STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

PROJECT NO. C 908-00-126
CCSJ: 0908-00-126

VARIOUS HIGHWAYS
TAYLOR COUNTY, ETC

LIMITS FROM: VARIOUS
FOR THE CONSTRUCTION OF: BRIDGE MAINTENANCE
CONSISTING OF: BRIDGE MAINTENANCE

DESIGN SPEED : N/A
CURRENT A.D.T. : N/A
PROJECTED A.D.T. : N/A
FUNCTIONAL CLASS : VARIOUS
EXISTING NBI# : SEE PROJECT LAYOUT
PROPOSED NBI#: N/A

FHWA TEXAS DIVISION	PROJECT NO.		SHEET NO.
	C 908-00-126		1
STATE	DISTRICT	COUNTY	
TEXAS	ABL	TAYLOR, ETC.	
CONTROL	SECTION	JOB	HIGHWAY NO.
0908	00	126	VARIOUS

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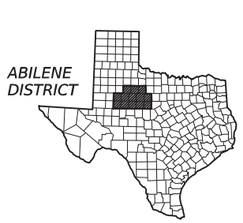
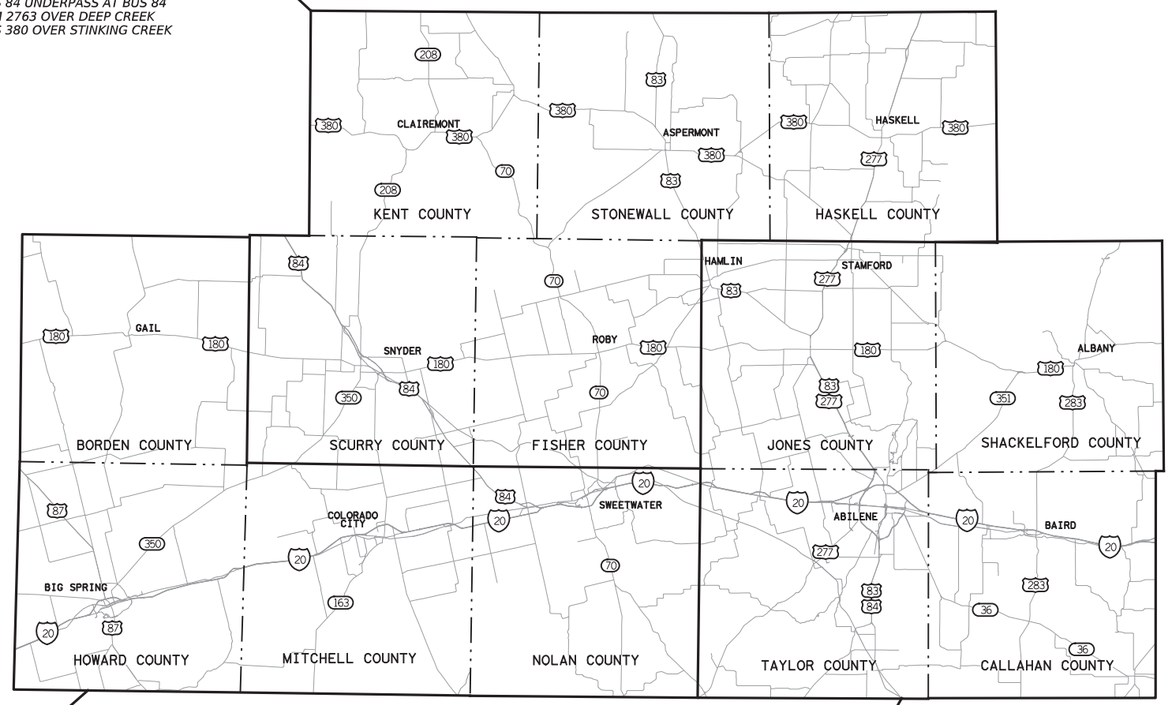
SEE SHEET 2 FOR INDEX OF SHEETS

SNYDER AREA BRIDGES - SEE LOCATION MAP

NBI#: 08-105-0-0157-09-003: US 277 OVER RICE SPRINGS BRANCH
NBI#: 08-105-0-0157-09-008: US 277 OVER RICE SPRINGS BRANCH TRIB
NBI#: 08-208-0-0053-08-072: US 84 UNDERPASS AT FM 1611
NBI#: 08-208-0-0053-09-052: US 84 UNDERPASS AT BUS 84
NBI#: 08-208-0-3311-01-001: FM 2763 OVER DEEP CREEK
NBI#: 08-217-0-0106-04-054: US 380 OVER STINKING CREEK





BIG SPRING AREA BRIDGES - SEE LOCATION MAP

NBI#: 08-115-0-0005-06-043: IH 20 OVERPASS AT MISSOURI PACIFIC RR
NBI#: 08-115-0-0693-01-024: SH 350 OVERPASS AT MOPAC RR AND BEALS CREEK
NBI#: 08-168-0-0005-08-094: IH 20 WBML OVER COLORADO RIVER
NBI#: 08-168-0-0005-08-095: IH 20 EBML OVER COLORADO RIVER
NBI#: 08-177-0-0006-02-189: IH 20 UNDERPASS AT BUS 20 EB
NBI#: 08-177-0-0006-02-232: IH 20 WBML OVERPASS AT HOPKINS RD
NBI#: 08-177-0-0006-15-009: BI 20 OVERPASS AT AT&SF RR AND WALNUT ST
NBI#: 08-177-0-0053-12-083: US 84 EB OVERPASS AT UPRR & BUS 84
NBI#: 08-177-0-0053-12-084: US 84 WB OVERPASS AT UPRR & BUS 84

ABILENE AREA BRIDGES - SEE LOCATION MAP

NBI#: 08-128-0-2032-02-004: FM 600 OVER ELM CREEK
NBI#: 08-221-0-0407-06-018: US 277 OVERPASS AT BNSF RR

MAP SCALE: 1" = 20 MI

EXCEPTIONS: N/A
EQUATIONS: N/A
R.R. CROSSINGS: UPRR & BNSF

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

FINAL PLANS

LETTING DATE: SEPTEMBER 2024
DATE CONTRACTOR BEGAN WORK: _____
DATE WORK WAS COMPLETED: _____
DATE WORK WAS ACCEPTED: _____
FINAL CONTRACT COST: $ _____
CONTRACTOR : _____

CERTIFICATION FOR FINAL PLANS

THIS PROJECT WAS BUILT ACCORDING TO THE PLANS AND SPECIFICATIONS. THESE FINAL PLANS REFLECT THE WORK DONE AND THE QUANTITIES SHOWN THEREON AND ON THE FINAL ESTIMATE ARE FINAL QUANTITIES

AREA ENGINEER *DATE*

THE DISTRICT TRAFFIC SAFETY COMMITTEE HAS REVIEWED THE TRAFFIC CONTROL PLAN FOR THIS PROJECT AND IT IS IN COMPLIENCE WITH CURRENT [illegible] STANDARDS

DocuSigned by: Michael Wittie, P.E. 62A1809BE662415... 6/25/2024 *DATE*

Texas Department of Transportation

SUBMITTED FOR LETTING: 06/14/2024
GREGORY M. KOCHERSPERGER, P.E.
HDR PROJECT MANAGER

RECOMMENDED FOR LETTING: 06/18/2024
MICHAEL ROETHELI, P.E.
TxDOT PROJECT MANAGER

RECOMMENDED FOR LETTING: 6/25/2024
DocuSigned by: Ryan Sayles EBF7BBC51549476... *P.E.*
BIG SPRING AREA ENGINEER

RECOMMENDED FOR LETTING: 6/25/2024
DocuSigned by: Michael Haithcock 5757E28879884FD... *P.E.*
DIRECTOR OF TP & D

APPROVED FOR LETTING: 6/25/2024
DocuSigned by: Thomas D. Allbritton, P.E. 0F6F7E74C37D430...
DISTRICT ENGINEER

CK: GK
DW: NS
CK: JD
DW: NS

INDEX OF SHEETS

STATE OF TEXAS
GREGORY W. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

SIGNATURE OF REGISTRANT , P.E. 06/14/2024 DATE

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

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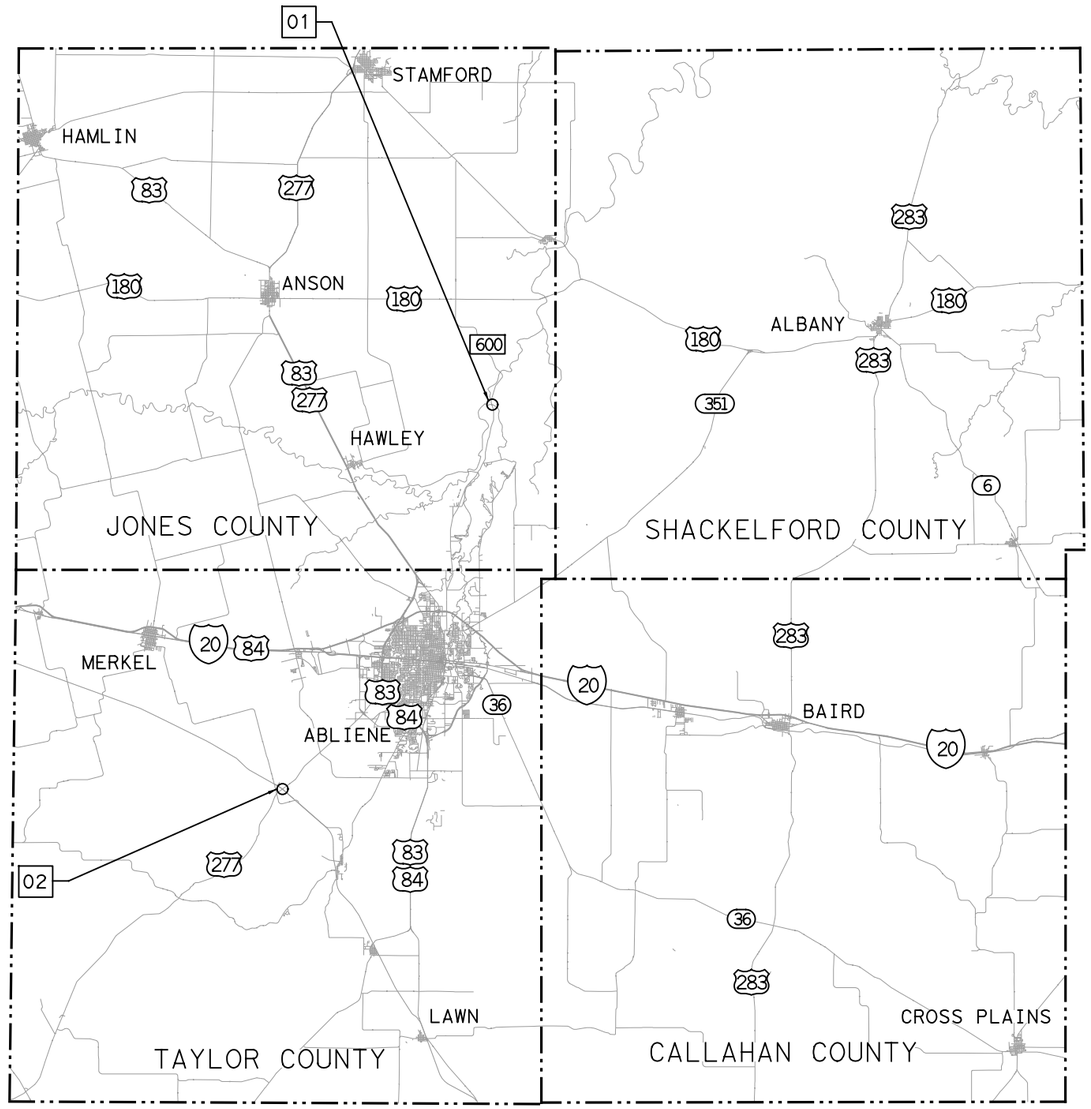
DATE:
FILE:



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LOCATION SUMMARY

LOCATION	COUNTY	NBI NUMBER	HIGHWAY	CROSSING	LENGTH OF BRIDGE	LENGTH OF ROADWAY	TOTAL LENGTH
REF 01	JONES	08-128-0-2032-02-004	FM 600	ELM CREEK	224.6 FT = 0.043 MI	0.0 FT = 0.000 MI	224.6 FT = 0.043 MI
REF 02	TAYLOR	08-221-0-0407-06-018	US 277	BNSF RR	180.0 FT = 0.034 MI	0.0 FT = 0.000 MI	180.0 FT = 0.034 MI
				TOTAL ABILENE AREA (CSJ 0908-00-126)	404.6 FT = 0.077 MI	0.0 FT = 0.000 MI	404.6 FT = 0.077 MI

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

LOCATION MAP
ABILENE AREA

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CONT	SECT	JOB	HIGHWAY
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CK: GK
DW: NS
CK: JD
DW: NS

DATE:
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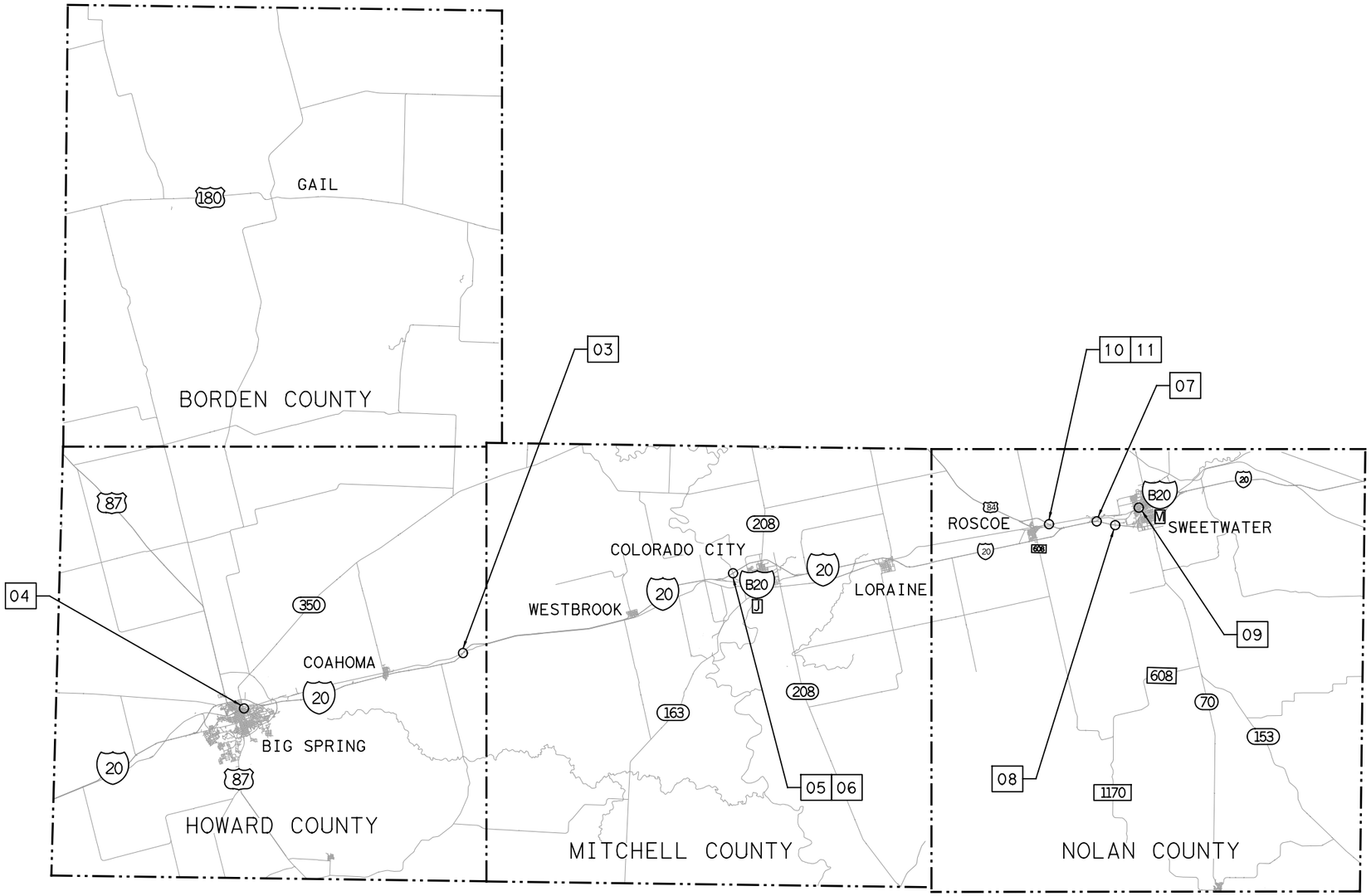
DW: NS
CK: JD
DW: NS
CK: GK



LOCATION SUMMARY

LOCATION	COUNTY	NBI NUMBER	HIGHWAY	CROSSING	LENGTH OF BRIDGE	LENGTH OF ROADWAY	TOTAL LENGTH
REF 03	HOWARD	08-115-0-0005-06-043	IH 20	MISSOURI PACIFIC RR	420.0 FT = 0.080 MI	0.0 FT = 0.000 MI	420.0 FT = 0.080 MI
REF 04	HOWARD	08-115-0-0693-01-024	SH 350	MOPAC RR AND BEALS CREEK	751.0 FT = 0.142 MI	0.0 FT = 0.000 MI	751.0 FT = 0.142 MI
REF 05	MITCHELL	08-168-0-0005-08-094	IH 20 WBML	COLORADO RIVER	580.0 FT = 0.110 MI	0.0 FT = 0.000 MI	580.0 FT = 0.110 MI
REF 06	MITCHELL	08-168-0-0005-08-095	IH 20 EBML	COLORADO RIVER	580.0 FT = 0.110 MI	0.0 FT = 0.000 MI	580.0 FT = 0.110 MI
REF 07	NOLAN	08-177-0-0006-02-189	BUS 20 EB	IH 20	400.0 FT = 0.076 MI	0.0 FT = 0.000 MI	400.0 FT = 0.076 MI
REF 08	NOLAN	08-177-0-0006-02-233	IH 20 WBML	HOPKINS RD	114.0 FT = 0.022 MI	0.0 FT = 0.000 MI	114.0 FT = 0.022 MI
REF 09	NOLAN	08-177-0-0006-15-009	BI 20	AT&SF RR / WALNUT ST	657.4 FT = 0.125 MI	0.0 FT = 0.000 MI	657.4 FT = 0.125 MI
REF 10	NOLAN	08-177-0-0053-12-083	US 84 EB	UPRR & BUS 84	435.0 FT = 0.082 MI	0.0 FT = 0.000 MI	435.0 FT = 0.082 MI
REF 11	NOLAN	08-177-0-0053-12-084	US 84 WB	UPRR & BUS 84	435.0 FT = 0.082 MI	0.0 FT = 0.000 MI	435.0 FT = 0.082 MI
				TOTAL BIG SPRING AREA (CSJ 0908-00-126)	3952.4 FT = 0.749 MI	0.0 FT = 0.000 MI	3952.4 FT = 0.749 MI

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

LOCATION MAP
BIG SPRING AREA

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CONT	SECT	JOB	HIGHWAY
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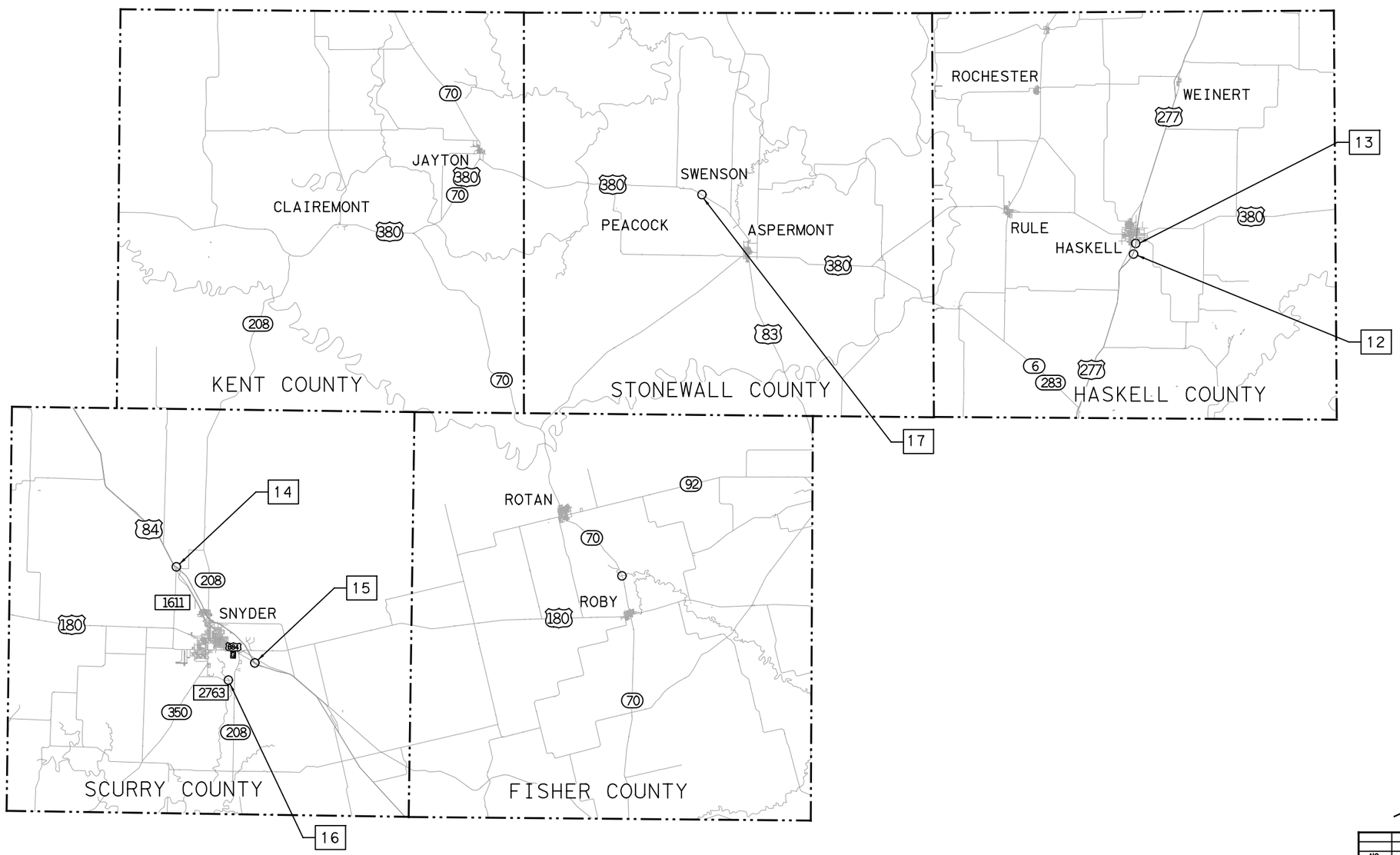

LOCATION SUMMARY

LOCATION	COUNTY	NBI NUMBER	HIGHWAY	CROSSING	LENGTH OF BRIDGE	LENGTH OF ROADWAY	TOTAL LENGTH
REF 12	HASKELL	08-105-0-0157-09-003	US 277	RICE SPRINGS BRANCH	180.0 FT = 0.034 MI	0.0 FT = 0.000 MI	180.0 FT = 0.034 MI
REF 13	HASKELL	08-105-0-0157-09-008	US 277	RICE SPRINGS BRANCH TRIB	170.0 FT = 0.032 MI	0.0 FT = 0.000 MI	170.0 FT = 0.032 MI
REF 14	SCURRY	08-208-0-0053-08-072	FM 1611	US 84	230.0 FT = 0.044 MI	0.0 FT = 0.000 MI	230.0 FT = 0.044 MI
REF 15	SCURRY	08-208-0-0053-09-052	BUS 84	US 84	370.0 FT = 0.070 MI	0.0 FT = 0.000 MI	370.0 FT = 0.070 MI
REF 16	SCURRY	08-208-0-3311-01-001	FM 2763	DEEP CREEK	200.0 FT = 0.038 MI	0.0 FT = 0.000 MI	200.0 FT = 0.038 MI
REF 17	STONEWALL	08-217-0-0106-04-054	US 380	STINKING CREEK	160.0 FT = 0.030 MI	0.0 FT = 0.000 MI	160.0 FT = 0.030 MI
				TOTAL SNYDER AREA (CSJ 0908-00-126)	1310.0 FT = 0.248 MI	0.0 FT = 0.000 MI	1310.0 FT = 0.248 MI

CK: GK
DW: NS
CK: JD
DW: NS

DATE:
FILE:

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

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Texas Department of Transportation

LOCATION MAP
SNYDER AREA

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
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ABILENE DISTRICT GENERAL NOTES
2024 SPECIFICATIONS

General Requirements – Item 1 thru 10

I. **UNION PACIFIC RAILROAD COMPANY**

Protection of Fiber Optic Cable Systems

Fiber optic cable systems may be buried on the railroad's property. Protection of the fiber optic cable systems is of extreme importance since any break could disrupt service to users resulting in business interruption and loss of revenue and profits. The State and/or its Contractor shall telephone the railroad during normal business hours (7:00 A.M. to 9:00 P.M., Central time, Monday through Friday, except holidays) at 1-800-336-9193 (also a 24-hour, seven-day number for emergency calls) to determine if fiber optic cable is buried on the railroad's premises to be used by the State. If it is, the State and/or its Contractor will telephone the telecommunications company (ies) involved, arrange for a cable locator and make arrangements for relocation or other protection of the fiber optic cable prior to beginning any work on the railroad's premises.

II. BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY

Protection of Fiber Optic Cable Systems

The State and/or its Contractor shall, five working days before any work is performed, call the railroad's communications network control center at 1-800-533-2891 (a 24-hour number) to assist in determining if fiber optic communications, control systems, or other type of cable systems are buried in the general locations where work is to be performed. In the event such cable is present, the State and/or its Contractor shall then call the owner of the cable line to determine its exact location. The Contractor shall indemnify and hold harmless the railroad against any cost or claims arising out of damage to any fiber optic communications, control systems or other types of cable systems, but only to the extent such damage is caused by negligence of the Contractor.

Contractor questions on this project are to be addressed to the following individual(s):

Ryan R. Sayles, P.E. / Phone: 432-263-4768 / Ryan.Sayles@txdot.gov
LaRissa Halford, E.I.T. / Phone: 806-356-3226 / larissa.halford@txdot.gov
(Big Spring Area Office)

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

For Q&A's on Proposals navigate to
https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors
Use the dashboard to navigate to the project you are interested in by scrolling or filtering the dashboard using the controls on the left. Hover over the blue hyperlink for the project you want to view the Q&A for and click on the link in the window that pops up.

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Highway: Various
County: Taylor, Etc.

Failure to make necessary corrections to traffic control items based on barricade inspections will be cause for withholding the monthly estimate until such corrections have been made.

Provide ingress/egress to the adjacent properties in areas under construction. Phased construction of driveways and streets shall be required to provide uninterrupted access to adjacent properties. Coordinate work with the property owners before beginning any construction in the vicinity of the drive. This work is subsidiary to Item 502.

Environmental

Endangered and Protected Species

1. Migratory Birds
   - **a. Bird nesting season is typically 15Feb through 15Sep annually.**
   - b. The Contractor will avoid disturbing, destroying, removing, or relocating migratory birds and active nests found in trees, culverts, bridges, on the ground, or anywhere they are encountered.
   - c. Perform all tree trimming and other vegetation clearing activities during the non-breeding season (typically 15Sep-15Feb annually). Perform any inactive nest removal and bird exclusion methods to prevent birds from establishing nests. Phasing of work during construction may be necessary to stay in compliance.
   - d. When active nests are unexpectedly encountered on-site during construction, the Contractor will stop work and immediately notify the Engineer. Take measures to avoid disturbance of these birds, their occupied nest, eggs, and/or young, in accordance with the Migratory Bird Treaty Act, Texas Parks and Wildlife Code, and TxDOT policy.
   - e. The Engineer will notify the Contractor when work may resume.
   - f. The Contractor should be prepared to prevent migratory birds from building nests by utilizing nest prevention methods, such as bird-deterrent netting and bird-repelling sprays and/or gels, between 15Feb and 15Sep. The Contractor can discuss other preventative measures with the Engineer and/or District Environmental Staff.

Best Management Practices

1. Bird BMPs
   - a. Not disturbing, destroying, or removing active nests, including ground nesting birds, during the nesting season.
   - b. Avoiding the removal of unoccupied, inactive nests, as practicable.
   - c. Preventing the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair.
   - d. Not collecting, capturing, relocating, or transporting birds, eggs, young, or active nests without a permit.

DATE:
FILE:

Item 5, "Control of Work"
Make necessary arrangements with utility owners regarding temporary protections such as bracing power poles, and de-energizing power lines. The Department will not reimburse the cost of such temporary protections to the Contractor, unless the Engineer determines that inadequate information was available at the time the project was bid. **"Call Before You Dig" "Call 811"**

Provide notification to the District Traffic Engineering Section by telephone at 325-676-6991 and by email at ABL_TrafficFix@txdot.gov when planning drilling or excavation work in areas where existing TxDOT underground utilities exist. Visual evidence of TxDOT underground utilities in the area include illumination poles, ground boxes, flashing beacons, traffic signals, etc. This notification must be provided 72 hours in advance of performing the work.

Item 6, "Control of Materials"
Lead abatement will be performed by the Contractor at connection points shown in the demolition plan. Flame cutting or saw cutting will be allowed only at locations shown in the demolition plans.

Item 7, "Legal Relations and Responsibilities"

The total area disturbed for this project is **0.0** acres. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain required authorization from the TCEQ for Contractor PSLs for construction support activities on or off the ROW.

Provide one SWP3 Notification Board for this project. Notification Boards are to be placed at locations within the right-of-way but outside the clear zone as directed by the Engineer. Consider this work to be subsidiary to the various bid items of the contract.

No significant traffic generator events identified.

Hard hats are required at all times during construction when construction personnel are in TxDOT Right-of-Way.

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.

DATE:
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CCSJ: 0908-00-126
Highway: Various
County: Taylor, Etc.

LIGHTING STANDARDS FOR HIGHWAY MAINTENANCE OR CONSTRUCTION VEHICLES AND SERVICE VEHICLES

VEHICLE LIGHTING SUMMARY

Vehicle	Color of Flashing Lights	Transportation Code
Police Vehicles	Red/Blue/White/Amber	547.305 & 547.702
Fire/EMS Vehicles	Red/Blue/White/Amber	547.305 & 547.702
Volunteer Fire/EMS	Red/Blue/White/Amber	547.305 & 547.702
School	Bus Red/White (rooftop) /Amber	547.305 & 547.701
Highway Maintenance or Construction Vehicles and Service Vehicles	Amber/Blue	547.105 & TxDOT Lighting Standards

Item 8 "Prosecution and Progress"
Each contract awarded by the Department stands on its own and as such, is separate from other contracts. A Contractor awarded multiple contracts must be capable and sufficiently staffed to concurrently process and/or execute all contracts at the same time.

Coordinate and update the work schedule with the project inspector daily. Give a minimum of 24 hours of notice to project inspector if work requiring inspection or testing is to be performed. Failure to do so may cause that work to be delayed or postponed if TxDOT personnel are not available. Work performed without suitable inspection, as determined by the Engineer, may be ordered removed and replaced at Contractor's expense.

This project includes a delayed start provision of 60 days for Contractor Mobilization.

Prepare the progress schedule as a Critical Path Method (CPM).

Item 9, "Measurement and Payment"
The progress payment period shall end on the 25th of each month, unless directed by the Area Engineer. Material on Hand (MOH) is due two business days before estimate cut off.

Item 429, "Concrete Structure Repair"
Areas to be repaired at each location shall be marked in the field by the Engineer.

Areas to be repaired at each location shall be repaired in accordance with the Department's Concrete Repair Manual. The Contractor must prepare and submit formal procedures outlining repair plans and which proprietary implementation so the Engineer has sufficient time to review. The Engineer must approve in writing any procedures that differ from those in the Concrete

Repair Manual or materials that are not included in one of TxDOT's MPLS materials they plan to utilize. Submit the package a minimum of two weeks prior to.

For Vertical and Overhead repairs use preapproved Type C Repair Material. For Deck repairs use preapproved Type B Ultra-Rapid Extended Repair Material.

Item 446, "Field Cleaning and Painting Steel"
Provide a System II and System I overcoat as shown in the plans Paint with a Federal Standard 595B #35630 color.

The existing coating to be removed contains lead or other hazardous materials.

Item 502, "Barricades, Signs and Traffic Handling"
Provide the Engineer with written notification seven (7) days in advance of major traffic changes. A major traffic change is defined as the temporary (greater than one day) or permanent relocation of traffic lanes typically in an urban setting. The notice will, at a minimum, include the expected date, time and scope of the traffic change. The Department will utilize the information provided to inform the traveling public of the changes. Failure to provide advance notice, or to provide accurate information, will result in delaying the work until such time that the public has been notified.
Additional signs, barricades and traffic handling may be necessary to complete the work shown herein and will be provided by the contractor as required and will be considered subsidiary to this item.

In sections where traffic is restricted to one lane, two-way traffic, flaggers will be stationed at each end of that section with two-way communication devices and a pilot car will control operations.

Pilot car is subsidiary to item 502.

Relocate existing roadside signs to temporary supports as approved by the engineer.

All safety appurtenances such as signs, delineators, object markers and route markers will be in place prior to opening each phase of the construction to traffic, unless otherwise directed.

During construction on all underpass structures erect and maintain accurate clearance signs in accordance with the "Texas Manual on Uniform Traffic Control Device for Streets and Highways". The mounting method for the temporary clearance sign is subject to approval of the Engineer. Temporary clearance signs are considered subsidiary to the various bid items.
Movement of construction equipment and haul trucks will be prohibited from crossing the median unless specifically authorized by the Engineer. Ingress and egress to main lanes will be at entrance and exit ramps.

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

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Highway: Various
County: Taylor, Etc.

Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

Work will not be allowed on both sides of the roadbed at the same time.

Equip all work vehicles within 30 feet of the traveled way with a functioning amber strobe light or rotating beacon visible from all directions.

Repair barricades within the timeline shown on the barricade inspection report. Failure to comply will cease all work until barricades are repaired to the satisfaction of the Department. Replace all damaged traffic control devices immediately. Remove any damaged traffic control devices from the project within 24 hours.

Traffic switches will not be permitted on Fridays or any working day preceding a holiday unless authorized by the Engineer.

The Contractor shall bid the traffic control plan shown in the plans. Any proposed alterations to the TCP (combining work areas/phasing/etc.) shall be submitted to the Engineer at least 10 days prior to anticipated changes.

All bid items and work requiring traffic control is the responsibility of the contractor, even when not explicitly detailed in the plans. Consider this work subsidiary to Item 502.

Ground mount all signs when possible.

Conflicting guide signs shall be covered as approved by the Engineer. This work shall be subsidiary to Item 502.

Removing, relocating or covering speed limit signs shall be considered subsidiary to item 502.

Item 505, "Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA)"
Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA) will not be considered a major item of work on this project.

TMA,s will only be paid while workers are present or to protect a blunt object.

The contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMAs needed for the project. The Contractor must get approval from the Engineer for any changes in the number of TMA as shown in the plans.

DATE:
FILE:

If a TMA is used for both mobile and stationary traffic control on the same day, it will be paid for as stationary for that day.

Provide separate attenuators for each work area within a common lane closure as approved or directed by the Engineer.

		BASIS OF ESTIMATE FOR STATIONARY TMAs			
			TMA (Stationary)		
Location	Phase	Standard	Required	Additional	TOTAL
REF 01	1 & 2	TCP(2-8)-23	1	0	1
REF 02	1	TCP(2-2)-18	1	0	1
REF 03	1	TCP(5-1)-18	1	0	1
REF 04	1	TCP(2-4)-18	1	0	1
REF 05	1	TCP(6-1)-12	1	0	1
REF 06	1	TCP(6-1)-12	1	0	1
REF 07	1	TCP(6-1)-12	1	0	1
REF 08	1	TCP(6-1)-12	1	0	1
REF 09	1	TCP(1-2)-18	1	0	1
REF 10	1	TCP(2-4)-18	1	0	1
		TCP(2-2)-18	0	0	0
REF 11	1	TCP(2-4)-18	2	0	2
		TCP(2-2)-18	0	0	0
REF 12	1 & 2	TCP(2-4)-18	1	0	1
REF 13	1 & 2	TCP(2-4)-18	1	0	1
	1 & 2	TCP(6-1)-12	1	0	1
REF 14	1	TCP(2-4)-18	1	0	1
REF 15	1	TCP(2-4)-18	1	0	1
REF 16	1	TCP(2-1)-18	1	0	1
REF 17	1 & 2	TCP(2-8)-23	1	0	1

		Basis of Estimate for Mobile TMAs			
			TMA (Mobile)		
Location	Phase	Standard	Required	Additional	TOTAL
REF 01	3	TCP(3-1)-13	1	0	1
REF 12	3	TCP(3-1)-13	1	0	1
REF 13	3	TCP(3-1)-13	1	0	1
REF 17	3	TCP(3-1)-13	1	0	1

CCSJ: 0908-00-126
Highway: Various
County: Taylor, Etc.

Item 506, "Temporary Erosion, Sedimentation, and Environmental Controls"
On site concrete washout will be allowed on this project.

The Storm Water Pollution Prevention Plan (SWP3) consists of temporary erosion control measures needed and provided for under this Item. The disturbed area is less than one acre and use of erosion control measures is not anticipated. If physical conditions encountered at the job site require necessary controls, BMP installation, maintenance, and removal will be paid as extra work on a force account basis per Articles 4.4 and 9.7.

Item 510, "One-way Traffic Control"
The contractor shall use ADDCO PTS-2000 or equivalent, that shall show wait time, as temporary traffic signals. Two (2) temporary traffic signals will be required for this project.

Item 512, "Portable Traffic Barrier
The state will furnish the portable concrete traffic barrier (PCTB) sections stockpiled at the southeast corner of intersection of SH70 and IH20, east of Sweetwater, approx.10.5 miles from the US84 over UPRR project location. All PCTB sections will be hauled by the Contractor to the project site. Upon completion, all PCTB sections will be returned to their original location. Make arrangements at the storage sites for the loading and unloading of the PCTB.

The contractor shall provide all connection hardware for state furnished PCTB.

Upon completion of the project, PCTB will become the property of the TxDOT and will be stockpiled as approved by the Engineer at the southeast corner of intersection of SH70 and IH20, east of Sweetwater, approx.10.5 miles from the project limits.

Item 514, "Permanent Concrete Traffic Barrier"
Use Class "C" concrete with air entrainment for Permanent Concrete Traffic Barrier.

Item 666, "Retroreflectorized Pavement Markings"
All longitudinal pavement markings (including profile pavement markings) must meet minimum retro reflectivity requirements.

The 3" spacing option in Detail A and B shall be used when PM (1)-22 is applicable.

Item 672, "Raised Pavement Markers"
Provide a complete system of raised pavement markers at locations indicated on the plans and as directed by the engineer. The plans are intended to show typical conditions, which can be extended to similar conditions throughout this project as approved or directed.

Bituminous adhesive shall be used on this project.

DATE:
FILE:

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0908-00-126 **DISTRICT** Abilene **COUNTY** Taylor
HIGHWAY Various

							TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0908-00-126**				
		PROJECT ID		**A00195364**				
		COUNTY		**Taylor**				
		HIGHWAY		**Various**				
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL			
	104-7006	REMOV CONC (RIPRAP)	SY	13.000			13.000	
	401-7001	FLOWABLE BACKFILL	CY	23.000			23.000	
	429-7003	CONC STR REPAIR(DECK REP(PART DEPTH))	SF	1,498.000			1,498.000	
	429-7005	CONC STR REPAIR(DECK REP (FULL DEPTH))	SF	44.000			44.000	
	429-7007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	1,238.000			1,238.000	
	432-7001	RIPRAP (CONC)(4 IN)	CY	3.000			3.000	
	432-7041	RIPRAP (STONE PROTECTION)(12 IN)	CY	25.000			25.000	
	438-7007	CLEANING AND SEALING EXIST JOINTS (CL7)	LF	350.000			350.000	
	438-7012	CLEAN AND SEAL JNTS (PAN GIRDERS) (CL7)	LF	556.000			556.000	
	439-7007	LATEX - MODIFIED CONC OVERLAY (2 IN)	SY	1,632.000			1,632.000	
	439-7014	MULTI-LAYER POLYMER OVERLAY	SY	4,338.000			4,338.000	
	442-7010	STR STEEL (PEDESTAL)	LB	1,840.000			1,840.000	
	446-7002	CLEAN & PAINT EXIST STR (SYSTEM II)	LS	1.000			1.000	
	446-7019	SPOT CLEAN & PNT EXT STR(SPL PROT SYS)	LS	1.000			1.000	
	483-7010	HYDRO-DEMOLITION (2 IN)	SY	1,632.000			1,632.000	
	483-7016	SHOT BLASTING	SY	4,338.000			4,338.000	
	500-7001	MOBILIZATION	LS	1.000			1.000	
	502-7001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	10.000			10.000	
	505-7001	TMA (STATIONARY)	DAY	90.000			90.000	
	505-7003	TMA (MOBILE OPERATION)	DAY	8.000			8.000	
	510-7003	ONE-WAY TRAF CONT (PORT TRAF SIG)	MO	2.000			2.000	
	512-7017	PORT CTB (DES SOURCE)(F-SHAPE)(TY 1)	LF	300.000			300.000	
	512-7029	PORT CTB (MOVE)(F-SHAPE)(TY 1)	LF	300.000			300.000	
	512-7041	PORT CTB (STKPL)(F-SHAPE)(TY 1)	LF	300.000			300.000	
	545-7004	CRASH CUSH ATTEN (REMOVE)	EA	1.000			1.000	
	545-7014	CRASH CUSH ATTEN (INSTL)(S)(N)(TL3)	EA	1.000			1.000	
	662-7051	WK ZN PAV MRK REMOV (REFL) TY II-A-A	EA	200.000			200.000	
	662-7068	WK ZN PAV MRK REMOV (W)6"(SLD)	LF	1,620.000			1,620.000	
	662-7077	WK ZN PAV MRK REMOV (W)24"(SLD)	LF	48.000			48.000	
	662-7100	WK ZN PAV MRK REMOV (Y)6"(SLD)	LF	7,680.000			7,680.000	
	666-7411	REFL PAV MRK TY I (W)6"(SLD)(100MIL)	LF	11,560.000			11,560.000	
	666-7420	REFL PAV MRK TY I (Y)6"(BRK)(100MIL)	LF	1,315.000			1,315.000	
	666-7423	REFL PAV MRK TY I (Y)6"(SLD)(100MIL)	LF	3,760.000			3,760.000	
	672-7002	REFL PAV MRKR TY I-C	EA	14.000			14.000	
	672-7004	REFL PAV MRKR TY II-A-A	EA	134.000			134.000	
	677-7001	ELIM EXT PM & MRKS (4")	LF	10,688.000			10,688.000	
	678-7002	PAV SURF PREP FOR MRK (6")	LF	14,515.000			14,515.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0908-00-126 **DISTRICT** Abilene **COUNTY** Taylor
HIGHWAY Various

		CONTROL SECTION JOB		**0908-00-126**		TOTAL EST.	TOTAL FINAL
		PROJECT ID		**A00195364**			
		COUNTY		**Taylor**			
		HIGHWAY		**Various**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	778-7004	CONCRETE RAIL REPLACEMENT (IN-KIND)	LF	30.000		30.000	
	780-7002	CNC CRACK REPAIR (DISCRETE)(INJECT)	LF	100.000		100.000	
	784-7002	REP STL BRIDGE MEMBER (BEAM)	EA	7.000		7.000	
	784-7003	REP STL BRIDGE MEMBER (DIAPHRAGM)	EA	2.000		2.000	
	786-7001	CARBON FIBER REINF POLYMER PROTECTION	SF	132.000		132.000	
	787-7001	REPLACING ELASTOMERIC BEARING PADS	EA	22.000		22.000	
	7001-7002	BENT CAP/ABUTMENT CAP CLEANING	EA	6.000		6.000	
	02	RAILROAD FLAGGING: RAILROAD FORCE ACCOUNT WORK (NON-PART)	LS	1.000		1.000	
	08	EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (NON-PART)	LS	1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (NON-PART)	LS	1.000		1.000	

CK: GK
DW: NS
CK: JD
DN: NS

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS

	505 7001	505 7003	510 7003	662 7051	662 7068	662 7077	662 7100	666 7411	666 7420	666 7423	672 7004	677 7001	678 7002
	TMA (STATIONARY)	TMA (MOBILE OPERATION)	ONE-WAY TRAF CONT (PORT TRAF SIG)	WK ZN PAV MRK REMOV (REFL) TY II-A-A	WK ZN PAV MRK REMOV (W)6"(SLD)	WK ZN PAV MRK REMOV (W)24"(SLD)	WK ZN PAV MRK REMOV (Y)6"(SLD)	REFL PAV MRK TY I (W)6"(SLD) (100MIL)	REFL PAV MRK TY I (Y)6"(BRK) (100MIL)	REFL PAV MRK TY I (Y)6"(SLD) (100MIL)	REFL PAV MRKR TY II-A-A	ELIM EXT PM & MRKS (4")	PAV SURF PREP FOR MRK (6")
	DAY	DAY	MO	EA	LF	LF	LF	LF	LF	LF	EA	LF	LF
REF 01: FM 600 OVER ELM CREEK	6	2	1	100	900	24	3840	5340	670	2700	68	4238	8710
REF 02: US 277 OVERPASS AT BNSF RR	4												
ABILENE AREA TOTALS	**10**	**2**	**1**	**100**	**900**	**24**	**3840**	**5340**	**670**	**2700**	**68**	**4238**	**8710**

NOTE: FLAGGERS SHALL BE SUBSIDIARY TO OTHER TCP ITEMS.

SUMMARY OF BRIDGE ITEMS

CSJ	BRIDGE NBI#		DESIGN		BRIDGE LOCATION		LENGTH	WIDTH		438 7012	439 7007	442 7010	483 7010	787 7001	7001 7002
										CLEAN AND SEAL JNTS (PAN GIRDERS) (CL7)	LATEX - MODIFIED CONC OVERLAY (2 IN)	STR STEEL (PEDESTAL)	HYDRO-DEMOLITION (2 IN)	REPLACING ELASTOMERIC BEARING PADS	BENT CAP/ ABUTMENT CAP CLEANING
	EXISTING	PROPOSED	EXISTING	PROPOSED	COUNTY	DESCRIPTION	FT	FT		EA	SY	LB	SY	EA	EA
0908-00-126	08-128-0-2032-02-004	N/A	CONCRETE STRINGER/MULTI-BEAM OR GIRDER	N/A	JONES	REF 01: FM 600 OVER ELM CREEK	224.6	36.7		326	849		849		
0908-00-126	08-221-0-0407-06-018	N/A	STEEL STRINGER/MULTI-BEAM OR GIRDER	N/A	TAYLOR	REF 02: US 277 OVERPASS AT BNSF RR	180.0	46.0				1840		12	2
ABILENE AREA TOTALS										**326**	**849**	**1840**	**849**	**12**	**2**

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Texas Department of Transportation

QUANTITY SUMMARIES
ABILENE AREA

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		8

DATE:
FILE:

DN: NS | CK: JD | DW: NS | CK: GK

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS

	505 7001
	TMA (STATIONARY)
	DAY
REF 05: IH 20 WBML OVER COLORADO RIVER	2
REF 06: IH 20 EBML OVER COLORADO RIVER	2
REF 07: IH 20 UNDERPASS AT BUS 20 EB	4
REF 08: IH 20 WBML OVERPASS AT HOPKINS RD	4
REF 09: BI 20 OVERPASS AT AT&SF RR / WALNUT ST	8
BIG SPRING AREA TOTALS	**20**

NOTE: FLAGGERS SHALL BE SUBSIDIARY TO OTHER TCP ITEMS.

SUMMARY OF BRIDGE ITEMS

CSJ	BRIDGE NBI#		DESIGN		BRIDGE LOCATION		LENGTH	WIDTH		104 7006	401 7001	429 7005	429 7007	432 7001
										REMOV CONC (RIPRAP)	FLOWABLE BACKFILL	CONC STR REPAIR(DECK REP (FULL DEPTH))	CONC STR REPAIR (VERTICAL & OVERHEAD)	RIPRAP (CONC)(4 IN)
	EXISTING	PROPOSED	EXISTING	PROPOSED	COUNTY	DESCRIPTION	FT	FT		SY	CY	SF	SF	CY
0908-00-126	08-115-0-0005-06-043	N/A	STEEL STRINGER/MULTI-BEAM OR GIRDER	N/A	HOWARD	REF 03: IH 20 OVERPASS AT MISSOURI PACIFIC RR	420.0	80.5					36	
0908-00-126	08-115-0-0693-01-024	N/A	PRESTRESSED STRINGER/MULTI-BEAM OR GIRDER	N/A	HOWARD	REF 04: SH 350 OVERPASS AT MOPAC RR AND BEALS CREEK	751.0	70.8						
0908-00-126	08-168-0-0005-08-094	N/A	PRESTRESSED STRINGER/MULTI-BEAM OR GIRDER	N/A	MITCHELL	REF 05: IH 20 WBML OVER COLORADO RIVER	580.0	40.0						
0908-00-126	08-168-0-0005-08-095	N/A	PRESTRESSED STRINGER/MULTI-BEAM OR GIRDER	N/A	MITCHELL	REF 06: IH 20 EBML OVER COLORADO RIVER	580.0	40.0						
0908-00-126	08-177-0-0006-02-189	N/A	STEEL STRINGER/MULTI-BEAM OR GIRDER	N/A	NOLAN	REF 07: IH 20 UNDERPASS AT BUS 20 EB	400.0	39.0					189	
0908-00-126	08-177-0-0006-02-233	N/A	FLAT SLAB	N/A	NOLAN	REF 08: IH 20 WBML OVERPASS AT HOPKINS RD	114.0	40.0		3	5		10	1
0908-00-126	08-177-0-0006-15-009	N/A	STEEL STRINGER/MULTI-BEAM OR GIRDER	N/A	NOLAN	REF 09: BI 20 OVERPASS AT AT&SF RR / WALNUT ST	657.4	47.3					625	
0908-00-126	08-177-0-0053-12-083	N/A	PRESTRESSED STRINGER/MULTI-BEAM OR GIRDER	N/A	NOLAN	REF 10: US 84 EB OVERPASS AT UPRR & BUS 84	435.0	40.1		10	10		205	2
0908-00-126	08-177-0-0053-12-084	N/A	PRESTRESSED STRINGER/MULTI-BEAM OR GIRDER	N/A	NOLAN	REF 11: US 84 WB OVERPASS AT UPRR & BUS 84	435.0	40.1				44	173	
BIG SPRING AREA TOTALS										**13**	**15**	**44**	**1238**	**3**

SUMMARY OF BRIDGE ITEMS (CONTINUED)

BRIDGE LOCATION		CSJ		778 7004	780 7002	786 7001	787 7001	7001 7002	432 7001	438 7007	446 7002	7001 7002
				CONCRETE RAIL REPLACE- MENT (IN-KIND)	CNC CRACK REPAIR (DISCRETE) (INJECT)	CARBON FIBER REINF POLYMER PROTECTION	REPLACING ELASTOMERIC BEARING PADS	BENT CAP/ ABUTMENT CAP CLEANING	RIPRAP (CONC)(4 IN)	CLEANING AND SEALING EXIST JOINTS (CL7)	CLEAN & PAINT EXIST STR (SYSTEM II)	BENT CAP/ ABUTMENT CAP CLEANING
COUNTY	DESCRIPTION			LF	LF	SF	EA	EA	CY	LF	LS	EA
HOWARD	REF 03: IH 20 OVERPASS AT MISSOURI PACIFIC RR	0908-00-126						4			1	4
HOWARD	REF 04: SH 350 OVERPASS AT MOPAC RR AND BEALS CREEK	0908-00-126								350		
MITCHELL	REF 05: IH 20 WBML OVER COLORADO RIVER	0908-00-126					5					
MITCHELL	REF 06: IH 20 EBML OVER COLORADO RIVER	0908-00-126					5					
NOLAN	REF 07: IH 20 UNDERPASS AT BUS 20 EB	0908-00-126										
NOLAN	REF 08: IH 20 WBML OVERPASS AT HOPKINS RD	0908-00-126				132			1			
NOLAN	REF 09: BI 20 OVERPASS AT AT&SF RR / WALNUT ST	0908-00-126										
NOLAN	REF 10: US 84 EB OVERPASS AT UPRR & BUS 84	0908-00-126							2			
NOLAN	REF 11: US 84 WB OVERPASS AT UPRR & BUS 84	0908-00-126		30	100							
	BIG SPRING AREA TOTALS			**30**	**100**	**132**	**10**	**4**	**3**	**350**	**1**	**4**

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Texas Department of Transportation

QUANTITY SUMMARIES
BIG SPRING AREA

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		9

DATE:
FILE:

CK: GK
DW: NS
CK: JD
DN: NS

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS

	505 7001	505 7003	510 7003	662 7051	662 7068	662 7077	662 7100	666 7411	666 7420	666 7423	672 7002	672 7004	677 7001	678 7002
	TMA (STATIONARY)	TMA (MOBILE OPERATION)	ONE-WAY TRAF CONT (PORT TRAF SIG)	WK ZN PAV MRK REMOV (REFL) TY II-A-A	WK ZN PAV MRK REMOV (W)6"(SLD)	WK ZN PAV MRK REMOV (W)24"(SLD)	WK ZN PAV MRK REMOV (Y)6"(SLD)	REFL PAV MRK TY I (W)6"(SLD) (100MIL)	REFL PAV MRK TY I (Y)6"(BRK) (100MIL)	REFL PAV MRK TY I (Y)6"(SLD) (100MIL)	REFL PAV MRKR TY I-C	REFL PAV MRKR TY II-A-A	ELIM EXT PM & MRKS (4")	PAV SURF PREP FOR MRK (6")
	DAY	DAY	MO	EA	LF	LF	LF	LF	LF	LF	EA	EA	LF	LF
REF 12: US 277 OVER RICE SPRINGS BRANCH	8	2						530		530	7			
REF 13: US 277 OVER RICE SPRINGS BRANCH TRIB	8	2						530		530	7			
REF 14: US 84 UNDERPASS AT FM 1611	5													
REF 15: US 84 UNDERPASS AT BUS 84	7													
REF 16: FM 2763 OVER DEEP CREEK	2													
REF 17: US 380 OVER STINKING CREEK	5	2	1	100	720	24	3840	5160	645			66	6450	5805
SNYDER AREA TOTALS	**35**	**6**	**1**	**100**	**720**	**24**	**3840**	**6220**	**645**	**1060**	**14**	**66**	**6450**	**5805**

NOTE: FLAGGERS SHALL BE SUBSIDIARY TO OTHER TCP ITEMS.

SUMMARY OF BRIDGE ITEMS

CSJ	BRIDGE NBI#		DESIGN		BRIDGE LOCATION		LENGTH	WIDTH		401 7001	429 7003	432 7041	438 7012	439 7007	439 7014
										FLOWABLE BACKFILL	CONC STR REPAIR(DECK REP(PART DEPTH))	RIPRAP (STONE PROTECTION) (12 IN)	CLEAN AND SEAL JNTS (PAN GIRDERS) (CL7)	LATEX - MODIFIED CONC OVERLAY (2 IN)	MULTI-LAYER POLYMER OVERLAY
	EXISTING	PROPOSED	EXISTING	PROPOSED	COUNTY	DESCRIPTION	FT	FT		CY	SF	CY	LF	SY	SY
0908-00-126	08-105-0-0157-09-003	N/A	PRESTRESSED STRINGER/MULTI-BEAM OR GIRDER	N/A	HASKELL	REF 12: US 277 OVER RICE SPRINGS BRANCH	180.0	86.0			438				2053
0908-00-126	08-105-0-0157-09-008	N/A	PRESTRESSED STRINGER/MULTI-BEAM OR GIRDER	N/A	HASKELL	REF 13: US 277 OVER RICE SPRINGS BRANCH TRIB	170.0	93.0			1060				2285
0908-00-126	08-208-0-0053-08-072	N/A	STEEL STRINGER/MULTI-BEAM OR GIRDER	N/A	SCURRY	REF 14: US 84 UNDERPASS AT FM 1611	230.0	33.0							
0908-00-126	08-208-0-0053-09-052	N/A	STEEL STRINGER/MULTI-BEAM OR GIRDER	N/A	SCURRY	REF 15: US 84 UNDERPASS AT BUS 84	370.0	34.7							
0908-00-126	08-208-0-3311-01-001	N/A	CONCRETE STRINGER/MULTI-BEAM OR GIRDER	N/A	SCURRY	REF 16: FM 2763 OVER DEEP CREEK	200.0	50.3		8		25			
0908-00-126	08-217-0-0106-04-054	N/A	CONCRETE STRINGER/MULTI-BEAM OR GIRDER	N/A	STONEWALL	REF 17: US 380 OVER STINKING CREEK	160.0	46.0					230	783	
						SNYDER AREA TOTALS				**8**	**1498**	**25**	**230**	**783**	**4338**

SUMMARY OF BRIDGE ITEMS (CONTINUED)

BRIDGE LOCATION		CSJ		446 7019	483 7010	483 7016	784 7002	784 7003
				SPOT CLEAN & PAINT EXT STR(SPL PROT SYS)	HYDRO-DEMOLITION (2 IN)	SHOT BLASTING	REP STL BRIDGE MEMBER (BEAM)	REP STL BRIDGE MEMBER (DIAPHRAGM)
COUNTY	DESCRIPTION			LS	SY	SY	EA	EA
HASKELL	REF 12: US 277 OVER RICE SPRINGS BRANCH	0908-00-126				2053		
HASKELL	REF 13: US 277 OVER RICE SPRINGS BRANCH TRIB	0908-00-126				2285		
SCURRY	REF 14: US 84 UNDERPASS AT FM 1611	0908-00-126		0.4			5	
SCURRY	REF 15: US 84 UNDERPASS AT BUS 84	0908-00-126		0.6			2	2
SCURRY	REF 16: FM 2763 OVER DEEP CREEK	0908-00-126						
STONEWALL	REF 17: US 380 OVER STINKING CREEK	0908-00-126			783			
	SNYDER AREA TOTALS			**1.0**	**783**	**4338**	**7**	**2**

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Texas Department of Transportation

QUANTITY SUMMARIES
SNYDER AREA

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		10

DATE:
FILE:

CK: GK
DW: NS
CK: JD
DW: NS

TRAFFIC CONTROL GENERAL NOTES

1. ALL SIGNS, BARRICADES, WORK ZONE MARKINGS AND DEVICES AS SHOWN HEREON SHALL BE IN ACCORDANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (T.M.U.T.C.D.), LATEST REVISION.

