

INDEX OF SHEETS

SHEET 1 TITLE SHEET SEE SHEET 2 FOR SUPPLEMENTAL INDEX OF SHEETS

FINAL PLANS

DATE CONTRACT LETTING: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK COMPLETED & ACCEPTED: _____

CONTRACTOR: _____

USED _____ OF _____ ALLOTTED DAYS _____

FINAL CONTRACT COST : \$ _____

FINAL AS BUILT PLANS

THE CONSTRUCTION WAS PERFORMED UNDER MY SUPERVISION IN ACCORDANCE WITH THE PLANS AND CONTRACT

DATE _____ AREA ENGINEER _____

PLANS PREPARED BY:

PROJECT LIMITS FOR SW3P LOCATION:
 LAT. BEG 32.3567813
 LONG. BEG -95.8477735

LAT END 32.2286941
 LONG. END -95.8522152

* SIGN IN ACCORDANCE WITH STANDARD BC SHEETS AND PART 6 OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.



07/02/2024

VOLKERT

F-12679

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, SEPTEMBER 1, 2024 AND SPECIFICATIONS ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: SPECIAL LABOR PROVISIONS FOR STATE PROJECTS (000-005)

STATE OF TEXAS
 DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
 STATE HIGHWAY IMPROVEMENT
HENDERSON COUNTY
SH 19

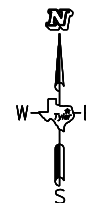
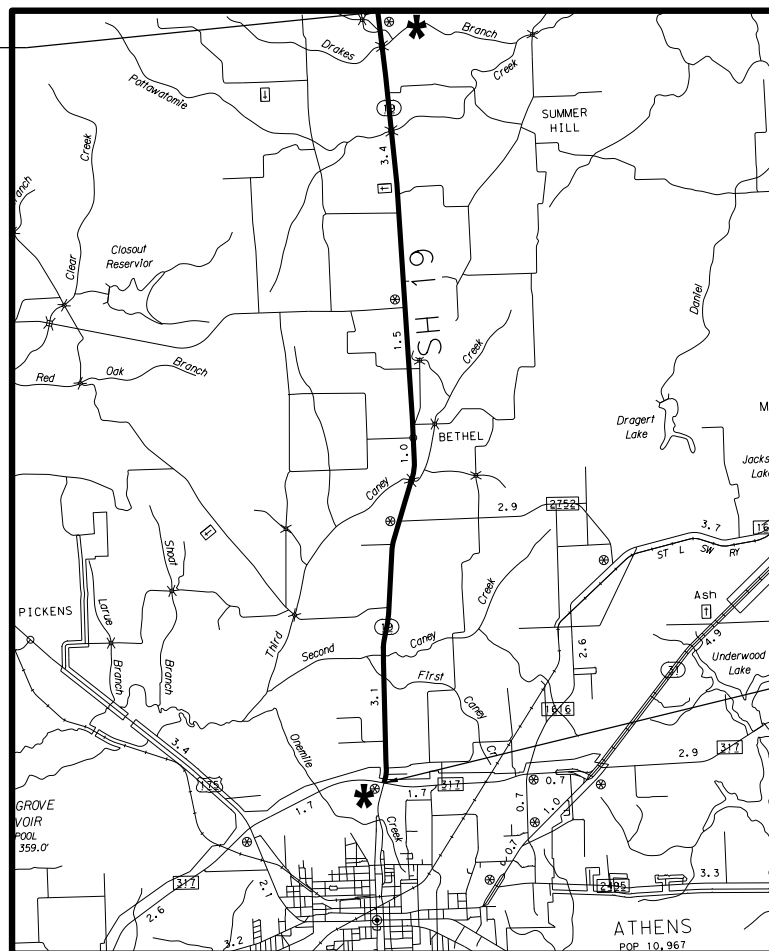
	ROADWAY LENGTH		BRIDGE LENGTH		TOTAL LENGTH	
	(FT)	(MI)	(FT)	(MI)	(FT)	(MI)
CSJ 0108-03-041	46435	8.80	332	.06	46767	8.86

PROJECT NO.: C 108-3-41

NET LENGTH OF PROJECT = 46,767 FT = 8.86 MILES
 FROM 0.3 MI S OF FM 1861 (VAN ZANDT C/L), S TO 0.1 MI N OF SL 7 IN ATHENS (WATSON)

FOR THE CONSTRUCTION OF SUPER 2 TYPE WORK
 CONSISTING OF TREATED SUBGRADE, ACP, BASE,
 OCST, MILL, INLAY, STRUCTURES, SIGNS AND PAVEMENT MARKINGS

SH 19 STA 1564+00.00
 BEGIN PROJECT P01
 CSJ 0108-03-041
 TRM 300+0.000



SH 19 STA 2032+05.00
 END PROJECT P01
 CSJ 0108-03-041
 TRM 308+0.982

NO RAILROADS
 NO EXCEPTIONS
 NO EQUATIONS

LAYOUT SCALE: N. T. S.

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
BM	6	C 108-3-41		SH 19
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JM	TEXAS	TYLER	HENDERSON	1
CHECK TR	CONTROL	SECTION	JOB	
	0108	03	041	

FUNCTION CLASS = RURAL ARTERIAL
 SH 19
 DESIGN SPEED = 40 MPH
 AVERAGE DAILY TRAFFIC
 2019 ADT SH 19 (SH 243 TO RM 2909) = 11,700
 2039 ADT SH 19 (SH 243 TO RM 2909) = 16,200
 2019 ADT SH 19 (RM 2909 TO FM 1861) = 7,500
 2039 ADT SH 19 (RM 2909 TO FM 1861) = 10,300

Project: 0108-03-041 - SH 19 Super 2, Tyler, TX - Design: 07/02/2024 - Designer: Volker Associates, Inc. - General: Volker Associates, Inc.

COUNTY: SMITH PROJ. NO.: P01
 HWY. NO.: SH 19 LETTING DATE: _____
 DATE ACCEPTED: _____



SUBMITTED FOR LETTING _____ 20____
 DocuSigned by:
 Rolando Mendez, P. E.
 DISTRICT DESIGN ENGINEER

APPROVED FOR LETTING _____ 20____
 DocuSigned by:
 _____, P. E.
 DISTRICT ENGINEER



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SUPPLEMENTAL INDEX OF SHEETS

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Trevor L. Reed 08/06/2024

THE STANDARD SHEETS INCLUDED WITH THESE PLANS HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION.

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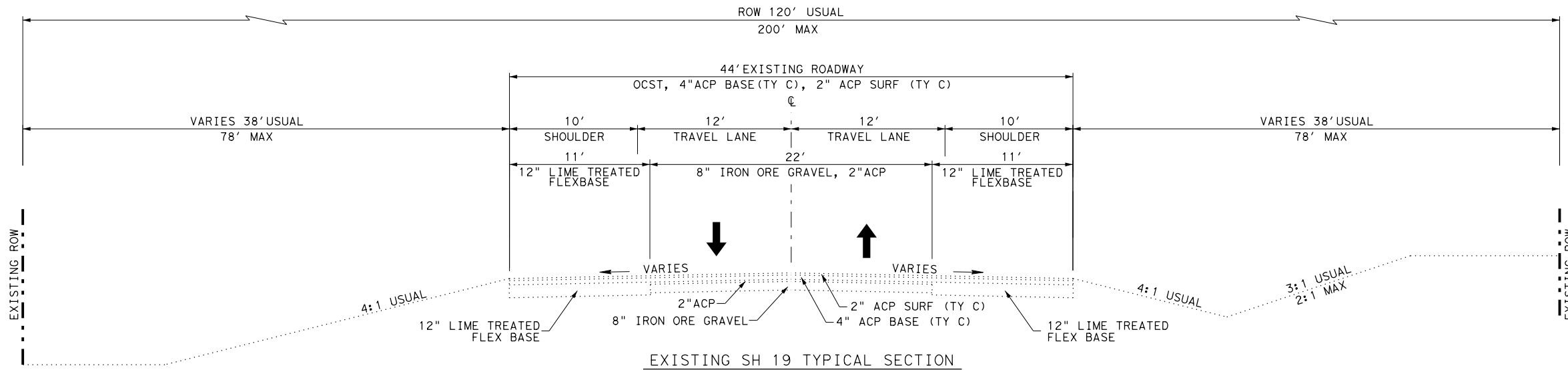
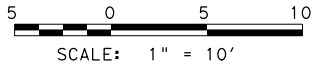


SH 19 SUPPLEMENTAL INDEX OF SHEETS

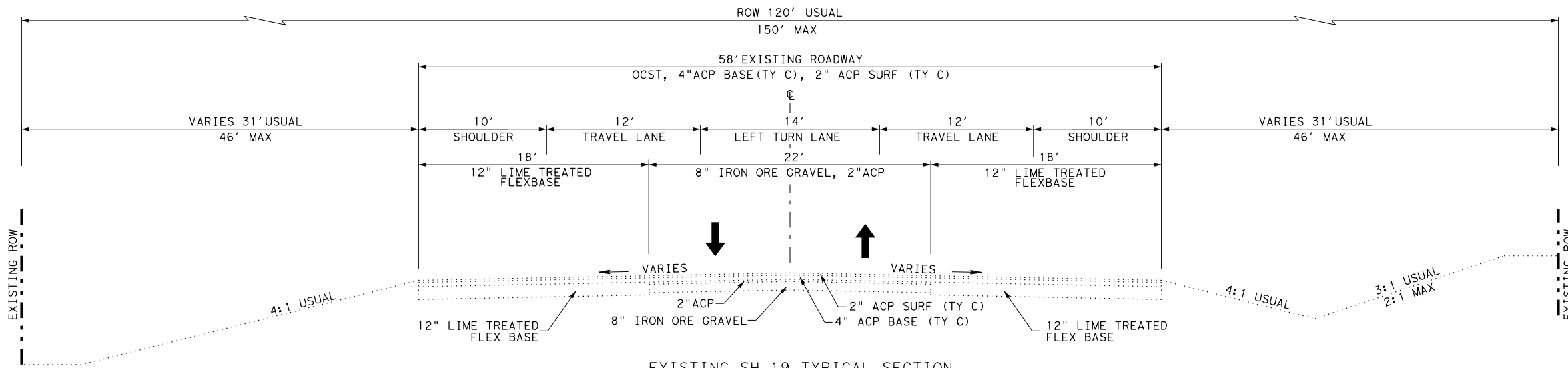
SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	2

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STA 1564+38 TO STA 1743+30
 STA 1758+00 TO STA 1812+98
 STA 1837+87 TO STA 1871+36
 STA 1884+61 TO STA 2032+05



STA 1743+30 TO STA 1758+00
 STA 1812+98 TO STA 1837+87
 STA 1871+36 TO STA 1884+61



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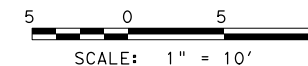


**SH 19
EXISTING
TYPICAL SECTION**

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	3

DATE: 29-MAY-2024 18:50
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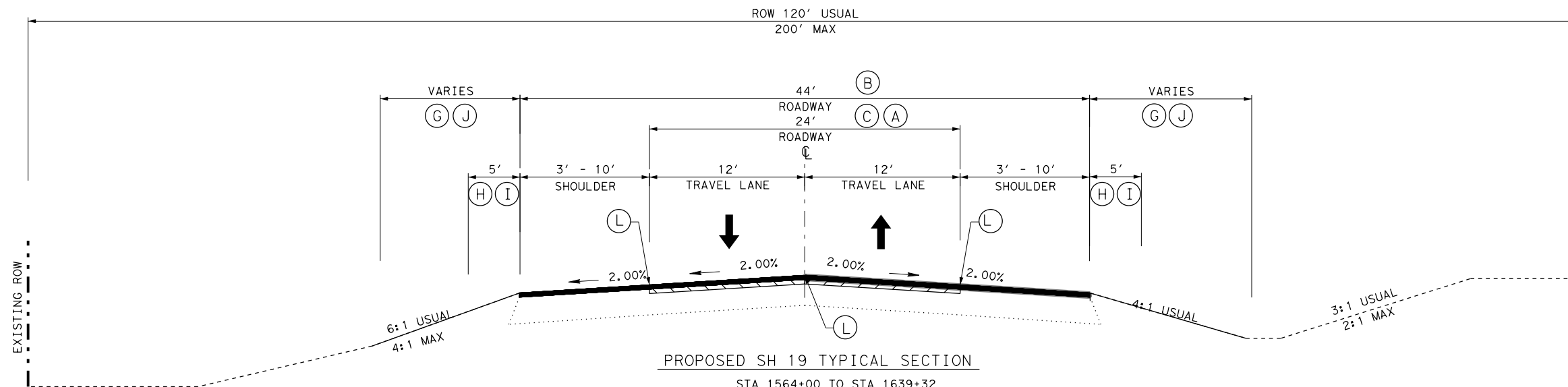
LEGEND

- (A) INLAY SP-C TYPE A
- (B) OCST
- (C) 2" MILL SURFACE
- (D) SUPERPAVE SP-C SAC-B PG70-22 (6")
- (E) 12" FLEX BASE (TY A GR1-2) (TO BE PLACED IN 2 EQUAL LIFTS.)
- (F) 8" TREATED SUBGRADE
- (G) 4" TOP SOIL
- (H) EMULSION
- (I) BACKFILL PAVEMENT EDGE (TY A)
- (J) BONDED FIBER MATRIX
- (K) EMBANKMENT (TY C)
- (L) RUMBLE STRIPS

NOTES:

1. SALVAGE 100% OF TOPSOIL IN PROPOSED DISTURBED AREAS.
2. PROFILE PAVEMENT MARKINGS TO BE USED ACROSS BRIDGES.

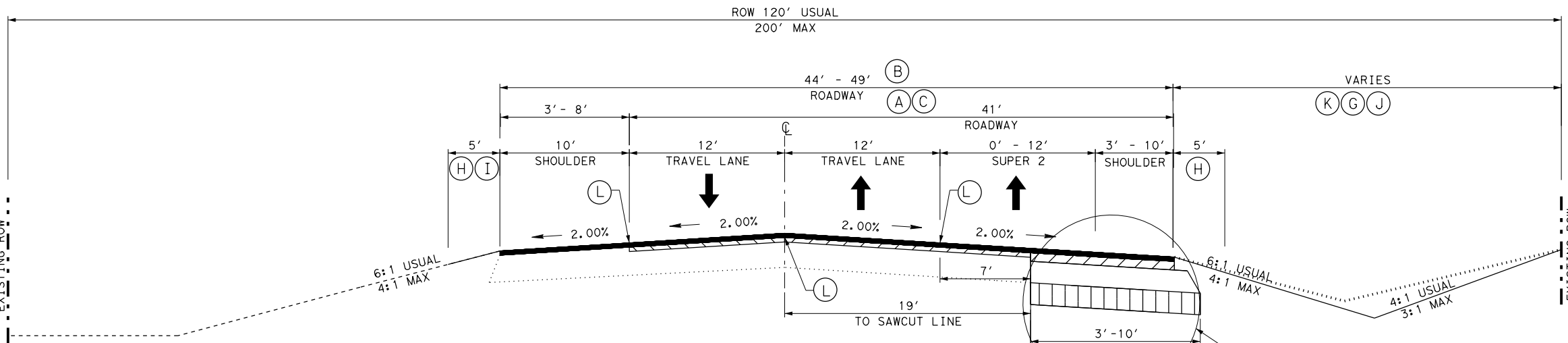
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PROPOSED SH 19 TYPICAL SECTION

STA 1564+00 TO STA 1639+32
 ** STA 1797+72 TO STA 1807+53
 ** STA 1837+87 TO STA 1865+91

** NOTE:
 OMIT LEVEL-UP IN BRIDGE AREAS STA 1849+92 - 1851+18 & STA 1960+47 - 1961+62



PROPOSED SH 19 TYPICAL SECTION

***STA 1639+32 TO STA 1739+30
 ***STA 1758+00 TO STA 1797+72

*** NOTE:
 USE 14" FULL DEPTH SUPER PAVE (BASE) (TYB) IN LIEU OF FLEX BASE (8") AND TREATED SUBGRADE IN THE SUPER 2 TRANSITIONS.



06/10/2024

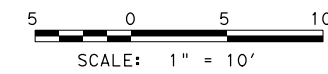
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SH 19 PROPOSED TYPICAL SECTION

SHEET 1 OF 4			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	4

DATE: 03-JUN-2024 14:47
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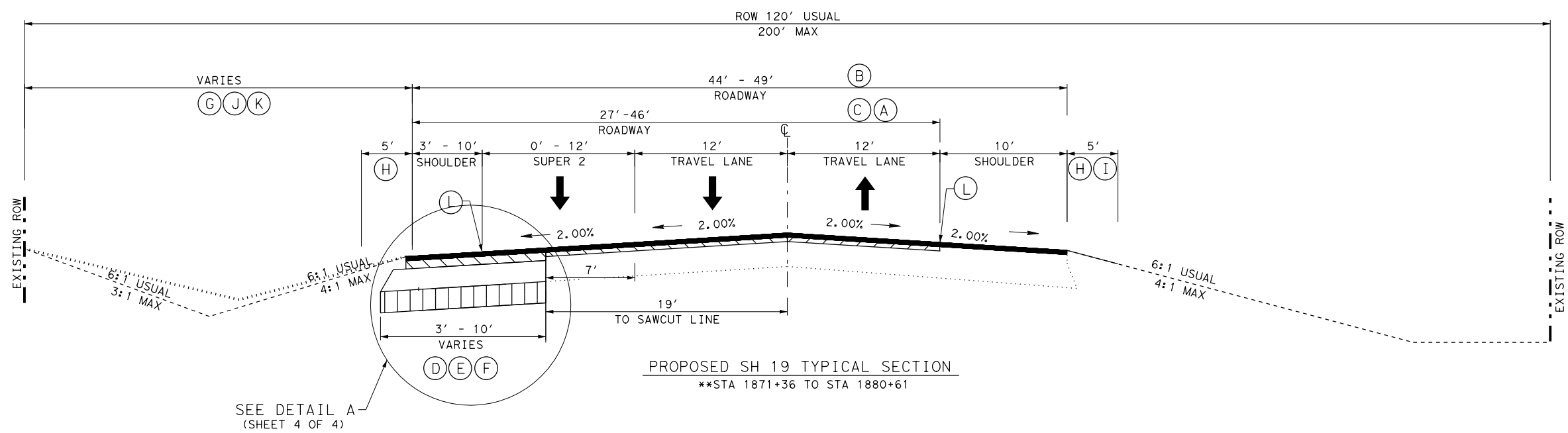
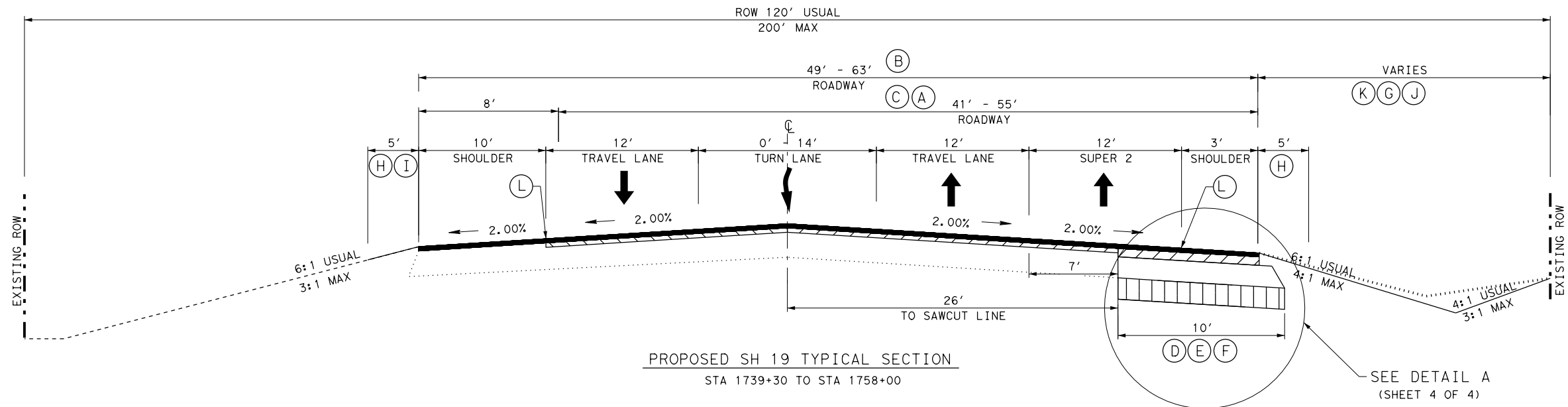


LEGEND

- (A) INLAY SP-C TYPE A
- (B) OCST
- (C) 2" MILL SURFACE
- (D) SUPERPAVE SP-C SAC-B PG70-22 (6")
- (E) 12" FLEX BASE (TY A GR1-2) (TO BE PLACED IN 2 EQUAL LIFTS.)
- (F) 8" TREATED SUBGRADE
- (G) 4" TOP SOIL
- (H) EMULSION
- (I) BACKFILL PAVEMENT EDGE (TY A)
- (J) BONDED FIBER MATRIX
- (K) EMBANKMENT (TY C)
- (L) RUMBLE STRIPS

NOTES:

1. SALVAGE 100% OF TOPSOIL IN PROPOSED DISTURBED AREAS.
2. PROFILE PAVEMENT MARKINGS TO BE USED ACROSS BRIDGES.



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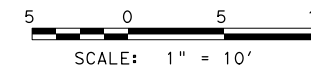
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**SH 19
 PROPOSED
 TYPICAL SECTION**

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	5

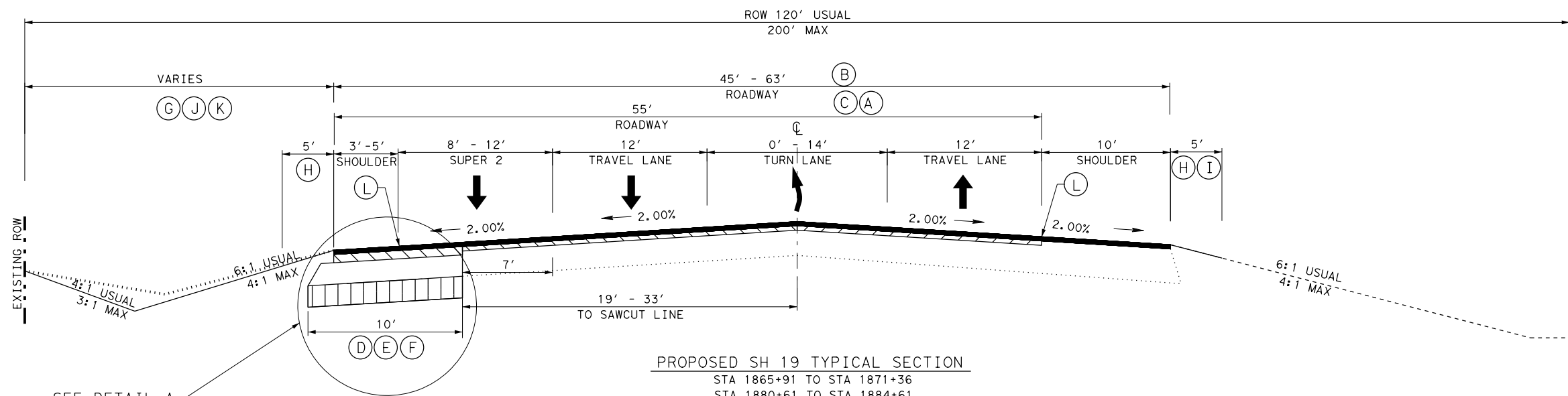


LENGEND

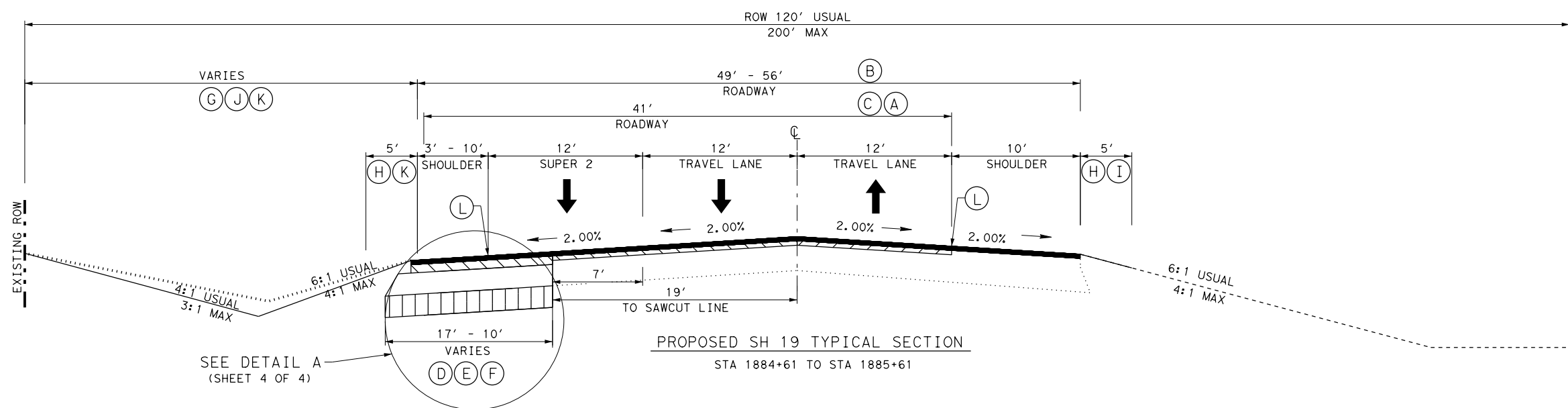
- (A) INLAY SP-C TYPE A
- (B) OCST
- (C) 2" MILL SURFACE
- (D) SUPERPAVE SP-C SAC-B PG70-22 (6")
- (E) 12" FLEX BASE (TY A GR1-2) (TO BE PLACED IN 2 EQUAL LIFTS.)
- (F) 8" TREATED SUBGRADE
- (G) 4" TOP SOIL
- (H) EMULSION
- (I) BACKFILL PAVEMENT EDGE (TY A)
- (J) BONDED FIBER MATRIX
- (K) EMBANKMENT (TY C)
- (L) RUMBLE STRIPS

NOTES:

1. SALVAGE 100% OF TOPSOIL IN PROPOSED DISTURBED AREAS.
2. PROFILE PAVEMENT MARKINGS TO BE USED ACROSS BRIDGES.



SEE DETAIL A
(SHEET 4 OF 4)



SEE DETAIL A
(SHEET 4 OF 4)



06/10/2024

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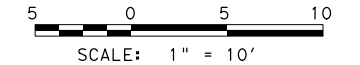
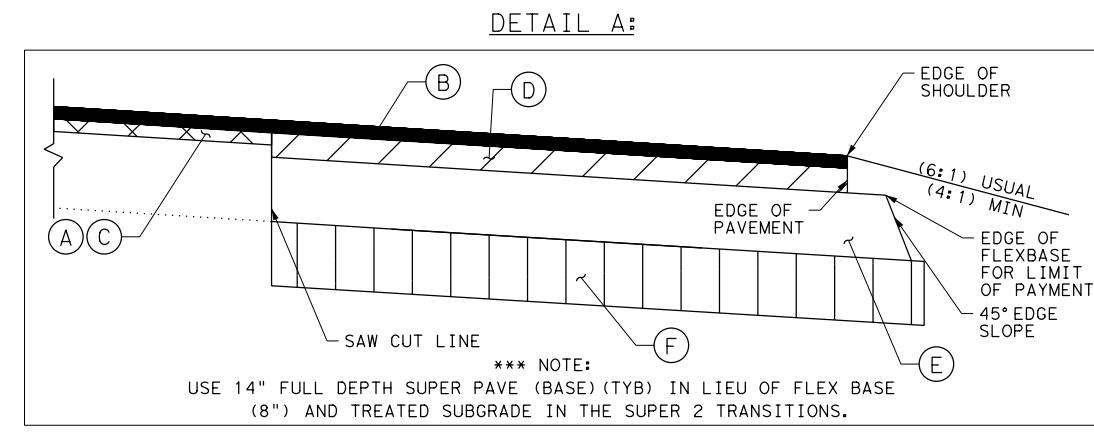
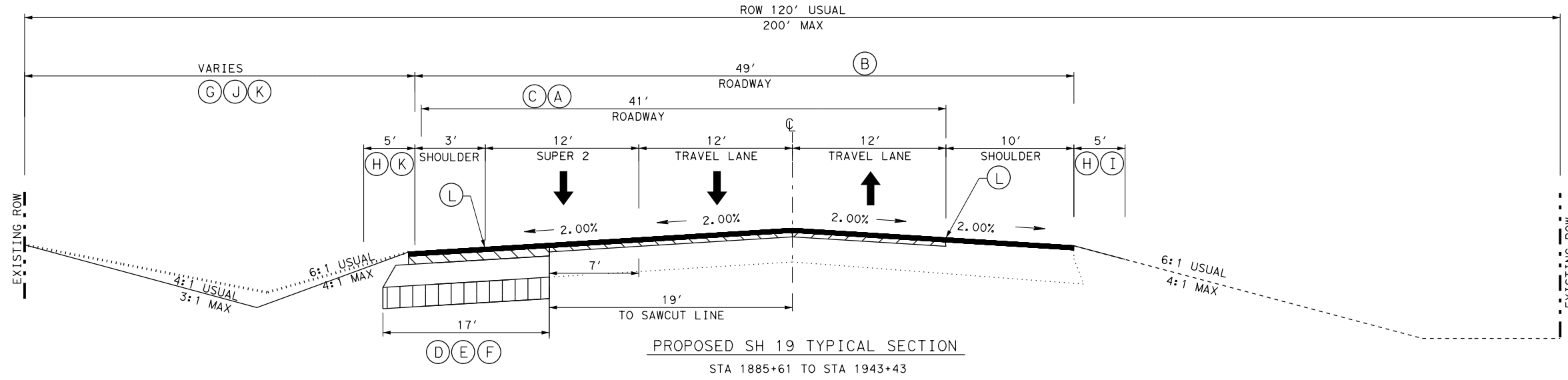
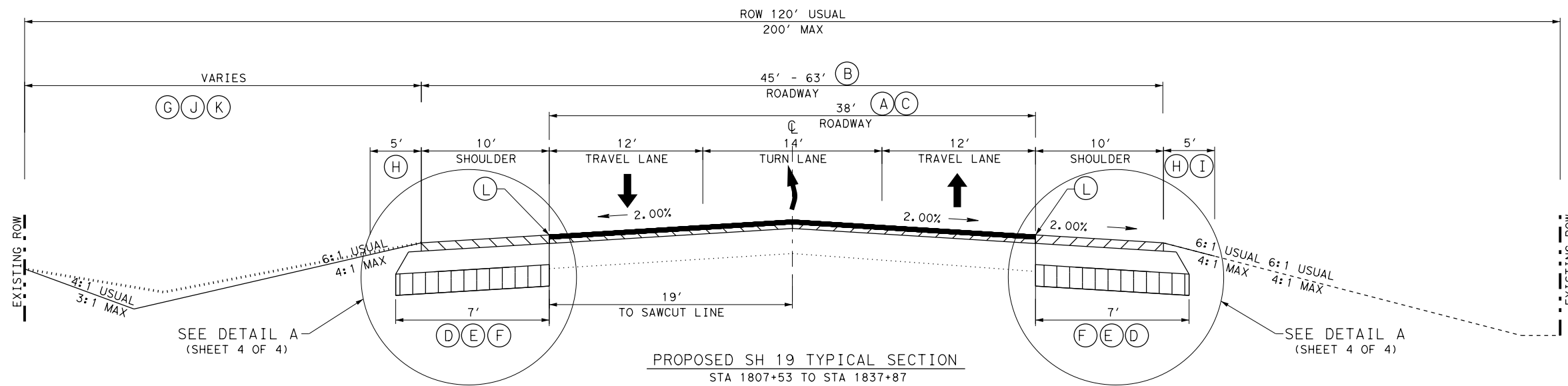
**SH 19
PROPOSED
TYPICAL SECTION**

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	6

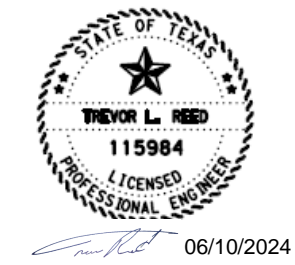
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- LEGEND**
- (A) INLAY SP-C TYPE A
 - (B) OCST
 - (C) 2" MILL SURFACE
 - (D) SUPERPAVE SP-C SAC-B PG70-22 (6")
 - (E) 12" FLEX BASE (TY A GR1-2) (TO BE PLACED IN 2 EQUAL LIFTS.)
 - (F) 8" TREATED SUBGRADE
 - (G) 4" TOP SOIL
 - (H) EMULSION
 - (I) BACKFILL PAVEMENT EDGE (TY A)
 - (J) BONDED FIBER MATRIX
 - (K) EMBANKMENT (TY C)
 - (L) RUMBLE STRIPS

- NOTES:**
1. SALVAGE 100% OF TOPSOIL IN PROPOSED DISTURBED AREAS.
 2. PROFILE PAVEMENT MARKINGS TO BE USED ACROSS BRIDGES.



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**SH 19
 PROPOSED
 TYPICAL SECTION**

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	7

County: Henderson

Control: 0108-03-041

Highway: SH 19

GENERAL NOTES:**GENERAL.**

Contractor questions on this project are to be addressed to the following individuals:

Danny Henderson, P.E. danny.henderson@txdot.gov

Eduardo Castaneda, P.E. eduardo.castaneda@txdot.gov

For Q&A on Proposals navigate to:

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

Use the dashboard to navigate to the project you are interested in by scrolling or filtering the dashboard using the controls on the left. Hover over the blue hyperlink for the project and click on the link in the window that pops up to view the Q&A.

All relevant project documentation including Contract Time Determinations and cross-sections will still be posted to the districts FTP website.

<https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/Tyler%20District/Construction%20Projects>

All stockpiles within TxDOT right of way, must not exceed 12 ft. in height and must have 3:1 slope unless otherwise directed. Place stockpiles in a manner that will be outside the horizontal clear zone, will not obstruct traffic or sight distance, and will not interfere with roadway drainage.

Perform work as necessary off the right of way on temporary construction easements for driveway construction. All work performed in these areas will be paid for under the pertinent bid items of the Contract.

Do not haul with loaded scrapers on the surfaced areas of any highway except as approved.

Remove all vegetation from pavement edges, intersections, and driveways prior to planing operations, seal coat, or ACP operations. This work will not be paid for directly, but will be subsidiary to the bid items of the Contract.

ATTN: Provide a 20-ft. length per 1-in. depth temporary taper at all transverse joints in the travel lane before opening to traffic. This work will not be paid for directly, but will be subsidiary to the bid items of the Contract.

County: Henderson

Control: 0108-03-041

Highway: SH 19

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

ITEM 4. SCOPE OF WORK

Upon completion of the work and before final acceptance, remove all foreign material, stains, and marks from concrete surfaces. Sandblast clean concrete surfaces as directed. Clean existing concrete structures that are marked or stained by the Contractor's operations. This work will not be paid for directly, but will be subsidiary to the bid items of the Contract.

During final clean up, remove all foreign material that has accumulated at bridge abutments and bent caps as approved. All work and equipment involved in the removal of this material is subsidiary to the bid items of the Contract.

Preserve the integrity of all right of way monuments within project limits. Right of way monuments damaged or destroyed during construction must be replaced by a registered professional land surveyor (RPLS), at the Contractor's expense.

ITEM 5. CONTROL OF THE WORK

If utility lines need adjustments during construction operations, modify operations and continue the work in a manner that will allow others to make the utility adjustments. Additional working time may be allowed for delays caused by these utility adjustments.

Place and maintain construction hubs near the right of way line in accordance with Article 5.9., "Construction Surveying" on both sides of the roadway until the final item of work is complete.

Establish proposed centerlines throughout the project from control points and alignment data as shown on the plans.

Use "Method C" for construction surveying in accordance with Section 5.9.3.

Refer to the horizontal and vertical alignment data summaries for satellite-control point information.

Maintain and re-establish the centerline stations throughout each project as required for each phase of work.

Utility locations shown on the plans are approximate. Contact utilities in accordance with Article 5.6., "Cooperating With Utilities."

County: Henderson

Control: 0108-03-041

Highway: SH 19

Verify survey control for accuracy before beginning construction.

Notify the Engineer if there are conflicts with survey control accuracy.

Before beginning work, profile the centerline of the existing roadway. Set horizontal and vertical control points to provide for the required thickness of materials.

Prior to beginning driveway and intersection work, submit a detailed construction sequence to be approved by the Engineer. Driveway and intersection completion includes existing surface removal, structure removal, removal of debris from the project site, installing the new RCP and SETs, backfilling, grading ditches to drain, and installing the permanent driveway or intersection surface (or all-weather drive surface as allowed).

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."

ITEM 7. LEGAL RELATIONS AND RESPONSIBILITIES

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

Proceed with activities in PSL that do not affect a COE permit area if Contractor determines that the PSL is non-jurisdictional or proper COE clearances have been obtained in jurisdictional areas or have been previously evaluated by the COE as part of the permit review of this project. The Contractor is responsible for documenting his determination that his activities do not affect a COE permit area. Maintain copies of determination for review by the Department or any regulatory agency.

Keep mailboxes in a position accessible to the carrier's vehicle along the travelway. When grading operations necessitate the moving of mailboxes, place mailboxes nearby at a location accessible to the carrier's vehicle. Return mailboxes to a position accessible to the carrier's

County: Henderson

Control: 0108-03-041

Highway: SH 19

vehicle along the travelway when grading operations are not in progress. The Contractor may mount mailboxes on a portable stand that keeps the mailbox in a level position approximately 42 in. above the pavement.

Furnish mounts for mailboxes in accordance with the Compliant Work Zone Traffic Control Device List for temporary mailboxes. When existing mailboxes are non-standard size, supply the new standard sized mailbox when temporarily relocated on drum and label the address as directed. This process will not be paid for directly, but will be subsidiary to the various bid items.

Coordinate with the local mail carrier where to place temporary mailboxes.

Concrete truck drivers and concrete pump operators are required to wash out only in designated areas specifically constructed for eliminating run-off. Dispose of materials in accordance with federal, state, and local requirements.

Maintain positive drainage for permanent and temporary work for the duration of the project. The Contractor will be responsible for any items associated with the temporary or interim drainage and all related maintenance. This work will be subsidiary to various bid items.

The total disturbed area for this project is 70 acres. The disturbed area in this project and the Contractor Project Specific Locations (PSL's) within 1 mile of the project limits for the Contract will further establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. Obtain any required authorization from the TCEQ for any Contractor PSL for construction support activities on or off the ROW. When the total area disturbed for all projects in the Contract and PSLs within 1 mile of the project limits exceed 5 acres, before disturbance, provide a copy of the Contractor NOI for PSLs on the ROW and within 1 mile of the project limits to the Engineer and to any local government that operates a Municipal Separate Storm Sewer System (MSSS).

In accordance with Article 7.9, provide and maintain adequate, neat and sanitary toilet accommodations within the project limits for employees, including State employees.

No significant traffic generator events identified.

ITEM 8. PROSECUTION AND PROGRESS

Prepare the progress schedule as a bar chart.

ITEM 9. MEASUREMENT & PAYMENT

In accordance with Article 9.1., "Measurement of Quantities," furnish the tare and maximum gross weights as well as the volume capacity of all vehicles, trucks, truck-tractors, trailers, semi-trailers, or combination of such vehicles used to deliver materials for this Contract. Also, furnish calculations supporting these weights and capacities. Provide all measurements required for pay a minimum of 2 days before the trucks are used.

ITEM 100. PREPARING RIGHT OF WAY

Perform work as necessary off the right of way on temporary or drainage easements and at those locations where improvements have been taken or partially taken by right of way acquisition. Review these locations with the Area Engineer. The cost of this work will be included in the unit price bid for this Item.

Burning will not be permitted within the right-of-way.

Do not use a forestry type mulcher for grinding. Tub grinders will be allowed.

A boom-axe will not be allowed to trim trees.

Remove or stockpile remaining trees and brush at the end of the day. Barricade the stockpile in accordance with Item 502. Remove stockpiles weekly.

ITEM 104. REMOVING CONCRETE

Blasting will not be permitted on this project.

Before removing existing curb & gutter or laydown curb, saw cut between the gutter pan and the roadbed to eliminate the possibility of damage to the pavement structure. When the existing pavement edge has to be removed to facilitate the curb & gutter transition from existing to the proposed ramp landing, remove the old and replace the new pavement structure the same day unless otherwise directed. The use of temporary material may be allowed as approved. This work will be subsidiary to Item 104.

ITEMS 110 & 132. EXCAVATION & EMBANKMENT

Before Contract letting, prospective bidders may review the earthwork cross-sections at the Area Engineer's office. The computer data is for non-construction purposes only and is the prospective bidder's responsibility to validate the data with the accompanying plans, specifications, and estimates for this Contract.

Excavation and embankment for driveways, intersections, mailbox turnouts and crossovers will not be paid for directly, but will be subsidiary to the various bid items unless otherwise shown on the plans.

In a cut section, if the soil encountered in the subgrade is unsuitable for reasons other than excess moisture (example: PI >18), this material will be declared "waste" and the Contractor will be required to undercut for a minimum depth of 1 ft. and a maximum depth as determined and replaced with a material having a plasticity index of 6 to 18. This required undercutting will be paid for under Item 110, "Excavation." The replacement material will be paid for under Item 132, "Embankment."

When excavation is required to adjust stream flow lines at culvert ends, flatten the side slopes of channels and the backslopes of parallel ditches to the maximum extent possible within the existing right of way and channel easements.

ITEM 132. EMBANKMENT

Furnish Type C embankment consisting of suitable earth material (rock, loam, clay, or other approved materials) that will form a stable embankment. Within the proposed roadbed, the top 2 ft. of embankment material should have a plasticity index between 6 and 18.

Test borrow sources and furnish results to the Engineer for select embankment, the Engineer will then run confirmation testing.

ITEM 134. BACKFILLING PAVEMENT EDGES

Compact the backfill adjacent to the pavement edge with a pneumatic roller or other approved equipment. This rolling will not be paid for directly, but will be subsidiary to Item 134.

ITEM 150. BLADING

Use blading to finish slopes after placement of the ACP surface and use blading to reshape unimproved driveways as directed.

Compact blading material as directed.

ITEM 164. SEEDING FOR EROSION CONTROL

The rates, types of seed, asphalt, and locations for the straw mulch and broadcast seed items will be determined if temporary erosion control is needed.

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Mow tall vegetation prior to placement of erosion control measures in order to provide optimal growing conditions. This work will not be paid for directly, but will be subsidiary to the bid items of the Contract.

The seeding areas are considered highly erodible land per Section 164.2.4.

Place topsoil before temporary seeding unless otherwise directed.

Do not use Bahiagrass.

Use additional temporary seeding if permanent seeding is placed outside the optimum growing season shown for this Item as directed.

Provide a Bonded Fiber Matrix that meets the current requirements of the Approved Products List for Item 169, "Soil Retention Blanket, Class 1, Type D, Spray Type Blanket," for both permanent and temporary seeding. Install according to manufacturer's recommendations based on a slope steeper than 3:1 with sandy soils. This Item will be paid for under Item 164.

ITEM 166. FERTILIZER

Place fertilizer at the rate of 1 lb. per 9 sq. yd. on areas prepared for seeding.

ITEM 168. VEGETATIVE WATERING

Apply water to all newly placed seeded areas the same day of installation. Maintain the sod or seeded areas in a sufficiently watered condition. Do not allow sod or seeded areas to dry out so that water stress is evident.

ITEM 247. FLEXIBLE BASE

Blade and sprinkle flexible base for a minimum of 7 days after it achieves density unless otherwise approved or directed.

Flex base material must meet the minimum compressive strength requirements.

Furnish base material with a minimum bar linear shrinkage of 2 percent as determined by Tex-107-E, Part II.

ITEM 310. PRIME COAT

A minimum curing time of 10 days is required before application of Item 316 when using bituminous material unless otherwise authorized or directed in writing.

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ITEM 314. EMULSIFIED ASPHALT TREATMENT

Before application, dilute the emulsion with water up to a maximum dilution of 50% at a distribution rate of 0.30 gal. per sq. yd.

ITEM 316. SEAL COAT

Protect all existing bridges, curbs, and other exposed concrete surfaces from asphaltic materials by any acceptable method. Removal of excessive asphaltic materials deposited on these surfaces will be at the Contractor's expense.

During surface treatment application, if existing conditions warrant, vary the lane widths, transitions, and intersection areas as directed.

Perform rolling as directed with equipment complying with Section 210.2.4.2, "Medium Pneumatic Tire." This work will not be paid for directly, but will be subsidiary to pertinent Items.

Do not apply asphalt later than 1 hour before sunset unless otherwise approved.

Provide aggregate for shoulders and mainlanes from the same source unless otherwise directed.

Place surface treatments between May 1 and August 31 unless otherwise directed.

The rates shown on the plans for asphalt and aggregate are for estimating purposes only. The rates may be varied as directed.

Place surface treatment on crossovers and intersecting roadways prior to the roadway.

The target rate for precoat asphalt is 1.2%.

ITEM 320. EQUIPMENT FOR ASPHALT CONCRETE PAVEMENT

Provide either a material transfer vehicle or material transfer paver for the surface course of this project. The material transfer vehicle must be self-propelled, wheel mounted and capable of receiving material from haul trucks separate from the paver. The 20-ton minimum capacity hopper must be equipped with a pivoting discharge conveyor and must have a means of remixing the asphaltic material before placement. The material transfer paver, if supplied, must consist of a mobile, self-propelled asphalt paver incorporating an integral mix loadout elevator (conveyor) having a minimum rated capacity of 750 ton per hour. The conveyor system must have a means of remixing the asphaltic concrete material before discharging into the paver hopper and must be equipped with either a truck dump hopper attachment or a minimum 20-ton capacity surge

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hopper. If a material transfer paver utilizing the truck dumper hopper attachment is used, the haul trucks must stop a minimum of 1 foot into the truck. In addition, paving will not be allowed to begin until the paver has reached its full storage capacity.

ITEM 344. SUPERPAVE MIXTURES

When using crushed gravel as a coarse aggregate for ACP, use 1% lime as an antistripping agent.

Provide coarse aggregate for the final surface course from the same source or blended sources unless otherwise directed.

Give the State inspector at the spreading and finishing machine one weight ticket for each load of material. When directed, weigh asphaltic concrete loads on public scales to ensure the proper weight of material.

For materials paid for by the ton, provide a summary spreadsheet in accordance with Article 520.2, "Equipment."

Provide Class A coarse aggregate for the surface as listed in the Department's Bituminous Rated Source Quality Catalog (BRSQC).

Use an electrical impedance (non-nuclear) measurement gauge to determine mat segregation and joint density for Part V and Part VIII of test procedure Tex-207-F. Do not use nuclear density gauges or thin lift gauges for segregation or joint density determinations. Data reporting for mat segregation and joint density must be performed on Department templates.

All RAP used on this project must be fractionated. If an existing mix design is submitted for use as Warm Mix Asphalt (WMA), then a new trial batch with passing Hamburg Wheel test results is required.

All RAP must be acquired before the work on the project ends.

Apply a tack coat with a rate of 0.10 gal/sy of residual asphalt between each layer of ACP pavement unless otherwise directed.

Extend the tapered portion of the mat beyond the normal lane width as shown on the plans. Construct the tapered portion of the mat using an approved strike-off device that will provide a uniform slope and will not restrict the main screed. The final density requirements for the entire pavement, including the taper area, will not change. Compaction of the initial taper section will be required to be as near to final density as possible. A small static roller (approx. 200 lb.) will be required behind the paver for pre-compaction of the notched wedged joint.

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ITEM 351. FLEXIBLE PAVEMENT STRUCTURE REPAIR

Replace the unstable pavement structure with 6 in. of asphaltic concrete pavement base (SP MIXES SP-C SAC B PG70-22) (Intermediate), unless otherwise directed. The Engineer will determine the exact locations and limits of pavement repair in the field prior to beginning this Item of work.

Apply a tack coat with a rate of 0.10 gal/sy of residual asphalt between each layer of ACP pavement unless otherwise directed.

Furnish planing equipment to remove existing material in accordance with Item 354, as directed. The planing equipment will be subsidiary to Item 351.

Furnish an asphalt paver on full lane width pavement repair sections in accordance with Item 320 unless otherwise directed.

ITEM 354. PLANING AND TEXTURING PAVEMENT

Use a front-end loader or other suitable equipment at the stockpile site to properly stockpile the planed material as required.

ATTN: Vary planing locations to meet field conditions as directed. Begin and end planing at a sawed or planed vertical joint to provide a smooth transition to existing pavement. Provide a 20-ft. length per 1-in. depth temporary taper at all transverse joints in the travel lane before opening to traffic.

Before opening planed areas to traffic, bevel vertical or near vertical longitudinal faces in the pavement surface.

The Department retains ownership of planed material generated on this project. The stockpile site for RAP is located 1.3 miles south of FM 1256. The Engineer will determine the exact stockpile location within the designated area.

Furnish a small planing machine as approved for planing small areas and street intersections.

Overlay all planed areas by the end of each day unless otherwise approved.

If unsuitable weather or other unexpected conditions do not allow planed areas to be overlaid, provide and maintain warning signs for overnight lane closures in accordance with the traffic control plan sheets until overlay operations are complete.

Furnish longitudinal grade reference at least 28-feet long except at areas adjacent to MBGF or bridge ends.

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ITEM 421. HYDRAULIC CEMENT CONCRETE

The Engineer will provide strength-testing equipment.

Provide the Engineer with a mixture design report using Department-provided software in accordance with Section 421.4.1., "Classification of Concrete Mix Designs," of the standard specifications. Include in the report the producer's plant, all materials sources, and a unique identification number for the design.

Air is not required on concrete cast-in-place elements on this project. If the Contractor proposes the use of an existing concrete design containing air, the Engineer must approve the design in writing before placement. If used, air testing will be performed in accordance with the specifications.

ITEM 432. RIPRAP

Locations and quantities may be varied as directed by the Engineer to accommodate field conditions.

ITEM 462. CONCRETE BOX CULVERTS AND DRAINS

Provide Portland cement mortar joints between precast concrete box culverts and existing reinforced box culverts in accordance with Section 464.3., "Jointing."

Provide cast-in-place concrete box culverts.

Removal of existing wingwalls is subsidiary to Item 462.

If existing curb and wingwalls are left in place during cast-in-place culvert extensions, drill and grout 2 ft. long #6 bars halfway into the existing curb and wingwalls at 18-in. center to center spacing. This work is considered subsidiary to Item 462.

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ITEM 464. REINFORCED CONCRETE PIPE

Removal of portions of the existing structure, including headwalls, safety end treatments, and pipe, is subsidiary to Item 464.

An alternative for RCP is being included under item 468 and will be an equal switch between the two specifications. All of the other measurement and payment items required for construction of the pipes (trench protections, backfill, connections, etc.) will be the same for both options.

ITEM 465. JUNCTION BOXES, MANHOLES, AND INLETS

Paint all iron manhole rings and covers with galvanized paint.

Payment for precast elements and inlet extensions are included in the payment for Inlet (Compl).

ITEM 467. SAFETY END TREATMENT

Reshape embankment side slopes and provide embankment as required. Add mulch sod to achieve a smooth uniform finish around the installation of the safety end treatments and culvert extensions as directed.

Removal of portions of the existing structure, including headwalls, safety end treatments, and pipe, is subsidiary to Item 467.

ITEM 496. REMOVING STRUCTURES

All materials removed under this Item are the property of the Contractor.

Removal for SETs is considered appurtenances when removing driveway pipe by the each.

ITEM 502. BARRICADES, SIGNS, AND TRAFFIC HANDLING

The traffic control plan for this Contract consists of: the installation and maintenance of warning signs and other traffic control devices shown on the plans; specification data, which may be included in the general notes; applicable provisions of the Texas Manual on Uniform Traffic Control Devices (TMUTCD); traffic control plan sheets included on the plans; standard BC sheets; Compliant Work Zone Traffic Control Device List, and Item 502 of the standard specifications.

Use ground-mounted sign mounts with two posts for all temporary work zone signs unless otherwise directed.

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Inspect and correct deficiencies each day throughout the duration of the Contract. In accordance with Article 502.4., "Payment," no payment will be made for the month if the Contractor fails to provide or properly maintain signs and devices in compliance with Contract requirements. Temporary warning signs that are visible when conditions do not apply will be considered improper maintenance of signs.

Provide at least one employee on call nights and weekends (or any other time that work is not in progress) for maintenance of signs and traffic control devices. This employee must have an address and telephone number near the project, as approved. Notify the Engineer in writing of the name, address, and telephone number of this employee. The Engineer will furnish this information to local law enforcement officials.

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 30 minutes.

Sign all roads intersecting the project in accordance with current BC standards.

Refer to the traffic control plan sheets for traffic handling through the work area. Contractor may vary the signing arrangement and spacing as necessary to fit field conditions; however, any proposed changes in the traffic control plan must be approved before implementation.

When the sequence of work is shown on the plans, the Contractor may submit an alternate proposal for approval. Submit in writing all proposed variations and revisions.

High-visibility safety apparel is required for workers in accordance with the General Notes on current BC standards.

Place and maintain signs, channelizing devices, and flaggers to direct and route traffic at any location and for any period of time as may be required or directed.

When operations require a lane closure, provide cones, vertical panels, drums, signs, flaggers, and flashing arrow panels as necessary to route traffic around the closed lane as shown on the plans and as directed. Lane closures will be limited to one specific lane as directed.

Lane closures will only be permitted after 8 A.M. unless otherwise directed.

Unless otherwise approved, construction operations will not be allowed on Good Friday, Easter weekend, the Friday before Memorial Day thru Memorial Day, July 4th, the Friday before Labor Day thru Labor Day, the Wednesday before Thanksgiving Day thru Sunday, Christmas Eve, Christmas Day, New Year's Eve, New Year's Day, or on any other high traffic days or holidays as determined by the Engineer.

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Erect R4-1 (Do Not Pass) and R4-2 (Pass With Care) signs to mark existing no-passing zones as directed. (These signs will not be required if these zones will not be eliminated during construction.)

Maintain existing roadside signs within this project's limits during this Contract. In order to accommodate the grading or other operations, temporarily relocate these signs in accordance with the TMUTCD as directed. Use ground-mounted sign mounts with two posts for all relocated signs unless otherwise directed. This work will not be paid for directly, but will be subsidiary to Item 502.

Provide truck-mounted attenuators (TMA) as shown on the appropriate traffic control plan sheets. Provide a letter certifying that all TMA used on this project meet NCHRP 350 or AASHTO Manual for Assessing Safety Hardware (MASH) requirements.

Regulate all construction activities and equipment to minimize inconvenience to the traveling public. At points where it is necessary for trucks to stop, load, or unload, provide warning signs and flaggers to protect the traveling public.

The pavement must be entirely open to traffic each night. Remove or clearly barricade all material stockpiles, equipment left overnight, or any obstruction within the right of way as approved.

The Contractor Force Account "Safety Contingency" is intended to be used for work zone enhancements that could not be foreseen in the project planning and design stage for the purpose of improving the effectiveness of the Traffic Control Plan. 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.

Provide flaggers at county roads, commercial driveways, and other intersecting roadways deemed necessary by the Engineer to maintain control of the work zone during one-lane two-way operations. Provide communication radios to each flagger in the work zone and the pilot vehicle operator.

Nighttime work will be necessary for this project. Lane closures for various operations will only be allowed between the hours of 7 P.M. and 6 A.M. maintaining traffic as described in the construction sequences.

For nighttime work (7 P.M. – 6 A.M.), submit written notification to the Engineer for approval. State the location, nature and time of the nighttime operations. Submit a drawing showing the proposed lighting, traffic control, and protection devices during night work. Do not direct the lighting into the eyes of motorists. Provide lighting that is adequate to satisfactorily perform the required work.

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For nighttime work, submit written notification to the Engineer for approval of the type of lighting to be used during construction.

Provide Balloon Lighting for nighttime construction work. Follow manufacturer's operational guidelines. Work lights must be portable and include LED lighting to diffuse glare and reduce shadows and provide 360 degrees of light. Balloon lighting is subsidiary to Item 502.

When a culvert extension, inlet construction, or safety end treatment, etc. is within 30 ft. of a travel lane, delineate these areas as shown on current BC standards. In addition, provide a 4-ft. high plastic construction fence at or around any structure or obstruction that would be a hazard to pedestrians unless otherwise approved. Erect fence using a minimum of 4-T-posts, one at each corner of the structure or obstruction.

Where there is excavation adjacent to the pavement edge, provide adequate warning signs, vertical panels, drums, and lights at the pavement edge as directed. Treat pavement drop-offs created by ACP operations in a similar manner in accordance with the details shown on the plans.

Furnish and install work zone/reduce speed ahead and work zone/speed limit signs in accordance with current BC standards at locations as established by the Engineer. Signs must be ground-mounted.

Provide work zone speed limit signs that meet sizing requirements in accordance with Table 2B-1 of the TMUTCD.

When excavation is required next to a travel lane carrying traffic and widening is not completed by the end of the day's operation, place sufficient backfill against the edge of the travel lane in order to provide a 3:1 slope, unless otherwise permitted on the plans. Provide backfill containing a durable crushed stone type of flexible base or other materials as approved. When work resumes on this excavated area, carefully remove and dispose of the backfill material. Materials and labor for this work will not be paid for directly, but will be subsidiary to the various bid items of the Contract.

Provide a pilot vehicle.

Do not perform base widening on both sides of the roadway simultaneously.

All work required by these general notes, except as provided for by Item 502, will not be paid for directly, but will be subsidiary to Item 502 unless otherwise shown on the plans.

The use of Law Enforcement Officers (LEOs) will be required for this project. Before the preconstruction meeting, coordinate with local agencies to be prepared for staffing needs.

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Provide uniformed LEOs with marked vehicles during work zone activities. The officer in marked vehicle will be located as approved to monitor or direct traffic during the closure. The Engineer will approve the method used to direct traffic at signalized intersections. Additional officers and vehicles may be provided when 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. Minimums, scheduling fees, etc. will not be paid; TxDOT will consider paying cancellation fees on a case-by-case basis.

All law enforcement personnel used in work zone traffic control must 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 verify completion when reporting to the work site.

Provide the Engineer 72-hour notice of lane or ramp closures to provide advance notice to the traveling public by way of media and for any dynamic message sign programming. Place Portable Changeable Message Signs (PCMS) at locations as directed a minimum of 3 days in advance of entrance ramp closures on the affected crossroad. These signs are to remain in place during the ramp closures.

Cancel law enforcement personnel when the work is canceled due to weather. Cancellation, minimums or "show up" fees will not be paid when cancellation is made 12 hours prior to beginning of the work. Failure to cancel within 12 hours will not be cause for payment for cancellation, minimums, or "show up" time. Payment of actual "show up" time to the work site due to cancellation will be on a case-by-case basis at a maximum of 2 hours per officer.

ITEM 503. PORTABLE CHANGEABLE MESSAGE SIGN

Provide a non-erodible, stable surface to place the Portable Changeable Message Sign (PCMS) units adjacent to the roadway as directed. Payment for this surface is incidental to Item 503.

Provide a cellular modem connection to communicate with the PCMS remotely.

ITEM 504. FIELD OFFICE AND LABORATORY

Provide a facility at the asphalt concrete pavement plant for use by the Engineer as a laboratory. This is an existing requirement of Item 6, Article 5, "Plant Inspection and Testing," of the Standard Specifications. Provide a facility meeting the requirements of Item 504. At a minimum

meet the requirements of 504.2.2.4, “Ty D Structure (Asphalt Mix Control Laboratory)” and 504.2.2.4.1, “Asphalt Content by Ignition Method.” In addition, provide the following: At least one exterior door opening with a 48-in. minimum width. If steps are required to gain access to the facility’s 48-in. door, provide a landing dock with minimum dimensions of 60 in. wide by 60 in. deep. The strong floor and landing of the facility should support the weight of all equipment and personnel providing a stable, essentially zero deflection during testing operations, acceptable to the Engineer. This facility will be required of all projects with plant produced asphalt concrete pavement.

No direct payment will be made for Engineer field labs. All construction, maintenance, utilities, custodial services, security, and permits necessary to establish and maintain readiness of this facility is the responsibility of the Contractor. This building/facility is required by the standard specifications and is considered a standard part of any asphalt concrete pavement plant producing materials for Department projects.

Furnish a Superpave Gyratory Compactor calibrated in accordance with Tex-241-F for molding production samples. The Superpave Gyratory Compactor will not be paid for directly, but will be subsidiary to the asphalt concrete pavement Items of work.

ITEM 505. TRUCK MOUNTED ATTENUATOR (TMA)

Shadow vehicles with truck mounted attenuator (TMA) are required on the traffic control plan and TCP standards for this project. The Contractor will be responsible for determining if one or more of these traffic control operations will be ongoing at the same time to determine the total number of TMAs needed for the project. Additional truck mounted attenuators (TMAs) may be required as deemed necessary by the Engineer.

The TMA/TA used for installation/removal of traffic control for a work area will be subsidiary to the TMA/TA used to perform the work.

ITEM 506. TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS

Remove dirt, silt, rocks, debris, and other foreign matter that accumulates in all structures due to project erosion and Contractor’s operations. Keep stream channels open at all times. This work will not be paid for directly, but will be subsidiary to this Item.

The total disturbed area for this project is 70 acres. The disturbed area in this project, all project locations in the Contract, and Contractor project specific locations (PSLs) within 1 mile of the project limits for the Contract, will further establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. Obtain any required authorization from the TCEQ for any Contractor PSLs for the

construction support activities on or off right of way. When the total area disturbed for all projects in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, before disturbance, provide a copy of the Contractor NOI for PSLs on the right of way to the Engineer (to the appropriate MS4 operator when on an off-State system route).

The Engineer will provide copies of documents to meet TxDOT’s posting requirements. Laminate, post, and maintain these documents at the project limits and at major roadways intersecting the project as directed. Post required Contractor documents in the same manner and location. This work will be subsidiary to Item 506.

ITEM 533. MILLED RUMBLE STRIPS

Provide one-lane two-way traffic control on two-lane roadways unless otherwise approved.

Provide traffic control for roadways with other lane configurations as directed.

Provide a sweeper that meets the requirements of Section 354.2.3.

ITEM 540. METAL BEAM GUARD FENCE

Do not paint treated timber posts.

Steel posts will be required in accordance with “Low Fill Culvert Post Mounting” details show on standard shet MBGF.

Length of steel posts for low fill culvert post mounting will be determined in the field to ensure proper metal beam guard fence height.

ITEMS 540 & 542. METAL BEAM GUARD FENCE & REMOVING METAL BEAM GUARD FENCE

Prior to removal of existing MBGF and associated appurtenances, submit to the Engineer for approval a work plan, including a detailed timeline, outlining removal and reinstallation of safety features. It is the intent that the Contractor has the necessary materials and labor force available to reinstall the safety features prior to beginning the removal process.

Regardless of when the Contractor installs proposed MBGF, set the rail height to account for any subsequent surfacing work in order to be in accordance with standard MBGF upon completion of the Contract.

When replacing guard rail, ensure that all segments of guard rail removed are replaced the same work day before opening to traffic.

ITEM 542. REMOVING METAL BEAM GUARD FENCE

The Engineer will determine the metal beam guard fence to be salvaged and location of stockpile sites.

All metal beam guard fence is non-salvageable and will become the property of the Contractor.

Removal of existing ACP mow strips is incidental to removal of the existing guard rail.

ITEM 560. MAILBOX ASSEMBLIES

Use round posts, set in concrete, with 12 in. reflector tape for all mailbox installations.

Provide new metal mailboxes and place the existing mailboxes at the front door of the homeowner. Ensure the new mailbox is not smaller than the existing. The following mailbox quantities are for Contractor’s information only: 71 medium mailboxes, and 2 large mailboxes.

Place 2-in. address location numbers on each mailbox in accordance with Placement of Emergency Location Number notes on MB-15(1). The color of the numbers must contrast the mailbox color as directed.

ITEM 585. RIDE QUALITY FOR PAVEMENT SURFACES

Use Surface Test Type B pay adjustment schedule 3 to evaluate ride quality of the travel lanes in accordance with Item 585, “Ride Quality for Pavement Surfaces.”

ITEM 636. SIGNS

Install signs in accordance with the Department of Transportation’s “Sign Crew Field Book,” latest edition, or as directed.

All signs removed from the project are deemed salvageable and become the property of the Department. Stockpile salvageable material at the Canton Maintenance Section located at 15500 FM 1255, Canton Texas 75103.

ITEM 644. SMALL ROADSIDE SIGN ASSEMBLIES

Sign types for which details are not shown on the plans must conform to “Standard Highway Sign Designs for Texas,” latest edition.

Before construction begins, locate all Texas Reference Marker (TRM) signs and Adopt-a-Highway signs using survey control methods for accuracy. Provide the survey data to the Engineer. If either type of sign is relocated during construction activities, survey the sign location and notify the Engineer before placement of the permanent sign.

Stake all sign locations for approval prior to placement.

The relocation of existing street signs to proposed stop sign will be subsidiary to Item 644.

ITEM 658. DELINEATOR AND OBJECT MARKER ASSEMBLIES

Accept ownership of unsalvageable delineator and object marker assemblies and remove from the right of way.

ITEM 662. WORK ZONE PAVEMENT MARKINGS

For this project, Contractor may use paint and beads for work zone pavement markings (non-removable).

Dispose of all empty paint containers and unused paint in accordance with federal, state, and local requirements.

Do not use foil backed pavement markings as removable work zone pavement markings. Removable work zone pavement markings must be pliant polymer detour grade (removable) material or other markings that can be obliterated or removed to the satisfaction of the Engineer.

Use tape for short-term removable pavement markings on hot mix & PFC surfacing applications.

Tabs may be used before surface treatment application.

Furnish and place work zone pavement markings (short term)(tab) on center lines and lane lines in accordance with WZ(STPM), and provide warning signs in accordance with TCP (7-1). Place tabs within 1 in. of the proper alignment as established by the Contractor and approved by the Engineer. Remove tabs after placement of permanent markings. Tab removal will be subsidiary to Item 662.

ITEM 666. RETROREFLECTORIZED PAVEMENT MARKINGS

Use the spray method for application of the thermoplastic compound for lane lines, barrier lines, edge lines and channelizing lines.

In high traffic volume areas, do not begin work before 9 A.M. and do not continue work after 4 P.M. unless otherwise approved. In other areas, the Engineer will approve and direct the time of work.

Extrude hot to the pavement surface thermoplastic compound for arrows, stop lines, yield triangles, transverse lines, crosswalk lines, words and symbols.

For lengths greater than 300-ft, provide guide markings that will not leave a permanent mark on the roadway. Have the guide marking material and equipment used for placement approved prior to use. Provide adequate notification for approval of the guide markings prior to placement of the permanent pavement markings.

Provide a crew experienced in the work of installing pilot guideline markings and in the necessary traffic control. Supply all the equipment, personnel, traffic control, and materials necessary for the placement of pilot guideline markings as directed. All work will be in conformance with Part 6 of the TMUTCD.

The Engineer will establish beginning and ending points of no passing zones.

Correct deficiencies in the alignment of pavement markings at Contractor's expense, as directed. Use a strip seal with aggregate and asphalt types and rates as directed to eliminate the deficient pavement markings.

Static lane closures are required for all profile stripe operations. These operations will require a pilot car for all two-lane roadways, unless otherwise directed.

ITEM 672. RAISED PAVEMENT MARKERS

Provide dispensing equipment such that the bituminous material can be directly applied from the melting pot to the pavement surface without secondary handling. Dispensing material from the melting pot into a separate container and then to the pavement surface will not be permitted. Intermittent agitation of the bituminous material will be by a method approved by the Engineer to ensure even heat distribution and must be such that the adhesive is agitated at approved and consistent intervals.

ITEM 730. ROADSIDE MOWING

Mow the highway right of way in the project limits a maximum of 2 cycles per year, as directed, in the Fall and Summer.

Provide approved mowing equipment capable of mowing on slopes without unduly marring finished slope surfaces or damaging existing growth. The minimum cutting width should not be less than 5 ft. unless otherwise approved.

Mow all areas of existing vegetation and vegetation placed during the project, as directed. The mowing height should be 5 in. unless otherwise directed. Repair portions of sod or grass which are damaged during mowing operations in an acceptable manner.

Mow as close as possible to all fixed objects, exercising extreme care not to damage trees, plants, shrubs, signs, delineators or other appurtenances which are part of the facility. Hand trim around such objects, unless otherwise specified.

Use safety chains or other manufacturer's safety devices to prevent injury to people or damage to property caused by flying debris propelled out from under rotary mowers. Chains should be a minimum size of 5/16 in. and links spaced side by side around the front, sides and rear of mower. When mowing at the specified cutting height, the chains should be long enough to drag the ground. If at any time it is determined that mowing or trimming equipment is defective to the point that it may affect the quality of work or create unsafe conditions, then immediately repair or replace the equipment.

ITEM 734. LITTER REMOVAL

Remove litter from the right of way in the project limits a maximum of 3 cycles per year as directed. Litter pickup will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Equipment used for litter pickup must be approved.

Collect and properly dispose of all litter deposited by construction operations or the traveling public from within the right of way as directed. This includes cans, bottles, paper, plastic items, metal scraps, lumber, etc. Do not dump or stockpile collected litter on Department property.



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0108-03-041

DISTRICT Tyler
HIGHWAY SH 19

COUNTY Henderson

CONTROL SECTION JOB				0108-03-041		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00059358			
COUNTY				Henderson			
HIGHWAY				SH 19			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	100-7002	PREPARING ROW	STA	476.810		476.810	
	104-7005	REMOV CONC (MOWSTRIP)	LF	3,402.000		3,402.000	
	104-7011	REMOV CONC (DRIVEWAYS)	SY	150.000		150.000	
	105-7052	RMV (0"-12") TRT/UNTRT BASE & ASPH PAV	SY	6,938.000		6,938.000	
	110-7001	EXCAV (ROADWAY)	CY	13,074.000		13,074.000	
	132-7006	EMBANK (FNL)(DC)(TY C)	CY	4,283.000		4,283.000	
	134-7001	BACKFILL (TY A)	STA	339.700		339.700	
	160-7002	FURN & PLACE TOPSOIL (4")	SY	88,865.000		88,865.000	
	164-7001	BROADCAST SEED (PERM_RURAL_SAND)	SY	44,436.000		44,436.000	
	164-7009	DRILL SEED (PERM_RURAL_SAND)	SY	88,865.000		88,865.000	
	164-7013	DRILL SEED (TEMP_WARM)	SY	44,436.000		44,436.000	
	164-7014	DRILL SEED (TEMP_COOL)	SY	44,436.000		44,436.000	
	168-7001	VEGETATIVE WATERING	TGL	977.500		977.500	
	247-7176	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	8,989.000		8,989.000	
	260-7001	LIME (COM OR QK)(SLURRY) OR QK(DRY)	TON	541.000		541.000	
	275-7001	CEMENT	TON	541.000		541.000	
	314-7010	EMULS ASPH (EROSN CONT)(CSS-1)	GAL	2,139.000		2,139.000	
	316-7068	ASPH (AC-20XP, AC-10-2TR, OR AC-20-5TR)	GAL	112,135.000		112,135.000	
	316-7148	AGGR (TY-PD, GR-4)(SAC-A)	CY	2,670.000		2,670.000	
	344-7019	SP MIXES SP-C PG70-22	TON	21,032.000		21,032.000	
	344-7021	SP MIXES SP-C SAC-B PG70-22	TON	11,624.000		11,624.000	
	344-7077	TACK COAT	GAL	26,739.000		26,739.000	
	351-7005	FLEXIBLE PAVEMENT STRUCTURE REPAIR(6")	SY	3,500.000		3,500.000	
	351-7007	FLEXIBLE PAVEMENT STRUCTURE REPAIR(8")	SY	3,500.000		3,500.000	
	354-7002	PLANE & TEXT ASPH CONC PAV(0" TO 2")	SY	187,543.000		187,543.000	
	401-7001	FLOWABLE BACKFILL	CY	33.000		33.000	
	402-7001	TRENCH EXCAVATION PROTECTION	LF	86.000		86.000	
	429-7007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	111.000		111.000	
	432-7013	RIPRAP (MOW STRIP)(4 IN)	CY	259.000		259.000	
	432-7043	RIPRAP (STONE PROTECTION)(18 IN)	CY	346.000		346.000	
	438-7004	CLEANING AND SEALING EXIST JOINTS (CL3)	LF	360.000		360.000	
	450-7020	RAIL (TY T631)	LF	500.000		500.000	
	462-7056	CONC BOX CULV (3 FT X 2 FT)(EXTEND)	LF	8.000		8.000	
	462-7057	CONC BOX CULV (3 FT X 3 FT)(EXTEND)	LF	19.000		19.000	
	462-7059	CONC BOX CULV (4 FT X 3 FT)(EXTEND)	LF	4.000		4.000	
	462-7060	CONC BOX CULV (4 FT X 4 FT)(EXTEND)	LF	16.000		16.000	
	462-7063	CONC BOX CULV (5 FT X 4 FT)(EXTEND)	LF	11.000		11.000	

DISTRICT	COUNTY	CCSJ	SHEET
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Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0108-03-041

DISTRICT Tyler
HIGHWAY SH 19

COUNTY Henderson

CONTROL SECTION JOB				0108-03-041		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00059358			
COUNTY				Henderson			
HIGHWAY				SH 19			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	462-7067	CONC BOX CULV (6 FT X 4 FT)(EXTEND)	LF	15.000		15.000	
	462-7069	CONC BOX CULV (6 FT X 6 FT)(EXTEND)	LF	3.000		3.000	
	462-7073	CONC BOX CULV (7 FT X 6 FT)(EXTEND)	LF	10.000		10.000	
	466-7174	WINGWALL (PW - 1) (HW=4 FT)	EA	1.000		1.000	
	466-7175	WINGWALL (PW - 1) (HW=5 FT)	EA	5.000		5.000	
	466-7176	WINGWALL (PW - 1) (HW=6 FT)	EA	5.000		5.000	
	466-7177	WINGWALL (PW - 1) (HW=7 FT)	EA	1.000		1.000	
	466-7179	WINGWALL (PW - 1) (HW=9 FT)	EA	1.000		1.000	
	467-7004	SET (REPLACE PIPE RUNNER)	EA	9.000		9.000	
	467-7041	SET (TY I)(S= 3 FT)(HW= 3 FT)(4:1)(C)	EA	2.000		2.000	
	467-7044	SET (TY I)(S= 3 FT)(HW= 4 FT)(3:1)(C)	EA	2.000		2.000	
	467-7045	SET (TY I)(S= 3 FT)(HW= 4 FT)(4:1)(C)	EA	1.000		1.000	
	467-7104	SET (TY I)(S= 5 FT)(HW= 5 FT)(4:1)(C)	EA	1.000		1.000	
	467-7108	SET (TY I)(S= 5 FT)(HW= 6 FT)(4:1)(C)	EA	1.000		1.000	
	467-7166	SET (TY I)(S= 7 FT)(HW= 7 FT)(4:1)(C)	EA	1.000		1.000	
	467-7308	SET (TY II) (18 IN) (RCP) (6: 1) (P)	EA	109.000		109.000	
	467-7328	SET (TY II) (24 IN) (RCP) (6: 1) (P)	EA	12.000		12.000	
	480-7001	CLEAN EXIST CULVERTS	EA	24.000		24.000	
	480-7002	CLEAN EXIST CULVERTS	CY	1,120.000		1,120.000	
	496-7037	REMOV STR (PIPE)	EA	54.000		54.000	
	500-7001	MOBILIZATION	LS	1.000		1.000	
	502-7001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	20.000		20.000	
	503-7002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000	
	505-7001	TMA (STATIONARY)	DAY	50.000		50.000	
	505-7003	TMA (MOBILE OPERATION)	DAY	50.000		50.000	
	506-7001	ROCK FILTER DAMS (INSTALL) (TY 1)	LF	1,600.000		1,600.000	
	506-7011	ROCK FILTER DAMS (REMOVE)	LF	1,600.000		1,600.000	
	506-7029	EARTHWORK (EROSN & SEDMT CONT, IN VEH)	CY	1,000.000		1,000.000	
	506-7030	BACKHOE WORK (EROSION & SEDMT CONT)	HR	150.000		150.000	
	506-7039	TEMP SEDMT CONT FENCE (INSTALL)	LF	3,145.000		3,145.000	
	506-7041	TEMP SEDMT CONT FENCE (REMOVE)	LF	3,145.000		3,145.000	
	530-7002	INTERSECTIONS (ACP)	SY	2,054.000		2,054.000	
	530-7007	DRIVEWAYS (CONC) (HES)	SY	150.000		150.000	
	530-7010	DRIVEWAYS (ACP)	SY	7,688.000		7,688.000	
	530-7018	TURNOUTS (ACP)	SY	257.000		257.000	
	533-7001	MILL RUMBLE STRIPS (ASPHALT) (SHLDR)	LF	68,260.000		68,260.000	
	533-7003	MILL RUMBLE STRIPS (CONC) (SHLDR)	LF	25,623.000		25,623.000	

DISTRICT	COUNTY	CCSJ	SHEET
Tyler	Henderson	0108-03-041	10



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0108-03-041

DISTRICT Tyler
HIGHWAY SH 19

COUNTY Henderson

CONTROL SECTION JOB				0108-03-041		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00059358			
COUNTY				Henderson			
HIGHWAY				SH 19			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	533-7004	MILL RUMBLE STRIPS (CONC) (CENTERLINE)	LF	46,805.000		46,805.000	
	540-7002	MTL W-BEAM GD FEN (STEEL POST)	LF	2,138.000		2,138.000	
	540-7018	MTL W - BEAM GD FEN (LOW FILL CULVERT)	LF	350.000		350.000	
	542-7001	REMOVE METAL BEAM GUARD FENCE	LF	2,496.000		2,496.000	
	544-7001	GUARDRAIL END TREATMENT (INSTALL)	EA	32.000		32.000	
	544-7003	GUARDRAIL END TREATMENT (REMOVE)	EA	18.000		18.000	
	560-7001	MAILBOX INSTALL-M (TWG-POST) TY 1	EA	12.000		12.000	
	560-7002	MAILBOX INSTALL-S (TWG-POST) TY 2	EA	55.000		55.000	
	560-7003	MAILBOX INSTALL-D (TWG-POST) TY 2	EA	6.000		6.000	
	644-7004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	1.000		1.000	
	644-7007	IN SM RD SN SUP&AM TY10BWG(1)SA(U)	EA	3.000		3.000	
	644-7028	IN SM RD SN SUP&AM TYS80(1)SA(T)	EA	1.000		1.000	
	644-7031	IN SM RD SN SUP&AM TYS80(1)SA(U)	EA	4.000		4.000	
	644-7057	IN SM RD SN SUP&AM TYTWT(1)WS(P)	EA	74.000		74.000	
	644-7058	IN SM RD SN SUP&AM TYTWT(1)WS(T)	EA	1.000		1.000	
	644-7073	REMOVE SM RD SN SUP&AM	EA	84.000		84.000	
	658-7018	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2	EA	207.000		207.000	
	658-7059	INSTL OM ASSM (OM-2Z)(WFLX)GND(BI)	EA	62.000		62.000	
	662-7005	WK ZN PAV MRK NON-REMOV (W)6"(BRK)	LF	10,507.000		10,507.000	
	662-7008	WK ZN PAV MRK NON-REMOV (W)6"(SLD)	LF	187,068.000		187,068.000	
	662-7017	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	LF	556.000		556.000	
	662-7036	WK ZN PAV MRK NON-REMOV (Y)6"(BRK)	LF	300.000		300.000	
	662-7038	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)	LF	201,548.000		201,548.000	
	662-7068	WK ZN PAV MRK REMOV (W)6"(SLD)	LF	4,750.000		4,750.000	
	662-7100	WK ZN PAV MRK REMOV (Y)6"(SLD)	LF	46,029.000		46,029.000	
	662-7112	WK ZN PAV MRK SHT TERM (TAB)TY W	EA	1,583.000		1,583.000	
	662-7113	WK ZN PAV MRK SHT TERM (TAB)TY Y	EA	5,040.000		5,040.000	
	666-7024	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	1,840.000		1,840.000	
	666-7036	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	278.000		278.000	
	666-7123	REFL PAV MRK TY I (Y)24"(SLD)(100MIL)	LF	1,430.000		1,430.000	
	666-7172	RE PM TY II (W) 6" (BRK)	LF	5,120.000		5,120.000	
	666-7173	RE PM TY II (W) 6" (DOT)	LF	571.000		571.000	
	666-7175	RE PM TY II (W) 6" (SLD)	LF	93,574.000		93,574.000	
	666-7211	RE PM TY II (Y) 6" (BRK)	LF	16,140.000		16,140.000	
	666-7213	RE PM TY II (Y) 6" (SLD)	LF	113,734.000		113,734.000	
	668-7023	PREFAB PM TY B (W)(ARROW)	EA	4.000		4.000	
	668-7027	PREFAB PM TY B (W)(U-LT ARROW)	EA	8.000		8.000	

DISTRICT	COUNTY	CCSJ	SHEET
Tyler	Henderson	0108-03-041	11



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0108-03-041

DISTRICT Tyler
HIGHWAY SH 19

COUNTY Henderson

CONTROL SECTION JOB				0108-03-041		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00059358			
COUNTY				Henderson			
HIGHWAY				SH 19			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	668-7031	PREFAB PM TY B (W)(WORD)	EA	8.000		8.000	
	668-7051	PREFAB PM TY B (Y)(6")(SLD)	LF	18.000		18.000	
	672-7002	REFL PAV MRKR TY I-C	EA	94.000		94.000	
	672-7004	REFL PAV MRKR TY II-A-A	EA	1,122.000		1,122.000	
	730-7019	FULL - WIDTH MOWING	CYC	4.000		4.000	
	734-7002	LITTER REMOVAL	CYC	6.000		6.000	
	08	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (NON-PART)	LS	1.000		1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (NON-PART)	LS	1.000		1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (NON-PART)	LS	1.000		1.000	
1	464-7003	RC PIPE (CL III)(18 IN)	LF	2,752.000		2,752.000	
2	464-7005	RC PIPE (CL III)(24 IN)	LF	239.000		239.000	
1A	468-7001	THERMOPLASTIC PIPE (PP) (18")	LF	2,752.000		2,752.000	
2A	468-7002	THERMOPLASTIC PIPE (PP) (24")	LF	239.000		239.000	

DATE: 07-AUG-2024 23:43
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_01.dgn

BASIS OF ESTIMATE						
ITEM	DESCRIPTION	RATE	AMOUNT	UNIT	QUANTITY	PAY UNIT
100	PREPARING ROW				476.81	STA
105	RMV (0"-12") TRT/UNTRT BASE & ASPH PAV				6938	SY
168	VEGETATIVE WATERING	11 GAL/SY	88865	SY	977.5	TGL
247	FLEXBASE	1 CY/.33 SY	26966	SY	8989	CY
260	LIME (HYDRATED LIME) (DRY) (5%) (120 LB/CF)	41.4 LB/SY	26131	SY	541	TON
275	CEMENT (5%) (120 LB/CF)	41.4 LB/SY	26131	SY	541	TON
314	EMULS ASPH (EROSN CONT) (CSS-1)	0.15 GAL/SY	14261	SY	2139	GAL
316	ASPH (AC-20XP, AC-10-2TR, OR AC-20-5TR)	0.42 GAL/SY	266989	SY	112135	GAL
316	AGGR (TY-PD GR-4 SAC A)	1 CY/100 SY	266989	SY	2670	CY
344	SP MIXES SP-C PG70-22	220 LB/SY	191203	SY	21032	TON
344	TACK COAT	0.1 GAL/SY	267391	SY	26739	GAL
344	SP MIXES SP-C SAC-B PG 70-22 (6")	660 LB/SY	35224	SY	11624	TON
500	MOBILIZATION				1.000	LS
502	BARRICADES, SIGNS AND TRAFFIC HANDLING				20.00	MO
730	ROADSIDE MOWING	2 CYL/YR	2.00	YR	4.00	CYC
734	LITTER REMOVAL	3 CYL/YR	2.00	YR	6.00	CYC

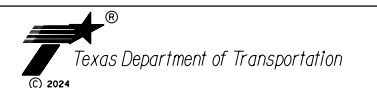
BACKFILL SUMMARY						
LOCATION		LENGTH FT	ITEM 134	ITEM 314		REMARKS
FROM STA	TO STA		BACKFILL (TY A) STA	(1) EMULS ASPH (EROSN CONT) (CSS-1) SY	(2) EMULS ASPH (EROSN CONT) (CSS-1) SY	
1564+00 LT & RT	1639+32 LT & RT	7532	75.32	8369		
1639+32 LT	1797+72 LT	15840	79.20	8800	8800	RT SIDE EARTH WORK AREA
1797+72 LT & RT	1860+30 LT & RT	6258	62.58	6953		
1860+30 RT	1958+60 RT	9830	49.15	5461	5461	LT SIDE EARTH WORK AREA
1958+60 LT & RT	2032+05 LT & RT	7345	73.45	8161		
PROJECT TOTALS			339.70	37744	14261	

(1) THIS ITEM IS SUBSIDIARY TO ITEM 134

(2) QUANTITY INCLUDED IN BASIS OF ESTIMATE FOR WIDENING LIMITS

VOLKERT

F-12679



SH 19 QUANTITY SUMMARY

SHEET 1 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	12

TABULATION OF SURFACE AREAS (1)

STATION	LOCATION	LENGTH	ITEM 316				ITEM 344				ITEM 344				ITEM 344				ITEM 105				
			OCST				SP MIXES SP-C PG70-22 220 LBS/SY				SP MIXES SP-C SAC-B PG 70-22 (6")				TACK COAT				RMV (0"-12") TRT/UNTRT BASE & ASPH PAV				
			BEGIN WIDTH	END WIDTH	AVG WIDTH	AREA	BEGIN WIDTH	END WIDTH	AVG WIDTH	AREA	BEGIN WIDTH	END WIDTH	AVG WIDTH	AREA	BEGIN WIDTH	END WIDTH	AVG WIDTH	AREA	BEGIN WIDTH	END WIDTH	AVG WIDTH	AREA	BEGIN WIDTH
BEGIN	END	LF	LF	LF	LF	SY	LF	LF	LF	SY	LF	LF	LF	SY	LF	LF	LF	SY	LF	LF	LF	SY	
1564+00.00	1565+38.00	PAVEMENT TRANSITION	138	24	44	34	521	24	24	24	368					46	44	45	690				
1565+38.00	1639+32.00	MILL & INLAY	7394	44	44	44	36148	24	24	24	19717					44	44	44	36148				
1639+32.00	1643+52.00	PAVEMENT TRANSITION	420	44	49	46.5	2170	41	41	41	1913	3	8	5.5	257	44	49	46.5	2170	0	4	2	93
1643+52.00	1739+30.00	SUPER-2 RT	9578	49	49	49	52147	41	41	41	43633	8	8	8	8514	49	49	49	52147	4	5	4.5	4789
1739+30.00	1743+30.00	PAVEMENT TRANSITION	400	49	63	56	2489	39	53	46	2044	8	8	8	356	49	63	56	2489	5	3	4	178
1743+30.00	1752+55.00	SUPER-2 RT/TURN LANE	925	63	63	63	6475	53	53	53	5447	8	8	8	822	63	63	63	6475	3	3	3	308
1752+55.00	1758+00.00	PAVEMENT TRANSITION	545	63	49	56	3391	53	39	46	2786	8	8	8	484	63	49	56	3391	3	4	3.5	212
1758+00.00	1789+32.00	SUPER-2 RT	3132	49	49	49	17052	41	41	41	14268	8	8	8	2784	49	49	49	17052	4	3	3.5	1218
1789+32.00	1797+72.00	PAVEMENT TRANSITION	840	44	44	44	4107	41	41	41	3827	8	3	5.5	513	49	44	46.5	4340	3	0	1.5	140
1797+72.00	1807+53.00	MILL & INLAY	981	44	44	44	4796	24	24	24	2616					44	44	44	4796				
1807+53.00	1812+98.00	PAVEMENT TRANSITION	545	44	64	54	3270	38	38	38	2301					44	64	54	3270				
1812+98.00	1832+42.00	TURN LANE	1944	64	64	64	13824	38	38	38	8208					64	64	64	13824				
1832+42.00	1836+87.00	PAVEMENT TRANSITION	445	64	44	54	2670	38	38	38	1879					64	44	54	2670				
1836+87.00	1865+91.00	MILL & INLAY	2904	44	44	44	14197	24	24	24	7744					44	44	44	14197				
1865+91.00	1871+36.00	PAVEMENT TRANSITION	545	44	65	54.5	3300	55	55	55	3331		8	4	242	44	65	54.5	3300				
1871+36.00	1880+61.00	SUPER-2 LT/TURN LANE	925	65	65	65	6681	27	46	36.5	3751	8	9	8.5	874	65	65	65	6681				
1880+61.00	1885+61.00	PAVEMENT TRANSITION	500	65	53	59	3278	41	41	41	2278	9	9	9	500	65	53	59	3278				
1885+61.00	1941+00.00	SUPER-2 LT	5539	53	53	53	32619	41	41	41	25233	9	9	9	5539	53	53	53	32619				
1941+00.00	1951+19.00	PAVEMENT TRANSITION	1019	53	58	55.5	6284	41	38	39.5	4472	9	14	11.5	1302	53	58	55.5	6284				
1951+19.00	1956+50.00	14' CENTER TURN LANE	531	58	58	58	3422	38	38	38	2242	14	14	14	826	58	58	58	3422				
1956+50.00	1957+70.00	PAVEMENT TRANSITION	120	58	44	51	680	38	38	38	507	14	14	14	187	58	44	51	680				
1957+70.00	1966+00.00	14' TURN LANE/BRIDGE	830	44	44	44	4058	38	38	38	3504	14	14	14	1291	44	44	44	4058				
1966+00.00	1979+58.00	PAVEMENT TRANSITION	1358	44	58	51	7695	38	38	38	5734	14	14	14	2112	44	58	51	7695				
1979+58.00	2035+00.00	14' CENTER TURN LANE	5542	58	58	58	35715	38	38	38	23400	14	14	14	8621	58	58	58	35715				
PROJECT TOTAL							266989				191203				35224				267391				6938

SUMMARY OF VEGETATION

LOCATION		LENGTH	ITEM 160	ITEM 164				ITEM 168	REMARKS
			FURNISHING AND PLACING TOPSOIL (4")	(1) BROADCAST SEED (PERM) (RURAL) (SANDY)	(1) DRILL SEED (PERM) (RURAL) (L_SAND)	(1) DRILL SEED (TEMP_COOL)	(1) DRILL SEED (TEMP_WARM)	(2) VEGETATIVE WATERING	
FROM	TO	FT	SY	SY	SY	SY	SY	SY	
1564+38	1639+32	7494	0	0	0	0	0	0	
1639+32	1797+72	15840	56757	28379	56757	28379	28379	56757	
1797+72	1860+30	6258	0	0	0	0	0	0	
1860+30	1958+60	9830	32108	16057	32108	16057	16057	32108	
1958+60	2032+05	7345	0	0	0	0	0	0	
PROJECT TOTALS			88865	44436	88865	44436	44436	88865	

(1) MULTIPLE MOVE-INS WILL BE REQUIRED TO MAINTAIN ADEQUATE VEGETATION IN COMPLIANCE WITH THE CONSTRUCTION GENERAL PERMIT

(2) QUANTITIES INCLUDED IN BASIS OF ESTIMATE

(3) FOR CONTRACTOR'S INFORMATION ONLY. SEE EROSION CONTROL SUMMARY FOR SHEET BREAKDOWNS

VOLKERT

F-12679



**SH 19
QUANTITY SUMMARY**

SHEET 2 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	13

DATE: 07-AUG-2024 23:43 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_02.dgn

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FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_04.dgn

BRIDGE SUMMARY				
LOCATION	ITEM 401	ITEM 429	ITEM 432	ITEM 480
	FLOWABLE	CONC	RIPRAP	CLEAN
	BKFL	STR	(STONE	EXIST
		REPAIR	PROTECTION)	CULVERTS
CY	LF	CY	CY	
Drakes Branch Creek (STRUC ID 101080010803008)	3.00	19.00	100.00	200.00
Pattowatomie Creek (STRUC ID 101080010803009)	6.00	6.00	16.00	300.00
Third Caney Creek (STRUC ID 101080010803010)	12.00	18.00	100.00	300.00
Second Caney Creek (STRUC ID 101080010803011)		52.00	100.00	160.00
First Caney Creek (STRUC ID 101080010803064)	12.00	16.00	30.00	160.00
CSJ 0108-43-041 SUBTOTAL	33	111	346	1120

BRIDGE RAIL SUMMARY						
NAME	LOCATION		LENGTH	DESIGN	ITEM 450	ITEM 540
					RAIL	MTL W - BEAM
	(TY T631)	GD FEN (LOW				
					FILL	CULVERT)
	BEGIN STA	END STA			LF	LF
POTTAWATOMIE CREEK	1636+56 LT	1639+09 LT	50	LOW FILL MBGF		50
POTTAWATOMIE CREEK	1636+06 RT	1638+59 RT	50	LOW FILL MBGF		50
THIRD CANEY CREEK	1849+24 LT	1853+02 LT	125	TY T631	125	
THIRD CANEY CREEK	1848+23 RT	1852+02 RT	125	TY T631	125	
SECOND CANEY CREEK	1959+24 LT	1963+51 LT	125	TY T631	125	
SECOND CANEY CREEK	1958+73 RT	1962+76 RT	125	TY T631	125	
FIRST CANEY CREEK	1973+81 LT	1976+23 LT	125	LOW FILL MBGF		125
FIRST CANEY CREEK	1973+26 RT	1975+56 RT	125	LOW FILL MBGF		125
PROJECT TOTAL			850		500	350

VOLKERT

F-12679



SH 19 QUANTITY SUMMARY

SHEET 4 OF 20


CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	15

DRIVEWAY SUMMARY LEFT


[1] BASE BID
 [1A] QUANTITY SUBJECT TO ALTERNATE BID
 [3] QUANTITY PAID IN THE STRUCTURE SUMMARY

LOCATION	DRIVEWAY NO.	COUNTY RD NO.	DESCRIPTION OF EXISTING STRUCTURE	EXIST DRVWY TYPE	EXIST WIDTH	PROP WIDTH	PROP DRVWY LENGTH	ITEM 132	ITEM 496	ITEM 464		ITEM 464		ITEM 467		ITEM 530	
								EMBANKMENT (FINAL) (DENS CONT) (TY C)	REMOVE STR PIPE	(1), (3) RCP (CL III) (18 IN)	(1), (3) RCP (CL III) (24 IN)	(1A), (3) THERMO-PLASTIC PIPE (18 IN) (PP)	(1A), (3) THERMO-PLASTIC PIPE (24 IN) (PP)	SET (TY II) (18 (RCP) (6:1) (P))	SET (TY II) (24 (RCP) (6:1) (P))	INTERSECTIONS (ACP)	DRIVEWAYS (ACP)
STA					LF	LF	LF	CY	EA	LF	LF	LF	LF	EA	EA	SY	SY
CSJ-0108-03-041																	
1563+79.21	LT	1	18 IN X 83 FT RCP	ASPHALT	50	54	10										64
1564+20.21	LT	2		ASPHALT	20	28	10										36
1568+37.46	LT	3	18 IN X 28 FT RCP	ASPHALT	14	14	9										22
1579+49.70	LT	4		ASPHALT	13	13	10										23
1583+64.45	LT	5		ASPHALT	24	24	10										31
1592+31.58	LT	6	18 IN X 32 FT RCP	ASPHALT	23	23	8										27
1594+99.90	LT	7	18 IN X 28 FT RCP	ASPHALT	15	15	9										20
1597+11.02	LT	8	18 IN X 32 FT RCP	ASPHALT	17	17	10										27
1614+47.86	LT		18 IN X 54 FT RCP	ASPHALT	22	22	38	3	1	54		54		2		119	
1616+94.35	LT	9	18 IN X 28 FT RCP	ASPHALT	19	19	7										20
1628+22.76	LT	10	18 IN X 28 FT RCP	ASPHALT	18	18	10										29
1640+49.83	LT	11	18 IN X 30 FT RCP	ASPHALT	14	14	10										22
1645+09.53	LT	12	18 IN X 30 FT RCP	ASPHALT	14	14	10										25
1650+79.00	LT	13		ASPHALT	16	16	10										25
1653+65.48	LT	14	18 IN X 28 FT RCP	ASPHALT	16	16	7										18
1657+99.06	LT	15		ASPHALT	19	19	8										23
1659+86.00	LT	16	18 IN X 28 FT RCP	ASPHALT	16	16	10										25
1666+82.29	LT	17	18 IN X 28 FT RCP	ASPHALT	16	16	10										25
1667+88.26	LT	18	18 IN X 28 FT RCP	ASPHALT	14	14	9										22
1674+88.05	LT	19		ASPHALT	19	19	10										29
1676+76.08	LT		18 IN X 54 FT RCP	ASPHALT	24	24	39	3	1	54		54		2		136	
1689+10.24	LT	20		ASPHALT	15	15	10										25
1698+81.17	LT	21	18 IN X 42 FT RCP	ASPHALT	25	25	10										36
1703+53.44	LT	22	18 IN X 30 FT RCP	GRAVEL	19	19	10										29
1708+63.74	LT	23		GRAVEL	31	31	10										41
1708+91.35	LT	24		ASPHALT	14	14	10										22
1710+02.54	LT	25	18 IN X 28 FT RCP	ASPHALT	18	18	7										19
1711+83.91	LT	26	18 IN X 28 FT RCP	ASPHALT	15	15	8										21
1712+72.84	LT	27	18 IN X 28 FT RCP	ASPHALT	19	19	9										27
1725+80.05	LT	28	18 IN X 44 FT RCP	ASPHALT	13	13	9										18
1726+06.87	LT	29		ASPHALT	14	14	9										19
1728+97.86	LT	30	18 IN X 51 FT RCP	ASPHALT	34	34	8	3	1	51		51		2			57
1730+04.26	LT		CO RD 3821	ASPHALT	18	18	38									116	
1730+98.07	LT	31	18 IN X 28 FT RCP	ASPHALT	16	16	10										24
1732+42.76	LT	32	18 IN X 28 FT RCP	ASPHALT	13	13	9										21
1734+50.19	LT	33	18 IN X 28 FT RCP	ASPHALT	15	15	8										20
1737+78.04	LT	34	18 IN X 28 FT RCP	ASPHALT	16	16	8										21
1740+94.45	LT	35	18 IN X 28 FT RCP	ASPHALT	19	19	10										30
1742+77.21	LT	36	18 IN X 28 FT RCP	ASPHALT	16	16	10										26
1744+33.41	LT	37	18 IN X 28 FT RCP	ASPHALT	15	15	10										25
1751+88.84	LT	38		ASPHALT	14	14	10										24
1752+30.87	LT	39		ASPHALT	15	15	10										25
1755+25.80	LT	40	18 IN X 28 FT RCP	ASPHALT	16	16	10		1					2			27
1758+38.02	LT	41		ASPHALT	12	12	9			68		68					20
1758+77.28	LT	42	18 IN X 28 FT RCP	ASPHALT	14	14	9	3	1	28		28		2			28
1767+70.23	LT	43		ASPHALT	19	19	10										30
1769+49.29	LT	44	18 IN X 28 FT RCP	ASPHALT	18	18	10										31
1776+78.43	LT	45	18 IN X 28 FT RCP	ASPHALT	19	19	10										30
1779+65.23	LT	46	18 IN X 74 FT RCP	ASPHALT	18	18	10										30
1780+02.47	LT	47		ASPHALT	17	17	10										28
1783+47.25	LT		CO RD	ASPHALT	38	38	14									71	
1791+59.04	LT	48	18 IN X 28 FT RCP	ASPHALT	20	20	10										31
1817+85.07	LT	49		GRAVEL	28	28	10										39
1819+41.99	LT		CO RD	ASPHALT	38	38	37	3	1	82		82		2		255	
1826+14.87	LT	50	18 IN X 28 FT RCP	ASPHALT	21	21	10										
1845+51.77	LT	51	18 IN X 28 FT RCP	ASPHALT	18	18	10										31
1860+74.00	LT	52	24 IN X 28 FT RCP	ASPHALT	14	14	42	3	1		32		32		2		70
1863+68.57	LT	53		ASPHALT	16	16	30			55		55		2			60
1878+16.55	LT		FM 2752	ASPHALT	20	20	28									174	
1879+79.92	LT	54	24 IN X 28 FT RCP	ASPHALT	15	15	23	3	1		28		28		2		49
1880+50.81	LT	55	24 IN X 28 FT RCP	ASPHALT	15	15	22	3	1		28		28		2		47
1887+49.48	LT	56		ASPHALT	12	15	35			62		62					67
1895+27.23	LT	57	18 IN X 28 FT RCP	ASPHALT	15	15	32	3	1	62		62		2			65
TOTAL 1 OF 2								27	10	516	88	516	88	16	6	871	1726

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F-12679



SH 19
QUANTITY SUMMARY

SHEET 5 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	16

DATE: 06-AUG-2024 19:46
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_06.dgn


DRIVEWAY SUMMARY LEFT

LOCATION STA	DRIVEWAY NO.	COUNTY RD NO.	DESCRIPTION OF EXISTING STRUCTURE	EXIST DRVWY TYPE	EXIST WIDTH LF	PROP WIDTH LF	PROP DRVWY LENGTH LF	ITEM 132	ITEM 496	ITEM 464		ITEM 464		ITEM 467		ITEM 530	
								EMBANKMENT (FINAL) (DENS CONT) (TY C) CY	REMOVE STR PIPE EA	(1), (3) RCP (CL III) (18 IN) LF	(1), (3) RCP (CL III) (24 IN) LF	(1A), (3) THERMO- PLASTIC PIPE (18 IN) (PP) LF	(1A), (3) THERMO- PLASTIC PIPE (24 IN) (PP) LF	SET (TY II) (18 (RCP) (6:1) (P) EA	SET (TY II) (24 (RCP) (6:1) (P) EA	INTERSECTIONS (ACP) SY	DRIVEWAYS (ACP) SY
1899+20.21	LT	58		ASPHALT	16	16	32			74		74		2			68
1905+14.64	LT	59	18 IN X 28 FT RCP	ASPHALT	13	13	32	3	1	76		76		2			58
1914+13.45	LT	60	18 IN X 32 FT RCP	ASPHALT	22	22	33	3	1	96		96		2			100
1916+78.02	LT	61	18 IN X 28 FT RCP	ASPHALT	16	17	32	3	1	66		66		2			71
1924+98.19	LT	62	18 IN X 28 FT RCP	ASPHALT	12	13	31	3	1	27		27		2			56
1927+59.14	LT	63	18 IN X 28 FT RCP	ASPHALT	51	52	33	3	1	110		110		2			192
1928+51.96	LT	64	18 IN X 28 FT RCP	ASPHALT	17	17	32	3	1	66		66		2			70
1929+41.63	LT	65	18 IN X 28 FT RCP	ASPHALT	17	17	32	3	1	28		28		2			71
1944+66.91	LT	66		ASPHALT	16	16	32			32		32		2			76
1947+57.41	LT	67	18 IN X 28 FT RCP	ASPHALT	12	17	33	3	1	102		102		2			105
1969+85.55	LT	68		ASPHALT	15	15	10										25
1973+59.69	LT	69	18 IN X 28 FT RCP	ASPHALT	35	35	10										41
1984+14.24	LT	70		ASPHALT	17	17	10										27
1986+00.00	LT	71		GRAVEL	17	17	10										27
1992+20.89	LT	72	18 IN X 28 FT RCP	GRAVEL	35	35	10										39
2004+30.52	LT	73	18 IN X 28 FT RCP	ASPHALT	18	18	10										28
2006+68.20	LT	74	18 IN X 28 FT RCP	ASPHALT	17	17	10										27
2009+22.76	LT	75	18 IN X 28 FT RCP	ASPHALT	16	16	10										26
2010+86.48	LT	76	18 IN X 28 FT RCP	ASPHALT	19	19	10										29
2012+23.12	LT	77	18 IN X 38 FT RCP	ASPHALT	40	40	10										55
2017+55.51	LT	78	18 IN X 28 FT RCP	ASPHALT	17	17	10										30
2020+43.74	LT	79	18 IN X 28 FT RCP	ASPHALT	17	17	10										29
2024+24.99	LT	80		ASPHALT	18	18	10										31
2025+09.62	LT	81		ASPHALT	50	50	10										64
2025+78.90	LT	82		ASPHALT	50	50	10										60
2027+50.45	LT	83	18 IN X 28 FT RCP	ASPHALT	25	25	10										37
2028+60.11	LT	84	18 IN X 28 FT RCP	ASPHALT	25	25	10										36
2029+75.63	LT	CR 3718		ASPHALT	21	21	36.7									154	
2030+66.81	LT	85		ASPHALT	20	20	10										30
TOTAL 2 OF 2								24	8	677	0	677	0	20	0	154	1508
OVERALL DRIVEWAY LEFT TOTAL								51	18	1193	88	1193	88	36	6	1025	3234

[1] BASE BID
[1A] QUANTITY SUBJECT TO ALTERNATE BID
[3] QUANTITY PAID IN THE STRUCTURE SUMMARY

VOLKERT

F-12679



Texas Department of Transportation
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SH 19 QUANTITY SUMMARY

SHEET 6 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	17

DATE: 03-JUL-2024 15:53
FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_07.dgn

DRIVEWAY SUMMARY RIGHT																			
LOCATION	DRIVEWAY NO.	COUNTY RD NO.	DESCRIPTION OF EXISTING STRUCTURE	EXIST DRVWY TYPE	EXIST WIDTH	PROP WIDTH	PROP DRVWY LENGTH	ITEM 104	ITEM 132	ITEM 496	ITEM 464		ITEM 464		ITEM 467		ITEM 530		
								REMOV CONC (DRIVEWAYS)	EMBANKMENT (VEHICLE) (ORD COMP) (TY C)	REMOVE STR PIPE	(1), (3) RCP (CL III) (18 IN)	(1), (3) RCP (CL III) (24 IN)	(1A), (3) THERMO-PLASTIC PIPE (18 IN) (PP)	(1A), (3) THERMO-PLASTIC PIPE (24 IN) (PP)	SET (TY II) (18) (RCP) (6:1) (P)	SET (TY II) (24) (RCP) (6:1) (P)	INTERSECTION (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)
STA					LF	LF	LF	SY	CY	EA	LF	LF	LF	LF	EA	EA	SY	SY	SY
CSJ-0108-03-041																			
1576+56.57	RT	CO RD 3924	18 IN X 54 FT RCP	ASPHALT	14	14	46		3	1	33		33		2				151
1577+67.89	RT		18 IN X 42 FT RCP	ASPHALT	16	16	9										24		
1582+33.19	RT			ASPHALT	16	16	10										26		
1597+01.34	RT			GRAVEL	19	19	18												49
1620+42.67	RT			ASPHALT	14	14	15										34		
1643+97.79	RT		18 IN X 28 FT RCP	ASPHALT	15	15	33		3	1	31		31		2				66
1661+44.84	RT		18 IN X 28 FT RCP	ASPHALT	12	13	33		3	1	28		28		2				59
1666+91.11	RT		18 IN X 58 FT RCP	ASPHALT	25	25	33		3	1	56		56		2				103
1667+62.54	RT		18 IN X 28 FT RCP	ASPHALT	12	12	33		3	1	28		28		2				55
1670+73.81	RT		18 IN X 28 FT RCP	ASPHALT	16	16	31		3	1	28		28		2				66
1672+16.97	RT		18 IN X 28 FT RCP	ASPHALT	13	14	31		3	1	36		36		2				59
1674+15.20	RT		18 IN X 36 FT RCP	ASPHALT	9	10	33		3	1	26		26		2				45
1678+06.37	RT		18 IN X 28 FT RCP	ASPHALT	11	12	33		3	1	28		28		2				55
1681+81.73	RT		18 IN X 28 FT RCP	ASPHALT	20	21	33		3	1	41		41		2				88
1688+17.64	RT	CO RD 3900		ASPHALT	25	26	33							1			155		
1688+60.04	RT			ASPHALT	12	12	48				120		120		1				52
1690+16.80	RT		18 IN X 28 FT RCP	ASPHALT	15	15	42		3	1	32		32		2				66
1704+88.04	RT		18 IN X 28 FT RCP	ASPHALT	15	16	33		3	1	36		36		2				70
1708+57.54	RT			ASPHALT	13	13	39				61		61		1				76
1708+82.03	RT			ASPHALT	12	12	33							1					49
1714+09.71	RT		24 IN X 40 FT RCP	CONCRETE	24	24	33	102	3	1		40		40		2		102	
1715+88.39	RT		18 IN X 28 FT RCP	ASPHALT	16	16	33		3	1	26		26		2				67
1719+49.35	RT			ASPHALT	12	12	33												41
1722+06.66	RT		18 IN X 28 FT RCP	ASPHALT	15	15	33		3	1	28		28		2				66
1727+77.80	RT		18 IN X 28 FT RCP	ASPHALT	15	15	33		3	1	31		31		2				66
1731+02.26	RT		18 IN X 42 FT RCP	ASPHALT	22	22	33		3	1	44		44		2				92
1733+52.80	RT		18 IN X 42 FT RCP	ASPHALT	27	27	33		3	1	43		43		2				110
1736+20.78	RT		18 IN X 28 FT RCP	ASPHALT	14	14	33		3	1	28		28		2				63
1736+80.14	RT		18 IN X 28 FT RCP	ASPHALT	14	14	33		3	1	28		28		2				63
1737+27.20	RT			ASPHALT	14	14	33		3	1	28		28		2				63
1739+25.66	RT		18 IN X 28 FT RCP	ASPHALT	13	13	48		3	1	28		28		2				80
1746+00.00	RT	FM 2709	24 IN X 70 FT RCP	ASPHALT	30	30	41		3	1		71		71		2	195		
1748+47.03	RT			ASPHALT	20	22	26				42		42		2				83
1751+35.00	RT			ASPHALT	47	47	26				114		114		2				147
1752+95.71	RT		18 IN X 28 FT RCP	ASPHALT	15	15	27		3	1	83		83		2				55
1756+90.59	RT		18 IN X 28 FT RCP	ASPHALT	12	13	32		3	1	82		82		2				57
1760+09.47	RT		18 IN X 36 FT RCP	ASPHALT	14	14	33		3	1	36		36		2				62
1760+75.72	RT		18 IN X 36 FT RCP	ASPHALT	14	14	33		3	1	35		35		2				63
1762+32.59	RT		18 IN X 44 FT RCP	ASPHALT	14	14	40		3	1	44		44		2				73
1765+41.04	RT		18 IN X 28 FT RCP	ASPHALT	12	14	43		3	1	63		63		1				76
1768+55.79	RT		18 IN X 28 FT RCP	ASPHALT	15	15	33		3	1	28		28		2				66
1774+28.68	RT		18 IN X 28 FT RCP	ASPHALT	15	15	44		3	1	29		29		2				84
1775+59.19	RT		18 IN X 28 FT RCP	ASPHALT	15	15	39		3	1	28		28		2				72
1777+34.27	RT		18 IN X 28 FT RCP	ASPHALT	16	16	33		3	1	28		28		2				70
1783+44.75	RT	CO RD 3923	18 IN X 28 FT RCP	ASPHALT	14	14	33		3	1	44		44		2		95		
1808+90.49	RT		18 IN X 40 FT RCP	ASPHALT	17	17	10												23
1816+37.08	RT		18 IN X 56 FT RCP	CONCRETE	14	14	10												
1825+84.68	RT	CO RD 3911	18 IN X 40 FT RCP	ASPHALT	22	22	32		3	1		40		40		2	114		
1833+07.43	RT			ASPHALT	19	19	10												30
1836+45.70	RT		18 IN X 28 FT RCP	ASPHALT	18	18	10												29
1838+40.68	RT			ASPHALT	15	15	10												26
1845+85.78	RT		18 IN X 56 FT RCP	CONCRETE	31	31	10	48									48		
1856+31.79	RT			ASPHALT	18	18	10												29
1862+19.93	RT			ASPHALT	19	19	10												30
1863+08.53	RT			ASPHALT	20	20	10												30
1864+85.82	RT			ASPHALT	19	19	10												30
1869+82.48	RT		48 IN X 28 FT RCP	ASPHALT	23	23	10												34
1875+76.65	RT			ASPHALT	19	19	10												30
1877+46.31	RT			ASPHALT	20	20	10												31
1878+40.94	RT			ASPHALT	18	18	10												29
1880+17.68	RT		18 IN X 40 FT RCP	GRAVEL	21	21	10												31
1892+63.42	RT	CO RD 3912	18 IN X 35 FT RCP	ASPHALT	17	17	38		3	1	35		35		2		107		
1895+18.40	RT		18 IN X 28 FT RCP	ASPHALT	19	19	10												30
TOTAL 1 OF 2								150	111	36	1559	151	1559	151	73	6	750	150	3140

[1] BASE BID
[1A] QUANTITY SUBJECT TO ALTERNATE BID
[3] QUANTITY PAID IN THE STRUCTURE SUMMARY



F-12679



**SH 19
QUANTITY SUMMARY**

SHEET 7 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	18

DATE: 03-JUL-2024 15:53
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_08.dgn

DRIVEWAY SUMMARY RIGHT

LOCATION	DRIVEWAY NO.	COUNTY RD NO.	DESCRIPTION OF EXISTING STRUCTURE	EXIST DRVWY TYPE	EXIST WIDTH	PROP WIDTH	PROP DRVWY LENGTH	ITEM 104	ITEM 132	ITEM 496	ITEM 464		ITEM 464		ITEM 467		ITEM 530		
								REMOV CONC (DRIVEWAYS)	EMBANKMENT (VEHICLE) (ORD COMP) (TY C)	REMOVE STR PIPE	(1), (3) RCP (CL III) (18 IN)	(1), (3) RCP (CL III) (24 IN)	(1A), (3) THERMO-PLASTIC PIPE (18 IN) (PP)	(1A), (3) THERMO-PLASTIC PIPE (24 IN) (PP)	SET (TY II) (18 (RCP) (6:1) (P)	SET (TY II) (24 (RCP) (6:1) (P)	INTERSECTION (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)
STA					LF	LF	LF	SY	CY	EA	LF	LF	LF	LF	EA	EA	SY	SY	SY
CSJ-0108-03-041																			
1897+85.48	RT	58	18 IN X 28 FT RCP	ASPHALT	19	19	10												29
1900+10.48	RT	59	18 IN X 28 FT RCP	ASPHALT	17	17	10												28
1904+83.82	RT	60	18 IN X 42 FT RCP	ASPHALT	49	49	10												67
1908+10.20	RT	61	18 IN X 42 FT RCP	ASPHALT	35	35	10												50
1910+62.67	RT	62	18 IN X 28 FT RCP	ASPHALT	15	15	10												28
1920+15.61	RT	63	18 IN X 28 FT RCP	ASPHALT	12	12	10												24
1922+90.11	RT	64	18 IN X 28 FT RCP	ASPHALT	19	19	10												32
1923+96.88	RT	65	18 IN X 28 FT RCP	ASPHALT	18	18	10												32
1927+04.23	RT	66	18 IN X 28 FT RCP	ASPHALT	17	17	10												30
1928+32.99	RT	67	18 IN X 28 FT RCP	ASPHALT	18	18	10												29
1931+35.77	RT	CO RD 3907		ASPHALT	21	21	39										134		
1938+92.82	RT	68		ASPHALT	37	37	10												53
1947+74.87	RT	69	24 IN X 66 FT ALUM	ASPHALT	63	63	10												87
1970+77.43	RT	70		ASPHALT	60	60	10												101
1972+67.94	RT	71		ASPHALT	61	61	10												80
1975+76.94	RT	72	2 - 24" X 29 FT RCP	ASPHALT	19	19	10												30
1977+68.08	RT	73		ASPHALT	19	19	10												29
1983+66.97	RT	74		ASPHALT	20	20	10												30
1989+74.51	RT	75		ASPHALT	18	18	10												31
1994+99.35	RT	76	18 IN X 28 FT RCP	ASPHALT	17	17	10												30
2001+00.63	RT	77	18 IN X 30 FT RCP	ASPHALT	20	20	10												33
2004+15.05	RT	78	18 IN X 32 FT RCP	CONCRETE	33	33	10												
2007+04.60	RT	79		ASPHALT	21	21	10												32
2013+30.67	RT	CO RD 3922		ASPHALT	26	26	39										145		
2015+27.11	RT	80		ASPHALT	23	23	10												34
2016+88.03	RT	81	18 IN X 80 FT RCP	ASPHALT	32	32	10												46
2019+17.38	RT	82		ASPHALT	31	31	10												43
2022+28.57	RT	83		ASPHALT	70	70	10												89
2023+42.68	RT	84		ASPHALT	45	45	16												96
2024+27.96	RT	85		ASPHALT	13	13	10												26
2025+93.67	RT	86	18 IN X 36 FT RCP	ASPHALT	21	21	10												34
2029+45.18	RT	87	18 IN X 28 FT RCP	ASPHALT	18	18	10												31
2030+22.83	RT	88	18 IN X 28 FT RCP	ASPHALT	17	17	10												30
TOTAL 2 OF 2								0	0	0	0	0	0	0	0	0	279	0	1314
OVERALL DRIVEWAY RIGHT TOTAL								150	111	36	1559	151	1559	151	73	6	1029	150	4454

[1] BASE BID
[1A] QUANTITY SUBJECT TO ALTERNATE BID
[3] QUANTITY PAID IN THE STRUCTURE SUMMARY



F-12679



**SH 19
QUANTITY SUMMARY**


SHEET 8 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	19


DATE: 06-AUG-2024 19:46
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_09.dgn

SUMMARY OF CROSS-CULVERTS

LOCATION	CUL NO.	EXISTING CONDITION	PROPOSED WORK	ITEM 402	ITEM 462								ITEM 466			
				TRENCH EXCAVATION PROTECTION	CONC BOX CULV (3 FT X 2 FT) (EXTEND)	CONC BOX CULV (3 FT X 3 FT) (EXTEND)	CONC BOX CULV (4 FT X 3 FT) (EXTEND)	CONC BOX CULV (4 FT X 4 FT) (EXTEND)	CONC BOX CULV (5 FT X 4 FT) (EXTEND)	CONC BOX CULV (6 FT X 4 FT) (EXTEND)	CONC BOX CULV (6 FT X 6 FT) (EXTEND)	CONC BOX CULV (7 FT X 6 FT) (EXTEND)	WINGWALL (PW - 1) (HW=4 FT)	WINGWALL (PW - 1) (HW=5 FT)	WINGWALL (PW - 1) (HW=6 FT)	
STA				LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	
1574+59	1	LT	6'X6' FW-S 3:1	EXISTING TO REMAIN												
		RT	6'X6' FW-S 3:1	EXISTING TO REMAIN												
1581+69	2	LT	4'X3' FW	EXISTING TO REMAIN												
		RT	4'X3' FW	EXISTING TO REMAIN												
1586+19	3	LT	2 - 10'X8' FW	EXISTING TO REMAIN												
		RT	2 - 10'X8' FW	EXISTING TO REMAIN												
1603+88	4	LT	4'X3' FW	EXISTING TO REMAIN												
		RT	4'X3' FW-0, SET 3:1	EXISTING TO REMAIN												
1608+48	5	LT	3'X3' FW-S 3:1	EXISTING TO REMAIN												
		RT	3'X3' FW-S, SET 3:1	EXISTING TO REMAIN												
1619+18	6	LT	5'X4' FW	EXISTING TO REMAIN												
		RT	5'X4' FW	EXISTING TO REMAIN												
1635+67	7	LT	2 - 6'X6' FW-0, SET 3:1	EXISTING TO REMAIN												
		RT	2 - 6'X6' FW	EXISTING TO REMAIN												
1637+50	8	LT	3'X2' FW	EXISTING TO REMAIN												
		RT	3'X2' FW	EXISTING TO REMAIN												
1651+03.00	9	LT	3'X2' FW	EXISTING TO REMAIN												
		RT	3'X2' FW	REMOVE FW, INSTALL SETB-FW-0 (HW= 3') (4:1) (C) WITH PIPE RUNNER ASSEMBLY												
1662+78.00	10	LT	5'X4' FW	EXISTING TO REMAIN												
		RT	5'X4' FW	REMOVE FW, INSTALL 3' - 5' x 4' RCB & SETB-FW-0 (HW= 5') (4:1) (C) WITH PIPE RUNNER ASSEMBLY	3					3						
1686+33.00	11	LT	3'X3' FW	EXISTING TO REMAIN												
		RT	3'X3' FW	REMOVE FW, INSTALL 5' - 3' X 3' RCB & SETB-FW-0 (HW= 4') (3:1) (C) WITH PIPE RUNNER ASSEMBLY	5		5									
1693+56.00	12	LT	6'X4' FW	REMOVE 4' RCB & FW, INSTALL PW-1 (HW= 5.5') (2:1)												1
		RT	6'X4' FW	REMOVE FW, INSTALL 2' - 6' X 4' RCB & PW-1 (HW= 5') (2:1)	2						2				1	
1695+97.00	13	LT	6'X4' FW	EXISTING TO REMAIN												
		RT	6'X4' FW	REMOVE FW-S, INSTALL 13' - 6' X 4' RCB & PW-1 (HW= 5') (2:1)	13						13				1	
1716+16.50	14	LT	3'X2' FW	EXISTING TO REMAIN												
		RT	3'X2' FW	REMOVE FW, INSTALL 2' - 3' X 2' RCB & SETB-FW-0 (HW= 3') (4:1) (C) WITH PIPE RUNNER ASSEMBLY	2	2										
1744+75.50	15	LT	6'X6' FW	EXISTING TO REMAIN												
		RT	6'X6' FW	REMOVE FW, INSTALL 3' - 6' X 6' RCB & PW-1 (HW= 8.5') (2:1); ADD MBGF	3							3				
1749+06.00	16	LT	3'X2' FW	EXISTING TO REMAIN												
		RT	3'X2' FW	REMOVE FW, INSTALL PW-1 (HW= 4.5') (2:1); ADD MBGF											1	
1754+61.50	17	LT	3'X3' FW	EXISTING TO REMAIN												
		RT	3'X3' FW	REMOVE FW, INSTALL 4' - 3' X 3' RCB & PW-1 (HW= 5.5') (2:1); ADD MBGF	4		4									
SUBTOTALS (1 OF 2)					32	2	9	0	0	3	15	3	0	0	3	2



F-12679



SH 19
QUANTITY SUMMARY

SHEET 9 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	20

SUMMARY OF CROSS-CULVERTS

LOCATION STA	CUL NO.	EXISTING CONDITION	PROPOSED WORK	ITEM 402	ITEM 462								ITEM 466				
				TRENCH EXCAVATION PROTECTION LF	CONC BOX CULV (3 FT X 2 FT) (EXTEND) LF	CONC BOX CULV (3 FT X 3 FT) (EXTEND) LF	CONC BOX CULV (4 FT X 3 FT) (EXTEND) LF	CONC BOX CULV (4 FT X 4 FT) (EXTEND) LF	CONC BOX CULV (5 FT X 4 FT) (EXTEND) LF	CONC BOX CULV (6 FT X 4 FT) (EXTEND) LF	CONC BOX CULV (6 FT X 6 FT) (EXTEND) LF	CONC BOX CULV (7 FT X 6 FT) (EXTEND) LF	WINGWALL (PW - 1) (HW=4 FT) EA	WINGWALL (PW - 1) (HW=5 FT) EA	WINGWALL (PW - 1) (HW=6 FT) EA		
1764+22.00	18	LT 4'X4' FW	EXISTING TO REMAIN														
		RT 4'X4' FW	REMOVE FW-S, INSTALL 16' - 4' X 4' RCB & PW-1 (HW= 5') (2:1)	16				16								1	
1773+54.00	19	LT 7'X6' FW	EXISTING TO REMAIN														
		RT 7'X6' FW	REMOVE FW, INSTALL 10' - 7' X 6' RCB & SETB-FW-0 (HW= 7') (4:1) (C) WITH PIPE RUNNER ASSEMBLY	10								10					
1783+66.00	20	LT 5'X4' SW	EXISTING TO REMAIN														
		RT 5'X4' SW	REMOVE SW, INSTALL 4' - 5' X 4' RCB & SETB-SW-0 (HW= 5.5') (4:1) (C) WITH PIPE RUNNER ASSEMBLY	4					4								
1793+97.00	21	LT 3'X3' FW	EXISTING TO REMAIN														
		RT 3'X3' FW	EXISTING TO REMAIN, INSTALL PIPE RUNNER ASSEMBLY														
1807+49.00	22	LT 3'X2' PW	EXISTING TO REMAIN, ADD MBGF														
		RT TY H INLET	EXISTING TO REMAIN														
1831+56.00	23	LT 3'X2' FW	EXISTING TO REMAIN														
		RT 3'X2' FW	REMOVE FW, INSTALL PW-1 (HW= 5') (2:1)													1	
1860+30.00	25	LT 4'X2' PW	EXISTING TO REMAIN														
		RT 4'X2' FW	EXISTING TO REMAIN														
1866+28.00	26	LT 5'X4' PW	REMOVE PW, INSTALL 4' - 5' X 4' RCB & PW-1 (HW= 6') (2:1)	4					4								1
		RT 5'X4' FW	REMOVE FW, INSTALL PW-1 (HW= 6') (2:1)														1
1873+31.00	27	LT 3'X3' FW	REMOVE FW, INSTALL 6' - 3' X 3' RCB & PW-1 (HW= 4') (2:1); ADD MBGF	6		6								1			
		RT 3'X3' FW	REMOVE FW, INSTALL PW-1 (HW= 5.5') (2:1)														1
1883+40.00	28	LT 5'X5' PW	EXISTING TO REMAIN														
		RT 5'X5' PW	EXISTING TO REMAIN														
1890+60.00	29	LT 4'X4' FW	EXISTING TO REMAIN														
		RT 4'X4' FW	EXISTING TO REMAIN														
1907+08.00	30	LT 3'X3' FW	REMOVE FW, INSTALL 4' - 3' X 3' RCB & SETB-FW-0 (HW= 4') (4:1) (C) WITH PIPE RUNNER ASSEMBLY	4		4											
		RT 3'X3' FW	EXISTING TO REMAIN														
1929+93.40	31	LT 3'X2' FW	REMOVE FW, INSTALL 6' - 3' X 2' RCB & SETB-FW-0 (HW= 3') (4:1) (C) WITH PIPE RUNNER ASSEMBLY	6	6												
		RT 3'X2' FW	EXISTING TO REMAIN														
1938+15.50	32	LT 4'X3' PW	REMOVE PW, INSTALL 4' - 4' X 3' RCB & PW-1 (HW= 6.5') (2:1); ADD MBGF	4					4								
		RT 4'X3' PW	EXISTING TO REMAIN														
SUBTOTAL (2 OF 2)				54	6	10	4	16	8	0	0	10	1	2	3		
PROJECT TOTAL				86	8	19	4	16	11	15	3	10	1	5	5		



F-12679



**SH 19
QUANTITY SUMMARY**

SHEET 10 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	21

DATE: 06-AUG-2024 19:46
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_10.dgn

SUMMARY OF CROSS-CULVERTS

LOCATION	CUL NO.	EXISTING CONDITION	PROPOSED WORK	ITEM 466		ITEM 467								ITEM 480	ITEM 658
				WINGWALL (PW - 1) (HW=7 FT)	WINGWALL (PW - 1) (HW=9 FT)	SET (PIPE RUNNER ASSEMBLY)	SET (TY I) (S=3 FT) (HW=3FT) (4:1) (C)	SET (TY I) (S=3 FT) (HW= 4 FT) (3:1) (C)	SET (TY I) (S=3 FT) (HW= 4 FT) (4:1) (C)	SET (TY I) (S= 3 FT) (HW= 5 FT) (4:1) (C)	SET (TY I) (S= 5 FT) (HW= 5 FT) (4:1) (C)	SET (TY I) (S= 5 FT) (HW= 6 FT) (4:1) (C)	SET (TY I) (S= 7 FT) (HW= 7 FT) (4:1) (C)	CLEAN EXIST CULVERTS	(1) INSTL OM ASSM (OM-22) (W FLX) GND (B)
STA				EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	
1574+59	1	LT	6'X6' FW-S 3:1												1
		RT	6'X6' FW-S 3:1											1	1
1581+69	2	LT	4'X3' FW												1
		RT	4'X3' FW											1	1
1586+19	3	LT	2 - 10'X8' FW												1
		RT	2 - 10'X8' FW											1	1
1603+88	4	LT	4'X3' FW												1
		RT	4'X3' FW-0, SET 3:1											1	1
1608+48	5	LT	3'X3' FW-S 3:1												1
		RT	3'X3' FW-S, SET 3:1											1	1
1619+18	6	LT	5'X4' FW												1
		RT	5'X4' FW											1	1
1635+67	7	LT	2 - 6'X6' FW-0, SET 3:1												1
		RT	2 - 6'X6' FW											1	1
1637+50	8	LT	3'X2' FW												1
		RT	3'X2' FW											1	1
1651+03.00	9	LT	3'X2' FW												1
		RT	3'X2' FW	REMOVE FW, INSTALL SETB-FW-0 (HW= 3') (4:1) (C) WITH PIPE RUNNER ASSEMBLY			1	1							1
1662+78.00	10	LT	5'X4' FW	EXISTING TO REMAIN											1
		RT	5'X4' FW	REMOVE FW, INSTALL 3' - 5' X 4' RCB & SETB-FW-0 (HW= 5') (4:1) (C) WITH PIPE RUNNER ASSEMBLY			1				1				1
1686+33.00	11	LT	3'X3' FW	EXISTING TO REMAIN											1
		RT	3'X3' FW	REMOVE FW, INSTALL 5' - 3' X 3' RCB & SETB-FW-0 (HW= 4') (3:1) (C) WITH PIPE RUNNER ASSEMBLY			1		1						1
1693+56.00	12	LT	6'X4' FW	REMOVE 4' RCB & FW, INSTALL PW-1 (HW= 5.5') (2:1)											1
		RT	6'X4' FW	REMOVE FW, INSTALL 2' - 6' X 4' RCB & PW-1 (HW= 5') (2:1)											1
1695+97.00	13	LT	6'X4' FW	EXISTING TO REMAIN											1
		RT	6'X4' FW	REMOVE FW-S, INSTALL 13' - 6' X 4' RCB & PW-1 (HW= 5') (2:1)											1
1716+16.50	14	LT	3'X2' FW	EXISTING TO REMAIN											1
		RT	3'X2' FW	REMOVE FW, INSTALL 2' - 3' X 2' RCB & SETB-FW-0 (HW= 3') (4:1) (C) WITH PIPE RUNNER ASSEMBLY			1	1							1
1744+75.50	15	LT	6'X6' FW	EXISTING TO REMAIN											1
		RT	6'X6' FW	REMOVE FW, INSTALL 3' - 6' X 6' RCB & PW-1 (HW= 8.5') (2:1); ADD MBGF											1
1749+06.00	16	LT	3'X2' FW	EXISTING TO REMAIN											1
		RT	3'X2' FW	REMOVE FW, INSTALL PW-1 (HW= 4.5') (2:1); ADD MBGF											1
1754+61.50	17	LT	3'X3' FW	EXISTING TO REMAIN											1
		RT	3'X3' FW	REMOVE FW, INSTALL 4' - 3' X 3' RCB & PW-1 (HW= 5.5') (2:1); ADD MBGF											1
SUBTOTALS (1 OF 2)				0	1	4	2	1	0	0	1	0	0	15	34

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**SH 19
QUANTITY SUMMARY**

SHEET 11 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	22

DATE: 06-AUG-2024 21:06
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_12.dgn


SUMMARY OF CROSS-CULVERTS																
LOCATION STA	CUL NO.	EXISTING CONDITION	PROPOSED WORK	ITEM 466			ITEM 467						ITEM 480	ITEM 658		
				WINGWALL (PW - 1) (HW=7 FT) EA	WINGWALL (PW - 1) (HW=9 FT) EA	SET (PIPE RUNNER ASSEMBLY) EA	SET (TY I) (S=3 FT) (HW=3FT) (4:1) (C) EA	SET (TY I) (S=3 FT) (HW= 4 FT) (3:1) (C) EA	SET (TY I) (S=3 FT) (HW= 4 FT) (4:1) (C) EA	SET (TY I) (S= 3 FT) (HW= 5 FT) (4:1) (C) EA	SET (TY I) (S= 5 FT) (HW= 5 FT) (4:1) (C) EA	SET (TY I) (S= 5 FT) (HW= 6 FT) (4:1) (C) EA	SET (TY I) (S= 7 FT) (HW= 7 FT) (4:1) (C) EA	CLEAN EXIST CULVERTS EA	(1) INSTL OM ASSM (OM-22) (WFLX) GN D(BI) EA	
764+22.00	18	LT	4'X4' FW	EXISTING TO REMAIN												1
		RT	4'X4' FW	REMOVE FW-S, INSTALL 16' - 4' X 4' RCB & PW-1 (HW= 5') (2:1)											1	1
773+54.00	19	LT	7'X6' FW	EXISTING TO REMAIN												1
		RT	7'X6' FW	REMOVE FW, INSTALL 10' - 7' X 6' RCB & SETB-FW-0 (HW= 7') (4:1) (C) WITH PIPE RUNNER ASSEMBLY											1	1
783+66.00	20	LT	5'X4' SW	EXISTING TO REMAIN												1
		RT	5'X4' SW	REMOVE SW, INSTALL 4' - 5' X 4' RCB & SETB-SW-0 (HW= 5.5') (4:1) (C) WITH PIPE RUNNER ASSEMBLY											1	1
793+97.00	21	LT	3'X3' FW	EXISTING TO REMAIN												1
		RT	3'X3' FW	EXISTING TO REMAIN, INSTALL PIPE RUNNER ASSEMBLY												1
807+49.00	22	LT	3'X2' PW	EXISTING TO REMAIN, ADD MBGF												1
		RT	TY H INLET	EXISTING TO REMAIN											1	1
831+56.00	23	LT	3'X2' FW	EXISTING TO REMAIN												1
		RT	3'X2' FW	REMOVE FW, INSTALL PW-1 (HW= 5') (2:1)												1
860+30.00	25	LT	4'X2' PW	EXISTING TO REMAIN												1
		RT	4'X2' FW	EXISTING TO REMAIN											1	1
866+28.00	26	LT	5'X4' PW	REMOVE PW, INSTALL 4' - 5' x 4' RCB & PW-1 (HW= 6') (2:1)												1
		RT	5'X4' FW	REMOVE FW, INSTALL PW-1 (HW= 6') (2:1)												1
873+31.00	27	LT	3'X3' FW	REMOVE FW, INSTALL 6' - 3' X 3' RCB & PW-1 (HW= 4') (2:1); ADD MBGF												1
		RT	3'X3' FW	REMOVE FW, INSTALL PW-1 (HW= 5.5') (2:1)												1
883+40.00	28	LT	5'X5' PW	EXISTING TO REMAIN												1
		RT	5'X5' PW	EXISTING TO REMAIN											1	1
890+60.00	29	LT	4'X4' FW	EXISTING TO REMAIN												1
		RT	4'X4' FW	EXISTING TO REMAIN											1	1
907+08.00	30	LT	3'X3' FW	REMOVE FW, INSTALL 4' - 3' X 3' RCB & SETB-FW-0 (HW= 4') (4:1) (C) WITH PIPE RUNNER ASSEMBLY												1
		RT	3'X3' FW	EXISTING TO REMAIN											1	1
929+93.40	31	LT	3'X2' FW	REMOVE FW, INSTALL 6' - 3' X 2' RCB & SETB-FW-0 (HW= 3') (4:1) (C) WITH PIPE RUNNER ASSEMBLY												1
		RT	3'X2' FW	EXISTING TO REMAIN											1	1
938+15.50	32	LT	4'X3' PW	REMOVE PW, INSTALL 4' - 4' X 3' RCB & PW-1 (HW= 6.5') (2:1); ADD MBGF											1	1
		RT	4'X3' PW	EXISTING TO REMAIN												1
SUBTOTAL (2 OF 2)				1	0	5	0	1	1	0	0	1	1	9	28	
PROJECT TOTAL				1	1	9	2	2	1	0	1	1	1	24	62	

STRUCTURE SUMMARY						
LOCATION	ITEM 464	ITEM 468	ITEM 464	ITEM 468	ITEM 467	
	(1), (3) RC PIPE (CL III) 18 IN	(1A), (3) THERMO- PLASTIC PIPE (18 IN) (PP)	(1), (3) RC PIPE (CL III) 24 IN	(1A), (3) THERMO- PLASTIC PIPE (24 IN) (PP)	SET (TY II) (18 IN) (RCP) (6:1) (P)	SET (TY II) (24 IN) (RCP) (6:1) (P)
	LF	LF	LF	LF	EA	EA
FROM DRIVEWAY & INTERSECTION SUMMARY	2752	2752	239	239	109	12
PROJECT TOTAL	2752	2752	239	239	109	12

BRIDGE JOINT SUMMARY	
LOCATION	ITEM 438
	CLEANING & SEALING EXTRA JOINTS (CL3) LF
THIRD CANEY CREEK STA 1849+92.00 TO 1851+18.00	180
SECOND CANEY CREEK STA 1960+47.00 TO 1961+62.00	180
PROJECT TOTAL	360

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Texas Department of Transportation

SH 19 QUANTITY SUMMARY

SHEET 12 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	23

DATE: 06-AUG-2024 20:55
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_13.dgn

MAILBOX SUMMARY				
LOCATION	ITEM 530	ITEM 560		
	TURNOUTS (ACP)	MAILBOX INSTALL-S (TWG-POST) TY 2	MAILBOX INSTALL-D (TWG-POST) TY 2	MAILBOX INSTALL-M (TWG-POST) TY 1
	SY	EA	EA	EA
STA 1639+32 - STA 1797+72	105			
STA 1860+30 - STA 1958+60	152			
STA 1564+00 - STA 2032+05		55	6	12
PROJECT TOTAL	257	55	6	12

TRUCK MOUNTED ATTENUATORS			
NUMBER OF TRUCKS	LOCATION	ITEM 505	
		(1) TMA (STATIONARY)	(2) TMA (MOBILE)
		DAY	DAY
1	AS REQUIRED PER TCP	50	
2	AS REQUIRED PER TCP		50
TOTALS		50	50

PORTABLE CHANGEABLE MESSAGE SIGN		
SIGN	LOCATION	ITEM 503
		PORTABLE CHANGEABLE MESSAGE SIGN EA
LOC #1	TO BE LOCATED AS DIRECTED BY THE ENGINEER	1
LOC #2	TO BE LOCATED AS DIRECTED BY THE ENGINEER	1
PROJECT TOTAL		2

NOTE: MONTHLY PAYMENTS WILL BE MADE BASED ON A MONTH OF BARRICADES IN THE PROJECTS

SMALL SIGN TABULATION							
LOCATION	ITEM 644						
	IN SM RD SUP&AM TY10BWG (1) SA (T)	IN SM RD SUP&AM TY10BWG (1) SA (U)	IN SM RD SUP&AM TYS80 (1) SA (T)	IN SM RD SUP&AM TYS80 (1) SA (U)	IN SM RD SUP&AM TYTWT (1) WS (P)	IN SM RD SUP&AM TYTWT (1) WS (T)	REMOVE SM SN SUP&AM
	EA	EA	EA	EA	EA	EA	EA
SHEET 1 THRU SHEET 40	1	3	1	4	74	1	84
PROJECT TOTAL	1	3	1	4	74	1	84

NOTE: MULTIPLE MOVE-INS MAY BE REQUIRED FOR PLACEMENT OF PERMANENT SIGNS

METAL BEAM GUARD FENCE SUMMARY									
LOCATION		ITEM 104	ITEM 432	ITEM 540	ITEM 542	ITEM 544		ITEM 658	REMARKS
FROM STA	TO STA	REMOVE CONCRETE (MOW STRIP) LF	RIPRAP (MOW STRIP) (4") CY	MTL W-BEAM GD FEN (STEEL POST) LF	REMOVE METAL BEAM GUARD FENCE LF	GUARDRAIL END TREATMENT (INSTALL) EA	GUARDRAIL END TREATMENT (REMOVE) EA	INSTL DEL ASSM (D-SW) SZ 1 (BRF) CF2 EA	
1585+15 LT	1587+68 LT	0	14	150	0	2	0	12	
1584+71 RT	1587+24 RT	0	14	150	0	2	0	12	
1636+56 LT	1639+09 LT	402	20	100	179	2	2	12	AT PATTOWATOMIE CREEK
1636+06 RT	1638+59 RT	395	20	100	179	2	2	12	
1742+61 RT	1745+39 RT	0	16	175	0	2	0	10	
1748+69 RT	1749+73 RT	0	7	25	0	2	0	4	
1753+56 RT	1755+34 RT	0	11	75	0	2	0	7	
1805+76 LT	1810+28 LT	569	28	350	354	2	2	18	
1849+24 LT	1853+02 LT	498	25	150	287	2	2	16	AT THIRD CANEY CREEK
1848+23 RT	1852+02 RT	485	24	150	287	2	2	16	
1872+43 LT	1874+96 LT	0	14	150	0	2	0	10	
1937+26 LT	1939+76 LT	0	14	175	0	2	0	10	
1959+24 LT	1963+51 LT	543	27	175	338	2	2	18	AT SECOND CANEY CREEK
1958+73 RT	1962+76 RT	510	25	175	287	2	2	16	
1973+81 LT	1976+23 LT	0	0	38	320	2	2	18	
1973+26 RT	1975+56 RT	0	0	0	265	2	2	16	AT FIRST CANEY CREEK
PROJECT TOTAL		3402	259	2138	2496	32	18	207	

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SH 19 QUANTITY SUMMARY

SHEET 13 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	24

DATE: 01-JUL-2024 14:01
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_14.dgn

EROSION CONTROL SUMMARY

PROJECT PLAN & PROFILE SHEET NUMBER	ITEM 160	ITEM 164				ITEM 168	ITEM 506					
	FURNISHING AND PLACING TOPSOIL (4") SY	BROADCAST SEED (PERM) (RURAL) (SANDY) SY	DRILL SEED (PERM_RURAL_SAND) SY	DRILL SEED (TEMP_COOL) SY	DRILL SEED (TEMP_WARM) SY	VEGETATIVE WATERING SY	EARTHWORK (EROSION & SEDMT CONT. IN VEH) CY	BACKHOE WORK (EROSION & SEDMT CONT) HR	TEMPORARY SEDIMENT CONTROL FENCE		ROCK FILTER DAMS (TY I)	
									INSTALL LF	REMOVE LF	INSTALL LF	REMOVE LF
SHEET 1 OF 20											20	20
SHEET 2 OF 20												
SHEET 3 OF 20												
SHEET 4 OF 20	8081	4041	8081	4041	4041	8081					100	100
SHEET 5 OF 20	8085	4043	8085	4043	4043	8085					140	140
SHEET 6 OF 20	8387	4194	8387	4194	4194	8387			290	290	160	160
SHEET 7 OF 20	8236	4118	8236	4118	4118	8236					120	120
SHEET 8 OF 20	8159	4080	8159	4080	4080	8159					200	200
SHEET 9 OF 20	8842	4421	8842	4421	4421	8842					220	220
SHEET 10 OF 20	6967	3484	6967	3484	3484	6967					100	100
SHEET 11 OF 20												
SHEET 12 OF 20									100	100		
SHEET 13 OF 20	4368	2184	4368	2184	2184	4368			200	200	140	140
SHEET 14 OF 20	7447	3724	7447	3724	3724	7447			965	965	100	100
SHEET 15 OF 20	8185	4093	8185	4093	4093	8185			290	290	120	120
SHEET 16 OF 20	7982	3991	7982	3991	3991	7982			585	585	100	100
SHEET 17 OF 20	4126	2063	4126	2063	2063	4126			715	715	80	80
SHEET 18 OF 20												
SHEET 19 OF 20												
SHEET 20 OF 20												
AS DIRECTED							1000	150				
PROJECT TOTALS	88865	44436	88865	44436	44436	88865	1000	150	3145	3145	1600	1600

NOTE: MULTIPLE MOVE-INS WILL BE REQUIRED TO MAINTAIN ADEQUATE VEGETATION IN COMPLIANCE WITH THE CONSTRUCTION GENERAL PERMIT

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SH 19 QUANTITY SUMMARY

SHEET 14 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	25

DATE: 27-JUN-2024 15:54
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_15.dgn

SUMMARY OF WORKZONE PAVEMENT MARKINGS

LOCATION	TYPE	RATE	ITEM 662											
			WK ZN PAV MRK NON- REMOVE (W) 6" (BRK)	WK ZN PAV MRK NON- REMOVE (W) 6" (SLD)	WK ZN PAV MRK NON- REMOVE (W) 24" (SLD)	WK ZN PAV MRK NON- REMOVE (Y) 6" (BRK)	WK ZN PAV MRK NON- REMOVE (Y) 6" (SLD)	RATE	SHORT TERM REMOVABLE		RATE	SHORT TERM TABS		
			LF	LF	LF	LF	LF		WHITE	YELLOW		WHITE	YELLOW	
								TAPE 6"	TAPE 6"		(TAB) TY W	(TAB) TY Y-2		
SHT 1 OF 40	EDGE LINE	SOLID		4248				4248	4.5FT/20FT		956	1 EA/20FT		106
	CENTERLINE	SOLID												
SHT 2 OF 40	EDGE LINE	SOLID		4800				4800	4.5FT/20FT		1080	1 EA/20FT		120
	CENTERLINE	SOLID												
	STOP BAR	SOLID			24									
SHT 3 OF 40	EDGE LINE	SOLID		4800				4800	4.5FT/20FT		1080	1 EA/20FT		120
	CENTERLINE	SOLID												
SHT 4 OF 40	EDGE LINE	SOLID		4800				4800	4.5FT/20FT		1080	1 EA/20FT		120
	CENTERLINE	SOLID												
SHT 5 OF 40	EDGE LINE	SOLID		4800				4800	4.5FT/20FT		1080	1 EA/20FT		120
	CENTERLINE	SOLID												
SHT 6 OF 40	EDGE LINE	SOLID		4800				4800	4.5FT/20FT		1080	1 EA/20FT		120
	CENTERLINE	SOLID												
SHT 7 OF 40	EDGE LINE	SOLID		4800				4800	4.5FT/20FT		1080	1 EA/20FT		120
	CENTERLINE	SOLID												
	DOTTED	3FT / 12 FT												
	BROKEN	10FT / 40 FT	87					4.5FT/40FT	78	21	3 EA/40FT	26		
SHT 8 OF 40	EDGE LINE	SOLID		4800				4800	4.5FT/20FT		1080	1 EA/20FT		120
	CENTERLINE	SOLID												
	BROKEN	10FT / 40 FT	600					4.5FT/40FT	270	68	3 EA/40FT	90		
SHT 9 OF 40	EDGE LINE	SOLID		4800				4800	4.5FT/20FT		1080	1 EA/20FT		120
	CENTERLINE	SOLID												
	BROKEN	10FT / 40 FT	600					4.5FT/40FT	270	68	3 EA/40FT	90		
SHT 10 OF 40	EDGE LINE	SOLID		4800				4800	4.5FT/20FT		1080	1 EA/20 FT		120
	CENTERLINE	SOLID												
	BROKEN	10FT / 40 FT	600					4.5FT/40FT	270	68	3 EA/40FT	90		
SHT 11 OF 40	EDGE LINE	SOLID		4800				4800	4.5FT/20FT		1080	1 EA/20FT		120
	CENTERLINE	SOLID												
	BROKEN	10FT / 40 FT	600					4.5FT/40FT	270	68	3 EA/40FT	90		
	STOP BAR	SOLID			24									
SHT 12 OF 40	EDGE LINE	SOLID		4800				4800	4.5FT/20FT		1080	1 EA/20FT		120
	CENTERLINE	SOLID												
	BROKEN	10FT / 40 FT	600					4.5FT/40FT	270	68	3 EA/40FT	90		
SHT 13 OF 40	EDGE LINE	SOLID		4800				4800	4.5FT/20FT		1080	1 EA/20FT		120
	CENTERLINE	SOLID												
	BROKEN	10FT / 40 FT	600					4.5FT/40FT	270	68	3 EA/40FT	90		
SHT 14 OF 40	EDGE LINE	SOLID		4800				4800	4.5FT/20FT		1080	1 EA/20FT		120
	CENTERLINE	SOLID												
	BROKEN	10FT / 40 FT	600					4.5FT/40FT	270	68	3 EA/40FT	90		
SHT 15 OF 40	EDGE LINE	SOLID		4800				6280	4.5FT/20FT		1413	1 EA/20FT		157
	CENTERLINE	SOLID												
	BROKEN	10FT / 40 FT	600					4.5FT/40FT	270	68	3 EA/40FT	90		
SUBTOTALS (1 of 3)			4887	71448	48	0	72928		2238	16970		746	1823	

NOTE:
 MULTIPLE MOVE-INS WILL BE REQUIRED TO MAINTAIN ADEQUATE STRIPING.
 SHORT TERM TABS ALLOWED ON OCST APPLICATION ONLY.

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F-12679



SH 19 QUANTITY SUMMARY

SHEET 15 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	26

DATE: 06-AUG-2024 19:46
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_16.dgn


SUMMARY OF WORKZONE PAVEMENT MARKINGS

LOCATION	TYPE	RATE	ITEM 662										
			WK ZN PAV MRK NON- REMOVE (W) 6" (BRK) LF	WK ZN PAV MRK NON- REMOVE (W) 6" (SLD) LF	WK ZN PAV MRK NON- REMOVE (W) 24" (SLD) LF	WK ZN PAV MRK NON- REMOVE (Y) 6" (BRK) LF	WK ZN PAV MRK NON- REMOVE (Y) 6" (SLD) LF	RATE	SHORT TERM REMOVABLE		RATE	SHORT TERM TABS	
									WHITE	YELLOW		WHITE	YELLOW
									TAPE 6"	TAPE 6"		(TAB) TY W	(TAB) TY Y-2
LF	LF	LF	LF	LF	LF	LF	EA	EA					
SHT 16 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4990	4.5FT/20FT		1123	1 EA/20FT		125	
	BROKEN	10FT / 40 FT	580				4.5FT/40FT	252	66	3 EA/40FT	84		51
	TURN LANE	SOLID				2050							
	STOP BAR	SOLID			24								
	MISC	ARROW / WORD											
SHT 17 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				6000	4.5FT/20FT		1350	1 EA/20FT		150	
	BROKEN	10FT / 40 FT	600				4.5FT/40FT	270	68	3 EA/40FT	90		
	TURN LANE	SOLID											
SHT 18 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
	BROKEN	10FT / 40 FT	600				4.5FT/40FT	270	68	3 EA/40FT	90		
SHT 19 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
	DOTTED	3FT / 12 FT											
	BROKEN	10FT / 40 FT	40				4.5FT/40FT	16	5	3 EA/40FT	5		
	STOP BAR	SOLID			48								
	MISC	ARROW / WORD											
SHT 20 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
SHT 21 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				7280	4.5FT/20FT		1638	1 EA/20FT		182	
	TURN LANE	SOLID				260						7	
	MISC	ARROW / WORD											
SHT 22 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4340	4.5FT/20FT		977	1 EA/20FT		109	
	BROKEN	10FT / 40 FT				300							
	TURN LANE	SOLID											
	STOP BAR	SOLID			100								
	MISC	ARROW / WORD											
SHT 23 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				6960	4.5FT/20FT		1566	1 EA/20FT		174	
	TURN LANE	SOLID											
	MISC	ARROW / WORD											
SHT 24 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
SHT 25 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
SHT 26 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				7760	4.5FT/20FT		1746	1 EA/20FT		194	
	DOTTED	3FT / 12 FT											
	TURN LANE	SOLID											
	MISC	ARROW / WORD											
SHT 27 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				6960	4.5FT/20FT		1566	1 EA/20FT		174	
	DOTTED	3FT / 12 FT											
	BROKEN	10FT / 40 FT	440				4.5FT/40FT	187	50	3 EA/40FT	62		
	TURN LANE	SOLID											
	STOP BAR	SOLID			70								
	MISC	ARROW / WORD											
SUBTOTALS (2 of 3)			2260	57600	242	300	70600	0	995	15623	0	331	1766

NOTE:
MULTIPLE MOVE-INS WILL BE REQUIRED
TO MAINTAIN ADEQUATE STRIPING.
SHORT TERM TABS ALLOWED ON OCST
APPLICATION ONLY.

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F-12679



Texas Department of Transportation
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SH 19 QUANTITY SUMMARY

SHEET 16 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	27

DATE: 06-AUG-2024 22:32
FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_17.dgn


SUMMARY OF WORKZONE PAVEMENT MARKINGS

LOCATION	TYPE	RATE	ITEM 662										
			WK ZN PAV MRK NON- REMOVE (W) 6" (BRK) LF	WK ZN PAV MRK NON- REMOVE (W) 6" (SLD) LF	WK ZN PAV MRK NON- REMOVE (W) 24" (SLD) LF	WK ZN PAV MRK NON- REMOVE (Y) 6" (BRK) LF	WK ZN PAV MRK NON- REMOVE (Y) 6" (SLD) LF	RATE	SHORT TERM REMOVABLE		RATE	SHORT TERM TABS	
									WHITE	YELLOW		WHITE	YELLOW
									TAPE 6" LF	TAPE 6" LF		(TAB) TY W EA	(TAB) TY Y-2 EA
SHT 28 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
	BROKEN	10FT / 40 FT	600				4.5FT/40FT	270	68	3 EA/40FT	90		
	STOP BAR	SOLID			34								
SHT 29 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
	BROKEN	10FT / 40 FT	600				4.5FT/40FT	270	68	3 EA/40FT	90		
	STOP BAR	SOLID			88								
SHT 30 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
	BROKEN	10FT / 40 FT	600				4.5FT/40FT	270	68	3 EA/40FT	90		
	STOP BAR	SOLID			40								
SHT 31 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
	BROKEN	10FT / 40 FT	600				4.5FT/40FT	270	68	3 EA/40FT	90		
	STOP BAR	SOLID			32								
SHT 32 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
	BROKEN	10FT / 40 FT	600				4.5FT/40FT	270	68	3 EA/40FT	90		
SHT 33 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
	DOTTED	3FT / 12 FT											
	BROKEN	10FT / 40 FT	360				4.5FT/40FT	167	41	3 EA/40FT	56		
	TURN LANE	SOLID											
SHT 34 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
SHT 35 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
SHT 36 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
SHT 37 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
SHT 38 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
	STOP BAR	SOLID			36								
SHT 39 OF 40	EDGE LINE	SOLID		4800									
	CENTERLINE	SOLID				4800	4.5FT/20FT		1080	1 EA/20FT		120	
	STOP BAR	SOLID			36								
SHT 40 OF 40	EDGE LINE	SOLID		420									
	CENTERLINE	SOLID				420	4.5FT/20FT		95	1 EA/20FT		11	
SUBTOTALS (3 of 3)			3360	58020	266	0	58020	0	1517	13436	0	505	1451
PROJECT SUBTOTALS			10507	187068	556	300	201548		4750	46029		1583	5040

NOTE:
MULTIPLE MOVE-INS WILL BE REQUIRED TO MAINTAIN ADEQUATE STRIPING.
SHORT TERM TABS ALLOWED ON OCST APPLICATION ONLY.

VOLKERT

F-12679



Texas Department of Transportation

SH 19 QUANTITY SUMMARY

SHEET 17 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	28

DATE: 06-AUG-2024 20:22
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_18.dgn

SUMMARY OF PERMANENT PAVEMENT MARKINGS

LOCATION	TYPE	RATE	ITEM 666 REFLECTORIZED PAV MARKINGS								ITEM 668 PREFABRICATED PAVEMENT				ITEM 672 RAISED PAV MARKERS		
			WHITE				YELLOW				ARROW	ARROW	YELLOW	WORD	RATE	TY I-C	TY II-AA
			RE PM TY II (W) 6" (BRK)	RE PM TY II (W) 6" (SLD)	RE PM TY II (W) 6" (DOT)	REFL PAV MRK TY I (W) 8" (SLD) (10)	REFL PAV MRK TY I (W) 24" (SLD) (100 MIL)	RE PM TY II (Y) 6" (BRK)	RE PM TY II (Y) 6" (SLD)	24" SOLID 100 MIL	LNDP	LEFT	6" SLD	ONLY			
			LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	LF	EA	EA	EA	
SHT 1 OF 40	EDGE LINE	SOLID		2124													
	CENTERLINE	SOLID						2124									
SHT 2 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
	STOP BAR	SOLID					12										
SHT 3 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
SHT 4 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
SHT 5 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
SHT 6 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
SHT 7 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
	DOTTED	3FT / 12 FT			105												
	BROKEN	10FT / 40 FT	90														
SHT 8 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
	BROKEN	10FT / 40 FT	300														
SHT 9 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
	BROKEN	10FT / 40 FT	300														
SHT 10 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
	BROKEN	10FT / 40 FT	300														
SHT 11 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
	BROKEN	10FT / 40 FT	300														
	STOP BAR	SOLID					12										
SHT 12 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
	BROKEN	10FT / 40 FT	300														
SHT 13 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
	BROKEN	10FT / 40 FT	300														
SHT 14 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
	BROKEN	10FT / 40 FT	300														
SHT 15 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						3140									74
	BROKEN	10FT / 40 FT	300														
SUBTOTALS (1 of 3)			2490	35724	105	0	24	0	36464	0	0	0	0	0	0	0	74

NOTE: MULTIPLE MOVE-INS WILL BE REQUIRED TO MAINTAIN ADEQUATE STRIPING.

VOLKERT

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**SH 19
QUANTITY SUMMARY**


SHEET 18 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	29

SUMMARY OF PERMANENT PAVEMENT MARKINGS

LOCATION	TYPE	RATE	ITEM 666 REFLECTORIZED PAV MARKINGS								ITEM 668 PREFABRICATED PAVEMENT				ITEM 672 RAISED PAV MARKERS		
			WHITE				YELLOW				ARROW	ARROW	YELLOW	WORD	RATE	TY I-C	TY II-AA
			RE PM TY II (W) 6" (BRK)	RE PM TY II (W) 6" (SLD)	RE PM TY II (W) 6" (DOT)	REFL PAV MRK TY I (W) 8" (SLD) (10)	REFL PAV MRK TY I (W) 24" (SLD) (100 MIL)	RE PM TY II (Y) 6" (BRK)	RE PM TY II (Y) 6" (SLD)	24" SOLID 100 MIL	LNDP	LEFT	6" SLD	ONLY			
			EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA			
SHT 16 OF 40	EDGE LINE	SOLID	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	LF	EA			
	CENTERLINE	SOLID		2440													
	BROKEN	10FT / 40 FT	290							2495						26	178
	TURN LANE	SOLID				505				1025							
	STOP BAR	SOLID					12										
	MISC	ARROW / WORD										2		2			
SHT 17 OF 40	EDGE LINE	SOLID		2400													60
	CENTERLINE	SOLID								3000							
	BROKEN	10FT / 40 FT	300														
	TURN LANE	SOLID															
SHT 18 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID								2400							
	BROKEN	10FT / 40 FT	300														
SHT 19 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID								2400							
	DOTTED	3FT / 12 FT			235												
	BROKEN	10FT / 40 FT	20														
	STOP BAR	SOLID					24										
	MISC	ARROW / WORD									2						
SHT 20 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID								2400							
SHT 21 OF 40	EDGE LINE	SOLID		2400												2	148
	CENTERLINE	SOLID								3640							
	TURN LANE	SOLID				20				130							
	MISC	ARROW / WORD												1			
SHT 22 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	10FT / 40 FT					500		300	2170						25	50
	TURN LANE	SOLID															
	STOP BAR	SOLID						50									
	MISC	ARROW / WORD										3		2			
SHT 23 OF 40	EDGE LINE	SOLID		2400			355			3480						18	182
	CENTERLINE	SOLID															
	TURN LANE	SOLID															
	MISC	ARROW / WORD										1		1			
SHT 24 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID								2400							
SHT 25 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID								2400							
SHT 26 OF 40	EDGE LINE	SOLID		2400			170			3880							
	CENTERLINE	SOLID														9	166
	DOTTED	3FT / 12 FT			159												
	BROKEN	10FT / 40 FT															
	TURN LANE	SOLID								370							
	MISC	ARROW / WORD									1	1		1			
SHT 27 OF 40	EDGE LINE	SOLID		2400			290			3480							
	CENTERLINE	SOLID															
	LANE DROP	3FT / 12 FT			72												
	BROKEN	10FT / 40 FT	220														
	TURN LANE	SOLID								380			18			14	148
	STOP BAR	SOLID					35										
	MISC	ARROW / WORD									1	1		1			
SUBTOTALS (2 of 3)			1130	28840	466	1840	121	300	35300	1430	4	8	18	8		94	932

DATE: 06-AUG-2024 20:22
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_19.dgn

VOLKERT
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 Texas Department of Transportation
SH 19
QUANTITY SUMMARY
 SHEET 19 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	30

DATE: 06-AUG-2024 20:22
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_QUANTITY_SUMMARY_20.dgn

SUMMARY OF PERMANENT PAVEMENT MARKINGS

LOCATION	TYPE	RATE	ITEM 666 REFLECTORIZED PAV MARKINGS								ITEM 668 PREFABRICATED PAVEMENT				ITEM 672 RAISED PAV MARKERS		
			WHITE				YELLOW				ARROW	ARROW	YELLOW	WORD	RAISED PAV MARKERS		
			RE PM TY II (W) 6" (BRK)	RE PM TY II (W) 6" (SLD)	RE PM TY II (W) 6" (DOT)	REFL PAV MRK TY I (W) 8" (SLD) (10)	REFL PAV MRK TY I (W) 24" (SLD) (100 MIL)	RE PM TY II (Y) 6" (BRK)	RE PM TY II (Y) 6" (SLD)	24" SOLID 100 MIL	LNDP	LEFT	6" SLD	ONLY	RATE	TY I-C	TY II-AA
			LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	LF	EA		EA	EA
SHT 28 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
	BROKEN	10FT / 40 FT	300														
	STOP BAR	SOLID					17										
SHT 29 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
	BROKEN	10FT / 40 FT	300														
	STOP BAR	SOLID					44										
SHT 30 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
	BROKEN	10FT / 40 FT	300														
	STOP BAR	SOLID					20										
SHT 31 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
	BROKEN	10FT / 40 FT	300														
	STOP BAR	SOLID					16										
SHT 32 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400									
	BROKEN	10FT / 40 FT	300														
SHT 33 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID															
	DOTTED	3FT / 12 FT															
	BROKEN	10FT / 40 FT															
	TURN LANE	SOLID						2880	2400								
SHT 34 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400	2400								
	TURN LANE	SOLID															
SHT 35 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400	2400								
	TURN LANE	SOLID															
SHT 36 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400	2400								
	TURN LANE	SOLID															
SHT 37 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID						2400	2400								
	TURN LANE	SOLID															
SHT 38 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID							2400								
	STOP BAR	SOLID					18										
	TURN LANE	SOLID						2400	2400							9	
SHT 39 OF 40	EDGE LINE	SOLID		2400													
	CENTERLINE	SOLID							2400								
	STOP BAR	SOLID					18										
	TURN LANE	SOLID						960	3360							95	
SHT 40 OF 40	EDGE LINE	SOLID		210													
	CENTERLINE	SOLID							210							12	
SUBTOTALS (3 of 3)			1500	29010	0	0	133	15840	41970	0	0	0	0	0	0	116	
PROJECT SUBTOTALS			5120	93574	571	1840	278	16140	113734	1430	4	8	18	8	94	1122	

NOTE: MULTIPLE MOVE-INS WILL BE REQUIRED TO MAINTAIN ADEQUATE STRIPING.

VOLKERT

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SH 19 QUANTITY SUMMARY

SHEET 20 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	31

DATE: 03-JUN-2024 15:42
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_SUMMARY OF EARTHWORK QUANTITIES_01.dgn

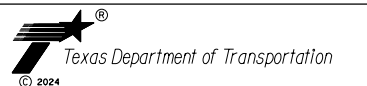
SUMMARY OF EARTHWORK QUANTITIES		
STATION TO STATION	ITEM 110	ITEM 132
	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
STA 1564+38 TO STA 1565+00	0	0
STA 1565+00 TO STA 1566+00	0	0
STA 1566+00 TO STA 1567+00	0	0
STA 1567+00 TO STA 1568+00	0	0
STA 1568+00 TO STA 1569+00	2	0
STA 1569+00 TO STA 1570+00	2	0
STA 1570+00 TO STA 1571+00	0	0
STA 1571+00 TO STA 1572+00	0	0
STA 1572+00 TO STA 1573+00	2	0
STA 1573+00 TO STA 1574+00	4	0
STA 1574+00 TO STA 1575+00	2	0
STA 1575+00 TO STA 1576+00	0	0
STA 1576+00 TO STA 1577+00	0	0
STA 1577+00 TO STA 1578+00	6	0
STA 1578+00 TO STA 1579+00	6	0
STA 1579+00 TO STA 1580+00	0	0
STA 1580+00 TO STA 1581+00	0	0
STA 1581+00 TO STA 1582+00	0	0
STA 1582+00 TO STA 1583+00	0	0
STA 1583+00 TO STA 1584+00	0	0
STA 1584+00 TO STA 1585+00	0	0
STA 1585+00 TO STA 1586+00	0	0
STA 1586+00 TO STA 1587+00	0	0
STA 1587+00 TO STA 1588+00	0	0
STA 1588+00 TO STA 1589+00	0	0
STA 1589+00 TO STA 1590+00	0	0
STA 1590+00 TO STA 1591+00	0	0
STA 1591+00 TO STA 1592+00	0	0
STA 1592+00 TO STA 1593+00	0	0
STA 1593+00 TO STA 1594+00	0	0
STA 1594+00 TO STA 1595+00	0	0
STA 1595+00 TO STA 1596+00	0	0
STA 1596+00 TO STA 1597+00	0	0
STA 1597+00 TO STA 1598+00	0	0
STA 1598+00 TO STA 1599+00	0	0
STA 1599+00 TO STA 1600+00	0	0
STA 1600+00 TO STA 1601+00	0	0
STA 1601+00 TO STA 1602+00	0	0
STA 1602+00 TO STA 1603+00	0	0
STA 1603+00 TO STA 1604+00	0	0
STA 1604+00 TO STA 1605+00	4	0
STA 1605+00 TO STA 1606+00	4	0
STA 1606+00 TO STA 1607+00	0	0
STA 1607+00 TO STA 1608+00	0	0
STA 1608+00 TO STA 1609+00	0	0
STA 1609+00 TO STA 1610+00	0	0
STA 1610+00 TO STA 1611+00	0	0
STA 1611+00 TO STA 1612+00	0	0
STA 1612+00 TO STA 1613+00	0	0
STA 1613+00 TO STA 1614+00	1	0
STA 1614+00 TO STA 1615+00	1	0
STA 1615+00 TO STA 1616+00	0	0
STA 1616+00 TO STA 1617+00	0	0
STA 1617+00 TO STA 1618+00	0	0
STA 1618+00 TO STA 1619+00	0	0
STA 1619+00 TO STA 1620+00	0	0
SUBTOTAL	33	0

SUMMARY OF EARTHWORK QUANTITIES		
STATION TO STATION	ITEM 110	ITEM 132
	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
STA 1620+00 TO STA 1621+00	0	0
STA 1621+00 TO STA 1622+00	4	0
STA 1622+00 TO STA 1623+00	6	0
STA 1623+00 TO STA 1624+00	3	0
STA 1624+00 TO STA 1625+00	0	0
STA 1625+00 TO STA 1626+00	0	0
STA 1626+00 TO STA 1627+00	0	0
STA 1627+00 TO STA 1628+00	0	0
STA 1628+00 TO STA 1629+00	0	0
STA 1629+00 TO STA 1630+00	0	0
STA 1630+00 TO STA 1631+00	0	0
STA 1631+00 TO STA 1632+00	0	0
STA 1632+00 TO STA 1633+00	0	0
STA 1633+00 TO STA 1634+00	0	0
STA 1634+00 TO STA 1635+00	3	0
STA 1635+00 TO STA 1636+00	6	0
STA 1636+00 TO STA 1637+00	4	0
STA 1637+00 TO STA 1638+00	0	0
STA 1638+00 TO STA 1639+00	3	0
STA 1639+00 TO STA 1640+00	3	0
STA 1640+00 TO STA 1641+00	0	0
STA 1641+00 TO STA 1642+00	39	0
STA 1642+00 TO STA 1643+00	49	0
STA 1643+00 TO STA 1644+00	36	5
STA 1644+00 TO STA 1645+00	8	8
STA 1645+00 TO STA 1646+00	0	25
STA 1646+00 TO STA 1647+00	1	36
STA 1647+00 TO STA 1648+00	2	30
STA 1648+00 TO STA 1649+00	1	26
STA 1649+00 TO STA 1650+00	4	23
STA 1650+00 TO STA 1651+00	11	22
STA 1651+00 TO STA 1652+00	15	21
STA 1652+00 TO STA 1653+00	15	25
STA 1653+00 TO STA 1654+00	12	26
STA 1654+00 TO STA 1655+00	17	27
STA 1655+00 TO STA 1656+00	13	28
STA 1656+00 TO STA 1657+00	4	29
STA 1657+00 TO STA 1658+00	16	18
STA 1658+00 TO STA 1659+00	59	4
STA 1659+00 TO STA 1660+00	90	3
STA 1660+00 TO STA 1661+00	88	6
STA 1661+00 TO STA 1662+00	61	20
STA 1662+00 TO STA 1663+00	18	53
STA 1663+00 TO STA 1664+00	3	37
STA 1664+00 TO STA 1665+00	5	16
STA 1665+00 TO STA 1666+00	6	22
STA 1666+00 TO STA 1667+00	7	33
STA 1667+00 TO STA 1668+00	38	27
STA 1668+00 TO STA 1669+00	39	29
STA 1669+00 TO STA 1670+00	13	60
STA 1670+00 TO STA 1671+00	9	56
STA 1671+00 TO STA 1672+00	14	49
STA 1672+00 TO STA 1673+00	50	29
STA 1673+00 TO STA 1674+00	76	18
STA 1674+00 TO STA 1675+00	103	13
STA 1675+00 TO STA 1676+00	99	2
SUBTOTAL	1051	824

SUMMARY OF EARTHWORK QUANTITIES		
STATION TO STATION	ITEM 110	ITEM 132
	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
STA 1676+00 TO STA 1677+00	45	13
STA 1677+00 TO STA 1678+00	18	27
STA 1678+00 TO STA 1679+00	44	16
STA 1679+00 TO STA 1680+00	37	27
STA 1680+00 TO STA 1681+00	5	52
STA 1681+00 TO STA 1682+00	6	46
STA 1682+00 TO STA 1683+00	4	23
STA 1683+00 TO STA 1684+00	1	14
STA 1684+00 TO STA 1685+00	10	27
STA 1685+00 TO STA 1686+00	10	35
STA 1686+00 TO STA 1687+00	3	39
STA 1687+00 TO STA 1688+00	3	18
STA 1688+00 TO STA 1689+00	29	1
STA 1689+00 TO STA 1690+00	65	7
STA 1690+00 TO STA 1691+00	94	7
STA 1691+00 TO STA 1692+00	0	0
STA 1692+00 TO STA 1693+00	124	29
STA 1693+00 TO STA 1694+00	68	38
STA 1694+00 TO STA 1695+00	10	27
STA 1695+00 TO STA 1696+00	8	36
STA 1696+00 TO STA 1697+00	26	39
STA 1697+00 TO STA 1698+00	36	17
STA 1698+00 TO STA 1699+00	65	13
STA 1699+00 TO STA 1700+00	110	15
STA 1700+00 TO STA 1701+00	136	18
STA 1701+00 TO STA 1702+00	146	25
STA 1702+00 TO STA 1703+00	162	28
STA 1703+00 TO STA 1704+00	181	17
STA 1704+00 TO STA 1705+00	180	13
STA 1705+00 TO STA 1706+00	132	8
STA 1706+00 TO STA 1707+00	49	12
STA 1707+00 TO STA 1708+00	22	19
STA 1708+00 TO STA 1709+00	31	14
STA 1709+00 TO STA 1710+00	69	7
STA 1710+00 TO STA 1711+00	75	3
STA 1711+00 TO STA 1712+00	23	16
STA 1712+00 TO STA 1713+00	8	35
STA 1713+00 TO STA 1714+00	8	38
STA 1714+00 TO STA 1715+00	9	32
STA 1715+00 TO STA 1716+00	11	26
STA 1716+00 TO STA 1717+00	6	21
STA 1717+00 TO STA 1718+00	1	31
STA 1718+00 TO STA 1719+00	1	43
STA 1719+00 TO STA 1720+00	11	30
STA 1720+00 TO STA 1721+00	76	8
STA 1721+00 TO STA 1722+00	122	4
STA 1722+00 TO STA 1723+00	107	4
STA 1723+00 TO STA 1724+00	66	11
STA 1724+00 TO STA 1725+00	15	38
STA 1725+00 TO STA 1726+00	1	46
STA 1726+00 TO STA 1727+00	7	28
STA 1727+00 TO STA 1728+00	10	15
STA 1728+00 TO STA 1729+00	10	12
STA 1729+00 TO STA 1730+00	10	21
STA 1730+00 TO STA 1731+00	18	32
STA 1731+00 TO STA 1732+00	64	17
SUBTOTAL	2587	1233

VOLKERT

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SH 19 SUMMARY OF EARTHWORK QUANTITY

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	32

DATE: 01-JUL-2024 14:01
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_SUMMARY OF EARTHWORK QUANTITIES_02.dgn

SUMMARY OF EARTHWORK QUANTITIES		
STATION TO STATION	ITEM 110	ITEM 132
	EXCAVATION (ROADWAY) CY	EMBANKMENT (FINAL) (DENS CONT) (TY C) CY
STA 1732+00 TO STA 1733+00	60	21
STA 1733+00 TO STA 1734+00	27	34
STA 1734+00 TO STA 1735+00	29	27
STA 1735+00 TO STA 1736+00	35	24
STA 1736+00 TO STA 1737+00	44	20
STA 1737+00 TO STA 1738+00	37	17
STA 1738+00 TO STA 1739+00	57	22
STA 1739+00 TO STA 1740+00	40	26
STA 1740+00 TO STA 1741+00	2	36
STA 1741+00 TO STA 1742+00	2	47
STA 1742+00 TO STA 1743+00	1	41
STA 1743+00 TO STA 1744+00	1	46
STA 1744+00 TO STA 1745+00	0	40
STA 1745+00 TO STA 1746+00	0	39
STA 1746+00 TO STA 1747+00	58	27
STA 1747+00 TO STA 1748+00	87	13
STA 1748+00 TO STA 1749+00	82	15
STA 1749+00 TO STA 1750+00	54	10
STA 1750+00 TO STA 1751+00	8	18
STA 1751+00 TO STA 1752+00	48	12
STA 1752+00 TO STA 1753+00	59	14
STA 1753+00 TO STA 1754+00	64	13
STA 1754+00 TO STA 1755+00	48	11
STA 1755+00 TO STA 1756+00	7	29
STA 1756+00 TO STA 1757+00	5	44
STA 1757+00 TO STA 1758+00	5	34
STA 1758+00 TO STA 1759+00	7	26
STA 1759+00 TO STA 1760+00	3	38
STA 1760+00 TO STA 1761+00	26	20
STA 1761+00 TO STA 1762+00	35	9
STA 1762+00 TO STA 1763+00	12	15
STA 1763+00 TO STA 1764+00	22	45
STA 1764+00 TO STA 1765+00	24	88
STA 1765+00 TO STA 1766+00	6	87
STA 1766+00 TO STA 1767+00	0	44
STA 1767+00 TO STA 1768+00	20	7
STA 1768+00 TO STA 1769+00	70	6
STA 1769+00 TO STA 1770+00	54	9
STA 1770+00 TO STA 1771+00	29	4
STA 1771+00 TO STA 1772+00	59	1
STA 1772+00 TO STA 1773+00	34	22
STA 1773+00 TO STA 1774+00	24	25
STA 1774+00 TO STA 1775+00	28	3
STA 1775+00 TO STA 1776+00	7	6
STA 1776+00 TO STA 1777+00	31	7
STA 1777+00 TO STA 1778+00	45	6
STA 1778+00 TO STA 1779+00	33	8
STA 1779+00 TO STA 1780+00	49	4
STA 1780+00 TO STA 1781+00	48	1
STA 1781+00 TO STA 1782+00	29	4
STA 1782+00 TO STA 1783+00	14	10
STA 1783+00 TO STA 1784+00	0	17
STA 1784+00 TO STA 1785+00	0	12
STA 1785+00 TO STA 1786+00	5	9
STA 1786+00 TO STA 1787+00	23	14
STA 1787+00 TO STA 1788+00	64	8
SUBTOTAL	1659	1229

SUMMARY OF EARTHWORK QUANTITIES		
STATION TO STATION	ITEM 110	ITEM 132
	EXCAVATION (ROADWAY) CY	EMBANKMENT (FINAL) (DENS CONT) (TY C) CY
STA 1788+00 TO STA 1789+00	125	4
STA 1789+00 TO STA 1790+00	163	4
STA 1790+00 TO STA 1791+00	153	3
STA 1791+00 TO STA 1792+00	106	4
STA 1792+00 TO STA 1793+00	39	17
STA 1793+00 TO STA 1794+00	2	16
STA 1794+00 TO STA 1795+00	9	3
STA 1795+00 TO STA 1796+00	9	16
STA 1796+00 TO STA 1797+00	0	31
STA 1797+00 TO STA 1798+00	0	31
STA 1798+00 TO STA 1799+00	0	0
STA 1799+00 TO STA 1800+00	0	0
STA 1800+00 TO STA 1801+00	0	0
STA 1801+00 TO STA 1802+00	0	0
STA 1802+00 TO STA 1803+00	0	0
STA 1803+00 TO STA 1804+00	0	0
STA 1804+00 TO STA 1805+00	0	0
STA 1805+00 TO STA 1806+00	0	0
STA 1806+00 TO STA 1807+00	0	0
STA 1807+00 TO STA 1808+00	0	0
STA 1808+00 TO STA 1809+00	0	0
STA 1809+00 TO STA 1810+00	0	0
STA 1810+00 TO STA 1811+00	0	0
STA 1811+00 TO STA 1812+00	0	0
STA 1812+00 TO STA 1813+00	0	0
STA 1813+00 TO STA 1814+00	0	0
STA 1814+00 TO STA 1815+00	0	0
STA 1815+00 TO STA 1816+00	0	0
STA 1816+00 TO STA 1817+00	0	0
STA 1817+00 TO STA 1818+00	0	0
STA 1818+00 TO STA 1819+00	0	0
STA 1819+00 TO STA 1820+00	0	0
STA 1820+00 TO STA 1821+00	0	0
STA 1821+00 TO STA 1822+00	0	0
STA 1822+00 TO STA 1823+00	0	0
STA 1823+00 TO STA 1824+00	0	0
STA 1824+00 TO STA 1825+00	0	0
STA 1825+00 TO STA 1826+00	0	0
STA 1826+00 TO STA 1827+00	0	0
STA 1827+00 TO STA 1828+00	0	0
STA 1828+00 TO STA 1829+00	0	0
STA 1829+00 TO STA 1830+00	0	0
STA 1830+00 TO STA 1831+00	0	0
STA 1831+00 TO STA 1832+00	0	0
STA 1832+00 TO STA 1833+00	0	0
STA 1833+00 TO STA 1834+00	0	0
STA 1834+00 TO STA 1835+00	0	0
STA 1835+00 TO STA 1836+00	0	0
STA 1836+00 TO STA 1837+00	0	0
STA 1837+00 TO STA 1838+00	0	0
STA 1838+00 TO STA 1839+00	0	0
STA 1839+00 TO STA 1840+00	0	0
STA 1840+00 TO STA 1841+00	0	0
STA 1841+00 TO STA 1842+00	0	0
STA 1842+00 TO STA 1843+00	0	0
STA 1843+00 TO STA 1844+00	0	0
SUBTOTAL	607	130

SUMMARY OF EARTHWORK QUANTITIES		
STATION TO STATION	ITEM 110	ITEM 132
	EXCAVATION (ROADWAY) CY	EMBANKMENT (FINAL) (DENS CONT) (TY C) CY
STA 1844+00 TO STA 1845+00	0	0
STA 1845+00 TO STA 1846+00	0	0
STA 1846+00 TO STA 1847+00	0	0
STA 1847+00 TO STA 1848+00	0	0
STA 1848+00 TO STA 1849+00	0	0
STA 1849+00 TO STA 1850+00	0	0
STA 1850+00 TO STA 1851+00	0	0
STA 1851+00 TO STA 1852+00	3	0
STA 1852+00 TO STA 1853+00	3	0
STA 1853+00 TO STA 1854+00	0	0
STA 1854+00 TO STA 1855+00	0	0
STA 1855+00 TO STA 1856+00	0	0
STA 1856+00 TO STA 1857+00	0	0
STA 1857+00 TO STA 1858+00	0	0
STA 1858+00 TO STA 1859+00	0	0
STA 1859+00 TO STA 1860+00	0	0
STA 1860+00 TO STA 1861+00	0	0
STA 1861+00 TO STA 1862+00	0	0
STA 1862+00 TO STA 1863+00	51	0
STA 1863+00 TO STA 1864+00	81	0
STA 1864+00 TO STA 1865+00	103	0
STA 1865+00 TO STA 1866+00	157	0
STA 1866+00 TO STA 1867+00	103	36
STA 1867+00 TO STA 1868+00	2	38
STA 1868+00 TO STA 1869+00	2	23
STA 1869+00 TO STA 1870+00	6	22
STA 1870+00 TO STA 1871+00	9	9
STA 1871+00 TO STA 1872+00	32	3
STA 1872+00 TO STA 1873+00	27	6
STA 1873+00 TO STA 1874+00	23	4
STA 1874+00 TO STA 1875+00	21	3
STA 1875+00 TO STA 1876+00	23	1
STA 1876+00 TO STA 1877+00	32	5
STA 1877+00 TO STA 1878+00	43	1
STA 1878+00 TO STA 1879+00	46	1
STA 1879+00 TO STA 1880+00	54	1
STA 1880+00 TO STA 1881+00	59	1
STA 1881+00 TO STA 1882+00	32	2
STA 1882+00 TO STA 1883+00	22	3
STA 1883+00 TO STA 1884+00	23	2
STA 1884+00 TO STA 1885+00	25	2
STA 1885+00 TO STA 1886+00	29	9
STA 1886+00 TO STA 1887+00	49	3
STA 1887+00 TO STA 1888+00	76	0
STA 1888+00 TO STA 1889+00	25	2
STA 1889+00 TO STA 1890+00	22	3
STA 1890+00 TO STA 1891+00	18	5
STA 1891+00 TO STA 1892+00	20	4
STA 1892+00 TO STA 1893+00	12	6
STA 1893+00 TO STA 1894+00	20	3
STA 1894+00 TO STA 1895+00	24	11
STA 1895+00 TO STA 1896+00	37	5
STA 1896+00 TO STA 1897+00	24	6
STA 1897+00 TO STA 1898+00	23	4
STA 1898+00 TO STA 1899+00	36	3
STA 1899+00 TO STA 1900+00	24	7
SUBTOTAL	1423	236



F-12679



**SH 19
SUMMARY OF
EARTHWORK
QUANTITY**

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	33

SUMMARY OF SMALL SIGNS

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

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		
										PREFABRICATED		1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels
20	1	W2-1	INTERSECTION AHEAD	36"X36"	X		10BWG	1	WS	P		
22	1	D20-1TL	CO RD 3822	24"X24"	X		10BWG	1	WS	P		
22	2	D3-3T	CR 3822	8"X36"	X		10BWG	1	WS	P		
		R1-1	STOP	36"X36"	X							
22	3	D20-1TR	CO RD 3911	24"X24"	X		10BWG	1	WS	P		
22	4	D20-1TR	CO RD 3822	24"X24"	X		10BWG	1	WS	P		
22	5	R1-1	STOP	36"X36"	X		10BWG	1	WS	P		
23	1	D20-1TL	CO RD 3911	24"X24"	X		10BWG	1	WS	P		
24	1	W8-13aT	BRIDGE MAY ICE IN COLD WEATHER	36"X36"	X		10BWG	1	WS	P		
25	1	D5-1aT	PICNIC AREA 1 MILE ACCESSIBLE	36"X36"	X		10BWG	1	WS	P		
25	2	D15-11T	NEXT PASSING LANE 1 MILES	54"X48"	X		S80	1	SA	U		
		M2-1	JCT	21"X15"	X		10BWG	1	WS	P		
M1-6F	FARM ROAD 2752	24"X24"	X									
25	4	W8-13aT	BRIDGE MAY ICE IN COLD WEATHER	36"X36"	X		10BWG	1	WS	P		
26	1	R2-1	SPEED LIMIT 70	30"X36"	X		10BWG	1	WS	P		
27	1	M3-1	NORTH	24"X12"	X		10BWG	1	WS	P		
		M1-6T	19 TEXAS	24"X24"	X							
		D10-7aT	TEXAS REFERENCE MARKER	3"X10"	X							
27	2	R1-1	STOP	36"X36"	X		10BWG	1	WS	P		
27	3	M1-6F	FARM ROAD 2752	24"X24"	X		10BWG	1	WS	P		
		M6-1L	ARROW LEFT	21"X15"	X							
27	4	M6-4	DIRECTIONAL ARROW AUXILIARY	21"X15"	X		10BWG	1	WS	P		
		M1-6T	19 TEXAS	24"X24"	X							
		M3-3	SOUTH	21"X12"	X							
27	5	W1-7T	TWO-DIRECTION LARGE ARROW	96"X36"	X		S80	1	SA	U	EXAL	
27	6	M1-6F	FARM ROAD 2752	24"X24"	X		10BWG	1	WS	P		
		M6-1	ARROW RIGHT	21"X15"	X							
27	7	M3-3	SOUTH	24"X12"	X		10BWG	1	WS	P		
		M1-6T	19 TEXAS	24"X24"	X							
27	8	R2-1	SPEED LIMIT 70	30"X36"	X		10BWG	1	WS	P		
27	9	D20-1TR	CO RD 3912	24"X24"	X		10BWG	1	WS	P		
28	1	R1-1	STOP	36"X36"	X		10BWG	1	WS	P		
28	2	M2-1	JCT	21"X15"	X		10BWG	1	WS	P		
		M1-6F	FARM ROAD 2752	24"X24"	X							
28	3	W2-2L	SIDE ROAD	36"X36"	X		10BWG	1	WS	P		
29	1	D20-1TL	CO RD 3912	24"X24"	X		10BWG	1	WS	P		
29	2	D5-2aT	PICNIC AREA ACCESSIBLE	36"X36"	X		10BWG	1	WS	P		
29	3	R1-1	STOP	36"X36"	X		10BWG	1	WS	P		
29	4	R1-1	STOP	36"X36"	X		10BWG	1	WS	P		
30	1	R1-1	STOP	36"X36"	X		10BWG	1	WS	P		
31	1	D20-1TR	CO RD 3907	24"X24"	X		10BWG	1	WS	P		
31	2	R1-1	STOP	36"X36"	X		10BWG	1	WS	P		
31	3	D20-1TL	CO RD 3907	24"X24"	X		10BWG	1	WS	P		
33	1	W8-13aT	BRIDGE MAY ICE IN COLD WEATHER	36"X36"	X		10BWG	1	WS	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:**
- 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.
 - For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS) Standard Sheet.
 - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).



SUMMARY OF SMALL SIGNS

SOSS

FILE: slms16.dgn	DW: TxDOT	CK: TxDOT	DR: TxDOT	CR: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108 03		041	SH 19
4-16	DIST	COUNTY	SHEET NO.	
8-16	TYL	HENDERSON	36	

DATE: \$DATES \$TIMES
 FILE: \$FILES\$

DATE: 03-JUL-2024 20:18
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\2. TCP\SH19_TYLER_TCP_NARRATIVE.dgn

TRAFFIC CONTROL GENERAL NOTES:

1. THE CONTRACTOR SHALL PLACE ADVANCE WARNING SIGNS, BARRICADES, CHANNELING DEVICES AND WORK ZONE PAVEMENT MARKINGS BASED ON LATEST TXDOT STANDARDS AND GUIDELINES PROVIDED IN TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
2. INSTALL SW3P CONTROL MEASURES AS SOIL DISTURBANCE PROGRESSES.
3. LIMIT CULVERT AND WIDENING WORK TO ONE SIDE OF THE ROADWAY AT A TIME. WORKING ON BOTH SIDES OF THE ROAD AT THE SAME TIME WILL NOT BE ALLOWED. DRESS UP SLOPES AND PLACE PERMANENT VEGETATIVE MEASURES BEFORE PROCEEDING TO NEXT SUPER 2 SECTION, UNLESS OTHERWISE DIRECTED. ONLY TWO-MILE SECTIONS OF WORK WILL BE ALLOWED FOR PHASES OF WORK.
4. THE PORTION OF THIS PROJECT WHICH COINCIDES WITH EXISTING ROADS AND/OR PRIVATE DRIVES SHALL BE MAINTAINED AS ALL-WEATHER ROADS AND KEPT OPEN AT ALL TIMES UNLESS OTHERWISE DIRECTED.
5. CONTRACTOR TO PROVIDE ACCESS TO MAILBOXES AT ALL TIMES.
6. CW 8-17P "SHOULDER DROP OFF" SIGNS SHALL BE PLACED DURING PHASED WORK AT A MAXIMUM SPACING OF 1,800FT.
7. THE 3:1 SLOPE BACKFILL FOR END OF DAY OPERATIONS SHALL BE A DURABLE CRUSHED STONE TYPE OF FLEXIBLE BASE OR OTHER APPROVED MATERIALS. WHEN WORK IS RESUMED ON THE EXCAVATED AREA THIS BACKFILL MATERIAL SHALL BE INCORPORATED INTO THE ROAD WORK OR DISPOSED OF AS APPROVED. MATERIALS AND LABOR FOR THIS WORK WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE SUBSIDIARY TO THE VARIOUS BID ITEMS.
8. BARRICADE AND CONSTRUCTION STANDARDS BC (1-12) REQUIRED FOR ALL PHASES. REFER TO WORK ZONE AND STANDARD SHEETS FOR ADDITIONAL DETAILS. STANDARDS SHOWN ARE CONSIDERED TO BE THE MINIMUM REQUIREMENTS FOR WORK ZONE SIGNING AND TRAFFIC CONTROL. ADDITIONAL OR OTHER DEVICES MAY BE REQUIRED AS DIRECTED.
9. PAVEMENT OPERATIONS BETWEEN STATIONS 2022+05 THROUGH 2032+05 SHALL BE DONE AT NIGHT BETWEEN THE HOURS OF 7 PM TO 6 AM.
10. PCTB WILL NOT BE USED DURING TCP PHASING. CONTRACTOR ONLY TO REMOVE MBGF THAT CAN BE REPLACED THE SAME DAY.
11. MAINTAIN EXISTING SIGNS DURING CONSTRUCTION. COVER OR REMOVE ANY CONFLICTING SIGNS AS DIRECTED.

WIDENING & SURFACING NOTES:

1. DURING NONWORKING HOURS AND WHEN DAILY TRAFFIC CONTROL IS NOT IN PLACE, NO EDGE DROP OFFS GREATER THAN 2" WILL BE ALLOWED.
2. SHOULDER UP WITH LIKE OR OTHERWISE APPROVED MATERIALS. THIS WILL BE IN ADDITION TO PROVIDING A 3:1 OR FLATTER SLOPE. PLACEMENT AND REMOVAL OF TEMPORARY MATERIAL WILL BE INCIDENTAL TO VARIOUS PAY ITEMS.
3. LANE CLOSURES WILL REQUIRE RUMBLE STRIPS AND PCMS.
4. TCP(7-1)-13 AND TCP(S-3)-08 WILL BE REQUIRED DURING ALL SURFACING OPERATIONS, ACP WIDENING, AND ALL OTHER OPERATIONS WHERE, IN THE OPINION OF THE ENGINEER, FIELD CONDITIONS DICTATE.

TCP PHASE 1

1. INSTALL TRAFFIC CONTROL ADVANCED WARNING SIGNS AND DEVICES FOR PROJECT.
2. INSTALL EROSION CONTROL DEVICES AS WORK PROGRESSES AND PREPARE ROW.
3. PERFORM MISCELLANEOUS BRIDGE MAINTENANCE REPAIRS
4. PERFORM 2" MILLING OPERATIONS TO ACHIEVE DESIRED 2% CROSS SLOPE ACROSS EXISTING SURFACE FROM BEGINNING TO END OF PROJECT.
5. PLACE 2" INLAY PAVING LAYER ON TOP OF MILLED SURFACE.
6. AT BRIDGES LOCATED AT STA 1850+55 & STA 1961+04, MILLING AND PAVEMENT OPERATIONS SHOULD BE DONE TOGETHER TO ALLOW FOR THE OPENING OF TRAFFIC BY THE END OF EACH DAY.
7. SEED ALL DISTURBED AREAS CAUSED BY CONSTRUCTION.

TCP PHASE 2

1. INSTALL TRAFFIC CONTROL ADVANCED WARNING SIGNS AND DEVICES FOR PROJECT.
2. INSTALL EROSION CONTROL DEVICES AS WORK PROGRESSES AND PREPARE ROW.
3. PERFORM CULVERT EXTENSION AND REPLACEMENT WORK FROM STA 1564+38 TO STA 2032+05.
4. CONSTRUCT PAVEMENT WIDENING, MBGF, DRIVEWAYS, AND SIDE STREET IMPROVEMENTS ON THE RIGHT SIDE OF THE ROADWAY FROM STA 1639+32 TO STA 1797+72.
5. SEED ALL DISTURBED AREAS CAUSED BY CONSTRUCTION.

TCP PHASE 3

1. IF REQUIRED/NEEDED, ADJUST CONSTRUCTION TRAFFIC SIGNS AND EROSION CONTROL DEVICES.
2. INSTALL EROSION CONTROL DEVICES AS WORK PROGRESSES AND PREPARE ROW.
3. PERFORM CULVERT EXTENSION AND REPLACEMENT WORK FROM STA 1564+38 TO STA 2032+05.
4. CONSTRUCT PAVEMENT WIDENING, MBGF, DRIVEWAYS, AND SIDE STREET IMPROVEMENTS ON THE LEFT SIDE OF THE ROADWAY FROM STA1860+30 TO STA 1958+60.
5. SEED ALL DISTURBED AREAS CAUSED BY CONSTRUCTION.

TCP PHASE 4

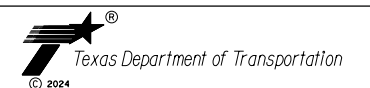
1. BEGIN SUPERPAVE ASPHALT OPERATIONS.
2. CONSTRUCT ONE COURSE SURFACE TREATMENT (OCST) AND PFC FROM STA 1564+38 TO STA 2032+05.
3. PLACE CONTEMPORARY PAVEMENT MARKINGS (TABS) AS REQUIRED TO ACCOMODATE CONSTRUCTION.
4. INSTALL PERMANENT SIGNS, FINAL PAVEMENT MARKINGS, AND ALL REMAINING ITEMS OF WORK.
5. PROJECT CLEAN UP.



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**SH 19
TCP NARRATIVE**

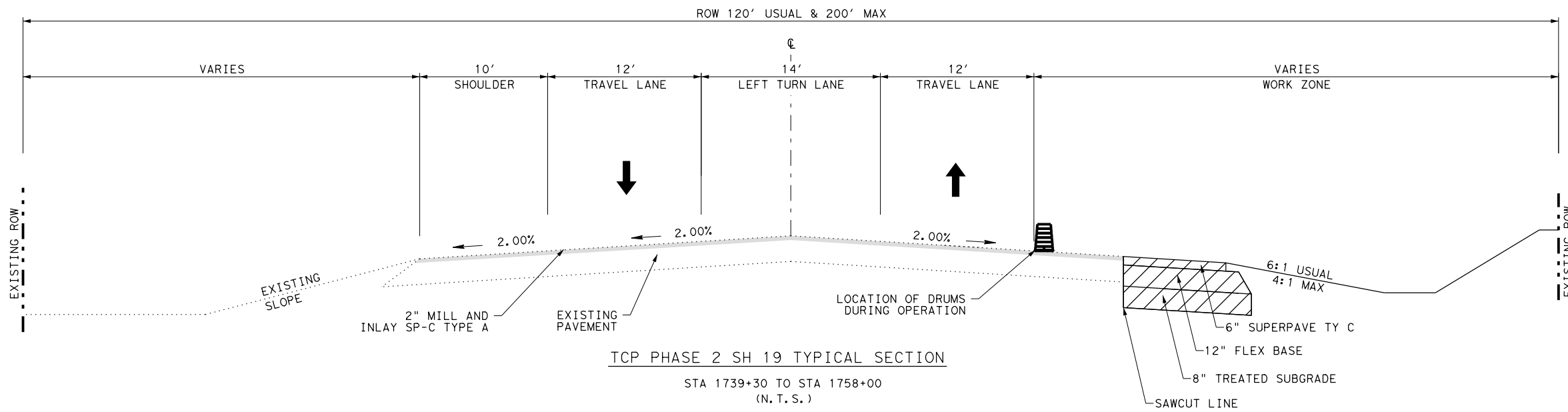
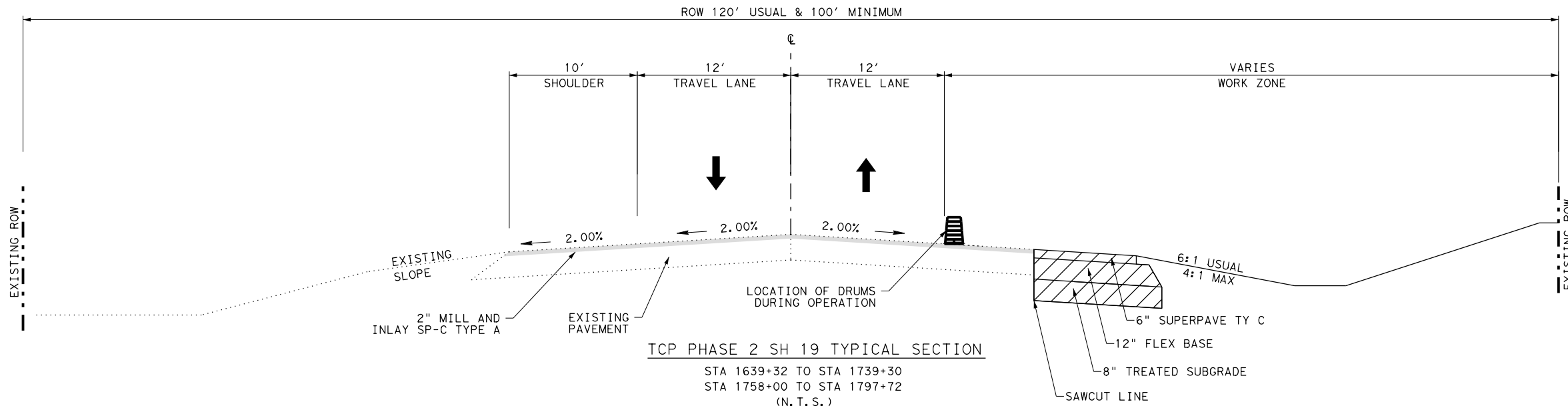
SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	38

DATE: 03-JUL-2024 20:17
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\2. TCP\SH19_TYLER_TCP_TYP_SECTION_1.dgn

LEGEND

-  PERM PAVEMENT UNDER CONSTRUCTION
-  TRAVEL LANE
-  DRUMS
-  PERM PAVEMENT PREVIOUSLY CONSTRUCTED



07/03/2024

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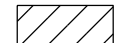



**SH 19
 TCP PHASE 2
 TYPICAL SECTION**

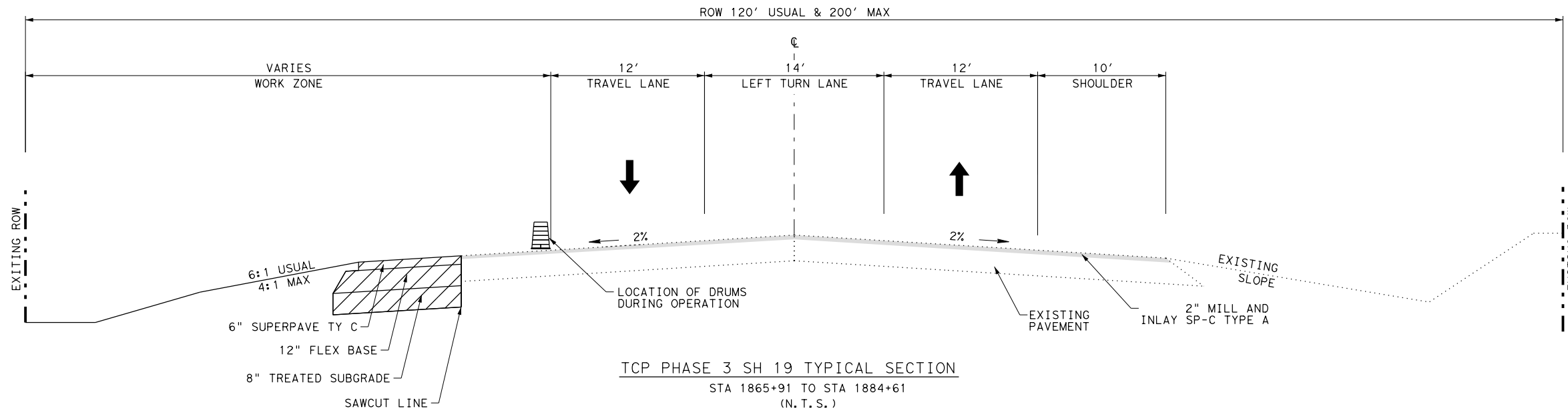
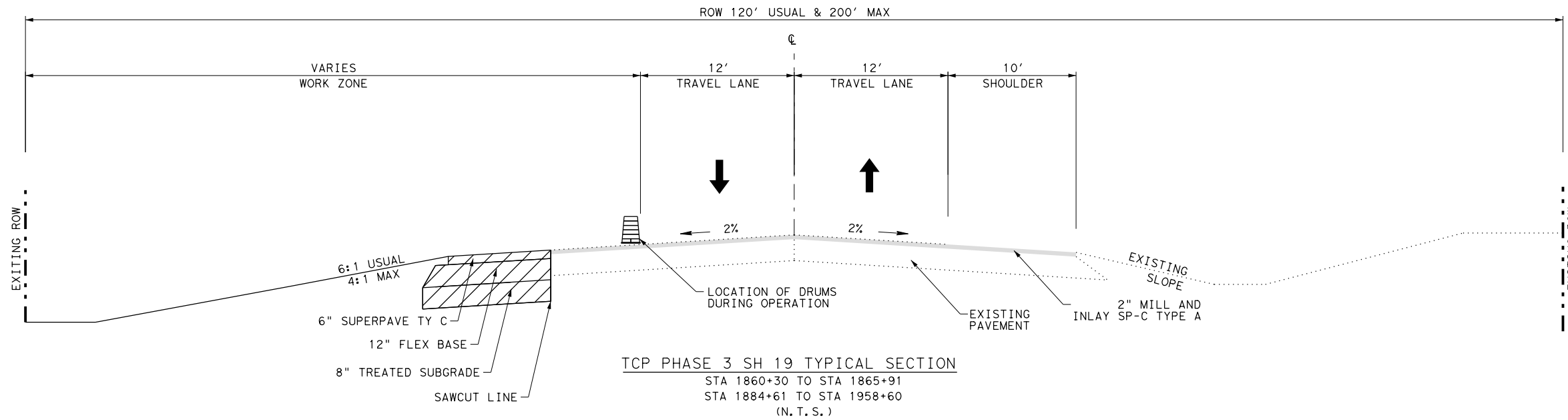
SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	39

DATE: 03-JUL-2024 20:17
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\2. TCP\SH19_TYLER_TCP_TYP_SECTION_2.dgn

LEGEND

-  PERM PAVEMENT UNDER CONSTRUCTION
-  TRAVEL LANE
-  DRUMS
-  PERM PAVEMENT PREVIOUSLY CONSTRUCTED



07/03/2024

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**SH 19
 TCP PHASE 3
 TYPICAL SECTION**

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	40

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DATE:
FILE:

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.
6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.
11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer has the final decision on the location of all traffic control devices.
13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.
2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

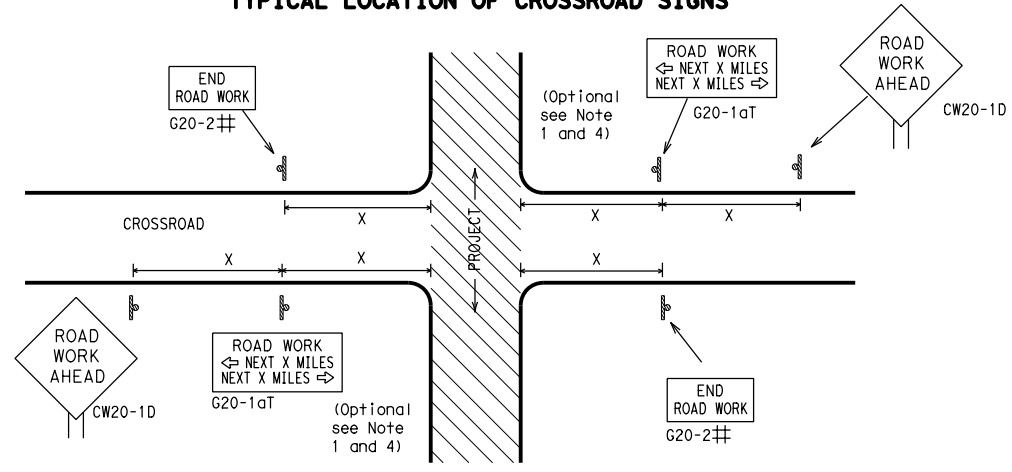
THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS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

SHEET 1 OF 12

Texas Department of Transportation		<i>Traffic Safety Division Standard</i>	
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS			
BC(1)-21			
FILE:	bc-21.dgn	DN: TxDOT	ck: TxDOT
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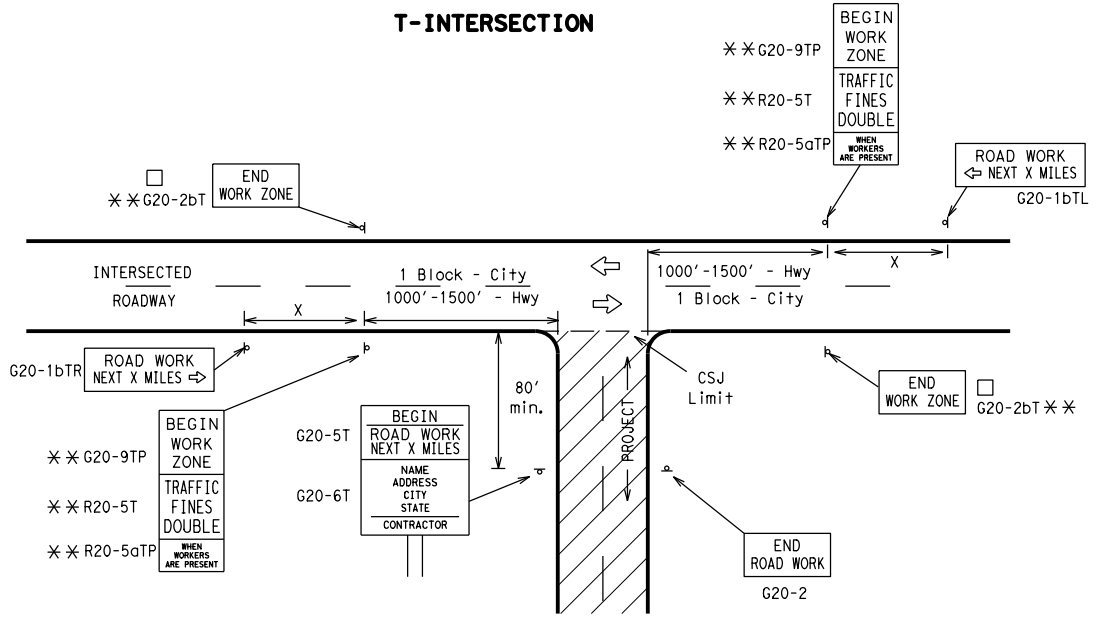
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TYPICAL LOCATION OF CROSSROAD SIGNS



- ## May be mounted on back of "ROAD WORK AHEAD" (CW20-1D) sign with approval of Engineer. (See note 2 below)
- 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.
 - 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.
 - 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.
 - 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.
 - Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
 - 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

- 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.
- 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}

Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed MPH	Sign Δ Spacing "X" Feet (Apprx.)
CW20 ⁴	48" x 48"	48" x 48"	30	120
CW21			35	160
CW22			40	240
CW23	36" x 36"	48" x 48"	45	320
CW1, CW2, CW7, CW8, CW9, CW11, CW14			50	400
			55	500 ²
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"	60	600 ²
			65	700 ²
			70	800 ²
			75	900 ²
			80	1000 ²
			*	* ³

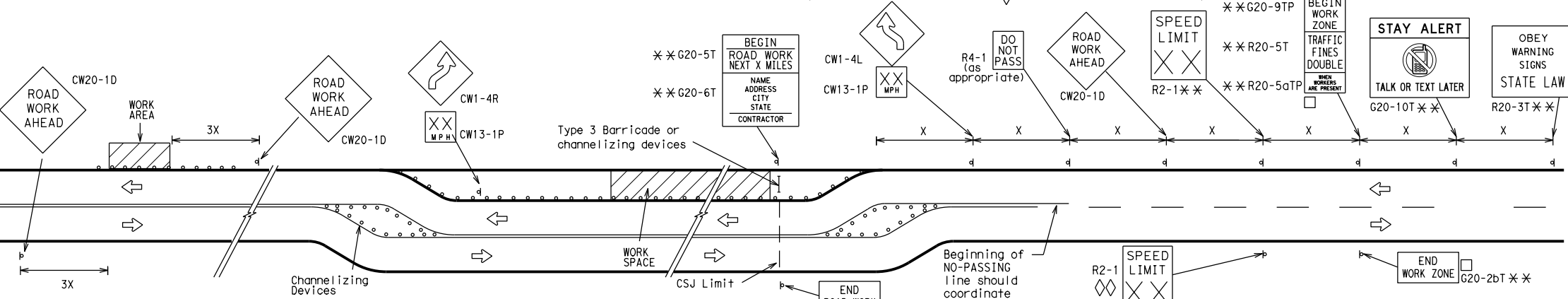
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

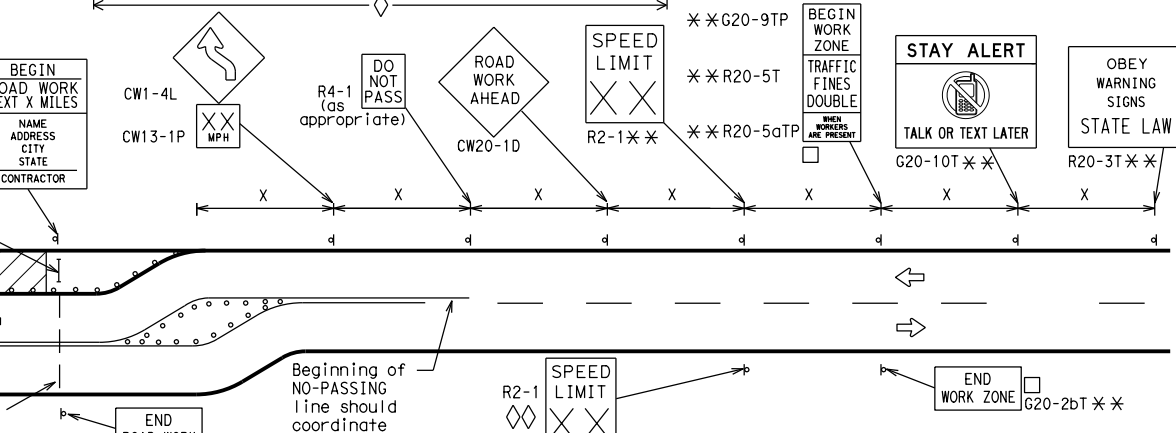
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be 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".
- Only diamond shaped warning sign sizes are indicated.
- 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.

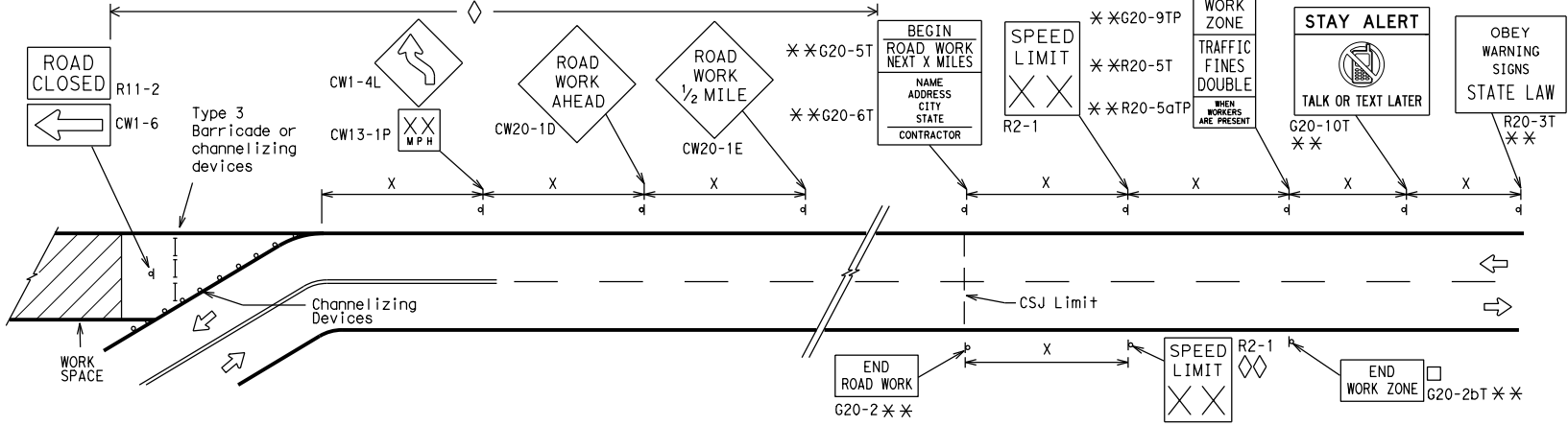
SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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.

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



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



BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC (2) -21

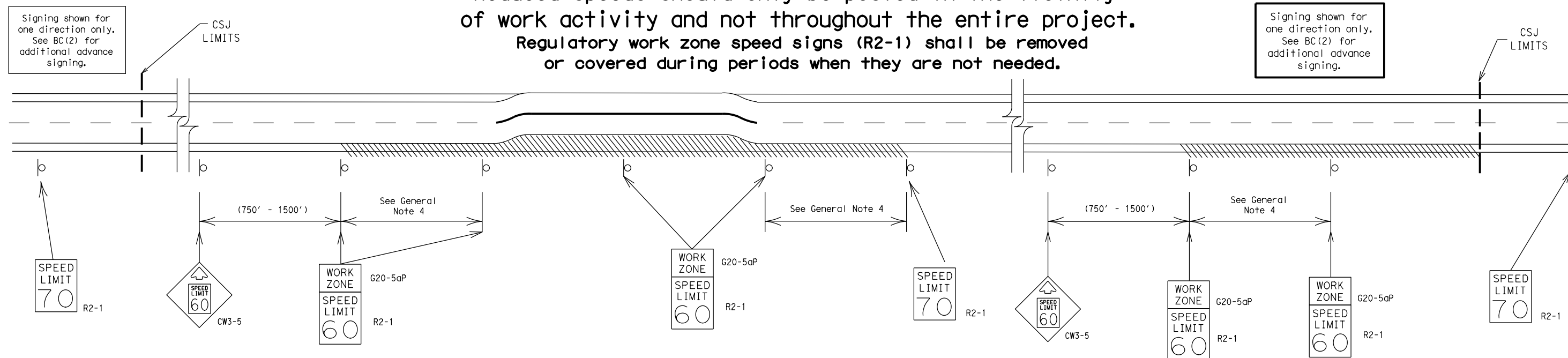
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TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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:

- rough road or damaged pavement surface
- substantial alteration of roadway geometrics (diversions)
- construction detours
- grade
- width
- 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

- Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
- Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
- Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
- 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
- Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
- 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.
- Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
- Techniques that may help reduce traffic speeds include but are not limited to:
 - Law enforcement.
 - Flagger stationed next to sign.
 - Portable changeable message sign (PCMS).
 - Low-power (drone) radar transmitter.
 - Speed monitor trailers or signs.
- Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
- For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

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SHEET 3 OF 12



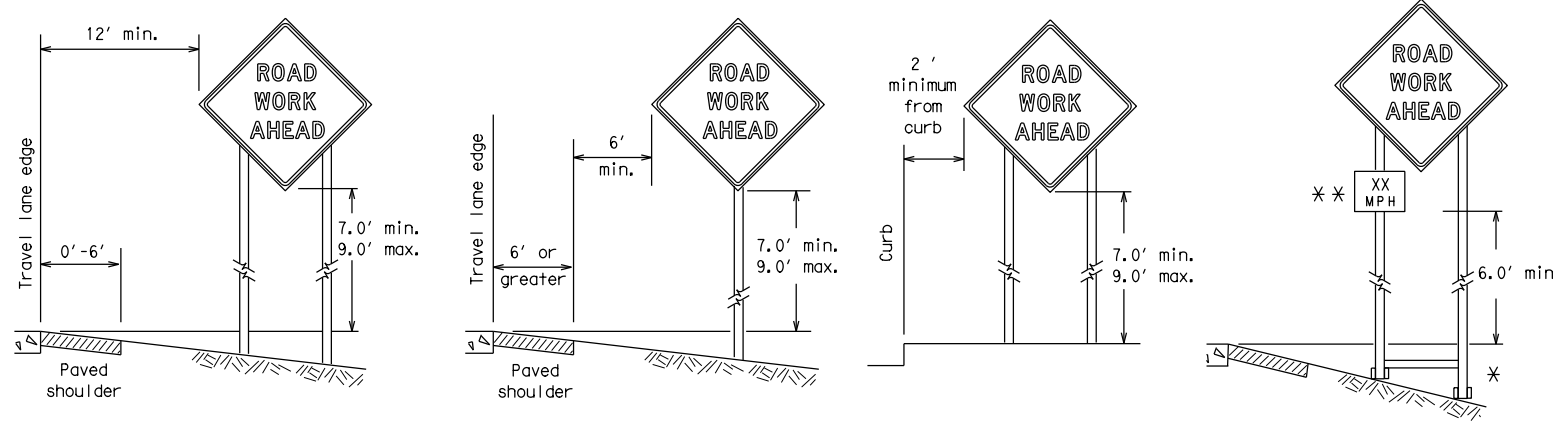
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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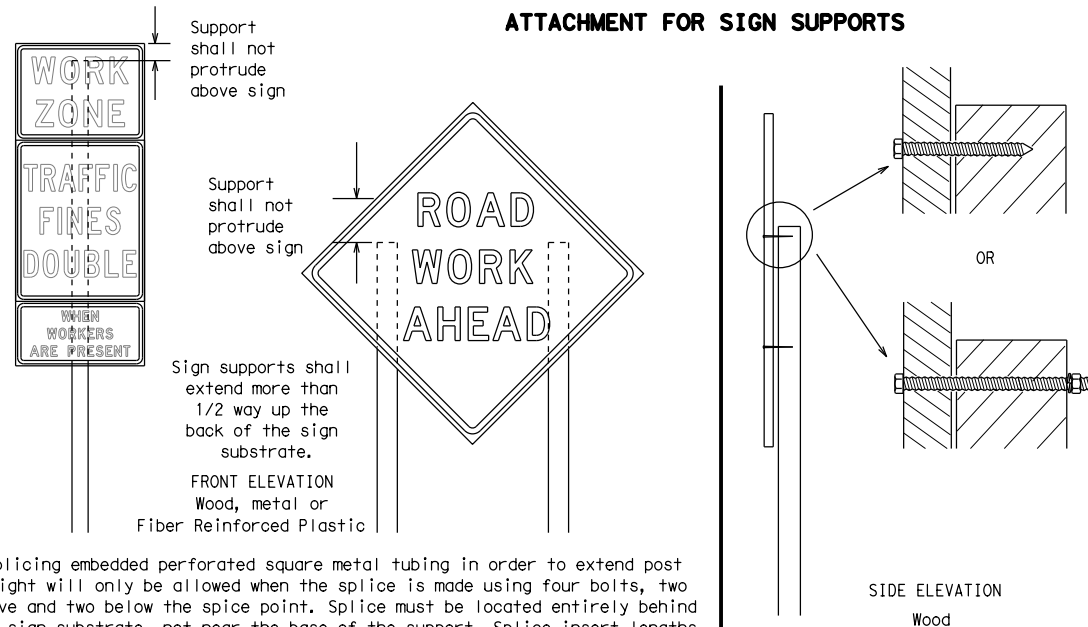
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



* 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



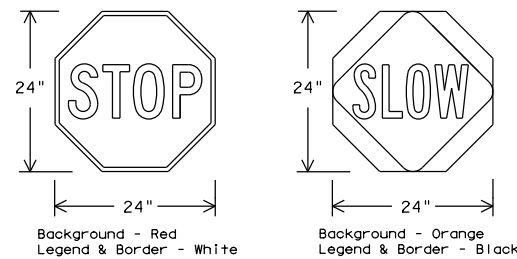
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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 splice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

SHEET 4 OF 12



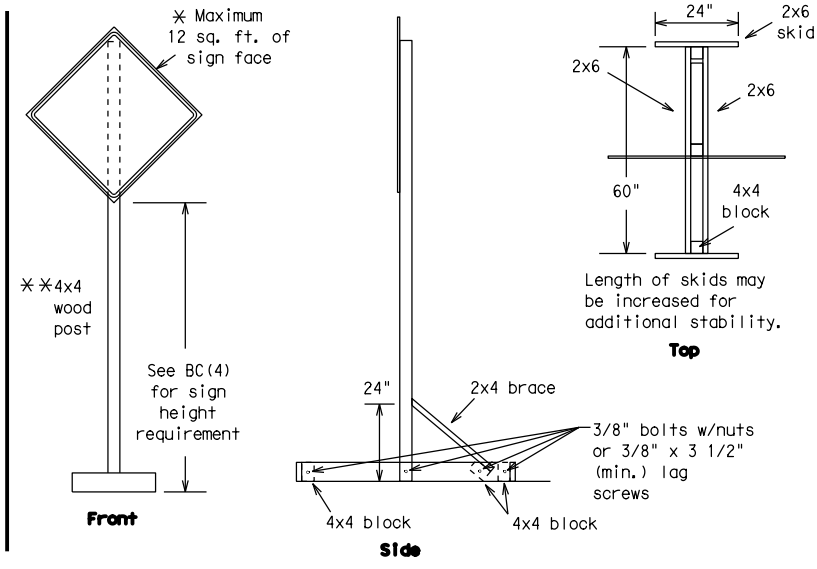
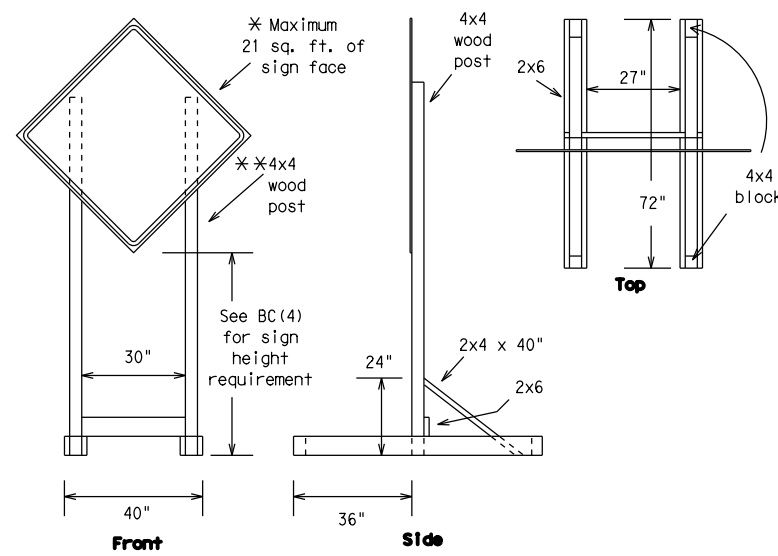
BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC (4) -21

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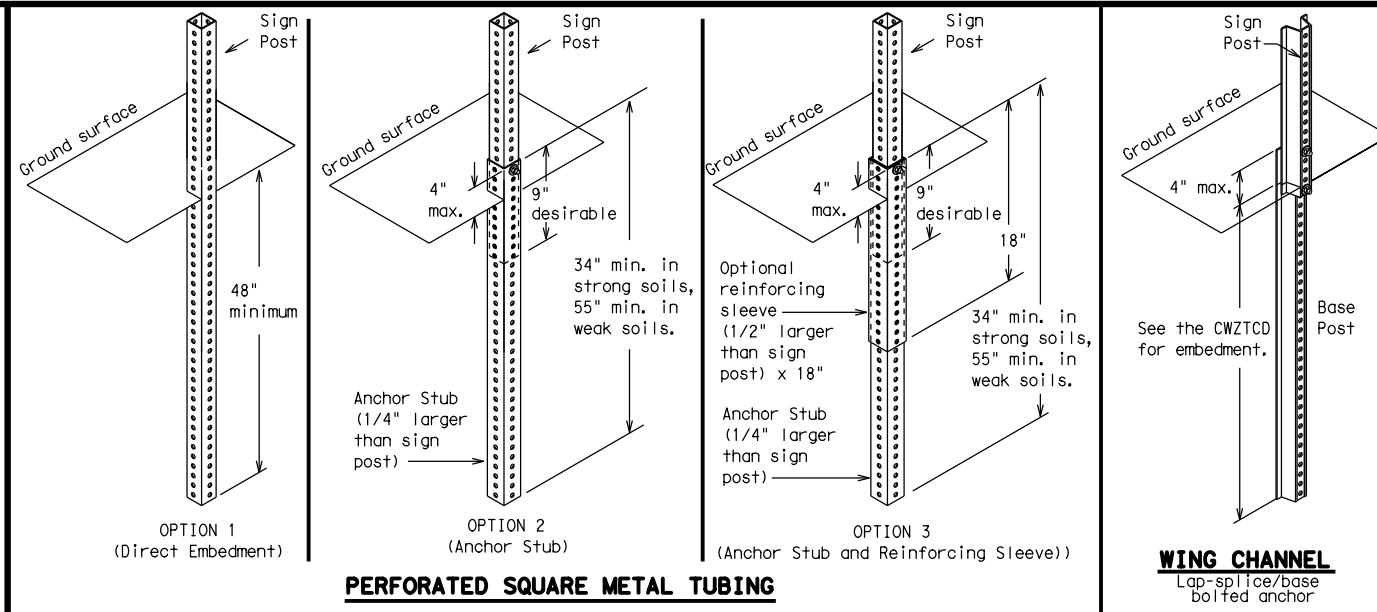
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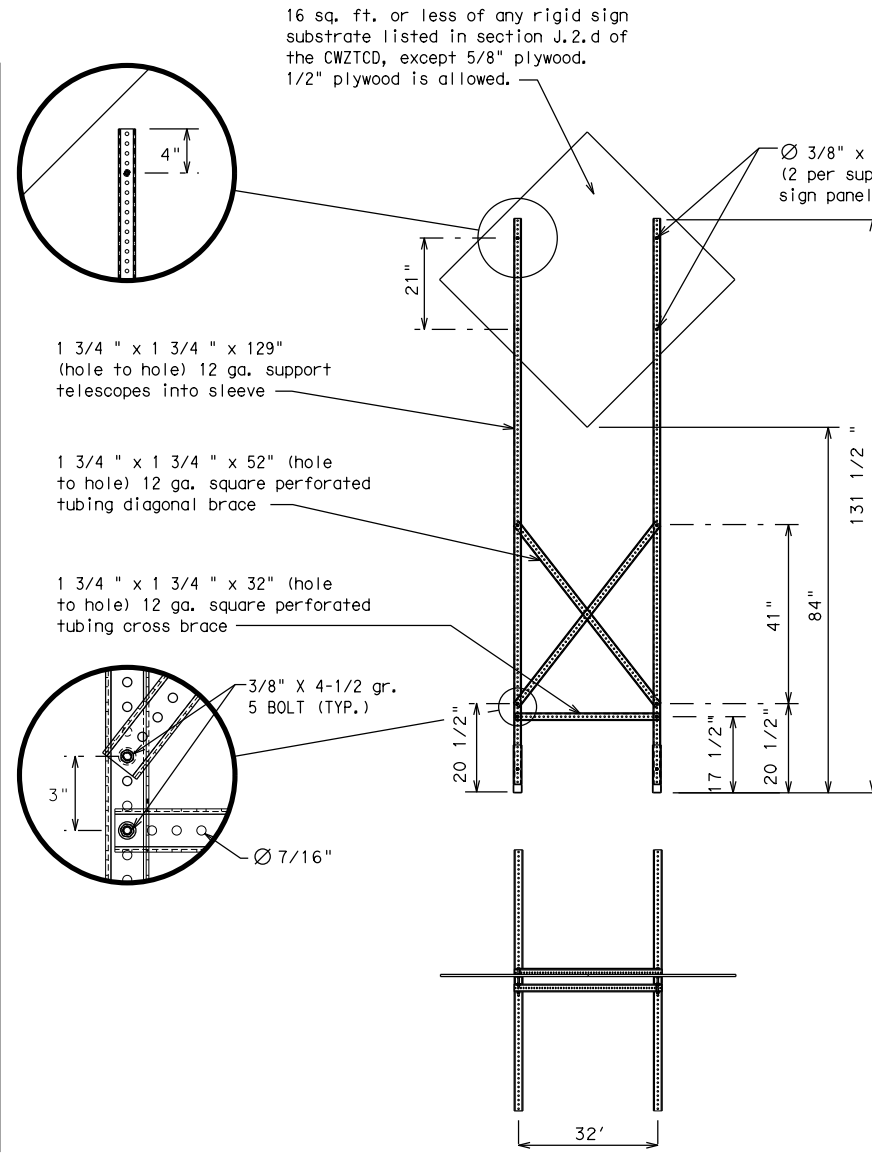
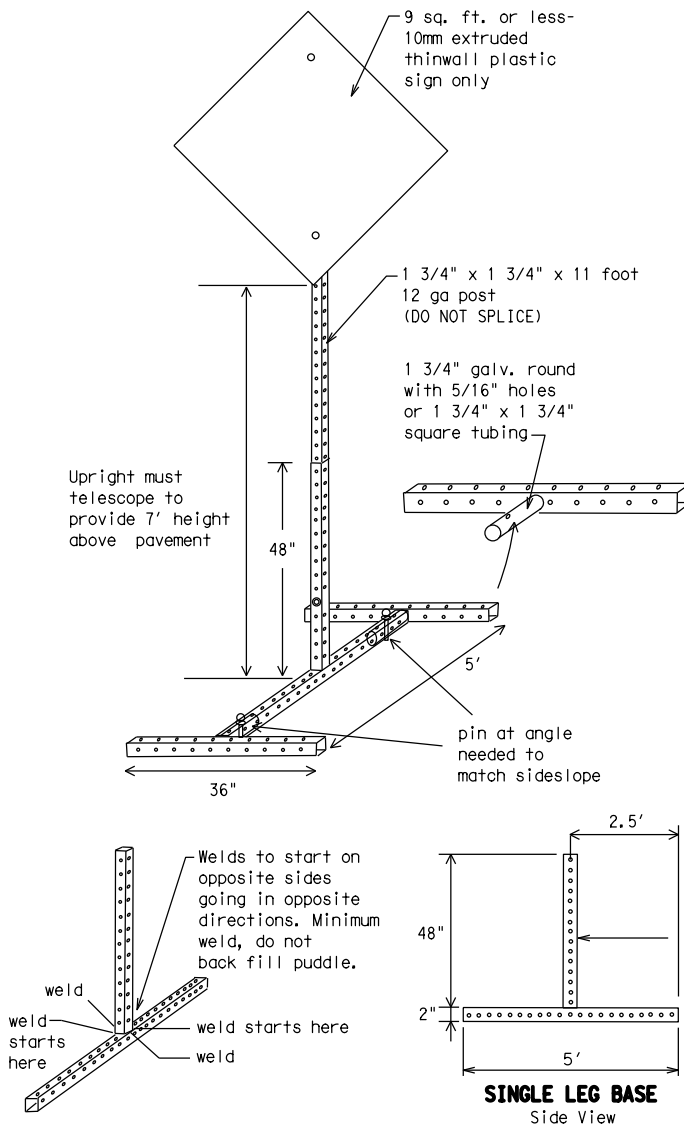
SKID MOUNTED WOOD SIGN SUPPORTS

* 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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BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

PORTABLE CHANGEABLE MESSAGE SIGNS

- The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
- 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.
- 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.
- Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
- Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
- When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
- 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.
- 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.
- Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
- 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.
- Do not use the word "Danger" in message.
- Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
- Do not display messages that scroll horizontally or vertically across the face of the sign.
- 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.
- 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.
- Each line of text should be centered on the message board rather than left or right justified.
- 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.

