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STATE	DIST	COUNTY
TEXAS	AUS	LEE, ETC.
CONT / SECT	JOB	HIGHWAY
6464 / 87	001	FM 1697, ETC.

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY BRIDGE PREVENTATIVE MAINTENANCE

PROJECT NUMBER 646487001

NET LENGTH OF PROJECT = 17,769.75 FEET= 3.3655 MILES

- SH 95 OVER UPRR & 1ST STREET = 970.00 FT = 0.1837 MILES
- IH 35 SB OVER US 290 = 650.00 FT = 0.1231 MILES
- US 183 NB OVER METRO RR/BURNET RD = 1,654.00 FT = 0.3133 MILES
- US 183 NB OVER OLHEN RD & LOCAL STREETS = 6,122.47 FT = 1.1596 MILES
- US 183 SB OVER OLHEN RD & LOCAL STREETS = 6,130.00 FT = 1.1610 MILES
- FM 734 EB OVER SOUTH BRUSHY CREEK = 1,548.28 FT = 0.2932 MILES
- FM 1697 OVER CEDAR CREEK = 182.00 FT = 0.0345 MILES
- FM 1697 OVER NAILS CREEK = 273.00 FT = 0.0517 MILES
- FM 448 OVER RABBS CREEK = 240.00 FT = 0.0455 MILES

LEE, ETC.
FM 1697, ETC.

LIMITS: VARIOUS LOCATIONS IN LEE, TRAVIS & WILLIAMSON COUNTIES FOR THE CONSTRUCTION OF CLEANING & SEALING JOINTS, BEARING PAD REPLACEMENT, CONCRETE REPAIR, JOINT REPLACEMENT, BEAM REPAIR, RAIL REPAIR, CRACK REPAIR, HEADER JOINT REPAIR, CRACK INJECTION, SHEAR KEY REPAIR, DIAPHRAGM SPALL REPAIR AND DEBRIS REMOVAL

NTS

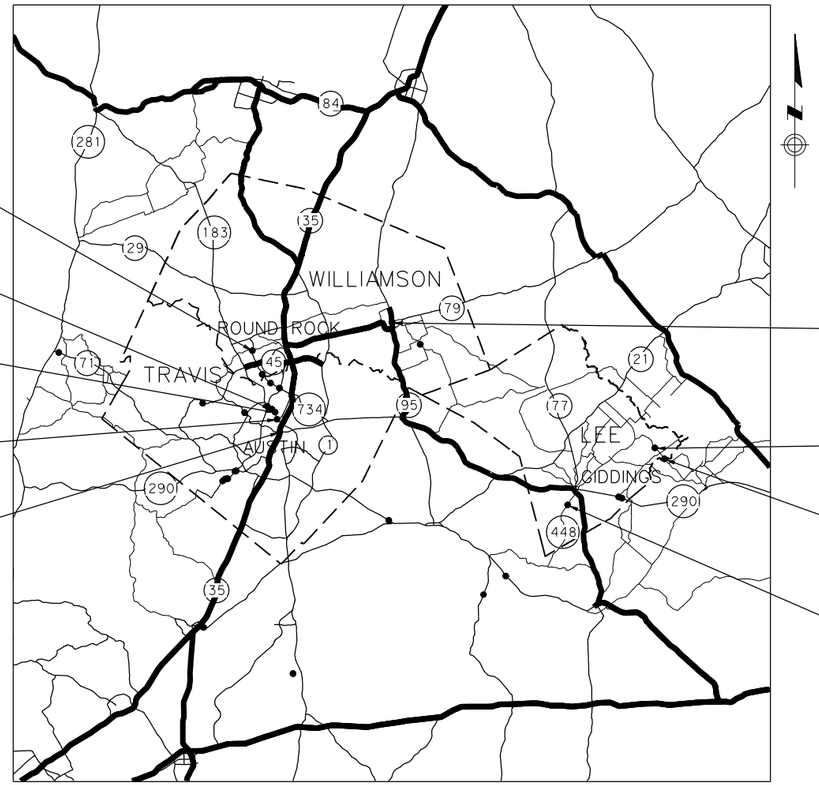
LOCATION 6
STR: 14-246-0-3417-02-012
FM 734 EB OVER SOUTH BRUSHY CREEK

LOCATION 3
STR: 14-227-0-0151-06-054
US 183 NB OVER METRO RR/BURNET RD

LOCATION 5
STR: 14-227-0-0151-06-081
US 183 SB OVER OLHEN RD & LOCAL STREETS

LOCATION 4
STR: 14-227-0-0151-06-080
US 183 NB OVER OLHEN RD & LOCAL STREETS

LOCATION 2
STR: 14-227-0-0015-13-385
IH 35 SB OVER US 290



LOCATION 1
STR: 14-246-0-0321-01-018
SH 95 OVER UPRR & 1ST STREET

LOCATION 8
STR: 14-144-0-1564-02-009
FM 1697 OVER NAILS CREEK

LOCATION 7
STR: 14-144-0-1564-02-011
FM 1697 OVER CEDAR CREEK

LOCATION 9
STR: 14-144-0-0334-06-047
FM 448 OVER RABBS CREEK

LOCATION MAP NOT TO SCALE

EXCEPTIONS: N/A
EQUATIONS: N/A
R.R. CROSSINGS: US 183 NB OVER METRO RR/BURNET RD
SH 95 OVER UPRR & 1ST STREET

FINAL PLANS

LETTING DATE: _____
DATE CONTRACTOR BEGAN WORK: _____
DATE WORK WAS ACCEPTED: _____
DATE WORK WAS COMPLETED: _____
FINAL CONTRACT COST: $_____
CONTRACTOR: _____

FINAL PLANS STATEMENT:

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

THE CONSTRUCTION WORK WAS PERFORMED IN ACCORDANCE WITH THE PLANS:

_____ P.E. _____
AREA ENGINEER DATE

TEXAS DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR LETTING: 5/28/2024
DocuSigned by: Gisel Carrasco, P.E.
AUSTIN DISTRICT MAINTENANCE ENGINEER

SUBMITTED FOR LETTING: 5/28/2024
DocuSigned by: Diana K. Schulze, P.E.
AREA ENGINEER

APPROVED FOR LETTING: 5/29/2024
DocuSigned by: Omar X. De Leon, P.E.
DIRECTOR OF MAINTENANCE

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, SEPTEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS.

Texas Department of Transportation

ALL RIGHTS RESERVED

1:54:03 PM 5/24/2024
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2	INDEX OF SHEETS
3,3A- 3E	GENERAL NOTES
4	TxDOT CONNECT ESTIMATE SHEET
5	ESTIMATED QUANTITIES
6	SH 95 OVER UPRR & 1st STREET - BRIDGE LAYOUT
7	SH 95 OVER UPRR & 1st STREET - ELASTOMERIC BEARING REPLACEMENT DETAILS FOR CONCRETE BEAMS
8	SH 95 OVER UPRR & 1st STREET - JOINT REPLACEMENT AT BENT NO. 6
9	SH 95 OVER UPRR & 1st STREET - TCP NARRATIVE & QUANTITIES
10	SH 95 OVER UPRR & 1st STREET - RAILROAD SCOPE OF WORK
11 - 12	IH 35 SB OVER US 290 - BRIDGE LAYOUT
13	IH 35 SB OVER US 290 - BRIDGE PROTECTIVE BEAM WRAP
14	IH 35 SB OVER US 290 - TCP NARRATIVE & QUANTITIES
15 - 18	US 183 NB OVER METRO RR / BURNET RD - BRIDGE LAYOUT
19	US 183 NB OVER METRO RR / BURNET RD - JOINT REPLACEMENT AT BENT NO. 9
20	US 183 NB OVER METRO RR / BURNET RD - TCP NARRATIVE & QUANTITIES
21 - 30	US 183 NB OVER OHLEN RD & LOCAL STREETS - BRIDGE LAYOUT
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48	FM 734 EB OVER SOUTH BRUSHY CREEK - TCP NARRATIVE & QUANTITIES
49	FM 1697 OVER CEDAR CREEK - BRIDGE LAYOUT
50	FM 1697 OVER CEDAR CREEK - TCP NARRATIVE & QUANTITIES
51	FM 1697 OVER NAILS CREEK - BRIDGE LAYOUT
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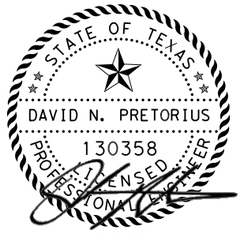

5.22.2024

LJA Engineering, Inc.
FRN - F-1386

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INDEX OF SHEETS

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.
DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	2
CHECKED: DNP	6464	87	001	

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GENERAL NOTES:

The following standard detail sheet or sheets have been modified:

Painting Structure Numbers (PSN-19 (AUS)(MOD))

GENERAL
Contractor questions on this project are to be addressed to the following individual(s):
District Maintenance gisel.carrasco@txdot.gov

Questions and requests for documents will be accepted via the Letting Pre-Bid Q&A web page. All contractor questions will be reviewed by the Engineer. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:

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

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

Written notice will be given to begin work on this project.

Work must begin within seven (7) calendar days after such notification. Time charges will begin when work begins regardless if it falls within seven (7) calendar days of the notification to begin work.

The contractor will have Two hundred and sixty-one (261) working days to complete all work under this contract.

Work under this contract shall consist of cleaning and sealing joints, bearing pad replacement, concrete spall repair, joint replacement, beam repair, rail repair, crack injection, and debris removal at various locations in Lee, Travis, and Williamson counties.

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County: LEE, Etc. **Control:** 6464-87-001
Highway: FM 1697, Etc.

References to manufacturer's trade name or catalog numbers are for the purpose of identification only. Similar materials from other manufacturers are permitted if they are of equal quality, comply with the specifications for this project, and are approved.
If work is performed at Contractor's option, when inclement weather is impending, and the work is damaged by subsequent precipitation, the Contractor is responsible for all costs associated with replacing the work, if required.

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

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

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

Intelligent Transportation Systems (ITS) Infrastructure may exist within the limits of this project and that the system must remain operational throughout construction. The exact location of ITS Infrastructure is not known. Contact the TxDOT Area Engineer's or Inspection Team's Office for the location(s) at least 48 hours before commencing any work that might affect present ITS Infrastructure. Use caution if working in these areas to avoid damaging or interfering with existing facilities. Repair any damage to this system within 8 hours of occurrence at no cost to the Department. In the event of system damage, notify TxDOT/CTECC at (512) 974-0883 within one hour of occurrence. Failure of the Contractor to repair damage to any infrastructure that conveys any corridor information to TxDOT/CTECC will result in the Contractor being billed for the full cost of emergency repairs.

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

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

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

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

The Contractor is responsible for any damage done to the existing utilities while working on this project. The Contractor is responsible for reporting the damage to the utility company as soon as possible.

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

Each contract is considered separate and individual from others. Requirements to complete work on any or all contracts may occur at the same time. If requests are issued at the same time, it is expected that the work will be completed in the time frame allowed.

Coordinate and obtain approval for all bridgework over existing roadways.

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

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

ITEM 3 – AWARD AND EXECUTION OF CONTRACT
A work order will be issued for each item of work, or as directed by the Engineer. Daily work reports will be submitted to the Engineer. Work reports will include planned work 24 hours in advance and all completed work. Notify Engineer of arrival at each site prior to beginning work. Documentation of completion of work and inspection by the Engineer are required for payment.

ITEM 5 – CONTROL OF THE WORK
Place construction or silt fence 2 ft. inside TxDOT ROW along the Railroad ROW. If work is to be performed inside the Railroad ROW, then the Contractor will coordinate with the Railroad for a Railroad Flagger. This work is subsidiary.

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

Provide a 72-hour advance email notice to AUS_Locate@TxDOT.gov to request illumination, traffic signal, ITS, or toll equipment utility locates. Provide AUS_Locate@TxDOT.gov an electronic pdf of as-builts within 21 calendar days of illumination, traffic signal, ITS, or toll equipment being placed into operation. As-built shall include GPS coordinates of manholes and junction boxes. Include final version of RFI's and revised plan sheets.

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Electronic Shop Drawing Submittals:
Submit electronic shop drawing submittals according to the current Guide to Electronic Shop Drawing Submittal https://www.txdot.gov/business/resources/specifications/shop-drawings.html (TxDOT.gov Business > Resources - General > Shop Drawings). Pre-approved producers can be found online at TxDOT.gov > Business > Resources - Material Producer List. Use the following contact list for all submittals that are not required to be sent to Bridge Division and to copy the Engineer for all submittals to the Bridge Division.

Submittal Contact List

Bastrop Area	Diana.Schulze@txdot.gov	AUS_BA-ShopReview@txdot.gov
District Maintenance	gisel.carrasco@txdot.gov	AUS_HQ-ShopReview@txdot.gov

ITEM 6 - CONTROL OF MATERIALS
The Contractor is responsible for furnishing all materials included in this contract. Materials provided by Contractor will be new unless otherwise shown on the plans or approved. The Contractor must receive approval from the Engineer prior to ordering materials for this contract.

The Contractor is required to have sufficient supply of material to complete repair work within the allotted time.

Give a minimum of 1 business day notice for materials, which require inspection at the Plant.

For structures with paint containing hazardous materials, provide locations of paint removal 60 days prior to begin removal.

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

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

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

Roadway closures during key dates and/or special events are prohibited. See notes for Item 502 for the key dates and/or special events.

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

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

Erosion control and stabilization measures must be initiated immediately in portions of the site where construction activities have temporarily ceased and will not resume for a period exceeding 14 calendar days. Track all exposed soil, stockpiles, and slopes. Tracking consists of operating a tracked vehicle or equipment up and down the slope, leaving track marks perpendicular to the direction of the slope. Re-track slopes and stockpiles after each rain event or every 14 days, whichever occurs first. This work is subsidiary.

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

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

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

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

PSL in Edwards Aquifer Recharge and Contributing Zone.
Obtain written approval from the Engineer for all on or off right of way PSLs not specifically addressed in the plans. Provide a signed SW3P sketch of the location 30 business days prior to use of the PSL. Include a list of materials, equipment and portable facilities that will be stored at the PSL.

PSL in USACE Jurisdictional Area.
Do not initiate activities in a PSL associated with a U.S. Army Corps of Engineers (USACE) jurisdictional area that have not been previously evaluated by the USACE as part of the permit review of this project. Such activities include, but are not limited to, haul roads, equipment staging areas, borrow and disposal sites. Associated defined here means materials are delivered to or from the PSL. The jurisdictional area includes all waters of the U.S. including wetlands or associated wetlands affected by activities associated with this project. Special restrictions may be required for such work. Consult with the USACE regarding activities, including PSLs that have not been

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previously evaluated by the USACE. Provide the Department with a copy of all USACE coordination and approvals before initiating activities.

Proceed with activities in PSLs that do not affect a USACE jurisdictional area if self-determination has been made that the PSL is non-jurisdictional or proper clearances have been obtained in USACE jurisdictional areas or have been previously evaluated by the USACE as part of the permit review of this project. Document any determinations that PSL activities do not affect a USACE jurisdictional area. Maintain copies of PSL determinations for review by the Department or any regulatory agency. The Contractor must document and coordinate with the USACE, if required, before any excavation material hauled from or embankment material hauled into a USACE jurisdictional area by either (1) or (2) below.

1. **Restricted Use of Materials for the Previously Evaluated Permit Areas.** When an area within the project limits has been evaluated by the USACE as part of the permit process for this project:
    a. suitable excavation of required material in the areas shown on the plans and cross sections as specified in Standard Specification Item 110, Excavation is used for permanent or temporary fill within a USACE jurisdictional area;
    b. suitable embankment from within the USACE jurisdictional area is used as fill within a USACE evaluated area;
    c. Unsuitable excavation or excess excavation that is disposed of at an approved location within a USACE evaluated area.

2. **Contractor Materials from Areas Other than Previously Evaluated Areas.** Provide the Department with a copy of all USACE coordination and approvals before initiating any activities in a jurisdictional area within the project limits that has not been evaluated by the USACE or for any off right of way locations used for the following, but not limited to, haul roads, equipment staging areas, borrow and disposal sites:
    a. Standard Specification Item 132, Embankment is used for temporary or permanent fill within a USACE jurisdictional area;
    b. Unsuitable excavation or excess excavation that is disposed of outside a USACE evaluated area.

Work over or near Bodies of Water (Lakes, Rivers, Ponds, Creeks, etc.).
Keep on site a universal spill kit adequate for the body of water and the work being performed. Debris is not allowed to fall into the ordinary high-water level (OHWL). Debris that falls into the OHWL must be removed at the end of each work day. Debris that falls into the floodway must be removed at the end of each work week or prior to a rain event. Install and maintain traffic control devices to maintain a navigable corridor for water traffic, except during bridge demo and beam placement. This work is subsidiary.

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

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

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

Law Enforcement Personnel.
Submit charge summary and invoices using the Department forms.

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

No payment will be made for law enforcement personnel needed for moving equipment or payment for drive time to/from the event site. A minimum number of hours is not guaranteed. Payment is for work performed. If the Contractor has a field office, provide an office location for a supervisory officer when event requires a supervising officer. This work is subsidiary.

A maximum combined rate of $70 per hour for the law enforcement personnel and the patrol vehicle will be allowed. Any scheduling fee is subsidiary per Standard Specification 502.4.2.

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

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

ITEM 8 – PROSECUTION AND PROGRESS
Working days will be charged in accordance with 8.3.1.4, "Standard Workweek."

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

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

ITEM 420, 425, 441, & 462 - STRUCTURES
Bridge Vertical Clearance and Traffic Handling
Notify TxDOT project staff and the local bridge engineer 10 business days prior to the following: change in vertical clearance, placing beams/girders over traffic, opening or removing traffic from a bridge or portion of a bridge, and completion of bridge work. This requirement includes bridge class culverts. Provide vertical clearance for all structures (including signal mast arms, span wires, and overhead sign bridge structures) within the project limit. Submit information and notices to local bridge engineer at AUS_BRG_Notify@txdot.gov.

ITEM 429 - CONCRETE STRUCTURE REPAIR
Refer to TxDOT Concrete Repair Manual (2021) for all concrete structure repair requirements and details.

ITEM 434 - BRIDGE BEARINGS
Fabricate bearings (or special components) in accordance with Item 4002.

ITEM 454 - BRIDGE EXPANSION JOINTS
Apply protection System II in accordance with Item 446 to armor joint.

For Header-Type Expansion Joints, go to the following TxDOT website for approved systems:
https://www.txdot.gov/inside-txdot/division/bridge/approved-systems/expansion-joints.html

http://ftp.dot.state.tx.us/pub/txdot-info/cmd/mpl/polyconc.pdf

For Asphalt-Plug Expansion Joints, go to the following TxDOT website for approved systems:
https://www.txdot.gov/inside-txdot/division/bridge/approved-systems/expansion-joints.html

http://ftp.dot.state.tx.us/pub/txdot-info/cmd/mpl/jtsealrs.pdf

ITEM 502 - BARRICADES, SIGNS, AND TRAFFIC HANDLING
Table 1

Roadway	Limits	Allowable Closure Time
IH 35	All (1 lane closed)	9 P to 5 A
IH 35	All (2 lanes closed, see allowable work below)	9 P to 5 A
IH 35	All (2 lanes closed, all work)	11 P to 5 A
SH 45	US 183 to SH130	8 P to 5 A
LP 1	William Cannon to Parmer Lane	8 P to 5 A
US 183	SH 29 to FM 1327	8 P to 5 A
SH 71	SH 130 to IH 35	8 P to 5 A
SH 71	SH 304 to Tahitian Drive	8 P to 5 A
SH 71	US 290 W to RM 3238	8 P to 5 A
US 290 W	IH 35 to Nutty Brown Rd	8 P to 5 A
US 290 E	IH 35 to SH 95	8 P to 5 A

FM 734	FM 1431 to US 290 E	8 P to 5 A
US 79	IH 35 to Bus 79 in Taylor	8 P to 5 A
RM 1431	Lohmans Ford Rd to IH 35	8 P to 5 A
SH 29	LP 332 western terminus to SH 130	8 P to 5 A
SH 80	Charles Austin to River Road	8 P to 5 A
RM 2222	All	8 P to 5 A
RM 620	All	8 P to 5 A
RM 2244	All	8 P to 5 A
SPUR 69	All	8 P to 5 A
LP 360	All	8 P to 5 A
LP 343	All	8 P to 5 A
LP 275	All	8 P to 5 A
FM 1325	All	8 P to 5 A
All	Within 200’ of a signalized intersection	9 P to 5 A
All	All (Full Closure, see allowable work below)	11 P to 4 A

Table 3 (Mobile Operations)

Roadway	Allowable Sun Night thru Fri Noon	Allowable Sat thru Sun Morn
Within Austin City Limits	10 A to 2 P and 7 P to 6 A	7 P to 10 A
Outside Austin City Limits	9 A to 3 P and 7 P to 7 A	6 P to 11 A
IH 35 main lanes	10 P to 5 A	9 P to 9 A
AADT over 50,000	8 P to 6 A	8 P to 10 A

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

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

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

No closures will be allowed on the weekends, working day prior, and working day after the National Holidays defined in the Standard Specifications, Good Friday, and Easter weekend. Closures the Sunday of the Super Bowl will not be allowed from 1 P to 11 P. No closures will be allowed on Friday and the weekends for projects within 20 miles of Formula 1 at COTA, ACL Fest, SXSW, ROT Rally, UT home football games (includes games not on a Friday or weekend), sales tax holiday, Dell Match Play (includes Thursday) or other special events that could be impacted by the construction. All lanes will be open by noon of the day before these special events.

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

Project Number: 646487001
County: LEE, Etc.
Highway: FM 1697, Etc.

Sheet: 3D
Control: 6464-87-001

Submit an emailed request for a lane closure (LCN) to TxDOT. The email will be submitted in the format provided. Receive concurrence prior to implementation. Submit a cancellation of lane closures a minimum of 18 hours prior to implementation. Blanket requests for extended periods are not allowed. Max duration of a request is 2 weeks prior to requiring resubmittal. Provide 2-hour notice prior to implementation and immediately upon removal of the closure.
For roadways listed in Table 1: Submit the request 96 hours prior to implementation.

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

For all roadways: Submit request for traffic detours and full roadway closures 168 hours prior to implementation. Submit request for nighttime work 96 hours to implementation date.
Cancellations of accepted closures (not applicable to full closures or detours) due to weather will not require resubmission in accordance with the above restrictions if the work is completed during the next allowable closure time.

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

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

Meet with the Engineer prior to lane closures to ensure that sufficient equipment, materials, devices, and workers will be used. Take immediate action to modify traffic control, if at any time the queue becomes greater than 20 minutes. Have a contingency plan of how modification will occur. Consider inclement weather prior to implementing the lane closures. Do not set up traffic control when the pavement is wet.

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

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

To determine a speed limit or an advisory speed limit, submit a request to TxDOT 60 business days prior to manufacture of the sign.
The Contractor Force Account “Safety Contingency” that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor’s Responsible

Sheet: 3E
Control: 6464-87-001

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.

One-way Traffic Control will be subsidiary.

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

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

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

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

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

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

ITEM 7052 – LANE CLOSURES
Payment for lane closure hourly maintenance will be considered subsidiary to the bid item.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 6464-87-001 **DISTRICT** Austin **COUNTY** Lee
HIGHWAY FM1697

		CONTROL SECTION JOB		**6464-87-001**		TOTAL EST.	TOTAL FINAL
		PROJECT ID		**A00207909**			
		COUNTY		**Lee**			
		HIGHWAY		**FM1697**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	429-6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	141.000		141.000	
	438-6001	CLEANING AND SEALING EXISTING JOINTS	LF	276.000		276.000	
	438-6002	CLEANING AND SEALING EXIST JOINTS(CL3)	LF	239.800		239.800	
	438-6004	CLEANING AND SEALING EXIST JOINTS(CL7)	LF	810.100		810.100	
	438-6009	CLEANING EXISTING JOINTS	LF	598.000		598.000	
	449-6001	ANCHOR BOLTS	EA	16.000		16.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	13.000		13.000	
	764-6001	DRAIN INLET CLEANING	EA	197.000		197.000	
	780-6002	CNC CRACK REPAIR (DISCRETE)(INJECT)	LF	4.000		4.000	
	785-6006	BRIDGE JOINT REPAIR (HEADER)	LF	182.000		182.000	
	785-6010	BRIDGE JOINT REPLACEMENT (ARMOR)	LF	53.000		53.000	
	785-6011	BRIDGE JOINT REPLACEMENT (SEJ)	LF	74.000		74.000	
	785-6012	BRIDGE JOINT REPLACEMENT (FINGER)	LF	53.000		53.000	
	786-6001	CARBON FIBER REINF POLYMER PROTECTION	SF	186.700		186.700	
	788-6001	CONCRETE BEAM REPAIR	EA	6.000		6.000	
	4002-6001	REPLACE ELASTOMERIC BEARING PADS	EA	14.000		14.000	
	4076-6005	RAIL REPLACEMENT	LF	4.000		4.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000	
	6185-6002	TMA (STATIONARY)	DAY	206.000		206.000	
	7000-6001	REML & DISPL DRIFTWOOD & DEBRIS	CY	157.700		157.700	
	7052-6042	LANE CLOSURE (SETUP AND REMOV)(TY 1)	EA	4.000		4.000	
	7052-6043	LANE CLOSURE (SETUP AND REMOV)(TY 2)	EA	4.000		4.000	
	7052-6047	LANE CLOSURE (SETUP AND REMOV)(TY 6)	EA	8.000		8.000	
	7052-6050	LANE CLOSURE (SETUP AND REMOV)(TY 9)	EA	2.000		2.000	

CSJ 6464-87-001				ESTIMATED QUANTITIES						
				STRUCTURE	STRUCTURE	STRUCTURE	STRUCTURE	STRUCTURE	STRUCTURE	STRUCTURE
				14-246-0-0321-01-018	14-227-0-0015-13-385	14-227-0-0151-06-054	14-227-0-0151-06-080	14-227-0-0151-06-081	14-246-0-3417-02-012	14-144-0-1564-02-011
				WILLIAMSON CO	TRAVIS CO	TRAVIS CO	TRAVIS CO	TRAVIS CO	WILLIAMSON CO	LEE CO
				SH 95 OVER UPRR & 1ST STREET	I 35 SB OVER US 290	US 183 NB METRO RR	US 183 NB OVER OHLEN RD	US 183 SB OVER OHLEN RD	FM 734 EB OVER SOUTH BRUSHY CREEK	FM 1697 OVER CEDAR CREEK
			LATITUDE:	30.56687664	30.3220377	30.37332047	30.35053907	30.36671844	30.50693368	30.24725062
			LONGITUDE:	-97.40923508	-97.70684988	-97.72644124	-97.71356211	-97.71850366	-97.77609122	-96.70196309
ITEM	CODE	DESCRIPTION	UNIT	QUANTITIES	QUANTITIES	QUANTITIES	QUANTITIES	QUANTITIES	QUANTITIES	QUANTITIES
429	6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	7.4		0.5	32.0	10.0		42.2
438	6001	CLEANING AND SEALING EXISTING JOINTS	LF						276.0	
438	6002	CLEANING AND SEALING EXISTING JOINTS (CL3)	LF							52.0
438	6004	CLEANING AND SEALING EXISTING JOINTS (CL7)	LF	636.0	84.1		40.0	50.0		
438	6009	CLEANING EXISTING JOINTS	LF			168.0	126.0	304.0		
449	6001	ANCHOR BOLTS	EA				16			
500	6001	MOBILIZATION	LS	1						
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	2	1	1	2	3	1	1
764	6001	DRAIN INLET CLEANING	EA		2	13	90	92		
780	6002	CNC CRACK REPAIR (DISCRETE) (INJECT)	LF					4.0		
785	6006	BRIDGE JOINT REPAIR (HEADER)	LF		100.0		32.0	50.0		
785	6010	BRIDGE JOINT REPLACEMENT (ARMOR)	LF	53.0						
785	6011	BRIDGE JOINT REPLACEMENT (SEJ)	LF			74.0				
785	6012	BRIDGE JOINT REPLACEMENT (FINGER)	LF				31.0	22.0		
786	6001	CARBON FIBER REINF POLYMER PROTECTION	SF		186.7					
788	6001	CONCRETE BEAM REPAIR	EA		6					
4002	6001	REPLACE ELASTOMERIC BEARING PADS	EA	14						
4076	6005	RAIL REPLACEMENT	LF			4.0				
6001	6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2						
6185	6002	TMA (STATIONARY)	DAY	40	5	15	56	62	12	4
7000	6001	REML & DISPL DRIFTWOOD & DEBRIS	CY							
7051	6042	LANE CLOSURE (SETUP AND REMOV)(TY 1)	EA							2
7052	6043	LANE CLOSURE (SETUP AND REMOV)(TY 2)	EA						2	
7052	6047	LANE CLOSURE (SETUP AND REMOV)(TY 6)	EA		2	2	2	2		
7052	6050	LANE CLOSURE (SETUP AND REMOV)(TY 9)	EA		2					

CSJ 6464-87-001				ESTIMATED QUANTITIES		
				STRUCTURE	STRUCTURE	PROJECT TOTALS
				14-144-0-1564-02-009	14-144-0-0334-06-047	
				LEE CO	LEE CO	
				FM 1697 OVER NAILS CREEK	FM 448 OVER RABBS CREEK	
			LATITUDE:	30.27233763	30.14684003	
			LONGITUDE:	-96.72631298	-96.95692335	
ITEM	CODE	DESCRIPTION	UNIT	QUANTITIES	QUANTITIES	QUANTITIES
429	6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	48.9		141.0
438	6001	CLEANING AND SEALING EXISTING JOINTS	LF			276.0
438	6002	CLEANING AND SEALING EXISTING JOINTS (CL3)	LF	102.8	85.0	239.8
438	6004	CLEANING AND SEALING EXISTING JOINTS (CL7)	LF			810.1
438	6009	CLEANING EXISTING JOINTS	LF			598.0
449	6001	ANCHOR BOLTS	EA			16
500	6001	MOBILIZATION	LS			1
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	1	1	13
764	6001	DRAIN INLET CLEANING	EA			197
780	6002	CNC CRACK REPAIR (DISCRETE) (INJECT)	LF			4.0
785	6006	BRIDGE JOINT REPAIR (HEADER)	LF			182.0
785	6010	BRIDGE JOINT REPLACEMENT (ARMOR)	LF			53.0
785	6011	BRIDGE JOINT REPLACEMENT (SEJ)	LF			74.0
785	6012	BRIDGE JOINT REPLACEMENT (FINGER)	LF			53.0
786	6001	CARBON FIBER REINF POLYMER PROTECTION	SF			186.7
788	6001	CONCRETE BEAM REPAIR	EA			6
4002	6001	REPLACE ELASTOMERIC BEARING PADS	EA			14
4076	6005	RAIL REPLACEMENT	LF			4.0
6001	6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA			2 ①
6185	6002	TMA (STATIONARY)	DAY	8	4	206
7000	6001	REML & DISPL DRIFTWOOD & DEBRIS	CY		157.7	157.7
7051	6042	LANE CLOSURE (SETUP AND REMOV)(TY 1)	EA	2		4
7052	6043	LANE CLOSURE (SETUP AND REMOV)(TY 2)	EA		2	4
7052	6047	LANE CLOSURE (SETUP AND REMOV)(TY 6)	EA			8
7052	6050	LANE CLOSURE (SETUP AND REMOV)(TY 9)	EA			2

① Relocate changeable message signs to each location as needed. Relocation cost is subsidiary to bid item 6001-6002 under this contract

STATE OF TEXAS
DAVID N. PRETORIUS
130358
PROFESSIONAL ENGINEER
5.22.2024

LJA Engineering, Inc.
FRN - F-1386

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ESTIMATED QUANTITIES

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	5
CHECKED: DNP	6464	87	001	

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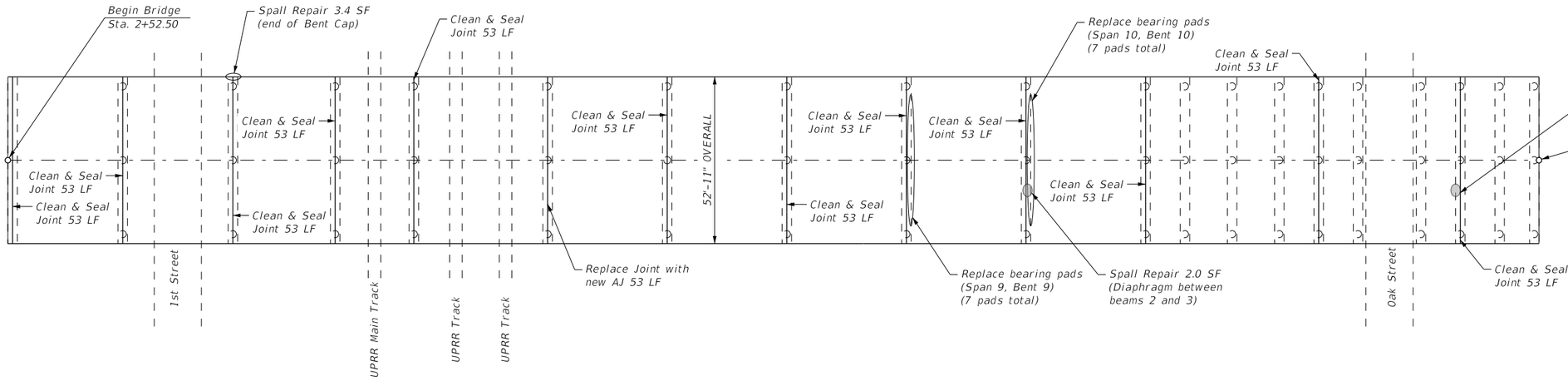
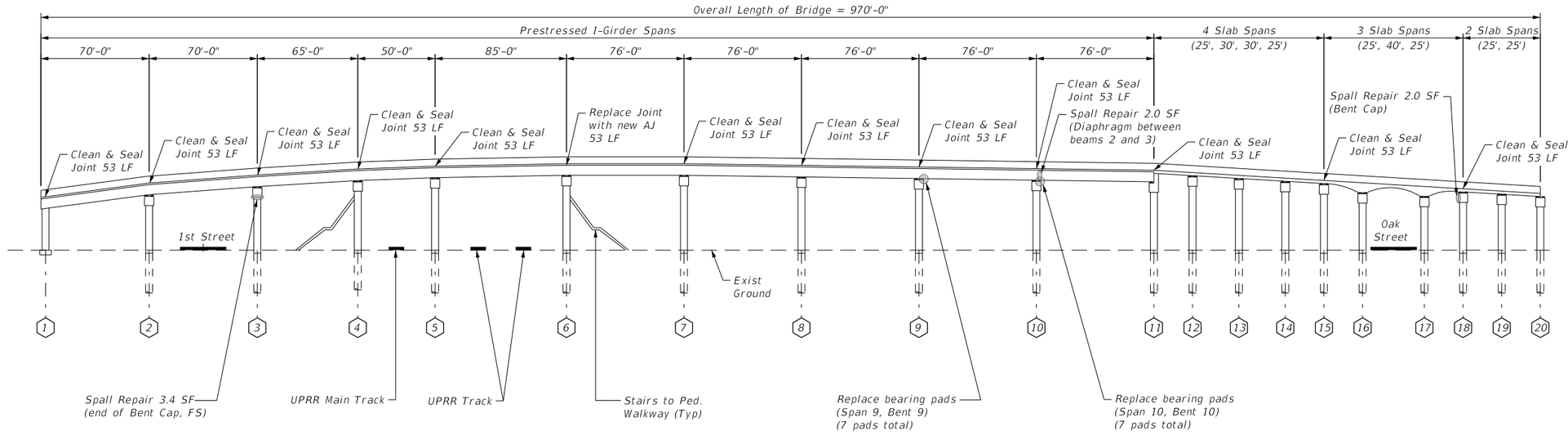
TABLE OF ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
429 6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	7.4	SF
438 6004	CLEANING AND SEALING EXISTING JOINTS (CL7)	636.0	LF
500 6001	MOBILIZATION	1	LS
785 6010	BRIDGE JOINT REPLACEMENT (ARMOR)	53.0	LF
4002 6001	REPLACE ELASTOMERIC BEARING PADS	14	EA



PLAN



ELEVATION

GENERAL NOTES

Contractor must verify repair locations and quantities prior to commencing work. Any discrepancies between repair plans and existing field conditions must to communicated to the Engineer immediately.

Refer to "Joint Replacement at Bent No. 6" Sheet for more information.

Refer to the "Elastomeric Bearing replacement details for concrete beams" Sheet for more information.

Refer to the Spall Repair details sheet.

Refer to Cleaning and Sealing Existing Bridge Joints sheets. Bents 1 to 5 and 7 to 11, refer to "Armor Joint" details & Detail "C". Bents 15 and 18, refer to "Joint with Silicone Seal" details & Detail "A".

Refer to AJ standard sheet.

NBI: 14-246-0-0321-01-018

5.22.2024

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FRN - F-1386

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SH 95 over UPRR &
1st Street
Bridge Layout

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.
DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: CTH	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	
CHECKED: DNP	6464	87	001	6

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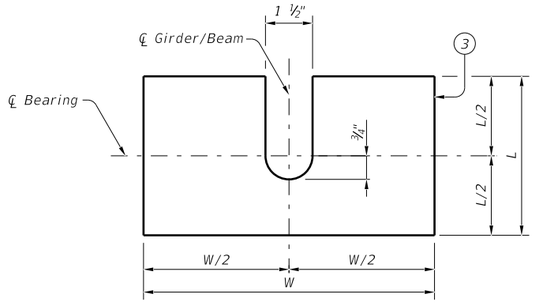
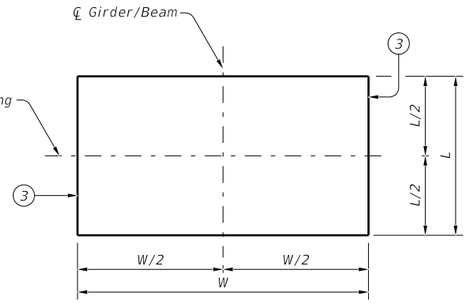
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

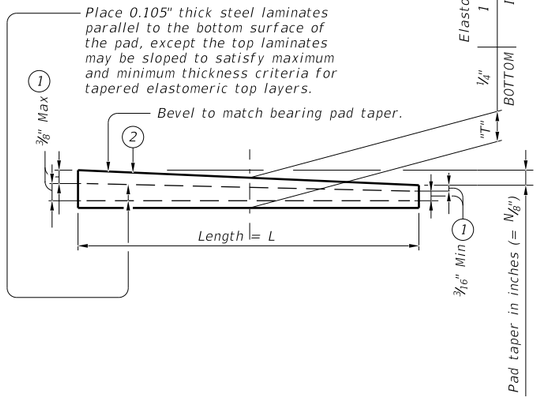
DATE:
FILE:



BEARING PAD PLAN WITH DOWEL



BEARING PAD PLAN WITHOUT DOWEL



BEARING PAD ELEVATION

LAMINATED ELASTOMERIC BEARING REPLACEMENT DETAILS

(1) Maximum and minimum layer thicknesses shown are for elastomer only, on tapered layers.

(2) Indicate BEARING TYPE on all pads. For tapered pads, locate BEARING TYPE on the high side. Include the value of "N" (amount of taper in ⅛" increments) in this mark.
Examples: N=0, (for 0" taper)
N=1, (for ⅛" taper)
N=2, (for ¼" taper)
(etc.)
Fabricated pad top surface slope must not vary from plan beam slope by more than $\left(\frac{0.0625"}{Length}\right)$ IN/IN.

(3) Locate permanent mark here.

BEARING PAD SUMMARY TABLE

Bent No.	Beam No.	Dowels	Bearing Pad Dimensions			Beam Slope	Bearing Pad Type	Quantity
			L (inch)	W (inch)	T (inch)			
9 (Upstation)	ALL	YES	9	19	1	0.01837	Elastomeric	7
10 (Upstation)	ALL	YES	9	19	1	0.01837	Elastomeric	7

LIFTING NOTES:

1. All work and materials for bearing pad replacement must be performed and paid for in accordance with Special Specification 4002, "Elastomeric Bearing Pads." Verify all locations and beam slopes prior to ordering materials.

2. Submit lifting plans and calculations to the Engineer for approval. Design lifting device and supports for live load and dead load with appropriate load factors in accordance with Item 495, "Raising Existing Structures." Unfactored loads are as follows:
   DL = 55 kips per beam end
   LL = 130 kips per beam end
   (including impact)

3. Limit lifting to ½" maximum to allow for pad replacement. Note that dowels may restrain existing pads. Do not damage deck, beams, or cap during any stage of bearing pad replacement.

4. Supporting falsework on existing bent caps is permitted following requirements of Lifting Note 2 above.

5. Jacking against the slab is not allowed. Jacking from existing bent cap is permitted following requirements of Lifting Note 2 above.

6. Place new bearing pads and lower beams back onto pads. Ensure that all new bearing pads compress when jacking force is removed. If load is not transferred as intended, place steel shims under pad or use epoxy injection or grout mixture as specified in Article 784.4.3 to properly engage bearing pad and transfer load.

Live load may be permitted on the bridge during jacking if the following requirements are met:

1. Signed and Sealed lifting plans indicate lift can be done under live load.

2. During the lift (or just after), secure the structure on cribbing or temporary supports while performing the bearing replacement. Under no circumstances should the existing bearing pad be removed or repositioned while the bridge load is solely supported on jacks.

3. Contractor is responsible for all activity regardless of allowance.

GENERAL NOTES:

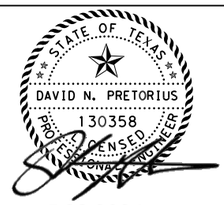
Replace existing bearings per Special Specification 4002, "Elastomeric Bearing Pads". Payment for lifting the structure is included in the price bid for replacing elastomeric bearing pads.

Raise the existing span in accordance with Item 495, "Raising Existing Structures." It is acceptable to cut existing pad to facilitate removal.

Per Item 495, shoring, falsework, jacking, bearing pads, labor, tools, and equipment shall be subsidiary to item 4002 6001 Replace Elastomeric Bearing Pads.

Following installation of new bearing pad apply stripe coat of Type V epoxy at interface of pad and concrete pedestal to secure pad.

LJA Engineering, Inc.
FRN-F-1386



5.22.2024

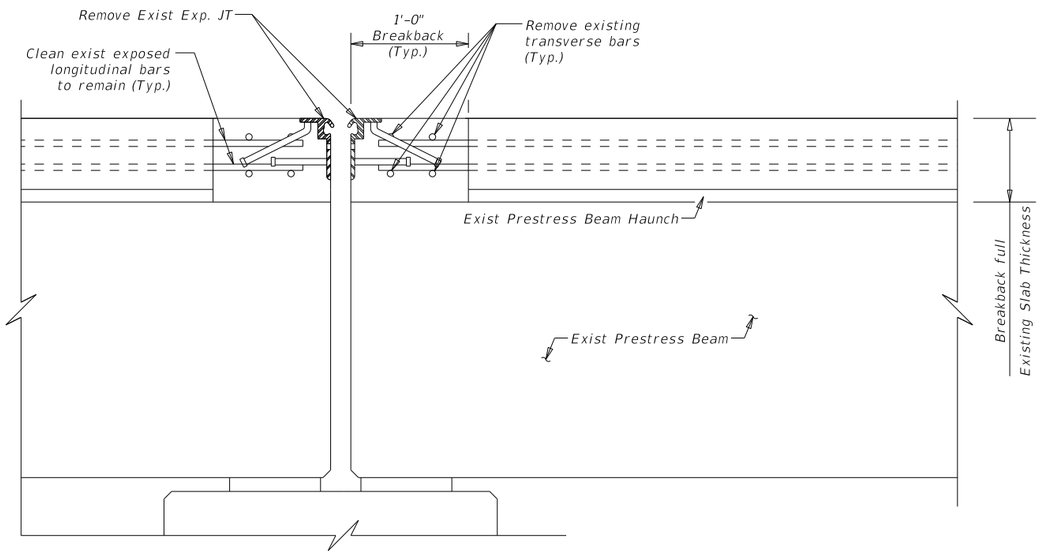
Texas Department of Transportation — Bridge Division

SH 95 over UPRR & 1st Street

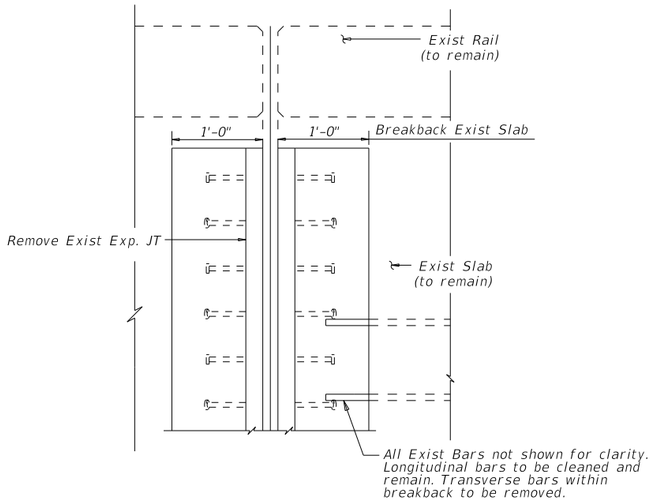
ELASTOMERIC BEARING REPLACEMENT DETAILS FOR CONCRETE BEAMS

NBI: 14-246-0321-01-018

FILE: WD-EBR(C)-22.dgn	DN: DNP	CK: WO	DW: GZ	CK: DNP
©TxDOT August 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	6464	87	001	FM 1697, ETC.
	DIST	COUNTY		SHEET NO.
	AUT	LEE, ETC.		7



EXISTING EXPANSION JOINT



SLAB/RAIL BREAKBACK
EXIST EXP. JT.

GENERAL NOTES:

Perform work in accordance with the TxDOT Concrete Repair Manual, Chapter 3, Section 4 and Item 785, "Bridge Joint Repair or Replacement." A copy of the Concrete Repair Manual must be available onsite during all concrete repair operations.

Obtain approval for all tools, equipment, materials, and techniques proposed before beginning work.

Existing slab is to be partially removed at breakline and reconstructed with new AJ joint installed.

Payment for breaking back existing deck, removing existing expansion joint armoring, cleaning existing reinforcement to remain, installation of new reinforcing steel, and replacing the portion of the slab that was removed shall be included with 785 6010 BRIDGE JOINT REPLACEMENT (ARMOR)

MATERIAL NOTES:

Provide Class K or Class S Concrete (f'c = 4,000 psi, Course Aggregate Grades 2–5). Alternatively, if approved by the engineer, provide Type A or D concrete repair materials meeting the requirements of DMS 4655, "Concrete Repair Materials." Achieve a minimum compressive strength f'c = 3,600 psi prior to opening to traffic.

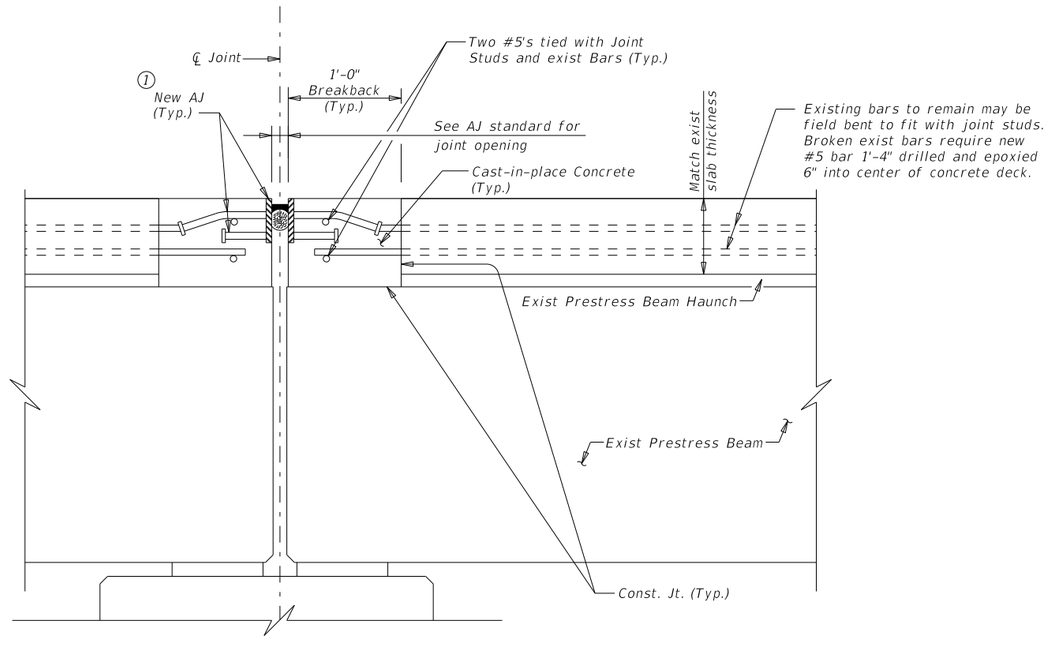
Provide Grade 60 reinforcing steel.

Provide bar laps, where required, as follows:

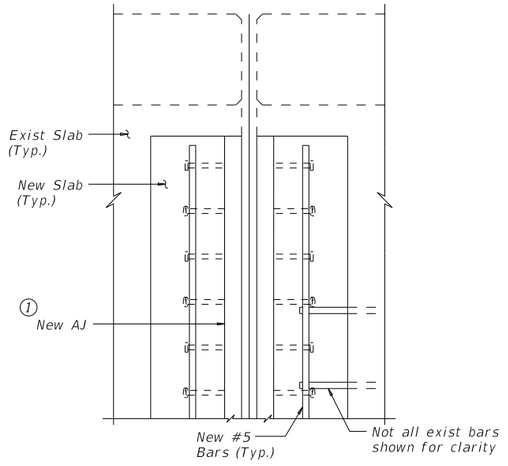
Uncoated – #5 = 1'-10"

End cover – 2"

(1) See AJ Standard Sheet for additional details.



PROPOSED EXPANSION JOINT



PLAN OF PROPOSED
END CONDITIONS

STATE OF TEXAS
DAVID N. PRETORIUS
130358
PROFESSIONAL ENGINEER
LICENSED

5.22.2024

LJA Engineering, Inc. LJA
FRN - F-1386

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SH 95 over UPRR &
1st Street
Joint Replacement at Bent No. 6

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: CTH	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: DNP	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: GZ	CONT.	SECT.	JOB	8
CHECKED: CTH	6464	87	001	

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GENERAL REQUIREMENTS:

NOTES:

1. NOTIFY UNION PACIFIC RAILROAD OF WORK TO BE PERFORMED IN AND ADJACENT TO THEIR RIGHT-OF-WAY.
2. INSTALL ALL TRAFFIC CONTROL DEVICES AND ADVANCE WARNING SIGNS IN ACCORDANCE WITH THE TXDOT BC-21 STANDARDS, TCP STANDARDS, AND THE LATEST EDITION OF THE TEXAS MUTCD.
3. PLACE ALL TEMPORARY EROSION CONTROL (SW3P) DEVICES AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. ALL EROSION CONTROL DEVICES WILL BE MAINTAINED AND RELOCATED AS NEEDED THROUGHOUT CONSTRUCTION.
4. CONTRACTOR TO LOCATE ALL UTILITIES WITHIN THE WORKZONE.
5. TCP AND WZ TXDOT STANDARDS SHALL BE USED FOR TRAFFIC CONTROL AS NEEDED. ALL TRAFFIC OPERATIONS MUST BE APPROVED BY THE ENGINEER.
6. REFER TO GENERAL NOTES FOR MORE INFORMATION.
7. REMOVE ALL TEMPORARY EROSION CONTROL (SW3P) DEVICES AFTER CONSTRUCTION IS COMPLETE.
8. PERFORM FINAL CLEAN UP OF WORK AREA AND REMOVE ANY CONSTRUCTION MATERIAL AND TRAFFIC CONTROL DEVICES.
9. ALL CONSTRUCTION SHALL BE DONE DURING OFF PEAK HOURS
10. CLOSE 1ST STREET TO THRU TRAFFIC AT MAIN ST DURING BRIDGE CLOSURE WITH APPROVAL FROM CITY OF TAYLOR.
11. LEFT THRU LANE ON EACH SIDE OF THE BRIDGE SHALL BE LEFT TURN ONLY DURING BRIDGE CLOSURE.
12. RIGHT THRU LANE ON EACH SIDE OF THE BRIDGE SHALL BE GUIDED TO AT GRADE MAIN STREET DURING BRIDGE CLOSURE.
13. PLACE STATIONARY TRUCK MOUNTED ATTENUATORS AT EACH END OF THE BRIDGE FOR EACH CLOSED THRU LANE.
14. RELOCATE CHANGEABLE MESSAGE SIGNS TO EACH LOCATION AS NEEDED. RELOCATION COST IS SUBSIDIARY TO BID ITEM 6001-6002 UNDER THIS CONTRACT

WORKZONE TCP QUANTITIES THIS SHEET			
LOCATION	TCP-1 0502-6001 BARRICADES, SIGNS AND TRAFFIC HANDLING MO	TCP-2 6001-6002 PORTABLE CHANGEABLE MESSAGE SIGN EA	TCP-3 6185-6002 TMA (STATIONARY) DAY
SH 95 OVER UPRR & 1ST STREET	2	2	40
PROJECT TOTALS	**2**	**2**	**40**

SH 95 OVER UPRR & 1ST STREET

NOTES:

1. COMPLY WITH ALL GENERAL TCP NOTES.
2. DELIVER AND DISTRIBUTE TRAFFIC CONTROL DEVICES.
3. SET UP TEMPORARY WORK ZONE TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH STANDARD WZ(RCD)-13.
4. PERFORM MINOR SPALL REPAIRS.
5. COMPLETLEY CLOSE THE BRIDGE TO THRU TRAFFIC DURING BEAM JACKING OPERATIONS AND PERFORM JOINT REPAIRS.
6. OPEN THE BRIDGE TO TRAFFIC ONCE BEAMS ARE JACKED UP AND CRIBBED AND THERE ARE NO FURTHER JOINT REPAIRS NEEDED AT THIS TIME.
7. ONCE THE BEARING PADS ARE REPLACED, CLOSE THE BRIDGE TO TRAFFIC DURING BEAM JACKING, CRIB REMOVAL, JOINT REPAIRS, AND BEAM LOWERING OPERATIONS.
8. OPEN THE BRIDGE TO TRAFFIC ONCE BEAMS ARE LOWERED ON TO THE BENTS AND JOINT REPAIRS ARE COMPLETED.

STATE OF TEXAS
RUSSELL P KUDELA
150880
LICENSED
PROFESSIONAL ENGINEER
5/22/2024

LJA Engineering, Inc.
FRN - F-1386

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SH 95 over UPRR & 1st Street
TCP NARRATIVE & QUANTITIES

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DW	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: RK	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: DW	CONT.	SECT.	JOB	9
CHECKED: RK	6464	87	001	

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

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

DOT No.: 446578B
Crossing Type: PUBLIC
RR Company Operating Track at Crossing: UP
RR Company Owning Track at Crossing: UP
RR MP: 0144.600
RR Subdivision: AUSTIN SUB
City: TAYLOR
County: WILLIAMSON
CSJ at this Crossing: 6464-87-001
Latitude: 30.56687664
Longitude: -97.40923508

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

BEARING PAD REPLACEMENT, SPALL REPAIR, AND EXPANSION JOINT REPAIR/REPLACEMENT ON THE BRIDGE. TCP PLANS REQUIRE TEMPORARY BRIDGE CLOSURES, DURING WHICH THE DETOUR ROUTE WOULD DIRECT TRAFFIC TO CROSS THE RAILROAD AT-GRADE (ON MAIN ST.).

Scope of Work to be performed by Railroad Company:

N/A

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 5

On this project, night or weekend flagging is:

☒ Expected
☐ Not Expected

Flagging services will be provided by:

☐ Railroad Company: 1) Txdot will pay flagging invoices. Flagging Agreement with railroad will be needed or, 2) Permitted crossing. Railroad company to provide flagging.
☒ Outside Party: Contractor will pay flagging invoices to be reimbursed by TxDOT

Contractor must incorporate flaggers into anticipated construction schedule. The Railroad requires a 30-day notice if their flaggers are to be utilized. If Contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact Information for Flagging:

☒ **UPRR** UP.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
UP.request@nrssinc.net
Call Center 877-984-6777

☐ **BNSF** BNSFinfo@railprosfs.com
Call Center 877-315-0513, Select #1 for flagging

☐ **CPKCR** KCS.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
Bottom Line On-Track Safety Services
bottomline076@aol.com, 903-767-7630

☐ OTHERS:

Contractor must incorporate railroad construction inspection into anticipated construction schedule.

