STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

MAINTENANCE PROJECT NO. BPM 6383-87-001

US 277, ETC.
HASKELL, ETC.

LIMITS: VARIOUS LOCATIONS IN HASKELL, STONEWALL, FISHER, MITCHELL, AND CALLAHAN COUNTIES.

FOR THE CONSTRUCTION OF: BRIDGE PREVENTIVE MAINTENANCE

CONSISTING OF: BRIDGE PREVENTIVE MAINTENANCE

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

FHWA TEXAS DIVISION	PROJECT NO.		SHEET NO.
	BPM 6383-87-001		1
STATE	DISTRICT	COUNTY	
TEXAS	ABL	HASKELL, ETC	
CONTROL	SECTION	JOB	HIGHWAY NO.
6383	87	001	US 277, ETC

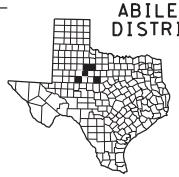
INDEX OF SHEETS
SEE SHEET 2

THE DISTRICT TRAFFIC SAFETY COMMITTEE HAS REVIEWED THE TRAFFIC CONTROL PLAN FOR THIS PROJECT AND IT IS IN COMPLIANCE WITH CURRENT TRAFFIC CONTROL STANDARDS.

DocuSigned by:
Casey L. McGee, P.E.
2377E0857A804A6...
COMMITTEE CHAIRMAN

9/15/2021
DATE

ABILENE DISTRICT



EXISTING NBI# :

C1FY23. BUCK CREEK ROAD AT IH20
NBI# 08-017-0-0295-02-016

F1. FM 611 AT BULL CREEK
NBI# 08-077-0-0983-02-014

F2. FM 611 AT COTTONWOOD CREEK
NBI# 08-077-0-0983-02-015

F3. US 180 AT COTTONWOOD CREEK
NBI# 08-077-0-0296-03-012

F4. SH 92 AT DRAW
NBI# 08-077-0-0318-02-010

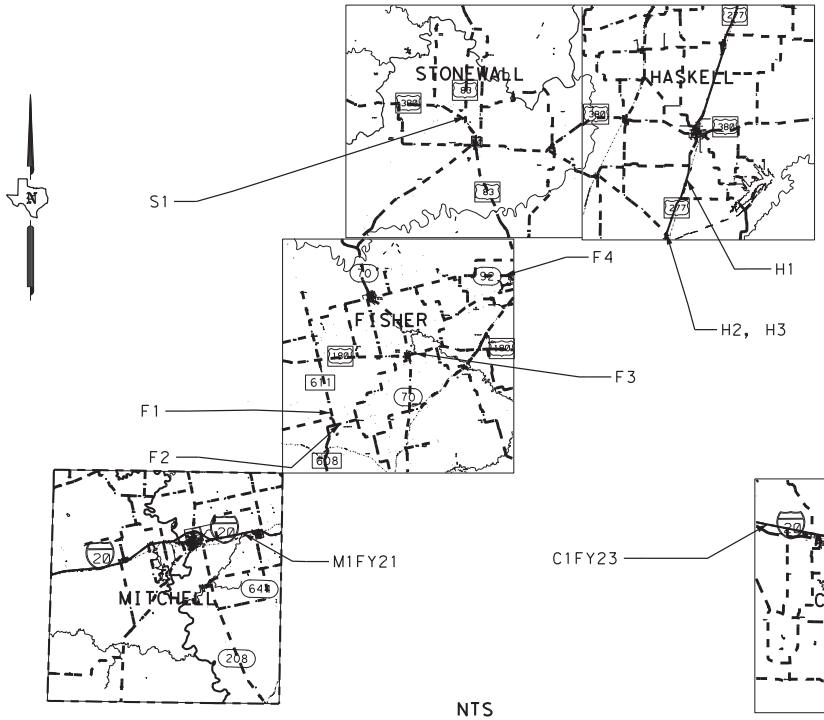
H1. US 277 AT LITTLE TIMBER CREEK
NBI# 08-105-0-0157-04-020

H2. US 277 SB AT SH 6
NBI# 08-105-0-0157-04-052

H3. US 277 NB AT SH 6
NBI# 08-105-0-0157-04-053

M1FY21. IH20 EBML AT N. CHAMPION CREEK
NBI# 08-168-0-0006-01-002

S1. US 83 AT KU CREEK
NBI# 08-217-0-0032-07-032



SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, MAY 1, 2012).

EQUATIONS: N/A
RAILROAD CROSSINGS: N/A

FINAL PLANS

LETTING DATE: NOVEMBER 2021

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

Texas Department of Transportation

SUBMITTED FOR LETTING: 9/15/2021
DocuSigned by:
Michael Roethueli
77DE2F0F6220470...
ELI, E.I.T.
PROJECT MANAGER

RECOMMENDED FOR LETTING: 08/15/20
Stephen T. Jones, P.E.
STEPHEN T. JONES, P.E.
DISTRICT DESIGN ENGINEER

RECOMMENDED FOR LETTING: 9/15/2021
DocuSigned by:
Stewart J. Chapman
40878C8750864A9...
APMAN, P.E.
NGINEER

RECOMMENDED FOR LETTING: 9/15/2021
DocuSigned by:
Daniel P. Richardson, P.E.
E07CA1501A784BF...
DIRECTOR OF MAINTENANCE

APPROVED FOR LETTING: 9/15/2021
DocuSigned by:
Thomas D. Allchin, P.E.
0F6F7E74C37D430...
E.
DISTRICT ENGINEER

PENTABLE:
DATE: 9/15/2021
FILE: S:\XFER\Mike Roethel\1\BPM FY22\Sheets\DA set\001 TITLE SHEET.dgn

INDEX OF SHEETS

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ON THIS SHEET WITH A # HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

Stephen T. Jones, P.E. , P.E. 08/17/2021
STEPHEN T. JONES DATE

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 Texas Department of Transportation

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TEXAS	HASKELL, ETC		
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

2

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Project Number: See Title Sheet
Control: 6383-87-001
County: Haskell, etc.
Highway: US 277, etc.

ABILENE DISTRICT GENERAL NOTES
2014 SPECIFICATIONS

General

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

Stewart Chapman, P.E.: Stewart.Chapman@txdot.gov
Maxie Allen, P.E.: Maxie.Allen@txdot.gov
(Snyder Area Office)

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

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

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

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.

Cut neat, straight lines with vertical faces along pavement edges or along joints between existing asphalt or concrete pavement and new pavement perpendicular or parallel to the direction of traffic by methods described in applicable bid items, or as directed. Provide clean edges or joints without jagged appearance or chunks broken out. This work is considered subsidiary to various bid items.

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

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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.

Item 5, "Control of Work"
Use Method C for construction surveying.

Identify potential issues with power poles and power lines prior to bidding. 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 7, "Legal Relations and Responsibilities"
The total area disturbed for this project is **0.0** acres. The disturbed area in this project, all project locations in the Contract, and the Contractor project specific locations (PSLs), within 1 mile of the project limits, for the Contract will further establish the authorization requirements for storm

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ABL	HASKELL, ETC		3

GENERAL NOTES

water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain required authorization from the TCEQ for Contractor PSLs for construction support activities on or off the ROW. When the total area disturbed in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, provide a copy of the Contractor NOI for PSLs on the ROW to the Engineer and to the government that operates a separate storm sewer system.

No significant traffic generator events identified.

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

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.

The Contractor is hereby authorized to begin work prior to the expiration of the number of calendar days provided in the Special Provision to Item 8, Article 8.1. Notify the Engineer in writing of the date to begin work. Time charges will commence when work begins or on the expiration of the number of calendar days provided, whichever occurs first.

Maintain and submit a project schedule monthly. Submit to the Engineer the updated project schedule no later than the 25th calendar day of the following month.

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.

Contractor shall complete all work prior to the last day of August 2022.

Item 9, "Measurement and Payment"
The progress payment period shall end on the 25th of each month, unless directed by the Area Office 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

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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 438, "Cleaning and Sealing Joints and Cracks"
Cleaning off the top of the bents is considered subsidiary to this item.

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.

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

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

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.

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

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The Contractor's person responsible for TCP compliance must be available by local telephone and have a response time within 45 minutes.

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.

Conflicting guide signs shall be covered as approved by the Engineer.

Item 506, "Temporary Erosion, Sedimentation, and Environmental Controls"
On-site concrete washout shall only be allowed on this project as directed, in writing, by the Engineer.

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.

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Item 6185, "Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA)"

BASIS OF ESTIMATE FOR STATIONARY TMAs				
		TMA (Stationary)		
LOCATION	Standard	Required	Additional	TOTAL
C1FY23	TCP (2-1)-18; TCP (2-2)-18	1		1
F1	TCP (2-1)-18; TCP (2-2)-18	1		1
F2	TCP (2-1)-18; TCP (2-2)-18	1		1
F3	TCP (2-1)-18, TCP (2-3)-18	1		1
F4	TCP (2-1)-18	1		1
H1	TCP (5-1)-18	1		1
H2	TCP (2-6)-18	1		1
H3	TCP (2-6)-18	1		1
M1FY21	TCP (2-1)-18	1		1
S1	TCP (2-1)-18	1		1

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.

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.

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GENERAL NOTES

ESTIMATE SUMMARY

Project: SEE TITLE SHEET
CSJ: 6383-87-001
Highway: US 277, ETC.
County: HASKELL, ETC.

EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	ALT	ITEM-CODE ITEM NO	DESC CODE	SP NO	DESCRIPTION	UNIT	TOTAL EST.	FINAL
						20.000			429-6003			CONC STR REPAIR (DECK REP (PART DEPTH))	SF	20.000	
						6.000			429-6005			CONC STR REPAIR (DECK REP (FULL DEPTH))	SF	6.000	
						3545.000			429-6007			CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	3545.000	
						60.000			438-6004			CLEANING AND SEALING EXIST JOINTS(CL3)	LF	60.000	
						252.000			438-6004			CLEANING AND SEALING EXIST JOINTS(CL7)	LF	252.000	
						40.000			454-6008			HEADER TYPE EXPANSION JOINT	CF	40.000	
						180.000			454-6009			JOINT SEALANT	CF	180.000	
						1.000			500-6001			MOBILIZATION	LS	1.000	
						5.000			502-6001		008	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	5.000	
						1.000			4002-6001			REPLACE ELASTOMERIC BEARING PADS	EA	1.000	
						68.000			6185-6002		002	TMA (STATIONARY)	DAY	68.000	
												CONTRACTOR FORCE ACCOUNT WORK (PART)			
						1.000						EROSION CONTROL MAINTENANCE	LS	1.000	
						1.000						SAFETY CONTINGENCY	LS	1.000	

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ESTIMATE & QUANTITY SHEET

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SUMMARY OF BRIDGE REPAIR ITEMS								
LOCATION	429	429	429	438	438	454	454	4002
	6003	6005	6007	6002	6004	6008	6009	6001
	CONC STR REPAIR(DECK REP(PART DEPTH))	CONC STR REPAIR(DECK REP (FULL DEPTH))	CONC STR REPAIR (VERTICAL & OVERHEAD)	CLEANING AND SEALING EXIST JOINTS(CL3)	CLEANING AND SEALING EXIST JOINTS(CL7)	HEADER TYPE EXPANSION JOINT	JOINT SEALANT	REPLACE ELASTOMERIC BEARING PADS
	SF	SF	SF	LF	LF	CF	LF	EA
C1FY23	-	-	565	60	-	30	-	1
F1	-	3	300	-	-	-	-	-
F2	-	3	490	-	-	-	-	-
F3	-	-	1055	-	252	-	-	-
F4	-	-	225	-	-	-	-	-
H1	-	-	90	-	-	-	-	-
H2	10	-	270	-	-	20	90	-
H3	10	-	290	-	-	20	90	-
M1FY21	-	-	100	-	-	-	-	-
S1	-	-	160	-	-	-	-	-
TOTAL	**20**	**6**	**3545**	**60**	**252**	**40**	**180**	**1**

SUMMARY OF TRAFFIC CONTROL ITEMS	
LOCATION	6185
	6002
	TMA (STATIONARY)
	DAY
C1FY23	12
F1	5
F2	7
F3	21
F4	3
H1	2
H2	7
H3	7
M1FY21	2
S1	2
TOTAL	**68**

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QUANTITY SUMMARY

Texas Department of Transportation

SCALE: N/A SHEET 1 OF 1

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GENERAL:

1. THE STEPS OF THE CONSTRUCTION SEQUENCE MAY BE MODIFIED AS APPROVED, IN WRITING, BY THE ENGINEER. ANY CHANGES IMPLEMENTED, SHALL HAVE DETAILS THAT ARE SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER.

2. WORK SHALL BE DONE AT A MAXIMUM OF TWO LOCATIONS. IF WORK IS TO BE DONE AT MORE THAN TWO LOCATIONS, WRITTEN APPROVAL BY THE ENGINEER SHALL BE REQUIRED.

LOCATIONS H2 AND H3 (US 277):

1. SET UP TCP AS SHOWN ON THE SHEET TCP (2-6)-18 TO CLOSE 1 LANE OF TRAFFIC ACROSS BRIDGE.

2. PERFORM JOINT REPAIR ON US 277 MAINLANE BRIDGE IN LANE THAT IS CLOSED.

3. RE-OPEN LANE ON US 277 ONCE THE WORK HAS BEEN COMPLETED.

4. REPEAT STEPS 1-3 UNTIL ALL WORK IS COMPLETED AT THESE LOCATIONS.

LOCATIONS C1FY23(BUCK CREEK ROAD):

1. SET UP TCP AS SHOWN ON THE DETOUR LAYOUT SHEET.

2. PERFORM BEARING PAD REPLACEMENT ON BUCK CREEK BRIDGE.

3. RE-OPEN BUCK CREEK ROAD ONCE THE WORK HAS BEEN COMPLETED.

ALL OTHER LOCATIONS:

SET UP TCP ACCORDING TO THE APPROPRIATE STANDARDS AS APPROVED BY THE ENGINEER.

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

TCP NARRATIVE

Texas Department of Transportation

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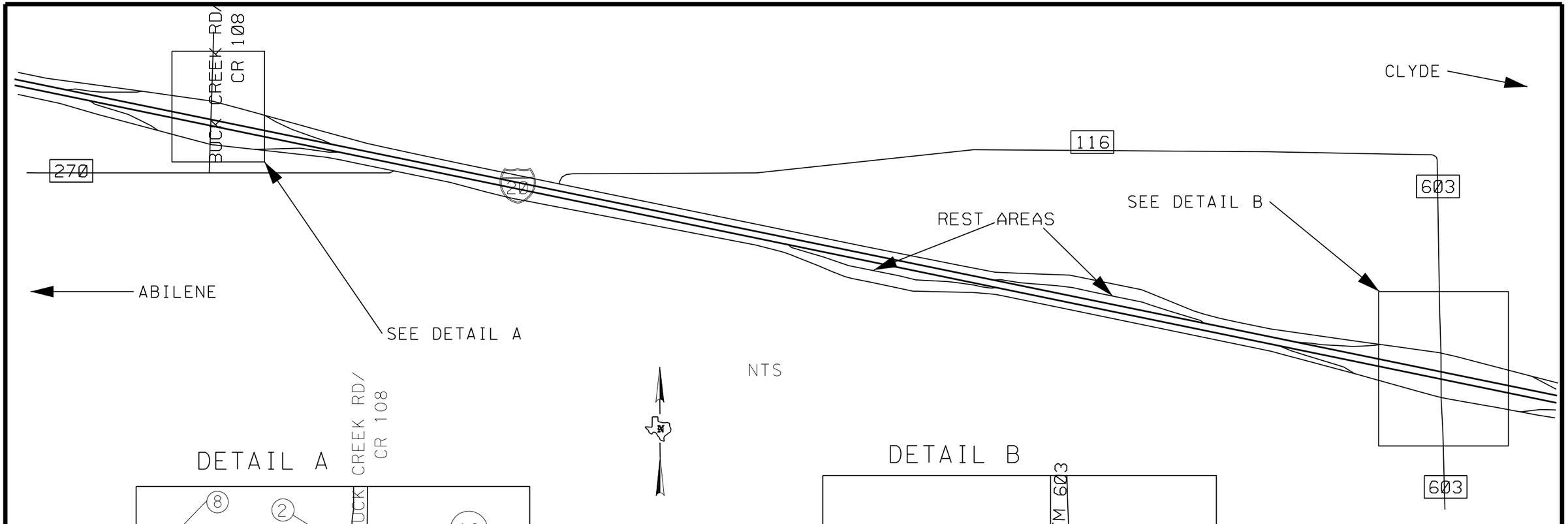

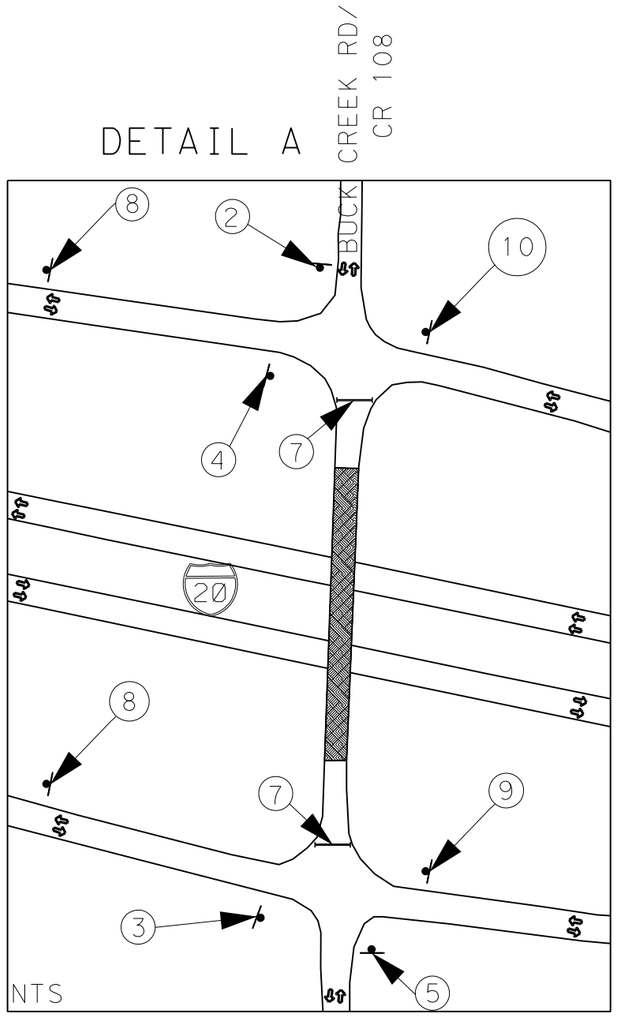

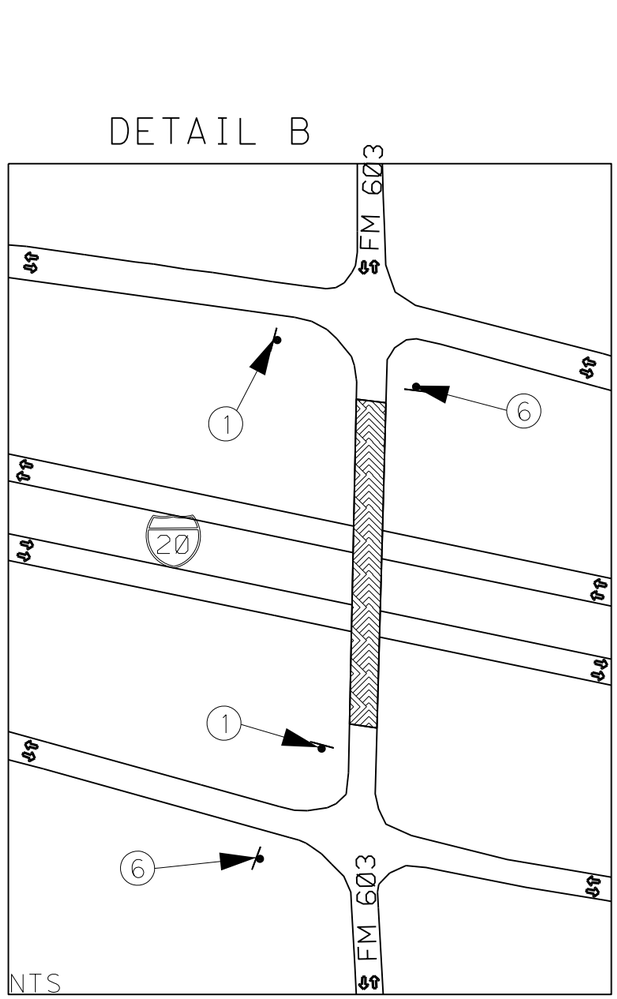

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.
08/20/2021

C1FY23 DETOUR ROUTE

Texas Department of Transportation

SCALE: N/A SHEET 1 OF 1

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1

DETOUR M4-8

SOUTH M3-3

CR 108

M5-1R

2

DETOUR M4-8

SOUTH M3-3

CR 108

M5-1L

3

DETOUR M4-8

NORTH M3-1

CR 108

M6-3

4

DETOUR M4-8

SOUTH M3-3

CR 108

M6-3

5

DETOUR M4-8

NORTH M3-1

CR 108

M5-1R

6

DETOUR M4-8

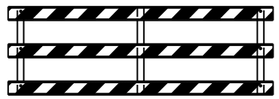
NORTH M3-1

CR 108

M5-1L

7

ROAD CLOSED



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END ROAD WORK

G20-2a

9

DETOUR M4-8

NORTH M3-1

CR 108

10

DETOUR M4-8

SOUTH M3-3

CR 108

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

C1FY23 DETOUR SIGNS

 Texas Department of Transportation

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

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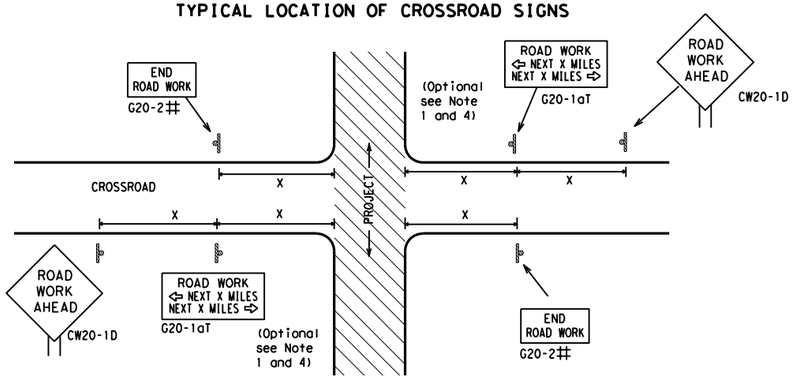
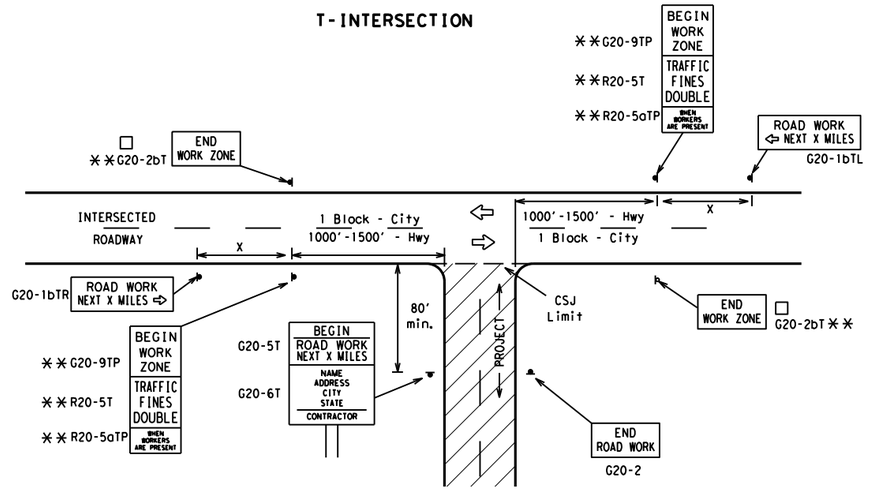
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

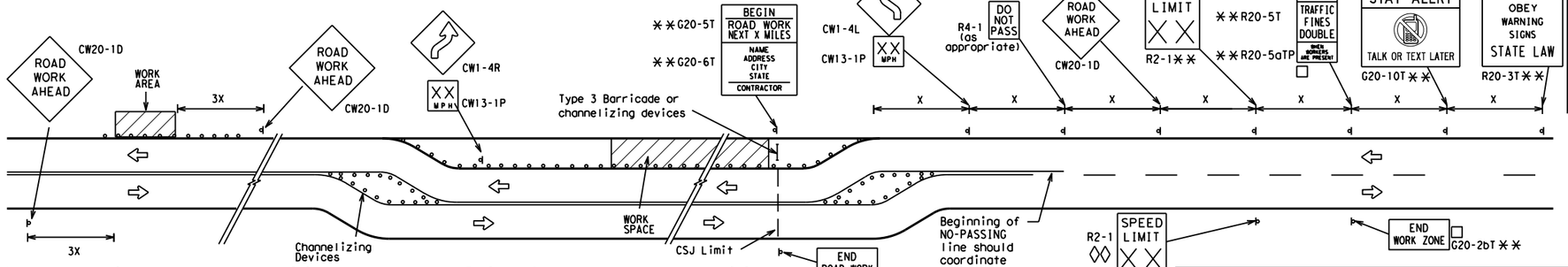
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

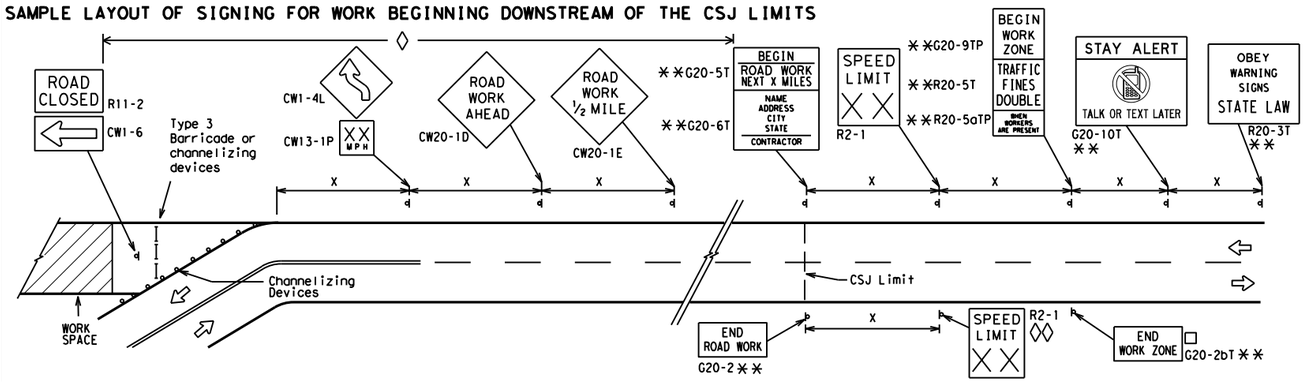
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

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



NOTES

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

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

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

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

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

LEGEND

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

SHEET 2 OF 12

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Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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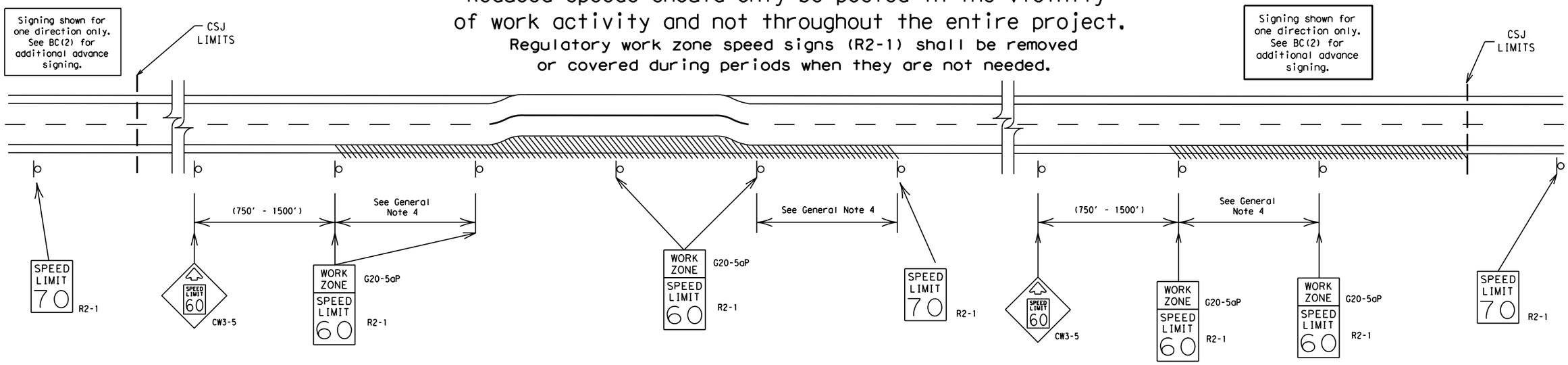
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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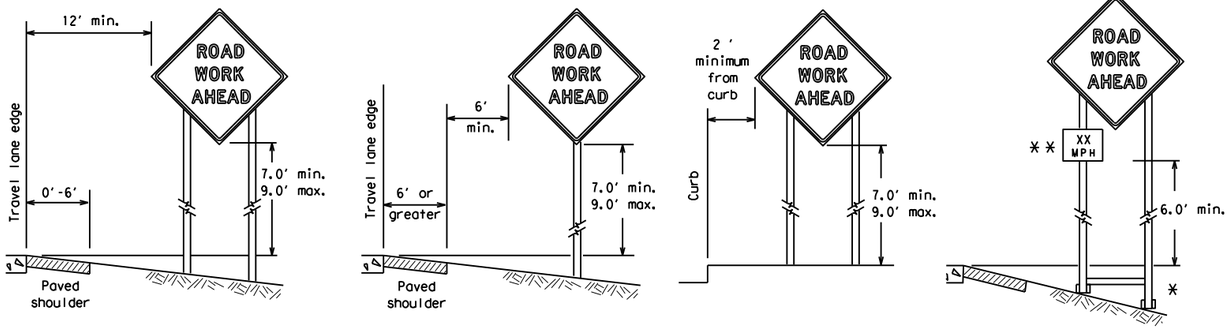
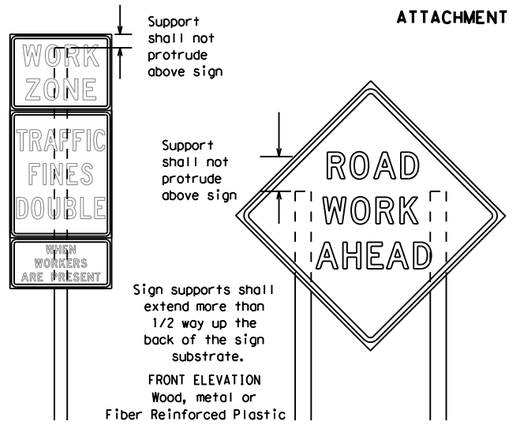
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

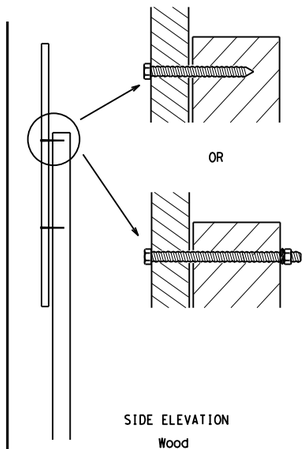


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





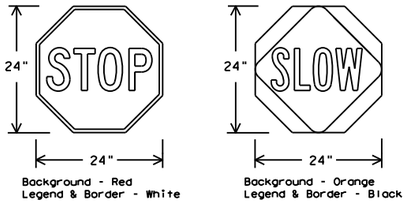
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the spice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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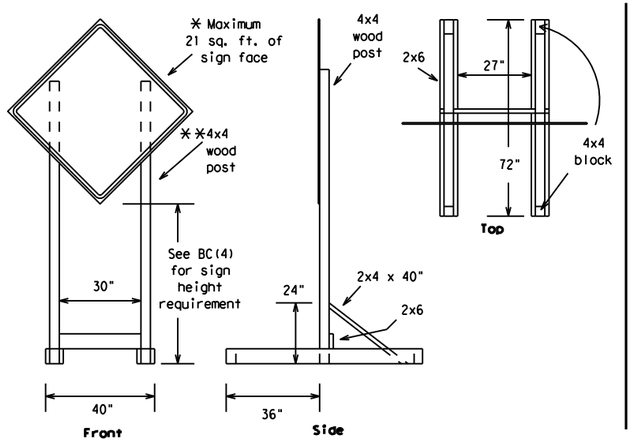
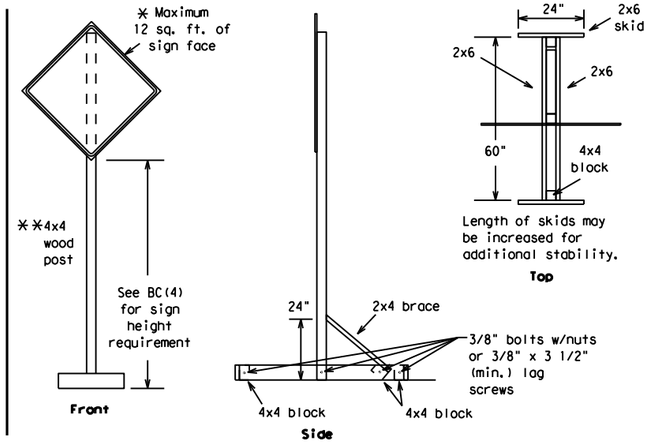
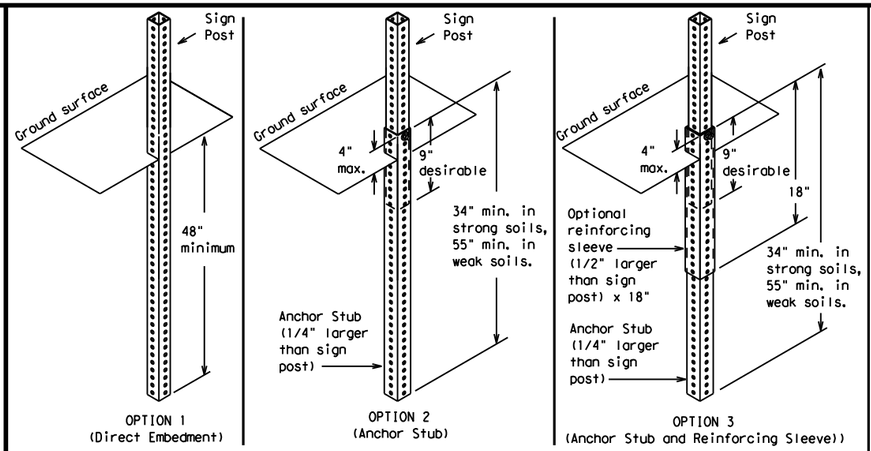