2. FOR SPACING OF SIGNS AND BARRICADES, SEE "BC" AND "TCP" STANDARD SHEETS OR AS DIRECTED BY ENGINEER.

3. BARRICADES, SIGNS, CHANNELIZING DEVICES AND OTHER TRAFFIC HANDLING DEVICES, MAY BE ADJUSTED OR SHIFTED TO FIT FIELD CONDITIONS OR AS REQUIRED FOR CONSTRUCTION AND SET UP, FOR THE VARIOUS PHASES, AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

4. ADEQUATE SIGNS AND BARRICADES SHALL BE INSTALLED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO OPENING ANY SECTION TO TRAFFIC. THE ENGINEER MAY DIRECT THE CONTRACTOR TO FURNISH ADDITIONAL SIGNS, BARRICADES AND CHANNELIZING DEVICES AS REQUIRED TO MAINTAIN TRAFFIC AND MOTORIST SAFETY DURING CONSTRUCTION. ANY SUCH ADDITIONAL SIGNS AND BARRICADES, ETC. SHALL BE CONSIDERED SUBSIDIARY TO ITEM 502 "BARRICADES, SIGNS, AND TRAFFIC HANDLING".

5. ALL SIGNS, BARRICADES, AND POSTS SHALL BE NEW AND KEPT CLEAN FOR THE DURATION OF THE PROJECTS.

6. IF NIGHT WORK IS REQUIRED, THE CONTRACTOR SHALL MAINTAIN ADEQUATE LIGHTING DURING CONSTRUCTION. A LIGHTING PLAN MUST BE SUBMITTED AND APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION. LIGHTING NEEDED TO PERFORM WORK SHALL NOT BE PAID FOR DIRECTLY AND SHOULD BE CONSIDERED SUBSIDIARY TO ITEM 502.

7. ALL ARROW BOARDS ARE SUBSIDIARY TO ITEM 502. FLAGGERS SHALL BE SUBSIDIARY TO OTHER TCP ITEMS.

8. THE CONTRACTOR SHALL PROVIDE FOR SAFE AND CONVENIENT INGRESS AND EGRESS TO ABUTTING PROPERTY, HIGHWAY, PUBLIC ROAD, AND STREET CROSSINGS WITHIN PROJECT LIMITS AT ALL TIMES. CONTRACTOR SHALL COORDINATE HIGH WORK ACTIVITIES TO MINIMIZE ANY INCONVENIENCE TO THE PUBLIC.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MARKING THE LOCATION OF ALL TRAFFIC CONTROL STRIPING AND PERMANENT STRIPING AS DIRECTED BY THE ENGINEER.

10. PERMANENT STRIPING SHALL THEN BE PLACED IN ACCORDANCE WITH ALL APPLICABLE STANDARDS.

11. THE CONTRACTOR MAY SUBMIT AN ALTERNATE TCP AND/OR AN ALTERNATE SEQUENCE OF CONSTRUCTION, IN ADVANCED AND IN WRITING, SUBJECT TO THE APPROVAL OF THE ENGINEER. ALL PCTB SHALL BE USED IN ACCORDANCE WITH THE PLANS AND MANUFACTURER'S RECOMMENDATIONS AND SHALL HAVE TY "C" DELINEATOR AS SHOWN ON BC(7)-13.

12. REFER TO PROJECT GENERAL NOTES FOR SPECIFIC MILESTONES AND OTHER REQUIREMENTS.

13. THE CONTRACTOR SHALL MAINTAIN EXISTING DRAINAGE FACILITIES UNTIL THOSE FACILITIES ARE REPLACED BY PERMANENT CONSTRUCTION OR THEIR FLOWS ARE REROUTED.

ABILENE AREA BRIDGES – SEQUENCE OF CONSTRUCTION BY LOCATION

REF 01: 08-128-0-2032-02-004 FM 600 OVER ELM CREEK

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTAL TEMPORARY WORK ZONE SPEED LIMIT SIGNS PER BC(3)-21 TO REDUCE WORK ZONE SPEED LIMIT TO 45 MPH.
3. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
4. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
5. CLOSE NB LANE OF FM 600 UTILIZING ONE-LANE TWO-WAY TRAFFIC CONTROL WITH TEMPORARY SIGNAL IN ACCORDANCE WITH TCP(2-8)-23. PROVIDE TEMPORARY RUMBLE STRIPS IN ACCORDANCE WITH WZ(RS).
6. PERFORM HYDRODEMOLITION OF BRIDGE DECK SURFACE AND APPLY LATEX-MODIFIED CONCRETE OVERLAY WITHIN THE WORKZONE. CLEAN AND SEAL JOINTS WITHIN THE WORKZONE.
7. SHIFT TRAFFIC TO NB LANE AND CLOSE SB LANE UTILIZING ONE-LANE TWO-WAY TRAFFIC CONTROL WITH TEMPORARY SIGNAL IN ACCORDANCE WITH TCP(2-8)-23. PROVIDE TEMPORARY RUMBLE STRIPS IN ACCORDANCE WITH WZ(RS).
8. PERFORM HYDRODEMOLITION OF BRIDGE DECK SURFACE AND APPLY LATEX-MODIFIED CONCRETE OVERLAY OF REMAINING AREA. CLEAN AND SEAL REMAINING JOINTS.
9. REMOVE TEMPORARY SIGNAL AND TEMPORARY STRIPING.
10. INSTALL FINAL STRIPING UTILIZING MOBILE OPERATIONS IN ACCORDANCE WITH TCP(3-1)-13 AND TCP(3-3)-14. REPLACE STRIPING AND RAISED PAVEMENT MARKINGS IN-KIND AND EXTEND TO END OF WORK ZONE AS DIRECTED BY THE ENGINEER. SEE PM(1)-22 AND PM(2)-22 FOR ADDITIONAL INFORMATION.
11. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
12. REMOVE ALL TRAFFIC CONTROL DEVICES AND RESTORE TRAFFIC TO FM 600.

REF 02: 08-221-0-0407-06-018 US 277 OVERPASS AT BNSF RR

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. PROVIDE ONE-LANE TWO-WAY OPERATION WITH FLAGGERS ALONG US 277 AS NEEDED IN ACCORDANCE WITH TCP (2-2b)-18. TCP (2-2b)-18 WITH FLAGGERS SHALL ONLY BE USED DURING DAYTIME AND RESET AT END OF EACH DAY. FLAGGER AND ONE-LANE TWO-WAY OPERATION DURING NIGHTTIME IS NOT ALLOWED. ALTERNATIVELY, IT IS PERMISSIBLE TO UTILIZE TWO-LANE TRAFFIC SHIFT IN ACCORDANCE WITH TCP(2-3)-23.
5. PERFORM JACKING AND REPLACE BEARINGS AT ABUTMENTS.
6. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
7. REMOVE TRAFFIC CONTROL DEVICES AND RESTORE TRAFFIC TO US 277.

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TCP NARRATIVE
ABILENE AREA

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		11

DATE:
FILE:

CK: GK
DW: NS
CK: JD
DW: NS

TRAFFIC CONTROL GENERAL NOTES

1. ALL SIGNS, BARRICADES, WORK ZONE MARKINGS AND DEVICES AS SHOWN HEREON SHALL BE IN ACCORDANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (T.M.U.T.C.D.), LATEST REVISION.
2. FOR SPACING OF SIGNS AND BARRICADES, SEE "BC" AND "TCP" STANDARD SHEETS OR AS DIRECTED BY ENGINEER.
3. BARRICADES, SIGNS, CHANNELIZING DEVICES AND OTHER TRAFFIC HANDLING DEVICES, MAY BE ADJUSTED OR SHIFTED TO FIT FIELD CONDITIONS OR AS REQUIRED FOR CONSTRUCTION AND SET UP, FOR THE VARIOUS PHASES, AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
4. ADEQUATE SIGNS AND BARRICADES SHALL BE INSTALLED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO OPENING ANY SECTION TO TRAFFIC. THE ENGINEER MAY DIRECT THE CONTRACTOR TO FURNISH ADDITIONAL SIGNS, BARRICADES AND CHANNELIZING DEVICES AS REQUIRED TO MAINTAIN TRAFFIC AND MOTORIST SAFETY DURING CONSTRUCTION. ANY SUCH ADDITIONAL SIGNS AND BARRICADES, ETC. SHALL BE CONSIDERED SUBSIDIARY TO ITEM 502 "BARRICADES, SIGNS, AND TRAFFIC HANDLING".
5. ALL SIGNS, BARRICADES, AND POSTS SHALL BE NEW AND KEPT CLEAN FOR THE DURATION OF THE PROJECTS.
6. IF NIGHT WORK IS REQUIRED, THE CONTRACTOR SHALL MAINTAIN ADEQUATE LIGHTING DURING CONSTRUCTION. A LIGHTING PLAN MUST BE SUBMITTED AND APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION. LIGHTING NEEDED TO PERFORM WORK SHALL NOT BE PAID FOR DIRECTLY AND SHOULD BE CONSIDERED SUBSIDIARY TO ITEM 502.
7. ALL ARROW BOARDS ARE SUBSIDIARY TO ITEM 502. FLAGGERS SHALL BE SUBSIDIARY TO OTHER TCP ITEMS.
8. THE CONTRACTOR SHALL PROVIDE FOR SAFE AND CONVENIENT INGRESS AND EGRESS TO ABUTTING PROPERTY, HIGHWAY, PUBLIC ROAD, AND STREET CROSSINGS WITHIN PROJECT LIMITS AT ALL TIMES. CONTRACTOR SHALL COORDINATE HIGH WORK ACTIVITIES TO MINIMIZE ANY INCONVENIENCE TO THE PUBLIC.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MARKING THE LOCATION OF ALL TRAFFIC CONTROL STRIPING AND PERMANENT STRIPING AS DIRECTED BY THE ENGINEER.
10. PERMANENT STRIPING SHALL THEN BE PLACED IN ACCORDANCE WITH ALL APPLICABLE STANDARDS.
11. THE CONTRACTOR MAY SUBMIT AN ALTERNATE TCP AND/OR AN ALTERNATE SEQUENCE OF CONSTRUCTION, IN ADVANCED AND IN WRITING, SUBJECT TO THE APPROVAL OF THE ENGINEER. ALL PCTB SHALL BE USED IN ACCORDANCE WITH THE PLANS AND MANUFACTURER'S RECOMMENDATIONS AND SHALL HAVE TY "C" DELINEATOR AS SHOWN ON BC(7)-13.
12. REFER TO PROJECT GENERAL NOTES FOR SPECIFIC MILESTONES AND OTHER REQUIREMENTS.
13. THE CONTRACTOR SHALL MAINTAIN EXISTING DRAINAGE FACILITIES UNTIL THOSE FACILITIES ARE REPLACED BY PERMANENT CONSTRUCTION OR THEIR FLOWS ARE REROUTED.

BIG SPRING AREA BRIDGES – SEQUENCE OF CONSTRUCTION BY LOCATION

REF 03: 08-115-0-0005-06-043 IH 20 OVERPASS AT MISSOURI PACIFIC RR

RAILROAD PERMIT AND FLAGGING REQUIRED - SEE RAILROAD SCOPE OF WORK SHEET

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. PROVIDE DAILY SHOULDER CLOSURES OF IH 20 IN ACCORDANCE WITH TCP (5-1)-18 AS REQUIRED FOR WORKZONE ACCESS TO PERFORM REPAIRS.
5. CLEAN STEEL BENT CAPS AND INSTALL BIRD DETERRANT.
6. REPAIR PRESTRESSED CONCRETE BEAM ENDS AND CONCRETE ABUTMENTS.
7. CLEAN AND PAINT STEEL GIRDERS.
8. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
9. REMOVE TRAFFIC CONTROL DEVICES.

REF 04: 08-115-0-0693-01-024 SH350 OVERPASS AT MOPAC RR AND BEALS CREEK

RAILROAD PERMIT AND FLAGGING REQUIRED - SEE RAILROAD SCOPE OF WORK SHEET

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. PROVIDE DAILY LANE CLOSURES OF SH 350 IN ACCORDANCE WITH TCP (2-4a)-18. MAINTAIN A MINIMUM OF ONE LANE IN EACH DIRECTION OPEN AT ALL TIMES.
5. CLEAN AND RESEAL ALL JOINTS.
6. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
7. REMOVE TRAFFIC CONTROL DEVICES.

REF 05: 08-168-0-0005-08-094 IH 20 WBML OVER COLORADO RIVER

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. PROVIDE DAILY LANE CLOSURES OF IH 20 WB LANES IN ACCORDANCE WITH TCP (6-1)-12 AS REQUIRED FOR CONSTRUCTION STAGING. MAINTAIN A MINIMUM OF ONE LANE EACH DIRECTION OPEN AT ALL TIMES.
5. REPLACE ELASTOMERIC BEARINGS.
6. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
7. REMOVE TRAFFIC CONTROL DEVICES.

REF 06: 08-168-0-0005-08-095 IH 20 EBML OVER COLORADO RIVER

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. PROVIDE DAILY LANE CLOSURES OF IH 20 EB LANES IN ACCORDANCE WITH TCP (6-1)-12 AS REQUIRED FOR CONSTRUCTION STAGING. MAINTAIN A MINIMUM OF ONE LANE EACH DIRECTION OPEN AT ALL TIMES.
5. REPLACE ELASTOMERIC BEARINGS.
6. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
7. REMOVE TRAFFIC CONTROL DEVICES.

REF 07: 08-177-0-0006-02-189 IH 20 UNDERPASS AT BUS 20 EB

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. PROVIDE DAILY LANE CLOSURES OF IH 20 IN ACCORDANCE WITH TCP (6-1)-12 AS REQUIRED TO PERFORM REPAIRS. MAINTAIN A MINIMUM OF ONE LANE IN EACH DIRECTION OPEN AT ALL TIMES.
5. REPAIR DELAMINATIONS AND SPALLS ON UNDERSIDE OF CONCRETE DECK.
9. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
10. REMOVE TRAFFIC CONTROL DEVICES.

REF 08: 08-177-0-0006-02-233 IH 20 WB OVERPASS AT HOPKINS RD

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. PROVIDE DAILY LANE CLOSURES OF IH 20 WB LANES IN ACCORDANCE WITH TCP (6-1)-12 AS REQUIRED FOR WORKZONE ACCESS TO PERFORM REPAIRS. MAINTAIN A MINIMUM OF ONE LANE OPEN AT ALL TIMES.
5. REPAIR BROKEN CONCRETE RIPRAP AND FILL VOIDS.
6. REPAIR SLAB FASCIA.
7. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
8. REMOVE TRAFFIC CONTROL DEVICES.

REF 09: 08-177-0-0006-15-009 BI 20 OVERPASS AT AT&SF RR AND WALNUT ST

RAILROAD PERMIT AND FLAGGING REQUIRED - SEE RAILROAD SCOPE OF WORK SHEET

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. PROVIDE CLOSURES OF LOCAL ROADS BELOW STRUCTURE USING ONE-LANE TWO-WAY TRAFFIC CONTROL WITH FLAGGERS IN ACCORDANCE WITH TCP (2-2a)-18 AS REQUIRED FOR CONSTRUCTION WORKZONE ACCESS. CLOSE LOCAL ROADWAYS AS NECESSARY TO TRAFFIC AND PEDESTRIANS WHEN WORKING DIRECTLY OVERHEAD.
5. PROVIDE DAILY LANE CLOSURES OF BI 20 UTILIZING ONE-LANE TWO-WAY TRAFFIC CONTROL WITH FLAGGERS IN ACCORDANCE WITH TCP (2-2b)-18 IF NECESSARY FOR CONSTRUCTION ACCESS. TCP (2-2b)-18 SHALL ONLY BE USED DURING DAYTIME AND RESET AT END OF EACH DAY. FLAGGER AND ONE-LANE TWO-WAY OPERATION DURING NIGHTTIME IS NOT ALLOWED.
6. REPAIR CONCRETE DIAPHRAGMS AND CONCRETE BENT CAPS AND COLUMNS.
7. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
8. REMOVE TRAFFIC CONTROL DEVICES.

REF 10: 08-177-0-0053-12-083 US 84 EB OVERPASS AT UPRR & BUS 84

RAILROAD PERMIT AND FLAGGING REQUIRED - SEE RAILROAD SCOPE OF WORK SHEET

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. PROVIDE DAILY LANE CLOSURES OF US 84 EB IN ACCORDANCE WITH TCP (2-4a)-18 AS REQUIRED FOR CONSTRUCTION WORKZONE ACCESS. MAINTAIN A MINIMUM OF ONE LANE OPEN AT ALL TIMES.
5. PROVIDE LANE CLOSURES OF BUS 84 UTILIZING ONE-LANE TWO-WAY TRAFFIC CONTROL WITH FLAGGERS IN ACCORDANCE WITH TCP (2-2b)-18 WHEN WORKING DIRECTLY OVERHEAD.
6. REPAIR PRESTRESSED CONCRETE BEAM ENDS AND CONCRETE DIAPHRAGMS.
7. REPAIR DELAMINATIONS AND SPALLS ON UNDERSIDE OF DECK.
8. FILL EROSION VOIDS AND REPAIR CONCRETE FLUME.
9. PROVIDE ADDITIONAL LANE CLOSURE OF INSIDE LANE OF US 84 EB IN ACCORDANCE WITH TCP (2-4a)-18 AS REQUIRED FOR RECONSTRUCTION OF CENTER MEDIAN BARRIER ASSOCIATED WITH US 84 WB REPAIRS.
9. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
10. REMOVE TRAFFIC CONTROL DEVICES.

REF 11: 08-177-0-0053-12-084 US 84 WB OVERPASS AT UPRR & BUS 84

RAILROAD PERMIT AND FLAGGING REQUIRED - SEE RAILROAD SCOPE OF WORK SHEET

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. PROVIDE DAILY LANE CLOSURES OF US 84 WB IN ACCORDANCE WITH TCP (2-4a)-18 AS REQUIRED FOR CONSTRUCTION WORKZONE ACCESS. MAINTAIN A MINIMUM OF ONE LANE OPEN AT ALL TIMES.
5. REPAIR CONCRETE MEDIAN BARRIER. SEE US 84 EB OVERPASS AT UPRR & BUS 84 NARRATIVE FOR LANE CLOSURES IN OPPOSING TRAFFIC LANES.
6. PROVIDE LANE CLOSURES OF BUS 84 UTILIZING ONE-LANE TWO-WAY TRAFFIC CONTROL WITH FLAGGERS IN ACCORDANCE WITH TCP (2-2b)-18 WHEN WORKING DIRECTLY OVERHEAD.
7. REPAIR CONCRETE BENT CAPS AND PRESTRESSED CONCRETE BEAM ENDS.
8. REPAIR DELAMINATIONS AND SPALLS ON UNDERSIDE OF CONCRETE DECK.
9. INSTALL TEMPORARY RIGID BARRIER AND ATTENUATOR FOR REPLACEMENT OF BRIDGE RAILING. SEE US 84 WB OVER UPRR & BUS 84 TCP LAYOUT.
10. REPAIR CONCRETE BRIDGE RAIL. CLEAN AND REPAIR CRACK, SPALLS AND DELAMINATIONS ON INTERIOR BENTS, CONCRETE BEAMS, AND DECK SOFFIT.
11. MOVE TEMPORARY BARRIER TO SHOULDER DURING RAIL CURING PERIOD. MAINTAIN 2 FT CLEAR FROM EDGE OF TRAVEL LANE TO TOE OF BARRIER.
12. REMOVE TEMPORARY BARRIER AND ATTENUATOR AT END OF CURE TIME.
13. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
14. REMOVE TRAFFIC CONTROL DEVICES.

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

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Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

TCP NARRATIVE
BIG SPRING AREA

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		12

DATE:
FILE:

CK: GK
DW: NS
CK: JD
DN: NS

TRAFFIC CONTROL GENERAL NOTES

1. ALL SIGNS, BARRICADES, WORK ZONE MARKINGS AND DEVICES AS SHOWN HEREON SHALL BE IN ACCORDANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (T.M.U.T.C.D.), LATEST REVISION.
2. FOR SPACING OF SIGNS AND BARRICADES, SEE "BC" AND "TCP" STANDARD SHEETS OR AS DIRECTED BY ENGINEER.
3. BARRICADES, SIGNS, CHANNELIZING DEVICES AND OTHER TRAFFIC HANDLING DEVICES, MAY BE ADJUSTED OR SHIFTED TO FIT FIELD CONDITIONS OR AS REQUIRED FOR CONSTRUCTION AND SET UP, FOR THE VARIOUS PHASES, AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
4. ADEQUATE SIGNS AND BARRICADES SHALL BE INSTALLED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO OPENING ANY SECTION TO TRAFFIC. THE ENGINEER MAY DIRECT THE CONTRACTOR TO FURNISH ADDITIONAL SIGNS, BARRICADES AND CHANNELIZING DEVICES AS REQUIRED TO MAINTAIN TRAFFIC AND MOTORIST SAFETY DURING CONSTRUCTION. ANY SUCH ADDITIONAL SIGNS AND BARRICADES, ETC. SHALL BE CONSIDERED SUBSIDIARY TO ITEM 502 "BARRICADES, SIGNS, AND TRAFFIC HANDLING".
5. ALL SIGNS, BARRICADES, AND POSTS SHALL BE NEW AND KEPT CLEAN FOR THE DURATION OF THE PROJECTS.
6. IF NIGHT WORK IS REQUIRED, THE CONTRACTOR SHALL MAINTAIN ADEQUATE LIGHTING DURING CONSTRUCTION. A LIGHTING PLAN MUST BE SUBMITTED AND APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION. LIGHTING NEEDED TO PERFORM WORK SHALL NOT BE PAID FOR DIRECTLY AND SHOULD BE CONSIDERED SUBSIDIARY TO ITEM 502.
7. ALL ARROW BOARDS ARE SUBSIDIARY TO ITEM 502. FLAGGERS SHALL BE SUBSIDIARY TO OTHER TCP ITEMS.
8. THE CONTRACTOR SHALL PROVIDE FOR SAFE AND CONVENIENT INGRESS AND EGRESS TO ABUTTING PROPERTY, HIGHWAY, PUBLIC ROAD, AND STREET CROSSINGS WITHIN PROJECT LIMITS AT ALL TIMES. CONTRACTOR SHALL COORDINATE HIGH WORK ACTIVITIES TO MINIMIZE ANY INCONVENIENCE TO THE PUBLIC.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MARKING THE LOCATION OF ALL TRAFFIC CONTROL STRIPING AND PERMANENT STRIPING AS DIRECTED BY THE ENGINEER.
10. PERMANENT STRIPING SHALL THEN BE PLACED IN ACCORDANCE WITH ALL APPLICABLE STANDARDS.
11. THE CONTRACTOR MAY SUBMIT AN ALTERNATE TCP AND/OR AN ALTERNATE SEQUENCE OF CONSTRUCTION, IN ADVANCED AND IN WRITING, SUBJECT TO THE APPROVAL OF THE ENGINEER. ALL PCTB SHALL BE USED IN ACCORDANCE WITH THE PLANS AND MANUFACTURER'S RECOMMENDATIONS AND SHALL HAVE TY "C" DELINEATOR AS SHOWN ON BC(7)-13.
12. REFER TO PROJECT GENERAL NOTES FOR SPECIFIC MILESTONES AND OTHER REQUIREMENTS.
13. THE CONTRACTOR SHALL MAINTAIN EXISTING DRAINAGE FACILITIES UNTIL THOSE FACILITIES ARE REPLACED BY PERMANENT CONSTRUCTION OR THEIR FLOWS ARE REROUTED.

SNYDER AREA BRIDGES – SEQUENCE OF CONSTRUCTION BY LOCATION

REF 12: 08-105-0157-09-0003 US 277 OVER RICE SPRINGS BRANCH

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. CLOSE OUTSIDE LANES OF US 277 IN ACCORDANCE WITH TCP (2-4a)-18.
5. PERFORM CONCRETE DECK AND APPROACH SLAB REPAIRS, SHOTBLAST DECK AND APPROACH SLAB SURFACE, AND APPLY MULTI-LAYER POLYMER OVERLAY WITHIN THE WORKZONE.
6. SHIFT TRAFFIC TO OUTSIDE LANES OF US 277 AND CLOSE INLANES IN ACCORDANCE WITH TCP (2-4a)-18.
7. PERFORM CONCRETE DECK AND APPROACH SLAB REPAIRS, SHOTBLAST DECK AND APPROACH SLAB SURFACE, AND APPLY MULTI-LAYER POLYMER OVERLAY WITHIN THE WORKZONE.
8. INSTALL FINAL STRIPING UTILIZING MOBILE OPERATIONS IN ACCORDANCE WITH TCP (3-1)-13 AND TCP (3-3)-14. REPLACE STRIPING AND RAISED PAVEMENT MARKINGS IN-KIND AND EXTEND TO END OF WORK ZONE AS DIRECTED BY THE ENGINEER. SEE PM(1)-22 AND PM(2)-22 FOR ADDITIONAL INFORMATION.
9. PERFORM FINAL CLEAN UP AND REMOVE AND SWP3 DEVICES.
10. REMOVE TRAFFIC CONTROL DEVICES AND RESTORE TRAFFIC TO US 277.

REF 13: 08-105-0157-09-0008 US 277 OVER RICE SPRINGS BRANCH TRIB

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. CLOSE OUTSIDE LANES OF US 277 IN ACCORDANCE WITH TCP (2-4a)-18.
5. PERFORM CONCRETE DECK AND APPROACH SLAB REPAIRS, SHOTBLAST DECK AND APPROACH SLAB SURFACE, AND APPLY MULTI-LAYER POLYMER OVERLAY WITHIN THE WORKZONE.
6. SHIFT TRAFFIC TO OUTSIDE LANES OF US 277 AND CLOSE INLANES IN ACCORDANCE WITH TCP (2-4a)-18.
7. PERFORM CONCRETE DECK AND APPROACH SLAB REPAIRS, SHOTBLAST DECK AND APPROACH SLAB SURFACE, AND APPLY MULTI-LAYER POLYMER OVERLAY WITHIN THE WORKZONE.
8. INSTALL FINAL STRIPING UTILIZING MOBILE OPERATIONS IN ACCORDANCE WITH TCP (3-1)-13 AND TCP (3-3)-14. REPLACE STRIPING AND RAISED PAVEMENT MARKINGS IN-KIND AND EXTEND TO END OF WORK ZONE AS DIRECTED BY THE ENGINEER. SEE PM(1)-22 AND PM(2)-22 FOR ADDITIONAL INFORMATION.
9. PERFORM FINAL CLEAN UP AND REMOVE AND SWP3 DEVICES.
10. REMOVE TRAFFIC CONTROL DEVICES AND RESTORE TRAFFIC TO US 277.

REF 14: 08-208-0-0053-08-072 US 84 UNDERPASS AT FM 1611

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. PROVIDE DAILY LANE CLOSURES OF US 84 IN ACCORDANCE WITH TCP (2-4a)-18 AS REQUIRED TO PERFORM REPAIRS. MAINTAIN A MINIMUM OF ONE LANE OPEN EACH DIRECTION AT ALL TIMES.
5. PERFORM HEAT-STRAIGHTENING REPAIR OF DAMAGED STEEL GIRDERS.
6. SPOT PAINT REPAIR AREA.
7. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
8. REMOVE TRAFFIC CONTROL DEVICES.

REF 15: 08-208-0-0053-09-052 US 84 UNDERPASS AT BUS 84

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. PROVIDE DAILY LANE CLOSURES OF US 84 IN ACCORDANCE WITH TCP (2-4a)-18 AS REQUIRED TO PERFORM REPAIRS. MAINTAIN A MINIMUM OF ONE LANE OPEN EACH DIRECTION AT ALL TIMES.
5. PERFORM HEAT-STRAIGHTENING REPAIR OF DAMAGED STEEL GIRDERS AND REPLACE DIAPHRAGMS.
6. SPOT PAINT REPAIR AREA.
7. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
8. REMOVE TRAFFIC CONTROL DEVICES.

REF 16: 08-208-0-3311-01-001 FM 2763 OVER DEEP CREEK

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
3. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
4. PROVIDE DAILY SHOULDER CLOSURE OF FM 2763 IN ACCORDANCE WITH TCP (2-1)-18 AS REQUIRED FOR CONSTRUCTION WORK ZONE ACCESS BELOW BRIDGE.
5. PERFORM EROSION REPAIRS.
6. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
7. REMOVE TRAFFIC CONTROL DEVICES.

REF 17: 08-217-0-0106-04-054 US 380 OVER STINKING CREEK

1. SETUP BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN IN THE TCP AND BC STANDARDS. SIGNS MAY BE ADJUSTED IN THE FIELD WITH APPROVAL FROM THE ENGINEER.
2. INSTAL TEMPORARY WORK ZONE SPEED LIMIT SIGNS PER BC(3)-21 TO REDUCE WORK ZONE SPEED LIMIT TO 45 MPH.
3. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED LIMITING INSTALLATION TO INDIVIDUAL WORK AREA.
4. INSTALL TRAFFIC CONTROL DEVICES. REMOVE OR COVER SIGNS IN CONFLICT WITH THE TCP.
5. CLOSE WB LANE OF US 380 UTILIZING ONE-LANE TWO-WAY TRAFFIC CONTROL WITH TEMPORARY SIGNAL IN ACCORDANCE WITH TCP(2-8)-23. PROVIDE TEMPORARY RUMBLE STRIPS IN ACCORDANCE WITH WZ(RS).
6. PERFORM HYDRODEMOLITION OF BRIDGE DECK SURFACE AND APPLY LATEX-MODIFIED CONCRETE OVERLAY WITHIN THE WORKZONE. CLEAN AND SEAL JOINTS WITHIN THE WORKZONE.
7. SHIFT TRAFFIC TO EB LANE AND CLOSE WB LANE UTILIZING ONE-LANE TWO-WAY TRAFFIC CONTROL WITH TEMPORARY SIGNAL IN ACCORDANCE WITH TCP(2-8)-23. PROVIDE TEMPORARY RUMBLE STRIPS IN ACCORDANCE WITH WZ(RS).
8. PERFORM HYDRODEMOLITION OF BRIDGE DECK SURFACE AND APPLY LATEX-MODIFIED CONCRETE OVERLAY OF REMAINING AREA. CLEAN AND SEAL REMAINING JOINTS.
9. REMOVE TEMPORARY SIGNAL AND TEMPORARY STRIPING.
10. INSTALL FINAL STRIPING UTILIZING MOBILE OPERATIONS IN ACCORDANCE WITH TCP(3-1)-13 AND TCP (3-3)-14. REPLACE STRIPING AND RAISED PAVEMENT MARKINGS IN-KIND AND EXTEND TO END OF WORK ZONE AS DIRECTED BY THE ENGINEER. SEE PM(1)-22 AND PM(2)-22 FOR ADDITIONAL INFORMATION.
11. PERFORM FINAL CLEAN UP AND REMOVE ANY SWP3 DEVICES.
12. REMOVE ALL TRAFFIC CONTROL DEVICES AND RESTORE TRAFFIC TO US 380.

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

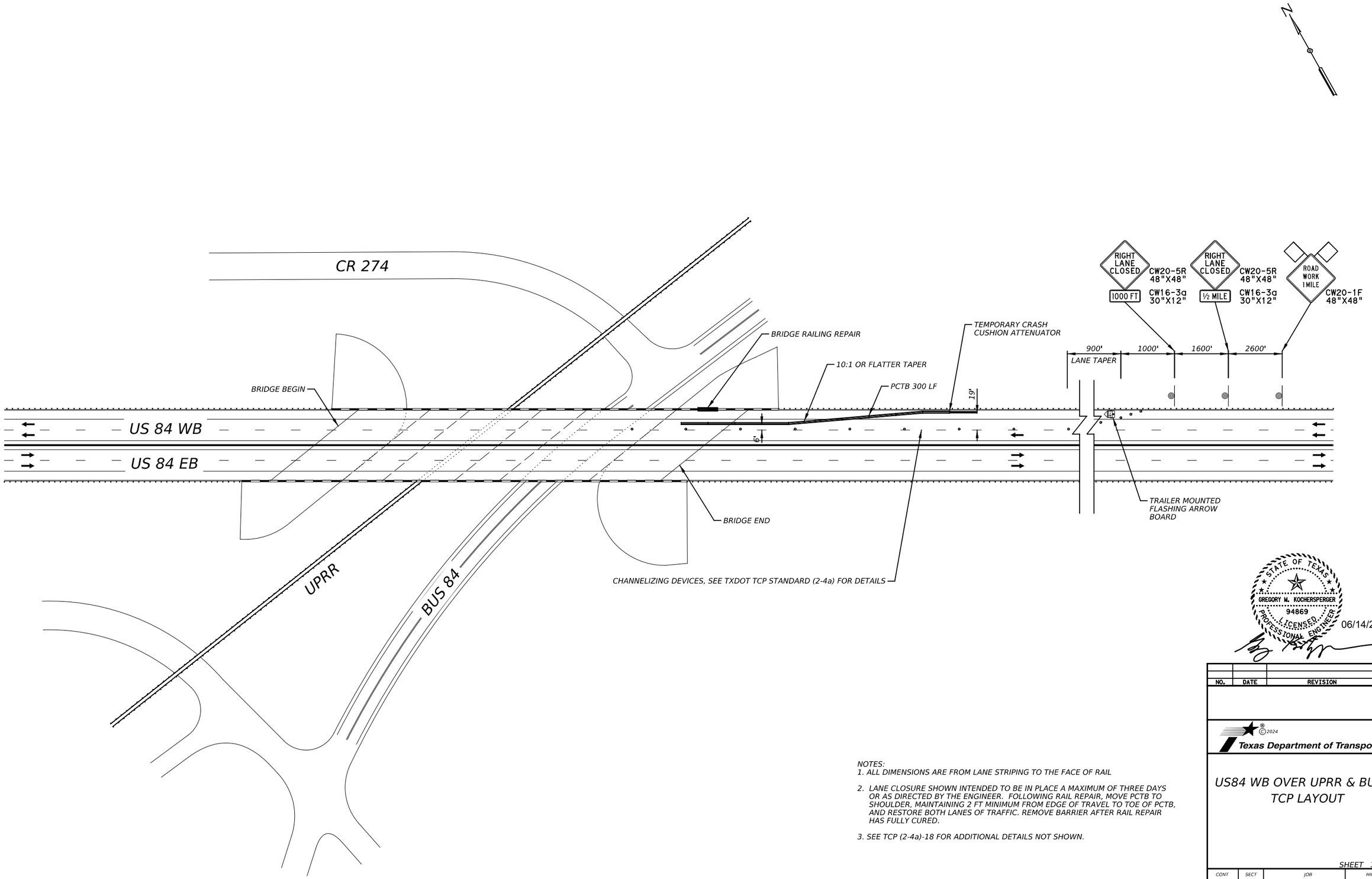
TCP NARRATIVE
SNYDER AREA

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		13

DATE:
FILE:

CK: GK
DW: NS
CK: JD
DW: NS



NOTES:
1. ALL DIMENSIONS ARE FROM LANE STRIPING TO THE FACE OF RAIL

2. LANE CLOSURE SHOWN INTENDED TO BE IN PLACE A MAXIMUM OF THREE DAYS OR AS DIRECTED BY THE ENGINEER. FOLLOWING RAIL REPAIR, MOVE PCTB TO SHOULDER, MAINTAINING 2 FT MINIMUM FROM EDGE OF TRAVEL TO TOE OF PCTB, AND RESTORE BOTH LANES OF TRAFFIC. REMOVE BARRIER AFTER RAIL REPAIR HAS FULLY CURED.

3. SEE TCP (2-4a)-18 FOR ADDITIONAL DETAILS NOT SHOWN.

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

Texas Department of Transportation

US84 WB OVER UPRR & BUS 84
TCP LAYOUT

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		14

DATE:
FILE:

LOC NO.	TCP PHASE	PLAN SHEET NUMBER	LOCATION	STA	TEST LEVEL	DIRECTION OF TRAFFIC (UNI/BI)	FOUNDATION PAD		BACKUP SUPPORT			AVAILABLE SITE LENGTH	CRASH CUSHION									
															MOVE / RESET		L	L	R	R	S	S
							PROPOSED MATERIAL	PROPOSED THICKNESS	DESCRIPTION	WIDTH	HEIGHT		INSTALL	REMOVE	MOVE/ RESET	FROM LOC. #	N	W	N	W	N	W
1	US84 WB PHASE 2	14	US 84 WBML	N/A	TL-3	UNI	N/A	N/A	PCTB	24"	32"	>50'	X	X							X	
												TOTALS	1	1	0							

LEGEND:
L=LOW MAINTENANCE
R=REUSABLE
S=SACRIFICIAL
N=NARROW
W=WIDE

FOR DEFINITIONS SEE THE "CRASH CUSHION CATEGORIZATION CHART.PDF" AT THE DESIGN DIVISION (ROADWAY STANDARDS) WEBSITE. USE QUICK LINKS TO ACCESS ATTENUATORS / CRASH CUSHIONS SECTION.
http://www.dot.state.tx.us/insdtdot/orgchart/cmd/cserve/standard/rdwylse.htm

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

CRASH CUSHION SUMMARY SHEET

FILE: ccss.dgn	DN: TxDOT	CK:		CK:
© TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0908	00	126	VARIOUS
	DIST	COUNTY		
	ABL	TAYLOR, ETC.		
	FEDERAL AID PROJECT			SHEET NO.
				15

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0908	00	126	VARIOUS
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	ABL	TAYLOR, ETC.		16
5-10 5-21				

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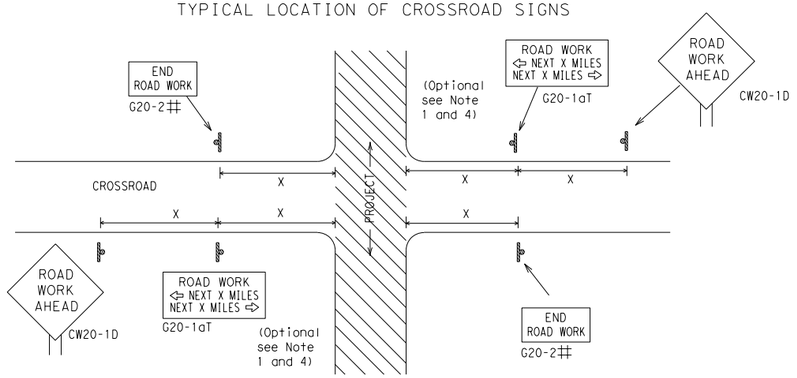
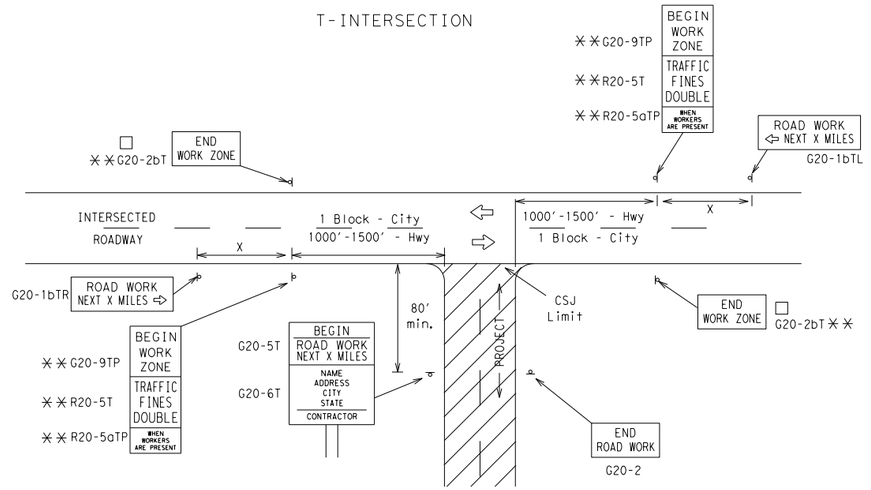
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

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

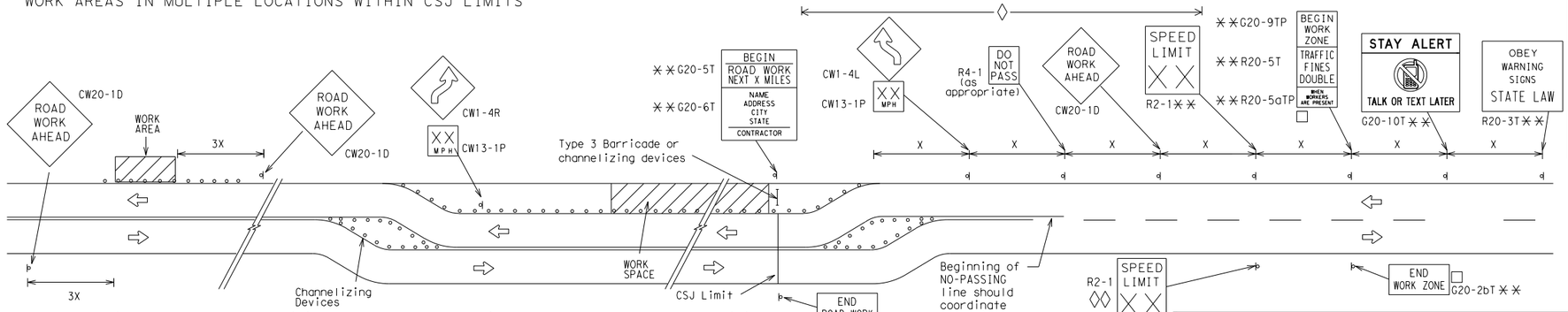
△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

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

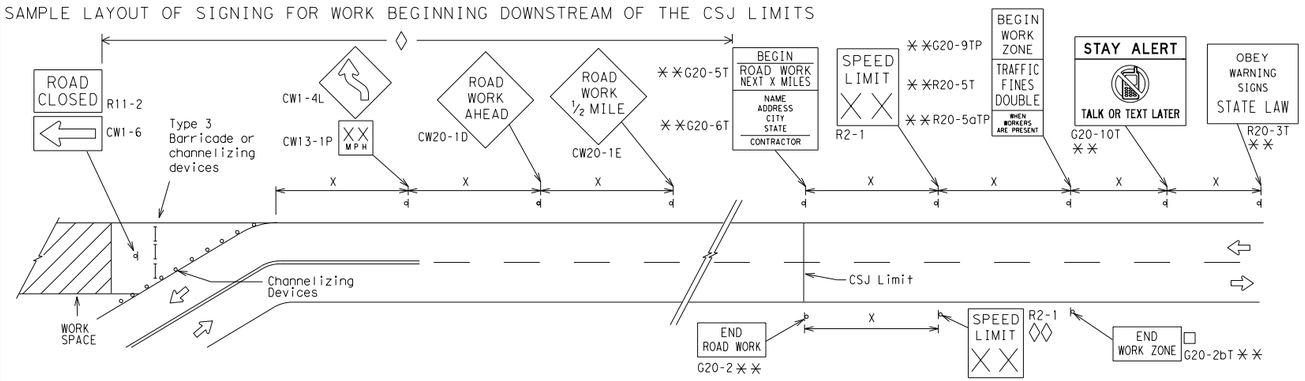
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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

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



NOTES

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

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

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

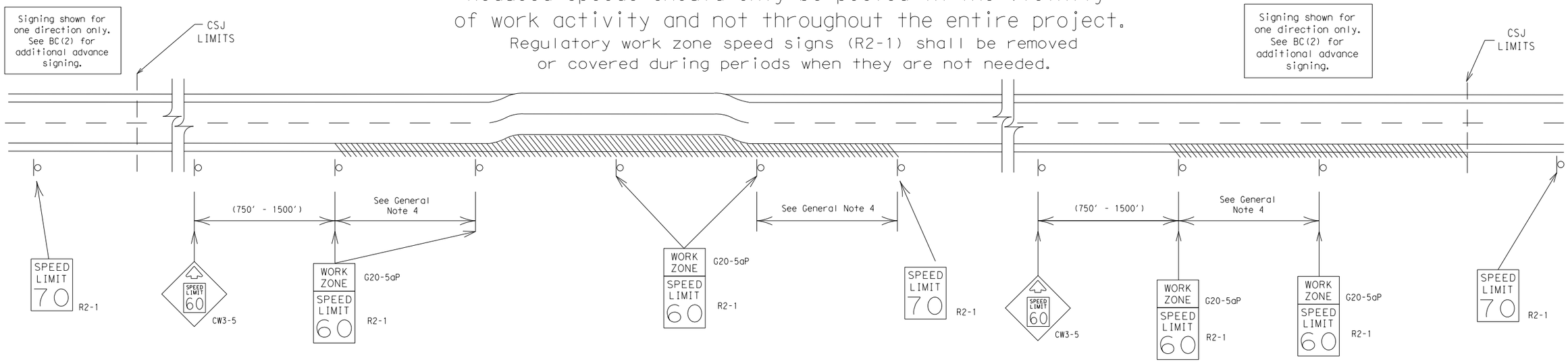
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0908	00	126	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ABL	TAYLOR, ETC.		17

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 8-14 7-13 5-21	0908	00	126	VARIOUS
	DIST	COUNTY		SHEET NO.
	ABL	TAYLOR, ETC.		18

DATE: 6/14/2024 3:45:51 PM
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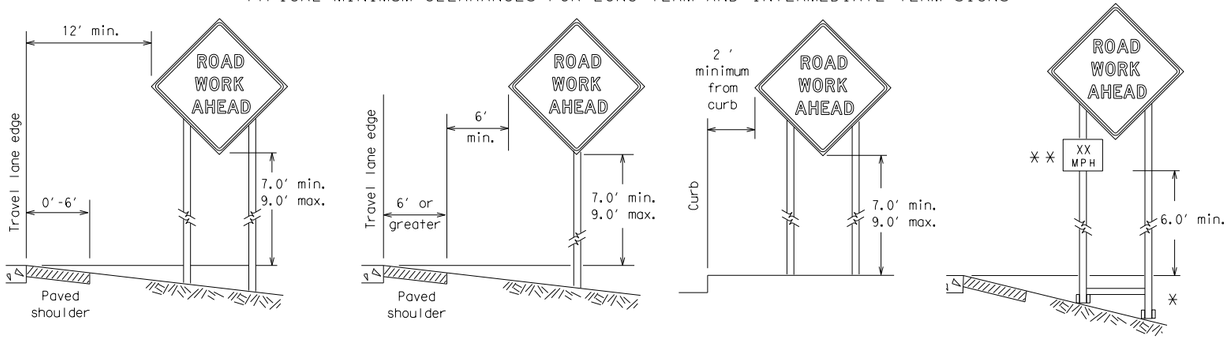
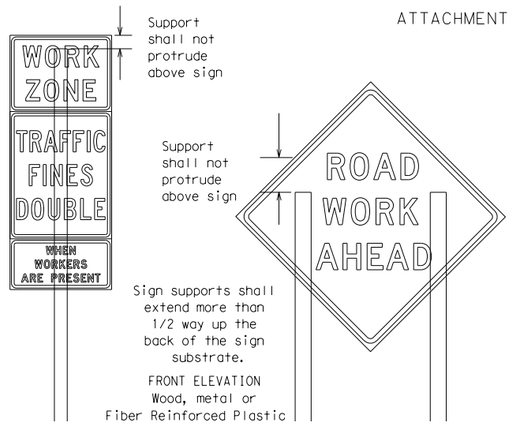
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



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

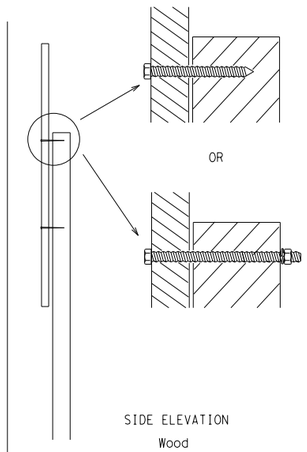
⁎⁎ When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS



FRONT ELEVATION
Wood, metal or
Fiber Reinforced Plastic

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.



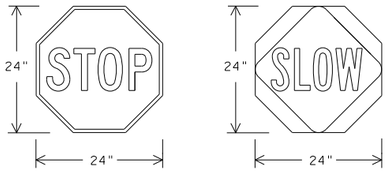
SIDE ELEVATION
Wood

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

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

STOP/SLOW PADDLES

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



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0908	00	126	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
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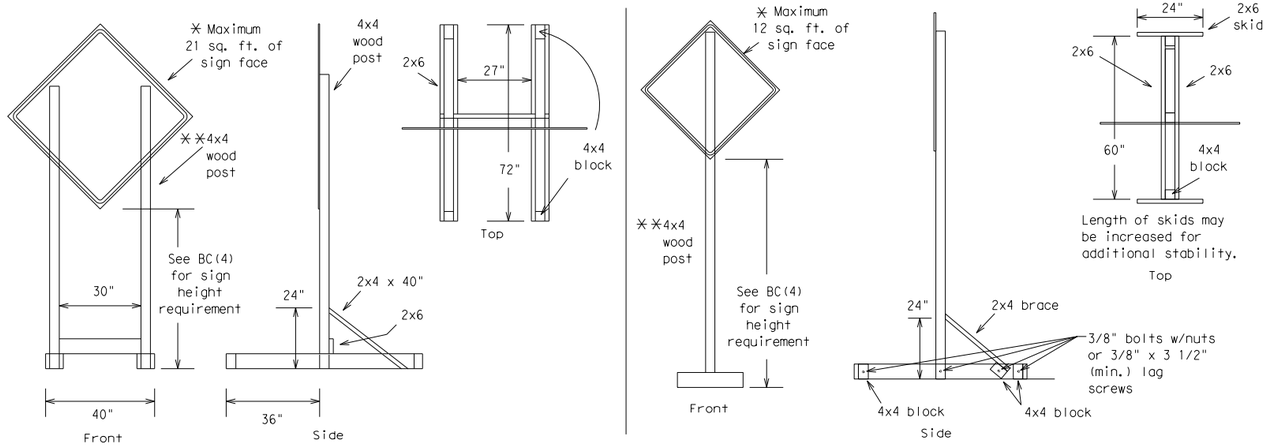
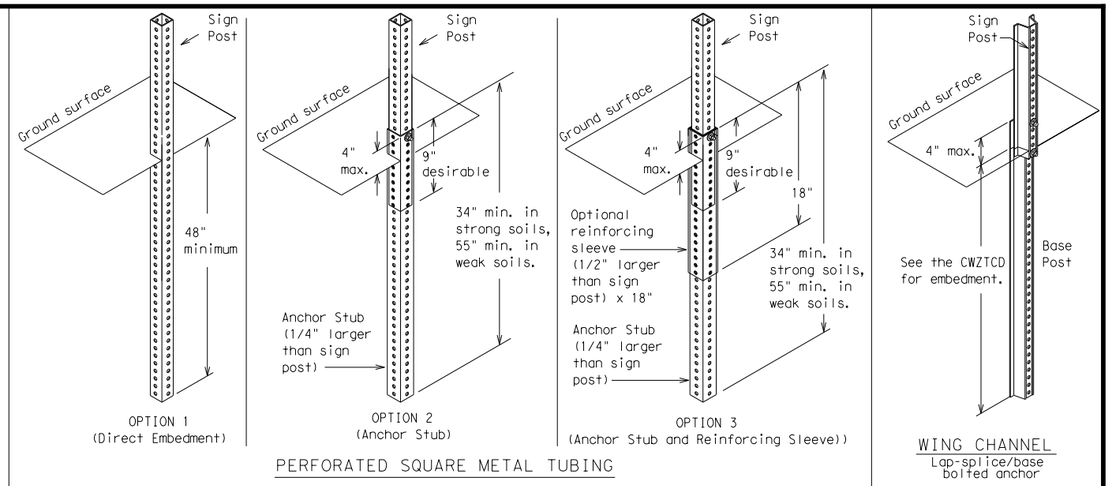


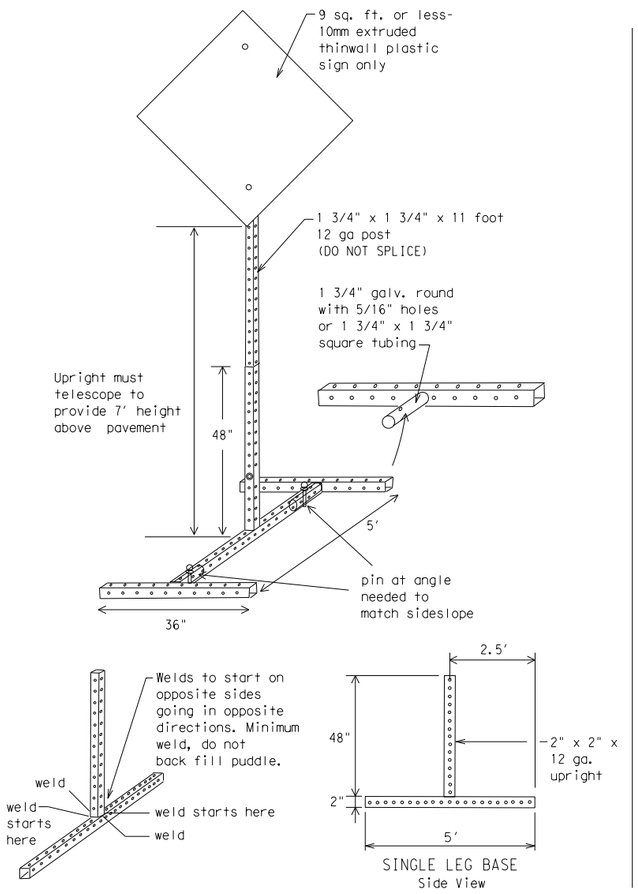
SKID MOUNTED WOOD SIGN SUPPORTS

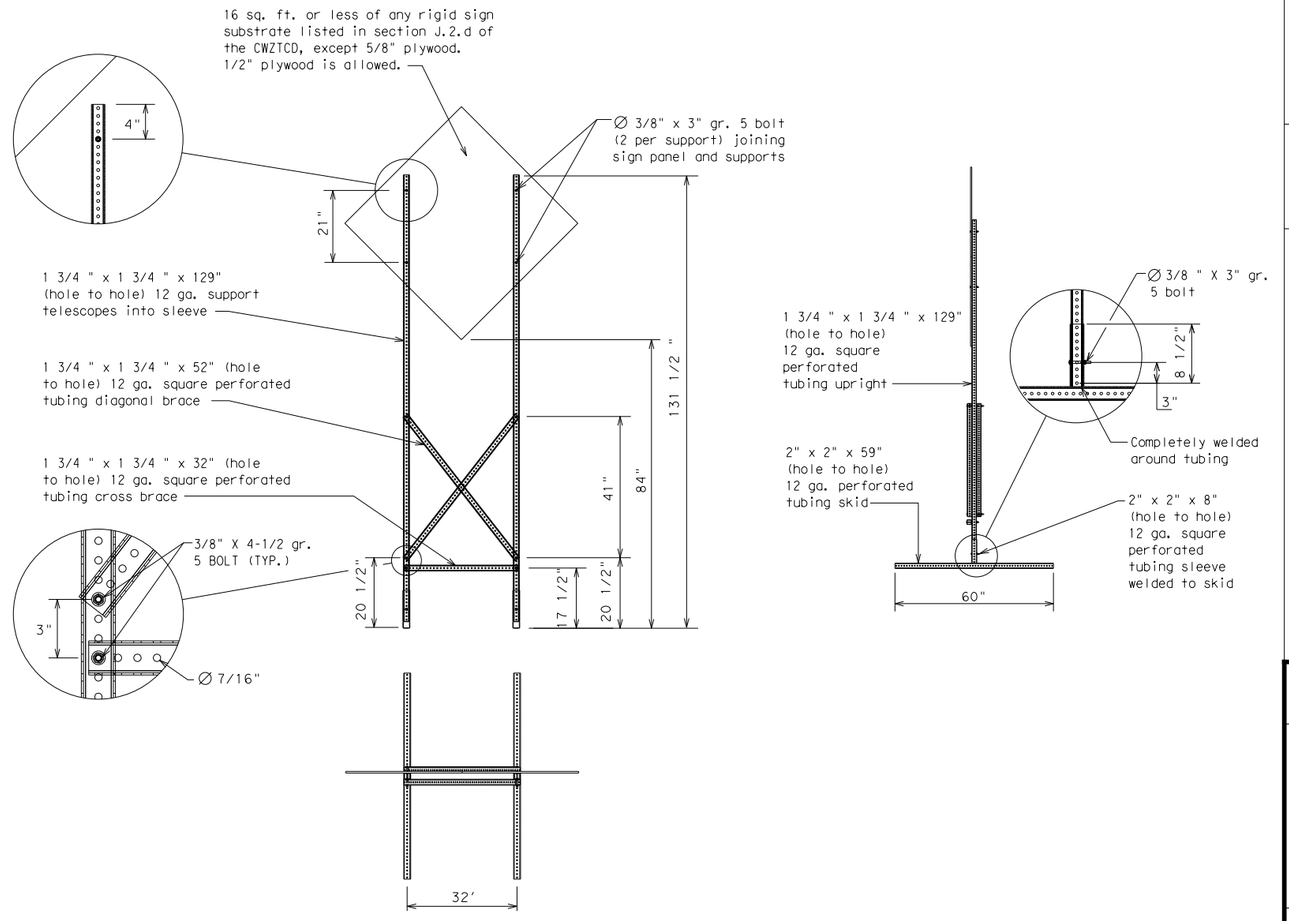
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



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.