☒ Not Required
☐ Required. Contact Information for Construction Inspection:

III. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

☐ Required.
☒ Not Required
Railroad Point of Contact: _____

Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

IV. RAILROAD INSURANCE REQUIREMENTS

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.

Insurance policies and corresponding certificates of insurance must be issued by the contractor on behalf of the Railroad. Separate insurance policies and certificates are required when more than one Railroad Company is operating on the same right of way, or when several Railroad Companies are involved and operate on their own separate right of ways.

No direct compensation will be made to the Contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Escalated Limits	
Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	$500,000 / $500,000 / $500,000
Commercial General Liability	$2,000,000 / $4,000,000
Business Automobile	$2,000,000

Railroad Protective Liability Limits	
☐ Not Required	
☐ Non - Bridge/Typical Maintenance Projects. Includes repairs to overpass/underpass and culvert structures	$2,000,000 / $6,000,000
☒ Bridge Structure Projects. Includes new construction or replacement of overpass/ underpass structures	$5,000,000 / $10,000,000
☐ Other: _____	

V. CONTRACTOR'S RIGHT OF ENTRY (CROE)

☐ Not Required
☒ Required: UPRR Maintenance Consent Letter. TxDOT to assist
☐ Required: TxDOT to assist in obtaining the UPRR CROE
☐ Required: Contractor to obtain
- ☐ BNSF: _____
  https://bnsf.railpermitting.com
- ☐ CPKCR
  https://jllrpg.360works.com/fmi/webd/rpo_web_kcs.fmp12
- ☐ Other Railroads: _____

To view previously approved CROE templates agreed upon between the State and Railroad, see: https://www.txdot.gov/business/resources/railroad-highway-crossing/sample-right-of-entry-agreements.html

Approved CROE templates are not to be modified by the Contractor.

Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed CROE between the Contractor and the Railroad if required on project.

VI. RAILROAD COORDINATION MEETING

A Railroad Coordination Meeting is required. See item 5, Article 8.1. of the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges Manual for more details.

VII. RAILROAD SAFETY ORIENTATION

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

UPRR, BNSF, CPKCR will not accept on-track safety training certificates from other Railroads. Refer to each Railroad's specific contractor right of entry for training information.

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

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are subject to the same insurance requirements as the Prime Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
Call: UP
Railroad Emergency Line at: 1-888-877-7267
Location: DOT 446578B
RR Milepost: 0144.600
Subdivision: AUSTIN SUB

RRD Review Only
Initials: _____
Date: 04/03/2024

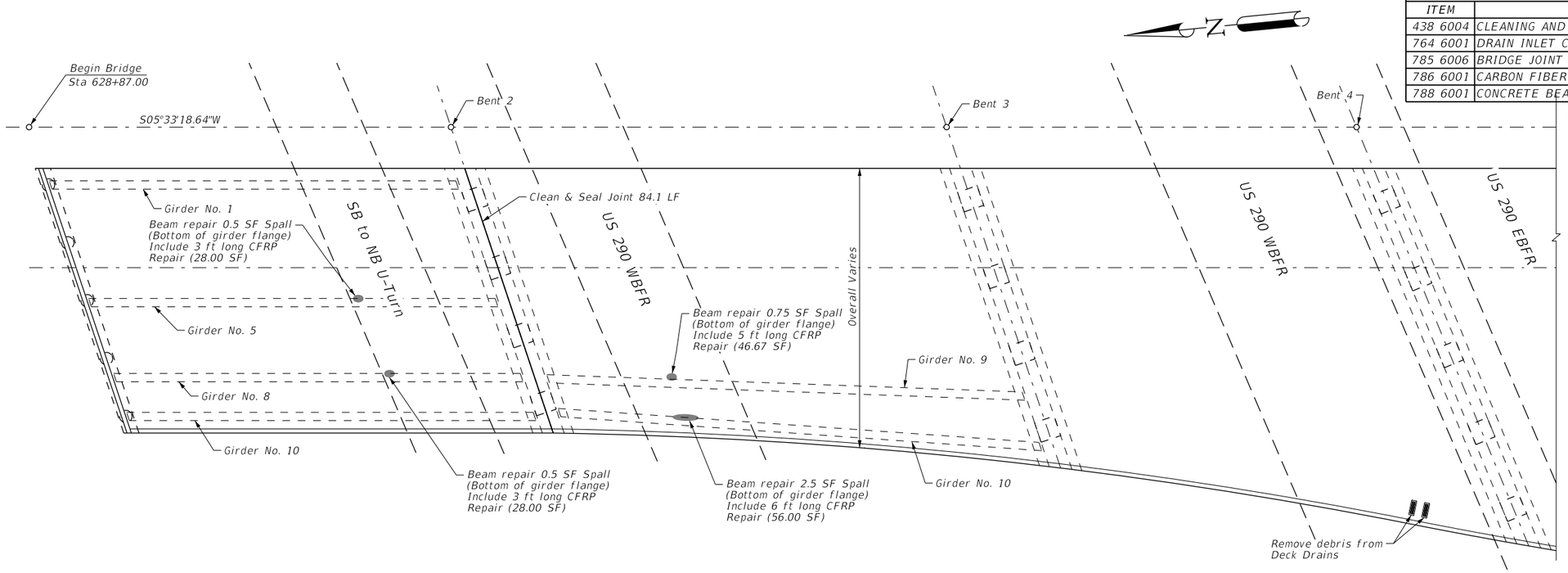
Texas Department of Transportation | Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

FILE: rr-scope-of-work.pdf	DN: TxDOT	CK:	DW:	CK:	
© TxDOT June 2014	CONT	SECT	JOB	HIGHWAY	
REVISIONS	6464	87	001	FM 1697	
6/2023	DIST	COUNTY		SHEET NO.	
	AUS	WILLIAMSON		10	

TABLE OF ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
438 6004	CLEANING AND SEALING EXIST JOINTS (CL7)	84.1	LF
764 6001	DRAIN INLET CLEANING	2	EA
785 6006	BRIDGE JOINT REPAIR (HEADER)	100.0	LF
786 6001	CARBON FIBER REINF POLYMER PROTECTION	186.7	SF
788 6001	CONCRETE BEAM REPAIR (1)	6	EA

(1) Beam repair consists of approximately 4.83 SF of concrete spalling.



PLAN

GENERAL NOTES

Contractor must verify repair locations and quantities prior to commencing work. Any discrepancies between repair plans and existing field conditions must to communicated to the Engineer immediately.

Refer to Cleaning and Sealing Existing Bridge Joints sheets. Bent 5, refer to "Header Joint with Silicone Seal" & Detail "D".

Refer to "Bridge Protective Beam Wrap" sheet.

Refer to Spall Repair Details sheets.

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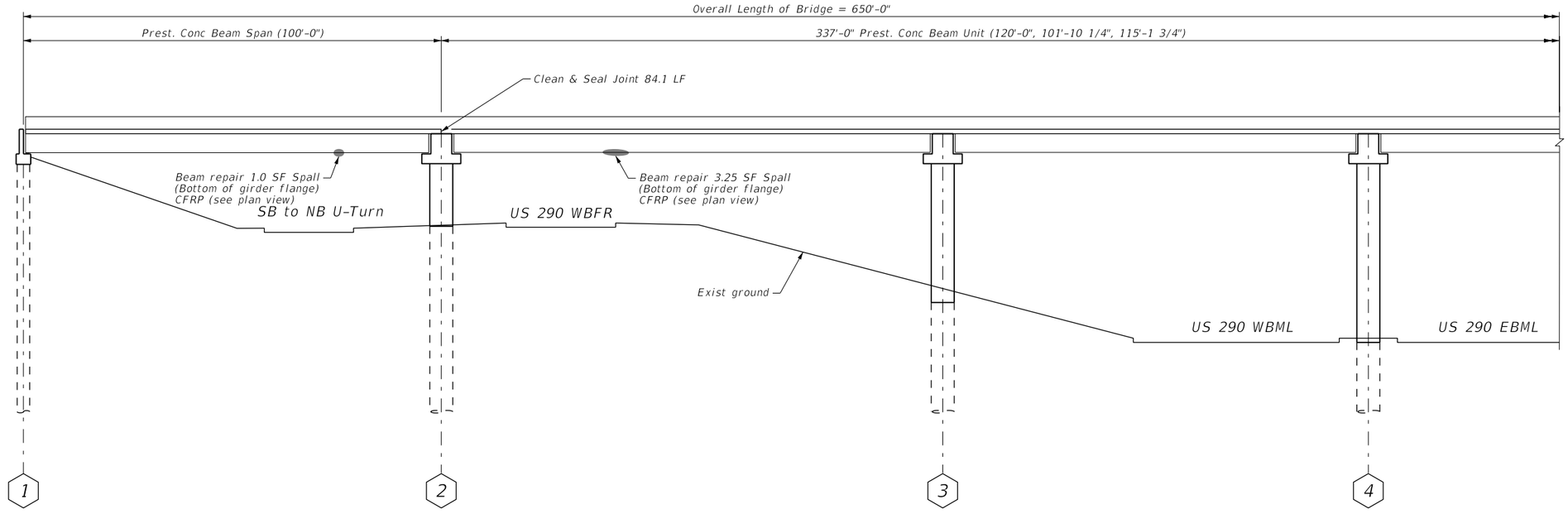

ELEVATION

STATE OF TEXAS
DAVID N. PRETORIUS
130358
PROFESSIONAL ENGINEER
5.22.2024

LJA Engineering, Inc.
FRN - F-1386

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IH 35 SB over
US 290
Bridge Layout

SHEET 1 OF 2

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	11
CHECKED: DNP	6464	87	001	

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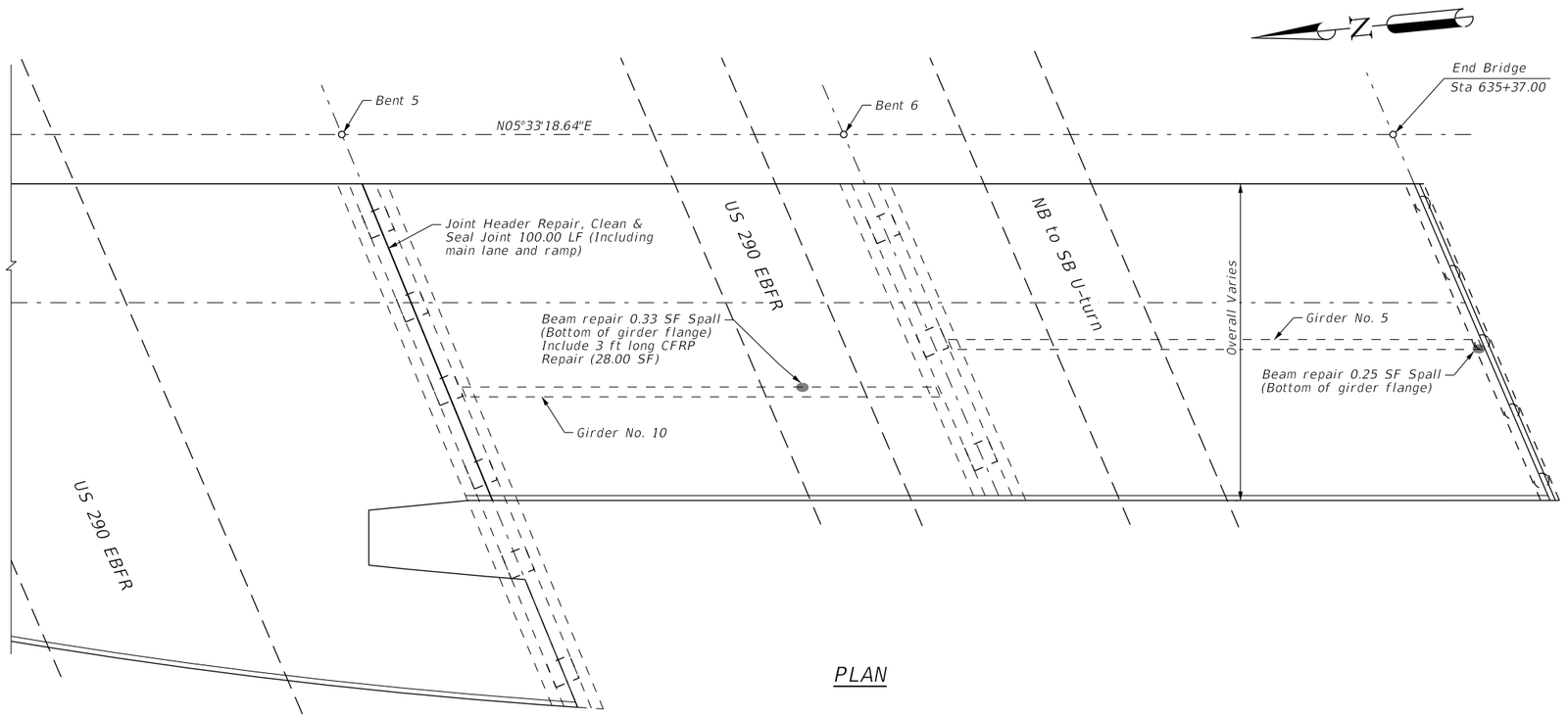
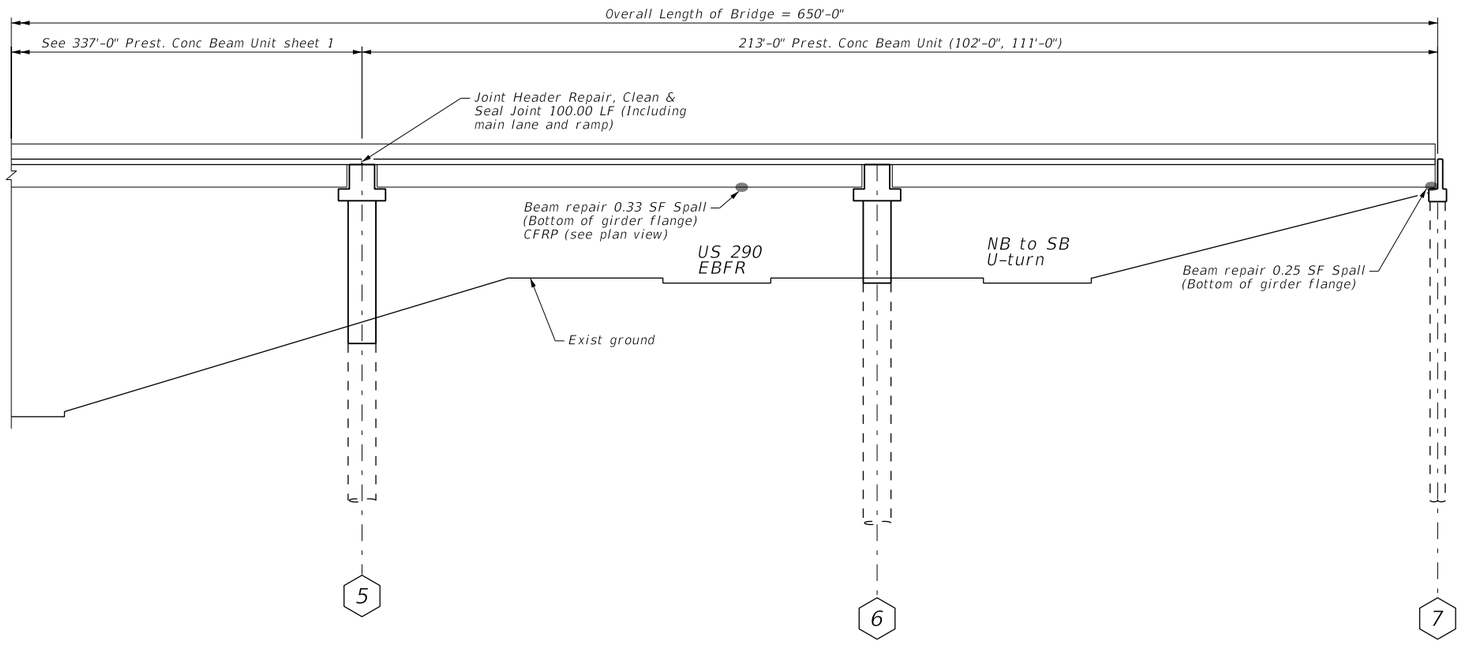


PLAN



ELEVATION

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DAVID N. PRETORIUS
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IH 35 SB over US 290
Bridge Layout

SHEET 2 OF 2

FED. RD. DIV. NO.		PROJECT NO.		HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE TEXAS	STATE DIST. NO. AUSTIN	COUNTY LEE, ETC.	SHEET NO.
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CHECKED: DNP				

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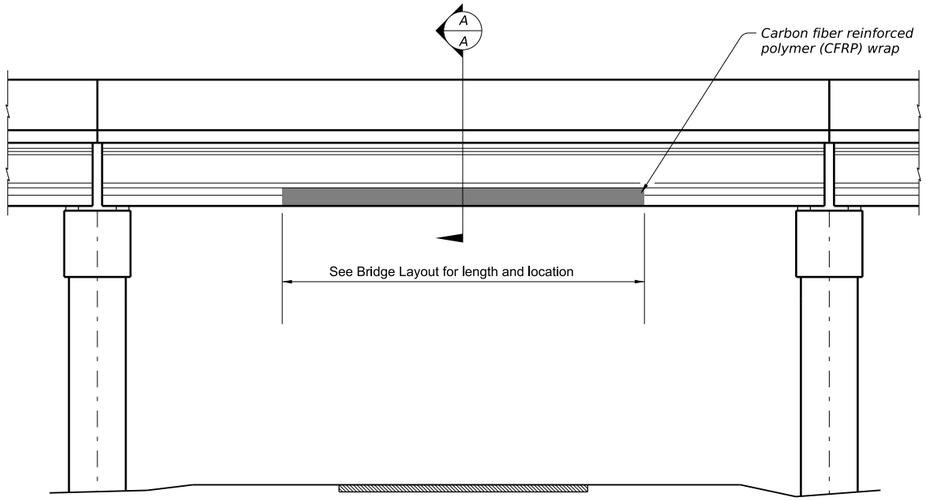
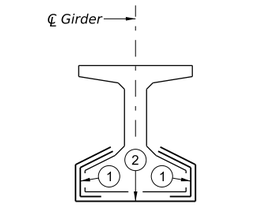


TYPICAL BRIDGE ELEVATION



Tx Girder shown,
AASHTO Type IV Similar

SECTION A-A

(Showing typical beam sections.)

(1) First layer - place 24" wide carbon fiber fabric sheets longitudinally on beams/girders, with fiber orientation parallel to beam/girder centerline. Locate sheets on bottom corners of beam/girder as shown. Overlap fabric sheets a minimum of 6" in the longitudinal direction to achieve full installation length.

(2) Second layer - place carbon fiber fabric sheets transversely on beam/girder, with fiber orientation perpendicular to beam/girder centerline. Wrap sheets on bottom and sides of beam/girder to limits shown. Wrap butt joints in the longitudinal direction to achieve full installation length.

CONSTRUCTION NOTES:

If beams or girders are spaced closely together, install CFRP wrap prior to beam erection. For unpainted beams/girders, install approved CFRP system and apply the protective top coating with color and texture to match adjacent concrete. Mask adjacent concrete prior to coating.

For painted beams/girders, install approved CFRP system and apply the protective top coating prior to painting. Paint concrete and CFRP to produce uniform finish, as specified elsewhere.

GENERAL NOTES:

Provide and apply CFRP system, including protective top coating, in accordance with Item 786, "Carbon Fiber Reinforced Polymer (CFRP)."

Install CFRP wrap to beams/girders shown on the layout, in the location and to the limits given.

Payment for the Bridge Protective Beam Wrap is in accordance with Item 786, "Carbon Fiber Reinforced Polymer (CFRP)." Quantity is measured by the square foot of beam/girder surface area covered.

LJA Engineering, Inc.
FRN - F-1386

5.22.2024

Texas Department of Transportation — Bridge Division

IH 35 SB OVER US 290

BRIDGE PROTECTIVE BEAM WRAP

FILE: protective wrap_WD-BPBW-24.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS	6464	87	001	FM 1697, ETC.
	DIST	COUNTY		SHEET NO.
	AUS	LEE, ETC.		13

DATE:
FILE:

GENERAL REQUIREMENTS:

NOTES:

1. INSTALL ALL TRAFFIC CONTROL DEVICES AND ADVANCE WARNING SIGNS IN ACCORDANCE WITH THE TXDOT BARRICADE AND CONSTRUCTION (BC(1-12)-21) STANDARDS,TRAFFIC CONTROL PLAN (TCP(2-(1-8)) STANDARDS, AND THE LATEST EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

2. PLACE ALL TEMPORARY STORM WATER POLLUTION PREVENTION PLAN (SWP3) DEVICES AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. MAINTAIN ALL EROSION CONTROL DEVICES AND RELOCATE AS REQUIRED THROUGHOUT CONSTRUCTION.

3. LOCATE ALL UTILITIES WITHIN THE WORKZONE.

4. APPLY TXDOT TRAFFIC CONTROL PLAN (TCP) AND WORK ZONE (WZ) STANDARDS FOR TRAFFIC CONTROL ASREQUIRED. ALL TRAFFIC OPERATIONS MUST BE APPROVED BY THE ENGINEER.

5. REFER TO GENERAL NOTES FOR MORE INFORMATION.

6. REMOVE ALL TEMPORARY EROSION CONTROL DEVICES AFTER CONSTRUCTION IS COMPLETE.

7. PERFORM FINAL CLEAN UP OF WORK AREA AND REMOVE ANY CONSTRUCTION MATERIAL AND TRAFFIC CONTROL DEVICES.

8. PERFORM ALL CONSTRUCTION DURING NIGHT TIME OPERATIONS.

9. RELOCATE CHANGEABLE MESSAGE SIGNS TO EACH LOCATION AS NEEDED. RELOCATION COST IS SUBSIDIARY TO BID ITEM 6001-6002 UNDER THIS CONTRACT.

IH 35 OVER US 290

NOTES:

1. COMPLY WITH ALL GENERAL REQUIREMENTS NOTES.

2. CLOSE ONE HALF OF IH 35 SB AT A TIME IN ACCORDANCE WITH STANDARD TCP (6-1b)-12.

3. KEEP MINIMUM TWO LANES ON IH 35 SB OPEN AT ALL TIMES.

4. SHOULDERS MAY BE UTILIZED ON IH 35 SB TO DIVERT TRAFFIC FROM WORKZONE.

5. CLOSE EXIT LANE, ADD SIGNAGE TO DIRECT TRAFFIC TO TAKE PREVIOUS EXIT IN ACCORDANCE WITH STANDARD TCP (6-3b)-12.

6. USE ITEM TCP-2 TO DELINEATE LANES IN CONJUNCTION WITH CHANNELIZING DEVICES.

WORKZONE TCP QUANTITIES THIS SHEET

LOCATION	TCP-1	TCP-2	TCP-3	TCP-4
	0502-6001	6185-6002	7052-6047	7052-6050
	BARRICADES, SIGNS AND TRAFFIC HANDLING	TMA (STATIONARY)	LANE CLOSURE (SETUP AND REMOV)(TY 6)	LANE CLOSURE (SETUP AND REMOV)(TY 9)
	MO	DAY	EA	EA
IH 35 SB OVER US 290	1	5	2	2
PROJECT TOTALS	**1**	**5**	**2**	**2**

STATE OF TEXAS
RUSSELL P KUDELA
150880
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5/22/2024

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IH 35 SB OVER US 290

TCP NARRATIVE & QUANTITIES

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DW	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: RK	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: DW	CONT.	SECT.	JOB	14
CHECKED: RK	6464	87	001	

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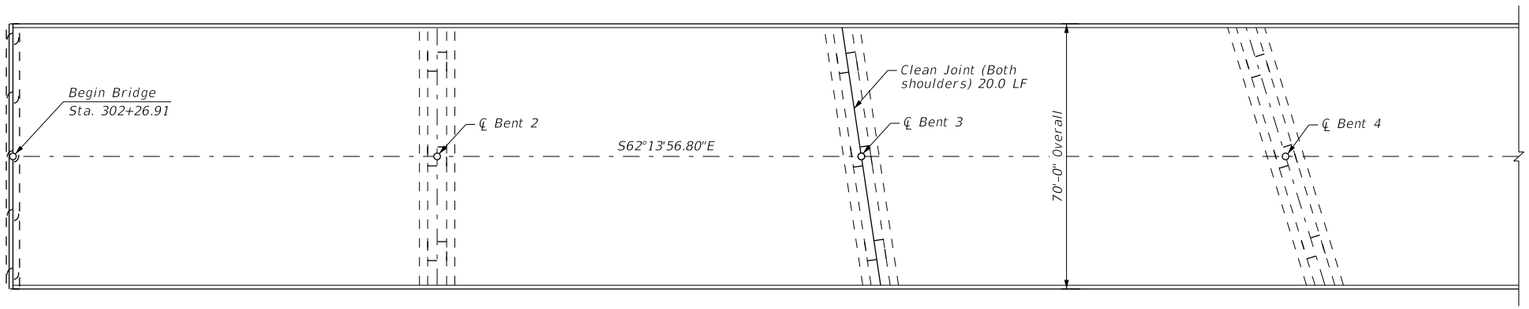
ITEM	DESCRIPTION	QUANTITY	UNIT
429 6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	0.5	SF
438 6009	CLEANING EXISTING JOINTS	168.0	LF
764 6001	DRAIN INLET CLEANING	13	EA
785 6011	BRIDGE JOINT REPLACEMENT (SEJ)	74.0	LF
4076 6005	RAIL REPLACEMENT	4.0	LF



PLAN

GENERAL NOTES:

Contractor must verify repair locations and quantities prior to commencing work. Any discrepancies between repair plans and existing field conditions must to communicated to the Engineer immediately.

Refer to Spall Repair Details sheets.

Refer to Joint Replacement at Bent No. 9 Sheet for more information.

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
2	EAST SHLDR	1
3	EAST SHLDR	1
4	EAST SHLDR	1

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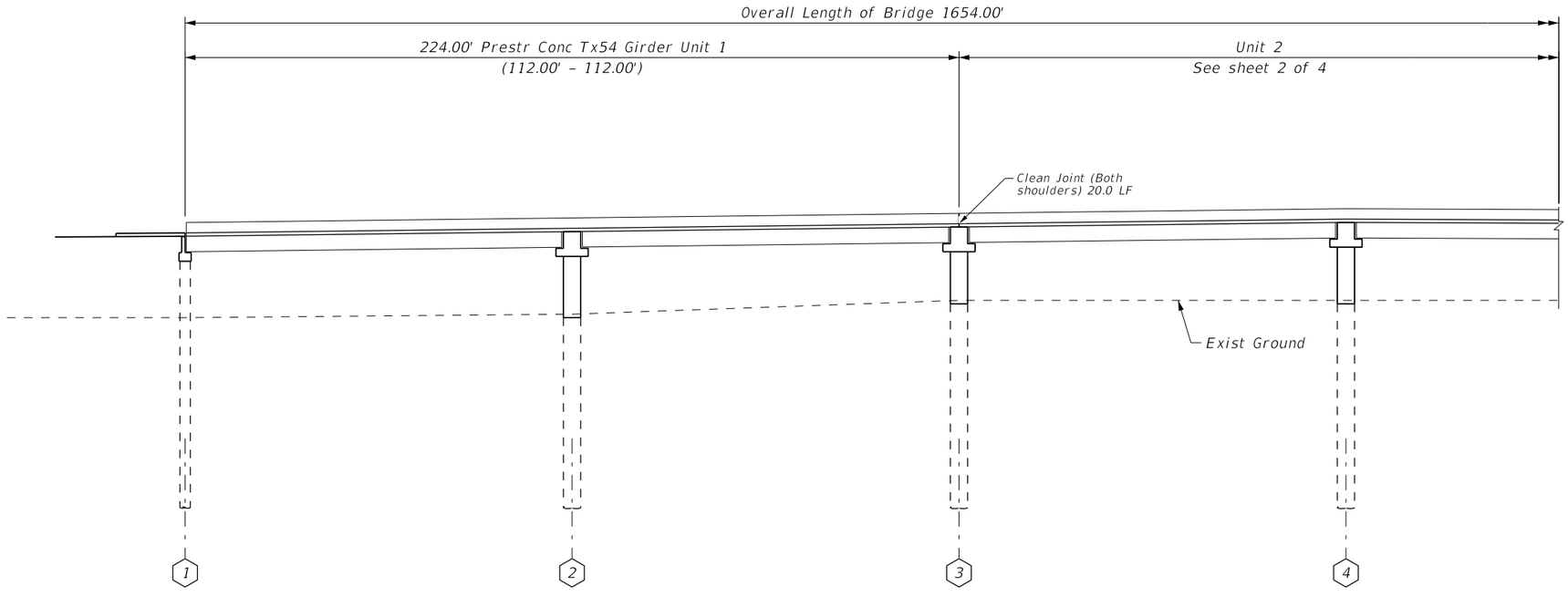

ELEVATION

STATE OF TEXAS
DAVID N. PRETORIUS
130358
PROFESSIONAL ENGINEER
5.22.2024

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US 183 NB over
METRO RR
Bridge Layout

Sheet 1 of 4

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
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CHECKED: DNP	6464	87	001	

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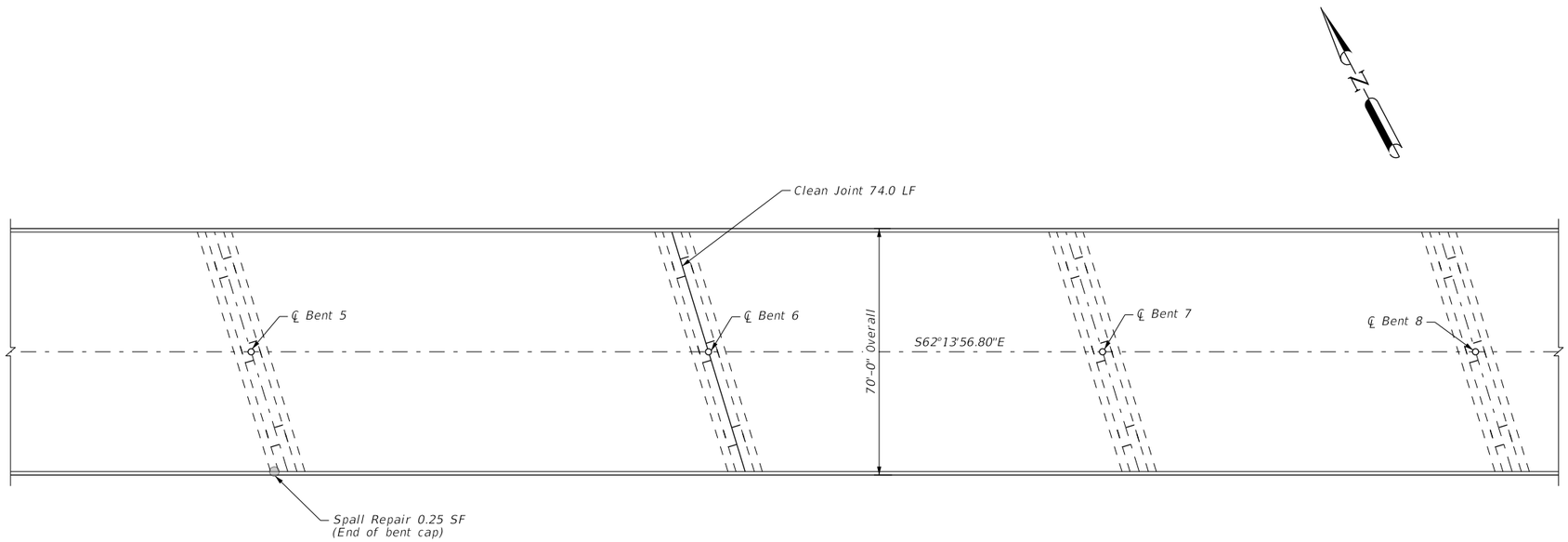
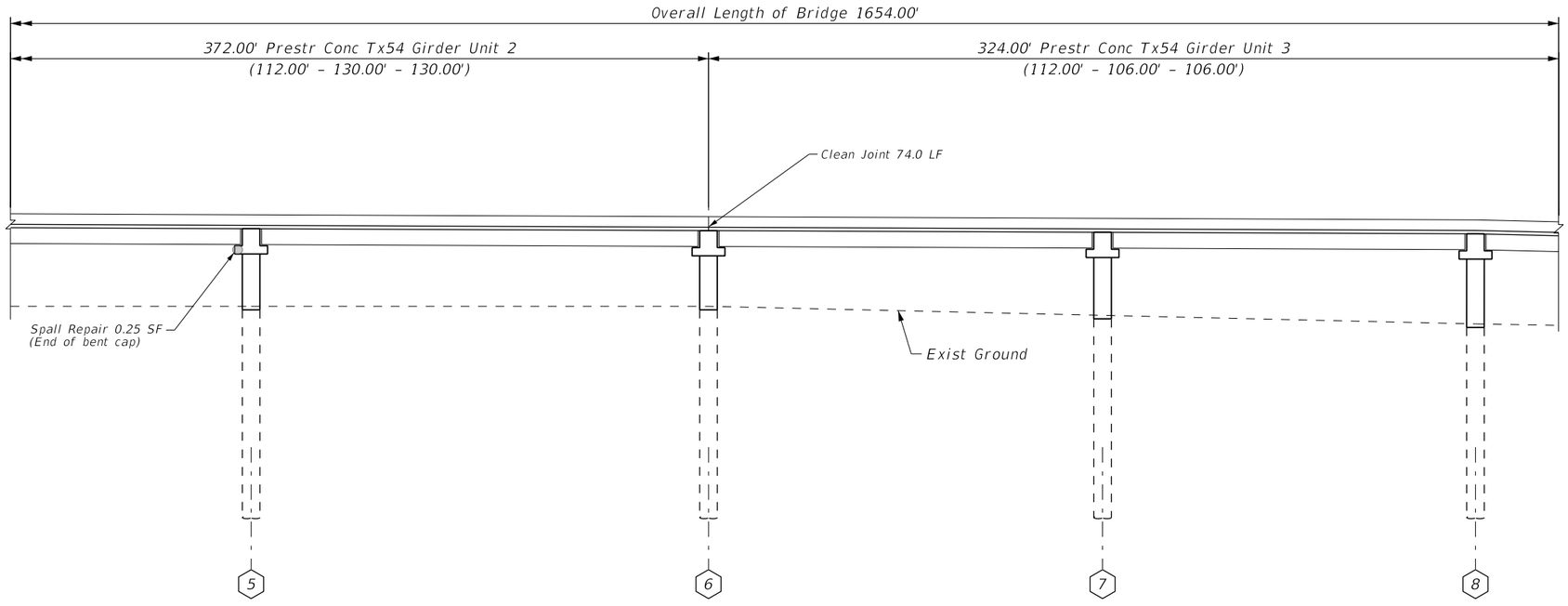


PLAN

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
5	EAST SHLDR	1
6	EAST SHLDR	1
7	EAST SHLDR	1

NBI: 14-227-0-0151-06-054



ELEVATION

STATE OF TEXAS
DAVID N. PRETORIUS
130358
LICENSED
PROFESSIONAL ENGINEER
5.06.2024

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US 183 NB over
METRO RR
Bridge Layout

Sheet 2 of 4

FED. RD. DIV. NO.		PROJECT NO.		HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: GZ	CONT.	SECT.	JOB	16
CHECKED: DNP	6464	87	001	

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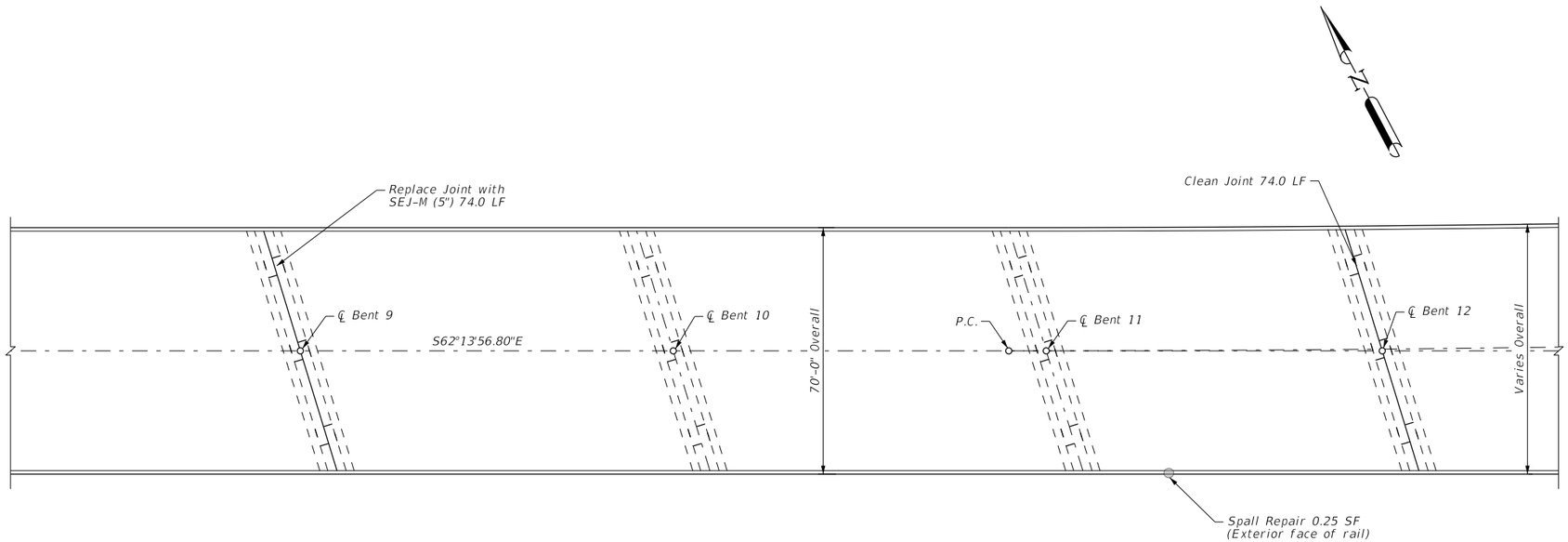
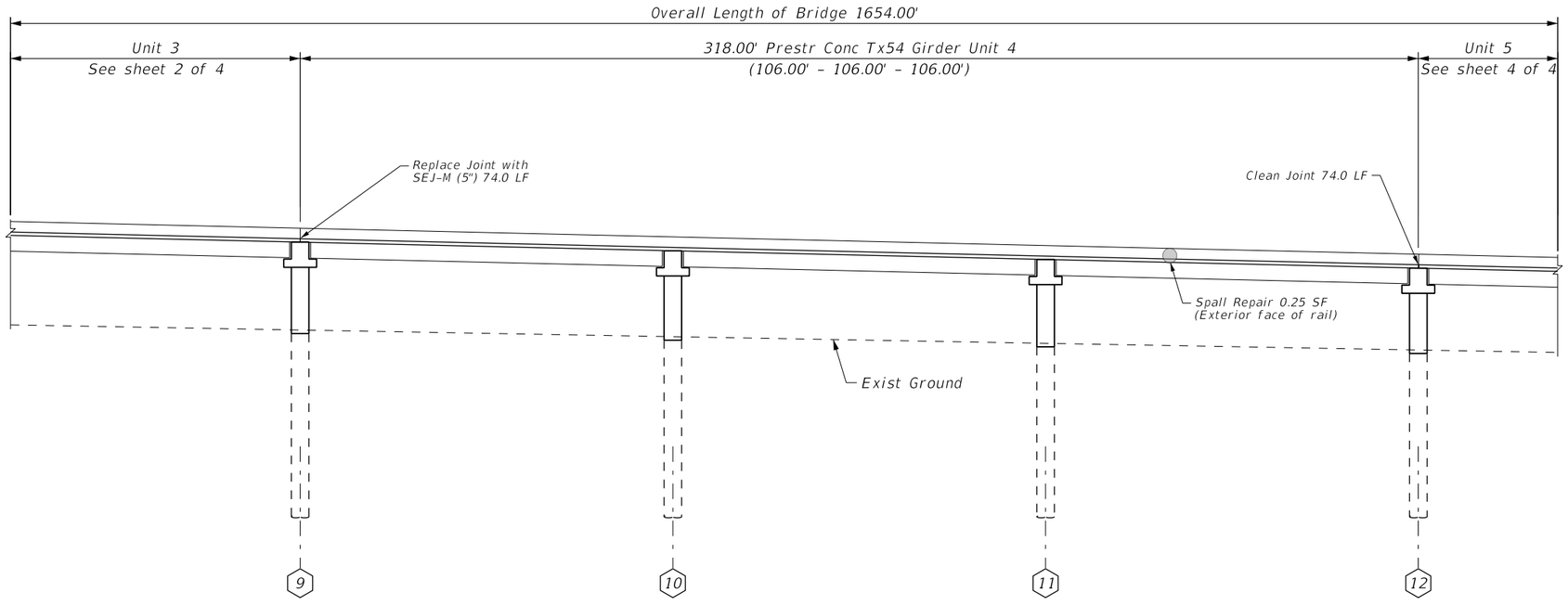


PLAN

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
8	EAST SHLDR	1
9	EAST SHLDR	1
10	EAST SHLDR	1
11	EAST SHLDR	1

NBI: 14-227-0-0151-06-054



ELEVATION

STATE OF TEXAS
DAVID N. PRETORIUS
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5.06.2024

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US 183 NB over
METRO RR
Bridge Layout

Sheet 3 of 4

FED. RD. DIV. NO.		PROJECT NO.		HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: GZ	CONT.	SECT.	JOB	17
CHECKED: DNP	6464	87	001	

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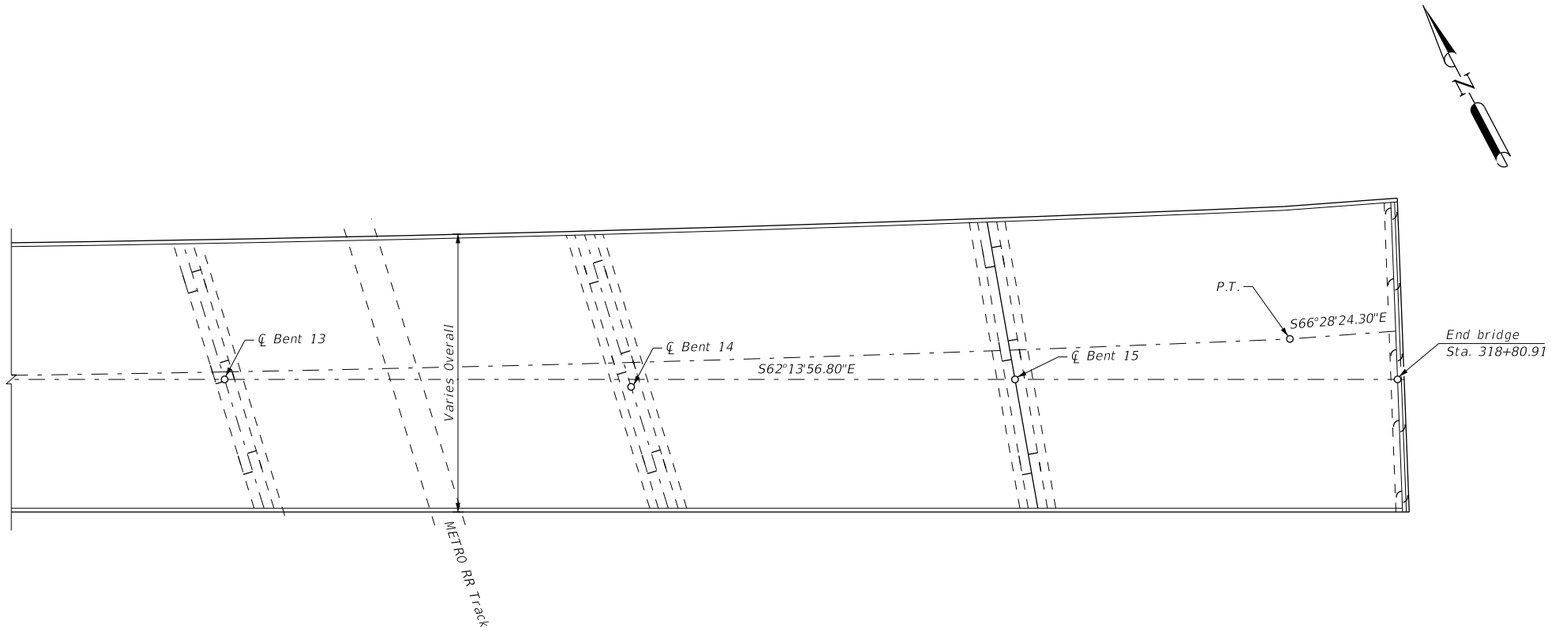
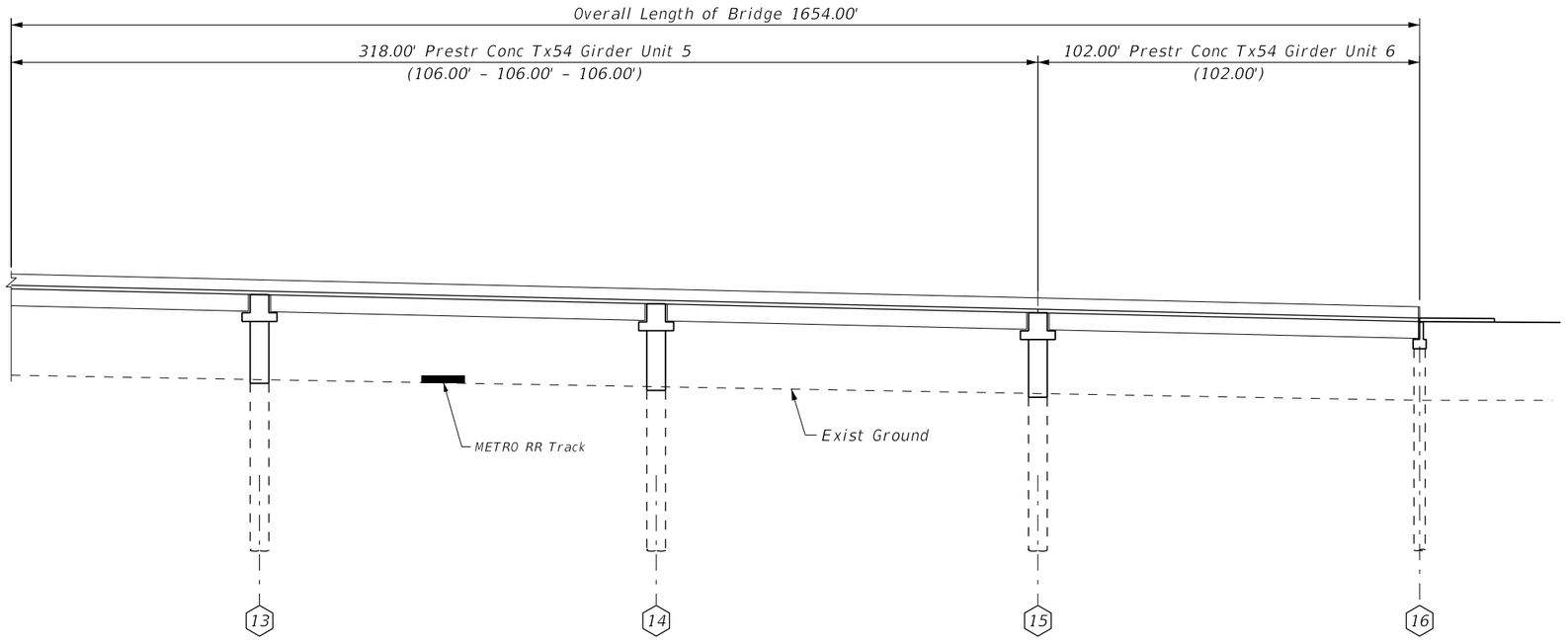


PLAN

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
12	EAST SHLDR	1
13	EAST SHLDR	1
14	EAST SHLDR	1

NBI: 14-227-0-0151-06-054



ELEVATION

STATE OF TEXAS
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Sheet 4 of 4

FED. RD. DIV. NO.		PROJECT NO.		HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
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CHECKED: DNP	6464	87	001	

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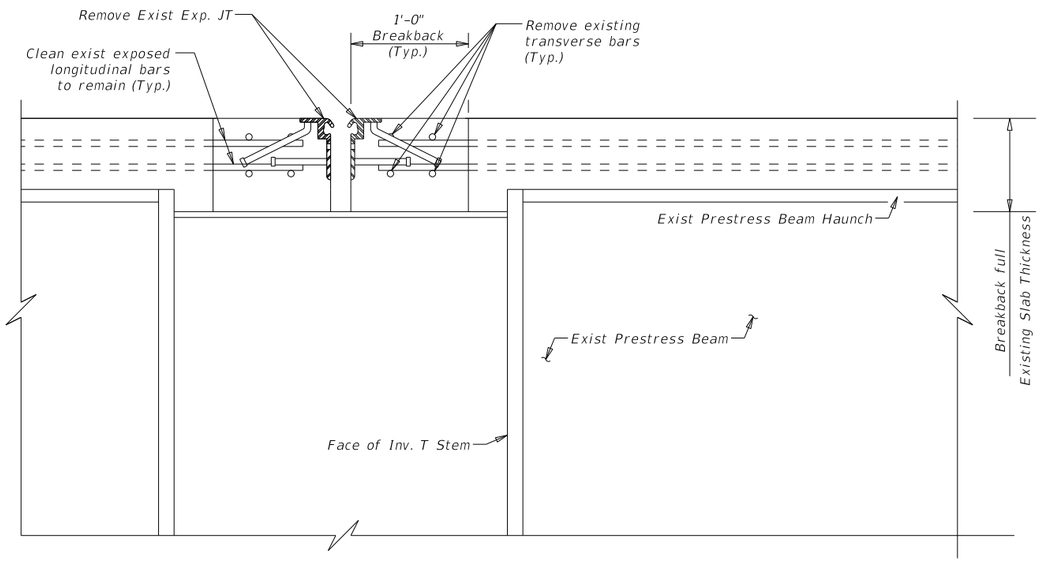
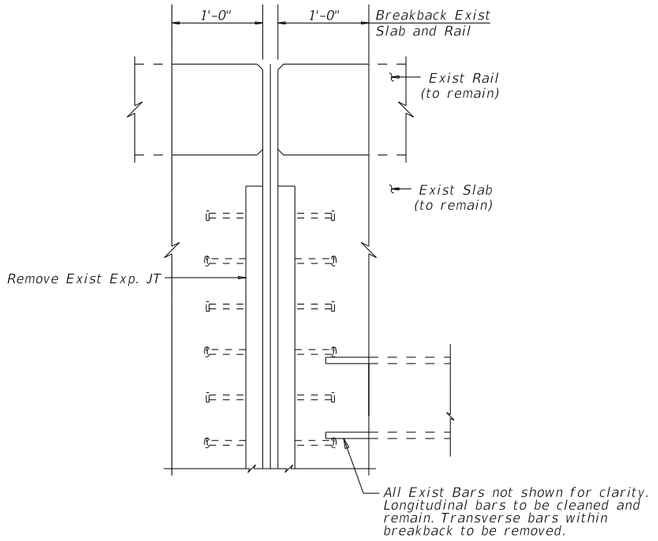


EXISTING EXPANSION JOINT



SLAB/RAIL BREAKBACK
EXIST EXP. JT.

GENERAL NOTES:

Perform work in accordance with the TxDOT Concrete Repair Manual, Chapter 3, Section 4 and Item 785, "Bridge Joint Repair or Replacement." A copy of the Concrete Repair Manual must be available onsite during all concrete repair operations.

Obtain approval for all tools, equipment, materials, and techniques proposed before beginning work.

Payment for breaking back existing deck, removing existing expansion joint armoring, cleaning existing reinforcement to remain, installation of new reinforcing steel, and replacing the portion of the slab that was removed shall be included with 785 6011 BRIDGE JOINT REPLACEMENT (SEJ)

Payment for breaking back and replacing the rail shall be included with 4076 6005 RAIL REPLACEMENT.

MATERIAL NOTES:

Provide Class K or Class S Concrete (f'_c = 4,000 psi, Course Aggregate Grades 2–5). Alternatively, if approved by the engineer, provide Type A or D concrete repair materials meeting the requirements of DMS 4655, "Concrete Repair Materials." Achieve a minimum compressive strength f'_c = 3,600 psi prior to opening to traffic.

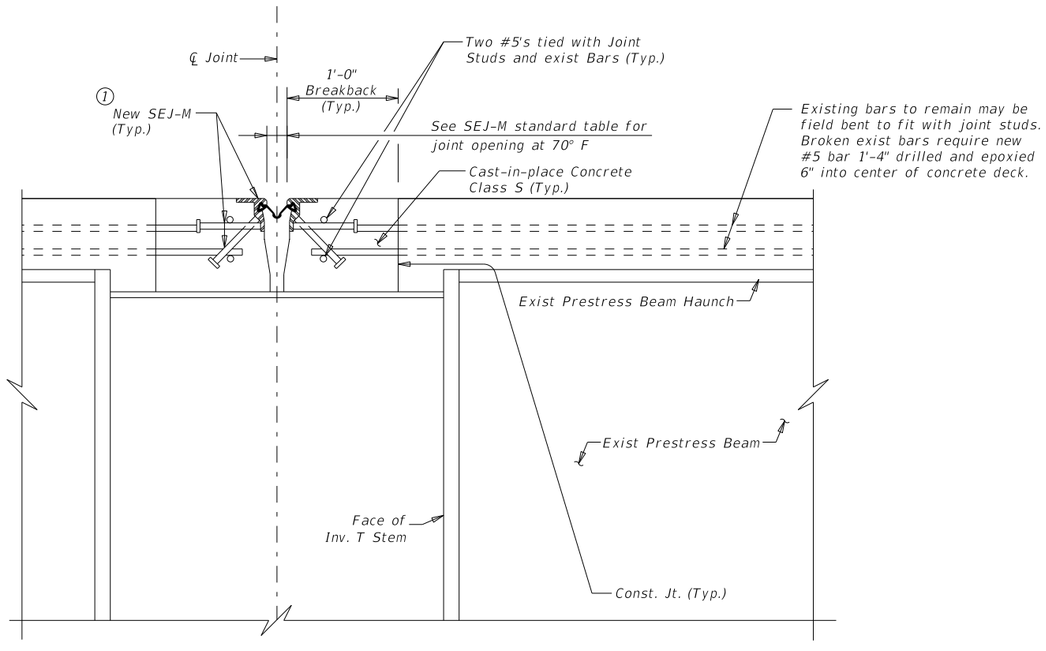
Provide Grade 60 reinforcing steel.

Provide bar laps, where required, as follows:

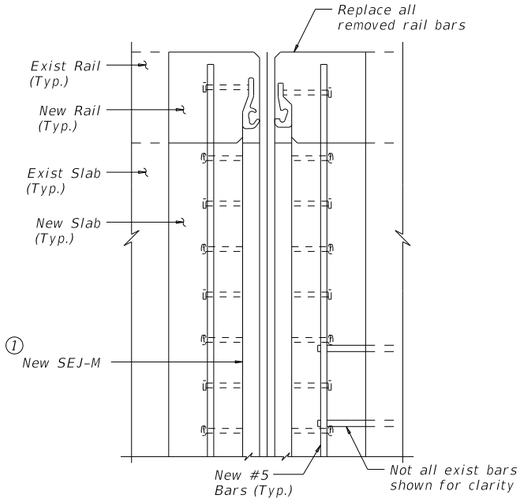
Uncoated – #5 = 1'-10"

End cover – 2"

(1) See SEJ(M) Sandard Sheet for additional details.



PROPOSED EXPANSION JOINT SEJ-M



PLAN OF PROPOSED
END CONDITIONS

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US 183 NB over
METRO RR
Joint Replacement at Bent No. 9

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: CTH	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: DNP	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: GZ	CONT.	SECT.	JOB	19
CHECKED: CTH	6464	87	001	

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GENERAL REQUIREMENTS:

NOTES:

1. INSTALL ALL TRAFFIC CONTROL DEVICES AND ADVANCE WARNING SIGNS IN ACCORDANCE WITH THE TXDOT BARRICADE AND CONSTRUCTION (BC(1-12)-21) STANDARDS,TRAFFIC CONTROL PLAN (TCP(2-(1-8)) STANDARDS, AND THE LATEST EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

2. PLACE ALL TEMPORARY STORM WATER POLLUTION PREVENTION PLAN (SWP3) DEVICES AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. MAINTAIN ALL EROSION CONTROL DEVICES AND RELOCATE AS REQUIRED THROUGHOUT CONSTRUCTION.