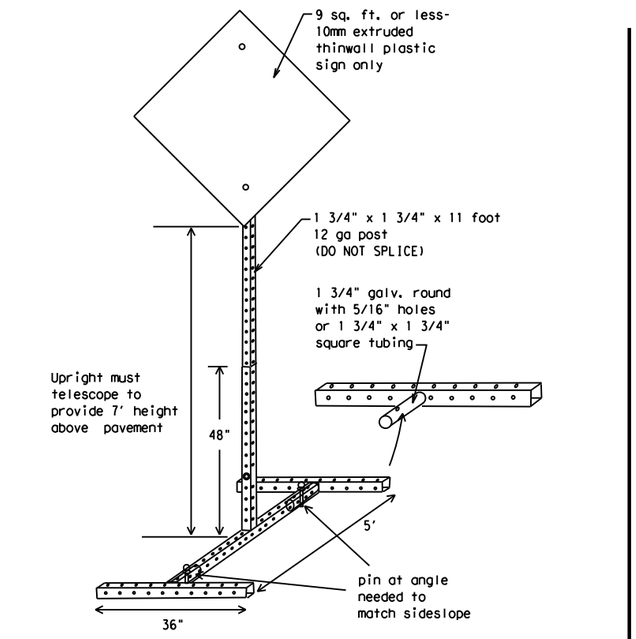
SKID MOUNTED WOOD SIGN SUPPORTS

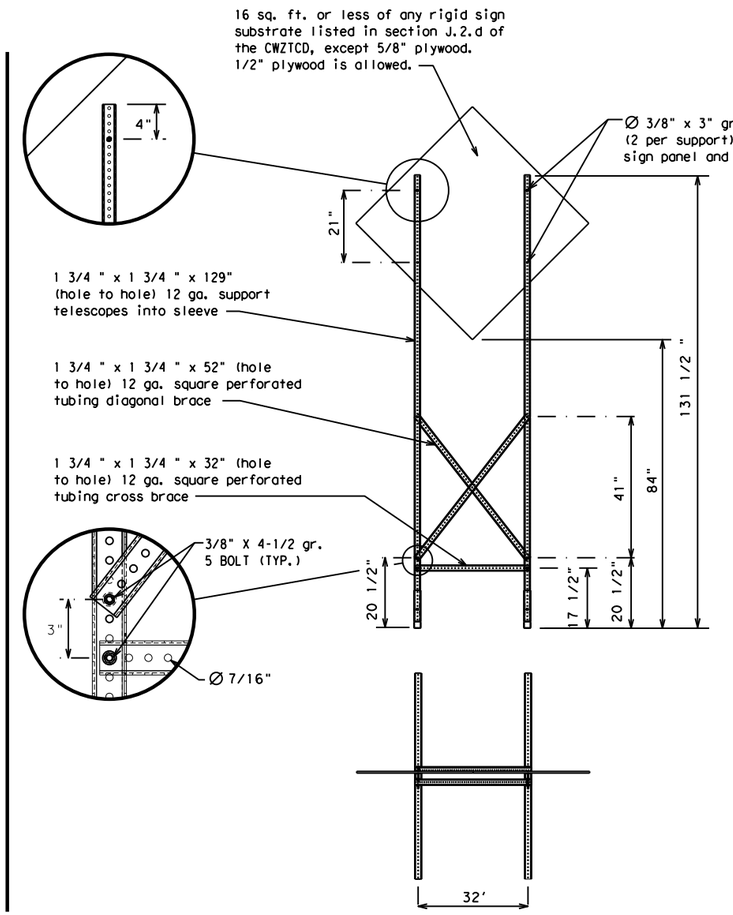
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

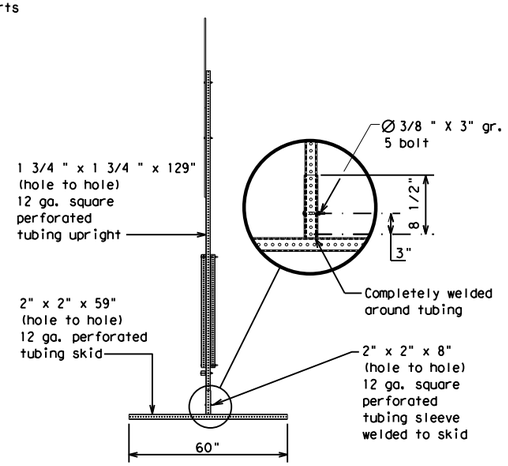


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

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BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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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
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REVISIONS	6383	87	001	US 277, ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ABL	HASKELL, ETC		16

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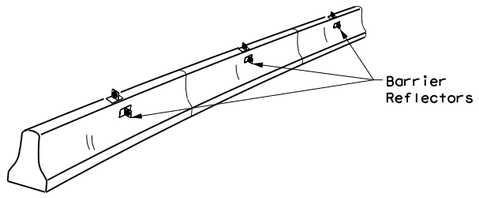
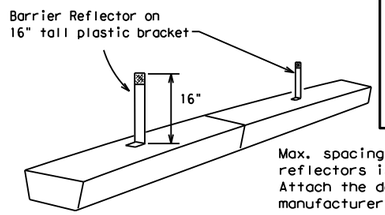
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



CONCRETE TRAFFIC BARRIER (CTB)

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

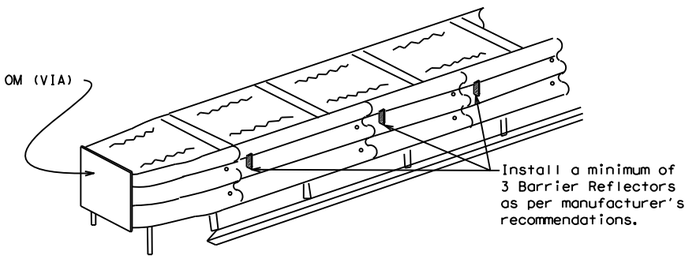


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

LOW PROFILE CONCRETE BARRIER (LPCB)

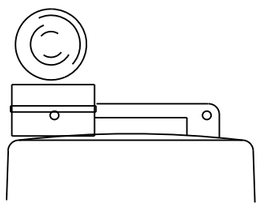


DELINEATION OF END TREATMENTS

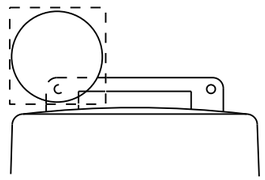
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

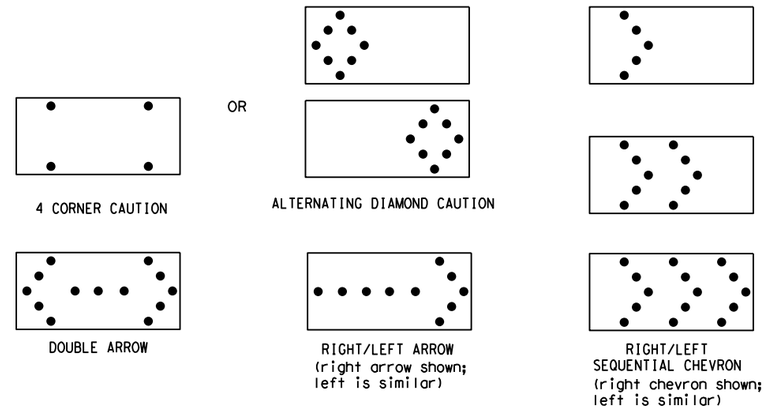
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
	CONT	SECT	JOB	HIGHWAY
REVISIONS	6383	87	001	US 277, ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
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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:

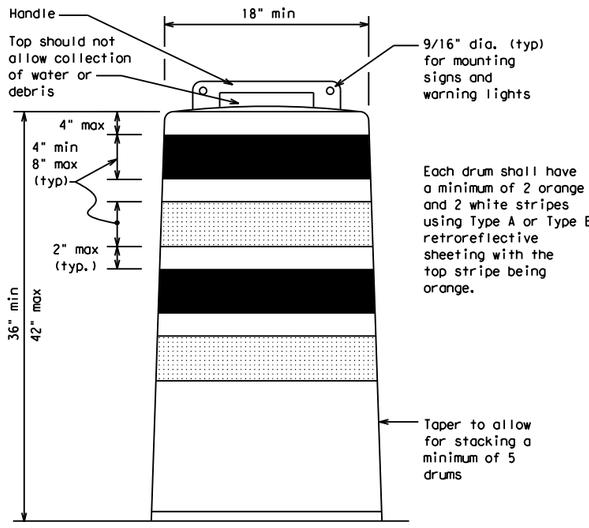
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

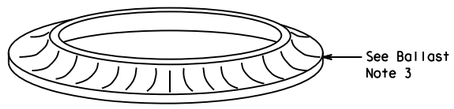
RETROREFLECTIVE SHEETING

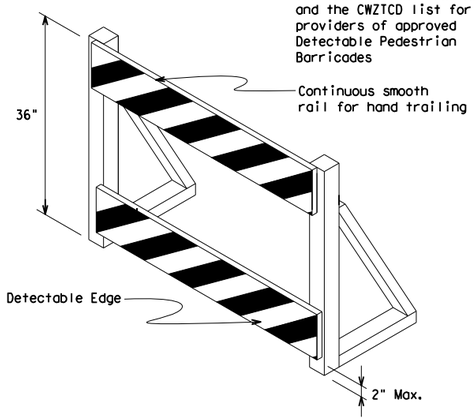
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

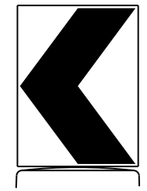




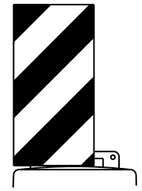


DETECTABLE PEDESTRIAN BARRICADES

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.

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

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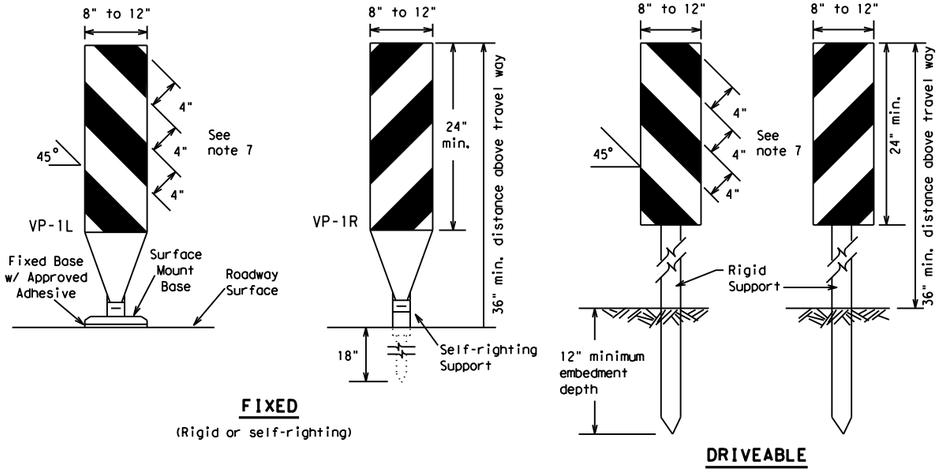
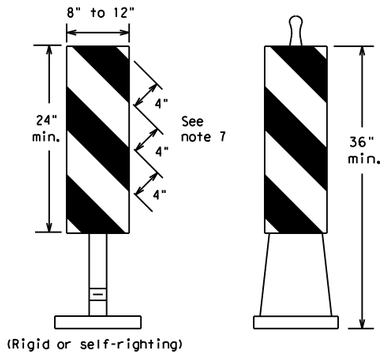


FIXED
(Rigid or self-righting)

DRIVEABLE

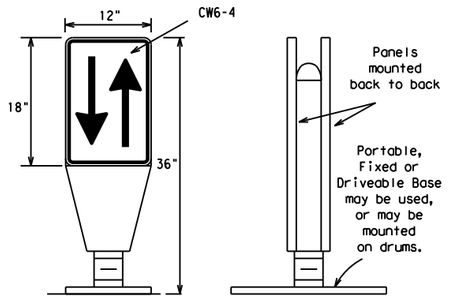


(Rigid or self-righting)

PORTABLE

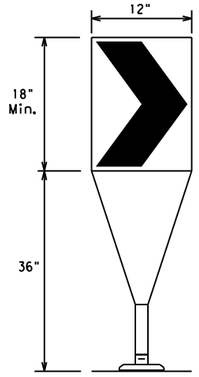
VERTICAL PANELS (VPs)

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



OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

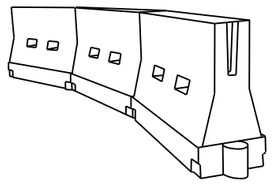
1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The 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.



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

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

CHEVRONS



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

GENERAL NOTES

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

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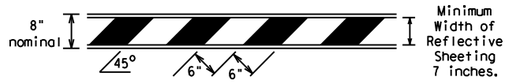
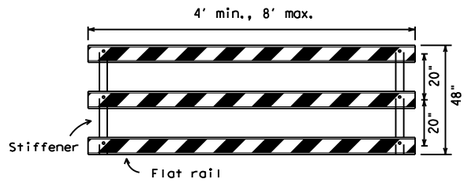
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



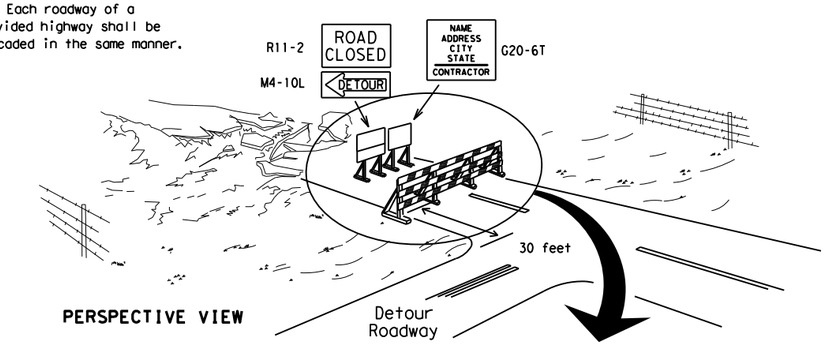
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

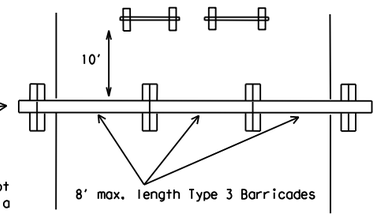
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

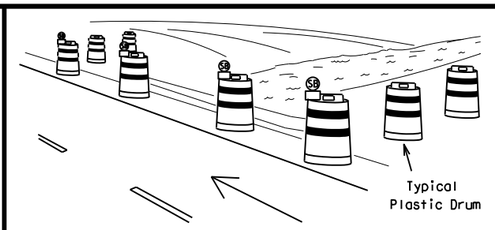
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

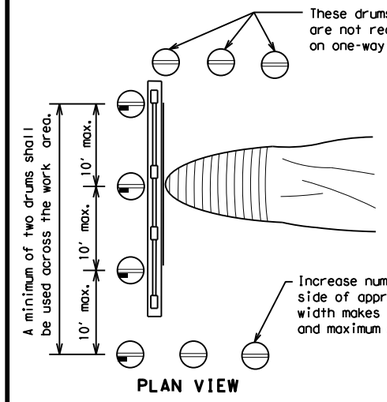
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

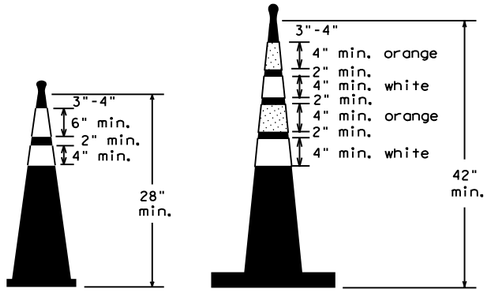
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



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

PLAN VIEW

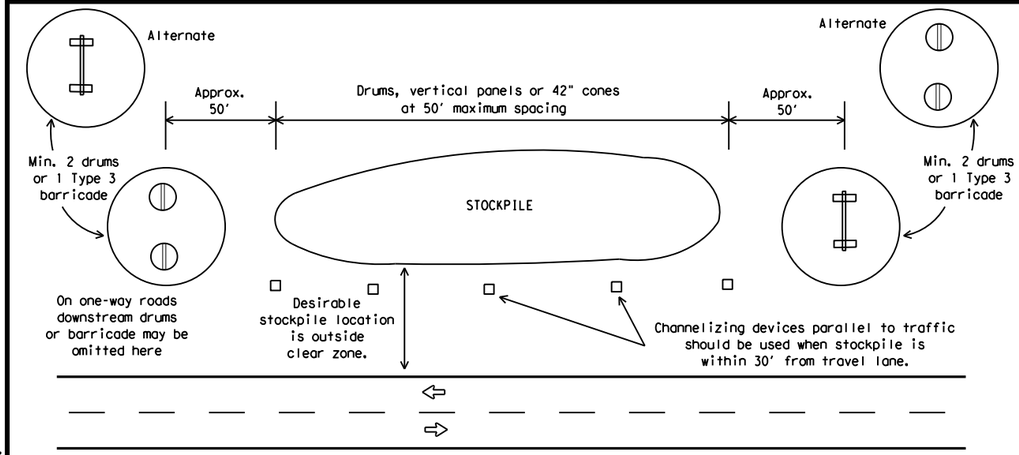
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

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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.

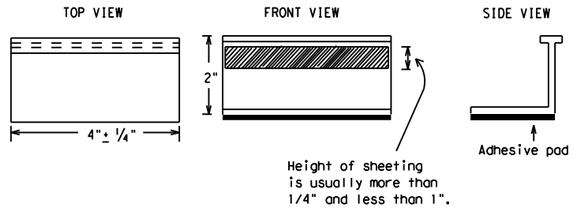
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

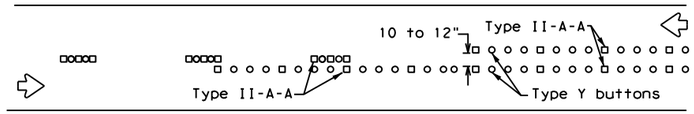
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	6383	87	001	US 277, ETC
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	ABL	HASKELL, ETC		21
11-02 8-14				

105

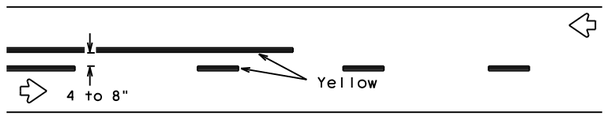
DATE:
FILE:

PAVEMENT MARKING PATTERNS

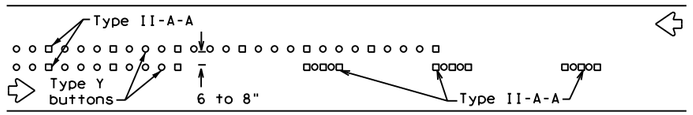
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



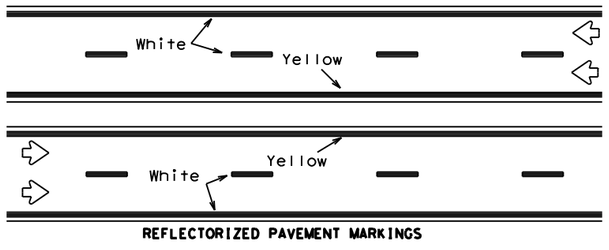
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



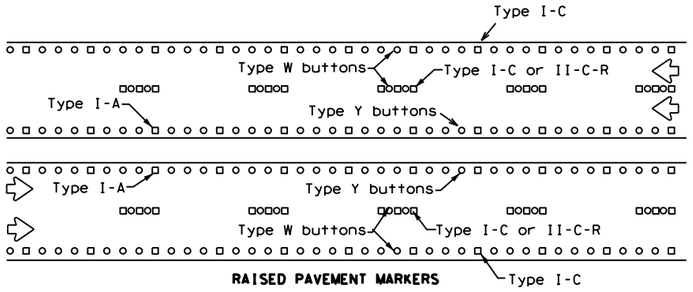
RAISED PAVEMENT MARKERS - PATTERN B

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

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



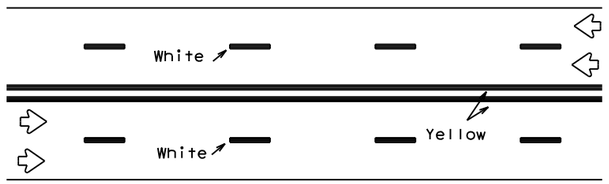
REFLECTORIZED PAVEMENT MARKINGS



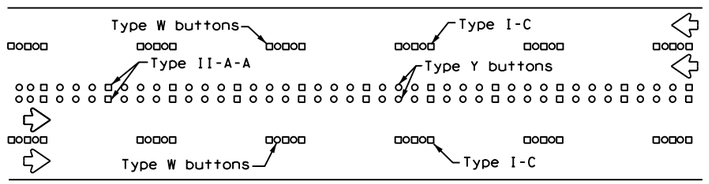
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



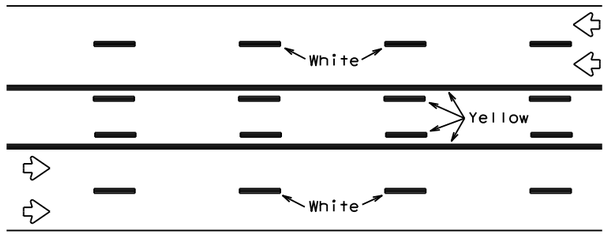
REFLECTORIZED PAVEMENT MARKINGS



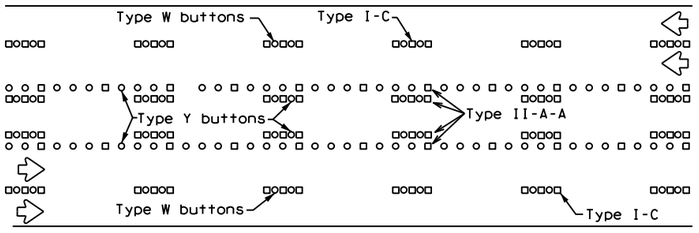
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

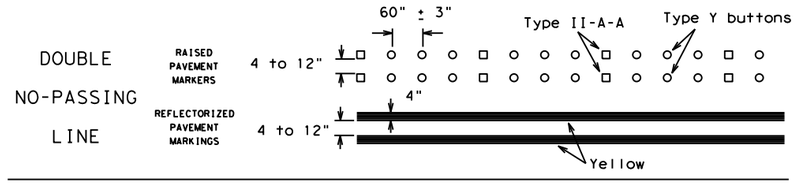
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

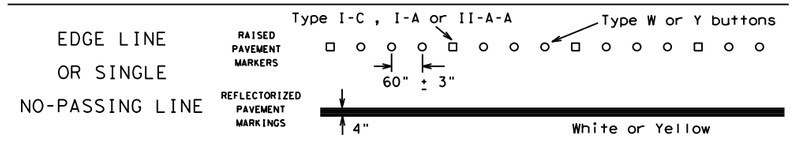
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

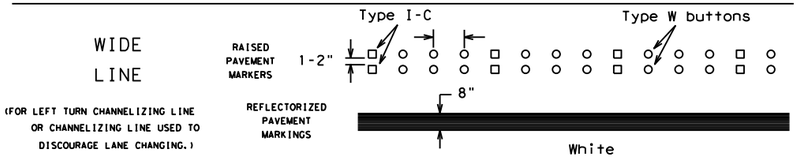


EDGE LINE OR SINGLE NO-PASSING LINE



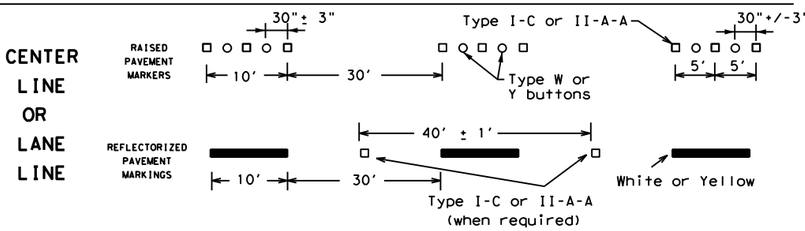
WIDE LINE

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

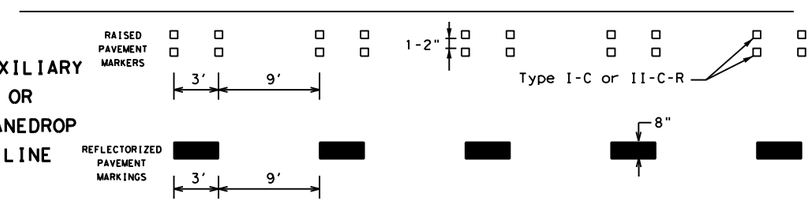


BROKEN LINES

CENTER LINE OR LANE LINE

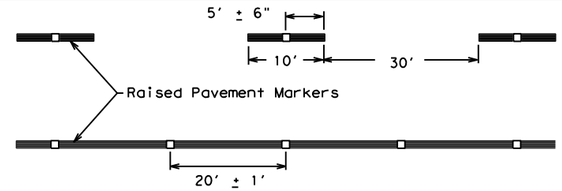


AUXILIARY OR LANEDROP LINE



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

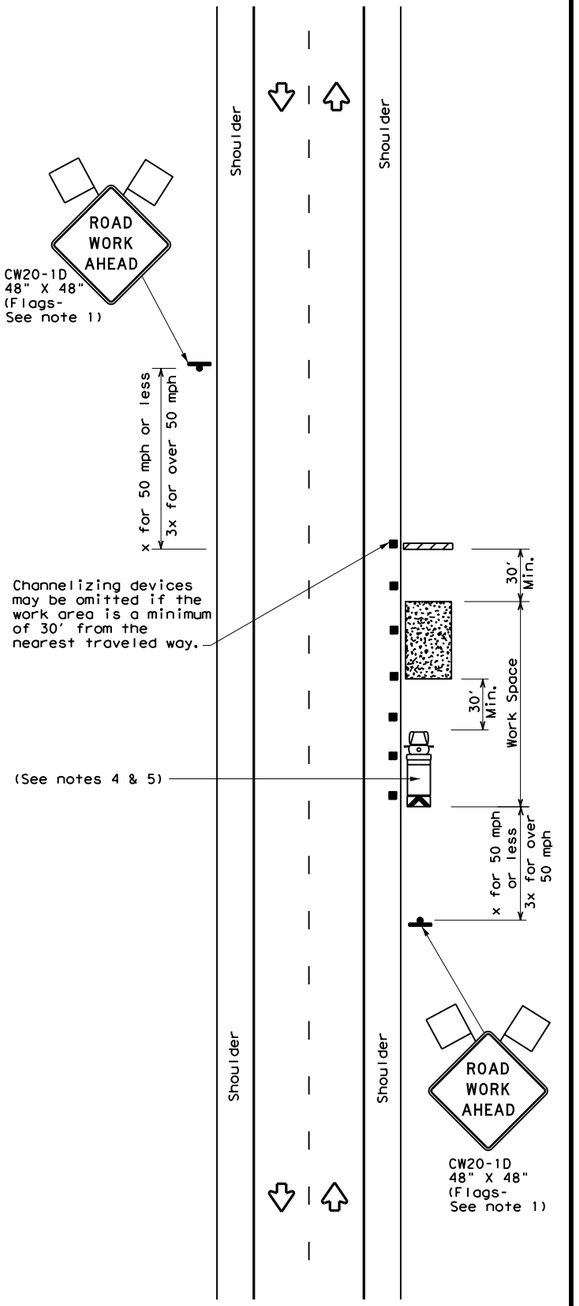
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

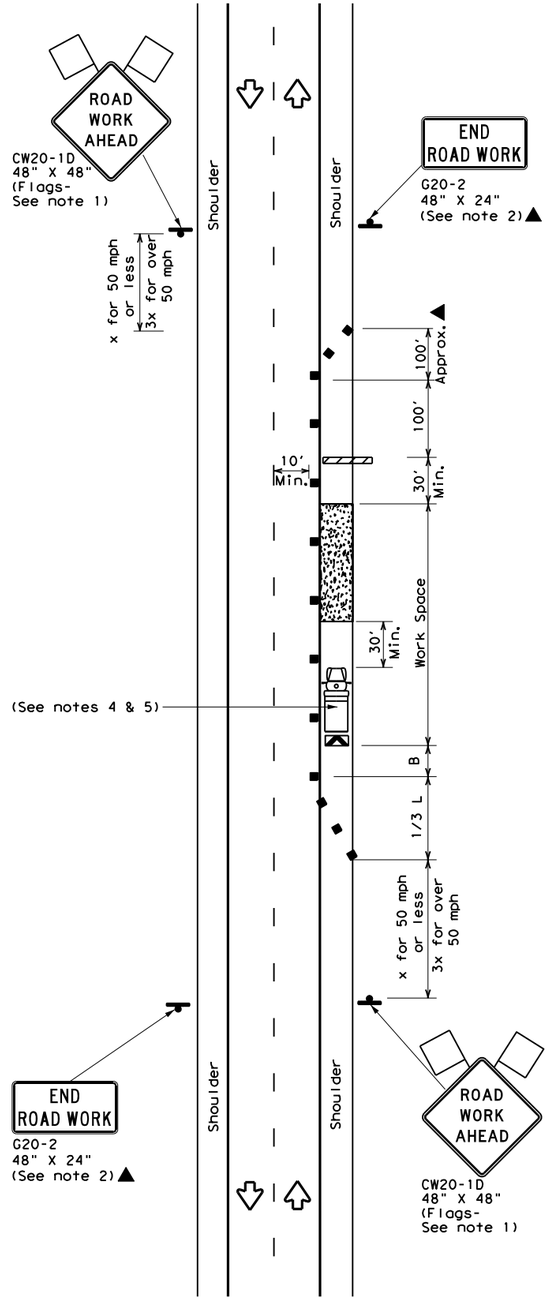
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	6383	87	001	US 277, ETC
	DIST	COUNTY		SHEET NO.
	ABL	HASKELL, ETC		22

DATE:
FILE:



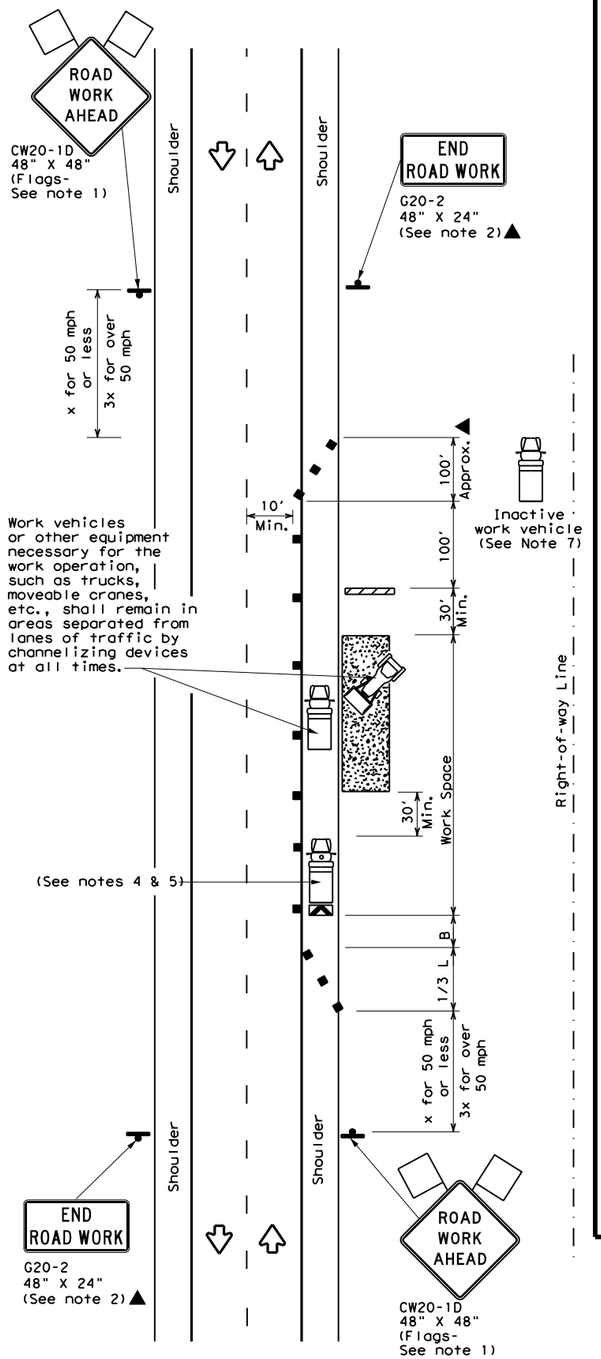
TCP (2-1a)