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE
ROAD CLOSED AT SH XXX
ROAD CLSD AT FM XXXX
RIGHT X LANES CLOSED
CENTER LANE CLOSED
NIGHT LANE CLOSURES
VARIOUS LANES CLOSED
EXIT CLOSED
MALL DRIVEWAY CLOSED
XXXXXXXX BLVD CLOSED

Other Condition List

FRONTAGE ROAD CLOSED
SHOULDER CLOSED XXX FT
RIGHT LN CLOSED XXX FT
RIGHT X LANES OPEN
DAYTIME LANE CLOSURES
I-XX SOUTH EXIT CLOSED
EXIT XXX CLOSED X MILE
RIGHT LN TO BE CLOSED
X LANES CLOSED TUE - FRI
ROADWORK XXX FT
FLAGGER XXXX FT
RIGHT LN NARROWS XXXX FT
MERGING TRAFFIC XXXX FT
LOOSE GRAVEL XXXX FT
DETOUR X MILE
ROADWORK PAST SH XXXX
BUMP XXXX FT
TRAFFIC SIGNAL XXXX FT
ROAD REPAIRS XXXX FT
LANE NARROWS XXXX FT
TWO-WAY TRAFFIC XX MILE
CONST TRAFFIC XXX FT
UNEVEN LANES XXXX FT
ROUGH ROAD XXXX FT
ROADWORK NEXT FRI-SUN
US XXX EXIT X MILES
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
DETOUR NEXT X EXITS
USE EXIT XXX
STAY ON US XXX SOUTH
TRUCKS USE US XXX N
WATCH FOR TRUCKS
EXPECT DELAYS
REDUCE SPEED XXX FT
USE OTHER ROUTES
STAY IN LANE *
FORM X LINES RIGHT
USE XXXXX RD EXIT
USE EXIT I-XX NORTH
USE I-XX E TO I-XX N
WATCH FOR TRUCKS
EXPECT DELAYS
END SHOULDER USE
WATCH FOR WORKERS

Location List

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

- Only 1 or 2 phases are to be used on a PCMS.
- The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
- A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
- A Location Phase is necessary only if a distance or location is not included in the first phase selected.
- 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.
- 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

- The words RIGHT, LEFT and ALL can be interchanged as appropriate.
- Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
- EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
- Highway names and numbers replaced as appropriate.
- ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
- AHEAD may be used instead of distances if necessary.
- FT and MI, MILE and MILES interchanged as appropriate.
- AT, BEFORE and PAST interchanged as needed.
- 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

- 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.
- 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.
- 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.
- 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.

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WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Canot	CANT	North	N
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking	PKING
CROSSING	XING	Road	RD
Detour Route	DETOUR RTE	Right Lane	RT LN
Do Not	DONT	Saturday	SAT
East	E	Service Road	SERV RD
Eastbound	(route) E	Shoulder	SHLDR
Emergency	EMER	Slippery	SLIP
Emergency Vehicle	EMER VEH	South	S
Entrance, Enter	ENT	Southbound	(route) S
Express Lane	EXP LN	Speed	SPD
Expressway	EXPWY	Street	ST
XXXX Feet	XXXX FT	Sunday	SUN
Fog Ahead	FOG AHD	Telephone	PHONE
Freeway	FRWY, FWY	Temporary	TEMP
Freeway Blocked	FWY BLKD	Thursday	THURS
Friday	FRI	To Downtown	TO DWNTN
Hazardous Driving	HAZ DRIVING	Traffic	TRAF
Hazardous Material	HAZMAT	Travelers	TRVLR
High-Occupancy Vehicle	HOV	Tuesday	TUES
Highway	Hwy	Time Minutes	TIME MIN
Hour(s)	HR, HRS	Upper Level	UPR LEVEL
Information	INFO	Vehicles (s)	VEH, VEHS
It Is	ITS	Warning	WARN
Junction	JCT	Wednesday	WED
Left	LFT	Weight Limit	WT LIMIT
Left Lane	LFT LN	West	W
Lane Closed	LN CLOSED	Westbound	(route) W
Lower Level	LWR LEVEL	Wet Pavement	WET PVMT
Maintenance	MAINT	Will Not	WONT

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

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BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

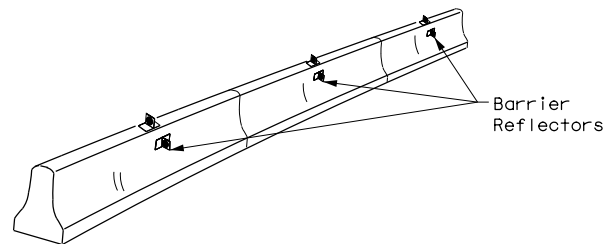
BC (6) -21

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© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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7-13 5-21	TYL	HENDERSON	46	

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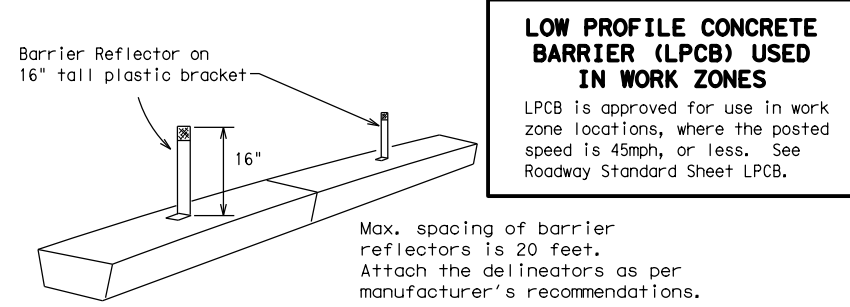
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors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



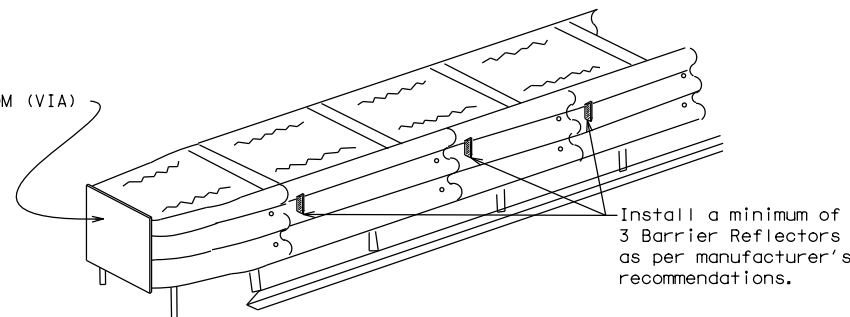
CONCRETE TRAFFIC BARRIER (CTB)

- 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.
- 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.
- When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
- Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
- Maximum spacing of Barrier Reflectors is forty (40) feet.
- Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
- Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
- Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
- Single slope barriers shall be delineated as shown on the above detail.



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

LOW PROFILE CONCRETE BARRIER (LPCB)



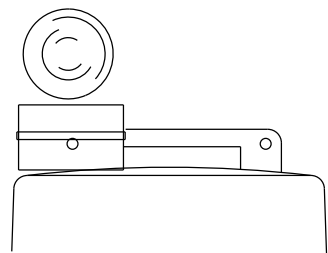
DELINEATION OF END TREATMENTS

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

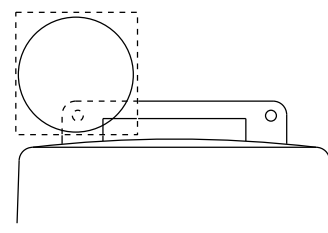
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet 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.
- 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".
- The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
- 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.
- 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.
- The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.



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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- 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.
- 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.
- Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
- Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
- The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.



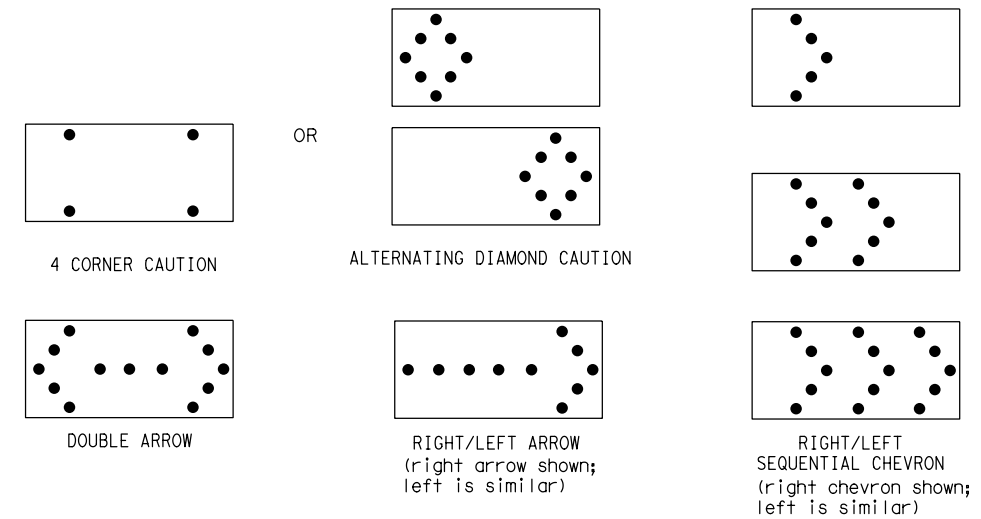
Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

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

- 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.
- 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.
- The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
- Round reflectors shall be fully reflectorized, including the area where attached to the drum.
- 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.
- 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.
- When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
- The warning reflector should be mounted on the side of the handle nearest approaching traffic.
- 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.

- 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.
- 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.
- 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.
- The Flashing Arrow Board should be able to display the following symbols:



- The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
- The straight line caution display is NOT ALLOWED.
- 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.
- 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.
- The sequential arrow display is NOT ALLOWED.
- The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
- The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
- A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
- 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.
- Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

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

ATTENTION
 Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

SHEET 7 OF 12

TRUCK-MOUNTED ATTENUATORS

- Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
- Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
- Refer to the CWZTCD for a list of approved TMAs.
- TMAs are required on freeways unless otherwise noted in the plans.
- 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.
- 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.



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

BC (7) -21

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©TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0108	03	041	SH 19				
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GENERAL NOTES

- For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
- 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.
- 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.
- 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).
- 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.
- 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:

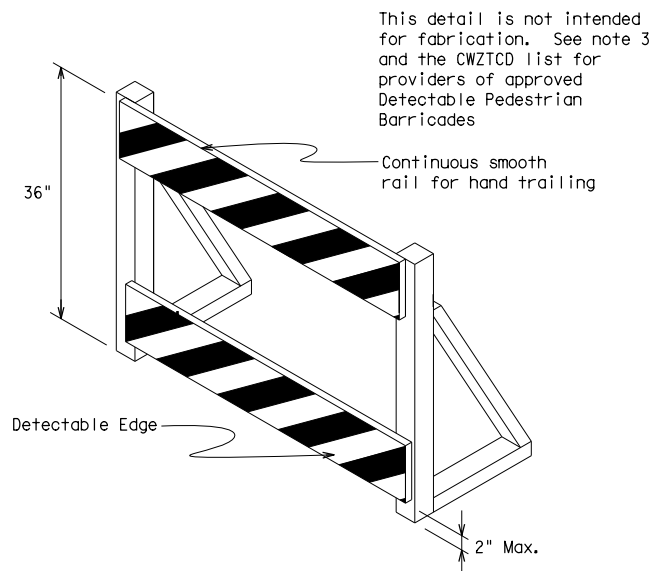
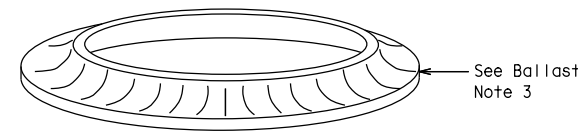
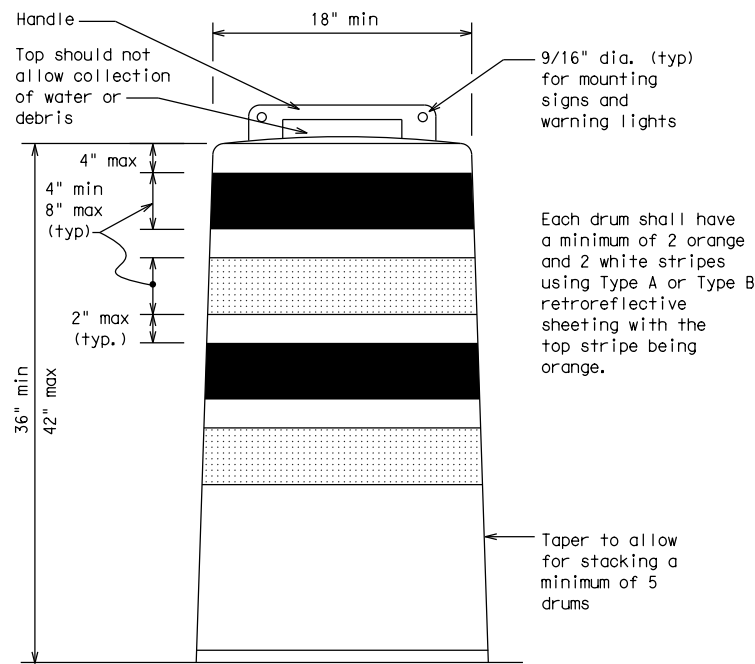
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
- 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.
- 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.
- 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.
- 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.
- 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.
- Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
- Drum body shall have a maximum unballasted weight of 11 lbs.
- Drum and base shall be marked with manufacturer's name and model number.

RETROREFLECTIVE SHEETING

- 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.
- 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.

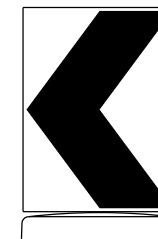
BALLAST

- 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.
- 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.
- Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
- 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.
- 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.
- Ballast shall not be placed on top of drums.
- Adhesives may be used to secure base of drums to pavement.

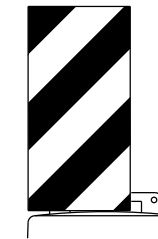


DETECTABLE PEDESTRIAN BARRICADES

- 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.
- 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.
- 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.
- 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.
- Warning lights shall not be attached to detectable pedestrian barricades.
- 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

- Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
- 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.
- 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.
- 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.
- Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
- Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
- 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.
- 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.

SHEET 8 OF 12

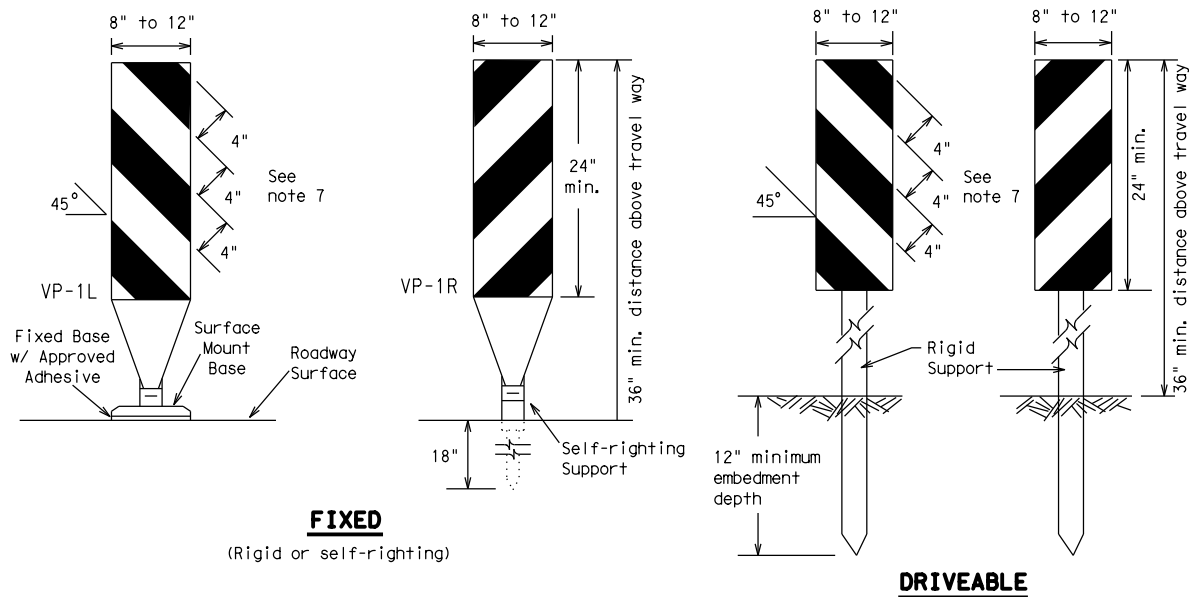


BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (8) -21

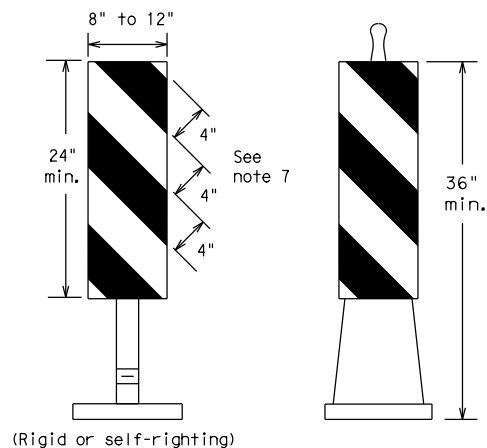
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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0108	03	041	SH 19				
4-03	8-14	DIST		COUNTY	SHEET NO.				
9-07	5-21	TYL		HENDERSON	48				
7-13									

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FIXED
(Rigid or self-righting)

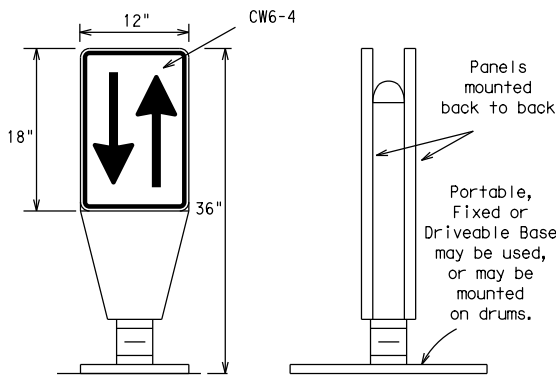
DRIVEABLE



PORTABLE

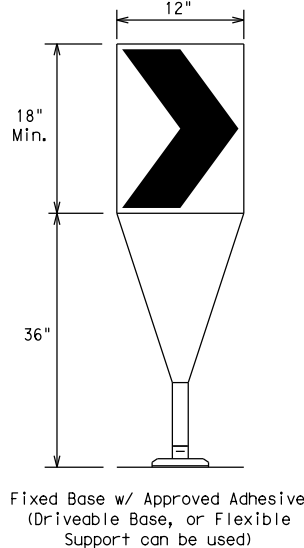
VERTICAL PANELS (VPs)

- Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
- 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.
- 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.
- VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
- Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
- Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.



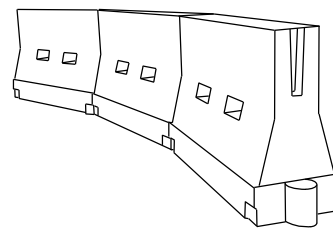
OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

- 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.
- The OTLD may be used in combination with 42" cones or VPs.
- Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
- 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.



- The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
- 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.
- 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.
- To be effective, the chevron should be visible for at least 500 feet.
- 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.
- 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)

- 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.
- LCDs may be used instead of a line of cones or drums.
- LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
- LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
- 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

- 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.
- 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.
- 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.
- 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.
- 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

- 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).
- 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.
- 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).
- 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.
- Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
- 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.
- 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			Suggested Maximum Spacing of Channelizing Devices	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent
30	L = WS ² / 60	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45	L = WS	450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55		550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80		800'	880'	960'	80'	160'

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (9) -21

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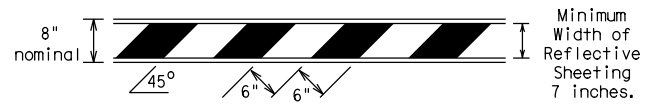
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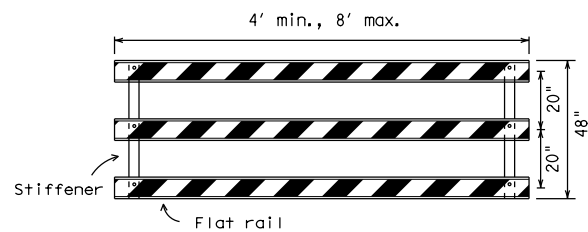
TYPE 3 BARRICADES

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.



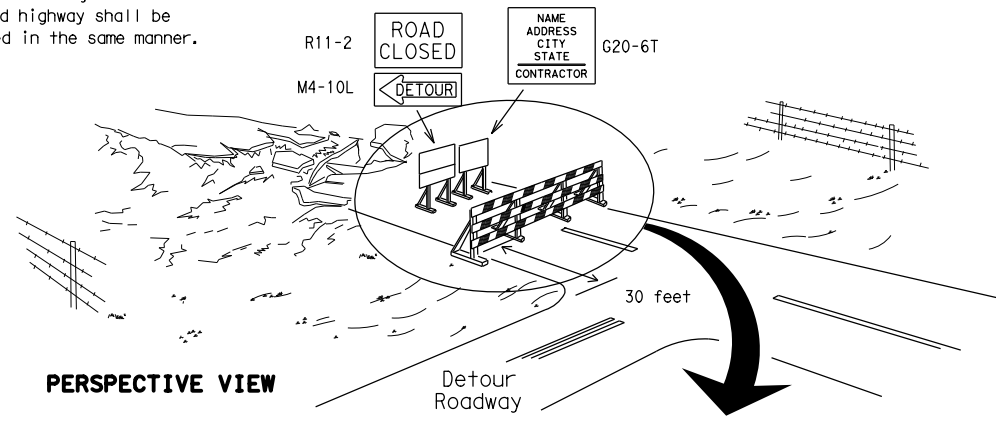
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

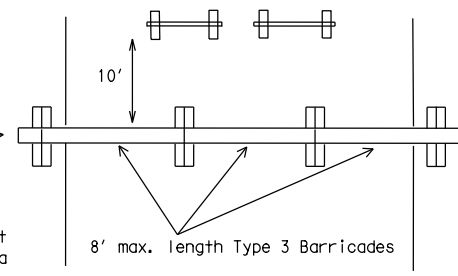
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

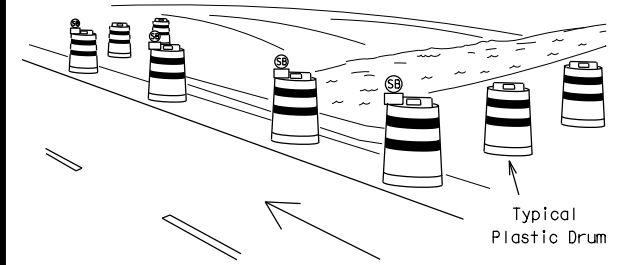
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



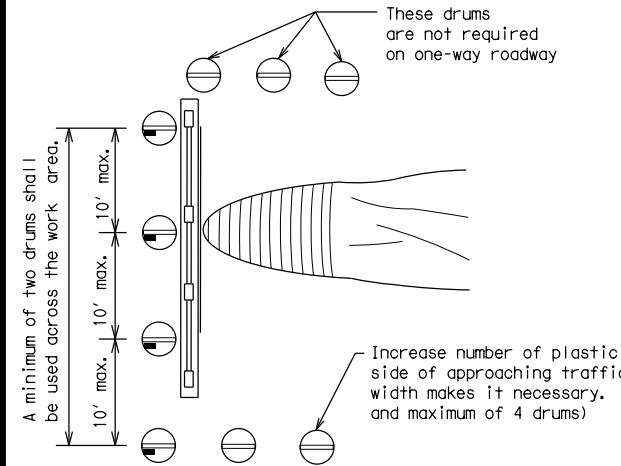
PLAN VIEW

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

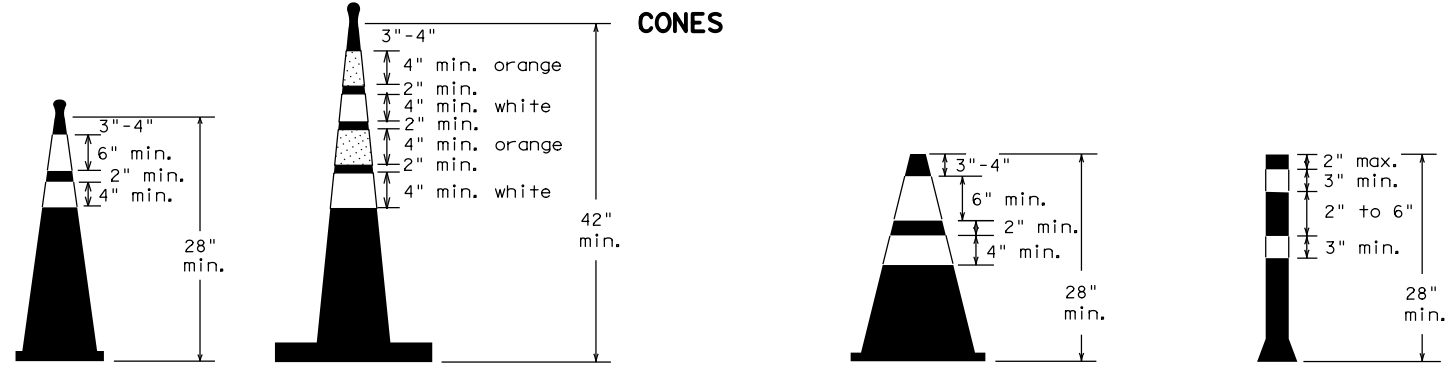


PLAN VIEW

1. Where positive redirection 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
	Steady burn warning light or yellow warning reflector

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



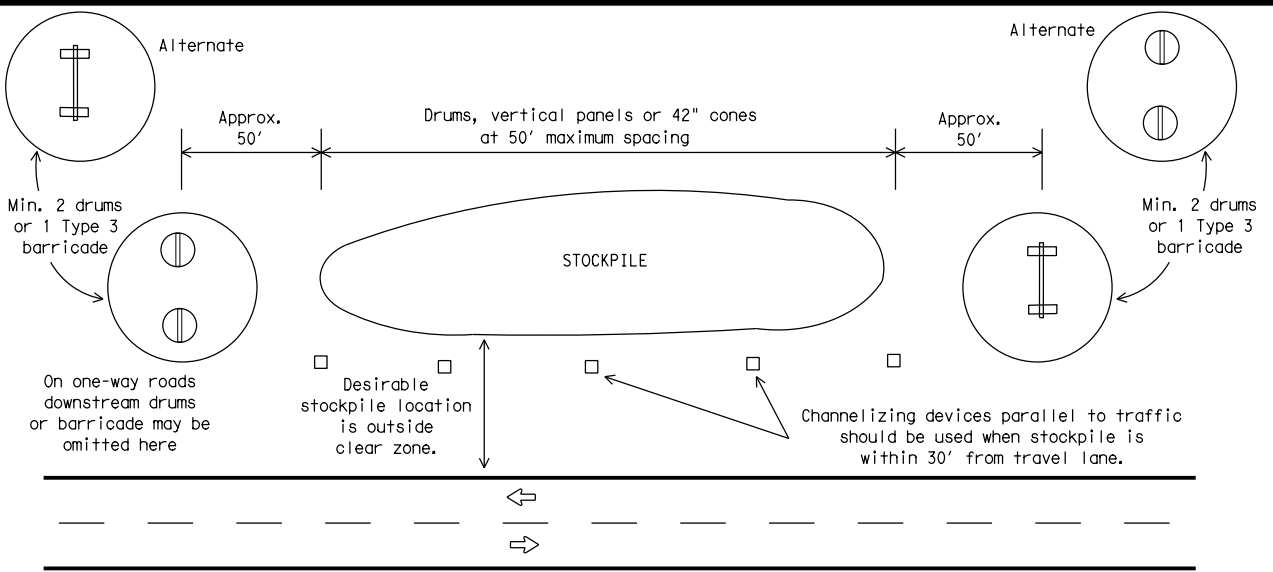
Two-Piece cones

One-Piece cones

Tubular Marker

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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WORK ZONE PAVEMENT MARKINGS

GENERAL

- 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.
- Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Additional supplemental pavement marking details may be found in the plans or specifications.
- Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
- 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).
- 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.
- All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

- Raised pavement markers are to be placed according to the patterns on BC(12).
- 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

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

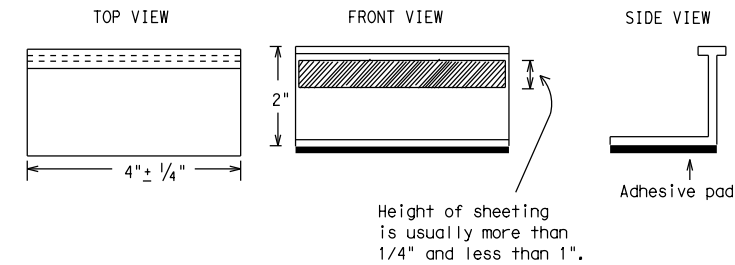
MAINTAINING WORK ZONE PAVEMENT MARKINGS

- The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
- 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.
- 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.
- 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

- 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.
- 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.
- 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".
- The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
- Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
- Blast cleaning may be used but will not be required unless specifically shown in the plans.
- Over-painting of the markings SHALL NOT BE permitted.
- Removal of raised pavement markers shall be as directed by the Engineer.
- 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.
- 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**

- Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
- 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.
 - 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.
 - 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.
- Small design variances may be noted between tab manufacturers.
- 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

- Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
- All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
- 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).

SHEET 11 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

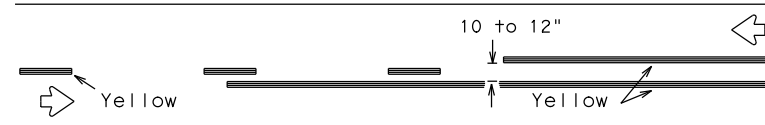
BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS				
2-98	9-07	5-21		
1-02	7-13		041	SH 19
11-02	8-14			
	DIST	COUNTY	SHEET NO.	
	TYL	HENDERSON	51	

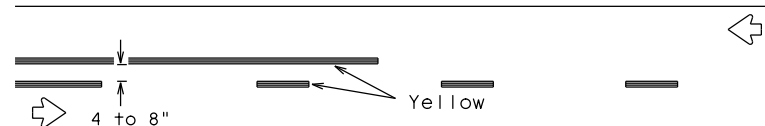
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

PAVEMENT MARKING PATTERNS

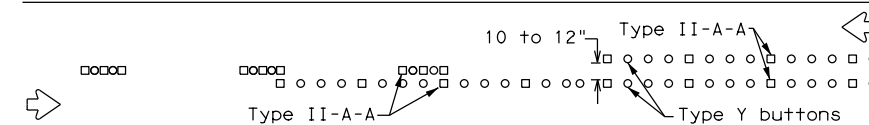


REFLECTORIZED PAVEMENT MARKINGS - PATTERN A

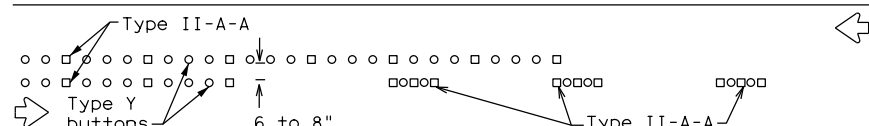


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

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.

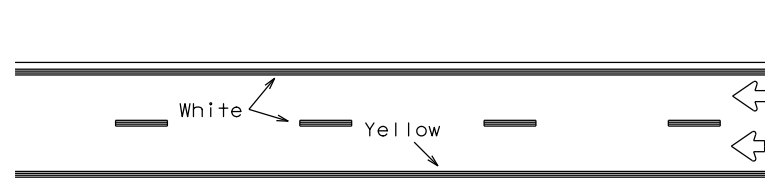


RAISED PAVEMENT MARKERS - PATTERN A



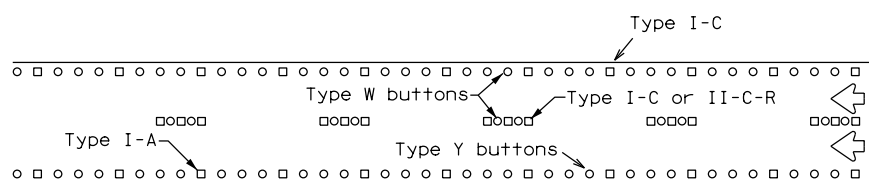
RAISED PAVEMENT MARKERS - PATTERN B

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



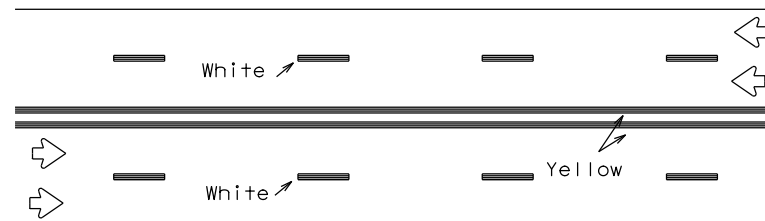
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



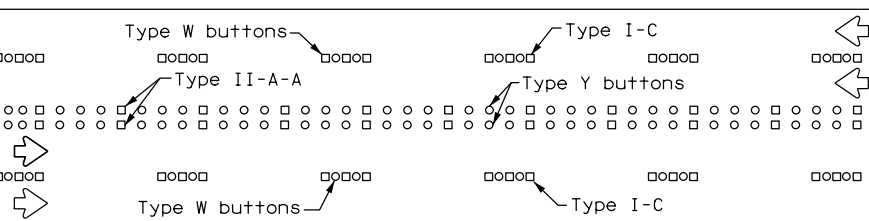
RAISED PAVEMENT MARKERS

EDGE & LANE LINES FOR DIVIDED HIGHWAY



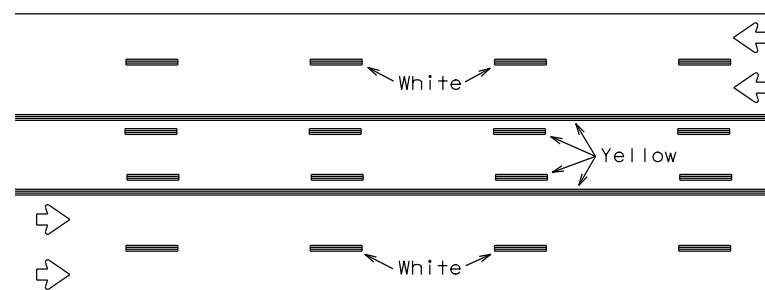
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



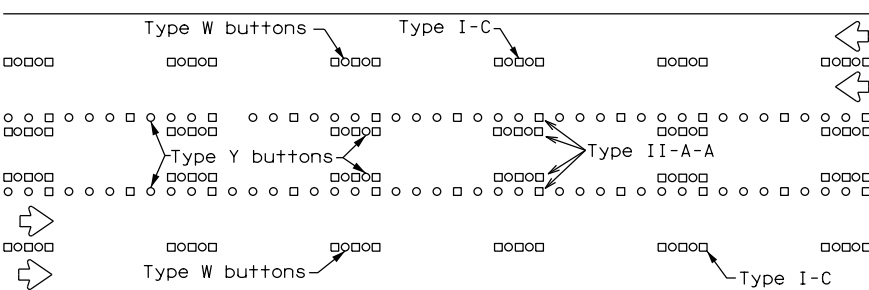
RAISED PAVEMENT MARKERS

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

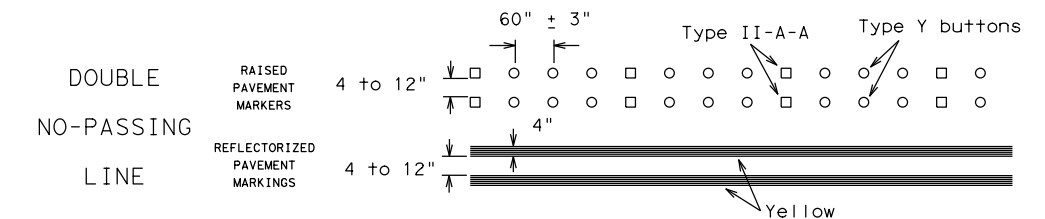
Prefabricated markings may be substituted for reflectORIZED pavement markings.



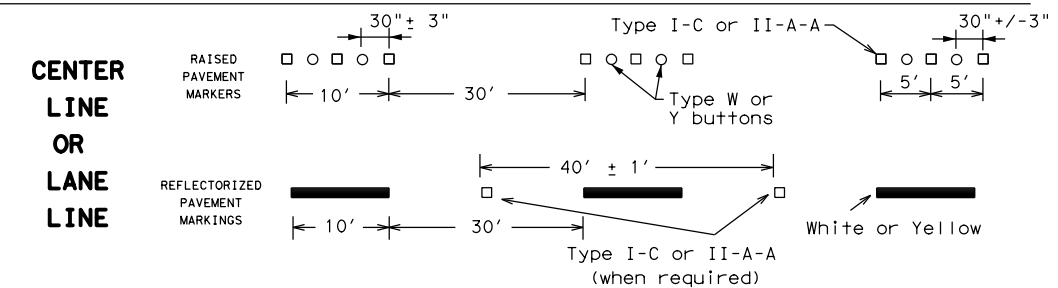
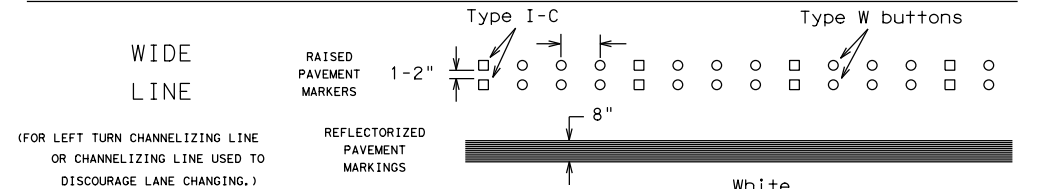
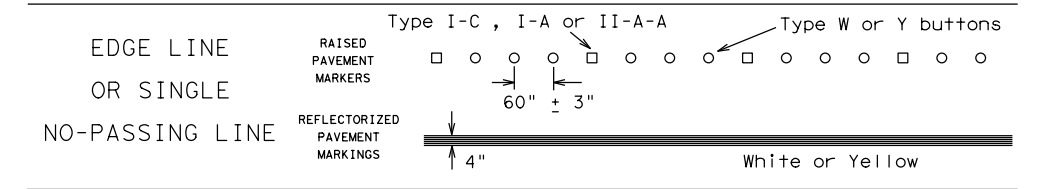
RAISED PAVEMENT MARKERS

TWO-WAY LEFT TURN LANE

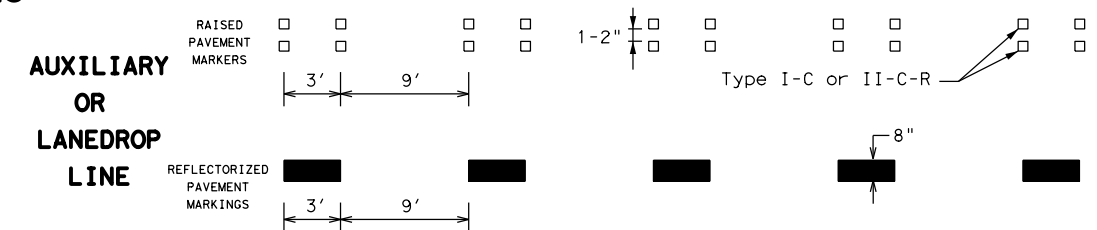
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



SOLID LINES

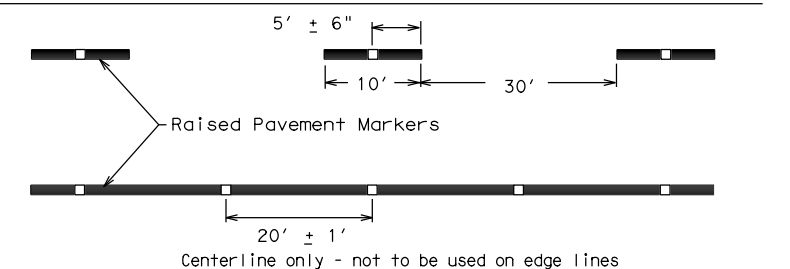


BROKEN LINES



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



SHEET 12 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

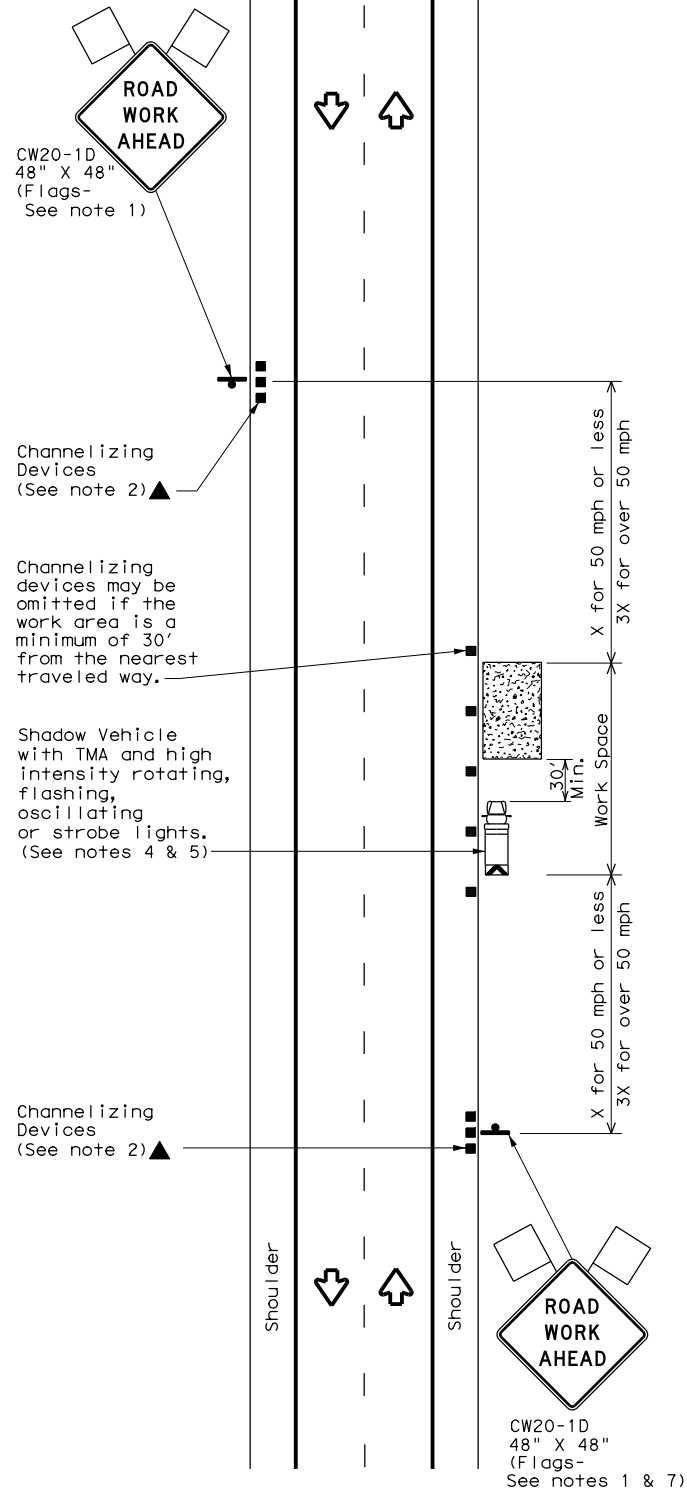
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
1-97 9-07 5-21	DIST	COUNTY	SHEET NO.	
2-98 7-13	TYL	HENDERSON	52	
11-02 8-14				

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."

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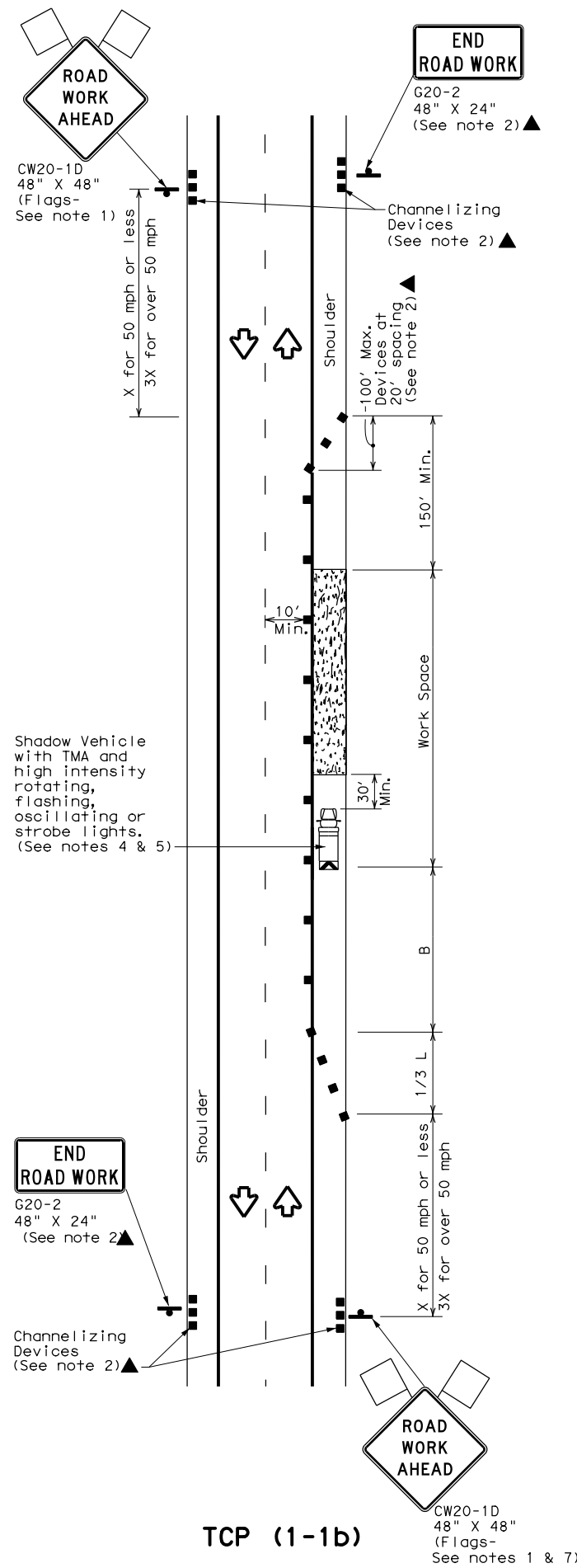
DATE:
FILE:

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



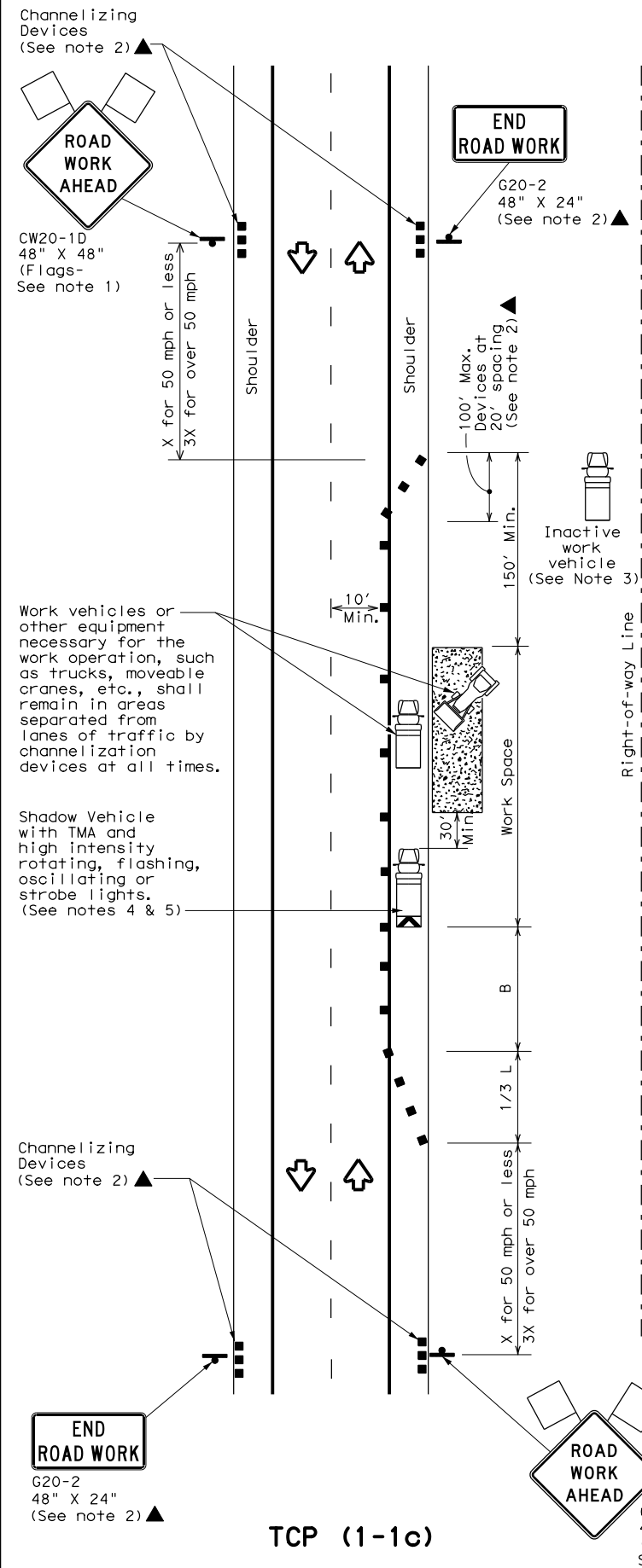
TCP (1-1a)

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		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
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**
- Flags attached to signs where shown are REQUIRED.
 - 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.
 - Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
 - 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.
 - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
 - See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
 - CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD
SHOULDER WORK

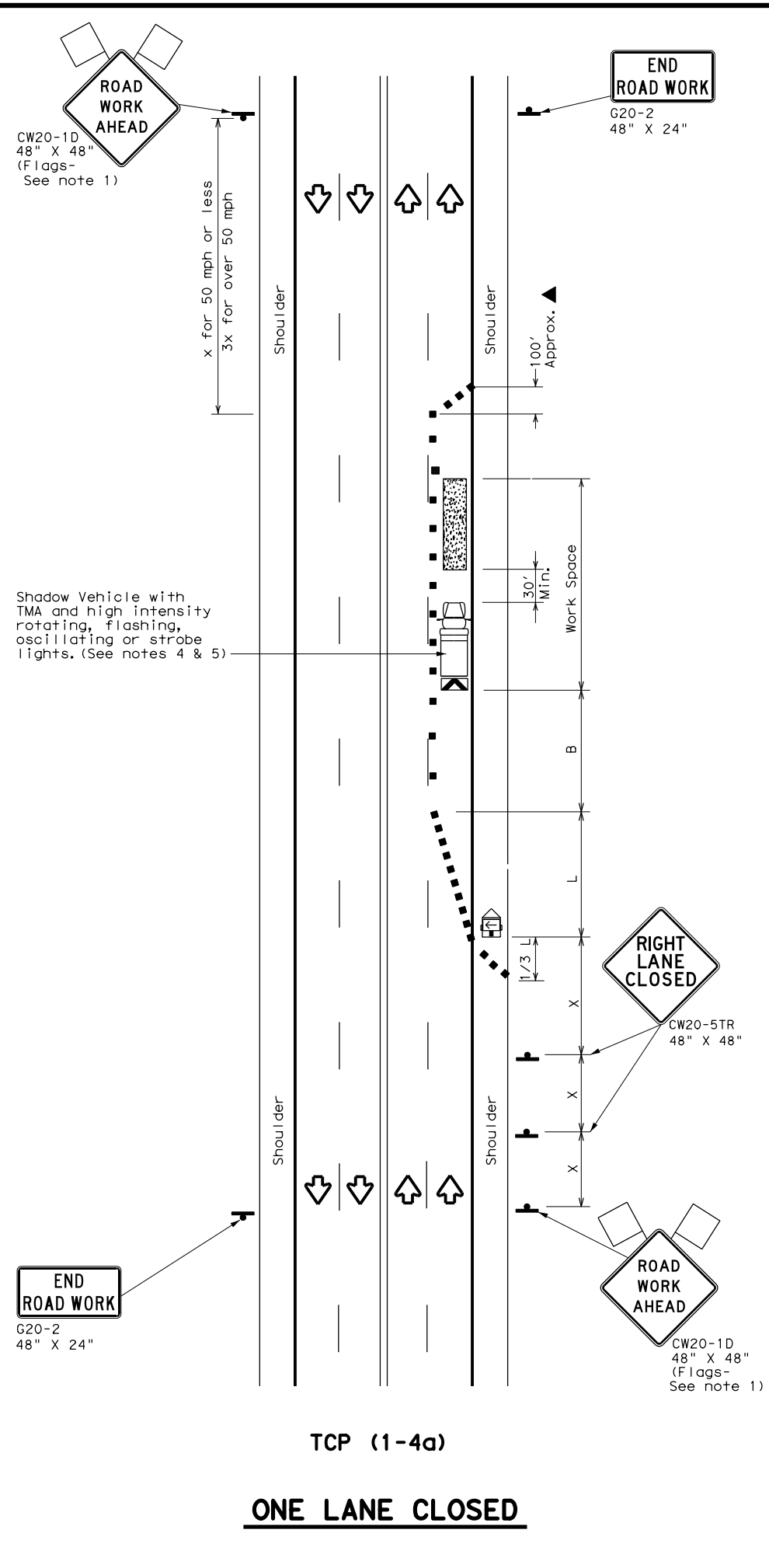
TCP (1-1)-18

FILE: tcp1-1-18.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
2-94 4-98				
8-95 2-12				
1-97 2-18				
	DIST	COUNTY	SHEET NO.	
	TYL	HENDERSON	53	

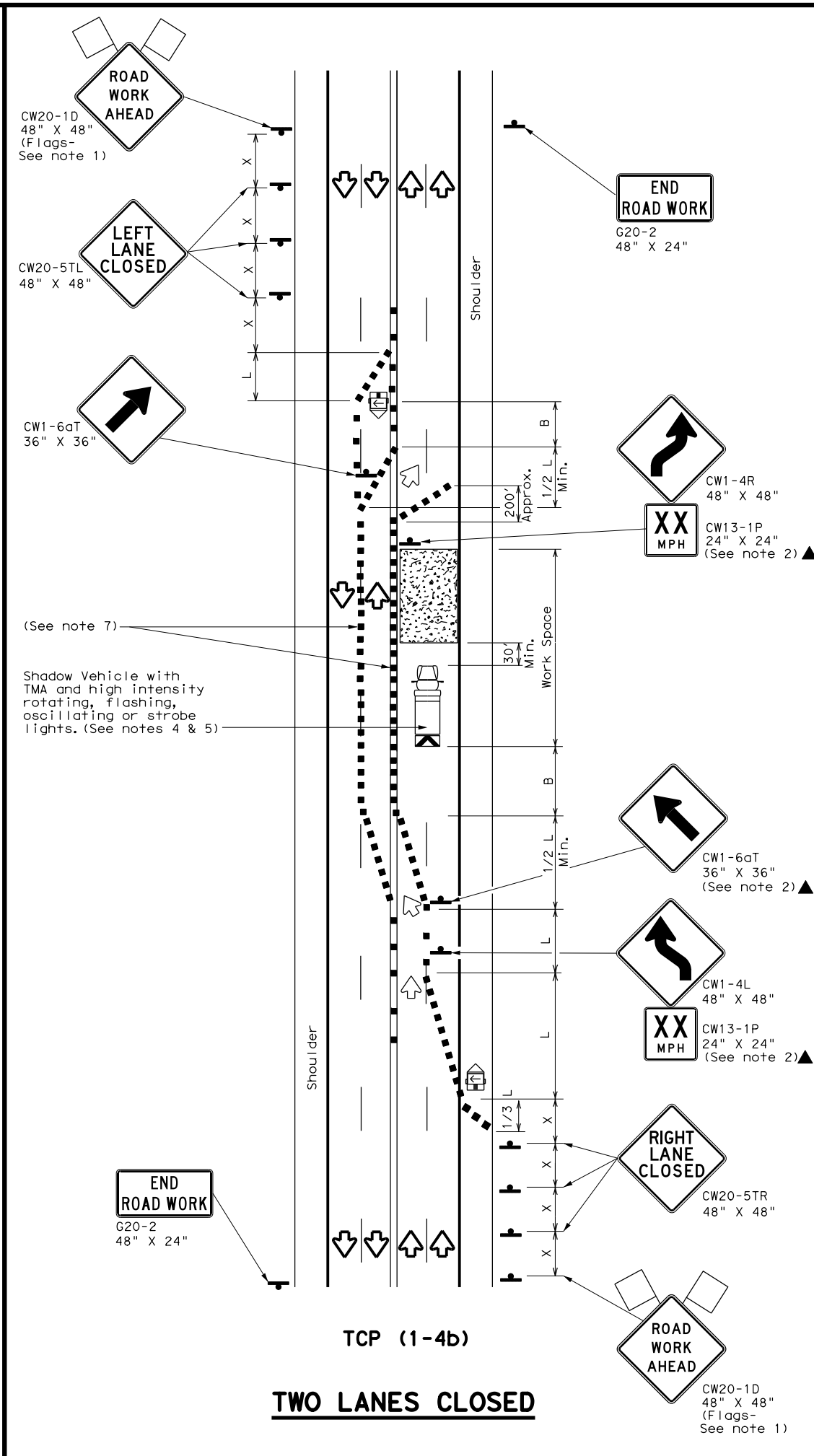
DATE:
FILE:

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DATE: FILE:



TCP (1-4a)
ONE LANE CLOSED



TCP (1-4b)
TWO LANES CLOSED

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
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**
- Flags attached to signs where shown are REQUIRED.
 - 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.
 - The CW20-1D "ROAD WORK AHEAD" sign may be repeated if the visibility of the work zone is less than 1500 feet.
 - 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.
 - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-4a)

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

TCP (1-4b)

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

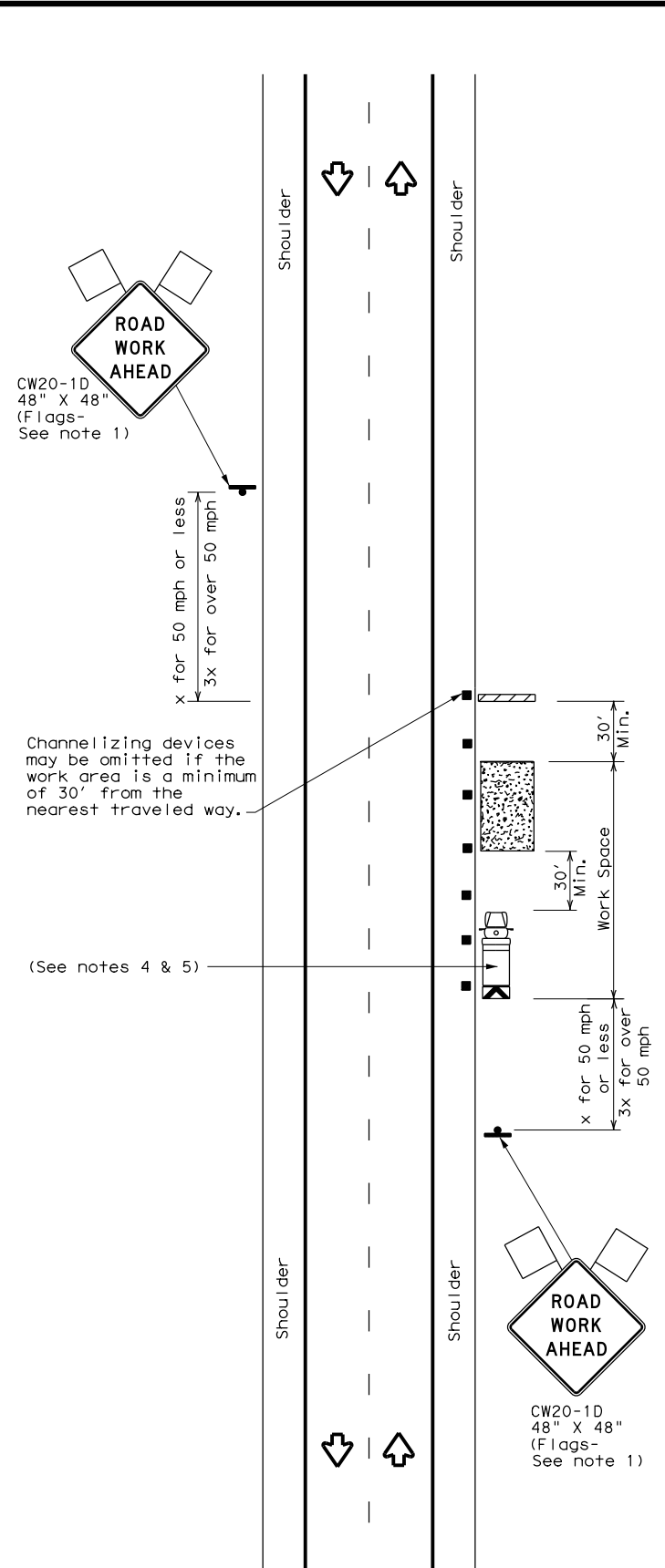
Texas Department of Transportation
Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN
LANE CLOSURES ON MULTILANE
CONVENTIONAL ROADS**

TCP (1-4) - 18

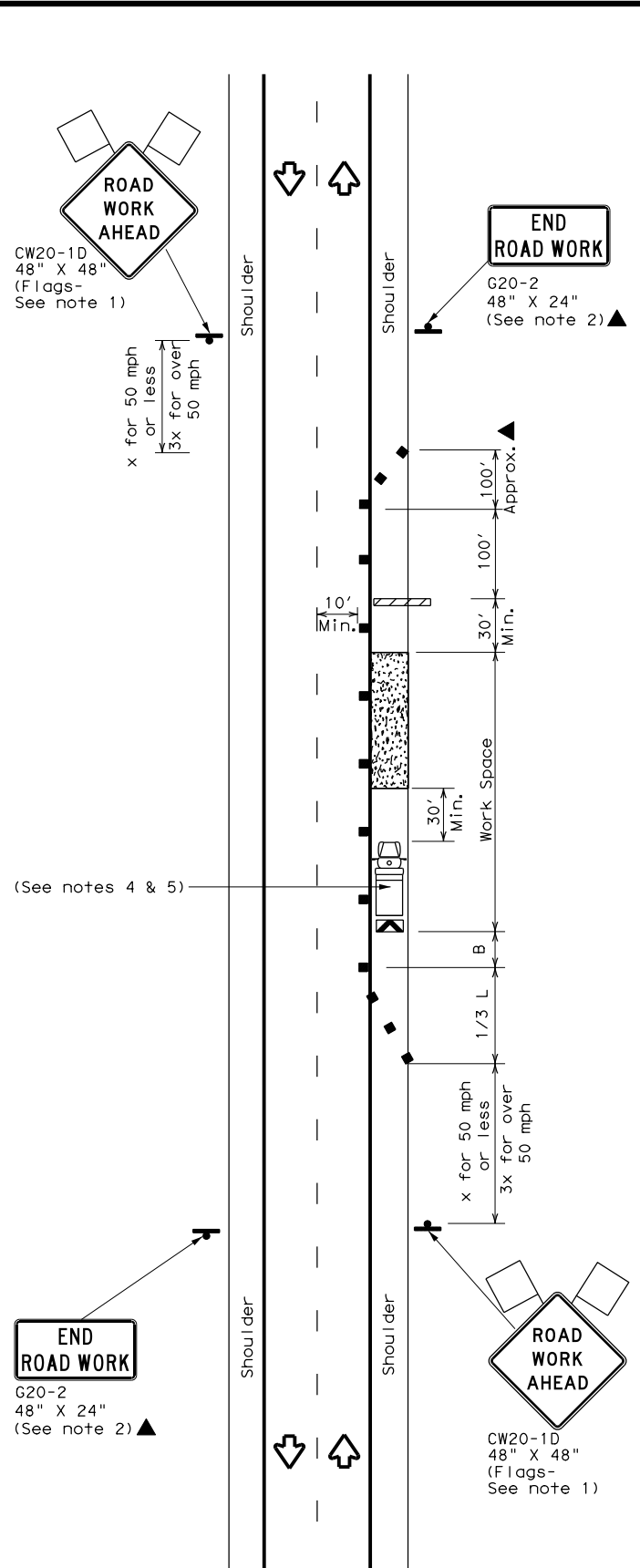
FILE: tcp1-4-18.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 2-12	TYL	HENDERSON	54	
1-97 2-18				

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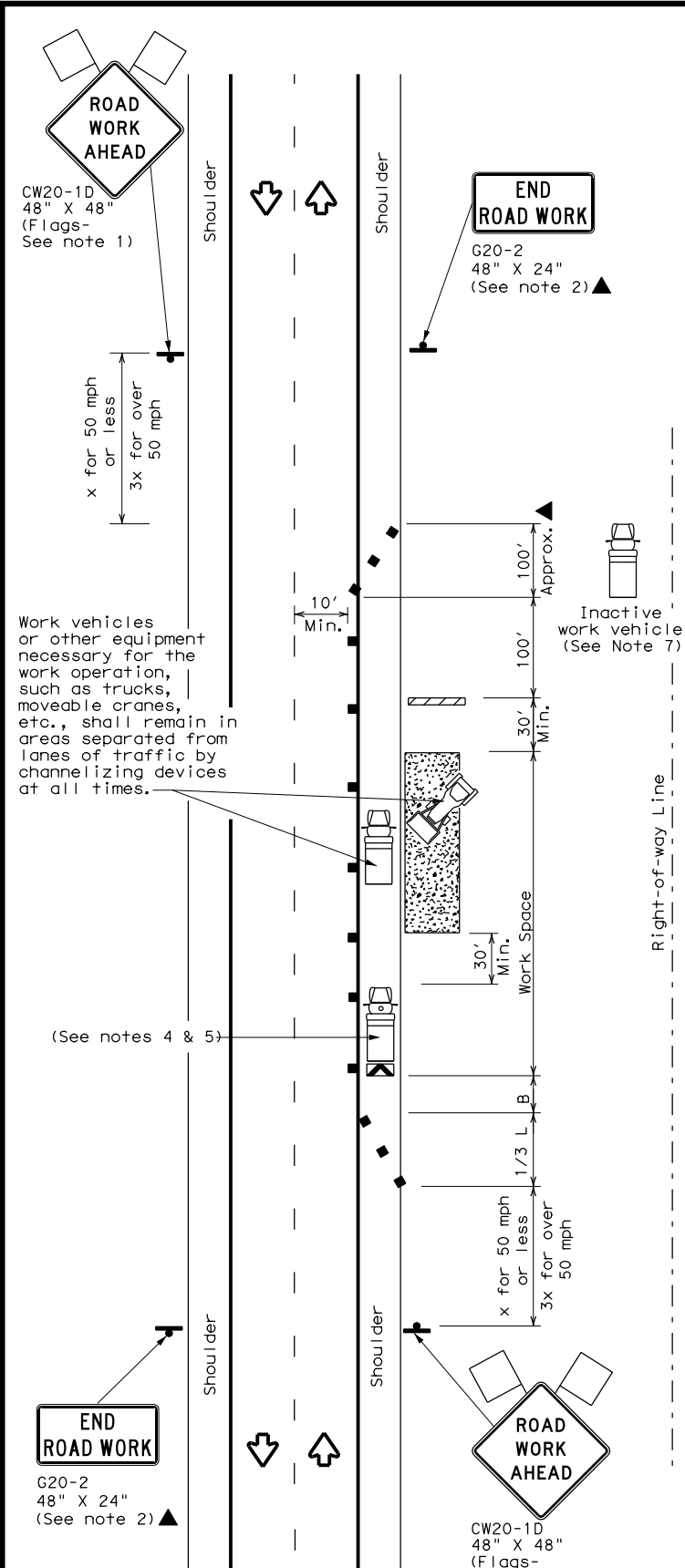
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "x" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
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

- Flags attached to signs where shown, are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
- Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
- Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
- See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
- Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
- CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.



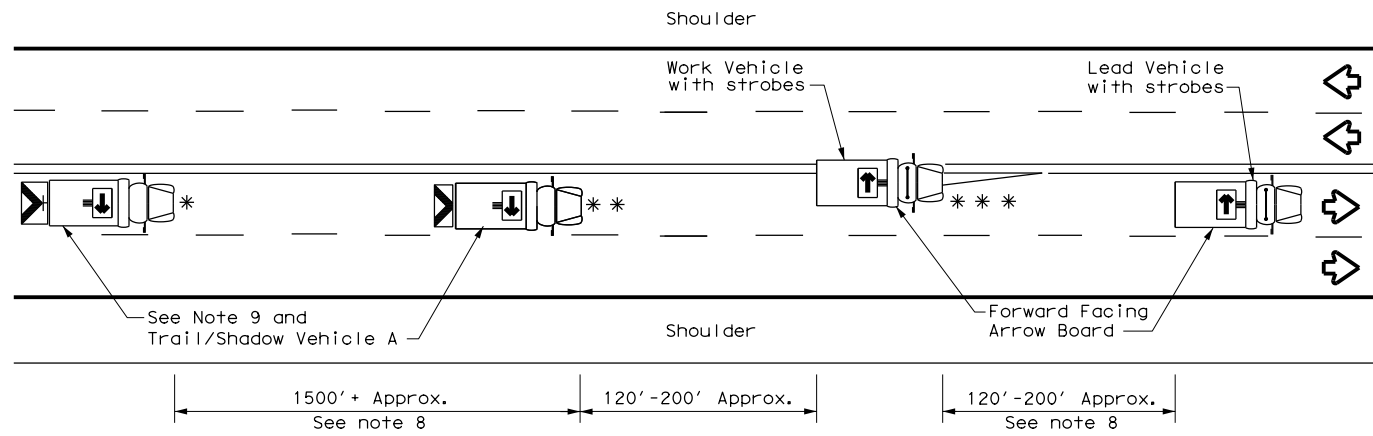
TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD
SHOULDER WORK

TCP (2-1) - 18

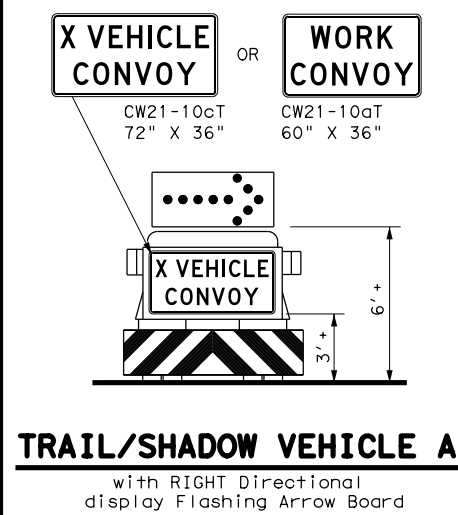
FILE: tcp2-1-18.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 2-12	TYL	HENDERSON	55	
1-97 2-18				

DATE:
FILE:

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TCP (3-1a)
UNDIVIDED MULTILANE ROADWAY



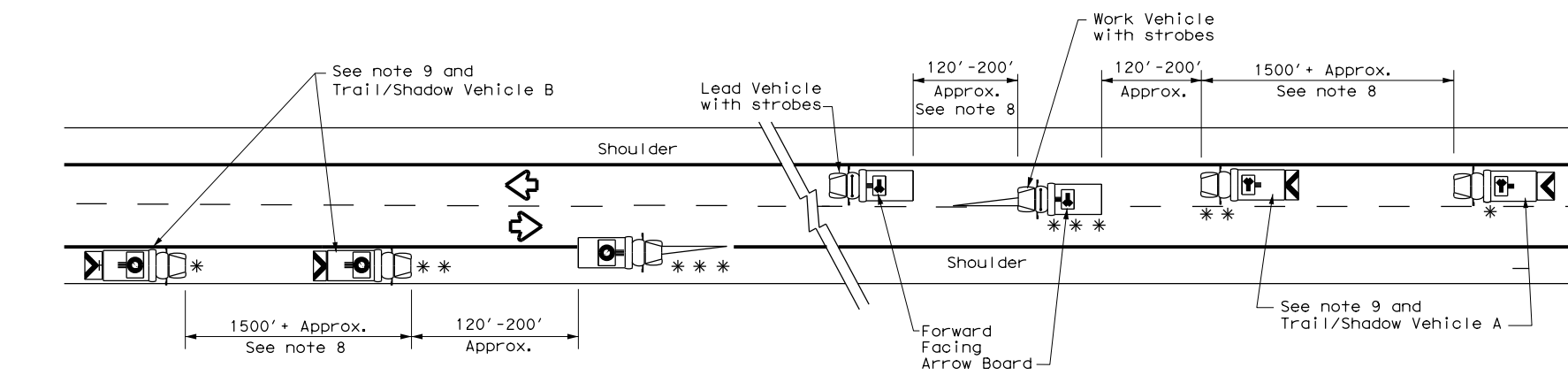
TRAIL/SHADOW VEHICLE A
with RIGHT Directional display Flashing Arrow Board

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

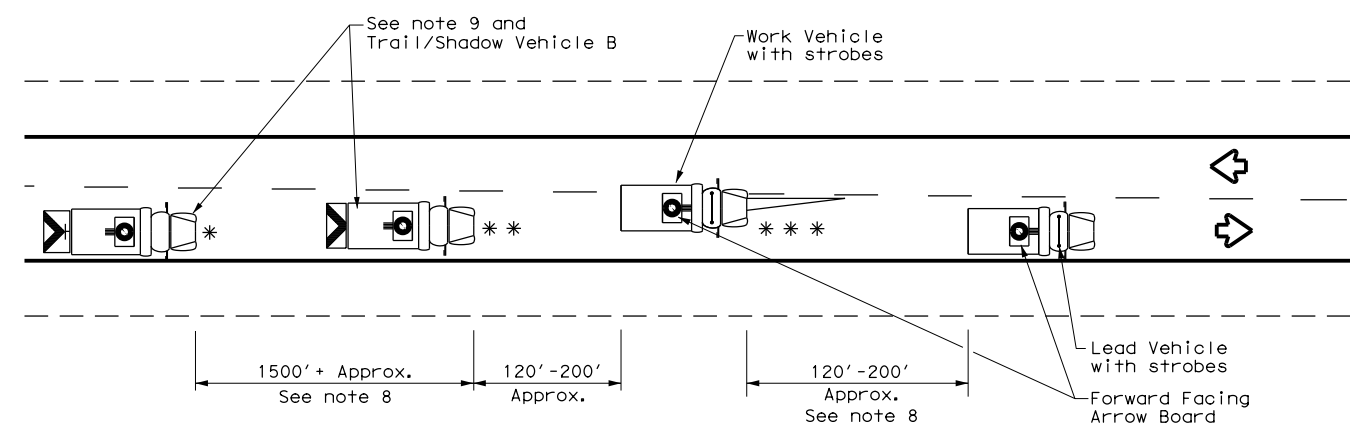
TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
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GENERAL NOTES

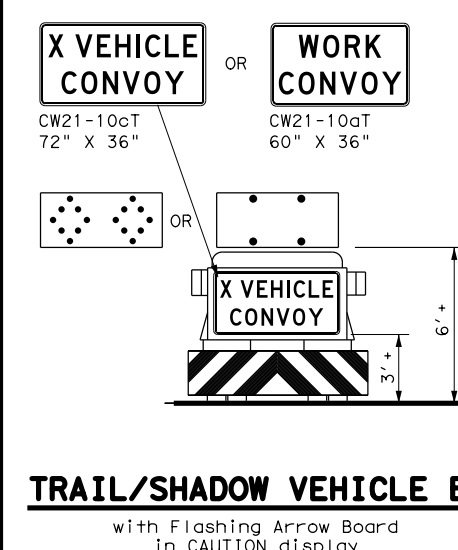
1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. "X VEHICLE CONVOY" (CW21-10cT) or "WORK CONVOY" (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" X 48" diamond shaped "WORK CONVOY" (CW21-10T) or "X VEHICLE CONVOY" (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The "X VEHICLE CONVOY" sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a "DO NOT PASS" (R4-1) sign should be placed on the back of the rearmost protection vehicle.



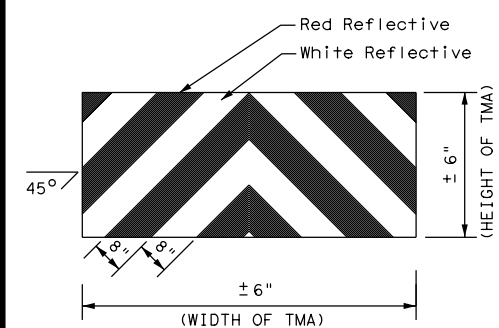
TCP (3-1b)
TWO-WAY ROADWAY WITH PAVED SHOULDERS



TCP (3-1c)
TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B
with Flashing Arrow Board in CAUTION display



STRIPING FOR TMA



TRAFFIC CONTROL PLAN
MOBILE OPERATIONS
UNDIVIDED HIGHWAYS

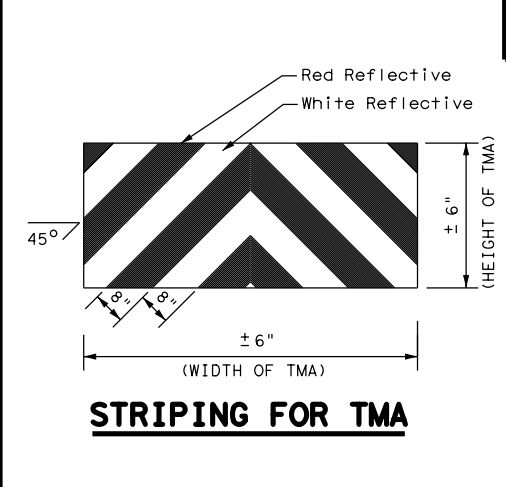
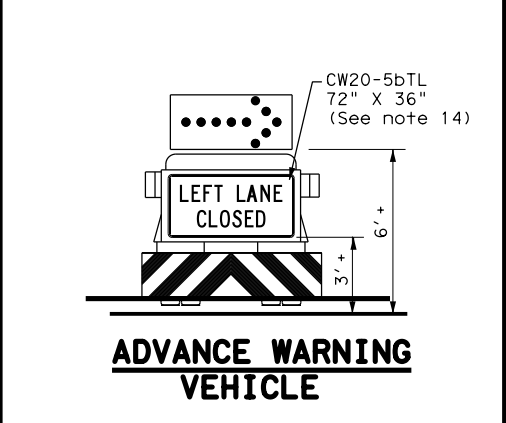
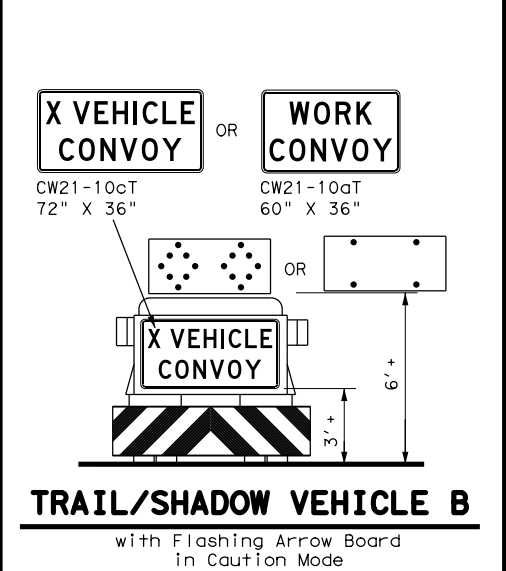
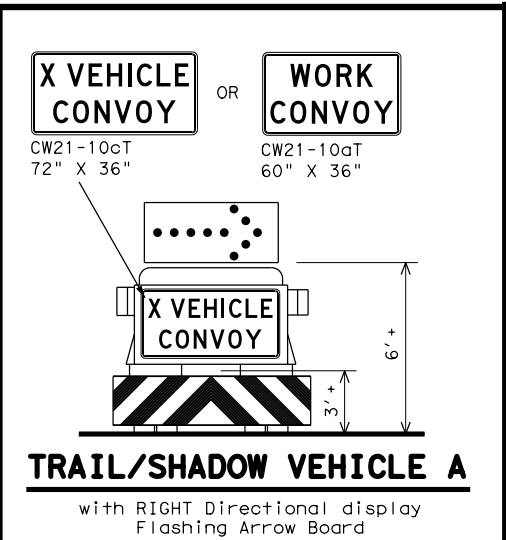
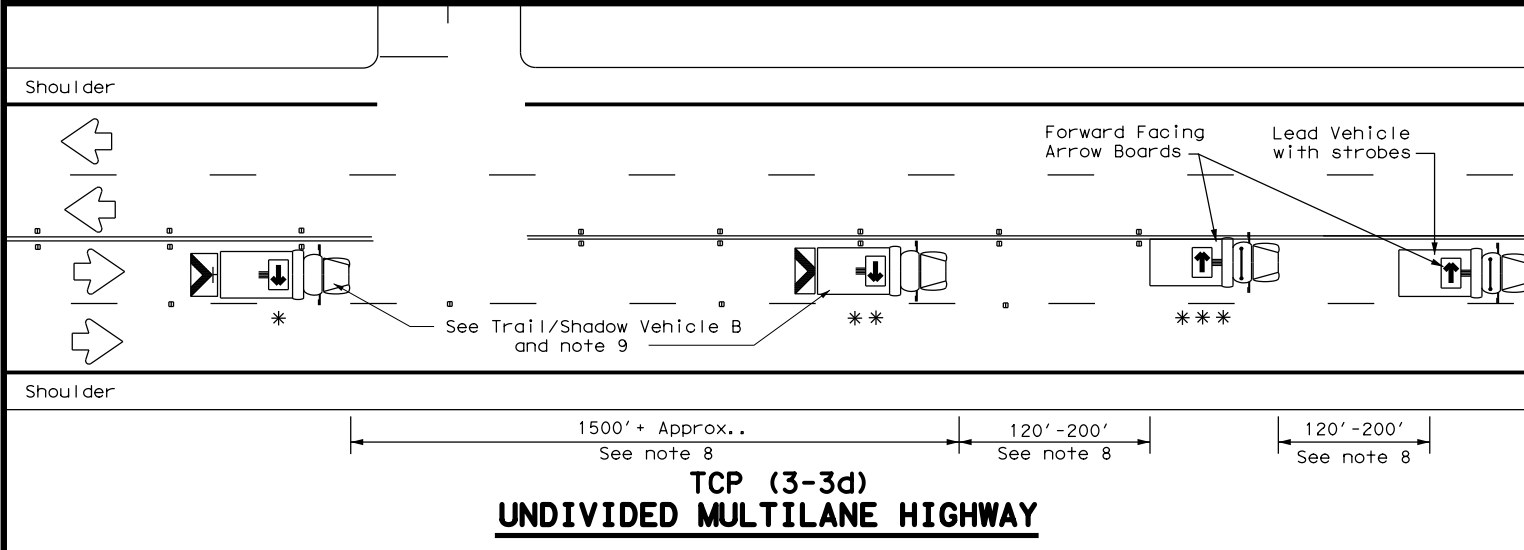
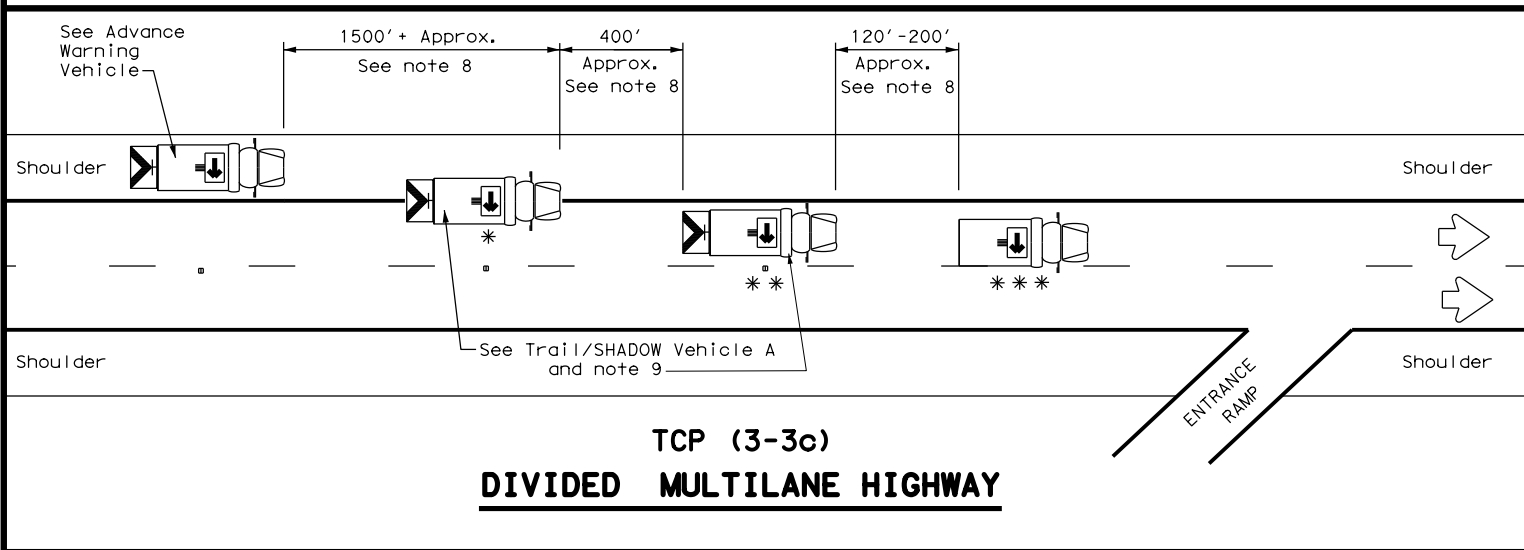
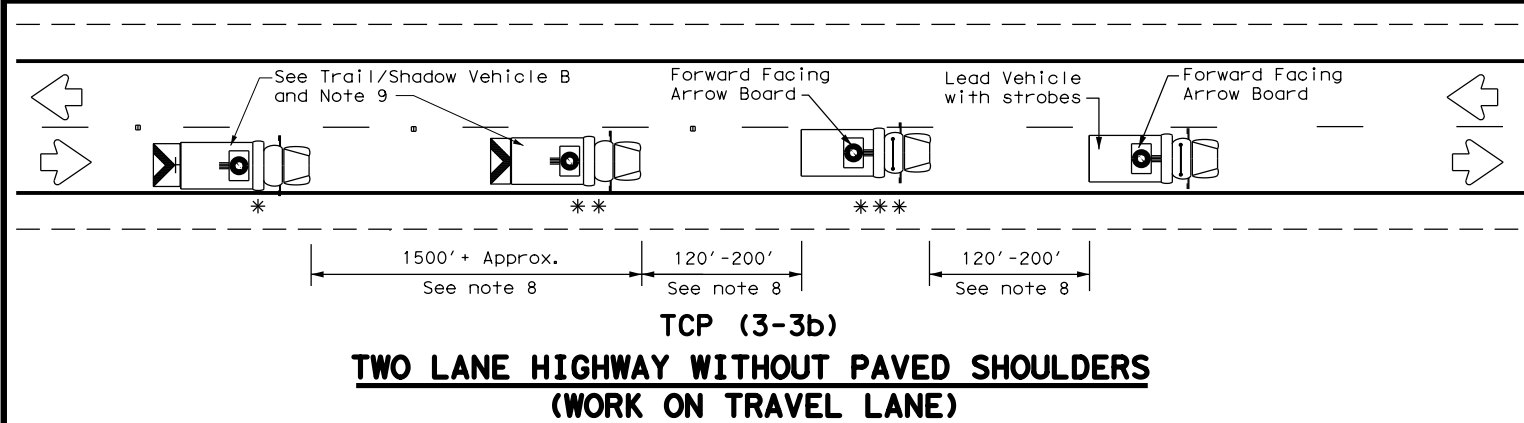
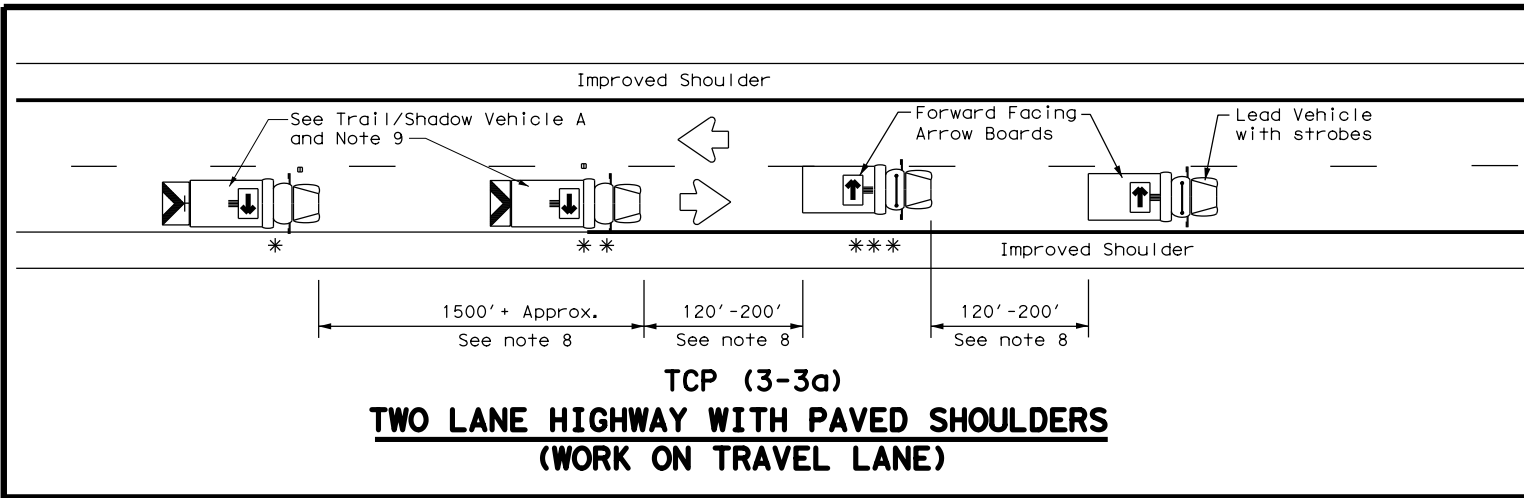
TCP (3-1)-13

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

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

GENERAL NOTES

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

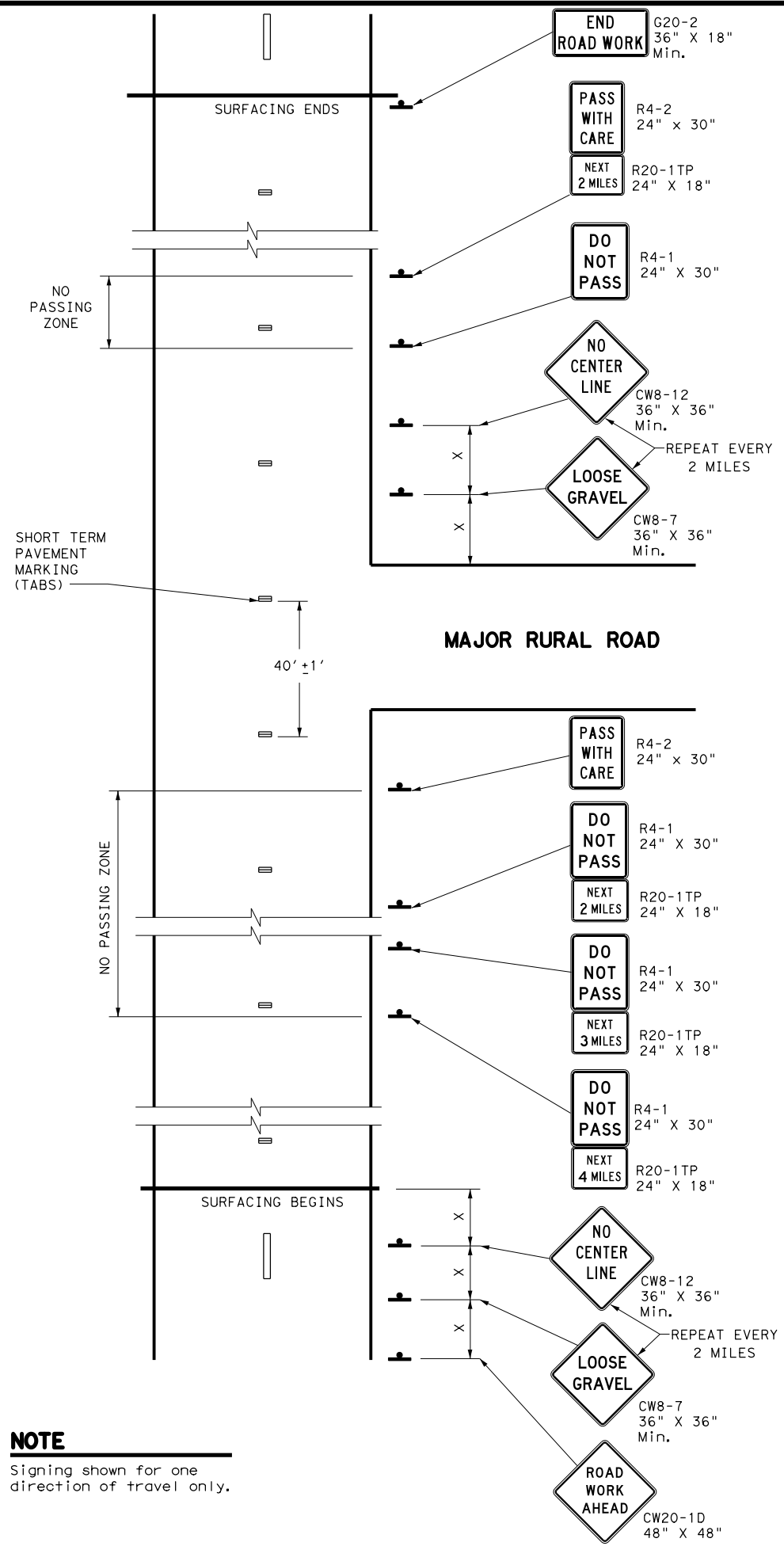
Texas Department of Transportation
 Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
MOBILE OPERATIONS
RAISED PAVEMENT
MARKER INSTALLATION/
REMOVAL
TCP (3-3) - 14

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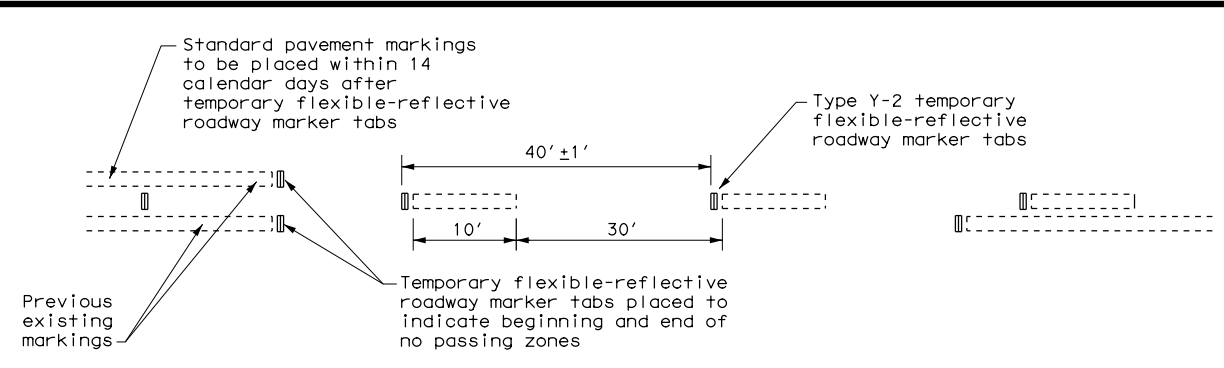
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NOTE
Signing shown for one direction of travel only.

NO PASSING ZONES ON TWO-LANE TWO-WAY ROADS



TABS ON CENTERLINES OF TWO-LANE TWO-WAY ROADS
For seal coat, micro-surface or similar operations

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

- A. Prior to the beginning of construction, all currently striped no-passing zones shall be signed with the DO NOT PASS (R4-1) signs and PASS WITH CARE (R4-2) signs placed at the beginning and end of each zone for each direction of travel except as otherwise provided herein. Signs marking these individual no-passing zones need not be covered prior to construction if the signs supplement the existing pavement markings.
- B. At the discretion of the Engineer, in areas of numerous no-passing zones, several zones may be combined as a single zone. If passing is to be prohibited over one or more lengthy sections, a DO NOT PASS sign and a NEXT XX MILES (R20-1TP) plaque may be used at the beginning of such zones. The DO NOT PASS sign and the NEXT XX MILES plaque should be repeated every mile to the end of the no-passing zone. In areas where there is considerable distance between no-passing zones, the end of the no-passing zone may be signed with a PASS WITH CARE sign and a NEXT XX MILES plaque.
- C. Depending on traffic volumes and length of sections, it may be desirable to prohibit passing throughout the project to prevent damage to windshield and lights. The DO NOT PASS sign and NEXT XX MILES plaque should be used and repeated as often as necessary for this purpose. Where several existing zones are to be combined into one individual no-passing zone, the sign at the beginning of the zone should be covered until the surfacing operation has passed this location so as not to have the DO NOT PASS sign conflict with the existing pavement markings. Also, unless one days operation completes the entire length of such combined zones, appropriate DO NOT PASS and PASS WITH CARE signs should be placed at the beginning and end of the no-passing zones where the surfacing operation has stopped for the day.
- D. R4-1 and R4-2 are to remain in place until standard pavement markings are installed.

"NO CENTER LINE" SIGN (CW8-12)

- A. Center line markings are yellow pavement markings that delineate the separation of travel lanes that have opposite directions of travel on a roadway. Divided highways do not typically have center line markings.
- B. At the time construction activity obliterates the existing center line markings (low volume roads may not have an existing centerline), a NO CENTER LINE (CW8-12) sign should be erected at the beginning of the work area, at approximately 2 mile intervals within the work area, beyond major intersections and other locations deemed necessary by the Engineer.
- C. The NO CENTER LINE signs are to remain in place until standard pavement markings are installed.

"LOOSE GRAVEL" SIGN (CW8-7)

- A. When construction begins, a LOOSE GRAVEL (CW8-7) sign should be erected at each end of the work area and repeated at intervals of approximately 2 miles in rural areas and closer in urban areas.
- B. The LOOSE GRAVEL signs are to remain in place until the condition no longer exists.

PAVEMENT MARKINGS

- A. Temporary markings for surfacing projects shall be Temporary Flexible-reflective Roadway Marker Tabs unless otherwise approved by the Engineer. Tabs are to be installed to provide true alignment for striping crews or as directed by the Engineer. Tabs will be placed at the spacing indicated. Tabs should be applied to the pavement no more than two (2) days before the surfacing is applied. After the surfacing is rolled and swept, the cover over the reflective strip shall be removed.
- B. Tabs shall not be used to simulate edge lines.
- C. Tab placement for overlay/inlay operations shall be as shown on the WZ(STPM) standard sheet.

COORDINATION OF SIGN LOCATIONS

- A. The location of warning signs at the beginning and end of a work area are to be coordinated with other signing typically shown on the Barricade and Construction Standards for project limits to ensure adequate sign spacing.
- B. Where possible the ROAD WORK AHEAD (CW20-1D), LOOSE GRAVEL (CW8-7), and NO CENTER LINE (CW8-12) signs should be placed in the sequence shown following the OBEY WARNING SIGNS STATE LAW (R20-3T) and the TRAFFIC FINES DOUBLE (R20-5T) sign, and one "X" sign spacing prior to the CONTRACTOR (G20-6T) sign typically located at or near the limits of surfacing. LOOSE GRAVEL and NO CENTER LINE signs will then be repeated as described above.

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

* Conventional Roads Only

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

GENERAL NOTES

1. The traffic control devices detailed on this sheet will be furnished and erected as directed by the Engineer on sections of roadway where tabs must be placed prior to the surfacing operation which will cover or obliterate the existing pavement markings.
2. The devices shown on this sheet are to be used to supplement those required by the BC Standards or others required elsewhere in the plans.
3. Signs shall be erected as detailed on the BC Standards or the Compliant Work Zone Traffic Control Devices List (CWZTCD) on supports approved for Long-Term / Intermediate-Term Work Zone Sign Supports.
4. When surfacing operations take place on divided highways, freeways or expressways, the size of diamond shaped construction warning signs shall be 48" x 48".
5. Signs on divided highways, freeways and expressways will be placed on both right and left sides of the roadway based on roadway conditions as directed by the Engineer.



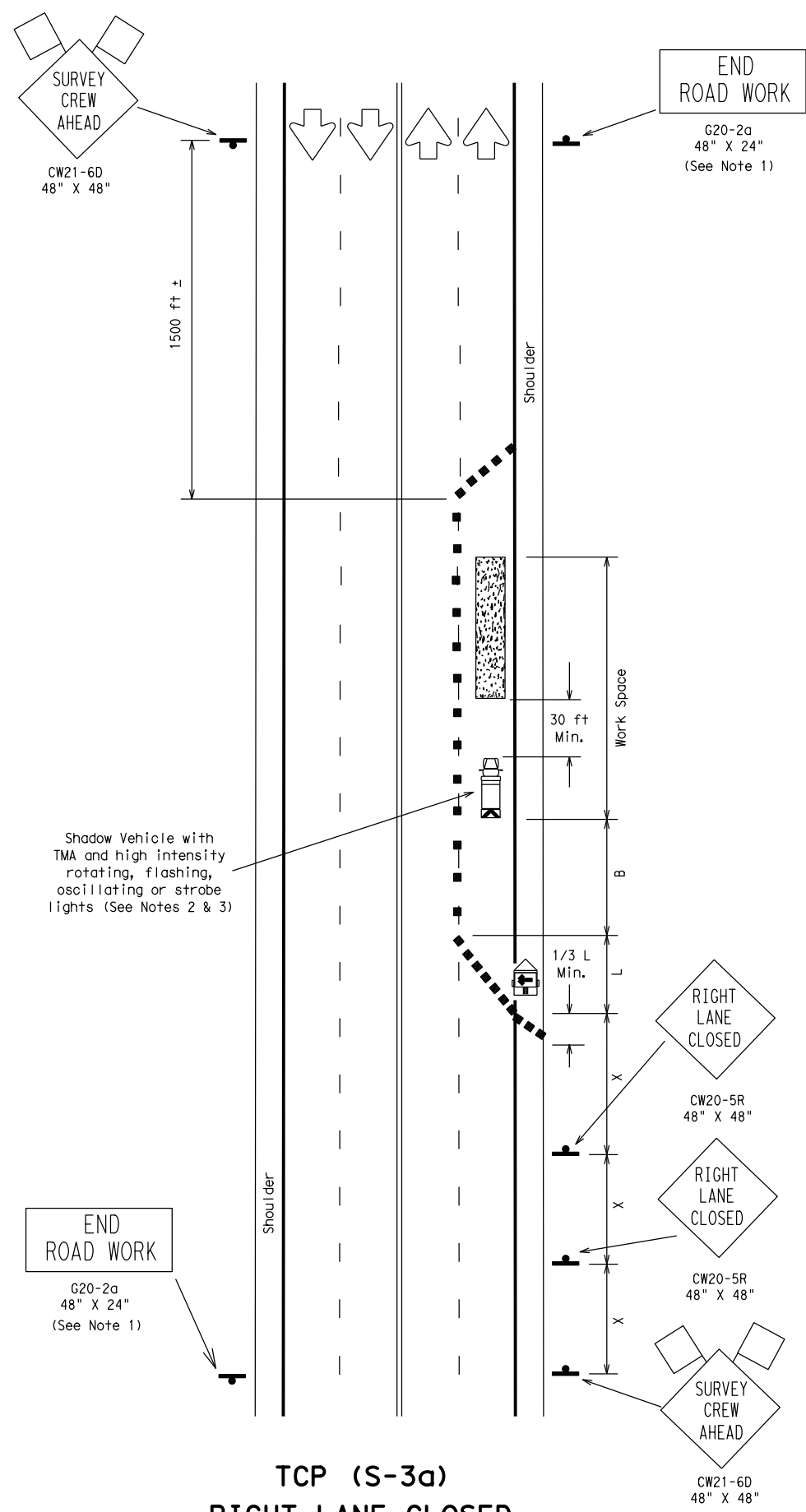
TRAFFIC CONTROL DETAILS FOR SURFACING OPERATIONS

TCP (7-1) - 13

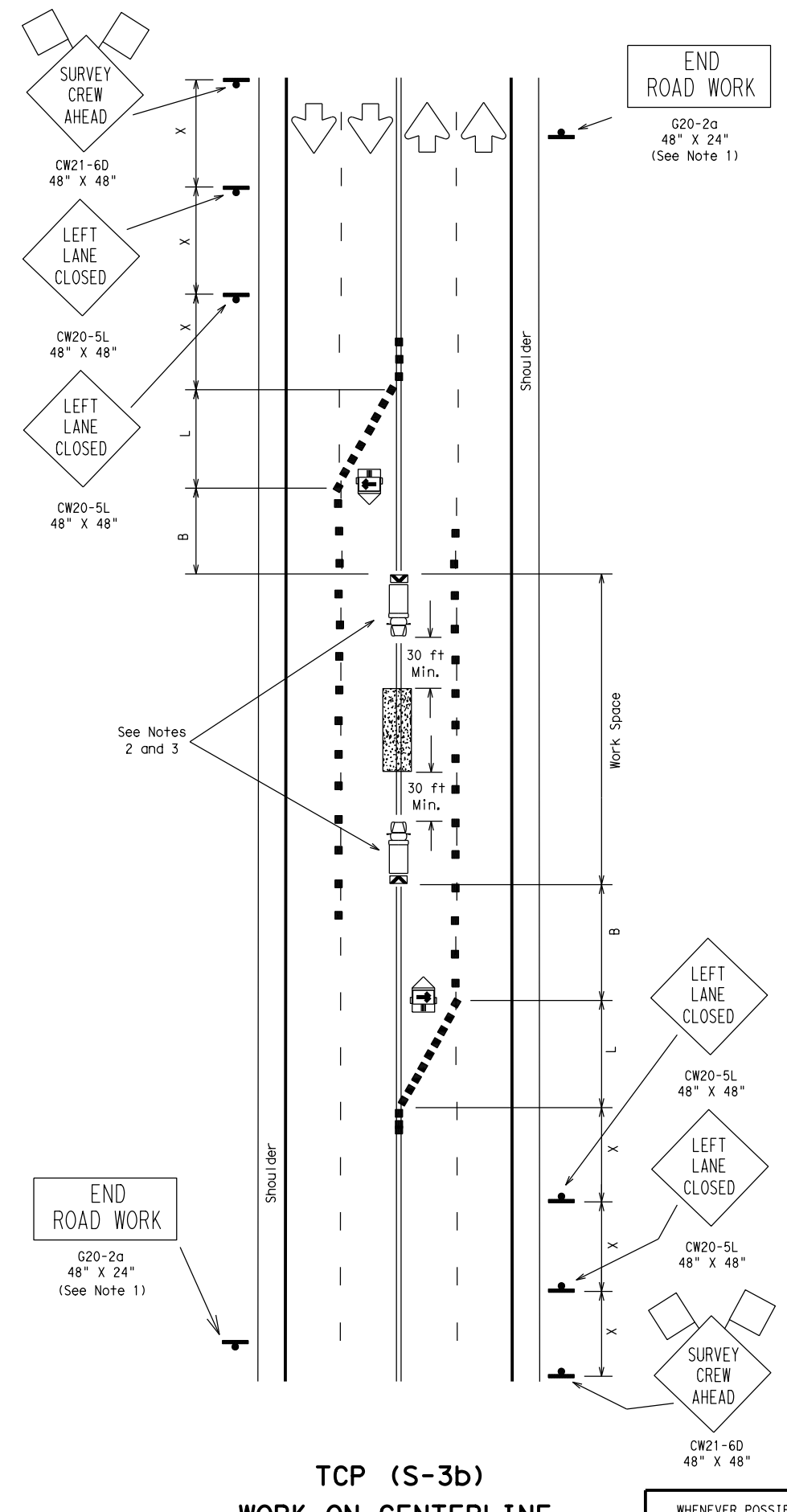
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TCP (S-3a)
RIGHT LANE CLOSED
WITH OR WITHOUT SHOULDERS



TCP (S-3b)
WORK ON CENTERLINE

WHENEVER POSSIBLE, SURVEY PARTIES SHOULD AVOID, BY THE USE OF OFFSET LINES, ANY UNNECESSARY PERIODS OF TIME ON THE ROAD SURFACE.

LEGEND

	Type III Barricade		Channelizing Devices		Flag
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)		
	Trailer Mounted Flashing Arrow Panel		Portable Changeable Message Sign (PCMS)		
	Flagger		Sign Post		

Posted Speed *X	Formula	Minimum Desirable Taper Lengths *X			Suggested Maximum Spacing of Device		Min. Sign Spacing "X" Distance	Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60' - 75'	120'	90'
35		205'	225'	245'	35'	70' - 90'	160'	120'
40		265'	295'	320'	40'	80' - 100'	240'	155'
45		450'	495'	540'	45'	90' - 110'	320'	195'
50		500'	550'	600'	50'	100' - 125'	400'	240'
55		550'	605'	660'	55'	110' - 140'	500'	295'
60		600'	660'	720'	60'	120' - 150'	600'	350'
65	650'	715'	780'	65'	130' - 165'	700'	410'	
70	700'	770'	840'	70'	140' - 175'	800'	475'	
75	750'	825'	900'	75'	150' - 185'	900'	540'	

* Conventional Roads Only
 X 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
	✓	✓		

DEFINITIONS:
 SHORT DURATION - work that occupies a location up to 1 hour.
 SHORT TERM STATIONARY - daytime work that occupies a location for more than 1 hour within a single daylight period.

- GENERAL NOTES:**
- The G20-2a "END ROAD WORK" sign may be placed on the back of the CW21-6D "SURVEY CREW AHEAD" sign or may be omitted for short duration (less than 1 hour) work.
 - For short duration work the Shadow Vehicle with TMA may be replaced by another Work Vehicle with high intensity rotating, flashing or strobe lights.
 - Shadow Vehicles with a TMA are desirable when workers or equipment are in the work space. When approved by the engineer, Type III barricades or other channelizing devices may be substituted for the Shadow Vehicle.
 - CW20-1D "ROAD WORK AHEAD" signs may be substituted for CW21-6D "SURVEY CREW AHEAD" signs.
 - The CW21-6D "SURVEY CREW AHEAD" sign for low volume intersecting side roads is desirable, but is not required when working less than 15 minutes in area of the side road, as determined by the Engineer.

TCP (S-3a)
 6. If shoulders are not present, the 1/3L shoulder taper is to be omitted and four channelizing devices shall be placed in front of the arrow panel, perpendicular to traffic.

TCP (S-3b)
 7. One CW20-5L "LEFT LANE CLOSED" sign in each direction may be omitted when the posted speed is less than 45mph and volume is less than 2000 ADT.

Texas Department of Transportation
 Traffic Operations Division

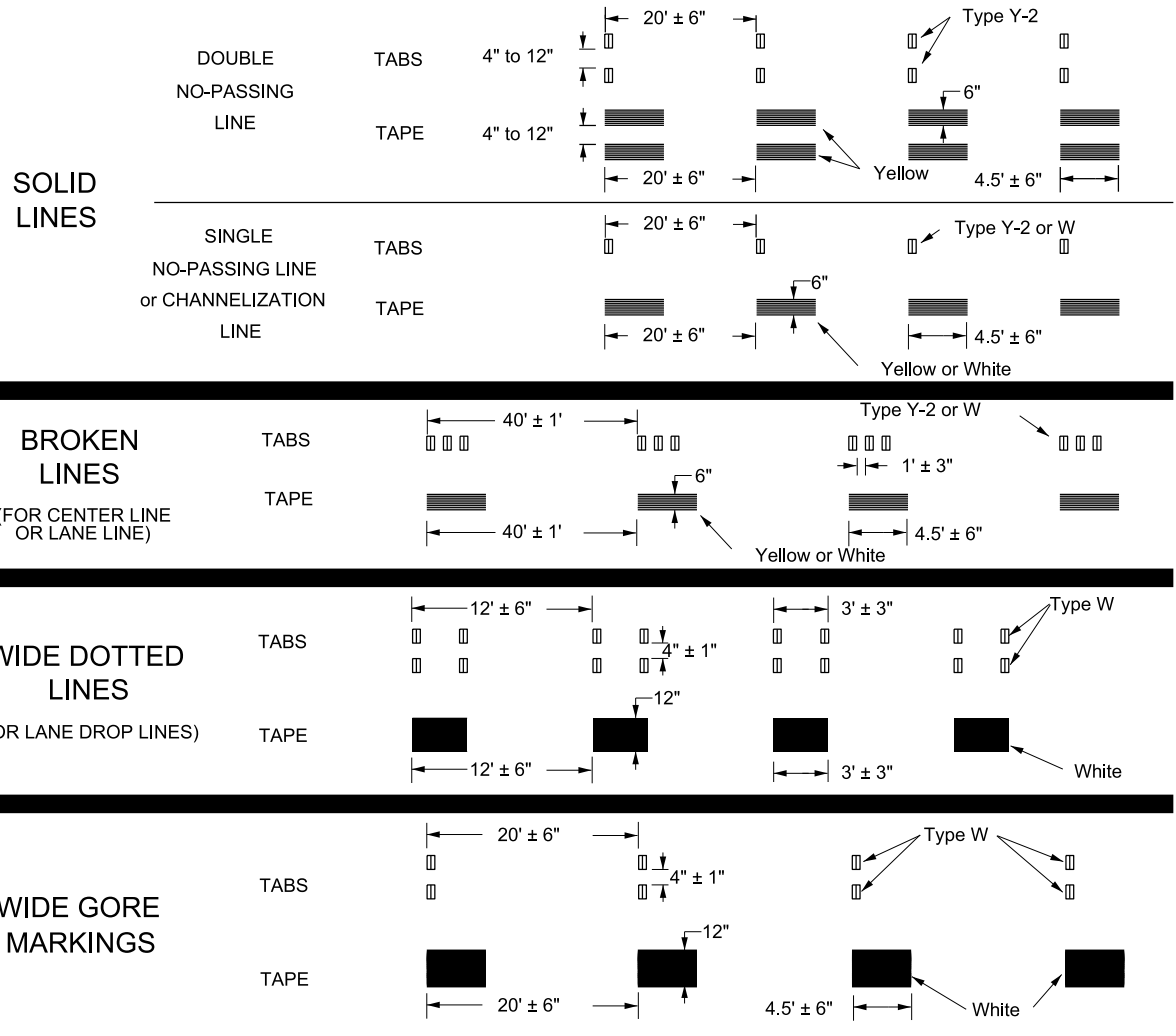
TRAFFIC CONTROL PLAN FOR SURVEYING OPERATIONS

TCP (S-3) -08

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WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



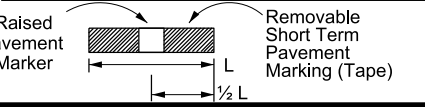
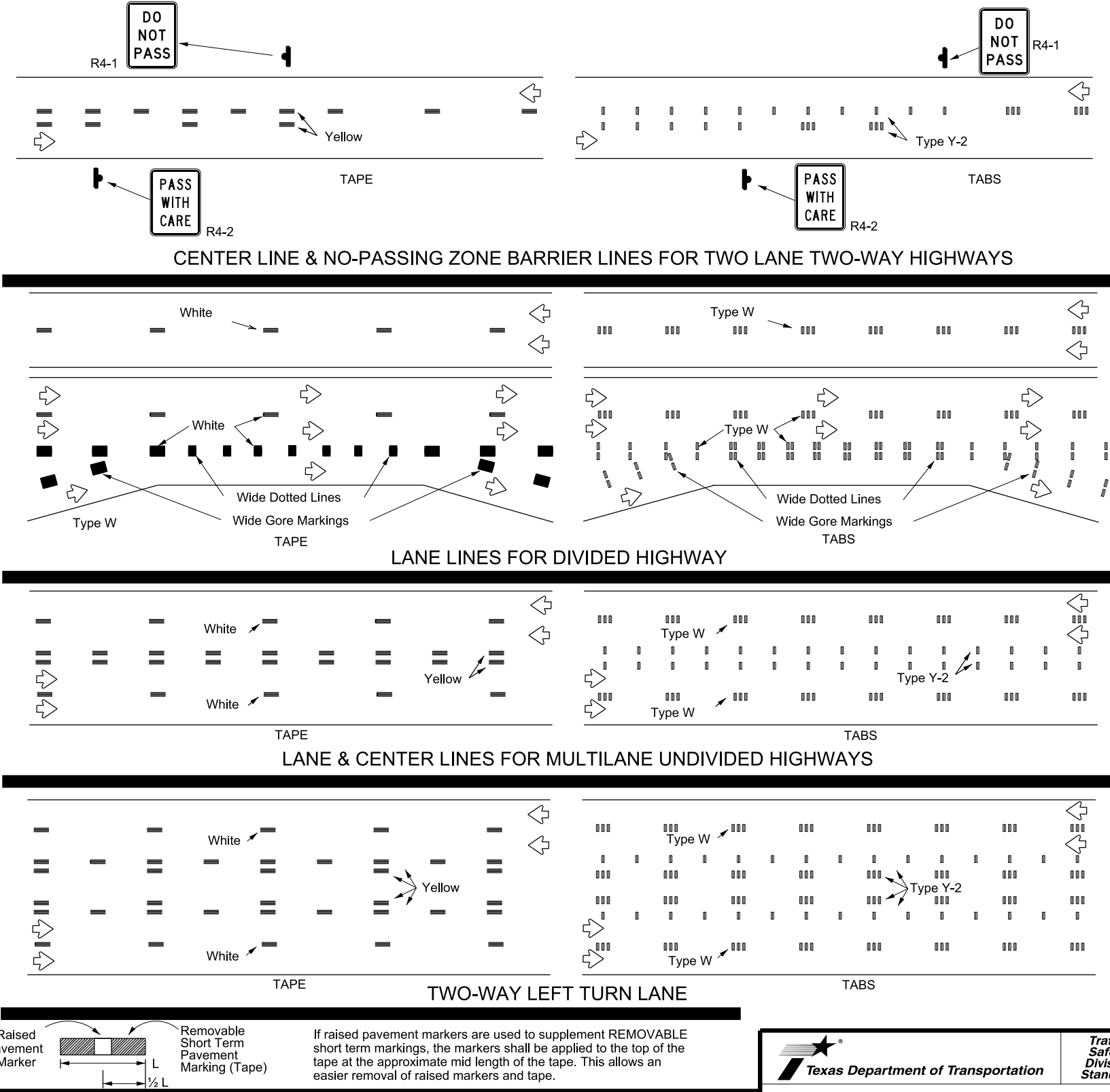
NOTES:

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

TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

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

WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



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

PREFABRICATED PAVEMENT MARKINGS

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

RAISED PAVEMENT MARKERS

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

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

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

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



WORK ZONE SHORT TERM PAVEMENT MARKINGS

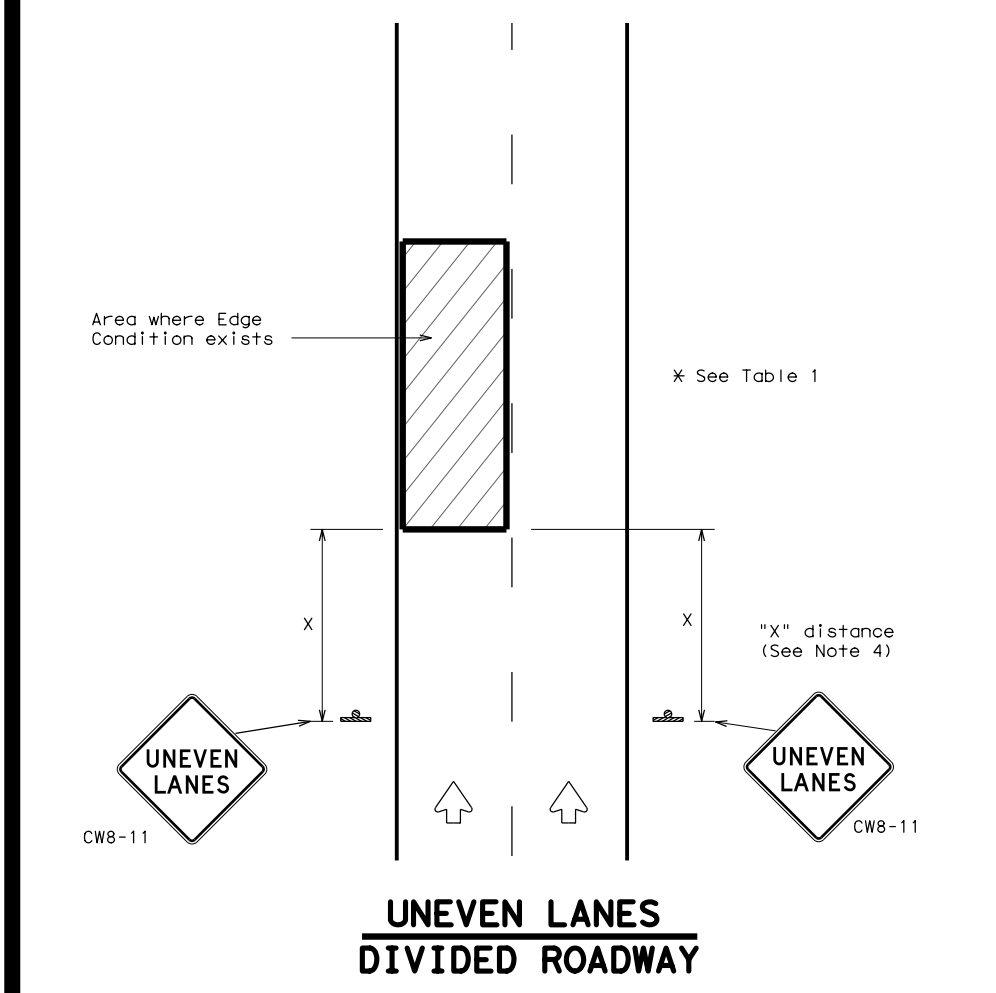
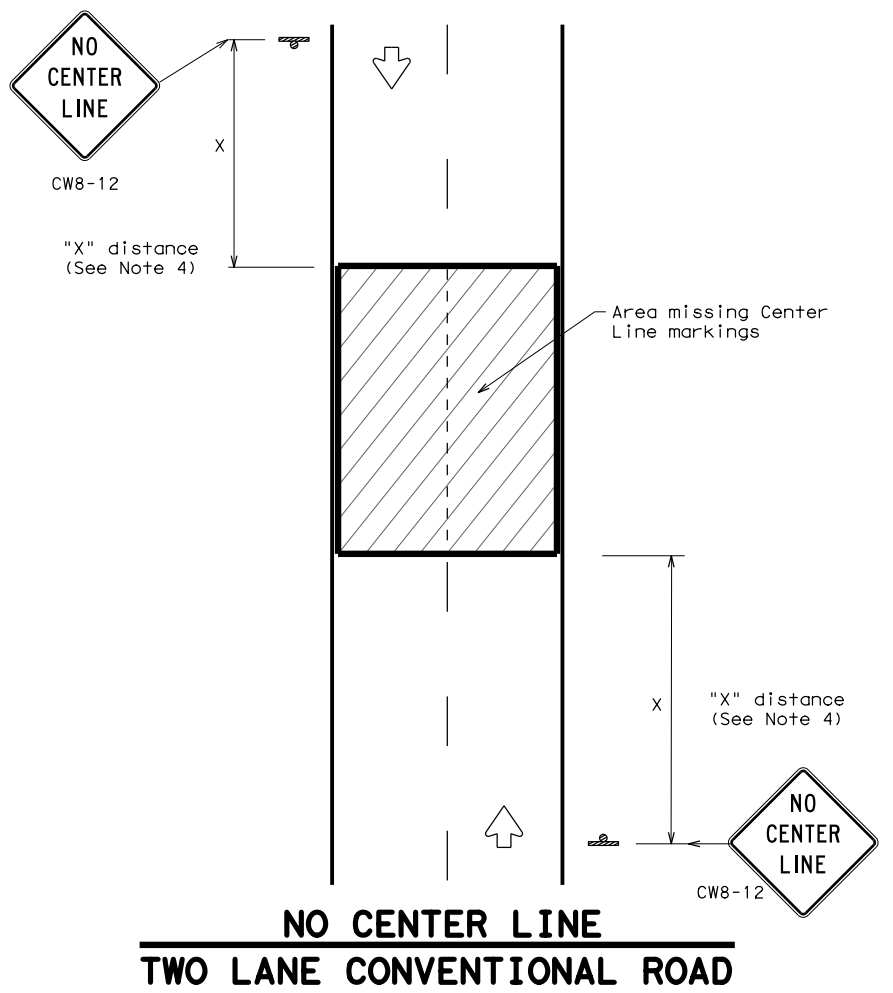
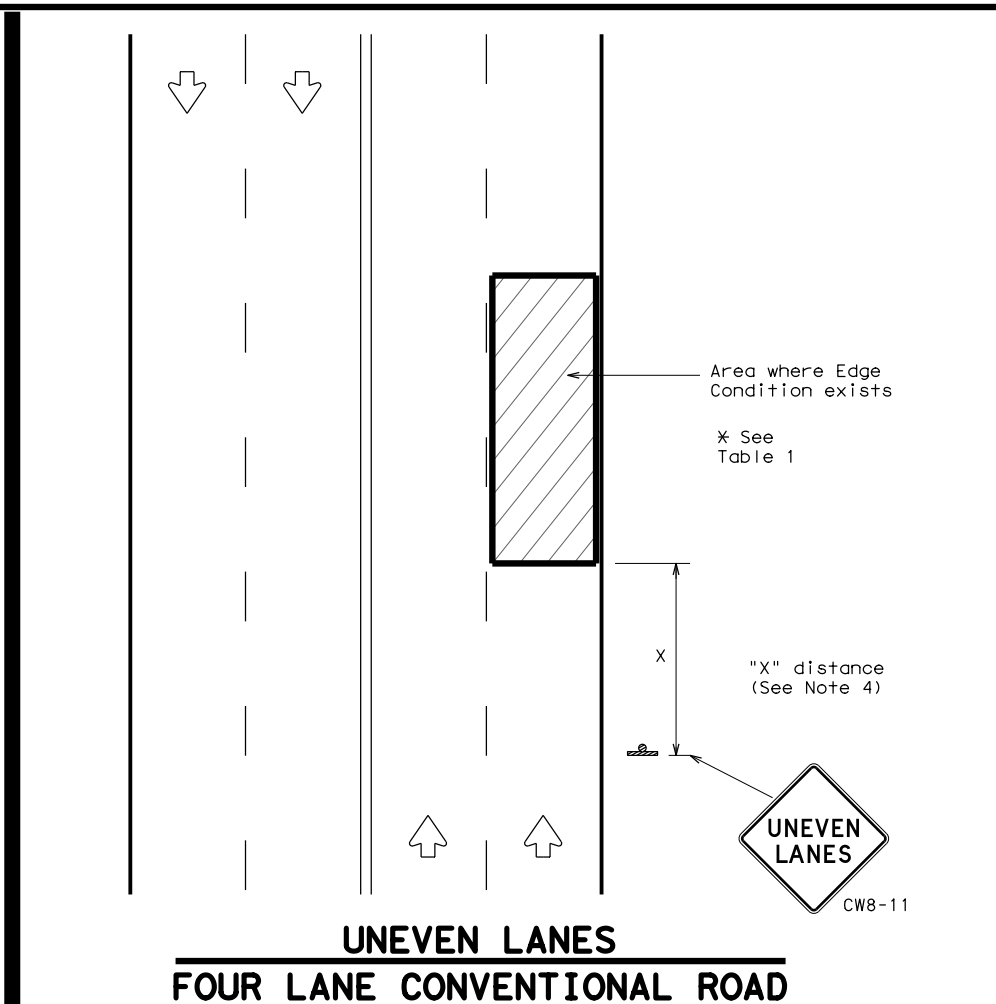
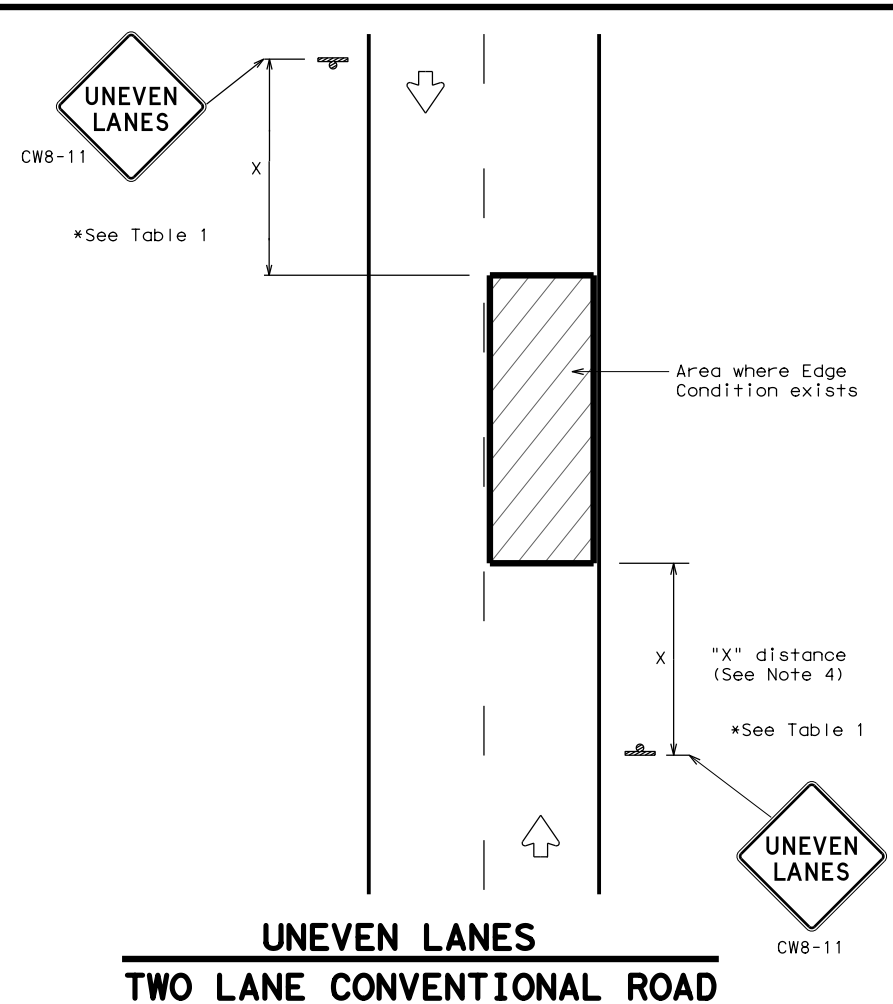
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DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B _{FL} OR TYPE C _{FL} SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

GENERAL NOTES

1. If spalling or holes occur, ROUGH ROAD (CW8-8) signs should be placed in advance of the condition and be repeated every two miles where the condition persists.
2. UNEVEN LANES (CW8-11) signs shall be installed in advance of the condition and repeated every mile. Signs installed along the uneven lane condition may be supplemented with the NEXT XX MILES (CW7-3aP) plaque or Advisory Speed (CW13-1P) plaque.
3. NO CENTER LINE (CW8-12) signs and temporary pavement markings as per the WZ(STPM) standard shall be installed if yellow centerlines separating two way traffic are obscured or obliterated. Repeat NO CENTER LINE signs every two miles where the center line markings are not in place. The signs and markings shall remain in place until permanent pavement markings are installed.
4. Signs shall be spaced at the distances recommended as per BC standards.
5. Additional signs may be required as directed by the Engineer. Signs shall remain in place until final surface is applied. Signs shall be considered subsidiary to Item 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING."
6. Signs shall be fabricated and mounted on supports as shown on the BC standards and/or listed on the "Compliant Work Zone Traffic Control Devices" list.
7. Short term markings shall not be used to simulate edge lines.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition.

TABLE 1		
Edge Condition	Edge Height (D)	* Warning Devices
①	Less than or equal to: 1/4" (maximum-planing) 1/2" (typical-overlay)	Sign: CW8-11
②	Less than or equal to 3"	Sign: CW8-11
③	Distance "D" may be a maximum of 3" if uneven lanes with edge condition 2 or 3 are open to traffic after work operations cease. Uneven lanes should not be open to traffic when "D" is greater than 3".	

Notched Wedge Joint

TRAFFIC CONTROL DURING PLANING, OVERLAY AND LEVELING OPERATIONS ARE SHOWN ELSEWHERE IN THE PLANS.

MINIMUM WARNING SIGN SIZE	
Conventional roads	36" x 36"
Freeways/expressways, divided roadways	48" x 48"



SIGNING FOR UNEVEN LANES

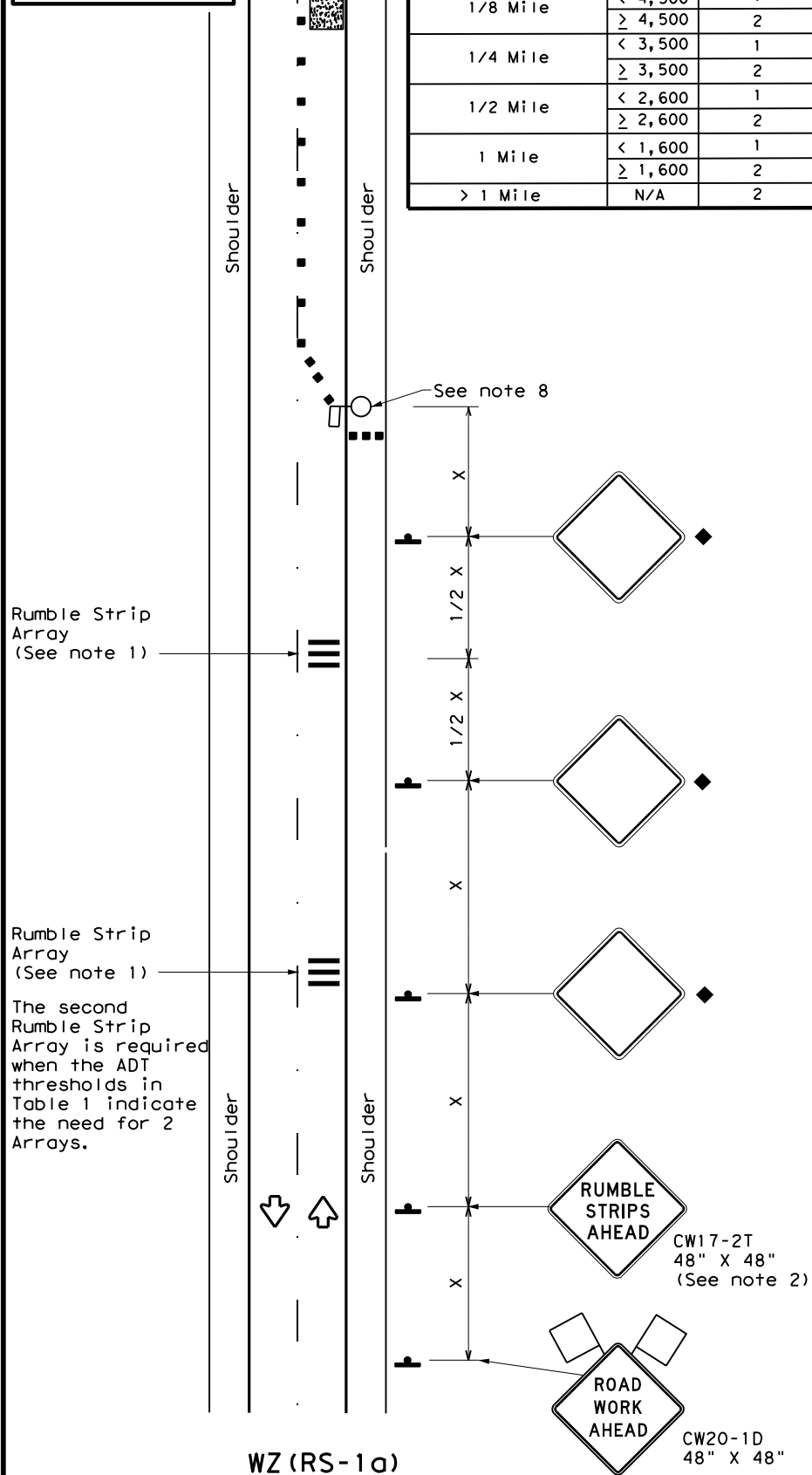
WZ (UL) - 13

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1-97 3-03	TYL	HENDERSON	61	

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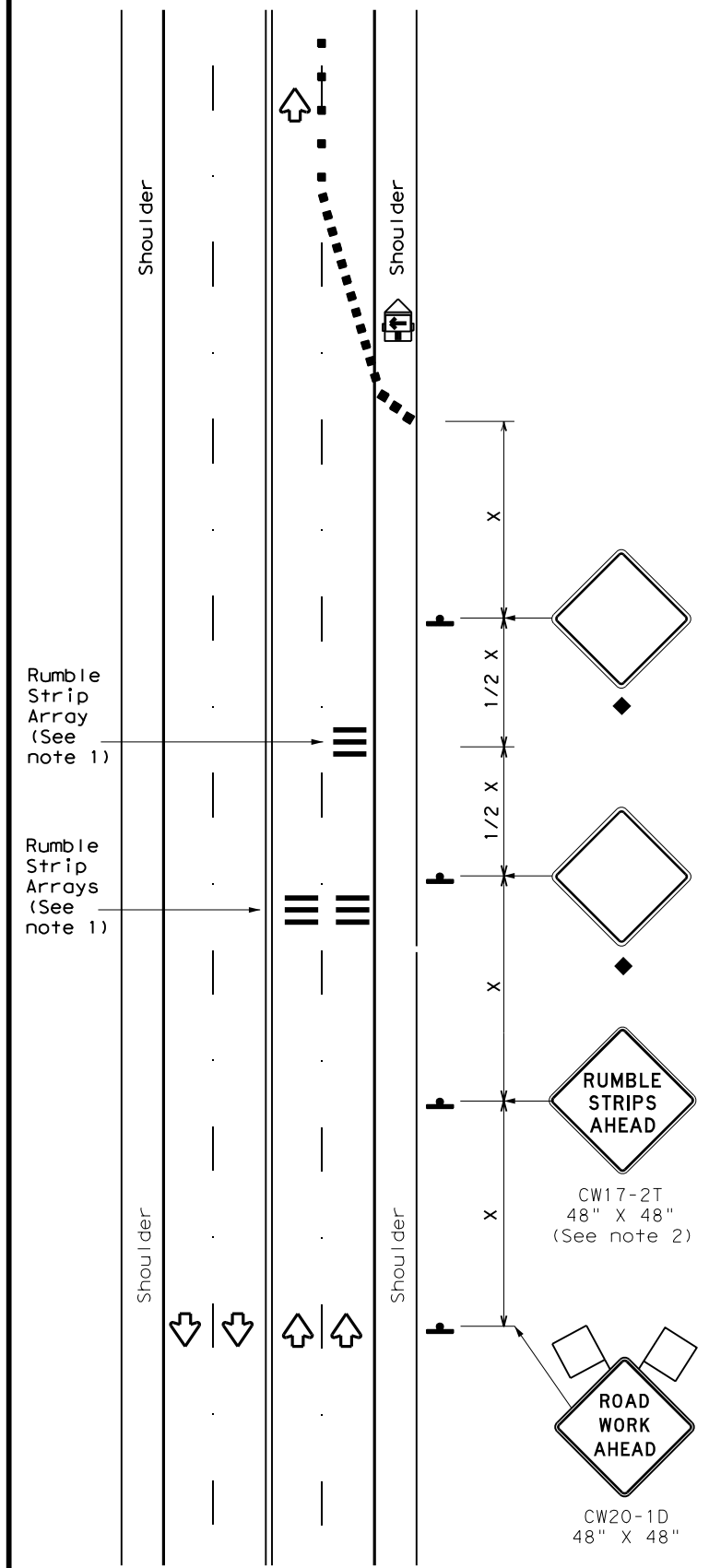
Warning sign and rumble strip sequence in opposite direction is same as below.

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

- 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.
- 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.
- Temporary Rumble Strips will be considered subsidiary to Item 502, and shall be a product listed on the Compliant Work Zone Traffic Control Devices.
- Remove Temporary Rumble Strips before removing the advanced warning signs.
- Temporary Rumble Strips should not be used on horizontal curves, loose gravel, soft or bleeding asphalt, heavily rutted pavements or unpaved surfaces.
- Temporary Rumble Strips shall be installed and maintained as per manufacturer's recommendations.
- This standard sheet shall be used in conjunction with other appropriate TCP standard, TMUTCD typical application or project specific detail for the project.
- The one-lane two-way application may utilize a flagger, an Automated Flagger Assistance Device (AFAD) or a Portable Traffic Signal (PTS).
- Replace defective Temporary Rumble Strips as directed by the Engineer.
- Temporary Rumble Strips may be used on freeways or expressways based on engineering judgment and written direction from the Engineer.

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

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L = WS/2	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40	L = WS	265'	295'	320'	40'	80'	240'	155'
45		350'	395'	440'	45'	90'	320'	195'
50	L = WS	450'	500'	550'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60	L = WS	600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70	L = WS	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)

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.

Texas Department of Transportation Traffic Safety Division Standard

TEMPORARY RUMBLE STRIPS

WZ (RS) - 22

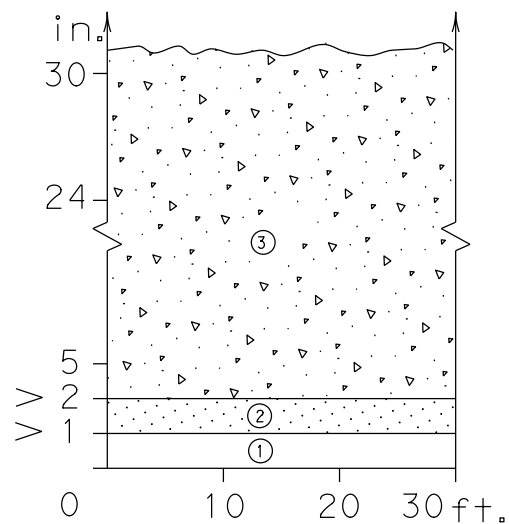
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© TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
2-14 1-22	DIST	COUNTY	SHEET NO.	
4-16	TYL	HENDERSON	62	

DATE: FILE:

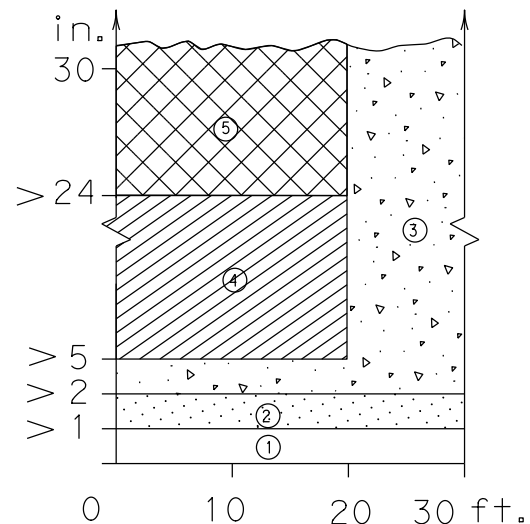
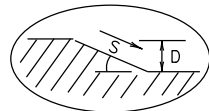
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DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

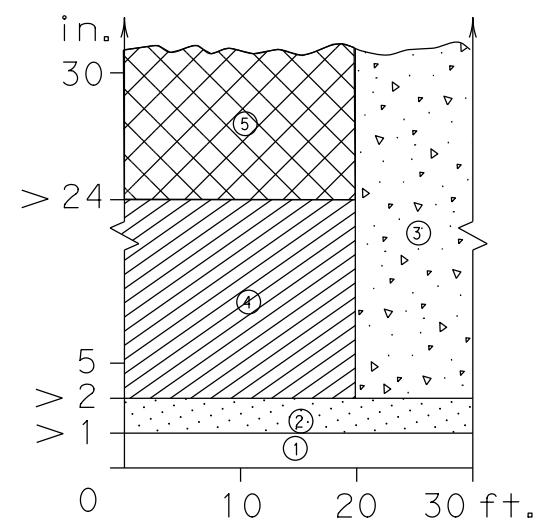
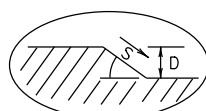
Edge Height (D) in Inches versus Lateral Clearance (Y) in Feet



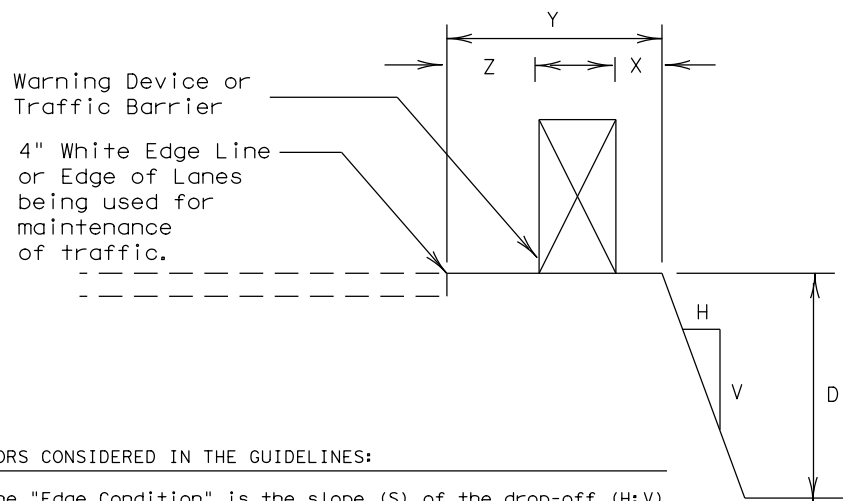
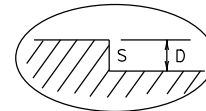
Edge Condition I
S = (3:1) (or flatter)



Edge Condition II
S = ((2.99):1) to (1:1)



Edge Condition III
S is steeper than (1:1)



FACTORS CONSIDERED IN THE GUIDELINES:

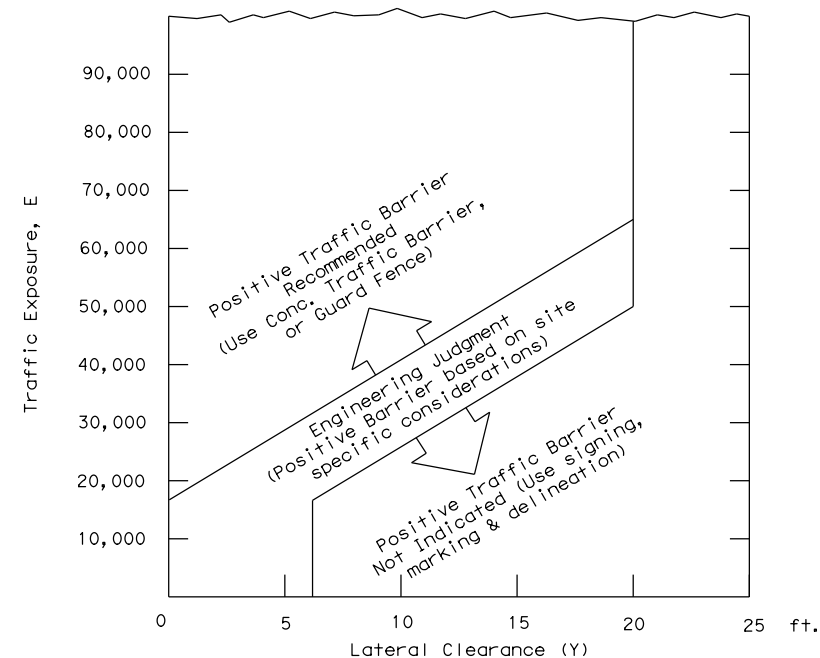
- The "Edge Condition" is the slope (S) of the drop-off (H:V). The "Edge Height" is the depth of the drop-off "D".
- Distance "X" is to be the maximum practical under job conditions. Two feet minimum for high speed conditions. Distance "Y" is the lateral clearance from edge of travel lane to edge of dropoff. Distance "Z" does not have a minimum.
- In addition to the factors considered in the guidelines, each construction zone drop-off situation should be analyzed individually, taking into account other variables, such as: traffic mix, posted speed in the construction zone, horizontal curvature, and the practicality of the treatment options.
- The conditions for indicating the use of positive or protective barriers are given by Zone-5 and Figure-1. Traffic barriers are primarily applicable for high speed conditions. Urban areas with speeds of 30 mph or less may have a lesser need for signing, delineation, and barriers. Right-angled edges, however, with "D" greater than 2 inches and located within a lateral offset of 6 feet, may indicate a higher level of treatment.
- If the distance "Y" must be less than 3 feet, the use of a positive barrier may not be feasible. In such a case, consider either: 1) narrowing the lanes to a desired 11 to 12 feet or 10 foot minimum (see CW20-8 sign), or 2) provide an edge slope such as Edge Condition I.

Zone	Treatment Types Guidelines:
①	No treatment.
②	CW 8-11 "Uneven Lanes" signs.
③	CW 8-9a "Shoulder Drop-Off" or CW 8-11 signs plus vertical panels.
④	CW 8-9a or CW 8-11, signs plus drums. Where restricted space precludes the use of drums, use vertical panels. An edge fill may be provided to change the edge slope to that of the preferable Edge Condition I.
⑤	Check indications (Figure-1) for positive barrier. Where positive barrier is not indicated, the treatment shown above for Zone- 4 may be used after consideration of other applicable factors.

Edge Condition Notes:

- Edge Condition I: Most vehicles are able to traverse an edge condition with a slope rate of (3 to 1) or flatter. The slope must be constructed with a compacted material capable of supporting vehicles.
- Edge Condition II: Most vehicles are able to traverse an edge condition with a slope between (2.99 to 1) and (1 to 1) so long as "D" does not exceed 5 inches. Under-carriage drag on most automobiles will occur when "D" exceeds 6 inches. As "D" exceeds 24 inches, the possibility for rollover is greater in most vehicles.
- Edge Condition III: When slopes are greater than (1 to 1) and where "D" is greater than 2 inches, a more difficult control factor may exist for some vehicles, if not properly treated. For example, where "D" is greater than 2 inches and up to 24 inches different types of vehicles may experience different steering control at different edge heights. Automobiles might experience more steering control differential when "D" is greater than 2 inches and up to 5 inches. Trucks, particularly those with high loads, have more steering control differential when "D" is greater than 5 inches and up to 24 inches. When "D" exceeds 24 inches, the possibility of rollover is greater for most vehicles.
- Milling or overlay operations that result in Edge Condition III should not be in place without appropriate warning treatments, and these conditions should not be left in place for extended periods of time.

FIGURE-1: CONDITIONS INDICATING USE OF POSITIVE BARRIER FOR ZONE 5 ([Cross-hatched symbol])



- E = ADT x T
Where ADT is that portion of the average daily traffic volume traveling within 20 feet (generally two adjacent lanes) of the edge dropoff condition; and, T is the duration time in years of the dropoff condition.
- Figure-1 provides a practical approach to the use of positive barriers for the protection of vehicles from pavement drop-offs. Other factors, such as the presence of heavy machinery, construction workers, or the mix and volume of traffic may make the use of positive barriers appropriate, even when the edge condition alone may not justify the use of a barrier.
- An approved end treatment should be provided for any positive barrier end located within a lateral offset of 20 feet from the edge of the travel lane.

These guidelines apply to temporary traffic control areas or work zones where continuous pavement edges or drop-offs exists parallel and adjacent to a lane used by traffic. The edge conditions may be present between shoulders and travel lanes, between adjacent or opposing travel lanes, or at intermediate points across the width of the paved surface. Due to the variability in construction operations, tolerances in the variables may be allowed by the engineer. These guidelines do not apply to short term operations. These guidelines do not constitute a rigid standard or policy; rather, they are guidance to be used in conjunction with engineering judgement. These guidelines may be updated on the Design Division's on-line manuals.

DATE:
FILE:

Engineer's Seal

Date: 06/10/2024

TREATMENT FOR VARIOUS EDGE CONDITIONS

© TxDOT August 2000		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS					
CONT	SECT	JOB		HIGHWAY	
0108	03	041		SH 19	
DIST		COUNTY		SHEET NO.	
TYL		HENDERSON		62A	

SH 19 ALIGNMENT DATA

Chain GEOMCL19 contains:
 GEOMCL191 CUR GEOMCL19_3 CUR GEOMCL19_6 GEOMCL199 GEOMCL1911 GEOMCL1913 GEOMCL1915 CUR GEOMCL19_17 GEOMCL1920 CUR GEOMCL19_22 CUR GEOMCL19_25 GEOMCL1928 CUR - GEOMCL19_30 GEOMCL1933 GEOMCL1935 GEOMCL1937 GEOMCL1939 CUR GEOMCL19_41 GEOMCL19_44 CUR GEOMCL19_46 GEOMCL1949 GEOMCL1951 GEOMCL1953 GEOMCL1955 GEOMCL1957 GEOMCL1959 CUR GEOMCL19_61 CUR GEOMCL19_64 CUR GEOMCL19_67 GEOMCL1969

Beginning chain GEOMCL19 description
 Feature: Geom_Centerline

Point GEOMCL191 N 6,824,024.2455 E 2,787,702.7548 Sta 1563+00.00
 Course from GEOMCL191 to PC GEOMCL19_3 S 5° 24' 56.62" E Dist 10,379.3340

Curve Data

 Curve GEOMCL19_3
 P.I. Station = 1671+30.14 N 6,813,242.4505 E 2,788,724.9207
 Delta = 2° 31' 08.96" (RT)
 Degree = 0° 16' 46.02"
 Tangent = 450.8058
 Length = 901.4663
 Radius = 20,502.9821
 External = 4.9554
 Long Chord = 901.3937
 Mid. Ord. = 4.9542
 P.C. Station = 1666+79.33 N 6,813,691.2439 E 2,788,682.3730
 P.T. Station = 1675+80.80 N 6,812,792.2207 E 2,788,747.7014
 C.C. = 6,811,756.1397 E 2,768,270.9142
 Back = S 5° 24' 56.62" E
 Ahead = S 2° 53' 47.66" E
 Chord Bear = S 4° 09' 22.14" E

Course from PT GEOMCL19_3 to PC GEOMCL19_6 S 2° 53' 47.66" E Dist 12,498.3164

Curve Data

 Curve GEOMCL19_6
 P.I. Station = 1811+66.53 N 6,799,223.8486 E 2,789,434.2315
 Delta = 0° 49' 04.63" (RT)
 Degree = 0° 02' 15.40"
 Tangent = 1,087.4130
 Length = 2,174.7891
 Radius = 152,339.3501
 External = 3.8810
 Long Chord = 2,174.7707
 Mid. Ord. = 3.8809
 P.C. Station = 1800+79.12 N 6,800,309.8724 E 2,789,379.2811
 P.T. Station = 1822+53.91 N 6,798,137.1511 E 2,789,473.6729
 C.C. = 6,792,611.6799 E 2,637,234.5624
 Back = S 2° 53' 47.66" E
 Ahead = S 2° 04' 43.03" E
 Chord Bear = S 2° 29' 15.35" E

Course from PT GEOMCL19_6 to GEOMCL199 S 2° 04' 43.03" E Dist 853.8244
 Point GEOMCL199 N 6,797,283.8885 E 2,789,504.6418 Sta 1831+07.73
 Course from GEOMCL199 to GEOMCL1911 S 1° 46' 43.03" E Dist 279.0000
 Point GEOMCL1911 N 6,797,005.0229 E 2,789,513.3013 Sta 1833+86.73
 Course from GEOMCL1911 to GEOMCL1913 S 2° 04' 43.03" E Dist 306.3353
 Point GEOMCL1913 N 6,796,698.8892 E 2,789,524.4124 Sta 1836+93.07
 Course from GEOMCL1913 to GEOMCL1915 S 1° 46' 43.03" E Dist 210.0000
 Point GEOMCL1915 N 6,796,488.9904 E 2,789,530.9303 Sta 1839+03.07
 Course from GEOMCL1915 to PC GEOMCL19_17 S 1° 28' 43.03" E Dist 209.7771

Curve Data

 Curve GEOMCL19_17
 P.I. Station = 1844+85.81 N 6,795,906.4433 E 2,789,545.9673
 Delta = 14° 45' 09.26" (RT)
 Degree = 1° 59' 19.49"
 Tangent = 372.9641
 Length = 741.8026
 Radius = 2,881.0000
 External = 24.0410
 Long Chord = 739.7552
 Mid. Ord. = 23.8420
 P.C. Station = 1841+12.84 N 6,796,279.2832 E 2,789,536.3434
 P.T. Station = 1848+54.65 N 6,795,543.4435 E 2,789,460.3320
 C.C. = 6,796,204.9421 E 2,786,656.3027
 Back = S 1° 28' 43.03" E
 Ahead = S 13° 16' 26.22" W
 Chord Bear = S 5° 53' 51.60" W

Course from PT GEOMCL19_17 to GEOMCL1920 S 13° 16' 26.22" W Dist 220.1622
 Point GEOMCL1920 N 6,795,329.1633 E 2,789,409.7812 Sta 1850+74.81
 Course from GEOMCL1920 to PC GEOMCL19_22 S 13° 42' 53.21" W Dist 261.4625

SH 19 ALIGNMENT DATA

Curve Data

 Curve GEOMCL19_22
 P.I. Station = 1855+49.79 N 6,794,867.7205 E 2,789,297.1675
 Delta = 7° 42' 55.42" (RT)
 Degree = 1° 48' 33.93"
 Tangent = 213.5230
 Length = 426.4006
 Radius = 3,166.5198
 External = 7.1909
 Long Chord = 426.0785
 Mid. Ord. = 7.1746
 P.C. Station = 1853+36.27 N 6,795,075.1556 E 2,789,347.7914
 P.T. Station = 1857+62.67 N 6,794,668.9597 E 2,789,219.1532
 C.C. = 6,795,825.9018 E 2,786,271.5555
 Back = S 13° 42' 53.21" W
 Ahead = S 21° 25' 48.63" W
 Chord Bear = S 17° 34' 20.92" W

Course from PT GEOMCL19_22 to PC GEOMCL19_25 S 21° 25' 48.63" W Dist 521.8417

Curve Data

 Curve GEOMCL19_25
 P.I. Station = 1868+24.12 N 6,793,680.8939 E 2,788,831.3340
 Delta = 4° 51' 56.87" (LT)
 Degree = 0° 27' 04.08"
 Tangent = 539.6091
 Length = 1,078.5696
 Radius = 12,700.3794
 External = 11.4582
 Long Chord = 1,078.2455
 Mid. Ord. = 11.4479
 P.C. Station = 1862+84.51 N 6,794,183.1963 E 2,789,028.4894
 P.T. Station = 1873+63.08 N 6,793,163.6785 E 2,788,677.4954
 C.C. = 6,789,542.8956 E 2,800,850.8092
 Back = S 21° 25' 48.63" W
 Ahead = S 16° 33' 51.76" W
 Chord Bear = S 18° 59' 50.20" W

Course from PT GEOMCL19_25 to GEOMCL1928 S 16° 33' 51.76" W Dist 553.5877

Point GEOMCL1928 N 6,792,633.0647 E 2,788,519.6717 Sta 1879+16.67

Course from GEOMCL1928 to PC GEOMCL19_30 S 16° 15' 51.76" W Dist 951.4688

Curve Data

 Curve GEOMCL19_30
 P.I. Station = 1893+58.22 N 6,791,249.2055 E 2,788,115.9368
 Delta = 12° 36' 28.10" (LT)
 Degree = 1° 17' 29.44"
 Tangent = 490.0818
 Length = 976.2054
 Radius = 4,436.3350
 External = 26.9876
 Long Chord = 974.2370
 Mid. Ord. = 26.8244
 P.C. Station = 1888+68.14 N 6,791,719.6741 E 2,788,253.1940
 P.T. Station = 1898+44.34 N 6,790,760.1214 E 2,788,084.6814
 C.C. = 6,790,477.1901 E 2,792,511.9851
 Back = S 16° 15' 51.76" W
 Ahead = S 3° 39' 23.66" W
 Chord Bear = S 9° 57' 37.71" W

Course from PT GEOMCL19_30 to GEOMCL1933 S 3° 39' 23.66" W Dist 696.1990

Point GEOMCL1933 N 6,790,065.3397 E 2,788,040.2806 Sta 1905+40.54

Course from GEOMCL1933 to GEOMCL1935 S 3° 43' 50.71" W Dist 698.0000

Point GEOMCL1935 N 6,789,368.8189 E 2,787,994.8632 Sta 1912+38.54

Course from GEOMCL1935 to GEOMCL1937 S 3° 25' 50.71" W Dist 531.0000

Point GEOMCL1937 N 6,788,838.7705 E 2,787,963.0871 Sta 1917+69.54

Course from GEOMCL1937 to GEOMCL1939 S 3° 43' 50.71" W Dist 619.0000

Point GEOMCL1939 N 6,788,221.0823 E 2,787,922.8100 Sta 1923+88.54

Course from GEOMCL1939 to PC GEOMCL19_41 S 4° 01' 14.80" W Dist 1,277.5895

Curve Data

 Curve GEOMCL19_41
 P.I. Station = 1938+74.18 N 6,786,739.0998 E 2,787,818.6397
 Delta = 8° 13' 43.67" (RT)
 Degree = 1° 58' 51.64"
 Tangent = 208.0496
 Length = 415.3838
 Radius = 2,892.2498
 External = 7.4732
 Long Chord = 415.0269
 Mid. Ord. = 7.4540
 P.C. Station = 1936+66.13 N 6,786,946.6374 E 2,787,833.2278
 P.T. Station = 1940+81.52 N 6,786,535.7869 E 2,787,774.4977
 C.C. = 6,787,149.4368 E 2,784,948.0966
 Back = S 4° 01' 14.80" W
 Ahead = S 12° 14' 58.47" W
 Chord Bear = S 8° 08' 06.63" W

Course from PT GEOMCL19_41 to GEOMCL1944 S 12° 14' 58.47" W Dist 393.0444

Point GEOMCL1944 N 6,786,151.6911 E 2,787,691.1053 Sta 1944+74.56

Course from GEOMCL1944 to PC GEOMCL19_46 S 12° 32' 58.47" W Dist 635.0002



06/10/2024

VOLKERT

F-12679



**SH 19
 HORIZONTAL
 ALIGNMENT DATA**

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	63

DATE: 23-APR-2024 18:25
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SH 19 ALIGNMENT DATA

Curve Data

Curve GEOMCL19_46
 P.I. Station = 1954+52.21 N 6,785,197.3994 E 2,787,478.6775
 Delta = 12° 45' 49.27" (LT)
 Degree = 1° 52' 12.87"
 Tangent = 342.6492
 Length = 682.4620
 Radius = 3,063.5503
 External = 19.1026
 Long Chord = 681.0517
 Mid. Ord. = 18.9842
 P.C. Station = 1951+09.56 N 6,785,531.8621 E 2,787,553.1298
 P.T. Station = 1957+92.02 N 6,784,854.7526 E 2,787,479.9580
 C.C. = N 6,784,866.2009 E 2,790,543.4869
 Back = S 12° 32' 58.47" W
 Ahead = S 0° 12' 50.80" E
 Chord Bear = S 6° 10' 03.84" W

Course from PT GEOMCL19_46 to GEOMCL1949 S 0° 12' 50.80" E Dist 262.6370
 Point GEOMCL1949 N 6,784,592.1175 E 2,787,480.9394 Sta 1960+54.66
 Course from GEOMCL1949 to GEOMCL1951 S 0° 30' 50.80" E Dist 951.0000
 Point GEOMCL1951 N 6,783,641.1558 E 2,787,489.4725 Sta 1970+05.66
 Course from GEOMCL1951 to GEOMCL1953 S 0° 23' 44.07" E Dist 458.0000
 Point GEOMCL1953 N 6,783,183.1667 E 2,787,492.6346 Sta 1974+63.66
 Course from GEOMCL1953 to GEOMCL1955 S 0° 35' 44.07" E Dist 450.0000
 Point GEOMCL1955 N 6,782,733.1910 E 2,787,497.3122 Sta 1979+13.66
 Course from GEOMCL1955 to GEOMCL1957 S 0° 17' 44.07" E Dist 903.0000
 Point GEOMCL1957 N 6,781,830.2030 E 2,787,501.9705 Sta 1988+16.66
 Course from GEOMCL1957 to GEOMCL1959 S 0° 35' 44.07" E Dist 971.3741
 Point GEOMCL1959 N 6,780,858.8815 E 2,787,512.0675 Sta 1997+88.03
 Course from GEOMCL1959 to PC GEOMCL19_61 S 0° 17' 44.07" E Dist 331.2894

Curve Data

Curve GEOMCL19_61
 P.I. Station = 2002+56.51 N 6,780,390.4093 E 2,787,514.4843
 Delta = 0° 36' 00.00" (LT)
 Degree = 0° 13' 07.24"
 Tangent = 137.1890
 Length = 274.3755
 Radius = 26,200.9308
 External = 0.3592
 Long Chord = 274.3749
 Mid. Ord. = 0.3592
 P.C. Station = 2001+19.32 N 6,780,527.5964 E 2,787,513.7766
 P.T. Station = 2003+93.70 N 6,780,253.2370 E 2,787,516.6286
 C.C. = N 6,780,662.7607 E 2,813,714.3588
 Back = S 0° 17' 44.07" E
 Ahead = S 0° 53' 44.07" E
 Chord Bear = S 0° 35' 44.07" E

Course from PT GEOMCL19_61 to PC GEOMCL19_64 S 0° 53' 44.07" E Dist 780.7389

Curve Data

Curve GEOMCL19_64
 P.I. Station = 2014+71.26 N 6,779,175.8044 E 2,787,533.4710
 Delta = 0° 36' 00.00" (LT)
 Degree = 0° 06' 03.85"
 Tangent = 296.8253
 Length = 593.6451
 Radius = 56,688.9357
 External = 0.7771
 Long Chord = 593.6424
 Mid. Ord. = 0.7771
 P.C. Station = 2011+74.44 N 6,779,472.5935 E 2,787,528.8316
 P.T. Station = 2017+68.08 N 6,778,879.0803 E 2,787,541.2181
 C.C. = N 6,780,358.6482 E 2,844,210.8423
 Back = S 0° 53' 44.07" E
 Ahead = S 1° 29' 44.07" E
 Chord Bear = S 1° 11' 44.07" E

Course from PT GEOMCL19_64 to PC GEOMCL19_67 S 1° 29' 44.07" E Dist 1,103.1039

Curve Data

Curve GEOMCL19_67
 P.I. Station = 2033+02.36 N 6,777,345.3210 E 2,787,581.2625
 Delta = 16° 52' 28.86" (RT)
 Degree = 1° 58' 15.89"
 Tangent = 431.1780
 Length = 856.1136
 Radius = 2,906.8217
 External = 31.8050
 Long Chord = 853.0227
 Mid. Ord. = 31.4608
 P.C. Station = 2028+71.19 N 6,777,776.3521 E 2,787,570.0089
 P.T. Station = 2037+27.30 N 6,776,929.5825 E 2,787,466.9121
 C.C. = N 6,777,700.4847 E 2,784,664.1774
 Back = S 1° 29' 44.07" E
 Ahead = S 15° 22' 44.78" W
 Chord Bear = S 6° 56' 30.36" W

Course from PT GEOMCL19_67 to GEOMCL1969 S 15° 22' 44.78" W Dist 172.7001

Point GEOMCL1969 N 6,776,763.0664 E 2,787,421.1113 Sta 2039+00.00

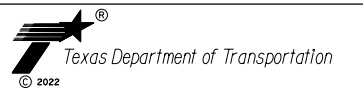
Ending chain GEOMCL19 description



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F-12679



**SH 19
HORIZONTAL
ALIGNMENT DATA**

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	64

DATE: 23-APR-2024 18:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_HORIZONTAL_ALIGNMENT_DATA_2.dgn

DATE: 23-APR-2024 18:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\1. General\SH19_TYLER_VERTICAL_ALIGNMENT_DATA.dgn

TABULAR VERTICAL CURVE DATA																					
EXISTING TERRAIN (DATA SHOWNS THAT EXISTING PROFILE MEETS CRITERIA)																					
Curve ID	VPI STAT	ELEV	VC LGTH (FT)	LGTH	G1 %	G2 %	A	RAW "K"	CAL "K"	TYPE	Curve ID	VPI STAT	ELEV	VC LGTH (FT)	LGTH	G1 %	G2 %	A	RAW "K"	CAL "K"	TYPE
	1563+00.00	507.03									31	1773+12.95	464.63	300	573.79	-2.48%	2.23%	-4.71%	-63.70	64	Sag
1	1568+33.79	487.08	425.9	533.79	-3.74%	-2.28%	-1.46%	-291.60	292	Sag	32	1778+35.03	476.27	494.19	522.08	2.23%	-0.81%	3.04%	162.62	163	Crest
2	1574+68.44	472.63	351.25	634.65	-2.28%	0.56%	-2.84%	-123.63	124	Sag	33	1783+19.35	472.35	236.62	484.32	-0.81%	2.80%	-3.61%	-65.56	66	Sag
3	1580+17.91	475.73	233.09	549.47	0.56%	-1.00%	1.56%	149.02	149	Crest	34	1789+19.35	489.15	675	600.00	2.80%	-1.19%	3.99%	169.17	169	Crest
4	1585+77.91	470.13	340	560.00	-1.00%	4.09%	-5.09%	-66.86	67	Sag	35	1796+05.84	480.98	310.06	686.49	-1.19%	1.12%	-2.31%	-134.01	134	Sag
5	1595+32.24	509.12	982.62	954.33	4.09%	-2.42%	6.51%	151.03	151	Crest	36	1801+71.89	487.34	282.39	566.05	1.12%	-1.22%	2.35%	120.33	120	Crest
6	1603+27.56	489.87	510.44	795.32	-2.42%	-0.88%	-1.55%	-330.34	330	Sag	37	1807+02.47	480.85	369.69	530.58	-1.22%	0.60%	-1.82%	-202.78	203	Sag
7	1607+51.46	486.16	235.57	423.90	-0.88%	0.19%	-1.07%	-220.69	221	Sag	38	1815+17.52	485.74	684.82	815.05	0.60%	-3.42%	4.02%	170.37	170	Crest
8	1612+92.54	487.2	383.75	541.08	0.19%	-2.15%	2.35%	163.61	164	Crest	39	1823+21.13	458.26	491.47	803.61	-3.42%	-1.46%	-1.96%	-251.19	251	Sag
9	1617+68.55	476.95	370.34	476.01	-2.15%	-0.66%	-1.49%	-248.09	248	Sag	40	1829+16.48	449.55	351.94	595.35	-1.46%	-0.03%	-1.44%	-244.83	245	Sag
10	1623+21.11	473.3	565.09	552.56	-0.66%	-1.95%	1.29%	438.59	439	Crest	41	1840+13.63	449.27	628.29	1097.15	-0.03%	-3.40%	3.37%	186.18	186	Crest
11	1629+70.17	460.65	579.03	649.06	-1.95%	0.00%	-1.95%	-297.10	297	Sag	42	1847+20.05	425.25	419.56	706.42	-3.40%	-0.01%	-3.39%	-123.76	124	Sag
12	1639+57.84	460.65	434.37	987.67	0.00%	3.78%	-3.78%	-114.93	115	Sag	43	1853+10.82	425.19	350.42	590.77	-0.01%	1.00%	-1.01%	-346.59	347	Sag
13	1645+87.54	484.45	364.9	629.70	3.78%	2.00%	1.78%	205.06	205	Crest	44	1859+41.26	431.5	0	630.44	1.00%	0.87%	0.13%	0.00	0	
14	1656+31.51	505.33	631.5	1043.97	2.00%	-1.30%	3.30%	191.41	191	Crest	45	1869+09.23	439.92	300.52	967.97	0.87%	1.67%	-0.80%	-375.12	375	Sag
15	1663+70.42	495.73	499.37	738.91	-1.30%	2.38%	-3.68%	-135.83	136	Sag	46	1877+97.92	454.77	674.96	888.69	1.67%	-2.35%	4.02%	167.92	168	Crest
16	1673+70.78	519.51	672.97	1000.36	2.38%	-1.62%	4.00%	168.18	168	Crest	47	1883+72.72	441.27	343.01	574.80	-2.35%	0.50%	-2.85%	-120.42	120	Sag
17	1683+80.41	503.11	468.79	1009.63	-1.62%	-0.15%	-1.48%	-317.50	318	Sag	48	1889+78.88	444.3	374.98	606.16	0.50%	4.50%	-4.00%	-93.77	94	Sag
18	1688+94.41	502.35	397.48	514.00	-0.15%	-1.56%	1.41%	282.39	282	Crest	49	1896+38.16	473.96	908.62	659.28	4.50%	-1.30%	5.80%	156.71	157	Crest
19	1695+40.53	492.3	684.11	646.12	-1.56%	2.75%	-4.30%	-158.93	159	Sag	50	1904+51.00	463.4	230.26	812.84	-1.30%	-0.15%	-1.15%	-200.43	200	Sag
20	1707+58.43	525.78	1025.74	1217.90	2.75%	-2.60%	5.35%	191.74	192	Crest	51	1910+89.66	462.44	480.74	638.66	-0.15%	1.77%	-1.93%	-249.71	250	Sag
21	1714+82.49	506.95	336.41	724.06	-2.60%	-0.14%	-2.46%	-136.67	137	Sag	52	1919+74.21	478.14	677.45	884.55	1.77%	-2.90%	4.67%	144.92	145	Crest
22	1720+78.78	506.12	315.18	596.29	-0.14%	-2.25%	2.11%	149.26	149	Crest	53	1929+19.43	450.73	271.27	945.22	-2.90%	-1.54%	-1.36%	-200.15	200	Sag
23	1725+02.64	496.58	304.23	423.86	-2.25%	-0.35%	-1.90%	-159.96	160	Sag	54	1938+04.51	437.06	287.27	885.08	-1.54%	-0.82%	-0.72%	-396.53	397	Sag
24	1733+02.54	493.79	943.48	799.90	-0.35%	-1.38%	1.03%	918.94	919	Crest	55	1946+76.43	429.91	255.48	871.92	-0.82%	-0.05%	-0.77%	-329.71	330	Sag
25	1744+21.41	478.4	370	1118.87	-1.38%	2.10%	-3.48%	-106.45	106	Sag	56	1981+95.82	428.32	499.31	3519.39	-0.05%	0.27%	-0.31%	-1587.05	1587	Sag
26	1749+86.58	490.27	568.86	565.17	2.10%	-0.87%	2.97%	191.46	191	Crest	57	1989+86.36	430.45	533.62	790.54	0.27%	5.97%	-5.70%	-93.61	94	Sag
27	1754+69.94	486.06	172.32	483.36	-0.87%	0.98%	-1.85%	-92.94	93	Sag	58	2002+12.89	503.67	831.21	1226.53	5.97%	1.51%	4.45%	186.58	187	Crest
28	1758+63.62	489.93	444.03	393.68	0.98%	-2.22%	3.20%	138.64	139	Crest	59	2013+62.89	521.09	0	1150.00	1.51%	1.87%	-0.36%	0.00	0	
29	1763+86.22	478.33	278.97	522.60	-2.22%	0.15%	-2.37%	-117.72	118	Sag	60	2024+95.39	542.27	968	1132.50	1.87%	-3.23%	5.10%	189.82	190	Crest
30	1767+39.16	478.86	287.31	352.94	0.15%	-2.48%	2.63%	109.24	109	Crest	61	2029+79.39	526.64	0	484.00	-3.23%	0.26%	-3.49%	0.00	0	

NOTES:

1. CURVE DATA DERIVED FROM THE TOPOGRAPHIC SURVEY AND IS A GENERAL REPRESENTATION OF EXISTING ROADWAY SURFACE. NO WORK TO BE PERFORMED ON CENTERLINE OTHER THAN OVERLAY. CONTRACTOR TO CONSTRUCT PROPOSED ROADWAY ELEMENTS USING EXISTING ROADWAY SURFACE ABOUT THE SAWCUT LINE ACCORDING TO THE TYPICAL SECTIONS PROVIDED. THIS PROJECT MEETS THE VERTICAL DESIGN REQUIREMENTS OF THE 3R DESIGN CRITERIA.

MPH	Crest	Sag
40	44	64
45	61	79
50	84	96
55	114	115
60	151	136
65	193	157
70	247	181



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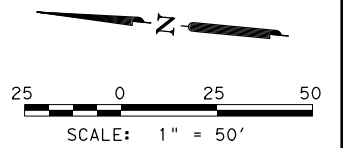
F-12679










**SH 19
VERTICAL
ALIGNMENT DATA**

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0180	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	65

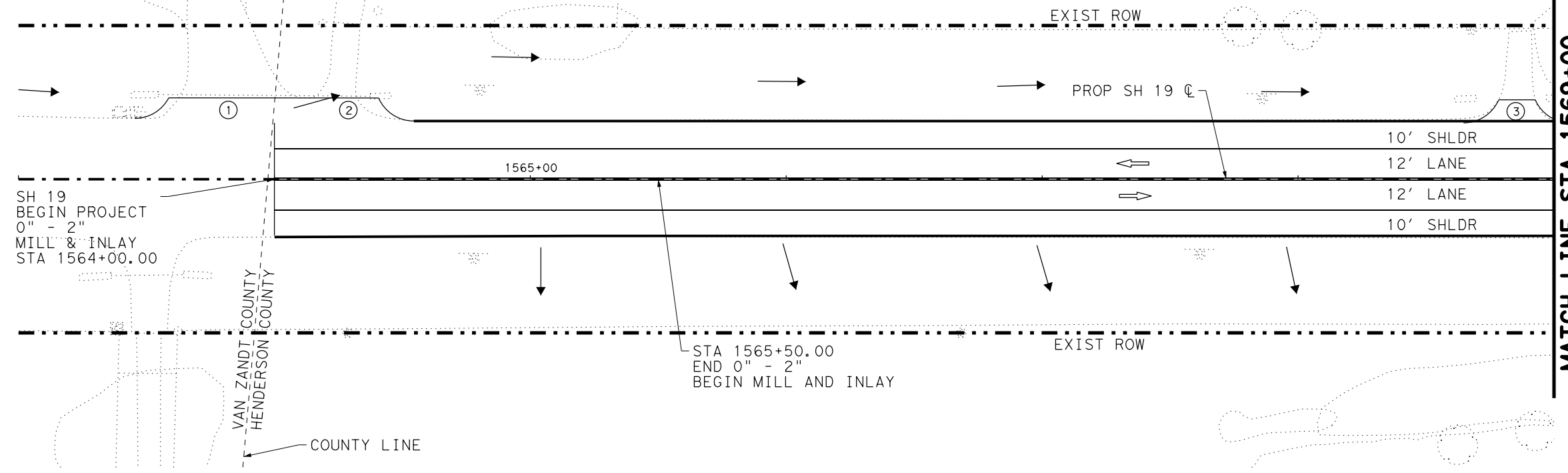


LEGEND

-  EXISTING LANE
-  PROPOSED LANE
-  PROPOSED PAVEMENT
-  CROSS-CULVERT NUMBER
-  DRIVEWAY NUMBER
-  OUTFALL DIRECTION
-  FLOW DIRECTION

NOTES:

1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



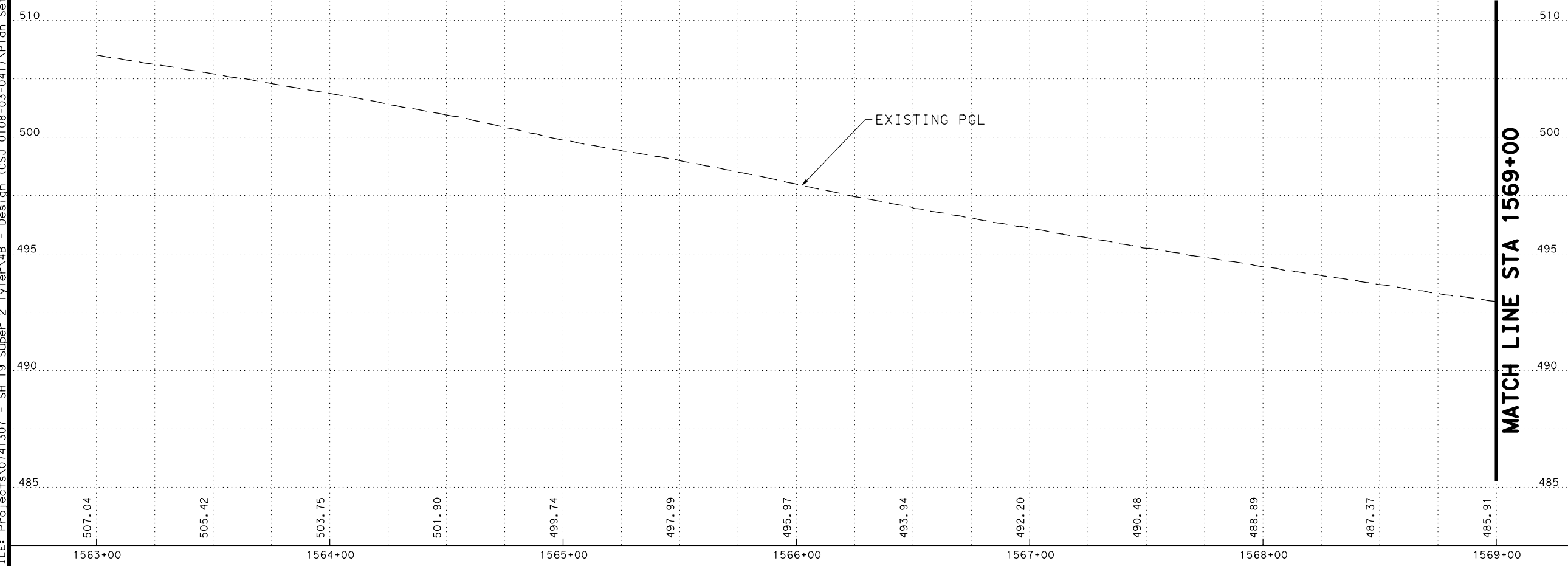
STA 1565+50.00
END 0" - 2"
BEGIN MILL AND INLAY

SH 19
BEGIN PROJECT
0" - 2"
MILL & INLAY
STA 1564+00.00

VAN ZANDT COUNTY
HENDERSON COUNTY

COUNTY LINE

MATCH LINE STA 1569+00



EXISTING PGL

MATCH LINE STA 1569+00



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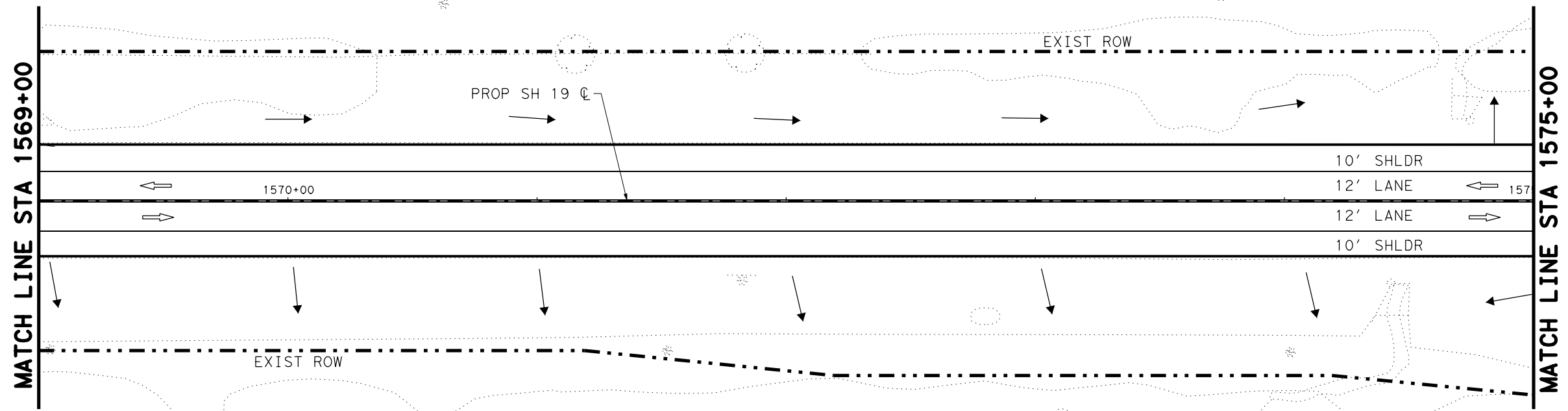
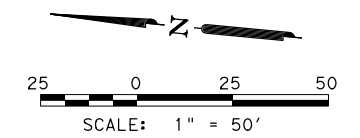
**SH 19
PROPOSED
PLAN AND PROFILE**

SHEET 1 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	66

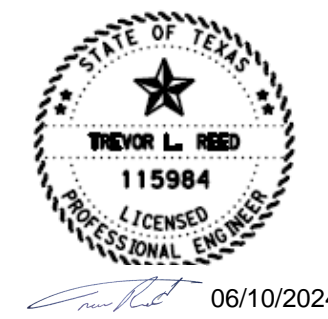
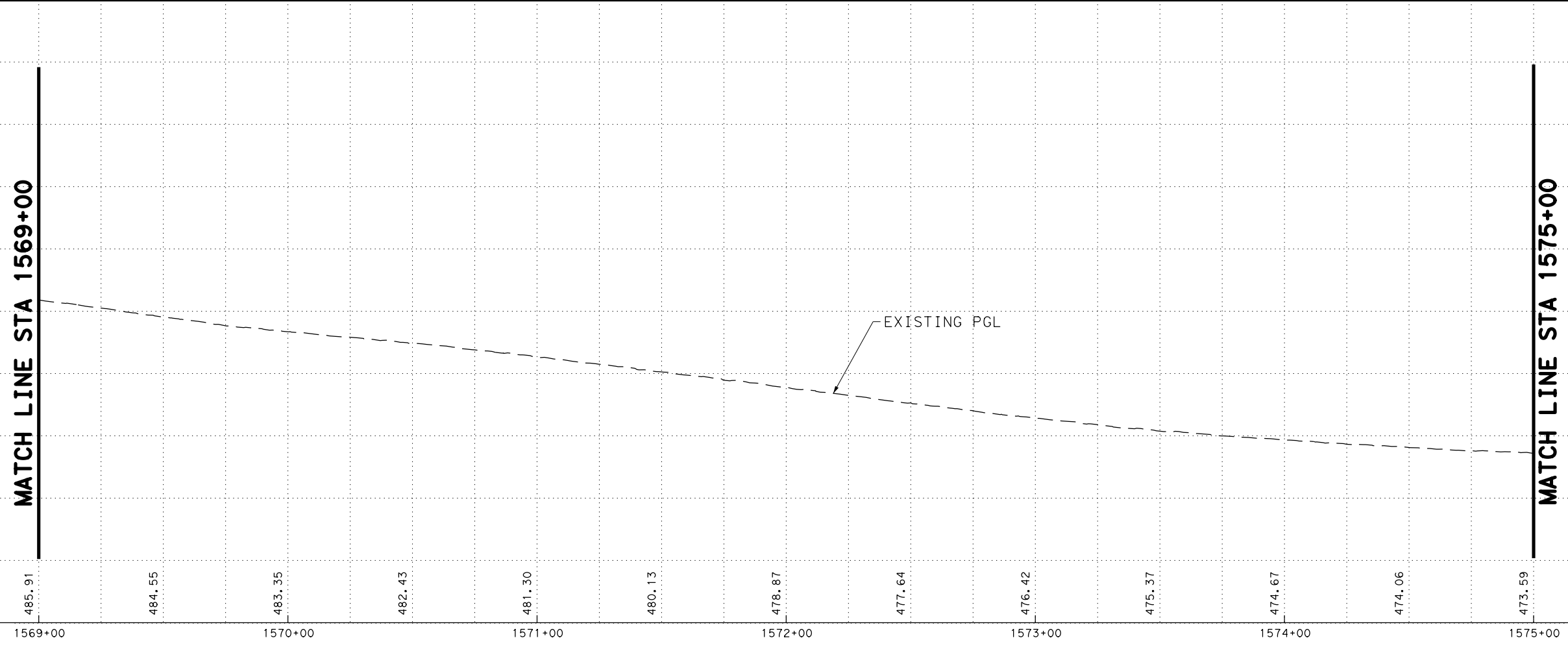
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DATE: 10-JUN-2024 15:27
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- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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**SH 19
 PROPOSED
 PLAN AND PROFILE**

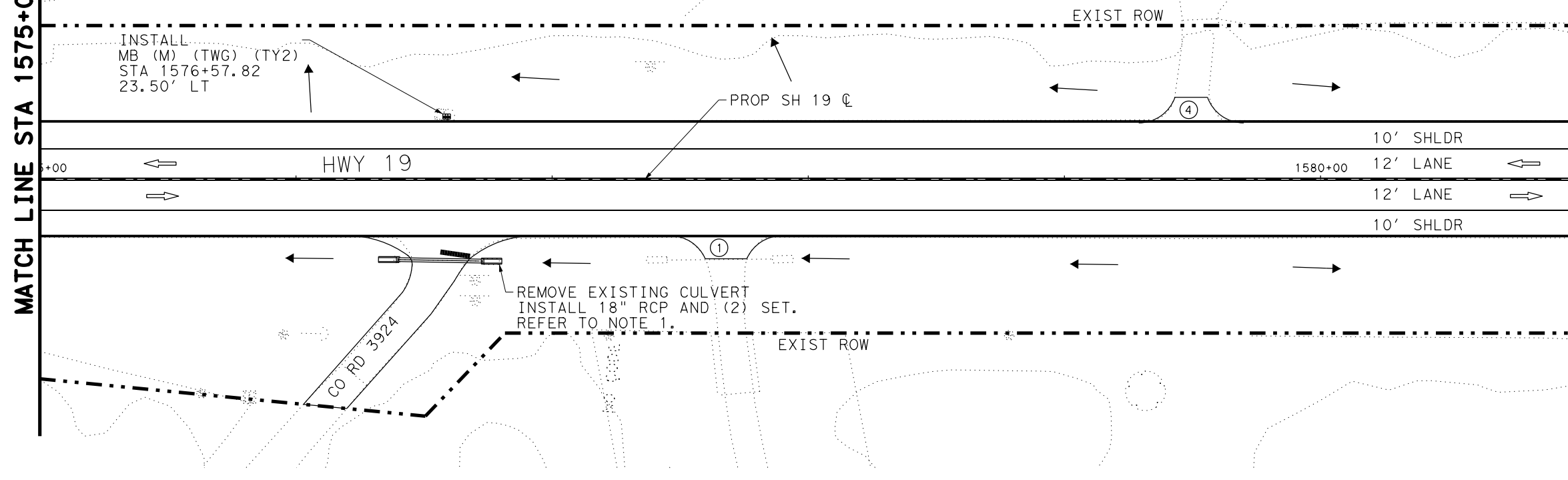
SHEET 2 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	67

DATE: 10-JUN-2024 15:29
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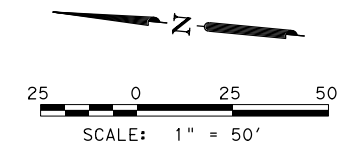
MATCH LINE STA 1575+00

MATCH LINE STA 1581+00



INSTALL
 MB (M) (TWG) (TY2)
 STA 1576+57.82
 23.50' LT

REMOVE EXISTING CULVERT
 INSTALL 18" RCP AND (2) SET.
 REFER TO NOTE 1.



LEGEND

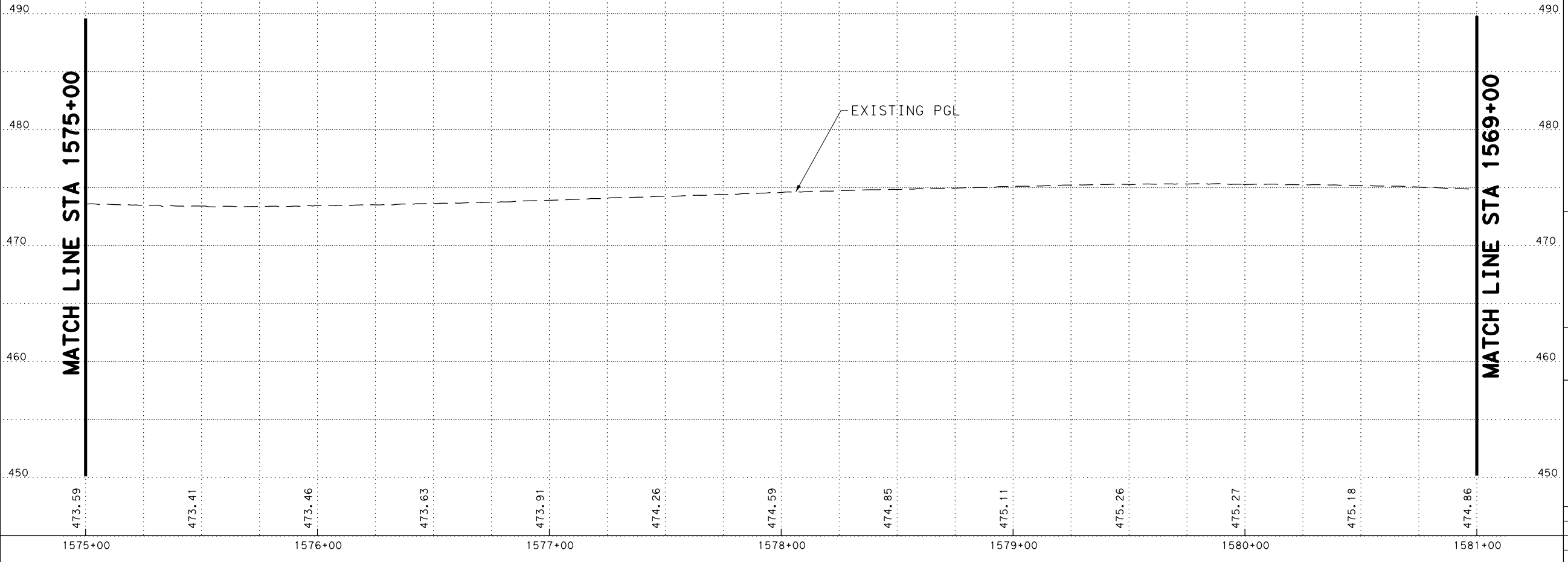
- EXISTING LANE
- PROPOSED LANE
- PROPOSED PAVEMENT
- CROSS-CULVERT NUMBER
- DRIVEWAY NUMBER
- OUTFALL DIRECTION
- FLOW DIRECTION

NOTES:

1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1575+00

MATCH LINE STA 1569+00



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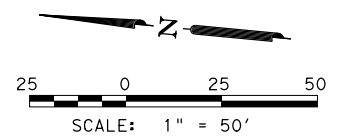
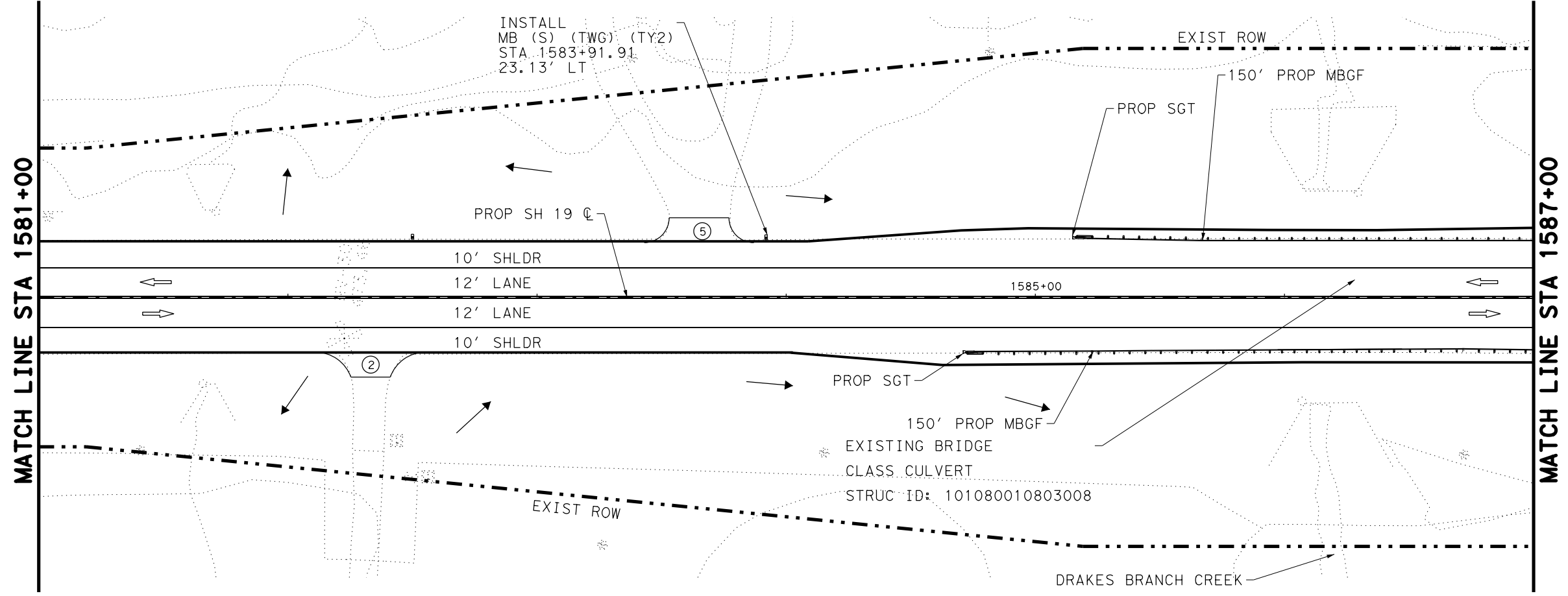


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 3 OF 79

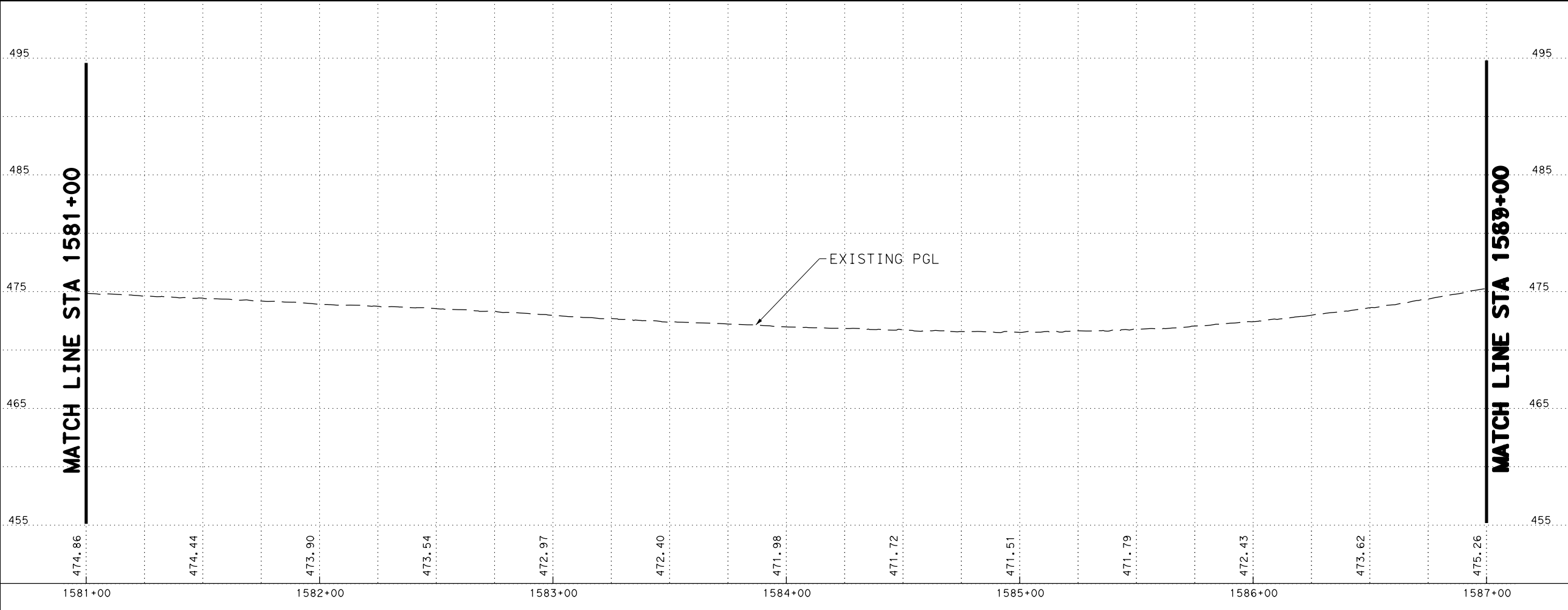
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	68

DATE: 05-JUL-2024 13:50
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_04.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



08/01/2024

VOLKERT

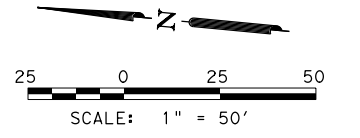
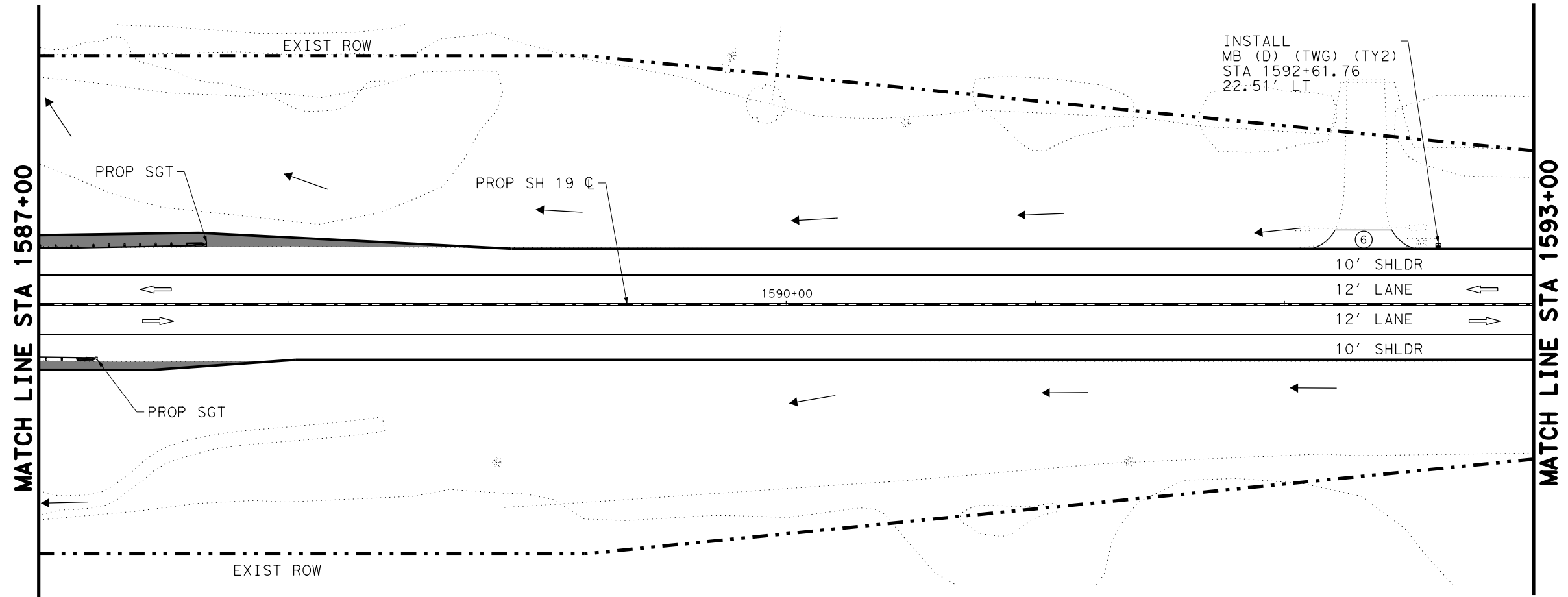
F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

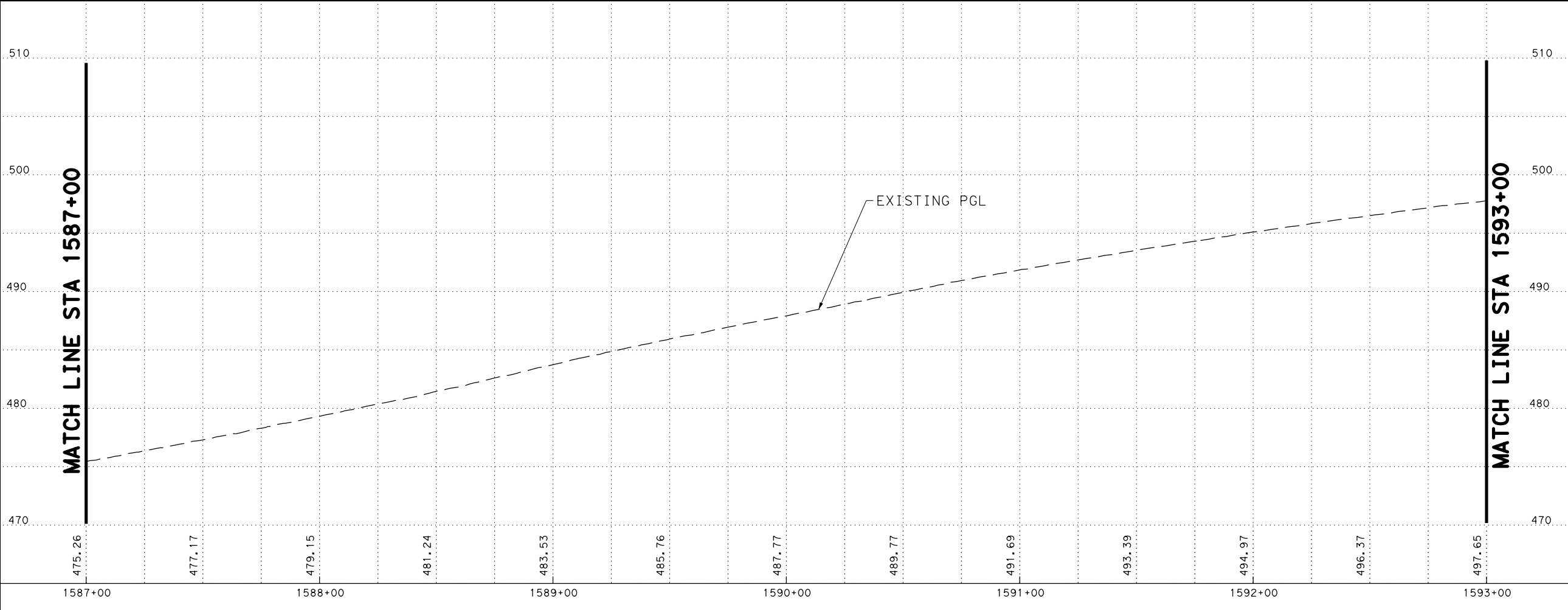
SHEET 4 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	69

DATE: 21-JUN-2024 13:21
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_05.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



VOLKERT

F-12679

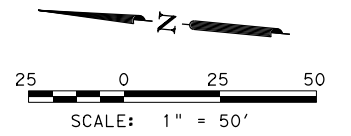


**SH 19
 PROPOSED
 PLAN AND PROFILE**








SHEET 5 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	70

NOTES:

1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



LEGEND

-  EXISTING LANE
-  PROPOSED LANE
-  PROPOSED PAVEMENT
-  CROSS-CULVERT NUMBER
-  DRIVEWAY NUMBER
-  OUTFALL DIRECTION
-  FLOW DIRECTION

NOTES:

1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1593+00

MATCH LINE STA 1599+00

INSTALL
MB (M) (TWG) (TY2)
STA 1597+37.85
22.70' LT

EXIST ROW

PROP SH 19 CL

1595+00

10' SHLDR

12' LANE

12' LANE

10' SHLDR

EXIST ROW

3

MATCH LINE STA 1593+00

MATCH LINE STA 1599+00

EXISTING PGL



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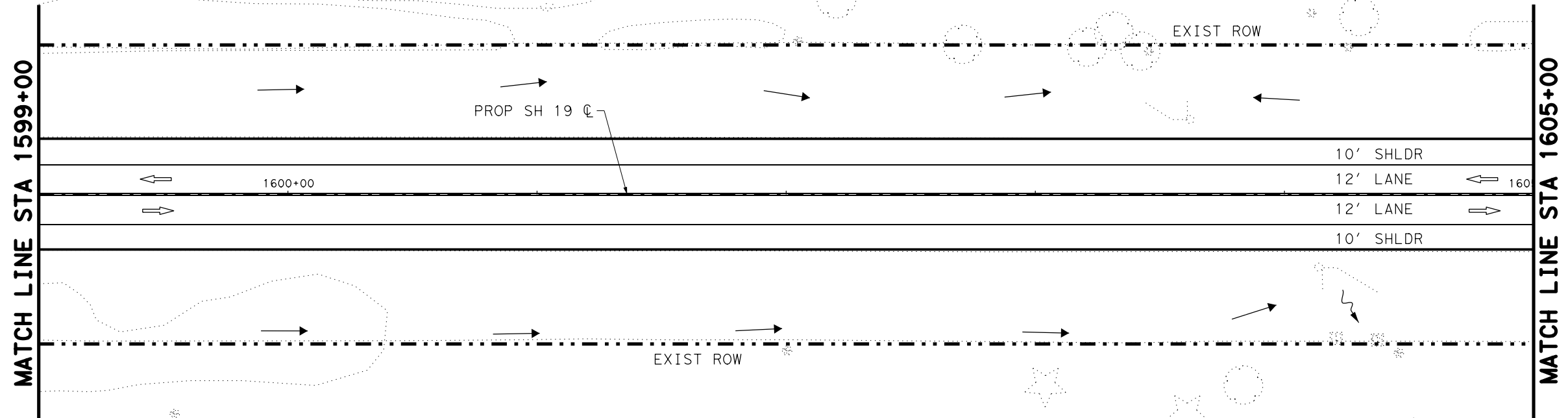
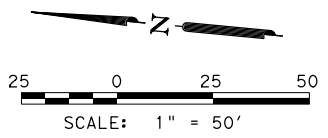
**SH 19
PROPOSED
PLAN AND PROFILE**

SHEET 6 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	71

DATE: 10-JUN-2024 15:28
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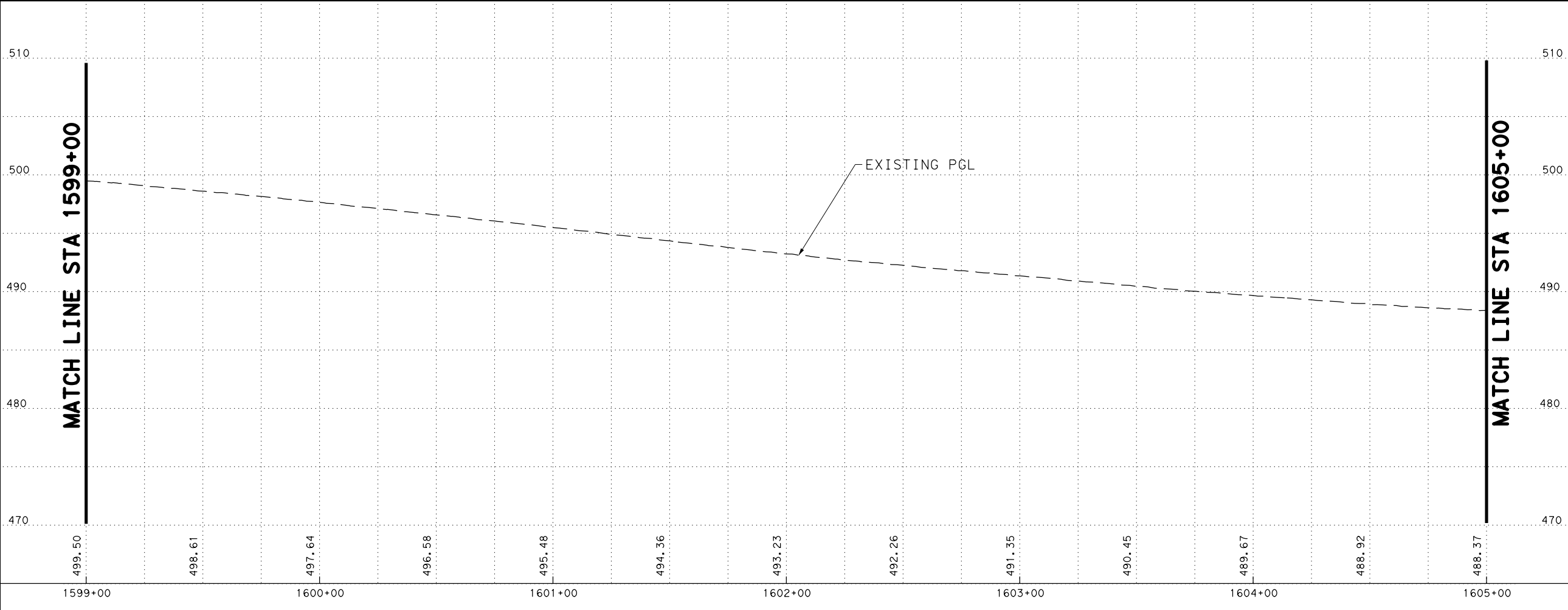
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- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:

- REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



Trevor Reed 06/10/2024

VOLKERT

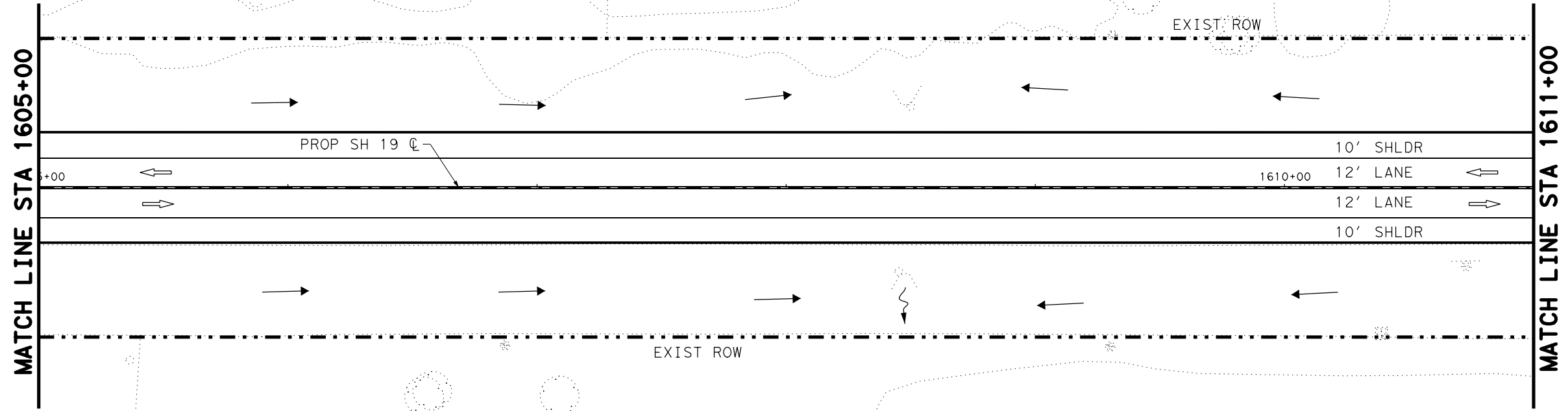
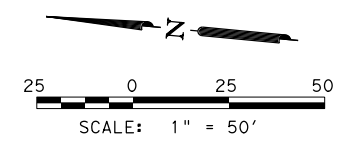
F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

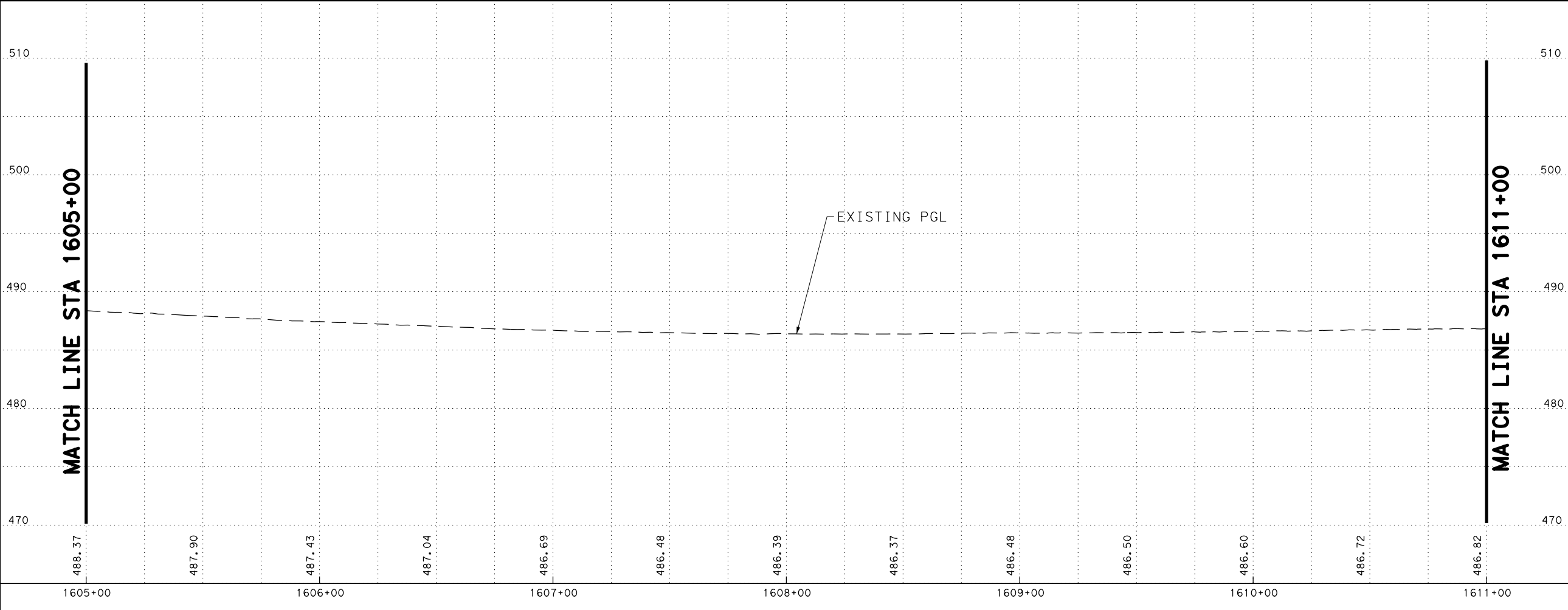
SHEET 7 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	72

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_08.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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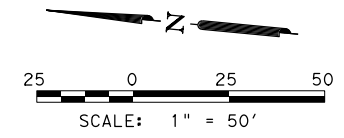
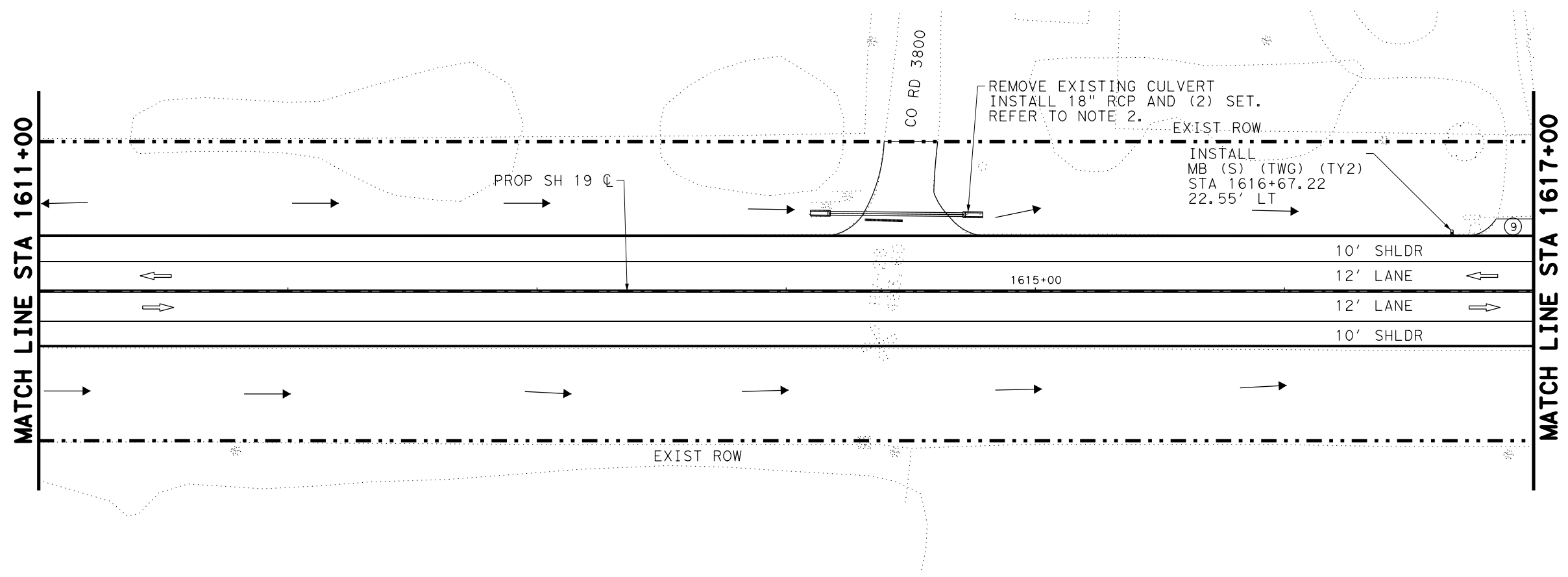
**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 8 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	73

DATE: 10-JUN-2024 15:28
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_09.dgn

MATCH LINE STA 1611+00

MATCH LINE STA 1617+00

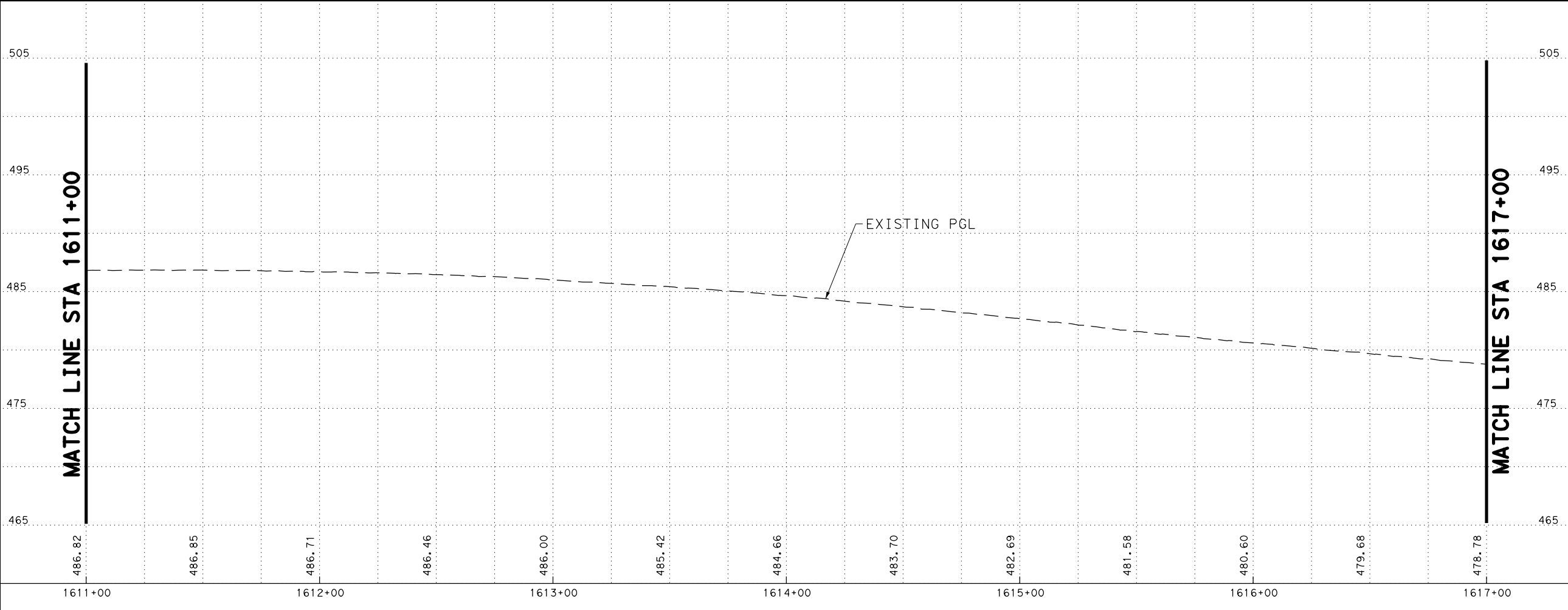


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1611+00

MATCH LINE STA 1617+00



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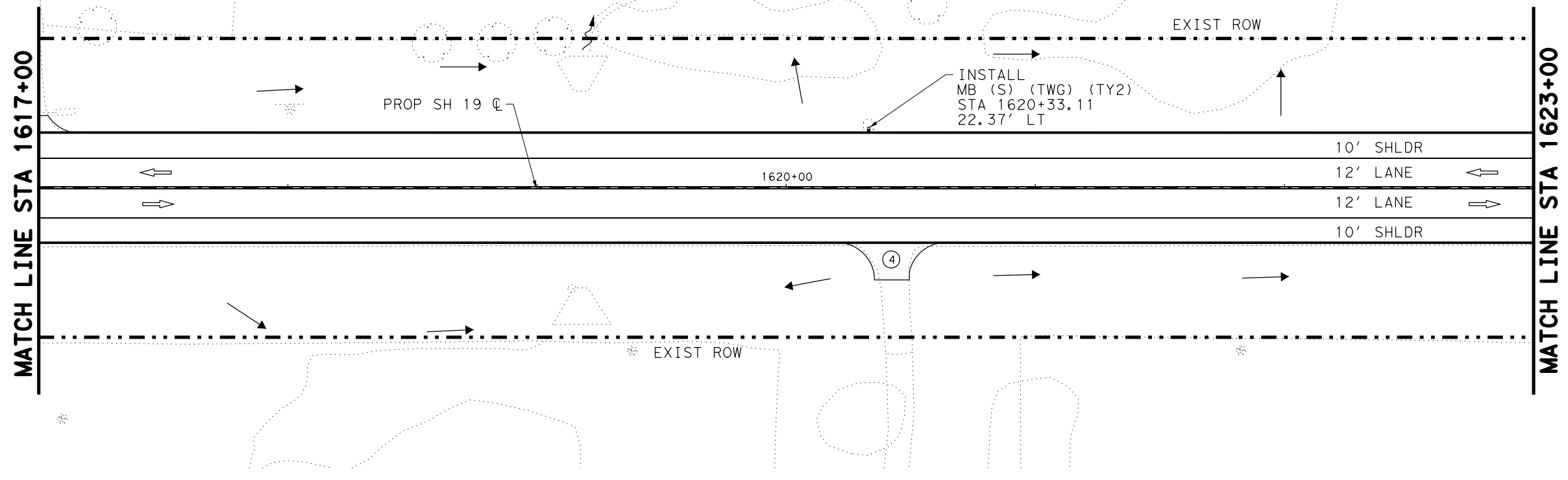
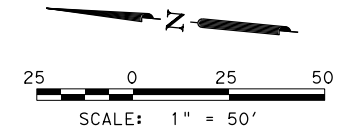
F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

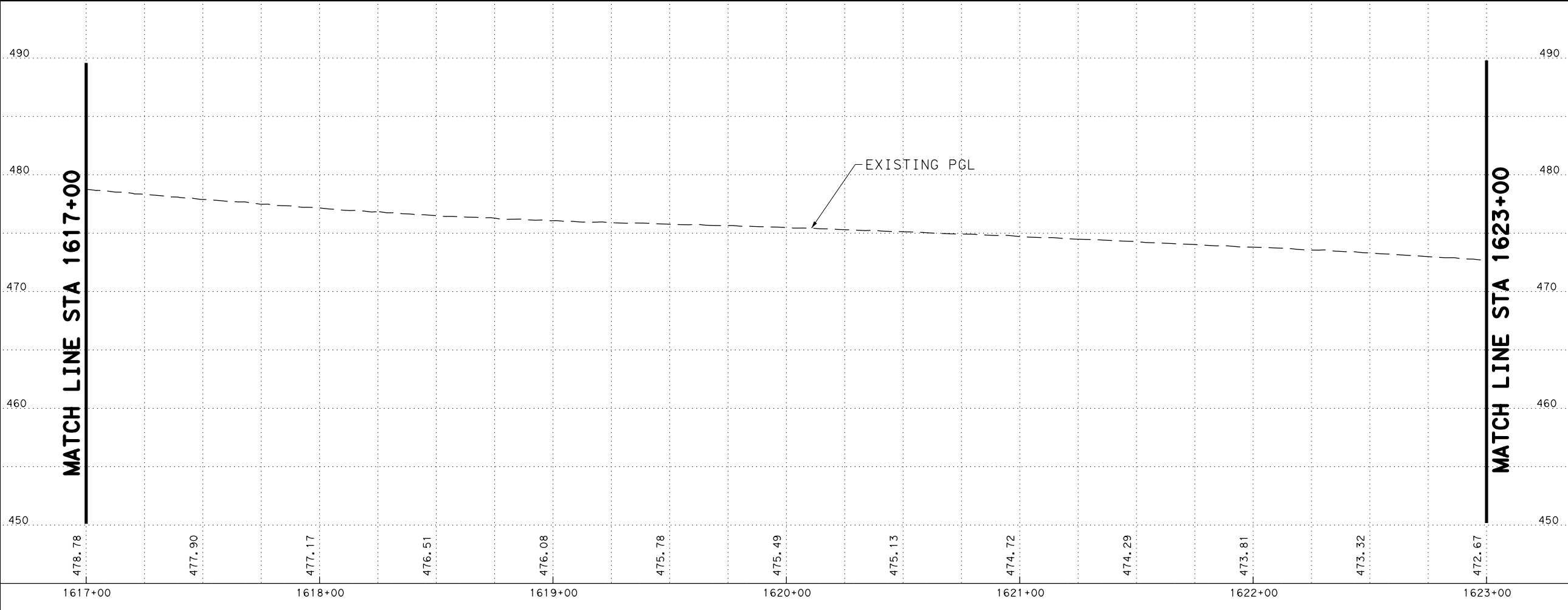
SHEET 9 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	74

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_10.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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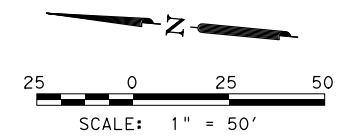
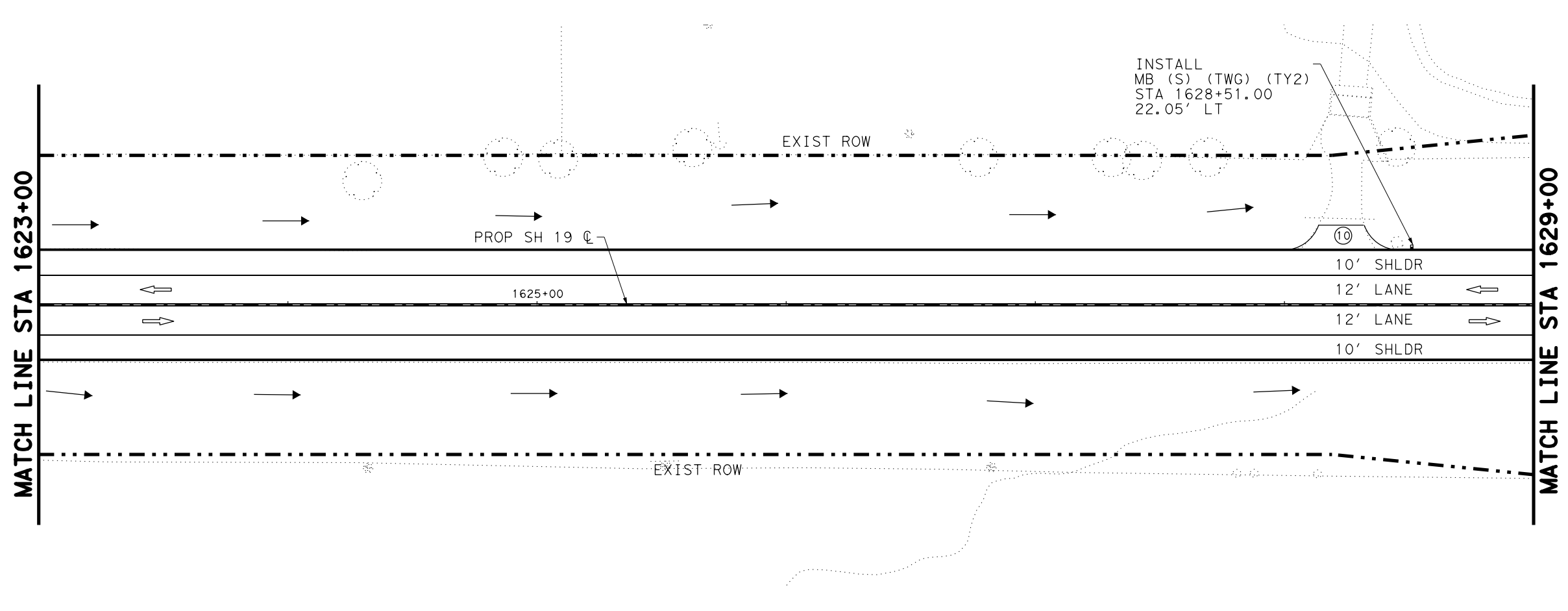
**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 10 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	75