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	0908	00	126	VARIOUS
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WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

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

WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT

WORD OR PHRASE	ABBREVIATION
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0908	00	126	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ABL	TAYLOR, ETC.		21

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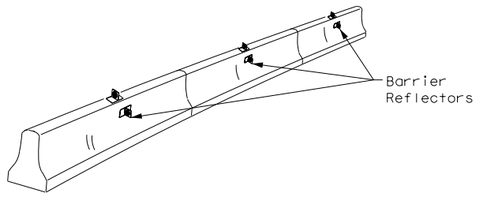
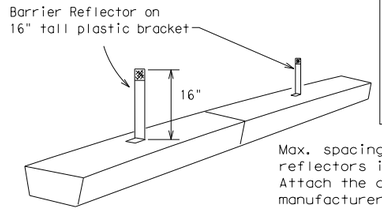
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



CONCRETE TRAFFIC BARRIER (CTB)

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

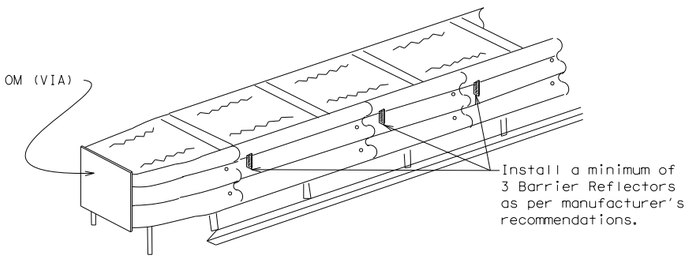


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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



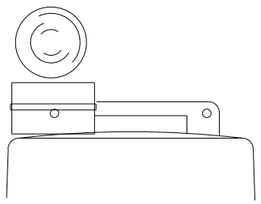
DELINEATION OF END TREATMENTS

END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

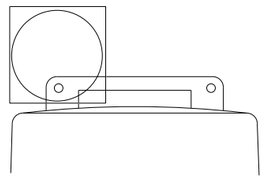


Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

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



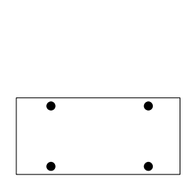
Warning reflector may be round or square.Must have a yellow reflective surface area of at least 30 square inches

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

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

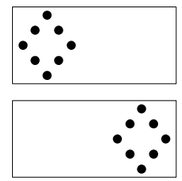
Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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

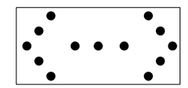


4 CORNER CAUTION

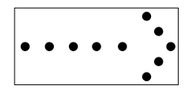
OR



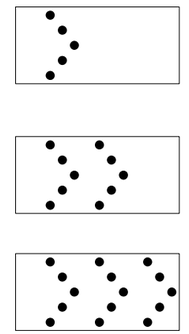
ALTERNATING DIAMOND CAUTION



DOUBLE ARROW



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



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

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

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

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

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation — Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0908	00	126	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ABL	TAYLOR, ETC.		22

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

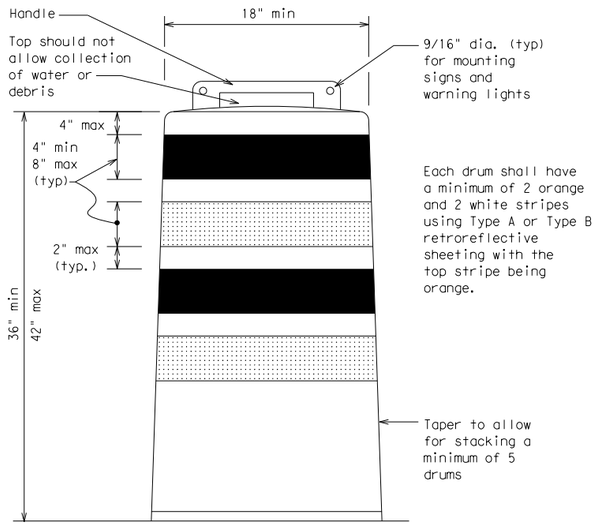
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

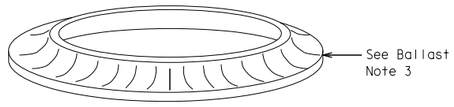
RETROREFLECTIVE SHEETING

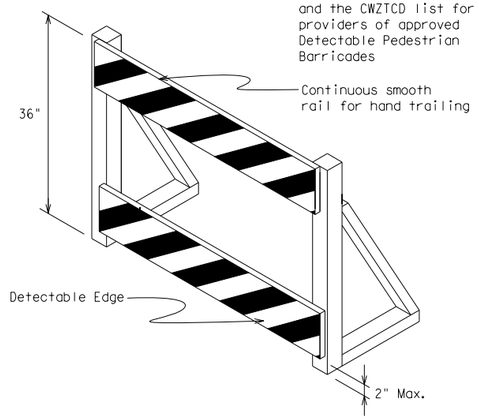
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

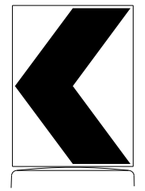




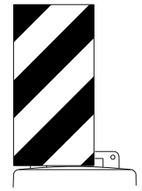


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0908	00	126	VARIOUS
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	ABL	TAYLOR, ETC.		23
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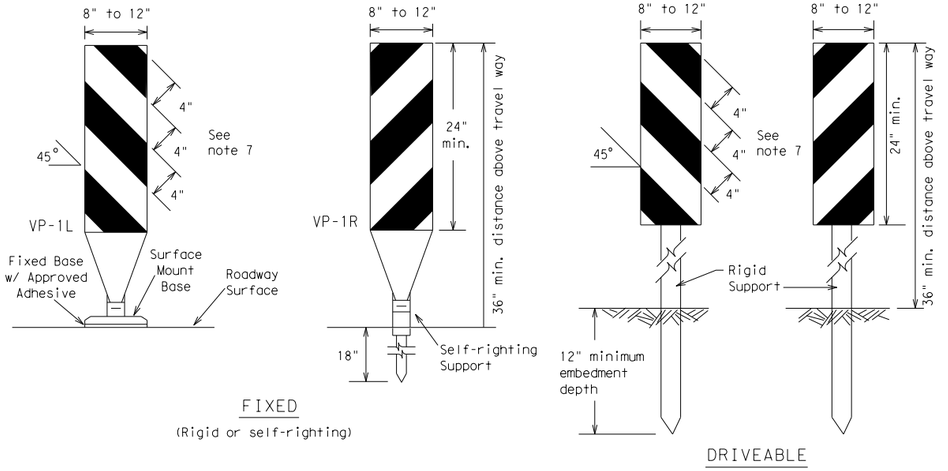
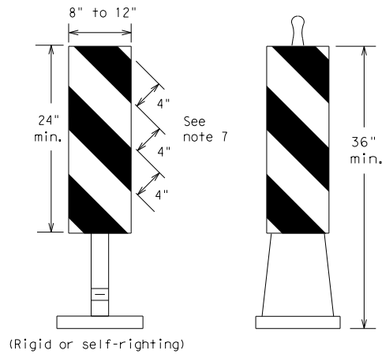


FIXED

(Rigid or self-righting)

DRIVEABLE

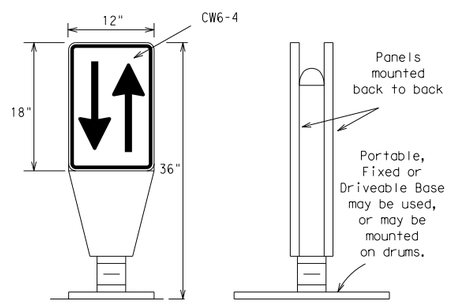


(Rigid or self-righting)

PORTABLE

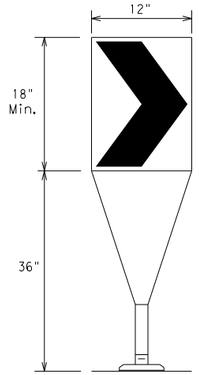
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

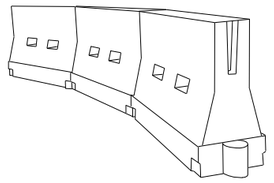
OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



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

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

CHEVRONS



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

GENERAL NOTES

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0908	00	126	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ABL	TAYLOR, ETC.		24

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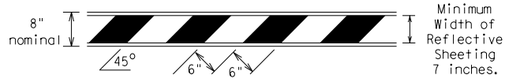
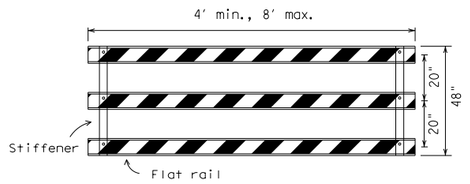
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



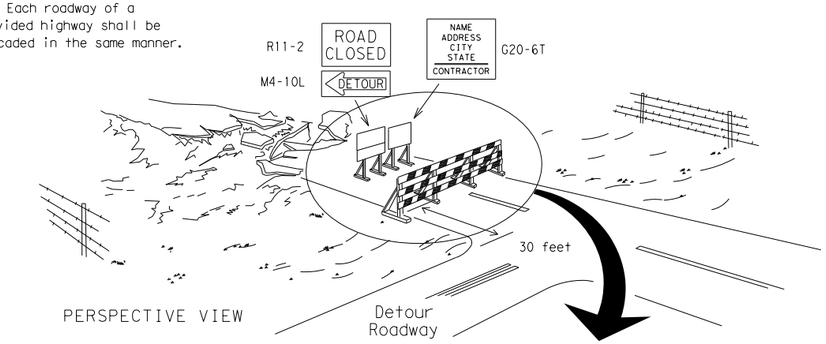
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

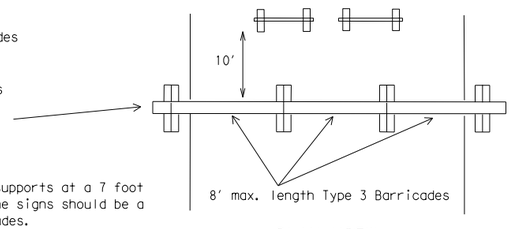
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.

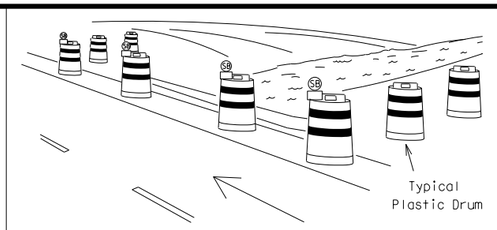
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

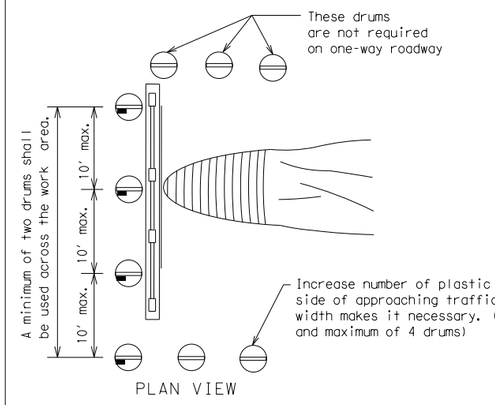
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

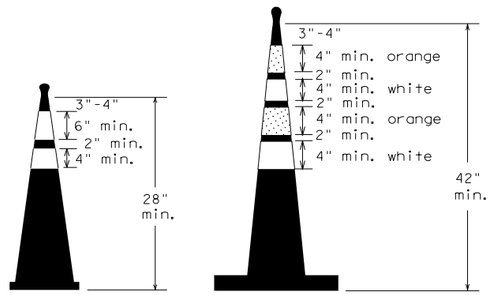
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



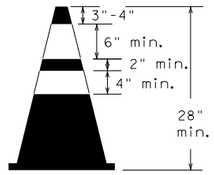
PLAN VIEW

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

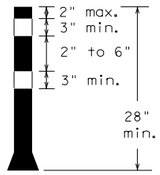
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

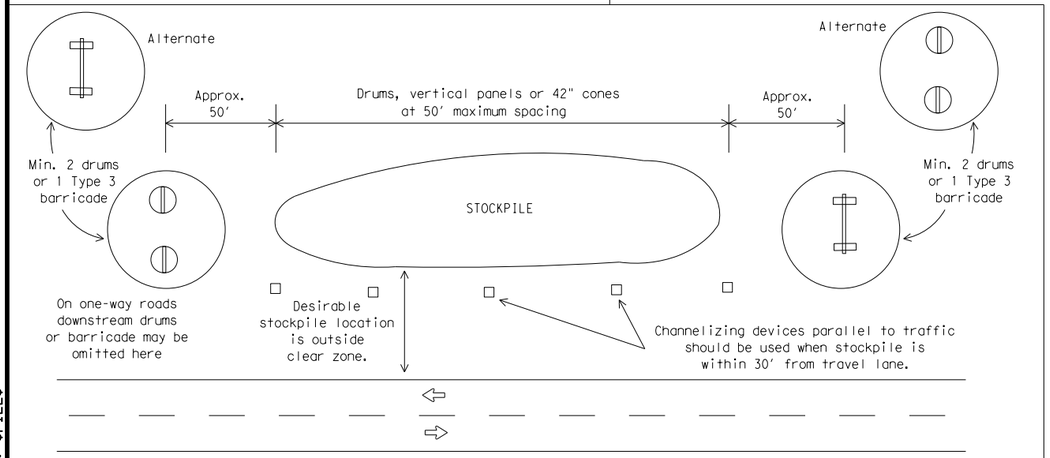


Tubular Marker

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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0908	00	126	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

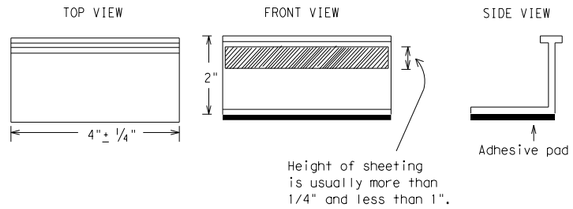
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-98 9-07 5-21 1-02 7-13 11-02 8-14	0908	00	126	VARIOUS
	DIST	COUNTY		SHEET NO.
	ABL	TAYLOR, ETC.		26

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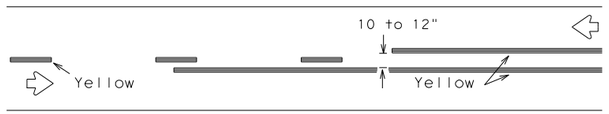
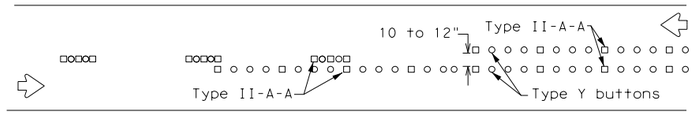
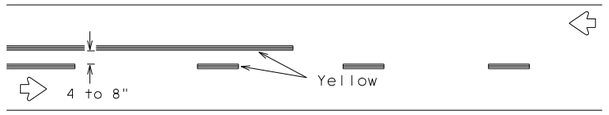
PAVEMENT MARKING PATTERNS



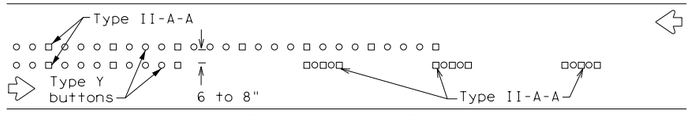
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



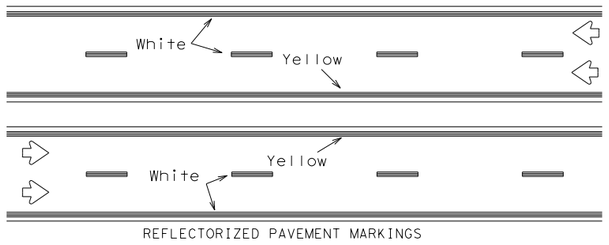
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



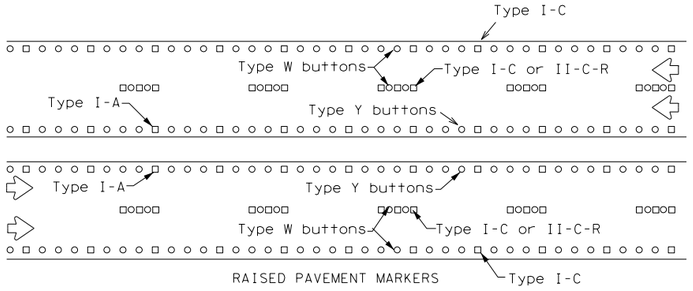
RAISED PAVEMENT MARKERS - PATTERN B

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

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



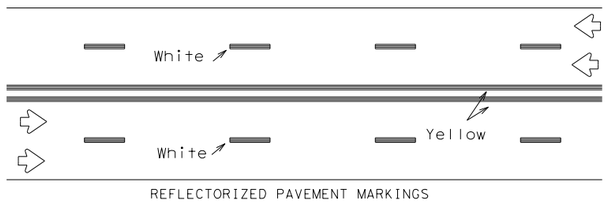
REFLECTORIZED PAVEMENT MARKINGS



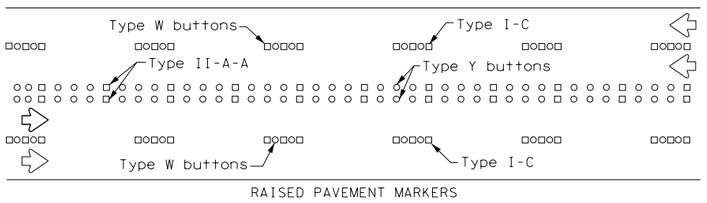
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



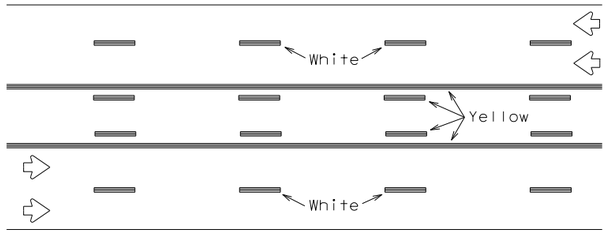
REFLECTORIZED PAVEMENT MARKINGS



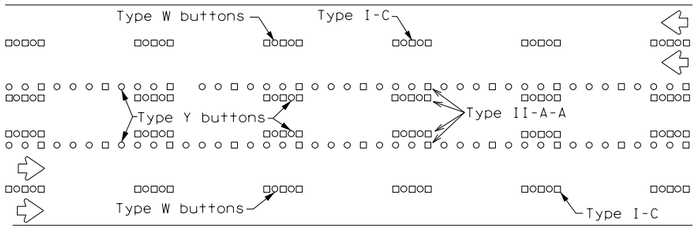
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

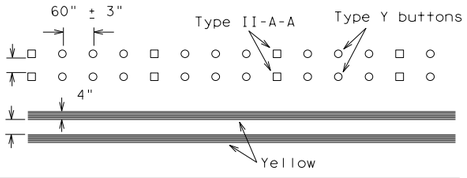
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

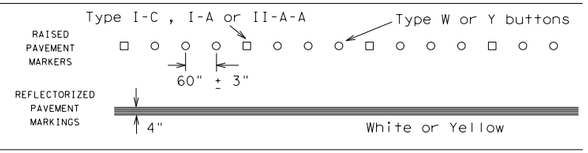
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

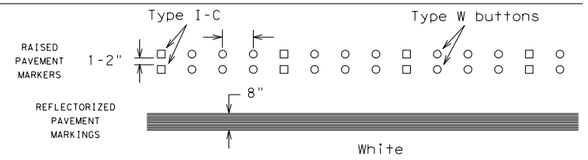


EDGE LINE OR SINGLE NO-PASSING LINE



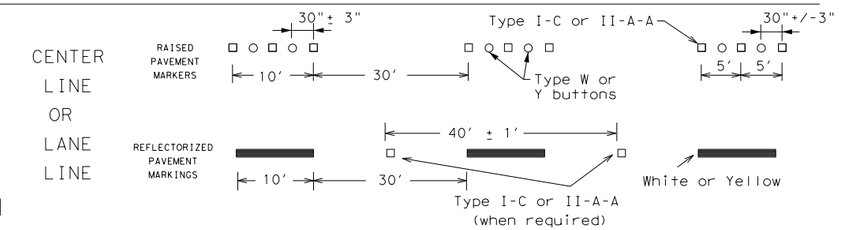
WIDE LINE

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

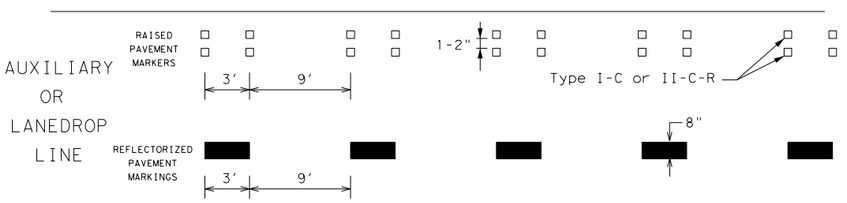


BROKEN LINES

CENTER LINE OR LANE LINE

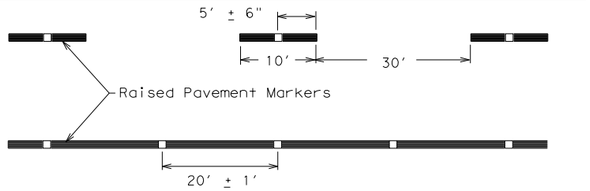


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

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	0908	00	126	VARIOUS
	DIST	COUNTY		SHEET NO.
	ABL	TAYLOR, ETC.		27

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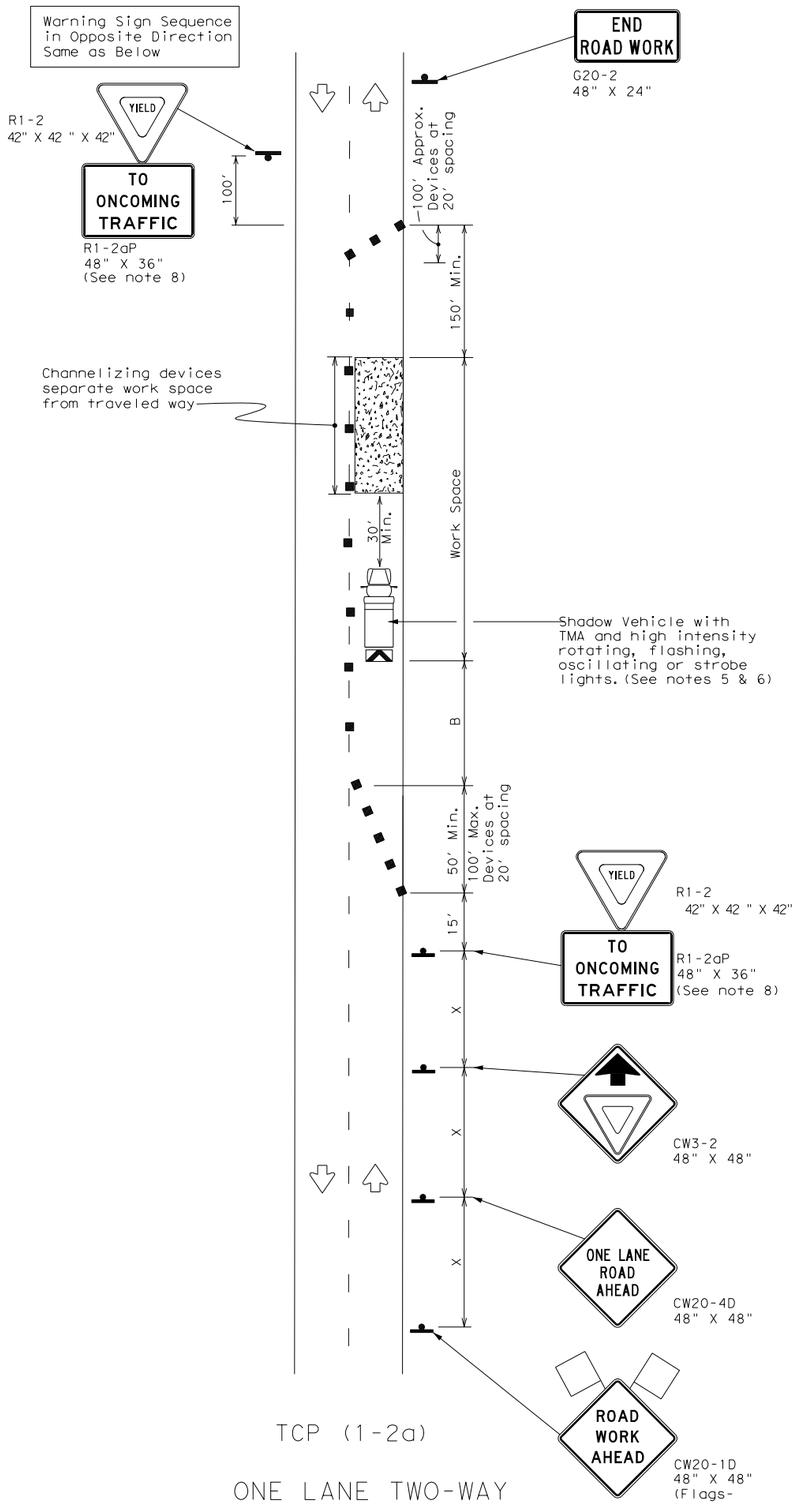
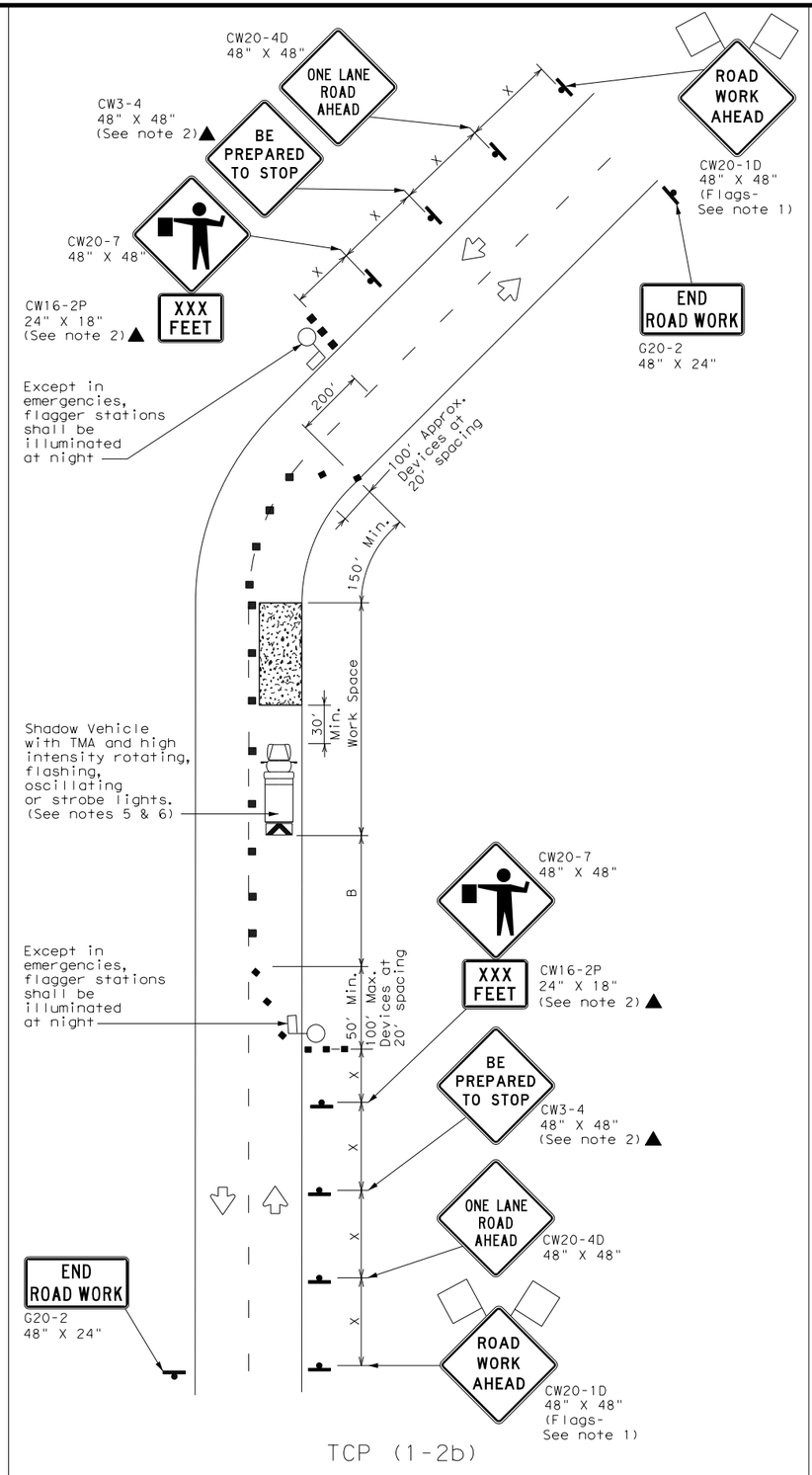


TCP (1-2a)

ONE LANE TWO-WAY CONTROL WITH YIELD SIGNS

(Less than 2000 ADT - See note 7)



TCP (1-2b)

ONE LANE TWO-WAY CONTROL WITH FLAGGERS

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

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

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

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

GENERAL NOTES

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

TCP (1-2a)

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

TCP (1-2b)

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP (1-2)-18

FILE: tcp1-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-90 4-98 2-94 2-12 1-97 2-18	0908	00	126	VARIOUS
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	ABL	TAYLOR, ET		$TCP1-2-18$

DATE: 6/14/2024 3:46:11 PM
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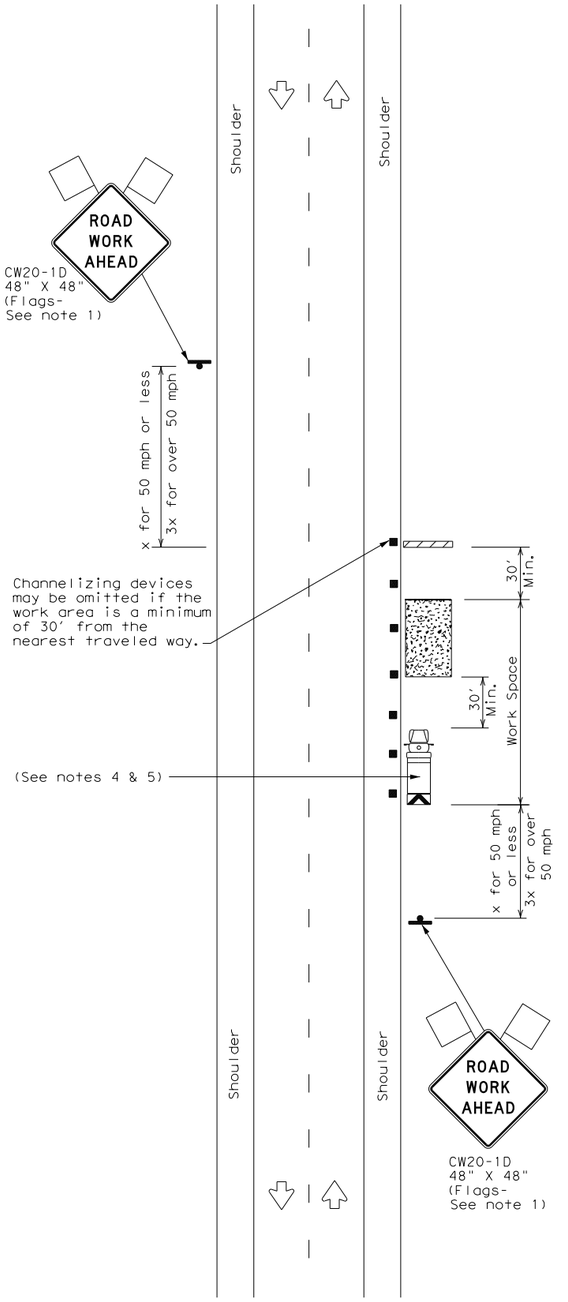
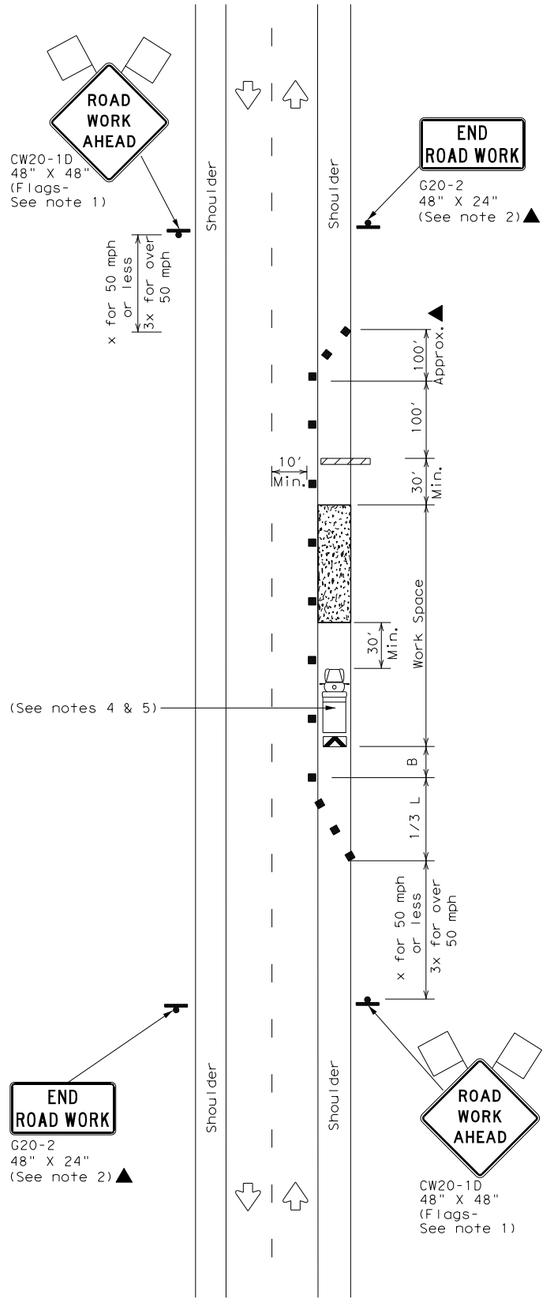


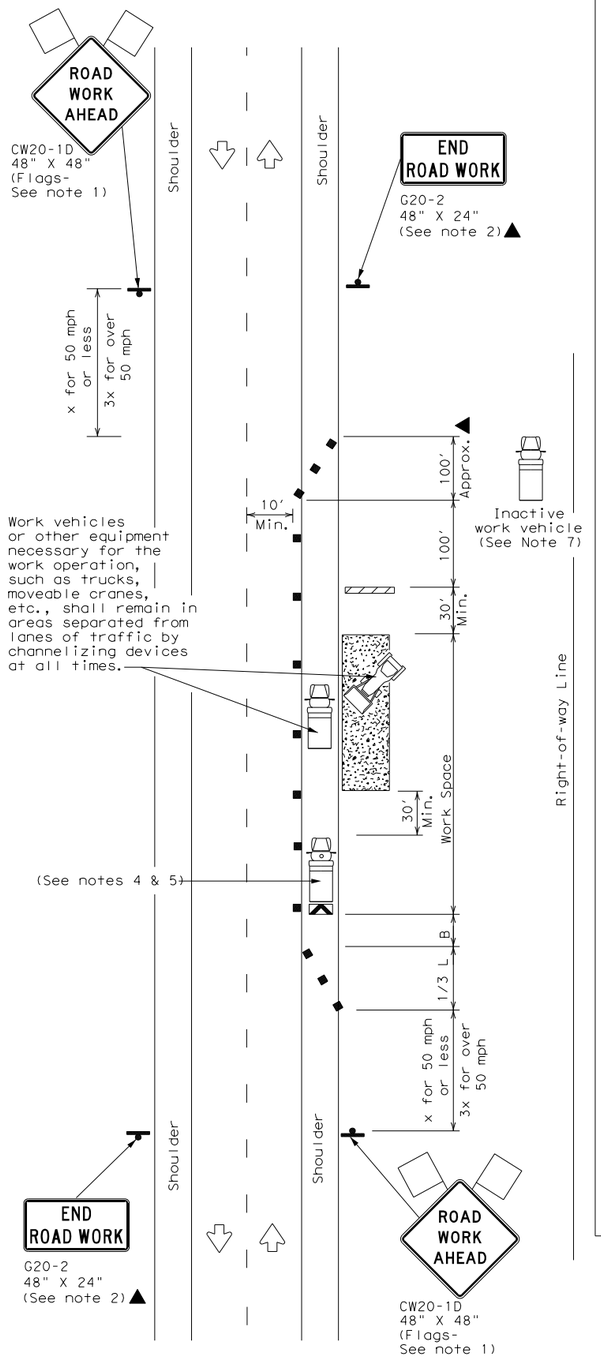
TCP (2-1a)

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	0908	00	126	VARIOUS
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	ABL	TAYLOR, ETC.		29
1-97 2-18				

161

DATE: 6/14/2024 3:46:20 PM
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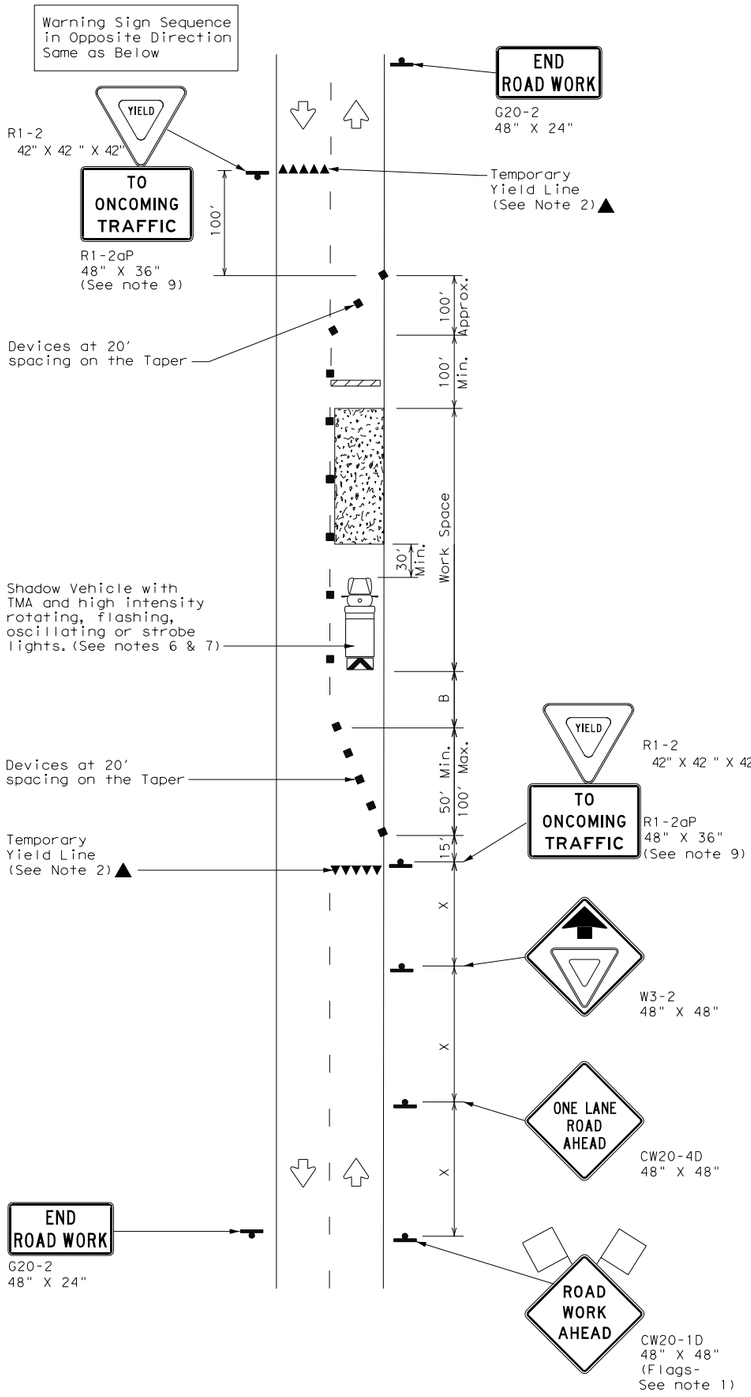
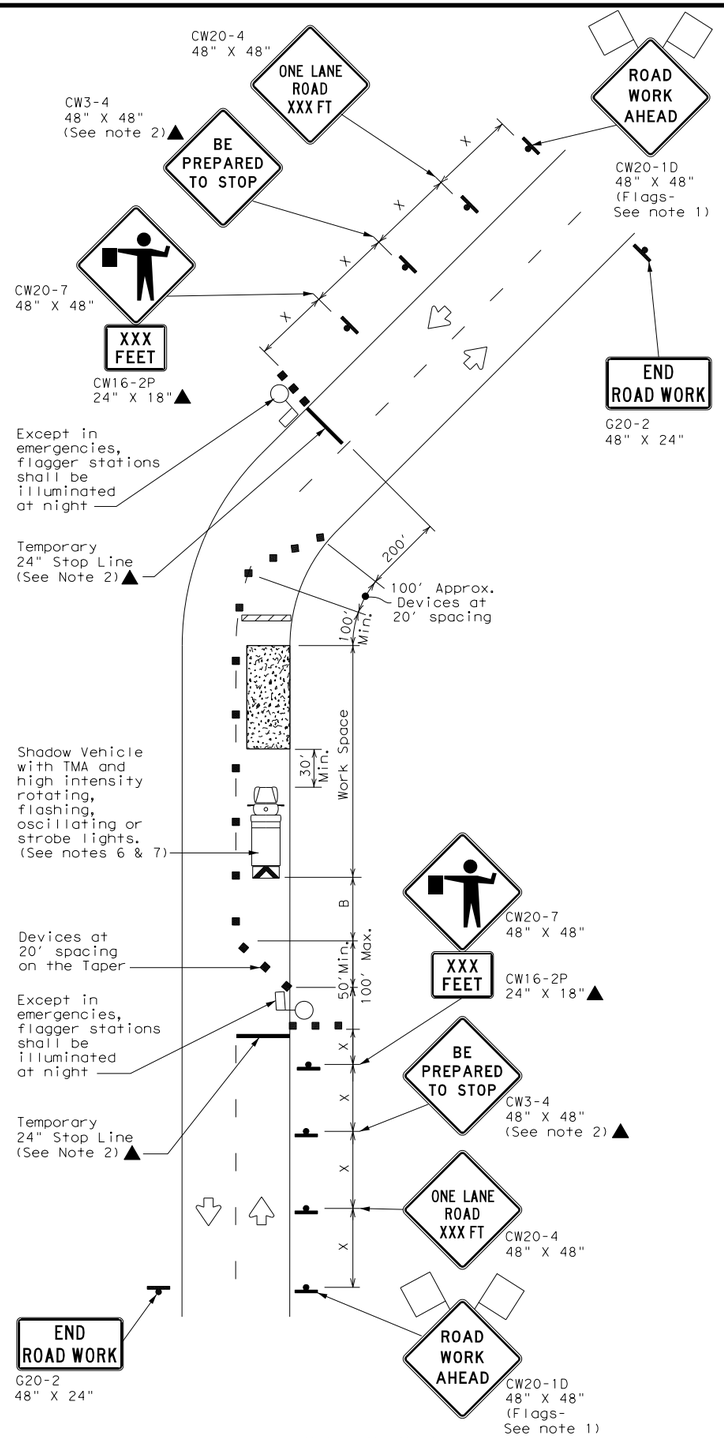


TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



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 8-95 3-03 1-97 2-12 4-98 2-18	0908	00	126	VARIOUS
	DIST	COUNTY		SHEET NO.
	ABL	TAYLOR, ETC.		30

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DATE: 6/14/2024 3:46:29 PM
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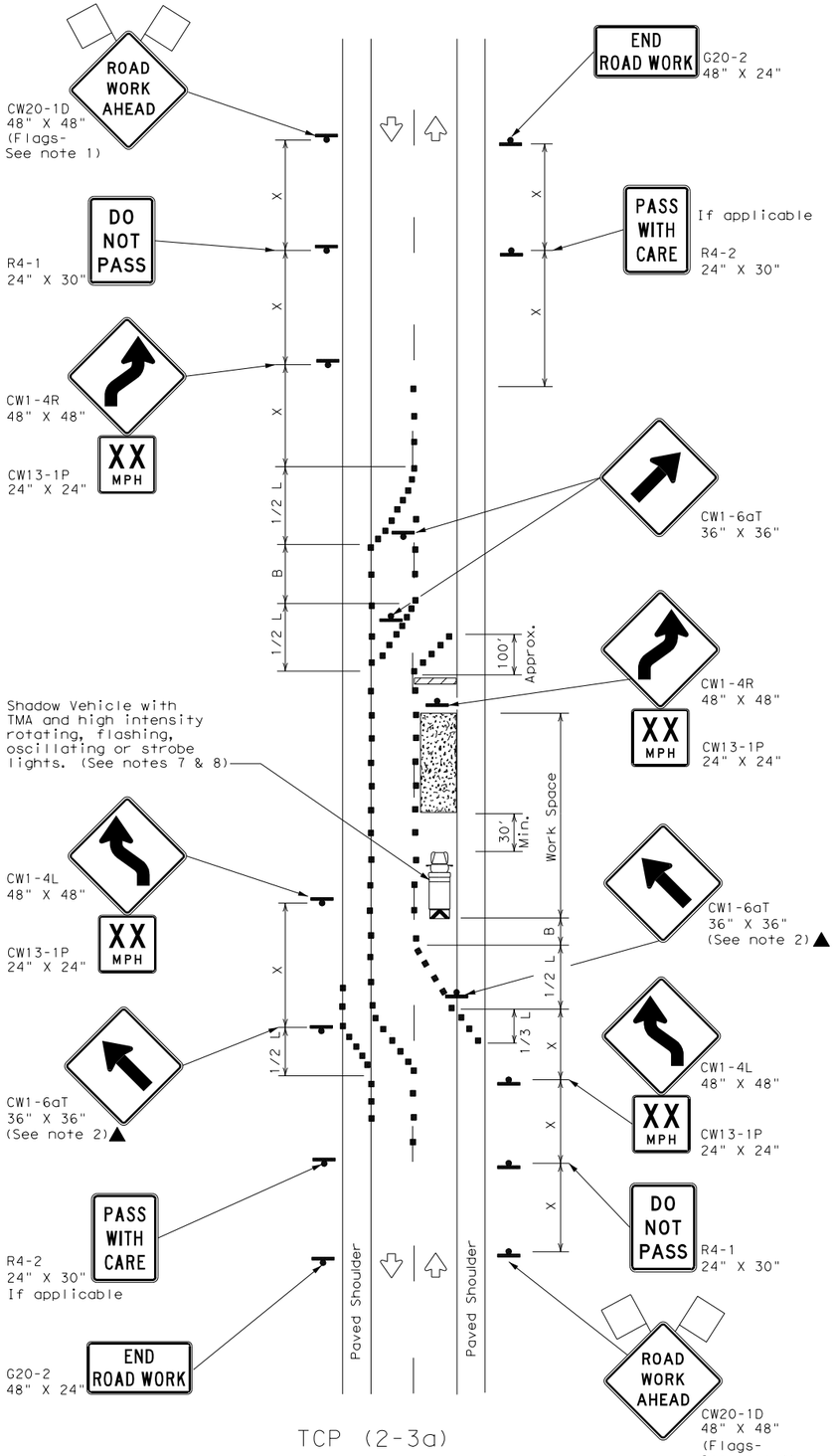
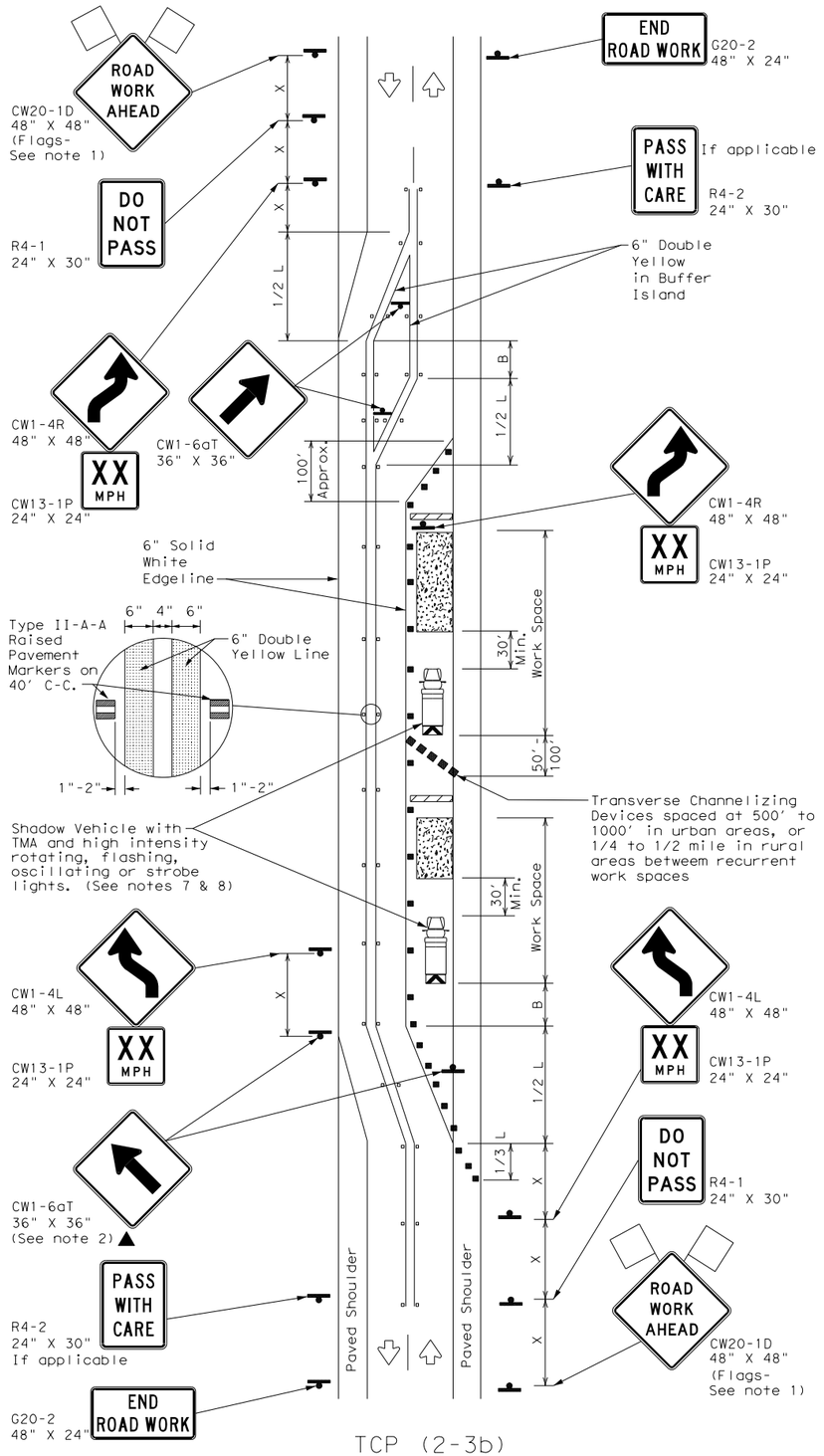


TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS
ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



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.