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	6383	87	001	US 277, ETC
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	ABL	HASKELL, ETC		23
1-97 2-18				

DATE:
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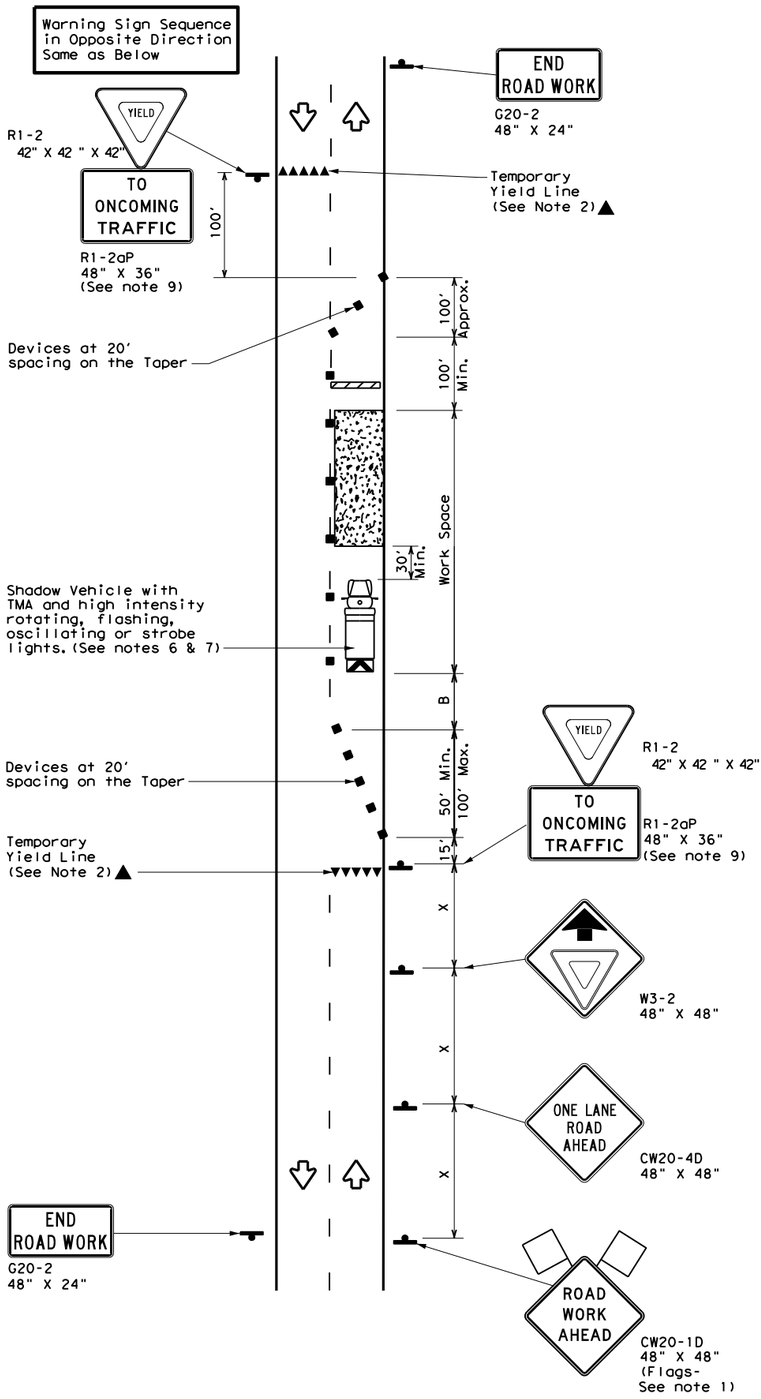
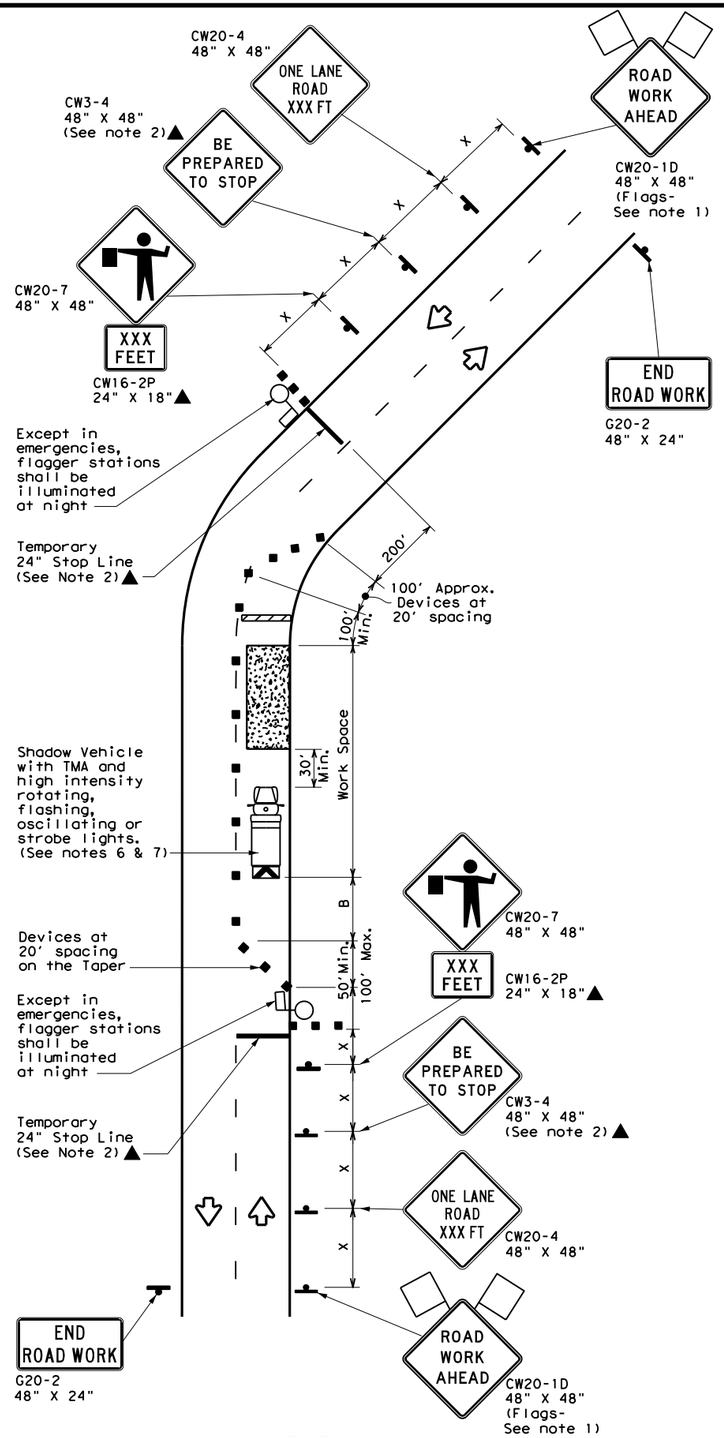


TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



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	6383	87	001	US 277, ETC
	DIST	COUNTY		SHEET NO.
	ABL	HASKELL, ETC		24

DATE:
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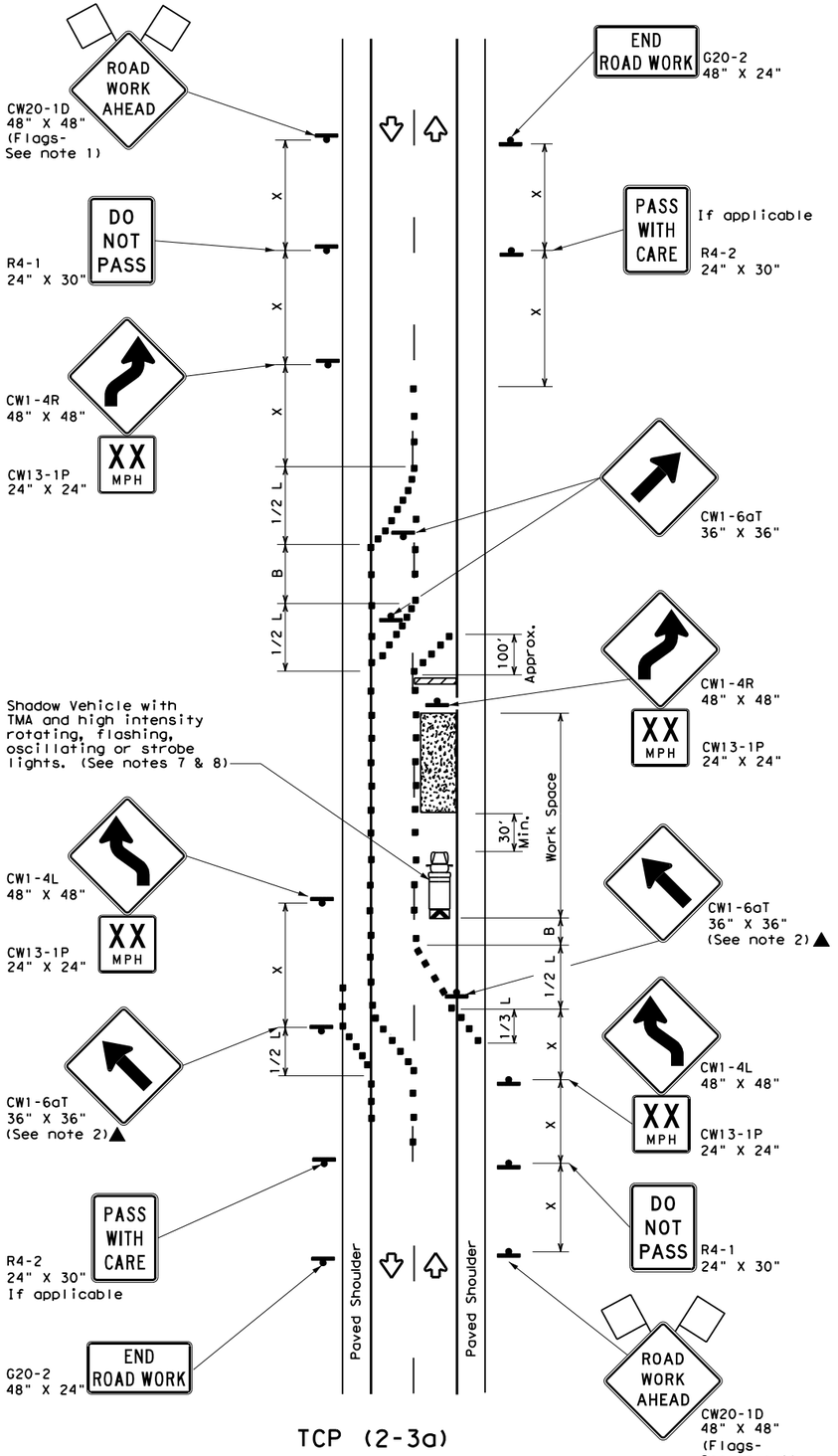
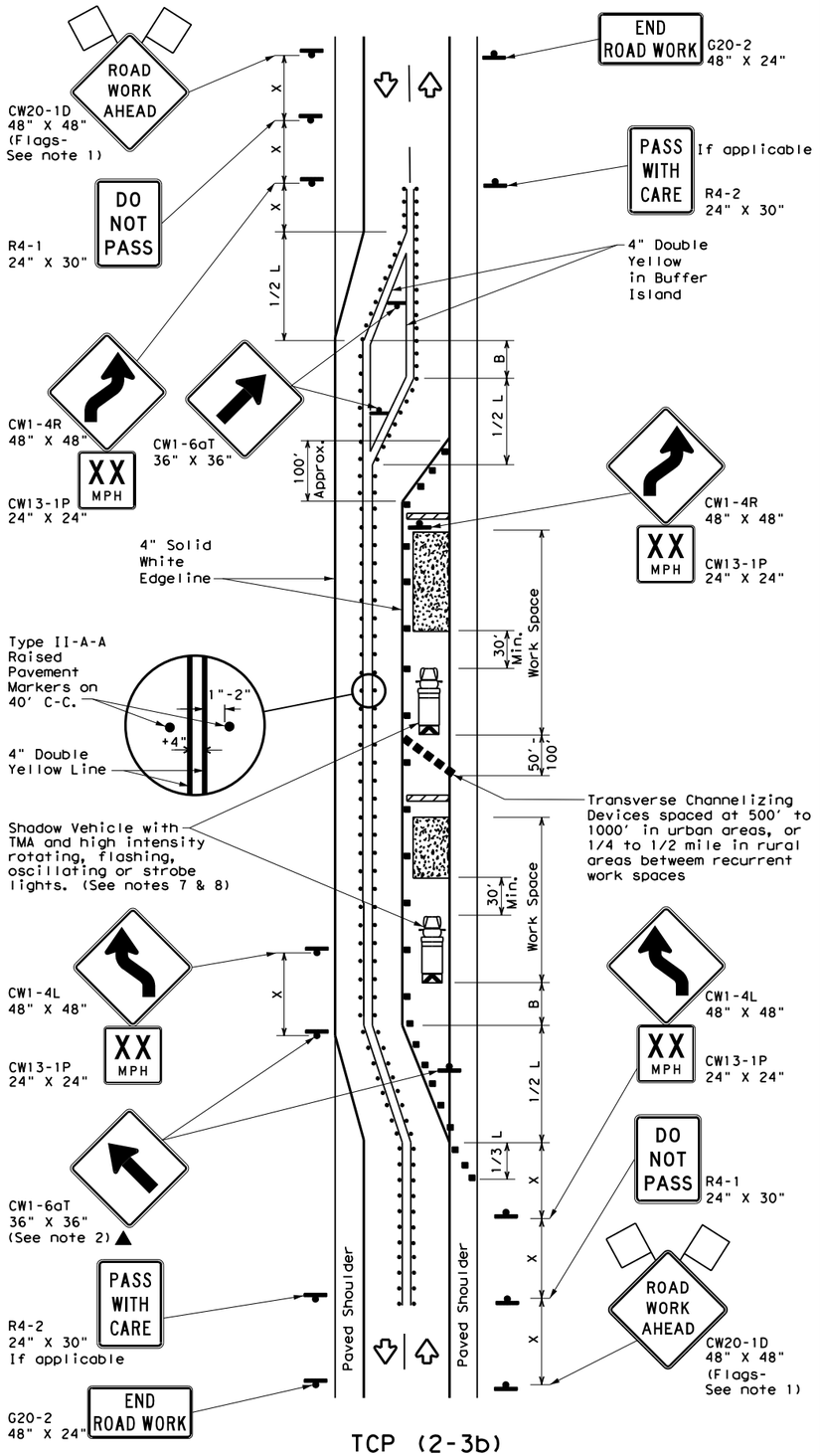


TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

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

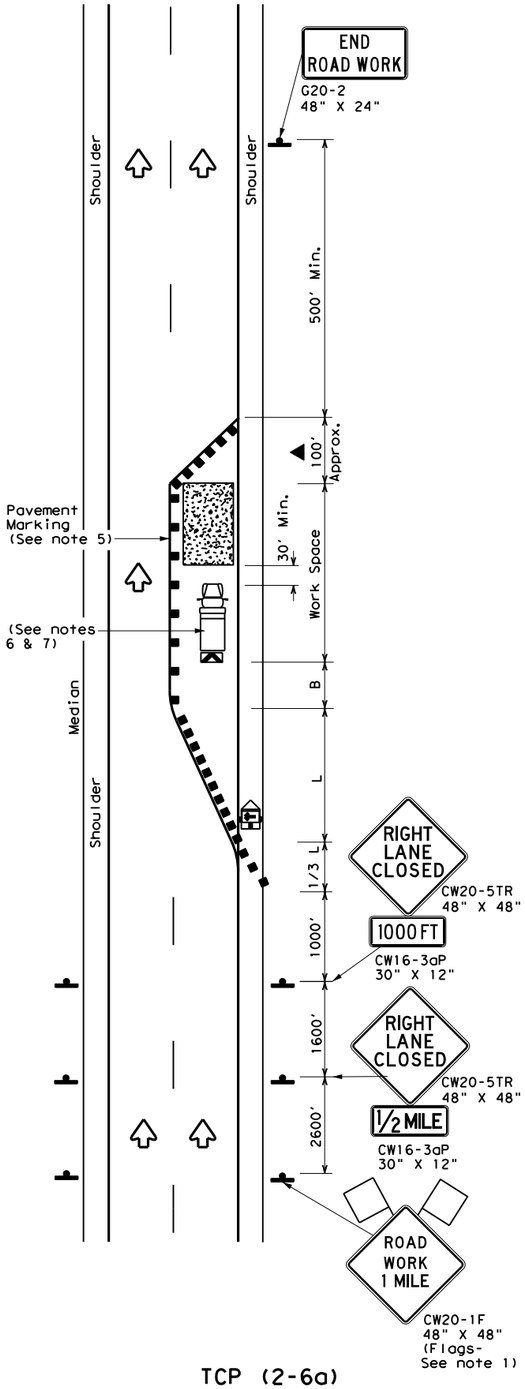
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

TCP(2-3)-18

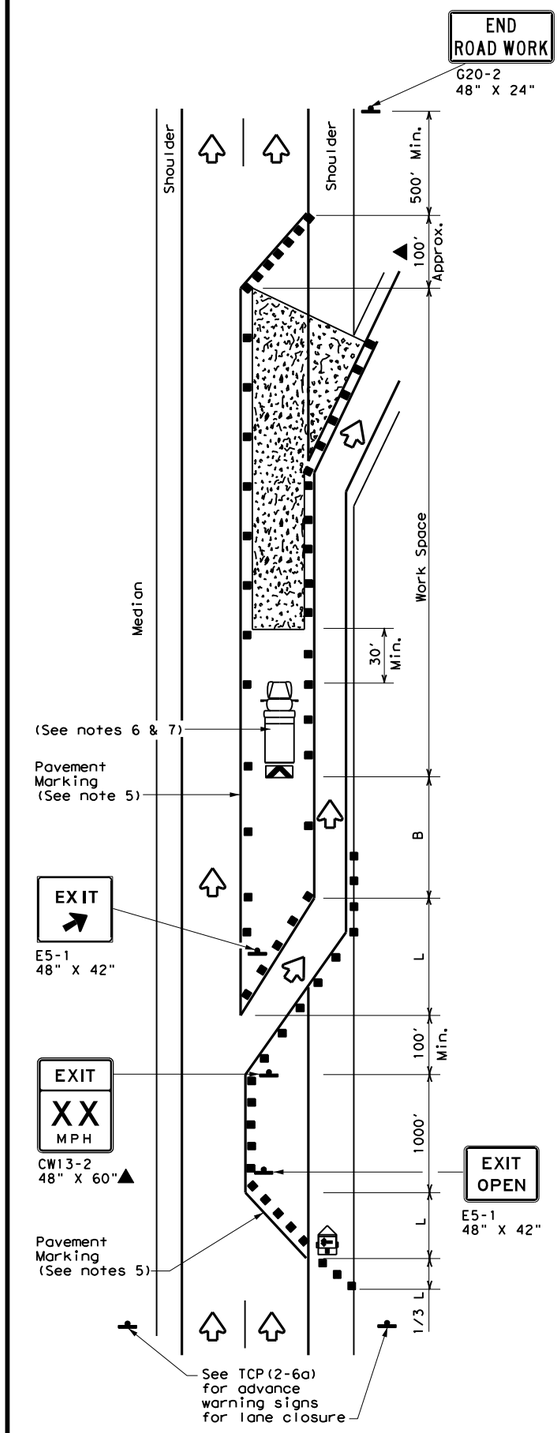
FILE: tcp(2-3)-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	6383	87	001	US 277, ETC
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	ABL	HASKELL, ETC		25
4-98 2-18				

DATE:
FILE:



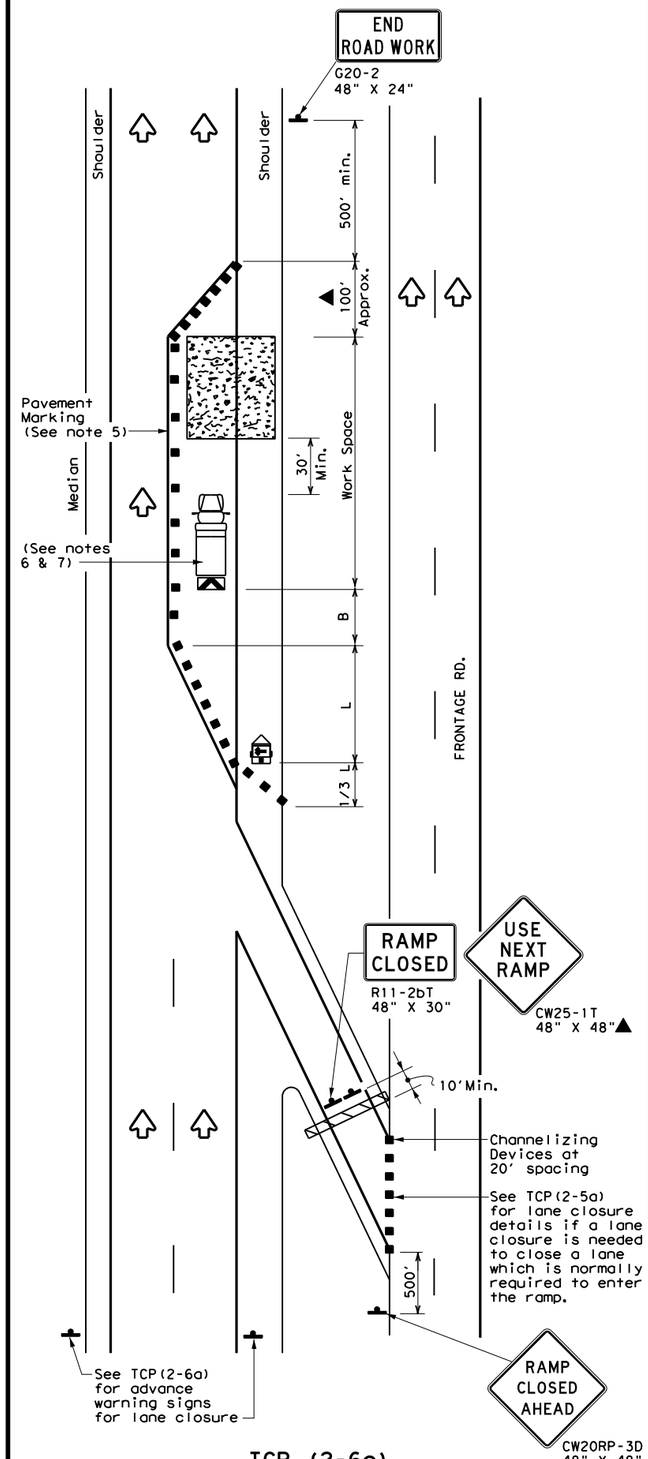
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-6c)

LANE CLOSURE NEAR ENTRANCE RAMPS

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

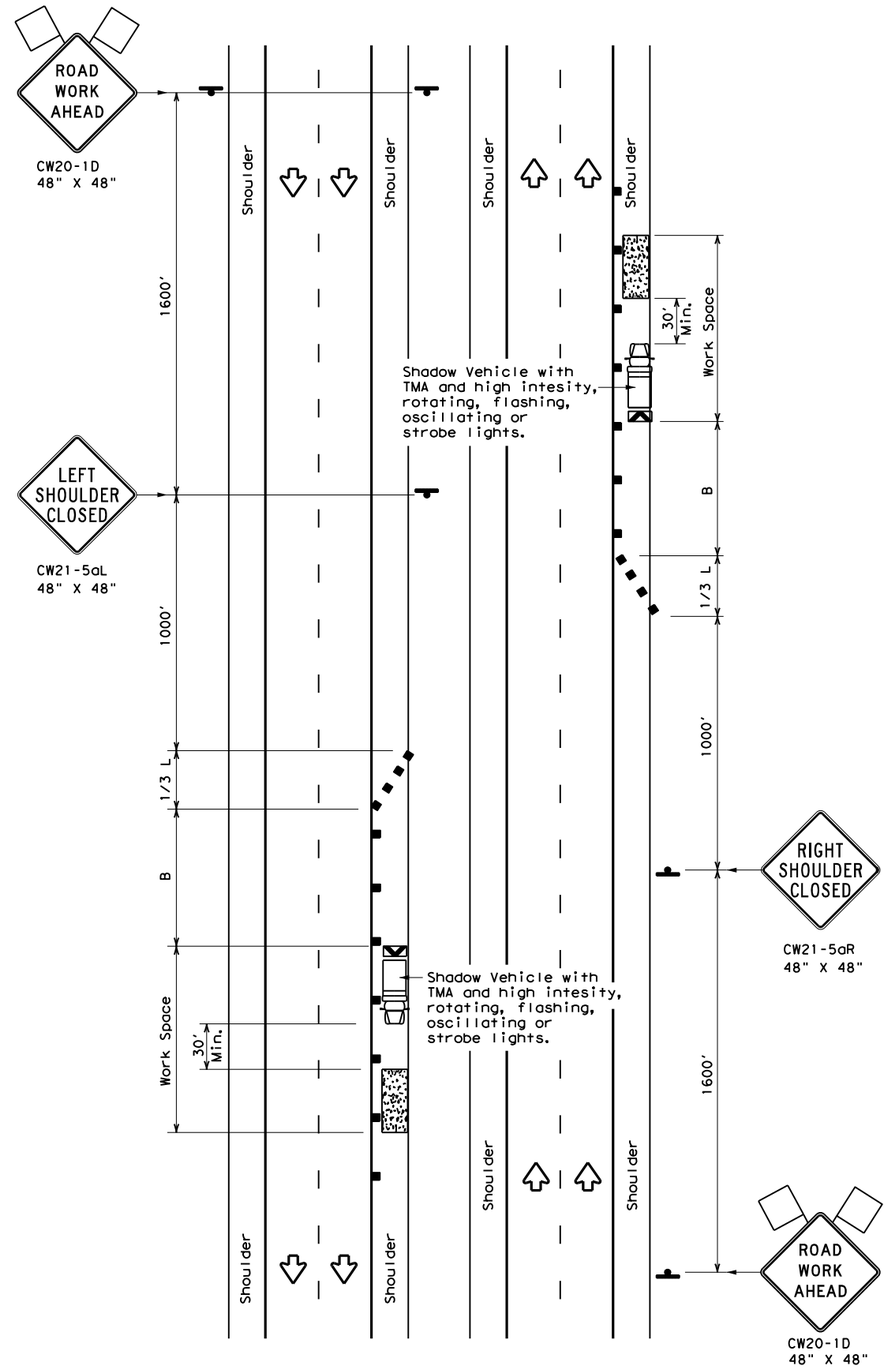
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

TCP(2-6)-18

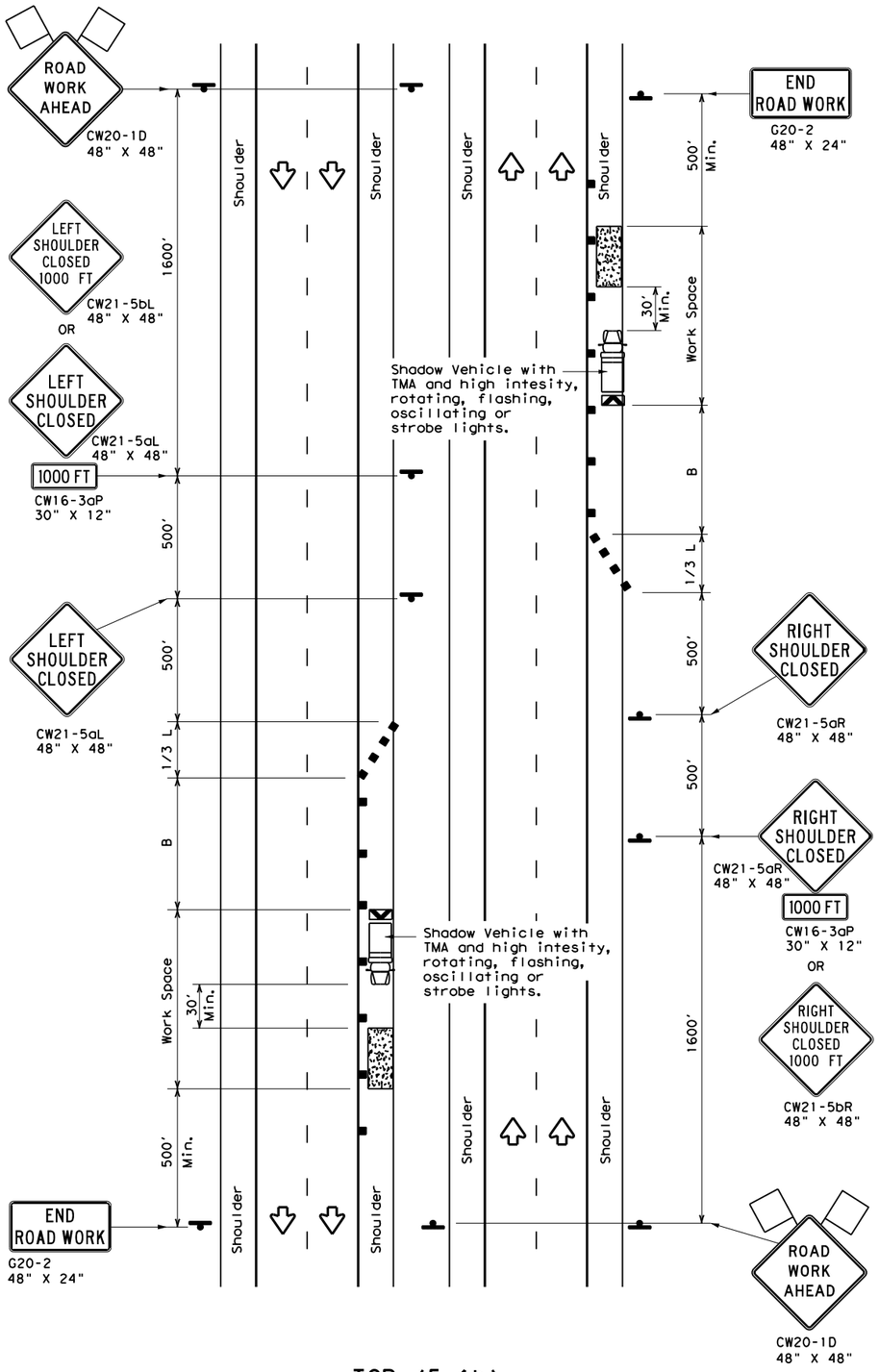
FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	6383	87	001	US 277, ETC
	DIST	COUNTY		SHEET NO.
	ABL	HASKELL, ETC		26

DATE:
FILE:



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.

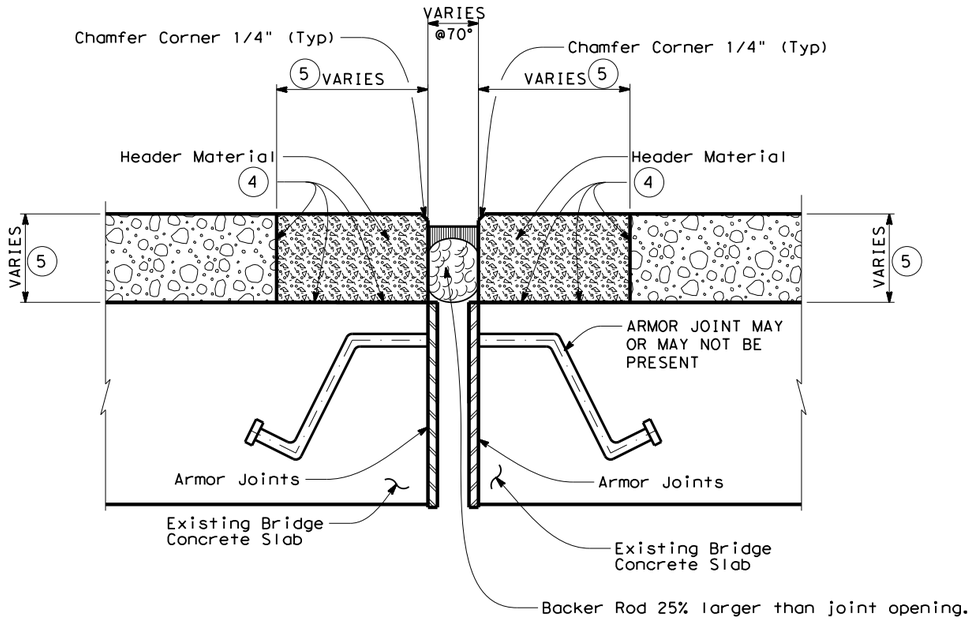
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN SHOULDER WORK FOR FREEWAYS / EXPRESSWAYS

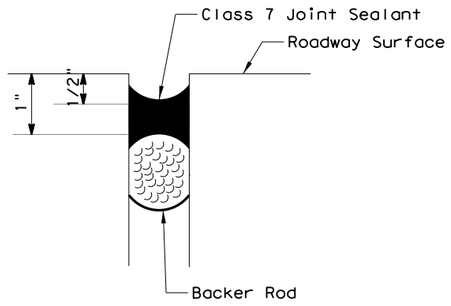
TCP(5-1)-18

FILE: tcp5-1-18.dgn	DN:	CK:	DW:	CK:
	CONT	SECT	JOB	HIGHWAY
REVISIONS	6383	87	001	US 277, ETC
2-18	DIST	COUNTY		SHEET NO.
	ABL	HASKELL, ETC		27



HEADER JOINT REPAIR - TYPE 1

NOT TO SCALE



JOINT SEAL - TYPE 1

NOTES:

1. Measure thickness of existing overly before beginning joint repair. If existing overlay is 1.5" thick or greater, proceed with header joint repair - type 1 with Engineer approval. If existing overlay is less than 1.5" thick, see Joint Repair Detail 2.
2. Saw cut overlay to top of deck and remove material to expose existing joint.
3. Condition of existing plates, and/or rails must be determined prior to placing nosing/header material. The entire length of existing joint must be checked and any portion that is determined unsound by the Engineer must be repaired or removed; and replaced as directed by the Engineer. The existing seal must be removed and disposed of. New backer rod and sealant will be used.
4. Surfaces where nosing/header material is to be placed must be clean (including abrasive blasting) and dry in accordance with the manufacturer's specifications. Apply primer to surfaces as directed by manufacturers's specifications. Set top of the backer rod 1" below top of final surfaces. Backer rod must be compatible with joint sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown in the joint seal detail.
5. Match the thickness of the header with the thickness of the total bridge overlay. The thickness of the overlay will vary depending on location. If the thickness of the overlay exceeds 3.25", set the width of the header at one and a half times the thickness of the overlay and rounded up to the nearest inch but should not be less than 5" or greater than 8" unless approved by the Engineer.
6. Match existing joint opening or set at the minimum shown below or as directed by the Engineer. Do not cantilever header over joint opening.

