STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL-AID PROJECT NO. BR 2008(909)

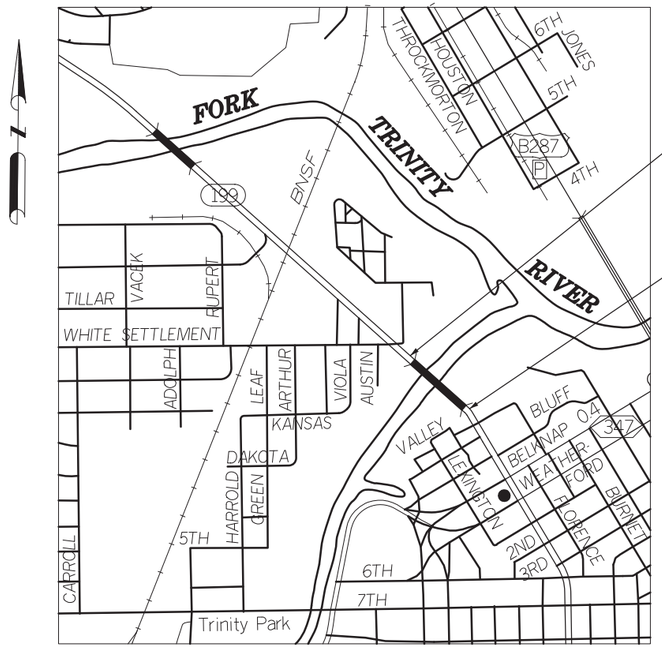
SH 199

TARRANT COUNTY

CSJ	HWY	LIMITS	ROADWAY LENGTH		BRIDGE LENGTH		PROJECT LENGTH	
			FEET	MILES	FEET	MILES	FEET	MILES
0171-05-083	SH 199	AT CLEAR FORK TRINITY RIVER	40.00	0.008	796.00	0.151	836.00	0.159

TOTAL PROJECT LENGTH = 0.159 MILES

FOR THE CONSTRUCTION OF BRIDGE REHABILITATION
CONSISTING OF STRUCTURE AND PAVEMENT MARKINGS



NOT TO SCALE

END PROJECT
END CSJ 0171-05-083
STA 45+64.00
REF MARKER 570+0.201
END MP 15.751

BEGIN PROJECT
BEGIN CSJ 0171-05-083
STA 37+28.00
REF MARKER 570+0.360
END MP 15.910

EQUATIONS : NONE
RAILROAD : NONE
EXCEPTIONS : NONE
NO TDLR REQUIRED

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	INDEX OF SHEETS

REQUIRED SIGNS SHALL BE IN ACCORDANCE WITH BC (1)- 21 THRU BC (12)- 21 AND THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT:
REQUIRED CONTRACT PROVISIONS, FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 2023)

STATE OF TEXAS
JASON PATRICK BERRY
138339
LICENSED
PROFESSIONAL ENGINEER

Jason Berry, P.E. 12/04/2023
DATE

OMEGA ENGINEERS, INC.
8200 N. MOPAC EXPRESSWAY, STE #280
AUSTIN, TEXAS 78759
OMEGAENGINEERS.COM
TX PE FIrm Reg. No. F-2147
P:512 575 2288 F:281 647 9184

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	BR 2008(909)		1
STATE	STATE DIST.	COUNTY	
TEXAS	FTW	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0171	05	083	SH 199

FUNCTIONAL CLASS: PRINCIPAL ARTERIAL - OTHER
DESIGN SPEED: 30 MPH
ADT (2022): 32,209
ADT (2042): 39,939

LETTING DATE: _____
CONTRACTOR: _____
_____
WORK BEGAN: _____
WORK COMPLETED: _____
WORK ACCEPTED: _____
CHANGE ORDERS: _____

Texas Department of Transportation

SUBMITTED FOR LETTING: 12/7/2023
DocuSigned by:
7B89CC87CF28477...
AREA ENGINEER

RECOMMENDED FOR LETTING: 12/11/2023
DocuSigned by:
7879B0B92E5D403...
...ECTOR, TP&D

APPROVED FOR LETTING: 12/11/2023
DocuSigned by:
David M Salazar, P.E.
B741E64FAD82411...
DISTRICT ENGINEER

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	8	TRAFFIC CONTROL PLAN GENERAL NOTES AND NARRATIVE
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	15 - 16	TRAFFIC CONTROL PLAN PHASE 3
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STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

O THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

NAME — 10/06/2023 DATE

STATE OF TEXAS
JOHN M. HOLT
68237
LICENSED
PROFESSIONAL ENGINEER

X THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

NAME — 10/6/2023 DATE

REV	BY	DESCRIPTION	DATE

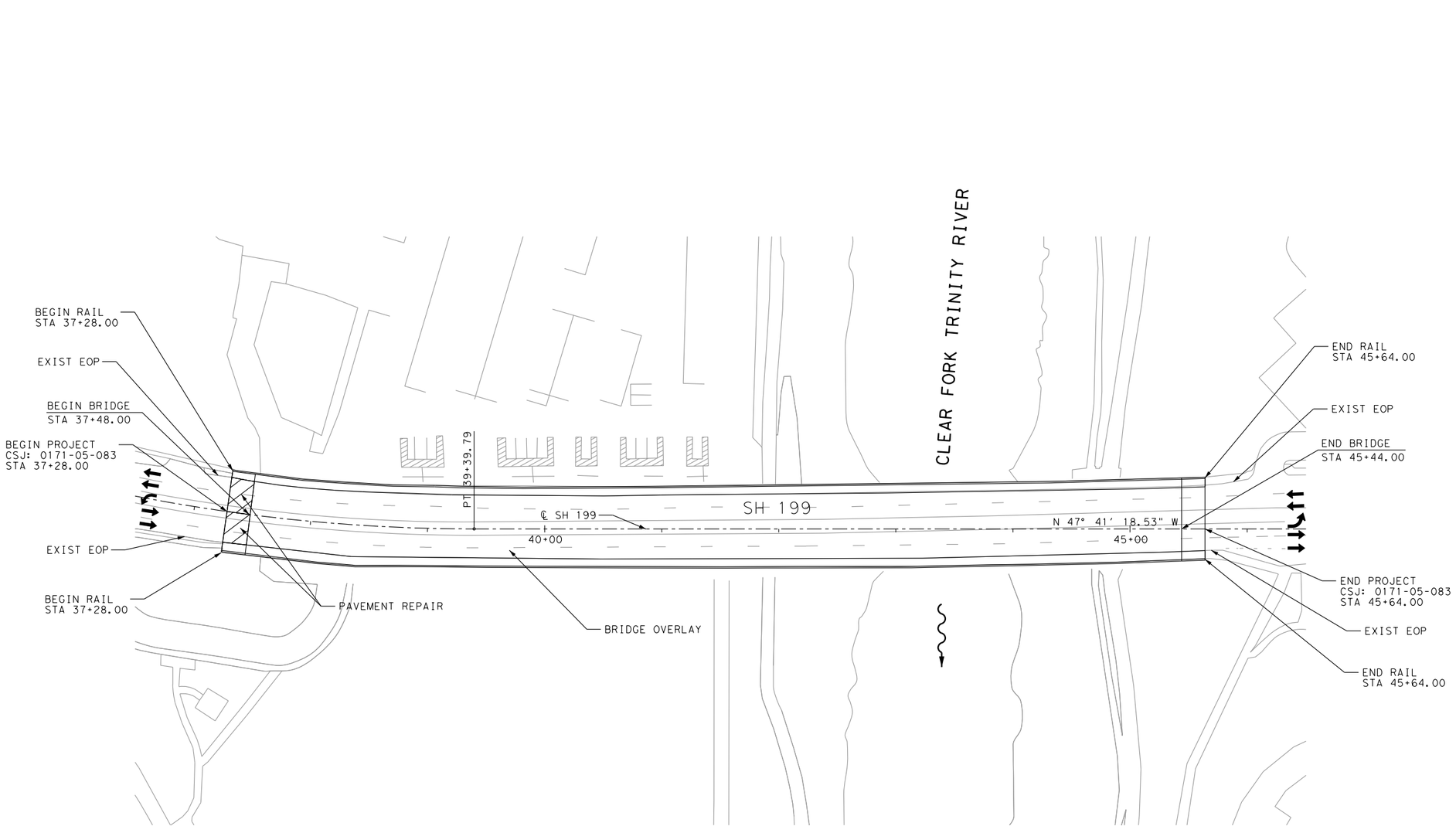
OMEGA ENGINEERS, INC.
8200 N. MOPAC EXPRESSWAY, STE #280
AUSTIN, TEXAS 78759
OMEGAENGINEERS.COM
TX PE Firm Reg. No. F-2147
P:512 575 2288 F:281 647 9184

Texas Department of Transportation

INDEX OF SHEETS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	2
CONTROL	SECTION NO.	JOB	
0171	05	083	



0 50′ 100′

SCALE: 1" = 100′

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

10.4.23

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

PROJECT LAYOUT

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	3
CONTROL	SECTION NO.	JOB	
0171	05	083	

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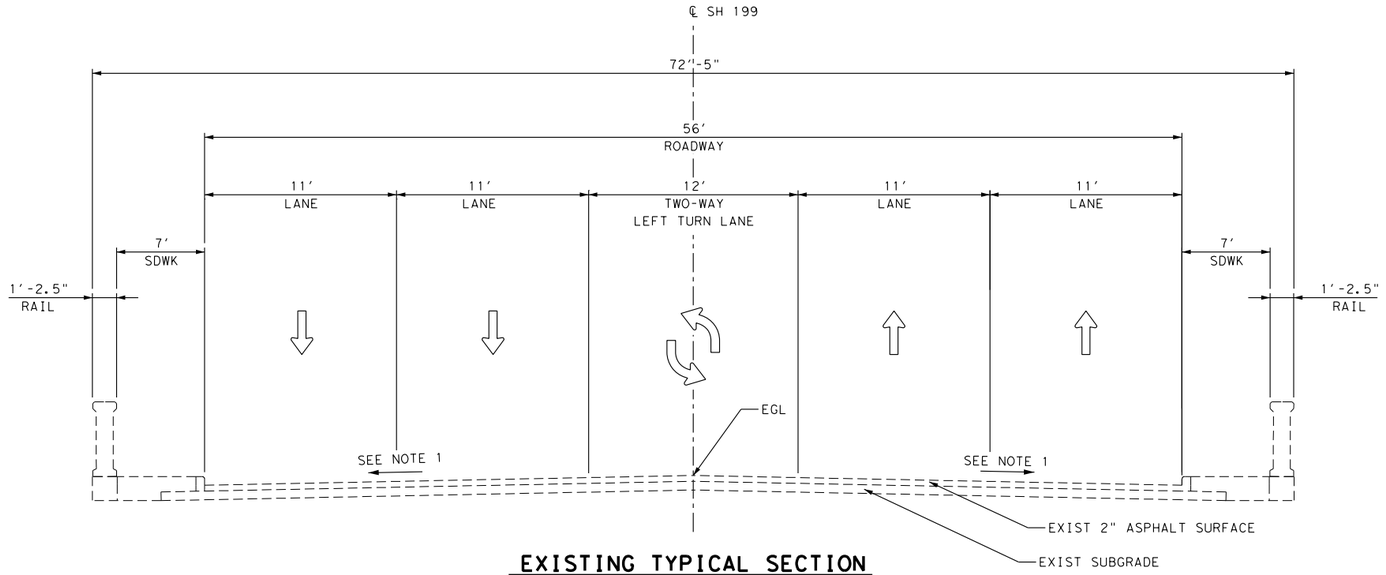
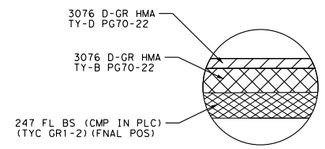
NOTES:

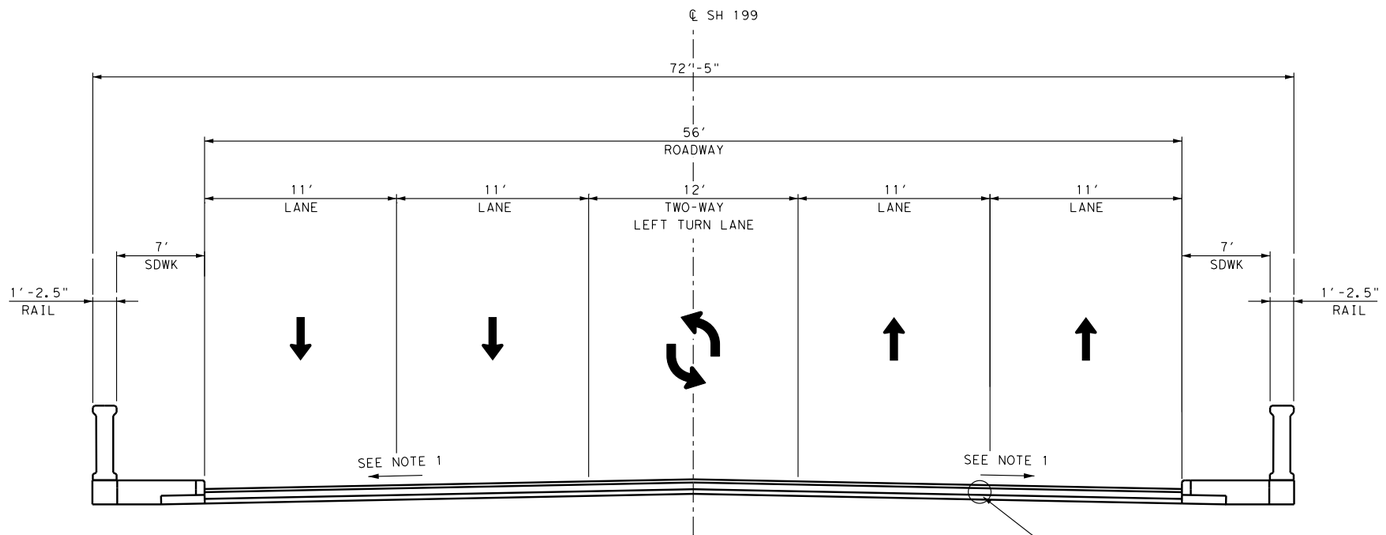
1. 6" CROWN
2. SEE BRIDGE LAYOUT SHEETS FOR DETAILS.



EXISTING TYPICAL SECTION
STA 37+28.00 TO STA 37+48.00
NOT TO SCALE



DETAIL A



PROPOSED TYPICAL SECTION
STA 37+28.00 TO STA 37+48.00 (PAVEMENT REPAIR)
STA 37+48.00 TO STA 45+44.00 (BRIDGE)(SEE NOTE 2)
STA 45+44.00 TO STA 45+64.00 (RAIL REPAIR)
NOT TO SCALE

STATE OF TEXAS
ALEX I. GARCIA
107317
PROFESSIONAL LICENSED ENGINEER
10-4-23

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

TYPICAL SECTIONS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	4
CONTROL	SECTION NO.	JOB	
0171	05	083	

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County: TARRANT

Highway: SH 199

Specification Data

Basis of Estimate

Item	Description	Rate	Unit
166	Fertilizer (16-8-8)	600 lb./acre**	ton
168	Vegetative Watering	169,400 gal./acre	1,000 gal.
3076	Hot Mix (All Types)	115 lb./sq. yd.-in.	ton
**	Non-Pay, for Contractor's Information Only.		

Compaction Requirements for Base Courses

Item	Material	Course	Min. Density
247	Flex Base	All	100 %

(Minimum Density is the percentage of density required based on results of Tex-113-E, Tex-114-E, Tex-120-E, and/or Tex-121-E)

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):

County: TARRANT

Highway: SH 199

Area Engineer's Email: Minh.Tran@txdot.gov
Assistant Area Engineer's Email: Alfredo.Luera@txdot.gov
Design Manager's Email: Sam.Yacoub@txdot.gov

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

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

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

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

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.

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

Where necessary, the governing slopes indicated herein may be varied from the limits shown, to the extent approved.

On superelevated curves the shoulders will have the same cross-slope as the pavement, unless otherwise indicated.

On superelevated curves where the grade line is in a sag or on a flat grade, overlay the shoulders to the extent necessary to prevent trapping of water on the high side.

Locations and lengths of all private entrances are approximate only. The actual locations, lengths, lines, and grades are to be established in the field.

Locations and lengths of all private entrances are approximate only. The actual locations, lengths, lines and grades are to be determined by the Engineer and shall conform to the regulations of The City of Fort Worth.

Do not discolor or damage existing curb and curb and gutter during construction operations. In the event of discoloration or damage, clean or repair as directed.

Provide temporary drain openings at all low points or other drainage structures, as required, at the Contractor's expense.

Remove any obstructions to existing drainage due to the contractor's operations, as required, at the Contractor's expense.

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

To comply with the latest provisions of Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law, the contractor must submit an original of the TxDOT Construction Material Buy America Certification Form for all items classified as construction materials. This form is not required for materials classified as a manufactured product.

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

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

The Contractor may proceed with activities in PSLs that do not affect a USACE permit area if a self-determination has been made that the PSL is non-jurisdictional or proper USACE clearances have been obtained in jurisdictional areas or have been previously evaluated by the USACE as part of the permit review of this project. The contractor is solely responsible for documenting any determinations that their activities do not affect a USACE permit area. Maintain copies of these determinations for review by the Department or any regulatory agency.

Document and coordinate with the USACE, if required, prior to any excavation hauled from or embankment hauled into a USACE permit area by either (1) or (2) below.

(1) Restricted Use of Materials for Previously Evaluated Permit Areas. Document both the project specific location (PSL) and its authorization. Maintain copies for review by the Department or any regulatory agency. When an area within the project limits has been evaluated by the USACE as part of the permit process for this project:

a. Suitable excavation of required material in the areas shown on the plans and cross sections as specified in Item 110 is used for permanent or temporary fill (Item 132, Embankment) within a USACE permit area;
b. Suitable embankment (Item 132) from within the USACE permit area is used as fill within a USACE evaluated area; and,
c. Unsuitable excavation or excess excavation [“Waste”] (Item 110) that is disposed of at a location approved by the Engineer within a USACE evaluated area.

(2) Contractor Materials from Areas Other than Previously Evaluated Areas. Provide the Department with a copy of all USACE coordination or approvals prior to initiating any activities for an area within the project limits that has not been evaluated by the USACE or for any off right of way locations used for the following, but not limited to haul roads, equipment staging areas, borrow and disposal sites:

a. Item 132, Embankment, used for temporary or permanent fill within a USACE permit area; and,
b. Unsuitable excavation or excess excavation [“Waste”] (Item 110, Excavation) that is disposed of outside a USACE evaluated area.

The total area disturbed for this project is 1.13 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.

When a bridge deck is milled, seal coated and overlaid, remove excess material. Do not just broom to the sides of the bridge, under guardrail, etc. Cover or protect all sealed expansion joints and rails on bridges and all railroad tracks encountered as approved. Clean and repair all of these features if they weren’t properly protected at contractor’s expense. This work is subsidiary work to applicable bid items.

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 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 28

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
Fort Worth Stock Show and Rodeo

Item 8. Prosecution and Progress

Working days will be computed and charged in accordance with Section 8.3.1.2, 'Six-Day Workweek.'

Use a Critical Path Method (CPM) schedule in P6 format for this project. Submit baseline schedule with XER file and obtain approval prior to beginning construction.

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.

Item 161. Compost

Place approximately 4" of compost manufactured topsoil (CMT) on all cut and fill slopes (except drainage channels where flexible channel liners are indicated), at other locations shown on the plans, or as directed.

Where "pre-blended" CMT is specified, amend suitable soil material, as directed, with 25% compost, by volume, to produce the compost manufactured topsoil. Place the compost manufactured topsoil in a loose layer approximately 4" thick, as shown on the plans.

Item 162. Sodding for Erosion Control

Furnish and place Bermudagrass sod.

Item 166. Fertilizer

Fertilize all areas of project to be seeded or sodded.

Item 168. Vegetative Watering

Furnish and install an approved rain gauge at the project site, as directed. Furnishing and installation of the rain gauge will not be paid for directly, but will be subsidiary to Item 168.

Apply vegetative watering for an establishment period of thirteen weeks following application of seed or installation of sod, at a rate of 1/2 inch of water depth per week (approximately 13,030 gallons per acre). During the first four weeks after seeding, apply water twice per week, on non-consecutive days, each at half the weekly application rate. For the remainder of the establishment period, apply vegetative watering once per week during the months of January through June or September through December, at the weekly application rate; apply watering twice per week, on non-consecutive days during the months of July and August, each at one-half the weekly application rate.

Average weekly rainfall rates for the District are:

January—0.39"	April—0.86"	July—0.48"	October—0.68"
February—0.46"	May—1.00"	August—0.47"	November—0.46"
March—0.48"	June—0.63"	September—0.74"	December—0.37"

Item 247. Flexible Base

Place material in two or more equal lifts unless otherwise directed.

Do not add field sand to modify the final material to meet the requirements.

(TY E, GR 4) Furnish aggregate conforming to the following requirements:

Gradation:

Retained on Sieve Size	Percent (%) by Weight
1-3/4 in.	0–5
No. 4	30–75
No. 40	65–85

Plasticity Index (PI)	15 max.
Liquid Limit	45 max.
Wet Ball Mill	50 max.
Wet Ball Mill, % (Increase Passing the No. 40)	20 max.

Place material in two or more equal lifts unless otherwise directed.

Do not add field sand to modify the final material to meet the requirements.

Item 354. Planing and Texturing Pavement

Salvaged materials are Contractor's property.

Intent is to remove all HMAC from existing concrete in one pass. Repair damaged concrete paving caused by Contractor's operations at the expense of the Contractor as directed by the Engineer.

Take precaution to avoid damage to existing bridge decks and bridge joints including but not limited to armor joints, header joints, relieve joints, etc.. Repair any damage to the bridge decks and/or joints as approved. This work will not be paid directly, but will be performed at the Contractor's expense.

