INDEX OF SHEETS

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
	C 902-90-329		1
STATE	STATE DIST.	COUNTY	
TEXAS	FTW	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0902	90	329	VARIOUS

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

STATE PROJECT • C 902-90-329

HIGHWAY:VA

TARRANT COUNTY

PROJECT LENGTH= N/A

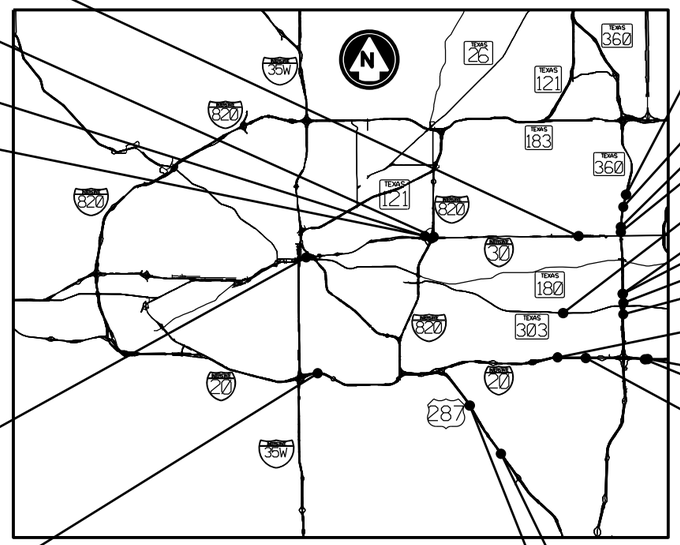
LIMITS: FROM VARIOUS LOCATIONS TO VARIOUS LOCATIONS
FOR CONSTRUCTION OF BRIDGE MAINTENANCE WORK
CONSISTING OF BRIDGE JOINT CLEANING AND REPAIRS

NBI # 02-220-0-1068-02-491
IH 30 EB ON RAMP @ IH 30

NBI # 02-220-0-1068-02-376
DIRECT CONNECTOR
FROM IH-820 SB TO IH-30 EB

NBI # 02-220-0-1068-02-345
IH 30 EB @ IH 820

NBI # 02-220-0-1068-02-382
IH 30 WB EXIT 21A



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IM TERRLL WAY @ IH 30

NBI # 02-220-0-0008-13-354
IH 20 EB @ UNION PACIFIC RR

NBI # 02-220-0-2266-02-046
POST & PADDOCK RD @ SH-360

FUNCTIONAL CLASS: INTERSTATE, PRNCIPAL ARTERIAL, COLLECTOR

DESIGN SPEED: VARIES

NBI # 02-220-0-2266-02-047
W N. CARRIER PKWY @ SH-360

NBI # 02-220-0-2266-02-049
AVENUE K @ SH-360

NBI # 02-220-0-2266-02-050
AVENUE J @ SH-360

NBI # 02-220-0-2208-01-009
SPUR 303 WB @ JOHNSON CREEK

NBI # 02-220-0-2266-02-033
SH360 SB @ PARK ROW DR

NBI # 02-220-0-2266-02-032
SH360 NB @ PARK ROW DR

NBI # 02-220-0-2266-02-058
SH 360 NB ON-RAMP @ S WATSON RD.

NBI # 02-220-0-2266-02-060
SH 360 NB EXIT-RAMP @ S WATSON RD.

NBI # 02-220-0-2374-05-281
MATLOCK ST. @ IH20

NBI # 02-220-0-2374-05-296
IH20 WB @ GREAT SW PARKWAY

NBI # 02-220-0-2374-05-297
IH20 EB @ GREAT SW PARKWAY

NBI # 02-220-0-2374-05-284
COLLINS ST SB @ IH-20

NBI # 02-220-0-0172-09-140
US 287 NB @ TURNER-WARNELL RD

NBI # 02-220-0-0172-09-134
US 287 NB @ KENN-SUBLETT RD

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: NBI 022200000813354
NO TDLR REQUIRED

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

SUBMITTED FOR LETTING: 9/11/2024
DocuSigned by: Maribel Rangel
AREA ENGINEER

RECOMMENDED FOR LETTING: 9/23/2024
DocuSigned by:
DIRECTOR OF TP&D
7879B0B92E5D403...

APPROVED FOR LETTING: 9/23/2024
DocuSigned by: David M Salazar, P.E.
DISTRICT ENGINEER
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SHEET NO	**GENERAL**
1	TITLE SHEET
2	INDEX OF SHEETS
3-5	PROJECT LOCATION MAP
6	ESTIMATE & QUANTITY SHEET
7	GENERAL NOTES
8	SUMMARY OF BRIDGES
9	FUA ID

SHEET NO	**TRAFFIC CONTROL PLAN**
10	TCP NOTES
11	TCP SUMMARY
12-19	TCP LAYOUT

BC STANDARDS

SHEET NO	DESCRIPTION
20-31	• BC (1)-21 THRU BC (12)-21

TCP STANDARDS

SHEET NO	DESCRIPTION
32	• TCP (2-2) - 18
33	• TCP (2-6) - 18
34-39	• TCP (6-1) - 12 THROUGH TCP (6-6) - 12
40	• WZ (RS) - 22

BRIDGE JOINT DETAILS

SHEET NO	DESCRIPTION
41	EXISTING ARMOR JOINT DETAILS
42-43	SEALED EXPANSION JOINT TYPE B
44-45	EXIST. CONTRUCTION JOINT DETAILS
46	EXISTING RELIEF JOINT DETAILS
47-48	EXISTING PJS ARMOR JOINT DETAILS
49	JOINT SEALANT TERMINATION DETAILS

SHEET NO	**AS- BUILT** ASSET NUMBER	**LOCATION**
50-51	022200000813354	IH 20 EB @ UNION PACIFIC RR
52-53	022200017209134	US 287 NB @ KENN-SUBLETT RD
54-55	022200017209140	US 287 NB @ TURNER-WARNELL RD
56	022200106802345	IH 30 EB @ IH 820
57-63	022200106802376	DIRECT CONNECTOR D FROM IH-820 SB TO IH-30 EB
64	022200106802382	IH - 30 WB Exit 21A
65-66	022200106802415	IM TERRLL WAY @ I 30
67-69	022200106802491	IH 30 EB ON RAMP @ IH 30 EB EXIT RAMP
70	022200220801009	SPUR 303 WBL @ JOHNSON CREEK
71	022200226602032	SH 360 NBL @ PARK ROW DR
72	022200226602033	SH 360 SBL @ PARK ROW DR
73	022200226602046	POST & PADDOCK RD @ SH 360
74-75	022200226602047	W N CARRIER PKWY @ SH 360
76	022200226602049	AVENUE K @ SH 360
77	022200226602050	AVENUE J @ SH 360
78	022200226602058	NE COLLECTOR RD @ RAMP 500L
79	022200226602060	SH 360 SE COLL. RD @ RAMP 530L
80	022200237405281	MATLOCK ST @ IH 20
81-82	022200237405284	COLLINS ST SB @ IH 20
83-84	022200237405296	IH 20 WBL @ GREAT SW PARKWAY
85-86	022200237405297	IH 20 EBL @ GREAT SW PARKWAY

ENVIRONMENTAL ISSUES STANDARDS

SHEET NO	DESCRIPTION
87-88	STORMWATER POLLUTION PREVENTION PLAN (SW3P)

RAILROAD STANDARDS

SHEET NO	DESCRIPTION
89	RAILROAD SCOPE OF WORK

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
Maribel Rangel
E0D25AC6252D429...
MARIBEL RANGEL, P.E.

$DATE$
DATE

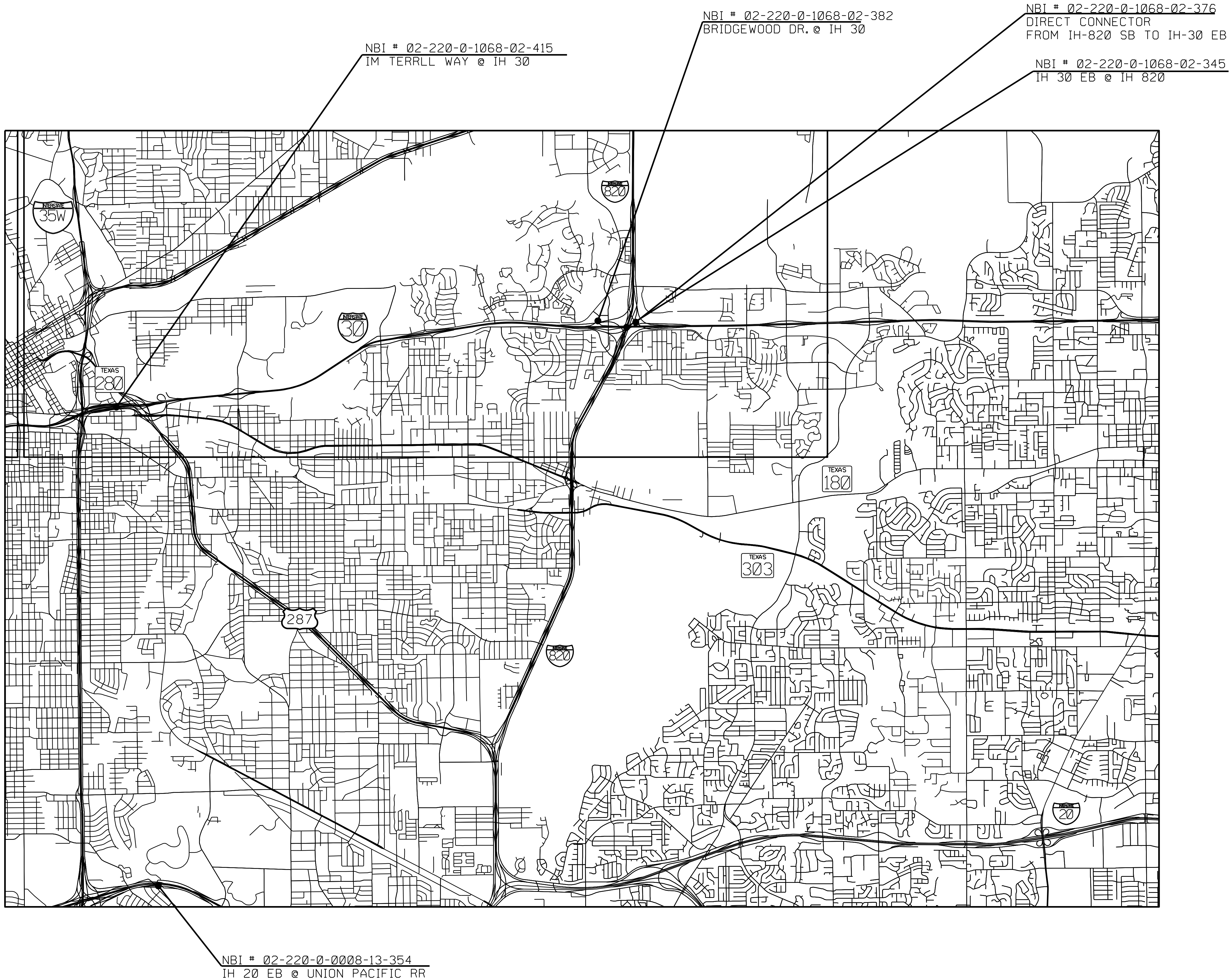
- STATEWIDE STANDARD
- THE STANDARD SHEETS IDENTIFIED ABOVE HAVE BEEN SELECTED AS BEING APPLICABLE TO THIS PROJECT.

DATE: $DATE$ $TIME$
FILE: $FILE$

Texas Department of Transportation

INDEX OF SHEETS

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		2



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STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
Maribel Rangel
E0D25AC8252D429...
MARIBEL RANGEL, P.E.
9/6/2024
DATE

Texas Department of Transportation

PROJECT LOACTION MAP

© TxDOT

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		3

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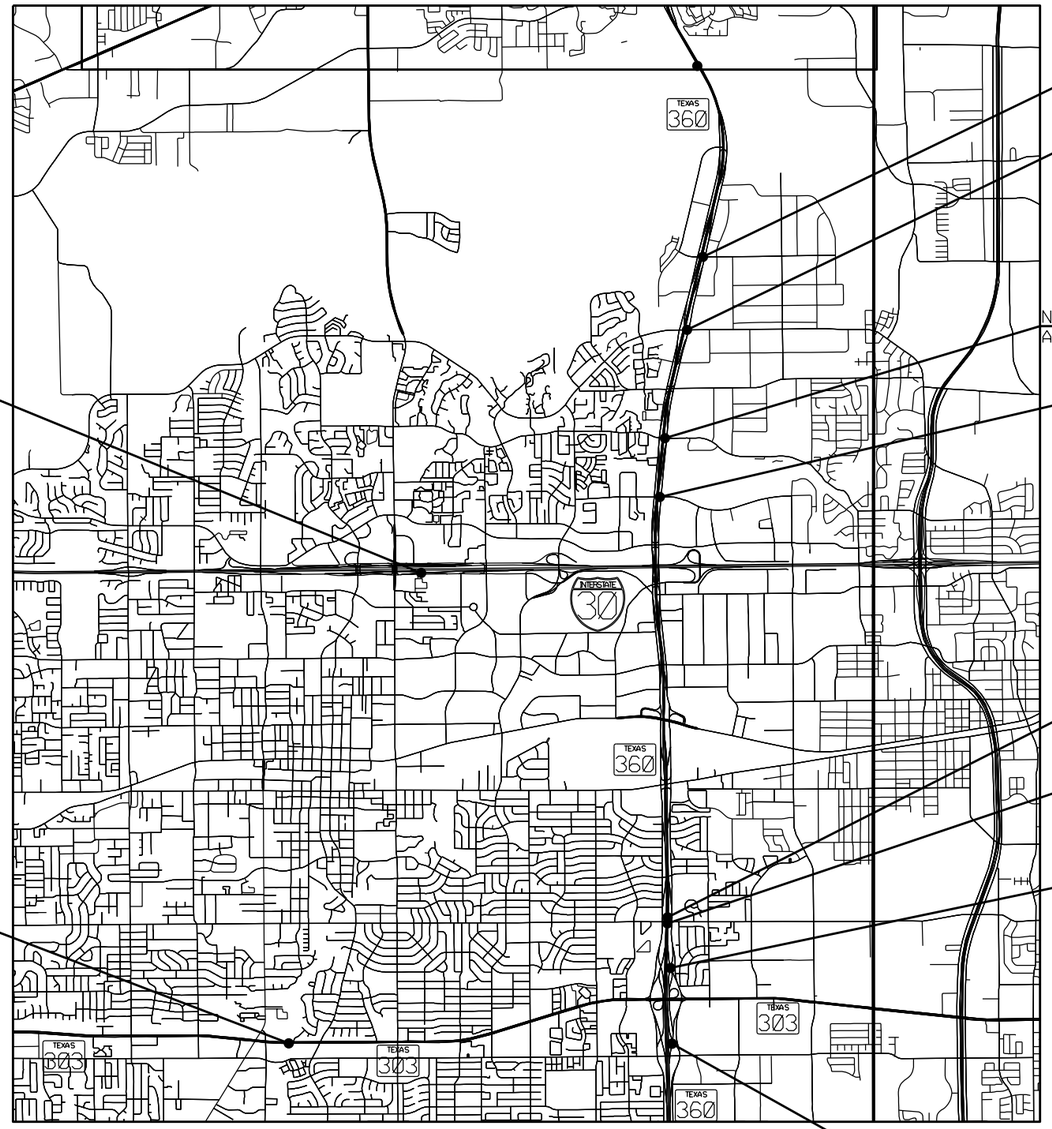

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POST & PADDOCK RD @ SH-360

NBI # 02-220-0-2266-02-047
W N. CARRIER PKWY @ SH-360

NBI # 02-220-0-2266-02-049
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NBI # 02-220-0-2266-02-050
AVENUE J @ SH-360

NBI # 02-220-0-1068-02-491
IH 30 EB ON RAMP @ IH 30

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SH360 NB @ PARK ROW DR

NBI # 02-220-0-2266-02-033
SH360 SB @ PARK ROW DR

NBI # 02-220-0-2266-02-058
SH 360 NB ON-RAMP @ S WATSON RD.

NBI # 02-220-0-2208-01-009
SPUR 303 WB @ JOHNSON CREEK

NBI # 02-220-0-2266-02-060
SH 360 NB EXIT-RAMP @ S WATSON RD.

N

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
Maribel Rangel
E0D25AC8252D428...
MARIBEL RANGEL, P.E.

9/6/2024
DATE

Texas Department of Transportation

PROJECT LOACTION MAP

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		4

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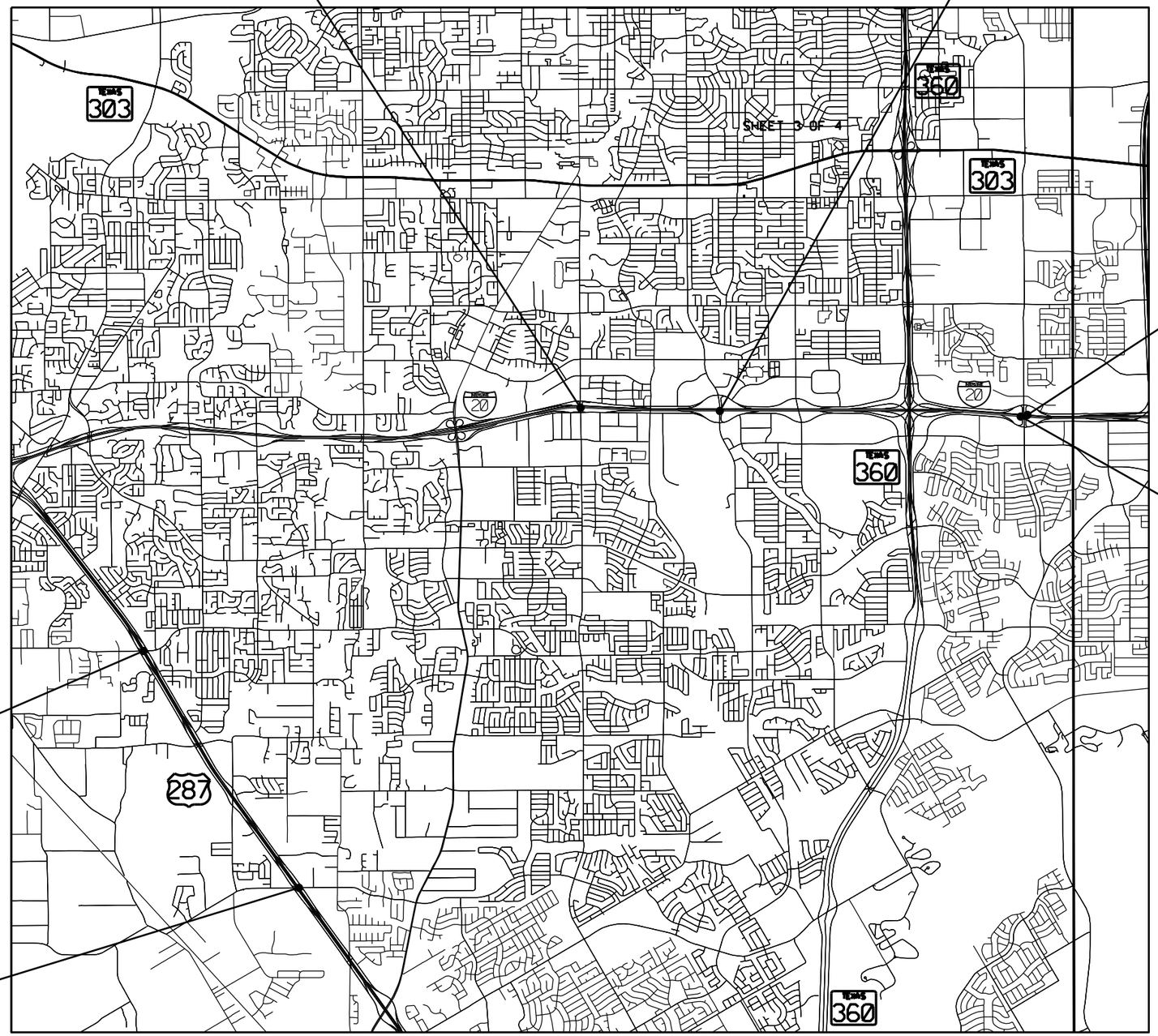
MATLOCK ST. @ IH20 WBL

NBI # 02-220-0-2374-05-284
COLLINS ST SB @ IH-20



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NBI # 02-220-0-2374-05-296
IH20 WB @ GREAT SW PARKWAY

NBI # 02-220-0-2374-05-297
IH20 EB @ GREAT SW PARKWAY

NBI # 02-220-0-0172-09-134
US 287 NB @ KENN-SUBLETT RD

NBI # 02-220-0-0172-09-140
US 287 NB @ TURNER-WARNELL RD

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
Maribel Rangel
E0D25AC8252D423...
MARIBEL RANGEL, P.E.

9/6/2024
DATE

Texas Department of Transportation

PROJECT LOACTION MAP

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		5

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Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0902-90-329 **DISTRICT** Fort Worth **COUNTY** Tarrant
HIGHWAY Various

			CONTROL SECTION JOB		**0902-90-329**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00207797**		
			COUNTY		**Tarrant**		
			HIGHWAY		**Various**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	438-7004	CLEANING AND SEALING EXIST JOINTS (CL3)	LF	166.000		166.000	
	438-7007	CLEANING AND SEALING EXIST JOINTS (CL7)	LF	5,823.700		5,823.700	
	438-7009	RESIZING AND SEALING JOINTS	LF	2,375.000		2,375.000	
	438-7013	CLEANING & SEALING EXISTING JOINT (SEJ)	LF	280.000		280.000	
	500-7001	MOBILIZATION	LS	1.000		1.000	
	502-7001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	8.000		8.000	
	503-7002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	8.000		8.000	
	505-7001	TMA (STATIONARY)	DAY	267.000		267.000	
	510-7001	ONE-WAY TRAF CONT (FLAGGER CONT)	HR	486.000		486.000	
	785-7002	BRIDGE JOINT REPAIR (HEADER)	LF	498.000		498.000	
	08	ENVIRONMENTAL: CONTRACTOR FORCE ACCOUNT WORK (NONPART)	LS	1.000		1.000	
	12	RAILROAD FLAGGING: RAILROAD FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
	18	EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	

Control: 0902-90-329

County: Tarrant

Highway: VA

Special Notes

Electronic files containing answered pre-letting questions and other project related design information will be placed in the following FTP site periodically.

Check this site for new information. Notices of new postings will not be sent out by the Engineer.

The data located in these files is for non-construction purposes only and can be found at

TxDOT's public FTP site at https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting Responses/.

Access is read-only.

All files in the FTP site are subject to the License Agreement shown on the FTP site.

To obtain a copy of the project plans free of charge, submit a request from the following site: http://www.txdot.gov/business/letting-bids/plans-online.html

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

Area Engineer's Email:	Maribel.Rangel@txdot.gov
Assistant Area Engineer's Email:	Justin.Thomey@txdot.gov
Design Manager's Email:	Raul.Orozco@txdot.gov

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

All questions submitted that generate a response will be posted through this site. The site is organized by Fort Worth, Project Type (Construction), December 2024, CSJ 0902-90-329, Project Name(Various).

Single lane closures, except as otherwise shown in the plans, will be restricted to off-peak hours as defined in the following table:

Control: 0902-90-329

County: Tarrant

Highway: VA

Peak Hours		Off-Peak Hours	
6 to 9 AM Monday through Friday	3 to 7 PM Monday through Friday	9 AM to 3 PM and 7 PM to 6 AM Monday through Friday	All day Saturday and Sunday

Work that requires closure of multiple travel lanes in the same direction, except as otherwise shown in the plans, are restricted to night hours between 9 PM and 6 AM.

Existing storm sewers and utilities are shown from the best available information. Verify the location of all underground facilities prior to starting work.

For dimensions of right-of-way not shown on the plans, see right-of-way map on file at the TxDOT District Office.

Modifications to Lane Closure / Work Restrictions:

Submit a request in writing for approval by the Engineer a minimum of 10 days in advance of implementing a change to lane closure restrictions.

When deemed necessary, the Engineer will lengthen, shorten, or otherwise modify lane closure restrictions as traffic conditions warrant.

When deemed necessary, the Engineer will modify the list of major events when new events develop, existing events are rescheduled, or when warranted.

Special Events/ Special Situations will be handled on a case-by-case basis. No work restricting lane closures is allowed from 3 PM a day before to 9 AM the day after the Special Event or Special Situation.

Item 4. Scope of Work

Reimbursement for project overhead will not be considered until project completion has extended beyond the original Contract Time.

Item 5. Control of the Work

When supplementary bridge plans, shop drawings, shop details, erection drawings, working drawings, forming plans, or other drawings are required, prepare and submit drawings on sheets 8-1/2 by 11 inches, 17 by 22 inches, or full size drawings reduced to half scale if completely legible. If, in the opinion of the Engineer, the drawings are not completely legible, prepare and

submit on sheets 22 by 34 inches, with a 1-1/2 inch left margin, and 1/2 inch top, right, and bottom margins.

Submit all sheets with a title in the lower right hand corner. The title must include the sheet index data shown on the lower right corner of the project plans, name of the structure or element or stream, sheet numbering for the shop drawings, name of the fabricator and the name of the Contractor.

Item 6. Control of Materials

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

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

Item 7. Legal Relations and Responsibilities

The total area disturbed for this project is 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 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 right of way. 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 right of way to the Engineer and to the local government that operates a separate storm sewer system.

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

Structures
Do not begin bridge and culvert construction operations until swallow nesting prevention is implemented, until after October 1 if it's determined that swallow nesting is actively occurring, or until it's determined swallow nests have been abandoned. If the State installed nesting deterrent on the bridges and culverts, maintain the existing nesting deterrent to prevent swallow nesting until October 1 or completion of the bridge and culvert work, whichever occurs earlier. If

Control: 0902-90-329

County: Tarrant

Highway: VA

new nests are built and occupied after the beginning of the work, do not perform work that can interfere with or discourage swallows from returning to their nests. Prevention of swallow nesting can be performed by one of the following methods:

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

2. By February 15 place a nesting deterrent (which prevents access to the bridge and culvert by swallows) on the entire bridge (except deck and railing) and culverts.

No extension of time or compensation payment will be granted for a delay or suspension of work caused by nesting swallows. This work is subsidiary to the various bid items.
The following Holiday/Event lane closure restriction requirements apply to this project:
No work that restricts or interferes with traffic shall be allowed between 3 PM on the day preceding a Holiday or Event and 9 AM on the day after the Holiday or Event.

Holiday Lane Closure Restrictions	
New Year's Eve and New Year's Day (December 31 through January 1)	3 PM December 30 through 9 AM January 2
Easter Holiday Weekend (Friday through Sunday)	3PM Thursday through 9 AM Monday
Memorial Day Weekend (Friday through Monday)	3 PM Thursday through 9 AM Tuesday
Independence Day (July 3 through July 5)	3 PM July 2 through 9 AM July 6
Labor Day Weekend (Friday through Monday)	3 PM Thursday through 9 AM Tuesday
Thanksgiving Holiday (Wednesday through Sunday)	3 PM Tuesday through 9 AM Monday
Christmas Holiday (December 23 through December 26)	3 PM December 22 through 9 AM December 27

Plan work schedules around the appropriate dates above to ensure productive work is performed without lane closures.

Event Lane Closure Restrictions 3 PM the day before Event to 9 AM the day after the Event			
NASCAR Races at Texas Motor Speedway (generally 3	NASCAR Nationwide and Sprint Cup Series (Held in late	NASCAR Nationwide and Sprint Cup Series (Held in Late	Indy Series Racing and NASCAR Truck Series (Held

events):	March/early April)	October/early November)	in June)
Within one mile radius of major retail traffic generators i.e. malls (Thanksgiving Day through January 2)			
Arlington Entertainment District			
Grapevine Festivals (Including but not limited to: Carol of Lights, Black Friday Weekend, Christmas Parade, and weekends during Christmas Capital of Texas)			

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.
For 21 bridges that need to clean and seal, freeway closure and bridge work shall be conducted at nighttime only from 9:00 pm to 6:00 am. Contractor should prepare all requirements including lighting requirements.

Working days will be computed and charged in accordance with Section 8.3.1.4, 'Standard Workweek.'

Item 502. Barricades, Signs, and Traffic Handling

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 typically 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.

Permanent signs may be installed when construction in an area is complete and they will not conflict with the traffic control plan for the remainder of the job.

Existing signs are to remain as long as they do not interfere with construction and they do not conflict with the traffic control plan.
Any sign not detailed in the plans but called for in the layout will be as shown in the current "Standard Highway Sign Designs for Texas".

When traffic is obstructed, arrange warning devices in accordance with the latest edition of the "Texas Manual on Uniform Traffic Control Devices".

Control: 0902-90-329

County: Tarrant

Highway: VA

Cover or remove any work zone signs when work or condition referenced is not occurring.

Do not place barricades, signs, or any other traffic control devices where they interfere with sight distance at driveways or side streets. Provide access to all driveways during all phases of construction unless otherwise noted in the plans or as directed.

Item 503. Portable Changeable Message Signs

Provide all portable changeable message signs and arrow panels with a photoelectric device to allow for automatic dimming of operations to approximately 50% of their normal brightness when ambient light drops to approximately five footcandles, and then increase back again for daytime operations.

Six electronic portable changeable message signs will be required. Individual or collective use of signs will be required by the Engineer when deemed necessary to supplement the traffic control plan.

Each sign must have programmed in its permanent memory the following 15 messages:

1. Exit Closed Ahead
2. Use Other Routes
3. Right Lane
4. Left Lane
5. Closed Ahead
6. Two Lane
7. Detour Ahead
8. Thru Traffic
9. Prepare To Stop
10. Merging Traffic
11. Expect 15 Minute Delay
12. Max Speed ** MPH
13. Merge Right
14. Merge Left
15. No Exit Next ** Miles

SUMMARY OF BRIDGES

LAYOUT SHEET NO.	NBI NUMBERS	FEATURE CARRIED	FEATURE CROSSED	438-7004 CLEANING AND SEALING EXIST JOINTS(CL3)	438-7007 CLEANING AND SEALING EXIST JOINTS(CL7)	438-7009 RESIZING AND SEALING JOINTS	438-7013 CLEANING & SEALING EXISTING JOINT (SEJ)	785-7002 BRIDGE JOINT REPAIR (HEADER)	503-7002 PORTABLE CHANGEABLE MESSAGE SIGN	505-7001 TMA (STATIONARY)	510-7001 ONE-WAY TRAF CONT (FLAGGER CONT)
				LF	LF	LF	LF	LF	EA	DAY	HR
50-51	022200000813354	IH 20 EB	UNION PACIFIC RR		1218	202					270
52-53	022200017209134	US 287 NB	KENN-SUBLETT RD		186	88					
54-55	022200017209140	US 287 NB	TURNER-WARNELL RD		205	88					
56	022200106802345	IH 30 EB	IH 820		596						
57-63	022200106802376	DIRECT CONNECTOR, IH-820 SB TO IH-30 EB			616	56	112				
64	022200106802382	IH - 30 WB Exit 21A			188	60					
65-66	022200106802415	IM TERRLL WAY	IH 30		238	136					216
67-69	022200106802491	IH 30 EB ON RAMP	IH-30		168	56	168				
70	022200220801009	SPUR 303 WB	JOHNSON CREEK			137					
71	022200226602032	SH 360 NB	PARK ROW DR					498			
72	022200226602033	SH 360 SB	PARK ROW DR	166	166	166					
73	022200226602046	POST & PADDOCK RD	SH 360		160	185					
74-75	022200226602047	W CARRIER PKWY	SH 360		160	185					
76	022200226602049	AVENUE K	SH 360		155	180					
77	022200226602050	AVENUE J	SH 360		156	181					
78	022200226602058	SH 360 NB ON-RAMP	S WATSON RD.		261	81					
79	022200226602060	SH 360 NB EXIT-RAMP	S WATSON RD.		252	76					
80	022200237405281	MATLOCK ST	IH 20 WB		234	100					
81-82	022200237405284	COLLINS ST SB	IH 20		234	100					
83-84	022200237405296	IH 20 WB	GREAT SW PARKWAY		356	148					
85-86	022200237405297	IH 20 EB	GREAT SW PARKWAY		356	148					
PROJECT TOTAL				**166**	**5905**	**2372**	**280**	**498**	**8**	**171**	**486**

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Texas Department of Transportation

SUMMARY OF BRIDGES

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		8

FUA ID			
#	FUA ID	NBI	Location
50-51	503553	02-220-0-0008-13-354	IH 20 EB @ UNION PACIFIC RR
	672442	02-220-0-0008-13-354	IH 20 EB @ UNION PACIFIC RR
52-53	508087	02-220-0-0172-09-134	US 287 NB @ KENN-SUBLETT RD
54-55	508114	02-220-0-0172-09-140	US 287 NB @ TURNER-WARNELL RD
	508114	02-220-0-0172-09-140	US 287 NB @ TURNER-WARNELL RD
56	497932	02-220-0-1068-02-345	IH 30 EB @ IH 820
57-63	504430	02-220-0-1068-02-376	DIRECT CONNECTOR FROM IH-820 SB TO IH-30 EB
	504435	02-220-0-1068-02-376	DIRECT CONNECTOR FROM IH-820 SB TO IH-30 EB
64	503046	02-220-0-1068-02-382	IH - 30 WB Exit 21A
65-66	503055	02-220-0-1068-02-415	IM TERRLL WAY @ IH30
67-69	504452	02-220-0-1068-09-491	IH 30 EB ON RAMP @ IH 30
70	504554	02-220-0-2208-01-009	SPUR 303 WBL @ JOHNSON CREEK
71	667858	02-220-0-2266-02-032	SH 360 NB @ PARK ROW DR
	667859	02-220-0-2266-02-032	SH 360 NB @ PARK ROW DR
72	667863	02-220-0-2266-02-033	SH 360 SB @ PARK ROW DR
73	506839	02-220-0-2266-02-046	POST & PADDOCK RD @ SH 360
74-75	506844	02-220-0-2266-02-047	W CARRIER PKWY @ SH 360
76	506851	02-220-0-2266-02-049	AVENUE K @ SH 360
77	506861	02-220-0-2266-02-050	AVENUE J @ SH 360
78	504556	02-220-0-2266-02-058	SH 360 NB ON-RAMP @ S WATSON RD.
79	504578	02-220-0-2266-02-060	SH 360 NB EXIT-RAMP @ S WATSON RD.
80	502307	02-220-0-2374-05-281	MATLOCK ST @ IH 20 WB
	502308	02-220-0-2374-05-281	MATLOCK ST @ IH 20 WB
81-82	502323	02-220-0-2374-05-284	COLLINS ST SB @ IH 20
83-84	502345	02-220-0-2374-05-296	IH 20 WB @ GREAT SW PARKWAY
	502347	02-220-0-2374-05-296	IH 20 WB @ GREAT SW PARKWAY
85-86	502348	02-220-0-2374-05-297	IH 20 EB @ GREAT SW PARKWAY
	502349	02-220-0-2374-05-297	IH 20 EB @ GREAT SW PARKWAY

- TXDOT INSPECTOR SHALL PHOTOGRAPH THE DAMAGED AREA AFTER IT HAS BEEN REPAIRED AND EMAIL THE PHOTOGRAPH TO THE TXDOT FORT WORTH BRIDGE INSPECTOR COORDINATOR(MARK BUWELL) FOR FURTHER PROCESSING.

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
Maribel Rangel
E0D25AC6252D429...
MARIBEL RANGEL, P.E.

9/6/2024
DATE

Texas Department of Transportation

FUA ID

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		9

DATE: 9/6/2024 4:05:09 PM
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TRAFFIC CONTROL NOTES

1. THIS IS A PROPOSED TRAFFIC CONTROL PLAN (TCP). THE CONTRACTOR MAY SUBMIT AN ALTERNATE TRAFFIC CONTROL PLAN, SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN TEXAS, FOR APPROVAL BY THE ENGINEER. WHEN MUTUALLY BENEFICIAL CHANGES ARE PROPOSED TO THE EXISTING TRAFFIC CONTROL PLAN AND ARE AGREED UPON BY THE CONTRACTOR AND THE DEPARTMENT, THE PLAN SHEETS MAY BE DEVELOPED AND SIGNED AND SEALED BY THE ENGINEER.

2. REFER TO ITEM 8 "PROSECUTION OF WORK" AND PROJECT GENERAL NOTES FOR TRAFFIC CONTROL PLAN.

3. FURNISH AND INSTALL ALL TRAFFIC CONTROL PLANS DEVICES, INCLUDING BUT NOT LIMITED TO BARRICADES, SIGNS, AND WORK ZONE MARKINGS, IN COMPLIANCE WITH THE LATEST VERSION OF THE ,TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TXMUTCD),THE STATE STANDARD TRAFFIC CONTROL PLANS (TCP) SHEETS, AND THE BARRICADES AND CONSTRUCTION (BC) SHEETS. REFER TO THE PROJECT GENERAL NOTES FOR ADDITIONAL INFORMATION REGARDING THE TRAFFIC CONTROL PLAN.

4. VERIFY THE LOCATION AND SPACING OF SIGNS, BARRICADES, AND CHANNELIZING DEVICES PRIOR TO THEIR PLACEMENT ALONG VERTICAL CURVES, HORIZONTAL CURVES, AND OTHER GEOMETRIC CONSTRAINTS TO ENSURE VISIBILITY TO ALL MOTORISTS.

5. COVER ALL EXISTING SIGNS THAT CONFLICT WITH THE TRAFFIC CONTROL PLAN AND UNCOVER DURING NON-WORKING HOURS OR AS DIRECTED BY THE ENGINEER. PARTIAL COVERAGE OF THE SIGN OR COVERAGE BY MATERIAL THAT WILL NOT COVER THE ENTIRE SIGN ALL THE TIME IS NOT PERMITTED.

6. VARY THE SPACING OF SIGNS TO MEET TRAFFIC CONDITIONS OR AS DIRECTED BY THE ENGINEER AND ENSURE THAT ALL TRAFFIC CONTROL DEVICES AND WORK ZONE PAVEMENT MARKINGS ARE KEPT IN A HIGHLY VISIBLE CONDITION (CLEAN, UPRIGHT AND AT PROPER LOCATION).

7. CONDUCT CONSTRUCTION OPERATIONS SO AS TO PROVIDE THE LEAST POSSIBLE INTERFERENCE TO TRAFFIC AND TO PERMIT THE CONTINUOUS MOVEMENT OF TRAFFIC IN ALL ALLOWABLE DIRECTIONS AT ALL TIMES OR AS PERMITTED BY THE TRAFFIC CONTROL PLANS. PROVIDE FOR SAFE AND CONVENIENT ACCESS TO ABUTTING PROPERTIES, HIGHWAYS, PUBLIC ROADS, AND STREET CROSSINGS EXCEPT AS OTHERWISE SHOWN ON THE TRAFFIC CONTROL PLANS.

8. TXDOT INSPECTOR SHALL PHOTOGRAPH THE DAMAGED AREA AFTER IT HAS BEEN REPAIRED AND EMAIL THE PHOTOGRAPH TO THE TXDOT FORT WORTH BRIDGE INSPECTOR COORDINATOR(MARK BUWELL) FOR FURTHER PROCESSING.

9. REGULATE ALL CONSTRUCTION TRAFFIC SO AS TO CAUSE A MINIMAL INCONVENIENCE TO THE TRAVELING PUBLIC. AT THE TIMES WHEN IT IS NECESSARY FOR TRUCKS TO STOP, UNLOAD OR CROSS ROADWAYS UNDER TRAFFIC, PROVIDE WARNING SIGNS AND FLAGGERS AS NEEDED TO ADEQUATELY PROTECT THE TRAVELING PUBLIC.

10. CONTRACTOR SHALL USE PORTABLE CHANGEABLE MESSAGE SIGN IN ADVANCE OF EACH CONSTRUCTION SITE AS DIRECTED BY THE ENGINEER. USE OF PORTABLE CHANGEABLE MESSAGE SIGNS AS ADVANCE NOTICE OF LANE CLOSURES WILL BE REQUIRED, AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL USE PORTABLE CHANGEABLE MESSAGE SIGNS FOR LANE CLOSURES UNDERNEATH THE BRIDGE IF THERE IS A FREEWAY AND IF THE BRIDGE WORK IS EXPECTED TO AFFECT TRAFFIC OPERATIONS BELOW. FOR LOCATIONS THAT ARE ADJACENT TO EACH OTHER, A SINGLE PORTABLE CHANGEABLE MESSAGE SIGN IN ADVANCE OF THE ENTIRE WORK AREA IS ACCEPTABLE.

11. ADDITIONAL SIGNS, BARRICADES AND CHANNELIZING DEVICES MAY BE REQUIRED TO MAINTAIN TRAFFIC DURING CONSTRUCTION, AS SHOWN ON TXDOT TCP AND TMUTCD STANDARDS. ADDITIONAL SIGNS, BARRICADES, ETC. (IF ANY), WILL BE SUBSIDIARY TO ITEMS 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING".

12. PROVIDE LIGHTS TO ILLUMINATE THE FLAGGERS AND WORK AREA DURING NIGHTTIME OPERATIONS. CLASS 3 GARMENTS WILL BE REQUIRED FOR ALL WORKERS AND FLAGGERS DURING NIGHTTIME WORK.

13. CONTRACTOR SHALL COORDINATE TCP WITH ADJACENT CONSTRUCTION PROJECTS TO ENSURE NO CONFLICTING TRAFFIC CONTROL EXISTS.

14. FOLLOW THE CONSTRUCTION SEQUENCING UNLESS OTHERWISE APPROVED BY THE ENGINEER.

15. BEFORE BEGINNING WORK, PLACE APPLICABLE BARRICADES IN ACCORDANCE WITH TXDOT STANDARDS BC (1)-21 THROUGH BC (12)-21.

16. ALL TCP DEVICES SHALL BE PICKED UP PRIOR TO OPENING AFFECTED LANES TO TRAFFIC.

17. CONTRACTOR SHALL FOLLOW TXDOT PS&E, PROJECT DEVELOPMENT PROCESS MANUAL, TMUTCD, MUTCD, AND FORT WORTH DESIGNERS REFERENCE GUIDE TO PERFORM THE WORK.

18. CONTRACTOR SHALL PERFORM JOINTS REPAIR WORK DURING NIGHTTIME (9:00PM TO 6:00AM). CONTRACTOR SHALL OPEN THE ROADWAYS TO TRAFFIC AFTER THE NIGHT WORK.

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
Maribel Rangel
E0D25AC6252D429...
MARIBEL RANGEL, P.E.

9/6/2024
DATE

Texas Department of Transportation

TCP NOTES

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS

DIST	COUNTY	SHEET NO.
FTW	TARRANT	10

DATE: 9/6/2024 4:05:34 PM
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SUMMARY OF APPLICABLE TRAFFIC CONTROL PLANS FOR BRIDGES								
NBI #	FEATURE CARRIED	FEATURE CROSSED	NUMBER OF LANES AT BRIDGE	PRESENCE OF RAMP	DIRECTION	TYPE OF WORK	NIGHT TIME WORK ONLY	TRAFFIC CONTROL PLANS
022200000813354	IH 20 EB	UNION PACIFIC RR	6	ON RAMP	ONE WAY (EB)	CLEANING AND SEALING JOINTS (ARMOR)	YES	TCP (6-1) (6-2) (6-3a)
022200017209134	US 287 NB	KENN-SUBLETT RD	2	-	ONE WAY (NB)	CLEANING AND SEALING JOINTS	YES	TCP (6-1)
022200017209140	US 287 NB	TURNER-WARNELL RD	2	-	ONE WAY (NB)	CLEANING AND SEALING JOINTS	YES	TCP (6-1) and TCP Layout 1
022200106802345	IH 30 EB	IH 820	4	ON RAMP	ONE WAY (EB)	BRIDGE REPAIR (HEADER)	YES	TCP (6-1) (6-2) (6-3a)
022200106802376	DIRECT CONNECTOR FROM IH-820 SB TO IH-30 EB		1	-	ONE WAY (SB)	CLEANING AND SEALING JOINTS	YES	TCP (6-3b) and TCP Layout 2
022200106802382	IH - 30 WB Exit 21A		1	-	ONE WAY (NB)	CLEANING AND SEALING JOINTS (ARMOR)	YES	TCP (6-3b)
022200106802415	IM TERRLL WAY	IH 30	2	-	TWO WAY	CLEANING AND SEALING JOINTS (ARMOR)	YES	TCP (2-2b)
022200106802491	IH 30 EB ON RAMP	IH-30	1	-	ONE WAY (EB)	CLEANING AND SEALING JOINTS	YES	TCP (6-2b)-18 (MOD)
022200220801009	SPUR 303 WBL	JOHNSON CREEK	3	-	ONE WAY (WB)	CLEANING AND SEALING JOINTS	YES	TCP (2-6a) and TCP Layout 3
022200226602032	SH 360 NBL	PARK ROW DR	5	ON RAMP	ONE WAY (NB)	CLEANING AND SEALING JOINTS	YES	TCP (6-1) (6-2) (6-3a)
022200226602033	SH 360 SBL	PARK ROW DR	5	-	ONE WAY (SB)	CLEANING AND SEALING JOINTS	YES	TCP (6-1) (6-3)
022200226602046	POST & PADDOCK RD	SH 360	6	-	TWO WAY	CLEANING AND SEALING JOINTS (ARMOR)	YES	TCP Layout 4
022200226602047	W CARRIER PKWY	SH 360	6	-	TWO WAY	CLEANING AND SEALING JOINTS	YES	TCP Layout 5
022200226602049	AVENUE K	SH 360	6	-	TWO WAY	CLEANING AND SEALING JOINTS	YES	TCP Layout 6
022200226602050	AVENUE J	SH 360	6	-	TWO WAY	CLEANING AND SEALING JOINTS	YES	TCP Layout 7
022200226602058	SH 360 NB ON-RAMP	S WATSON RD.	1	-	ONE WAY (NB)	CLEANING AND SEALING JOINTS	YES	TCP (6-2b)-18 (MOD)
022200226602060	SH 360 NB EXIT-RAMP	S WATSON RD.	2	-	ONE WAY (NB)	CLEANING AND SEALING JOINTS	YES	TCP (6-3b)
022200237405281	MATLOCK ST	IH 20 WBL	8	-	TWO WAY	CLEANING AND SEALING JOINTS	YES	TCP Layout 8
022200237405284	COLLINS ST SB	IH 20	3	-	ONE WAY	CLEANING AND SEALING JOINTS	YES	TCP (2-6a)
022200237405296	IH 20 WBL	GREAT SW PARKWAY	4	-	ONE WAY (WB)	CLEANING AND SEALING JOINTS	YES	TCP (6-1)
022200237405297	IH 20 EBL	GREAT SW PARKWAY	4	-	ONE WAY (EB)	CLEANING AND SEALING JOINTS	YES	TCP (6-1)

- SEE TRAFFIC CONTROL NOTES AND APPLICABLE TRAFFIC CONTROL PLANS FOR MORE DETAILS.
- WORK SHALL BE DONE AT ONE LOCATION AT A ATIME, EXCEPT WITH THE APPROVAL OF THE ENGINEER. THE COST OF ADDITIONAL TRAFFIC CONTROL DEVICES WILL BE AT THE EXPENSE OF THE CONTRACTOR.