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_11.dgn

MATCH LINE STA 1623+00

MATCH LINE STA 1629+00



LEGEND

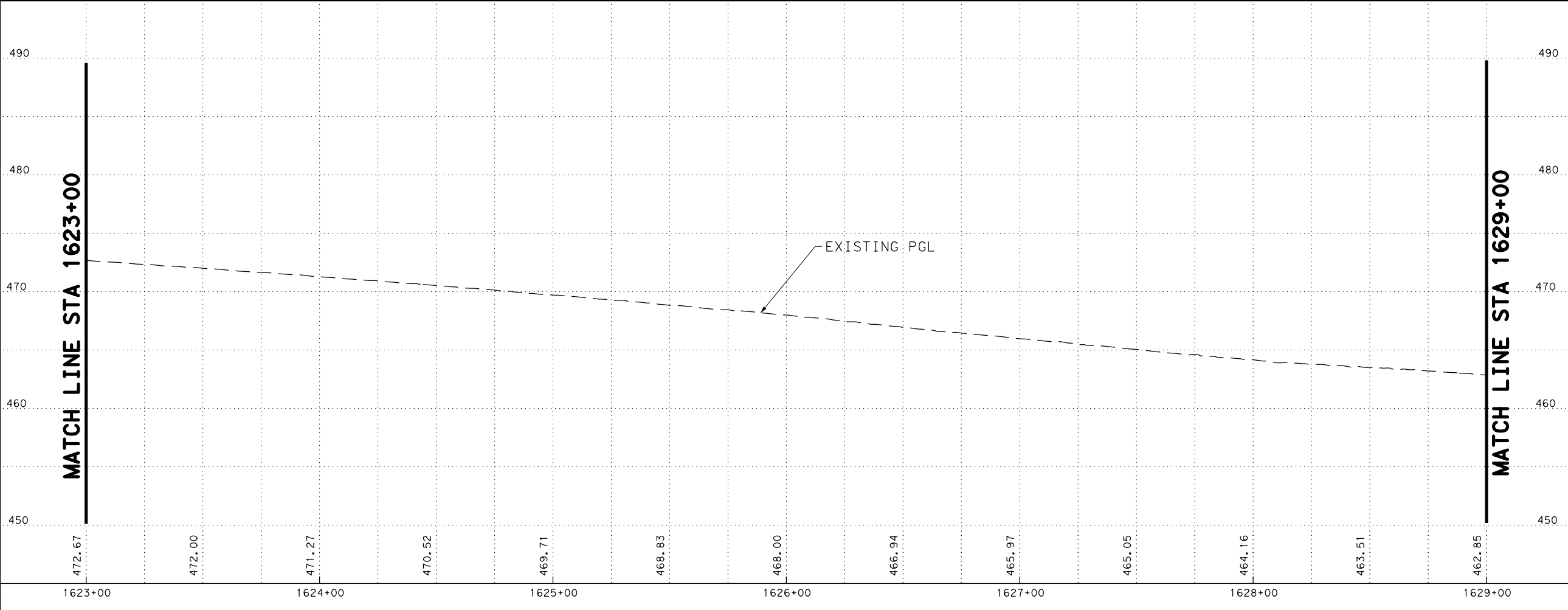
- EXISTING LANE
- PROPOSED LANE
- PROPOSED PAVEMENT
- CROSS-CULVERT NUMBER
- DRIVEWAY NUMBER
- OUTFALL DIRECTION
- FLOW DIRECTION

NOTES:

1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1623+00

MATCH LINE STA 1629+00



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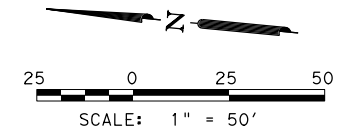
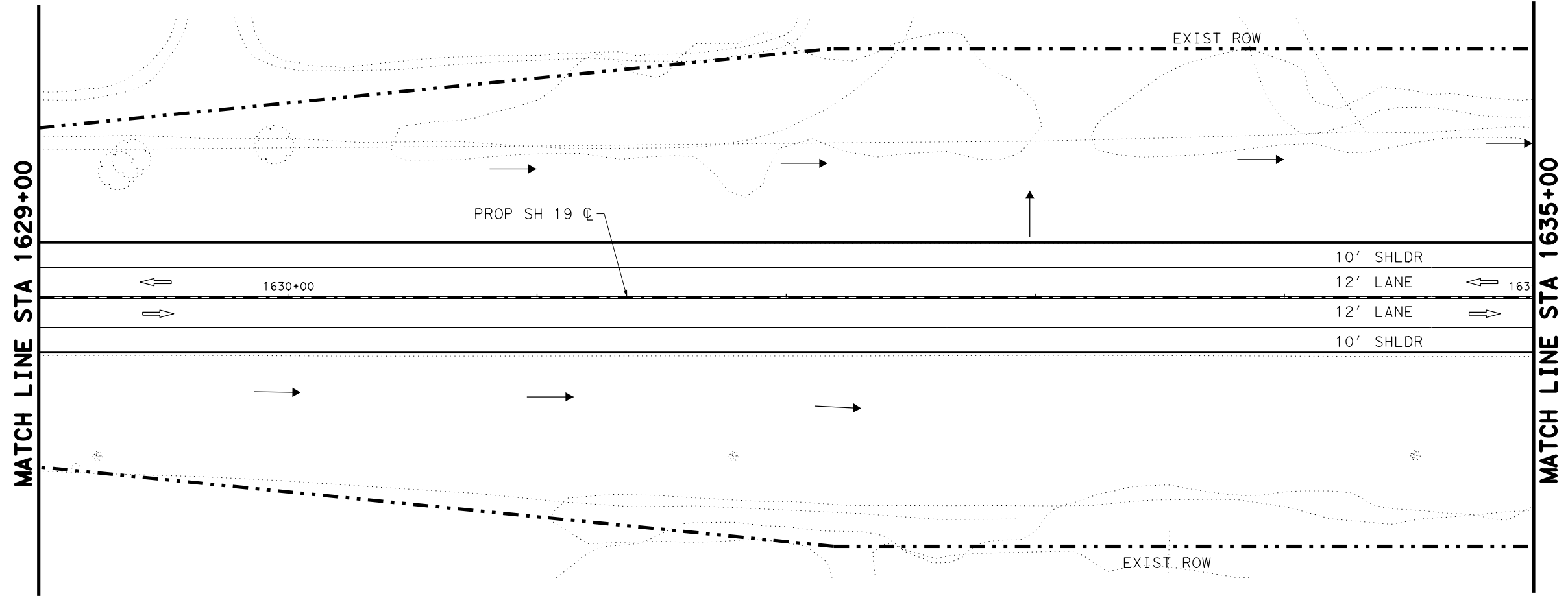


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 11 OF 79

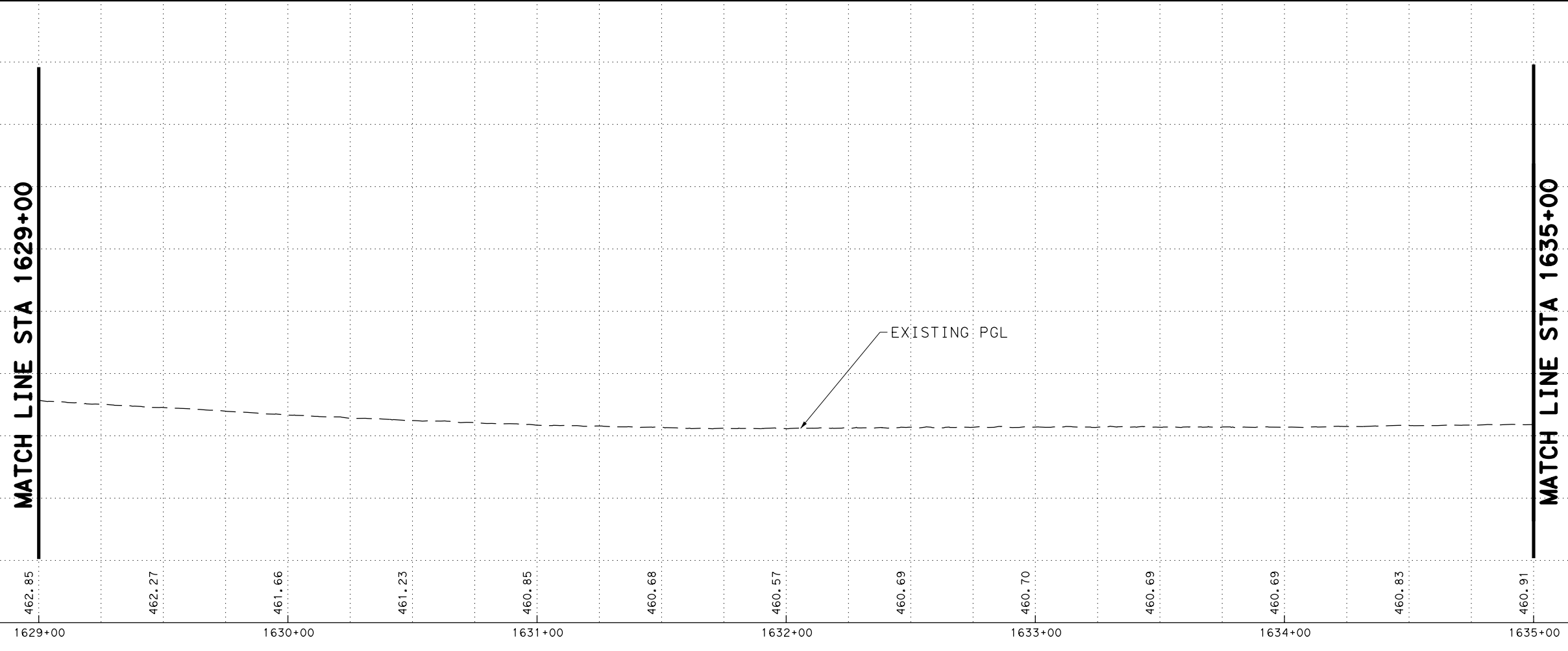
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	76

DATE: 10-JUN-2024 15:28
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_12.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 12 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	77

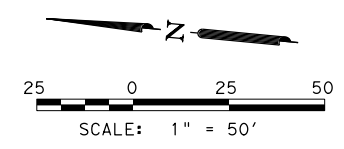
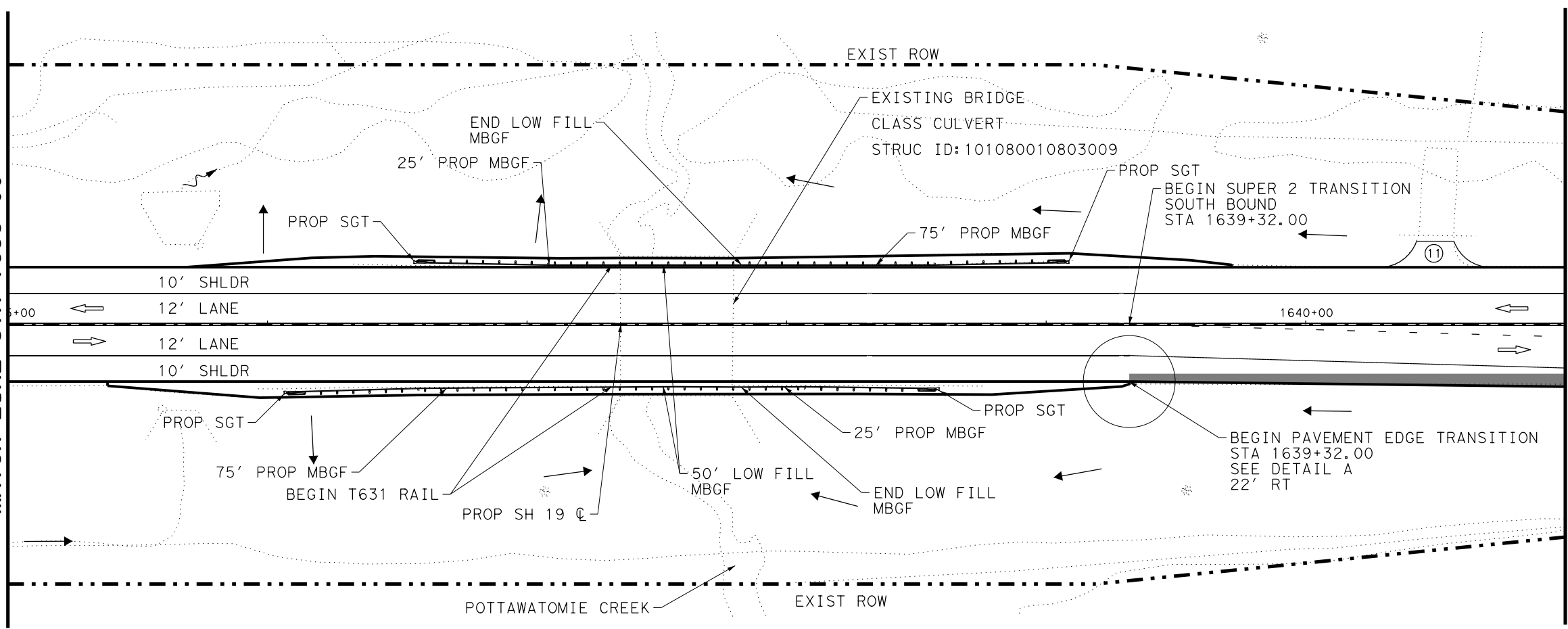
DATE: 11-JUL-2024 13:50
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_13.dgn

MATCH LINE STA 1635+00

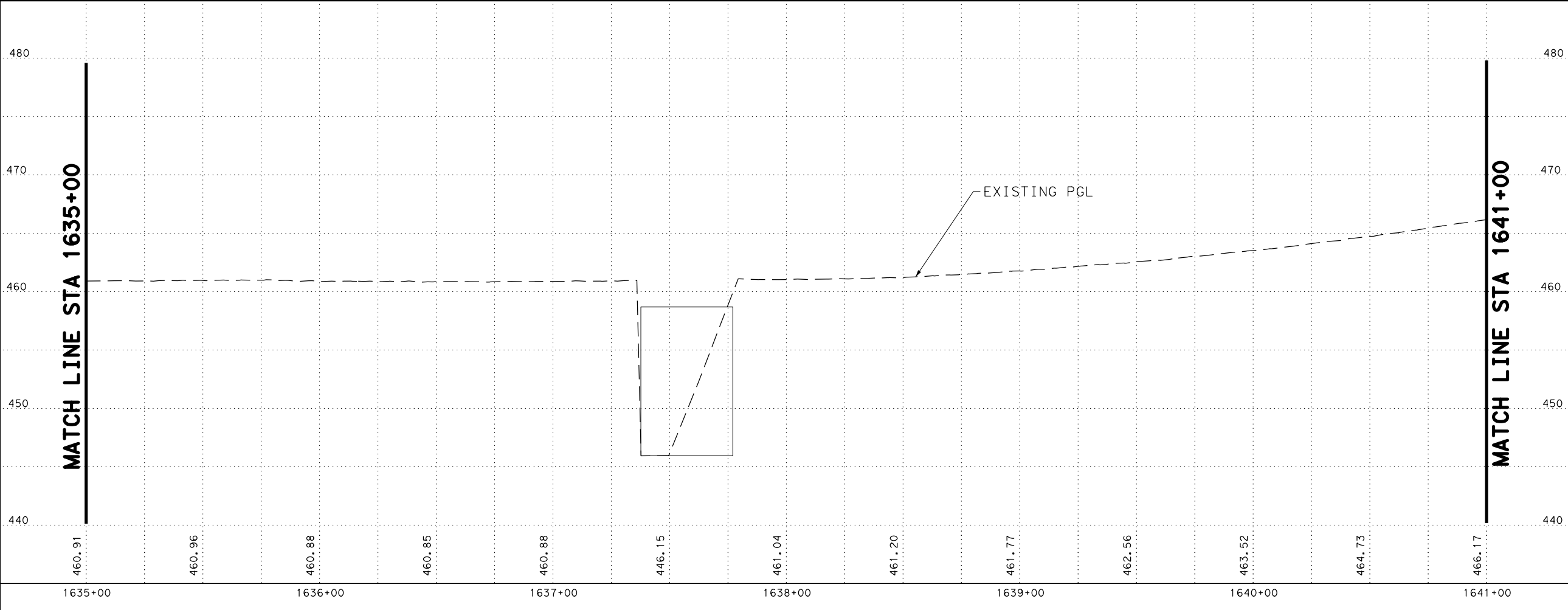
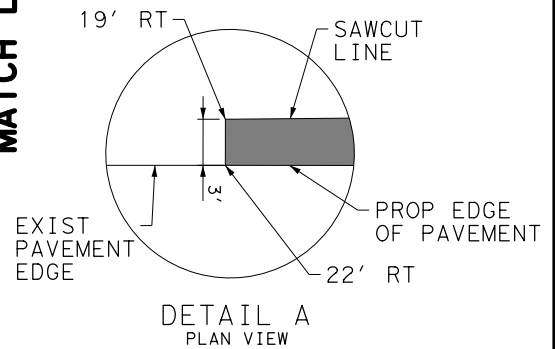
MATCH LINE STA 1635+00

MATCH LINE STA 1641+00

MATCH LINE STA 1641+00



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION



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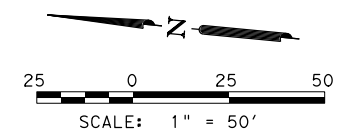
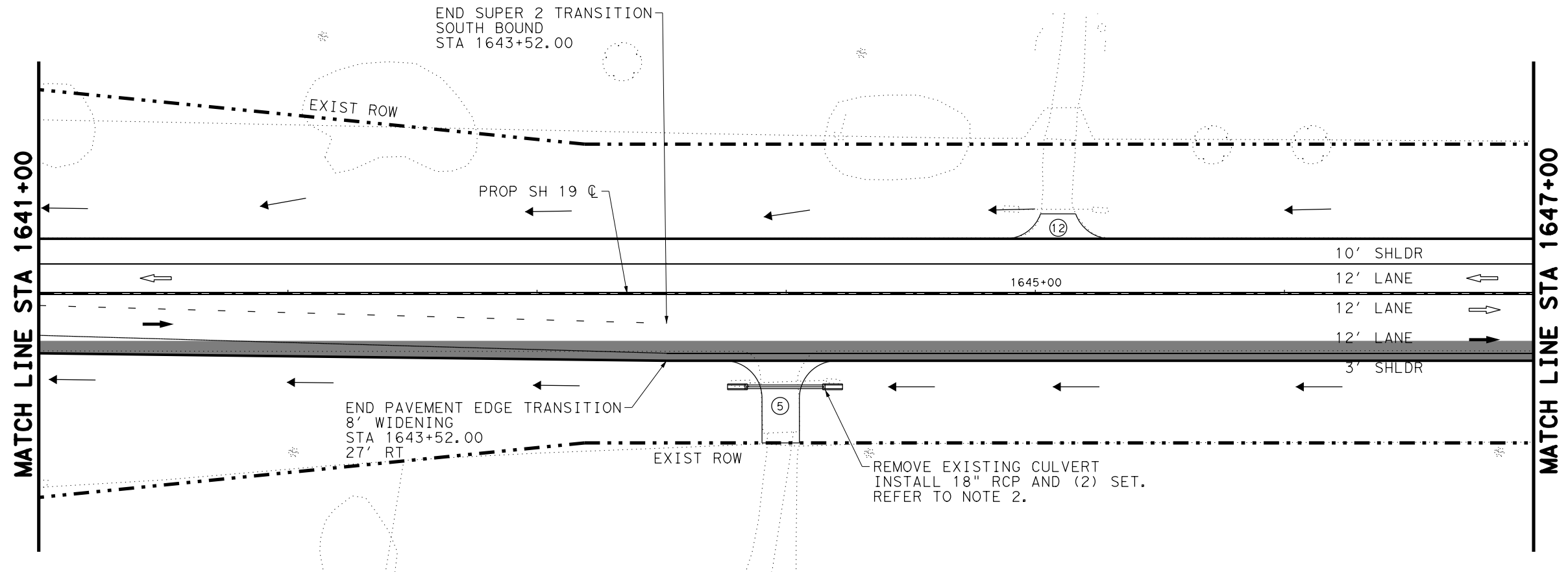


**SH 19
PROPOSED
PLAN AND PROFILE**

SHEET 13 OF 79

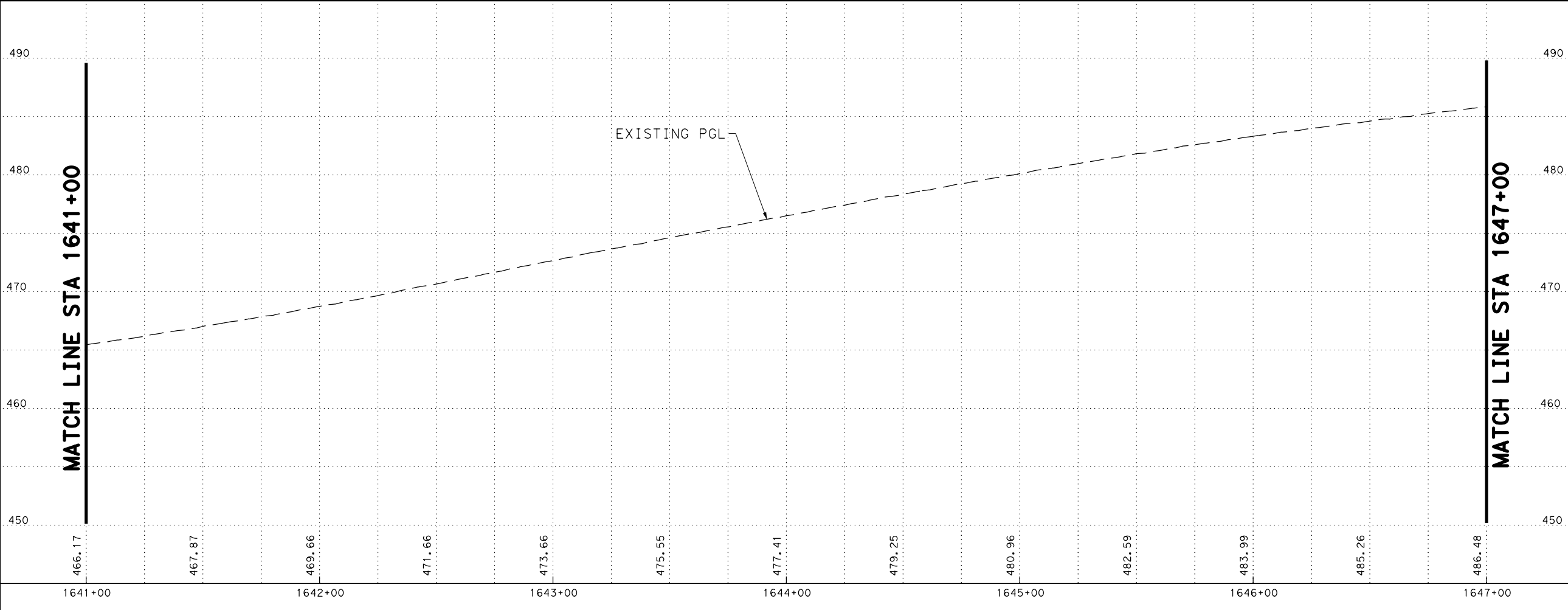
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	78

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_14.dgn



- LEGEND
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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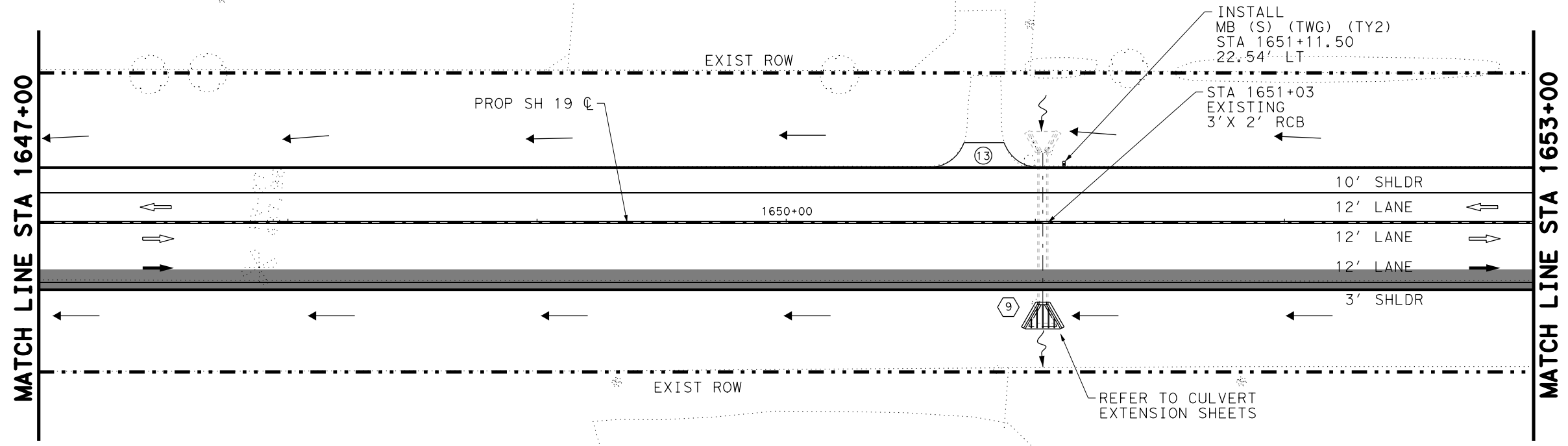
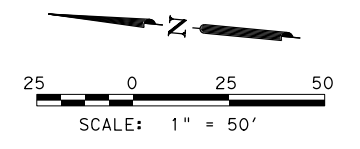


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 14 OF 79

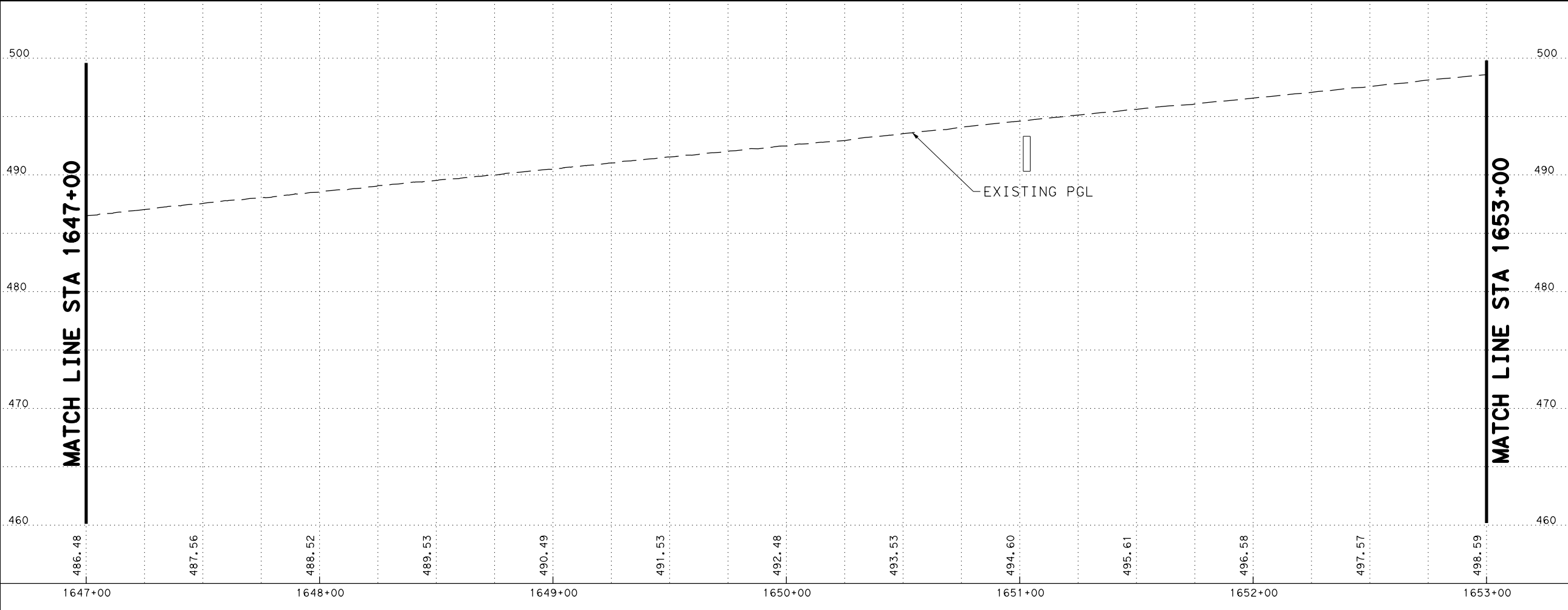
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	79

DATE: 10-JUN-2024 15:30
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ 0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_15.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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**SH 19
 PROPOSED
 PLAN AND PROFILE**

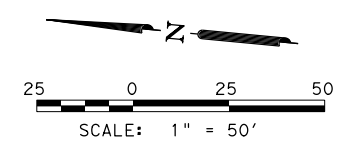
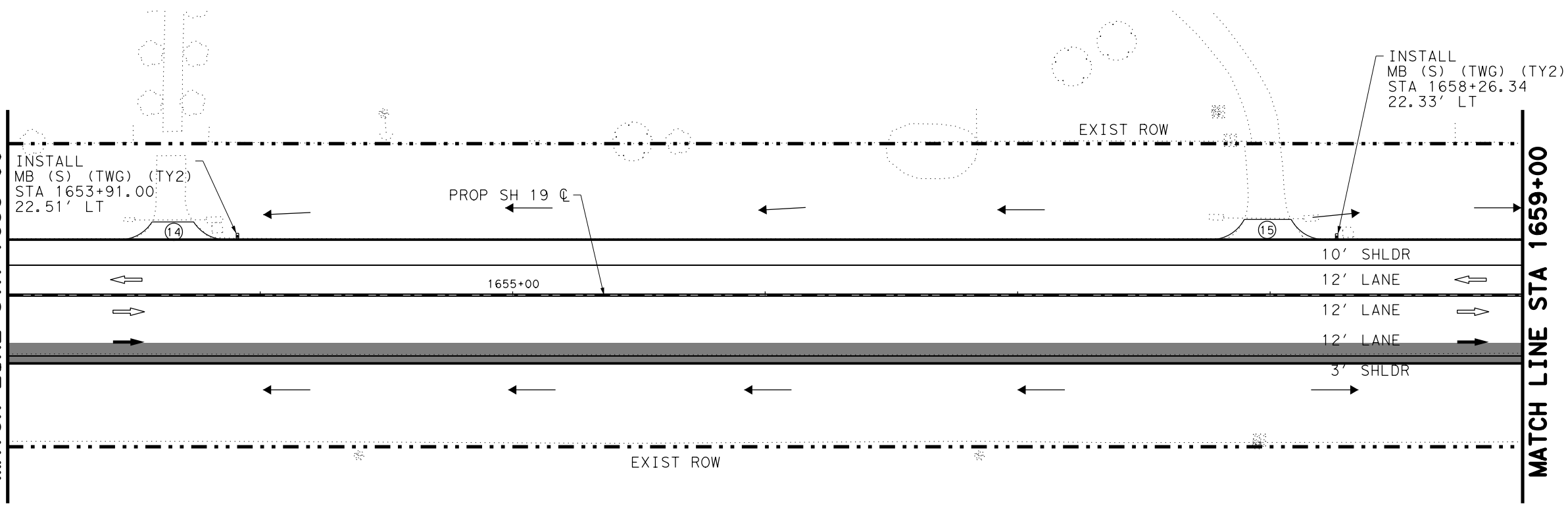
SHEET 15 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	80

DATE: 10-JUN-2024 15:28
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_16.dgn

MATCH LINE STA 1653+00

MATCH LINE STA 1659+00



LEGEND

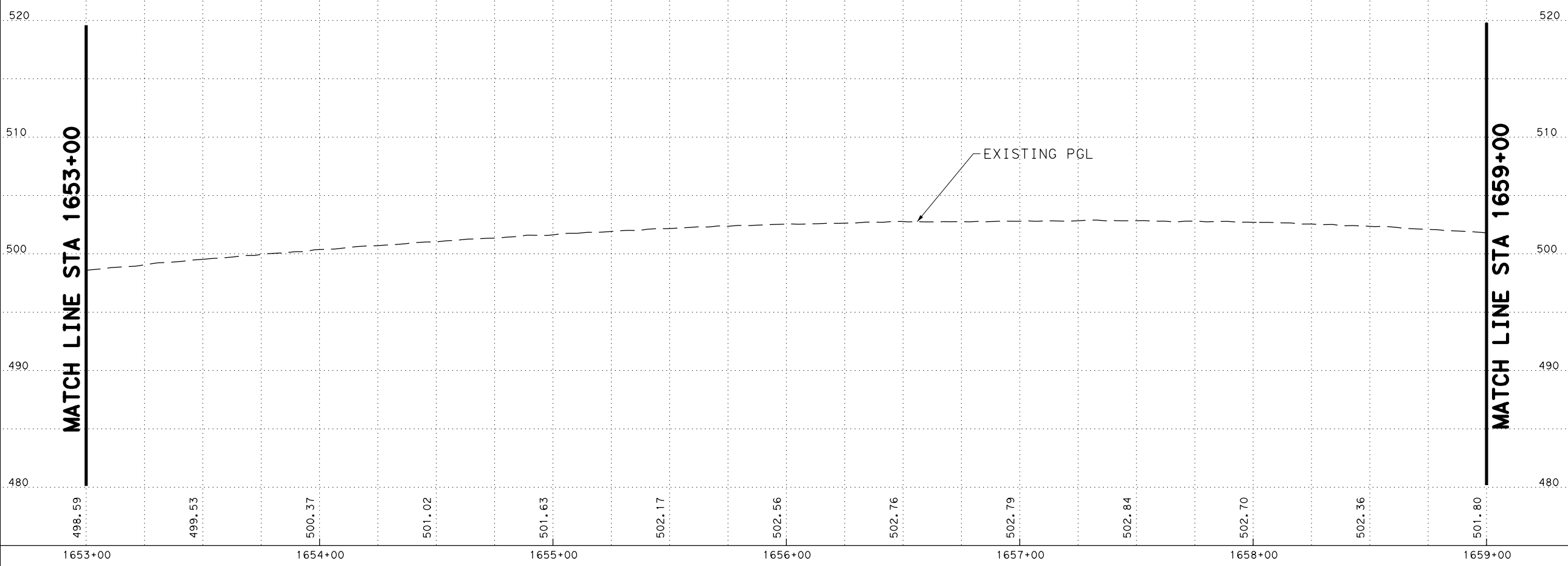
- EXISTING LANE
- PROPOSED LANE
- PROPOSED PAVEMENT
- CROSS-CULVERT NUMBER
- DRIVEWAY NUMBER
- OUTFALL DIRECTION
- FLOW DIRECTION

NOTES:

1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1653+00

MATCH LINE STA 1659+00



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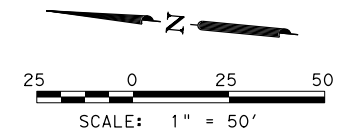
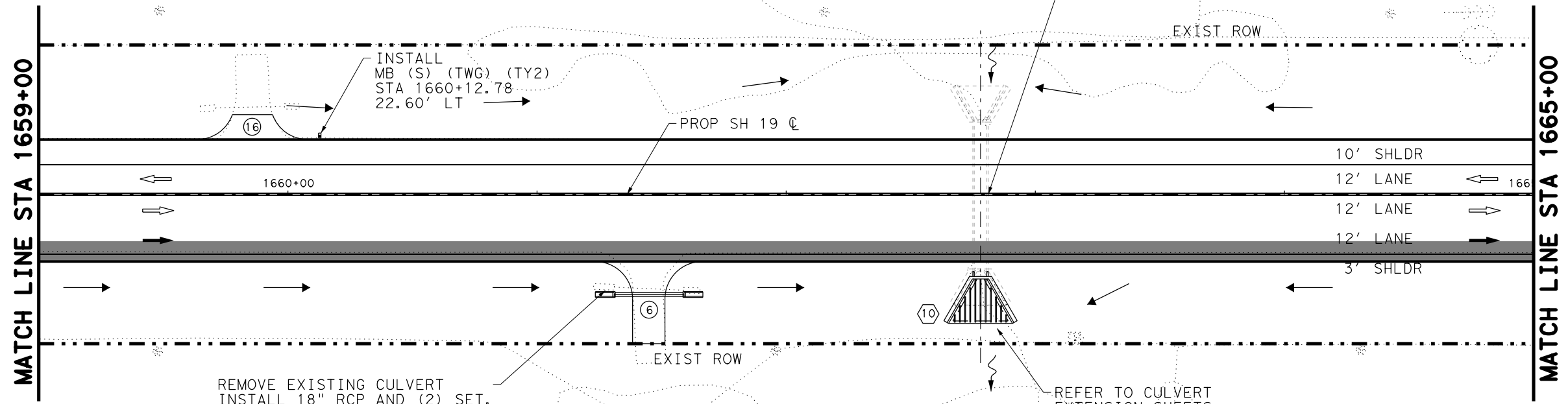


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 16 OF 79

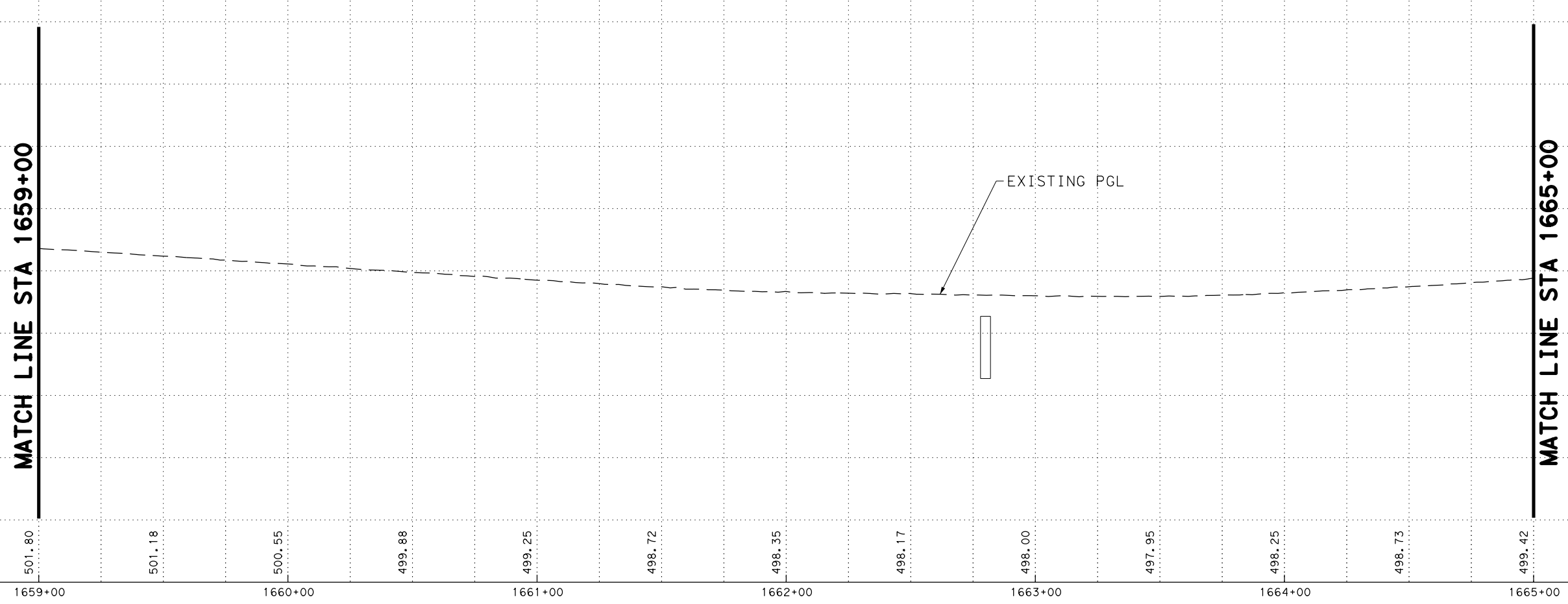
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	81

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\3. Roadway\SH19_TYLER_RDW_P&P_17.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



Trevor L. Reed 06/10/2024

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**SH 19
 PROPOSED
 PLAN AND PROFILE**

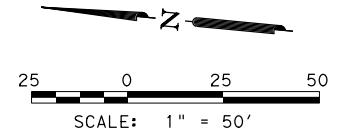
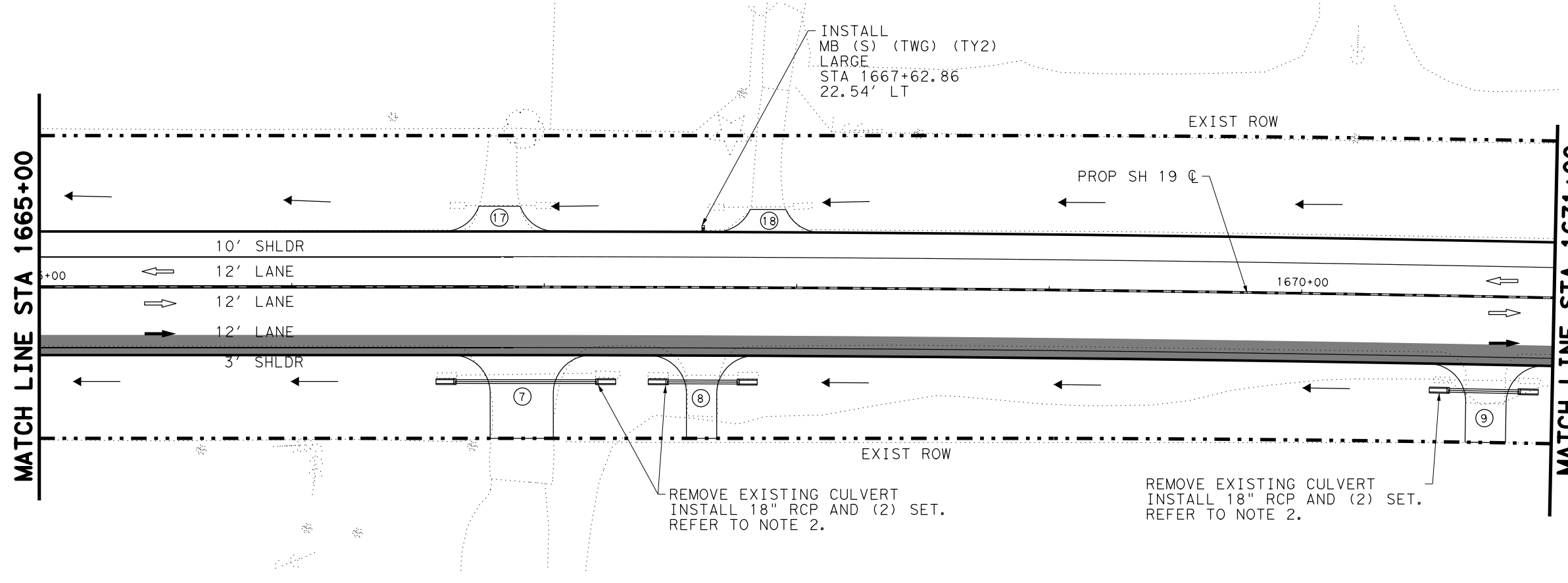
SHEET 17 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	82

DATE: 10-JUN-2024 15:28
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_18.dgn

MATCH LINE STA 1665+00

MATCH LINE STA 1671+00



LEGEND

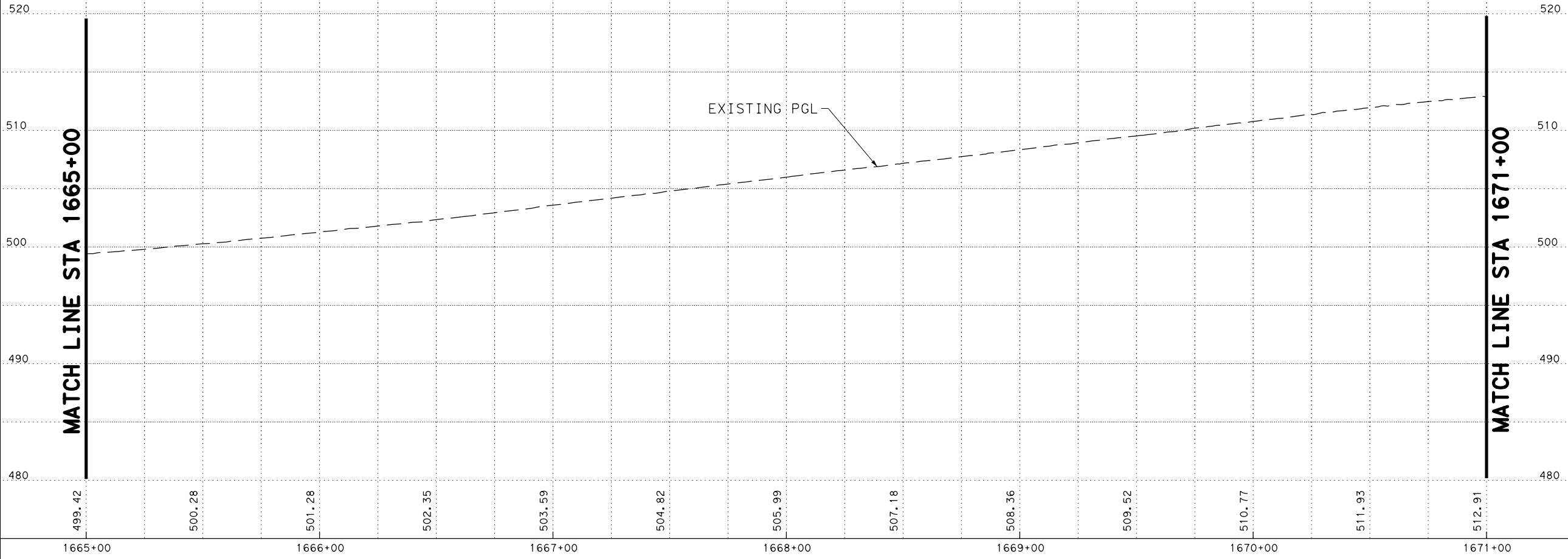
- EXISTING LANE
- PROPOSED LANE
- PROPOSED PAVEMENT
- CROSS-CULVERT NUMBER
- DRIVEWAY NUMBER
- OUTFALL DIRECTION
- FLOW DIRECTION

NOTES:

1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1665+00

MATCH LINE STA 1671+00



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**SH 19
 PROPOSED
 PLAN AND PROFILE**

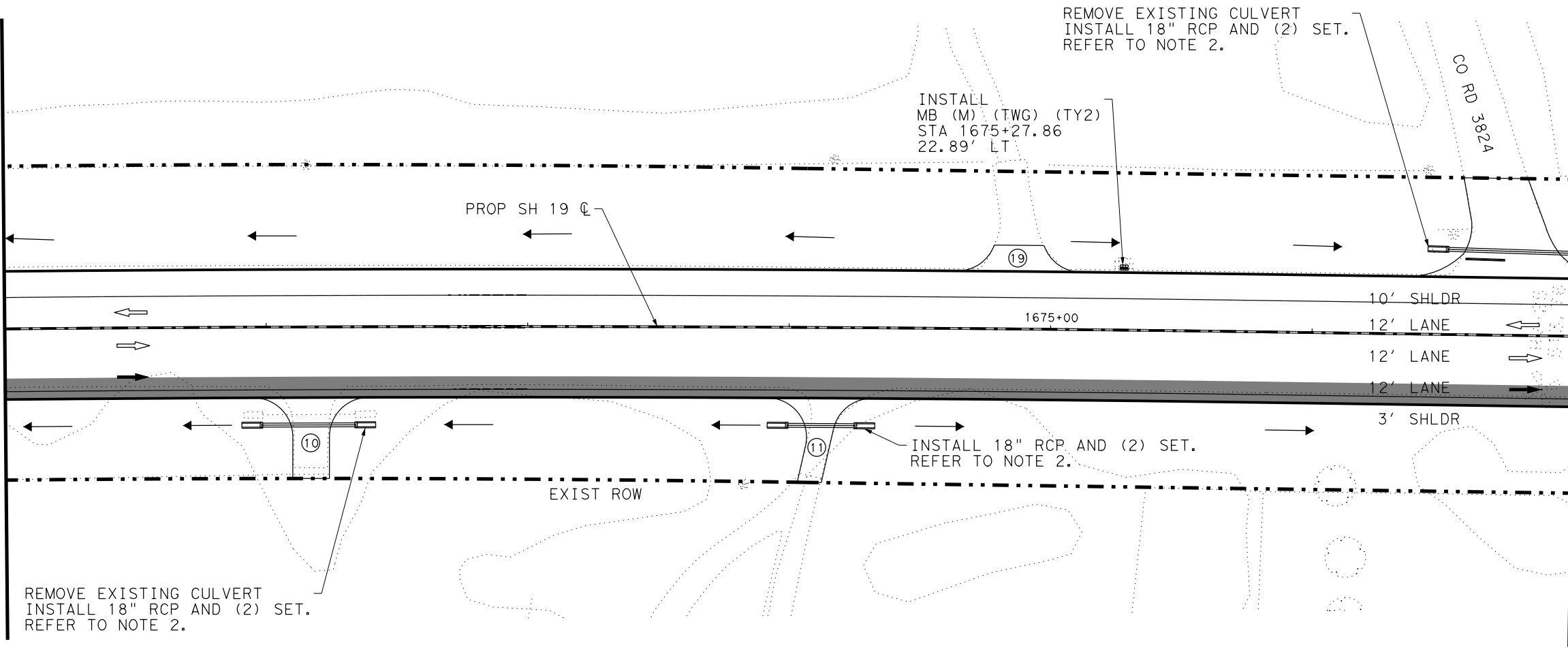
SHEET 18 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	83

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_19.dgn

MATCH LINE STA 1671+00

MATCH LINE STA 1677+00

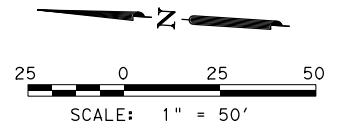


REMOVE EXISTING CULVERT
 INSTALL 18" RCP AND (2) SET.
 REFER TO NOTE 2.

INSTALL
 MB (M) (TWG) (TY2)
 STA 1675+27.86
 22.89' LT

REMOVE EXISTING CULVERT
 INSTALL 18" RCP AND (2) SET.
 REFER TO NOTE 2.

INSTALL 18" RCP AND (2) SET.
 REFER TO NOTE 2.



LEGEND

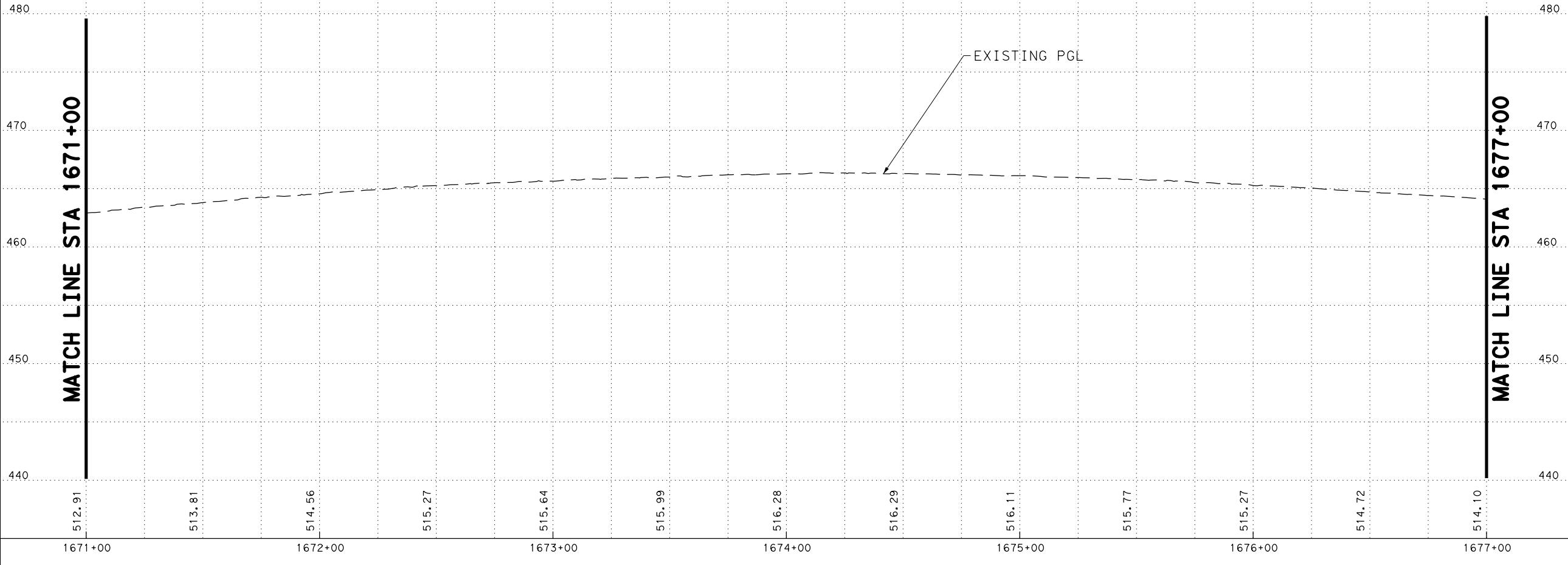
- EXISTING LANE
- PROPOSED LANE
- PROPOSED PAVEMENT
- CROSS-CULVERT NUMBER
- DRIVEWAY NUMBER
- OUTFALL DIRECTION
- FLOW DIRECTION

NOTES:

1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1671+00

MATCH LINE STA 1677+00



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**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 19 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	84

DATE: 10-JUN-2024 15:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Sets\3. Roadway\SH19_TYLER_RDW_P&P_20.dgn

MATCH LINE STA 1677+00

MATCH LINE STA 1677+00

MATCH LINE STA 1683+00

MATCH LINE STA 1683+00

INSTALL
 MB (S) (TWG) (TY2)
 STA 1678+31.81
 24.00' LT

EXIST ROW

PROP SH 19 CL

INSTALL
 MB (S) (TWG) (TY2)
 STA 1681+85.60
 23.29' LT

10' SHLDR

12' LANE

12' LANE

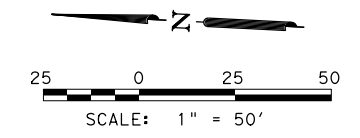
12' LANE

3' SHLDR

1680+00

REMOVE EXISTING CULVERT
 INSTALL 18" RCP AND (2) SET.
 REFER TO NOTE 2.

REMOVE EXISTING CULVERT
 INSTALL 18" RCP AND (2) SET.
 REFER TO NOTE 2.

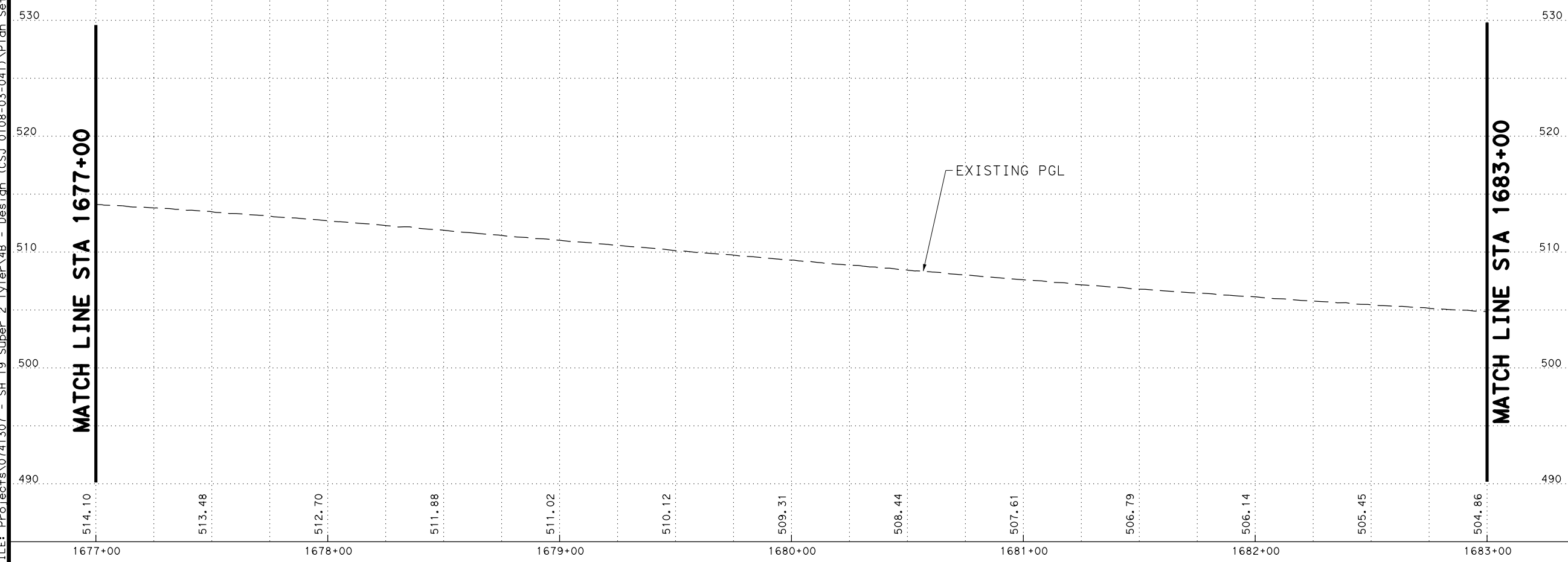


LEGEND

- EXISTING LANE
- PROPOSED LANE
- PROPOSED PAVEMENT
- CROSS-CULVERT NUMBER
- DRIVEWAY NUMBER
- OUTFALL DIRECTION
- FLOW DIRECTION

NOTES:

1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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**SH 19
 PROPOSED
 PLAN AND PROFILE**

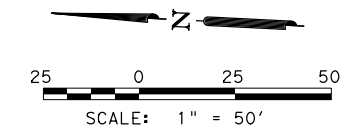
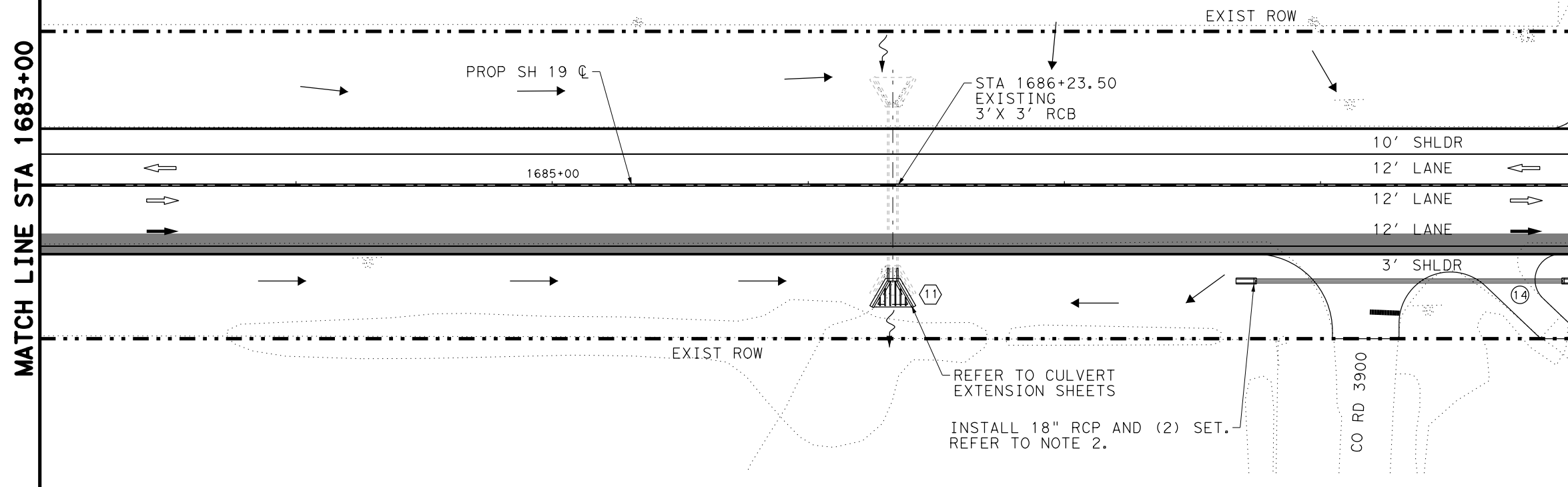
SHEET 20 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	85

DATE: 10-JUN-2024 15:28
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_21.dgn

MATCH LINE STA 1683+00

MATCH LINE STA 1689+00



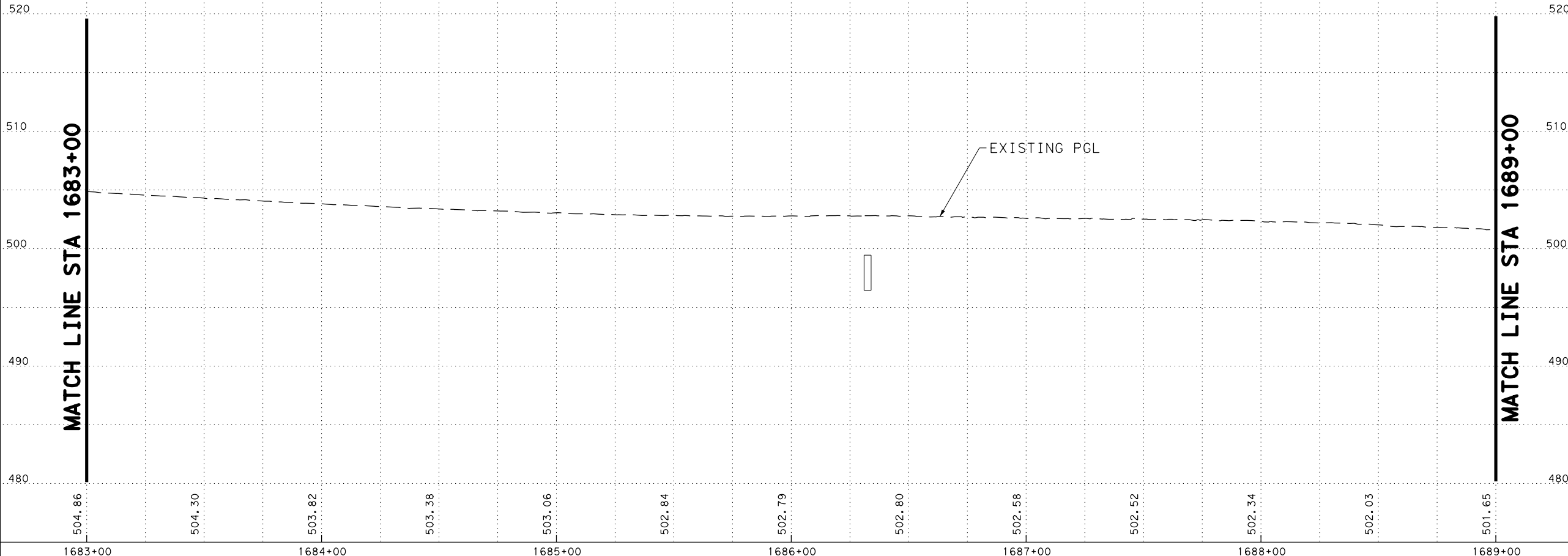
- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

- NOTES:**
- REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

REFER TO CULVERT EXTENSION SHEETS
 INSTALL 18" RCP AND (2) SET.
 REFER TO NOTE 2.

MATCH LINE STA 1683+00

MATCH LINE STA 1689+00



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VOLKERT

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**SH 19
 PROPOSED
 PLAN AND PROFILE**

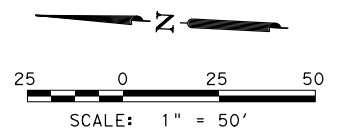
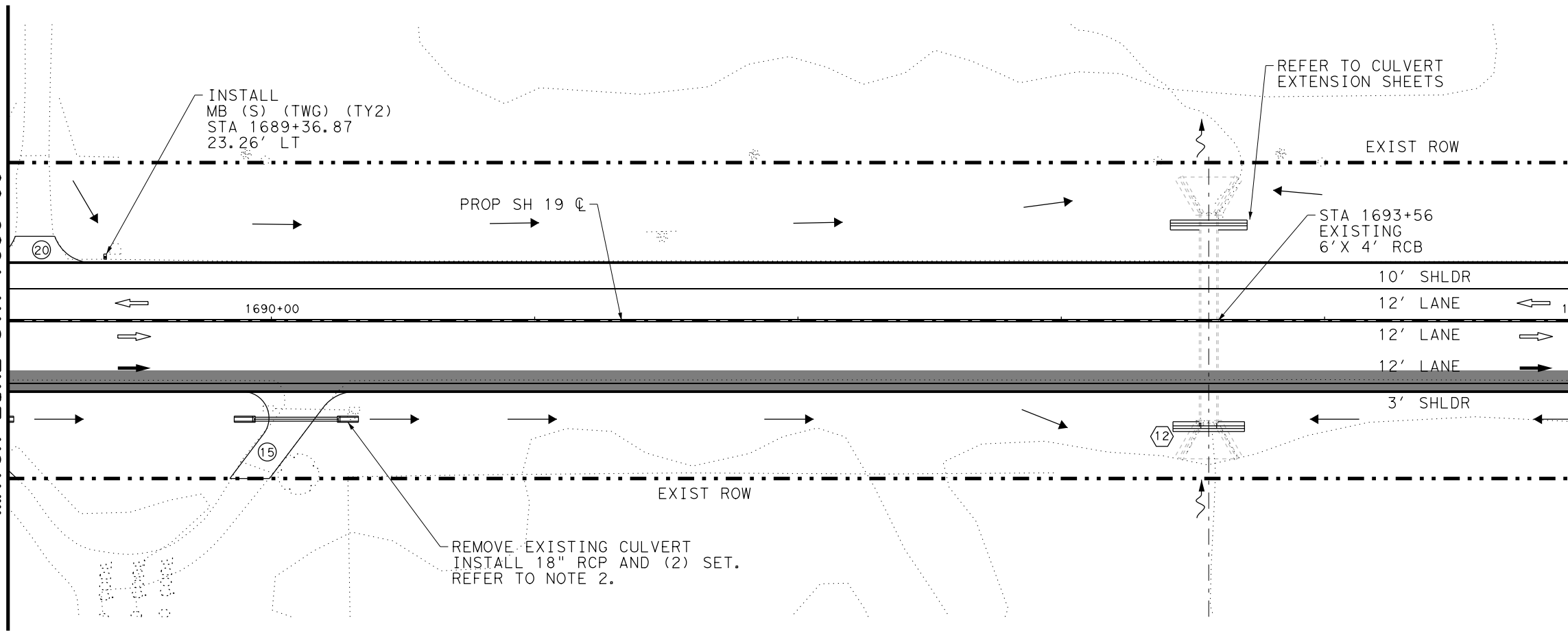
SHEET 21 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	86

DATE: 10-JUN-2024 15:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_22.dgn

MATCH LINE STA 1689+00

MATCH LINE STA 1695+00

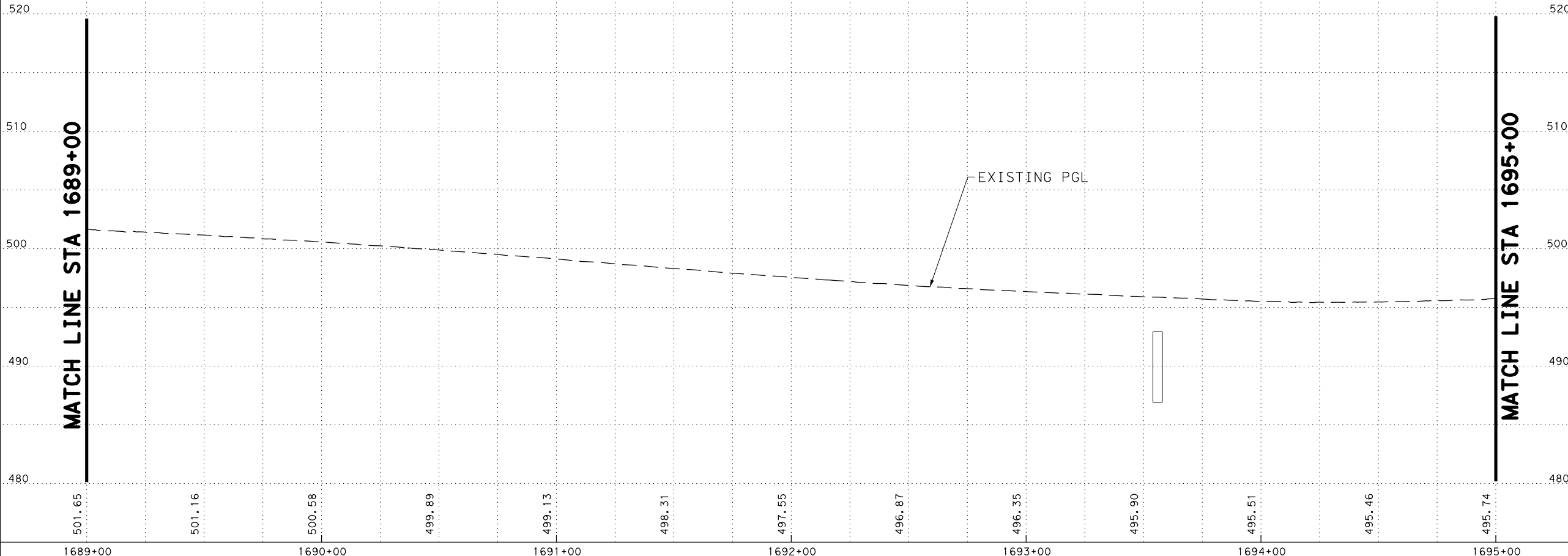


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1689+00

MATCH LINE STA 1695+00



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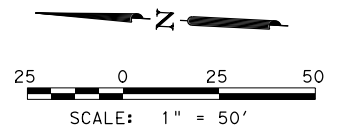


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 22 OF 79

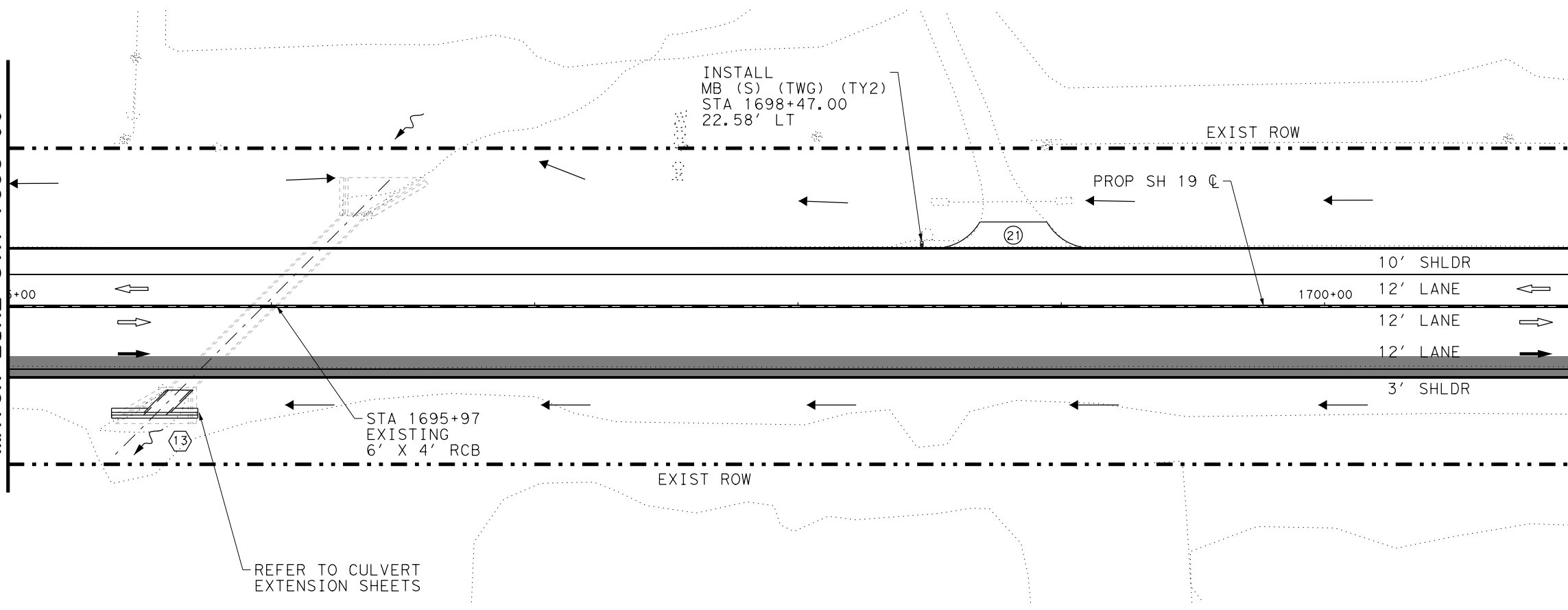
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	87

DATE: 10-JUN-2024 15:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_23.dgn



MATCH LINE STA 1695+00

MATCH LINE STA 1701+00



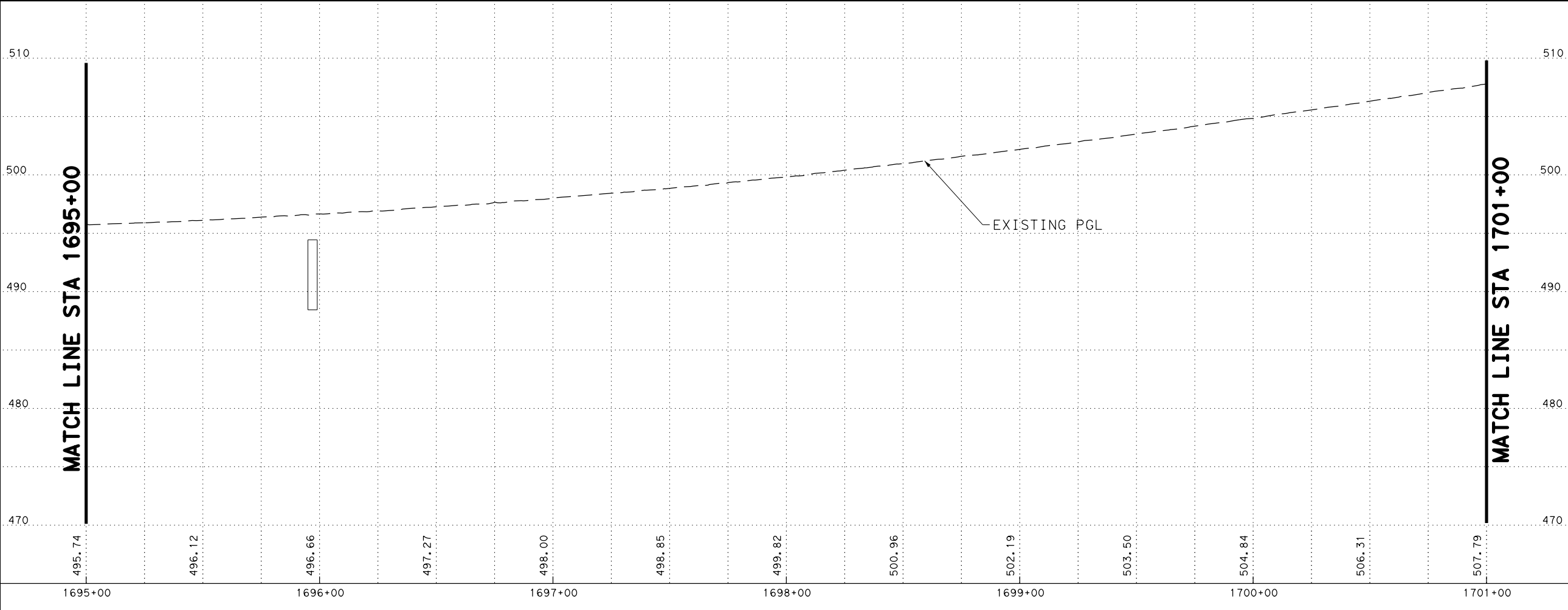
- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

REFER TO CULVERT EXTENSION SHEETS

MATCH LINE STA 1695+00

MATCH LINE STA 1701+00



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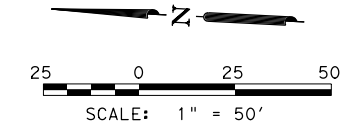
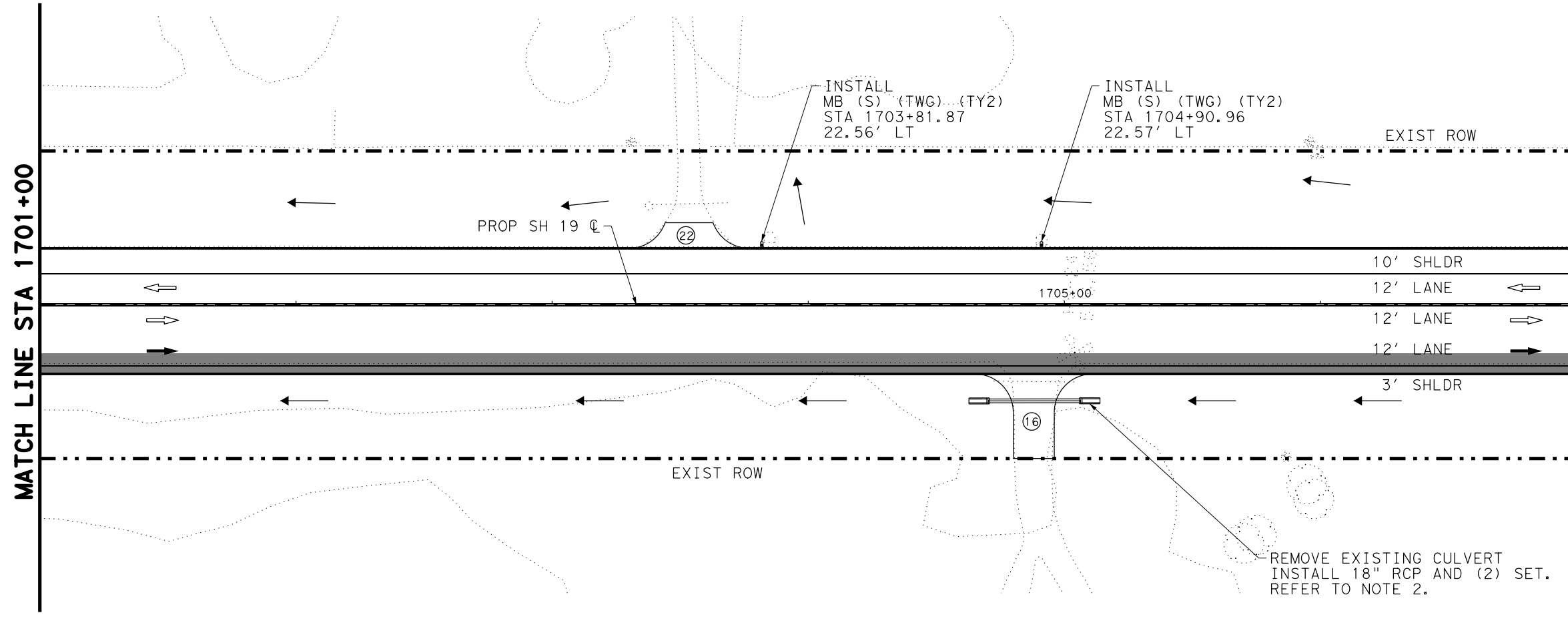
SHEET 23 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	88

DATE: 10-JUN-2024 15:28
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_24.dgn

MATCH LINE STA 1701+00

MATCH LINE STA 1707+00

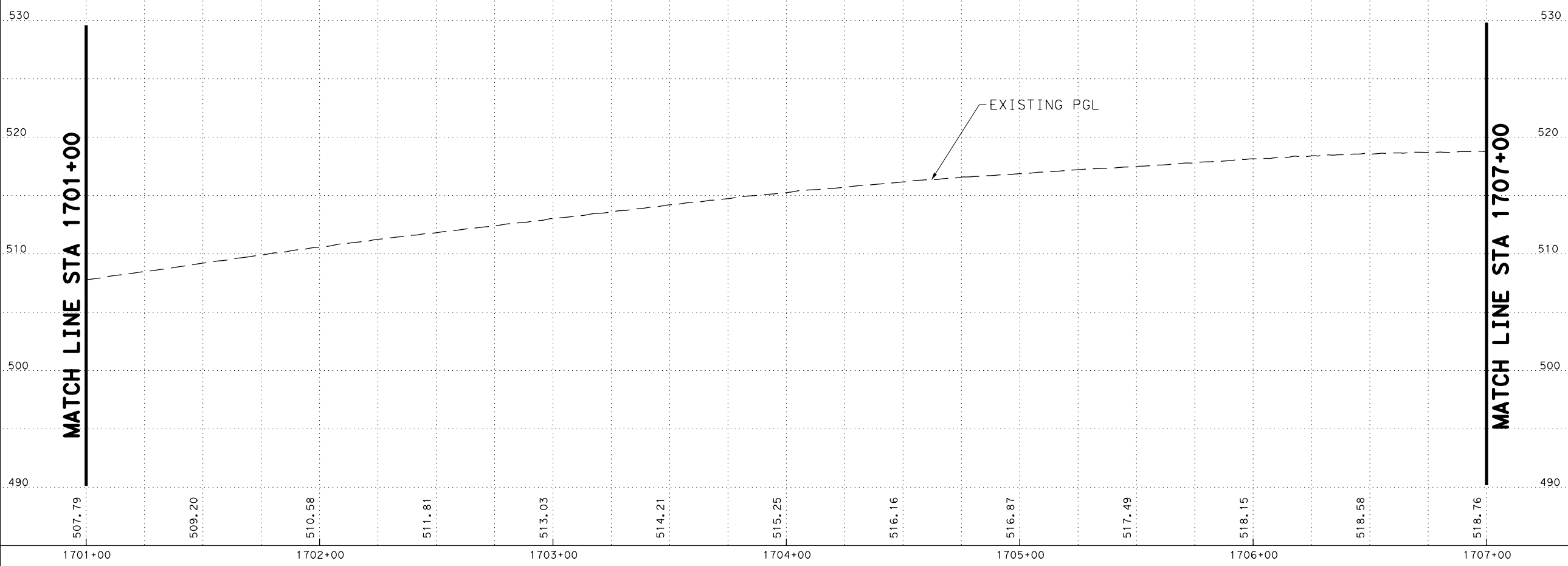


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1701+00

MATCH LINE STA 1707+00



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**SH 19
 PROPOSED
 PLAN AND PROFILE**

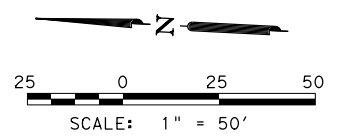
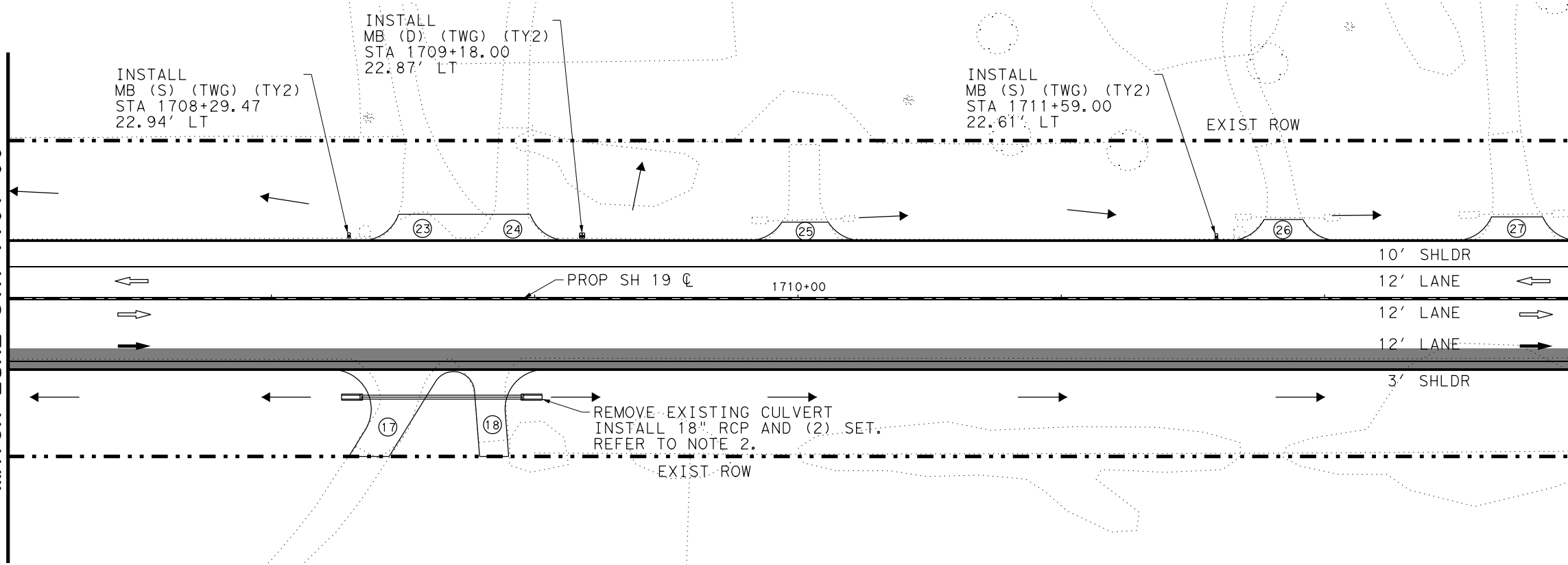
SHEET 24 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	89

DATE: 10-JUN-2024 15:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_25.dgn

MATCH LINE STA 1707+00

MATCH LINE STA 1713+00

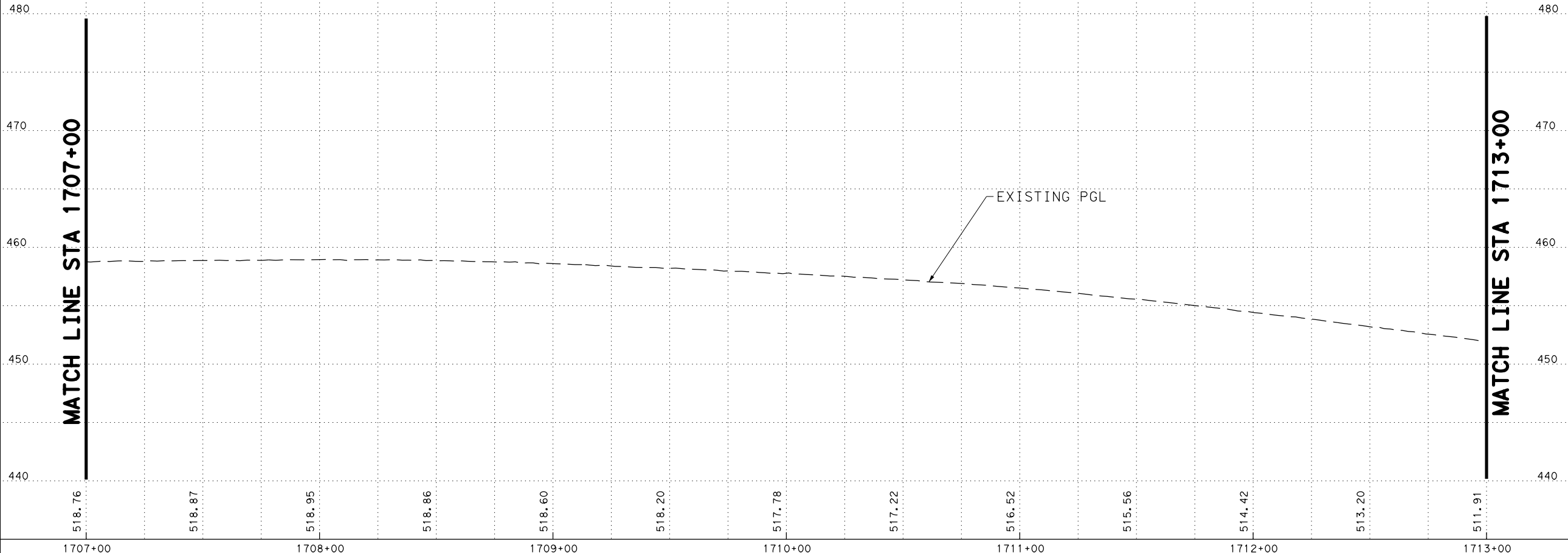


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1707+00

MATCH LINE STA 1713+00



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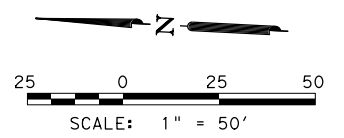


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 25 OF 79

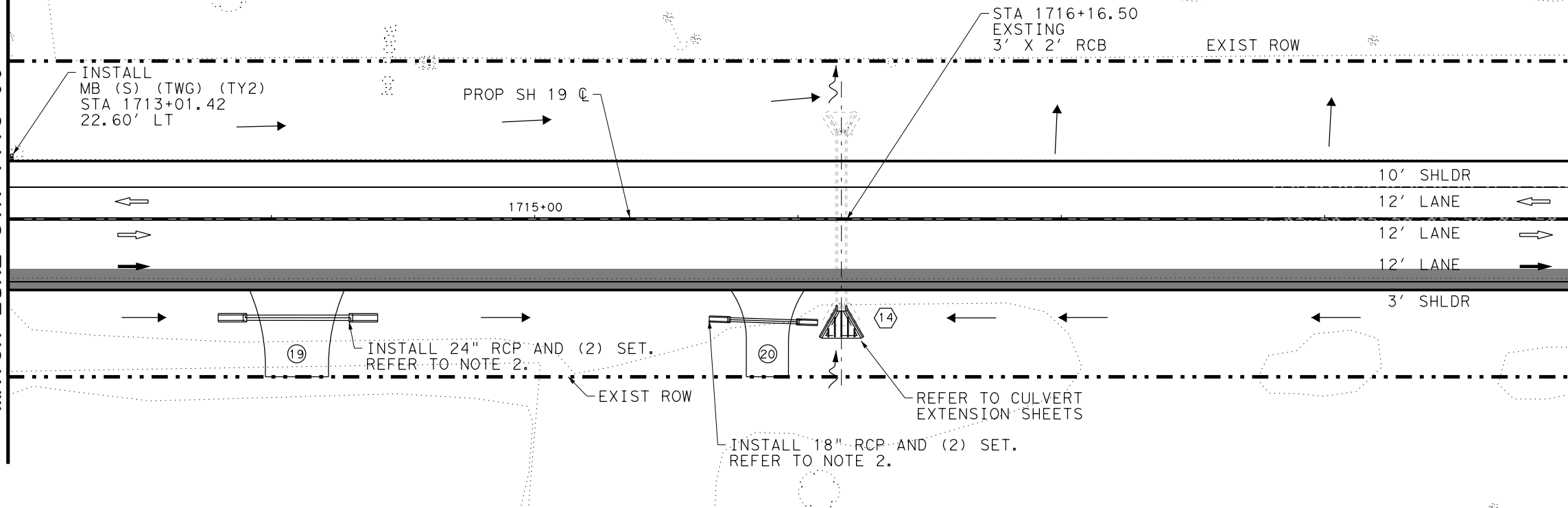
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	90

DATE: 10-JUN-2024 15:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_26.dgn



MATCH LINE STA 1713+00

MATCH LINE STA 1719+00



LEGEND

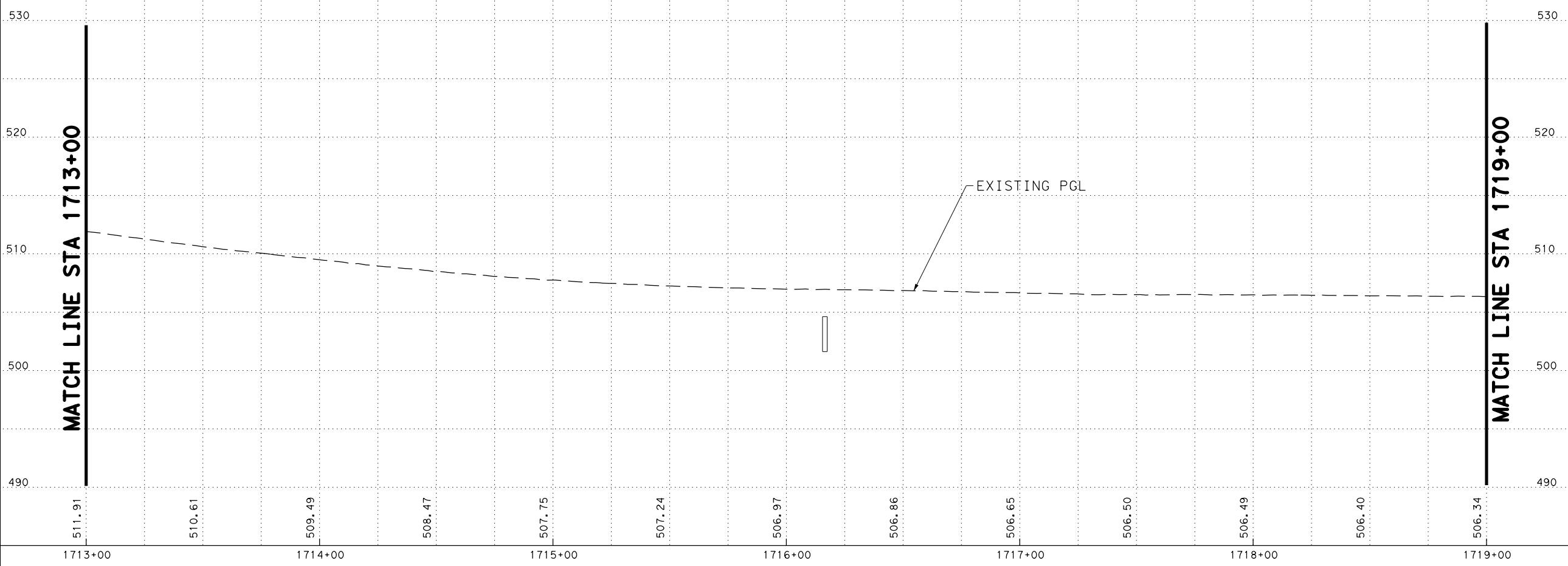
- EXISTING LANE
- PROPOSED LANE
- PROPOSED PAVEMENT
- CROSS-CULVERT NUMBER
- DRIVEWAY NUMBER
- OUTFALL DIRECTION
- FLOW DIRECTION

NOTES:

1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1713+00

MATCH LINE STA 1719+00



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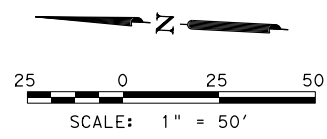
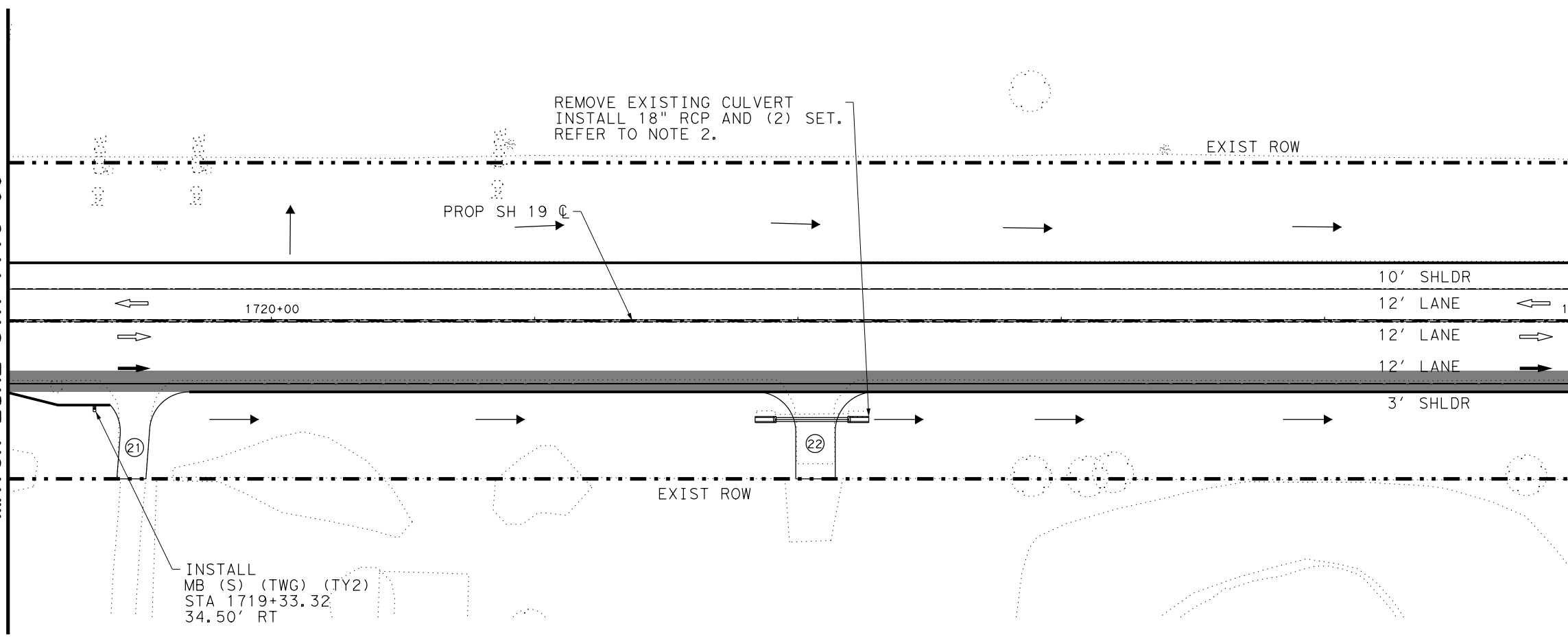
SHEET 26 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	91

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_27.dgn

MATCH LINE STA 1719+00

MATCH LINE STA 1725+00

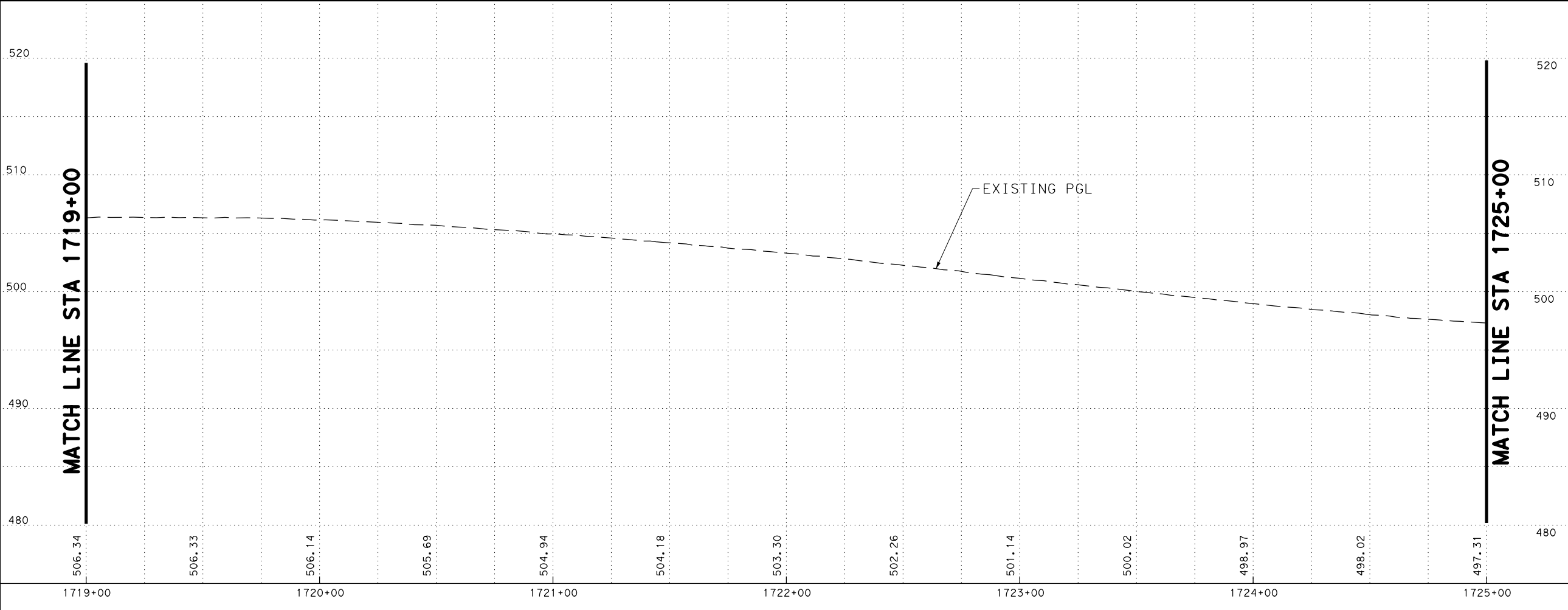


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1719+00

MATCH LINE STA 1725+00



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SHEET 27 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	92

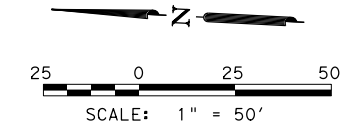
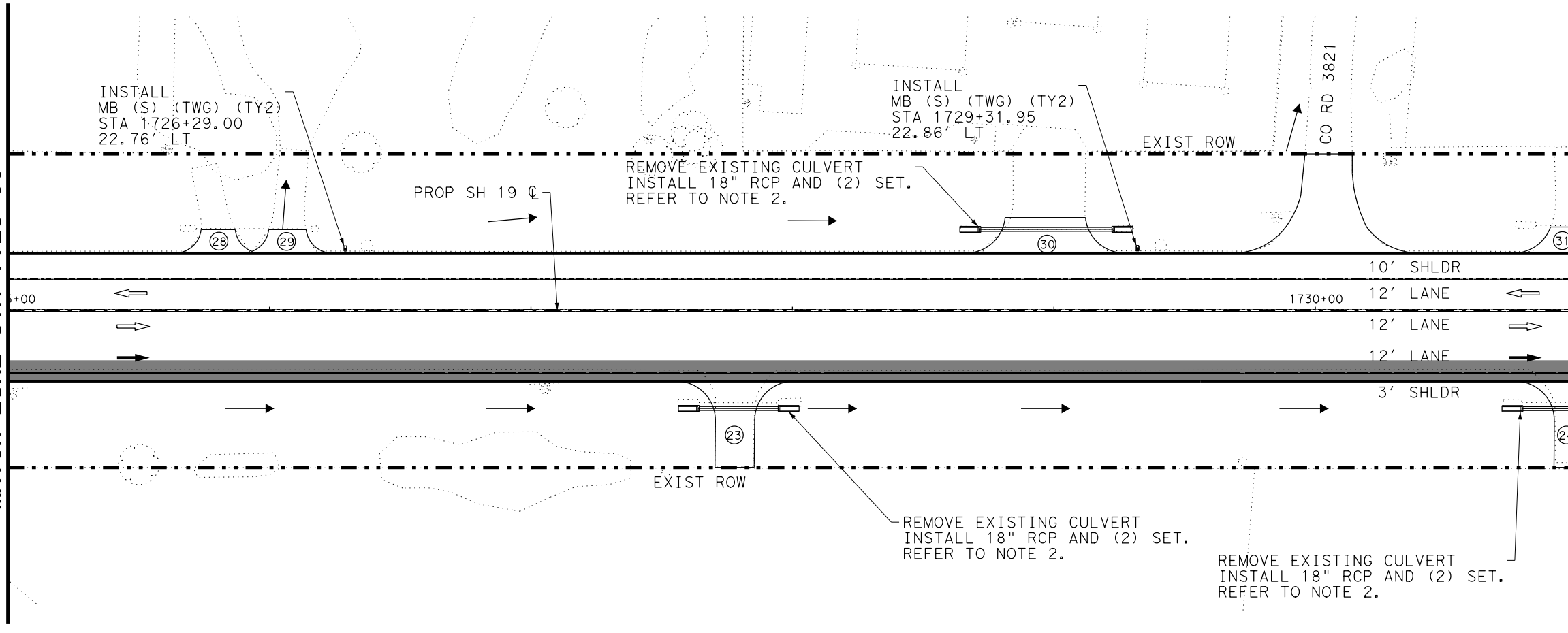
DATE: 10-JUN-2024 15:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ 0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_28.dgn

MATCH LINE STA 1725+00

MATCH LINE STA 1725+00

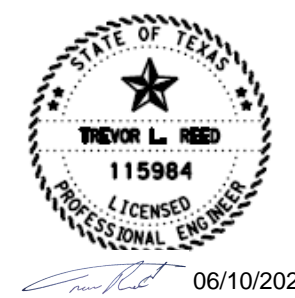
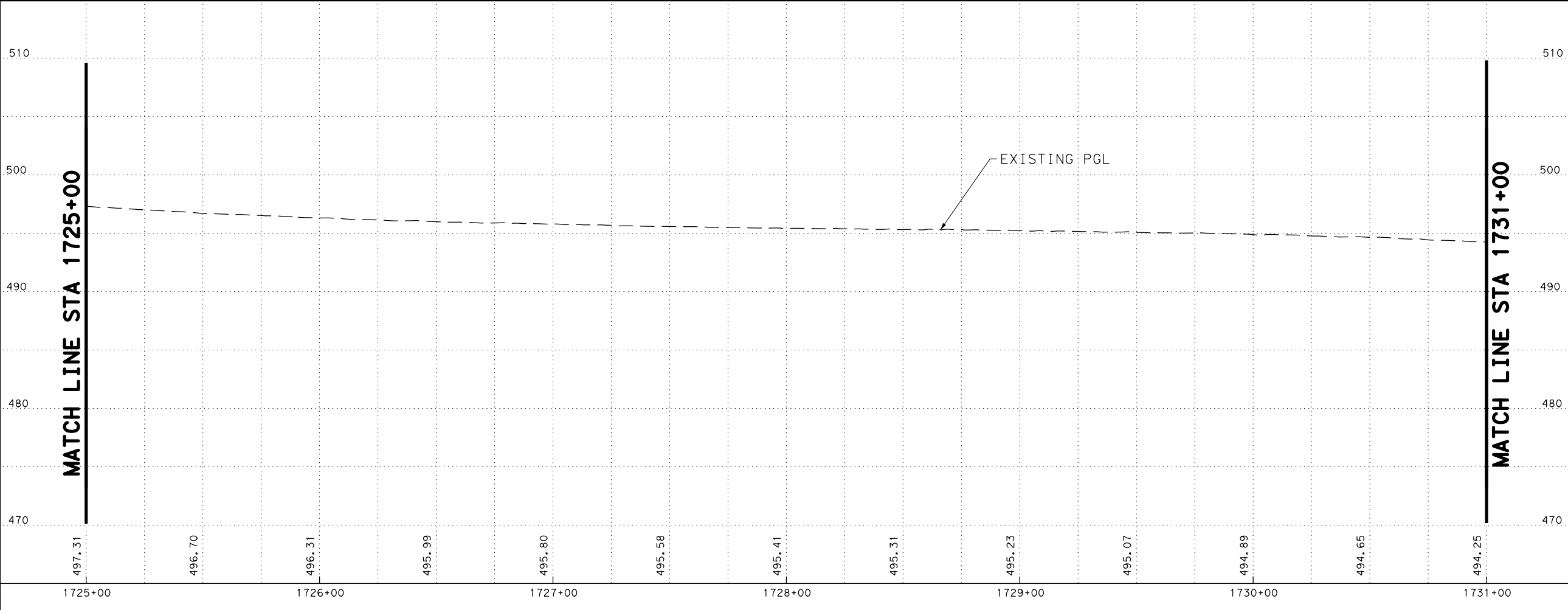
MATCH LINE STA 1731+00

MATCH LINE STA 1731+00

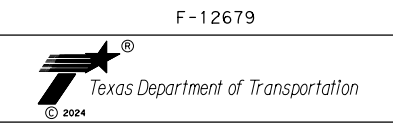


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

- NOTES:**
1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 28 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	93

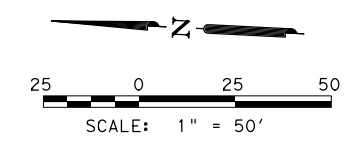
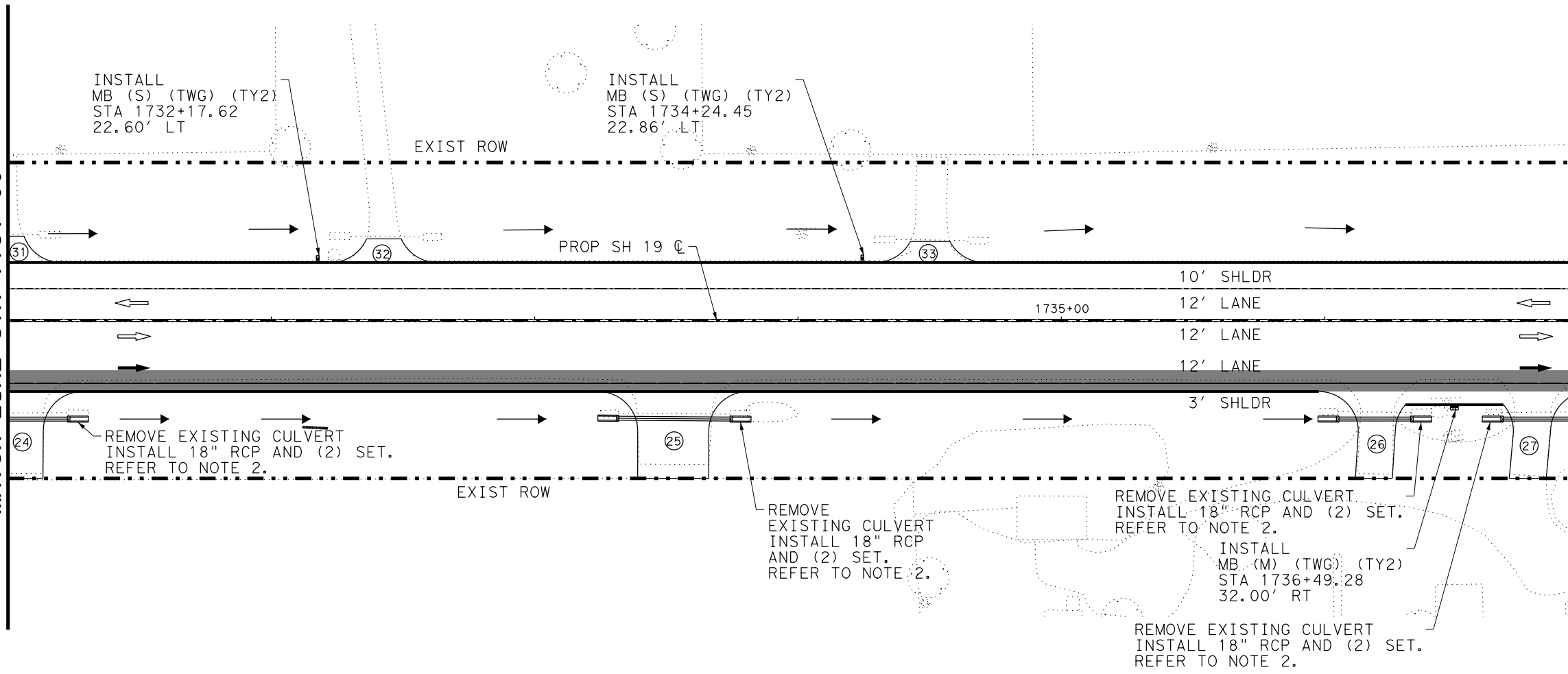
DATE: 10-JUN-2024 15:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ 0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_29.dgn

MATCH LINE STA 1731+00

MATCH LINE STA 1731+00

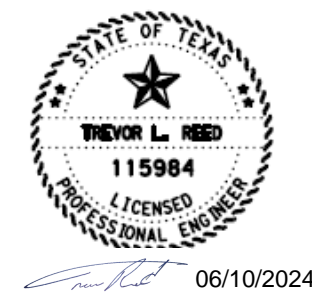
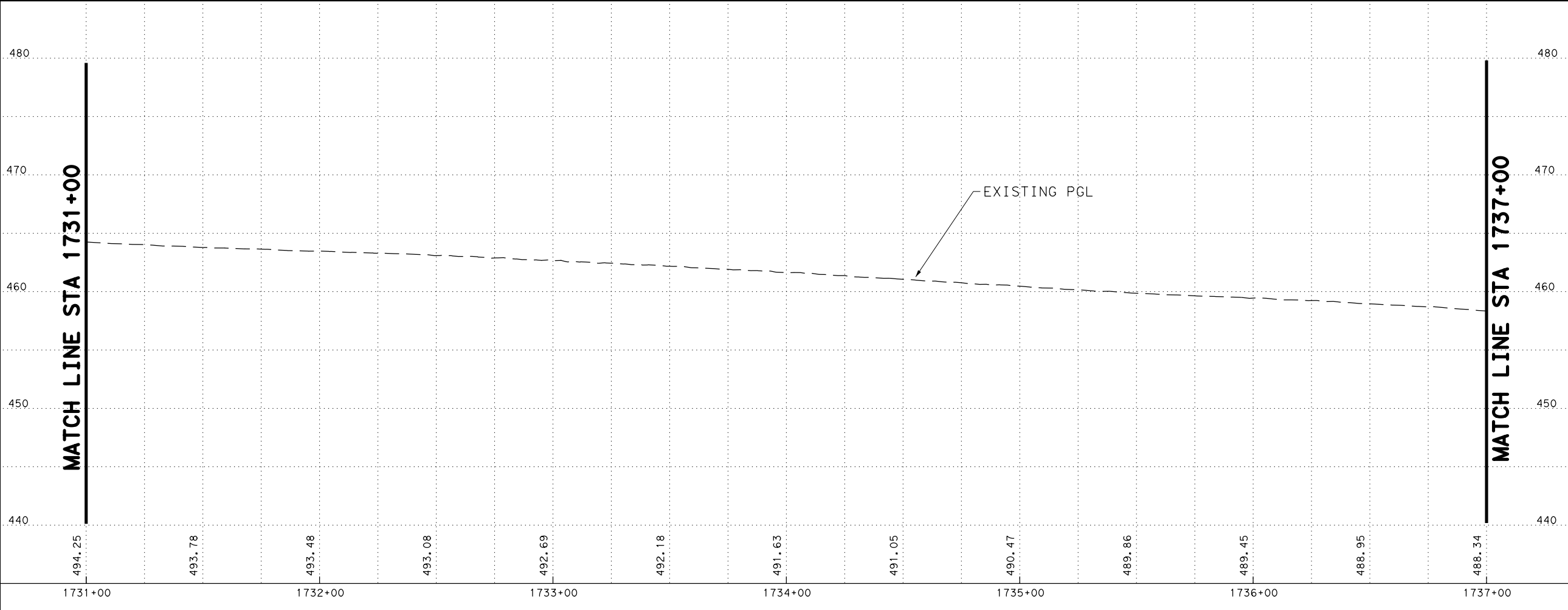
MATCH LINE STA 1737+00

MATCH LINE STA 1737+00

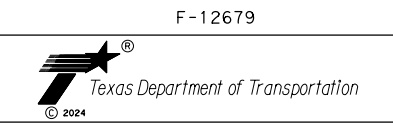


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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**SH 19
 PROPOSED
 PLAN AND PROFILE**

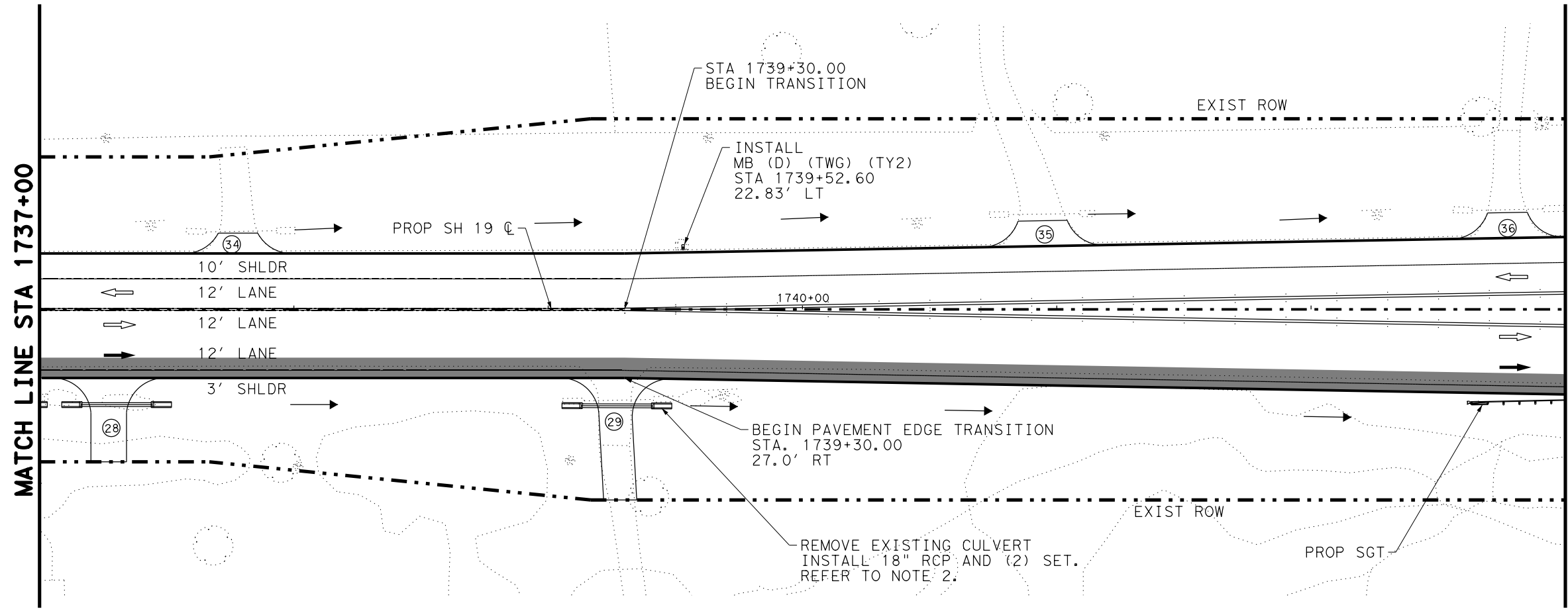
SHEET 29 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	94

DATE: 10-JUN-2024 15:30
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_30.dgn

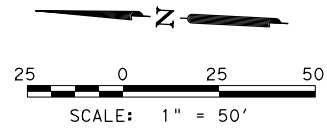
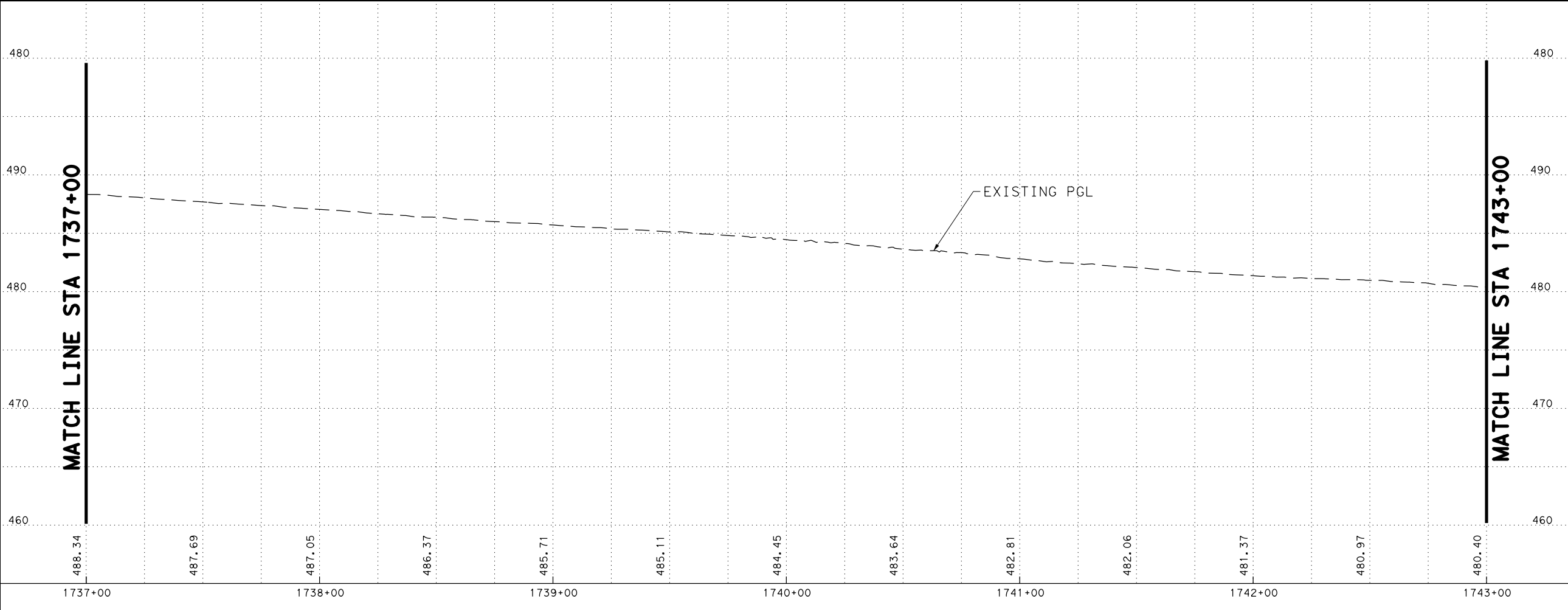
MATCH LINE STA 1737+00

MATCH LINE STA 1743+00



MATCH LINE STA 1737+00

MATCH LINE STA 1743+00



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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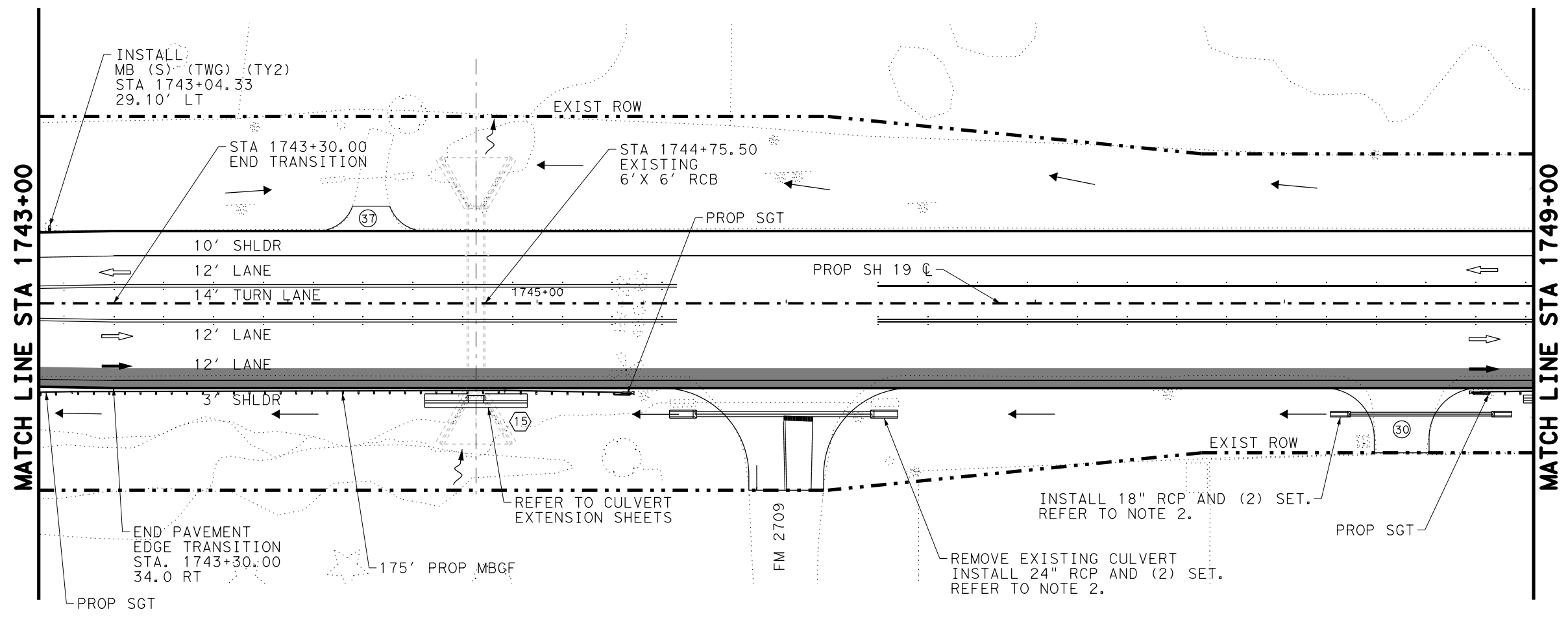
F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

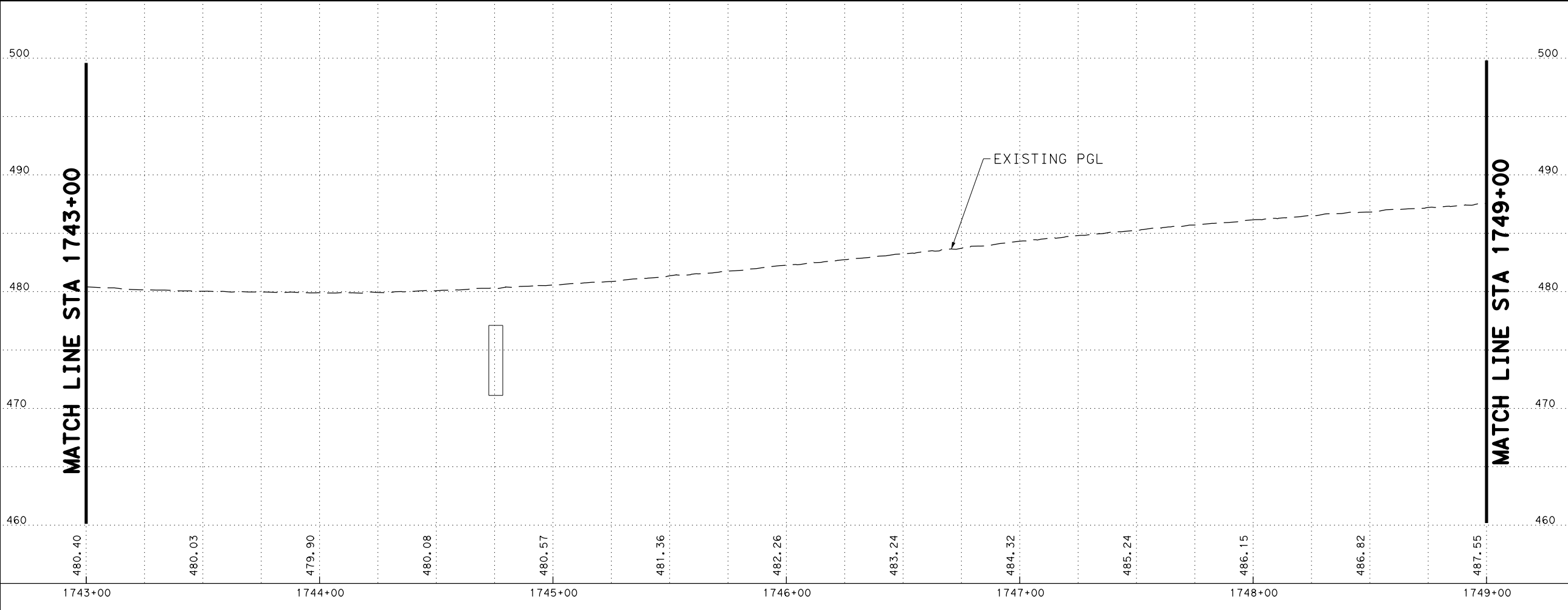
SHEET 30 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	95

DATE: 10-JUN-2024 15:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_31.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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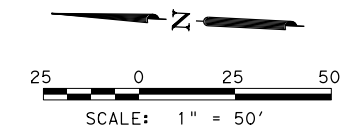
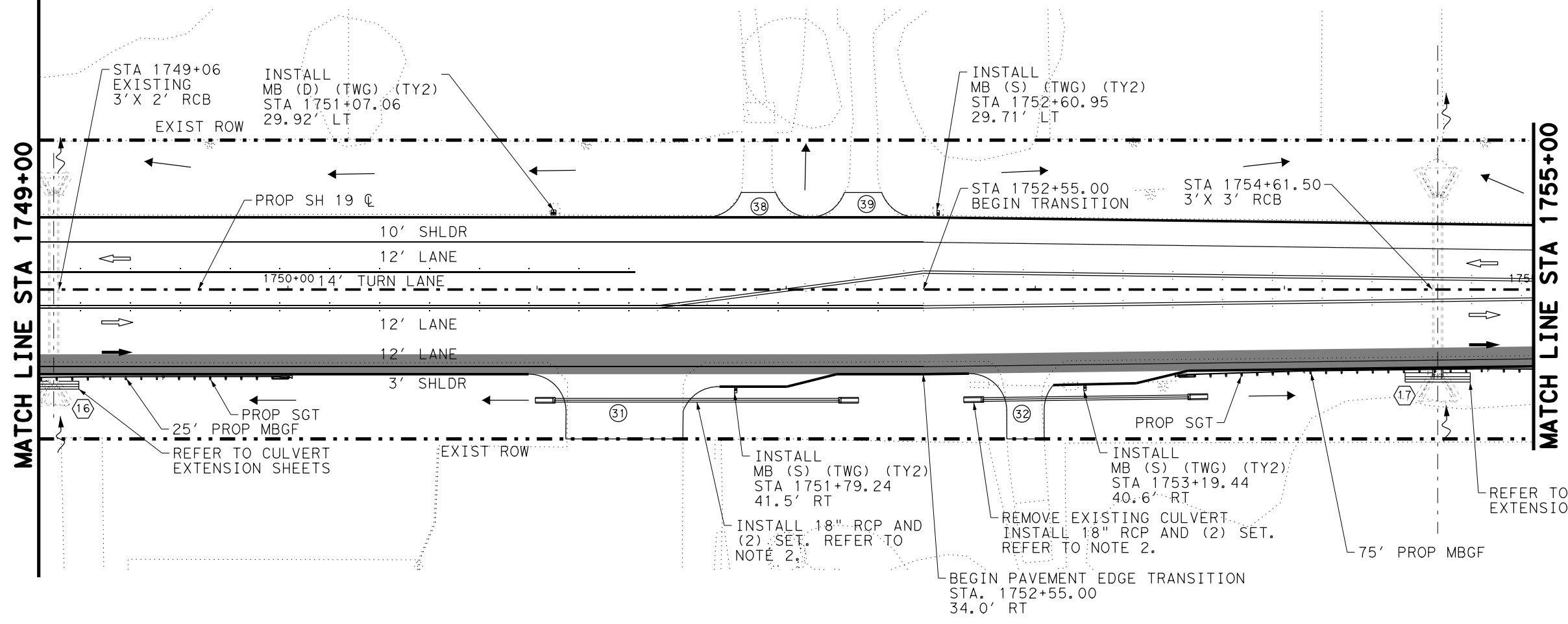
**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 31 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	96

DATE: 10-JUN-2024 15:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_32.dgn

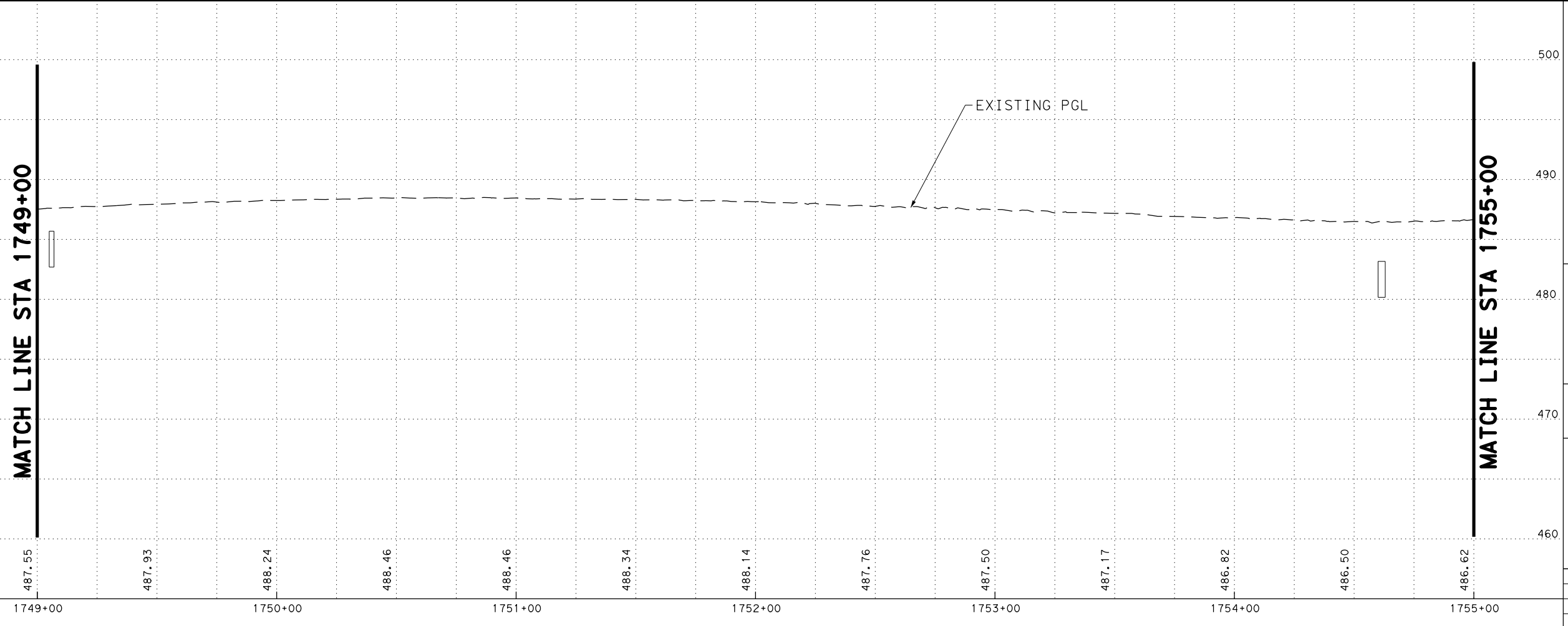
MATCH LINE STA 1749+00

MATCH LINE STA 1755+00



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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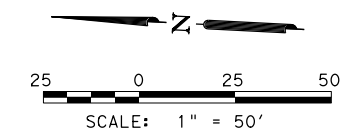
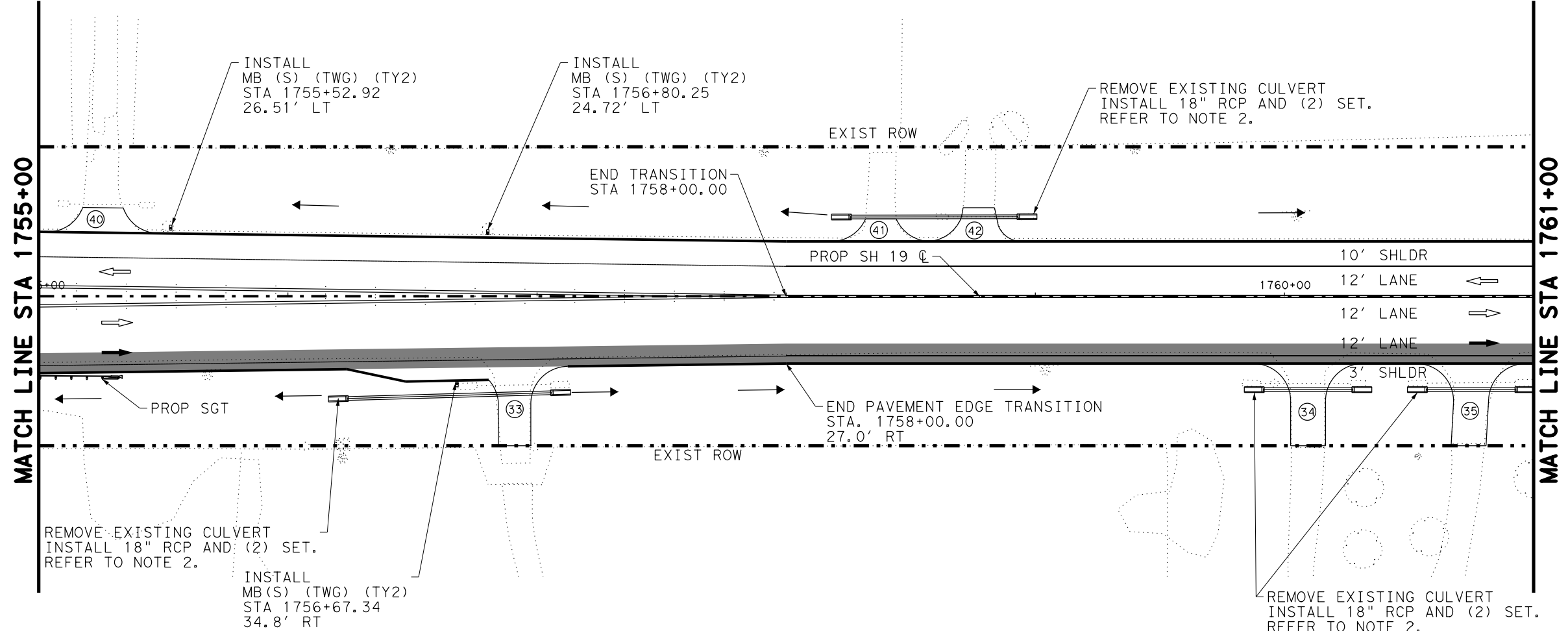
**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 32 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	97

DATE: 10-JUN-2024 15:28
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_33.dgn

MATCH LINE STA 1755+00

MATCH LINE STA 1761+00

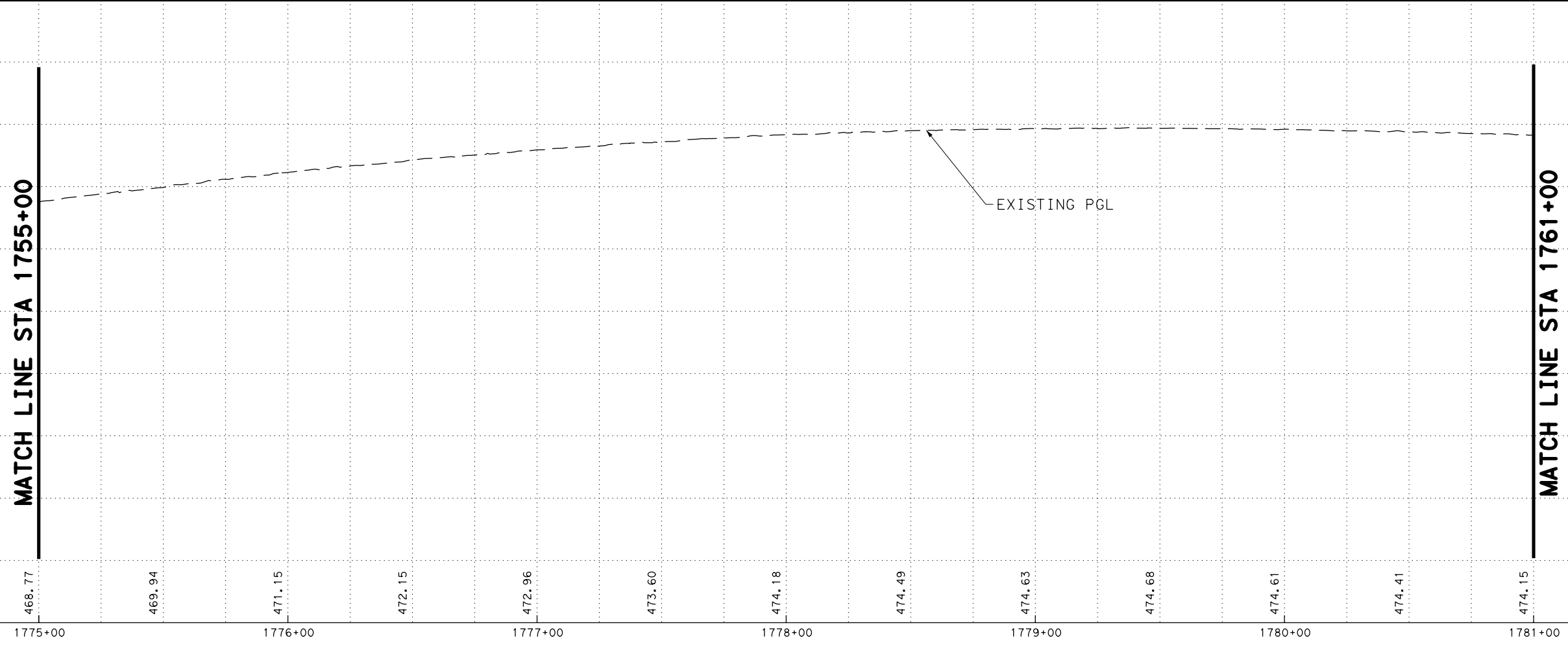


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1755+00

MATCH LINE STA 1761+00



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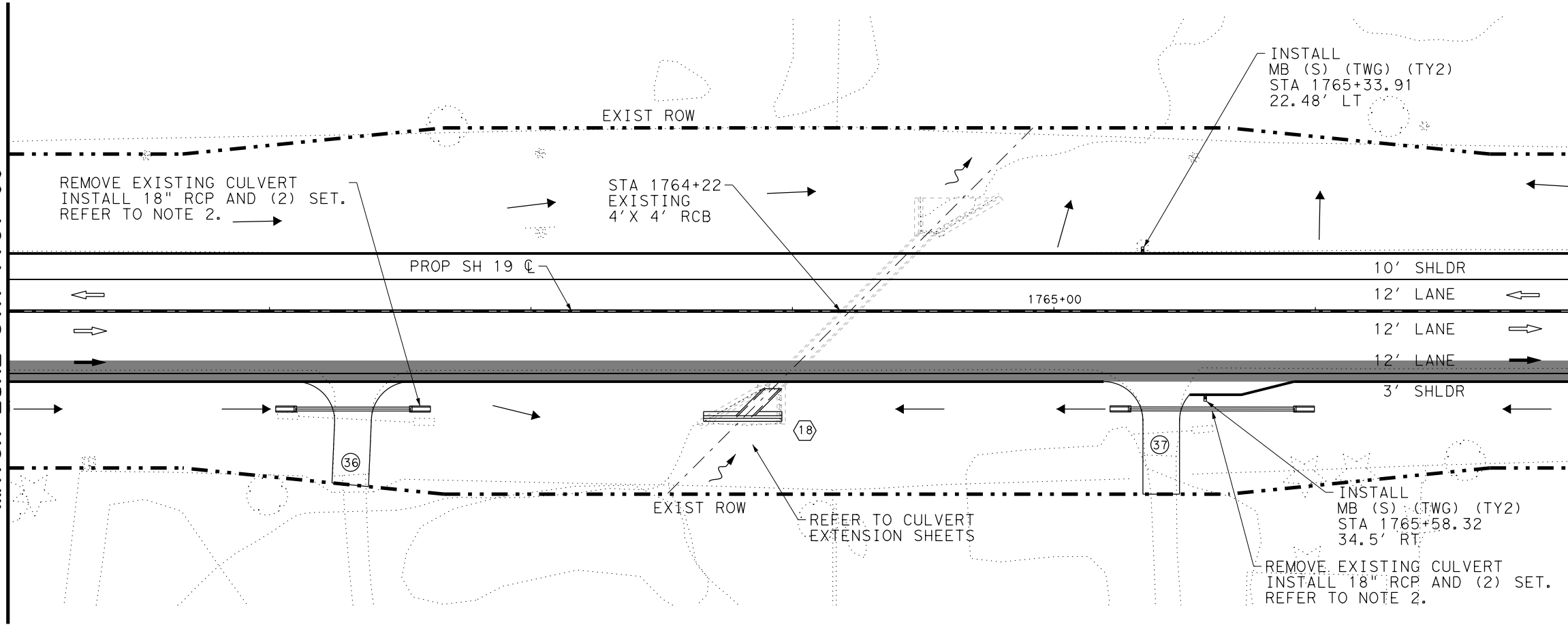
SHEET 33 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	98

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_34.dgn

MATCH LINE STA 1761+00

MATCH LINE STA 1767+00

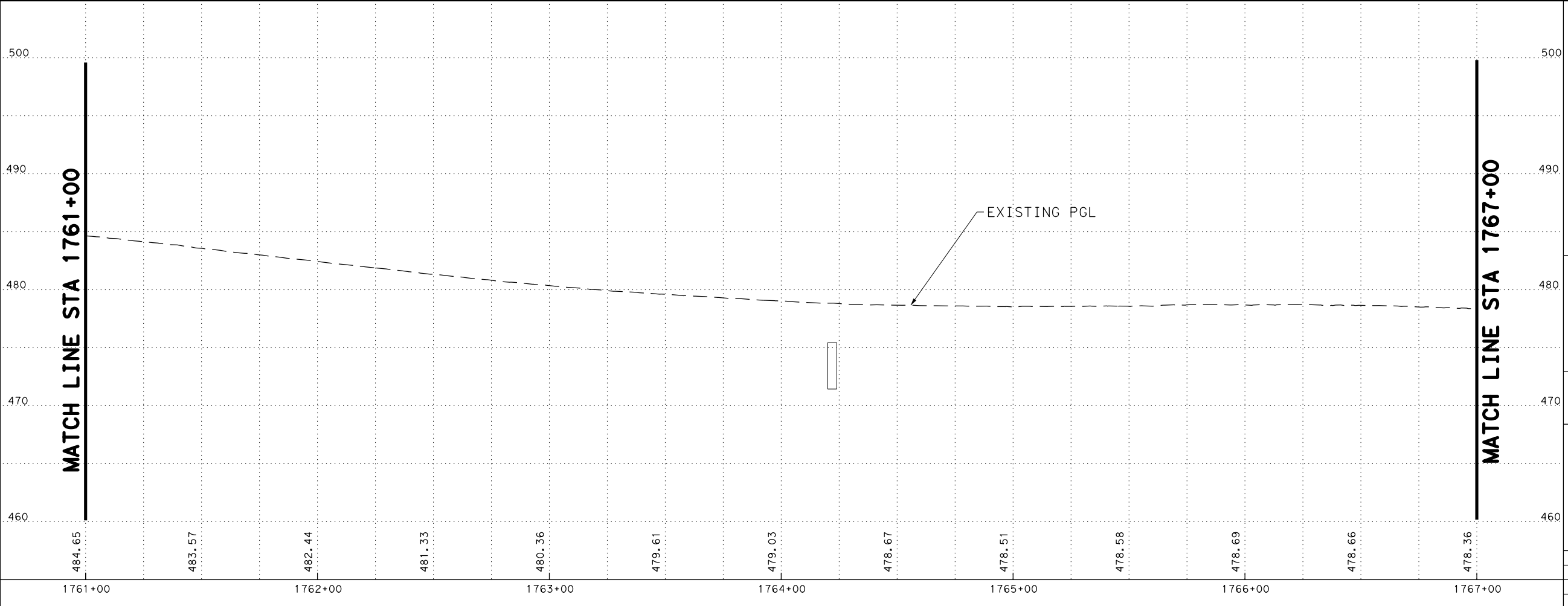


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1761+00

MATCH LINE STA 1767+00



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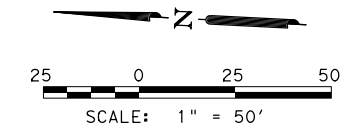
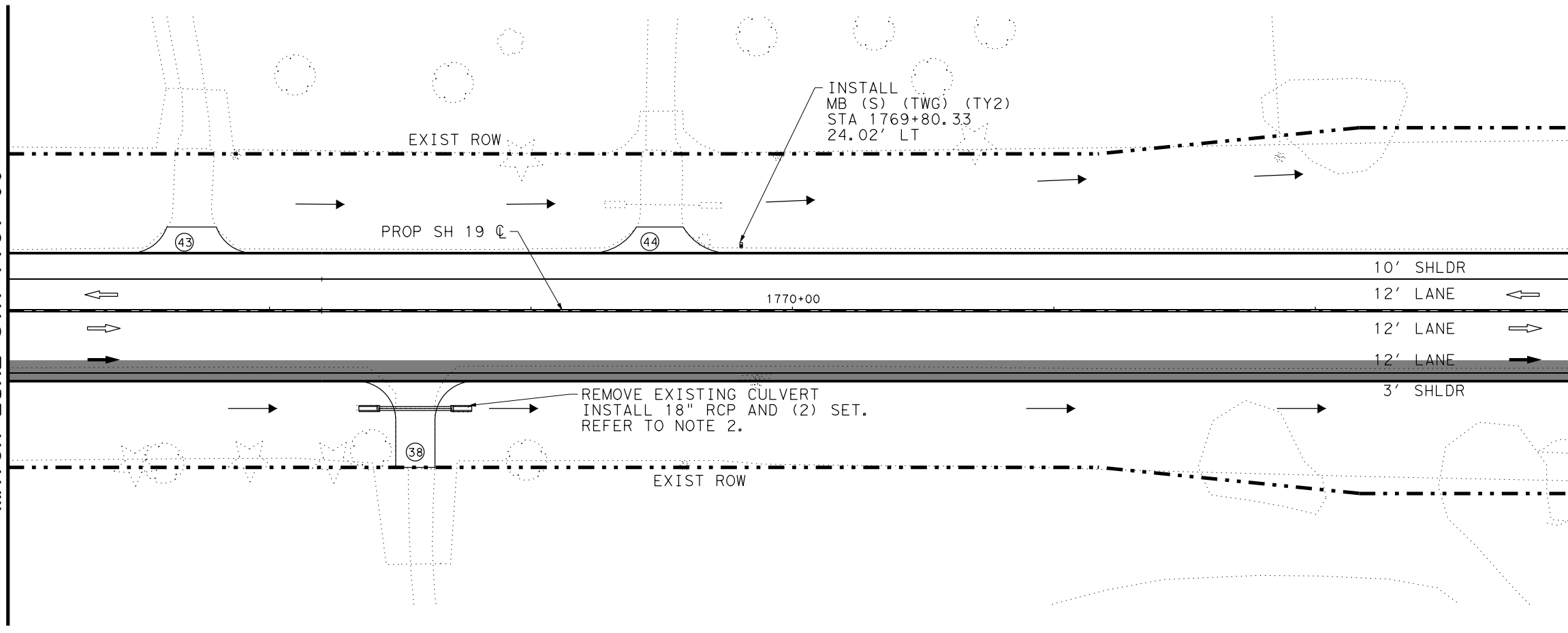
**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 34 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	99

DATE: 10-JUN-2024 15:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\3. Roadway\SH19_TYLER_RDW_P&P_35.dgn

MATCH LINE STA 1767+00

MATCH LINE STA 1773+00



LEGEND

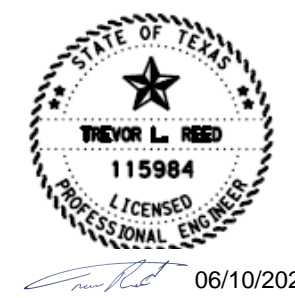
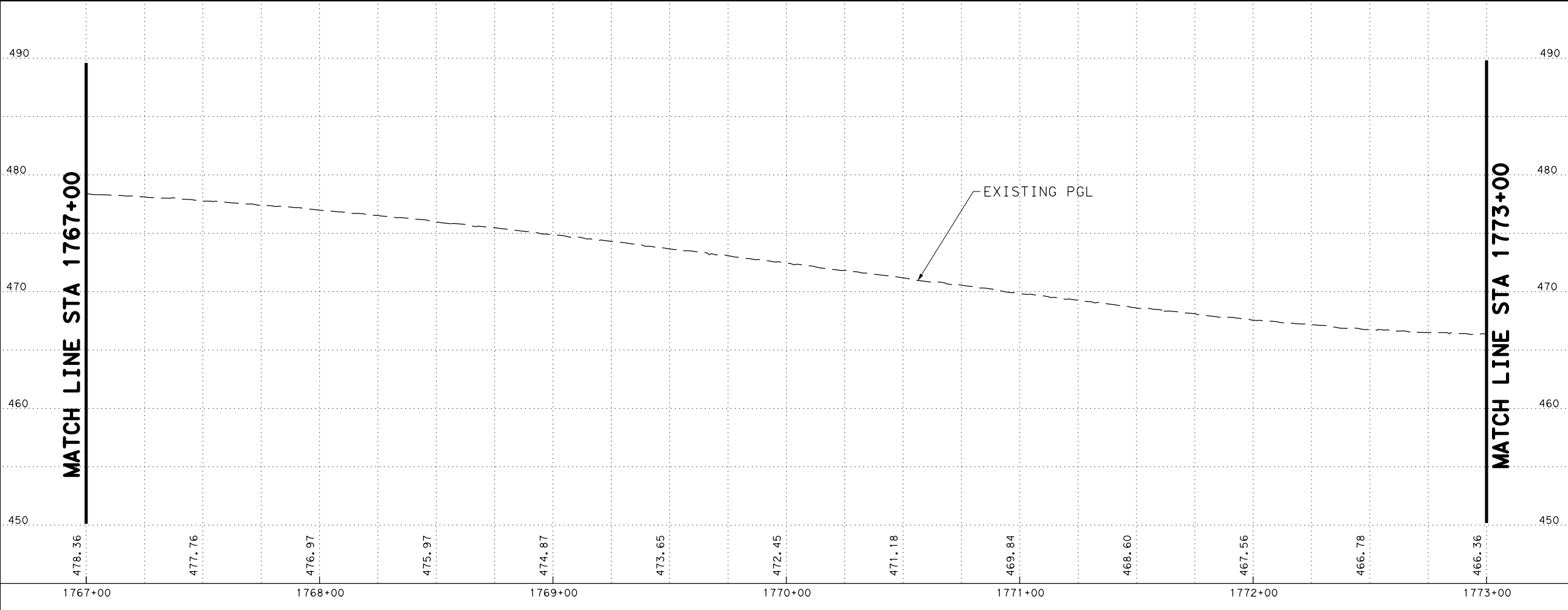
- EXISTING LANE
- PROPOSED LANE
- PROPOSED PAVEMENT
- CROSS-CULVERT NUMBER
- DRIVEWAY NUMBER
- OUTFALL DIRECTION
- FLOW DIRECTION

NOTES:

1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1767+00

MATCH LINE STA 1773+00



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**SH 19
 PROPOSED
 PLAN AND PROFILE**

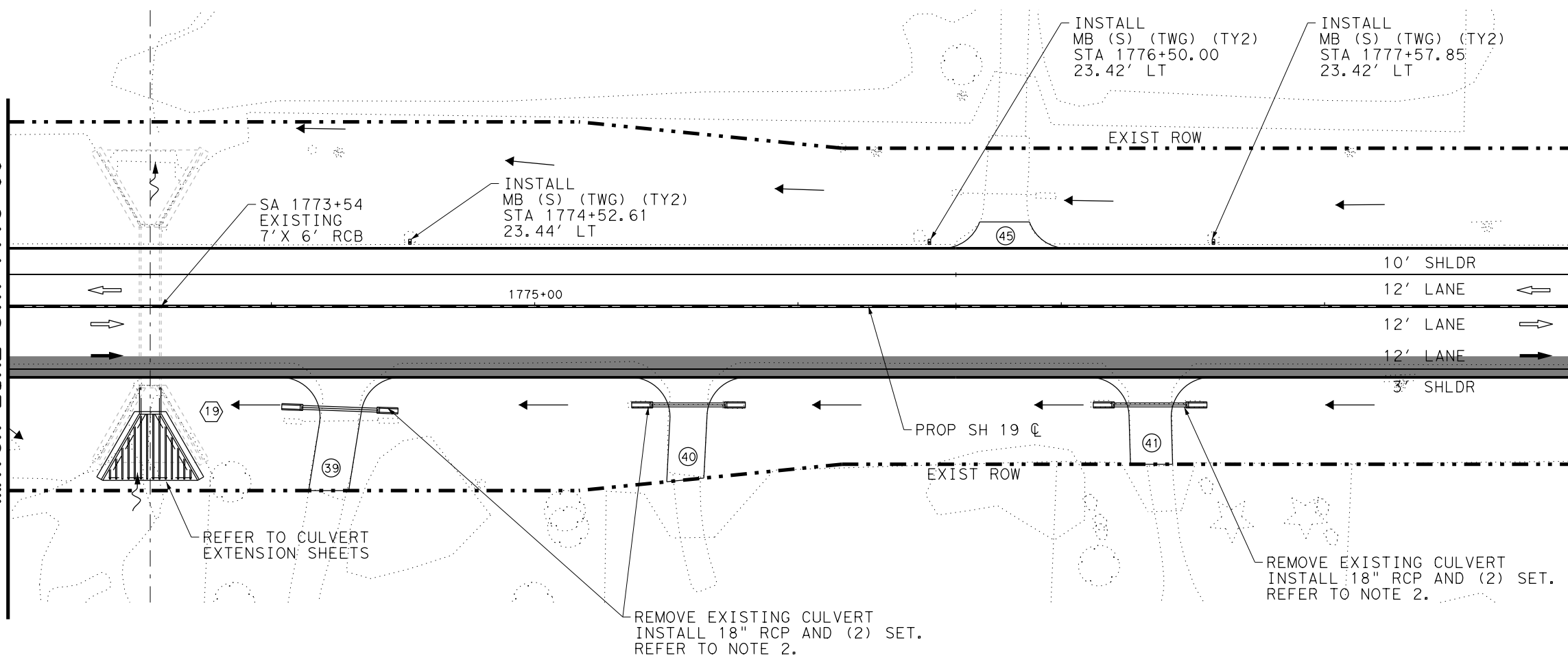
SHEET 35 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	100

DATE: 10-JUN-2024 15:29
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_36.dgn

MATCH LINE STA 1773+00

MATCH LINE STA 1779+00

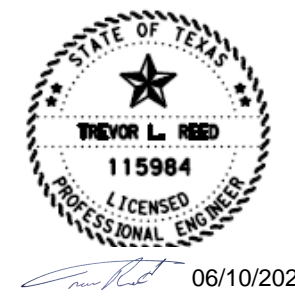
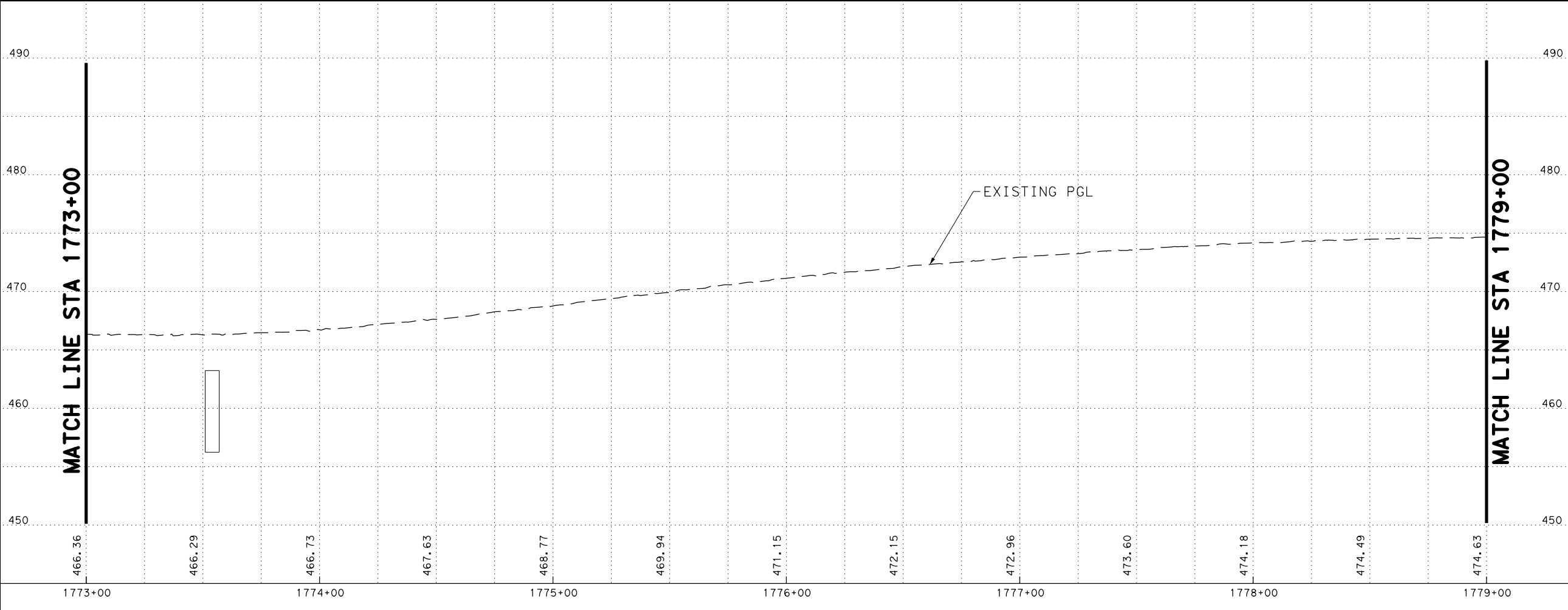


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1773+00

MATCH LINE STA 1779+00



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F-12679

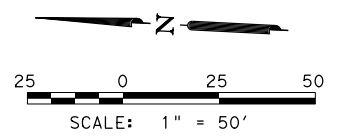


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 36 OF 79

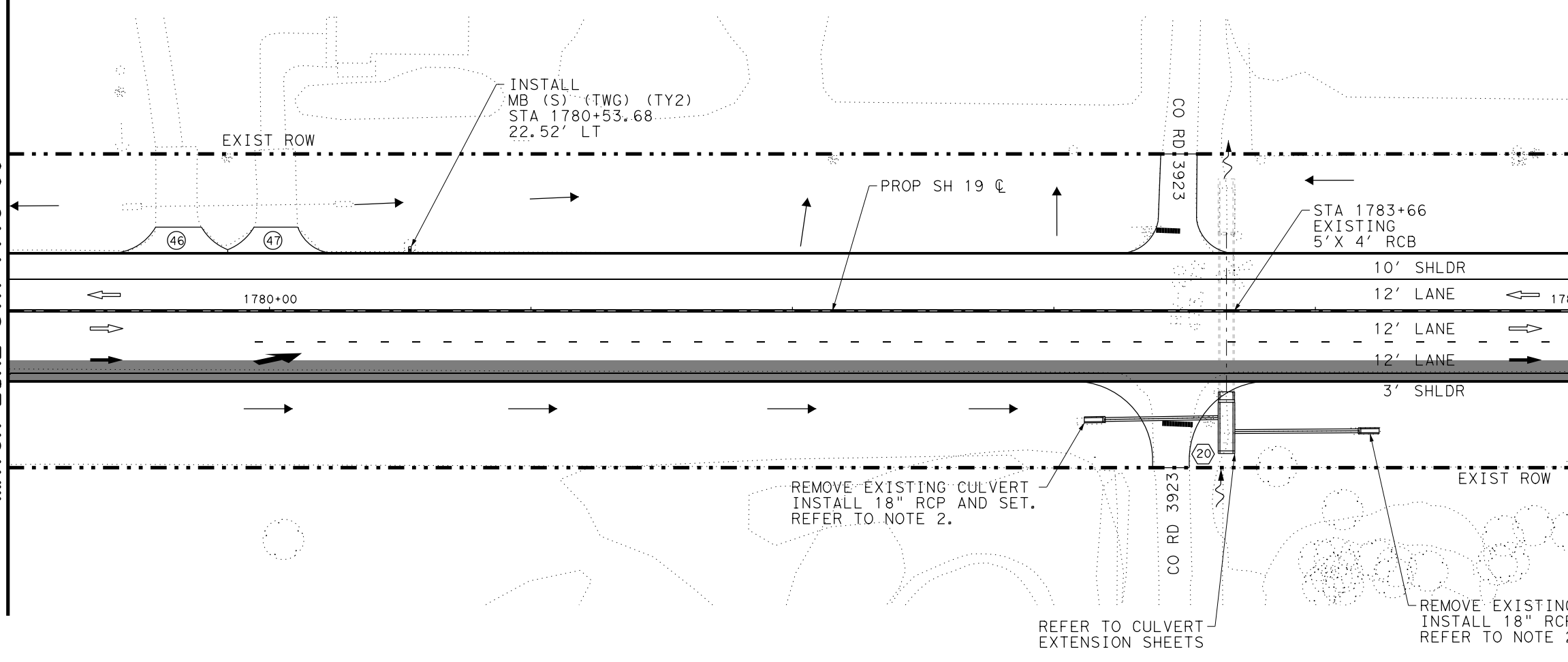
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	101

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_37.dgn



MATCH LINE STA 1779+00

MATCH LINE STA 1785+00

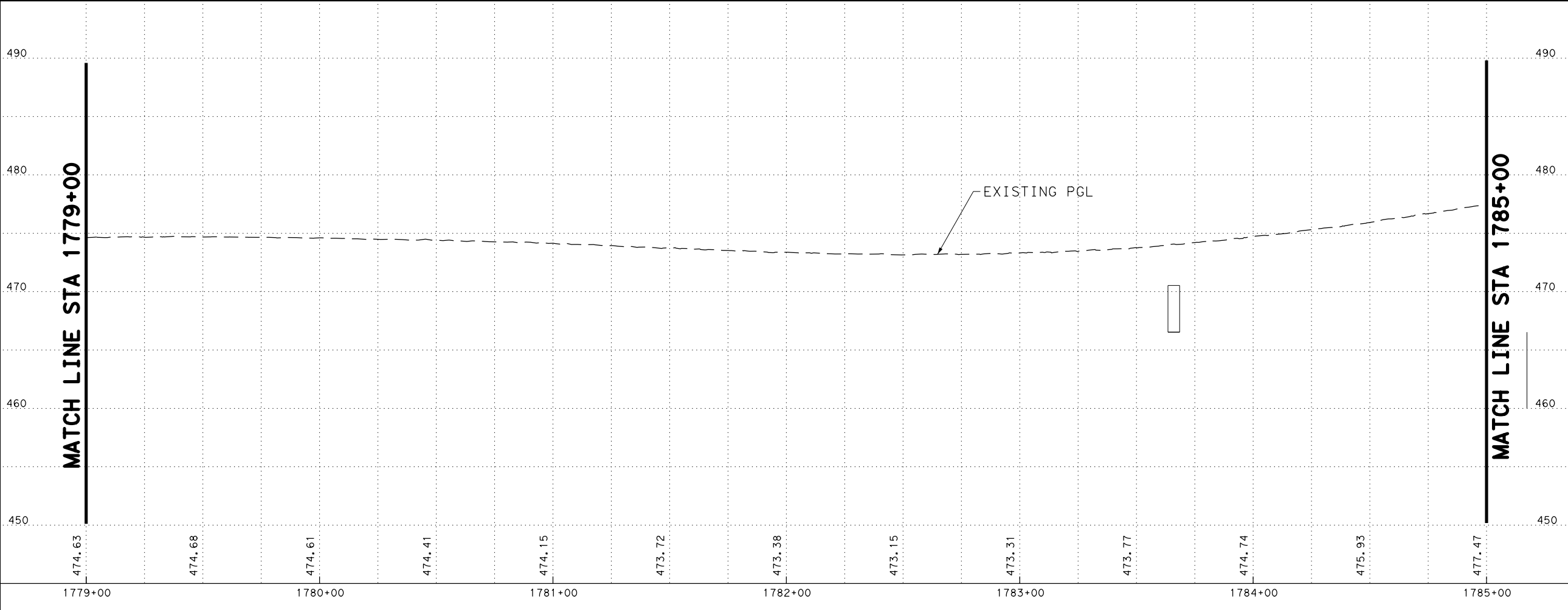


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1779+00

MATCH LINE STA 1785+00



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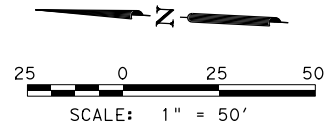
F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

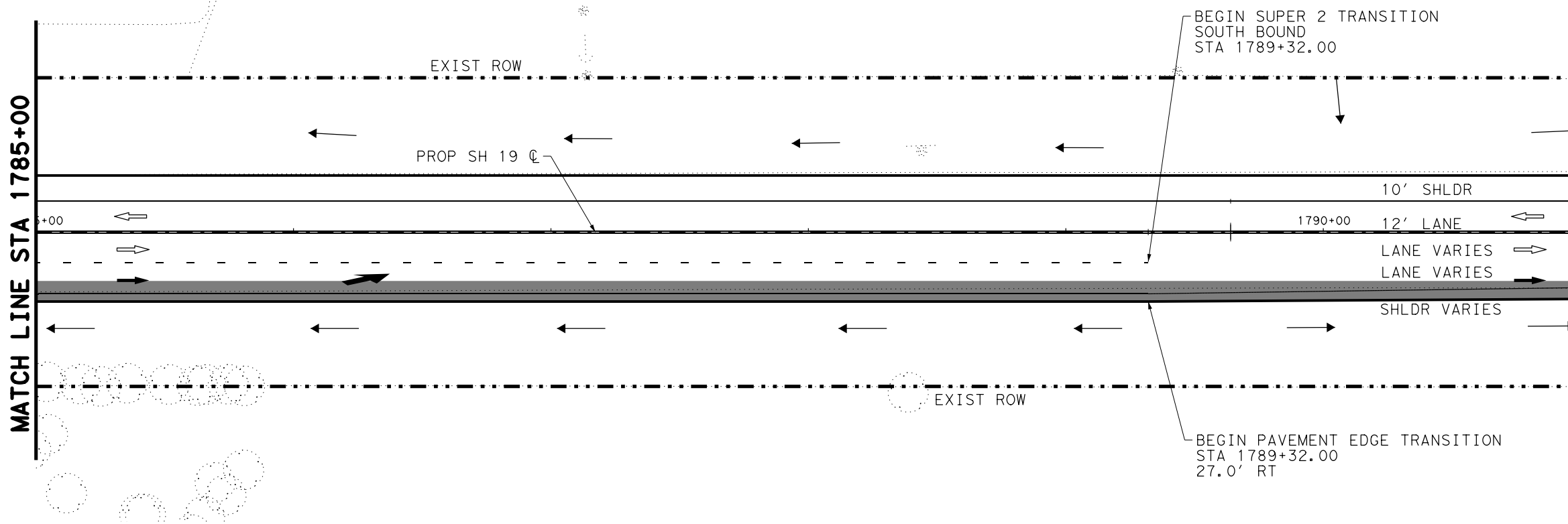
SHEET 37 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	102

DATE: 10-JUN-2024 15:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_38.dgn



MATCH LINE STA 1785+00

MATCH LINE STA 1791+00



LEGEND

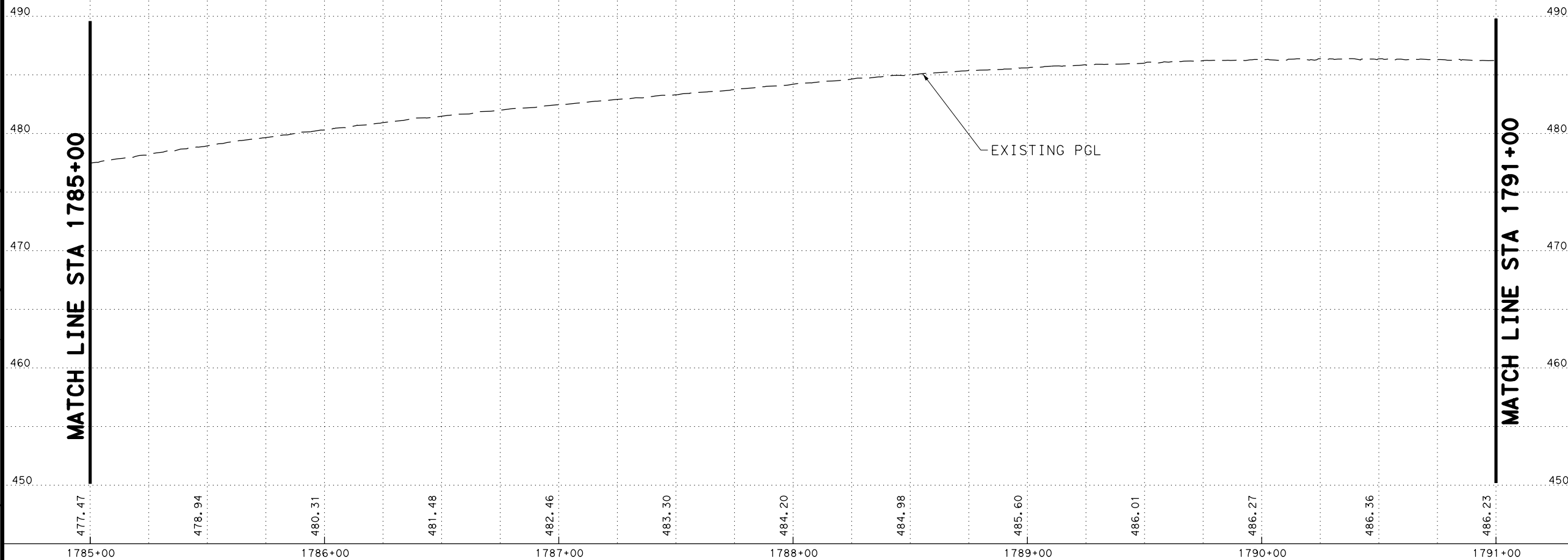
- EXISTING LANE
- PROPOSED LANE
- PROPOSED PAVEMENT
- CROSS-CULVERT NUMBER
- DRIVEWAY NUMBER
- OUTFALL DIRECTION
- FLOW DIRECTION

NOTES:

1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1785+00

MATCH LINE STA 1791+00



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**SH 19
 PROPOSED
 PLAN AND PROFILE**

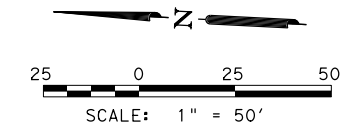
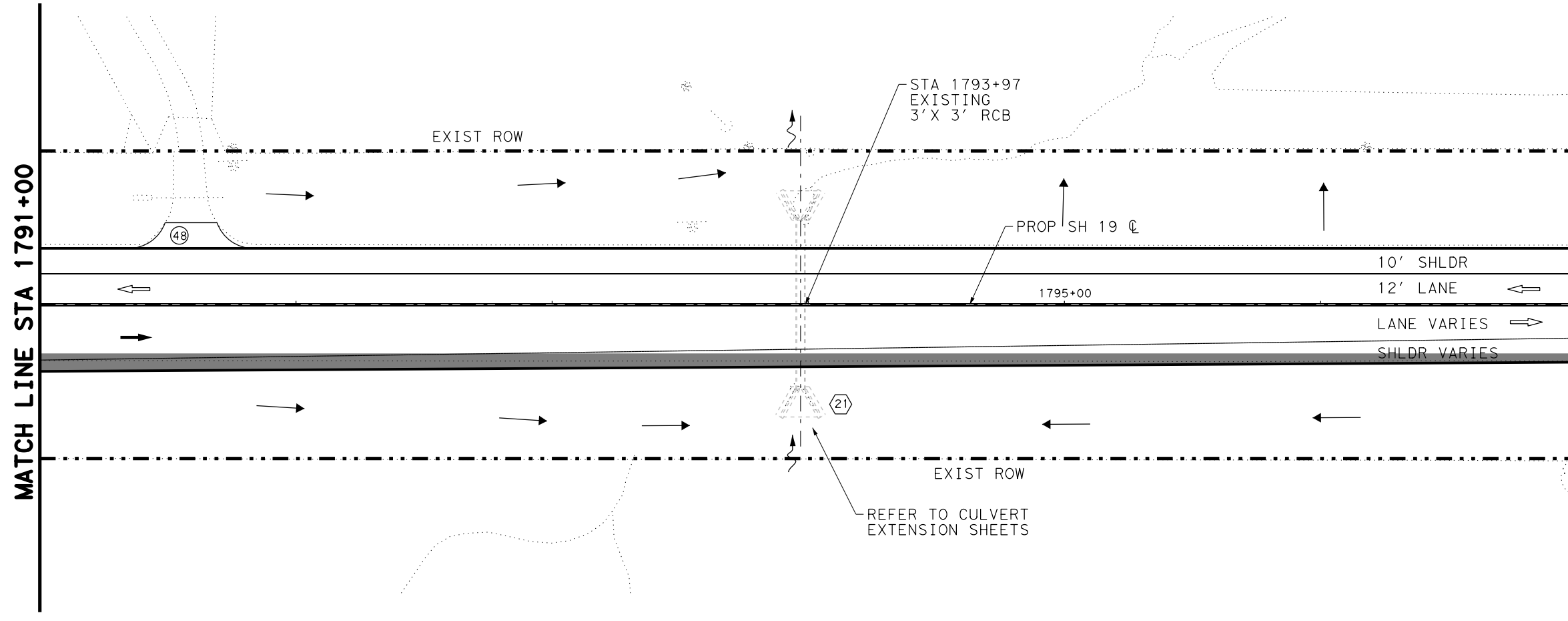
SHEET 38 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	103

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_39.dgn

MATCH LINE STA 1791+00

MATCH LINE STA 1797+00

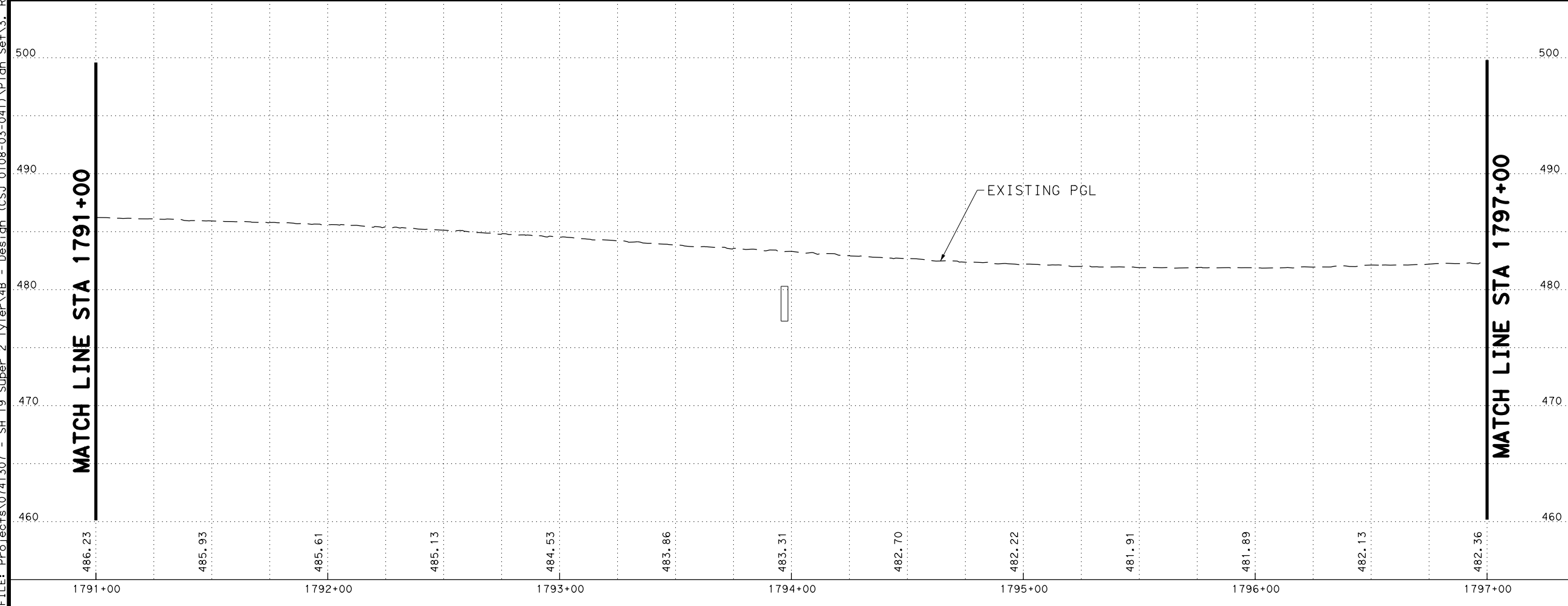


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1791+00

MATCH LINE STA 1797+00



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**SH 19
 PROPOSED
 PLAN AND PROFILE**

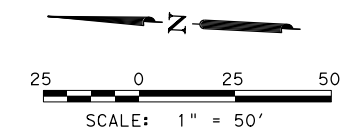
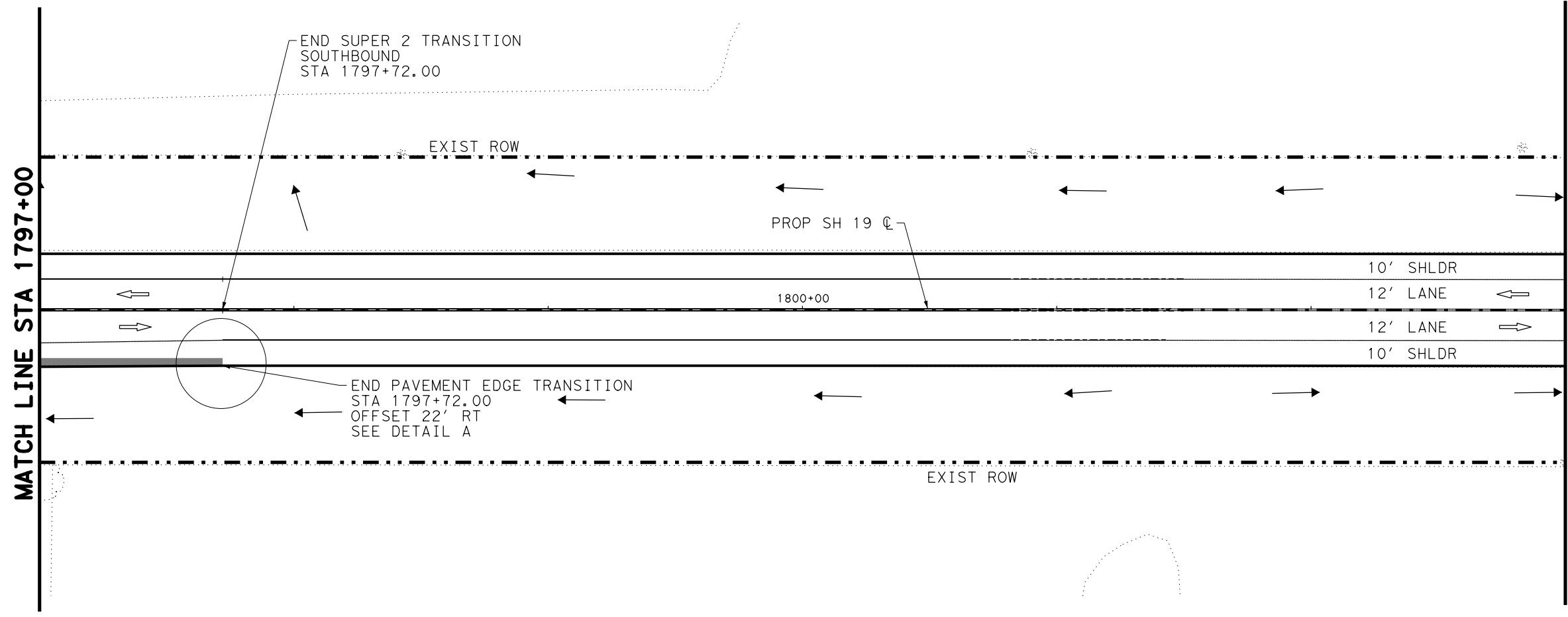
SHEET 39 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	104

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_40.dgn

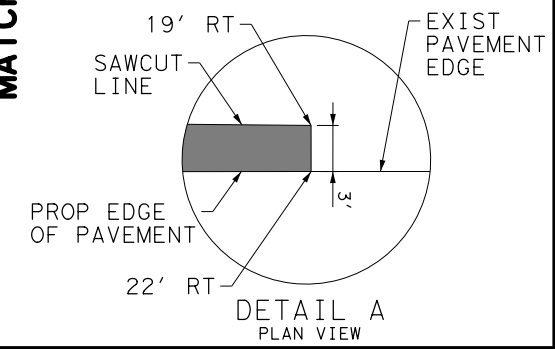
MATCH LINE STA 1797+00

MATCH LINE STA 1803+00



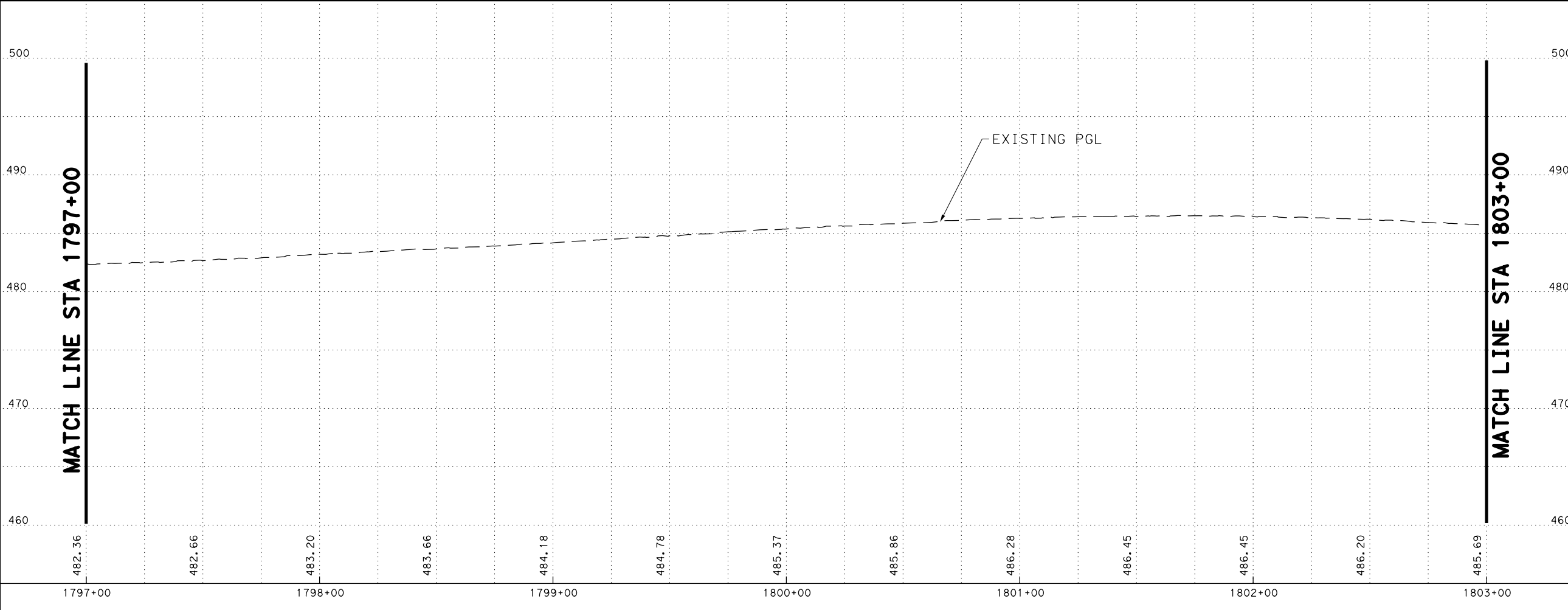
- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



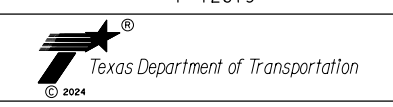
MATCH LINE STA 1797+00

MATCH LINE STA 1803+00



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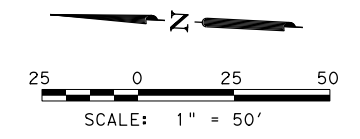
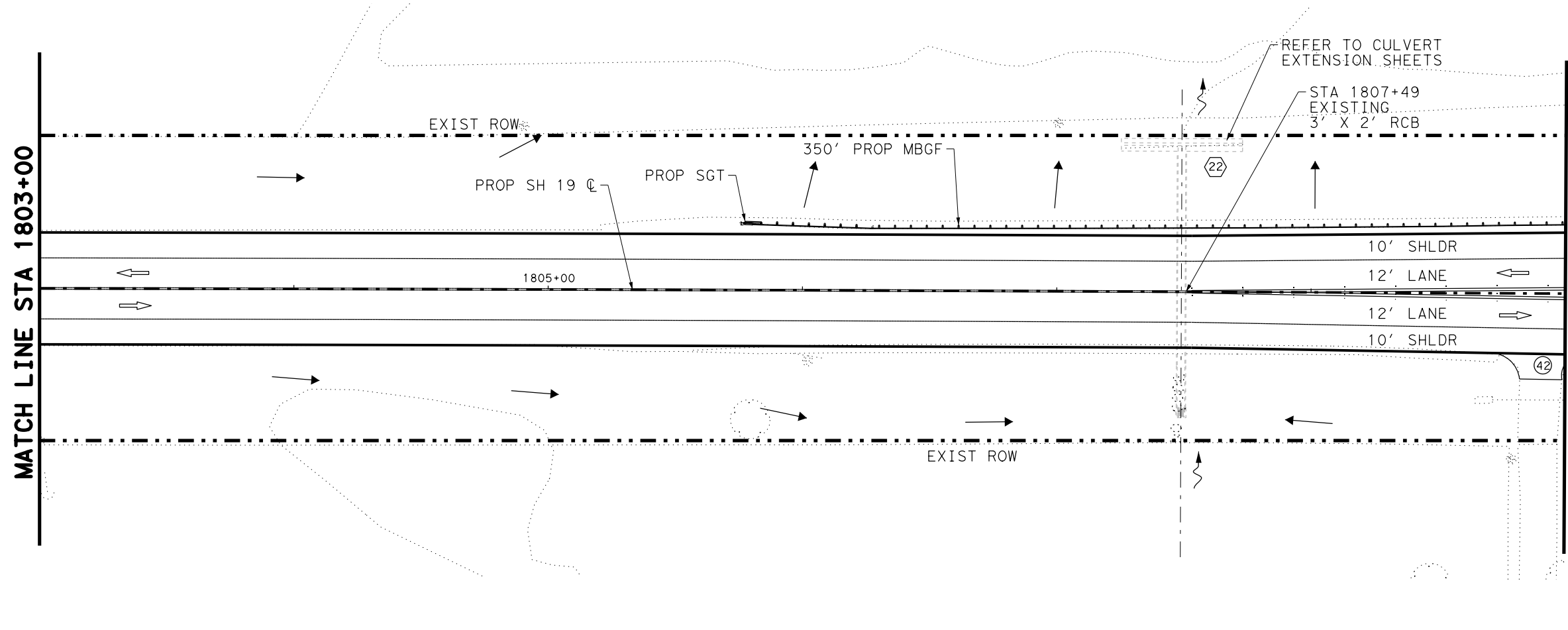
**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 40 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	105

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_41.dgn

MATCH LINE STA 1803+00

MATCH LINE STA 1809+00

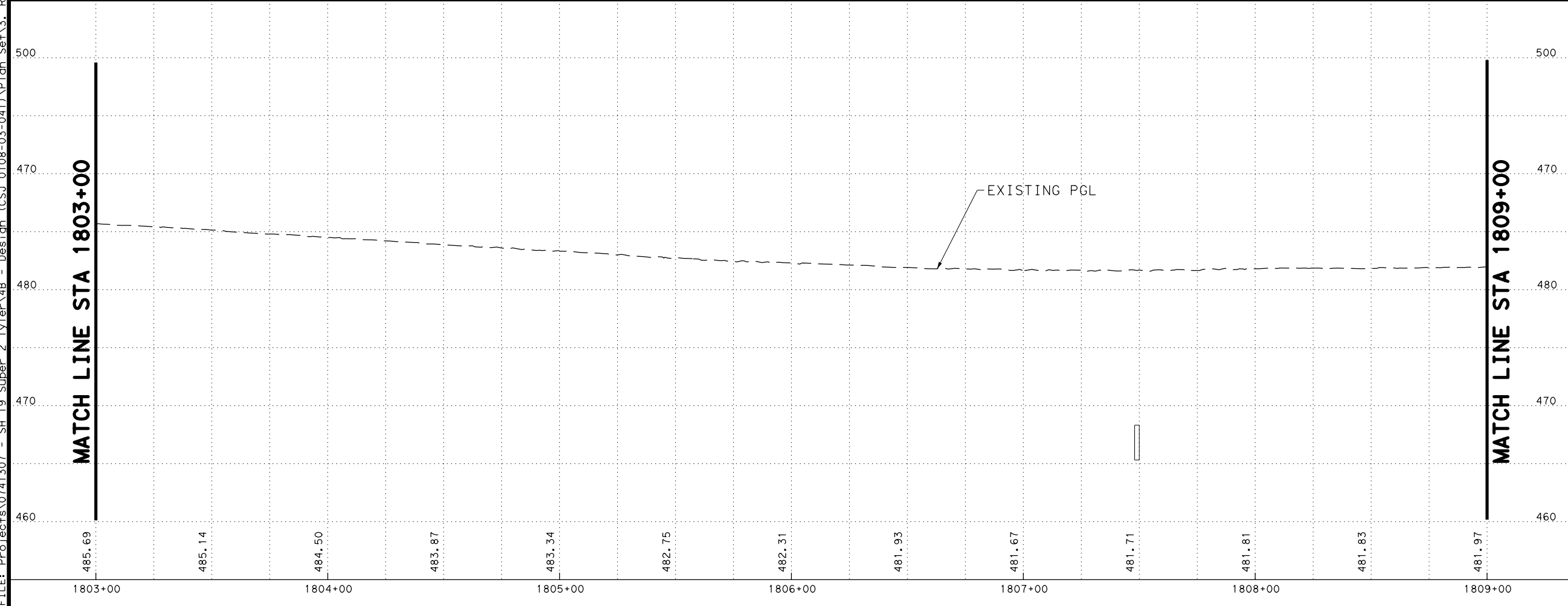


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1803+00

MATCH LINE STA 1809+00



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**SH 19
 PROPOSED
 PLAN AND PROFILE**

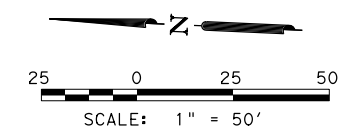
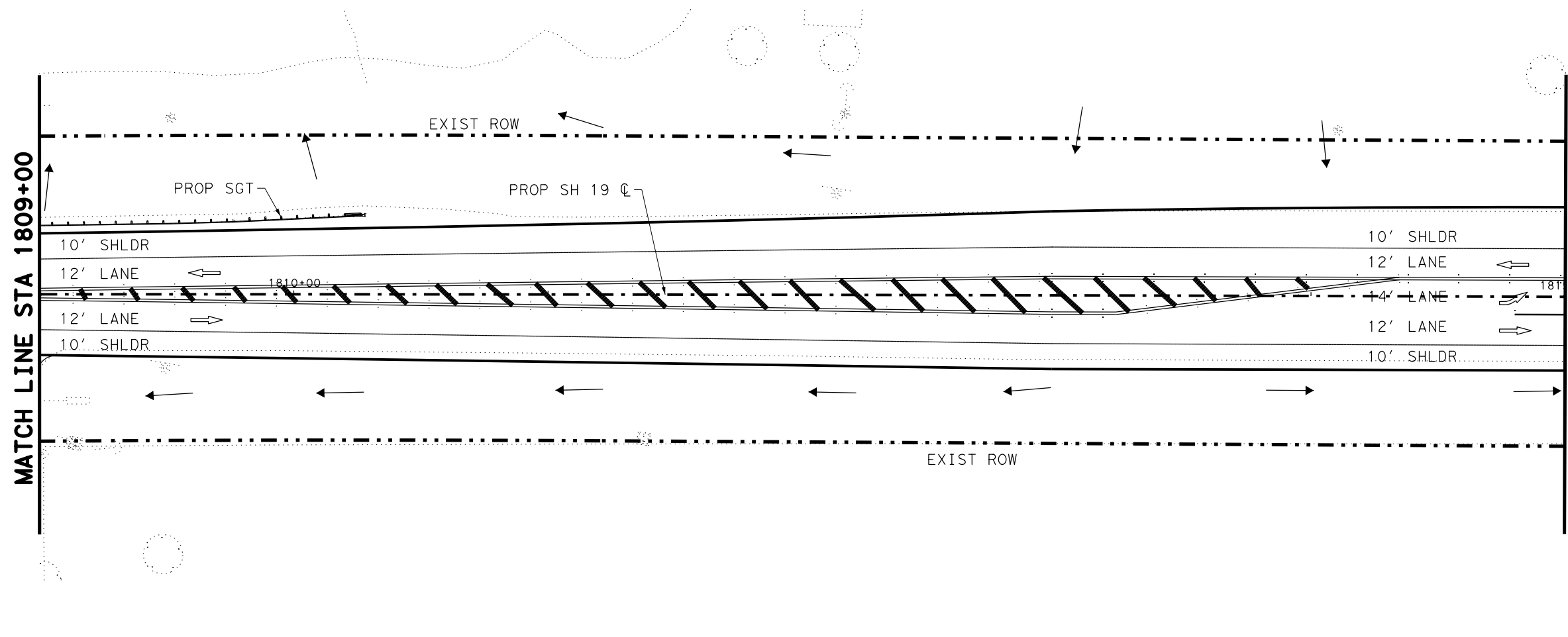
SHEET 41 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	106

DATE: 10-JUN-2024 15:28
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_42.dgn

MATCH LINE STA 1809+00

MATCH LINE STA 1815+00

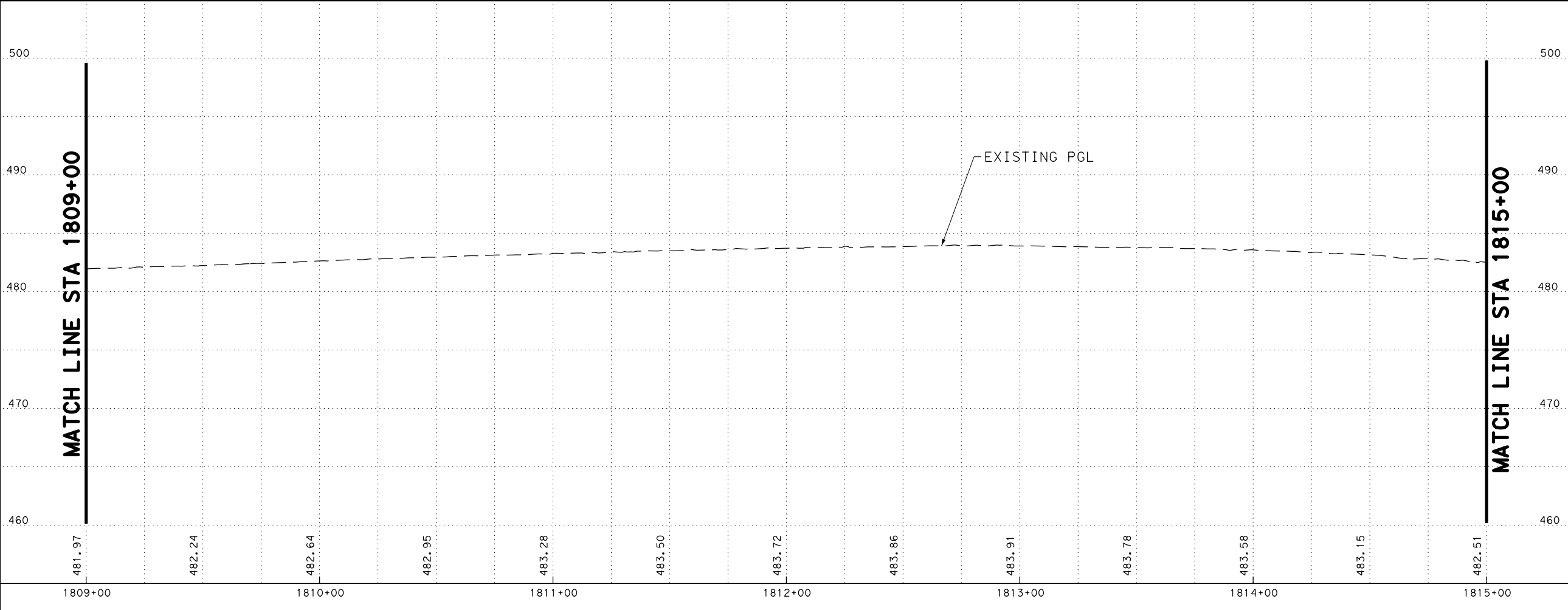


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1809+00

MATCH LINE STA 1815+00



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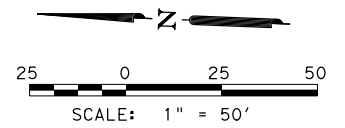
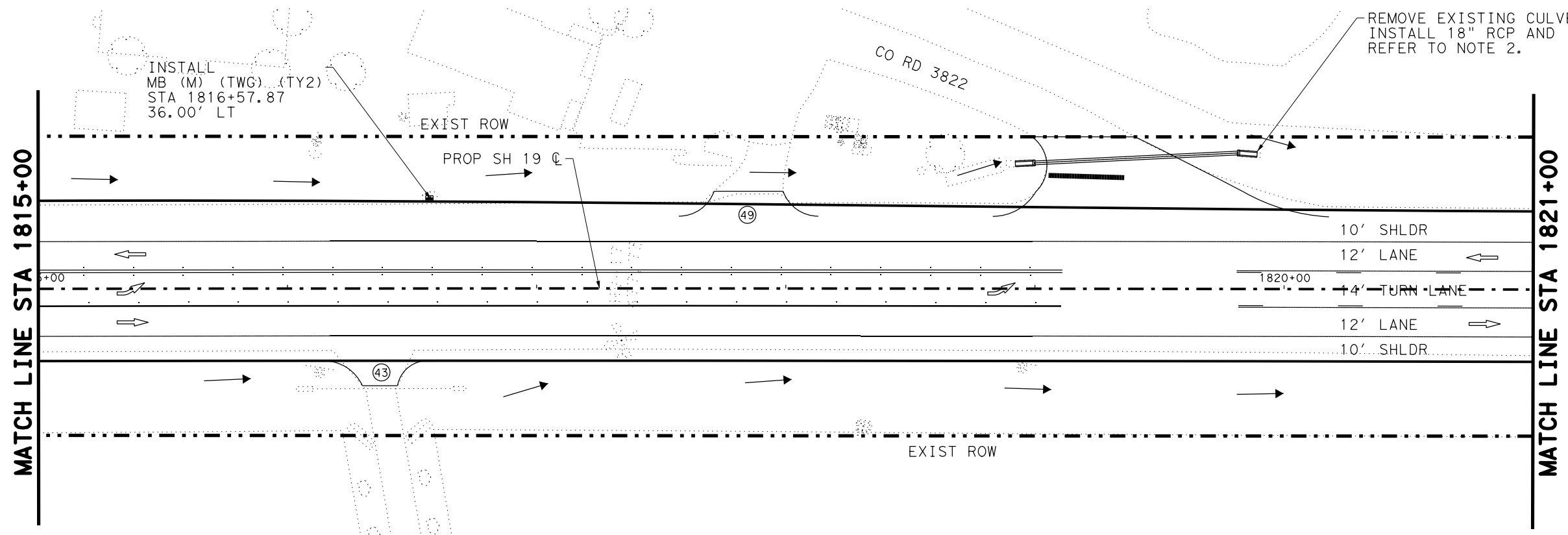


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 42 OF 79

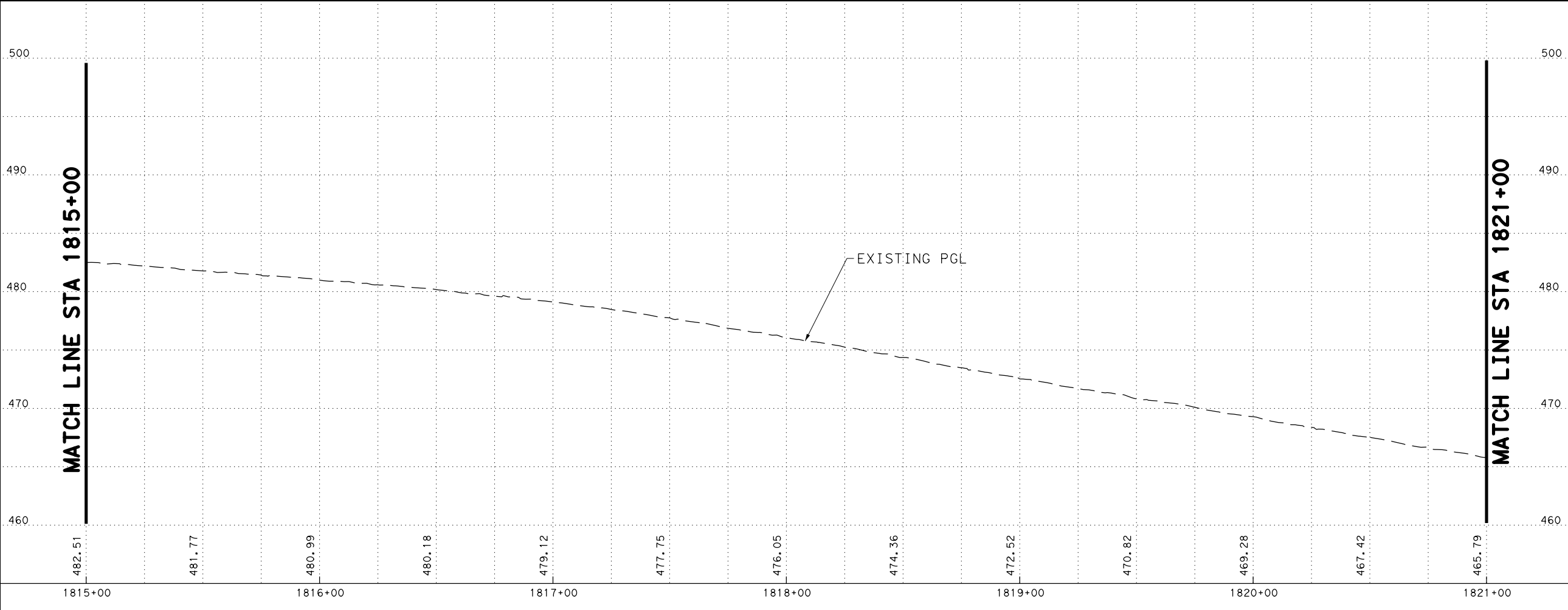
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	107

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_43.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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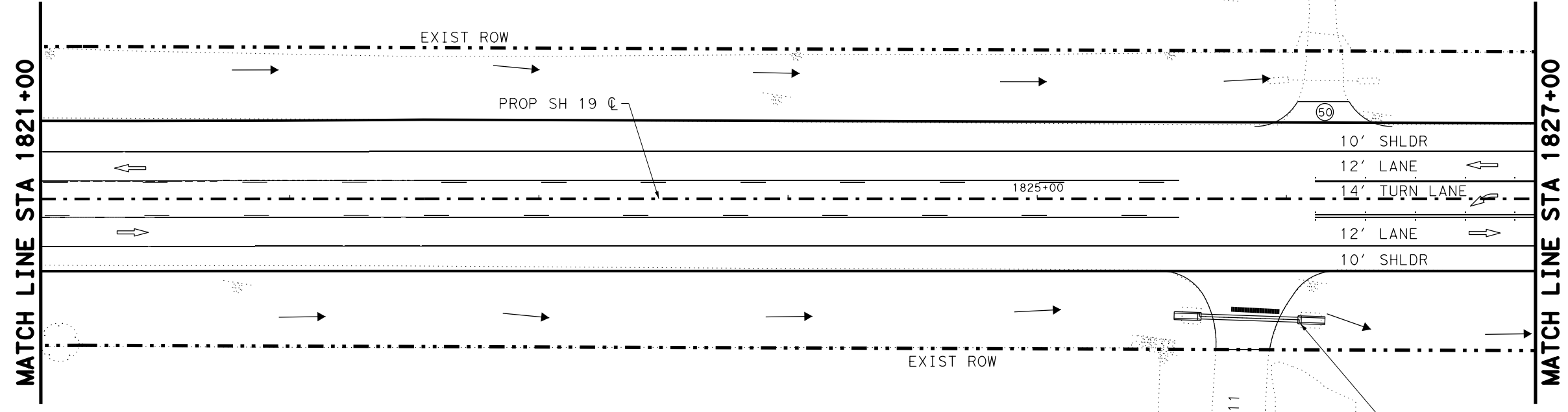
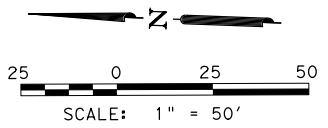


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 43 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	108

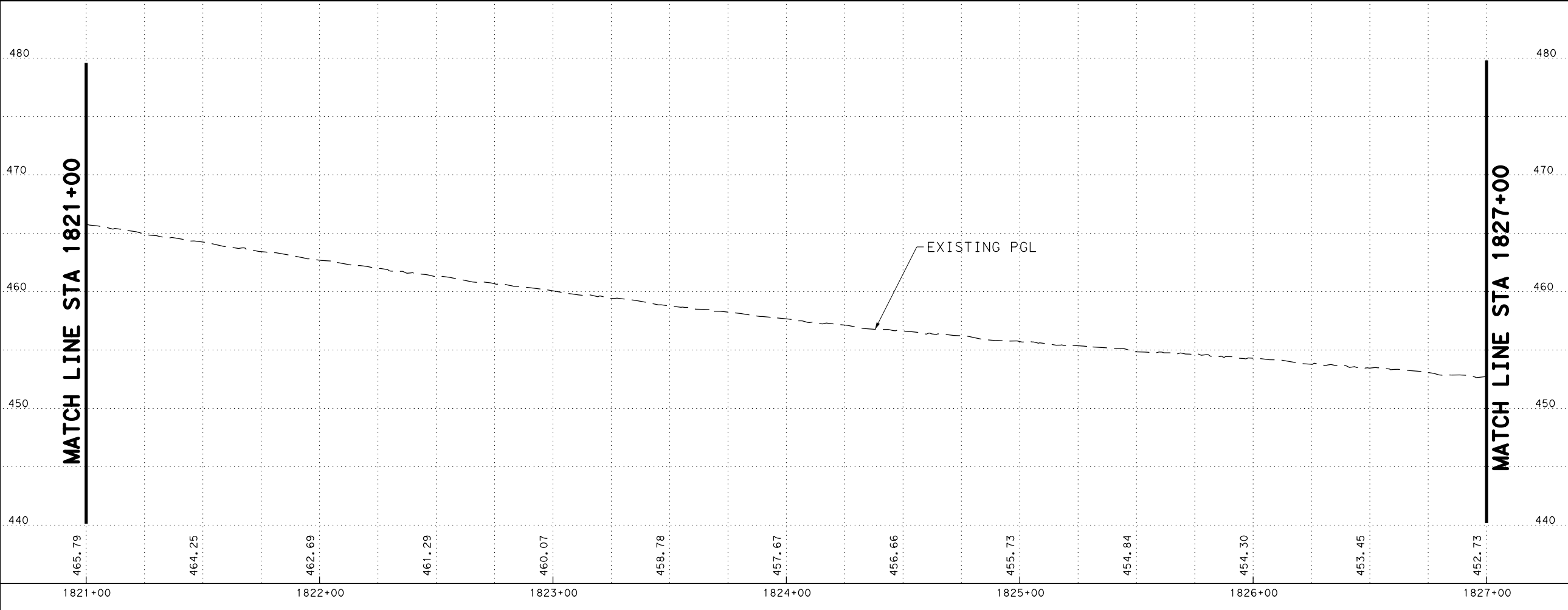
DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_44.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

CO RD 3911
 REMOVE EXISTING CULVERT
 INSTALL 24" RCP AND (2) SET.
 REFER TO NOTE 2.