Item 421. Hydraulic Cement Concrete

For Class P (Item 360) and S (Item 421) Concrete Only: For concrete plants equipped with 2 aggregate bins or no calibrated metering system, blend manufactured and natural sand at the aggregate source only. For concrete plants equipped with a minimum of 3 bins and a calibrated metering system, blending of the separate sands on-site is permitted to meet gradation and AIR requirements.

Strength/cylinder testing equipment must be equipped with a printer for an electronic print out of all test results.

Air entrainment requirements are waived for all classes of concrete except all Class S and all Class P concrete.

Concrete will not be rejected for low air content. Adjustment to the dosage of air entrainment will be as directed or allowed by the Engineer.

Include the approved mix design number on each delivery ticket.

Item 428. Penetrating Concrete Surface Treatment

Provide a Class I Seal Coat to the following elements: *underside of deck, abutments, bents, piers, and exterior and bottom surface of concrete beams.*

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".

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 504. Field Office and Laboratory

Furnish the following structures for this project:

Type	No.
Field Lab (Ty. A)	1
Field Office (Ty. C)	1

Field office will require at least a 3' by 3' landing on the outside of each exit door and a concrete landing at the bottom of exit stairs. The concrete landing will be the width of the stairs and extend at least 4’ in front of the bottom step.

Furnish the following for the Field Office structure:

Item	No.
Desktop Computer	1
Laptop Computer	1
Printer	1
Internet Service	1

Provide Laptop computers with an Intel i5 (2.8 GHz) processor, or greater.

Integrated printer/copier/scanner/fax units will be permitted.

Item 506. Temporary Erosion, Sedimentation, and Environmental Controls

Remove accumulated sediment or replace SW3P controls when the capacity has been reduced by 50% or when the depth of sediment at the control structure exceeds one foot.

Item 512. Portable Concrete Traffic Barrier

“*Furnish and Install*” barrier in compliance with Low Profile Concrete Barrier (LPCB) standards as shown on the plans.

Furnish Class H Concrete with a minimum 28 day compressive strength of 3,600 psi.

Provide the hardware assemblies to join barrier sections.

Provide (2) 1-1/4” x 2’2” threaded rods, (4) standard USS washers, grade 5, (4) 1-1/4” hex nuts, and (2) 5” x 10” x 3/8” plate washers for each section of LPCB.

Delineate all barriers in accordance with Barricade and Construction (BC) Standard sheets. Barrier delineation will not be paid for directly, but will be subsidiary to Item 512,”Portable Concrete Traffic Barrier”.

Remove and replace traffic barrier damaged by the traveling public and no longer serviceable as directed. Additional payment will be provided as compensation to remove and replace the traffic barrier damaged by the traveling public in accordance with Item 512.

Items 530 And 531. Intersections, Driveways and Turnouts, and Sidewalks

The furnishing and installation of the sand cushion in proposed sidewalks, sidewalk ramps, and driveways will not be paid for directly but will be subsidiary to this bid item.

Item 585. Ride Quality for Pavement Surfaces

Use Surface Test Type A to evaluate ride quality of travel lanes in accordance with Item 585, “Ride Quality for Pavement Surfaces.”

Item 666. Reflectorized Pavement Markings with Retroreflective Requirements

Collection of retroreflectivity readings using a mobile retroreflectometer is the preferred method. If retroreflectivity readings are collected using a portable or handheld unit, then measurement is defined as a collective average of at least 20 readings taken along a 200-foot test section. A minimum of three measurements will be required per mile of roadway. Measurements collected on a centerline stripe will be averaged separately for stripe in each direction of travel. A TxDOT inspector must witness the calibration and collection of all retro-reflectivity data.

Item 3076. Dense-Graded Hot-Mix Asphalt

Provide aggregate with a Surface Aggregate Classification (SAC) value of A for the travel lanes and shoulders.

No blending, of the material retained on the No. 4 sieve, to meet SAC A will be allowed for surface mixes.

Natural (field) sands are not allowed.

Warm Mix Asphalt (WMA) is not permitted in any mix type on this project.

RAP and RAS are not permitted in any surface and levelup mixes on this project.

Use the Boil Test, Test Procedure Tex-530-C, and provide only mixes that produce zero percent (0%) stripping for design verification and during production.

Include the approved mix design number on each delivery ticket.

Use a Material Transfer Device (MTD) unless otherwise directed.

County: TARRANT

Highway: SH 199

Stop production after Lot 1. Review all test data and confirm any changes with the Engineer. Do not start production and placement on subsequent Lots until approved by the Engineer.

Item 6001. 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.

Two electronic portable changeable message sign unit(s) 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

Item 6185. Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA)

One total shadow vehicles with TMA will be required for this type of work. Determine if one or more of these operations will be ongoing at the same time to determine the total number of TMAs needed for the project.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0171-05-083 **DISTRICT** Fort Worth **COUNTY** Tarrant
HIGHWAY SH 199

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0171-05-083**			
		PROJECT ID		**A00015637**			
		COUNTY		**Tarrant**			
		HIGHWAY		**SH 199**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	161-6017	COMPOST MANUF TOPSOIL (4")	SY	29.000		29.000	
	162-6002	BLOCK SODDING	SY	29.000		29.000	
	166-6001	FERTILIZER	AC	0.010		0.010	
	168-6001	VEGETATIVE WATERING	MG	4.400		4.400	
	351-6002	FLEXIBLE PAVEMENT STRUCTURE REPAIR(6")	SY	125.000		125.000	
	354-6220	PLANE ASPH CONC PAV (0" TO 2" MICRO)	SY	4,953.000		4,953.000	
	401-6001	FLOWABLE BACKFILL	CY	5.000		5.000	
	428-6001	PENETRATING CONCRETE SURFACE TREATMENT	SY	20,437.000		20,437.000	
	429-6003	CONC STR REPAIR(DECK REP(PART DEPTH))	SF	862.000		862.000	
	429-6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	2,019.000		2,019.000	
	438-6002	CLEANING AND SEALING EXIST JOINTS(CL3)	LF	112.000		112.000	
	438-6004	CLEANING AND SEALING EXIST JOINTS(CL7)	LF	896.000		896.000	
	442-6007	STR STEEL (MISC NON - BRIDGE)	LB	2,358.000		2,358.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	8.000		8.000	
	506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	156.000		156.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	156.000		156.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	600.000		600.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	600.000		600.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	264.000		264.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	264.000		264.000	
	512-6009	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	LF	816.000		816.000	
	512-6010	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	LF	40.000		40.000	
	512-6033	PORT CTB (MOVE)(LOW PROF)(TY 1)	LF	2,370.000		2,370.000	
	512-6034	PORT CTB (MOVE)(LOW PROF)(TY 2)	LF	120.000		120.000	
	512-6057	PORT CTB (REMOVE)(LOW PROF)(TY 1)	LF	816.000		816.000	
	512-6058	PORT CTB (REMOVE)(LOW PROF)(TY 2)	LF	40.000		40.000	
	531-6002	CONC SIDEWALKS (5")	SY	1.000		1.000	
	658-6013	INSTL DEL ASSM (D-SW)SZ (BRF)CTB	EA	40.000		40.000	
	662-6060	WK ZN PAV MRK REMOV (W)4"(BRK)	LF	381.000		381.000	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	4,813.000		4,813.000	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	5,070.000		5,070.000	
	666-6030	REFL PAV MRK TY I (W)8"(DOT)(100MIL)	LF	12.000		12.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	368.000		368.000	
	666-6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	LF	159.000		159.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	222.000		222.000	
	666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	3.000		3.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0171-05-083 **DISTRICT** Fort Worth **COUNTY** Tarrant
HIGHWAY SH 199

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0171-05-083**			
		PROJECT ID		**A00015637**			
		COUNTY		**Tarrant**			
		HIGHWAY		**SH 199**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	3.000		3.000	
	666-6171	REFL PAV MRK TY II (W) 6" (BRK)	LF	799.000		799.000	
	666-6174	REFL PAV MRK TY II (W) 6" (SLD)	LF	219.000		219.000	
	666-6176	REFL PAV MRK TY II (W) 8" (DOT)	LF	12.000		12.000	
	666-6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	368.000		368.000	
	666-6180	REFL PAV MRK TY II (W) 12" (SLD)	LF	159.000		159.000	
	666-6182	REFL PAV MRK TY II (W) 24" (SLD)	LF	222.000		222.000	
	666-6184	REFL PAV MRK TY II (W) (ARROW)	EA	3.000		3.000	
	666-6192	REFL PAV MRK TY II (W) (WORD)	EA	3.000		3.000	
	666-6208	REFL PAV MRK TY II (Y) 6" (BRK)	LF	468.000		468.000	
	666-6210	REFL PAV MRK TY II (Y) 6" (SLD)	LF	3,164.000		3,164.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF	799.000		799.000	
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	219.000		219.000	
	666-6318	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	LF	468.000		468.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF	3,164.000		3,164.000	
	672-6007	REFL PAV MRKR TY I-C	EA	30.000		30.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	55.000		55.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	2,872.000		2,872.000	
	678-6002	PAV SURF PREP FOR MRK (6")	LF	4,650.000		4,650.000	
	778-6001	CONCRETE RAIL REPAIR (IN-KIND)	LF	4.000		4.000	
	780-6004	CONC CRCK REPR(DISCRETE)(ROUT AND SEAL)	LF	106.000		106.000	
	786-6001	CARBON FIBER REINF POLYMER PROTECTION	SF	1,052.000		1,052.000	
	4106-6003	POLYESTER POLYMER CONC OVERLAY (2")	SY	4,953.000		4,953.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000	
	6185-6002	TMA (STATIONARY)	DAY	240.000		240.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS

LOCATION	512 6009 PORT CTB (FUR & INST) (LOW PROF) (TY 1) LF	512 6010 PORT CTB (FUR & INST) (LOW PROF) (TY 2) LF	512 6033 PORT CTB (MOVE) (LOW PROF) (TY 1) LF	512 6034 PORT CTB (MOVE) (LOW PROF) (TY 2) LF	512 6057 PORT CTB (REMOVE) (LOW PROF) (TY 1) LF	512 6058 PORT CTB (REMOVE) (LOW PROF) (TY 2) LF	658 6013 INSTL DEL ASSM (D-SW) SZ (BRF) CTB EA	662 6060 WK ZN PAV MRK REMOV (W) 4" (BRK) LF	662 6063 WK ZN PAV MRK REMOV (W) 4" (SLD) LF	662 6095 WK ZN PAV MRK REMOV (Y) 4" (SLD) LF	677 6001 ELIM EXT PAV MRK & MRKS (4") LF	6001 6002 PORTABLE CHANGEABLE MESSAGE SIGN EA	6185 6002 TMA (STATIONARY) DAY
PHASE 1													
SHEET 1 OF 2	753	20					38	247	991	985	2,045		
SHEET 2 OF 2	44	20					2	59	124	405	437		
PHASE 2													
SHEET 1 OF 2			750	20					876	885			
SHEET 2 OF 2			47	20				75	351	239			
PHASE 3													
SHEET 1 OF 2	19		797	40					1,309	1,290	287		
SHEET 2 OF 2													
PHASE 4													
SHEET 1 OF 3			732	20	772	20			1,055	1,025	103		
SHEET 2 OF 3			44	20	44	20			107	241			
SHEET 3 OF 3													
PROJECT TOTALS	816	40	2,370	120	816	40	40	381	4,813	5,070	2,872	2	240