3. LOCATE ALL UTILITIES WITHIN THE WORKZONE.

4. APPLY TXDOT TRAFFIC CONTROL PLAN (TCP) AND WORK ZONE (WZ) STANDARDS FOR TRAFFIC CONTROL ASREQUIRED. ALL TRAFFIC OPERATIONS MUST BE APPROVED BY THE ENGINEER.

5. REFER TO GENERAL NOTES FOR MORE INFORMATION.

6. REMOVE ALL TEMPORARY EROSION CONTROL DEVICES AFTER CONSTRUCTION IS COMPLETE.

7. PERFORM FINAL CLEAN UP OF WORK AREA AND REMOVE ANY CONSTRUCTION MATERIAL AND TRAFFIC CONTROL DEVICES.

8. PERFORM ALL CONSTRUCTION DURING NIGHT TIME OPERATIONS.

9. RELOCATE CHANGEABLE MESSAGE SIGNS TO EACH LOCATION AS NEEDED. RELOCATION COST IS SUBSIDIARY TO BID ITEM 6001-6002 UNDER THIS CONTRACT.

US 183 NB OVER BURNET RD

NOTES:

1. COMPLY WITH ALL GENERAL REQUIREMENTS NOTES.

2. CLOSE ONE HALF OF US 183 NB AT A TIME IN ACCORDANCE WITH STANDARD TCP (6-1b)-12.

3. KEEP MINIMUM TWO LANES ON US 183 NB OPEN AT ALL TIMES.

4. SHOULDERS MAY BE UTILIZED ON US 183 NB TO DIVERT TRAFFIC FROM WORKZONE.

5. CLOSE EXIT LANE, KEEP EXIT RAMP OPEN IN ACCORDANCE WITH STANDARD TCP (6-4b)-12.

6. USE ITEM TCP-2 TO DELINEATE LANES IN CONJUNCTION WITH CHANNELIZING DEVICES.

WORKZONE TCP QUANTITIES THIS SHEET

LOCATION	TCP-1	TCP-2	TCP-3
	0502-6001	6185-6002	7052-6047
	BARRICADES, SIGNS AND TRAFFIC HANDLING	TMA (STATIONARY)	LANE CLOSURE (SETUP AND REMOV)(TY 6)
	MO	DAY	EA
US 183 NB OVER METRO RR/ BURNET RD	1	15	2
PROJECT TOTALS	**1**	**15**	**2**

STATE OF TEXAS
RUSSELL P KUDELA
150880
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PROFESSIONAL ENGINEER
5/22/2024

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US 183 NB OVER METRO RR/BURNET RD

TCP NARRATIVE & QUANTITIES

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.
DESIGNED: DW	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: RK	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: DW	CONT.	SECT.	JOB	20
CHECKED: RK	6464	87	001	

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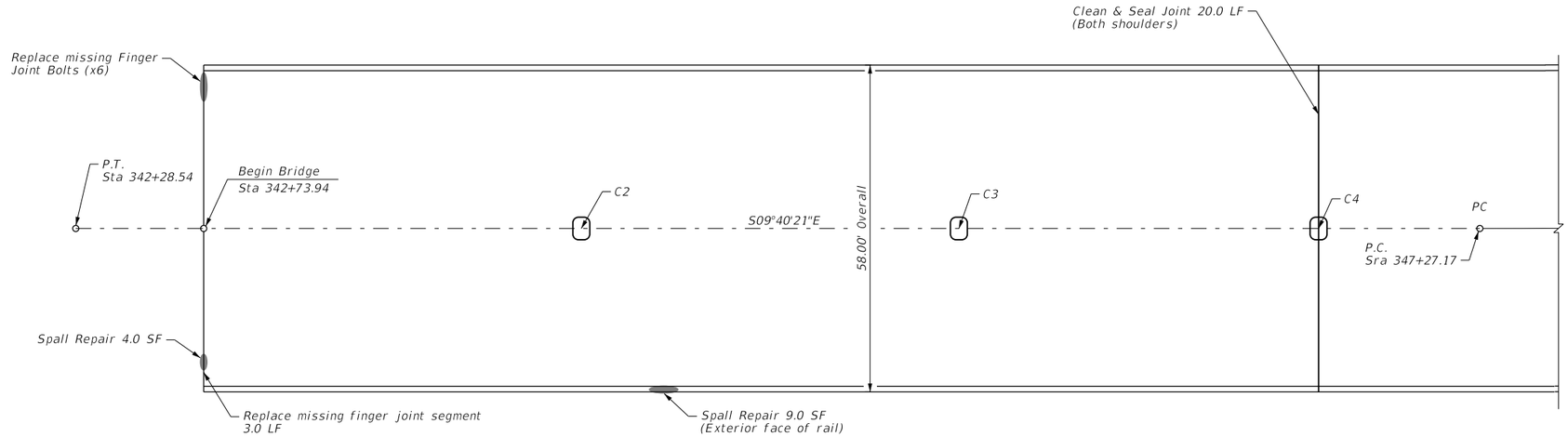
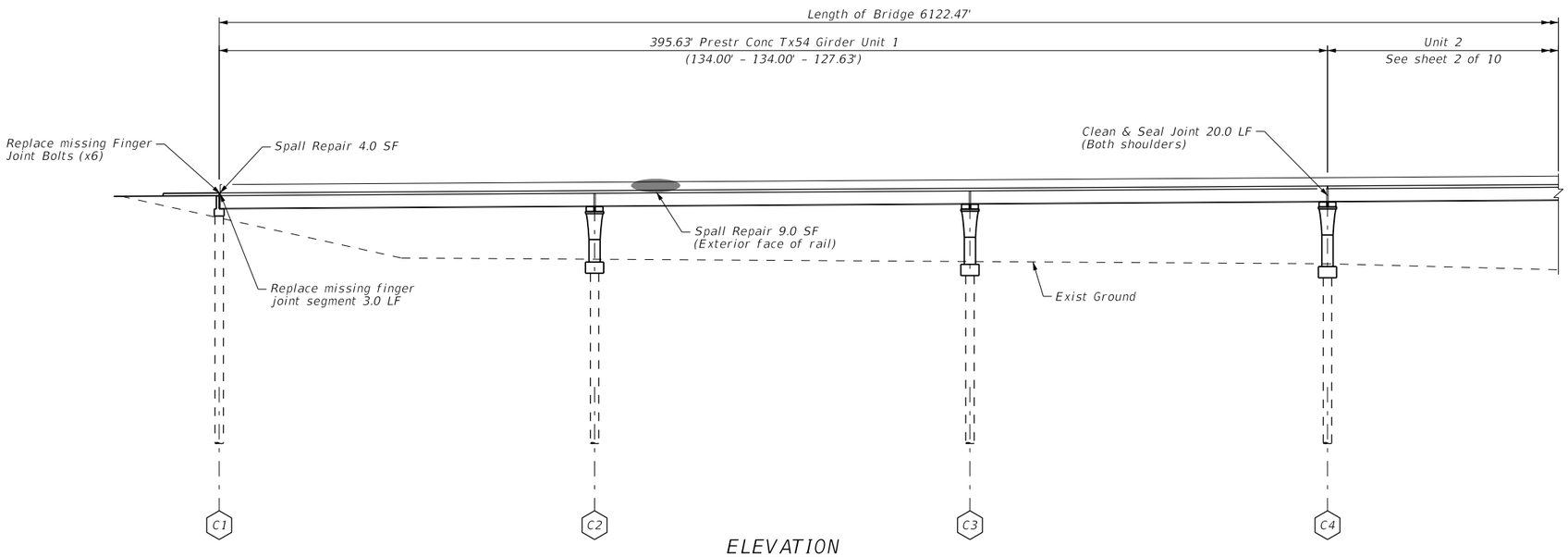
TABLE OF ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
429 6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	32.0	SF
438 6004	CLEANING AND SEALING EXIST JOINTS (CL7)	40.0	LF
438 6009	CLEANING EXISTING JOINTS	126.0	LF
449 6001	ANCHOR BOLTS	16	EA
764 6001	DRAIN INLET CLEANING	90	EA
785 6006	BRIDGE JOINT REPAIR (HEADER)	32.0	LF
785 6012	BRIDGE JOINT REPLACEMENT (FINGER)	31.0	LF



PLAN



ELEVATION

GENERAL NOTES:

Contractor must verify repair locations and quantities prior to commencing work. Any discrepancies between repair plans and existing field conditions must to communicated to the Engineer immediately.

Refer to Cleaning and Sealing Existing Bridge Joints sheets, Header Joint With Silicone Seal & Detail "D" (Bents 4, 25, 38, 41, 44, 46, & 48).

Refer to Spall Repair Details sheets.

Provide Work Plan and Shop Drawings for the Finger Joint repairs (Bents 1, 7, 13 & 38) for approval prior to beginning work at these locations.

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
2	EAST SHLDR	2
3	EAST SHLDR	2
4	EAST SHLDR	2

NBI: 14-227-0-0151-06-080

STATE OF TEXAS
DAVID N. PRETORIUS
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5.22.2024

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US 183 NB over
Ohlen Rd & local streets
Bridge Layout

SHEET 1 OF 10

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: GZ	CONT.	SECT.	JOB	21
CHECKED: DNP	6464	87	001	

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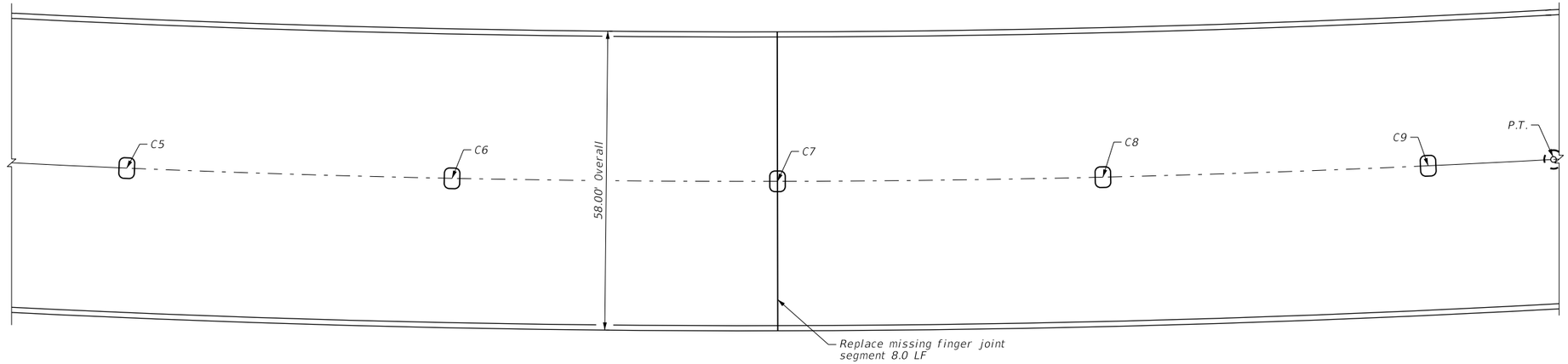
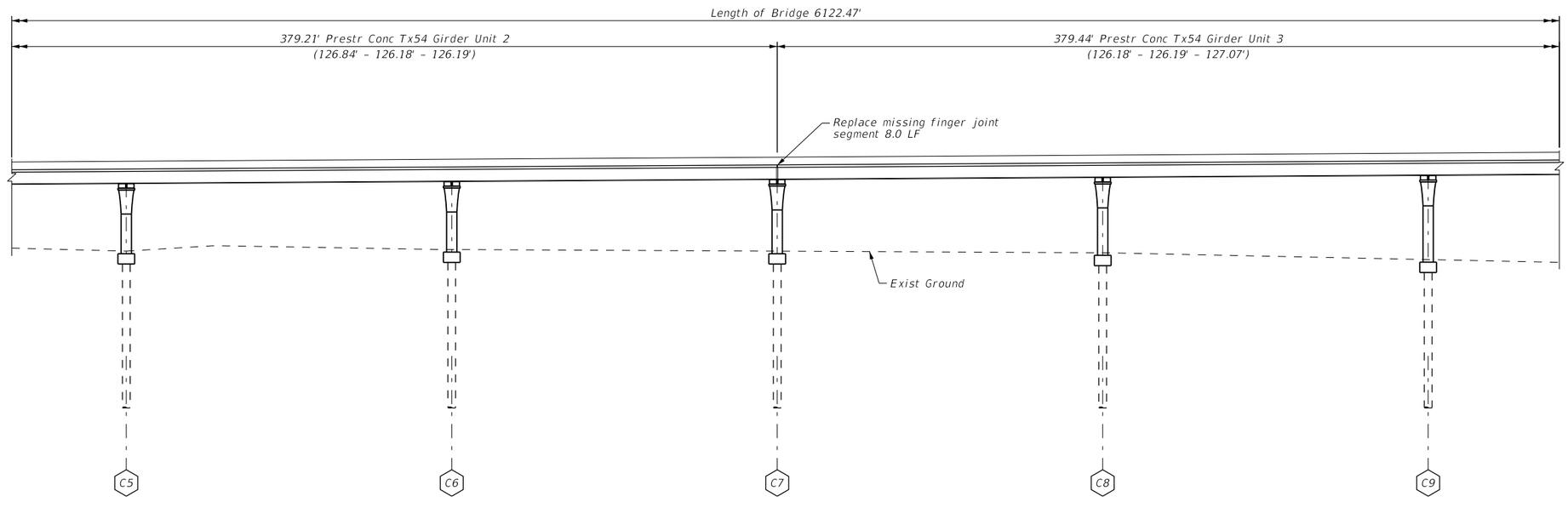


PLAN

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
5	EAST SHLDR	2
6	EAST SHLDR	2
7	EAST SHLDR	2
8	EAST SHLDR	2
9	EAST SHLDR	2

NBI: 14-227-0-0151-06-080



ELEVATION

STATE OF TEXAS
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Bridge Layout

SHEET 2 OF 10

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE TEXAS	STATE DIST. NO. AUSTIN	COUNTY LEE, ETC.	SHEET NO.
CHECKED: WO				
DRAWN: GZ	CONT.	SECT.	JOB	22
CHECKED: DNP	6464	87	001	

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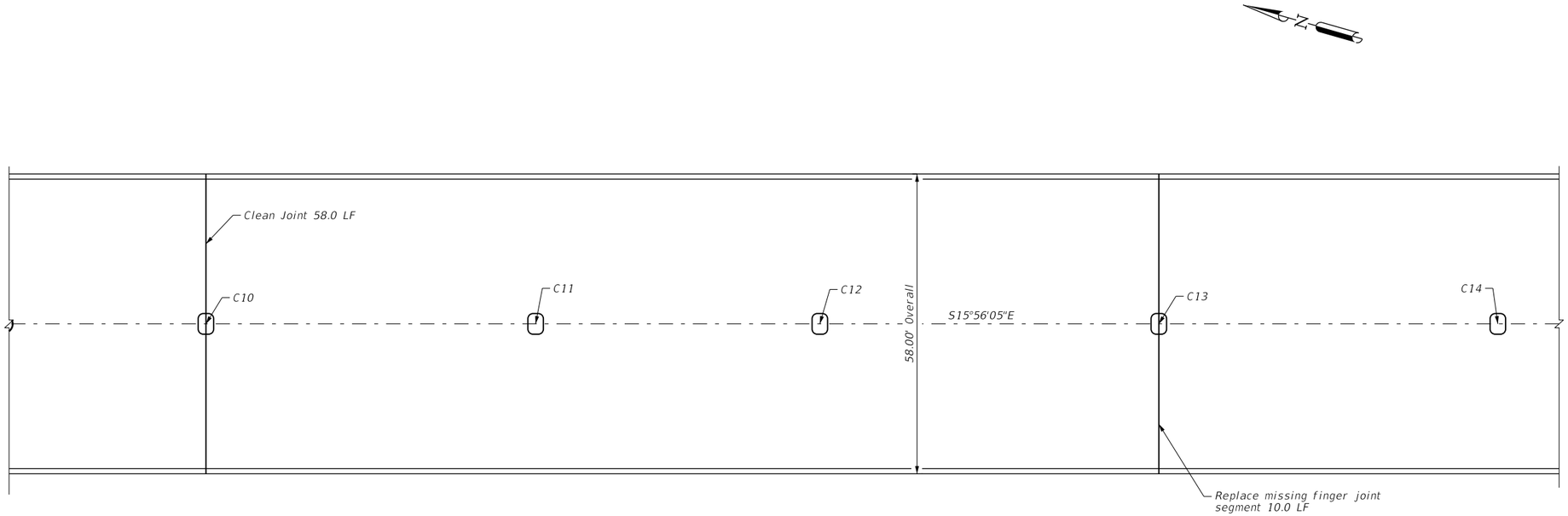
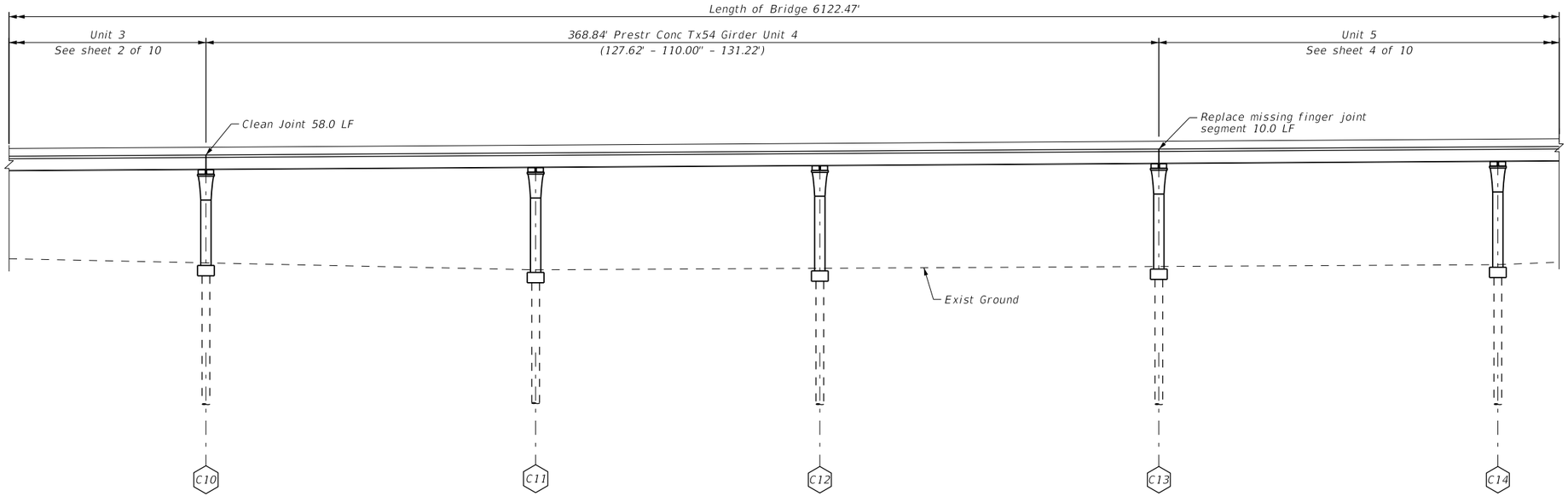


PLAN

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
10	EAST SHLDR	2
11	EAST SHLDR	2
12	EAST SHLDR	2
13	EAST SHLDR	2

NBI: 14-227-0-0151-06-080



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SHEET 3 OF 10

FED. RD. DIV. NO.	PROJECT NO.			HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
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CHECKED: DNP	6464	87	001	

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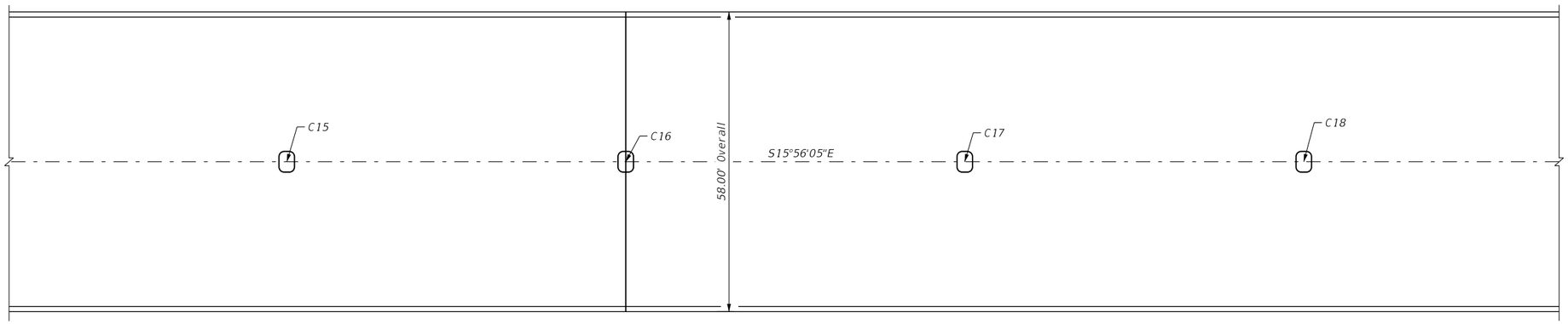
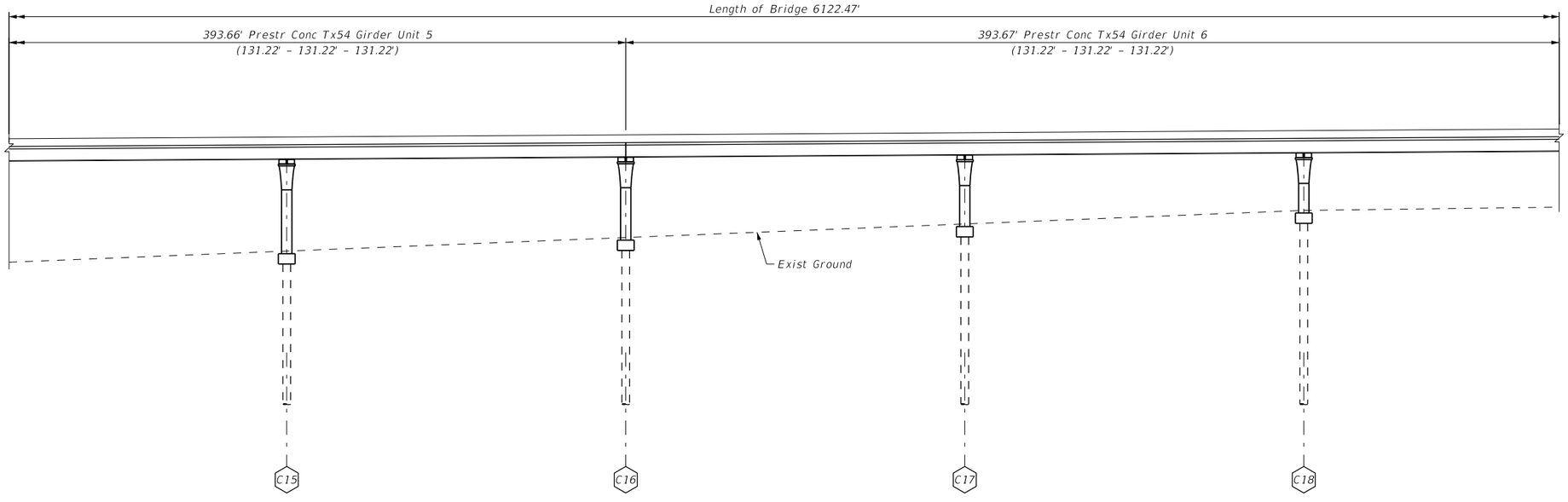


PLAN

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
14	EAST SHLDR	2
15	EAST SHLDR	2
16	EAST SHLDR	2
17	EAST SHLDR	2
18	EAST SHLDR	2

NBI: 14-227-0-0151-06-080



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STATE OF TEXAS
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SHEET 4 OF 10

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
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CHECKED: DNP	6464	87	001	

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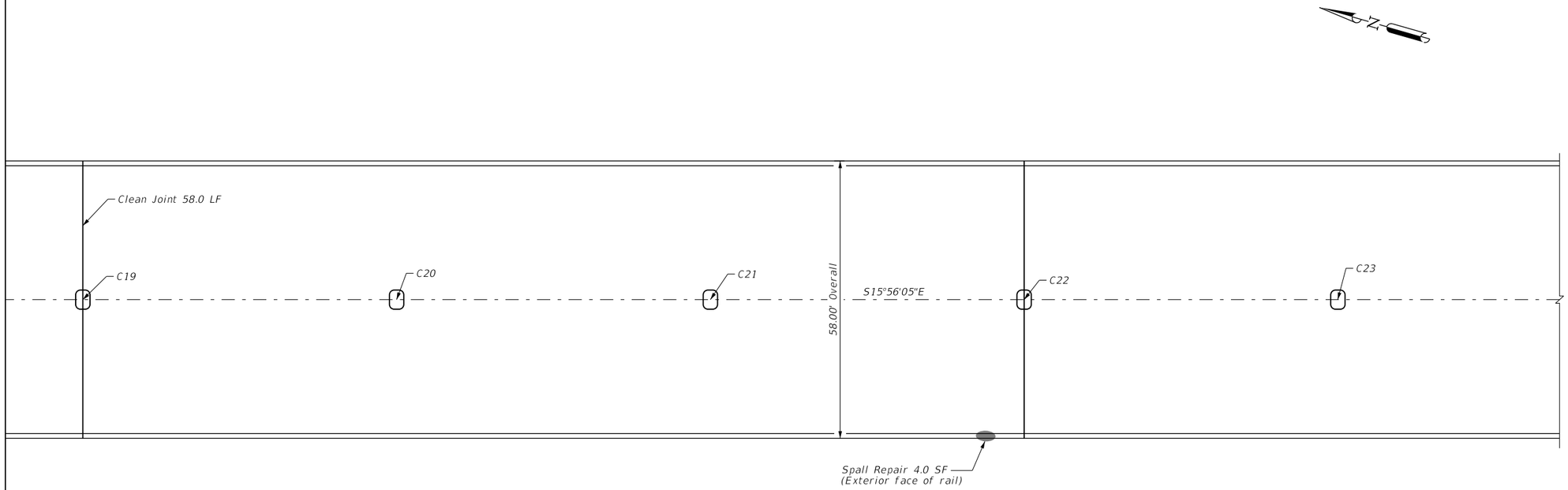

PLAN

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
19	EAST SHLDR	2
20	EAST SHLDR	2
21	EAST SHLDR	2
22	EAST SHLDR	2
23	EAST SHLDR	2

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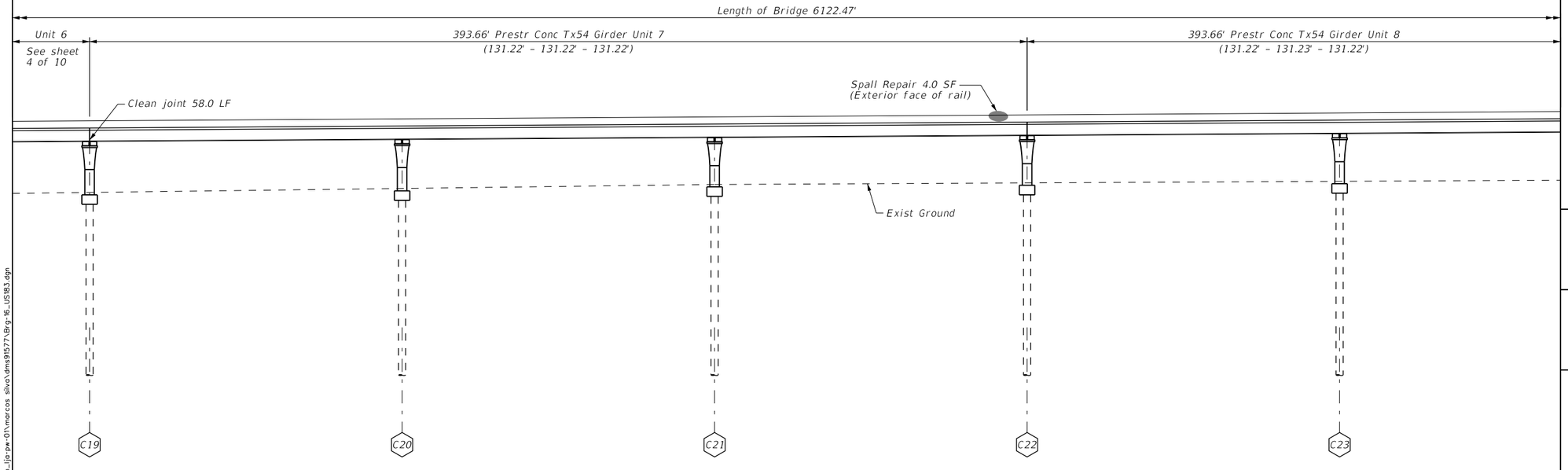

ELEVATION

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Ohlen Rd & local streets
Bridge Layout

SHEET 5 OF 10

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE TEXAS	STATE DIST. NO. AUSTIN	COUNTY LEE, ETC.	SHEET NO.
CHECKED: WO				
DRAWN: GZ	CONT.	SECT.	JOB	25
CHECKED: DNP	6464	87	001	

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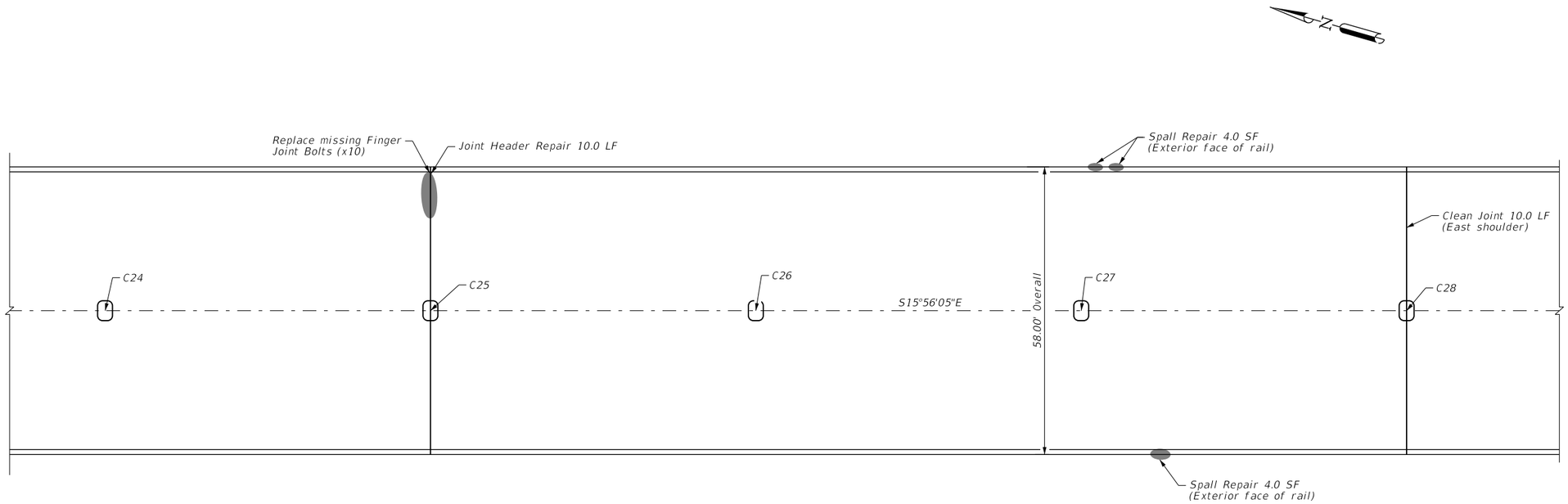
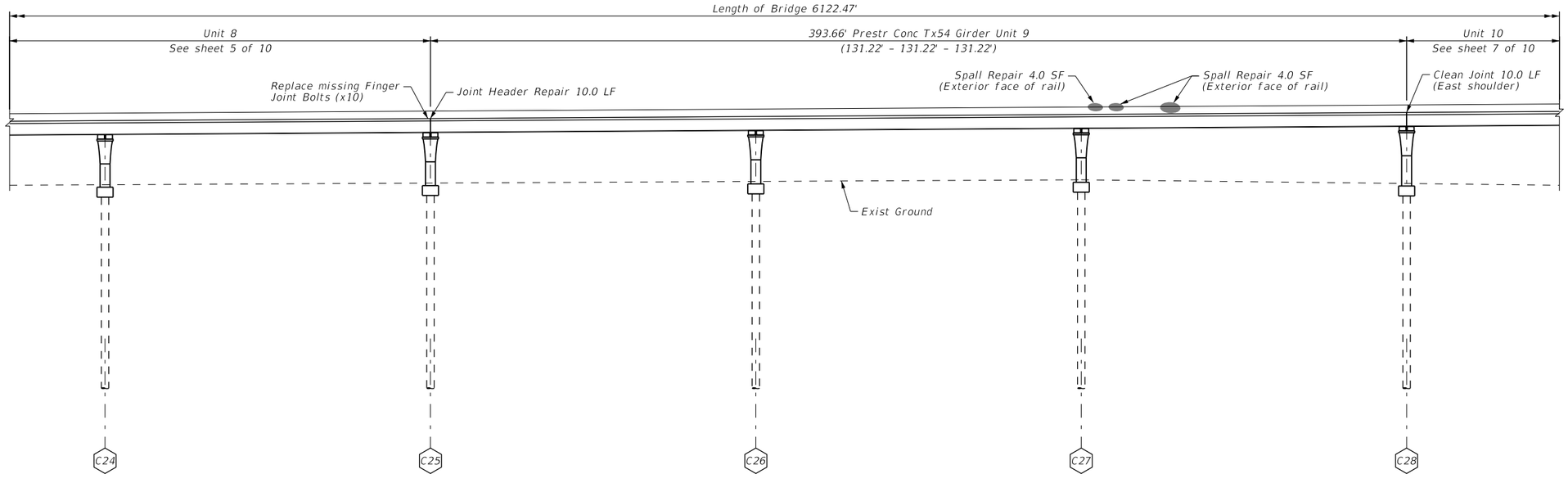


PLAN

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
24	EAST SHLDR	2
25	EAST SHLDR	2
26	EAST SHLDR	2
27	EAST SHLDR	2

NBI: 14-227-0-0151-06-080



ELEVATION

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SHEET 6 OF 10

FED. RD. DIV. NO.	PROJECT NO.			HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE TEXAS	STATE DIST. NO. AUSTIN	COUNTY LEE, ETC.	SHEET NO.
CHECKED: WO				
DRAWN: GZ	CONT. 6464	SECT. 87	JOB 001	26
CHECKED: DNP				

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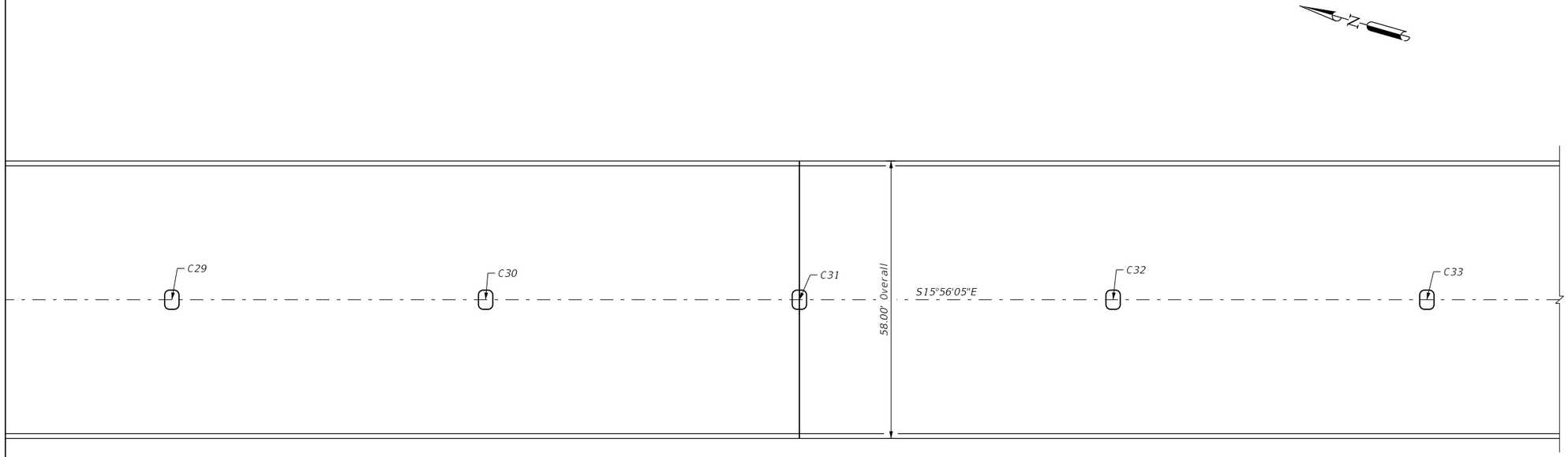
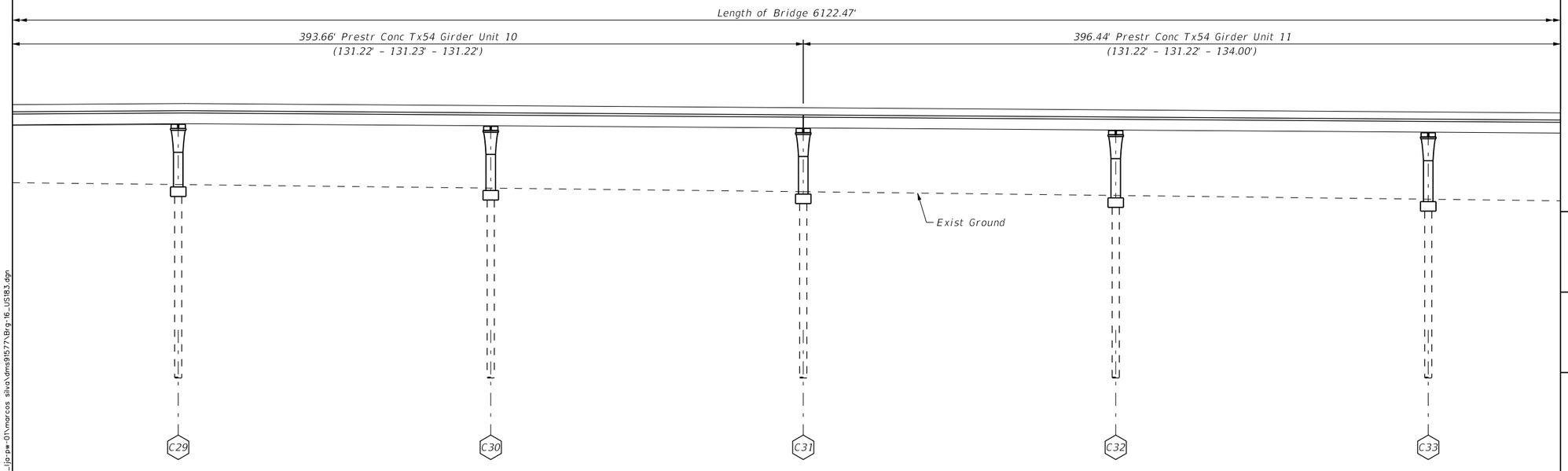


PLAN

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
28	EAST SHLDR	2
29	EAST SHLDR	2
30	EAST SHLDR	2
31	EAST SHLDR	2
32	EAST SHLDR	2

NBI: 14-227-0-0151-06-080



ELEVATION

STATE OF TEXAS
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5.06.2024

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Bridge Layout

SHEET 7 OF 10

FED. RD. DIV. NO.	PROJECT NO.			HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE TEXAS	STATE DIST. NO. AUSTIN	COUNTY LEE, ETC.	SHEET NO.
CHECKED: WO				
DRAWN: GZ	CONT. 6464	SECT. 87	JOB 001	27
CHECKED: DNP				

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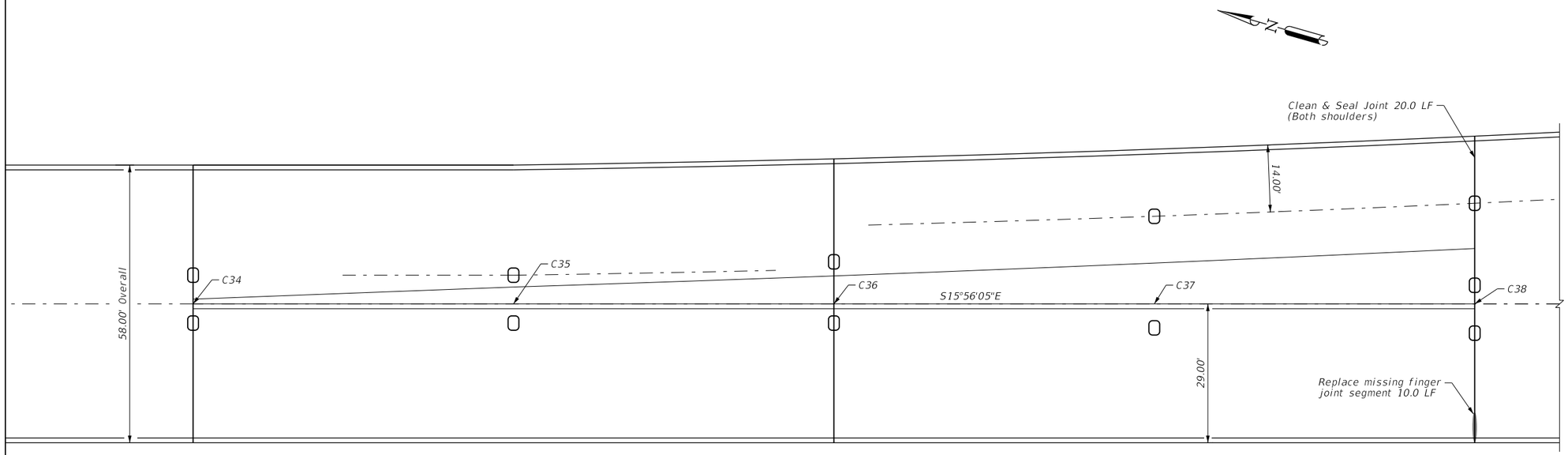
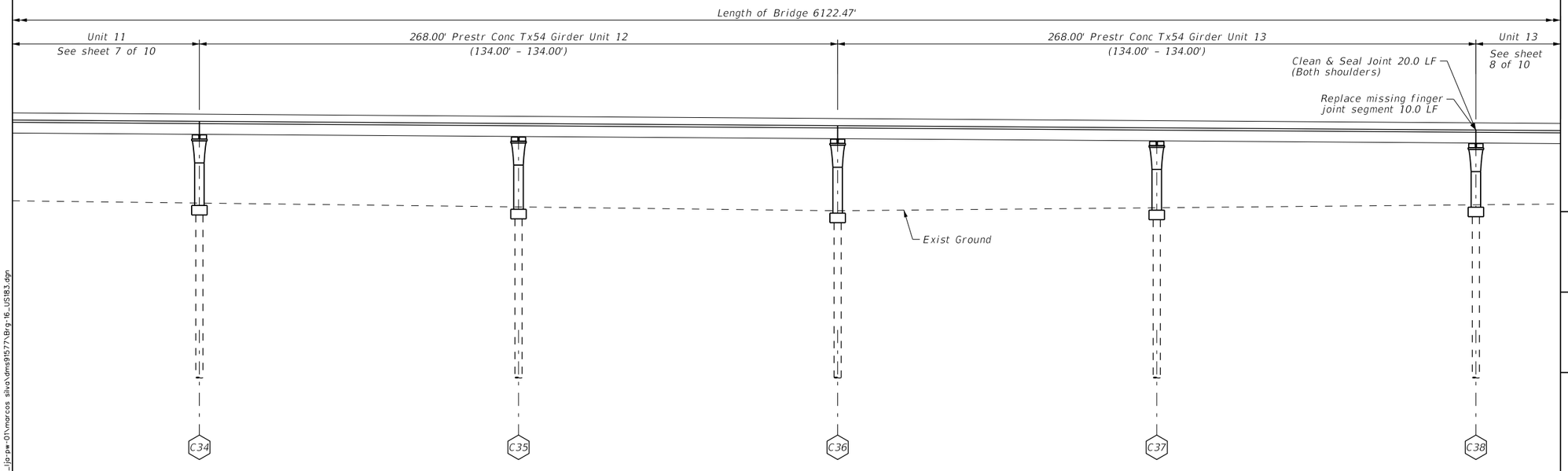


PLAN

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
33	EAST SHLDR	2
34	EAST SHLDR	2
35	EAST SHLDR	2
36	EAST SHLDR	2
37	EAST SHLDR	2

NBI: 14-227-0-0151-06-080



ELEVATION

STATE OF TEXAS
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5.06.2024

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US 183 NB over
Ohlen Rd & local streets
Bridge Layout

SHEET 8 OF 10

FED. RD. DIV. NO.	PROJECT NO.			HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE TEXAS	STATE DIST. NO. AUSTIN	COUNTY LEE, ETC.	SHEET NO.
CHECKED: WO				
DRAWN: GZ	CONT. 6464	SECT. 87	JOB 001	28
CHECKED: DNP				

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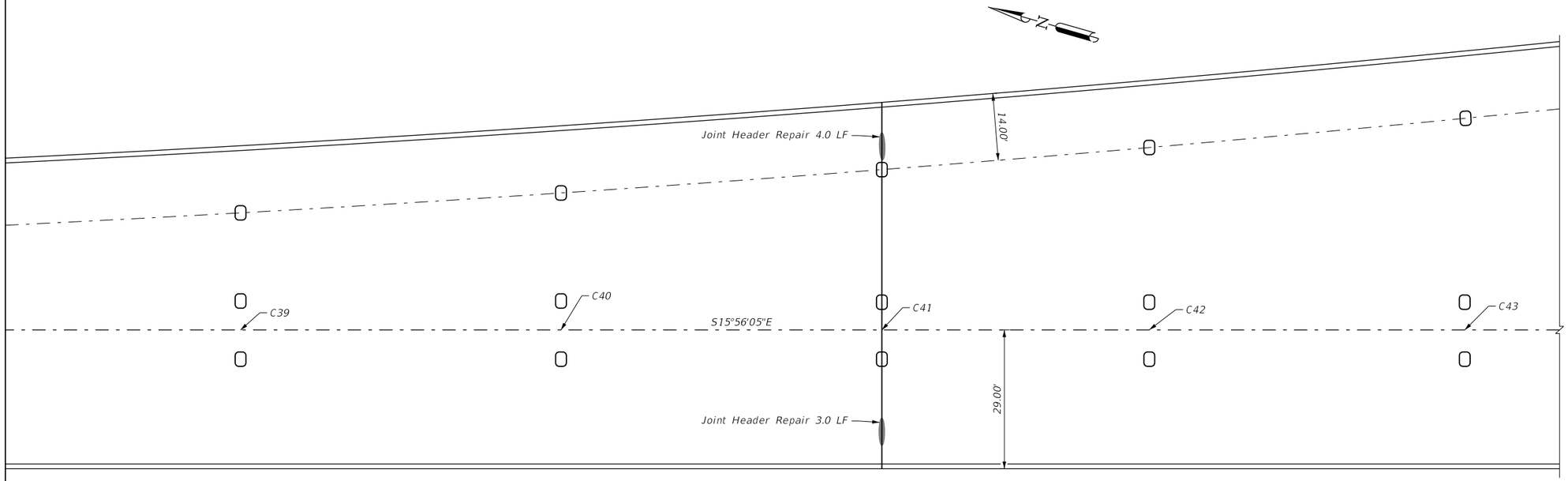
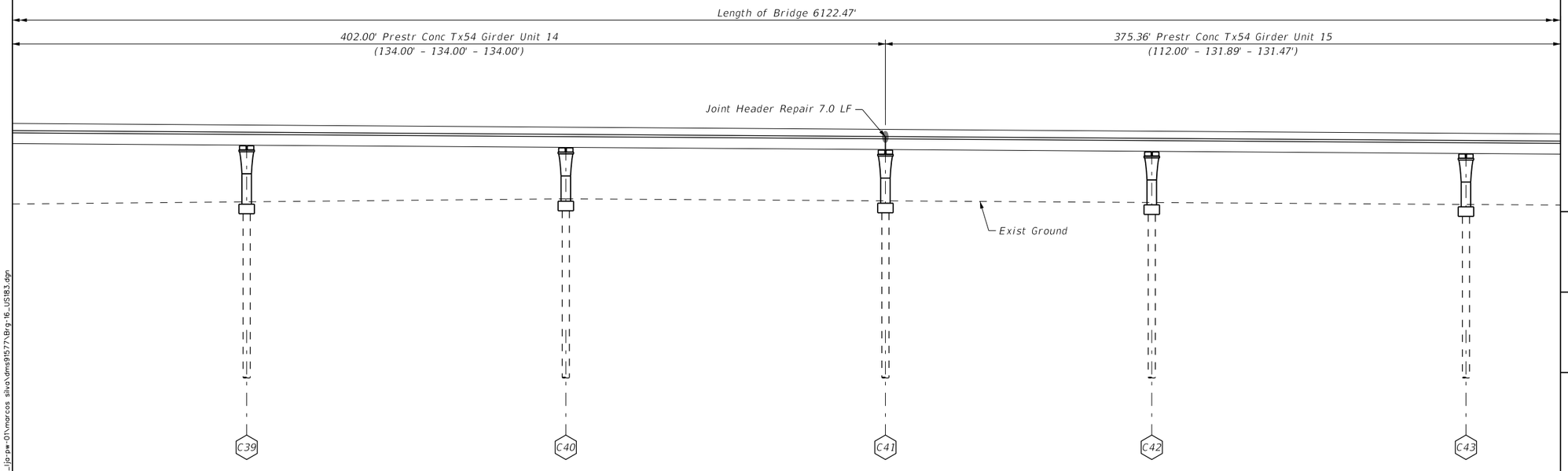


PLAN

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
38	EAST SHLDR	2
39	EAST SHLDR	2
40	EAST SHLDR	2
41	EAST SHLDR	2
42	EAST SHLDR	2

NBI: 14-227-0-0151-06-080



ELEVATION

STATE OF TEXAS
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SHEET 9 OF 10

FED. RD. DIV. NO.	PROJECT NO.			HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE TEXAS	STATE DIST. NO. AUSTIN	COUNTY LEE, ETC.	SHEET NO.
CHECKED: WO				
DRAWN: GZ	CONT.	SECT.	JOB	29
CHECKED: DNP	6464	87	001	

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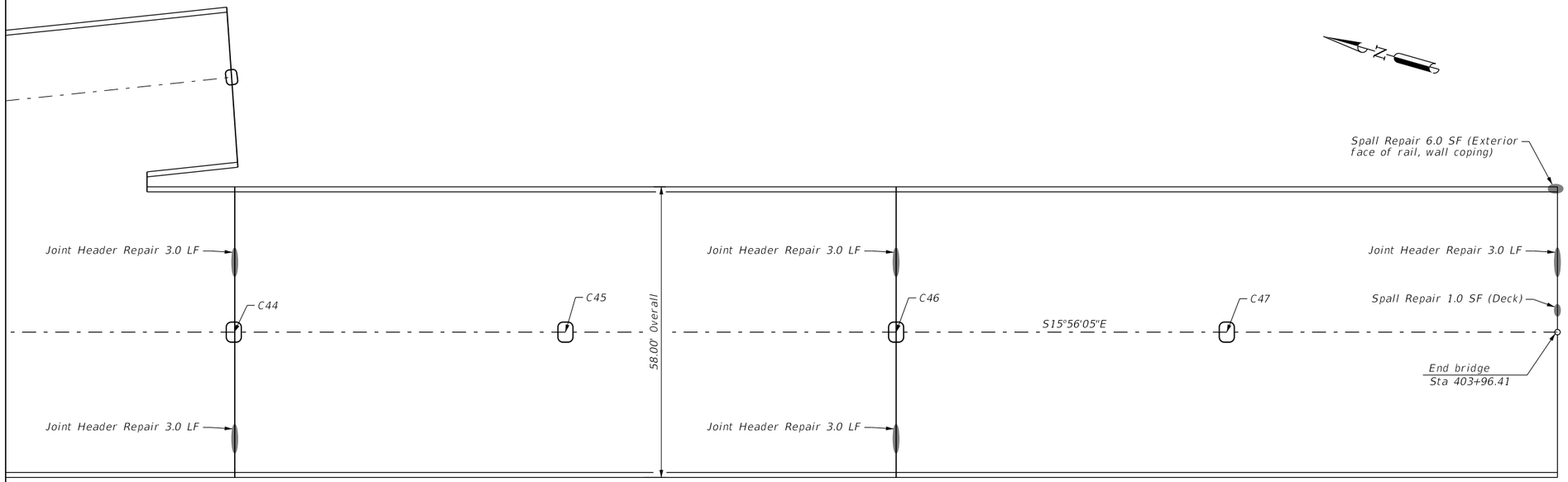
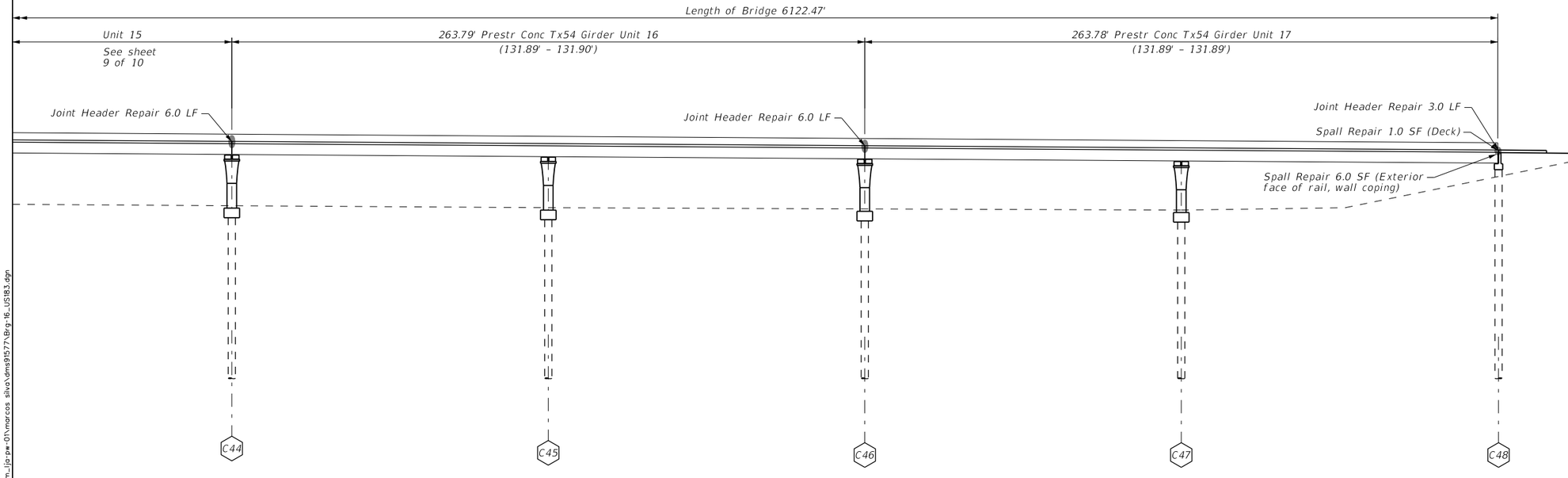


PLAN

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
43	EAST SHLDR	2
44	EAST SHLDR	2
45	EAST SHLDR	2
46	EAST SHLDR	2

NBI: 14-227-0-0151-06-080



ELEVATION

STATE OF TEXAS
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US 183 NB over Ohlen Rd & local streets

Bridge Layout

SHEET 10 OF 10

FED. RD. DIV. NO.	PROJECT NO.			HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: GZ	CONT.	SECT.	JOB	30
CHECKED: DNP	6464	87	001	

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GENERAL REQUIREMENTS:

NOTES:

1. INSTALL ALL TRAFFIC CONTROL DEVICES AND ADVANCE WARNING SIGNS IN ACCORDANCE WITH THE TXDOT BARRICADE AND CONSTRUCTION (BC(1-12)-21) STANDARDS,TRAFFIC CONTROL PLAN (TCP(2-(1-8)) STANDARDS, AND THE LATEST EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

2. PLACE ALL TEMPORARY STORM WATER POLLUTION PREVENTION PLAN (SWP3) DEVICES AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. MAINTAIN ALL EROSION CONTROL DEVICES AND RELOCATE AS REQUIRED THROUGHOUT CONSTRUCTION.

3. LOCATE ALL UTILITIES WITHIN THE WORKZONE.

4. APPLY TXDOT TRAFFIC CONTROL PLAN (TCP) AND WORK ZONE (WZ) STANDARDS FOR TRAFFIC CONTROL ASREQUIRED. ALL TRAFFIC OPERATIONS MUST BE APPROVED BY THE ENGINEER.