DATE: 9/6/2024 4:05:52 PM
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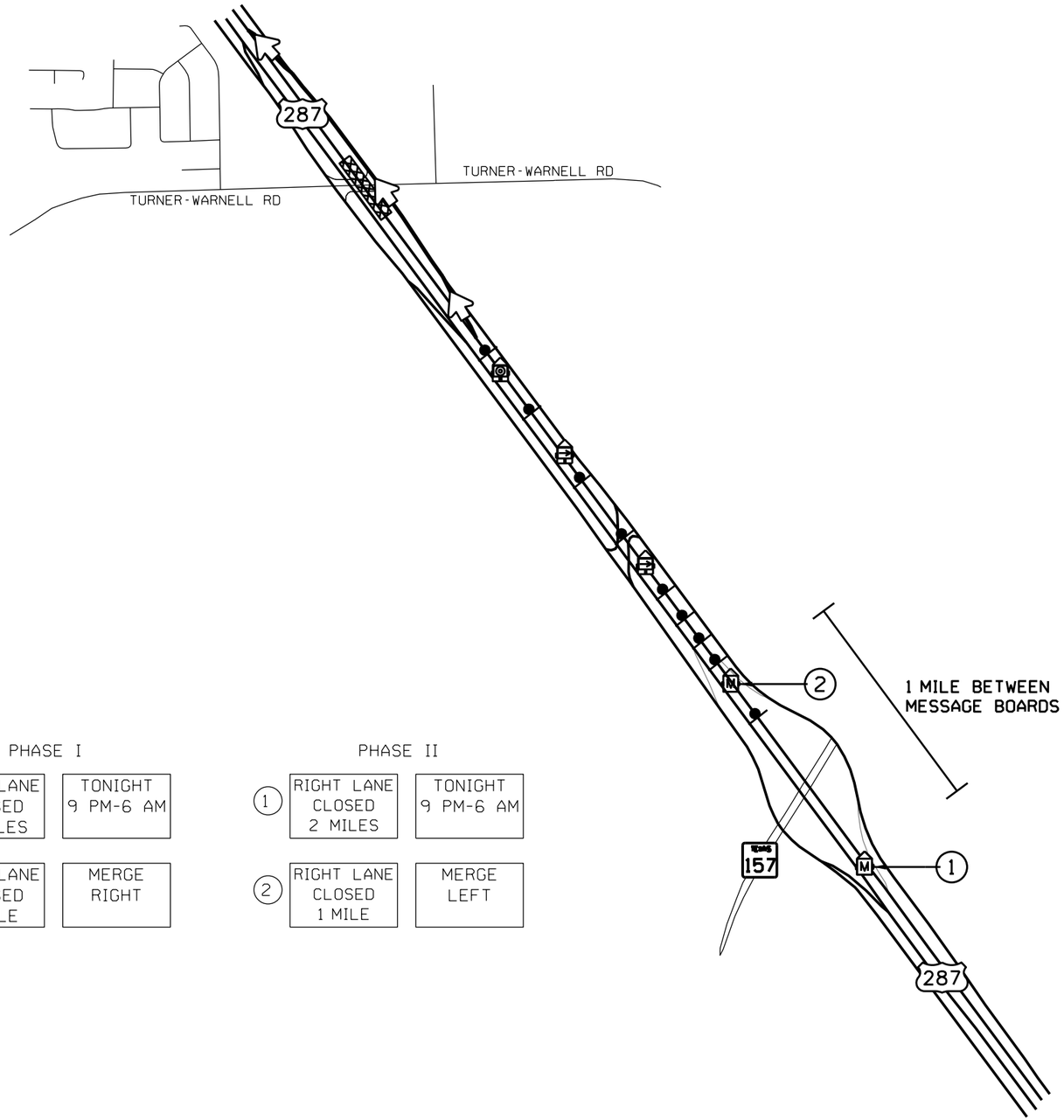
Texas Department of Transportation

TCP SUMMARY

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		11



N

LEGEND

- SIGN
- CONSTRUCTION ZONE
- PROPOSED DETOUR ROUTE
- TRAFFIC FLOW
- PORTABLE CHANGEABLE MESSAGE SIGN
- **TRAILER MOUNTED FLASHING ARROW BOARD**
- **FLASHINBG ARROW BOARD IN CAUTION MODE**

PHASE I

1	LEFT LANE CLOSED 2 MILES	TONIGHT 9 PM-6 AM
2	LEFT LANE CLOSED 1 MILE	MERGE RIGHT

PHASE II

1	RIGHT LANE CLOSED 2 MILES	TONIGHT 9 PM-6 AM
2	RIGHT LANE CLOSED 1 MILE	MERGE LEFT

NOTES:
1. LANE CLOSURE AND BRIDGE WORK SHALL BE CONDUCTED DURING NIGHT TIME FROM 9:00PM TO 6:00AM ONLY FOR CLEANING AND SEALING.
2. SET UP THE LANE CLOSURES TO CONFORM TO TCP (6-1a)-12.
3. ENSURE THAT THE MESSAGE BOARD PLACEMENT DOES NOT CONFLICT WITH THE TCP STANDARD LAYOUT.
4. PERFORM THE BRIDGE WORK AS SHOWN ON THE "AS BUILTS" SHEETS.
5. FACE MESSAGE BOARDS AWAY FROM TRAFFIC WHEN THE CLOSURE IS NOT ACTIVE TO AVOID CONFUSION.

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
Maribel Rangel
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MARIBEL RANGEL, P.E.

9/6/2024
DATE

SCALE
HORIZONTAL: N.T.S.
VERTICAL: N.T.S.

Texas Department of Transportation

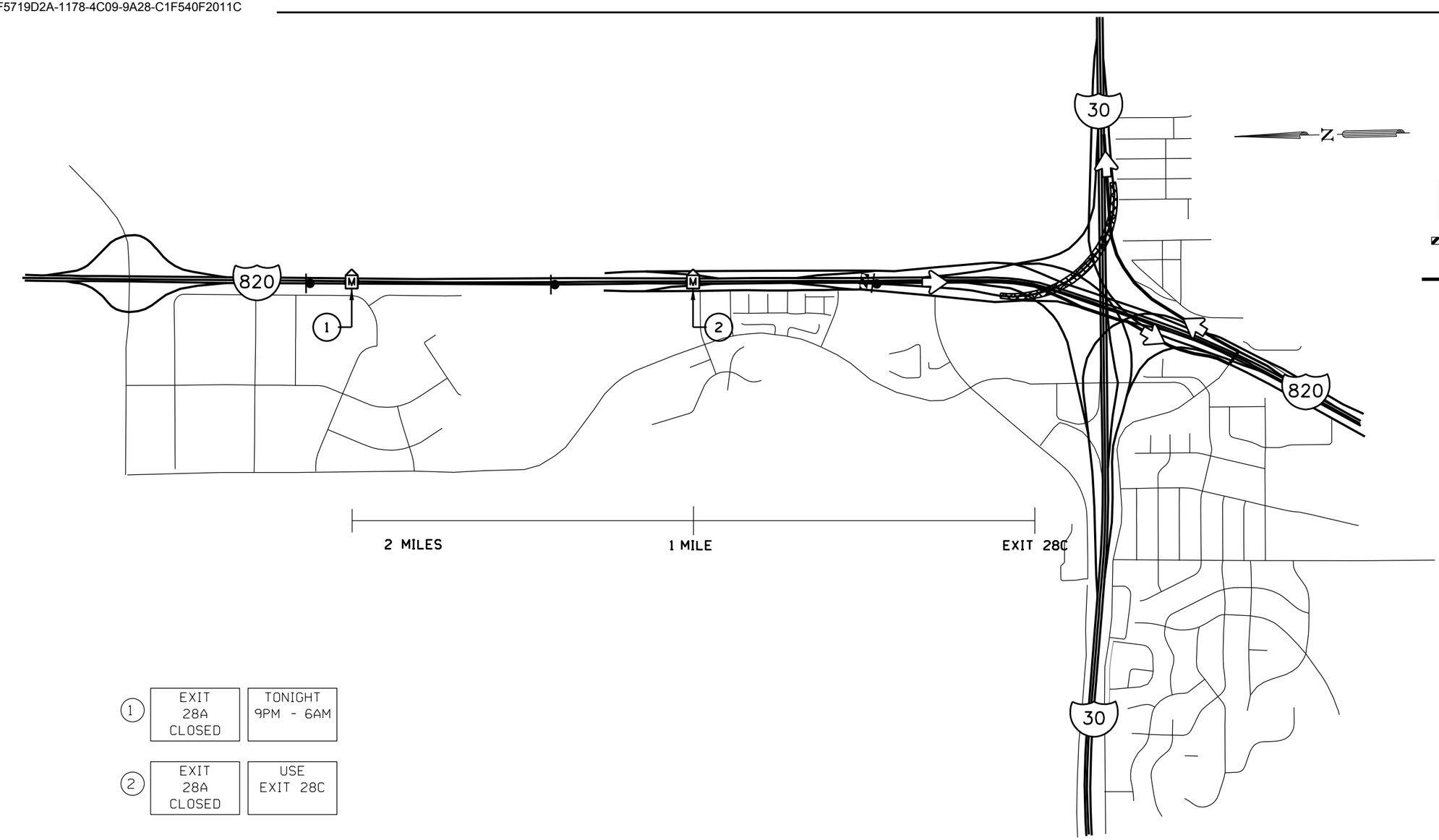
TCP LAYOUT US 287 NB AT TURNER-WARNELL RD

NBI# 02-220-0-0172-09-140

SHEET 1 OF 8

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		12

DATE: 9/6/2024 4:05:53 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\Roaway 60%\12.13.14. TCP15.dgn



1	EXIT 28A CLOSED	TONIGHT 9PM - 6AM
2	EXIT 28A CLOSED	USE EXIT 28C

NOTES:
1. RAMP CLOSURE AND BRIDGE WORK SHALL BE CONDUCTED DURING NIGHT TIME FROM 9:00PM TO 6:00AM ONLY FOR CLEANING AND SEALING.
2. SET UP THE RAMP CLOSURE TO CONFORM TO TCP (6-3b)-18.
3. ENSURE THAT THE MESSAGE BOARD PLACEMENT DOES NOT CONFLICT WITH THE TCP STANDARD LAYOUT.
4. PERFORM THE BRIDGE WORK AS SHOWN ON THE "AS BUILTS" SHEETS.
5. FACE MESSAGE BOARDS AWAY FROM TRAFFIC WHEN THE CLOSURE IS NOT ACTIVE TO AVOID CONFUSION.

STATE OF TEXAS
MARIBEL G. RANGEL
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9/6/2024
DATE

SCALE
HORIZONTAL: N.T.S.
VERTICAL: N.T.S.

Texas Department of Transportation

TCP LAYOUT CONNECTION D

NBI# 02-220-0-1068-02-376

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		13

DATE: 9/6/2024 4:05:54 PM
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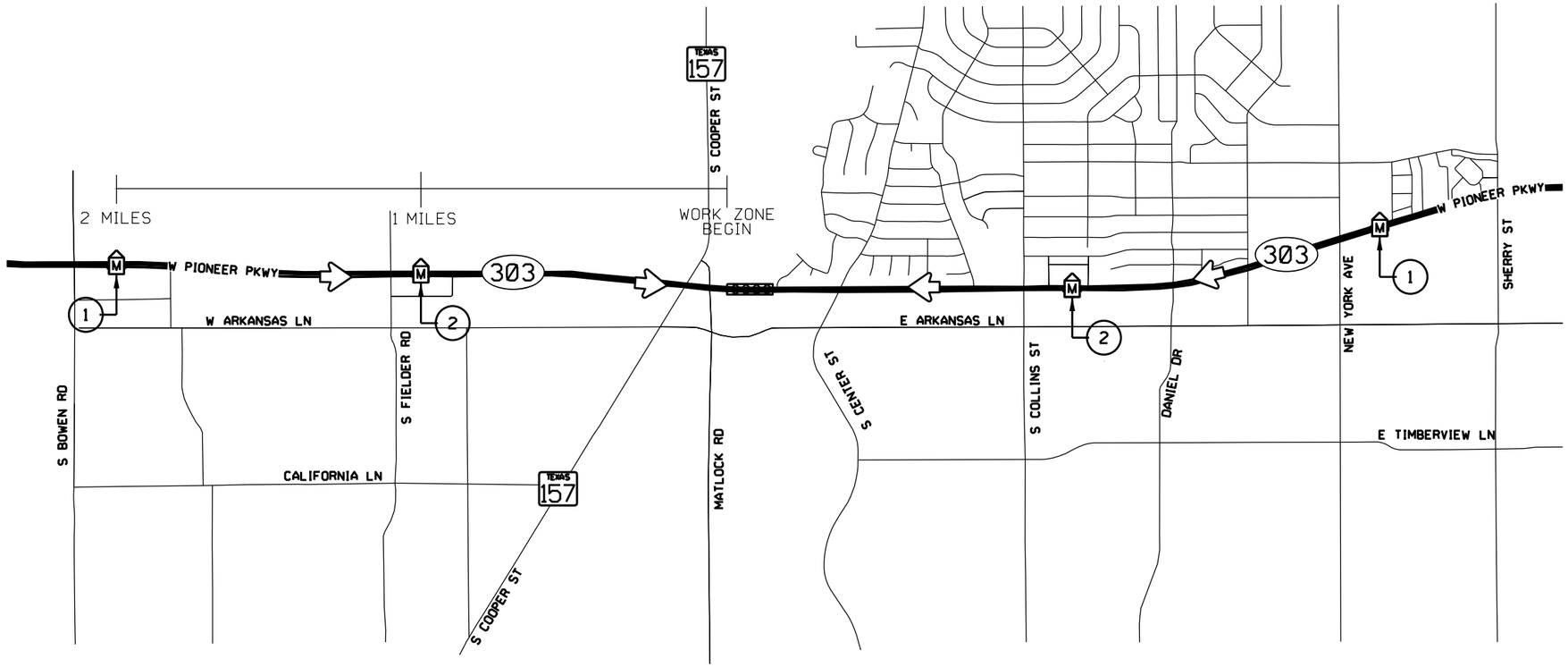

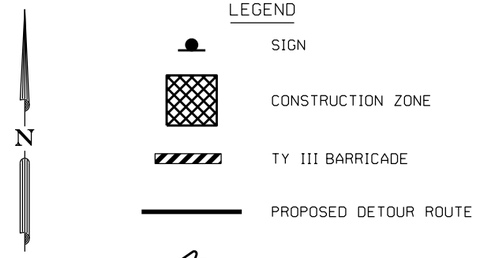

PHASE I			PHASE II		
1	LEFT 2 LANES CLOSED	NEXT 2 MILES	1	RIGHT 2 LANES CLOSED	NEXT 2 MILES
2	LEFT 2 LANES CLOSED	MERGE RIGHT	2	RIGHT 2 LANES CLOSED	MERGE LEFT

NOTES:
1. LANE CLOSURE AND BRIDGE WORK SHALL BE CONDUCTED DURING NIGHT TIME FROM 9:00PM TO 6:00AM ONLY FOR CLEANING AND SEALING.
2. SET UP THE LANE CLOSURES TO CONFORM TO TCP (2-6a)-18.
3. ENSURE THAT THE MESSAGE BOARD PLACEMENT DOES NOT CONFLICT WITH THE TCP STANDARD LAYOUT.
4. PERFORM THE BRIDGE WORK AS SHOWN ON THE "AS BUILTS" SHEETS.
5. FACE MESSAGE BOARDS AWAY FROM TRAFFIC WHEN THE CLOSURE IS NOT ACTIVE TO AVOID CONFUSION.

DATE: 9/6/2024 4:05:54 PM
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STATE OF TEXAS
MARIBEL G. RANGEL
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LICENSED PROFESSIONAL ENGINEER

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MARIBEL RANGEL, P.E.

9/6/2024
DATE

SCALE
HORIZONTAL: N.T.S.
VERTICAL: N.T.S.

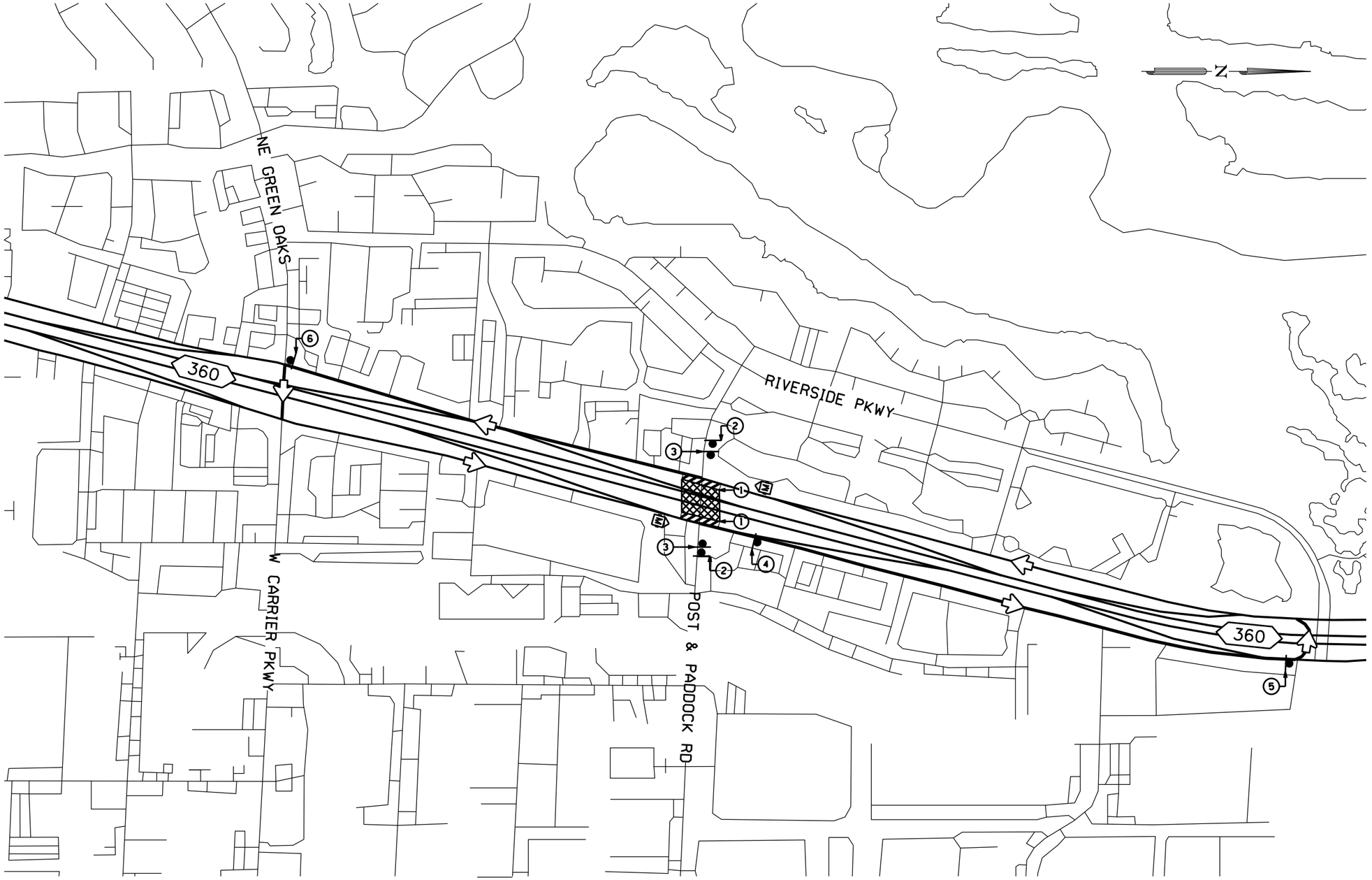
Texas Department of Transportation

TCP LAYOUT
SPUR 303 WBL
AT JOHNSON CREEK

NBI# 02-220-0-2208-01-009

SHEET 3 OF 8

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		14



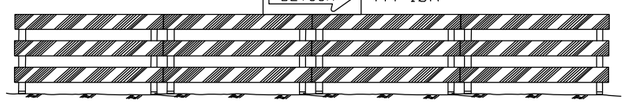
LEGEND

- SIGN
- CONSTRUCTION ZONE
- TY III BARRICADE
- PROPOSED DETOUR ROUTE
- TRAFFIC FLOW
- PORTABLE CHANGEABLE MESSAGE SIGN

NOTES:
1. BRIDGE CLOSURE SHALL BE CONDUCTED DURING NIGHT TIME FROM 9:00PM TO 6:00AM ONLY FOR CLEANING AND SEALING.
2. PERFORM THE BRIDGE WORK AS SHOWN ON THE "AS BUILTS" SHEETS.
3. FACE MESSAGE BOARDS AWAY FROM TRAFFIC WHEN THE CLOSURE IS NOT ACTIVE TO AVOID CONFUSION.

SIGN SPECIFICATIONS

1. ROAD CLOSED / DETOUR — R11-2, 48" x 30" / M4-10R



2. ROAD CLOSED AHEAD — CW20-2D
3. DETOUR AHEAD — CW20-2D
4. DETOUR SOUTH / TEXAS 360 — M4-8, M3-3, M1-6L, M6-3
5. DETOUR SOUTH / TEXAS 360 — M4-8, M3-3, M1-6L, M5-3T
6. DETOUR NORTH / TEXAS 360 — M4-8, M3-1, M1-6L, M6-1

(M)	SH-360 NB BRIDGE CLOSED	USE ALTERNATE ENTRANCE
(M)	SH-360 SB BRIDGE CLOSED	USE ALTERNATE ENTRANCE

STATE OF TEXAS
MARIBEL G. RANGEL
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LICENSED
PROFESSIONAL ENGINEER

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MARIBEL RANGEL, P.E.

9/6/2024
DATE

SCALE
HORIZONTAL: N.T.S.
VERTICAL: N.T.S.

Texas Department of Transportation

TCP LAYOUT SH 360 AT POST & PADDOCK RD

NBI# 02-220-0-2266-02-045

SHEET 4 OF 8

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		15

DATE: 9/6/2024 4:05:55 PM
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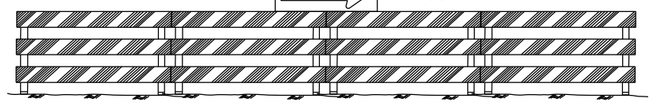
LEGEND

- SIGN
- CONSTRUCTION ZONE
- TY III BARRICADE
- PROPOSED DETOUR ROUTE
- TRAFFIC FLOW
- PORTABLE CHANGEABLE MESSAGE SIGN

NOTES:
1. BRIDGE CLOSURE SHALL BE CONDUCTED DURING NIGHT TIME FROM 9:00PM TO 6:00AM ONLY FOR CLEANING AND SEALING.
2. PERFORM THE BRIDGE WORK AS SHOWN ON THE "AS BUILTS" SHEETS.
3. FACE MESSAGE BOARDS AWAY FROM TRAFFIC WHEN THE CLOSURE IS NOT ACTIVE TO AVOID CONFUSION.

SIGN SPECIFICATIONS

1. ROAD CLOSED / DETOUR — R11-2, 48" × 30" / M4-10R



2. ROAD CLOSED AHEAD — CW20-2D
3. DETOUR AHEAD — CW20-2D
4. DETOUR / SOUTH / TEXAS 360 — M4-8 / M3-3 / M1-6L / M6-3
5. DETOUR / SOUTH / TEXAS 360 — M4-8 / M3-3 / M1-6L / M5-3T
6. DETOUR / NORTH / TEXAS 360 — M4-8 / M3-1 / M1-6L / M6-1

(M)	SH-360 NB BRIDGE CLOSED	USE ALTERNATE ENTRANCE
(M)	SH-360 SB BRIDGE CLOSED	USE ALTERNATE ENTRANCE

STATE OF TEXAS
MARIBEL G. RANGEL
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LICENSED PROFESSIONAL ENGINEER

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MARIBEL RANGEL, P.E.

9/6/2024
DATE

SCALE
HORIZONTAL: N.T.S.
VERTICAL: N.T.S.

Texas Department of Transportation

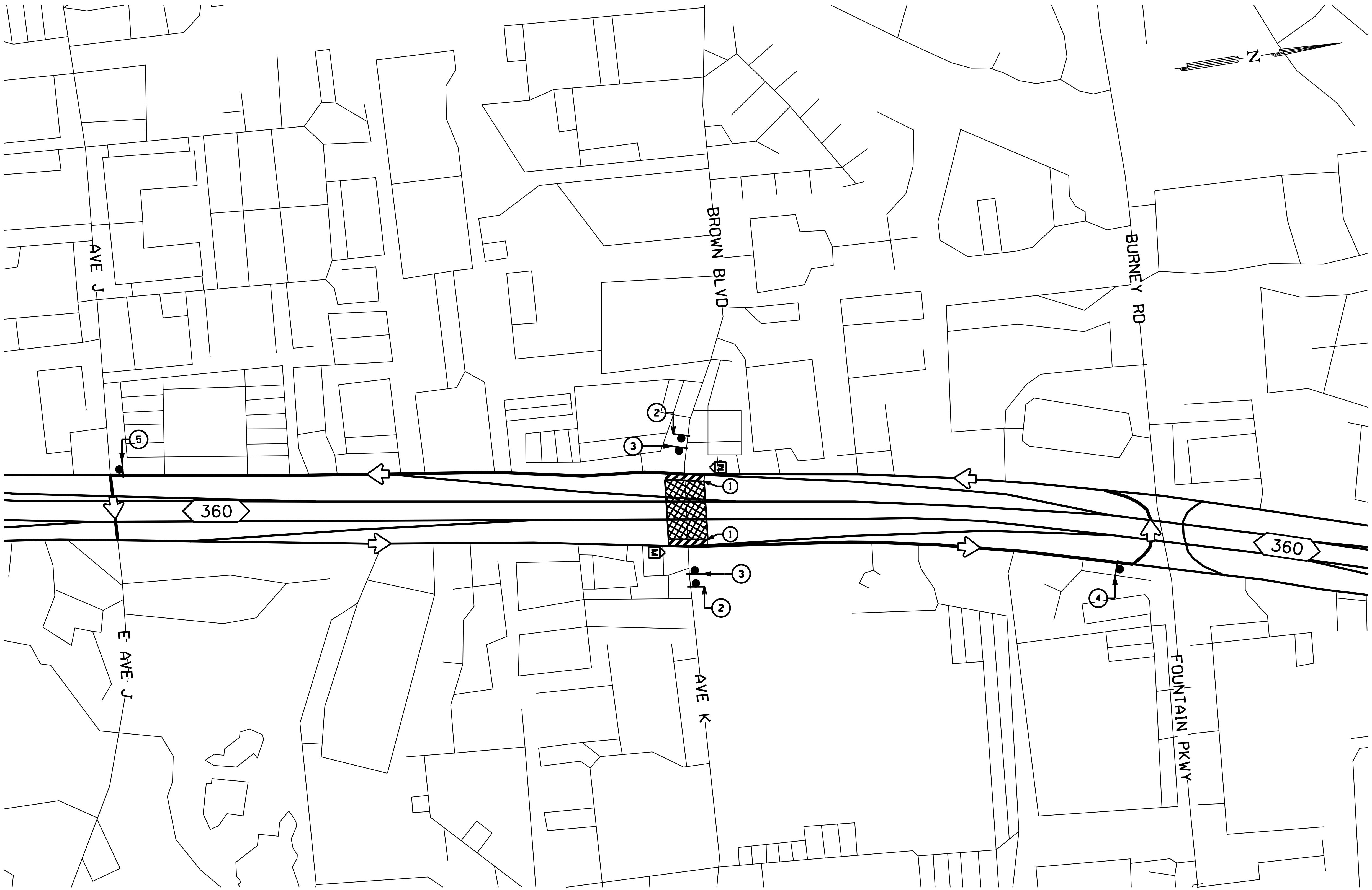
TCP LAYOUT
SH 360 AT
W CARRIER PKWY

NBI# 02-220-0-2266-02-047

SHEET 5 OF 8

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		16

DATE: 9/6/2024 4:05:55 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\Roaway 60%\15.16.17.18.19. BRIDGE_DETOUR_LAYOUTS.dgn



LEGEND

- SIGN
- CONSTRUCTION ZONE
- TY III BARRICADE
- PROPOSED DETOUR ROUTE
- TRAFFIC FLOW
- PORTABLE CHANGEABLE MESSAGE SIGN

NOTES:
1. BRIDGE CLOSURE SHALL BE CONDUCTED DURING NIGHT TIME FROM 9:00PM TO 6:00AM ONLY FOR CLEANING AND SEALING.
2. PERFORM THE BRIDGE WORK AS SHOWN ON THE "AS BUILTS" SHEETS.
3. FACE MESSAGE BOARDS AWAY FROM TRAFFIC WHEN THE CLOSURE IS NOT ACTIVE TO AVOID CONFUSION.

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
Maribel Rangel
E0D25A...
MARIBEL RANGEL, P.E. 9/6/2024
DATE

SCALE
HORIZONTAL: N.T.S.
VERTICAL: N.T.S.

SIGN SPECIFICATIONS

1 — ROAD CLOSED — R11-2 48" x 30"; DETOUR → — M4-10R

2 — ROAD CLOSED AHEAD — CW20-2D

3 — DETOUR AHEAD — CW20-2D

4 — DETOUR M4-8; SOUTH M3-3; TEXAS 360 M1-6L; M5-3T

5 — DETOUR M4-8; NORTH M3-1; TEXAS 360 M1-6L; M6-1

(M) SH-360 NB BRIDGE CLOSED | USE ALTERNATE ENTRANCE

(M) SH-360 SB BRIDGE CLOSED | USE ALTERNATE ENTRANCE

Texas Department of Transportation

TCP LAYOUT SH 360 AT AVENUE K

NBI# 02-220-0-2266-02-049

 SHEET 6 OF 8

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST		COUNTY	SHEET NO.
FTW		TARRANT	17

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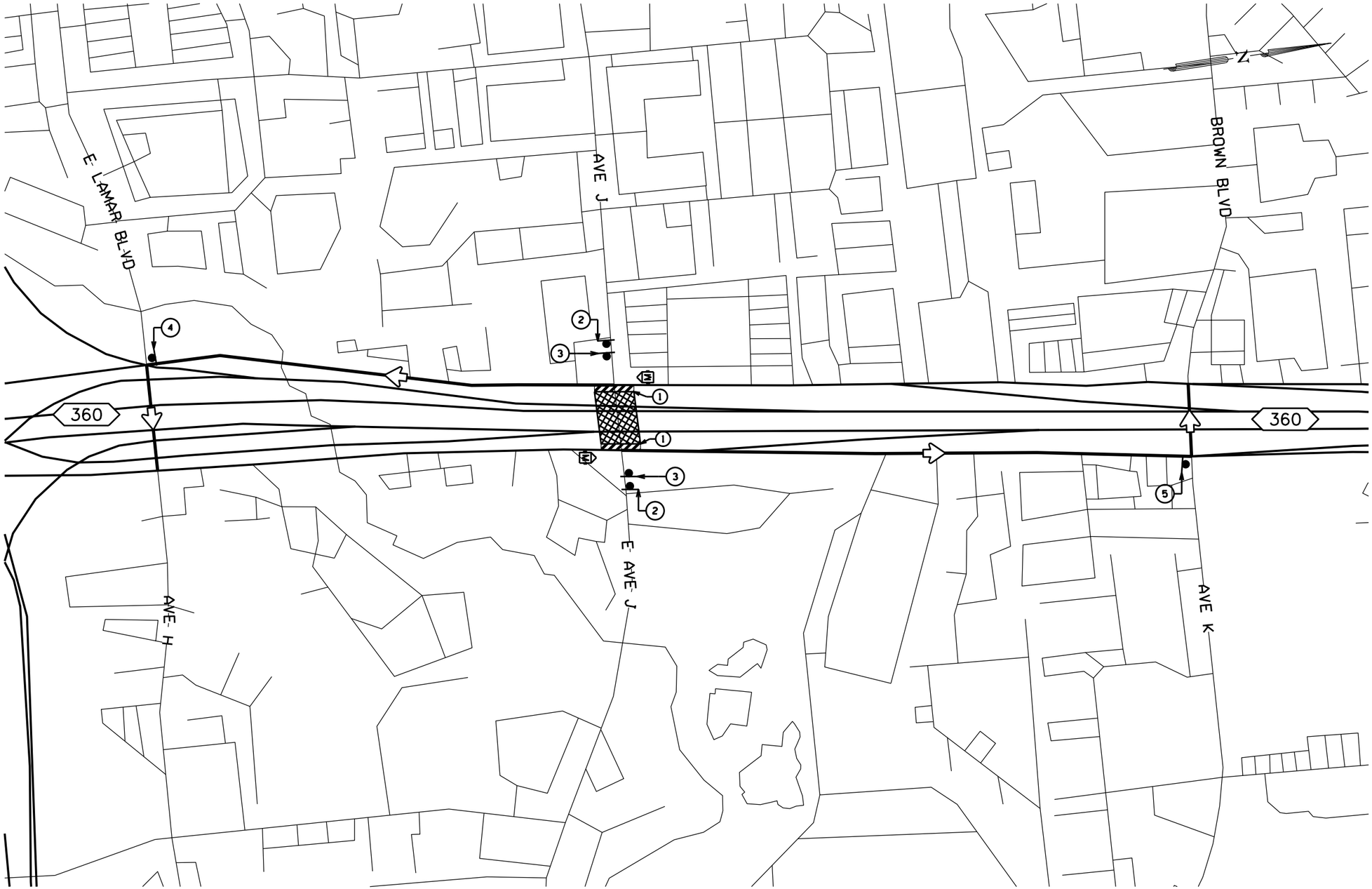

LEGEND

- SIGN
- CONSTRUCTION ZONE
- TY III BARRICADE
- PROPOSED DETOUR ROUTE
- TRAFFIC FLOW
- PORTABLE CHANGEABLE MESSAGE SIGN

NOTES:
1. BRIDGE CLOSURE SHALL BE CONDUCTED DURING NIGHT TIME FROM 9:ØØPM TO 6:ØØAM ONLY FOR CLEANING AND SEALING.
2. PERFORM THE BRIDGE WORK AS SHOWN ON THE "AS BUILTS" SHEETS.
3. FACE MESSAGE BOARDS AWAY FROM TRAFFIC WHEN THE CLOSURE IS NOT ACTIVE TO AVOID CONFUSION.

SIGN SPECIFICATIONS

1. ROAD CLOSED — R11-2, 48" x 30"; DETOUR — M4-1ØR

2. ROAD CLOSED AHEAD — CW20-2D
3. DETOUR AHEAD — CW20-2D
4. DETOUR NORTH — M4-8 / M3-1; TEXAS 360 — M1-6L; M5-3T
5. DETOUR SOUTH — M4-8 / M3-3; TEXAS 360 — M1-6L; M6-1

M	SH-360 NB BRIDGE CLOSED	USE ALTERNATE ENTRANCE
M	SH-360 SB BRIDGE CLOSED	USE ALTERNATE ENTRANCE

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
Maribel Rangel
E0D25AC6252D429...
MARIBEL RANGEL, P.E.

9/6/2024
DATE

SCALE
HORIZONTAL: N.T.S.
VERTICAL: N.T.S.

Texas Department of Transportation

TCP LAYOUT SH 360 AT AVENUE J

NBI# 02-220-0-2266-02-050

SHEET 7 OF 8

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		18

DATE: 9/6/2024 4:05:56 PM
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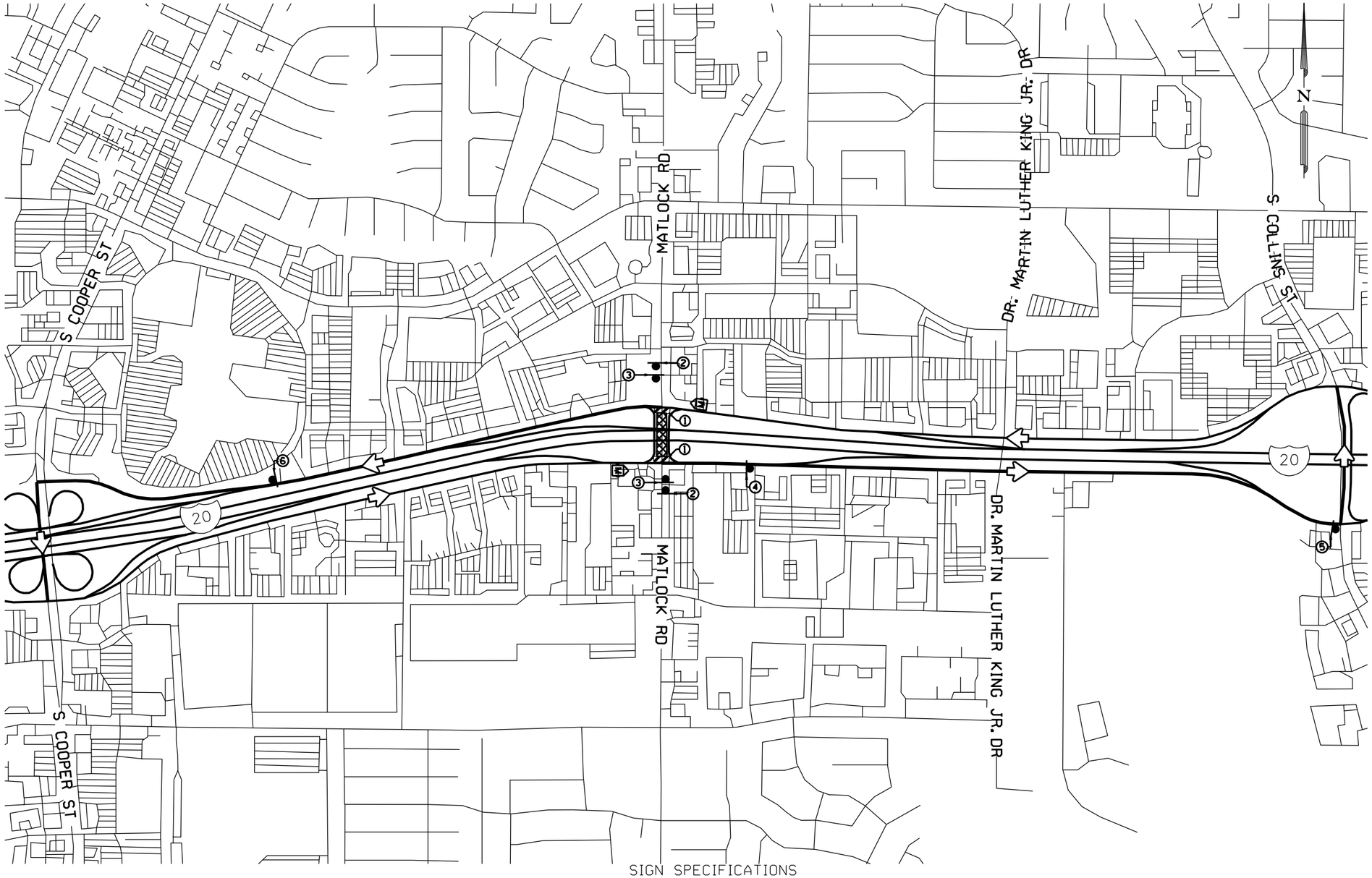


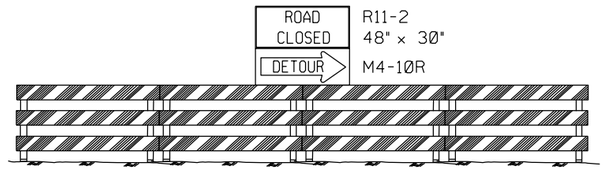
LEGEND

- SIGN
- CONSTRUCTION ZONE
- TY III BARRICADE
- PROPOSED DETOUR ROUTE
- TRAFFIC FLOW
- PORTABLE CHANGEABLE MESSAGE SIGN

NOTES:
1. BRIDGE CLOSURE SHALL BE CONDUCTED DURING NIGHT TIME FROM 9:00PM TO 6:00AM ONLY FOR CLEANING AND SEALING.
2. PERFORM THE BRIDGE WORK AS SHOWN ON THE "AS BUILTS" SHEETS.
3. FACE MESSAGE BOARDS AWAY FROM TRAFFIC WHEN THE CLOSURE IS NOT ACTIVE TO AVOID CONFUSION.

SIGN SPECIFICATIONS

1. ROAD CLOSED / DETOUR — R11-2, 48" × 30"; M4-10R



2. ROAD CLOSED AHEAD — CW20-2D
3. DETOUR AHEAD — CW20-2D
4. DETOUR / WEST / 20 — M4-8, M3-4, M1-1, M6-3
5. DETOUR / WEST / 20 — M4-8, M3-4, M1-1, M6-1
6. DETOUR / EAST / 20 — M4-8, M3-2, M1-1, M6-3

M. IH-20 WB BRIDGE CLOSED — USE ALTERNATE ENTRANCE

M. IH-20 EB BRIDGE CLOSED — USE ALTERNATE ENTRANCE

M6-2R

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
Maribel Rangel
E0D25AC8252DA28...
MARIBEL RANGEL, P.E.

9/6/2024
DATE

SCALE
HORIZONTAL: N.T.S.
VERTICAL: N.T.S.

Texas Department of Transportation

TCP LAYOUT
IH 20 AT MATLOCK ST.