SUMMARY OF MOBILIZATION ITEMS

LOCATION	500 6001 MOBILIZATION LS	502 6001 BARRICADES, SIGNS AND TRAFFIC HANDLING MO
SH 199	1	8
PROJECT TOTALS	1	8

SUMMARY OF ROADWAY ITEMS

LOCATION	351 6002 FLEXIBLE PAVEMENT STRUCTURE REPAIR (6") SY
SH 199	125
PROJECT TOTALS	125

SUMMARY OF PAVEMENT MARKING ITEMS

LOCATION	666 6030 REFL PAV MRK TY I (W) 8" (DOT) (100MIL) LF	666 6036 REFL PAV MRK TY I (W) 8" (SLD) (100MIL) LF	666 6042 REFL PAV MRK TY I (W) 12" (SLD) (100MIL) LF	666 6048 REFL PAV MRK TY I (W) 24" (SLD) (100MIL) LF	666 6054 REFL PAV MRK TY I (W) (ARROW) (100MIL) EA	666 6078 REFL PAV MRK TY I (W) (WORD) (100MIL) EA	666 6171 REFL PAV MRK TY II (W) 6" (BRK) LF	666 6174 REFL PAV MRK TY II (W) 6" (SLD) LF	666 6176 REFL PAV MRK TY II (W) 8" (DOT) LF	666 6178 REFL PAV MRK TY II (W) 8" (SLD) LF	666 6180 REFL PAV MRK TY II (W) 12" (SLD) LF	666 6182 REFL PAV MRK TY II (W) 24" (SLD) LF	666 6184 REFL PAV MRK TY II (W) (ARROW) EA	666 6192 REFL PAV MRK TY II (W) (WORD) EA	666 6208 REFL PAV MRK TY II (Y) 6" (BRK) LF	666 6210 REFL PAV MRK TY II (Y) 6" (SLD) LF	666 6306 RE PM W/RET REQ TY I (W) 6" (BRK) (100MIL) LF	666 6309 RE PM W/RET REQ TY I (W) 6" (SLD) (100MIL) LF	666 6318 RE PM W/RET REQ TY I (Y) 6" (BRK) (100MIL) LF	666 6321 RE PM W/RET REQ TY I (Y) 6" (SLD) (100MIL) LF	672 6007 REFL PAV MRKR TY I-C EA	672 6009 REFL PAV MRKR TY II-A-A EA	678 6002 PAV SURF PREP FOR MRK (6") LF
SHEET 1 OF 2		102	126	32	1	1	523			102	126	32	1	1	424	2,097	523		424	2,097	12	37	3,044
SHEET 2 OF 2	12	266	33	190	2	2	276	219	12	266	33	190	2	2	44	1,067	276	219	44	1,067	18	18	1,606
PROJECT TOTALS	12	368	159	222	3	3	799	219	12	368	159	222	3	3	468	3,164	799	219	468	3,164	30	55	4,650

SUMMARY OF BRIDGE ITEMS NBI: 022200017105018

LOCATION	354 6220 PLANE ASPH CONC PAV (0" TO 2" MICRO) SY	401 6001 FLOWABLE BACKFILL CY	428 6001 PENETRATING CONCRETE SURFACE TREATMENT SY	429 6003 CONC STR REPAIR (DECK REP (PART DEPTH)) SF	429 6007 CONC STR REPAIR (VERTICAL & OVERHEAD) SF	438 6002 CLEANING AND SEALING EXIST JOINTS (CL3) LF	438 6004 CLEANING AND SEALING EXIST JOINTS (CL7) LF	442 6007 STR STEEL (MISC NON - BRIDGE) LB	531 6002 CONC SIDEWALKS (5") SY	778 6001 CONCRETE RAIL REPAIR (IN-KIND) LF	780 6004 CONC CRCK REPR (DISCRETE) (ROUT AND SEAL) LF	786 6001 CARBON FIBER REINF POLYMER PROTECTION SF	4106 6003 POLYESTER POLYMER CONC OVERLAY (2") SY
SH 199	4,953	5	20,437	862	2,019	112	896	2,358	1	4	106	1,052.0	4,953
PROJECT TOTALS	4,953	5	20,437	862	2,019	112	896	2,358	1	4	106	1,052.0	4,953

SUMMARY OF EROSION CONTROL ITEMS

LOCATION	161 6017 COMPOST MANUF TOPSOIL (4") SY	162 6002 BLOCK SODDING SY	166 6001 FERTILIZER AC	168 6001 VEGETATIVE WATERING MG	506 6020 CONSTRUCTION EXITS (INSTALL) (TY 1) SY	506 6024 CONSTRUCTION EXITS (REMOVE) SY	506 6038 TEMP SEDMT CONT FENCE (INSTALL) LF	506 6039 TEMP SEDMT CONT FENCE (REMOVE) LF	506 6041 BIODEG EROSN CONT LOGS (INSTL) (12") LF	506 6043 BIODEG EROSN CONT LOGS (REMOVE) LF
SH 199	29	29	0.01	4.4	156	156	600	600	264	264
PROJECT TOTALS	29	29	0.01	4.4	156	156	600	600	264	264

REV	BY	DESCRIPTION	DATE

OMEGA ENGINEERS, INC.
8200 N. MOPAC EXPRESSWAY, STE #280
AUSTIN, TEXAS 78759
OMEGAENGINEERS.COM
TX PE Firm Reg. No. F-2147
P:512 575 2288 F:281 647 9184

Texas Department of Transportation

PROJECT SUMMARY

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	7
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 4:51:43 PM
Design Filename: c:\pwworkingdir\omega-app02.omegaengineers.local+omega-prod\omega+jberry\dms08244\FW1+SH199+QUANT.dgn

TCP GENERAL NOTES

1. ALL DETOURS, HORIZONTAL TRAFFIC MOVEMENTS, LPCB, DRAINAGE, ETC. ARE DIRECTLY RELATED TO THE SEQUENCE OF OPERATIONS IN CONFORMITY WITH THE DETAILS SHOWN ON THE PLANS. THE CONTRACTOR MAY PROPOSE MODIFICATIONS TO THE SEQUENCE OF WORK FOR CONSIDERATION BY THE ENGINEER. IN THE EVENT THAT THE CONTRACTOR MAKES SIGNIFICANT CHANGES TO THE TCP PHASING, ALL CHANGES TO THE VARIOUS PAY ITEMS, IMPACT TO TRAFFIC, EFFECT TO OVERALL PROJECT IN TIME AND COST, ETC. MUST BE PROVIDED BY THE CONTRACTOR.
2. IF ANY ALTERNATIVE PROPOSAL IS TO BE IMPLEMENTED, THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING DETAILED PLAN SHEETS SEALED BY A TEXAS REGISTERED PROFESSIONAL ENGINEER FOR INCLUSION WITH THE CHANGE ORDER. THE CONTRACTOR SHALL NOT PROCEED WITH ANY CONSTRUCTION OPERATIONS BASED ON A REVISED PHASE/SEQUENCE UNTIL HE/SHE OBTAINS WRITTEN APPROVAL FROM THE ENGINEER.
3. TRAFFIC MUST BE MAINTAINED OVER THE PROJECT AREA DURING CONSTRUCTION. ALL WORK AND MATERIALS REQUIRED FOR HANDLING TRAFFIC SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO ITEM 502, "BARRICADES, SIGNS, AND TRAFFIC HANDLING" UNLESS NOTED OTHERWISE IN THE PLANS.
4. THE PROVISIONS FOR ROUTING TRAFFIC DURING CONSTRUCTION AND THE SEQUENCE OF CONSTRUCTION OPERATIONS SHALL BE IN GENERAL CONFORMITY WITH THE DETAILS SHOWN ON THE PLANS. ALL TRAFFIC HANDLING SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF THE TMUTCD AND APPLICABLE TXDOT TCP AND WORK ZONE STANDARDS THROUGHOUT THE DURATION OF THE CONSTRUCTION OF EACH PROJECT LOCATION.
5. THE SPACING OF SIGNS MAY BE MODIFIED TO MEET TRAFFIC CONDITIONS AS DIRECTED.
6. ALL LANE CLOSURES SHALL BE SCHEDULED AT LEAST TWO WEEKS IN ADVANCE AND APPROVED BY THE ENGINEER.
7. BY THE END OF EACH WORKDAY SUFFICIENT BACKFILL WILL BE PLACED TO PROVIDE A 3:1 SAFETY WEDGE ON ALL DROPOFFS 2" OR GREATER ADJACENT TO THE ROADWAY. THE BACKFILL SHALL BE EXISTING PAVEMENT MATERIAL OR ANOTHER APPROVED MATERIAL.
8. PROVIDE ACCESS TO ADJACENT PROPERTIES AT ALL TIMES THROUGHOUT CONSTRUCTION. THIS WORK WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SUBSIDIARY TO THE VARIOUS BID ITEMS.
9. COVER OR REMOVE ALL CONFLICTING SIGNS.
10. THE CONTRACTOR IS REQUIRED TO PROVIDE AND MAINTAIN POSITIVE DRAINAGE THROUGHOUT THE PROJECT PHASING, INCLUDING REMOVING DEBRIS.
11. DO NOT LEAVE CONSTRUCTION WARNING SIGNS ON ANY AREA WHICH CONSTRUCTION OPERATIONS ARE NOT BEING CARRIED OUT.
12. NO EQUIPMENT, STOCKPILED MATERIAL, ETC. SHALL BE PERMITTED TO REMAIN IN THE CLEAR ZONE AFTER WORKING HOURS.
13. THE CONTRACTOR MAY INSTALL FINAL SIGNS IN ACCORDANCE WITH THE SIGNING LAYOUT WHERE TRAFFIC IS TO BE ROUTED ON SECTIONS OF NEW ROADWAY OR PROVIDE TEMPORARY SIGNING ACCORDINGLY.

TCP NARRATIVE

PHASE 1

1. INSTALL ADVANCED WARNING SIGNS AS SHOWN IN THE PLANS AND IN ACCORDANCE WITH BC AND WZ STANDARDS.
2. INSTALL SWP3 FEATURES AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.
3. INSTALL WORK ZONE PAVEMENT MARKINGS AND SIGNAGE TO ROUTE THE NORTHBOUND LANES ONTO EXISTING CENTER TURNING LANE AND INNER SOUTHBOUND LANE.
4. REPAIR NORTHBOUND SH 199 BRIDGE RAILING.
5. REPAIR NORTHBOUND SH 199 SIDEWALK.
6. OPEN NORTHBOUND SH 199 BRIDGE TO THROUGH TRAFFIC.

PHASE 2

1. INSTALL ADVANCED WARNING SIGNS AS SHOWN IN THE PLANS AND IN ACCORDANCE WITH BC AND WZ STANDARDS.
2. INSTALL SWP3 FEATURES AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.
3. INSTALL WORK ZONE PAVEMENT MARKINGS AND SIGNAGE TO ROUTE THE SOUTHBOUND LANES ONTO EXISTING CENTER TURNING LANE.
4. REPAIR SOUTHBOUND SH 199 BRIDGE RAILING.
5. REPAIR SOUTHBOUND SH 199 SIDEWALK.
6. OPEN SOUTHBOUND SH 199 BRIDGE TO THROUGH TRAFFIC.