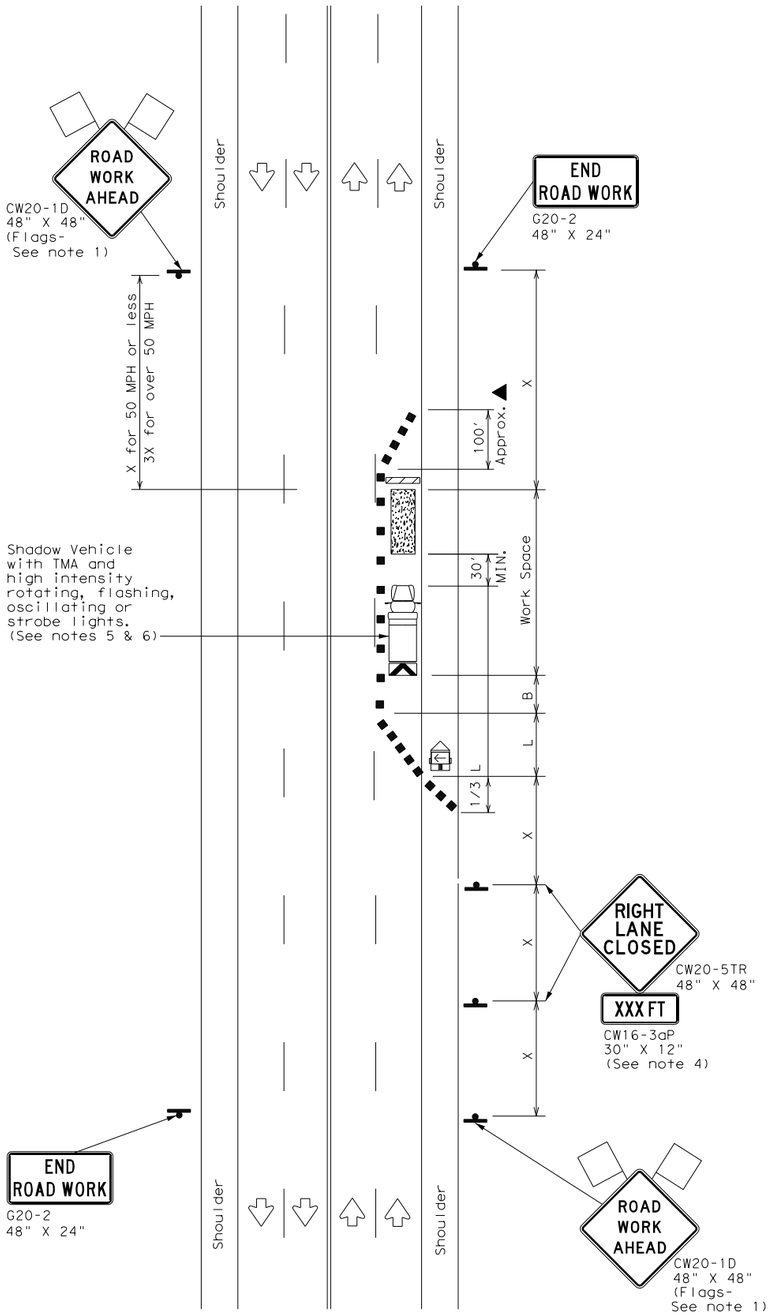
Texas Department of Transportation

Traffic Safety Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

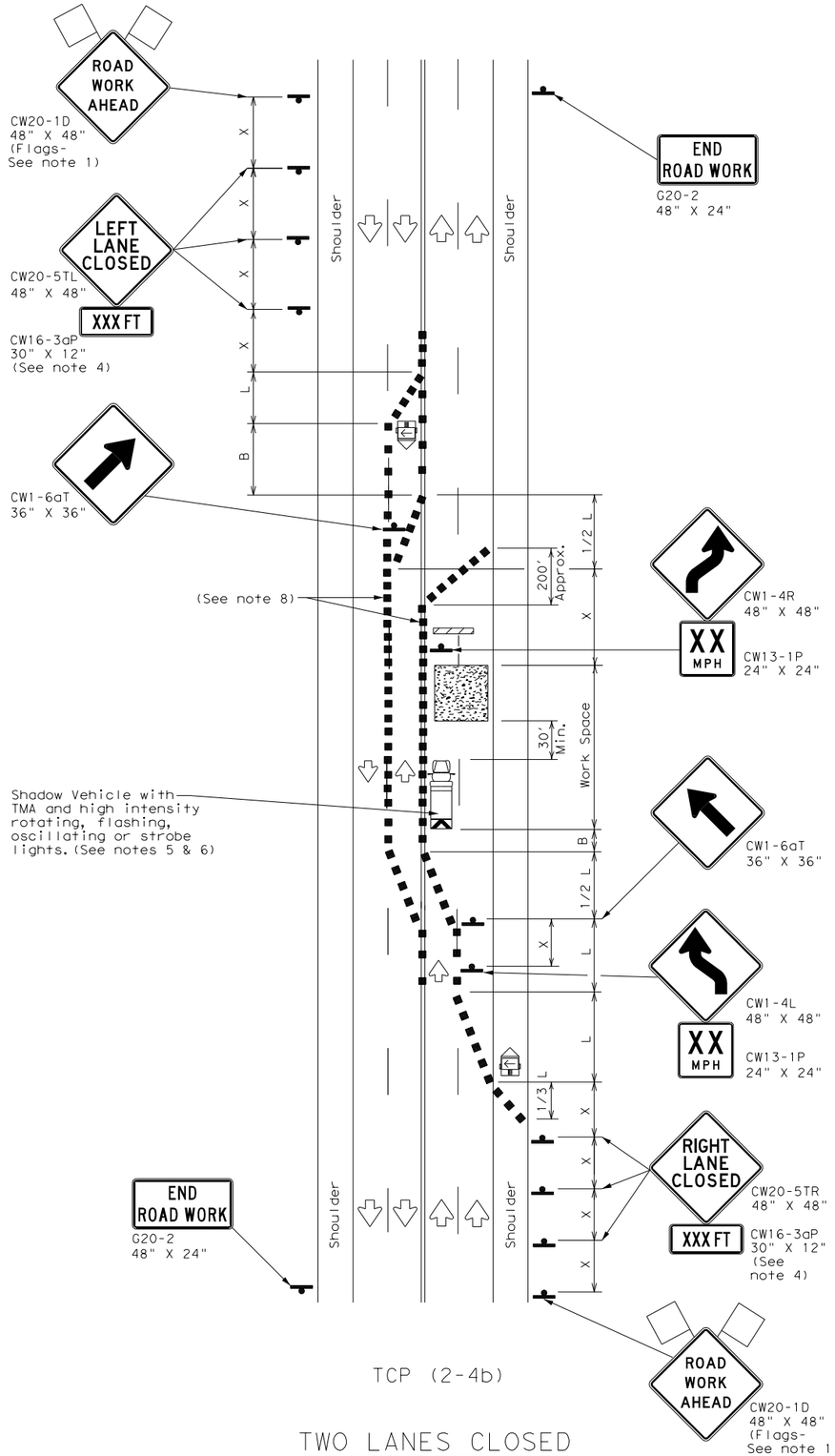
TCP (2-3)-23

FILE: tcp(2-3)-23.dgn	DN:	CK:	DW:	CK:
© TxDOT April 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-85 4-98 2-18	0908	00	126	VARIOUS
8-95 3-03 4-23	DIST	COUNTY		SHEET NO.
1-97 2-12	ABL	TAYLOR, ETC.		31



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	0908	00	126	VARIOUS
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	ABL	TAYLOR, ETC.		32

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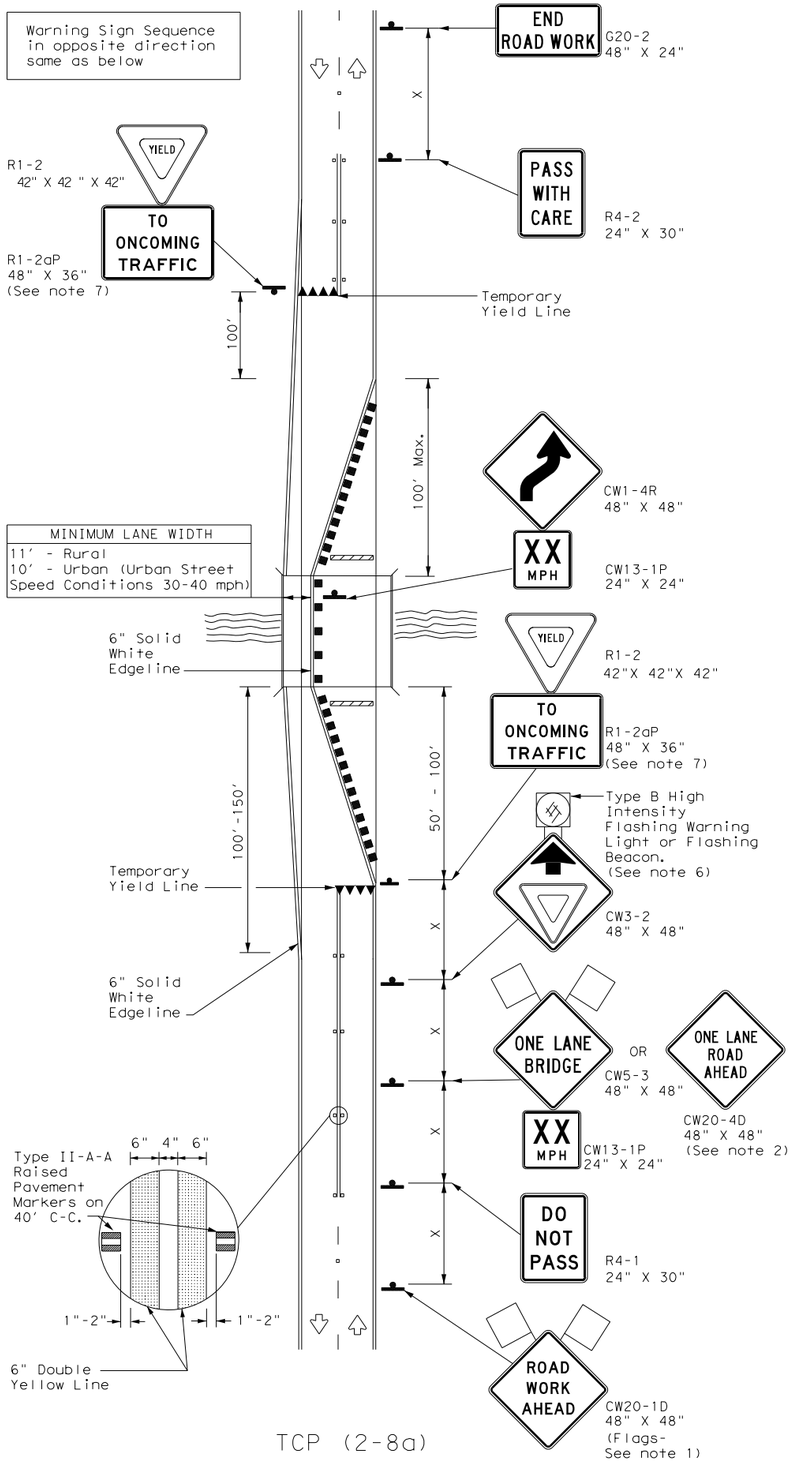
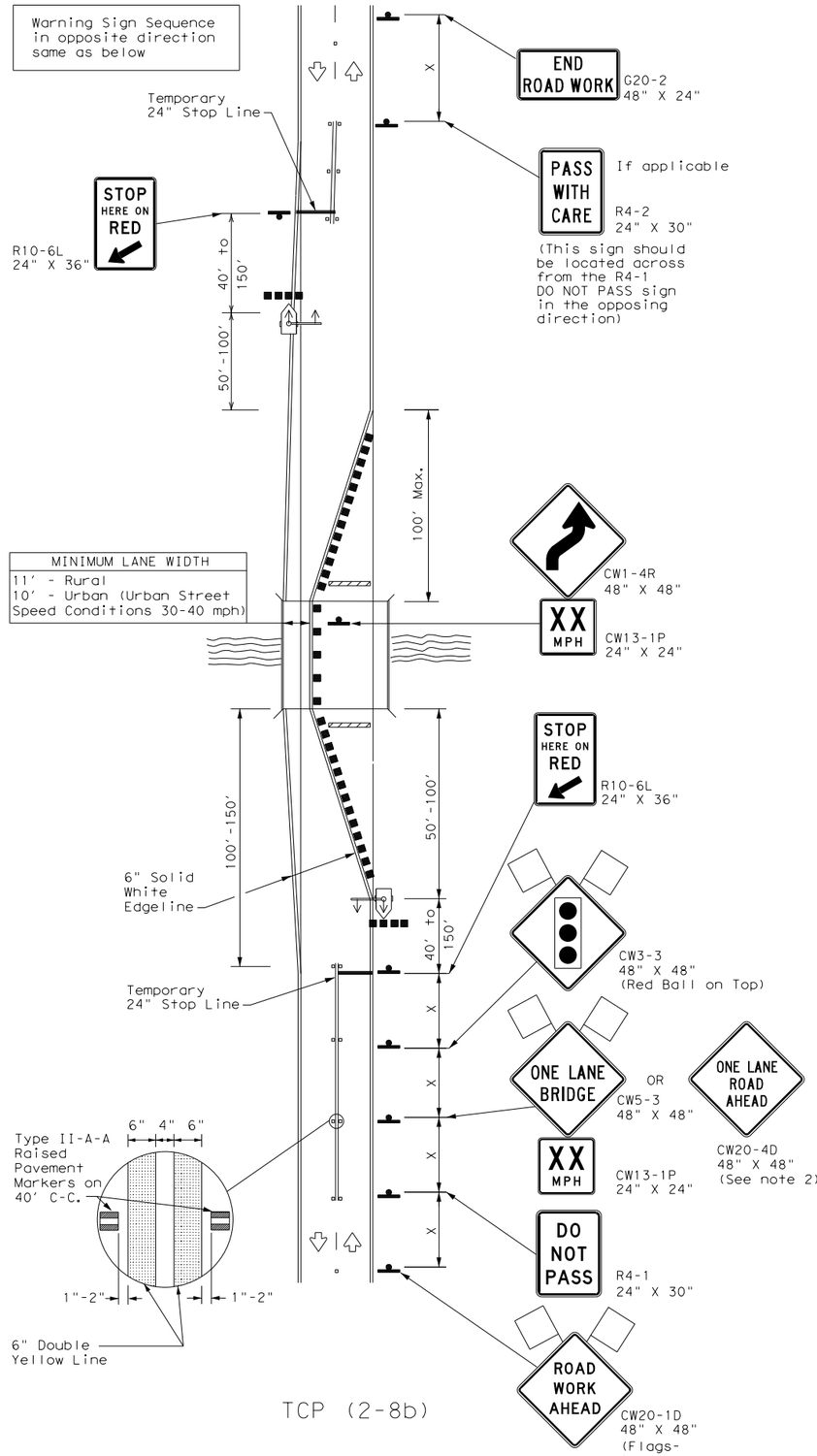


TCP (2-8a)

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
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8-95 3-03 4-23	ABL	TAYLOR, ETC.		33
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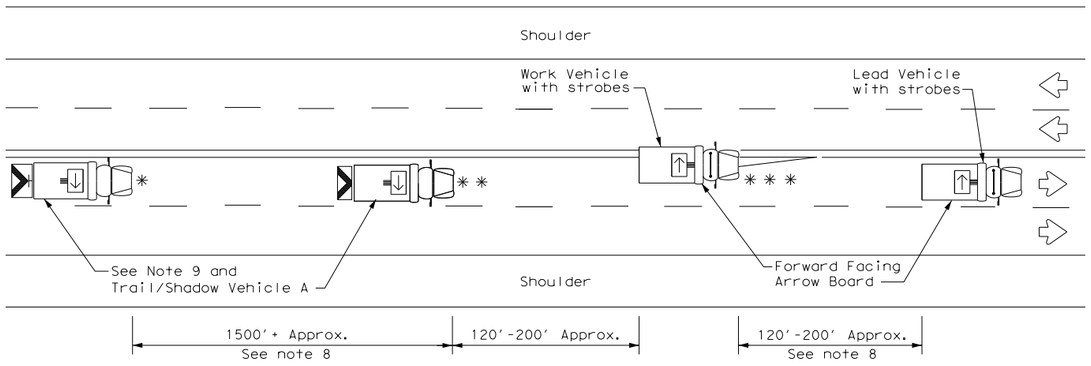
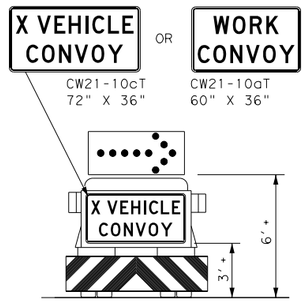


TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

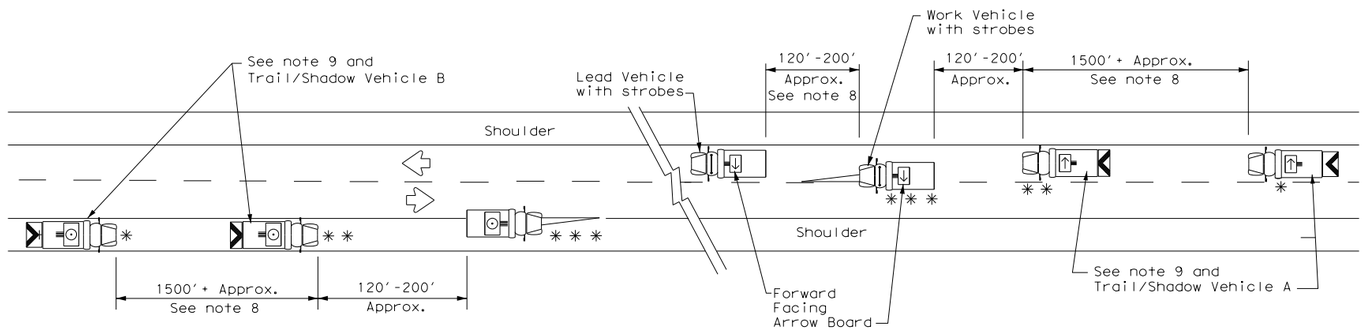
with RIGHT Directional display Flashing Arrow Board

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

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

GENERAL NOTES

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

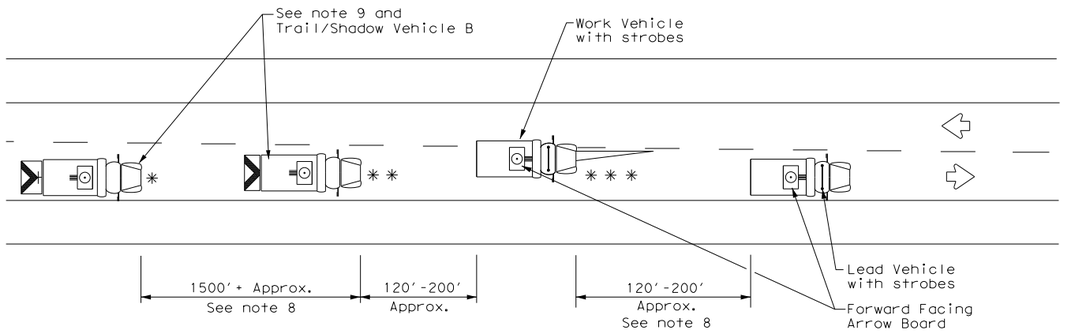


WORK ON SHOULDER

WORK ON TRAVEL LANE

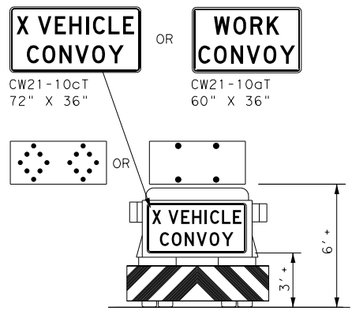
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



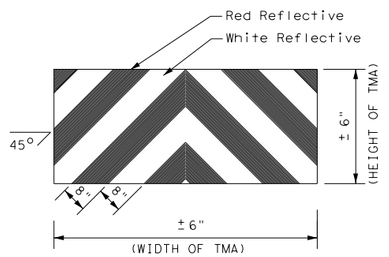
TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board in CAUTION display



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

TCP (3-1)-13

FILE: tcp3-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 7-13 1-97	0908	00	126	VARIOUS
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	ABL	TAYLOR, ETC.		34

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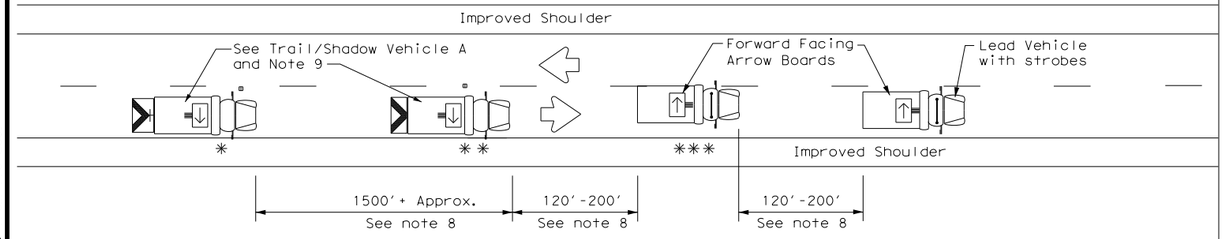
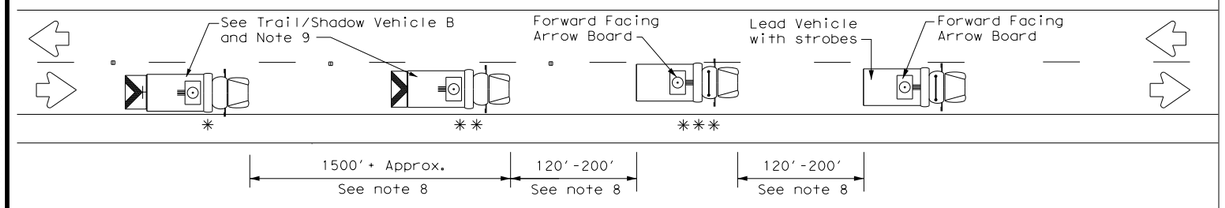


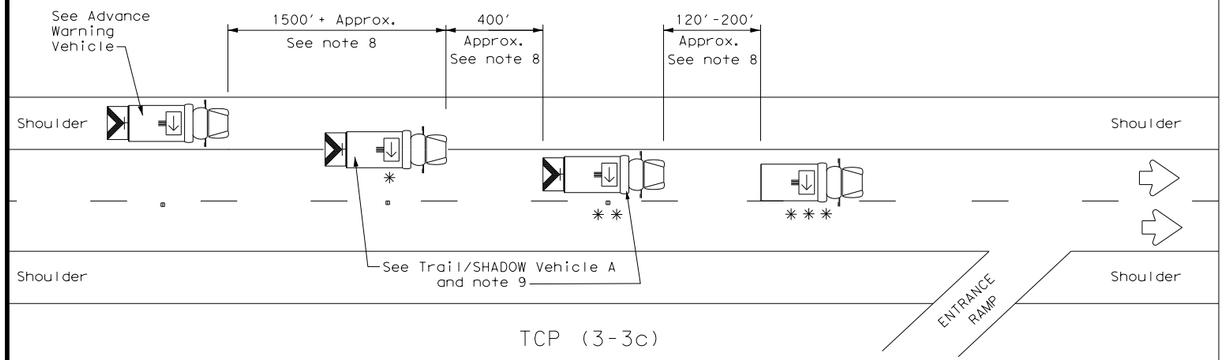
TCP (3-3a)

TWO LANE HIGHWAY WITH PAVED SHOULDERS
(WORK ON TRAVEL LANE)



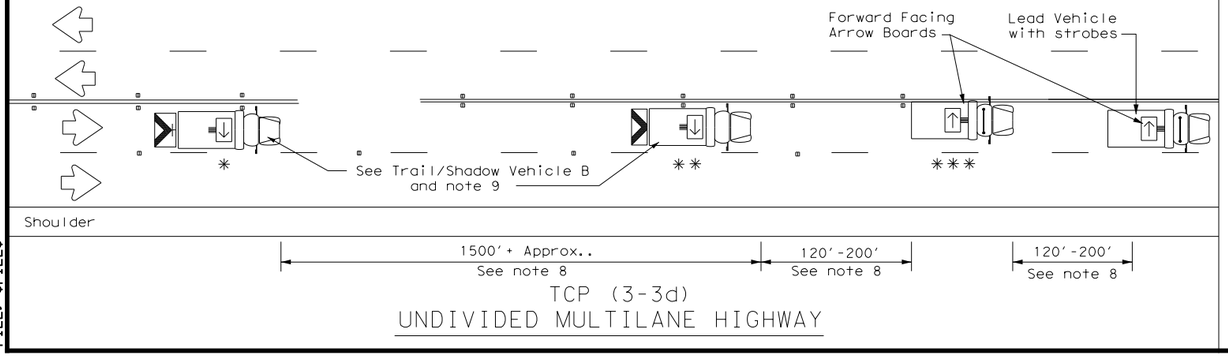
TCP (3-3b)

TWO LANE HIGHWAY WITHOUT PAVED SHOULDERS
(WORK ON TRAVEL LANE)



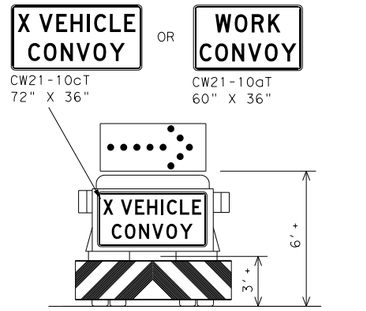
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



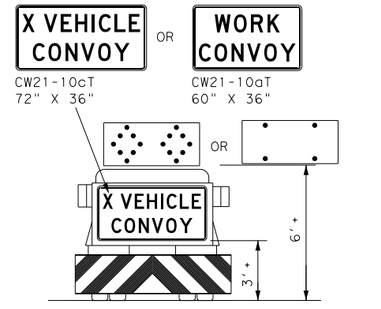
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



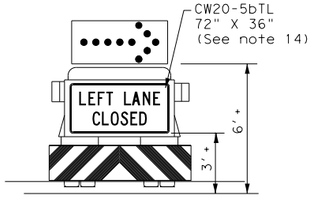
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

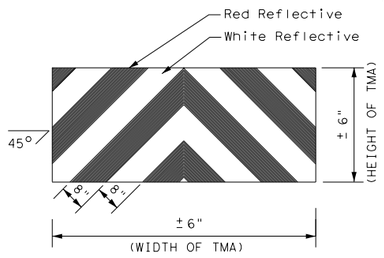


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

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

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©TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
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8-95 7-13	ABL	TAYLOR, ETC.		35
1-97 7-14				

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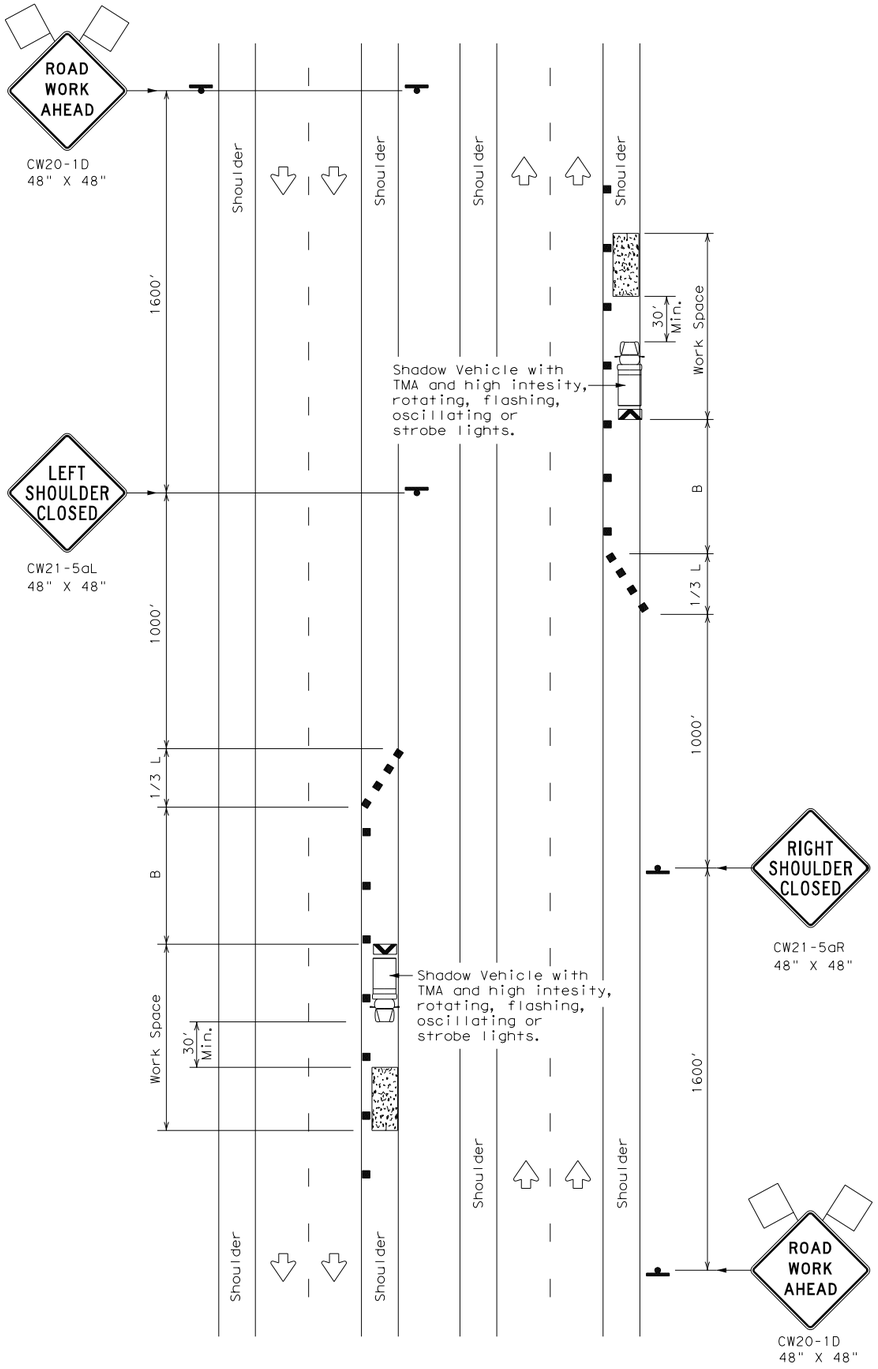
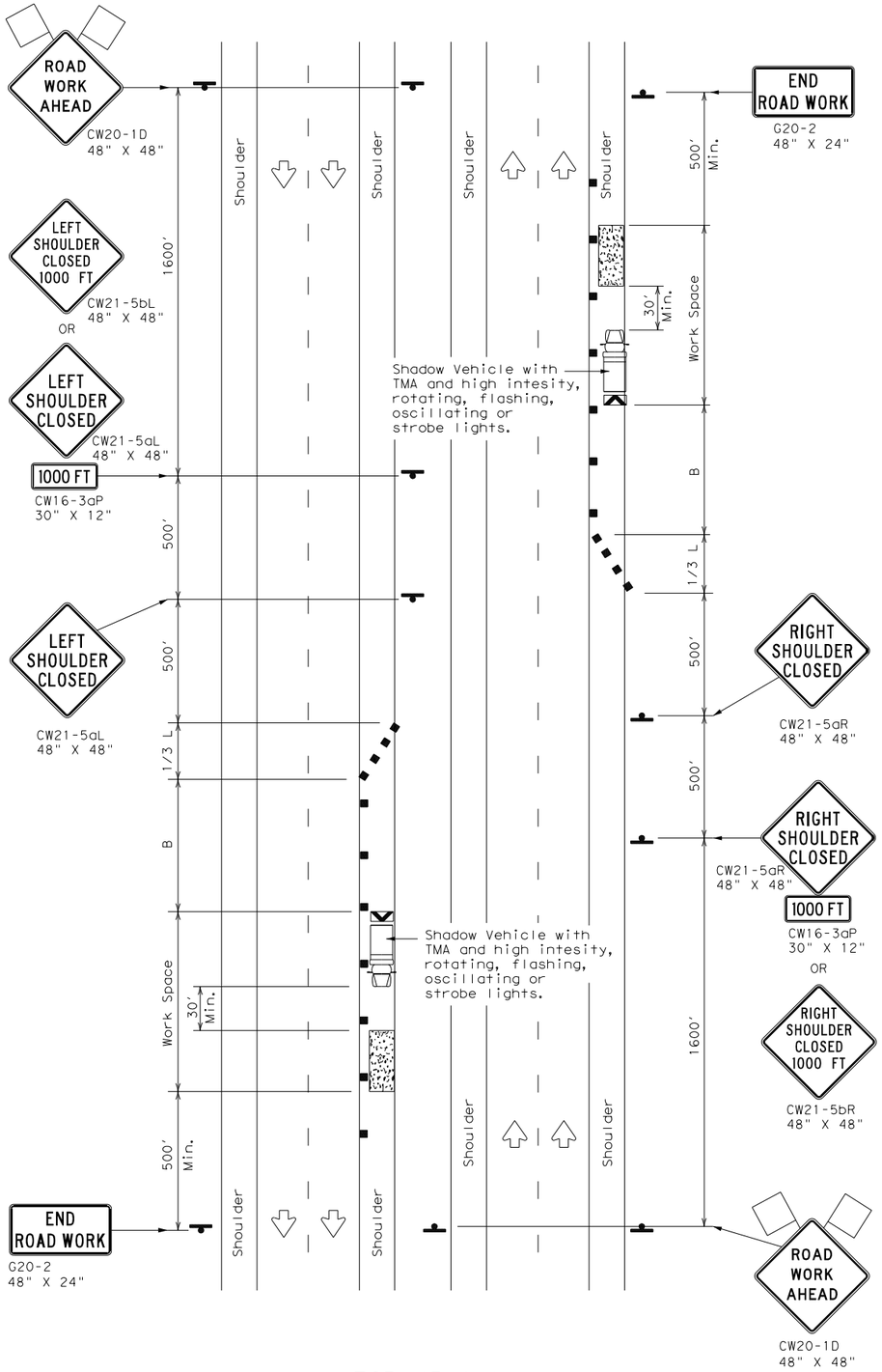


TCP (5-1a)

WORK AREA ON SHOULDER



TCP (5-1b)

WORK AREA ON SHOULDER

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	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	90'
35		205'	225'	245'	35'	70'	120'
40		265'	295'	320'	40'	80'	155'
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'

* 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(5-1a)	TCP(5-1b)	TCP(5-1b)	

GENERAL NOTES

1. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30' to 100' in advance of the area of crew exposure without adversely effecting the performance or quality of the work. Type 3 barricades or drums may be substituted when workers on foot are no longer present when approved by the Engineer.
2. 28" tall or taller one-piece cones will be allowed only for Short Duration or Short Term stationary operations when workers are present to maintain the devices upright and in proper location. Intermediate Term stationary work areas should use Drums, Vertical Panels or 42" tall two-piece cones.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN SHOULDER WORK FOR FREEWAYS / EXPRESSWAYS

TCP (5-1)-18

FILE: tcp5-1-18.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
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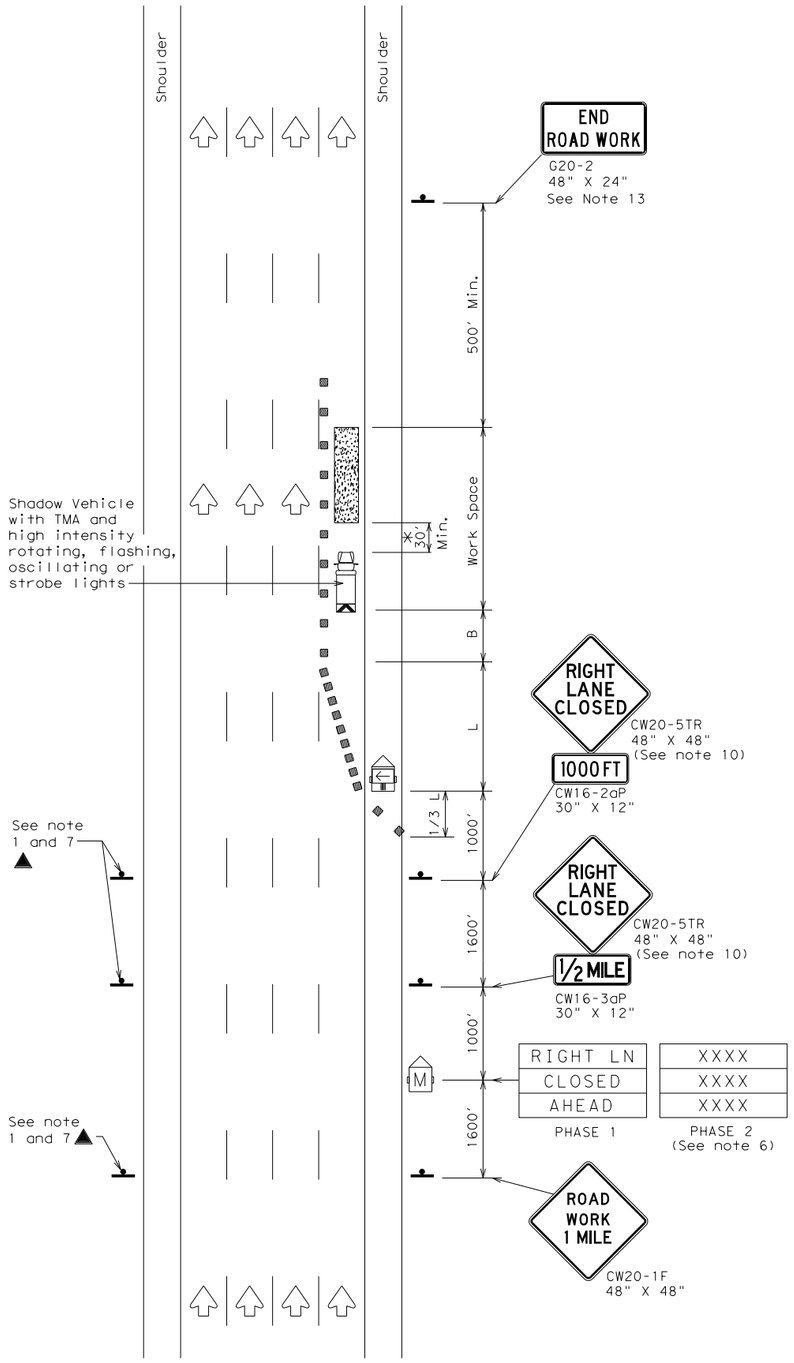
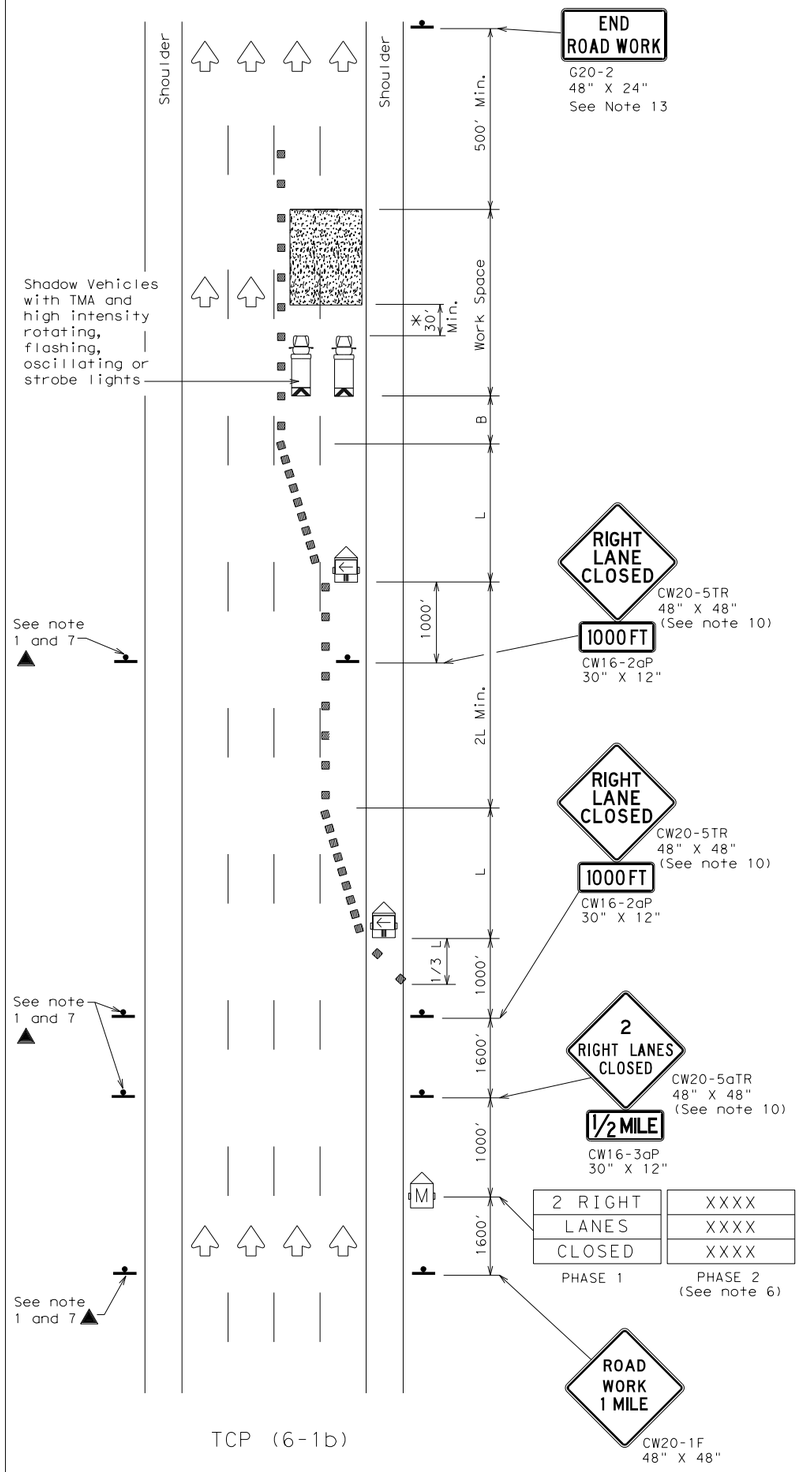
	ABL	TAYLOR, ETC.		36



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

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©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-12	0908	00	126	VARIOUS
	DIST	COUNTY		SHEET NO.
	ABL	TAYLOR, ETC.		37

201

DATE: 6/14/2024 3:47:23 PM
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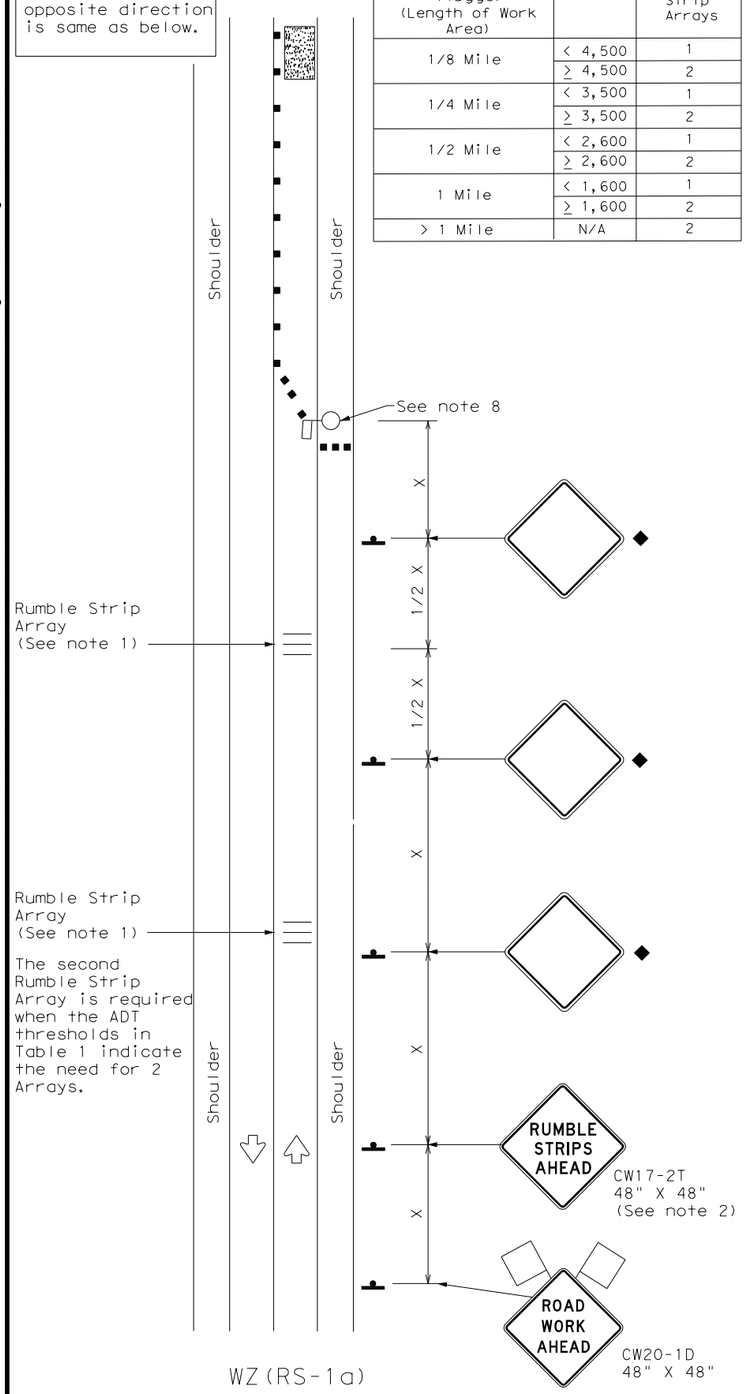
DATE: 6/14/2024 3:47:33 PM
FILE: $FILE$

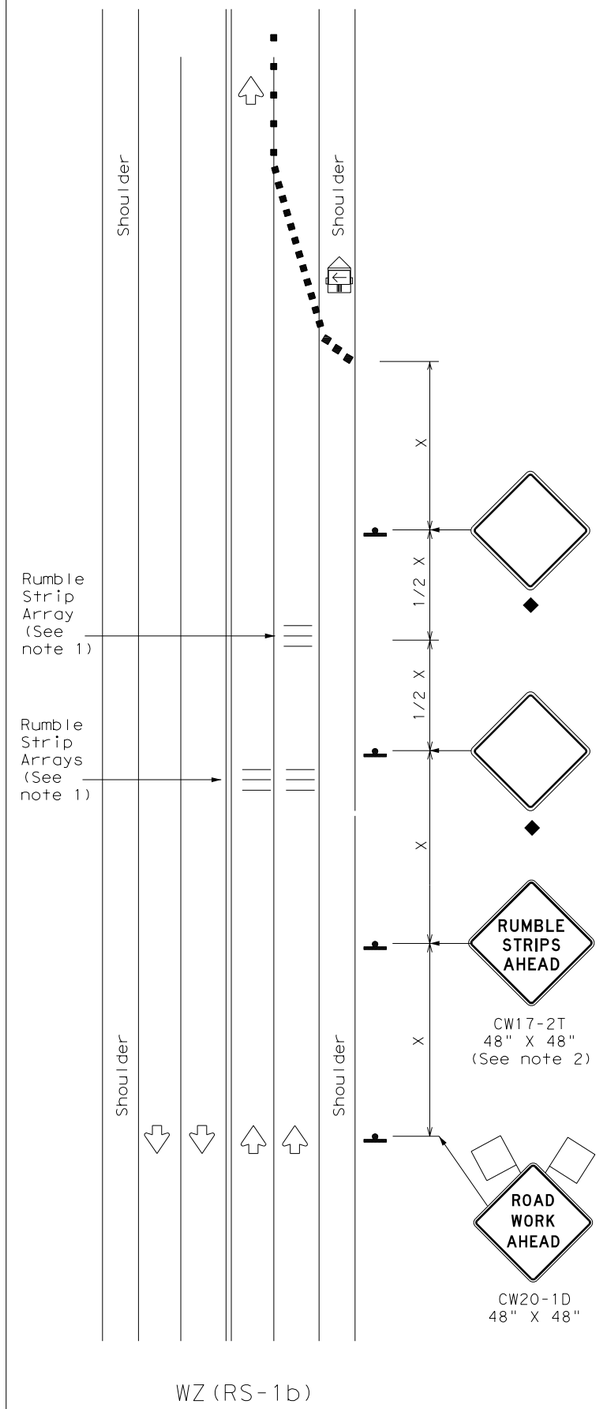
Warning sign and rumble strip sequence in opposite direction is same as below.

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



WZ(RS-1a)

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



WZ(RS-1b)

RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

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

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

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

* Conventional Roads Only

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

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

TEMPORARY RUMBLE STRIPS

WZ(RS)-22

FILE: wzrs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-14 1-22 4-16	0908	00	126	VARIOUS
	DIST	COUNTY		SHEET NO.
	ABL	TAYLOR, ETC.		38

DATE: 7/17/2024 6:50:13 PM
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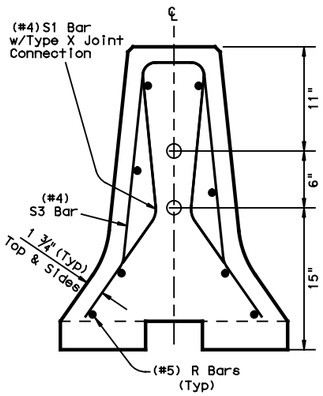
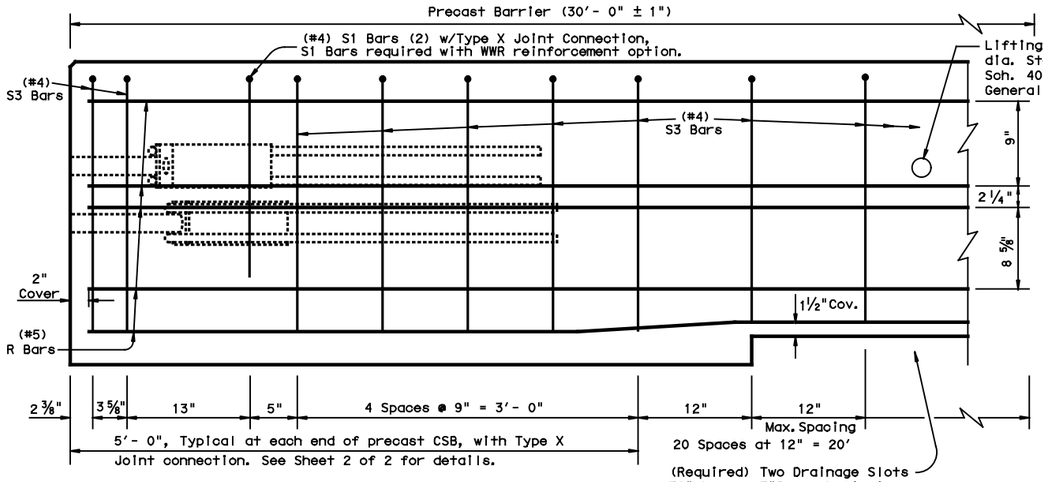


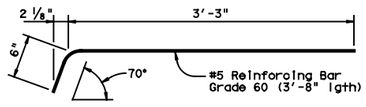
End View Precast Barrier

See sheet 2 of 3 for Joint connection Type X



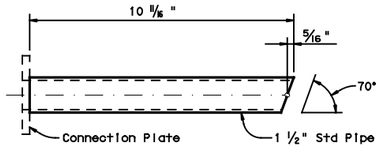
Reinforcement for Precast (CSB) Concrete Safety Barrier (Type 1)

Showing reinforcement for Joint Type X



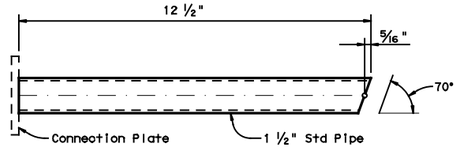
DEFORMED BAR ANCHOR DETAILS

Two (2) Bars required per assembly.
Eight (8) required per Joint.



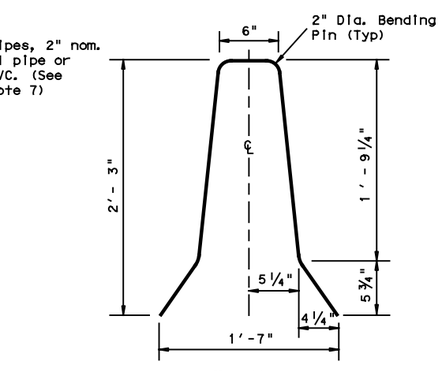
UPPER CONNECTION PIPE DETAILS

One (1) Steel Pipe required per Upper Assembly.
Two (2) required per Joint.



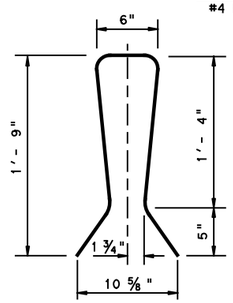
LOWER CONNECTION PIPE DETAILS

One (1) Steel Pipe required per Lower Assembly.
Two (2) required per Joint.



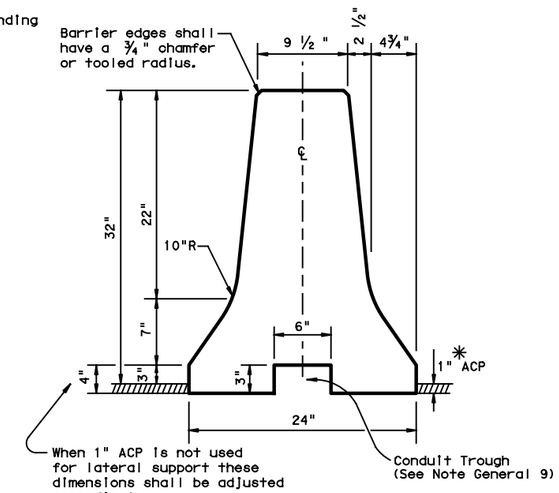
S3 Bar

#4 Bar



S1 Bar

#4 Bar (2)
(Joint Type X)

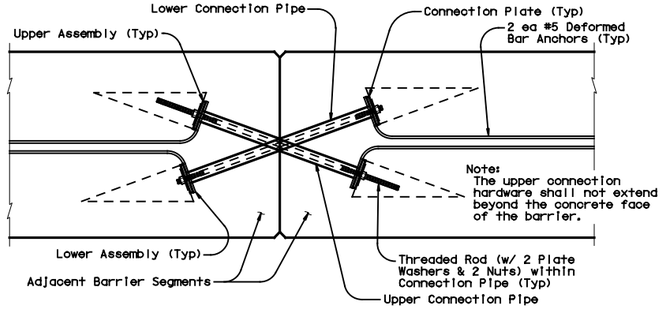


Concrete Safety Barrier

✳ When 1" ACP is "not" used as lateral support for permanent barrier placement. A permissible method of attaining the equivalent lateral support may be used, See CSB(6) sheet.

GENERAL NOTES

1. Concrete shall be Class H with a minimum compressive strength of 3,600 psi.
2. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
3. Precast barrier length shall be 30 ft. unless otherwise specified on the plans.
4. All precast barrier edges shall have a ¾" chamfer or tooled radius.
5. All concrete, reinforcement, joint connection systems, grout etc. as shown, are considered as part of the barrier payment.
6. All steel assemblies for joint shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."
7. Regardless of the method of handling, barrier lifting points shall be approx. 7.5 feet from the ends of the barrier. Lifting devices and attachments to barrier sections shall be approved by the Engineer.
8. Surface finishing and grouting (where required) shall be two parts sand one part cement with enough water to make the mixture plastic. Grouting shall be done in a manner that will assure a smooth surface. Surface finishing shall be considered subsidiary to the various bid items involved.
9. Conduit trough when required shall be shown elsewhere on the plans, or as directed by the Engineer.



TYPE X JOINT INSTALLATION DETAIL

Barrier reinforcing and Type X Joint Leave-Out dimensions not shown for clarity.

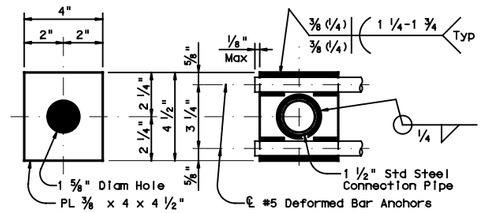
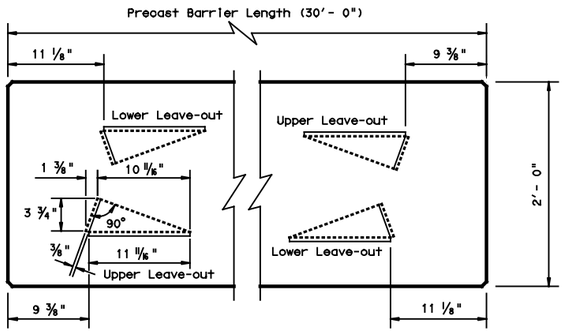


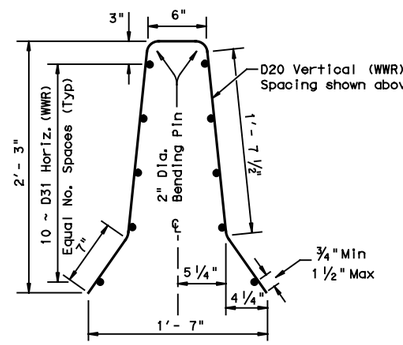
PLATE DIMENSIONS WELDING DETAILS

CONNECTION PLATE DETAILS

One (1) Plate required per assembly.
Four (4) required per Joint. All steel fittings for joint Type X shall be galvanized after fabrication in accordance with Item 445.



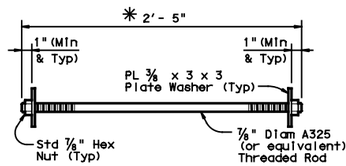
BARRIER PLAN AT END JOINTS



Welded Wire Reinforcement (WWR) Option for Bars R and S3

(WWR) General Notes

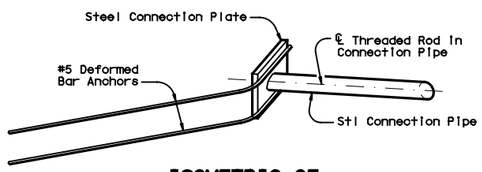
1. Deformed Welded Wire Reinforcement (WWR) shall conform to ASTM A497.
2. Welded wire cage may be cut or bent to accommodate the Type X joint connection and drainage slots, as directed by the Engineer.
3. All reinforcement shall comply with Item 440, "Reinforcing Steel."
4. Combinations of reinforcing steel and WWR will be permitted, as directed by the Engineer. The dimension from the end of the barrier section to the first wire shall not exceed 3".



CONNECTION BOLT OR THREADED ROD DETAIL

Two (2) Threaded Rods (Or Equivalent Hex Hd. Bolts) (w/ Two (2) PL ⅜ x 3 x 3 Plate Washers & Two (2) Std Hex Nuts) required per Joint.

✳ The connection hardware shall not extend beyond the conorete face of the barrier. Hex head bolts may be provided. The proper length of all hardware should be verified.



ISOMETRIC OF TYPICAL WELDED ASSEMBLY

Four (4) [2 Upper & 2 Lower] Assemblies required per Joint.

Weight of one Precast 30 ft. (CSB) segment = Approx. 6.5 Tons or 440 lbs per ft.