NBI# 02-220-0-2374-05-281

SHEET 8 OF 8

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		19

DATE: 9/6/2024 4:05:56 PM
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DATE:
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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

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	VARIOUS
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	FTW	TARRANT		20
5-10 5-21				

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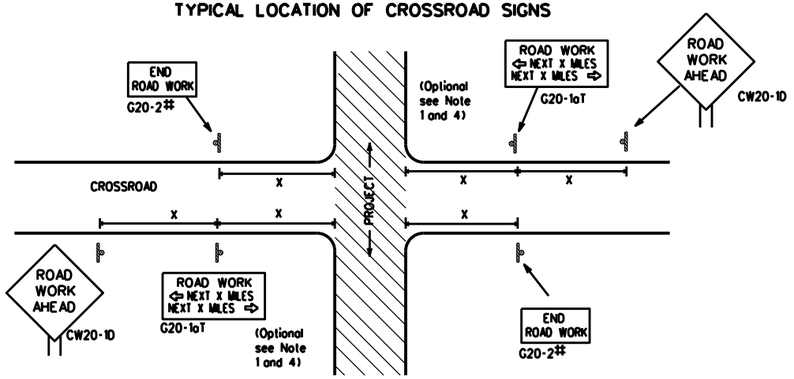
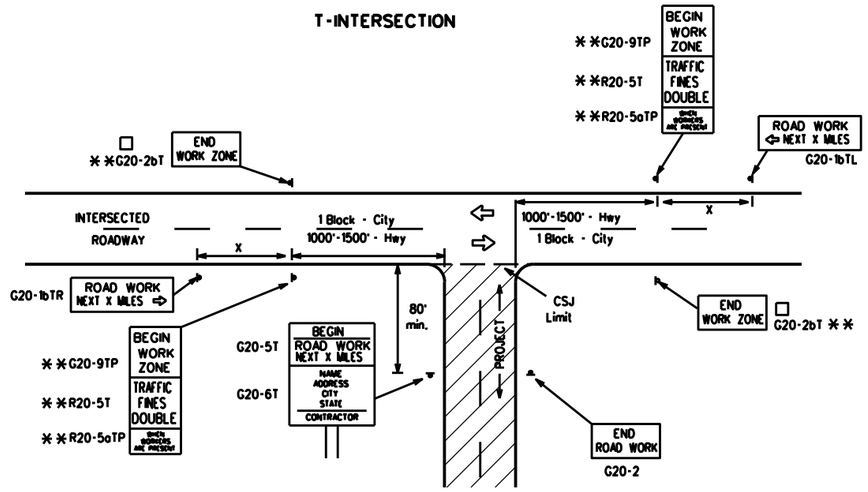
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING

1.5.6

SIZE

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

SPACING

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

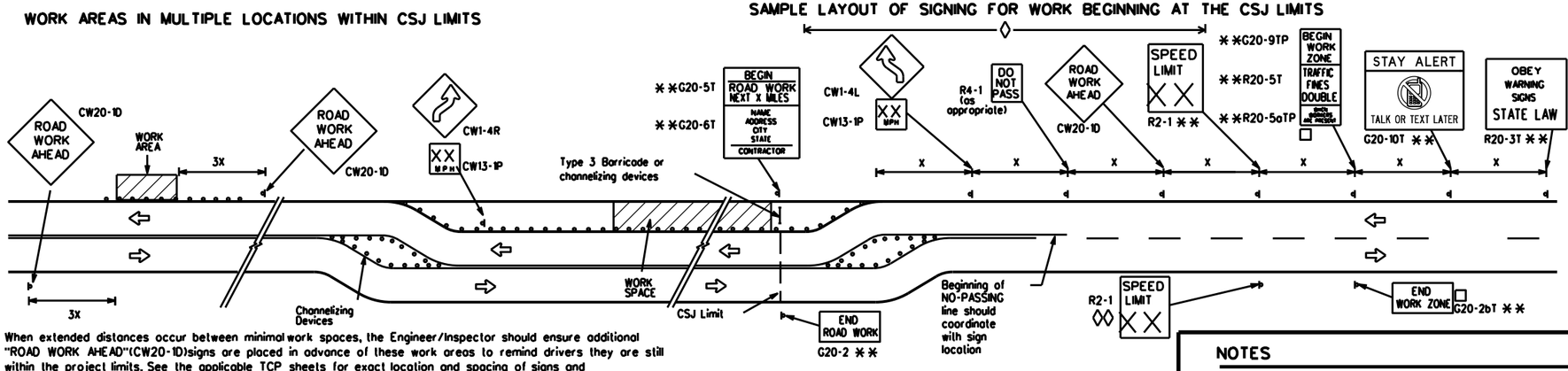
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

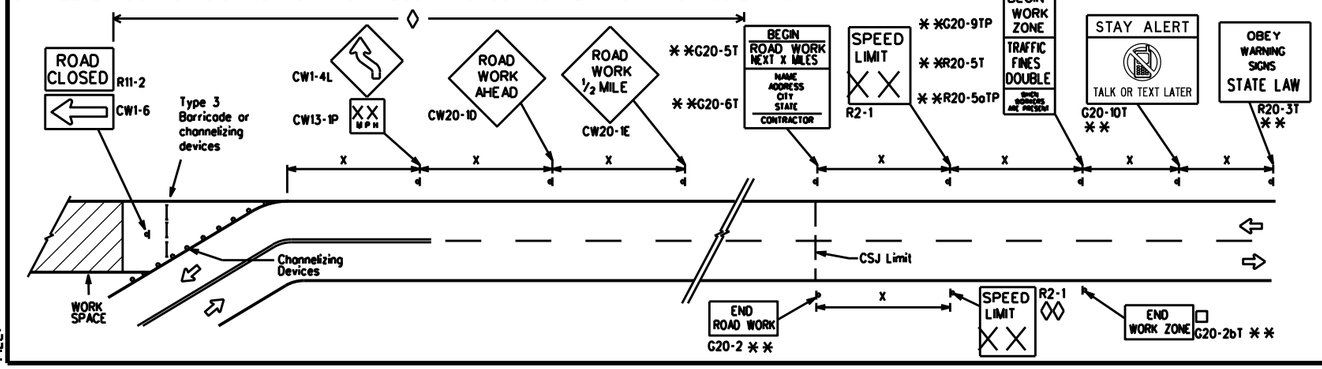
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

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



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

NOTES

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

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

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

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

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

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

SHEET 2 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

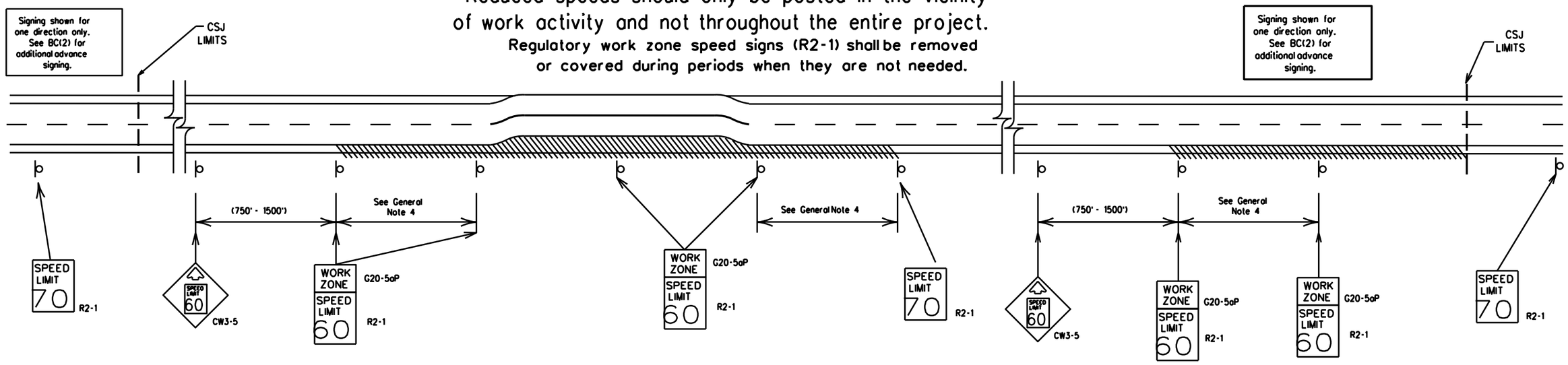
BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	FTW	TARRANT		21

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.

DATE:
FILE:

Texas Department of Transportation | Traffic Safety Division Standard

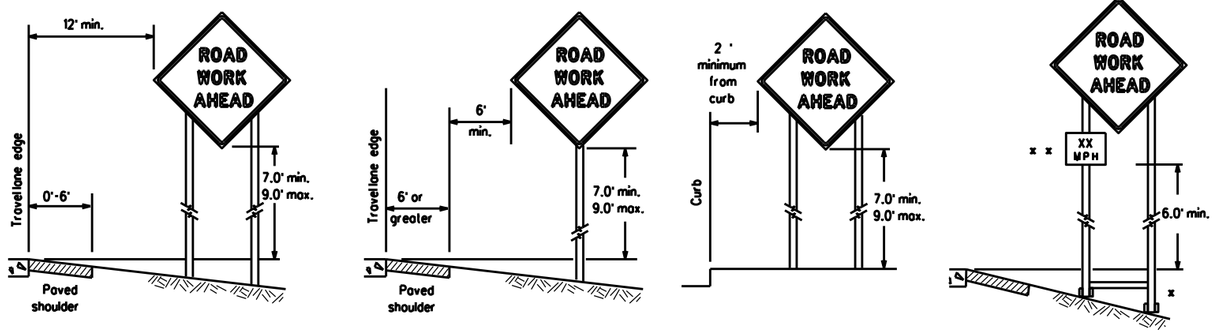
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	FTW	TARRANT		22

DATE:
FILE:

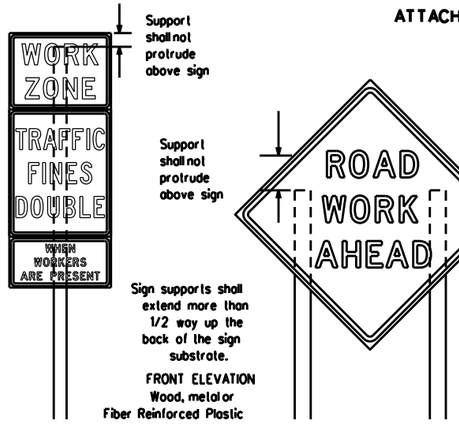
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

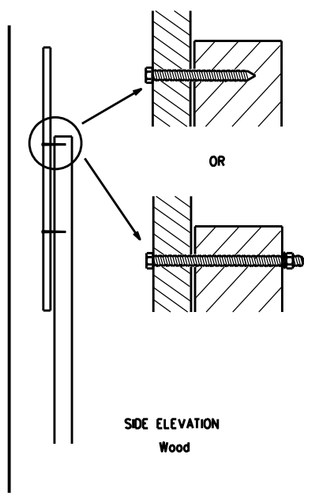


x When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





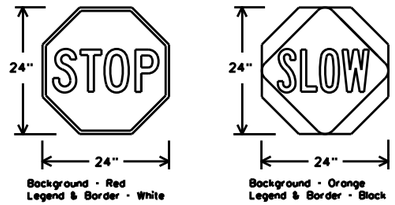
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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 on 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 or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

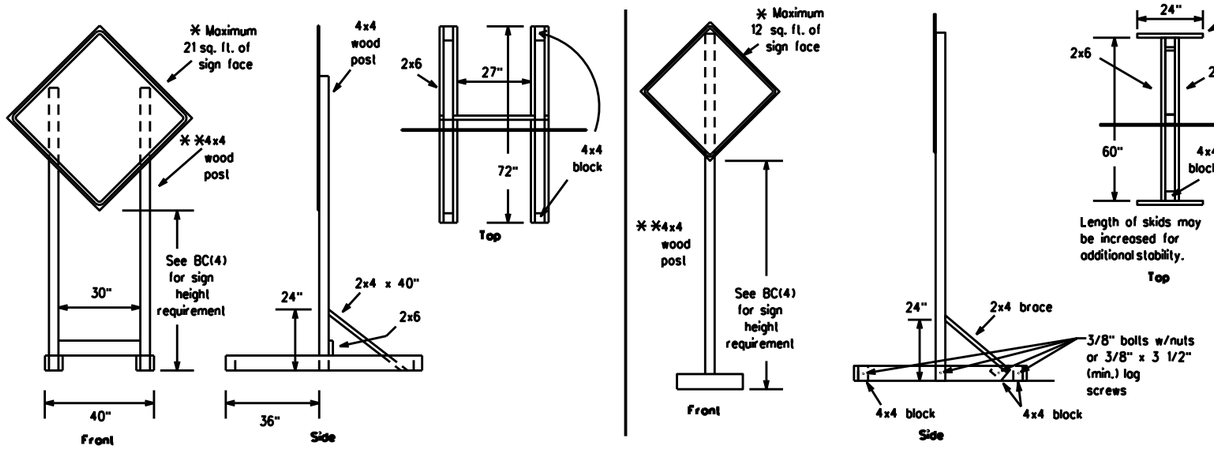
Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

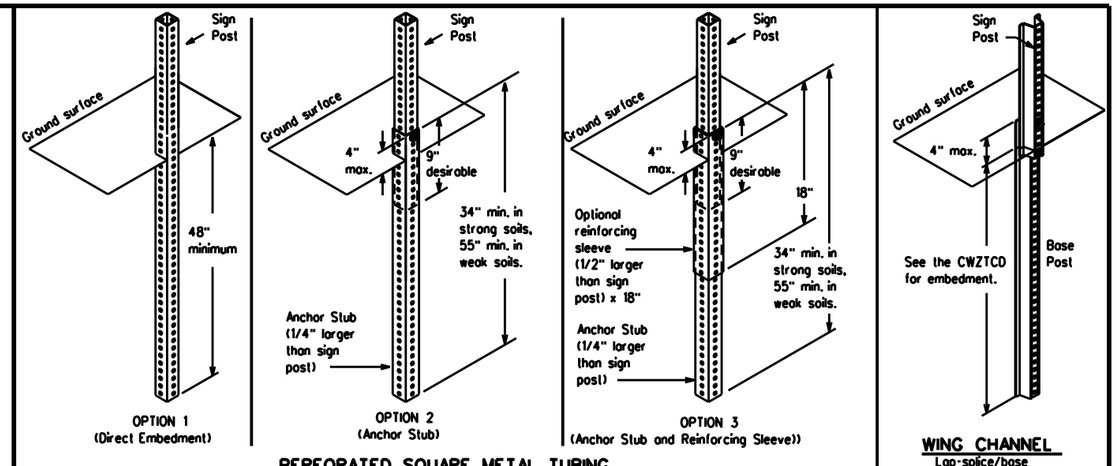
BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	FTW	TARRANT		23



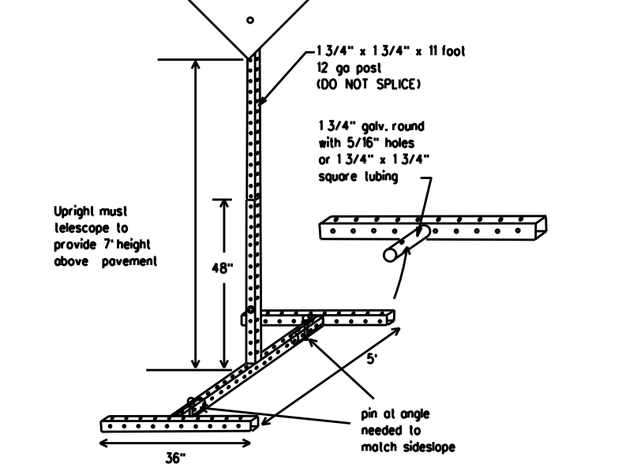
SKID MOUNTED WOOD SIGN SUPPORTS

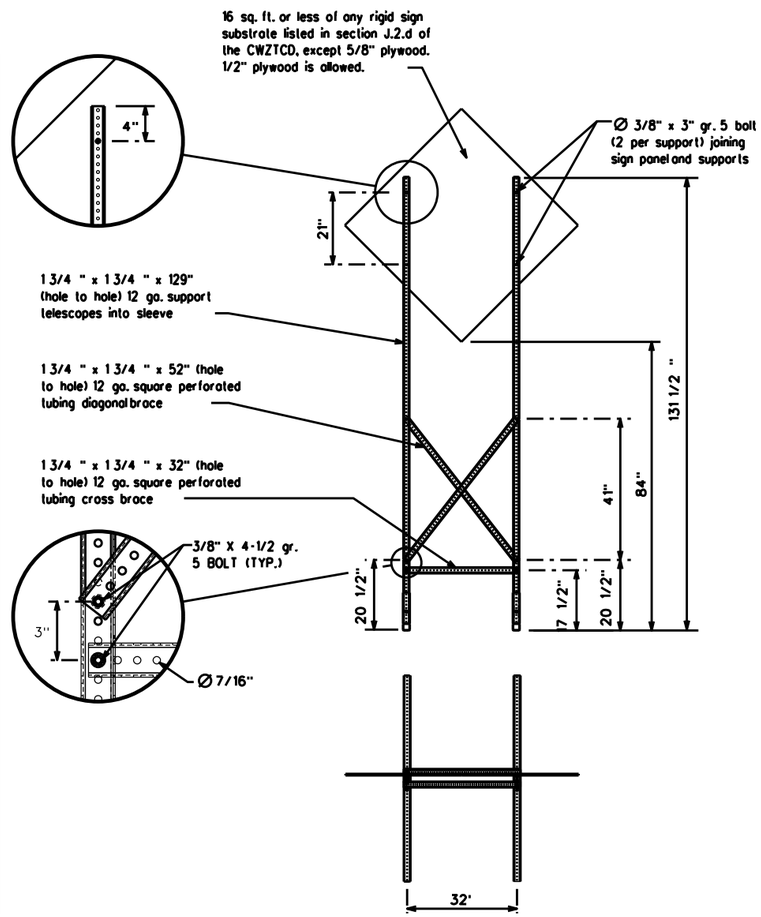
*** LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS**

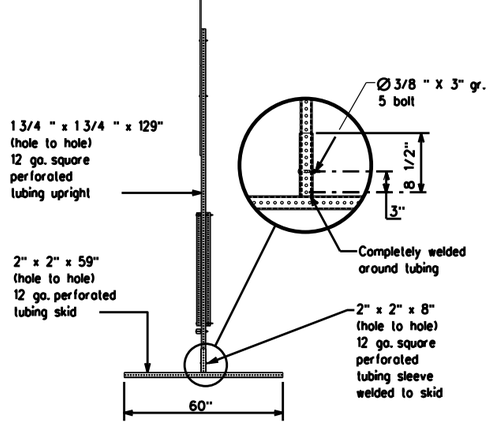


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

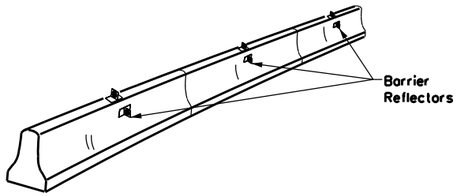
BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	FTW	TARRANT		25

100

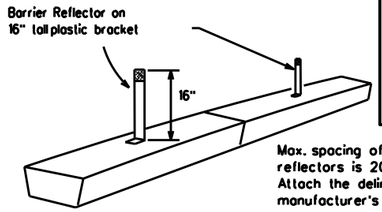
DATE:
FILE:

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.

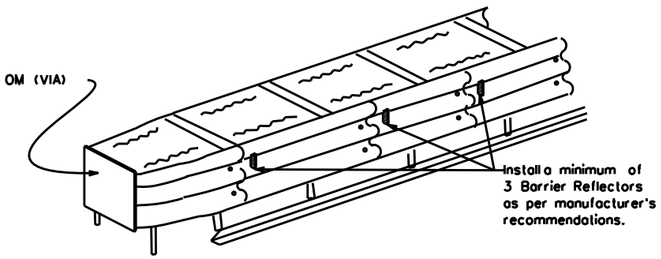


Max. spacing of barrier reflectors is 20 feet.
Attach the delineators as per manufacturer's recommendations.

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)

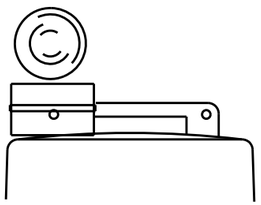


DELINEATION OF END TREATMENTS

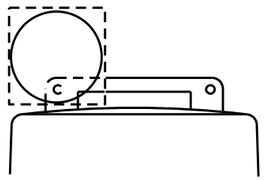
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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 or C 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

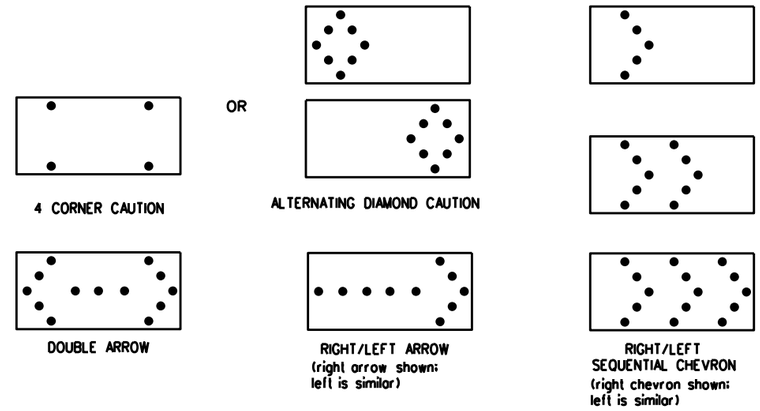
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing 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 on 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
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9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	FTW	TARRANT		26

101

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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:

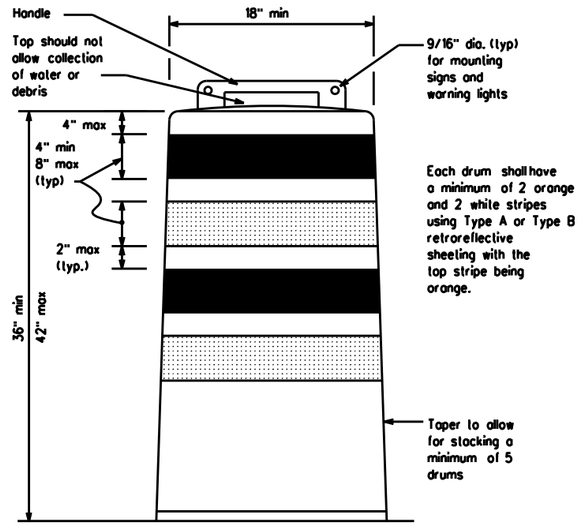
1. Plastic drums shall be a two-piece design: the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

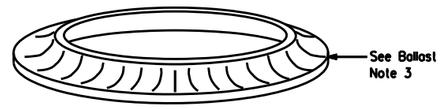
RETROREFLECTIVE SHEETING

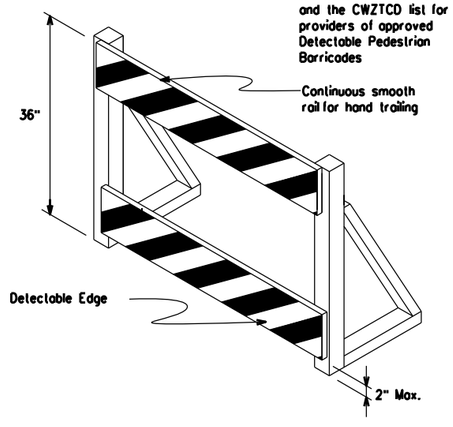
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

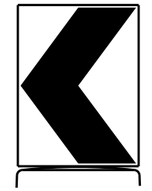




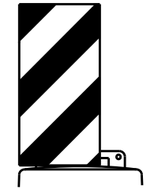


DETECTABLE PEDESTRIAN BARRICADES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

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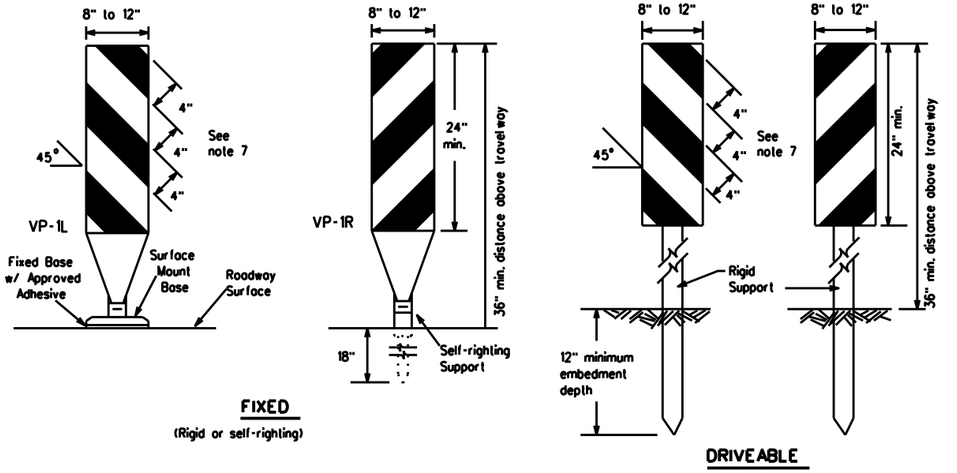
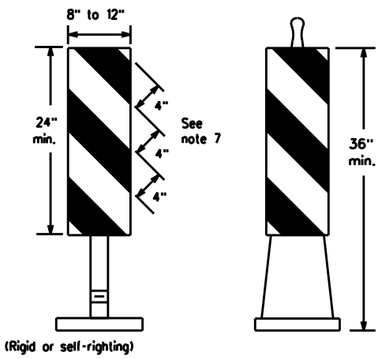
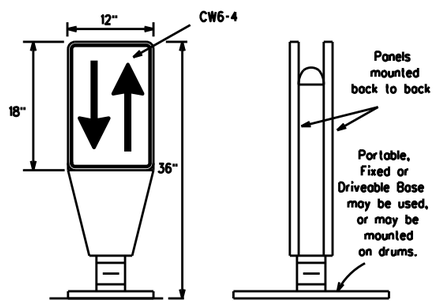
7-13				





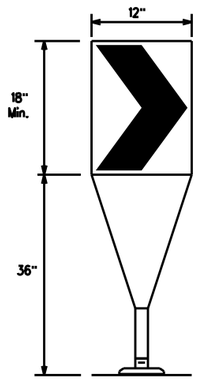
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



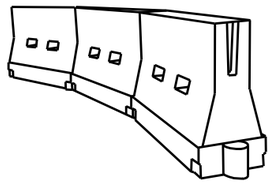
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	FTW	TARRANT		28

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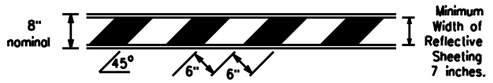
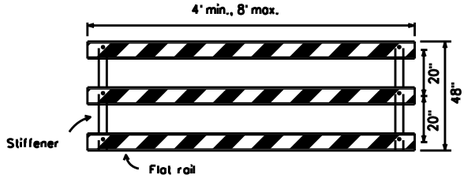
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



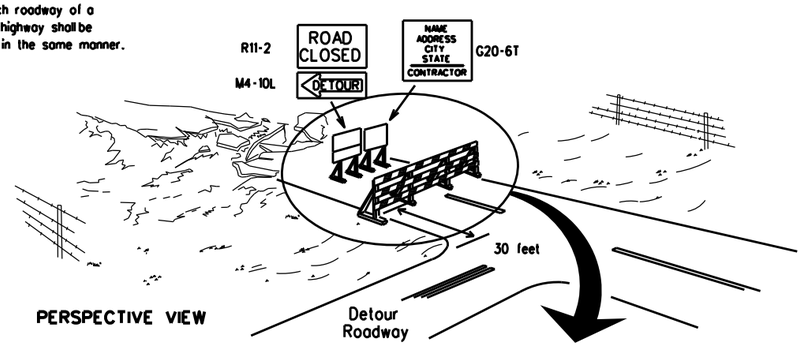
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

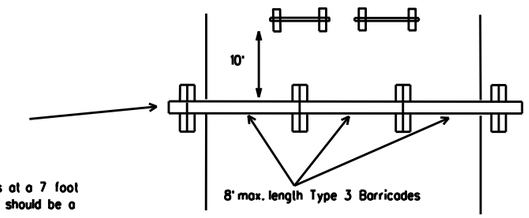
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

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

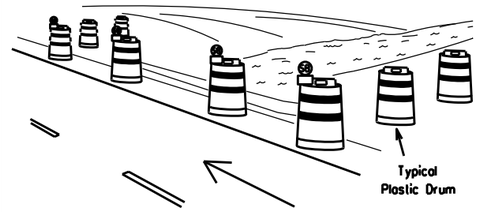
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

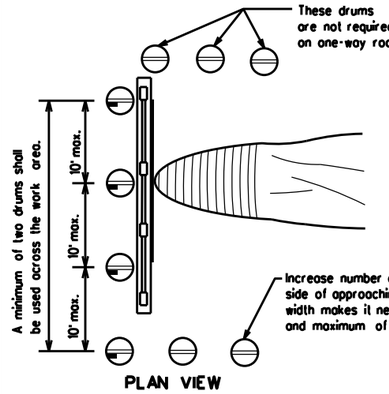
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

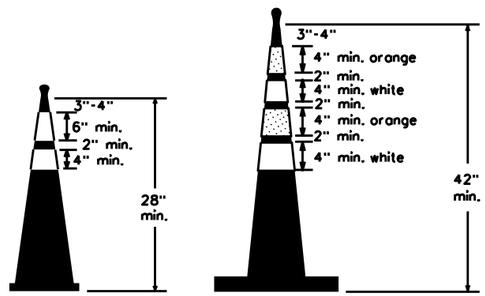
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



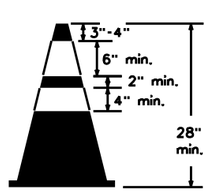
PLAN VIEW

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

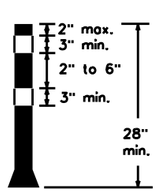
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

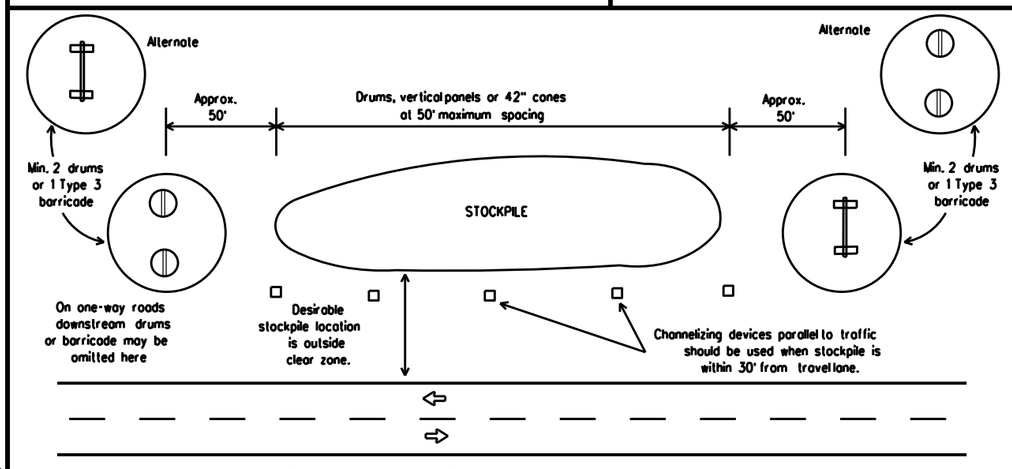


Tubular Marker

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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

DATE:
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SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	FTW	TARRANT		29

104

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.

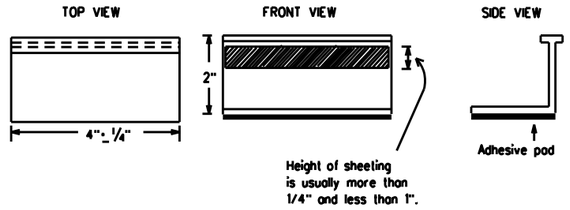
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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
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11-02 8-14				

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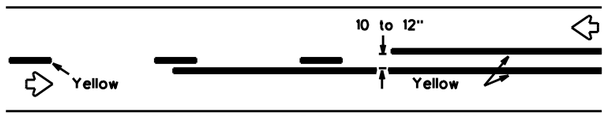
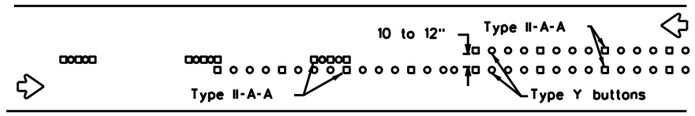
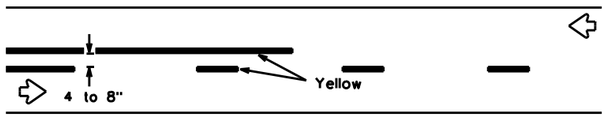
PAVEMENT MARKING PATTERNS



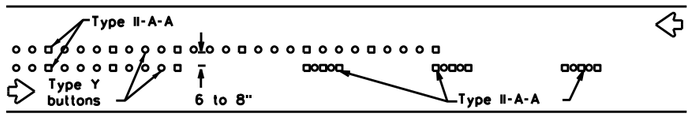
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



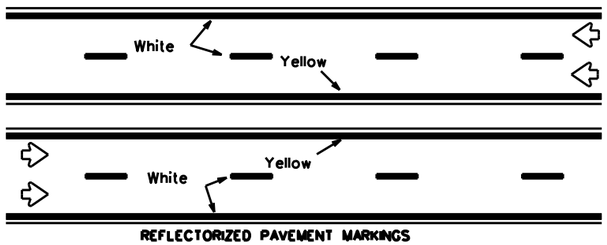
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



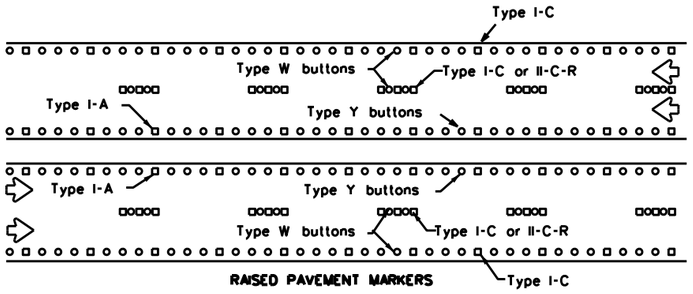
RAISED PAVEMENT MARKERS - PATTERN B

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

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



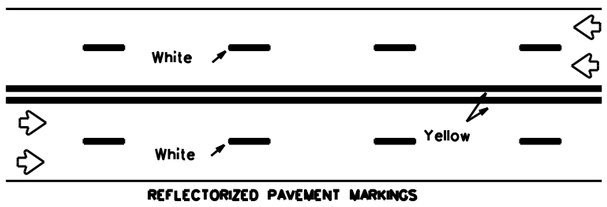
REFLECTORIZED PAVEMENT MARKINGS



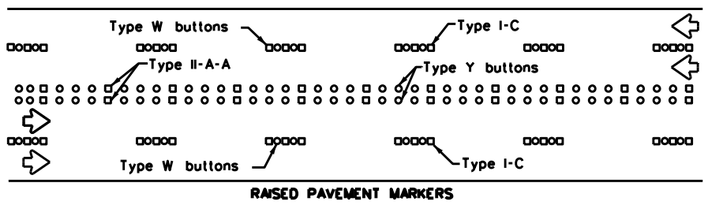
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



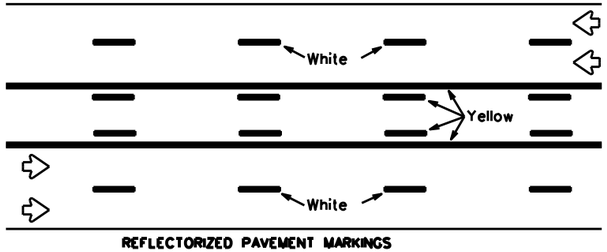
REFLECTORIZED PAVEMENT MARKINGS



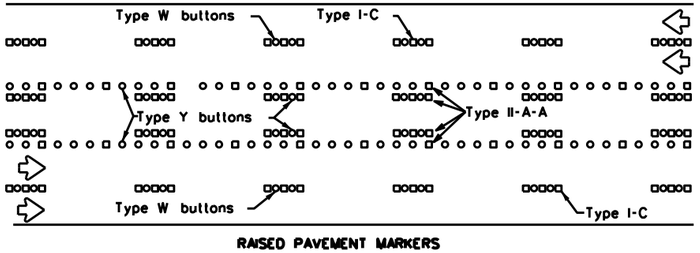
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

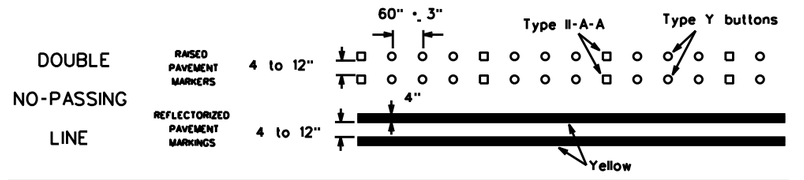
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

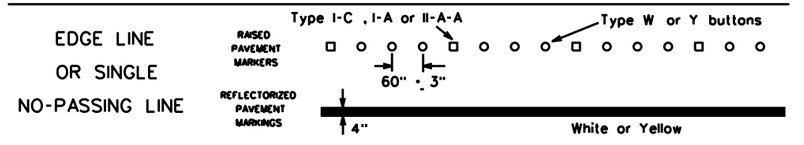
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

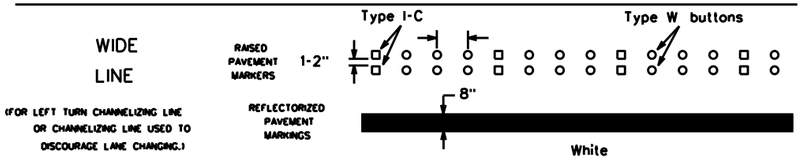


EDGE LINE OR SINGLE NO-PASSING LINE



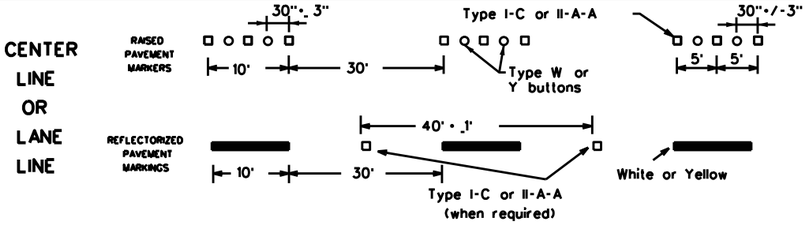
WIDE LINE

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

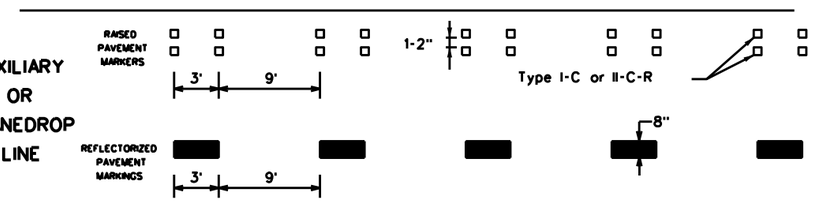


BROKEN LINES

CENTER LINE OR LANE LINE

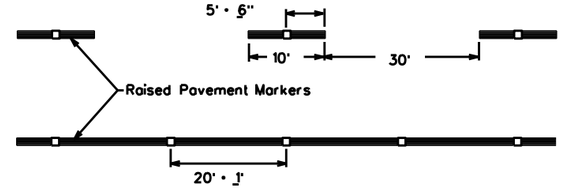


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

SHEET 12 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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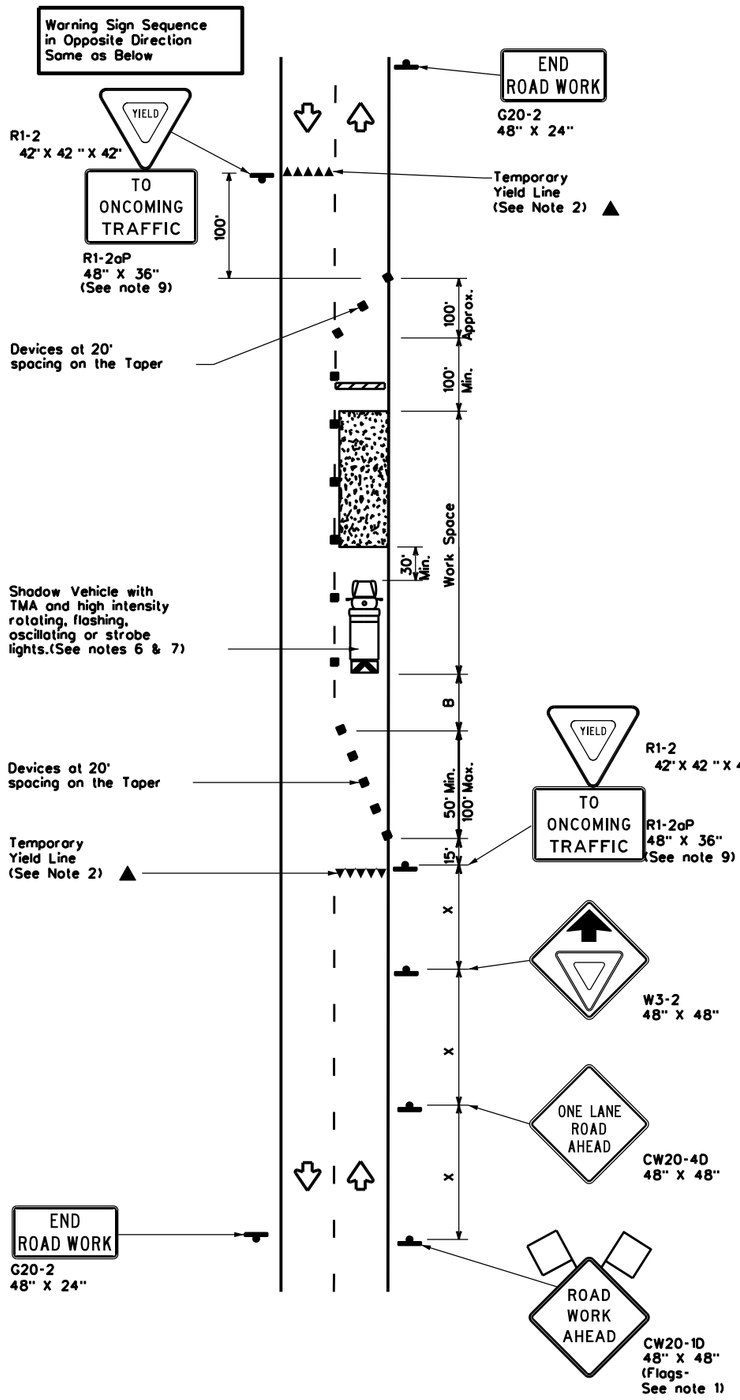
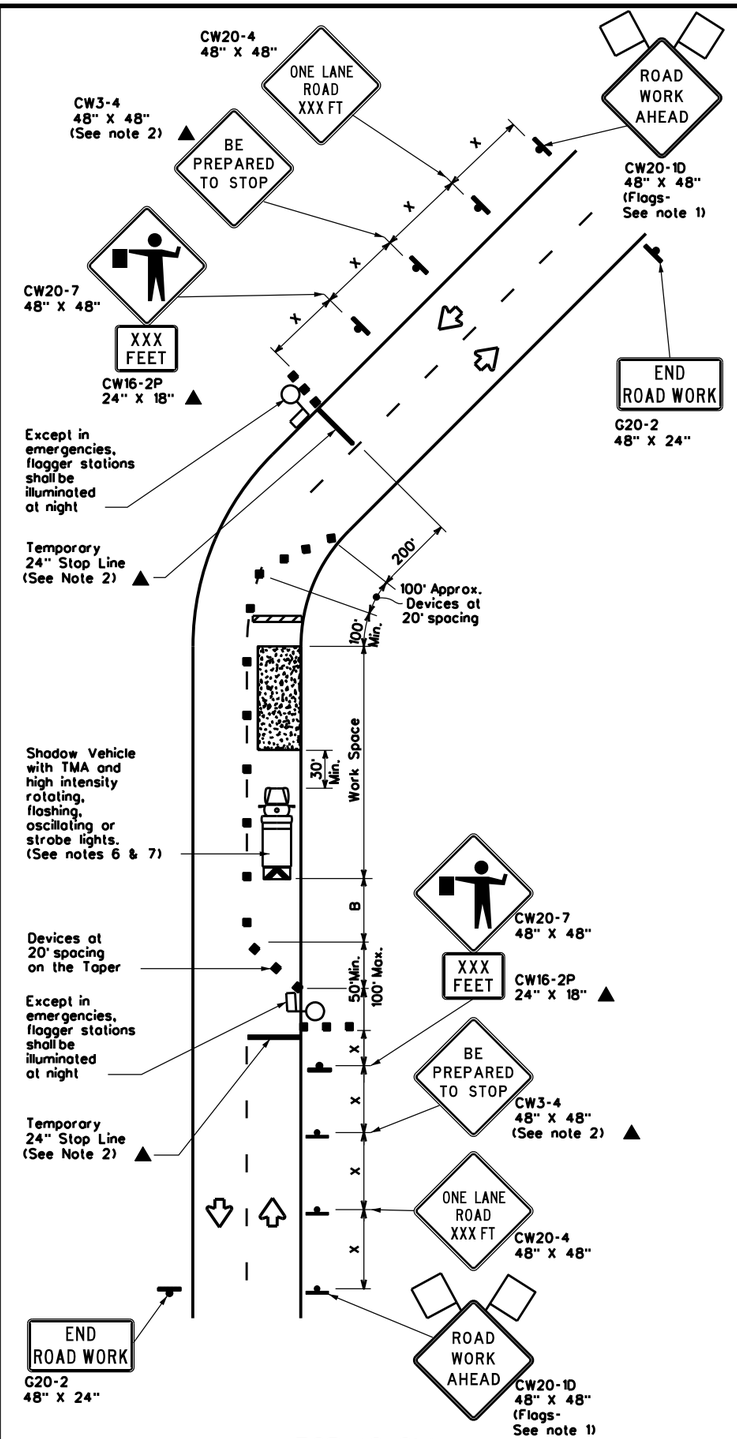


TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



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 situations.