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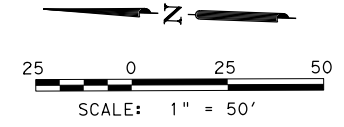
F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

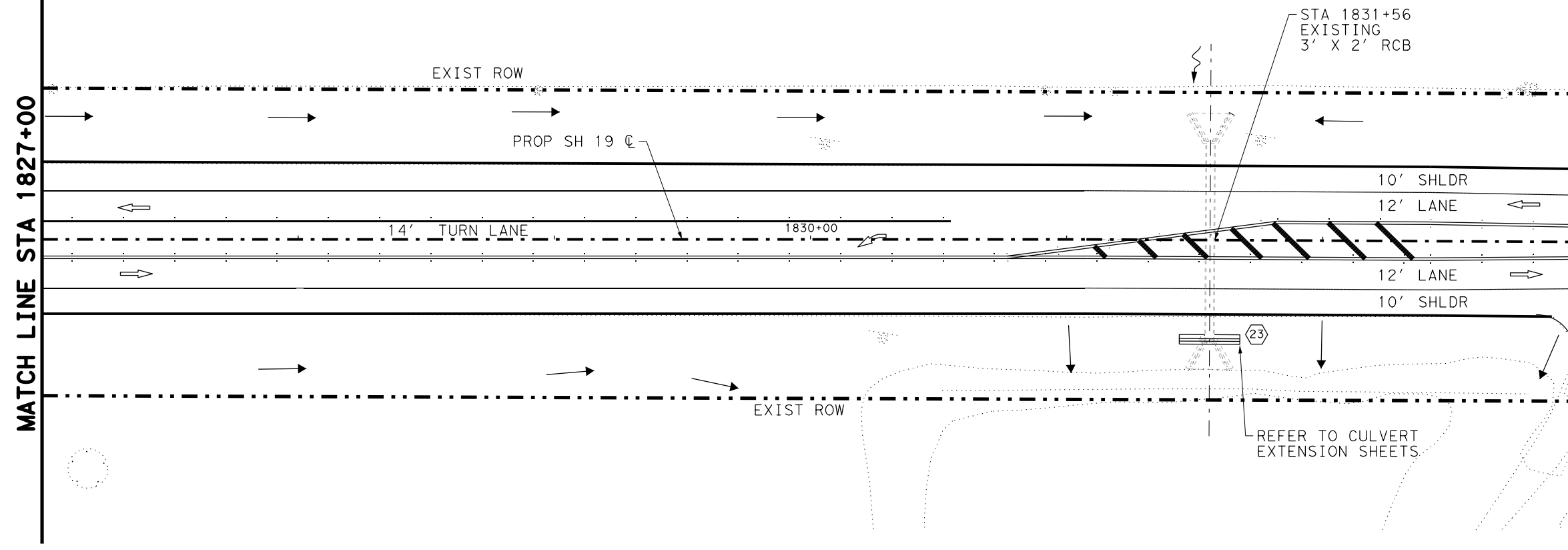
SHEET 44 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	109

DATE: 10-JUN-2024 15:28
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_45.dgn



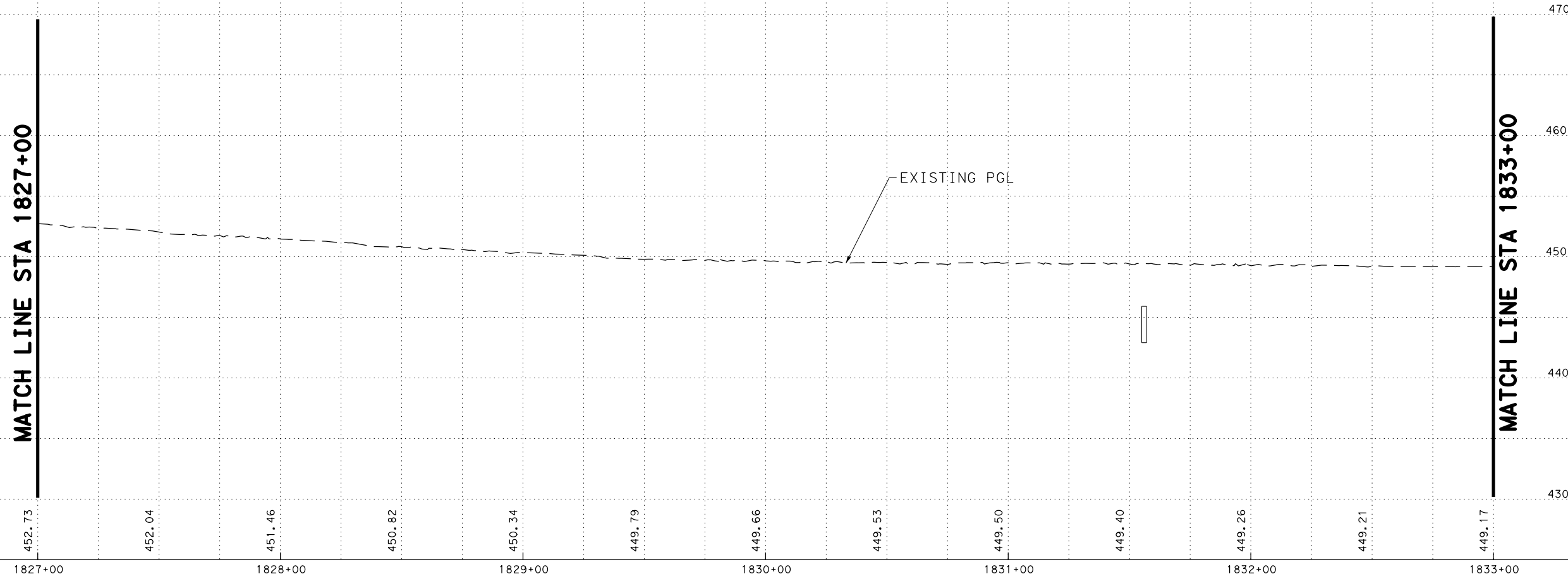
MATCH LINE STA 1827+00

MATCH LINE STA 1833+00



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

- NOTES:**
1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



MATCH LINE STA 1827+00

MATCH LINE STA 1833+00



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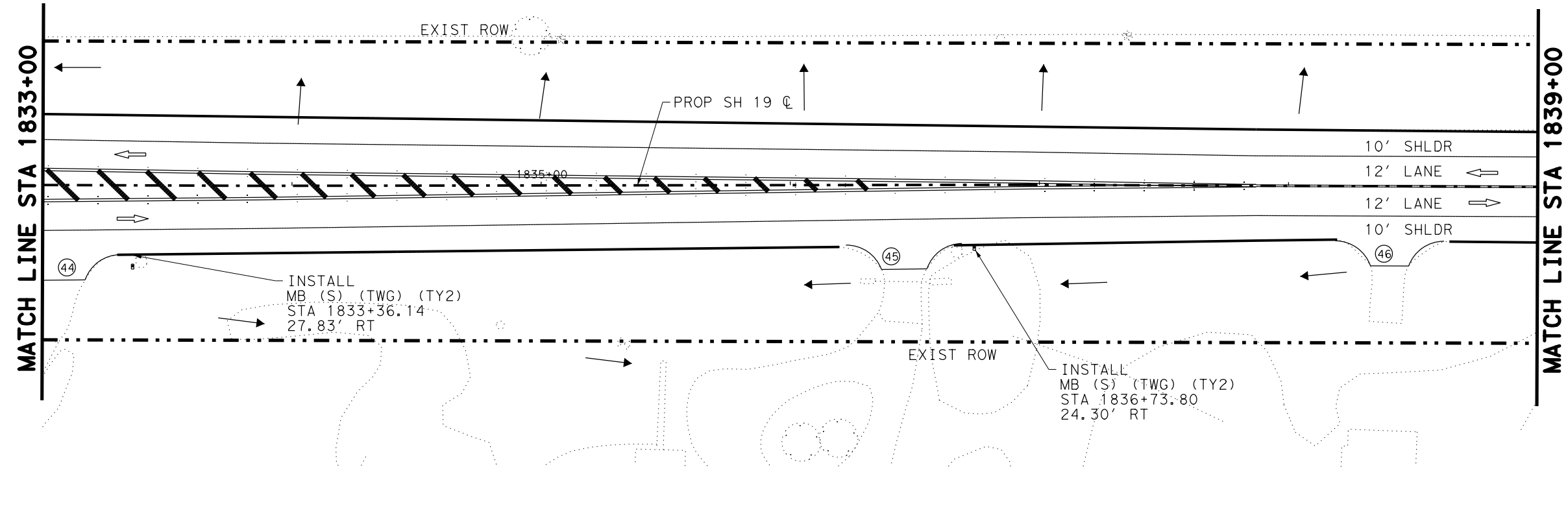
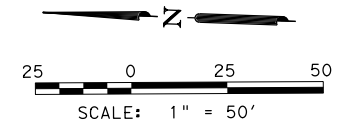


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 45 OF 79

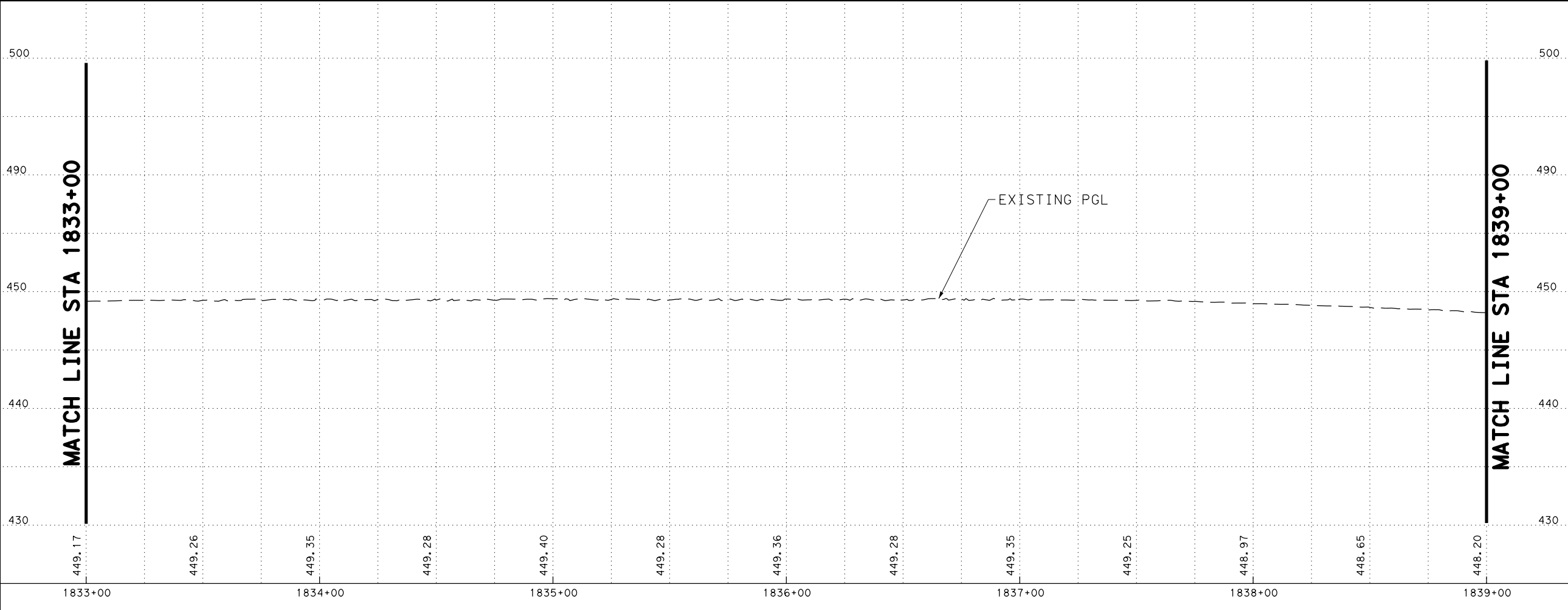
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	110

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_46.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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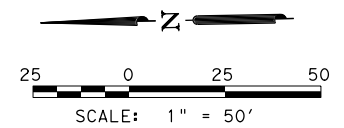
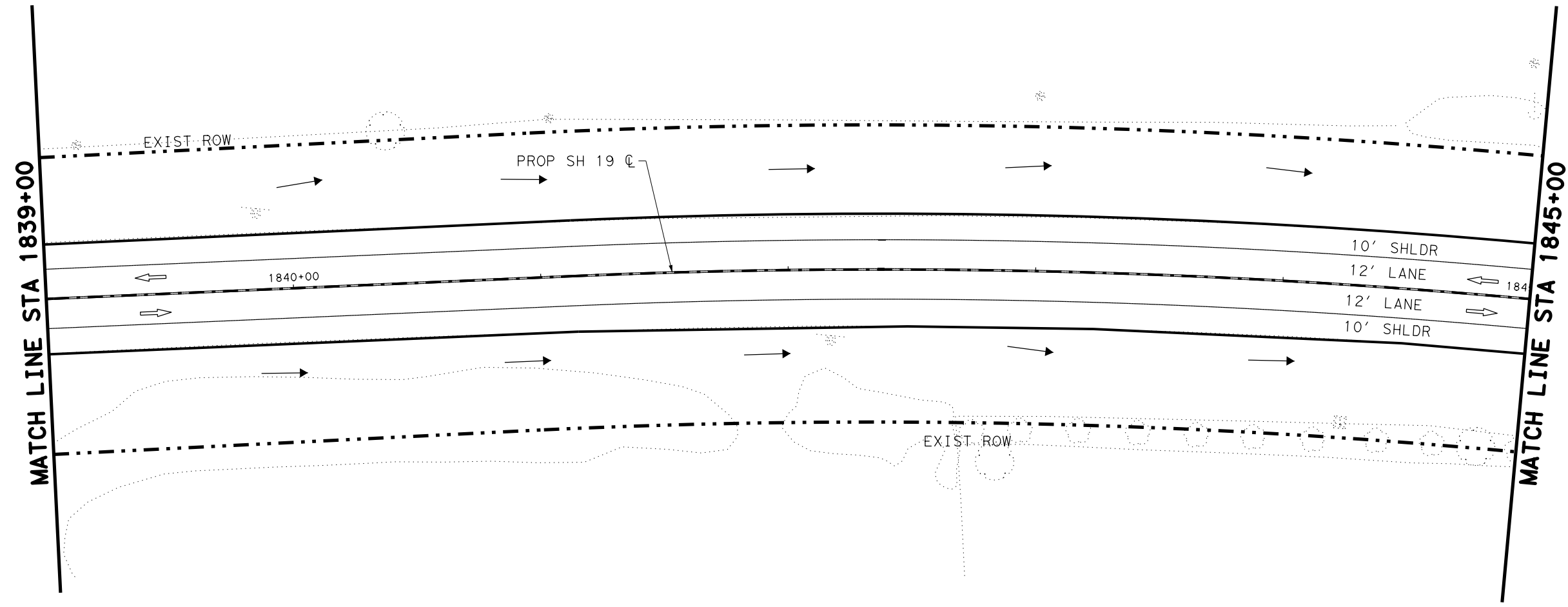


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 46 OF 79

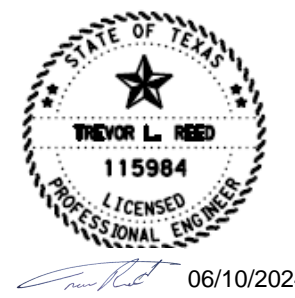
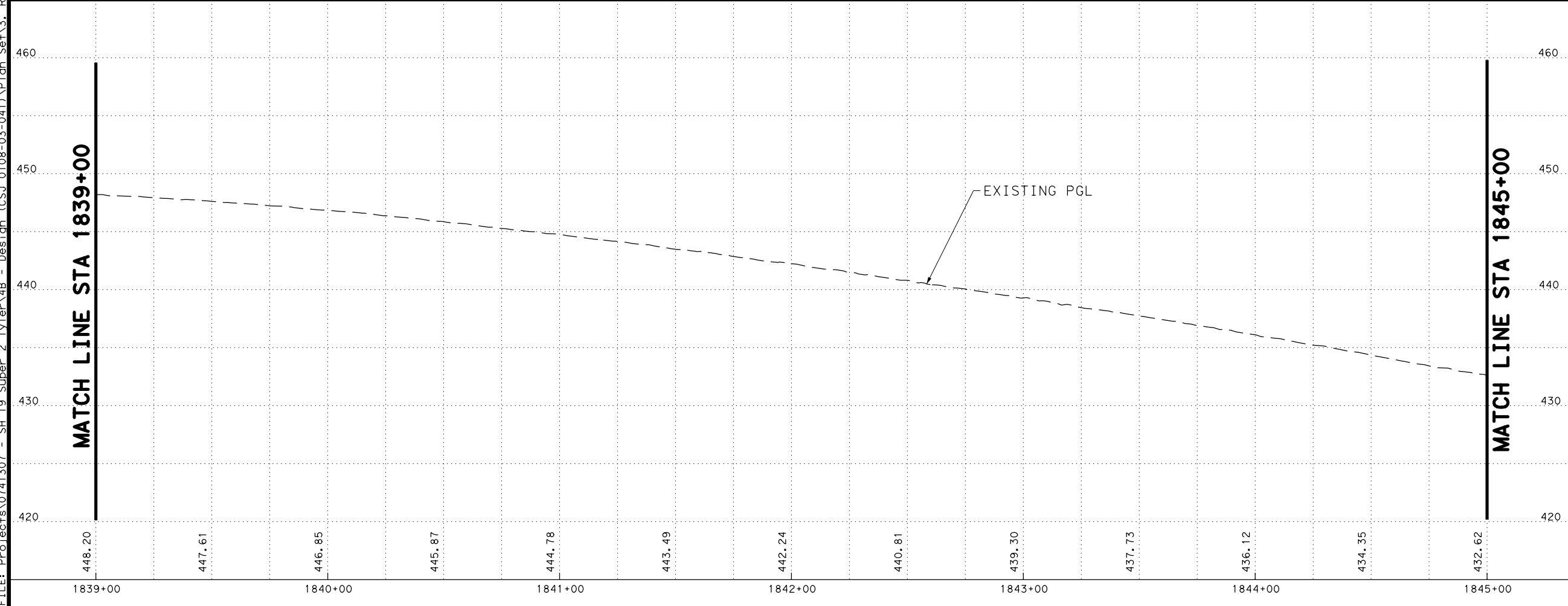
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	111

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_47.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



VOLKERT

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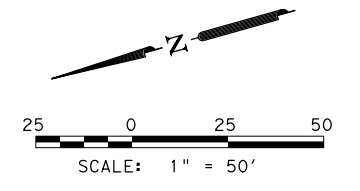
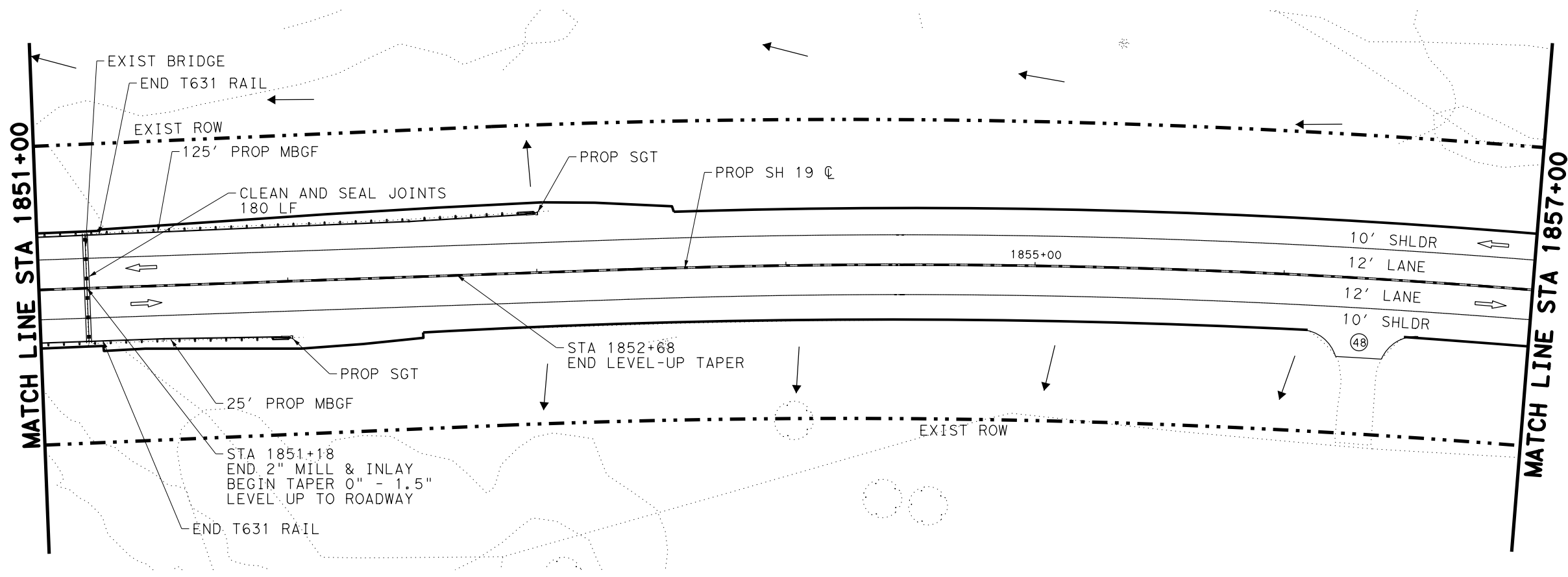


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 47 OF 79

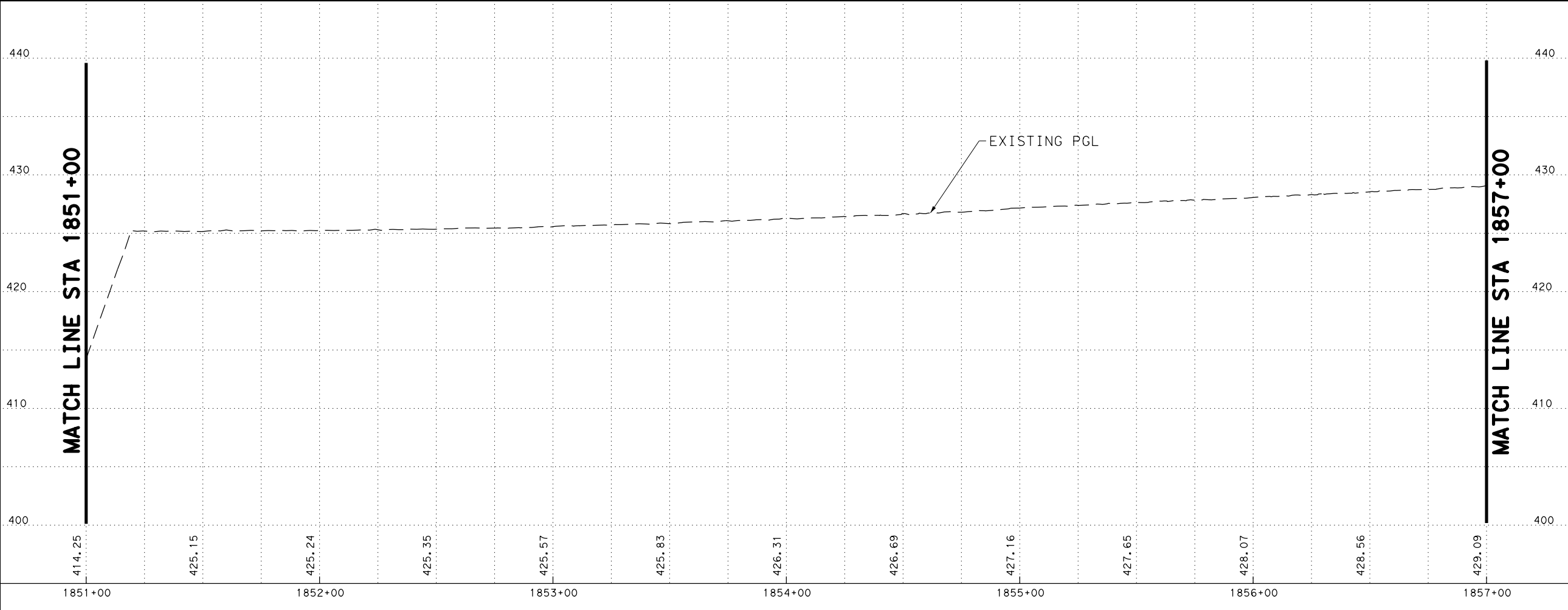
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	112

DATE: 21-JUN-2024 13:21
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_49.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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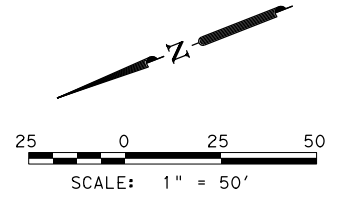
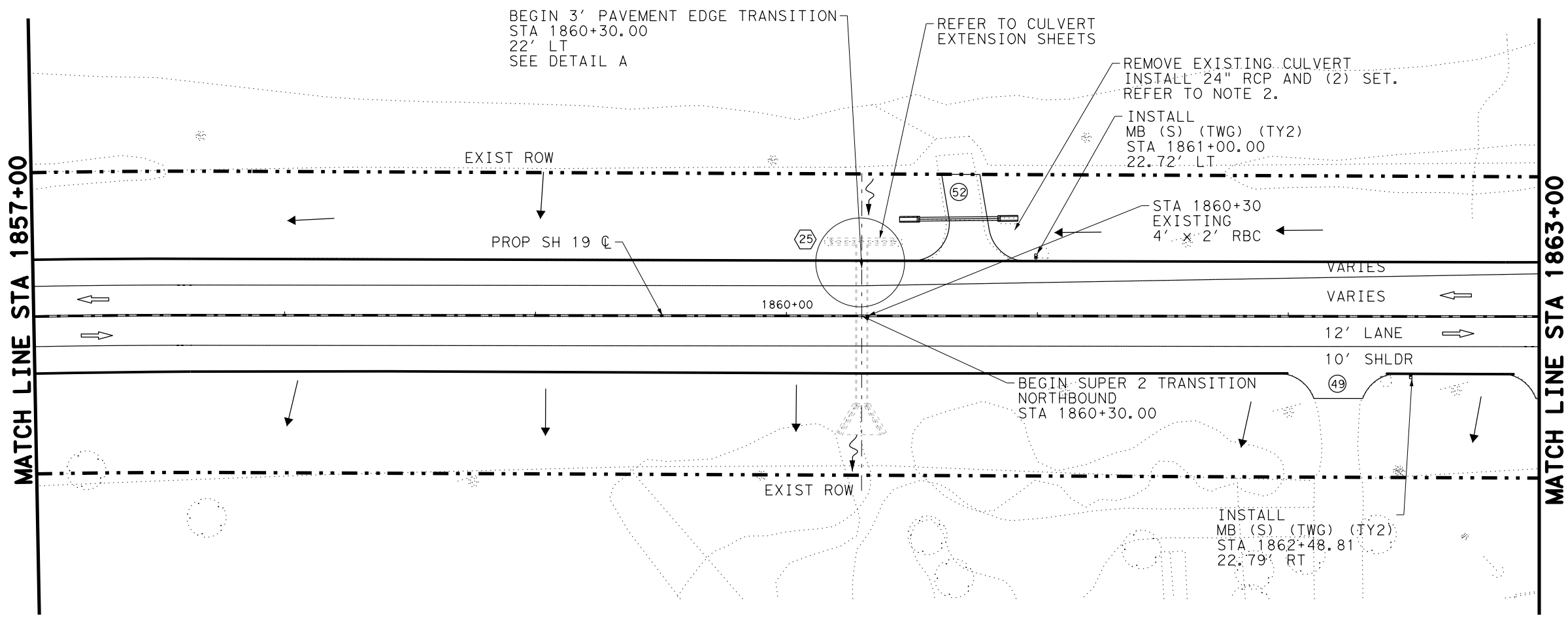


**SH 19
 PROPOSED
 PLAN AND PROFILE**

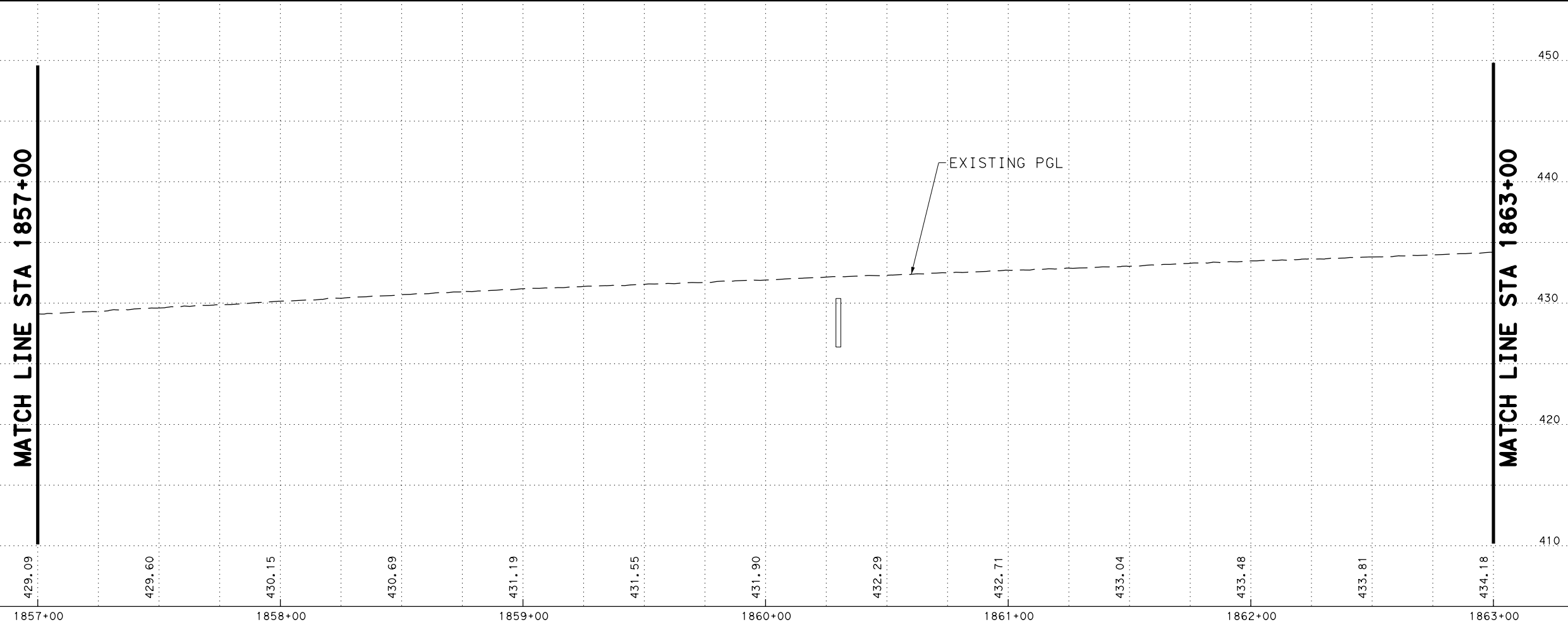
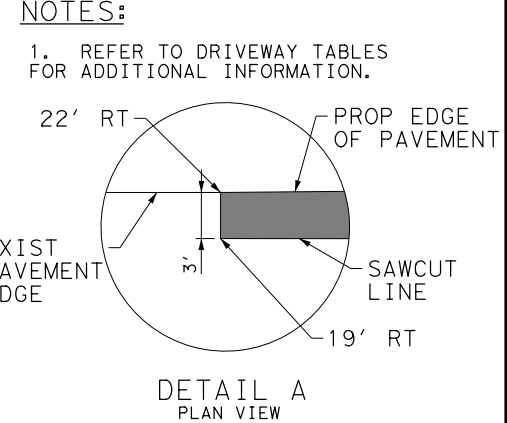
SHEET 49 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	114

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_50.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION



VOLKERT

F-12679

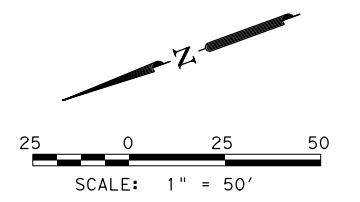
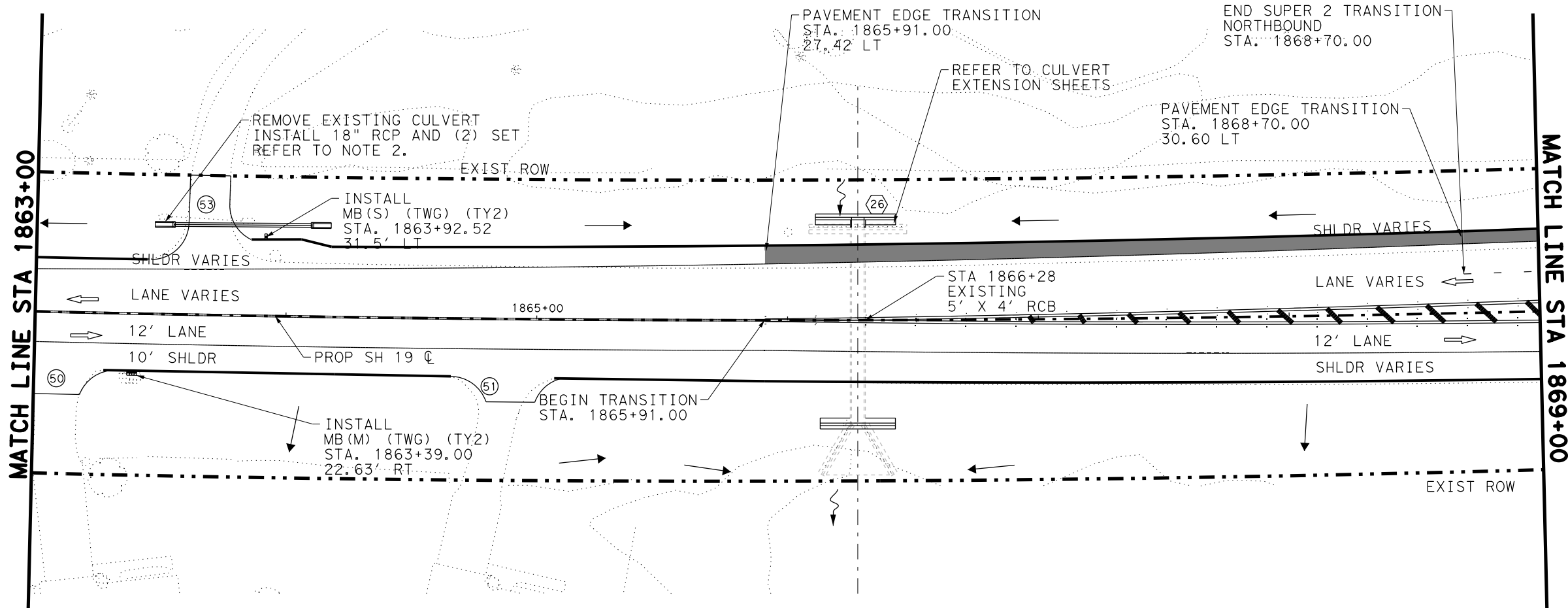


**SH 19
PROPOSED
PLAN AND PROFILE**

SHEET 50 OF 79

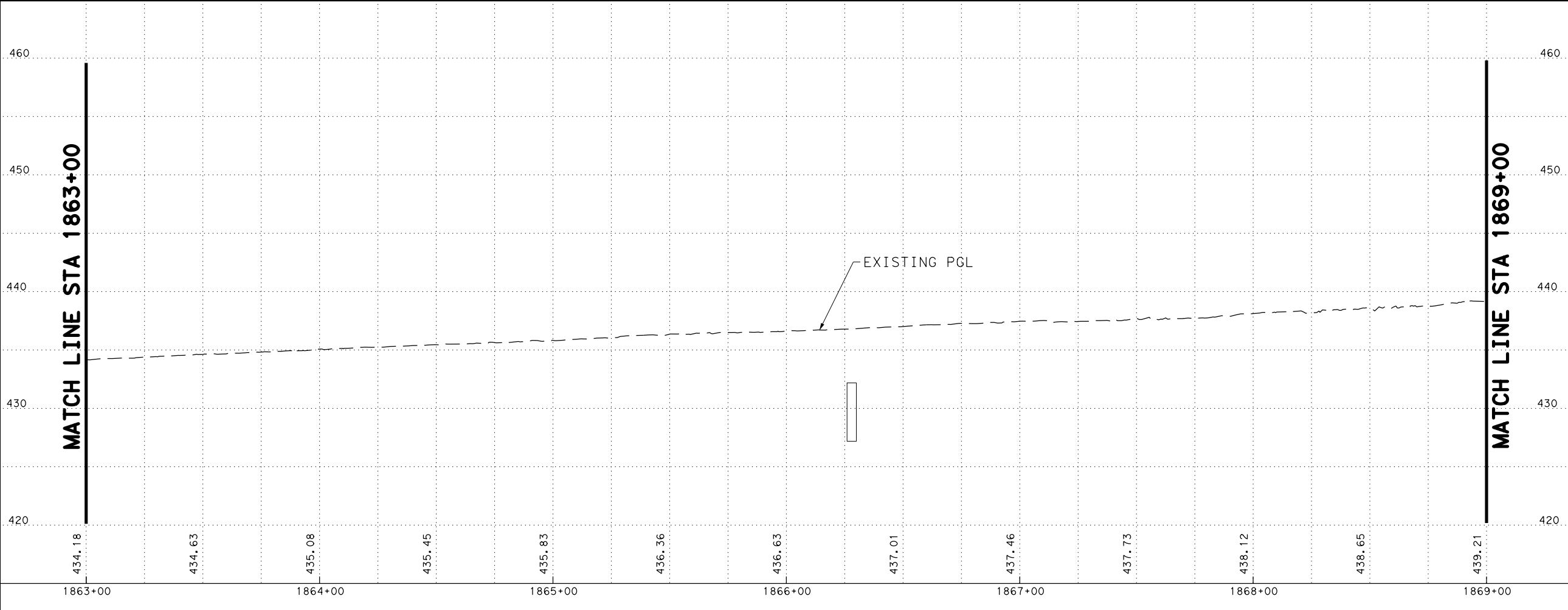
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	115

DATE: 10-JUN-2024 15:29
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_51.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



VOLKERT

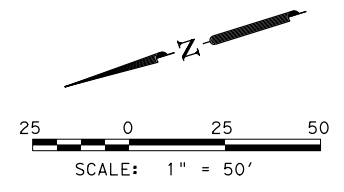
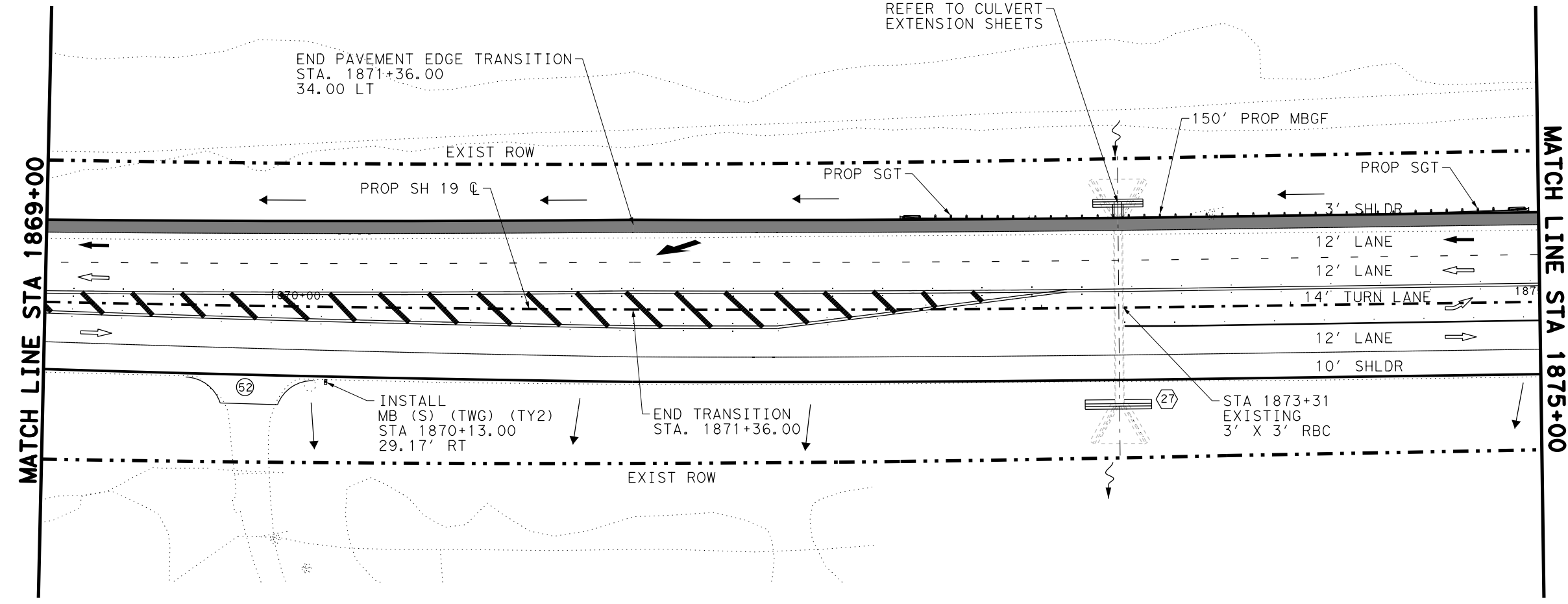
F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

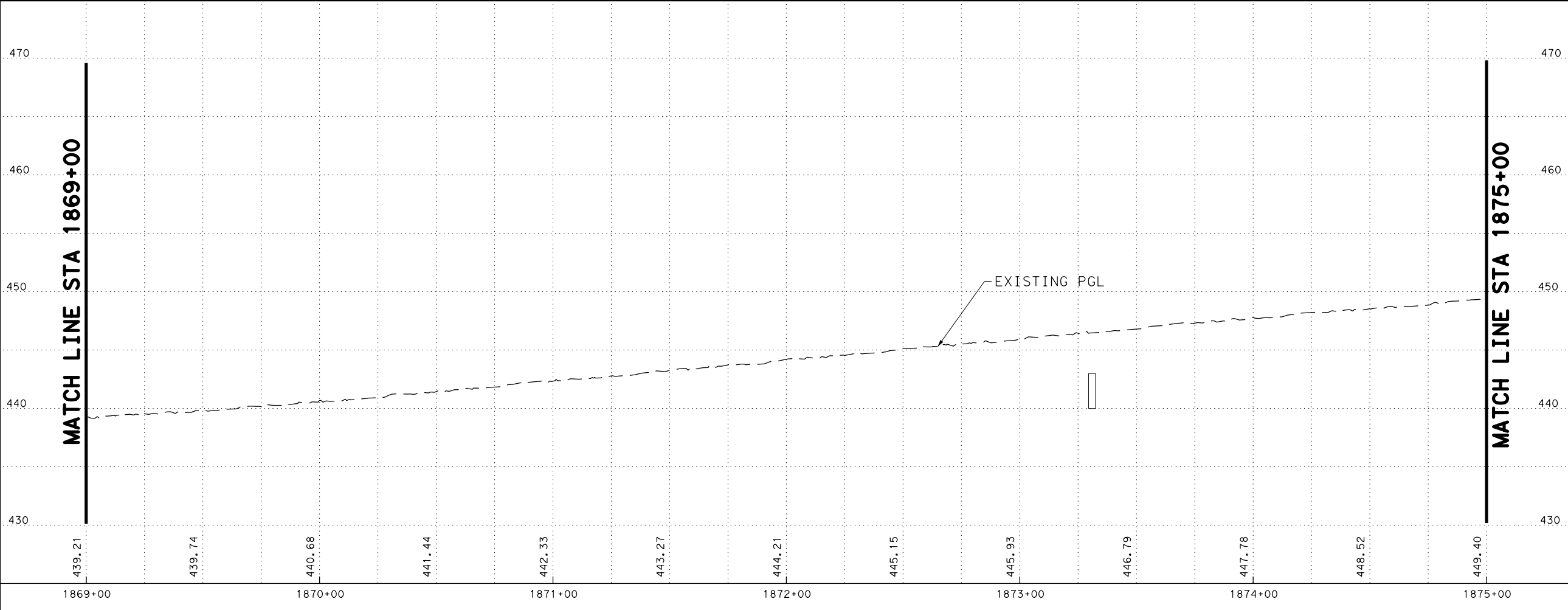
SHEET 51 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	116

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_52.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



VOLKERT

F-12679

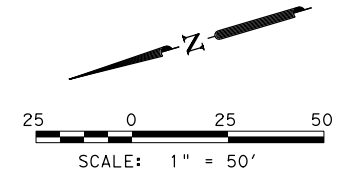
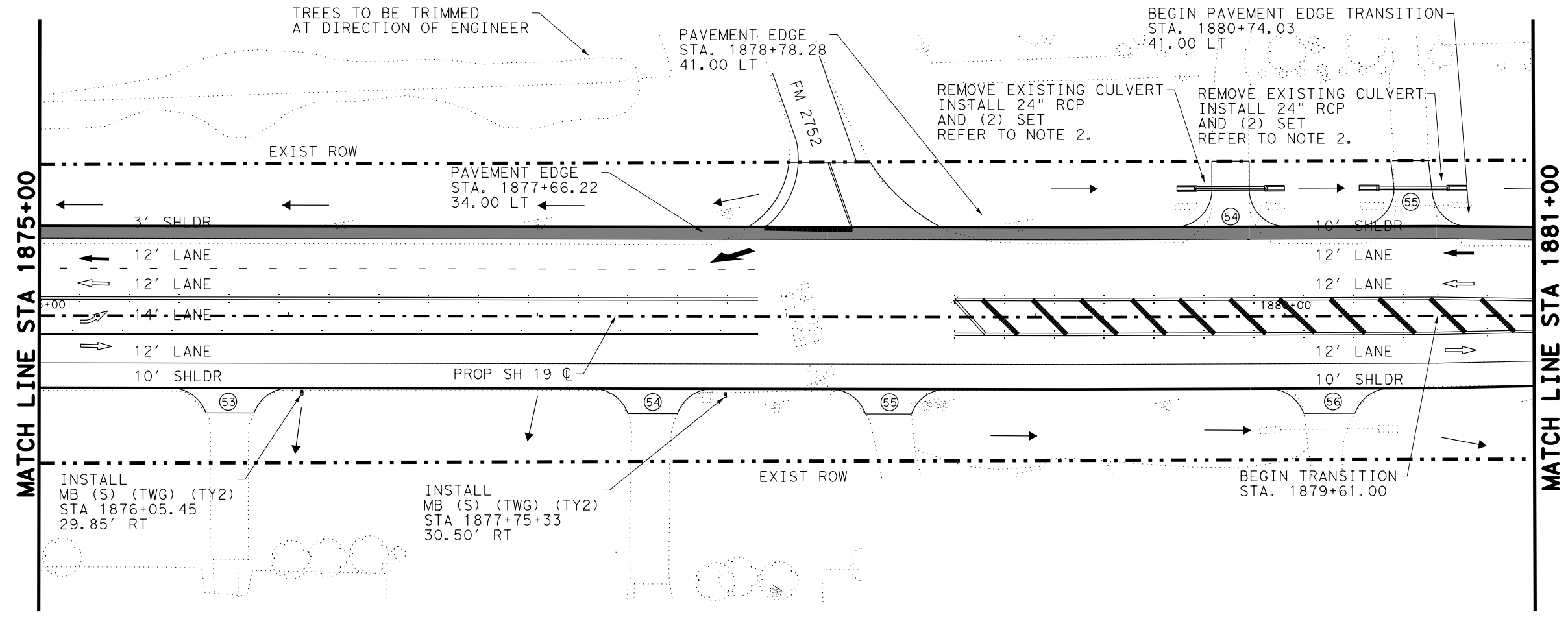


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 52 OF 79

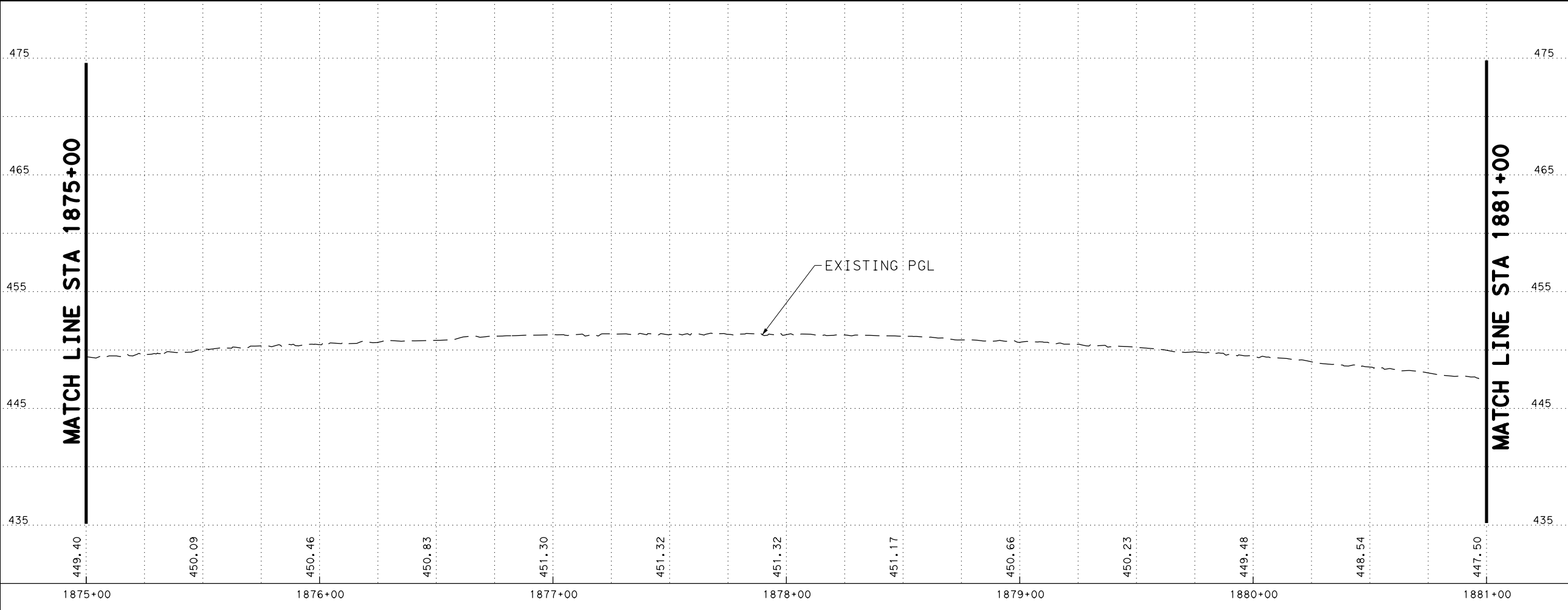
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYLER	HENDERSON	117	

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_53.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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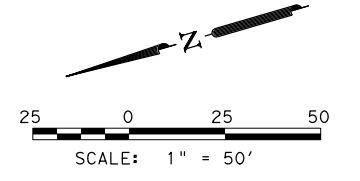
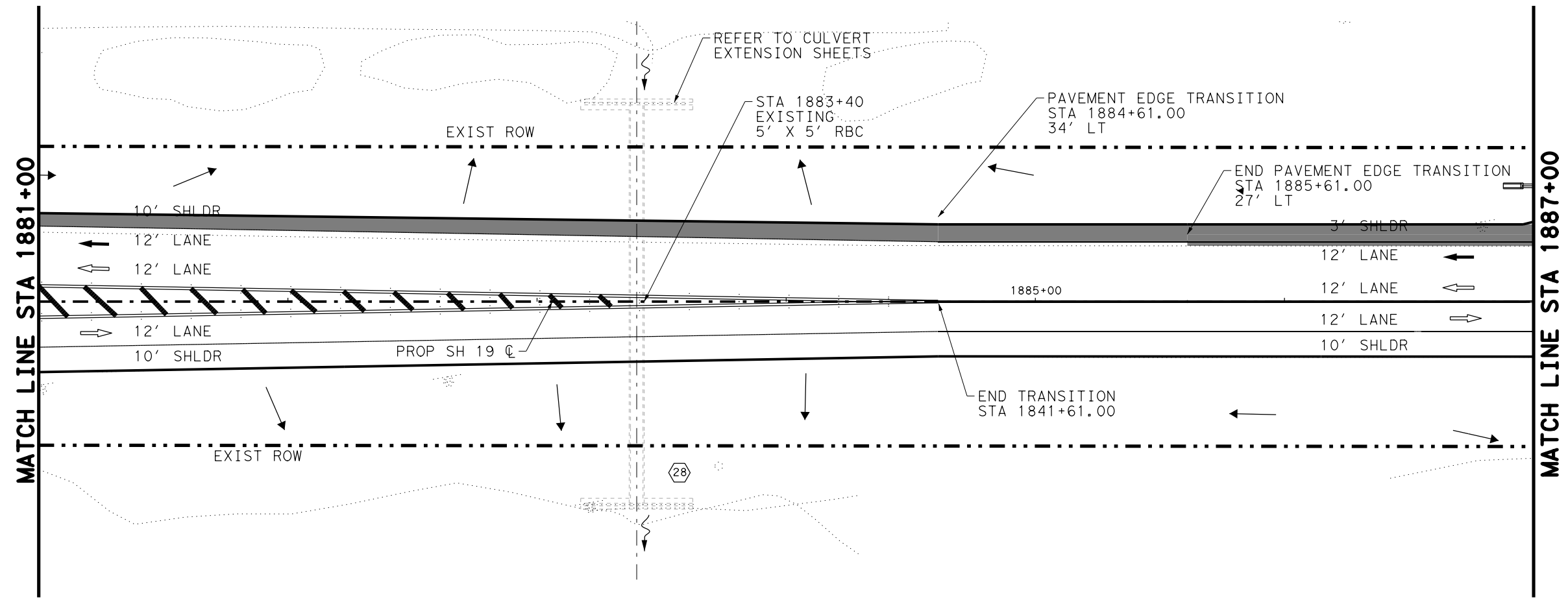
F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

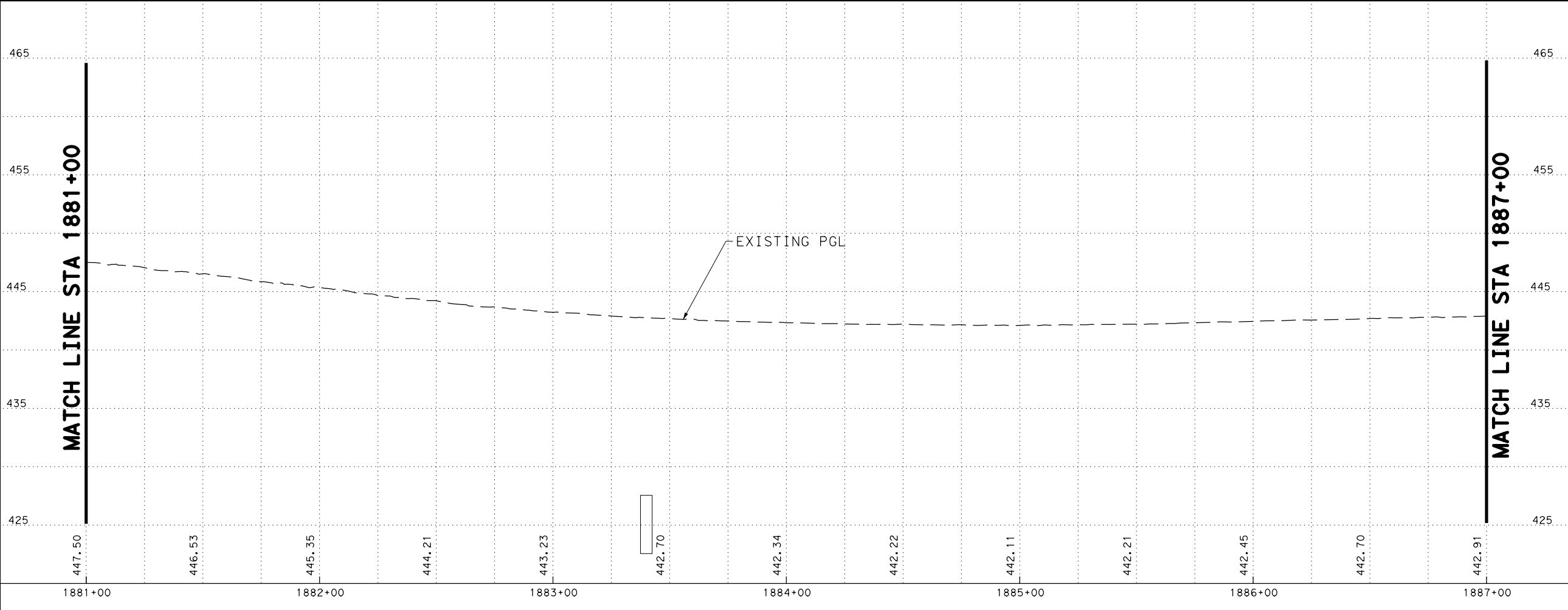
SHEET 53 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	118

DATE: 10-JUN-2024 15:29
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_54.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



VOLKERT

F-12679

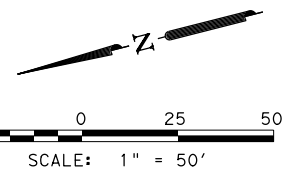


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 54 OF 79

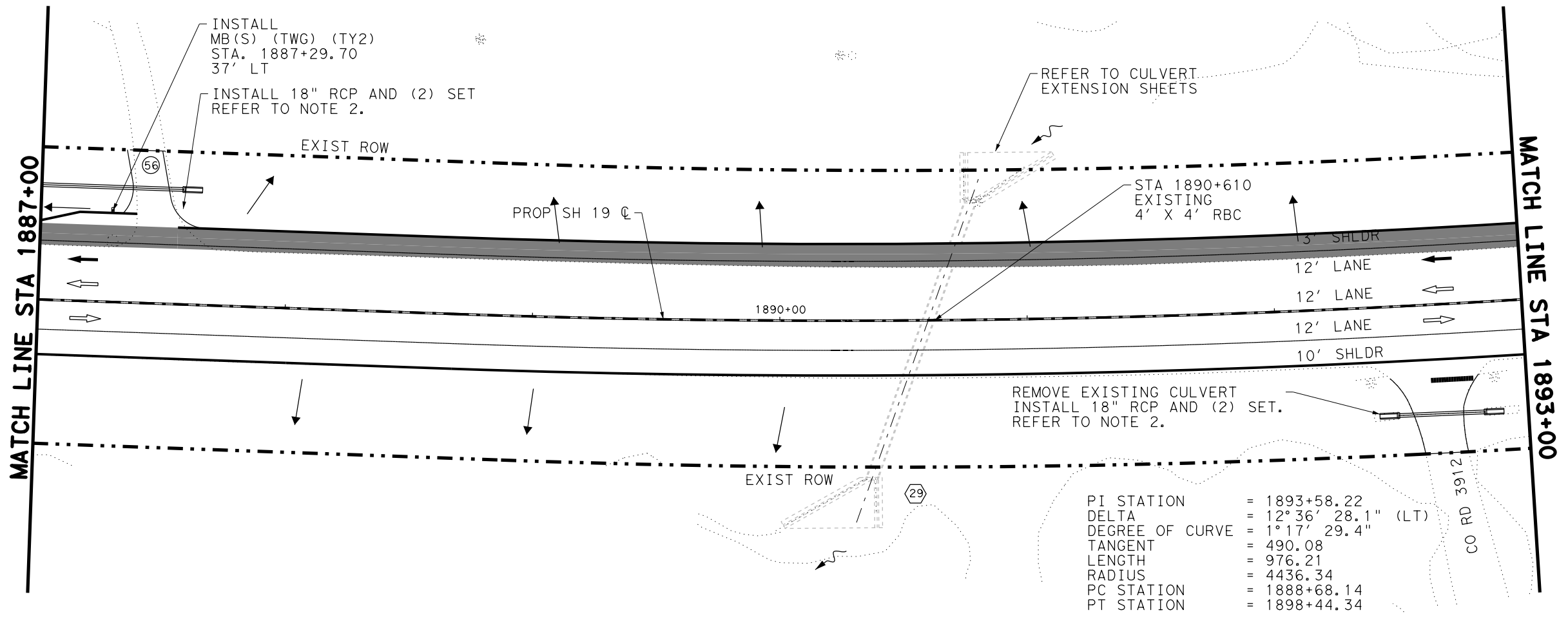
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	119

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_55.dgn

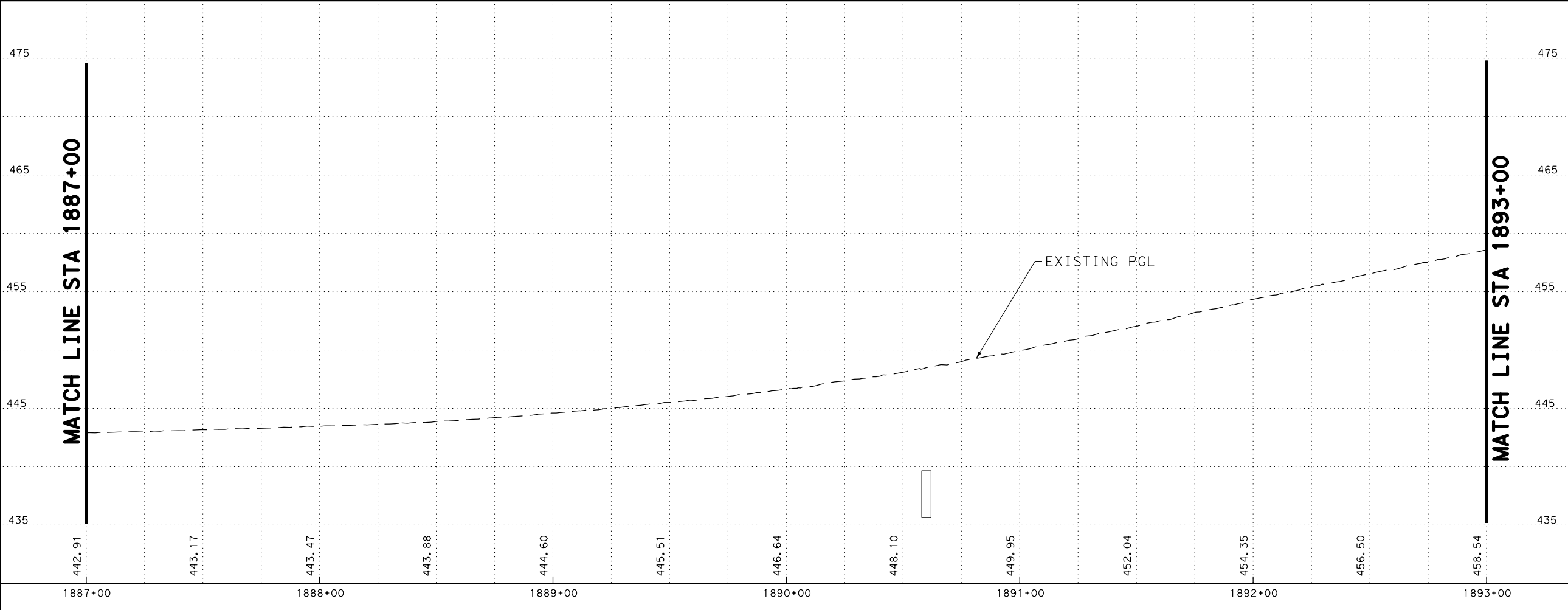


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



PI STATION = 1893+58.22
 DELTA = 12° 36' 28.1" (LT)
 DEGREE OF CURVE = 1° 17' 29.4"
 TANGENT = 490.08
 LENGTH = 976.21
 RADIUS = 4436.34
 PC STATION = 1888+68.14
 PT STATION = 1898+44.34



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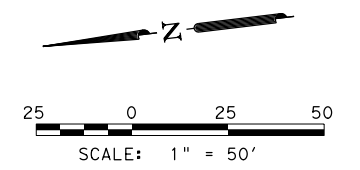
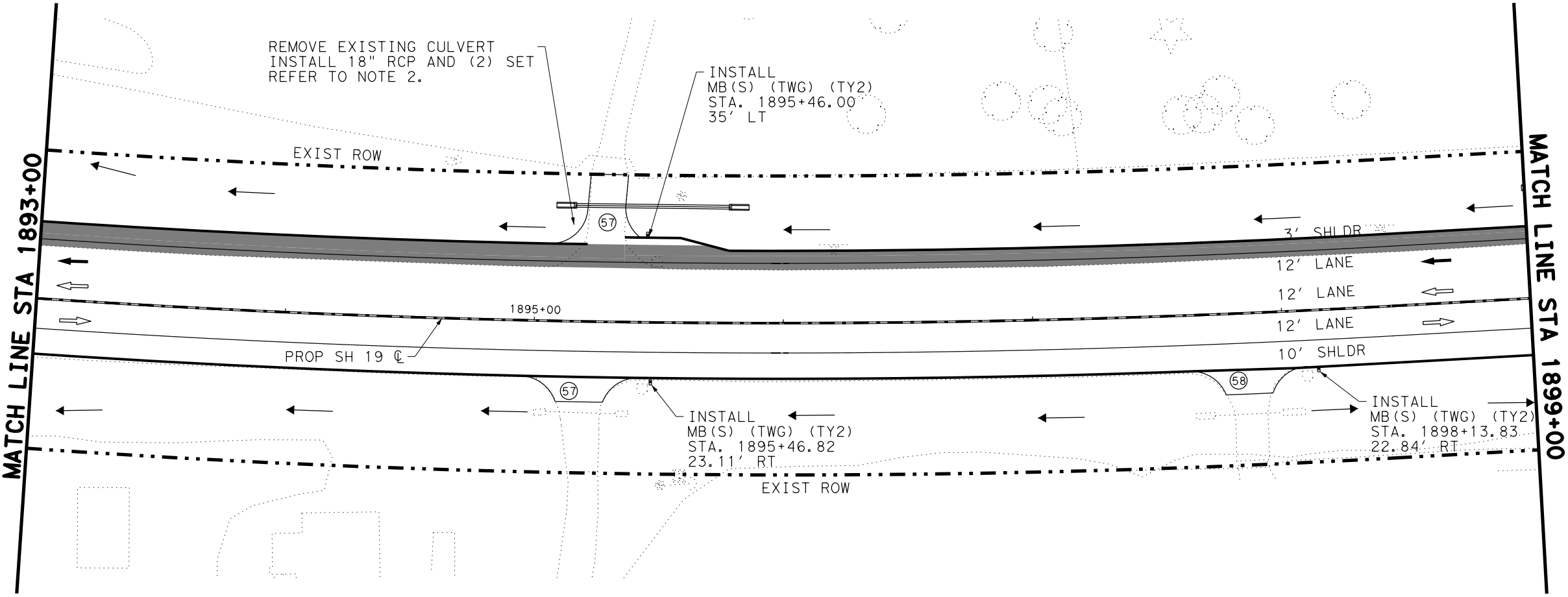


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 55 OF 79

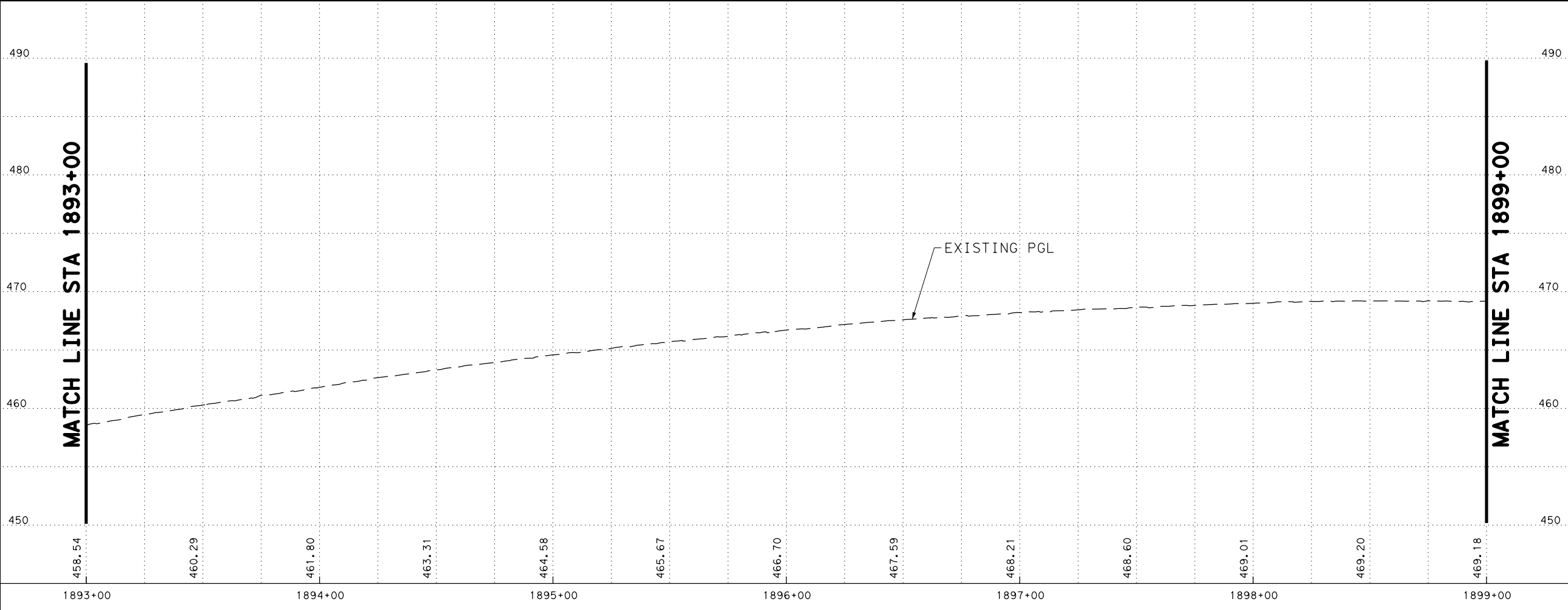
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	120

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_56.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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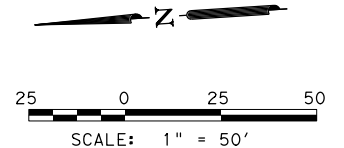


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 56 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	121

DATE: 10-JUN-2024 15:28
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ 0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_57.dgn

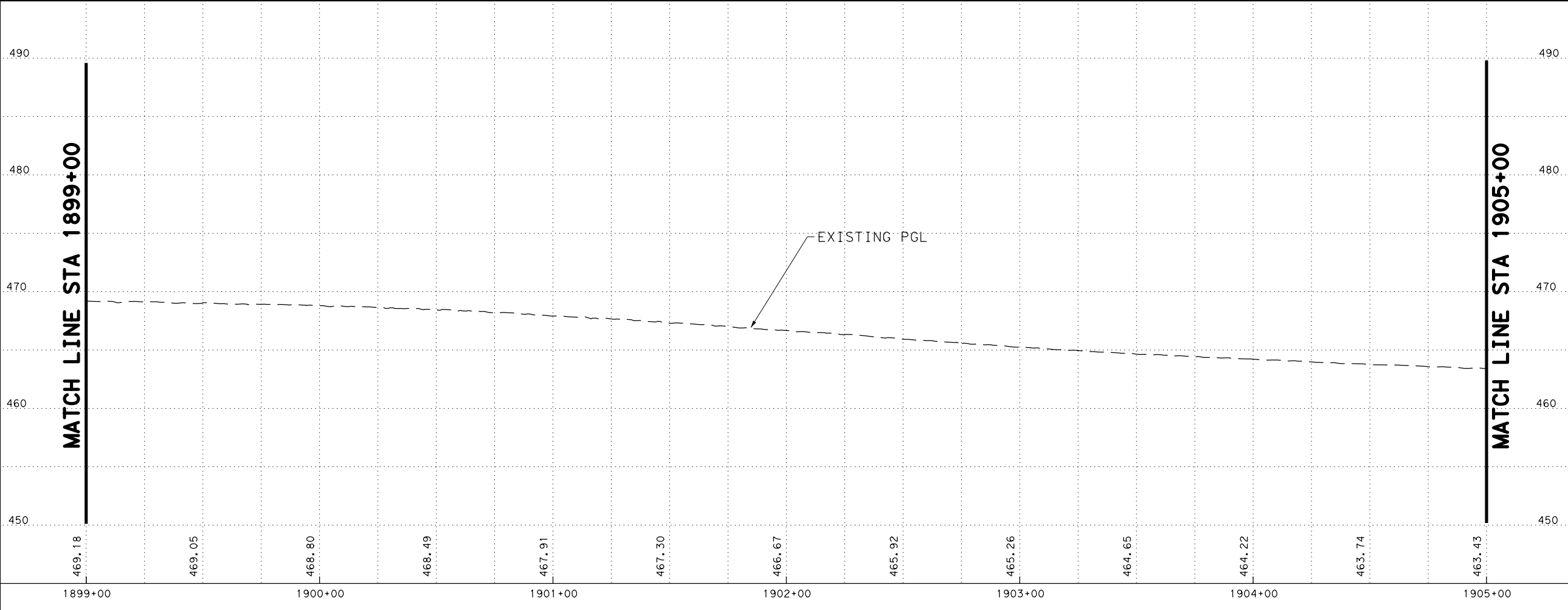
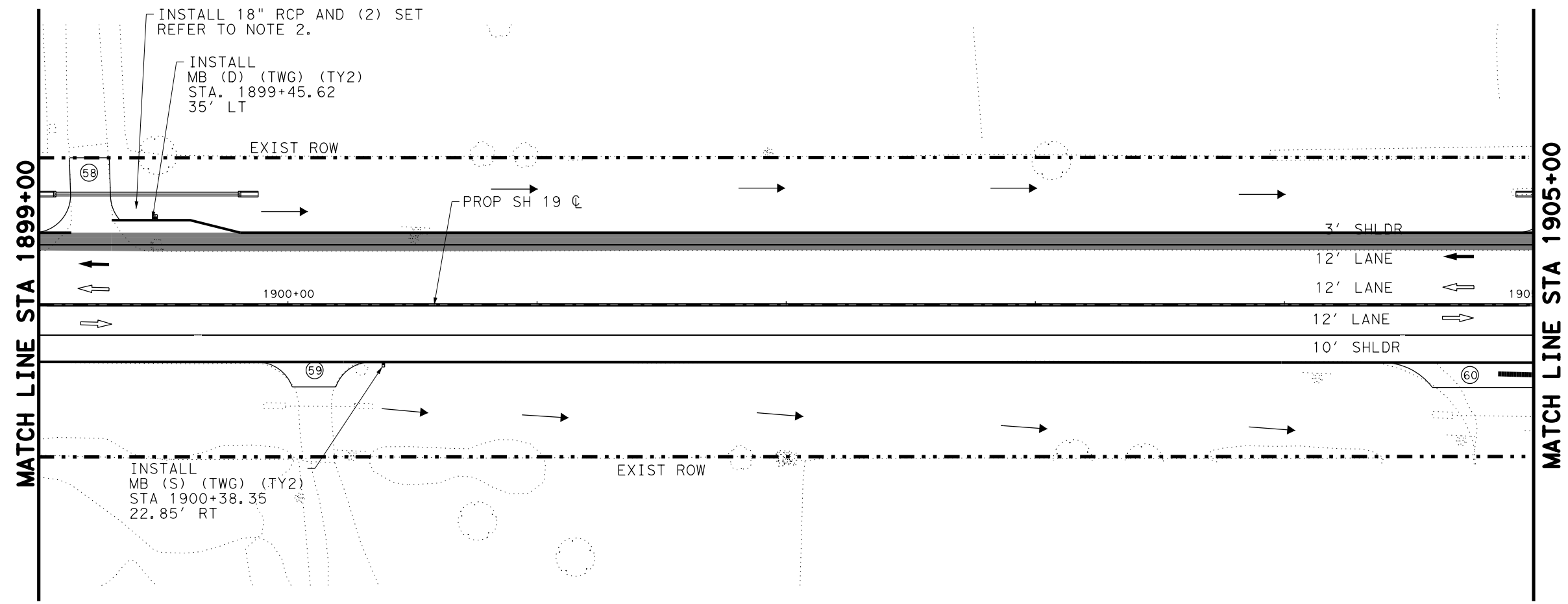


LEGEND

- EXISTING LANE
- PROPOSED LANE
- PROPOSED PAVEMENT
- CROSS-CULVERT NUMBER
- DRIVEWAY NUMBER
- OUTFALL DIRECTION
- FLOW DIRECTION

NOTES:

1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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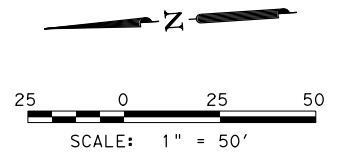
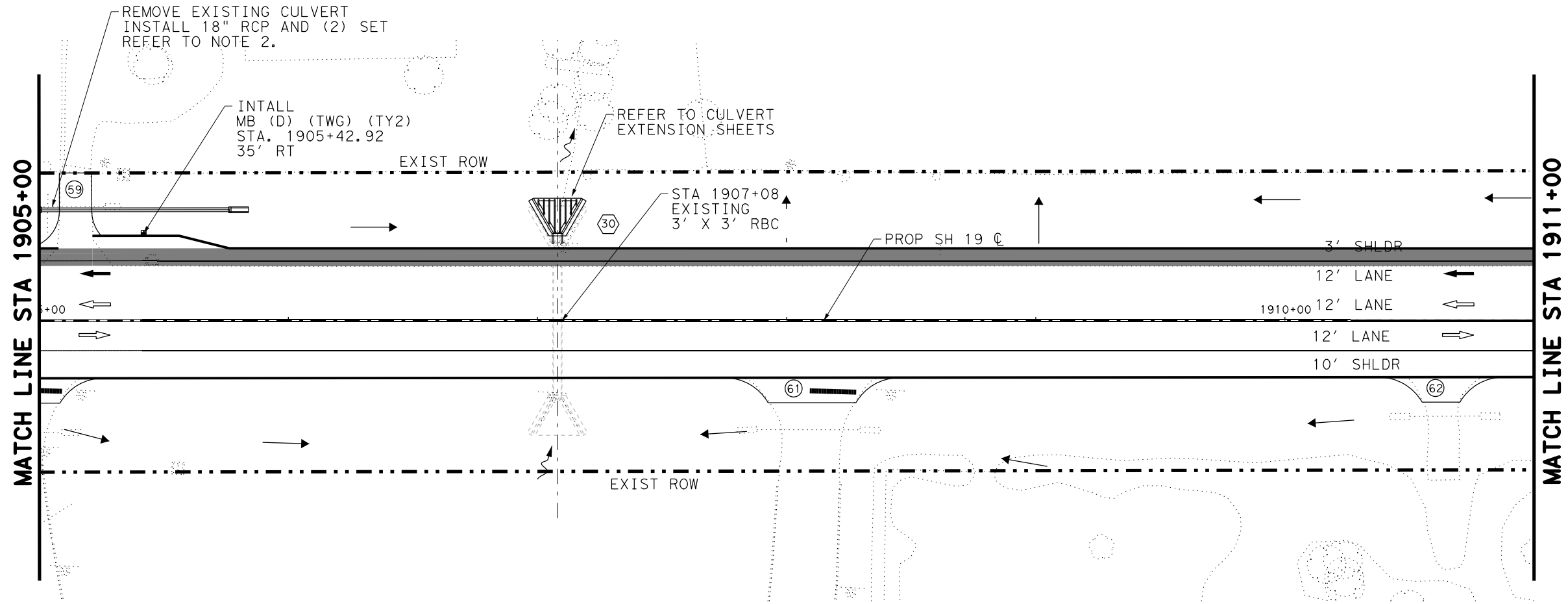


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 57 OF 79

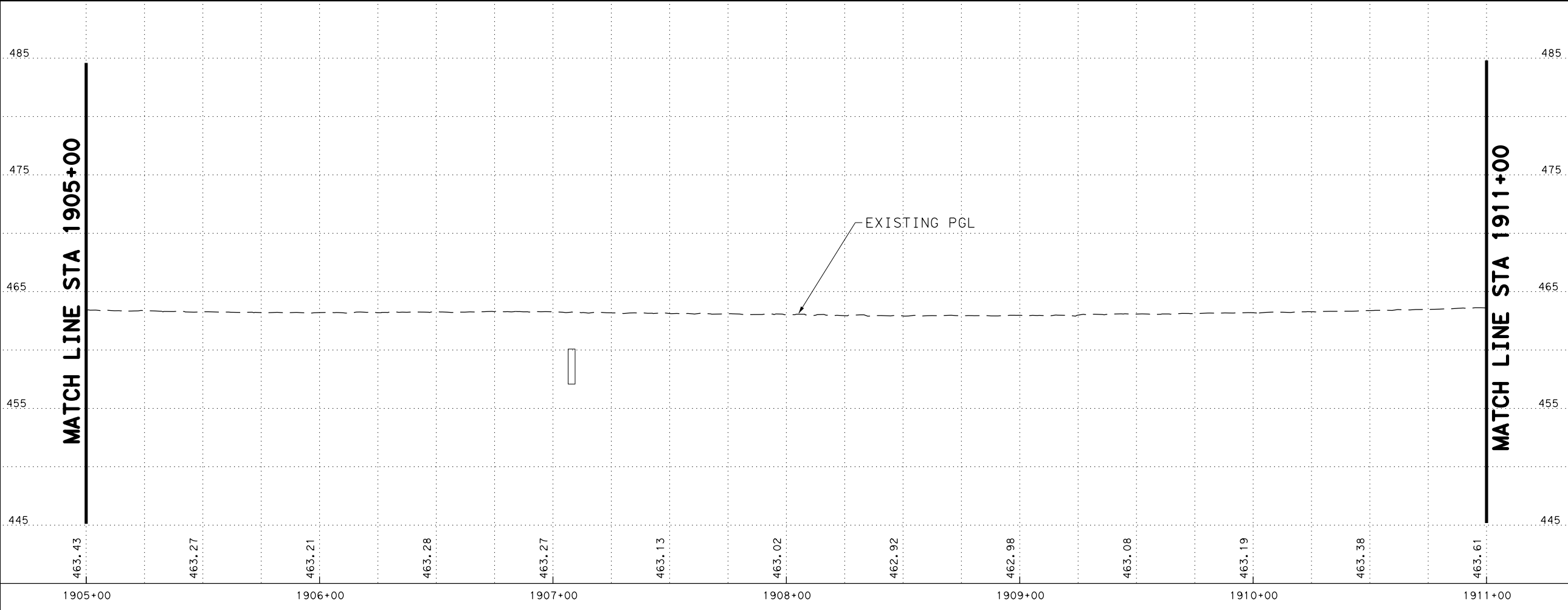
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	122

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_58.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



VOLKERT

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**SH 19
 PROPOSED
 PLAN AND PROFILE**

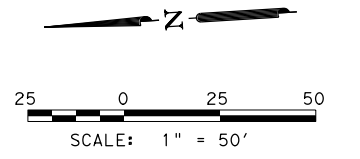
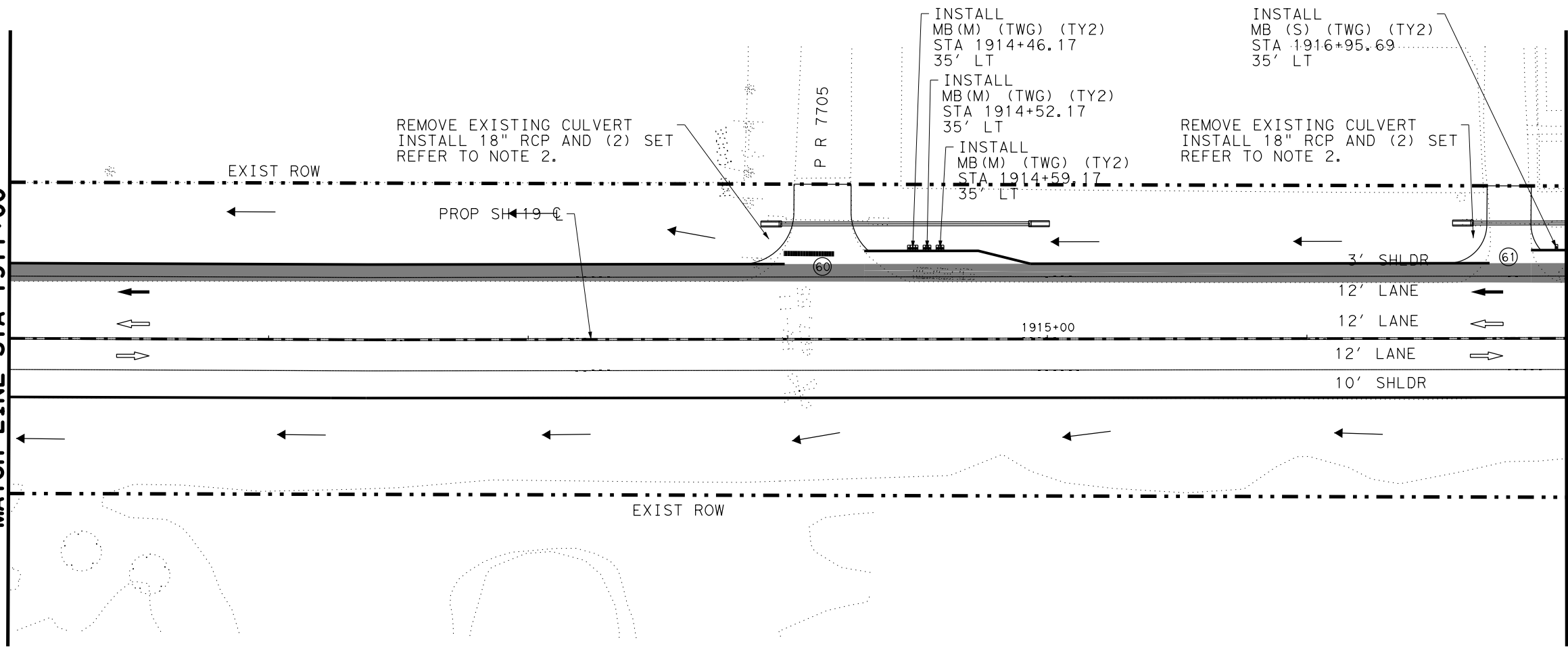
SHEET 58 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	123

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_59.dgn

MATCH LINE STA 1911+00

MATCH LINE STA 1917+00

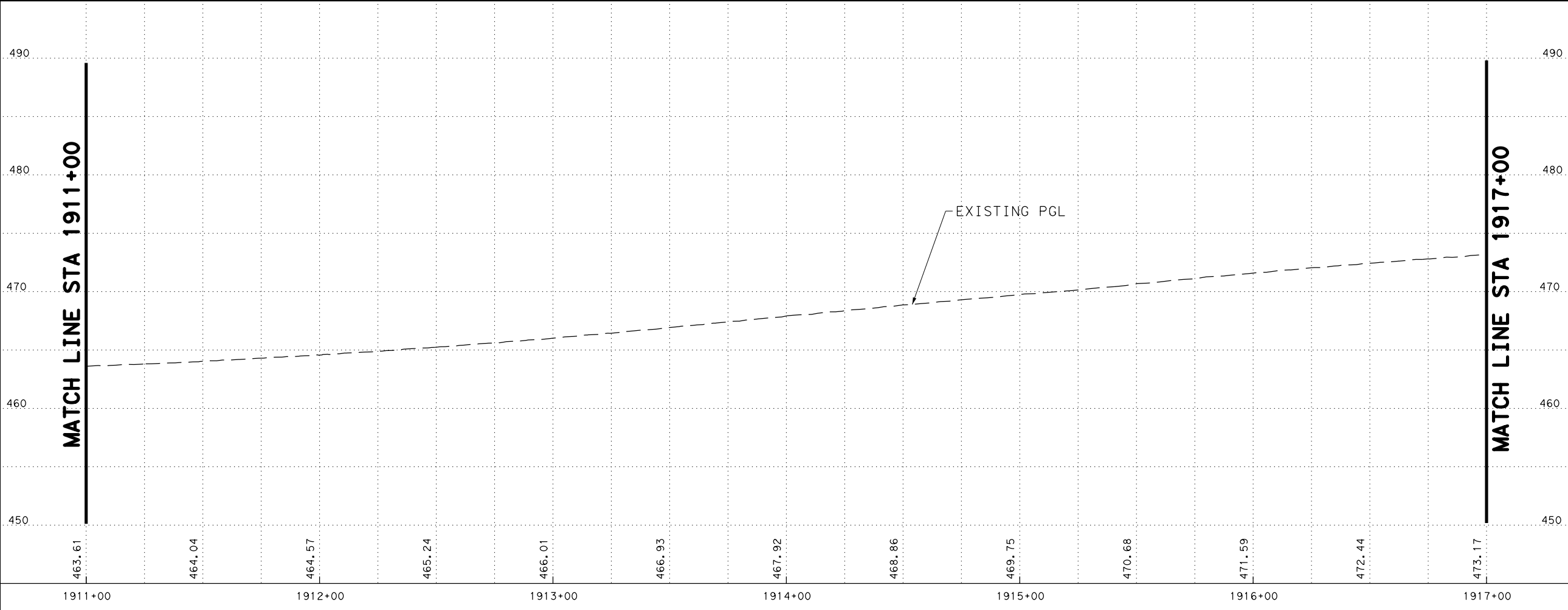


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1911+00

MATCH LINE STA 1917+00



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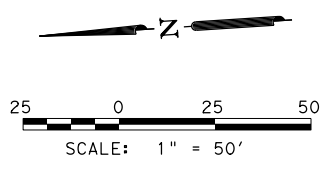
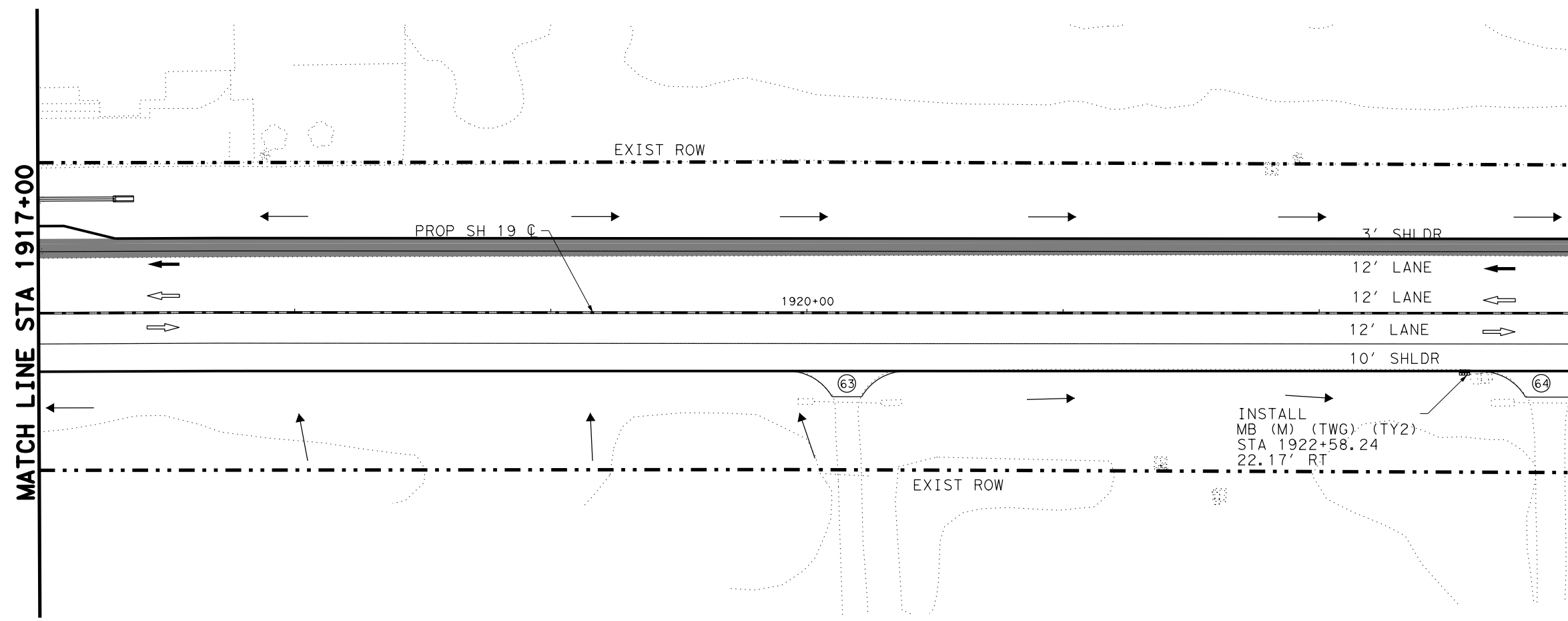
**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 59 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	124

DATE: 10-JUN-2024 15:29
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_60.dgn

MATCH LINE STA 1917+00

MATCH LINE STA 1923+00

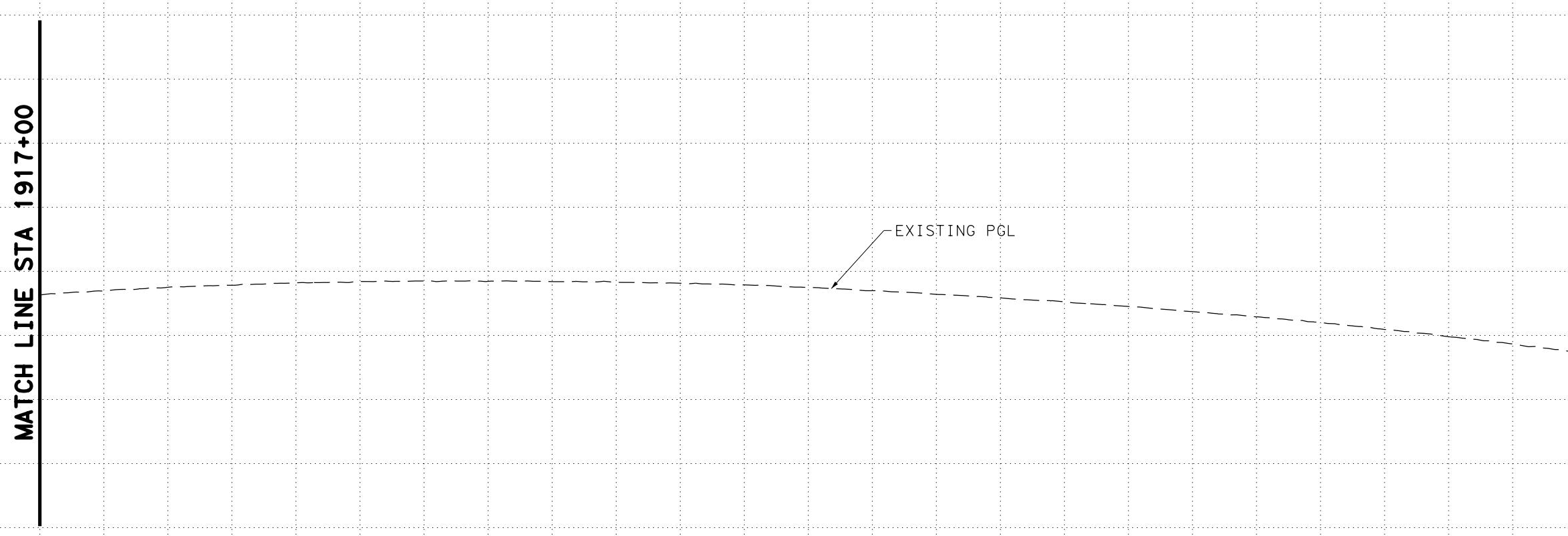


- LEGEND
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1917+00

MATCH LINE STA 1923+00



473.17	473.76	474.11	474.25	474.20	474.07	473.75	473.21	472.62	471.86	471.03	469.90	468.70
1917+00		1918+00		1919+00		1920+00		1921+00		1922+00		1923+00



06/10/2024

VOLKERT

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**SH 19
 PROPOSED
 PLAN AND PROFILE**

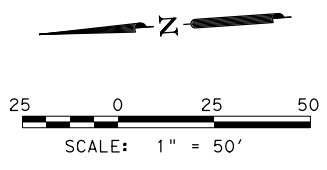
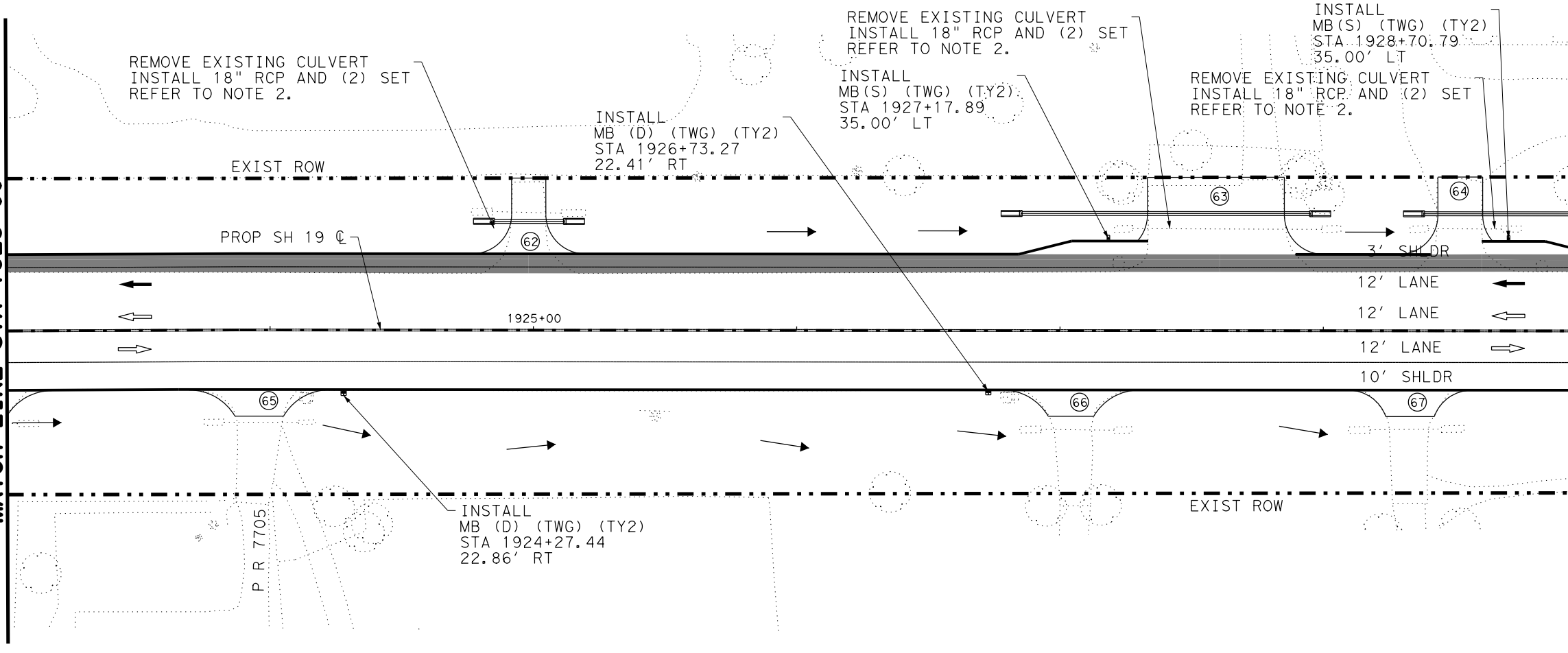
SHEET 60 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	125

DATE: 10-JUN-2024 15:28
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_61.dgn

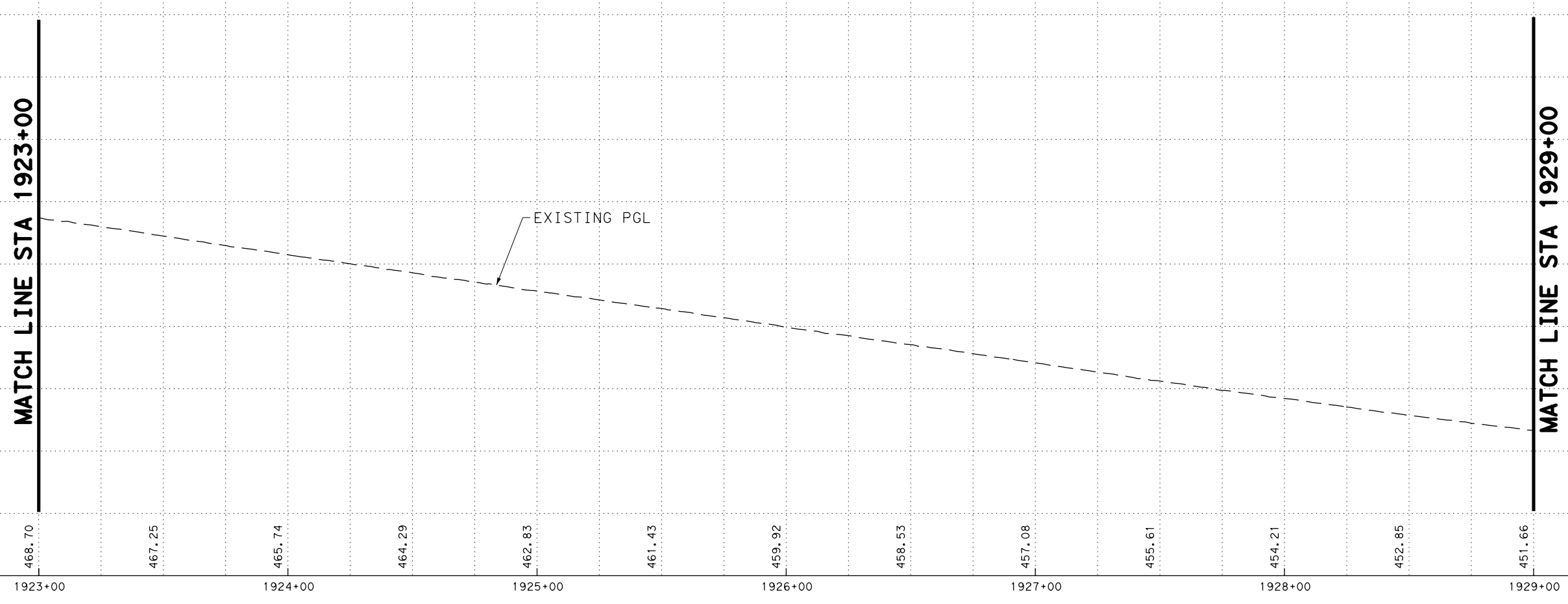
MATCH LINE STA 1923+00

MATCH LINE STA 1929+00



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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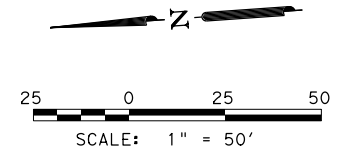
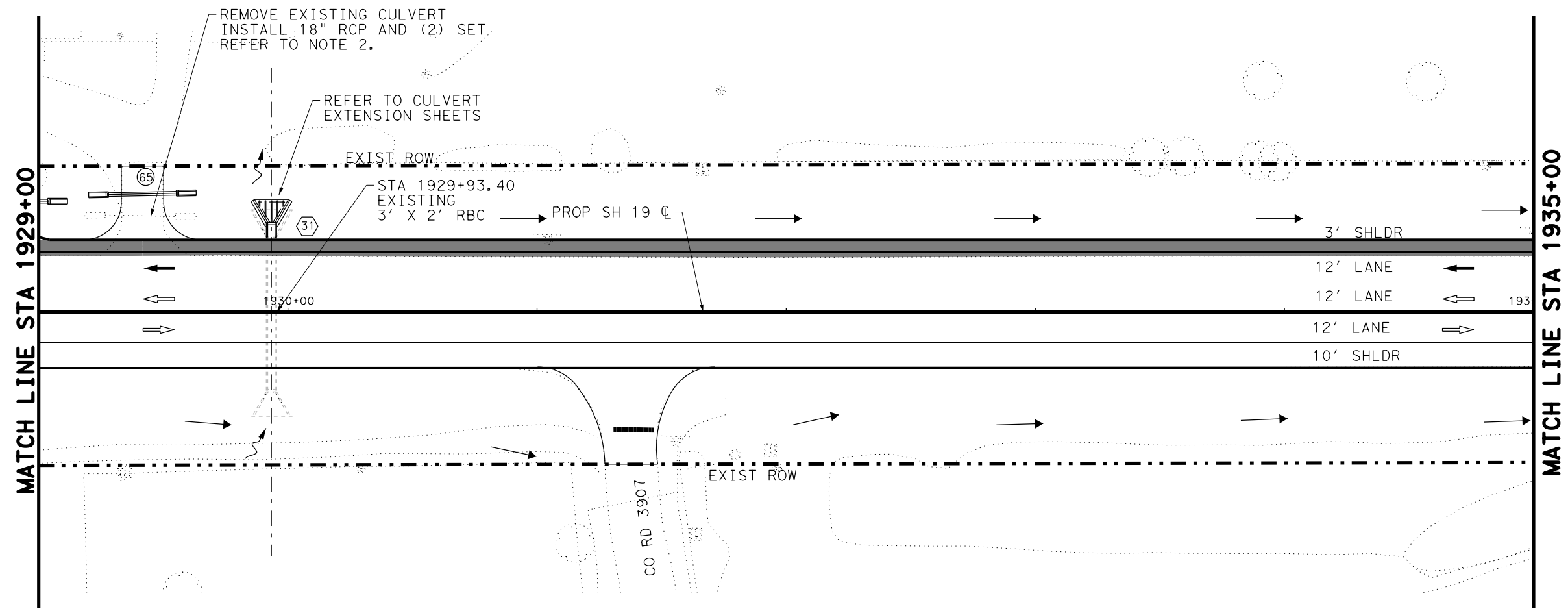
F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

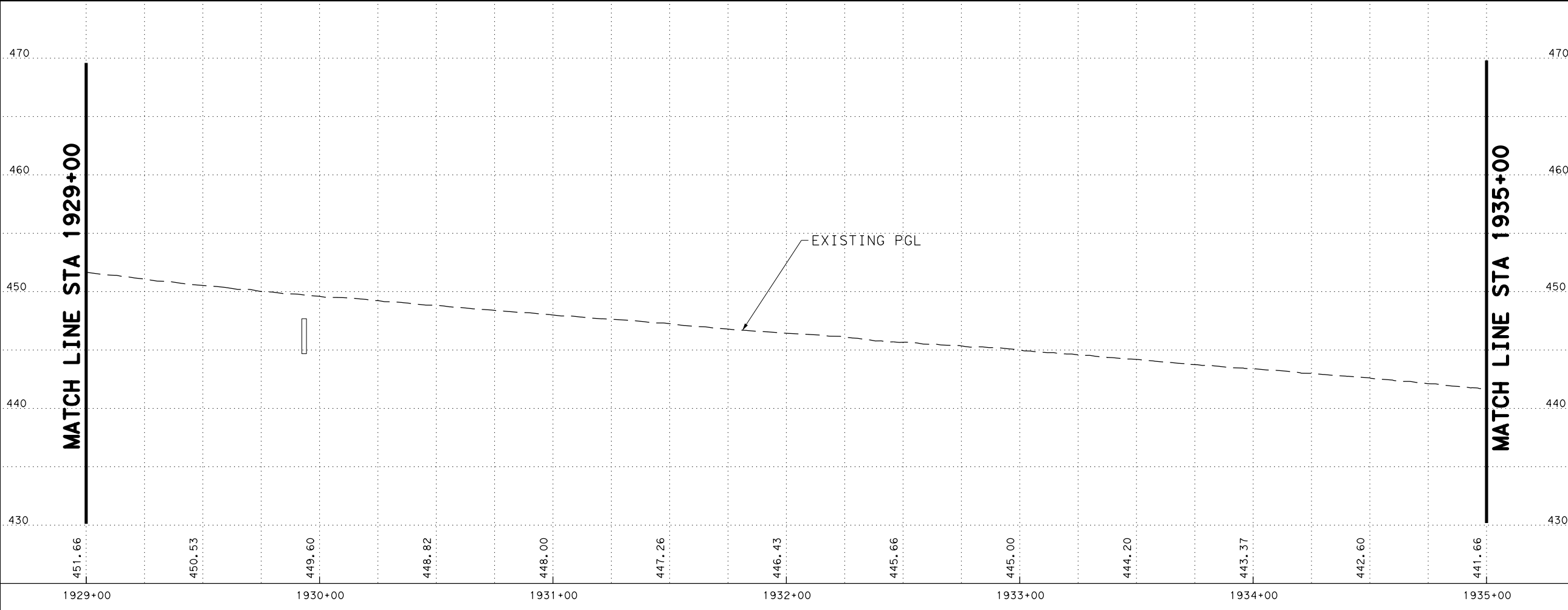
SHEET 61 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	126

DATE: 10-JUN-2024 15:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_62.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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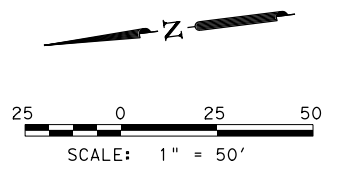
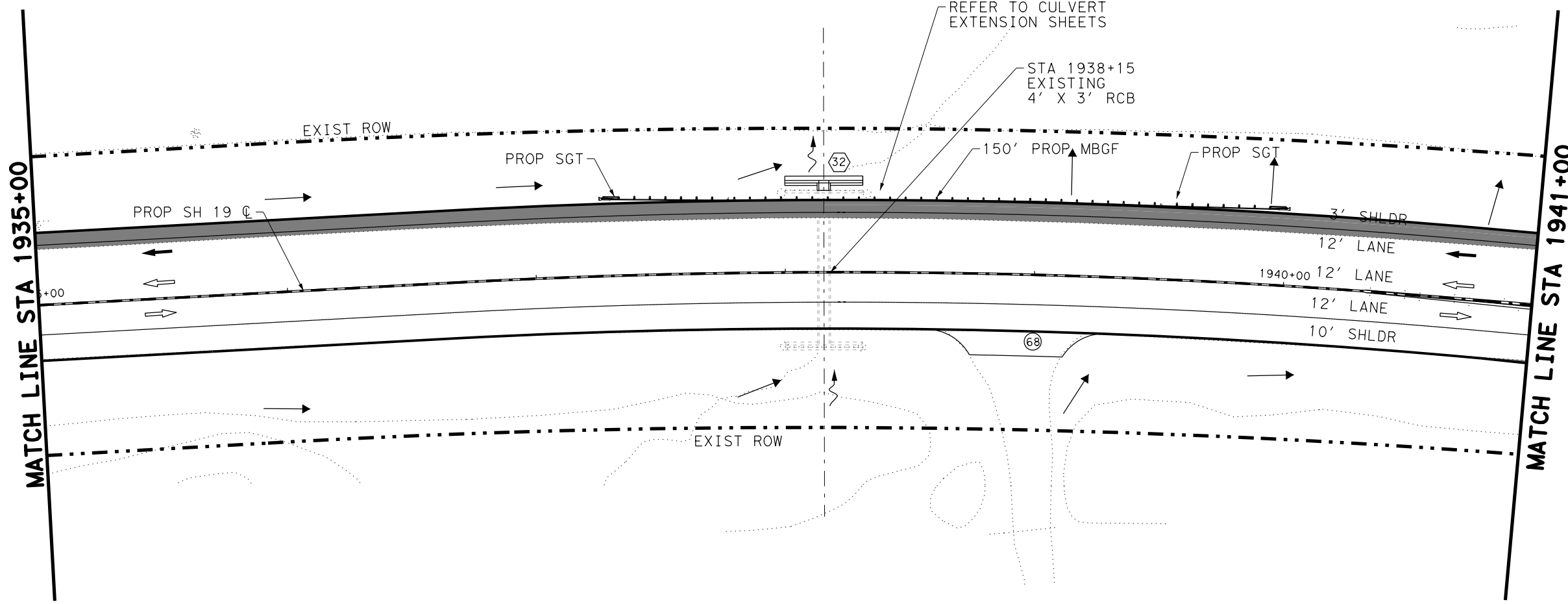
F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

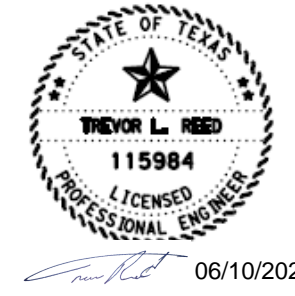
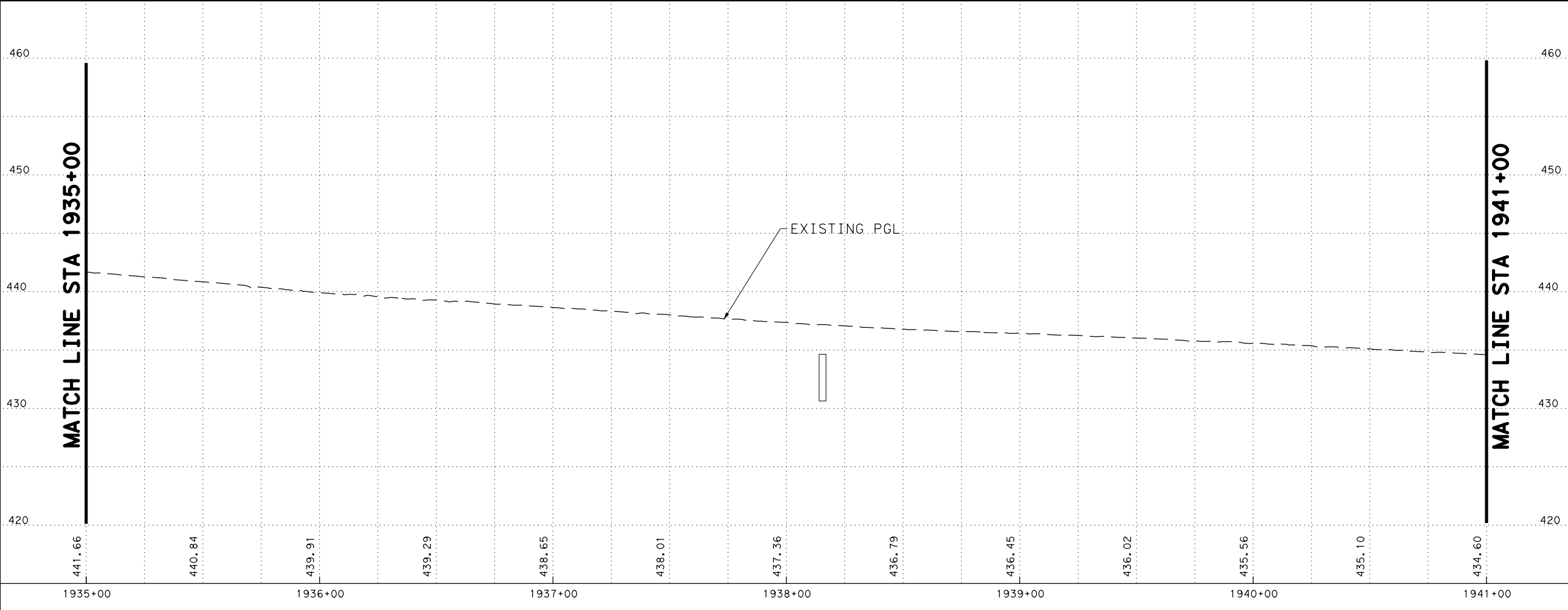
SHEET 62 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	127

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_63.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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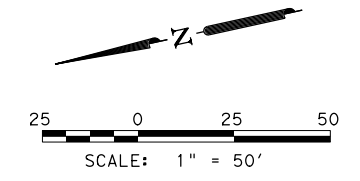
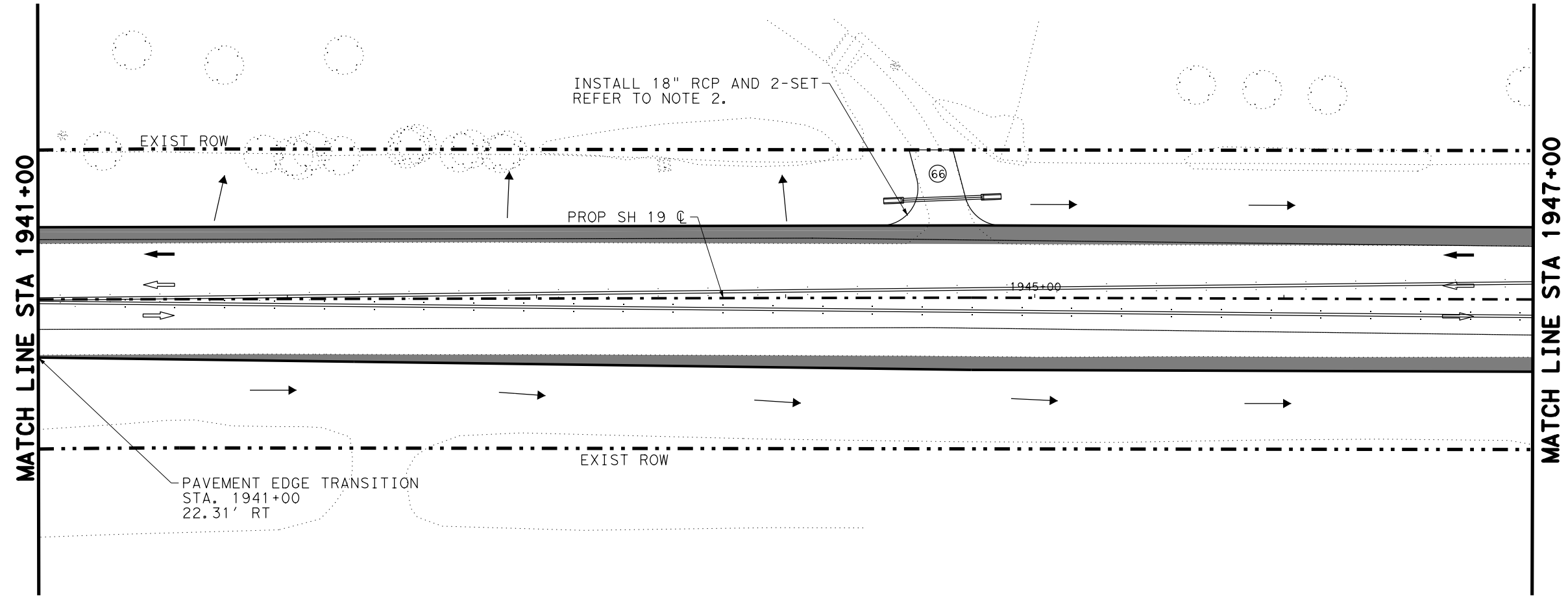


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 63 OF 79

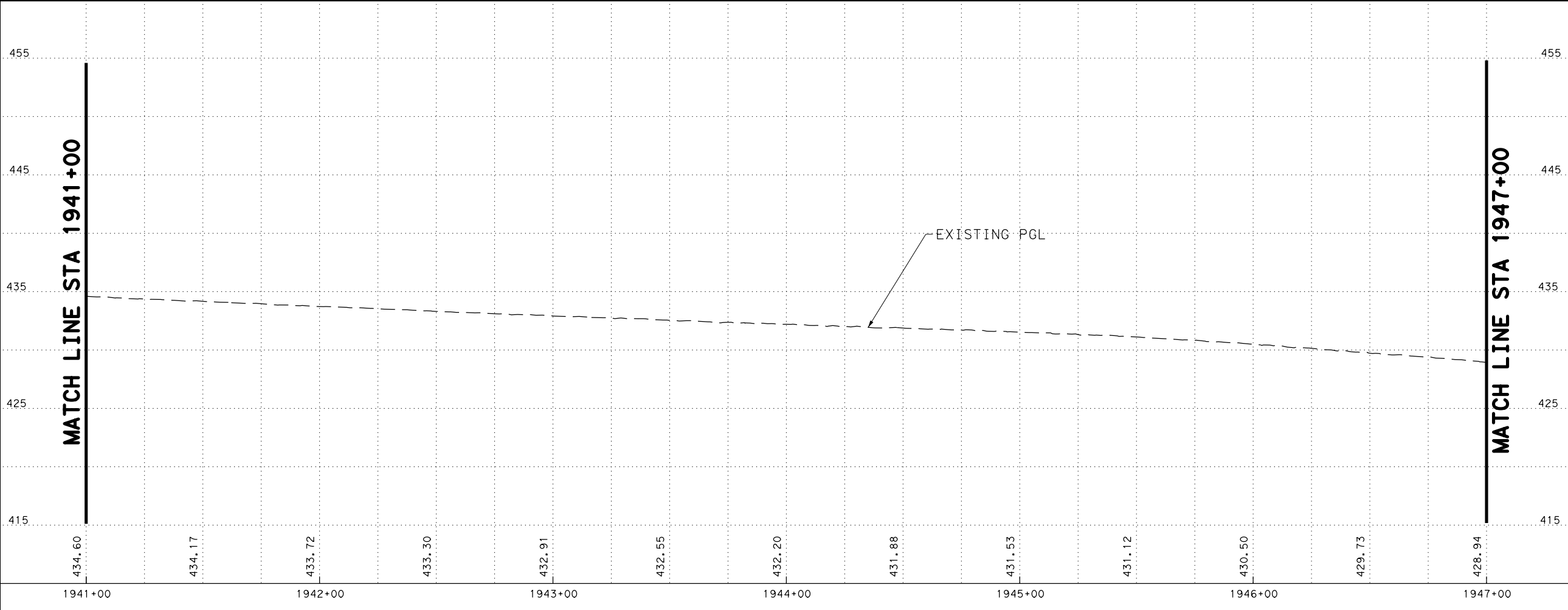
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	128

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_64.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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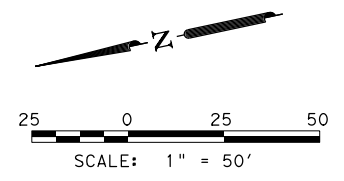
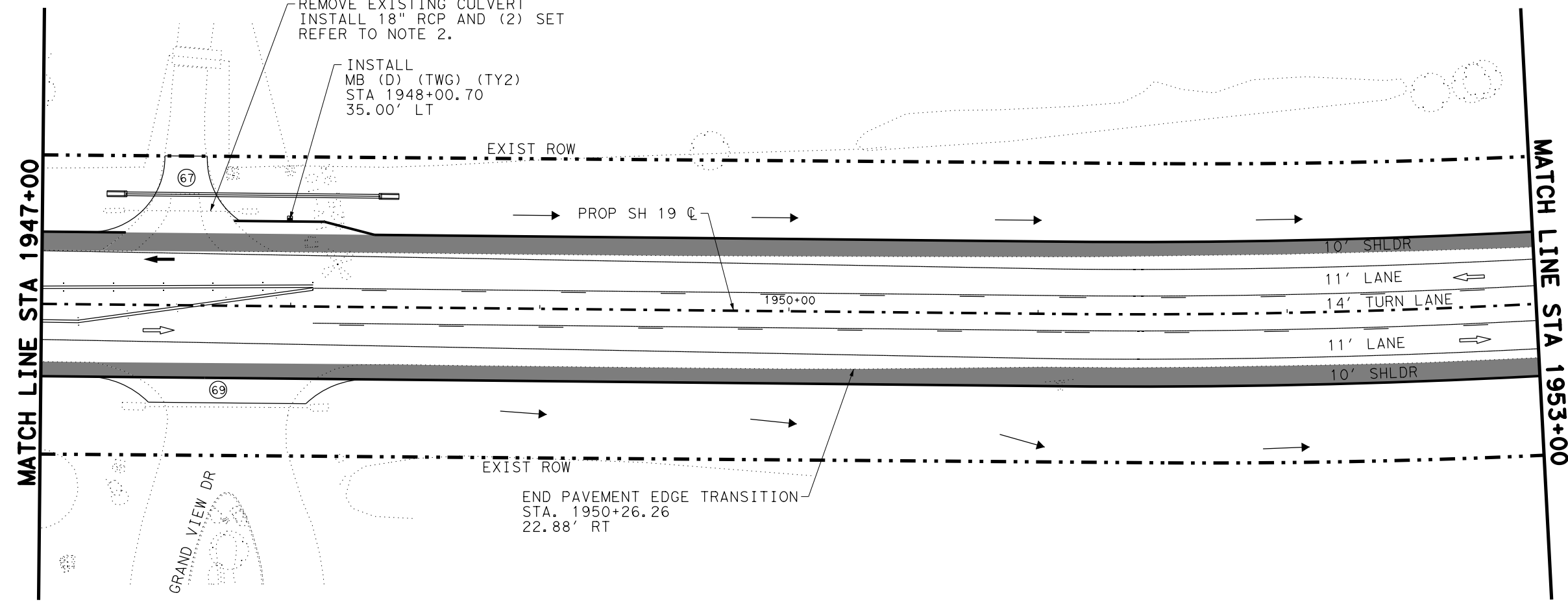
F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

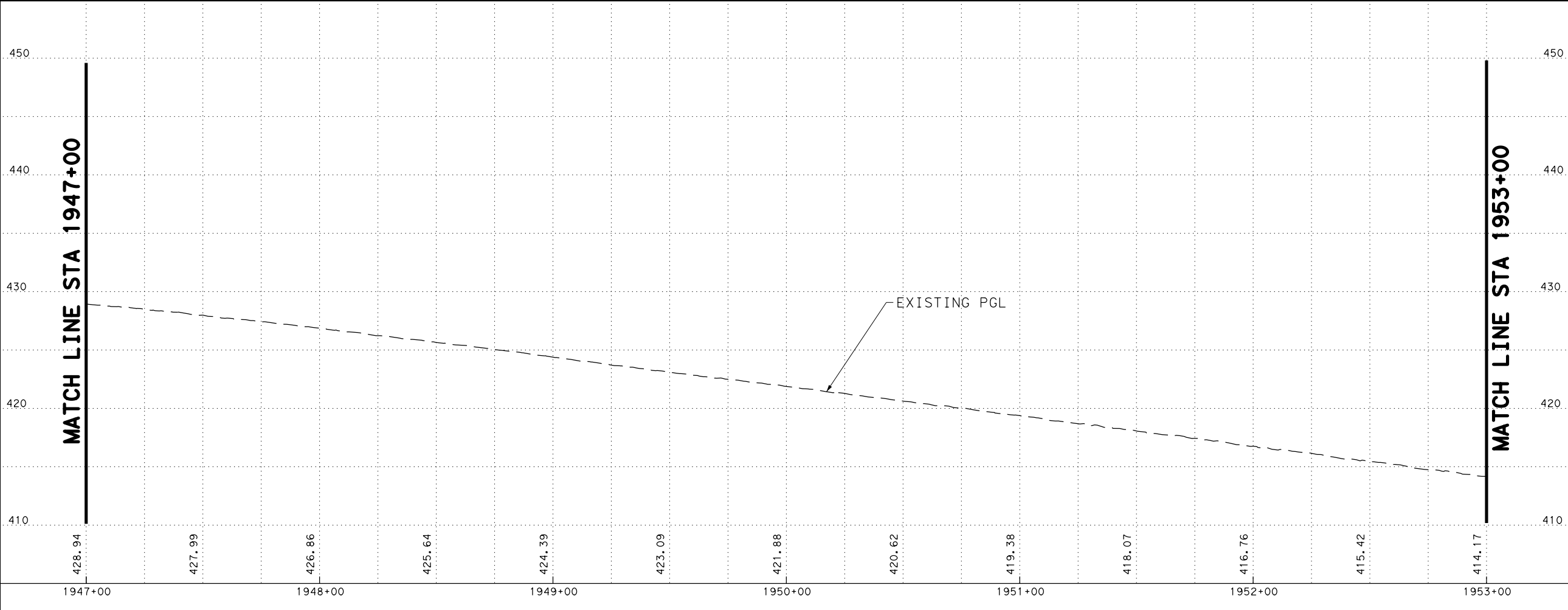
SHEET 64 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	129

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_65.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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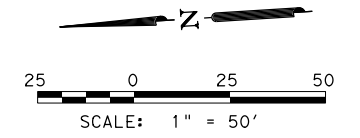
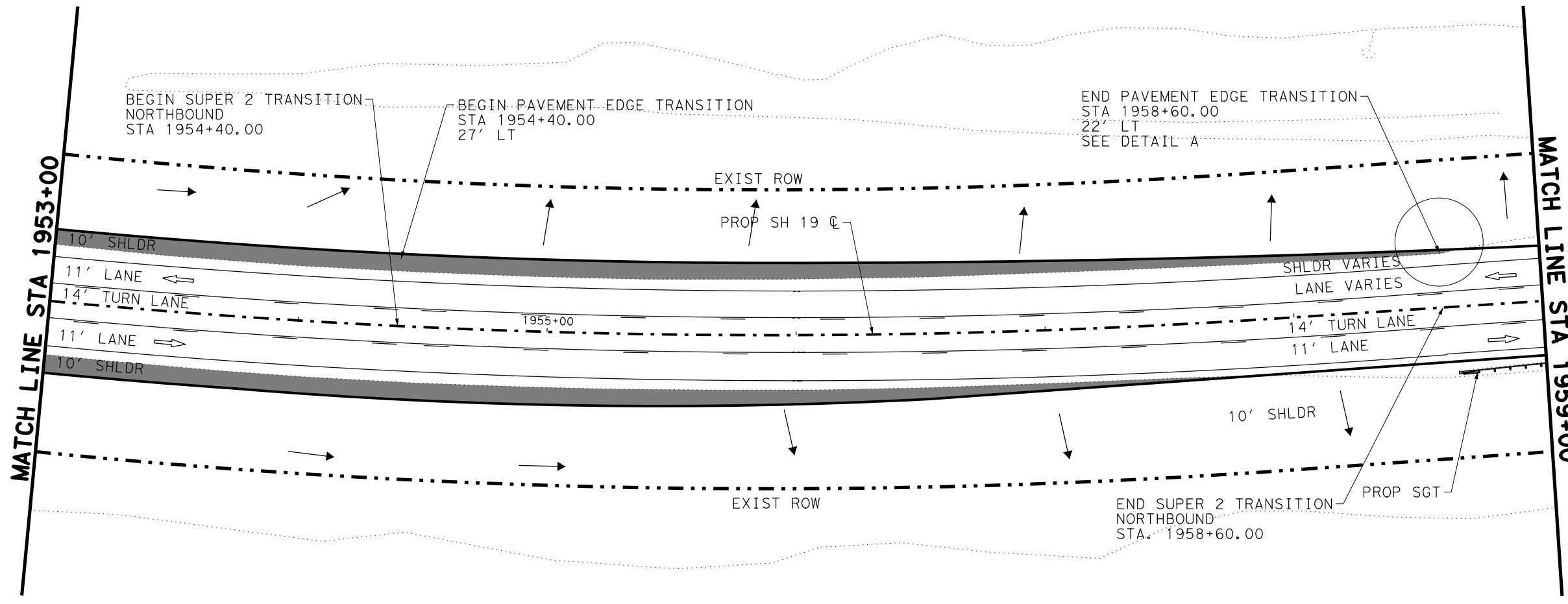
F-12679



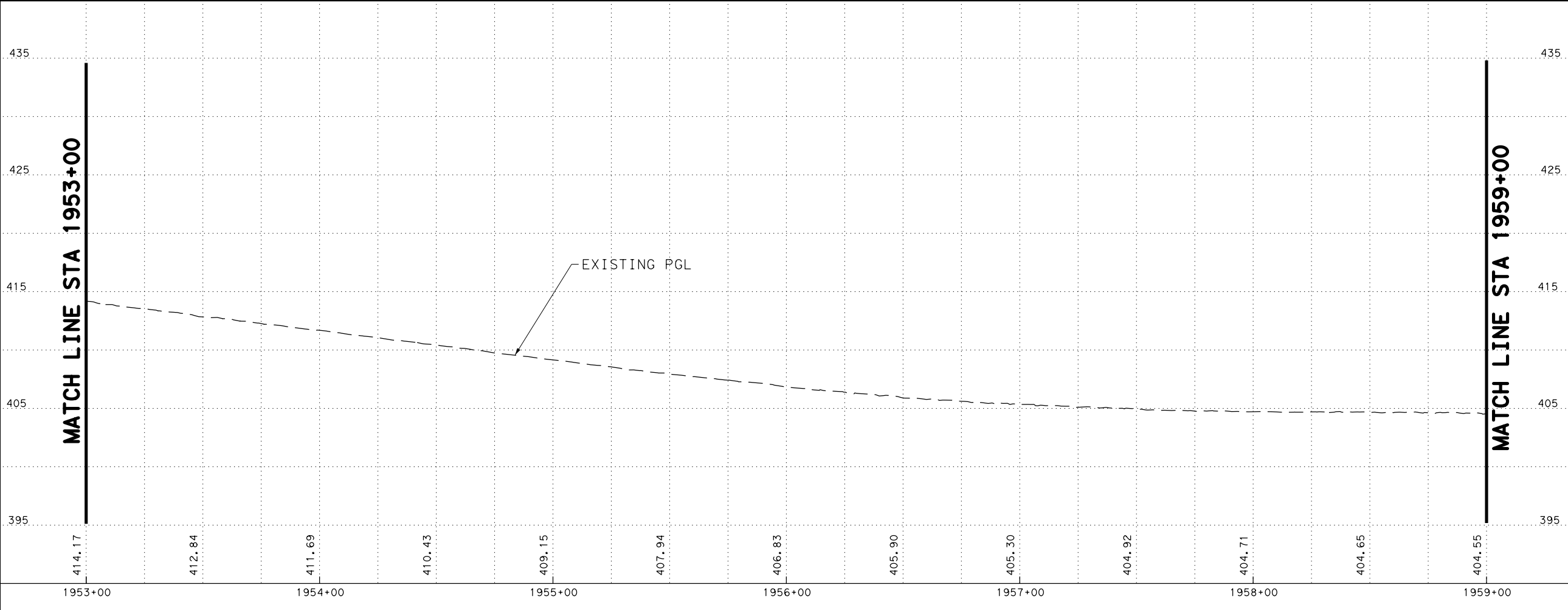
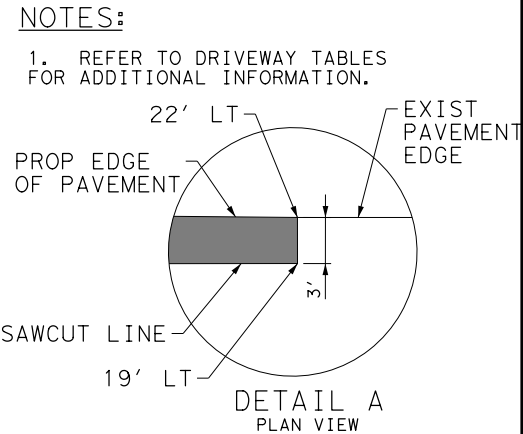
**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 65 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	130

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_66.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION



06/10/2024

VOLKERT

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**SH 19
PROPOSED
PLAN AND PROFILE**

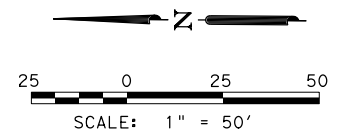
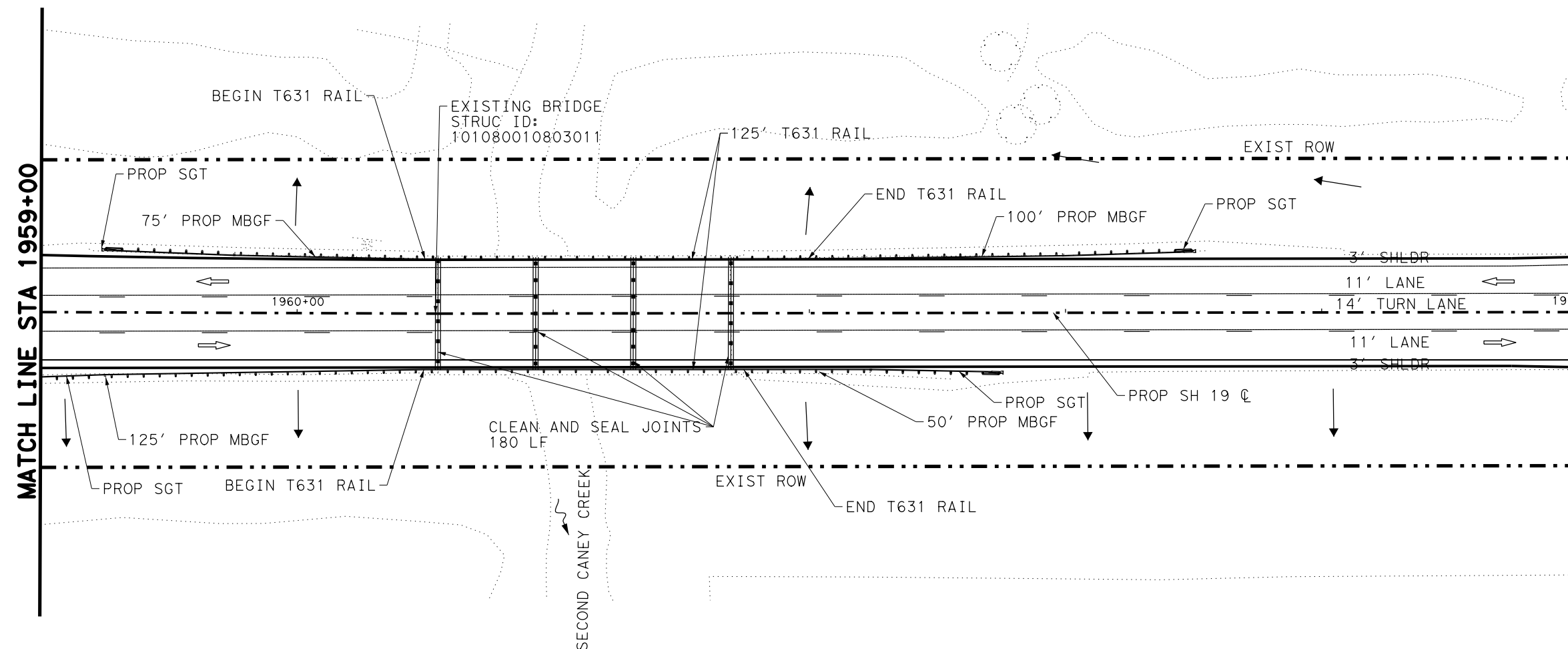
SHEET 66 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYLER	HENDERSON	131	

DATE: 21-JUN-2024 13:21
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_67.dgn

MATCH LINE STA 1959+00

MATCH LINE STA 1965+00

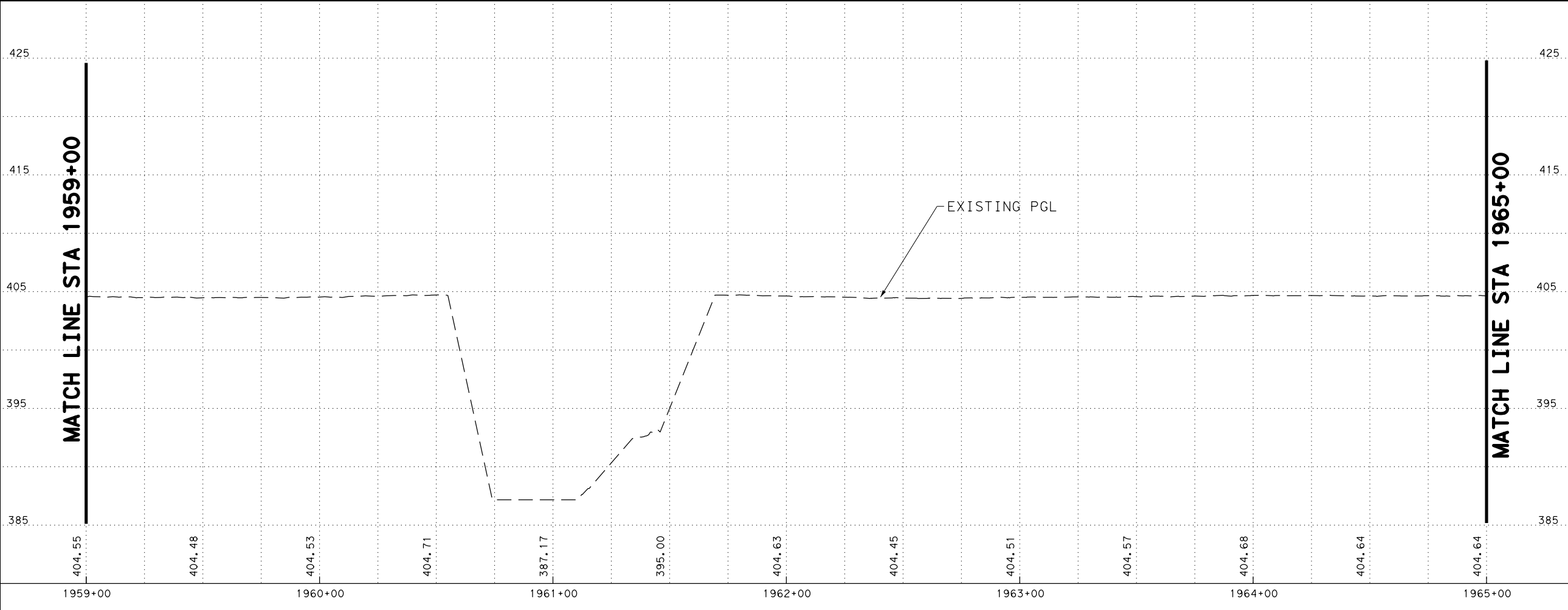


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1959+00

MATCH LINE STA 1965+00



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F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

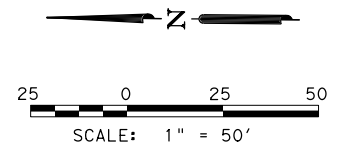
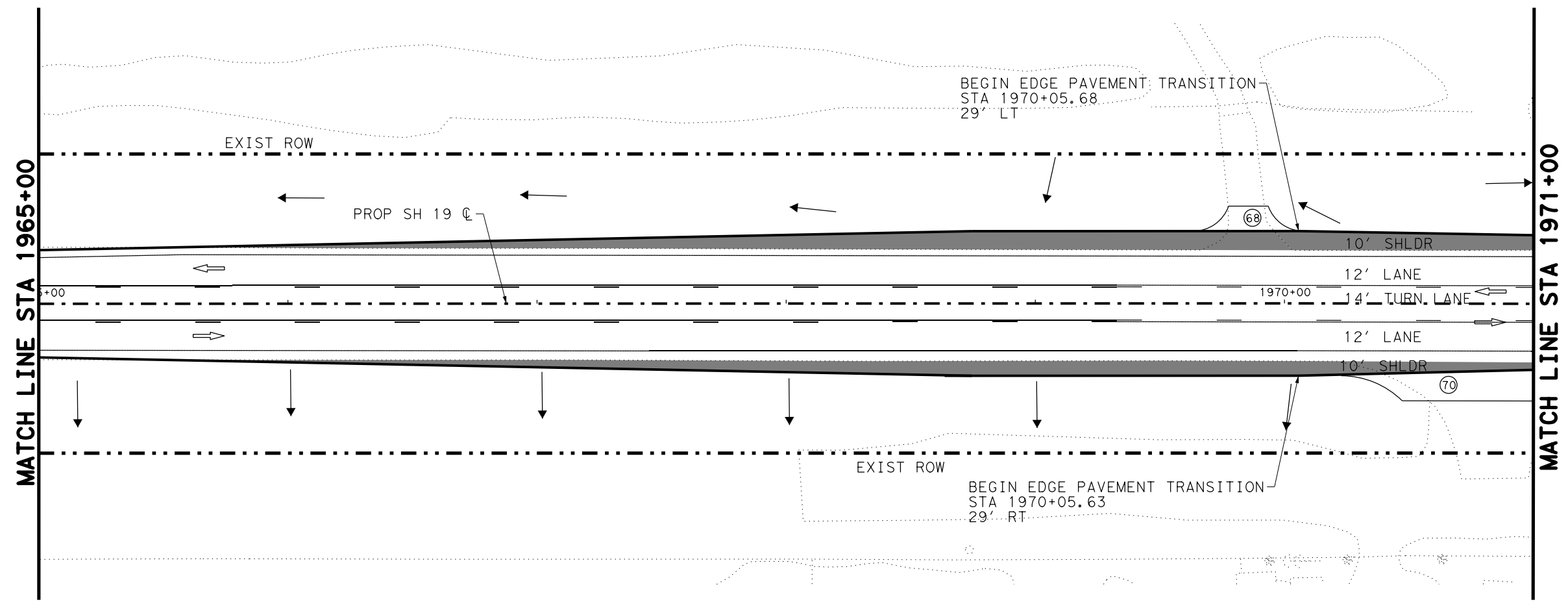
SHEET 67 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	132

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_68.dgn

MATCH LINE STA 1965+00

MATCH LINE STA 1971+00

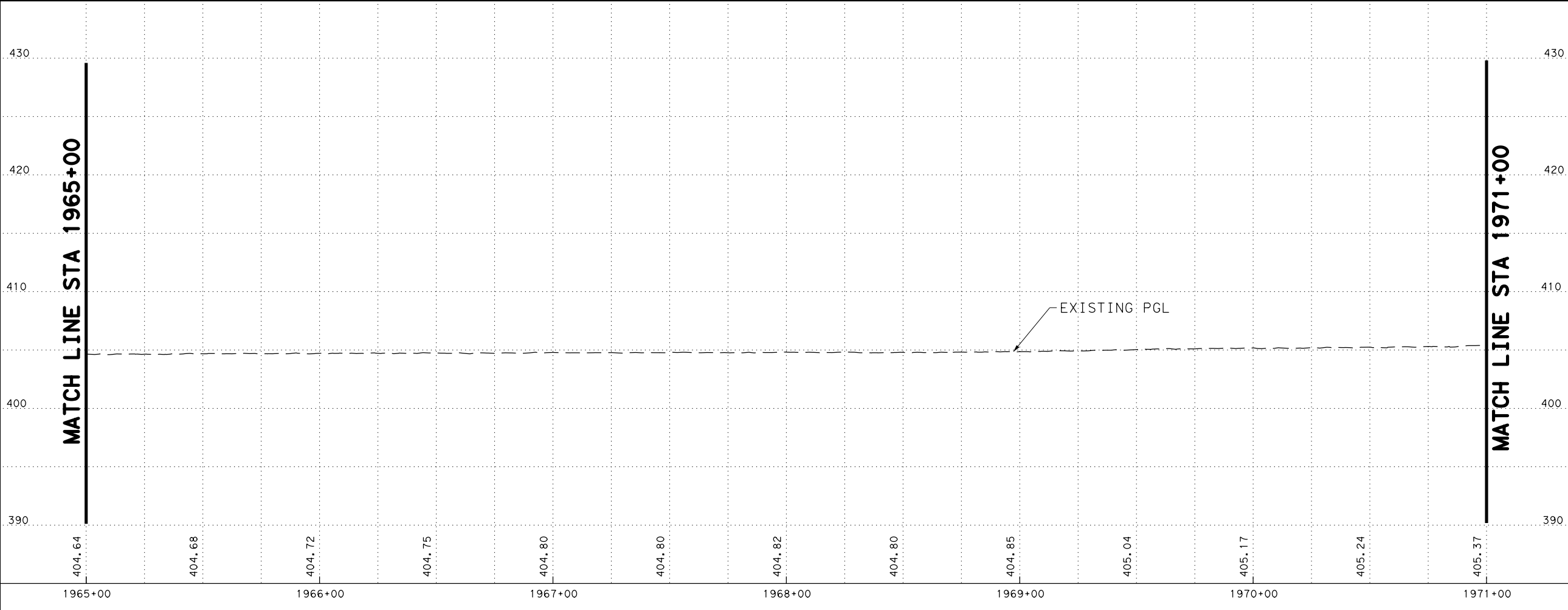


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1965+00

MATCH LINE STA 1971+00



Trevor L. Reed 06/10/2024

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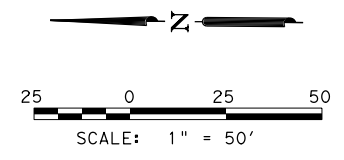
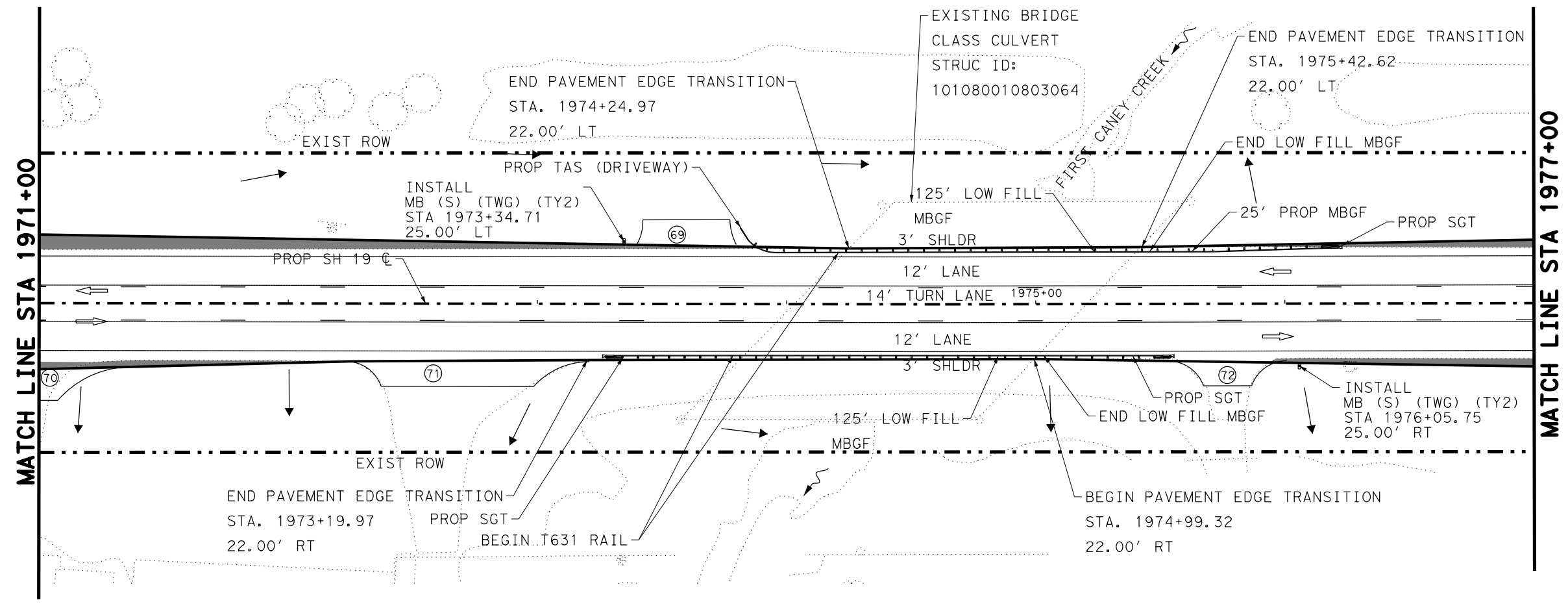
F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

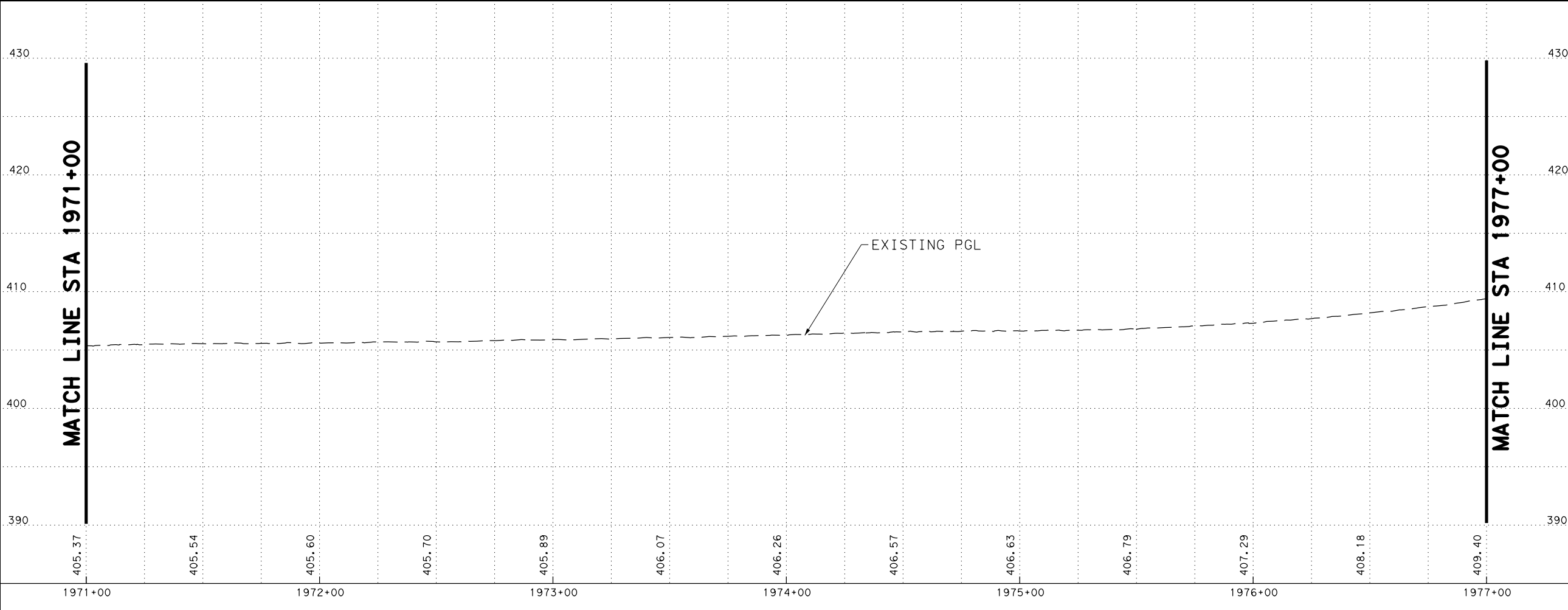
SHEET 68 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	133

DATE: 11-JUL-2024 13:50
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_69.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



Trevor L. Reed 07/31/2024

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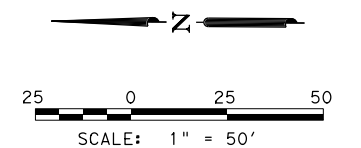
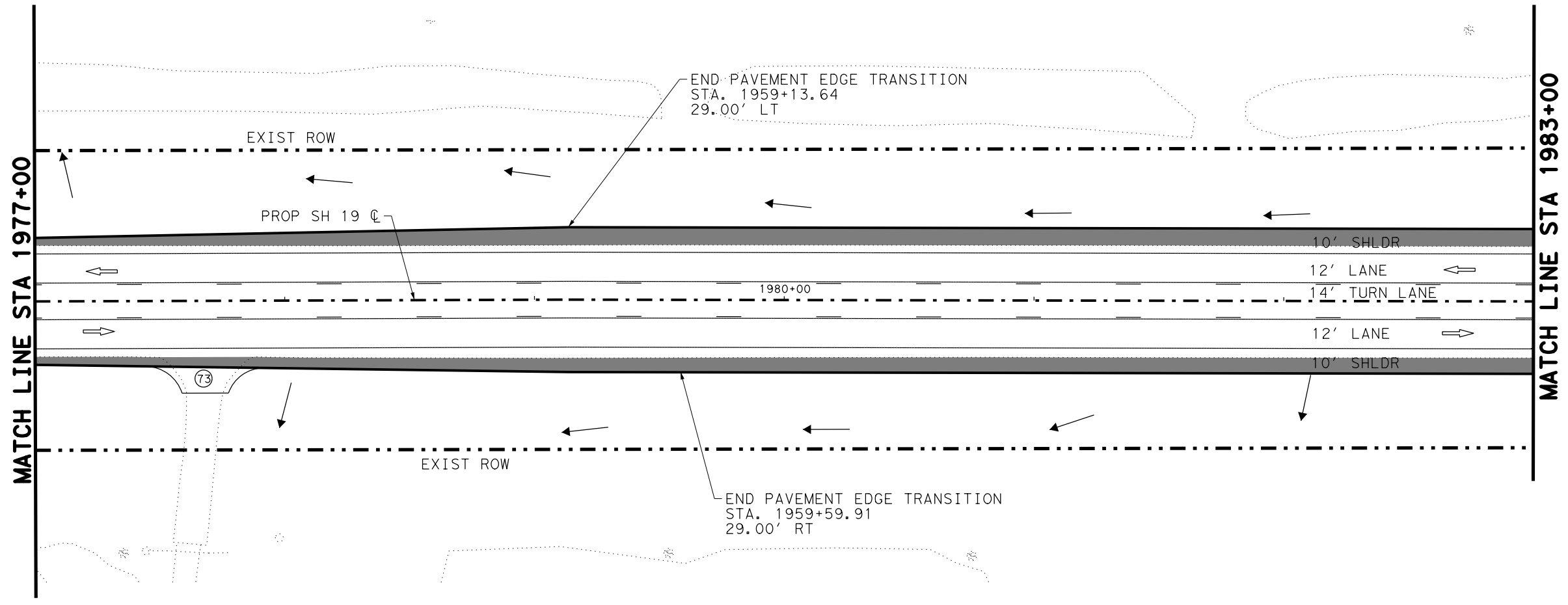


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 69 OF 79

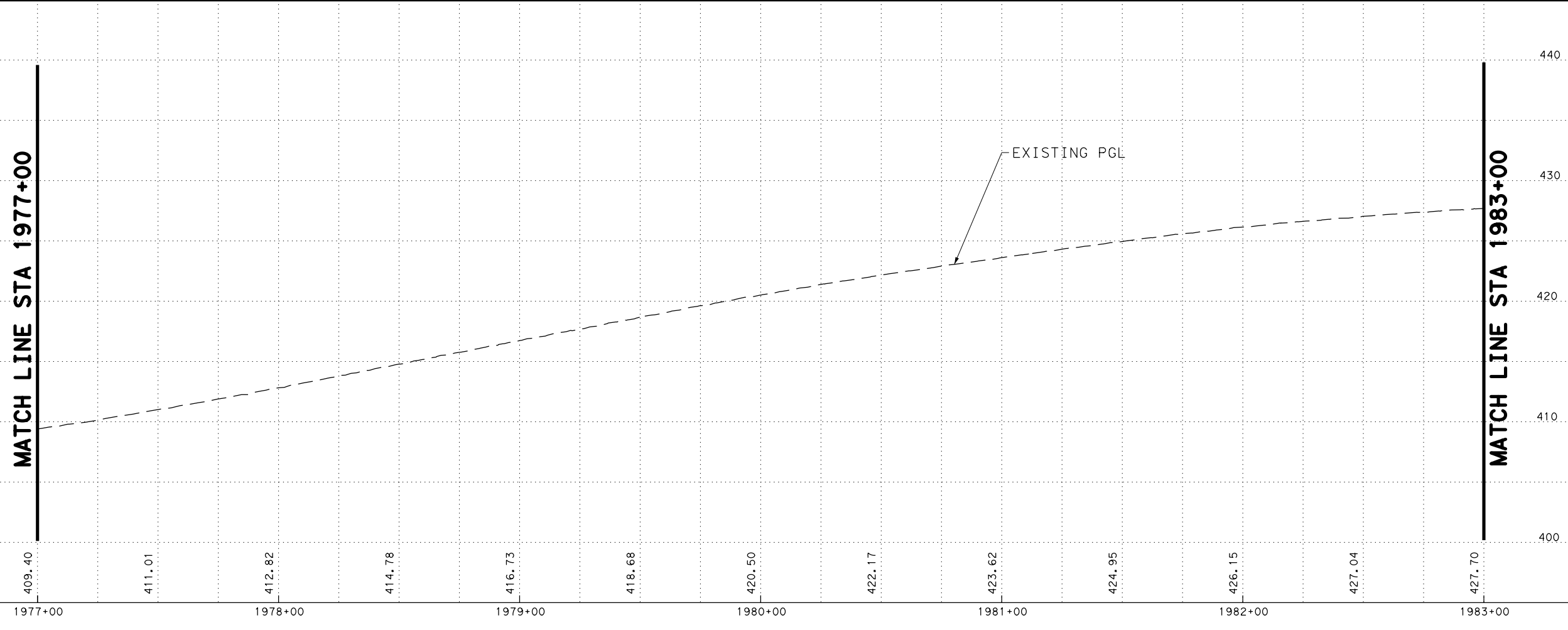
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	134

DATE: 10-JUN-2024 15:29
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_70.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



Trevor L. Reed 06/10/2024

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**SH 19
 PROPOSED
 PLAN AND PROFILE**

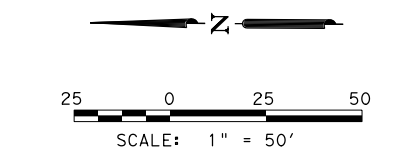
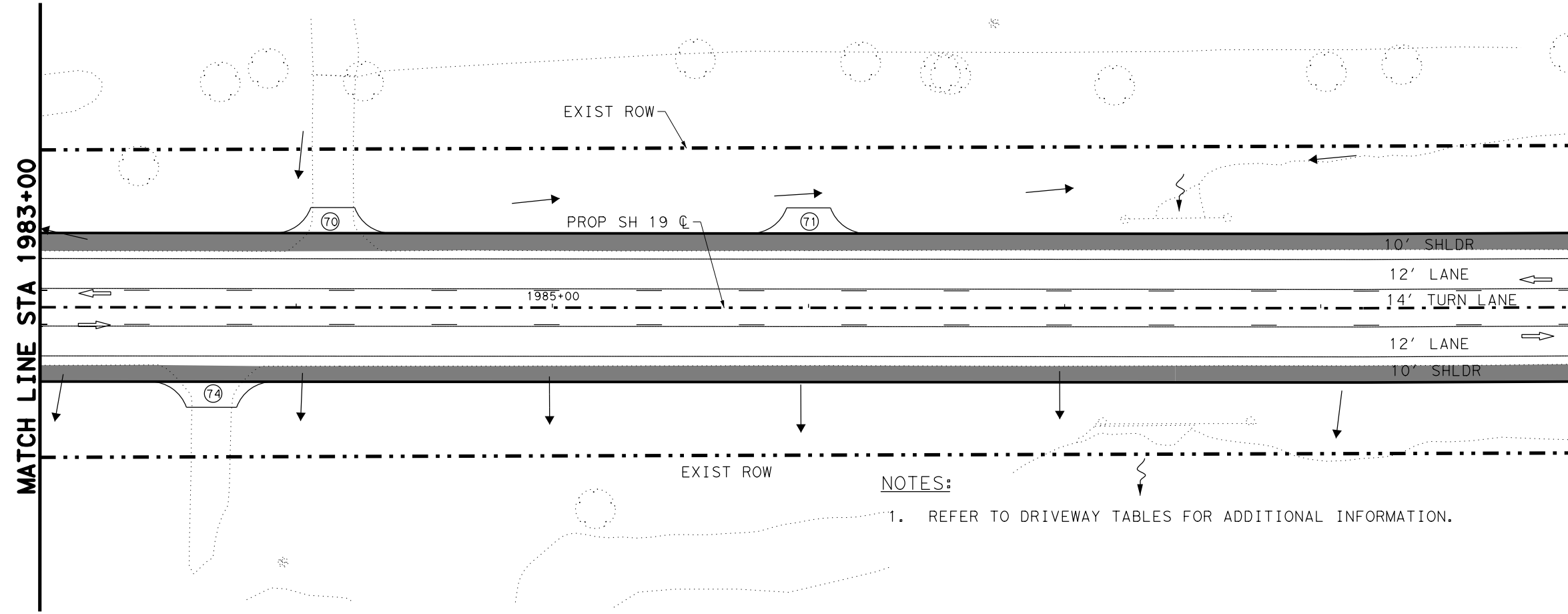
SHEET 70 OF 79

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	135

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\3. Roadway\SH19_TYLER_RDW_P&P_71.dgn

MATCH LINE STA 1983+00

MATCH LINE STA 1989+00



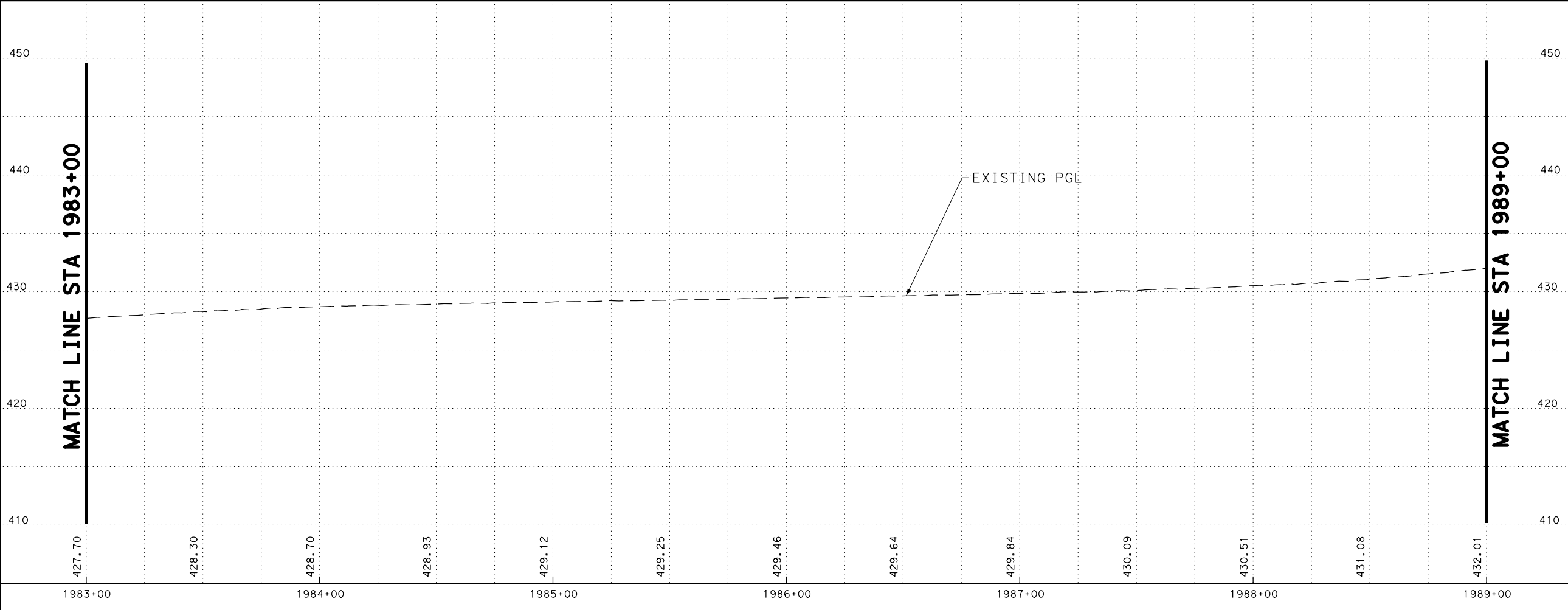
- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1983+00

MATCH LINE STA 1989+00



06/10/2024

VOLKERT

F-12679

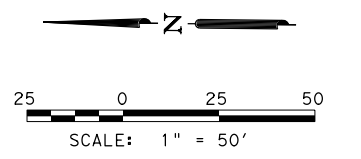


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 71 OF 79

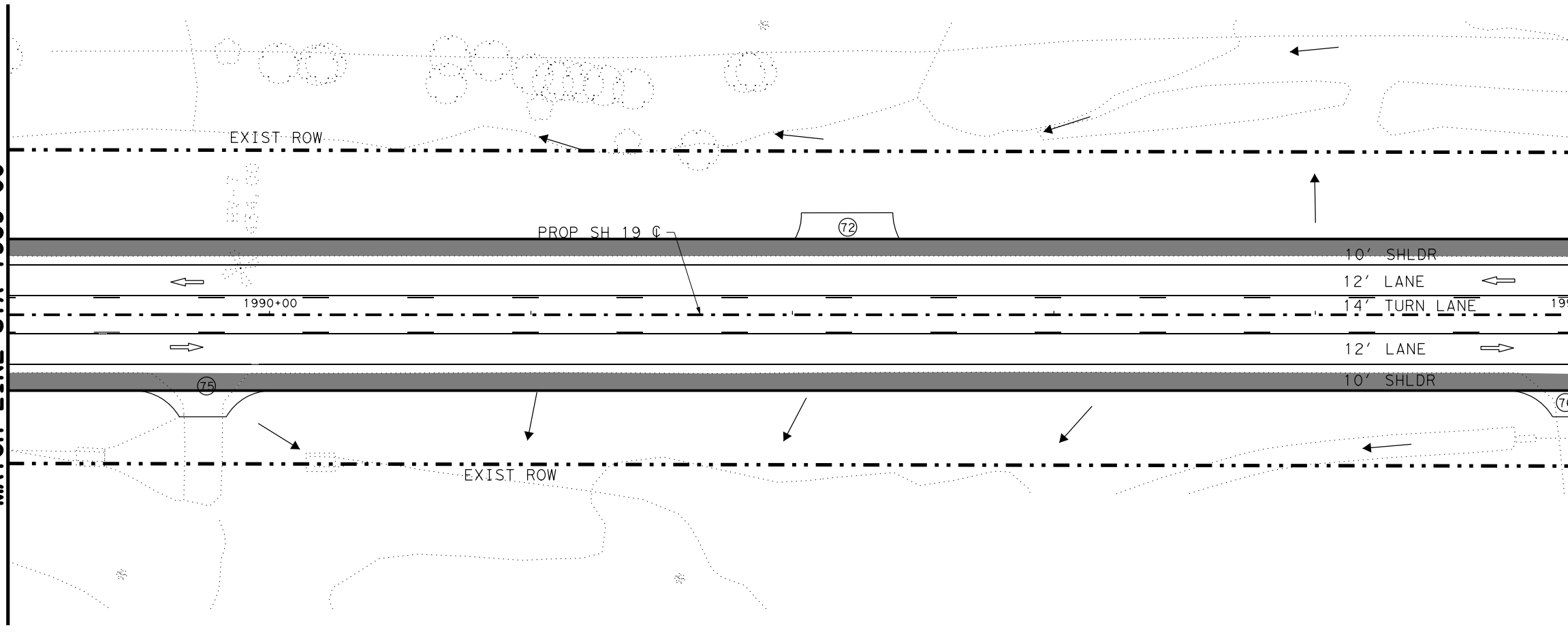
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	136

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_T2.dgn



MATCH LINE STA 1989+00

MATCH LINE STA 1995+00

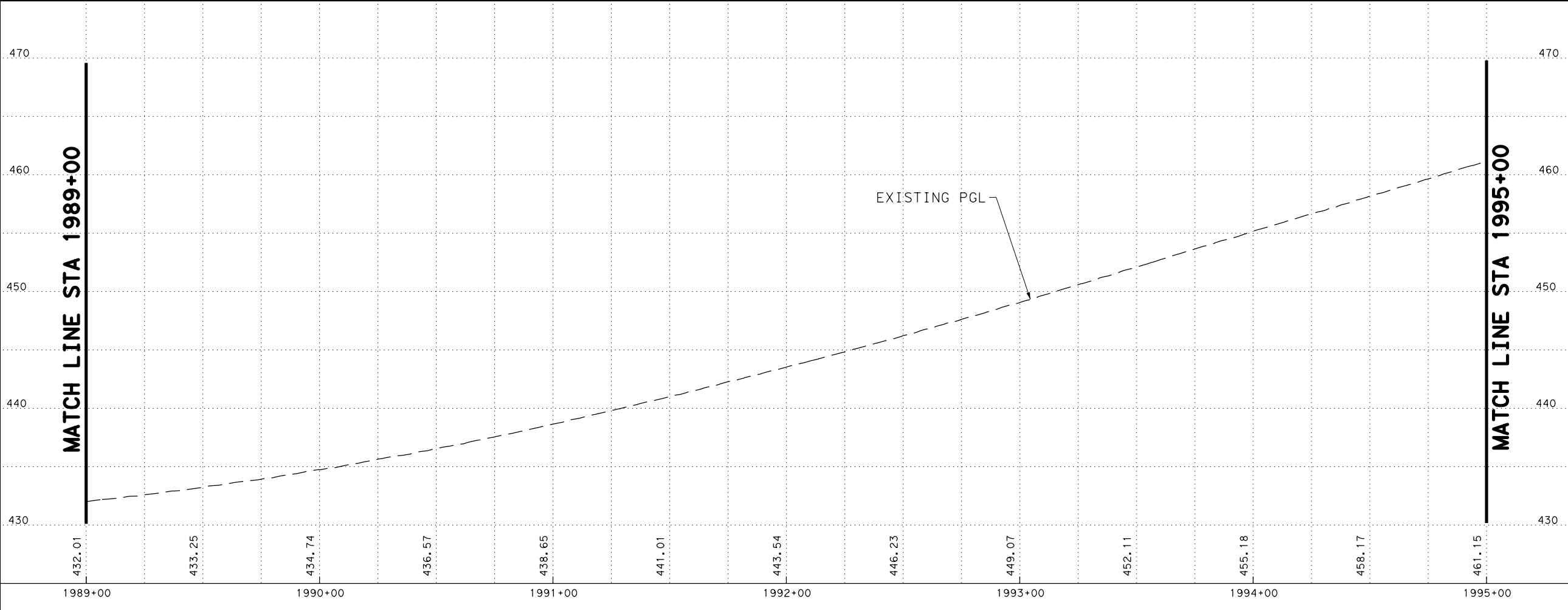


- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.

MATCH LINE STA 1989+00

MATCH LINE STA 1995+00



VOLKERT

F-12679

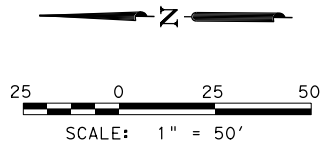
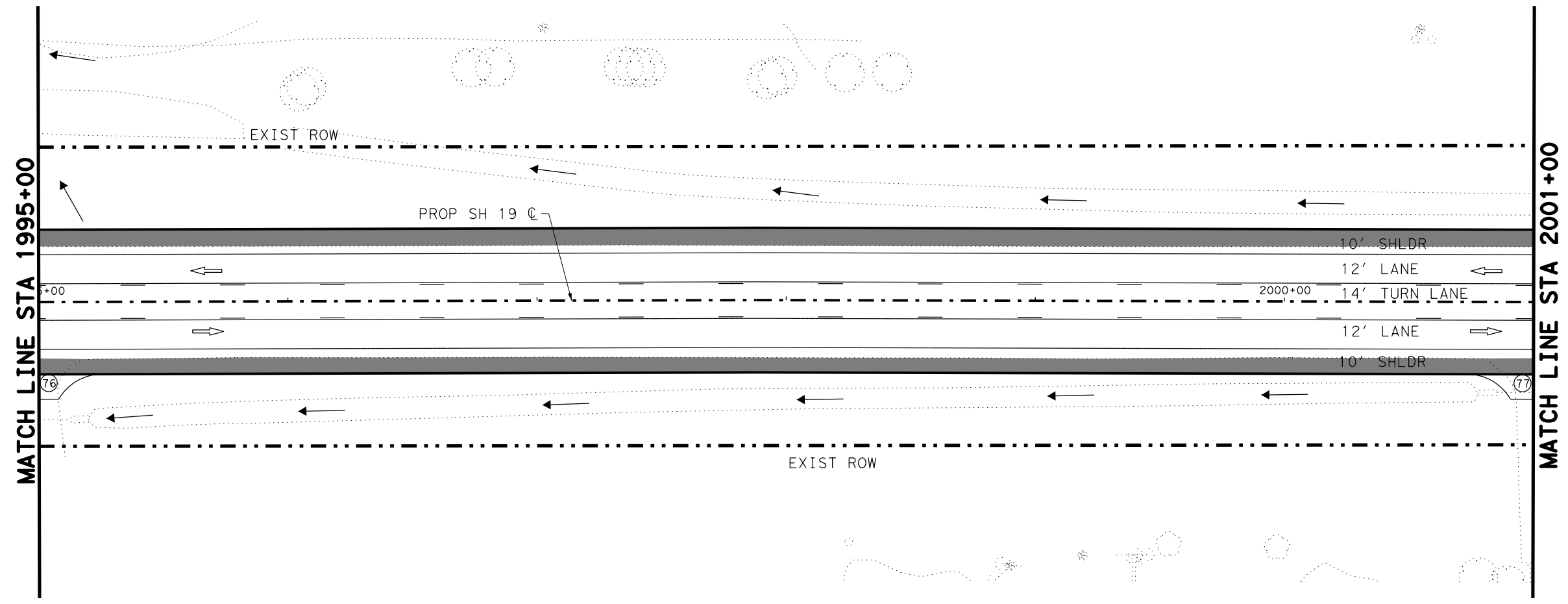


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 72 OF 79

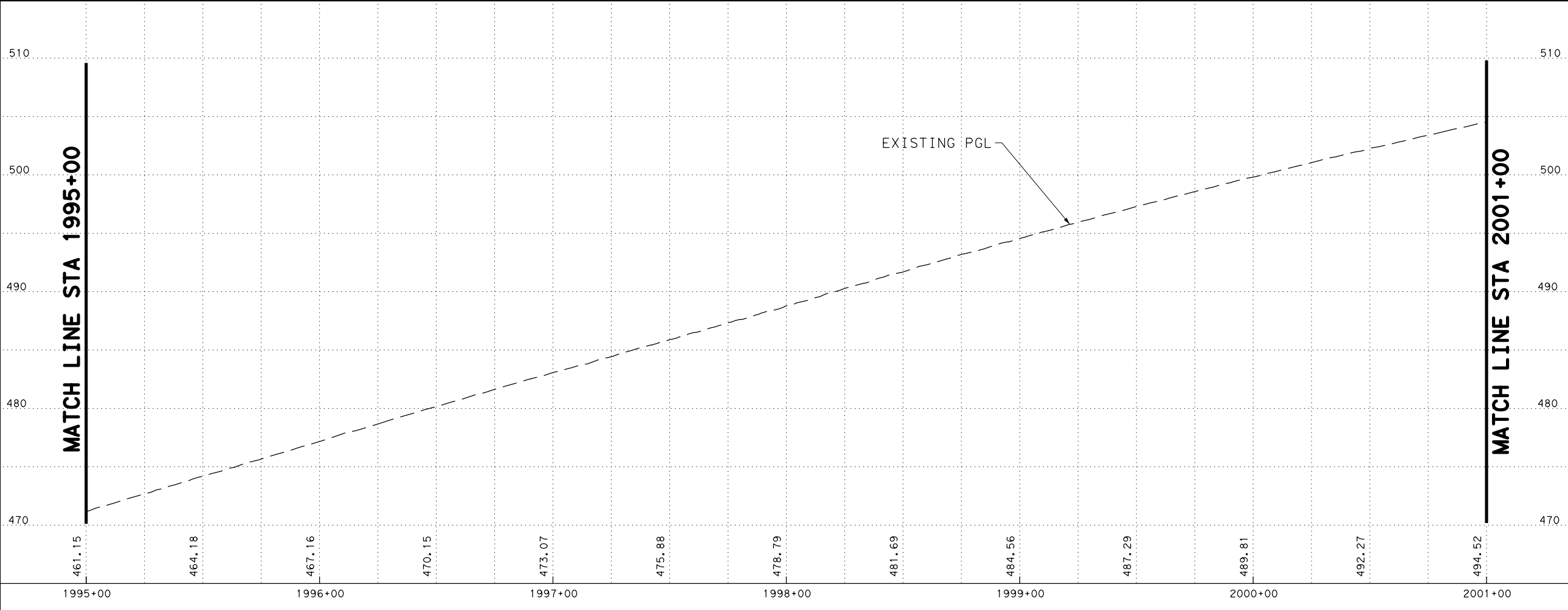
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	137

DATE: 10-JUN-2024 15:28
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_73.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



Trevor L. Reed 06/10/2024

VOLKERT

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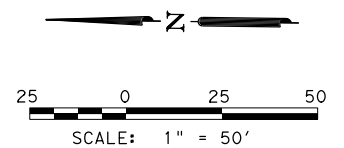
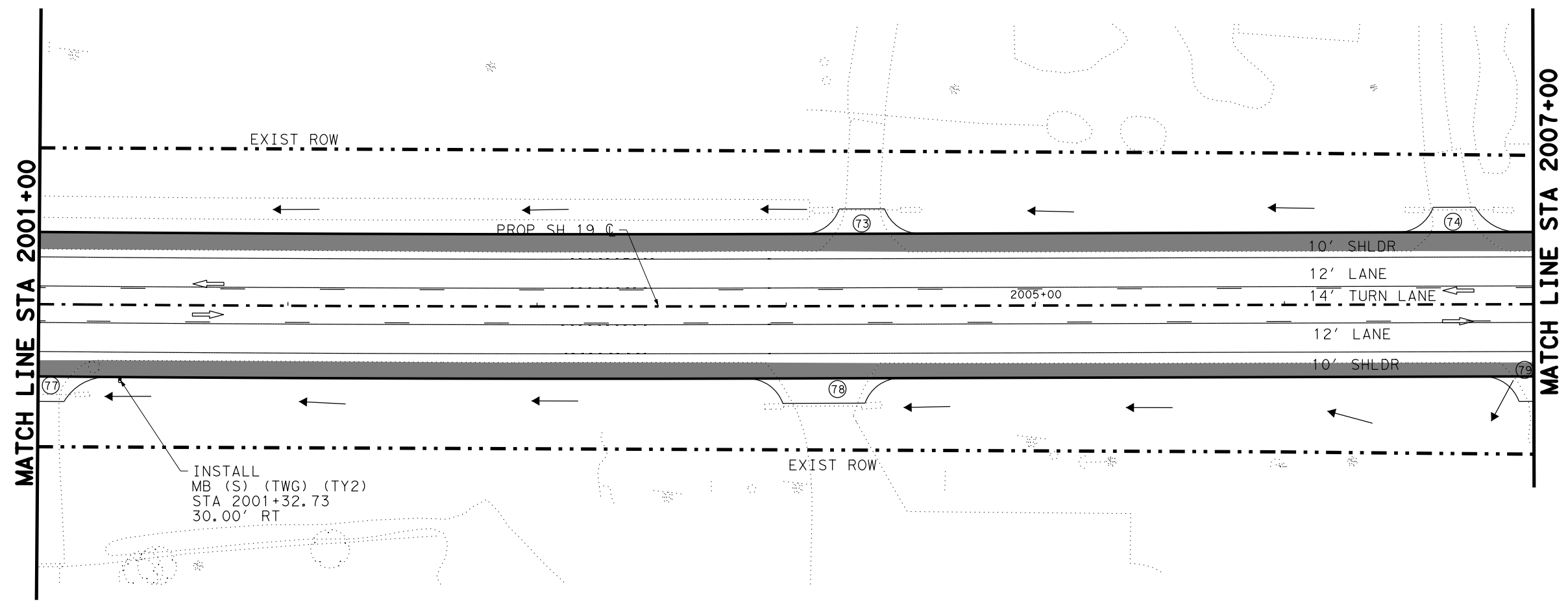


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 73 OF 79

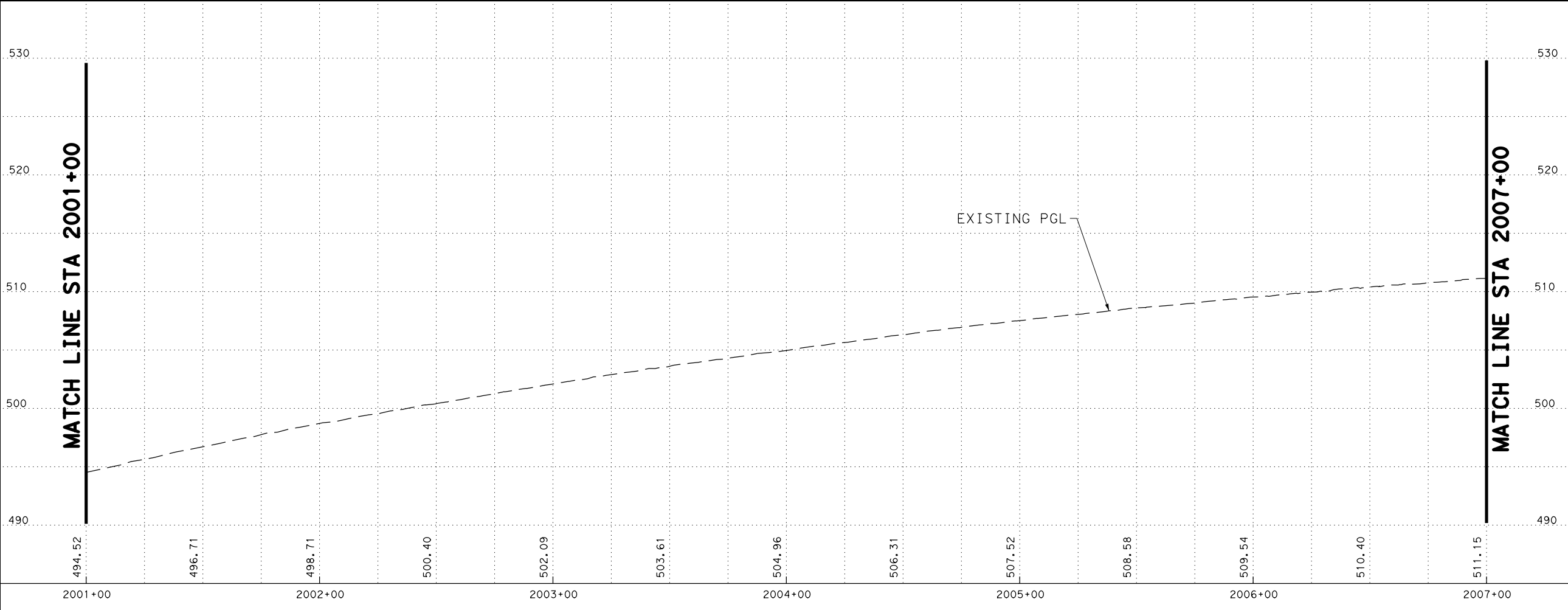
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	138

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_74.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



VOLKERT

F-12679

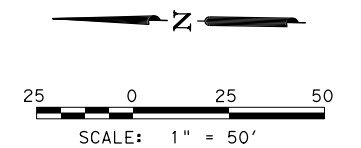
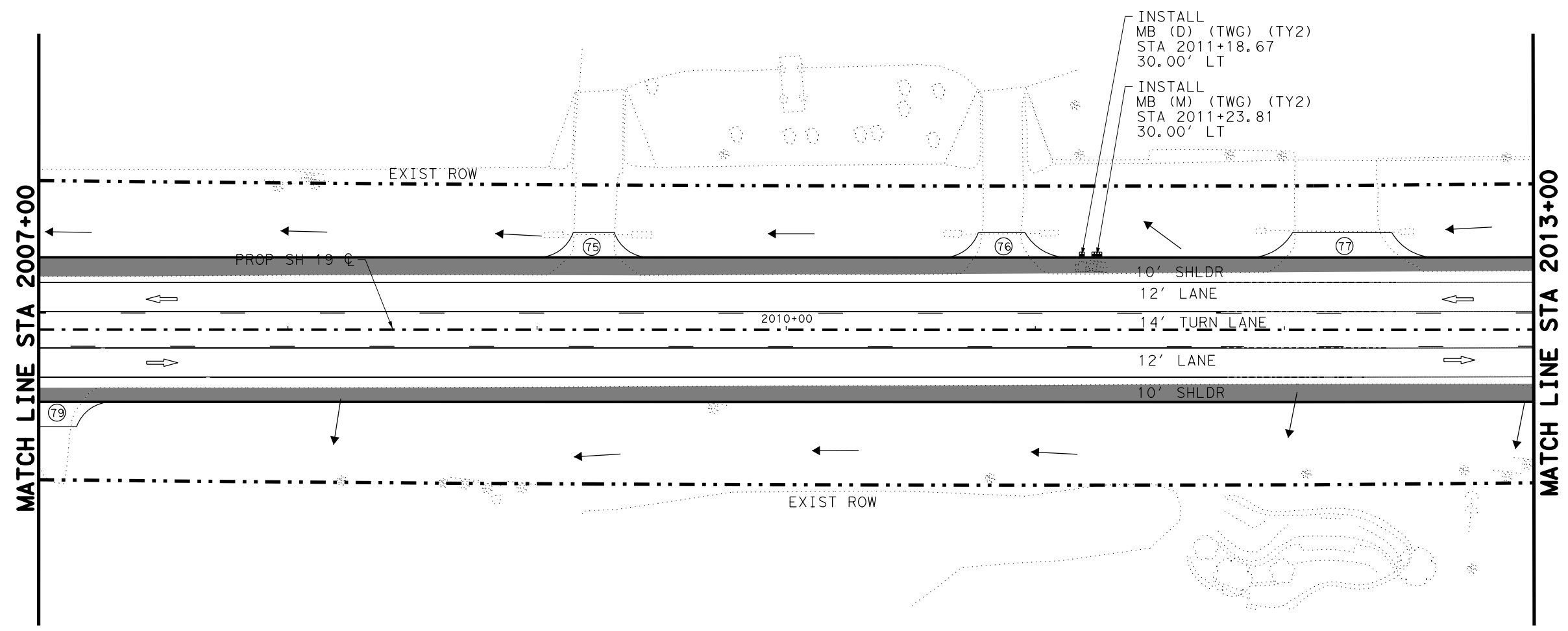


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 74 OF 79

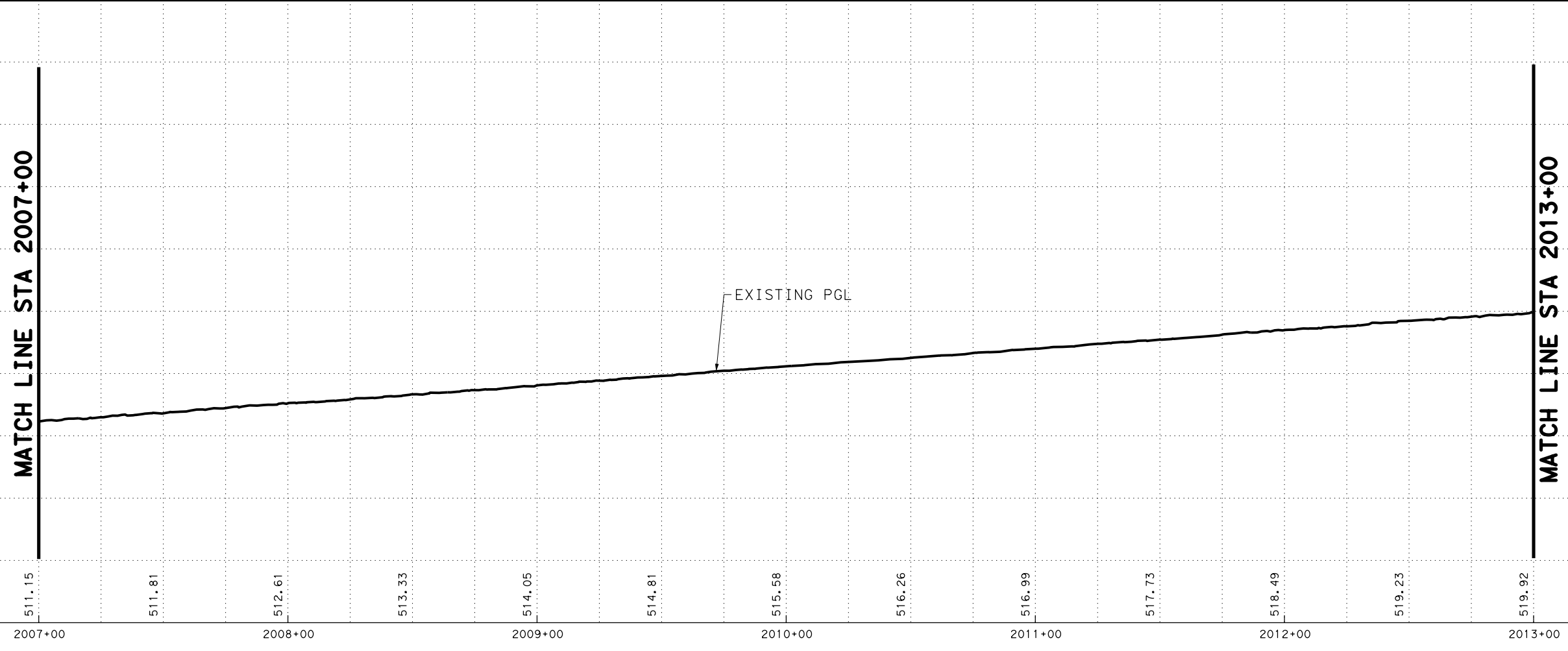
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	139

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_75.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



VOLKERT

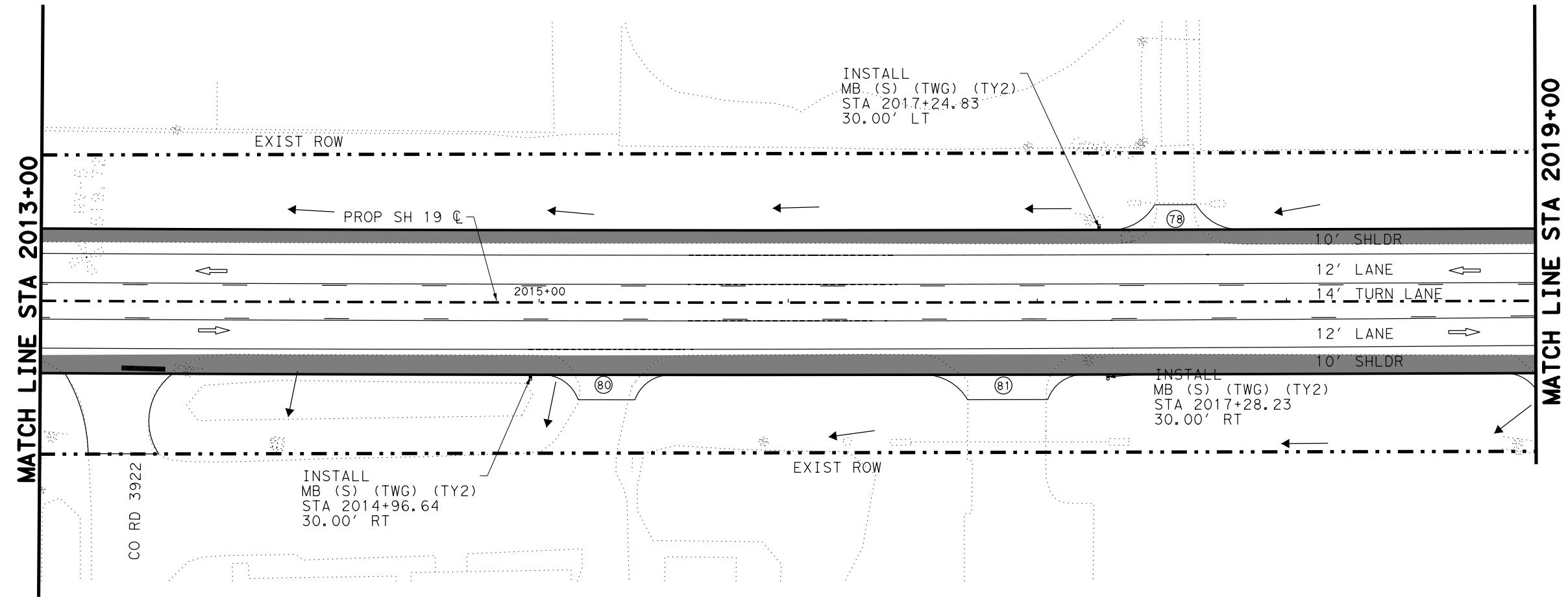
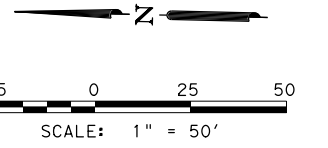
F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

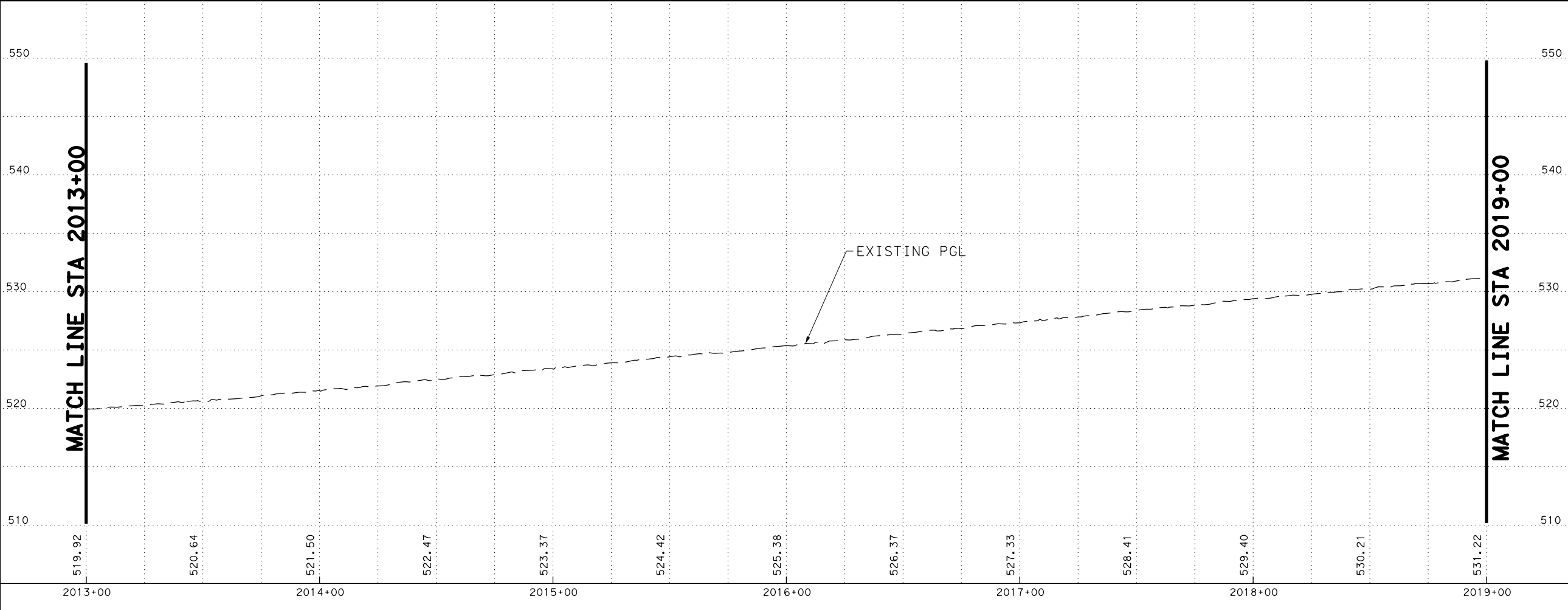
SHEET 75 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	140

DATE: 10-JUN-2024 15:28
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_76.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



Trevor L. Reed 06/10/2024

VOLKERT

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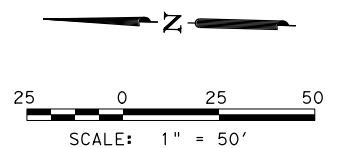
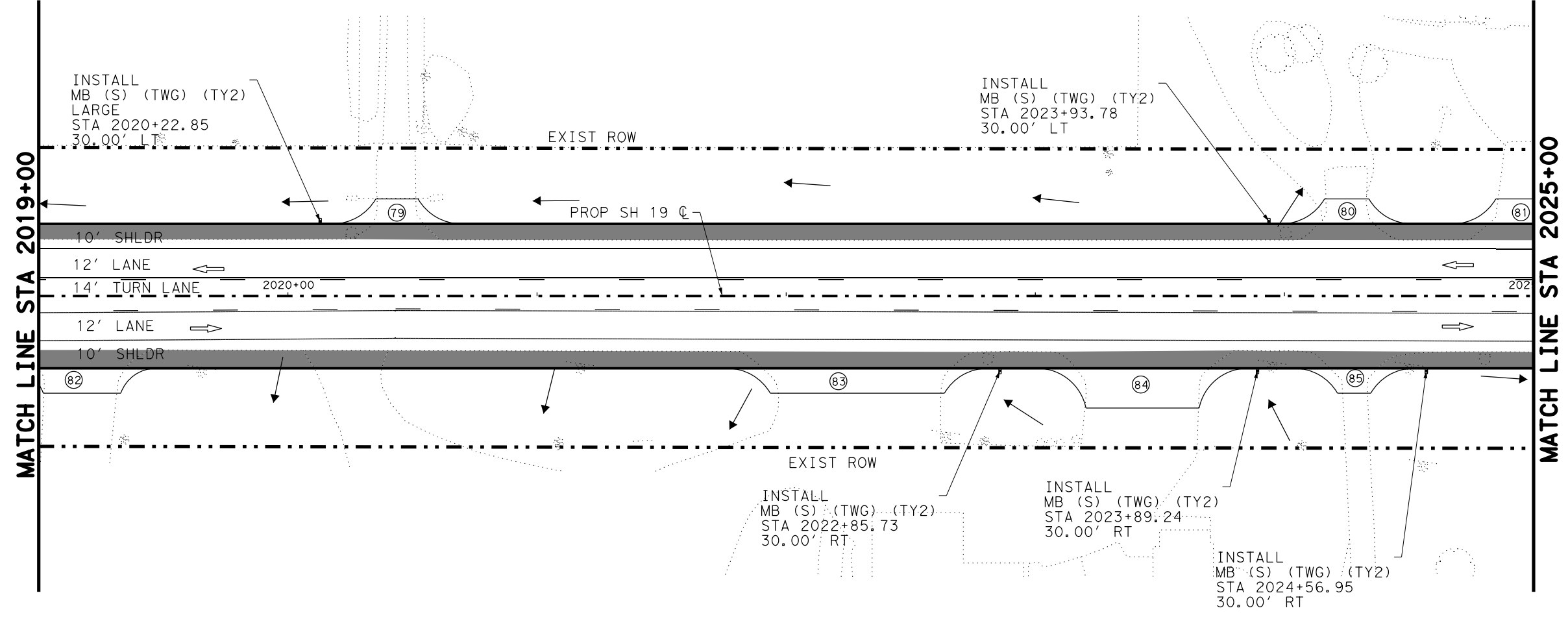


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 76 OF 79

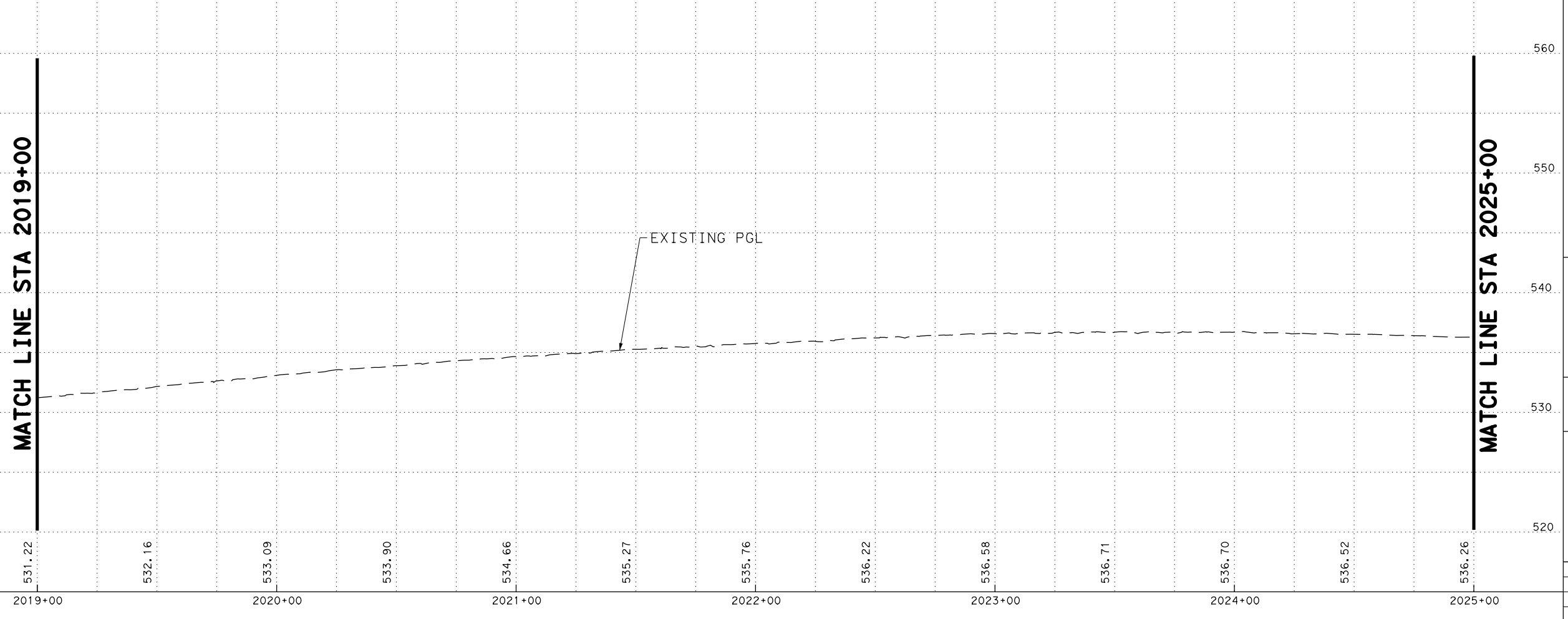
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	141

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_77.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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F-12679

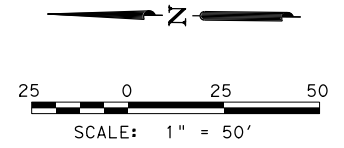
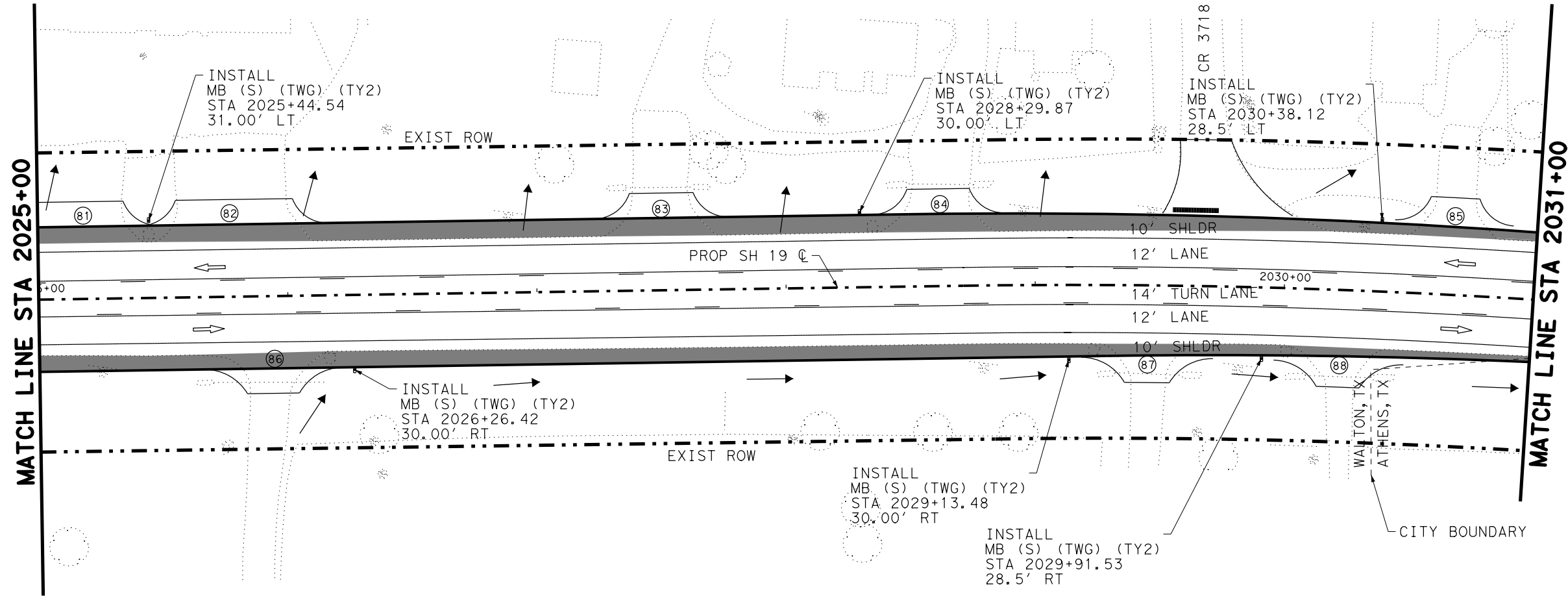


**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 77 OF 79

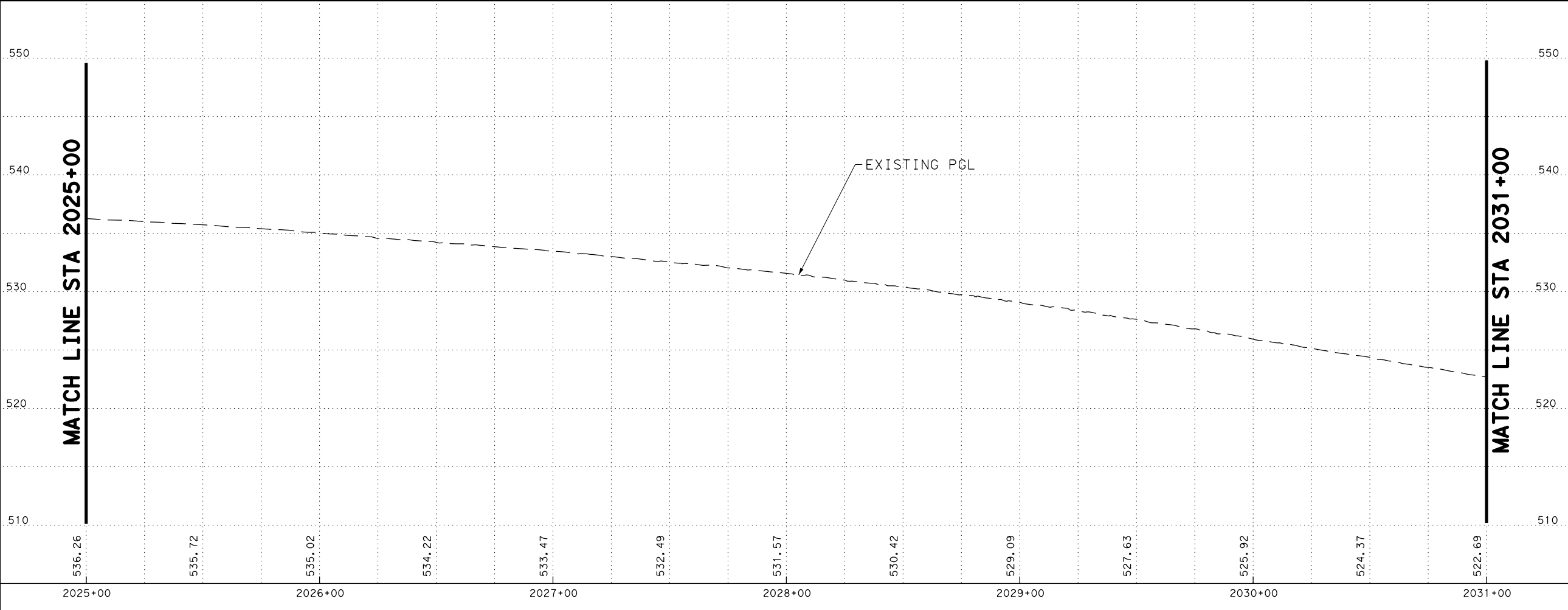
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	142

DATE: 10-JUN-2024 15:26
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_78.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

NOTES:
 1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



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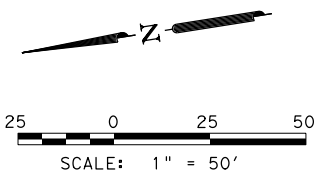
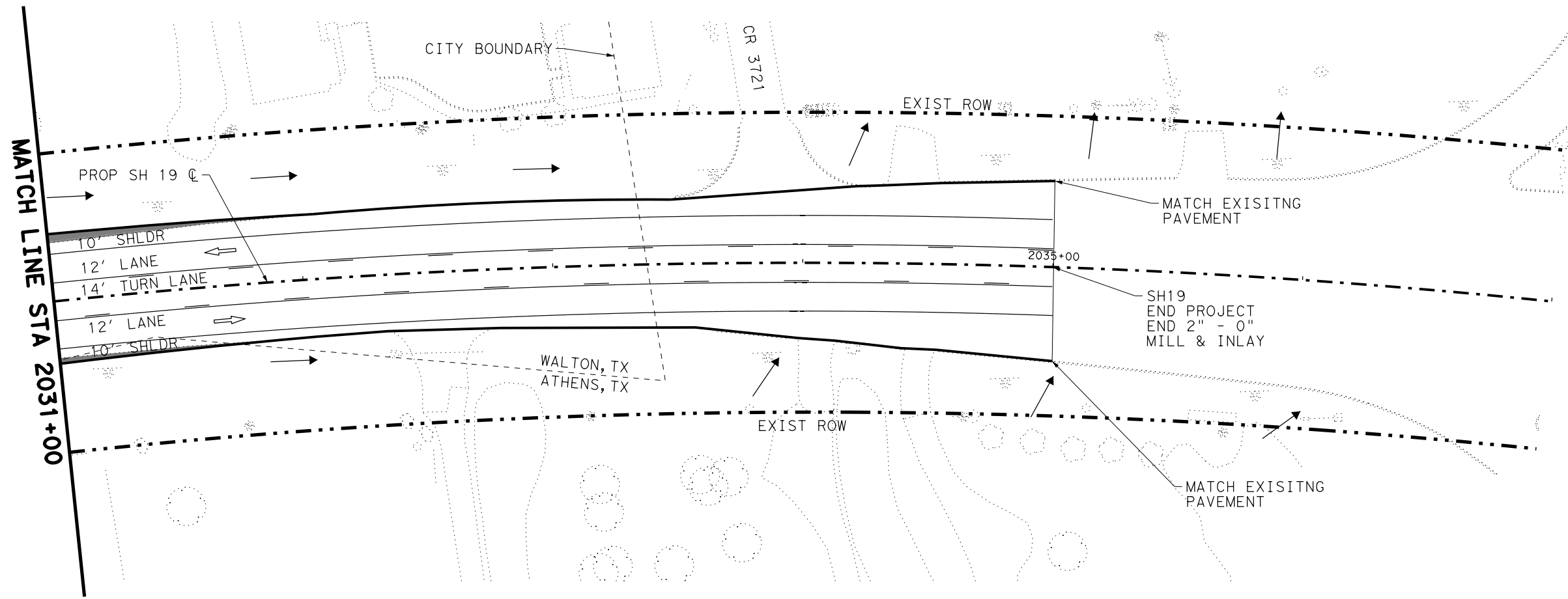
F-12679



**SH 19
 PROPOSED
 PLAN AND PROFILE**

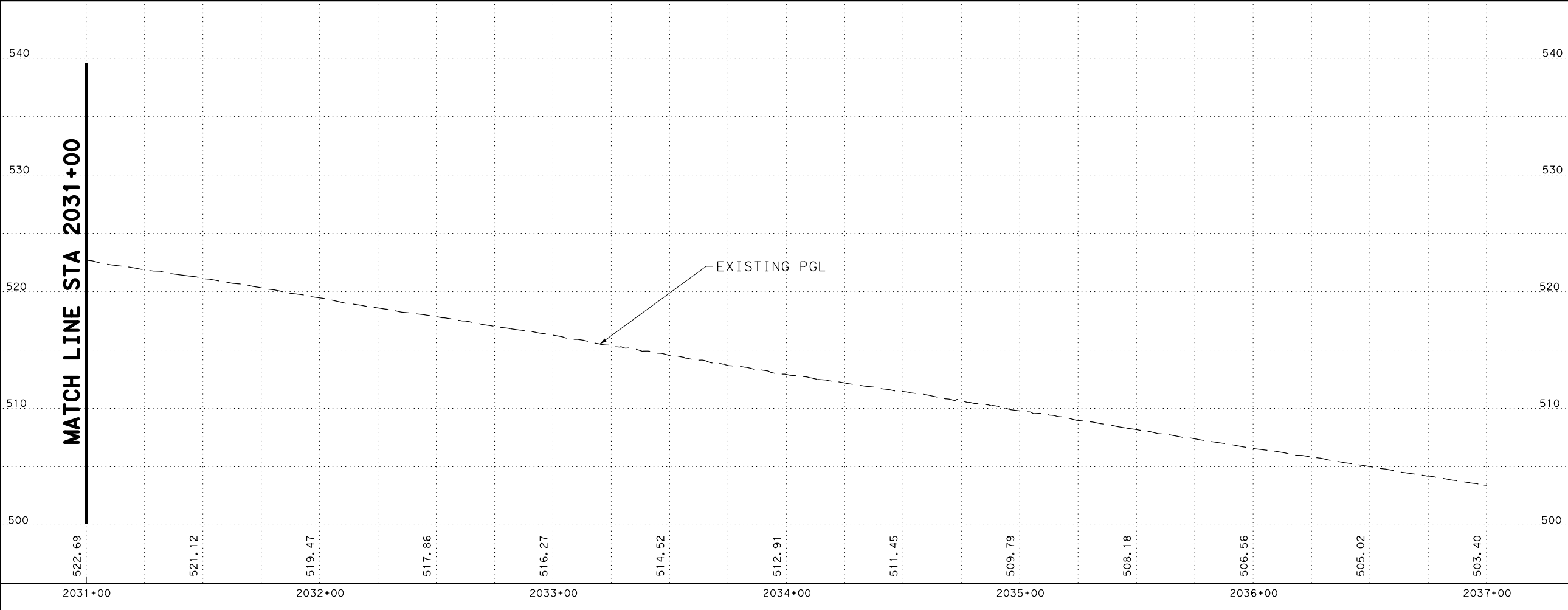
SHEET 78 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	143

DATE: 10-JUN-2024 15:27
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan Set\3. Roadway\SH19_TYLER_RDW_P&P_79.dgn



- LEGEND**
- EXISTING LANE
 - PROPOSED LANE
 - PROPOSED PAVEMENT
 - CROSS-CULVERT NUMBER
 - DRIVEWAY NUMBER
 - OUTFALL DIRECTION
 - FLOW DIRECTION

- NOTES:**
1. REFER TO DRIVEWAY TABLES FOR ADDITIONAL INFORMATION.



Trevor L. Reed 06/10/2024

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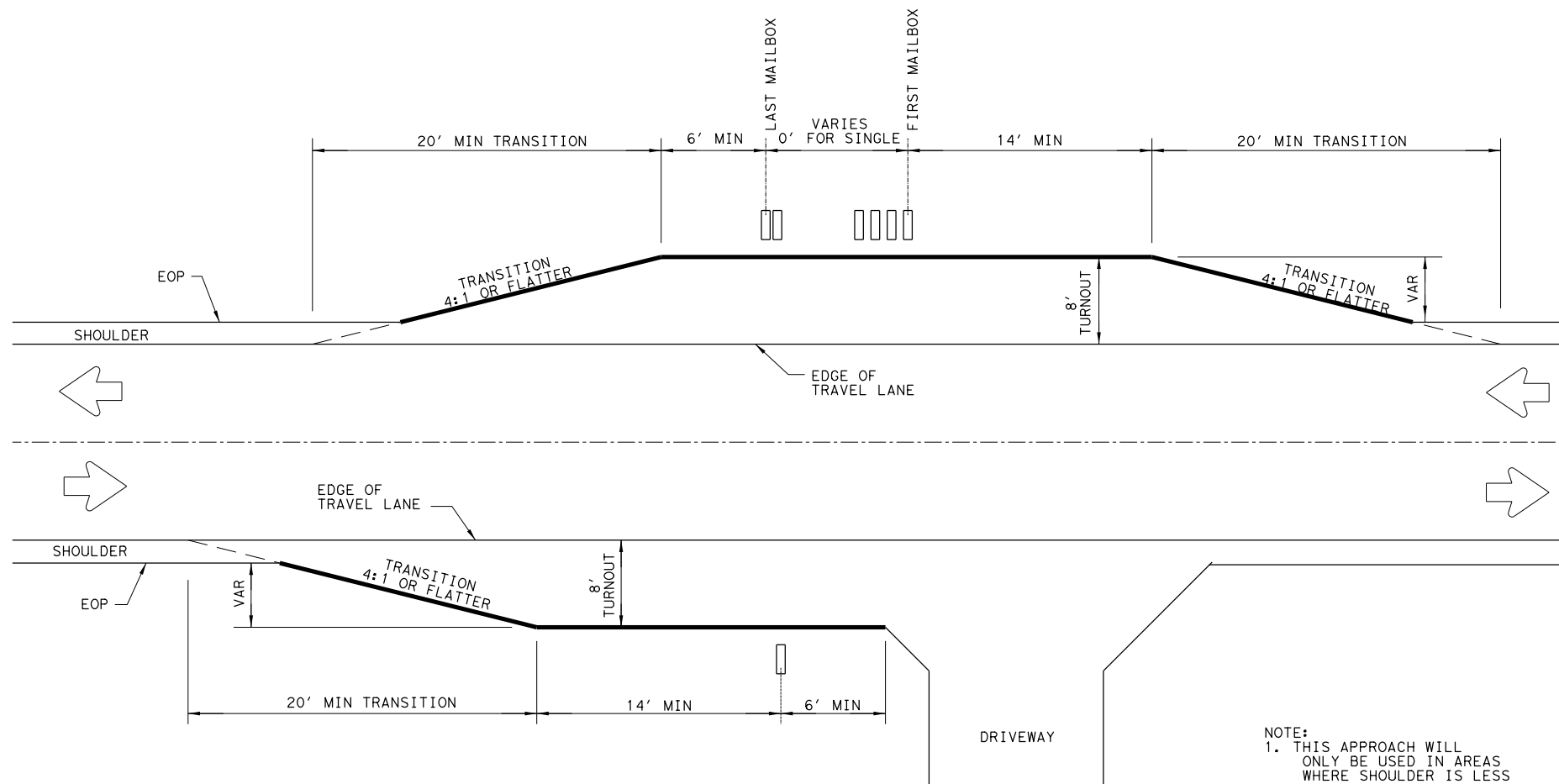
F-12679



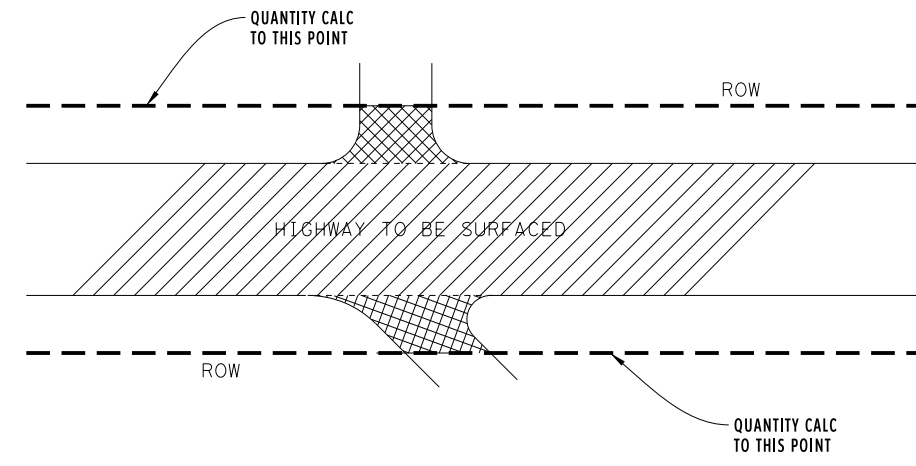
**SH 19
 PROPOSED
 PLAN AND PROFILE**

SHEET 79 OF 79			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	144

DATE: 04-JUN-2024 14:09
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\3. Roadway\SH19_TYLER_MAIL_BOX_TURNOUT.dgn

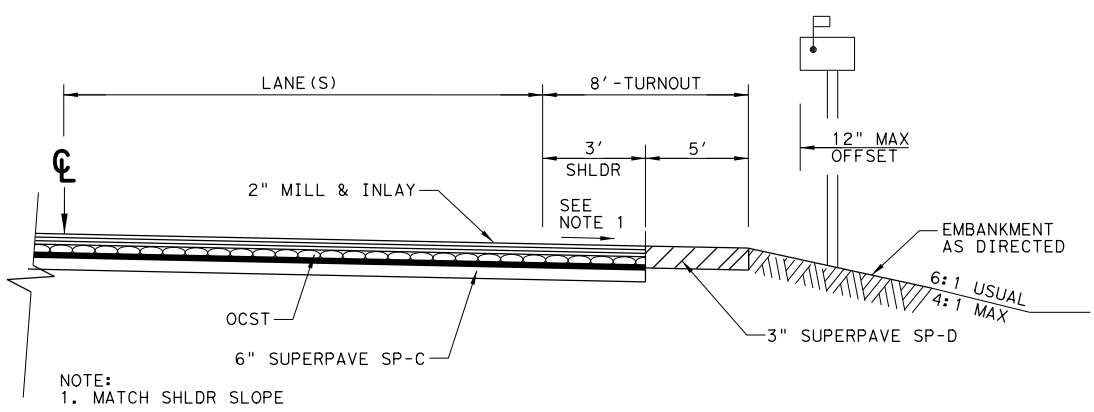


TYPICAL MAILBOX TURNOUT
 NTS.

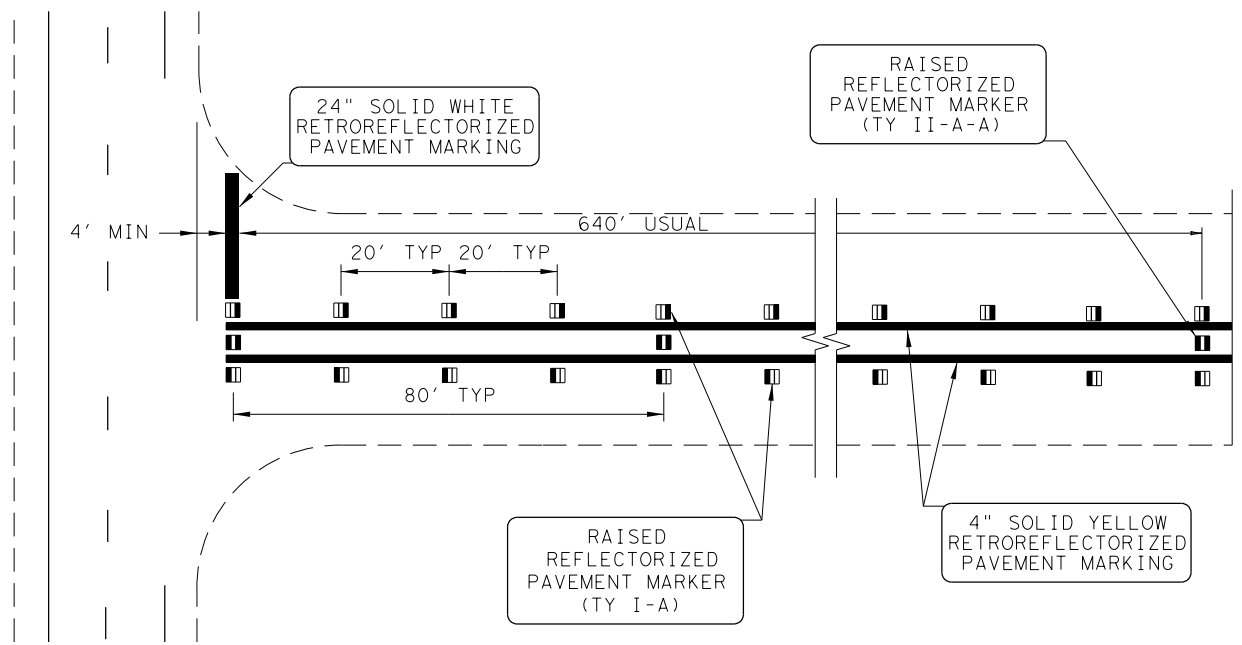


TYPICAL SURFACING CUT-OFF POINT AT COUNTY ROADS

NOTE:
 1. THIS APPROACH WILL ONLY BE USED IN AREAS WHERE SHOULDER IS LESS THAN 10 FEET.



TYPICAL SECTION
 NTS.



PAVEMENT MARKING TREATMENT AT STATE MAINTAINED HIGHWAY INTERSECTIONS
 NTS REVISED: 05/2018



06/10/2024

VOLKERT

F-12679

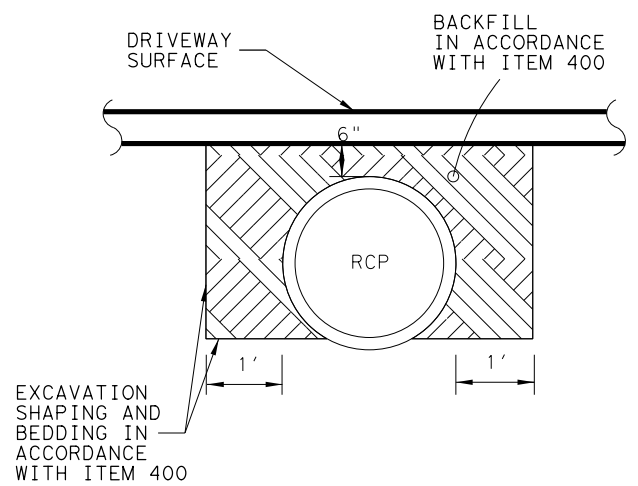


SH 19 MISCELLANEOUS DETAILS

SHEET 1 OF 6

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	145

DATE: 05-JUN-2024 16:20
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\3. Roadway\SH19_TYLER_INTERSECTION_DETAILS.dgn

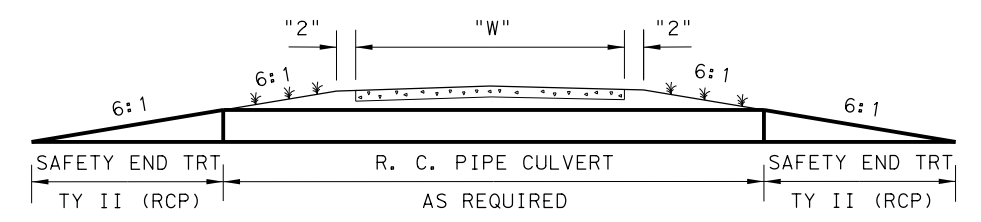


BACKFILL DETAIL FOR DRIVEWAYS & COUNTY ROADS
N. T. S.

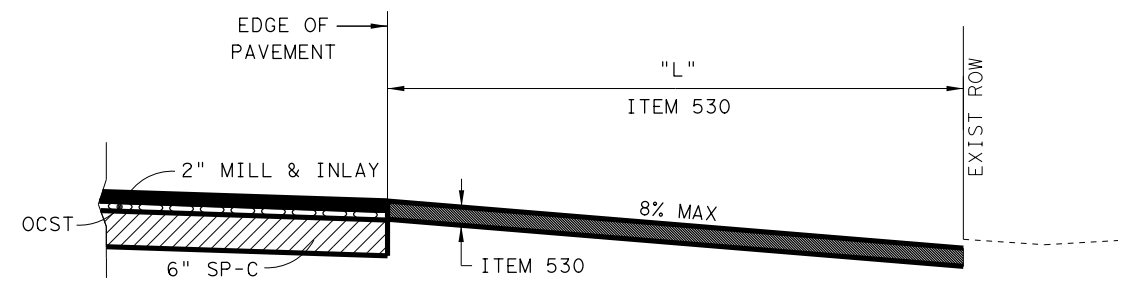
R. C. PIPE DETAIL

NOTE: EXCAVATION, SHAPING, BEDDING, AND BACKFILL ARE SUBSIDIARY TO ITEM 464. FLOWABLE BACKFILL WILL BE PAID FOR AS PROVIDED IN ITEM 401, "FLOWABLE BACKFILL".

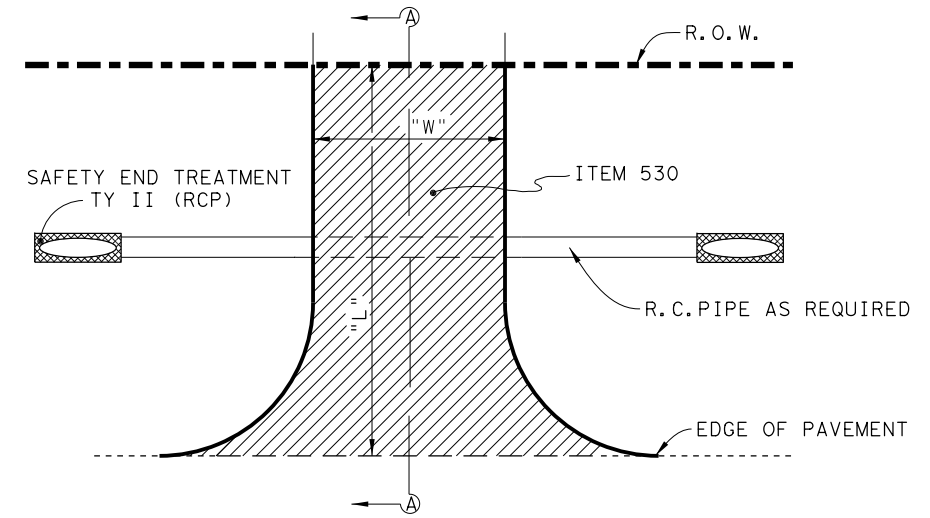
ANY DEPTH UNDER 2" IS SUBSIDIARY OF ITEM 530.



EXIST INTERSECTION TYPICAL SECTION



EXIST SECTION A-A
NTS



INTERSECTION DETAILS ASPHALT INTERSECTION
NTS

NOTE: 1. SEE SUMMARY OF DRIVEWAYS & INTERSECTIONS TABLE FOR "L" & "W" DIMENSION.
2. DETAIL FOR ALL INTERSECTIONS (NON WIDENED & WIDENED SIDE)



06/10/2024

VOLKERT

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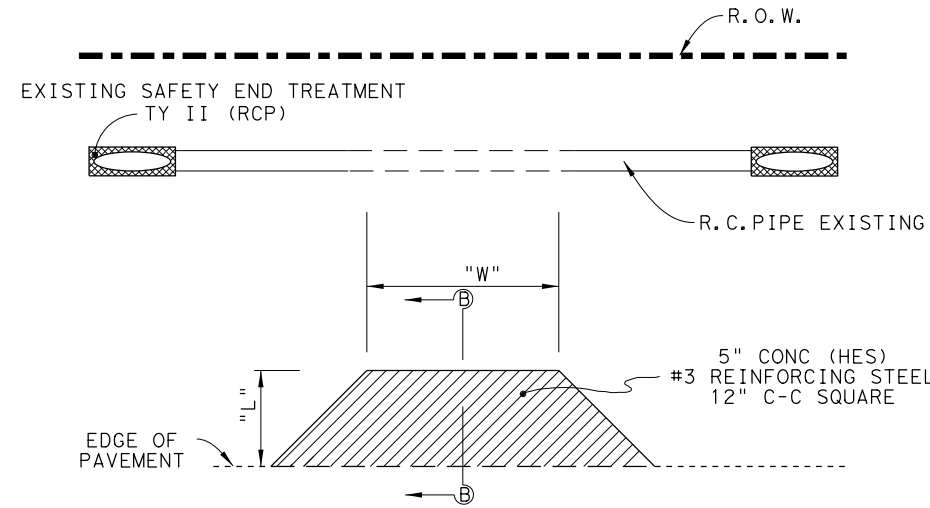


SH 19 MISCELLANEOUS DETAILS

SHEET 2 OF 6

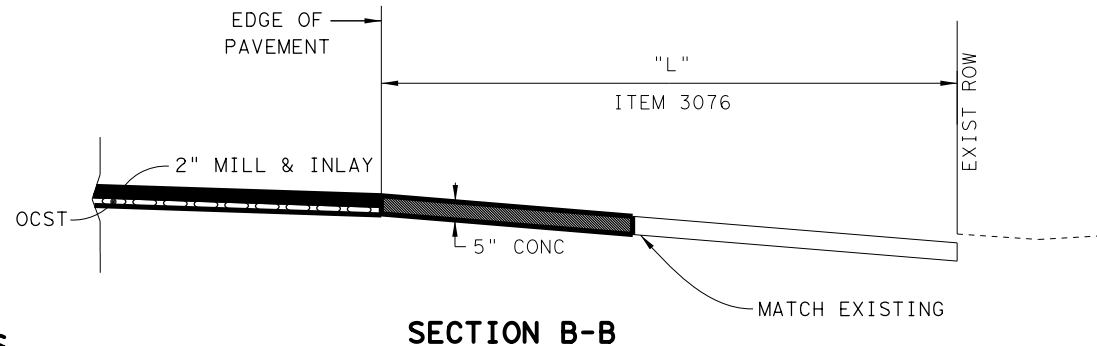
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	146

DATE: 05-JUL-2024 13:50
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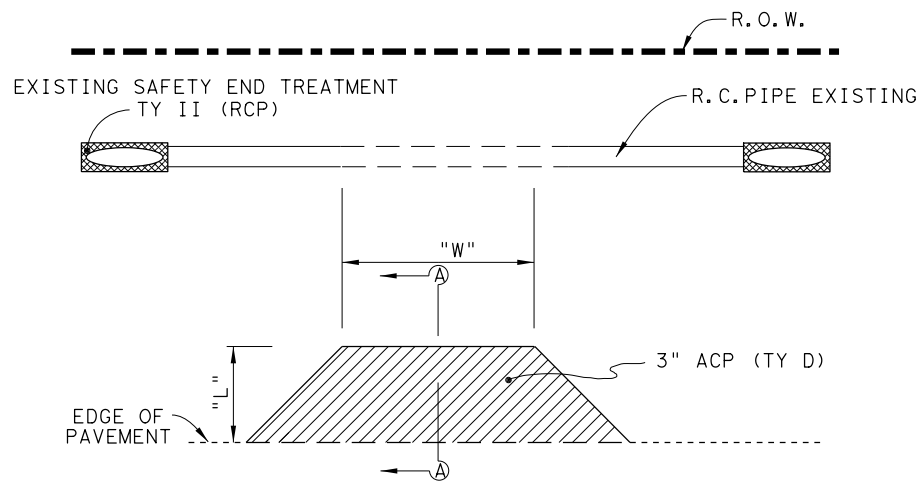


- NOTE:
1. SEE SUMMARY OF DRIVEWAYS & INTERSECTIONS TABLE FOR "L" & "W" DIMENSION
 2. DETAIL FOR DRIVEWAYS ON NON-WIDENED SIDE ONLY

**DRIVEWAY DETAILS
CONCRETE DRIVEWAYS**
NTS

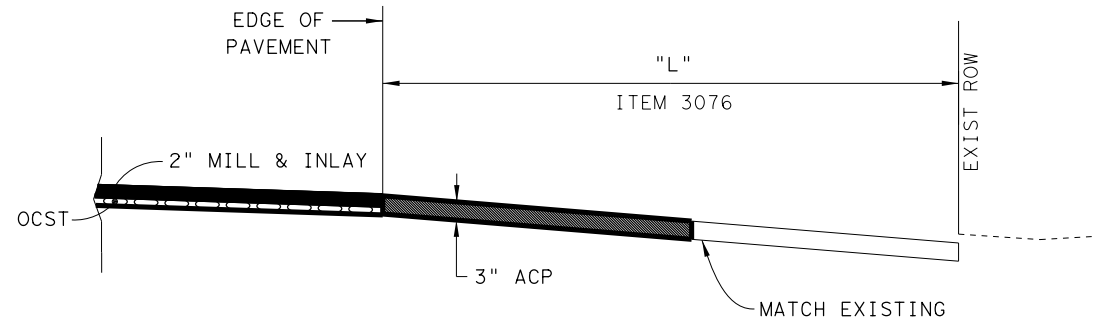


SECTION B-B



- NOTE:
1. SEE SUMMARY OF DRIVEWAYS & INTERSECTIONS TABLE FOR "L" & "W" DIMENSION
 2. DETAIL FOR DRIVEWAYS ON NON-WIDENED SIDE ONLY

**DRIVEWAY DETAILS
ASPHALT DRIVEWAYS**
NTS



SECTION A-A



08/01/2024

VOLKERT

F-12679

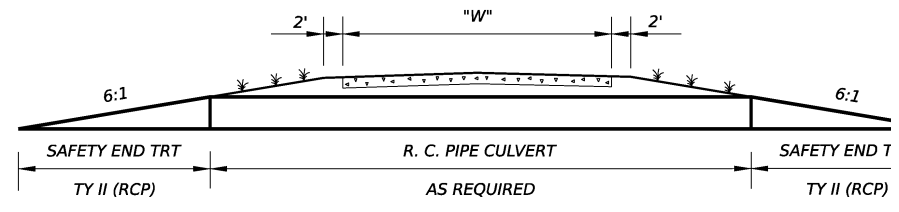


**SH 19
MISCELLANEOUS
DETAILS**

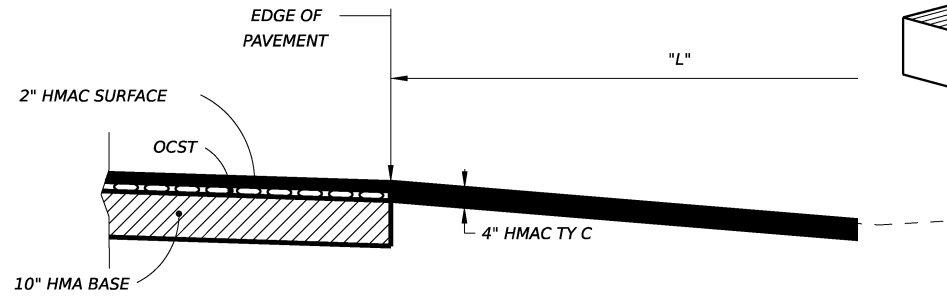
SHEET 3 OF 6

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	147

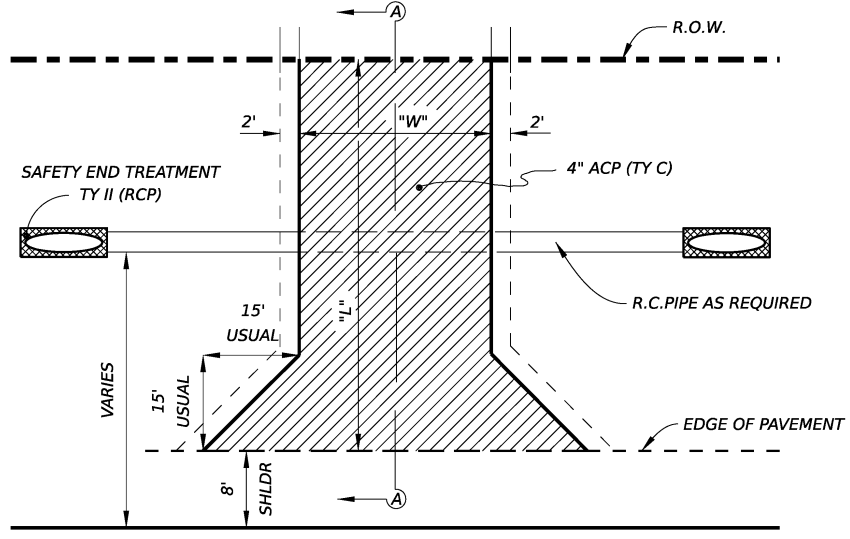
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TYPICAL SECTION
FOR NEW DRIVEWAY INSTALLATION
(RURAL)

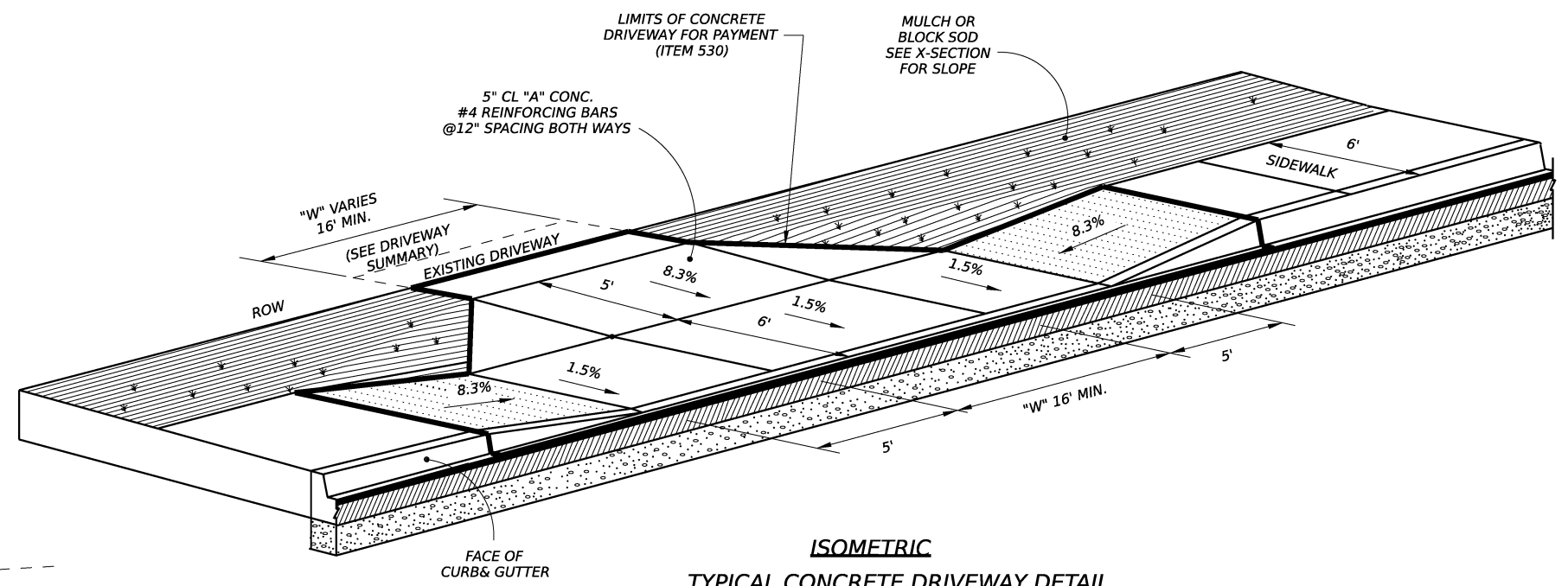


SECTION A-A

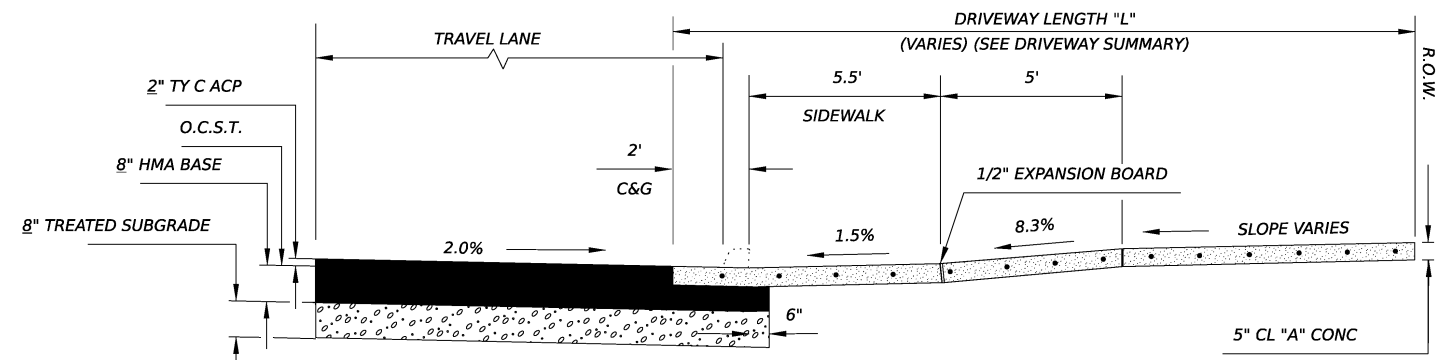


TYPICAL DRIVEWAY DETAIL
(FOR UNCURBED PAVEMENT) (RURAL)

NOTE: SEE SUMMARY OF DRIVEWAYS & INTERSECTIONS TABLE FOR "L" DIMENSION



ISOMETRIC
TYPICAL CONCRETE DRIVEWAY DETAIL
(FOR AREAS WITH SIDEWALK TO ACCOMMODATE ADA GUIDELINE)



ELEVATION



06/10/2024

VOLKERT

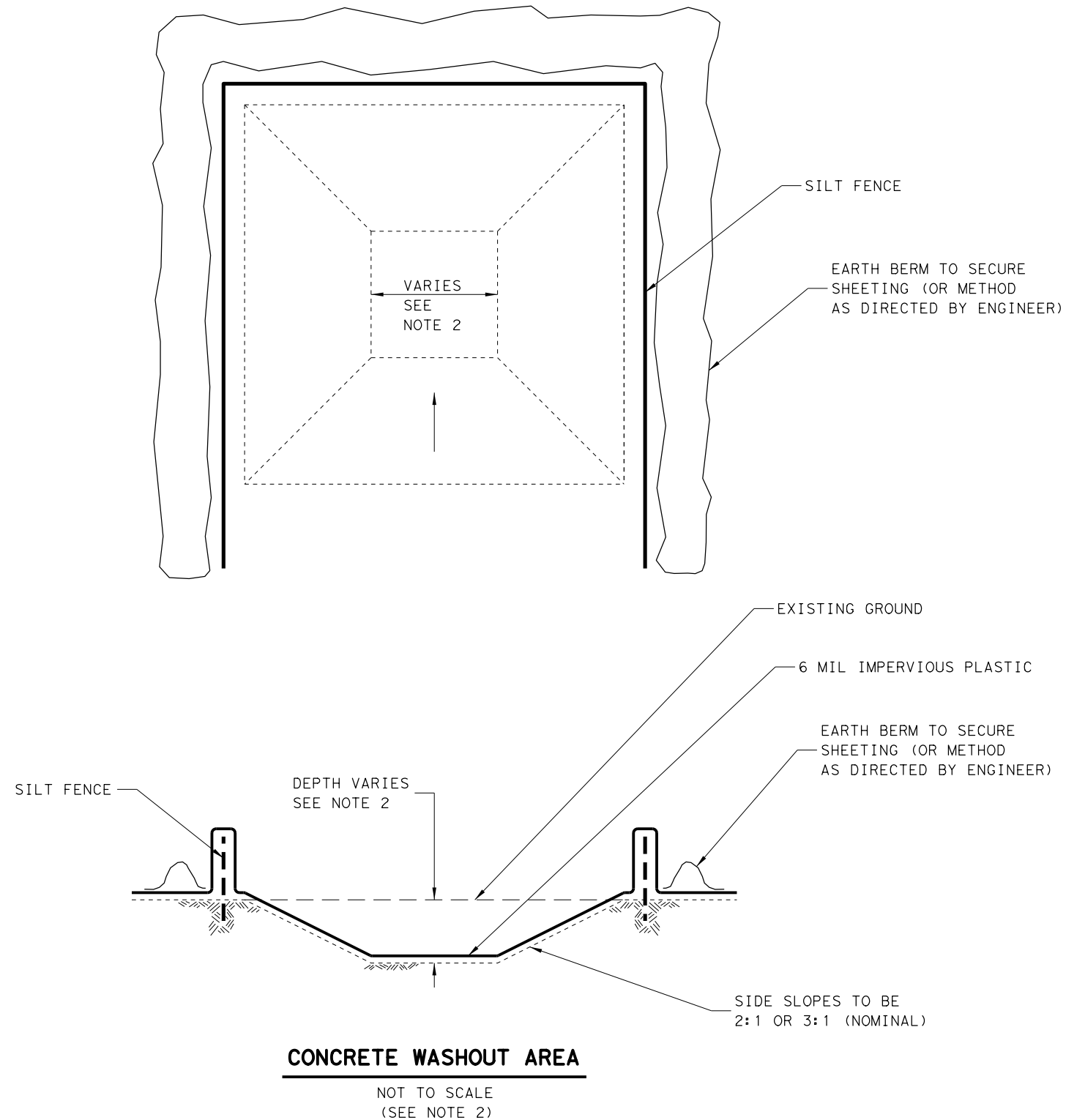
F-12679



SH 19
MISCELLANEOUS
DETAILS

SHEET 4 OF 6			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY		SHEET NO.
TYL	HENDERSON		148

DATE: 04-JUN-2024 14:23
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CONCRETE WASHOUT AREA
 NOT TO SCALE
 (SEE NOTE 2)

NOTES

1. CONCRETE WASHOUT AREA(S) SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE. THE CONCRETE WASHOUT AREA SHALL BE ENTIRELY SELF-CONTAINED.
2. THE CONTRACTOR SHALL SUBMIT THE DESIGN, LOCATION AND SIZING OF OF THE CONCRETE WASHOUT AREA(S) WITH THE PROJECT'S EROSION AND SEDIMENTATION CONTROL PLAN AND SHALL BE APPROVED BY THE ENGINEER.

 LOCATION: WASHOUT AREA(S) ARE TO BE LOCATED AT LEAST 50 FEET FROM ANY STREAM, WETLAND, STORM DRAINS, OR OTHER SENSITIVE RESOURCE. THE FLOOD CONTINGENCY PLAN MUST ADDRESS THE CONCRETE WASHOUT IF THE WASHOUT IS TO BE LOCATED WITHIN THE FLOODPLAN.