SHEET 1 OF 2

Texas Department of Transportation | Design Division Standard

CONCRETE SAFETY BARRIER (F-SHAPE)

PRECAST BARRIER (TYPE 1)

CSB(1)-10

FILE: csb110.dgn	DN: TxDOT	CK: AM	DW: BD	CK: VP
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0908	00	126	VARIOUS
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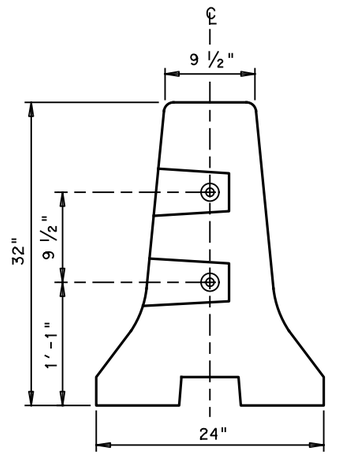
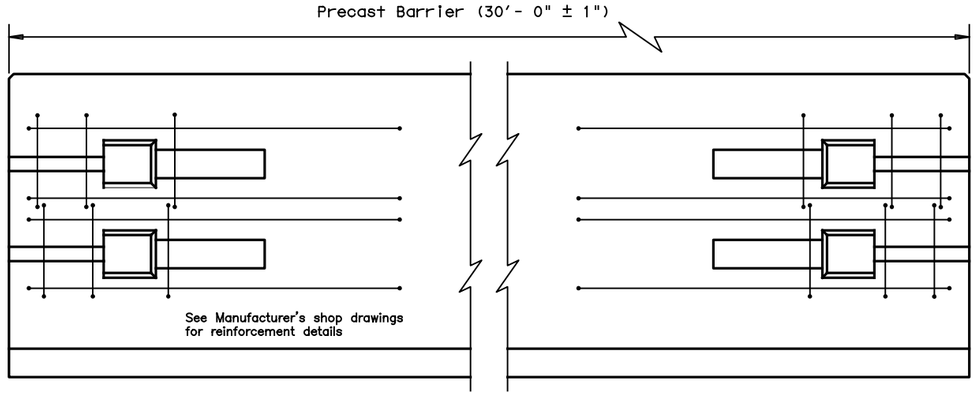
	ABL	TAYLOR, ETC.		39



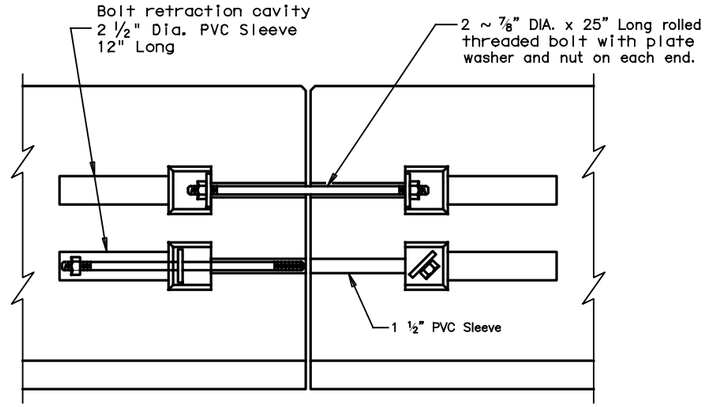
END VIEW (CSB) QUICK-BOLT

QUICK-BOLT POCKET LOCATIONS



ELEVATION (CSB) QUICK-BOLT

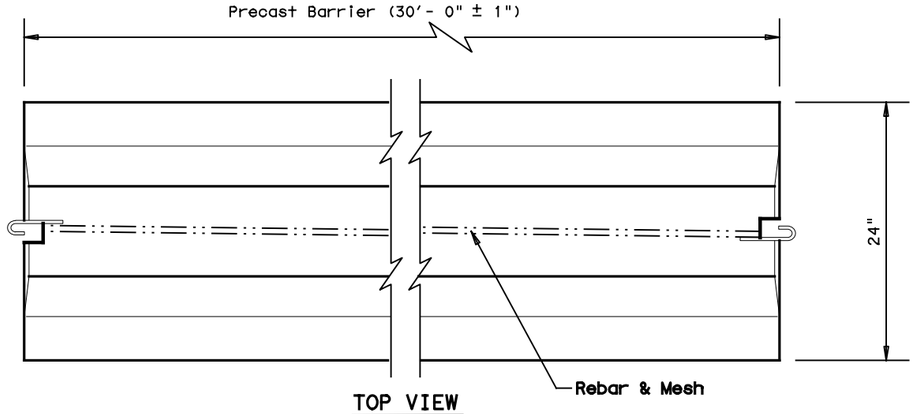
See Manufacturer's shop drawing for additional details



ELEVATION VIEW SHOWING JOINT CONNECTION

"QUICK-BOLT"

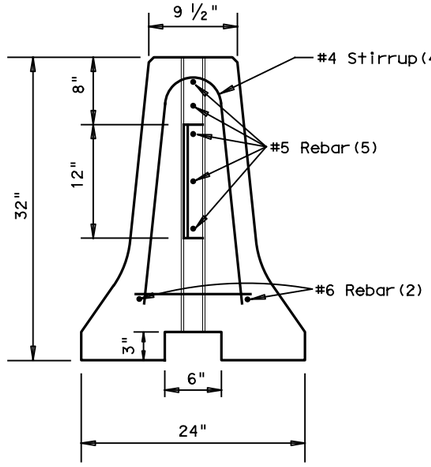
Joint Connection (Type Q)



TOP VIEW

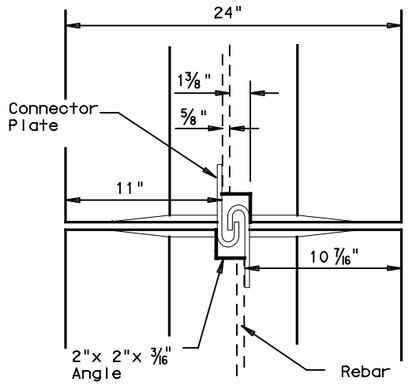
PRECAST (CSB) WITH J-J HOOKS

See Manufacturer's shop drawing for additional details



END VIEW
J-J HOOK CONNECTION

Joint Connection (Type J)



VIEW FROM ABOVE
J-J HOOK CONNECTION

Proprietary Joint Connections (CSB)

Two proprietary joint connections are acceptable as alternates to the (Type X) connection shown, here on. These joint connections types are:

J-J Hooks by East-Set Industries, (800)547-4045
Quick-Bolt by Bexar Concrete, (210)497-3773

If one of these connection systems are exclusively specified in the plans, prior approval for sole source use must be obtained. Details of the connection components and barrier reinforcement for these systems, will be shown on the manufacturer's shop drawing(s) furnished to the Engineer.

SHEET 2 OF 2

Texas Department of Transportation

Design Division Standard

CONCRETE SAFETY BARRIER (F-SHAPE)

PRECAST BARRIER
(TYPE 1)

CSB(1)-10

FILE: csb110.dgn	DN: TxDOT	CK: AM	DW: BD	CK: VP
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0908	00	126	VARIOUS
	DIST	COUNTY		SHEET NO.
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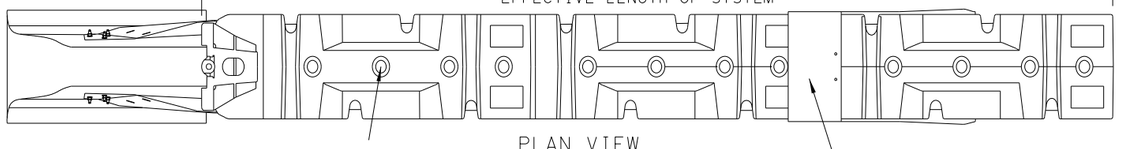
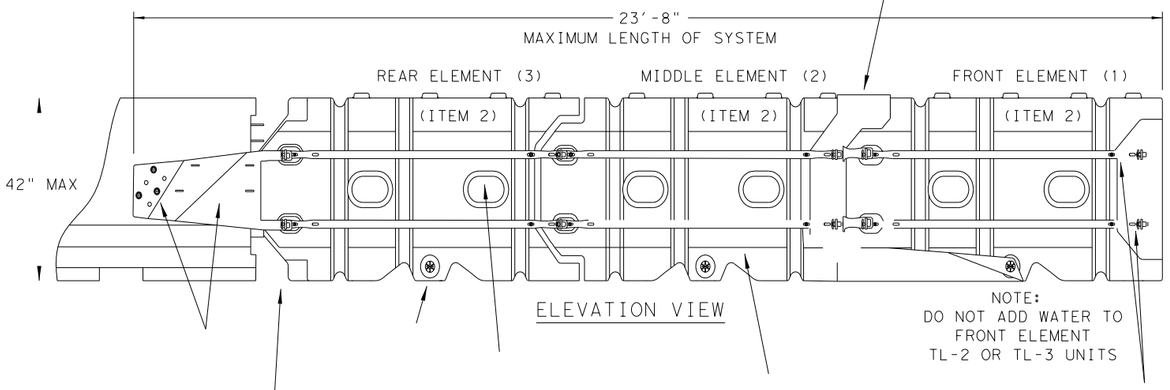
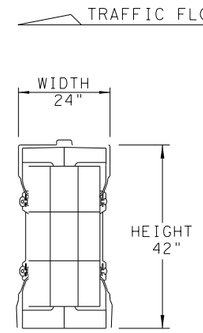
SYSTEM SHOWN - ABSORB-M TL-3



PLAN VIEW



ELEVATION VIEW



SECTION A-A

TEST LEVEL	NUMBER OF ELEMENTS	EFFECTIVE LENGTH	MAXIMUM LENGTH
TL-2	2	14'- 7 3/4"	17'- 4"
TL-3	3	20'- 11 3/4"	23'- 8"

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING THE INSTALLATION AND TECHNICAL GUIDANCE, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800. 180 RIVER ROAD, RIO VISTA, CA 94571
2. THE ABSORB-M SYSTEM IS ONLY APPROVED FOR USE IN (TEMPORARY WORK ZONE) LOCATIONS.
3. THE ABSORB-M IS A WATER FILLED NON-REDIRECTIVE, GATING CRASH CUSHION THAT DOES NOT NEED TO BE ATTACHED TO A FOUNDATION AND CAN BE INSTALLED ON TOP OF CONCRETE, ASPHALT, OR ANY SURFACE CAPABLE OF BEARING THE WEIGHT OF THE SYSTEM.
4. MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%.
5. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
6. THE ABSORB-M SHOULD BE LOCATED APPROXIMATELY PARALLEL WITH THE BARRIER.
7. THE USE OF THE ABSORB-M IS RESTRICTED TO A BARRIER HEIGHT OF UP TO 42 INCHES.
8. DO NOT ADD WATER TO FRONT ELEMENT (TL-2 OR TL-3 UNIT).

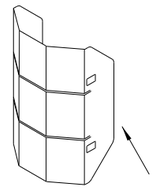
BILL OF MATERIALS (BOM) ABSORB-M TL-3 & TL-2 SYSTEMS			QTY	QTY
ITEM #	PART NUMBER	PART DESCRIPTION	TL-2 SYSTEM	TL-3 SYSTEM
1	BSI-1809036-00	TRANSITION-(GALV)	1	1
* 2	BSI-1808002-00	PRE-ASSEMBLED ABSORBING (ELEMENTS)	2	3
* 3	BSI-4004598	FILL CAPS	8	12
* 4	BSI-4004599	DRAIN PLUGS	2	3
* 5	BSI-1809053-00	TENSION STRAP-(GALV)	8	12
* 6	BSI-2001998	C-SCR FH 3/8-16 X 1 1/2 GR5 PLT	8	12
* 7	BSI-2001999	C-SCR FH 3/8-16 X 1 GR5 PLT	8	12
8	BSI-1809035-00	MIDNOSE-(GALV)	1	1
9	BSI-1808014-00	NOSE PLATE	1	1
10	BSI-1809037-00	TRANSITION STRAP (LEFT-HAND)-(GALV)	1	1
11	BSI-1809038-00	TRANSITION STRAP (RIGHT-HAND)-(GALV)	1	1
12	BSI-1808005-00	PIN ASSEMBLY	8	10
13	BSI-2002001	ANC MECH 5/8-11X5 (GALV)	6	6
14	ABSORB-M	INSTALLATION AND INSTRUCTIONS MANUAL	1	1

* COMPONENTS PRE-ASSEMBLED WITH ELEMENT ASSEMBLY

DELINEATION DECAL PLACEMENT GUIDE

TRAFFIC FLOW LEFT-SIDE BARRIER | TRAFFIC FLOW BOTH-SIDE BARRIER | TRAFFIC FLOW RIGHT-SIDE BARRIER

** APPLY DECAL



NOSE PLATE

** NOTE: (PROVIDED BY OTHERS)
ENGINEER OR CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER FOR THE CORRECT DECAL PER TRAFFIC FLOW, LEFT, RIGHT OR BOTH-SIDES.

NOTE:
APPLY A HIGH REFLECTIVE DECAL TO THE NOSE PLATE. DELINEATION DECAL ORIENTATION IS SHOWN ON THE CONSTRUCTION PLAN SET AND SHALL BE IN ACCORDANCE WITH THE TEXAS MUTCD FOR (TRAFFIC CONTROL DEVICES). DECALs ARE AVAILABLE FOR TRAFFIC FLOW ON THE LEFT-SIDE, BOTH -SIDES AND RIGHT-SIDE.

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE ABSORB-M, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

SACRIFICIAL

Texas Department of Transportation — Design Division Standard

LINDSAY TRANSPORTATION SOLUTIONS
CRASH CUSHION
(MASH TL-3 & TL-2)
TEMPORARY - WORK ZONE
ABSORB(M)-19

FILE: absorbm19	DN: TxDOT	CK: KM	DW: VP	CK:
© TxDOT: JULY 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0908	00	126	VARIOUS
	DIST	COUNTY		SHEET NO.
	ABL	TAYLOR, ETC.		41

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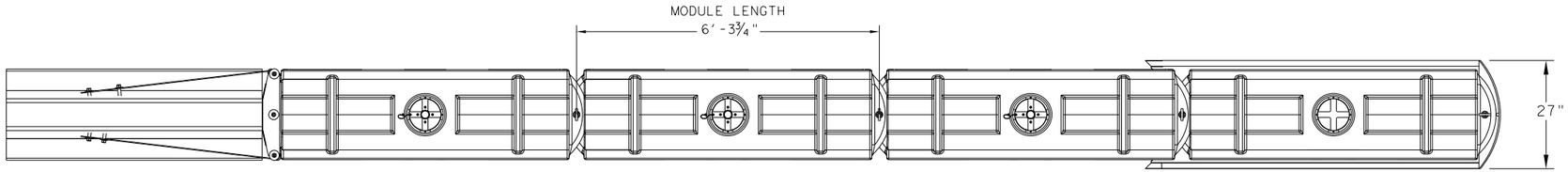
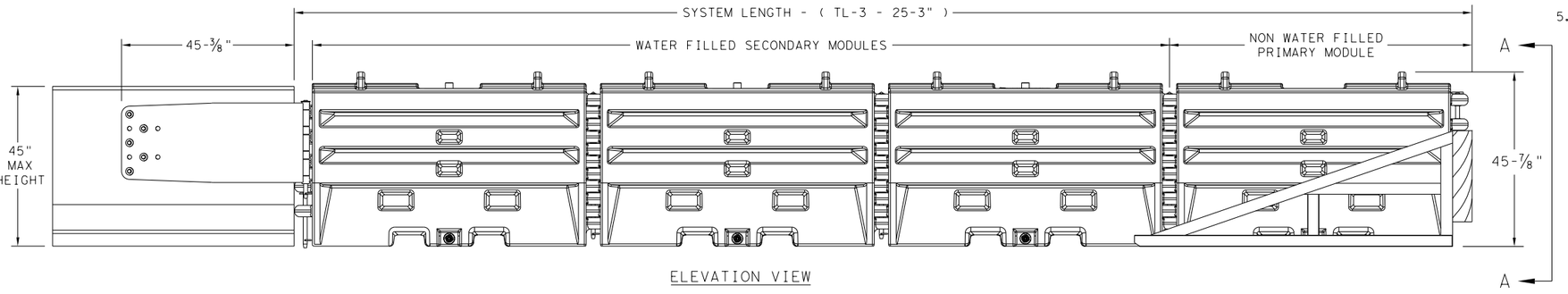
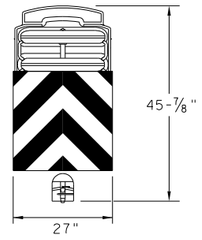


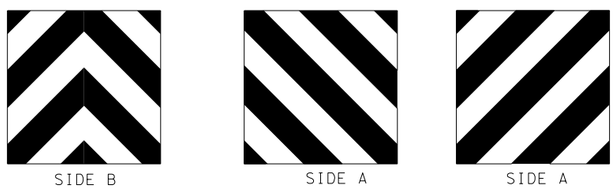
PLAN VIEW



ELEVATION VIEW



SECTION A-A



NOSE SHEETING PANEL DELINEATION

NOTE:
SEE INSTALLATION MANUAL FOR CUSTOMIZED DELINEATION NOSE SHEETING FOR DECAL PLACEMENT.

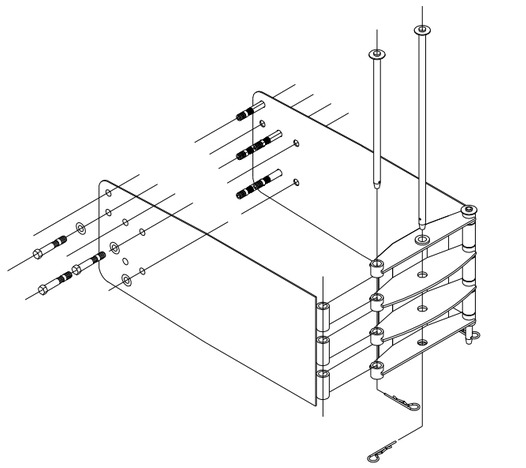
TEST LEVEL	NUMBER OF SECONDARY MODULES	SYSTEM LENGTH
TL-3	3	25′ 3"

GENERAL NOTES

1. REFER TO THE INSTALLATION MANUAL FOR SPECIFIC SYSTEM ASSEMBLY AND MODULE ORIENTATION. FOR ADDITIONAL INFORMATION, CONTACT TRAFFIX, INC. AT (949) 361-5663.
2. THE SLED SYSTEM IS A MASH APPROVED TEST LEVEL 3 (TL-3) CRASH CUSHION APPROVED FOR USE IN TEMPORARY WORK ZONES. THE SLED SYSTEM IS A NON-REDIRECTIVE, GATING CRASH CUSHION THAT DOES NOT NEED TO BE ATTACHED TO THE GROUND AND CAN BE INSTALLED ON CONCRETE, ASPHALT, GRAVEL OR COMPACTED SOIL.
3. MAXIMUM PERMISSIBLE CROSS SLOPE IS 8° (DEGREES) (14%).
4. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
5. THE SLED SYSTEM CAN BE ATTACHED TO:

- CONCRETE BARRIER, TEMPORARY OR PERMANENT, 45" MAXIMUM HEIGHT
- STEEL BARRIER
- PLASTIC BARRIER
- CONCRETE BRIDGE ABUTMENTS
- W-BEAM GUARD RAIL
- THRIE BEAM GUARD RAIL

BILL OF MATERIAL		
PART NUMBER	DESCRIPTION	QTY: TL-3
45131	TRANSITION FRAME, GALVANIZED	1
45150	TRANSITION PANEL, GALVANIZED	2
45147-CP	TRANSITION SHORT DROP PIN W/ KEEPER PIN, GALVANIZED	2
45148-CP	TRANSITION LONG DROP PIN W/ KEEPER PIN, GALVANIZED	1
45050	ANCHOR BOLTS	9
12060	WASHER, 3/4" ID X 2" OD	9
45044-Y	SLED YELLOW WATER FILLED MODULE	3
45044-YH	SLED YELLOW "NO FILL" MODULE	1
45044-S	CIS (CONTAINMENT IMPACT SLED), GALVANIZED	1
45043-CP	T-PIN W/ KEEPER PIN	4
18009-B-I	FILL CAP W/ "DRIVE BY" FLOAT INDICATOR	3
45033-RC-B	DRAIN PLUG	3
45032-DPT	DRAIN PLUG REMOVAL TOOL	1



SLED TRANSITION COMPONENTS FOR ATTACHMENT TO CMB

NOTE:
SEE MANUFACTURER'S INSTALLATION MANUAL FOR FURTHER DETAILS.

TRANSITION OPTIONS
SLED TRANSITION TO CONCRETE TRAFFIC BARRIER (TEMPORARY OR PERMANENT)
SLED TRANSITION TO STEEL TRAFFIC BARRIER (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO PLASTIC TRAFFIC BARRIER (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO W-BEAM OR THRIE BEAM GUARD RAIL (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO CONCRETE BRIDGE ABUTMENT

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE SLED, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

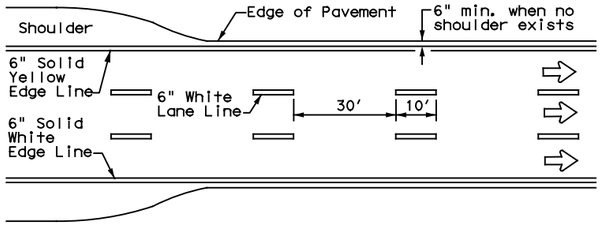
SACRIFICIAL

Texas Department of Transportation

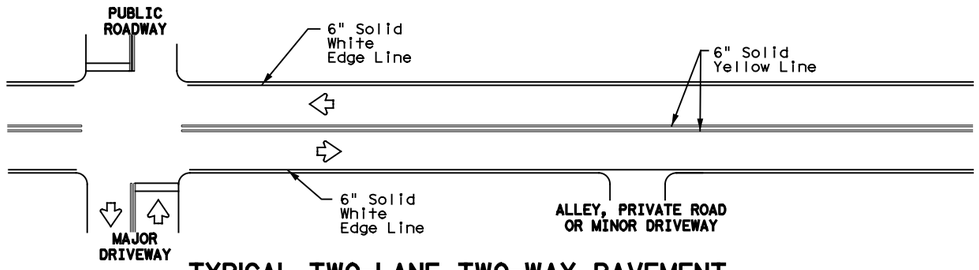
Design Division Standard

SLED
CRASH CUSHION
TL-3 MASH COMPLIANT
(TEMPORARY, WORK ZONE)
SLED-19

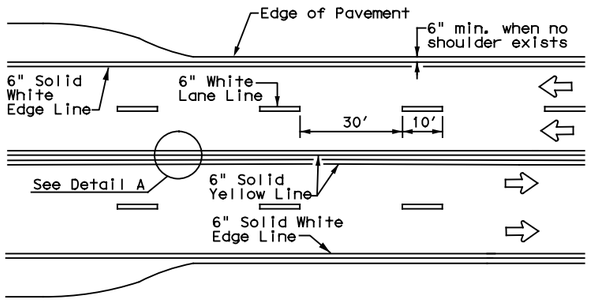
FILE: sled19.dgn	DN: TxDOT	CK: KM	DW: VP	CK:
© TxDOT: DECEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0908	00	126	VARIOUS
	DIST	COUNTY		SHEET NO.
	ABL	TAYLOR, ETC.		42

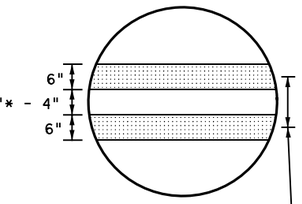


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS





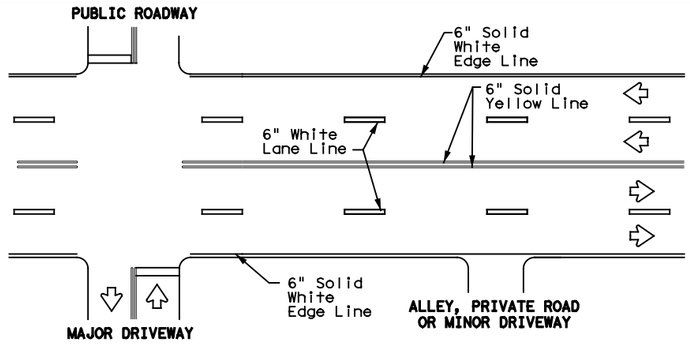
DETAIL "A"

9"** min. - 10" typ.
(18" max. for traveled way greater than 48' only)

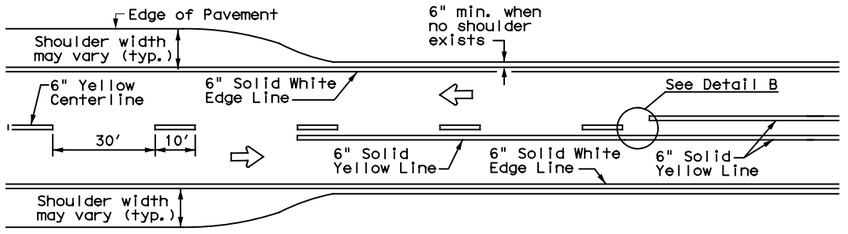
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

* 2" minimum for restripe projects when approved by the Engineer.

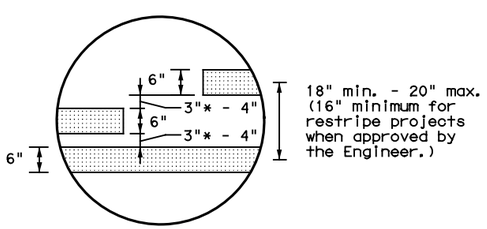
** 8" minimum for restripe projects when approved by the Engineer.



TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

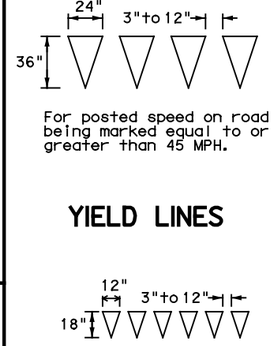


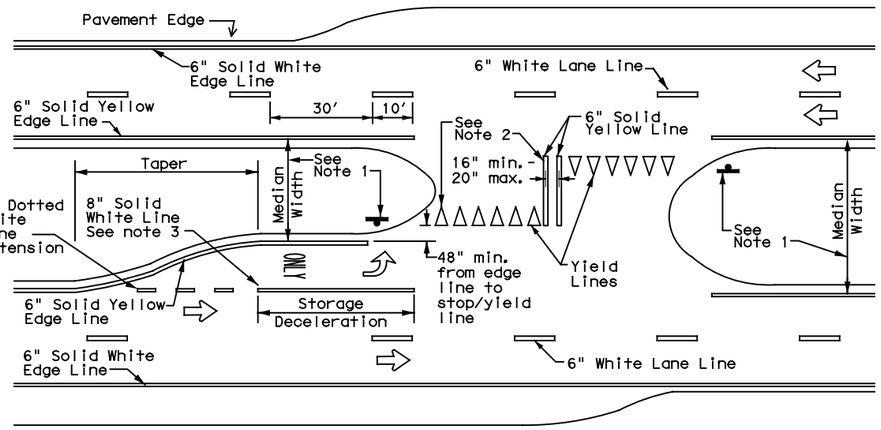
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



DETAIL "B"

* 2" minimum for restripe projects when approved by the Engineer.





FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

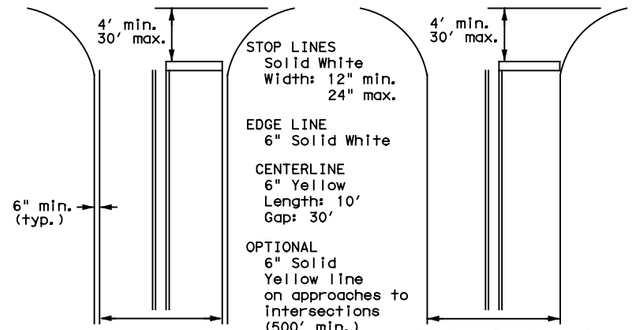
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20	0908	00	126	VARIOUS
8-95 3-03 12-22	DIST	COUNTY		SHEET NO.
5-00 2-12	ABL	TAYLOR, ETC.		43

22A

DATE: 6/14/2024 3:48:12 PM
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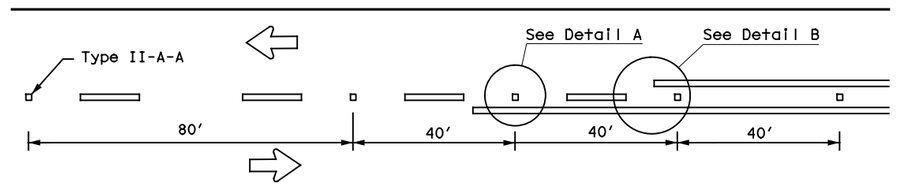
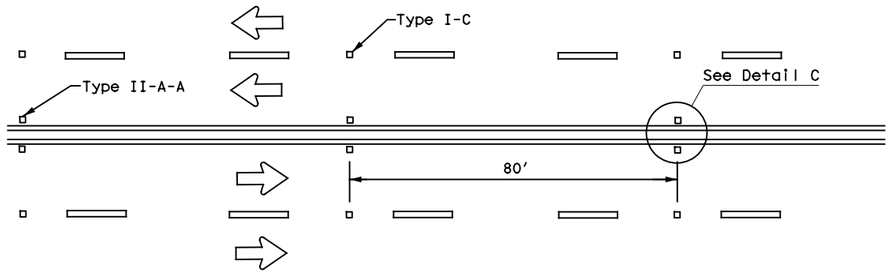
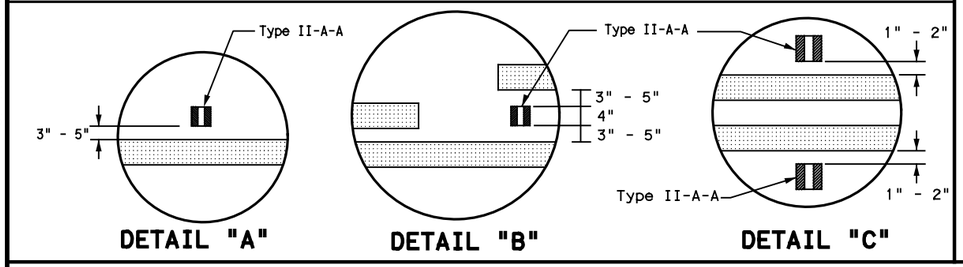
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

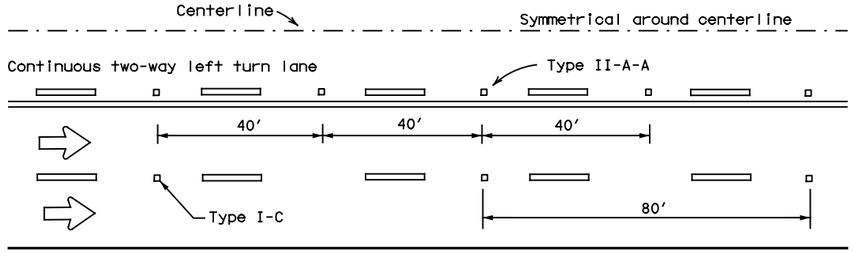


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

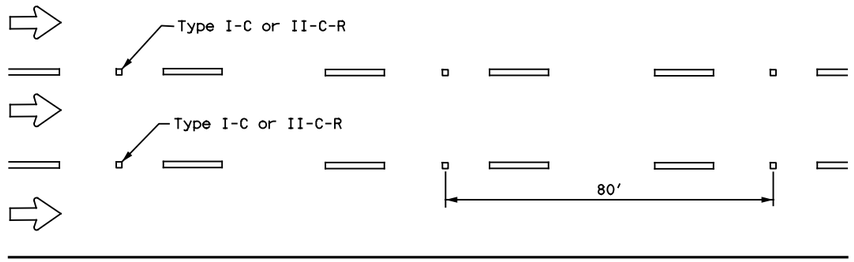


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS





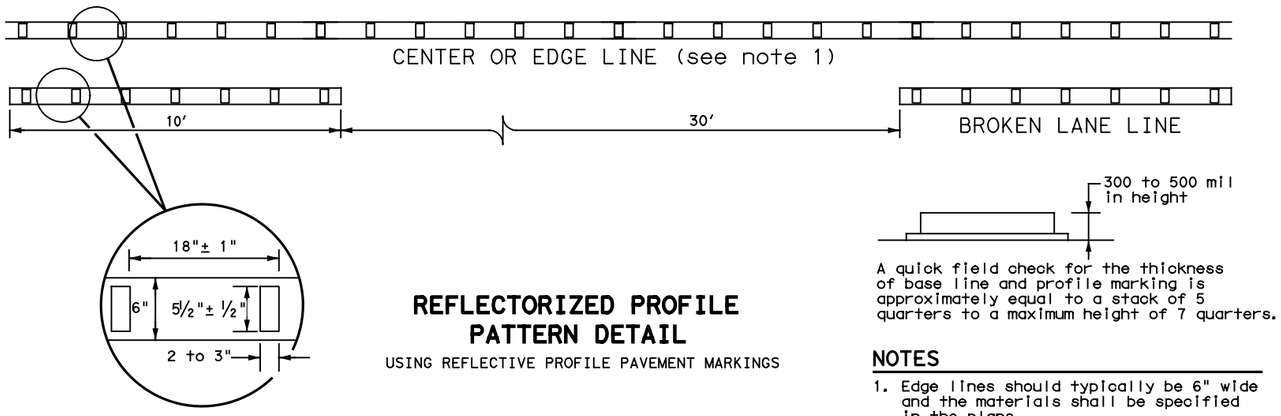
CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

See Note 3.



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

NOTES

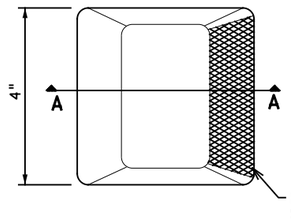
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

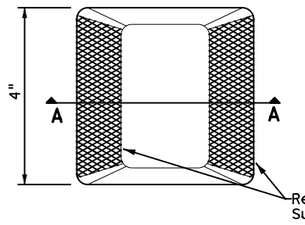
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements, the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians, and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

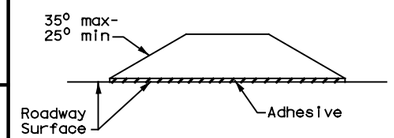
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation

Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS REFLECTORIZED PROFILE MARKINGS PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-77 8-00 6-20 4-92 2-10 12-22 5-00 2-12	0908	00	126	VARIOUS
	DIST	COUNTY		SHEET NO.
	ABL	TAYLOR, ETC.		44

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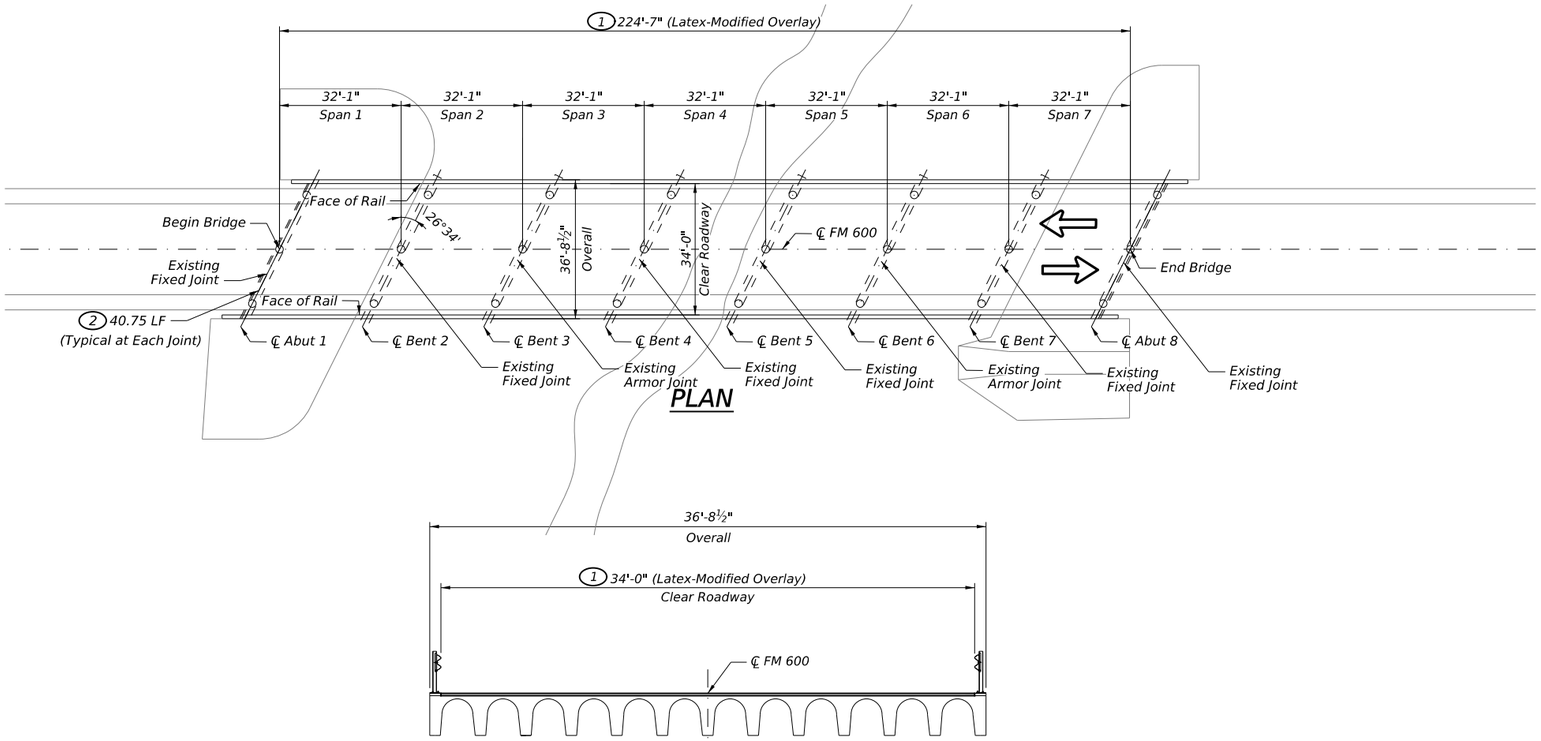
DN: NS



PLAN

EXISTING TYPICAL SECTION

0 20 40 60 80
SCALE IN FEET

GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only. Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

REPAIR CALL-OUT LEGEND

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
1	Replace concrete deck surface with 2 inch latex-modified overlay.	544996	0483	HYDRO-DEMOLITION (2 IN)	849	SY	See Bridge Deck Overlay Note Sheet.
			0439	LATEX - MODIFIED CONC OVERLAY (2 IN)	849	SY	
2	Reseal existing pan girder joints.	544996	0438	CLEAN AND SEAL JNTS (PAN GIRDERS) (CL7)	326	LF	See Cleaning and Sealing Existing Bridge Joints Detail Sheets

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

FM 600
OVER ELM CREEK
BRIDGE REPAIR LOCATION PLAN

NBI# 08-128-0-2032-02-004

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		45

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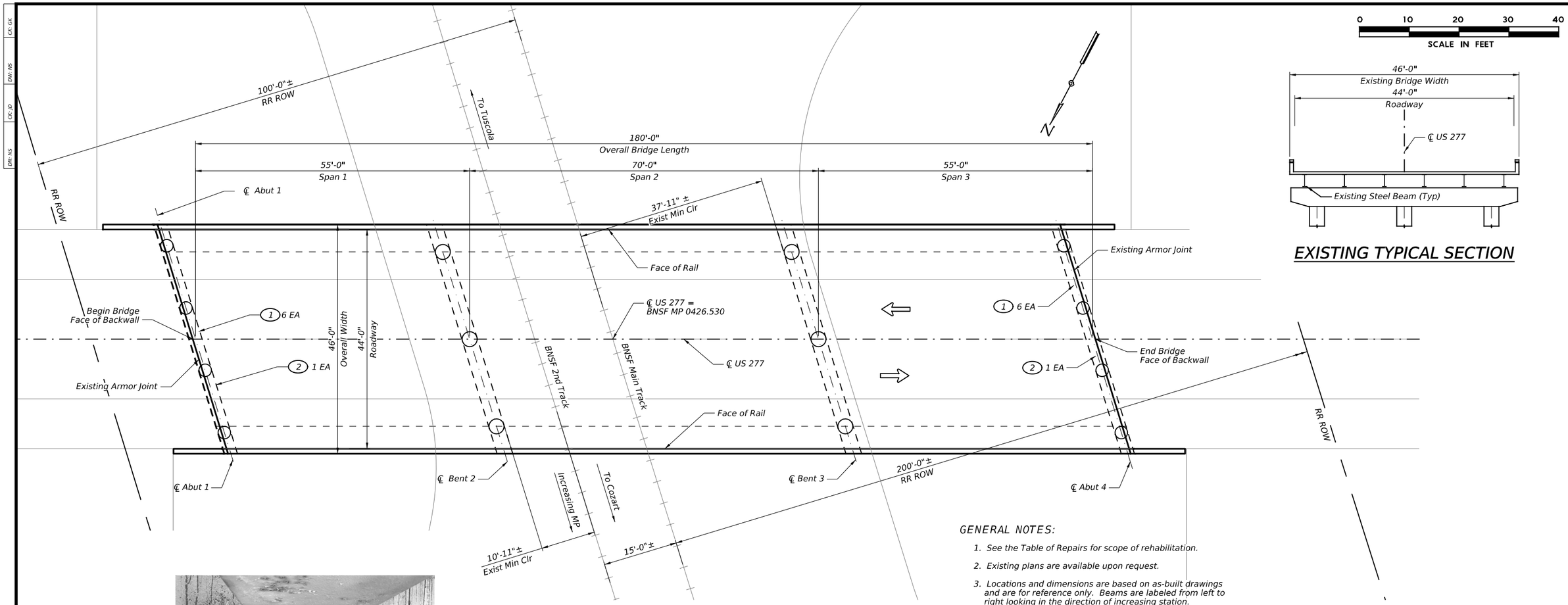

PLAN

① ② TYPICAL STEEL SHOE BEARINGS AT ABUTMENTS

EXISTING TYPICAL SECTION

GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only. Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to begining repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

REPAIR CALL-OUT LEGEND

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
①	Replace Rocker Bearings at Abutment 1 and Abutment 4 with Elastomeric Bearings.	545062	0442	STR STEEL (PEDESTAL)	1840	LB	See ELASTOMERIC BEARING REPLACEMENT DETAILS FOR STEEL BEAMS sheet.
			0787	REPLACING ELASTOMERIC BEARING PADS	12	EA	
②	Remove dirt and debris from the top of the abutments. See Plan for locations.	N/A	7001	BENT CAP/ ABUTMENT CAP CLEANING	2	EA	Clean debris and water blast clean abutments in accordance with Special Specification 7001

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
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06/14/2024

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

US 277 OVERPASS AT BNSF RR BRIDGE REPAIR LOCATION PLAN

NBI# 08-221-0-0407-06-018

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
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ABL	TAYLOR, ETC.		46

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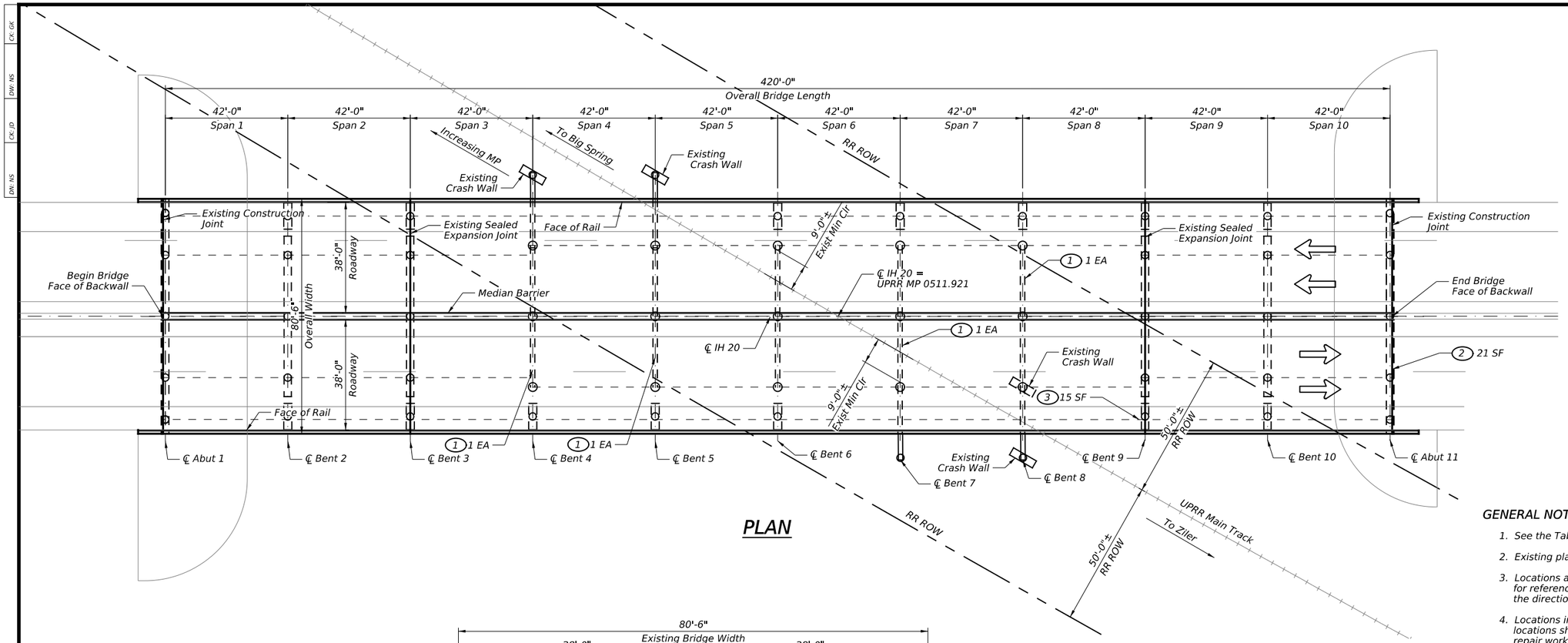
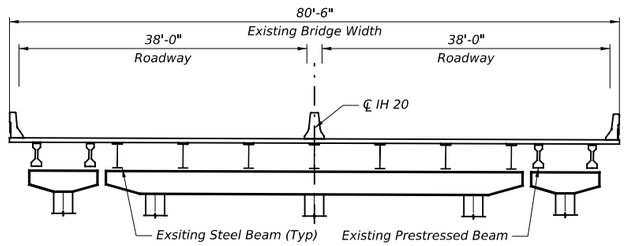


PLAN



EXISTING TYPICAL SECTION

GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only. Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

REPAIR CALL-OUT LEGEND

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
1	Clean existing steel caps at bents 4, 5, 7 and 8.	627098	7001	BENT CAP/ ABUTMENT CAP CLEANING	4	EA	Clean debris and bird dropings from beam seats. Water blast all exposed bent surface in accordance with Special Specification 7001.
2	Repair delaminated concrete along abutment 11 widening joints	544210	0429	CONC STR REPAIR (VERTICAL & OVERHEAD)	21	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 2.
3	Repair spalled beam ends, NE end of south girder in span 8	544209	0429	CONC STR REPAIR (VERTICAL & OVERHEAD)	15	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 2.
4	Clean and paint pack rust areas on steel girders at Bent 3 and Bent 9	544208	0446	CLEAN & PAINT EXIST STR (SYSTEM II)	1	LS	Provide System II on beam ends at Bent 3 and Bent 9 per Item 446. See Partial Steel Beam Elevation on IH20 OVERPASS AT MISSOURI PACIFIC BRIDGE REPAIR DETAILS sheet for extent of painting. Area is approximately 2520 SF.

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

IH 20 OVERPASS AT MISSOURI PACIFIC RR BRIDGE LOCATION REPAIR PLAN

NBI# 08-115-0-0005-06-043

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		47

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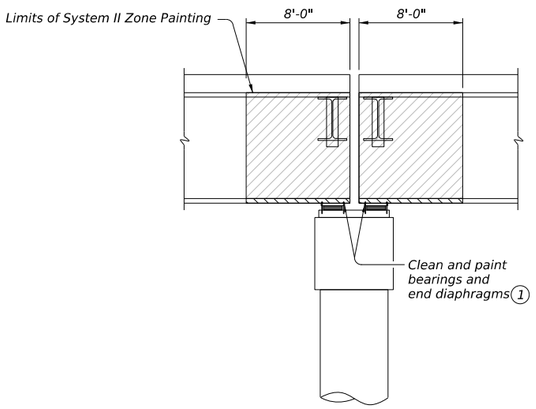


(4) **BENT 3 AND BENT 9**

PARTIAL STEEL BEAM ELEVATION (3)

TABLE OF ESTIMATED PAINT QUANTITIES (2)	
STRUCTURE NUMBER (& FEATURE CROSSED)	QUANTITY PER STRUCTURE (SF)
NBI# 08-115-0-0005-06-043	2520
TOTAL QUANTITY (SF)	2520

(1) Bearings and diaphragms may vary from what is shown.

(2) Paint quantities shown include allowance for bearings, diaphragms, and other minor areas as determined by Engineer.

(3) Showing minimum areas of paint application. Spot clean and paint other locations on the bridges as directed by the Engineer. Dimensions shown are basis of paint estimate but do not define exact limits of repainting. Address deteriorated paint as directed by the Engineer. Painting perimeter does not need to be a vertical plane except surfaces of exterior beams.

REPAIR CALL-OUT LEGEND

Concrete Repair

(XX) XX XX
- XX — Repair Quantity Unit
- XX — Estimated Repair Quantity At Each Location
- XX — Repair No. - See Table of Repairs

(2) **PATCH ABUTMENT 11**
NW WIDENING JOINT AND BACKWALL

(2) **PATCH ABUTMENT 11**
NE WIDENING JOINT AND BACKWALL

(3) **REPAIR SOUTH FASCIA BEAMS AT BENT 9**

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

IH 20 OVERPASS AT MISSOURI PACIFIC RR BRIDGE REPAIR DETAILS

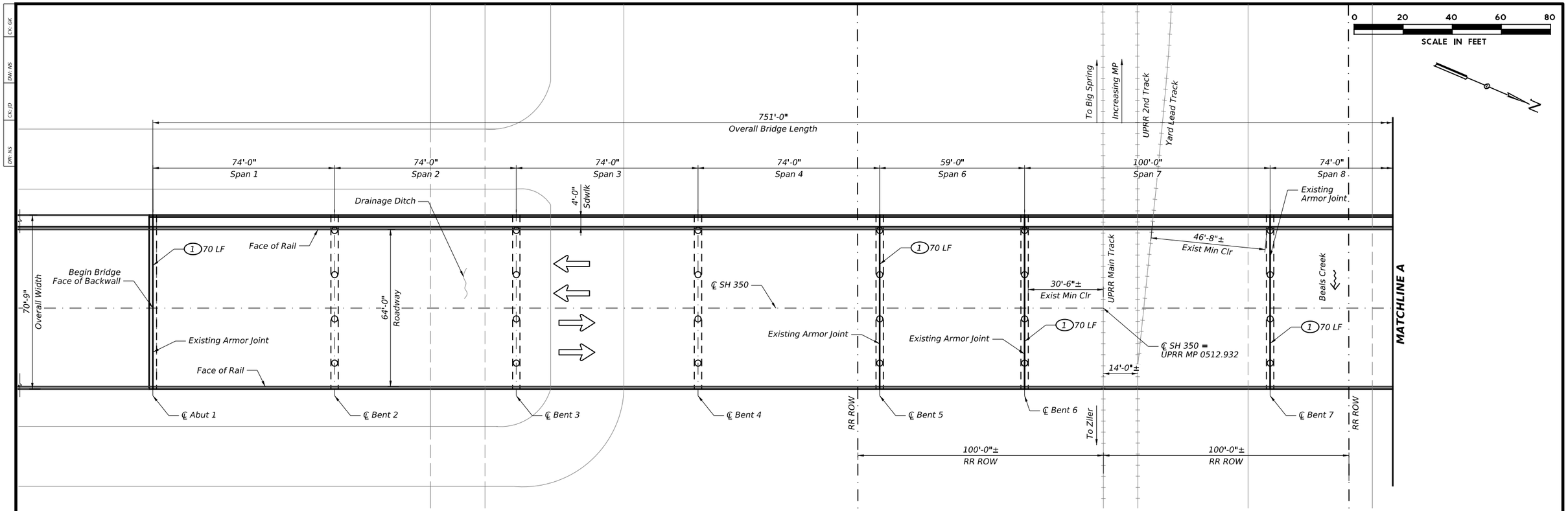
NBI# 08-115-0-0005-06-043

SHEET 1 OF 1

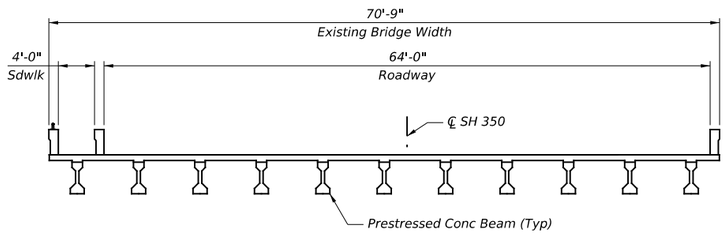
CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		48

DATE:
FILE:

CK: GK
DW: NS
CK: JD
DW: NS



PLAN



EXISTING TYPICAL SECTION

GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only. Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

REPAIR CALL-OUT LEGEND

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
(1)	Reseal Armor Joints	544005	0438	CLEANING AND SEALING EXIST JOINTS (CL7)	350	LF	See Cleaning and Sealing Existing Armor Joints Detail on Bridge Joint Repair Detail Sheets.

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

SH 350 OVERPASS AT MOPAC RR AND BEALS CREEK BRIDGE LOCATION REPAIR PLAN

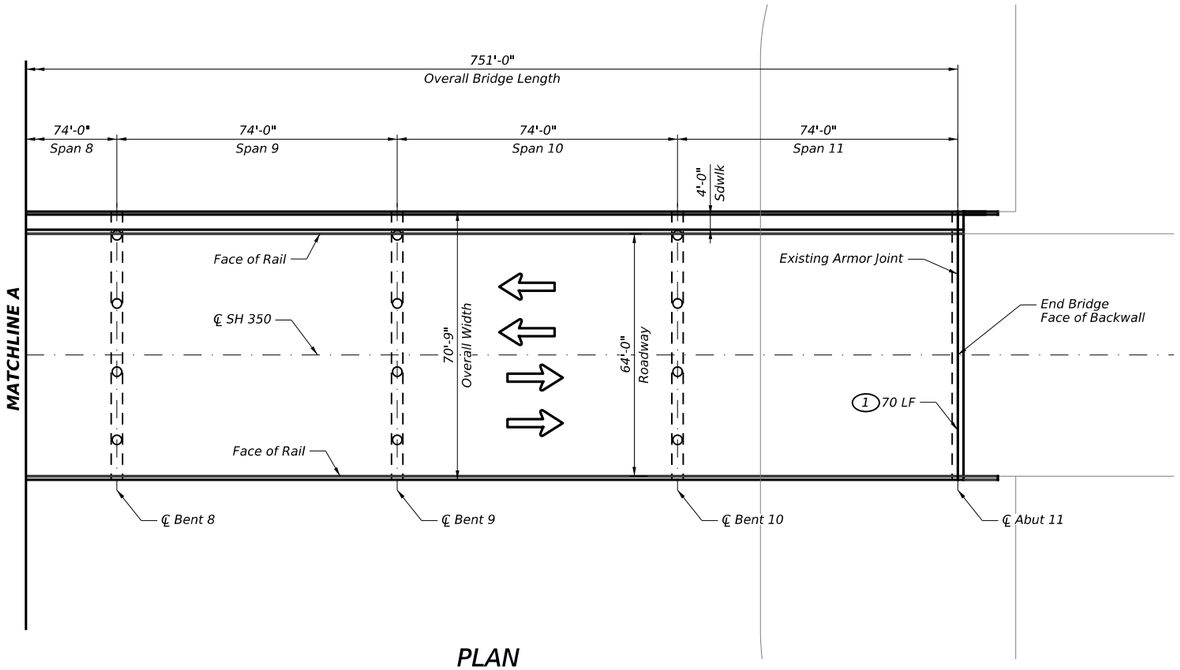
NBI# 08-115-0-0693-01-024

SHEET 1 OF 2

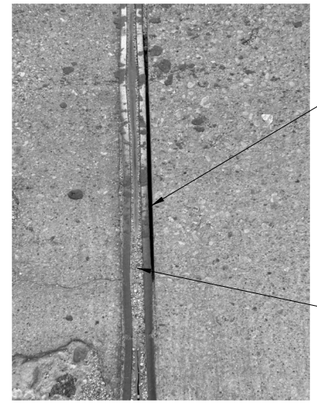
CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		49

DATE:
FILE:

CK: GK
DW: NS
CK: JD
DW: NS



PLAN



1 JOINTS (TYPICAL)

0 20 40 60 80
SCALE IN FEET

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SH 350 OVERPASS AT MOPAC RR AND BEALS CREEK BRIDGE LOCATION REPAIR PLAN

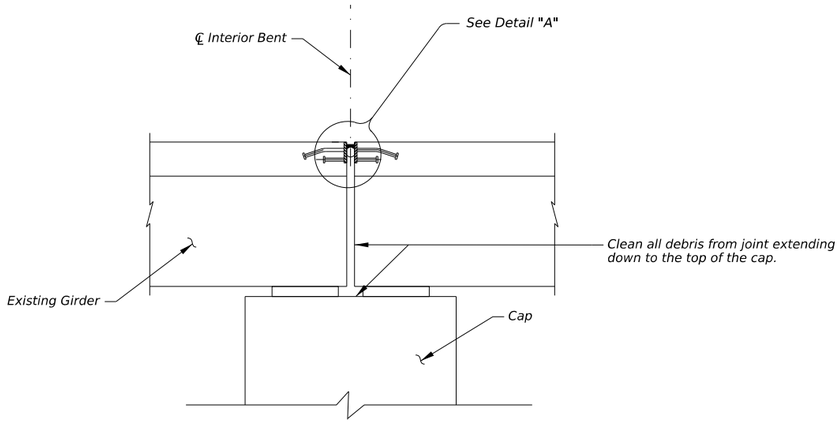
NBI# 08-115-0-0693-01-024

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		50

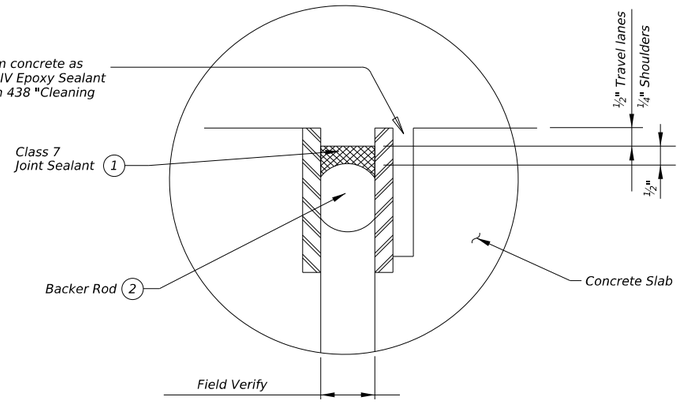
DATE:
FILE:

CK: GK
DW: NS
CK: JD
DW: NS



ARMOR JOINT

Clean locations armor plate has separated from concrete as directed by Engineer. Select and apply a Type IV Epoxy Sealant from DMS 6100. This work is subsidiary to Item 438 "Cleaning and Sealing Joints"



DETAIL "A"

(Stud anchors not shown for clarity.)