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	0902	90	329	VARIOUS
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	FTW	TARRANT		32
4-98 2-18				

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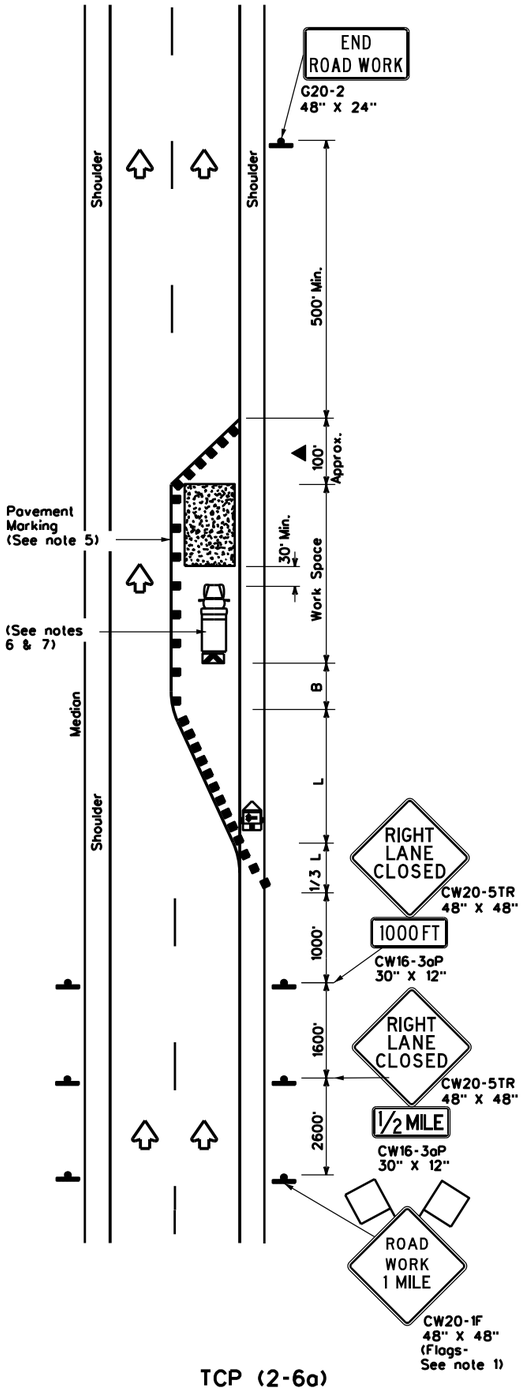
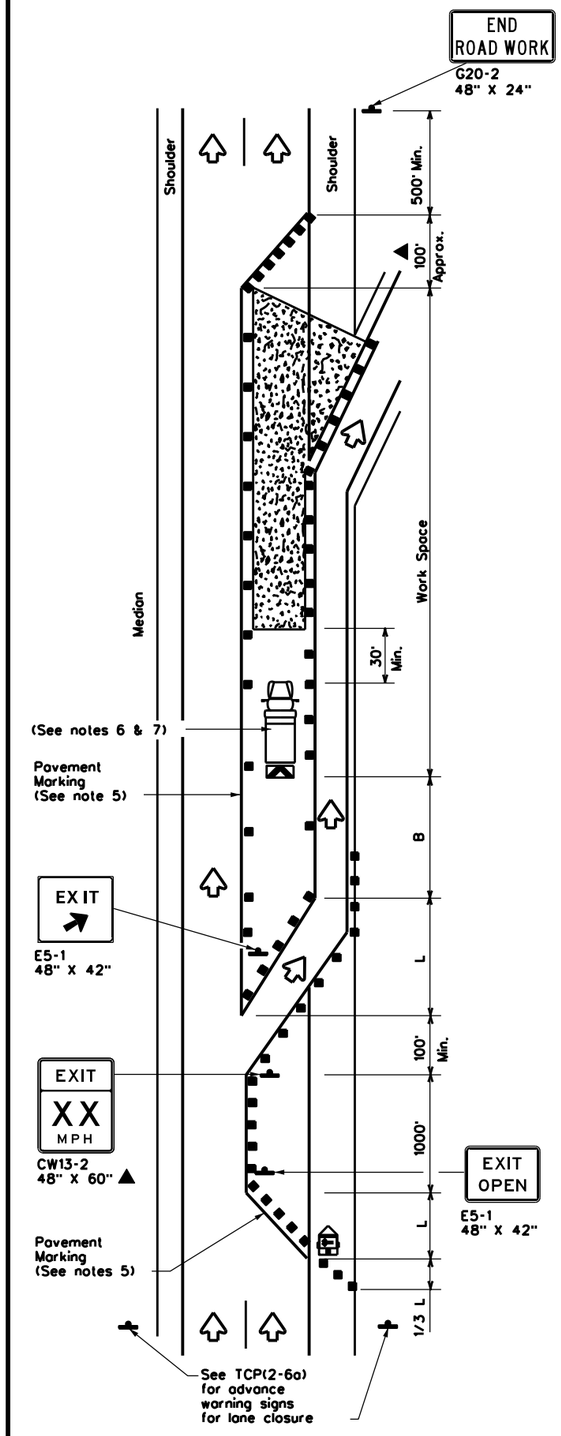
DATE:
FILE:



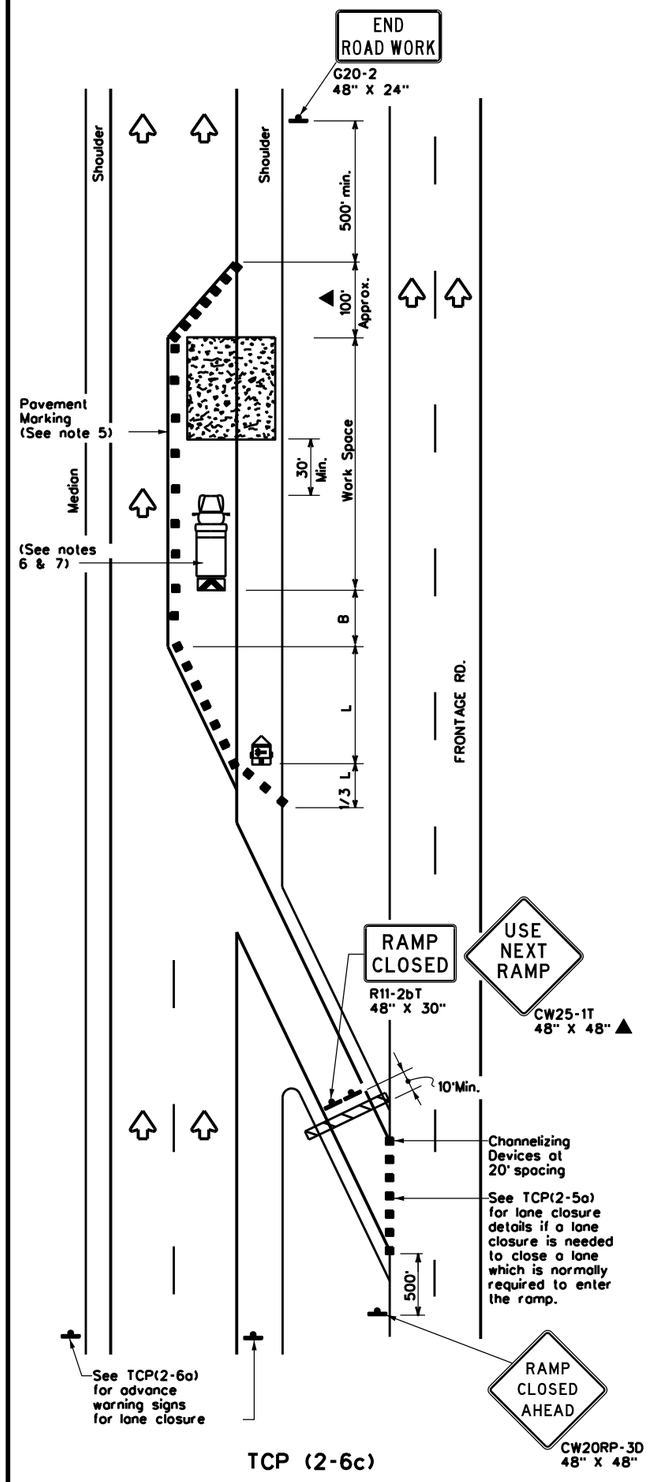
TCP (2-6a)

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		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.

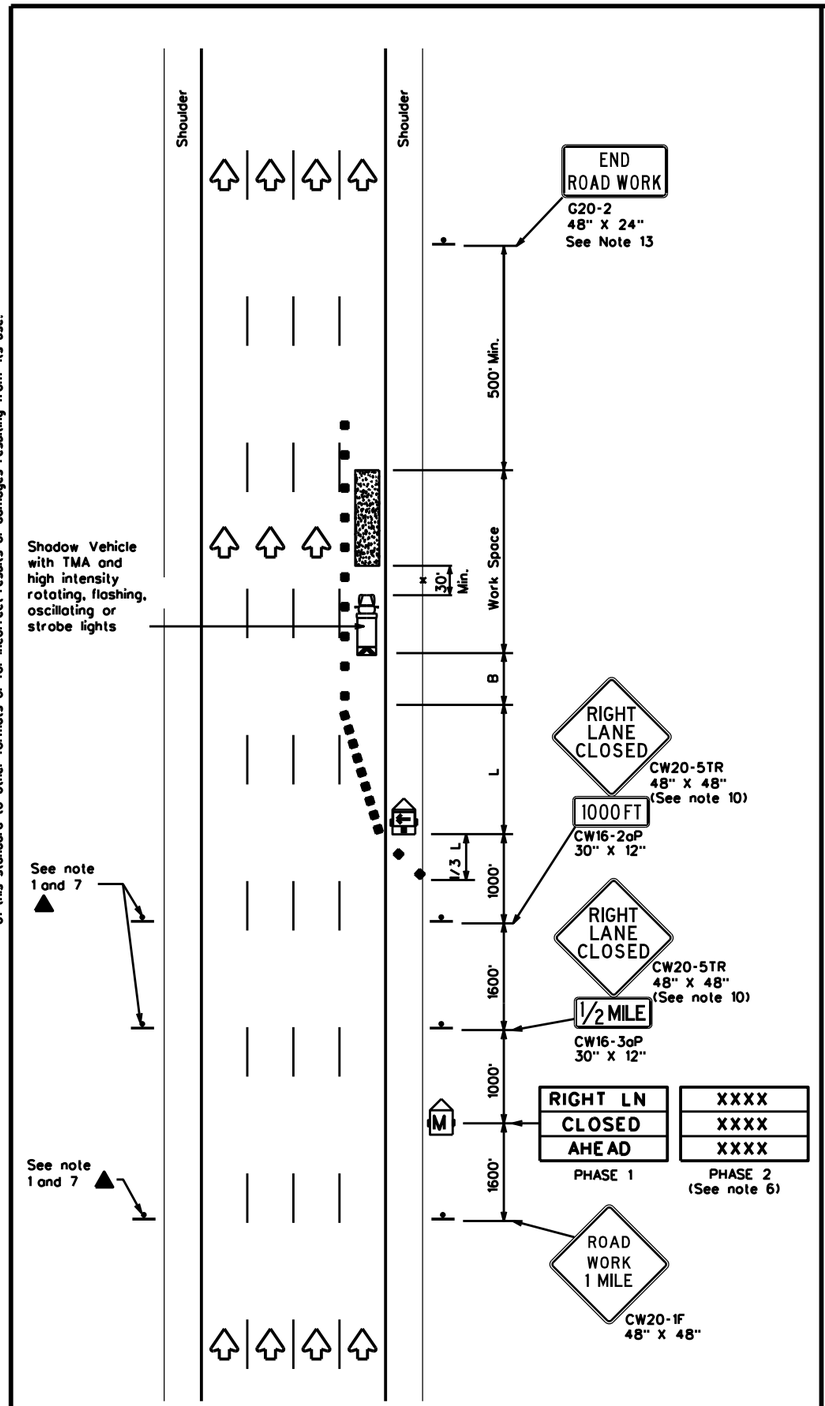
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

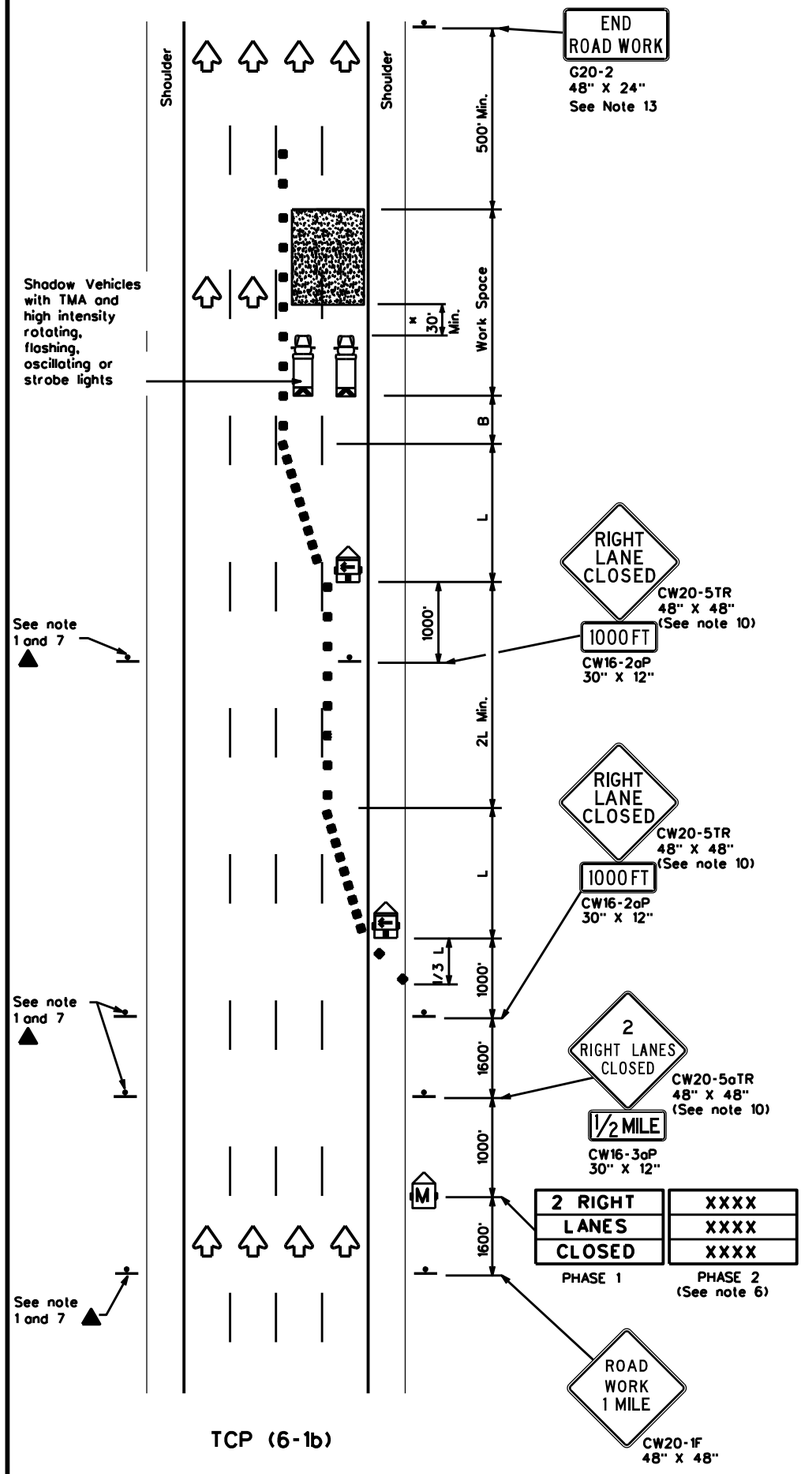
TCP(2-6)-18

FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	VARIOUS
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	FTW	TARRANT		33
1-97 2-18				



TCP (6-1a)

TYPICAL FREEWAY ONE LANE CLOSURE



TCP (6-1b)

TYPICAL FREEWAY TWO LANE CLOSURE

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

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

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

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

GENERAL NOTES

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. Drums or 42"cones are the typical channelizing devices. For Intermediate Term Stationary work, drums shall be used on tapers with drums or 42" cones used on tangent sections. Other channelizing devices may be used as directed by the Engineer.
3. All construction signs and barricades placed during any phase of work shall remain in place until removal is approved by the Engineer.
4. The Engineer may direct the Contractor to furnish additional signs and barricades as required to maintain traffic flow, detours and motorist safety during construction.
5. Static message boards or changeable message signs stating the date and duration of ramp or freeway lane closures shall be placed a minimum of seven (7) calendar days in advance of the actual closure.
6. Phase 2 of the PCMS message should include appropriate information formatted as shown on BC(6), such as "MERGE LEFT," recommended advisory speed, delay information, or other specific warnings.
7. Duplicate construction warning signs should be erected on the medians side of freeways where median width will permit and traffic volume justifies the signing.
8. The number of closed lanes may be increased provided the spacing of traffic control devices, taper lengths and tangent lengths meet the requirements of the TMUTCD.
9. Warning signs for intermediate term stationary work should be mounted at 7' to the bottom of the sign.
10. Warning signs shown shall be appropriately altered for left lane closures. When signs are mounted at 1' height for short term stationary or short duration work, sign versions shown in the SHSD for Texas with distances on the sign face rather than mounted on a ploque below the sign may be used.
11. When possible, PCMS units should be located in advance of the last available exit ramp prior to the lane closure to allow motorists an alternate route. They may also be relocated to improve advance warning in case of unanticipated queuing or congestion.
12. For Intermediate Term Stationary work at night, floodlights should be used to illuminate the work area and equipment crossings. Floodlights shall not produce a disabling glare condition for road users or workers.
13. The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

* A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Texas Department of Transportation
Traffic Operations Division Standard

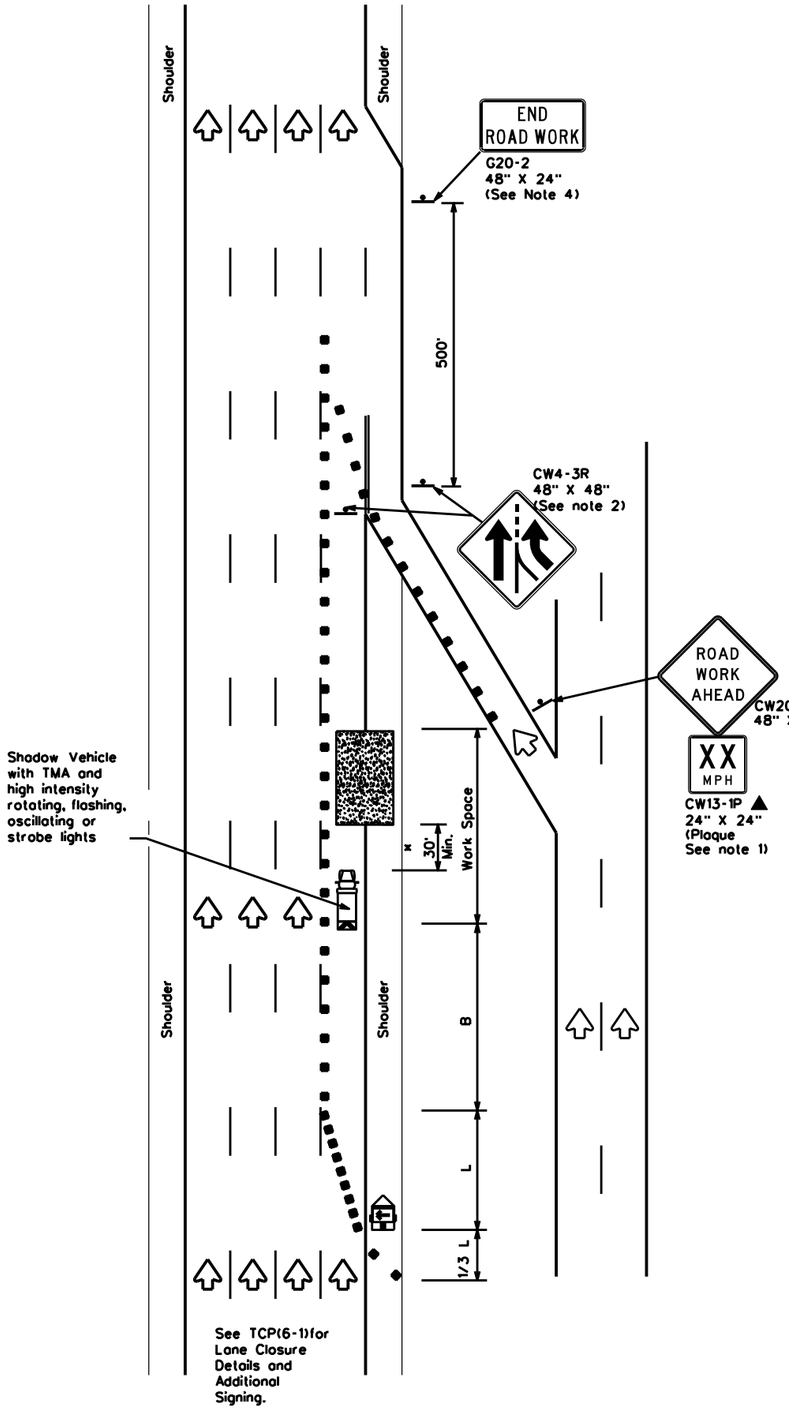
TRAFFIC CONTROL PLAN FREEWAY LANE CLOSURES

TCP(6-1)-12

FILE: tcp6-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-12	0902	90	329	Various
	DIST	COUNTY		SHEET NO.
	FTW	Tarrant		34

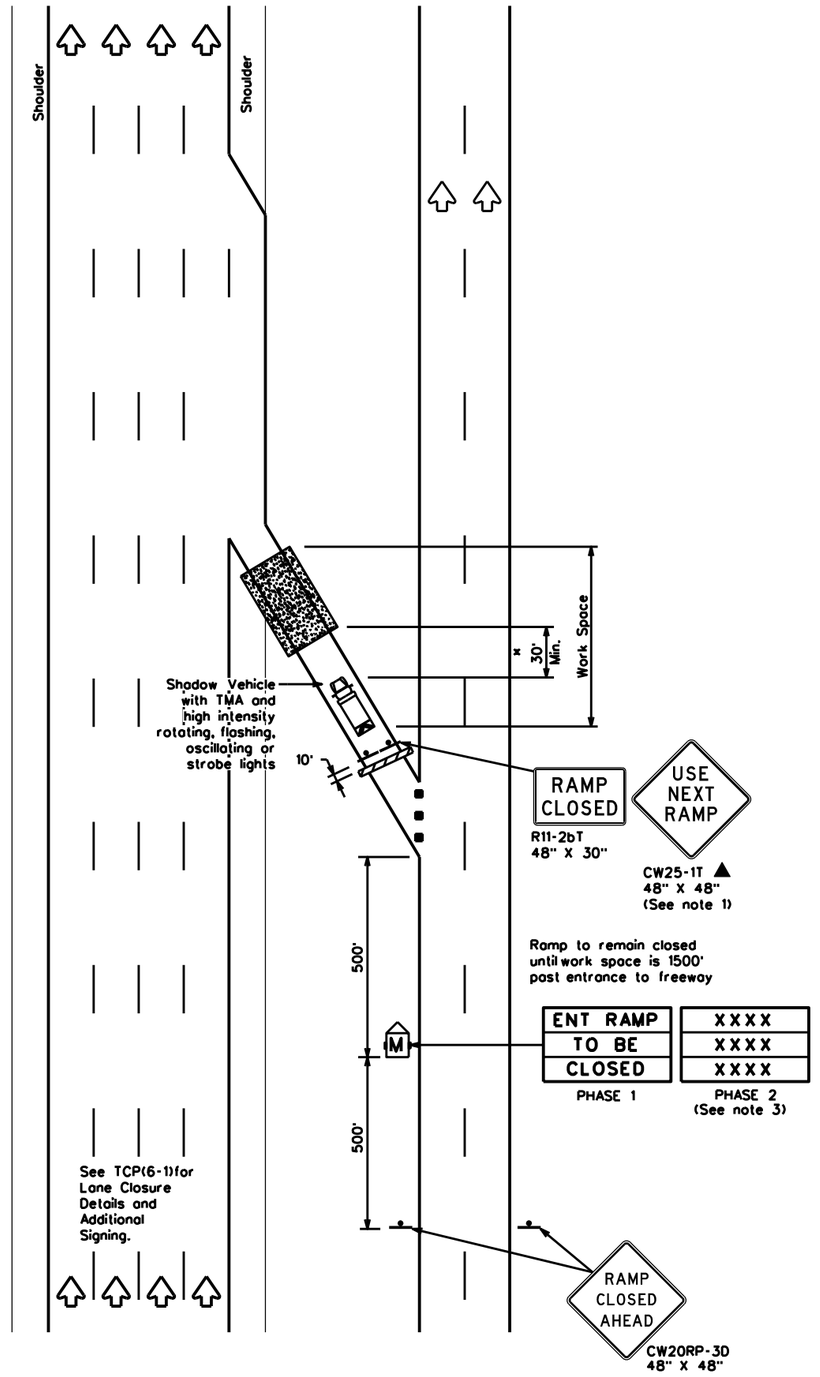
DATE:
FILE:

DATE: $DATE$ $TIME$
FILE:



TCP (6-2a)

ENTRANCE RAMP OPEN
WORK WITHIN 500' OF RAMP



TCP (6-2b) (MOD)

ENTRANCE RAMP CLOSED

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

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

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

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

GENERAL NOTES

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. ADDED LANE Symbol (CW4-3) sign may be omitted when sign between ramp and mainlane can be seen from both roadways.
3. See "Advance Notice List" on BC(6) for recommended date and time formatting options for PCMS Phase 2 message.
4. The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

x A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA NEAR RAMP
(MOD)
TCP(6-2)-12 (MOD)

FILE: tcp6-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	VARIOUS
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	FTW	TARRANT		35

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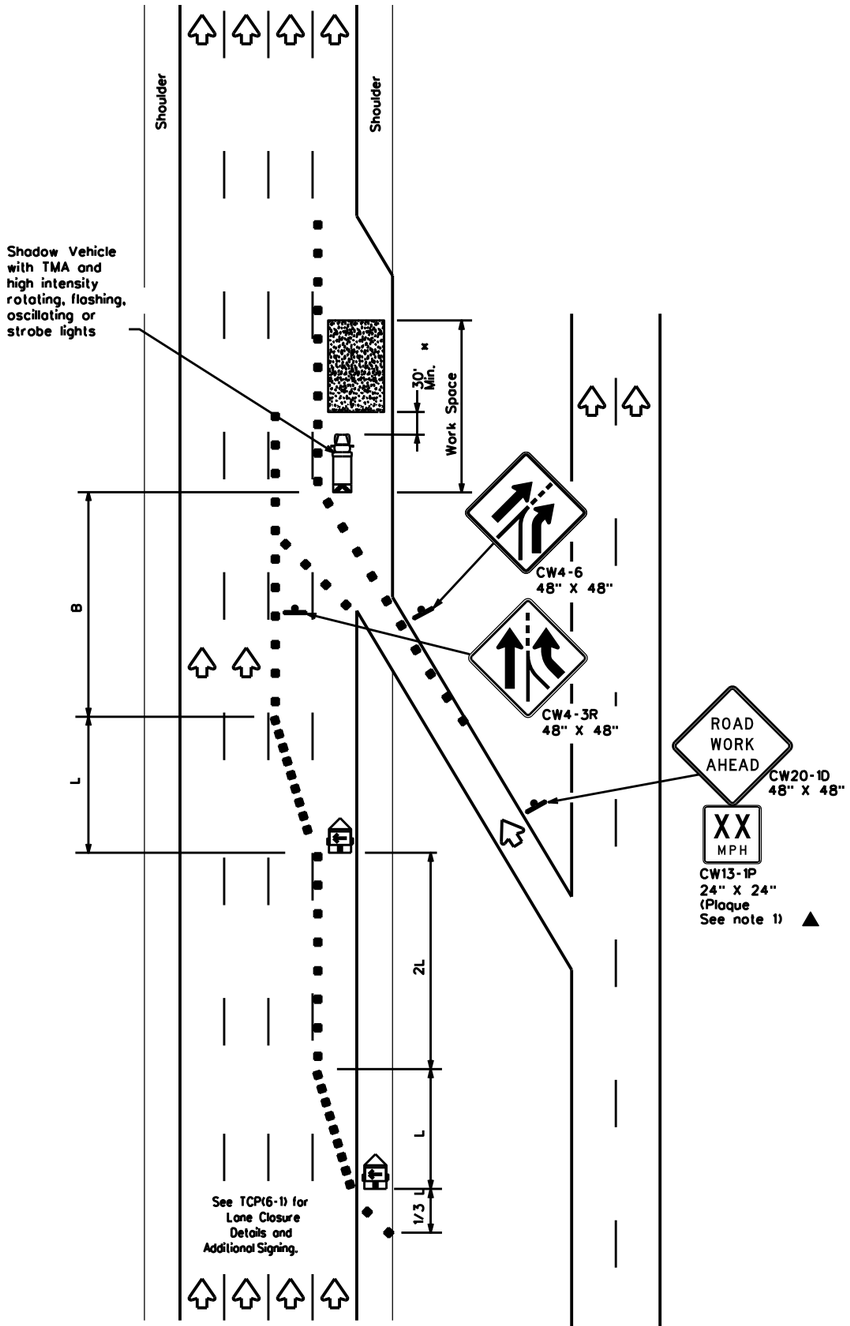
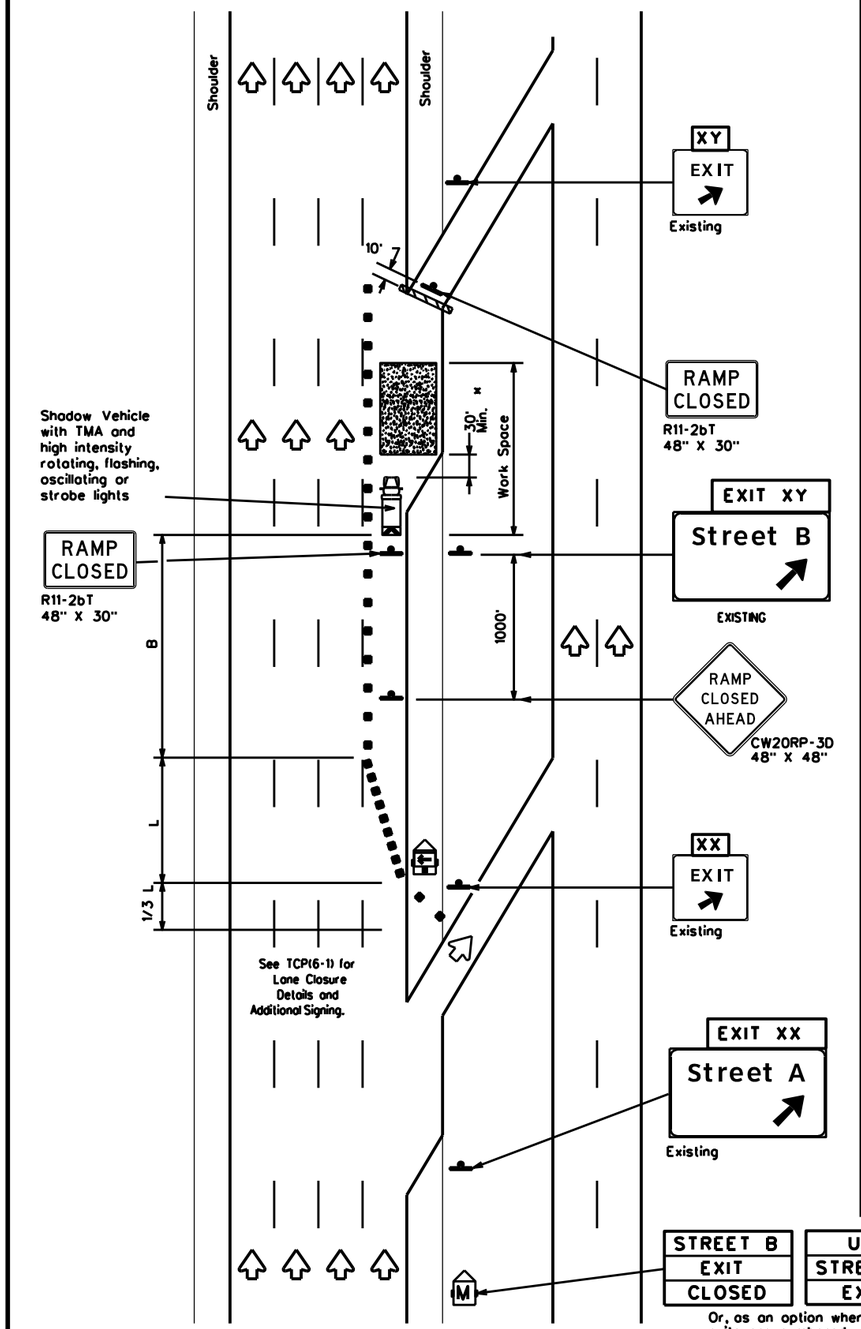
DATE:
FILE:



TCP (6-3a)

ENTRANCE RAMP OPEN



TCP (6-3b)

EXIT RAMP CLOSED

TRAFFIC EXITS PRIOR TO CLOSED RAMP

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

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

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

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

GENERAL NOTES:

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.

* A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA BEYOND RAMP

TCP(6-3)-12

FILE: tcp6-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
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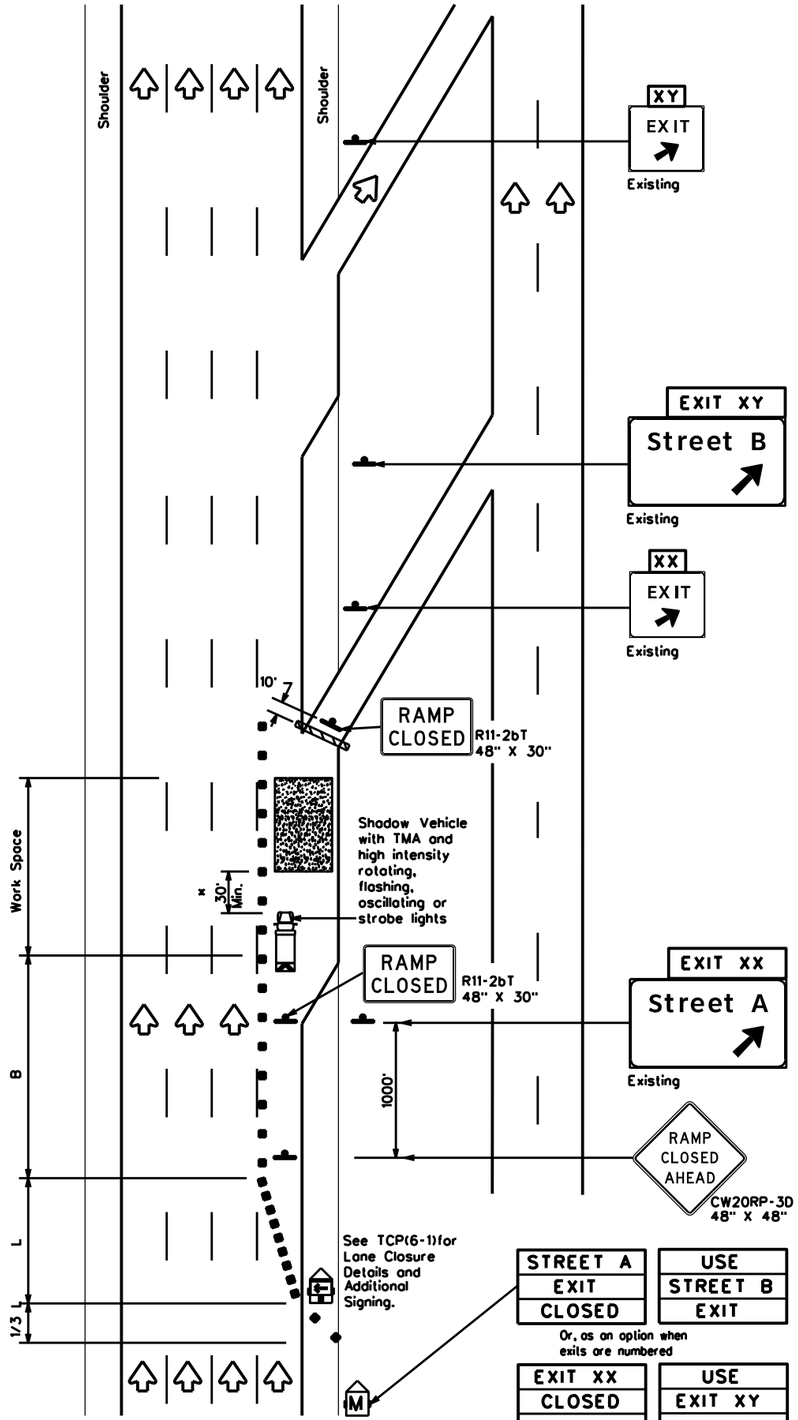
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	FTW	Tarrant		36

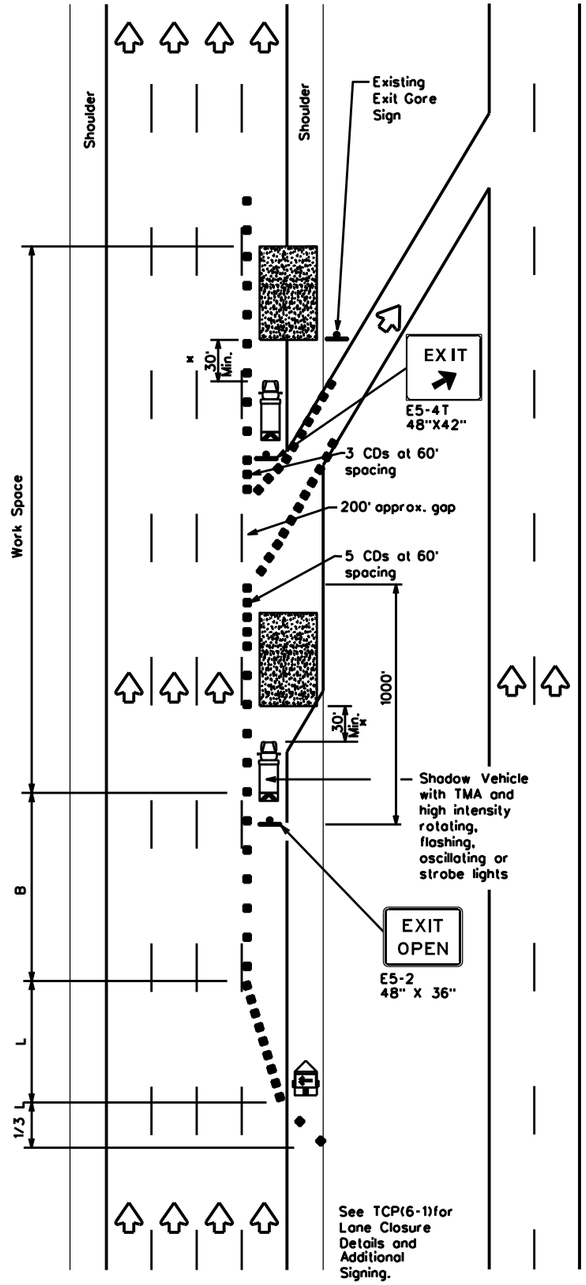
DATE:
FILE:



TCP (6-4a)

EXIT RAMP CLOSED

TRAFFIC EXITS PAST CLOSED RAMP



TCP (6-4b)

EXIT RAMP OPEN

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

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

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

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

GENERAL NOTES

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. See BC Standards for sign details.

x A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

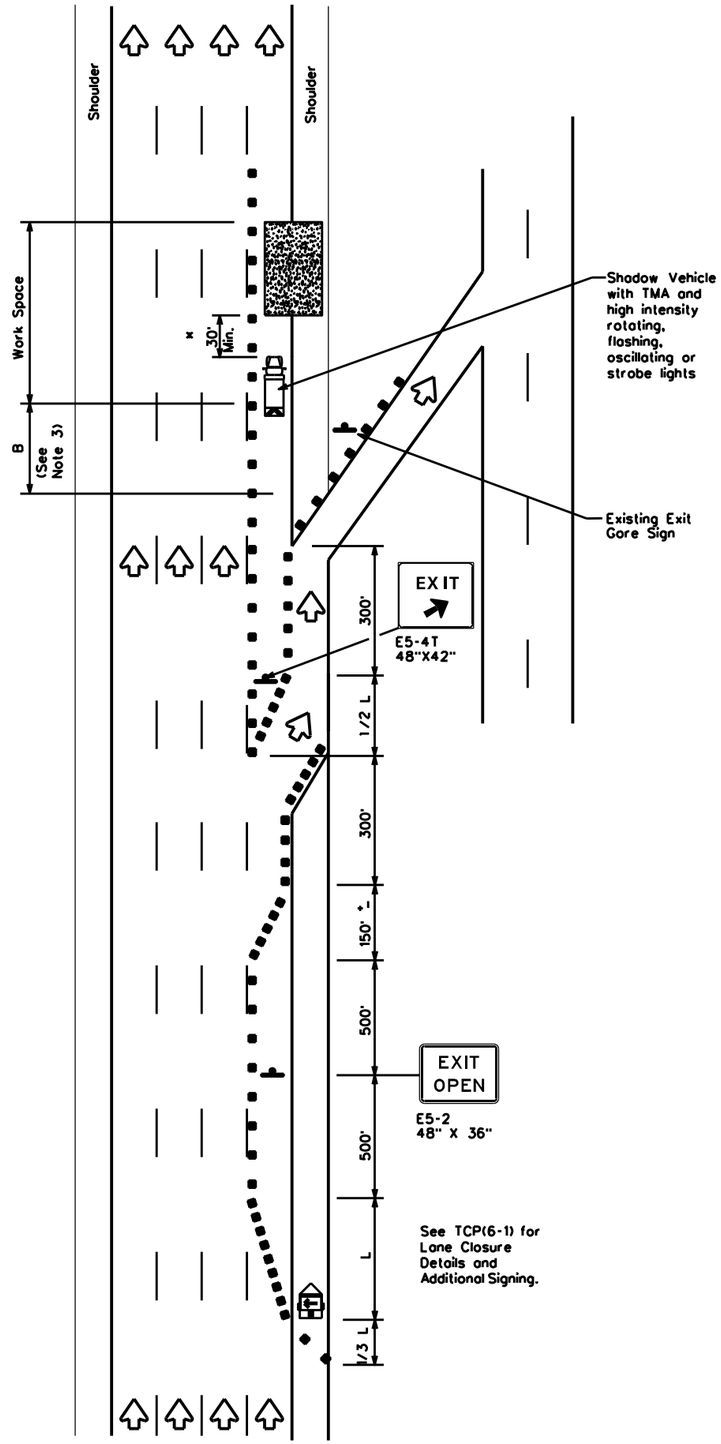
Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA AT EXIT RAMP

TCP(6-4)-12

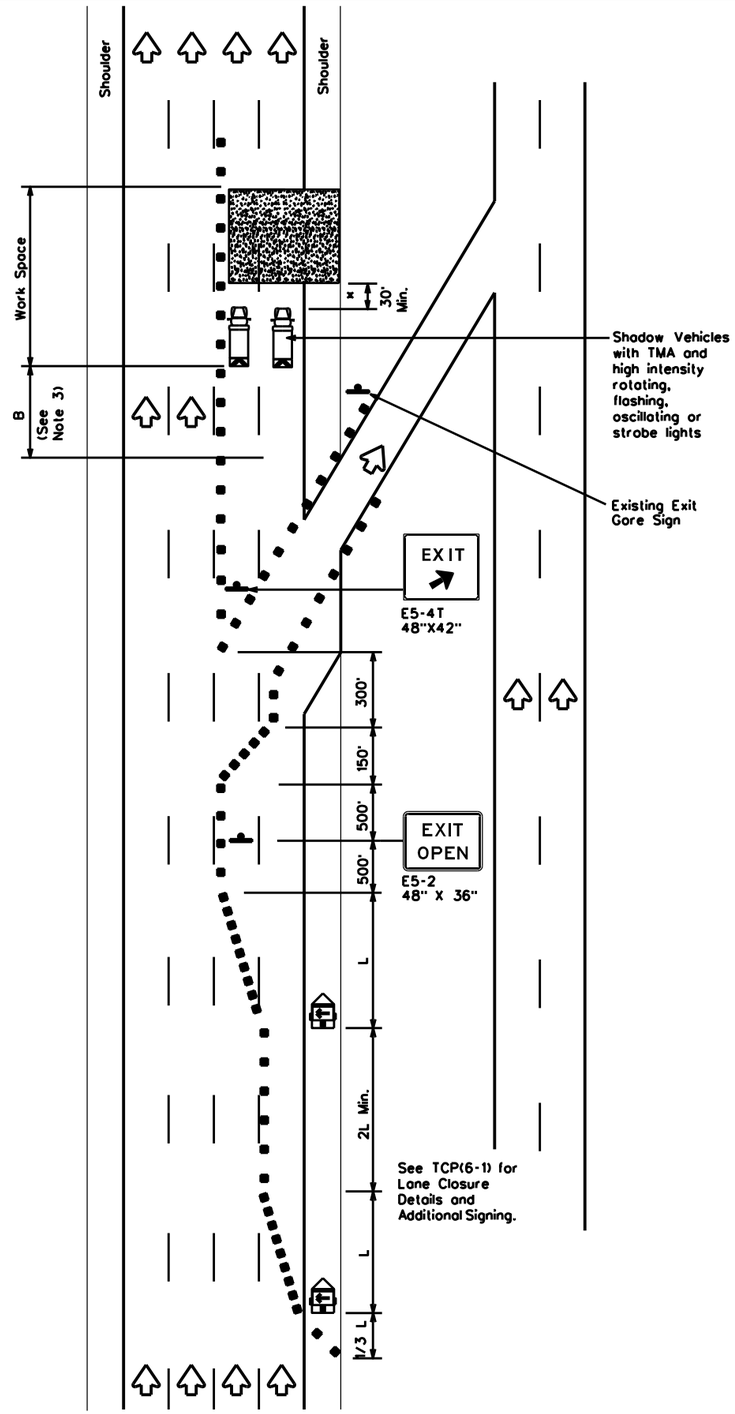
FILE: tcp6-4.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT Feburary 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	Various
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	FTW	Tarrant		37

DATE:
FILE:



TCP (6-5a)