PHASE 3

1. INSTALL ADVANCED WARNING SIGNS AS SHOWN IN THE PLANS AND IN ACCORDANCE WITH BC AND WZ STANDARDS.
2. INSTALL SWP3 FEATURES AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.
3. INSTALL WORK ZONE PAVEMENT MARKINGS AND SIGNAGE TO ROUTE THE SOUTHBOUND LANES AND CENTER TURNING LANE ONTO THE INNER NORTHBOUND LANE.
4. REMOVE EXISTING PAVEMENT ON THE SOUTHBOUND LANES AND HALF OF THE CENTER TURNING LANE AND REPLACE IT WITH TY B HMA IN ACCORDANCE WITH THE PLANS.
5. REMOVE EXISTING ASPHALT OVERLAY ON THE SOUTHBOUND LANES AND HALF OF THE CENTER TURNING LANE ON BRIDGE, SEAL BRIDGE JOINTS, AND REPLACE OVERLAY WITH POLYESTER POLYMER CONCRETE OVERLAY. THIS CONSTRUCTION SHOULD OCCUR BETWEEN 10 AM AND 3 PM.
6. OPEN SOUTHBOUND SH 199 BRIDGE TO THROUGH TRAFFIC.

PHASE 4

1. INSTALL WORK ZONE PAVEMENT MARKINGS AND SIGNAGE TO ROUTE THE NORTHBOUND LANES AND CENTER TURNING LANE ONTO THE INNER SOUTHBOUND LANE.
2. REMOVE EXISTING PAVEMENT ON THE NORTHBOUND LANES AND HALF OF THE CENTER TURNING LANE AND REPLACE IT WITH TY B HMA IN ACCORDANCE WITH THE PLANS.
3. REMOVE EXISTING ASPHALT OVERLAY ON THE NORTHBOUND LANES AND HALF OF THE CENTER TURNING LANE ON BRIDGE, SEAL BRIDGE JOINTS, AND REPLACE OVERLAY WITH POLYESTER POLYMER CONCRETE OVERLAY. THIS CONSTRUCTION SHOULD OCCUR BETWEEN 10 AM AND 3 PM.
4. INSTALL PERMANENT STRIPING PER TCP (3-1) AND TCP (3-3).
5. REMOVE ALL THE SWP3 ITEM AS DIRECTED WHEN PERMANENT COVER IS ESTABLISHED.
6. REMOVE ALL ADVANCED WARNING SIGNS.
7. OPEN NORTHBOUND AND CENTER TURNING LANE SH 199 BRIDGE TO THROUGH TRAFFIC.

STATE OF TEXAS
ALEX I. GARCIA
107317
PROFESSIONAL LICENSED ENGINEER
10.5.23

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

TRAFFIC CONTROL PLAN GENERAL NOTES AND NARRATIVE SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

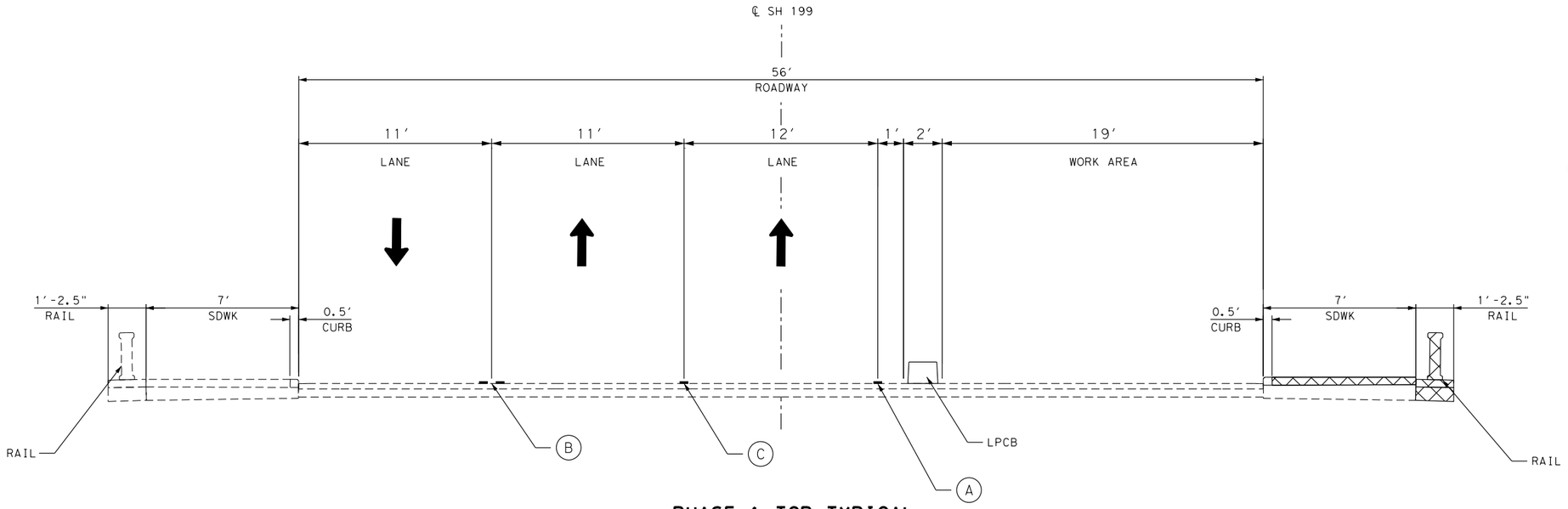
FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	8
CONTROL	SECTION NO.	JOB	
0171	05	083	

LEGEND

- PROP CONSTRUCTION
- (A) WK ZN PAV MRK REMOV (W)4"(SLD)
- (B) WK ZN PAV MRK REMOV (Y)4"(SLD)(DBL)
- (C) WK ZN PAV MRK REMOV (W) 4" (BRK)

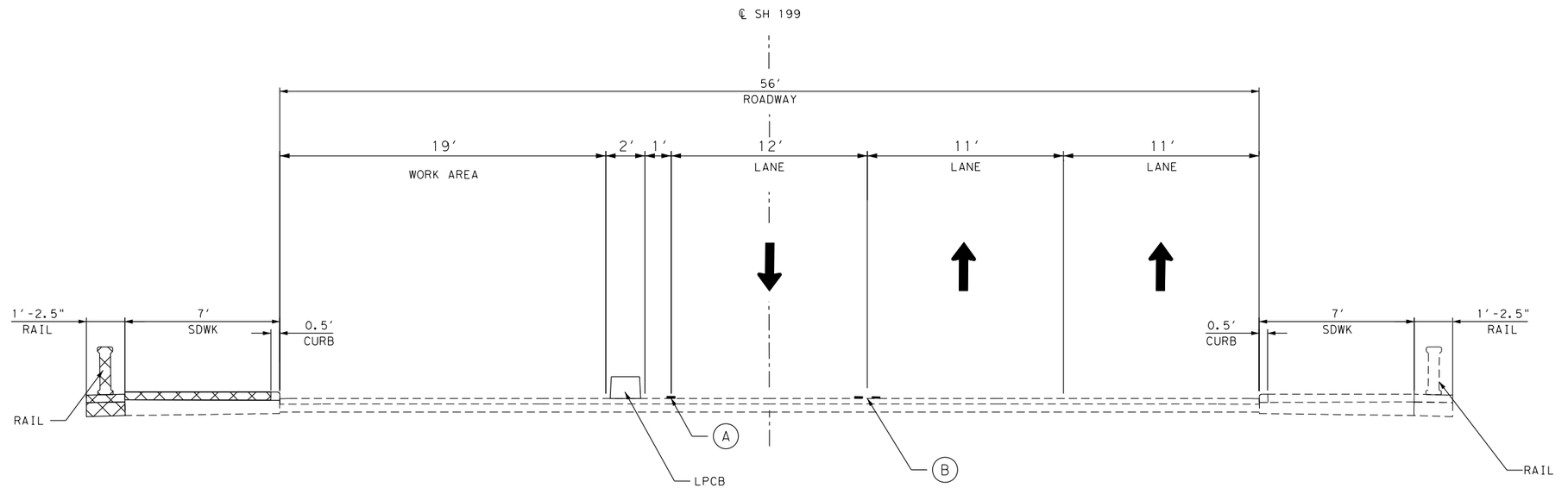
NOTES:

FOR SECTIONS FROM BEGIN TO STA 37+28 AND STA 45+64 TO END SEE TCP PLAN FOR TRANSITION DETAILS



PHASE 1 TCP TYPICAL

STA 37+28.00 TO STA 45+64.00
NOT TO SCALE



PHASE 2 TCP TYPICAL

STA 37+28.00 TO STA 45+64.00
NOT TO SCALE

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
10-4-23

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

TRAFFIC CONTROL PLAN TYPICAL SECTION

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	9
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/4/2023 3:31:22 PM
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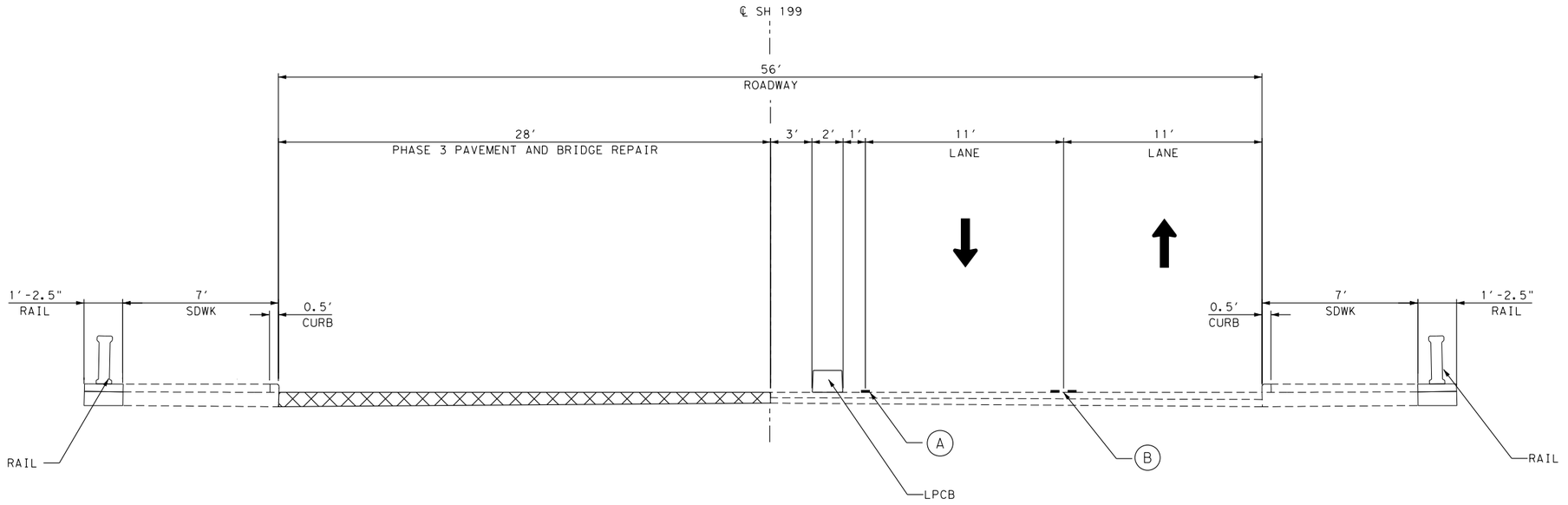
LEGEND