PROCEDURE FOR CLEANING AND SEALING EXISTING ARMOR JOINTS:

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

2) Abrasice blast clean existing steel surface where silicone seal 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.

JOINT SEALING 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 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.

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.

STATE OF TEXAS
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Texas Department of Transportation

SH 350 OVERPASS AT MOPAC RR AND BEALS CREEK BRIDGE REPAIR DETAILS

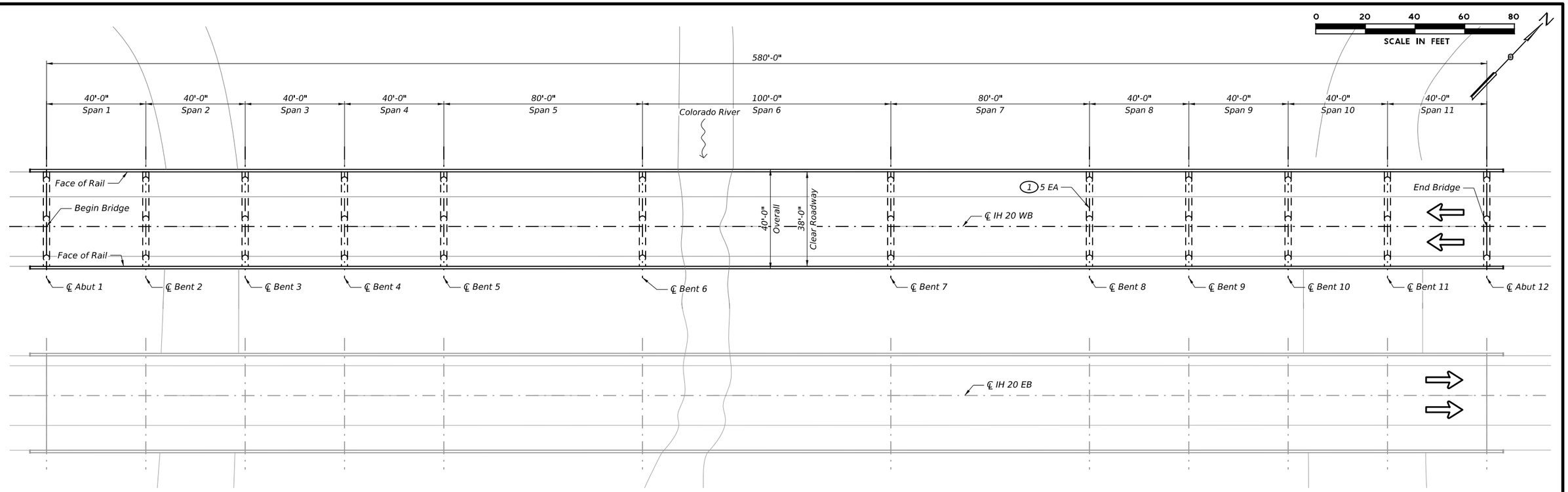
NBI# 08-115-0-0693-01-024

SHEET 1 OF 1

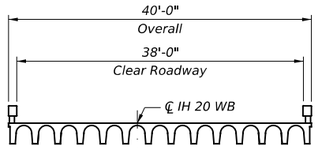
CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		51

DATE:
FILE:

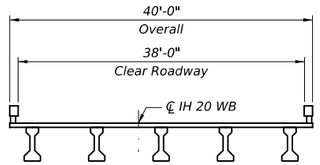
CK: GK
DW: NS
CK: JD
DW: NS



PLAN



EXISTING TYPICAL SECTION (SPANS 1-4, 8-11)



EXISTING TYPICAL SECTION (SPANS 5-7)

GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only. Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

REPAIR CALL-OUT LEGEND

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
1	Replace elastomeric bearing pads at Span 7, Bent 8.	54006	0787	REPLACING ELASTOMERIC BEARING PADS	5	EA	See Elastomeric Bearing Replacement Details for Concrete Beams.

STATE OF TEXAS
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PROFESSIONAL ENGINEER
06/14/2024

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Texas Department of Transportation

IH 20 WBML
OVER COLORADO RIVER
BRIDGE REPAIR LOCATION PLAN

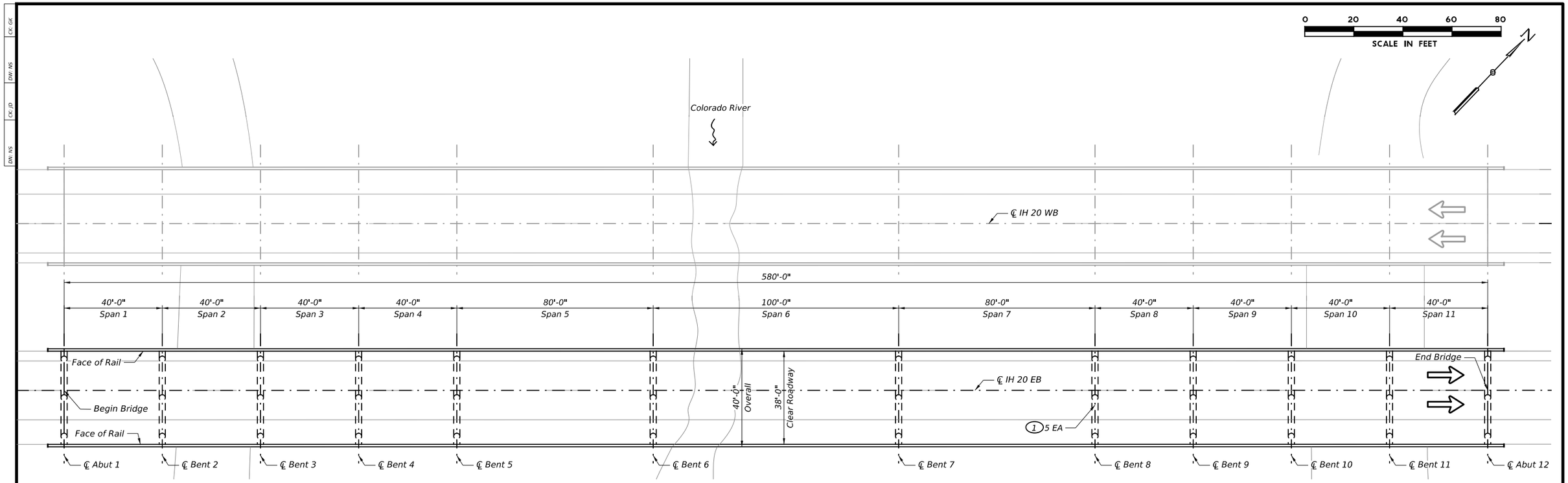
NBI# 08-168-0-0005-08-094

SHEET 1 OF 1

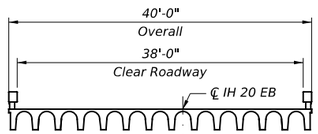
CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		52

DATE:
FILE:

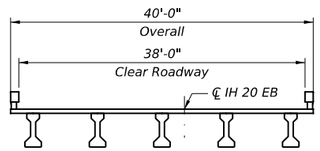
CK: GK
DW: NS
CK: JD
DW: NS



PLAN



EXISTING TYPICAL SECTION (SPANS 1-4, 8-11)



EXISTING TYPICAL SECTION (SPANS 5-7)

GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only. Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

REPAIR CALL-OUT LEGEND

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
1	Replace elastomeric bearing pads at Span 7, Bent 8.	54007	0787	REPLACING ELASTOMERIC BEARING PADS	5	EA	See Elastomeric Bearing Replacement Details for Concrete Beams.

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
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LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
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Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

IH 20 EBML OVER COLORADO RIVER BRIDGE REPAIR LOCATION PLAN

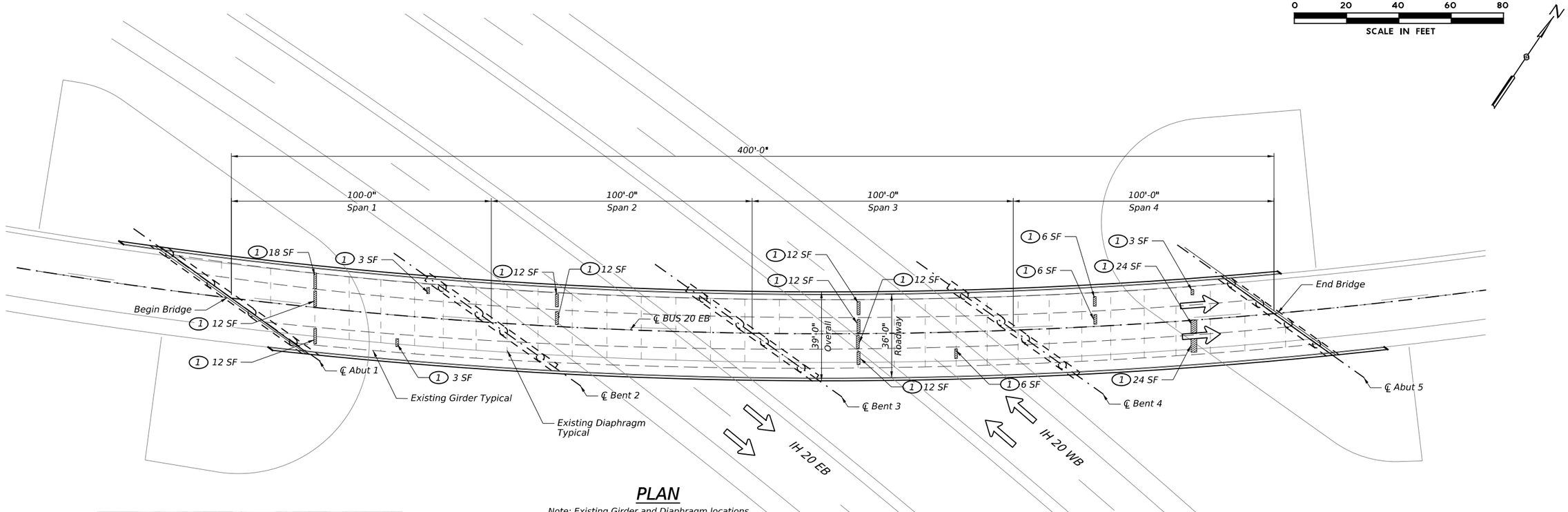
NBI# 08-168-0-0005-08-095

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		53

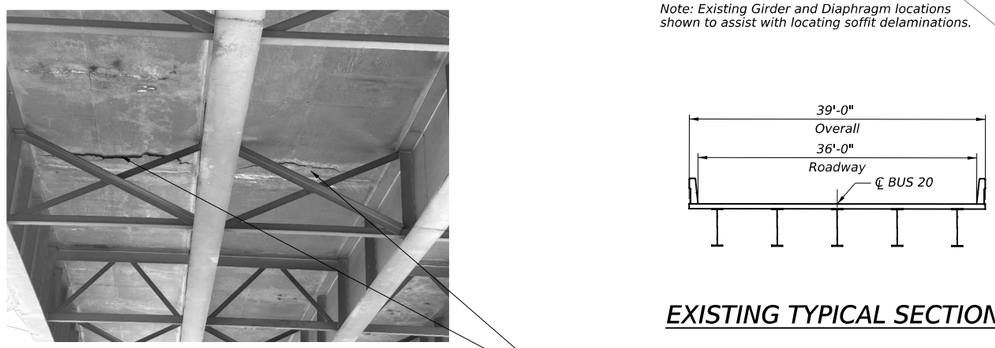
DATE:
FILE:

CK: GK
DW: NS
CK: JD
DN: NS



PLAN

Note: Existing Girder and Diaphragm locations shown to assist with locating soffit delaminations.



① DECK SOFFIT DELAMINATION

EXISTING TYPICAL SECTION

REPAIR CALL-OUT LEGEND

Concrete Deck Repair

(XX) XX XX

- XX XX — Repair Quantity Unit
- XX XX — Estimated Repair Quantity At Each Location
- (XX) — Repair No. - See Table of Repairs

GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only. Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
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LICENSED
PROFESSIONAL ENGINEER
06/14/2024

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
①	Repair delamination on deck soffit.	655006	0429	CONC STR REPAIR (VERTICAL & OVERHEAD)	189	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 2.

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
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17111 Preston Road, Suite 300
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972.960.4400

Texas Department of Transportation

IH 20 UNDERPASS AT BUS 20 EB BRIDGE REPAIR LOCATION PLAN

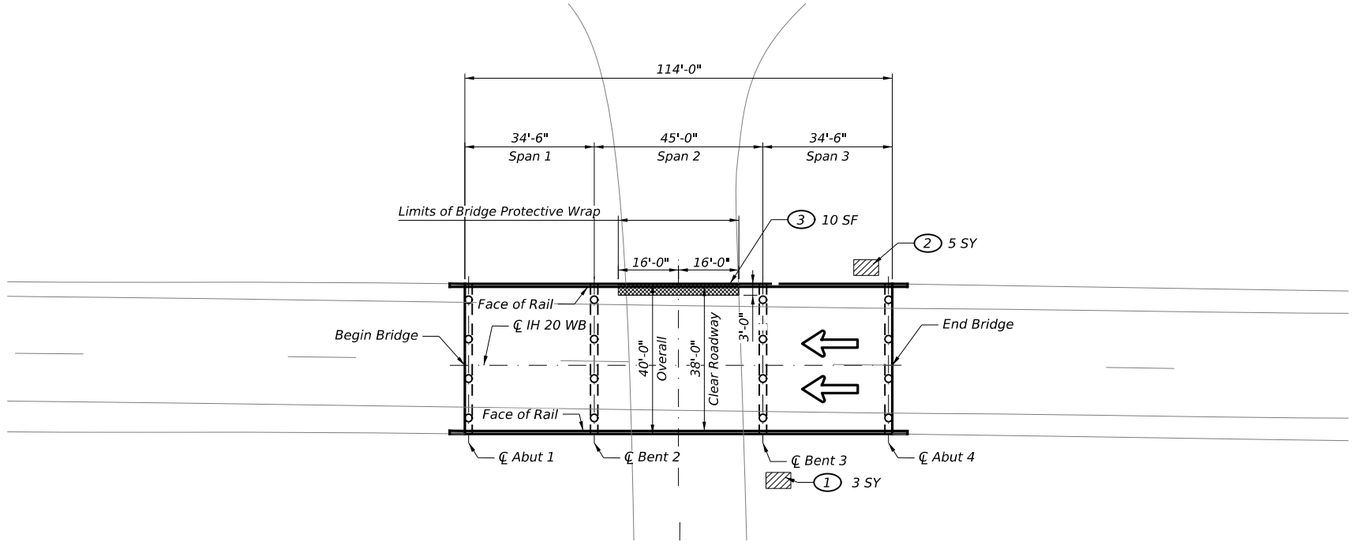
NBI# 08-177-0-0006-02-189

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		54

DATE:
FILE:

CK: GK
DW: NS
CK: JD
DN: NS



PLAN

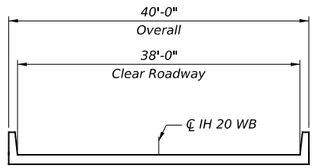
0 20 40 60 80
SCALE IN FEET

N

GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only. Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

1 CONCRETE RIPRAP REPAIR



EXISTING TYPICAL SECTION

REPAIR CALL-OUT LEGEND

Carbon Fiber Protective Wrap
Concrete Repair
XX XX
Repair Quantity Unit
Estimated Repair Quantity At Each Location
Repair No. - See Table of Repairs

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
1	Repair section of concrete riprap at SE bridge corner.	649939	0104	REMOV CONC (RIPRAP)	3	SY	Replace in-kind with 4" riprap. See CRR standard for details.
			0432	RIPRAP (CONC)(4 IN)	1	CY	
2	Repair void hole under weep hole on concrete riprap at NE bridge corner.	649939	0401	FLOWABLE BACKFILL	5	CY	Perform work in accordance with item 401.
3	Repair slab fascia damaged by verticular impact on span 2. See Plan for location.	N/A	429	CONC STR REPAIR (VERTICAL & OVERHEAD)	10	SF	Repair as intermediate spalls per the TXDOT Concrete Repair Manual, Chapter 3, Section 2.
	Install Carbon Fiber Protection on span 2 slab fascia.	N/A	786	CARBON FIBER REINF POLYMER PROTECTION	132	SF	See Bridge Protective Repair Detail Sheet.

STATE OF TEXAS
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06/14/2024

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17111 Preston Road, Suite 300
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Texas Department of Transportation

IH 20 WB OVERPASS AT HOPKINS RD BRIDGE REPAIR LOCATION PLAN

NBI# 08-177-0-0006-02-233

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		55

DATE:
FILE:

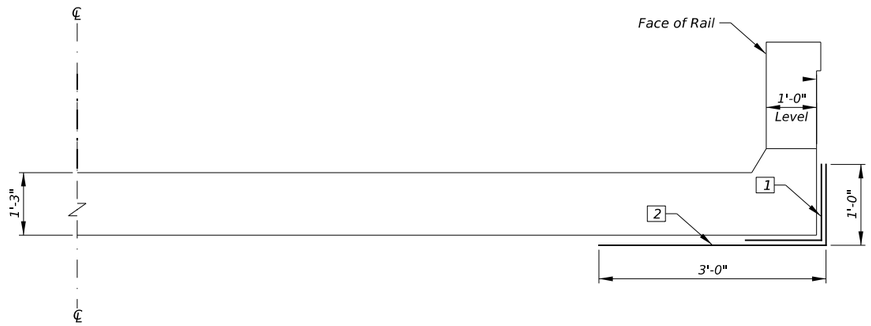
CK: GK
DW: NS
CK: JD
DW: NS

Repair fascia, install carbon fiber protection wrap

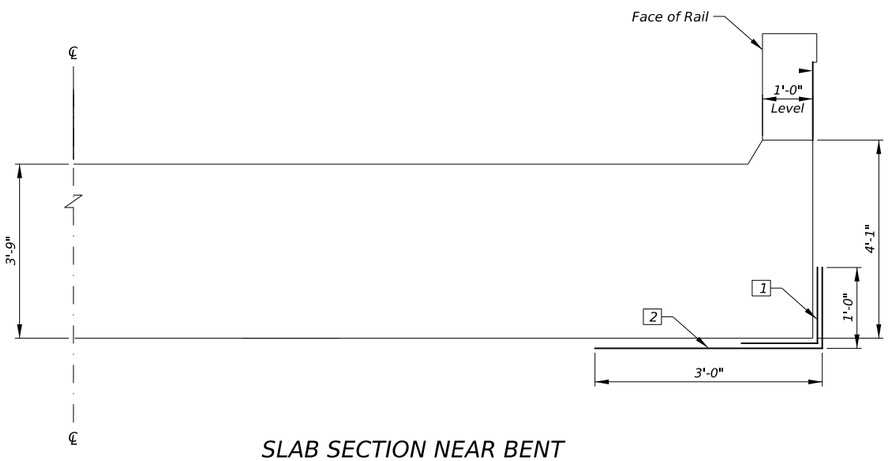
③ SOUTH SLAB FASCIA ELEVATION

[1] First layer - place 24" wide carbon fiber fabric sheets longitudinally on slab, with fiber orientation parallel to slab centerline. Locate sheets on corners of slab 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 slab, with fiber orientation perpendicular to slab centerline. Wrap sheets on bottom and sides of slab to limits shown. Wrap butt joints in the longitudinal direction to achieve full installation length. Placement of carbon fiber on 45 degree bias is allowed to achieve protection along curved slab profile.



SLAB SECTION MIDSPAN



SLAB SECTION NEAR BENT

CONSTRUCTION NOTES:

For unpainted slab, 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 slab, 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 slab 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 slab surface area covered. Carbon fiber system is for protection of slab fascia only. Calculations are not required.

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IH 20 WB OVERPASS AT HOPKINS RD BRIDGE REPAIR DETAILS

NBI # 08-177-0-0006-02-233

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		56

DATE:
FILE:

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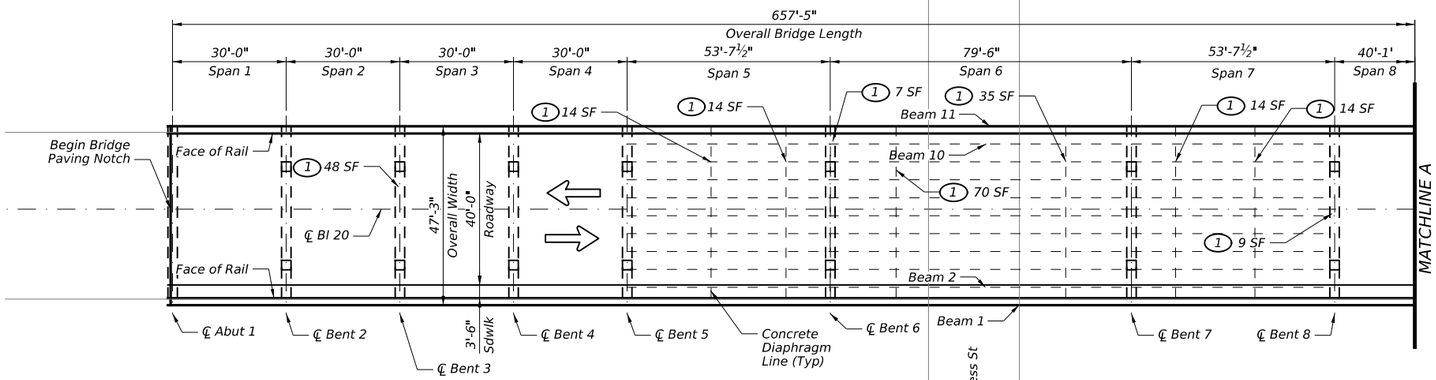
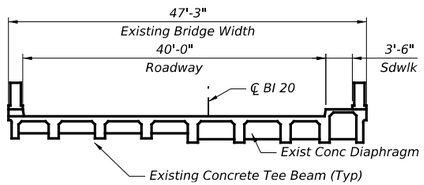
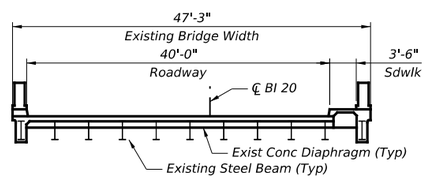
DW: NS
CK: JD
DW: NS



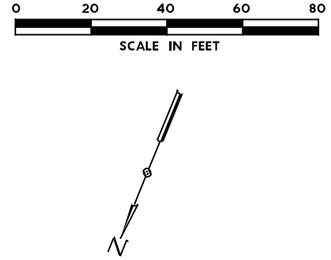
PLAN



EXISTING TYPICAL SECTION (SPANS 1-4, 8-16)



EXISTING TYPICAL SECTION (SPANS 5-7)



GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only. Beams are labeled from right to left looking in the direction of increasing station to be consistent with as-builts plans.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

REPAIR CALL-OUT LEGEND

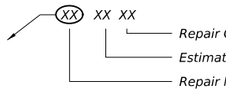
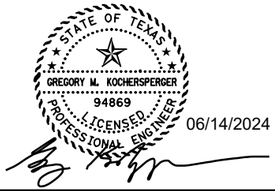


TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
1	Repair damaged concrete diaphragms. See Plan and repair photos.	545227	0429	CONC STR REPAIR (VERTICAL & OVERHEAD)	225	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 2.
2	Repair delamination, cracks and spalls in bent caps. and columns.	649757	0429	CONC STR REPAIR (VERTICAL & OVERHEAD)	400	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 2.



NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

BI 20 OVERPASS AT AT&SF RR AND WALNUT ST BRIDGE LOCATION REPAIR PLAN

NBI# 08-177-0-0006-15-009

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		57

DATE:
FILE:

DW: NS
CK: JD
DW: NS
CK: GK

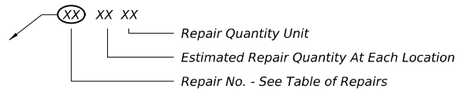
1 CRACKING AND SPALLING ON DIAPHRAGMS 6N, 7N, AND 8N ON EAST SIDE OF BENT 8

1 CRACKING AND SPALLING ON DIAPHRAGMS 1N AND 10N AT BOTH EAST AND WEST CONCRETE DIAPHRAGM LINES, SPAN 7 LOOKING NORTH

1 SPAN 6, CRACKING AND SPALLING ON DIAPHRAGMS 2N, 3N, 4N, 8N, AND 9N AT WEST END OF SUSPENDED SPAN

1 SPAN 6, CRACKING AND SPALLING ON DIAPHRAGMS 1N, 2N, 3N, 4N, 5N, 6N, 7N, 8N, 9N, AND 10N AT EAST END OF SUSPENDED SPAN

REPAIR CALL-OUT LEGEND



1 CRACKING AND SPALLING ON DIAPHRAGM 10N AT BENT 6

1 SPAN 5, CRACKING AND SPALLING ON DIAPHRAGMS 1N AND 10N AT BOTH EAST AND WEST CONCRETE DIAPHRAGM LINES

1 CRACKING AND SPALLING ON DIAPHRAGMS 5N, 6N, 7N, 8N ON WEST SIDE OF BENT 3

1 CRACKING AND SPALLING ON DIAPHRAGMS 5N, 6N, 7N, 8N ON EAST SIDE OF BENT 3

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

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Dallas, Texas 75248
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Texas Department of Transportation

BI 20 OVERPASS AT AT&SF RR AND WALNUT ST BRIDGE REPAIR DETAILS

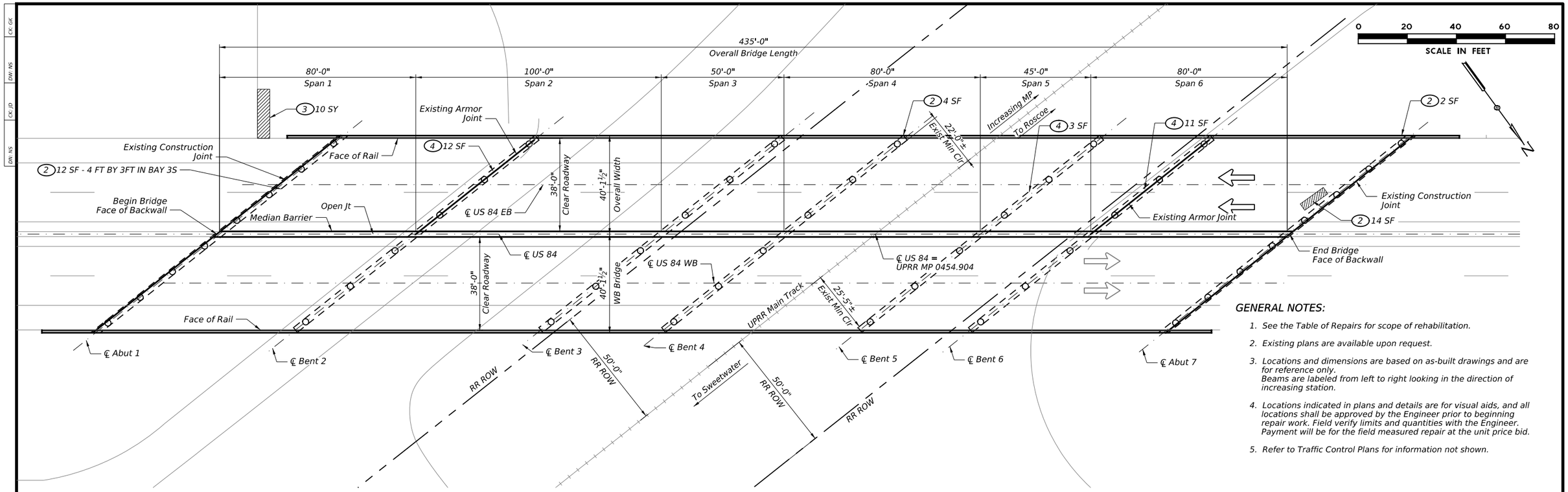
NBI# 08-177-0-0006-15-009

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		58

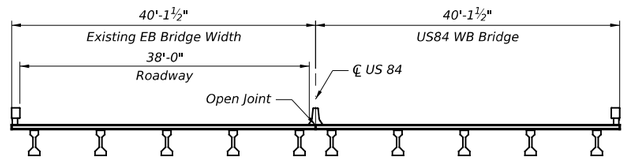
DATE:
FILE:

CK: GK
DW: NS
CK: JD
DW: NS



PLAN

**Note: East Bound and West Bound Shown - See West Bound Repair Plan for West Bound Repair Quantities*



EXISTING TYPICAL SECTION

GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only.
   Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

REPAIR CALL-OUT LEGEND

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
1	Repair Damaged Prestressed Beam Ends. See Beam Repair Table on Sheet 2 of 2.	544035	0429	CONC STR REPAIR (VERTICAL & OVERHEAD)	115	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 2.
2	Clean and repair delaminations and spalling on underside of deck. 32 SF measured, see Plan for location. Additional 18 SF assumed, to be used as directed by the Engineer.	649775	0429	CONC STR REPAIR (VERTICAL & OVERHEAD)	50	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 2.
3	Place flowable fill in erosion void at the southwest embankment and replace drainage flume.	545231	0104	REMOV CONC (RIPRAP)	10	SY	Perform work in accordance with Item 104.
			0401	FLOWABLE BACKFILL	10	CY	Perform work in accordance with Item 401.
			0432	RIPRAP (CONC)(4 IN)	2	CY	Replace in-kind with 4" riprap. See CRR standard for details.
4	Clean and repair spalls on the concrete diaphragms. 26 SF measured, see plan for location. Additional 14 SF assumed, to be used as directed by the Engineer.	545229	0429	CONC STR REPAIR (VERTICAL & OVERHEAD)	40	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 2.

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Dallas, Texas 75248
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Texas Department of Transportation

US 84 EB OVERPASS AT UPRR AND BUS 84 BRIDGE LOCATION REPAIR PLAN

NBI# 08-177-0-0053-12-083

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		59

DATE:
FILE:

CK: GK
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CK: JD
DW: NS

1 TYPICAL BEAM END THAT REQUIRES REPAIR AT ABUTMENT. SEE BEAM REPAIR TABLE FOR LOCATION AND QUANTITY.

1 TYPICAL BEAM END THAT REQUIRES REPAIR AT BENT. SEE BEAM REPAIR TABLE FOR LOCATION AND QUANTITY

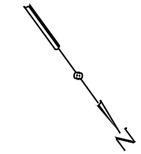
1 TABLE OF PRESTRESSED BEAM END REPAIRS

Span	Location	Beam	Repair Quantity
1	Abutment 1	1	2 SF
1	Abutment 1	2	5 SF
1	Abutment 1	4	5 SF
2	Bent 2	1	5 SF
2	Bent 2	2	5 SF
2	Bent 2	3	5 SF
2	Bent 2	4	5 SF
3	Bent 2	1	6 SF
3	Bent 2	2	5 SF
3	Bent 2	3	5 SF
3	Bent 2	4	5 SF
3	Bent 2	5	2 SF
3	Bent 3	5	3 SF
3	Bent 4	5	3 SF
4	Bent 4	5	3 SF
4	Bent 5	4	3 SF
4	Bent 5	5	5 SF
5	Bent 5	5	5 SF
6	Bent 6	1	5 SF
6	Bent 6	2	5 SF
6	Bent 6	3	5 SF
6	Bent 6	4	8 SF
6	Bent 6	5	5 SF
6	Abutment 7	1	2 SF
6	Abutment 7	2	8 SF

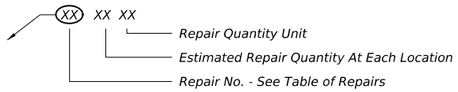
Beam 1 South Fascia Beam.

Existing Prestressed Beam Plans are not available.

0 20 40 60 80
SCALE IN FEET



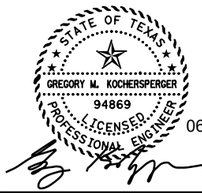
REPAIR CALL-OUT LEGEND



Typical soffit delamination (See plan for location)

2 DECK SOFFIT DELAMINATION

4 DIAPHRAGM REPAIR



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972.960.4400

Texas Department of Transportation

US 84 EB OVERPASS AT UPRR AND BUS 84 BRIDGE REPAIR DETAILS

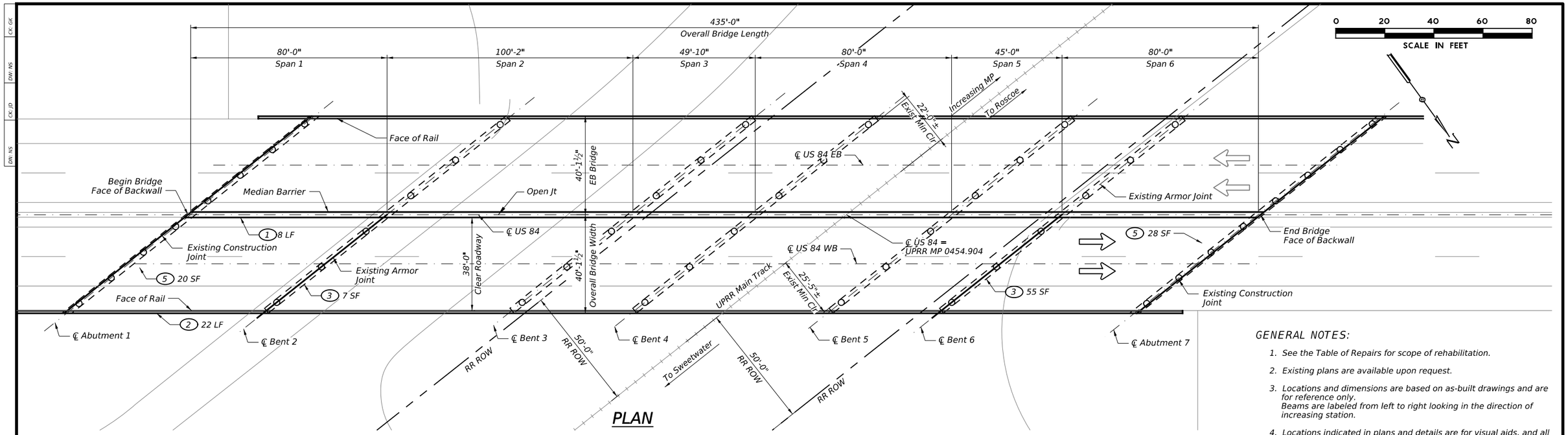
NBI# 08-177-0-0053-12-083

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		60

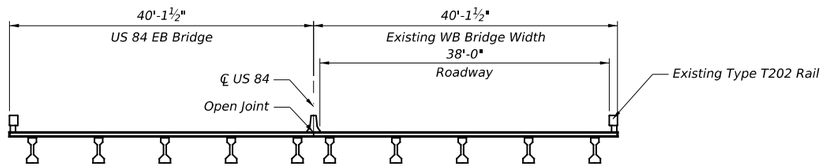
DATE:
FILE:

CK: GK
DW: NS
CK: JD
DW: NS



PLAN

*Note: East Bound and West Bound Shown - See East Bound Repair Plan for East Bound Repair Quantities



EXISTING TYPICAL SECTION

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
(1)	Replace damaged median barrier in-kind. See Plan for location.	545233	0778	CONCRETE RAIL REPLACE- MENT (IN-KIND)	8	LF	See Bridge Railing Replacement Details on US 84 OVERPASS AT UPRR AND BUS 84 BRIDGE REPAIR DETAILS sheet.
(2)	Replace damaged T202 bridge rail in-kind. See Plan for location.	545233	0778	CONCRETE RAIL REPLACE- MENT (IN-KIND)	22	LF	See Bridge Railing Replacement Details on US 84 OVERPASS AT UPRR AND BUS 84 BRIDGE REPAIR DETAILS sheet.
			0429	CONC STR REPAIR(DECK REP (FULL DEPTH))	44	SF	
(3)	Clean and repair cracks and delaminations in the interior bent caps. Crack Repair quantity to be used as directed by the Engineer at bent locations cracks are found outside of delaminated areas.	545235	0429	CONC STR REPAIR (VERTICAL & OVERHEAD)	62	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 2.
			0780	CNC CRACK REPAIR (DISCRETE)(INJECT)	100	LF	Perform pressure injected crack repair per the TxDOT Concrete Repair Manual, Chapter 5.
(4)	Clean and repair spalls, delaminations and cracks on the concrete beams. See Beam Repair Table on Bridge Repair Details Sheet 1 of 2. Crack Repair quantity to be used as directed by the Engineer at beam end locations cracks are found outside of delaminated areas.	545234	0429	CONC STR REPAIR (VERTICAL & OVERHEAD)	43	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 2.
			0780	CNC CRACK REPAIR (DISCRETE) (INJECT)	100	LF	Perform pressure injected crack repair per the TxDOT Concrete Repair Manual, Chapter 5.
(5)	Clean and repair delaminations and spalls on the deck soffit and overhangs. 48 SF measured, see Plan for location. Additional 20 SF assumed, to be used as directed by the Engineer.	544036	0429	CONC STR REPAIR (VERTICAL & OVERHEAD)	68	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 2.

GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only.
   Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

REPAIR CALL-OUT LEGEND

Crack/Spall/Delamination Repair

(XX) XX XX
- XX XX — Repair Quantity Unit
- Estimated Repair Quantity At Each Location
- (XX) — Repair No. - See Table of Repairs

STATE OF TEXAS
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94869
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PROFESSIONAL ENGINEER
06/14/2024

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Texas Department of Transportation

US 84 WB OVERPASS AT UPRR AND BUS 84 BRIDGE LOCATION REPAIR PLAN

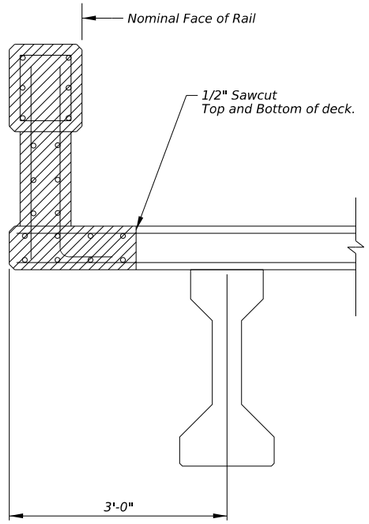
NBI# 08-177-0-0053-12-084

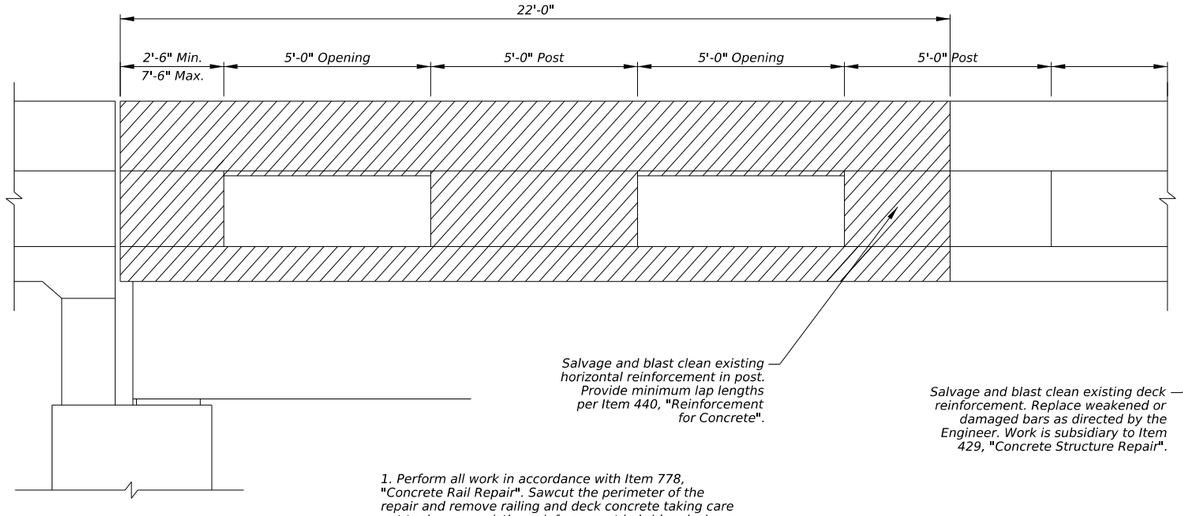
SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		61

DATE:
FILE:

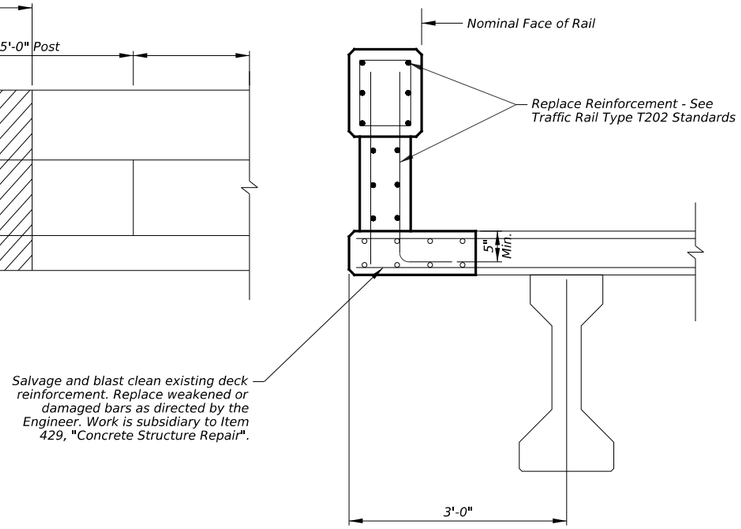
CK: GK
DW: NS
CK: JD
DW: NS





1. Perform all work in accordance with Item 778, "Concrete Rail Repair". Sawcut the perimeter of the repair and remove railing and deck concrete taking care not to damage existing reinforcement in bridge deck.

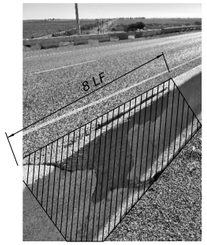
2. Replace damaged deck reinforcement as directed by the Engineer. Replace Traffic Rail reinforcement in-kind.



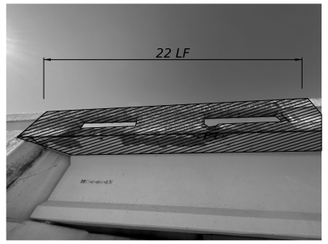
② SECTION AT DAMAGED FASCIA RAIL - REMOVAL

② SECTION AT DAMAGED FASCIA RAIL - REPLACE IN-KIND

REPAIR CALL-OUT LEGEND



① REPLACE DAMAGED MEDIAN RAIL IN-KIND



② REPLACE DAMAGED FASCIA RAIL AND DECK OVERHANG IN-KIND

1. Perform all work in accordance with Item 778, "Concrete Rail Repair". Sawcut the perimeter of the repair and remove concrete taking care not to damage existing reinforcement.

2. Replace damaged reinforcement as directed by the Engineer.

3. Existing plans of barrier are not available. Assume existing barrier is similar to Concrete Barrier (F-Shape) Cast-in-Place per standard plan CSB(3)-16. Cast concrete to match existing shape of barrier.

③ BENT CAP REPAIR

④ TYPICAL BEAM END THAT REQUIRES REPAIR AT BENT (SEE BEAM REPAIR TABLE FOR LOCATION AND QUANTITY)

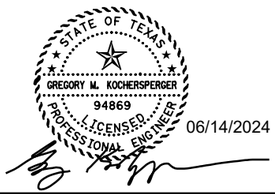
⑤ DECK SOFFIT DELAMINATION

④ BEAM REPAIR TABLE

Span	Location	Beam	Repair Quantity
1	Abutment 1	3	2 SF
1	Bent 2	2	5 SF
1	Bent 2	3	1 SF
1	Bent 2	4	5 SF
1	Bent 2	5	5 SF
2	Bent 2	1	1 SF
2	Bent 2	2	5 SF
2	Bent 2	3	1 SF
2	Bent 2	4	5 SF
2	Bent 2	5	5 SF
2	Bent 3	5	1 SF
6	Bent 6	4	1 SF
6	Bent 6	5	1 SF
6	Abutment 7	3	5 SF

Beam 1 is North Fascia Beam.

Existing PCI Beam Plans are not available.



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Texas Department of Transportation

US 84 WB OVERPASS AT UPRR AND BUS 84 BRIDGE REPAIR DETAILS

NBI# 08-177-0-0053-12-084

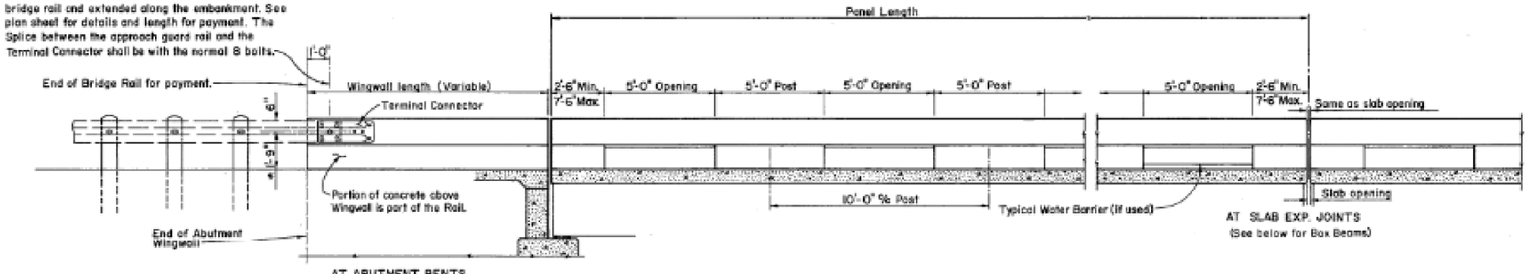
SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		62

DATE:
FILE:

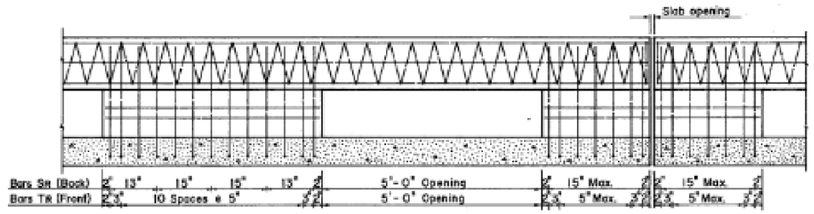
CK: GK | DW: NS | CK: JD | DW: NS

Note: Metal Beam Guard Fence must be attached to the bridge rail and extended along the embankment. See plan sheet for details and length for payment. The Splice between the approach guard rail and the Terminal Connector shall be with the normal 8 bolts.

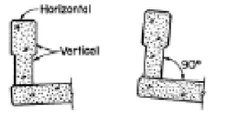


ROADWAY ELEVATION OF RAIL

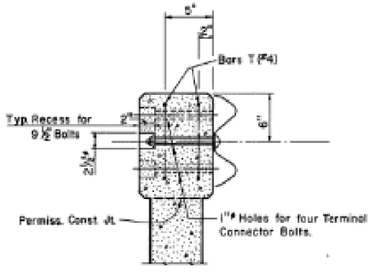
NOTE: Terminal Connector shall receive the same protective coating as the attached Metal Beam Guard Fence.



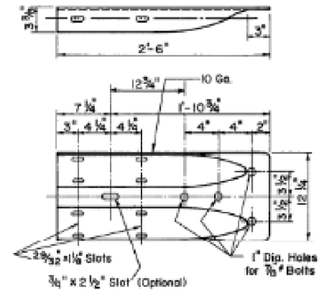
TYPICAL REINFORCING PLACEMENT



PLACEMENT DETAIL



TYP. BM. TO WALL CONNECTION



TERMINAL CONNECTOR

GENERAL NOTES:

Designed according to AASHTO 1977 Standard and current Interim Specifications.

Rail Type T202 is comprised of the following parts: Concrete railing, concrete posts, concrete above wingwall, all reinforcing shown, water barrier, Deep Beam rail connection, Terminal Connector, and all anchorage provisions including bolts, nuts and washers.

All these parts are included in price bid per linear foot of rail.

All steel components except reinforcing shall be galvanized unless otherwise shown in plans.

All concrete shall be Class C. Chamfer all exposed corners.

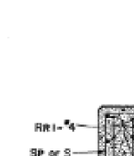
Dimensions relating to reinforcing steel are to centers of bars.

All reinforcing steel shall be Grade 60 except spiral.

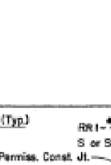
Railing shall be as shown in placement detail. Openings shall have end faces perpendicular to adjacent roadway grade.

Water barriers shall be provided at openings draining onto undercrossing roadways and sidewalks. They may be cast-in-place or precast in convenient lengths and bonded to the bridge deck with an approved epoxy cement.

Shop drawings will not be required for this rail.



#3 BARS SP

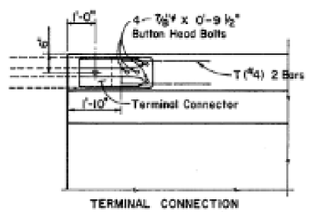


#4 BARS TR

If two or more S bars are used in a continuous panel length, they shall be butted within the center 3 ft. of a rail post. At Contractor's option, Bars SP spaced at 6" may be substituted for Bars S.

BARS S

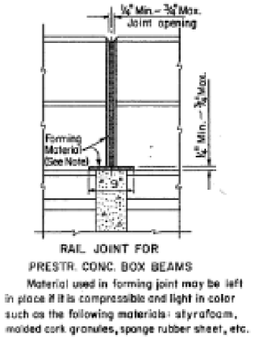
BARS T # 4 (2 at each terminal)



TERMINAL CONNECTION

RAILS ON HORIZONTAL CURVES

Rad. to Face of Rail	Max. Chord Lgth.	Construction or Fabrication
Over 3200'	33'-0"	Construct wall to the required radius or in chords shown.
Over 2000' 3200'	20'-0"	
Over 300' 2000'	10'-0"	
Thru. 300'	0	Construct wall to the required radius



RAIL JOINT FOR PRESTR. CONC. BOX BEAMS

Material used in forming joint may be left in place if it is compressible and light in color such as the following materials: styrofoam, molded cork granules, sponge rubber sheet, etc.

FOR STRUCTURES WITHOUT SIDEWALKS

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

TRAFFIC RAIL

TYPE T202

ORIGINAL DRAWING DATE: DEC. 1980

DR.:-LJP
CK.:-HJD
DR.:-EDS
CK.:-HJD

REVISIONS

STATE DISTRICT: 6
FEDERAL AID NO.:
PERSONAL NO. PROJECT
SHEET
COUNTY
CONTROL
SECTION
JOB
HIGHWAY

EXISTING TYPE T202 TRAFFIC RAIL STANDARD DETAIL - FOR INFORMATION ONLY

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc.
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

US 84 WB OVERPASS
AT UPRR AND BUS 84
BRIDGE REPAIR DETAILS

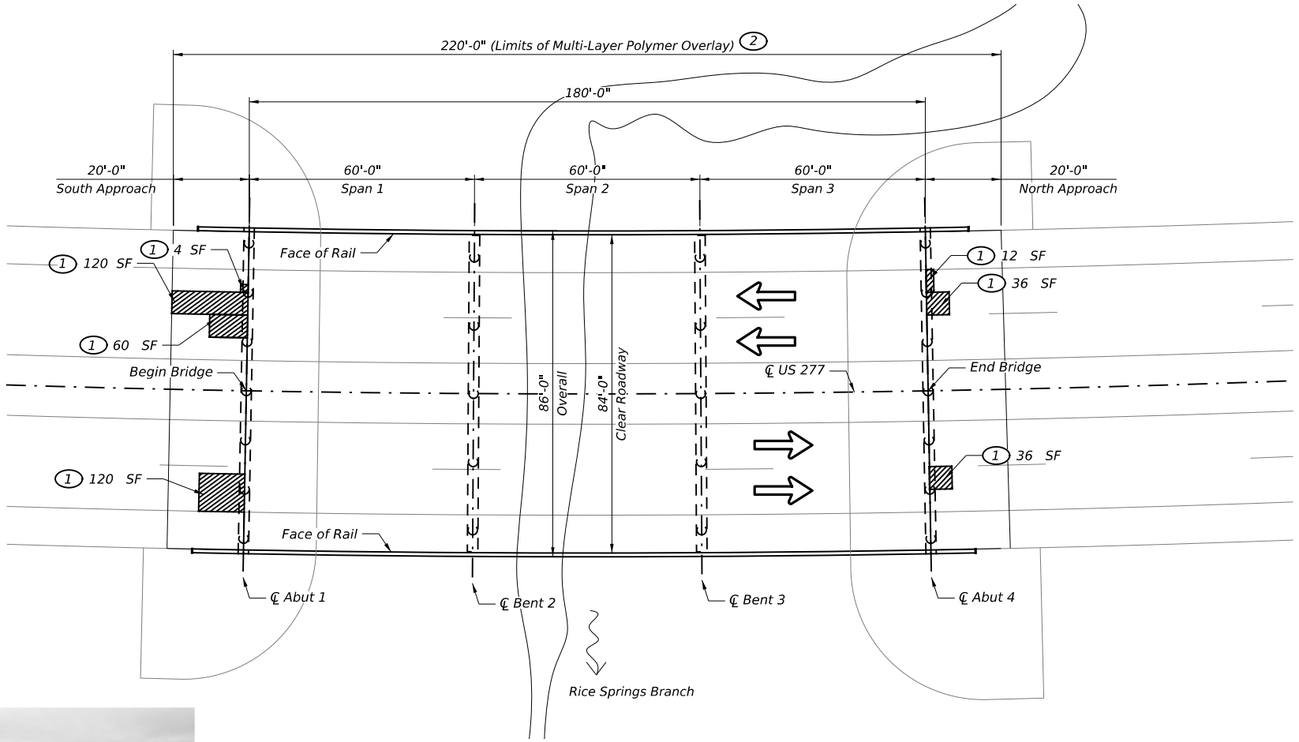
NBI# 08-177-0-0053-12-084

SHEET 2 OF 2

CONT.	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		63

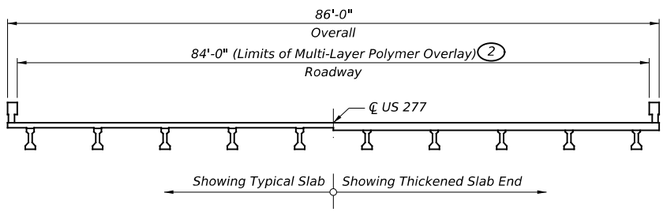
DATE:
FILE:

CK: GK
DW: NS
CK: JD
DW: NS

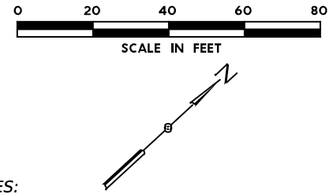


PLAN

1 APPROACH SLAB TYPICAL CONDITION



EXISTING TYPICAL SECTION



GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only. Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

MULTI-LAYER POLYMER OVERLAY (MLPO) NOTES:

Perform work in accordance with Item 430, "Bridge Deck Overlays" and below instructions. A technical representative of the overlay manufacturer should be present at the pre-construction meeting and execution of all work associated with the overlay installation.

1. Inspect the bridge deck for any potential deck repairs or delaminated concrete. Perform partial and/or full depth bridge deck repairs in accordance with Item 429, "Concrete Structure Repair" and Chapter 3, Section 4 of TxDOT Concrete Repair Manual. Repair materials must be compatible with MLPO system. Cure repairs in accordance with Manufacturer's recommendations unless approved otherwise. Test moisture content in concrete repairs to ensure it conforms to Manufacturer's requirements. This work will be paid for in accordance with Item 429, "Concrete Structure Repair".
2. Prepare the deck surface by shot blasting and cleaning with high pressure air. Remove all oil and other contaminants.
3. Mask existing joints and deck drains.
4. Identify moisture in the deck per ASTM D4263 or other approved methods. Do not begin the overlay installation until the deck is properly dry.
5. Install Multi-layer Polymer Overlay per Item 439, "Bridge Deck Overlays".
6. Install pavement markings as shown on plans after the overlay is cured.