 SIZE: THE WASHOUT MUST HAVE SUFFICIENT VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS INCLUDING, BUT NOT LIMITED TO, OPERATIONS ASSOCIATED WITH GROUT AND MORTAR.
3. SURFACE DISCHARGE IS UNACCEPTABLE, THEREFORE EARTH BERM OR OTHER CONTROL MEASURES, AS APPROVED BY THE ENGINEER, SHOULD BE USED AROUND THE PERIMETER OF THE CONCRETE WASHOUT AREA FOR CONTAINMENT.
4. SIGNS SHOULD BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CONCRETE AREA(S) AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS. WASHOUT AREA(S) SHOULD BE FLAGGED WITH SAFETY FENCING OR OTHER APPROVED METHOD.
5. CONCRETE WASH-OUT AREAS SHALL BE LINED WITH IMPERVIOUS PLASTIC WITH A MINIMUM THICKNESS OF 6 MILS AND BE REPLACED IF DAMAGED DURING CLEAN-OUT OF HARDENED CONCRETE FROM THE WASH-OUT AREA.
6. WASHOUT AREA(S) ARE TO BE INSPECTED AT LEAST ONCE A WEEK FOR STRUCTURAL INTEGRITY, ADEQUATE HOLDING CAPACITY AND CHECKED FOR LEAKS, TEARS, OR OVERFLOWS. (AS DIRECTED BY THE CONSTRUCTION SITE ENVIRONMENTAL INSPECTION REPORT) WASHOUT AREA(S) SHOULD BE CHECKED AFTER HEAVY RAINS.
7. HARDENED CONCRETE WASTE SHOULD BE REMOVED AND DISPOSED OF WHEN THE WASTE HAS ACCUMULATED TO HALF OF THE CONCRETE WASHOUT'S HEIGHT. THE WASTE CAN BE STORED AT AN UPLAND LOCATION, AS APPROVED BY THE ENGINEER. ALL CONCRETE WASTE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH ALL APPLICABLE LAWS, REGULATIONS, AND GUIDELINES.
8. PAYMENT FOR THIS ITEM IS TO BE INCLUDED UNDER THE GENERAL COST OF THE WORK FOR THE PROJECT, INCLUDING SITE RESTORATION.



06/10/2024

VOLKERT

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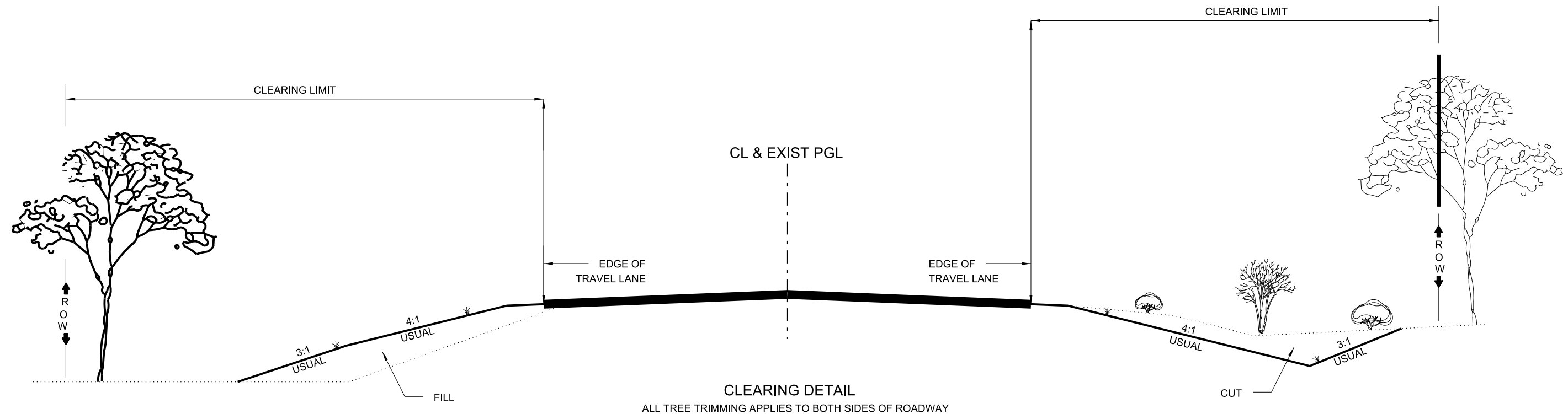


**SH 19
 MISCELLANEOUS
 DETAILS**

SHEET 5 OF 6

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	149

DWG:
 CHK:
 DWG:
 CHK:



CLEARING DETAIL
 ALL TREE TRIMMING APPLIES TO BOTH SIDES OF ROADWAY

PREPARING ROW DETAILS

REFER TO PREP ROW SUMMARY TABLE FOR INCLUDED STATIONS.
 OTHER STATIONS TO BE CLEARED ONLY AS DIRECTED.

NOTES:

- 1) ALL TREE LIMBS EXTENDING INTO THE CLEARING LIMITS SHALL BE REMOVED, UNLESS OTHERWISE SHOWN ON PLANS.
- 2) CLEARING OPERATIONS SHALL BE PERFORMED IN ACCORDANCE TO ITEM 100, "PREPARING RIGHT OF WAY", EXCEPT THOSE SHOWN BY THESE DETAILS.
- 3) PAYMENT WILL BE MADE AT THE UNIT PRICE BID FOR PREPARING RIGHT OF WAY BY THE STATION, LIMITS WILL BE SHOWN ELSEWHERE IN THE PLANS.
- 4) IF FRONT SLOPE IS STEEPER THAN 4:1 IN FILL SECTION, THEN A MINIMUM OF 7' FROM THE TOE OF SLOPE SHALL BE CLEARED TO PROVIDE A SAFETY RECOVERY ZONE.
- 5) WHERE STEEP SLOPES MAKE GRINDING OPERATIONS IMPRACTICAL, AND THE ENGINEER APPROVES IN WRITING, THE CONTRACTOR MAY CUT STUMPS OFF EVEN WITH THE GROUND.



Trevor L. Reed 06/21/2024



**SH 19
 MISCELLANEOUS
 DETAILS**

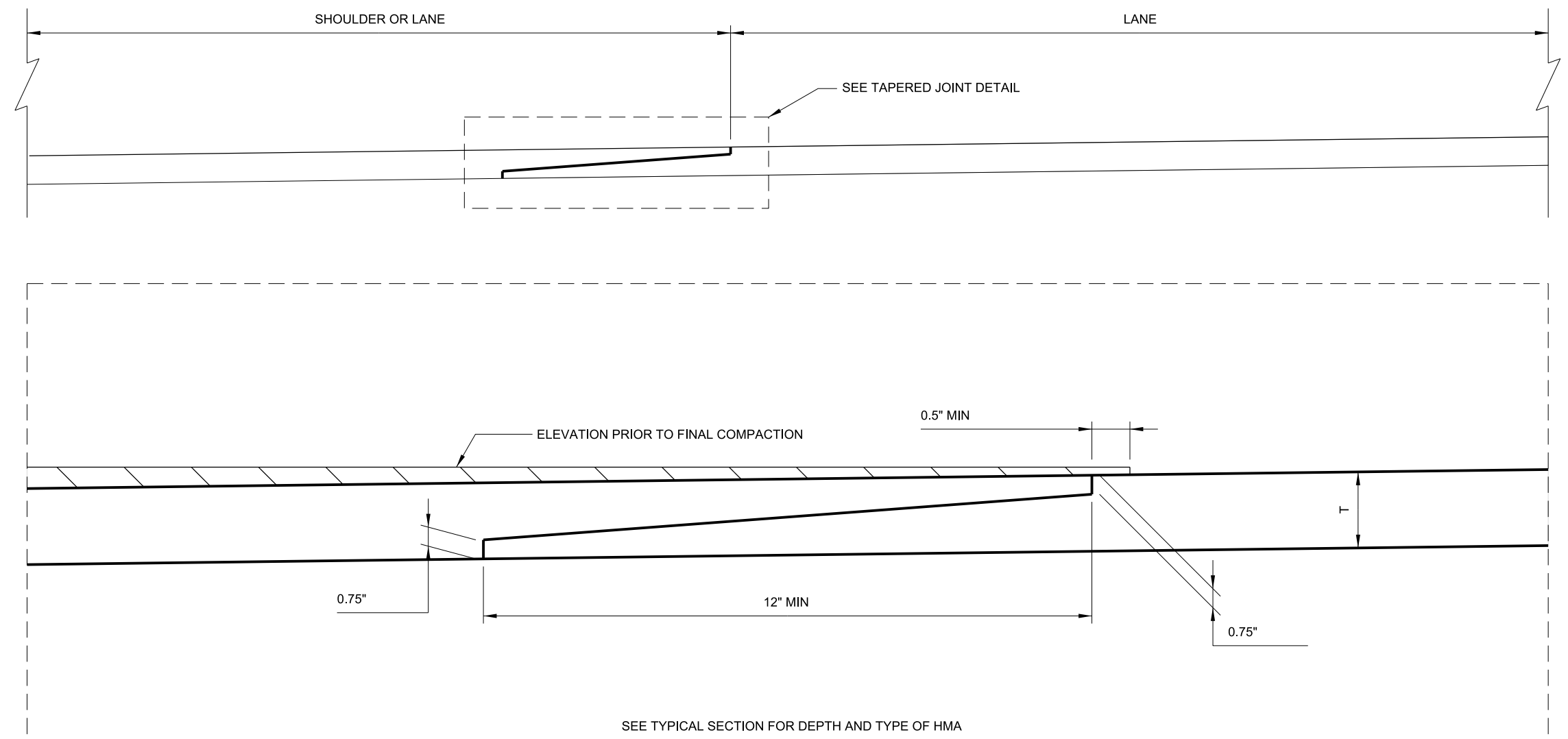
SHEET 6 OF 6

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	150

DATE: 20-JUN-2024 16:17
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NOT TO SCALE

DATE: 06-AUG-2024 14:51
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SEE TYPICAL SECTION FOR DEPTH AND TYPE OF HMA

TAPERED JOINT DETAIL

- NOTES:
- EXTEND THE TAPERED PORTION OF THE MAT BEYOND THE NORMAL LANE WIDTH.
 - CONSTRUCT THE TAPERED PORTION OF THE MAT USING AN APPROVED STRIKE-OFF DEVICE THAT WILL PROVIDE A UNIFORM SLOPE AND WILL NOT RESTRICT THE MAIN SCREED.
 - APPLY TACK COAT TO THE IN-PLACE TAPER BEFORE THE ADJACENT MAT IS PLACED.
 - FINAL DENSITY REQUIREMENTS FOR THE ENTIRE PAVEMENT, INCLUDING THE TAPER AREA, WILL NOT CHANGE.
 - COMPACTION OF THE INITIAL TAPER SECTION WILL BE REQUIRED TO BE AS NEAR TO FINAL DENSITY AS POSSIBLE.
 - USE A SMALL STATIC ROLLER (APPROXIMATELY 200 LBS) LOCATED IMMEDIATELY BEHIND THE PAVER FOR PRE-COMPACTION OF THE NOTCHED WEDGE JOINT.



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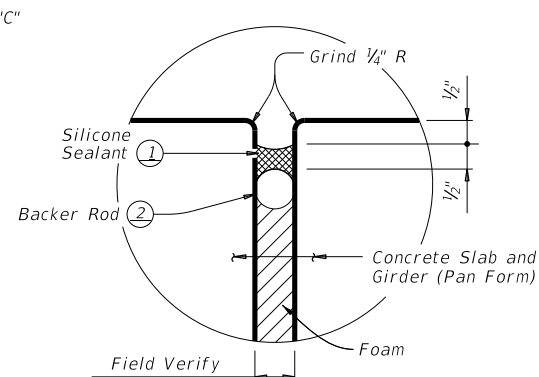
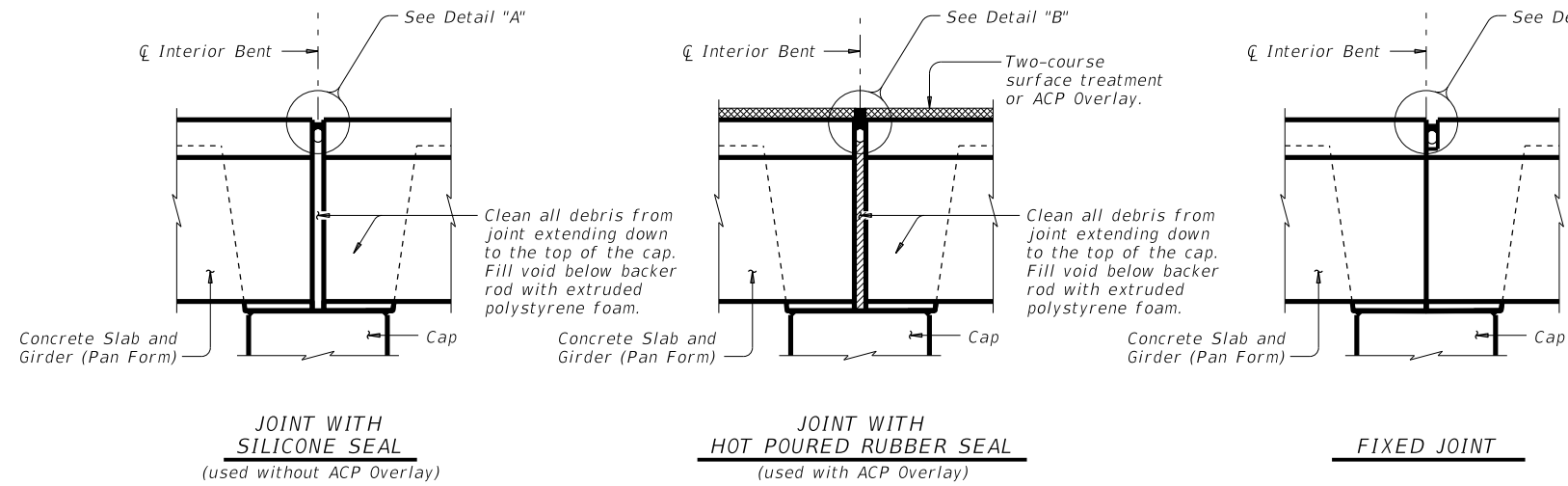


SH 19
 TAPERED
 JOINT
 DETAIL

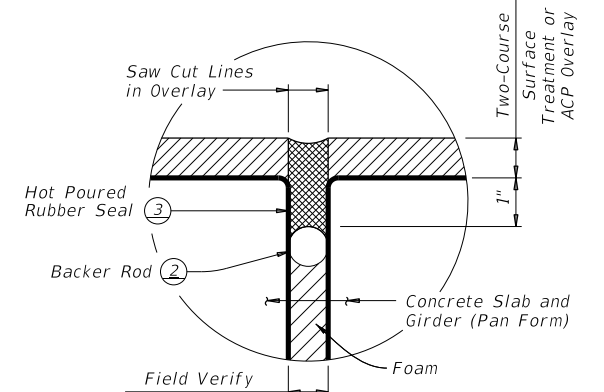
SHEET 1 OF 1

DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH 19
CHECKED	DIST COUNTY			SHEET NO.
APPROVED	TYL	HENDERSON		150A

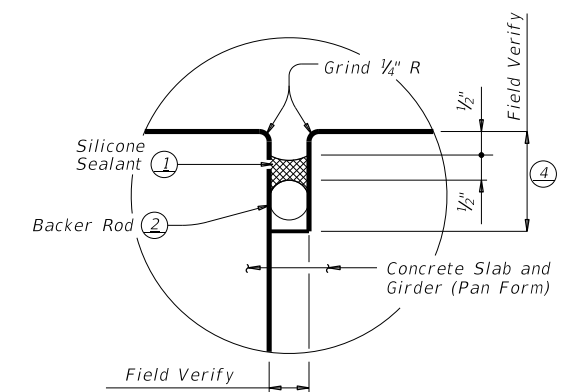
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DETAIL "A"



DETAIL "B"



DETAIL "C"

- ① Use Class 7 silicone sealant. Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."
- ② Backer rod must be 25% larger than joint opening and must be compatible with the sealant.
- ③ Use Class 3 hot poured rubber seal. Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."
- ④ Backer rod may be omitted if existing joint depth is less than 1 1/2".

EXISTING CONCRETE SLAB & GIRDER JOINT REPAIR

PROCEDURE FOR CLEANING AND SEALING EXISTING CONCRETE GIRDER JOINT WITH SILICONE SEAL:

- 1) Clean joint opening of all old expansion materials/devices, dirt, and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints." Clean joint out full depth of the joint.
- 2) Obtain approval of cleaned joint prior to proceeding with joint sealing operation.
- 3) Place backer rod into joint opening 1" below the top of concrete. The backer rod must be 25% larger than the joint opening. Fill void below backer rod with extruded polystyrene foam.
- 4) Seal the joint opening with a Class 7 Silicone. Recess seal 1/2" below top of concrete in travel lanes and 1/8" below top of concrete in shoulders.

PROCEDURE FOR CLEANING AND SEALING EXISTING CONCRETE GIRDER JOINT WITH HOT Poured RUBBER SEAL:

- 1) Saw cut through the asphalt at the centerline of joint. Make multiple saw cuts to create a 1/2" minimum joint opening or match the existing joint opening. Clean joint opening of all old expansion materials/devices, bituminous materials, dirt, grease and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints."
- 2) Obtain approval of cleaned joint prior to proceeding with joint sealing operation.
- 3) Place backer rod into joint opening 1" below the top of concrete. Backer rod must be compatible with the hot poured rubber sealant and rated for a minimum of 400°F. The backer rod must be 25% larger than the joint opening. Fill void below backer rod with extruded polystyrene foam.
- 4) Seal the joint opening with a Class 3, "Hot Poured Rubber." Seal flush to the top of the asphaltic concrete pavement.

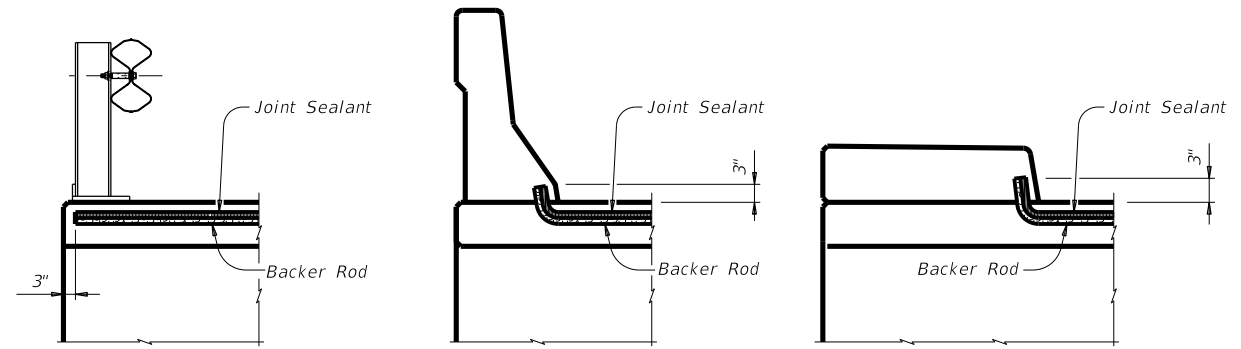
PROCEDURE FOR CLEANING AND SEALING EXISTING FIXED JOINTS:

- 1) Remove existing seal and debris from recess.
- 2) Abrasive blast clean existing surfaces where silicone seal is to be placed.
- 3) Obtain approval of cleaned joint prior to proceeding with joint sealing operation.
- 4) Place backer rod into joint opening 1" below the top of concrete. The backer rod must be 25% larger than the joint opening.
- 5) Seal the joint opening with a Class 7 Silicone. Recess seal 1/2" below top of concrete in travel lanes and 1/8" below top of concrete in shoulders.

NOTE:
DURING LANE CLOSURES AND PRIOR TO MILLING OPERATIONS, THE CONTRACTOR SHALL MARK BRIDGE JOINT LOCATIONS.



06/10/2024



JOINT SEALANT TERMINATION DETAILS

GENERAL NOTES

Cleaning existing joint opening (full depth) of all debris, providing and placing backer rod, saw-cutting asphalt overlay, and sealing joint is paid for by Item 438, "Cleaning and Sealing Joints" and measured by the linear foot.

Obtain approval for all tools, equipment, materials and techniques proposed for use to prepare the joint.

For Class 3 Hot Poured Rubber Seal, provide backer rod compatible with the hot poured rubber sealant and rated for a minimum of 400°F.

Provide Class 3 sealant in accordance with DMS-6310, "Joint Sealants and Fillers" for joints in asphalt overlay.

Provide Class 7 silicone sealant in accordance with DMS-6310, "Joint Sealants and Fillers" for joints in concrete.

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

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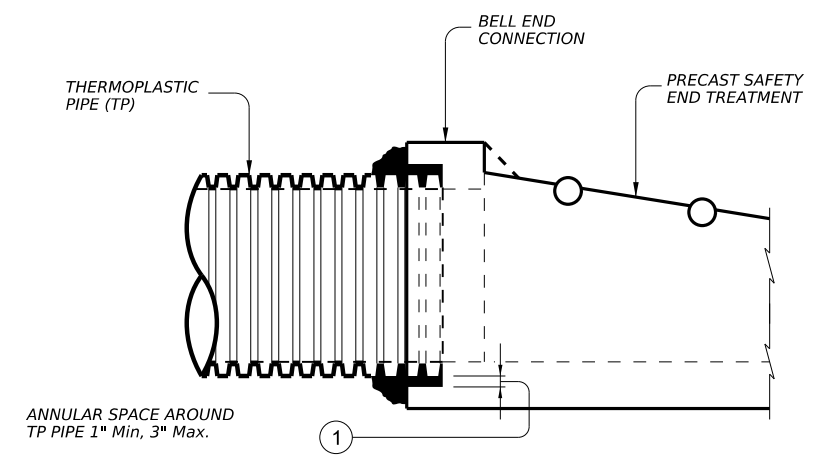
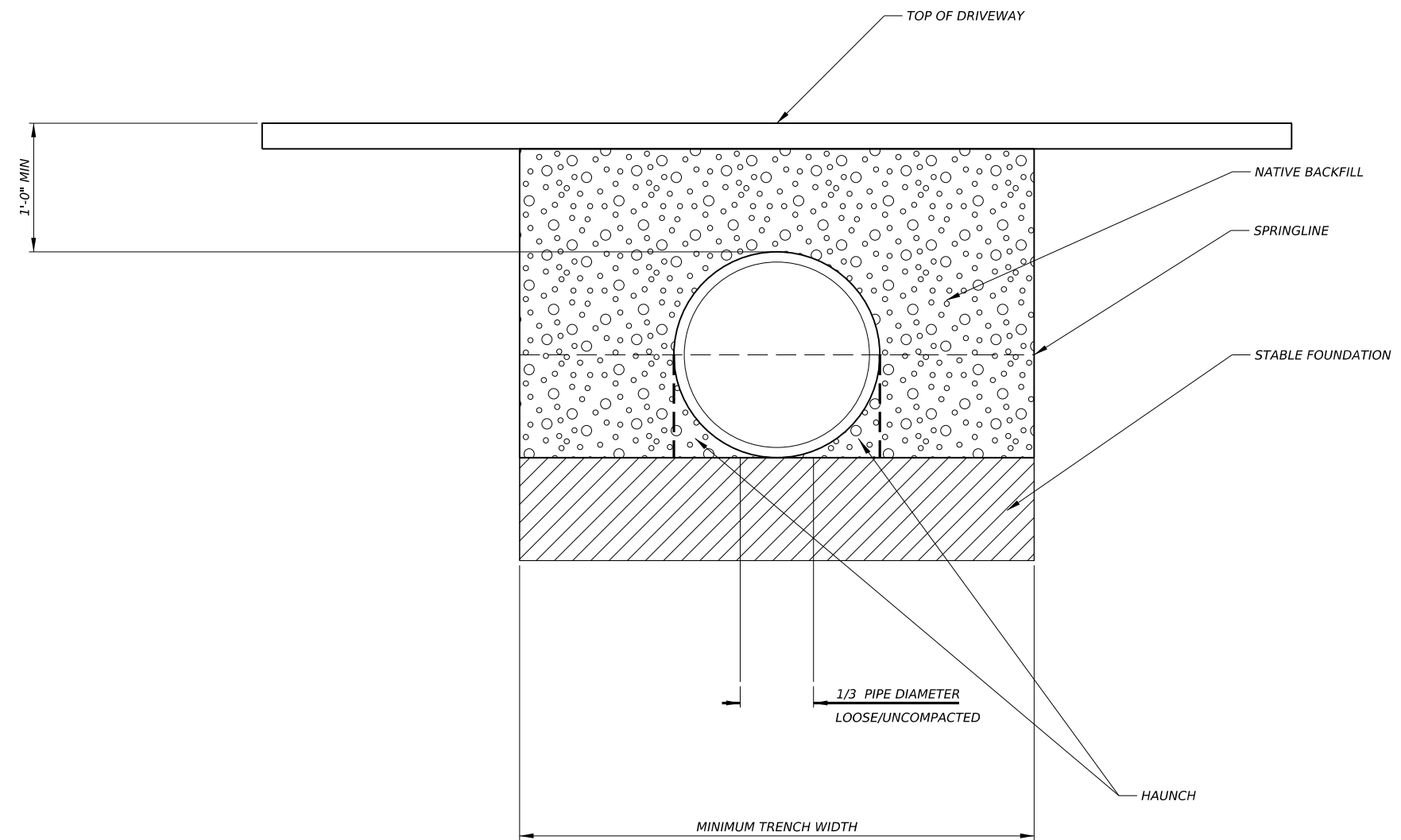
Texas Department of Transportation

**SH 19
CLEANING AND SEALING
EXISTING BRIDGE JOINTS
DETAIL**

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	151

CK: DW: CK: DW: CK: DW:



TYPICAL PARTIAL ELEVATION OF PRECAST SAFETY END TREATMENTS

Showing square PSET for parallel drainage, cross drainage shown similar.

① COMPLETELY FILL THE VOID BETWEEN THE PRECAST STRUCTURE AND THE CONNECTING PIPE OR BOX WITH CEMENTITIOUS GROUTS AND MORTARS IN ACCORDANCE WITH DMS-4675 *CEMENTITIOUS GROUT AND MORTARS FOR MISCELLANEOUS APPLICATION*.

PIPE DIAMETER (INCHES)	TRENCH WIDTH (INCHES)	MAXIMUM DEPTH FILL (FEET)
12	30	20
15	34	20
18	39	20
24	48	20
30	57	20
36	66	20
42	75	20
48	84	20

NOTES: MAXIMUM FILL DEPTH MEASURED FROM TOP OF PIPE TO TOP OF FINISHED GRADE OR PAVEMENT

(A) ENSURE BACKFILL COMPLETELY FILLS THE VOID BETWEEN THE STABLE FOUNDATION AND THE PIPE IN THE HAUNCH ZONE. COMPACT BACKFILL INTO HAUNCH AND BETWEEN CORRUGATIONS

DRIVEWAY TRENCH AND BEDDING DETAIL
(ITEM 468)



08/06/2024



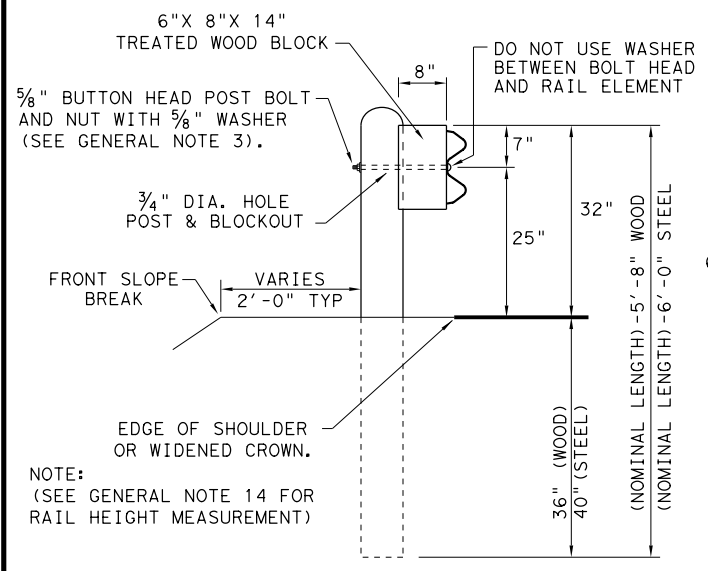
THERMOPLASTIC PIPE DETAIL

CONT		JOB		SHEET OF	
CONT	SECT	JOB	SECTION	SHEET	OF
0108	03	041		SH 19	
DIST		COUNTY		SHEET NO.	
TYL		HENDERSON		151A	

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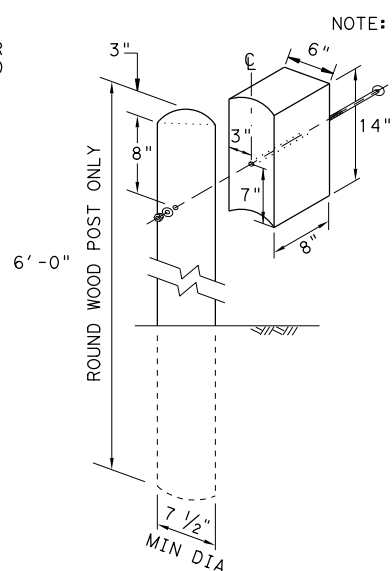
DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE: FILE:

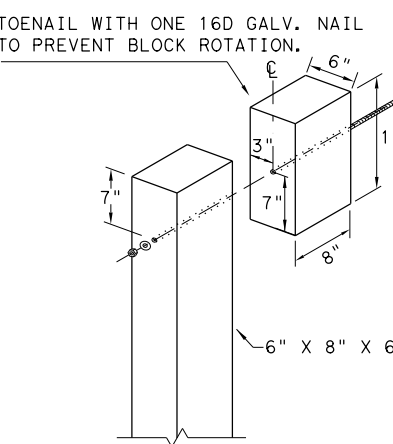


TYPICAL POST PLACEMENT

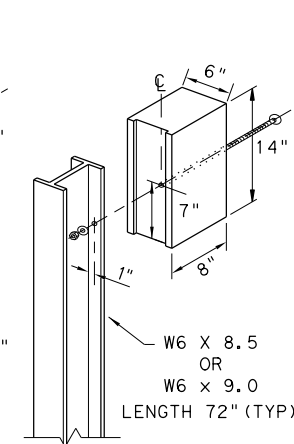
NOTE: (SEE GENERAL NOTE 14 FOR RAIL HEIGHT MEASUREMENT)



WOOD BLOCK TO ROUND WOOD POST

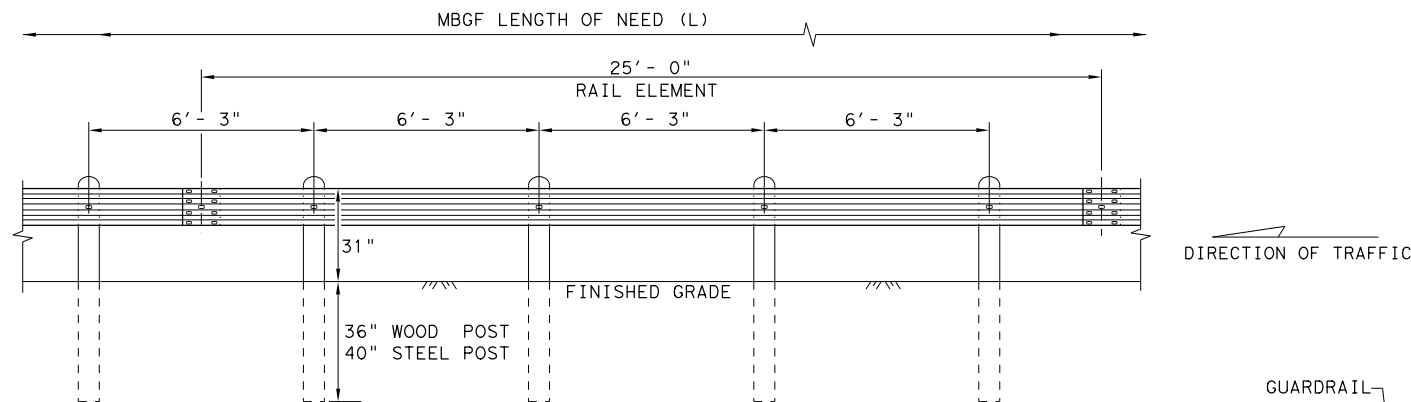


WOOD BLOCK TO RECTANGULAR WOOD POST



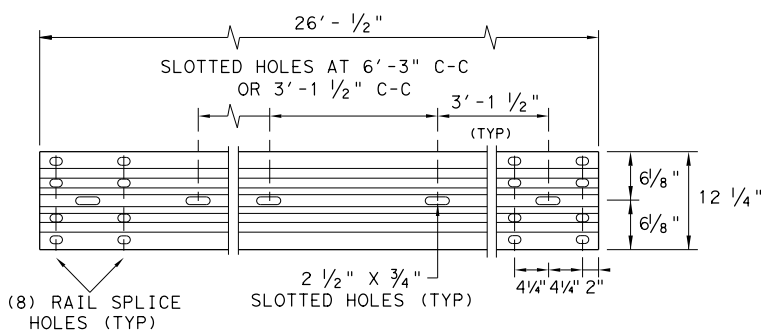
ROUTED WOOD BLOCK TO I-BEAM STEEL POST

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



ELEVATION MID-SPAN RAIL SPLICE

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



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

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

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

SPLICE BOLT LENGTH VARIES

FBB01 = 1 1/4"

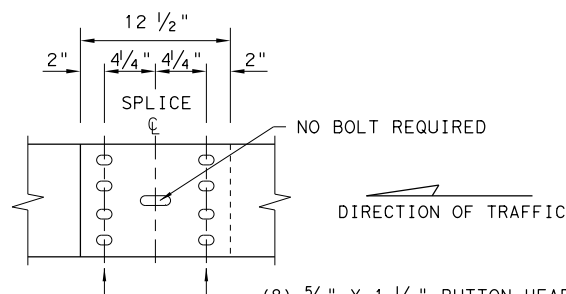
FBB02 = 2"

POST & BLOCK LENGTH

FBB03 = 10"

FBB04 = 18"

BUTTON HEAD BOLT

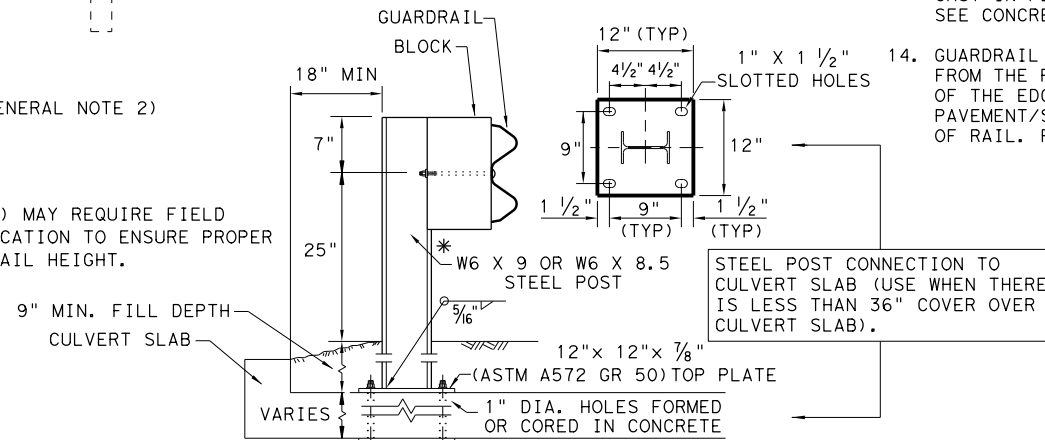


MID-SPAN RAIL SPLICE DETAIL

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

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

* POST(S) MAY REQUIRE FIELD MODIFICATION TO ENSURE PROPER GUARDRAIL HEIGHT.



LOW FILL CULVERT POST

12" X 12" X 1/4" (ASTM A36) STEEL BOTTOM PLATE WITH 1" DIA. HOLES REQUIRED WITH BOLT-THROUGH INSTALLATION.

NOTE: TWO INSTALLATION OPTIONS.

1. **BOLT-THROUGH OPTION:** REQUIRES A 6" MIN. SLAB THICKNESS. 7/8" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS. NOTE: BOLT LENGTH = SLAB PLUS 2 1/4" MIN.

2. **EPOXY ANCHOR OPTION:** THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" MIN. THICK. THREADED ANCHOR RODS MUST BE 7/8" DIA. ASTM A449 OR A193 GRADE B7 WITH HEAVY HEX NUT, AND ONE HARDENED WASHER EACH. EMBED ANCHOR RODS 6" WITH HILTI HIT RE 500 EPOXY ADHESIVE. OTHER TYPE III CLASS C EPOXY ADHESIVES MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES", MAY BE USED IF IT CAN BE DEMONSTRATED THAT THEY MEET OR EXCEED THE STRENGTH OF HILTI HIT RE 500 WITH THE SAME EMBEDMENT DEPTH AND THREADED ROD DIA. FOLLOW THE MANUFACTURER'S REQUIREMENTS FOR INSTALLING EPOXIED THREADED RODS. EXTEND RODS 1/4" MIN. BEYOND NUT.

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

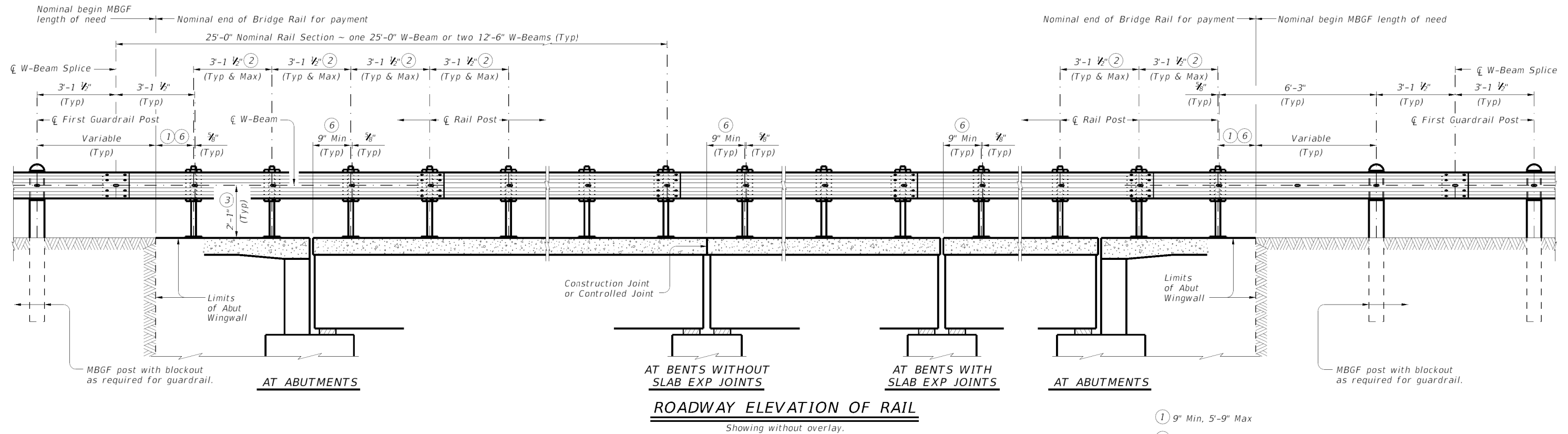
GENERAL NOTES

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBSG SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'-0", OR 12'-6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 1/2" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND 5/8" WASHER (FWC16G) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 25:1 OR FLATTER.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE GUTTER PAN OR EDGE OF SHOULDER.
9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MD.
14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL, MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

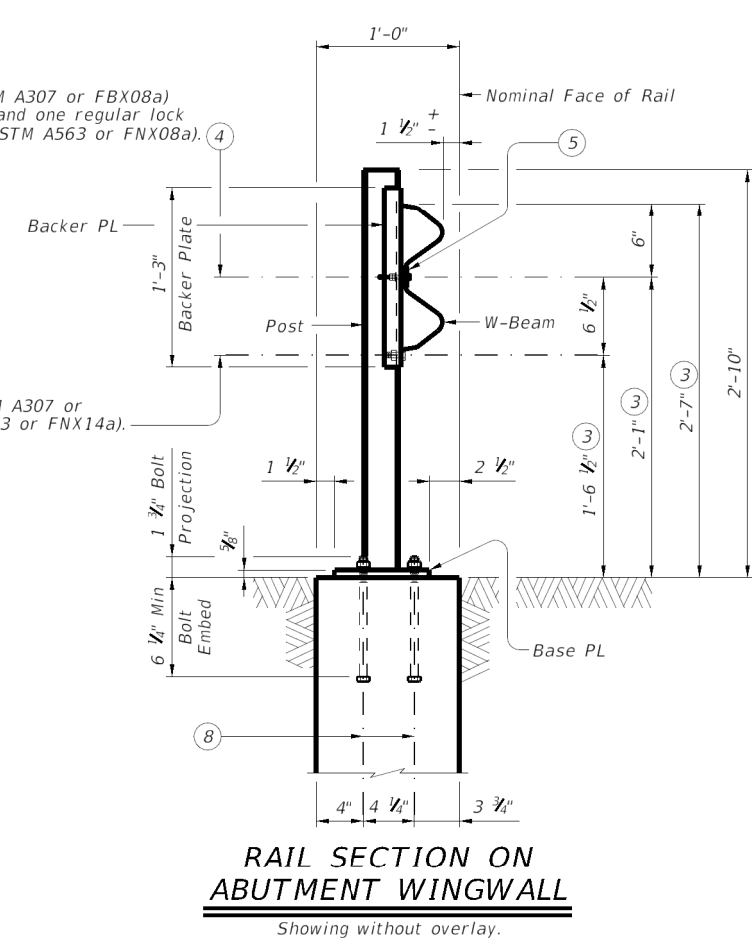
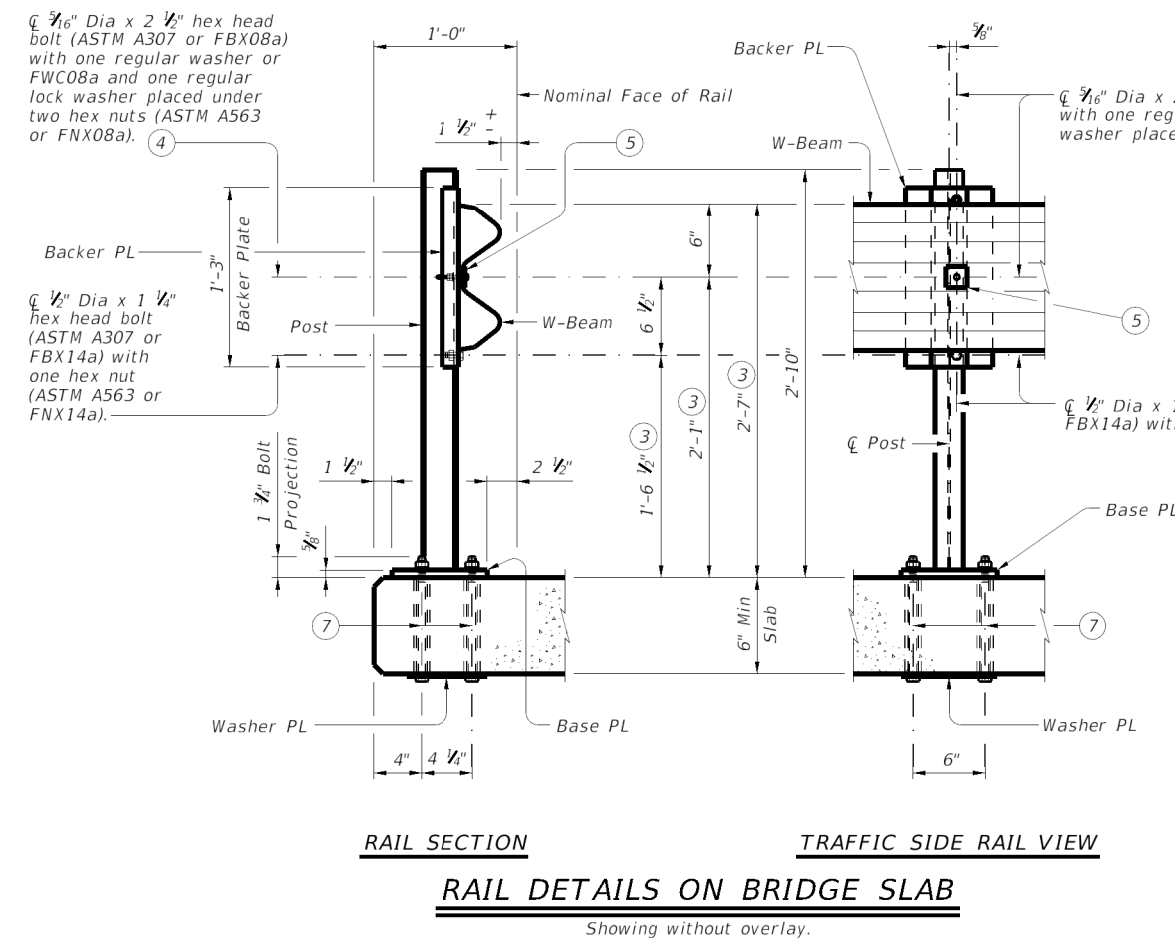
NOTE: TRANSITIONS TO BRIDGE RAILS OR TRAFFIC BARRIERS. SEE GF(31)TL3 TR STANDARD FOR HIGH-SPEED TL-3 TRANSITIONS. SEE GF(31)TL2 TR STANDARD FOR LOW-SPEED TL-2 TRANSITIONS.

				Design Division Standard	
METAL BEAM GUARD FENCE TL-3 MASH COMPLIANT GF(31)-19					
FILE: gf3119.dgn	DN: TXDOT	CK: KM	DW: VP	CK: CGL/AG	
© TXDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0108	03	041	SH 19	
	DIST	COUNTY		SHEET NO.	
	TYL	HENDERSON		152	

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- ① 9" Min, 5'-9" Max
- ② Maintain 3'-1 1/2" Rail Post spacing wherever possible for use with nominal 25'-0" or 12'-6" W-Beam sections. Symmetry of post spacing on both sides and along the structure is not necessary.
- ③ Increase 2" for structures with overlay.
- ④ Tighten the first hex nut by hand until the top and bottom edges of the W-Beam engage the Backer Plate (Backer Plate should be snug against the post). Then tighten hex nut one revolution with wrench and secure with the second hex nut.
- ⑤ PL 1/8" x 1 3/4" x 1 3/4" with 3/8" Dia Hole centered in PL (ASTM A36). Square Guardrail Washer (FWR01).
- ⑥ The post nearest to a slab joint or end of structure may be shifted up to 9" in order to satisfy the minimum offset dimension. Drill a new 3/8" Dia hole on the centerline of W-beam for shifted post. Paint hole with two coats of zinc-rich paint conforming to the Item "Galvanizing". All other posts must remain on the typical spacing.
- ⑦ 3/8" Dia formed holes for 3/8" Dia heavy hex head anchor bolt (ASTM F3125 Gr A325 or A449) or threaded rod (ASTM A193 Gr B7 or F1554 Gr 105) with one hardened steel washer (ASTM F436) and one regular lock washer placed under heavy hex nut (ASTM A563). One additional heavy hex nut must be furnished and tack welded for each threaded rod. See "Cast-In-Place & Formed Hole Anchor Bolt Options".
- ⑧ 3/8" Dia heavy hex head anchor bolt (ASTM F3125 Gr A325 or A449) or threaded rod (ASTM A193 Gr B7 or F1554 Gr 105) with one hardened steel washer (ASTM F436) and one regular lock washer placed under heavy hex nut (ASTM A563). One additional heavy hex nut must be furnished and tack welded for each threaded rod. See "Cast-In-Place & Formed Hole Anchor Bolt Options".



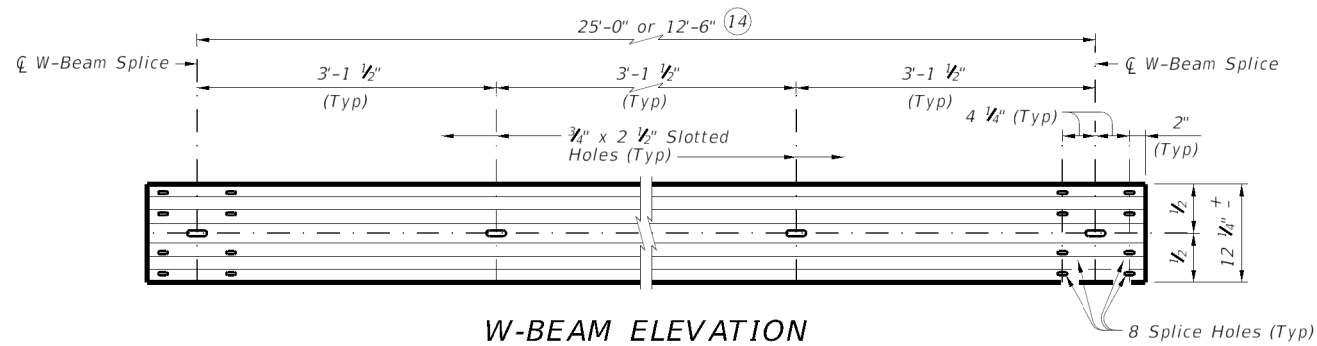
SHEET 1 OF 2

		Bridge Division Standard		
<h2>TRAFFIC RAIL</h2>				
<h3>TYPE T631</h3>				
FILE:	DN: TxDOT	CK: AES	DW: JTR	CK: AES
REVISIONS:	CONT: 0108	SECT: 03	JOB: 041	HIGHWAY: SH 19
01/2020: Allowing 9'-4 1/2" or 6'-3" W-Beam sections.	DIST:	COUNTY:	SHEET NO.	
03/2023: MBGF Notes.	TYL	HENDERSON	153	

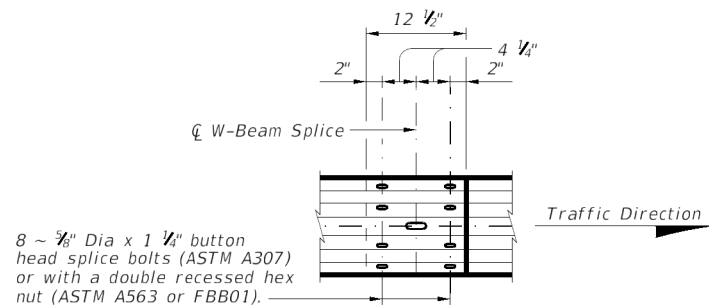
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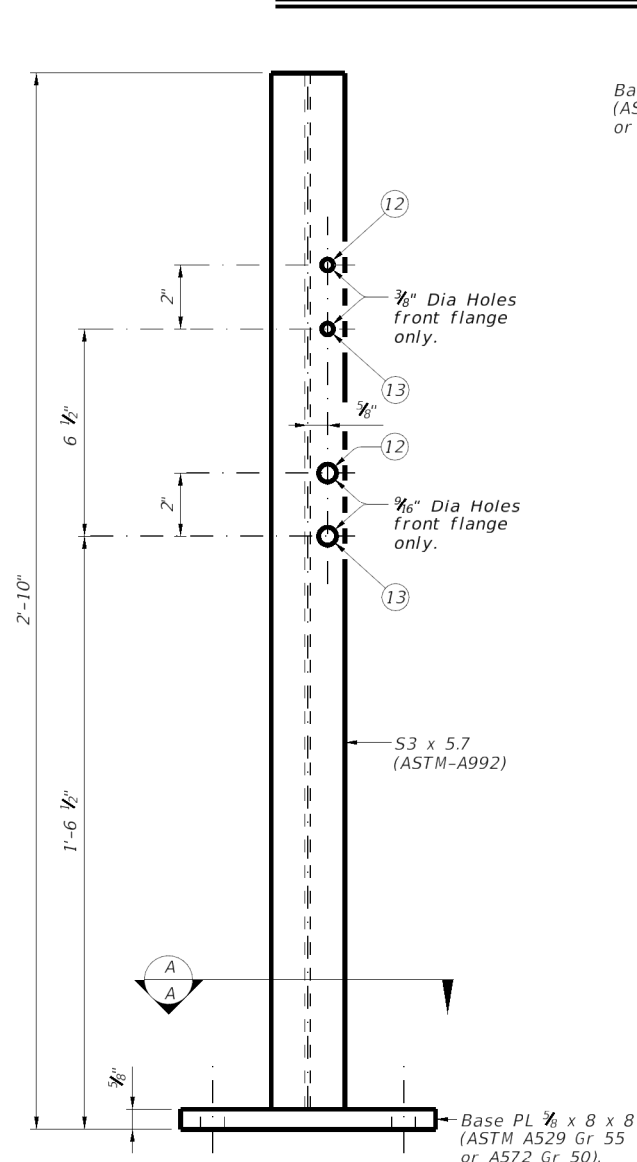
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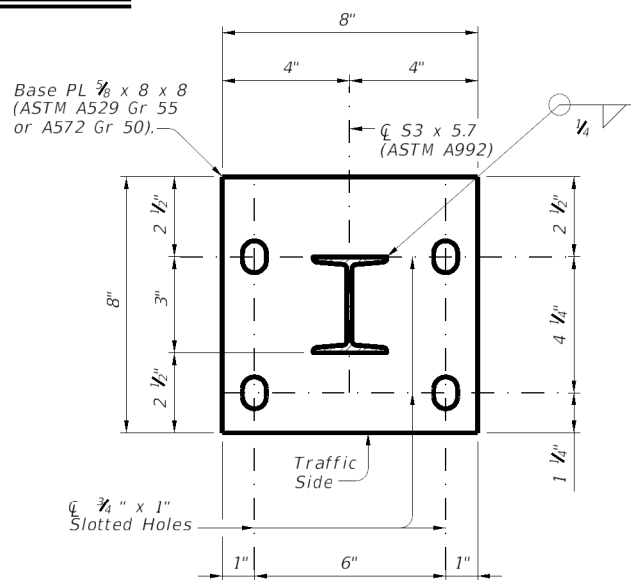
W-BEAM ELEVATION



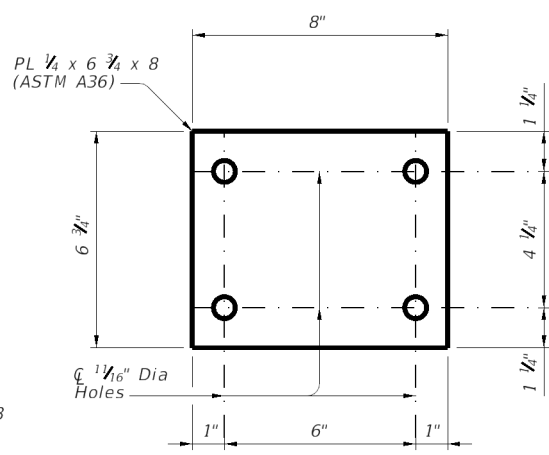
W-BEAM SPLICE ELEVATION



POST ELEVATION

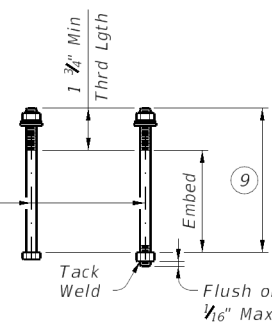


SECTION A-A



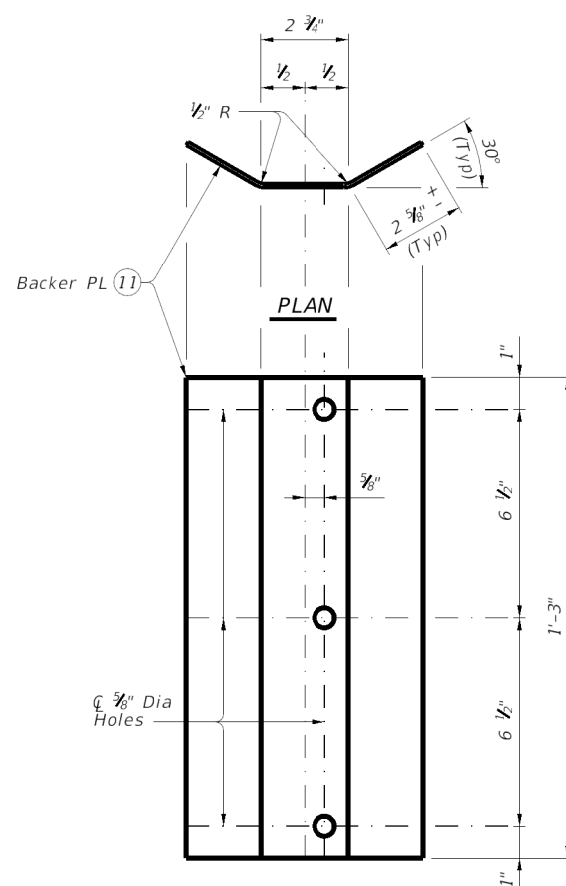
WASHER PLATE DETAIL

5/8" Dia heavy hex head anchor bolt (ASTM F3125 Gr A325 or A449) or threaded rod (ASTM A193 Gr B7 or F1554 Gr 105) with one hardened steel washer (ASTM F436) and one regular lock washer placed under heavy hex nut (ASTM A563). One additional heavy hex nut must be furnished and tack welded for each threaded rod.



CAST-IN-PLACE & FORMED HOLE ANCHOR BOLT OPTIONS (10)

- (9) See "Rail Details On Bridge Slab" and/or "Rail Section On Abutment Wingwall".
- (10) See "Material Notes" for anchor bolt information.
- (11) Backer PL 1/4" x 8 x 1'-3" (ASTM A1011 CS or SS Gr 33, or A1008 CS or SS Gr 33 (11 Gage acceptable)).
- (12) Used for structures with overlay.
- (13) Used for structures without overlay.
- (14) At the nominal end of the bridge rail for payment, one 9'-4 1/2" or 6'-3" W-beam section is permitted in order to achieve the required W-Beam splice location on the MBGF.



BACKER PLATE

MBGF AND END TREATMENT NOTES:
This traffic railing must be anchored by metal beam guard fence (MBGF) and guard fence end treatments. Determine MBGF length of need in accordance with the Roadway Design Manual, unless otherwise specified. The minimum MBGF length of need required for anchoring the railing is 25' of MBGF plus the appropriate end treatment installed tangent to the primary roadway.

CONSTRUCTION NOTES:
Face of rail post must be plumb unless otherwise approved by the Engineer. Post must be perpendicular to adjacent roadway grade. Use epoxy mortar under post base plates if gaps larger than 1/16" exist.
Fully anchored guardrail must be attached to each end of rail. A metal beam guard fence transition is not used with this rail. At the Contractor's option anchor bolts may be an adhesive anchor 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.

It is recommended to show a Rail Layout with rail posts and W-beam splices. Fabricator must submit erection drawings to the Engineer for approval.
Round or chamfer exposed edges of rail post and backer plate to approximately 1/16" by grinding.
Shop drawings are not required for this rail.

MATERIAL NOTES:
Galvanize all steel components.
Anchor bolts for base plate must be 5/8" Dia ASTM F3125 Gr A325 or A449 bolts (or ASTM A193 Gr B7 or F1554 Gr 105 threaded rods with one tack welded heavy hex nut each) with one hardened steel washer (ASTM F436) and one regular lock washer placed under each heavy hex nut. Nuts must conform to ASTM A563 requirements.

Optional adhesive anchorage system must be 5/8" Dia ASTM A193 Gr B7 or F1554 Gr 105 fully threaded rods with one hardened steel washer (ASTM F436) and one regular lock washer placed under each heavy hex nut. Nuts must conform to ASTM A563 requirements. Embed fully threaded rod into slab and/or abutment wingwall using a Type III, Class C, D, E, or F anchor adhesive. Minimum adhesive anchor embedment depth is 4 3/4". Anchor adhesive chosen must be able to achieve a nominal bond strength in tension of a single anchor, Na, of 8 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."

W-beam must meet the requirements of Item 540, "Metal Beam Guard Fence" except as modified in the plans. The Contractor may furnish rail elements of 25'-0" or 12'-6" (Nominal) lengths and a single rail element of 9'-4 1/2" or 6'-3" (Nominal) length. W-Beam must have slotted holes at 3'-1 1/2".

Some part numbers from the "Task Force 13" Guide to Standardized Highway Barrier Hardware have been furnished for quick reference.

GENERAL NOTES:
This railing has been successfully evaluated by full-scale crash test to meet MASH TL-3 criteria. This railing can be used for speeds of 50 mph and greater.

This rail is designed to deflect approximately 4' to 4'-6" as it contains and redirects the errant vehicle. This rail may not be installed on top of or behind curbs that project above finished grade, on bridges with expansion joints providing more than 5" movement, on retaining walls, or on grade separations and interchanges.

Repairs to impact-damaged post and base plate unit are not permitted. Replace all impact-damaged posts with a new post and base plate unit.

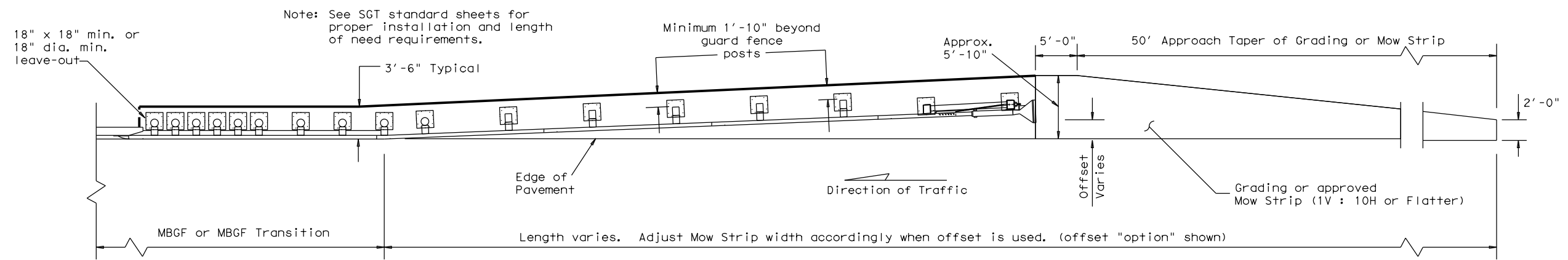
Average weight of railing with no overlay: 20 pcf total.

SHEET 2 OF 2

		Bridge Division Standard		
<h1>TRAFFIC RAIL</h1>				
<h2>TYPE T631</h2>				
FILE:	DN: TxDOT	CK: AES	DW: JTR	CK: AES
REVISIONS	CONT	SECT	JOB	HIGHWAY
01/2020: Allowing 9'-4 1/2" or 6'-3" W-Beam sections	0108	03	041	SH 19
03/2023: MBGF Notes	DIST	COUNTY	SHEET NO.	
	TYL	HENDERSON	154	

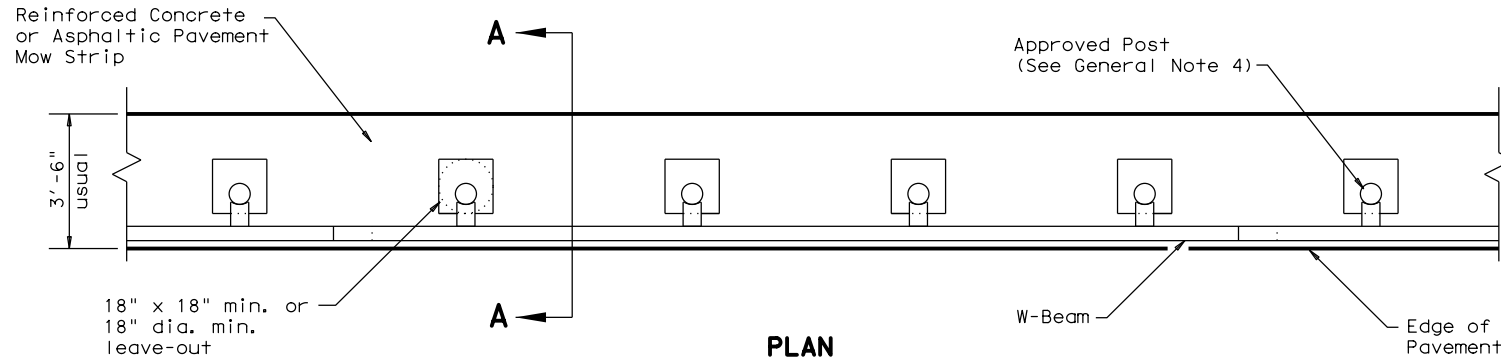
DISCLAIMER: THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE: FILE:



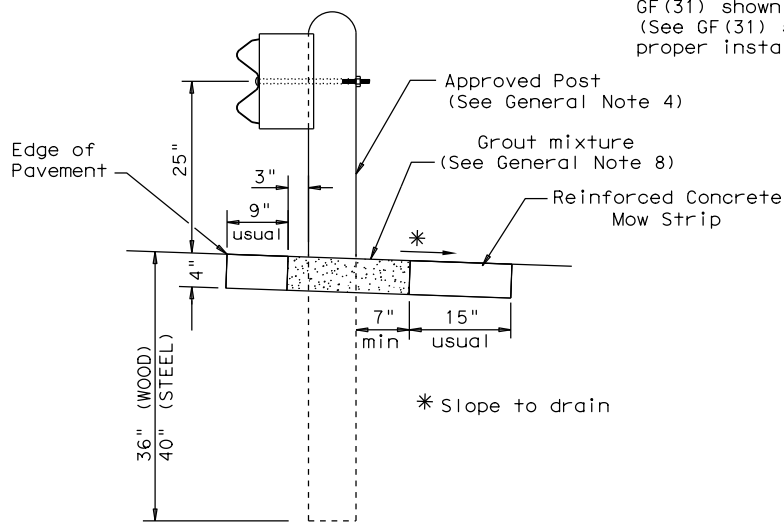
GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS

Note: Site Condition(s)
 Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.
 Approach grading or mow strip may be decreased or eliminated, as directed by the Engineer.



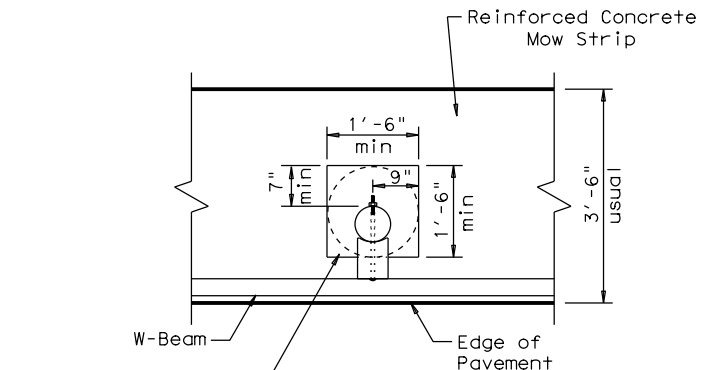
PLAN

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



SECTION A-A

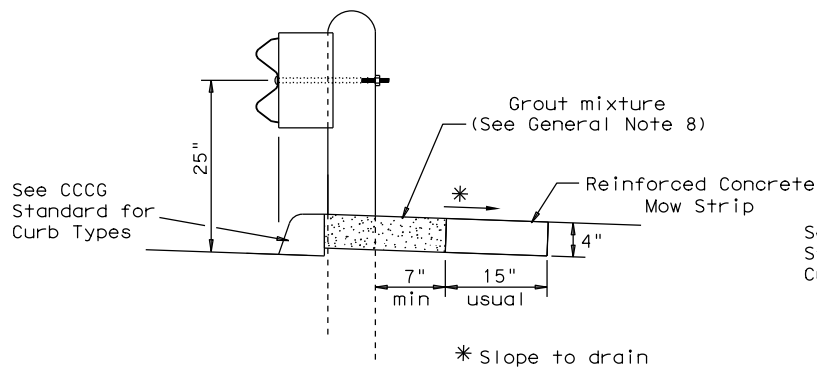
Typical



MOW STRIP DETAIL

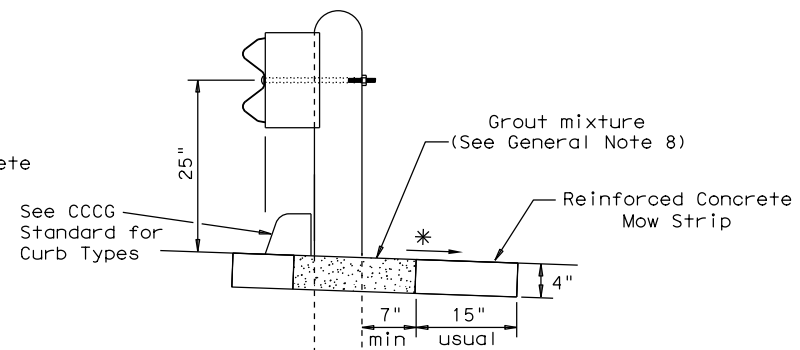
Reinforced Concrete Mow Strip with 18" x 18" Square or 18" Dia. minimum leave-out.

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



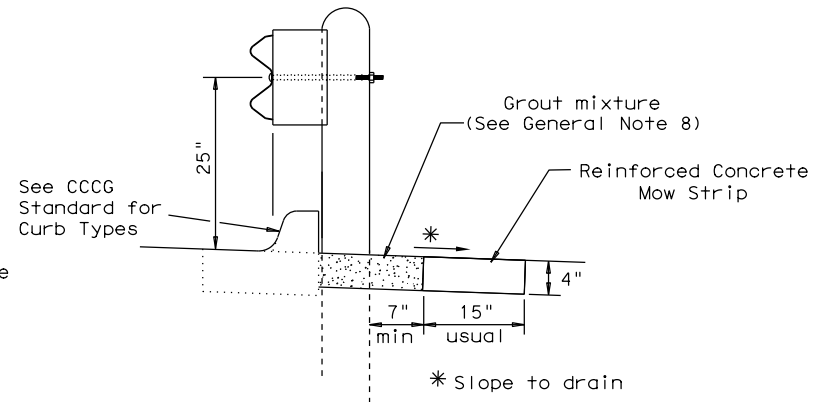
CURB OPTION (1)

This option will increase the post embedment throughout the system.



CURB OPTION (2)

Curb shown on top of mow strip

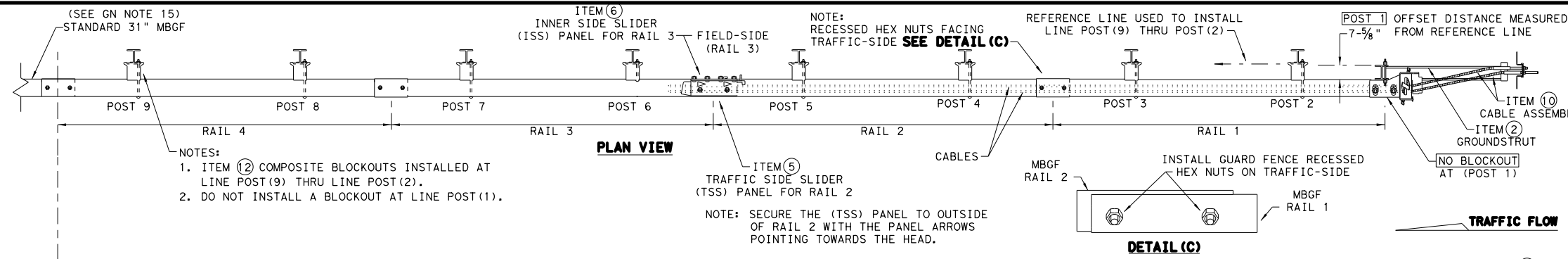


CURB OPTION (3)

		Design Division Standard	
METAL BEAM GUARD FENCE (MOW STRIP) TL-3 MASH COMPLIANT GF (31) MS-19			
FILE: gf31ms19.dgn	DN: TXDOT	CK: KM	DW: VP
© TXDOT: NOVEMBER 2019	CONT	SECT	JOB
REVISIONS	0108	03	041
	DIST	COUNTY	SHEET NO.
	TYL	HENDERSON	155

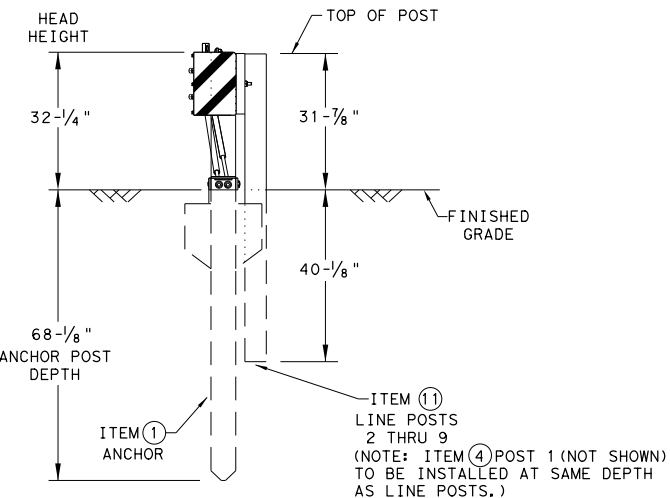
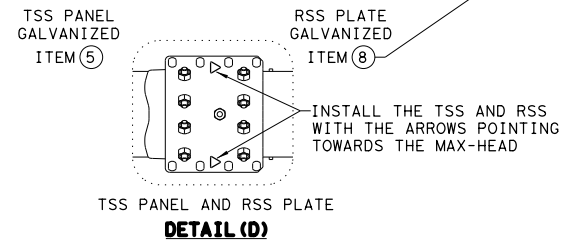
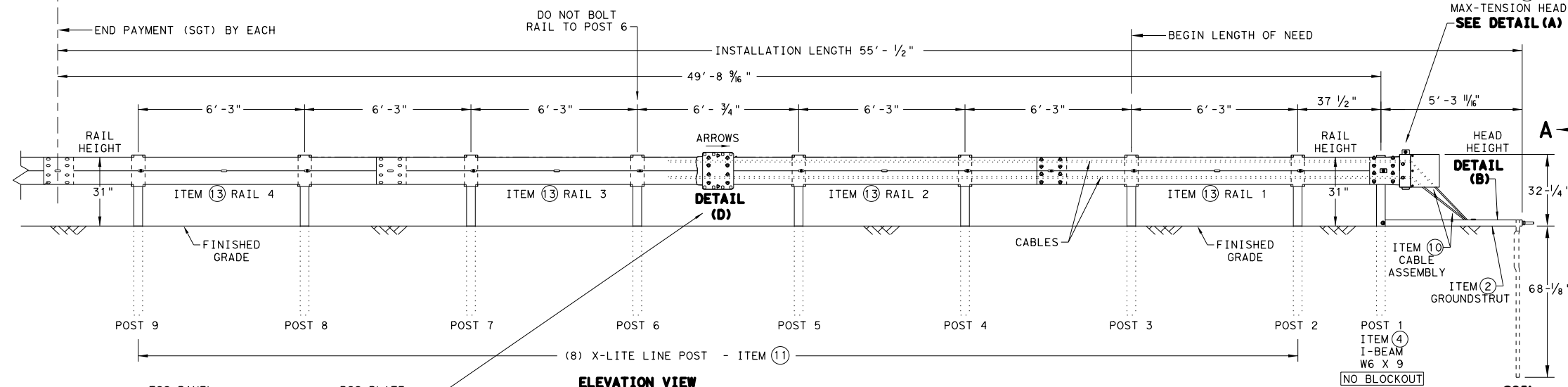
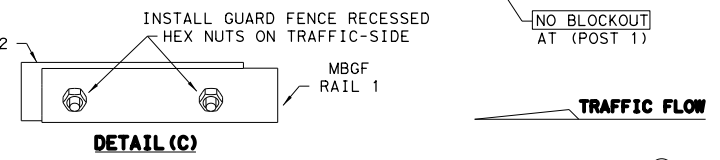
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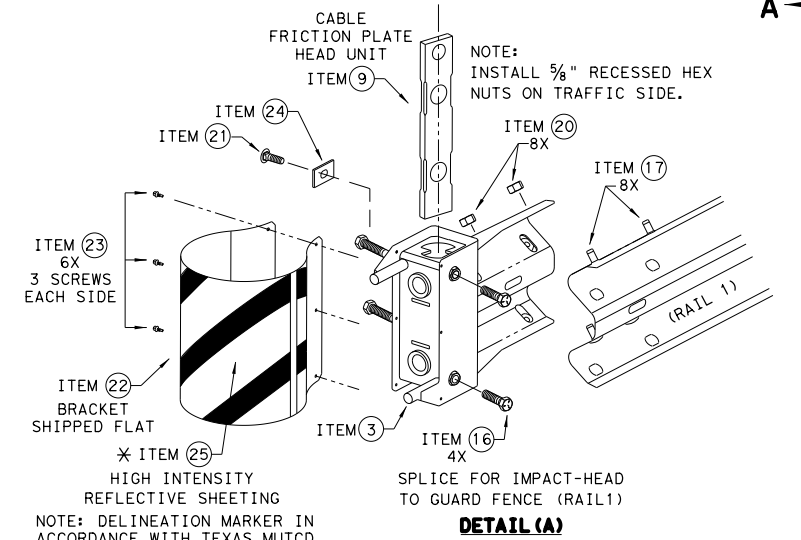


- NOTES:
- ITEM ② COMPOSITE BLOCKOUTS INSTALLED AT LINE POST (9) THRU LINE POST (2).
 - DO NOT INSTALL A BLOCKOUT AT LINE POST (1).

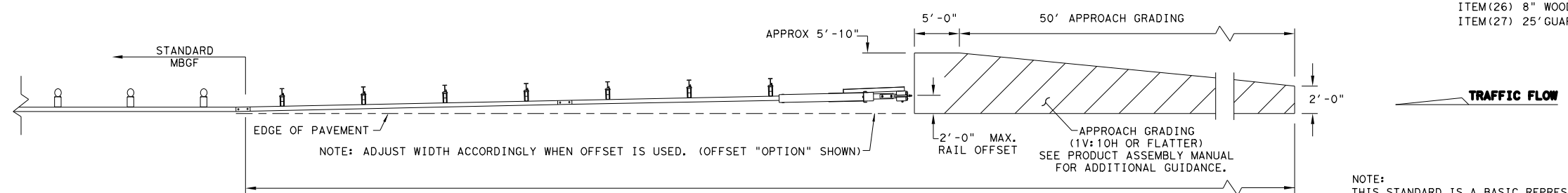
NOTE: SECURE THE (TSS) PANEL TO OUTSIDE OF RAIL 2 WITH THE PANEL ARROWS POINTING TOWARDS THE HEAD.



SECTION VIEW A-A
SOIL ANCHOR, POST 1 & LINE POST 2 THRU 9



- * TO BE PROVIDED BY DISTRIBUTOR OR CONTRACTOR.
- ** ALTERNATIVE ITEMS NOT SHOWN. ITEM (26) 8" WOOD-BLOCKOUTS ITEM (27) 25' GUARD FENCE PANELS



NOTE: TxDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

APPROACH GRADING AT GUARDRAIL END TREATMENTS

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE MAX-TENSION END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

GENERAL NOTES

- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800
- FOR INSTALLATION, REPAIR, & MAINTENANCE REFER TO THE: MAX-TENSION INSTALLATION INSTRUCTION MANUAL. P/N MANMAX REV D (ECN 3516).
- APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
- FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TxDOT'S LATEST ROADWAY MOW STRIP STANDARD.
- ALL STEEL COMPONENTS ARE GALVANIZED PER ASTM A123 OR EQUIVALENT UNLESS OTHERWISE STATED.
- SYSTEM SHOWN USING STEEL WIDE FLANGE POST WITH COMPOSITE BLOCKOUTS.
- COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
- REFER TO INSTALLATION MANUAL FOR SPECIFIC PANEL LAPPING GUIDANCE.
- IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL FOR INSTALLATION GUIDANCE.
- POSTS SHALL NOT BE SET IN CONCRETE.
- A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POST TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST.
- MAX-TENSION SYSTEM SHALL NEVER BE INSTALLED WITHIN A CURVED SECTION OF GUARDRAIL.
- IF A DELINEATION MARKER IS REQUIRED, MARKER SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
- THE SYSTEM IS SHOWN WITH 12'-6" MBGF PANELS, 25'-0" MBGF PANELS ARE ALSO ALLOWED.
- A MINIMUM OF 12'-6" OF 12GA. MBGF IS REQUIRED IMMEDIATELY DOWNSTREAM OF THE MAX-TENSION SYSTEM.

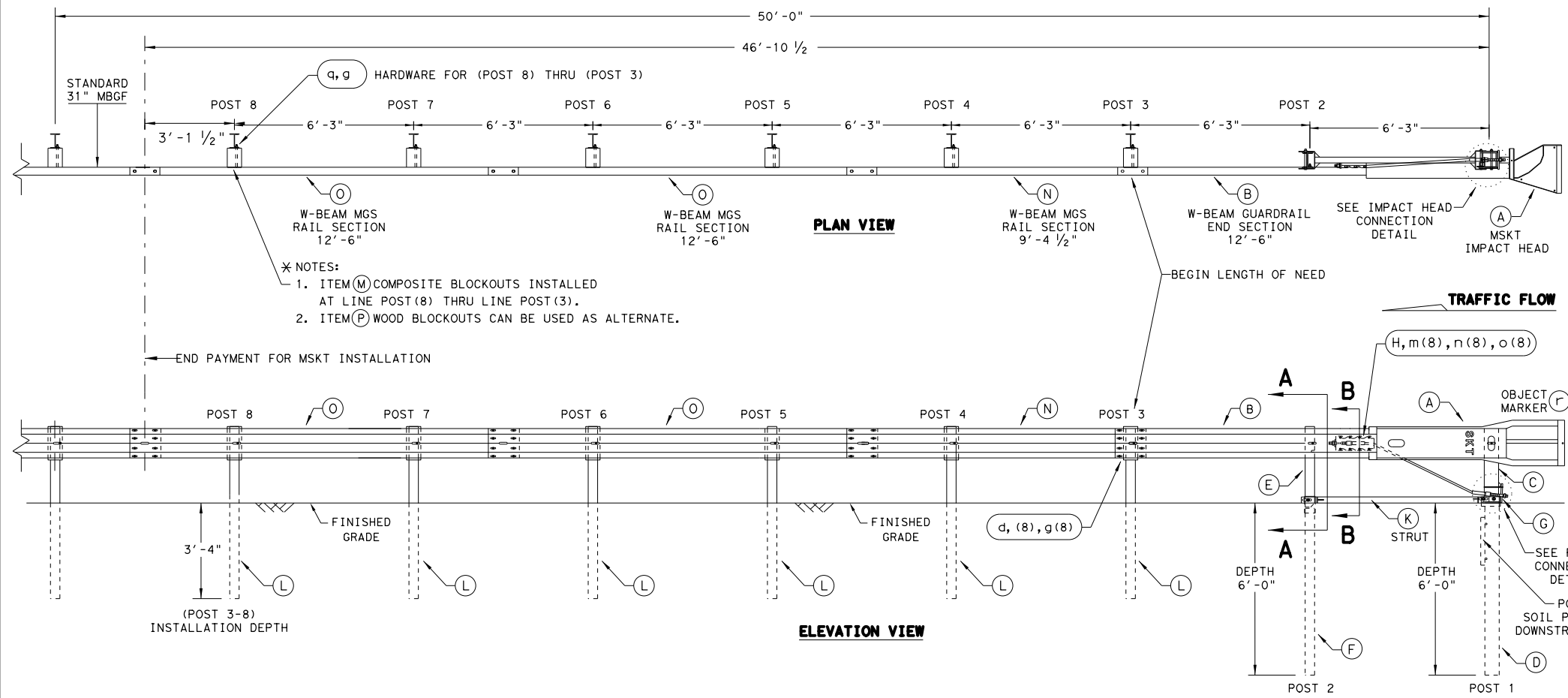
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	BSI-1610060-00	SOIL ANCHOR - GALVANIZED	1
2	BSI-1610061-00	GROUND STRUT - GALVANIZED	1
3	BSI-1610062-00	MAX-TENSION IMPACT HEAD	1
4	BSI-1610063-00	W6x9 I-BEAM POST 6FT.-GALVANIZED	1
5	BSI-1610064-00	TSS PANEL - TRAFFIC SIDE SLIDER	1
6	BSI-1610065-00	ISS PANEL - INNER SIDE SLIDER	1
7	BSI-1610066-00	TOOTH - GEOMET	1
8	BSI-1610067-00	RSS PLATE - REAR SIDE SLIDER	1
9	B061058	CABLE FRICTION PLATE - HEAD UNIT	1
10	BSI-1610069-00	CABLE ASSEMBLY - MASH X-TENSION	2
11	BSI-1012078-00	X-LITE LINE POST-GALVANIZED	8
12	B090534	8" W-BEAM COMPOSITE-BLOCKOUT XT110	8
13	BSI-4004386	12'-6" W-BEAM GUARD FENCE PANELS 12GA.	4
14	BSI-1102027-00	X-LITE SQUARE WASHER	1
15	BSI-2001886	5/8" X 7" THREAD BOLT HH (GR.5)GEOMET	1
16	BSI-2001885	3/4" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET	4
17	4001115	5/8" X 1 1/4" GUARD FENCE BOLTS (GR.2)MGAL	48
18	2001840	5/8" X 10" GUARD FENCE BOLTS MGAL	8
19	2001636	5/8" WASHER F436 STRUCTURAL MGAL	2
20	4001116	5/8" RECESSED GUARD FENCE NUT (GR.2)MGAL	59
21	BSI-2001888	5/8" X 2" ALL THREAD BOLT (GR.5)GEOMET	1
22	BSI-1701063-00	DELINEATION MOUNTING (BRACKET)	1
23	BSI-2001887	1/4" X 3/4" SCREW SD HH 410SS	7
24	4002051	GUARDRAIL WASHER RECT AASHTO FWRO3	1
25	SEE NOTE BELOW	HIGH INTENSITY REFLECTIVE SHEETING	1
26	4002337	8" W-BEAM TIMBER-BLOCKOUT, PDB01B	8
27	BSI-4004431	25' W-BEAM GUARDRAIL PANEL, 8-SPACE, 12GA.	2
28	MANMAX Rev-(D)	MAX-TENSION INSTALLATION INSTRUCTIONS	1

**MAX-TENSION END TERMINAL
MASH - TL-3
SGT (11S) 31-18**

FILE: sg+11s3118.dgn	DN: TxDOT	CK: KM	DW: TxDOT	CK: CL
© TxDOT: FEBRUARY 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
DIST	COUNTY		SHEET NO.	
TYL	HENDERSON		157	

Design Division Standard

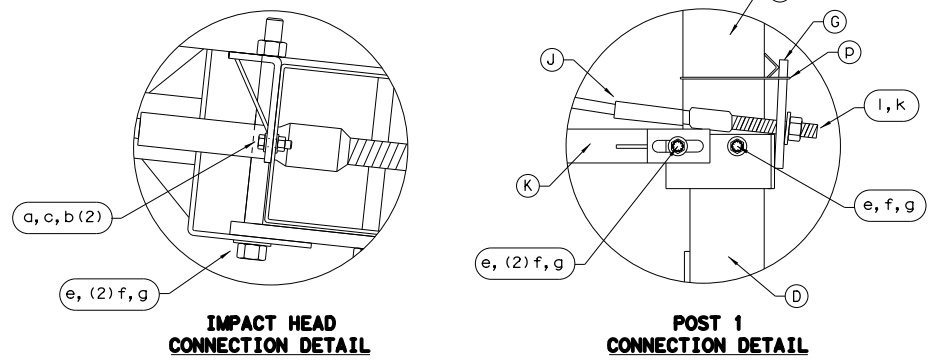
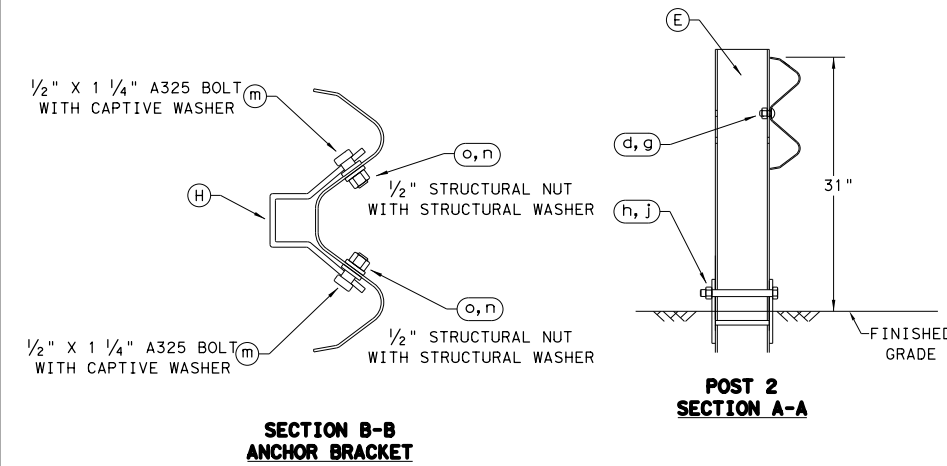
DISCLAIMER: THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TxDOT FOR ANY PURPOSE WHATSOEVER. TxDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.



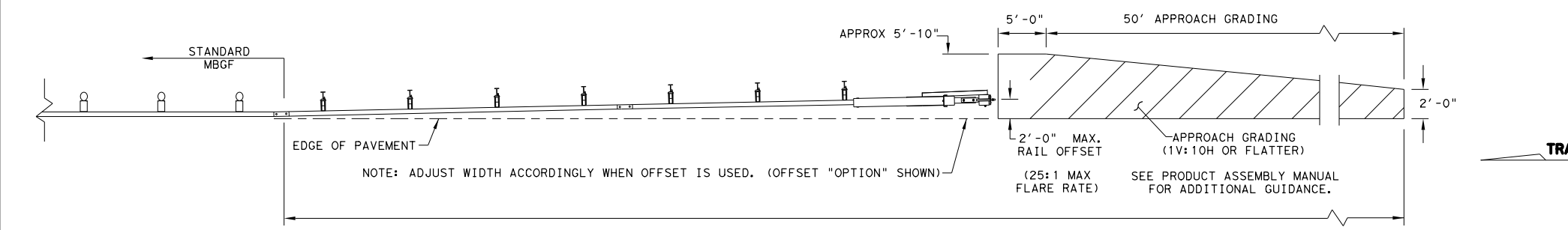
- NOTES:
- ITEM (M) COMPOSITE BLOCKOUTS INSTALLED AT LINE POST (8) THRU LINE POST (3).
 - ITEM (P) WOOD BLOCKOUTS CAN BE USED AS ALTERNATE.

- GENERAL NOTES**
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
 - FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE: MSKT END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL (PUBLICATION-062717).
 - APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
 - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TxDOT'S LATEST ROADWAY MOW STRIP STANDARD.
 - HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
 - SYSTEM SHOWN USING STEEL WIDE FLANGE POSTS WITH COMPOSITE BLOCKOUTS.
 - A COMPOSITE MATERIAL BLOCKOUTS THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
 - IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, & REFER TO THE LATEST ROADWAY MBSGF STANDARD FOR INSTALLATION GUIDANCE.
 - POSTS SHALL NOT BE SET IN CONCRETE.
 - SYSTEM MUST BE ATTACHED TO STANDARD 31" MBSGF.
 - UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
 - A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCRANCHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
 - THE SYSTEM IS SHOWN WITH TWO 12'-6" MBSGF PANELS, ONE 25'-0" MBSGF PANEL IS ALSO ALLOWED IN THEIR PLACE.
 - A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POSTS 3-8 TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST. SPECIAL DRIVING CAP TO BE USED ON LOWER POSTS 1 & 2 TO PREVENT DAMAGE TO THE WELDED PLATES.

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM NUMBERS
A	1	MSKT IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
C	1	POST 1 - TOP (6" X 6" X 1/8" TUBE)	MTPHP1A
D	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
E	1	POST 2 - ASSEMBLY TOP	UHP2A
F	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	GROUND STRUT	MS785
L	6	W6X9 OR W6X8.5 STEEL POST	P621
M	6	COMPOSITE BLOCKOUTS	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 1/2")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
P	6	WOOD BLOCKOUT 6" X 8" X 14"	P675
Q	1	W-BEAM MGS RAIL SECTION (25'-0")	G1209
SMALL HARDWARE			
a	2	5/16" x 1" HEX BOLT (GRD 5)	B5160104A
b	4	5/16" WASHER	W0516
c	2	5/16" HEX NUT	N0516
d	25	5/8" Dia. x 1 1/4" SPLICE BOLT (POST 2)	B580122
e	2	5/8" Dia. x 9" HEX BOLT (GRD A449)	B580904A
f	3	5/8" WASHER	W050
g	33	5/8" Dia. H.G.R NUT	N050
h	1	3/4" Dia. x 8 1/2" HEX BOLT (GRD A449)	B340854A
j	1	3/4" Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	1/2" x 1 1/4" A325 BOLT WITH CAPTIVE WASHER	SB12A
n	8	1/2" STRUCTURAL NUTS	N012A
o	8	1 1/16" O.D. x 3/16" I.D. STRUCTURAL WASHERS	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	5/8" x 10" H.G.R. BOLT	B581002
r	1	OBJECT MARKER 18" X 18"	E3151



ALTERNATIVE ITEMS NOT SHOWN. *
 * ITEM (P) 8" WOOD-BLOCKOUT
 ** ITEM (Q) 25' GUARD FENCE PANEL



NOTE: TxDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

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

Texas Department of Transportation
 Design Division Standard

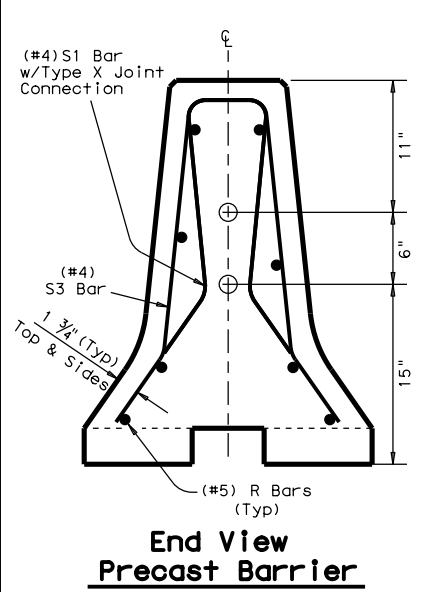
SINGLE GUARDRAIL TERMINAL MSKT-MASH-TL-3 SGT (12S) 31-18

FILE: sgt12s3118.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CL
© TxDOT: APRIL 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
	DIST	COUNTY		SHEET NO.
	TYL	HENDERSON		158

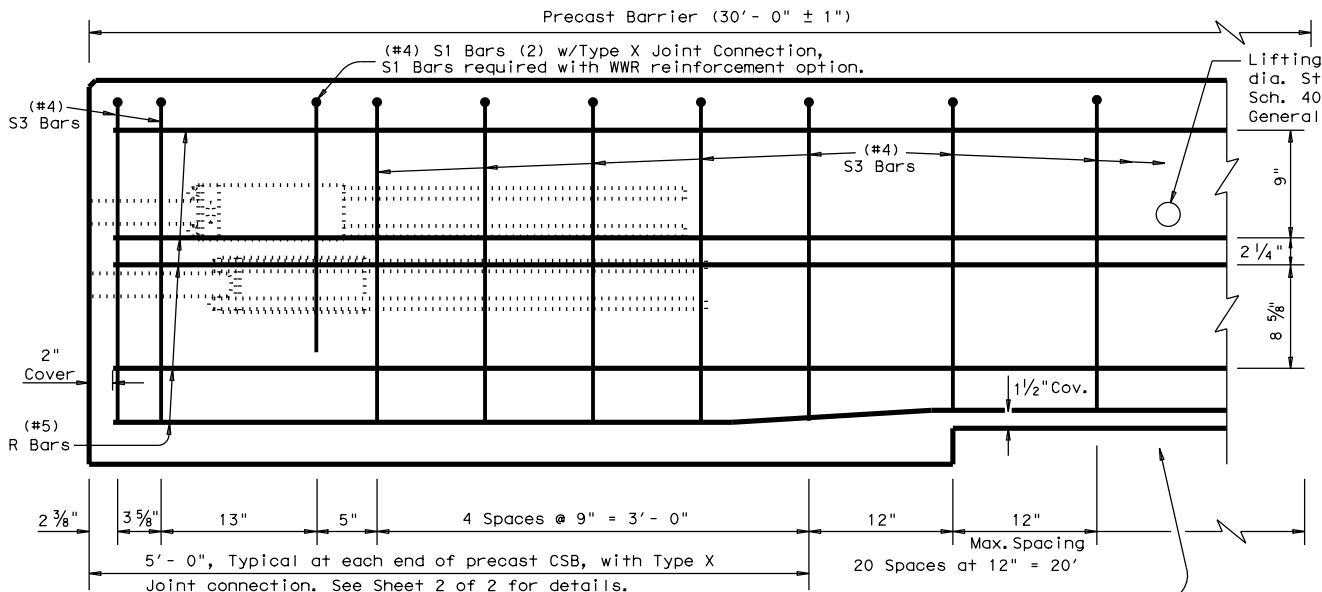
DATE: FILE:

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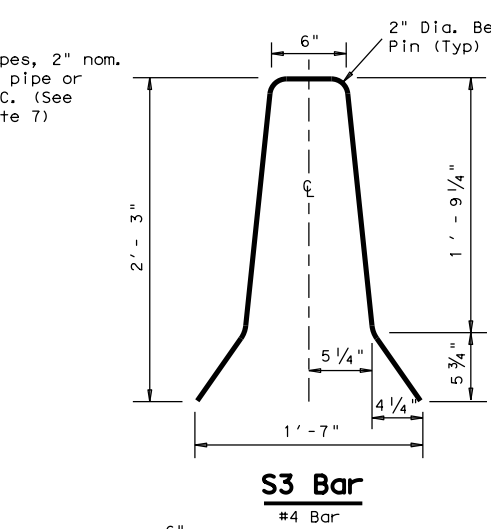
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FILE:



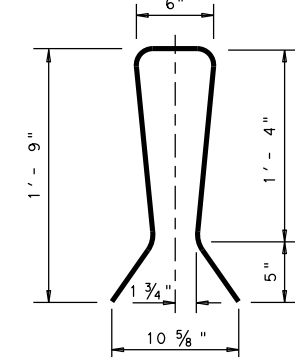
End View Precast Barrier
See sheet 2 of 3 for Joint connection Type X



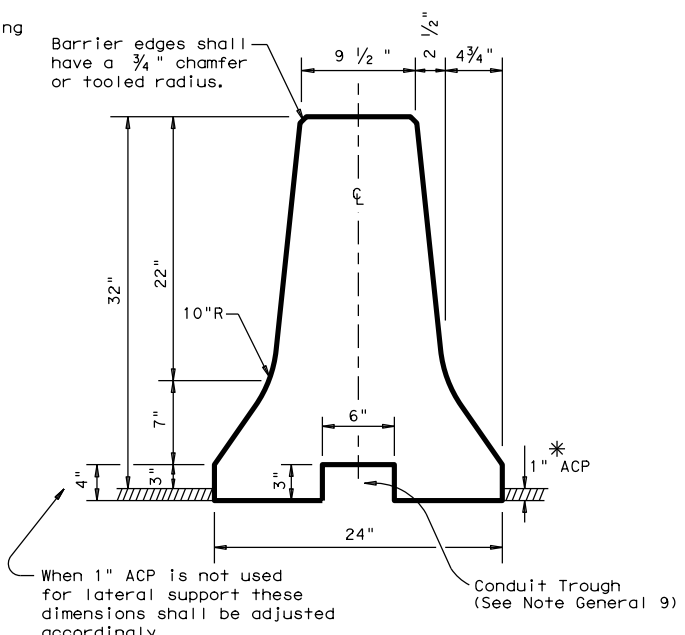
Reinforcement for Precast (CSB) Concrete Safety Barrier (Type 1)
Showing reinforcement for Joint Type X



S3 Bar
#4 Bar



S1 Bar
#4 Bar (2)
(Joint Type X)

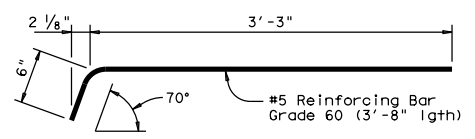


Concrete Safety Barrier

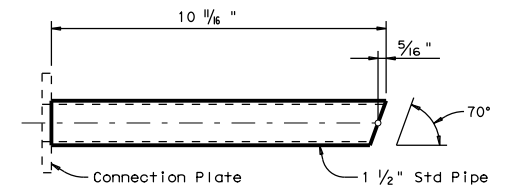
* When 1" ACP is "not" used as lateral support for permanent barrier placement. A permissible method of attaining the equivalent lateral support may be used, See CSB(6) sheet.

GENERAL NOTES

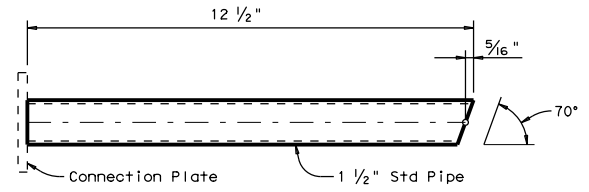
- Concrete shall be Class H with a minimum compressive strength of 3,600 psi.
- Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
- Precast barrier length shall be 30 ft. unless otherwise specified on the plans.
- All precast barrier edges shall have a 3/4" chamfer or toolled radius.
- All concrete, reinforcement, joint connection systems, grout etc. as shown, are considered as part of the barrier payment.
- All steel assemblies for joint shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."
- Regardless of the method of handling, barrier lifting points shall be approx. 7.5 feet from the ends of the barrier. Lifting devices and attachments to barrier sections shall be approved by the Engineer.
- Surface finishing and grouting (where required) shall be two parts sand and one part cement with enough water to make the mixture plastic. Grouting shall be done in a manner that will assure a smooth surface. Surface finishing shall be considered subsidiary to the various bid items involved.
- Conduit trough when required shall be shown elsewhere on the plans, or as directed by the Engineer.



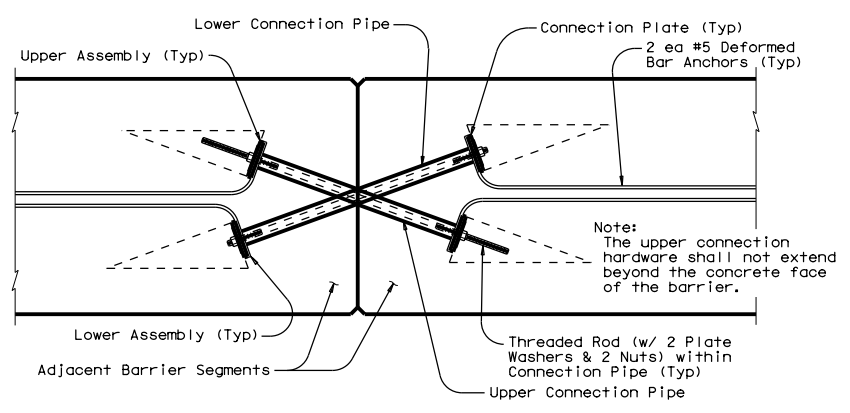
DEFORMED BAR ANCHOR DETAILS
Two (2) Bars required per assembly. Eight (8) required per joint.



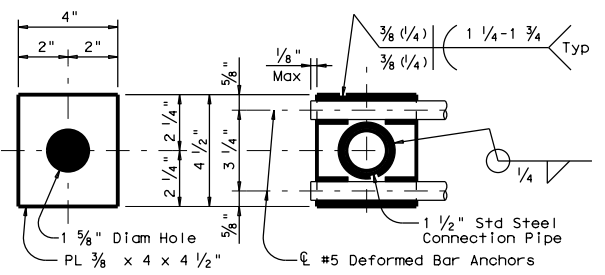
UPPER CONNECTION PIPE DETAILS
One (1) Steel Pipe required per Upper Assembly. Two (2) required per joint.



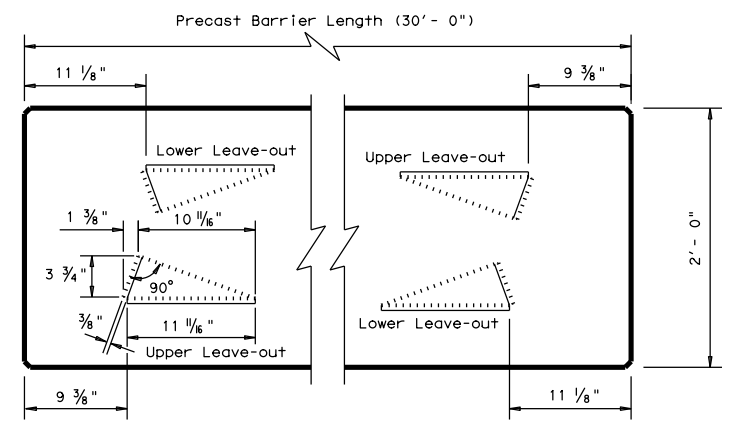
LOWER CONNECTION PIPE DETAILS
One (1) Steel Pipe required per Lower Assembly. Two (2) required per joint.



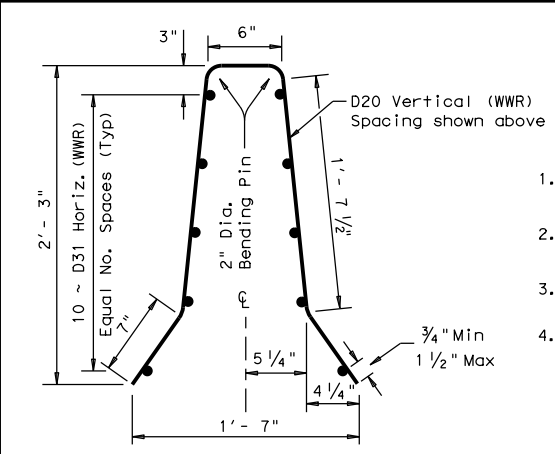
TYPE X JOINT INSTALLATION DETAIL
Barrier reinforcing and Type X Joint Leave-Out dimensions not shown for clarity.



CONNECTION PLATE DETAILS
One (1) Plate required per assembly. Four (4) required per joint. All steel fittings for joint Type X shall be galvanized after fabrication in accordance with Item 445.

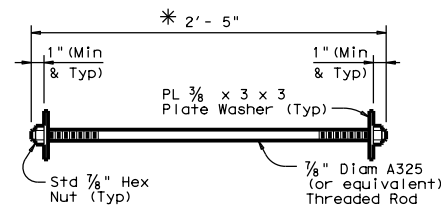


BARRIER PLAN AT END JOINTS



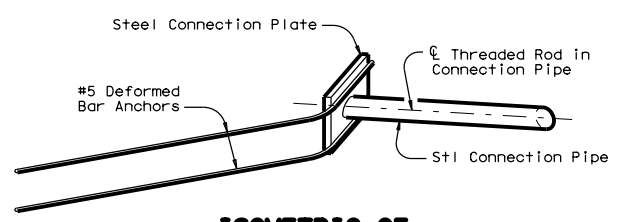
Welded Wire Reinforcement (WWR) Option for Bars R and S3
(WWR) General Notes

- Deformed Welded Wire Reinforcement (WWR) shall conform to ASTM A497.
- Welded wire cage may be cut or bent to accommodate the Type X joint connection and drainage slots, as directed by the Engineer.
- All reinforcement shall comply with Item 440, "Reinforcing Steel."
- Combinations of reinforcing steel and WWR will be permitted, as directed by the Engineer. The dimension from the end of the barrier section to the first wire shall not exceed 3".



CONNECTION BOLT OR THREADED ROD DETAIL
Two (2) Threaded Rods (Or Equivalent Hex Hd. Bolts) (w/ Two (2) PL 3/8 x 3 x 3 Plate Washers & Two (2) Std Hex Nuts) required per joint.

* The connection hardware shall not extend beyond the concrete face of the barrier. Hex head bolts may be provided. The proper length of all hardware should be verified.



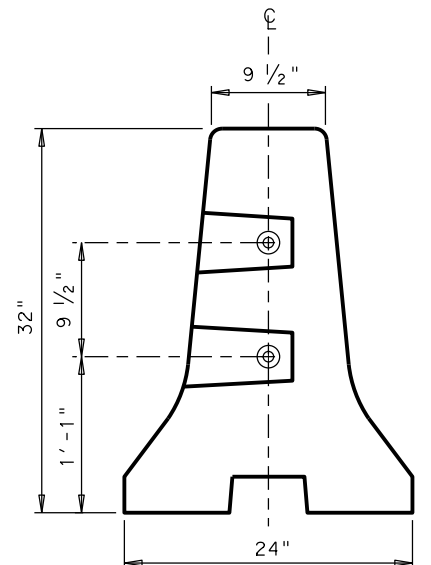
ISOMETRIC OF TYPICAL WELDED ASSEMBLY
Four (4) [2 Upper & 2 Lower] Assemblies required per joint.

Weight of one Precast 30 ft. (CSB) segment = Approx. 6.5 Tons or 440 lbs per ft.

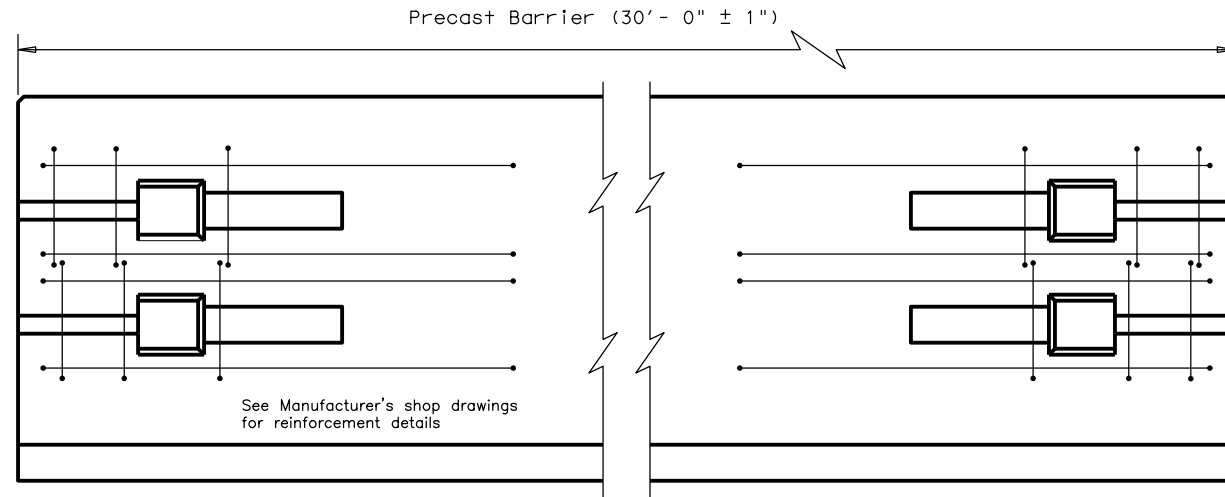
SHEET 1 OF 2

		Design Division Standard	
CONCRETE SAFETY BARRIER (F-SHAPE) PRECAST BARRIER (TYPE 1) CSB(1)-10			
FILE: csb110.dgn	DN: TxDOT	CK: AM	DW: BD
© TxDOT December 2010	CONT: 0108	SECT: 03	JOB: 041
REVISIONS	DIST: TYL	COUNTY: HENDERSON	HIGHWAY: SHEET NO. 159

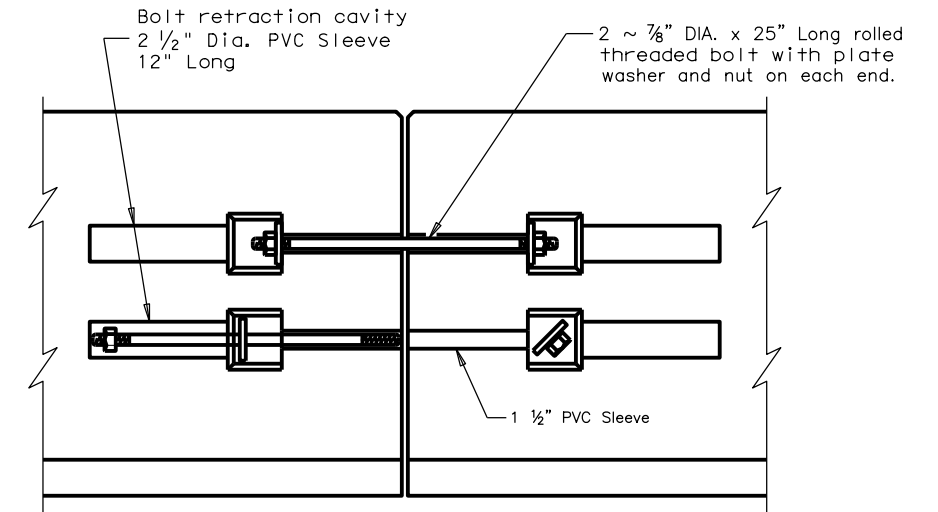
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END VIEW (CSB) QUICK-BOLT
QUICK-BOLT POCKET LOCATIONS

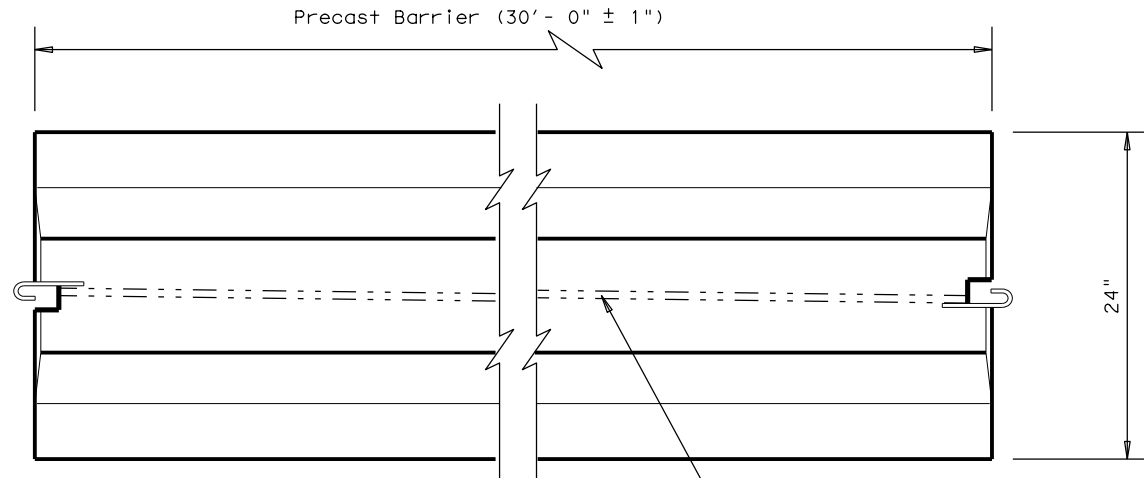


ELEVATION (CSB) QUICK-BOLT
See Manufacturer's shop drawing for additional details

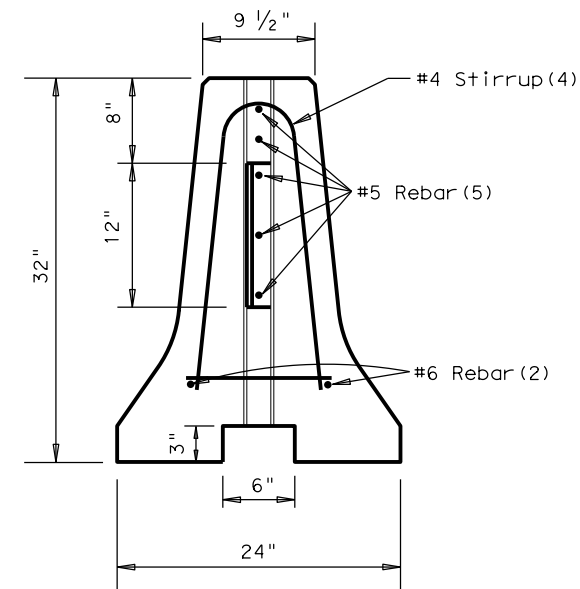


ELEVATION VIEW SHOWING JOINT CONNECTION
"QUICK-BOLT"

Joint Connection (Type Q)

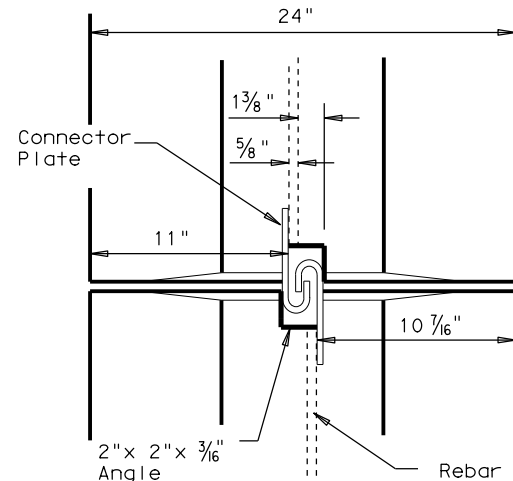


TOP VIEW
PRECAST (CSB) WITH J-J HOOKS
See Manufacturer's shop drawing for additional details



END VIEW
J-J HOOK CONNECTION

Joint Connection (Type J)



VIEW FROM ABOVE
J-J HOOK CONNECTION

Proprietary Joint Connections (CSB)

Two proprietary joint connections are acceptable as alternates to the (Type X) connection shown, here on. These joint connections types are:

J-J Hooks by Easi-Set Industries, (800)547-4045
Quick-Bolt by Bexar Concrete, (210)497-3773

If one of these connection systems are exclusively specified in the plans, prior approval for sole source use must be obtained. Details of the connection components and barrier reinforcement for these systems, will be shown on the manufacturer's shop drawing(s) furnished to the Engineer.

SHEET 2 OF 2



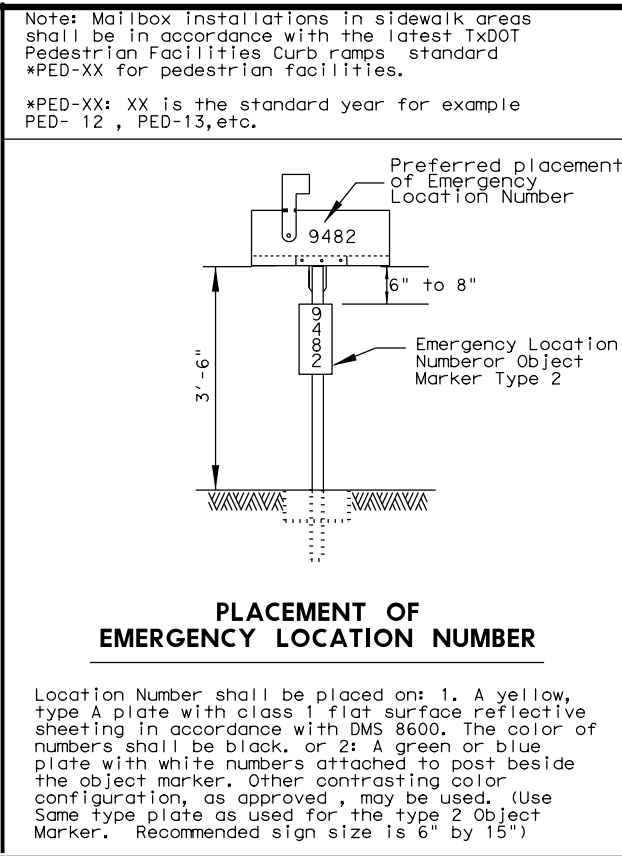
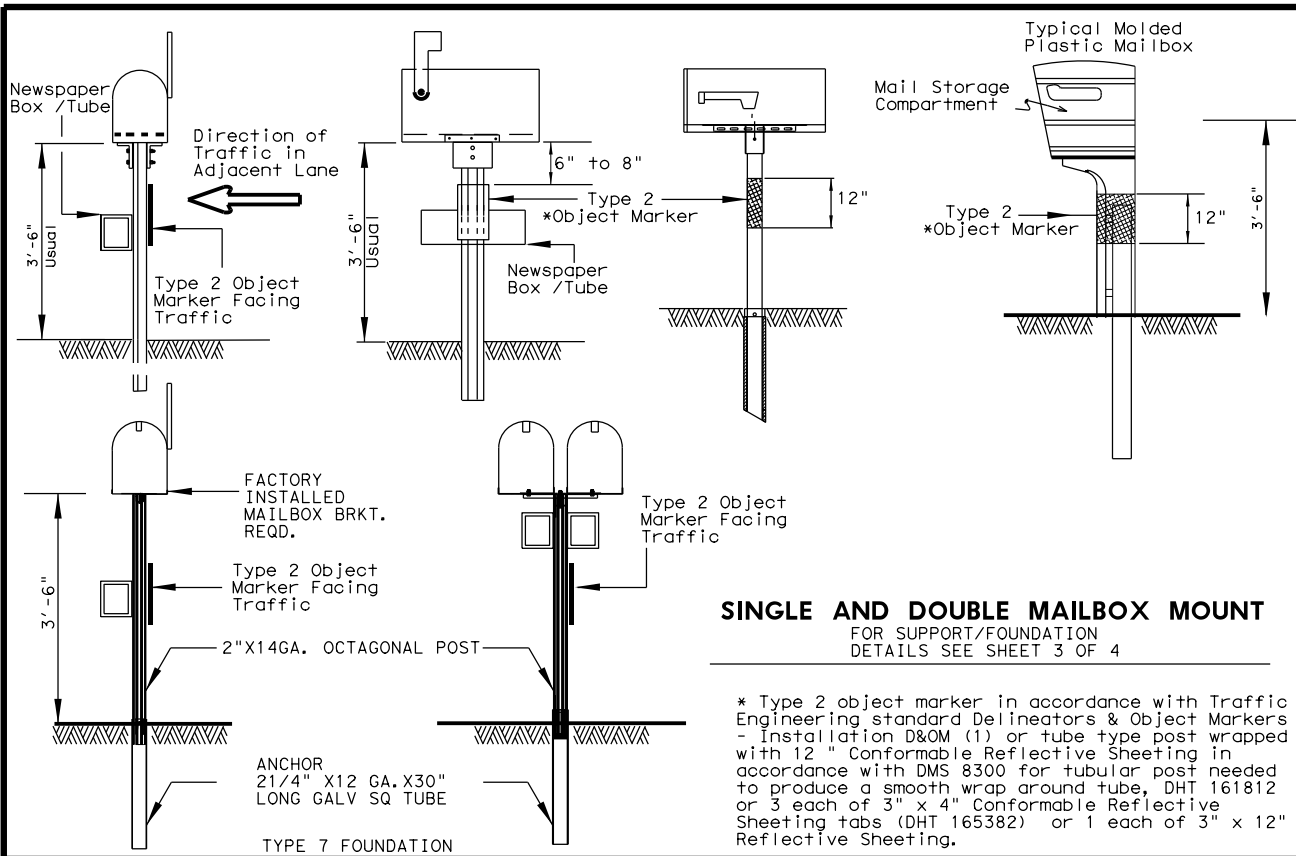
CONCRETE SAFETY BARRIER (F-SHAPE)
PRECAST BARRIER (TYPE 1)

CSB(1)-10

FILE: csb110.dgn	DN: TxDOT	CK: AM	DW: BD	CK: VP
© TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
	DIST	COUNTY		SHEET NO.
	TYL	HENDERSON		160

DATE:
FILE:

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TYPICAL MAILBOX SIZE

SIZE	INCHES			POUNDS	
	LENGTH	WIDTH	HEIGHT	MAXIMUM WEIGHT	
SMALL	19 1/2	6	7	5	5
MEDIUM	22 1/2	8	11 1/2	7	7
LARGE	23 1/2*	11 1/2*	13 1/2*	10	10

* Maximum allowed dimensions for mailbox
** Excluding Molded Plastic on 4 X 4 Post

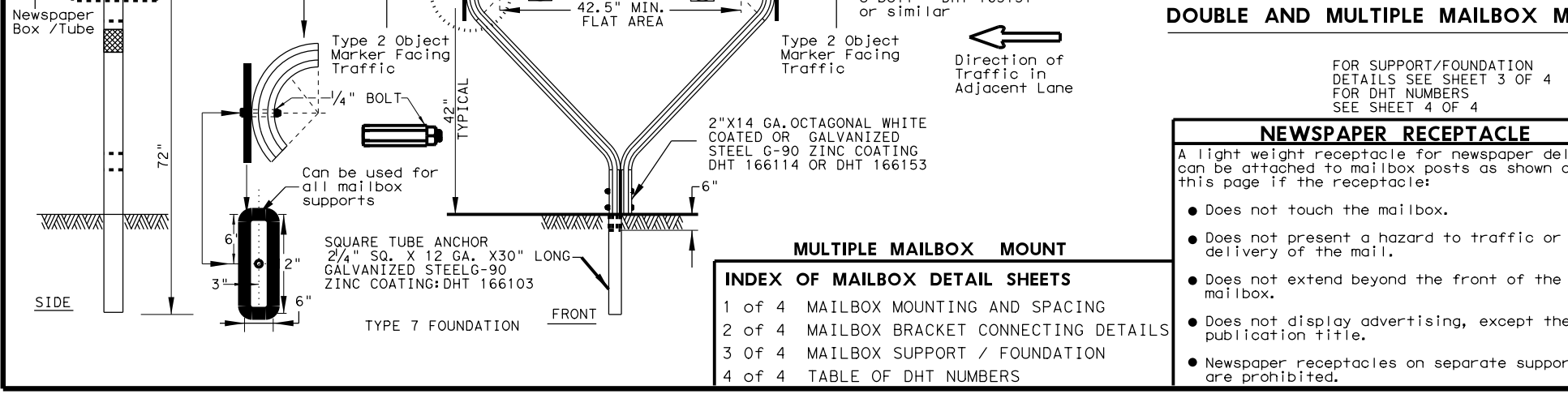
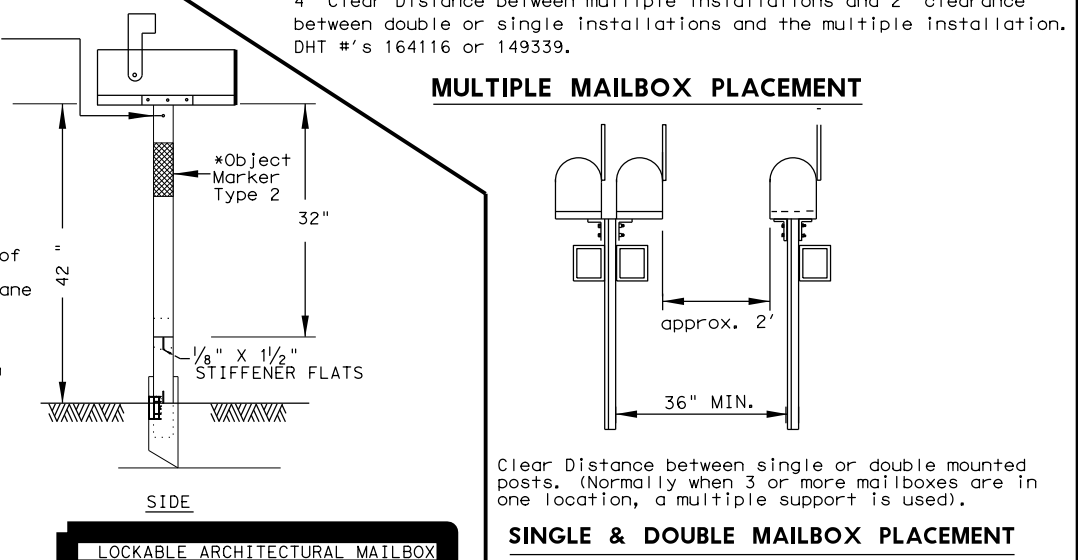
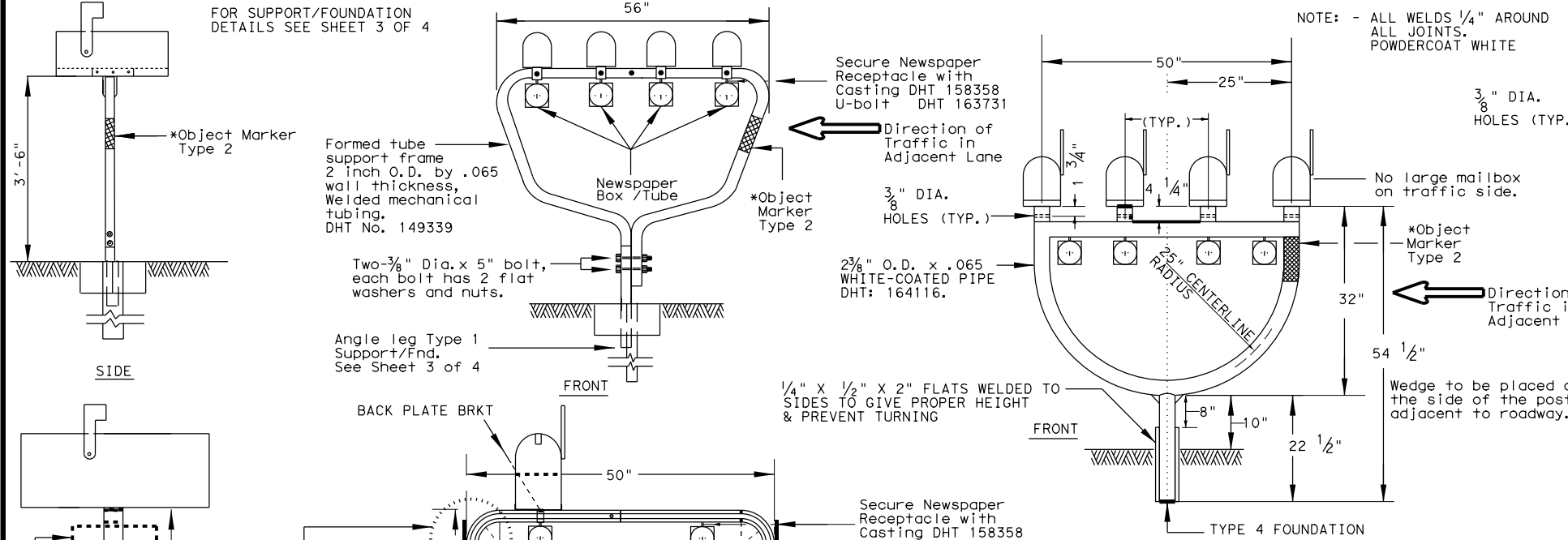
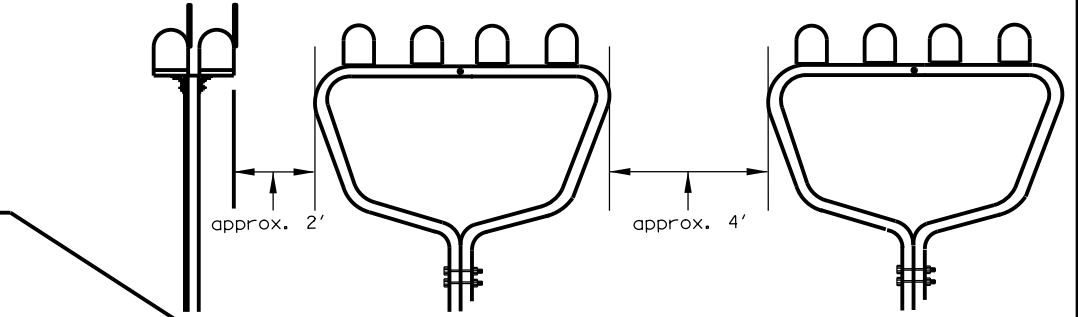
LOCKABLE ARCHITECTURAL MAILBOX SIZE (INCHES)

VIEW	TOP	BOTTOM	FRONT SIDE	BACK SIDE	WEIGHT (POUNDS)
SIDE	18	15	18.3	15	22.4
BACK	11 1/2	11 1/2		15	

Mailboxes shall be made of light weight sheet metal or light weight plastic. Lockable architectural mailboxes shall meet the requirements of the above table.

Heavy steel, cast iron or decorative mailboxes shall not be used on the state highway system.

SEE TOP RIGHT CORNER OF SHEET 2 OF 4



LOCKABLE ARCHITECTURAL MAILBOX

SEE SHEET 4 OF 4 FOR DETAILS

PLAN VIEW

ELEVATION VIEW

TYPE 2 Object Marker Facing Traffic

TRAFFIC SIDE

GROUND SIDE

SHEET 1 OF 4

Texas Department of Transportation

Maintenance Division Standard

MAILBOX MOUNTING AND SPACING MB-15(1)

FILE: MB14(1).DGN

DN: JEO

CK: JEO

DW:

CK:

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CON: 0108

SECT: 03

JOB: 041

HIGHWAY: SH 19

REVISIONS:

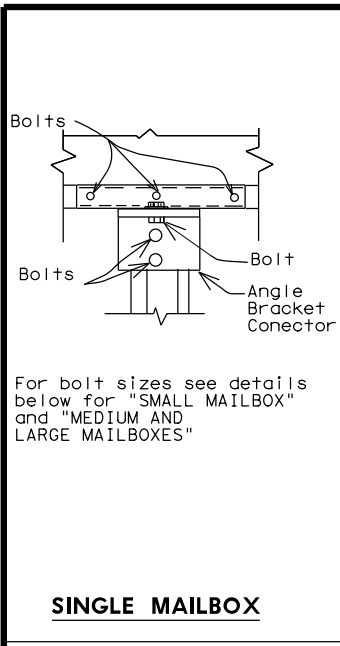
Added additional newspaper receptacle for double mailbox support

DIST: TYL

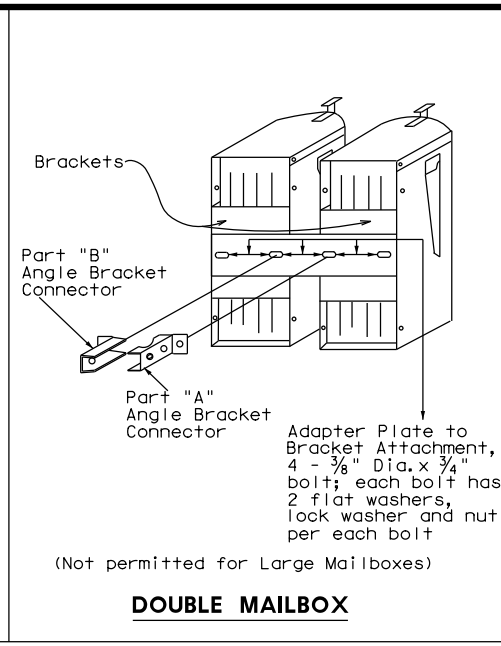
COUNTY: HENDERSON

SHEET NO.: 161

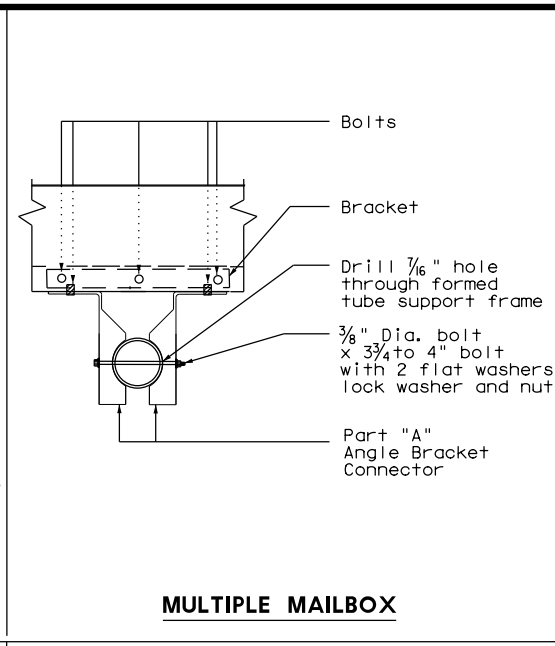
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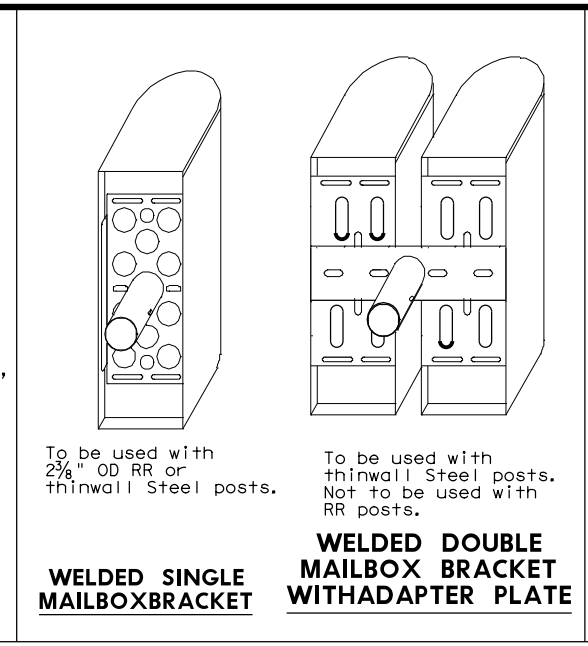
SINGLE MAILBOX



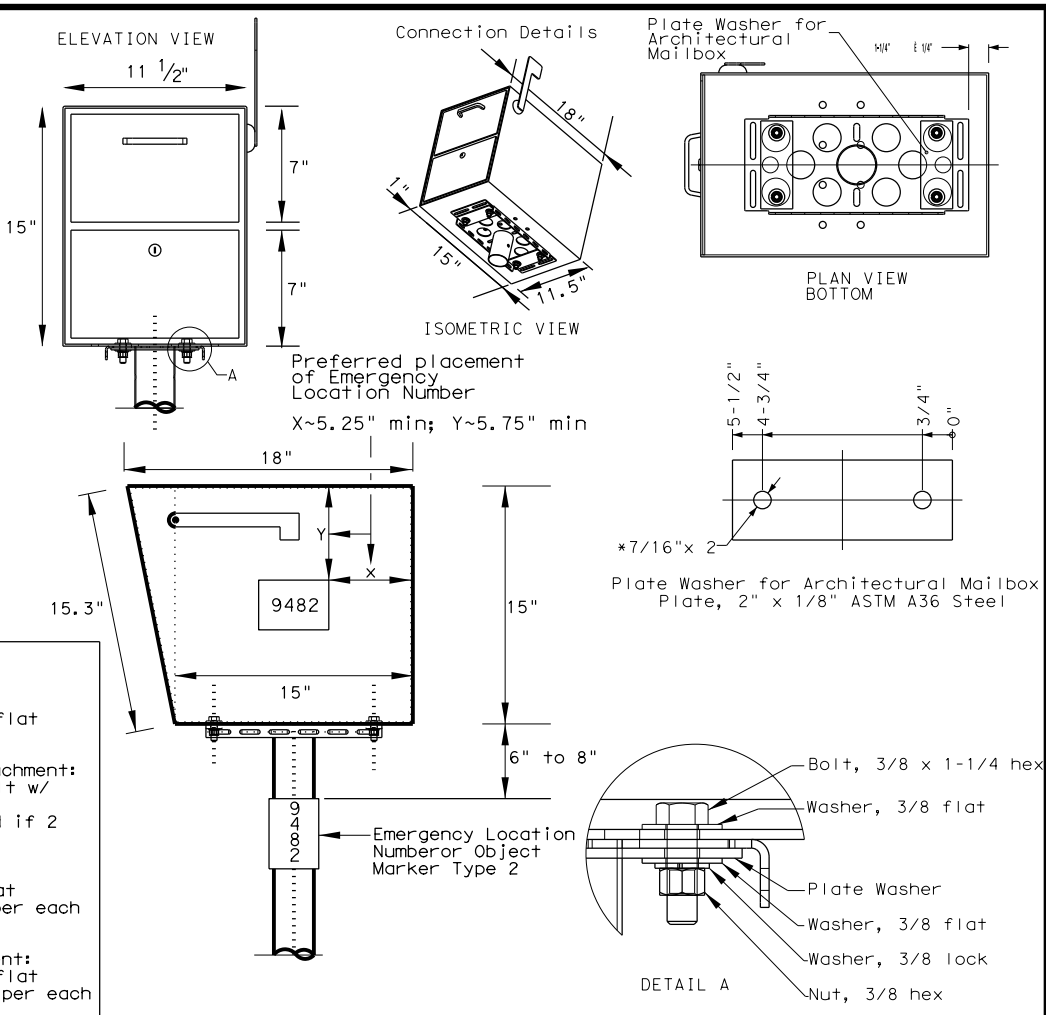
DOUBLE MAILBOX



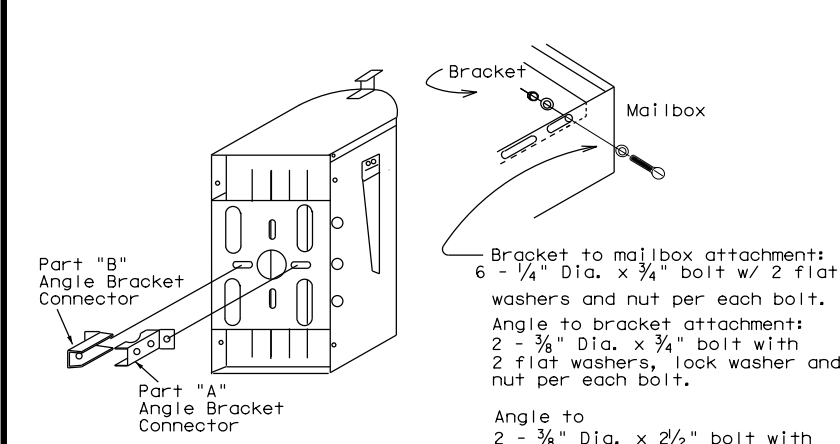
MULTIPLE MAILBOX



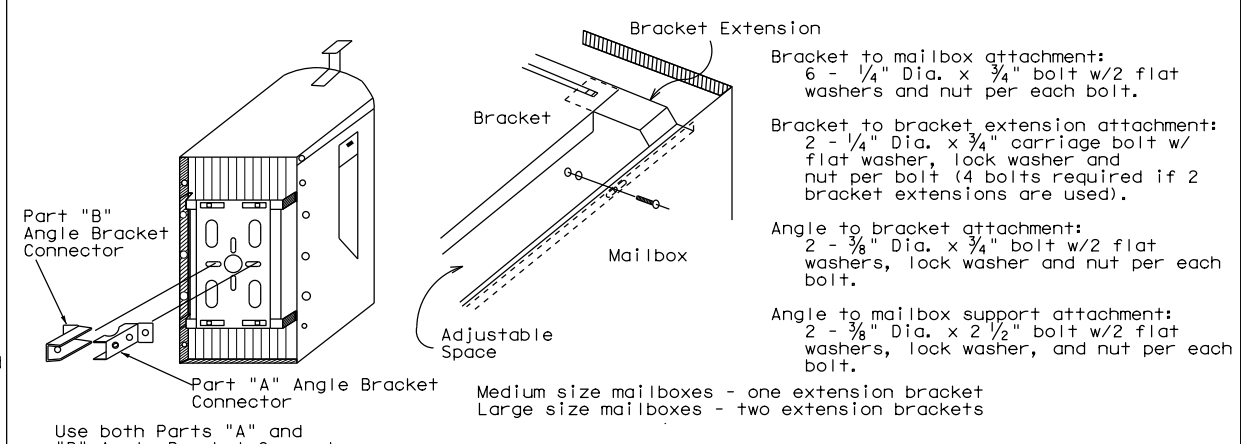
WELDED SINGLE MAILBOX BRACKET **WELDED DOUBLE MAILBOX BRACKET WITH ADAPTER PLATE**



LOCKABLE ARCHITECTURAL MAILBOX CONNECTION DETAILS



SMALL MAILBOX



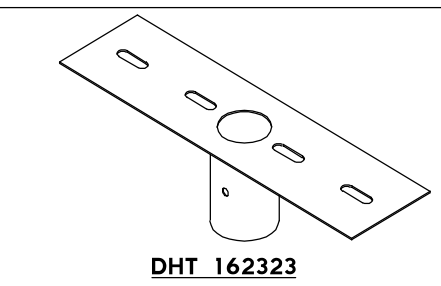
MEDIUM AND LARGE MAILBOXES

GENERAL NOTES

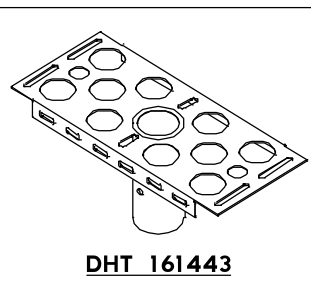
1. Connecting hardware detailed on this sheet is for the hardware that the Department stocks at the Regional Warehouses. This hardware is available to the contractor only when so stated elsewhere in the plans or specification.
2. Hardware for mounting mailboxes to the support/foundation furnished by industry should be used when shown on the Maintenance Divisions "Approved Products List." Only mailbox hardware that have been crash tested in accordance with NCHRP Report 350, will be on the approved list.
3. Hardware furnished by industry shall be erected in accordance with the manufacturer's recommendation.
4. Bracket and bracket extension shall be constructed of 14 gauge galvanized steel sheet metal.
5. The angles, brackets and adapter plates shall be constructed of 12 gauge galvanized steel sheet metal.
6. Items with evidence of damage to the galvanized coating or wet storage stains (white rust) will not be accepted.



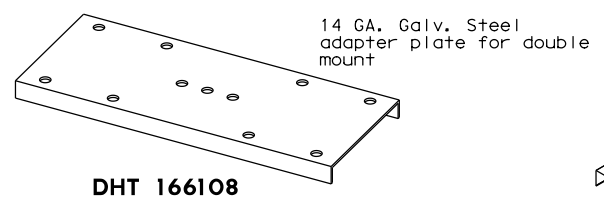
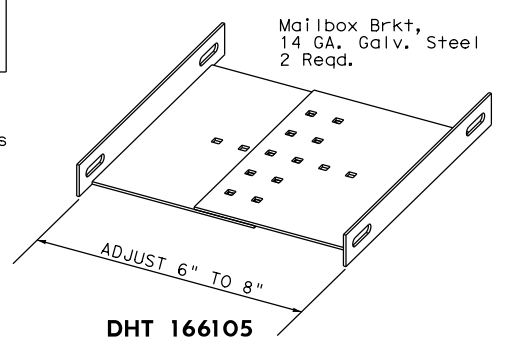
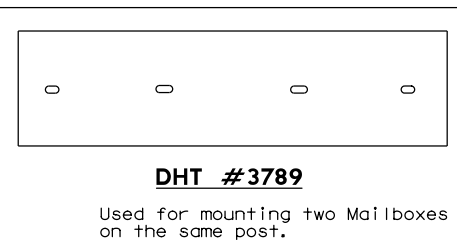
MAILBOX BRACKET CONNECTING DETAILS MB-15(1)



For use with galvanized thinwall steel posts DHT # 143426 or powder-coated thinwall steel post DHT # 162911.

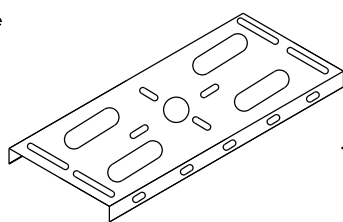


For use with RCR post DHT # 161442 or galvanized thinwall steel post DHT # 143426 or powder-coated thinwall steel post. DHT # 162911.

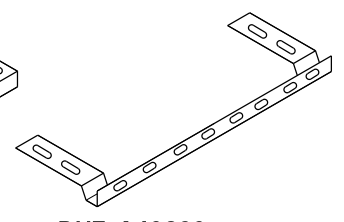


HARDWARE AT TXDOT REGIONAL WAREHOUSES

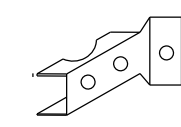
Brackets and adapter plate shown in this section should be available to the Contractor when stated elsewhere in plans or specifications.



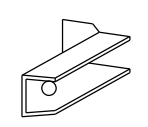
DHT 148939
Mailbox Bracket



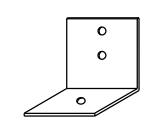
DHT 148938
Used for extending 6" wide bracket to attach larger mailboxes.
Bracket Extension



DHT 159489
Part "A" Angle Bracket Connector



DHT 159490
Part "B" Angle Bracket Connector

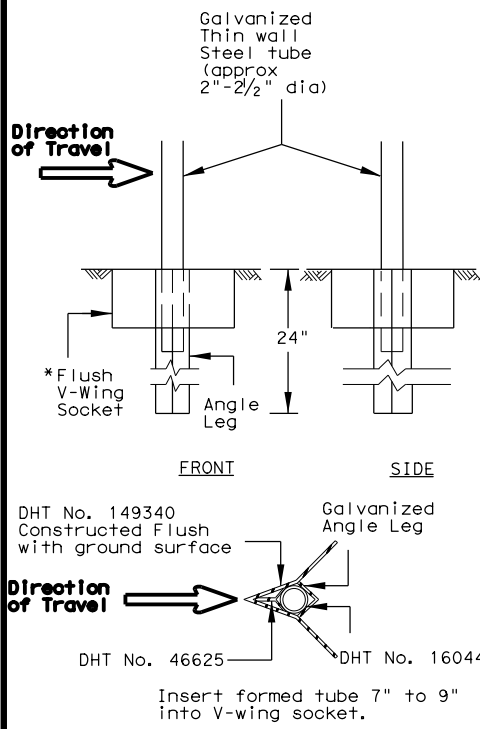


DHT 2917
Angle Bracket For Temporary Mailbox

See Table of Applicable DHT Numbers on sheet 4 of 4 for DHT description and unit of measure.

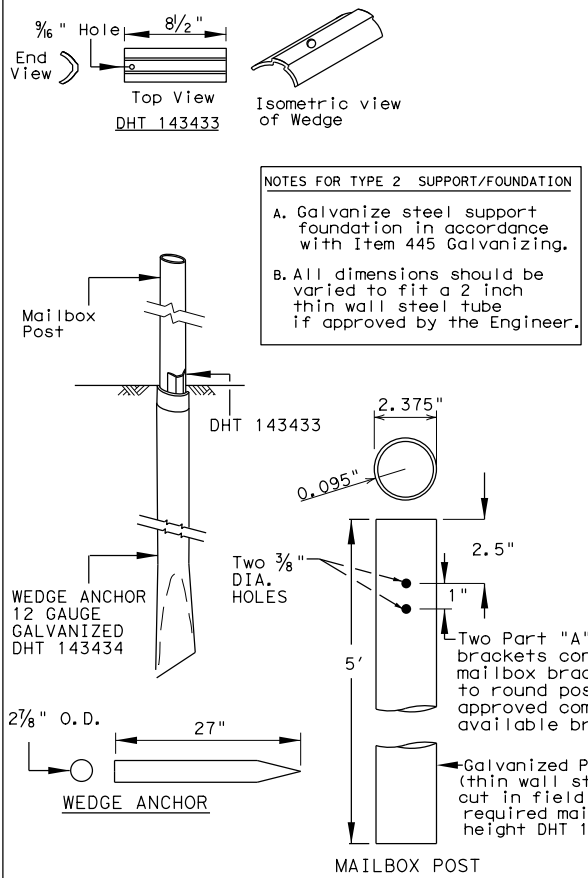
FILE:MB14(1).DGN	DN: JEO	CK:	DW: JEO	CK:
© TxDOT APRIL 2015	CONT	SECT	JOB	HIGHWAY
ADDED DHT 163730	0108	03	041	SH 19
	DIST	COUNTY	SHEET NO.	
	TYL	HENDERSON	162	

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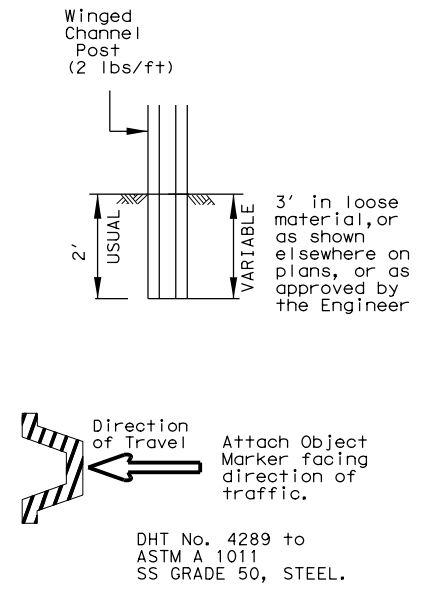
TYPE 1 SUPPORT/FOUNDATION

THIN WALL STEEL TUBE w/ V-LOC ANCHORAGE



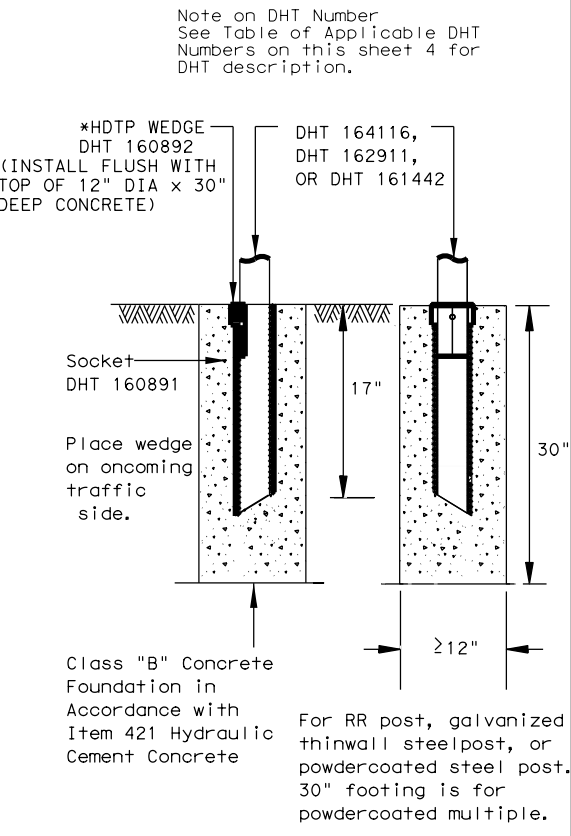
TYPE 2 SUPPORT/FOUNDATION

THIN WALL STEEL TUBE w/ WEDGE ANCHOR SYSTEM



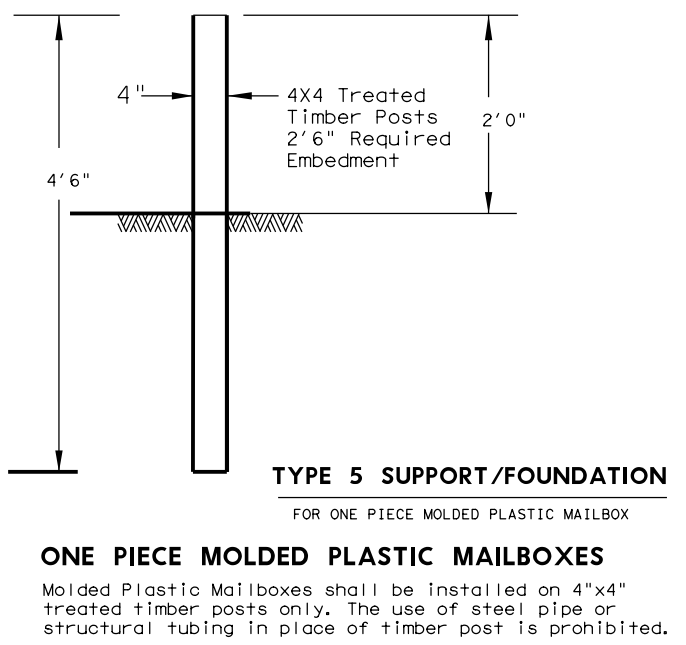
TYPE 3 SUPPORT/FOUNDATION

WINGED CHANNEL POST



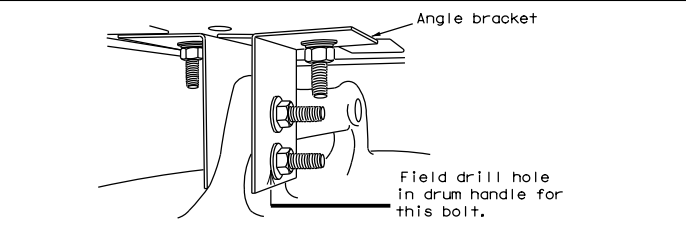
TYPE 4 SUPPORT/FOUNDATION

FOR WHITECOATED STEEL POST, MULTIPLE POST, AND RECYCLED RUBBER.



TYPE 5 SUPPORT/FOUNDATION

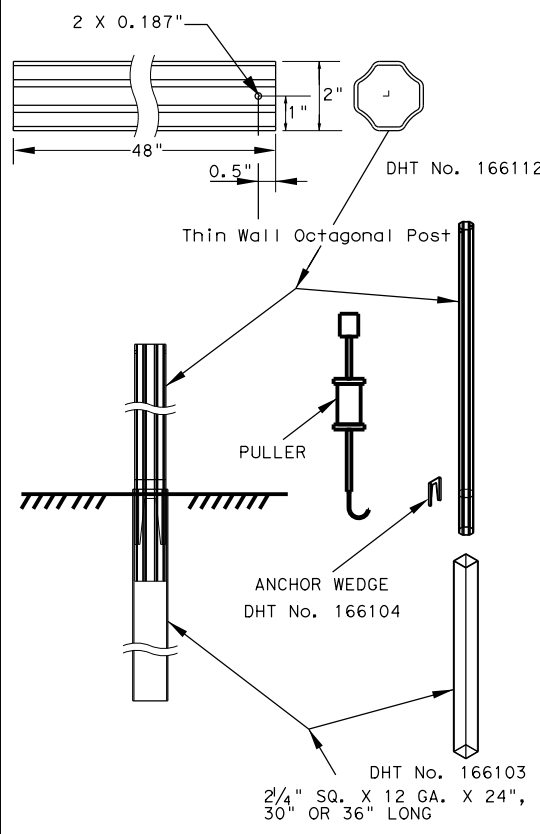
FOR ONE PIECE MOLDED PLASTIC MAILBOXES
Molded Plastic Mailboxes shall be installed on 4"x4" treated timber posts only. The use of steel pipe or structural tubing in place of timber post is prohibited.



TYPE 6 TEMPORARY MAILBOX SUPPORT

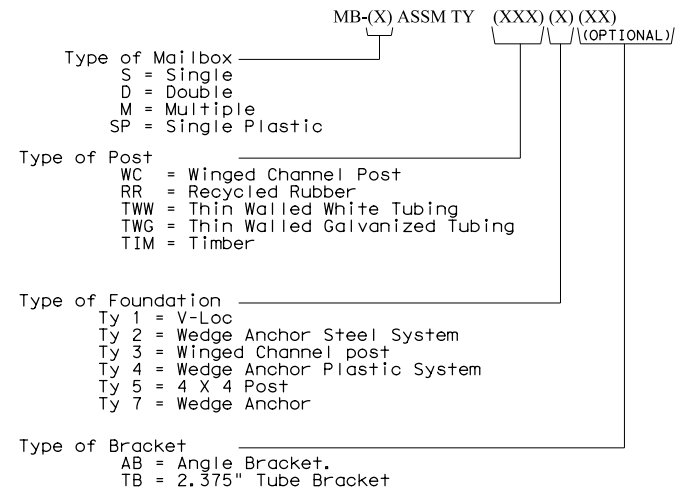
CONNECTION DETAIL

- GENERAL NOTES**
- Erect post plumb or vertical.
 - When galvanized part is required galvanize in accordance with Item 445.
 - type 1, 2, 3, 4 or 7 supports or foundation can be used for single or double mailbox installations. The RCR post should be used only for a single installation with a small mailbox. The Type 5 support/foundation is used for the single molded plastic mailbox. The Type 4 support/foundation is used for the 2.375" O.D. RR post, thin wall steel post, and white multiple mailbox post.
 - The Type 1 or type 7 support/foundation can be used for a multiple mailbox mount.
 - The Type 4 support should be used with thin wall steel pipe for the medium, large and double mailbox installations.
 - 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.



TYPE 7 MAILBOX SUPPORT/FOUNDATION

CONNECTION DETAIL



DOUBLE AND LARGE MAILBOXES MUST BE ON STEEL POST.

*HFTP: High density thermoplastic polyesters



MAILBOX SUPPORT AND FOUNDATION
MB-15(1)

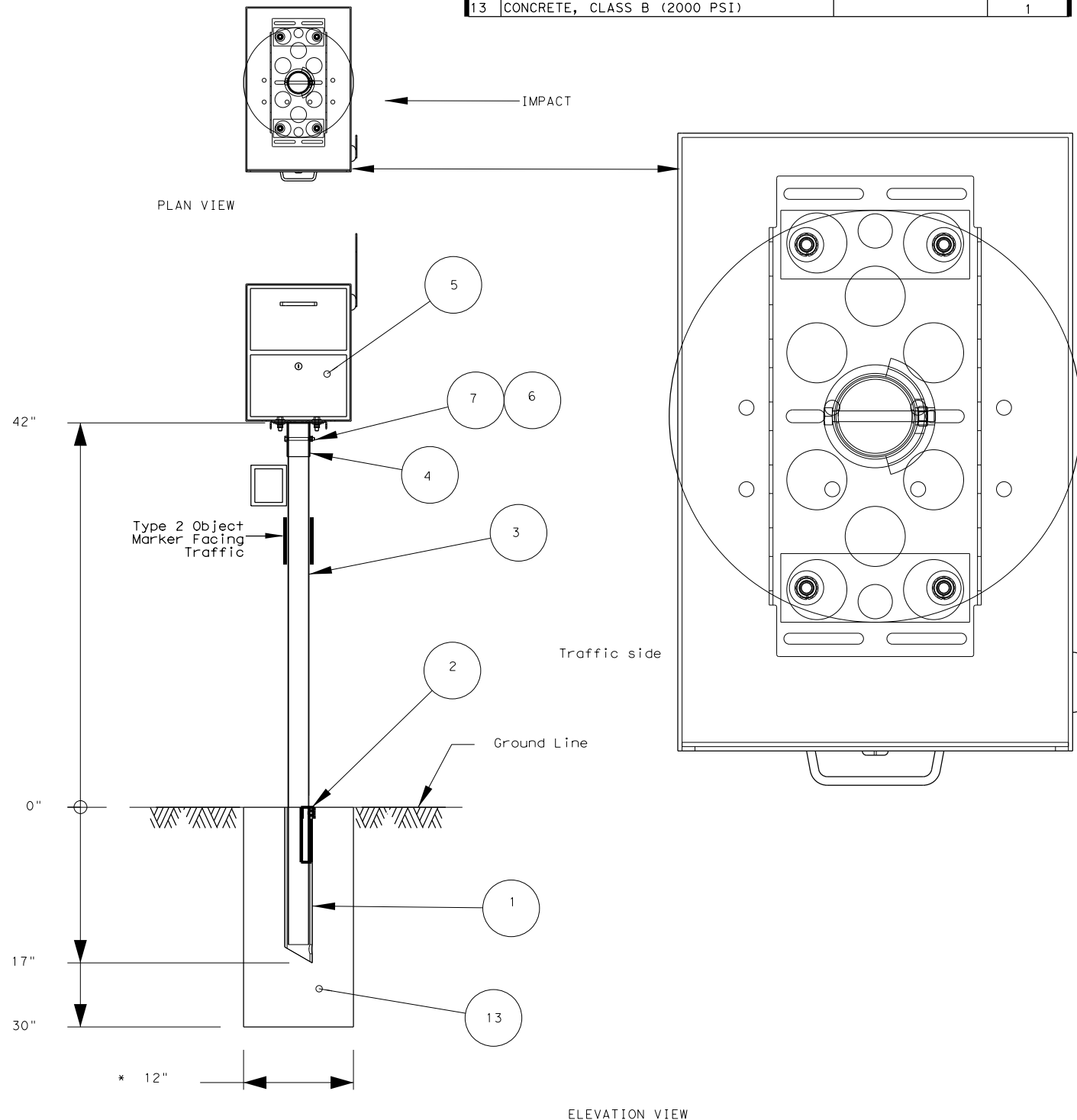
FILE:MB14(1).DGN	DN: JEO	CK:	DW: JEO	CK:
© TxDOT APRIL 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
	DIST	COUNTY	SHEET NO.	
	TYL	HENDERSON	163	

LOCKABLE ARCHITECTURAL MAILBOX

SINGLE-MOUNT INSTALLATION PARTS

#	PART NAME	PART/DHT #	QTY
1	SOCKET, TYPE 4 FOUNDATION	160891	1
2	WEDGE FOR TYPE 4 FOUNDATION	160892	1
3	THIN-WALL WHITE STEEL TUBE 2.375 OD	162911	1
4	BRACKET FOR ATTACHING MAILBOX	161443	1
5	ARCHITECTURAL MAILBOX	SEE NOTE	1
6	NUT, 5/16" HEX	NUT, 5/16" HEX	1
7	BOLT, 5/16 X 3 HEX	GRADE 5	1
8	PLATE WASHER FOR ARCHITECTURAL MAILBOX	SEE SEE SHEET 2	2
9	WASHER, 3/8 FLAT		8
10	WASHER, 3/8 LOCK		4
11	NUT, 3/8 HEX		4
12	BOLT, 3/8 X 1-1/4 HEX	GRADE 5	4
13	CONCRETE, CLASS B (2000 PSI)		1

LOCKABLE ARCHITECTURAL MAILBOX DETAILS



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TABLE OF APPLICABLE DHT NUMBERS

DHT NUMBER	DESCRIPTION
FOUNDATIONS	
46625	WEDGE FOR V-WING SOCKET FOR TYPE 1 FOUNDATION
149340	V-WING SOCKET FOR TYPE 1 FOUNDATION
143433	WEDGE FOR TYPE 2 FOUNDATION
143434	ANCHOR FOR TYPE 2 FOUNDATION
166103	ANCHOR FOR TYPE 7 FOUNDATION
160891	SOCKET FOR TYPE 4 FOUNDATION
160892	WEDGE FOR TYPE 4 FOUNDATION
166104	WEDGE FOR TYPE 7 FOUNDATION
POSTS	
4289	WINGED CHANNEL MAILBOX POST
149339	MULTIPLE MAILBOX POST (GALVANIZED TUBING)
164116	MULTIPLE MAILBOX POST (WHITE COATED)
166114	MULTIPLE MAILBOX POST (WHITE COATED OCTAGONAL)
166153	MULTIPLE MAILBOX POST (GALVANIZED OCTAGONAL)
161442	RECYCLED RUBBER POST. FOR SMALL MAILBOX ONLY
143426	THIN-WALL GALVANIZED STEEL TUBE 2.375" OUTER DIAMETER
162911	THINWALL WHITE STEEL TUBE 2.375" OUTER DIAMETER
	SINGLE OR DOUBLE THIN-WALL MAILBOX POST GALVANIZED
166152	2" OCTAGONAL
	SINGLE OR DOUBLE THIN-WALL MAILBOX POST WHITECOATED
166112	2" OCTAGONAL
REFLECTIVE SHEETING	
161812	REFLECTIVE SHEETING FOR EMERGENCY LOCATION NUMBER PANEL
CONNECTING HARDWARE	
2917	ANGLE BRACKET USED FOR TEMPORARY MAILBOX SUPPORT
166105	BRACKET FOR SINGLE MOUNTING OF MAILBOXES (MOUNTING KIT)
3789	PLATE FOR DOUBLE MOUNTING OF MAILBOXES
166108	BRACKET FOR DOUBLE MOUNTING OF MAILBOXES (MOUNTING KIT)
166111	BRACKET FOR MULTIPLE MOUNTING OF MAILBOXES (MOUNTING KIT)
148939	BRACKET FOR ATTACHING SMALL OR MEDIUM SIZE MAIL BOX
148938	EXTENDER TO BRACKET FOR ATTACHING LARGE MAILBOX
159489	ANGLE BRACKET PART A
159490	ANGLE BRACKET PART B
	BRACKET FOR DOUBLE MOUNTING OF MAILBOXES ON THINWALL
162323	STEEL POST, GALVANIZED OR POWDERCOATED.
	BRACKET FOR ATTACHING MAILBOX TO RECYCLED RUBBER POST
161443	AND TO MULTIPLE WHITE MAILBOX POST
158358	CASTING (NEWSPAPER RECEPTACLE BRACKET)
163731	U-BOLT (NEWSPAPER RECEPTACLE BRACKET)
160698	BOLT; HEX HEAD, GALV; 3/8"DIA X 3/4"L HD, W/2-FLAT WASHERS
163750	BOLT; HEX HEAD, GALV; 3/8" X 1-1/2, 16 NC, W/WASHERS
160701	BOLT; HEX HEAD, GALV; 3/8"DIA X 2-1/2"L, HD, W/2-FLAT WASHERS
163730	BOLT; HEX HEAD, GALV; 3/8" X 3-1/2", NC, W/NUT, 2 FLAT WASHERS
160699	BOLT; HEX HEAD, GALV; 3/8"DIA X 3-3/4"L HD, W/2-FLAT WASHERS
160700	BOLT; HEX HEAD, GALV; 3/8"DIA X 4"L HD, W/2-FLAT WASHERS

SHEET 4 OF 4

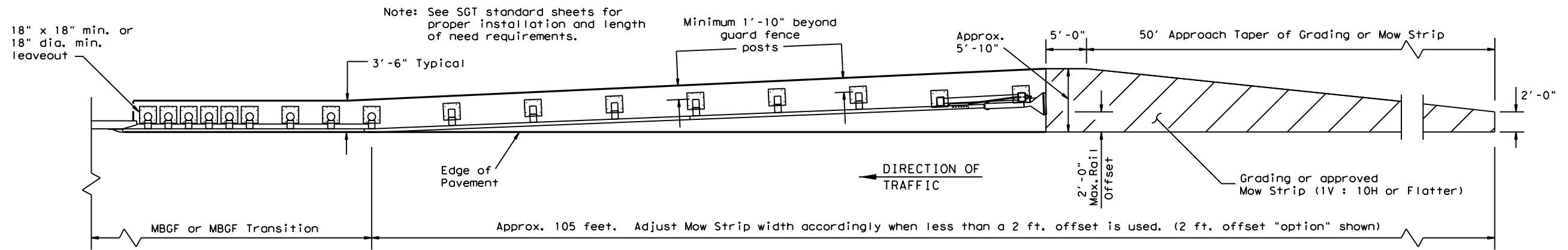


**DHT NUMBERS TABLE
MB-15(1)**

FILE:MB14(1).DGN	DN:	CK:	DW:	CK:
© TxDOT APRIL 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
	DIST	COUNTY		SHEET NO.
	TYL	HENDERSON		164

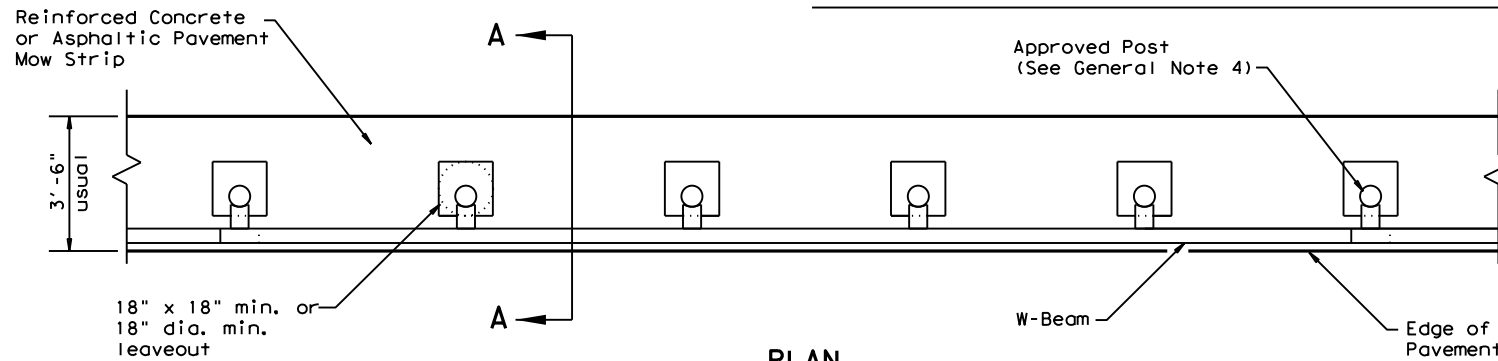
DISCLAIMER: THE USE OF THIS STANDARD IS COVERED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE:
FILE:



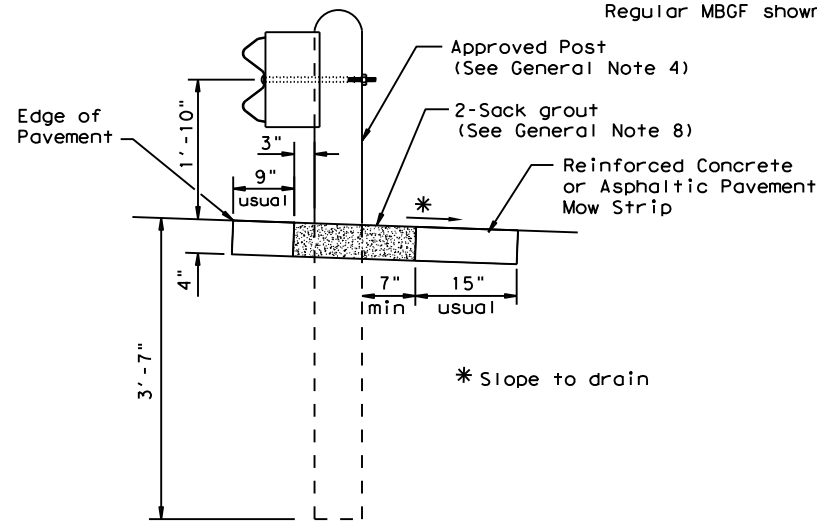
GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS

Note: Site Condition(s)
Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.
Approach grading or mow strip may be decreased or eliminated. As directed by the Engineer.



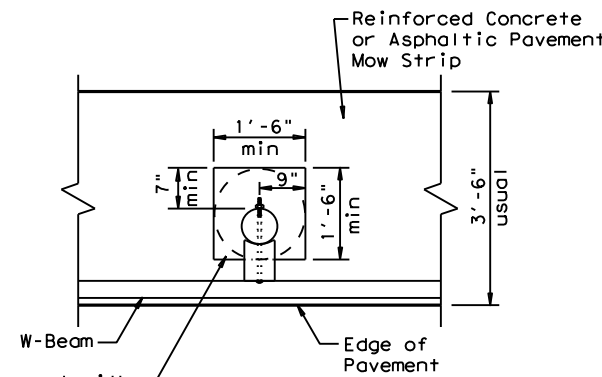
PLAN

Regular MBGF shown with Mow Strip



SECTION A-A

Typical

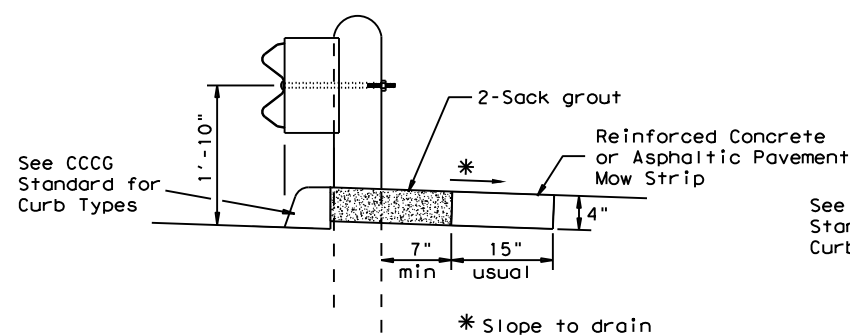


MOW STRIP DETAIL

Reinforced Concrete or Asphaltic Pavement Mow Strip with 18" x 18" or 18" dia. minimum leaveout.

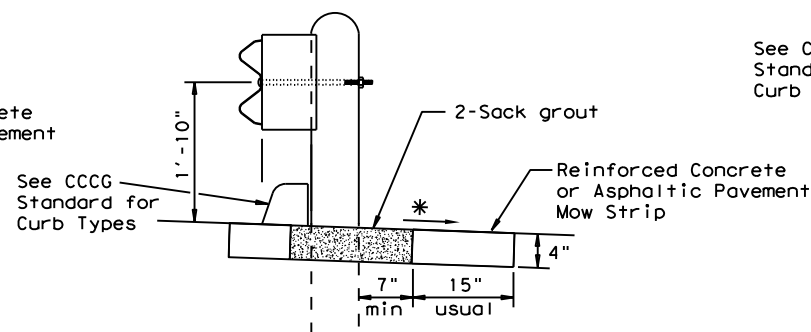
GENERAL NOTES

1. This mow strip design is for use with metal beam guard fence, guard fence transitions, and guard fence end treatments (See SGT standards for proper SGT installation).
2. Mow strips shall be asphaltic pavement or reinforced concrete (wire mesh or synthetic fiber), as shown on the plans and will be paid for under the pertinent bid item of work. Asphaltic pavement shall meet the requirements of the item, and be placed in accordance with the pertinent bid item as shown on the plans. Reinforced concrete shall be placed in accordance with Item 432, "Riprap." The use of the synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Material Producer List (MPL), maintained by TxDOT, Construction Division.
3. The leaveout behind the post shall be a minimum of 7".
4. The type of approved post will be shown elsewhere in the plans. See the applicable standard sheets for additional details and information.
5. Other curb placement options may be used. Curbs are not considered part of the mow strip and will be paid for under other pertinent bid item.
6. Depth of mow strip will be 4".
7. The limits of payment for asphaltic pavement or reinforced concrete will include leaveouts for posts.
8. The leave-outs shall be filled with no more than a 2-sack grout mixture (1 part cement, 5 parts water, and 14 parts sand by volume) with a 28-day compressive strength of approximately 120 psi or less. Provide grout of a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of rip rap mow strip.



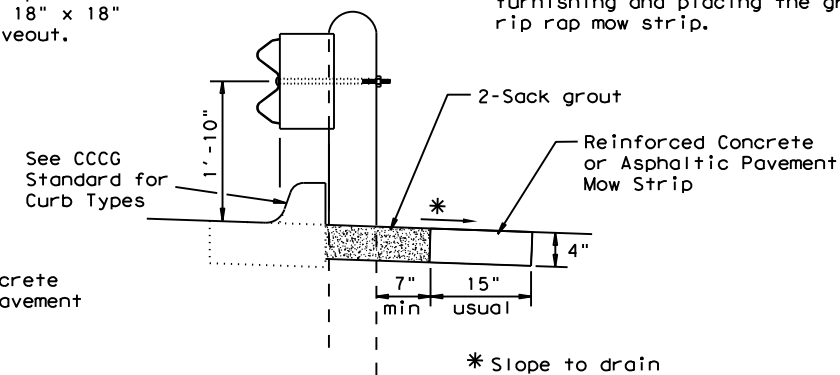
CURB OPTION (1)

This option will increase the post embedment through out the system.



CURB OPTION (2)

Curb shown on top of mow strip



CURB OPTION (3)

ONLY FOR USE IN MAINTENANCE REPAIRS.



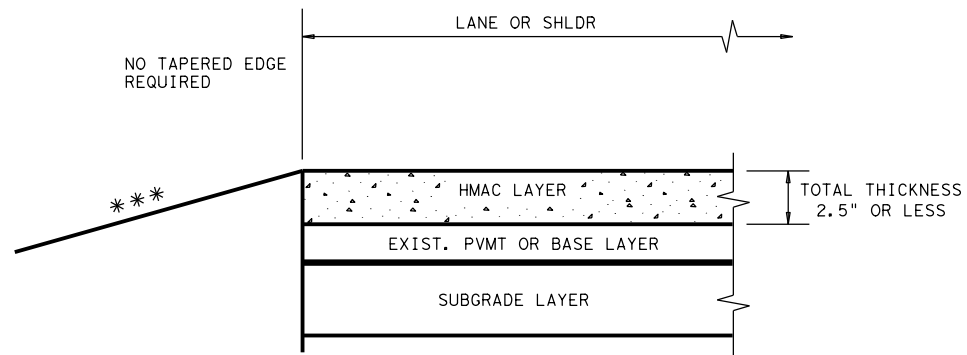
METAL BEAM GUARD FENCE (MOW STRIP)

MBGF (MS) - 19

FILE: mbgfms19.dgn	DN: TxDOT	CK: KM	DW: TXDOT	CK: CL
© TxDOT NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
	DIST	COUNTY	SHEET NO.	
	TYL	HENDERSON	167	

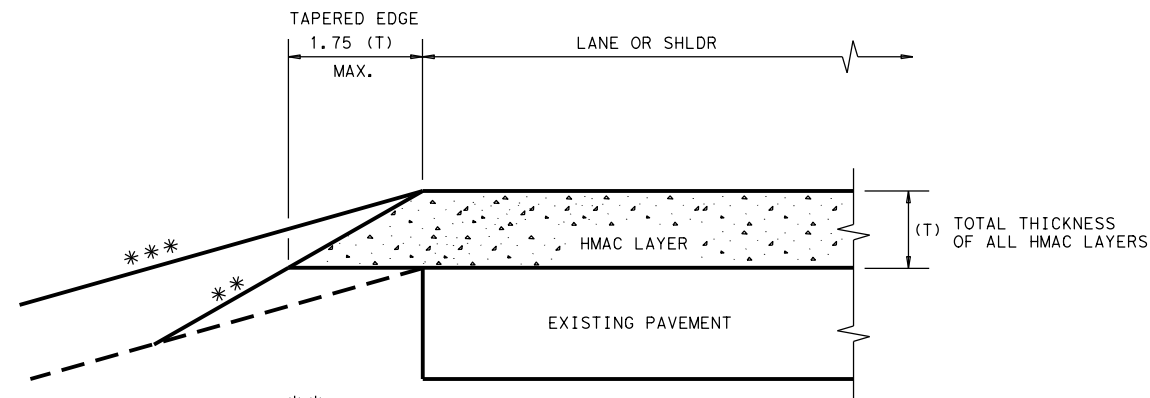
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DATE:
FILE:



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

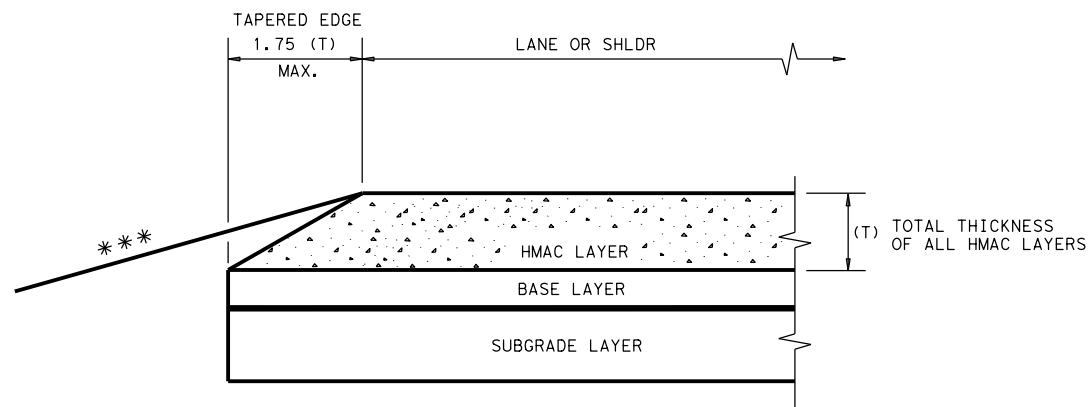
CONDITION - 1
THIN HMAC SURFACES OR HMAC OVERLAY
WITH THICKNESS OF 2.5" OR LESS



** EXISTING ROADSIDE EMBANKMENT TO BE GRADED TO PRODUCE A SMOOTH LEVEL SURFACE FOR PLACEMENT OF TAPERED EDGE. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS.

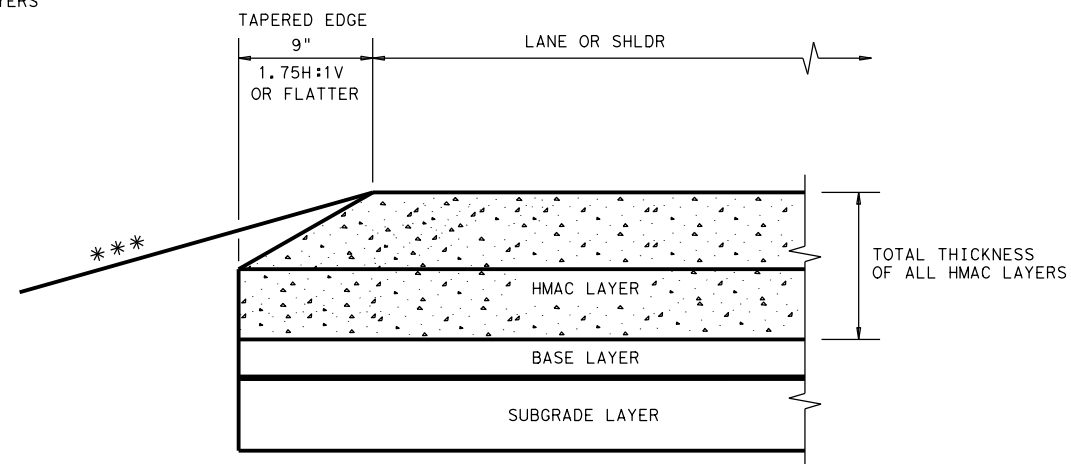
*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 2
OVERLAY OF EXISTING PAVEMENT
HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 3
NEW OR RECONSTRUCTED PAVEMENT
HMAC THICKNESS 2.5" TO 5"




*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 4
NEW OR RECONSTRUCTED PAVEMENT
HMAC THICKNESS 5" OR GREATER

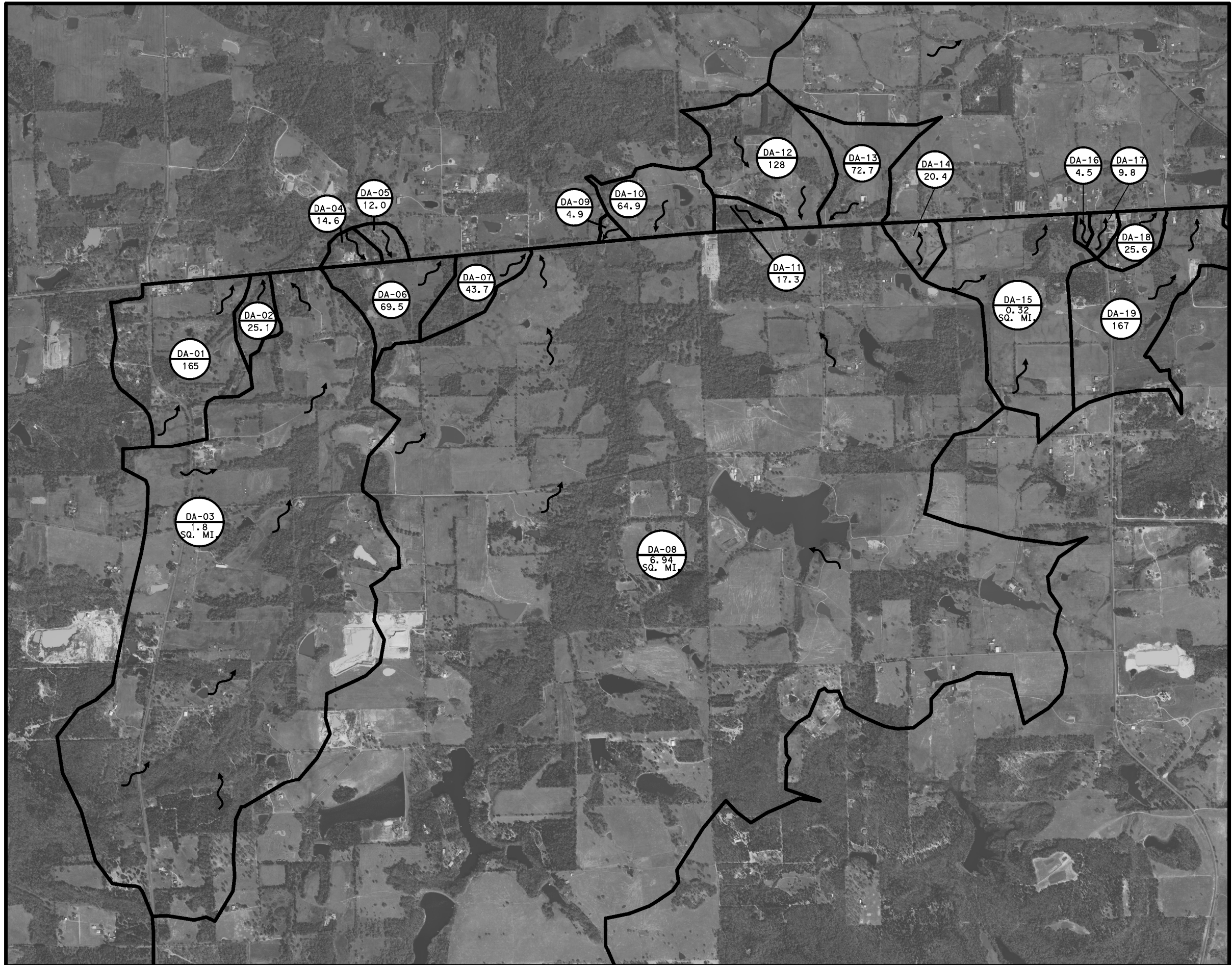
GENERAL NOTES

1. UNLESS OTHERWISE SHOWN IN THE PLANS, A VERTICAL EDGE IS PERMISSIBLE FOR HMAC PLACED GREATER THAN 5" BELOW THE EDGE OF PAVEMENT AND FOR THICKNESS OF HMAC LESS THAN 2.5".
2. FOR FURTHER INFORMATION REGARDING THE ROADSIDE AND PAVEMENT DETAILS, SEE TYPICAL SECTIONS.
3. PAYMENT FOR TAPERED EDGE WILL BE IN ACCORDANCE WITH APPLICABLE ITEMS IN THE CONTRACT.
4. THE SLOPE OF THE TAPERED EDGE SHALL BE 1.75H:1V OR FLATTER.
5. THE TAPERED EDGE SHALL BE PRODUCED BY USE OF A SCREED ATTACHMENT CAPABLE OF PRODUCING A SMOOTH COMPACTED SURFACE. ADDITIONAL COMPACTING EFFORT BEHIND THE SCREED IS NOT REQUIRED.

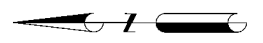
(NOT TO SCALE)

 Texas Department of Transportation					Design Division Standard	
TAPERED EDGE DETAILS HMAC PAVEMENT TE (HMAC) - 11						
FILE: tehmac11.dgn	DN: TxDOT	CK: RL	DW: KB	CK:		
© TxDOT January 2011	CONT	SECT	JOB	HIGHWAY		
REVISIONS		0108	03	041	SH 19	
		DIST	COUNTY		SHEET NO.	
		TYL	HENDERSON		169	

DATE: 21-JUN-2024 14:41
 FILE: Projects\0741307 - SH 19 Super 2 TYLER\4B - Design (CSJ_0108-03-041)\Plan_Sets\5. Drainage\041_DAM_01.dgn



MATCHLINE SHEET 2



LEGEND

- DRAINAGE BOUNDARY
- DRAINAGE AREA ID
DRAINAGE AREA (AC)
- FLOW ARROW

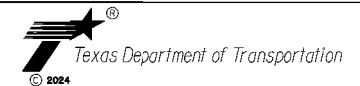
NOTES:

1. TOPOGRAPHIC CONTOURS FROM USGS QUADRANGLE MAPS: ATHENS, MALLARD HILL, MURCHISON WEST, STOCKARD



DIGITALLY SIGNED ON 02/15/2022

LAMB-STAR ENGINEERING, LLC
 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073






SH 19
DRAINAGE AREA MAP

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	170



LEGEND

-  DRAINAGE BOUNDARY
-  DRAINAGE AREA ID
DRAINAGE AREA (AC)
-  FLOW ARROW

NOTES:

1. TOPOGRAPHIC CONTOURS FROM USGS QUADRANGLE MAPS:
ATHENS
MALLARD HILL
MURCHISON WEST
STOCKARD



DIGITALLY SIGNED ON 02/15/2022



LAMB-STAR ENGINEERING, LLC
5700 W. PLANO PARKWAY, SUITE 1000
PLANO, TEXAS 75093 (214) 440-3600
TEXAS REGISTERED ENGINEERING FIRM F-9073



SH 19
DRAINAGE AREA MAP

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYL	HENDERSON	171	

MATCHLINE SHEET 1



DATE: \$DATES \$TIMES
FILE: \$FILES



DATE: 04-JUN-2024 16:03
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\5. Drainage\041_HYL_01.dgn

RATIONAL METHOD CALCULATIONS															
DRAINAGE AREA NO.	AREA SIZE (ACRES)	C	T ₀ (MIN)	I ² (IN/HR)	Q ² (CFS)	I ⁵ (IN/HR)	Q ⁵ (CFS)	I ¹⁰ (IN/HR)	Q ¹⁰ (CFS)	I ²⁵ (IN/HR)	Q ²⁵ (CFS)	I ⁵⁰ (IN/HR)	Q ⁵⁰ (CFS)	I ¹⁰⁰ (IN/HR)	Q ¹⁰⁰ (CFS)
DA 9	4.9	0.28	10	4.90	6.72	6.06	8.31	7.04	9.66	8.41	11.54	9.47	12.99	10.60	14.54
DA 10	64.9	0.36	17	3.94	92.05	4.86	113.55	5.63	131.54	6.70	156.54	7.52	175.70	8.38	195.79
DA 11	17.3	0.36	10	4.90	30.52	6.06	37.74	7.04	43.85	8.41	52.38	9.47	58.98	10.60	66.02
DA 12	128.0	0.21	56	2.01	54.12	2.49	66.97	2.89	77.59	3.44	92.43	3.86	103.86	4.31	115.83
DA 13	72.7	0.23	23	3.45	57.69	4.25	71.06	4.92	82.27	5.85	97.82	6.57	109.86	7.31	122.23
DA 14	20.4	0.32	12	4.58	29.90	5.66	36.95	6.57	42.89	7.84	51.18	8.82	57.58	9.86	64.37
DA 16	4.5	0.63	10	4.90	13.89	6.06	17.18	7.04	19.96	8.41	23.84	9.47	26.85	10.60	30.05
DA 17	9.8	0.28	31	2.85	7.82	3.50	9.60	4.05	11.11	4.81	13.20	5.39	14.79	5.99	16.44
DA 18	25.6	0.25	28	3.04	19.46	3.74	23.94	4.33	27.71	5.14	32.90	5.77	36.93	6.42	41.09
DA 19	167.0	0.25	32	2.81	117.32	3.46	144.46	4.01	167.42	4.75	198.31	5.33	222.53	5.93	247.58
DA 20	31.3	0.33	14	4.26	44.00	5.26	54.33	6.10	63.01	7.27	75.09	8.17	84.39	9.11	94.10
DA 21	19.2	0.34	10	4.90	31.99	6.06	39.56	7.04	45.96	8.41	54.90	9.47	61.82	10.60	69.20
DA 22	27.3	0.33	10	4.90	44.14	6.06	54.59	7.04	63.42	8.41	75.77	9.47	85.32	10.60	95.50
DA 23	15.2	0.33	11	4.74	23.78	5.86	29.39	6.80	34.11	8.12	40.73	9.14	45.85	10.23	51.31
DA 25	7.9	0.23	10	4.90	8.90	6.06	11.01	7.04	12.79	8.41	15.28	9.47	17.21	10.60	19.26
DA 26	39.2	0.32	10	4.90	61.47	6.06	76.02	7.04	88.31	8.41	105.50	9.47	118.79	10.60	132.97
DA 27	6.8	0.26	10	4.90	8.66	6.06	10.71	7.04	12.45	8.41	14.87	9.47	16.74	10.60	18.74
DA 28	105.4	0.22	11	4.65	107.87	5.75	133.38	6.69	155.03	7.99	185.32	9.00	208.78	10.08	233.74
DA 29	14.9	0.35	10	1.71	8.92	2.13	11.11	2.47	12.87	2.95	15.38	3.32	17.29	3.70	19.30
DA 30	56.5	0.23	37	2.65	34.44	3.26	42.36	3.77	48.99	4.48	58.22	5.02	65.23	5.59	72.64
DA 31	18.6	0.27	10	4.90	24.61	6.06	30.43	7.04	35.35	8.41	42.24	9.47	47.56	10.60	53.23
DA 32	26.7	0.23	10	4.90	30.09	6.06	37.21	7.04	43.23	8.41	51.65	9.47	58.16	10.60	65.09

NOTES:

1. DRAINAGE ANALYSIS PERFORMED IN CONFORMANCE WITH THE TXDOT HYDRAULIC DESIGN MANUAL (SEPTEMBER 2019).
2. HY-8 USED TO ANALYZE MINOR CULVERTS.
3. RATIONAL METHOD USED TO ANALYZE DRAINAGE BASINS LESS THAN 200 ACRES.



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HYDROGRAPH METHOD CALCULATIONS (DESIGN METHOD)															
DRAINAGE AREA ID	DRAINAGE AREA (A)	TIME OF CONC. (T _c)	CLIMATIC ADJUSTED NRCS RUNOFF CURVE	PRECIP. (P _{50%})	PRECIP. (P _{20%})	PRECIP. (P _{10%})	PRECIP. (P _{4%})	PRECIP. (P _{2%})	PRECIP. (P _{1%})	50% AEP PEAK DISCHARGE	20% AEP PEAK DISCHARGE	10% AEP PEAK DISCHARGE	4% AEP PEAK DISCHARGE	2% AEP PEAK DISCHARGE	1% AEP PEAK DISCHARGE
	(MI ²)	(HR)	(CN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(CFS)	(CFS)	(CFS)	(CFS)	(CFS)	(CFS)
DA 15	0.32	1.28	76	4.18	5.31	6.20	7.70	8.50	10.10	204.4	297.8	381.0	499.8	594.4	694.4

HYDROLOGIC ANALYSIS PERFORMED FOR CULVERT EXTENSIONS ONLY

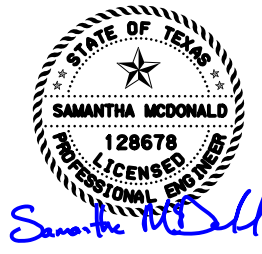
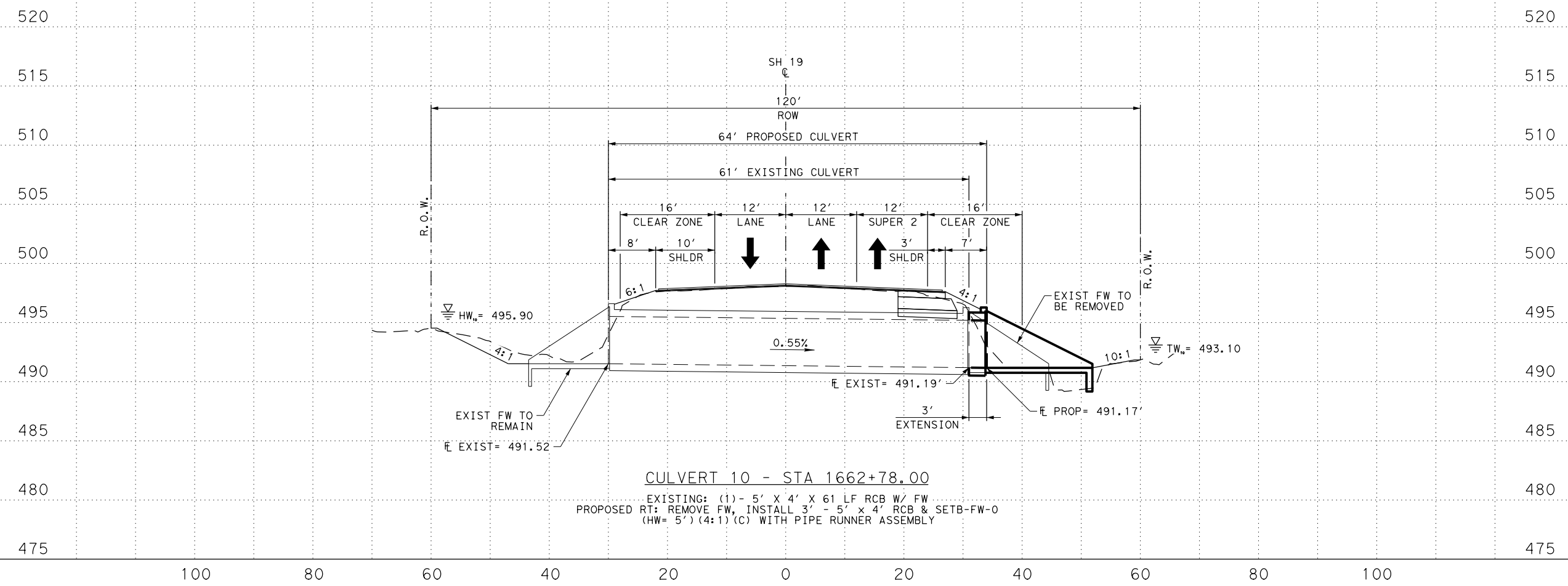
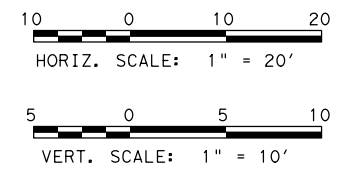
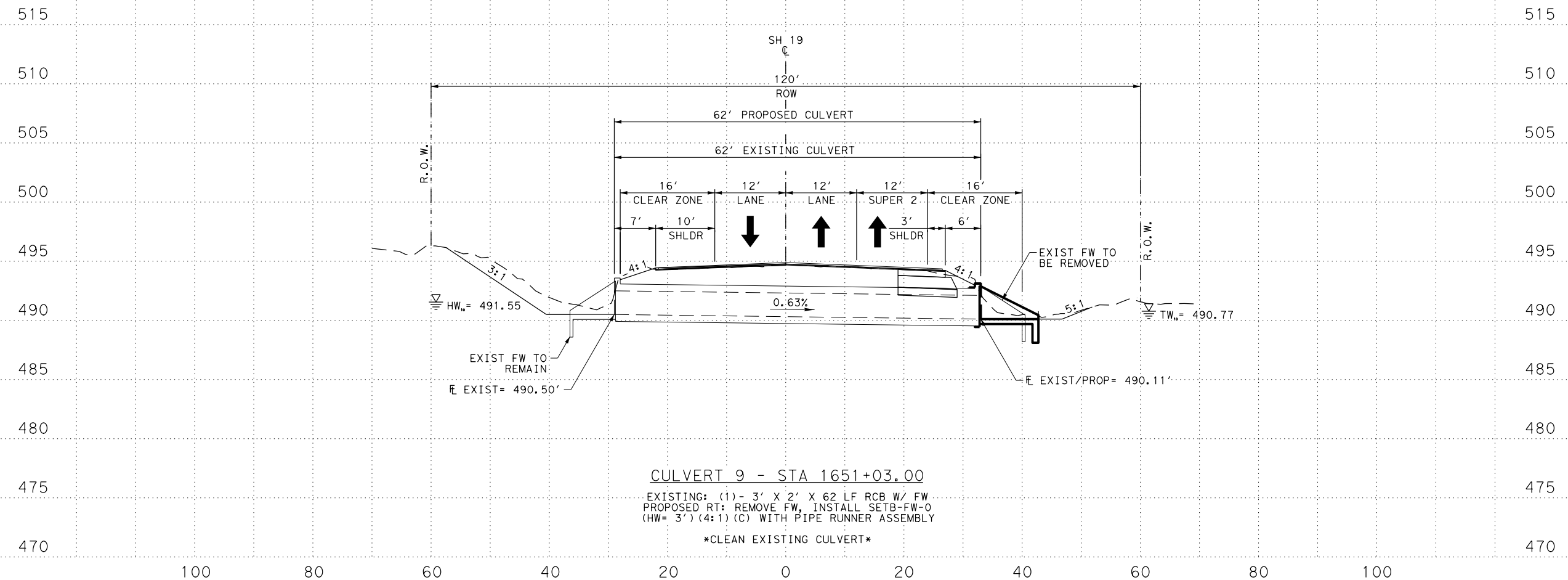


SH 19
 HYDRAULIC
 CALCULATIONS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	172

DATE: 04-JUN-2024 16:02
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\5. Drainage\041_CULV_PROF_01



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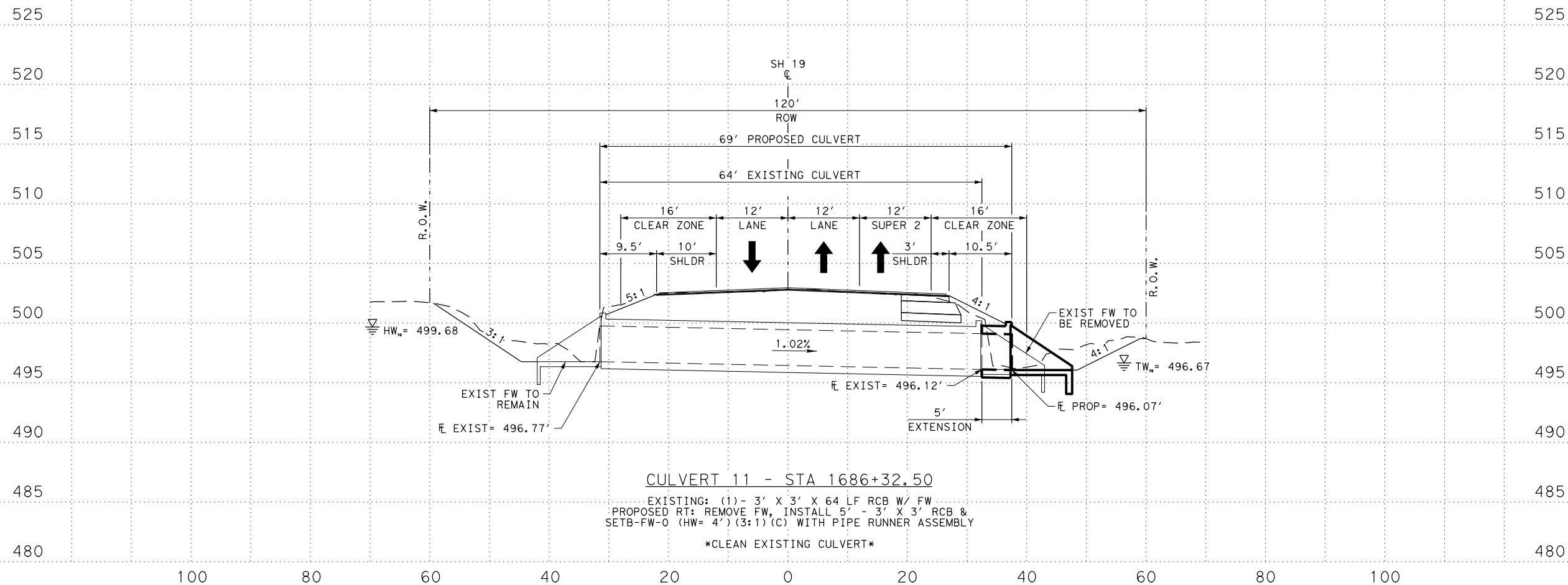


**SH 19
 CULVERT PROFILES**

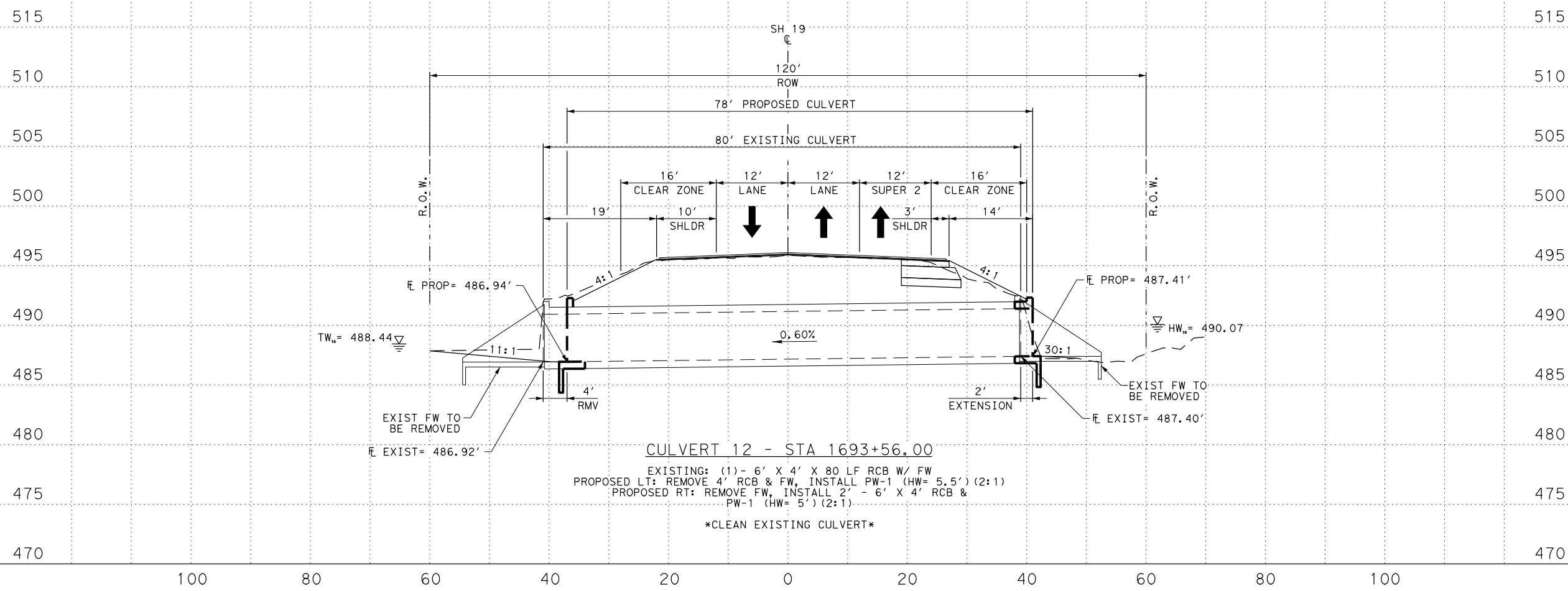
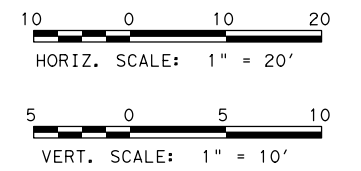
SHEET 1 OF 12

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYL	HENDERSON	173	

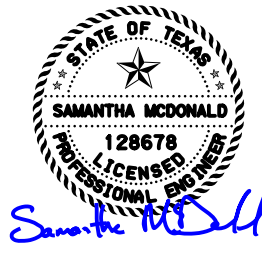
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FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\5. Drainage\041_CULV_PROF_02.dgn



CULVERT 11 - STA 1686+32.50
 EXISTING: (1)- 3' X 3' X 64 LF RCB W/ FW
 PROPOSED RT: REMOVE FW, INSTALL 5' - 3' X 3' RCB & SETB-FW-0 (HW= 4') (3:1) (C) WITH PIPE RUNNER ASSEMBLY
 CLEAN EXISTING CULVERT

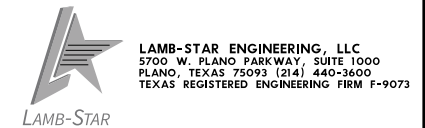


CULVERT 12 - STA 1693+56.00
 EXISTING: (1)- 6' X 4' X 80 LF RCB W/ FW
 PROPOSED LT: REMOVE 4' RCB & FW, INSTALL PW-1 (HW= 5.5') (2:1)
 PROPOSED RT: REMOVE FW, INSTALL 2' - 6' X 4' RCB & PW-1 (HW= 5') (2:1)
 CLEAN EXISTING CULVERT



Samantha McDonald

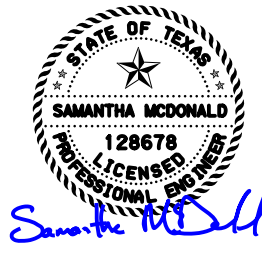
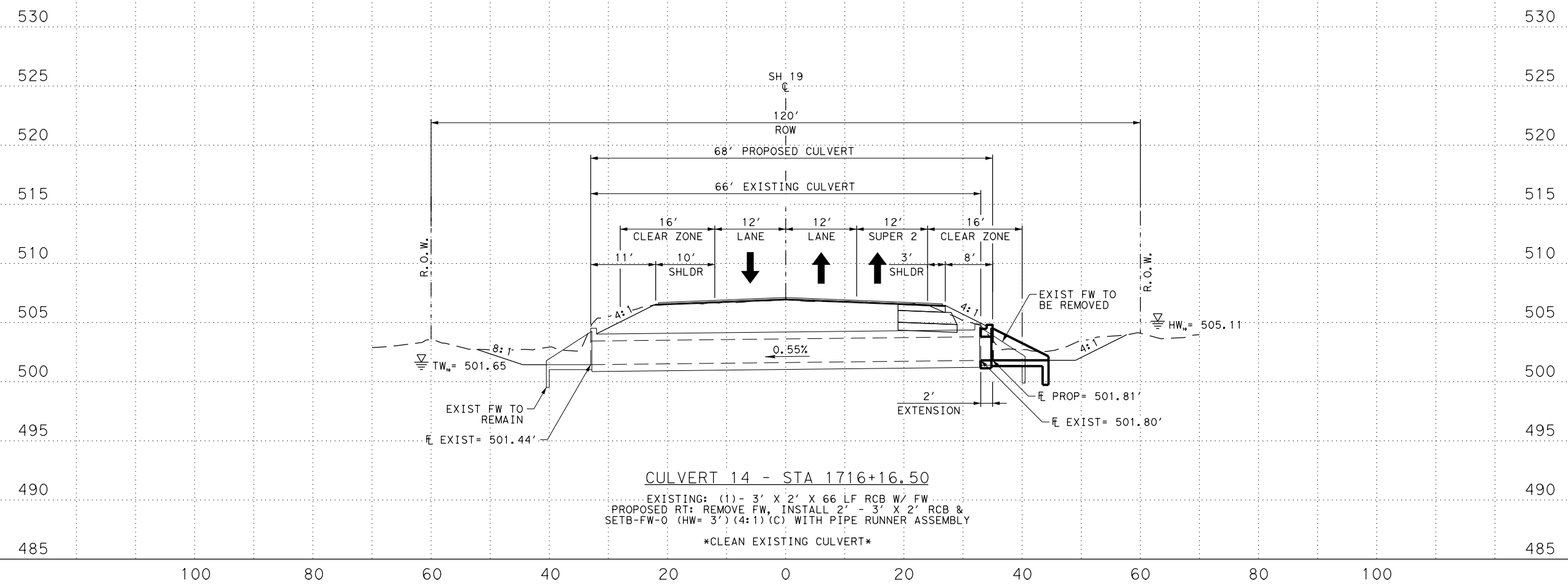
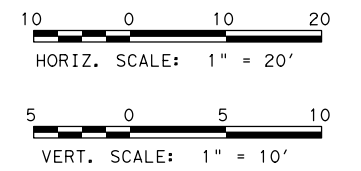
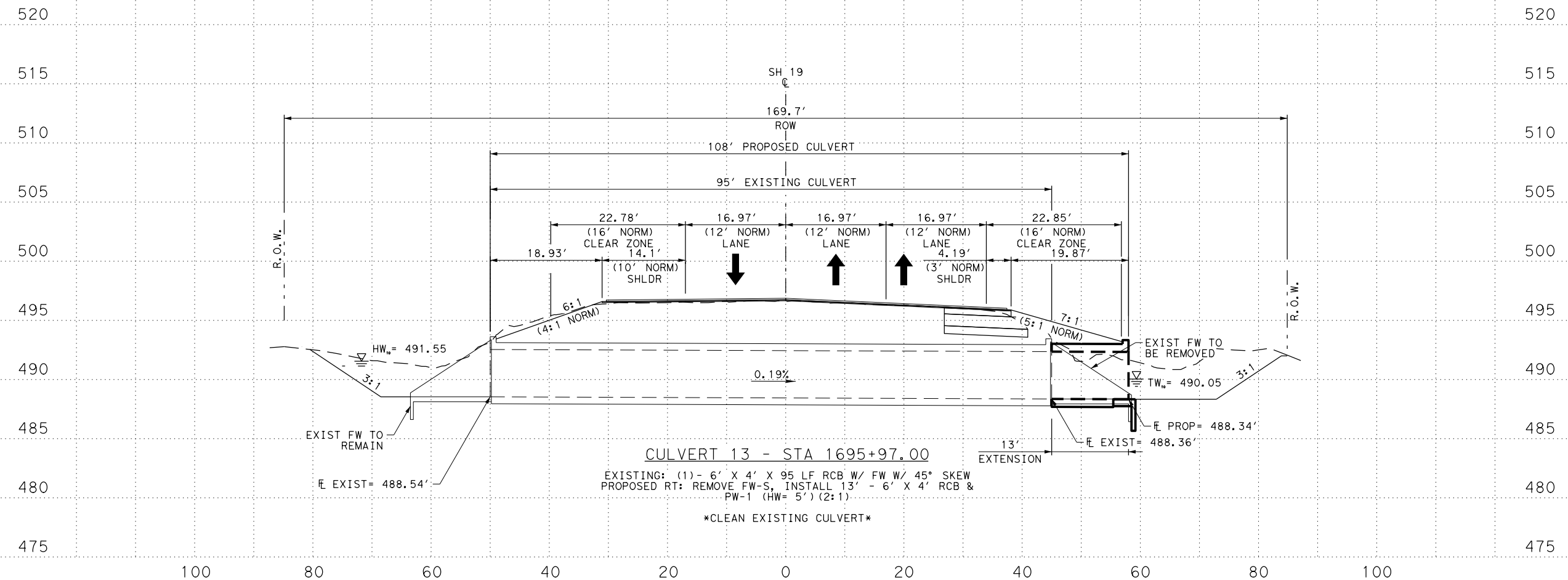
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**SH 19
CULVERT PROFILES**

SHEET 2 OF 12			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYL	HENDERSON	174	

DATE: 04-JUN-2024 16:03
FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\5. Drainage\041_CULV_PROF_03.dgn



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ON 02/15/2022

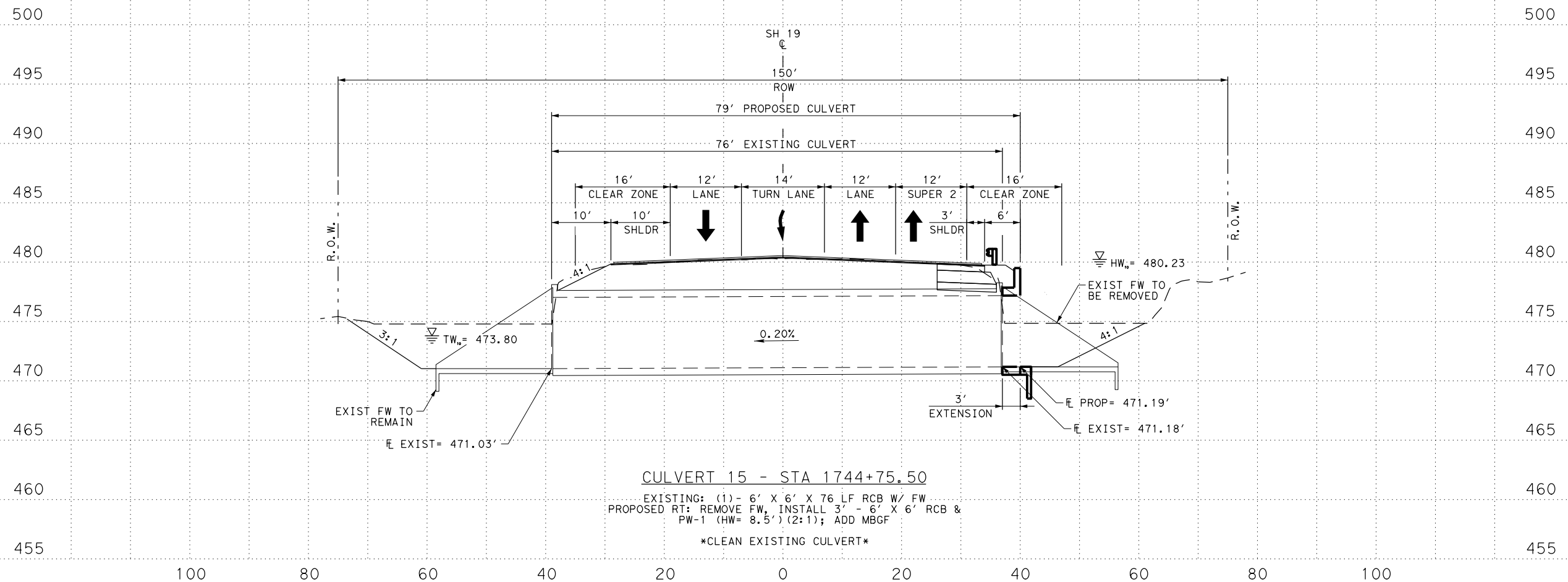


**SH 19
CULVERT PROFILES**

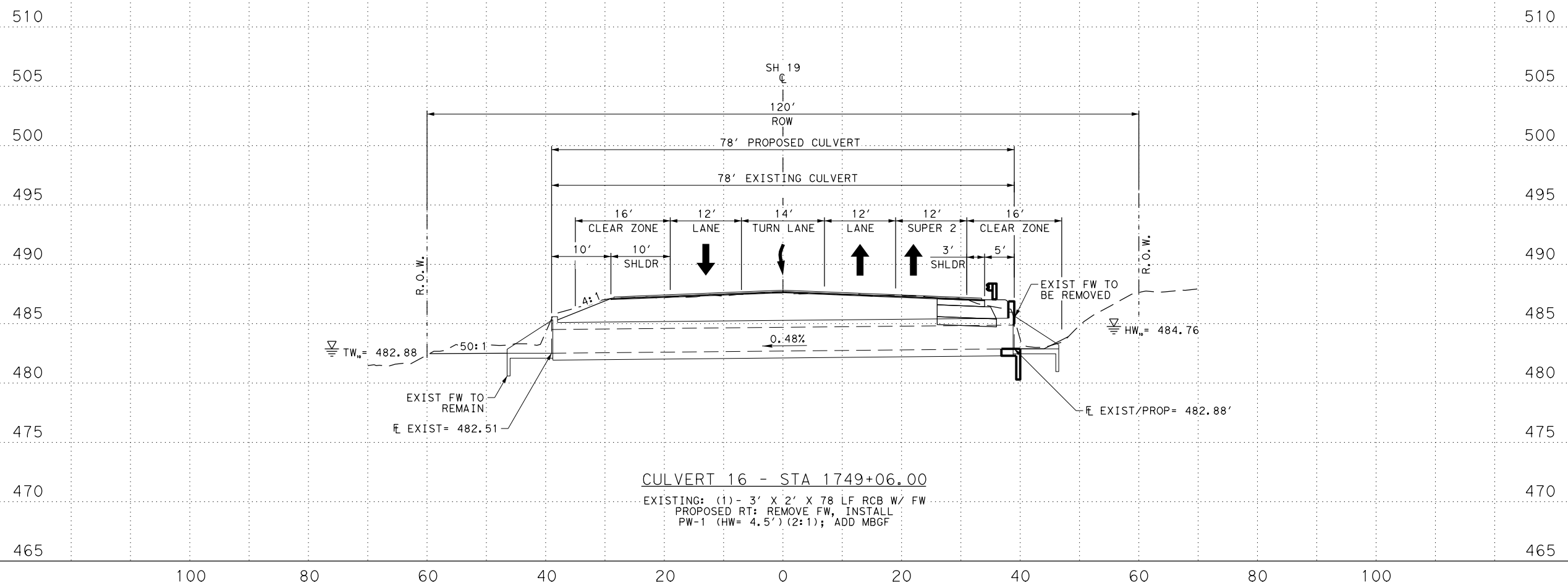
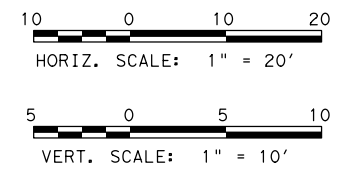
SHEET 3 OF 12

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	175

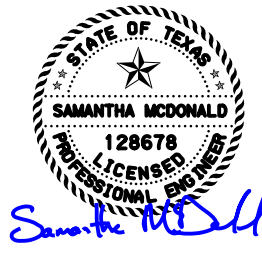
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 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\5. Drainage\041_CULV_PROF_04.dgn



CULVERT 15 - STA 1744+75.50
 EXISTING: (1) - 6' X 6' X 76 LF RCB W/ FW
 PROPOSED RT: REMOVE FW, INSTALL 3' - 6' X 6' RCB & PW-1 (HW= 8.5') (2:1); ADD MBGF
 CLEAN EXISTING CULVERT

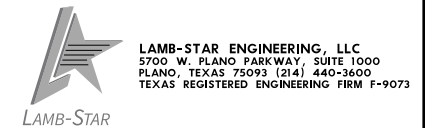


CULVERT 16 - STA 1749+06.00
 EXISTING: (1) - 3' X 2' X 78 LF RCB W/ FW
 PROPOSED RT: REMOVE FW, INSTALL PW-1 (HW= 4.5') (2:1); ADD MBGF



Samantha McDonald

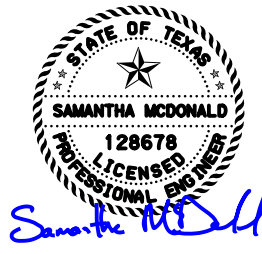
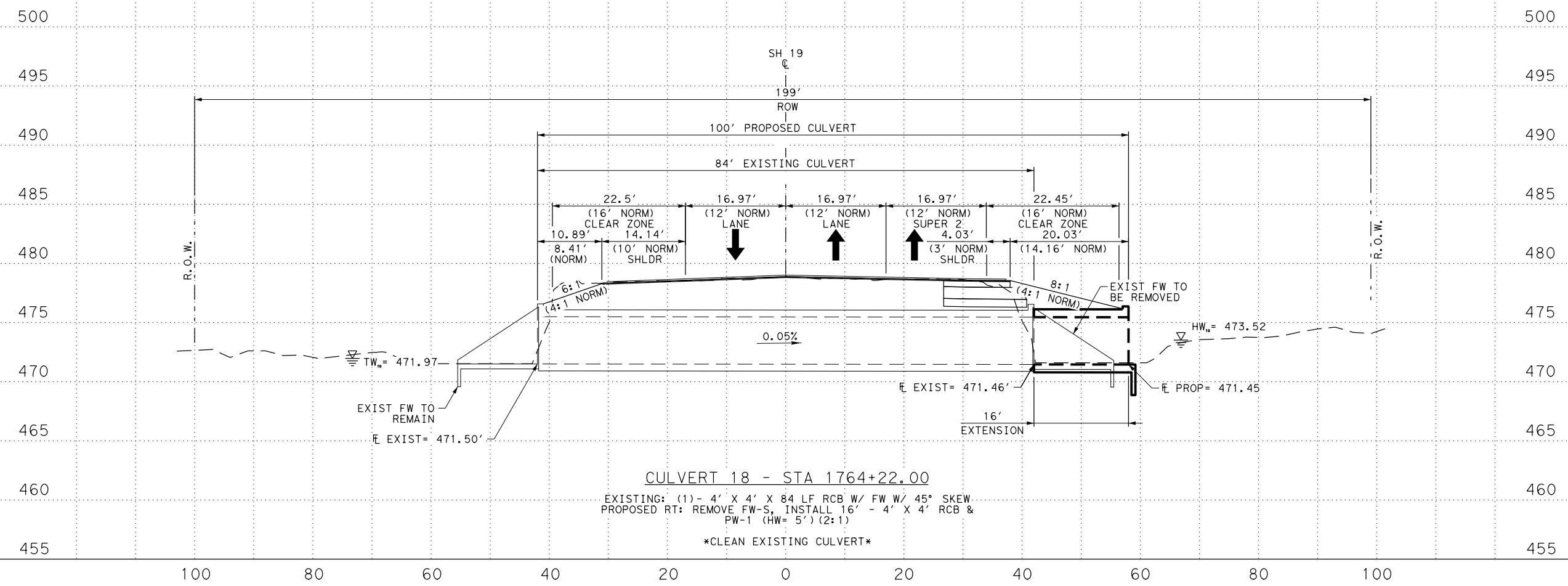
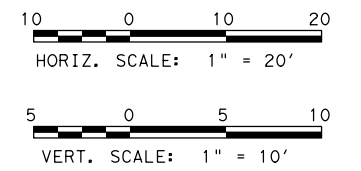
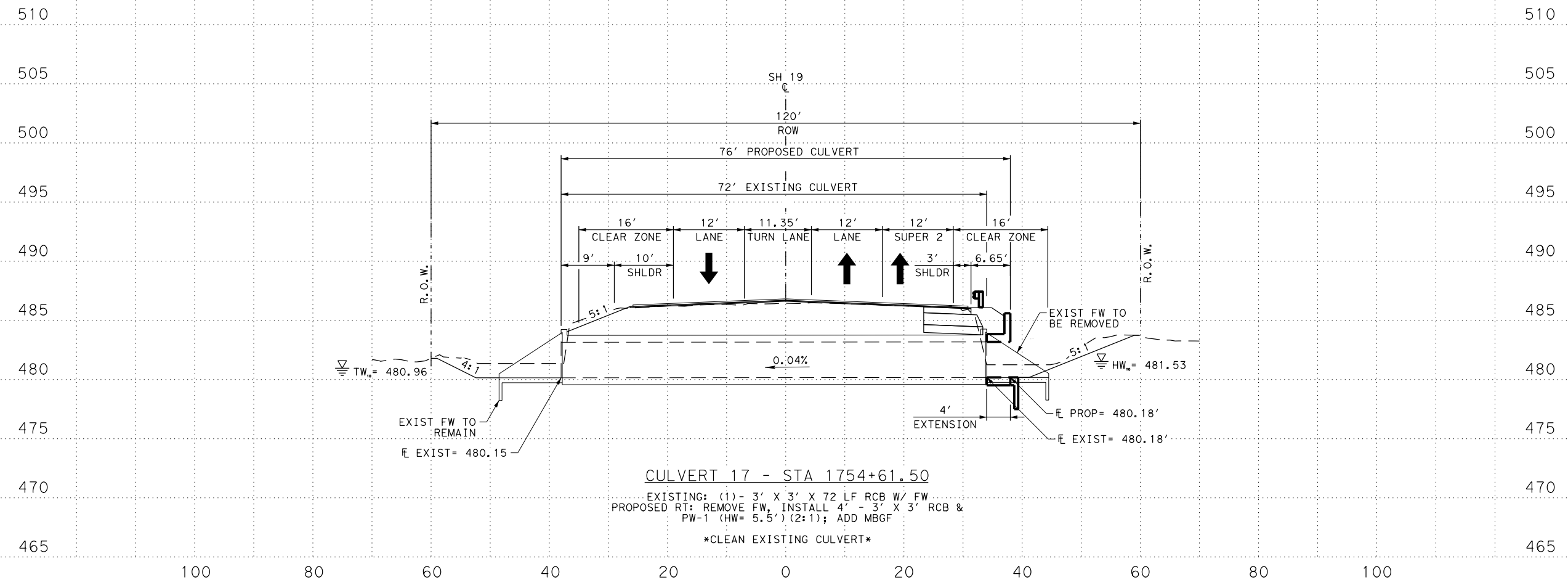
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**SH 19
 CULVERT PROFILES**

SHEET 4 OF 12			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	176

DATE: 04-JUN-2024 16:03
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan Set\5. Drainage\041_CULV_PROF_05.dgn



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 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073