   1" at 70° F when distance between joints is 150 feet or less.
   2" at 70° F when distance between joints is greater than 150 feet.
7. Seal when required as Directed by the Engineer. Extend sealant up into rail or curb 6 inches on low side or sides of deck. If the Class 7 Sealant cannot be effectively placed in the vertical position, a Class 4 Sealant 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.
8. Backer Rod should be 25% larger than the joint opening.
9. Install polymer concrete joint header in accordance with Item 454 and manufacturer's instructions. Allow full cure duration before re-opening to traffic.
10. Install Class 7 joint sealant that conforms to DMS-6310, "Joint Sealants and Fillers." Place sealant while ambient temperature is 55° F and rising.

GENERAL NOTES:

Measurement and Payment will be in accordance with Item 454, "Bridge Expansion Joints" and as shown on the plans. Removal of existing material to install header material will be considered subsidiary to the various bid items. Provide header joint material meeting the requirements of DMS-6140, "Polymer Concrete for Bridge Joint Systems," and as included on the Materials Producer List, "Polymer concrete," and the appropriate primer in accordance with manufacturer's specifications. Provide sealant compatible with header joint material in accordance with DMS-6310, "Joint Sealants and Fillers," and included on the Materials Producer List, "Joint Sealers," and the appropriate primer in accordance with manufacturer's specifications.

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED
PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

JOINT REPAIR DETAIL 1

 Texas Department of Transportation

NOT TO SCALE SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

28

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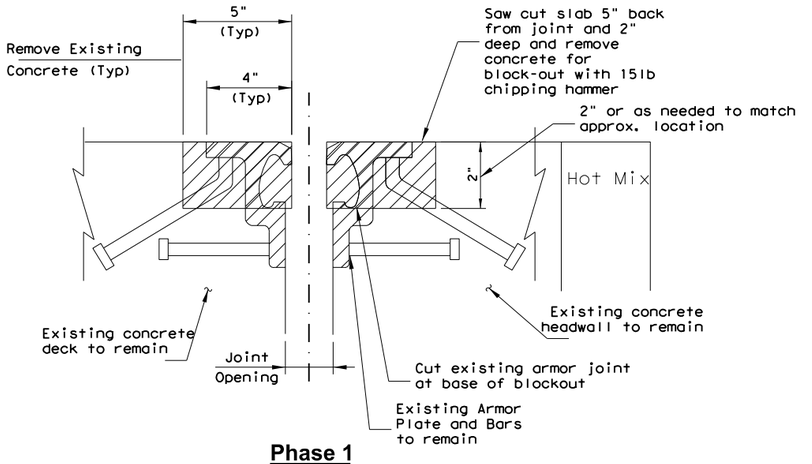
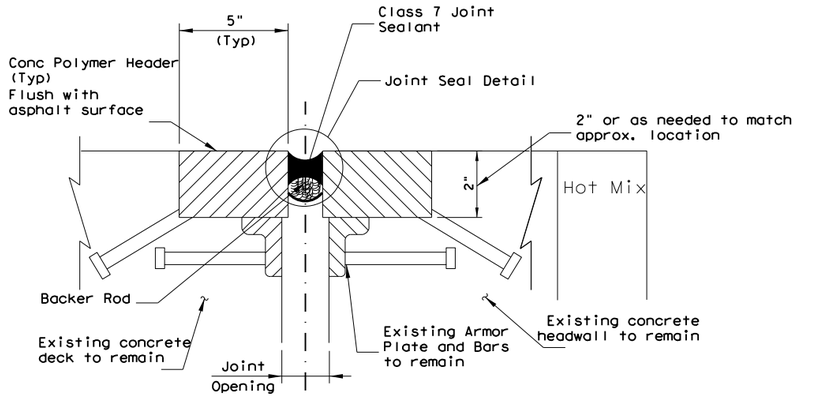
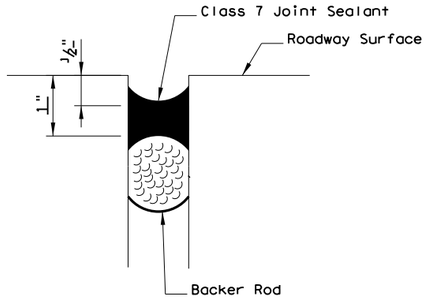


Phase 1



Phase 2

HEADER JOINT REPAIR - TYPE 2



JOINT SEAL

TYPE 2:

1. Saw cut and remove existing concrete to limits shown to the left. Saw cut 1"into concrete deck and remove block-out area with 15 lb chipping hammers. Remove any overlay material to limits of nosing material.

2. Cut existing steel armor plate flush to bottom of block-out. Flame cutting is permissible. Take care not to damage or cut any other existing reinforcing.

3. Remove any debris from joint and blast clean entire joint block-out.

4. Install polymer concrete joint header in accordance with Item 454 and manufacturer's instructions. Allow full cure duration before re-opening to traffic.

5. Install backer rod 25% larger than joint opening. Backer rod must be compatible with joint sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown in the joint seal detail.

6. Install Class 7 joint sealant that conforms to DMS-6310, "Joint Sealants and Fillers." Place sealant while ambient temperature is 55° F and rising.

7. Match existing joint opening or set at the minimum shown below or as directed by the Engineer. Do not cantilever header over joint opening.

   1" at 70° F when distance between joints is 150 feet or less.

   2" at 70° F when distance between joints is greater than 150 feet.

8. Seal when required as directed by the Engineer. Extend sealant up into rail or curb 6 inches on low side or sides of deck. If the Class 7 Sealant cannot be effectively placed in the vertical position, a Class 4 Sealant 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.

GENERAL NOTES:

Measurement and Payment will be in accordance with Item 454, "Bridge Expansion Joints" and as shown on the plans. Removal of existing material to install header material will be considered subsidiary to the various bid items. Provide header joint material meeting the requirements of DMS-6140, "Polymer Concrete for Bridge Joint Systems," and as included on the Materials Producer List, "Polymer concrete," and the appropriate primer in accordance with manufacturer's specifications. Provide sealant compatible with header joint material in accordance with DMS-6310, "Joint Sealants and Fillers," and included on the Materials Producer List, "Joint Sealers," and the appropriate primer in accordance with manufacturer's specifications.

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED
PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.
08/20/2021

JOINT REPAIR DETAIL 2

Texas Department of Transportation

NOT TO SCALE SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		29
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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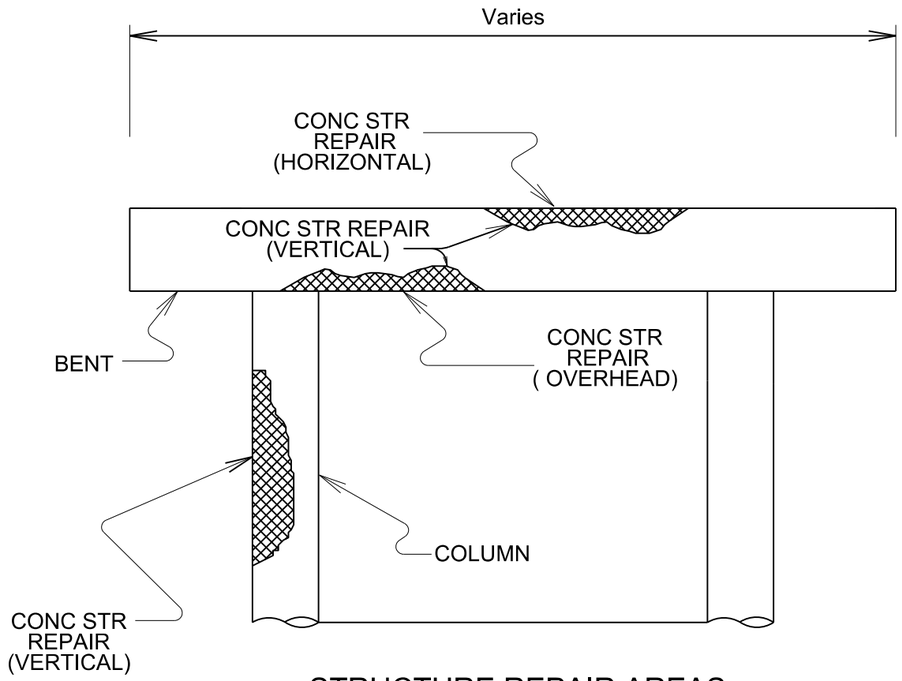
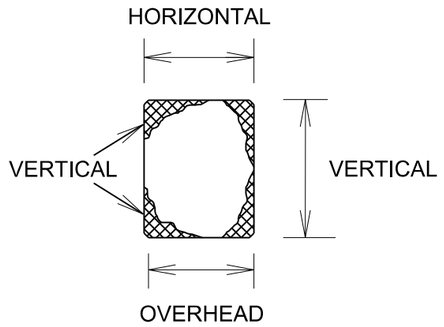


STRUCTURE REPAIR AREAS
(TYPICAL)



END OF BENT CAP
REPAIR AREAS
(TYPICAL)

NOTES

TYPICAL AREAS OF SPALL REPAIR

DETAILS ARE TYPICAL OF AREAS TO BE REPAIRED.

SLIGHT VARIATIONS DUE TO FIELD CONDITIONS ARE ANTICIPATED.

AREAS TO BE REPAIRED WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.

ALL VERTICAL AND OVERHEAD AREAS SHOWN HERE SHALL BE PAID UNDER BID ITEM 429 CONC STR REPAIR (VERTICAL & OVERHEAD). HORIZONTAL AREAS SHALL BE PAID FOR UNDER BID ITEM 429 CONC STR REPAIR (STANDARD).

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED
PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.
08/20/2021

CONCRETE REPAIR DETAIL

 Texas Department of Transportation

NOT TO SCALE SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		30
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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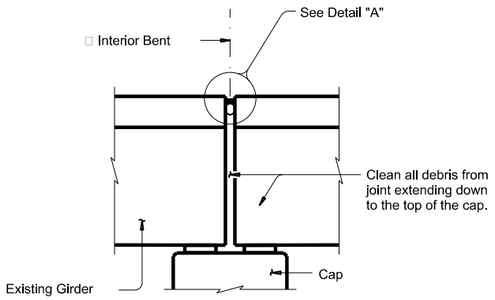
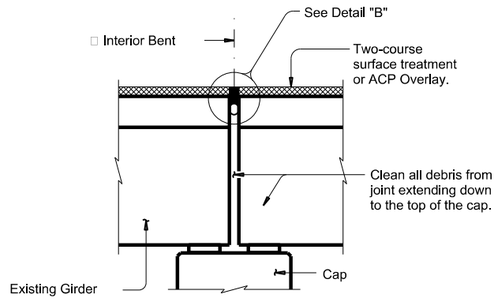


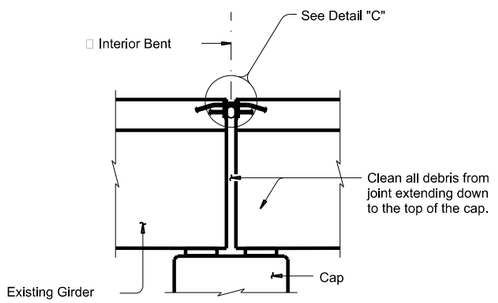
JOINT WITH SILICONE SEAL

(used without ACP Overlay)



JOINT WITH HOT POURED RUBBER SEAL

(used with ACP Overlay)

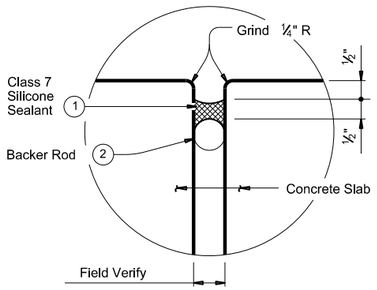


ARMOR JOINT

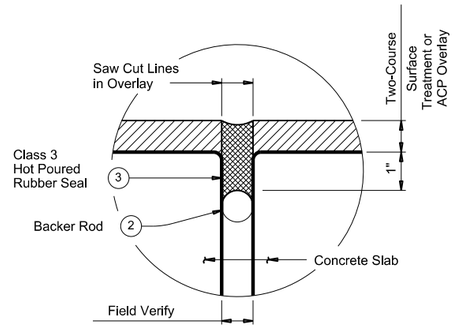
(used without ACP Overlay)

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

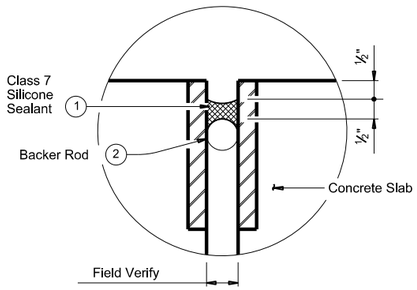
Clean off the tops of every bent after cleaning and sealing the joints. Use power washer or other method approved by Engineer to perform clean-off of top of bent. This is considered subsidiary to Item 438.



DETAIL "A"



DETAIL "B"



DETAIL "C"

(Stud anchors not shown for clarity)

PROCEDURE FOR CLEANING AND SEALING EXISTING JOINT WITH SILICONE SEAL

1) Clean joint opening of all old expansion materials/devices, dirt, and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints." Clean joint out full depth of the joint.

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

3) Place backer rod into joint opening 1" below the top of concrete. The backer rod must be 25% larger than the joint opening. When sealing joints for slab spans, pan girder spans, or box beam spans, fill void below backer rod with extruded polystyrene foam.

4) Seal the joint opening with a Class 7 Silicone. Recess seal ½" below top of concrete in travel lanes and ⅛" below top of concrete in shoulders.

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

1) Saw cut through the asphalt at the centerline of joint. Make multiple saw cuts to create a ½" minimum joint opening or match the existing joint opening. Clean joint opening of all old expansion materials/devices, bituminous materials, dirt, grease and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints."

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

3) Place backer rod into joint opening 1" below the top of concrete. Backer rod must be compatible with the hot poured rubber sealant and rated for a minimum of 400°F. The backer rod must be 25% larger than the joint opening. When sealing joints for slab spans, pan girder spans, or box beam spans, fill void below backer rod with extruded polystyrene foam.

4) Seal the joint opening with a Class 3, "Hot Poured Rubber." Seal flush to the top of the asphaltic concrete pavement.

PROCEDURE FOR CLEANING AND SEALING EXISTING ARMOR JOINTS

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

2) Abrasive blast clean existing steel surface where silicone seal is to be placed.

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

4) Place backer rod into joint opening 1" below the top of concrete. The backer rod must be 25% larger than the joint opening. When sealing joints for slab spans, pan girder spans, or box beam spans, fill void below backer rod with extruded polystyrene foam.

5) Seal the joint opening with a Class 7 Silicone. Recess seal ½" below top of concrete in travel lanes and ⅛" below top of concrete in shoulders.

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED
PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

SHEET 1 OF 3

Texas Department of Transportation

Bridge Division

CLEANING AND SEALING EXISTING BRIDGE JOINTS

(MOD)

FILE: cleanandsealjts.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT AUGUST 2020	CONT	SECT	JOB	HIGHWAY
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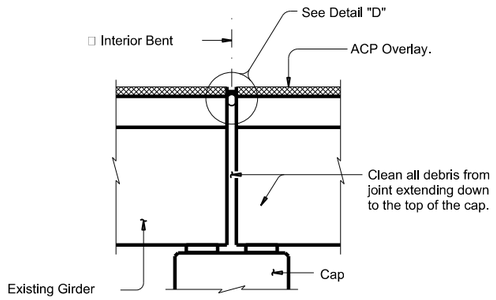
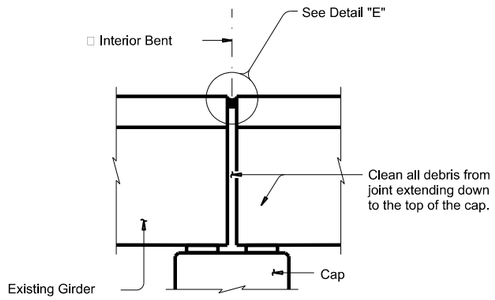
DATE:
FILE:



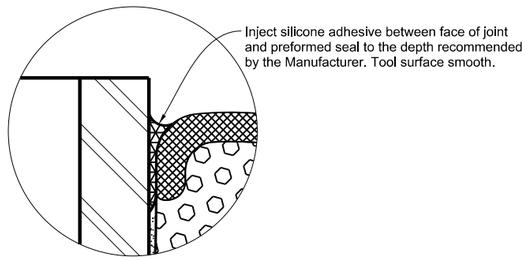
HEADER JOINT WITH SILICONE SEAL

(used with ACP Overlay with joints more than 100 ft apart)

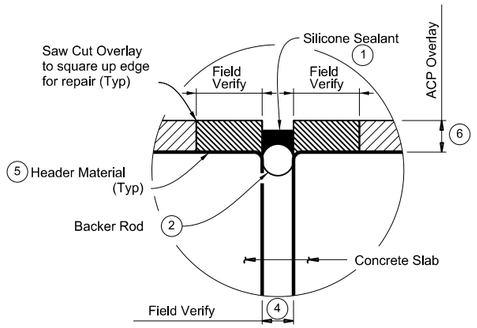


JOINT WITH PRECOMPRESSED FOAM WITH SILICONE SEAL

(used without ACP Overlay)



DETAIL "F"



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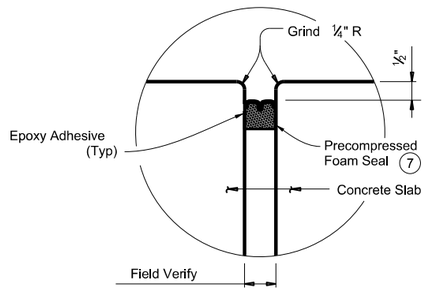

DETAIL "E"

PROCEDURE FOR CLEANING AND SEALING HEADER JOINT WITH SILICONE SEAL AND HEADER JOINT REPAIR

1) Clean joint opening of all old expansion materials/devices, dirt, and all other delterious materials in accordance with Item 438, "Cleaning and Sealing Joints."

2) Saw cut and remove damaged portions of existing header material to neat lines. Repair deck spalls that leave less than 6" of original deck in accordance with Item 785, "Bridge Joint Repair or Replacement." Shallower spalls may be filled with header material.

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

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

5) Place backer rod into joint opening 1" below the top of header material. The backer rod must be 25% larger than the joint opening. When sealing joints for slab spans, pan girder spans, or box beam spans, fill void below backer rod with extruded polystyrene foam.

6) Seal the joint opening with a Class 7 Silicone. Recess seal ½" below top of header in travel lanes and ⅛" below top of header in shoulders.

PROCEDURE FOR CLEANING AND SEALING JOINT WITH PRECOMPRESSED FOAM WITH SILICONE SEAL

1) Clean joint opening of all old expansion materials/devices, dirt, and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints." When sealing joints for slab spans, pan girder spans, or box beam spans, fill void below proposed seal with extruded polystyrene foam.

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

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

4) Wipe down joint surfaces to remove contaminates.

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

6) Apply epoxy to joint opening side surfaces.

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

8) Recess top of joint seal 1/2" in travel lanes and 1/4" in shoulders.

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

1. Use Class 7 silicone sealant in accordance with DMS-6310, "Joint Sealants and Fillers." Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."
2. Backer rod must be 25% larger than joint opening and must be compatible with the sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.
4. Match existing joint opening or set at a minimum:
   a. 1" at 70°F when the distance between joints is 150 ft or less
   b. 2" at 70°F when the distance between joints is greater than 150 ft.
   c. As directed by the Engineer.
5. Cleaning and sealing existing header joints does not necessitate replacement of existing header material. If replacement of header material is necessary, as determined by the Engineer, use header material in accordance with DMS-6140, "Polymer Concrete for Bridge Joint Systems." Match the thickness of the header material with the thickness of the overlay as shown in the plans, but not to exceed 4". Place header material flush with roadway surface. Do not cantilever header material over the joint opening. Repair of header material will be paid for in accordance with Item 785-6006, "Bridge Joint Repair (Header)."
6. Maximum thickness is 4".
7. See Table of Approved Foam Seal Manufacturers on Sheet 3 of 3.

Clean off the tops of every bent after cleaning and sealing the joints. Use power washer or other method approved by Engineer to perform clean-off of top of bent. This is considered subsidiary to Item 438.

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08/20/2021

Texas Department of Transportation — Bridge Division

CLEANING AND SEALING EXISTING BRIDGE JOINTS
(MOD)

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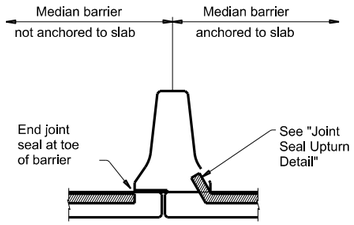
TABLE OF APPROVED FOAM SEAL MANUFACTURERS

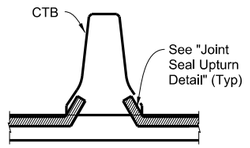
MANUFACTURER	SEAL TYPE
Watson Bowman Acme	Wabo FS
SSI	Silspec SES
Sealtite	Sealtite 50N
EMSEAL	BEJS

TABLE OF ESTIMATED QUANTITIES

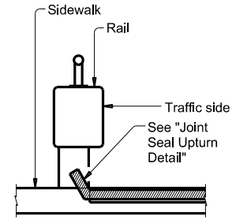
STRUCTURE NUMBER	ITEM	DESCRIPTION	NUMBER OF JOINTS	QUANTITY (LF)
C1FY23: 08-017-0-0295-02-016	438	CLEAN AND SEAL EXISTING JOINTS (CL 3)	2	60
F3: 08-077-0-0296-03-012	438	CLEAN AND SEAL EXISTING JOINTS (CL 7)	6	252
H2: 08-105-0-0157-04-052	454	JOINT SEALANT	2	90
H3: 08-105-0-0157-04-053	454	JOINT SEALANT	2	90



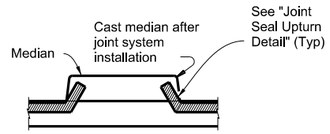
WITH OPEN DECK JOINT
BELOW MEDIAN BARRIER



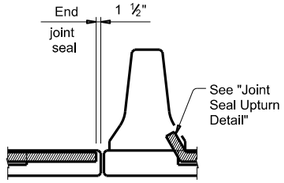
AT CONCRETE TRAFFIC BARRIER



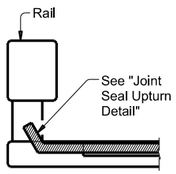
AT SIDEWALK
BEHIND BRIDGE RAIL



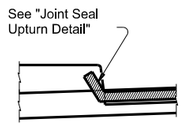
AT RAISED MEDIAN



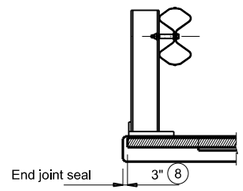
WITH OPEN DECK JOINT
ADJACENT TO MEDIAN BARRIER



AT CONCRETE BRIDGE RAIL



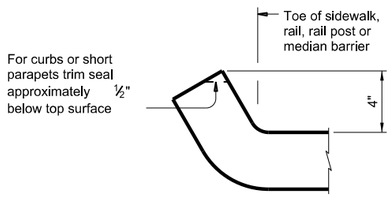
AT SIDEWALK



AT STEEL POST BRIDGE RAIL

JOINT SEALANT TERMINATION DETAILS

(8) 1 ½" for Precompressed Foam and Silicone Seal



JOINT SEAL UPTURN DETAIL

GENERAL NOTES

Cleaning existing joint opening (full depth) of all debris, providing and placing backer rod, saw-cutting joint opening, and sealing joint is paid for by Item 438, "Cleaning and Sealing Joints" and measured by the foot of "Cleaning and Sealing of Existing Joints."

Repair of existing header joint material is paid for by Item 785-6006, "Bridge Joint Repair (Header)." Provide header material in accordance with DMS-6140, "Polymer Concrete for Bridge Joint Systems."

Obtain approval for all tools, equipment, materials and techniques proposed for use to prepare the joint.

For Class 3 Hot Poured Rubber Seal, provide backer rod compatible with the hot poured rubber sealant and rated for a minimum of 400°F.

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

Provide Class 7 silicone sealant in accordance with DMS-6310, "Joint Sealants and Fillers" for joints in concrete.

Extend sealant up into rail or curb 3 inches on low side or sides of deck. If the Class 7 Sealant cannot be effectively placed in the vertical position, a Class 4 Sealant compatible with the Class 7 sealant is allowed for the extension of the seal into the curb or rail. Prepare surfaces where sealant is to be placed in accordance with manufacturer's specifications.

Clean off the tops of every bent after cleaning and sealing the joints. Use power washer or other method approved by Engineer to perform clean-off of top of bent. This is considered subsidiary to Item 438.

STATE OF TEXAS
STEPHEN T. JONES
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PROFESSIONAL ENGINEER

08/20/2021

Stephen T. Jones, P.E.

Texas Department of Transportation | Bridge Division

CLEANING AND SEALING EXISTING BRIDGE JOINTS

(MOD)

DATE:
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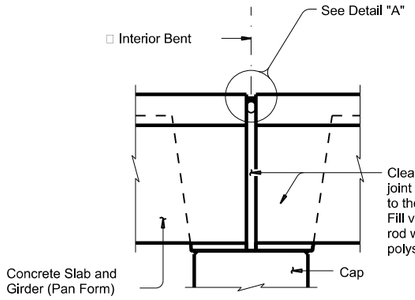
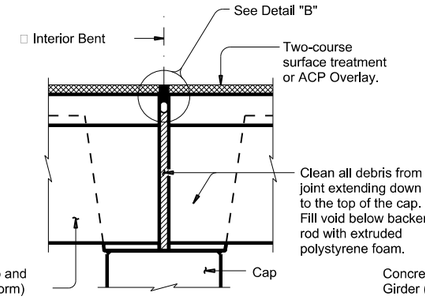
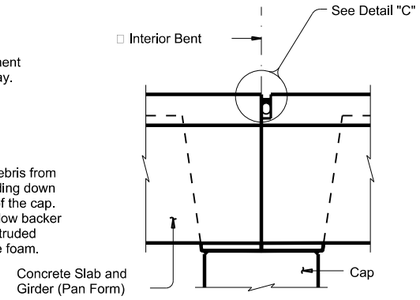
	DIST	COUNTY		SHEET NO.
	ABL	HASKELL, ETC		33



JOINT WITH SILICONE SEAL
(used without ACP Overlay)

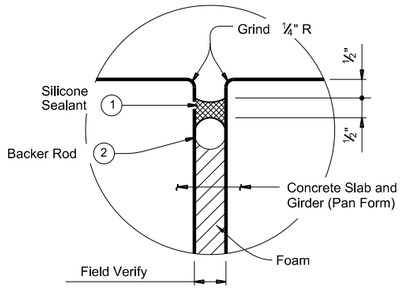


JOINT WITH HOT POURED RUBBER SEAL
(used with ACP Overlay)

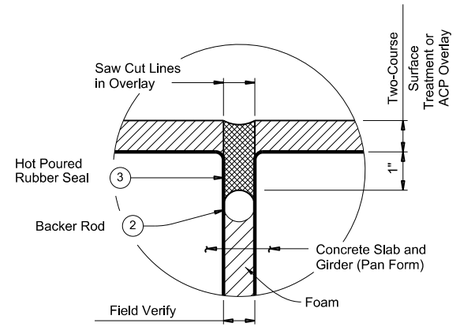


FIXED JOINT

EXISTING CONCRETE SLAB & GIRDER JOINT REPAIR



DETAIL "A"



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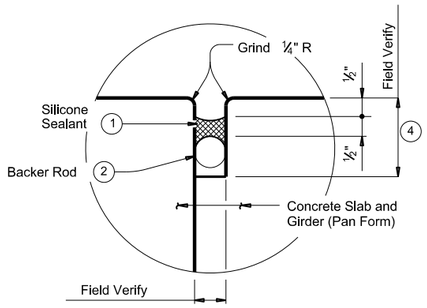


DETAIL "C"

1. Use Class 7 silicone sealant. Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."
2. Backer rod must be 25% larger than joint opening and must be compatible with the sealant.
3. Use Class 3 hot poured rubber seal. Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."
4. Backer rod may be omitted if existing joint depth is less than 1 ½".

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

1) Clean joint opening of all old expansion materials/devices, dirt, and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints." Clean joint out full depth of the joint.

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

3) Place backer rod into joint opening 1" below the top of concrete. The backer rod must be 25% larger than the joint opening. Fill void below backer rod with extruded polystyrene foam.

4) Seal the joint opening with a Class 7 Silicone. Recess seal ½" below top of concrete in travel lanes and ⅛" below top of concrete in shoulders.

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

1) Saw cut through the asphalt at the centerline of joint. Make multiple saw cuts to create a ½" minimum joint opening or match the existing joint opening. Clean joint opening of all old expansion materials/devices, bituminous materials, dirt, grease and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints."

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

3) Place backer rod into joint opening 1" below the top of concrete. Backer rod must be compatible with the hot poured rubber sealant and rated for a minimum of 400°F. The backer rod must be 25% larger than the joint opening. Fill void below backer rod with extruded polystyrene foam.

4) Seal the joint opening with a Class 3, "Hot Poured Rubber." Seal flush to the top of the asphaltic concrete pavement.

PROCEDURE FOR CLEANING AND SEALING EXISTING FIXED JOINTS:

1) Remove existing seal and debris from recess.

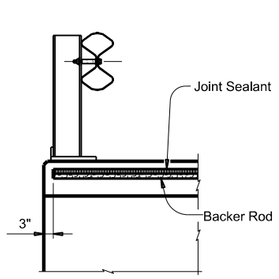
2) Abrasive blast clean existing surfaces where silicone seal is to be placed.

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

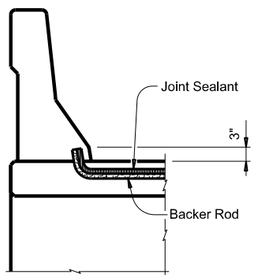
4) Place backer rod into joint opening 1" below the top of concrete. The backer rod must be 25% larger than the joint opening.

5) Seal the joint opening with a Class 7 Silicone. Recess seal ½" below top of concrete in travel lanes and ⅛" below top of concrete in shoulders.

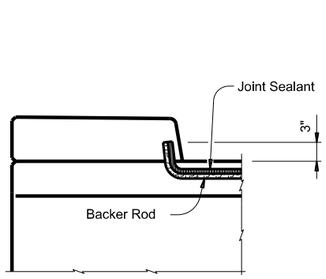
Clean off the tops of every bent after cleaning and sealing the joints. Use power washer or other method approved by Engineer to perform clean-off of top of bent. This is considered subsidiary to Item 438.



SHOWN AT STEEL RAIL



SHOWN AT BARRIER RAIL



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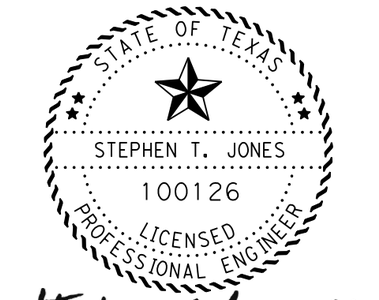
JOINT SEALANT TERMINATION DETAILS



Stephen T. Jones, P.E.

08/20/2021

GENERAL NOTES

Cleaning existing joint opening (full depth) of all debris, providing and placing backer rod, saw-cutting asphalt overlay, and sealing joint is paid for by Item 438, "Cleaning and Sealing Joints" and measured by the linear foot.

Obtain approval for all tools, equipment, materials and techniques proposed for use to prepare the joint.

For Class 3 Hot Poured Rubber Seal, provide backer rod compatible with the hot poured rubber sealant and rated for a minimum of 400°F.

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

Provide Class 7 silicone sealant in accordance with DMS-6310, "Joint Sealants and Fillers" for joints in concrete.

Extend sealant up into rail or curb 3 inches on low side or sides of deck. If the Class 7 Sealant cannot be effectively placed in the vertical position, a Class 4 Sealant compatible with the Class 7 sealant is allowed for the extension of the seal into the curb or rail. Prepare surfaces where sealant is to be placed in accordance with manufacturer's specifications.

Texas Department of Transportation | Bridge Division

CLEANING AND SEALING EXISTING BRIDGE JOINTS

(PAN GIRDER BRIDGES)

(MOD)

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	ABL	HASKELL, ETC		34

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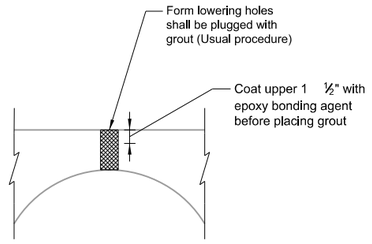

FORM LOWERING HOLE TREATMENT

Scale: N.T.S.