REPAIR CALL-OUT LEGEND

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
1	Perform partial depth repair of spalls in approach slab	666684	0429	CONC STR REPAIR(DECK REP(PART DEPTH))	388	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 4.
2	Apply multi-layer polymer overalay to bridge deck and approach slab. Perform partial depth repairs of concrete deck as directed by Engineer. Quantity for deck repairs is an assumed amount.	544100 & 543938	0429	CONC STR REPAIR(DECK REP(PART DEPTH))	50	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 4.
			0483	SHOT BLASTING	2053	SY	Perform work in accordance with Item 439.
			0439	MULTI-LAYER POLYMER OVERLAY	2053	SY	

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

US 277 OVER RICE SPRINGS BRANCH BRIDGE REPAIR LOCATION PLAN

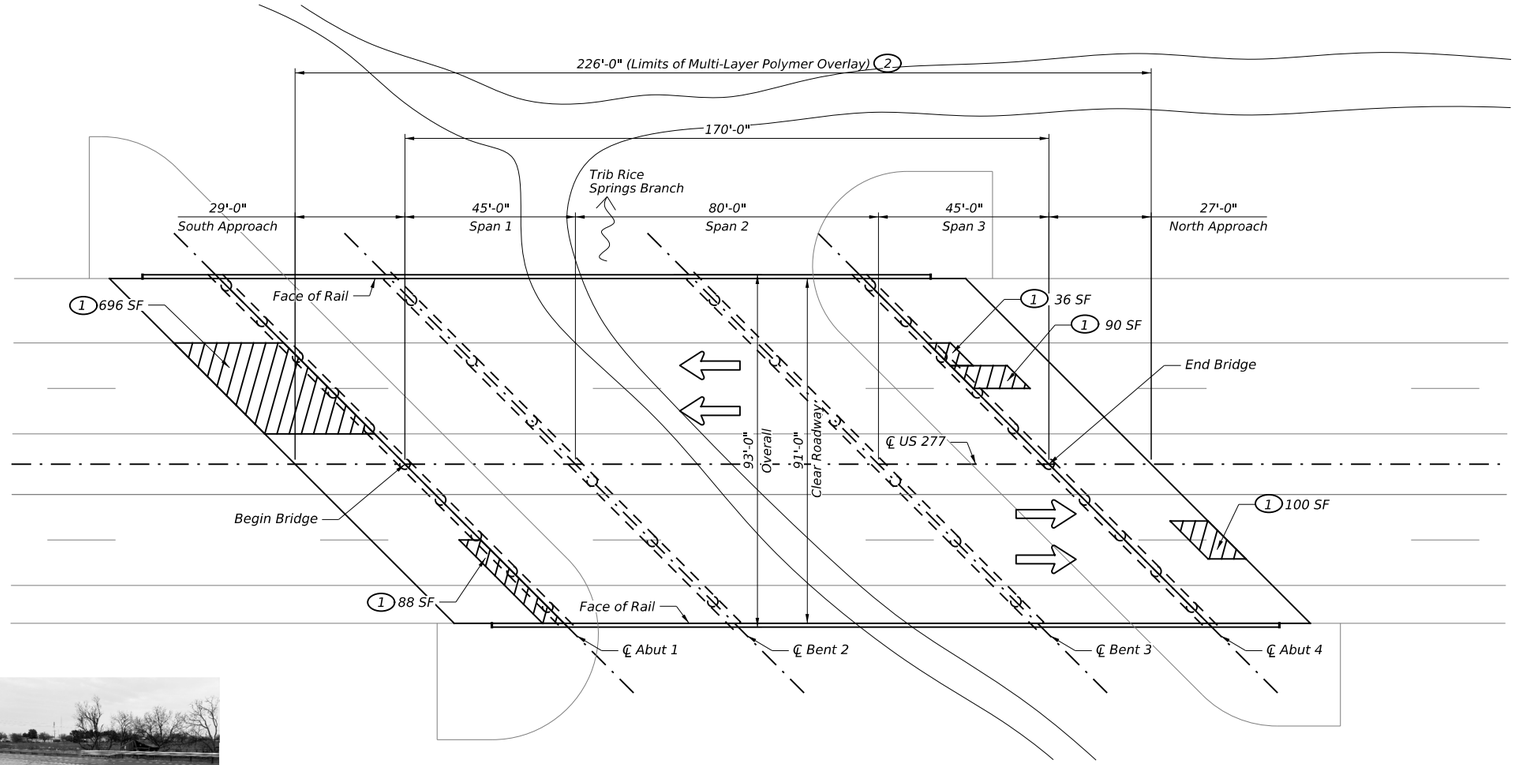
NBI# 08-105-0-0157-09-003

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		64

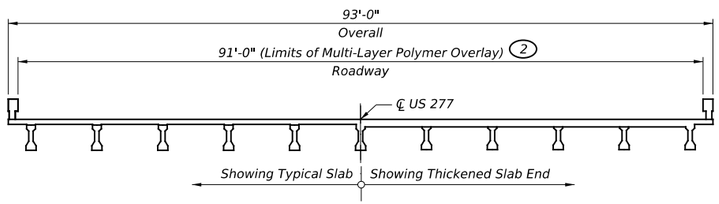
DATE:
FILE:

CK: GK
DW: NS
CK: JD
DW: NS



PLAN

① APPROACH SLAB TYPICAL CONDITION



EXISTING TYPICAL SECTION

0 20 40 60 80
SCALE IN FEET

N

GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only. Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

MULTI-LAYER POLYMER OVERLAY (MLPO) NOTES:

Perform work in accordance with Item 430, "Bridge Deck Overlays" and below instructions. A technical representative of the overlay manufacturer should be present at the pre-construction meeting and execution of all work associated with the overlay installation.

1. Inspect the bridge deck for any potential deck repairs or delaminated concrete. Perform partial and/or full depth bridge deck repairs in accordance with Item 429, "Concrete Structure Repair" and Chapter 3, Section 4 of TxDOT Concrete Repair Manual. Repair materials must be compatible with MLPO system. Cure repairs in accordance with Manufacturer's recommendations unless approved otherwise. Test moisture content in concrete repairs to ensure it conforms to Manufacturer's requirements. This work will be paid for in accordance with Item 429, "Concrete Structure Repair".
2. Prepare the deck surface by shot blasting and cleaning with high pressure air. Remove all oil and other contaminants.
3. Mask existing joints and deck drains.
4. Identify moisture in the deck per ASTM D4263 or other approved methods. Do not begin the overlay installation until the deck is properly dry.
5. Install Multi-layer Polymer Overlay per Item 439, "Bridge Deck Overlays".
6. Install pavement markings as shown on plans after the overlay is cured.

REPAIR CALL-OUT LEGEND

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
①	Perform partial depth repair of spalls in approach slab	543939	0429	CONC STR REPAIR(DECK REP(PART DEPTH))	1010	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 4.
②	Apply multi-layer polymer overalay to bridge deck and approach slab. Perform partial depth repairs of concrete deck as directed by Engineer. Quantity for deck repairs is an assumed amount.	544101	0429	CONC STR REPAIR(DECK REP(PART DEPTH))	50	SF	Repair as intermediate spalls per the TxDOT Concrete Repair Manual, Chapter 3, Section 4.
			0483	SHOT BLASTING	2285	SY	Perform work om accordance with Item 439.
			0439	MULTI-LAYER POLYMER OVERLAY	2285	SY	

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
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Dallas, Texas 75248
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Texas Department of Transportation

US 277 OVER RICE SPRINGS BRANCH TRIB BRIDGE REPAIR LOCATION PLAN

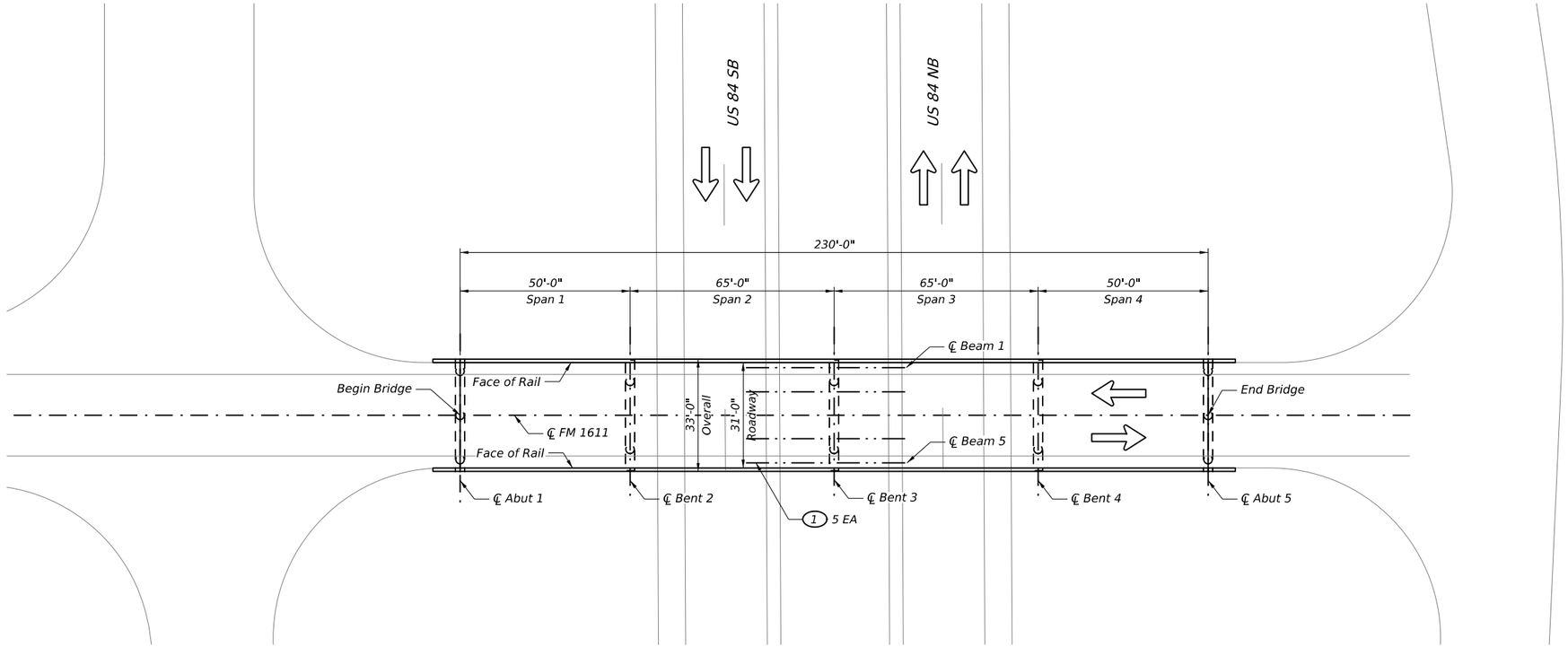
NBI# 08-105-0-0157-09-008

SHEET 1 OF 1

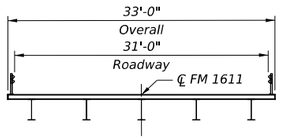
CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		65

DATE:
FILE:

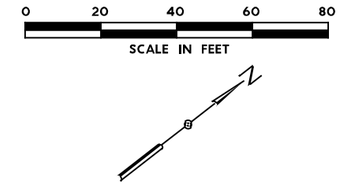
DW: NS
CK: JD
DW: NS
CK: GK



PLAN



EXISTING TYPICAL SECTION



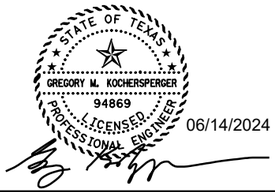
GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only. Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

REPAIR CALL-OUT LEGEND

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
1	Heat Straighten and repair steel beams in span 2 damaged by vehicular impact. See Plan for location.	668006	0784	REP STL BRIDGE MEMBER (BEAM)	5	EA	Heat straighten damaged beams in accordance with US 84 UNDERPASS AT FM 1611 BRIDGE REPAIR DETAILS sheet.
2	Clean and paint damaged beams. See US84 UNDERPASS AT FM 1611 BRIDGE REPAIR DETAILS sheet for limits	668006	0446	SPOT CLEAN & PAINT EXT STR(SPL PROT SYS)	0.4	LS	Provide System I Overcoat on web and flange within heat straightened zones per Item 446. Area is approximately 620 SF



NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

US 84 UNDERPASS AT FM 1611 BRIDGE REPAIR LOCATION PLAN

NBI# 08-208-0-0053-08-072

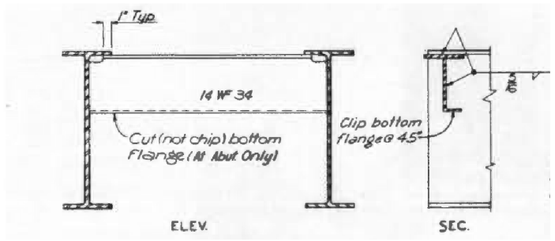
SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		66

DATE:
FILE:

DW: NS | CK: JD | DW: NS | CK: GK

IMPACT DAMAGE ON FASCIA BEAMS



EXISTING DIAPHRAGM CONNECTION

GENERAL NOTES:

Notify TxDOT Bridge Division at least two weeks in advance by e-mailing BRG-FO-STL@txdot.gov prior to beginning work to allow for inspection of repairs by a Bridge Division structural steel inspector.

Use heat-straightening to repair and restore the shape of beams and diaphragms. Heat straighten the members in accordance with Item 784, "Steel Member Repair." Apply sufficient force combined with heat to accomplish work but do not fracture member. Repair additional damage caused by Contractor's operations at no additional cost to the Department.

Restore the paint protection for repaired beams and diaphragms with System I per Item 446, "Field Cleaning and Painting Steel," and as directed by the Engineer. Match the appearance coat with the existing structure. Assume existing paint coating contains hazardous materials, unless otherwise noted.

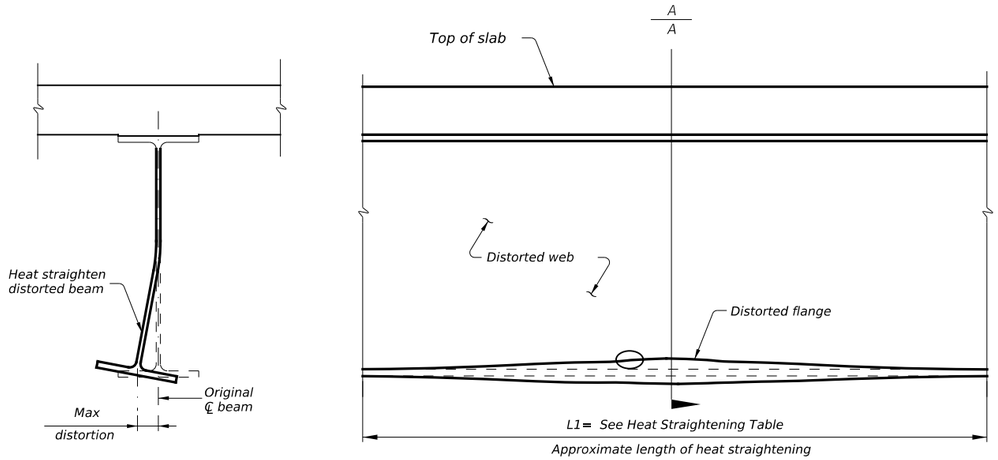
HEAT STRAIGHTENING PROCEDURE:

1. Set traffic control. Close lanes on top of the bridge as directed by the Engineer.
2. Check gap (if any) between top flange and bottom of deck for any debris and clear to allow complete contact to occur.
3. Remove the diaphragms, if necessary, for heat straightening.
4. Heat straighten distorted beam in accordance with Item 784, "Steel Member Repair."
5. Clean and paint the repair area as directed by the Engineer.
6. Open the roadways to normal traffic as directed by the Engineer.

REPAIR CALL-OUT LEGEND

(1) TABLE OF HEAT STRAIGHTENING REPAIRS

Span	Location	Beam	Repair Length	Max Distortion	Field Clean and Paint
2	Midspan	1	22 LF	8 in	22 LF
2	Midspan	2	10 LF	3 in	10 LF
2	Midspan	3	5 LF	1 in	5 LF
2	Midspan	4	10 LF	3 in	10 LF
2	Midspan	5	22 LF	5 in	22 LF



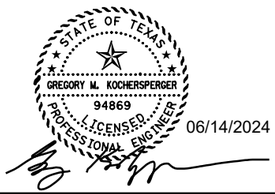
SECTION A-A

Maximum Distortion - See Heat Straightening Table. Approximate deflections measured from ground on 02/27/2024

BEAM ELEVATION

Approximate length measured from the ground on 02/27/2024

HEAT STRAIGHTENING



NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

US 84 UNDERPASS AT FM 1611 BRIDGE REPAIR DETAILS

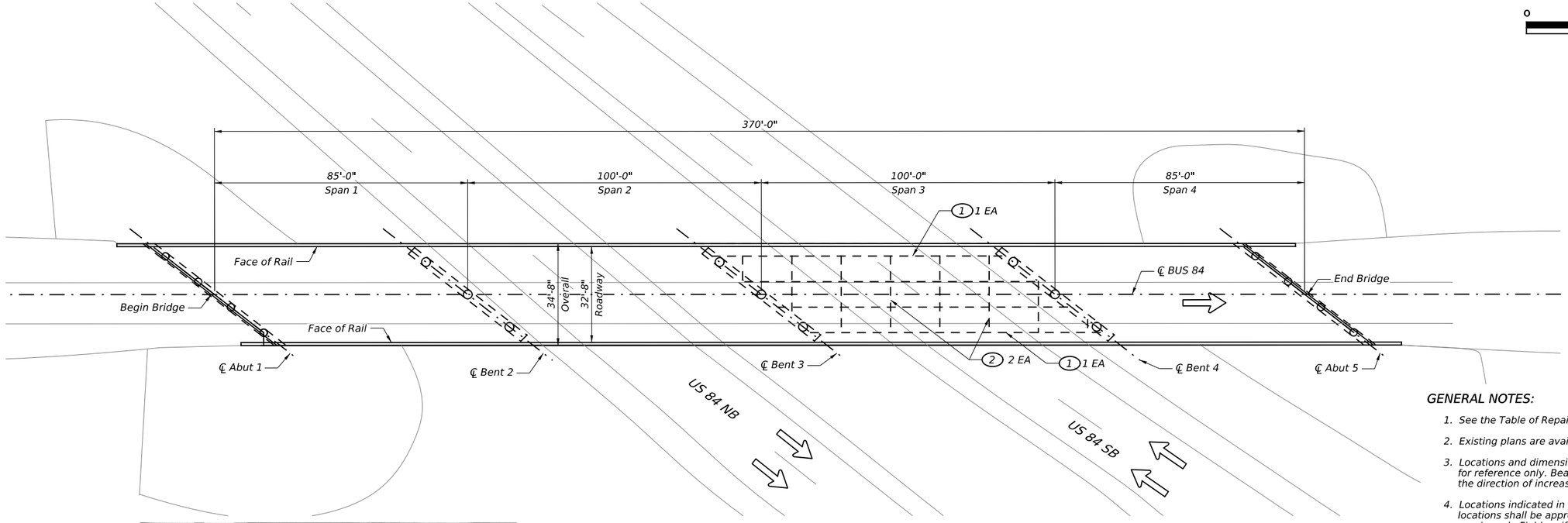
NBI# 08-208-0-0053-09-072

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		67

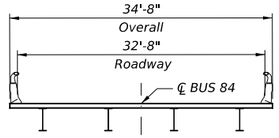
DATE:
FILE:

CK: GK
DW: NS
CK: JD
DW: NS



PLAN

1 2 IMPACT DAMAGE ON NORTH FASCIA BEAM



EXISTING TYPICAL SECTION

0 20 40 60 80
SCALE IN FEET

GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only. Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

REPAIR CALL-OUT LEGEND

(XX) XX XX
- XX: Repair Quantity Unit
- XX: Estimated Repair Quantity At Each Location
- (XX): Repair No. - See Table of Repairs

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
1	Heat Straighten steel beams in span 2 damaged by vehicular impact and repair. See Plan for location.	544130	0784	REP STL BRIDGE MEMBER (BEAM)	2	EA	Heat straighten damaged beams in accordance with US 84 UNDERPASS AT BUS84 BRIDGE REPAIR DETAILS sheet.
2	Replace steel diaphragms.	544130	0784	REP STL BRIDGE MEMBER (DIAPHRAGM)	2	EA	Replace steel diaphragms in-kind. See US 84 UNDERPASS AT BUS84 BRIDGE REPAIR DETAILS sheet.
3	Clean and paint damaged beams. See Steel beam Repair Detail Sheet for Limits	544130	0446	SPOT CLEAN & PAINT EXT STR(SPL PROT SYS)	0.2	LS	Provide System I Overcoat on web and flange within heat straightened zones per Item 446. Area is approximately 225 SF
4	Clean and paint portions of beams with damaged coating as directed by the Engineer.	544131	0446	SPOT CLEAN & PAINT EXT STR(SPL PROT SYS)	0.4	LS	Provide System I Overcoat on beam bottom flanges per Item 446. Area assumes 20 percent of total bottom flange length requires overcoat. Area is approximately 640 SF

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

US 84 UNDERPASS AT BUS 84 BRIDGE REPAIR LOCATION PLAN

NBI# 08-208-0-0053-09-052

SHEET 1 OF 1

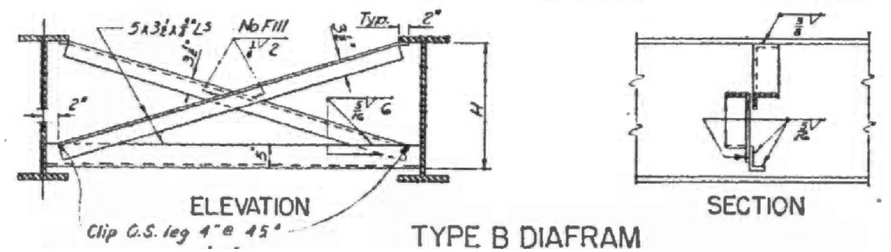
CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		68

DATE:
FILE:

DW: NS
CK: JD
DW: NS
CK: GK

Replace existing damaged diaphragms and connections as directed by the Engineer.

IMPACT DAMAGE ON NORTH FASCIA BEAM



EXISTING DIAPHRAGM CONNECTION

GENERAL NOTES:

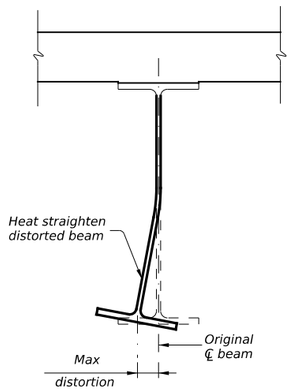
Notify TxDOT Bridge Division at least two weeks in advance by e-mailing BRG-FO-STL@txdot.gov prior to beginning work to allow for inspection of repairs by a Bridge Division structural steel inspector.

Use heat-straightening to repair and restore the shape of beams and diaphragms. Heat straighten the members in accordance with Item 784, "Steel Member Repair." Apply sufficient force combined with heat to accomplish work but do not fracture member. Repair additional damage caused by Contractor's operations at no additional cost to the Department.

Restore the paint protection for repaired beams and diaphragms with System I per Item 446, "Field Cleaning and Painting Steel," and as directed by the Engineer. Match the appearance coat with the existing structure. Assume existing paint coating contains hazardous materials, unless otherwise noted.

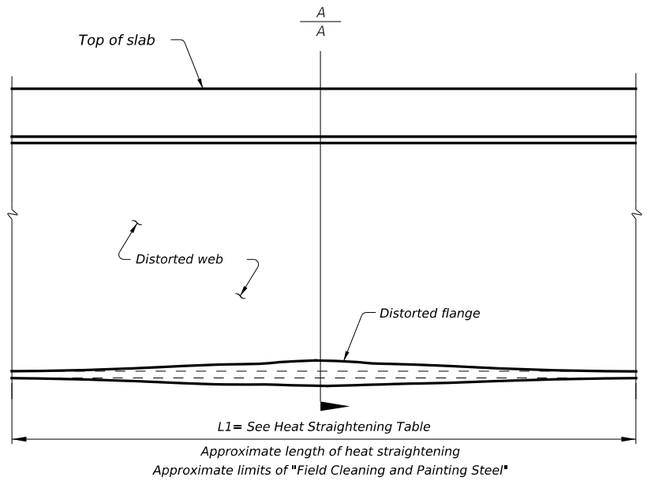
REPAIR CALL-OUT LEGEND

(XX) XX XX
- Repair Quantity Unit
- Estimated Repair Quantity At Each Location
- Repair No. - See Table of Repairs



SECTION A-A

Maximum Distortion - See Heat Straightening Table. Approximate deflections measured from ground on 02/27/2024



BEAM ELEVATION

Approximate length measured from the ground on 02/27/2024

HEAT STRAIGHTENING

HEAT STRAIGHTENING PROCEDURE:

1. Set traffic control. Close lanes on top of the bridge as directed by the Engineer.
2. Check gap (if any) between top of top flange and bottom of deck for any debris and clear to allow complete contact to occur.
3. Remove the diaphragms, if necessary, for heat straightening.
4. Heat straighten distorted beam in accordance with Item 784, "Steel Member Repair."
5. Repair/replace/re-weld damaged diaphragms as shown in the detail after the beam is restored in both shape and alignment.
6. Clean and paint the repair area as directed by the Engineer.
7. Open the roadways to normal traffic as directed by the Engineer.

(1) TABLE OF HEAT STRAIGHTENING REPAIRS

Span	Location	Beam	Repair Length	Max Distortion	Field Clean and Paint
3	Midspan	1	18 LF	6 in	18 LF
3	Midspan	4	5 LF	2 in	5 LF

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

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Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

US 84 UNDERPASS AT BUS 84 BRIDGE REPAIR DETAILS

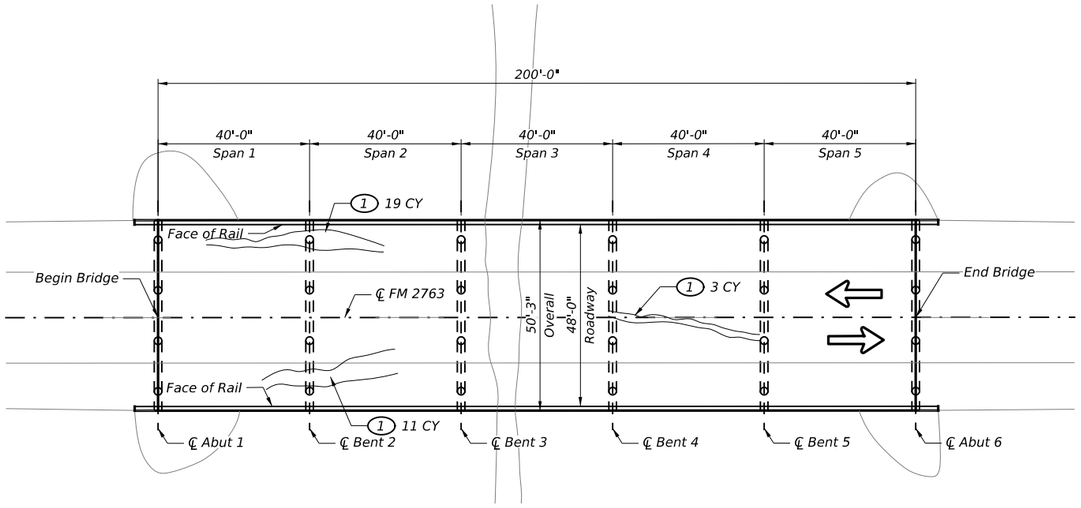
NBI# 08-208-0-0053-09-052

SHEET 1 OF 1

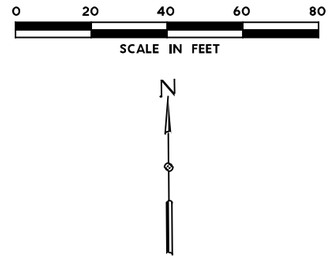
CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		69

DATE:
FILE:

CK: GK
DW: NS
CK: JD
DW: NS



PLAN



GENERAL NOTES:

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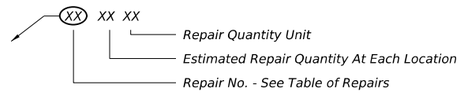
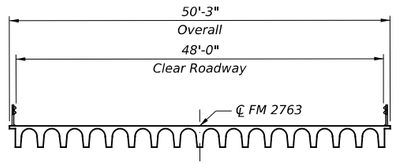
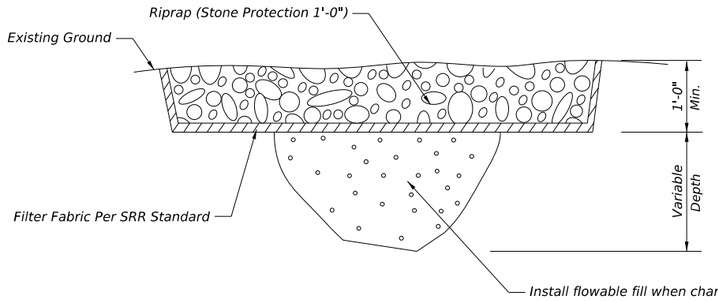
REPAIR CALL-OUT LEGEND





EXISTING TYPICAL SECTION

1 EROSION GULLY TYPICAL



EROSION GULLY DETAIL

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
1	Repair erosion gullies and channel banks.	544434	0401	FLOWABLE BACKFILL	8	CY	See Erosion Gully Detail.
			0432	RIPRAP (STONE PROTECTION)(12 IN)	25	CY	

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Texas Department of Transportation

FM 2763
OVER DEEP CREEK
BRIDGE REPAIR LOCATION PLAN

NBI# 08-208-0-3311-01-001

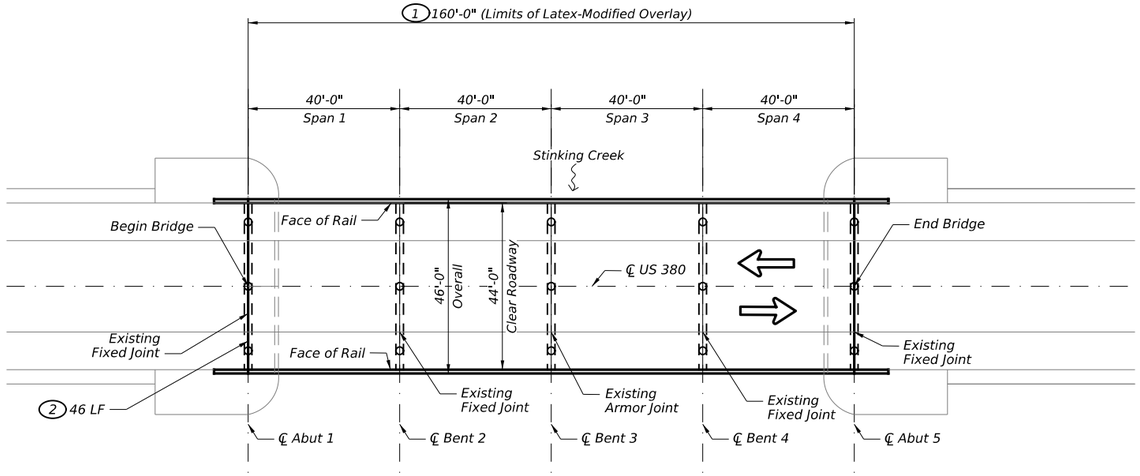
SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		70

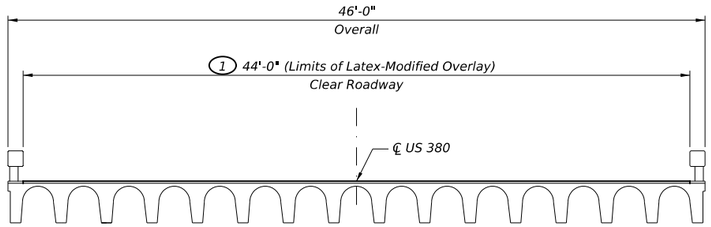
DATE:
FILE:

CK: GK
DW: NS
CK: JD
DW: NS

0 20 40 60 80
SCALE IN FEET



PLAN



EXISTING TYPICAL SECTION

GENERAL NOTES:

1. See the Table of Repairs for scope of rehabilitation.
2. Existing plans are available upon request.
3. Locations and dimensions are based on as-built drawings and are for reference only. Beams are labeled from left to right looking in the direction of increasing station.
4. Locations indicated in plans and details are for visual aids, and all locations shall be approved by the Engineer prior to beginning repair work. Field verify limits and quantities with the Engineer. Payment will be for the field measured repair at the unit price bid.
5. Refer to Traffic Control Plans for information not shown.

REPAIR CALL-OUT LEGEND

TABLE OF REPAIRS

REPAIR NO.	REPAIR DESCRIPTION/LOCATION	FOLLOW UP ACTION (FUA) ID	ITEM	BID ITEM DESCRIPTION	QUANTITY	UNIT	DETAILS/NOTES
1	Hydro-Demo and inlay concrete deck surface with 2 inch latex-modified overlay.	736073	0483	HYDRO-DEMOLITION (2 IN)	783	SY	See BRIDGE DECK OVERLAY NOTES sheet.
			0439	LATEX - MODIFIED CONC OVERLAY (2 IN)	783	SY	
2	Clean and reseal existing pan girder joints.	736073	0438	CLEAN AND SEAL JNTS (PAN GIRDERS) (CL7)	230	LF	See CLEANING AND SEALING EXISTING BRIDGE JOINTS DETAIL sheets.

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US 380
OVER STINKING CREEK
BRIDGE REPAIR LOCATION PLAN

NBI# 08-217-0-0106-04-054

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		71

DATE:
FILE:

CK: GK
DW: NS
CK: JD
DW: NS

LATEX-MODIFIED CONCRETE (LMC) OVERLAY AND CONCRETE OVERLAY (CO) NOTES:

Perform work in accordance with Item 439, "Bridge Deck Overlays" and instructions below.

1. *Prepare concrete deck surface for overlay installation. See SURFACE PREPARATION NOTES.*
2. *Water blast surface and any exposed steel with minimum 5,000 psi blast to remove all dirt, loose rust, and other contaminants and then use dry compressed air until the surface is cleared of debris. Perform pressure blasting no earlier than 24 hours before placing the overlay.*
3. *Cover the surface with wet cotton mats or wet burlap and opaque/white plastic sheets, and keep saturated for a minimum of 8 hours before placement of overlay.*
4. *Immediately before placing concrete, remove cover and blow off any standing water. Maintain saturated surface dry (SSD) condition on deck to receive overlay.*
5. *Mask existing joints and deck drains. Saw cutting of joints after overlay installation is prohibited.*
6. *Adjust the screed and screed rail as necessary to provide the approved grade and required thickness. Adjustments should be made during the screed dry run. Correct any areas with insufficient clearance by adjusting the screed and rail system or by chipping or scarifying as approved by the Engineer. Clean areas where removal occurs by pressure washing with a minimum of 5,000 psi.*
7. *Verify that ambient temperature, wind speed, and relative humidity are within the limits specified by the Engineer. Wind screens and fog spray may be submitted as part of the placement plan to minimize evaporation.*
8. *Place 2 inch overlay. Consolidate concrete around joints with a pencil vibrator. Use an internal vibrator for areas with 3" depth or greater in advance of the screed.*
9. *Meet the straightedge and finishing requirements specified in Section 422.4.7, "Finish and Interim Curing of Bridge Slabs" for finishing the concrete overlay.*
10. *Cure as required by Item 439, "Bridge Deck Overlays." See CURING NOTES.*
11. *The Contractor is responsible for the ride quality of the finished surface. See Article 422.4.10, "Defective Work," for acceptance criteria to be enforced for this work.*
12. *Groove surface in accordance with Article 422.4.11 "Final Surface Texture."*
13. *Install pavement markings as shown on plans.*
14. *Seal all the expansion joints. See elsewhere in plans for joint details.*

LMC SURFACE PREPARATION NOTES:

Concrete removal and surface preparation beyond cleaning utilizing air, water, and abrasive blasting will be paid for in accordance with Item 483, "Concrete Bridge Deck Surfacing."

MILLING AND HYDRO-DEMOLITION

1. *Mill concrete deck to remove ½" of deck surface. See CONCRETE MILLING NOTES. This work will be subsidiary to hydro-demolition.*
2. *Perform hydro-demolition on bridge deck to remove 1-½" of deck concrete. See HYDRO-DEMOLITION NOTES.*

CONCRETE MILLING NOTES:

Perform this work in accordance with Item 483, "Concrete Bridge Deck Surfacing" and instructions below.

1. *Contractor is responsible for identifying depth of reinforcing steel to ensure that there is no damage to the existing reinforcing through the removal process. Depth of milling must not exceed ½" or the depth to the top of top mat of reinforcement steel, whichever is less. Determine clear cover to top reinforcement prior to beginning milling operations. Stop the operations if reinforcing steel is encountered. Proceed with further milling only when approved by the Engineer.*
2. *Stop milling operations a minimum of 12" from all expansion joints. Remove concrete between end of milling operations and expansion joint using hydro-demolition or chipping hammers not heavier than a nominal 15 lb. Do not damage armor plates or studs of the expansion joints. Repair damage to joint system resulting from concrete removal operations at the Contractor's expense.*

HYDRO-DEMOLITION NOTES:

Perform work in accordance with Item 483, "Concrete Bridge Deck Surfacing" and instructions below.

1. *Submit a water disposal plan associated with the work for approval. Protect surrounding property and traffic from water spray and material that is dislodged. Provide water for hydro-demolition that meets the requirements of Article 421.2.5, Table 1. Additional cost for disposal of contaminated water is subsidiary to the hydro-demolition.*
2. *Provide remotely operated vacuum unit to reclaim water, debris and concrete cuttings. Collect water, debris and concrete cuttings in a separate unit located off of the bridge deck. Do not allow loaded reclamation units on bridge deck after hydro-demolition has occurred without a structural analysis signed and sealed by a licensed professional engineer. All equipment on bridge deck must be in accordance with Articles 7.16.2 and 7.16.3.*
3. *Block all inlets during hydro-demolition and overlay operations. Do not perform hydro-demolition work over open roadways or sidewalks. Do not permit any vehicular or pedestrian traffic below the bridge deck during hydro-demolition activities.*
4. *Provide a combination of milling and hydro-demolition sufficient to provide for a 2" (nominal) inlay. At a minimum, hydro-demolition will be no less than 3/4" in unless otherwise shown in the plans.*
5. *Demonstrate hydro-demolition on test areas as designated to calibrate machine to obtain concrete removal depth and finish as specified and as approved.*
6. *Ensure all unsound concrete is being removed after hydro-demolition. Additional chipping (with chipping hammer) or hydro-demolition may be required to remove remaining delaminated areas. Do not damage reinforcing steel. If bond between steel and concrete is destroyed, remove concrete (15 lb max chipping hammer) to expose bar and provide a clearance of not less than 3/4".*

CURING NOTES:

1. *Apply wet burlap to cure the overlay as soon as possible after the concrete has been textured. Keep the burlap continuously wet for 48 hours. Cover burlap with opaque or white polyethylene sheeting for duration of wet cure period.*
2. *Remove sheeting and burlap following wet cure period and allow surface to air cure for an additional 48 hours before opening to traffic.*

MULTI-LAYER POLYMER OVERLAY (MLPO) NOTES:

Perform work in accordance with Item 439, "Bridge Deck Overlays" and below instructions. A technical representative of the overlay manufacturer should be present at the pre-construction meeting and execution of all work associated with the overlay installation.

1. *Inspect the bridge deck for any potential deck repairs or delaminated concrete. Perform partial and/or full depth bridge deck repairs in accordance with Item 429, "Concrete Structure Repair" and Chapter 3, Section 4 of TxDOT Concrete Repair Manual. Repair materials must be compatible with MLPO system. Cure repairs in accordance with Manufacturer's recommendations unless approved otherwise. Test moisture content in concrete repairs to ensure it conforms to Manufacturer's requirements. This work will be paid for in accordance with Item 429, "Concrete Structure Repair."*
2. *Prepare the deck surface by shot blasting and cleaning with high pressure air. Remove all oil and other contaminants. Shot Blasting will be paid for in accordance with Item 483, "Concrete Bridge Deck Surfacing."*
3. *Mask existing joints and deck drains.*
4. *Identify moisture in the deck per ASTM D4263 or other approved methods. Do not begin the overlay installation until the deck is properly dry.*
5. *Install Multi-layer Polymer Overlay per Item 439, "Bridge Deck Overlays".*
6. *Install pavement markings as shown on plans after the overlay is cured.*

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BRIDGE DECK OVERLAY NOTES

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		72

DATE:
FILE:

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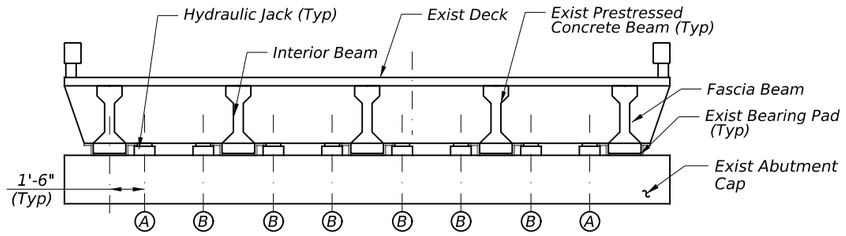
CK: JD
DW: NS



JACKING DETAIL

JACKING DIAGRAM NOTES:

Superstructure jacking will be performed in accordance with Item 495, "Raising Existing Structures".

Submit calculations and detailed plans to raise superstructure.

Hydraulic jacks should have adequate capacity to support 2 times the unfactored dead load. Apply required jacking forces in a balanced controlled manner. Required loads to be supported at each jack per the table below.

Table of Lifting Loads		
Location	Unfactored Dead Load Per Beam End (Lb)	Unfactored Live Load Per Beam End (Lb)
Fascia	93000	49400
Interior	80300	49400

BEARING PAD SUMMARY TABLE

NBI#	Abut / Bent No.	Dowels (Y/N)	Bearing Pad Dimensions			Beam Slope (N)	Bearing Pad Type	Quantity
			L (inch)	W (inch)	T (inch)			
08-030-0-0006-07-279	Bent 8	N	10	14	1	0	Elastomeric	5
08-030-0-0007-01-091	Bent 8	N	10	14	1	0	Elastomeric	5

LIFTING NOTES:

1. *All work and materials for bearing pad replacement must be performed and paid for in accordance with Item 787, "Replacing 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". See Table for lifting loads.*

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.*

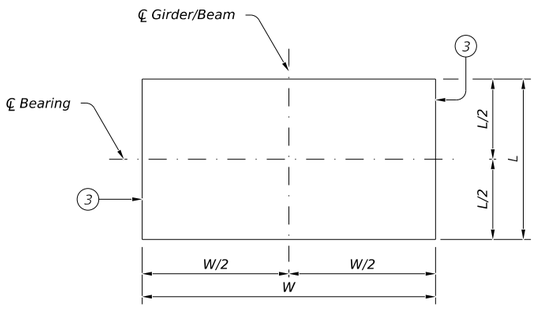
Live load is permitted on the bridge only after the structure has been raised and is supported by cribbing or temporary supports.

GENERAL NOTES:

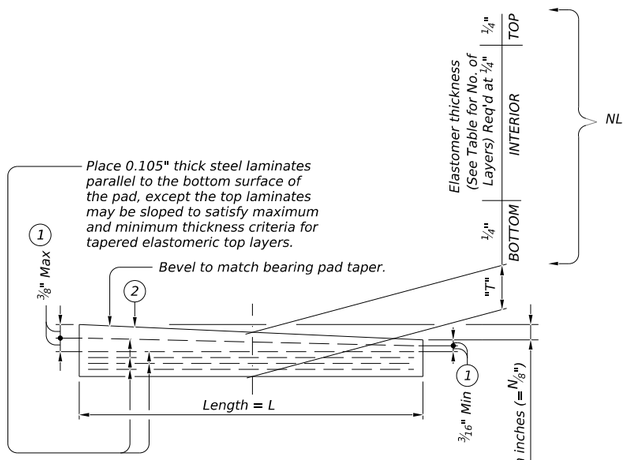
Replace existing bearings per Item 787, "Replacing Elastomeric Bearing Pads". The work performed to raise the spans of girders in accordance with Item 495 will not be paid directly but is considered subsidiary to Item 787. Payment for lifting the structure is included in the price bid for replacing elastomeric bearing pads.

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

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



BEARING PAD PLAN WITHOUT DOWEL



BEARING PAD ELEVATION

LAMINATED ELASTOMERIC BEARING REPLACEMENT DETAILS FOR CONCRETE BEAMS

(50 DUROMETER)

(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.*

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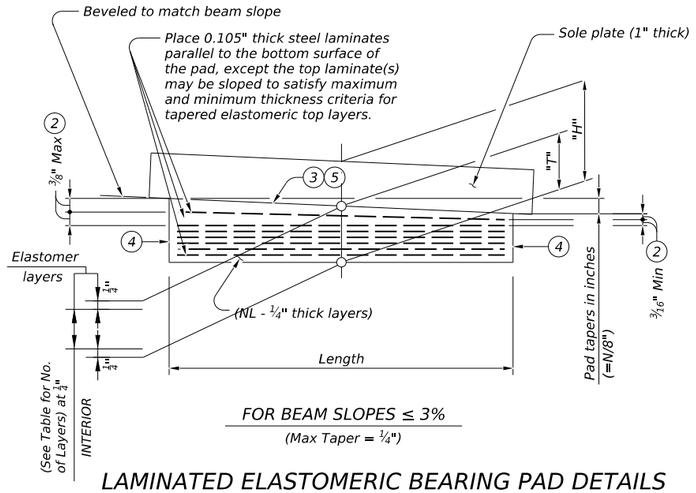
ELASTOMERIC BEARING REPLACEMENT DETAILS FOR CONCRETE BEAMS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		73

DATE:
FILE:

DW: JD | CK: GK | DW: NS | CK: JD

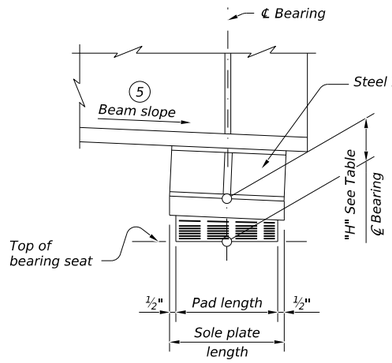


FOR BEAM SLOPES ≤ 3%

(Max Taper = ¼")

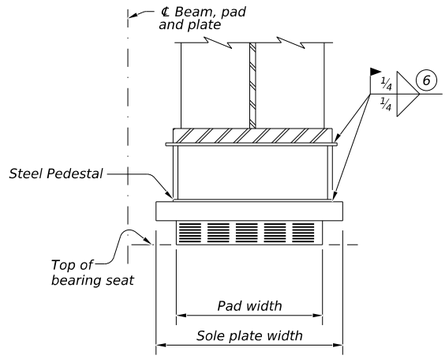
LAMINATED ELASTOMERIC BEARING PAD DETAILS

(50 Durometer) (Vulcanize sole plate to elastomer.)

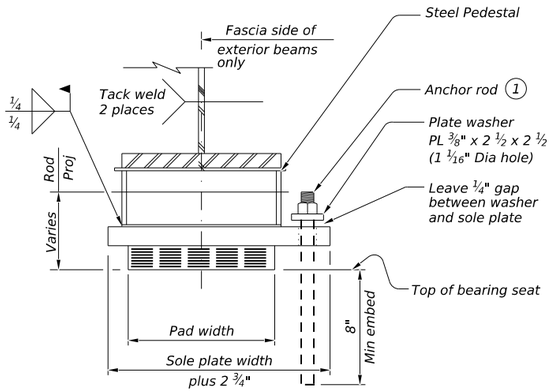


FOR BEAM SLOPES ≤ 3%

TYPICAL EXISTING BEARING



INTERIOR BEAMS



EXTERIOR BEAMS

TRANSVERSE SECTIONS

BEARING PAD SUMMARY TABLE

NBI#	Abut / Bent No.	Bearing Pad Dimensions				Sole Plate Dimensions		H (inch) (H=T+1")	Beam Slope (N)	Bearing Pad Type	Quantity
		L (inch)	W (inch)	T (inch)	Total No. of Layers (NL)	L (inch)	W (inch)				
08-221-0-0407-06-018	Abut 1	9	15	3.445	10	10	20	4.445	0	Elastomeric	6
	Abut 4	9	15	3.445	10	10	20	4.445	0	Elastomeric	6

LIFTING NOTES:

1. 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 = 28 kips per beam end
   LL = 80 kips per beam end
   (including impact)

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

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

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

5. 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.

(1) 1" Dia threaded rod (ASTM A 193 Gr B7 or F 1554 Gr 105) with heavy hex nut and plate waher. Hot-dip galvanize rod, nut and washer. Sizing, drilling and cleaning rod roles must follow the adhesive Manufacturer's directions. Embed using a Type III (Class C, D, E or F) adhesive, meeting the requirements of DMS-6100, "Epoxies and Adhesives". Mix and dispense with Manufacturer's static mixing nozzle/dual cartridge system. Allow reuse of existing anchors with Engineer's approval. Existing anchors will need to be cleaned and painted with a zinc-rich paint.

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

(3) 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 $(\frac{0.0625"}{Length})$ IN/IN.

(4) Locate permanent mark here.

(5) All work and materials for bearing pad replacement must be performed and paid for in accordance with Item 787, "Replacing Elastomeric Bridge Bearings". Verify all locations and beam slopes prior to ordering materials.

(6) Weld steel Pedestals to bottom flange of girders and top of sole plate in accordance with Item 448 Structural Field Welding in the TxDOT Standard Specifications.

MATERIAL NOTES:

Provide sole plates conforming to ASTM A588.
Provide anchor bolts conforming to ASTM F1554 Grade 105 or ASTM A193 Grade B7. Provide nuts conforming to ASTM A563 Grade DH, heavy hex or A194 Grade 2H, heavy hex. Provide washers conforming to ASTM F436.
Hot dip galvanize rpd, nut, washer as per Item 445, "Galvanizing". Sizing, drilling, and cleaning rod holes must follow the epoxy Manufacturer's directions. Use a Type III (Class C) epoxy meeting the requirements of DMS-6100, "Epoxies and Adhesives". Mix and dispense adhesive with the Manufacturer's static mixing nozzle/dual cartridge system.

GENERAL NOTES:

Costs of raising the existing girders, removal of original pads, cleaning and restoring bearing contact areas, furnishing and installing elastomeric bearing pads, sole plates, and anchor rod assembly are paid for in accordance with Item 787, "Bridge Bearings". Material for permanent steel pedestals is paid in accordance with Item 442, "Metal for Structures".
The bearing fabricator is required to develop a bearing layout which identifies location and orientation of all bearings. A copy of the bearing layout is to be provided to the Engineer. Permanently mark each bearing in accordance with the bearing layout.
Provide shop drawings for approval.

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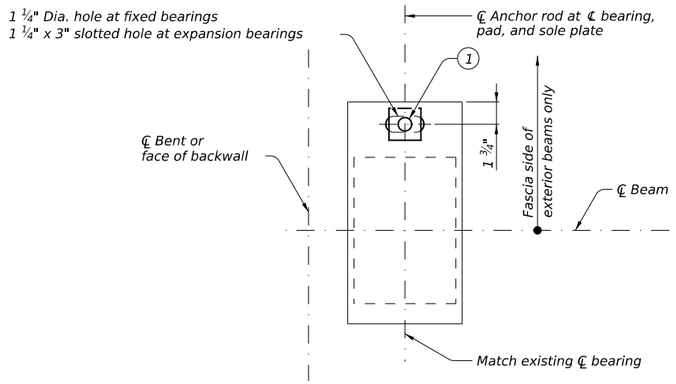
ELASTOMERIC BEARING REPLACEMENT DETAILS FOR STEEL BEAMS

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		74

DATE:
FILE:

DW: JD | CK: GK | DW: NS | CK: JD

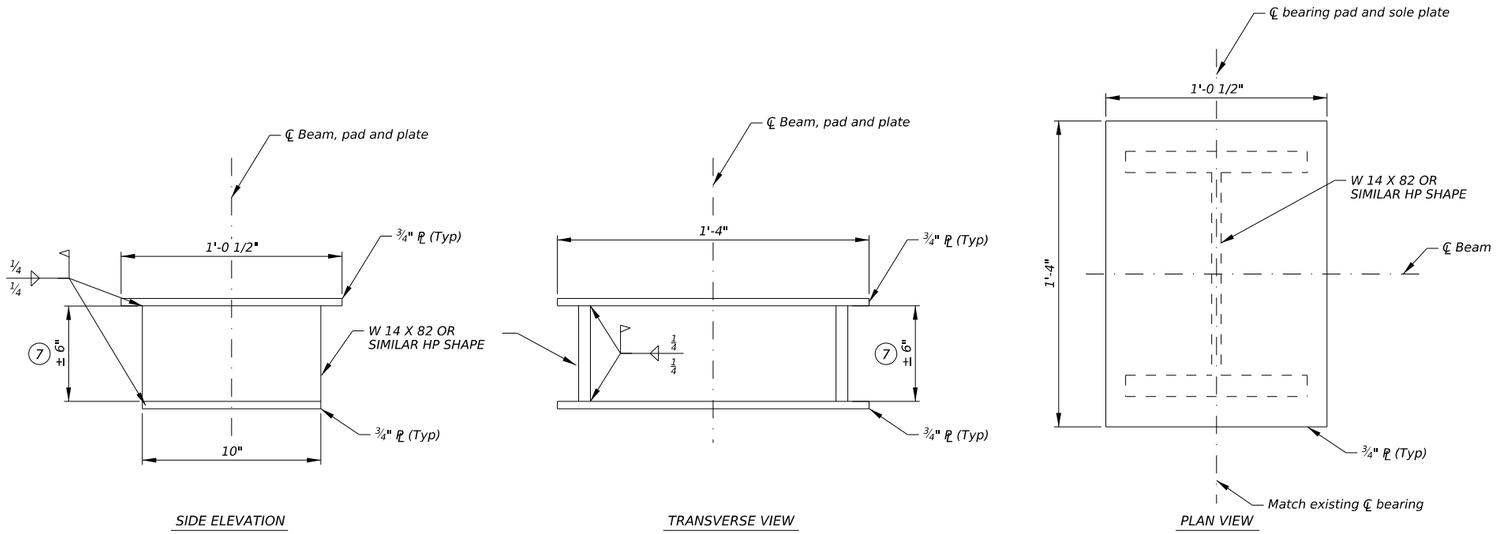


BEARING PLACEMENT AND ANCHOR ROD DETAILS

(Anchor rods at exterior beams only.)

(1) *1" Dia threaded rod (ASTM A 193 Gr B7 or F 1554 Gr 105) with heavy hex nut and plate waher. Hot-dip galvanize rod, nut and washer. Sizing, drilling and cleaning rod roles must follow the adhesive Manufacturer's directions. Embed using a Type III (Class C, D, E or F) adhesive, meeting the requirements of DMS-6100, "Epoxies and Adhesives". Mix and dispense with Manufacturer's static mixing nozzle/dual cartridge system. Allow reuse of existing anchors with Engineer's approval. Existing anchors will need to be cleaned and painted with a zinc-rich paint.*

(7) *Dimensions shown based on existing plans for IH 20 Underpass at Bus 20 WB (NBI# 08-168-0-0006-01-266). Field verify and adjust based on actual conditions. Notify the Engineer if conditions vary from what is shown by more than 10%.*



STEEL PEDESTAL

Approximate weight is 153 Lbs per pedestal

ELASTOMERIC BEARING REPLACEMENT DETAILS FOR STEEL BEAMS

DATE:
FILE:

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ELASTOMERIC BEARING REPLACEMENT DETAILS FOR STEEL BEAMS

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		75

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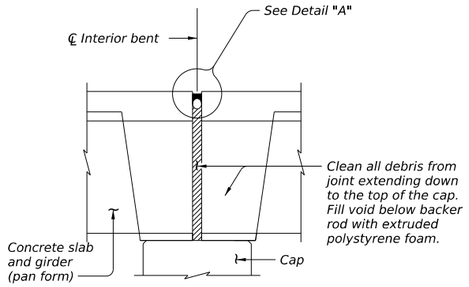
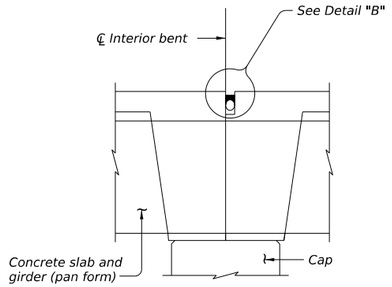
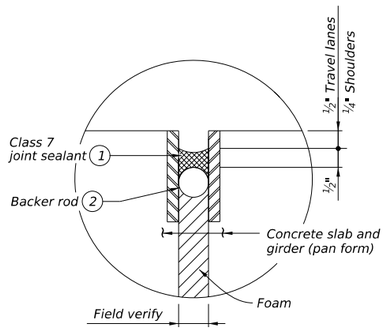


JOINT WITH SILICONE SEAL

(Used without ACP overlay)

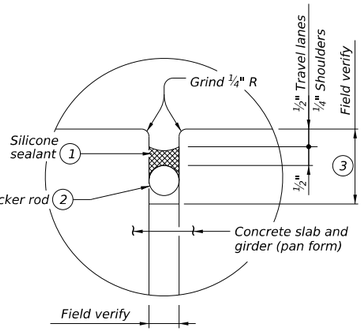


FIXED JOINT



DETAIL "A"

(Stud Anchors not shown for clarity.)