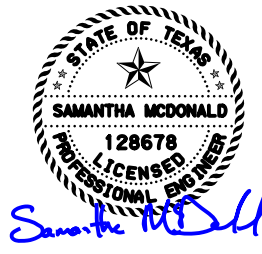
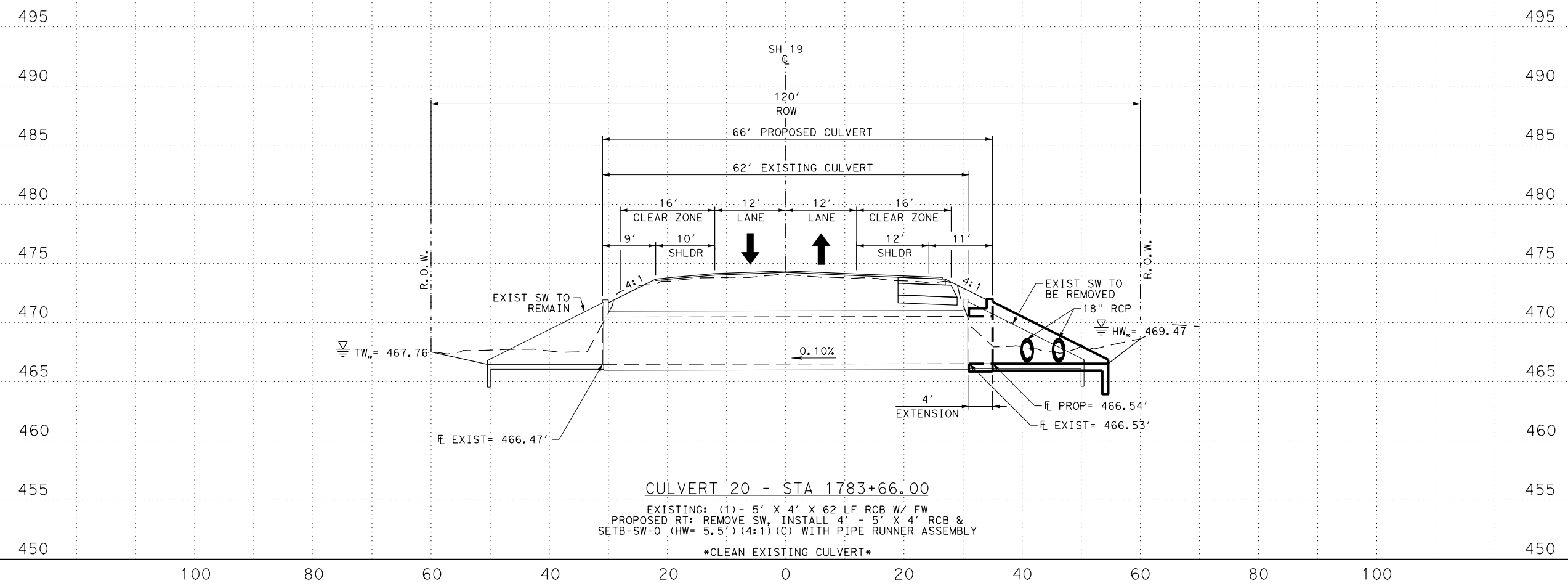
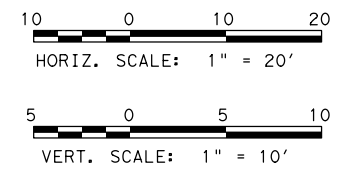
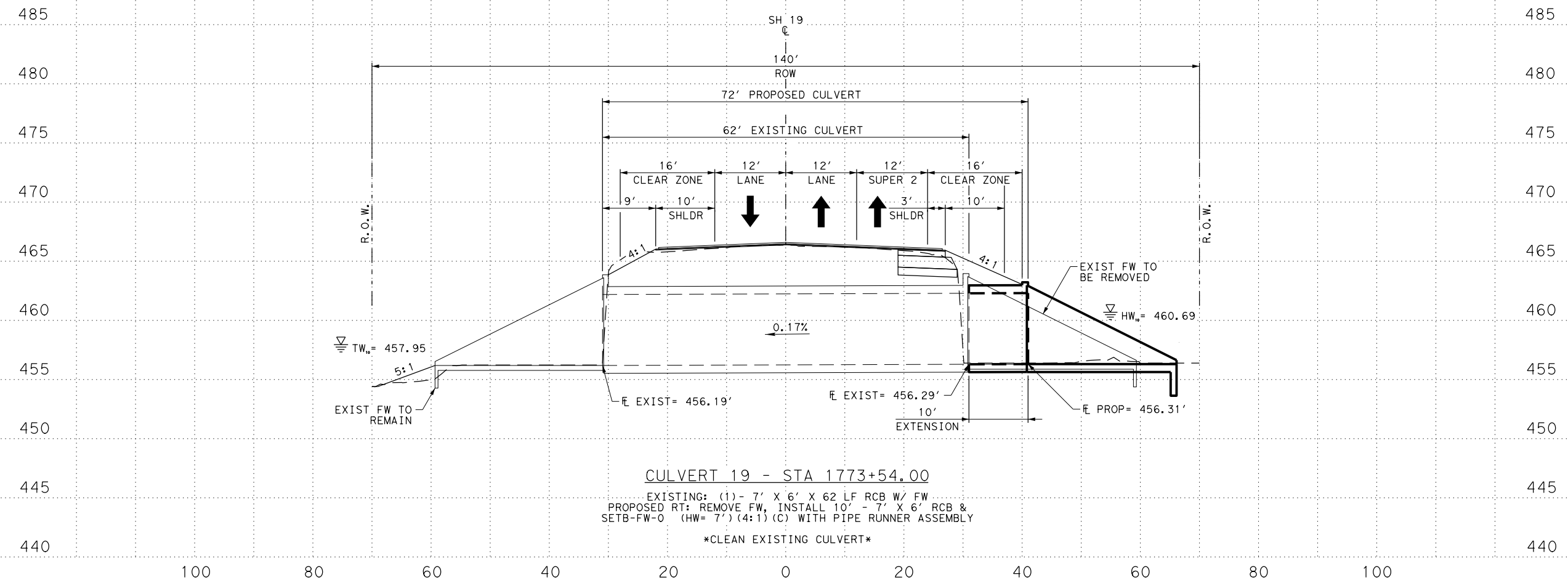


**SH 19
 CULVERT PROFILES**

SHEET 5 OF 12

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	177

DATE: 04-JUN-2024 16:02
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\5. Drainage\041_CULV_PROF_06.dgn



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5700 W. PLANO PARKWAY, SUITE 1000
PLANO, TEXAS 75093 (214) 440-3600
TEXAS REGISTERED ENGINEERING FIRM F-9073

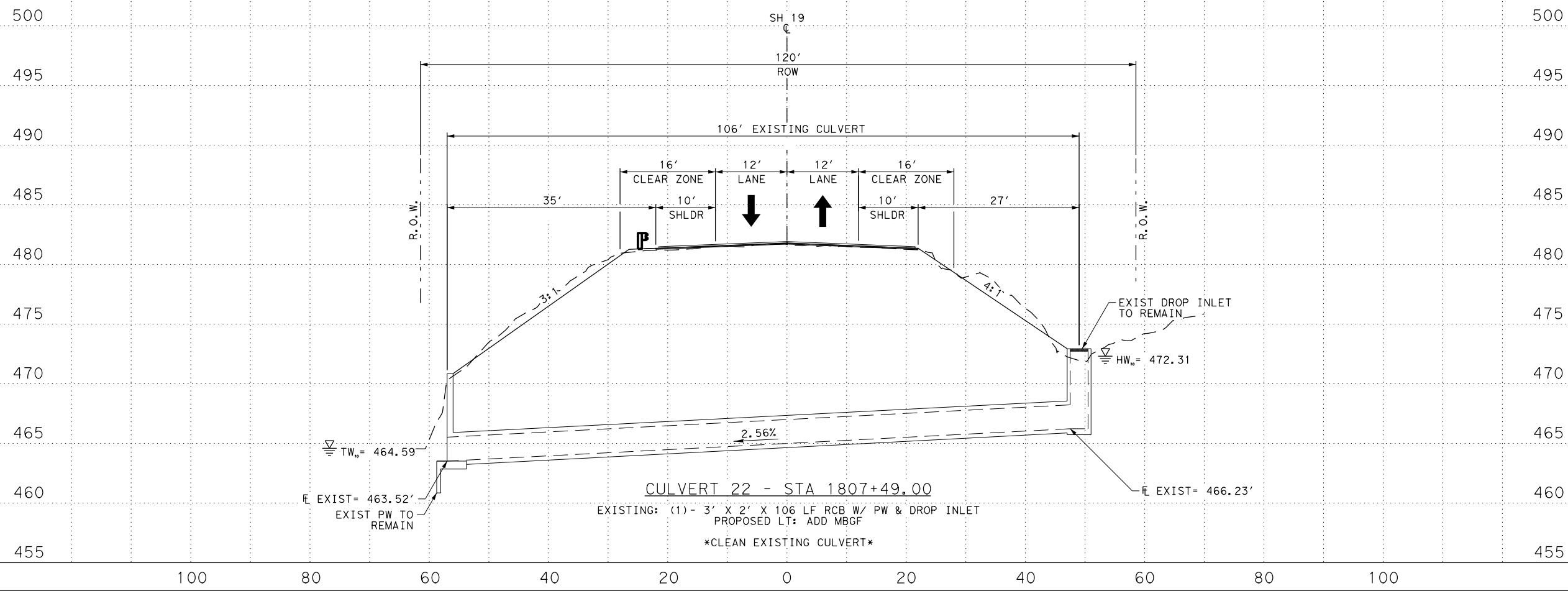
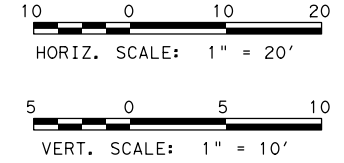
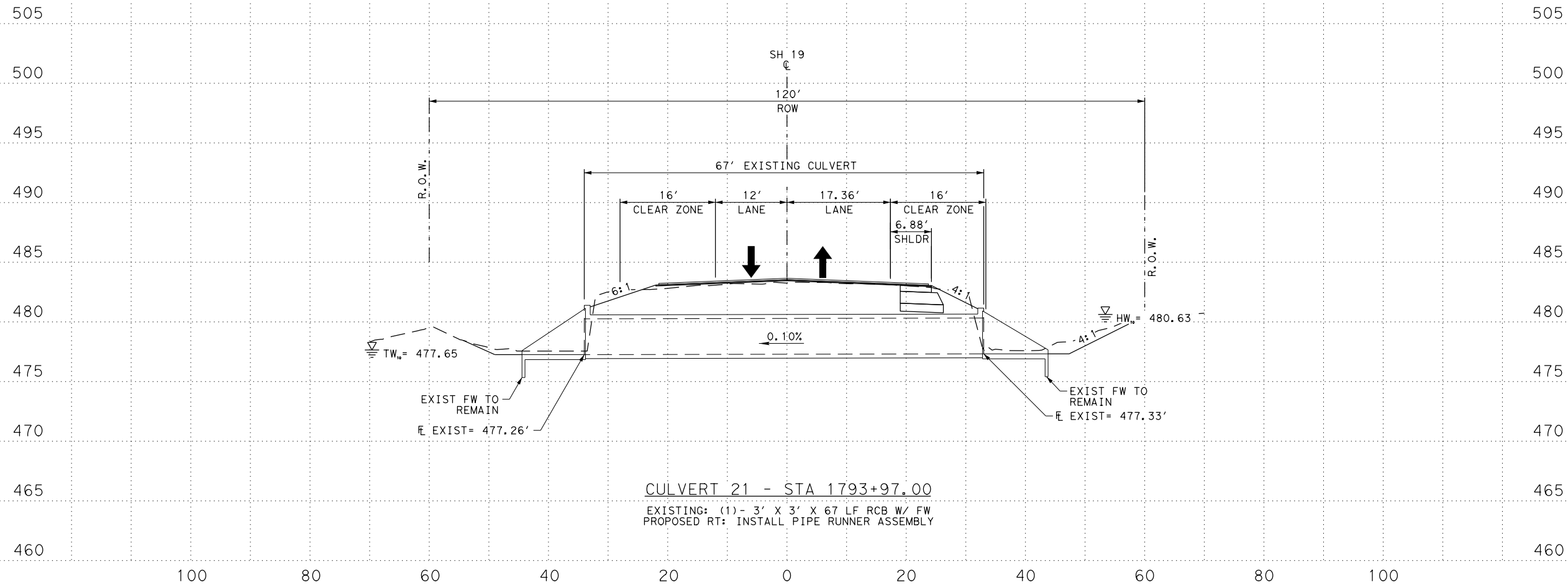


**SH 19
CULVERT PROFILES**

SHEET 6 OF 12

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	178

DATE: 04-JUN-2024 16:02
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan Set\5. Drainage\041_CULV_PROF_07.dgn



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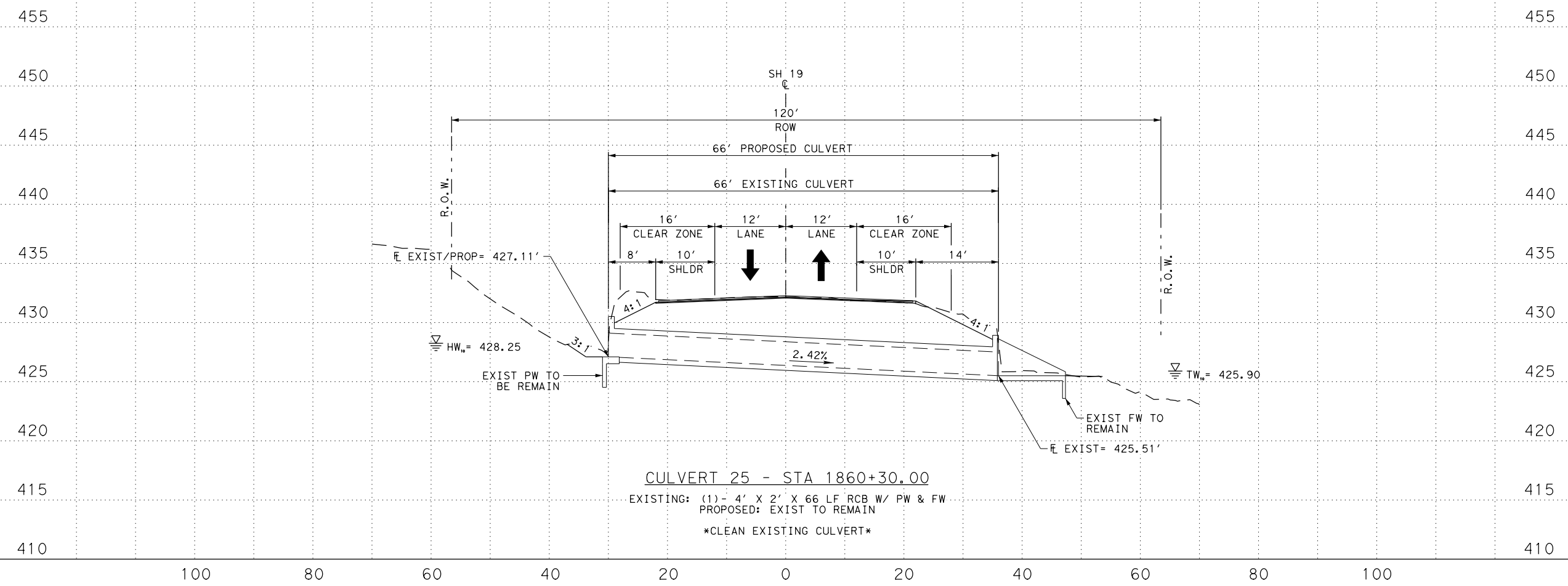
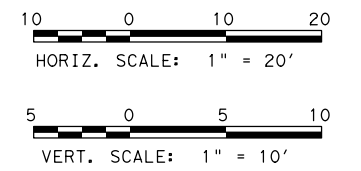
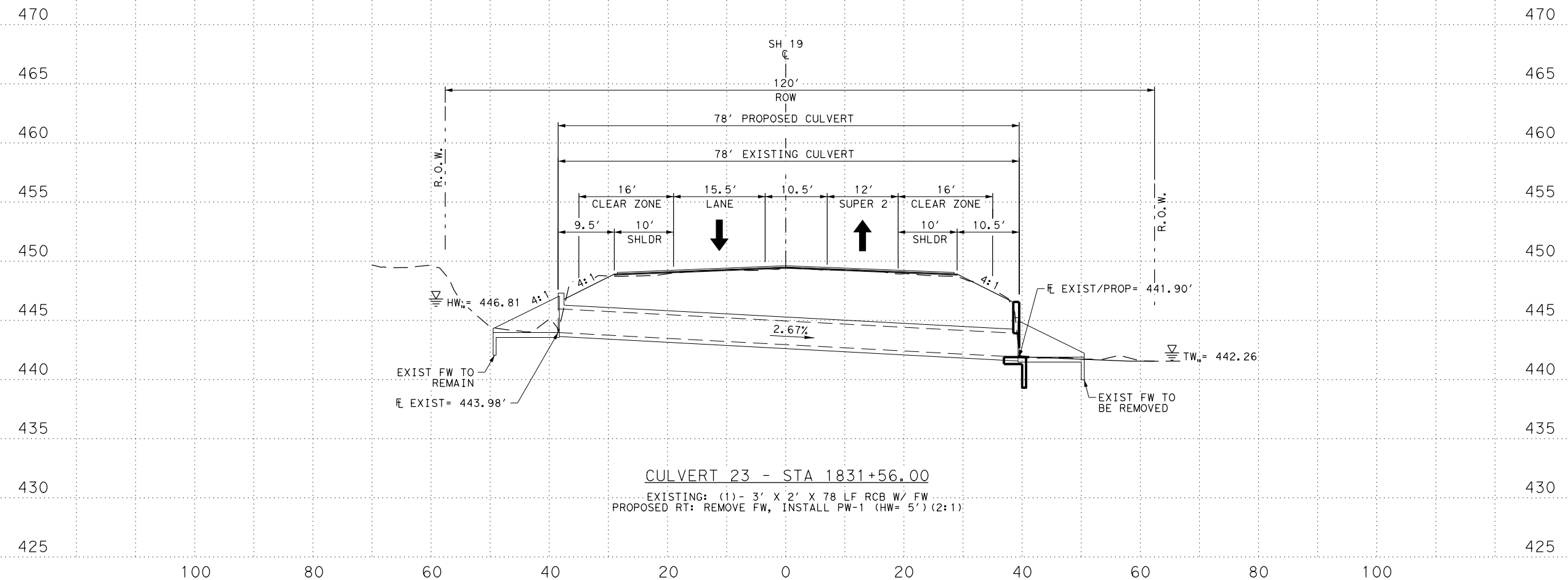


**SH 19
 CULVERT PROFILES**

SHEET 7 OF 12

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYL	HENDERSON	179	

DATE: 04-JUN-2024 16:02
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\5. Drainage\041_CULV_PROF_08.dgn



Andrew Griffin

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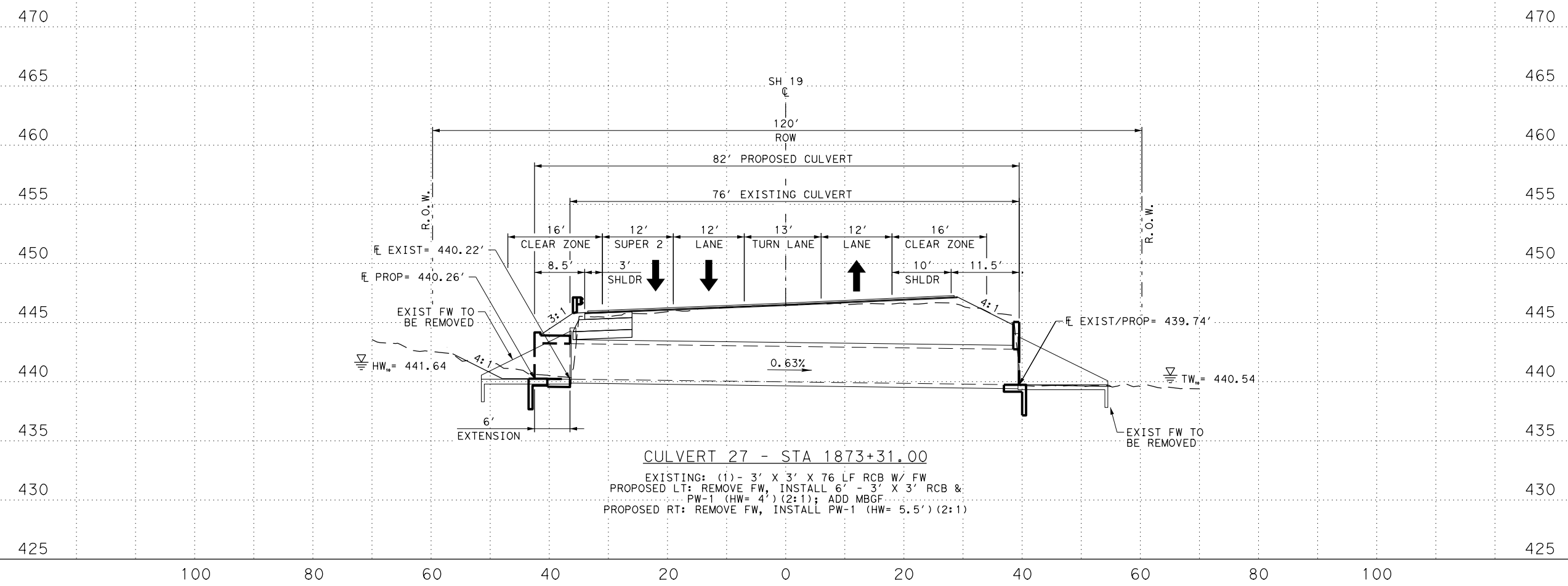
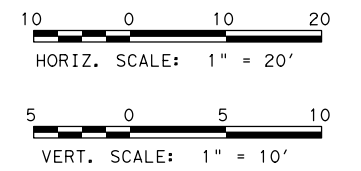
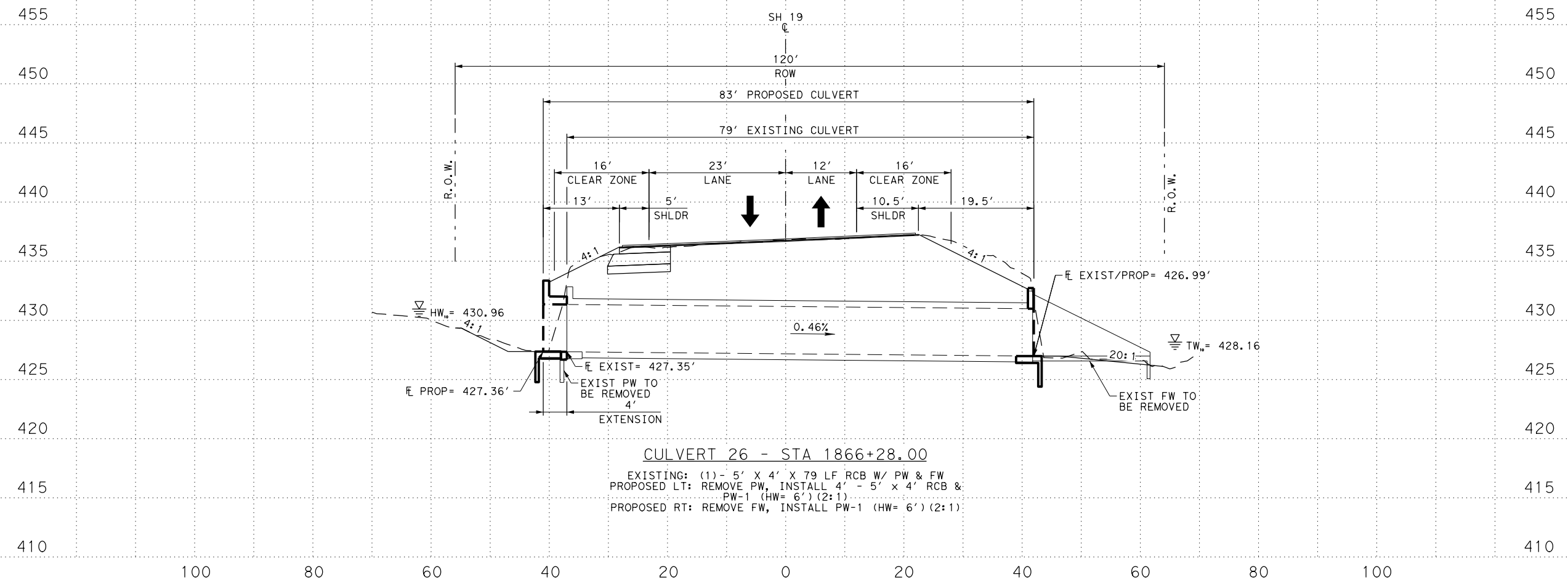


**SH 19
 CULVERT PROFILES**

SHEET 8 OF 12

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYL	HENDERSON	180	

DATE: 04-JUN-2024 16:02
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\5. Drainage\041_CULV_PROF_09.dgn



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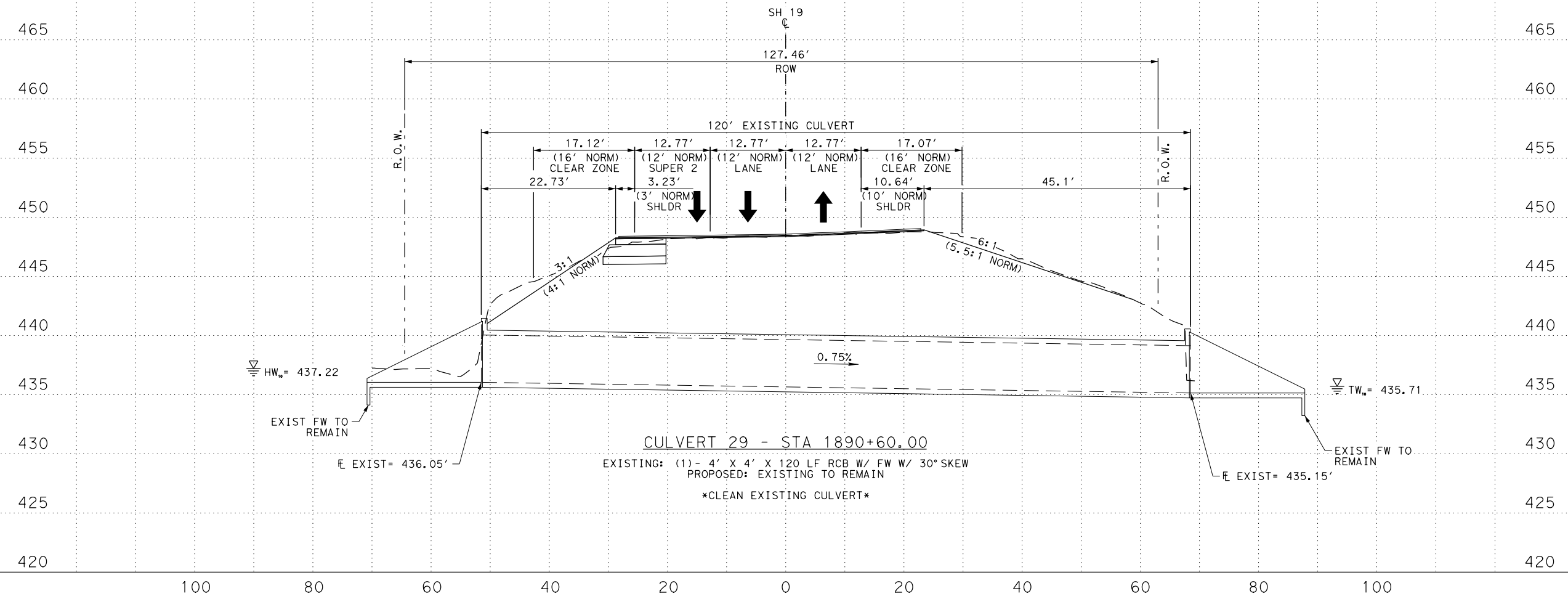
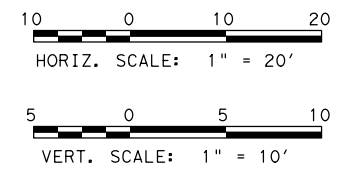
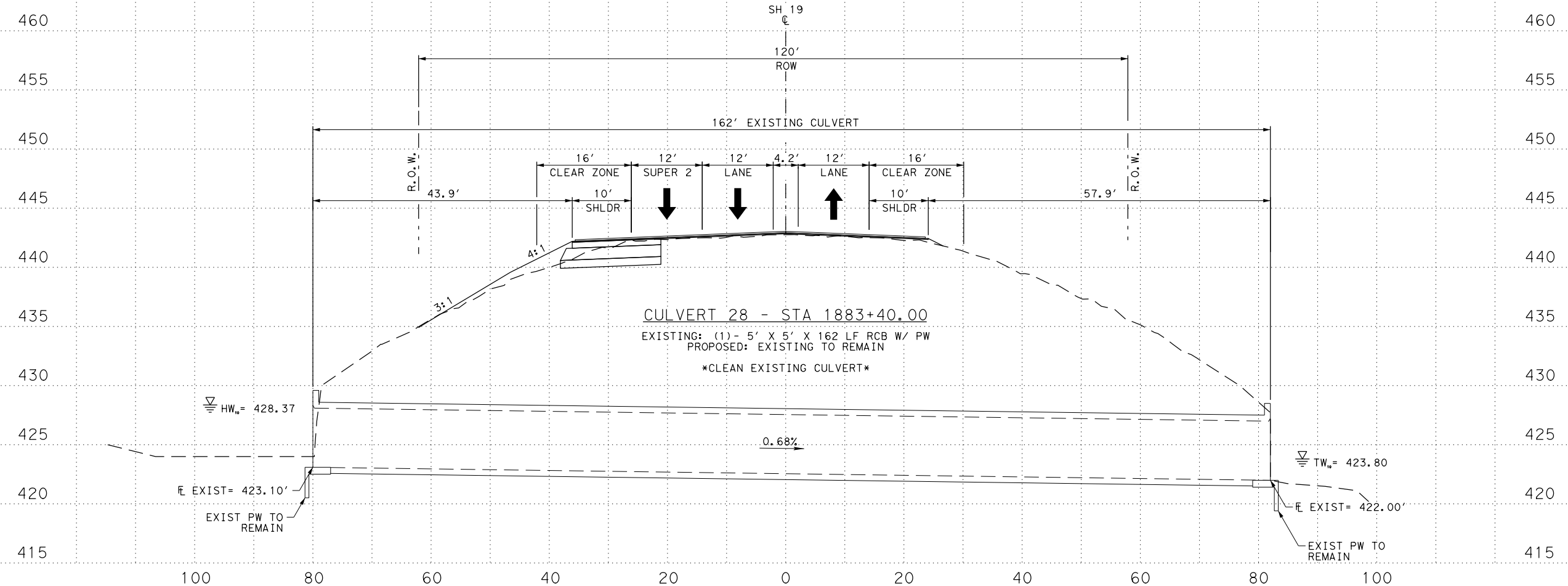


**SH 19
 CULVERT PROFILES**

SHEET 9 OF 12

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYL	HENDERSON	181	

DATE: 04-JUN-2024 16:03
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\5. Drainage\041_CULV_PROF_10.dgn



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 5700 W. PLANO PARKWAY, SUITE 1000
 PLANO, TEXAS 75093 (214) 440-3600
 TEXAS REGISTERED ENGINEERING FIRM F-9073

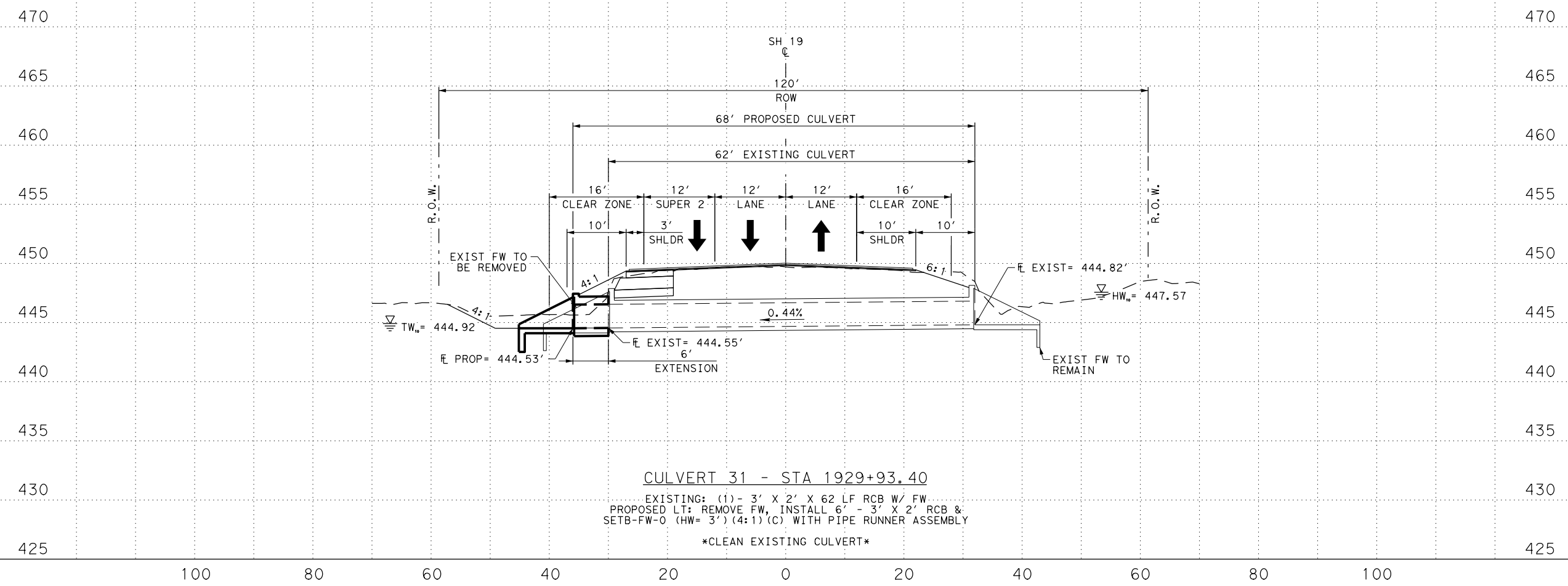
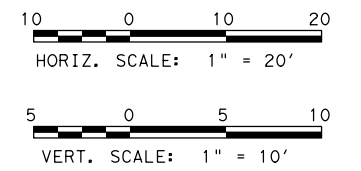
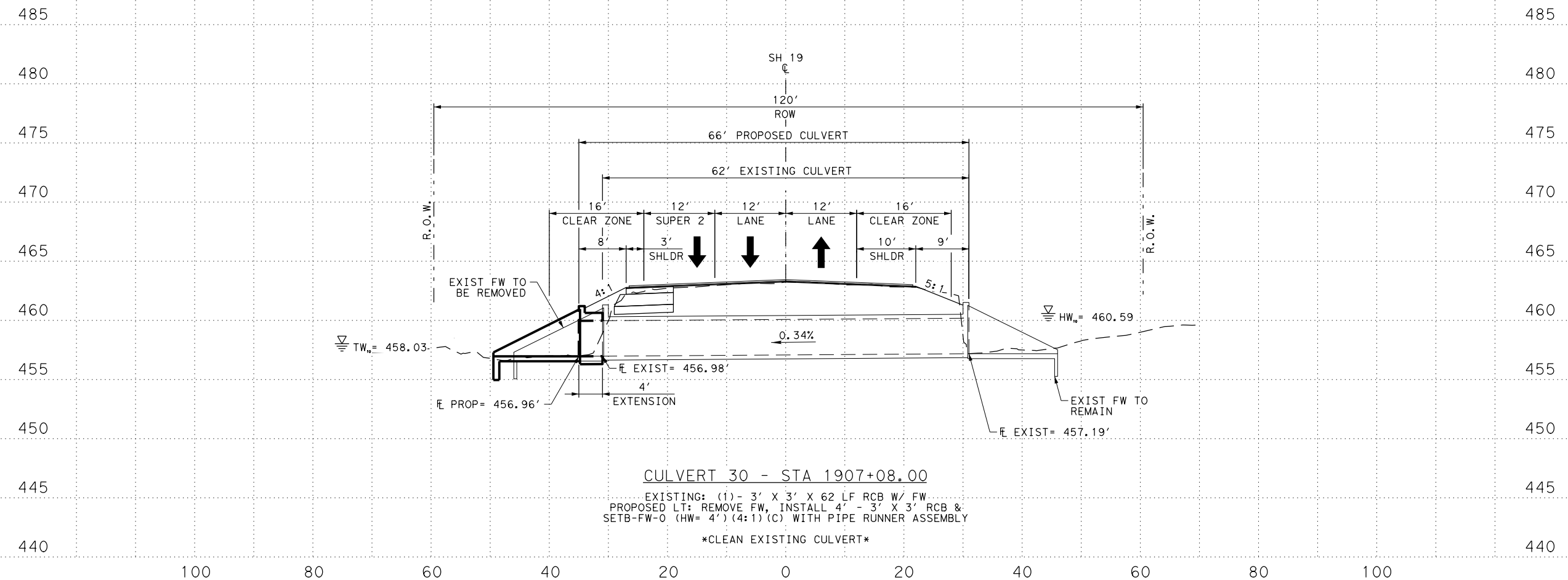


**SH 19
CULVERT PROFILES**

SHEET 10 OF 12

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYL	HENDERSON	182	

DATE: 04-JUN-2024 16:03
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\5. Drainage\041_CULV_PROF_11.dgn



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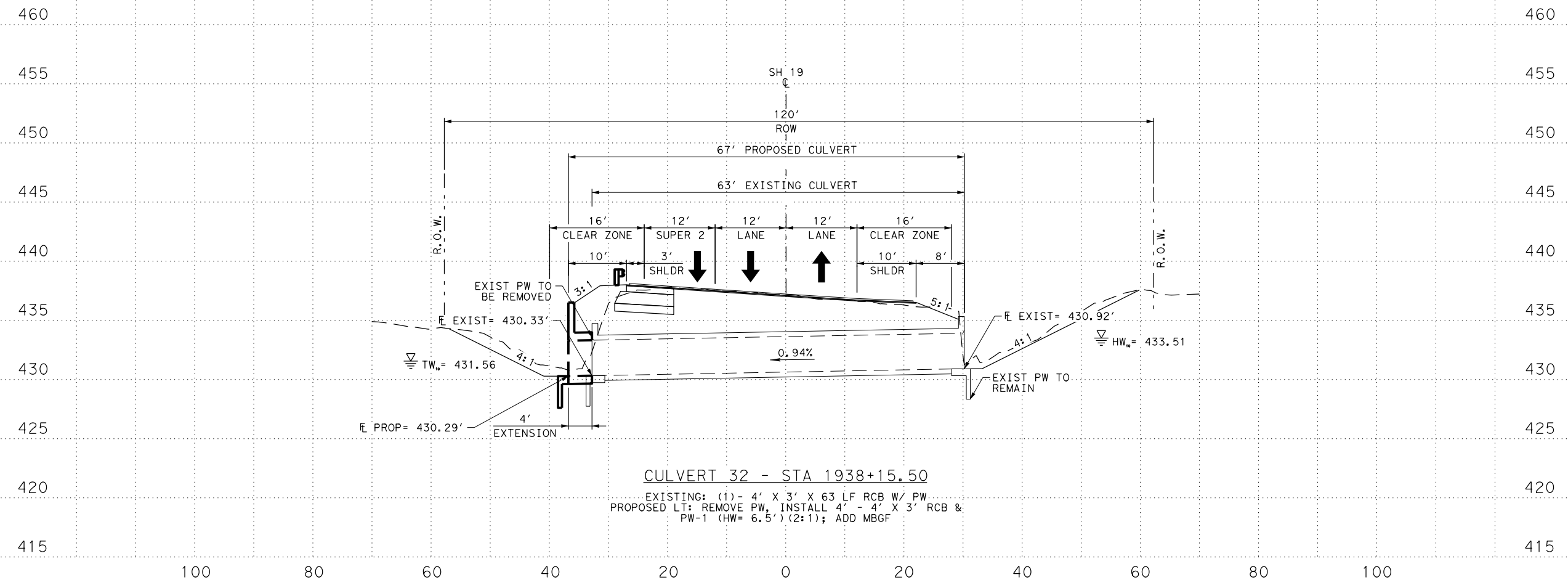


**SH 19
CULVERT PROFILES**

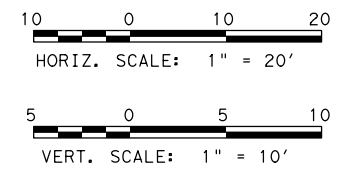
SHEET 11 OF 12

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	183

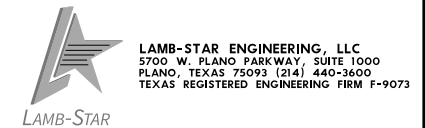
DATE: 04-JUN-2024 16:03
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\5. Drainage\041_CULV_PROF_12.dgn



CULVERT 32 - STA 1938+15.50
 EXISTING: (1) - 4' X 3' X 63 LF RCB W/ PW
 PROPOSED LT: REMOVE PW, INSTALL 4' - 4' X 3' RCB & PW-1 (HW= 6.5') (2:1); ADD MBGF



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 ON 02/15/2022



**SH 19
 CULVERT PROFILES**

SHEET 12 OF 12

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYL	HENDERSON	184	

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of units or for any errors or omissions in this document.

DATE: 04-JUN-2024 16:02
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041) - 0411

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) (CY) (2)	Class "C" Conc (Wingwall) (CY) (3)	Total Wingwall Area (SF)
STA 1651+03.00 (Rt)	1 ~ 3'x 2' 2"	2'	SCC-3&4	SETB-FW-0 0°	4:1 8"	7" 0.333' 2.750'	9.667'	5.581'	11.162'	4.167'	14.162'	0.0	0.1	4.0	N/A				
STA 1662+78.00 (Rt)	1 ~ 5'x 4' 2.5"	2.5'	SCC-5&6	SETB-FW-0 0°	4:1 8"	7" 0.500' 4.917'	18.333'	10.585'	21.170'	6.167'	26.170'	0.0	0.1	9.3	N/A				
STA 1686+32.50 (Rt)	1 ~ 3'x 3' 3"	3'	SCC-3&4	SETB-FW-0 0°	3:1 8"	7" 0.333' 3.750'	10.250'	5.9'	11.836'	4.167'	14.836'	0.0	0.1	4.5	N/A				
STA 1693+56.00 (Lt)	1 ~ 6'x 4' 4.5"	4.5'	SCC-5&6	PW-1 0°	2:1 8"	7" 0.750' 5.417'	N/A	N/A	10.833'	7.167'	N/A	0.0	0.2	7.8	117				
STA 1693+56.00 (Rt)	1 ~ 6'x 4' 3.5"	3.5'	SCC-5&6	PW-1 0°	2:1 8"	7" 0.333' 5.000'	N/A	N/A	10.000'	7.167'	N/A	0.0	0.1	6.9	100				
STA 1695+97.00 (Rt)	1 ~ 6'x 4' 4"	4"	SCC-5&6	PW-1 45°	2:1 8"	7" 0.333' 5.000'	N/A	N/A	14.142'	10.135'	N/A	0.0	0.1	9.7	141				
STA 1716+16.50 (Rt)	1 ~ 3'x 2' 2.5"	2.5'	SCC-3&4	SETB-FW-0 0°	4:1 8"	7" 0.333' 2.750'	9.667'	5.581'	11.162'	4.167'	14.162'	0.0	0.1	4.0	N/A				
STA 1744+75.50 (Rt)	1 ~ 6'x 6' 3"	3"	SCC-5&6	PW-1 0°	2:1 8"	7" 1.833' 8.500'	N/A	N/A	17.000'	7.167'	N/A	0.0	0.5	17.7	289				
STA 1749+06.00 (Rt)	1 ~ 3'x 2' 2"	2"	SCC-3&4	PW-1 0°	2:1 8"	7" 1.421' 4.083'	N/A	N/A	8.167'	4.167'	N/A	0.0	0.2	4.9	67				
STA 1754+61.50 (Rt)	1 ~ 3'x 3' 3"	3"	SCC-3&4	PW-1 0°	2:1 8"	7" 1.750' 5.417'	N/A	N/A	10.833'	4.167'	N/A	0.0	0.3	7.5	117				
STA 1764+22.00 (Rt)	1 ~ 4'x 4' 3"	3"	SCC-3&4	PW-1 45°	2:1 8"	7" 0.250' 4.917'	N/A	N/A	13.906'	7.307'	N/A	0.0	0.1	9.3	137				
STA 1773+54.00 (Rt)	1 ~ 7'x 6' 3"	3"	SCC-7	SETB-FW-0 0°	4:1 8"	7" 0.250' 6.667'	25.333'	14.625'	29.252'	8.167'	36.252'	0.0	0.1	14.9	N/A				
STA 1783+66.00 (Rt)	1 ~ 5'x 4' 3"	3"	SCC-5&6	SETB-SW-0 0°	4:1 8"	7" 0.833' 5.250'	N/A	N/A	19.667'	6.167'	5.000'	0.0	0.2	7.4	N/A				
STA 1831+56.00 (Rt)	1 ~ 3'x 2' 4.5"	4.5'	SCC-3&4	PW-1 0°	2:1 8"	7" 2.333' 5.000'	N/A	N/A	10.000'	4.167'	N/A	0.0	0.4	6.6	100				
STA 1866+28.00 (Lt)	1 ~ 5'x 4' 5.75"	5.75'	SCC-5&6	PW-1 0°	2:1 8"	7" 1.333' 6.000'	N/A	N/A	12.000'	6.167'	N/A	0.0	0.3	9.2	144				
STA 1866+28.00 (Rt)	1 ~ 5'x 4' 5.75"	5.75'	SCC-5&6	PW-1 0°	2:1 8"	7" 1.250' 5.917'	N/A	N/A	11.833'	6.167'	N/A	0.0	0.3	9.1	140				
STA 1873+31.00 (Lt)	1 ~ 3'x 3' 3"	3"	SCC-3&4	PW-1 0°	2:1 8"	7" 0.250' 3.917'	N/A	N/A	7.833'	4.167'	N/A	0.0	0.0	4.5	61				
STA 1873+31.00 (Rt)	1 ~ 3'x 3' 4"	4"	SCC-3&4	PW-1 0°	2:1 8"	7" 1.833' 5.500'	N/A	N/A	11.000'	4.167'	N/A	0.0	0.3	7.7	121				
STA 1907+08.00 (Lt)	1 ~ 3'x 3' 2.5"	2.5'	SCC-3&4	SETB-FW-0 0°	4:1 8"	7" 0.583' 4.000'	14.667'	8.468'	16.936'	4.167'	19.936'	0.0	0.1	6.3	N/A				
STA 1929+93.40 (Lt)	1 ~ 3'x 2' 2.5"	2.5'	SCC-3&4	SETB-FW-0 0°	4:1 8"	7" 0.250' 2.667'	9.333'	5.389'	10.777'	4.167'	13.777'	0.0	0.0	3.9	N/A				
STA 1938+15.50 (Lt)	1 ~ 4'x 3' 4.5"	4.5'	SCC-3&4	PW-1 0°	2:1 8"	7" 2.500' 6.167'	N/A	N/A	12.333'	5.167'	N/A	0.0	0.5	9.9	152				

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.

- 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.

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.



Samantha McDonald

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 TEXAS REGISTERED ENGINEERING FIRM F-9073

Texas Department of Transportation

Bridge Division Standard

BOX CULVERT SUPPLEMENT
 WINGS AND END TREATMENTS

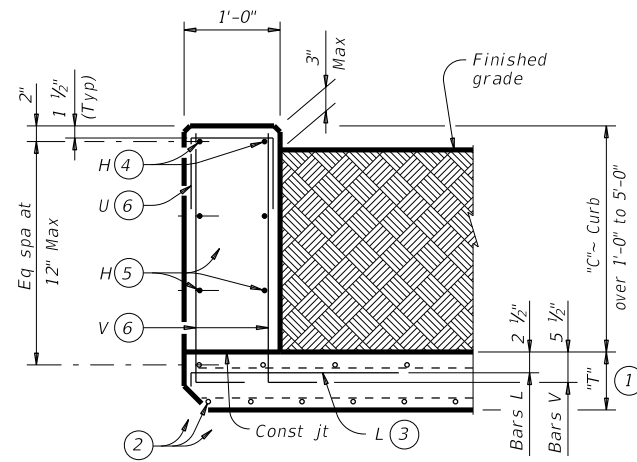
BCS

FILE: bcsstdel-20.dgn	DN: TxDOT	CK: TxDOT	OW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108 03		041	SH 19
	DIST	COUNTY	SHEET NO.	
	TYL	HENDERSON	185	

DIGITALLY SIGNED ON 02/15/2022

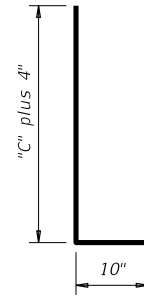
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DATE: 04-JUN-2024 16:15
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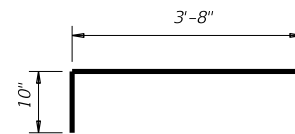


TYPICAL SECTION

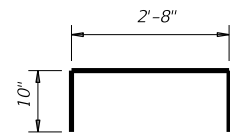
Used for curbs over 1'-0" to 5'-0"



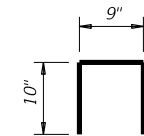
BARS V (#5)
Spaced at 12" Max



BARS L (#5)
Spaced at 12" Max



OPTIONAL BARS L (#5)
Spaced at 12" Max



BARS U (#4)
Spaced at 12" Max

- ① "T" is equal to the culvert top slab thickness. For precast boxes with slabs less than 8" thick, see SCP-MD standard for additional details.
- ② Adjust normal culvert slab bars as necessary to clear obstructions.
- ③ Place bars L as shown. Tilt hook as necessary to maintain cover.
- ④ Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.
- ⑤ Additional bars H(#4) as required to maintain 12" Max spacing.
- ⑥ Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.
- ⑦ Optional bars L are to be used only for precast box culverts with 3'-0" closure pour.
- ⑧ Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).

TABLE OF ESTIMATED CURB QUANTITIES ^⑧		
Curb Height "C"	Conc (CY/LF)	Reinf Steel (Lb/LF)
1'-0"	0.037	10.4
1'-6"	0.056	14.5
2'-0"	0.074	15.6
2'-6"	0.093	18.0
3'-0"	0.111	19.0
3'-6"	0.130	21.3
4'-0"	0.148	22.4
4'-6"	0.167	24.8
5'-0"	0.185	25.9

CONSTRUCTION NOTES:
 Adjust reinforcing steel as necessary to provide 1 1/4" cover.
 For vehicle safety, top of the curb must not project more than 3" above the finished grade.

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) minimum for curbs.
 Provide bar laps, where required, as follows:
 • Uncoated or galvanized ~ #4 = 1'-8" Min

GENERAL NOTES:
 Designed according to AASHTO LRFD Bridge Design Specifications.
 These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR11, PR22 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.
 This Curb is considered as part of the Box Culvert for payment.

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

		Bridge Division Standard	
EXTENDED CURB DETAILS FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL			
ECD			
FILE: ecdstde1-20.dgn	DN: GAF	CK: TxDOT	OW: TxDOT
©TxDOT February 2020	CONT SECT	JOB	HIGHWAY
REVISIONS	0108 03	041	SH 19
DIST:	COUNTY	SHEET NO.	
TYL	HENDERSON	186	

DATE: 04-JUN-2024 16:16
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TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

Maximum Wingwall Height Hw	Dimensions				Variable Reinforcing				Estimated Quantities per ft of wing (2-wings)		Estimated Quantities per ft of Toewall (1-toewall)	
	W	X	Y	Z	Bars J1		Bars J2		Reinf (Lb/Ft)	Conc (CY/Ft)	Reinf (Lb/Ft)	Conc (CY/Ft)
					Size	Spa	Size	Spa				
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"

WING DIMENSION FORMULAS:

(All values are in feet.)

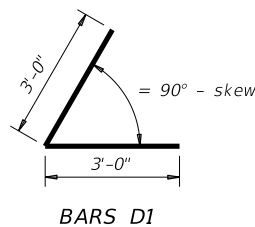
$$\begin{aligned}
 Hw &= H + T + C \\
 Lw &= (Hw) (SL) \div \cosine (\theta) \text{ for Type PW-1} \\
 &= (Hw - 1') (SL) \div \cosine (\theta) \text{ for Type PW-2 and } Hw \geq 4' \\
 &= (Hw - 0.5') (SL) \div \cosine (\theta) \text{ for Type PW-2 and } Hw < 4'
 \end{aligned}$$

For cast-in-place culverts:
 $Ltw = [(N) (S) + (N + 1) (U)] \div \cosine (\theta)$

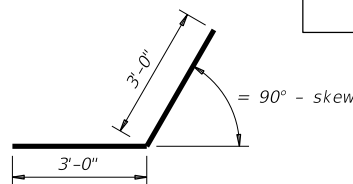
For precast culverts:
 $Ltw = [(N) (2 U + S) + (N - 1) (0.5')] \div \cosine (\theta)$
 Total Wingwall Area (two wings ~ SF)
 $= (2)(Hw)(Lw)$ for Type PW-1
 $= (2)(Hw)(Lw) - 6 SF$ for Type PW-2 and $Hw \geq 4'$
 $= (2)(Hw)(Lw) - 1.5 SF$ for Type PW-2 and $Hw < 4'$

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

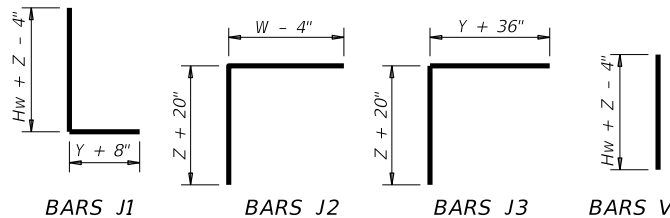
See applicable box culvert standard sheet for S, H, T, and U values.



BARS D1



BARS D2

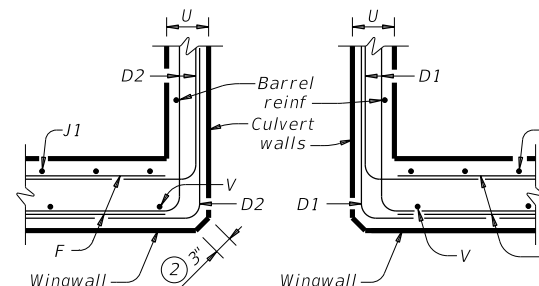


BARS J1

BARS J2

BARS J3

BARS V



SECTION C-C - PW-1

SECTION C-C - PW-2

- Skew = 0°
- At discharge end, chamfer may be 3/4" minimum.
- For 15° skew ~ 1"
For 30° skew ~ 2"
For 45° skew ~ 3"
- 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.
- Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
- Extend Bars E2 1'-6" minimum into the wingwall footing.
- Lap Bars M1 1'-6" minimum with Bars M2.
- Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
- 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.
- 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.
- 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
- 3'-0" for Hw < 4'.
- 6" for Hw < 4'.

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.

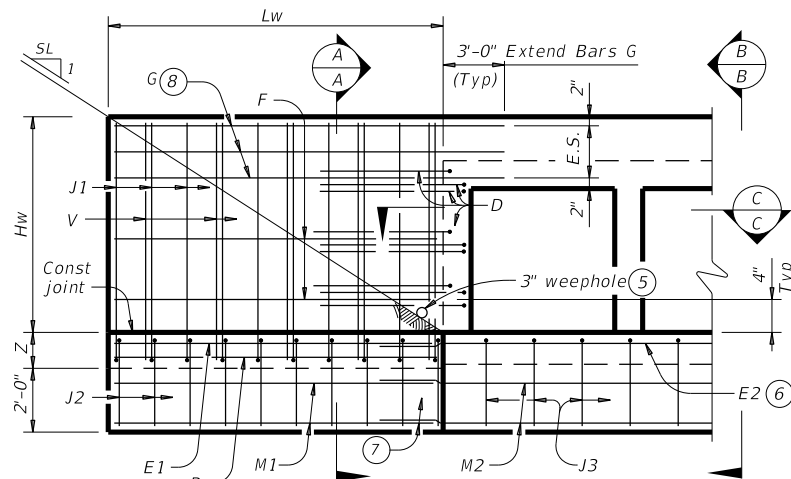
MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi).
 Provide Grade 60 reinforcing steel.
 Provide galvanized reinforcing steel if required elsewhere in the plans.

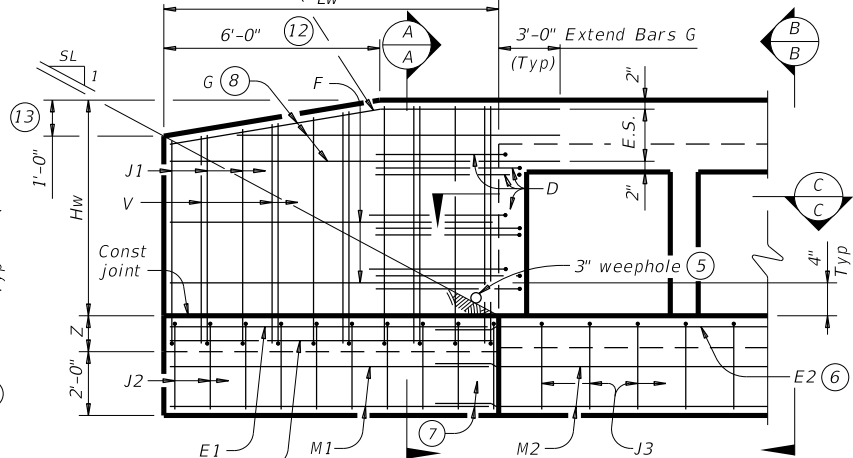
GENERAL NOTES:

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.

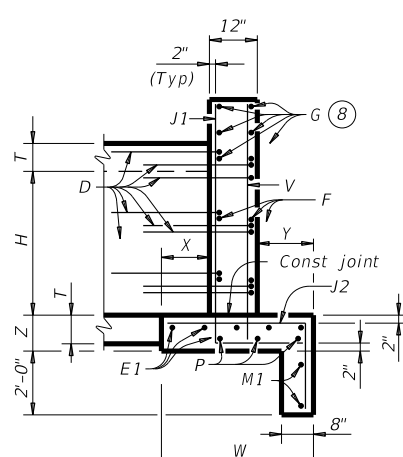
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.



PARTIAL ELEVATION - PW-1

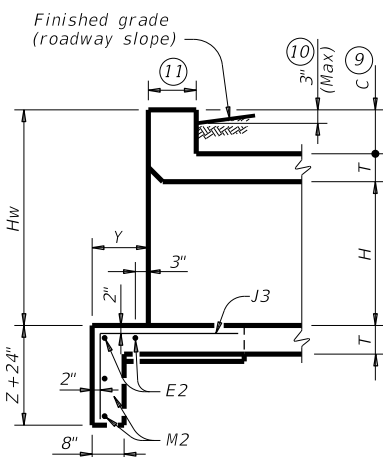


PARTIAL ELEVATION - PW-2



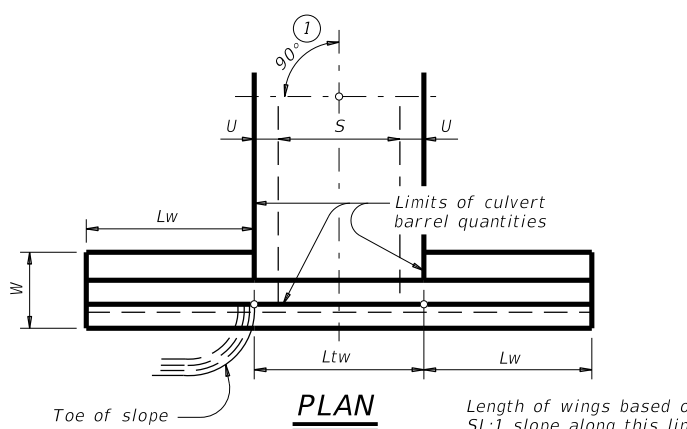
SECTION A-A

(Showing wing reinforcement.)



SECTION B-B

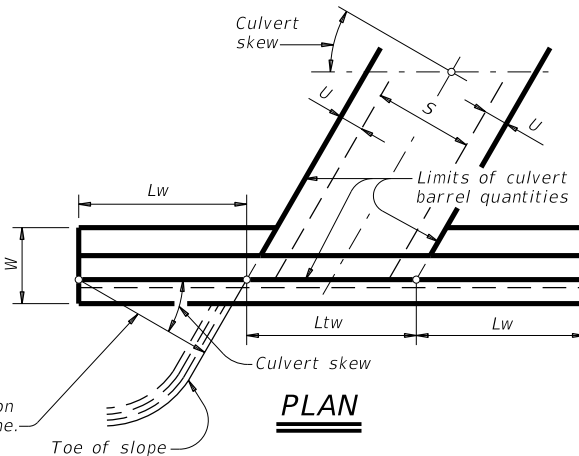
(Showing wing reinforcement.)



PLAN

DETAILS FOR NON-SKEWED BOX CULVERTS

Length of wings based on SL:1 slope along this line.



PLAN

DETAILS FOR SKEWED BOX CULVERTS

(Showing 30° skew.)

		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
CONT: February 2020	SECT: 0108 03	JOB: 041	HIGHWAY: SH 19
DIST: TYL	COUNTY: HENDERSON	SHEET NO. 187	

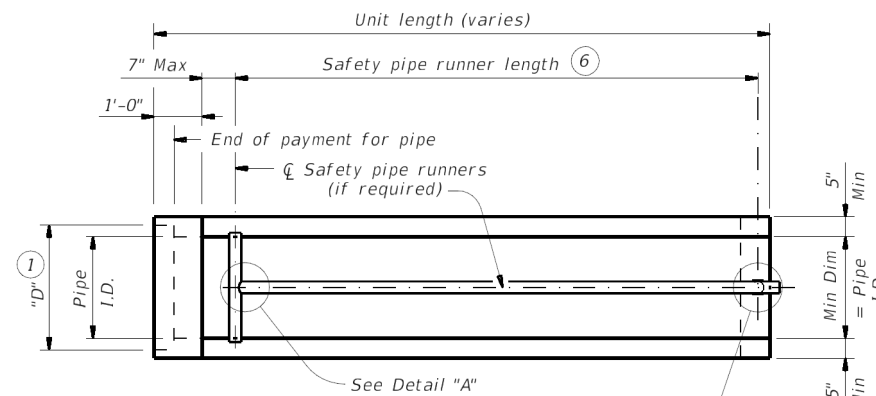
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

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

SAFETY PIPE RUNNER DIMENSIONS

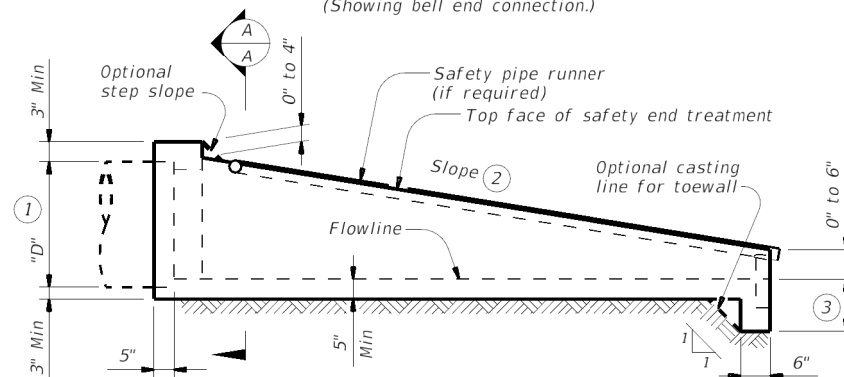
Max Safety Pipe Runner Length	Required Pipe Runner Size		
	Pipe Size	Pipe O.D.	Pipe I.D.
11' - 2"	3" STD	3.500"	3.068"
15' - 6"	3 1/2" STD	4.000"	3.548"
20' - 10"	4" STD	4.500"	4.026"
35' - 4"	5" STD	5.563"	5.047"



Pocket is to be formed to fit O.D. of pipe support post if safety pipe runners are used.

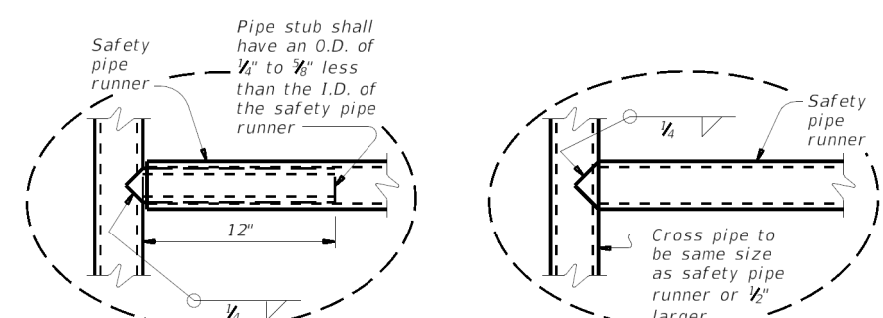
PLAN

(Showing bell end connection.)

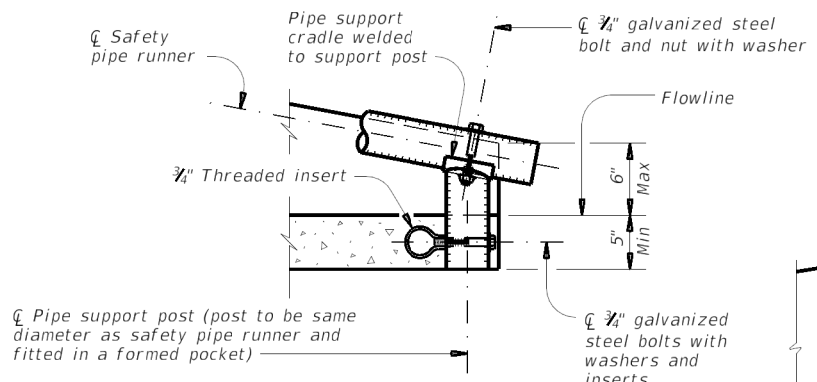


LONGITUDINAL ELEVATION

(Showing bell end connection.)

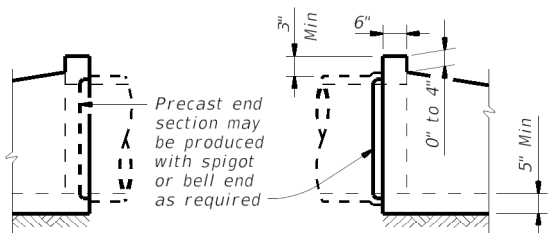


OPTION A DETAIL A OPTION B
(If required)



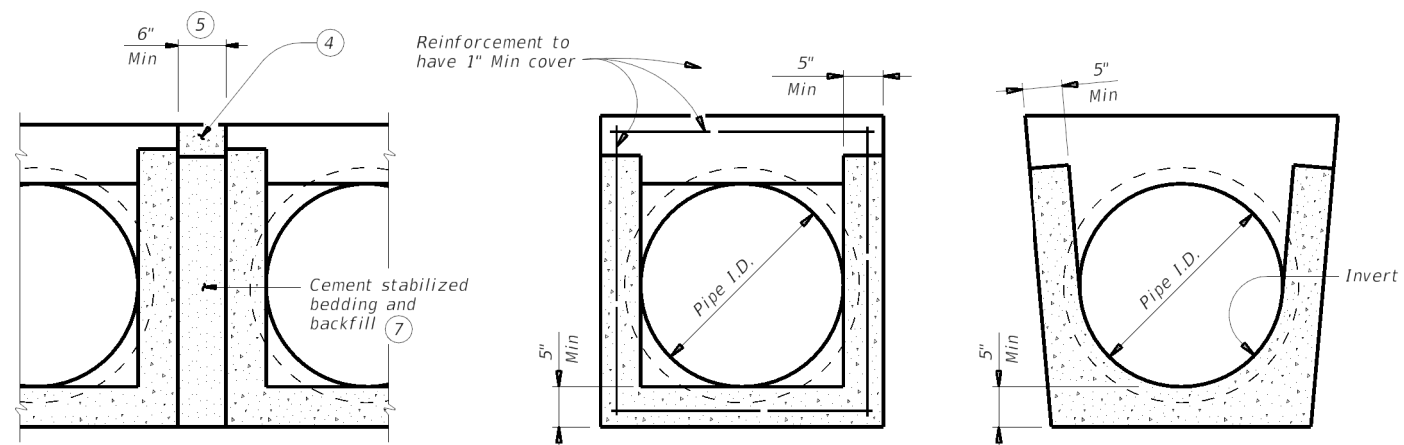
END DETAIL FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)



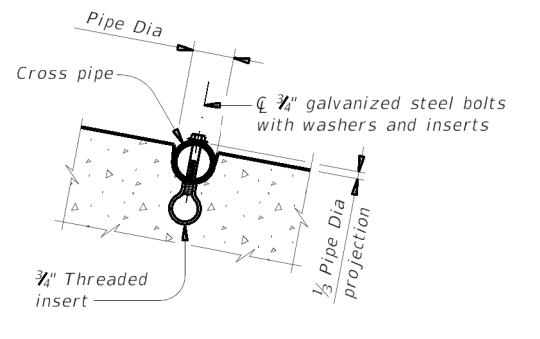
OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment)



MULTIPLE PIPE INSTALLATION OPTION WITH SQUARE BOTTOM OPTION WITH INVERT BOTTOM

SECTION A-A



INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)

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

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

Texas Department of Transportation
Bridge Division Standard

PRECAST SAFETY END TREATMENT

TYPE II ~ CROSS DRAINAGE

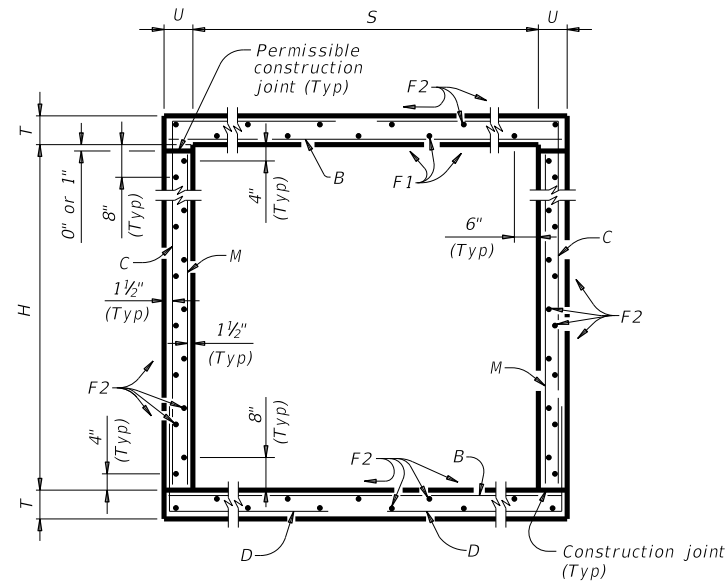
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February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	01	041	SH 19
12-21: Added 42" TP	DIST	COUNTY		SHEET NO.
	TYL	VAN ZANDT		187A

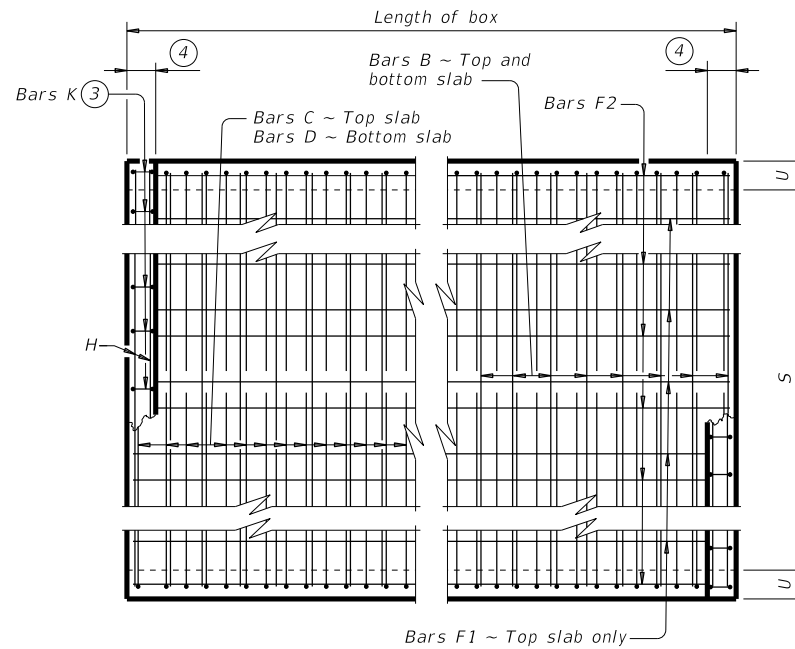
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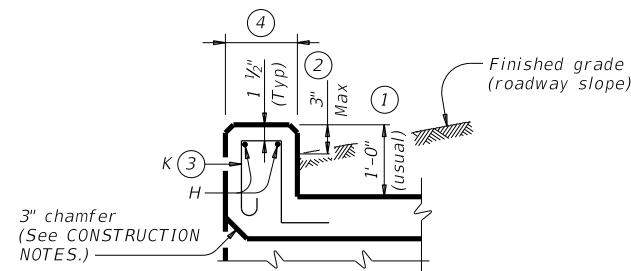
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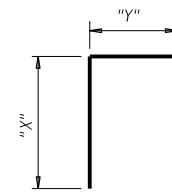
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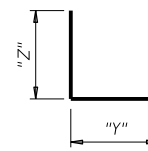
PLAN OF REINF STEEL



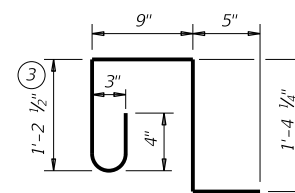
SECTION THRU CURB



BARS C



BARS D



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.

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 Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-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

SHEET 1 OF 2



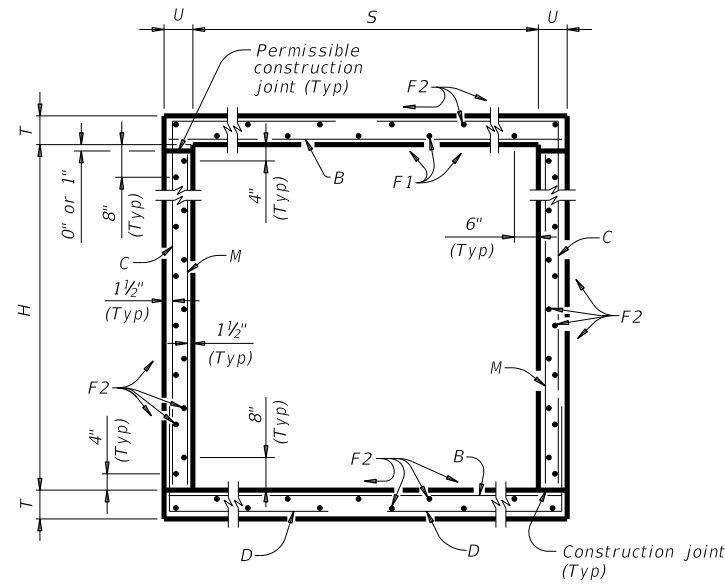
**SINGLE BOX CULVERTS
 CAST-IN-PLACE
 0' TO 30' FILL**

SCC-5 & 6

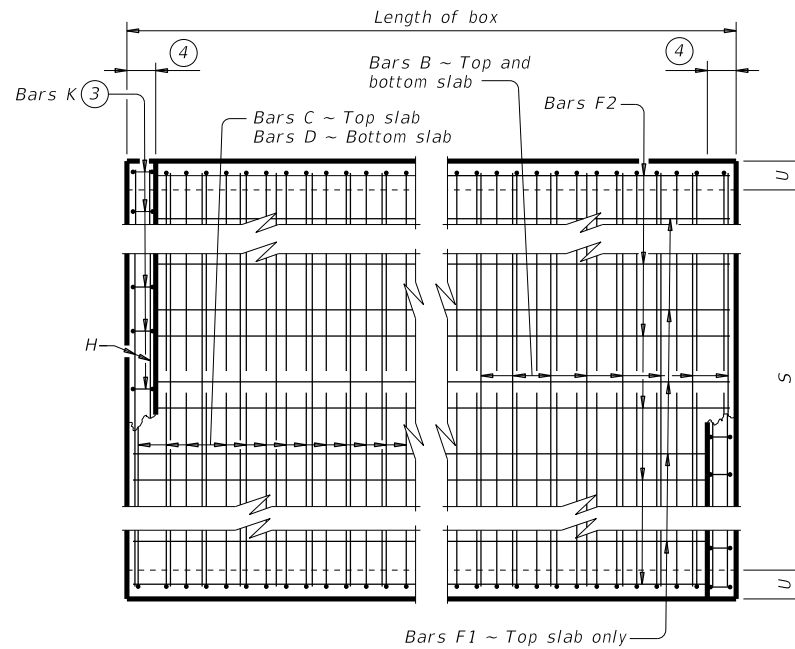
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REVISIONS	0108 03		041	SH 19
04/2021 Updated X values.	DIST:	COUNTY	SHEET NO.	
	TYL	HENDERSON	190	

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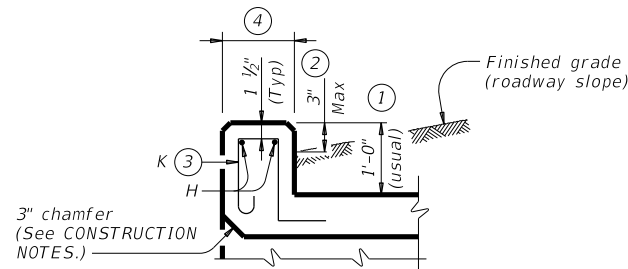
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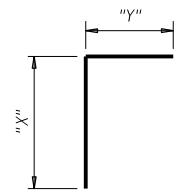
TYPICAL SECTION



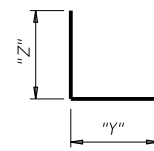
PLAN OF REINF STEEL



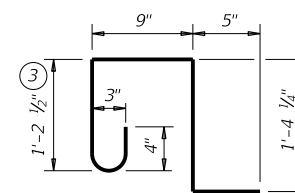
SECTION THRU CURB



BARS C



BARS D



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 (Spa = 1'-0" Max)
 (Length = 4'-2")

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HL93 LOADING

SHEET 1 OF 2



**SINGLE BOX CULVERTS
 CAST-IN-PLACE
 0' TO 30' FILL**

SCC-7

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REVISIONS	0108 03	041	SH 19	
04/2021 Updated X values.	DIST: TYL	COUNTY: HENDERSON	SHEET NO: 192	

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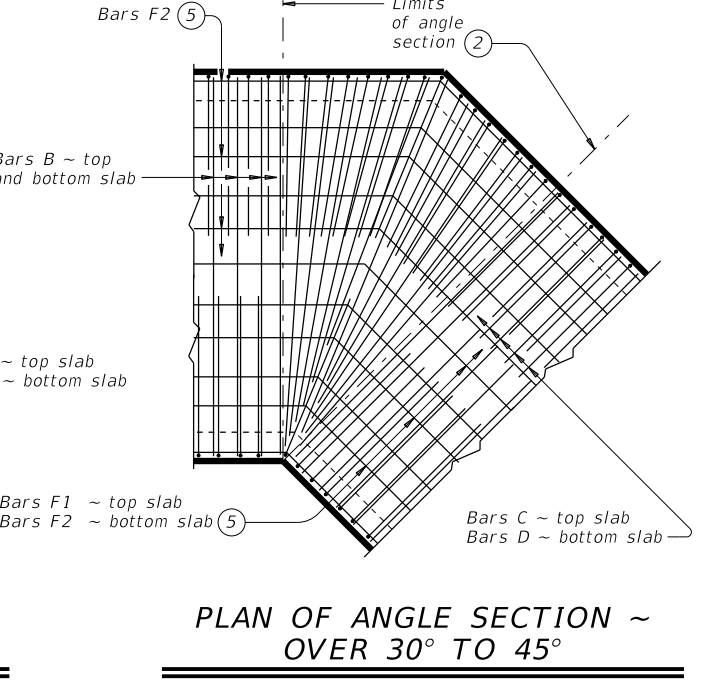
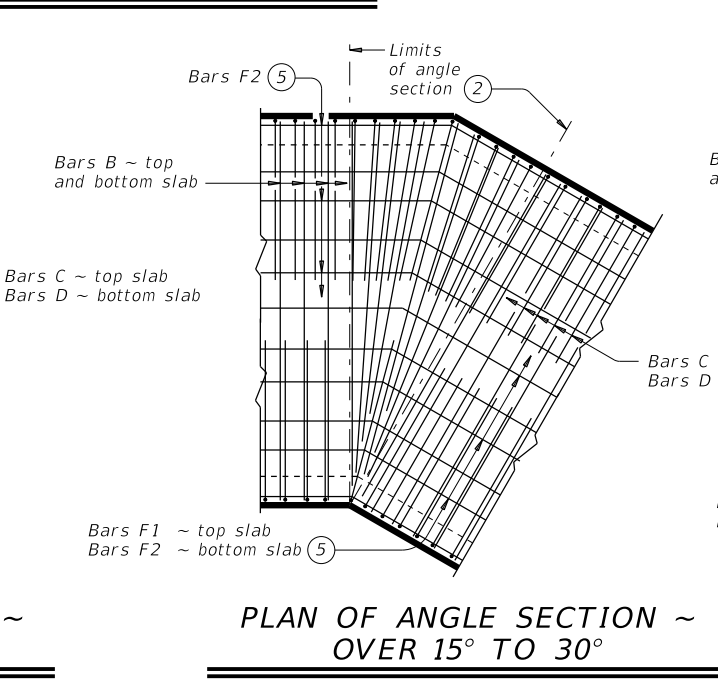
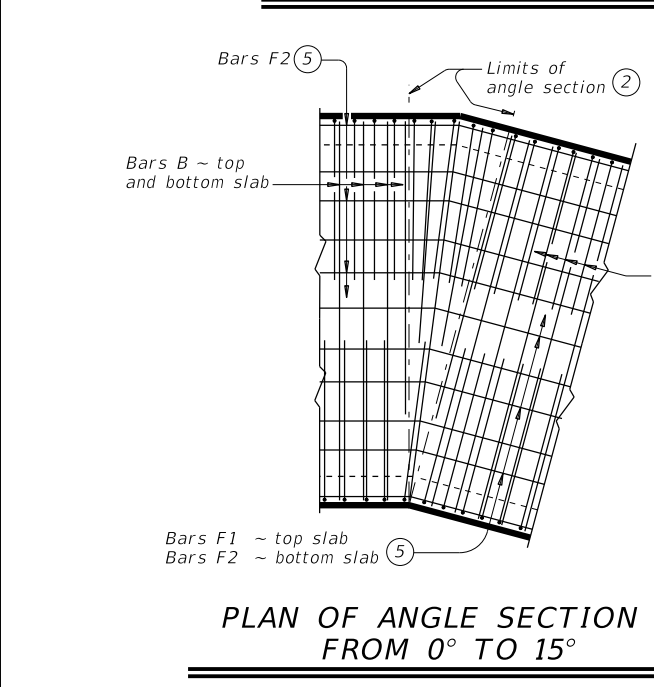
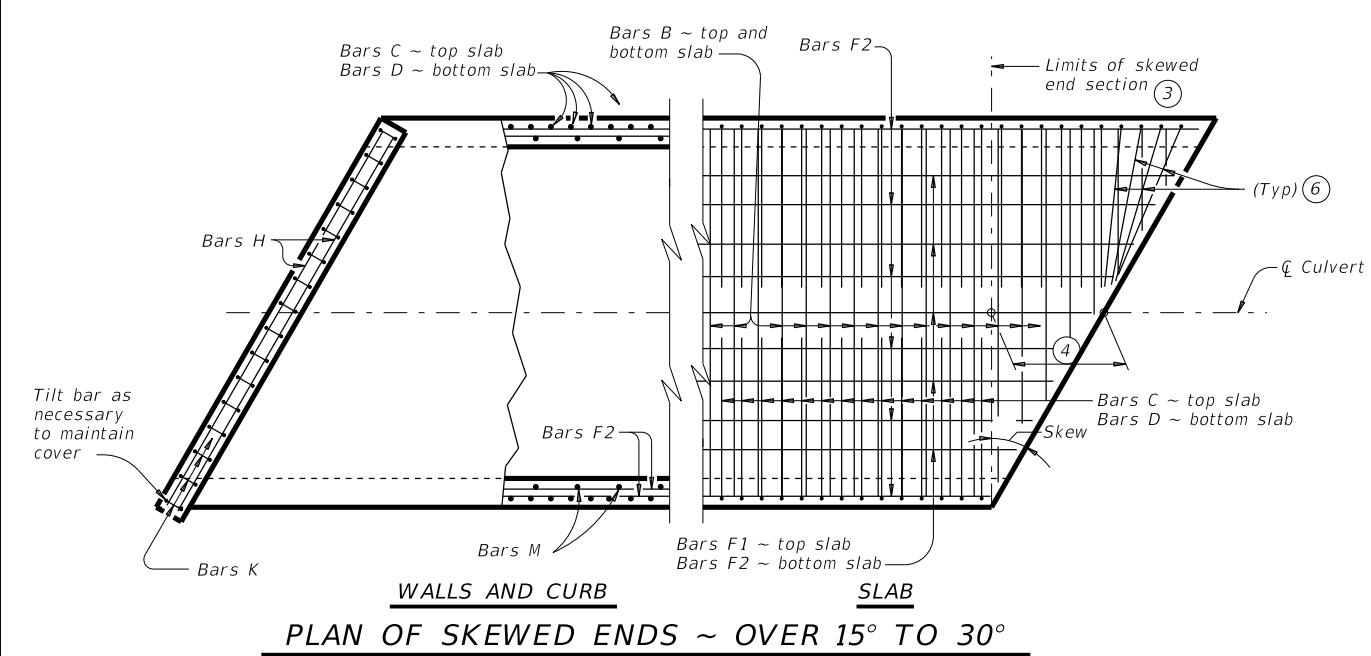
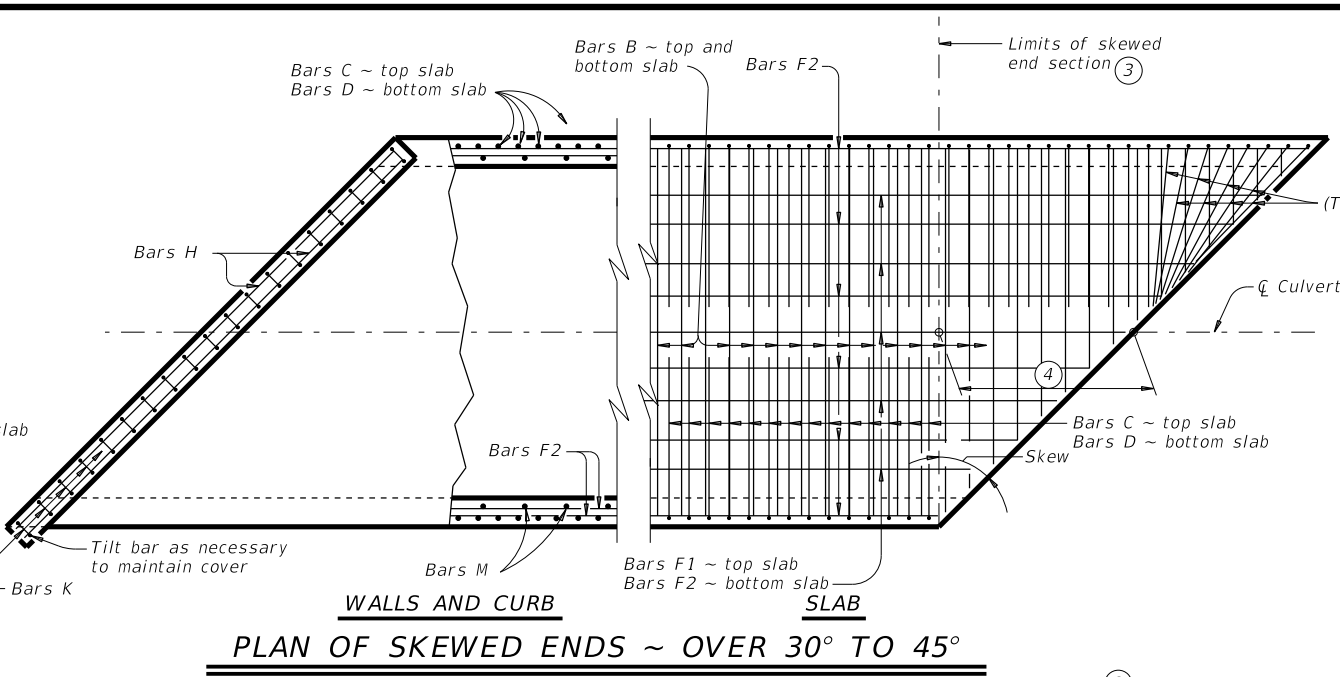
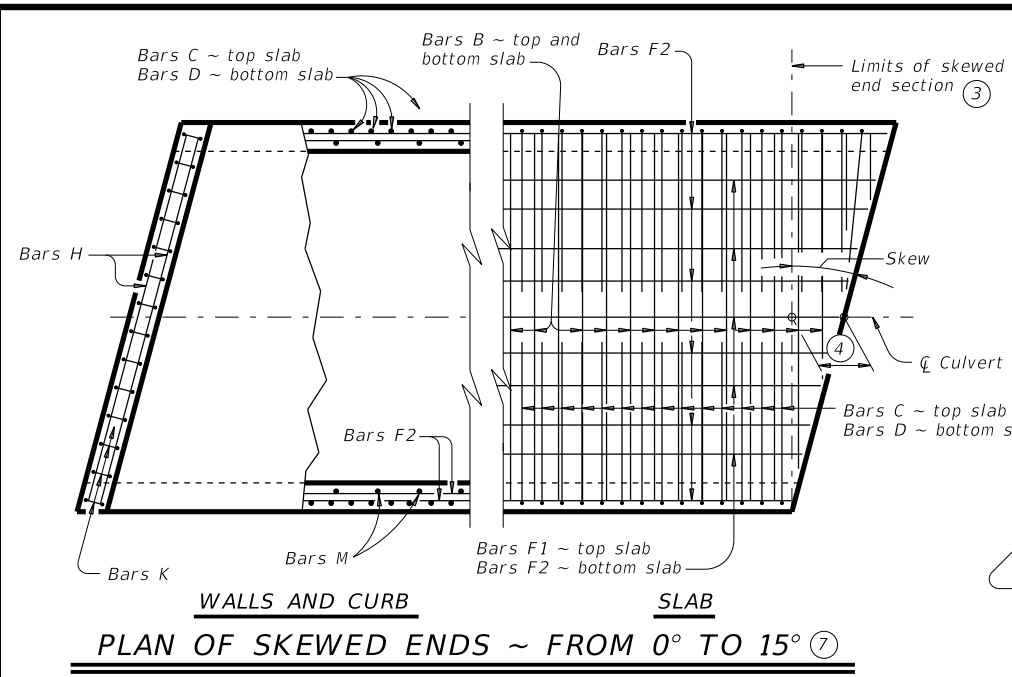
SECTION DIMENSIONS				FILL HEIGHT ⑤	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																								QUANTITIES														
					Bars B					Bars C					Bars D					Bars M ~ #4				Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total					
					S	H	T	U	No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)
7'-0"	3'-0"	8"	7"	16'	108	#6	9"	7'-11"	1,284	162	#5	6"	7'-11"	1,338	3'-6"	4'-5"	162	#5	6"	7'-1"	1,197	4'-5"	2'-8"	108	9"	3'-0"	216	5	39'-9"	133	31	39'-9"	823	7'-11"	21	18	50	0.533	124.8	0.6	71	21.9	5,062
7'-0"	3'-0"	9"	7"	20'	108	#6	9"	7'-11"	1,284	162	#5	6"	8'-0"	1,352	3'-7"	4'-5"	162	#5	6"	7'-2"	1,211	4'-5"	2'-9"	108	9"	3'-0"	216	5	39'-9"	133	31	39'-9"	823	7'-11"	21	18	50	0.583	125.5	0.6	71	23.9	5,090
7'-0"	3'-0"	10"	8"	23'	108	#6	9"	8'-1"	1,311	162	#5	6"	8'-2"	1,380	3'-8"	4'-6"	162	#5	6"	7'-4"	1,239	4'-6"	2'-10"	82	12"	3'-0"	164	5	39'-9"	133	31	39'-9"	823	8'-1"	22	20	56	0.663	126.3	0.6	78	27.1	5,128
7'-0"	3'-0"	11"	8"	30'	108	#6	9"	8'-1"	1,311	162	#5	6"	8'-3"	1,394	3'-9"	4'-6"	162	#5	6"	7'-5"	1,253	4'-6"	2'-11"	82	12"	3'-0"	164	5	39'-9"	133	31	39'-9"	823	8'-1"	22	20	56	0.714	127.0	0.6	78	29.2	5,156
7'-0"	4'-0"	8"	7"	16'	108	#6	9"	7'-11"	1,284	162	#5	6"	8'-11"	1,507	4'-6"	4'-5"	162	#5	6"	7'-1"	1,197	4'-5"	2'-8"	108	9"	4'-0"	289	5	39'-9"	133	31	39'-9"	823	7'-11"	21	18	50	0.576	130.8	0.6	71	23.6	5,304
7'-0"	4'-0"	9"	7"	20'	108	#6	9"	7'-11"	1,284	162	#5	6"	9'-0"	1,521	4'-7"	4'-5"	162	#5	6"	7'-2"	1,211	4'-5"	2'-9"	108	9"	4'-0"	289	5	39'-9"	133	31	39'-9"	823	7'-11"	21	18	50	0.627	131.5	0.6	71	25.7	5,332
7'-0"	4'-0"	10"	8"	23'	108	#6	9"	8'-1"	1,311	162	#5	6"	9'-2"	1,549	4'-8"	4'-6"	162	#5	6"	7'-4"	1,239	4'-6"	2'-10"	82	12"	4'-0"	219	5	39'-9"	133	31	39'-9"	823	8'-1"	22	20	56	0.712	131.9	0.6	78	29.1	5,352
7'-0"	4'-0"	11"	8"	30'	162	#6	6"	8'-1"	1,967	162	#5	6"	9'-3"	1,563	4'-9"	4'-6"	162	#5	6"	7'-5"	1,253	4'-6"	2'-11"	82	12"	4'-0"	219	5	39'-9"	133	31	39'-9"	823	8'-1"	22	20	56	0.763	149.0	0.6	78	31.1	6,036
7'-0"	5'-0"	8"	7"	16'	108	#6	9"	7'-11"	1,284	162	#5	6"	9'-11"	1,676	5'-6"	4'-5"	162	#5	6"	7'-1"	1,197	4'-5"	2'-8"	108	9"	5'-0"	361	5	39'-9"	133	35	39'-9"	929	7'-11"	21	18	50	0.619	139.5	0.6	71	25.4	5,651
7'-0"	5'-0"	9"	7"	20'	108	#6	9"	7'-11"	1,284	162	#5	6"	10'-0"	1,690	5'-7"	4'-5"	162	#5	6"	7'-2"	1,211	4'-5"	2'-9"	108	9"	5'-0"	361	5	39'-9"	133	35	39'-9"	929	7'-11"	21	18	50	0.670	140.2	0.6	71	27.4	5,679
7'-0"	5'-0"	10"	8"	23'	108	#6	9"	8'-1"	1,311	162	#5	6"	10'-2"	1,718	5'-8"	4'-6"	162	#5	6"	7'-4"	1,239	4'-6"	2'-10"	82	12"	5'-0"	274	5	39'-9"	133	35	39'-9"	929	8'-1"	22	20	56	0.761	140.1	0.6	78	31.1	5,682
7'-0"	5'-0"	11"	8"	30'	162	#6	6"	8'-1"	1,967	162	#5	6"	10'-3"	1,732	5'-9"	4'-6"	162	#5	6"	7'-5"	1,253	4'-6"	2'-11"	82	12"	5'-0"	274	5	39'-9"	133	35	39'-9"	929	8'-1"	22	20	56	0.813	157.2	0.6	78	33.1	6,366
7'-0"	6'-0"	8"	7"	16'	108	#6	9"	7'-11"	1,284	162	#5	6"	10'-11"	1,845	6'-6"	4'-5"	162	#5	6"	7'-1"	1,197	4'-5"	2'-8"	108	9"	6'-0"	433	5	39'-9"	133	39	39'-9"	1,036	7'-11"	21	18	50	0.663	148.2	0.6	71	27.1	5,999
7'-0"	6'-0"	9"	7"	20'	108	#6	9"	7'-11"	1,284	162	#5	6"	11'-0"	1,859	6'-7"	4'-5"	162	#5	6"	7'-2"	1,211	4'-5"	2'-9"	108	9"	6'-0"	433	5	39'-9"	133	39	39'-9"	1,036	7'-11"	21	18	50	0.713	148.9	0.6	71	29.1	6,027
7'-0"	6'-0"	10"	8"	23'	108	#6	9"	8'-1"	1,311	162	#5	6"	11'-2"	1,887	6'-8"	4'-6"	162	#5	6"	7'-4"	1,239	4'-6"	2'-10"	82	12"	6'-0"	329	5	39'-9"	133	39	39'-9"	1,036	8'-1"	22	20	56	0.811	148.4	0.6	78	33.1	6,013
7'-0"	6'-0"	11"	8"	30'	162	#6	6"	8'-1"	1,967	162	#5	6"	11'-3"	1,901	6'-9"	4'-6"	162	#5	6"	7'-5"	1,253	4'-6"	2'-11"	82	12"	6'-0"	329	5	39'-9"	133	39	39'-9"	1,036	8'-1"	22	20	56	0.862	165.5	0.6	78	35.1	6,697
7'-0"	7'-0"	8"	7"	16'	108	#6	9"	7'-11"	1,284	162	#5	6"	11'-11"	2,014	7'-6"	4'-5"	162	#5	6"	7'-1"	1,197	4'-5"	2'-8"	108	9"	7'-0"	505	5	39'-9"	133	39	39'-9"	1,036	7'-11"	21	18	50	0.706	154.2	0.6	71	28.8	6,240
7'-0"	7'-0"	9"	7"	20'	108	#6	9"	7'-11"	1,284	162	#5	6"	12'-0"	2,028	7'-7"	4'-5"	162	#5	6"	7'-2"	1,211	4'-5"	2'-9"	108	9"	7'-0"	505	5	39'-9"	133	39	39'-9"	1,036	7'-11"	21	18	50	0.756	154.9	0.6	71	30.8	6,268
7'-0"	7'-0"	10"	8"	23'	108	#6	9"	8'-1"	1,311	162	#5	6"	12'-2"	2,056	7'-8"	4'-6"	162	#5	6"	7'-4"	1,239	4'-6"	2'-10"	108	9"	7'-0"	505	5	39'-9"	133	39	39'-9"	1,036	8'-1"	22	20	56	0.860	157.0	0.6	78	35.0	6,358
7'-0"	7'-0"	11"	8"	30'	162	#6	6"	8'-1"	1,967	162	#5	6"	12'-3"	2,070	7'-9"	4'-6"	162	#5	6"	7'-5"	1,253	4'-6"	2'-11"	108	9"	7'-0"	505	5	39'-9"	133	39	39'-9"	1,036	8'-1"	22	20	56	0.912	174.1	0.6	78	37.1	7,042

⑤ For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.

				Bridge Division Standard	
SINGLE BOX CULVERTS CAST-IN-PLACE 0' TO 30' FILL					
SCC-7					
FILE: scc07ste-21.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT	
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0108	03	041	SH 19	
04/2021 Updated X values.	DIST	COUNTY	SHEET NO.		
	TYL	HENDERSON	193		

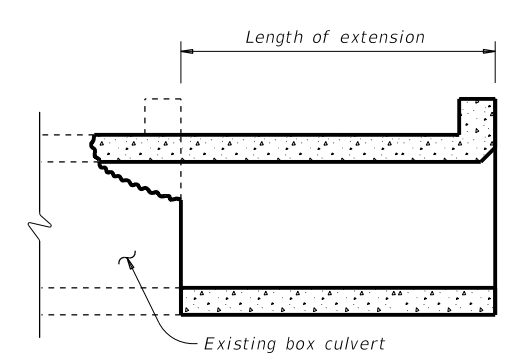
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 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041) \P 19 - Single Box Culverts Cast-In-Place.dwg



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, 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, N_{ba}, 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 becomes less than half of the normal spacing, cut bars to avoid conflict.
- ③ The length of Bars B vary in the skewed end sections.
- ④ $[One\ half\ of\ overall\ width] \times [tangent\ of\ the\ skew\ angle]$
- 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, and D parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B shown on the Single Box Culverts Cast-In-Place (SCC) standards sheets to accommodate the skew.



CONSTRUCTION NOTES:
 Do not use permanent forms.
 When required, lap Bars H 1'-8" for uncoated or galvanized bars.
 Provide a minimum of 1 1/2" 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 Single Box Culverts Cast-in-Place (SCC) standard sheets for details of straight sections of culvert.
 For skewed sections and angle sections, refer to Single Box Culverts Cast-in-Place (SCC) 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 culvert Single Box Culverts Cast-In-Place (SCC) 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

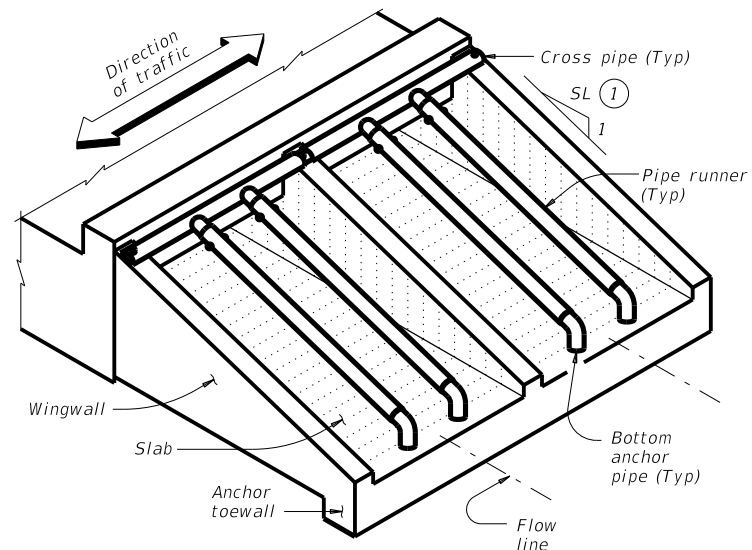
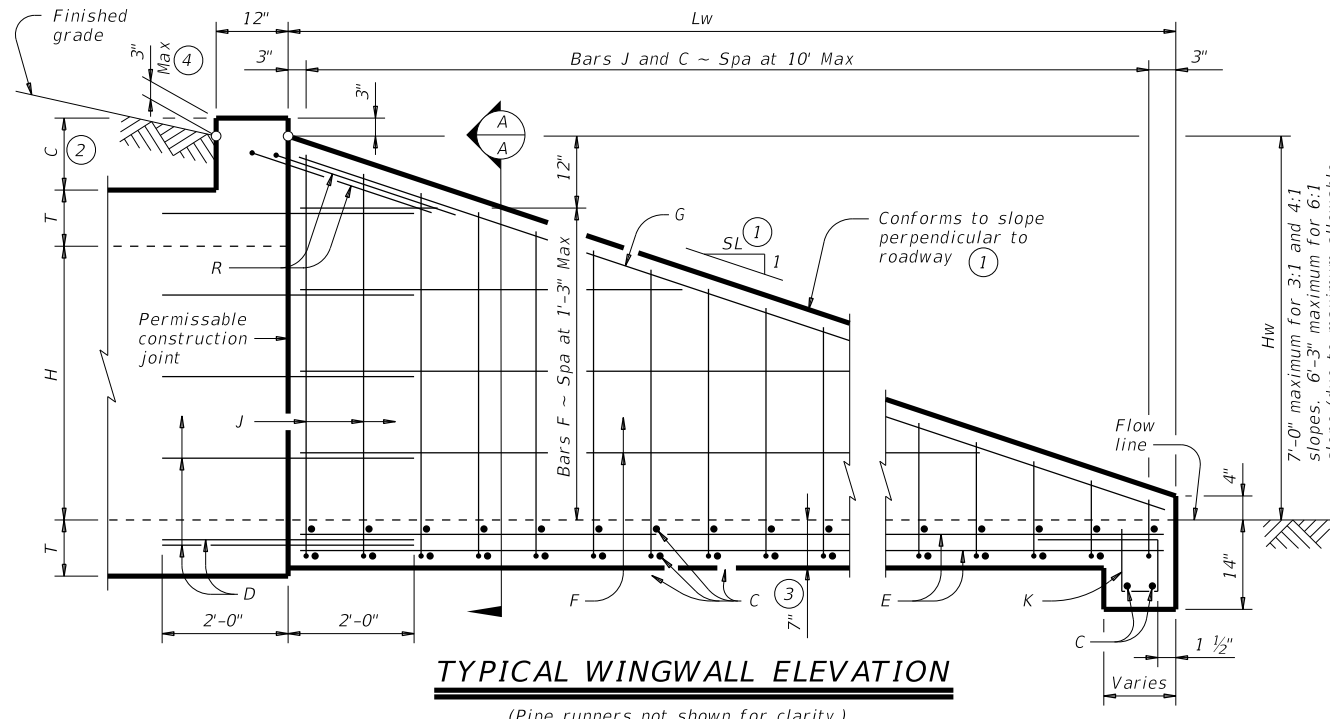
**SINGLE BOX CULVERTS
 CAST-IN-PLACE
 MISCELLANEOUS DETAILS**

SCC-MD

FILE: sccmdste-20.dgn	DN: TxDOT	CK: TxDOT	OW: TxDOT	CK: TxDOT
CONT: February 2020	SECT:	JOB:	HIGHWAY:	
REVISIONS:	0108 03	041	SH 19	
DIST: TYL	COUNTY: HENDERSON	SHEET NO: 194		

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DATE: 04-JUN-2024 16:16
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041) - 0741307.dwg



WING DIMENSION CALCULATIONS:

$$Hw = H + T + C - 0.250'$$

$$Lw = (Hw - 0.333') (SL)$$

For cast-in-place culverts:
 $Atw = (N) (S) + (N + 1) (U)$

For precast culverts:
 $Atw = (N) (2U + S) + (N - 1) (0.500')$

Total Wingwall Area (SF)
 $= (0.5) (Hw + 0.333') (Lw) (N + 1)$

Total Concrete Volume (CY)
 $= [(Wingwall Area) (0.583') + (Lw) (Atw) (0.583') + (Atw) (1.167') (1.167' - 0.583')] \div (27)$

PIPE RUNNER DIMENSION CALCULATIONS:

Pipe Runner Length
 $= (Lw) (K1) - (1.917')$

Total Reinforcing (Lb)
 $= (1.55) (Lw) (Atw) + (4.43) (Atw) + (K2) (Hw) (N + 1) (\sqrt{Lw})$

C = Height of curb above top of top slab (feet)
 Hw = Height of wingwall (feet)
 K = Constant value for use in formulas

Slope SL:1	K1	K2
3:1	~ 1.054	~ 7.45
4:1	~ 1.031	~ 8.49
6:1	~ 1.014	~ 10.30

Atw = Anchor toewall length (feet)
 Lw = Length of wingwall (feet)
 N = Number of culvert barrels
 SL:1 = Side slope ratio (horizontal : 1 vertical)

See applicable box culvert standard for H, S, T, and U values.

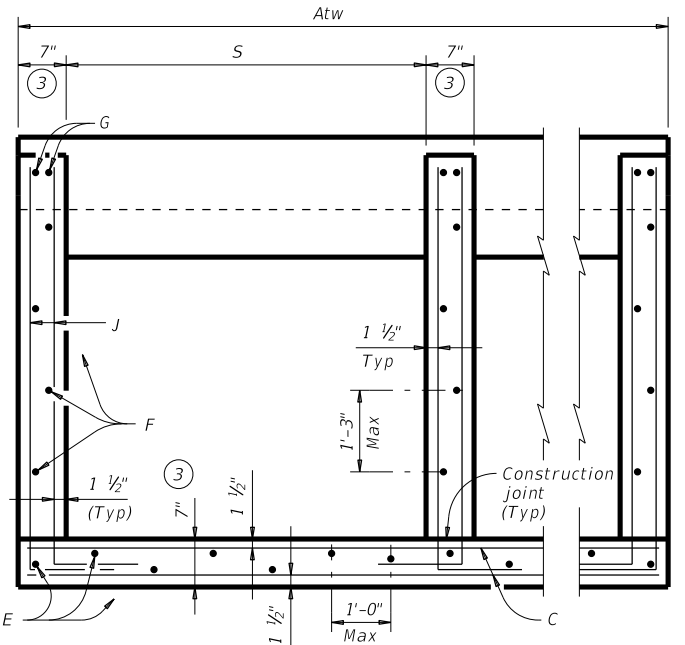
MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
 Provide galvanized reinforcing steel if required elsewhere in the plans.
 Adjust reinforcing as necessary to provide a minimum clear cover of 1 1/2".
 Provide Class "C" concrete (f'c = 3,600 psi).
 Provide pipe runners, cross pipes, and anchor pipes meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.
 Provide ASTM A307 bolts.
 Galvanize all steel components, except the concrete reinforcing, unless required elsewhere in the plans, after fabrication.
 Repair galvanizing damaged during transport or construction in accordance with the Item 445, "Galvanizing".

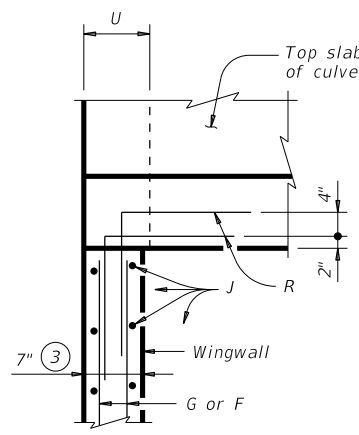
GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
 The safety end treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the pipe runners.
 Pipe runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.
 The quantities for pipe runners, reinforcing steel, and concrete resulting from the formulas given herein are for Contractor's information only.
 See the Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
 Alternate design drawings bearing the seal of a professional engineer will be acceptable for precast construction of the safety end treatments.

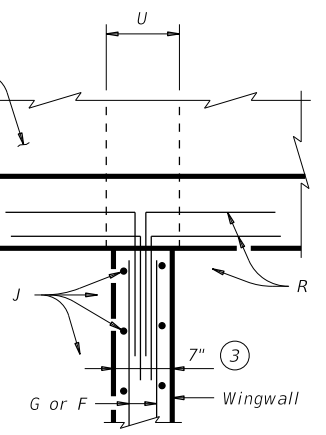
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.



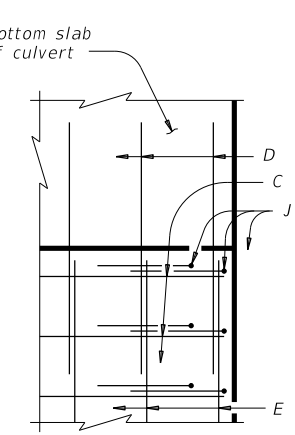
SECTION A-A
 (Showing typical wingwall and wing slab reinforcing. Pipe runners not shown for clarity.)



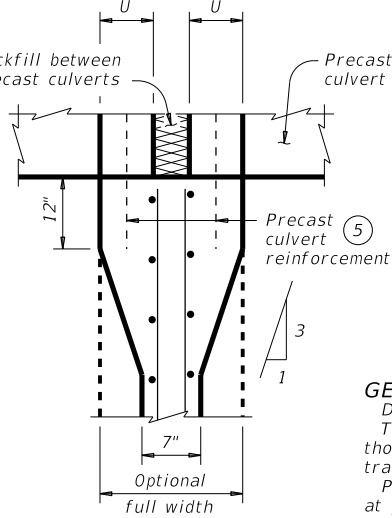
AT TOP OF EXTERIOR WINGWALL
 (Cast-in-place culvert)



AT TOP OF INTERIOR WINGWALL
 (Cast-in-place culvert)



AT OUTSIDE OF BOTTOM SLAB
 (Cast-in-place culvert)



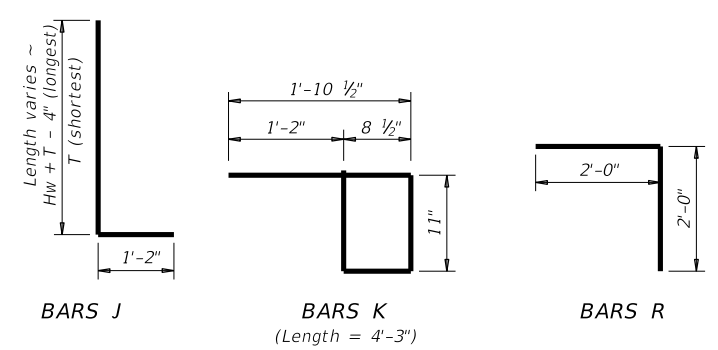
AT INTERIOR WINGWALL
 (Precast culvert)

PLAN VIEWS OF CORNER DETAILS

- Recommended values of slope are: 3:1, 4:1, and 6:1. Provide 3:1 or flatter slope.
- 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures without railing and curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet.
- Wingwall and slab thicknesses may be the same as the adjacent culvert wall and slab thicknesses (7" minimum). If thicknesses greater than the minimum (7") are used, no changes will be made in quantities and no additional compensation will be allowed.
- For vehicle safety, reduce curb height, if necessary, to provide a maximum 3" projection. No changes will be made in quantities and no additional compensation will be allowed for this work.
- For culverts with C = 0", the precast culvert reinforcing may extend 1'-0" minimum into wingwall. Wingwall Bars D and R may be omitted. Otherwise, refer to the Wingwall Connection detail on the Box Culvert Precast Miscellaneous Details (SCP-MD) standard sheet.

TABLE OF REINFORCING BAR SIZES AND SPACING

Bar	Size	Spacing
C	#4	10" Max
D	#4	Match F and E
E	#4	1'-0" Max
F	#4	1'-3" Max
G	#6	As shown
J	#4	10" Max
K	#4	1'-0" Max
R	#4	As shown



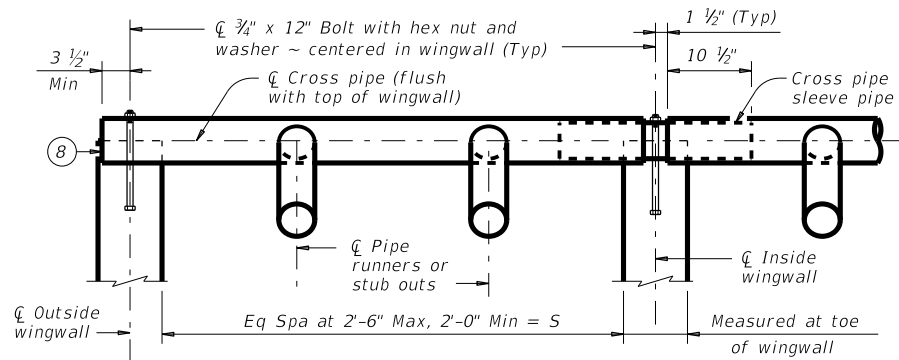
Texas Department of Transportation
 Bridge Division Standard

SAFETY END TREATMENT FOR 0° SKEW BOX CULVERTS (MAXIMUM Hw = 7'-0") TYPE I ~ CROSS DRAINAGE

SETB-CD

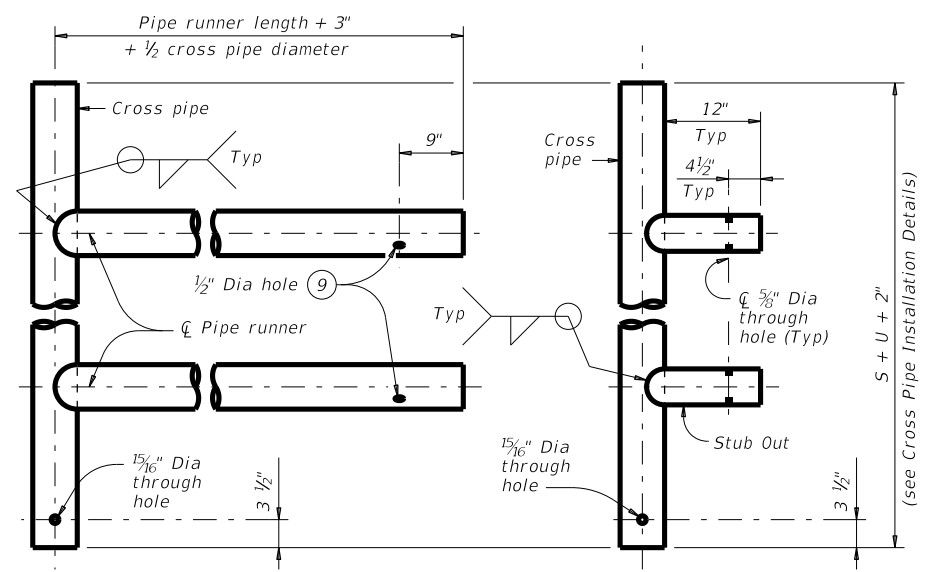
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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108 03		041	SH 19
	DIST	COUNTY	SHEET NO.	
	TYL	HENDERSON	195	

DATE: 04-JUN-2024 16:16
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ 0108-03-041) v1 for review.dwg
 PROJECT: 0741307 - SH 19 Super 2 Tyler
 DESIGNER: CSJ
 CHECKER: GAF
 DATE: 04-JUN-2024 16:16
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 PROJECT: 0741307 - SH 19 Super 2 Tyler
 DESIGNER: CSJ
 CHECKER: GAF

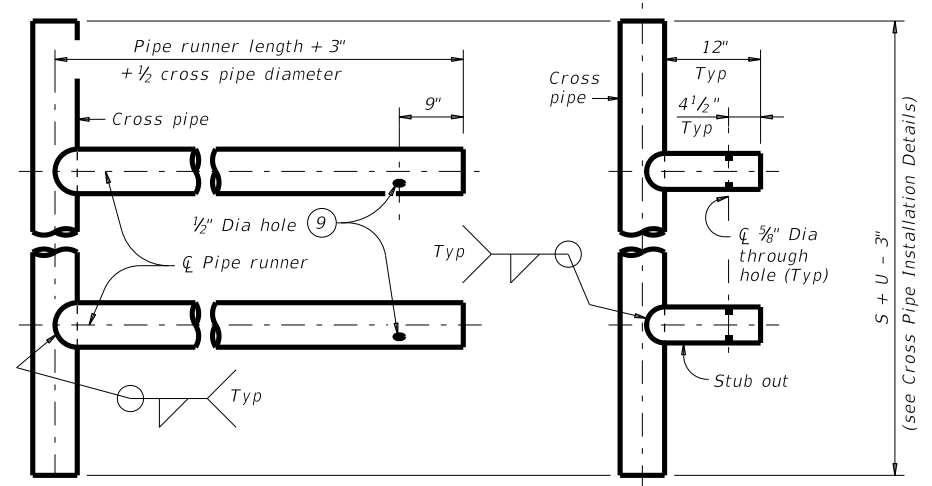


NOTE: At Contractor's option, make the cross pipe continuous across the inside wingwalls. If option is selected, omit the sleeve pipe and make a 1 5/16" diameter through hole in the cross pipe to accept the anchor bolt at the centerline of each inside wingwall.

CROSS PIPE INSTALLATION DETAILS

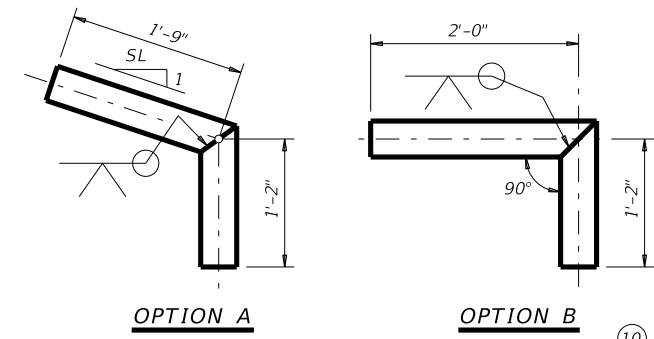


OPTION A2 **OPTION A1**
FOR USE IN OUTSIDE CULVERT BAY

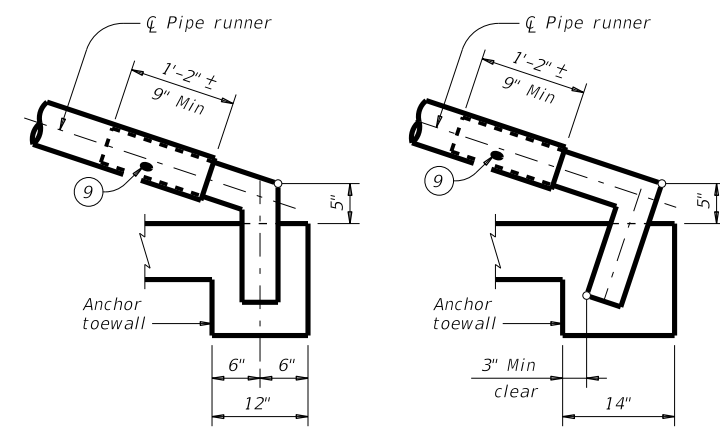


OPTION A2 **OPTION A1**
FOR USE IN INSIDE CULVERT BAY

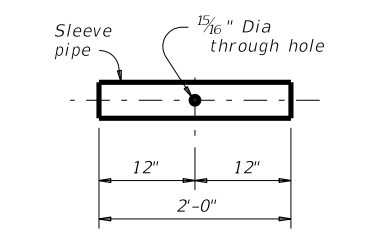
CROSS PIPE AND CONNECTIONS DETAILS



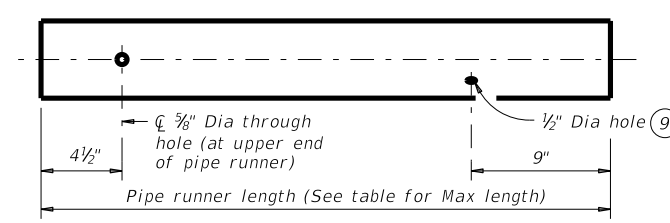
OPTION A **OPTION B**
BOTTOM ANCHOR PIPE DETAILS



OPTION B1 **OPTION B2**
BOTTOM ANCHOR TOEWALL DETAILS
(Wingwall not shown for clarity.)



CROSS PIPE SLEEVE PIPE DETAILS

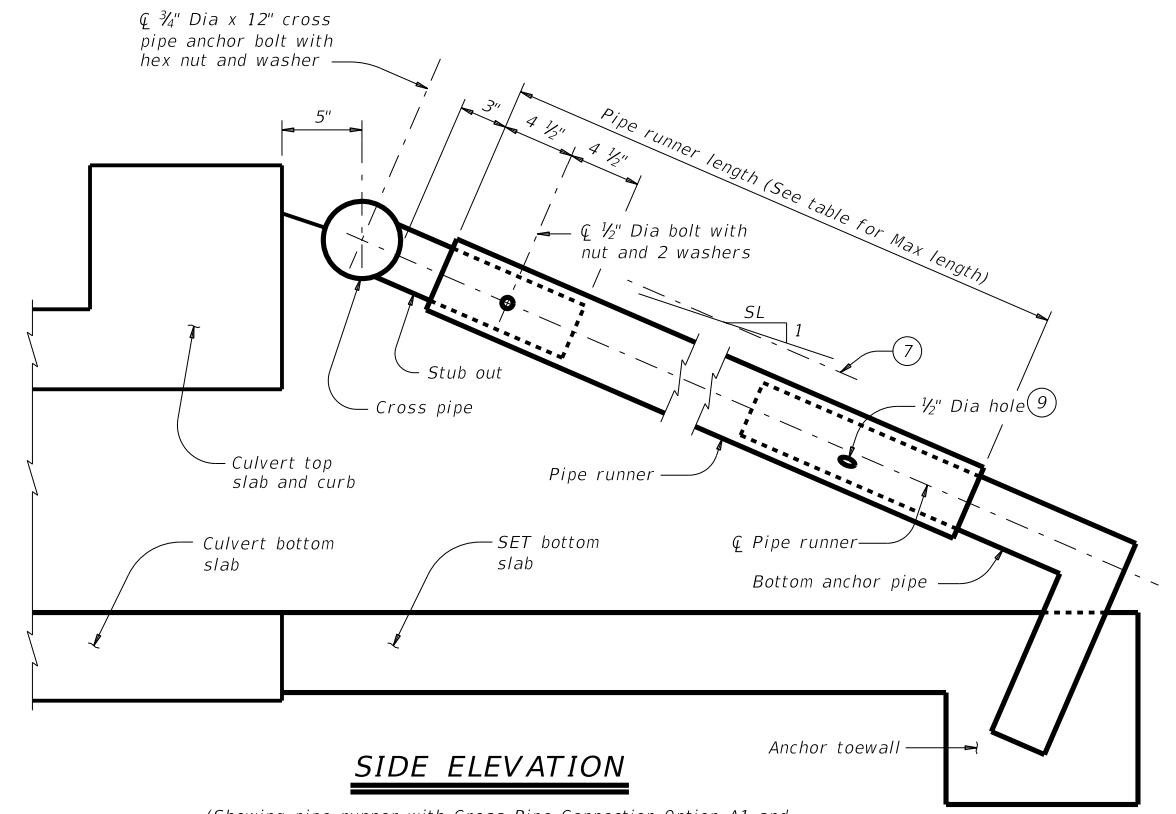


NOTE: The separate pipe runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS

- ⑥ Cross pipe is the same size as the pipe runner. Cross pipe stub out is the same size as the anchor pipe.
- ⑦ Note that actual slope of safety pipe runner may vary slightly from side slope.
- ⑧ Take care to ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access.
- ⑨ After installation, inspect the 1#2" hole to ensure that the lap of the safety pipe runner with the bottom anchor pipe is adequate.
- ⑩ At fabricator's option, a heat bend to a smooth 5" radius or a manufactured elbow (of the same material as the runner) may be substituted for the mitered and welded joint in the bottom anchor pipe.

Maximum Pipe Runner Length	Required Pipe Runner Size			Required Anchor Pipe Size		
	Pipe Size	Pipe O.D.	Pipe I.D.	Pipe Size	Pipe O.D.	Pipe I.D.
10'-0"	3" STD	3.500"	3.068"	2" STD	2.375"	2.067"
19'-8"	4" STD	4.500"	4.026"	3" STD	3.500"	3.068"
34'-2"	5" STD	5.563"	5.047"	4" STD	4.500"	4.026"



SIDE ELEVATION
(Showing pipe runner with Cross Pipe Connection Option A1 and Bottom Anchor Toewall Option B2. Wingwall not shown for clarity.)

SHEET 2 OF 2

				Bridge Division Standard	
SAFETY END TREATMENT FOR 0° SKEW BOX CULVERTS (MAXIMUM Hw = 7'-0") TYPE I ~ CROSS DRAINAGE					
SETB-CD					
FILE: setbcdse-20.dgn	DN: GAF	CK: CAT	DW: TXDOT	CK: TXDOT	
©TXDOT	REVISIONS	CONT	SECT	JOB	HIGHWAY
		0108 03		041	SH 19
		DIST	COUNTY	SHEET NO.	
		TYL	HENDERSON	196	

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TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for One Structure End)

Maximum Wingwall Height Hw (9)	Dimensions				Variable Reinforcing				Estimated Quantities (3)	
	W	X	Y	Z	Bars J1		Bars J2		Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.48
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.61
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.73
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.85
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.830
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.843
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.855
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.867
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.914
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.986
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.835
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.884
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.834
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721

TABLE OF WING WALL REINFORCING
(Two-Wings)

Bar	Size	No.	Spa
D #5	~ 1'-0"		
E #5	~ 1'-0"		
F #5	~ 1'-0"		
G #5	4		
M #4	4		
P #5	~ 1'-0"		
R #5	6		
V #5	~ 1'-0"		

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L #4	~ 1'-5"		
Q #4	1		
Reinf (Lb/Ft)		2.45	
Conc (CY/Ft)		0.037	

TABLE OF ESTIMATED ANCHOR TOEWALL QUANTITIES

Bar	Size	No.	Spa
K #5	~ 1'-0"		
N #5	6		
OL #4	6		
Reinf (Lb/Ft)		9.82	
Conc (CY/Ft)		0.074	

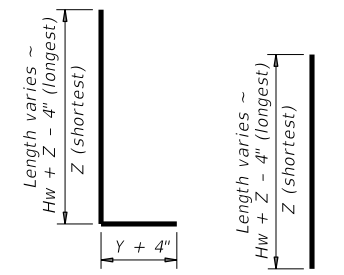
- Extend Bars P 3'-0" Min into bottom slab of box culvert.
- Adjust to fit as necessary to maintain 1 1/2" clear cover and 4" Min between bars.
- Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings multiply the tabulated values by Lw.
- Recommended values of slope are: 3:1, 4:1, and 6:1. Provide 3:1 or flatter slope.
- When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, extend construction joints or grooved joints, oriented in the direction of flow, across the full distance of the riprap, at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B is not required.
- At Contractor's option, end the culvert toewall flush with wingwall toewall. Adjust reinforcing as needed.
- 3" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures without railing and curbs taller than 1'-0", refer to the Extend Curb Details (ECD) standard sheet.
- For vehicle safety, reduce curb heights, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.
- See Table of Maximum Wing Heights for various slopes. Height is limited based on a 33'-6" maximum safety pipe runner length.

TABLE OF MAXIMUM WING HEIGHTS (9)

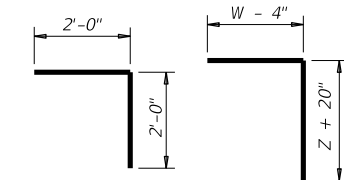
Side Slope	Hw Max
3:1	11'-5"
4:1	8'-10"
6:1	6'-1"

WING DIMENSION CALCULATIONS:

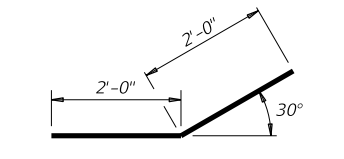
$$\begin{aligned}
 Hw &= H + T + C - 0.250' \quad (9) \\
 A &= (Hw - 0.333') (SL) \\
 B &= (A) (\tan 30^\circ) \\
 Lw &= (A) \div \cos 30^\circ \\
 \\
 \text{For cast-in-place culverts:} \\
 Ltw &= (N) (S) + (N + 1) (U) \\
 \text{For precast culverts:} \\
 Ltw &= (N) (2U + S) + (N - 1) (0.500') \\
 \\
 Lc &= (Ltw) - (2U) \\
 Atw &= (Lc) + (2B) \\
 \text{Total Wingwall Area (two wings ~ SF)} \\
 &= (Hw + 0.333') (Lw) \\
 \\
 Hw &= \text{Height of wingwall (feet)} \\
 Atw &= \text{Anchor toewall length (feet)} \\
 Lw &= \text{Length of wingwall (feet)} \\
 N &= \text{Number of culvert barrels} \\
 SL:1 &= \text{Side slope ratio (horizontal : 1 vertical)} \\
 Ltw &= \text{Culvert toewall length (feet)} \\
 Lc &= \text{Culvert curb between wings (feet)} \\
 \\
 \text{See applicable box culvert standard for H, S, T, and U values.} \\
 \text{See Table of Maximum Wall Heights for limits on Hw.}
 \end{aligned}$$



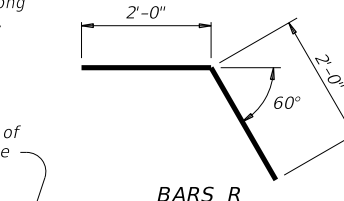
BARS J1 BARS V



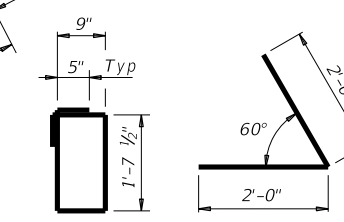
BARS L BARS J2



BARS D



BARS R

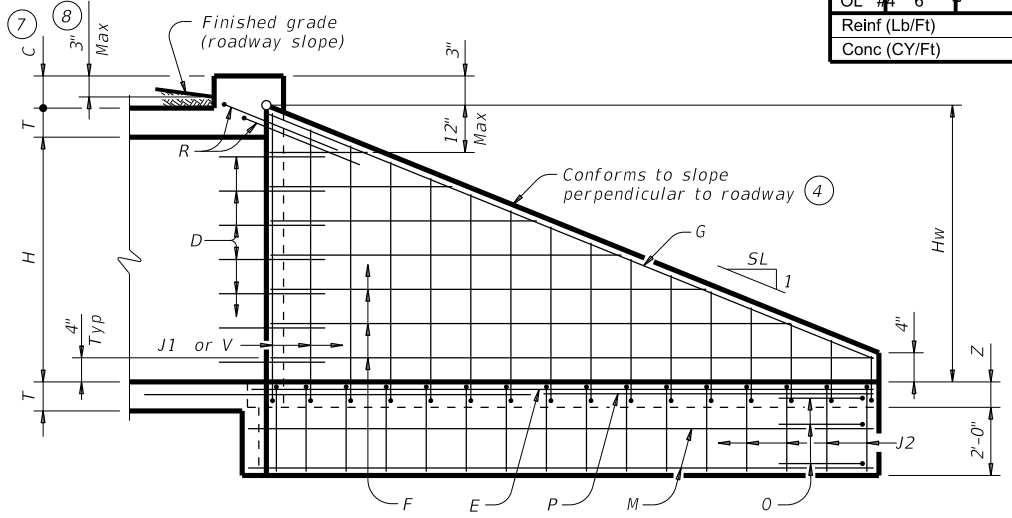


BARS K (Length = 5'-5") BARS OL

MATERIAL NOTES:
 Provide Grade 60 reinforcing steel.
 Provide galvanized reinforcing steel if required elsewhere in the plans. Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.
 Provide Class "C" concrete (f'c = 3,600 psi).
 Adjust reinforcing as necessary to provide a minimum clear cover of 1 1/2".
 Provide pipe runners and anchor pipes meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.
 Provide ASTM A307 bolts and nuts.
 Provide ASTM A36 steel plates.
 Galvanize all steel components, except reinforcing unless required elsewhere in the plans, after fabrication.
 Repair galvanizing damaged during transport or construction in accordance with the Item 445, "Galvanizing".
 For optional adhesive anchors, install adhesive anchorages in accordance with the manufacturer's instructions including hole size, drilling equipment and method, hole cleaning equipment and method, mixing and dispensing adhesive, and anchor insertion. Do not alter the manufacturer's mixing nozzle or dispenser. Provide anchorage rods that are clean and free of grease, oil, or any other foreign material. Demonstrate hole cleaning method to the Engineer for approval and continue the approved process for all anchorage locations. Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.

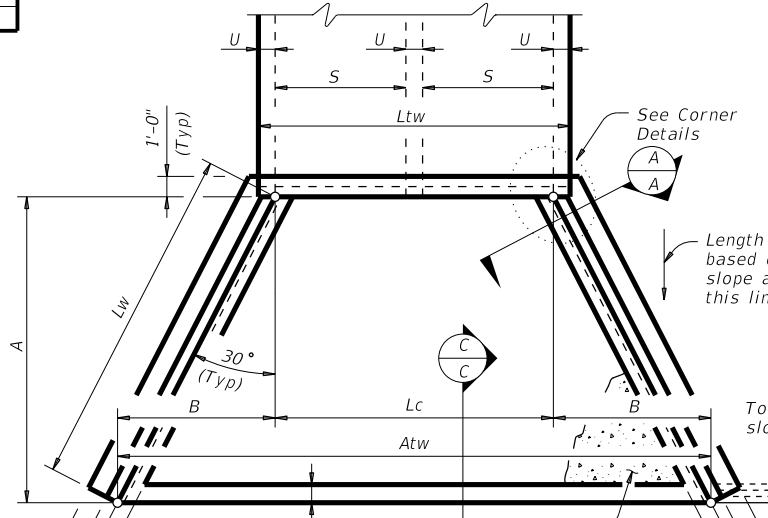
GENERAL NOTES:
 Designed according to AASHTO LRFD Bridge Design Specifications.
 The safety end treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the pipe runners.
 Pipe runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.
 When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
 All bolts, nuts, washers, brackets, angles, and pipe runners are considered parts of the safety end treatment for payment.
 The quantities for pipe runners, reinforcing steel, and concrete, resulting from the formulas given herein are for Contractor's information only.
 See the Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.

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



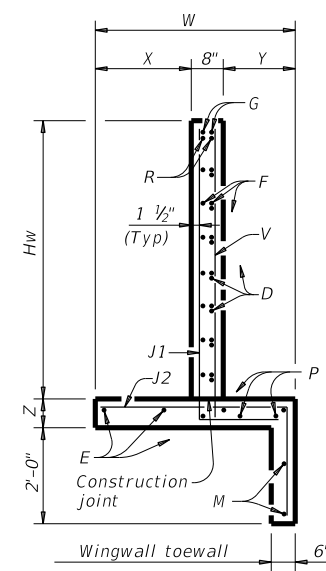
INSIDE ELEVATION OF WINGWALL

(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)

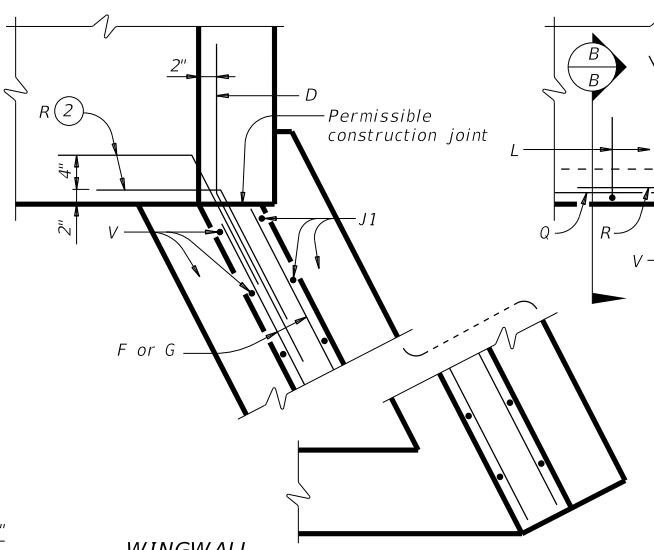


STRUCTURAL PLAN

(Showing dimensions.)



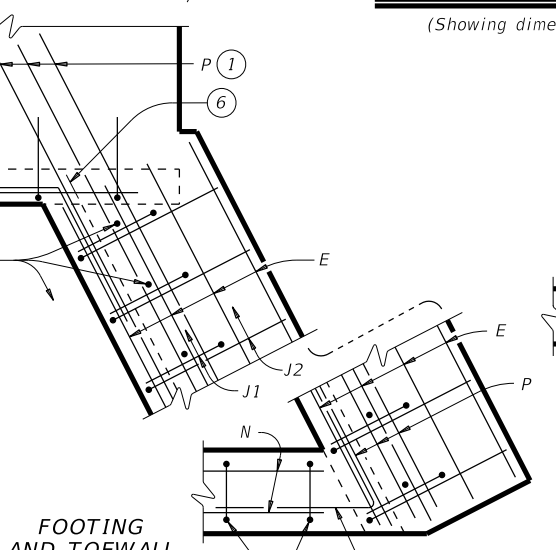
SECTION A-A



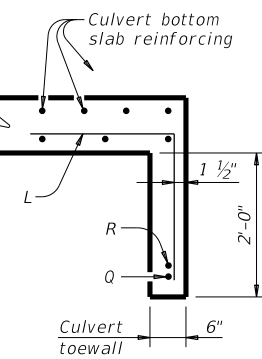
WINGWALL

CORNER DETAILS

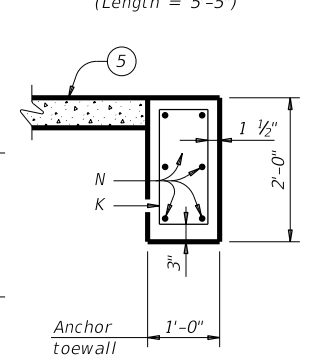
(Culvert and culvert toewall reinforcing not shown for clarity.)



FOOTING AND TOEWALL



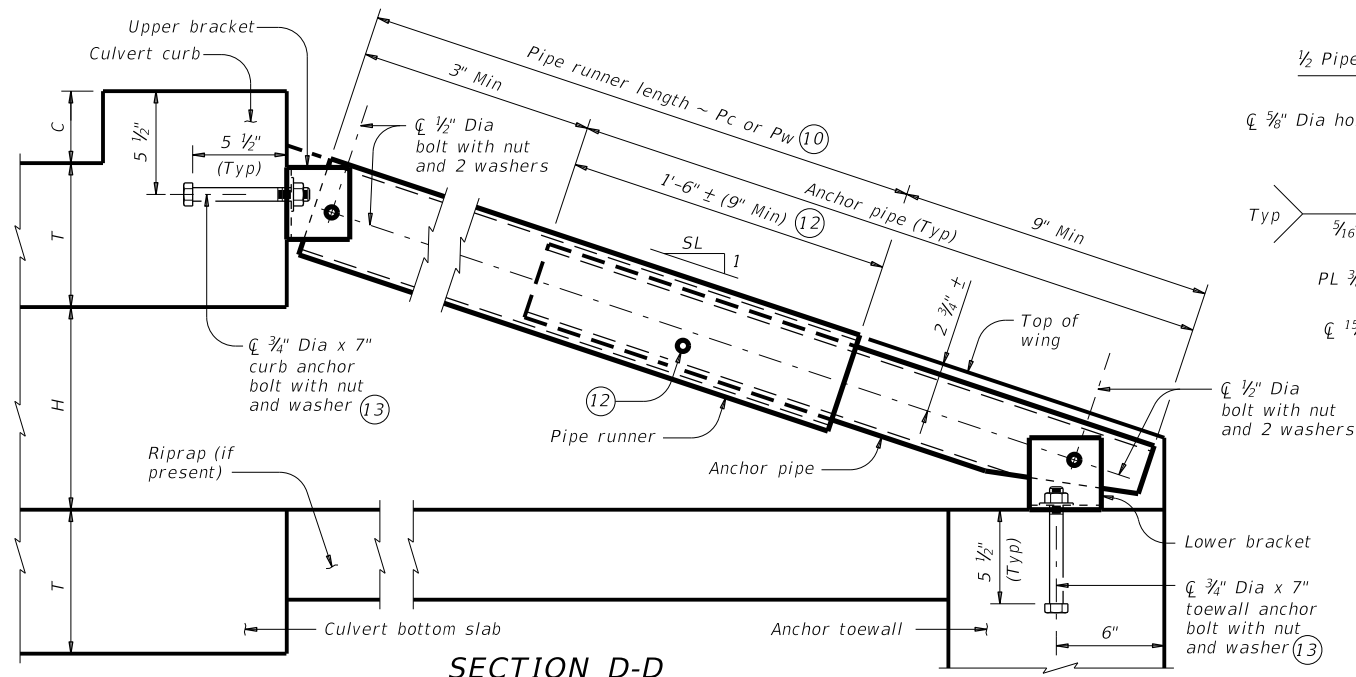
SECTION B-B (5)



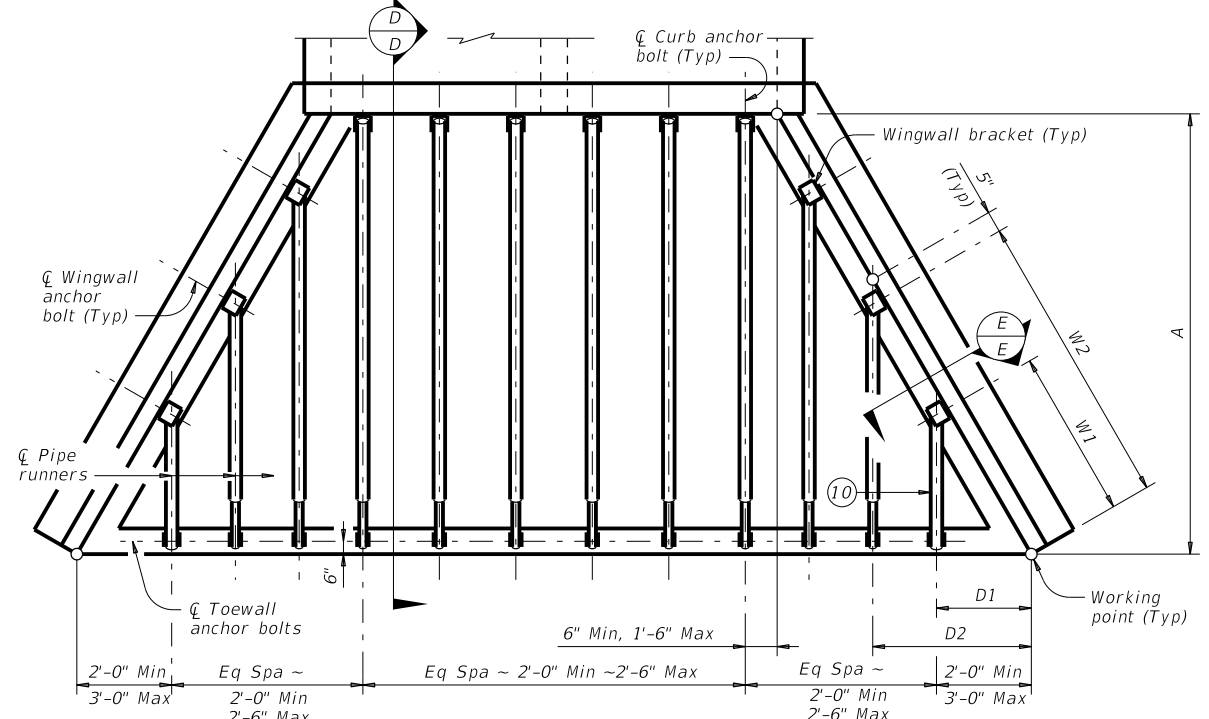
SECTION C-C

		Bridge Division Standard	
SAFETY END TREATMENT WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS TYPE I ~ CROSS DRAINAGE			
SETB-FW-0			
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REVISIONS	CONTRACT	SECTION	JOB
	0108 03		041
	DIST	COUNTY	SHEET NO.
	TYL	HENDERSON	197

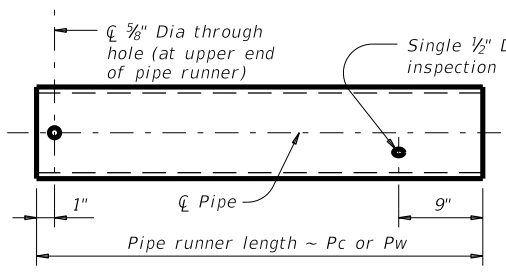
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 Design (CSJ 0108-03-041) v1 for review.dwg
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SECTION D-D
(Showing curb pipe runner. Except for upper bracket, wingwall pipe runners are similar.)

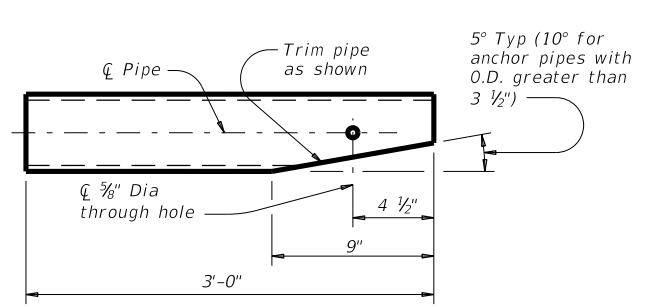


PIPE RUNNER PLAN

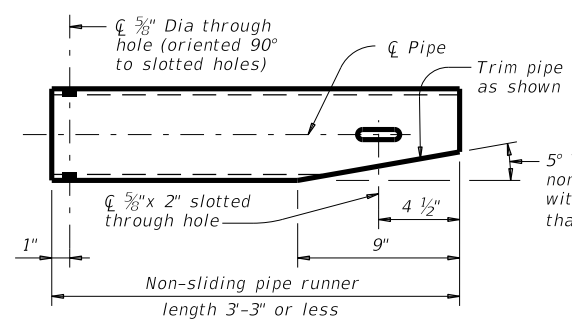


Note: Pipe diameter required for curb pipe runner is also used for wingwall pipe runner.

PIPE RUNNER DETAILS

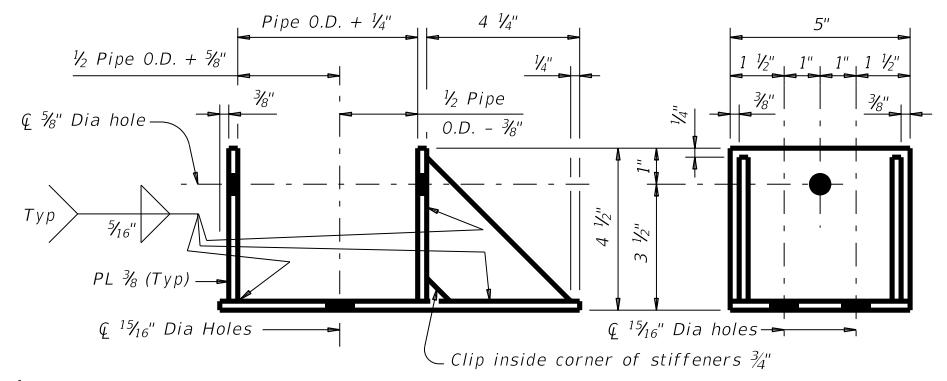


ANCHOR PIPE DETAILS



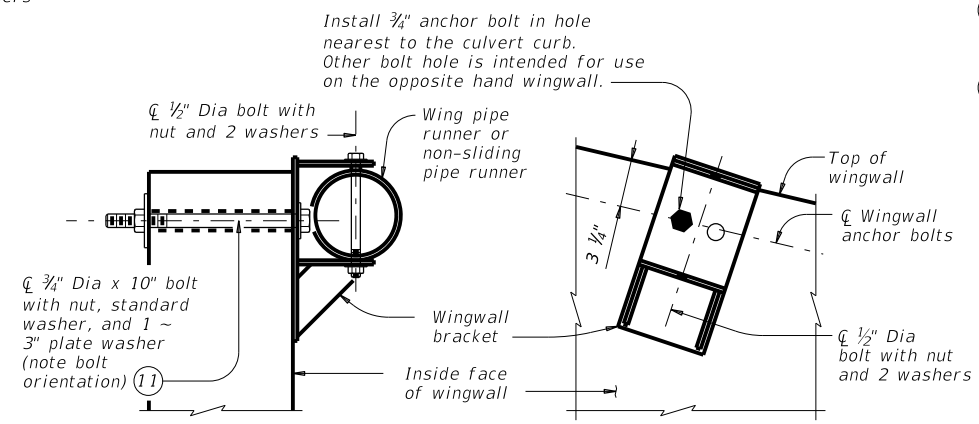
Note: Pipe size is the same as required for curb pipe runner. Adjust the corresponding lower bracket accordingly.

NON-SLIDING PIPE RUNNER DETAILS



ELEVATION

SIDE VIEW

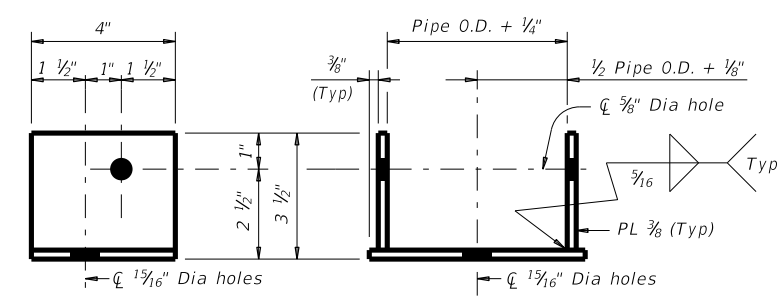


SECTION E-E
(Showing installed bracket.)

ELEVATION
(Showing installed bracket normal to wall. Pipe not shown for clarity.)

Note: Match wingwall bracket to the upper curb bracket size.

WINGWALL BRACKET DETAILS



SIDE VIEW

ELEVATION

Note: Match upper and lower brackets, except for the brackets used with non-sliding pipe runners, to the required pipe diameters as shown in the table.

UPPER AND LOWER BRACKET DETAILS

MAXIMUM PIPE RUNNER LENGTHS AND REQUIRED PIPE RUNNER SIZES

Maximum Pipe Runner Length (Pc or Pw)	Required Pipe Runner Size			Required Anchor Pipe Size		
	Pipe Size	Pipe O.D.	Pipe I.D.	Pipe Size	Pipe O.D.	Pipe I.D.
9'-4"	3" STD	3.500"	3.068"	2" STD	2.375"	2.067"
19'-0"	4" STD	4.500"	4.026"	3" STD	3.500"	3.068"
33'-6"	5" STD	5.563"	5.047"	4" STD	4.500"	4.026"

- 10 If pipe runner length (Pw) is 1'-9" or less replace the normal pipe runner and anchor pipe with a single non-sliding pipe runner. See Non-Sliding Pipe Runner Details for additional information.
- 11 At Contractor's option, 7/8" diameter hole may be formed or cored drilled. Percussion drilling is not permitted. Adjust placement of reinforcing steel as necessary to avoid bolt holes.
- 12 After installation of pipe runner, use the 1/2" inspection hole to ensure that the lap of the anchor pipe with the pipe runner is adequate.
- 13 At Contractor's option, an adhesive anchor may be used. Provide 3/4" Dia adhesive anchors that meet the requirements of ASTM A307 Gr A fully threaded rods. Embed threaded rods into curb, wingwalls, and toewall using a Type III, Class C, D, E, or F anchor adhesive. Minimum embedment depth is 5 1/2". Provide anchor adhesive able to achieve a basic bond strength in tension, Nba, of 20 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use.

PIPE RUNNER DIMENSION CALCULATIONS:

$$\begin{aligned}
 Wn &= (2.000)(Dn) - (0.416') \\
 Pwn &= (Dn)(K2) - (2.063') \\
 Pw1 \text{ Non-Sliding Pipe Runner (If required)} &= (D1)(K2) - (0.563') \\
 Pc &= (A)(K1) - (1.688')
 \end{aligned}$$

Wn = Distance from working point to centerline anchor bolt measured along bottom inside face of wing (feet)
 Dn = Distance from working point to centerline pipe runner measured along outside face of anchor toewall (feet)
 Pw = Wingwall pipe runner length (feet)
 Pc = Curb pipe runner length (feet)
 K = Constant values for use in formulas
 Slope SL:1 K1 K2
 3:1 ~ 1.054 ~ 1.826
 4:1 ~ 1.031 ~ 1.785
 6:1 ~ 1.014 ~ 1.756
 n = Wing pipe runner number

Bridge Division Standard

SAFETY END TREATMENT WITH FLARED WINGS
 FOR 0° SKEW BOX CULVERTS
 TYPE I ~ CROSS DRAINAGE

SETB-FW-0

FILE: setbf0se-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108 03	041	SH 19	
DIST	COUNTY	SHEET NO.		
TYL	HENDERSON	198		

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 DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of units or for the accuracy of the information provided.

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for One Structure End)

Maximum Wingwall Height Hw (9)	Dimensions				Variable Reinforcing				Estimated Quantities per ft of wing length (Two-Wings) (3)	
	W	X	Y	Z	Bars J1		Bars J2		Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.218
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.544
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721

TABLE OF WINGWALL REINFORCING (Two-Wings)

Bar Size No.	Spa
D #5 ~ 1'-0"	
E #5 ~ 1'-0"	
F #5 ~ 1'-0"	
G #5 4 ~	
M #4 4 ~	
P #5 ~ 1'-0"	
R #5 6 ~	
V #5 ~ 1'-0"	

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar Size No.	Spa	Reinf (Lb/Ft)	Conc (CY/Ft)
L #4 ~ 1'-5"			
Q #4 1 ~		2.45	
			0.037

TABLE OF ESTIMATED ANCHOR TOEWALL QUANTITIES

Bar Size No.	Spa	Reinf (Lb/Ft)	Conc (CY/Ft)
K #5 ~ 1'-0"			
N #5 6 ~			
OL #4 6 ~			
		9.82	
			0.074

- Extend Bars P 3'-0" Min into bottom slab of box culvert.
- Adjust to fit as necessary to maintain 1 #2" clear cover and 4" Min between bars.
- Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings multiply the tabulated values by Lw.
- Recommended values of slope are: 3:1, 4:1, and 6:1. Provide 3:1 or flatter slope.
- When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, extend construction joints or grooved joints, oriented in the direction of flow, across the full distance of the riprap, at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B is not required.
- At Contractor's option, end the culvert toewall flush with wingwall toewall. Adjust reinforcing as needed.
- 3" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures without railing and curbs taller than 1'-0", refer to Extended Curb Details (ECD) standard sheet.
- For vehicle safety, reduce curbs height, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.
- See Table of Maximum Wing Heights for various slopes. Height is limited based on a 33'-6" maximum safety pipe runner length.

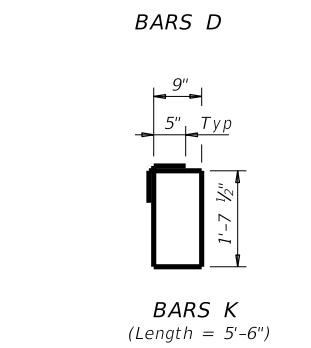
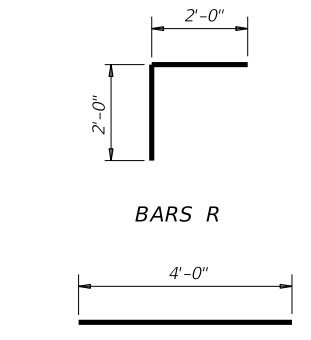
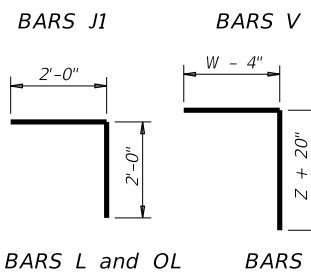
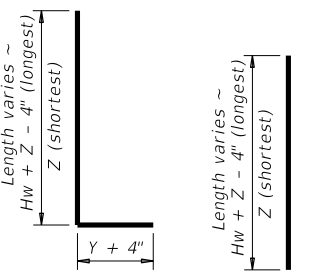
TABLE OF MAXIMUM WING HEIGHTS (9)

Side Slope	Hw Max
3:1	11'-5"
4:1	8'-10"
6:1	6'-1"

WING DIMENSION CALCULATIONS:

$$\begin{aligned}
 Hw &= H + T + C - 0.250' \quad (9) \\
 Lw &= (Hw - 0.333') (SL) \\
 \text{For cast-in-place culverts:} \\
 Ltw &= (N) (S) + (N + 1) (U) \\
 \text{For precast culverts:} \\
 Ltw &= (N) (2U + S) + (N - 1) (0.500') \\
 Lc &= (Ltw) - (2U) \\
 Atw &= Lc \\
 \text{Total Wingwall Area (two wings ~ SF)} \\
 &= (Hw + 0.333') (Lw)
 \end{aligned}$$

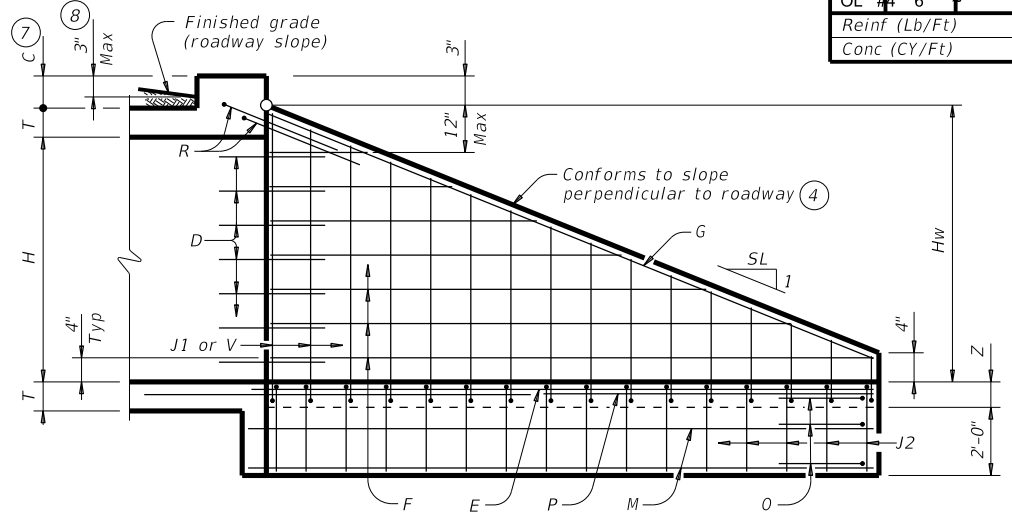
Hw = Height of wingwall (feet)
 SL:1 = Side slope ratio (horizontal : 1 vertical)
 Lw = Length of wingwall (feet)
 Ltw = Culvert toewall length (feet)
 Lc = Culvert curb between wings (feet)
 Atw = Anchor toewall length (feet)
 N = Number of culvert spans
 See applicable box culvert standard for H, S, T, and U values. See Table of Maximum Wall Heights for limits on Hw.



MATERIAL NOTES:
 Provide Grade 60 reinforcing steel.
 Adjust reinforcing as necessary to provide a minimum clear cover of 1 1/2".
 Provide pipe runners and anchor pipes meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.
 Provide ASTM A307 bolts and nuts.
 Provide ASTM A36 steel plates.
 Galvanize all steel components, except reinforcing unless required elsewhere in the plans, after fabrication.
 Repair galvanizing damaged during transport or construction in accordance with the Item 445, "Galvanizing".
 For optional adhesive anchors, install epoxy adhesive anchorages in accordance with the manufacturer's instructions including hole size, drilling equipment and method, hole cleaning equipment and method, mixing and dispensing adhesive, and anchor insertion. Do not alter the manufacturer's mixing nozzle or dispenser. Provide anchorage rods that are clean and free of grease, oil, or any other foreign material. Demonstrate hole cleaning method to the Engineer for approval and continue the approved process for all anchorage locations. Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.

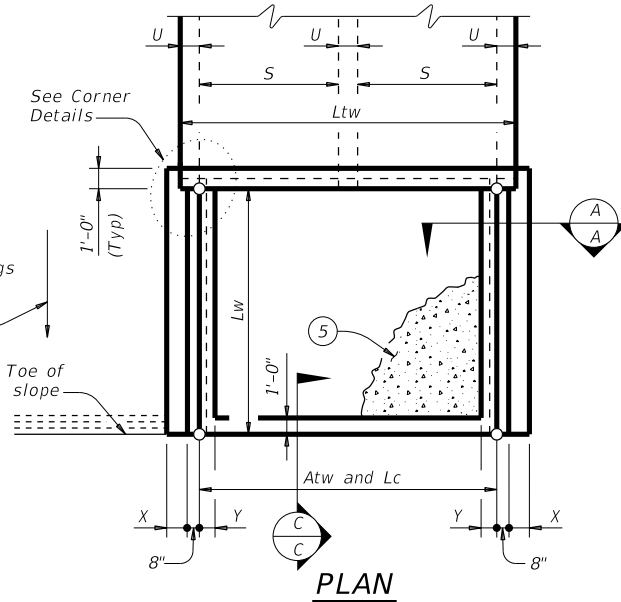
GENERAL NOTES:
 Designed according to AASHTO LRFD Bridge Design Specifications.
 The safety end treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the pipe runners.
 Pipe runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.
 When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
 All bolts, nuts, washers, brackets, angles, and pipe runners are considered parts of the safety end treatment for payment.
 The quantities for pipe runners, reinforcing steel, and concrete, resulting from the formulas given herein are for Contractor's information only.
 See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.

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



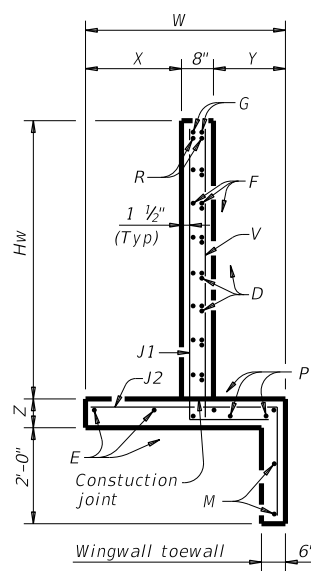
INSIDE ELEVATION OF WINGWALL

(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)

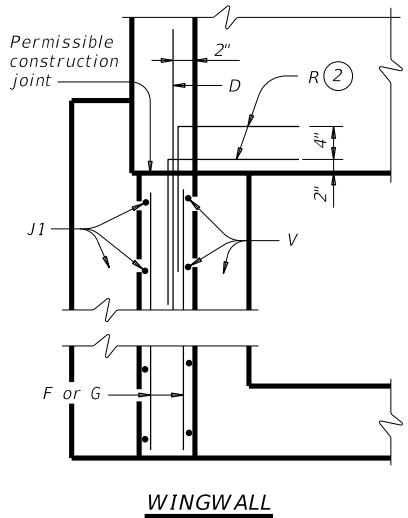


PLAN

(Showing dimensions.)



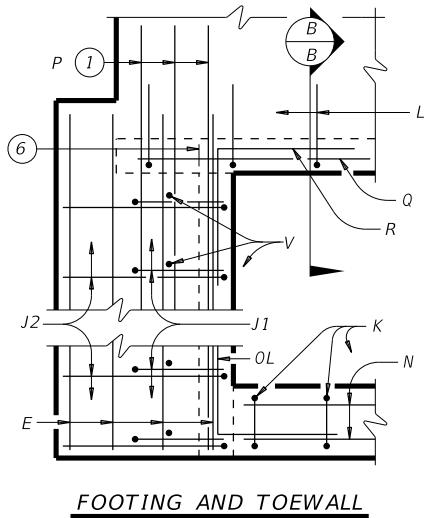
SECTION A-A



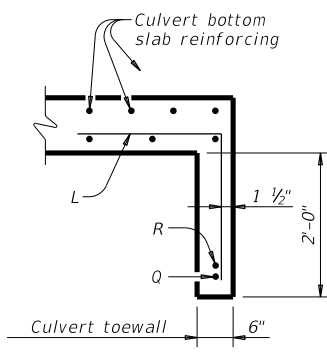
WINGWALL

CORNER DETAILS

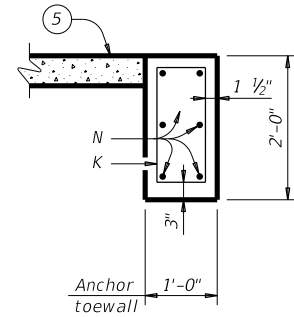
(Culvert and culvert toewall reinforcing not shown for clarity.)



FOOTING AND TOEWALL



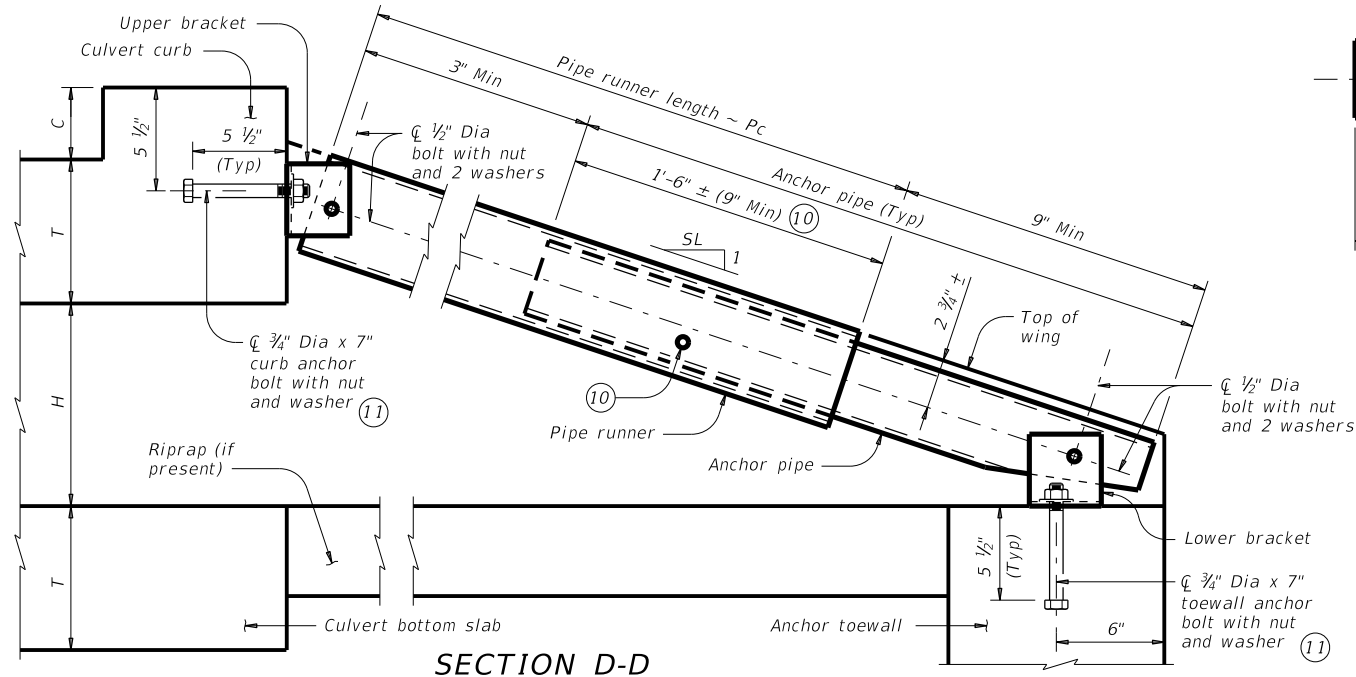
SECTION B-B (5)



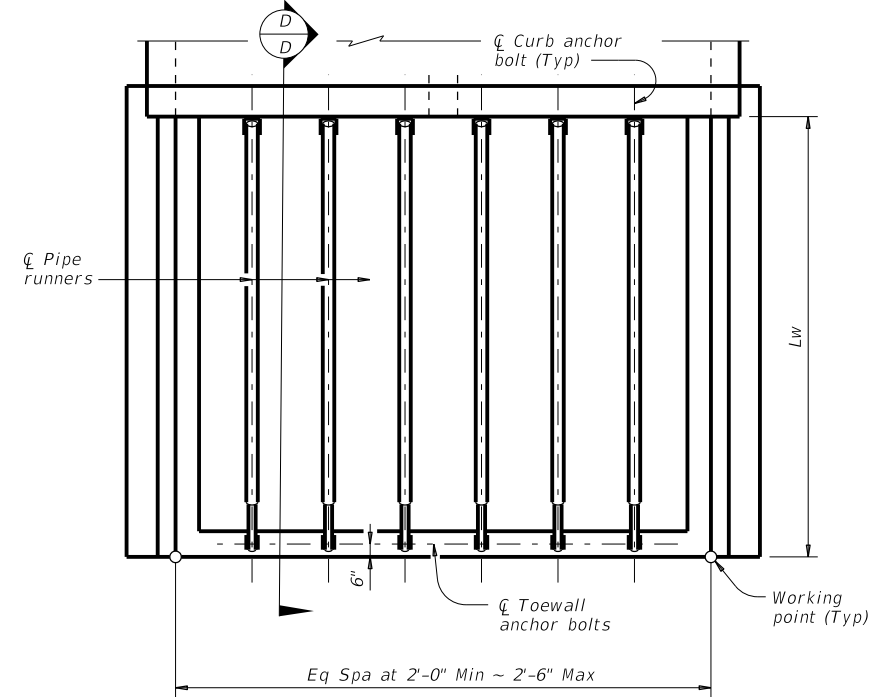
SECTION C-C

				Bridge Division Standard	
SAFETY END TREATMENT WITH STRAIGHT WINGS FOR 0° SKEW BOX CULVERTS TYPE I ~ CROSS DRAINAGE					
SETB-SW-0					
FILE: setbs0se-20.dgn	DN: GAF	CK: CAT	OW: TxDOT	CK: TxDOT	
©TxDOT February 2020	CONT SECT	JOB	HIGHWAY		
REVISIONS	0108 03	041	SH 19		
DIST:	COUNTY:	SHEET NO.			
TYL	HENDERSON	200			

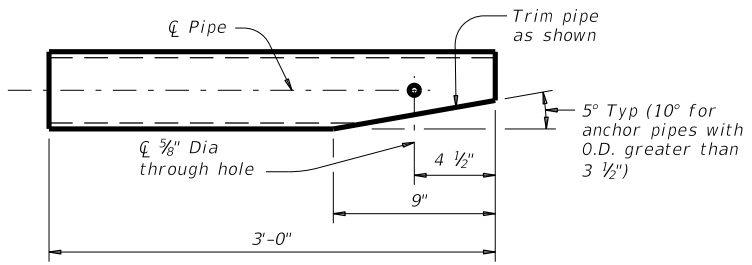
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of units or for the accuracy of the information provided.
 DATE: 04-JUN-2024 16:16
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ 0108-03-041) v19 for setb-s0se-20.dgn



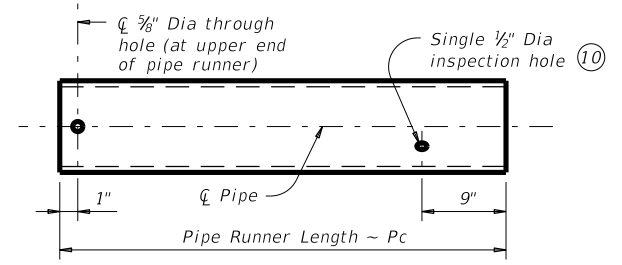
SECTION D-D
(Showing curb pipe runner.)



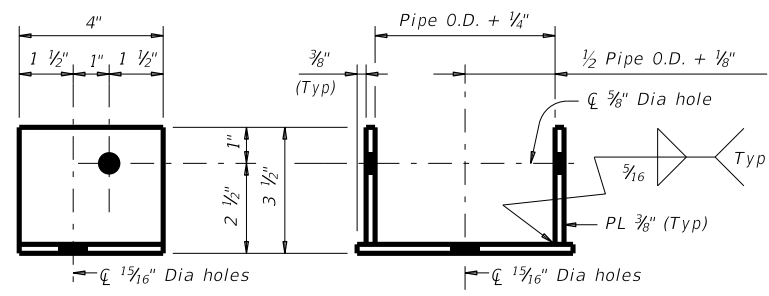
PIPE RUNNER PLAN



ANCHOR PIPE DETAILS



PIPE RUNNER DETAILS



UPPER AND LOWER BRACKET DETAILS

Note: Upper and lower brackets match the required pipe diameters as shown in the table.

Maximum Pipe Runner Length (Pc)	Required Pipe Runner Size			Required Anchor Pipe Size		
	Pipe Size	Pipe O.D.	Pipe I.D.	Pipe Size	Pipe O.D.	Pipe I.D.
9'-4"	3" STD	3.500"	3.068"	2" STD	2.375"	2.067"
19'-0"	4" STD	4.500"	4.026"	3" STD	3.500"	3.068"
33'-6"	5" STD	5.563"	5.047"	4" STD	4.500"	4.026"

- (10) After installation of pipe runner, use the 1/2" inspection hole to ensure that the lap of the anchor pipe with the pipe runner is adequate.
- (11) At Contractor's option, an adhesive anchor may be used. Provide 3/4" Dia adhesive anchors that meet the requirements of ASTM A307. Gr A fully threaded rods. Embed threaded rods into curb, wingwalls, and toewall using a Type III, Class C, D, E, or F anchor adhesive. Minimum embedment depth is 5 1/2". Provide anchor adhesive able to achieve a basic bond strength in tension, Nba, of 20 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use.

PIPE RUNNER DIMENSION CALCULATIONS:
 $Pc = (Lw) (K) - (1.688)$

Pc = Pipe runner length (feet)
 K = Constant values for use in formulas
 Slope SL:1 K
 3:1 ~ 1.054
 4:1 ~ 1.031
 6:1 ~ 1.014

SHEET 2 OF 3

Texas Department of Transportation
 Bridge Division Standard

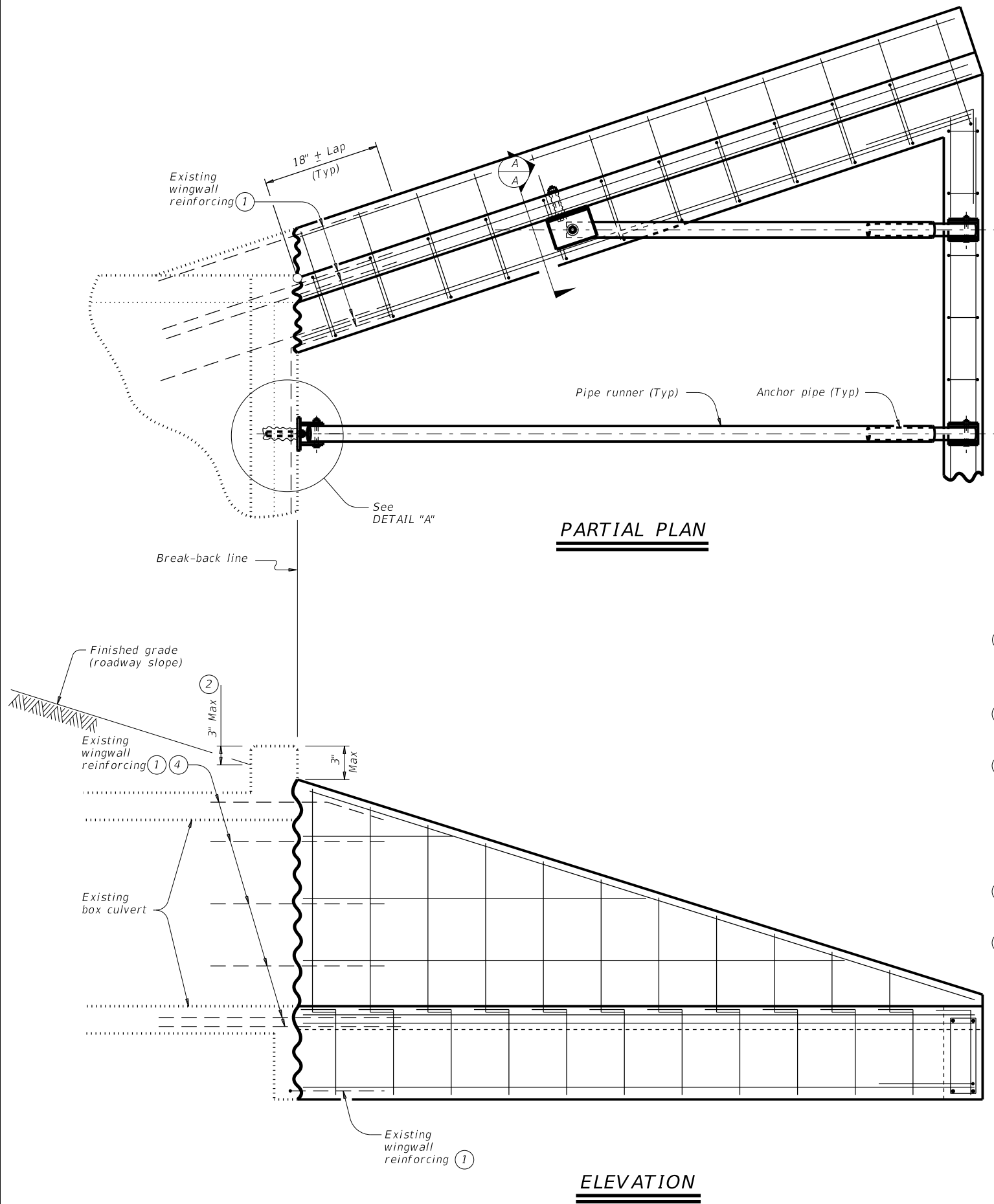
SAFETY END TREATMENT WITH STRAIGHT WINGS
 FOR 0° SKEW BOX CULVERTS
 TYPE I ~ CROSS DRAINAGE

SETB-SW-O

FILE: setbs0se-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108 03		041	SH 19
DIST	COUNTY	SHEET NO.		
TYL	HENDERSON	201		

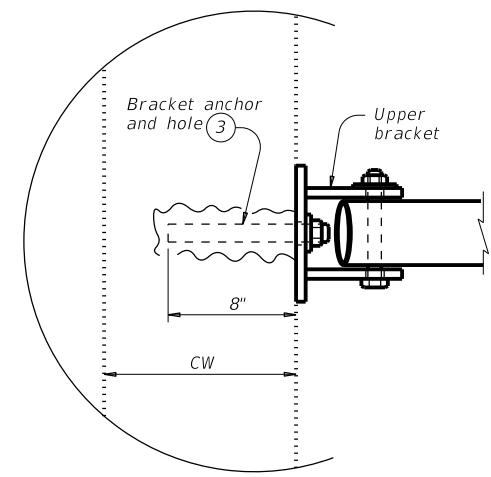
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of units or for any errors or omissions resulting from its use.

DATE: 04-JUN-2024 16:16
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041) \4B Setbrs\0741307-20.dgn

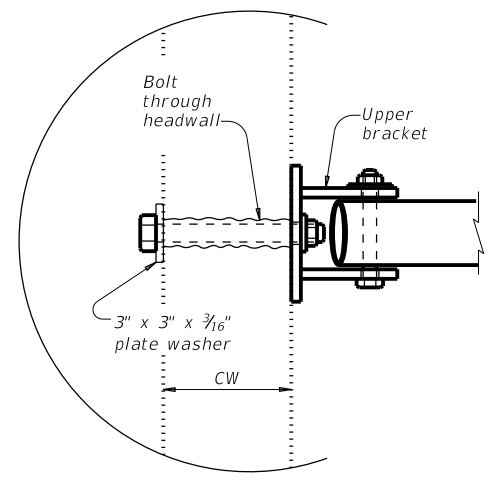


PARTIAL PLAN

ELEVATION

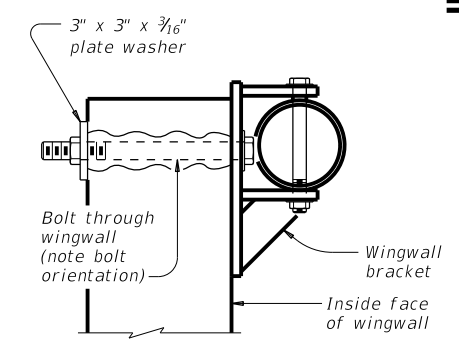


For CW greater than 8"

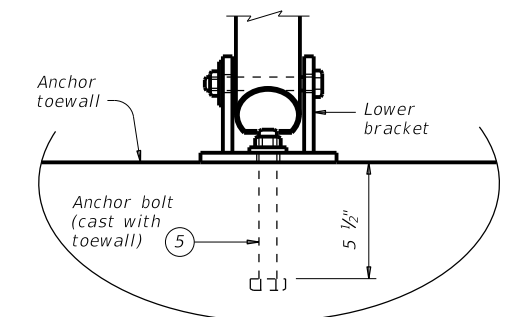


For CW 8" and less

DETAIL "A"



SECTION A-A



SECTION B-B

- ① Clean and straighten existing reinforcing to lap with new reinforcing as shown. The Engineer may require additional dowels to lap with the new reinforcing if the existing reinforcing is damaged or is not suitably located to lap with new reinforcing. These additional dowels must be #5 x 2'-0".
- ② For vehicle safety, reduce curb height, if necessary to provide a maximum 3" projection above finished grade. No quantity changes or additional compensation will be allowed for this work.
- ③ Provide 3/4" Dia adhesive anchors that meet the requirements of ASTM A307 Gr A fully threaded rod with one hex head nut and one hardened steel washer. Embed threaded rods into curb, wingwall, and toewall using a Type III, Class C, D, E, or F anchor adhesive. Minimum embedment depth is 8". Provide anchor adhesive able to achieve a basic bond strength in tension, Nba, of 20 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use.
- ④ If required, embed wingwall anchor dowels into existing box culvert using a Type III, Class C, D, E, or F anchor adhesive. Minimum embedment depth is 8".
- ⑤ At Contractor's option, adhesive anchors may be used. Provide 3/4" Dia adhesive anchors that meet the requirements of ASTM A307 Gr A fully threaded rods. Embed threaded rods into curb, wingwalls, and toewall using a Type III, Class C, D, E, or F anchor adhesive. Minimum embedment depth is 8". Provide anchor adhesive able to achieve a basic bond strength in tension, Nba, of 20 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use.

MATERIAL NOTES:

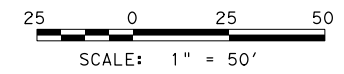
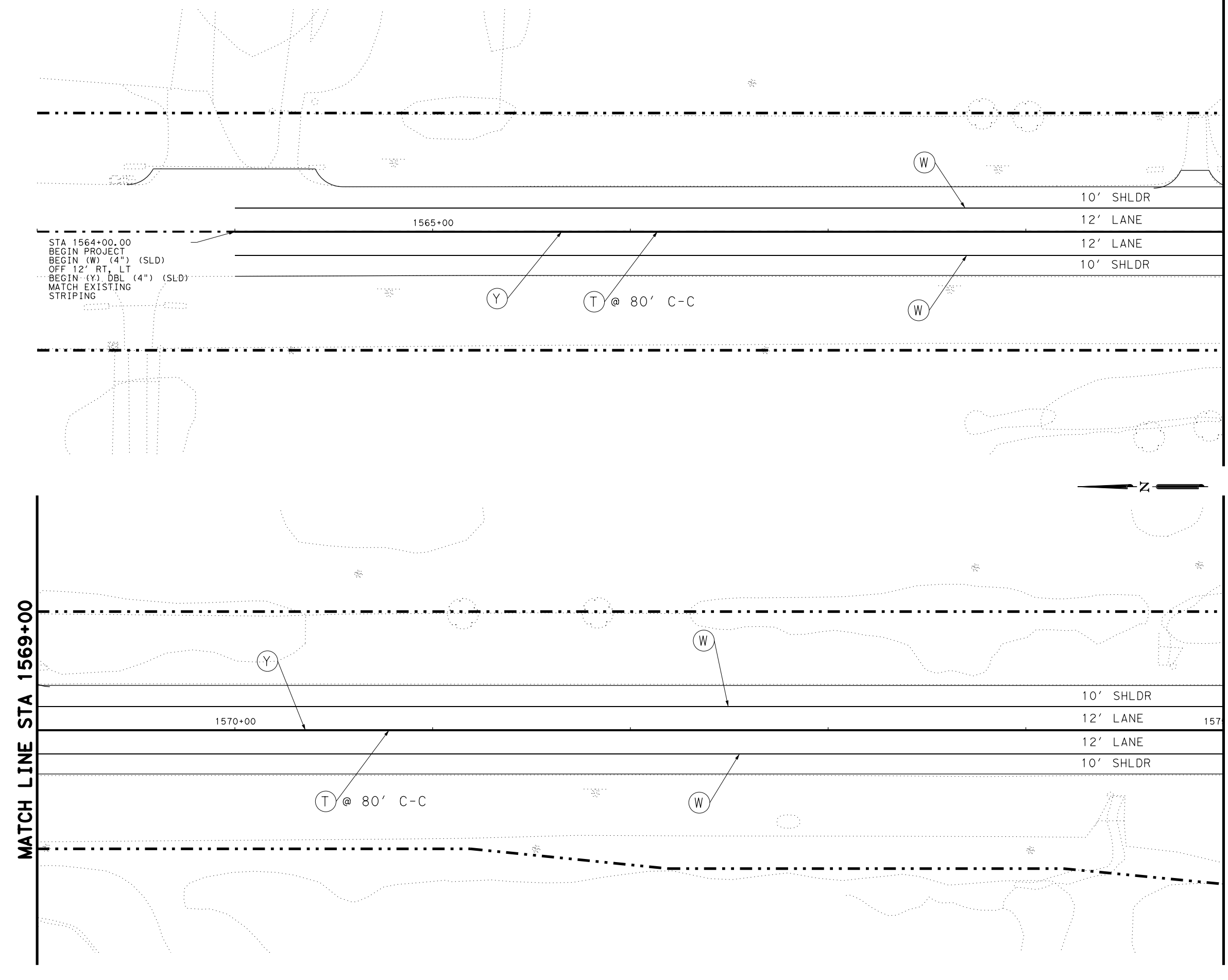
Install epoxy adhesive anchorages in accordance with the manufacturer's instructions including hole size, drilling equipment and method, hole cleaning equipment and method, mixing and dispensing epoxy, and anchor insertion. Do not alter the manufacturer's mixing nozzle or dispenser. Anchorage bars or bolts must be clean and free of grease, oil, or any other foreign material. Demonstrate hole cleaning method to the Engineer for approval and continue the approved process for all anchorage locations. Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.

GENERAL NOTES:

Use these details in conjunction with the SETB standard sheets. Shorten reinforcing Bars D, M, P, and R when utilizing existing reinforcing, as shown. If required, add dowels to lap with new reinforcing, as shown. No increase or decrease to the pay quantities is permitted for these adjustments in the reinforcing steel or concrete quantities.

				Bridge Division Standard	
SAFETY END TREATMENT RETROFIT DETAILS FOR EXISTING BOX CULVERTS					
SETBR					
FILE:	setbrste-20.dgn	DN: GAF	CK: TxDOT	OW: TxDOT	CK: TxDOT
©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS		0108 03		041	SH 19
		DIST.	COUNTY	SHEET NO.	
		TYL	HENDERSON	203	

DATE: 03-JUN-2024 19:39
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_01.dgn



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



Trevor L. Reed 06/10/2024

VOLKERT

F-12679

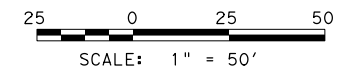
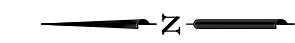


**SH 19
SIGNING AND STRIPING
SHEETS**

SHEET 1 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	204

DATE: 03-JUN-2024 19:40
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MATCH LINE STA 1575+00

MATCH LINE STA 1581+00

MATCH LINE STA 1581+00

MATCH LINE STA 1587+00



- LEGEND**
- (O) PAV MRK (Y) (6") (SLD)
 - (P) PAV MRK (Y) (24") (SLD)
 - (Q) PAV MRK (Y) (6") (BRK)
 - (R) PAV MARK (W) (8") (SLD)
 - (S) TYPE I-C
 - (T) TYPE II-A-A
 - (U) PAV MRK (W) (24") (SLD)
 - (V) PAV MRK (W) (6") (DOT)
 - (W) PAV MRK (W) (6") (SLD)
 - (X) PAV MRK (W) (6") (BRK)
 - (Y) PAV MRK (Y) DBL (6") (SLD)
 - (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
 - [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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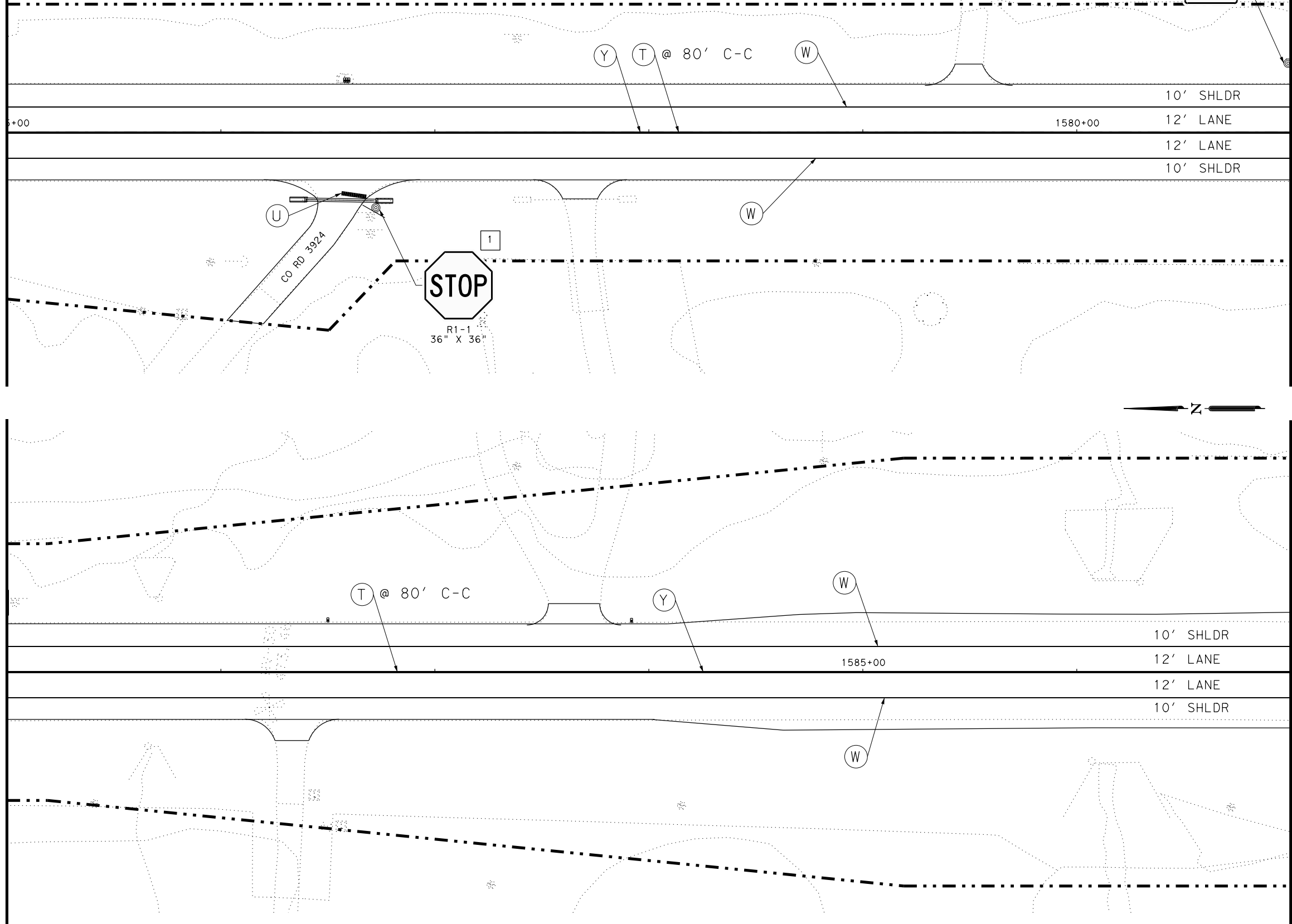
F-12679



**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 2 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	205



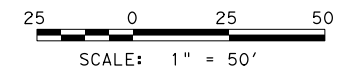
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MATCH LINE STA 1587+00

MATCH LINE STA 1593+00

MATCH LINE STA 1593+00

MATCH LINE STA 1599+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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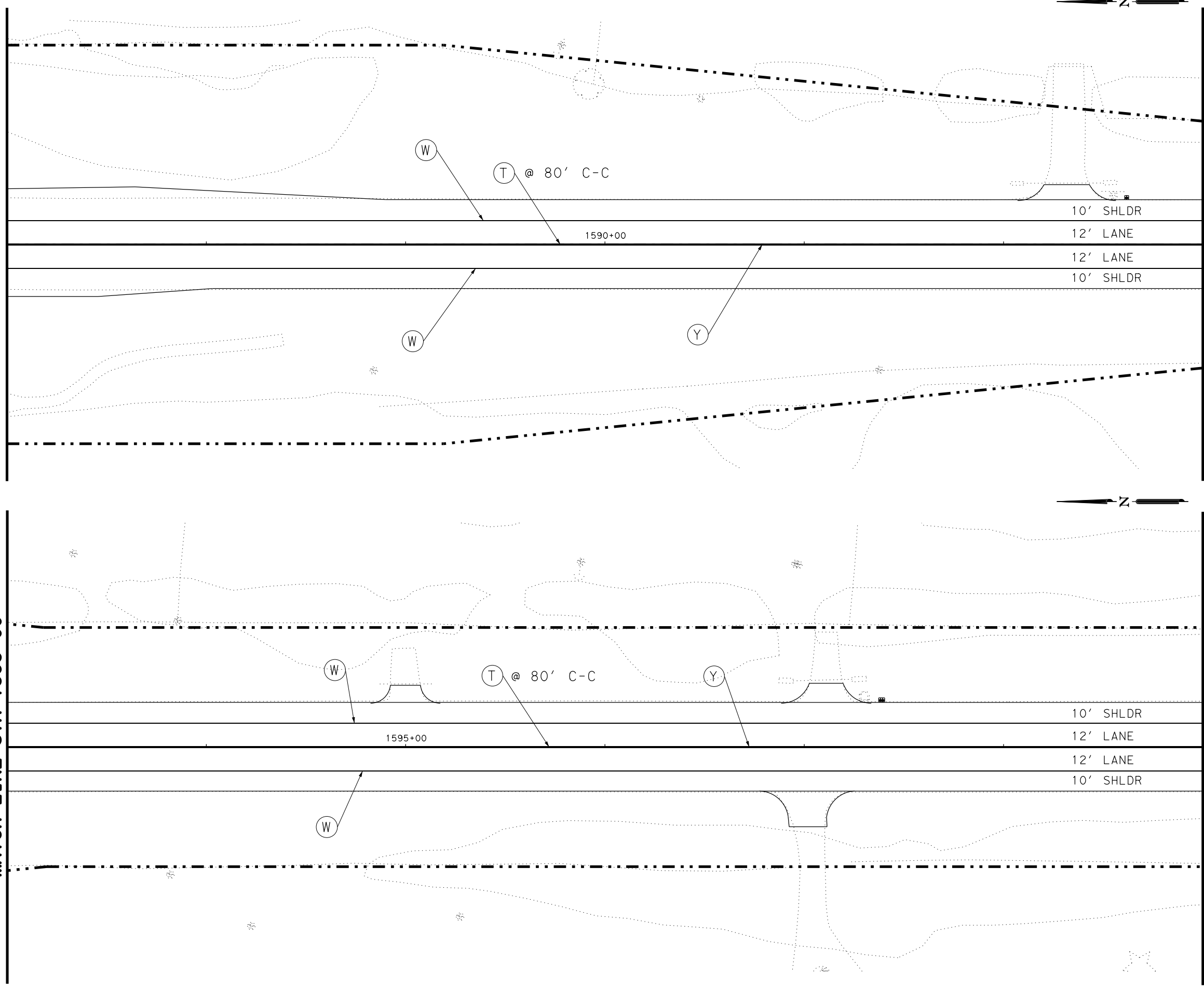
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**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 3 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	206



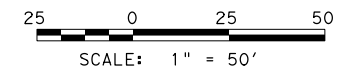
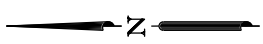
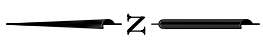
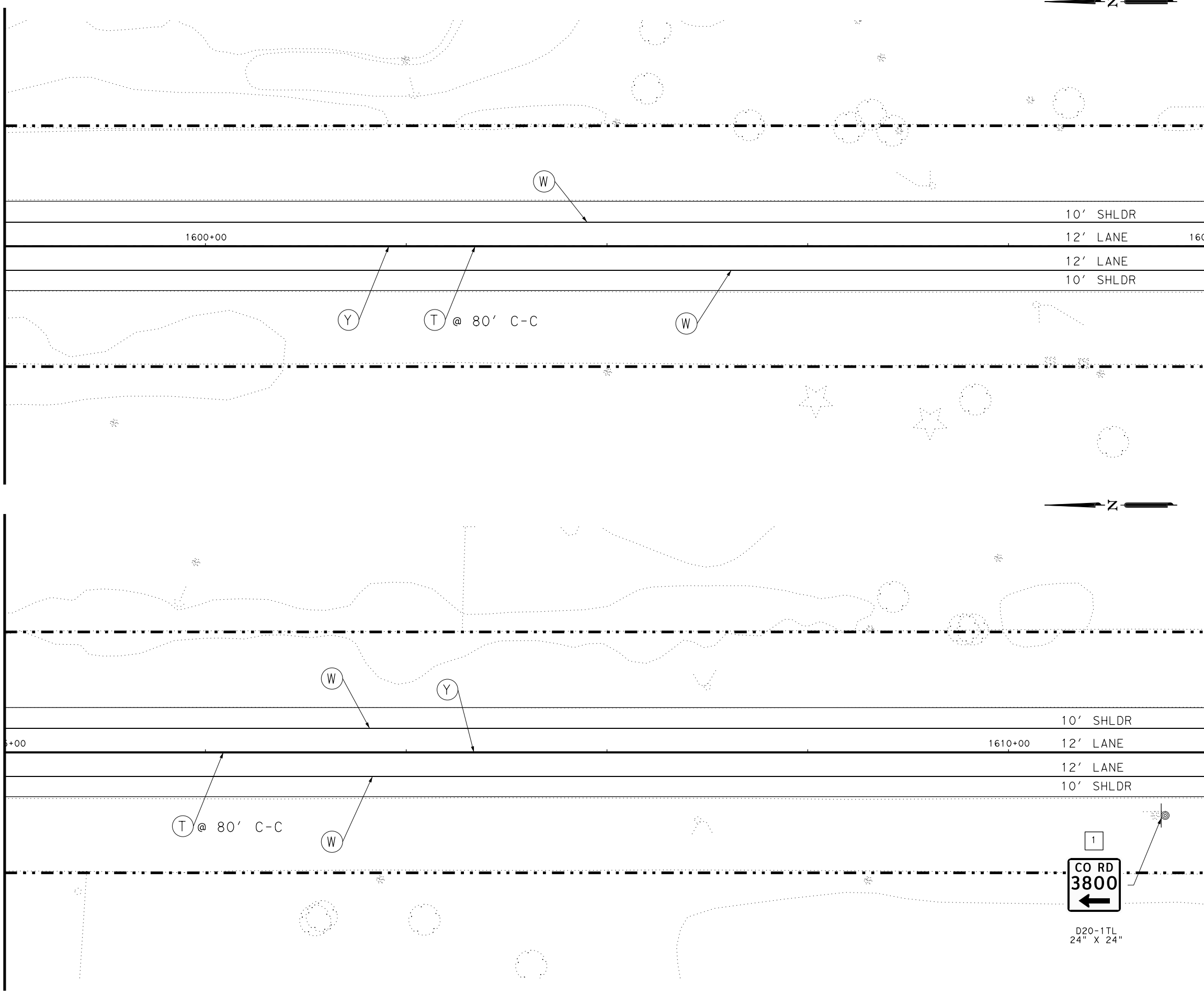
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MATCH LINE STA 1599+00

MATCH LINE STA 1605+00

MATCH LINE STA 1605+00

MATCH LINE STA 1611+00



LEGEND

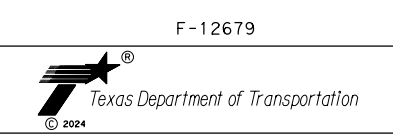
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- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



06/10/2024

VOLKERT



**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 4 OF 40			
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	207

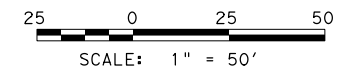
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MATCH LINE STA 1611+00

MATCH LINE STA 1617+00

MATCH LINE STA 1617+00

MATCH LINE STA 1623+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



06/10/2024

VOLKERT

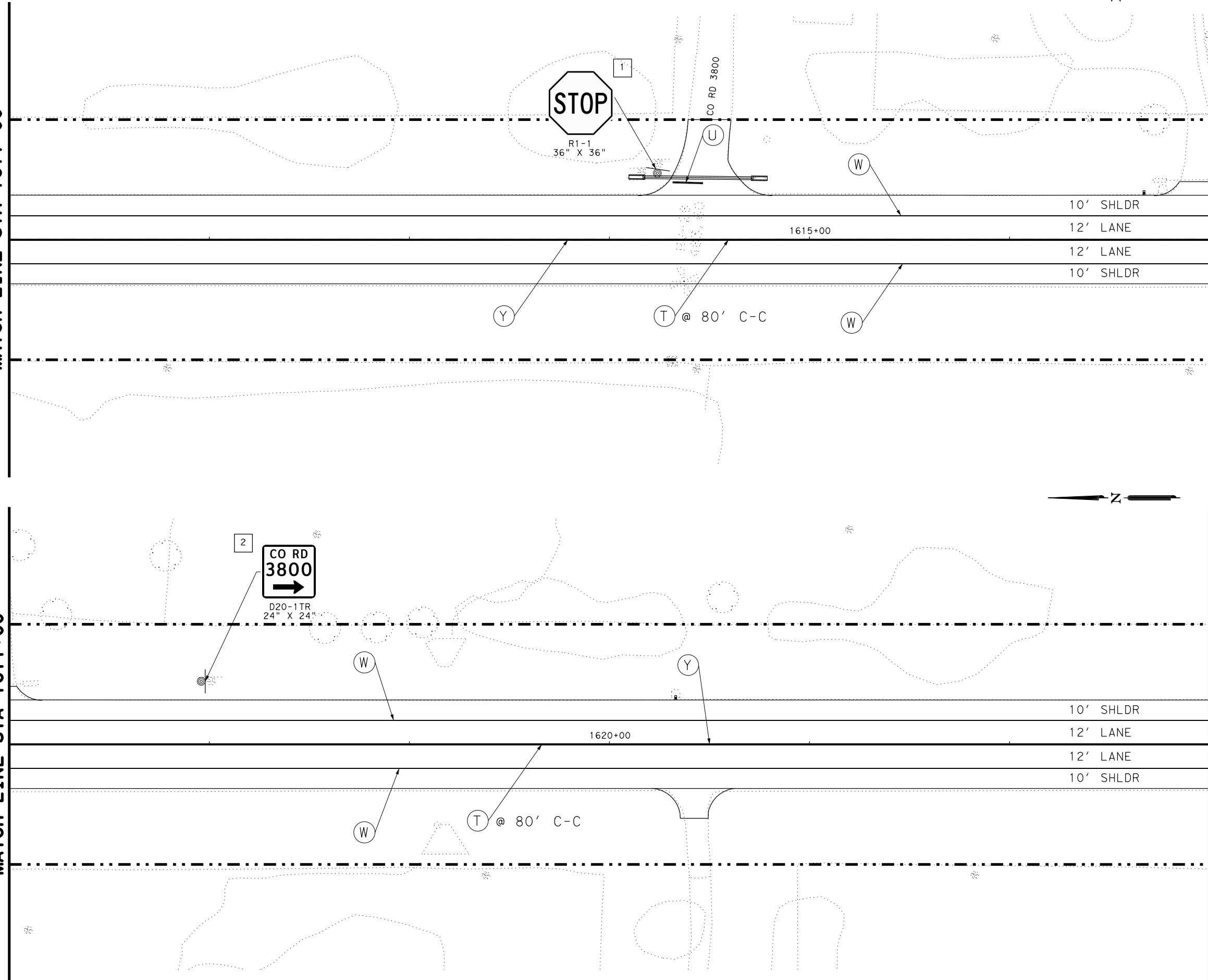
F-12679



**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 5 OF 40

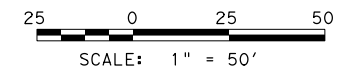
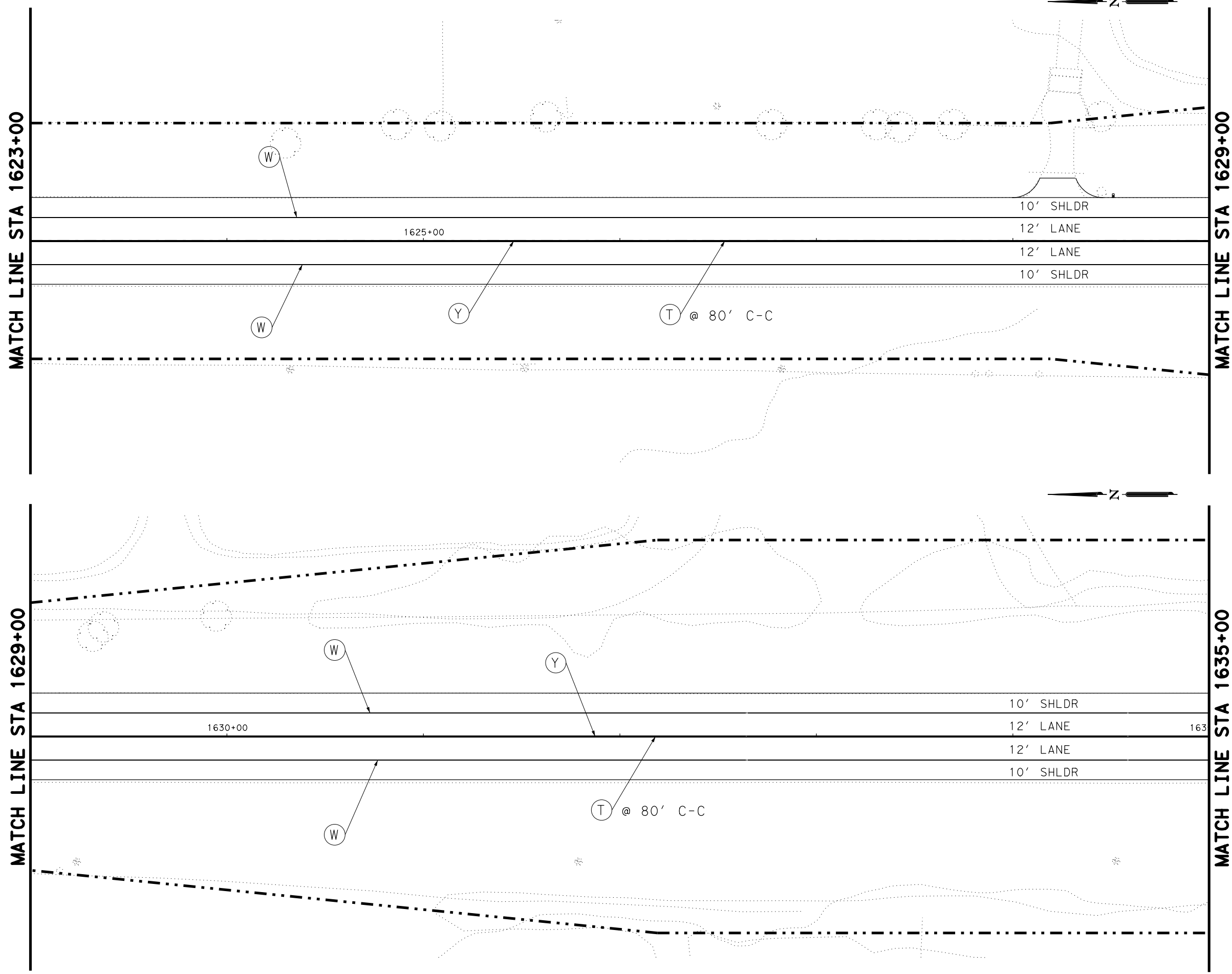
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0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	208



DATE: 03-JUN-2024 19:39
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MATCH LINE STA 1623+00

MATCH LINE STA 1629+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



06/10/2024

VOLKERT

F-12679



**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 6 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	209

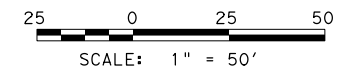
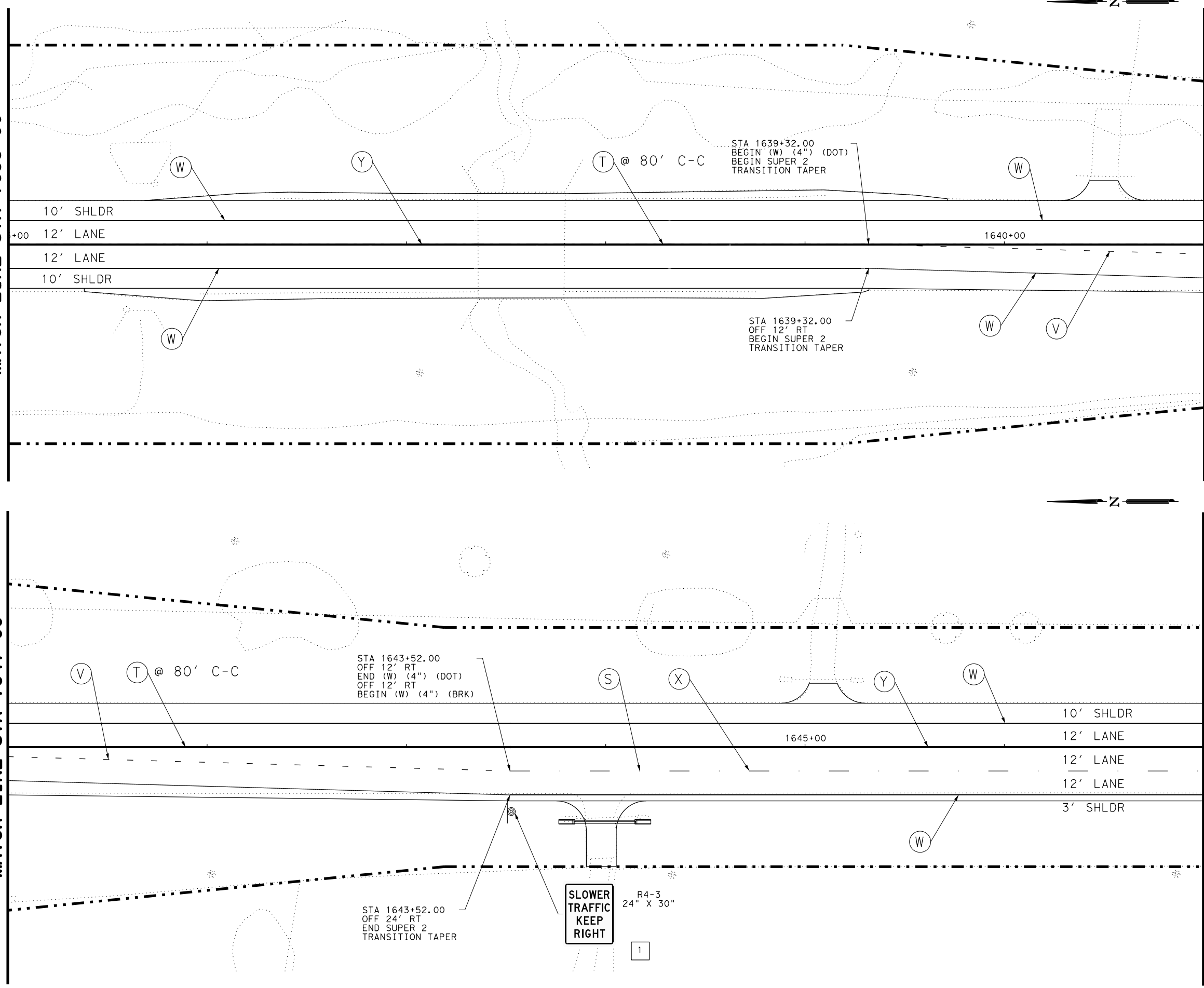
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MATCH LINE STA 1635+00

MATCH LINE STA 1641+00

MATCH LINE STA 1641+00

MATCH LINE STA 1647+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 7 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	210

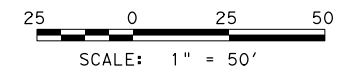
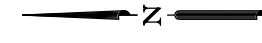
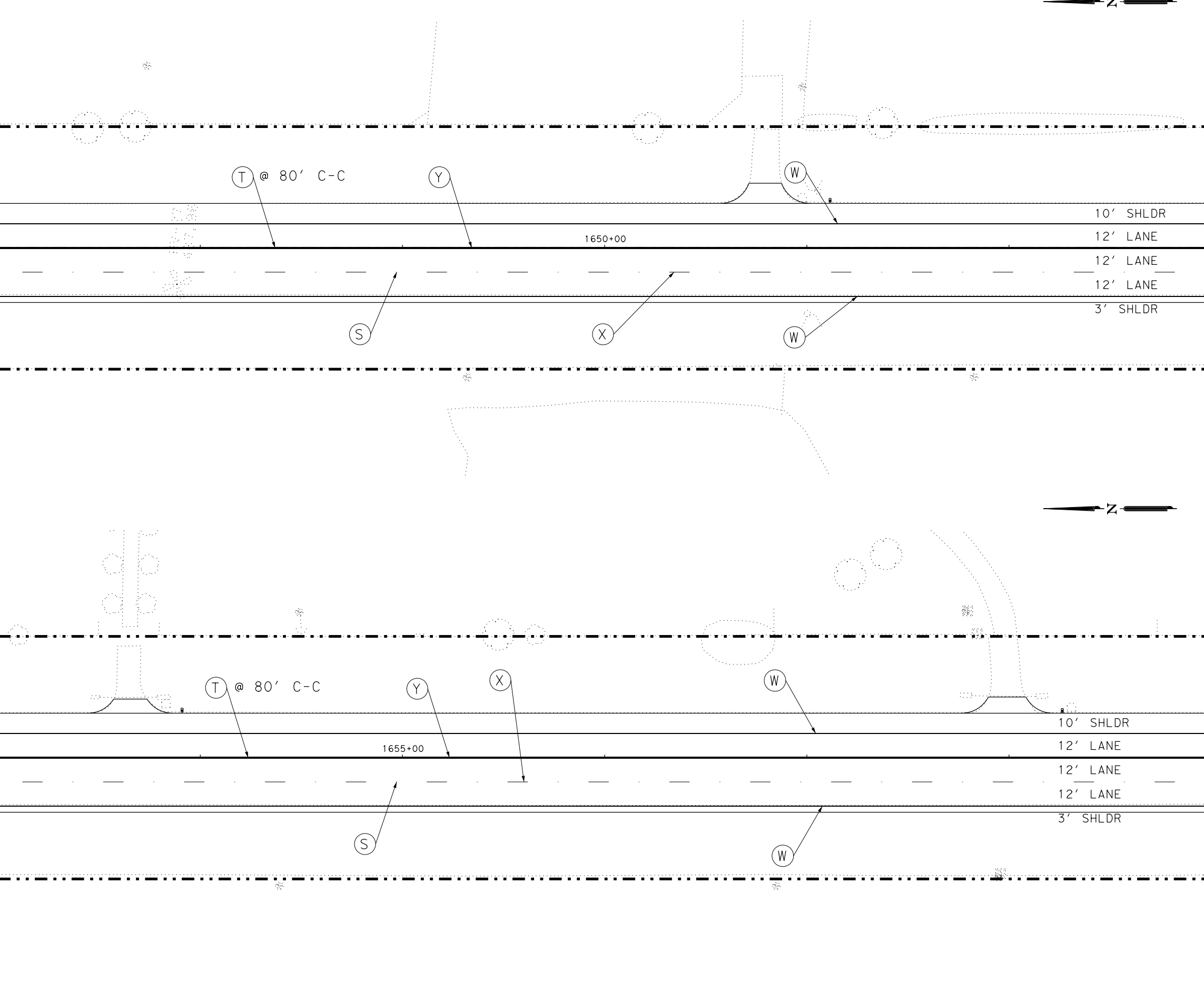
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 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_08.dgn

MATCH LINE STA 1647+00

MATCH LINE STA 1653+00

MATCH LINE STA 1653+00

MATCH LINE STA 1659+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



Trevor L. Reed 06/10/2024

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**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 8 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	211

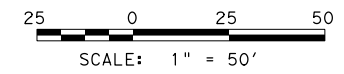
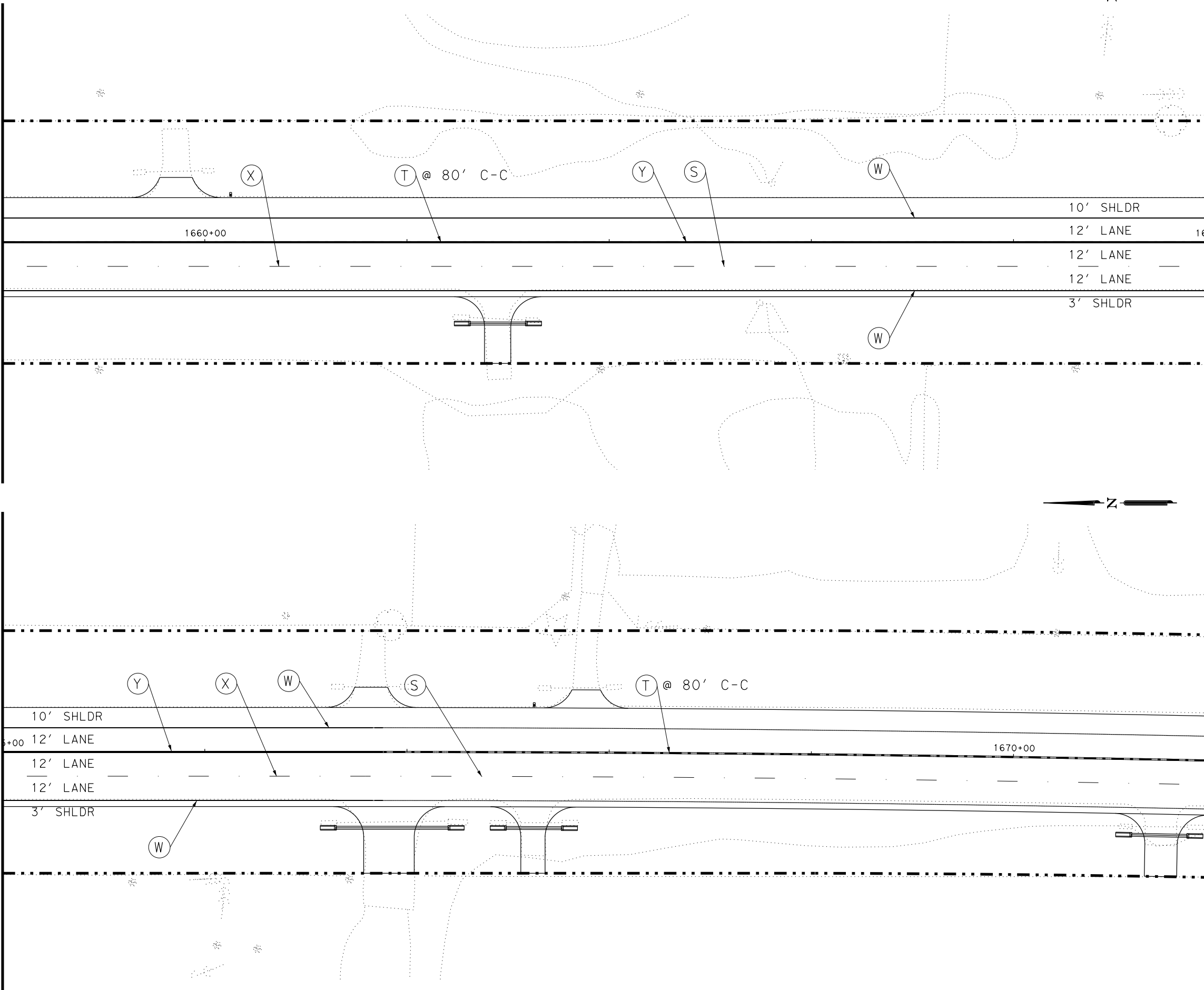
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 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_09.dgn

MATCH LINE STA 1659+00

MATCH LINE STA 1665+00

MATCH LINE STA 1665+00

MATCH LINE STA 1671+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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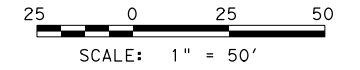
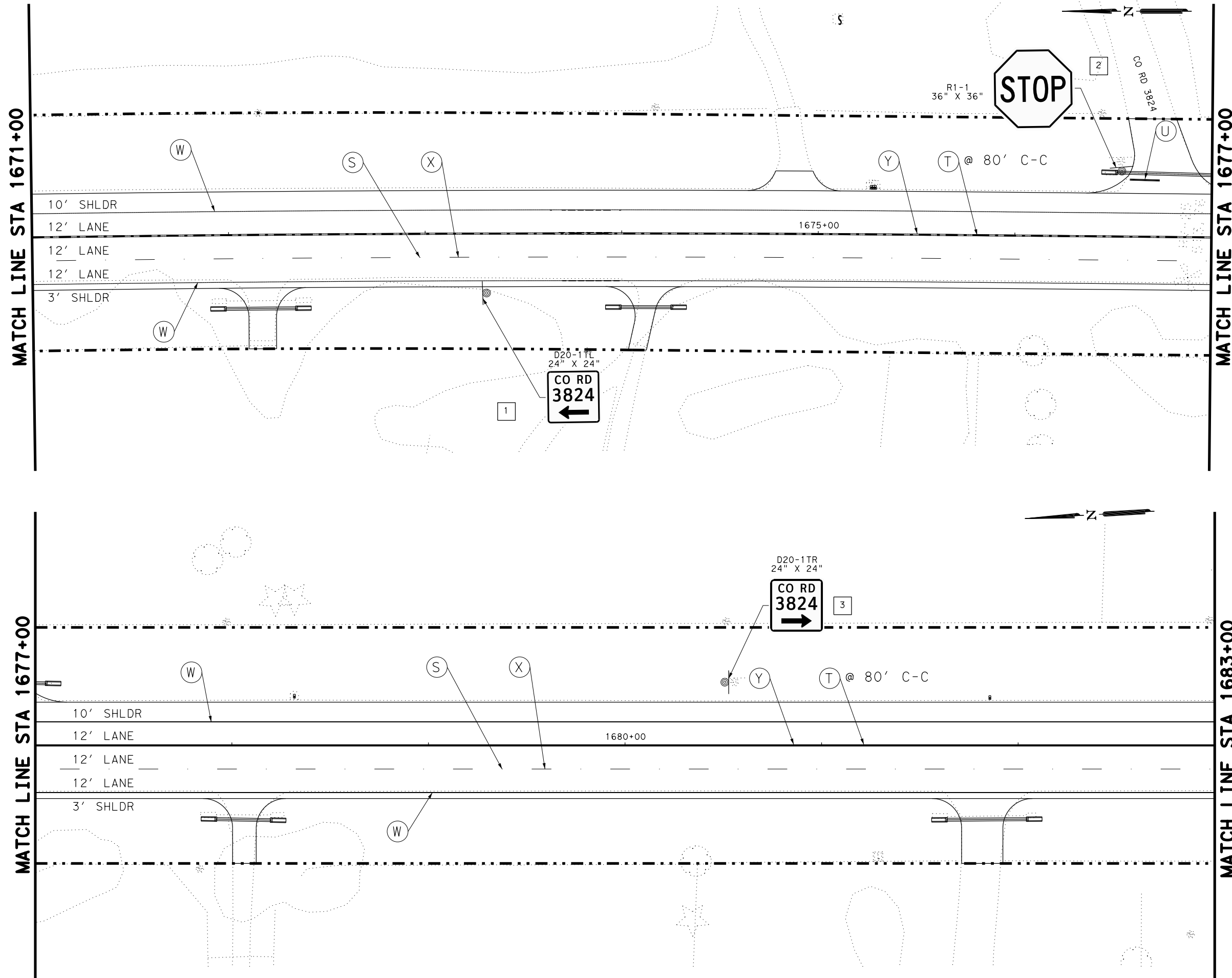


**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 9 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	212

DATE: 03-JUN-2024 19:39
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_10.dgn



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:

1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
SIGNING AND STRIPING
SHEETS**

SHEET 10 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	213

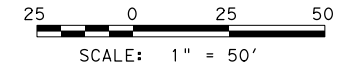
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 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_11.dgn

MATCH LINE STA 1683+00

MATCH LINE STA 1689+00

MATCH LINE STA 1689+00

MATCH LINE STA 1695+00



LEGEND

- ⊙ PAV MRK (Y) (6") (SLD)
- ⊙ PAV MRK (Y) (24") (SLD)
- ⊙ PAV MRK (Y) (6") (BRK)
- ⊙ PAV MARK (W) (8") (SLD)
- ⊙ TYPE I-C
- ⊙ TYPE II-A-A
- ⊙ PAV MRK (W) (24") (SLD)
- ⊙ PAV MRK (W) (6") (DOT)
- ⊙ PAV MRK (W) (6") (SLD)
- ⊙ PAV MRK (W) (6") (BRK)
- ⊙ PAV MRK (Y) DBL (6") (SLD)
- ⊙ EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- 1 SIGN NO. (SOSS)

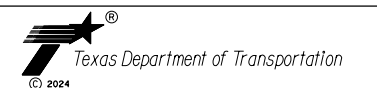
- NOTES:
1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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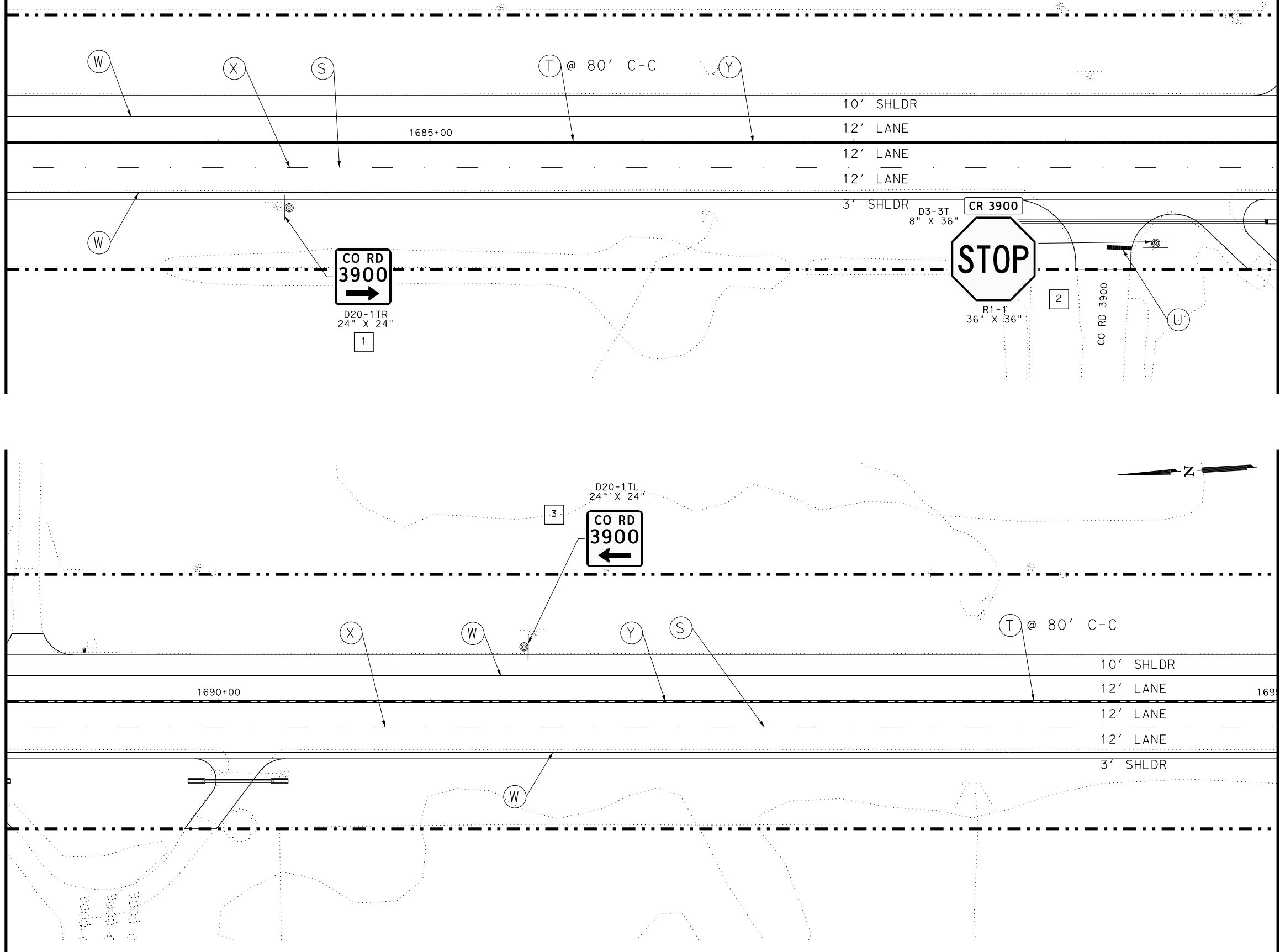
F-12679



**SH 19
SIGNING AND STRIPING
SHEETS**

SHEET 11 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	214



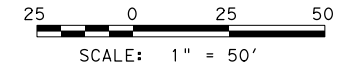
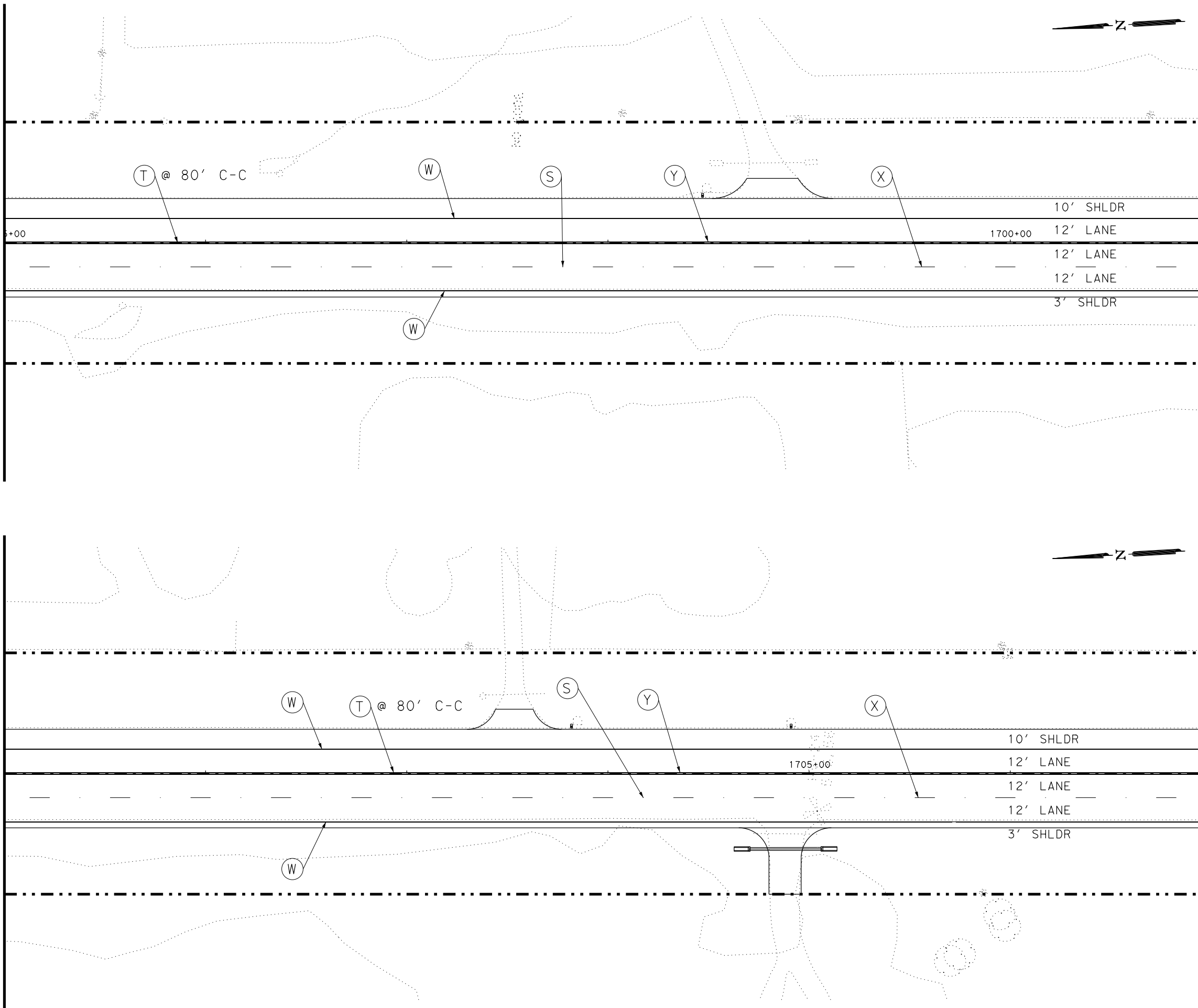
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MATCH LINE STA 1695+00