EXIT RAMP OPEN



TCP (6-5b)

EXIT RAMP OPEN
TWO LANE CLOSURE WITHIN 1500' PAST EXIT RAMP

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

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

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

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

GENERAL NOTES

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. See BC standards for sign details.
3. If adequate longitudinal buffer length "B" does not exist between the work space and the exit ramp, consideration should be given to closing the ramp.

x A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

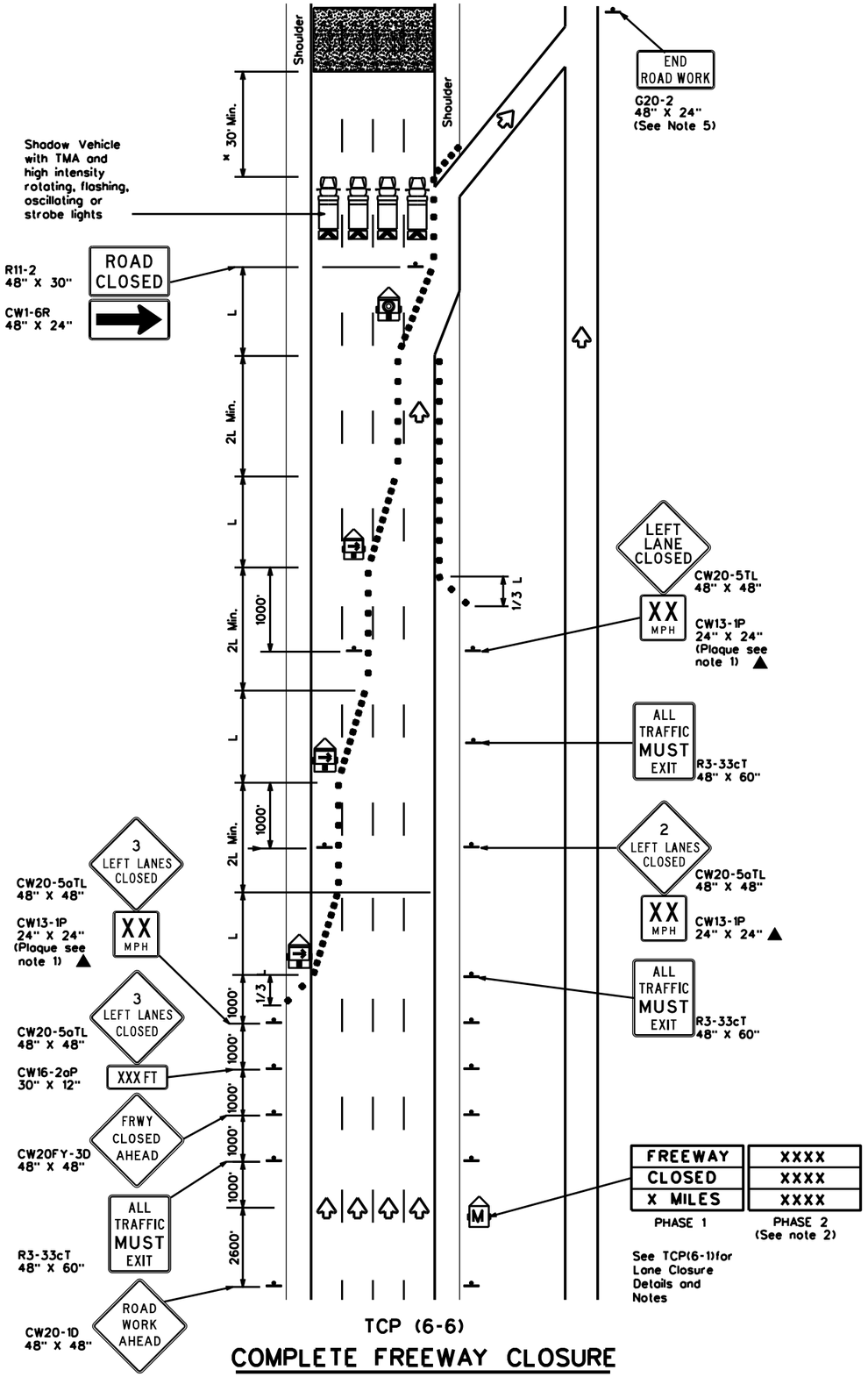
Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA BEYOND EXIT RAMP

TCP(6-5)-12

FILE: tcp6-5.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT Feburary 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	Various
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	FTW	Tarrant		38

DATE:
FILE:



TCP (6-6)

COMPLETE FREEWAY CLOSURE

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

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" **			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

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

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

GENERAL NOTES

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. Phase 2 of the PCMS message should include appropriate information formatted as shown on BC(6), such as "MERGE RIGHT," recommended speed, delay, exit information, or other specific warnings.
3. Where queuing is anticipated beyond signing shown, additional PCMS signs, other warning signs, devices or Law Enforcement Officers should be available to warn approaching high speed traffic of the end of the queue, as directed by the Engineer.
4. Entrance ramps located from the advance warning area to the exit ramp should be closed whenever possible.
5. The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

* A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN FREEWAY CLOSURE

TCP(6-6)-12

FILE: tcp6-6.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	Various
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	FTW	Tarrant		39

DISCLAIMER:
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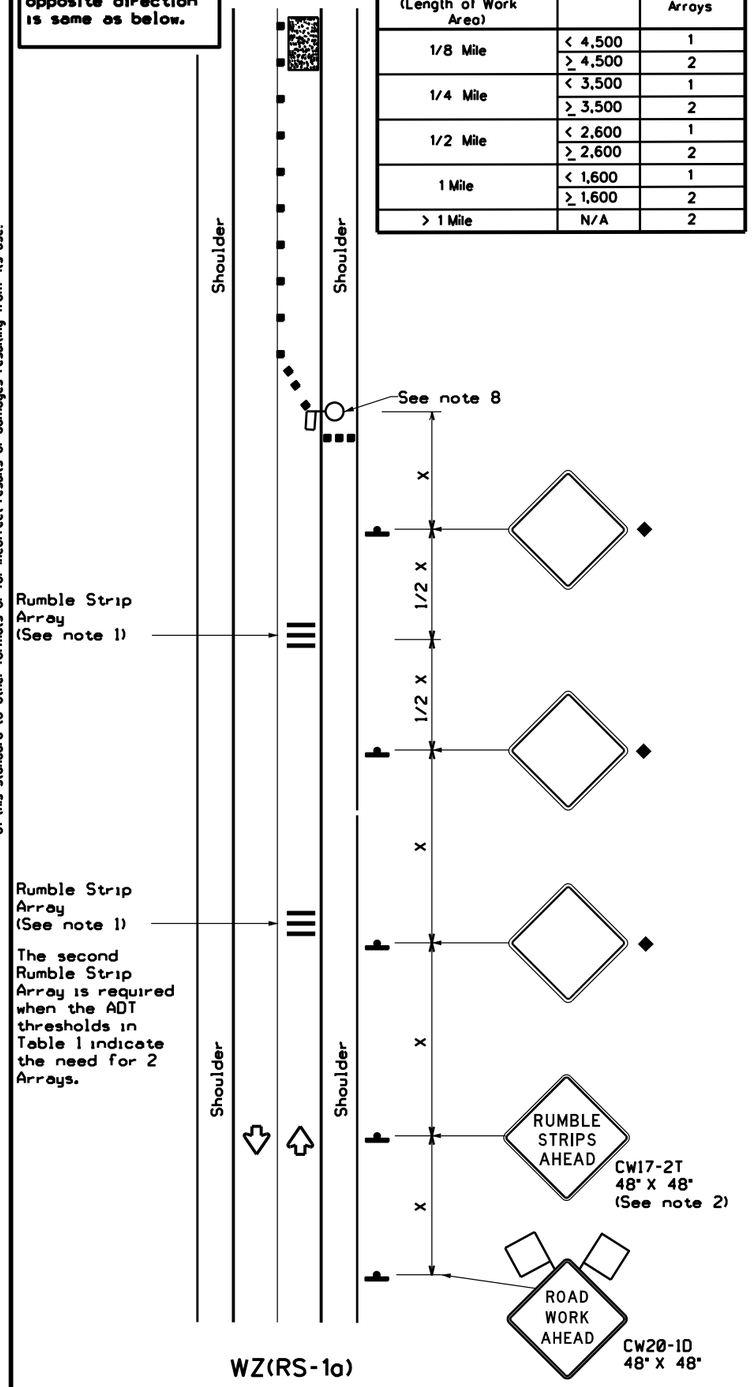
DATE:
FILE:

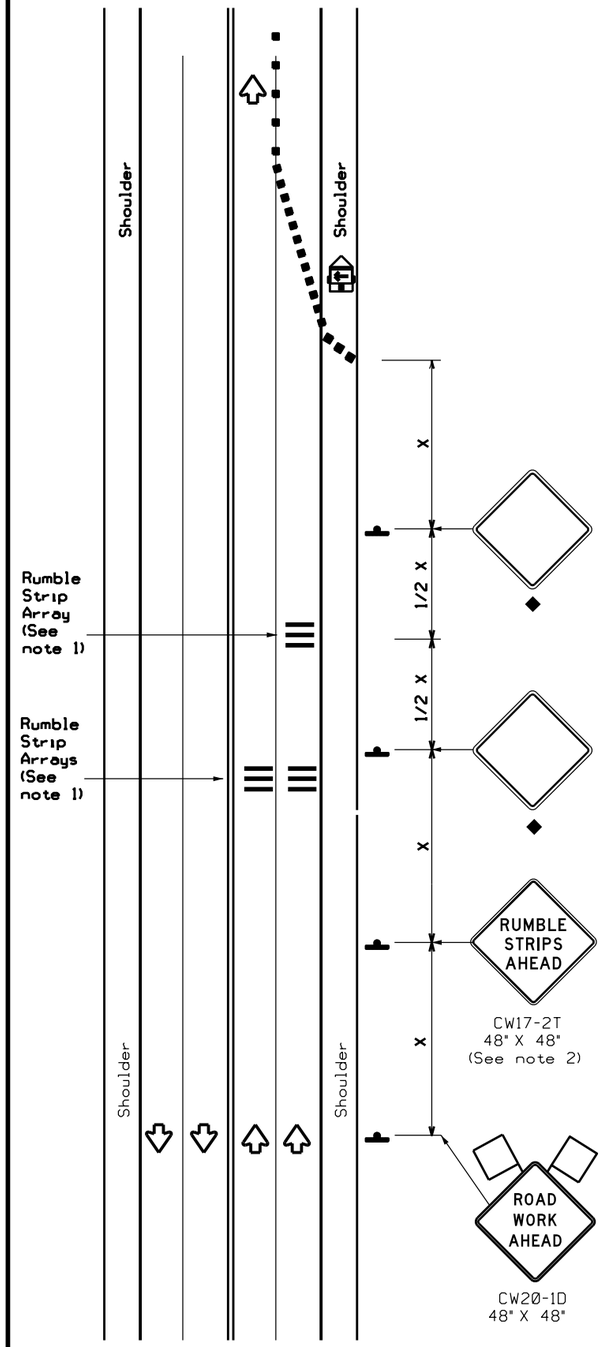
Warning sign and rumble strip sequence in opposite direction is same as below.

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



WZ(RS-1a)

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



WZ(RS-1b)

RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

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

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

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

* Conventional Roads Only

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

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

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

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

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

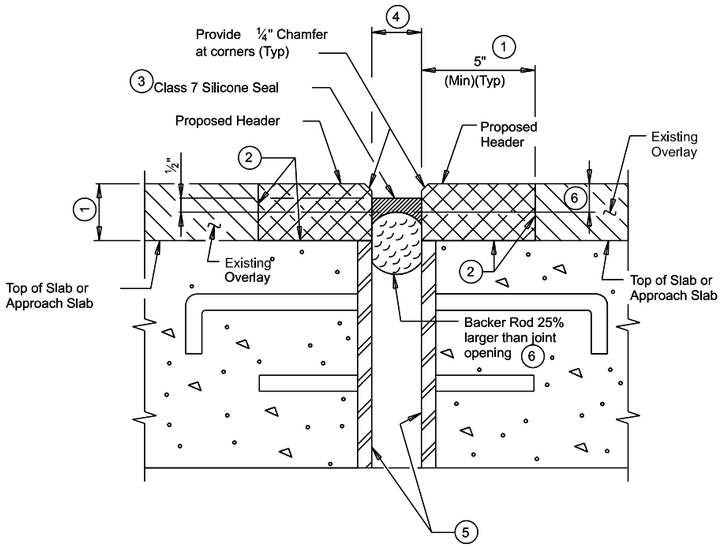
Texas Department of Transportation

Traffic Safety Division Standard

TEMPORARY RUMBLE STRIPS

WZ(RS)-22

FILE: wzrs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	Various
2-14 1-22	DIST	COUNTY		SHEET NO.
4-16	FTW	Tarrent		40



EXISTING ARMOR JOINT WITH HEADER/POLYMER NOSING

(With Existing Overlay)

Notes:

Clean and seal joint in accordance with Item 438, "Cleaning and Sealing Joints".

Measurement and payment for header shall be in accordance with Item 454, "Bridge Expansion Joints". Measurement and payment for cleaning and sealing shall be in accordance with Item 438, "Cleaning and Sealing Joints". Notify Engineer of Record if existing condition does not match detail during repair. The sealant shall be "Class 7", per DMS-6310, "Joint Sealants and Fillers". Use a Type II header/polymer nosing. Surface and material preparation shall follow the manufacturer's recommendations. A manufacturer's representative shall be present at time of initial installation to ensure contractor understands and follows manufacturer's recommendations for first few installations or as determined by Area Office.

(1) The thickness of the nosing/header shall match the thickness of the existing/new overlay. The width of the nosing/header material shall be 2X the thickness of the existing/new overlay or 5", whichever is greater. Provide nosing/header material in accordance with DMS-6140" "Polymer Concrete for Bridge Joint Systems".

(2) Surface where nosing/header material is to be placed shall be clean and dry in accordance with the manufacturer's specifications.

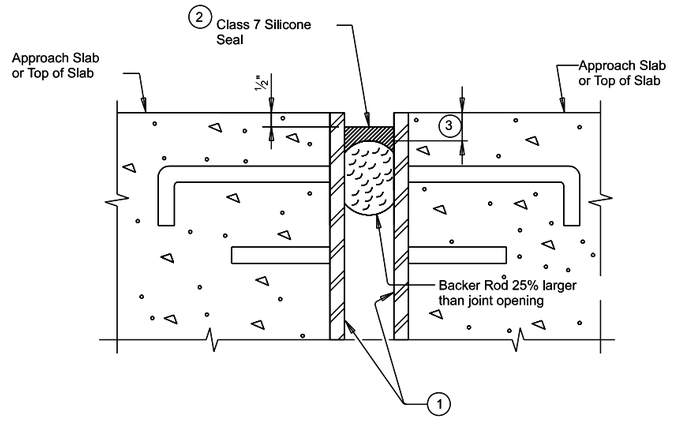
(3) Extend sealant up into rail or curb 3" on low side or sides of deck. Prepare surfaces where sealant is to be placed in accordance with manufacturer's recommendations.

(4) Joint opening shall match existing.

(5) Clean and prepare existing armor joint faces as required by material supplier's recommendations and Item 438.

(6) Set top of backer rod 1" below top of proposed nosing/header. 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.

DETAIL #1



EXISTING ARMOR JOINT WITHOUT HEADER

(Without Overlay)

Notes:

Clean and seal joint in accordance with Item 438, "Cleaning and Sealing Joints".

Measurement and payment for cleaning and sealing joints shall be in accordance with Item 438, be in "Cleaning and Sealing Joints". Notify Engineer of Record if existing condition does not match detail during repair. The sealant shall be "Class 7", per DMS-6310, "Joint Sealants and Fillers".

(1) Clean and prepare existing armor joint faces as required by material supplier's recommendations and Item 438.

(2) Extend sealant up into rail or curb 3" on low side or sides of deck. Prepare surfaces where sealant is to be placed in accordance with manufacturer's recommendations.

(3) Set top of backer rod 1" below top of existing slab. 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.

DETAIL #2

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9/6/2024
DATE

SHEET 1 OF 1

Texas Department of Transportation

Fort Worth Bridge Design

EXISTING ARMOR JOINT DETAILS

	DN: MA	CK: NB	DW:	CK:
©TxDOT 02-02-24	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	VARIOUS
Revised notes & callouts	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		41

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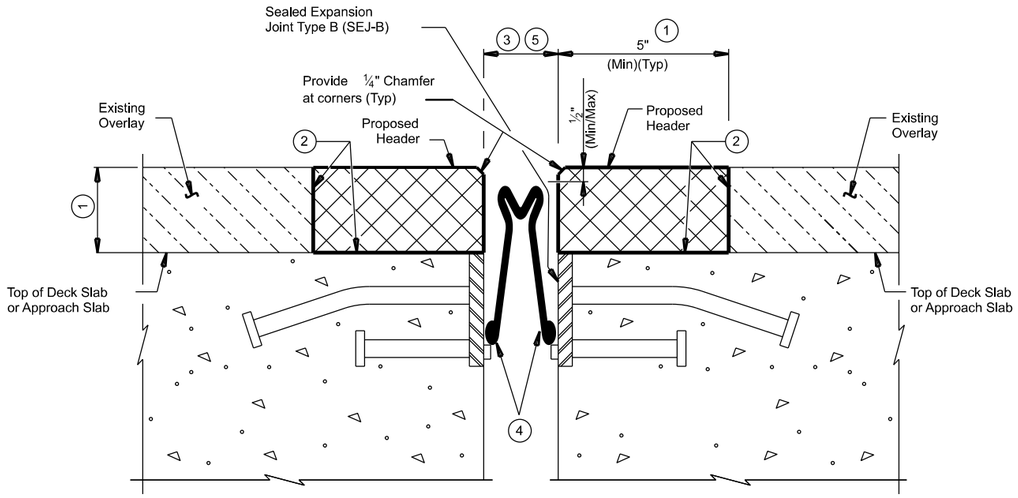

EXISTING SEJ-B JOINT

(With Overlay)

1. The thickness of the nosing/header shall match the thickness of the existing overlay. The width of the nosing/header material shall be 2X the thickness of the existing overlay or 5", whichever is greater. Provide nosing/header material in accordance with DMS-6140" "Polymer Concrete for Bridge Joint Systems".
2. Surface where nosing/header material is to be placed shall be clean and dry in accordance with the manufacturer's specifications.
3. Joint opening shall match existing.
4. Clean and prepare existing armor joint faces as required by material supplier's recommendations and Item 454.
5. Extend membrane up into rail or curb 3" on low sides of deck. Install new membrane per manufacturer's recommendations.

DETAIL #1

Notes:

Replace existing membrane in accordance with Item 454, "Bridge Expansion Joints".

Measurement and payment for header and new SEJ membrane shall be in accordance with Item 454, "Bridge Expansion Joints". Use Type II header/polymer nosing.

Notify Engineer of Record if existing condition does not match detail during repair.

Prepare and install new membrane per manufacturer's recommendations.

Surface and material preparation for polymer nosing shall follow the manufacturer's recommendations. A manufacturer's representative shall be present at time of initial installation to ensure contractor understands and follows manufacturer's recommendations for first few installations or as determined by Area Office.

STATE OF TEXAS
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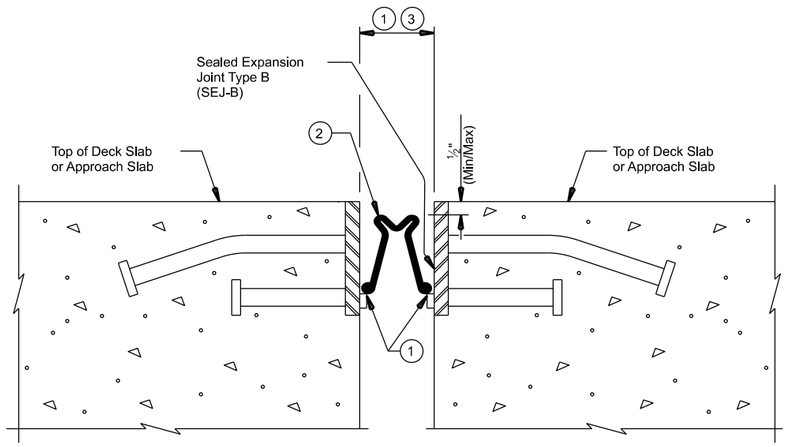
Fort Worth Bridge Design

SEALED EXPANSION JOINT TYPE B

	DN: MA	CK: NB	DW:	CK:
©TxDOT 02-02-24 REVISIONS	CONT	SECT	JOB	HIGHWAY
	0902	90	329	VARIOUS
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		42



EXISTING SEJ-B JOINT

(Without Overlay)

1. Clean and prepare existing armor joint faces as required by material supplier's recommendations and Item 454.
2. Extend membrane up into rail or curb 3" on low side or sides of deck. Install new membrane per manufacturer's recommendations.
3. Joint opening shall match existing.

DETAIL #2

Notes:

Replace existing membrane in accordance with Item 454, "Bridge Expansion Joints".

Measurement and payment for new SEJ membrane shall be in accordance with Item 454, "Bridge Expansion Joints".
Notify Engineer of Record if existing condition does not match detail during repair.

Prepare and install new membrane per manufacturer's recommendations.

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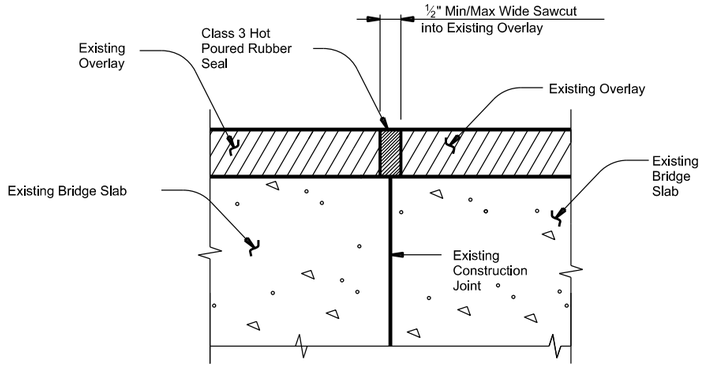
SEALED EXPANSION JOINT TYPE B

		DN: MA		CK: NB	DW:		CK:
©TxDOT 02-02-24		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0902	90	329		VARIOUS	
		DIST	COUNTY				SHEET NO.
		FTW	TARRANT				43

DATE:
FILE:



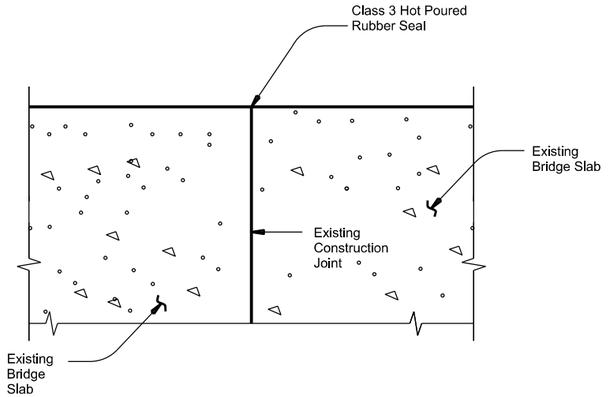
EXISTING CONSTRUCTION JOINT

(With Existing Overlay)

Notes:

1) Saw cut at the centerline of the joint. Take care not to cut into existing slab reinforcement. Saw cut shall be full depth of overlay. If existing overlay is greater than 2" in depth than maximum sawcut depth shall be 2". Make multiple saw cuts to create a 1/2" minimum/maximum joint opening. Clean joint opening of all deleterious material and grease in accordance with Item 438, "Cleaning and Sealing Joints".
2) Obtain approval of cleaned joints prior to proceeding with sealing operation.
3) Seal the joint opening with a Class 3, "Hot Poured Rubber". Seal flush to the top of the overlay. Provide Class 3 joint sealant in accordance with DMS-6310, "Joint Sealers and Fillers".

DETAIL #1



EXISTING CONSTRUCTION JOINT

(Without Overlay)

Notes:

1) Cleaning joint of all debris and sealing joint is paid for by Item 438, "Cleaning and Sealing Joints" and measured by the linear foot.
2) Seal the joint with a Class 3, "Hot Poured Rubber". The top of the sealant (after cooling) must be flush to 0.5 inches below the surface of the bridge slab. Ifjoint opening is larger than 0.5 inches then a backer rod is required before sealing.

DETAIL #2

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SHEET 1 OF 2

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Fort Worth Bridge Design

EXIST. CONSTRUCTION JOINT DETAILS

		DN: MA		CK: NB	DW:		CK:
©TxDOT 06-08-23		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0902	90	329		VARIOUS	
Revisions & callouts		DIST	COUNTY			SHEET NO.	
		FTW	TARRANT			44	

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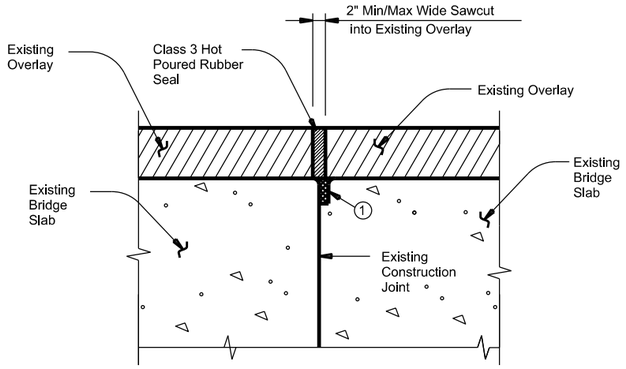


EXISTING TYPE B CONSTRUCTION JOINT

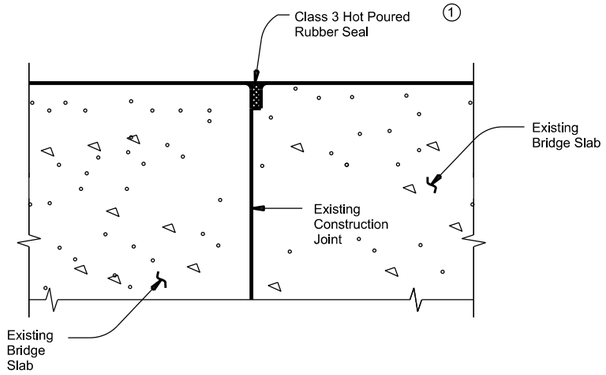
(With Existing Overlay)

(1) Remove existing sealing compound and thoroughly clean void. Once cleaned, fill void with Class 3 Hot Poured Rubber.

Notes:

1) Saw cut at the centerline of the joint. Take care not to cut into existing slab reinforcement. Saw cut shall be full depth of overlay. If existing overlay is greater than 2" in depth than maximum sawcut depth shall be 2". Make multiple saw cuts to create a 2" minimum/maximum joint opening. Clean joint opening of all deleterious material and grease in accordance with Item 438, "Cleaning and Sealing Joints".
2) Obtain approval of cleaned joints prior to proceeding with sealing operation.
3) Seal the joint opening with a Class 3, "Hot Poured Rubber". Seal flush to the top of the overlay. Provide Class 3 joint sealant in accordance with DMS-6310, "Joint Sealers and Fillers".

DETAIL #3



EXISTING TYPE B CONSTRUCTION JOINT

(Without Overlay)

(1) Remove existing sealing compound and thoroughly clean void. Once cleaned, fill void with Class 3 Hot Poured Rubber.

Notes:

1) Cleaning joint of all debris and sealing joint is paid for by Item 438, "Cleaning and Sealing Joints" and measured by the linear foot.
2) Seal the joint with a Class 3, "Hot Poured Rubber". The top of the sealant (after cooling) must be flush to 0.5 inches below the surface of the bridge slab. Ifjoint opening is larger than 0.5 inches then a backer rod is required before sealing.
3) Obtain approval for all tools, equipment, materials, and techniques proposed for use to prepare the joint.

DETAIL #4

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SHEET 2 OF 2

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Fort Worth Bridge Design

EXIST. CONSTRUCTION JOINT DETAILS

DN: MA	CK: NB	DW:	CK:
©TxDOT 06-08-23	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	VARIOUS
Revisions & callouts	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		45

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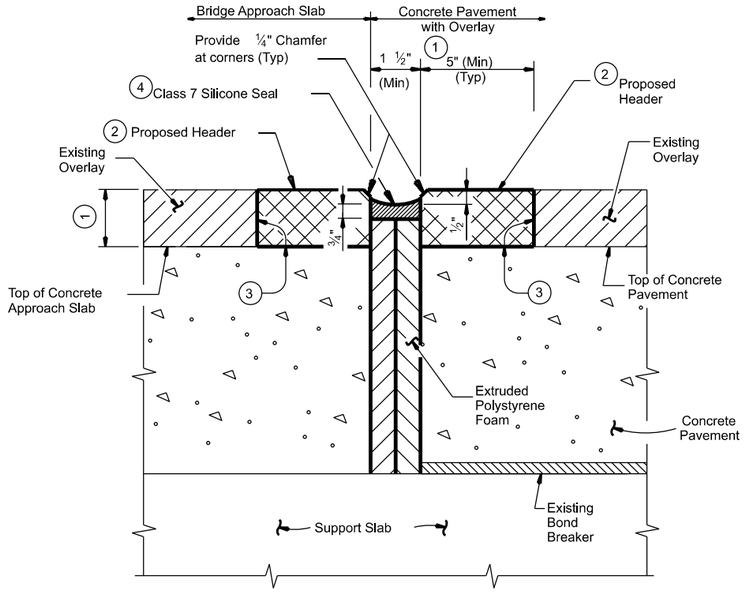


SECTION THRU RELIEF JOINT

(With Header/Polymer Nosing & New or Existing Overlay)

1. Thickness of the nosing/header shall match the thickness of the overlay. The width of the nosing/header material shall be 2X the thickness of the existing/new overlay or 5". whichever is greater.
2. Remove & replace existing ACP where existing ACP is damaged adjacent to joint.
3. Surface where nosing/header material is to be placed shall be clean and dry in accordance with the manufacturer's specifications.

NOTES:

Resize and/or reseal bridge approach slab relief joints in accordance with Item 438, "Resizing and Sealing Joints". The purpose is to prevent the reinforced concrete pavement from pushing against the approach slab and prevent future damage to the bridge abutment backwall.

If the width of the joint is less than 1 ½" anywhere along its length, restore the 1 ½" joint opening by cutting the full depth of the concrete pavement. Do not cut the approach slab or the support (sleeper) slab. Reseal the joint as shown.

If the minimum width of the joint is 1 ½" and less than 4", reseal the joint as shown.

In either case, both surfaces of the joint shall be thoroughly cleaned by sand blasting and air blasting, leaving a clean, newly exposed concrete surface. Fill the depth of the joint with extruded polystyrene to the width of the joint. Extruded Polystyrene Foam shall conform to ASTM C578 and shall have a minimum compressive strength of 25 psi. The sealant shall be "Class 7", per DMS-6310, "Joint Sealants and Fillers".

Prior to applying Class 7 Sealant, contractor shall fill all voids on top surface of extruded polystyrene with Class 4 Sealant, per DMS-6310, Joint Sealants and Fillers". Class 4 Sealant is considered subsidiary to Item 438, "Resizing and Sealing Joints".

Measurement and payment for header shall be in accordance with Item 454, "Bridge Expansion Joints". Measurement and payment for resizing, cleaning, and sealing shall be in accordance with Item 438, "Resizing and Sealing Joints". Use Type II header/polymer nosing.

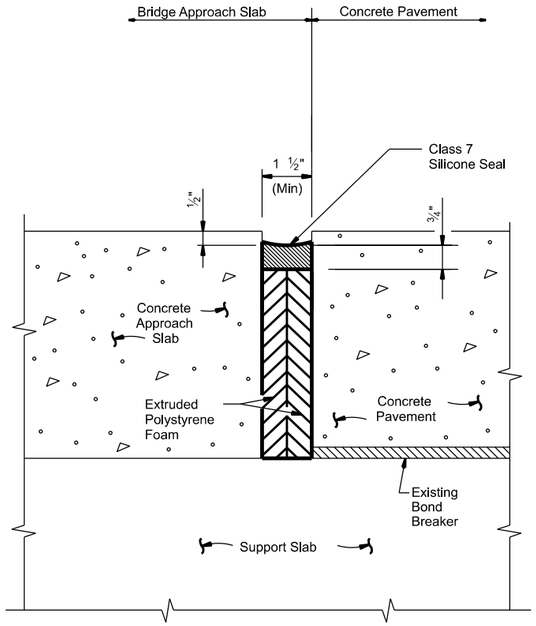
If condition in the field doesn't match with detail, please contact Engineer of Record.

Surface and material preparation shall follow the manufacturer's recommendations. A manufacturer's representative shall be present at time of initial installation to ensure contractor understands and follows manufacturer's recommendations for first few installations or as determined by Area Office.

Prepare surfaces where sealant is to be placed in accordance with manufacturer's specfications.

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

DETAIL #1



SECTION THRU RELIEF JOINT

(Without Header & No Overlay)

NOTES:

Resize and/or reseal bridge approach slab relief joints in accordance with Item 438, "Resizing and Sealing Joints". The purpose is to prevent the reinforced concrete pavement from pushing against the approach slab and prevent future damage to the bridge abutment backwall.

If the width of the joint is less than 1 ½" anywhere along its length, restore the 1 ½" joint opening by cutting the full depth of the concrete pavement. Do not cut the approach slab or the support (sleeper) slab. Reseal the joint as shown.

If the minimum width of the joint is 1 ½" and less than 4", reseal the joint as shown.

In either case, both surfaces of the joint shall be thoroughly cleaned by sand blasting and air blasting, leaving a clean, newly exposed concrete surface. Fill the depth of the joint with extruded polystyrene to the width of the joint.

Extruded Polystyrene Foam shall conform to ASTM C578 and shall have a minimum compressive strength of 25 psi.

The sealant shall be "Class 7", per DMS-6310, "Joint Sealants and Fillers".

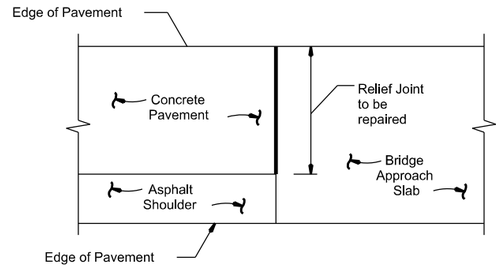
Prior to applying Class 7 Sealant, contractor shall fill all voids on top surface of extruded polystyrene with Class 4 Sealant, per DMS-6310, Joint Sealants and Fillers". Class 4 Sealant is considered subsidiary to Item 438, "Resizing and Sealing Joints".

Measurement and payment for resizing and/ or sealing shall be in accordance with Item 438, "Resizing and Sealing Joints".

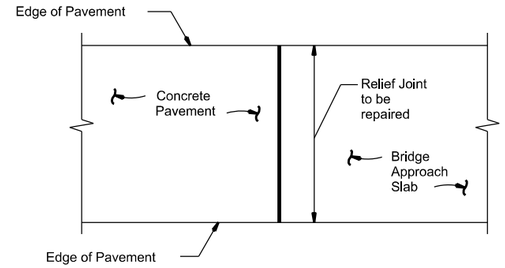
If condition in the field doesn't match with detail, please contact Engineer of Record.

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

DETAIL #2



PLAN ~ SHOWING JOINT WITH ASPHALT SHOULDER



PLAN ~ SHOWING JOINT WITHOUT ASPHALT SHOULDER

STATE OF TEXAS
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MARIBEL RANGEL, P.E.

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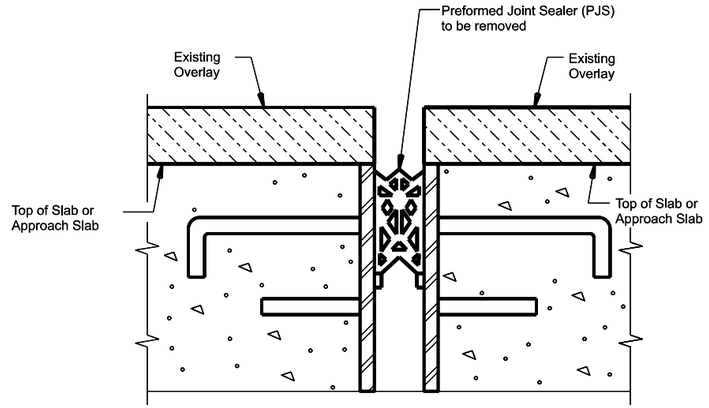
SHEET 1 OF 1

Texas Department of Transportation

Fort Worth Bridge Design

EXISTING RELIEF JOINT DETAILS

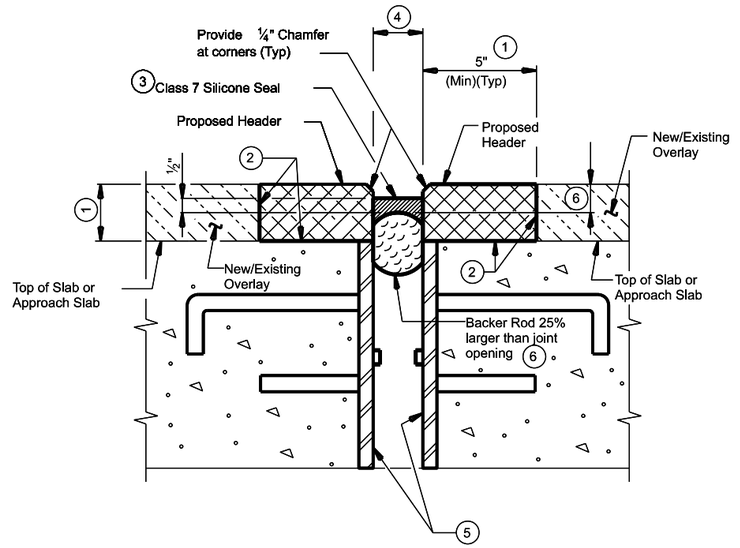
			DN: MA	CK: NB	DW:	CK:	
©TxDOT 02-02-24	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0902	90	329		VARIOUS		
Revised notes & callouts	DIST	COUNTY			SHEET NO.		
	FTW	TARRANT			46		



EXISTING ARMOR JOINT WITH PJS

(With Overlay)
(BEFORE)

DETAIL #1



NEW ARMOR JOINT WITH HEADER/POLYMER NOSING

(With Existing Overlay)
(AFTER)

DETAIL #2

Notes:

Clean and seal joint in accordance with Item 438, "Cleaning and Sealing Joints".

Measurement and payment for header shall be in accordance with Item 454, "Bridge Expansion Joints". Measurement and payment for cleaning and sealing shall be in accordance with Item 438, "Cleaning and Sealing Joints". Notify Engineer of Record if existing condition does not match detail during repair. The sealant shall be "Class 7", per DMS-6310, "Joint Sealants and Fillers". Use a Type II header/polymer nosing. Surface and material preparation shall follow the manufacturer's recommendations. A manufacturer's representative shall be present at time of initial installation to ensure contractor understands and follows manufacturer's recommendations for first few installations or as determined by Area Office.

(1) The thickness of the nosing/header shall match the thickness of the existing/new overlay. The width of the nosing/header material shall be 2X the thickness of the existing/new overlay or 5", whichever is greater. Provide nosing/header material in accordance with DMS-6140 "Polymer Concrete for Bridge Joint Systems".

(2) Surface where nosing/header material is to be placed shall be clean and dry in accordance with the manufacturer's specifications.

(3) Extend sealant up into rail or curb 3" on low side or sides of deck. Prepare surfaces where sealant is to be placed in accordance with manufacturer's recommendations.

(4) Joint opening shall match existing.

(5) Clean and prepare existing armor joint faces as required by material supplier's recommendations and Item 438.

(6) Set top of backer rod 1" below top of proposed nosing/header. 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.

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SHEET 1 OF 2

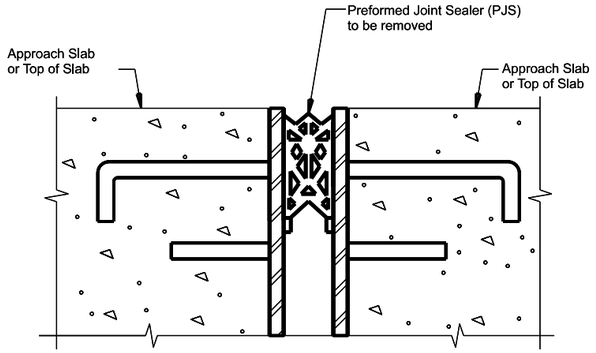
Texas Department of Transportation

Fort Worth Bridge Design

EXISTING PJS ARMOR JOINT DETAILS

	DN: MA	CK: NB	DW:	CK:
©TxDOT 02-02-24	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	VARIOUS
Add New Notes	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		47

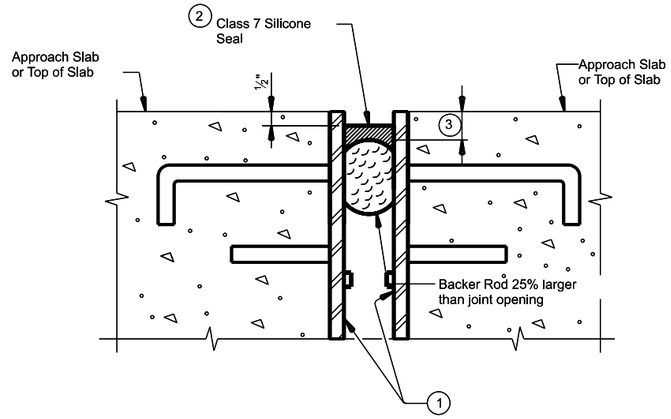
T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\Roaway 60%\47-48. PJS-Armor_Joints.dgn



EXISTING ARMOR JOINT WITH PJS

(Without Overlay)
(BEFORE)

DETAIL #3



NEW ARMOR JOINT
WITHOUT HEADER

(Without Overlay)
(AFTER)

DETAIL #4

Notes:

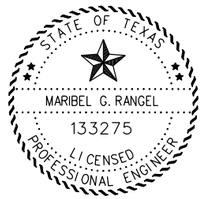
Clean and seal joint in accordance with Item 438, "Cleaning and Sealing Joints".

Measurement and payment for cleaning and sealing joints shall be in accordance with Item 438, be in "Cleaning and Sealing Joints". Notify Engineer of Record if existing condition does not match detail during repair. The sealant shall be "Class 7", per DMS-6310, "Joint Sealants and Fillers".

(1) Clean and prepare existing armor joint faces as required by material supplier's recommendations and Item 438.

(2) Extend sealant up into rail or curb 3" on low side or sides of deck. Prepare surfaces where sealant is to be placed in accordance with manufacturer's recommendations.

(3) Set top of backer rod 1" below top of proposed header. 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.