5. REFER TO GENERAL NOTES FOR MORE INFORMATION.

6. REMOVE ALL TEMPORARY EROSION CONTROL DEVICES AFTER CONSTRUCTION IS COMPLETE.

7. PERFORM FINAL CLEAN UP OF WORK AREA AND REMOVE ANY CONSTRUCTION MATERIAL AND TRAFFIC CONTROL DEVICES.

8. PERFORM ALL CONSTRUCTION DURING NIGHT TIME OPERATIONS.

9. RELOCATE CHANGEABLE MESSAGE SIGNS TO EACH LOCATION AS NEEDED. RELOCATION COST IS SUBSIDIARY TO BID ITEM 6001-6002 UNDER THIS CONTRACT.

US 183 NB OVER OHLEN RD & LOCAL STREETS

NOTES:

1. COMPLY WITH ALL GENERAL REQUIREMENTS NOTES.

2. CLOSE ONE HALF OF US 183 NB AT A TIME IN ACCORDANCE WITH STANDARD TCP (6-1b)-12.

3. KEEP MINIMUM TWO LANES ON US 183 NB OPEN AT ALL TIMES.

4. SHOULDERS MAY BE UTILIZED ON US 183 NB TO DIVERT TRAFFIC FROM WORKZONE.

5. USE ITEM TCP-2 TO DELINEATE LANES IN CONJUNCTION WITH CHANNELIZING DEVICES.

WORKZONE TCP QUANTITIES THIS SHEET			
LOCATION	TCP-1	TCP-2	TCP-3
	0502-6001	6185-6002	7052-6047
	BARRICADES, SIGNS AND TRAFFIC HANDLING	TMA (STATIONARY)	LANE CLOSURE (SETUP AND REMOV)(TY 6)
	MO	DAY	EA
US 183 NB OVER OHLEN RD & LOCAL STREETS	2	56	2
PROJECT TOTALS	**2**	**56**	**2**

STATE OF TEXAS
RUSSELL P KUDELA
150880
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5/22/2024

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US 183 NB OVER
OHLEN ROAD & LOCAL STREETS

TCP NARRATIVE & QUANTITIES

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.
DESIGNED: DW	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: RK	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: DW	CONT.	SECT.	JOB	31
CHECKED: RK	6464	87	001	

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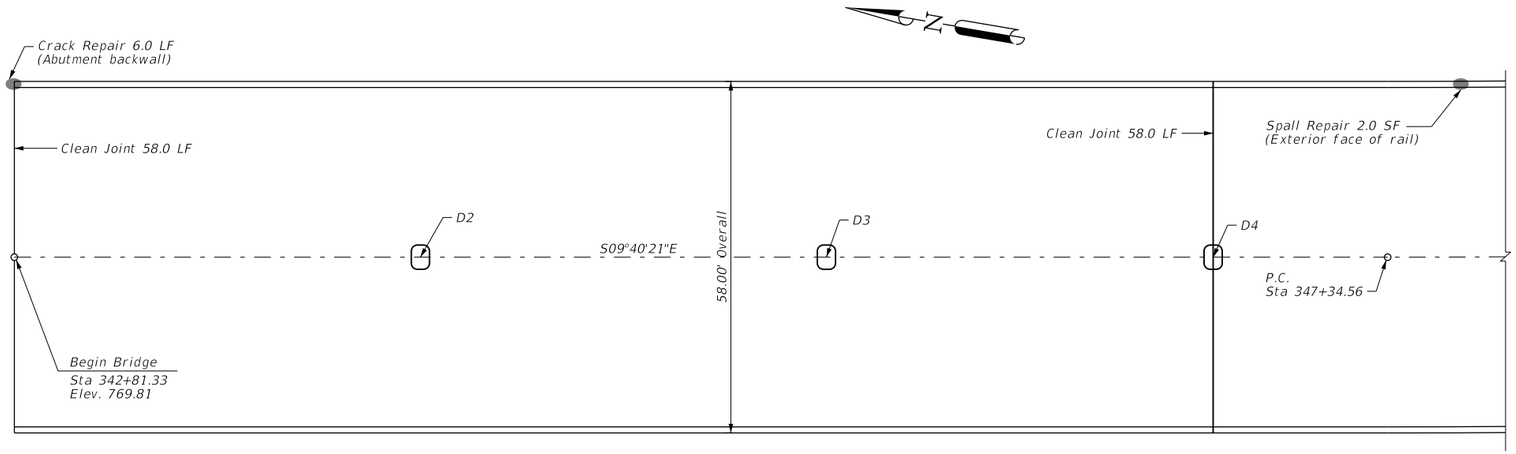


TABLE OF ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
429 6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	10.0	SF
438 6004	CLEANING AND SEALING EXIST JOINTS (CL7)	50.0	LF
438 6009	CLEANING EXISTING JOINTS	304.0	LF
764 6001	DRAIN INLET CLEANING	92	EA
780 6002	CNC CRACK REPAIR (DISCRETE) (INJECT)	4.0	LF
785 6006	BRIDGE JOINT REPAIR (HEADER)	50.0	LF
785 6012	BRIDGE JOINT REPLACEMENT (FINGER)	22.0	LF

GENERAL NOTES:

Contractor must verify repair locations and quantities prior to commencing work. Any discrepancies between repair plans and existing field conditions must to communicated to the Engineer immediately.

Refer to Cleaning and Sealing Existing Bridge Joints sheets, Header Joint With Silicone Seal & Detail "D" (Bents 13, 36, 39, 41, 44, 46 & 48).

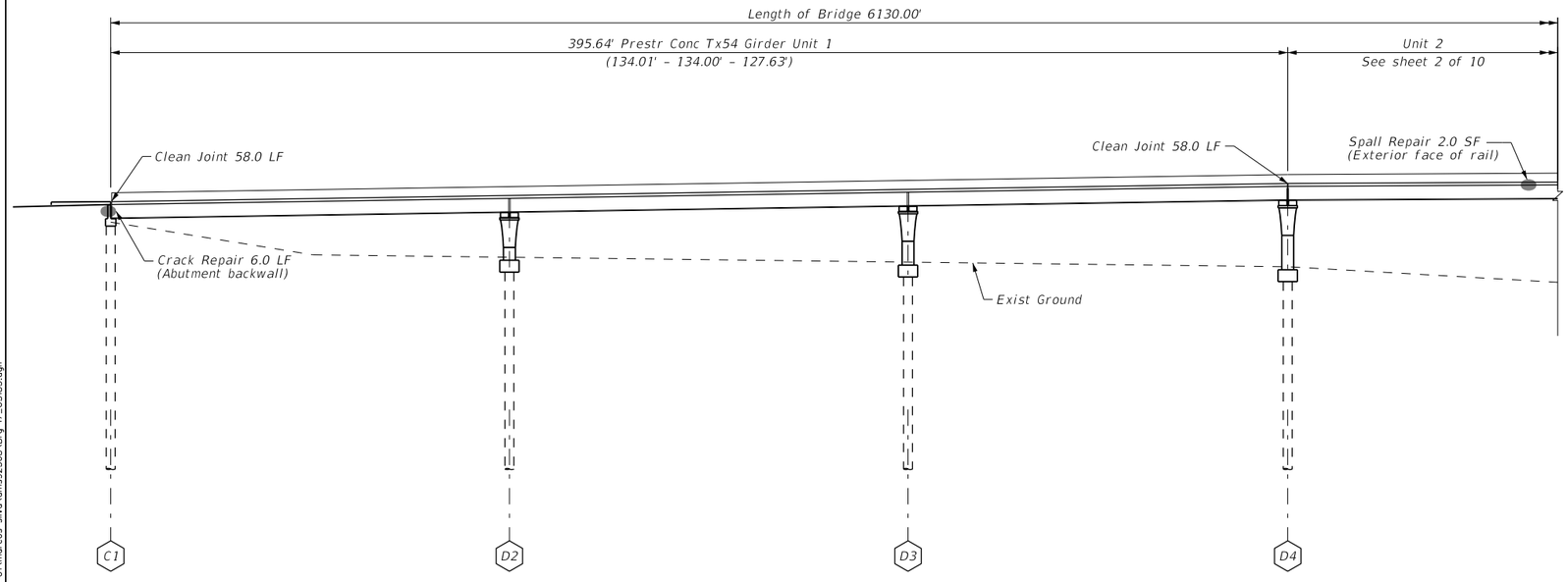
Refer to Spall Repair Details sheets.

Refer to TxDOT Concrete repair manual for crack repairs.

Provide Work Plan and Shop Drawings for the Finger Joint repairs (Bents 16 & 34) for approval prior to beginning work at these locations.

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
2	WEST SHLDR	2
3	EAST SHLDR	2
4	EAST SHLDR	2

NBI: 14-227-0-0151-06-081



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Ohlen Rd & Local Streets
Bridge Layout

SHEET 1 OF 10

FED. RD. DIV. NO.		PROJECT NO.		HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
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CHECKED: DNP	6464	87	001	

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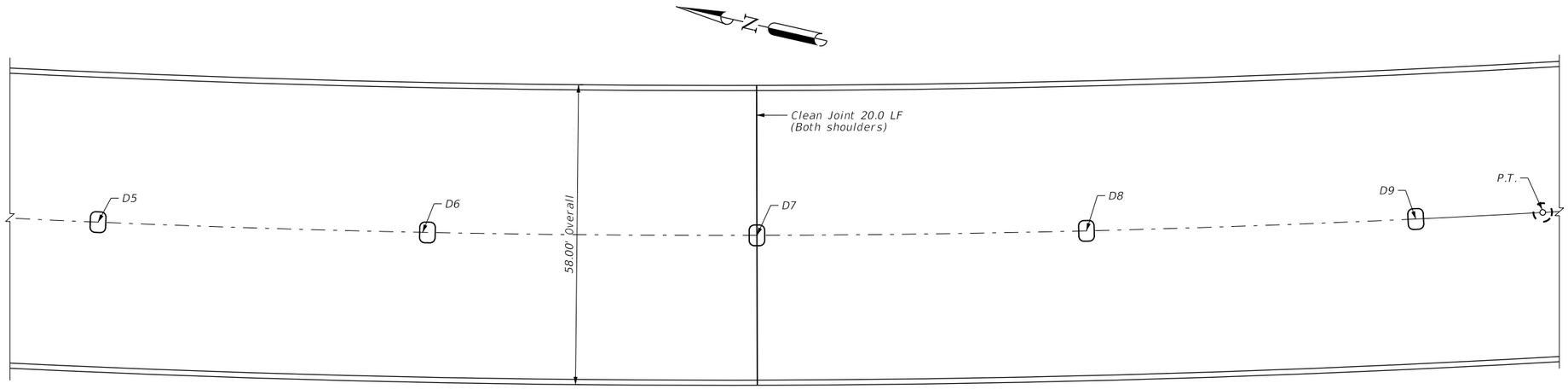
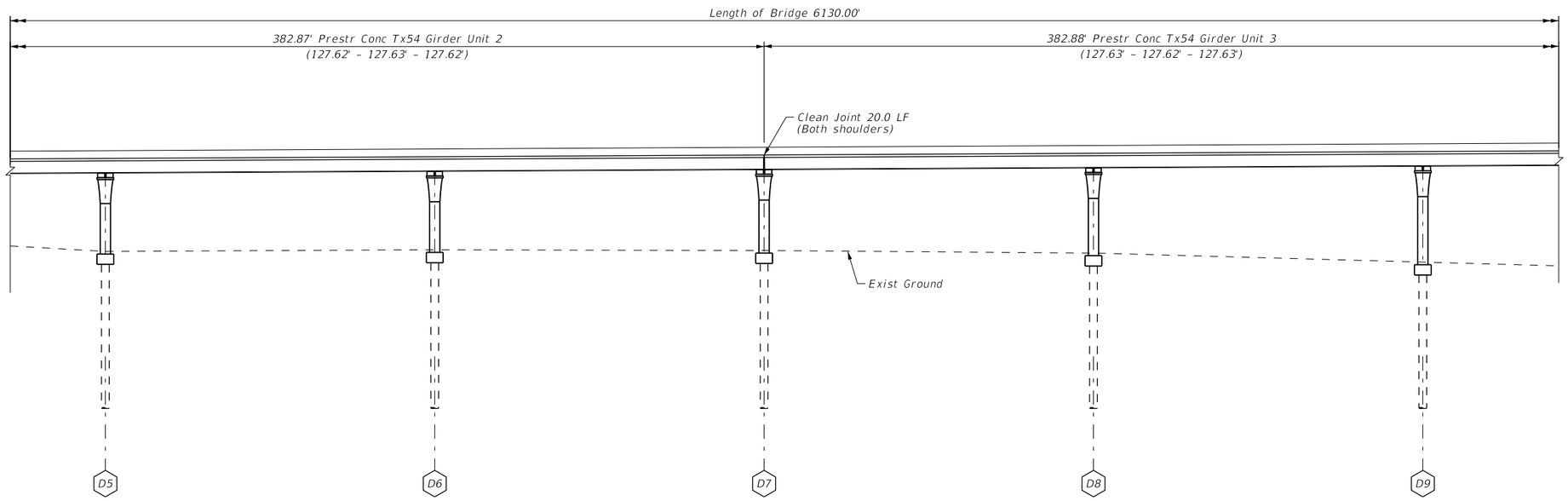


DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
5	EAST SHLDR	2
6	EAST SHLDR	2
7	EAST SHLDR	2
8	EAST SHLDR	2
9	EAST SHLDR	2

NBI: 14-227-0-0151-06-081



STATE OF TEXAS
DAVID N. PRETORIUS
130358
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5.06.2024

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US 183 SB over
Ohlen Rd & Local Streets
Bridge Layout

SHEET 2 OF 10

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	33
CHECKED: DNP	6464	87	001	

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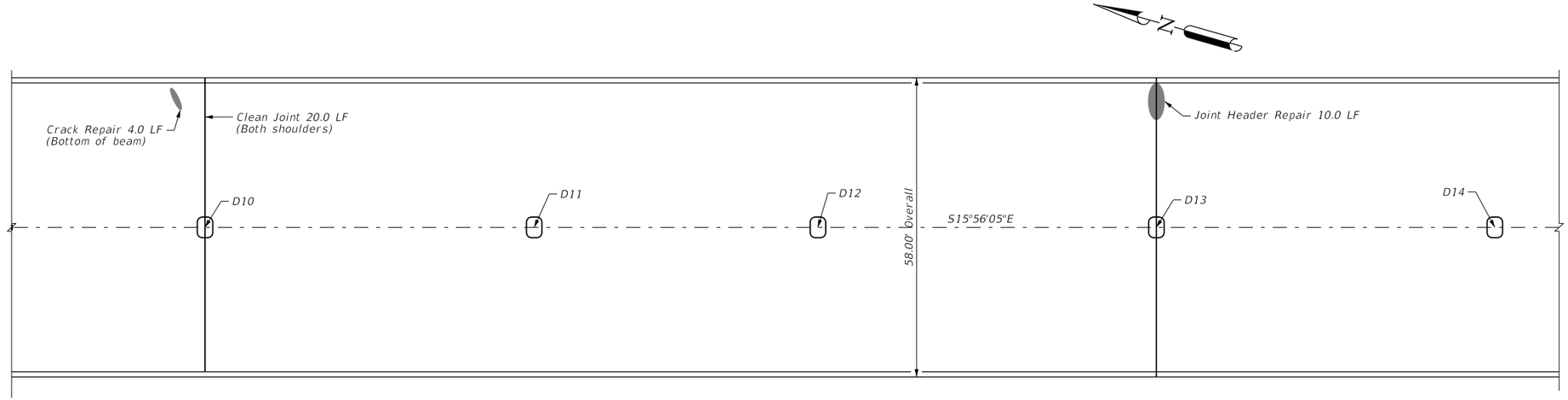
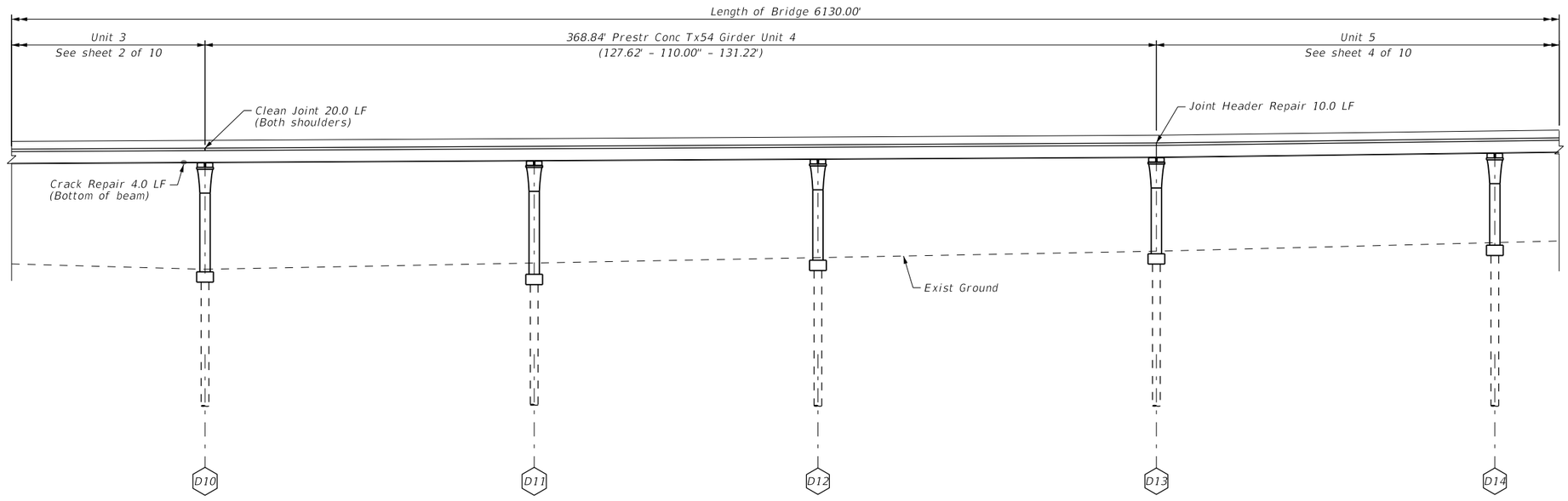


DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
10	WEST SHLDR	2
11	WEST SHLDR	2
12	WEST SHLDR	2
13	WEST SHLDR	2

NBI: 14-227-0-0151-06-081



STATE OF TEXAS
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US 183 SB over
Ohlen Rd & Local Streets
Bridge Layout

SHEET 3 OF 10

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	34
CHECKED: DNP	6464	87	001	

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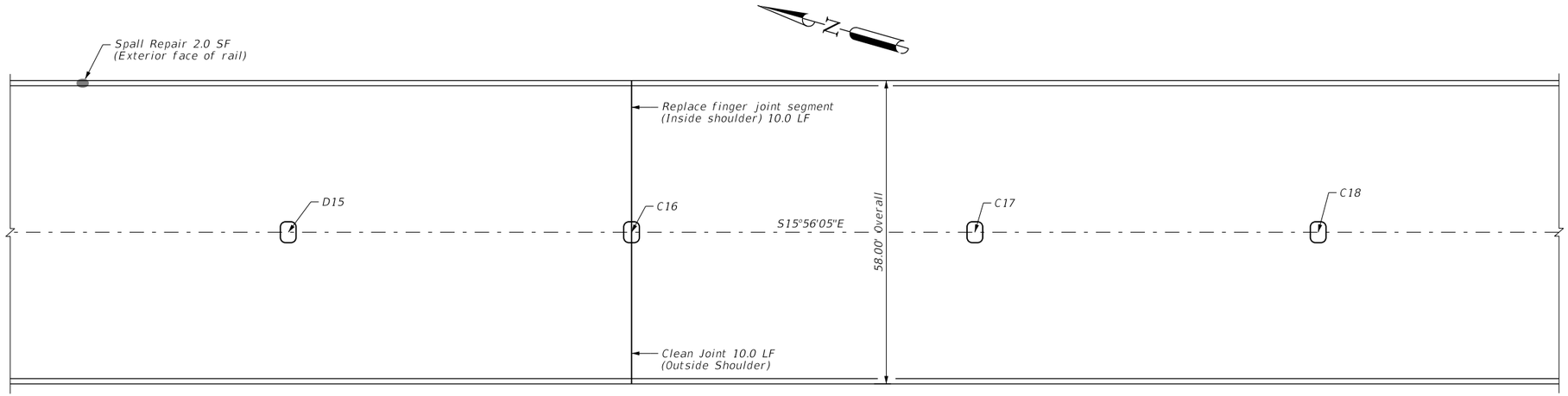

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
14	WEST SHLDR	2
15	WEST SHLDR	2
16	WEST SHLDR	2
17	WEST SHLDR	2
18	WEST SHLDR	2

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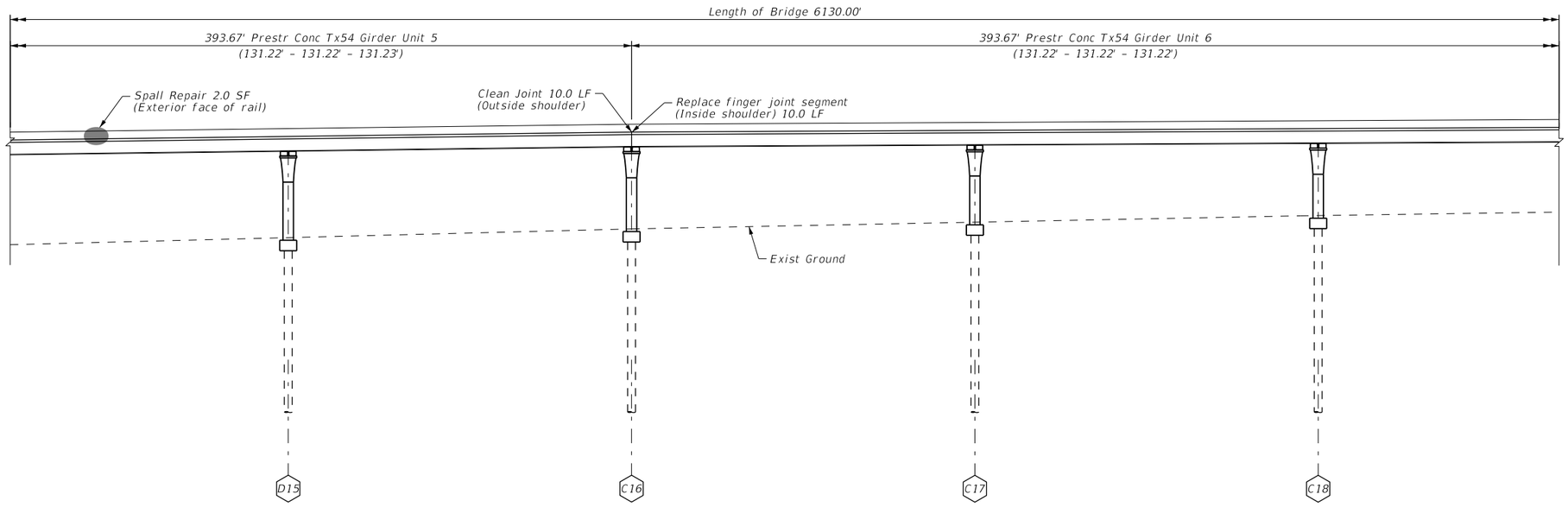

STATE OF TEXAS
DAVID N. PRETORIUS
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SHEET 4 OF 10

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	35
CHECKED: DNP	6464	87	001	

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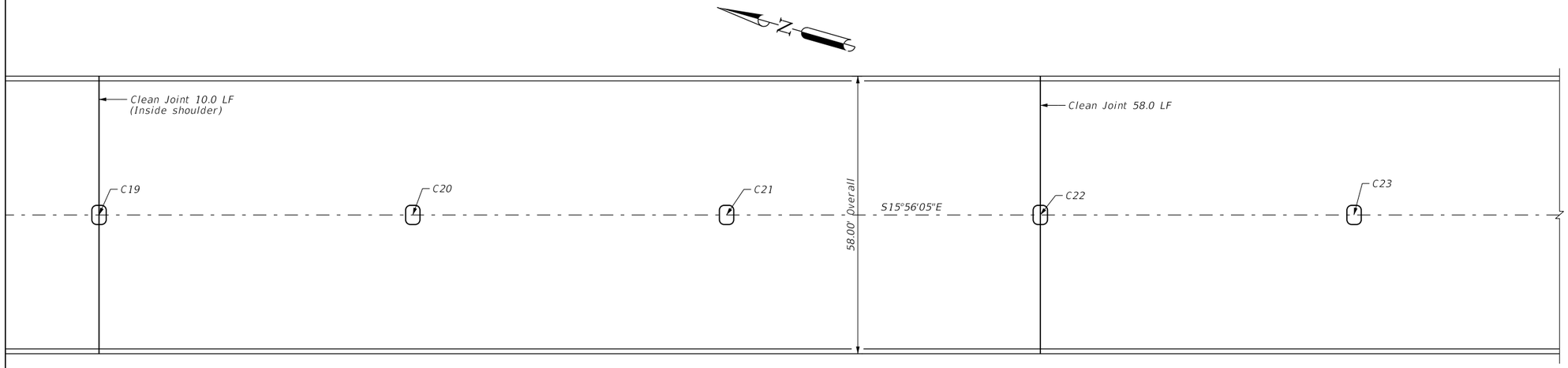
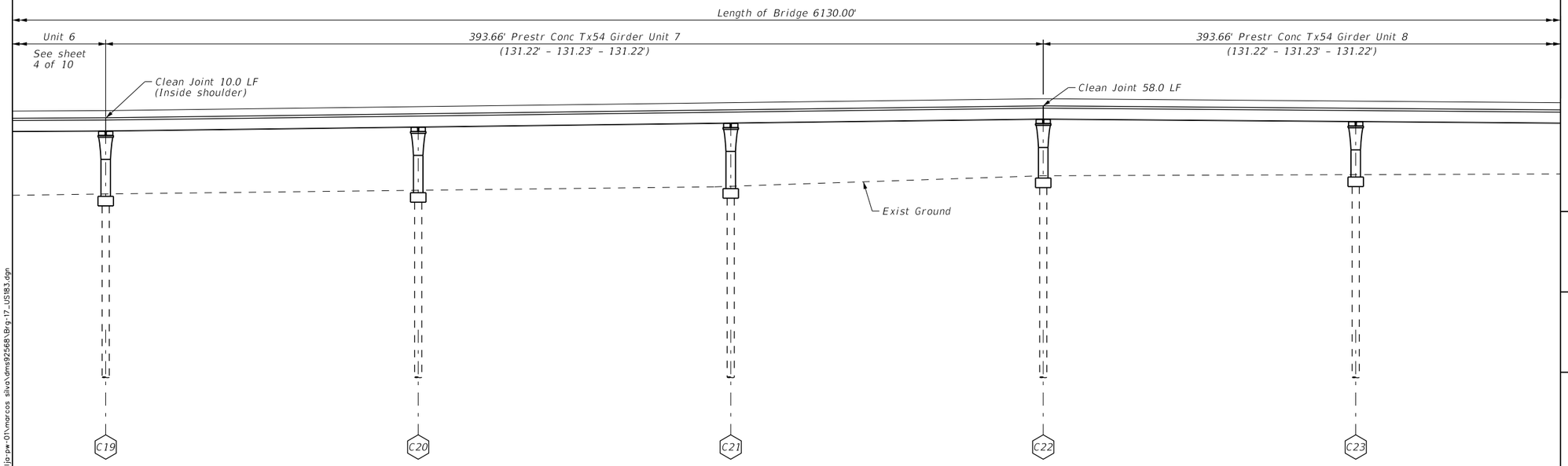


DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
19	WEST SHLDR	2
20	WEST SHLDR	2
21	WEST SHLDR	2
22	WEST SHLDR	2
23	WEST SHLDR	2

NBI: 14-227-0-0151-06-081



STATE OF TEXAS
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Ohlen Rd & Local Streets
Bridge Layout

SHEET 5 OF 10

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	36
CHECKED: DNP	6464	87	001	

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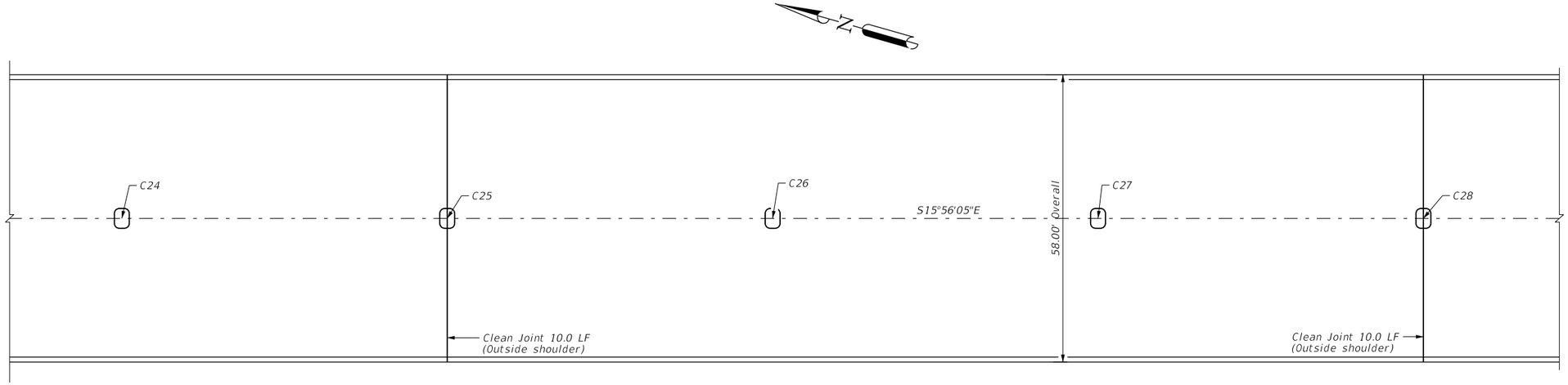
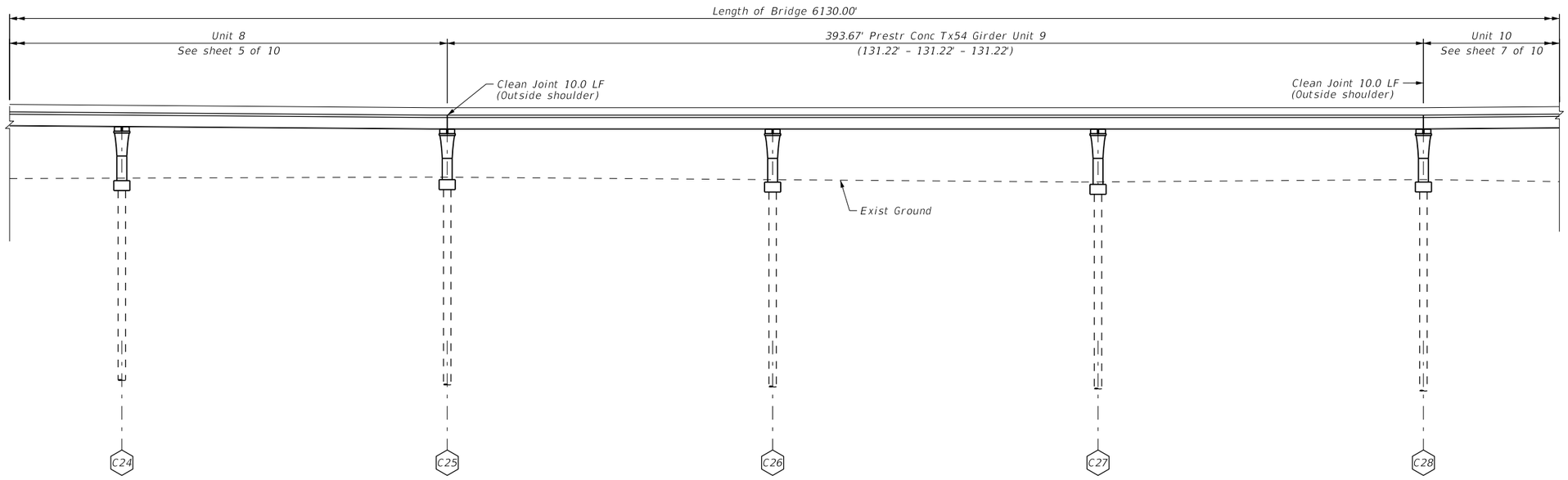


DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
24	WEST SHLDR	2
25	WEST SHLDR	2
26	WEST SHLDR	2
27	WEST SHLDR	2

NBI: 14-227-0-0151-06-081



STATE OF TEXAS
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SHEET 6 OF 10

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	37
CHECKED: DNP	6464	87	001	

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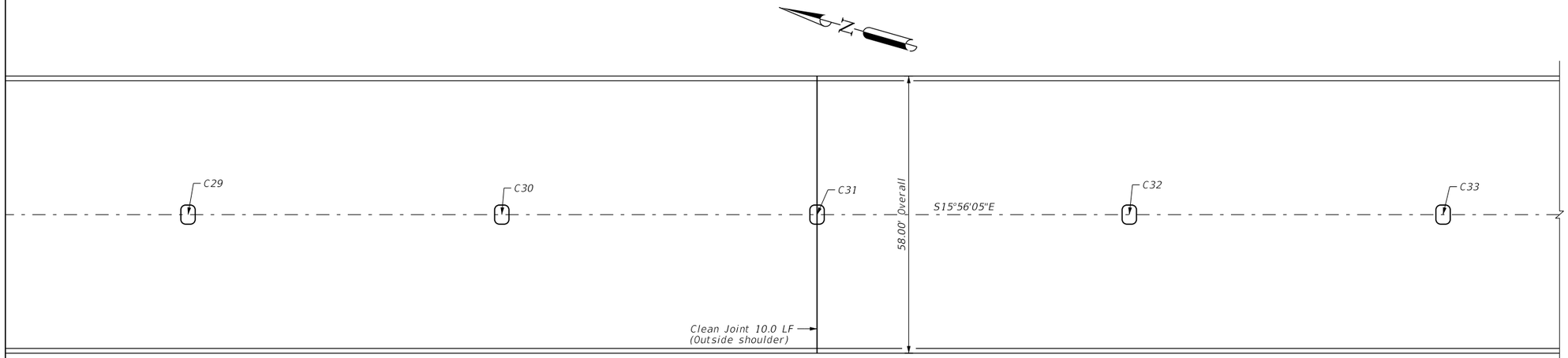
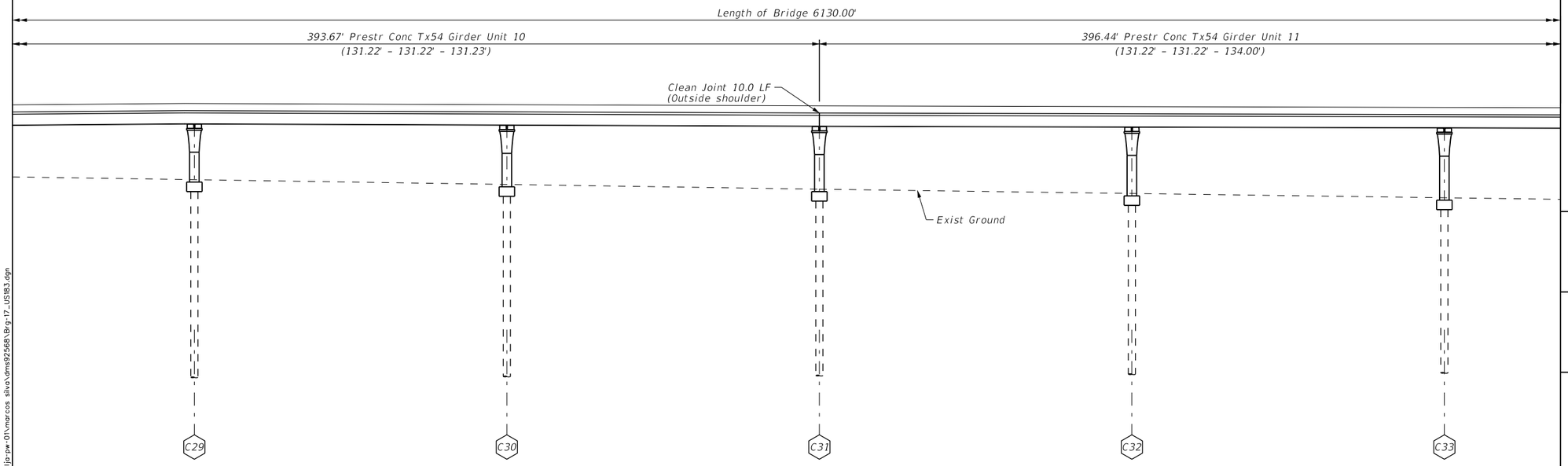


DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
28	WEST SHLDR	2
29	WEST SHLDR	2
30	WEST SHLDR	2
31	WEST SHLDR	2
32	WEST SHLDR	2

NBI: 14-227-0-0151-06-081



STATE OF TEXAS
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5.06.2024

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SHEET 7 OF 10

FED. RD. DIV. NO.	PROJECT NO.			HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	38
CHECKED: DNP	6464	87	001	

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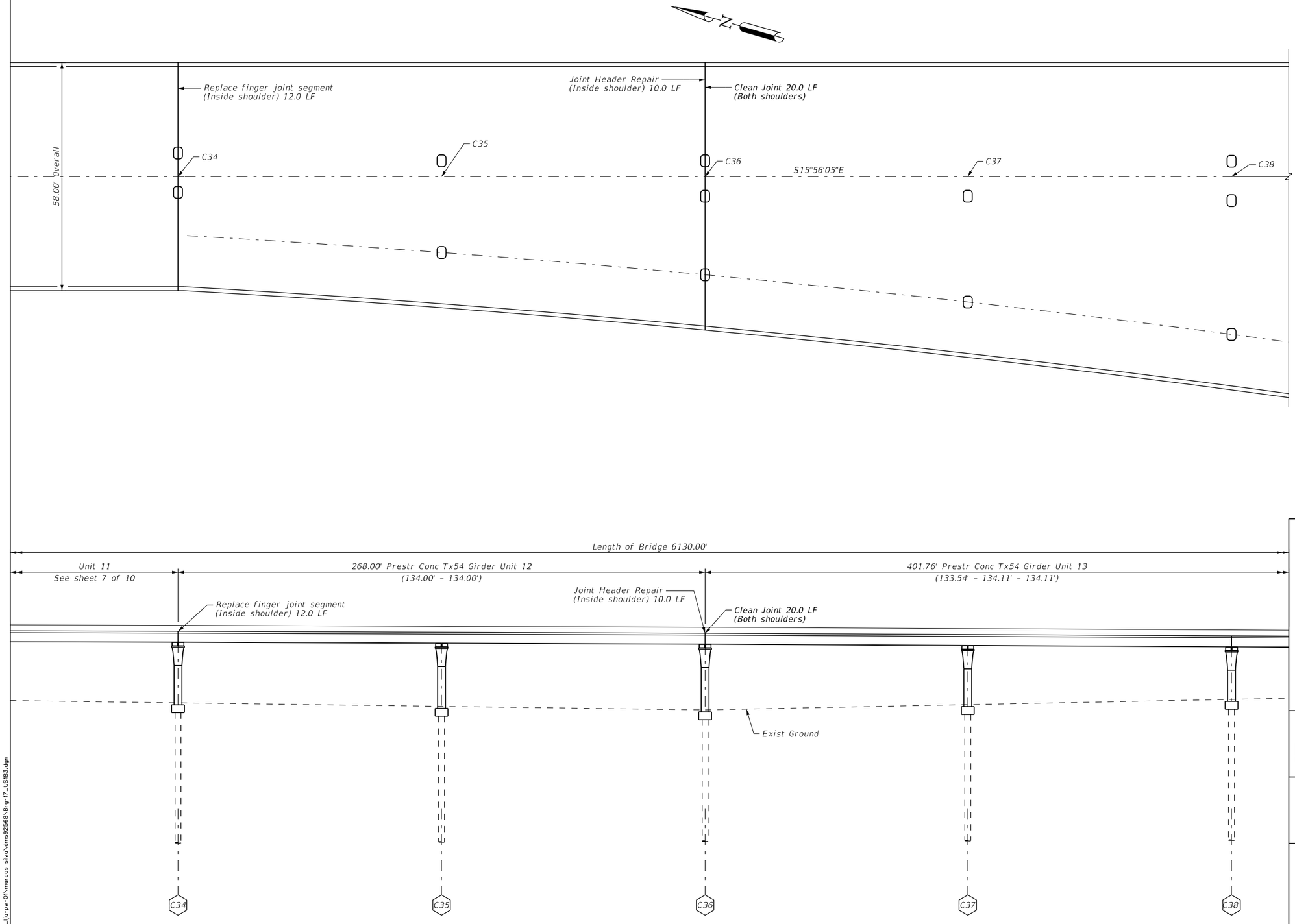

DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
33	WEST SHLDR	2
34	WEST SHLDR	2
35	WEST SHLDR	2
36	WEST SHLDR	2
37	WEST SHLDR	2

NBI: 14-227-0-0151-06-081

STATE OF TEXAS
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Bridge Layout

SHEET 8 OF 10

FED. RD. DIV. NO.	PROJECT NO.			HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	39
CHECKED: DNP	6464	87	001	

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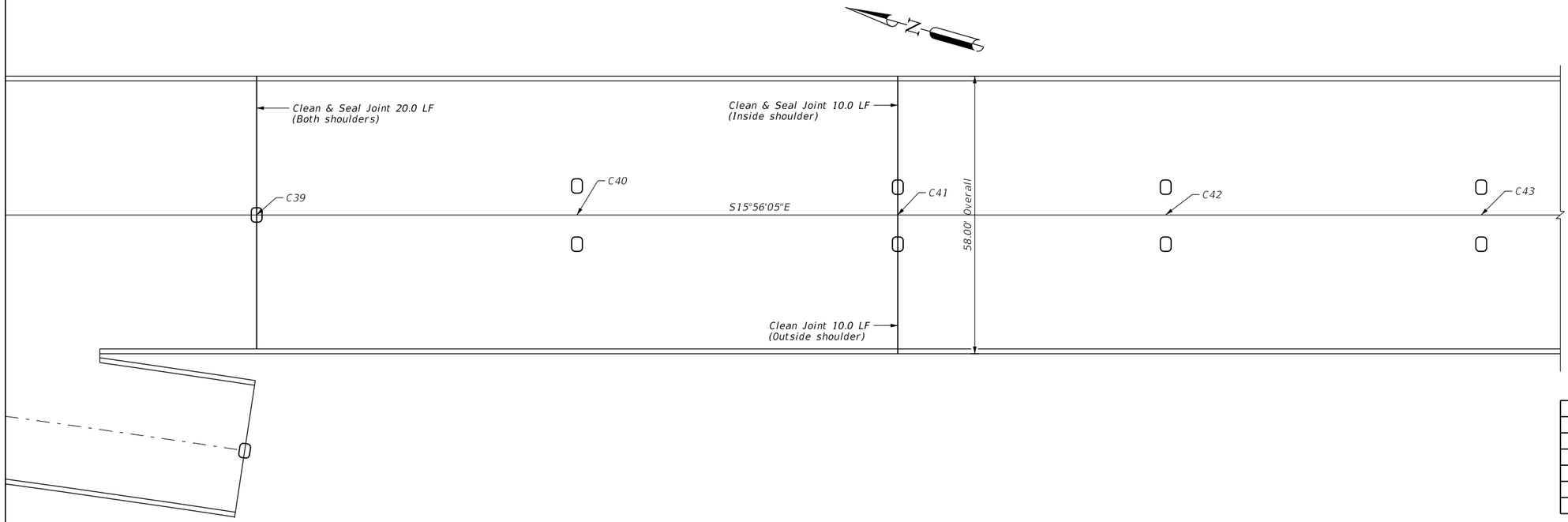
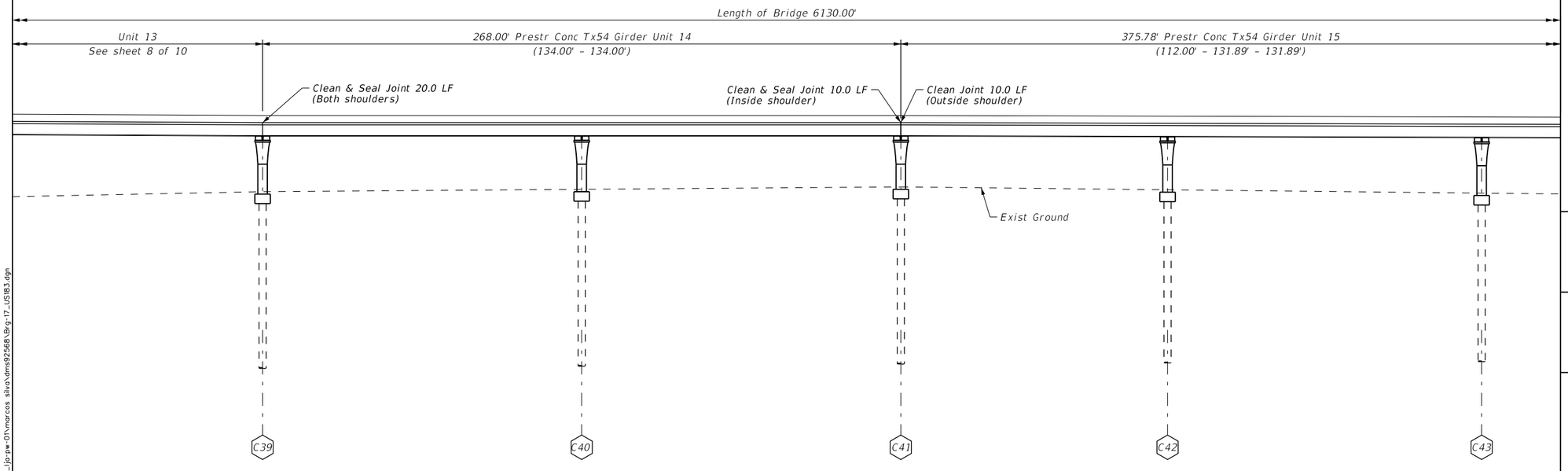


DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
38	WEST SHLDR	4
39	WEST SHLDR	2
40	WEST SHLDR	2
41	WEST SHLDR	2
42	WEST SHLDR	2

NBI: 14-227-0-0151-06-081



STATE OF TEXAS
DAVID N. PRETORIUS
130358
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PROFESSIONAL ENGINEER
5.06.2024

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US 183 SB over
Ohlen Rd & Local Streets
Bridge Layout

SHEET 9 OF 10

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	40
CHECKED: DNP	6464	87	001	

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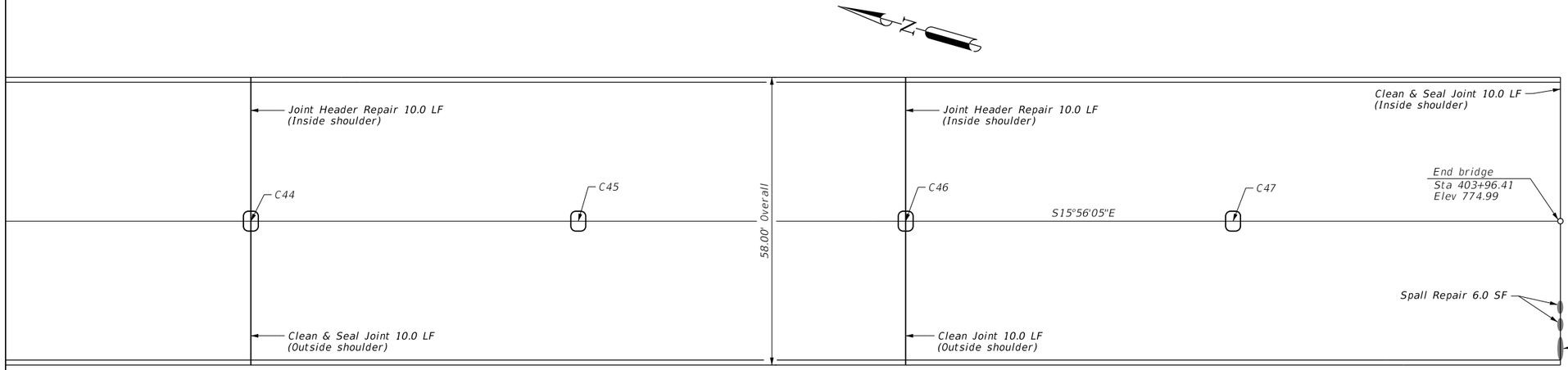
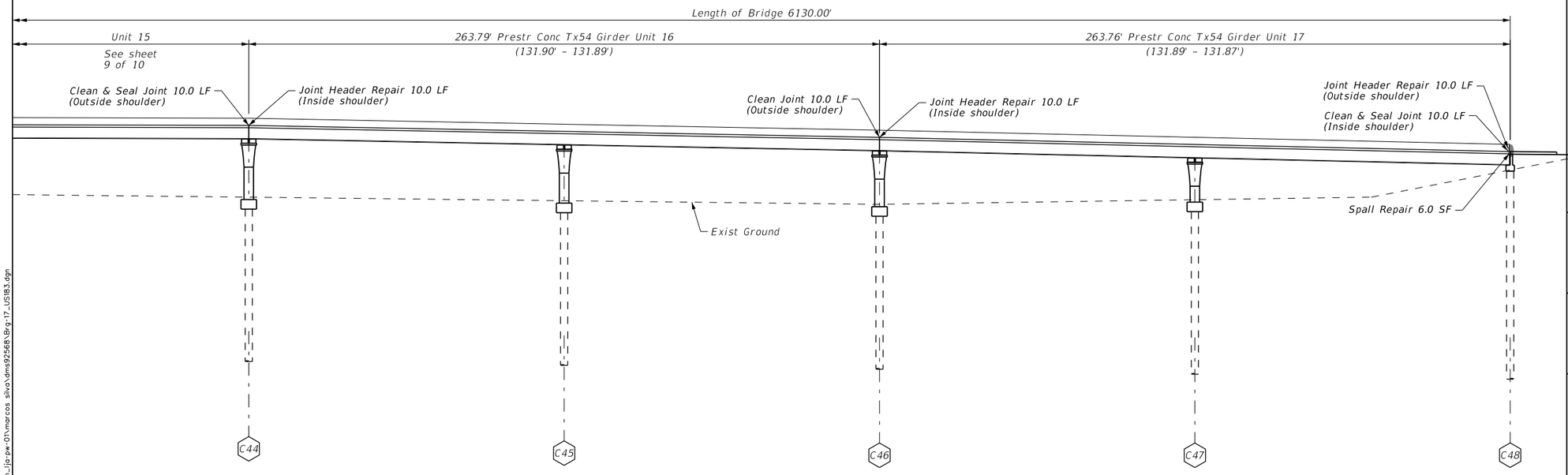


DECK DRAINS TO BE CLEANED		
SPAN	ROADWAY SIDE	QUANTITY
43	WEST SHLDR	2
44	WEST SHLDR	2
45	WEST SHLDR	2
46	WEST SHLDR	2

NBI: 14-227-0-0151-06-081



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US 183 SB over Ohlen Rd & Local Streets

Bridge Layout

SHEET 10 OF 10

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	41
CHECKED: DNP	6464	87	001	

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GENERAL REQUIREMENTS:

NOTES:

1. INSTALL ALL TRAFFIC CONTROL DEVICES AND ADVANCE WARNING SIGNS IN ACCORDANCE WITH THE TXDOT BARRICADE AND CONSTRUCTION (BC(1-12)-21) STANDARDS,TRAFFIC CONTROL PLAN (TCP(2-(1-8)) STANDARDS, AND THE LATEST EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

2. PLACE ALL TEMPORARY STORM WATER POLLUTION PREVENTION PLAN (SWP3) DEVICES AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. MAINTAIN ALL EROSION CONTROL DEVICES AND RELOCATE AS REQUIRED THROUGHOUT CONSTRUCTION.

3. LOCATE ALL UTILITIES WITHIN THE WORKZONE.

4. APPLY TXDOT TRAFFIC CONTROL PLAN (TCP) AND WORK ZONE (WZ) STANDARDS FOR TRAFFIC CONTROL ASREQUIRED. ALL TRAFFIC OPERATIONS MUST BE APPROVED BY THE ENGINEER.

5. REFER TO GENERAL NOTES FOR MORE INFORMATION.

6. REMOVE ALL TEMPORARY EROSION CONTROL DEVICES AFTER CONSTRUCTION IS COMPLETE.

7. PERFORM FINAL CLEAN UP OF WORK AREA AND REMOVE ANY CONSTRUCTION MATERIAL AND TRAFFIC CONTROL DEVICES.

8. PERFORM ALL CONSTRUCTION DURING NIGHT TIME OPERATIONS.

9. RELOCATE CHANGEABLE MESSAGE SIGNS TO EACH LOCATION AS NEEDED. RELOCATION COST IS SUBSIDIARY TO BID ITEM 6001-6002 UNDER THIS CONTRACT.

US 183 SB OVER OHLEN RD & LOCAL STREETS

NOTES:

1. COMPLY WITH ALL GENERAL REQUIREMENTS NOTES.

2. CLOSE ONE HALF OF US 183 SB AT A TIME IN ACCORDANCE WITH STANDARD TCP (6-1b)-12.

3. KEEP MINIMUM TWO LANES ON US 183 SB OPEN AT ALL TIMES.

4. SHOULDERS MAY BE UTILIZED ON US 183 SB TO DIVERT TRAFFIC FROM WORKZONE.

5. CLOSE ENTRANCE LANE, KEEP ENTRANCE RAMP OPEN IN ACCORDANCE WITH STANDARD TCP (6-3a)-12.

6. USE ITEM TCP-2 TO DELINEATE LANES IN CONJUNCTION WITH CHANNELIZING DEVICES.

WORKZONE TCP QUANTITIES THIS SHEET

LOCATION	TCP-1	TCP-2	TCP-3
	0502-6001	6185-6002	7052-6047
	BARRICADES, SIGNS AND TRAFFIC HANDLING	TMA (STATIONARY)	LANE CLOSURE (SETUP AND REMOV)(TY 6)
	MO	DAY	EA
US 183 SB OVER OHLEN RD & LOCAL STREETS	3	62	2
PROJECT TOTALS	**3**	**62**	**2**

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US 183 SB OVER
OHLEN ROAD & LOCAL STREETS

TCP NARRATIVE & QUANTITIES

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.
DESIGNED: DW	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: RK	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: DW	CONT.	SECT.	JOB	42
CHECKED: RK	6464	87	001	

9:18:25 AM 5/22/2024
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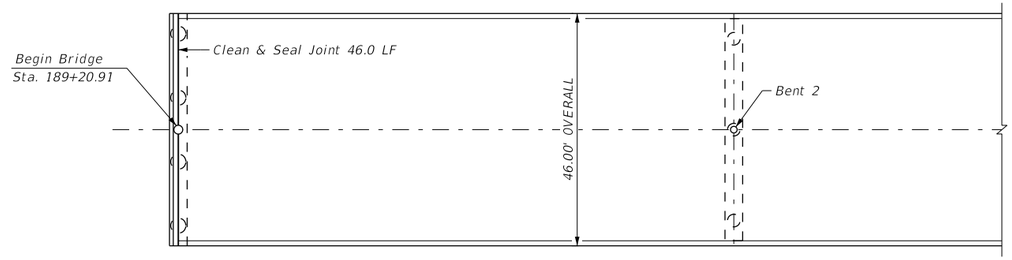
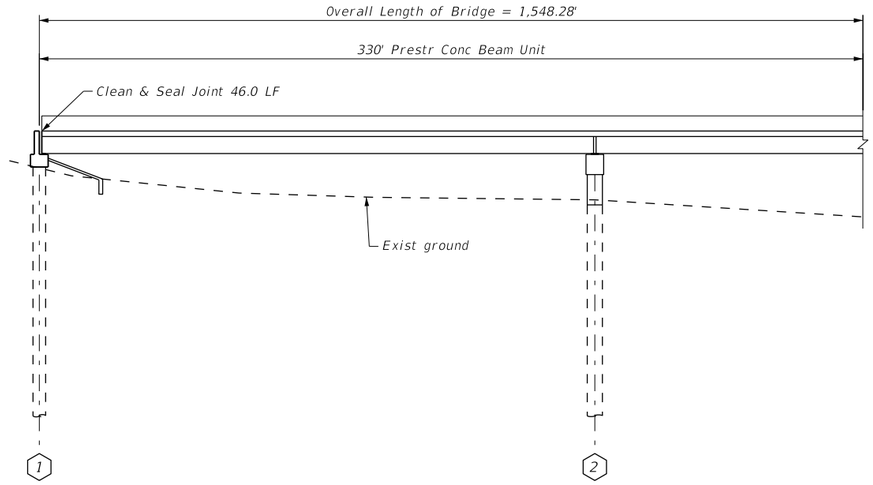
TABLE OF ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
438 6001	CLEANING AND SEALING EXISTING JOINTS	276.0	LF





GENERAL NOTES:

Contractor must verify repair locations and quantities prior to commencing work. Any discrepancies between repair plans and existing field conditions must to communicated to the Engineer immediately.