MATCH LINE STA 1701+00

MATCH LINE STA 1701+00

MATCH LINE STA 1707+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 12 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	215

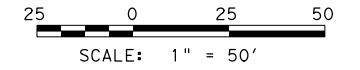
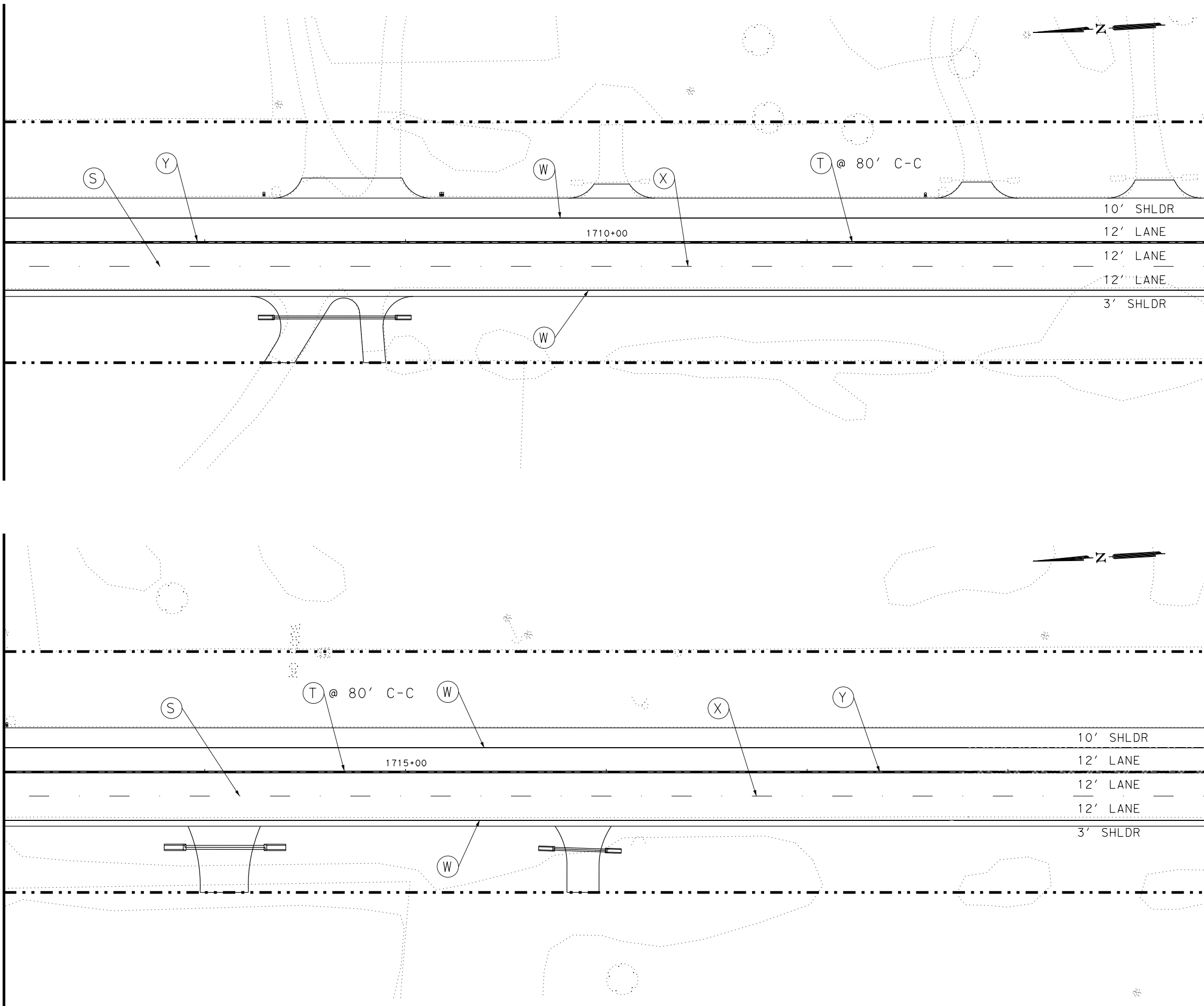
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MATCH LINE STA 1707+00

MATCH LINE STA 1713+00

MATCH LINE STA 1713+00

MATCH LINE STA 1719+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:

1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
SIGNING AND STRIPING
SHEETS**

SHEET 13 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	216

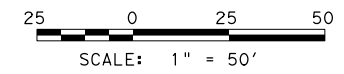
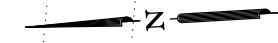
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MATCH LINE STA 1719+00

MATCH LINE STA 1725+00

MATCH LINE STA 1725+00

MATCH LINE STA 1731+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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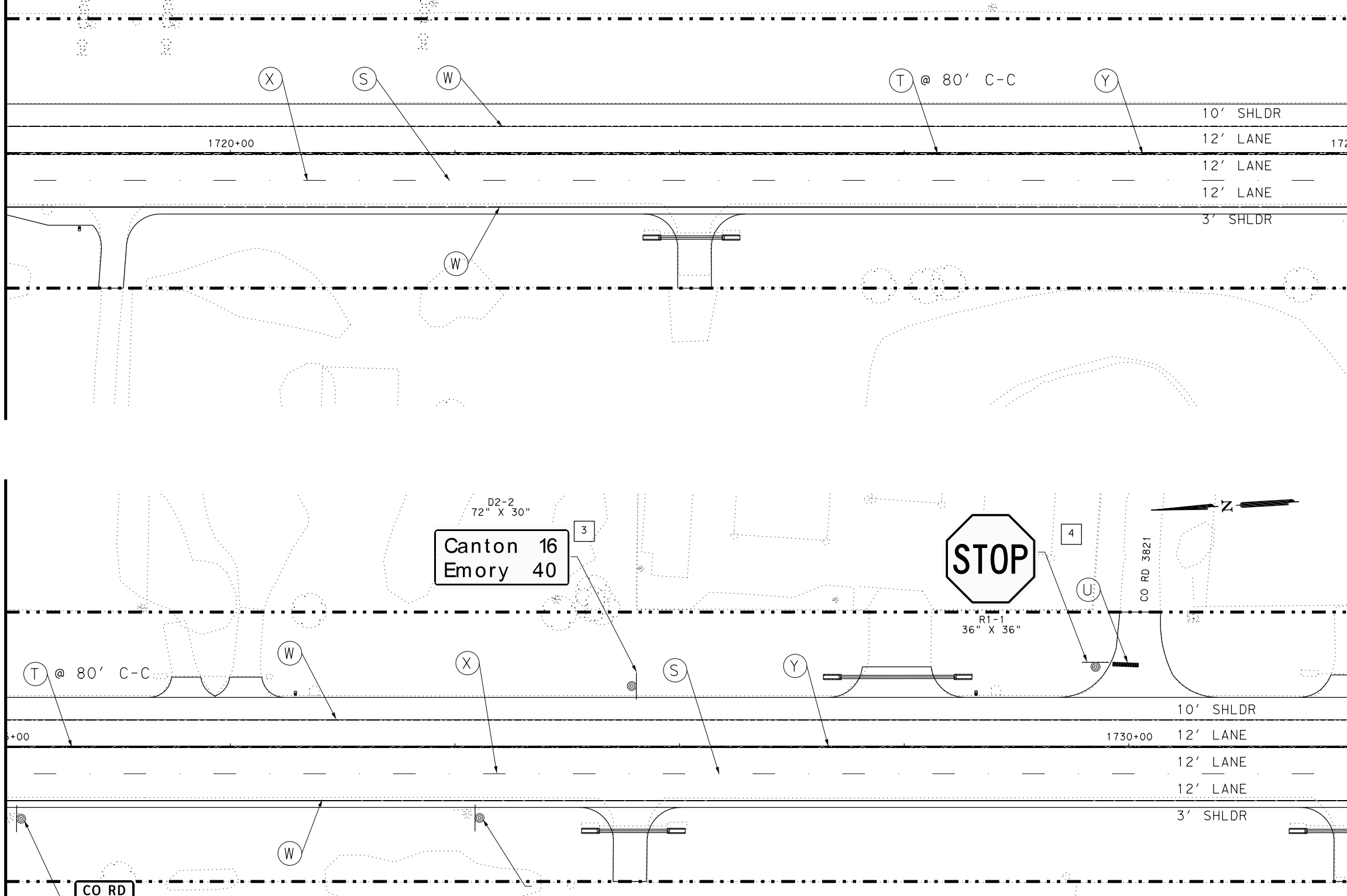
F-12679



**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 14 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	217



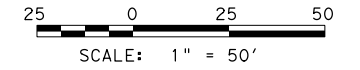
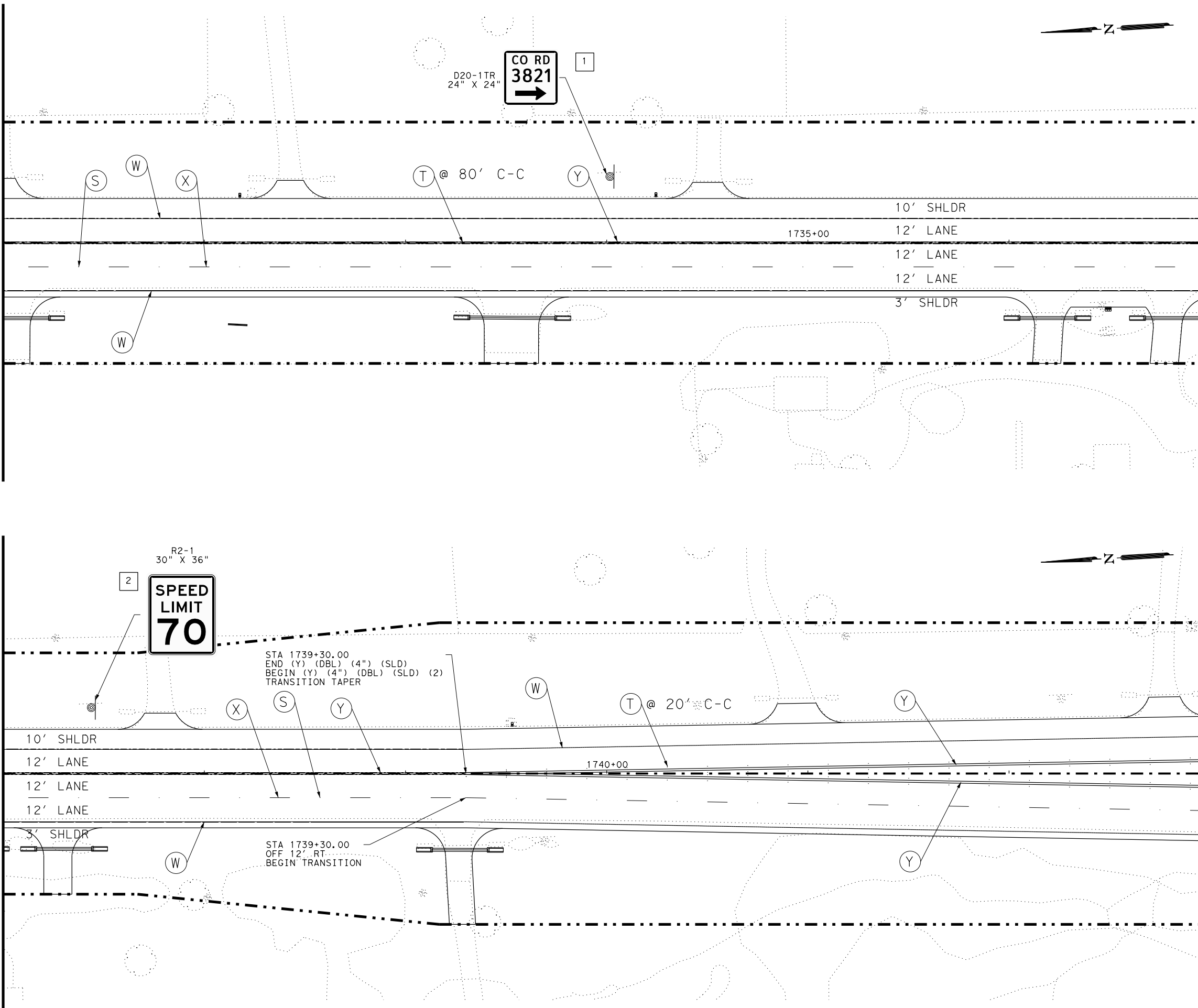
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MATCH LINE STA 1731+00

MATCH LINE STA 1737+00

MATCH LINE STA 1737+00

MATCH LINE STA 1743+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
SIGNING AND STRIPING
SHEETS**

SHEET 15 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	218

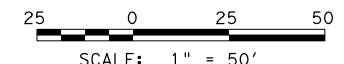
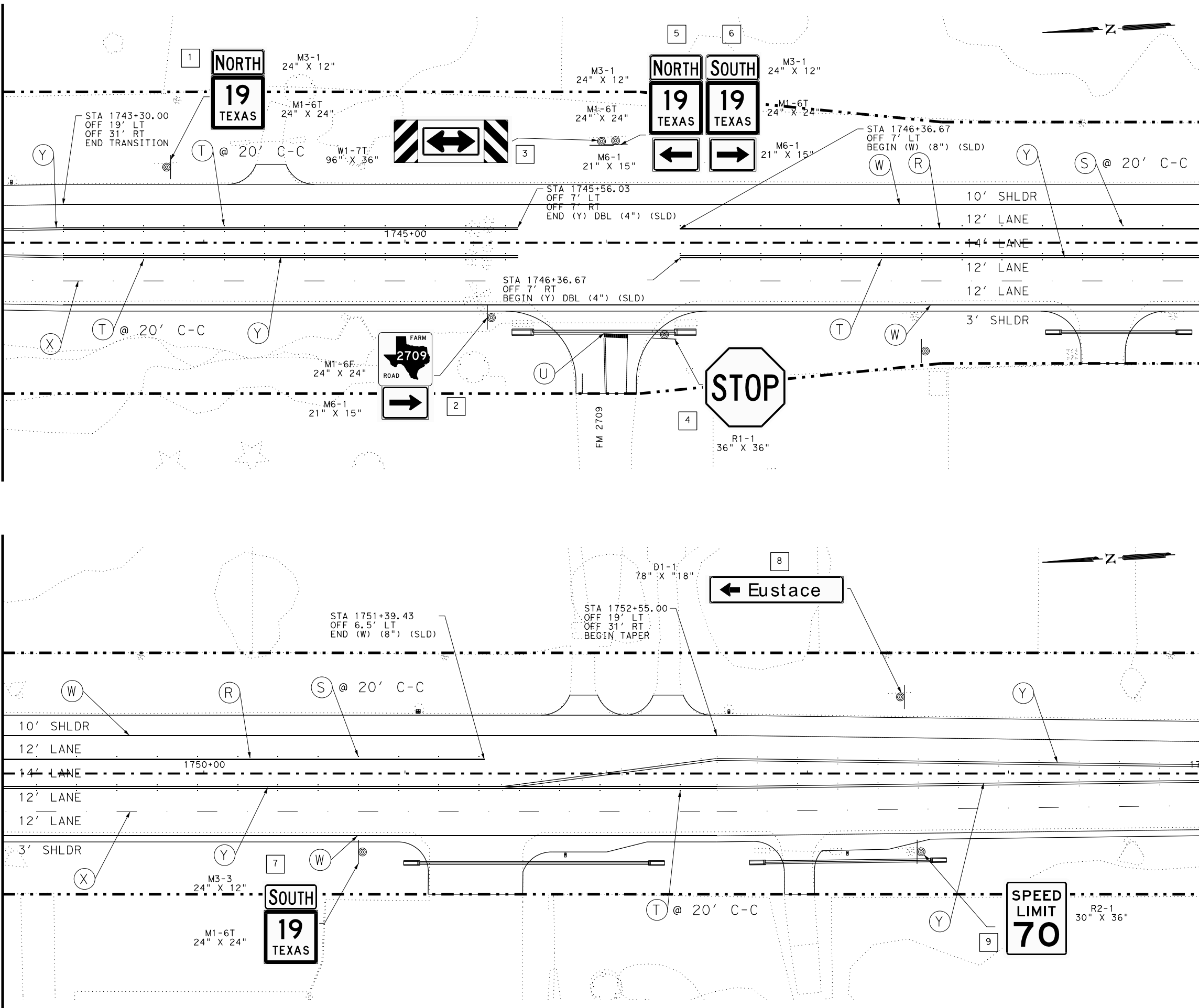
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 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_16.dgn

MATCH LINE STA 1743+00

MATCH LINE STA 1749+00

MATCH LINE STA 1749+00

MATCH LINE STA 1755+00



- LEGEND**
- (O) PAV MKR (Y) (6") (SLD)
 - (P) PAV MKR (Y) (24") (SLD)
 - (Q) PAV MKR (Y) (6") (BRK)
 - (R) PAV MARK (W) (8") (SLD)
 - (S) TYPE I-C
 - (T) TYPE II-A-A
 - (U) PAV MKR (W) (24") (SLD)
 - (V) PAV MKR (W) (6") (DOT)
 - (W) PAV MKR (W) (6") (SLD)
 - (X) PAV MKR (W) (6") (BRK)
 - (Y) PAV MKR (Y) DBL (6") (SLD)
 - (Z) EXIST PAV MKR OR PREVIOUSLY PLACED WRK ZN PAV MKR
 - [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 16 OF 40

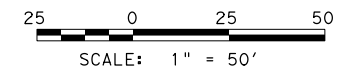
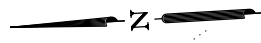
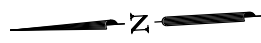
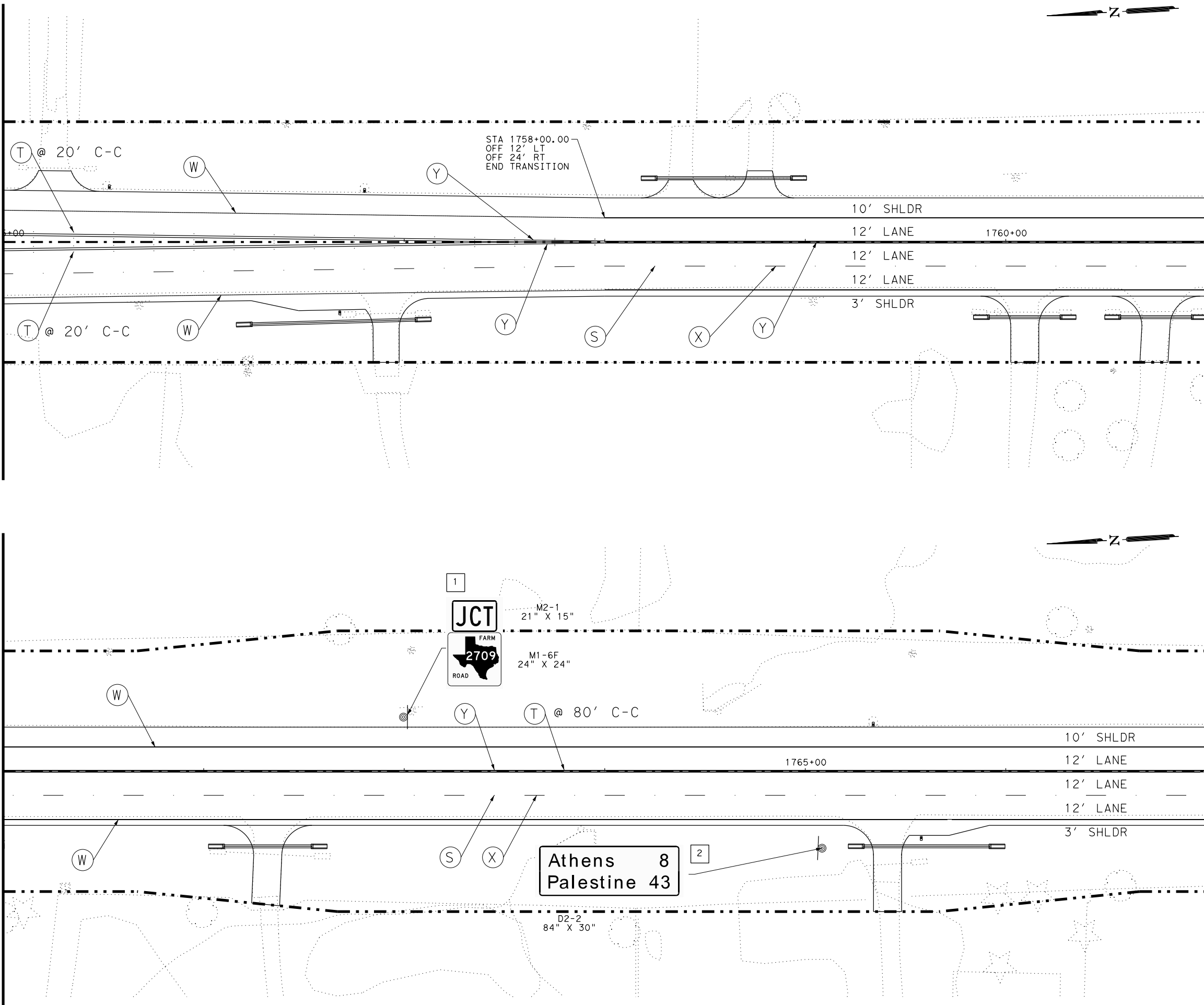
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYLER	HENDERSON	219	

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 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_17.dgn

MATCH LINE STA 1755+00

MATCH LINE STA 1761+00

MATCH LINE STA 1767+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 17 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	220

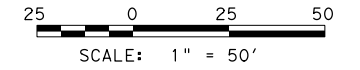
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MATCH LINE STA 1767+00

MATCH LINE STA 1773+00

MATCH LINE STA 1773+00

MATCH LINE STA 1779+00



LEGEND

- ⊙ PAV MRK (Y) (6") (SLD)
- ⊙ PAV MRK (Y) (24") (SLD)
- ⊙ PAV MRK (Y) (6") (BRK)
- ⊙ PAV MARK (W) (8") (SLD)
- ⊙ TYPE I-C
- ⊙ TYPE II-A-A
- ⊙ PAV MRK (W) (24") (SLD)
- ⊙ PAV MRK (W) (6") (DOT)
- ⊙ PAV MRK (W) (6") (SLD)
- ⊙ PAV MRK (W) (6") (BRK)
- ⊙ PAV MRK (Y) DBL (6") (SLD)
- ⊙ EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- 1 SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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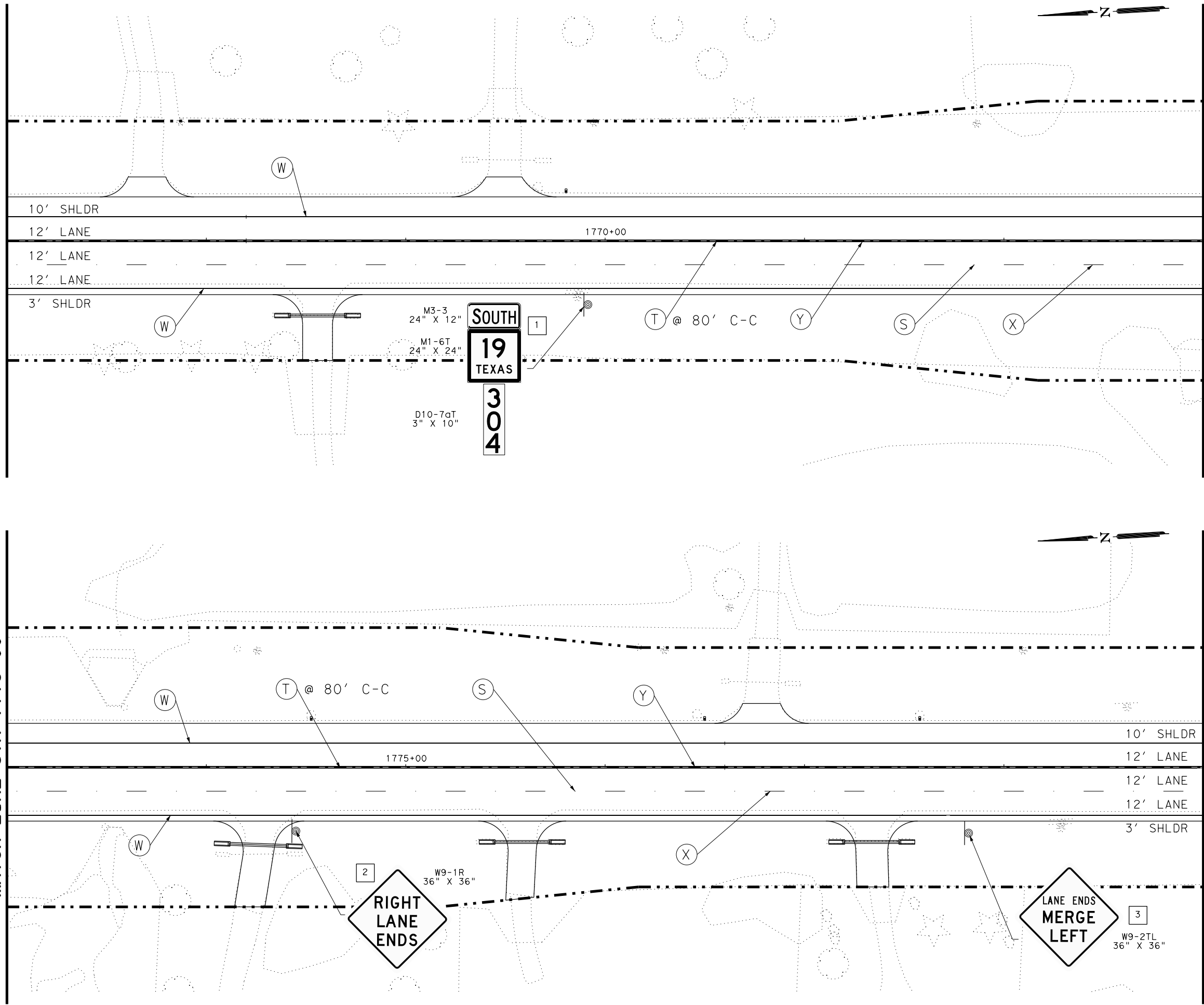
F-12679



**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 18 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	221



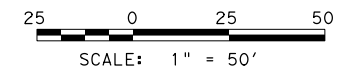
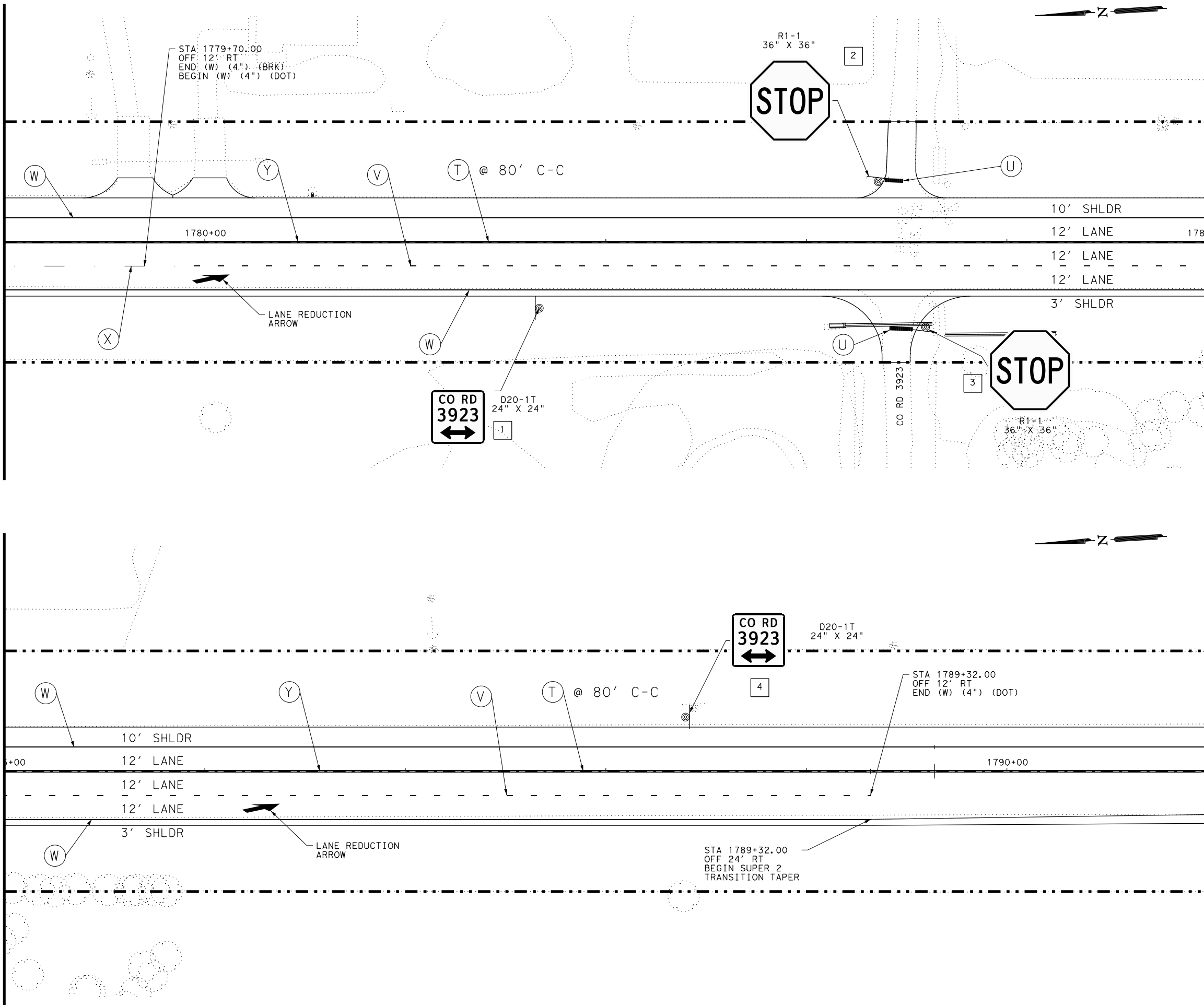
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 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_19.dgn

MATCH LINE STA 1779+00

MATCH LINE STA 1785+00

MATCH LINE STA 1785+00

MATCH LINE STA 1791+00



- LEGEND**
- (O) PAV MRK (Y) (6") (SLD)
 - (P) PAV MRK (Y) (24") (SLD)
 - (Q) PAV MRK (Y) (6") (BRK)
 - (R) PAV MARK (W) (8") (SLD)
 - (S) TYPE I-C
 - (T) TYPE II-A-A
 - (U) PAV MRK (W) (24") (SLD)
 - (V) PAV MRK (W) (6") (DOT)
 - (W) PAV MRK (W) (6") (SLD)
 - (X) PAV MRK (W) (6") (BRK)
 - (Y) PAV MRK (Y) DBL (6") (SLD)
 - (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
 - [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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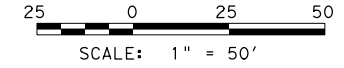
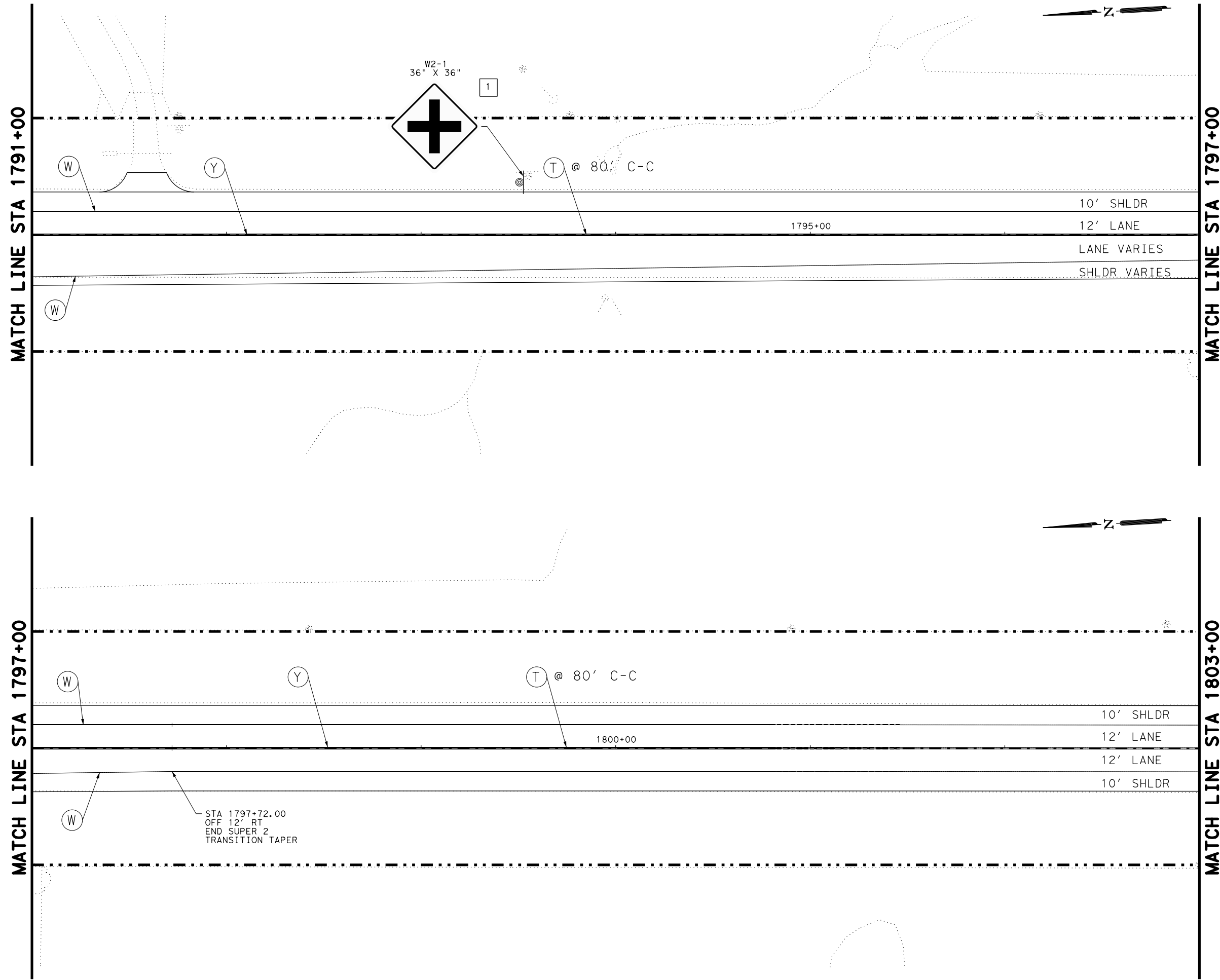
F-12679
 Texas Department of Transportation

**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 19 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	222

DATE: 03-JUN-2024 19:40
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_20.dgn



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 20 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	223

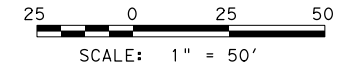
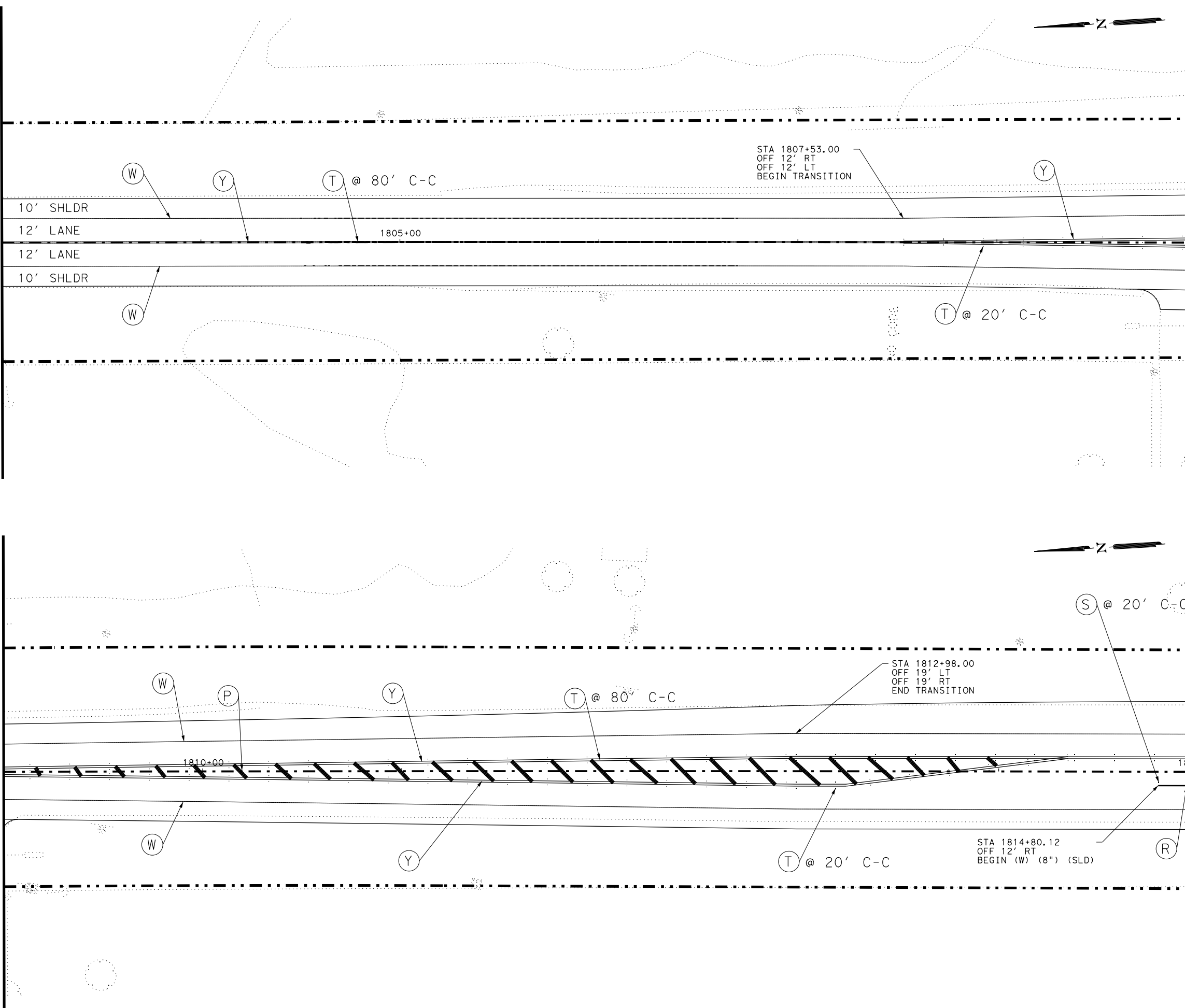
DATE: 03-JUN-2024 19:39
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_21.dgn

MATCH LINE STA 1803+00

MATCH LINE STA 1809+00

MATCH LINE STA 1809+00

MATCH LINE STA 1815+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

- NOTES:
1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
SIGNING AND STRIPING
SHEETS**

SHEET 21 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	224

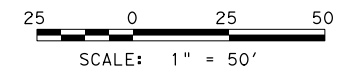
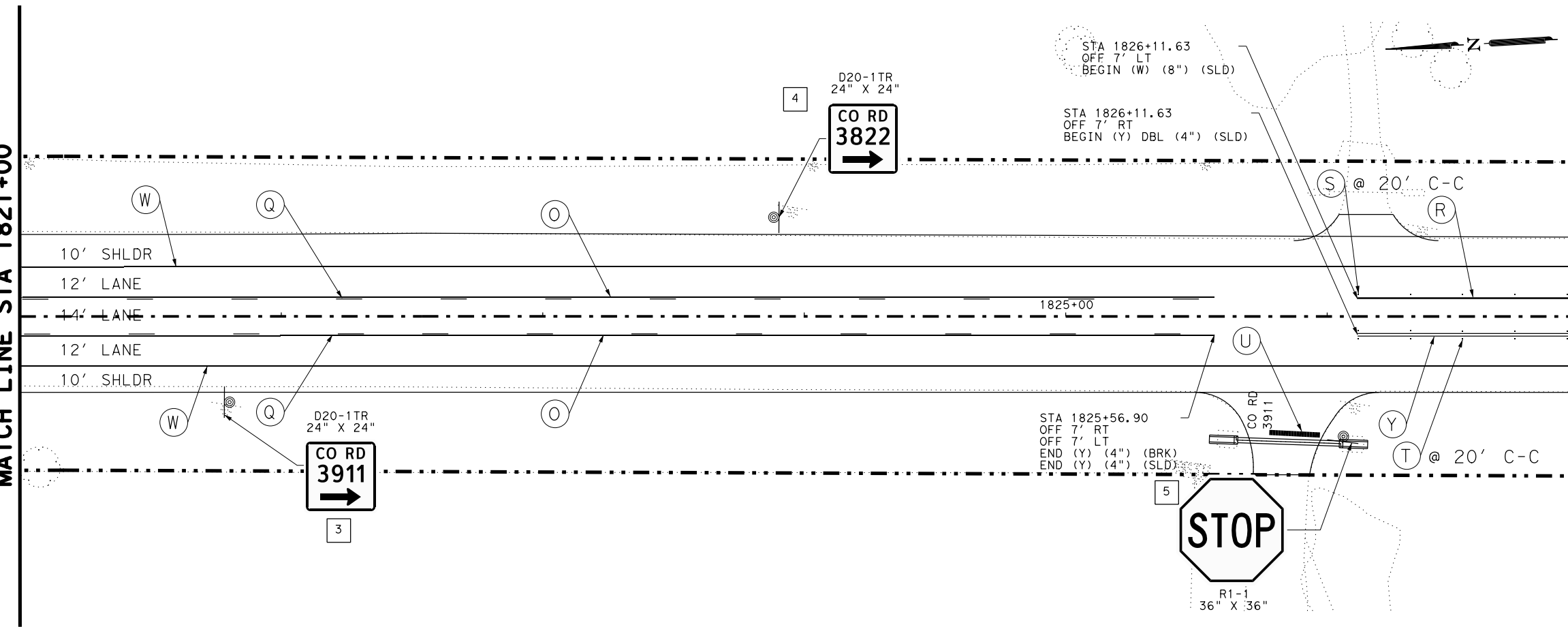
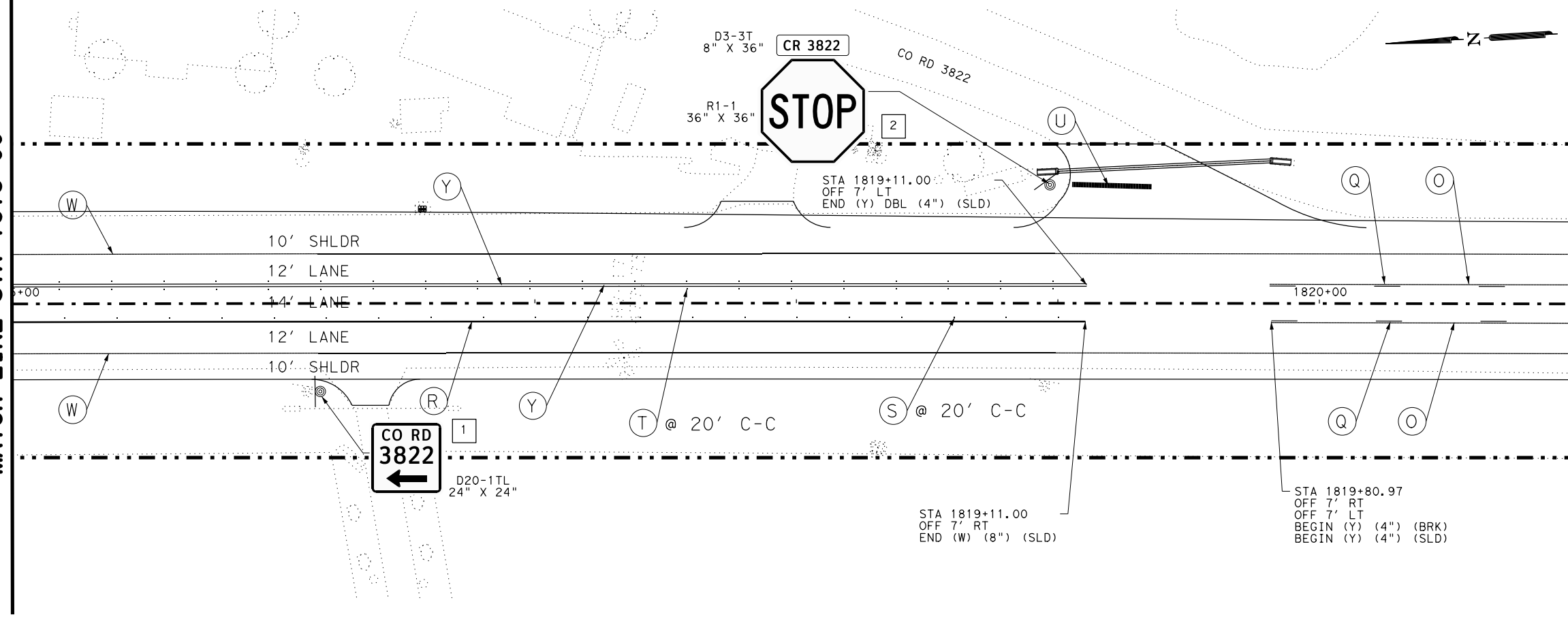
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 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_22.dgn

MATCH LINE STA 1815+00

MATCH LINE STA 1821+00

MATCH LINE STA 1821+00

MATCH LINE STA 1827+00



- LEGEND**
- (O) PAV MRK (Y) (6") (SLD)
 - (P) PAV MRK (Y) (24") (SLD)
 - (Q) PAV MRK (Y) (6") (BRK)
 - (R) PAV MARK (W) (8") (SLD)
 - (S) TYPE I-C
 - (T) TYPE II-A-A
 - (U) PAV MRK (W) (24") (SLD)
 - (V) PAV MRK (W) (6") (DOT)
 - (W) PAV MRK (W) (6") (SLD)
 - (X) PAV MRK (W) (6") (BRK)
 - (Y) PAV MRK (Y) DBL (6") (SLD)
 - (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
 - [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 22 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	225

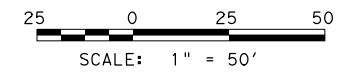
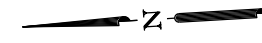
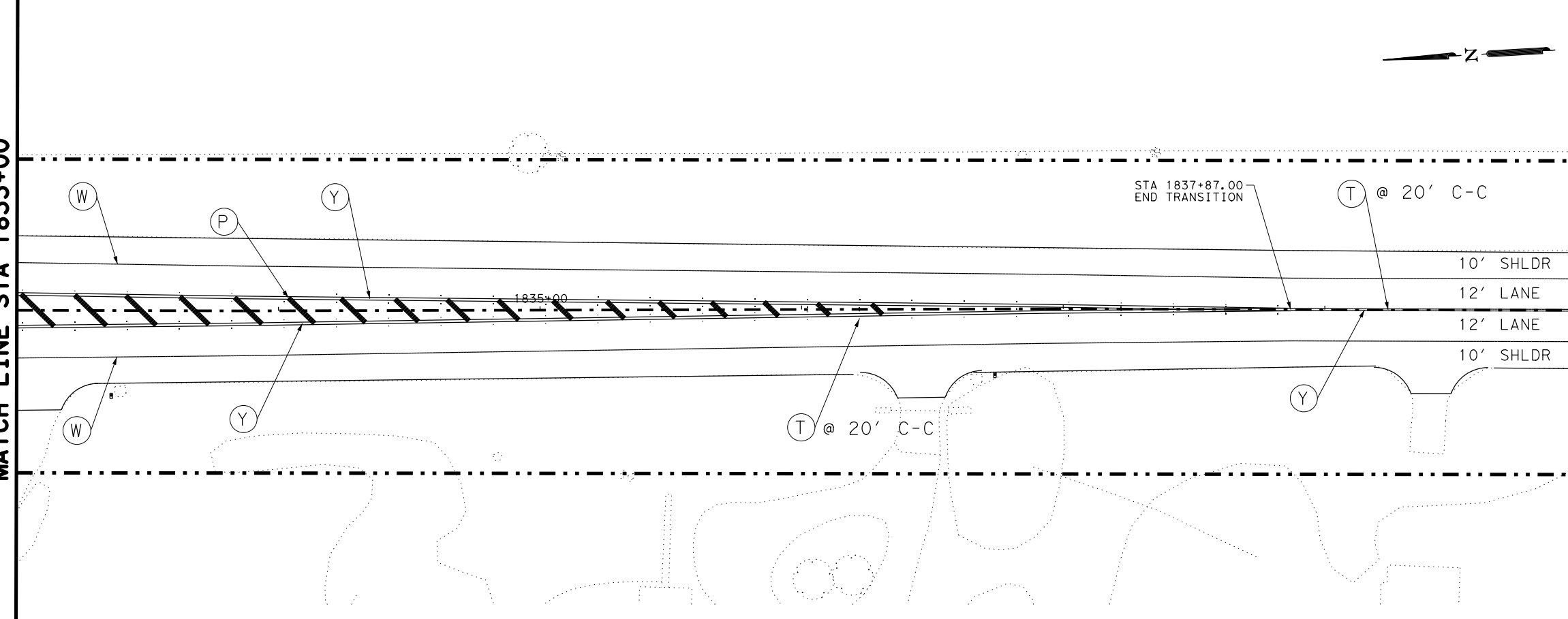
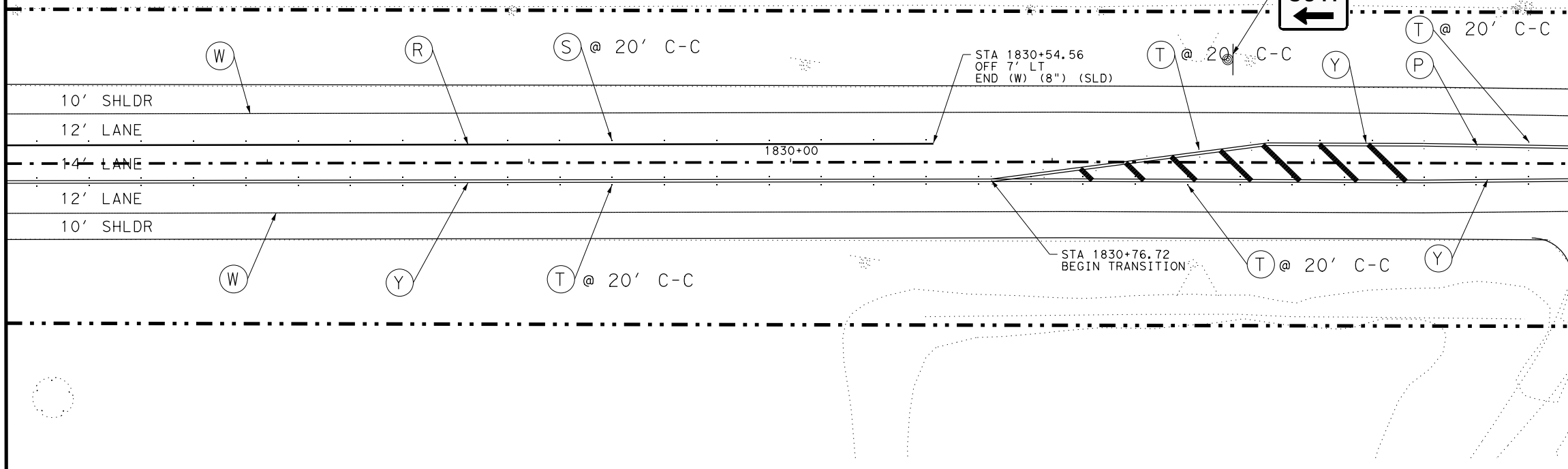
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 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_23.dgn

MATCH LINE STA 1827+00

MATCH LINE STA 1833+00

MATCH LINE STA 1833+00

MATCH LINE STA 1839+00



LEGEND

- PAV MRK (Y) (6") (SLD)
- PAV MRK (Y) (24") (SLD)
- PAV MRK (Y) (6") (BRK)
- PAV MARK (W) (8") (SLD)
- TYPE I-C
- TYPE II-A-A
- PAV MRK (W) (24") (SLD)
- PAV MRK (W) (6") (DOT)
- PAV MRK (W) (6") (SLD)
- PAV MRK (W) (6") (BRK)
- PAV MRK (Y) DBL (6") (SLD)
- EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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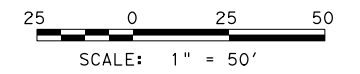
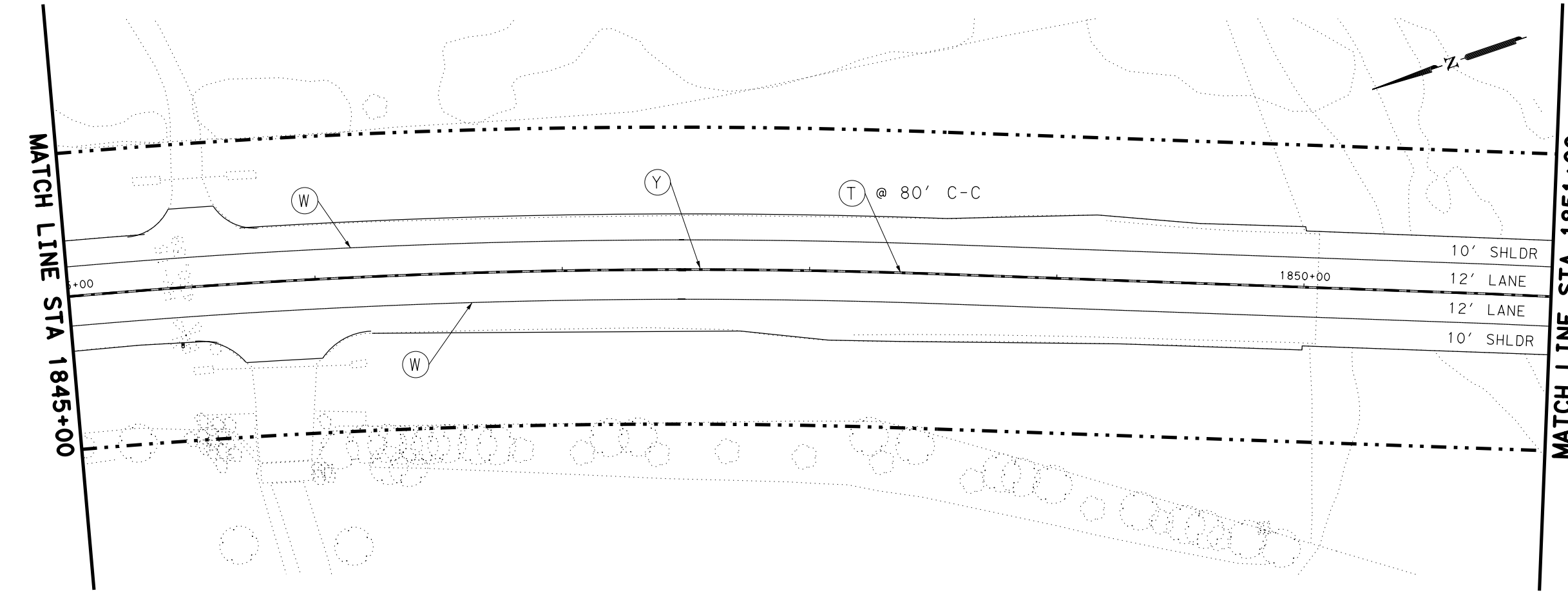
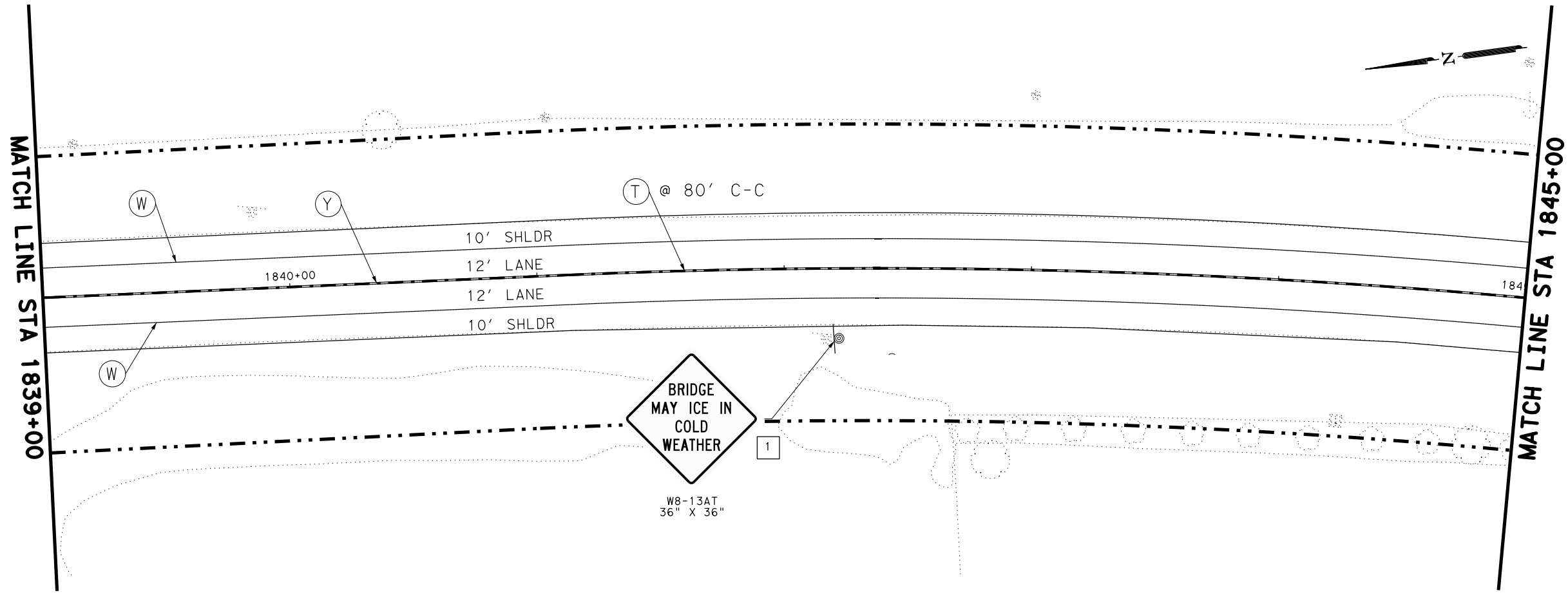


**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 23 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	226

DATE: 03-JUN-2024 19:40
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_24.dgn



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



Trevor L. Reed 06/10/2024

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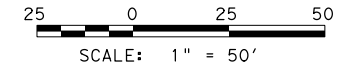
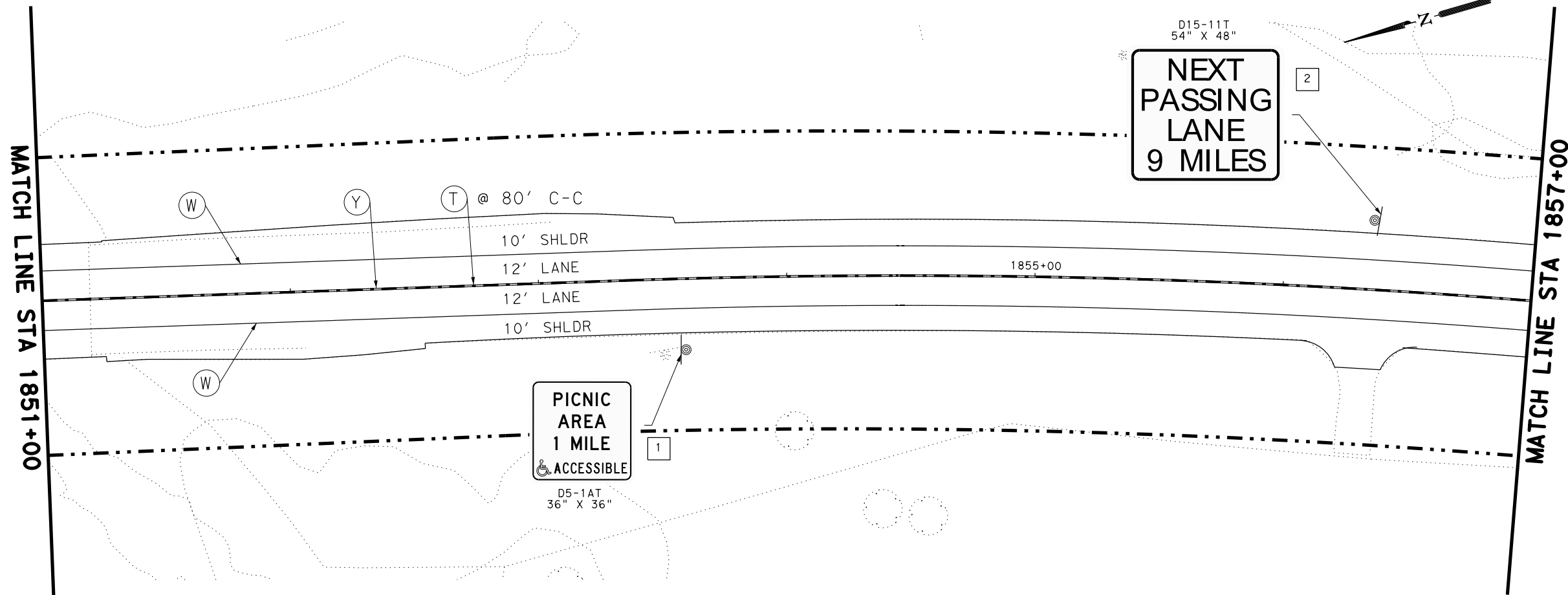


**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 24 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	227

DATE: 20-JUN-2024 13:18
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_25.dgn



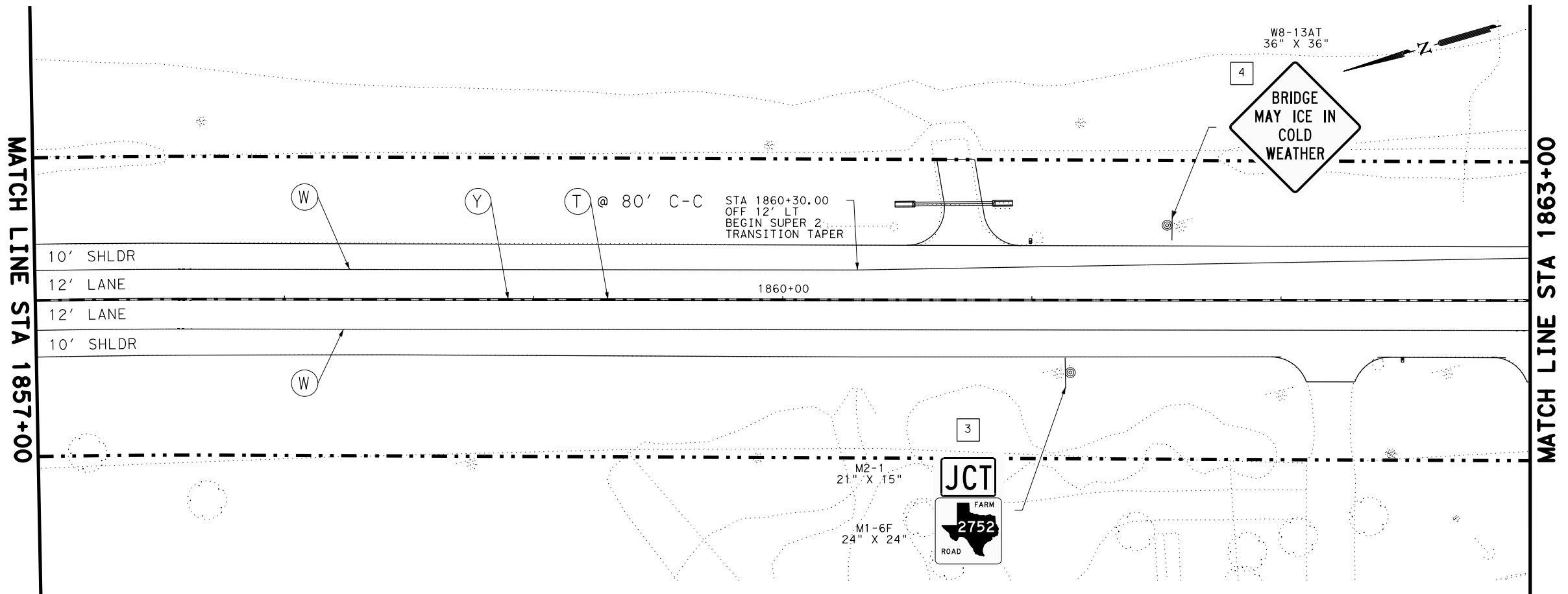
LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

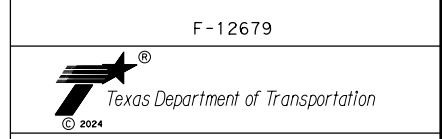
NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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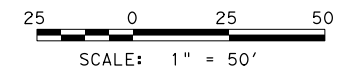
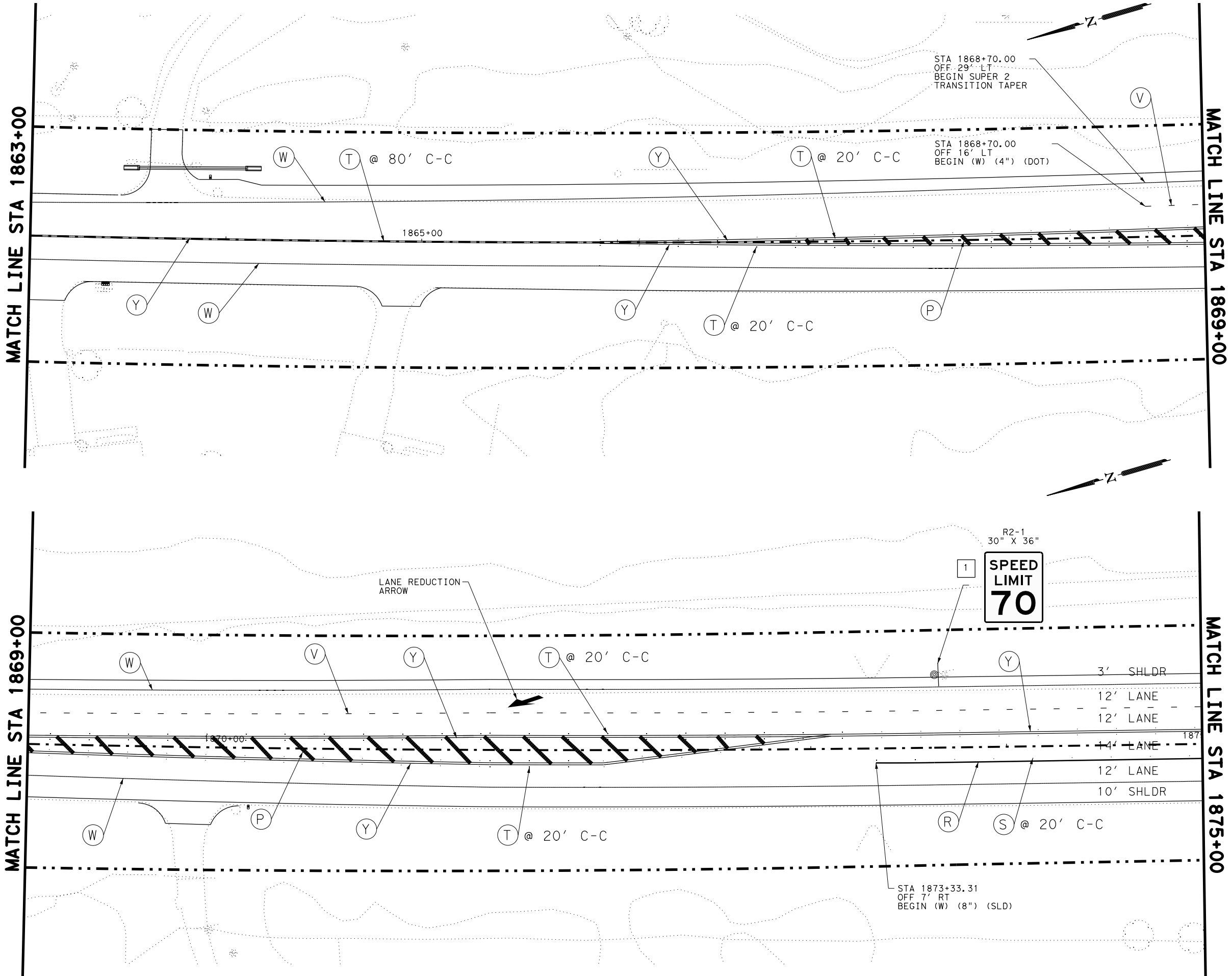


**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 25 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	228

DATE: 03-JUN-2024 19:40
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_26.dgn



- LEGEND**
- (O) PAV MRK (Y) (6") (SLD)
 - (P) PAV MRK (Y) (24") (SLD)
 - (Q) PAV MRK (Y) (6") (BRK)
 - (R) PAV MARK (W) (8") (SLD)
 - (S) TYPE I-C
 - (T) TYPE II-A-A
 - (U) PAV MRK (W) (24") (SLD)
 - (V) PAV MRK (W) (6") (DOT)
 - (W) PAV MRK (W) (6") (SLD)
 - (X) PAV MRK (W) (6") (BRK)
 - (Y) PAV MRK (Y) DBL (6") (SLD)
 - (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
 - [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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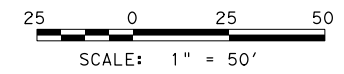
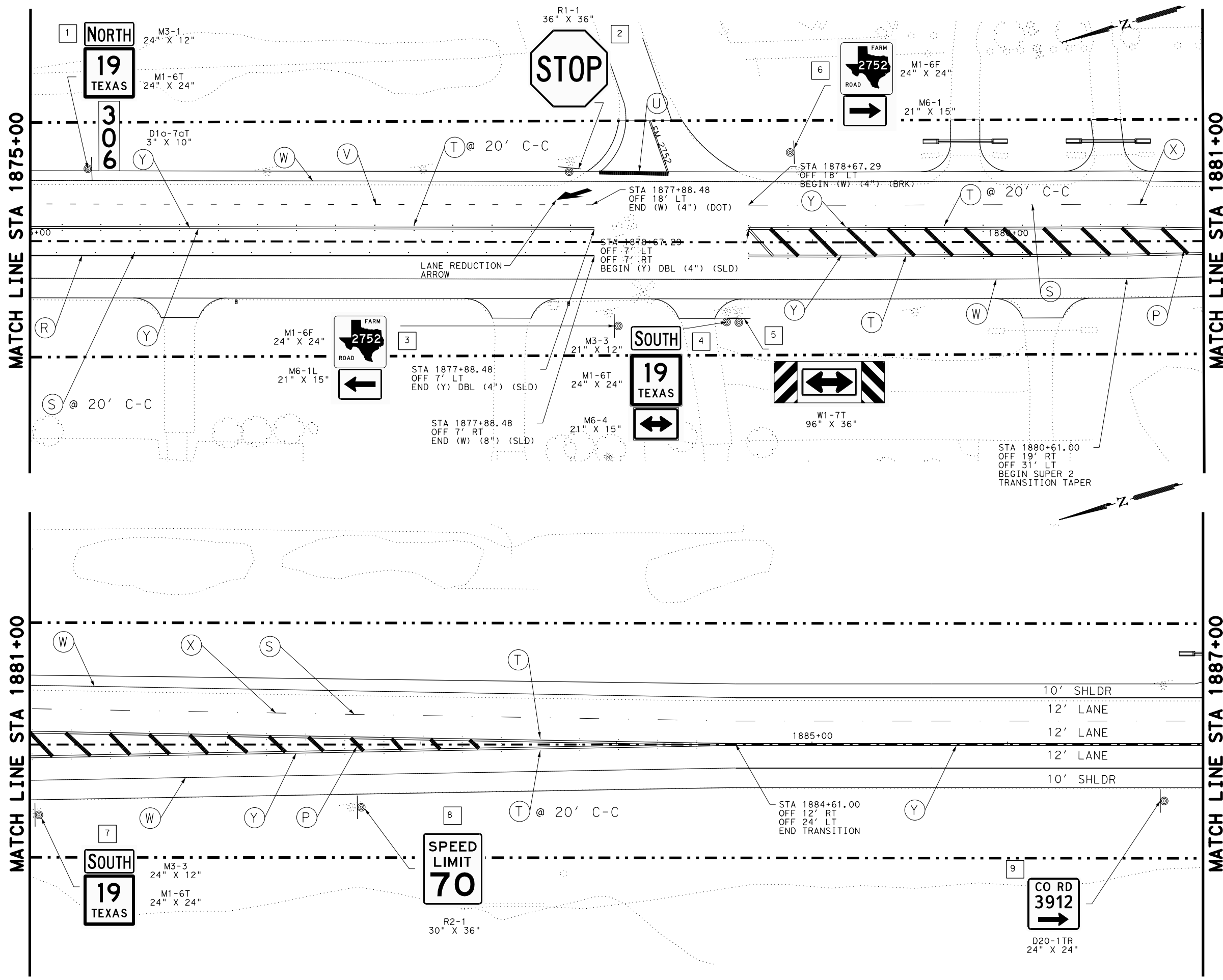


**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 26 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	229

DATE: 04-JUN-2024 13:41
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_27.dgn



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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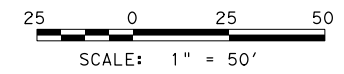
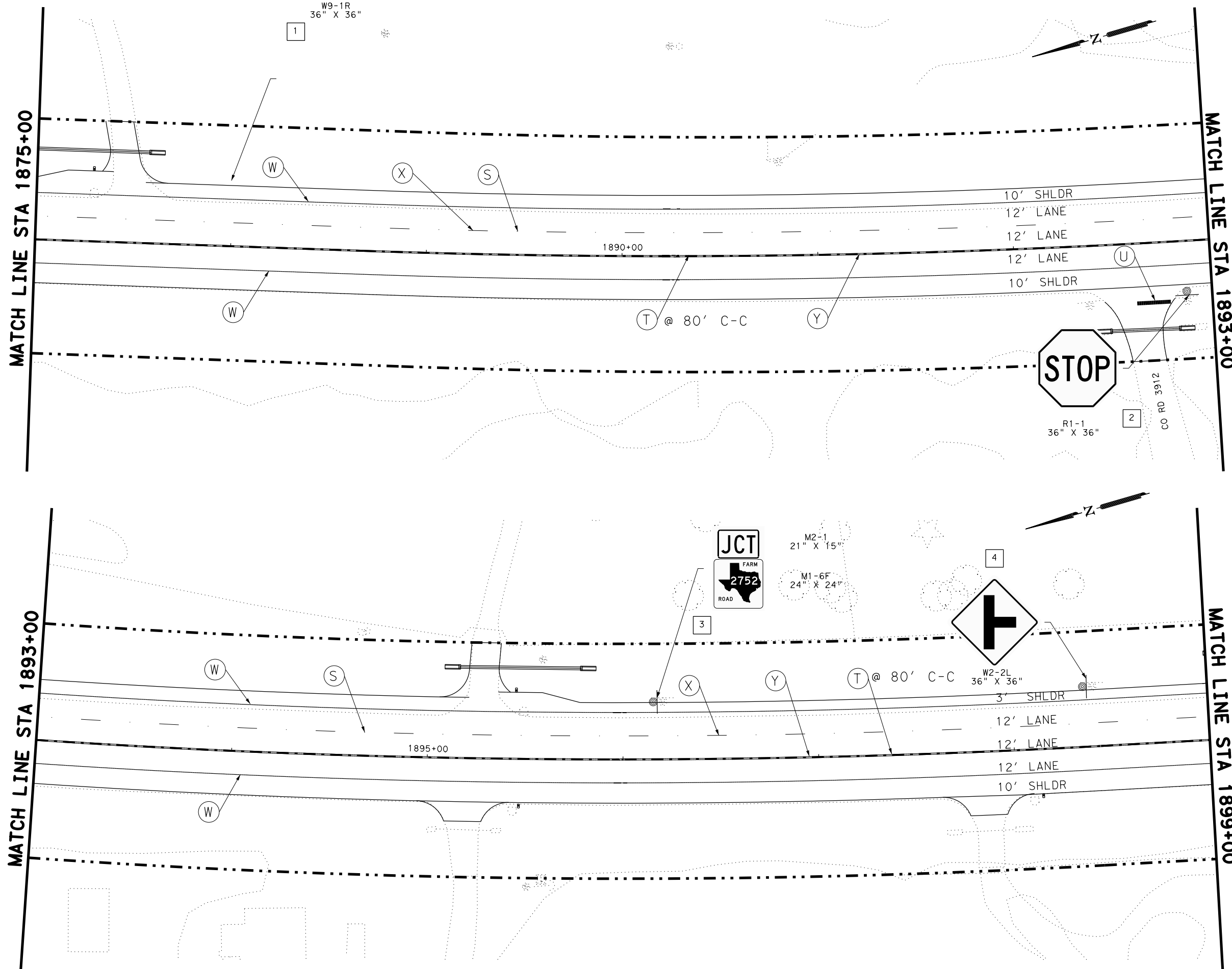


SH 19 SIGNING AND STRIPING SHEETS

SHEET 27 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	230

DATE: 03-JUN-2024 19:39
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_28.dgn



- LEGEND**
- PAV MRK (Y) (6") (SLD)
 - PAV MRK (Y) (24") (SLD)
 - PAV MRK (Y) (6") (BRK)
 - PAV MARK (W) (8") (SLD)
 - TYPE I-C
 - TYPE II-A-A
 - PAV MRK (W) (24") (SLD)
 - PAV MRK (W) (6") (DOT)
 - PAV MRK (W) (6") (SLD)
 - PAV MRK (W) (6") (BRK)
 - PAV MRK (Y) DBL (6") (SLD)
 - EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
 - SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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VOLKERT

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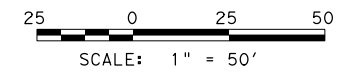
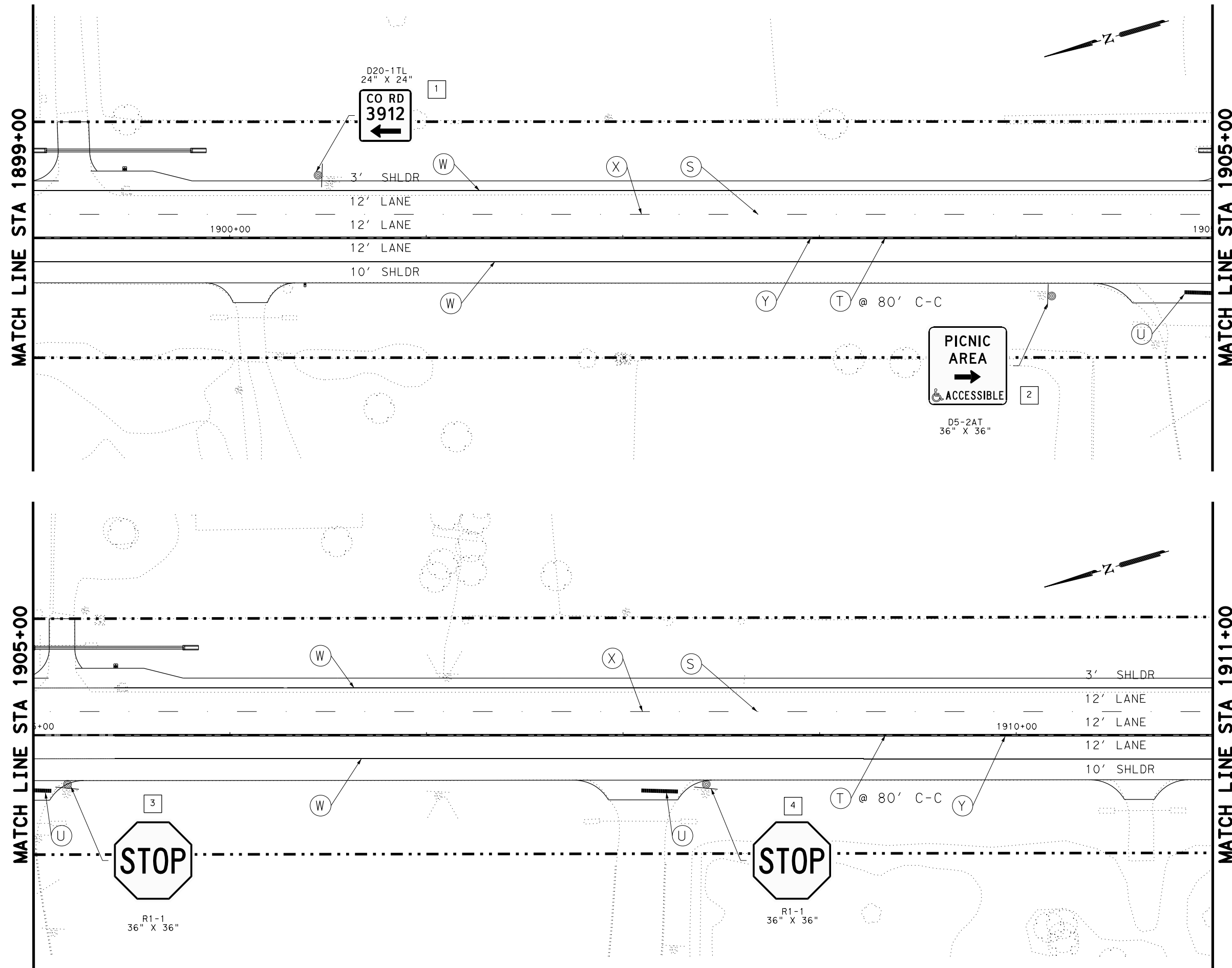


**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 28 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	231

DATE: 03-JUN-2024 19:40
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_29.dgn



- LEGEND**
- (O) PAV MRK (Y) (6") (SLD)
 - (P) PAV MRK (Y) (24") (SLD)
 - (Q) PAV MRK (Y) (6") (BRK)
 - (R) PAV MARK (W) (8") (SLD)
 - (S) TYPE I-C
 - (T) TYPE II-A-A
 - (U) PAV MRK (W) (24") (SLD)
 - (V) PAV MRK (W) (6") (DOT)
 - (W) PAV MRK (W) (6") (SLD)
 - (X) PAV MRK (W) (6") (BRK)
 - (Y) PAV MRK (Y) DBL (6") (SLD)
 - (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
 - [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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VOLKERT

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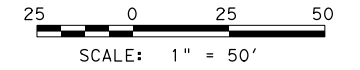
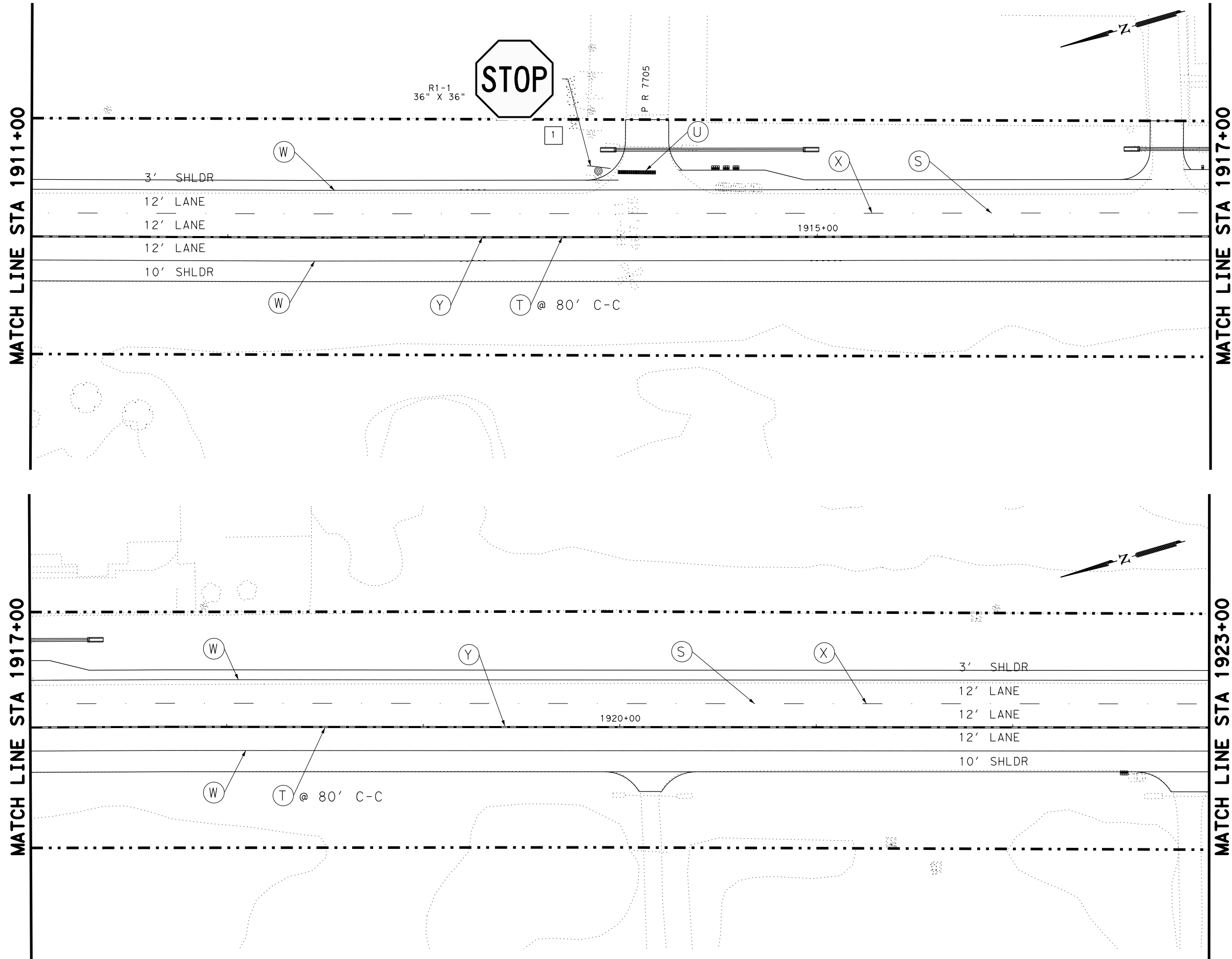


**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 29 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	232

DATE: 03-JUN-2024 19:40
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_30.dgn



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



06/10/2024

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F-12679



**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 30 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	233

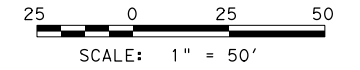
DATE: 03-JUN-2024 22:16
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_31.dgn

MATCH LINE STA 1923+00

MATCH LINE STA 1929+00

MATCH LINE STA 1929+00

MATCH LINE STA 1935+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

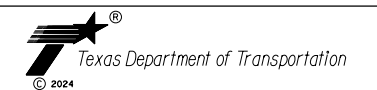
- NOTES:
1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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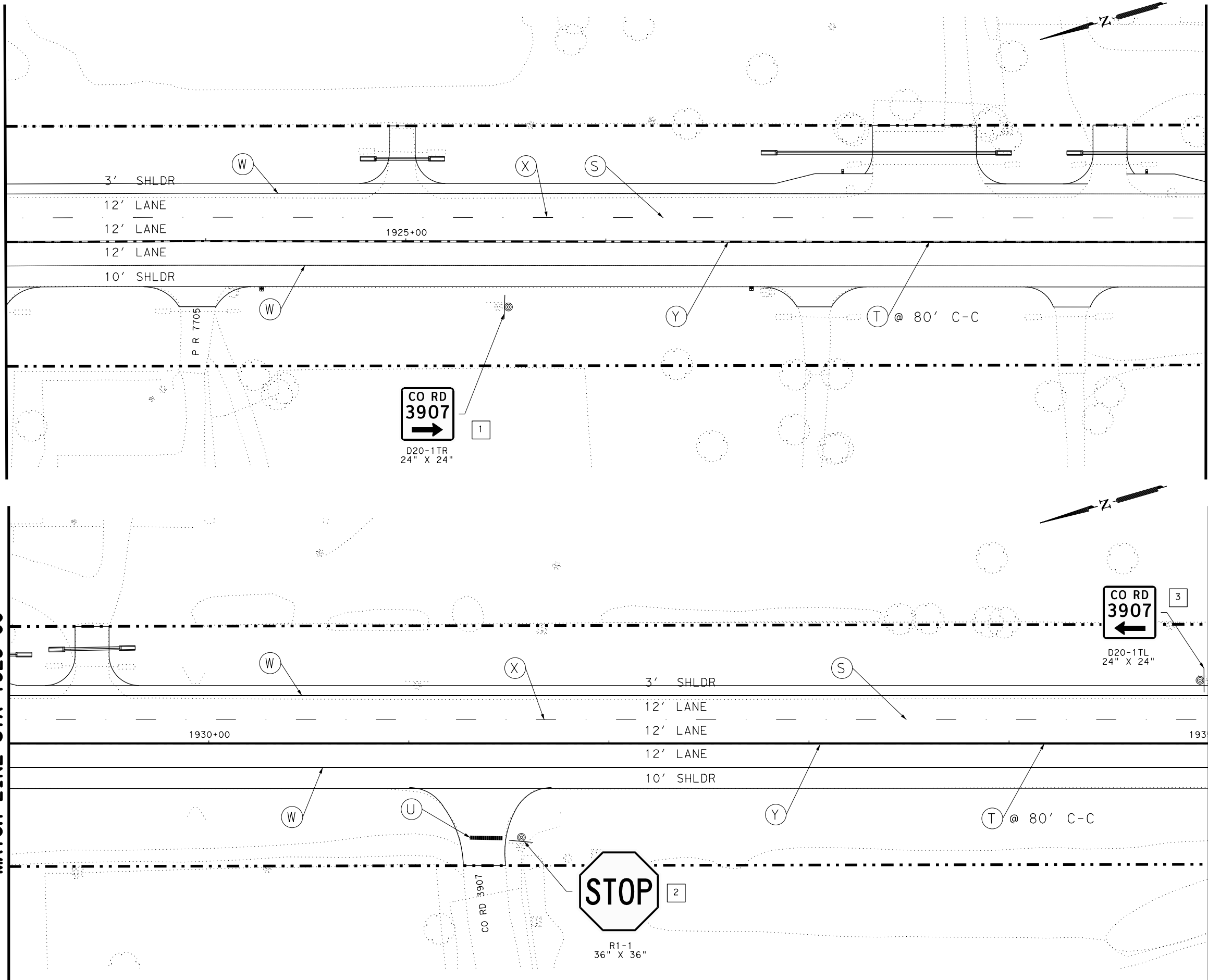
F-12679



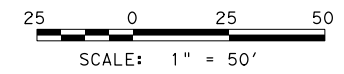
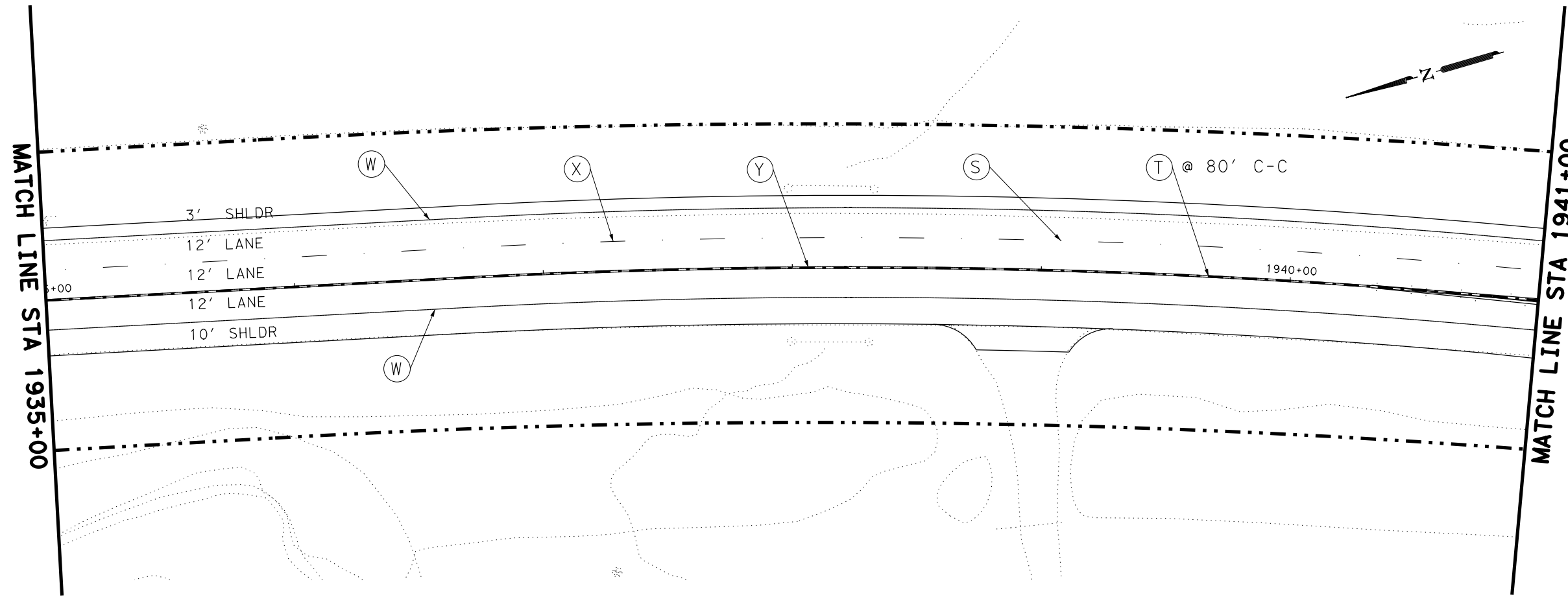
**SH 19
SIGNING AND STRIPING
SHEETS**

SHEET 31 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	234



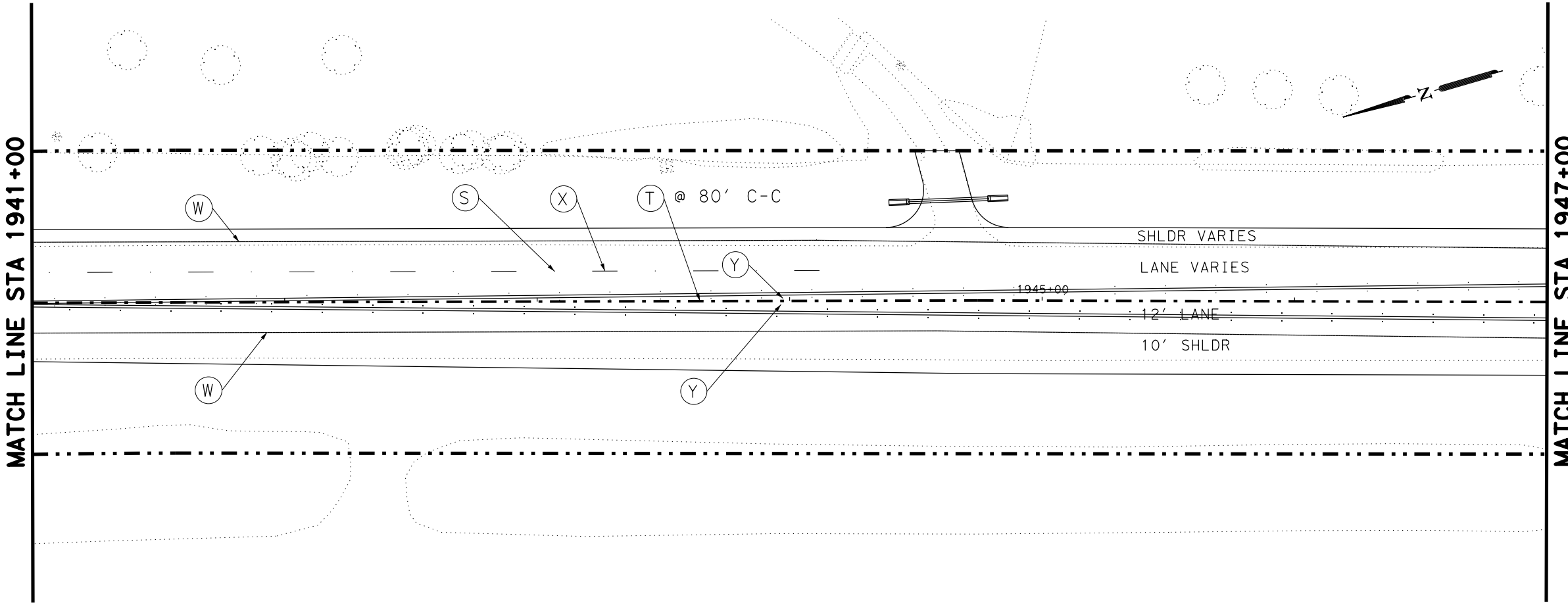
DATE: 03-JUN-2024 19:40
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_32.dgn



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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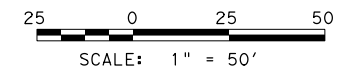
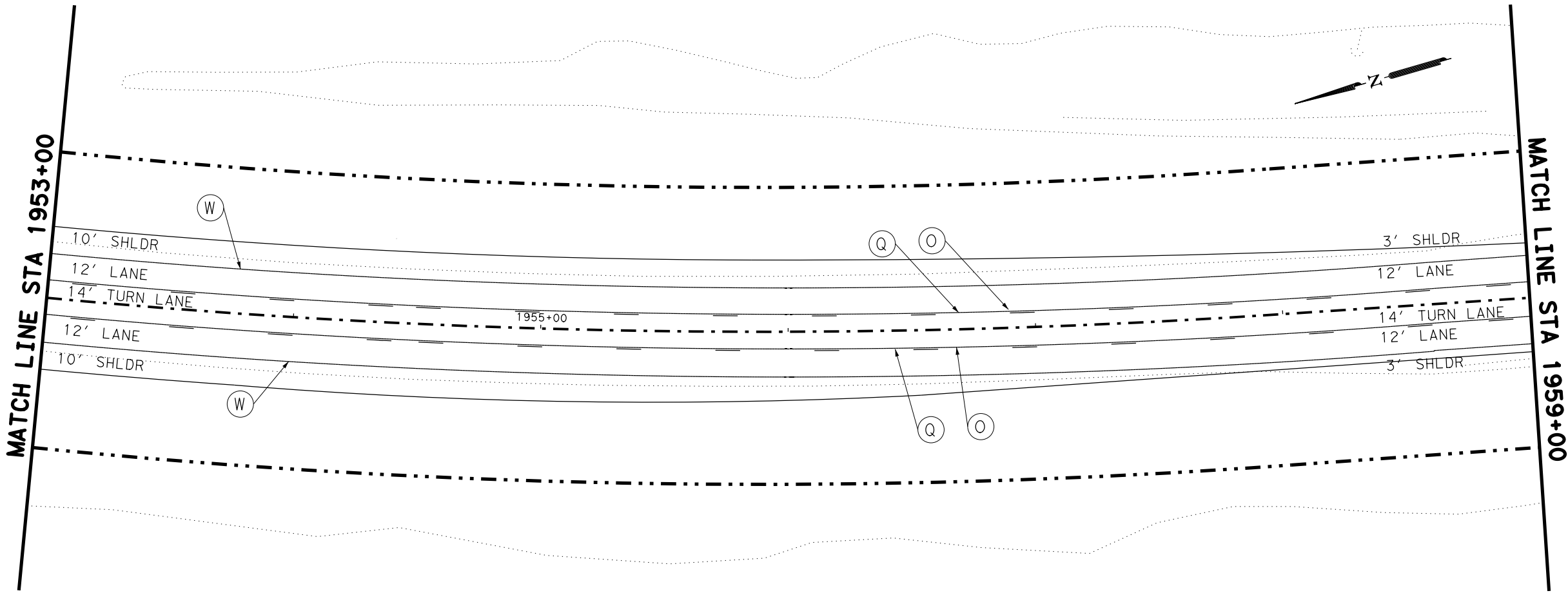
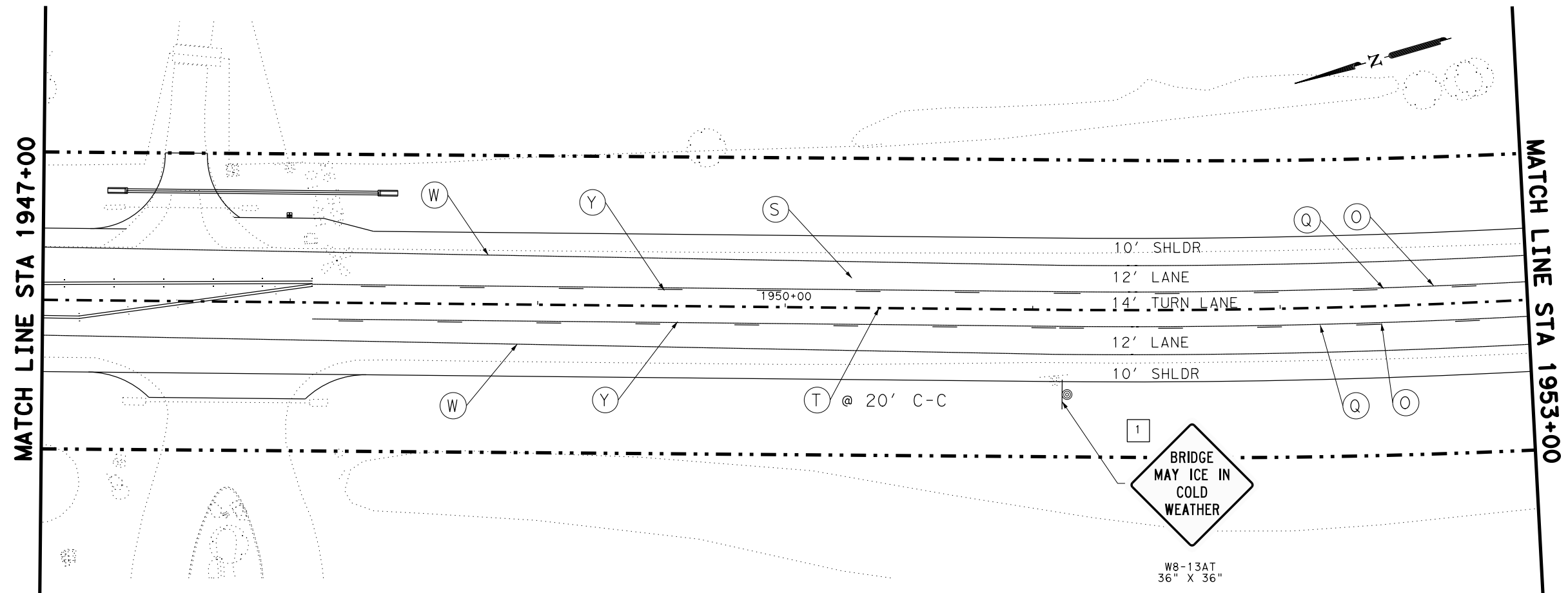


**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 32 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	235

DATE: 03-JUN-2024 22:16
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_33.dgn



- LEGEND**
- (O) PAV MRK (Y) (6") (SLD)
 - (P) PAV MRK (Y) (24") (SLD)
 - (Q) PAV MRK (Y) (6") (BRK)
 - (R) PAV MARK (W) (8") (SLD)
 - (S) TYPE I-C
 - (T) TYPE II-A-A
 - (U) PAV MRK (W) (24") (SLD)
 - (V) PAV MRK (W) (6") (DOT)
 - (W) PAV MRK (W) (6") (SLD)
 - (X) PAV MRK (W) (6") (BRK)
 - (Y) PAV MRK (Y) DBL (6") (SLD)
 - (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
 - [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 33 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	236

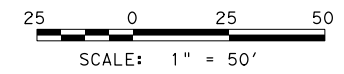
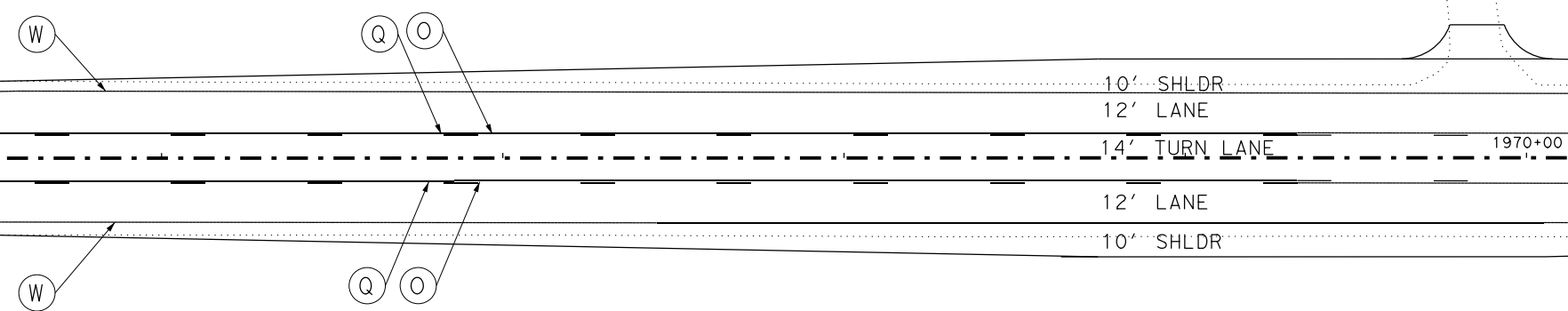
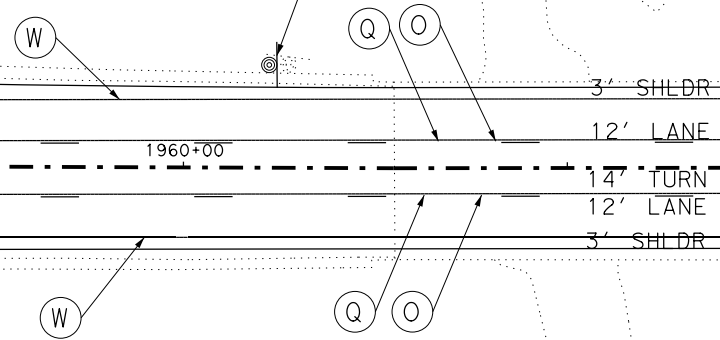
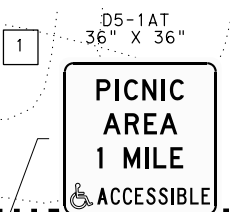
DATE: 03-JUN-2024 19:39
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_34.dgn

MATCH LINE STA 1959+00

MATCH LINE STA 1965+00

MATCH LINE STA 1965+00

MATCH LINE STA 1971+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-1G PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 34 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	237

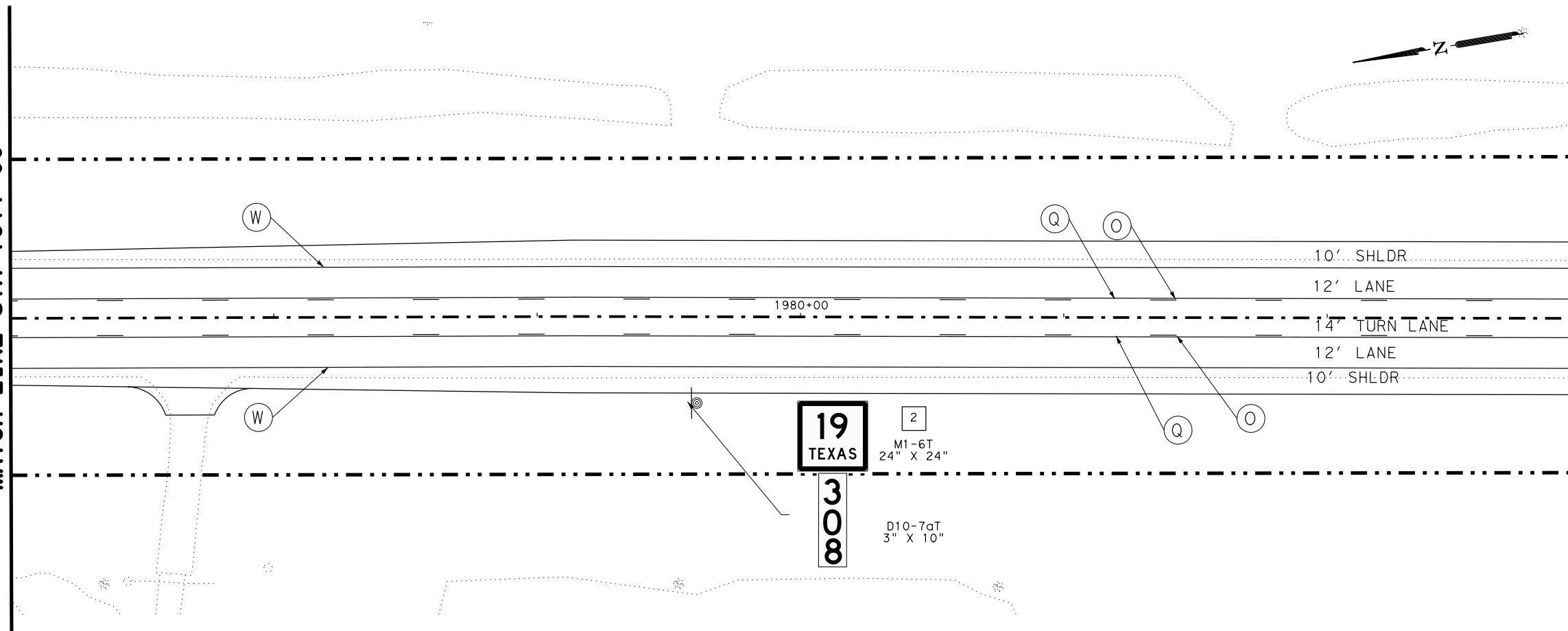
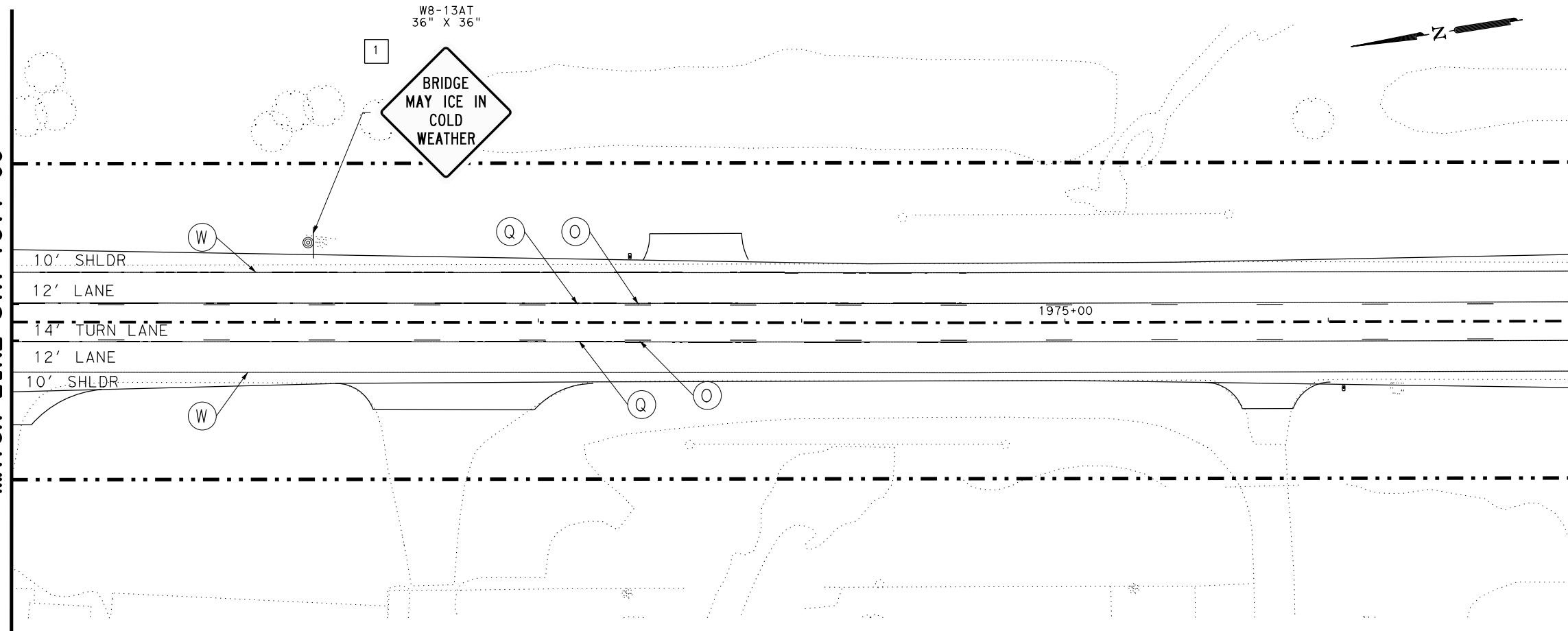
DATE: 03-JUN-2024 22:16
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_35.dgn

MATCH LINE STA 1971+00

MATCH LINE STA 1977+00

MATCH LINE STA 1977+00

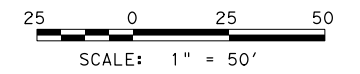
MATCH LINE STA 1983+00



W8-13AT
36" X 36"

2
M1-6T
24" X 24"

3
D10-7aT
3" X 10"



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- 1 SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
SIGNING AND STRIPING
SHEETS**

SHEET 35 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	238

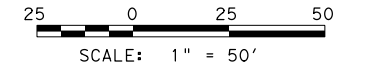
DATE: 03-JUN-2024 19:40
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_36.dgn

MATCH LINE STA 1983+00

MATCH LINE STA 1989+00

MATCH LINE STA 1989+00

MATCH LINE STA 1995+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:

1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
SIGNING AND STRIPING
SHEETS**

SHEET 36 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	239

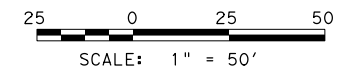
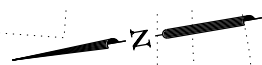
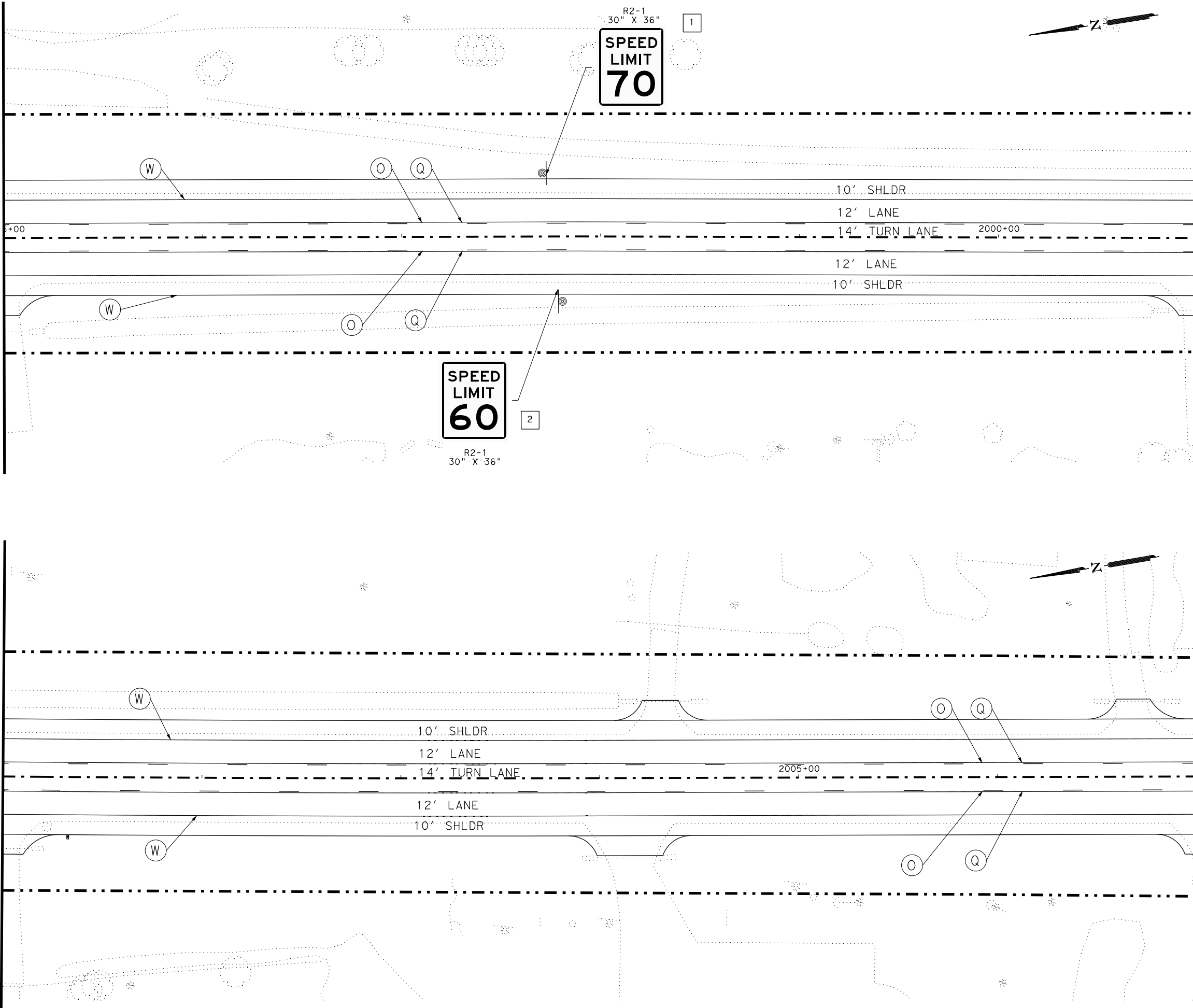
DATE: 03-JUN-2024 19:39
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_37.dgn

MATCH LINE STA 1995+00

MATCH LINE STA 2001+00

MATCH LINE STA 2001+00

MATCH LINE STA 2007+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
 SIGNING AND STRIPING
 SHEETS**

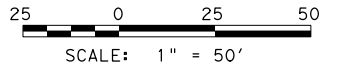
SHEET 37 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	240

DATE: 03-JUN-2024 19:40
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_38.dgn

D15-10T
 54" X 42"

PASSING
 LANE
 1 MILES



LEGEND

- PAV MRK (Y) (6") (SLD)
- Ⓟ PAV MRK (Y) (24") (SLD)
- Ⓠ PAV MRK (Y) (6") (BRK)
- Ⓡ PAV MARK (W) (8") (SLD)
- Ⓢ TYPE I-C
- Ⓣ TYPE II-A-A
- Ⓤ PAV MRK (W) (24") (SLD)
- Ⓥ PAV MRK (W) (6") (DOT)
- Ⓦ PAV MRK (W) (6") (SLD)
- Ⓧ PAV MRK (W) (6") (BRK)
- Ⓨ PAV MRK (Y) DBL (6") (SLD)
- Ⓩ EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- 1 SIGN NO. (SOSS)

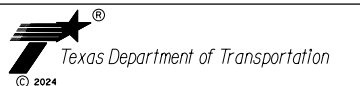
NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 38 OF 40

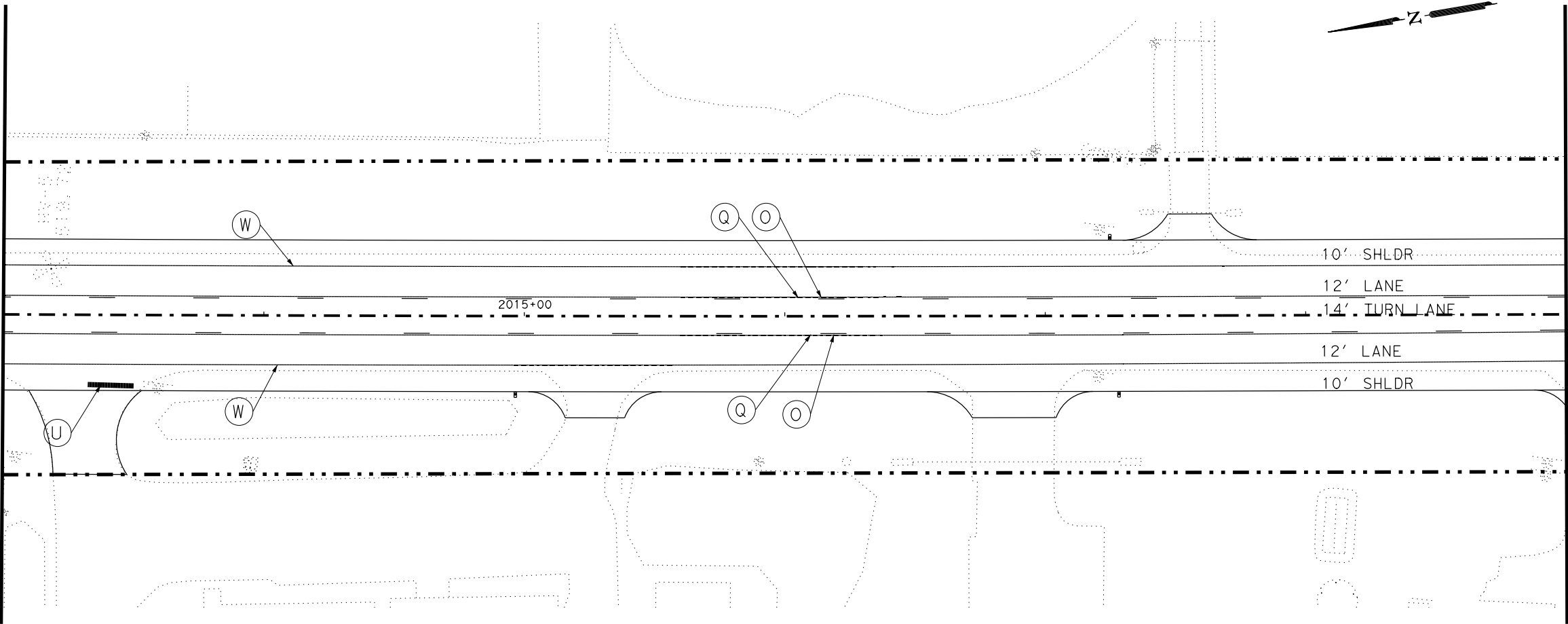
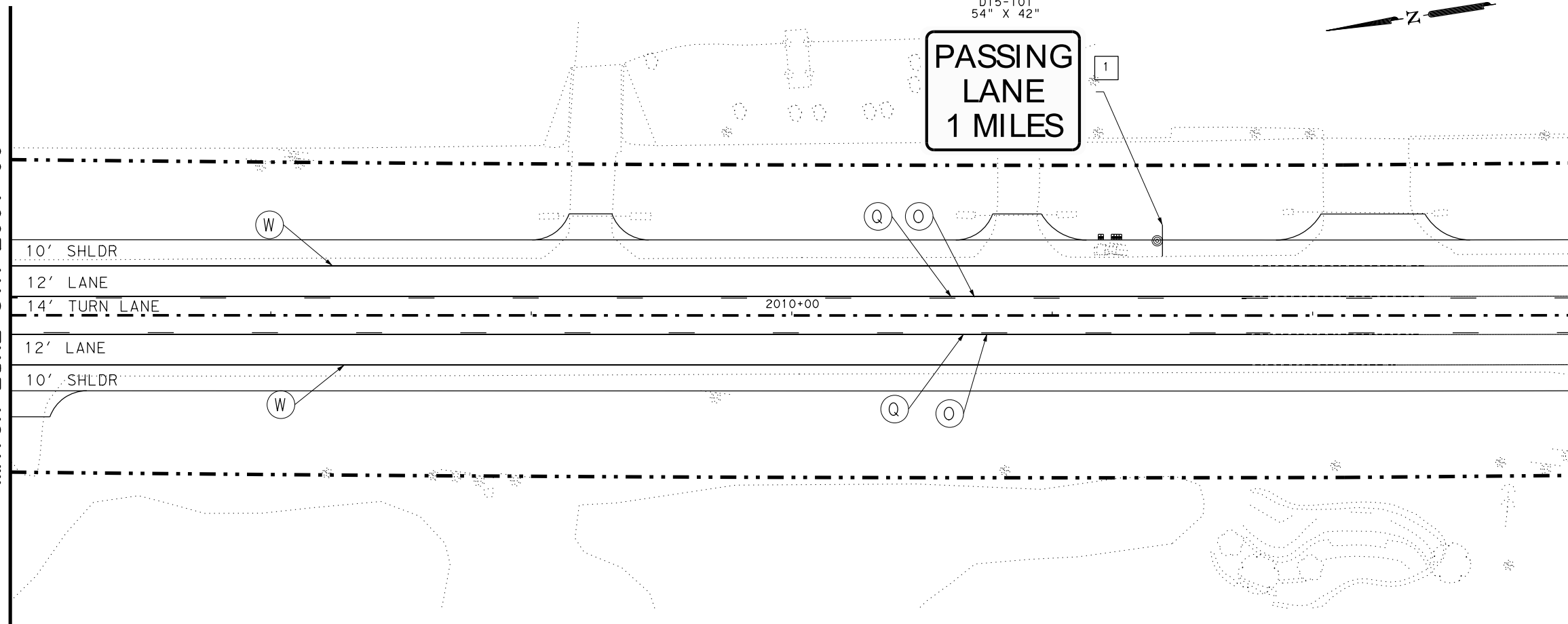
CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	241

MATCH LINE STA 2007+00

MATCH LINE STA 2013+00

MATCH LINE STA 2013+00

MATCH LINE STA 2019+00



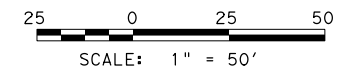
DATE: 03-JUN-2024 19:40
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_39.dgn

MATCH LINE STA 2019+00

MATCH LINE STA 2025+00

MATCH LINE STA 2025+00

MATCH LINE STA 2031+00



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

NOTES:
 1. ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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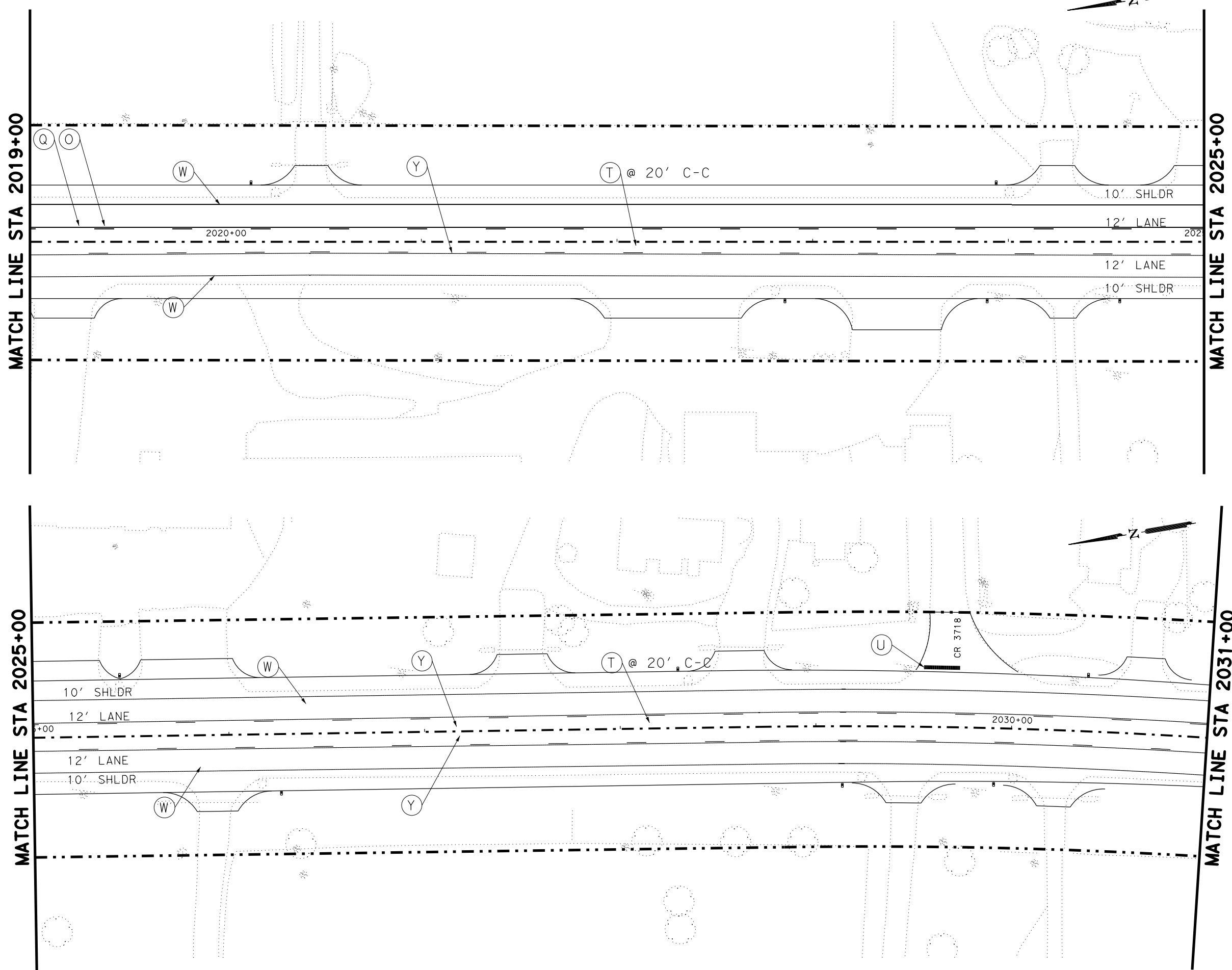
F-12679



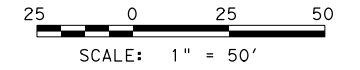
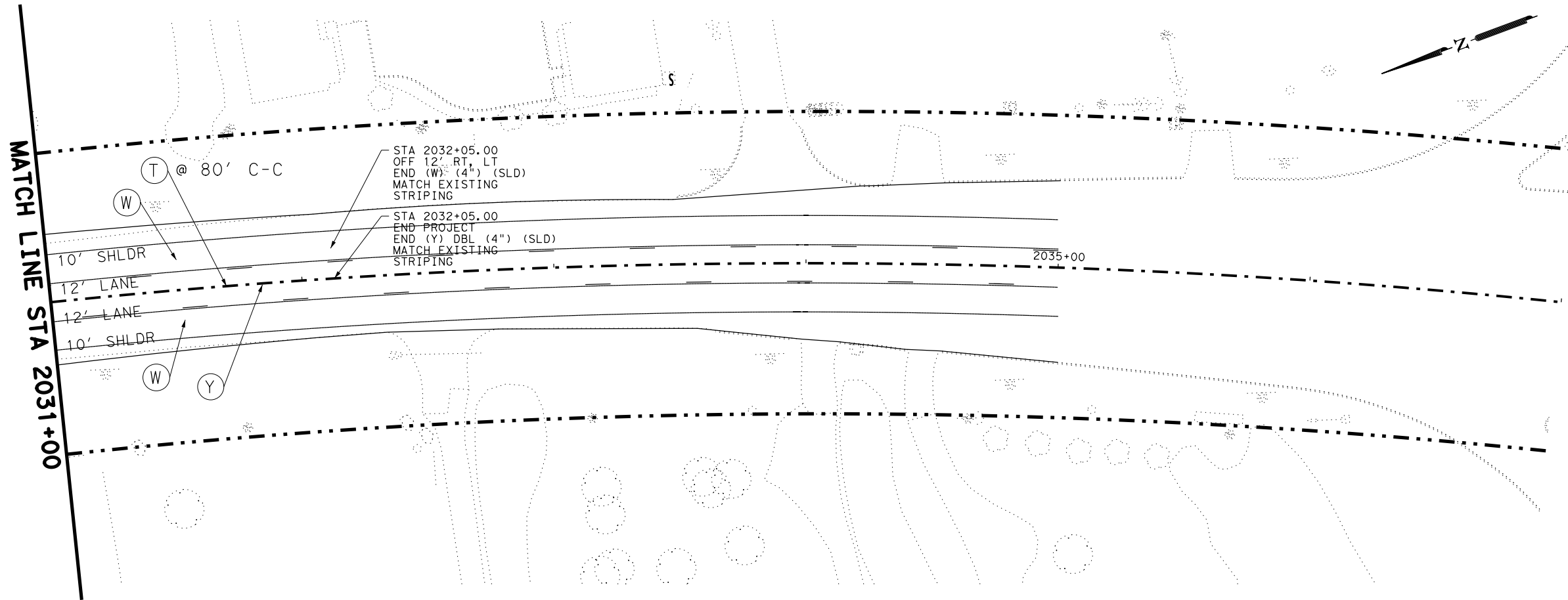
**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 39 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	242



DATE: 03-JUN-2024 19:40
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SH19_TYLER_SIGNING & STRIPING_40.dgn



LEGEND

- (O) PAV MRK (Y) (6") (SLD)
- (P) PAV MRK (Y) (24") (SLD)
- (Q) PAV MRK (Y) (6") (BRK)
- (R) PAV MARK (W) (8") (SLD)
- (S) TYPE I-C
- (T) TYPE II-A-A
- (U) PAV MRK (W) (24") (SLD)
- (V) PAV MRK (W) (6") (DOT)
- (W) PAV MRK (W) (6") (SLD)
- (X) PAV MRK (W) (6") (BRK)
- (Y) PAV MRK (Y) DBL (6") (SLD)
- (Z) EXIST PAV MRK OR PREVIOUSLY PLACED WRK ZN PAV MRK
- [1] SIGN NO. (SOSS)

- NOTES:
- ALL EXISTING D3-16 PLAQUES TO BE SALVAGED AND REINSTALLED ON PROPOSED SMALL SIGN STRUCTURE. ALL WORK AND MATERIAL IS SUBSIDIARY TO ITEM 644.



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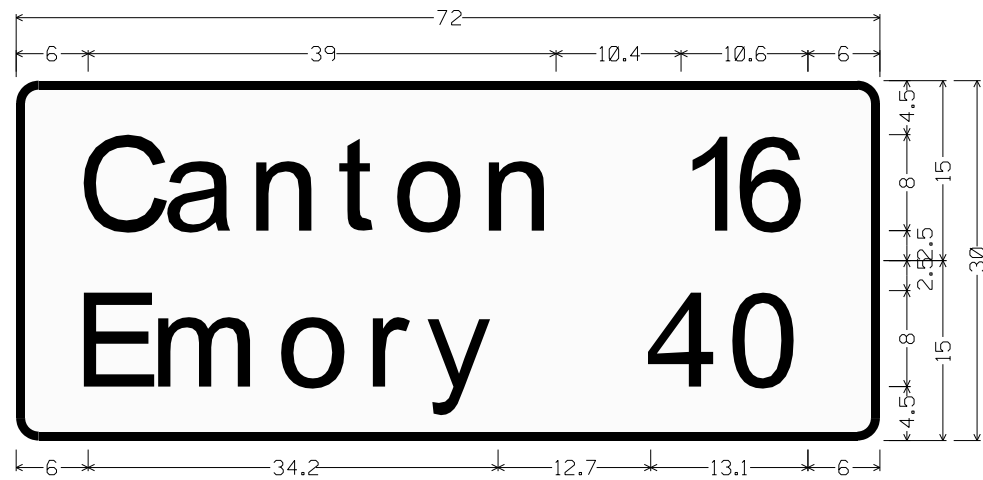


**SH 19
 SIGNING AND STRIPING
 SHEETS**

SHEET 40 OF 40

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYLER		HENDERSON	243

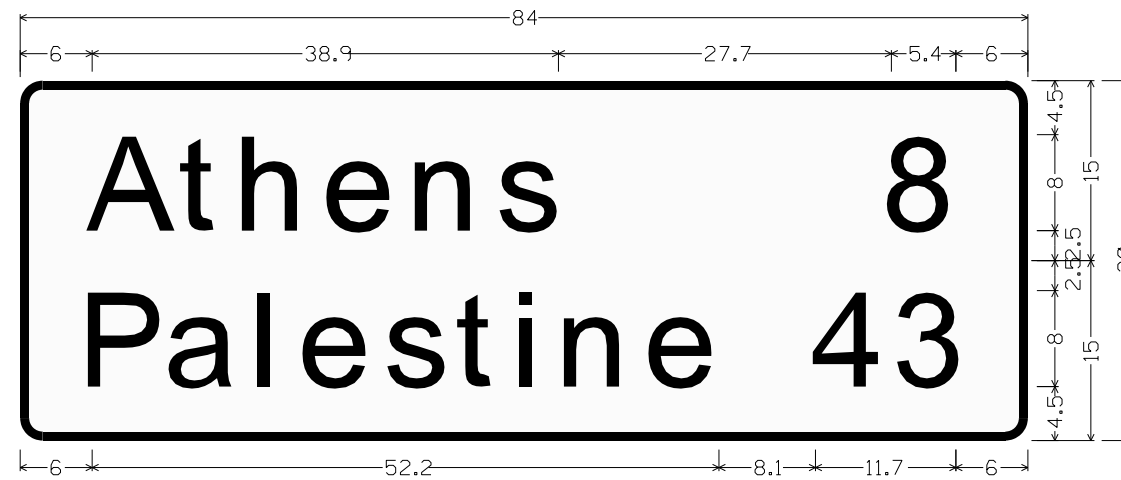
DATE: 10-JUN-2024 13:27
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\8. Traffic\SE_Standards\041_SIGN_DETS_01.dgn



D2-2 8in;

1.9" Radius, 0.8" Border, White on Green;
"Canton", ClearviewHwy-3-W; "16", ClearviewHwy-3-W;

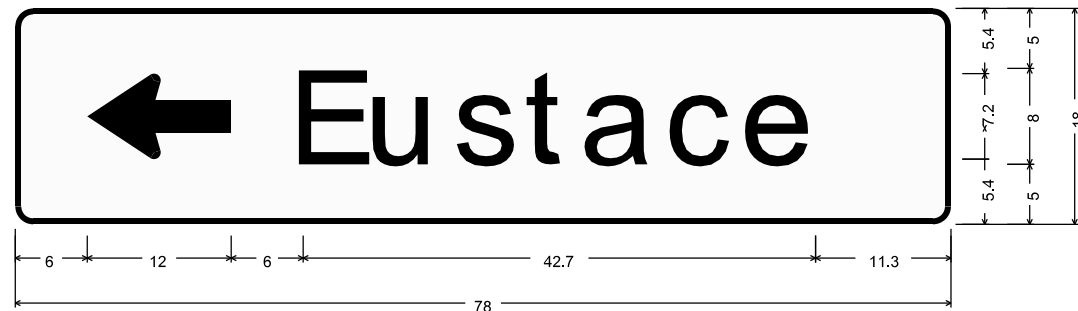
1.9" Radius, 0.8" Border, White on Green;
"Emory", ClearviewHwy-3-W; "40", ClearviewHwy-3-W;



D2-2 8in;

1.9" Radius, 0.8" Border, White on Green;
"Athens", ClearviewHwy-3-W; "8", ClearviewHwy-3-W;

1.9" Radius, 0.8" Border, White on Green;
"Palestine", ClearviewHwy-3-W; "43", ClearviewHwy-3-W;



D1-1 8in LT;

1.5" Radius, 0.5" Border, White on, Green;
Standard Arrow Custom 12.0" X 7.1" 180"; "Eustace", ClearviewHwy-3-W;



DIGITALLY SIGNED
ON 02/15/2022

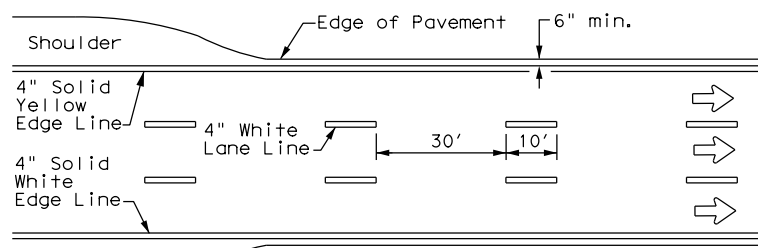


SH 19 SIGN DETAILS

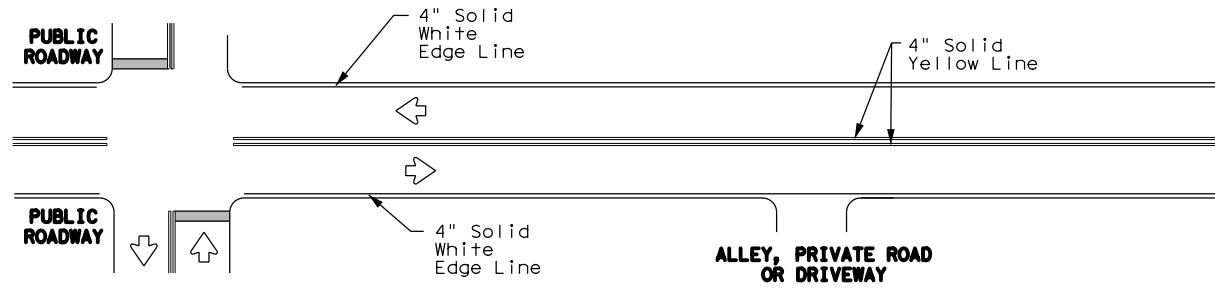
SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYL	HENDERSON	244	

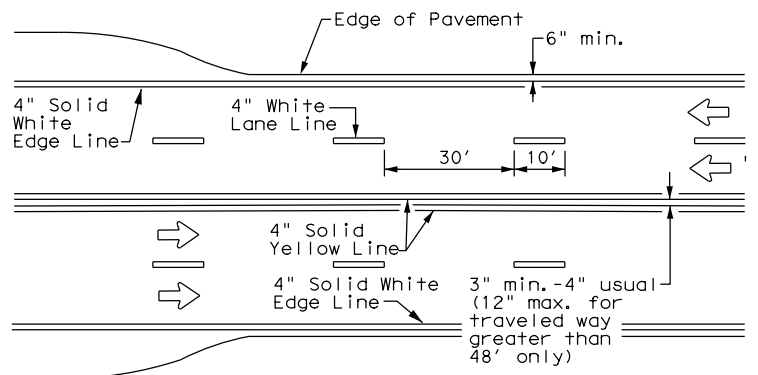
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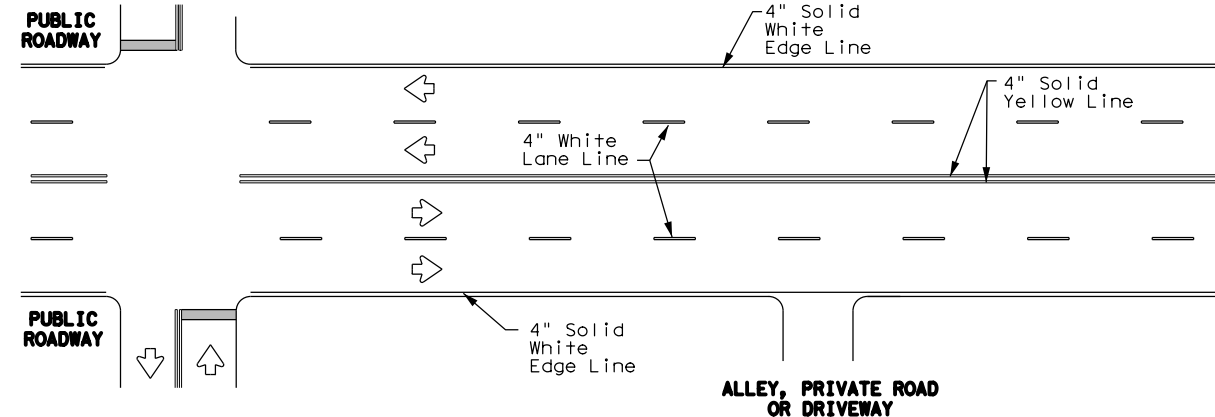
**EDGE LINE AND LANE LINES
ONE-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**



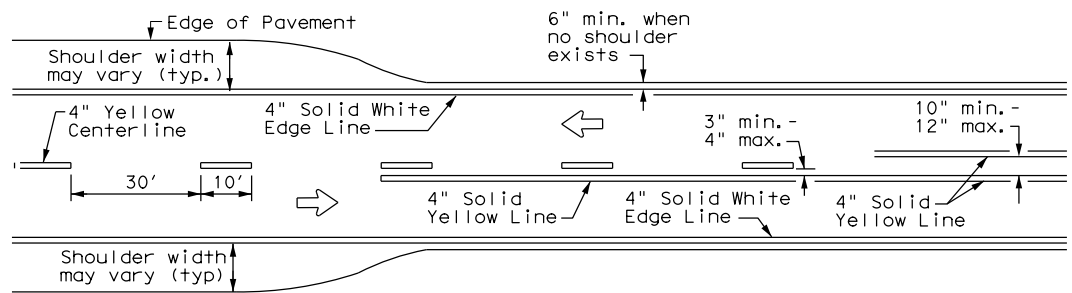
**TYPICAL TWO-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS**



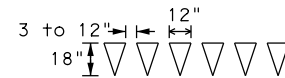
**CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**



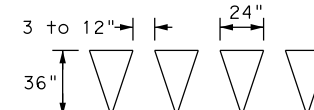
**TYPICAL MULTI-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS**



**TWO LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**

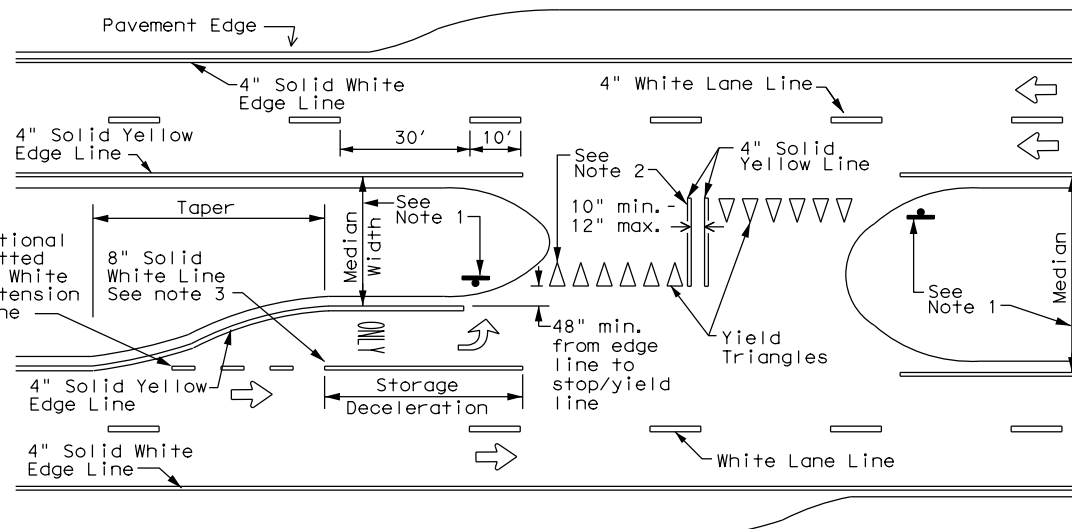


For posted speed on road being marked equal to or less than 40 MPH.



For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

- Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs are optional as determined by the Engineer.
- Install median striping (double yellow centerlines and stop bars/yield triangles) when a 50' or greater median centerline can be placed. Stop bars shall only be used with stop signs. Yield triangles shall only be used with yield signs.
- Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

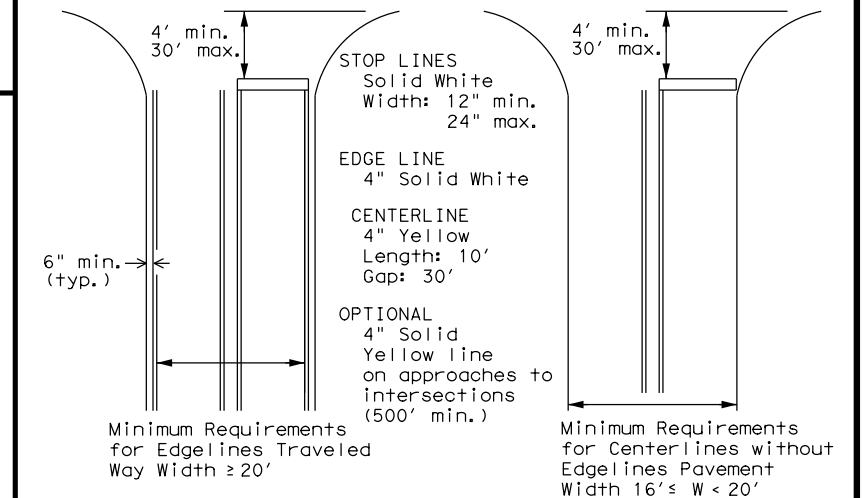
GENERAL NOTES

- Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.
- The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to the inside of edgeline of a two lane roadway.

MATERIAL SPECIFICATIONS

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

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



**GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE**

Based on Traveled Way and Pavement Widths for Undivided Highways



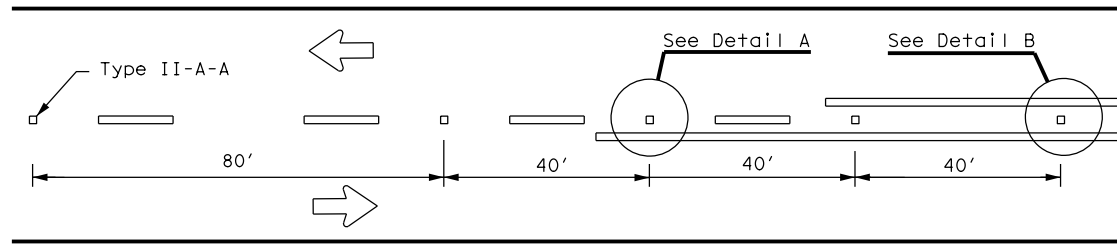
**TYPICAL STANDARD
PAVEMENT MARKINGS**

PM(1)-20

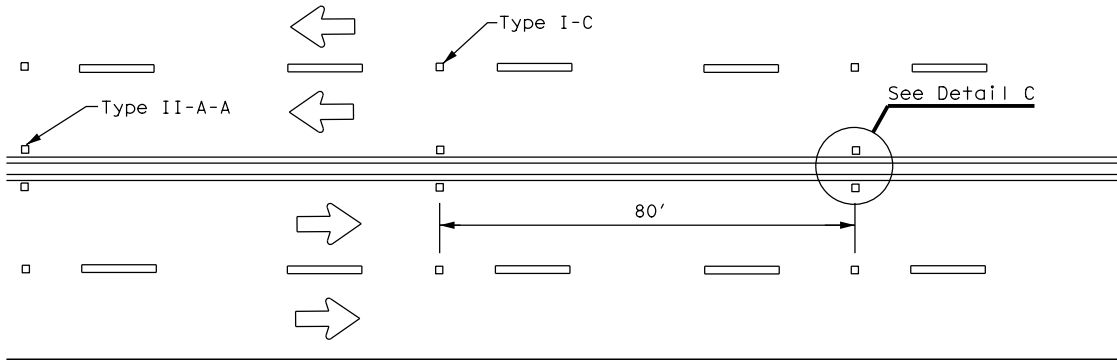
FILE: pm1-20.dgn	DN:	CK:	DW:	CK:
© TxDOT November 1978	CONT	SECT	JOB	HIGHWAY
8-95 3-03 REVISIONS	0108	03	041	SH 19
5-00 2-12	DIST	COUNTY	SHEET NO.	
8-00 6-20	TYL	HENDERSON	245	

REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

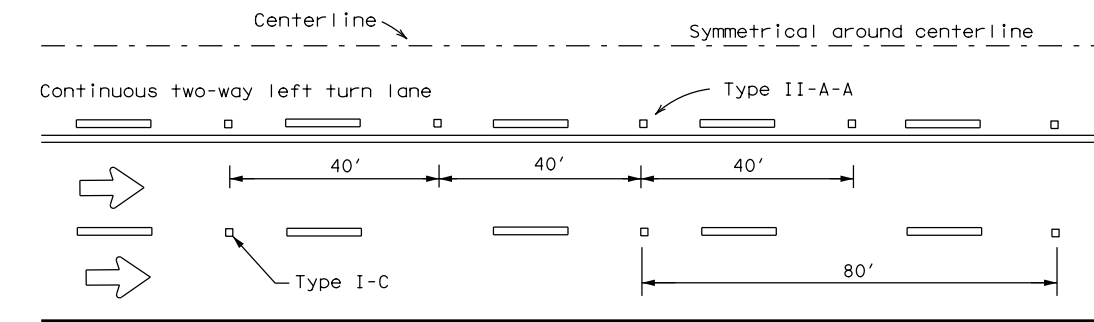
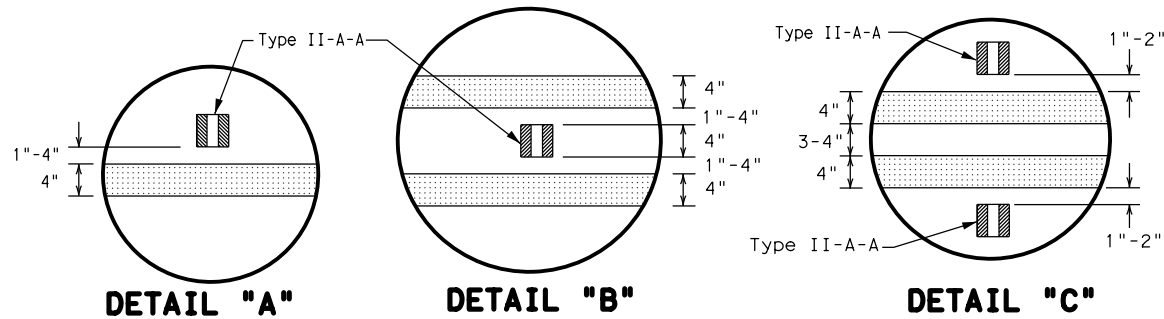
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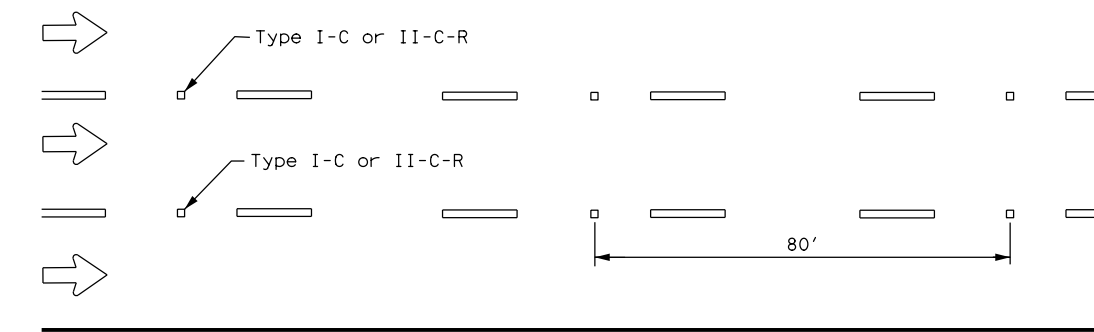
CENTERLINE FOR ALL TWO LANE ROADWAYS



**CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY HIGHWAYS**



CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE

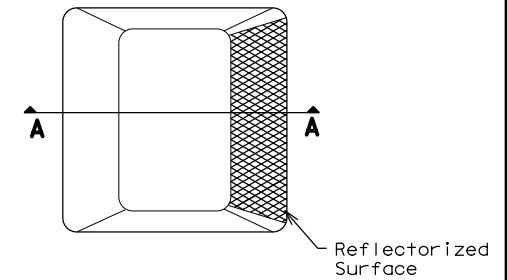


LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

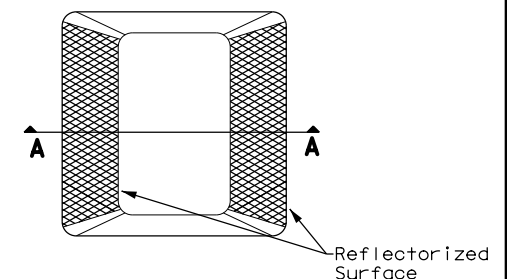
Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

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

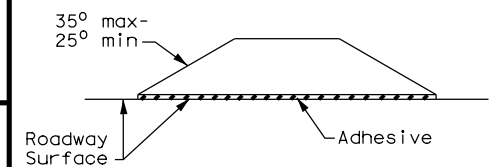
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

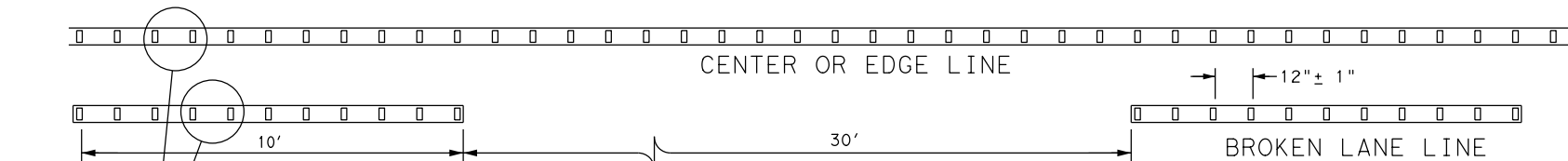
GENERAL NOTES

- All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
- On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.



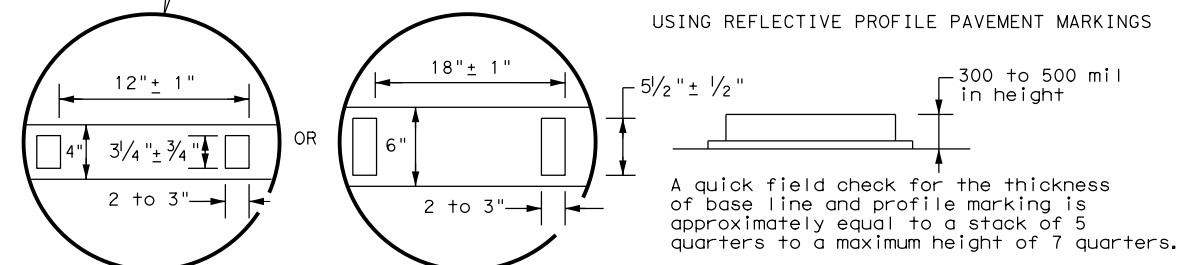
**POSITION GUIDANCE USING
RAISED MARKERS
REFLECTORIZED PROFILE
MARKINGS
PM(2) - 20**

FILE: pm2-20.dgn	DN:	CK:	DW:	CK:
© TxDOT April 1977	CONT	SECT	JOB	HIGHWAY
4-92 2-10 REVISIONS	0108	03	041	SH 19
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00 6-20	TYL	HENDERSON		246



**REFLECTORIZED PROFILE
PATTERN DETAIL**

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

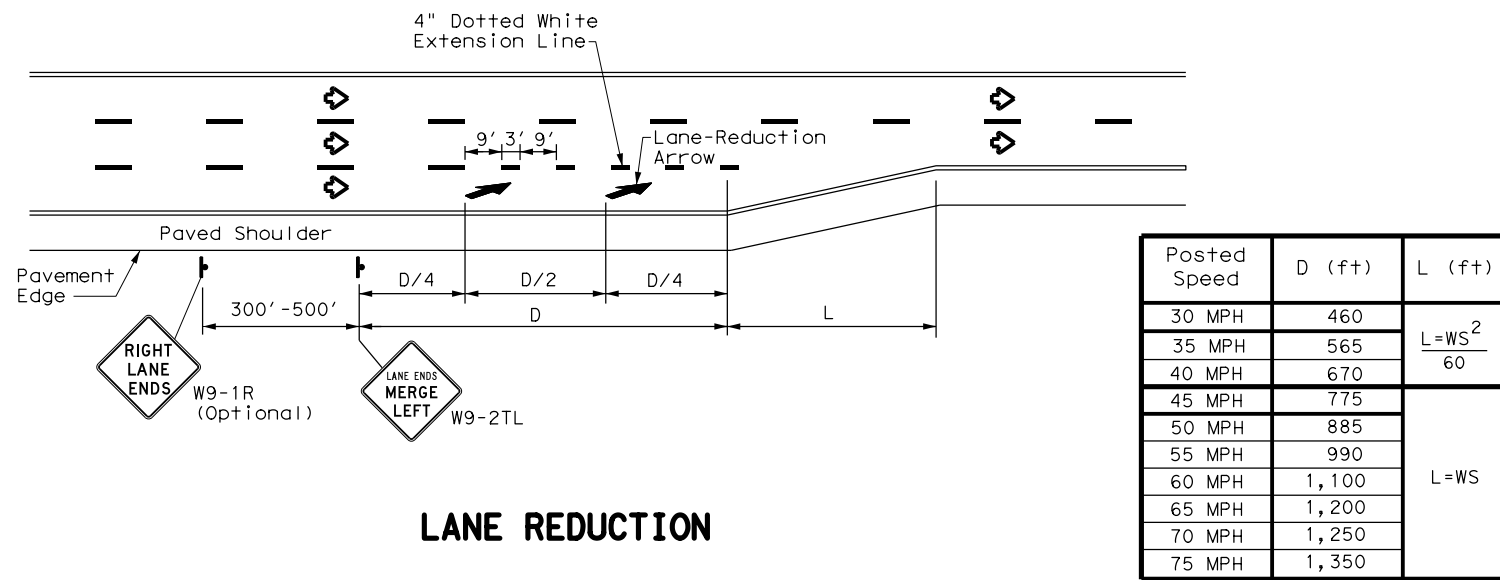


NOTE

Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

DATE: FILE:

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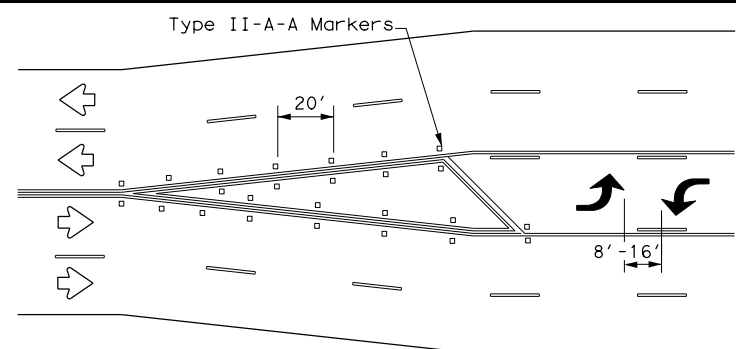
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L = \frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	L=WS
45 MPH	775	
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

NOTES

- 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.
- On divided highways, an additional W9-1R "RIGHT LANE ENDS" sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
- 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.
- For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

GENERAL NOTES

- 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.
- 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.
- 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.
- Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

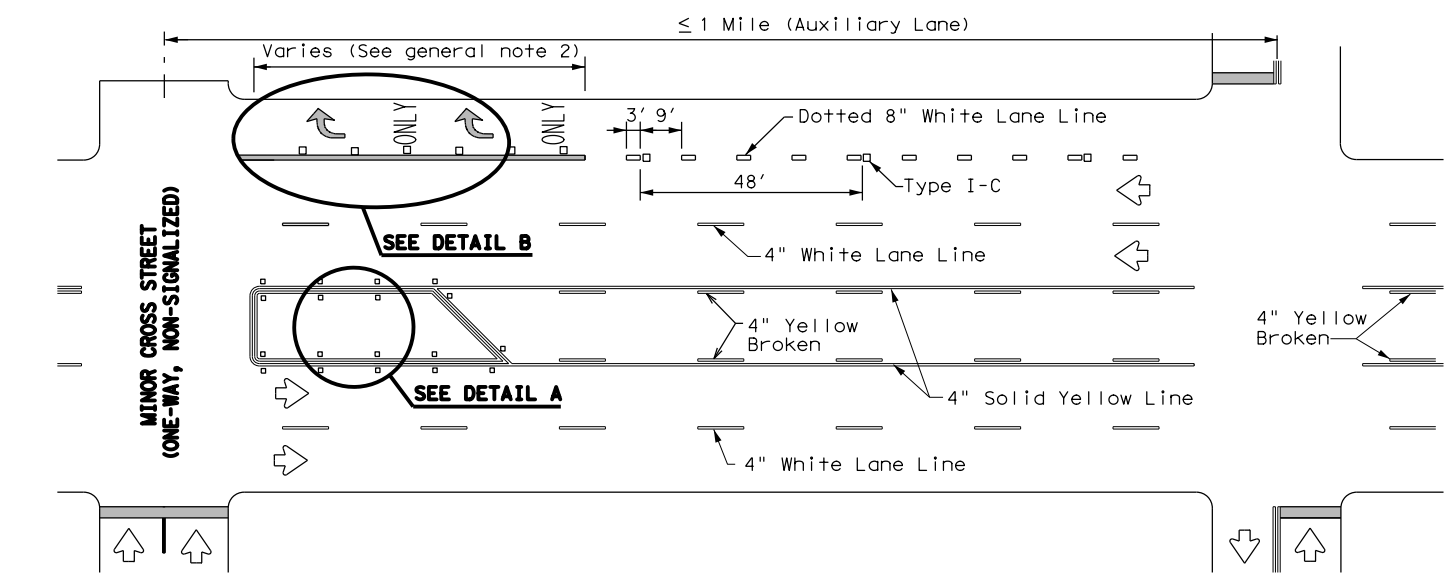


A two-way left-turn (TWLTL) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

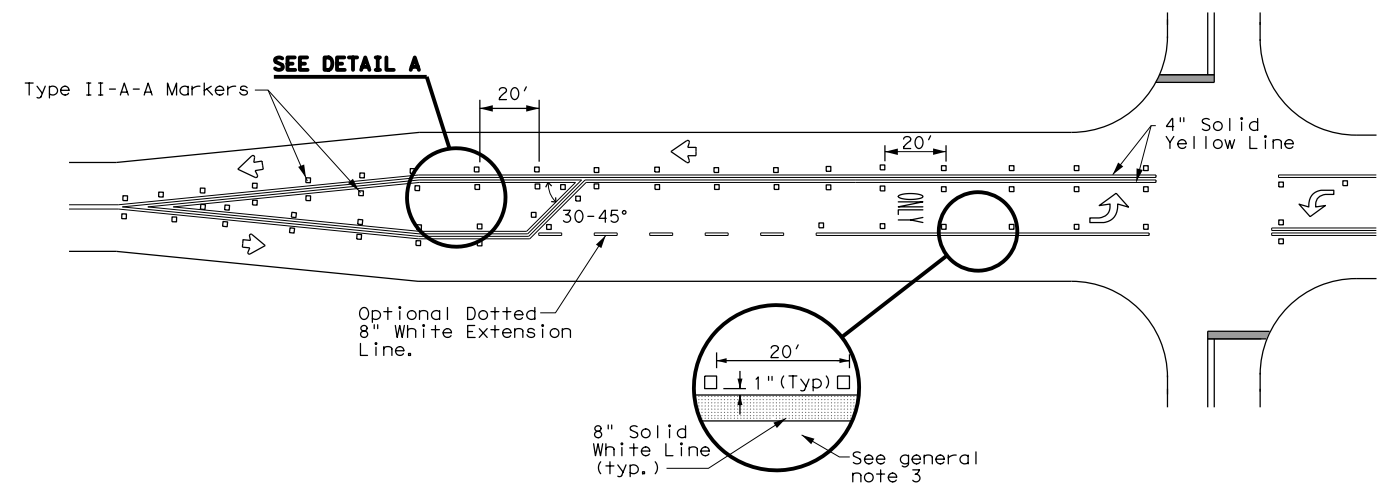
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

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

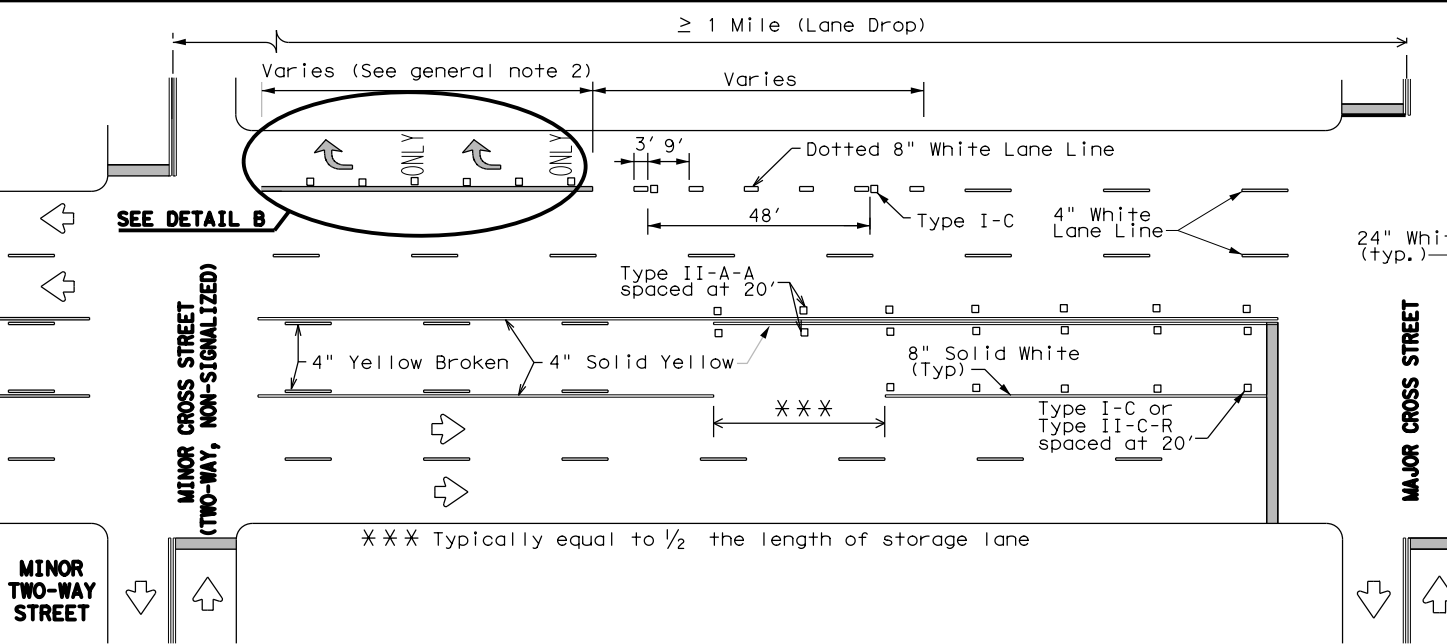
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



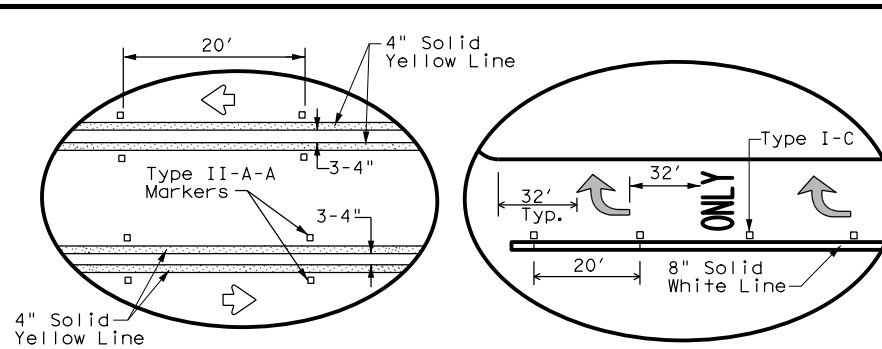
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS



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



DETAIL A

DETAIL B



TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-20

FILE: pm3-20.dgn	DN:	CK:	DW:	CK:
© TxDOT April 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
5-00 2-10	DIST	COUNTY	SHEET NO.	
8-00 2-12	TYL	HENDERSON	247	
3-03 6-20				

DATE: FILE:

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DATE: FILE:

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS				DELINEATORS				D & OM DESCRIPTIVE CODES		
DEVICE	SIZE 1	SIZE 2	SIZE 3	SIZE 4	SINGLE		DOUBLE		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	
SHEETING	Yellow, White or Red Type B or C reflective 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.				POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX	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
					MOUNT TYPE	GND	GND, SRF	GND	GND, SRF	

OBJECT MARKERS								
DEVICE	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
SHEETING	Yellow-Type B _{FL} or C _{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroreflective 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)			CHEVRONS				ONE DIRECTION LARGE ARROW		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.		
DEVICE	GF1	GF2	CTB	W1-8				W1-6			
NOTE	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.			SIZE (W x L)	18" x 24" (Conventional)	24" x 30" (Conventional Oversize)	30" x 36" (Expressway)	36" x 48" (Freeway)	SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
				MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only		MOUNTING HEIGHT	7'-0"	
SHEETING	Yellow, White, Red			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).			

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
© TXDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	TYL	HENDERSON		248

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DATE:
FILE:

POST TYPE AND SUPPORT FOUNDATION DETAILS

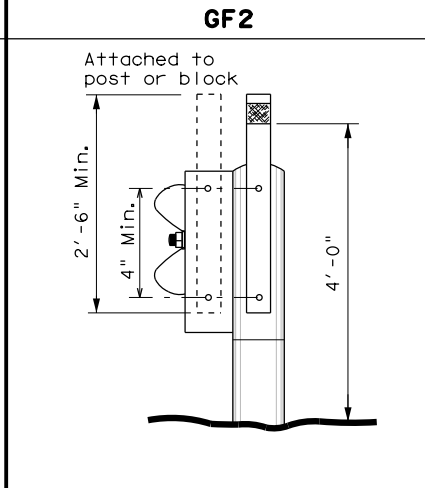
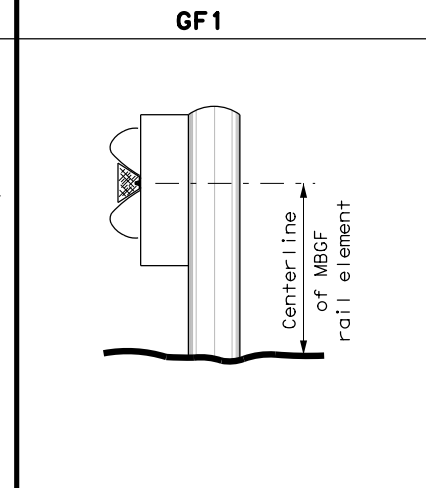
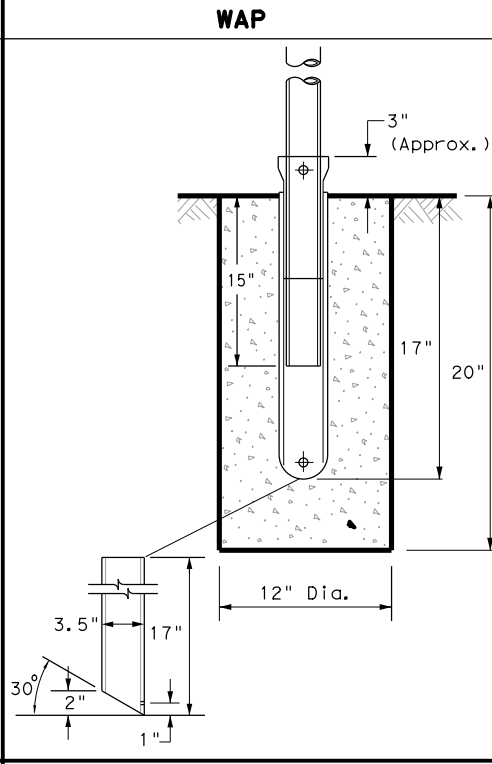
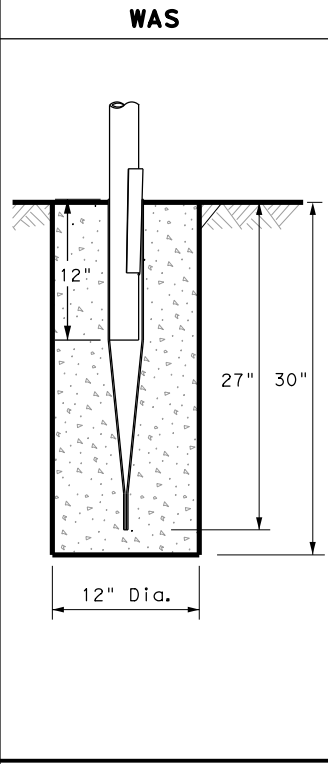
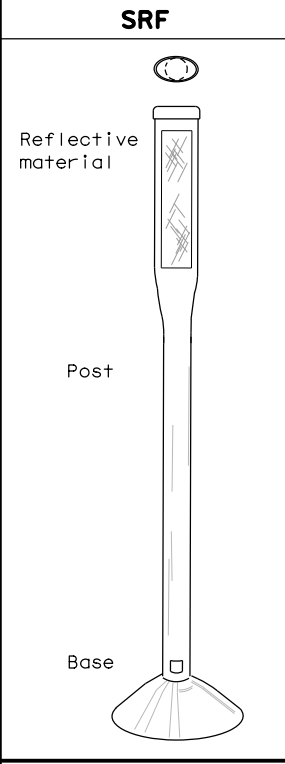
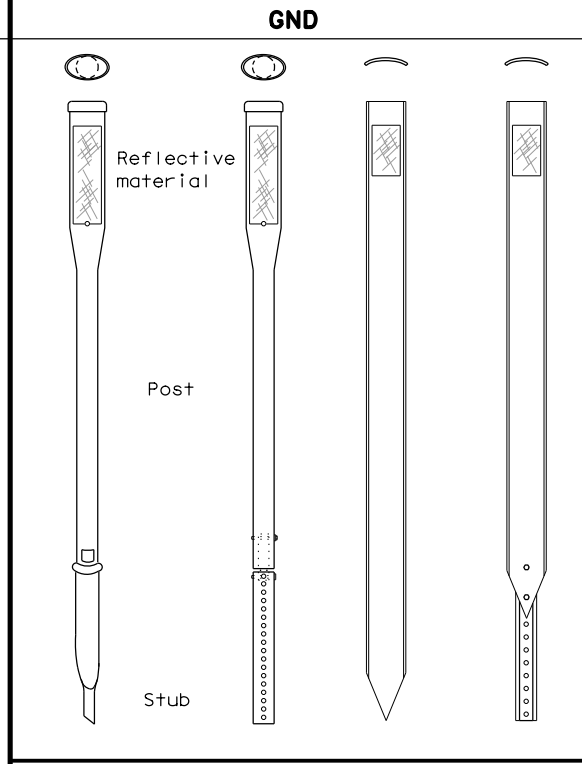
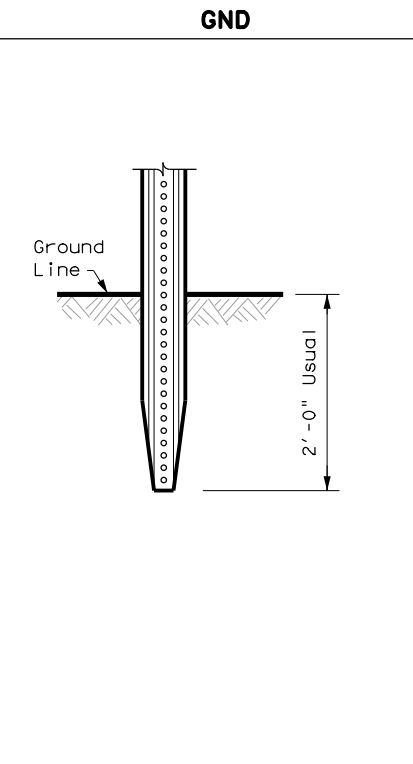
TYPE OF BARRIER MOUNTS

WING CHANNEL (WC)

FLEXIBLE POSTS (YFLX, WFLX)

WEDGE ANCHOR SYSTEMS

GUARD FENCE ATTACHMENT



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.

EMBEDDED

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.

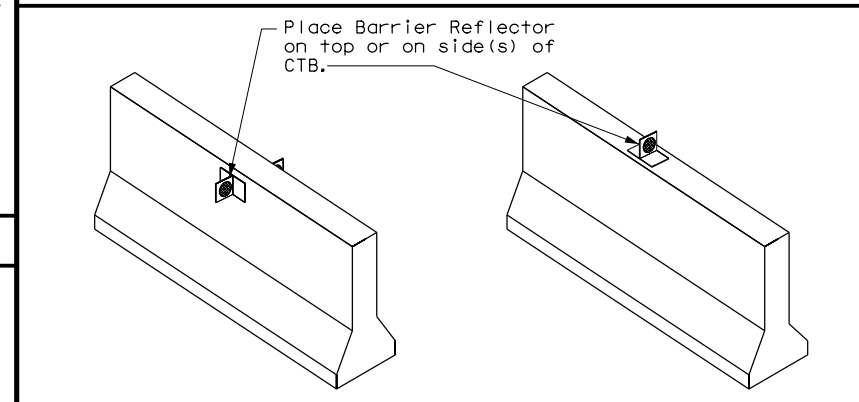
STEEL

PLASTIC

NOTE

1. Install per manufacturer's recommendations.

CONCRETE TRAFFIC BARRIER (CTB)



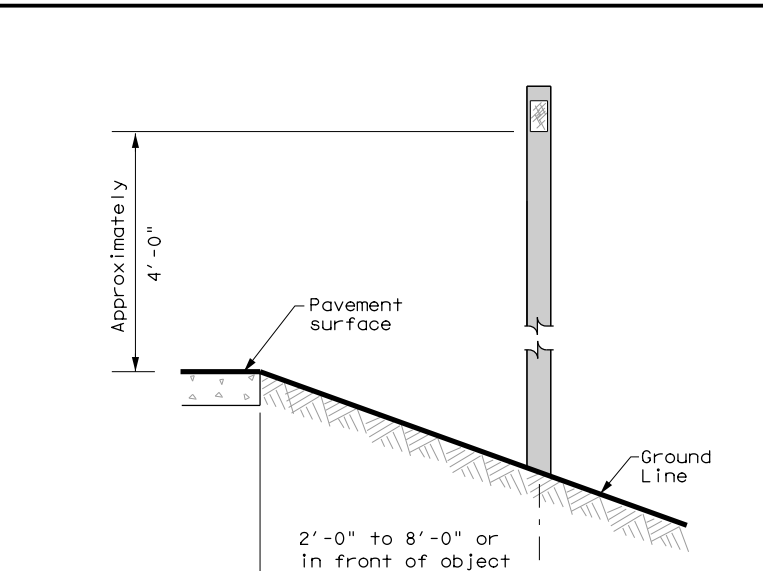
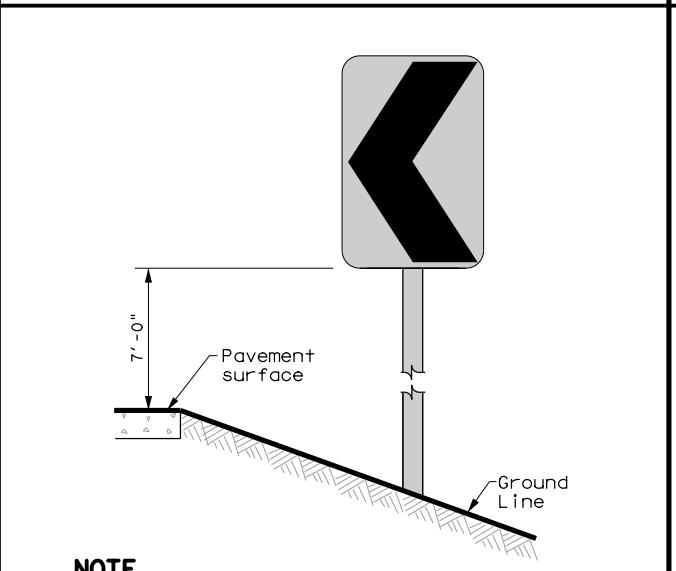
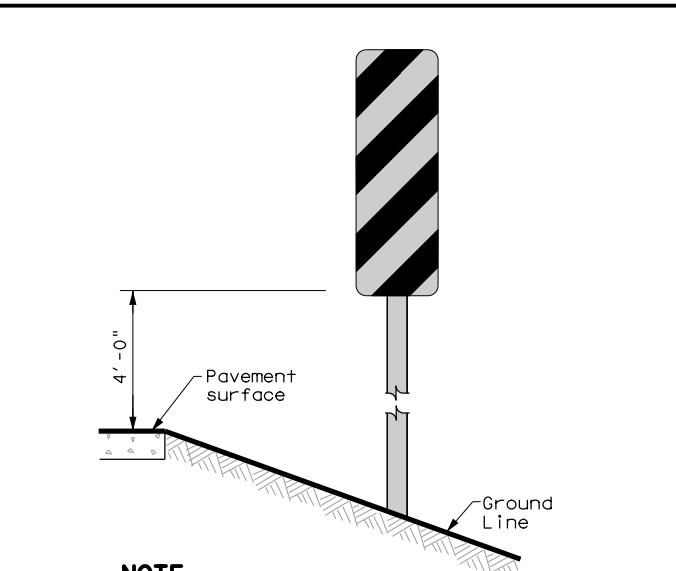
GENERAL NOTES

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

CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN

DELINEATORS AND TYPE 2 OBJECT MARKERS



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)

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.

See general notes 1, 2 and 3.

Texas Department of Transportation
Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

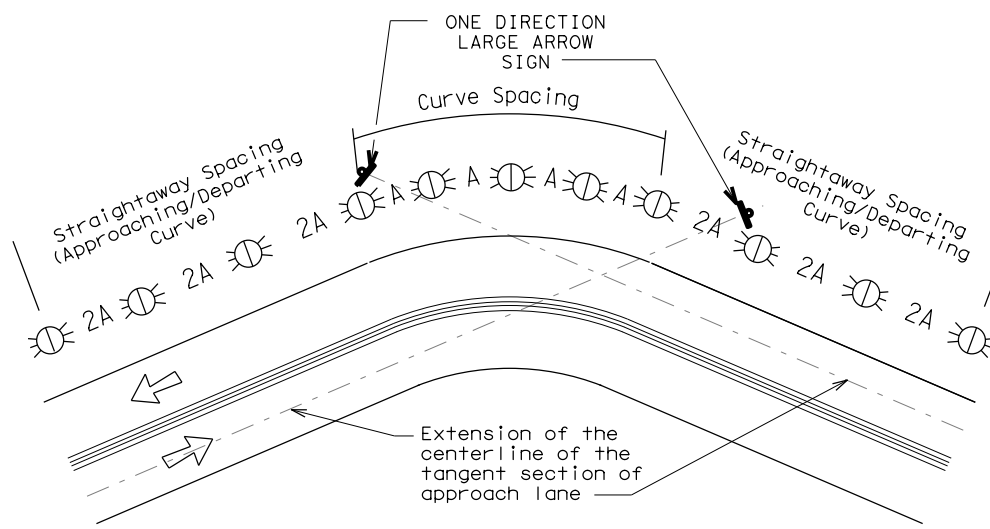
FILE: dom2-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
10-09 3-15	DIST	COUNTY	SHEET NO.	
4-10 7-20	TYL	HENDERSON	249	

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MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

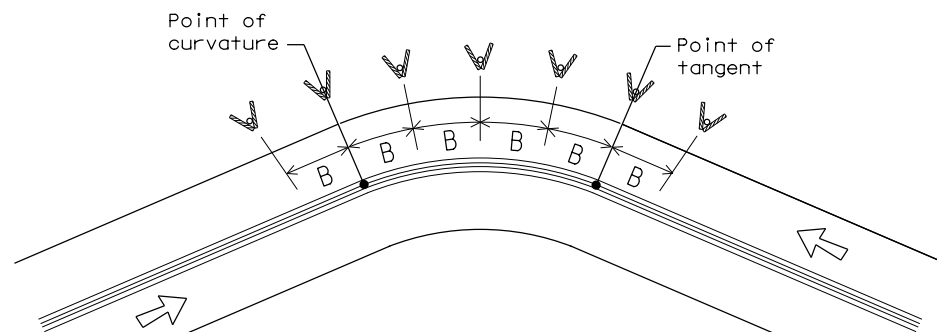
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN				
Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	—
2	2865	160	320	—
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN			
Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp. Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete) and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100' max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100' max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

- 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.
- Barrier reflectors may be used to replace required delineators.
- Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND	
	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation
Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(3)-20

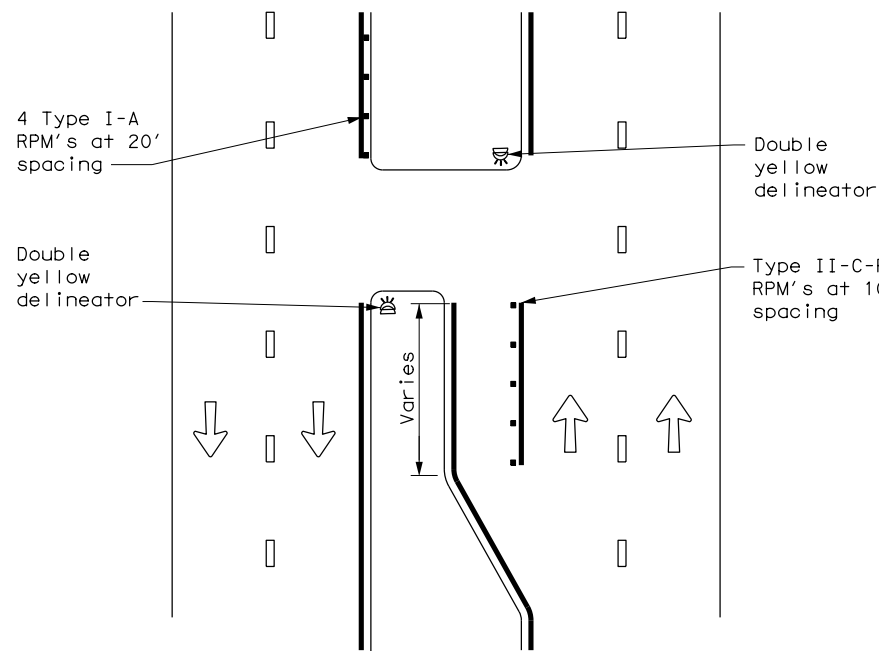
FILE: dom3-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TXDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
3-15 8-15	DIST	COUNTY	SHEET NO.	
8-15 7-20	TYL	HENDERSON	250	

DATE: FILE:

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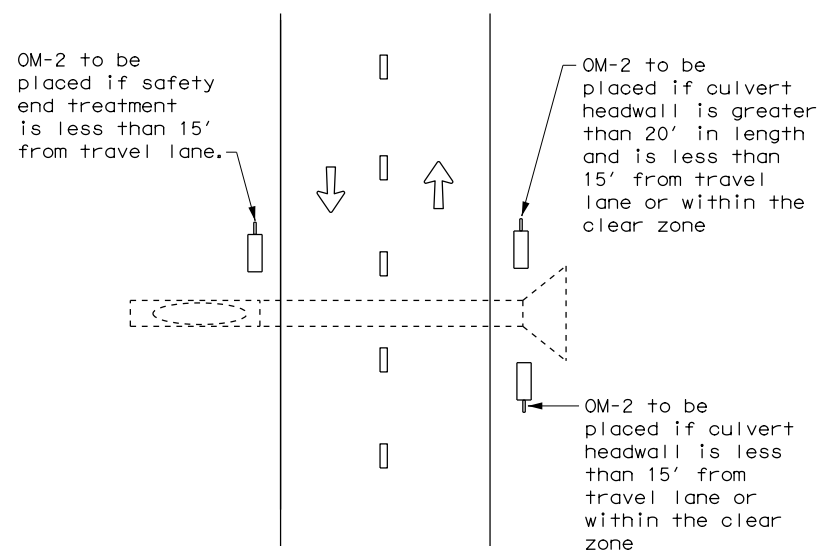
DATE:
FILE:

CROSSOVERS



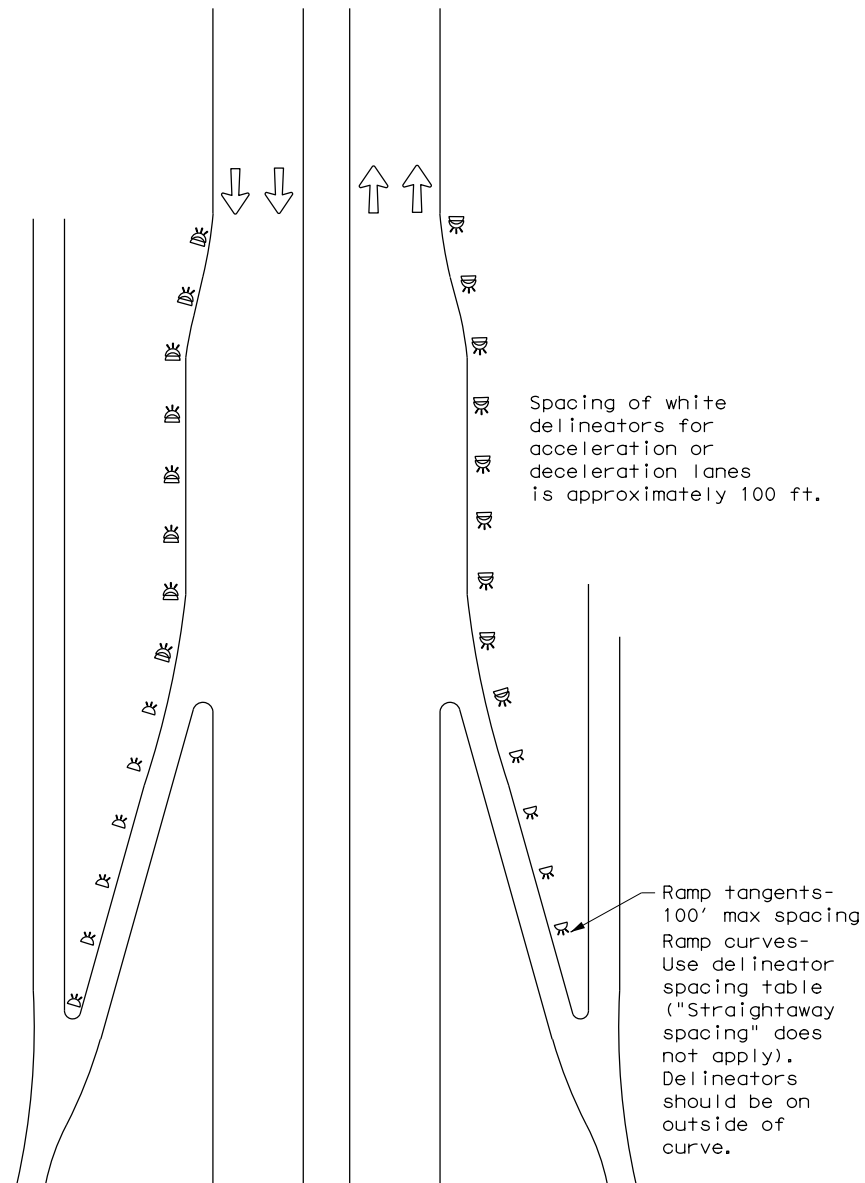
DETAIL 1

FOR CULVERTS WITHOUT MBGF



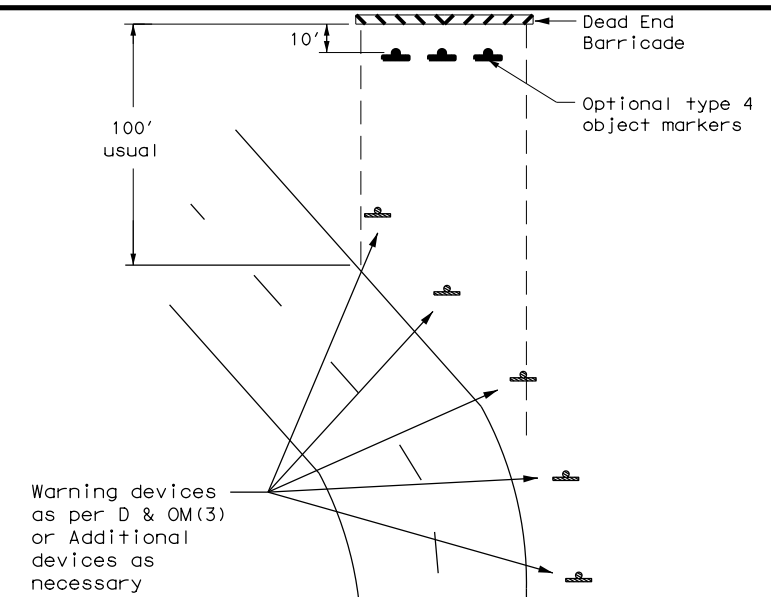
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



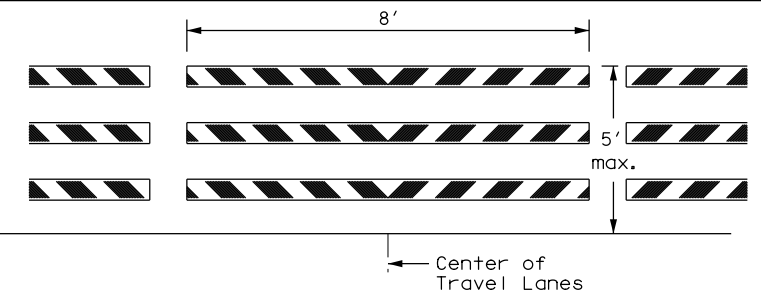
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

- Barricade striping shall be red and white reflective sheeting for all permanent road closures.
- Barricade striping is red and white sloping toward the center of the roadway.
- 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

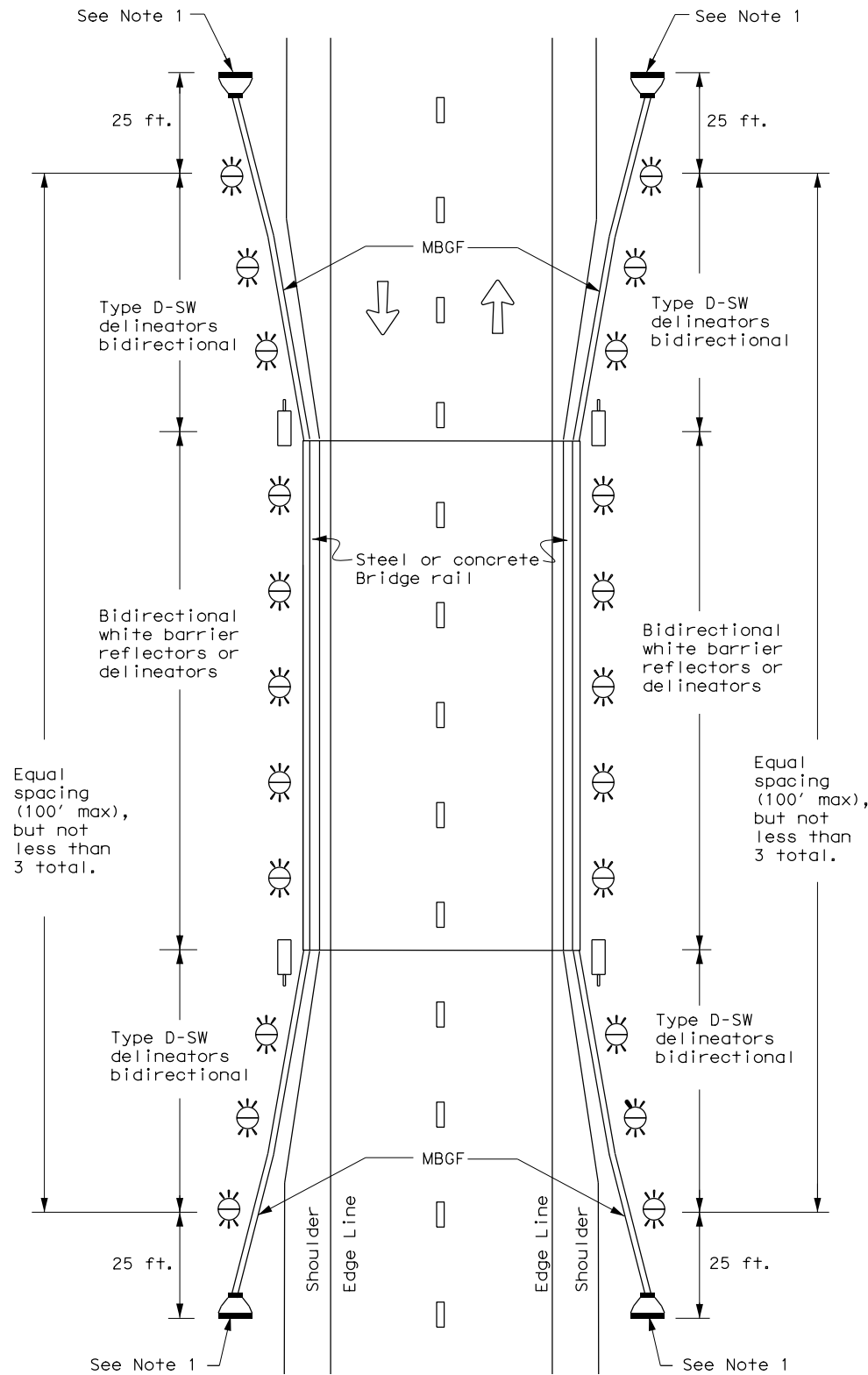


DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-20

FILE: dom4-20.dgn	DN: TxDOT	CK: TxDOT	OW: TxDOT	CK: TxDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
3-15	DIST	COUNTY	SHEET NO.	
7-20	TYL	HENDERSON	251	

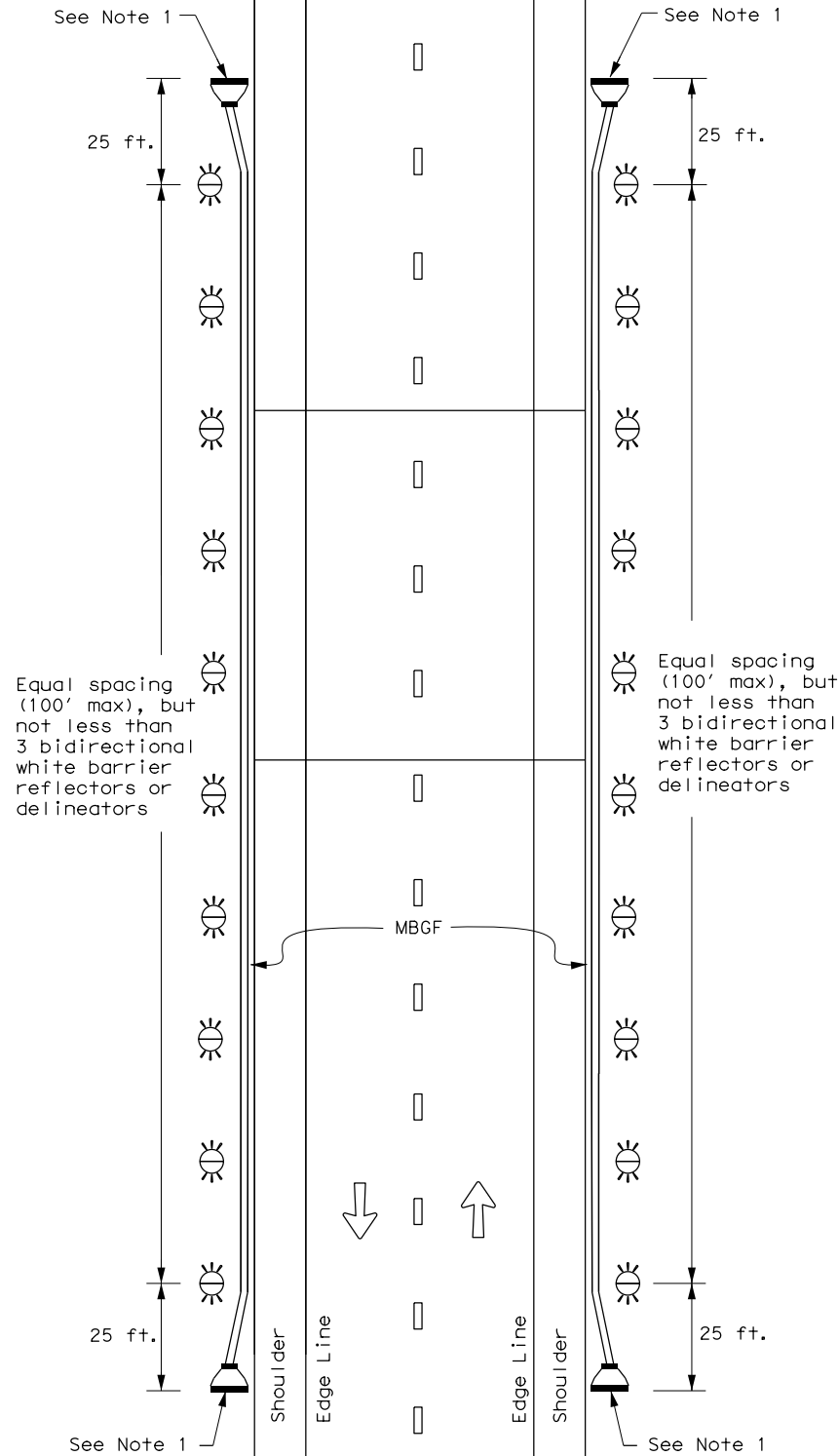
**TWO-WAY, TWO LANE ROADWAY
WITH REDUCED WIDTH APPROACH RAIL**



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

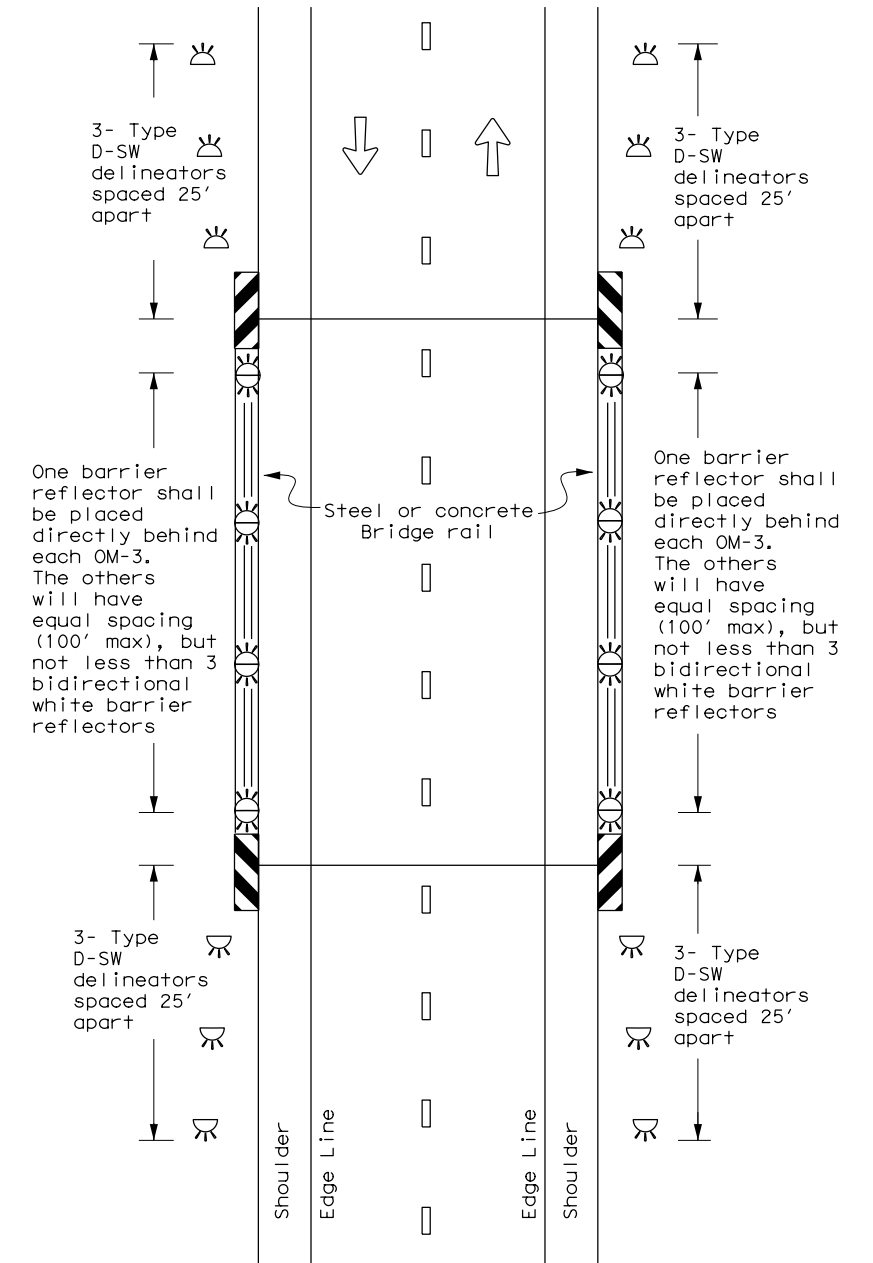
**TWO-WAY, TWO LANE ROADWAY
WITH METAL BEAM GUARD FENCE (MBGF)**



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

**TWO-WAY, TWO LANE ROADWAY
BRIDGE WITH NO APPROACH RAIL**



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow



Traffic Safety Division Standard

**DELINEATOR &
OBJECT MARKER
PLACEMENT DETAILS**

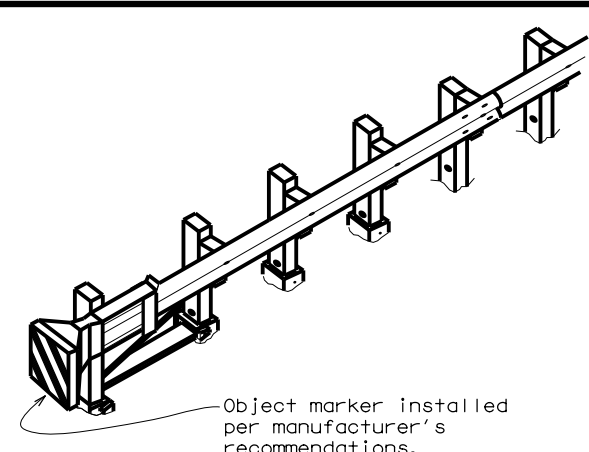
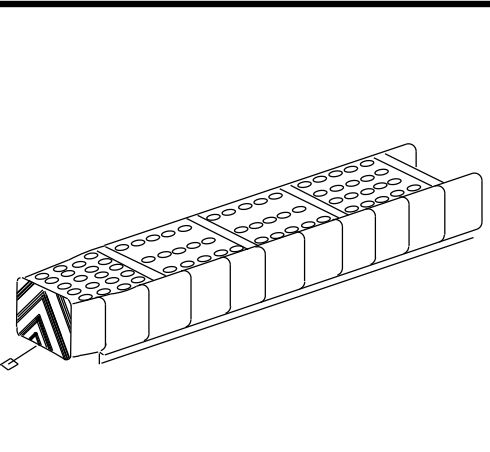
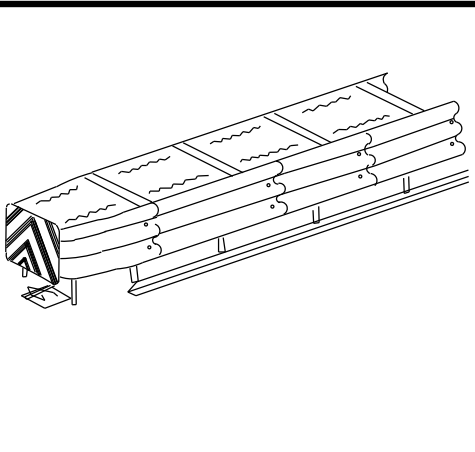
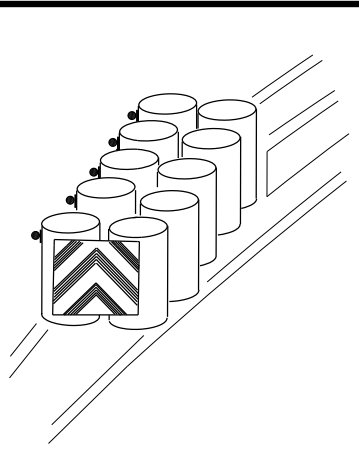
D & OM(5)-20

FILE: dom5-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
7-20	DIST	COUNTY	SHEET NO.	
	TYL	HENDERSON	252	

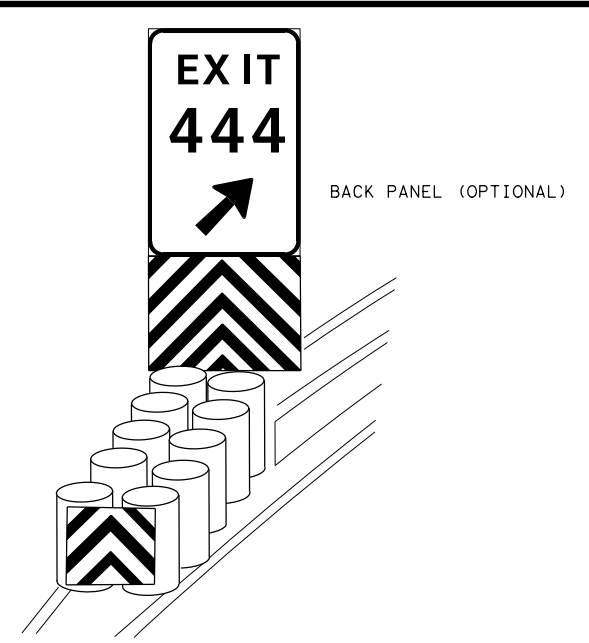
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DATE:
FILE:

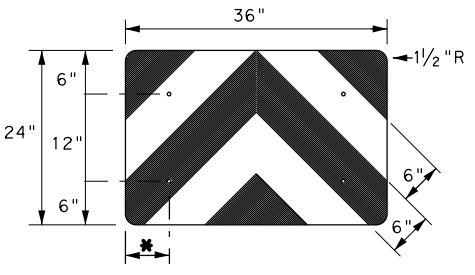
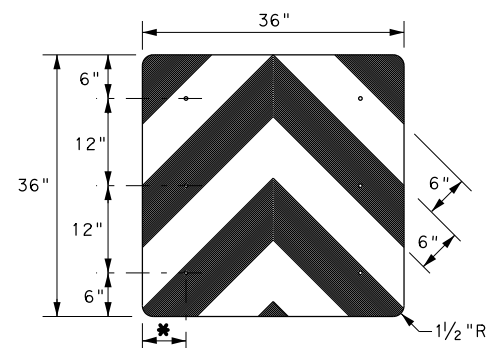
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



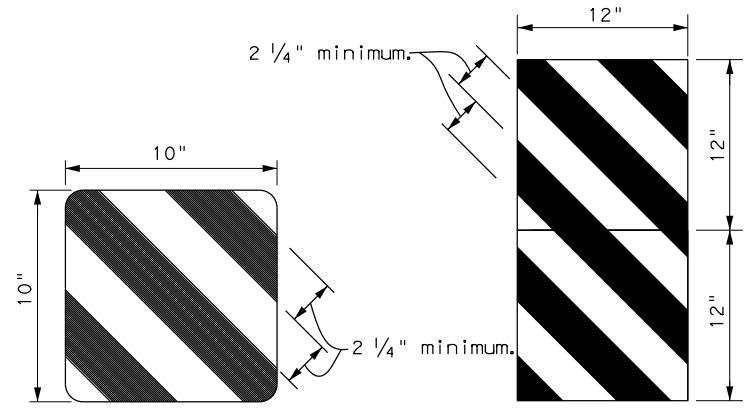
Object marker installed per manufacturer's recommendations.



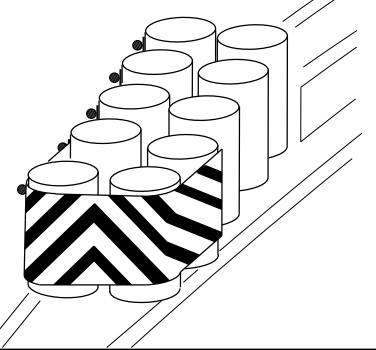
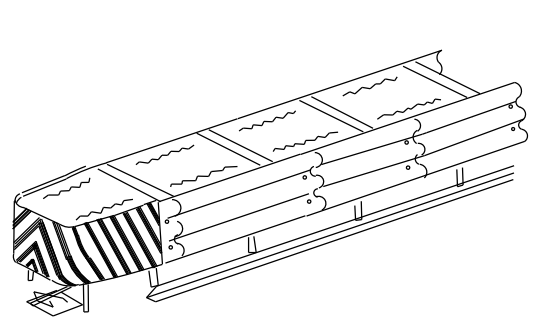
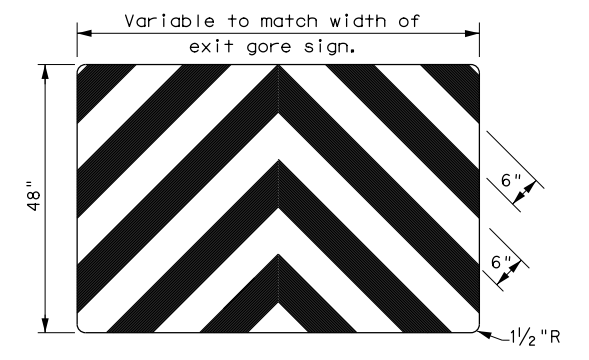
BACK PANEL (OPTIONAL)



* Adjust to fit attenuator per manufacturer's recommendation, or as directed by the Engineer



OBJECT MARKERS SMALLER THAN 3 FT²

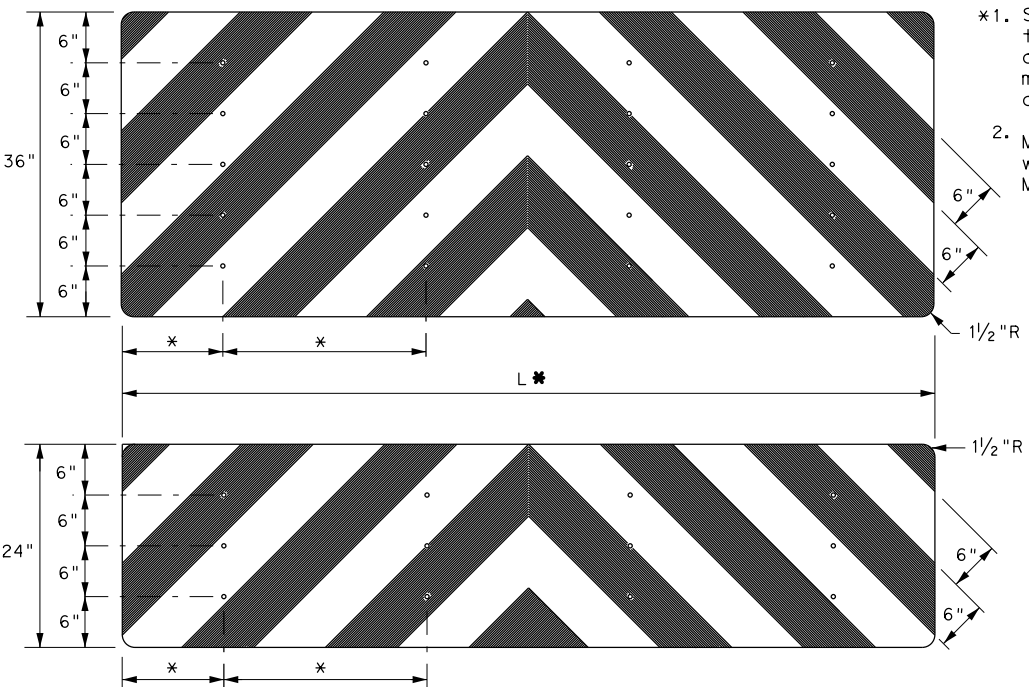


NOTES

- Object Markers shall conform to the Texas MUTCD and meet the color and reflectivity requirement of Department Material Specification DMS 8300. Background shall be yellow reflective sheeting (Type B or C) and Chevron shall be black.
- Object Markers may be fabricated from adhesive backed reflective sheeting applied directly to guardrail end treatment, or applied directly to an "end cap" as per the manufacturer's recommendation. Direct applied sheeting shall provide a smooth surface and have no wrinkles, air bubbles, cuts or tears. A radius at the corners is not required for direct applied sheeting.
- Object Marker size may be reduced to fit smaller devices. Width of alternating black and yellow stripes are typically 6". Object Markers smaller than 3ft may have reduced width stripes of a minimum of 2 1/4".
- Pop rivets, screws, or nuts and bolts may be used to attach object markers and reflectors. Holes, slots or other openings may be cut or drilled through object markers to allow cable or other attachments.
- Object Marker at nose of attenuator is subsidiary to the attenuator.
- See D & OM (1-4) for required barrier reflectors.

NOTES

- Spacing should be adjusted to attach through centerline of drum, per attenuator manufacturer's recommendation, or as directed by the Engineer.
- Mounting should be flush with top of attenuator. Minimum size 96" x 24".

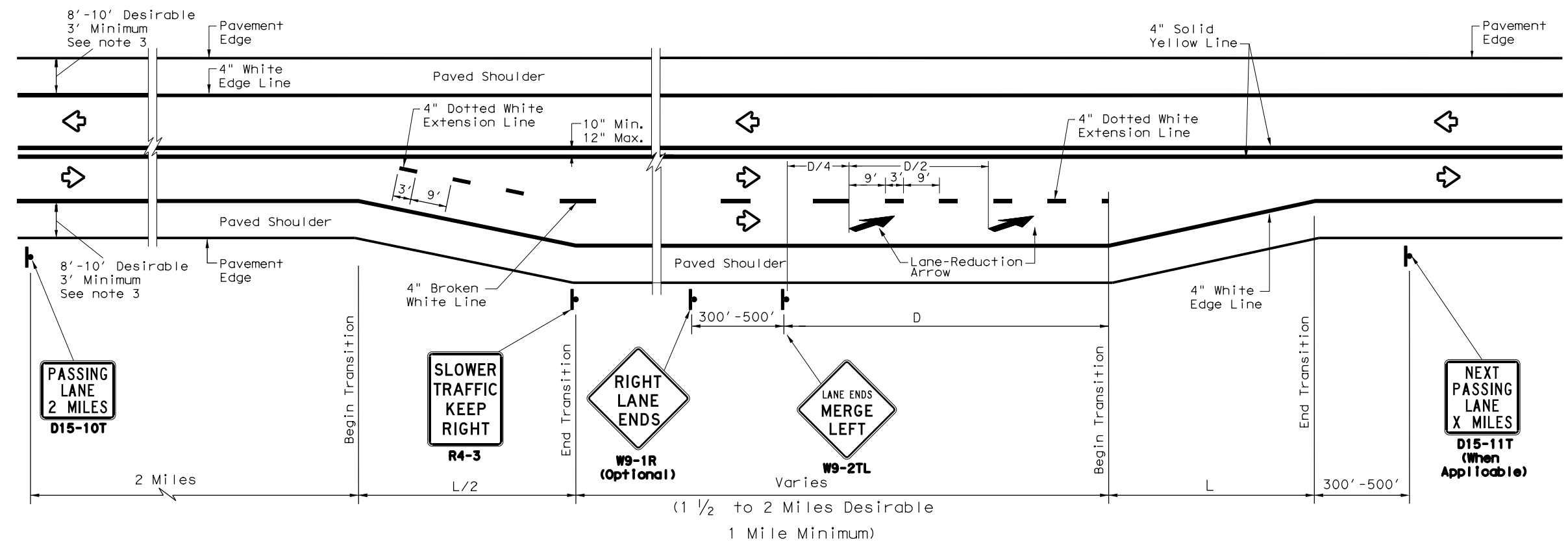


		Texas Department of Transportation		Traffic Safety Division Standard	
DELINEATOR & OBJECT MARKER FOR VEHICLE IMPACT ATTENUATORS					
D & OM(VIA)-20					
FILE: domvia20.dgn	DW: TxDOT	CK: TxDOT	DN: TxDOT	SH: TxDOT	HT: TxDOT
© TxDOT December 1989	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
4-92 8-04	0108	03	041	SH 19	
8-95 3-15	DIST		COUNTY	SHEET NO.	
4-98 7-20	TYL		HENDERSON	254	
20G					

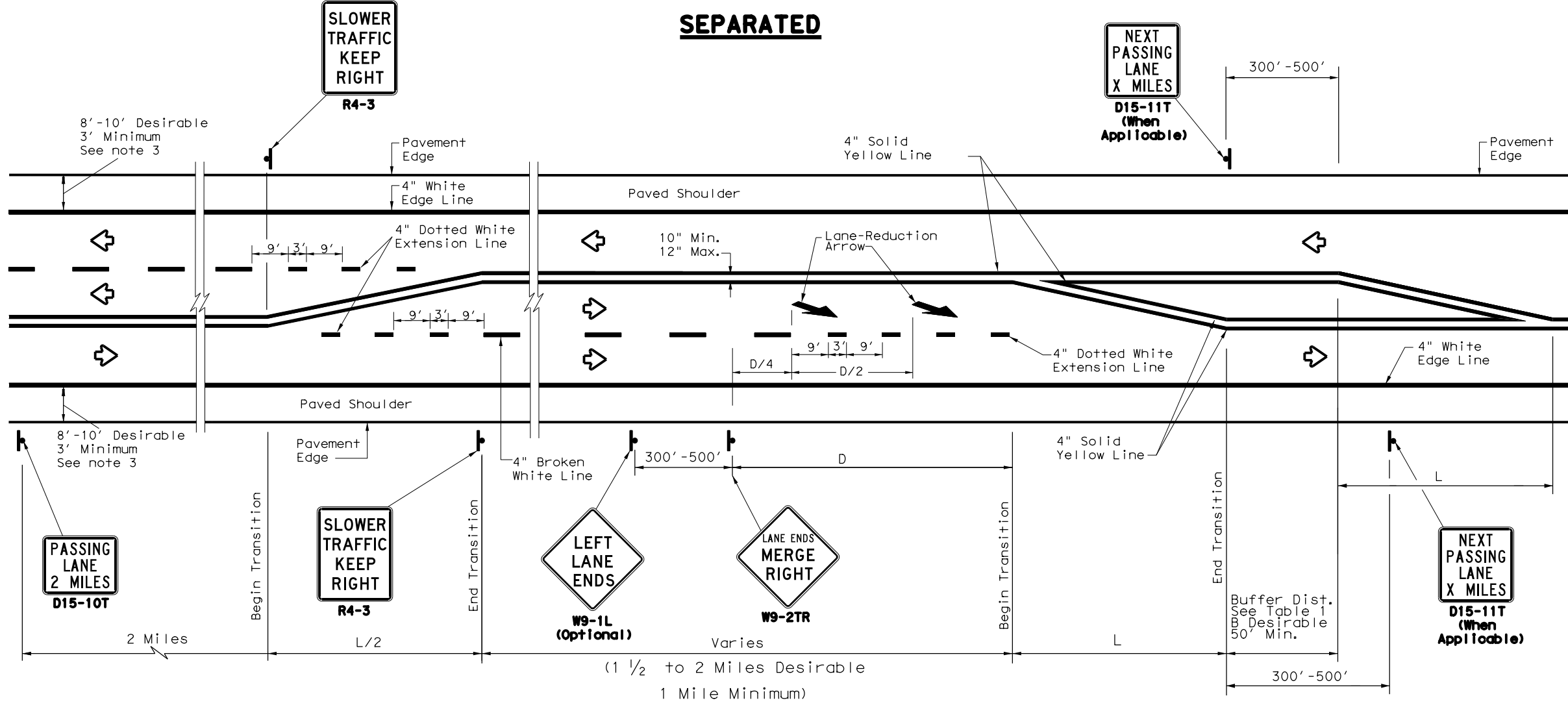
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DATE: FILE:



SEPARATED



ALTERNATING

LEGEND	
	Sign
	Traffic Flow

TYPICAL TAPER LENGTH (L)	
Formula *	$L = WS$

* Transition length should be rounded up to nearest 5 foot increment.

L=Length of Transition (FT)
W=Width of Offset (FT)
S=Posted Speed (MPH)

EXAMPLE

A 12 foot lane is added on a 70 mph roadway. The length of the transition should be:

$L = 12 \times 70 = 840 \text{ ft}$

**TABLE 1
ADVANCE WARNING SIGN
DISTANCE (D)
AND BUFFER DISTANCE (B)**

Posted Speed	D (FT)	B (FT)
40	670	305
45	775	360
50	885	425
55	990	495
60	1100	570
65	1200	645
70	1250	730
75	1350	820

GENERAL NOTES

1. For minimum and desirable design details, see the Roadway Design Manual, Chapter 4, Section 6, Super 2 Highways.
2. For Raised Pavement Markers (RPM) details, see Pavement Markings Standard sheet, PM(2). Note that RPMs are not recommended on the 4" dotted white extension lines.
3. For rumble strip options available for the designed shoulder width, see rumble strip standard sheet RS(4).



**TEXAS SUPER 2
PASSING LANES**

TS2 (PL-1) - 18

FILE: ts2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT May 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
2-12	DIST	COUNTY	SHEET NO.	
3-12	TYL	HENDERSON	255	
3-18				

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

Post Type

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

Number of Posts (1 or 2)

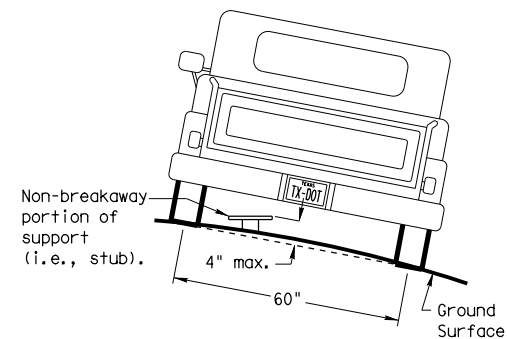
Anchor Type

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

Sign Mounting Designation

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

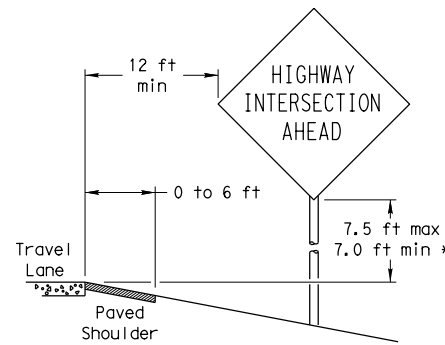
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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).

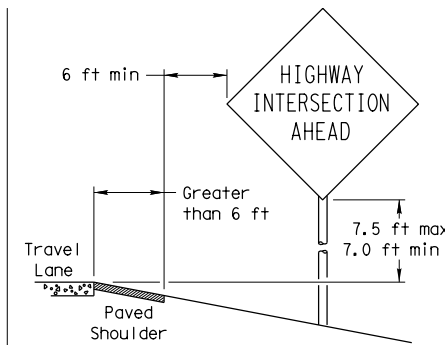
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

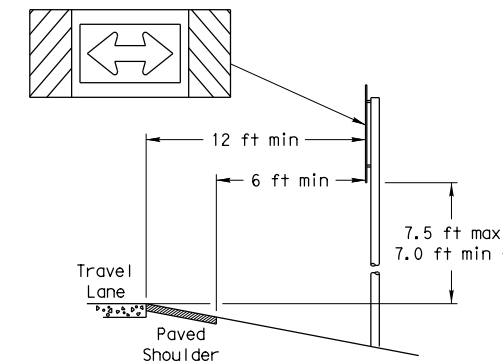
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



GREATER THAN 6 FT. WIDE

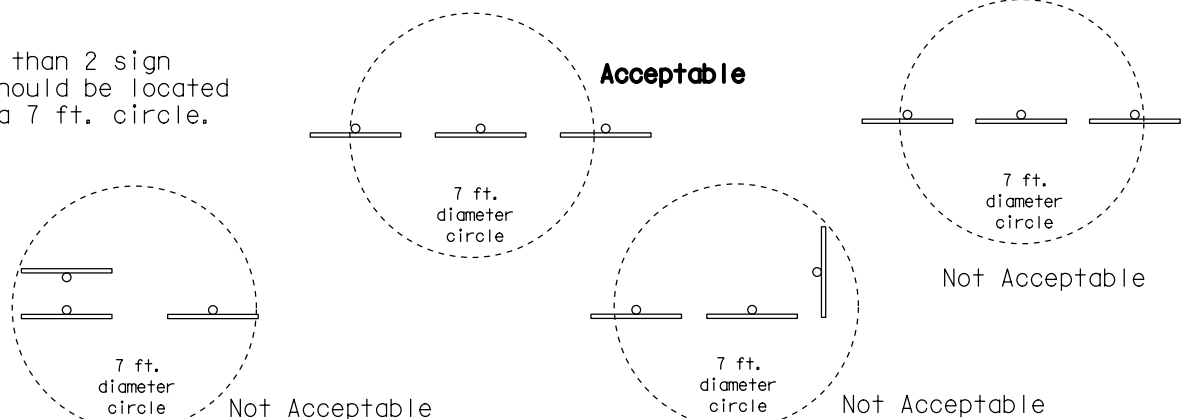
When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

T-INTERSECTION

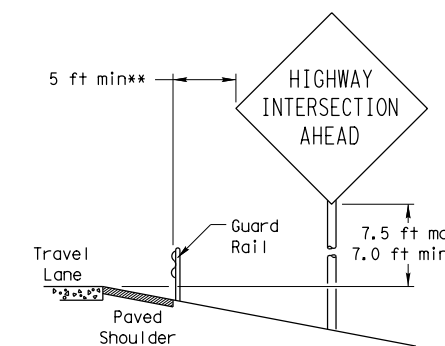


When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

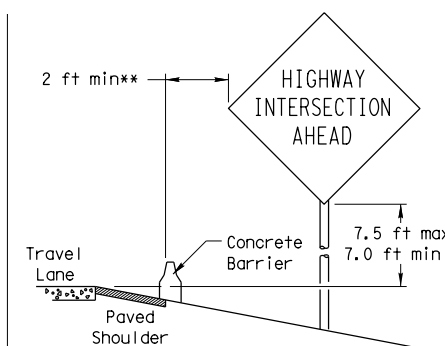
No more than 2 sign posts should be located within a 7 ft. circle.