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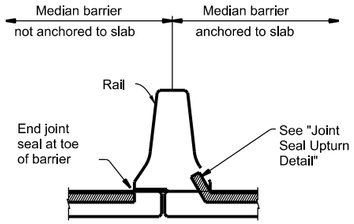
Fort Worth Bridge Design

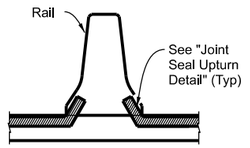
EXISTING PJS ARMOR JOINT DETAILS

DN: MA	CK: NB	DW:	CK:

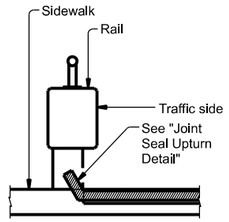
©TxDOT 02-02-24	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	VARIOUS
New Detail	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		48



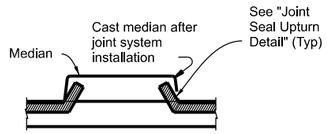
WITH OPEN DECK JOINT
BELOW MEDIAN BARRIER



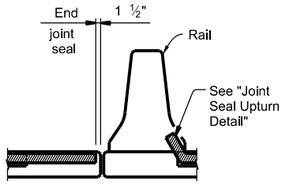
AT CONCRETE TRAFFIC BARRIER



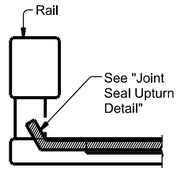
AT SIDEWALK
BEHIND BRIDGE RAIL



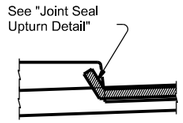
AT RAISED MEDIAN



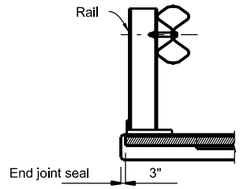
WITH OPEN DECK JOINT
ADJACENT TO MEDIAN BARRIER



AT CONCRETE BRIDGE RAIL

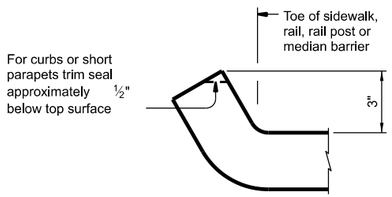


AT SIDEWALK



AT STEEL POST BRIDGE RAIL

JOINT SEALANT TERMINATION DETAILS



JOINT SEAL UPTURN DETAIL

GENERAL NOTES

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

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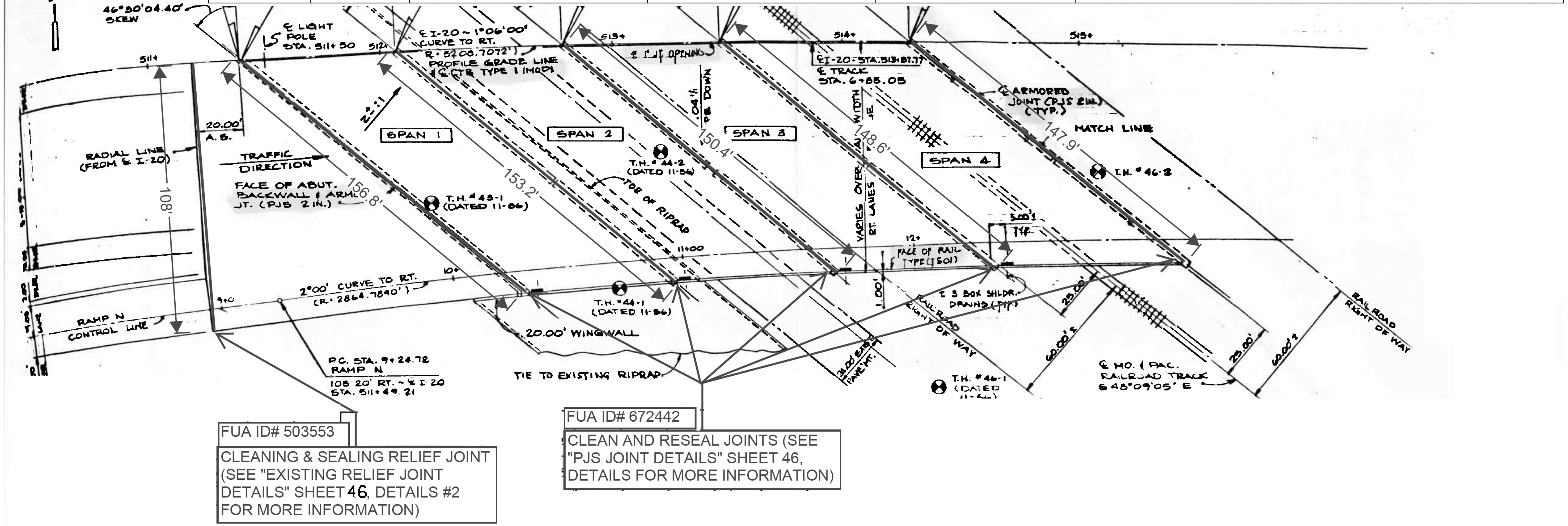
JOINT SEALANT TERMINATION DETAILS

FILE:	DN: MA	CK: NB	DW:	CK:
©TxDOT 06-08-23	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	329	VARIOUS
Revised notes & callouts	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		49

T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\Roaway 60%\49.Joint-Sealant-Termination.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	503553	02-220-0-0008-13-354	IH 20 EB	Union Pacific RR	Clean and Seal Joints
2	672442	02-220-0-0008-13-354	IH 20 EB	Union Pacific RR	Clean and Seal Joints



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ESTIMATED QUANTITIES NBI # 02-220-0-0008-13-354			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	1218
438-7009	RESIZING AND SEALING JOINTS	LF	202

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IH 20 EB
LAYOUT

NBI# 02-220-0-0008-13-354

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		50

DATE: 9/11/2024 1:07:35 PM
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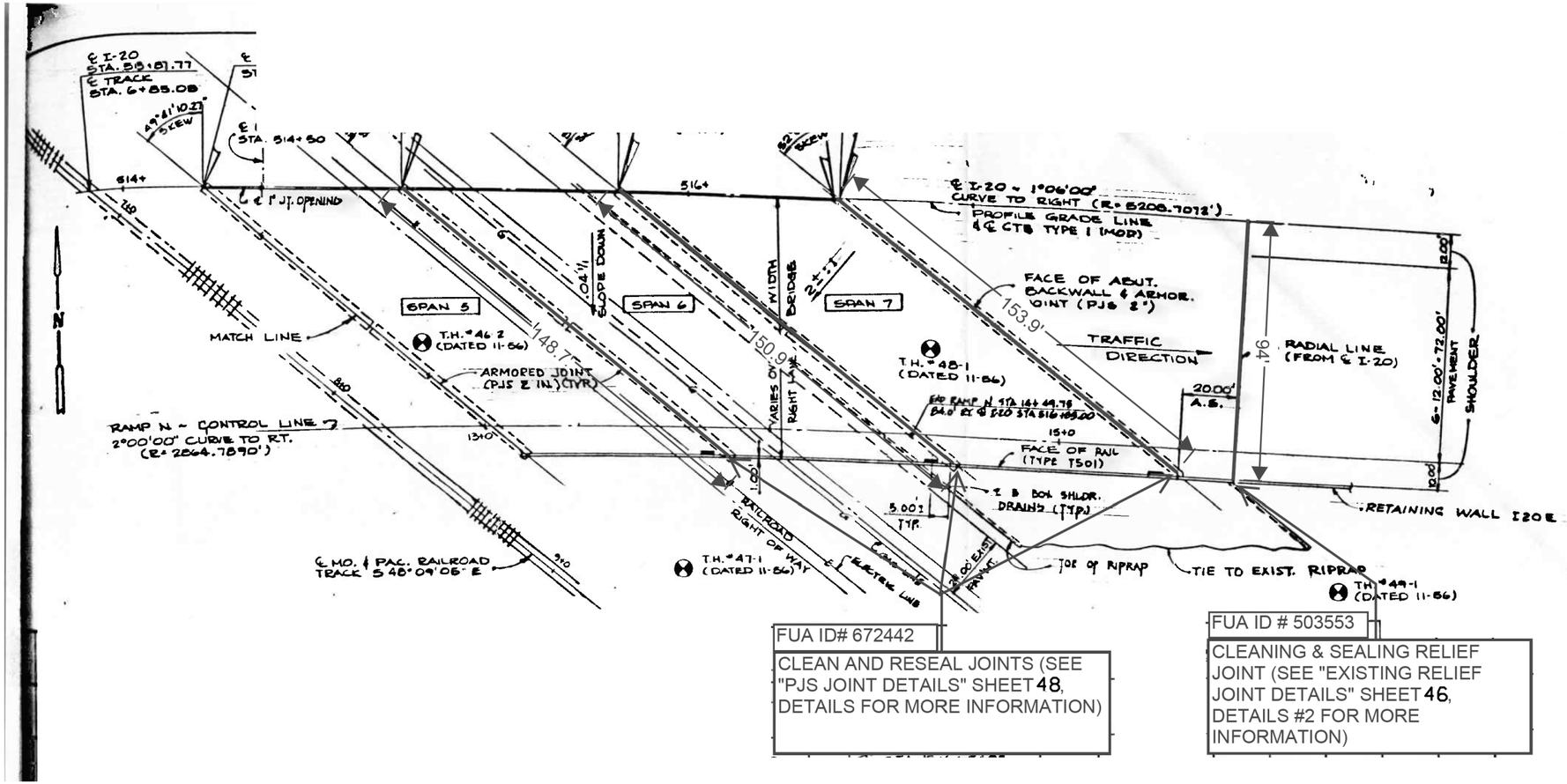

FUA ID# 672442

CLEAN AND RESEAL JOINTS (SEE "PJS JOINT DETAILS" SHEET 48, DETAILS FOR MORE INFORMATION)

FUA ID # 503553

CLEANING & SEALING RELIEF JOINT (SEE "EXISTING RELIEF JOINT DETAILS" SHEET 46, DETAILS #2 FOR MORE INFORMATION)

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IH 20 EB
LAYOUT

NBI# 02-220-0-0008-13-354

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		51

DATE: 9/11/2024 1:07:45 PM
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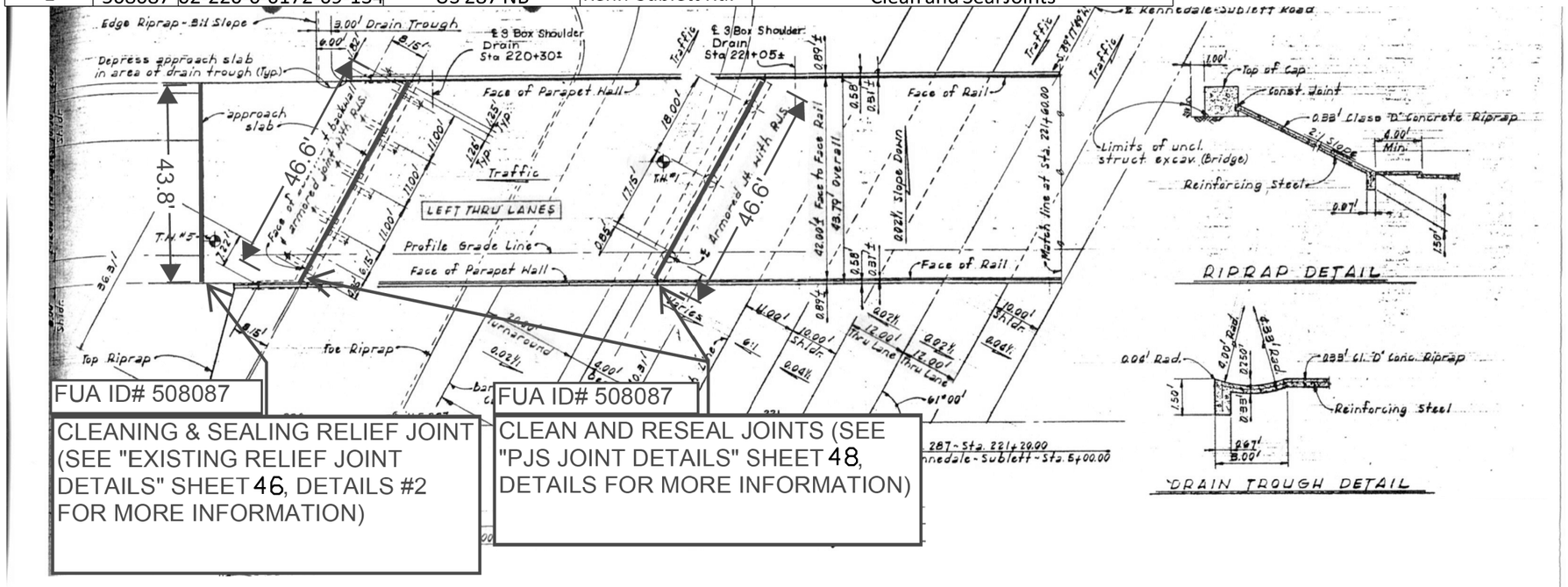
1	508087	02-220-0-0172-09-134	US 287 NB	Kenn-Sublett Rd.	Clean and Seal Joints



FUA ID# 508087

CLEANING & SEALING RELIEF JOINT (SEE "EXISTING RELIEF JOINT DETAILS" SHEET 46, DETAILS #2 FOR MORE INFORMATION)

FUA ID# 508087

CLEAN AND RESEAL JOINTS (SEE "PJS JOINT DETAILS" SHEET 48, DETAILS FOR MORE INFORMATION)

ESTIMATED QUANTITIES NBI # 02-220-0-0172-09-134			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	190
438-7009	RESIZING AND SEALING JOINTS	LF	88

DATE: 9/11/2024 1:07:54 PM
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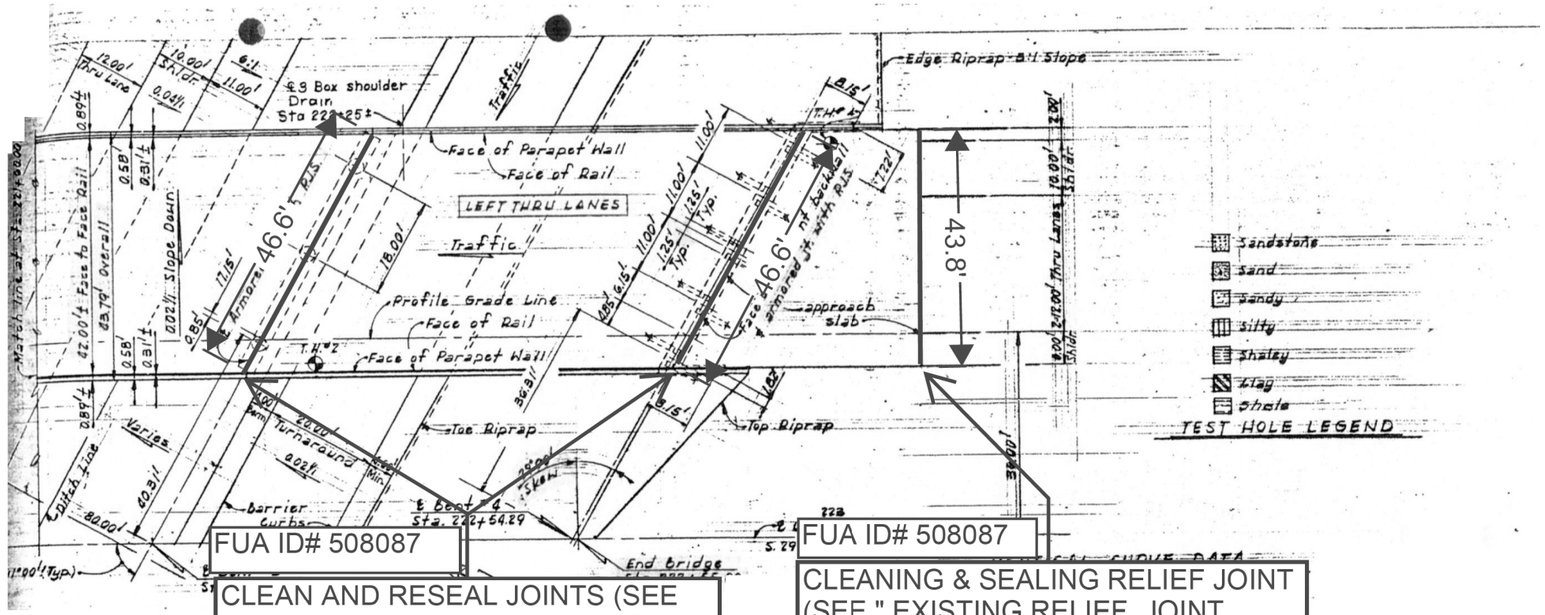
US 287 NB
LAYOUT

NBI# 02-220-0-0172-09-134

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		52



FUA ID# 508087

CLEAN AND RESEAL JOINTS (SEE "PJS JOINT DETAILS" SHEET 48, DETAILS FOR MORE INFORMATION)

FUA ID# 508087

CLEANING & SEALING RELIEF JOINT (SEE " EXISTING RELIEF JOINT DETAILS" SHEET 46, DETAILS #2 FOR MORE INFORMATION)

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US 287 NB
LAYOUT

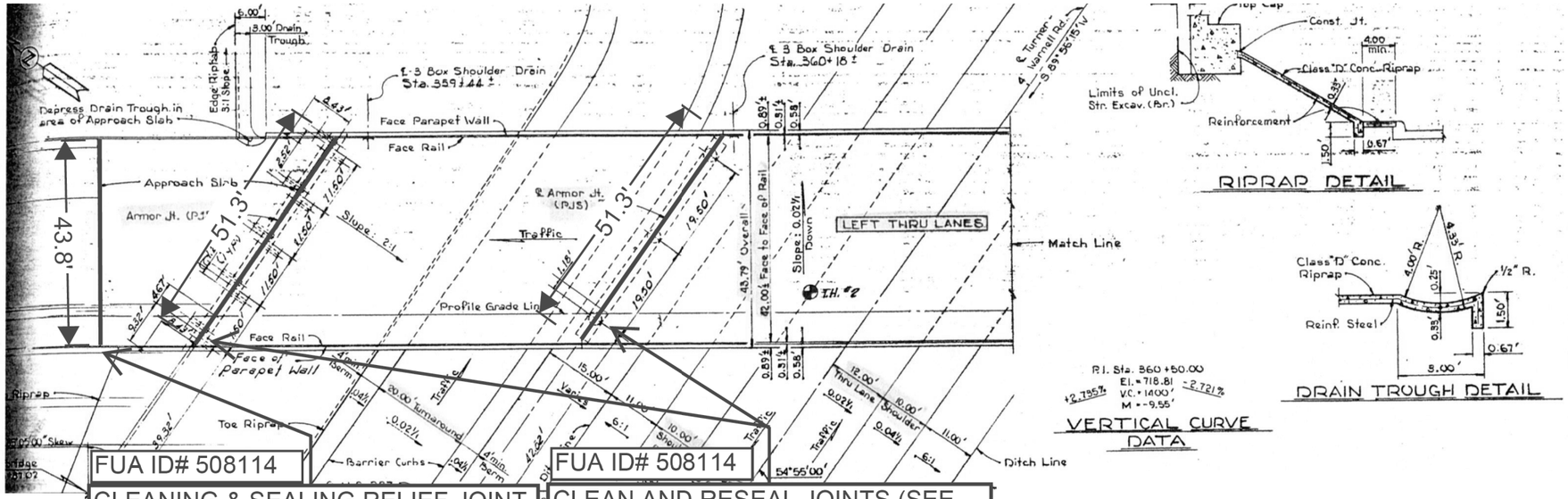
NBI# 02-220-0-0172-09-134

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS

DIST	COUNTY	SHEET NO.
FTW	TARRANT	53

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	508114	02-220-0-0172-09-140	US 287 NB	TURNER-WARNELL R	Clean and Seal Joints
2	508114	02-220-0-0172-09-140	US 287 NB	TURNER-WARNELL R	Clean and Seal Joints



FUA ID# 508114

CLEANING & SEALING RELIEF JOINT (SEE "EXISTING RELIEF JOINT DETAILS" SHEET 46, DETAILS #2 FOR MORE INFORMATION)

FUA ID# 508114

CLEAN AND RESEAL JOINTS (SEE "PJS JOINT DETAILS" SHEET 48, DETAILS FOR MORE INFORMATION)

ESTIMATED QUANTITIES NBI # 02-220-0-0172-09-140			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	209
438-7009	RESIZING AND SEALING JOINTS	LF	88

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US 287 NB
LAYOUT

NBI# 02-220-0-0172-09-140

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		54

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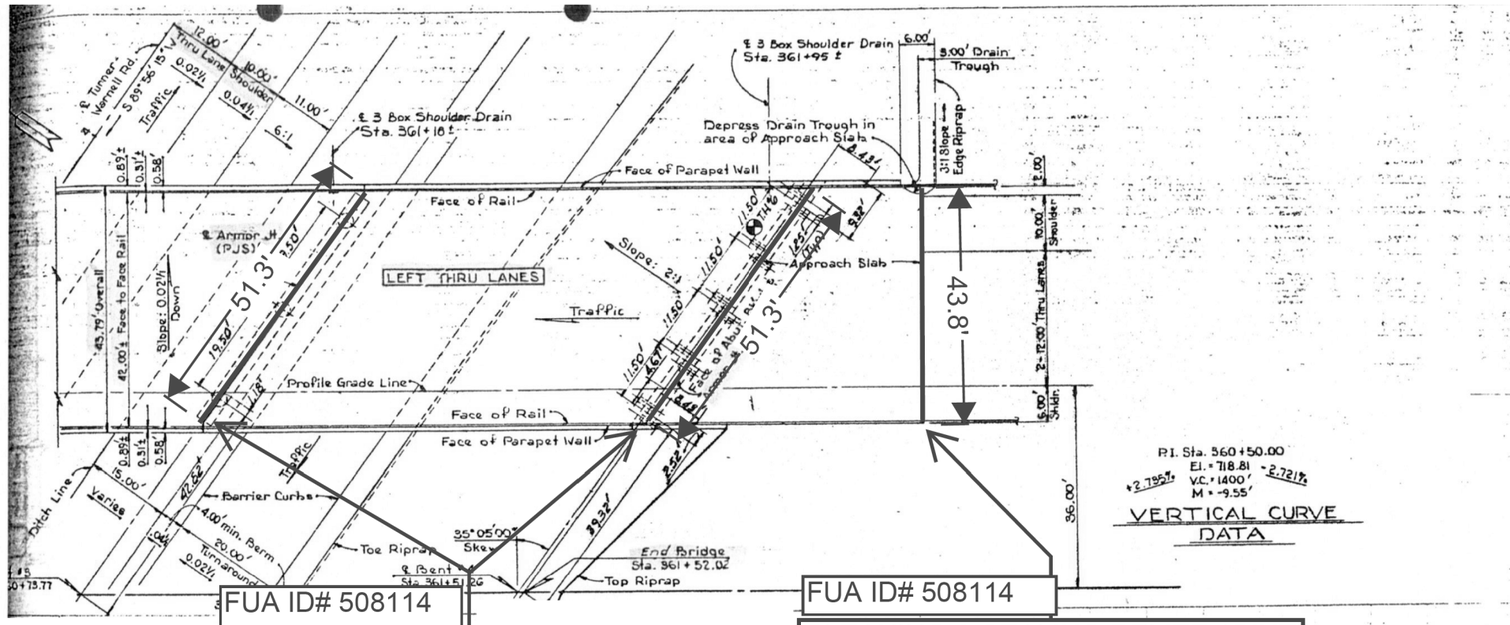

Pile Tip Elevations - Rt Lane		
Bent No.	Pile No	Tip Elev
1	A-f	658.76
1	A-b	658.76
1	B-f	658.52
1	B-b	658.52
1	C-f	658.28
1	C-b	658.28
1	D-f	658.04
1	D-b	658.04
1	E-f	657.80
1	E-b	657.80
1	Rt Wing	658.76
1	Lt Wing	657.88

Pile Tip Elevations - Rt Lane		
Bent No.	Pile No	Tip Elev
4	A-f	656.33
4	A-b	656.33
4	B-f	656.16
4	B-b	656.16
4	C-f	656.98
4	C-b	656.98
4	D-f	657.80
4	D-b	656.30
4	E-f	658.13
4	E-b	656.63
4	Rt Wing	657.60
4	Lt Wing	657.37

FUA ID# 508114

CLEAN AND RESEAL JOINTS (SEE "PJS JOINT DETAILS" SHEET 48, DETAILS FOR MORE INFORMATION)

FUA ID# 508114

CLEANING & SEALING RELIEF JOINT (SEE "EXISTING RELIEF JOINT DETAILS" SHEET 46, DETAILS #2 FOR MORE INFORMATION)

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US 287 NB
LAYOUT

NBI# 02-220-0-0172-09-140

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		55

DATE: 9/11/2024 1:08:24 PM
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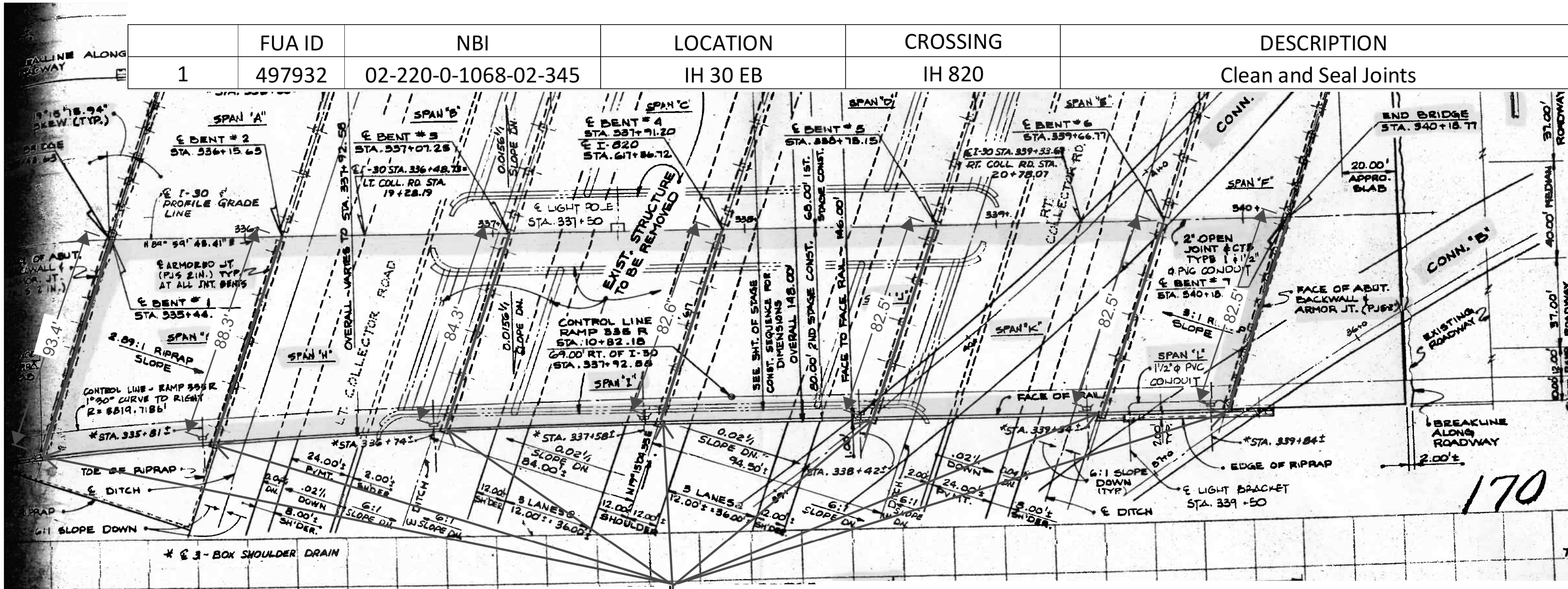
1	497932	02-220-0-1068-02-345	IH 30 EB	IH 820	Clean and Seal Joints



FUA ID# 497932

CLEAN AND RESEAL JOINTS (SEE "PJS JOINT DETAILS" SHEET 47, DETAILS FOR MORE INFORMATION)

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ESTIMATED QUANTITIES NBI # 02-220-1068-02-345			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	603

Texas Department of Transportation

IH 30 EB
LAYOUT

NBI# 02-220-0-1068-02-345

© TxDOT SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		56

DATE: 9/11/2024 1:08:35 PM
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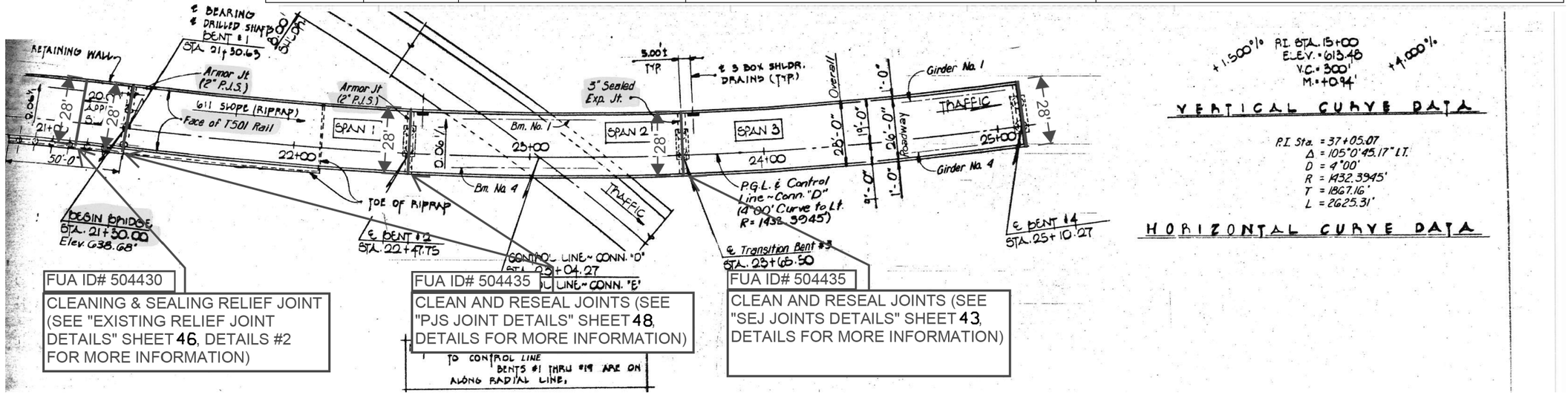
	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	504430	02-220-0-1068-02-376	DIRECT CONNECTOR, IH-820 SB to IH-30 EB		Clean and Seal Joints
2	504435	02-220-0-1068-02-376	DIRECT CONNECTOR, IH-820 SB to IH-30 EB		Clean and Seal Joints



FUA ID# 504430

CLEANING & SEALING RELIEF JOINT (SEE "EXISTING RELIEF JOINT DETAILS" SHEET 46, DETAILS #2 FOR MORE INFORMATION)

FUA ID# 504435

CLEAN AND RESEAL JOINTS (SEE "PJS JOINT DETAILS" SHEET 48, DETAILS FOR MORE INFORMATION)

TO CONTROL LINE BENTS #1 THRU #19 ARE ON ALONG RADIAL LINE.

FUA ID# 504435

CLEAN AND RESEAL JOINTS (SEE "SEJ JOINTS DETAILS" SHEET 43, DETAILS FOR MORE INFORMATION)

ESTIMATED QUANTITIES NBI # 02-220-2266-02-033			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	638
438-7009	RESIZING AND SEALING JOINTS	LF	56
438-7013	CLEANING & SEALING EXISTING JOINT (SEJ)	LF	112

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DATE

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DIRECT CONNECTOR D LAYOUT

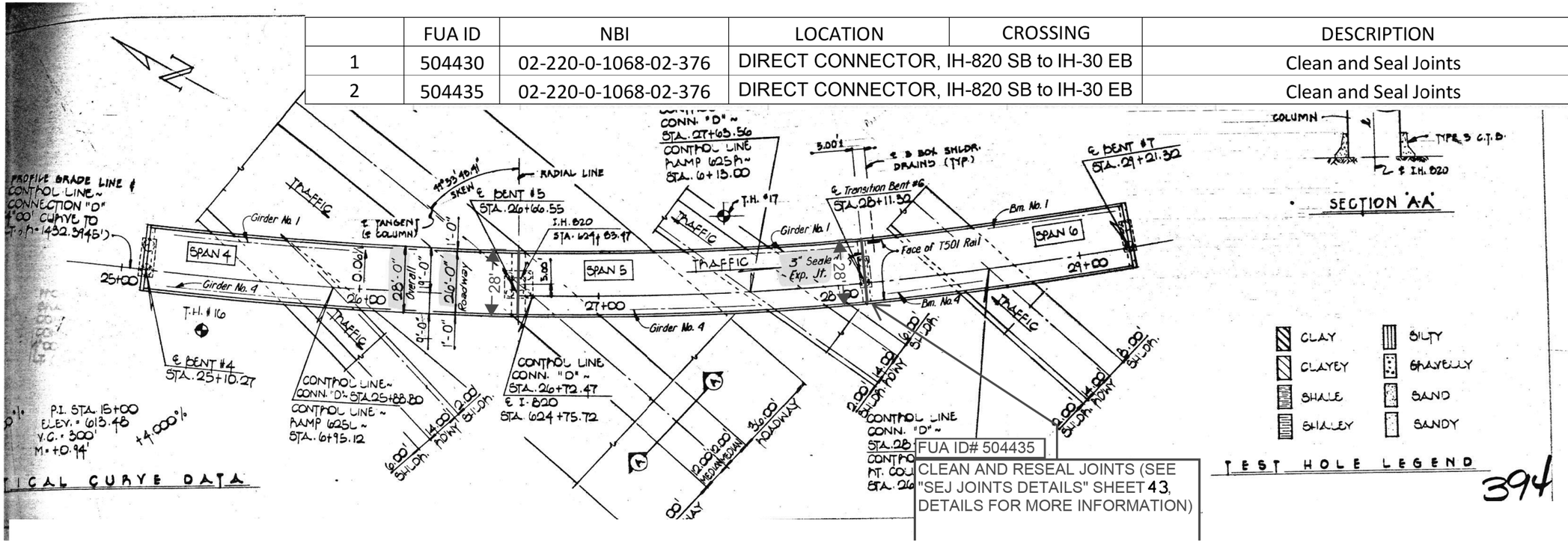
NBI# 02-220-0-1068-02-376

SHEET 1 OF 7

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		57

DATE: 9/11/2024 1:08:48 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	504430	02-220-0-1068-02-376	DIRECT CONNECTOR, IH-820 SB to IH-30 EB		Clean and Seal Joints
2	504435	02-220-0-1068-02-376	DIRECT CONNECTOR, IH-820 SB to IH-30 EB		Clean and Seal Joints



FUA ID# 504435
CLEAN AND RESEAL JOINTS (SEE "SEJ JOINTS DETAILS" SHEET 43, DETAILS FOR MORE INFORMATION)

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DIRECT CONNECTOR D LAYOUT

NBI= 02-220-0-1068-02-376

SHEET 2 OF 7

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		58

DATE: 9/11/2024 1:08:59 PM
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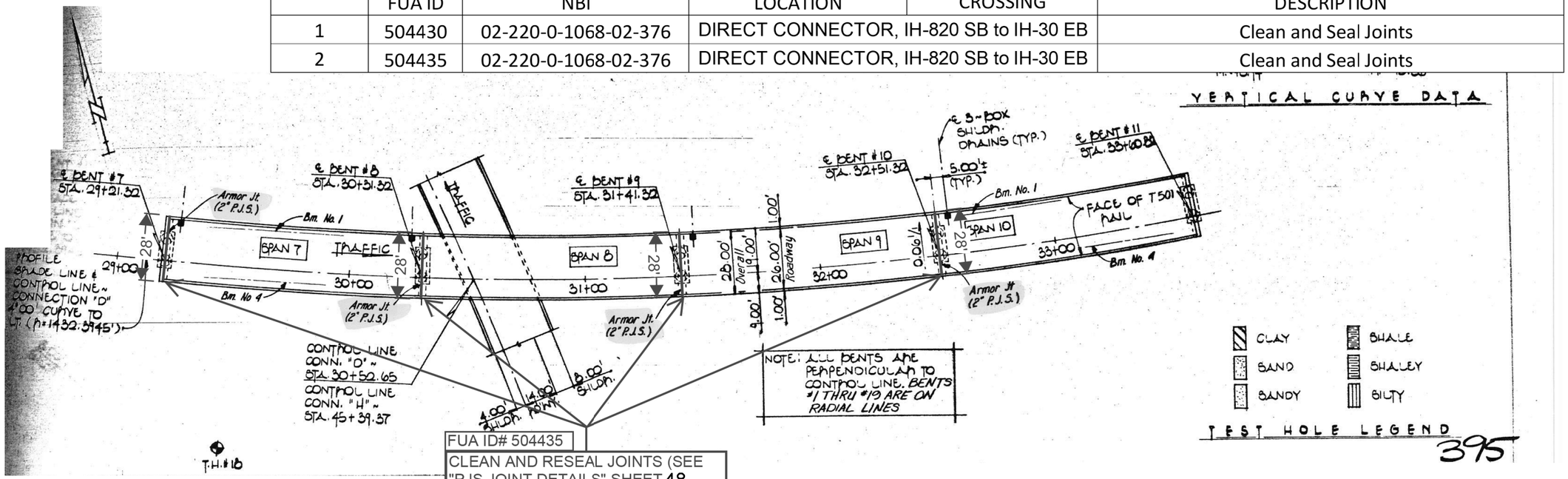
	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	504430	02-220-0-1068-02-376	DIRECT CONNECTOR, IH-820 SB to IH-30 EB		Clean and Seal Joints
2	504435	02-220-0-1068-02-376	DIRECT CONNECTOR, IH-820 SB to IH-30 EB		Clean and Seal Joints



FUA ID# 504435

CLEAN AND RESEAL JOINTS (SEE "PJS JOINT DETAILS" SHEET 48, DETAILS FOR MORE INFORMATION)

395

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SHEET 3 OF 7

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		59

DATE: 9/11/2024 1:09:09 PM
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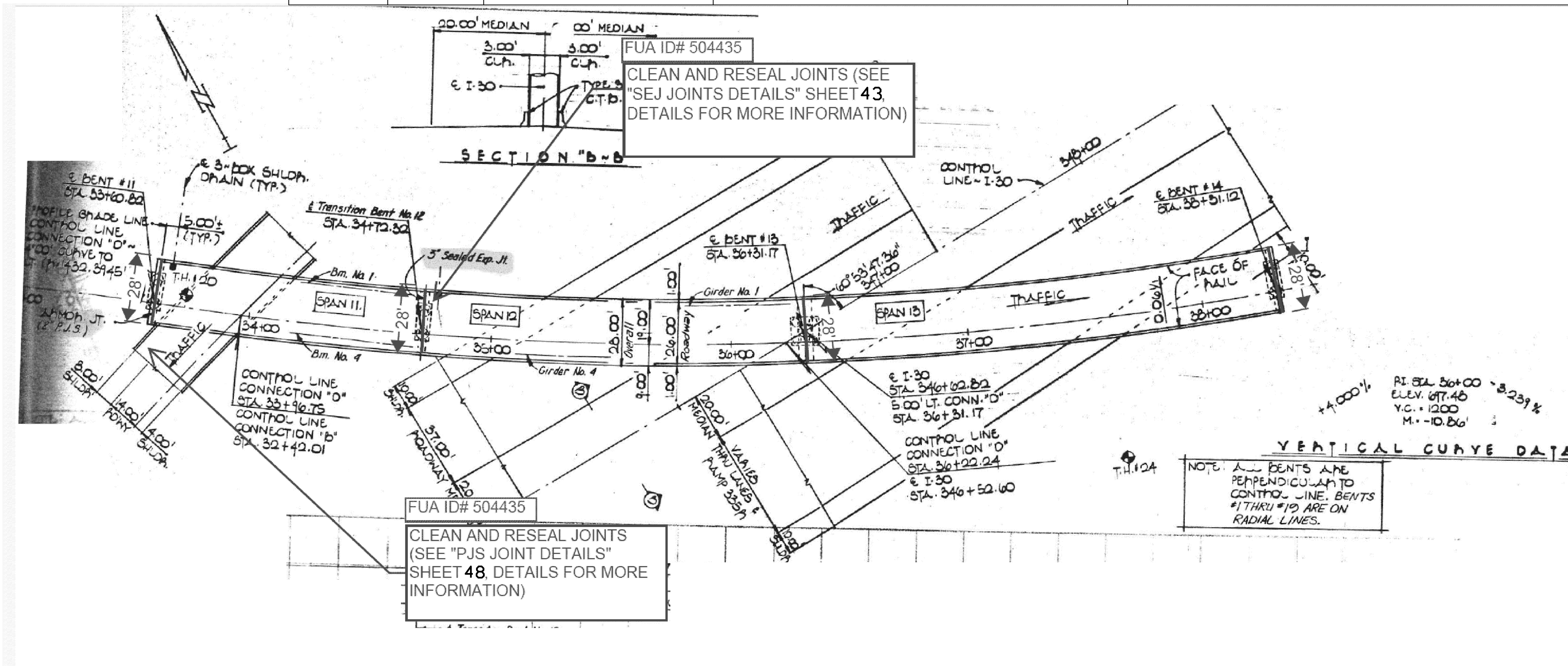
	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	504430	02-220-0-1068-02-376	DIRECT CONNECTOR, IH-820 SB to IH-30 EB		Clean and Seal Joints
2	504435	02-220-0-1068-02-376	DIRECT CONNECTOR, IH-820 SB to IH-30 EB		Clean and Seal Joints



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DIRECT CONNECTOR D
LAYOUT

NBI# 02-220-0-1068-02-376

© TxDOT SHEET 4 OF 7

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST		COUNTY	SHEET NO.
FTW		TARRANT	60

DATE: 9/11/2024 1:09:20 PM
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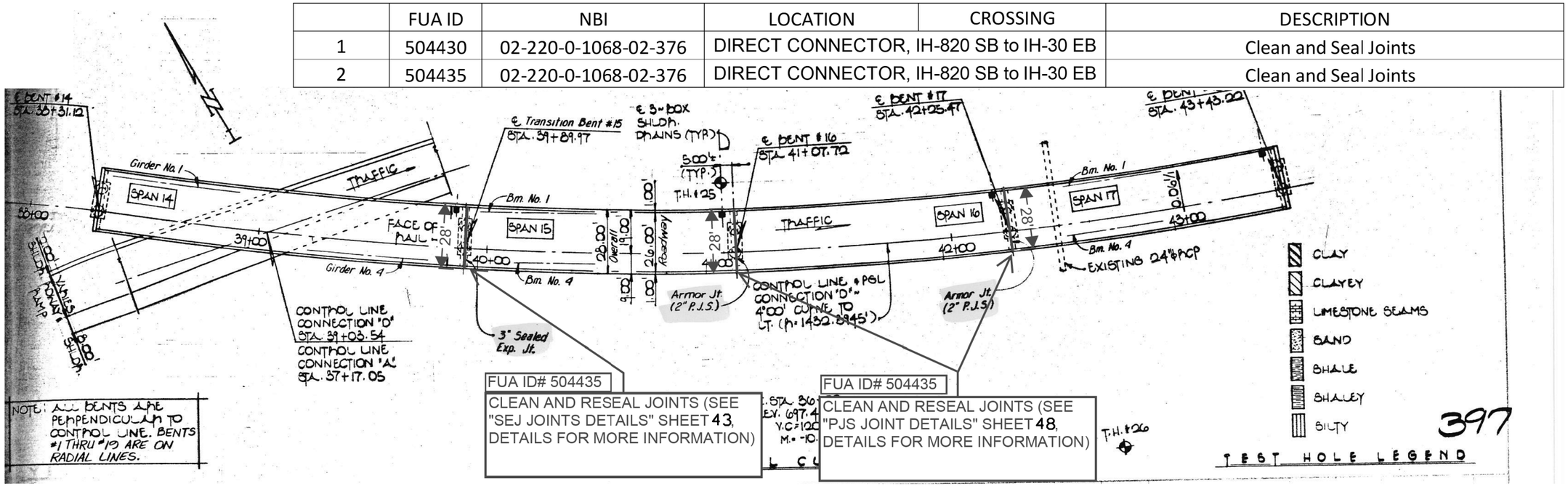
	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	504430	02-220-0-1068-02-376	DIRECT CONNECTOR, IH-820 SB to IH-30 EB		Clean and Seal Joints
2	504435	02-220-0-1068-02-376	DIRECT CONNECTOR, IH-820 SB to IH-30 EB		Clean and Seal Joints



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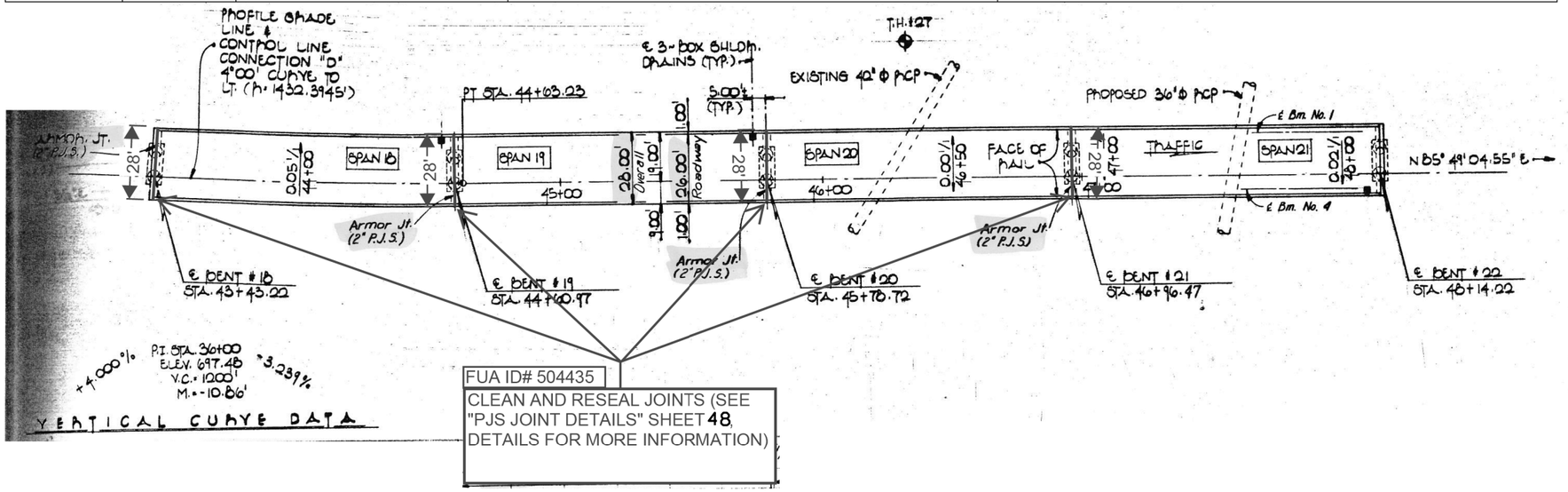
CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		61

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	504430	02-220-0-1068-02-376	DIRECT CONNECTOR, IH-820 SB to IH-30 EB		Clean and Seal Joints
2	504435	02-220-0-1068-02-376	DIRECT CONNECTOR, IH-820 SB to IH-30 EB		Clean and Seal Joints



FUA ID# 504435

CLEAN AND RESEAL JOINTS (SEE "PJS JOINT DETAILS" SHEET 48, DETAILS FOR MORE INFORMATION)