Refer to Cleaning and Sealing Existing Bridge Joints sheets, Joint With Precompressed Foam and Silicone Seal & Detail "E".

NBI: 14-246-0-3417-02-012

STATE OF TEXAS
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FM 734 EB over South Brushy Creek

Bridge Layout

SHEET 1 OF 5

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	43
CHECKED: DNP	6464	87	001	

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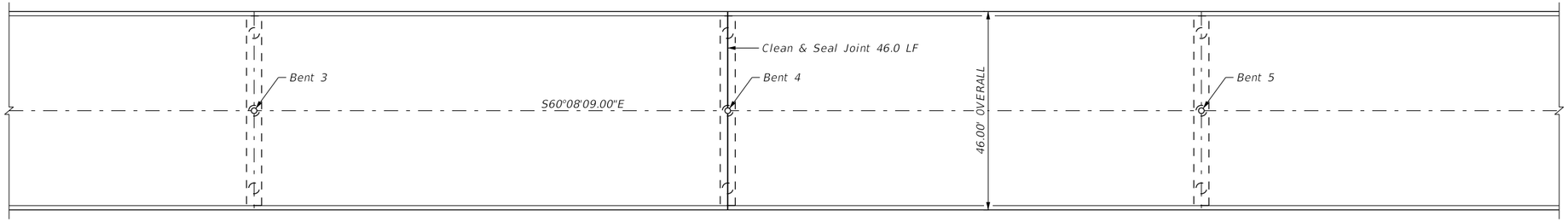

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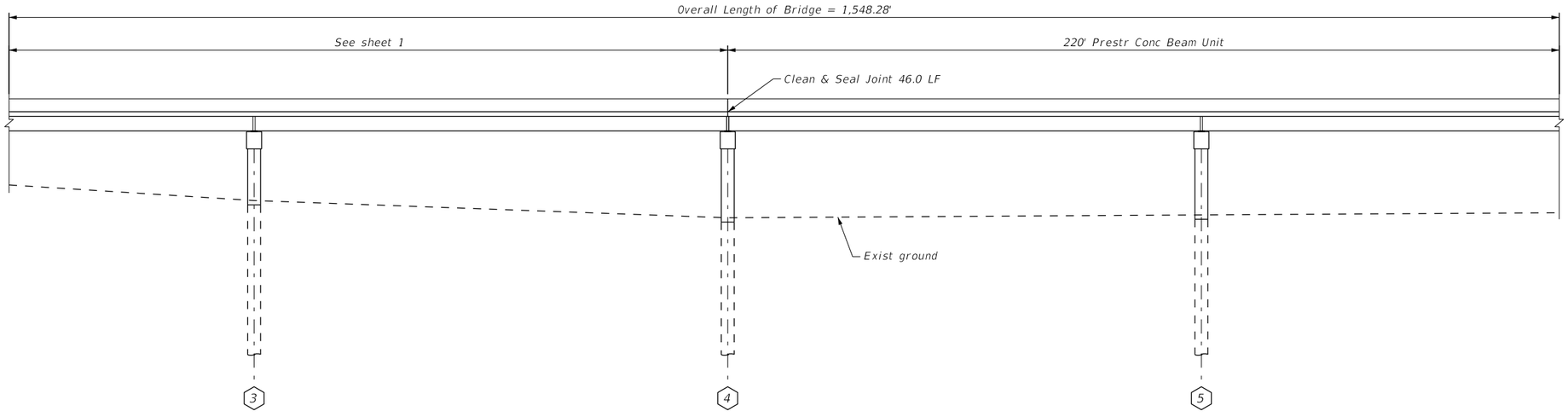

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FM 734 EB over South Brushy Creek
Bridge Layout

SHEET 2 OF 5

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	44
CHECKED: DNP	6464	87	001	

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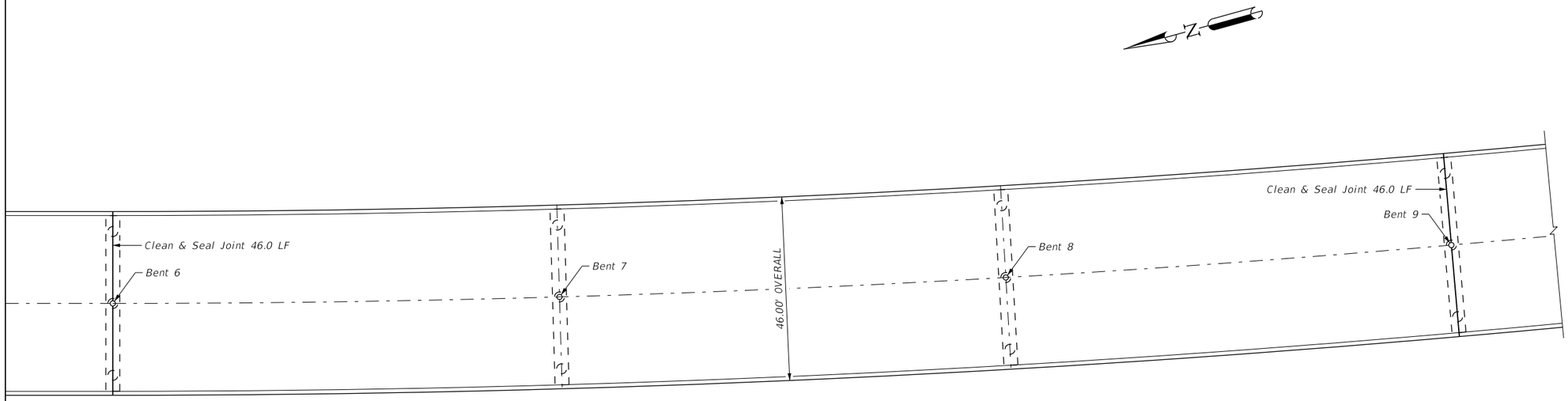

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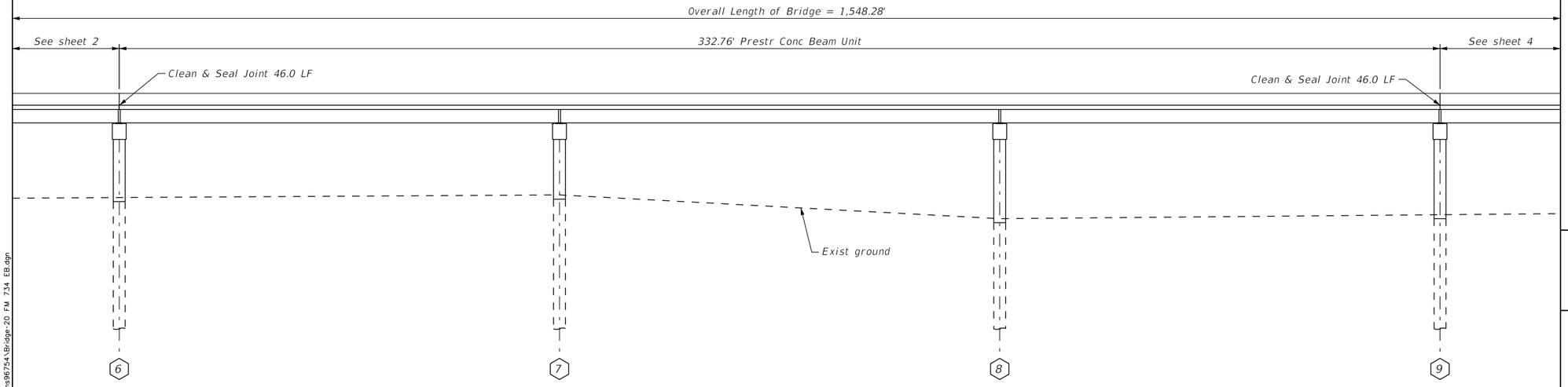

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FM 734 EB over South Brushy Creek
Bridge Layout

SHEET 3 OF 5

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	45
CHECKED: DNP	6464	87	001	

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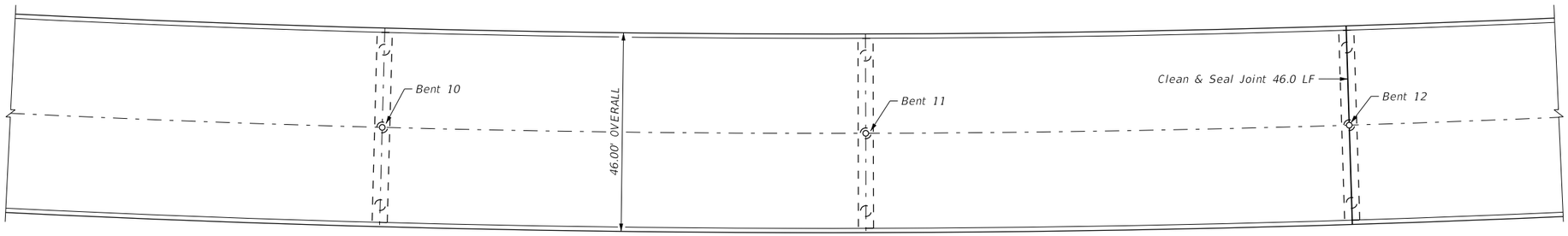

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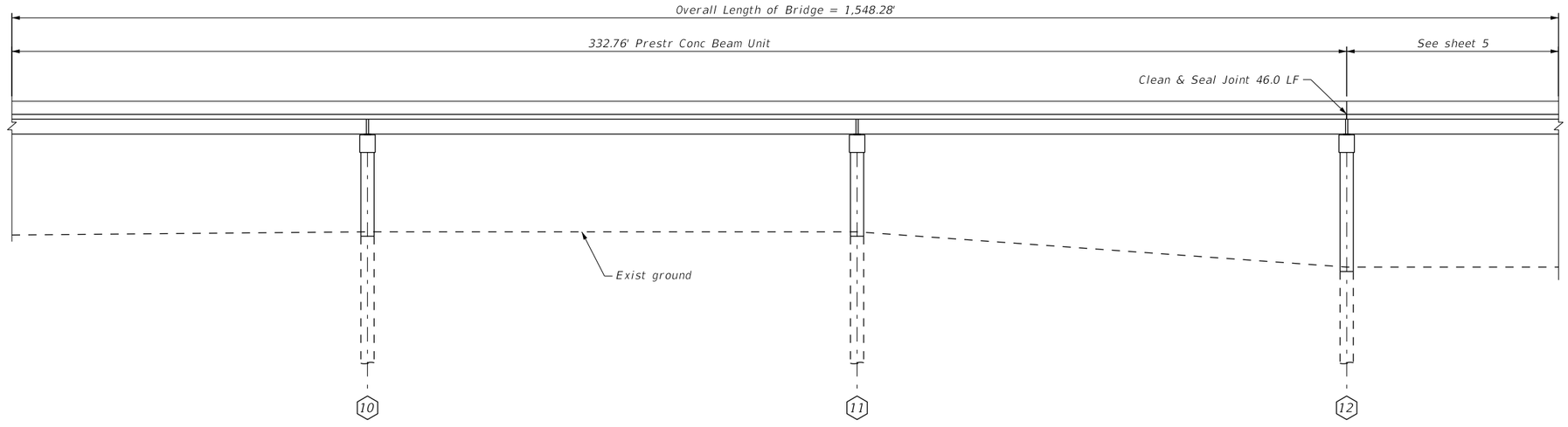

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FM 734 EB over South Brushy Creek

Bridge Layout

SHEET 4 OF 5

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	46
CHECKED: DNP	6464	87	001	

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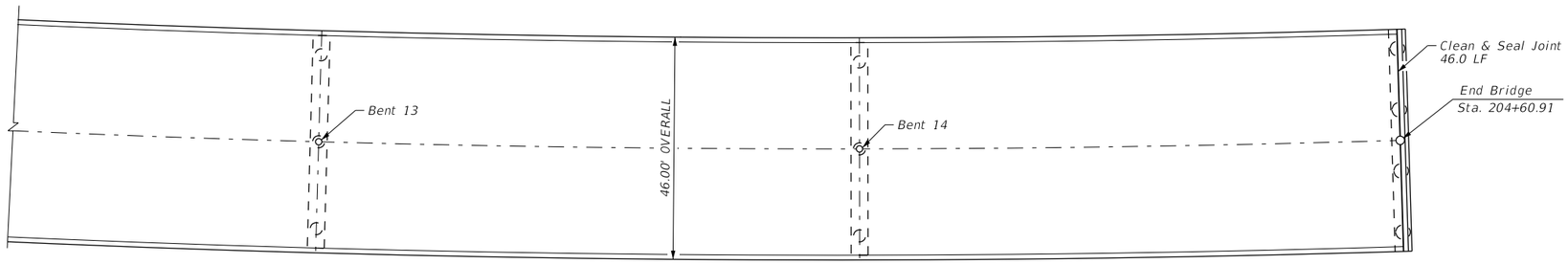

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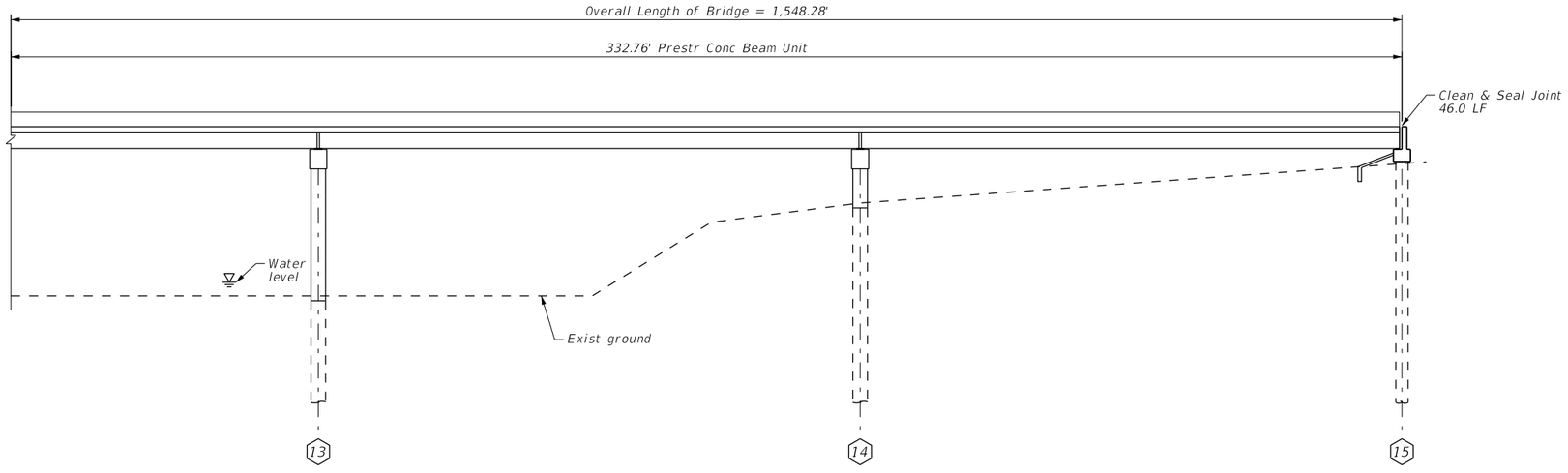

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FM 734 EB over South Brushy Creek

Bridge Layout

SHEET 5 OF 5

FED. RD. DIV. NO.		PROJECT NO.		HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	47
CHECKED: DNP	6464	87	001	

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GENERAL REQUIREMENTS:

NOTES:

1. INSTALL ALL TRAFFIC CONTROL DEVICES AND ADVANCE WARNING SIGNS IN ACCORDANCE WITH THE TXDOT BARRICADE AND CONSTRUCTION (BC(1-12)-21) STANDARDS,TRAFFIC CONTROL PLAN (TCP(2-(1-8)) STANDARDS, AND THE LATEST EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

2. PLACE ALL TEMPORARY STORM WATER POLLUTION PREVENTION PLAN (SWP3) DEVICES AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. MAINTAIN ALL EROSION CONTROL DEVICES AND RELOCATE AS REQUIRED THROUGHOUT CONSTRUCTION.

3. LOCATE ALL UTILITIES WITHIN THE WORKZONE.

4. APPLY TXDOT TRAFFIC CONTROL PLAN (TCP) AND WORK ZONE (WZ) STANDARDS FOR TRAFFIC CONTROL ASREQUIRED. ALL TRAFFIC OPERATIONS MUST BE APPROVED BY THE ENGINEER.

5. REFER TO GENERAL NOTES FOR MORE INFORMATION.

6. REMOVE ALL TEMPORARY EROSION CONTROL DEVICES AFTER CONSTRUCTION IS COMPLETE.

7. PERFORM FINAL CLEAN UP OF WORK AREA AND REMOVE ANY CONSTRUCTION MATERIAL AND TRAFFIC CONTROL DEVICES.

8. PERFORM ALL CONSTRUCTION DURING NIGHT TIME OPERATIONS.

9. RELOCATE CHANGEABLE MESSAGE SIGNS TO EACH LOCATION AS NEEDED. RELOCATION COST IS SUBSIDIARY TO BID ITEM 6001-6002 UNDER THIS CONTRACT.

FM 734 EB (PARMER) OVER SOUTH BRUSHY CREEK

NOTES:

1. COMPLY WITH ALL GENERAL REQUIREMENTS NOTES.

2. CLOSE ONE HALF OF FM 734 EB AT A TIME IN ACCORDANCE WITH STANDARD TCP (2-4b)-18.

3. KEEP MINIMUM ONE LANE IN EACH DIRECTION ON FM 734 EB OPEN AT ALL TIMES.

4. SHOULDERS MAY BE UTILIZED ON FM 734 EB TO DIVERT TRAFFIC FROM WORKZONE.

5. USE ITEM TCP-2 TO DELINEATE LANES IN CONJUNCTION WITH CHANNELIZING DEVICES.

WORKZONE TCP QUANTITIES THIS SHEET

LOCATION	TCP-1	TCP-2	TCP-3
	0502-6001	6185-6002	7052-6043
	BARRICADES, SIGNS AND TRAFFIC HANDLING	TMA (STATIONARY)	LANE CLOSURE (SETUP AND REMOV)(TY 2)
	MO	DAY	EA
FM 734 EB (PARMER) OVER SOUTH BRUSHY CREEK	1	12	2
PROJECT TOTALS	**1**	**12**	**2**

STATE OF TEXAS
RUSSELL P KUDELA
150880
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FM 734 EB (PARMER) OVER SOUTH BRUSHY CREEK

TCP NARRATIVE & QUANTITIES

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.
DESIGNED: DW	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: RK	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: DW	CONT.	SECT.	JOB	48
CHECKED: RK	6464	87	001	

9:21:07 AM 5/22/2024
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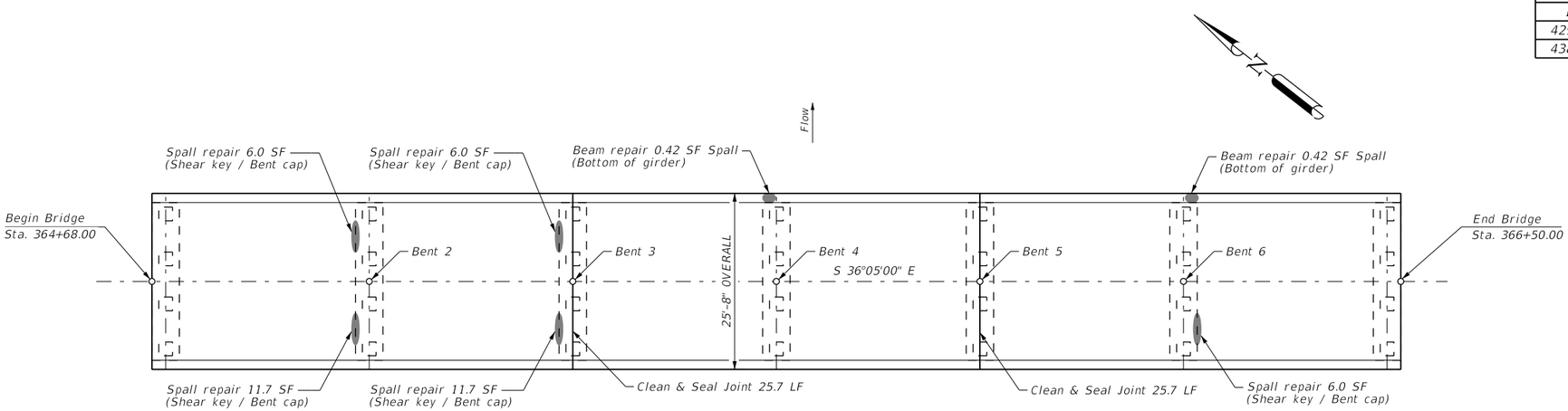
TABLE OF ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
429 6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	42.2	SF
438 6002	CLEANING AND SEALING EXISTING JOINTS (CL3)	52.0	LF



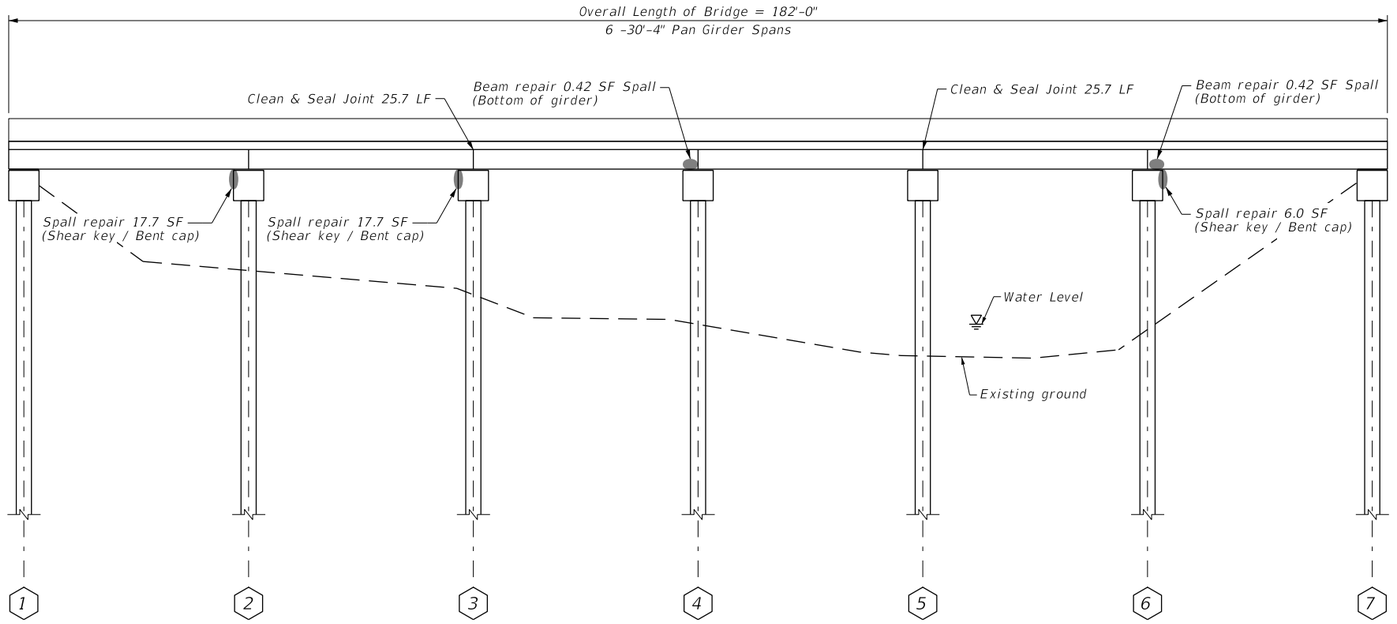
PLAN

GENERAL NOTES

Contractor must verify repair locations and quantities prior to commencing work. Any discrepancies between repair plans and existing field conditions must to communicated to the Engineer immediately.

Refer to Cleaning and Sealing Existing Bridge Joints (Pan Girder Bridges) sheets, Joint W/ Hot-Poured Rubber Seal & Detail "B".

Refer to Spall Repair Details sheet.



ELEVATION

NBI: 14-144-0-1564-02-011

STATE OF TEXAS
DAVID N. PRETORIUS
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FM 1697 over
Cedar Creek
Bridge Layout

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	49
CHECKED: DNP	6464	87	001	

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GENERAL REQUIREMENTS:

NOTES:

1. INSTALL ALL TRAFFIC CONTROL DEVICES AND ADVANCE WARNING SIGNS IN ACCORDANCE WITH THE TXDOT BARRICADE AND CONSTRUCTION (BC(1-12)-21) STANDARDS,TRAFFIC CONTROL PLAN (TCP(2-(1-8)) STANDARDS, AND THE LATEST EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

2. PLACE ALL TEMPORARY STORM WATER POLLUTION PREVENTION PLAN (SWP3) DEVICES AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. MAINTAIN ALL EROSION CONTROL DEVICES AND RELOCATE AS REQUIRED THROUGHOUT CONSTRUCTION.

3. LOCATE ALL UTILITIES WITHIN THE WORKZONE.

4. APPLY TXDOT TRAFFIC CONTROL PLAN (TCP) AND WORK ZONE (WZ) STANDARDS FOR TRAFFIC CONTROL ASREQUIRED. ALL TRAFFIC OPERATIONS MUST BE APPROVED BY THE ENGINEER.

5. REFER TO GENERAL NOTES FOR MORE INFORMATION.

6. REMOVE ALL TEMPORARY EROSION CONTROL DEVICES AFTER CONSTRUCTION IS COMPLETE.

7. PERFORM FINAL CLEAN UP OF WORK AREA AND REMOVE ANY CONSTRUCTION MATERIAL AND TRAFFIC CONTROL DEVICES.

8. RELOCATE CHANGEABLE MESSAGE SIGNS TO EACH LOCATION AS NEEDED. RELOCATION COST IS SUBSIDIARY TO BID ITEM 6001-6002 UNDER THIS CONTRACT.

FM 1697 OVER CEDAR CREEK

NOTES:

1. COMPLY WITH ALL GENERAL REQUIREMENTS NOTES.

2. CLOSE ONE HALF OF FM 1697 AT A TIME IN ACCORDANCE WITH STANDARD TCP (2-2)-18.

3. KEEP MINIMUM ONE LANE ONFM 1697 OPEN AT ALL TIMES.

4. 2-WAY TRAFFIC ON SINGLE LANE.

5. USE ITEM TCP-2 TO DELINEATE LANES IN CONJUNCTION WITH CHANNELIZING DEVICES.

WORKZONE TCP QUANTITIES THIS SHEET			
LOCATION	TCP-1	TCP-2	TCP-3
	0502-6001	6185-6002	7052-6042
	BARRICADES, SIGNS AND TRAFFIC HANDLING	TMA (STATIONARY)	LANE CLOSURE (SETUP AND REMOV)(TY 1)
	MO	DAY	EA
FM 1697 OVER CEDAR CREEK	1	4	2
PROJECT TOTALS	**1**	**4**	**2**

STATE OF TEXAS
RUSSELL P KUDELA
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FM 1697 OVER
CEDAR CREEK

TCP NARRATIVE & QUANTITIES

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.
DESIGNED: DW	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: RK	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: DW	CONT.	SECT.	JOB	50
CHECKED: RK	6464	87	001	

9:23:17 AM 5/22/2024
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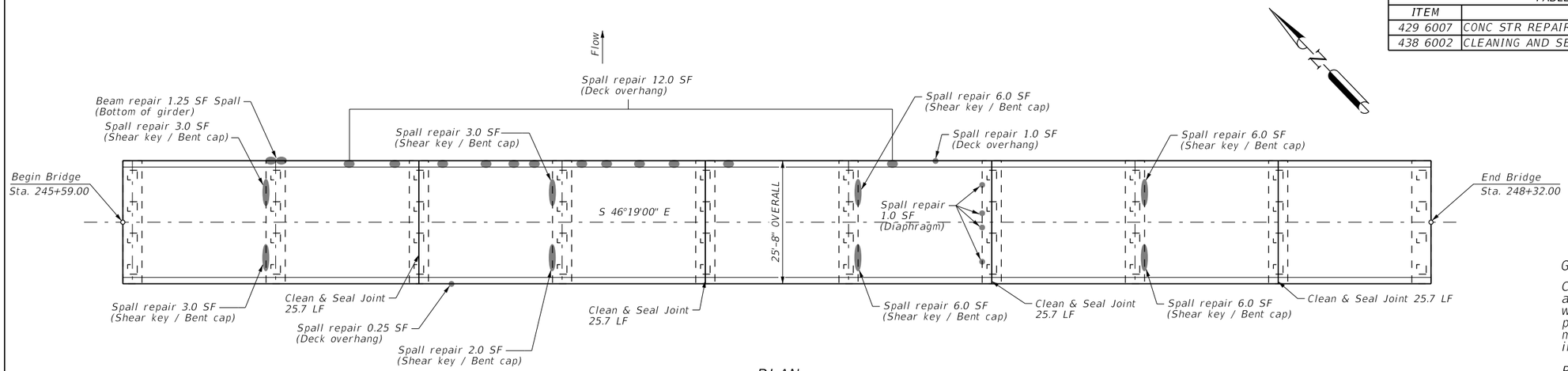
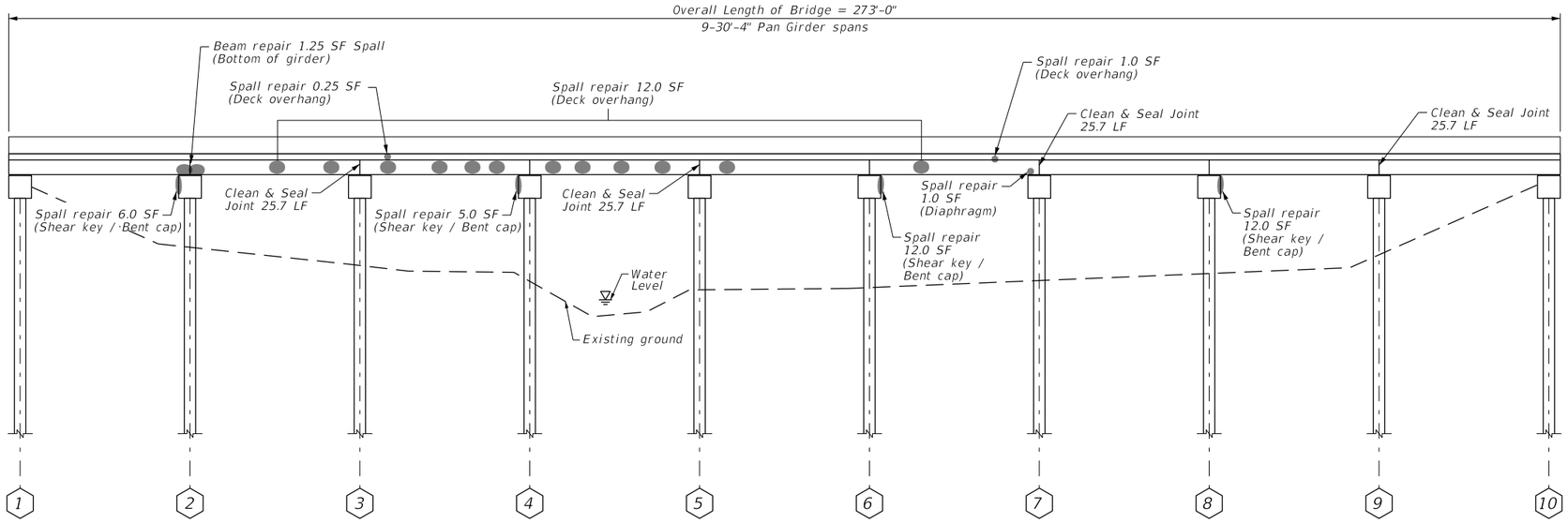
TABLE OF ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
429 6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	48.9	SF
438 6002	CLEANING AND SEALING EXISTING JOINTS (CL3)	102.8	LF



PLAN



ELEVATION

GENERAL NOTES

Contractor must verify repair locations and quantities prior to commencing work. Any discrepancies between repair plans and existing field conditions must to communicated to the Engineer immediately.

Refer to Cleaning and Sealing Existing Bridge Joints (Pan Girder Bridges) sheets, Joint W/ Hot-Poured Rubber Seal & Detail "B".

Existing Structure number is missing or illegible. Include a new Structure Number, see "PAINTING STRUCTURE NUMBERS (PSN-19 (AUS)(MOD))" standard sheet for more information.

Refer to Spall Repair Details sheet.

NBI: 14-144-0-1564-02-009

STATE OF TEXAS
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5.22.2024

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FM 1697 over
Nails Creek
Bridge Layout

FED. RD. DIV. NO.	PROJECT NO.			HIGHWAY NO.
				FM 1697, ETC.
DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	51
CHECKED: DNP	6464	87	001	

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GENERAL REQUIREMENTS:

NOTES:

1. INSTALL ALL TRAFFIC CONTROL DEVICES AND ADVANCE WARNING SIGNS IN ACCORDANCE WITH THE TXDOT BARRICADE AND CONSTRUCTION (BC(1-12)-21) STANDARDS,TRAFFIC CONTROL PLAN (TCP(2-(1-8)) STANDARDS, AND THE LATEST EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

2. PLACE ALL TEMPORARY STORM WATER POLLUTION PREVENTION PLAN (SWP3) DEVICES AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. MAINTAIN ALL EROSION CONTROL DEVICES AND RELOCATE AS REQUIRED THROUGHOUT CONSTRUCTION.

3. LOCATE ALL UTILITIES WITHIN THE WORKZONE.

4. APPLY TXDOT TRAFFIC CONTROL PLAN (TCP) AND WORK ZONE (WZ) STANDARDS FOR TRAFFIC CONTROL ASREQUIRED. ALL TRAFFIC OPERATIONS MUST BE APPROVED BY THE ENGINEER.

5. REFER TO GENERAL NOTES FOR MORE INFORMATION.

6. REMOVE ALL TEMPORARY EROSION CONTROL DEVICES AFTER CONSTRUCTION IS COMPLETE.

7. PERFORM FINAL CLEAN UP OF WORK AREA AND REMOVE ANY CONSTRUCTION MATERIAL AND TRAFFIC CONTROL DEVICES.

8. RELOCATE CHANGEABLE MESSAGE SIGNS TO EACH LOCATION AS NEEDED. RELOCATION COST IS SUBSIDIARY TO BID ITEM 6001-6002 UNDER THIS CONTRACT.

FM 1697 OVER NAILS CREEK

NOTES:

1. COMPLY WITH ALL GENERAL REQUIREMENTS NOTES.

2. CLOSE ONE HALF OF FM 1697 AT A TIME IN ACCORDANCE WITH STANDARD TCP (2-2)-18.

3. KEEP MINIMUM ONE LANE ONFM 1697 OPEN AT ALL TIMES.

4. ONE LANE TWO-WAY CONTROL WITH FLAGGERS.

5. USE ITEM TCP-2 TO DELINEATE LANES IN CONJUNCTION WITH CHANNELIZING DEVICES.

WORKZONE TCP QUANTITIES THIS SHEET

LOCATION	TCP-1	TCP-2	TCP-3
	0502-6001	6185-6002	7052-6042
	BARRICADES, SIGNS AND TRAFFIC HANDLING	TMA (STATIONARY)	LANE CLOSURE (SETUP AND REMOV)(TY 1)
	MO	DAY	EA
FM 1697 OVER NAILS CREEK	1	8	2
PROJECT TOTALS	**1**	**8**	**2**

STATE OF TEXAS
RUSSELL P KUDELA
150880
LICENSED
PROFESSIONAL ENGINEER
5/22/2024

LJA ENGINEERING, INC
FRN - F-1386

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FM 1697 OVER
NAILS CREEK

TCP NARRATIVE & QUANTITIES

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DW	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: RK	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: DW	CONT.	SECT.	JOB	52
CHECKED: RK	6464	87	001	

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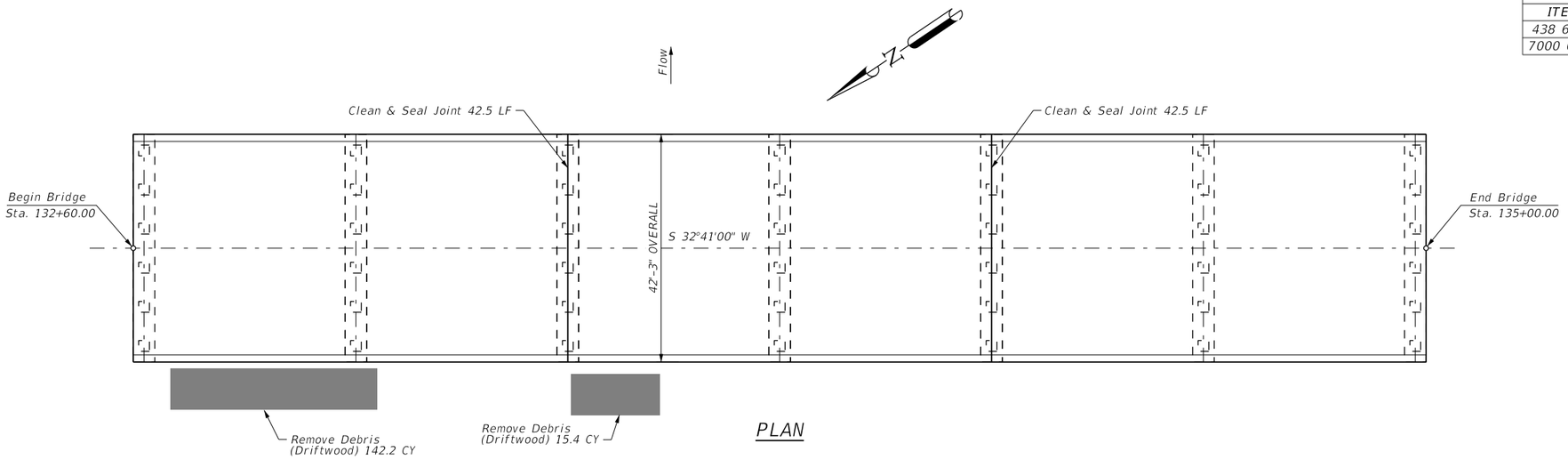
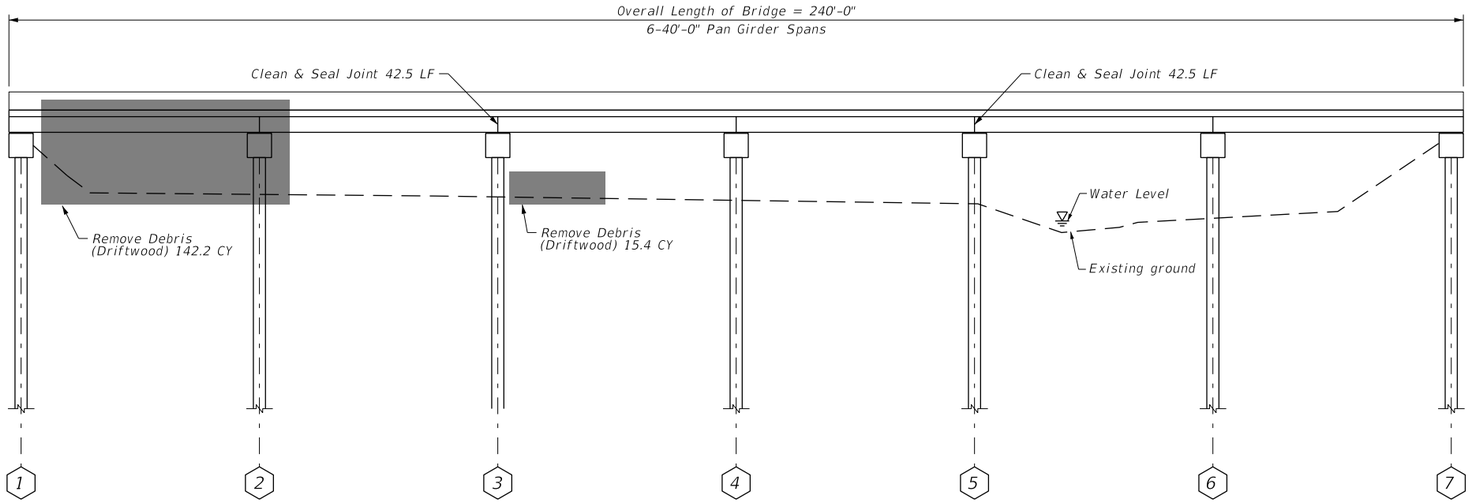
TABLE OF ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
438 6002	CLEANING AND SEALING EXISTING JOINTS (CL3)	85.0	LF
7000 6001	REML & DISPL DRIFTWOOD & DEBRIS	157.7	CY



PLAN



ELEVATION

GENERAL NOTES

Contractor must verify repair locations and quantities prior to commencing work. Any discrepancies between repair plans and existing field conditions must to communicated to the Engineer immediately.

Existing Structure number is missing or illegible. Include a new Structure Number, see "PAINTING STRUCTURE NUMBERS (PSN-19 (AUS)(MOD))" standard sheet for more information.

Refer to Cleaning and Sealing Existing Bridge Joints (Pan Girder Bridges) sheets, Joint W/ Hot-Poured Rubber Seal & Detail "B".

NBI: 14-144-0-0334-06-047

STATE OF TEXAS
DAVID N. PRETORIUS
130358
LICENSED
PROFESSIONAL ENGINEER
5.22.2024

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FRN - F-1386

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FM 448 over
Rabbs Creek
Bridge Layout

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.
DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	53
CHECKED: DNP	6464	87	001	

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GENERAL REQUIREMENTS:

NOTES:

1. INSTALL ALL TRAFFIC CONTROL DEVICES AND ADVANCE WARNING SIGNS IN ACCORDANCE WITH THE TXDOT BARRICADE AND CONSTRUCTION (BC(1-12)-21) STANDARDS,TRAFFIC CONTROL PLAN (TCP(2-(1-8)) STANDARDS, AND THE LATEST EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

2. PLACE ALL TEMPORARY STORM WATER POLLUTION PREVENTION PLAN (SWP3) DEVICES AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. MAINTAIN ALL EROSION CONTROL DEVICES AND RELOCATE AS REQUIRED THROUGHOUT CONSTRUCTION.

3. LOCATE ALL UTILITIES WITHIN THE WORKZONE.

4. APPLY TXDOT TRAFFIC CONTROL PLAN (TCP) AND WORK ZONE (WZ) STANDARDS FOR TRAFFIC CONTROL ASREQUIRED. ALL TRAFFIC OPERATIONS MUST BE APPROVED BY THE ENGINEER.

5. REFER TO GENERAL NOTES FOR MORE INFORMATION.

6. REMOVE ALL TEMPORARY EROSION CONTROL DEVICES AFTER CONSTRUCTION IS COMPLETE.

7. PERFORM FINAL CLEAN UP OF WORK AREA AND REMOVE ANY CONSTRUCTION MATERIAL AND TRAFFIC CONTROL DEVICES.

8. RELOCATE CHANGEABLE MESSAGE SIGNS TO EACH LOCATION AS NEEDED. RELOCATION COST IS SUBSIDIARY TO BID ITEM 6001-6002 UNDER THIS CONTRACT.

FM 448 OVER RABBS CREEK

NOTES:

1. COMPLY WITH ALL GENERAL REQUIREMENTS NOTES.

2. CLOSE ONE HALF OF FM 448 AT A TIME IN ACCORDANCE WITH STANDARD TCP (2-2)-18.

3. KEEP MINIMUM ONE LANE ONFM 448 OPEN AT ALL TIMES.

4. ONE LANE TWO-WAY CONTROL WITH FLAGGERS.

5. USE ITEM TCP-2 TO DELINEATE LANES IN CONJUNCTION WITH CHANNELIZING DEVICES.

WORKZONE TCP QUANTITIES THIS SHEET

LOCATION	TCP-1	TCP-2	TCP-3
	0502-6001	6185-6002	7052-6043
	BARRICADES, SIGNS AND TRAFFIC HANDLING	TMA (STATIONARY)	LANE CLOSURE (SETUP AND REMOV)(TY 2)
	MO	DAY	EA
FM 448 OVER RABBS CREEK	1	4	2
PROJECT TOTALS	**1**	**4**	**2**

STATE OF TEXAS
RUSSELL P KUDELA
150880
LICENSED
PROFESSIONAL ENGINEER
5/22/2024

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FM 448 OVER
RABBS CREEK

TCP NARRATIVE & QUANTITIES

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DW	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: RK	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: DW	CONT.	SECT.	JOB	54
CHECKED: RK	6464	87	001	

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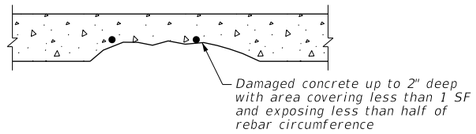
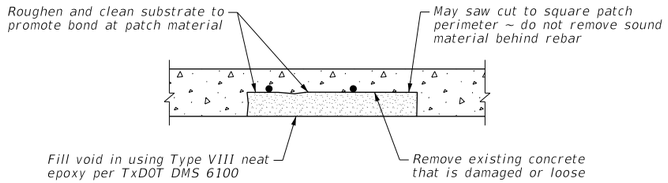


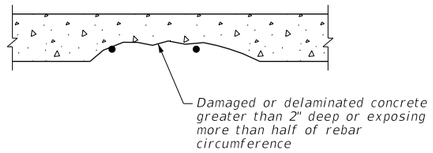
STEP 1 – DAMAGE CONDITION



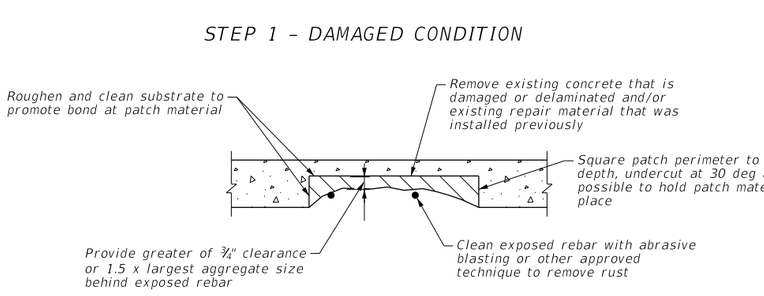
STEP 2 – EXCAVATION, PREPARATION AND PATCH

MINOR SPALL REPAIR DETAIL

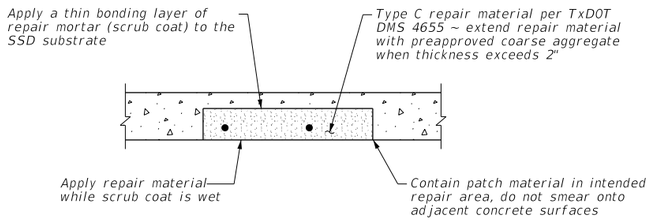
(TxDOT Concrete Repair Manual Section 3.1)



STEP 1 – DAMAGED CONDITION



STEP 2 – EXCAVATION AND PREPARATION

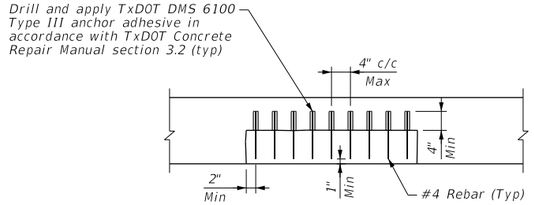


STEP 3 – PATCH DAMAGED AREA

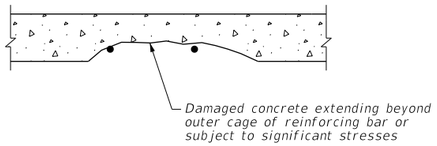
MINOR SPALL REPAIR DETAIL

(TxDOT Concrete Repair Manual Section 3.2)

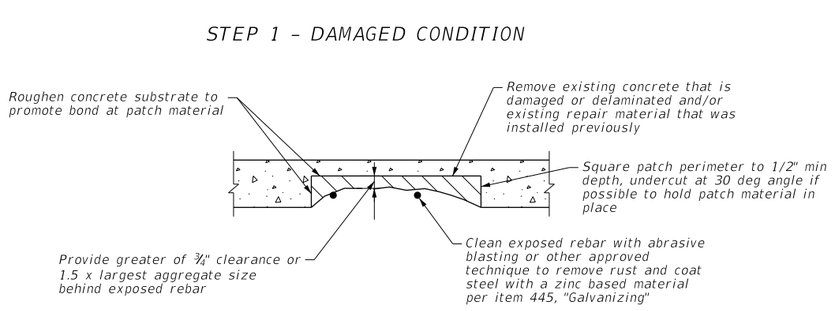
If batched concrete is selected as the repair material, follow the provisions of TxDOT Concrete Repair Manual Section 3.3



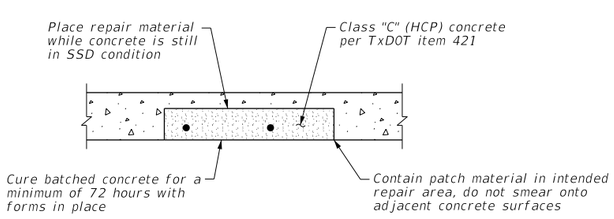
MECHANICAL TIE DETAIL



STEP 1 – DAMAGED CONDITION



STEP 2 – EXCAVATION AND PREPARATION



STEP 3 – PATCH DAMAGED AREA

MAJOR SPALL REPAIR DETAIL

(TxDOT Concrete Repair Manual Section 3.3)

Remove aggregate larger than 3/4" from Class "C" (HPC) concrete mix design when repair thickness will be less than 3" over a significant portion of the damaged area

REPAIR NOTES

Perform repair in accordance with TxDOT item 429, "Concrete structure repair", and the TxDOT Concrete Repair Manual, 2021. In addition to details shown on this sheet, the manual includes criteria for application, surface preparation, forms, and curing.

Contractor to submit all materials and methods of application for approval.

Contractor to provide compressive strength testing of Type C repair material and Class "C" (HPC) concrete.

Apply mechanical tie detail in the event existing rebar is corroded to the point of not sufficiently anchoring intermediate and major spall repair material to the substrate.

STATE OF TEXAS
DAVID N. PRETORIUS
130358
LICENSED PROFESSIONAL ENGINEER
5.06.2024

LJA Engineering, Inc.
FRN - F-1386

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Spall Repair Details

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
			FM 1697, ETC.

DESIGNED: DNP	STATE	STATE DIST. NO.	COUNTY	SHEET NO.
CHECKED: WO	TEXAS	AUSTIN	LEE, ETC.	
DRAWN: MS	CONT.	SECT.	JOB	55
CHECKED: DNP	6464	87	001	

5/6/2024 9:35:09 AM c:\workingdir\ljapw.bentley.com_ljapw01\marcos.silva\dms97986\CSJ 6464-87-001_Common_Repair_DETAILS.dgn

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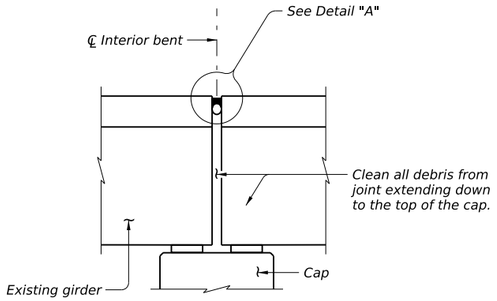
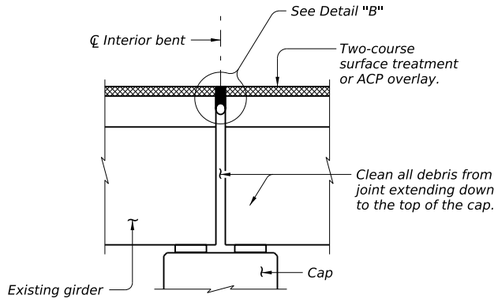


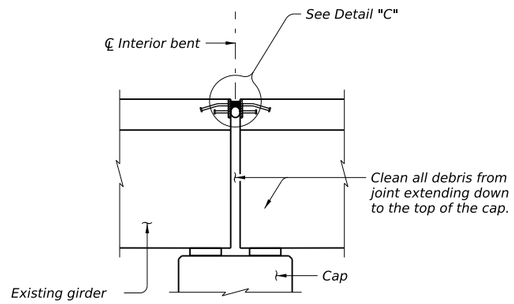
JOINT WITH SILICONE SEAL

(Used without ACP overlay)



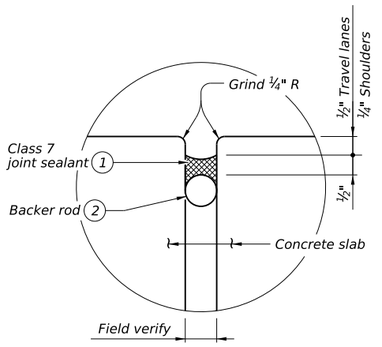
JOINT W/ HOT-POURED RUBBER SEAL

(Used with ACP overlay)

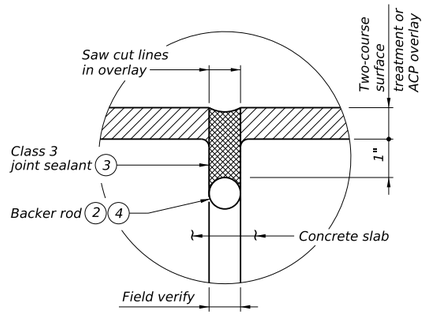


ARMOR JOINT

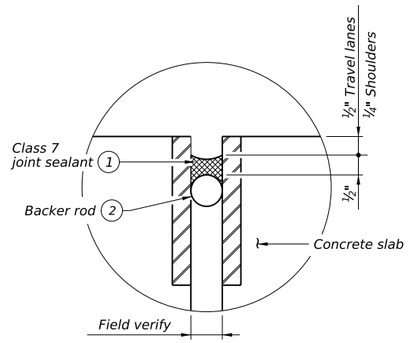
(Used without ACP overlay)



DETAIL "A"



DETAIL "B"



DETAIL "C"

(Stud anchors not shown for clarity.)

1. Use Class 7 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers." Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."
2. Provide backer rod 25% larger than joint opening and compatible with the sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.
3. Use Class 3 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers". Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."
4. Backer rod must be compatible with the hot poured rubber sealant and rated for a minimum of 400°F.

PROCEDURE FOR CLEANING AND SEALING EXISTING JOINT WITH SILICONE SEAL:

1) Clean joint opening of all existing 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. When sealing joints for slab spans, slab beam spans, or box beam spans, fill void below backer rod with extruded polystyrene foam before placing backer rod.

4) Seal the joint opening with a Class 7 joint sealant. Recess seal ½" below top of concrete in travel lanes and ¼" below top of concrete in shoulders.

PROCEDURE FOR CLEANING AND SEALING EXISTING JOINT WITH HOT-POURED RUBBER SEAL:

1) Saw cut through the asphalt at the centerline of joint. Make multiple saw cuts to create a ½" 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." 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. When sealing joints for slab spans, slab beam spans, or box beam spans, fill void below backer rod with extruded polystyrene foam before placing backer rod.

4) Seal the joint opening with a Class 3 joint sealant. Seal flush to the top of the asphaltic concrete pavement.

PROCEDURE FOR CLEANING AND SEALING EXISTING ARMOR JOINTS:

1) Remove existing seal, if present. Clean joint opening of all dirt and other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints." Clean joint out full depth of the joint.

2) Abrasive blast clean existing steel surface 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. When sealing joints for slab spans, slab beam spans, or box beam spans, fill void below backer rod with extruded polystyrene foam before placing backer rod.

5) Seal the joint opening with a Class 7 joint sealant. Recess seal ½" below top of concrete in travel lanes and ¼" below top of concrete in shoulders.

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 to clean and seal the joint.

Provide Class 3 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers" for joints in asphalt overlay.

Provide Class 7 joint 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 joint sealant cannot be effectively placed in the vertical position, a Class 4 joint sealant compatible with the Class 7 joint 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.