DETAIL "B"

PROCEDURE FOR CLEANING AND SEALING EXISTING CONCRETE GIRDER ARMOR 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) Abrasive blast clean exsiting steel surface where silicone seal to be placed. 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 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) Backer rod may be omitted if existing joint depth is less than 1 ½".

GENERAL NOTES:

Cleaning existing joint opening (full depth) of all debris, providing and placing backer rod, 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 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
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

CLEANING AND SEALING EXISTING BRIDGE JOINTS

SHEET 1 OF 2

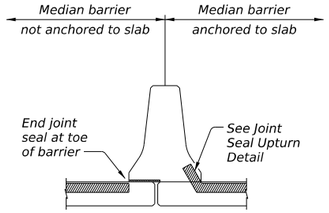
CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		76

DATE:
FILE:

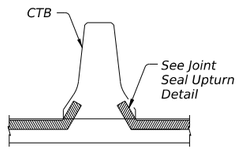
CK: GK
DW: NS
CK: JD
DN: NS

TABLE OF ESTIMATED QUANTITIES

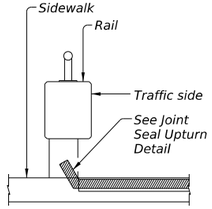
STRUCTURE NUMBER	FEATURE CROSSED	JOINT TYPE	ITEM	DESCRIPTION	NUMBER OF JOINTS	QUANTITY (LF)
NBI# 08-128-0-2032-02-004	FM 600 OVER ELM CREEK	Concrete Joint w/ Class 7 Sealant	438 6002	CLEAN AND SEAL JOINTS (PAN GIRDERS) (CL 7)	6	245
		Armor Joint w/ Class 7 Sealant	438 6002	CLEAN AND SEAL JOINTS (PAN GIRDERS) (CL 7)	2	82
NBI# 08-217-0-0106-04-054	US 380 0VER STINKING CREEK	Concrete Joint w/ Class 7 Sealant	438 6002	CLEAN AND SEAL JOINTS (PAN GIRDERS) (CL 7)	4	184
		Armor Joint w/ Class 7 Sealant	438 6002	CLEAN AND SEAL JOINTS (PAN GIRDERS) (CL 7)	1	46
NBI# 08-115-0-0693-01-024	SH 350 OVERPASS AT MOPAC RR AND BEALS CREEK	Armor Joint w/ Class 7 Sealant	438 6002	CLEAN AND SEAL EXISTING JOINTS (CL 7)	5	350



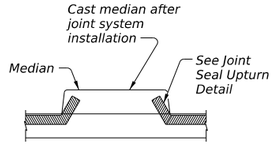
OPEN DECK JOINT BELOW MEDIAN BARRIER



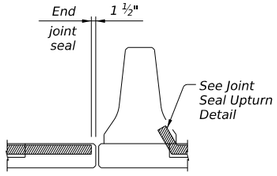
CONCRETE TRAFFIC BARRIER



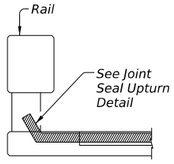
SIDEWALK BEHIND BRIDGE RAIL



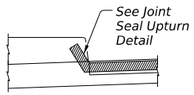
RAISED MEDIAN



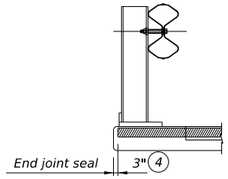
OPEN DECK JOINT ADJACENT TO MEDIAN BARRIER



CONCRETE BRIDGE RAIL



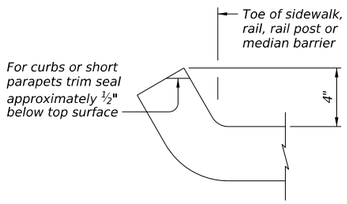
SIDEWALK



STEEL POST BRIDGE RAIL

JOINT SEALANT TERMINATION DETAILS

(4) 1 ½" for precompressed foam and silicone seal



JOINT SEAL UPTURN DETAIL

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

NO.	DATE	REVISION	APPR BY

HDR Engineering, Inc
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

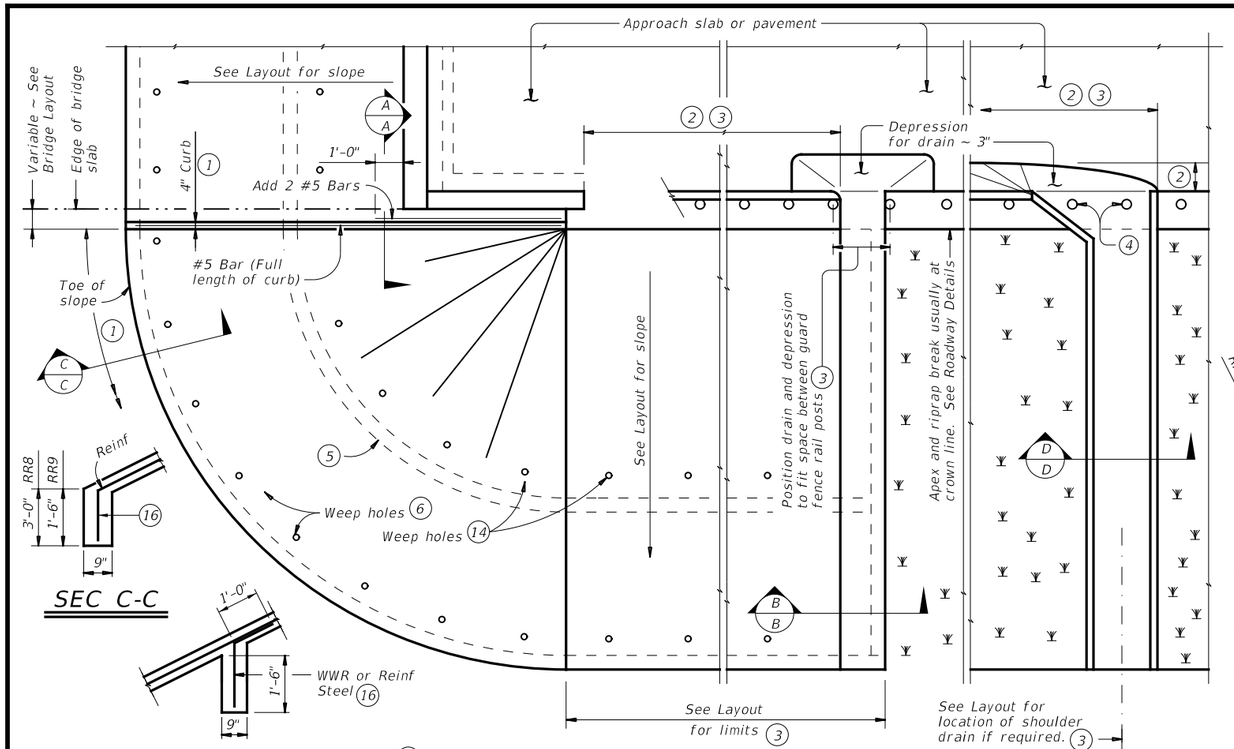
CLEANING AND SEALING EXISTING BRIDGE JOINTS

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0908	00	126	VARIOUS
DIST	COUNTY		SHEET NO.
ABL	TAYLOR, ETC.		77

DATE:
FILE:

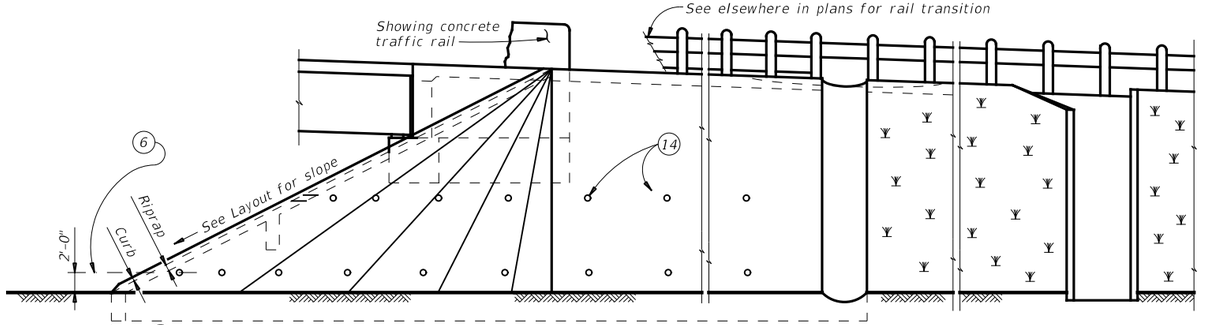
DATE:
FILE:



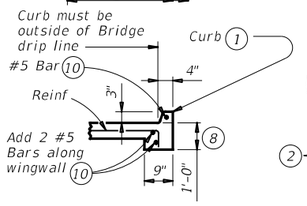
PLAN

SEC C-C

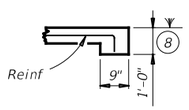
INTERMEDIATE TOEWALL



ELEVATION

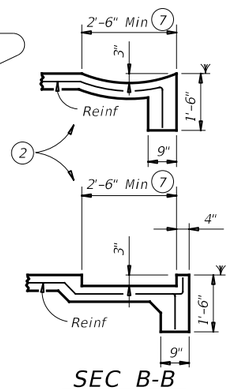


SEC A-A



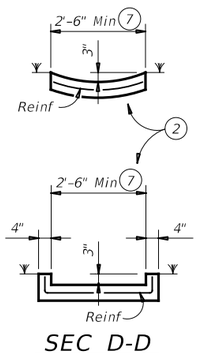
SEC B-B

(No drain)



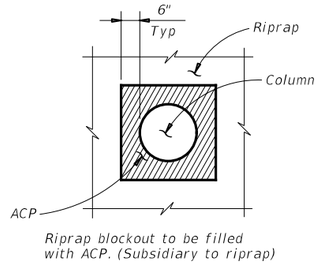
SEC B-B

(Shoulder drain integral with riprap)



SEC D-D

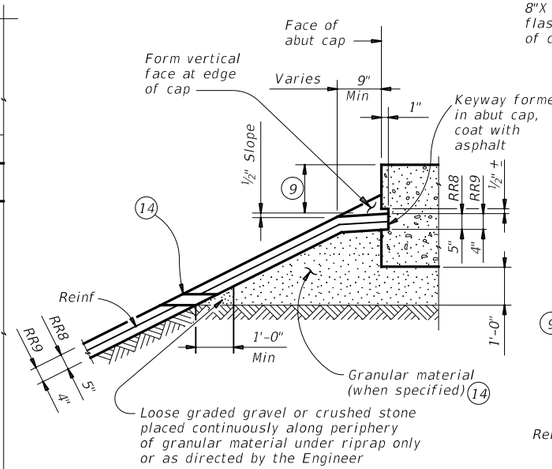
(Shoulder drain)



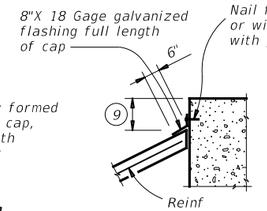
Riprap blockout to be filled with ACP. (Subsidiary to riprap)

RIPRAP DETAIL AT COLUMNS

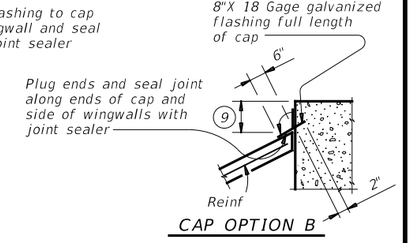
(As directed by the Engineer)



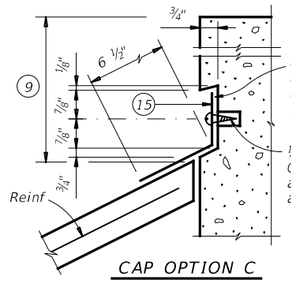
SHOWING KEYWAY OPTION



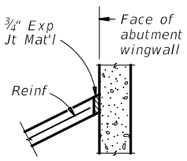
CAP OPTION A



CAP OPTION B

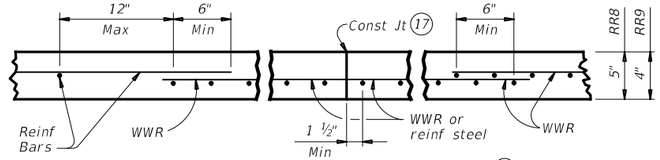


CAP OPTION C



SECT THRU RIPRAP AT WINGWALL (12)

SECTIONS THRU RIPRAP AT CAP (11)



REINFORCEMENT DETAILS (13)

See General Notes for optional synthetic fiber reinforcement.

1. When riprap is shown extended around header on layout, extend slab and toewall as shown and eliminate 4" curb.
2. Limits and configuration of drains and depressions are as shown elsewhere in plans or as directed by the Engineer.
3. Location of shoulder drain must consider limitations imposed by rail transition. Do not locate shoulder drains at expansion joints between approach slab and concrete pavement.
4. See details elsewhere in plans for installation of guard fence posts through concrete riprap.
5. Provide intermediate toewall only when designated elsewhere in the plans or included in the specifications.
6. Provide lower level of 2" Dia weep holes at 10' c-c backed by 1 CF packet of gravel and galvanized hardware cloth at all locations unless directed by the Engineer to eliminate.
7. Use wider or other drain configurations if shown elsewhere in plans or if directed by the Engineer.
8. Wall extension may be reduced or modified if approved by the Engineer. Increase wall extension to 1'-6" whenever the optional intermediate toewall is called for in the plans.
9. Top of cap to top of riprap dimension varies as directed by the Engineer. Should be 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.
10. #5 bars shown are required even when synthetic fiber reinforcing option is selected.
11. Provide sealing option for joint between the face of cap and riprap as designated by the Engineer or as shown elsewhere on plans.
12. Flashing (shown in Cap Option A) may be used at wingwall in addition to Exp Jt Mat'l if shown on plans or directed by the Engineer.
13. Provide #3 reinforcing bars at 18" Spa c-c. Provide Welded Wire Reinforcement (WWR) as 6x6-D2.9xD2.9 or D3xD3. Combinations of WWR and reinforcing bars may be used if both are permitted. Use lap splices of a minimum 6 inches, measured from the transverse wire of WWR, and the ends of reinforcing bars.
14. If granular material is specified, provide upper level of 2" Dia weep holes at 10' c-c backed by galvanized hardware cloth.
15. 8" x 18 Gage Galv Sheet Metal
16. Provide WWR or #3 bars, with 1'-0" extension into slope.
17. WWR or reinforcing steel is continuous through riprap construction joints. Provide WWR or reinforcing steel that extends 1'-1" minimum into adjacent riprap on each side of construction joint even if synthetic reinforcing fiber is utilized.

FOR CONTRACTOR'S INFORMATION ONLY:
5" of RR8 = 0.015 CY/SF
4" of RR9 = 0.012 CY/SF
#3 Reinf at 18" c-c = 0.501 Lbs/SF
6x6-D3xD3 = 0.408 Lbs/SF

GENERAL NOTES:

Provide Class "B" concrete (f'c = 2,000 psi) unless noted elsewhere in plans.

Provide Grade 60 reinforcing steel.

Provide deformed welded wire reinforcement (WWR) meeting ASTM A1064, unless otherwise shown.

Provide reinforcing bars, deformed WWR, or any suitable combination of both types for riprap reinforcing, unless specified elsewhere in the plans.

Optionally synthetic fibers may be used if approved by the Engineer. Provide synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) in lieu of steel reinforcing in riprap concrete.

Install construction joints or grooved joints extending the full slant slope height at intervals of approximately 20 feet unless otherwise directed by the Engineer.

Hardware cloth, loose grade stone behind weep holes, flashing, or other sealing material are subsidiary to the bid item "Riprap".

See Layout for limits of riprap.

RR8 is to be used on stream crossings.

RR9 is to be used on other embankments.

Texas Department of Transportation

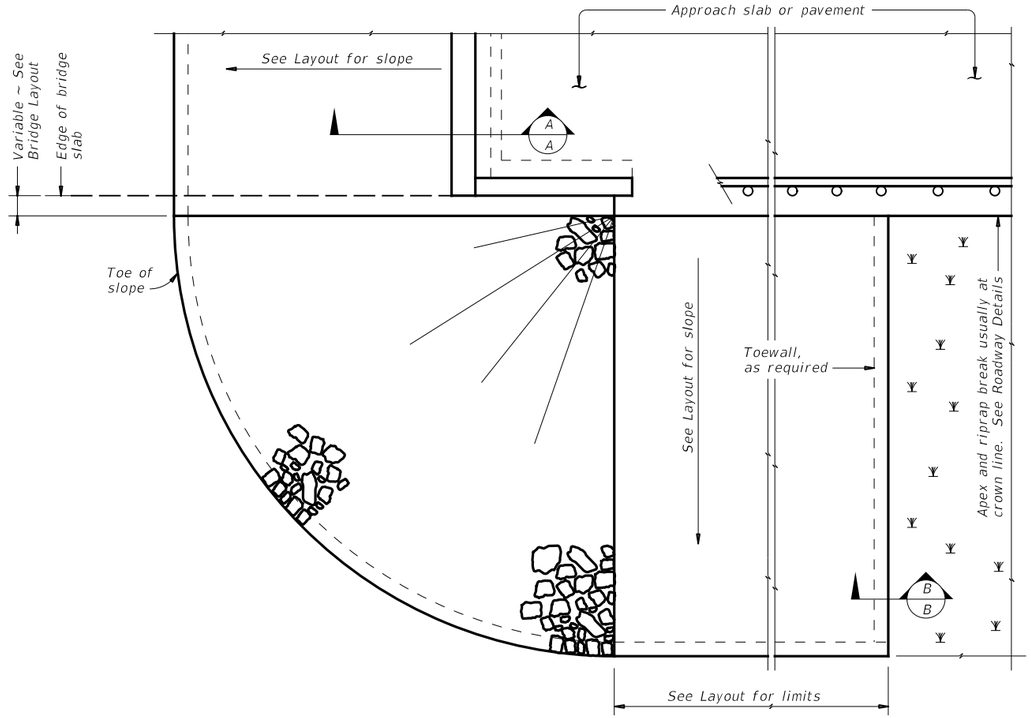
Bridge Division Standard

CONCRETE RIPRAP AND SHOULDER DRAINS
EMBANKMENTS AT BRIDGE ENDS (TYPES RR8 & RR9)

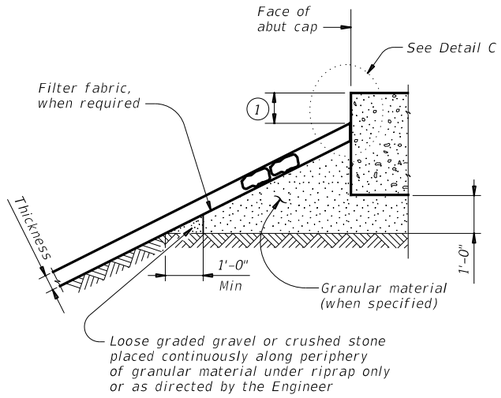
CRR

FILE: MS-CRR-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0908	00	126	VARIOUS
	DIST	COUNTY		SHEET NO.
	ABL	TAYLOR, ETC.		78

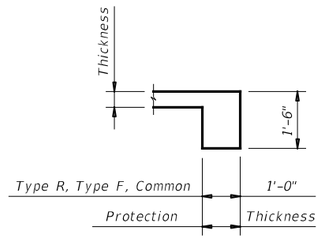
DATE:
FILE:



PLAN

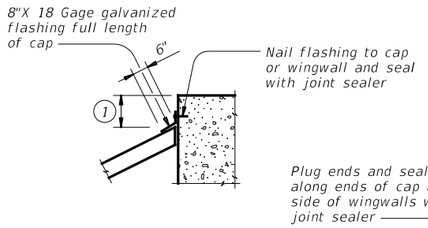


SECTION A-A AT CAP

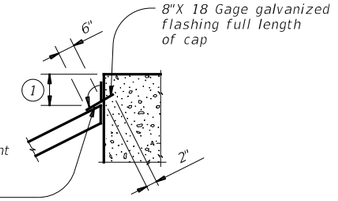


SECTION B-B

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

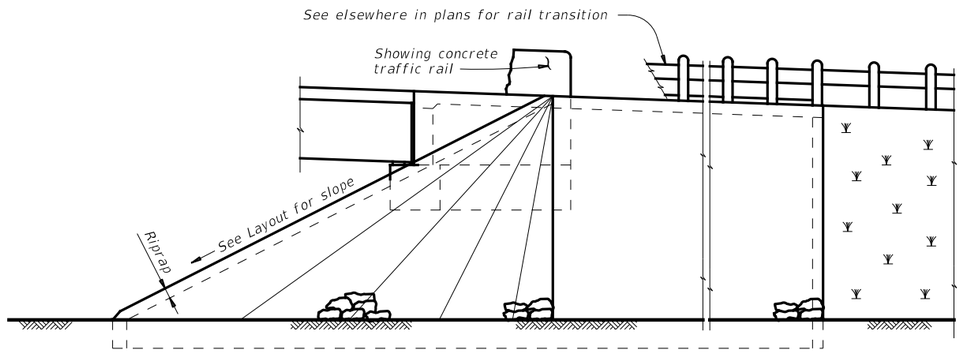


CAP OPTION A



CAP OPTION B

DETAIL C



ELEVATION

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

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

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: MS-SRR-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0908	00	126	VARIOUS
	DIST	COUNTY		SHEET NO.
	ABL			79

DATE:
FILE:

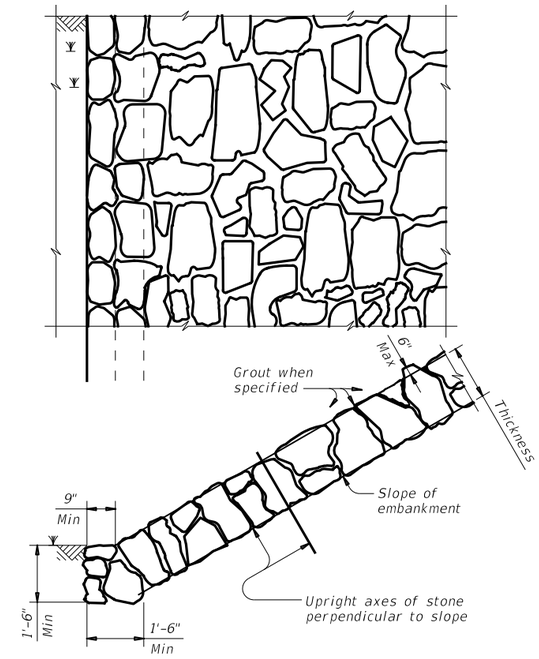


FIGURE 1 ~ TYPE R STONE RIPRAP

dry or grouted

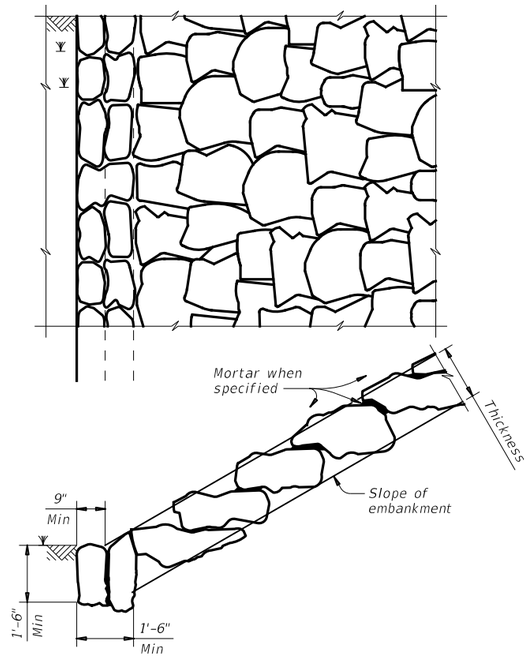


FIGURE 2 ~ TYPE F STONE RIPRAP

dry or mortared

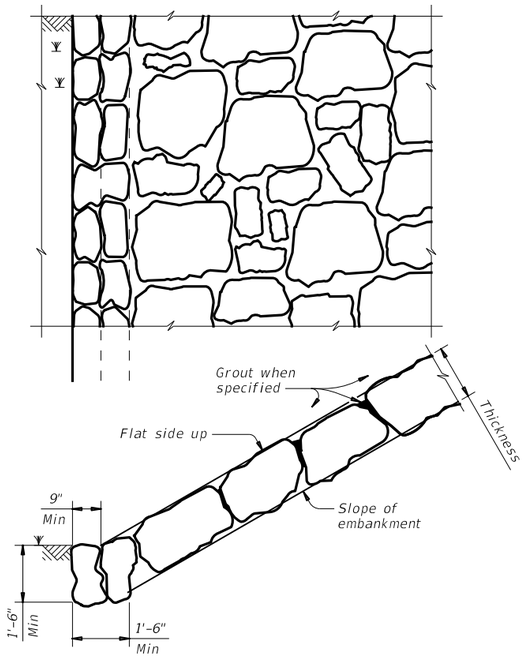


FIGURE 3 ~ TYPE F STONE RIPRAP

grouted

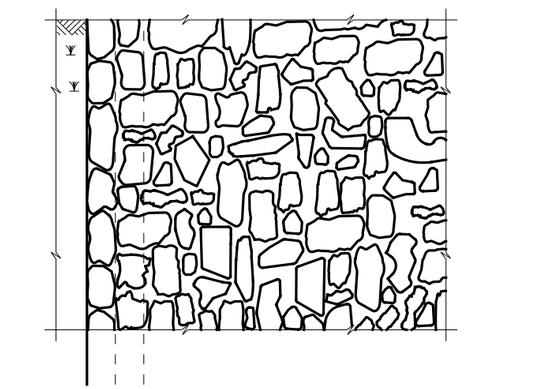


FIGURE 4 ~ COMMON STONE RIPRAP

dry or grouted

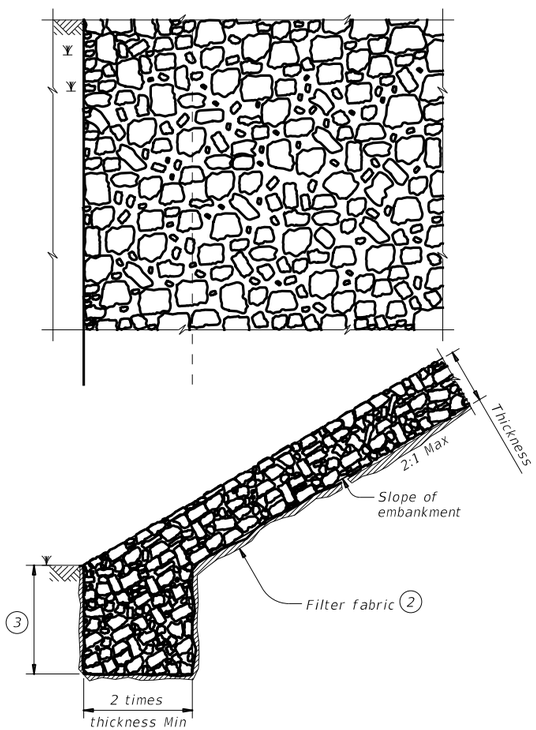


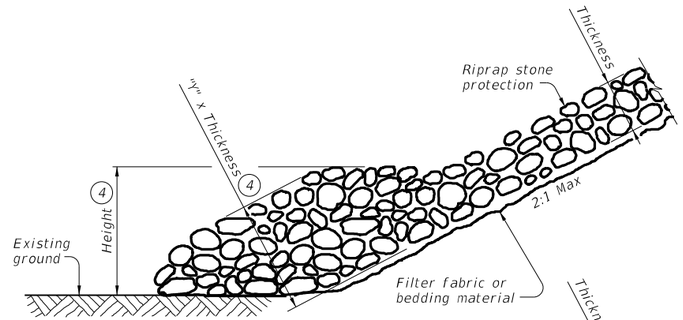
FIGURE 5 ~ PROTECTION STONE RIPRAP (5)

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

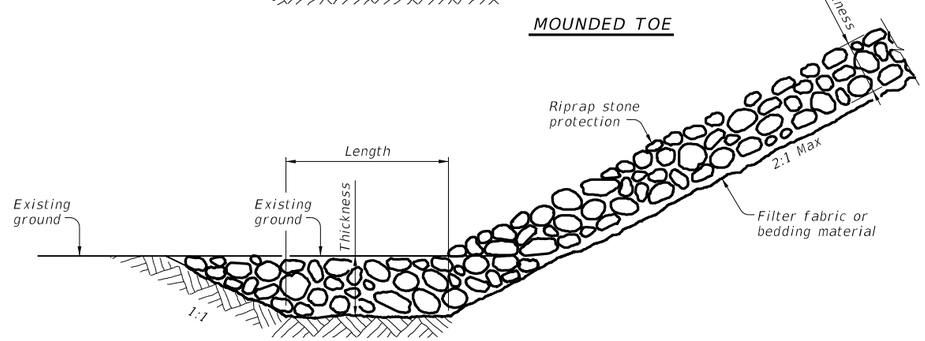
(3) Minimum toe depth is the larger of the maximum scour depth or 2 times the riprap thickness.

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

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



MOUNDED TOE



EXTENDED ROCK FILLED TRENCH

PROTECTION STONE RIPRAP TOE OPTIONS (5)

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: MS-SRR-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES			
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY			
REVISIONS	0908	00	126	VARIOUS			
	DIST	COUNTY		SHEET NO.			
	ABL	TAYLOR, ETC.		80			

PREPARED BY (NAME OF DESIGNER)
DATE: 6/14/2024
FILE: $FILE$

I. STORM WATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Storm water 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.

☐ No Action Required ☒ Required Action

Action No.

1. The project disturbs less than one acre of surface area. The contractor is responsible for the PSL as defined in the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (2014 Edition, Section 7.6., Page 44). The total disturbed acreage is the combined acreage to be disturbed on the project and the contractors PSL.
2. Prevent storm water pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
3. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
4. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
5. 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, WATER BODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

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

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

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

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

1.

2.

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	☐ Sedimentation Basin
☐ Sodding	☐ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw & Hay Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost & Mulch
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☐ Sand Filter Systems
☒ Temporary Erosion Control Logs (BIOLOGS)	☒ Temporary Erosion Control Logs (BIOLOGS)	☐ Temporary Erosion Control Logs (BIOLOGS)
☒ Preservation of Natural Resources	☐ Sediment Traps	☐ PermanentVegetation (Planting, Sodding, or Seeding)
☐ Construction Exits	☐ 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 E.O. 13112 on use of native vegetation.

2.

3.

4.

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.

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.

☐ No Action Required ☒ Required Action

Action No.

1. Comply with Migratory Bird Treaty Act on protection of Birds, their young, and nests.
2. Refer to General Notes for further details.

3.

4.

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 Storm water 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. Existing Steel Structures are assumed to be positive for lead. Contractor is responsible for any abatement required.

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.

VARIOUS ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS EPIC

Texas Department of Transportation

NO SCALE SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		VARIOUS
STATE	COUNTY		SHEET NO.
TEXAS	TAYLOR, ETC		81
DISTRICT	CONTROL	SECTION	JOB
ABL	0908	00	126

REV. DATE: 02/2015

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TxDOT policy for projects disturbing less than 1 acre of soil, and not part of a larger common plan of development.

For projects with less than one acre of soil disturbing activity and that have Environmental, Permits, Issues, and Commitments (EPICs) dependent on stormwater controls and water quality measures TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office, Area Office, or electronically.

This SWP3 is consistent with requirements specified in applicable stormwater plans, and the project's environmental permits, issues, and commitments (EPICs).

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):

0908-00-126

1.2 PROJECT LIMITS:

From: Various Locations

To: Various Locations

1.3 PROJECT COORDINATES:

BEGIN: Various Locations

END: Various Locations

1.4 TOTAL PROJECT AREA (Acres): ~ 10

1.5 TOTAL AREA TO BE DISTURBED (Acres): < 0.5

1.6 NATURE OF CONSTRUCTION ACTIVITY:

Bridge maintenance consisting of concrete repair, beam repair, joint and bearing replacement, and erosion repair

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Colorado, 0 to 1% slopes ocassionally flooded	40% sand, 25% clay, well drained, negligible runoff, low erosion
Shep, 1 to 15% slopes	38% sand, 26% clay, well drained low runoff, low erosion potential
Clairemont, 0 to 2% slopes	15% sand, 33% clay, well drained low runoff, very low erosion
Spur, 0 to 2% slopes	45% sand, 21% clay, well drained negligible runoff, very low erosion

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- ☐ PSLs determined during preconstruction meeting
- ☒ PSLs determined during construction
- ☐ No PSLs planned for construction

Type	Sheet #s
Concrete Washout	45 71

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.3.)

- ☒ Mobilization
- ☒ Install sediment and erosion controls
- ☐ Blade existing topsoil into windrows, prep ROW, clear and grub
- ☐ Remove existing pavement
- ☐ Grading operations, excavation, and embankment
- ☐ Excavate and prepare subgrade for proposed pavement widening
- ☐ Remove existing culverts, safety end treatments (SETs)
- ☐ Remove existing metal beam guard fence (MBGF), bridge rail
- ☐ Install proposed pavement per plans
- ☐ Install culverts, culvert extensions, SETs
- ☐ Install mow strip, MBGF, bridge rail
- ☐ Place flex base
- ☒ Rework slopes, grade ditches
- ☐ Blade windrowed material back across slopes
- ☐ Revegetation of unpaved areas
- ☐ Achieve site stabilization and remove sediment and erosion control measures
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- ☒ Sediment laden stormwater from stormwater conveyance over disturbed area
- ☒ Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- ☒ Solvents, paints, adhesives, etc. from various construction activities
- ☐ Transported soils from offsite vehicle tracking
- ☒ Construction debris and waste from various construction activities
- ☐ Contaminated water from excavation or dewatering pump-out water
- ☒ Sanitary waste from onsite restroom facilities
- ☒ Trash from various construction activities/receptacles
- ☐ Long-term stockpiles of material and waste
- ☒ Discharges from concrete washout activities, runoff from concrete cutting activities, and other concrete related activities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.11 RECEIVING WATERS:

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody
Elm Creek	Clear Fork Brazos River (1232), Impaired for bacteria
Colorado River	Colorado River (1412), Impaired for bacteria
Beals Creek	Colorado River (1412), Impaired for bacteria
Deep Creek	Colorado River (1412), Impaired for bacteria
Stinking Creek	Salt Fork Brazos River (1238), Imparied for bacteria

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- ☒ Development of plans and specifications
- ☒ Perform SWP3 inspections
- ☒ Maintain SWP3 records and update to reflect daily operations
- ☐ Other: _____
- ☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- ☒ Day To Day Operational Control
- ☒ Maintain schedule of major construction activities
- ☒ Install, maintain and modify BMPs
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

July 2023

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			82
STATE	STATE DIST.	COUNTY	
TEXAS	ABL	TAYLOR, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0908	00	126	VARIOUS

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☐ ☒ Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☐ ☐ Temporary Seeding
- ☐ ☐ Permanent Planting, Sodding or Seeding
- ☐ ☒ Biodegradable Erosion Control Logs
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Vertical Tracking
- ☐ ☐ Interceptor Swale
- ☐ ☐ Riprap
- ☐ ☐ Diversion Dike
- ☐ ☐ Temporary Pipe Slope Drain
- ☐ ☐ Embankment for Erosion Control
- ☐ ☐ Paved Flumes
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- ☐ ☒ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- ☐ ☐ Inlet Protection
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- ☐ ☐ Sediment Control Fence
- ☐ ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Vegetated Filter Strips
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- ☐ Excess dirt/mud on road removed daily
- ☐ Haul roads dampened for dust control
- ☐ Loaded haul trucks to be covered with tarpaulin
- ☐ Stabilized construction exit
- ☐ Daily street sweeping
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- ☐ Chemical Management
- ☐ Concrete and Materials Waste Management
- ☐ Debris and Trash Management
- ☐ Dust Control
- ☐ Sanitary Facilities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- ☒ Fire hydrant flushings
- ☒ Irrigation drainage
- ☒ Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- ☒ Potable water sources
- ☒ Springs
- ☒ Uncontaminated groundwater
- ☒ Water used to wash vehicles or control dust
- ☒ Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 DEWATERING:

Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment and other pollutants.

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3 .

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3.

STATE OF TEXAS
GREGORY M. KOCHERSPERGER
94869
LICENSED
PROFESSIONAL ENGINEER
06/14/2024

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

July 2023 Sheet 2 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			83
STATE	STATE DIST.	COUNTY	
TEXAS	ABL	TAYLOR, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0908	00	126	VARIOUS

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.: 972 530X
Crossing Type: Highway Overpass
RR Company Operating Track at Crossing: Union Pacific Railroad Company (UP)
RR Company Owning Track at Crossing: Union Pacific Railroad Company (UP)
RR MP: 0512.932
RR Subdivision: Toyah
City: Big Spring
County: Howard
CSJ at this Crossing: 0908-00-126
Latitude: 32.258022
Longitude: -101.470436

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

Bridge maintenance including repair of deck joints.

Scope of Work to be performed by Railroad Company:

None

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: Union Pacific Railroad
Railroad Emergency Line at: 800-848-8715
Location: DOT 972 530X
RR Milepost: 0512.932
Subdivision: Toyah

RRD Review Only
Initials: [signature]
Date: 4/24/24

Texas Department of Transportation | Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

972 530X SH350 OVER UPRR

FILE: rr-scope-of-work.pdf		DN: TxDOT	CK:	DW:		CK:
© TxDOT June 2014		CONT	SECT	JOB		HIGHWAY
REVISIONS		0908	00	126		VARIOUS
6/2023		DIST	COUNTY			SHEET NO.
		ABL	TAYLOR, ETC			84

I. OVERHEAD 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.: 859 609P

Crossing Type: Highway Overpass

RR Company Operating Track at Crossing: Union Pacific Railroad Company (UP)

RR Company Owning Track at Crossing: Union Pacific Railroad Company (UP)

RR MP: 0511.921

RR Subdivision: Toyah

City: Big Spring

County: Howard

CSJ at this Crossing: 0908-00-126

Latitude: 32.262183

Longitude: -101.45437

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

Bridge maintenance including cleaning of steel bent caps, repair of abutment concrete, repair of concrete beam ends, spot cleaning and painting of steel beams.

Scope of Work to be performed by Railroad Company:

None

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 10

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 (RCOE)

☐ 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: Union Pacific Railroad

Railroad Emergency Line at: 800-848-8715

Location: DOT 859 606P

RR Milepost: 0511.921

Subdivision: Toyah

RRD Review Only

Initials: _____

Date: 4/24/24

Texas Department of Transportation — Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

859 609P IH 20 OVER UPRR

FILE: rr-scope-of-work.pdf	DN: TxDOT	CK:	DW:	CK:	
© TxDOT June 2014	CONT	SECT	JOB	HIGHWAY	
VISIONS	0908	00	126	VARIOUS	
6/2023	DIST	COUNTY		SHEET NO.	
	ABL	TAYLOR, ETC		85	

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.: 972 528W
Crossing Type: Highway Overpass
RR Company Operating Track at Crossing: Union Pacific Railroad Company (UP)
RR Company Owning Track at Crossing: Union Pacific Railroad Company (UP)
RR MP: 0454.904
RR Subdivision: Toyah
City: Roscoe
County: Nolan
CSJ at this Crossing: 0908-00-126
Latitude: 32.449884
Longitude: -100.520188

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

Bridge maintenance including overhead concrete repairs to underside of deck and ends of prestressed beams. Replace damaged portion of bridge railing. Repair spalls and delaminations in concrete bents.

Scope of Work to be performed by Railroad Company:

None

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 10

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: Union Pacific Railroad
Railroad Emergency Line at: 800-848-8715
Location: DOT 972 528 W
RR Milepost: 0454.904
Subdivision: Toyah

RRD Review Only
Initials: _____
Date: 4/24/24

Texas Department of Transportation — Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

972 528W US 84 OVER UPRR

FILE: rr-scope-of-work.pdf		DN: TxDOT	CK:	DW:		CK:
© TxDOT June 2014		CONT	SECT	JOB		HIGHWAY
REVISIONS		0908	00	126		VARIOUS
6/2023		DIST	COUNTY			SHEET NO.
		ABL	TAYLOR, ETC			86

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.: 021 295C
Crossing Type: Highway Overpass
RR Company Operating Track at Crossing: BNSF RAILWAY COMPANY (BNSF)
RR Company Owning Track at Crossing: BNSF RAILWAY COMPANY (BNSF)
RR MP: 0426.530
RR Subdivision: Lampasas
City: Buffalo Gap
County: Taylor
CSJ at this Crossing: 0908-00-126
Latitude: 32.342908
Longitude: -99.884707

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

Bridge maintenance including replacement of steel bearings at abutments and cleaning of abutments.

Scope of Work to be performed by Railroad Company:

None

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 10

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: BNSF Temporary Occupancy Permit Kelly Schronk (Kelly.Schronk@jll.com)
  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: BNSF
Railroad Emergency Line at: 800-832-5452
Location: DOT 021 295C
RR Milepost: 0426.530
Subdivision: Lampasas

RRD Review Only
Initials: _____
Date: 4/11/2024

Texas Department of Transportation — *Rail Division*

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

021 295C US 277 OVER BNSF

FILE: rr-scope-of-work.pdf		DN: TxDOT	CK:	DW:		CK:	
© TxDOT June 2014		CONT	SECT	JOB		HIGHWAY	
REVISIONS	6/2023	0908	00	126		VARIOUS	
		DIST	COUNTY			SHEET NO.	
		ABL	TAYLOR, ETC			087	

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.: 018 594F
Crossing Type: Highway Overpass
RR Company Operating Track at Crossing: BNSF RAILWAY COMPANY (BNSF)
RR Company Owning Track at Crossing: BNSF RAILWAY COMPANY (BNSF)
RR MP: 0003.032
RR Subdivision: Sweetwater Spur
City: Sweetwater
County: Nolan
CSJ at this Crossing: 0908-00-126
Latitude: 32.4681607
Longitude: -100.412475

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

Bridge maintenance including repair of concrete diaphragms and repair of concrete spalls in bent caps.

Scope of Work to be performed by Railroad Company:

None

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 0 (Crossing is closed)

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.

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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: BNSF Temporary Occupancy Permit Kelly Schronk (Kelly.Schronk@jll.com)
  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

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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: BNSF
Railroad Emergency Line at: 800-832-5452
Location: DOT 018 594F
RR Milepost: 0003.032
Subdivision: Sweetwater Spur

RRD Review Only
Initials: _____
Date: 4/11/2024

Texas Department of Transportation — Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

018 594F BI 20 OVER BNSF

FILE: rr-scope-of-work.pdf		DN: TxDOT	CK:	DW:		CK:	
© TxDOT June 2014		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0908	00	126		VARIOUS	
6/2023		DIST	COUNTY			SHEET NO.	
		ABL	TAYLOR, ETC			088	

PART 1 - GENERAL

1.01 DESCRIPTION

This project includes construction work within the right of way and/or properties of the Railroad and adjacent to its tracks, wire lines and other facilities. These sheets describe the minimum special requirements for coordination with the Railroad when working upon, over or under Railroad Right of Way or when impacting current or future Railroad operations. Coordinate with the Railroad while performing the work outlined herein, and afford the same cooperation with the Railroad as with TxDOT. Complete all submittals and work in accordance with TxDOT Standard Specifications, Railroad Guidelines and AREMA recommendations as modified by these minimum special requirements or as directed in writing by the Railroad Designated Representative.

For purposes of this project, the Railroad Designated Representative is the person or persons designated by the Railroad Manager of Industry and Public Projects to handle specific tasks related to the project.

1.02 REQUEST FOR INFORMATION / CLARIFICATION

Submit Requests for Information ("RFI") involving work within any Railroad Right of Way to the TxDOT Engineer. The TxDOT Engineer will submit the RFI to the Railroad Designated Representative for review and approval for RFI's corresponding to work within Railroad Right of Way. Allow six (6) weeks total time for review and approval, which includes four (4) weeks for review and approval by the Railroad.

1.03 PLANS / SPECIFICATIONS

TxDOT has received written Railroad approval of the plans and specifications for this project. Any revisions or changes in the plans after award of the Contract must have the approval of TxDOT and the Railroad.

PART 2 - UTILITIES AND FIBER OPTIC

Construct all utility installations in accordance with current AREMA recommendations, Railroad, TxDOT and owning utility specifications and requirements. Railroad general guidelines can be found on the Railroad website or by contacting the Railroad Designated Representative.

PART 3 - CONSTRUCTION

3.01 GENERAL

A. Perform all work in compliance with all applicable Railroad, Federal Railroad Administration (FRA), and TxDOT rules and regulations. Arrange and conduct work in a manner that does not endanger or interfere with the safe operation of the tracks and property of the Railroad and the traffic moving on such tracks, or the wires, signals and other property of the Railroad, its tenants or licensees, at or in the vicinity of the Work. The safe operation of railroad train movements takes precedence over any work to be performed by the Contractor. The Contractor is responsible for train delay cost and lost revenue claims due to any delays or interruption of train operations resulting from Contractor's construction or other activities.

B. Construction activities within 15 feet of the operational tracks will only be allowed if absolutely necessary and the Railroad's Designated Representative grants approval. Construction activities within 15 feet of the operational track(s) preferably allow the tracks to stay operational. In such cases, coordination and approval by the Railroad Track Manager is required with regard to schedule, flagging, and slow orders. See Sections 3.07 and 3.08 for additional information.

C. Provide track protection for all work equipment (including rubber tired equipment) operating within 25 feet from nearest rail. When not in use, keep Contractor machinery and materials at least 50 feet from the Railroad's nearest track.

D. Vehicular crossings of railroad track are allowed only at existing crossings, or haul road crossings developed with Railroad approval.

E. The Contractor is also advised that new railroad facilities within the project may be built by the Railroad. If applicable, these facilities are delineated in the plans. Be aware of the limits of responsibilities and coordinate efforts with the Railroad and TxDOT.

F. Railroad requirements do not allow work within 50 feet of track centers when a train passes the work site and all personnel must clear the area within 50 feet of the track centerline and secure all equipment. Additional allowances may be pursued as outlined in 3.02 and 3.03.

G. All permanent clearances shall be verified before project closing.

3.02 RAILROAD OPERATIONS

A. Trains and/or equipment are expected on any track, at any time, in either direction. Become familiar with the train schedules in this location and structure bid assuming intermittent track windows in this period, as defined in Paragraph B that follows.

B. All railroad tracks within and adjacent to the contract site are active, and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. Coordinate and schedule the work so that construction activities do not interfere with railroad operations.

C. Coordinate work windows with TxDOT and the Railroad's Designated Representative. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:

1. Conditional Work Window: A Conditional Work Window is a period of time that railroad operations have priority over construction activities. When construction activities may occur on and/or adjacent to the railroad tracks within 25 feet of the nearest track, a railroad flag person will be required. At the direction of the railroad flag person, upon approach of a train, and when trains are present on the tracks, the tracks must be cleared (i.e., no construction equipment, materials or personnel within 25 feet, or as directed by the Railroad Designated Representative, from the tracks). Conditional Work Windows are available for the Project.

2. Absolute Work Window: An Absolute Work Window is a period of time that construction activities are given priority over railroad operations. During this time frame, the designated railroad track(s) will be inactive for train movements and may be fouled by the Contractor. At the end of an Absolute Work Window, the railroad tracks and/or signals must be completely operational for train operations and all Railroad, Public Utilities Commission (PUC) and FRA requirements, codes and regulations for operational tracks must be satisfied. In the situation where the operating tracks and/or signals have been affected, the Railroad will perform inspections of the work prior to placing that track back into service. Railroad flag persons will be required for construction activities requiring an Absolute Work Window. Absolute Work Windows will not generally be granted. Any request will require a detailed explanation for Railroad review.

3.03 RIGHT OF ENTRY, ADVANCE NOTICE AND WORK STOPPAGES

A. Do not perform any work within Railroad Right of Way without a valid executed Right of Entry Agreement if required on this project.

B. Give advance notice to the Railroad as required in the "Contractor's Right of Entry Agreement" before commencing work in connection with construction upon or over Railroad Right of Way and observe the Railroad's rules and regulations with respect thereto.

C. Perform all work upon Railroad Right of Way in a manner to avoid interference with or endanger the operations of the Railroad. Whenever work may affect the operations or safety of trains, submit the work method to the Railroad Designated Representative for approval. Approval does not relieve the Contractor from liability. Do not commence any work which requires flagging service or inspection service until the flagging protection required by the Railroad is available at the job site. See Section 3.15 for railroad flagging requirements.

D. Make requests in writing for both Absolute and Conditional Work Windows, at least 30 days in advance of any work. Include in the written request:
1. Exactly what the work entails.
2. The days and hours that work will be performed.
3. The exact location of work, and proximity to the tracks.
4. The type of window requested and the amount of time requested.
5. The designated contact person.

Provide a written confirmation notice to the Railroad at least 48 hours before commencing work in connection with approved work windows when work is within 25 feet of nearest rail. Perform all work in accordance with previously approved work plans.

E. Make provisions to protect operations and property of the Railroad should a condition arising from, or in connection with the work, require immediate and unusual action. If in the judgment of the Railroad Designated Representative such provisions are insufficient, the Railroad Designated Representative may require or provide such provisions as deemed necessary. In any event, such provisions shall be at the Contractor's expense and without cost to the Railroad or TxDOT. The Railroad or TxDOT shall have the right to order the Contractor to temporarily cease operations in the event of an emergency or, if in the opinion of the Railroad Designated Representative, the Contractor's operations could endanger railroad operations. In the event of such an order, immediately notify TxDOT of the order.

3.04 INSURANCE

Do not begin work upon or over Railroad Right of Way until furnishing the Railroad with the insurance policies, binders, certificates and endorsements required by the "Contractor's Right of Entry Agreement", and until the Railroad Designated Representative has advised TxDOT that such insurance is in accordance with the Agreement.

3.05 RAILROAD SAFETY ORIENTATION

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

"UPRR, BNSF, KCS/TEXMEX will not accept on-track safety training certificates from other railroads. Refer to Railroad specific contractor right of entry for training information."

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

3.06 COOPERATION

The Railroad will cooperate with Contractor so that work may be conducted in an efficient manner, and will cooperate with Contractor in enabling use of Railroad Right of Way in performing the work.

3.07 MINIMUM CONSTRUCTION CLEARANCES FOR FALSEWORK AND OTHER TEMPORARY STRUCTURES

Abide by the following minimum temporary clearances during the course of construction:
A. 15' - 0" (BNSF)(UPRR)and 14'-0" (KCS) horizontal from centerline of track
B. 22' (KCS) and 21' - 6" (UPRR & BNSF) vertically above top of rail.

For construction clearance less than listed above, obtain local Railroad Operating Unit review and approval.

3.08 APPROVAL OF REDUCED CLEARANCES

A. Maintain minimum track clearances during construction as specified in Section 3.07.

B. Submit any proposed infringement on the specified minimum clearances to the Railroad Designated Representative through TxDOT at least 30 days in advance of the work. Do not proceed with such infringement without written approval by the Railroad Designated Representative.

C. Do not commence work involving an approved infringement without receiving written assurance from the Railroad Designated Representative that arrangements have been made for any necessary flagging service.

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RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
	CONT	SECT	JOB	HIGHWAY
REVISIONS March 2020	0908	00	126	VARIOUS
	DIST	COUNTY		SHEET NO.
	ABL	TAYLOR, ETC		89

DATE:
FILE:

3.09 MAINTENANCE OF RAILROAD FACILITIES

A. Maintain all ditches and drainage structures free of silt or other obstructions resulting from Contractor's operations. Repair eroded areas and any other damage within Railroad Right of Way and repair any other damage to the property of the Railroad, or its tenants.

B. Perform all such maintenance and repair of damages due to the Contractors's operations at Contractor's expense.

C. Submit a proposed method of erosion control for review by the Railroad prior to beginning any grading on the project site. Comply with all applicable local, state and federal regulations when developing and implementing such erosion control.

3.10 SITE INSPECTIONS BY RAILROAD's DESIGNATED REPRESENTATIVE

A. In addition to the office reviews of construction submittals, site inspections may be performed by the Railroad Designated Representative at significant points during construction, including the following if applicable:
   1. Pre-construction meetings.
   2. Pile driving/drilling of caissons or drilled shafts.
   3. Reinforcement and concrete placement for railroad bridge substructure and/or superstructure.
   4. Erection of precast concrete or steel bridge superstructure.
   5. Placement of waterproofing (prior to placing ballast on bridge deck).
   6. Completion of the bridge structure.

B. Site inspection is not limited to the milestone events listed above. Site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by the Railroad.

C. Provide a detailed construction schedule, including the proposed temporary horizontal and vertical clearances and construction sequence for all work to TxDOT for submittal to the Railroad Designated Representative for review prior to commencement of work. Include the anticipated dates when the above listed events will occur. Update this schedule for the above listed events as necessary and each month at a minimum to allow the Railroad to schedule site inspections.

3.11 RAILROAD REPRESENTATIVES

Railroad representatives, conductors, flag person or watch person will be provided by the Railroad at expense of TxDOT to protect Railroad facilities, property and movements of its trains or engines. In general, the Railroad will furnish such personnel or other protective services as follows:

A. When any part of any equipment is standing or being operated within 25 feet, measured horizontally, from nearest rail of any track on which trains may operate, or when any object is off the ground and any dimension thereof could extend inside the 25 foot limit, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.

B. For any excavation below elevation of track subgrade if, in the opinion of the Railroad Designated Representative, track or other railroad facilities may be subject to settlement or movement.

C. During any clearing, grubbing, excavation or grading in proximity to railroad facilities, which, in the opinion of the Railroad Designated Representative, may endanger railroad facilities or operations.

D. During any Contractor's operations when, in the opinion of the Railroad Designated Representative, railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines, or pipe lines, may be endangered.

E. Arrange with the Railroad Designated Representative to provide the adequate number of flag persons to accomplish the work.

3.12 COMMUNICATIONS AND SIGNAL LINES

If required, the Railroad will rearrange its communications and signal lines, its grade crossing warning devices, train signals and tracks, and facilities that are in use and maintained by the Railroad's forces in connection with its operation at expense of TxDOT. This work by the Railroad will be done by its own forces and it is not a part of the Work under this Contract.

3.13 TRAFFIC CONTROL

Coordinate any operations that control traffic across or around railroad facilities with the Railroad Designated Representative.

3.14 CONSTRUCTION EXCAVATIONS AND BORING ACTIVITIES UNDER TRACK

A. Take special precaution and care in connection with excavating and shoring. Excavations for construction of footings, piers, columns, walls or other facilities that require shoring shall comply with requirements of TxDOT, OSHA, AREMA and Railroad "Guidelines for Temporary Shoring".

B. The project plans indicate whether there are fiber optic lines or other such telecommunications systems that require consideration. Regardless, contact the necessary call center to determine if such cable systems are present:

   UPRR 1-800-336-9193
   7:00 AM to 9:00 PM CST Monday-Friday except holidays,
   staffed 24 hrs/day for emergencies
   48 hrs notice required

   BNSF 1-800-533-2891
   24 hour number
   5 working days notice required

   KCS 1-800-344-8377
   Texas One Call, a 24 hour number
   48 hrs notice required, excluding weekends and holidays

   If a telecommunications system is buried anywhere on or near railroad property, coordinate with TxDOT, the Railroad and the Telecommunication Company(ies) to arrange for relocation or protective measures prior to beginning work on or near railroad property. Refer to the project General Notes for additional information.

C. Projects involving a boring or jack and bore operation under track such as drainage pipes or culverts and utilities require an installation plan reviewed and approved by the Railroad and TxDOT prior to proceeding with such construction. A railroad inspector and contractor assisted monitoring of ground and track movement is required to maintain safe passage of rail traffic. Stop installation and do not allow passage of trains if movements in excess of 1/4 inch vertical or horizontal is detected in the tracks. Immediately repair the damage to the satisfaction of TxDOT and the Railroad before proceeding.

3.15 RAILROAD FLAGGING

Per the Right of Entry Agreement for flagging, notify the Railroad Representative at least 10 working days in advance of Contractor's work and at least 30 working days in advance of any Contractor's work in which any person or equipment will be within 25 feet of nearest rail or as specified in the Contractor Right of Entry (CROE).

3.16 CLEANING OF RIGHT-OF-WAY

When work is complete, remove all tools, implements, and other materials brought into Railroad Right of Way and leave the right of Way in a clean and presentable condition to the satisfaction of TxDOT and the Railroad.

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	ABL	TAYLOR, ETC		90

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