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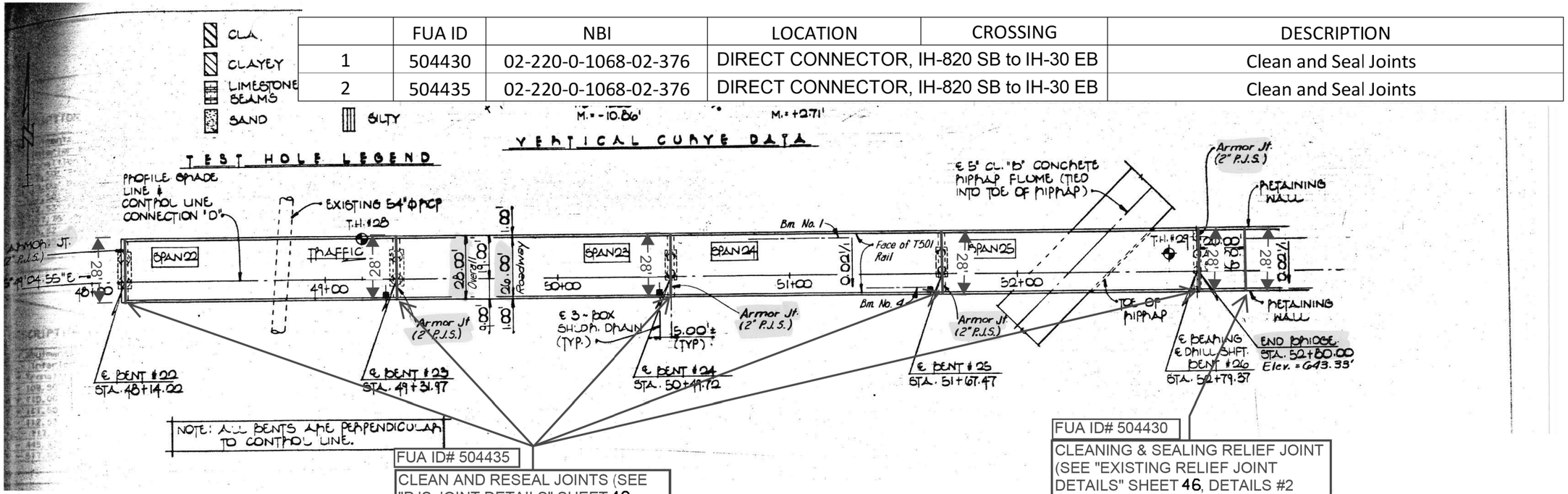
SHEET 6 OF 7

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		62

DATE: 9/11/2024 1:09:37 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	504430	02-220-0-1068-02-376	DIRECT CONNECTOR, IH-820 SB to IH-30 EB		Clean and Seal Joints
2	504435	02-220-0-1068-02-376	DIRECT CONNECTOR, IH-820 SB to IH-30 EB		Clean and Seal Joints



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DIRECT CONNECTOR D LAYOUT

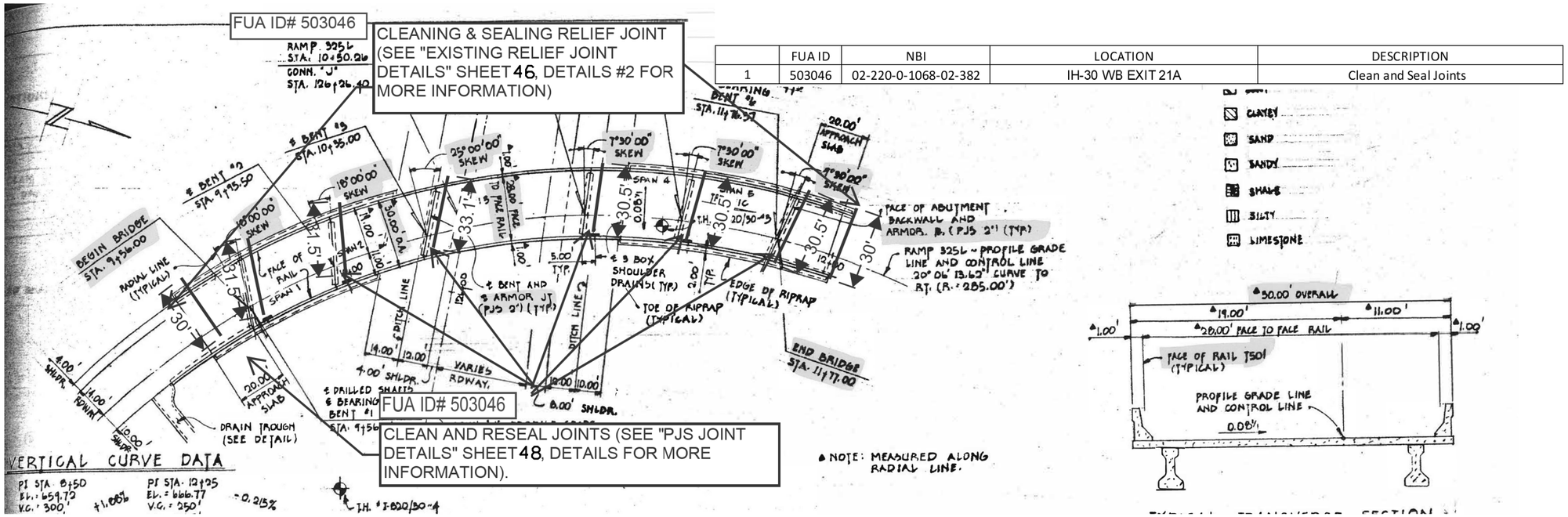
NBI# 02-220-0-1068-02-376

SHEET 7 OF 7

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		63

DATE: 9/11/2024 1:09:49 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	DESCRIPTION
1	503046	02-220-0-1068-02-382	IH-30 WB EXIT 21A	Clean and Seal Joints



ESTIMATED QUANTITIES NBI # 02-220-1068-09-382			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	194
438-7009	RESIZING AND SEALING JOINTS	LF	60

DATE: 9/11/2024 1:10:01 PM
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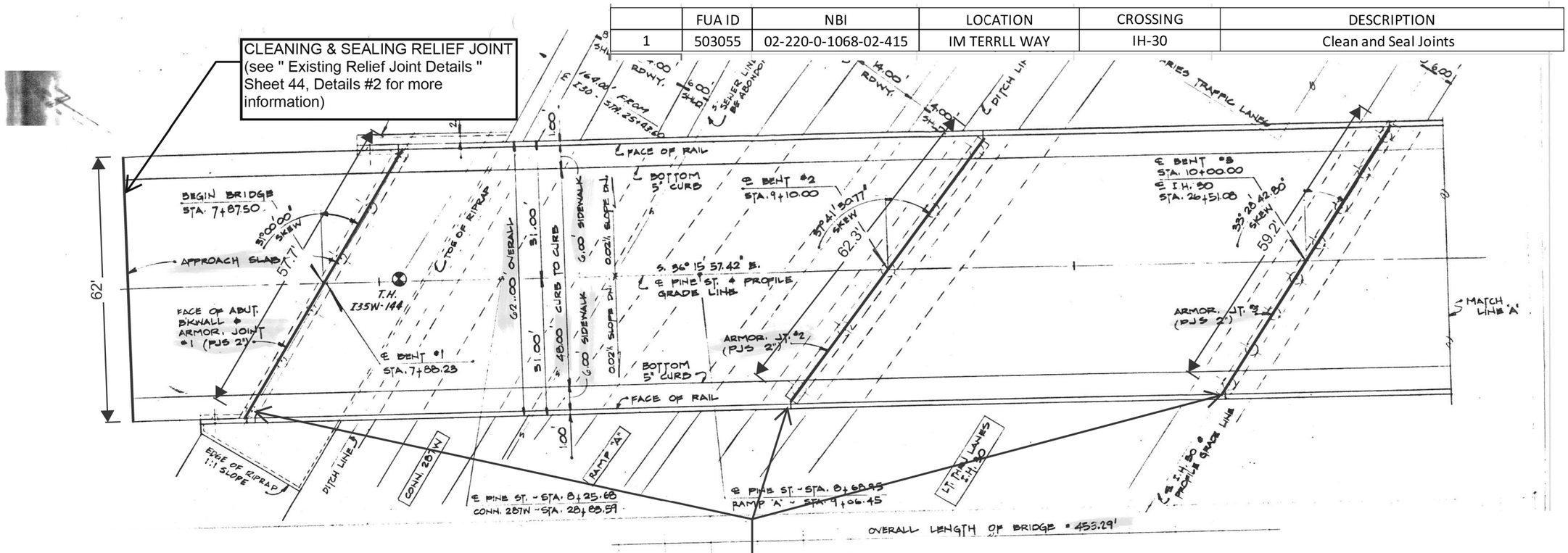
IH 30 WB EXIT 21A LAYOUT

NBI# 02-220-0-1068-02-382

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		64

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	503055	02-220-0-1068-02-415	IM TERRLL WAY	IH-30	Clean and Seal Joints



ESTIMATED QUANTITIES NBI # 02-220-0-1068-09-415			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	242
438-7009	RESIZING AND SEALING JOINTS	LF	136

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IM TERRLL WAY LAYOUT

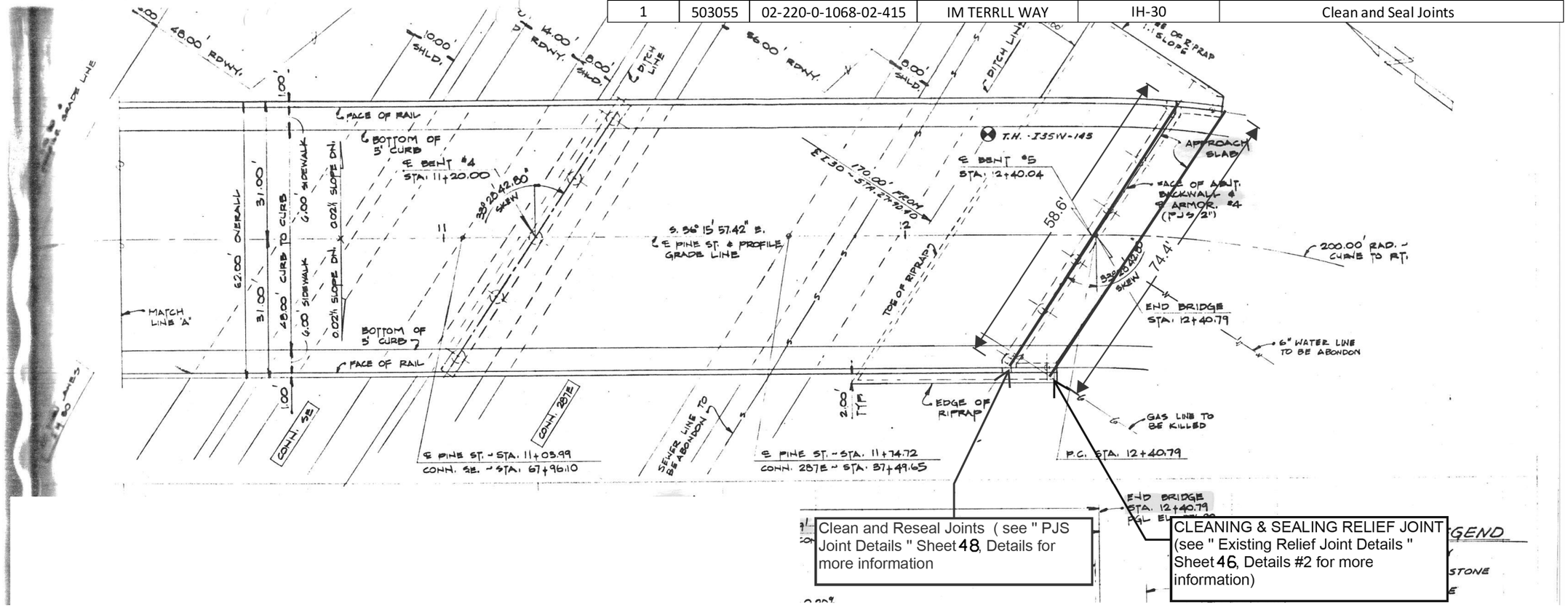
NBI# 02-220-0-1068-02-415

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		65

DATE: 9/11/2024 1:10:12 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	503055	02-220-0-1068-02-415	IM TERRLL WAY	IH-30	Clean and Seal Joints



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IM TERRLL WAY LAYOUT

NBI# 02-220-0-1068-02-415

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		66

DATE: 9/11/2024 1:10:22 PM
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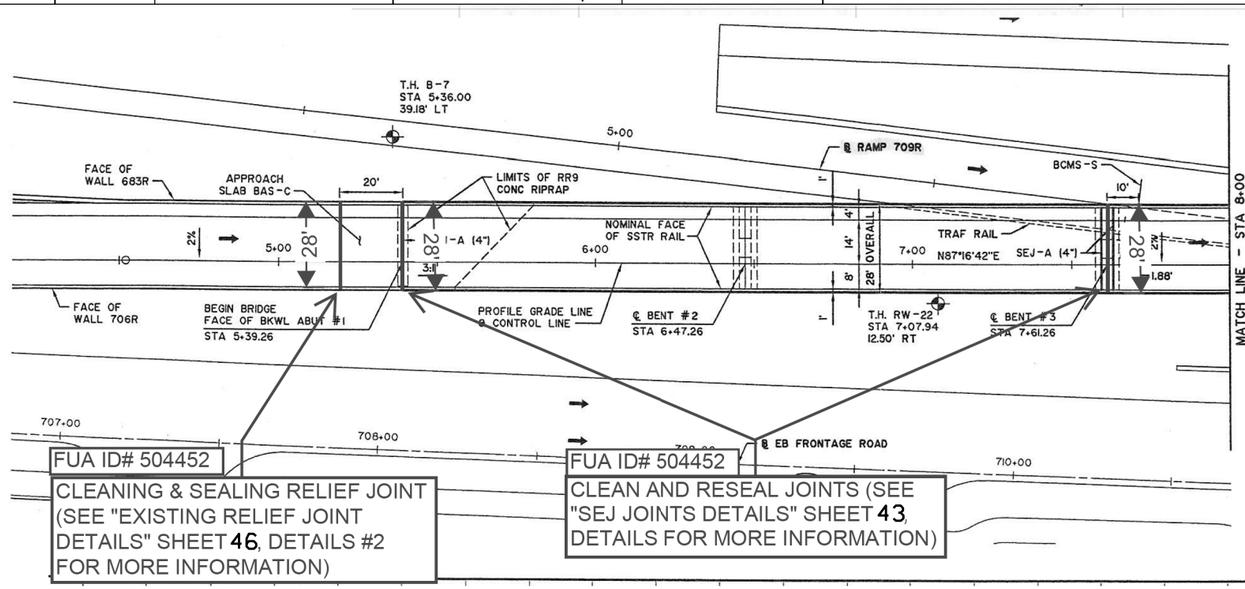
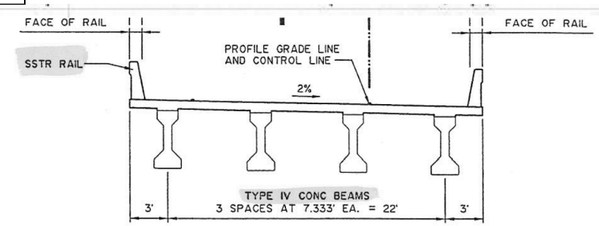
1	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
	504452	02-220-0-1068-02-491	IH-30 EB On Ramp	IH-30 EB	Clean and Seal Joints





TYPICAL SECTION

GENERAL NOTES:

DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS - 3rd EDITION USING HL93 LOADING.

DESIGN LOADS INCLUDE FUTURE 2" OVERLAY.

CONTACT BILLY MANNING, TxDOT, 817-370-6500 PRIOR TO TRENCHING OR DRILLING.

ALL BENTS ARE PERPENDICULAR TO THE CONTROL LINE OF RAMP 74IR.

INSTALL CONSTRUCTION JOINT OR CONTROL JOINT PER IBMS STANDARD AT EACH FACE OF STEM OF EACH BENT WHERE SLAB IS CONTINUOUS.

INSTALL DOWEL PINS AS SHOWN IN ELEVATION VIEW FOR THE OUTSIDE BEAMS ONLY.

REFER TO TxDOT STANDARD CRR FOR CONC RIPRAP DETAILS. CONNECTION TO CAP IS PER CAP OPTION "A".

ESTIMATED QUANTITIES NBI # 02-220-0-1068-09-491			
	Description		Total
438-7009	RESIZING AND SEALING JOINTS	LF	58
438-7013	CLEANING & SEALING EXISTING JOINT (SEJ)	LF	168

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IH 30 EB ON RAMP LAYOUT

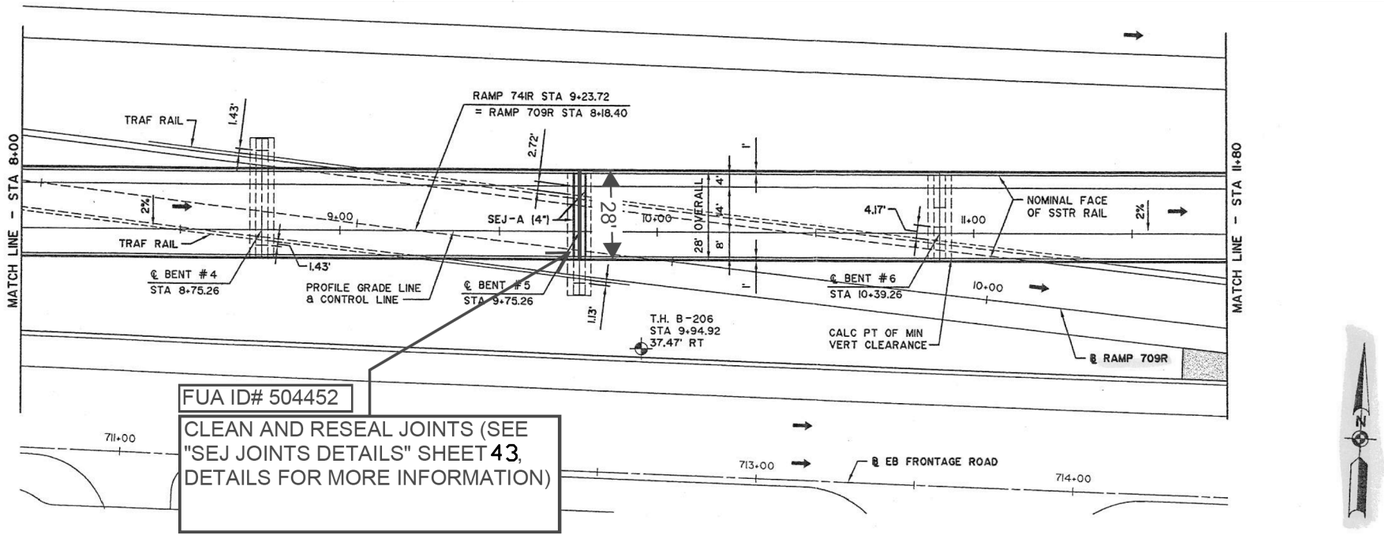
NBI# 02-220-0-1068-02-491

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		67

DATE: 9/11/2024 1:10:31 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

1	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
	504452	02-220-0-1068-02-491	IH-30 EB On Ramp	IH-30 EB	Clean and Seal Joints



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9/11/2024
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IH 30 EB ON RAMP LAYOUT

NBI# 02-220-0-1068-02-491

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		68

DATE: 9/11/2024 1:10:40 PM
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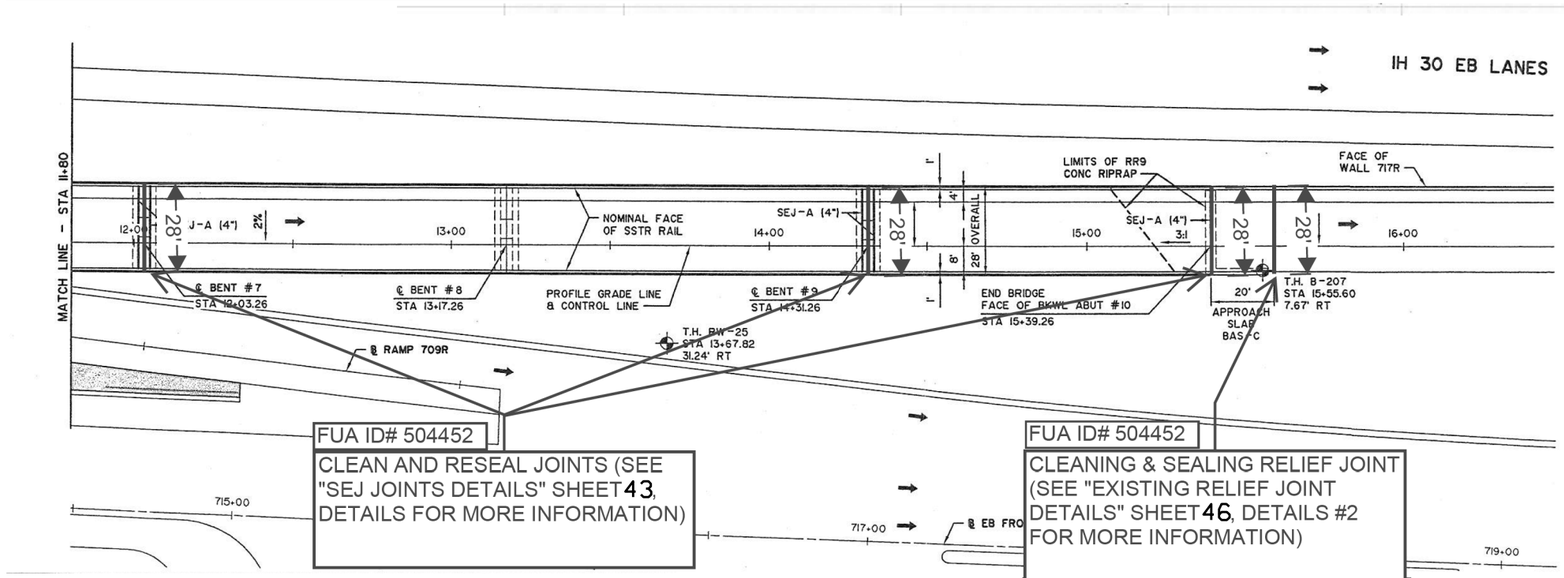
1	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
	504452	02-220-0-1068-02-491	IH-30 EB On Ramp	IH-30 EB	Clean and Seal Joints



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IH 30 EB ON RAMP LAYOUT

NBI# 02-220-0-1068-02-491

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		69

DATE: 9/11/2024 1:10:49 PM
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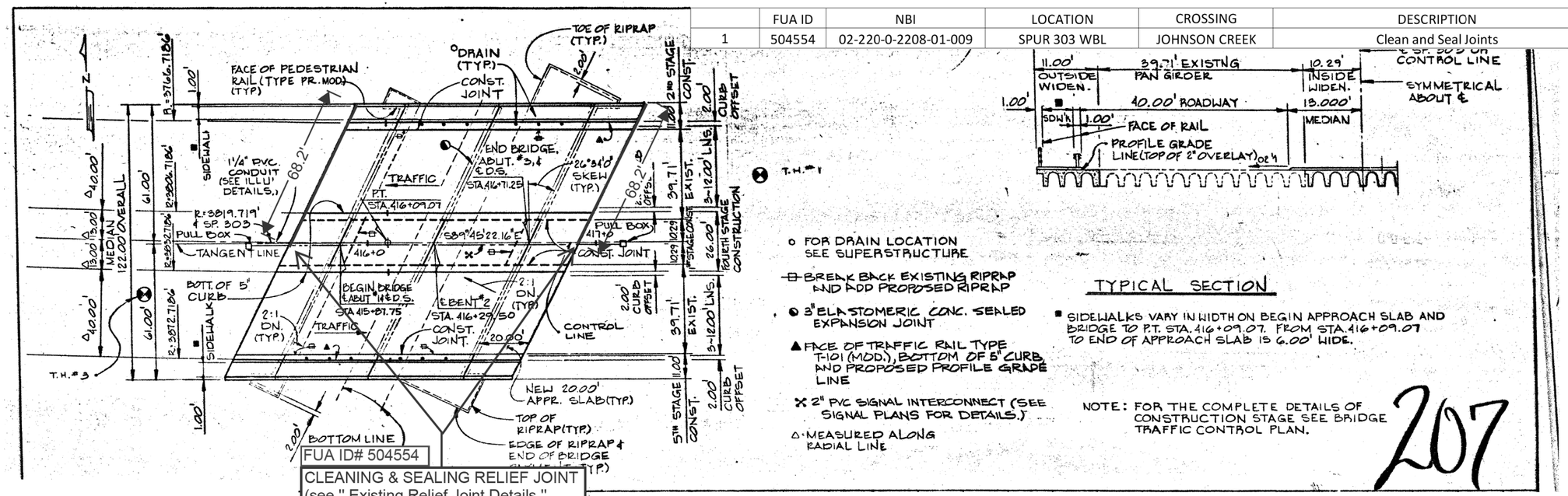
	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	504554	02-220-0-2208-01-009	SPUR 303 WBL	JOHNSON CREEK	Clean and Seal Joints



ESTIMATED QUANTITIES NBI # 02-220-0-2208-01-009			
	Description		Total
438-7009	RESIZING AND SEALING JOINTS	LF	137

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SPUR 303 WBL LAYOUT

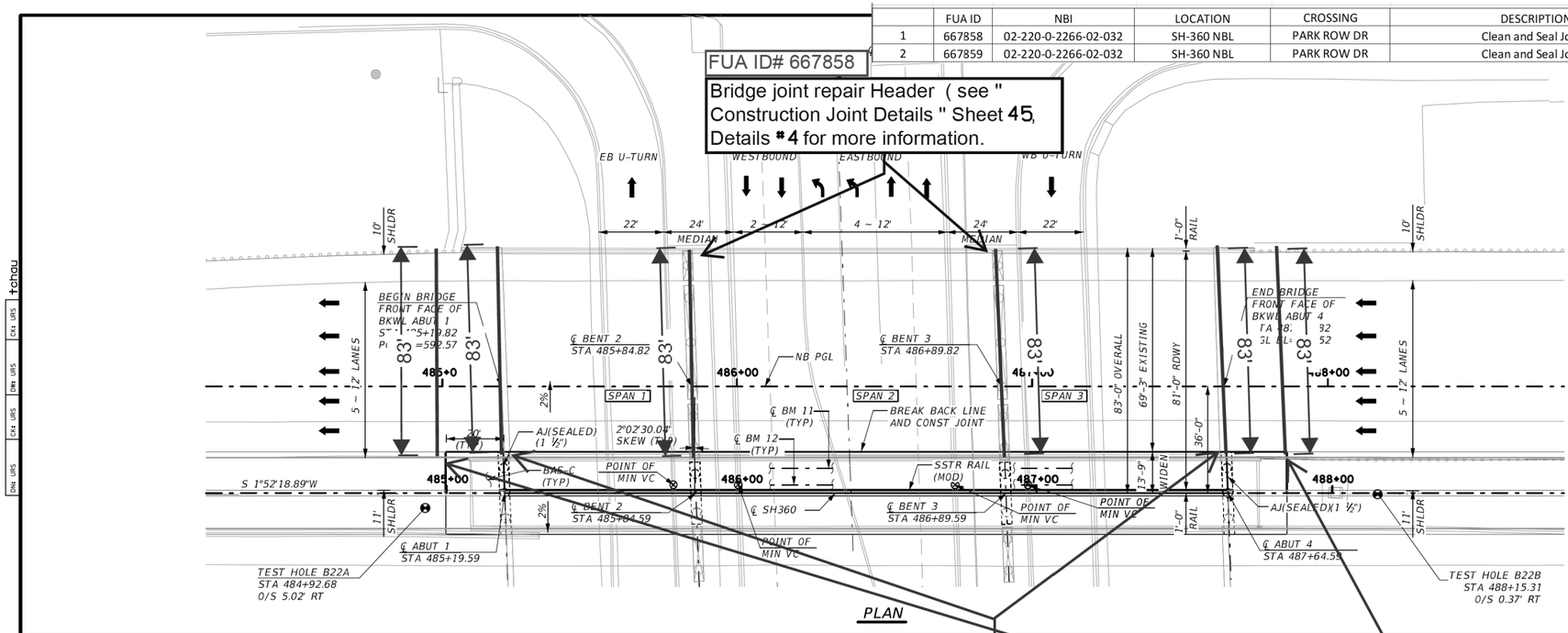
NBI# 02-220-0-2208-01-009

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		70

DATE: 9/11/2024 1:10:57 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	667858	02-220-0-2266-02-032	SH-360 NBL	PARK ROW DR	Clean and Seal Joints
2	667859	02-220-0-2266-02-032	SH-360 NBL	PARK ROW DR	Clean and Seal Joints



0' 20' 40'
H&V SCALE IN FEET

GENERAL NOTES:

1. BRIDGE DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION (2014).
2. SEE SHEET 2 FOR TYPICAL SECTION.
3. "D" DENOTES BENTS WITH D BARS & SLOTTED HOLES AT EXTERIOR GIRDERS.
4. SEE TEST HOLE DATA SHEETS FOR BORING DETAILS NOT SHOWN.
5. SEE CSAB STANDARD FOR CEMENT STABILIZED BACKFILL DETAILS.
6. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS IN THE FIELD.
7. THE "H" VALUES SHOWN ARE ESTIMATED COLUMN HEIGHTS.THE CONTRACTOR IS RESPONSIBLE FOR CALCULATING THE ACTUAL COLUMN HEIGHTS BASED ON FIELD CONDITIONS.

ROADWAY DATA

FREEWAY
2005 ADT = 204,300
2025 ADT = 268,500
2035 ADT = 292,000
DESIGN SPEED = 55 MPH

HL93 LOADING (WIDENING)
HS20 LOADING (EXISTING)
NBI 02-220-2266-02-032

ESTIMATED QUANTITIES NBI # 02-220-0-1068-02-376			
	Description		Total
785-7002	BRIDGE JOINT REPAIR (HEADER)	LF	498

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SH 360
LAYOUT

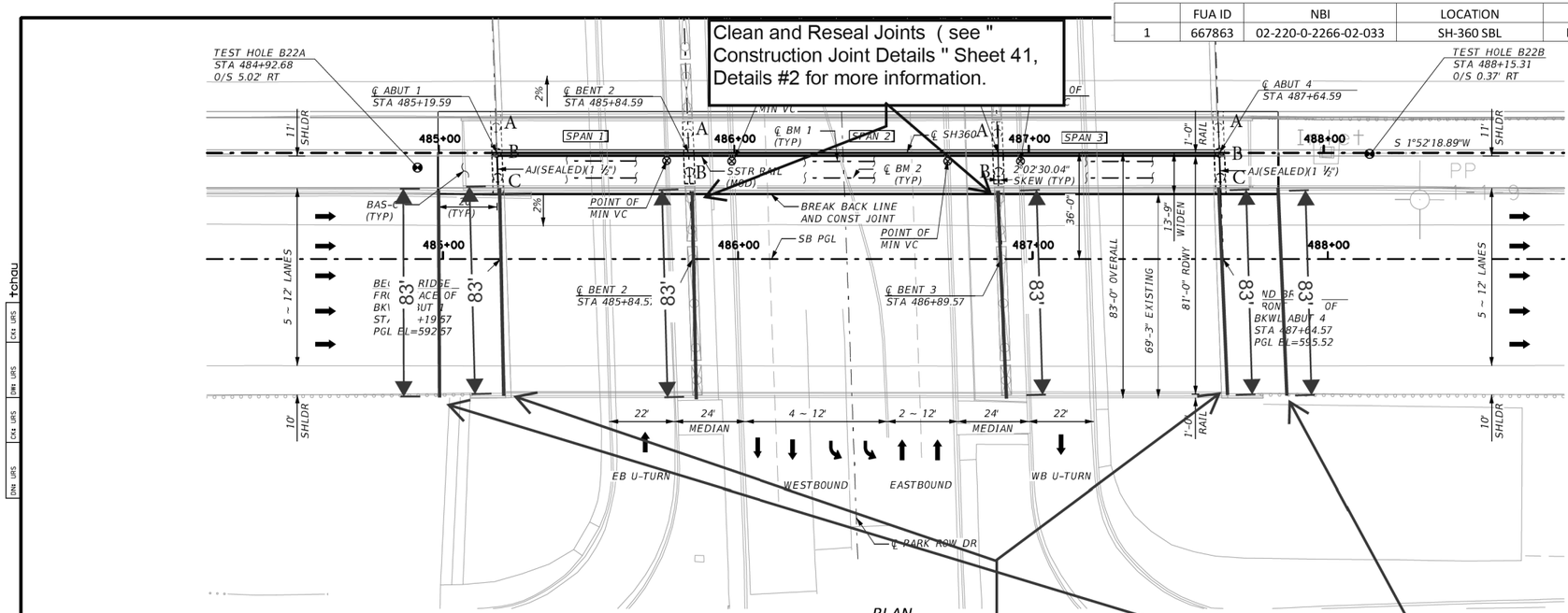
NBI# 02-220-0-2266-02-032

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		71

DATE: 9/13/2024 3:42:25 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	667863	02-220-0-2266-02-033	SH-360 SBL	PARK ROW DR	Clean and Seal Joints



GENERAL NOTES:

1. BRIDGE DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION (2014).
2. SEE SHEET 2 FOR TYPICAL SECTION.
3. "D" DENOTES BENTS WITH D BARS & SLOTTED HOLES AT EXTERIOR GIRDERS.
4. SEE TEST HOLE DATA SHEETS FOR BORING DETAILS NOT SHOWN.
5. SEE CSAB STANDARD FOR CEMENT STABILIZED BACKFILL DETAILS.
6. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS IN THE FIELD.
7. THE "H" VALUES SHOWN ARE ESTIMATED COLUMN HEIGHTS.THE CONTRACTOR IS RESPONSIBLE FOR CALCULATING THE ACTUAL COLUMN HEIGHTS BASED ON FIELD CONDITIONS.

ROADWAY DATA

FREEWAY
2005 ADT = 204,300
2025 ADT = 268,500
2035 ADT = 292,000
DESIGN SPEED = 55 MPH

HL93 LOADING (WIDENING)
HS20 LOADING (EXISTING)
NBI 02-220-2266-02-033

PLAN

FUA ID# 667863
Clean and Reseal Joints (see " PJS Joint Details " Sheet 48, Details for more information.

FUA ID# 667863
Clean and Reseal Relief Joints (see " Existing Relief Joint Details " Sheet 46, Details #2 for more information.

ESTIMATED QUANTITIES NBI # 02-220-2266-02-033			
	Description		Total
438-7004	CLEANING AND SEALING EXT'G JOINTS (CL3)	LF	166
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	168
438-7009	RESIZING AND SEALING JOINTS	LF	166

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SH 360 SBL
LAYOUT

NBI# 02-220-0-2266-02-033

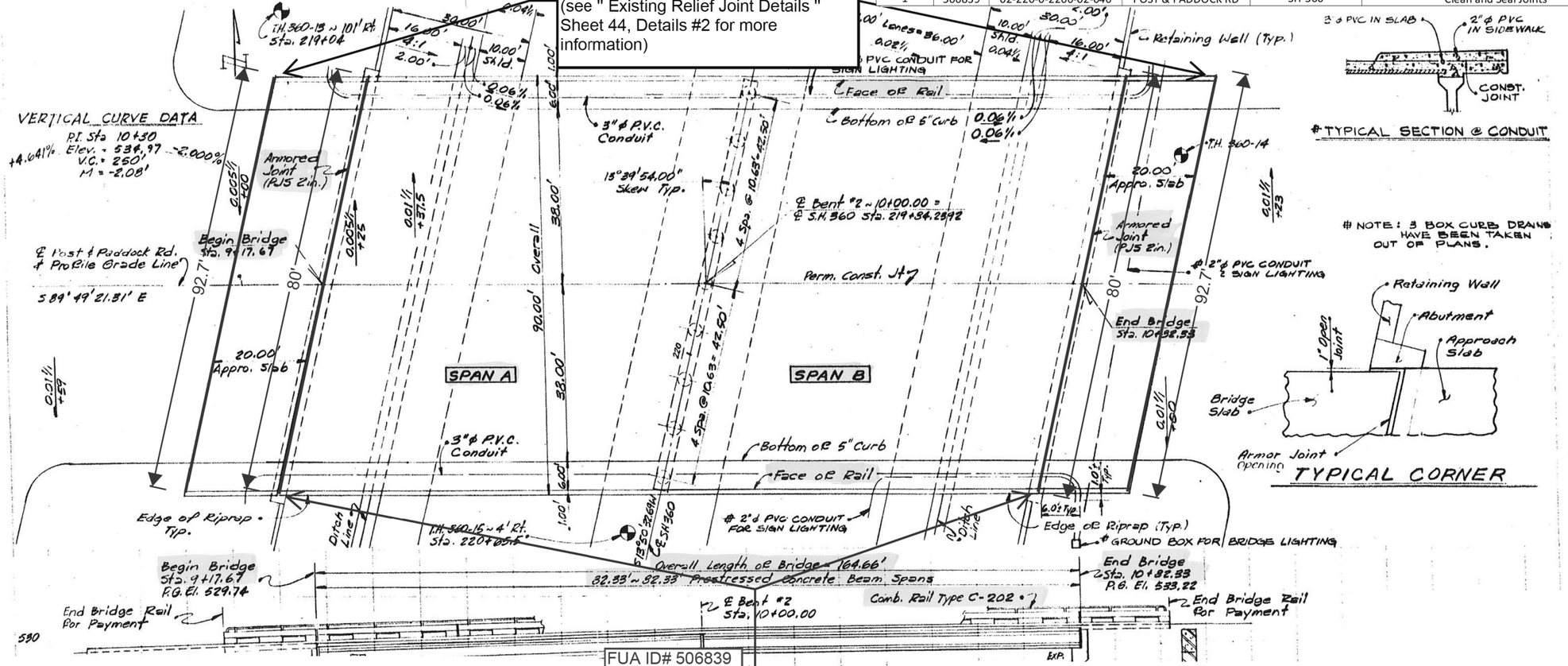
SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		72

DATE: 9/11/2024 1:11:12 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	506839	02-220-0-2266-02-046	POST & PADDOCK RD	SH-360	Clean and Seal Joints

CLEANING & SEALING RELIEF JOINT (see " Existing Relief Joint Details " Sheet 44, Details #2 for more information)



FUA ID# 506839

Clean and Reseal Joints (see " PJS Joint Details " Sheet 48, Details for more information.

ESTIMATED QUANTITIES NBI # 02-220-0-2266-02-046			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	162
438-7009	RESIZING AND SEALING JOINTS	LF	185

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POST & PADDOCK RD. LAYOUT

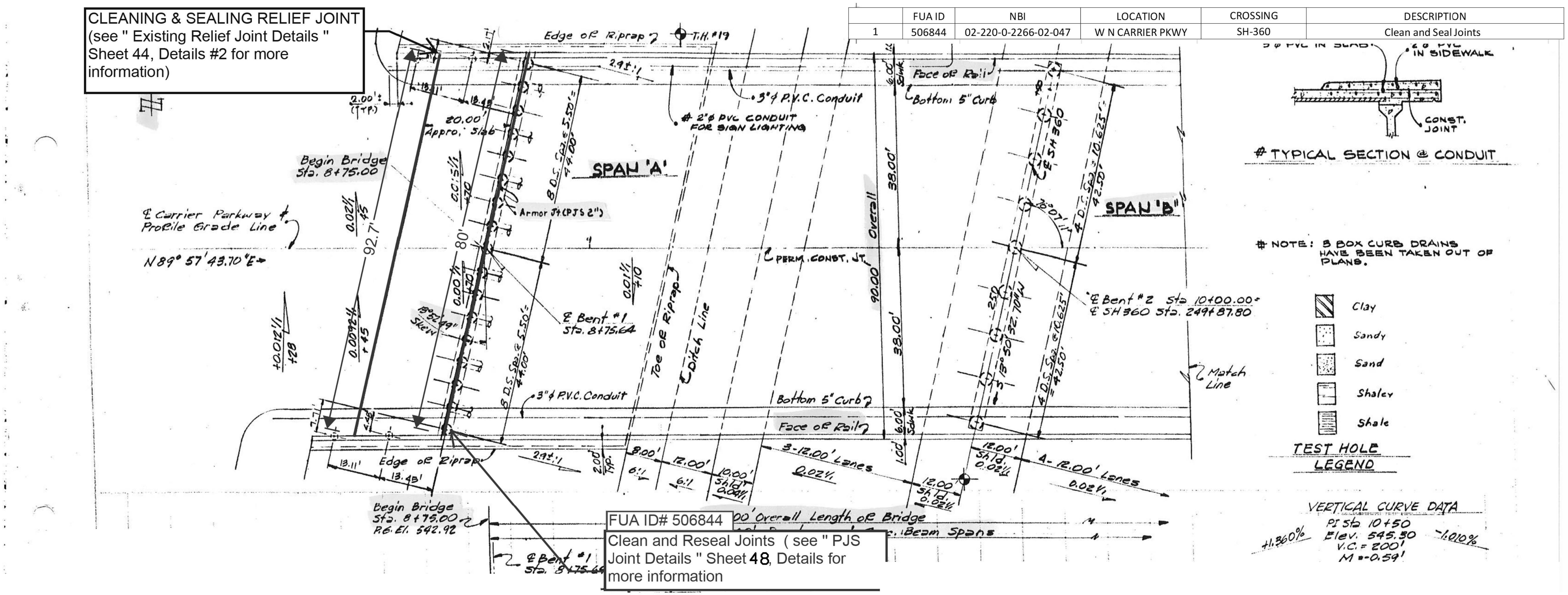
NBI# 02-220-0-2266-02-046

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		73

DATE: 9/11/2024 1:11:23 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	506844	02-220-0-2266-02-047	W N CARRIER PKWY	SH-360	Clean and Seal Joints



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ESTIMATED QUANTITIES NBI # 02-220-0-2266-02-047			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	162
438-7009	RESIZING AND SEALING JOINTS	LF	185

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NW CARRIER PKWY LAYOUT

NBI# 02-220-0-2266-02-047

 SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST		COUNTY	SHEET NO.
FTW		TARRANT	74

DATE: 9/11/2024 1:11:32 PM
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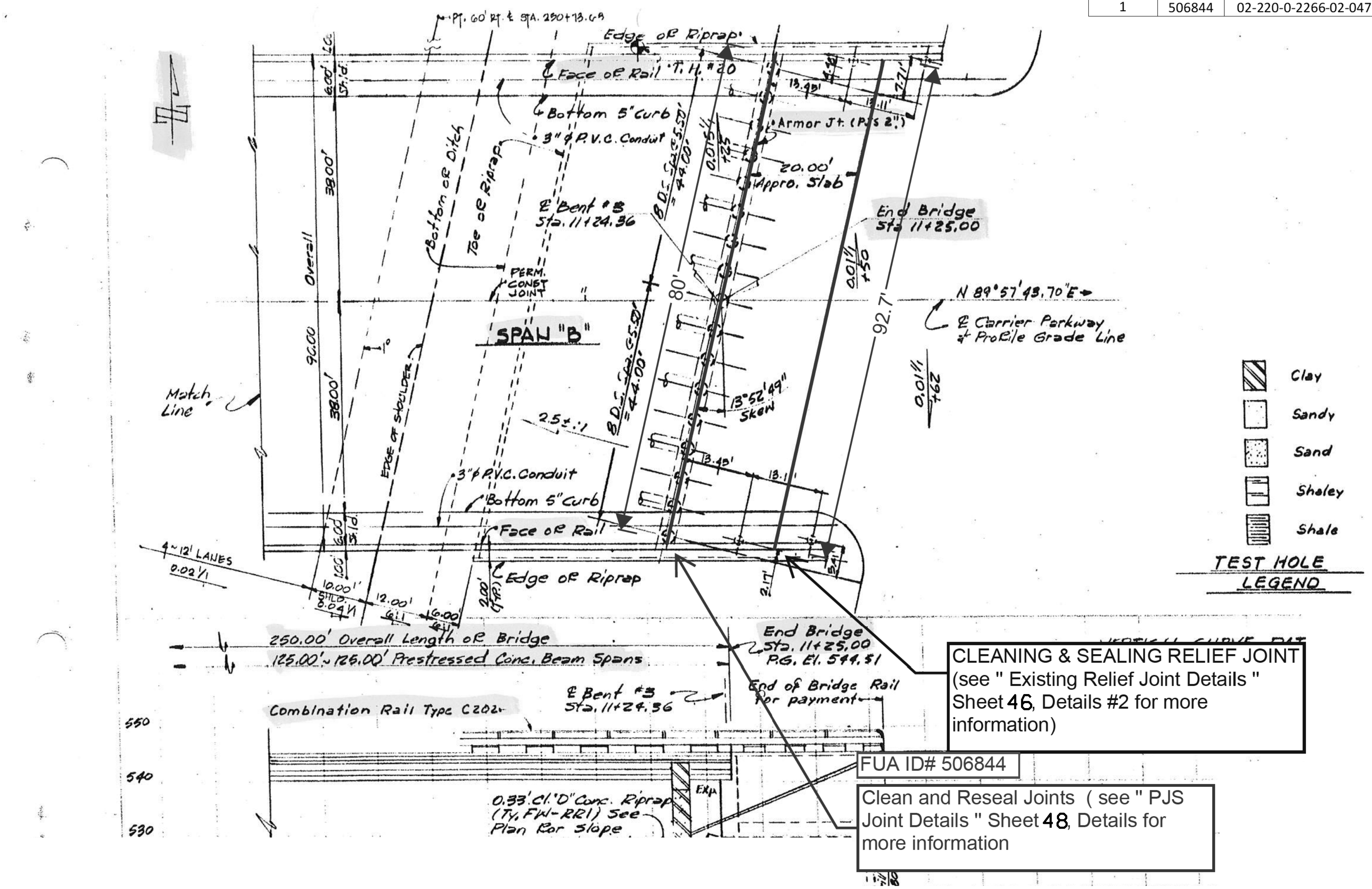
	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	506844	02-220-0-2266-02-047	W N CARRIER PKWY	SH-360	Clean and Seal Joints



GENERAL NOTES

Designed for HS20-44 Loading in accordance with AASHTO (1977) Standard Specifications and Revisions thereto.