- PROP CONSTRUCTION
- (A) WK ZN PAV MRK REMOV (W)4"(SLD)
- (B) WK ZN PAV MRK REMOV (Y)4"(SLD)(DBL)
- (C) WK ZN PAV MRK REMOV (W) 4" (BRK)

NOTES:

FOR SECTIONS FROM BEGIN TO STA 37+28 AND STA 45+44 TO END SEE TCP PLAN FOR TRANSITION DETAILS



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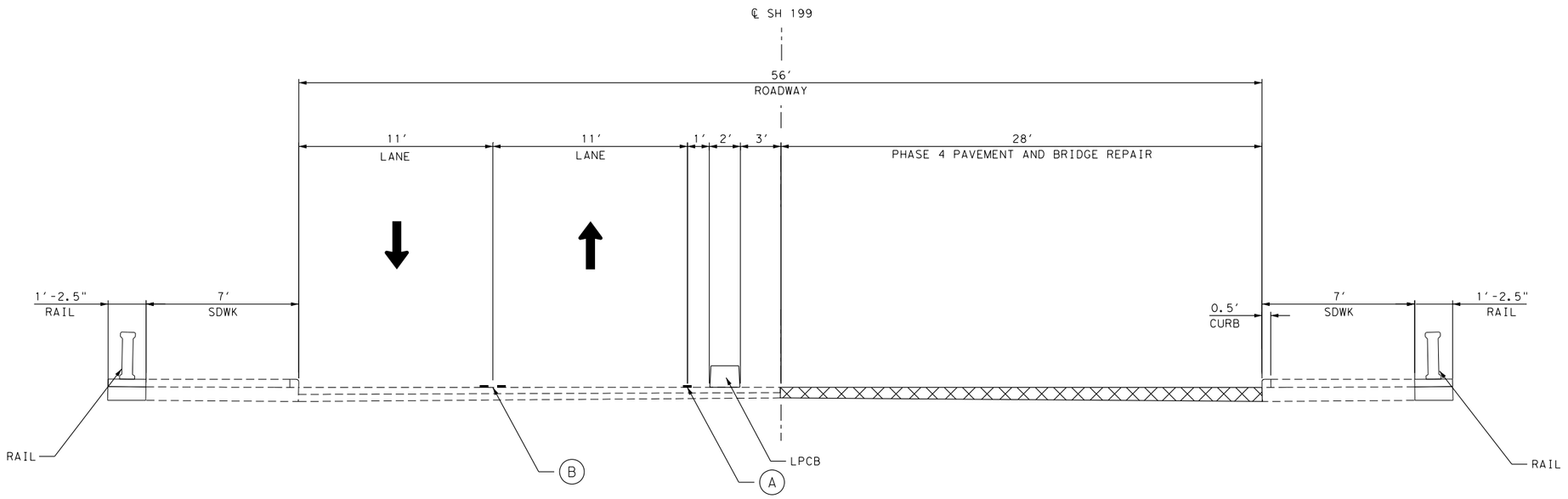
NOT TO SCALE



PHASE 4 TCP TYPICAL

STA 37+28.00 TO STA 45+44.00
NOT TO SCALE

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
10-4-23

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

TRAFFIC CONTROL PLAN TYPICAL SECTION

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	10
CONTROL	SECTION NO.	JOB	
0171	05	083	

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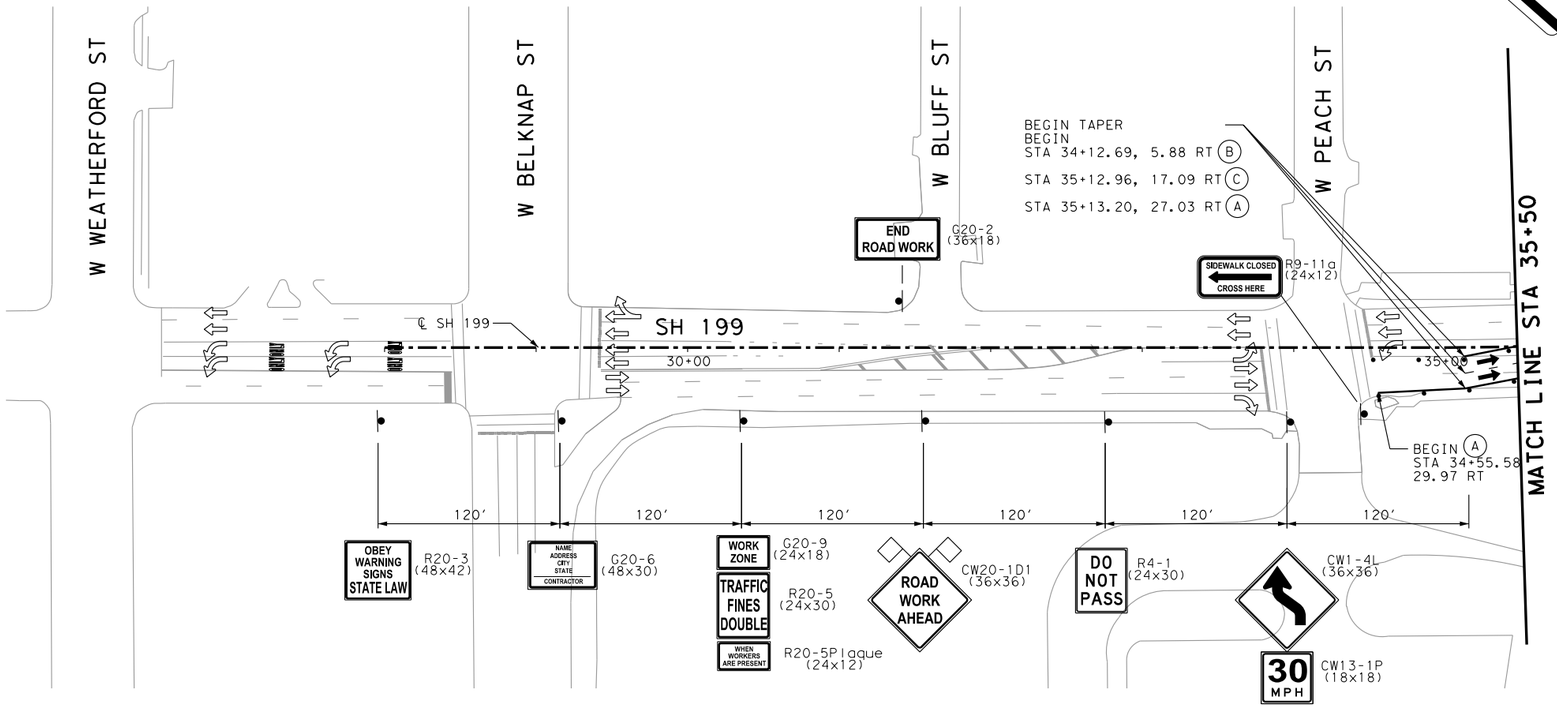

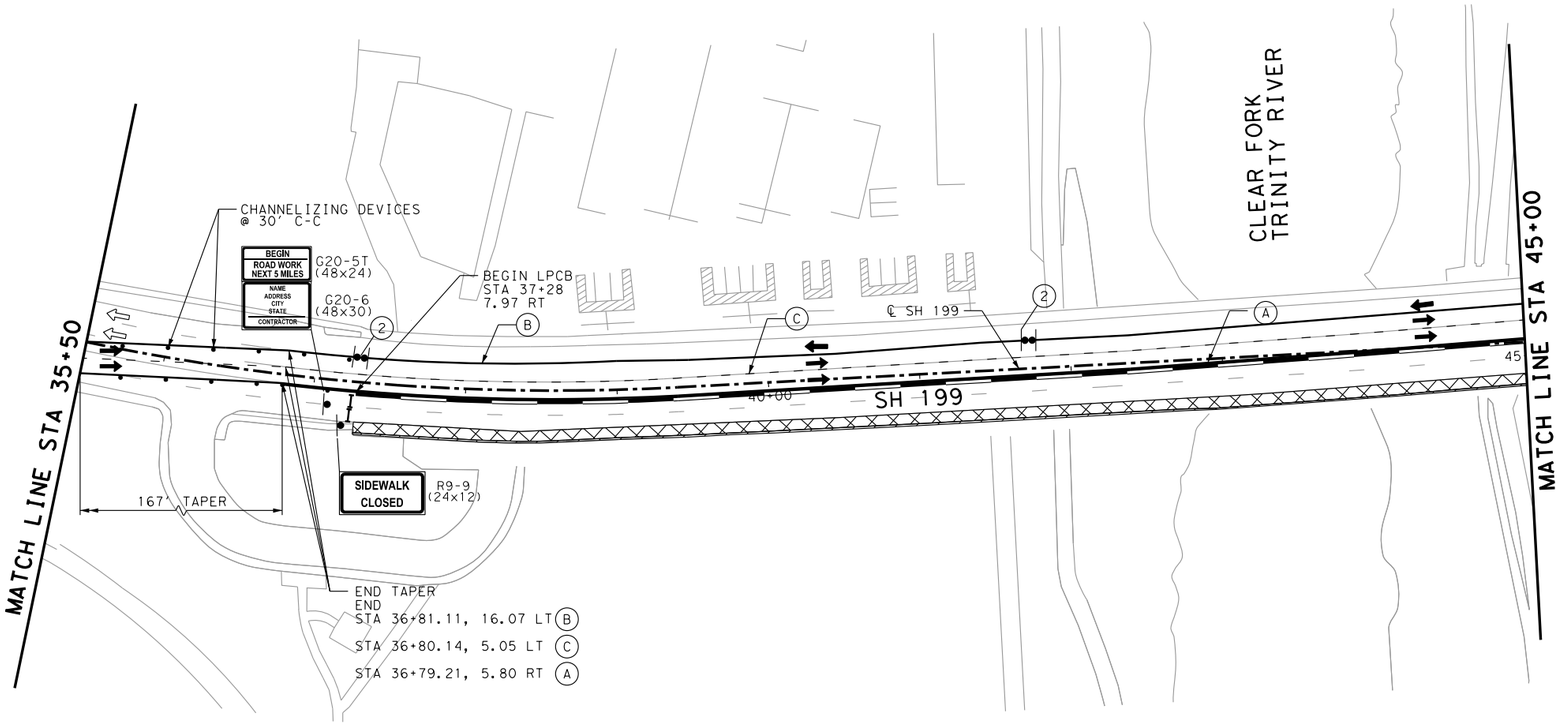

LEGEND

- CONC TRAFFIC BARRIER
- • • • CHANNELIZING DEVICES
- SIGN POST
- TYP III BARRICADE
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- WORKZONE
- (A) 4" WZ (W) SGL SLD REMOVABLE
- (B) 4" WZ (Y) DBL SLD REMOVABLE
- (C) 4" WZ (W) BRK REMOVABLE

NOTES:

1. FOR ADVANCED WARNING SIGNS LAYOUT REFER TO STANDARD BC(2)-21.
2. ADD BARRIER REFLECTORS TO LPCBs. REFER TO D&OM(1)-20 & D&OM(2)-20 FOR DETAILS.