LJA Engineering, Inc.
FRN - F-1386

Texas Department of Transportation

Bridge Division

CLEANING AND SEALING EXISTING BRIDGE JOINTS

FILE: WD-CSBJ-24.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS	6464	87	001	FM 1697, ETC.
	DIST	COUNTY		SHEET NO.
	AUS	LEE, ETC.		56

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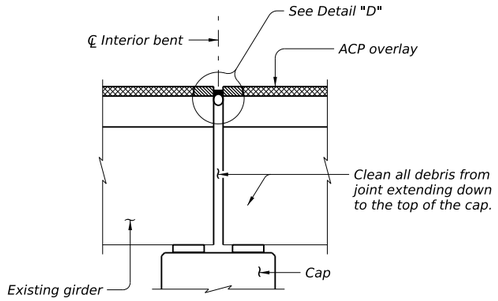
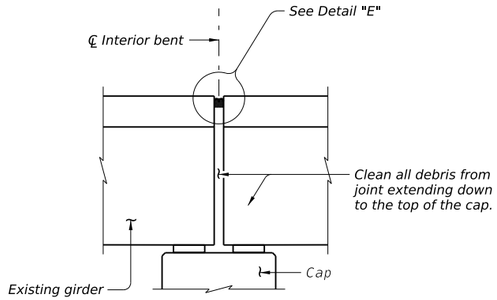


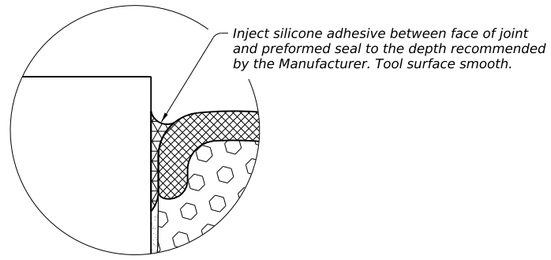
HEADER JOINT WITH SILICONE SEAL

(Used with ACP overlay)

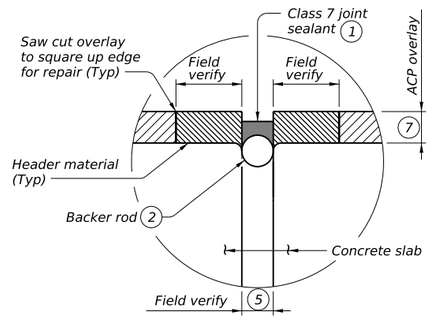


JOINT WITH PRECOMPRESSED FOAM AND SILICONE SEAL

(Used without ACP overlay)



SILICONE INJECTION



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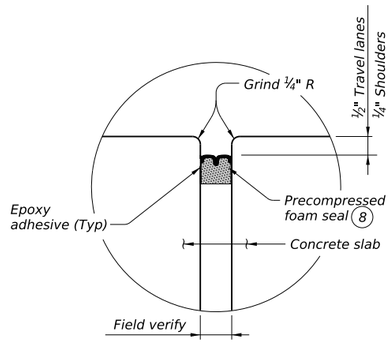

DETAIL "E"

PROCEDURE FOR CLEANING AND SEALING HEADER JOINT WITH SILICONE SEAL AND HEADER JOINT REPAIR (6)

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."

2) Saw cut and remove damaged portions of existing header material to neat lines. Repair deck joint spalls greater than 2" deep in accordance with Item 785, "Bridge Joint Repair or Replacement." Shallower spalls may be filled with header material.

3) Clean the voided region of all materials that could inhibit the bond between header material and concrete or steel.

4) Form the joint opening to the required width and place header material to fill voided region. Repair header material in accordance with Item 785, "Bridge Joint Repair or Replacement."

5) Place backer rod into joint opening 1" below the top of header material. When sealing joints for slab spans, slab beam spans, or box beam spans, fill void below backer rod with extruded polystyrene foam before placing backer rod.

6) Seal the joint opening with a Class 7 joint sealant. Recess seal ½" below top of header in travel lanes and ¼" below top of header in shoulders.

PROCEDURE FOR CLEANING AND SEALING JOINT WITH PRECOMPRESSED FOAM AND 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." When sealing joints for slab spans, slab beam spans, pan girder spans, or box beam spans, fill void below proposed seal with extruded polystyrene foam.

2) Correctly size joint seal based on field measurement and in accordance with Manufacturer's specifications. Multiple seal widths may be required. Ensure proper seal is selected for each joint.

3) Abrasive blast clean existing joint surfaces where seal is to be applied.

4) Wipe down joint surfaces to remove contaminants.

5) Mask areas adjacent to joint opening sufficiently to keep epoxy off deck surface.

6) Apply epoxy to joint opening side surfaces.

7) While epoxy is still tacky, remove shrink wrap from seal and install in joint opening.

8) Recess top of joint seal ½" in travel lanes and ¼" in shoulders.

9) Inject silicone adhesive along top interface of seal with joint side surface according to Manufacturer's recommendations. Tool to spread adhesive as necessary. See Silicone Injection detail.

(1) Use Class 7 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers." Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."

(2) Provide backer rod 25% larger than joint opening and compatible with the sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.

(5) Match existing joint opening or set at a minimum:
- a. 1" at 70°F when the distance between joints is 150 ft or less
- b. 2" at 70°F when the distance between joints is greater than 150 ft.
- c. As directed by the Engineer.

(6) Cleaning and sealing existing header joints does not necessitate replacement of existing header material. If replacement of header material is necessary, as determined by the Engineer, use header material in accordance with DMS-6140, "Polymer Concrete for Bridge Joint Systems." Match the thickness of the header material with the thickness of the overlay as shown in the plans, but do not exceed 3". Place header material flush with roadway surface. Do not cantilever header material over the joint opening. Repair of header material will be paid for in accordance with Item 785-6006, "Bridge Joint Repair (Header)."

(7) Maximum thickness is 3".

(8) See table of Approved Precompressed Foam Seal Manufacturers on Sheet 3 of 3.

LJA Engineering, Inc.
FRN - F-1386

Texas Department of Transportation
Bridge Division

CLEANING AND SEALING EXISTING BRIDGE JOINTS

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©TxDOT February 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS	6464	87	001	FM 1697, ETC.
	DIST	COUNTY		SHEET NO.
	AUS	LEE, ETC.		57

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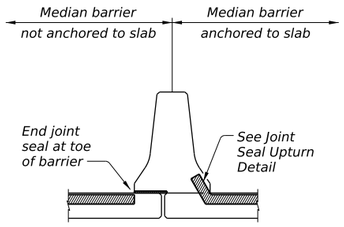
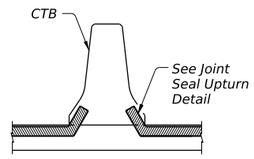
APPROVED PRECOMPRESSED FOAM SEAL MANUFACTURERS

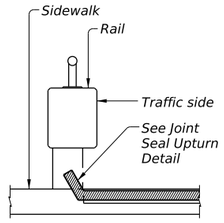
MANUFACTURER	SEAL TYPE
Watson Bowman Acme	Wabo FS
SSI	Silspec SES
Sealtite	Sealtite 50N
EMSEAL	BEJS
TuffTex	RepJoint PF-UV



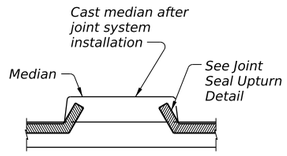
OPEN DECK JOINT BELOW MEDIAN BARRIER



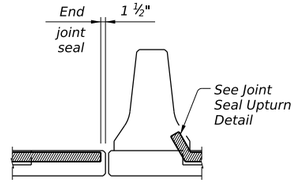
CONCRETE TRAFFIC BARRIER



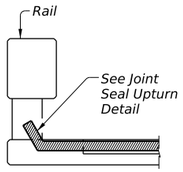
SIDEWALK BEHIND BRIDGE RAIL



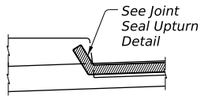
RAISED MEDIAN



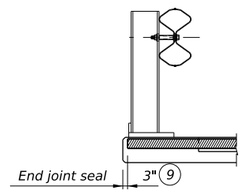
OPEN DECK JOINT ADJACENT TO MEDIAN BARRIER



CONCRETE BRIDGE RAIL



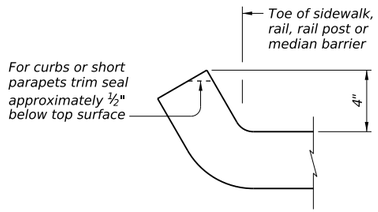
SIDEWALK



STEEL POST BRIDGE RAIL

JOINT SEALANT TERMINATION DETAILS

(9) 1 ½" for precompressed foam and silicone seal



JOINT SEAL UPTURN DETAIL

SHEET 3 OF 3

STATE OF TEXAS
DAVID N. PRETORIUS
130358
LICENSED
PROFESSIONAL ENGINEER
5.06.2024

LJA Engineering, Inc.
FRN - F-1386

Texas Department of Transportation
Bridge Division

CLEANING AND SEALING EXISTING BRIDGE JOINTS

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	DIST	COUNTY		SHEET NO.
	AUS	LEE, ETC.		58

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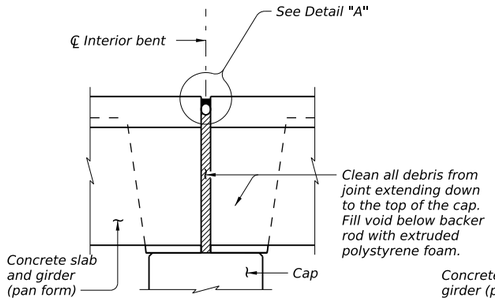
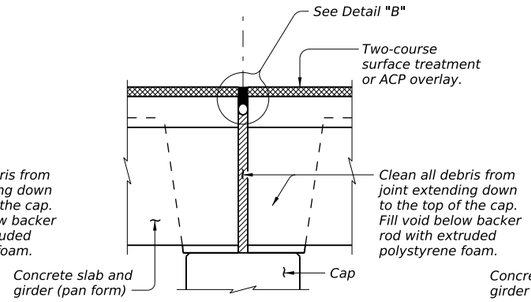


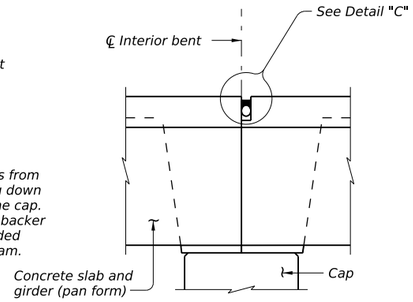
JOINT WITH SILICONE SEAL

(Used without ACP overlay)

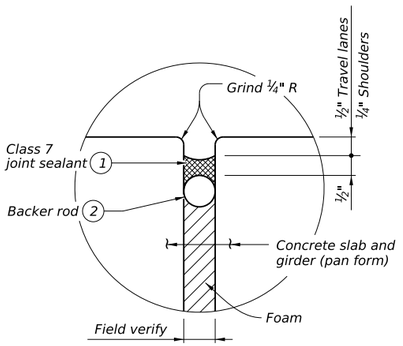


JOINT W/ HOT-POURED RUBBER SEAL

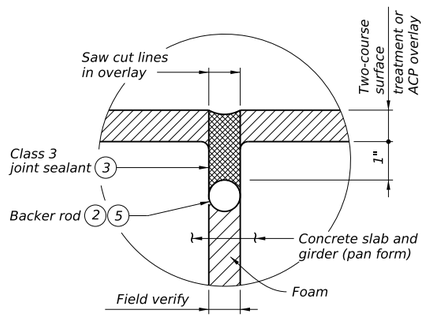
(Used with ACP overlay)



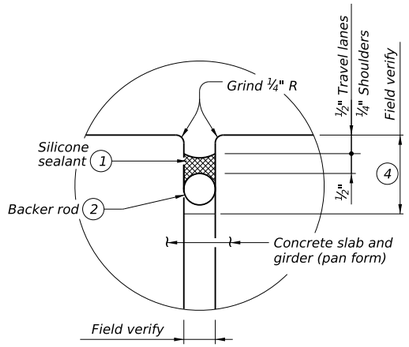
FIXED JOINT



DETAIL "A"



DETAIL "B"



DETAIL "C"

PROCEDURE FOR CLEANING AND SEALING EXISTING CONCRETE GIRDER JOINT WITH SILICONE SEAL:

1) Clean joint opening of all existing 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) Fill void with extruded polystyrene foam.

4) Place backer rod into joint opening 1" below the top of concrete.

5) Seal the joint opening with a Class 7 joint sealant. Recess seal ½" below top of concrete in travel lanes and ¼" 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 ½" 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." Clean joint out full depth of the joint.

2) Obtain approval of cleaned joint prior to proceeding with joint sealing operation.

3) Fill void with extruded polystyrene foam.

4) Place backer rod into joint opening 1" below the top of concrete.

5) Seal the joint opening with a Class 3 joint sealant. 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.

5) Seal the joint opening with a Class 7 joint sealant. Recess seal ½" below top of concrete in travel lanes and ¼" below top of concrete in shoulders.

(1) Use Class 7 joint sealant. Prepare joint and seal in accordance with Item 438, "Cleaning and Sealing Joints."

(2) Provide backer rod 25% larger than joint opening and compatible with the sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.

(3) Use Class 3 joint sealant. 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 ½".

(5) Backer rod must be compatible with the hot poured rubber sealant and rated for a minimum of 400°F.

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 to clean and seal the joint.

Provide Class 3 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers" for joints in asphalt overlay.

Provide Class 7 joint 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 joint sealant cannot be effectively placed in the vertical position, a Class 4 joint sealant compatible with the Class 7 joint 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.

STATE OF TEXAS
DAVID N. PRETORIUS
130358
PROFESSIONAL ENGINEER
5.06.2024

LJA Engineering, Inc.
FRN - F-1386

Texas Department of Transportation
Bridge Division

CLEANING AND SEALING EXISTING BRIDGE JOINTS

(PAN GIRDER BRIDGES)

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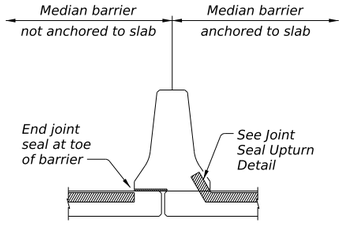
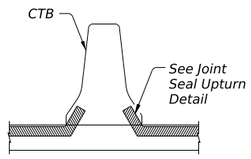
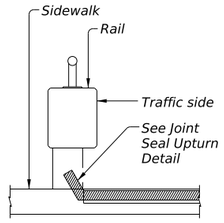


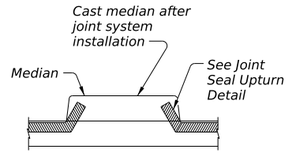
OPEN DECK JOINT
BELOW MEDIAN BARRIER



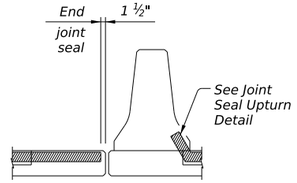
CONCRETE TRAFFIC BARRIER



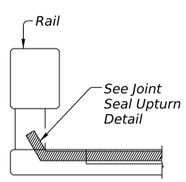
SIDEWALK
BEHIND BRIDGE RAIL



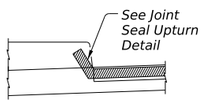
RAISED MEDIAN



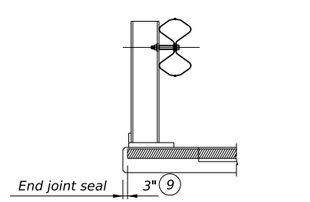
OPEN DECK JOINT
ADJACENT TO MEDIAN BARRIER



CONCRETE BRIDGE RAIL



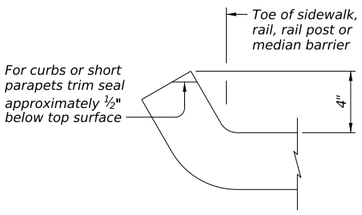
SIDEWALK



STEEL POST BRIDGE RAIL

JOINT SEALANT TERMINATION DETAILS

(9) 1 ½" for precompressed foam and silicone seal



JOINT SEAL UPTURN DETAIL

SHEET 2 OF 2

LJA Engineering, Inc.
FRN - F-1386

Texas Department of Transportation — Bridge Division

CLEANING AND SEALING EXISTING BRIDGE JOINTS

(PAN GIRDER BRIDGES)

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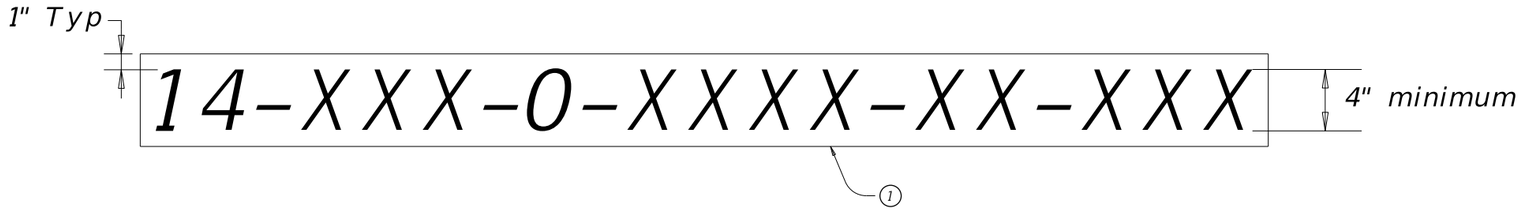
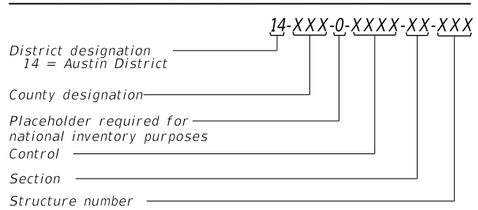
	DIST	COUNTY		SHEET NO.
	AUS	LEE, ETC.		60



(1) Painted white background, as needed. See GENERAL NOTES.

PAINTED STRUCTURE NUMBER LEGEND



011 = Bastrop
016 = Blanco
027 = Burnet
028 = Caldwell
087 = Gillespie
106 = Hays
144 = Lee
150 = Llano
157 = Mason
227 = Travis
246 = Williamson

GENERAL NOTES:

Permanently mark each structure with the painted structure number in accordance with the plans and as directed by the Engineer. Repaint faded/illegible/incorrect numbers as approved by the Engineer.

Paint a rectangular white background to cover the existing painted structure number. Once dry, paint the new structure number in black paint.

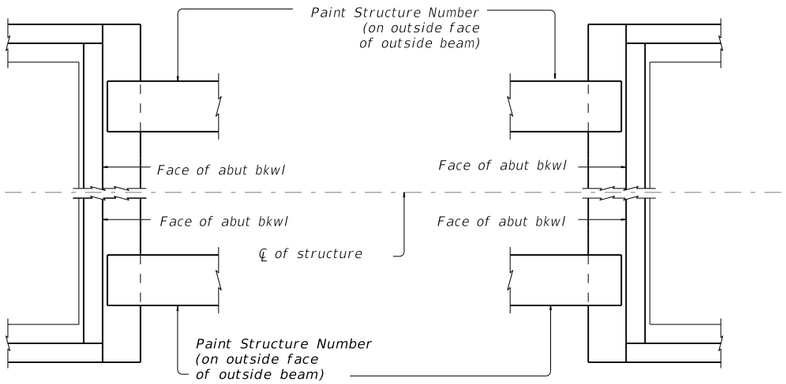
Each Structure shall have 4 (four) Structure numbers painted per structure.

Painting structure number work will not be measured or paid for directly but will be considered subsidiary to other pertinent items.

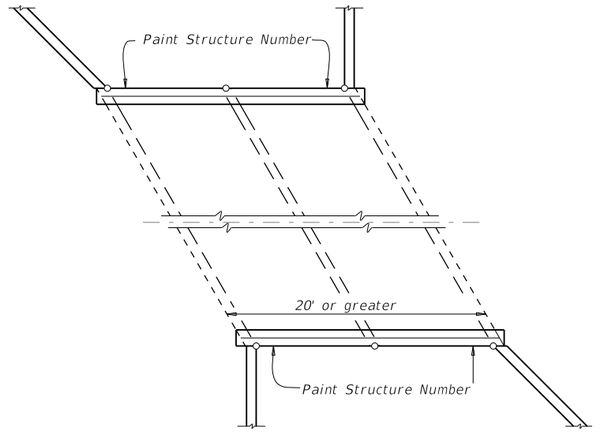
MATERIAL:

Provide black/white lead free, CFC free, and CFHC free paint that is water proof, weather resistant, and dries instantly on all surfaces without smearing, smudging, or rippling

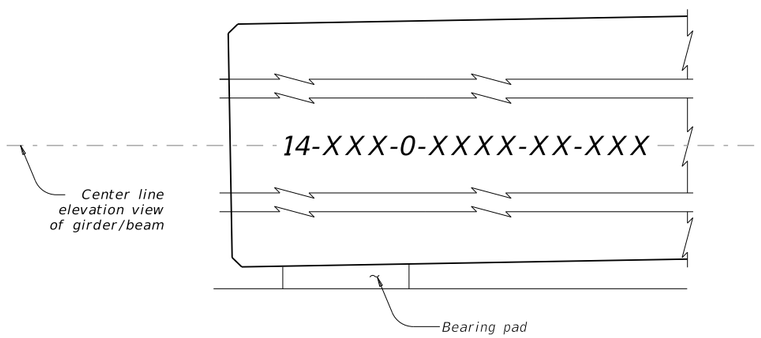
Background - White
Letters/Symbols - Black



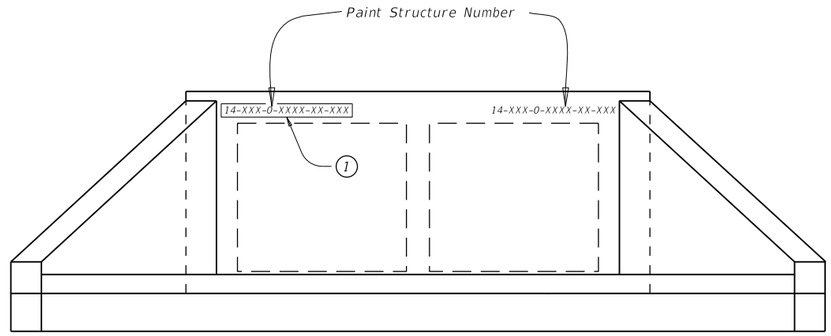
AT BRIDGE LOCATIONS



AT CULVERT LOCATIONS



ELEVATION VIEW DETAIL



ELEVATION VIEW DETAIL

STATE OF TEXAS
DAVID N. PRETORIUS
130358
LICENSED
PROFESSIONAL ENGINEER
5.06.2024

LJA Engineering, Inc.
FRN - F-1386

Texas Department of Transportation | Austin District Standard

PAINTING STRUCTURE NUMBERS

PSN-19 (AUS)(MOD)

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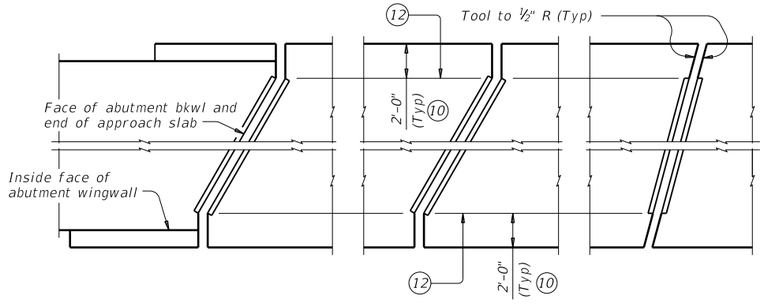
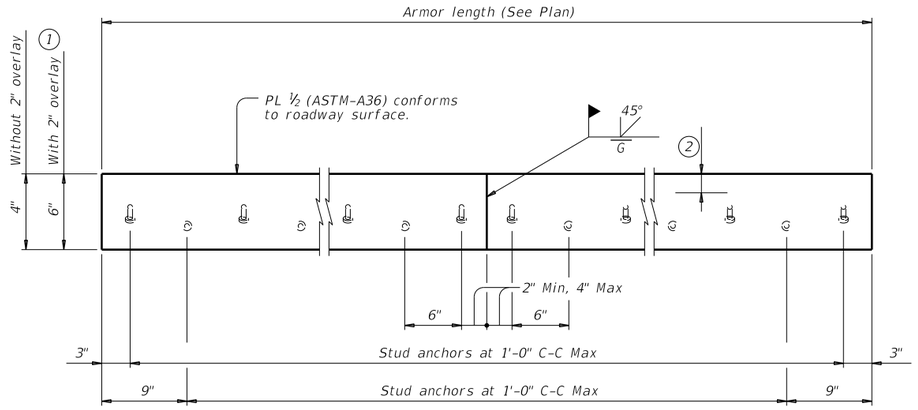


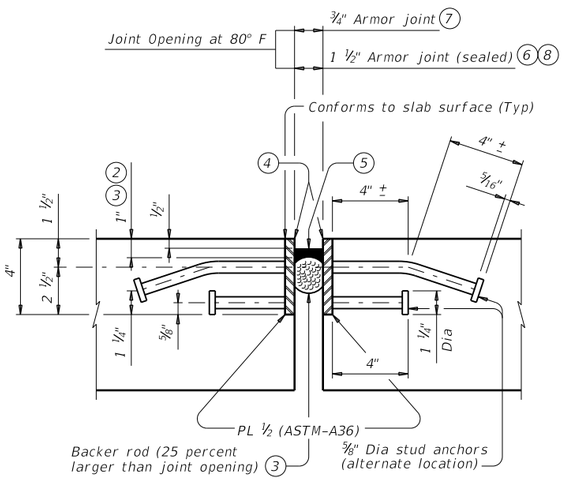
JOINTS AT ABUTMENTS | SKEWS OVER 15° | SKEWS THRU 15°

PLANS OF ARMOR PLATES

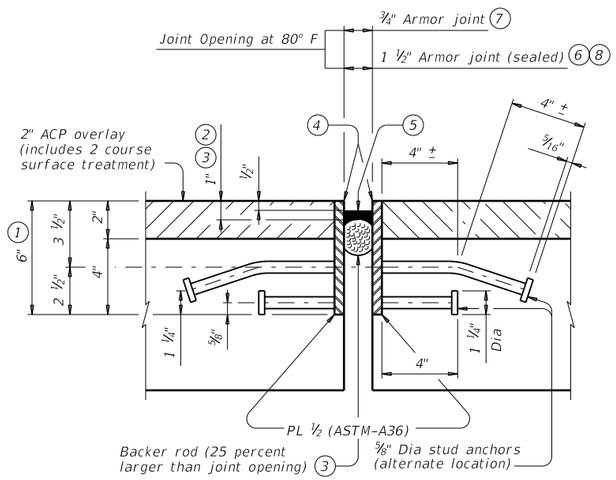


ELEVATION OF BASIC ARMOR PLATE

1. Adjust 6" plate height for overlay thicknesses other than the 2" shown. Adjust weight by 1.70 plf for each ½" variation in thickness.
2. Do not paint top 1 ½" of plate if using sealed armor joint.
3. Set top of backer rod 1" below top of armor plate. Backer rod must be compatible with joint sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.
4. Blast clean entire contact area between sealant and plate (SSPC-SP10) before installing sealant. Light brush blast and thoroughly clean all dust and debris from concrete surfaces in contact with joint sealant before application of silicone seal.
5. Use Class 7 joint sealant that conforms to DMS-6310.
6. Place sealant while ambient temperature is between 55°F and 80°F and is rising.
7. Armor joint does not include joint sealant or backer rod.
8. Armor joint (sealed) includes Class 7 joint sealant and backer rod.
9. Form vertical leg of seal as per the Manufacturer's recommendations. Use Class 4 joint sealant if Class 7 cannot be installed correctly. Install according to Manufacturer's recommendations.
10. Unless shown otherwise, terminate armor plate at slab break point if break is more than 2'-0" from slab edge.
11. See "Plans of Armor Plates".
12. At Fabricator's option, armor plate may extend up to 6" beyond this point for skews through 15°.
13. Align shipping angle perpendicular to joint.



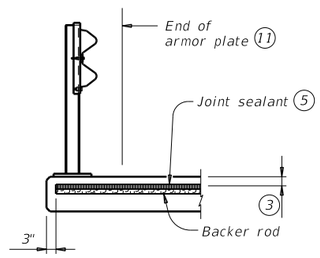
SHOWN WITHOUT 2" OVERLAY AT JOINT LOCATION



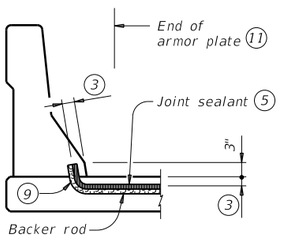
SHOWN WITH 2" OVERLAY AT JOINT LOCATION 1

ARMOR JOINT SECTIONS

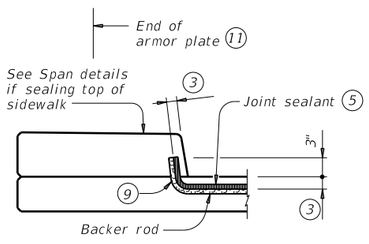
Showing Armor Joint (Sealed)



AT STEEL POST BRIDGE RAIL



AT CONCRETE BRIDGE RAIL



AT SIDEWALK

JOINT SEALANT TERMINATION DETAILS

Armor joint (sealed) only. Armor plate is not shown for clarity.

FABRICATION NOTES:

Match mark corresponding plate sections and secure together for shipment with shipping angle. Do not use erection bolts.

Ship armor joints in convenient lengths of 10'-0" Min and 24'-0" Max unless necessary for stage construction or widenings. One shop splice is permitted in each shipping length provided no piece is less than 2'-0" long and sufficient studs are added to limit the stud to shop splice distance to 2" Min and 4" Max.

Weld studs in accordance with AWS D1.1.

Use groove welds for all shop and field butt splices. Grind smooth areas in contact with seal. Make all necessary field splice joint preparations in the shop.

Paint the entire steel section, except as stated in Note 2, with System II or IV primer in accordance with Item 446 "Field Cleaning and Painting Steel." Provide paints in accordance with Item 446.2. Prepare steel and apply paint in accordance with Items 446.4.7.3 and 446.4.7.4.

Shop drawings for the fabrication of armor joints will not require the Engineer's approval if fabrication is in accordance with the details shown on this standard.

CONSTRUCTION NOTES:

Secure armor joints in position and place to proper grade and alignment by welding braces to adjacent reinforcing steel, to prestressed beam stirrups, or to anchors cast in concrete diaphragms. Include cost of temporary bracing in the price bid for Armor Joint.

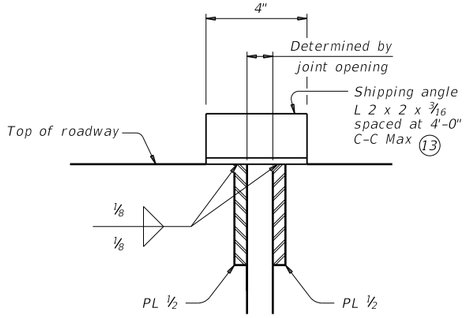
Remove shipping angle immediately after each joint half is secured in place. Grind smooth, and touch up with organic zinc-rich paint.

GENERAL NOTES:

Provide armor joints at locations shown on the plans. Provide the seal when "Armor Joint (Sealed)" is noted on the plans.

These joint details accommodate a joint movement range of 1 ⅜" (¾" opening movement and ⅜" closure movement).

Payment for armor joint, with or without seal, is based on length of armor plate.



SHOWN WITHOUT 2" OVERLAY AT JOINT LOCATION

With overlay similar

SHIPPING ANGLE

An alternate method of securing joint sections may be used if approved by the Bridge Division. Erection bolts are not allowed.

WEIGHTS FOR ONE ARMOR JOINT (2 PLATES)	
WITHOUT OVERLAY	16.10 plf
WITH 2" OVERLAY 1	22.90 plf

Texas Department of Transportation

Bridge Division Standard

ARMOR JOINT DETAILS

AJ

FILE: MS-AJ-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019 REVISIONS	CONT	SECT	JOB	HIGHWAY
	6464	87	001	FM 1697, ETC.
	DIST	COUNTY		SHEET NO.
	AUS	LEE, ETC.		62

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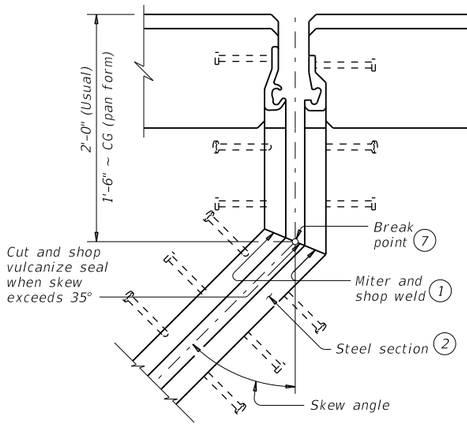
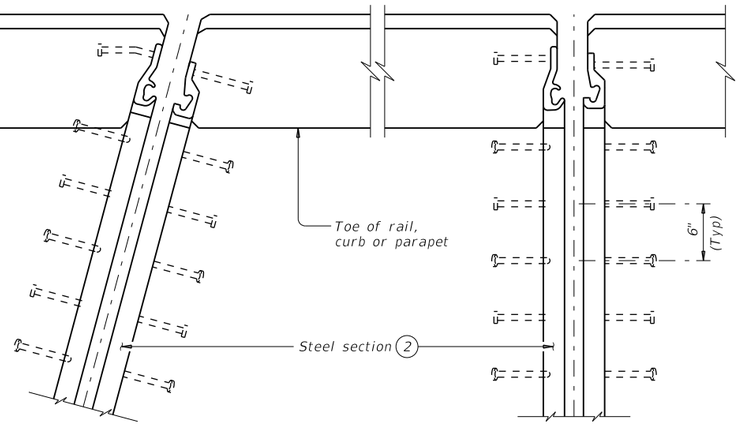


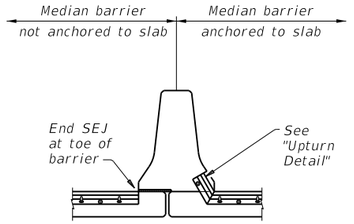
SHOWING SKEWS WITH SLAB BREAKBACKS



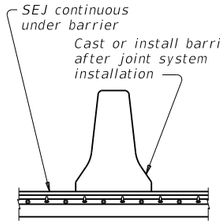
SHOWING SKEWS WITHOUT SLAB BREAKBACKS

SHOWING WITHOUT SKEWS AND SLAB BREAKBACKS

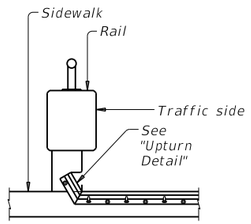
PLANS OF END CONDITIONS



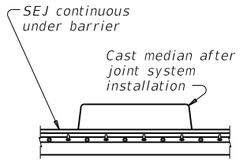
WITH OPEN DECK JOINT BELOW MEDIAN BARRIER



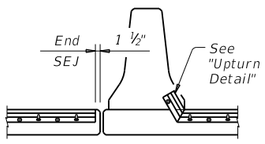
AT MEDIAN BARRIER



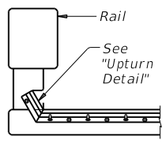
AT SIDEWALK BEHIND BRIDGE RAIL



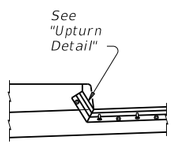
AT RAISED MEDIAN



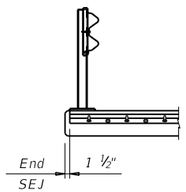
WITH OPEN DECK JOINT ADJACENT TO MEDIAN BARRIER



AT CONCRETE BRIDGE RAIL

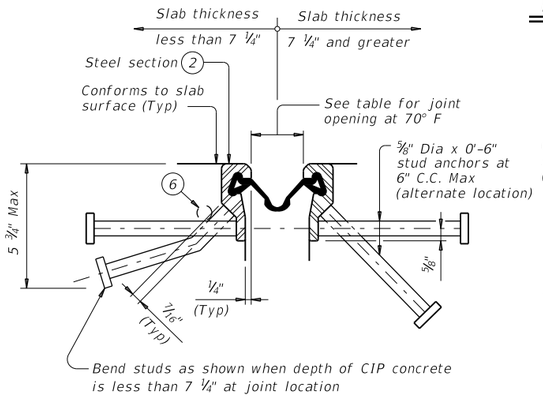


AT SIDEWALK

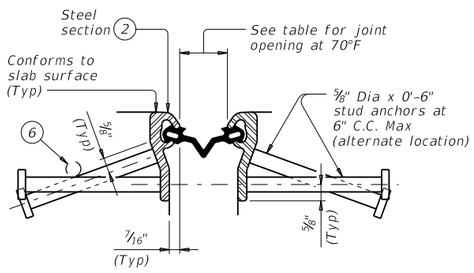


AT STEEL POST BRIDGE RAIL

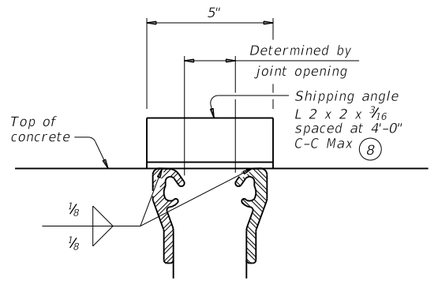
TYPICAL SECTIONS (5)



SECTION THRU WATSON BOWMAN ACME (SE-400 OR SE-500) JOINTS



SECTION THRU D.S. BROWN (A2R-400 OR A2R-XTRA) JOINTS



SHOWING D.S. BROWN (Ty SSCM2)
(All joints are similar.) (Studs are not shown for clarity.)

SHIPPING ANGLE

An alternate method of securing joint sections may be used if approved by the Bridge Division. Erection bolts are not allowed.

TABLE OF SEALED EXPANSION JOINT INFORMATION

MANUFACTURER	STEEL SECTION (2)	STRIP SEAL			
		4" JOINT		5" JOINT	
		Seal Type	Joint Opening (3)	Seal Type	Joint Opening (3)
D.S. Brown	Type SSCM2	A2R-400	1 ¾"	A2R-XTRA	2"
Watson Bowman Acme	Type R	SE-400	1 ¾"	SE-500	2"

REDUCED LONGITUDINAL MOVEMENT RANGE

SKEW (deg)	JOINT SIZE	
	4"	5"
0	4.0"	5.0"
15	4.0"	5.0"
30	3.5"	4.3"
45	2.8"	3.5"

DESIGN NOTES:

Joints installed on a skew have reduced ability to accommodate longitudinal movement. Use table values to determine the correct joint size for skewed installations.

For other skews over 25 degrees, calculate reduced movement range by multiplying joint size by cosine (skew).

(1) Remove all burrs which will be in contact with seal prior to making splice.

(2) Shape of steel section shown is typical. Variations in sections must be approved by the Engineer.

(3) These openings are also the recommended minimum installation openings.

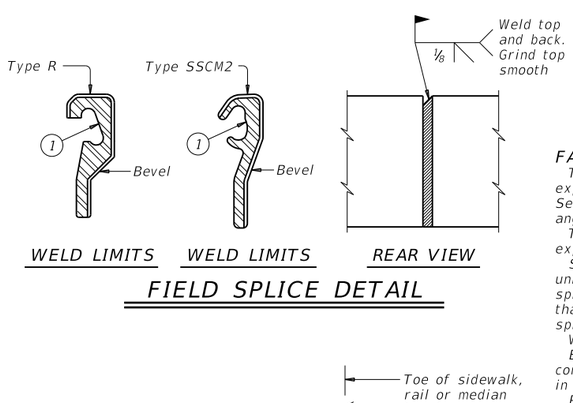
(4) Reduce for sidewalk or parapet heights less than 6".

(5) Other conditions affecting the joint profile should be noted elsewhere.

(6) Move transverse bars that are in conflict with SEJ studs, in either the bridge slab or approach slab, to rest at the junction of the studs.

(7) See Span details for location of break point.

(8) Align shipping angle perpendicular to joint.



WELD LIMITS WELD LIMITS REAR VIEW

FIELD SPLICE DETAIL

FABRICATION NOTES:

Temporarily shop assemble corresponding sections of sealed expansion joints (SEJ), check for fit, and match mark for shipment. Secure corresponding sections together for shipment with shipping angle. Do not use erection bolts.

The seal must be continuous and included in the price bid for sealed expansion joint.

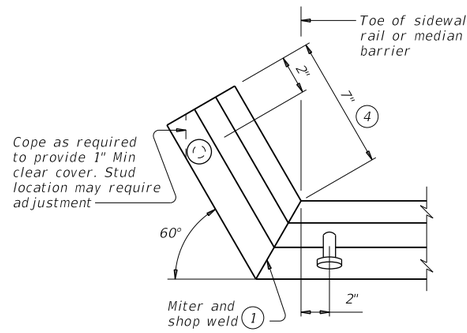
Ship steel sections in convenient lengths of 10'-0" Min and 24'-0" Max unless necessary for staged construction or widenings. One shop splice is permitted in each shipping length provided no piece is less than 2'-0" long and sufficient studs are added to limit the stud to shop splice distance to 2" Min and 4" Max.

Weld studs in accordance with AWS D1.1.

Butt weld all shop and field splices and grind smooth areas in contact with seal. Make all necessary field splice joint preparations in the shop.

Paint the entire steel section with System II or IV primer in accordance with Item 446, "Field Cleaning and Painting Steel", unless required to galvanize when shown in the plans. Provide galvanizing in accordance with Item 445, "Galvanizing". Provide paints in accordance with Item 446.2. Prepare steel and apply paint in accordance with Item 446.4.7.3 and 446.4.7.4.

Shop drawings for the fabrication of sealed expansion joints will not require the Engineer's approval if fabrication is in accordance with the details shown on this standard.



UPTURN DETAIL

CONSTRUCTION NOTES:

Secure the sealed expansion joint in position and place to the proper grade and alignment by welding braces to adjacent reinforcing steel, to prestressed beam stirrups, or to anchors cast in concrete diaphragms. Include cost of temporary bracing in the price bid for sealed expansion joint.

Remove shipping angle immediately after each joint half is secured in place. Grind smooth, and touch up with organic zinc-rich paint.

Clean and prepare seal cavity for seal installation as per the Manufacturer's installation procedures.

GENERAL NOTES:

Provide sealed expansion joints in the size and at locations shown on the plans.

Minimum slab and overhang thickness required for the use of SEJ-M is 6 ½".

Texas Department of Transportation

Bridge Division Standard

SEALED EXPANSION JOINT TYPE M WITHOUT OVERLAY

SEJ-M

FILE: MS-SEJ-M-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
©TxDOT April 2019 REVISIONS	CONT	SECT	JOB	HIGHWAY
	6464	87	001	FM 1697, ETC.
	DIST	COUNTY		SHEET NO.
	AUS	LEE, ETC.		63

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DATE:
FILE:

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1.

2.

☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000

2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.

3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.

4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

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

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

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

☐ No Permit Required

☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)

☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)

☐ Individual 404 Permit Required

☒ Other Nationwide Permit Required: NWP• 3(a)

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. FM 734 EB OVER SOUTH BRUSHY CREEK

2. FM 1697 OVER CEDAR CREEK

3. FM 1697 OVER NAILS CREEK

4. FM 448 OVER RABBS CREEK

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

Best Management Practices:

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

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

IV. VEGETATION RESOURCES

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

☐ No Action Required ☒ Required Action

Action No.

1. Comply with Invasive Species Executive Order 13112 when applicable.

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. See the special provision for Migratory Birds and Bats in Item 7 of the General Notes.

2. Work over or near Bodies of Water: Contractor shall not work outside the limits of construction indicated on the plans. There are State-Listed endangered species in the listed bodies of water. If the Contractor works outside the limits of construction shown in the plans due to known field conditions, the Environmental Department of TxDOT will be notified immediately and work in this area will cease immediately.

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediate area, and contact the Engineer immediately.

LIST OF ABBREVIATIONS

BMP:	Best Management Practice	SPCC:	Spill Prevention Control and Countermeasure
CGP:	Construction General Permit	SW3P:	Storm Water Pollution Prevention Plan
DSHS:	Texas Department of State Health Services	PCN:	Pre-Construction Notification
FHWA:	Federal Highway Administration	PSL:	Project Specific Location
MOA:	Memorandum of Agreement	TCEQ:	Texas Commission on Environmental Quality
MOU:	Memorandum of Understanding	TPDES:	Texas Pollutant Discharge Elimination System
MS4:	Municipal Separate Stormwater Sewer System	TPWD:	Texas Parks and Wildlife Department
MBTA:	Migratory Bird Treaty Act	TxDOT:	Texas Department of Transportation
NOT:	Notice of Termination	T&E:	Threatened and Endangered Species
NWP:	Nationwide Permit	USACE:	U.S. Army Corps of Engineers
NOI:	Notice of Intent	USFWS:	U.S. Fish and Wildlife Service

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:
- Dead or distressed vegetation (not identified as normal)
- Trash piles, drums, canister, barrels, etc.
- Undesirable smells or odors
- Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

☒ Yes ☐ No

If "No", then no further action is required.
If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

☒ Yes ☐ No

If "Yes", then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

VII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Texas Department of Transportation

Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR	
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY	
REVISIONS	6464	87	001	FM 1697, ETC.	
12-12-2011 (DS)	DIST	COUNTY		SHEET NO.	
05-07-14 ADDED NOTE SECTION IV.	AUSTIN	LEE, ETC.		64	
01-23-2015 SECTION II CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.					

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

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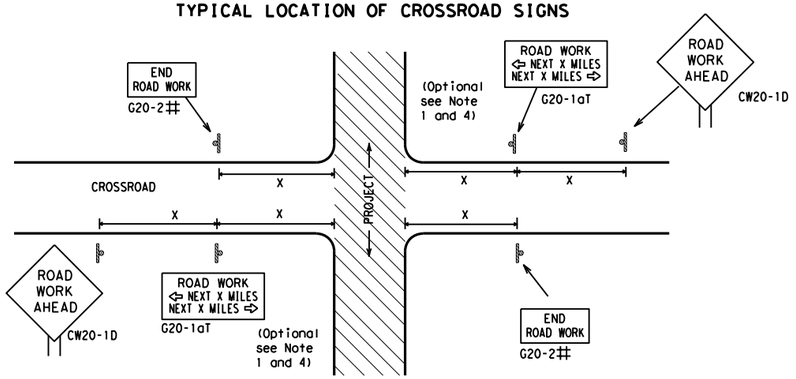
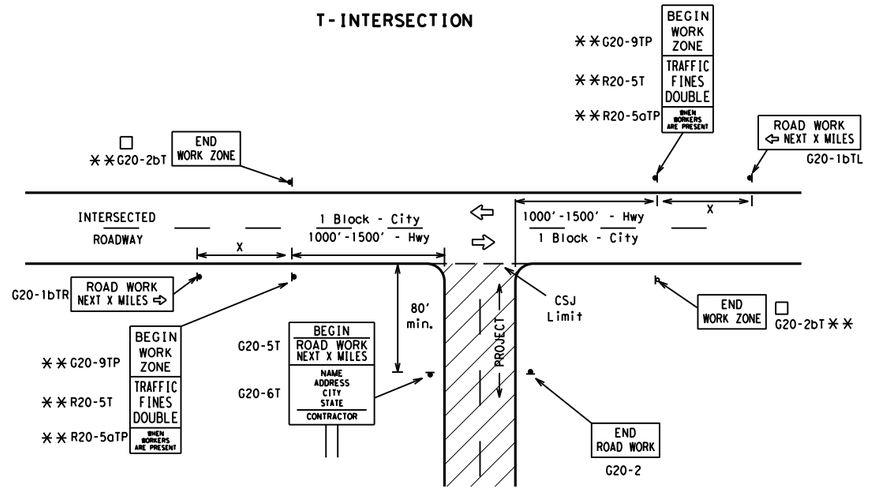
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

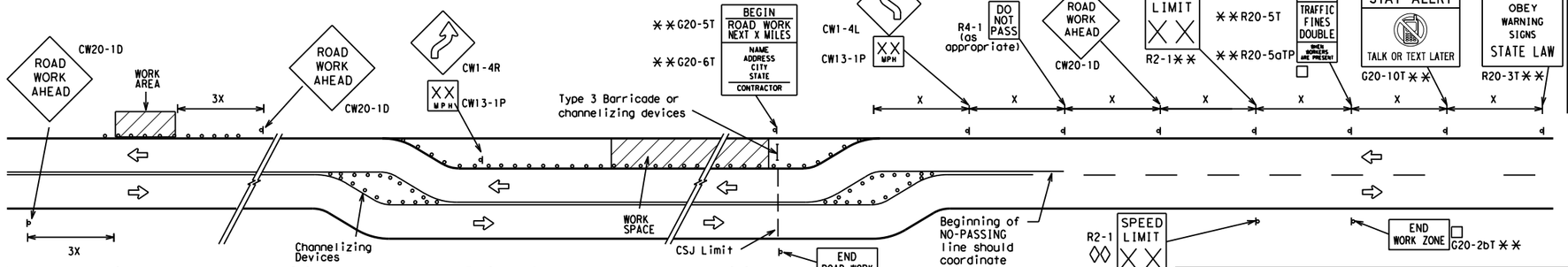
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

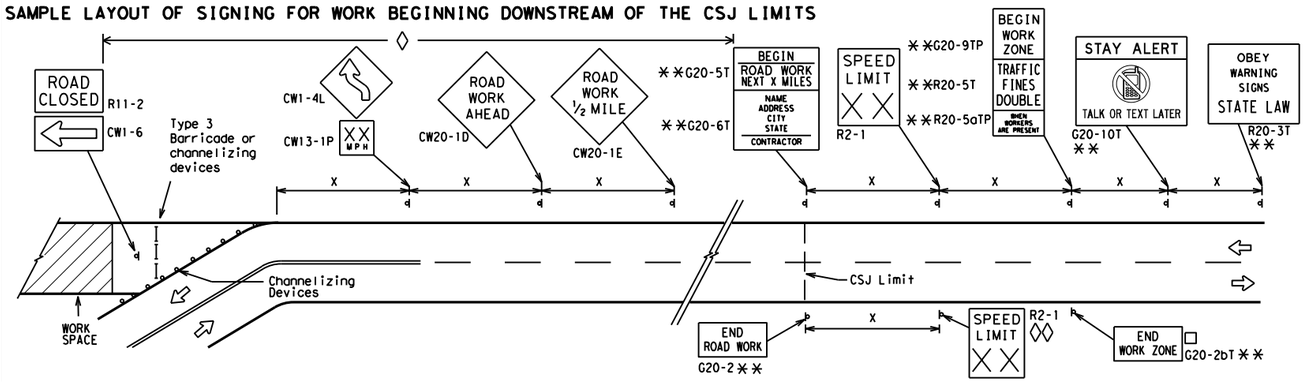
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

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



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

NOTES

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

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

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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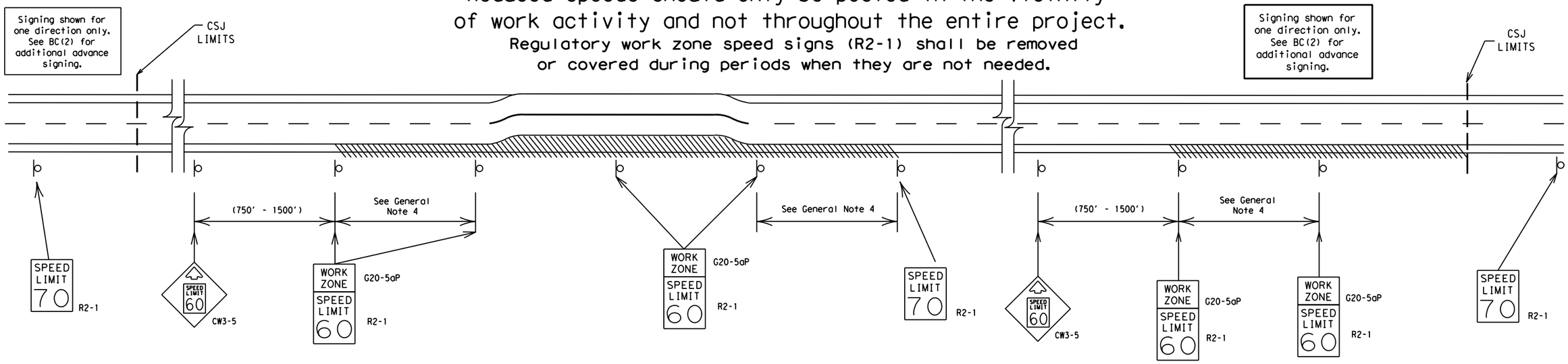
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

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BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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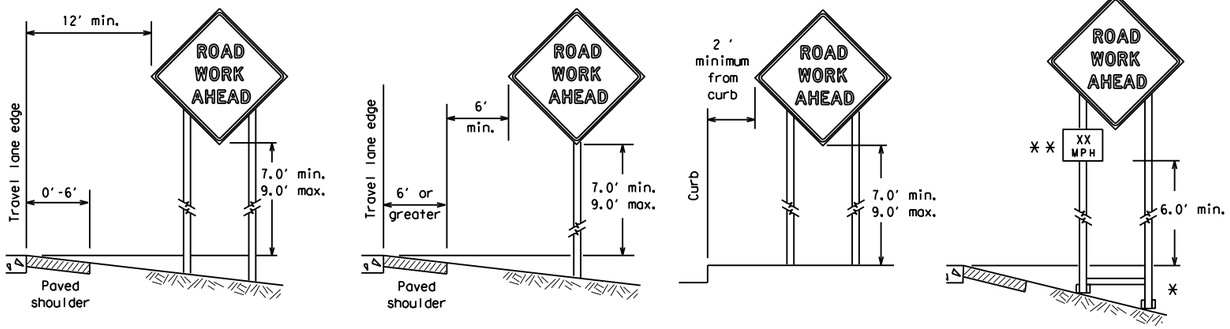
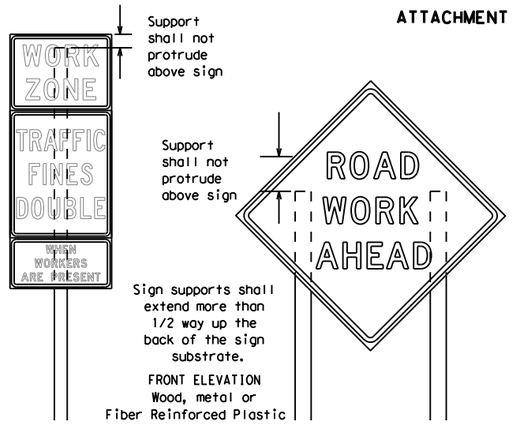
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

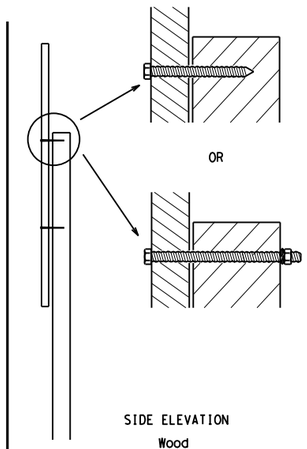


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

* * 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





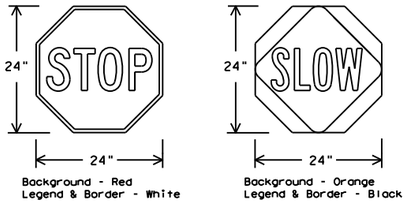
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

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BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

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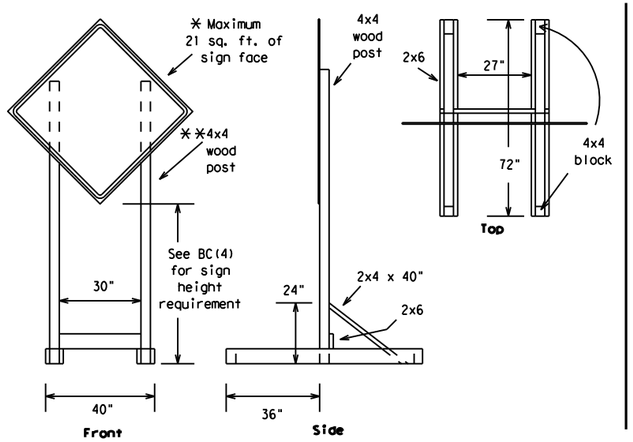
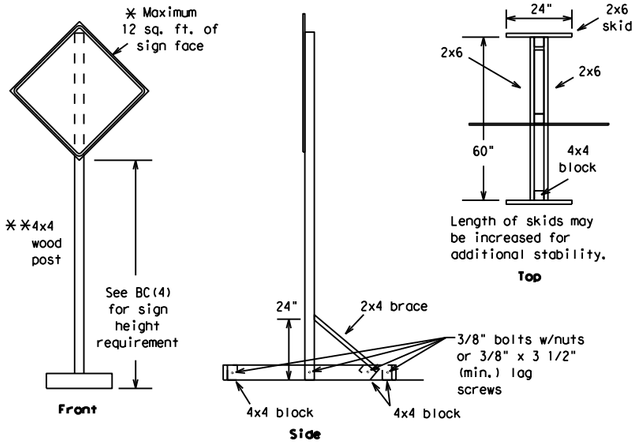
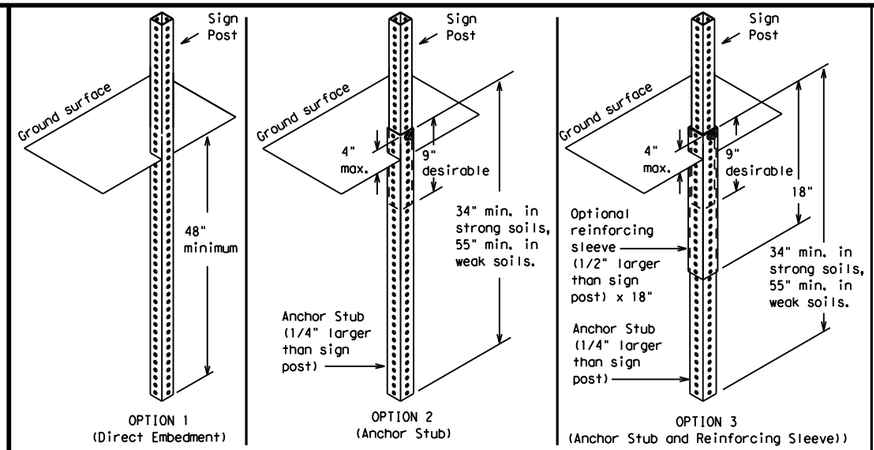