FORM LOWERING HOLE TREATMENT NOTES:

Clean hole to remove oil and other contaminants.

Provide Type V epoxy per DMS-6100, "Epoxies and Adhesives".

Repair as full-depth bridge deck repair per TxDOT Concrete Repair Manual Chapter 3, Section 4. Saw-cutting is not required.

Repairs are paid for as Item 429, "Concrete Structure Repair".

STATE OF TEXAS
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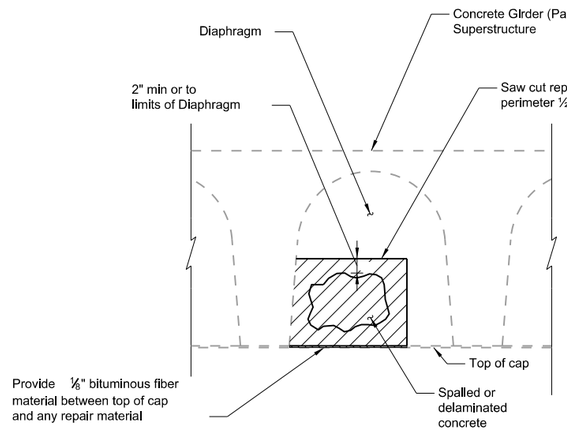
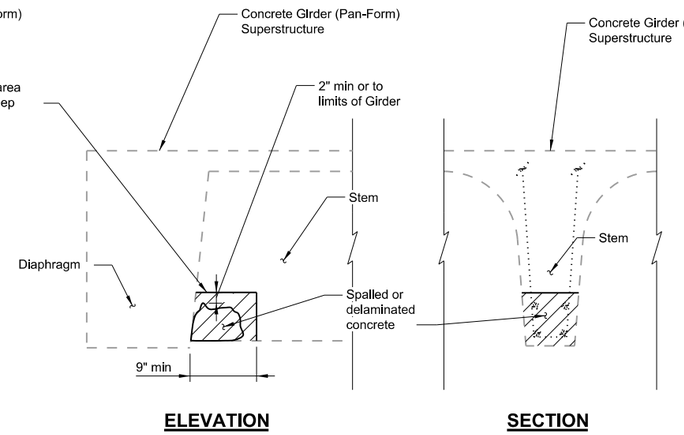
08/20/2021



TYPICAL DIAPHRAGM REPAIR

Scale: ½" = 1'-0"



ELEVATION **SECTION**

TYPICAL GIRDER STEM REPAIR

Scale: ½" = 1'-0"

CONCRETE REPAIR NOTES:

Damage locations and quantities are based on 06/16/21 Condition Assessment. Immediately notify TxDOT if any discrepancies are noted between the plans and actual conditions.

Submit detailed repair procedures, including proposed proprietary materials, for approval prior to commencing work. Repairs are considered "Intermediate Spalls" and shall be repaired following Chapter 3, Section 2 of the TxDOT Concrete Repair Manual.

Some repair areas indicated do not exhibit visible spalling and will need to be identified by sounding the concrete with hammers to determine the location and limits of repairs.

Sound all surfaces to identify and mark all delaminated areas for review and approval by the Engineer. Confirm square footage of repair areas prior to commencing removal and notify Engineer of any discrepencies. Provide access to Engineer for verification.

Notify Engineer once existing concrete is removed and repair areas for each span have been prepared. Provide access to the Engineer for verification of prepared repair areas.

Repairs are paid for as Item 429, "Concrete Structure Repair".

Bridge Division

CONCRETE SUPERSTRUCTURE REPAIR DETAILS

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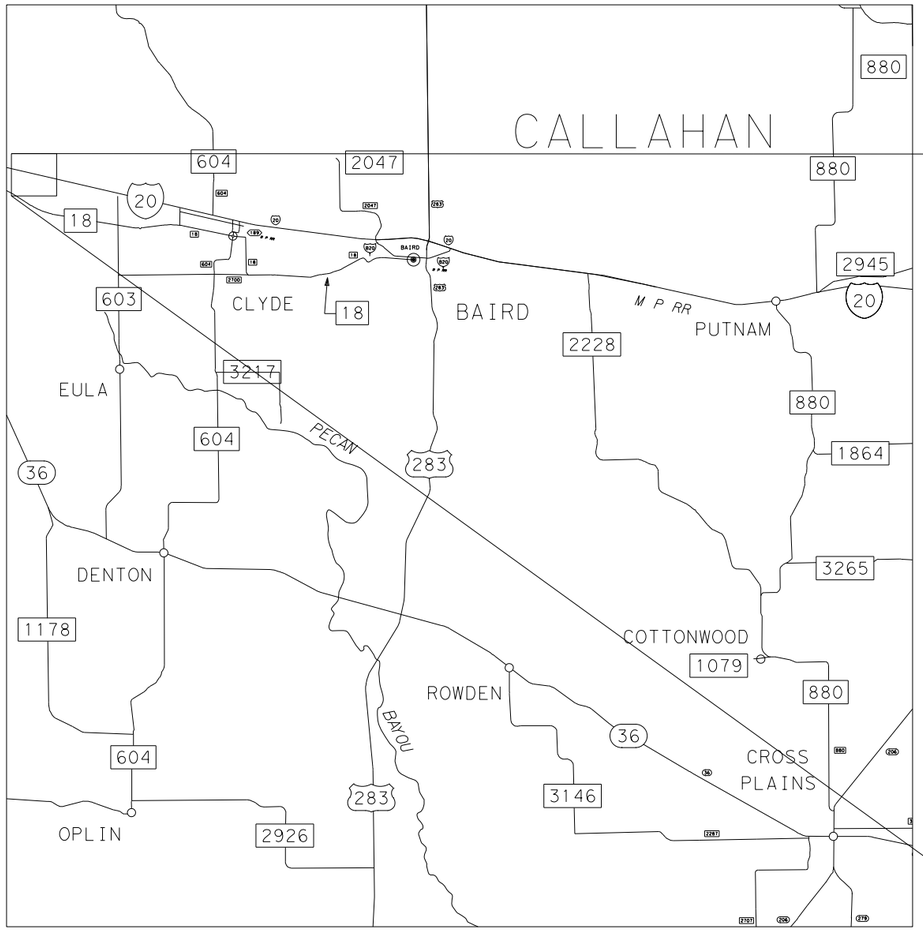
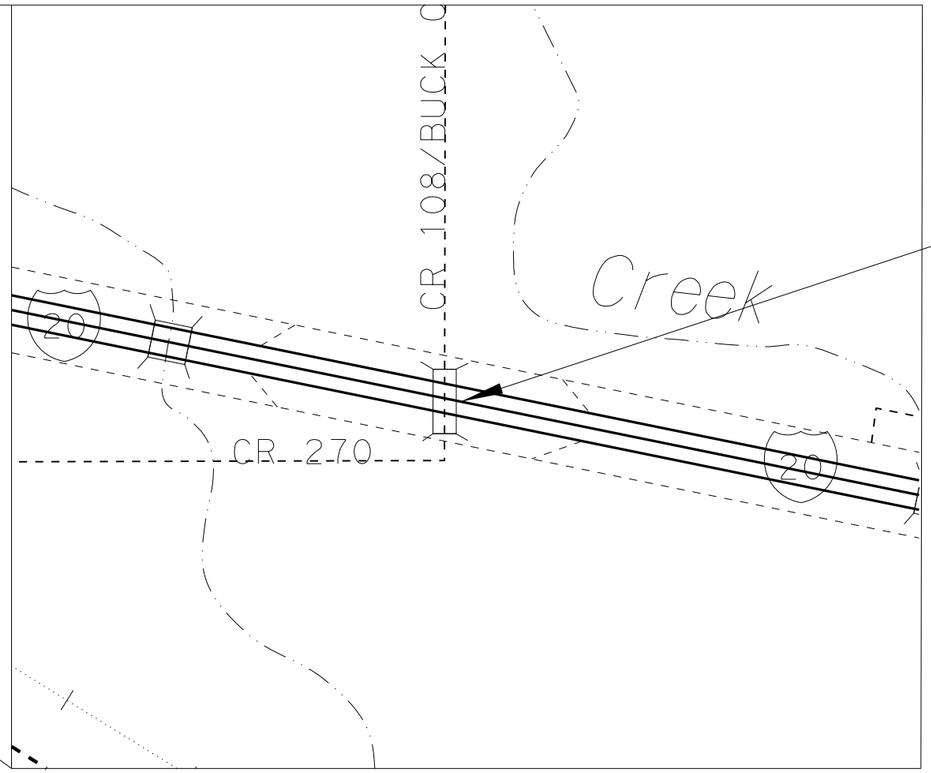
BUCK CREEK ROAD

IH 20

NBI # 08-030-0-0006-07-276



CALLAHAN COUNTY



LOCATION MAP

08-030-0-0006-07-276
LAT/LONG: 32.432212/-99.60506

LIMITS: AT IH20 BRIDGE

CONSISTING OF: CLEAN AND PATCH SPALLS, BEARING PAD REPLACEMENT, AND BRIDGE JOINT REPAIR

DESCRIPTION: 4 SPAN CONTINUOUS CONCRETE VARIABLE DEPTH T-BEAM BRIDGE ON CONCRETE BENTS

BRIDGE LENGTH: 252'

OVERALL WIDTH: 37'-2.5"

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED
PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.
08/20/2021

C1FY23 LOCATION MAP

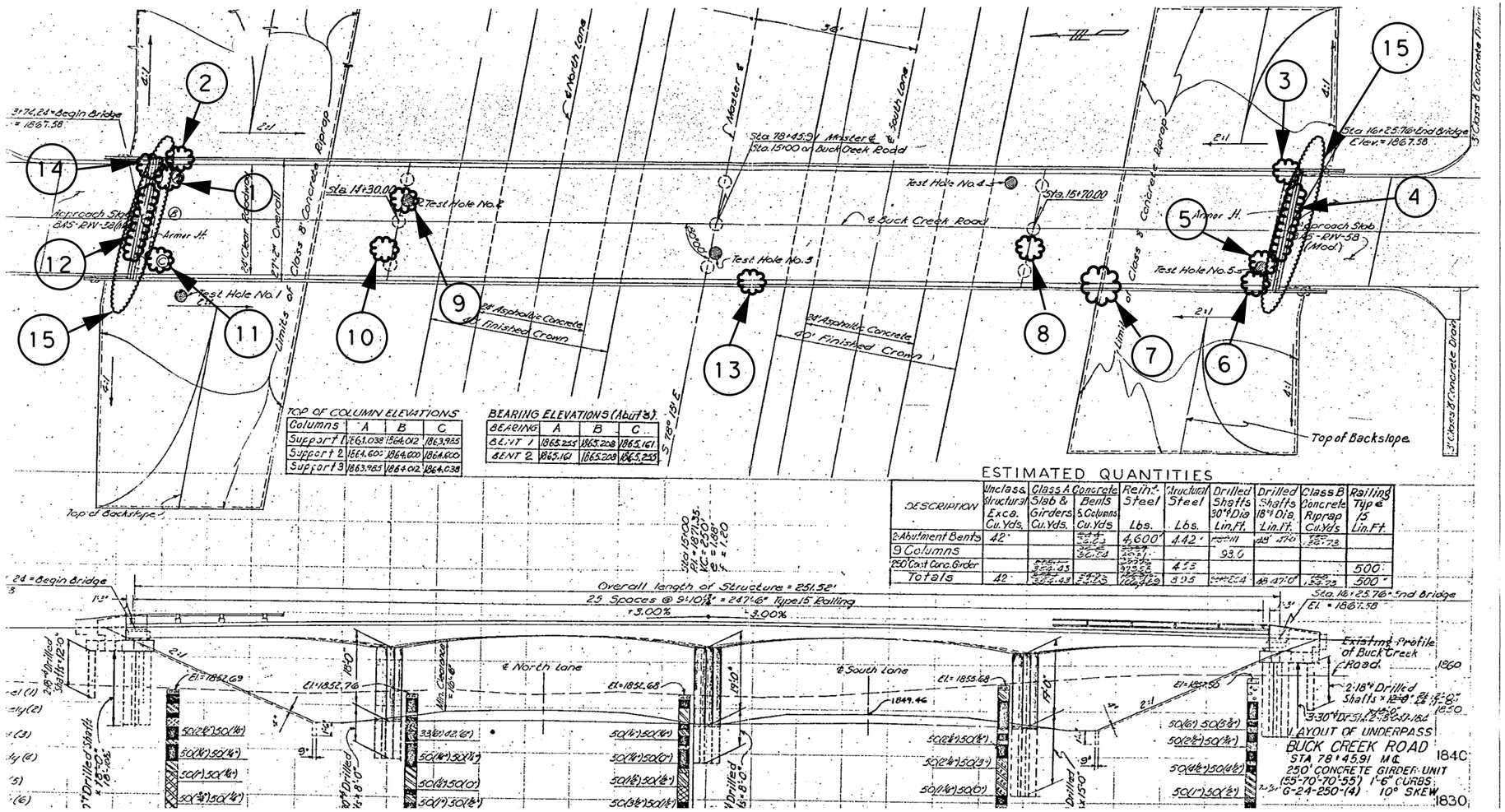
 Texas Department of Transportation

SCALE: NTS SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		36
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

FILE: S:\XFER\Mike Roethel\BPM FY22\Sheets\QA set\C1FY23 LOCATION MAP.dgn
DATE: 8/19/2021 12:09:25 PM

BUCK CREEK ROAD AT IH 20



TOP OF COLUMN ELEVATIONS

Columns	A	B	C
Support 1	1861.038	1864.012	1863.925
Support 2	1864.600	1864.600	1864.600
Support 3	1863.925	1864.012	1864.038

BEARING ELEVATIONS (Abut's)

BEARING	A	B	C
BENT 1	1865.255	1865.208	1865.161
BENT 2	1865.161	1865.208	1865.255

ESTIMATED QUANTITIES

DESCRIPTION	Unclass. Structural Excv. Cu. Yds.	Class A Concrete Slab & Girders Cu. Yds.	Class A Concrete Bents & Columns Cu. Yds.	Reinf. Steel Lbs.	Structural Steel Lbs.	Drilled Shafts 30" Dia Lin. Ft.	Drilled Shafts 18" Dia. Lin. Ft.	Class B Concrete Riprap Cu. Yds.	Railing Type C Lin. Ft.
2 Abutment Bents	42'			4,600'	442'				
9 Columns						93.0			
250' Cast Conc. Girder					455				500'
Totals	42'				595	93.0	47.0'	55.72	500'

Stephen T. Jones, P.E.
09/14/2021

C1FY23 BRIDGE LAYOUT

Texas Department of Transportation

SCALE: NTS SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		37
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

FILE: S:\XFER\Mike Roethel\BPM FY22\Sheets\QA set\C1FY23 BRIDGE LAYOUT.dgn
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BRIDGE REPAIRS

LOCATION	QUANTITY	UNIT	TYPE	DESCRIPTION	SURFACE TYPE	SPALL CATEGORY
1	20	SF	SPALL REPAIR	GIRDER	VERTICAL	INTERMEDIATE
2	15	SF	SPALL REPAIR	UNDERDECK	OVERHEAD	INTERMEDIATE
3	10	SF	SPALL REPAIR	UNDERDECK	OVERHEAD	INTERMEDIATE
4	50	SF	SPALL REPAIR	ABUTMENT	VERTICAL	INTERMEDIATE
5	10	SF	SPALL REPAIR	GIRDER	VERTICAL	INTERMEDIATE
6	10	SF	SPALL REPAIR	UNDERDECK	OVERHEAD	INTERMEDIATE
7	80	SF	SPALL REPAIR	GIRDER/DECK	OVERHEAD	INTERMEDIATE
8	20	SF	SPALL REPAIR	DIAPHRAGM	OVERHEAD	INTERMEDIATE
9	20	SF	SPALL REPAIR	DIAPHRAGM	OVERHEAD	INTERMEDIATE
10	110	SF	SPALL REPAIR	ABUTMENT	VERTICAL	INTERMEDIATE
11	20	SF	SPALL REPAIR	GIRDER	VERTICAL	INTERMEDIATE
12	150	SF	SPALL REPAIR	UNDERDECK	OVERHEAD	INTERMEDIATE
13	25	SF	SPALL REPAIR	UNDERDECK	VERTICAL	INTERMEDIATE
	25	SF	SPALL REPAIR	UNDERDECK	OVERHEAD	INTERMEDIATE
14	1	EA	BEARING	REPLACE BEARING		
15	60	LF	CLEANING AND SEALING EXIST JOINTS(CL3)	BRIDGE ENDS		

NOTE FOR LOCATION 15: SEE SHEET, CLEANING AND SEALING EXISTING BRIDGE JOINTS (SHEET 1 OF 3)- DETAIL "B"

BRIDGE REPAIR SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
429	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	565
438	CLEANING AND SEALING EXIST JOINTS(CL3)	LF	60
4002	REPLACE ELASTOMERIC BEARING PADS	EA	1

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

09/14/2021

C1FY23 BRIDGE SUMMARY

Texas Department of Transportation

SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		38
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

FILE: S:\XFER\Mike Roethel i\BPM FY22\Sheets\QA set\C1FY23 BRIDGE SUMMARY.dgn
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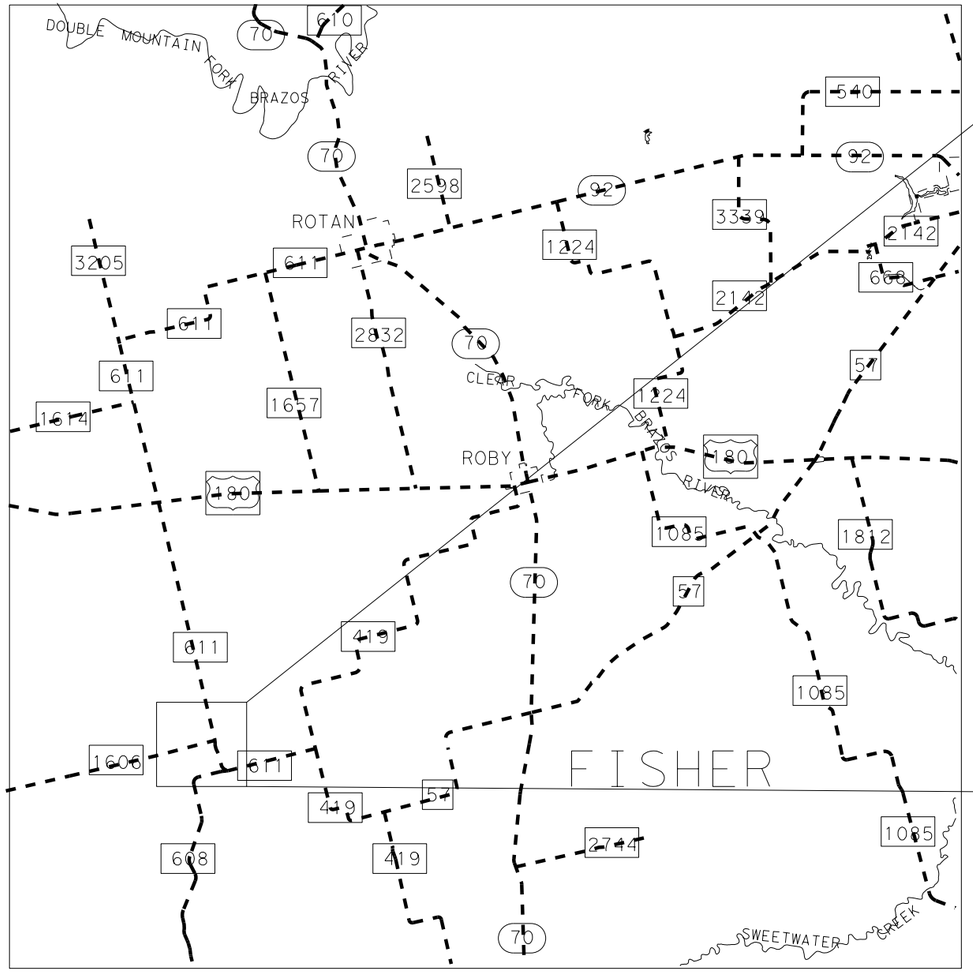
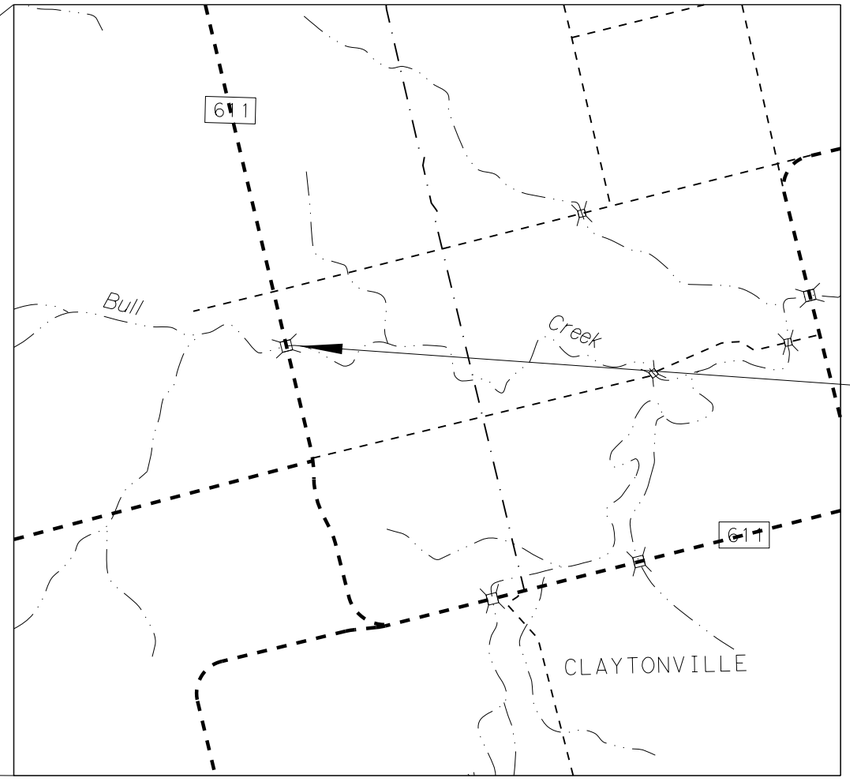
FM 611

BULL CREEK

NBI # 08-077-0-0983-02-014



FISHER COUNTY



08-077-0-0983-02-014

LAT/LONG: 32.635739/-100.549491

LOCATION MAP

LIMITS: AT BULL CREEK BRIDGE

CONSISTING OF: CONCRETE STRUCTURE REPAIR TO CONCRETE PAN GIRDERS WITH MODERATE TO SEVERE CRACKS, DELAMINATION, AND SPALLS WITH EXPPOSED RUSTING REBAR

DESCRIPTION: CONCRETE PAN AND GIRDER BRIDGE

BRIDGE LENGTH: 90'

OVERALL WIDTH: 24'-8.5"

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

F1 LOCATION MAP

 Texas Department of Transportation

SCALE: NTS SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		39
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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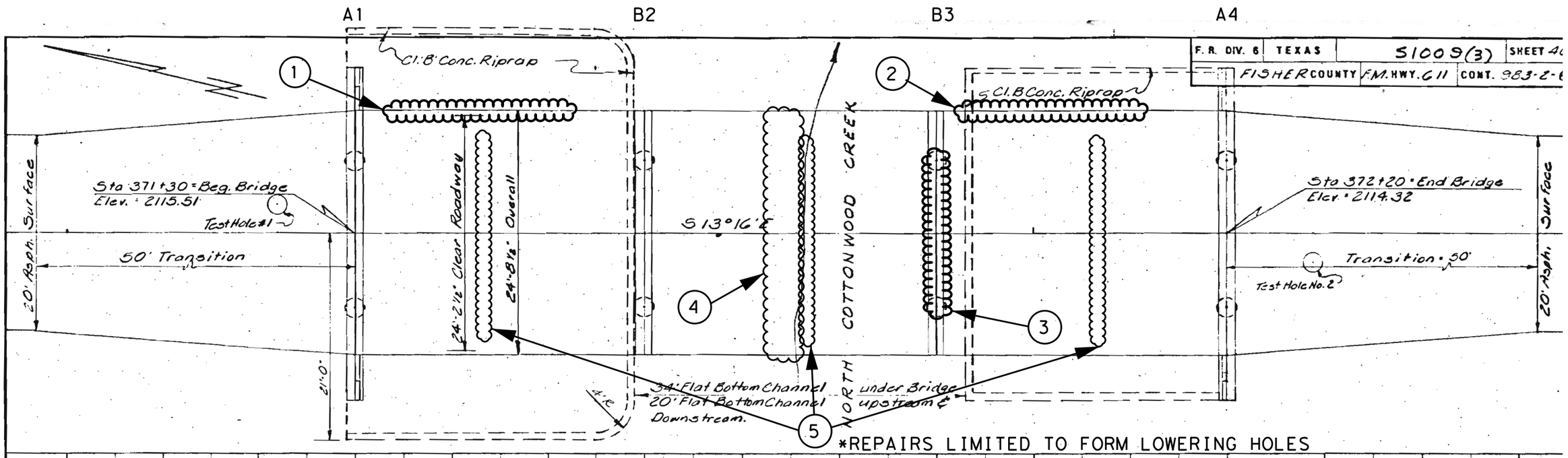
FM 611 AT BULL CREEK

F. R. DIV. 6	TEXAS	5100 9(3)	SHEET 4
FISHER COUNTY	FM. HWY. 611	CONT. 983-2-	



*NOTE: NAME OF CREEK CHANGED FROM
NORTH COTTONWOOD CREEK TO BULL CREEK

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

08/20/2021

Stephen T. Jones, P.E.

F1 BRIDGE LAYOUT

Texas Department of Transportation

SCALE: NTS SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		40
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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DATE: 8/19/2021 12:09:35 PM

BRIDGE REPAIRS

LOCATION	QUANTITY	UNIT	TYPE	DESCRIPTION	SURFACE TYPE	SPALL CATEGORY
1	60	SF	SPALL REPAIR	GIRDER	VERTICAL	INTERMEDIATE
	50	SF	SPALL REPAIR	GIRDER	OVERHEAD	INTERMEDIATE
2	60	SF	SPALL REPAIR	GIRDER	VERTICAL	INTERMEDIATE
	50	SF	SPALL REPAIR	GIRDER	OVERHEAD	INTERMEDIATE
3	40	SF	SPALL REPAIR	DIAPHRAGM	VERTICAL	INTERMEDIATE
	20	SF	SPALL REPAIR	BENTS	VERTICAL	INTERMEDIATE
	20	SF	SPALL REPAIR	BENTS	OVERHEAD	INTERMEDIATE
4	40	SF	SPALL REPAIR	GIRDER	OVERHEAD	INTERMEDIATE
5	3	SF	CON STR REPAIR	FULL DEPTH		

NOTE FOR LOCATION 5: SEE SHEET,"CONCRETE SUPERSTRUCTURE REPAIR DETAILS" -FORM LOWERING HOLE TREATMENT

NOTE: WORK MUST BE DURING DAYTIME ONLY AND LANES MUST BE RE-OPENED EACH NIGHT.

BRIDGE REPAIR SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
429	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	300
429	CON STR REPAIR (DECK REP (FULL DEPTH))	SF	3

STATE OF TEXAS
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Stephen T. Jones, P.E.

08/20/2021

F1 BRIDGE SUMMARY

Texas Department of Transportation

SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		41
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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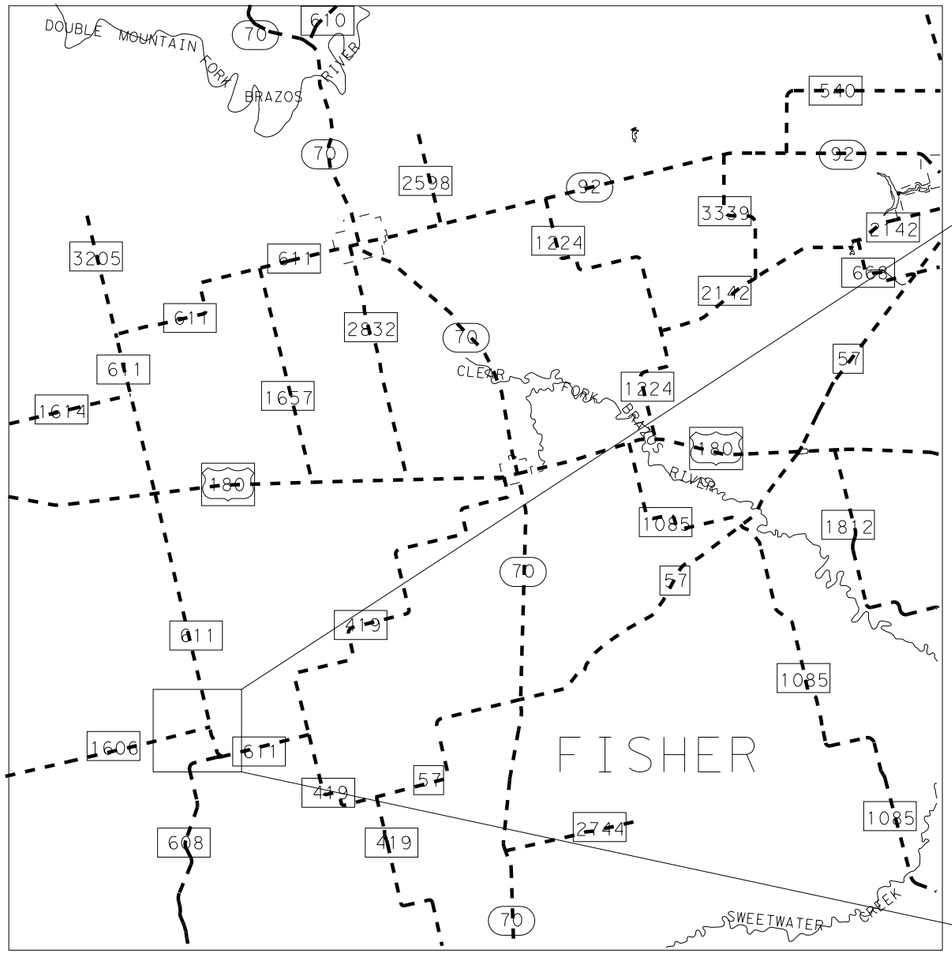
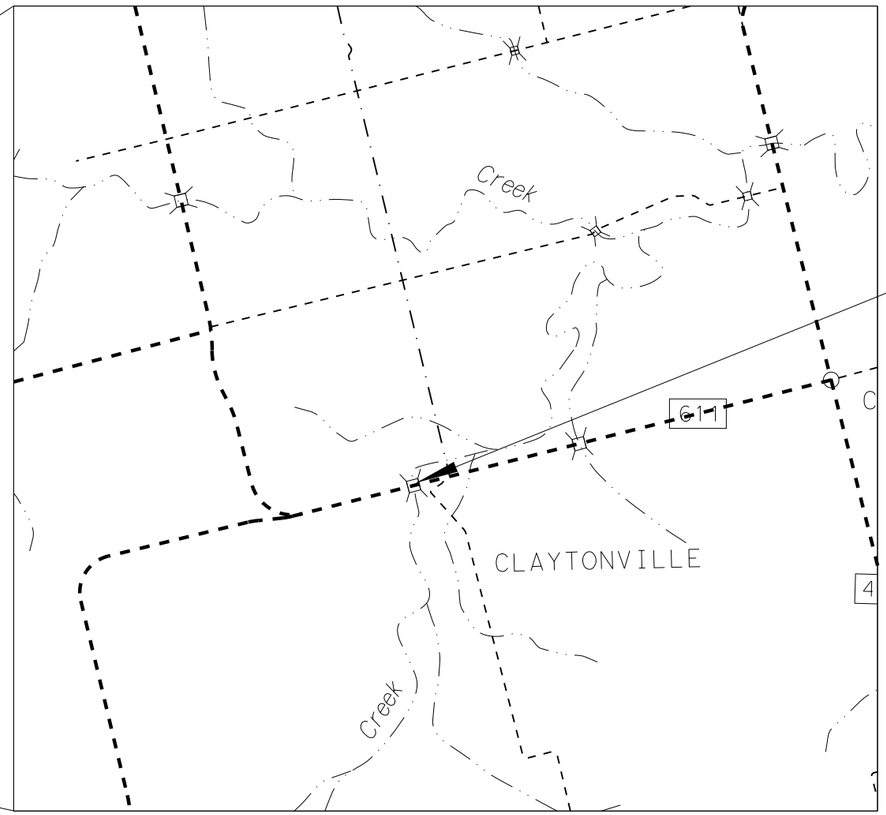
FM 611

COTTONWOOD CREEK

NBI # 08-077-0-0983-02-015



FISHER COUNTY



LOCATION MAP

08-077-0-0983-02-015

LAT/LONG: 32.61482/-100.528362

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

LIMITS: AT COTTONWOOD CREEK BRIDGE

CONSISTING OF: PERFORM CONCRETE STRUCTURE REPAIR TO CONCRETE PAN GIRDERS WITH MODERATE TO SEVERE CRACKS, DELAMINATION, AND SPALLS WITH EXPPOSED RUSTING REBAR

DESCRIPTION: CONCRETE PAN AND GIRDER BRIDGE

BRIDGE LENGTH: 120'

OVERALL WIDTH: 24'-8.5"

F2 LOCATION MAP

Texas Department of Transportation

SCALE: NTS

SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		42
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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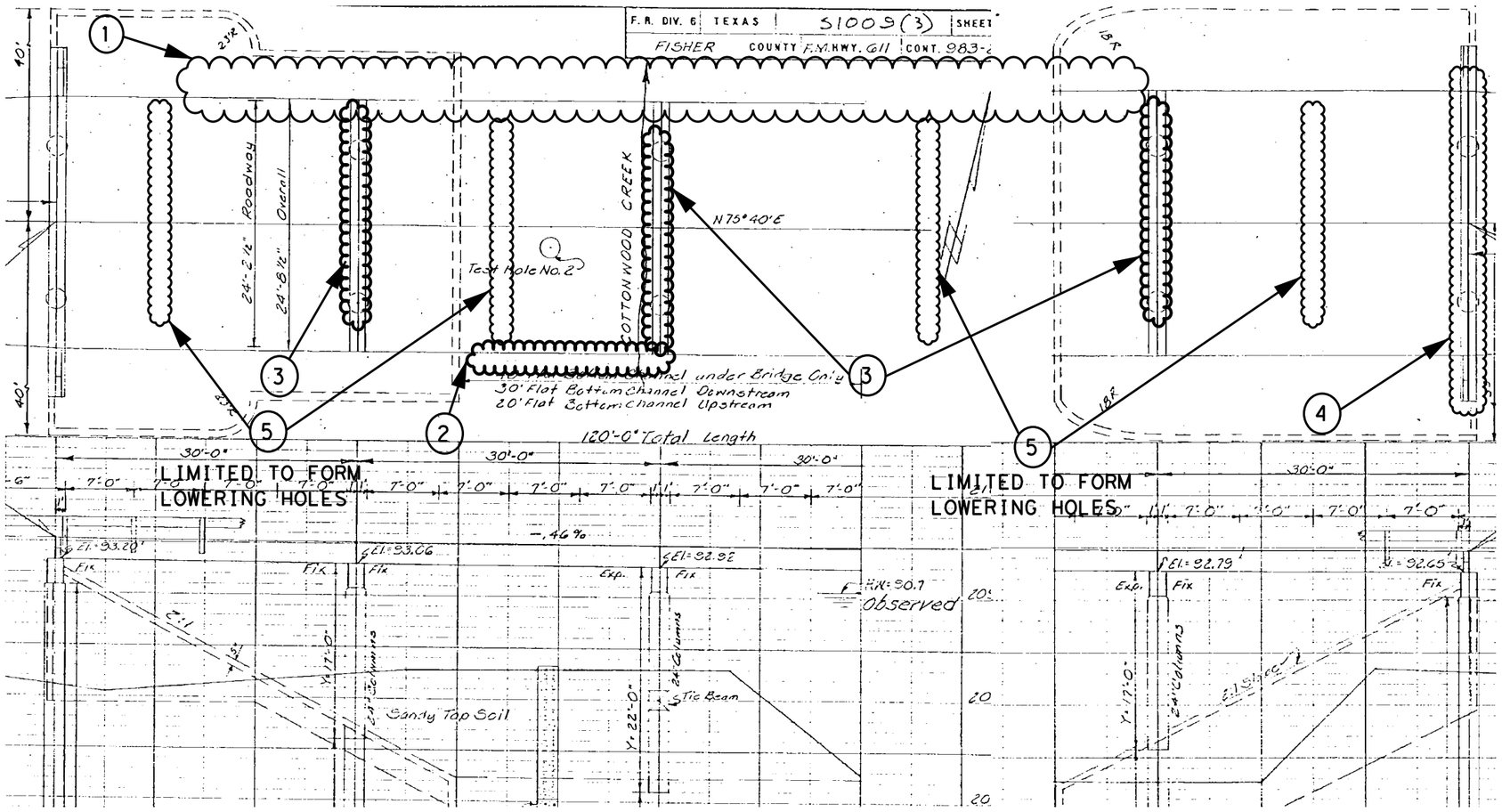

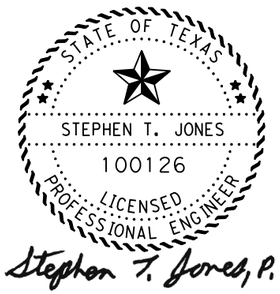

Stephen T. Jones, P.E.