(1) ROAD WORK AHEAD — CW20-1D1 36x36

(2) CW6-4 (12x18)

0 50′ 100′

SCALE: 1" = 100′

STATE OF TEXAS
ALEX I. GARCIA
107317
PROFESSIONAL LICENSED ENGINEER

10-4-23

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

TRAFFIC CONTROL PLAN PHASE 1

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	11
CONTROL	SECTION NO.	JOB	
0171	05	083	

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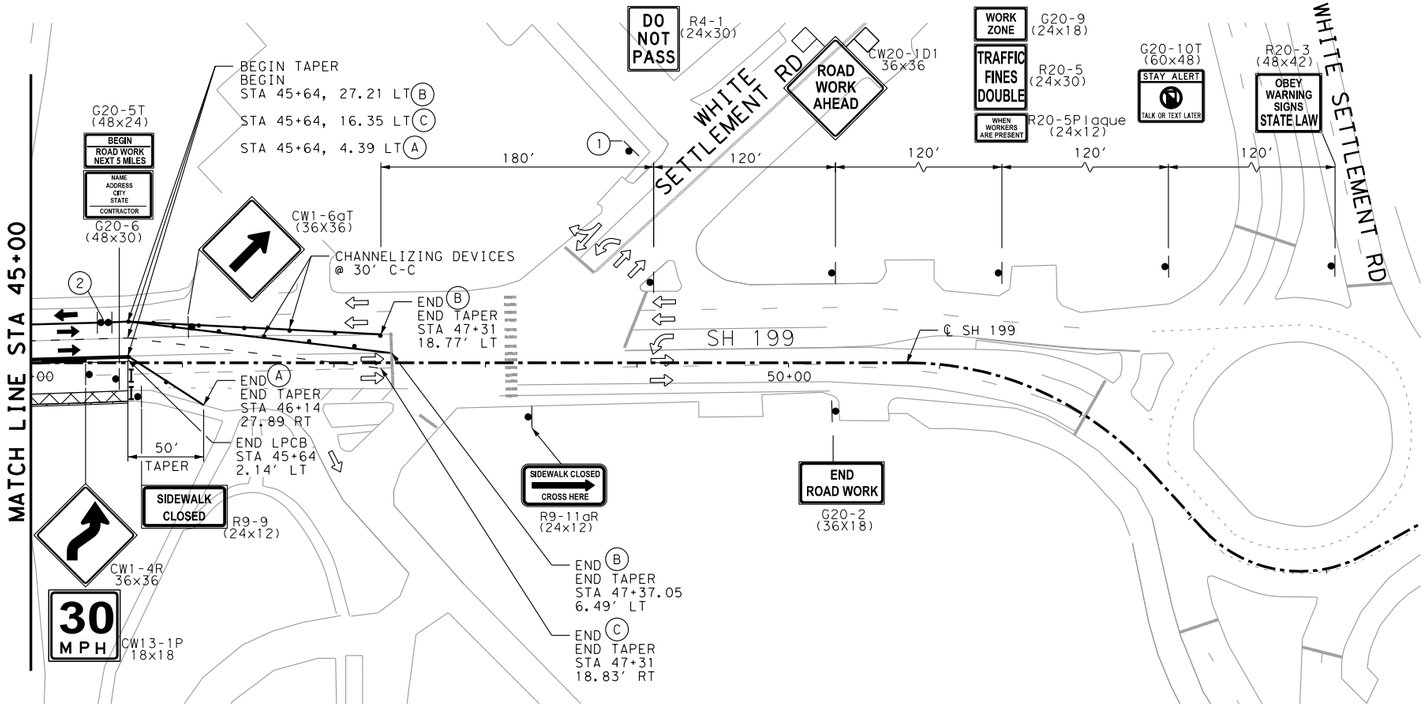

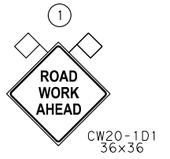

LEGEND

- CONC TRAFFIC BARRIER
- • • • CHANNELIZING DEVICES
- SIGN POST
- TYP III BARRICADE
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- WORKZONE
- (A) 4" WZ (W) SGL SLD REMOVABLE
- (B) 4" WZ (Y) DBL SLD REMOVABLE
- (C) 4" WZ (W) BRK REMOVABLE

NOTES:

1. FOR ADVANCED WARNING SIGNS LAYOUT REFER TO STANDARD BC(2)-21.
2. ADD BARRIER REFLECTORS TO LPCBs. REFER TO D&OM(1)-20 & D&OM(2)-20 FOR DETAILS.

0 50' 100'

SCALE: 1" = 100'

STATE OF TEXAS
ALEX I. GARCIA
107317
PROFESSIONAL LICENSED ENGINEER

10·5·23

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

TRAFFIC CONTROL PLAN PHASE 1

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	12
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/5/2023 9:47:50 AM
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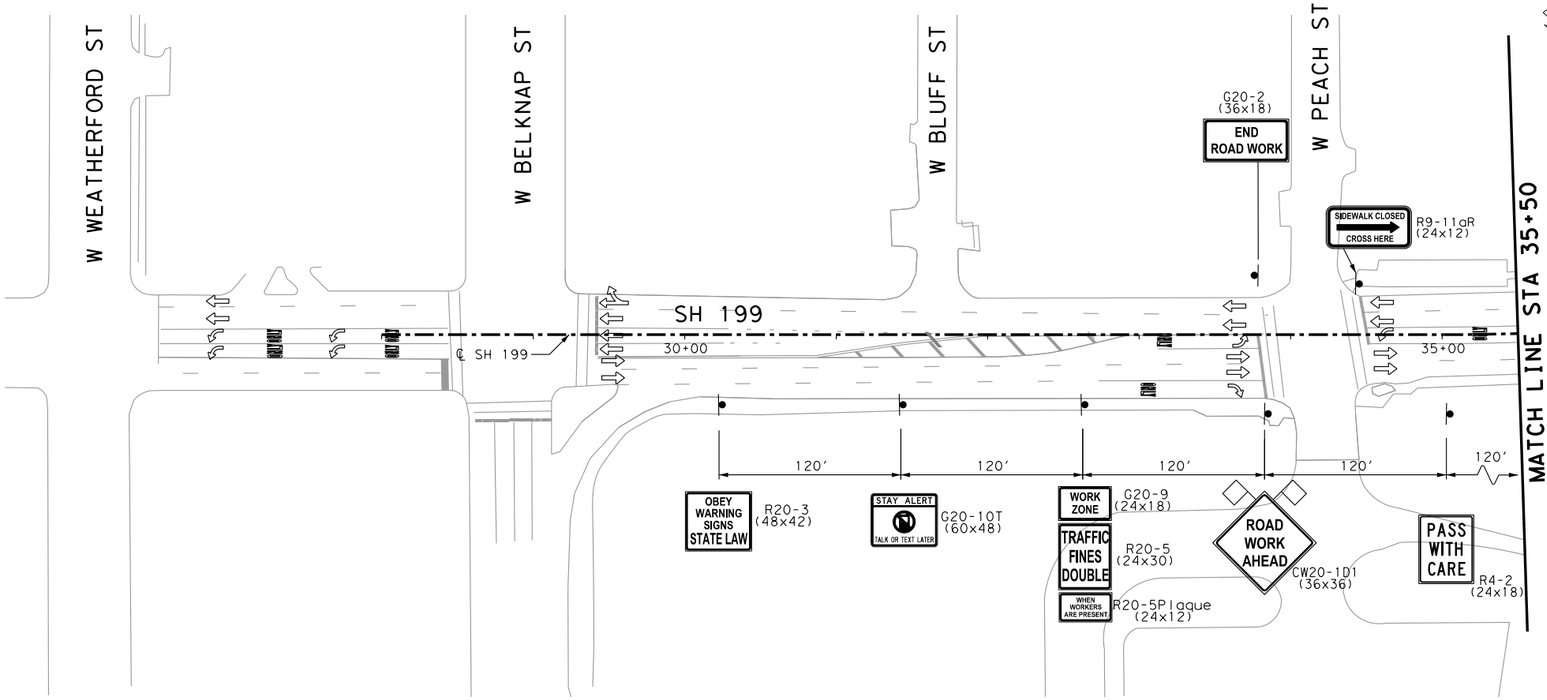
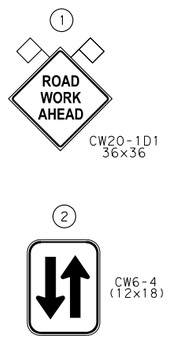




LEGEND

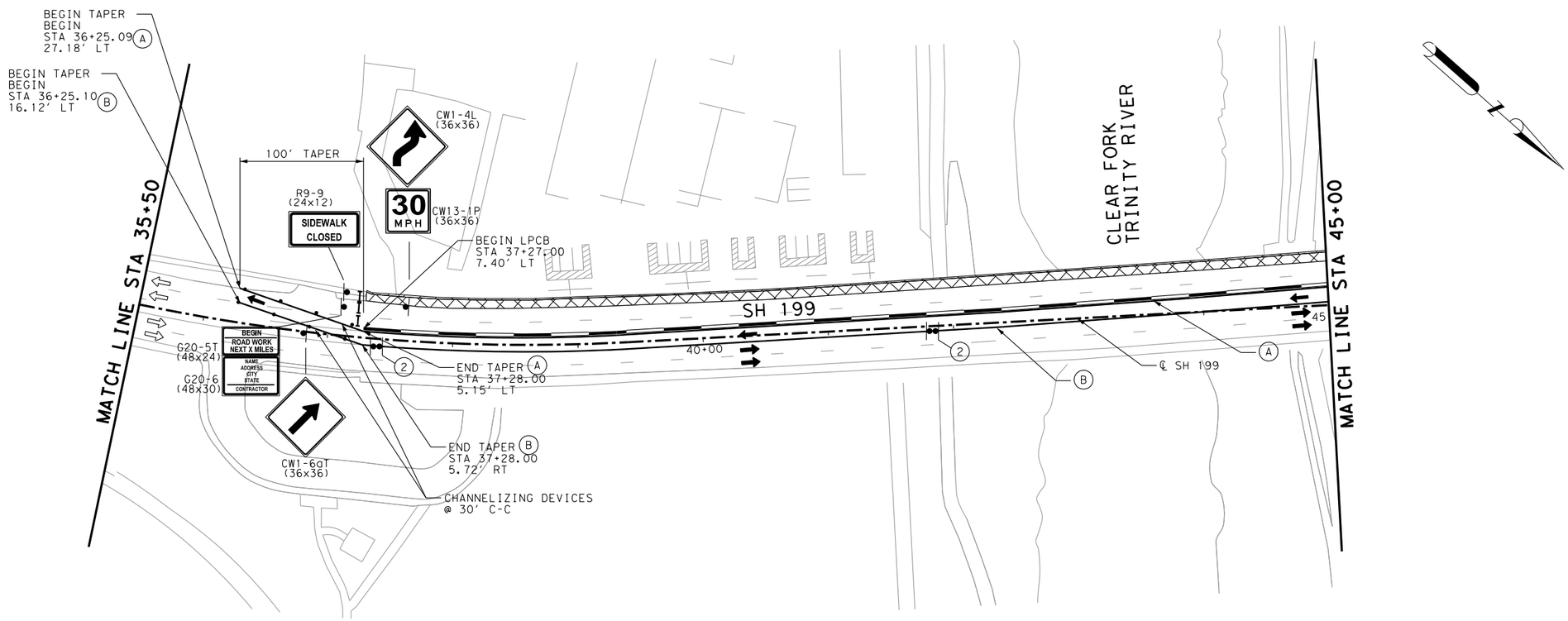
- CONC TRAFFIC BARRIER
- • • • CHANNELIZING DEVICES
- SIGN POST
- TYP III BARRICADE
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- WORKZONE
- (A) 4" WZ (W) SGL SLD REMOVABLE
- (B) 4" WZ (Y) DBL SLD REMOVABLE
- (C) 4" WZ (W) BRK REMOVABLE

NOTES:

1. FOR ADVANCED WARNING SIGNS LAYOUT REFER TO STANDARD BC(2)-21.
2. ADD BARRIER REFLECTORS TO LPCBs. REFER TO D&OM(1)-20 & D&OM(2)-20 FOR DETAILS.