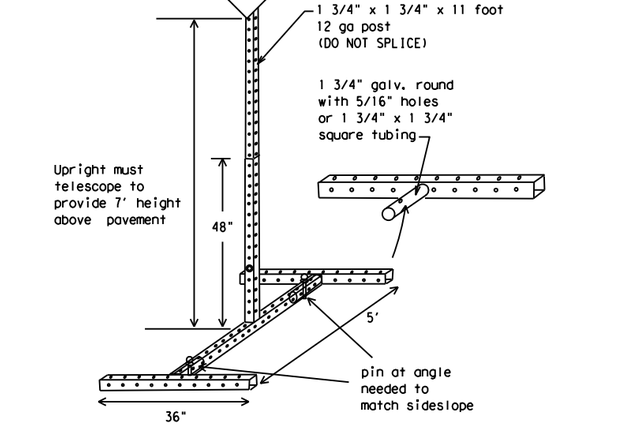
SKID MOUNTED WOOD SIGN SUPPORTS

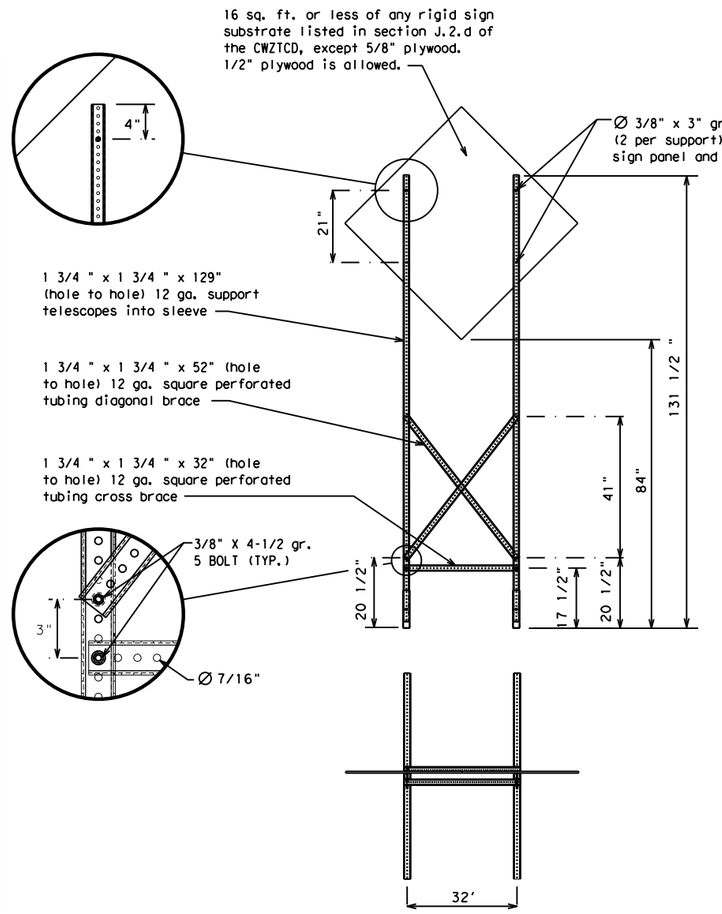
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

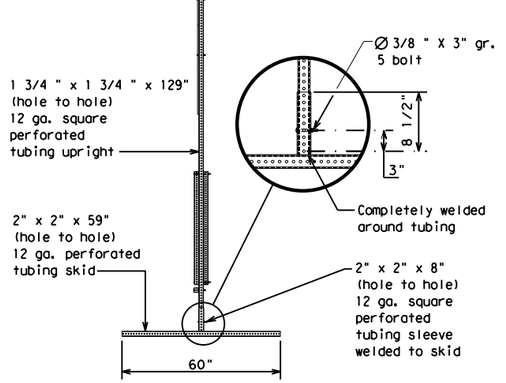


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

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Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	6464	87	001	FM 1697, ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	AUS	LEE. ETC.		69

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	6464	87	001	FM 1697, ETC.
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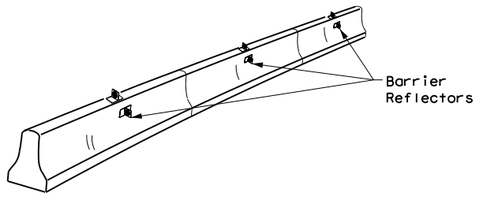
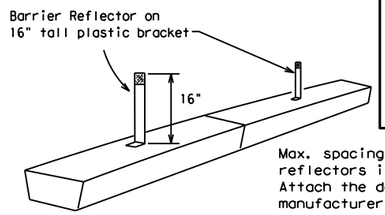
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



CONCRETE TRAFFIC BARRIER (CTB)

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

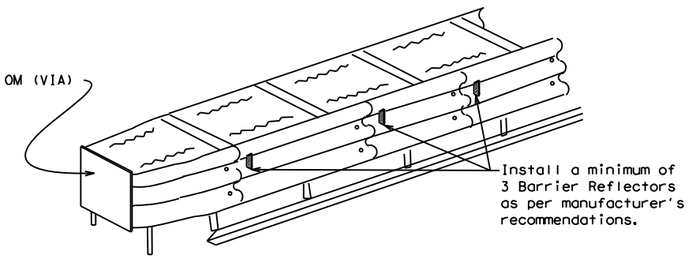


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

LOW PROFILE CONCRETE BARRIER (LPCB)

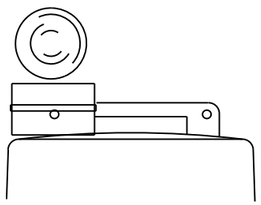


DELINEATION OF END TREATMENTS

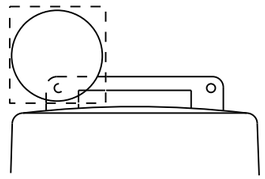
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

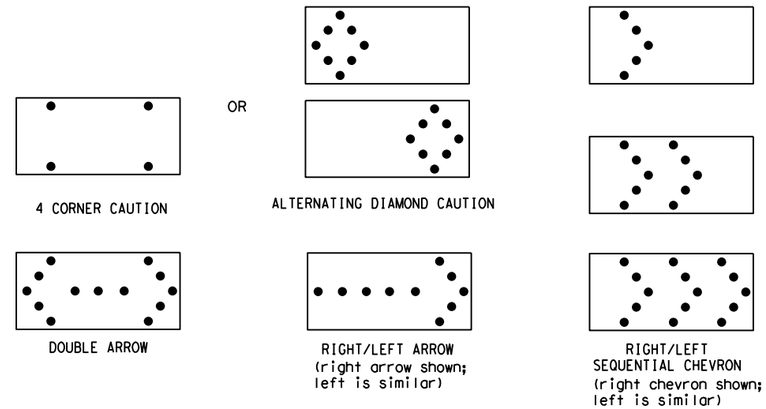
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	6464	87	001	FM 1697, ETC.
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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

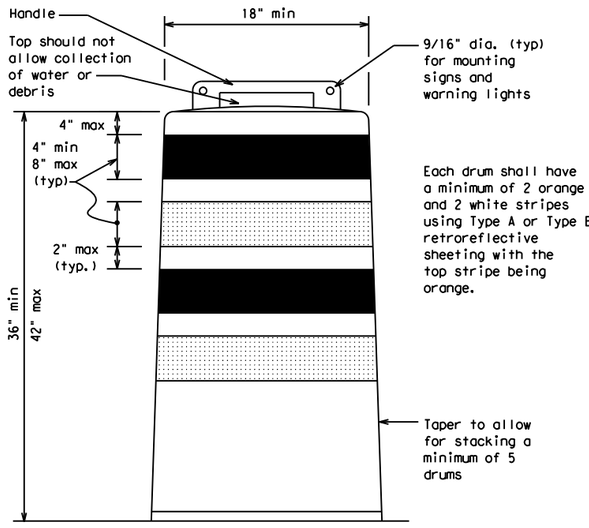
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

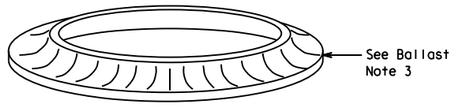
RETROREFLECTIVE SHEETING

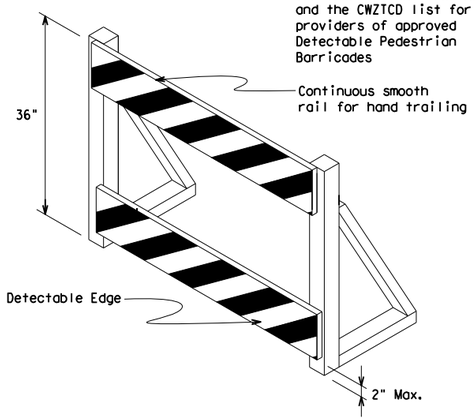
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

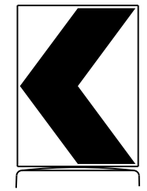




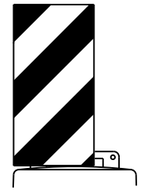


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

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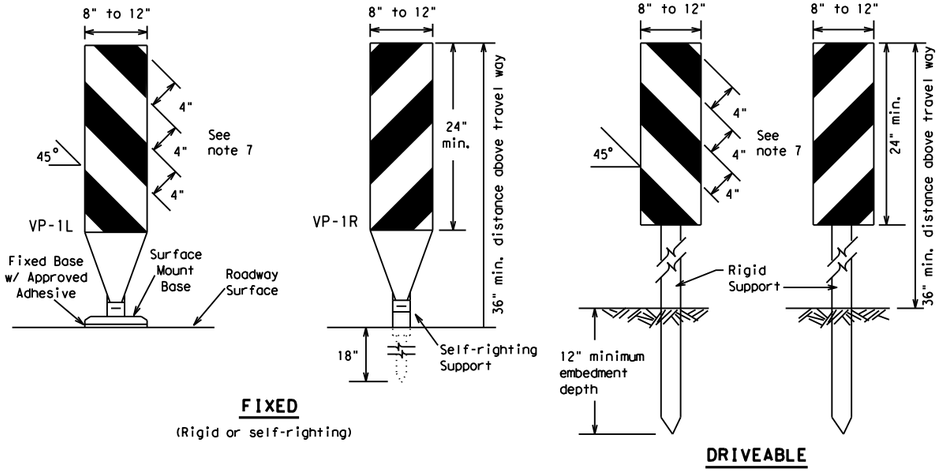
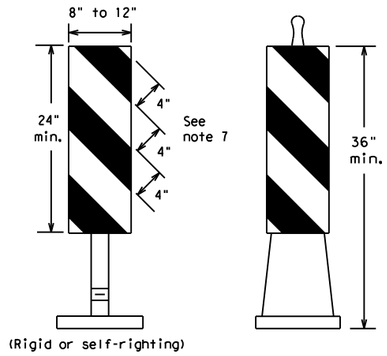


FIXED
(Rigid or self-righting)

DRIVEABLE

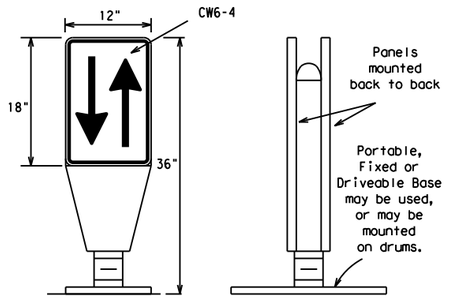


(Rigid or self-righting)

PORTABLE

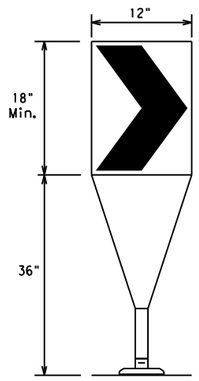
VERTICAL PANELS (VPs)

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



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



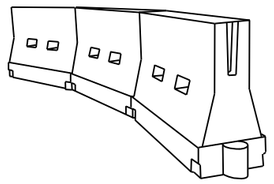
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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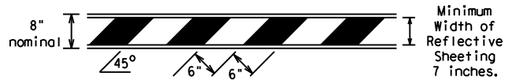
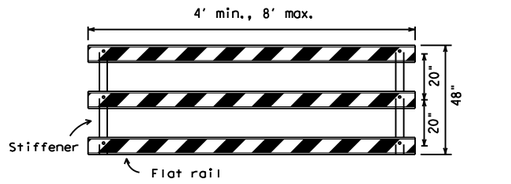
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



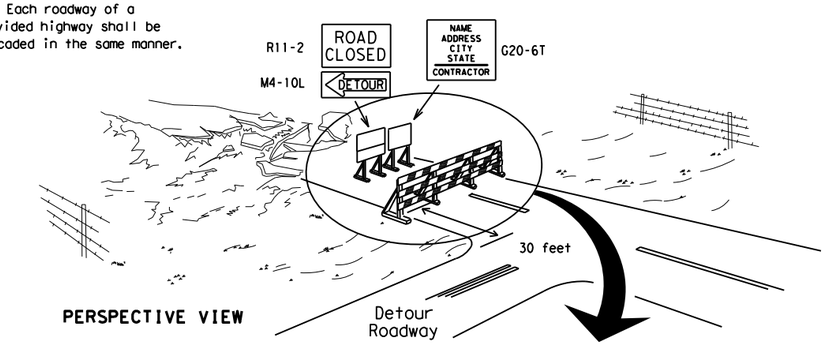
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

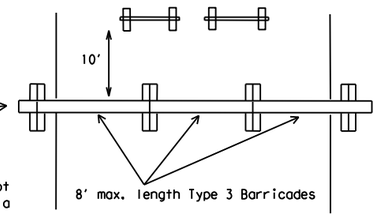
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

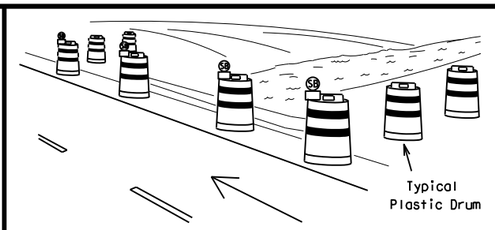
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

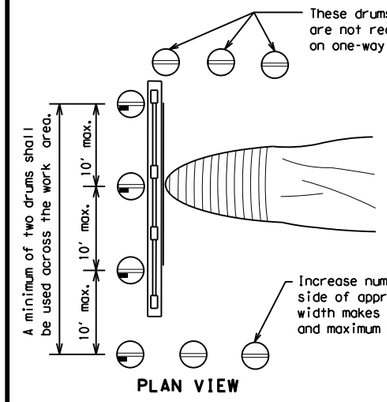
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

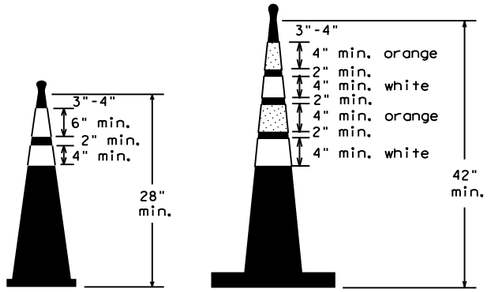
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



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

PLAN VIEW

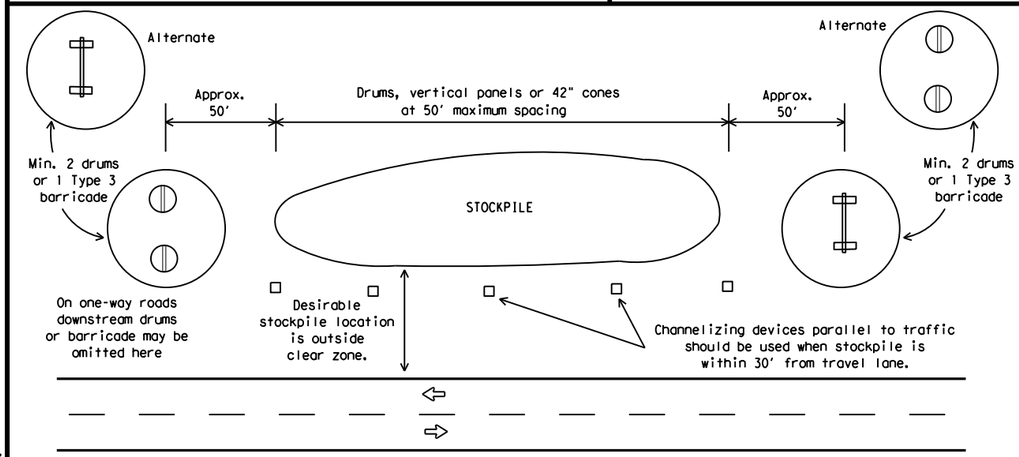
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

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SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

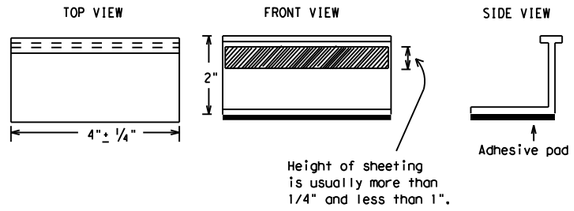
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	6464	87	001	FM 1697, ETC.
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	AUS	LEE, ETC.		75
11-02 8-14				

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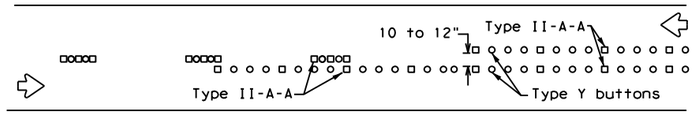
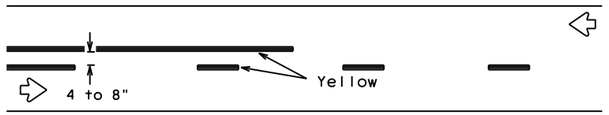
FILE:

PAVEMENT MARKING PATTERNS

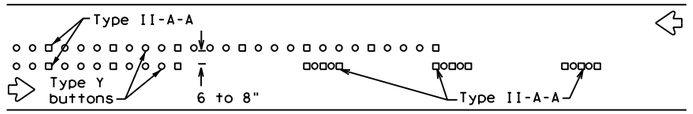
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



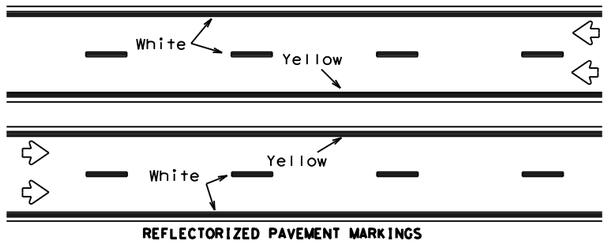
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



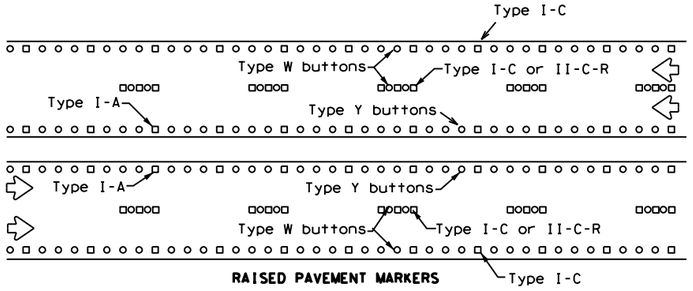
RAISED PAVEMENT MARKERS - PATTERN B

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

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



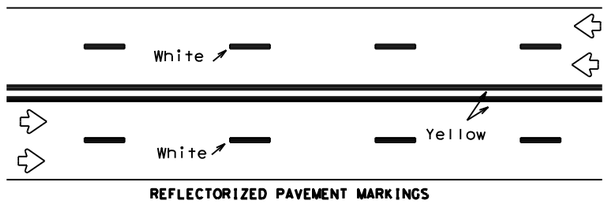
REFLECTORIZED PAVEMENT MARKINGS



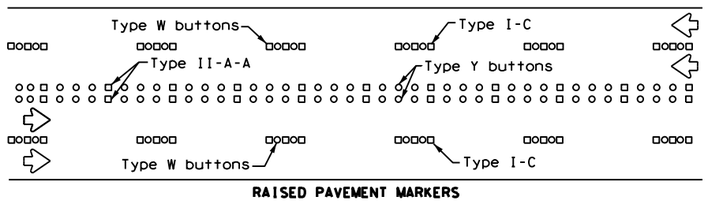
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



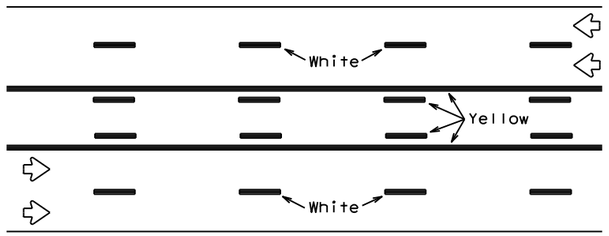
REFLECTORIZED PAVEMENT MARKINGS



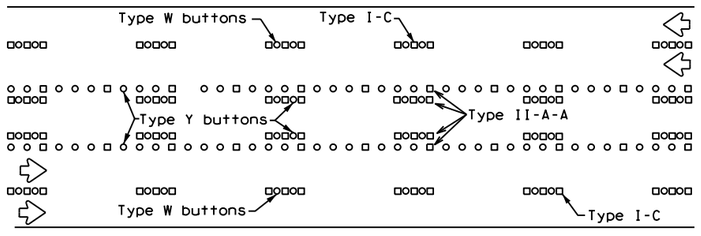
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

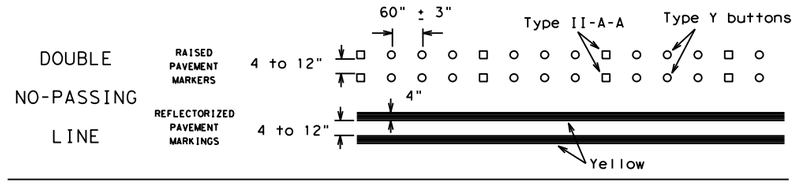
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

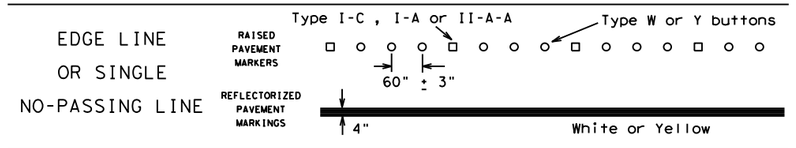
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

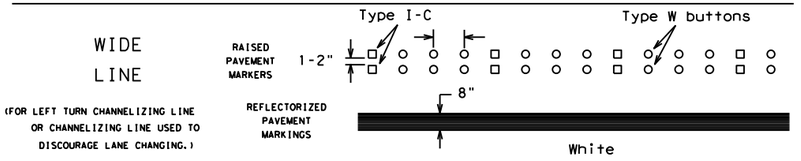


EDGE LINE OR SINGLE NO-PASSING LINE



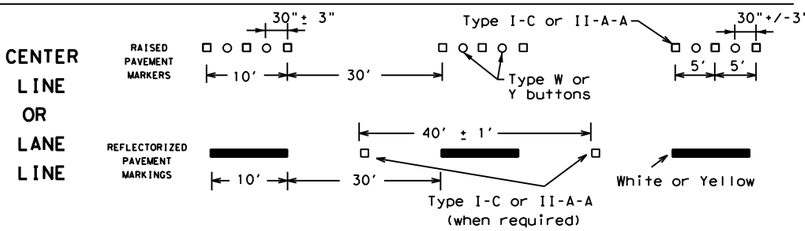
WIDE LINE

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

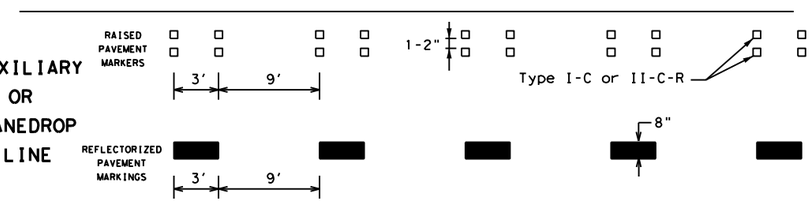


BROKEN LINES

CENTER LINE OR LANE LINE

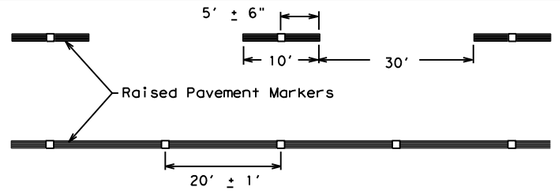


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

SHEET 12 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	6464	87	001	FM 1697, ETC.
	DIST	COUNTY		SHEET NO.
	AUS	LEE, ETC.		76

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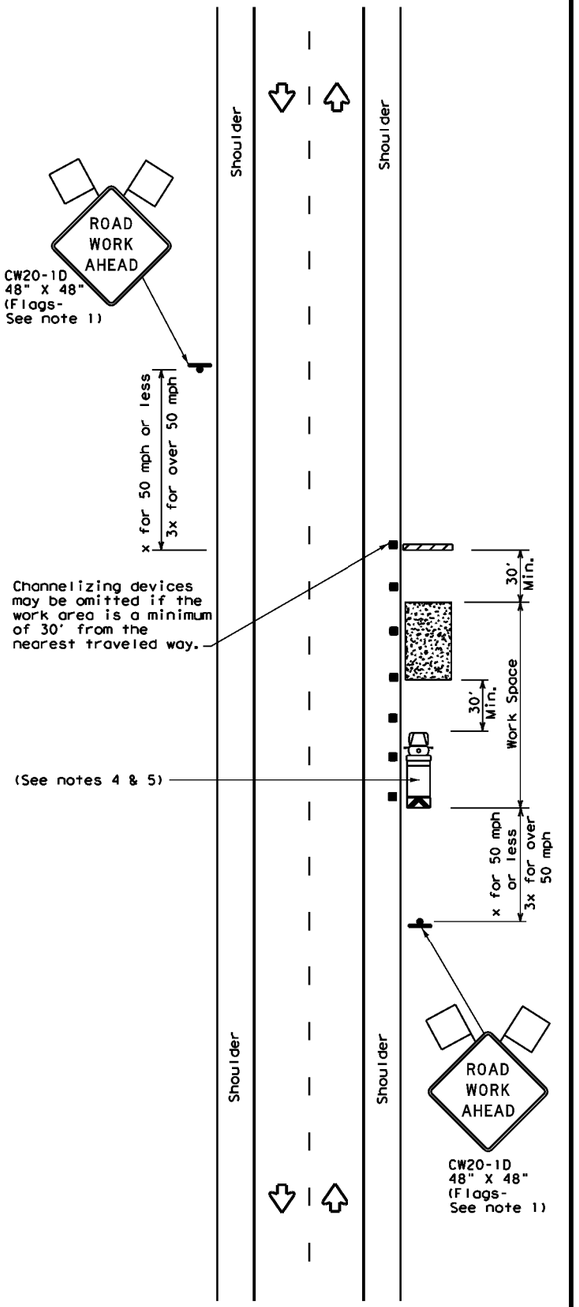
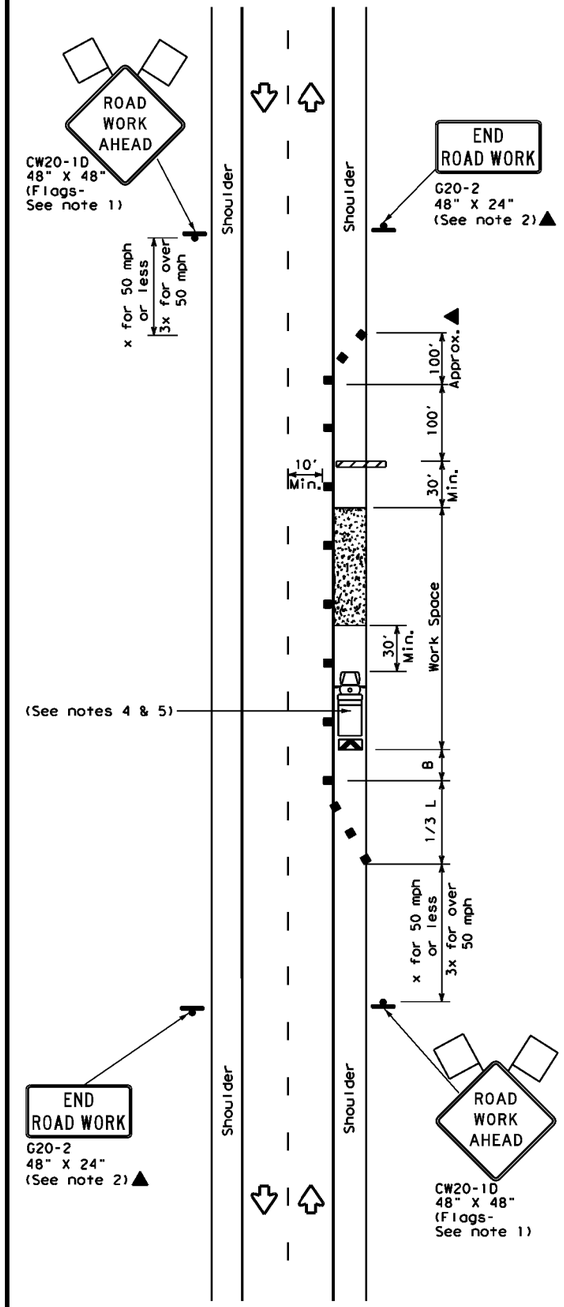


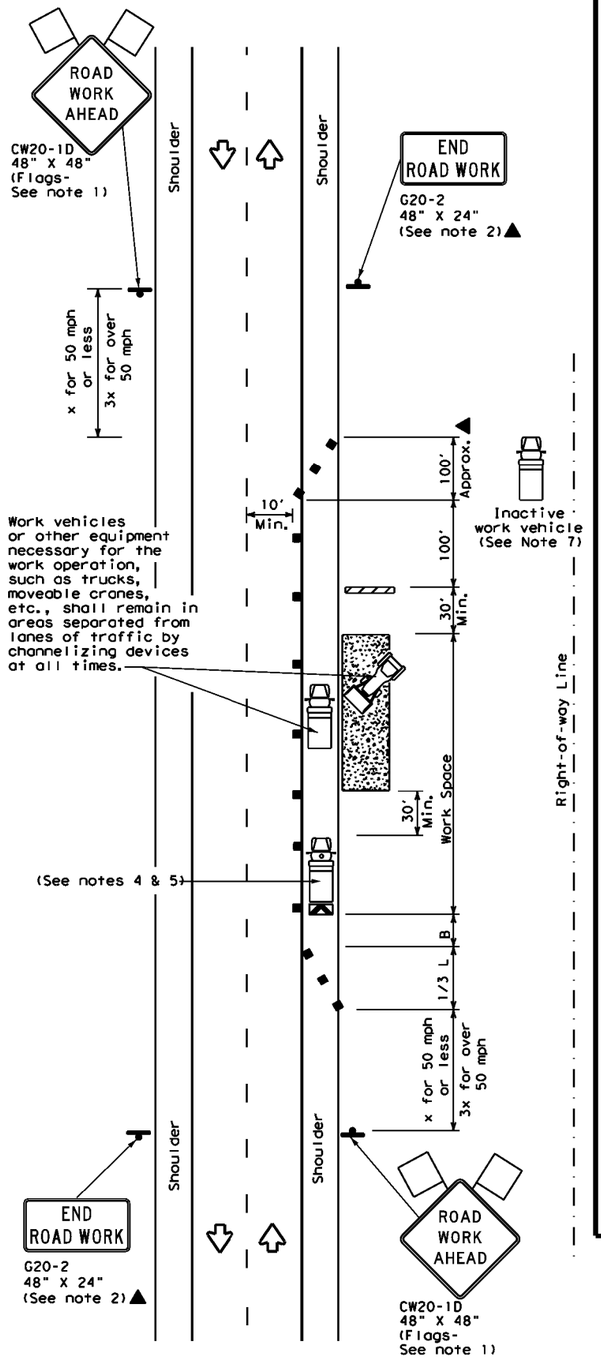
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	6464	87	001	FM 1697, ETC.
	DIST	COUNTY		SHEET NO.
	AUS	LEE, ETC.		77

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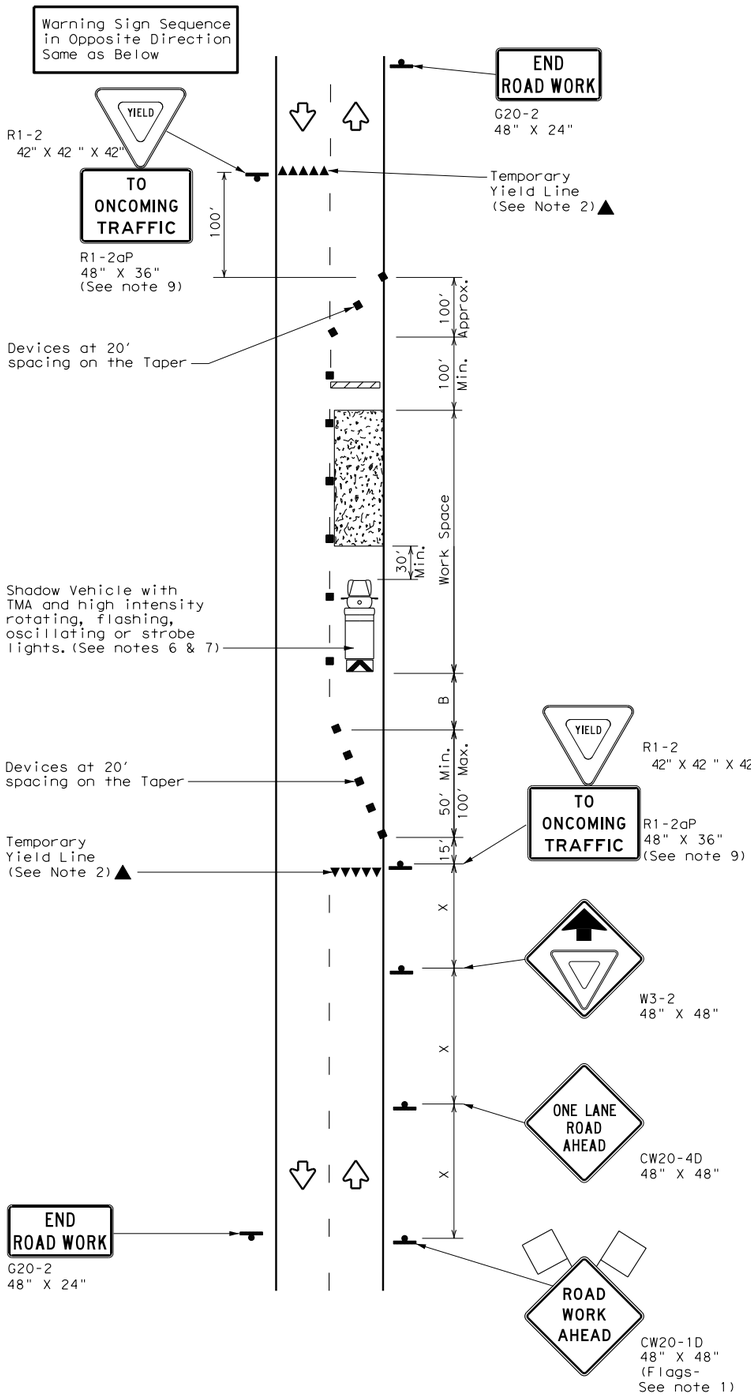
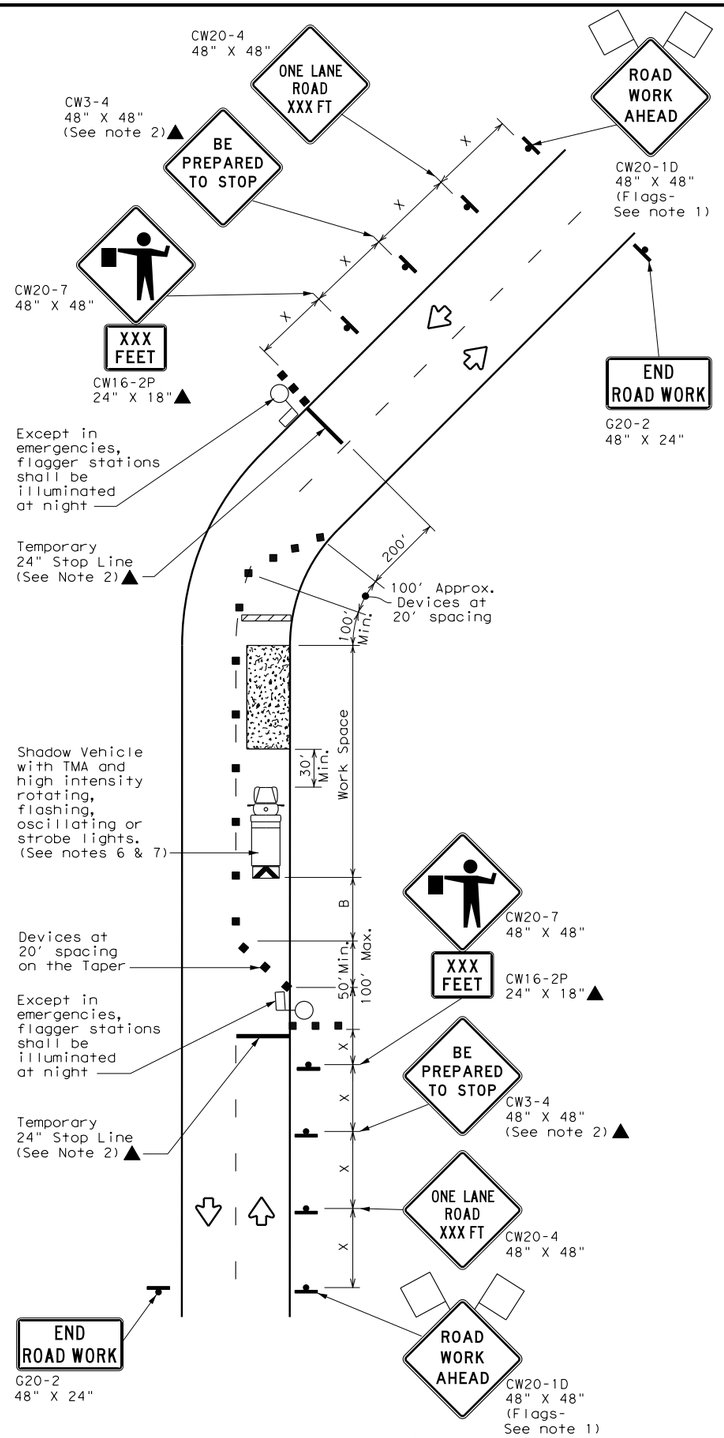


TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



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

LEGEND

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

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

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

TYPICAL USAGE

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

GENERAL NOTES

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

TCP (2-2a)

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

TCP (2-2b)

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

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP(2-2)-18

FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	6464	87	001	FM 1697, ETC.
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	AUS	LEE. ETC.		78
4-98 2-18				

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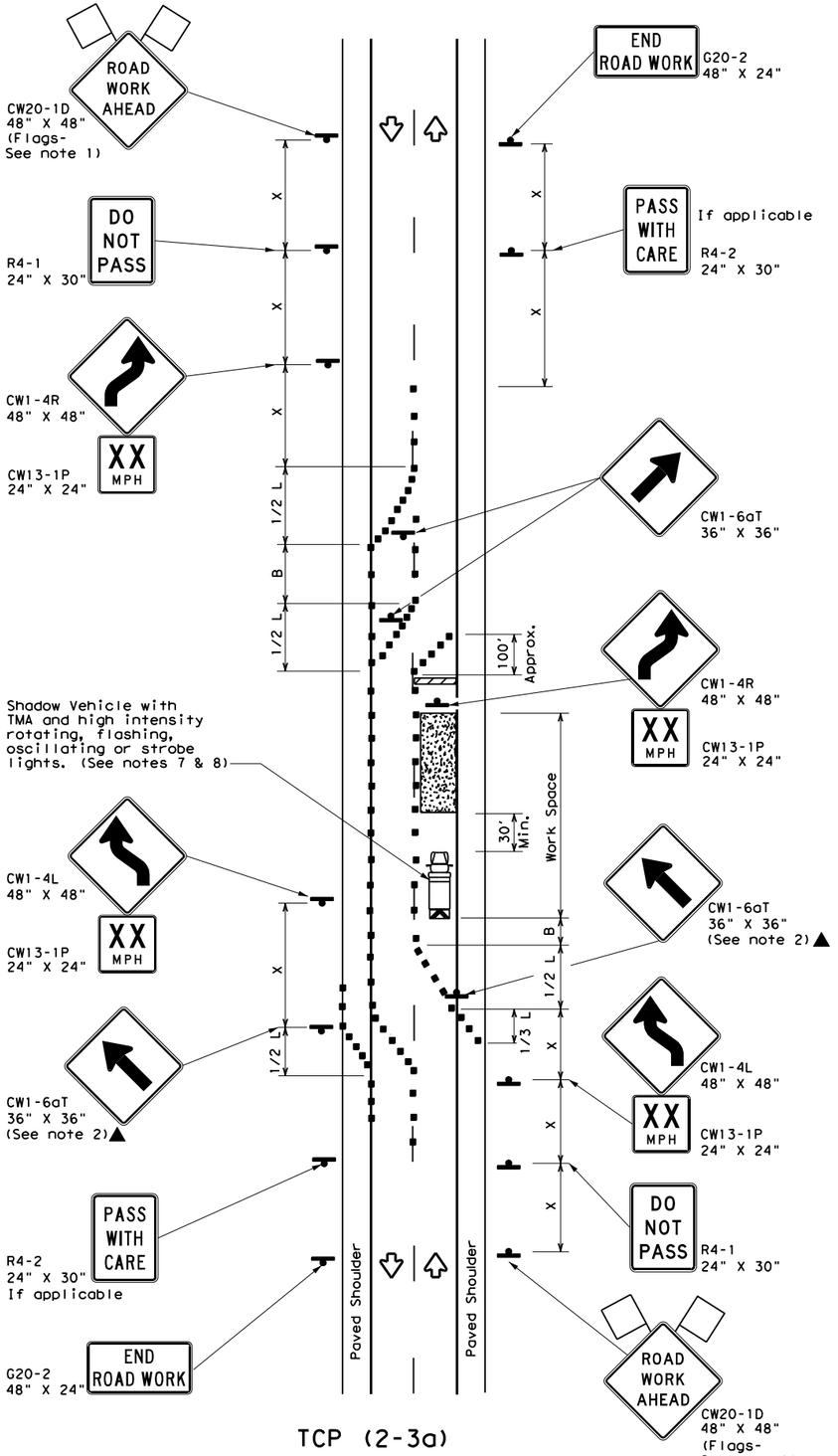
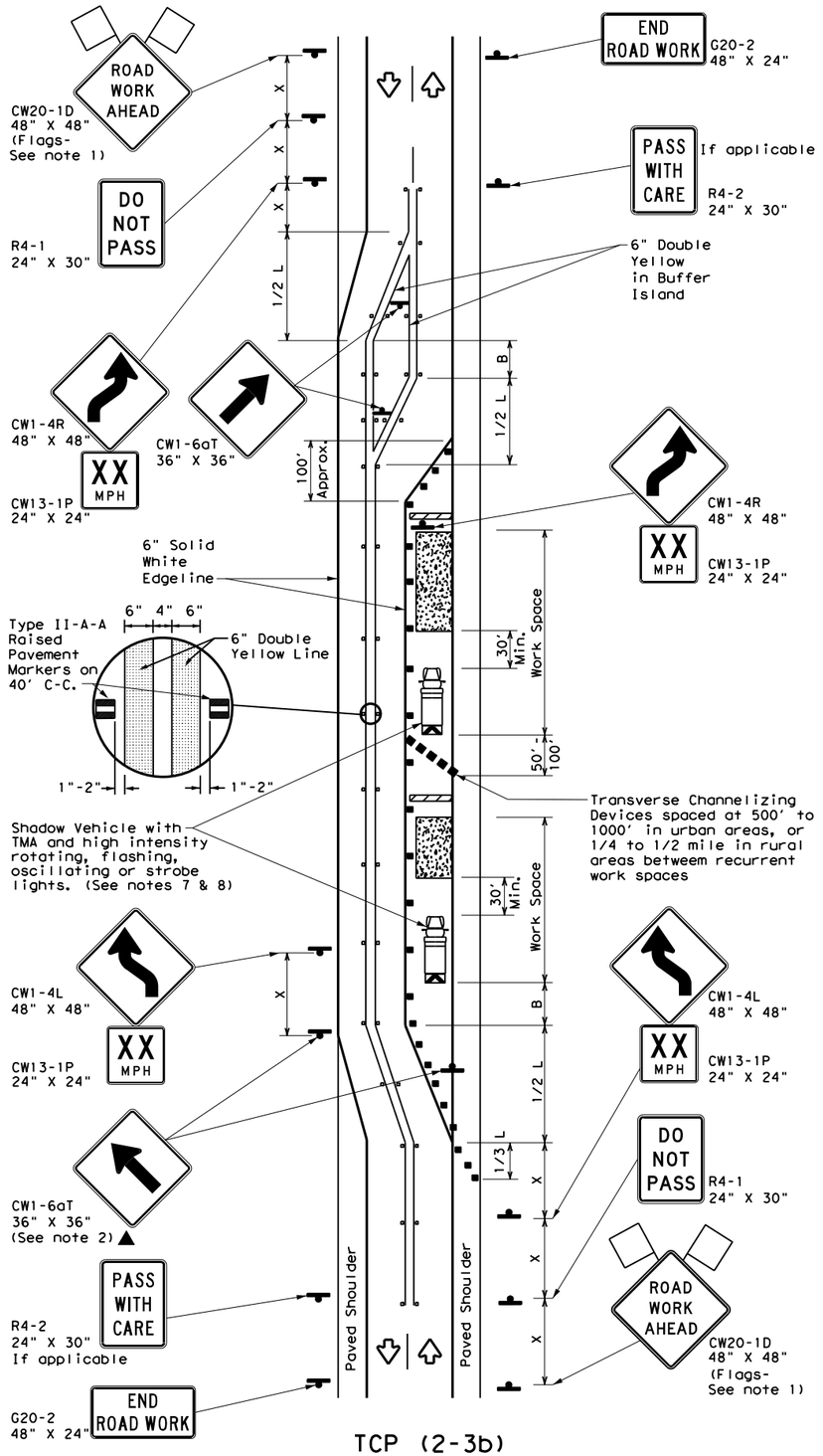


TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



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

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

LEGEND

	Type 3 Barricade	■ ■	Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	• • • •	Raised Pavement Markers Ty II-AA
	Sign		Traffic Flow
	Flag		Flagger

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

* Conventional Roads Only

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

TYPICAL USAGE

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
				TCP(2-3b)ONLY
			✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
4. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
5. The R4-1 "DO NOT PASS," R4-2 " PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
6. Conflicting pavement marking shall be removed for long term projects.
7. 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.
8. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-3a)

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

Texas Department of Transportation — *Traffic Safety Division Standard*

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

TCP(2-3)-23

FILE: tcp(2-3)-23.dgn	DN:	CK:	DW:	CK:
© TxDOT April 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-85 4-98 2-18	6464	87	001	FM 1697, ETC.
8-95 3-03 4-23	DIST	COUNTY		SHEET NO.
1-97 2-12	AUS	LEE, ETC.		79

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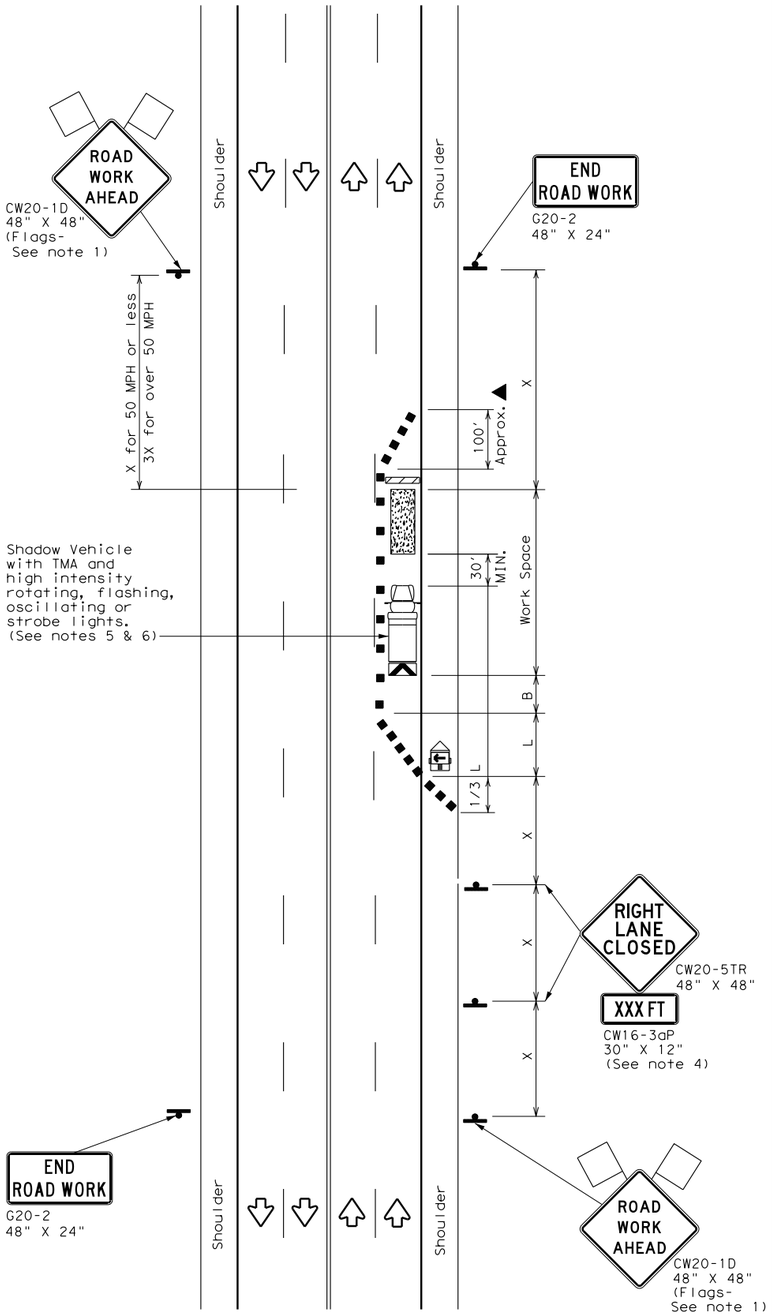
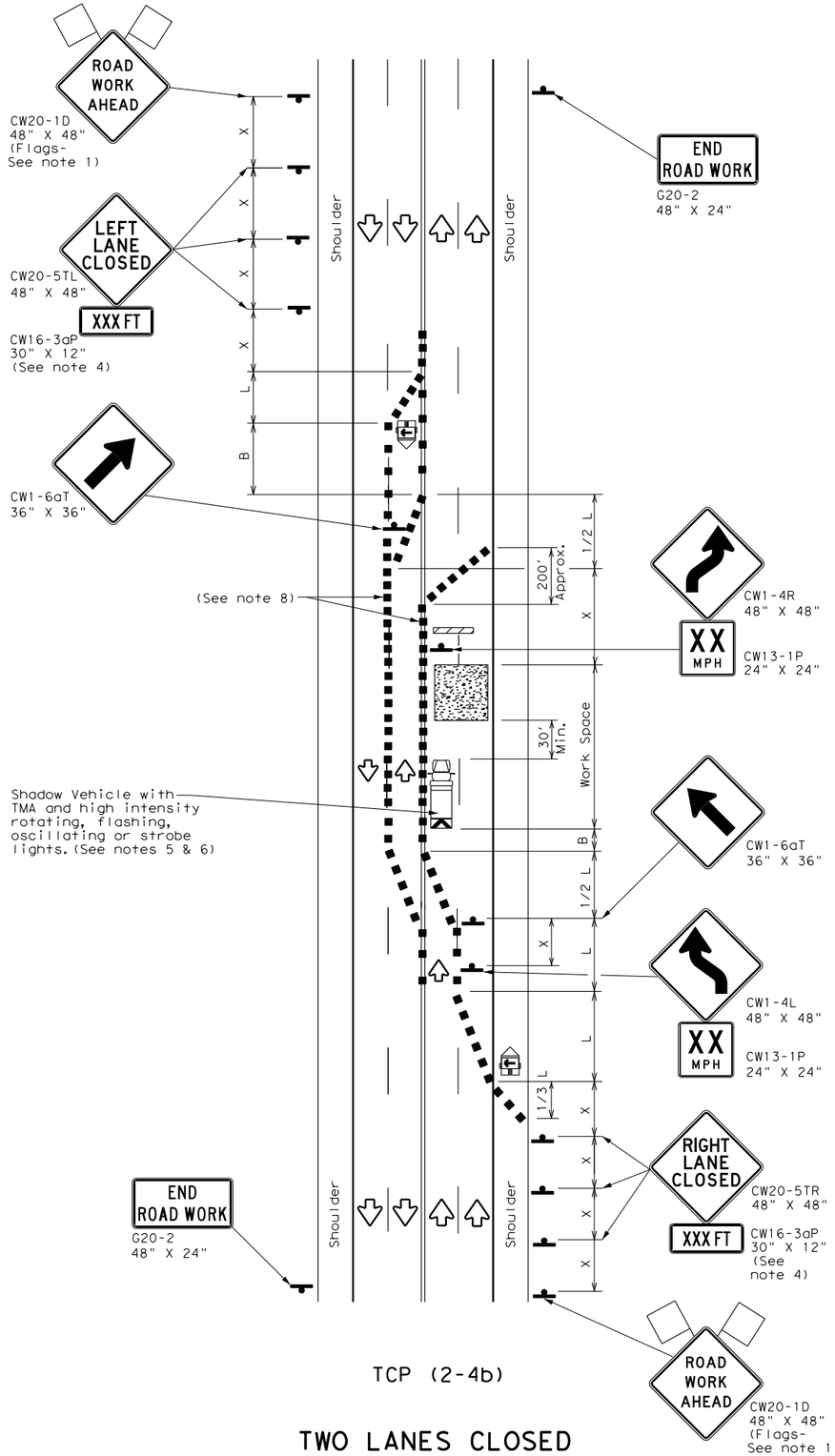


TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

TCP (2-4a)

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

TCP (2-4b)

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(2-4)-18

FILE: tcp2-4-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03	6464	87	001	FM 1697, ETC.
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	AUS	LEE, ETC.		80

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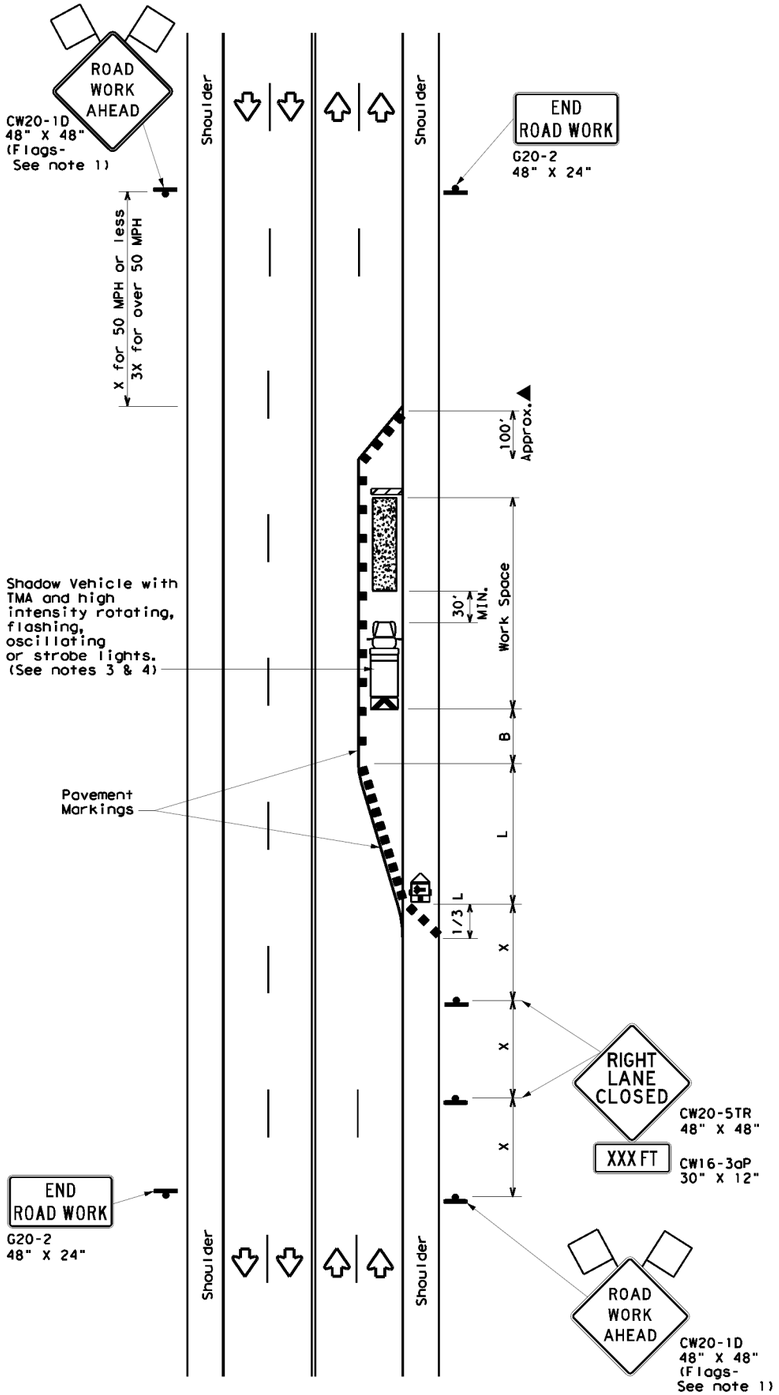
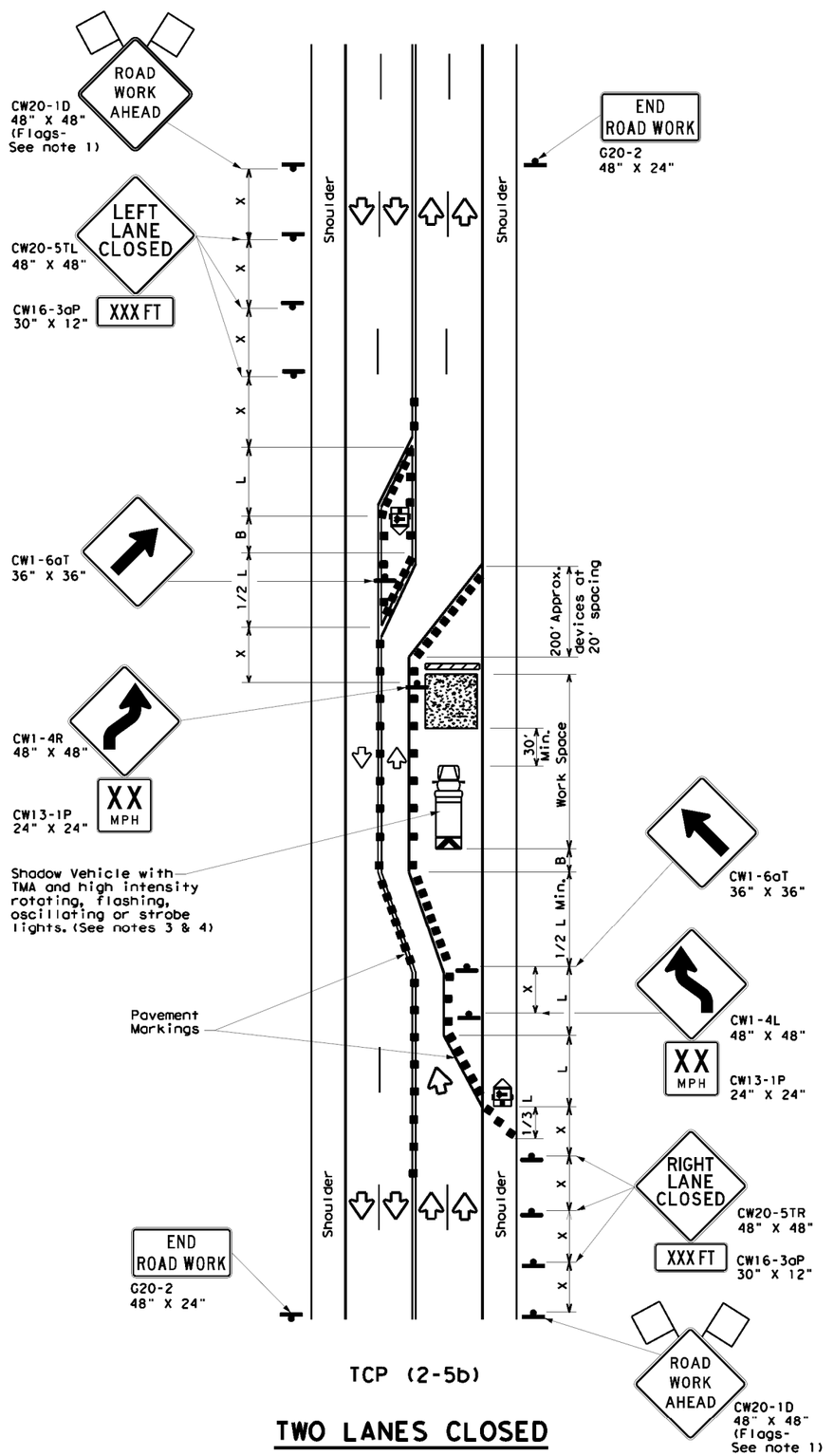


TCP (2-5a)

ONE LANE CLOSED



TCP (2-5b)

TWO LANES CLOSED

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			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

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew eposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substitutued for the Shadow Vehicle and TMA.
4. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
5. The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.