08/20/2021

F2 BRIDGE LAYOUT

Texas Department of Transportation

SCALE: NTS SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		43
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

FILE: S:\XFER\Mike Roethel\BPM FY22\Sheets\QA set\F2 BRIDGE LAYOUT.dgn
DATE: 8/19/2021 12:09:50 PM

BRIDGE REPAIRS

LOCATION	QUANTITY	UNIT	TYPE	DESCRIPTION	SURFACE TYPE	SPALL CATEGORY
1	50	SF	SPALL REPAIR	GIRDER	VERTICAL	INTERMEDIATE
	130	SF	SPALL REPAIR	GIRDER	OVERHEAD	INTERMEDIATE
2	40	SF	SPALL REPAIR	GIRDER	VERTICAL	INTERMEDIATE
	40	SF	SPALL REPAIR	GIRDER	OVERHEAD	INTERMEDIATE
3	80	SF	SPALL REPAIR	CAPS	VERTICAL	INTERMEDIATE
	30	SF	SPALL REPAIR	CAPS	OVERHEAD	INTERMEDIATE
4	120	SF	SPALL REPAIR	DIAPHRAGM	VERTICAL	INTERMEDIATE
5	3	SF	CON STR REPAIR	FULL DEPTH		

NOTE FOR LOCATION 5: SEE SHEET, "CONCRETE SUPERSTRUCTURE REPAIR DETAILS" -FORM LOWERING HOLE TREATMENT

BRIDGE REPAIR SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
429	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	490
429	CON STR REPAIR (DECK REP (FULL DEPTH))	SF	3

STATE OF TEXAS
STEPHEN T. JONES
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LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

F2 BRIDGE SUMMARY

Texas Department of Transportation

SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		44
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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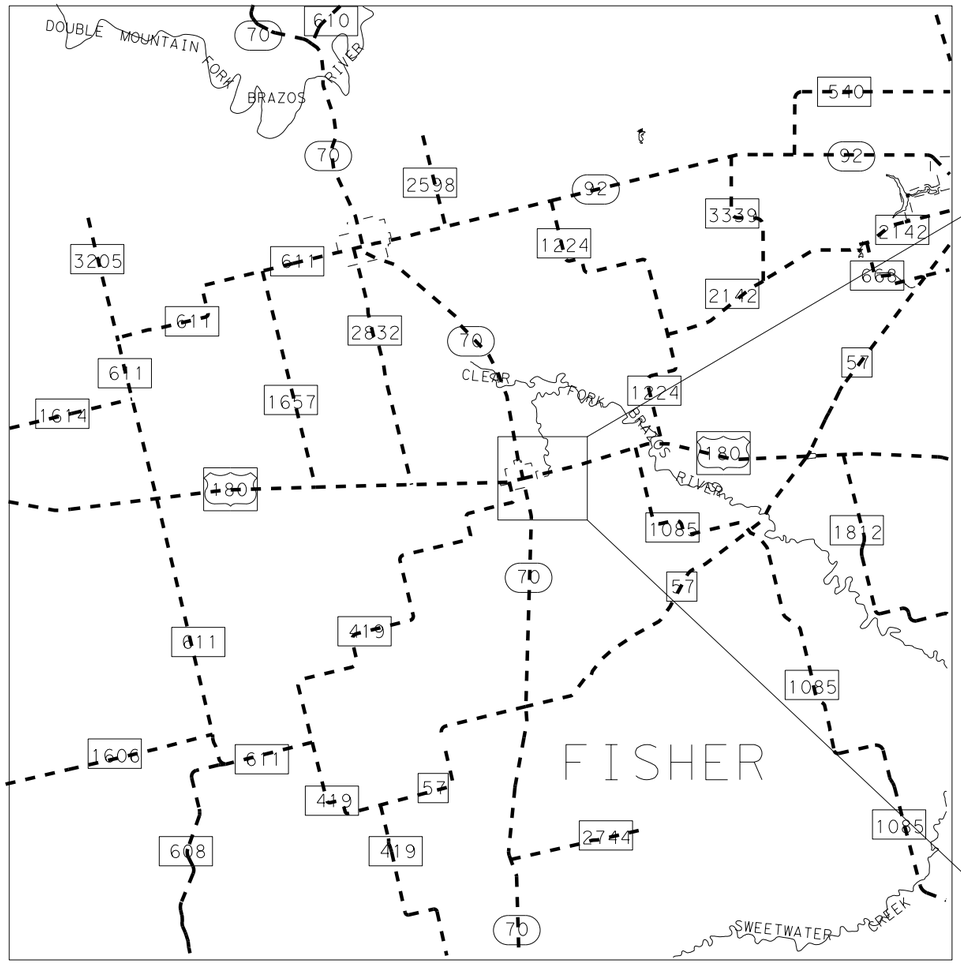
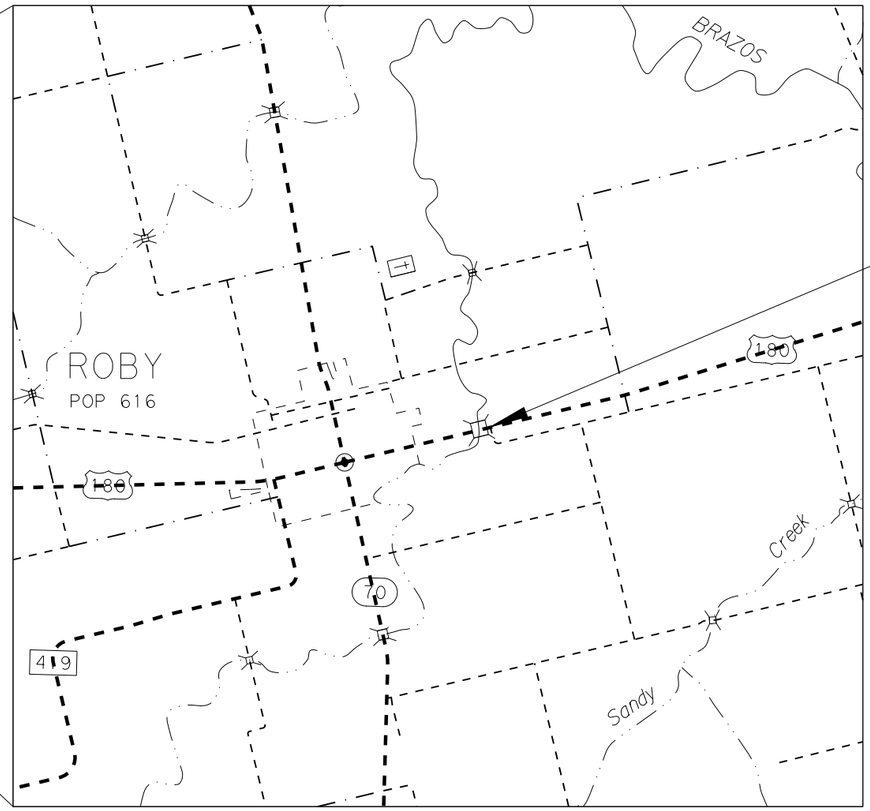
US 180

COTTONWOOD CREEK

NBI # 08-077-0-0296-03-012



FISHER COUNTY



LOCATION MAP

08-077-0-0296-03-012

LAT/LONG: 32.74788/-100.363777

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED
PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

F3 LOCATION MAP

LIMITS: AT COTTONWOOD CREEK BRIDGE

CONSISTING OF: CLEAN AND PATCH DELAMINATIONS AND SPALLS AT BEAM ENDS

DESCRIPTION: CONCRETE PAN AND GIRDER BRIDGE

BRIDGE LENGTH: 183'

OVERALL WIDTH: 46'-3.5"

SCALE: NTS SHEET 1 OF 1

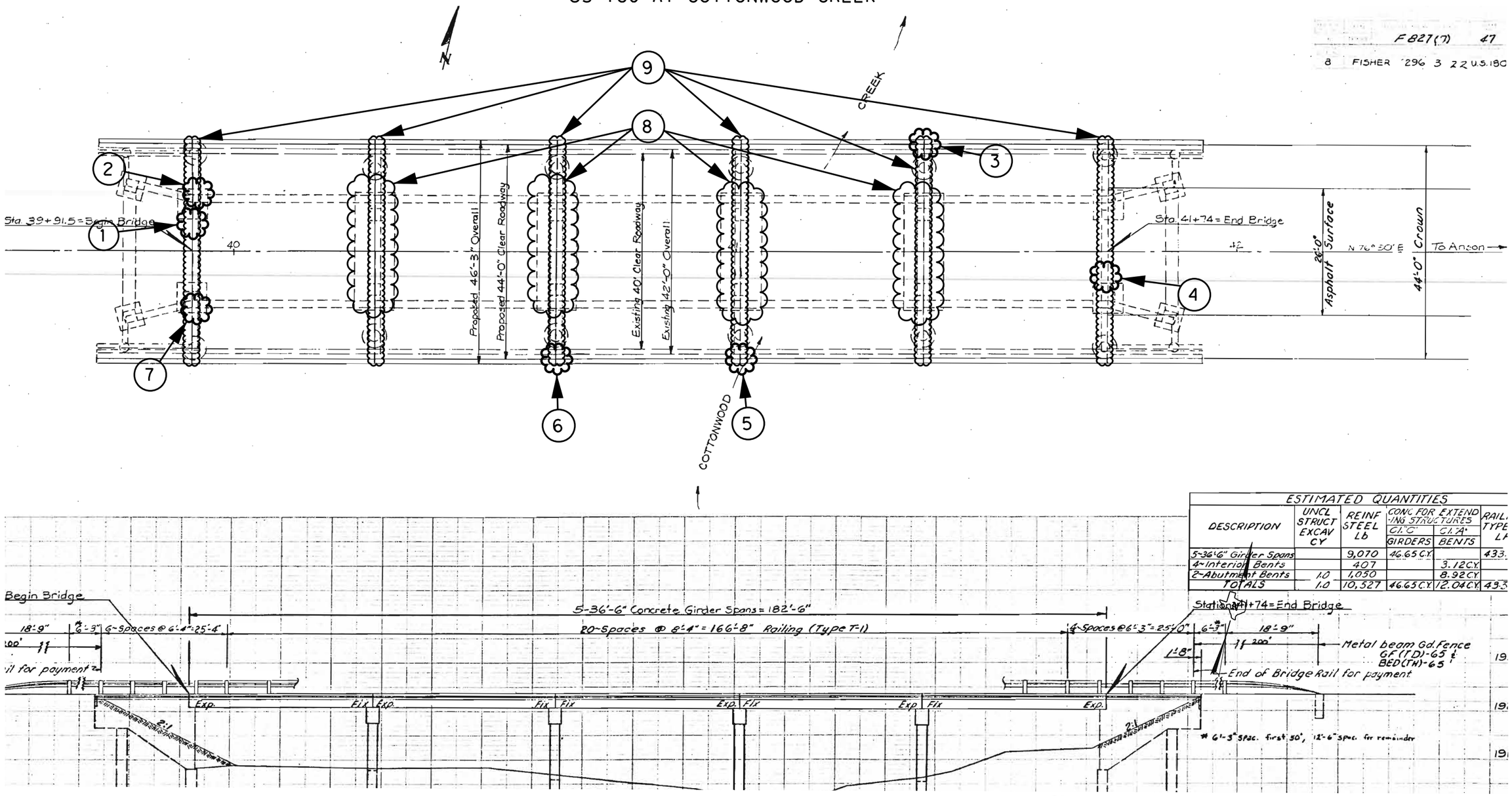
FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		45
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

FILE: S:\XFER\Mike Roethel\BPM FY22\Sheets\QA set\F3 LOCATION MAP.dgn
DATE: 8/19/2021 12:10:00 PM

US 180 AT COTTONWOOD CREEK

F827(7) 47

8 FISHER 296 3 22 U.S.180



ESTIMATED QUANTITIES

DESCRIPTION	UNCL STRUCT EXCAV CY	REINF STEEL Lb	CONC FOR EXTEND-ING STRUCTURES Cl. 'C' GIRDERS	CONC FOR EXTEND-ING STRUCTURES Cl. 'A' BENTS	RAIL TYPE LF
5-36'-6" Girder Spans		9,070	46.65 C.Y.		433.
4-Interior Bents		407		3.12 C.Y.	
2-Abutment Bents	1.0	1,050		8.92 C.Y.	
TOTALS	1.0	10,327	46.65 C.Y.	12.04 C.Y.	433.

STATE OF TEXAS
STEPHEN T. JONES
100126
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Stephen T. Jones, P.E.
08/20/2021

F3 BRIDGE LAYOUT

Texas Department of Transportation

SCALE: NTS SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		46
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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DATE: 8/20/2021 3:37:05 PM

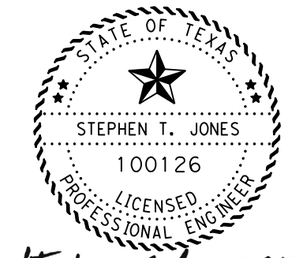
BRIDGE REPAIRS

LOCATION	QUANTITY	UNIT	TYPE	DESCRIPTION	SURFACE TYPE	SPALL CATEGORY
1	10	SF	SPALL REPAIR	ABUTMENT	VERTICAL	INTERMEDIATE
2	5	SF	SPALL REPAIR	ABUTMENT	VERTICAL	INTERMEDIATE
3	30	SF	SPALL REPAIR	END CAP	OVERHEAD	INTERMEDIATE
4	65	SF	SPALL REPAIR	ABUTMENT GIRDER INTERFACE	VERTICAL	INTERMEDIATE
5	40	SF	SPALL REPAIR	END CAP	OVERHEAD	INTERMEDIATE
6	20	SF	SPALL REPAIR	END CAP	VERTICAL	INTERMEDIATE
	20	SF	SPALL REPAIR	END CAP	OVERHEAD	INTERMEDIATE
7	10	SF	SPALL REPAIR	ABUTMENT	VERTICAL	INTERMEDIATE
	10	SF	SPALL REPAIR	ABUTMENT	OVERHEAD	INTERMEDIATE
8	600	SF	SPALL REPAIR	CAP	VERTICAL	INTERMEDIATE
	205	SF	SPALL REPAIR	CAP	OVERHEAD	INTERMEDIATE
	40	SF	SPALL REPAIR	COLUMN	VERTICAL	INTERMEDIATE
9	252	LF	RESEAL JOINT	JOINTS		

NOTE FOR LOCATION 9: SEE CLEANING AND SEALING EXISTING BRIDGE JOINTS- DETAIL "A", OR AS APPROPRIATE

BRIDGE REPAIR SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
429	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	1055
438	CLEANING AND SEALING JOINTS AND CRACKS	LF	252



Stephen T. Jones, P.E.

08/20/2021

F3 BRIDGE SUMMARY

 Texas Department of Transportation

SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

47

FILE: S:\XFER\Mike Roethel i\BPM FY22\Sheets\QA set\F3 BRIDGE SUMMARY.dgn
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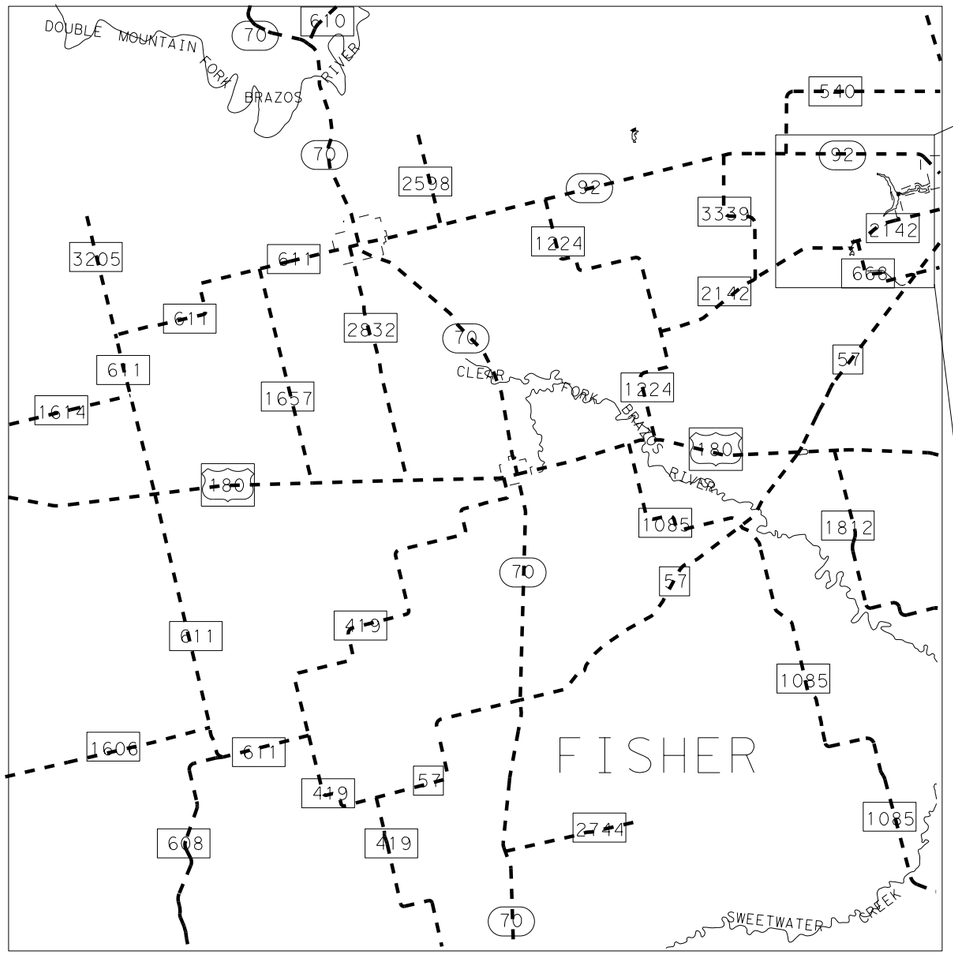
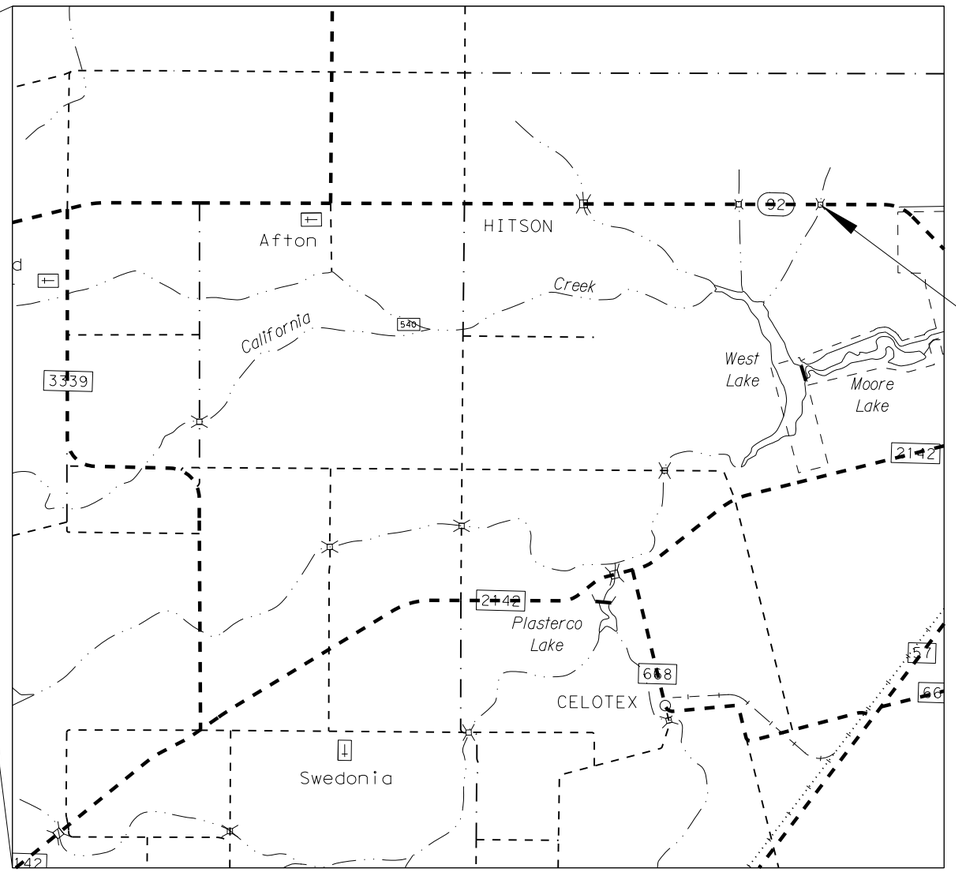
SH92

DRAW 3.65 MILES E OF FM 540

NBI # 08-077-0-0318-02-010



FISHER COUNTY



LOCATION MAP

08-077-0-0318-02-010

LAT/LONG: 32.894642/-100.166848

LIMITS: AT DRAW ON BRIDGE ON SH 92 3.65 MILES E OF FM 540

CONSISTING OF: CLEAN AND PATCH DELAMINATIONS AND SPALLS AT TOP SLAB AND WALLS IN WEST BARREL

DESCRIPTION: 5-BARREL CULVERT

BRIDGE LENGTH: 29'

OVERALL WIDTH: 55'-8.5"

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

F4 LOCATION MAP

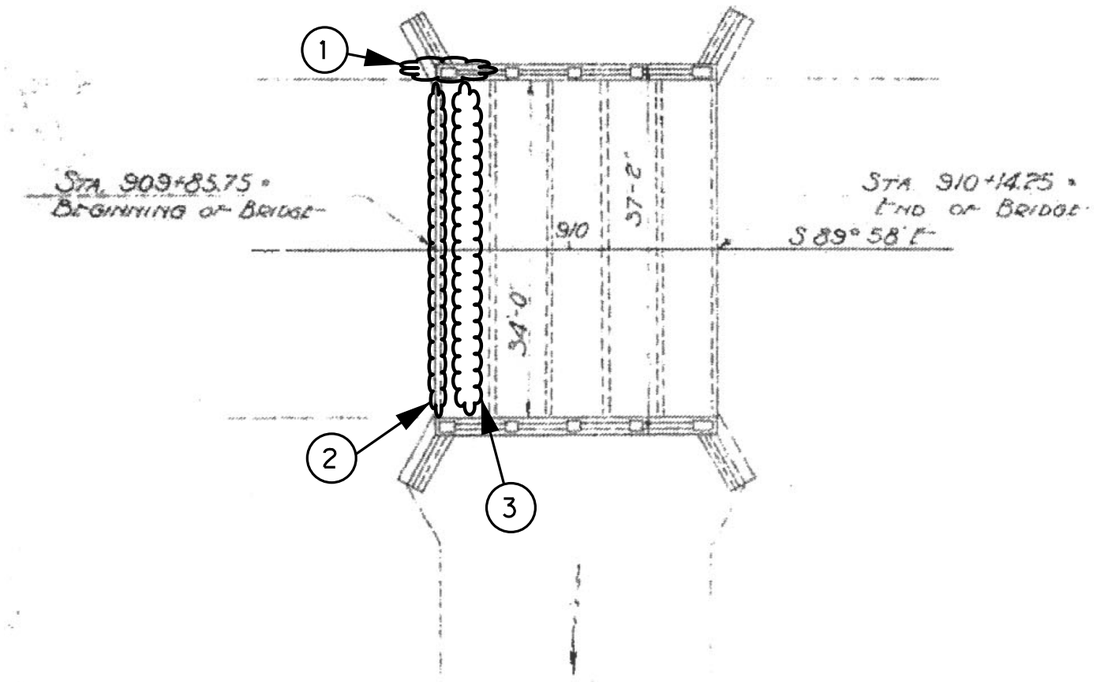
SCALE: NTS

SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		48
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

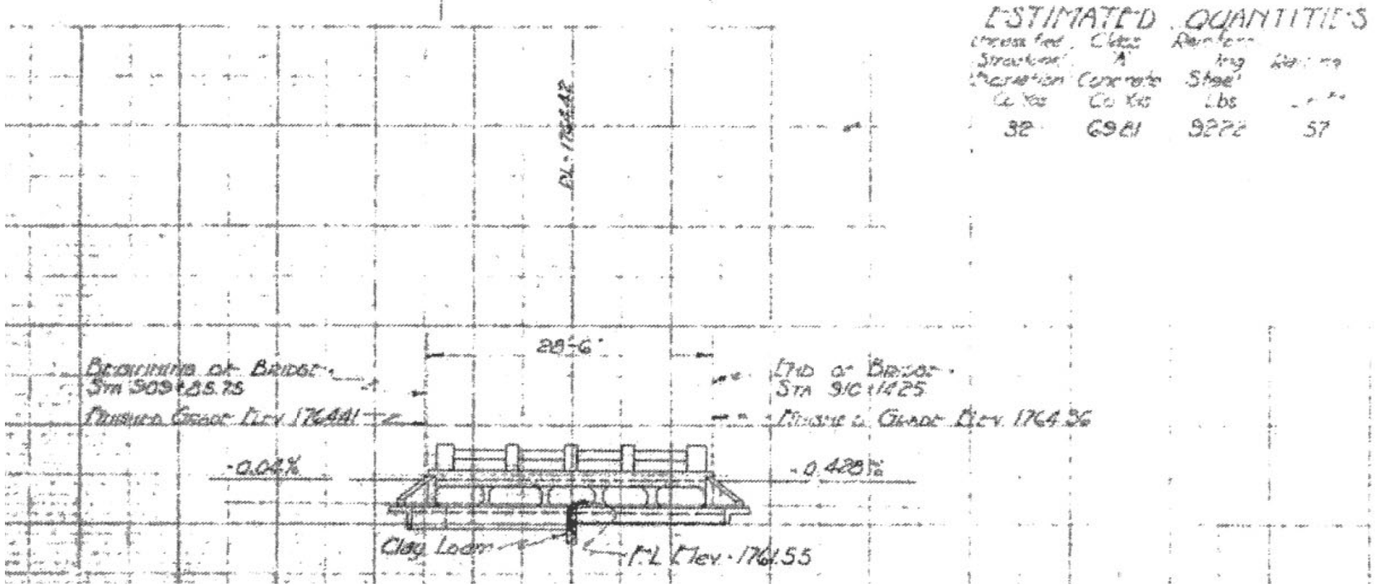
FILE: S:\XFER\Mike Roethel\BPM FY22\Sheets\QA set\F4 LOCATION MAP.dgn
DATE: 8/19/2021 12:10:20 PM

SH92 AT DRAW



ESTIMATED QUANTITIES

Structure Excavation Cu Yds	Class A Concrete Cu Yds	Reinforcing Steel Lbs	Remarks
32	69.81	9272	57



STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED
PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

F4 BRIDGE LAYOUT

 Texas Department of Transportation

SCALE: NTS SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		49
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

FILE: S:\XFER\Mike Roethel\BPM FY22\Sheets\QA set\F4 BRIDGE LAYOUT.dgn
DATE: 8/19/2021 12:10:21 PM

BRIDGE REPAIRS

LOCATION	QUANTITY	UNIT	TYPE	DESCRIPTION	SURFACE TYPE	SPALL CATEGORY
1	25	SF	SPALL REPAIR	HEADWALL	VERTICAL	INTERMEDIATE
2	100	SF	SPALL REPAIR	CULVERT WALL	VERTICAL	INTERMEDIATE
3	100	SF	SPALL REPAIR	CULVERT CEILING	OVERHEAD	INTERMEDIATE

BRIDGE REPAIR SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
429	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	225

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.
08/20/2021

F4 BRIDGE SUMMARY

 Texas Department of Transportation

SHEET 1 OF 1

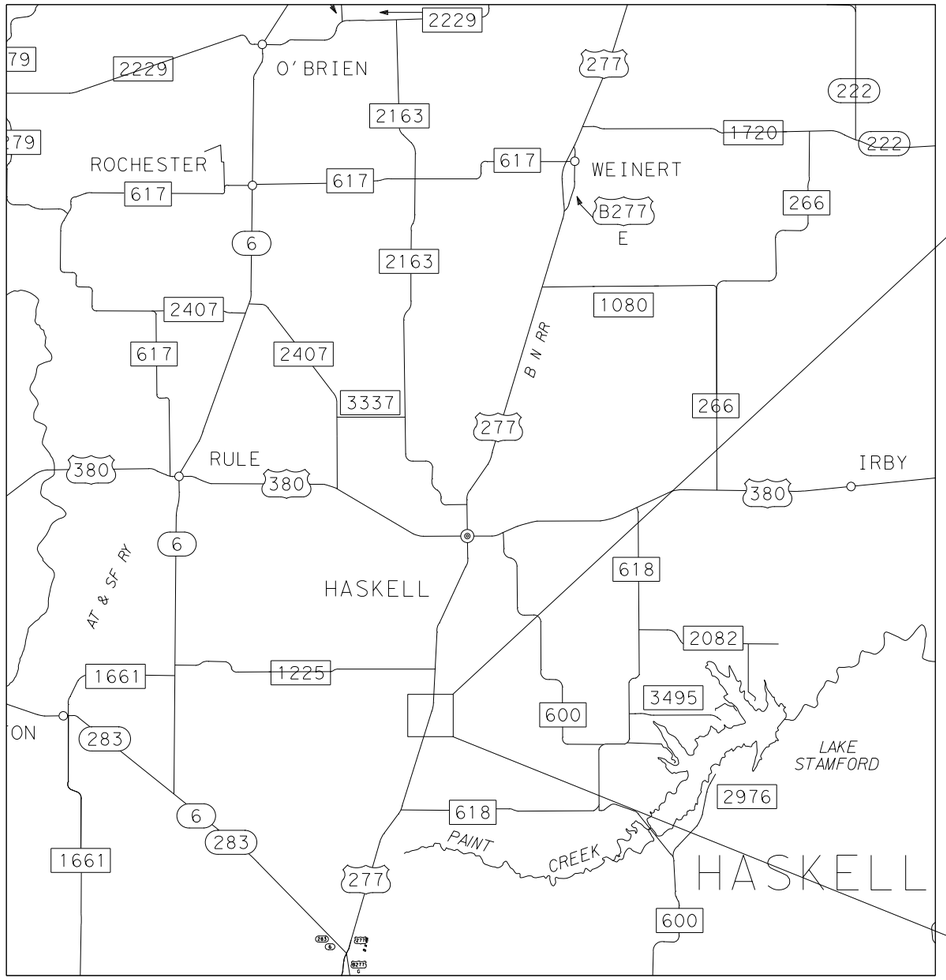
FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		50
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