Dimensions relating to reinforcing steel are to centers of bars except as shown (f_s = 20,000 p.s.i.)

Chamfer all exposed corners 3/4" unless otherwise noted.

Grade I Surface Finish will be required.

See Bent Details for Top of Drilled Shaft Elevations. Tops of Drilled Shafts as show to be used as basis of measurement.

3" ϕ CONDUIT TO BE PLACED ON TOP OF TOP MAT OF SLAB REINFORCING STEEL.

3" ϕ CONDUIT TO BE PLACED IN SIDEWALK.

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NW CARRIER PKWY
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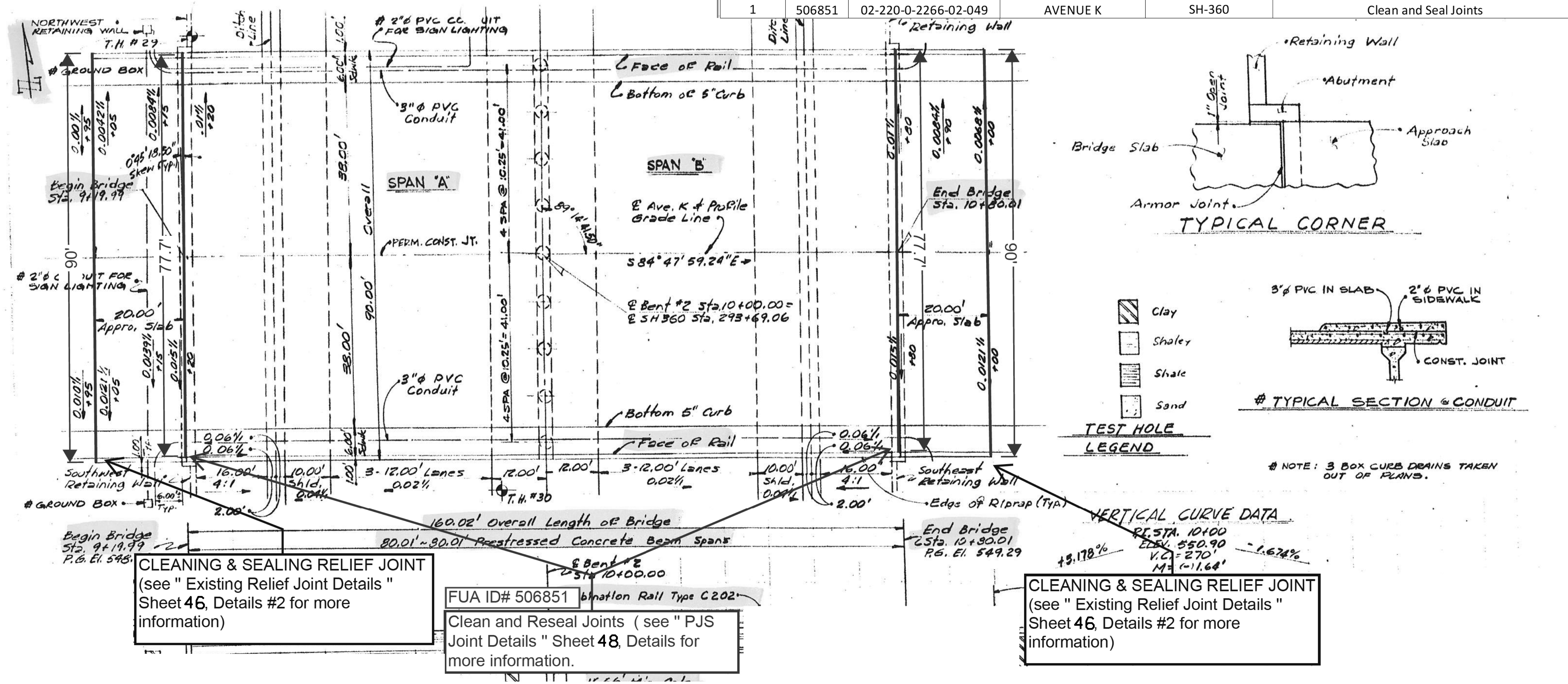
CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		75

DATE: 9/11/2024 1:11:41 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	506851	02-220-0-2266-02-049	AVENUE K	SH-360	Clean and Seal Joints



CLEANING & SEALING RELIEF JOINT (see " Existing Relief Joint Details " Sheet 46, Details #2 for more information)

FUA ID# 506851

Clean and Reseal Joints (see " PJS Joint Details " Sheet 48, Details for more information.

CLEANING & SEALING RELIEF JOINT (see " Existing Relief Joint Details " Sheet 46, Details #2 for more information)

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ESTIMATED QUANTITIES NBI # 02-220-0-2266-02-049			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	157
438-7009	RESIZING AND SEALING JOINTS	LF	180

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AVENUE K
LAYOUT

NBI# 02-220-0-2266-02-049

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CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST		COUNTY	SHEET NO.
FTW		TARRANT	76

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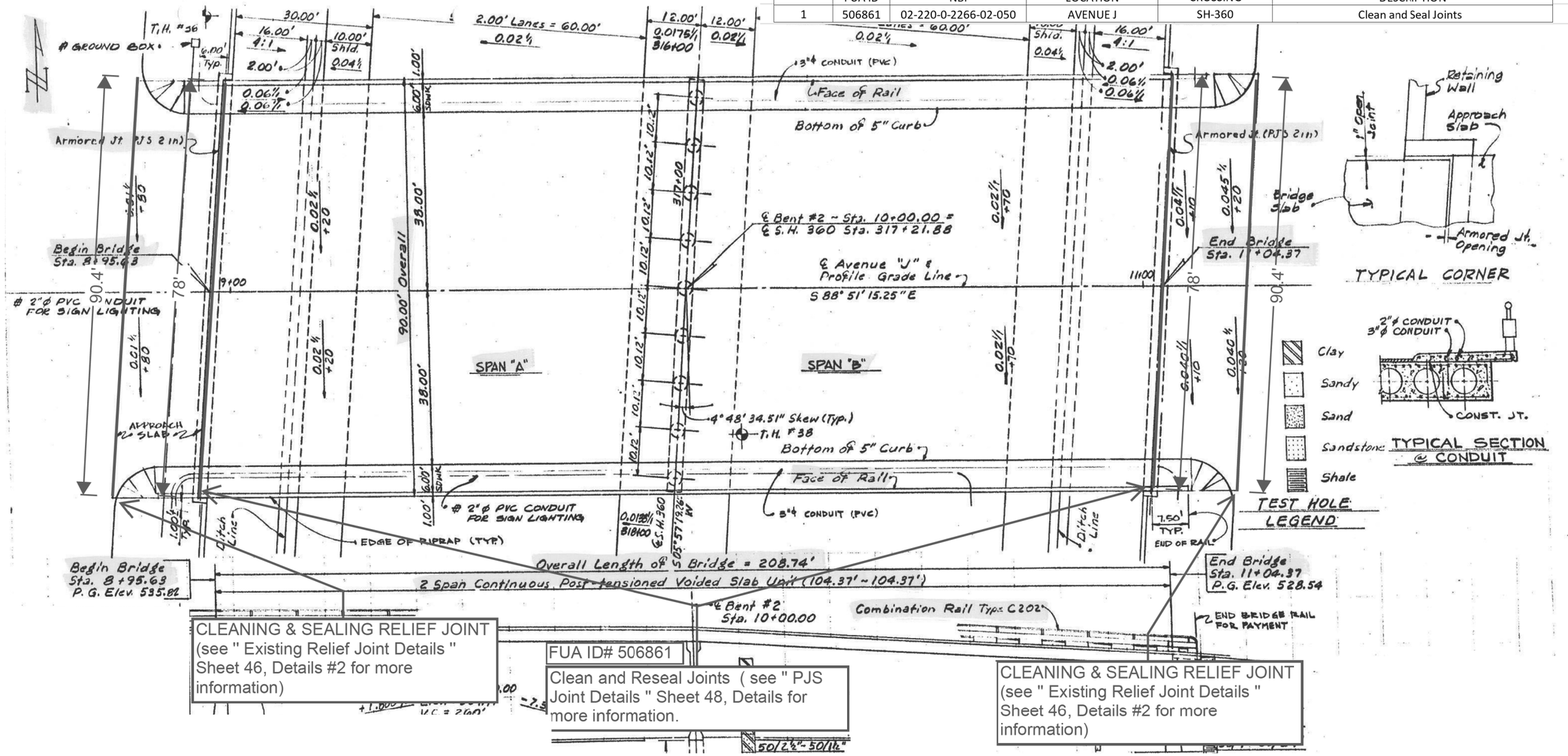
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	506861	02-220-0-2266-02-050	AVENUE J	SH-360	Clean and Seal Joints



ESTIMATED QUANTITIES NBI # 02-220-0-2266-02-050			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	158
438-7009	RESIZING AND SEALING JOINTS	LF	181

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AVENUE J
LAYOUT

NBI# 02-220-0-2266-02-050

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CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		77

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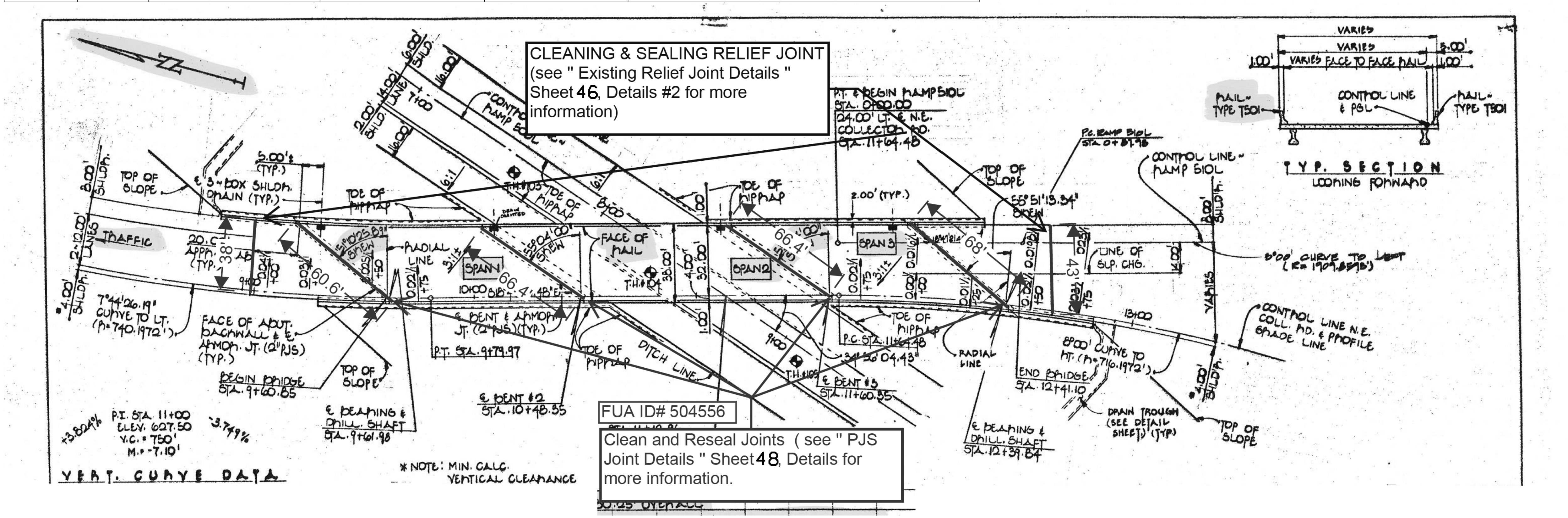
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	504556	02-220-0-2266-02-058	NE COLLECTOR ROAD	RAMP 500L	Clean and Seal Joints



ESTIMATED QUANTITIES NBI # 02-220-0-2266-02-058			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	265
438-7009	RESIZING AND SEALING JOINTS	LF	81

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NE COLLECTOR RD
LAYOUT

NBI# 02-220-0-2266-02-058

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CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		78

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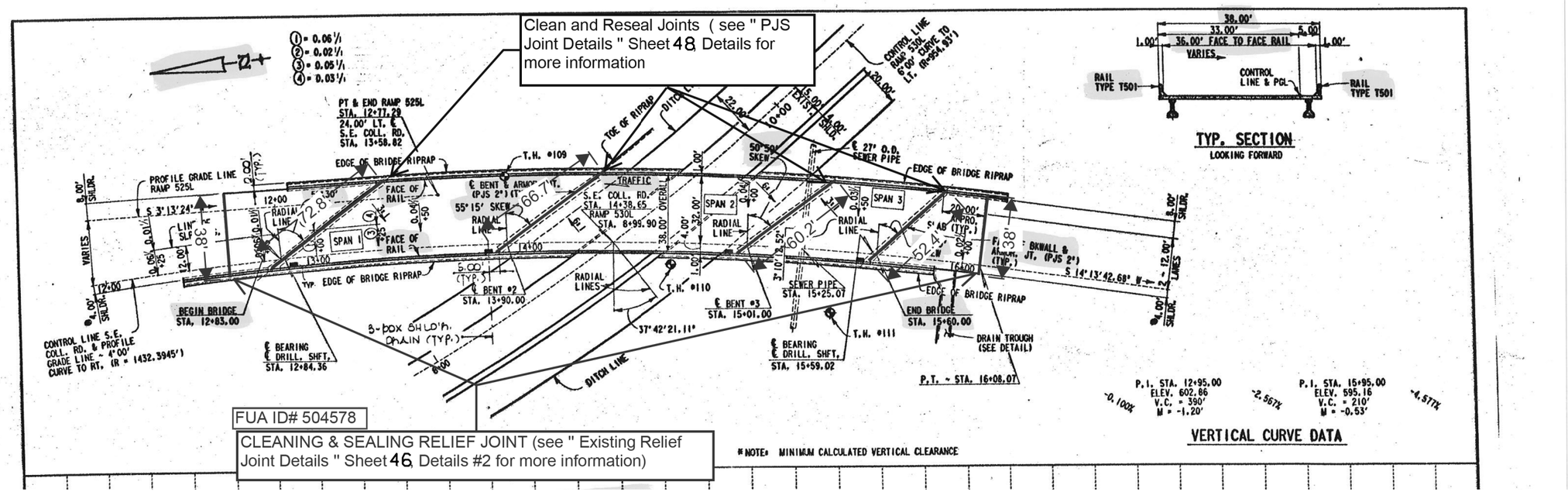
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	504578	02-220-0-2266-02-060	SH-360 SE Coll. Rd	RAMP 530L	Clean and Seal Joints



ESTIMATED QUANTITIES NBI # 02-220-0-2266-02-060			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	256
438-7009	RESIZING AND SEALING JOINTS	LF	76

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SH 360 SE COLL. RD
LAYOUT

NBI# 02-220-0-2266-02-060

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		79

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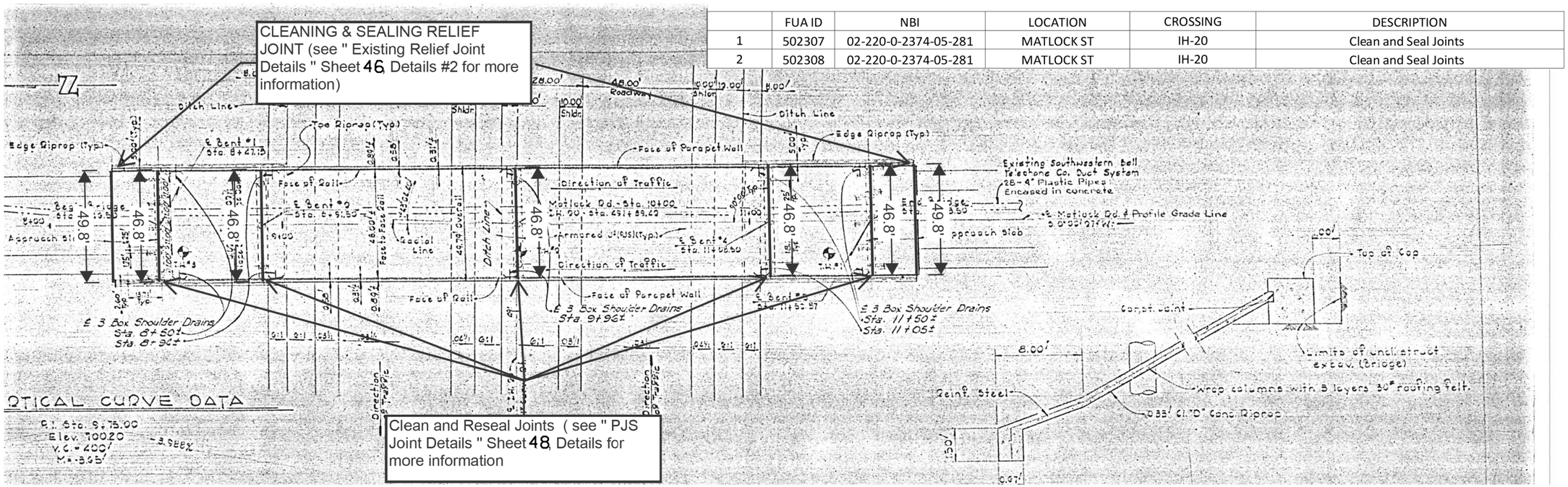
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	502307	02-220-0-2374-05-281	MATLOCK ST	IH-20	Clean and Seal Joints
2	502308	02-220-0-2374-05-281	MATLOCK ST	IH-20	Clean and Seal Joints



ESTIMATED QUANTITIES NBI # 02-220-0-2374-05-281			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	239
438-7009	RESIZING AND SEALING JOINTS	LF	100

DATE: 9/11/2024 1:12:29 PM
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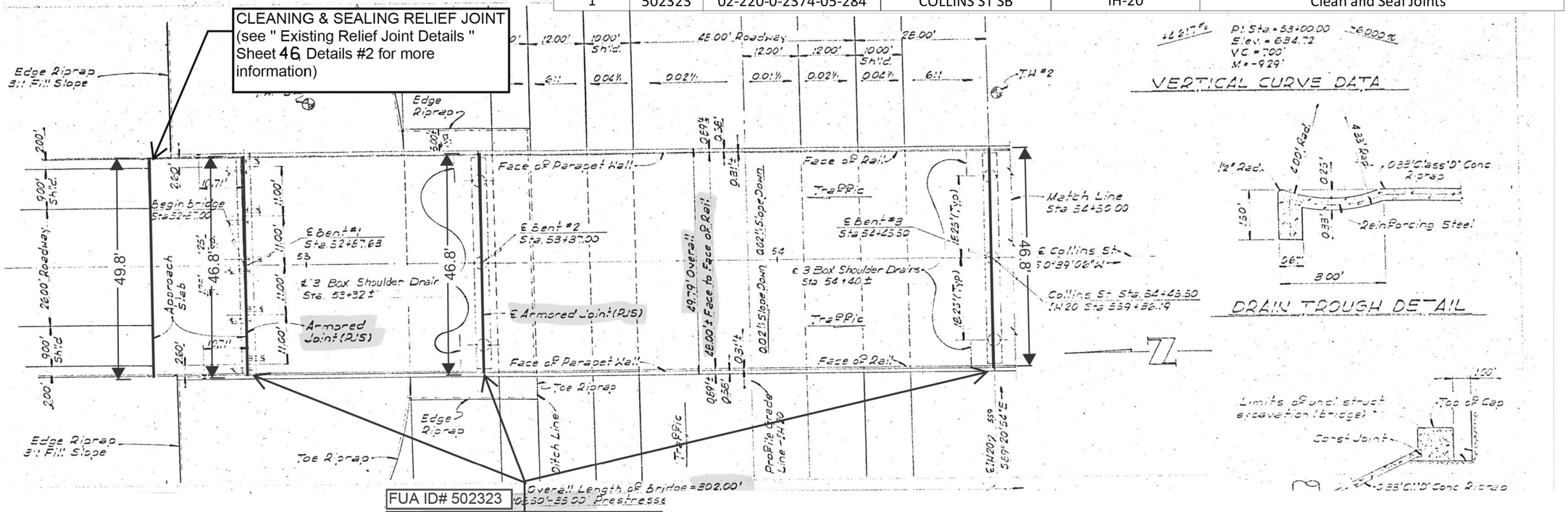
MATLOCK ST. LAYOUT

NBI# 02-220-0-2374-05-281

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		80

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	502323	02-220-0-2374-05-284	COLLINS ST SB	IH-20	Clean and Seal Joints



ESTIMATED QUANTITIES NBI # 02-220-0-2374-05-284			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	239
438-7009	RESIZING AND SEALING JOINTS	LF	100

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COLLINS ST SB LAYOUT

NBI# 02-220-0-2374-05-284

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		81

DATE: 9/11/2024 1:12:43 PM
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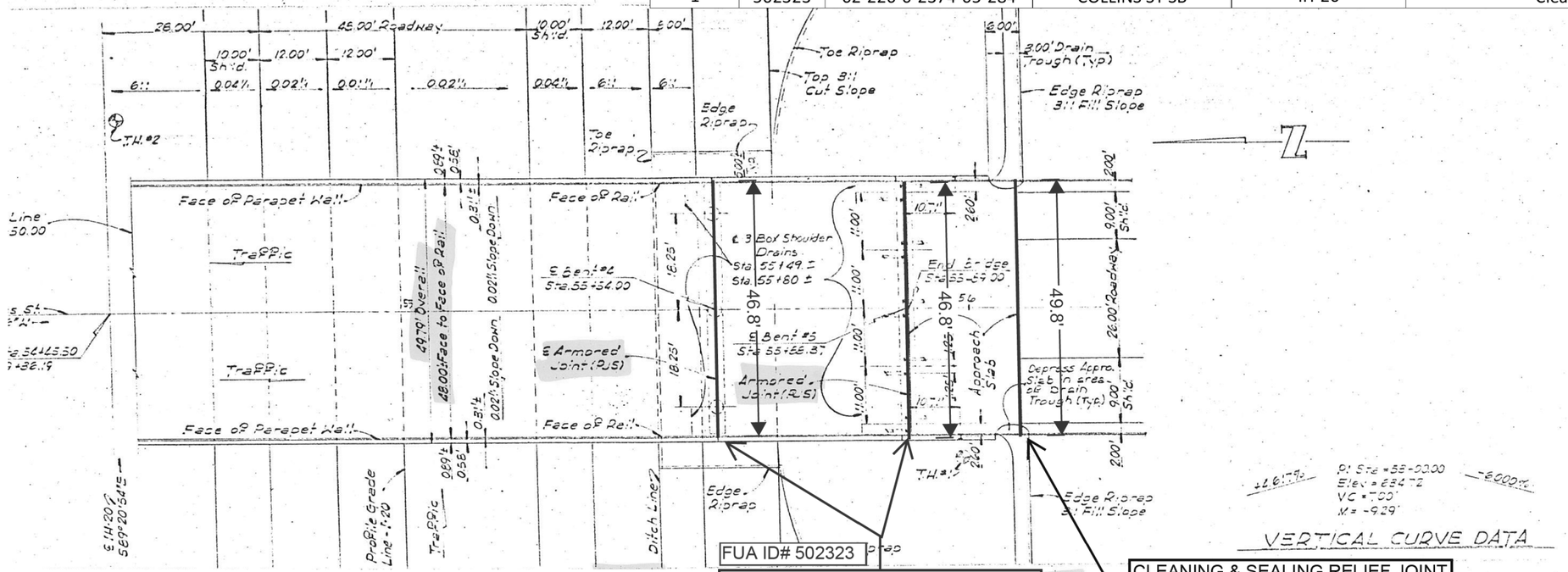
	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	502323	02-220-0-2374-05-284	COLLINS ST SB	IH-20	Clean and Seal Joints



FUA ID# 502323

Clean and Reseal Joints (see " PJS Joint Details " Sheet 48, Details for more information

CLEANING & SEALING RELIEF JOINT (see " Existing Relief Joint Details " Sheet 46, Details #2 for more information)

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COLLINS ST SB LAYOUT

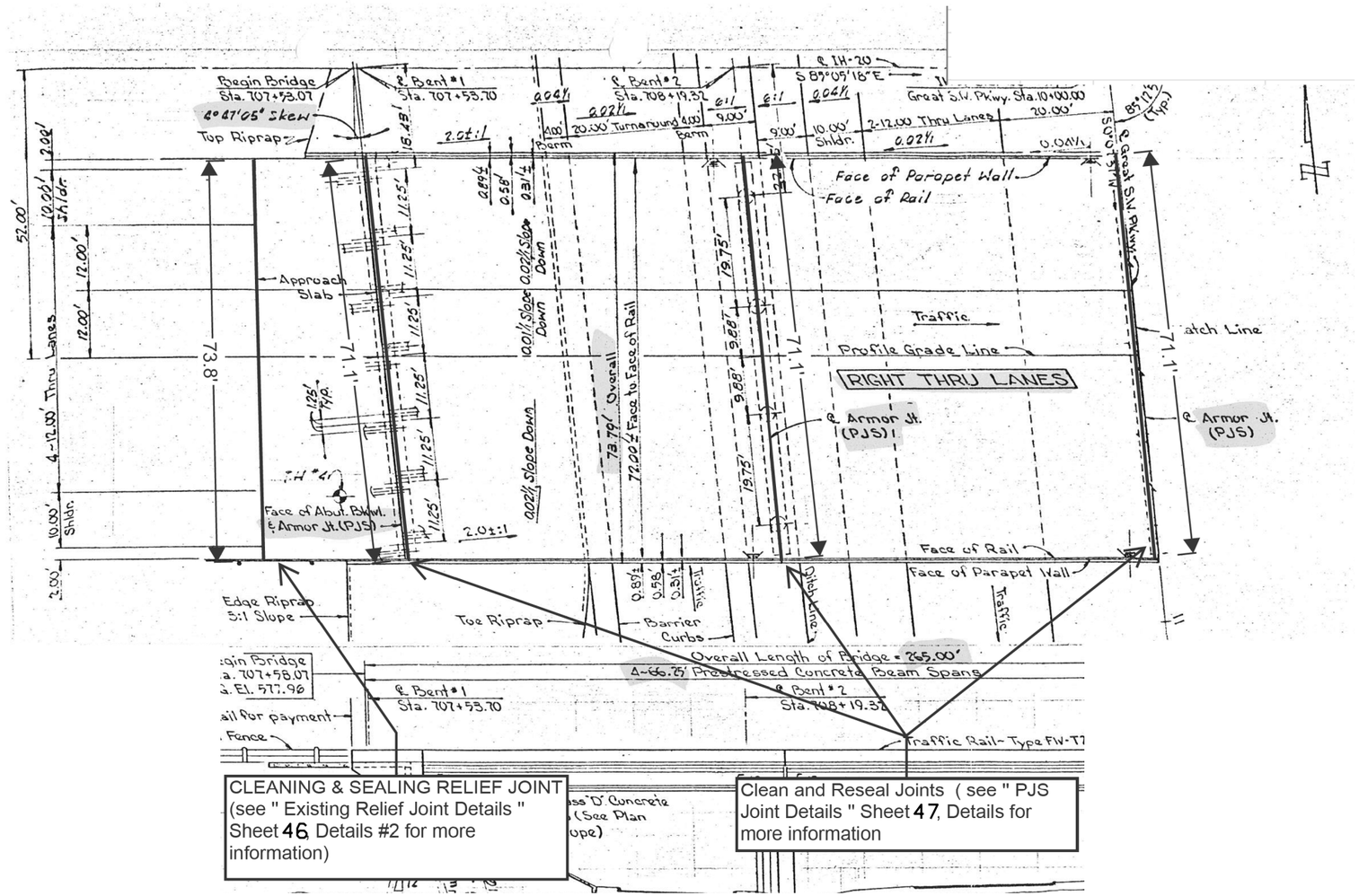
NBI# 02-220-0-2374-05-284

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		82

DATE: 9/11/2024 1:12:54 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	502345	02-220-0-2374-05-296	IH-20 WBL	GREAT SW PARKWAY	Clean and Seal Joints
2	502347	02-220-0-2374-05-296	IH-20 WBL	GREAT SW PARKWAY	Clean and Seal Joints



ESTIMATED QUANTITIES NBI # 02-220-0-2374-05-296			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	361
438-7009	RESIZING AND SEALING JOINTS	LF	148

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IH 20 WBL LAYOUT

NBI# 02-220-0-2374-05-296

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		83

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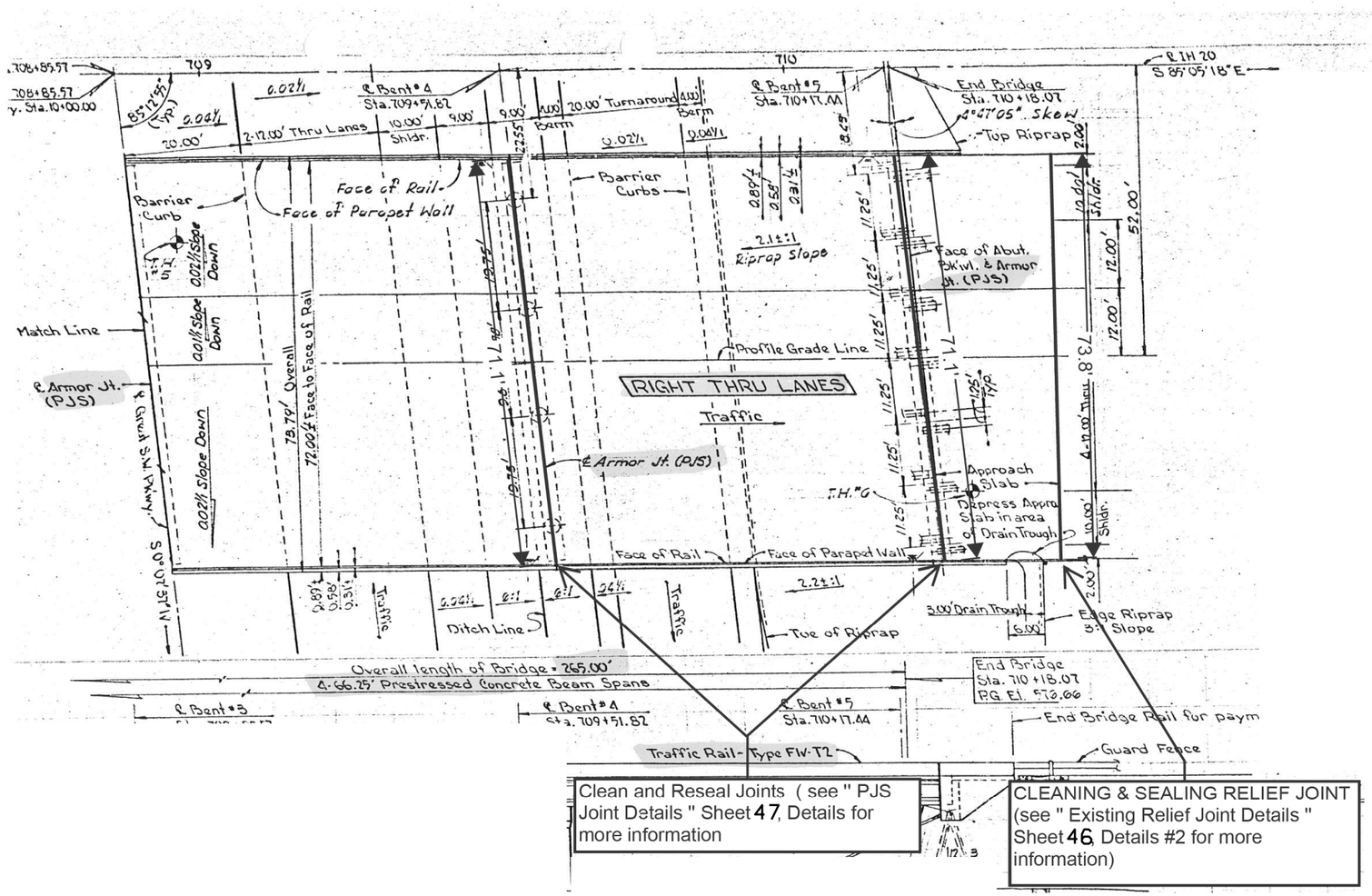
	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	502345	02-220-0-2374-05-296	IH-20 WBL	GREAT SW PARKWAY	Clean and Seal Joints
2	502347	02-220-0-2374-05-296	IH-20 WBL	GREAT SW PARKWAY	Clean and Seal Joints



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IH 20 WBL
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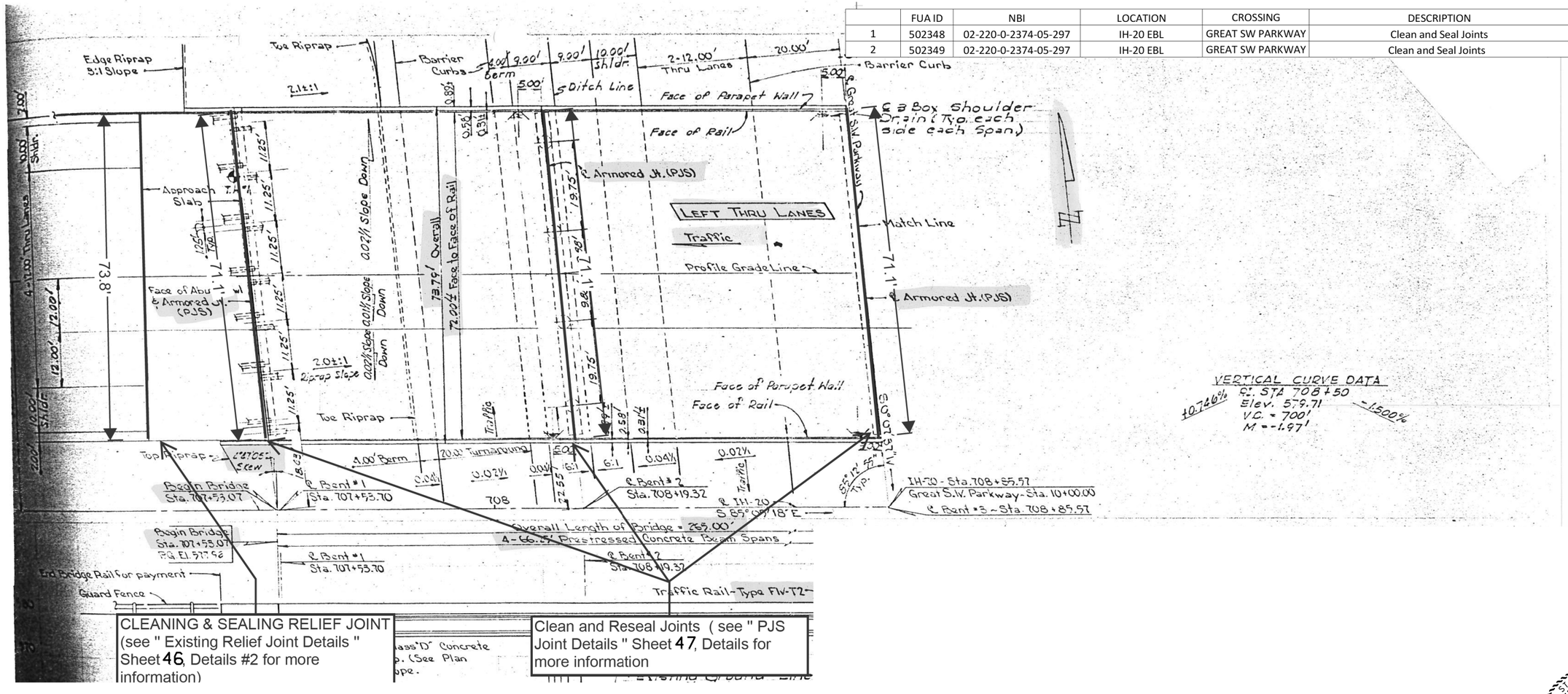
NBI# 02-220-0-2374-05-296

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		84

DATE: 9/11/2024 1:13:13 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	502348	02-220-0-2374-05-297	IH-20 EBL	GREAT SW PARKWAY	Clean and Seal Joints
2	502349	02-220-0-2374-05-297	IH-20 EBL	GREAT SW PARKWAY	Clean and Seal Joints



VERTICAL CURVE DATA
P.I. STA 708+50
Elev. 579.71
V.C. = 700'
M = -1.97'
+0.760% -1.500%

ESTIMATED QUANTITIES NBI # 02-220-0-2374-05-297			
	Description		Total
438-7007	CLEANING AND SEALING EXT'G JOINTS (CL7)	LF	361
438-7009	RESIZING AND SEALING JOINTS	LF	148

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IH 20 EBL
LAYOUT

NBI= 02-220-0-2374-05-297

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		85

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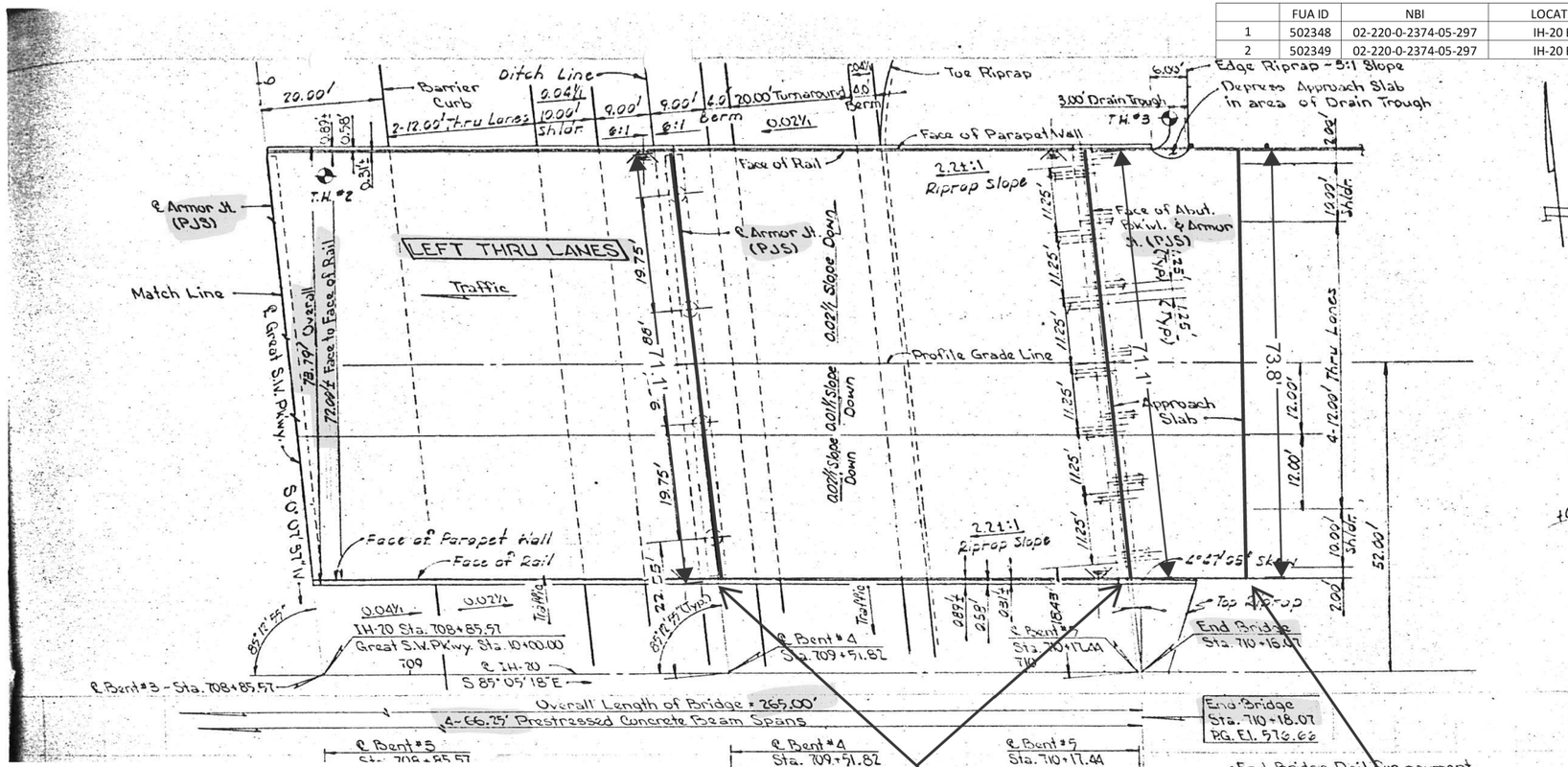
	FUA ID	NBI	LOCATION	CROSSING	DESCRIPTION
1	502348	02-220-0-2374-05-297	IH-20 EBL	GREAT SW PARKWAY	Clean and Seal Joints
2	502349	02-220-0-2374-05-297	IH-20 EBL	GREAT SW PARKWAY	Clean and Seal Joints



Clean and Reseal Joints (see " PJS Joint Details " Sheet 47, Details for more information

CLEANING & SEALING RELIEF JOINT (see " Existing Relief Joint Details " Sheet 46, Details #2 for more information)

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IH 20 EBL
LAYOUT

NBI# 02-220-0-2374-05-297

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0902	90	329	VARIOUS
DIST	COUNTY		SHEET NO.
FTW	TARRANT		86

DATE: 9/11/2024 1:13:38 PM
FILE: T:\STCAO Files\STCAO Design\Projects\0902-90-329 - FUA's 2025\100% PS&E\1as built.dgn

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

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

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

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

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
CSJ 0902-90-329

1.2 PROJECT LIMITS:
From: VA

To: VA

1.3 PROJECT COORDINATES:
BEGIN: (Lat) VA ,(Long) VA

END: (Lat) VA ,(Long) VA

1.4 TOTAL PROJECT AREA (Acres):

1.5 TOTAL AREA TO BE DISTURBED (Acres): 0

1.6 NATURE OF CONSTRUCTION ACTIVITY:
Bridge Maintenance work ,Cleaning and sealing Bridge Joint

1.7 MAJOR SOIL TYPES:

Soil Type	Description
VARIOUS	VARIOUS LOCATIONS

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

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

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

Type	Sheet #s

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

1.9 CONSTRUCTION ACTIVITIES:

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

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

1.10 POTENTIAL POLLUTANTS AND SOURCES:

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

1.11 RECEIVING WATERS:

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

Tributaries	Classified Waterbody

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

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

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

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

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

July 2023 Sheet 1 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
02	C 902-90-329		87
STATE	STATE DIST.	COUNTY	
TEXAS	FTW	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0902	90	329	VARIOUS

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

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

2.2 SEDIMENT CONTROL BMPs:

T / P

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

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

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To
NO PERMANENT CONTROLS ARE PLANNED		

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

2.5 POLLUTION PREVENTION MEASURES:

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

2.6 VEGETATED BUFFER ZONES:

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

Type	Stationing	
	From	To
No surface water present, vegitated buffer zones are not planned		

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

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

2.8 DEWATERING:

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

2.9 INSPECTIONS:

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

2.10 MAINTENANCE:

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

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

July 2023 Sheet 2 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
02	C 902-90-329		88
STATE	STATE DIST.	COUNTY	
TEXAS	FTW	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0902	90	329	VARIOUS

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

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

DOT No.: 797681G
Crossing Type: PUBLIC RR UNDER
RR Company Operating Track at Crossing: FWWR
RR Company Owning Track at Crossing: UPRR
RR MP: 5.160
RR Subdivision: EVRMAN SUB (LEASED)
City: FORT WORTH
County: TARRANT
CSJ at this Crossing: 0902-90-329
Latitude: 32.6697514
Longitude: -97.3063158

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

CLEAN AND RESEAL RELIEF JOINTS. CLEAN AND SEAL GAPS BETWEEN ARMOR JOINT PLATES AND DECK CONCRETE. ALL WORK WILL BE CONDUCTED AT NIGHT.

Scope of Work to be performed by Railroad Company:

N/A

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 15

On this project, night or weekend flagging is:

☑ Expected
☐ Not Expected

Flagging services will be provided by:

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

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

Contact Information for Flagging:

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

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

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

☐ OTHERS:

Contractor must incorporate railroad construction inspection into anticipated construction schedule.

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

III. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

☐ Required.
☑ Not Required

Railroad Point of Contact: _____

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

IV. RAILROAD INSURANCE REQUIREMENTS

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

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

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

Escalated Limits

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

Railroad Protective Liability Limits

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

V. CONTRACTOR'S RIGHT OF ENTRY (CROE)

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

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

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

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

VI. RAILROAD COORDINATION MEETING

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

VII. RAILROAD SAFETY ORIENTATION

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

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

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

VIII. SUBCONTRACTORS

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

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency

Call: UPRR
Railroad Emergency Line at: 1(888) 877-7267
Location: DOT 797681G
RR Milepost: 5.160
Subdivision: EVERMAN

RRD Review Only
Initials: _____
Date: 07/24/2024

Texas Department of Transportation — Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

FILE: rr-scope-of-work.pdf		DN: TxDOT	CK:	DW:		CK:	
© TxDOT June 2014		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0902	90	329		IH 20	
6/2023		DIST	COUNTY			SHEET NO.	
		02	TARRANT			89	