TCP (2-5a)

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

TCP (2-5b)

7. Conflicting pavement markings shall be removed for long-term projects.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
LONG TERM LANE CLOSURES
MULTILANE CONVENTIONAL RDS.

TCP(2-5)-18

FILE: tcp2-5-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	6464	87	001	FM 1697, ETC.
8-95 2-12	DIST	COUNTY		SHEET NO.
1-97 3-03	AUS	LEE, ETC.		81
4-98 2-18				

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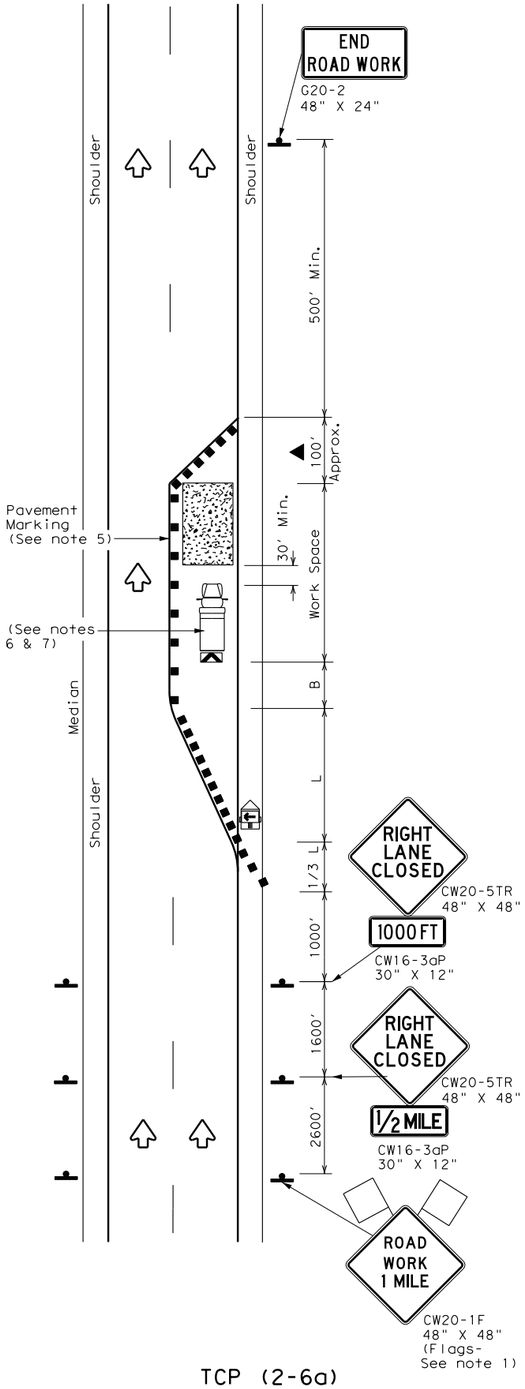
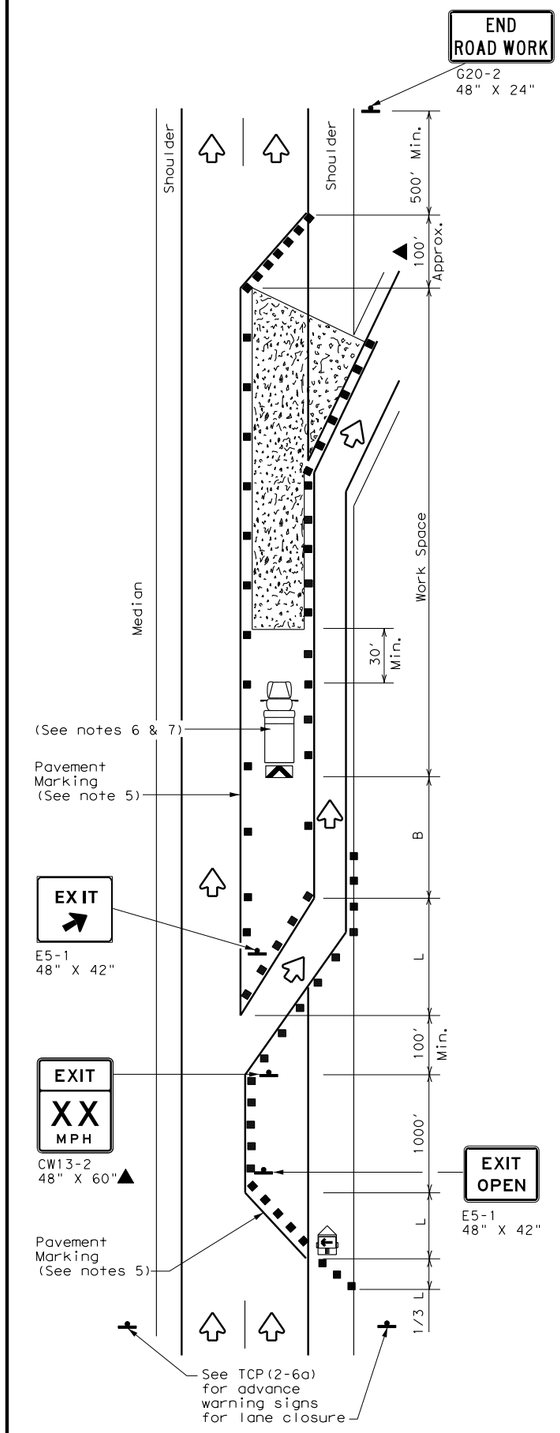


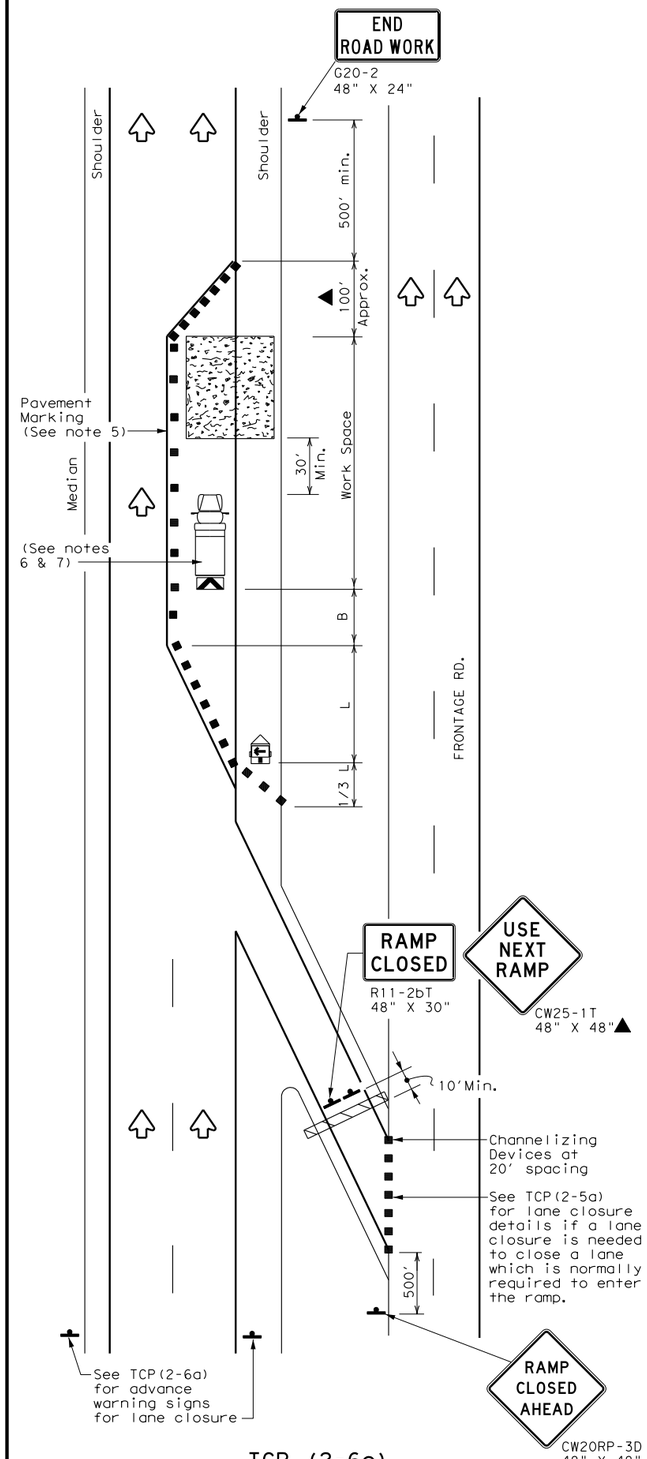
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-6c)

LANE CLOSURE NEAR ENTRANCE RAMPS

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

TCP(2-6)-18

FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98	6464	87	001	FM 1697, ETC.
8-95 2-12	DIST	COUNTY		SHEET NO.
1-97 2-18	AUS	LEE, ETC.		82

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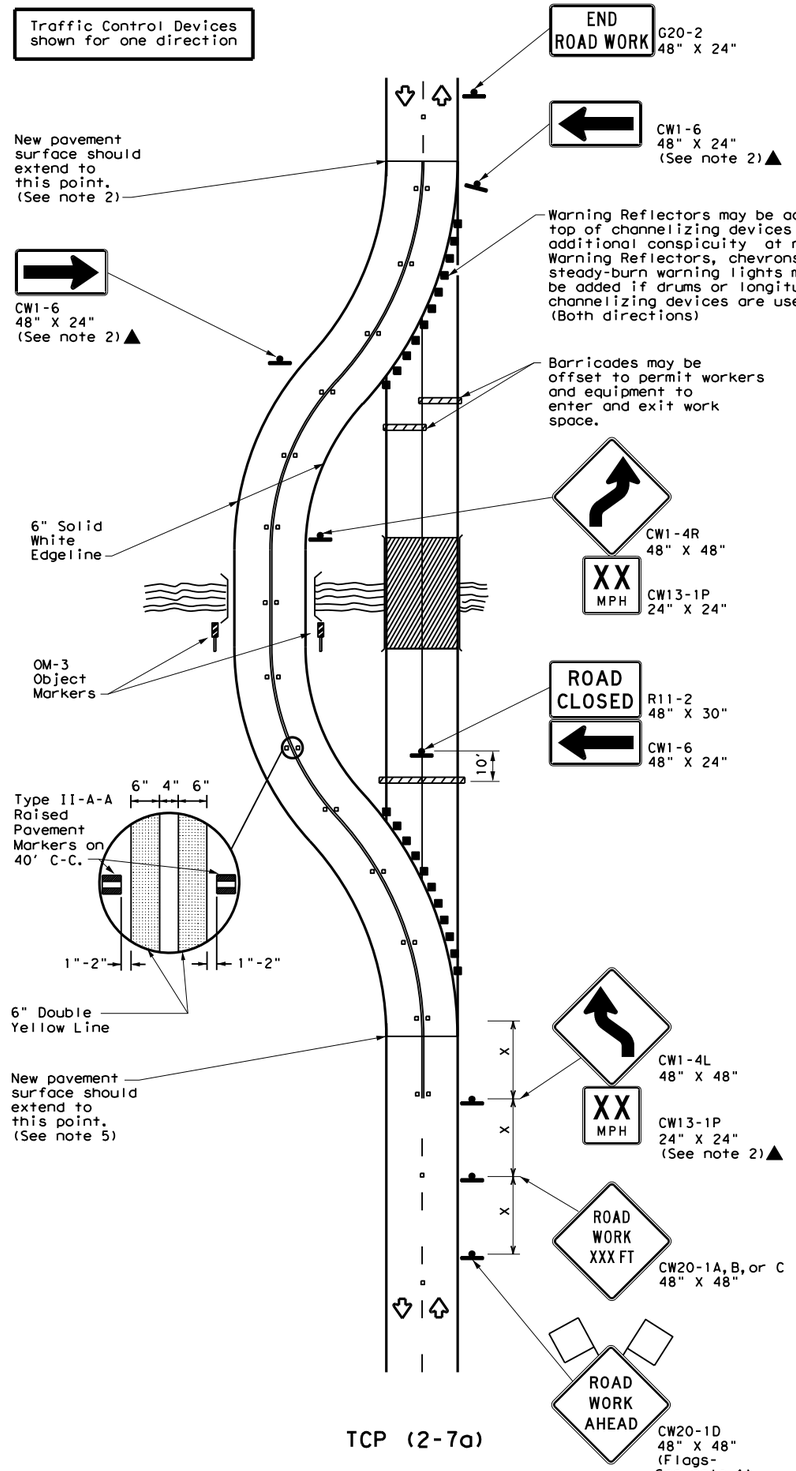
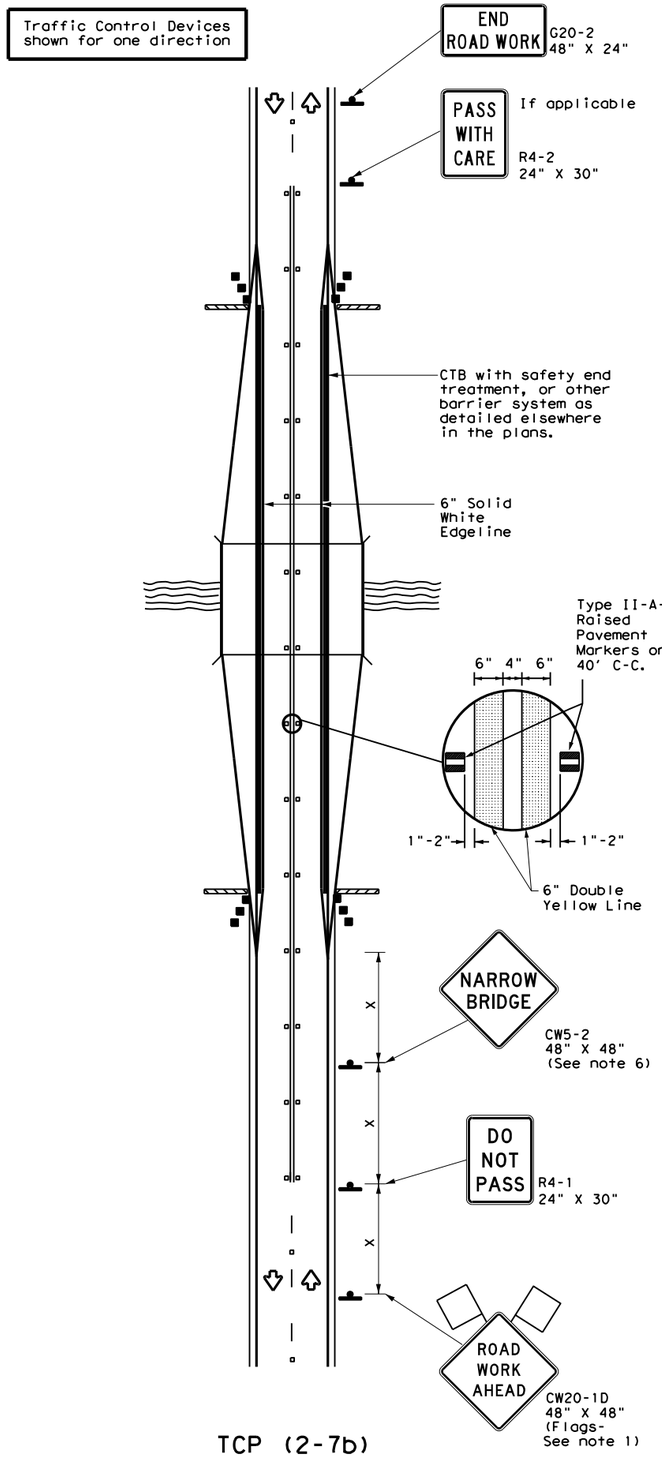


TCP (2-7a)

ROADWAY DIVERSION



TCP (2-7b)

BRIDGE WIDENING

LEGEND			
	Type 3 Barricade	■ ■	Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	• • • •	Raised Pavement Markers Ty II-AA
	Sign		Traffic Flow
	Flag		Flagger

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.

TCP (2-7a)

3. Raised pavement markers shall be placed 40 feet c-c on centerline throughout project.
4. Roadway diversion design requirements should be based on posted speed limit or prevailing speed.
5. New pavement surface should be extended across existing roadway edge to a point where existing pavement markings left in place during project do not conflict with construction area pavement marking.

TCP (2-7b)

6. The CW5-2 "Narrow Bridge" sign may be omitted if lane and shoulder widths are maintained.

Texas Department of Transportation

Traffic Safety Division Standard

TRAFFIC CONTROL PLAN DIVERSIONS AND NARROW BRIDGES

TCP(2-7)-23

FILE: tcp2-7-23.dgn	DN:	CK:	DW:	CK:
©TxDOT April 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-85 4-98 2-18 8-95 3-03 4-23 1-97 2-12	6464	87	001	FM 1697, ETC.
	DIST	COUNTY		SHEET NO.
	AUS	LEE, ETC.		83

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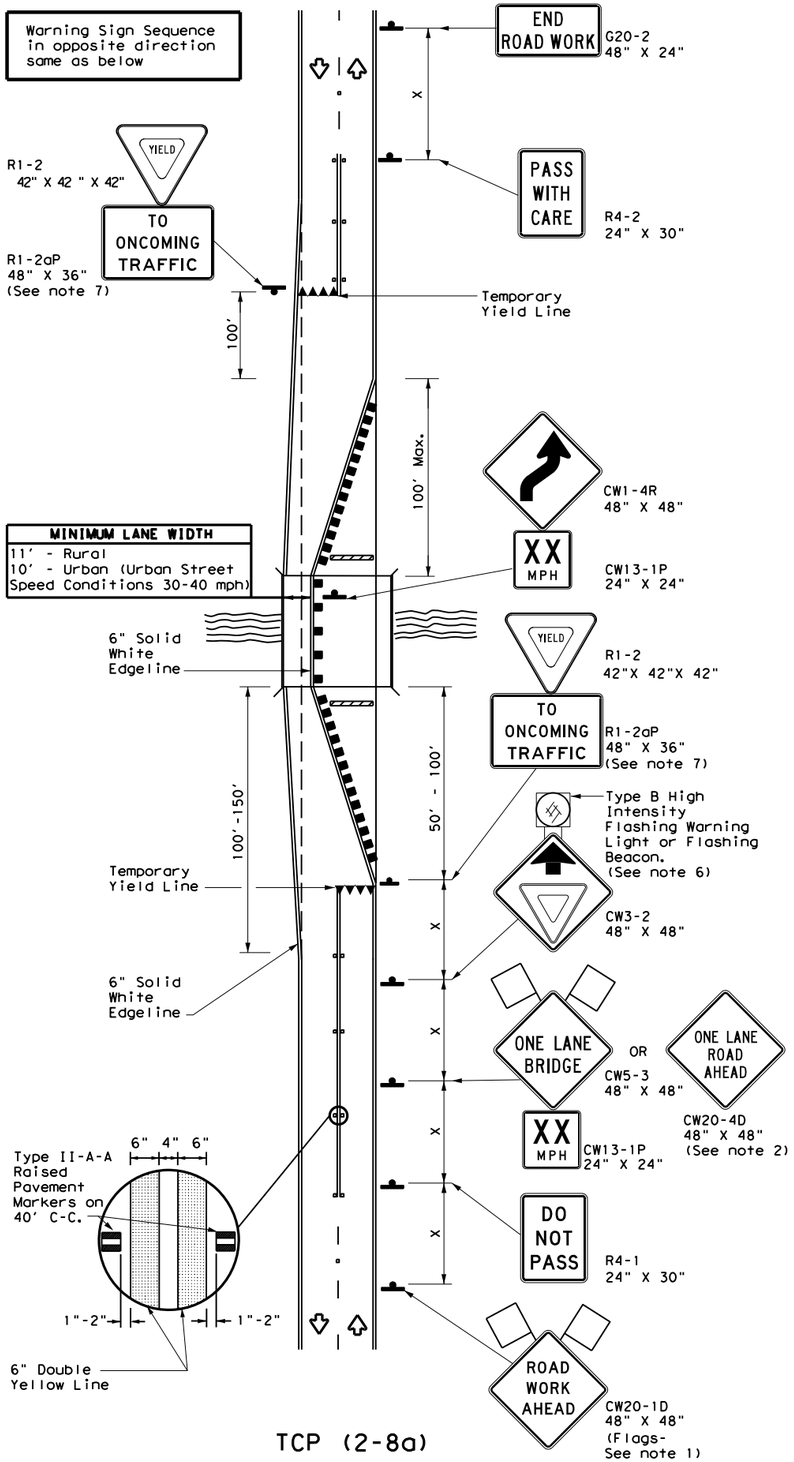
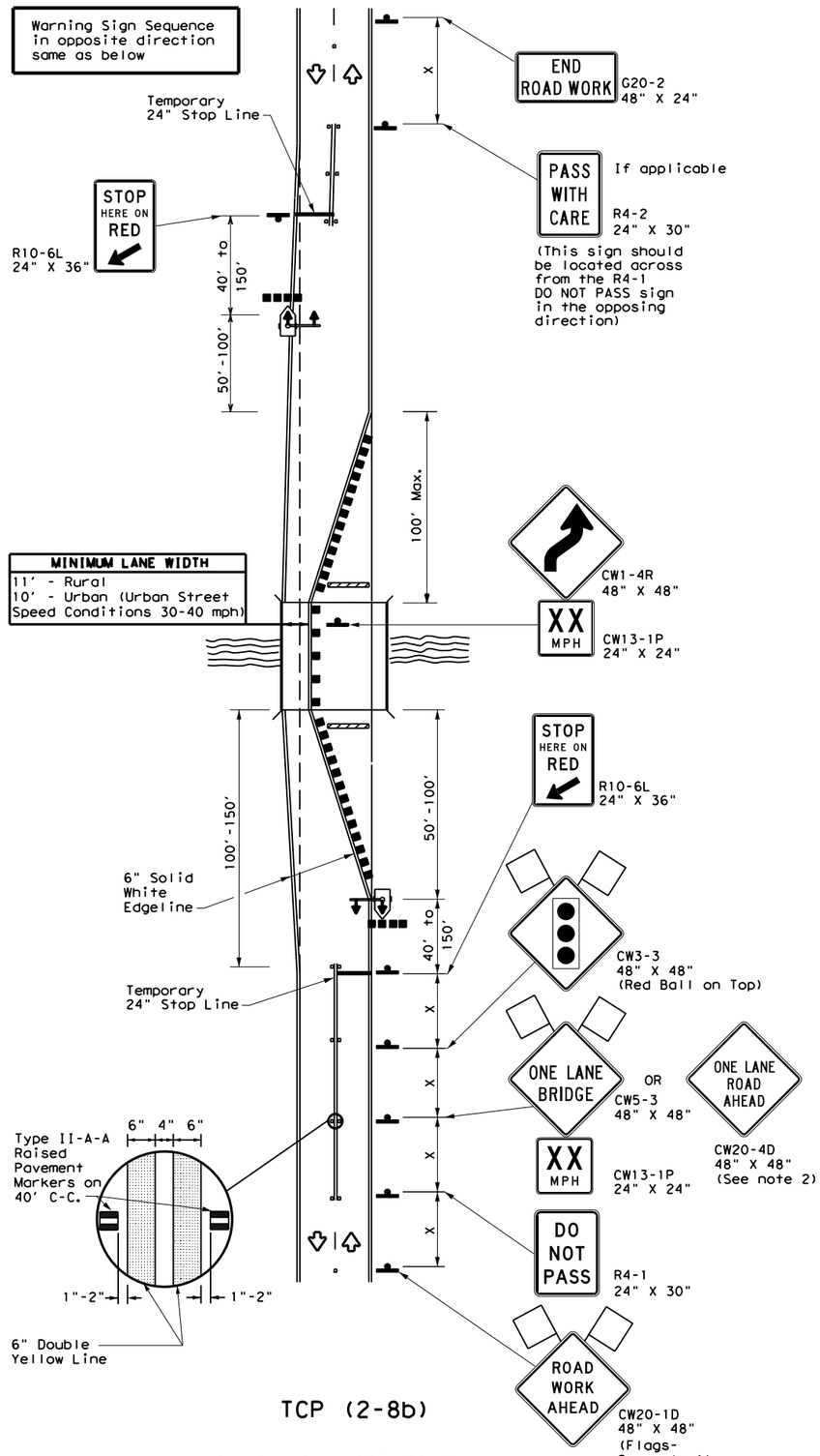


TCP (2-8a)

ONE LANE TWO-WAY
TRAFFIC CONTROL WITH YIELD SIGNS
(Less Than 2000 ADT-See Note 5)



TCP (2-8b)

ONE LANE TWO-WAY
TRAFFIC CONTROL WITH TRAFFIC SIGNAL

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Sign		Traffic Flow
	Flag		Flagger
	Raised Pavement Markers Ty II-AA		Temporary or Portable Traffic Signal

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. When this TCP is used at a location which does not involve a bridge, a 48" x 48" CW20-4D "ONE LANE ROAD AHEAD" signs should be used in lieu of the CW5-3 "ONE LANE BRIDGE" signs. The CW13-1P Advisory Speed Plaque is required with either warning sign.
3. Raised pavement markers shall be placed 40 feet c-c on centerline between DO NOT PASS signs and stop or yield lines.
4. For intermediate term situations, when it is not feasible to remove and restore pavement markings, the channelization must be made dominant by using a very close spacing. This is especially important in locations of conflicting information, such as where traffic is directed over a double yellow centerline. In such locations a maximum channelizing device spacing of 20 feet is recommended. The 20 foot channelizing device spacing recommendation is intended for the area of conflicting information and not the entire work zone.

TCP (2-8a)

5. Traffic control by CW3-2 "YIELD AHEAD" symbol signs for one lane two-way traffic control operations should be limited to work spaces less than 400 feet long and roadways with less than 2000 ADT. Otherwise, portable traffic signals should be used.
6. If power is available, a flashing beacon should be attached to the CW3-2 "YIELD AHEAD" symbol sign for emphasis.
7. The R1-2 "YIELD" and R1-2aP "TO ONCOMING TRAFFIC" signs and other regulatory signs shall be installed at 7 foot minimum mounting height.

TCP (2-8b)

8. A list of approved Portable Traffic Signals can be found in the "Compliant Work Zone Traffic Control Devices" list.
9. Portable traffic signals should be located to provide adequate stopping sight distance for approaching motorist (See table above).

Texas Department of Transportation

Traffic Safety Division Standard

TRAFFIC CONTROL PLAN LONG TERM ONE-LANE TWO-WAY CONTROL

TCP(2-8)-23

FILE: tcp2-8-23.dgn	DN:	CK:	DW:	CK:
© TxDOT April 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-85 4-98 2-18 8-95 3-03 4-23 1-97 2-12	6464	87	001	FM 1697, ETC.
	DIST	COUNTY		SHEET NO.
	AUS	LEE, ETC.		84

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DATE:
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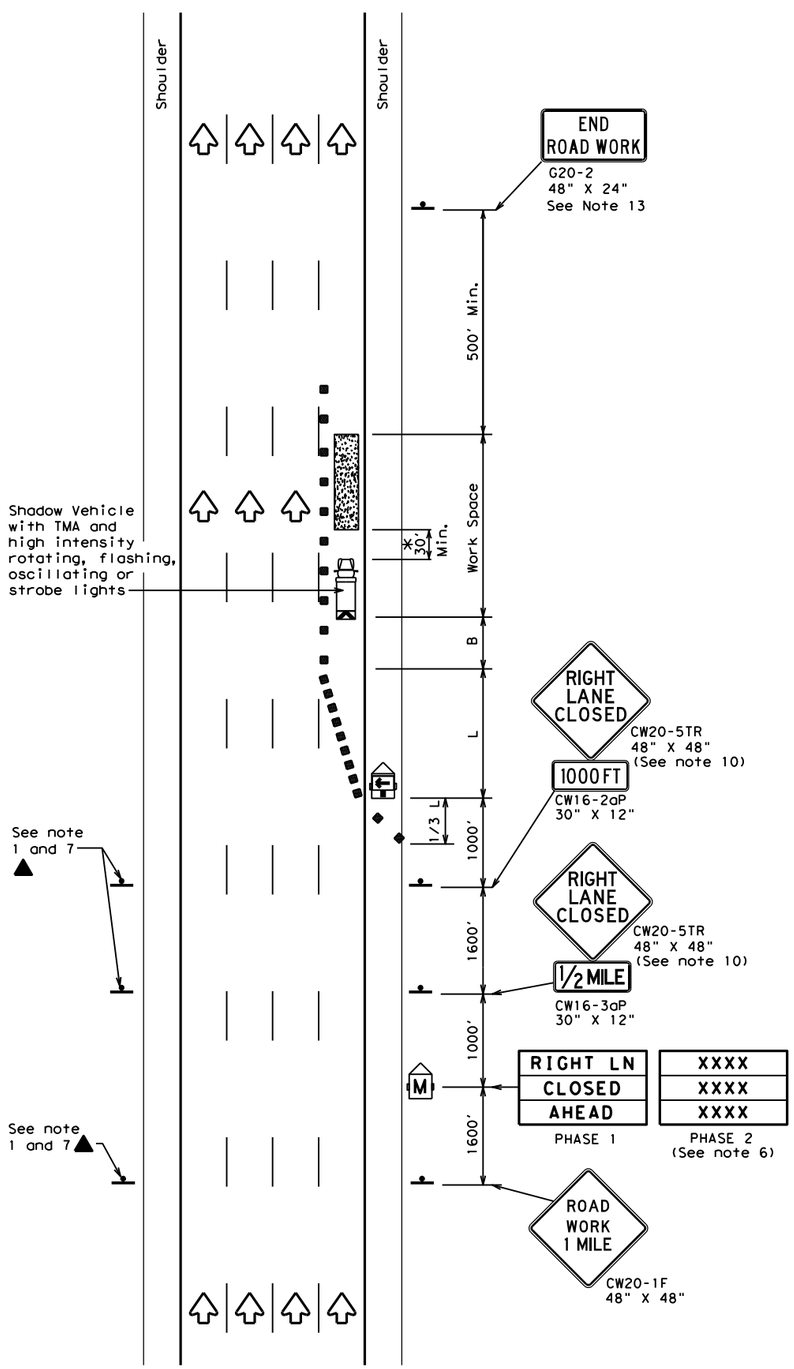
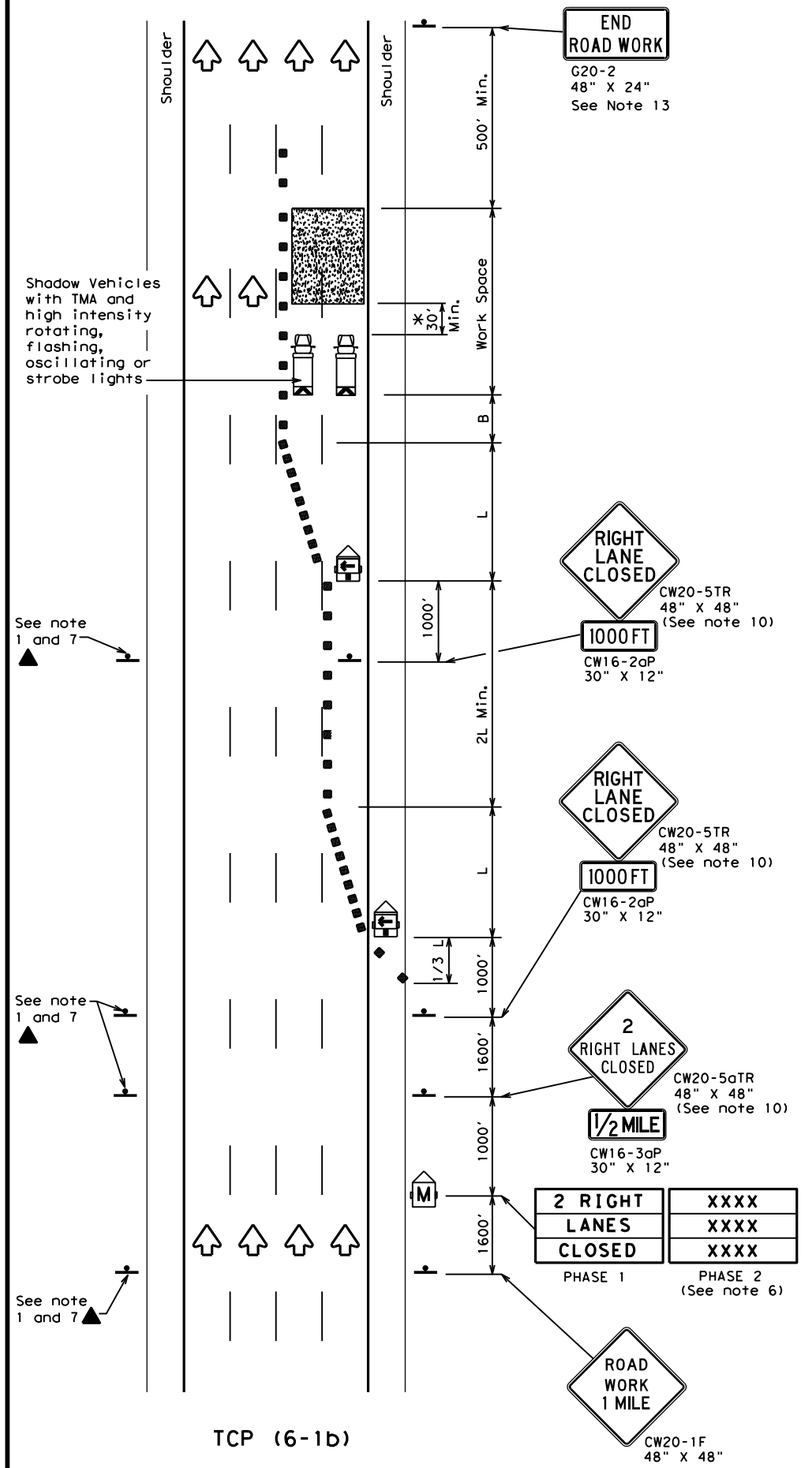


TCP (6-1a)

TYPICAL FREEWAY ONE LANE CLOSURE



TCP (6-1b)

TYPICAL FREEWAY TWO LANE CLOSURE

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

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" **			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

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

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

GENERAL NOTES

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. Drums or 42"cones are the typical channelizing devices. For Intermediate Term Stationary work, drums shall be used on tapers with drums or 42" cones used on tangent sections. Other channelizing devices may be used as directed by the Engineer.
3. All construction signs and barricades placed during any phase of work shall remain in place until removal is approved by the Engineer.
4. The Engineer may direct the Contractor to furnish additional signs and barricades as required to maintain traffic flow, detours and motorist safety during construction.
5. Static message boards or changeable message signs stating the date and duration of ramp or freeway lane closures shall be placed a minimum of seven (7) calendar days in advance of the actual closure.
6. Phase 2 of the PCMS message should include appropriate information formatted as shown on BC(6), such as "MERGE LEFT," recommended advisory speed, delay information, or other specific warnings.
7. Duplicate construction warning signs should be erected on the medians side of freeways where median width will permit and traffic volume justifies the signing.
8. The number of closed lanes may be increased provided the spacing of traffic control devices, taper lengths and tangent lengths meet the requirements of the TMUTCD.
9. Warning signs for intermediate term stationary work should be mounted at 7' to the bottom of the sign.
10. Warning signs shown shall be appropriately altered for left lane closures. When signs are mounted at 1' height for short term stationary or short duration work, sign versions shown in the SHSD for Texas with distances on the sign face rather than mounted on a plaque below the sign may be used.
11. When possible, PCMS units should be located in advance of the last available exit ramp prior to the lane closure to allow motorists an alternate route. They may also be relocated to improve advance warning in case of unanticipated queuing or congestion.
12. For Intermediate Term Stationary work at night, floodlights should be used to illuminate the work area and equipment crossings. Floodlights shall not produce a disabling glare condition for road users or workers.
13. The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

* A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN FREEWAY LANE CLOSURES

TCP(6-1)-12

FILE: tcp6-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	6464	87	001	FM 1697, ETC.
8-12	DIST	COUNTY		SHEET NO.
	AUS	LEE. ETC.		85

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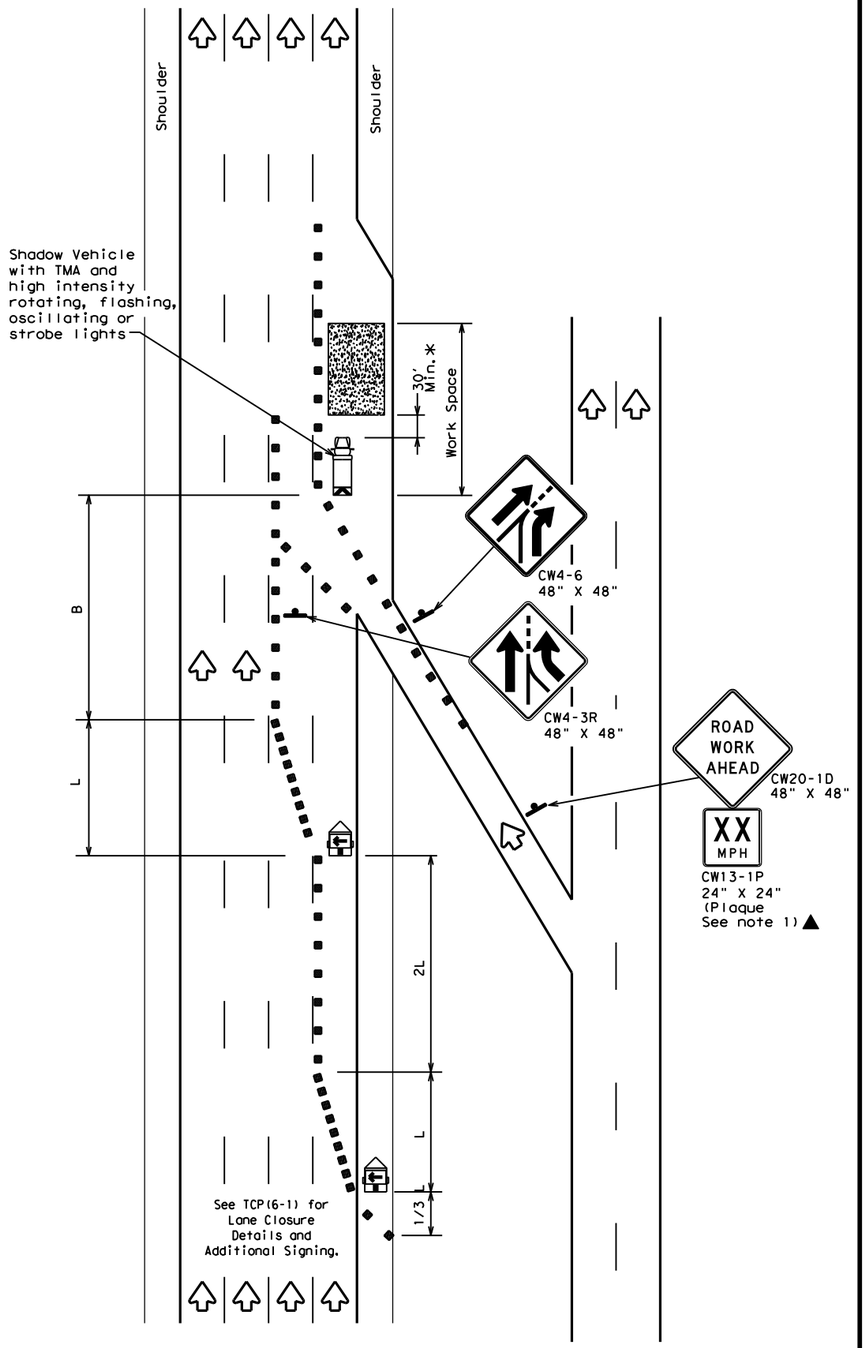
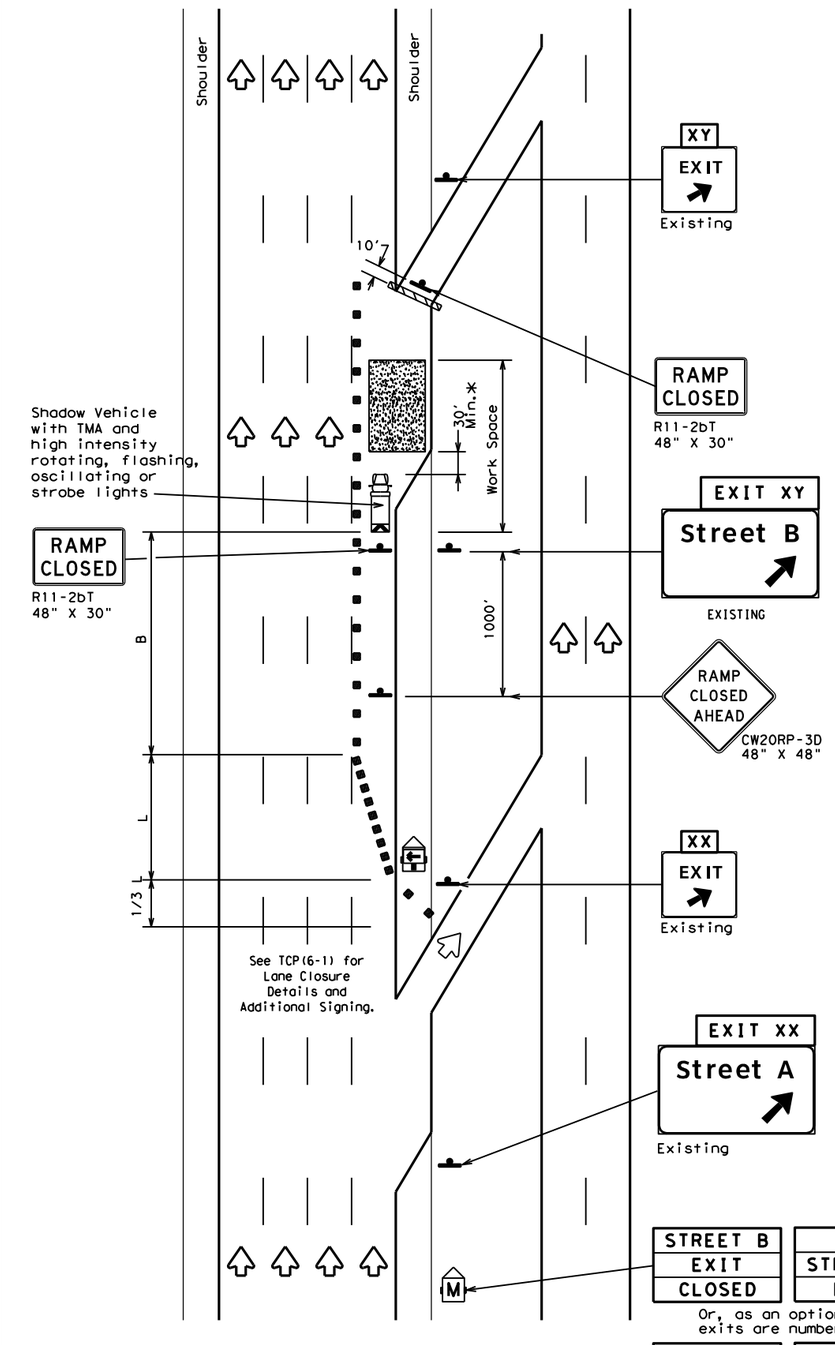


TCP (6-3a)

ENTRANCE RAMP OPEN



STREET B	USE
EXIT	STREET A
CLOSED	EXIT

Or, as an option when exits are numbered

EXIT XY	USE
CLOSED	EXIT XX

Place 1 mile (approx.) in advance of Street A exit.

TCP (6-3b)

EXIT RAMP CLOSED
TRAFFIC EXITS PRIOR TO CLOSED RAMP

LEGEND

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

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
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60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

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

TYPICAL USAGE

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

GENERAL NOTES:

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.

*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA BEYOND RAMP

TCP(6-3)-12

FILE: tcp6-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	6464	87	001	FM 1697, ETC.
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	AUS	LEE, ETC.		86

DATE:
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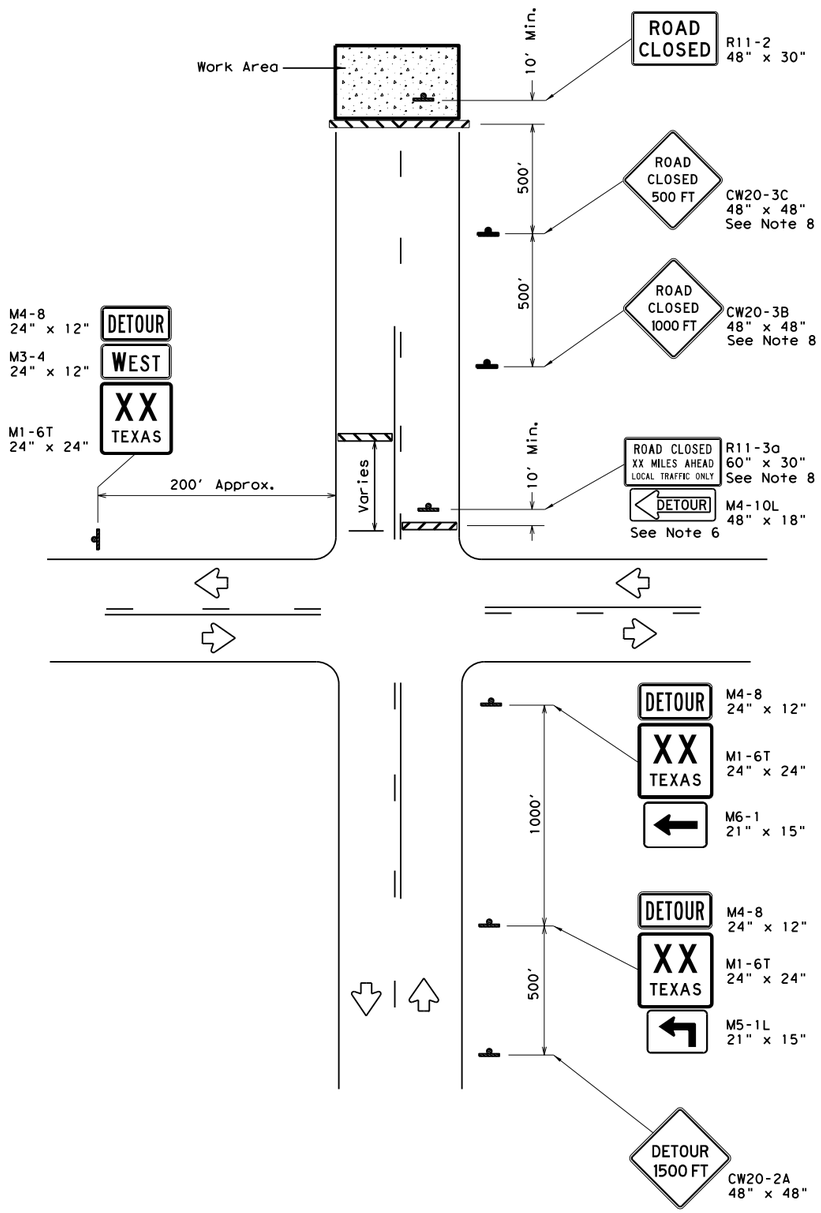
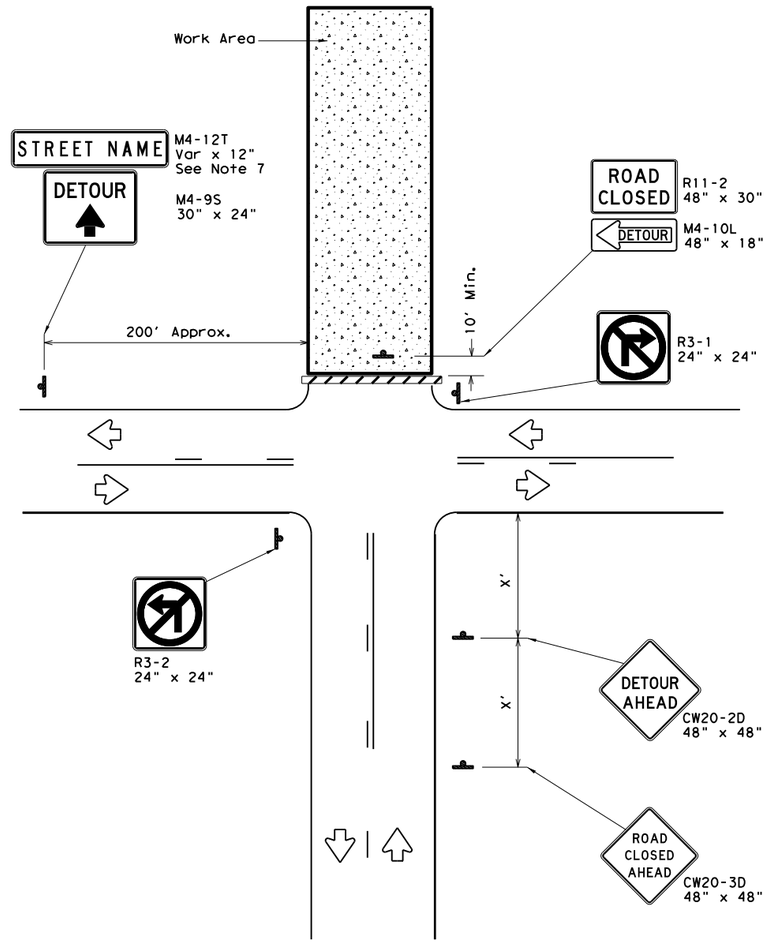
DATE:
FILE:



ROAD CLOSURE BEYOND THE INTERSECTION

Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION

Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

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

* Conventional Roads Only

GENERAL NOTES

1. This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
2. Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices list (CWZTCD).
3. Stockpiled materials shall not be placed on the traffic side of barricades.
4. Barricades at the road closure should extend from pavement edge to pavement edge.
5. Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be signed as shown elsewhere in the plans.
6. If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.
7. The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.
8. For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (R11-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (R11-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3B) and ROAD CLOSED 500 FT (CW20-3C) signs.
9. Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE ROAD CLOSURE DETAILS

WZ(RCD)-13

FILE: wzrcd-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	6464	87	001	FM 1697, ETC.
1-97 4-98 7-13	DIST	COUNTY		SHEET NO.
2-98 3-03	AUS	LEE, ETC.		87