FILE: S:\XFER\Mike Roethel i\BPM FY22\Sheets\QA set\F4 BRIDGE SUMMARY.dgn
DATE: 8/19/2021 12:10:32 PM

US 277

LITTLE TIMBER CREEK

NBI # 08-105-0-0157-04-020



HASKELL COUNTY

LOCATION MAP

08-105-0-0157-04-020

LAT/LONG: 33.0712/-99.757081

LIMITS: AT LITTLE TIMBER CREEK BRIDGE

CONSISTING OF: REPAIR THE LARGE TOP SLAB SPALL

DESCRIPTION: 5-BARREL CULVERT

BRIDGE LENGTH: 34'

OVERALL WIDTH: 197'-7"

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED
PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

H1 LOCATION MAP

Texas Department of Transportation

SCALE: NTS

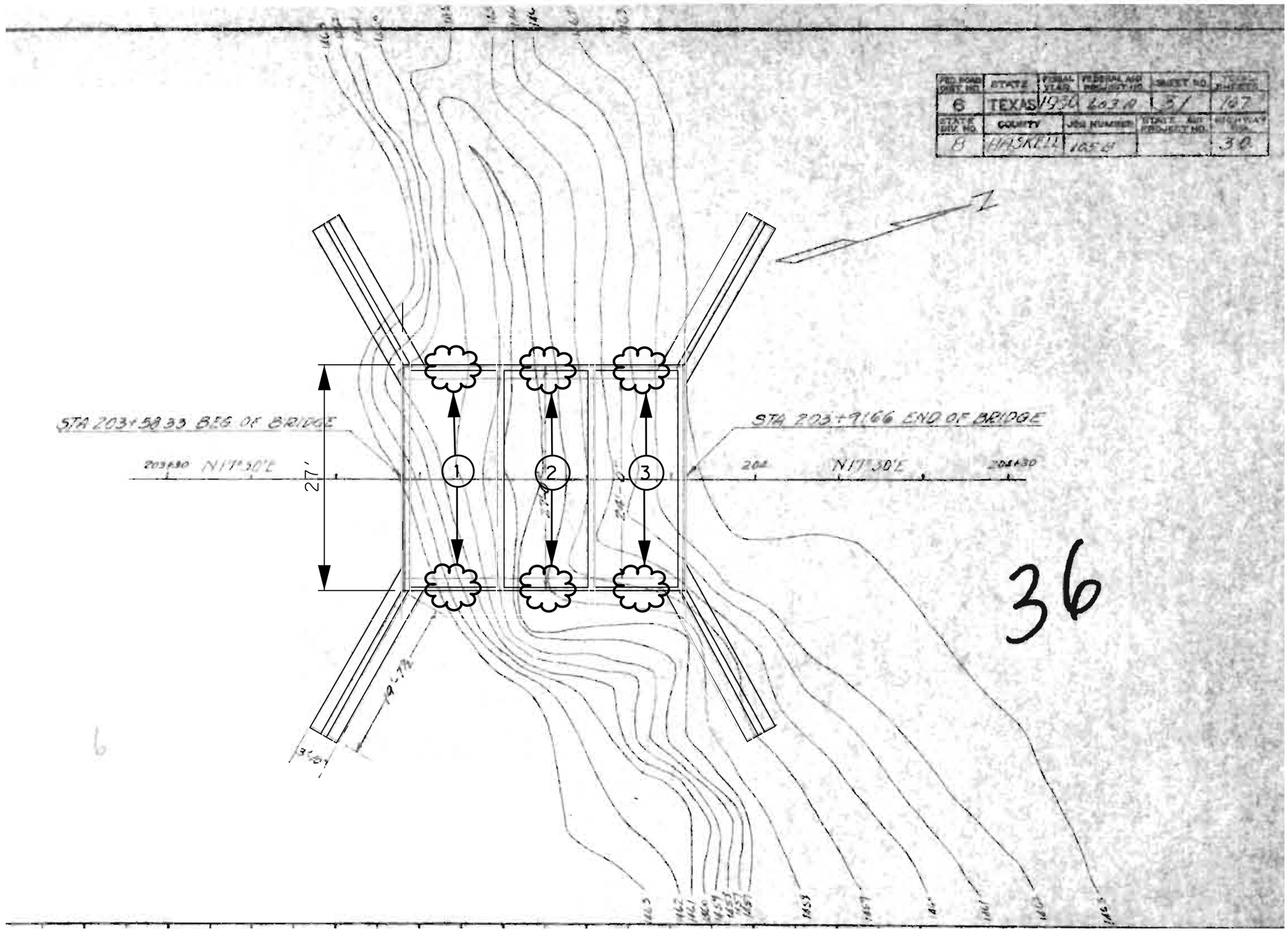
SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		51
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

FILE: S:\XFER\Mike Roethel\BPM FY22\Sheets\QA set\H1 LOCATION MAP.dgn
DATE: 8/19/2021 12:10:33 PM

US 277 AT LITTLE TIMBER CREEK

FED. ROAD DIST. NO.	STATE	FISCAL YEAR	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
6	TEXAS	1930	4030	51	107
STATE DIV. NO.	COUNTY	JOB NUMBER	STATE AID PROJECT NO.	HIGHWAY NO.	
8	HASKELL	1858		30	



STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.
08/20/2021

H1 BRIDGE LAYOUT

 Texas Department of Transportation

SCALE: NTS SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		52
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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DATE: 8/19/2021 12:10:34 PM

BRIDGE REPAIRS

LOCATION	QUANTITY	UNIT	TYPE	DESCRIPTION	SURFACE TYPE	SPALL CATEGORY
1	30	SF	SPALL REPAIR	SPALLS	OVERHEAD	INTERMEDIATE
2	30	SF	SPALL REPAIR	SPALLS	OVERHEAD	INTERMEDIATE
3	30	SF	SPALL REPAIR	SPALLS	OVERHEAD	INTERMEDIATE

BRIDGE REPAIR SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
429	CONC STR REPAIR (OVERHEAD)	SF	90

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED
PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

H1 BRIDGE SUMMARY

 Texas Department of Transportation

SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		53
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

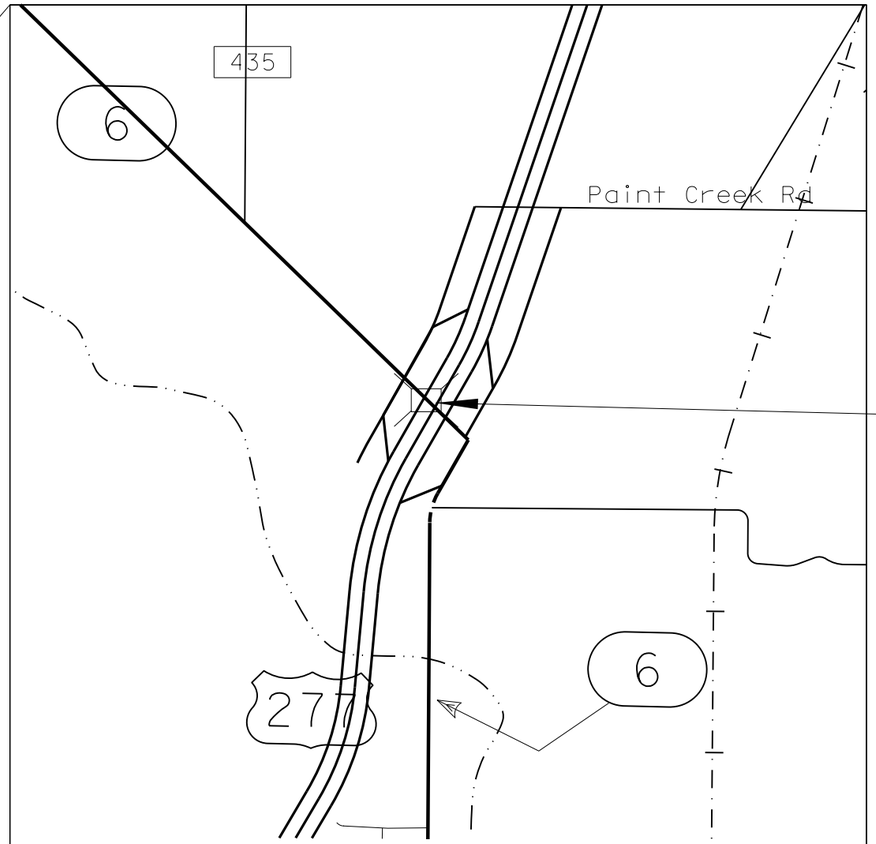
FILE: S:\XFER\Mike Roethel i\BPM FY22\Sheets\QA set\H1 BRIDGE SUMMARY.dgn
DATE: 8/19/2021 12:10:43 PM

US 277 SB

SH6

NBI # 08-105-0-0157-04-052

HASKELL COUNTY



LOCATION MAP

08-105-0-0157-04-052

LAT/LONG: 32.9701392/-99.80305855

08/20/2021

LIMITS: AT SH6

CONSISTING OF: REPLACE ARMOR JOINTS AND CONCRETE SPALL REPAIR

DESCRIPTION: CONCRETE SLAB AND GIRDER BRIDGE

BRIDGE LENGTH: 210'

OVERALL WIDTH: 40'

H2 LOCATION MAP

SCALE: NTS SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		54
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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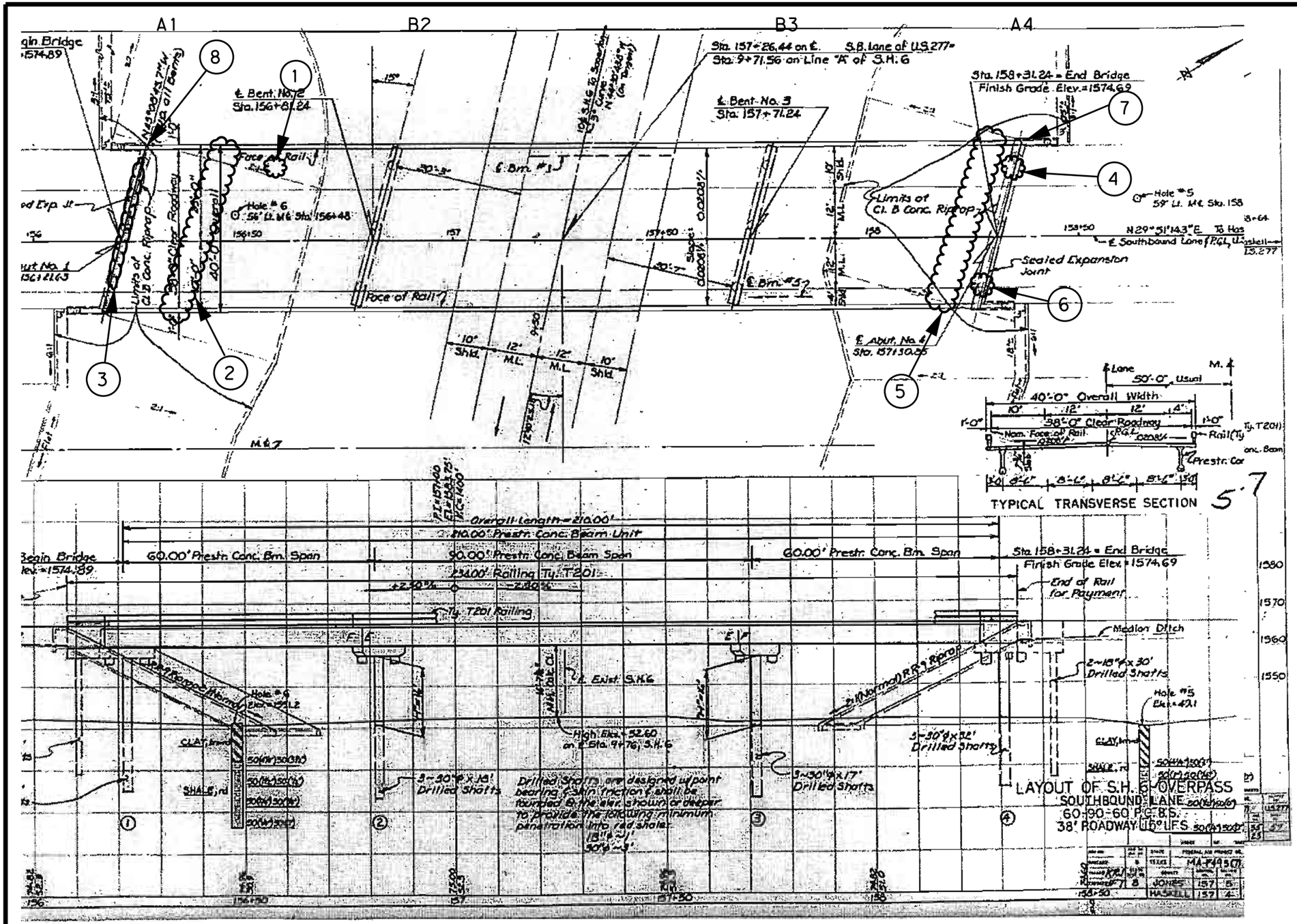

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

H2 BRIDGE LAYOUT

Texas Department of Transportation

SCALE: NTS SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		55
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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BRIDGE REPAIRS

LOCATION	QUANTITY	UNIT	TYPE	DESCRIPTION	SURFACE TYPE	SPALL CATEGORY
1	50	SF	SPALL REPAIR	UNDERDECK	OVERHEAD	INTERMEDIATE
	20	SF	SPALL REPAIR	UNDERDECK	VERTICAL	INTERMEDIATE
2	30	SF	SPALL REPAIR	GIRDER	VERTICAL	INTERMEDIATE
3	60	SF	SPALL REPAIR	ABUTMENT	VERTICAL	INTERMEDIATE
4	20	SF	SPALL REPAIR	UNDERDECK	OVERHEAD	INTERMEDIATE
5	30	SF	SPALL REPAIR	GIRDER	VERTICAL	INTERMEDIATE
6	20	SF	SPALL REPAIR	UNDERDECK	OVERHEAD	INTERMEDIATE
	40	SF	SPALL REPAIR	ABUTMENT	VERTICAL	INTERMEDIATE
7	10	CF	HEADER TYPE EXPANSION JOINT	JOINT & DECK		
	5	SF	CONC STR REPAIR	DECK REP (PARTIAL DEPTH)		
8	10	CF	HEADER TYPE EXPANSION JOINT	JOINT & DECK		
	5	SF	CONC STR REPAIR	DECK REP (PARTIAL DEPTH)		

NOTE FOR LOCATIONS 7 & 8: SEE SHEET,"JOINT REPAIR 2"

NOTE: WORK MUST BE DURING DAYTIME ONLY AND LANES MUST BE RE-OPENED EACH NIGHT.

PARTIAL DEPTH REPAIR QUANTITES ARE TO BE USED AS NEEDED IN THE FIELD IN LOCATIONS AS DETERMINED BY THE ENGINEER.

BRIDGE REPAIR SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
429	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	270
429	CONC STR REPAIR (DECK REP (PARTIAL DEPTH))	SF	10
454	HEADER TYPE EXPANSION JOINT	CF	20

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.
08/31/2021

H2 BRIDGE SUMMARY

Texas Department of Transportation

SHEET 1 OF 1

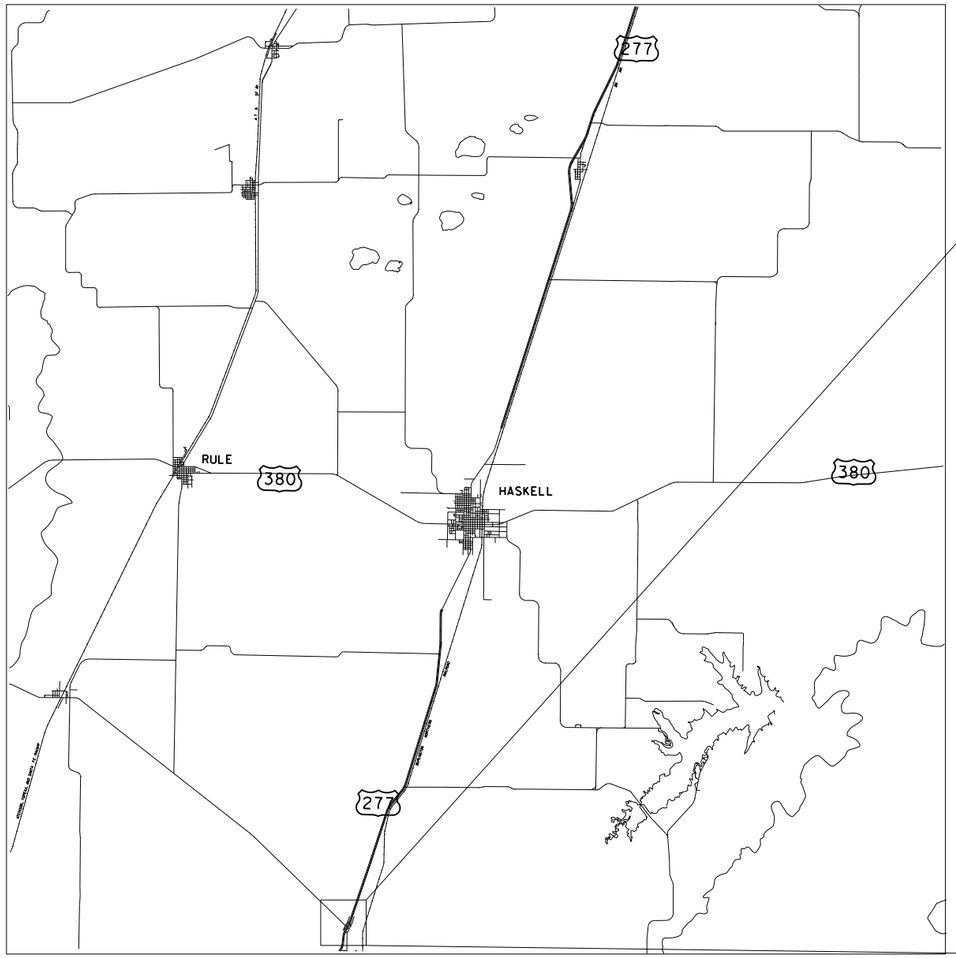
FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		56
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

FILE: S:\XFER\Mike Roethel\BPM FY22\Sheets\QA set\H2 BRIDGE SUMMARY.dgn
DATE: 8/31/2021 4:57:03 PM

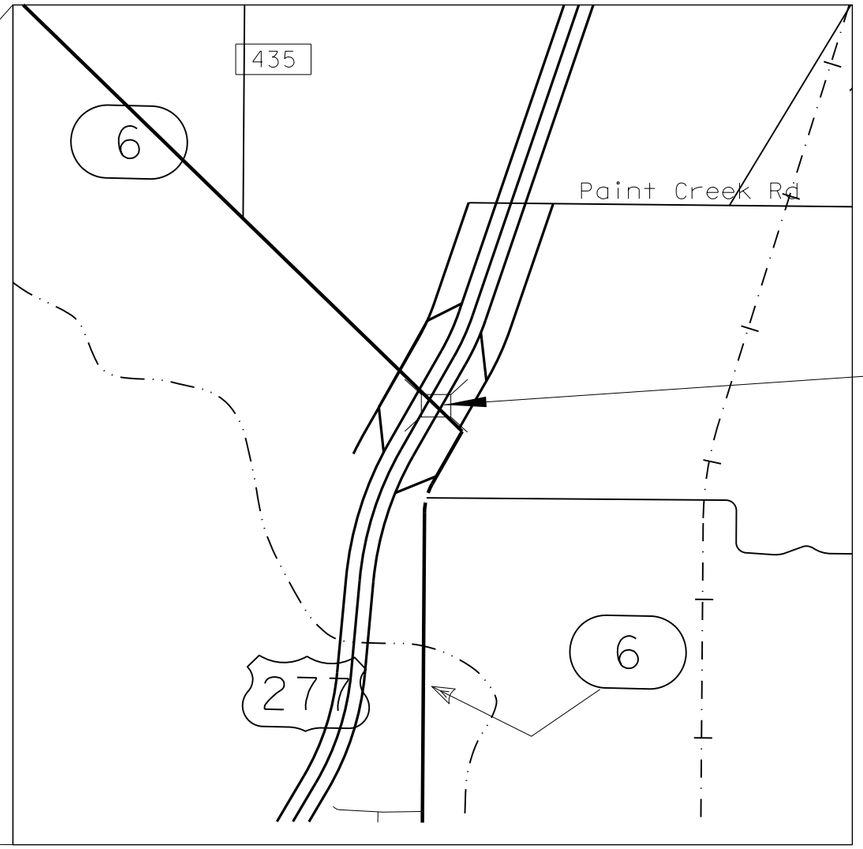
US 277 NB

SH6

NBI # 08-105-0-0157-04-053



HASKELL COUNTY



LOCATION MAP

08-105-0-0157-04-053
LAT/LONG: 32.96991907/-99.80282701

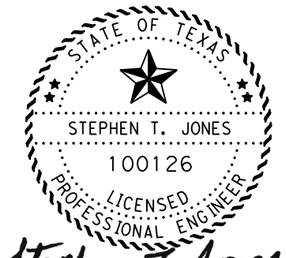
LIMITS: AT SH6

CONSISTING OF: REPLACE ARMOR JOINTS AND CONCRETE SPALL REPAIR

DESCRIPTION: CONCRETE SLAB AND GIRDER BRIDGE

BRIDGE LENGTH: 210'

OVERALL WIDTH: 40'



Stephen T. Jones, P.E.

08/31/2021

H3 LOCATION MAP

Texas Department of Transportation

SCALE: NTS SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		57
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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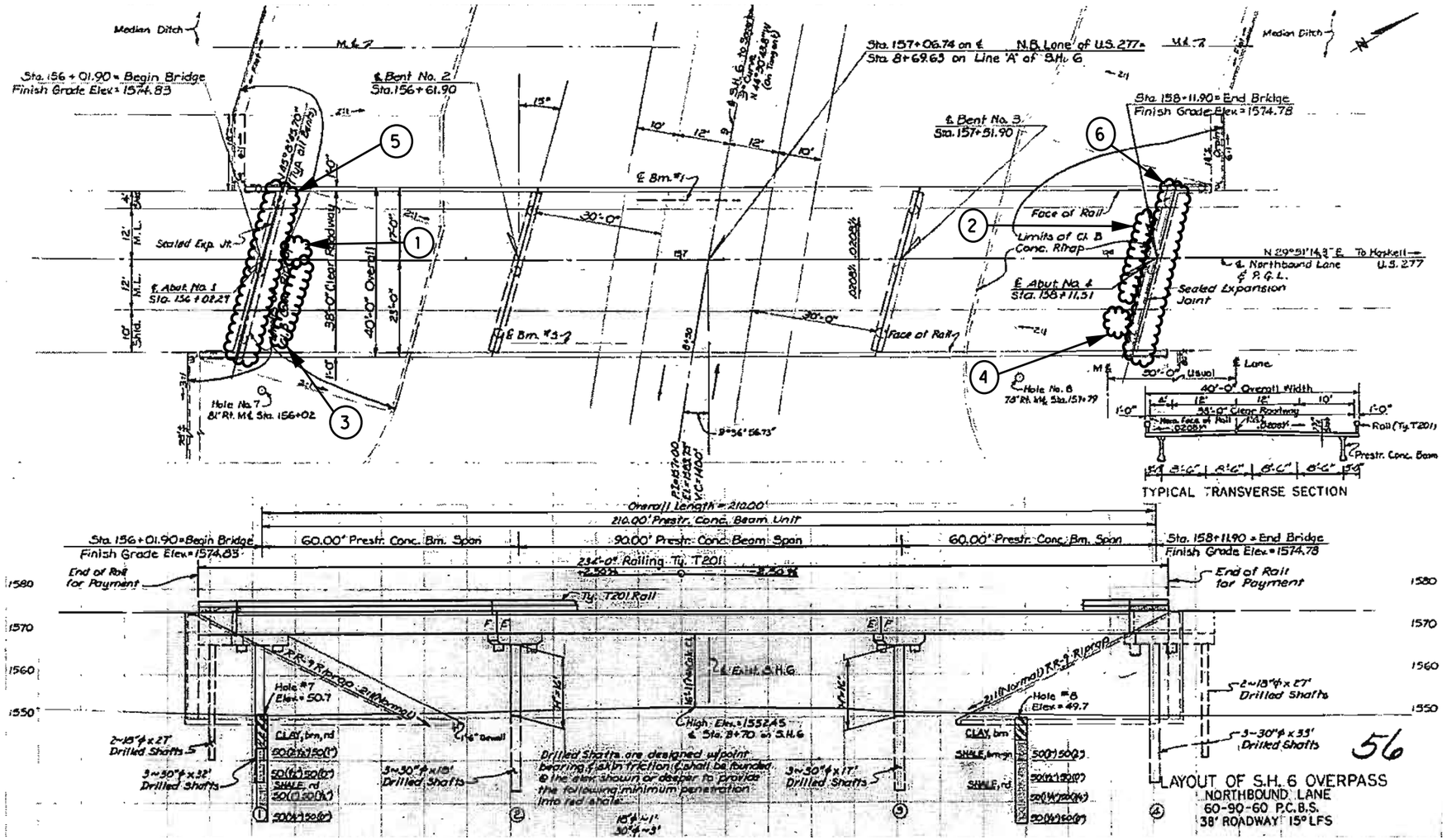


STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.
08/20/2021

H3 BRIDGE LAYOUT

Texas Department of Transportation

SCALE: NTS SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		58
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

FILE: S:\XFER\Mike Roethel i\BPM FY22\Sheets\QA set\H3 BRIDGE LAYOUT.dgn
DATE: 8/19/2021 12:10:56 PM

BRIDGE REPAIRS

LOCATION	QUANTITY	UNIT	TYPE	DESCRIPTION	SURFACE TYPE	SPALL CATEGORY
1	60	SF	SPALL REPAIR	UNDERDECK	OVERHEAD	INTERMEDIATE
2	40	SF	SPALL REPAIR	GIRDER ENDS	VERTICAL	INTERMEDIATE
3	40	SF	SPALL REPAIR	GIRDERS	VERTICAL	INTERMEDIATE
4	70	SF	SPALL REPAIR	UNDERDECK	OVERHEAD	INTERMEDIATE
	20	SF	SPALL REPAIR	JOINT	OVERHEAD	INTERMEDIATE
	60	SF	SPALL REPAIR	ABUTMENT	VERTICAL	INTERMEDIATE
7	10	CF	HEADER TYPE EXPANSION JOINT	JOINT & DECK		
	5	SF	CONC STR REPAIR	DECK REP (PARTIAL DEPTH)		
8	10	CF	HEADER TYPE EXPANSION JOINT	JOINT & DECK		
	5	SF	CONC STR REPAIR	DECK REP (PARTIAL DEPTH)		

NOTE FOR LOCATIONS 7 & 8: SEE SHEET,"JOINT REPAIR 2"

NOTE: WORK MUST BE DURING DAYTIME ONLY AND LANES MUST BE RE-OPENED EACH NIGHT.

PARTIAL DEPTH REPAIR QUANTITES ARE TO BE USED AS NEEDED IN THE FIELD IN LOCATIONS AS DETERMINED BY THE ENGINEER.

BRIDGE REPAIR SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
429	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	290
429	CONC STR REPAIR (DECK REP (PARTIAL DEPTH))	SF	10
454	HEADER TYPE EXPANSION JOINT	CF	20

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/31/2021

H3 BRIDGE SUMMARY

Texas Department of Transportation

SHEET 1 OF 1

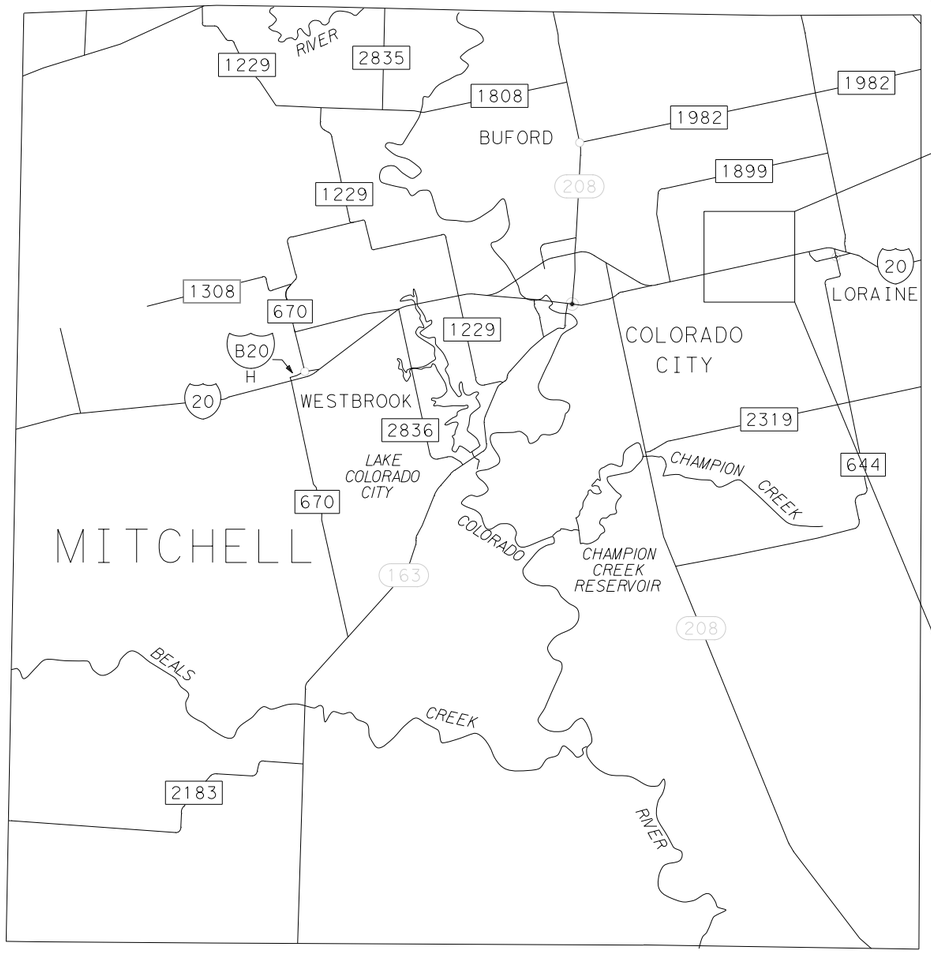
FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		59
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

FILE: S:\XFER\Mike Roethel\BPM FY22\Sheets\QA set\H3 BRIDGE SUMMARY.dgn
DATE: 8/31/2021 7:45:38 PM

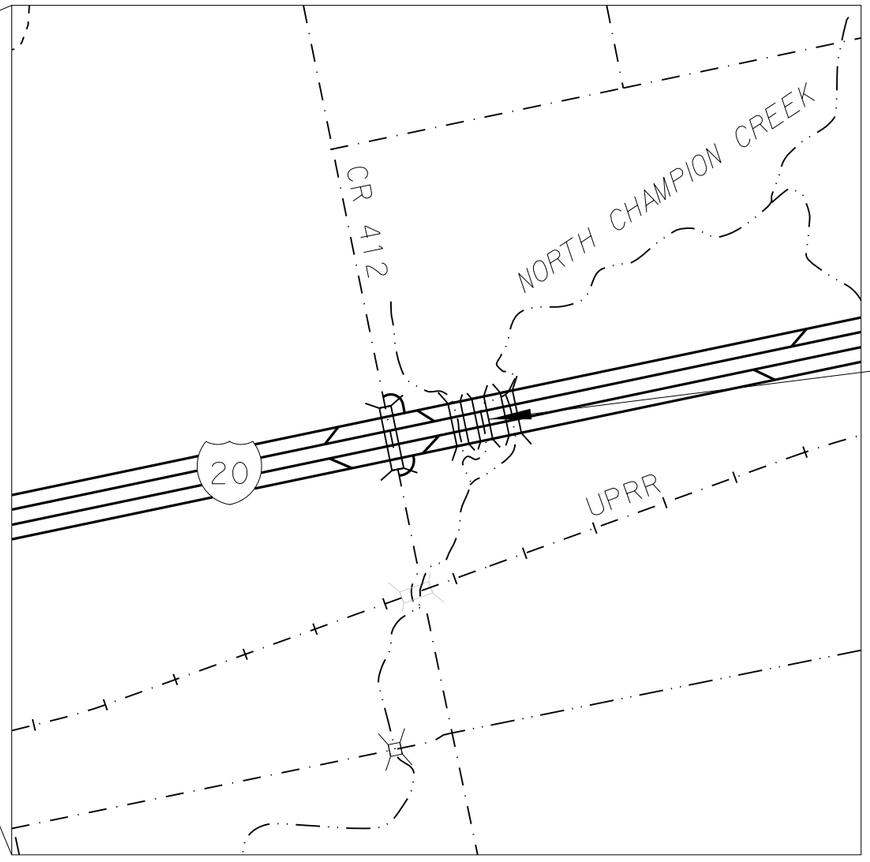
IH 20 EB ML

NORTH CHAMPION CREEK

NBI # 08-168-0-0006-01-002



MITCHELL COUNTY



LOCATION MAP

LIMITS: MIDDLE STRUCTURE AT NORTH CHAMPION CREEK

CONSISTING OF: SPALL REPAIR

DESCRIPTION: CONTINUOUS CONCRETE SLAB ON CONCRETE BENTS AND COLUMNS

BRIDGE LENGTH: 37'