BEHIND BARRIER

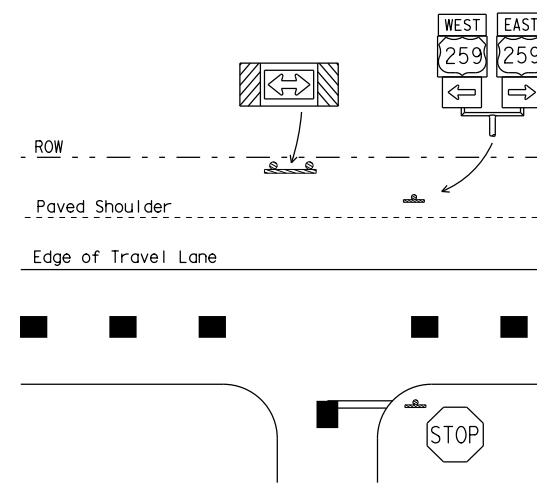


BEHIND GUARDRAIL



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:

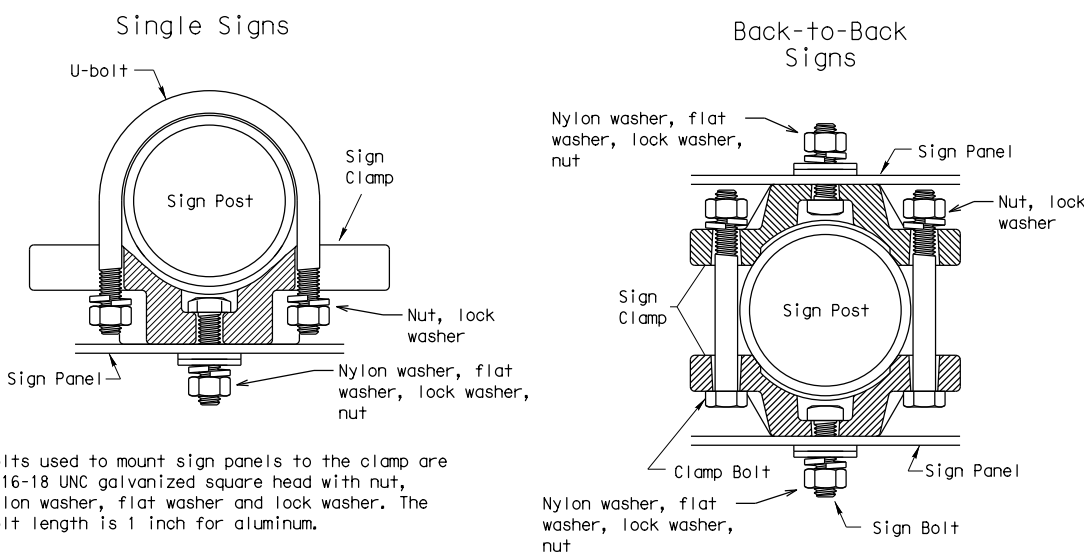
- (1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or
- (2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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



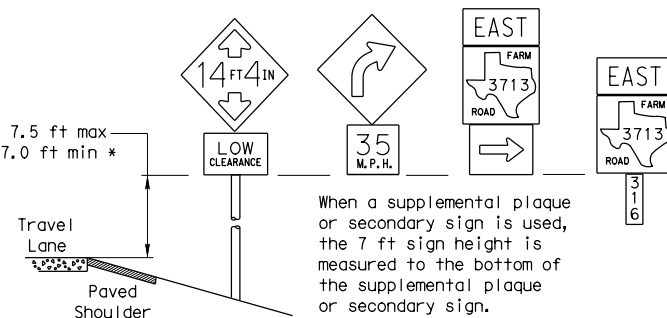
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

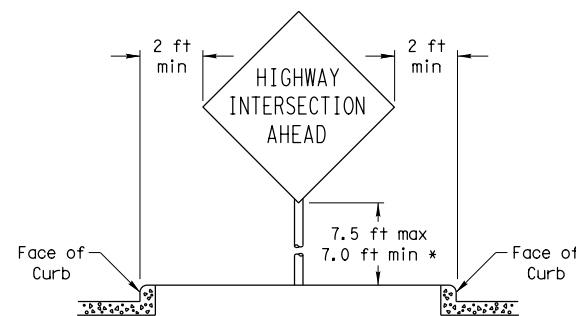
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES

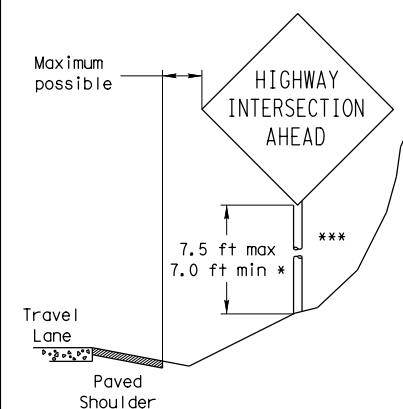


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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.

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 Traffic Operations Division

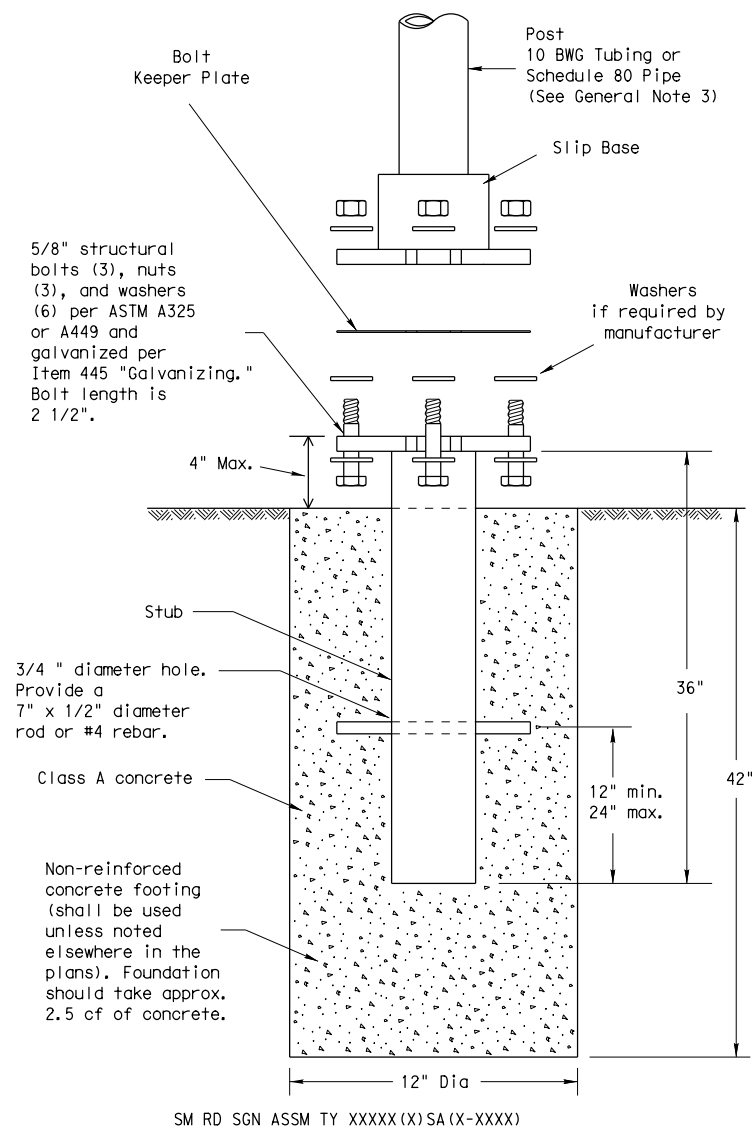
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD (GEN) -08

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TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

- 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.
- 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
- 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>
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

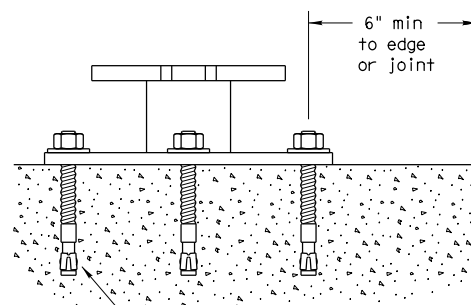
Foundation

- 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.
- 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.
- 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.
- Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
- The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support

- 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.
- 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



5/8" diameter Concrete Anchor - 8 places (embed a minimum of 5 1/2" and torque to min. of 50 ft-lbs). Anchor may be expansion or adhesive type.

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, "Epoxyes 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.

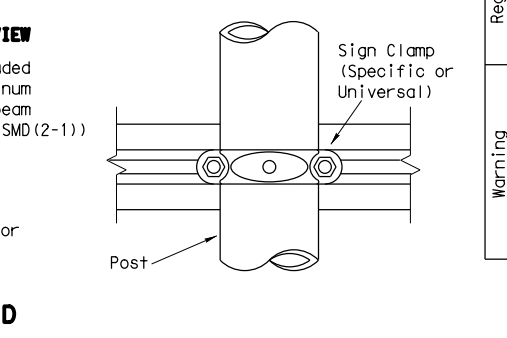
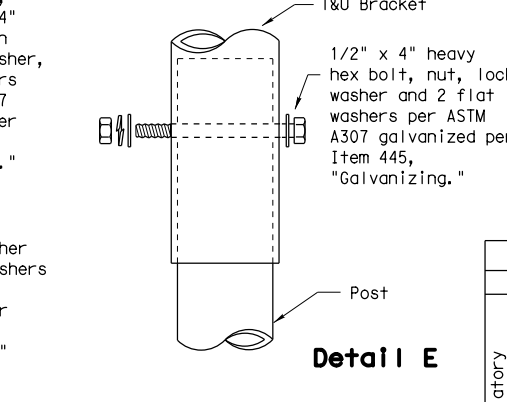
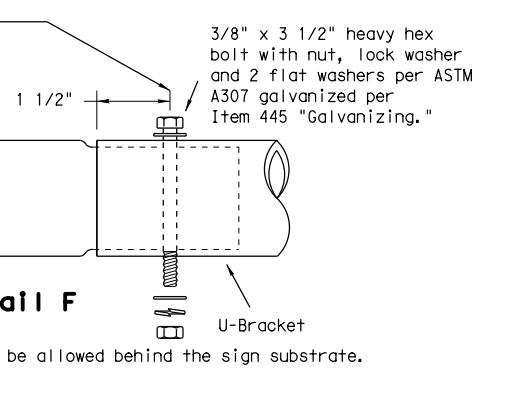
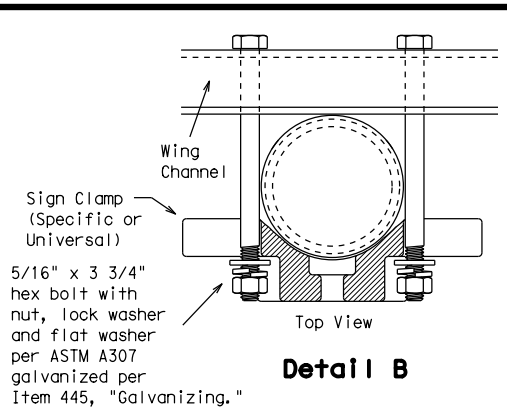
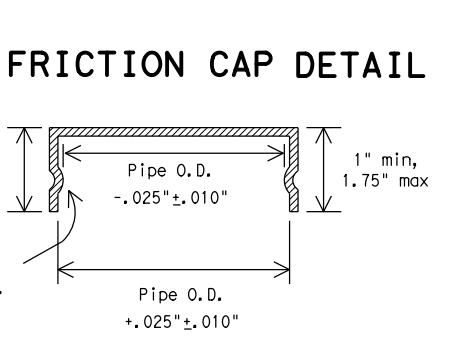
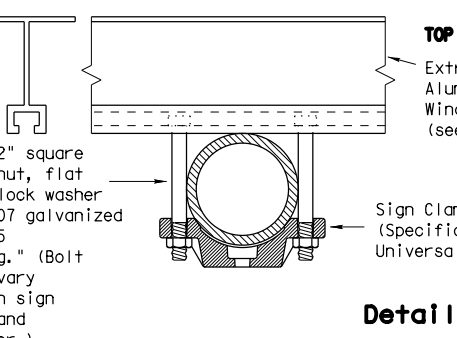
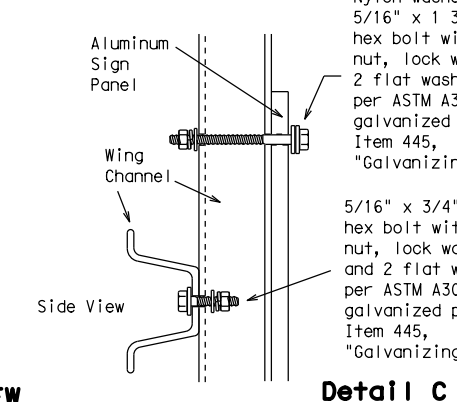
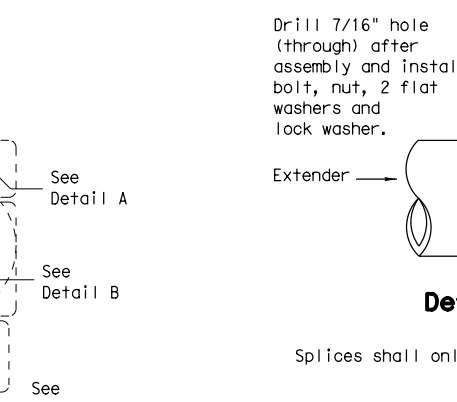
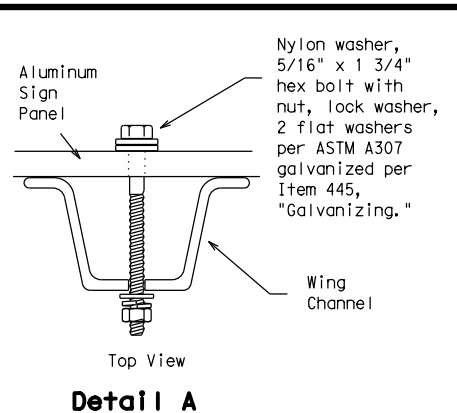
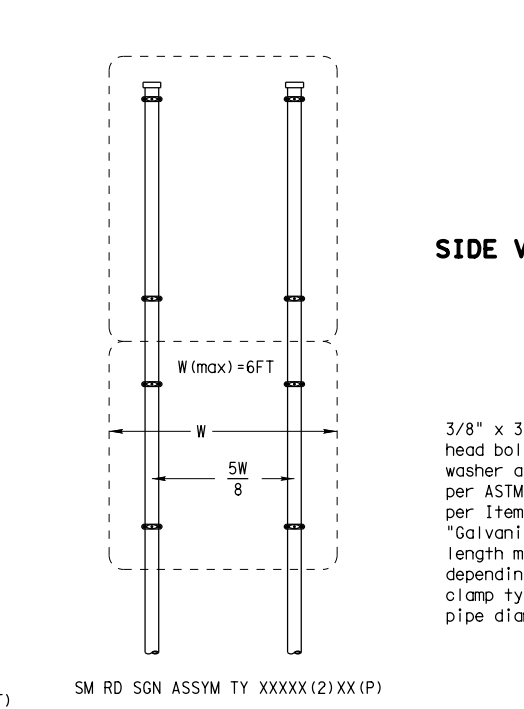
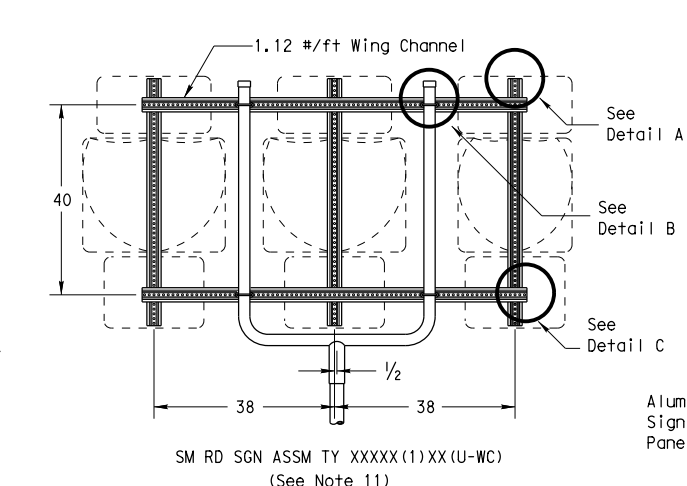
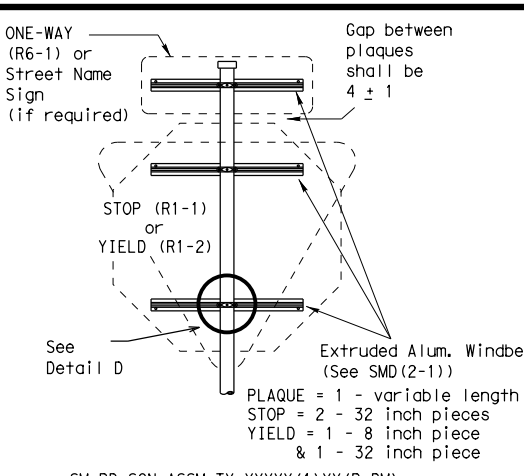
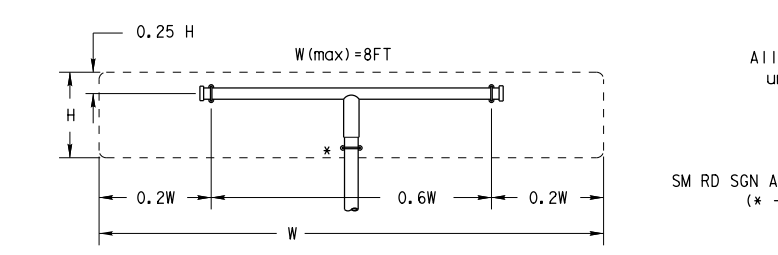
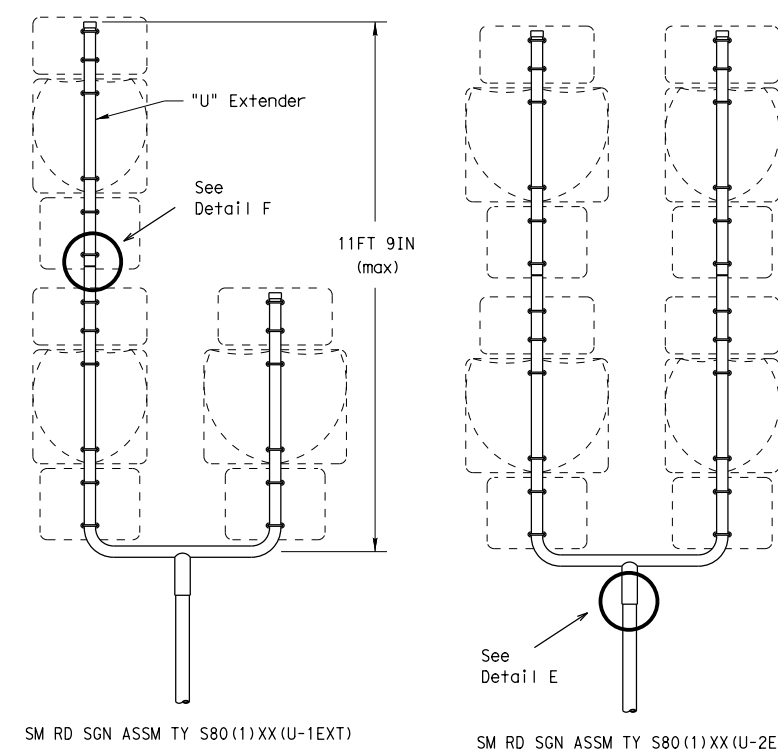
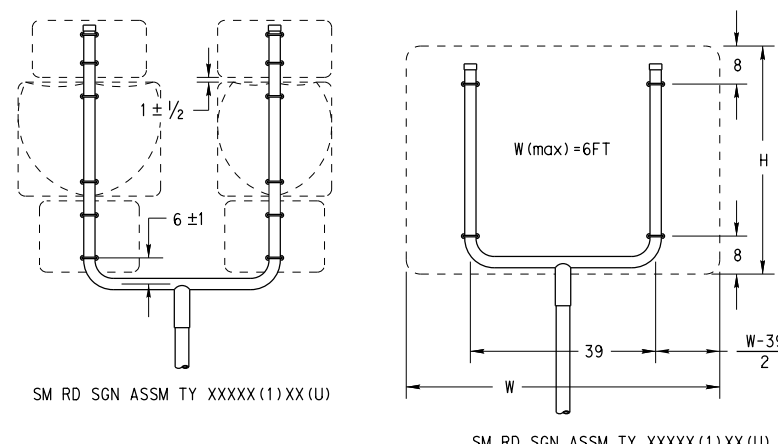
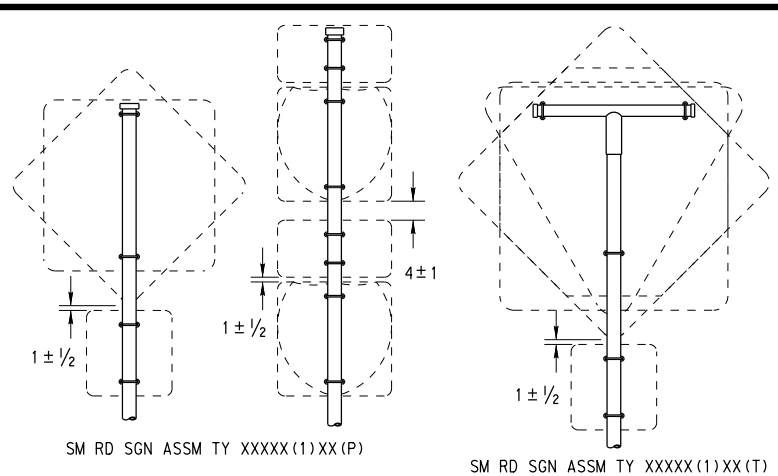


SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes. The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture. Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

- GENERAL NOTES:**
1. SIGN SUPPORT # OF POSTS MAX. SIGN AREA

10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF
 2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
 3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
 4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
 5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
 6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
 7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
 8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
 9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
 10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
 11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
 12. Post open ends shall be fitted with Friction Caps.
 13. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT	
SIGN DESCRIPTION	SUPPORT
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)
48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
48x60-inch signs	TY S80(1)XX(T)
48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

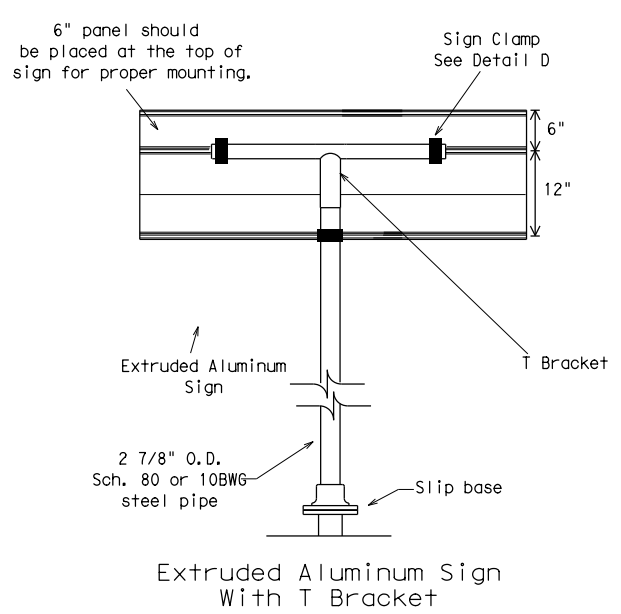
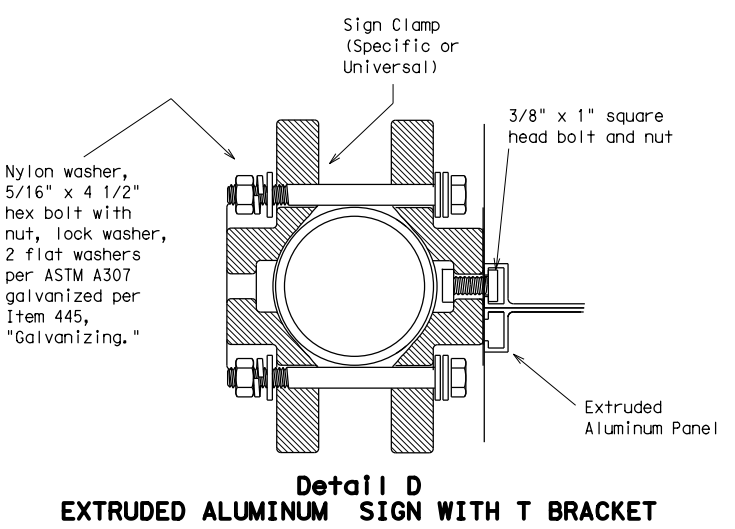
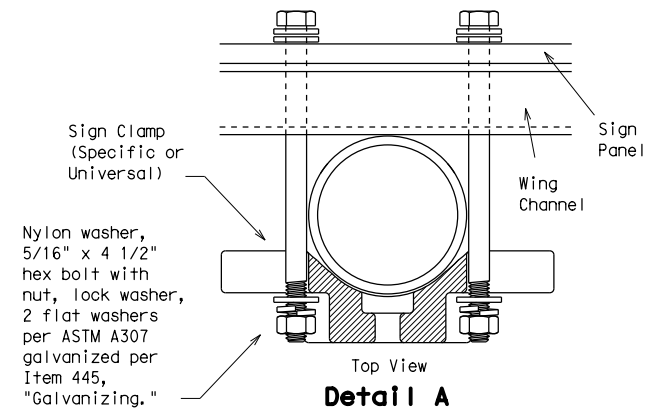
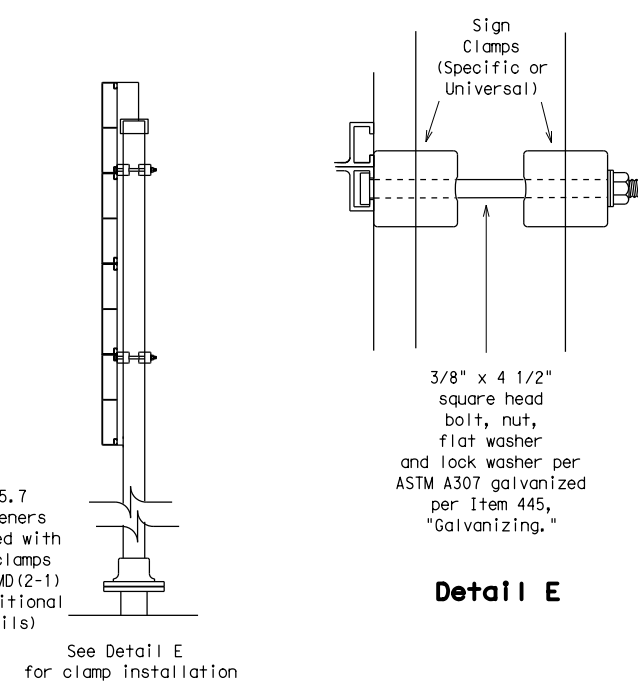
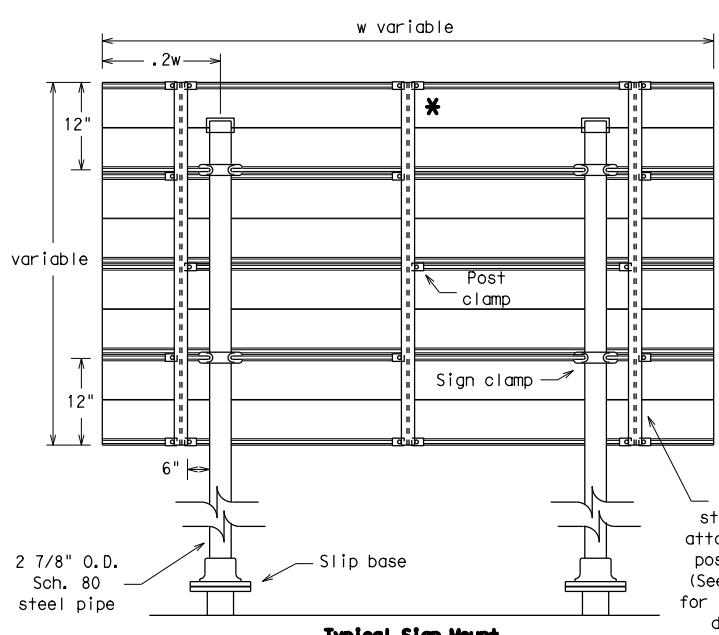
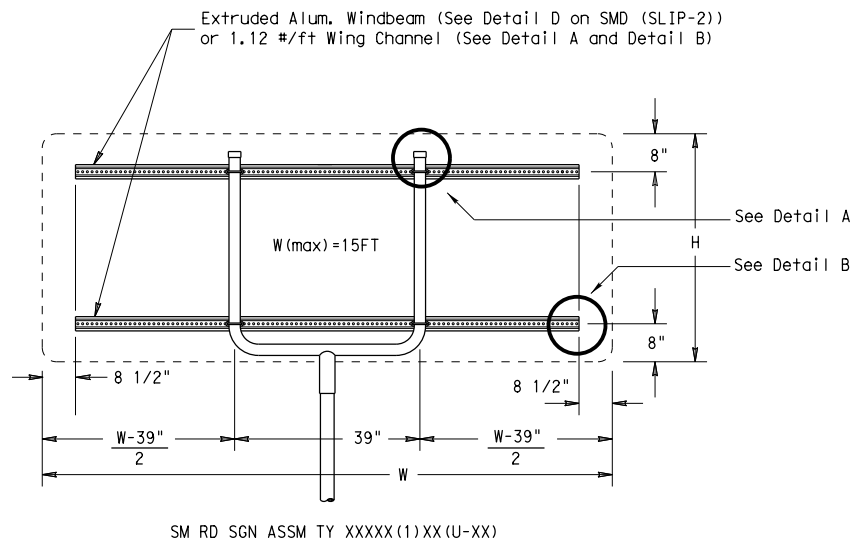
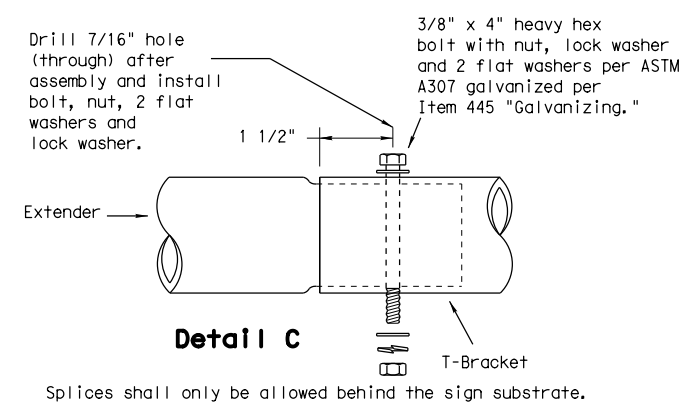
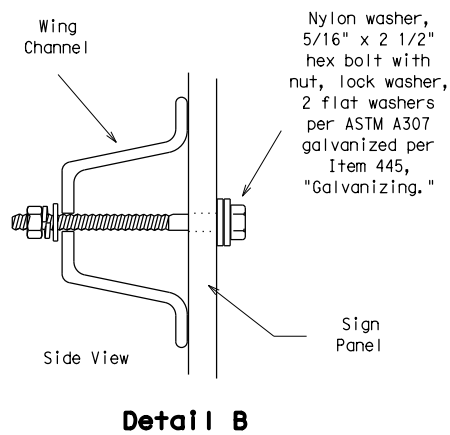
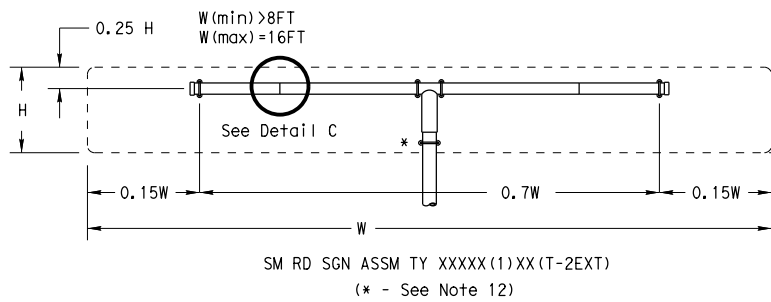
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD(SLIP-2)-08

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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 |
- 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.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- 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.
- Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
- 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.
- 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.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- 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."
- Sign blanks shall be the sizes and shapes shown on the plans.
- 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.
- 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)
Warning	48x60-inch signs	TY S80(1)XX(T)
	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)



**SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD (SLIP-3) -08**

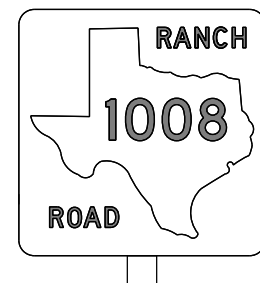
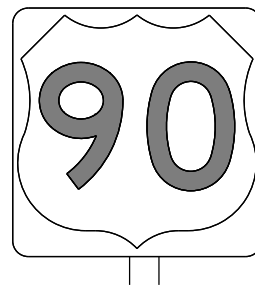
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9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
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REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

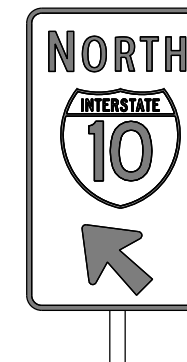
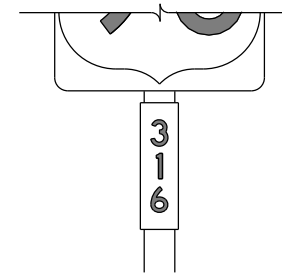
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
- White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

- Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.
- Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.
- Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
- Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

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

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:
<http://www.txdot.gov/>

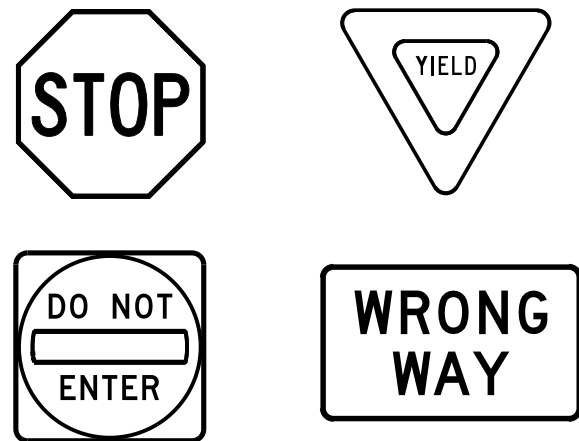
Texas Department of Transportation		Traffic Operations Division Standard	
TYPICAL SIGN REQUIREMENTS			
TSR(3)-13			
FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
©TxDOT October 2003	CONT	SECT	JOB
REVISIONS	0108	03	041
12-03 7-13	DIST	COUNTY	SHEET NO.
9-08	TYL	HENDERSON	260

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DATE: FILE:

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

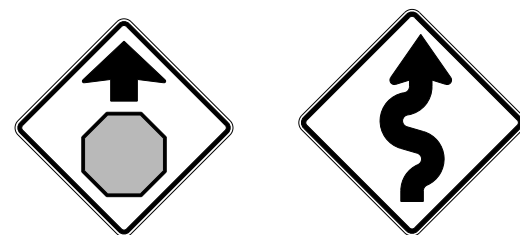
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B _{FL} OR C _{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B _{FL} OR C _{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
- Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
- White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
- Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
- Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
- Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

ALUMINUM SIGN BLANKS THICKNESS

Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

DEPARTMENTAL MATERIAL SPECIFICATIONS

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

<http://www.txdot.gov/>



TYPICAL SIGN REQUIREMENTS

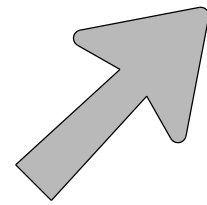
TSR (4) - 13

FILE:	tsr4-13.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	October 2003	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0108	03	041	SH 19				
12-03	7-13	DIST	COUNTY	SHEET NO.					
9-08		TYL	HENDERSON	261					

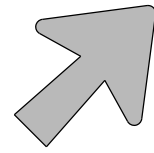
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ARROW DETAILS

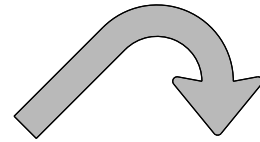
for Large Ground-Mounted and Overhead Guide Signs



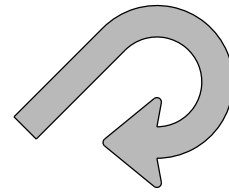
Type A



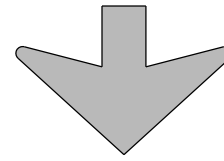
Type B



E-3



E-4



Down Arrow

TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

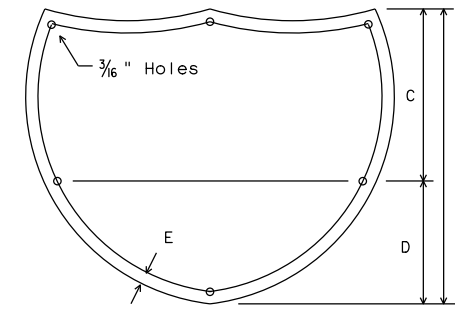
NOTE

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

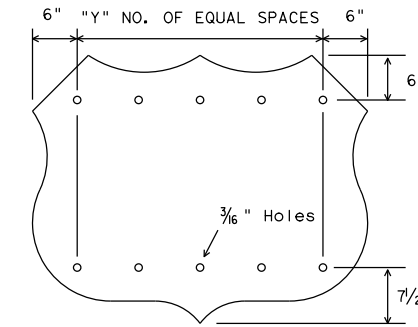
<http://www.txdot.gov/>

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)



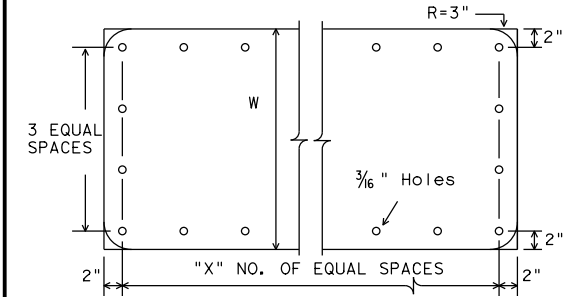
INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4



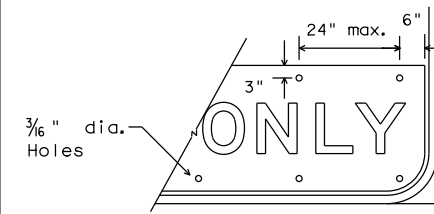
U.S. ROUTE MARKERS

Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



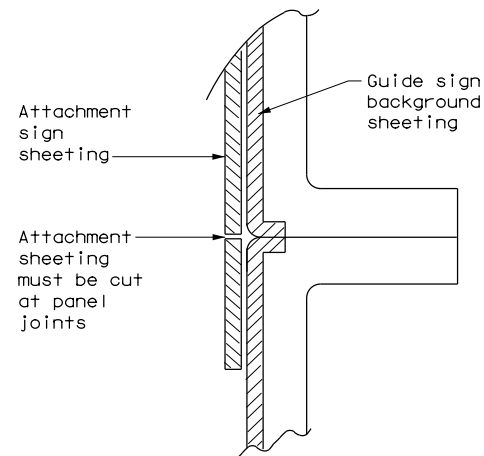
STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5

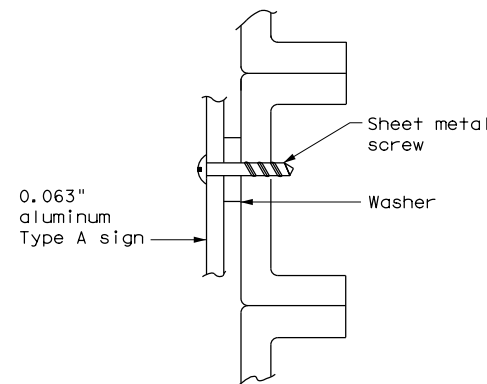


EXIT ONLY PANEL

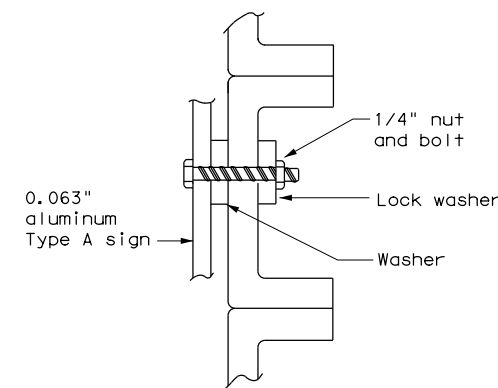
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



DIRECT APPLIED ATTACHMENT



SCREW ATTACHMENT

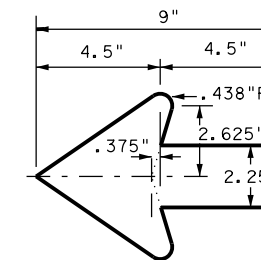


NUT/BOLT ATTACHMENT

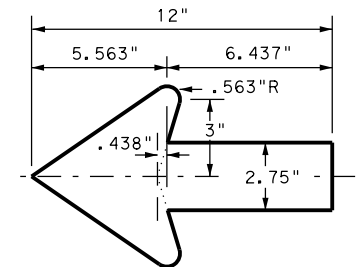
NOTE:

- Sheeting for legend, symbols, and borders must be cut at panel joints.
- Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".

ARROW DETAILS for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.



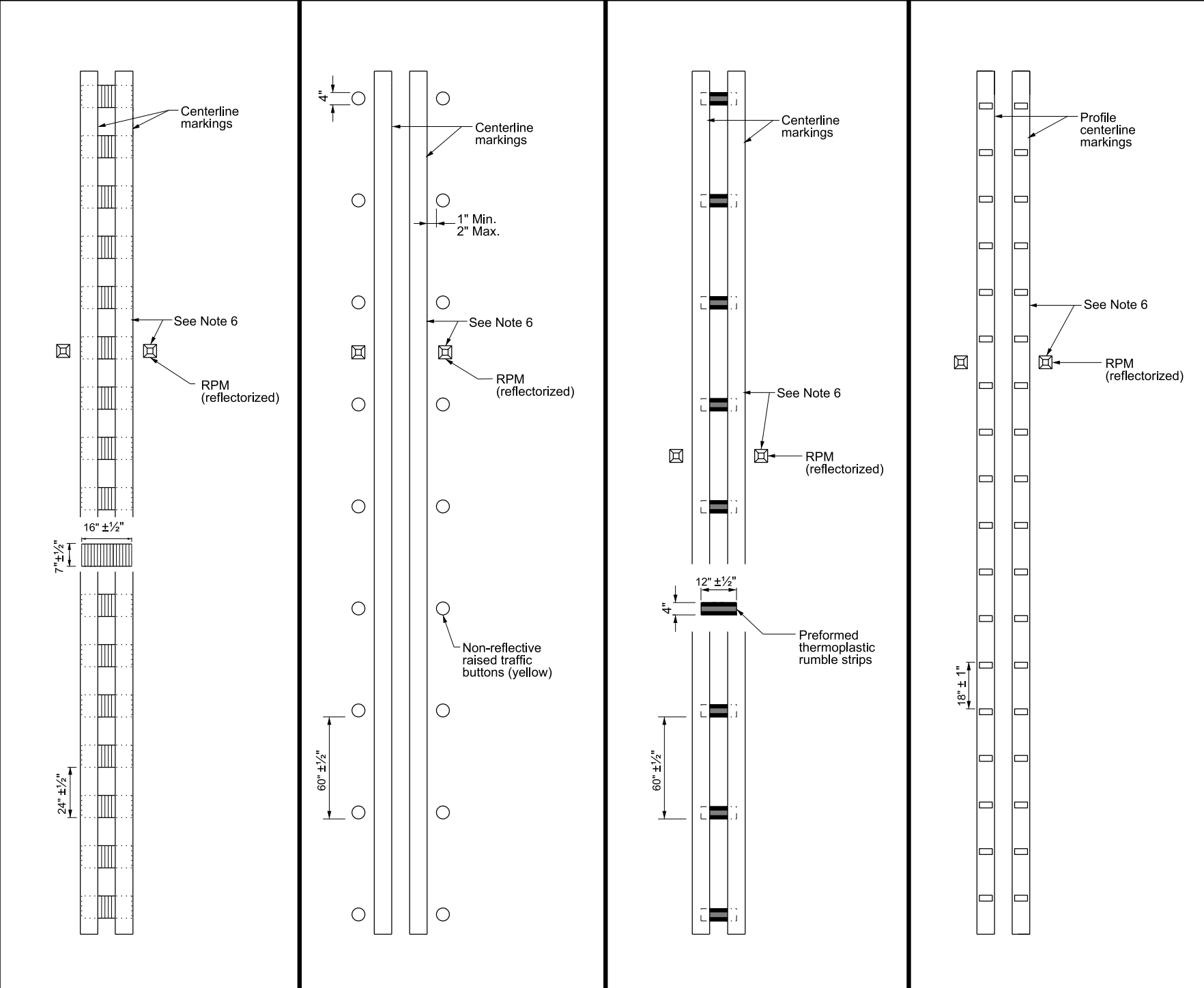
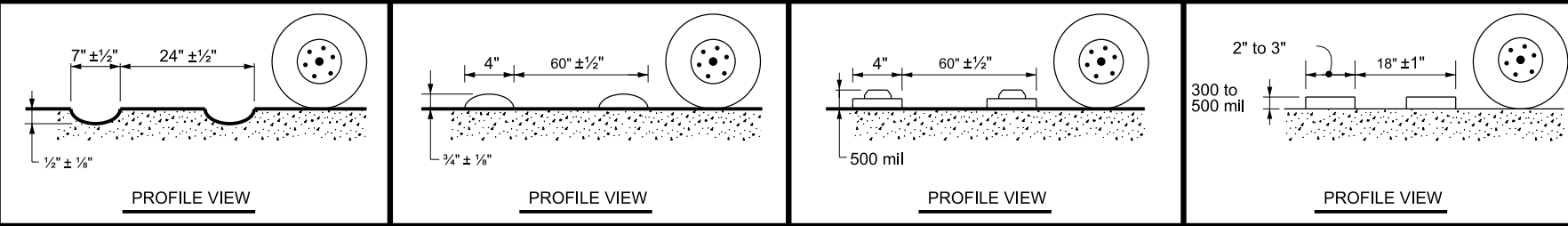
TYPICAL SIGN REQUIREMENTS

TSR (5) - 13

FILE: tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0108	03	041	SH 19
12-03 7-13	DIST	COUNTY	SHEET NO.	
9-08	TYL	HENDERSON	262	

DATE: FILE:

CENTERLINE RUMBLE STRIPS



PLAN VIEW OPTION 1
MILLED CENTERLINE RUMBLE STRIPS

PLAN VIEW OPTION 2
RAISED CENTERLINE RUMBLE STRIPS

PLAN VIEW OPTION 3
PREFORMED THERMOPLASTIC RUMBLE STRIPS

PLAN VIEW OPTION 4
PROFILE CENTERLINE MARKINGS

GENERAL NOTES

1. This standard sheet provides guidelines for installing centerline rumble strips on multilane undivided highways.
2. Centerline and edge line rumble strips or profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.
3. Milled rumble strips are preferred when adequate pavement depth is available. If pavement thickness is less than 2 inches, milled rumble strips shall not be used. Rumble strips shall not be milled or depressed into bridge decks.
4. See dimensions for milled rumble strips. Other shapes and dimensions may be used if approved by the Traffic Safety Division.
5. Breaks in milled centerline rumble strips shall occur at least 50 feet and no more than 150 feet in advance of bridges, railroad crossing, intersections or driveways with high usage of large trucks.
6. Use standard sheet PM(2) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings and profile markings.
7. Consideration should be given to noise levels when centerline rumble strips are to be installed near residential areas, schools, churches, etc. A 3/8 inch deep (minimum) milled rumble strip may be considered in these areas.
8. Pavement markings must be applied over milled centerline rumble strips for normal centerline spacing. For wider medians, specify in the plans the exact placement of the rumble strips. Place the rumble strips under each centerline marking or centered in the middle of the median.

WHEN INSTALLING CENTERLINE RUMBLE STRIPS:

9. Raised rumble strips consisting of non-reflective raised traffic buttons may be used. Non-reflective raised traffic buttons can be affixed to asphalt or concrete with bitumen or adhesives, as per manufacturer's recommendations.
10. When using non-reflective raised traffic buttons as a centerline rumble strip, the button shall be placed adjacent to the pavement marking delineating the centerline. The color of the button should be yellow for a continuous no passing roadway. The button will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.
11. Consideration shall be given to bicyclists. See RS(6).

WHEN INSTALLING EDGE LINE RUMBLE STRIPS WITH OR WITHOUT CENTERLINE RUMBLE STRIPS ON UNDIVIDED HIGHWAYS:

12. See standard sheet RS(2).

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DATE: DATE TIME
 FILE: DOCUMENT NAME

**MULTILANE UNDIVIDED
 HIGHWAY WITH
 SHOULDER**



CENTERLINE RUMBLE STRIPS ON MULTILANE UNDIVIDED HIGHWAYS

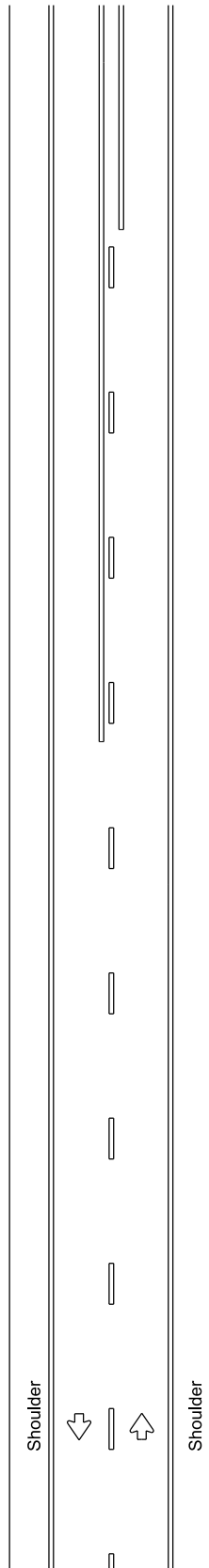
RS(3)-23

FILE: rs(3)-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	January 2023	CONT	SECT	JOB
REVISIONS	0108	03	041	HIGHWAY
10-13	DIST	COUNTY	SHEET NO.	
1-23	TYL	HENDERSON	263	

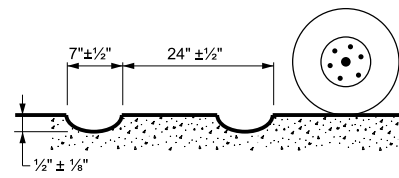
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DATE: 1-23
TIME: 1-23
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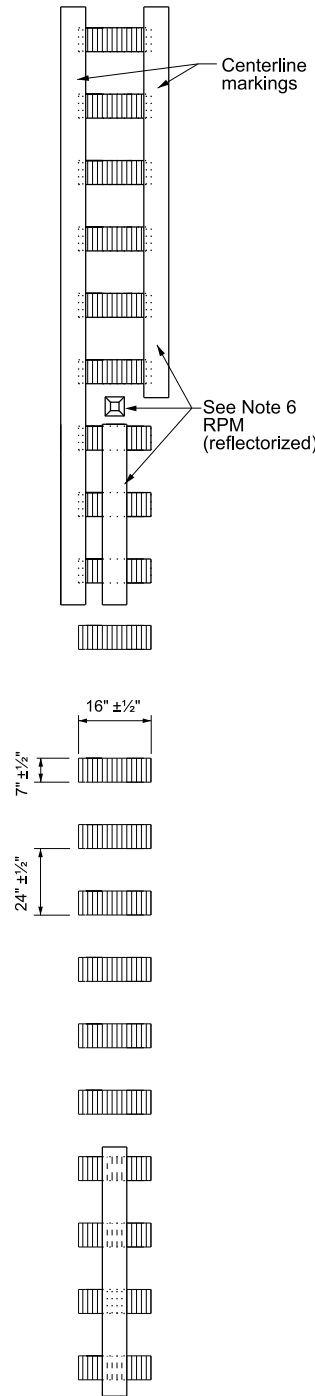
TWO LANE TWO-WAY HIGHWAYS



CENTERLINE RUMBLE STRIPS

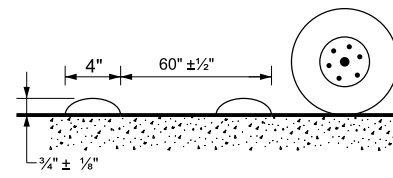


PROFILE VIEW

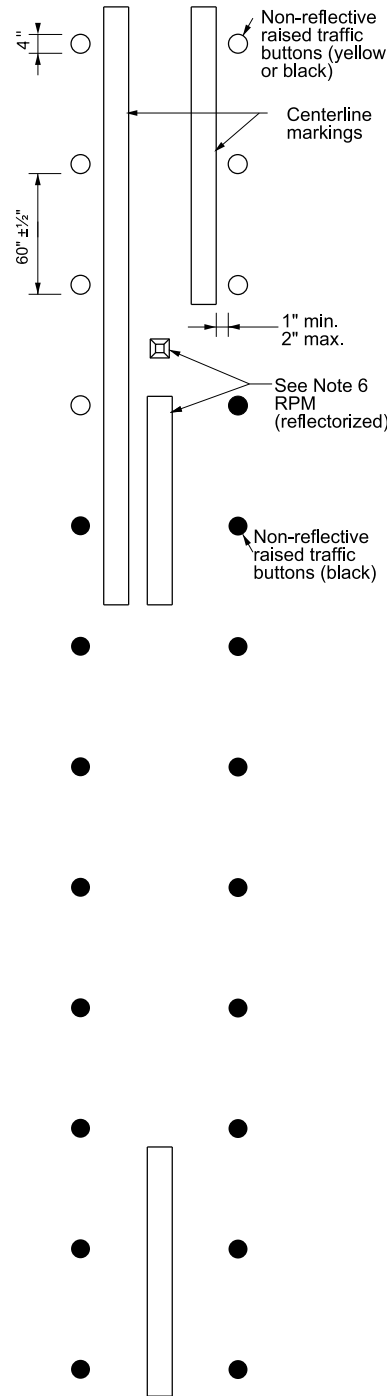


PLAN VIEW
OPTION 1

MILLED CENTERLINE RUMBLE STRIPS

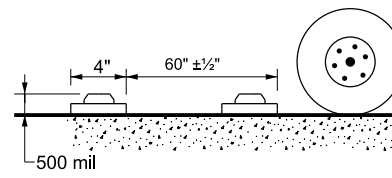


PROFILE VIEW

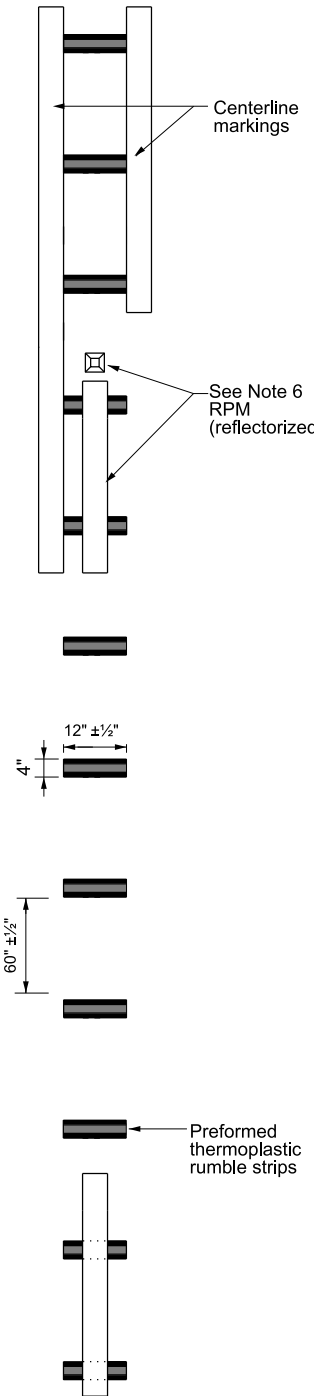


PLAN VIEW
OPTION 2

RAISED CENTERLINE RUMBLE STRIPS

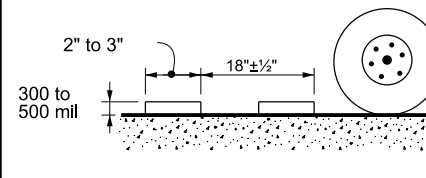


PROFILE VIEW

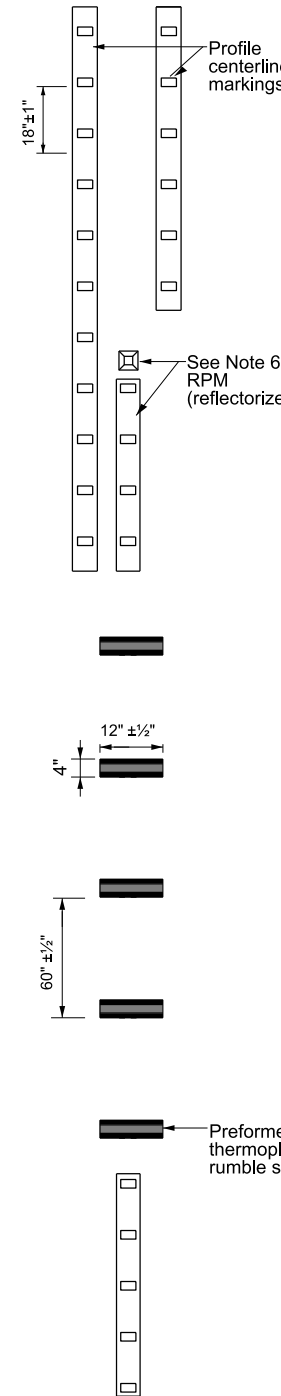


PLAN VIEW
OPTION 3

PREFORMED THERMOPLASTIC RUMBLE STRIPS



PROFILE VIEW



PLAN VIEW
OPTION 4

PROFILE CENTERLINE MARKINGS AND PREFORMED THERMOPLASTIC RUMBLE STRIPS

GENERAL NOTES

1. This standard sheet provides guidelines for installing centerline rumble strips on two-lane highways with or without shoulders.
2. Centerline and edge line rumble strips or profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.
3. Milled rumble strips are preferred when adequate pavement depth is available. If pavement thickness is less than 2 inches, milled rumble strips shall not be used. Rumble strips shall not be milled or depressed into bridge decks.
4. See dimensions for milled rumble strips. Other shapes and dimensions may be used if approved by the Traffic Safety Division.
5. Breaks in milled centerline rumble strips shall occur at least 50 feet and no more than 150 feet in advance of bridges, railroad crossings, intersections or driveways with high usage of large trucks.
6. Use standard sheet PM(2) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings and profile markings.
7. Consideration should be given to noise levels when centerline rumble strips are to be installed near residential areas, schools, churches, etc. A 3/8 inch deep (minimum) milled rumble strip may be considered in these areas.
8. Pavement markings must be applied over milled centerline rumble strips.

WHEN INSTALLING CENTERLINE RUMBLE STRIPS:

9. Raised rumble strips consisting of non-reflective raised traffic buttons may be used. Non-reflective raised traffic buttons can be affixed to asphalt or concrete with bitumen or adhesives, as per manufacturer's recommendations.
10. When using non-reflective raised traffic buttons as a centerline rumble strip, the button shall be placed adjacent to the pavement marking delineating the centerline. The buttons will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.
11. The color of the button should be yellow for a continuous no passing roadway. Black buttons should be used in areas where passing is allowed.
12. Consideration shall be given to bicyclists. See RS(6).

WHEN INSTALLING EDGE LINE RUMBLE STRIPS WITH OR WITHOUT CENTERLINE RUMBLE STRIPS ON UNDIVIDED HIGHWAYS:

13. See standard sheet RS(2).

<p>CENTERLINE RUMBLE STRIPS ON TWO LANE TWO-WAY HIGHWAYS</p> <p>RS(4)-23</p>			
FILE:	rs(4)-23.dgn	DN:	TxDOT
© TxDOT	January 2023	CONT:	0108
REVISIONS:		SECT:	03
10-13		JOB:	041
1-23		HIGHWAY:	SH 19
		DIST:	COUNTY
		TYL:	HENDERSON
		SHEET NO.:	264

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 DATE: 03-JUN-2024 18:58
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ 0108-03-041)\Plan Set\9. Environmental\epic.dgn

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

- 1.
2. No Action Required Required Action

Action No.

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

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

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

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

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

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

1. Pottawatomie Creek
2. First Caney Creek
3. Second Caney Creek
4. Third Caney Creek
5. Unnamed Tributaries

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

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
<input checked="" type="checkbox"/> Temporary Vegetation	<input checked="" type="checkbox"/> Silt Fence	<input type="checkbox"/> Vegetative Filter Strips
<input type="checkbox"/> Blankets/Matting	<input checked="" type="checkbox"/> Rock Berm	<input type="checkbox"/> Retention/Irrigation Systems
<input type="checkbox"/> Mulch	<input type="checkbox"/> Triangular Filter Dike	<input type="checkbox"/> Extended Detention Basin
<input checked="" type="checkbox"/> Sodding	<input type="checkbox"/> Sand Bag Berm	<input type="checkbox"/> Constructed Wetlands
<input type="checkbox"/> Interceptor Swale	<input type="checkbox"/> Straw Bale Dike	<input type="checkbox"/> Wet Basin
<input type="checkbox"/> Diversion Dike	<input type="checkbox"/> Brush Berms	<input type="checkbox"/> Erosion Control Compost
<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Mulch Filter Berm and Socks
<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks
<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks	<input checked="" type="checkbox"/> Vegetation Lined Ditches
	<input type="checkbox"/> Stone Outlet Sediment Traps	<input type="checkbox"/> Sand Filter Systems
	<input type="checkbox"/> Sediment Basins	<input type="checkbox"/> 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. Contractor to adhere to specifications listed above in IV. VEGETATION RESOURCES.
- 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. LEAST TERN -- Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered, and to avoid unnecessary impacts on nests.
2. PIPING PLOVER -- Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered, and to avoid unnecessary impacts on nests.
3. RED KNOT -- Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered, and to avoid unnecessary impacts on nests.

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediate area, and contact the Engineer immediately.

LIST OF ABBREVIATIONS

BMP: Best Management Practice	SPCC: Spill Prevention Control and Countermeasure
CGP: Construction General Permit	SW3P: Storm Water Pollution Prevention Plan
DSHS: Texas Department of State Health Services	PCN: Pre-Construction Notification
FHWA: Federal Highway Administration	PSL: Project Specific Location
MOA: Memorandum of Agreement	TCEQ: Texas Commission on Environmental Quality
MOU: Memorandum of Understanding	TPDES: Texas Pollutant Discharge Elimination System
MS4: Municipal Separate Stormwater Sewer System	TPWD: Texas Parks and Wildlife Department
MBTA: Migratory Bird Treaty Act	TxDOT: Texas Department of Transportation
NOT: Notice of Termination	T&E: Threatened and Endangered Species
NWP: Nationwide Permit	USACE: U.S. Army Corps of Engineers
NOI: Notice of Intent	USFWS: U.S. Fish and Wildlife Service

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used. Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act. Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

- * Dead or distressed vegetation (not identified as normal)
- * Trash piles, drums, canister, barrels, etc.
- * Undesirable smells or odors
- * Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

- Yes No

If "No", then no further action is required.

If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

- Yes No

If "Yes", then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

- No Action Required Required Action

Action No.

1. No action necessary above those required by the 2014 TxDOT Standard Specifications for Construction & Maintenance of Highways, Streets, and Bridges.
- 2.
- 3.

VII. OTHER ENVIRONMENTAL ISSUES

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

- No Action Required Required Action

Action No.

1. Notify the local floodplain administrator as necessary and comply with all applicable rules and regulations regarding the hydraulic design of the project.
- 2.
- 3.



DIGITALLY SIGNED ON 02/15/2022

Texas Department of Transportation		Design Division Standard	
ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS			
EPIC			
FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP
©TxDOT: February 2015	CONT	SECT	JOB
12-12-2011 (05) REVISIONS	0108	03	041
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY	SHEET NO.
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	TYL	HENDERSON	265

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with soil disturbing activity and for projects that have Environmental, Permits, Issues, and Commitments (EPICs) dependent on stormwater controls and water quality measures TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office, Area Office, or electronically.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
CSJ 0108-03-041 SH 19

1.2 PROJECT LIMITS:
From: STA 1564+00.00

To: STA 2035+00.00

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 32.35686°, (Long) 95.84781°

END: (Lat) 32.22855°, (Long) 95.85227°

1.4 TOTAL PROJECT AREA (Acres): 133.56 ACRES

1.5 TOTAL AREA TO BE DISTURBED (Acres): 70.00 ACRES

1.6 NATURE OF CONSTRUCTION ACTIVITY:

FOR THE CONSTRUCTION OF SUPER 2 TYPE WORK CONSISTING OF BASE REPAIR, TREATED SUBGRADE, ACP BASE, OCST, STRUCTURES, SIGNS AND PAVEMENT MARKINGS

1.7 MAJOR SOIL TYPES:

Soil Type	Description
FINE SAND	TONKAWA FINE SAND, 1 TO 6 PERCENT SLOPES
LOAM	NAHATCHE LOAM, 0 TO 1 PERCENT SLOPES
FINE SANDY LOAM	CUTHBERT FINE SANDY LOAM, 8 TO 20 PERCENT SLOPES
LOAM	WOODTELL LOAM, 5 TO 15 PERCENT SLOPES
LOAMY FINE SAND	PINKTON LOAMY FINE SAND, 1 TO 8 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.)

- Mobilization
- Install sediment and erosion controls
- Blade existing topsoil into windrows, prep ROW, clear and grub
- Remove existing pavement
- Grading operations, excavation, and embankment
- Excavate and prepare subgrade for proposed pavement widening
- Remove existing culverts, safety end treatments (SETs)
- Remove existing metal beam guard fence (MBGF), bridge rail
- Install proposed pavement per plans
- Install culverts, culvert extensions, SETs
- Install mow strip, MBGF, bridge rail
- Place flex base
- Rework slopes, grade ditches
- Blade windrowed material back across slopes
- Revegetation of unpaved areas
- Achieve site stabilization and remove sediment and erosion control measures
- Other: _____
- Other: _____
- Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- Sediment laden stormwater from stormwater conveyance over disturbed area
- Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- Solvents, paints, adhesives, etc. from various construction activities
- Transported soils from offsite vehicle tracking
- Construction debris and waste from various construction activities
- Contaminated water from excavation or dewatering pump-out water
- Sanitary waste from onsite restroom facilities
- Trash from various construction activities/receptacles
- Long-term stockpiles of material and waste

- Other: _____
- Other: _____
- Other: _____

1.11 RECEIVING WATERS:

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody
DRAKES BRANCH	CREEK
POTTAWATOMIE CREEK	CREEK
THIRD CANEY CREEK	CREEK
SECOND CANEY CREEK	CREEK
FIRST CANEY CREEK	CREEK

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- Development of plans and specifications
- Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- Post Construction Site Notice
- Submit NOI/CSN to local MS4
- Perform SWP3 inspections
- Maintain SWP3 records and update to reflect daily operations
- Complete and submit Notice of Termination to TCEQ
- Maintain SWP3 records for 3 years
- Other: _____
- Other: _____
- Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- Day To Day Operational Control
- Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- Post Construction Site Notice
- Submit NOI/CSN to local MS4
- Maintain schedule of major construction activities
- Install, maintain and modify BMPs
- Complete and submit Notice of Termination to TCEQ
- Maintain SWP3 records for 3 years
- Other: _____
- Other: _____
- Other: _____

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity



06/28/2024

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

July 2023 Sheet 1 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
				266
STATE	STATE DIST.	COUNTY		
TEXAS	TYL	HENDERSON		
CONT.	SECT.	JOB	HIGHWAY NO.	
0108	03	041	SH 19	

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- Protection of Existing Vegetation
- Vegetated Buffer Zones
- Soil Retention Blankets
- Geotextiles
- Mulching/ Hydromulching
- Soil Surface Treatments
- Temporary Seeding
- Permanent Planting, Sodding or Seeding
- Biodegradable Erosion Control Logs
- Rock Filter Dams/ Rock Check Dams
- Vertical Tracking
- Interceptor Swale
- Riprap
- Diversion Dike
- Temporary Pipe Slope Drain
- Embankment for Erosion Control
- Paved Flumes
- Other: PRESERVATION OF NATURAL RESOURCES
- Other: _____
- Other: _____
- Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- Biodegradable Erosion Control Logs
- Dewatering Controls
- Inlet Protection
- Rock Filter Dams/ Rock Check Dams
- Sandbag Berms
- Sediment Control Fence
- Stabilized Construction Exit
- Floating Turbidity Barrier
- Vegetated Buffer Zones
- Vegetated Filter Strips
- Other: STONE OUTLET STRUCTURES
- Other: _____
- Other: _____
- Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- Sediment Trap
 - Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
 - 3,600 cubic feet of storage per acre drained
- Sedimentation Basin
 - Not required (<10 acres disturbed)
 - Required (>10 acres) and implemented.
 - Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
 - 3,600 cubic feet of storage per acre drained
 - Required (>10 acres), but not feasible due to:
 - Available area/Site geometry
 - Site slope/Drainage patterns
 - Site soils/Geotechnical factors
 - Public safety
 - Other: _____

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- Excess dirt/mud on road removed daily
- Haul roads dampened for dust control
- Loaded haul trucks to be covered with tarpaulin
- Stabilized construction exit
- Daily street sweeping
- Other: _____
- Other: _____
- Other: _____
- Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- Chemical Management
- Concrete and Materials Waste Management
- Debris and Trash Management
- Dust Control
- Sanitary Facilities
- Other: _____
- Other: _____
- Other: _____
- Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- Fire hydrant flushings
- Irrigation drainage
- Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- Potable water sources
- Springs
- Uncontaminated groundwater
- Water used to wash vehicles or control dust
- Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 DEWATERING:

Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment and other pollutants.

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

When dewatering activities are present, a daily inspection will be conducted once per day during those activities and documented in accordance with CGP and TxDOT requirements.

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.



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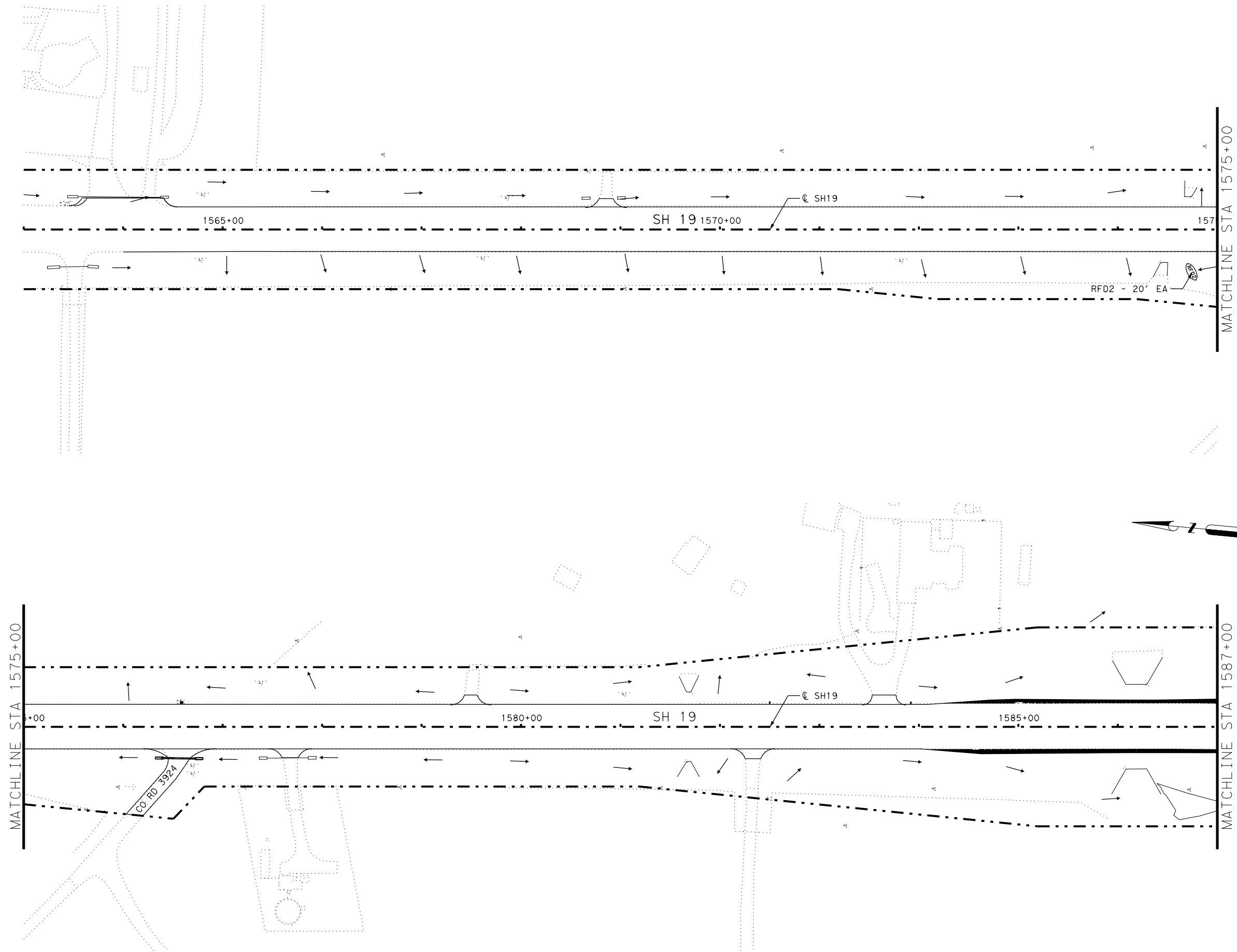
STORMWATER POLLUTION PREVENTION PLAN (SWP3)

July 2023 Sheet 2 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
				266A
STATE	STATE DIST.	COUNTY		
TEXAS	TYL	HENDERSON		
CONT.	SECT.	JOB	HIGHWAY NO.	
0108	03	041	SH 19	

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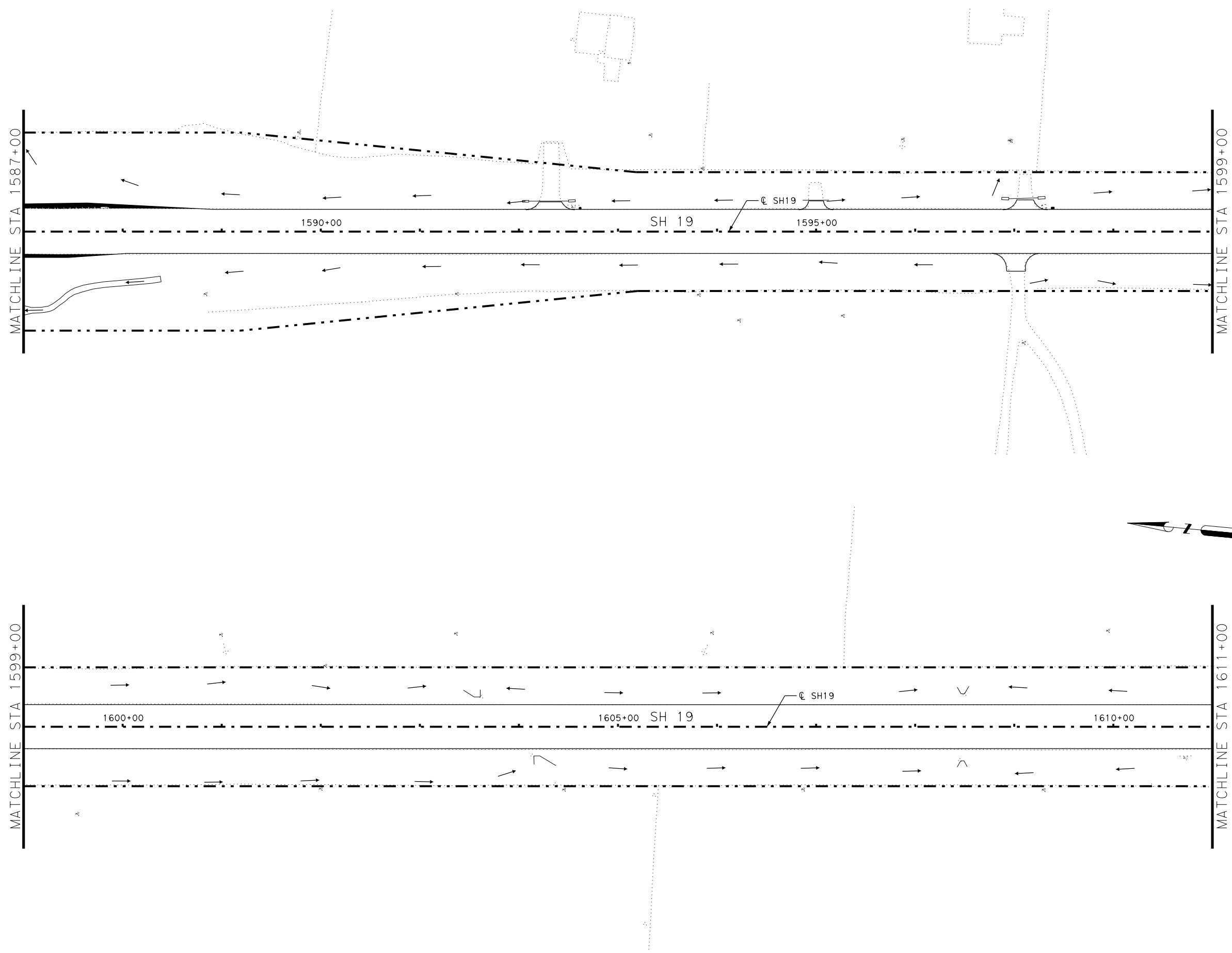


EROSION CONTROL LAYOUT

SHEET 1 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	267

DATE: 20-JUN-2024 17:56
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Trevor L. Reed 06/21/2024

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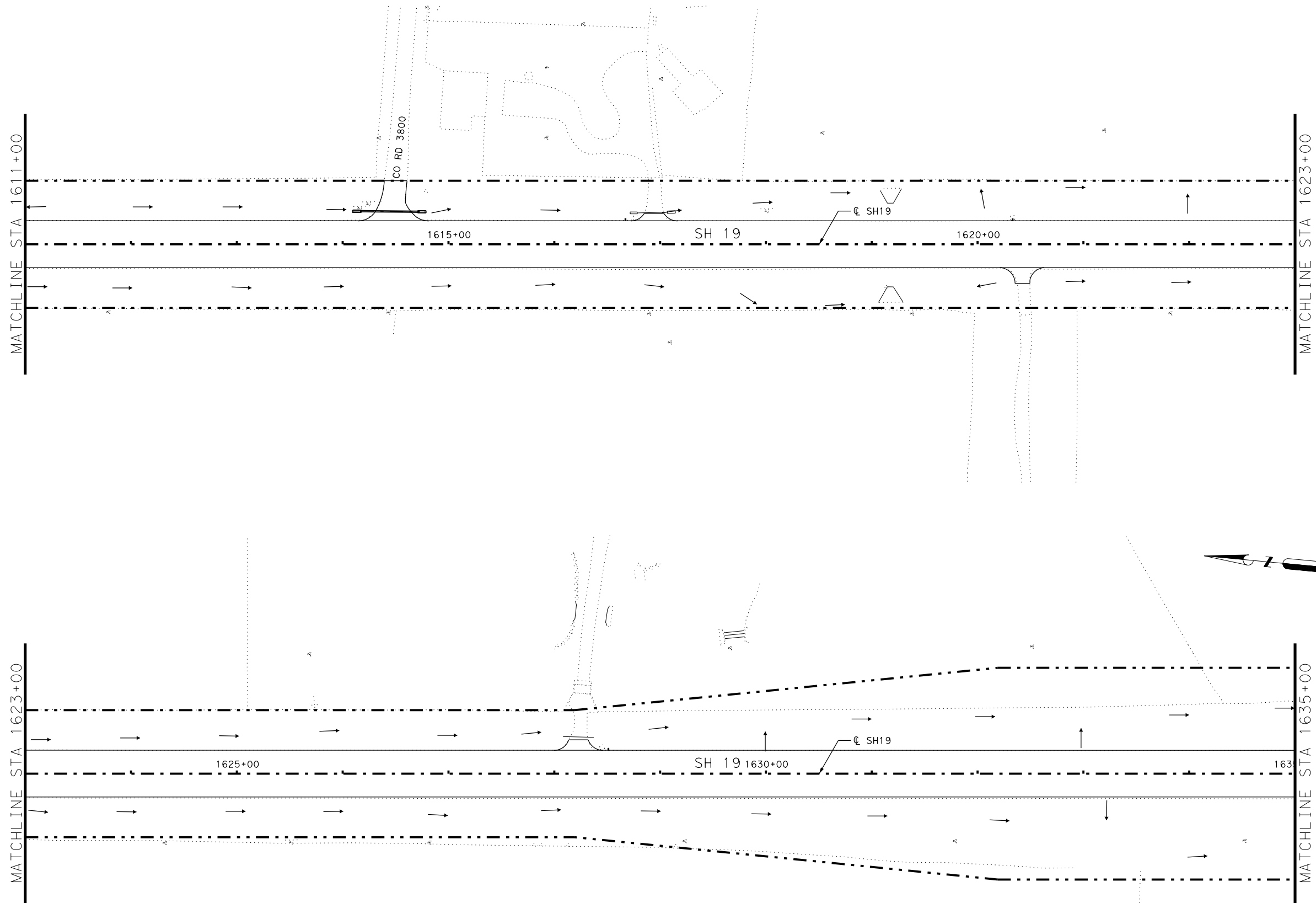


EROSION CONTROL LAYOUT

SHEET 2 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	268

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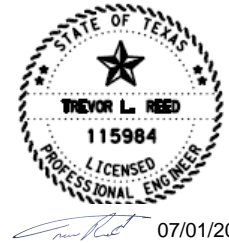
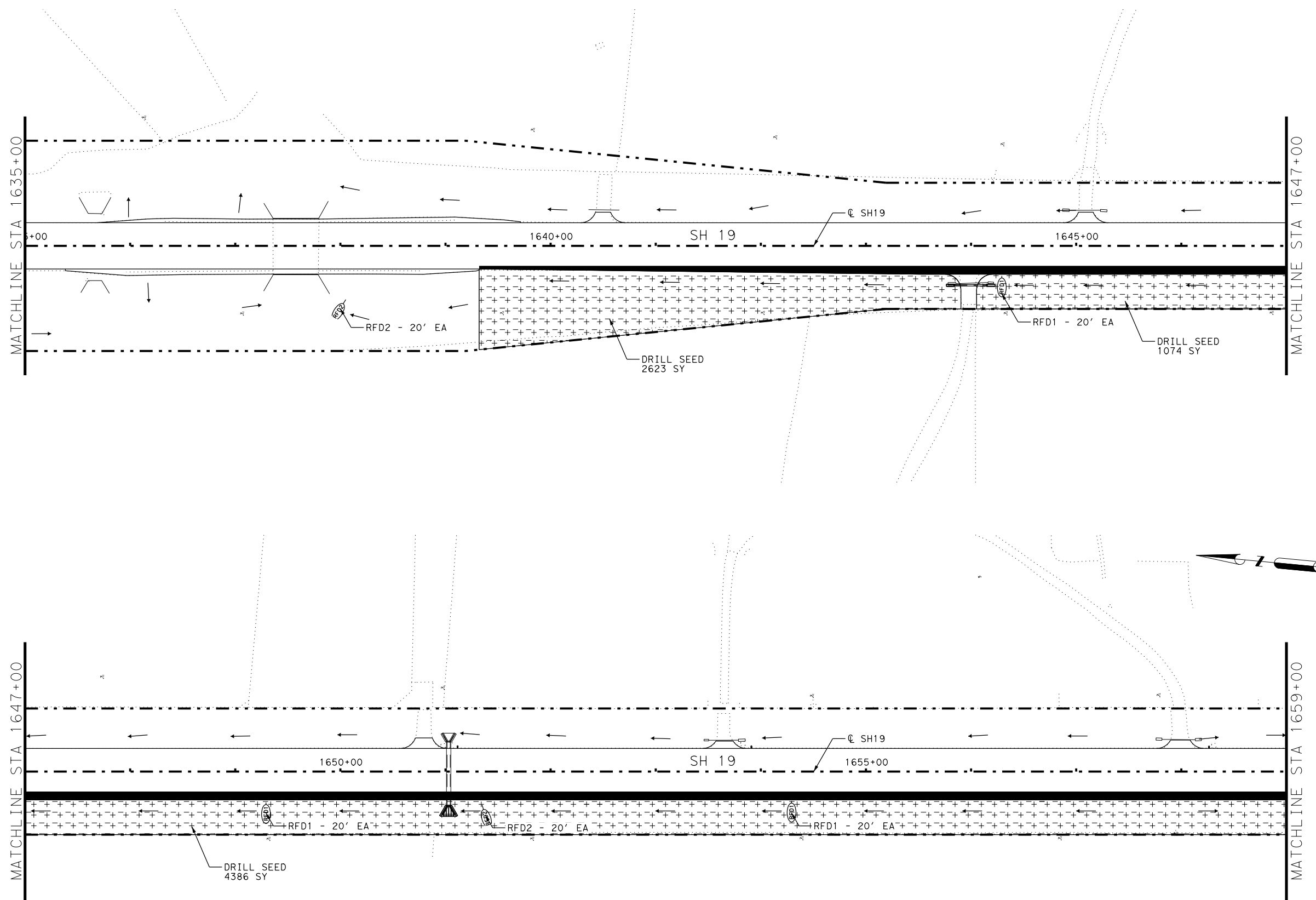


EROSION CONTROL LAYOUT

SHEET 3 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYL	HENDERSON	269	

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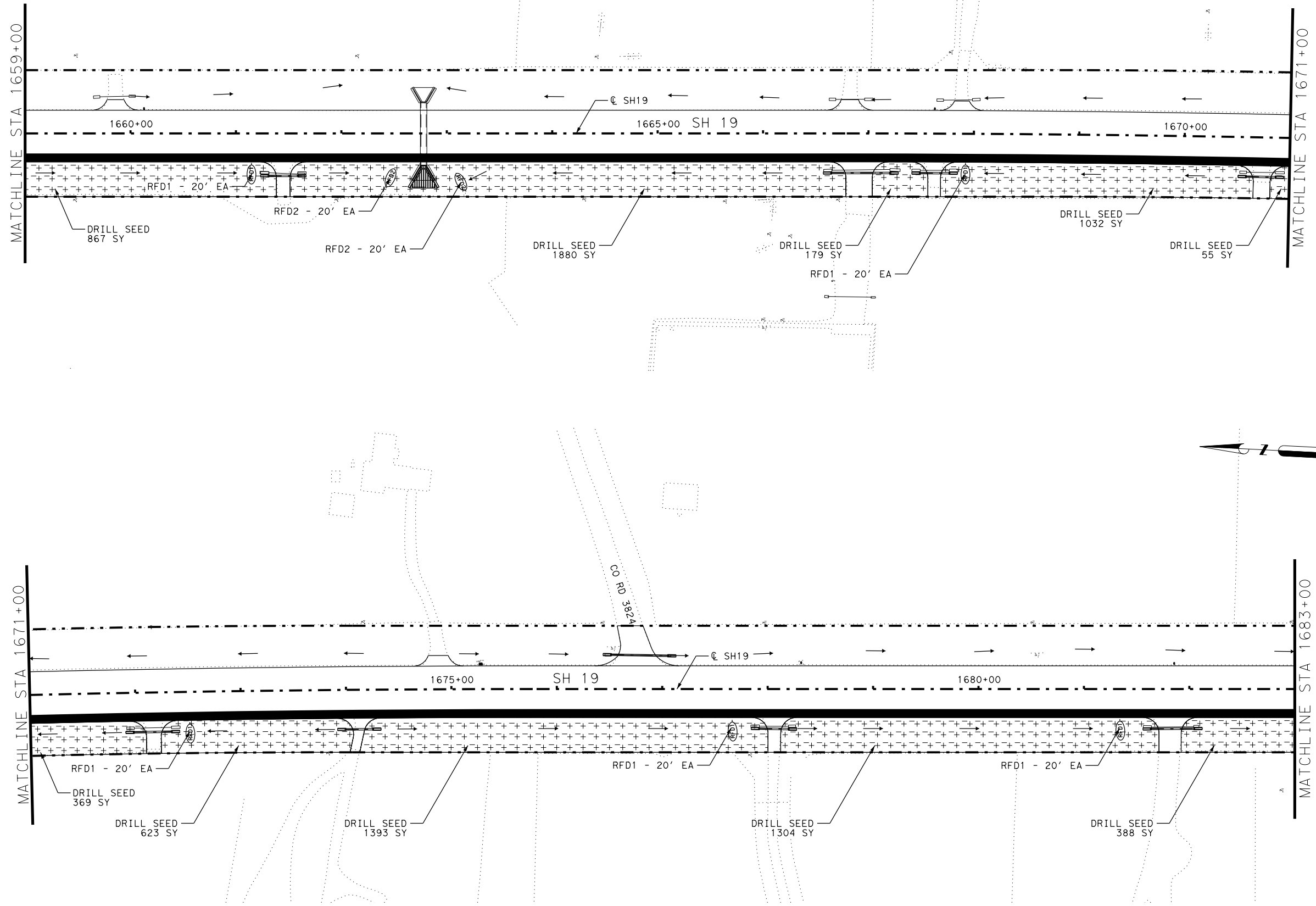
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 Texas Department of Transportation

EROSION CONTROL LAYOUT

SHEET 4 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	270

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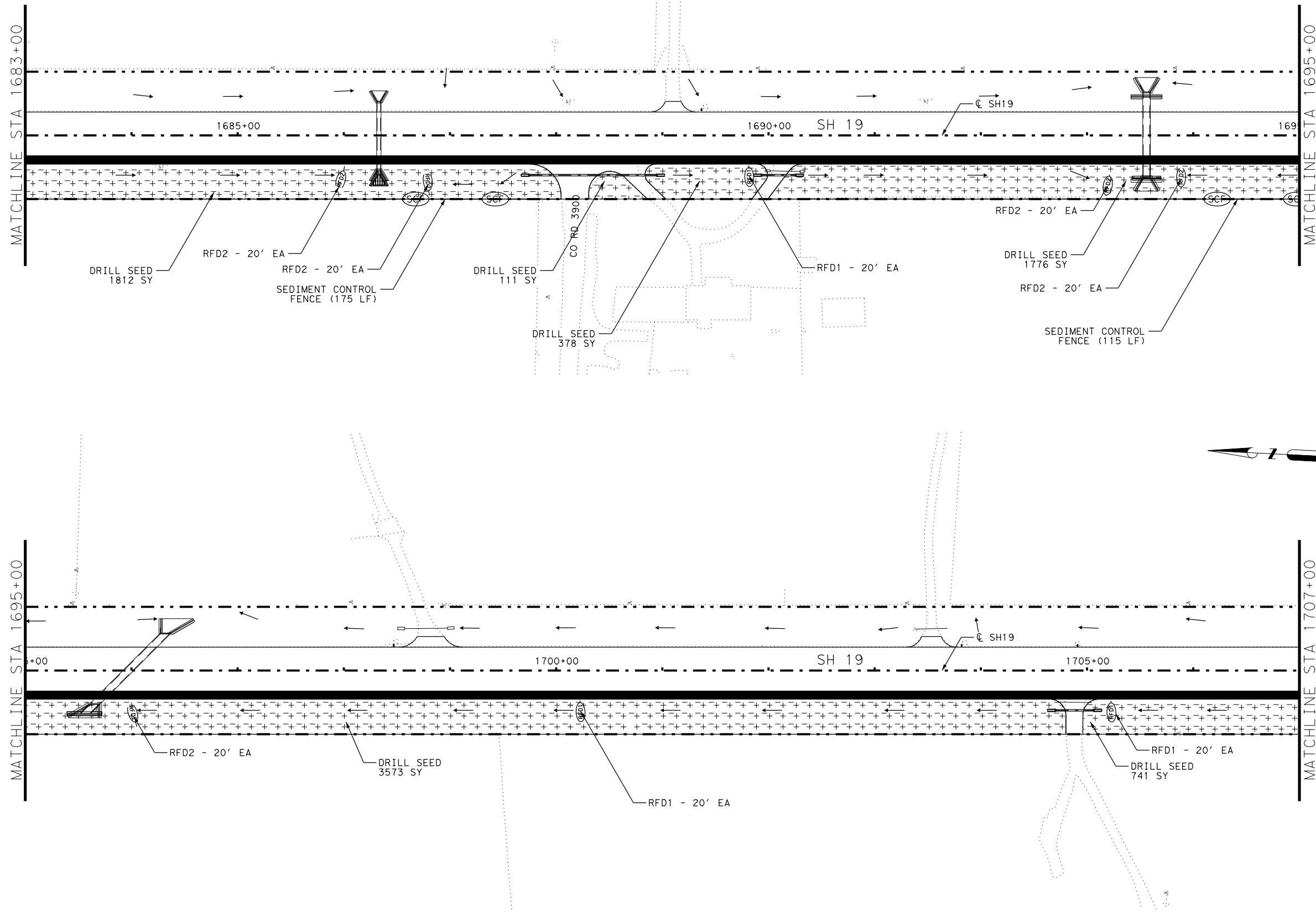


EROSION CONTROL LAYOUT

SHEET 5 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	271

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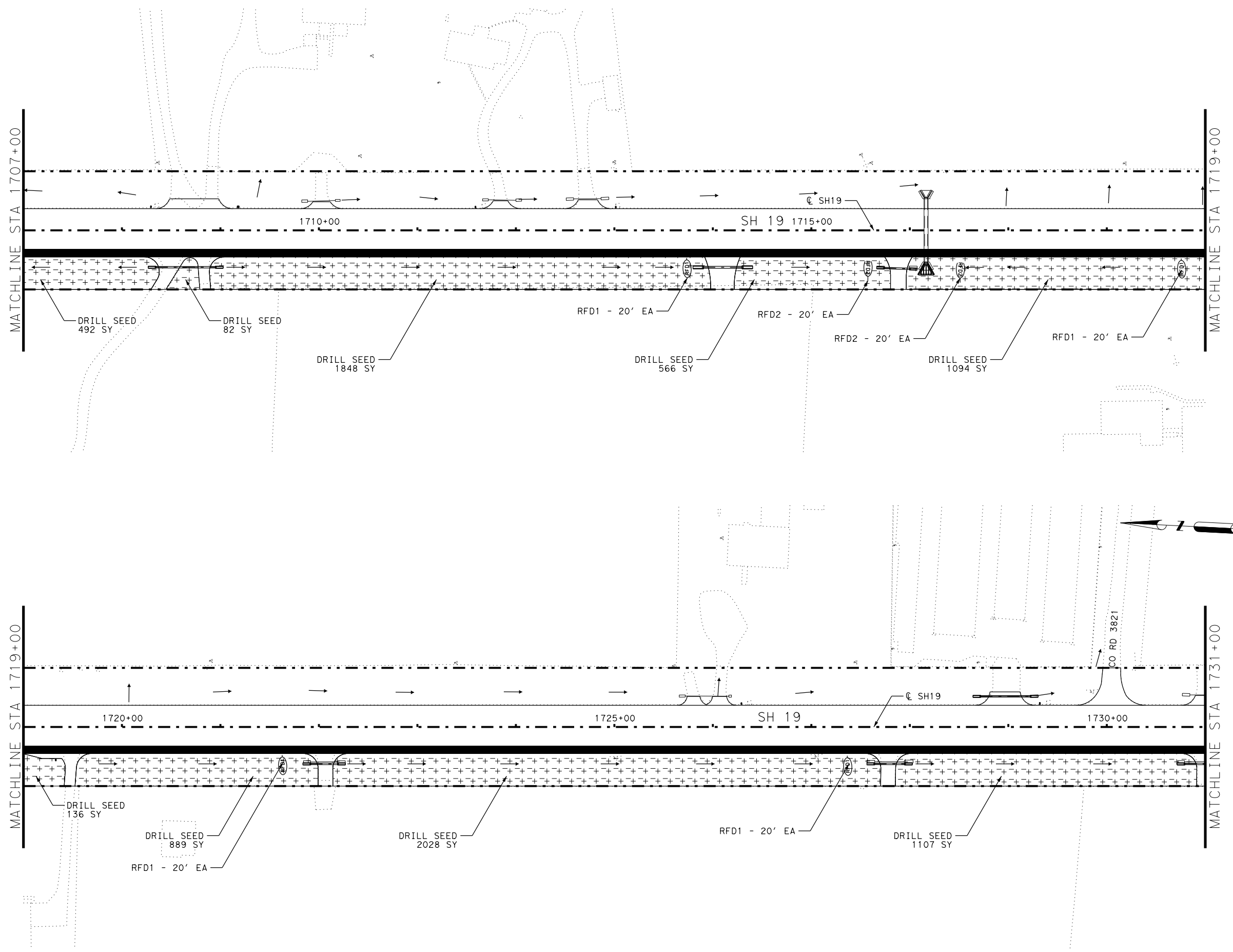


EROSION CONTROL LAYOUT

SHEET 6 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	272

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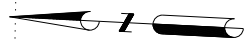
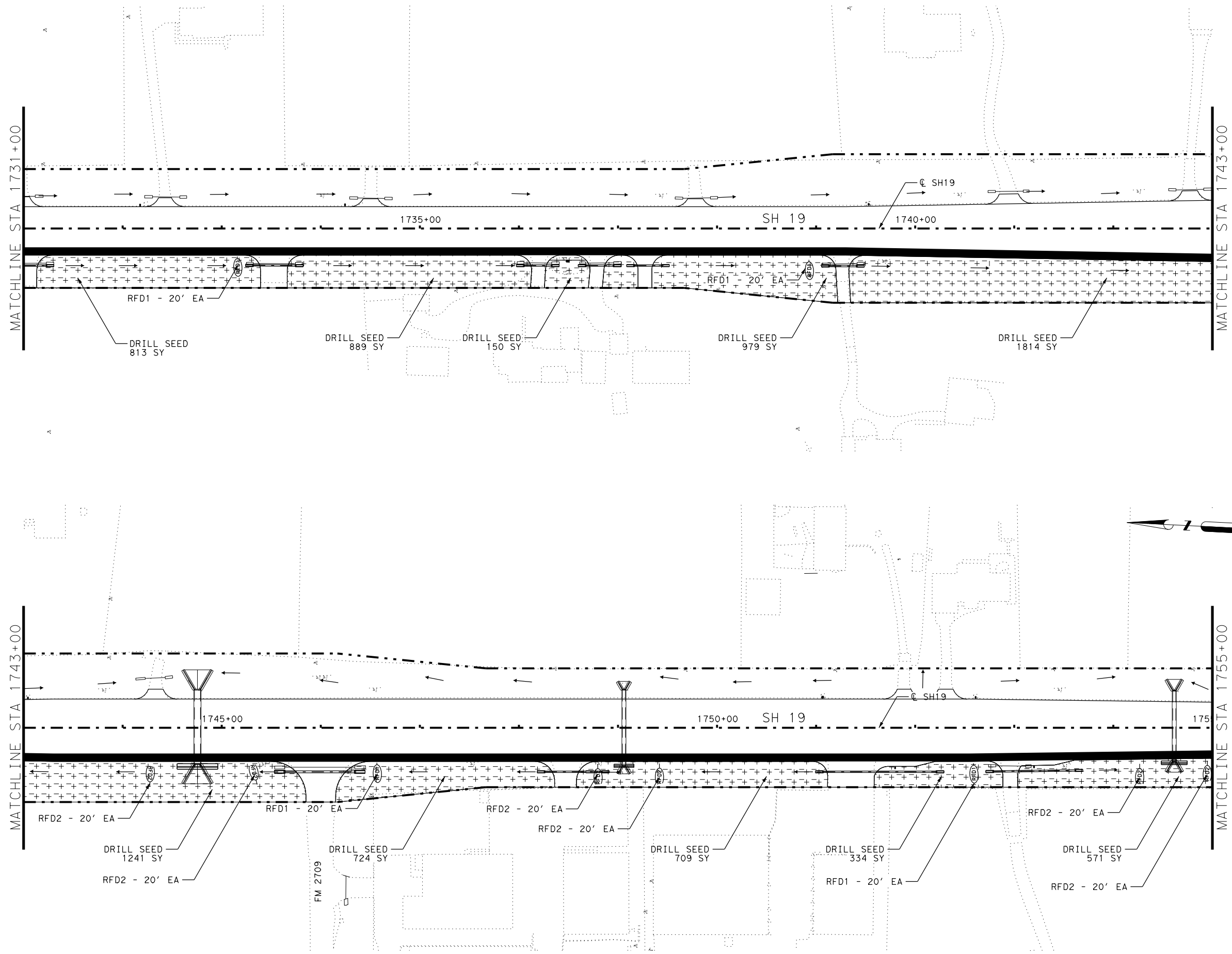


EROSION CONTROL LAYOUT

SHEET 7 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	273

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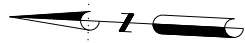
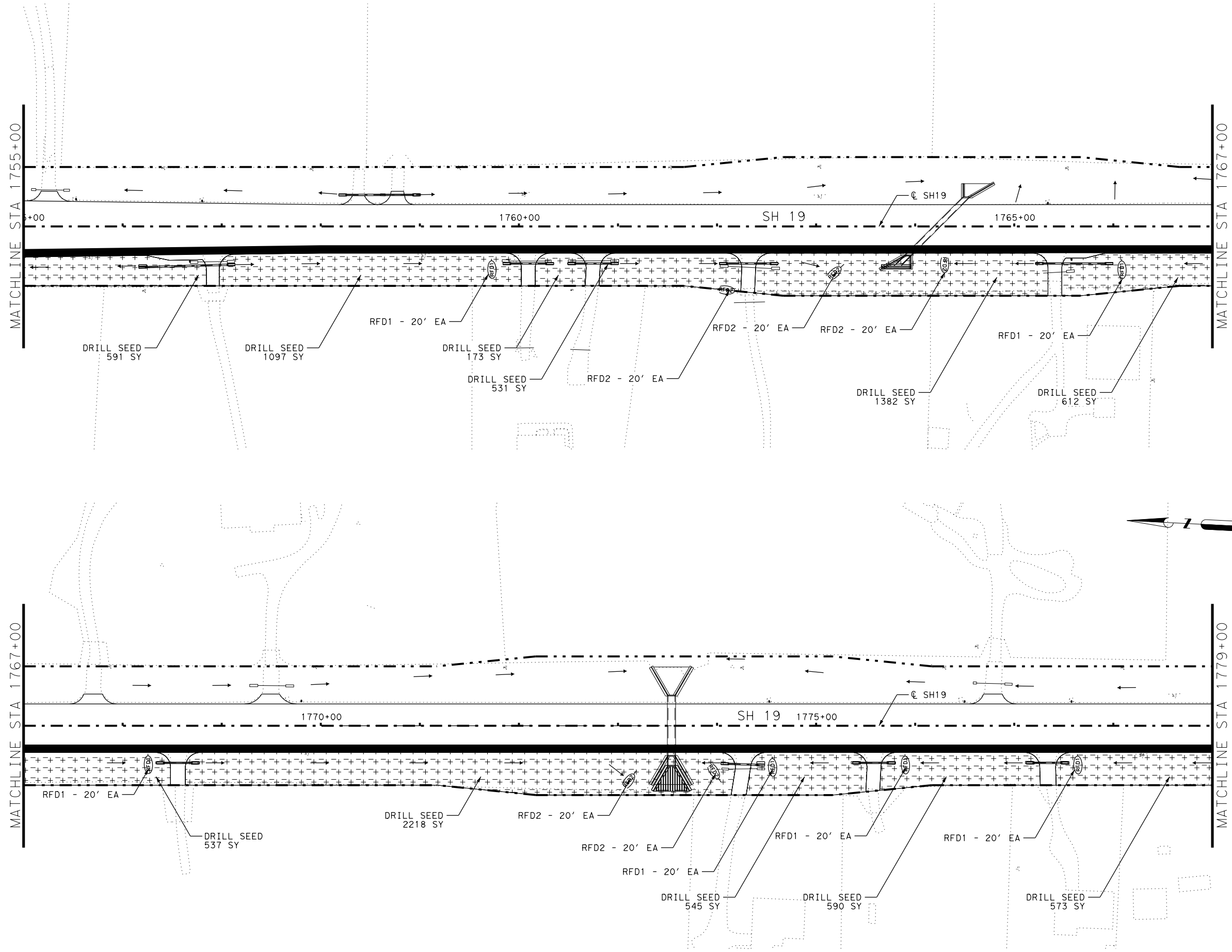


EROSION CONTROL LAYOUT

SHEET 8 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYL	HENDERSON	274	

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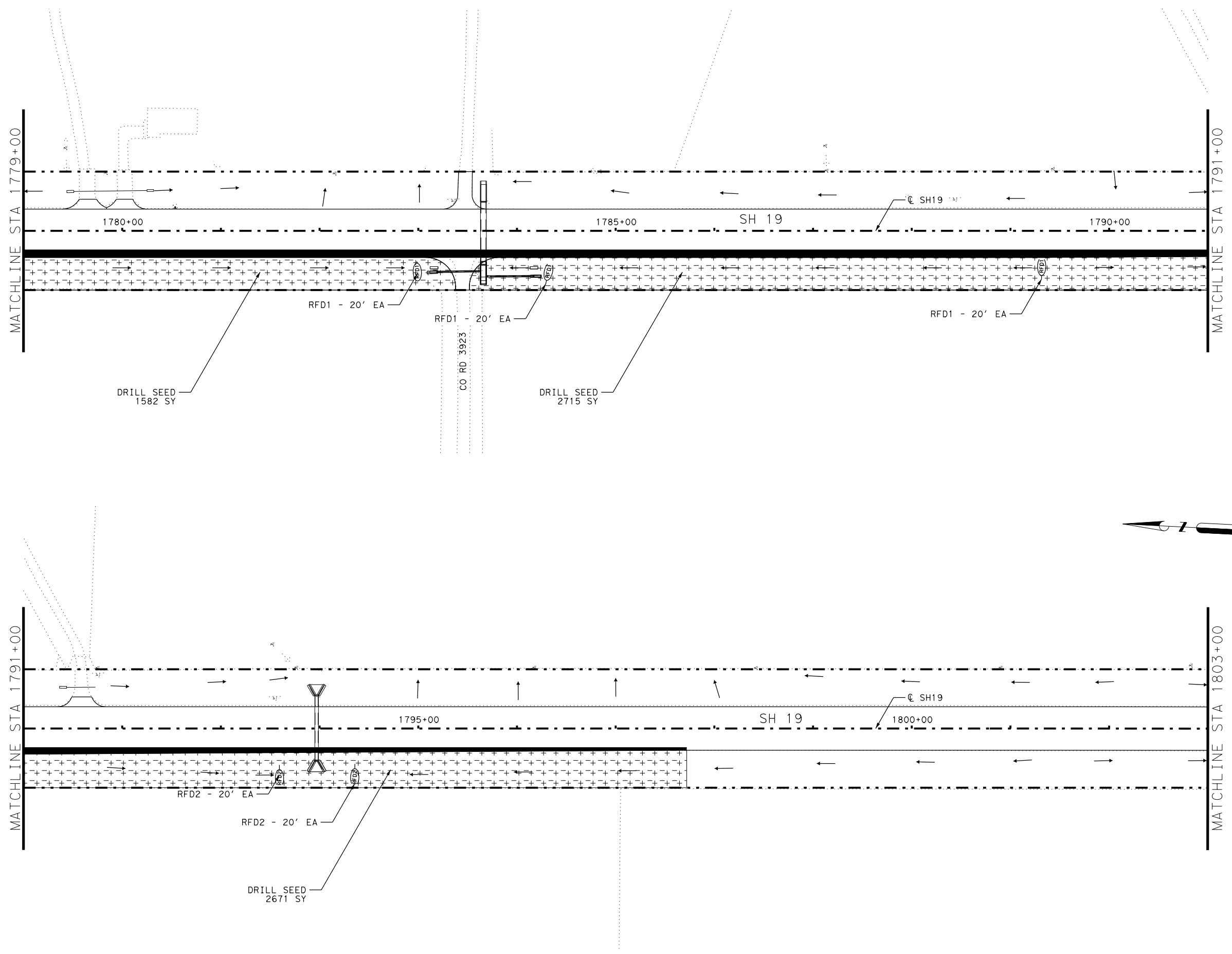


EROSION CONTROL LAYOUT

SHEET 9 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	275

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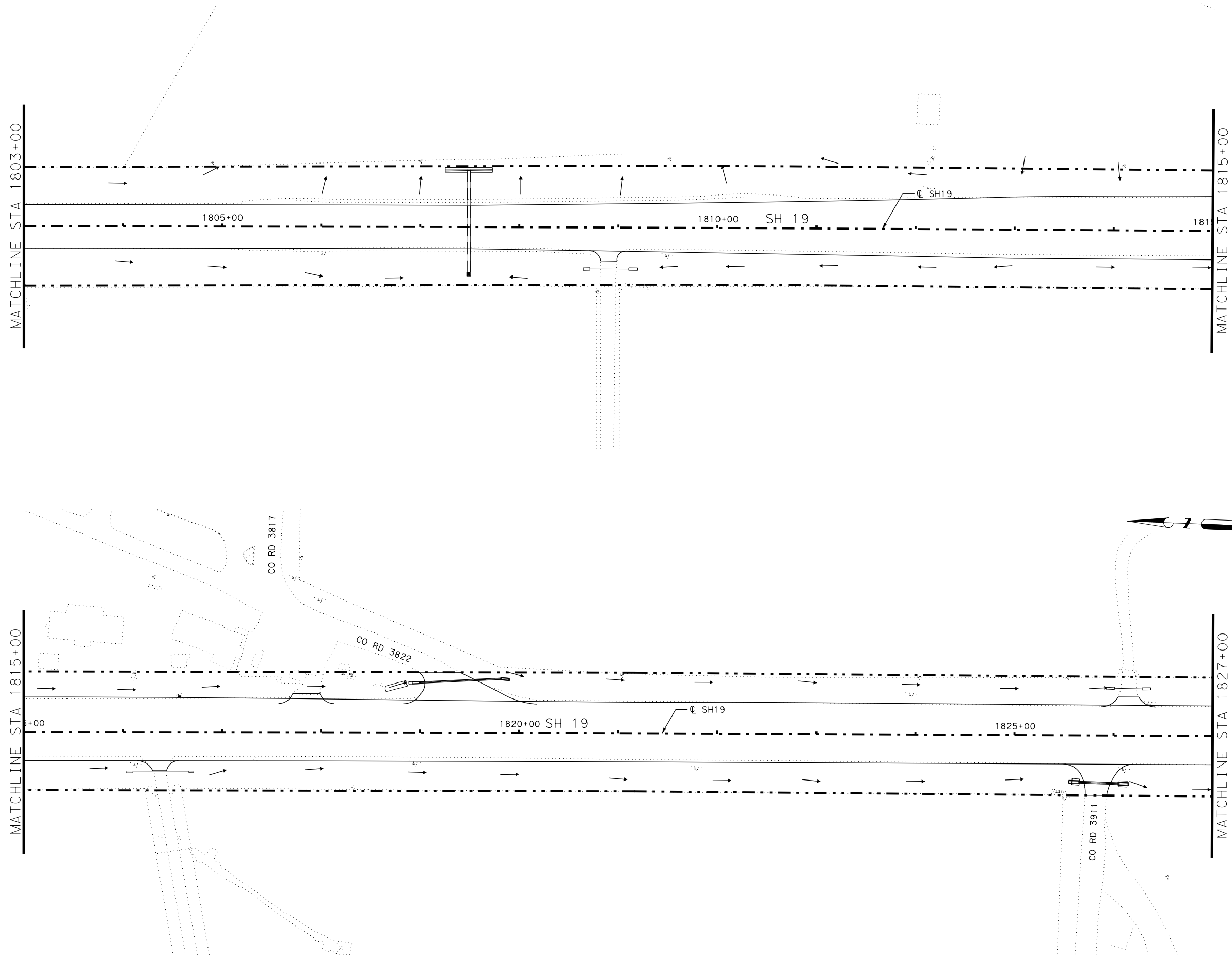


EROSION CONTROL LAYOUT

SHEET 10 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	276

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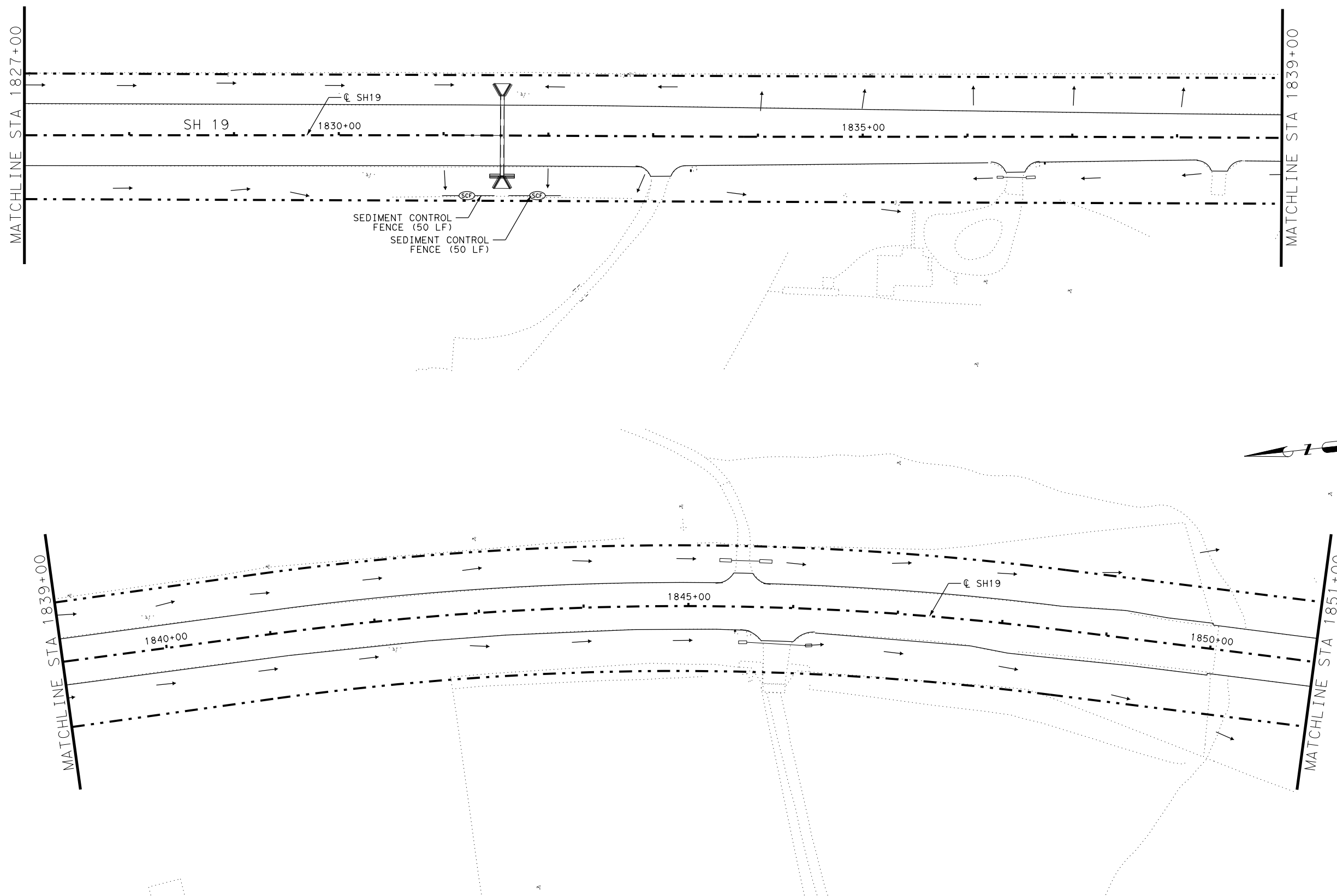


EROSION CONTROL LAYOUT

SHEET 11 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	277

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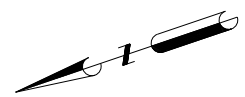
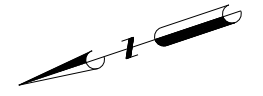
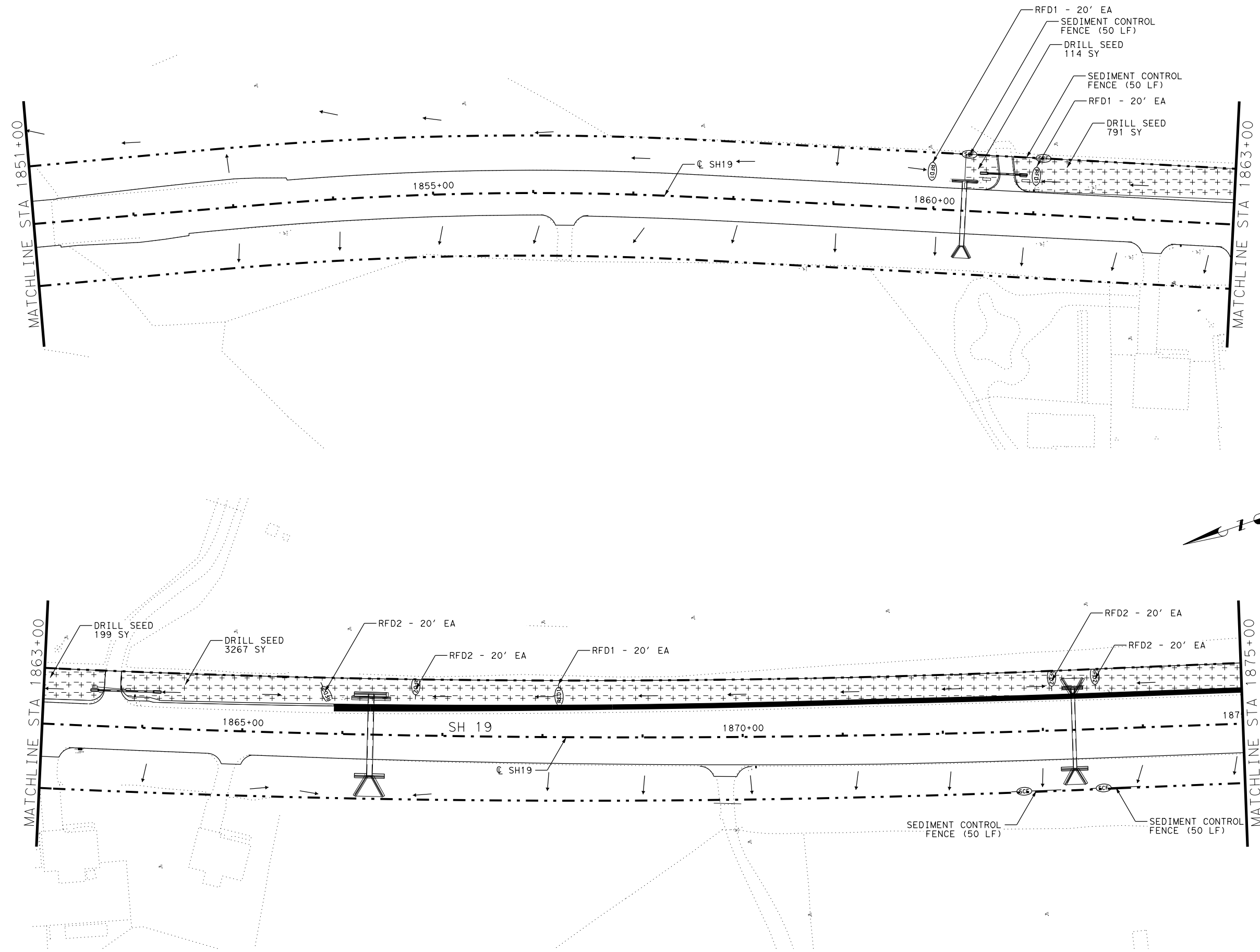


EROSION CONTROL LAYOUT

SHEET 12 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	278

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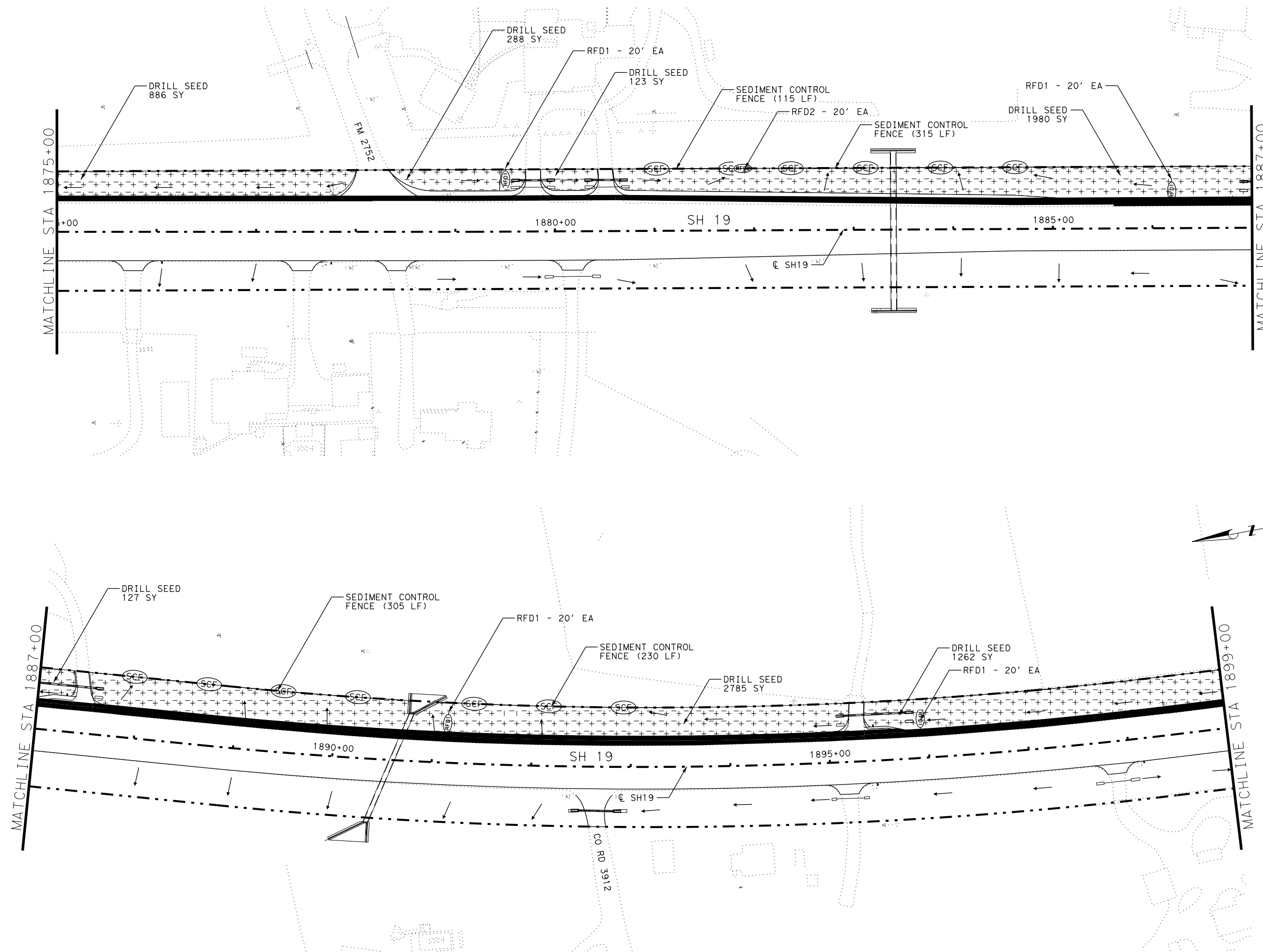


EROSION CONTROL LAYOUT

SHEET 13 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYL	HENDERSON	279	

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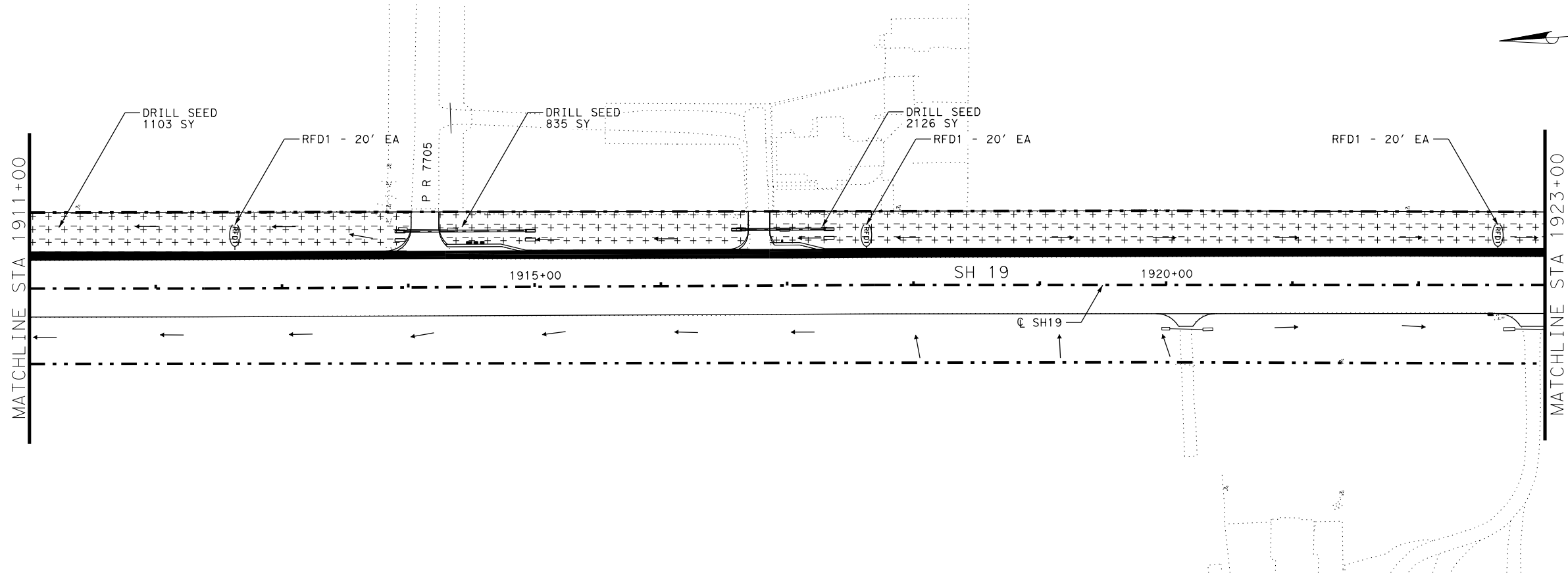
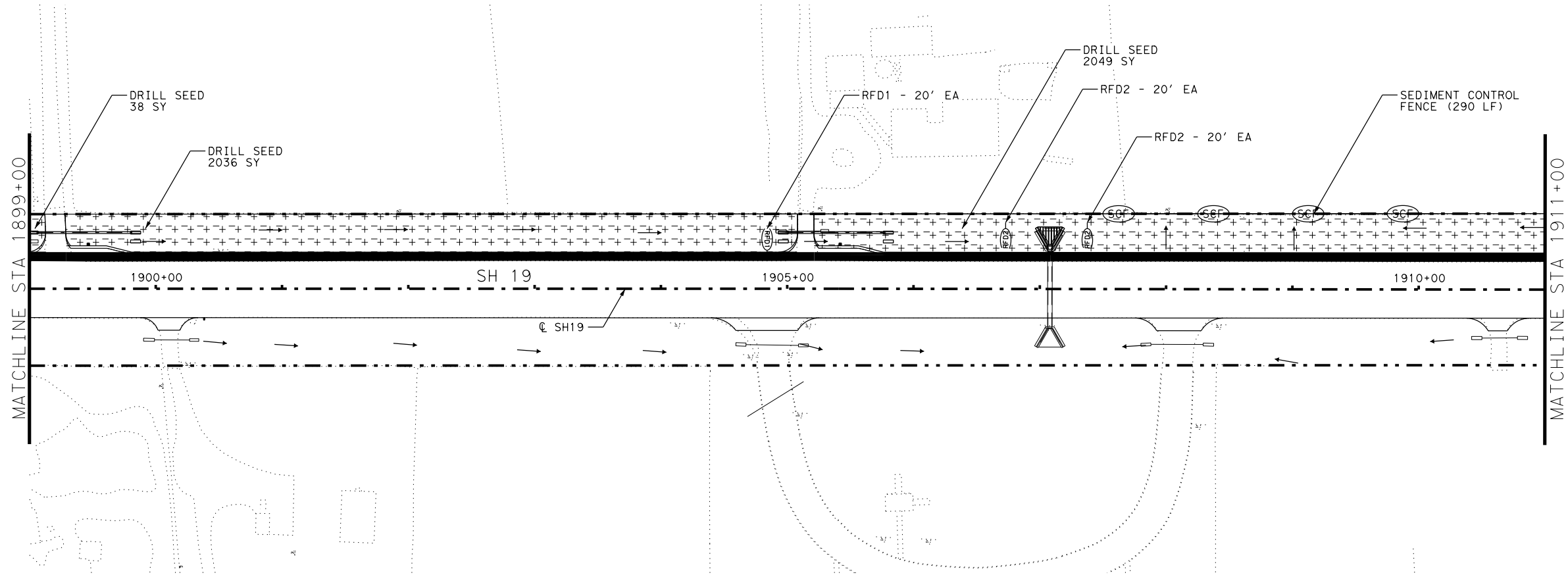


EROSION CONTROL LAYOUT

SHEET 14 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYL	HENDERSON	280	

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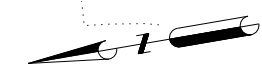
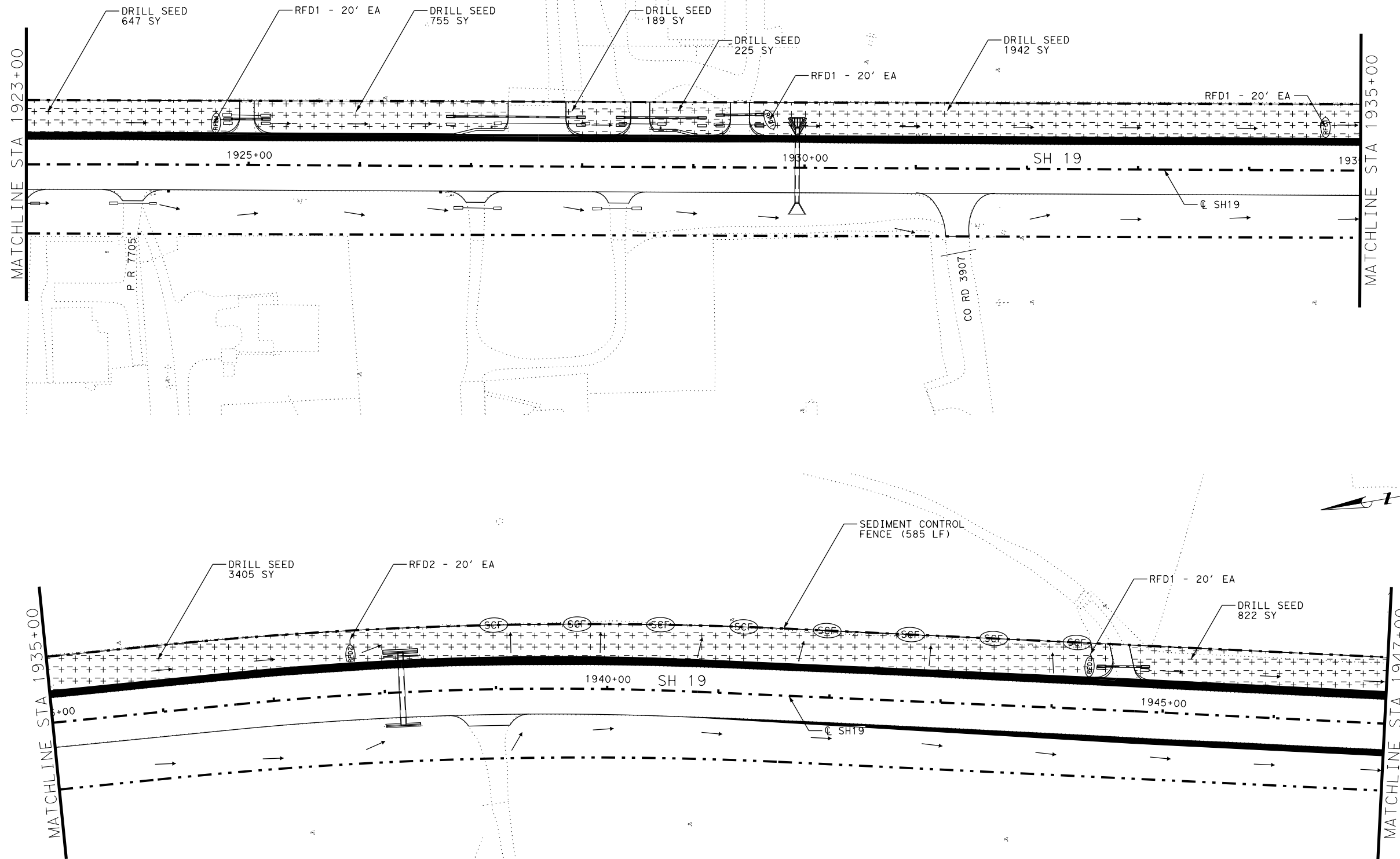


EROSION CONTROL LAYOUT

SHEET 15 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	281

DATE: 01-JUL-2024 15:32
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\9. Environmental\041_SW3P17.dgn



07/01/2024

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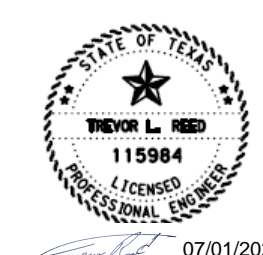
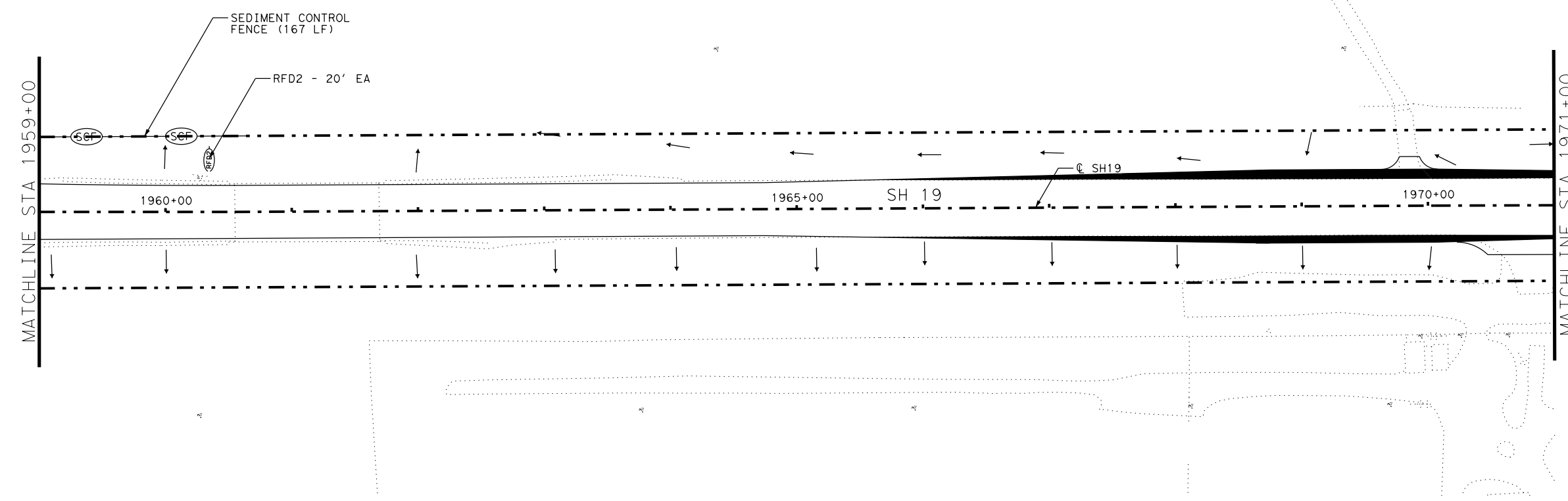
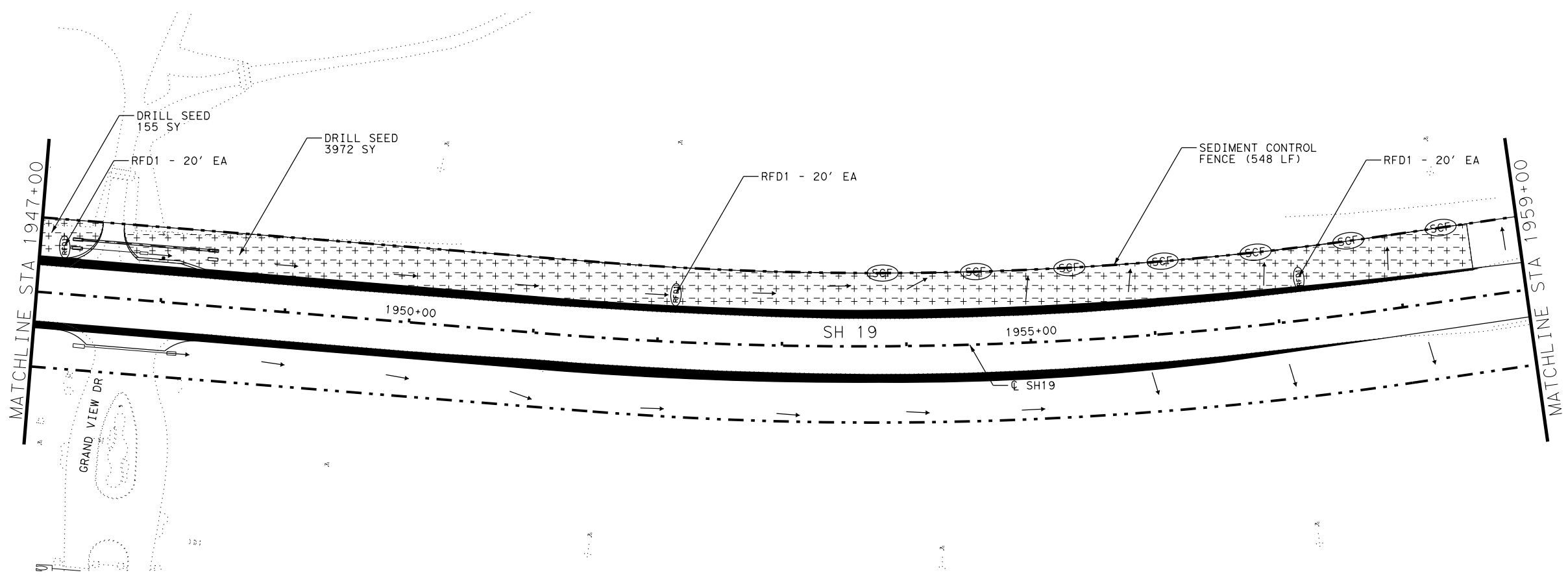


EROSION CONTROL LAYOUT

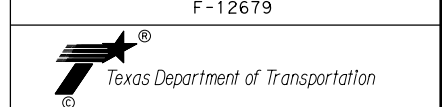
SHEET 16 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST	COUNTY	SHEET NO.	
TYL	HENDERSON	282	

DATE: 01-JUL-2024 15:31
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VOLKERT
 F-12679

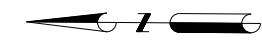
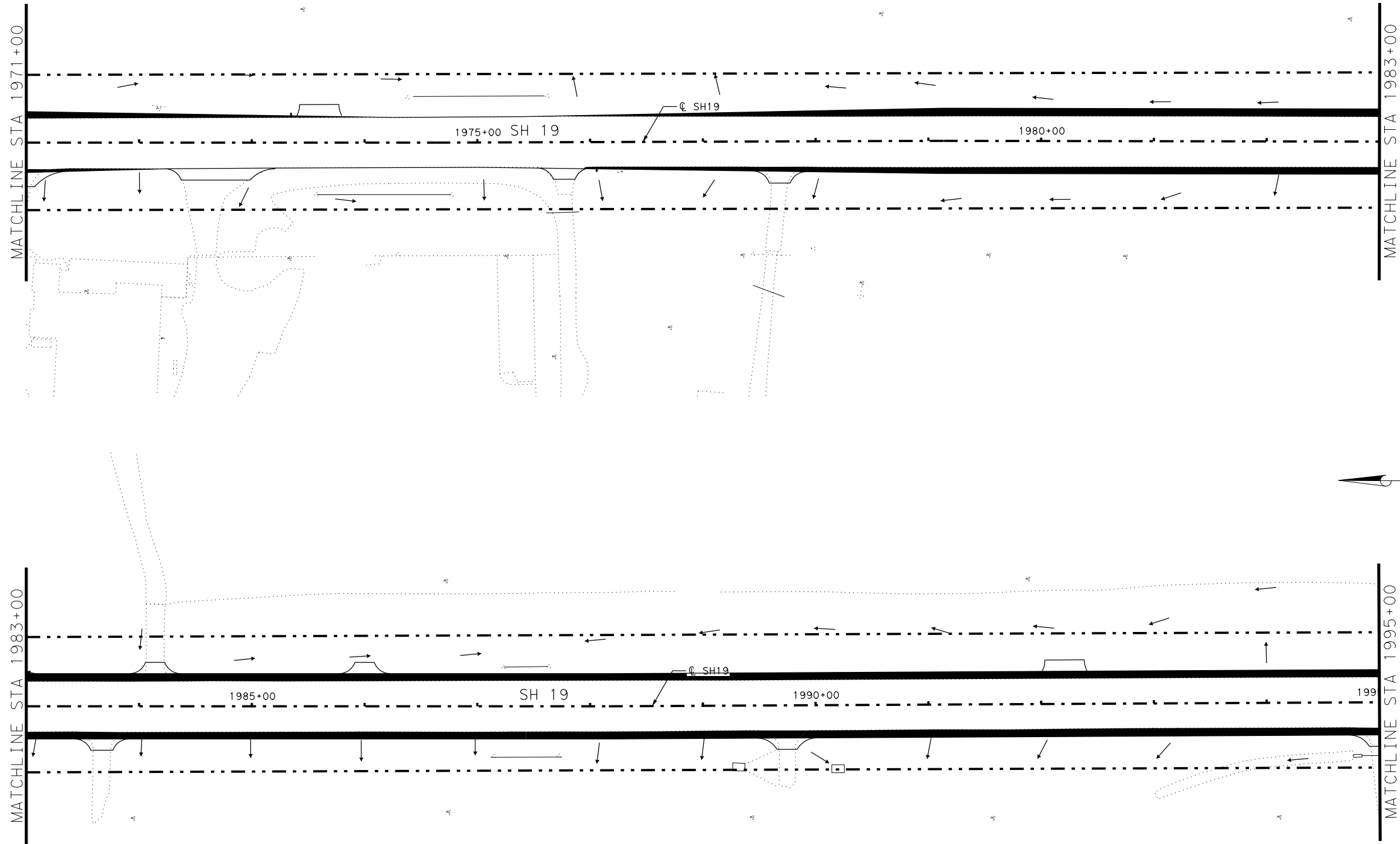


EROSION CONTROL LAYOUT

SHEET 17 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	283

DATE: 26-JUN-2024 19:05
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\9. Environmental\041_SW3P19.dgn



VOLKERT

F-12679

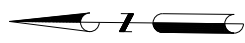
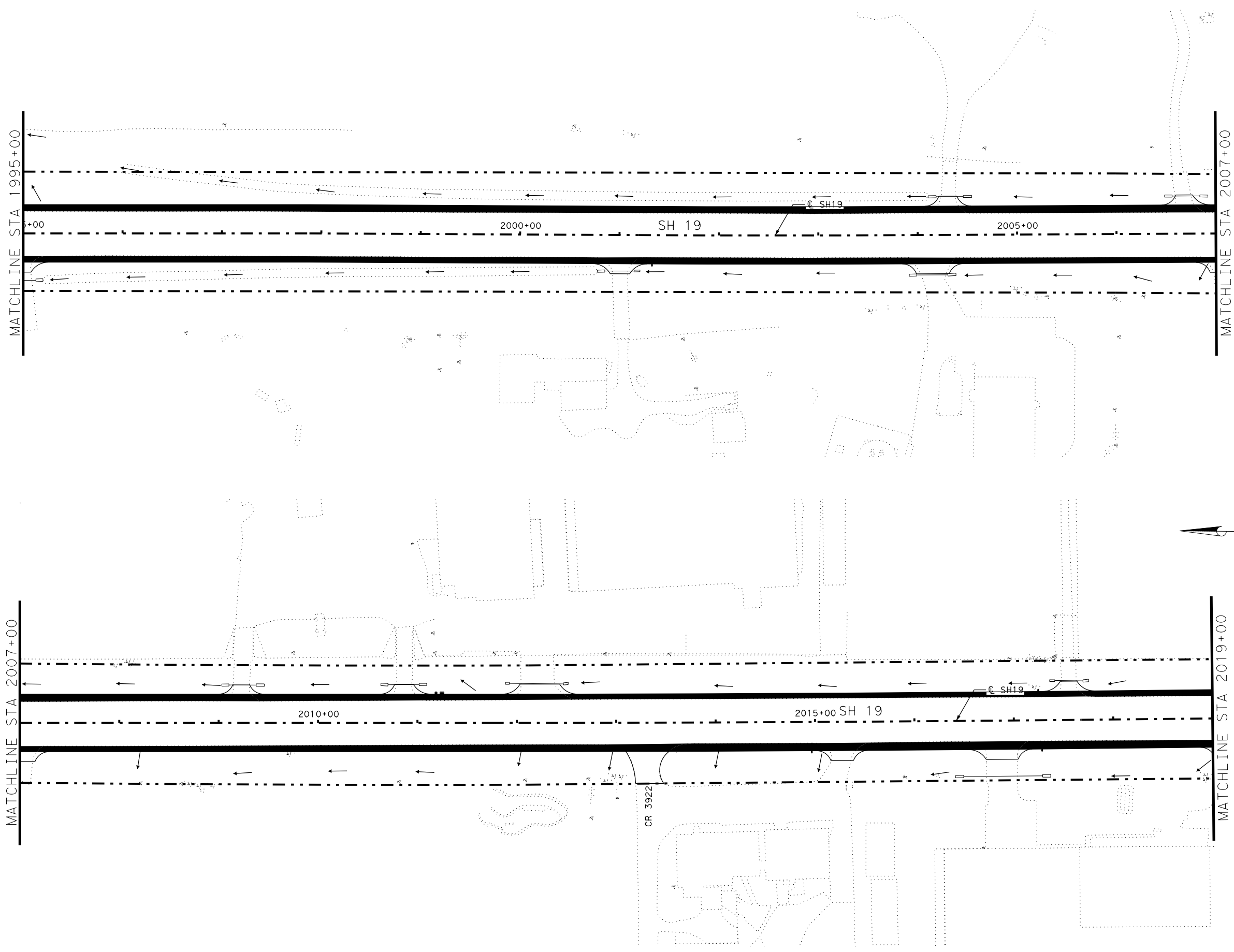


EROSION CONTROL LAYOUT

SHEET 18 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	284

DATE: 26-JUN-2024 19:05
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VOLKERT

F-12679

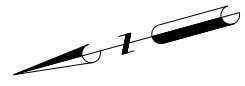
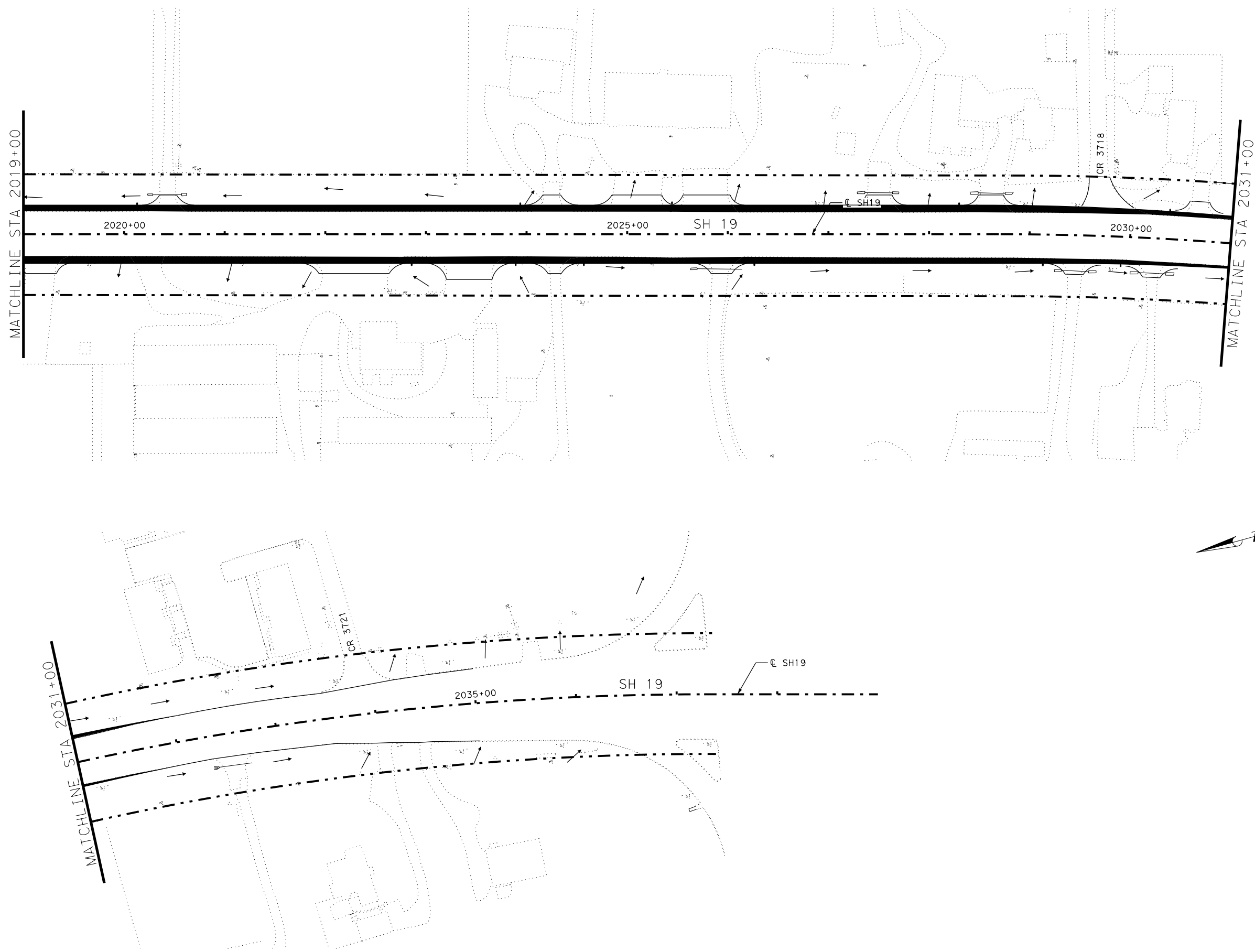


EROSION CONTROL LAYOUT

SHEET 19 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	285

DATE: 20-JUN-2024 17:56
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\9. Environmental\041_SW3P21.dgn



06/21/2024

VOLKERT

F-12679



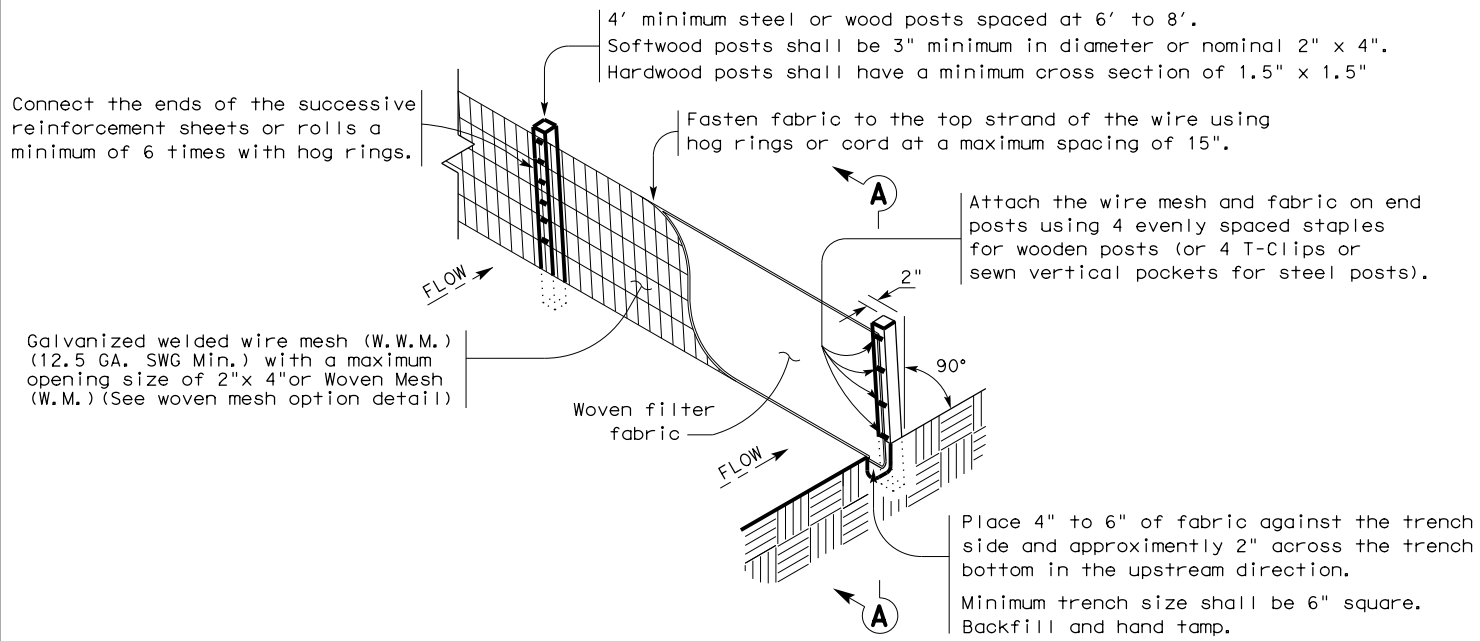
EROSION CONTROL LAYOUT

SHEET 20 OF 20

CONT	SECT	JOB	HIGHWAY
0108	03	041	SH 19
DIST		COUNTY	SHEET NO.
TYL		HENDERSON	286

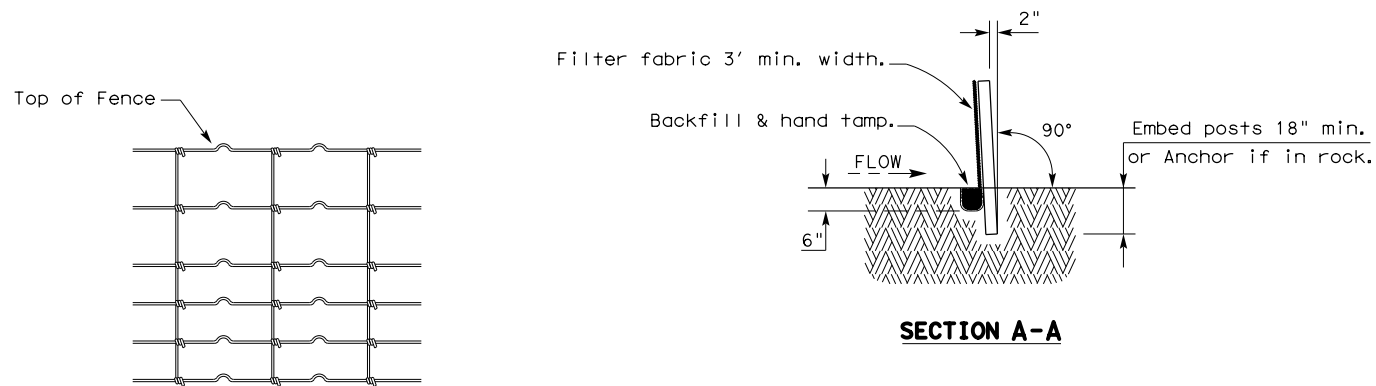
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DATE
FILE



TEMPORARY SEDIMENT CONTROL FENCE

SCF



HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA. SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

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/FT². Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

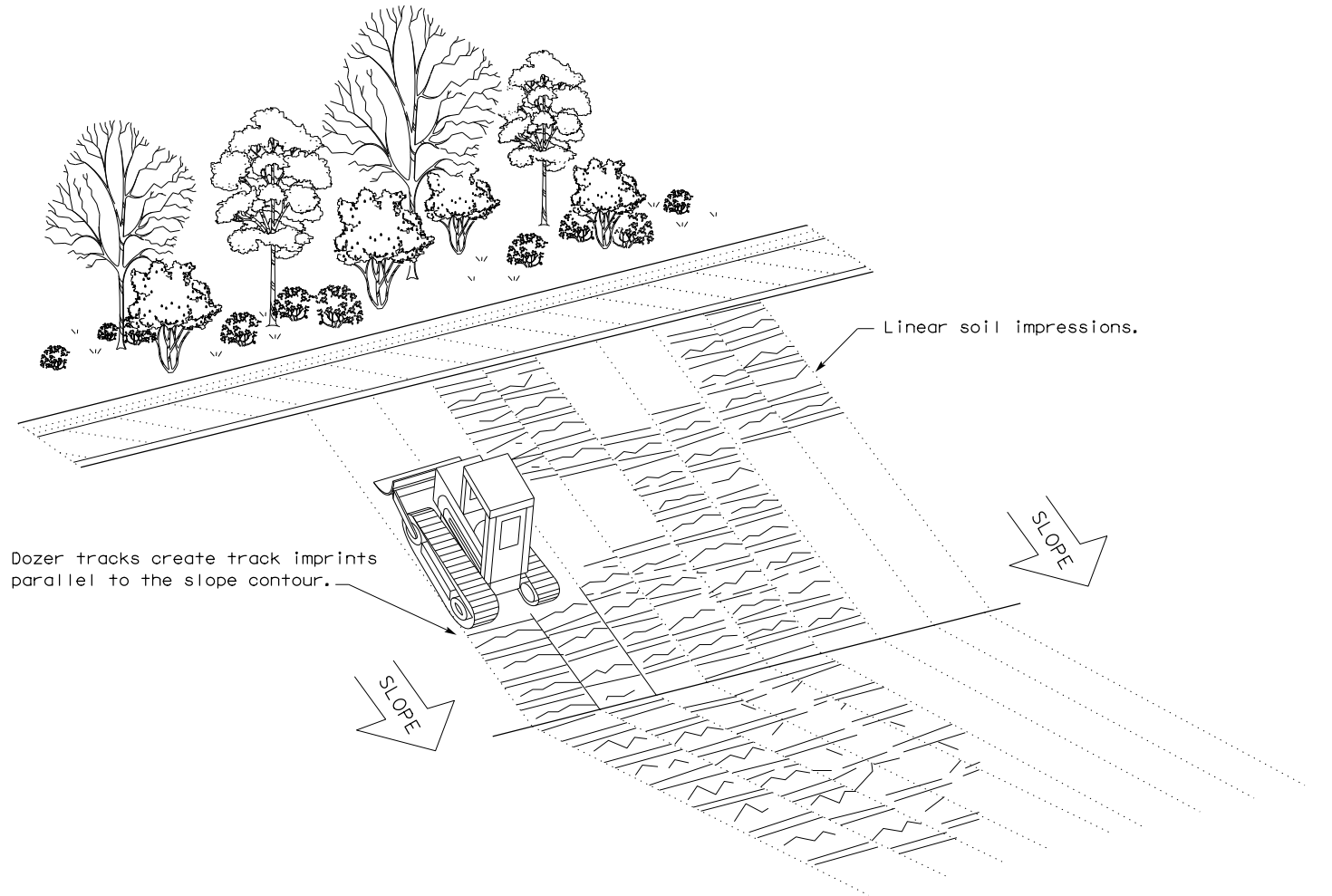
LEGEND

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 continuous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.

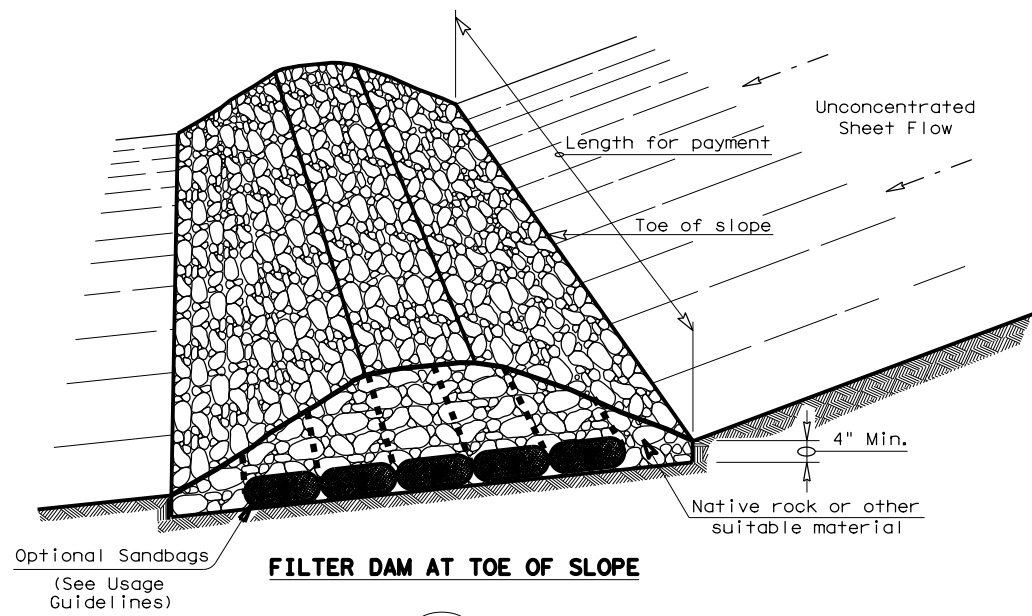


VERTICAL TRACKING

				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	0108	03	041	SH 19	
	DIST	COUNTY		SHEET NO.	
	TYL	HENDERSON		287	

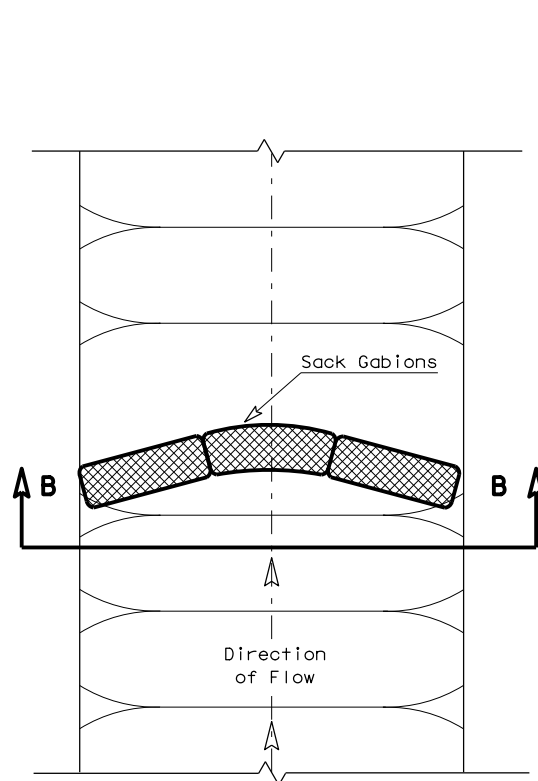
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:

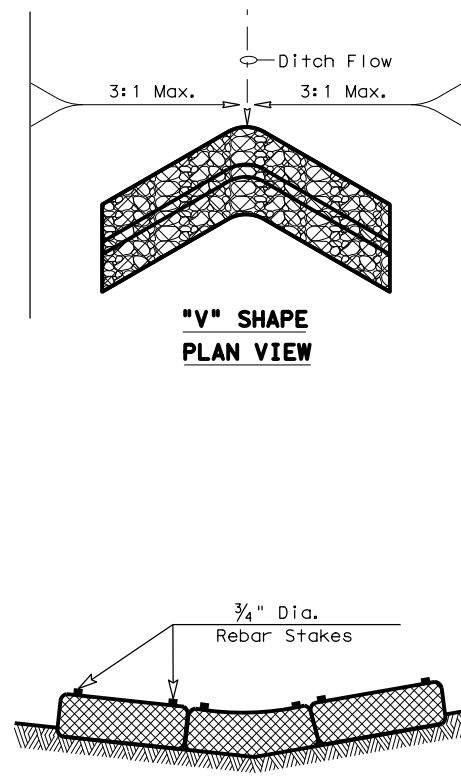


FILTER DAM AT TOE OF SLOPE

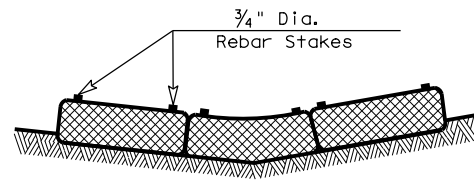
(RFD1)



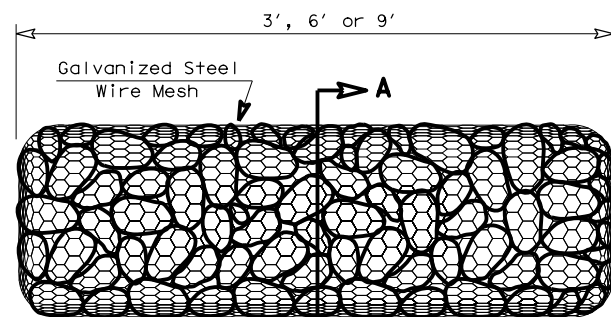
PLAN VIEW



"V" SHAPE PLAN VIEW

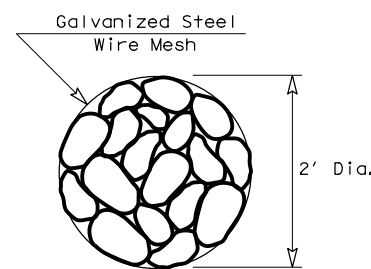


SECTION B-B

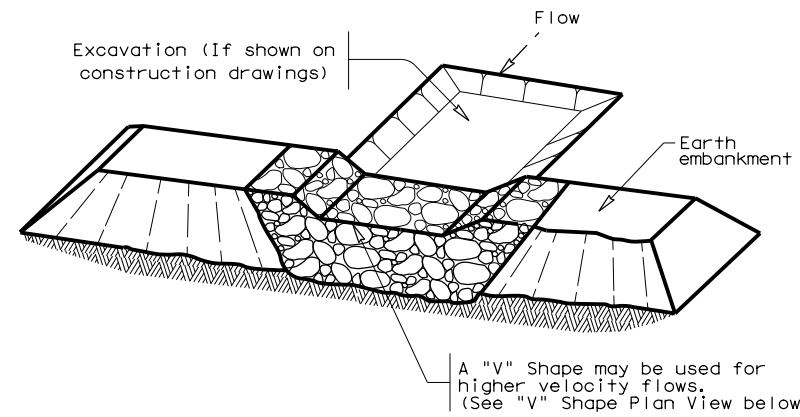


TYPE 4 (SACK GABIONS)

(RFD4)

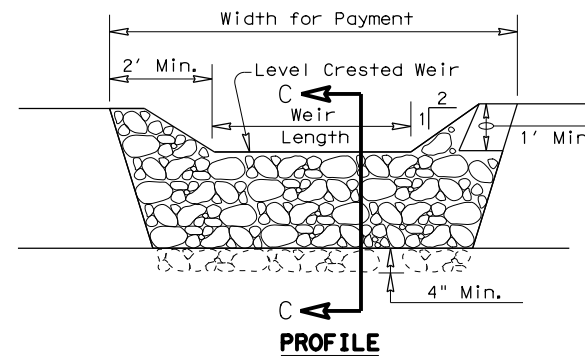


SECTION A-A

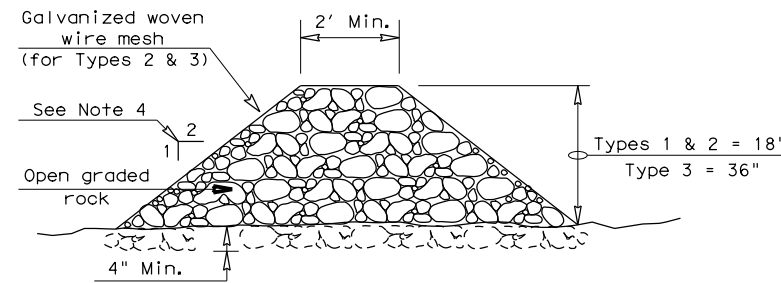


FILTER DAM AT SEDIMENT TRAP

(RFD2) OR (RFD1)



PROFILE



SECTION C-C

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/FT² of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

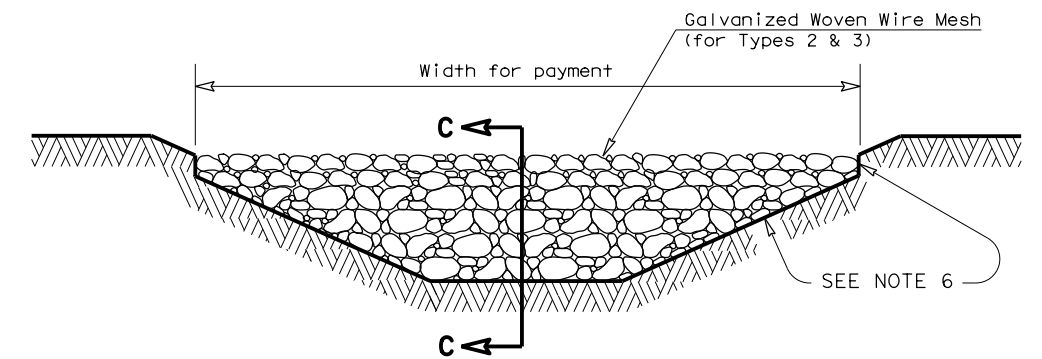
Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximately 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.



FILTER DAM AT CHANNEL SECTIONS

(RFD3) OR (RFD2) OR (RFD1)

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 3/4" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 1/2" x 3 1/4".
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.

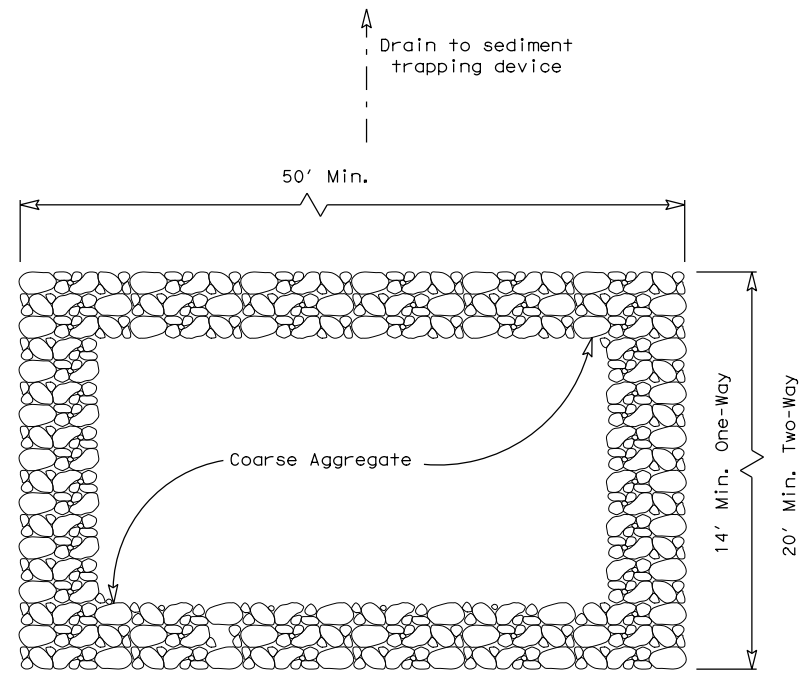
PLAN SHEET LEGEND

- Type 1 Rock Filter Dam (RFD1)
- Type 2 Rock Filter Dam (RFD2)
- Type 3 Rock Filter Dam (RFD3)
- Type 4 Rock Filter Dam (RFD4)

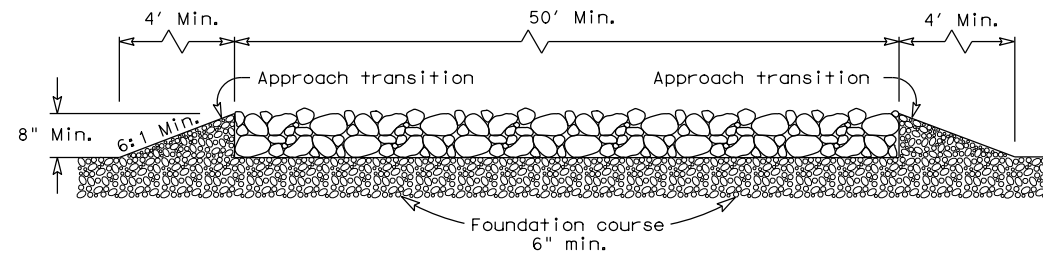
		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES ROCK FILTER DAMS EC (2) - 16			
FILE: ec216	DN: TxDOT	CK: KM	DW: VP
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0108	03	041
	DIST	COUNTY	SHEET NO.
	TYL	HENDERSON	288

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DATE:
FILE:



PLAN VIEW

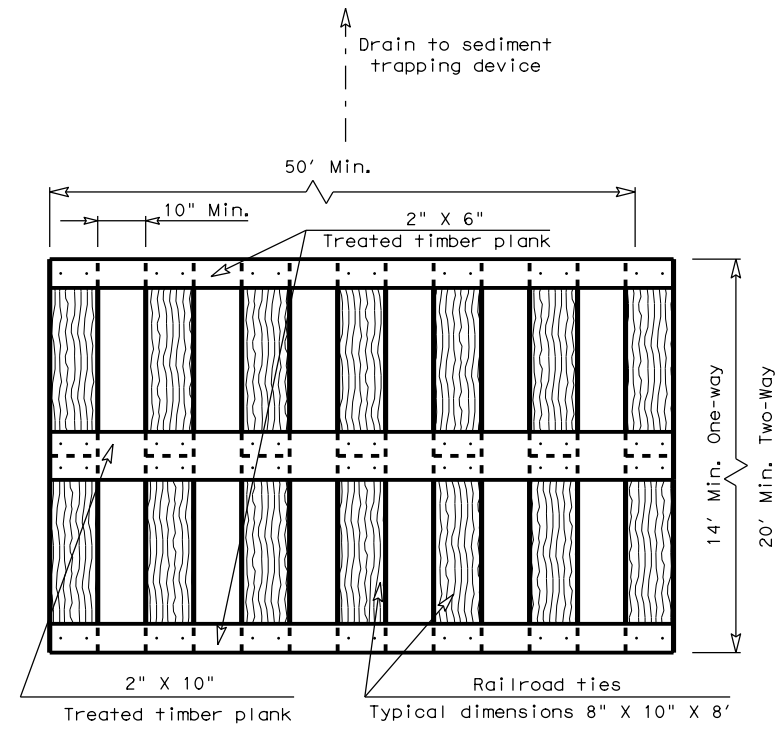


ELEVATION VIEW

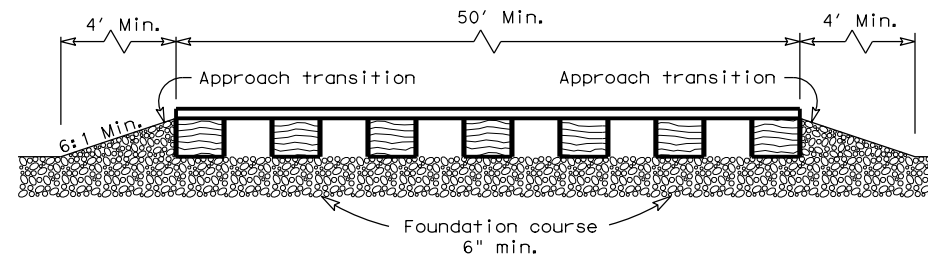
**CONSTRUCTION EXIT (TYPE 1)
ROCK CONSTRUCTION (LONG TERM)**

GENERAL NOTES (TYPE 1)

- The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
- The coarse aggregate should be open graded with a size of 4" to 8".
- The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
- The construction exit shall be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.
- 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.



PLAN VIEW

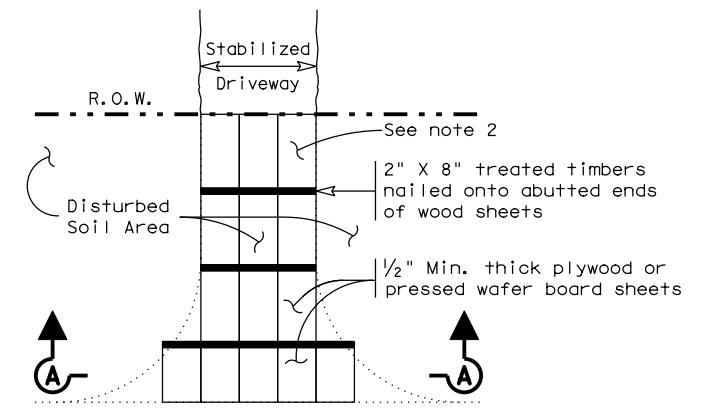


ELEVATION VIEW

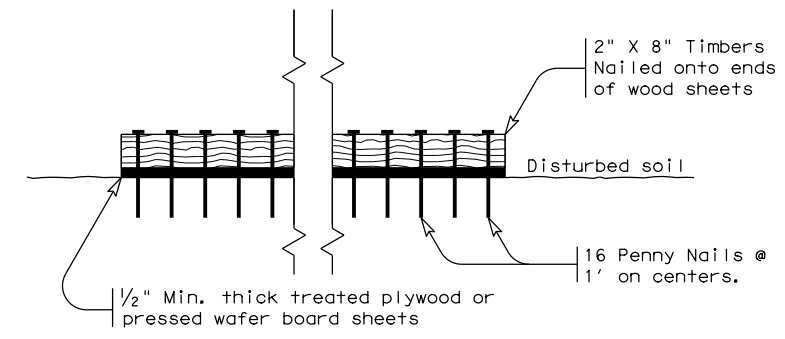
**CONSTRUCTION EXIT (TYPE 2)
TIMBER CONSTRUCTION (LONG TERM)**

GENERAL NOTES (TYPE 2)

- The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
- The treated timber planks shall be attached to the railroad ties with 1/2" x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
- The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
- The construction exit should be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.
- 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.



PLAN VIEW



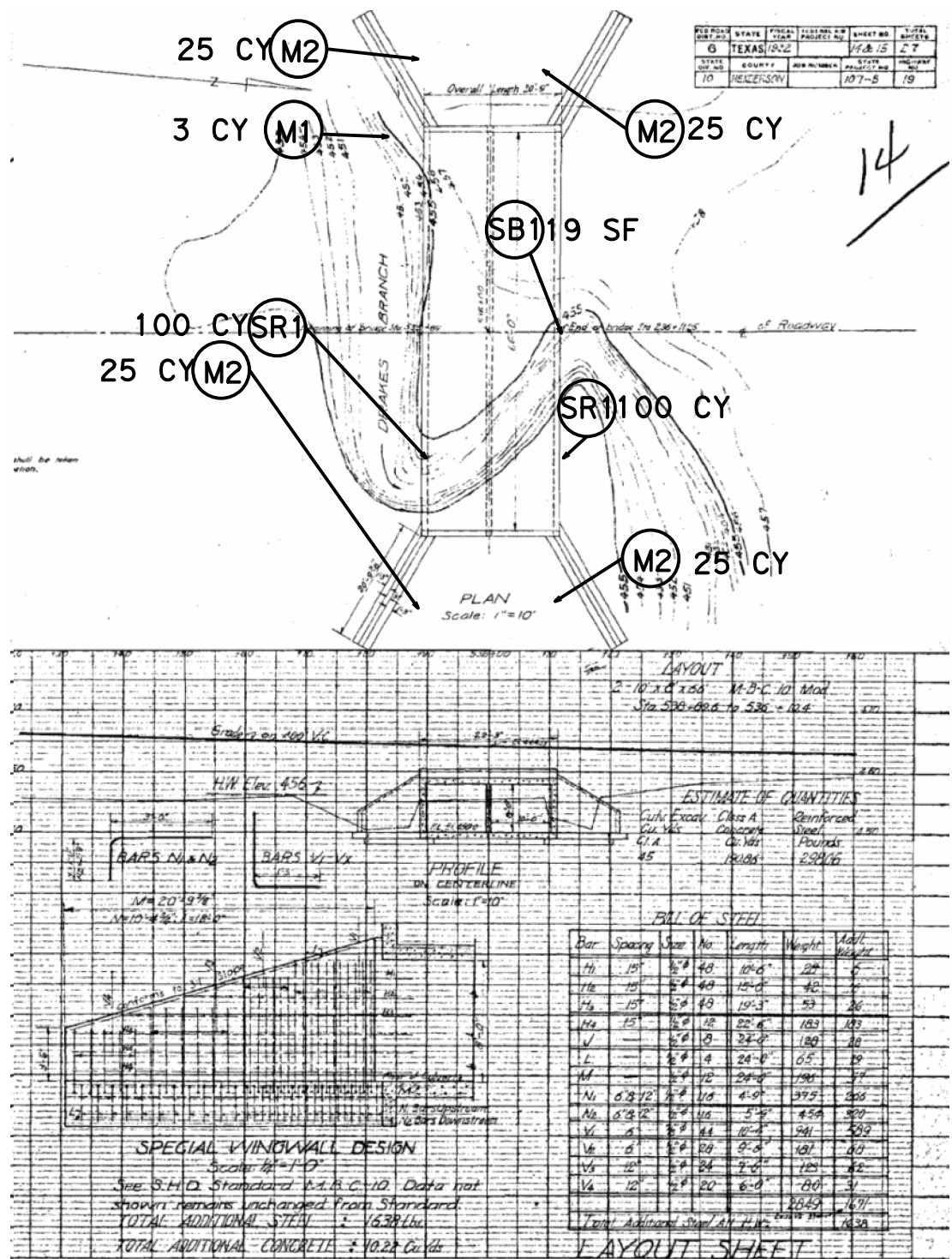
**SECTION A-A
CONSTRUCTION EXIT (TYPE 3)
SHORT TERM**

GENERAL NOTES (TYPE 3)

- The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
- 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.
- The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.

				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	
	0108	03	041	SH 19	
	REVISIONS				
	DIST	COUNTY		SHEET NO.	
	TYL	HENDERSON		289	

DATE: 15-JUL-2024 14:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\7. Bridge_SH19_Drakes_Bridge_Layout.dgn



BRIDGE REPAIR LAYOUT

GENERAL NOTES

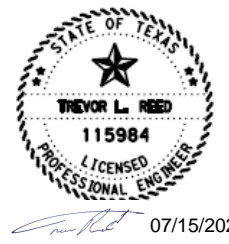
- LAYOUT, STATIONS, AND ELEVATIONS SHOWN ARE BASED ON AS-BUILT PLANS. COPIES OF AVAILABLE PORTIONS OF AS-BUILT PLANS MAY BE PROVIDED UPON REQUEST.
- REPAIR LOCATIONS AND QUANTITIES ARE BASED ON CONDITION SURVEY DATED (04/2024). CURRENT CONDITIONS MAY VARY. FIELD VERIFY LOCATIONS AND EXTENT OF REPAIRS IN THE PRESENCE OF THE ENGINEER PRIOR TO ORDERING MATERIALS.
- EXISTING LOAD RATING: 14.8

MATERIAL NOTES

PROVIDE CLASS C CONCRETE (F'C = 3600 PSI) FOR FULL DEPTH DECK REPAIRS AND CONCRETE BRIDGE RAILING.
 PROVIDE TYPE C CONCRETE REPAIR MATERIAL CONFORMING TO DMS 4655, "CONCRETE REPAIR MATERIAL".
 CAPABLE OF ACHIEVING A MINIMUM AVERAGE 28-DAY COMPRESSIVE STRENGTH OF 3600 PSI FOR ALL VERTICAL AND OVERHEAD CONCRETE REPAIRS. PROVIDE TYPE X EPOXY COATING CONFORMING TO DMS 6100, "EPOXIES AND ADHESIVES", FOR ALL DECK SOFFIT SPALL REPAIRS.

CONSTRUCTION NOTES

SUBMIT A DETAILED CONCRETE REPAIR PROCEDURE FOR APPROVAL PRIOR TO COMMENCING WORK. ALL CONCRETE REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH ITEM 429 AND CHAPTER 3, SECTIONS 1-3 OF TXDOT'S CONCRETE REPAIR MANUAL.
 A COPY OF THE CONCRETE REPAIR MANUAL MUST BE AVAILABLE ON SITE DURING ALL REPAIR OPERATIONS.
 REPAIR ALL DAMAGED OR LOOSE CONCRETE WITHOUT DAMAGING SURROUNDING SOUND CONCRETE THAT IS TO REMAIN IN PLACE. ONLY USE HAND TOOLS OR POWER DRIVEN CHIPPING HAMMERS (15 LB. MAX) TO REMOVE CONCRETE, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
 CLEAN ALL REINFORCING STEEL THAT IS ALREADY EXPOSED OR THAT IS EXPOSED DURING CHIPPING OPERATIONS. ADDITIONAL DAMAGE CAUSED TO THE STRUCTURE DURING REPAIR OPERATIONS MUST BE REPAIRED AT THE CONTRACTOR'S EXPENSE.



VOLKERT

F-12679
 Texas Department of Transportation
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SH 19
 BRIDGE REPAIR LAYOUT
 SH 19 AT DRAKES BRANCH

SHEET 1 OF 15


DISTRICT	COUNTY	SECTION	JOB	HIGHWAY
0108	03	041	SH19	
CHECKED	DISTRICT	COUNTY	SHEET NO.	
TYL	HENDERSON		290	

AS-BUILT DATA SOURCE:
 STATE OF TEXAS
 STATE HIGHWAY DEPARTMENT
 DATE: 07-12-67

DATE: 15-JUL-2024 14:24
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ 0108-03-041)\Plan Set\7. Bridge\SH19_Drakes_Summary of Repairs.dgn

Drakes Branch Table of Repairs						
Repair No.	Item	Bid Item Description	Unit	Quantity	Repair Description/Locator	Details/Notes
M1	0401-7001	Flowable Backfill	CY	3	Place backfill at various locations across channel, abutments and at approaches where erosion has occurred.	Refer to bridge layout for locations and quantities of backfill.
M2	0432-7043	Riprap (Stone Protection) (18 IN)	CY	100	Place stone protection adjacent to concrete riprap at SW abutment.	
SB1	0429-7007	CONC STR REPAIR (VERTICAL AND OVERHEAD)	SF	19	Repair spalling and delamination to interior of culvert.	Refer to the TxDOT Concrete Repair Manual, Chapter 3, Section 2. See
SR1	480-7002	CLEAN EXIST CULVERTS	CY	200	Remove vegetation/sediment	

BRIDGE REPAIR LAYOUT

VOLKERT				
F-12679				
 Texas Department of Transportation © 2024				
SH 19 SUMMARY OF REPAIRS				
SH 19 AT DRAKES BRANCH				
SHEET 2 OF 15				
DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH19
CHECKED	DIST COUNTY			SHEET NO.
APPROVED	TYL	HENDERSON		291

DATE: 26-JUN-2024 13:37
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\7. Bridge\SH19_Drakes_Bridge_Condition_Photos.dgn



TYPICAL SEDIMENTATION (M1) PHOTOS



TYPICAL EROSION (M2) PHOTOS



TYPICAL BENT (SBI) PHOTOS

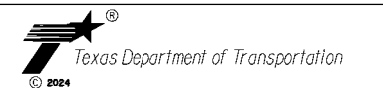


TYPICAL SEDIMENT (SRI) PHOTOS



VOLKERT

F-12679

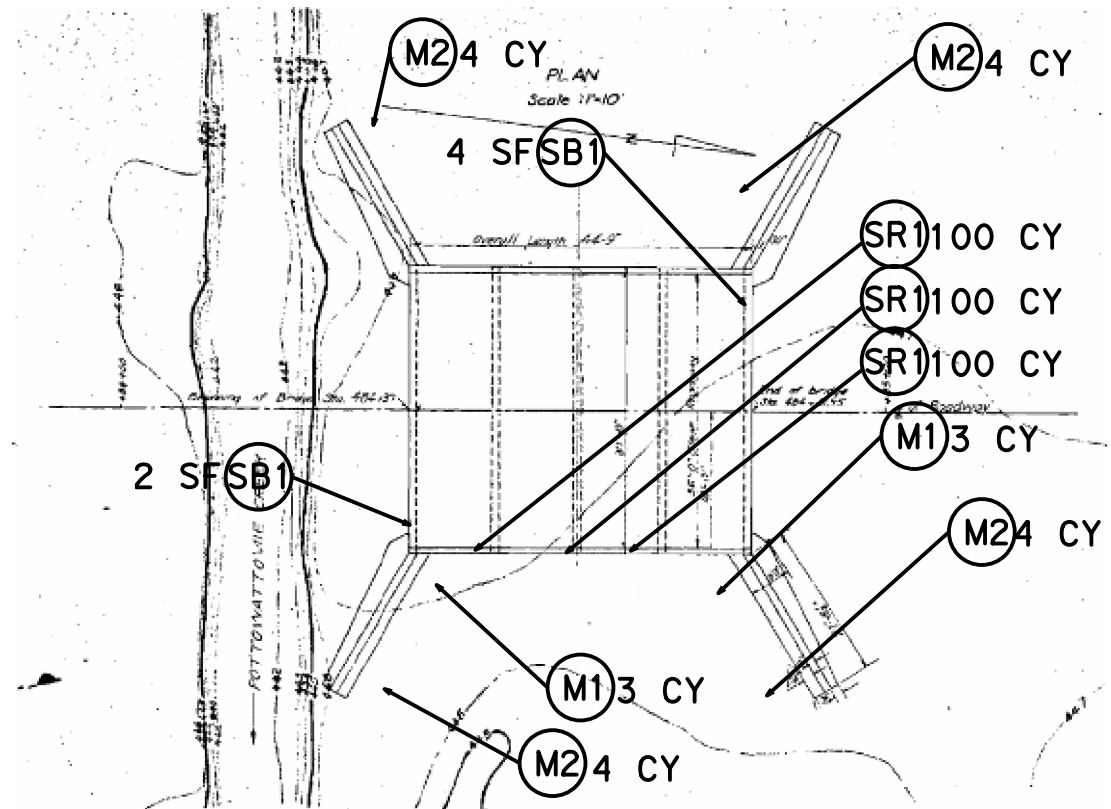


SH 19
BRIDGE CONDITION
PHOTOS
SH 19 AT DRAKES BRANCH

SHEET 3 OF 15

DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH19
CHECKED	DIST	COUNTY	SHEET NO.	
APPROVED	TYL	HENDERSON	292	

DATE: 15-JUL-2024 14:24
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\7. Bridge\SH19_Pattowatomie_Creek_Bridge_Layout.dgn



LAYOUT
 4'-10" x 12' x 38" M.B.C. Standard
 Overall Length 44'-9"

ESTD
 4/24/2024

Overall Length 44'-9"

Grade 100% FLAT

WIND 100% FLAT

REINFORCING STEEL

Bar	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Number	4	0	0	0	0	0	0	0	0	0
Spacing	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"
Length	10'-0"	15'-0"	20'-0"	25'-0"	30'-0"	35'-0"	40'-0"	45'-0"	50'-0"	55'-0"
Weight	27	60	93	126	159	192	225	258	291	324

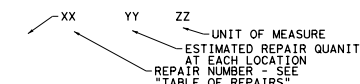
SPECIAL WINGWALL DESIGN

No Scales
 per S&P Co. Standard M.B.C. 10-Min. Data not shown. Fabrication unchanged from Standard.

TOTAL ADDITIONAL CONCRETE = 28.10 CY
 TOTAL ADDITIONAL STEEL = 24.79 LBS

BRIDGE REPAIR LAYOUT

REPAIR CALL-OUT LEGEND



SYMBOL	APPLICABLE REPAIR AREAS
D-#	DECK, JOINTS, OVERHANGS, APPROACH SLABS
R-#	RAILS, APPROACH MBGF
SP-#	SUPERSTRUCTURE ELEMENTS, BEARINGS
SB-#	SUBSTRUCTURE ELEMENTS
SR-#	SEDIMENT, VEGETATION
M-#	MISCELLANEOUS (RIPRAP, SHOULDER DRAINS, ETC)

GENERAL NOTES

- LAYOUT, STATIONS, AND ELEVATIONS SHOWN ARE BASED ON AS-BUILT PLANS. COPIES OF AVAILABLE PORTIONS OF AS-BUILT PLANS MAY BE PROVIDED UPON REQUEST.
- REPAIR LOCATIONS AND QUANTITIES ARE BASED ON CONDITION SURVEY DATED (04/2024). CURRENT CONDITIONS MAY VARY. FIELD VERIFY LOCATIONS AND EXTENT OF REPAIRS IN THE PRESENCE OF THE ENGINEER PRIOR TO ORDERING MATERIALS.
- EXISTING LOAD RATING: 15

MATERIAL NOTES

PROVIDE CLASS C CONCRETE (F'C = 3600 PSI) FOR FULL DEPTH DECK REPAIRS AND CONCRETE BRIDGE RAILING.
 PROVIDE TYPE C CONCRETE REPAIR MATERIAL CONFORMING TO DMS 4655, "CONCRETE REPAIR MATERIALS".
 CAPABLE OF ACHIEVING A MINIMUM AVERAGE 28-DAY COMPRESSIVE STRENGTH OF 3600 PSI FOR ALL VERTICAL AND OVERHEAD CONCRETE REPAIRS. PROVIDE TYPE X EPOXY COATING CONFORMING TO DMS 6100, "EPOXIES AND ADHESIVES", FOR ALL DECK SOFFIT SPALL REPAIRS.

CONSTRUCTION NOTES

SUBMIT A DETAILED CONCRETE REPAIR PROCEDURE FOR APPROVAL PRIOR TO COMMENCING WORK. ALL CONCRETE REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH ITEM 429 AND CHAPTER 3, SECTIONS 1-3 OF TXDOT'S CONCRETE REPAIR MANUAL.
 A COPY OF THE CONCRETE REPAIR MANUAL MUST BE AVAILABLE ON SITE DURING ALL REPAIR OPERATIONS.
 REPAIR ALL DAMAGED OR LOOSE CONCRETE WITHOUT DAMAGING SURROUNDING SOUND CONCRETE THAT IS TO REMAIN IN PLACE. ONLY USE HAND TOOLS OR POWER DRIVEN CHIPPING HAMMERS (15 LB. MAX) TO REMOVE CONCRETE, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
 CLEAN ALL REINFORCING STEEL THAT IS ALREADY EXPOSED OR THAT IS EXPOSED DURING CHIPPING OPERATIONS.
 ADDITIONAL DAMAGE CAUSED TO THE STRUCTURE DURING REPAIR OPERATIONS MUST BE REPAIRED AT THE CONTRACTOR'S EXPENSE.



07/15/2024



F-12679



SH 19
 BRIDGE REPAIR LAYOUT
 SH 19 AT PATTOWATOMIE CREEK

SHEET 4 OF 15

AS-BUILT DATA SOURCE:
 STATE OF TEXAS
 STATE HIGHWAY DEPARTMENT
 DATE: 07-12-67

DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH19
CHECKED	DIST	COUNTY	SHEET NO.	
APPROVED	TYL	HENDERSON	293	

DATE: 06-AUG-2024 19:47
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ 0108-03-041)\Plan Set\7. Bridge\SH19_Pattowatomie Creek_Summary of Repairs.dgn

Pattowatomie Creek Table of Repairs						
Repair No.	Item	Bid Item Description	Unit	Quantity	Repair Description/Locator	Details/Notes
M1	0401-7001	Flowable Backfill	CY	6	Place backfill at various locations across channel, abutments and at approaches where erosion has occurred.	Refer to bridge layout for locations and quantities of backfill.
M2	0432-7043	Riprap (Stone Protection) (18 IN)	CY	16	Place stone protection adjacent to concrete riprap at SW abutment.	
SB1	0429-7007	CONC STR REPAIR (VERTICAL AND OVERHEAD)	SF	6	Repair concrete on culvert openings	Refer to the TxDOT Concrete Repair Manual, Chapter 3, Section 2. See
SR1	480-7002	CLEAN EXIST CULVERTS	CY	300	Remove vegetation/sediment	

BRIDGE REPAIR LAYOUT

VOLKERT

F-12679



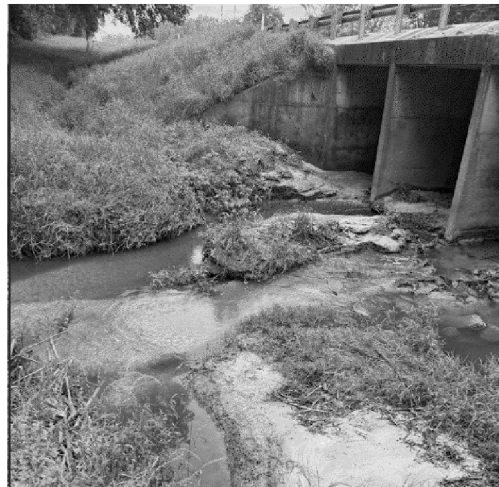
SH 19
SUMMARY OF REPAIRS

SH 19 AT PATTOWATOMIE CREEK

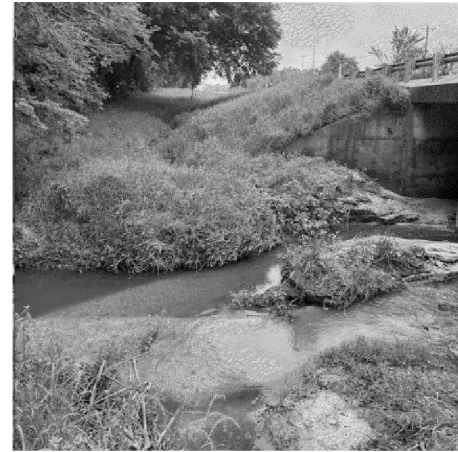
SHEET 5 OF 15

DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH19
CHECKED	DIST	COUNTY		SHEET NO.
APPROVED	TYL	HENDERSON		294

DATE: 26-JUN-2024 13:37
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\7. Bridge\SH19_Pattowatomie Creek_Bridge_Condition_Photos.dgn



TYPICAL SEDIMENTATION (MI) PHOTOS



TYPICAL EROSION (M2) PHOTOS



TYPICAL BENT (SBI) PHOTOS



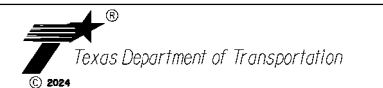
TYPICAL SEDIMENT (SRI) PHOTOS



06/28/2024

VOLKERT

F-12679

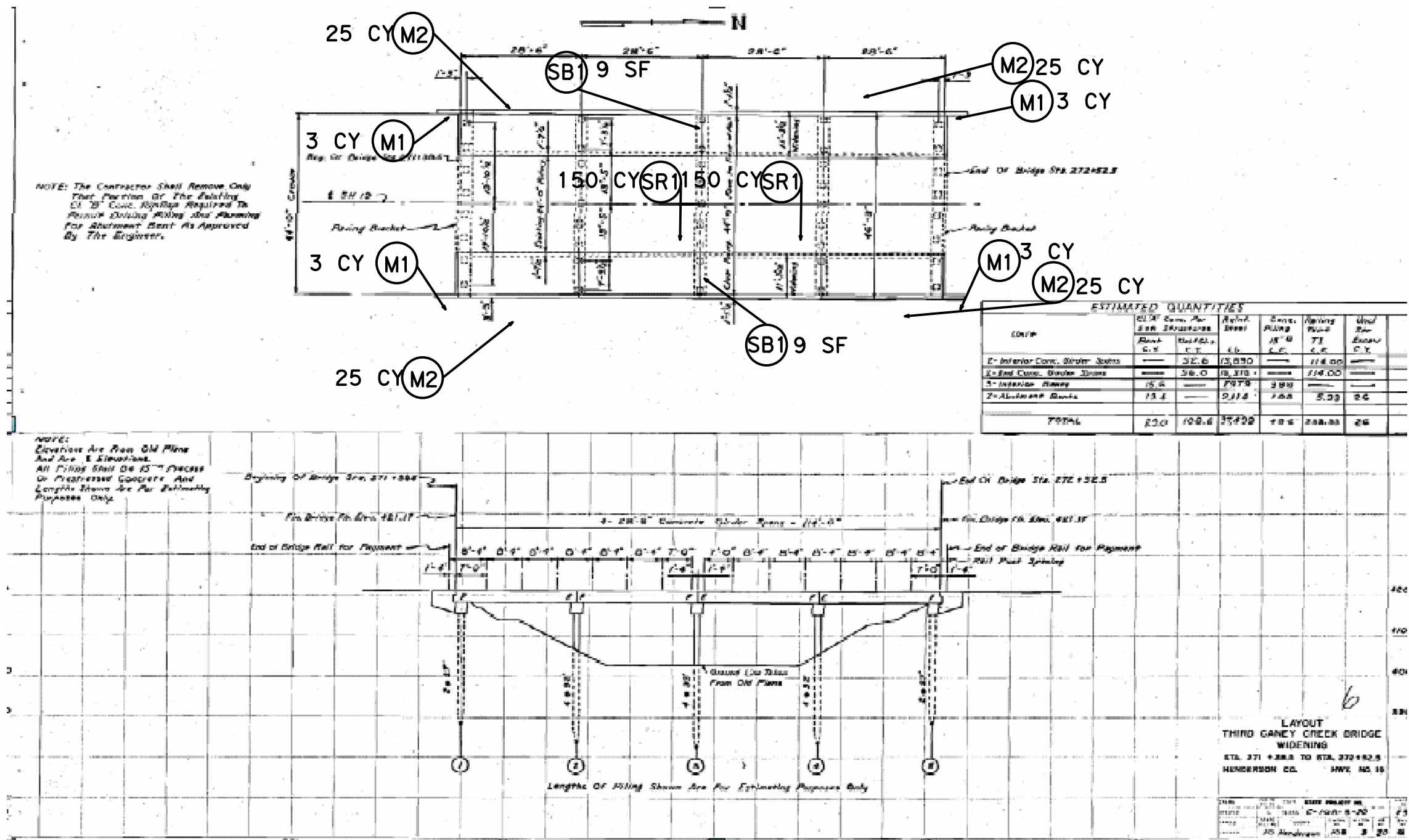


SH 19
BRIDGE CONDITION
PHOTOS
SH 19 AT PATTOWATOMIE CREEK

SHEET 6 OF 15

DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH19
CHECKED	DIST	COUNTY	SHEET NO.	
APPROVED	TYL	HENDERSON	295	

DATE: 15-JUL-2024 14:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\7. Bridge\SH19_Third_Caney_Bridge_Layout.dgn



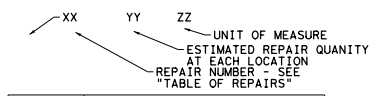
NOTE: The Contractor Shall Remove Only That Portion Of The Existing 24" Conc. Slabage Required To Repair Existing Slabs And Forming For Slabage Sent As Approved By The Engineer.

NOTE: Elevations Are From Old Plans And Are In Elevations. All Piling Shall Be 15" Dia. Or Larger Concrete And Lengths Shown Are For Estimating Purposes Only.

LAYOUT
 THIRD CANEY CREEK BRIDGE
 WIDENING
 STA. 371+88.5 TO STA. 372+82.5
 HENDERSON CO. HWY. NO. 19

DATE: 07/15/2024
 DRAWN BY: JAS. MORGAN
 CHECKED BY: JAS. MORGAN
 APPROVED BY: JAS. MORGAN

REPAIR CALL-OUT LEGEND



SYMBOL	APPLICABLE REPAIR AREAS
D-#	DECK, JOINTS, OVERHANGS, APPROACH SLABS
R-#	RAILS, APPROACH MBGF
SP-#	SUPERSTRUCTURE ELEMENTS, BEARINGS
SB-#	SUBSTRUCTURE ELEMENTS
SR-#	SEDIMENT, VEGETATION
M-#	MISCELLANEOUS (RIPRAP, SHOULDER DRAINS, ETC)

BRIDGE REPAIR LAYOUT

GENERAL NOTES

- LAYOUT, STATIONS, AND ELEVATIONS SHOWN ARE BASED ON AS-BUILT PLANS. COPIES OF AVAILABLE PORTIONS OF AS-BUILT PLANS MAY BE PROVIDED UPON REQUEST.
- REPAIR LOCATIONS AND QUANTITIES ARE BASED ON CONDITION SURVEY DATED (04/2024). CURRENT CONDITIONS MAY VARY. FIELD VERIFY LOCATIONS AND EXTENT OF REPAIRS IN THE PRESENCE OF THE ENGINEER PRIOR TO ORDERING MATERIALS.
- EXISTING LOAD RATING: 15

MATERIAL NOTES

PROVIDE CLASS C CONCRETE (F'C = 3600 PSI) FOR FULL-DEPTH DECK REPAIRS AND CONCRETE BRIDGE RAILING. PROVIDE TYPE C CONCRETE REPAIR MATERIAL CONFORMING TO DMS 4655, "CONCRETE REPAIR MATERIALS" CAPABLE OF ACHIEVING A MINIMUM AVERAGE 28-DAY COMPRESSIVE STRENGTH OF 3600 PSI FOR ALL VERTICAL AND OVERHEAD CONCRETE REPAIRS. PROVIDE TYPE X EPOXY COATING CONFORMING TO DMS 6100, "EPOXIES AND ADHESIVES" FOR ALL DECK SOFFIT SPALL REPAIRS.

CONSTRUCTION NOTES

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 Texas Department of Transportation
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SH 19
 BRIDGE REPAIR LAYOUT
 SH 19 AT THIRD CANEY CREEK

SHEET 7 OF 15

DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH19
CHECKED	DIST		COUNTY	SHEET NO.
APPROVED	TYL		HENDERSON	296

AS-BUILT DATA SOURCE:
 STATE OF TEXAS
 STATE HIGHWAY DEPARTMENT
 DATE: 07-12-67

DATE: 15-JUL-2024 14:24
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ 0108-03-041)\Plan Set\7. Bridge\SH19_Third Caney_Summary of Repairs.dgn

Third Caney Creek Table of Repairs						
Repair No.	Item	Bid Item Description	Unit	Quantity	Repair Description/Locator	Details/Notes
M1	0401-7001	Flowable Backfill	CY	12	Place backfill at various locations across channel, abutments and at approaches where	Refer to bridge layout for locations and quantities of backfill.
M2	0432-7043	Riprap (Stone Protection) (18 IN)	CY	100	Place stone protection adjacent to concrete riprap at SW abutment.	
SB1	0429-7007	CONC STR REPAIR (VERTICAL AND OVERHEAD)	SF	18	Repair spalling and delamination on superstructure elements as annotated in bridge layout.	Refer to the TxDOT Concrete Repair Manual, Chapter 3, Section 2. See
SR1	480-7002	CLEAN EXIST CULVERTS	CY	300	Remove vegetation/sediment	

BRIDGE REPAIR LAYOUT

VOLKERT

F-12679



SH 19
SUMMARY OF REPAIRS

SH 19 AT THIRD CANEY CREEK

SHEET 8 OF 15

DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH19
CHECKED	DIST	COUNTY		SHEET NO.
APPROVED	TYL	HENDERSON		297

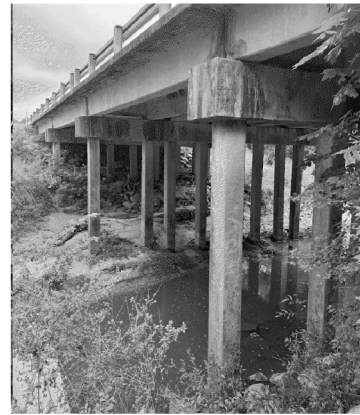
DATE: 26-JUN-2024 13:37
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\7. Bridge\SH19_Third_Caney_Bridge_Condition_Photos.dgn



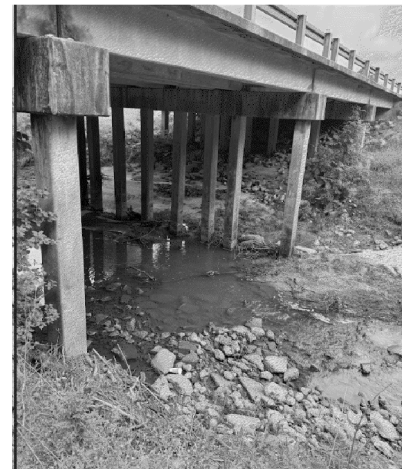
TYPICAL CREEK BED (MI) PHOTOS



TYPICAL ROCK RIP RAP EXISTING (M2) PHOTOS



TYPICAL BENT (SBI) PHOTOS



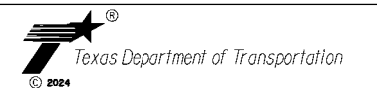
TYPICAL SEDIMENT (SRI) PHOTOS



06/28/2024

VOLKERT

F-12679

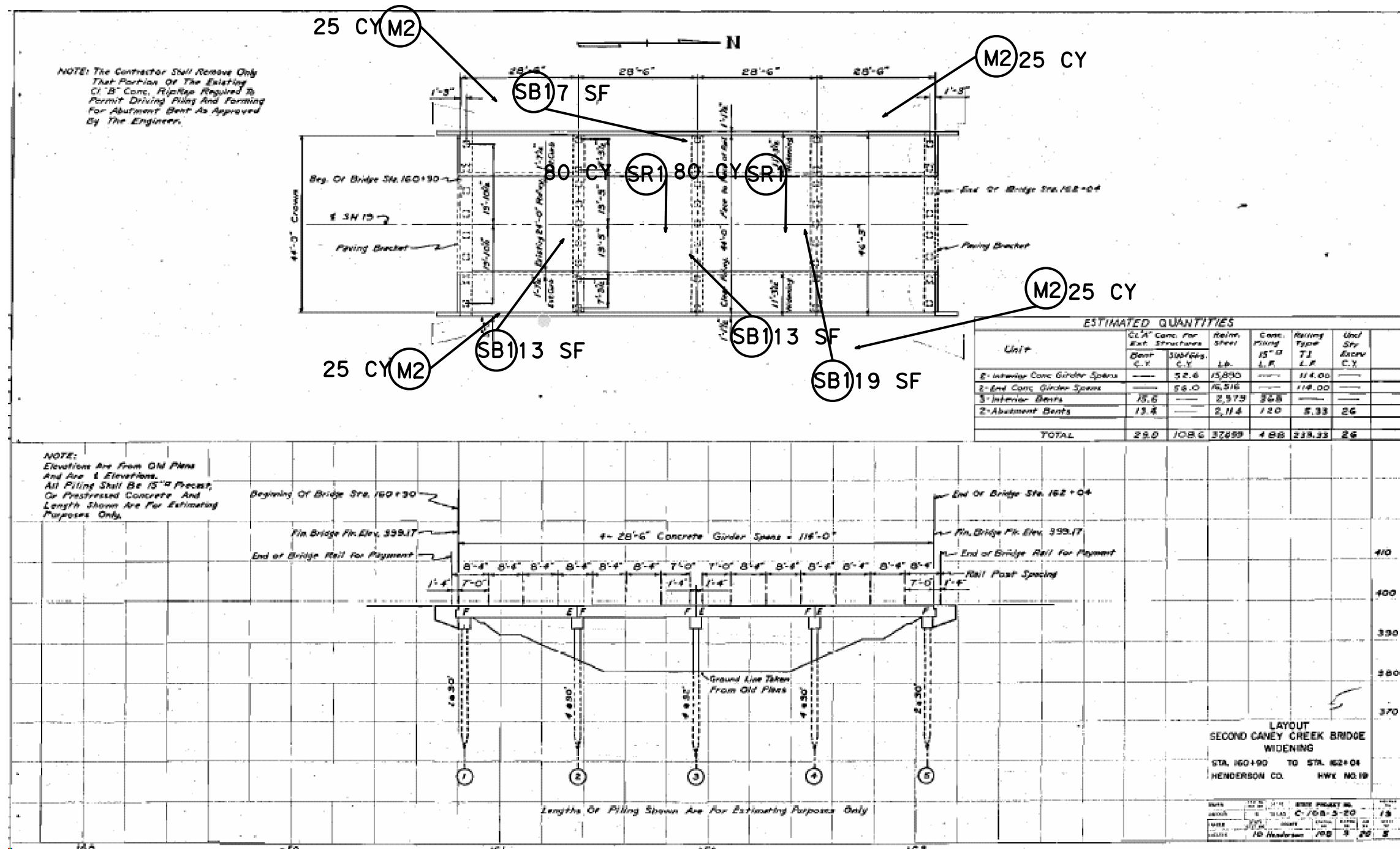


SH 19
BRIDGE CONDITION
PHOTOS
SH 19 AT THIRD CANEY CREEK

SHEET 9 OF 15

DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH19
CHECKED	DIST	COUNTY	SHEET NO.	
APPROVED	TYL	HENDERSON	298	

DATE: 06-AUG-2024 19:47
FILE: Projects\0741307 - SH 19 Super 2 Tyler\48 - Design (CSJ_0108-03-041)\Plan_Set\7. Bridge\SH19_Second_Caney_Bridge_Layout.dgn



REPAIR CALL-OUT LEGEND

XX YY ZZ UNIT OF MEASURE
ESTIMATED REPAIR QUANTITY AT EACH LOCATION
REPAIR NUMBER - SEE "TABLE OF REPAIRS"

SYMBOL	APPLICABLE REPAIR AREAS
D-#	DECK, JOINTS, OVERHANGS, APPROACH SLABS
R-#	RAILS, APPROACH MBGF
SP-#	SUPERSTRUCTURE ELEMENTS, BEARINGS
SB-#	SUBSTRUCTURE ELEMENTS
SR-#	SEDIMENT, VEGETATION
M-#	MISCELLANEOUS (RIPRAP, SHOULDER DRAINS, ETC)

BRIDGE REPAIR LAYOUT

- GENERAL NOTES**
- LAYOUT, STATIONS, AND ELEVATIONS SHOWN ARE BASED ON AS-BUILT PLANS. COPIES OF AVAILABLE PORTIONS OF AS-BUILT PLANS MAY BE PROVIDED UPON REQUEST.
 - REPAIR LOCATIONS AND QUANTITIES ARE BASED ON CONDITION SURVEY DATED (04/2024). CURRENT CONDITIONS MAY VARY. FIELD VERIFY LOCATIONS AND EXTENT OF REPAIRS IN THE PRESENCE OF THE ENGINEER PRIOR TO ORDERING MATERIALS.
 - EXISTING LOAD RATING: 15

MATERIAL NOTES

PROVIDE CLASS C CONCRETE (F'C = 3600 PSI) FOR FULL-DEPTH DECK REPAIRS AND CONCRETE BRIDGE RAILING.
PROVIDE TYPE C CONCRETE REPAIR MATERIAL CONFORMING TO DMS 4655, "CONCRETE REPAIR MATERIALS" ACHIEVING A MINIMUM AVERAGE 28-DAY COMPRESSIVE STRENGTH OF 3600 PSI FOR ALL VERTICAL AND OVERHEAD CONCRETE REPAIRS. PROVIDE TYPE X EPOXY COATING CONFORMING TO DMS 6100, "EPOXIES AND ADHESIVES" FOR ALL DECK SOFFIT SPALL REPAIRS.

CONSTRUCTION NOTES

SUBMIT A DETAILED CONCRETE REPAIR PROCEDURE FOR APPROVAL PRIOR TO COMMENCING WORK. ALL CONCRETE REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH ITEM 429 AND CHAPTER 3, SECTIONS 1-3 OF TXDOT'S CONCRETE REPAIR MANUAL. A COPY OF THE CONCRETE REPAIR MANUAL MUST BE AVAILABLE ON SITE DURING ALL REPAIR OPERATIONS. REPAIR ALL DAMAGED OR LOOSE CONCRETE WITHOUT DAMAGING SURROUNDING SOUND CONCRETE THAT IS TO REMAIN IN PLACE. ONLY USE HAND TOOLS OR POWER DRIVEN CHIPPING HAMMERS (15 LB. MAX) TO REMOVE CONCRETE, UNLESS OTHERWISE APPROVED BY THE ENGINEER. CLEAN ALL REINFORCING STEEL THAT IS ALREADY EXPOSED OR THAT IS EXPOSED DURING CHIPPING OPERATIONS. ADDITIONAL DAMAGE CAUSED TO THE STRUCTURE DURING REPAIR OPERATIONS MUST BE REPAIRED AT THE CONTRACTOR'S EXPENSE.



08/06/2024

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SH 19
BRIDGE REPAIR LAYOUT
SH 19 AT SECOND CANEY CREEK

SHEET 10 OF 15

DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH19
CHECKED	DIST		COUNTY	SHEET NO.
APPROVED	TYL		HENDERSON	299

AS-BUILT DATA SOURCE:
STATE OF TEXAS
STATE HIGHWAY DEPARTMENT
DATE: 07-12-67

DATE: 15-JUL-2024 14:25
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\7. Bridge\SH19_Second Caney_Summary of Repairs.dgn

Second Caney Creek Table of Repairs						
Repair No.	Item	Bid Item Description	Unit	Quantity	Repair Description/Locator	Details/Notes
M2	0432-7043	Riprap (Stone Protection) (18 IN)	CY	100	Place stone protection adjacent to concrete riprap at SW abutment.	
SB1	0429-7007	CONC STR REPAIR (VERTICAL AND OVERHEAD)	SF	52	Repair spalling and delamination on superstructure elements as annotated in bridge layout.	Refer to the TxDOT Concrete Repair Manual, Chapter 3, Section 2. See
SR1	480-7002	CLEAN EXIST CULVERTS	CY	160	Remove vegetation/sediment	

BRIDGE REPAIR LAYOUT

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SH 19
 SUMMARY OF REPAIRS

SH 19 AT SECOND CANEY CREEK

SHEET 11 OF 15

DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH19
CHECKED	DIST	COUNTY		SHEET NO.
APPROVED	TYL	HENDERSON		300

DATE: 26-JUN-2024 13:37
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\7. Bridge\SH19_Second_Caney_Bridge_Condition_Photos.dgn



TYPICAL INTERIOR BENT (MI) PHOTOS



TYPICAL EROSION (M2) PHOTOS



TYPICAL SEDIMENT (SRI) PHOTOS



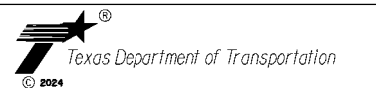
TYPICAL BENT (SBI) PHOTOS



06/28/2024

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F-12679

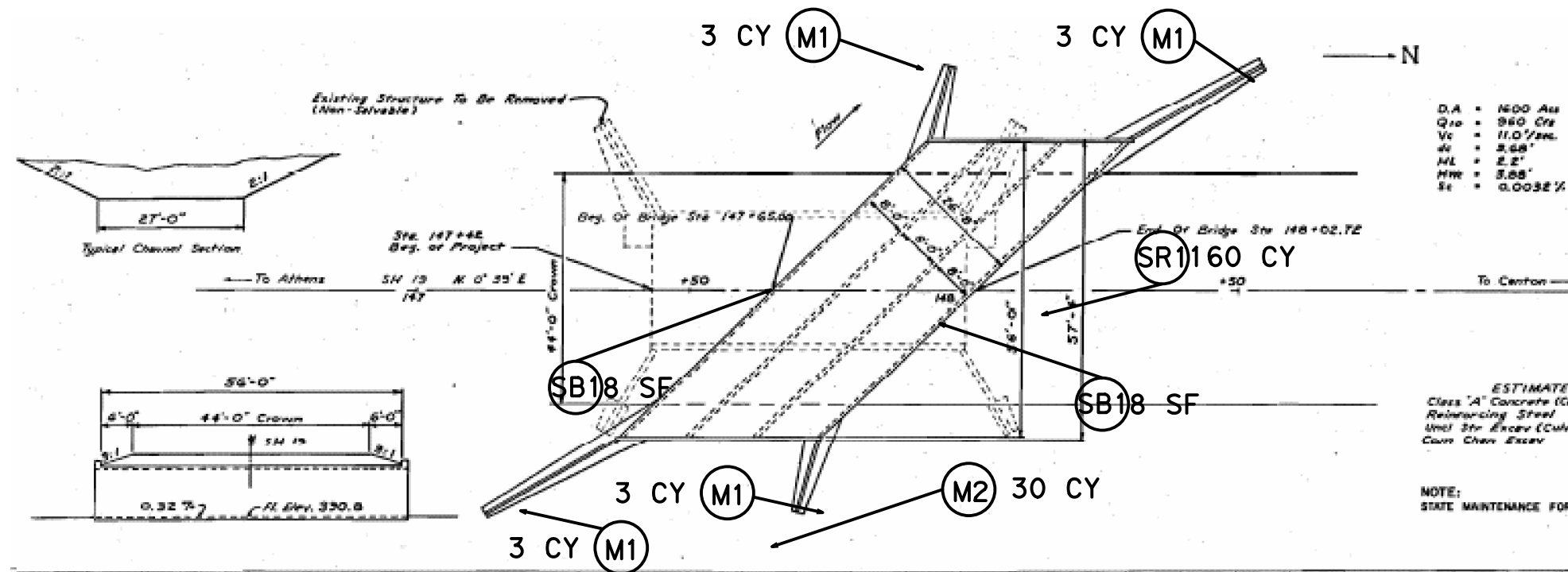


SH 19
BRIDGE CONDITION
PHOTOS
SH 19 AT SECOND CANEY CREEK

SHEET 12 OF 15

DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH19
CHECKED	DIST	COUNTY	SHEET NO.	
APPROVED	TYL	HENDERSON	301	

DATE: 15-JUL-2024 14:24
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\7. Bridge\SH19_First_Caney_Bridge_Layout

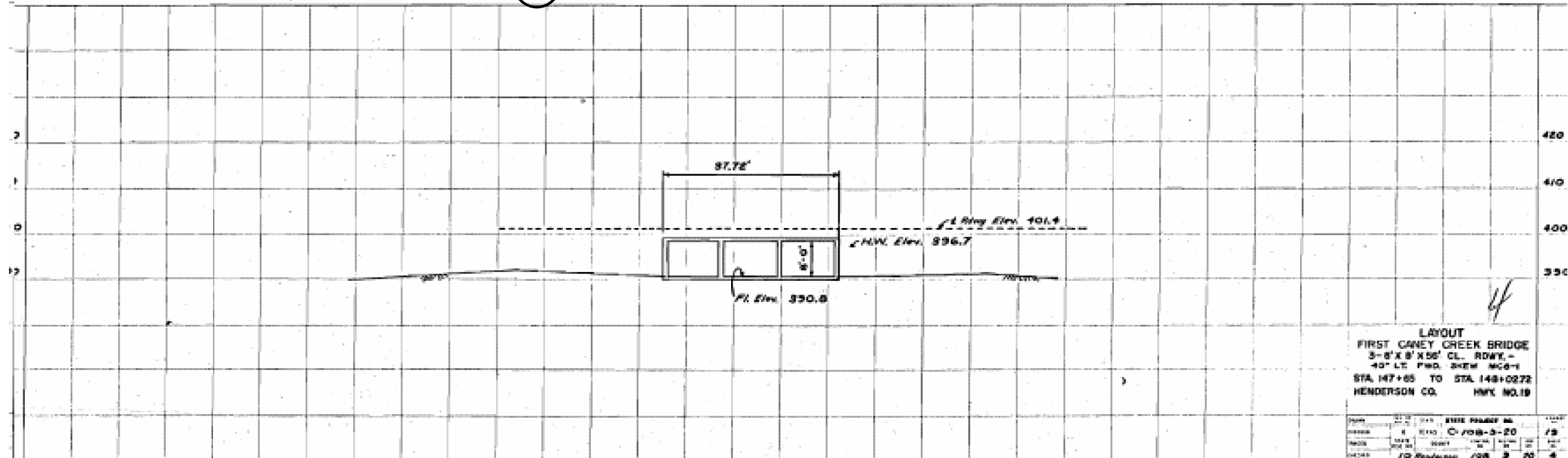


D.A = 1600 Ass
 Q₁₀ = 960 Cfs
 Vc = 11.0 fms.
 W = 3.68'
 HL = 2.2'
 HW = 3.85'
 Sr = 0.0032 %

ESTIMATED QUANTITIES

Class "A" Concrete (Culvert)	= 175.80 Cu. Yds.
Reinforcing Steel	= 26,723 Lbs.
Small Str. Embed (Culv)	= 53 Cu. Yds.
Crown Cham. Excav	= 44.5 Cu. Yds.

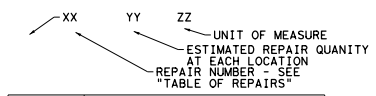
NOTE:
 STATE MAINTENANCE FORCES WILL BACKFILL STRUCTURE.



LAYOUT
 FIRST CANEY CREEK BRIDGE
 3-8'x8'x55' CL. RDWY. -
 40' LE. FWD. 28W. MCG-1
 STA. 147+65 TO STA. 148+02.72
 HENDERSON CO. HWY. NO. 19

DATE: 07/15/2024
 DRAWN BY: TYL
 CHECKED BY: TYL
 APPROVED BY: TYL

REPAIR CALL-OUT LEGEND



SYMBOL	APPLICABLE REPAIR AREAS
D-#	DECK, JOINTS, OVERHANGS, APPROACH SLABS
R-#	RAILS, APPROACH MBGF
SP-#	SUPERSTRUCTURE ELEMENTS, BEARINGS
SB-#	SUBSTRUCTURE ELEMENTS
SR-#	SEDIMENT, VEGETATION
M-#	MISCELLANEOUS (RIPRAP, SHOULDER DRAINS, ETC)

BRIDGE REPAIR LAYOUT

GENERAL NOTES

- LAYOUT, STATIONS, AND ELEVATIONS SHOWN ARE BASED ON AS-BUILT PLANS. COPIES OF AVAILABLE PORTIONS OF AS-BUILT PLANS MAY BE PROVIDED UPON REQUEST.
- REPAIR LOCATIONS AND QUANTITIES ARE BASED ON CONDITION SURVEY DATED (04/2024). CURRENT CONDITIONS MAY VARY. FIELD VERIFY LOCATIONS AND EXTENT OF REPAIRS IN THE PRESENCE OF THE ENGINEER PRIOR TO ORDERING MATERIALS.
- EXISTING LOAD RATING: 20

MATERIAL NOTES

PROVIDE CLASS C CONCRETE (F'c = 3600 PSI) FOR FULL-DEPTH DECK REPAIRS AND CONCRETE BRIDGE RAILING.
 PROVIDE TYPE C CONCRETE REPAIR MATERIAL CONFORMING TO DMS 4655, "CONCRETE REPAIR MATERIALS" CAPABLE OF ACHIEVING A MINIMUM AVERAGE 28-DAY COMPRESSIVE STRENGTH OF 3600 PSI FOR ALL VERTICAL AND OVERHEAD CONCRETE REPAIRS. PROVIDE TYPE X EPOXY COATING CONFORMING TO DMS 6100, "EPOXIES AND ADHESIVES" FOR ALL DECK SOFFIT SPALL REPAIRS.

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07/15/2024



F-12679



SH 19
 BRIDGE REPAIR LAYOUT
 SH 19 AT FIRST CANEY CREEK

SHEET 13 OF 15

AS-BUILT DATA SOURCE:
 STATE OF TEXAS
 STATE HIGHWAY DEPARTMENT
 DATE: 07-12-67

DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH19
CHECKED	DIST		COUNTY	SHEET NO.
APPROVED	TYL		HENDERSON	302

DATE: 15-JUL-2024 14:24
 FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ 0108-03-041)\Plan Set\7. Bridge\SH19_First Caney_Summary of Repairs.dgn

First Caney Creek Table of Repairs						
Repair No.	Item	Bid Item Description	Unit	Quantity	Repair Description/Locator	Details/Notes
M1	0401-7001	Flowable Backfill	CY	12	Place backfill at various locations across channel, abutments and at approaches where erosion has occurred.	Refer to bridge layout for locations and quantities of backfill.
M2	0432-7043	Riprap (Stone Protection) (18 IN)	CY	30	Place stone protection adjacent to concrete riprap at SW abutment.	
SB1	0429-7007	CONC STR REPAIR (VERTICAL AND OVERHEAD)	SF	16	Repair concrete on culvert openings	Refer to the TxDOT Concrete Repair Manual, Chapter 3, Section 2. See
SR1	480-7002	CLEAN EXIST CULVERTS	CY	160	Remove vegetation/sediment	

BRIDGE REPAIR LAYOUT

VOLKERT

F-12679



SH 19
 SUMMARY OF REPAIRS

SH 19 AT FIRST CANEY CREEK

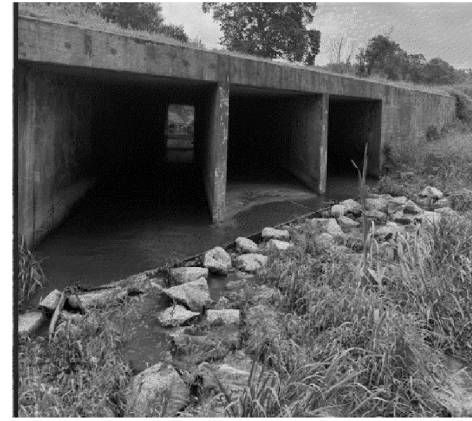
SHEET 14 OF 15

DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH19
CHECKED	DIST	COUNTY		SHEET NO.
APPROVED	TYL	HENDERSON		303

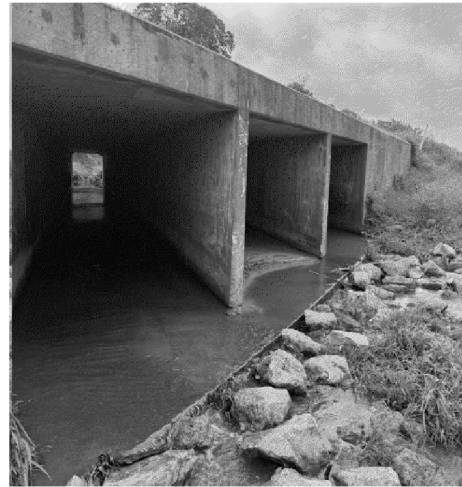
DATE: 26-JUN-2024 13:37
FILE: Projects\0741307 - SH 19 Super 2 Tyler\4B - Design (CSJ_0108-03-041)\Plan_Set\7. Bridge\SH19_First_Caney_Bridge_Condition_Photos.dgn



TYPICAL CREEK BED (M1) PHOTOS



TYPICAL EROSION (M2) PHOTOS



TYPICAL BENT (SBI) PHOTOS

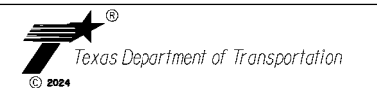


TYPICAL SEDIMENT (SRI) PHOTOS



VOLKERT

F-12679



SH 19
BRIDGE CONDITION
PHOTOS
SH 19 AT FIRST CANEY CREEK

SHEET 15 OF 15

DESIGN	CONT	SECT	JOB	HIGHWAY
DRAWN	0108	03	041	SH19
CHECKED	DIST	COUNTY	SHEET NO.	
APPROVED	TYL	HENDERSON	304	