OVERALL WIDTH: 44'

08-168-0-0006-01-002

LAT/LONG: 32.40907983/-100.75078863

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED
PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

M1FY21 LOCATION MAP

Texas Department of Transportation

SCALE: NTS

SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		60
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

FILE: S:\XFER\Mike Roethel\BPM FY22\Sheets\QA set\M1FY21 LOCATION MAP.dgn

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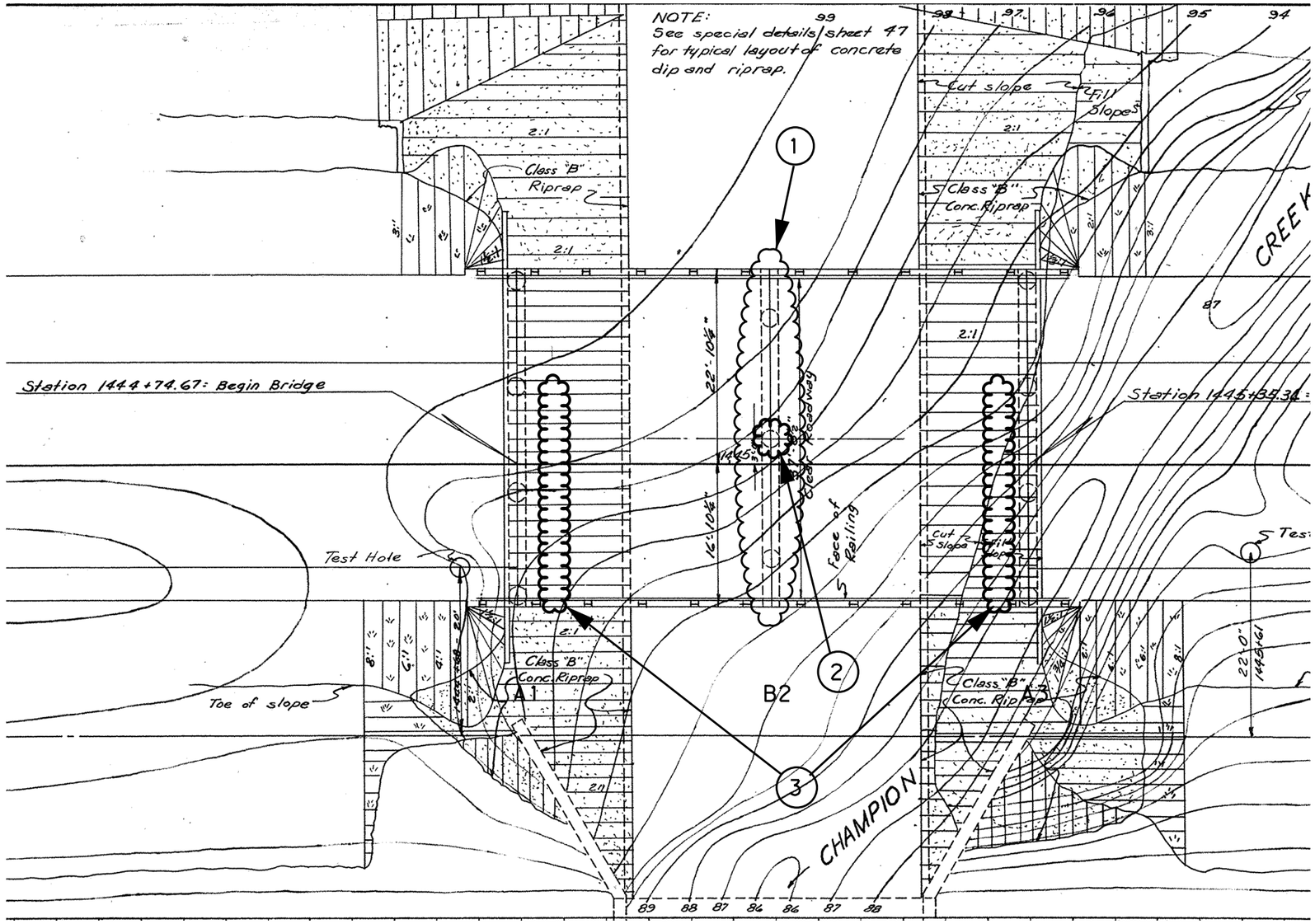
IH 20 EBML AT NORTH CHAMPION CREEK



STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

M1FY21 BRIDGE LAYOUT

Texas Department of Transportation

SCALE: NTS SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		61
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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BRIDGE REPAIRS

LOCATION	QUANTITY	UNIT	TYPE	DESCRIPTION	SURFACE TYPE	SPALL CATEGORY
1	50	SF	SPALL REPAIR	BENT CAP	OVERHEAD	INTERMEDIATE
2	10	SF	SPALL REPAIR	COLUMN	VERTICAL	INTERMEDIATE
3	40	SF	SPALL REPAIR	UNDERSIDE OF DECK	OVERHEAD	INTERMEDIATE

BRIDGE REPAIR SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
429	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	100

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

M1FY21 BRIDGE SUMMARY

 Texas Department of Transportation

SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		62
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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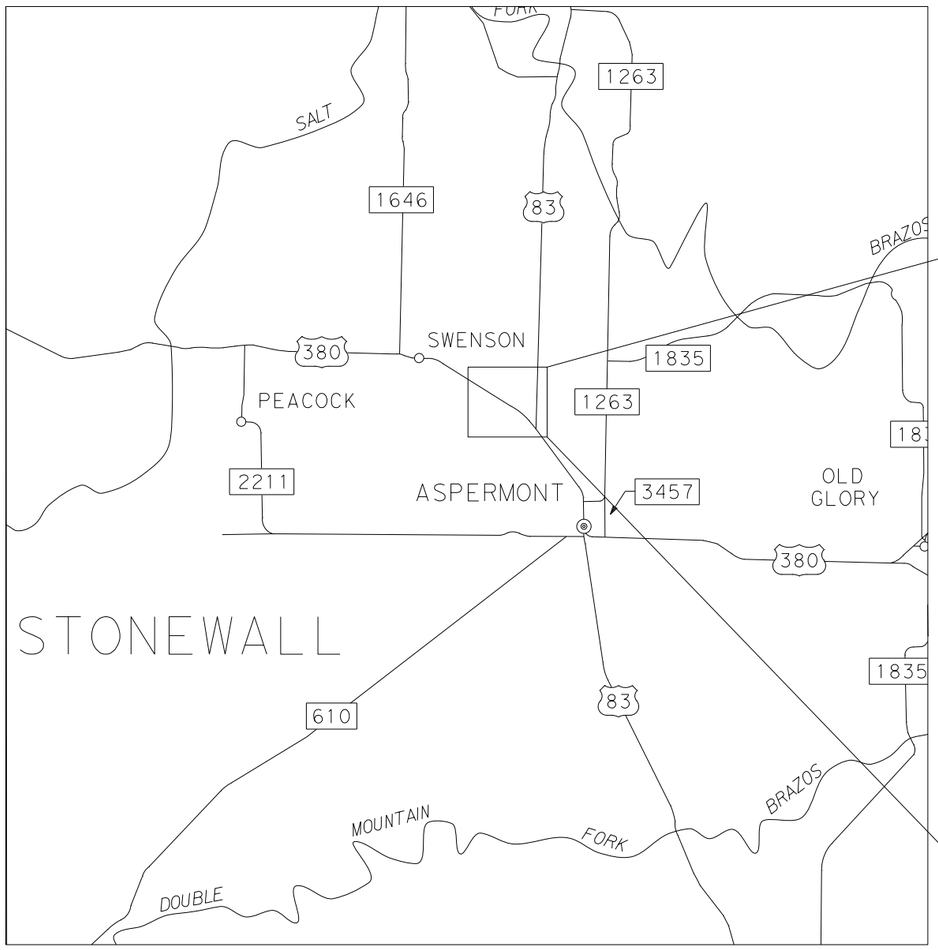
DATE: 8/19/2021 12:11:20 PM

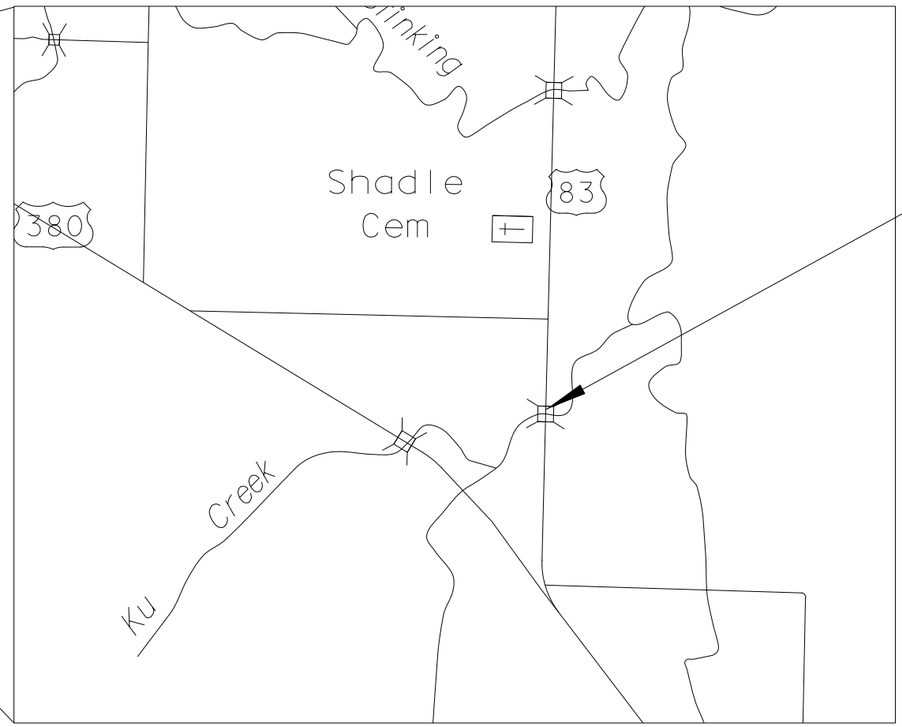
US 83

KU CREEK

NBI # 08-217-0-0032-07-032



STONEWALL COUNTY



LOCATION MAP

LIMITS: AT KU CREEK BRIDGE

CONSISTING OF: REPAIR THE SPALLING OF THE INTERIOR SUPPORT WALL

DESCRIPTION: 2-BARREL CULVERT

BRIDGE LENGTH: 22'

OVERALL WIDTH: 52'-3.5"

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED
PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.
08/31/2021

S1 LOCATION MAP

Texas Department of Transportation

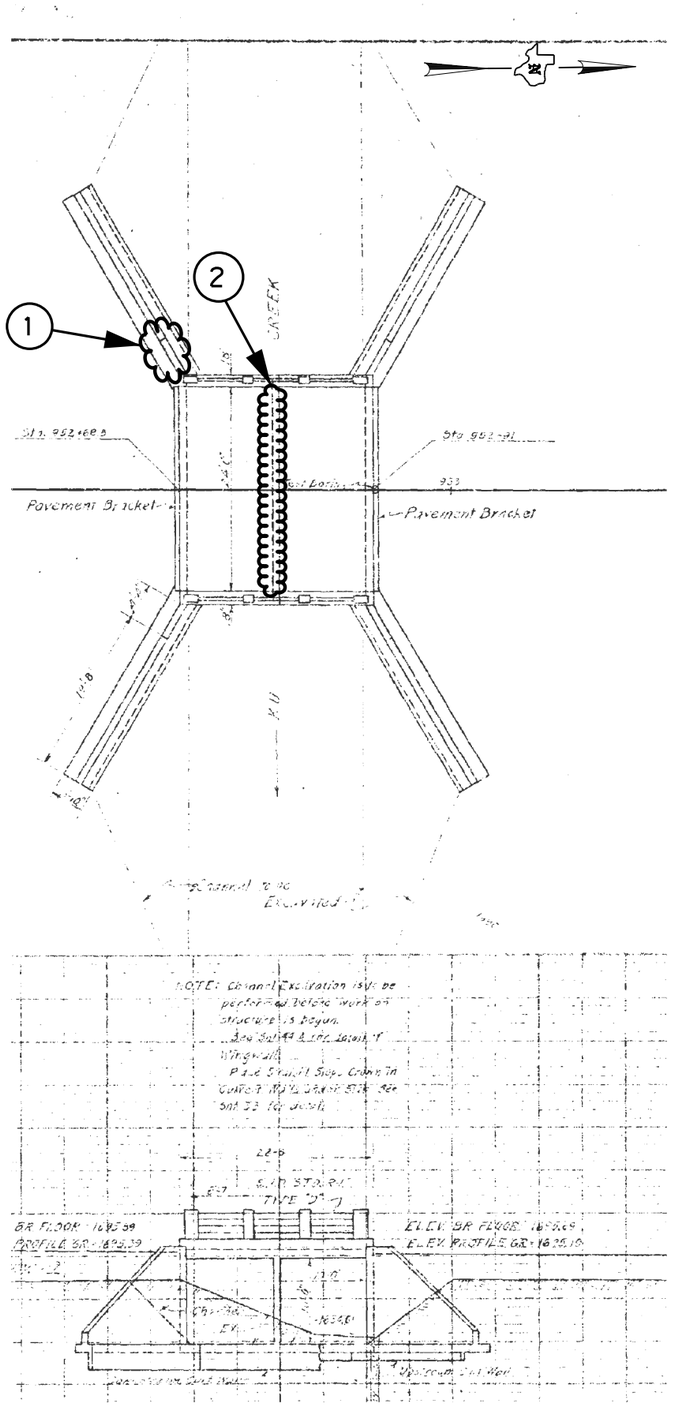
SCALE: NTS

SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		63
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

FILE: S:\XFER\Mike Roethel\BPM FY22\Sheets\QA set\S1 LOCATION MAP.dgn
DATE: 8/31/2021 7:58:13 PM

US 83 AT KU CREEK



STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.

08/20/2021

S1 BRIDGE LAYOUT

Texas Department of Transportation

SCALE: NTS SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		64
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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DATE: 8/19/2021 12:11:22 PM

BRIDGE REPAIRS

LOCATION	QUANTITY	UNIT	TYPE	DESCRIPTION	SURFACE TYPE	SPALL CATEGORY
1	10	SF	SPALL REPAIR	WING WALL	VERTICAL	INTERMEDIATE
2	150	SF	SPALL REPAIR	SPALL INTERIOR WALL	VERTICAL	INTERMEDIATE

BRIDGE REPAIR SUMMARY

ITEM	DESCRIPTION	UNIT	QUANTITY
429	CONC STR REPAIR (VERTICAL)	SF	160

STATE OF TEXAS
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Stephen T. Jones, P.E.

08/20/2021

S1 BRIDGE SUMMARY

Texas Department of Transportation

SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		65
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

FILE: S:\XFER\Mike Roethel i\BPM FY22\Sheets\QA set\S1 BRIDGE SUMMARY.dgn
DATE: 8/19/2021 12:11:31 PM

SITE DESCRIPTION

PROJECT LIMITS:
THE PROJECT LIMITS SHOWN ON THE TITLE SHEET AND LIMITS OF TXDOT RIGHT OF WAY SHALL ALSO BE THE LIMITS OF COVERAGE OF THE SW3P.

PROJECT LOCATION MAPS: TITLE SHEET

DRAINAGE PATTERNS: N/A

APPROX. SLOPES ANTICIPATED AFTER MAJOR GRADING AND AREAS OF SOIL DISTURBANCE: N/A

MAJOR CONTROLS AND LOCATIONS OF STABILIZATION PRACTICES: N/A

PROJECT SPECIFIC LOCATIONS: N/A

SURFACE WATERS AND DISCHARGE LOCATIONS: N/A

TYPICAL AREAS WHICH WILL NOT BE DISTURBED: N/A

ENDANGERED SPECIES, DESIGNATED CRITICAL HABITAT AND HISTORIC PROPERTY: EPIC SHEET

ESTIMATED START DATES AND DURATION OF ACTIVITIES IN THE INTENDED SCHEDULE/SEQUENCE OF EARTH-DISTURBING ACTIVITIES: CONTRACT TIME ESTIMATE

NATURE OF ACTIVITY: BRIDGE PREVENTIVE MAINTENANCE

MAJOR SOIL DISTURBING ACTIVITIES: NONE

TOTAL PROJECT AREA:
0.1 ACRES

TOTAL AREA TO BE DISTURBED (AT EACH SITE):
0.00 ACRES

WEIGHTED RUNOFF COEFFICIENT BEFORE CONSTRUCTION:
N/A

WEIGHTED RUNOFF COEFFICIENT AFTER CONSTRUCTION:
N/A

EXISTING CONDITION OF SOIL & VEGETATIVE COVER:
N/A

% OF EXISTING VEGETATIVE COVER:
N/A

NAME OF RECEIVING WATERS:
SEE RECEIVING WATERWAY SUMMARY

EROSION AND SEDIMENT CONTROLS

USE "T" OR "P" IN THE BLANKS BELOW IF APPLICABLE (T= TEMPORARY, P= PERMANENT)

SOIL STABILIZATION PRACTICES:

P	BUFFER ZONES		PERMANENT PLANTING, SODDING, OR SEEDING
	MULCHING	P	PRESERVATION OF NATURAL RESOURCES
	TEMPORARY SEEDING		SOIL RETENTION BLANKET
	OTHER		OTHER

OTHER:

FOR CONSTRUCTION PROJECTS, THIS DISTRICT OF THE TEXAS DEPARTMENT OF TRANSPORTATION USES SITEMANAGER, A COMPUTER BASED CONSTRUCTION RECORD-KEEPING SYSTEM, AS PART OF RECORD FOR PROJECT WORK INCLUDING ENVIRONMENTAL RELATED ACTIVITIES. DOCUMENTATION DESCRIBING MAJOR GRADING ACTIVITES, TEMPORARY OR PERMANENT CESSATION OF CONSTRUCTION AND STABILIZATION MEASURE IS PART OF THIS SYSTEM AND IS INCORPORATED BY REFERENCE INTO THIS SW3P.

STRUCTURAL PRACTICES:

	CHANNEL LINERS		DIVERSION DIKE AND SWALE COMBINATIONS
	CURBS AND GUTTERS		DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
	HAY BALES		DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
	PAVED FLUMES		ROCK BEDDING AT CONSTRUCTION EXIT
	PIPE SLOPE DRAINS		STONE OUTLET STRUCTURES
	STORM SEWERS		STORM INLET SEDIMENT TRAP
	SEDIMENT BASINS		TEMPORARY EROSION CONTROL LOGS (BIOLOGS)
	SEDIMENT TRAPS		TIMBER MATTING AT CONSTRUCTION EXIT
	SILT FENCES		VEGETATIVE FILTER STRIPS
	ROCK FILTER DAMS		VELOCITY CONTROL DEVICES
	EROSION CONTROL LOGS	T	LINED CONCRETE WASHOUT

OFFSITE VEHICLE TRACKING CONTROLS:

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

NARRATIVE - SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:

THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS:
N/A

STORM WATER MANAGEMENT:
CONCRETE WASHOUT WILL ONLY BE ALLOWED AT LOCATIONS AS DIRECTED BY THE ENGINEER.

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED
PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.
08/20/2021

OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE:
N/A

INSPECTION:
N/A

WASTE MATERIALS:
ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. THE DUMPSTER WILL MEET ALL STATE AND LOCAL CITY SOLID WASTE MANAGEMENT REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER WILL BE EMPTIED AS NECESSARY OR AS REQUIRED BY LOCAL REGULATION AND THE TRASH WILL BE HAULED TO A PERMITTED LANDFILL. NO CONSTRUCTION WASTE MATERIAL WILL BE BURIED ON SITE. CONSTRUCTION DEBRIS AND LITTER SHOULD BE PICKED UP ON A DAILY BASIS UNLESS OTHERWISE DIRECTED BY THE ENGINEER. WASTE AND DIRT PILES SHOULD BE REMOVED ON A WEEKLY BASIS.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING):
NO LONG TERM WATER QUALITY IMPACTS ARE EXPECTED AS A RESULT OF THE PROPOSED PROJECT. SEE THE NEXT PLAN SHEET FOR A LIST OF POTENTIAL POLLUTANTS. IN THE EVENT OF A MAJOR SPILL, NOTIFY THE TXDOT ENGINEER IMMEDIATELY. ALL PERSONNEL WILL BE INSTRUCTED IN THE PROCEDURES FOR SPILL HANDLING AND DISPOSING OF ANY HAZARDOUS MATERIALS THEY WILL BE USING. ALL SPILLS, INCLUDING THOSE OF LESS THAN 25 GALLONS SHALL BE CLEANED IMMEDIATELY AND ANY CONTAMINATED SOIL SHALL BE IMMEDIATELY REMOVED FROM THE SITE AND BE DISPOSED OF PROPERLY. DESIGNATED AREAS SHALL BE DETERMINED BY THE AREA ENGINEER FOR SPOILS DISPOSAL AND MATERIAL STORAGE. THESE AREAS SHALL BE PROTECTED FROM RUN-ON AND RUN-OFF. MATERIALS RESULTING FROM THE DESTRUCTION OF EXISTING ROADS AND BEING REMOVED AND/OR DISPOSED OF BY THE CONTRACTOR WILL BE DONE SO IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL LAWS, ORDINANCES AND REGULATIONS AND WITH THE APPROVAL OF THE PROJECT ENGINEER. ANY CHANGES TO AMBIENT WATER QUALITY DURING CONSTRUCTION OF THE PROPOSED PROJECT SHALL BE PROHIBITED AND MAY RESULT IN ADDITIONAL WATER QUALITY CONTROL MEASURES, WHICH SHALL BE MITIGATED AS SOON AS POSSIBLE AND SHALL BE REPORTED TO THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) WITHIN 24 HOURS OF BECOMING AWARE OF IMPACTS.

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

REMARKS:
CONSTRUCTION STAGING AREAS AND VEHICLE MAINTENANCE AREAS SHALL BE CONSTRUCTED BY THE CONTRACTOR IN A MANNER TO MINIMIZE THE RUNOFF OF POLLUTANTS.
ALL WATERWAYS SHALL BE CLEARED AS SOON AS PRACTICABLE OF TEMPORARY EMBANKMENT, TEMPORARY BRIDGES, MATTING, FALSEWORK PILING, DEBRIS OR OTHER OBSTRUCTIONS PLACED DURING CONSTRUCTION OPERATIONS THAT ARE NOT PART OF THE FINISHED WORK. DISPOSAL AREAS, STOCKPILES, AND HAUL ROADS SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE AND CONTROL THE AMOUNT OF SEDIMENT THAT MAY ENTER RECEIVING WATERS. DISPOSAL AREAS SHALL NOT BE LOCATED IN ANY WETLAND, WATER BODY OR STREAMBED.

Texas Department of Transportation

SHEET 1 OF 2

TxDOT STORM WATER POLLUTION PREVENTION PLAN (SW3P)

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		66
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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LIST OF POTENTIAL POLLUTANTS

POTENTIAL POLLUTANT	RELATED SOURCE	CONTROLS
CEMENTATEOUS MATERIAL AND CEMENTATEOUS AGGREGATES (BROKEN CONCRETE)	REMOVAL OF CONCRETE RIPRAP, CULVERT COMPONENTS, BRIDGE COMPONENTS, ETC.	THIS CONSTRUCTION WASTE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. WHEN STORED ON SITE PRIOR TO DISPOSAL, IT SHALL BE CONTAINED SO AS TO ENSURE THAT IT CANNOT ENTER SURFACE RUNOFF.
MILLED ASPHALTIC CEMENT PAVEMENT (MILLINGS)	OBLITERATION OF ABANDONED ROAD AND PLANING OF ASPHALT	THIS CONSTRUCTION WASTE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. WHEN STORED ON SITE PRIOR TO DISPOSAL, IT SHALL BE CONTAINED SO AS TO ENSURE THAT IT CANNOT ENTER SURFACE RUNOFF.
VIRGIN ASPHALTIC MATERIAL INCLUSIVE OF PRIME OILS, PRECOAT AGGREGATES, AND HOT MIX BITUMINOUS MIXTURES	APPLICATIONS OF PRIME COATS, SEAL COAT, AND PAVING OPERATIONS	THIS MATERIAL SHALL BE APPLIED AT APPROPRIATE RATES FOR CONSTRUCTION PURPOSES WHICH WILL PRECLUDE THESE MATERIALS FROM ENTERING RUNOFF. IN THE EVENT OF ANY UNINTENDED DISCHARGE, CONTROLS TO CONTAIN RUNOFF WILL BE IMMEDIATELY PLACED AND TCEQ WILL BE IMMEDIATELY NOTIFIED.
CONCRETE, REBAR, WIRE, WIRE FABRIC LUMBER, NAILS, STYROFOAM BLOCK, FIBERBOARD, CURING COMPOUND AND LINSEED OIL	CONSTRUCTION OF CONCRETE BRIDGE COMPONENTS SUCH AS DRILLED SHAFTS, CULVERTS, ABUTMENTS, BENTS, REINFORCED CONCRETE SLABS, RAIL, INLET, CONCRETE TRAFFIC BARRIERS, CURB AND GUTTER, RIPRAP AND SIGN FOUNDATIONS	THIS CONSTRUCTION WASTE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. WHEN STORED ON SITE PRIOR TO DISPOSAL, IT SHALL BE CONTAINED SO AS TO ENSURE THAT IT CANNOT ENTER SURFACE RUNOFF. ANY TEMPORARY FILLS MUST BE REMOVED IN THEIR ENTIRETY AND THE AFFECTED AREAS RETURNED TO THEIR PREEXISTING CONDITION/ELEVATION.
MASONRY CONCRETE BLOCK, GEOGRID FABRIC, CARDBOARD, AND PLASTIC RAP	CONSTRUCTION OF MODULAR RETAINING WALL SYSTEMS	THIS CONSTRUCTION WASTE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. WHEN STORED ON SITE PRIOR TO DISPOSAL, IT SHALL BE CONTAINED SO AS TO ENSURE THAT IT CANNOT ENTER SURFACE RUNOFF.
WOOD POSTS, STEEL POSTS, BARRELS, CONES, SIGN BOARDS (ALUMINUM AND PLYBOARD), FASTENERS, NUTS, BOLTS, AND WASHERS	PLACEMENT AND/OR REMOVAL OF BARRICADES, SIGNS AND TRAFFIC CONTROL DEVICES	THIS CONSTRUCTION WASTE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. WHEN STORED ON SITE PRIOR TO DISPOSAL, IT SHALL BE CONTAINED SO AS TO ENSURE THAT IT CANNOT ENTER SURFACE RUNOFF.
WOOD POST, STEEL POST, STEEL FASTENERS, NUTS, BOLTS, AND WASHERS	CONSTRUCTION OF METAL BEAM GUARD FENCE	THIS CONSTRUCTION WASTE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. WHEN STORED ON SITE PRIOR TO DISPOSAL, IT SHALL BE CONTAINED SO AS TO ENSURE THAT IT CANNOT ENTER SURFACE RUNOFF.
STRUCTURAL STEEL I-BEAM, SIGN BOARDS, AND CONCRETE FOUNDATIONS	REMOVAL OF ROADSIDE SIGN ASSEMBLIES LARGE AND SMALL	THIS CONSTRUCTION WASTE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. WHEN STORED ON SITE PRIOR TO DISPOSAL, IT SHALL BE CONTAINED SO AS TO ENSURE THAT IT CANNOT ENTER SURFACE RUNOFF.
THERMOPLASTIC PAINT, GLASS BEADS, REFLECTIVE TABS, AND RAISED REFLECTIVE PAVEMENT MARKERS	APPLICATION OF PAVEMENT MARKINGS/MARKERS	THIS CONSTRUCTION WASTE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. WHEN STORED ON SITE PRIOR TO DISPOSAL, IT SHALL BE CONTAINED SO AS TO ENSURE THAT IT CANNOT ENTER SURFACE RUNOFF.
PETROLEUM PRODUCTS (SMALL QUANTITIES INTRODUCED BY CONTRACTOR)	EQUIPMENT FAILURE, MAINTENANCE AND REPAIR	ALL EQUIPMENT AND VEHICLE MAINTENANCE SHALL BE PERFORMED IN A DESIGNATED AREA WITH APPROPRIATE MEASURES FOR CONTAINMENT AND PROPER DISPOSAL OF ALL WASTE MATERIALS INCLUDING HYDRAULIC OIL AND OTHER LIQUIDS IN ACCORDANCE STATE AND LOCAL WASTE MANAGEMENT REGULATIONS. ALL MATERIAL STORED PRIOR TO DISPOSAL SHALL BE CONTAINED IN A CONTAINER WITH A SECURE COVER MEETING ALL STATE AND LOCAL WASTE MANAGEMENT REGULATIONS.
ELIGIBLE NON-STORM WATER DISCHARGES INCLUDING BUT NOT LIMITED TO NON-POTABLE WATER AND NON-STORM WATER DISCHARGE	MOISTURE APPLICATIONS FOR DUST CONTROL, DENSITY, VEGETATION WATERING, NON-DETERGENT VEHICLE WASHING, AND AIR CONDITIONING CONDENSATE	THIS MATERIAL SHALL BE APPLIED AT APPROPRIATE RATES FOR CONSTRUCTION PURPOSES WHICH WILL PRECLUDE THESE MATERIALS FROM ENTERING RUNOFF. IN THE EVENT OF ANY UNINTENDED DISCHARGE, CONTROLS TO CONTAIN RUNOFF WILL BE IMMEDIATELY PLACED AND THE NON-POTABLE WATER WILL BE RECOVERED AND PROPERLY STORED FOR REUSE.
SURVEY STAKE, FLAGGING TAPE AND PAINT	SURVEY STAKING, ALIGNMENT ESTABLISHMENT	THIS CONSTRUCTION WASTE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. WHEN STORED ON SITE PRIOR TO DISPOSAL, IT SHALL BE CONTAINED SO AS TO ENSURE THAT IT CANNOT ENTER SURFACE RUNOFF.
WASTEWATER	WASHOUT AND CLEANOUT OF STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS	THIS CONSTRUCTION WASTE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. WHEN STORED ON SITE PRIOR TO DISPOSAL, IT SHALL BE CONTAINED SO AS TO ENSURE THAT IT CANNOT ENTER SURFACE RUNOFF.
SOAPS AND SOLVENTS	VEHICLE AND EQUIPMENT WASHING	THIS CONSTRUCTION WASTE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. WHEN STORED ON SITE PRIOR TO DISPOSAL, IT SHALL BE CONTAINED SO AS TO ENSURE THAT IT CANNOT ENTER SURFACE RUNOFF.
UNSUITABLE FILL MATERIAL	EXCAVATION - ROADWAY, SPECIAL AND EROSION CONTROL	THIS CONSTRUCTION WASTE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. WHEN STORED ON SITE PRIOR TO DISPOSAL, IT SHALL BE CONTAINED SO AS TO ENSURE THAT IT CANNOT ENTER SURFACE RUNOFF.

STATE OF TEXAS
STEPHEN T. JONES
100126
LICENSED PROFESSIONAL ENGINEER

Stephen T. Jones, P.E.
08/20/2021

TxDOT STORM WATER POLLUTION PREVENTION PLAN (SW3P)

REV. DATE: 02/27/2014

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		67
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

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PROJECT ID	COUNTY	CONTROL SECTION	HIGHWAY	PROJECT LIMITS	SEGMENT ID	SEGMENT NAME
F1	FISHER	0983-02	FM 611	BRIDGE AT BULL CREEK	1232	CLEAR FORK OF THE BRAZOS RIVER
F2	OMITTED	OMITTED	OMITTED	OMITTED	OMITTED	OMITTED
F3	FISHER	0296-03	US 180	BRIDGE AT COTTONWOOD CREEK	1232	CLEAR FORK OF THE BRAZOS RIVER
F4	FISHER	0318-02	SH 92	BRIDGE AT DRAW	1232A	CALIFORNIA CREEK
H1	HASKELL	0157-40	US 277	BRIDGE AT LITTLE TIMBER CREEK	1232C	PAINT CREEK
H2	HASKELL	0157-04	US 277 SB	BRIDGE AT SH 6	N/A	N/A
H3	HASKELL	0157-04	US 277 NB	BRIDGE AT SH 6	N/A	N/A
S1	STONEWALL	0032-07	US 83	BRIDGE AT KU CREEK	1238	SALT FORK OF THE BRAZOS RIVER
M1FY21	MITCHELL	0006-01	IH20 EBML	BRIDGE AT N CHAMPION CREEK	1412D	NORTH FORK OF CHAMPION CREEK
C1FY23	CALLAHAN	0006-07	IH20	BRIDGE AT BUCK CREEK RD	N/A	N/A

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RECEIVING WATERWAY SUMMARY

Texas Department of Transportation

SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		68
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

PREPARED BY (NAME OF DESIGNER)
DATE: 8/19/2021
FILE: S:\XFER\Mike Roethel\BPM FY22\Sheets\QA set\064 EPIC.dgn

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. REFER TO RECEIVING WATERWAYS SUMMARY SHEET

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. USE NATIVE VEGITATION - E.O. 13112

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. MIGRATORY BIRD TREATY ACT

2.

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.

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.

US 277, ETC
ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS
EPIC

Texas Department of Transportation

SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 277, ETC
STATE	COUNTY		SHEET NO.
TEXAS	HASKELL, ETC		69
DISTRICT	CONTROL	SECTION	JOB
ABL	6383	87	001

REV. DATE: 02/2015