0 50′ 100′

SCALE: 1" = 100′



STATE OF TEXAS
ALEX I. GARCIA
107317
PROFESSIONAL LICENSED ENGINEER
10423

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

TRAFFIC CONTROL PLAN PHASE 2

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	13
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/3/2023 10:43:08 PM
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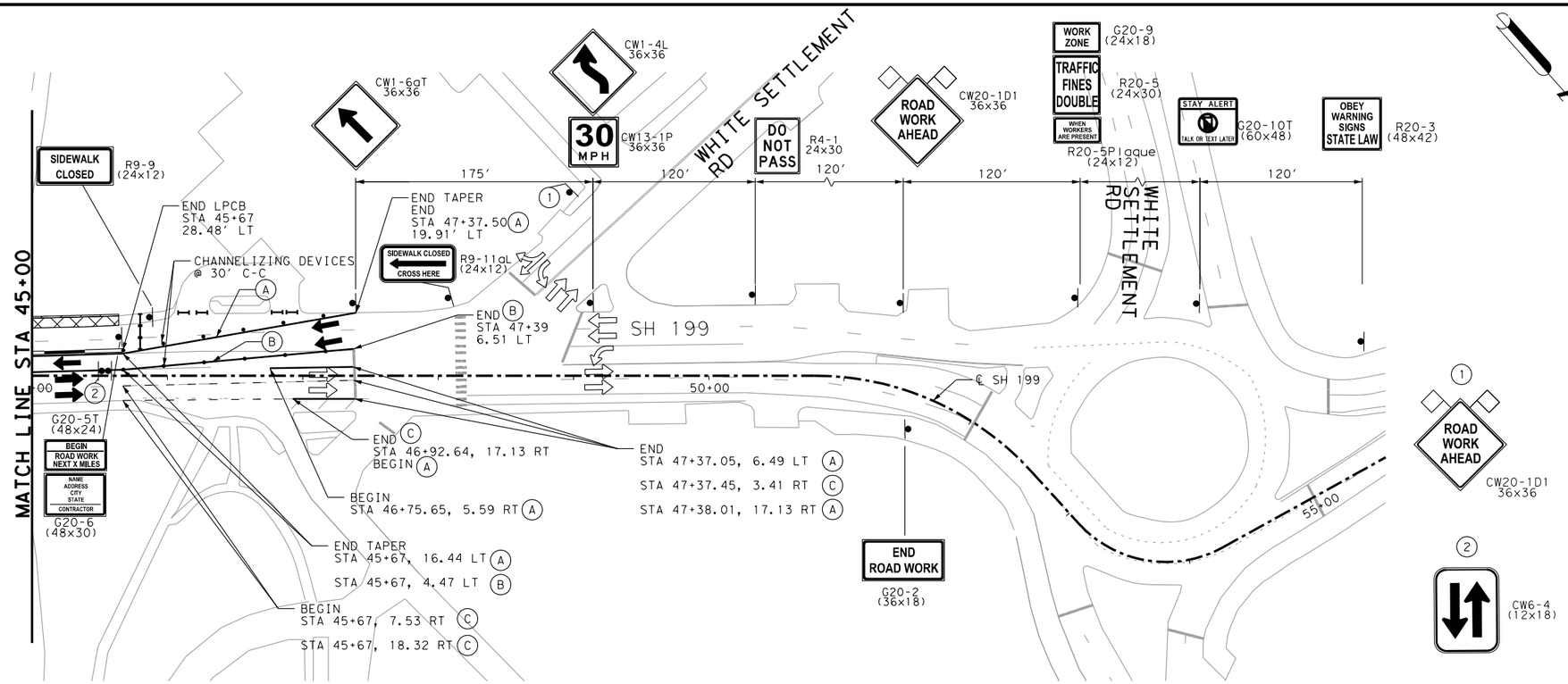

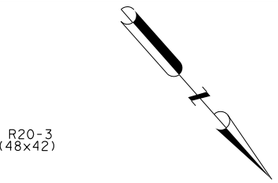

LEGEND

- CONC TRAFFIC BARRIER
- • • • CHANNELIZING DEVICES
- SIGN POST
- TYP III BARRICADE
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- WORKZONE
- (A) 4" WZ (W) SGL SLD REMOVABLE
- (B) 4" WZ (Y) DBL SLD REMOVABLE
- (C) 4" WZ (W) BRK REMOVABLE

NOTES:

1. FOR ADVANCED WARNING SIGNS LAYOUT REFER TO STANDARD BC(2)-21.
2. ADD BARRIER REFLECTORS TO LPCBs. REFER TO D&OM(1)-20 & D&OM(2)-20 FOR DETAILS.

0 50' 100'

SCALE: 1" = 100'

STATE OF TEXAS
ALEX I. GARCIA
107317
PROFESSIONAL LICENSED ENGINEER

10423

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

TRAFFIC CONTROL PLAN PHASE 2

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	14
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/3/2023 10:43:17 PM
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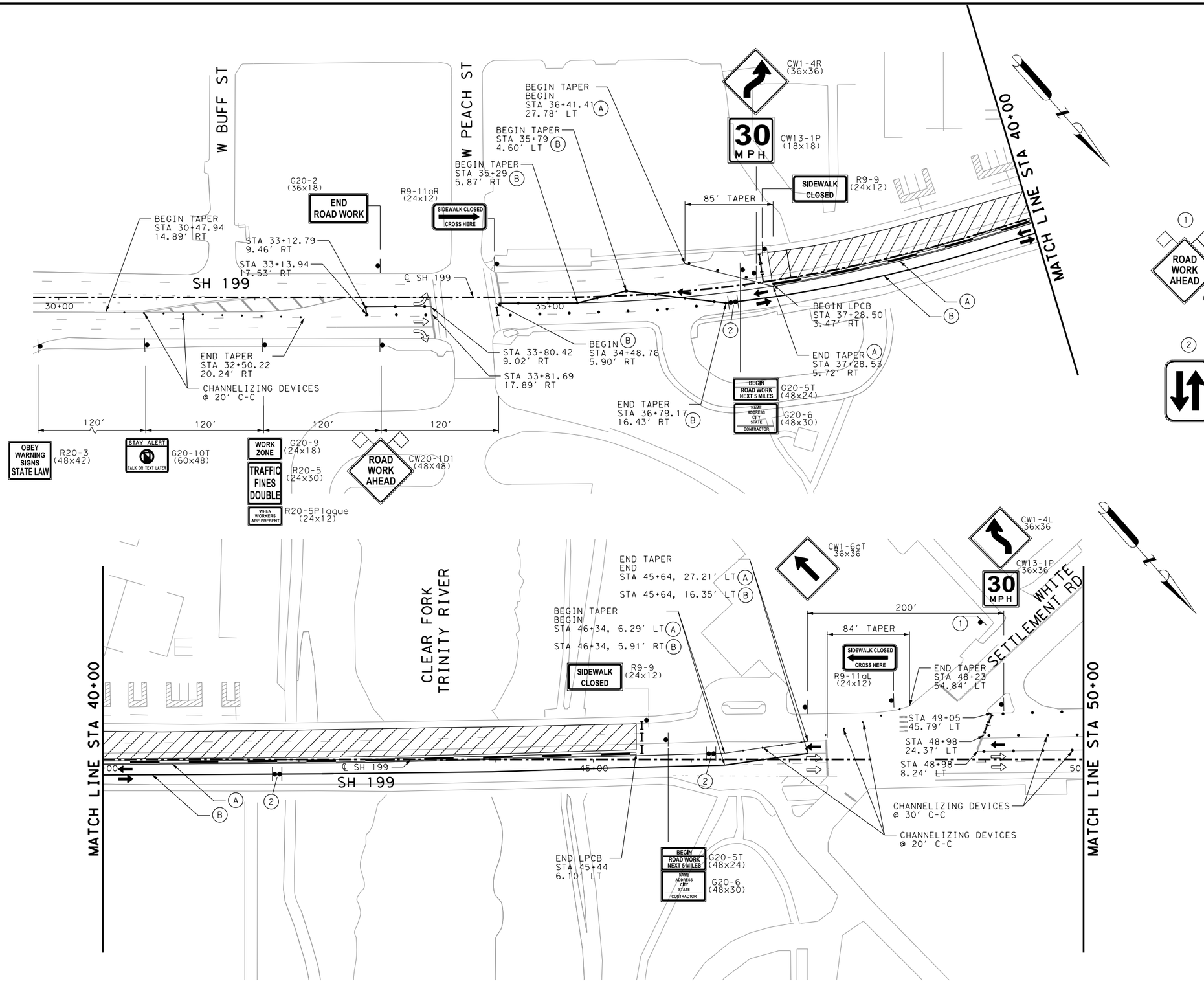
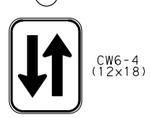


LEGEND

- CONC TRAFFIC BARRIER
- • • • CHANNELIZING DEVICES
- SIGN POST
- TYP III BARRICADE
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- WORKZONE
- (A) 4" WZ (W) SGL SLD REMOVABLE
- (B) 4" WZ (Y) DBL SLD REMOVABLE
- (C) 4" WZ (W) BRK REMOVABLE

NOTES:

1. FOR ADVANCED WARNING SIGNS LAYOUT REFER TO STANDARD BC(2)-21.
2. ADD BARRIER REFLECTORS TO LPCBs. REFER TO D&OM(1)-20 & D&OM(2)-20 FOR DETAILS.



0 50' 100'

SCALE: 1" = 100'

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

TRAFFIC CONTROL PLAN PHASE 3

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	15
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/3/2023 10:43:26 PM
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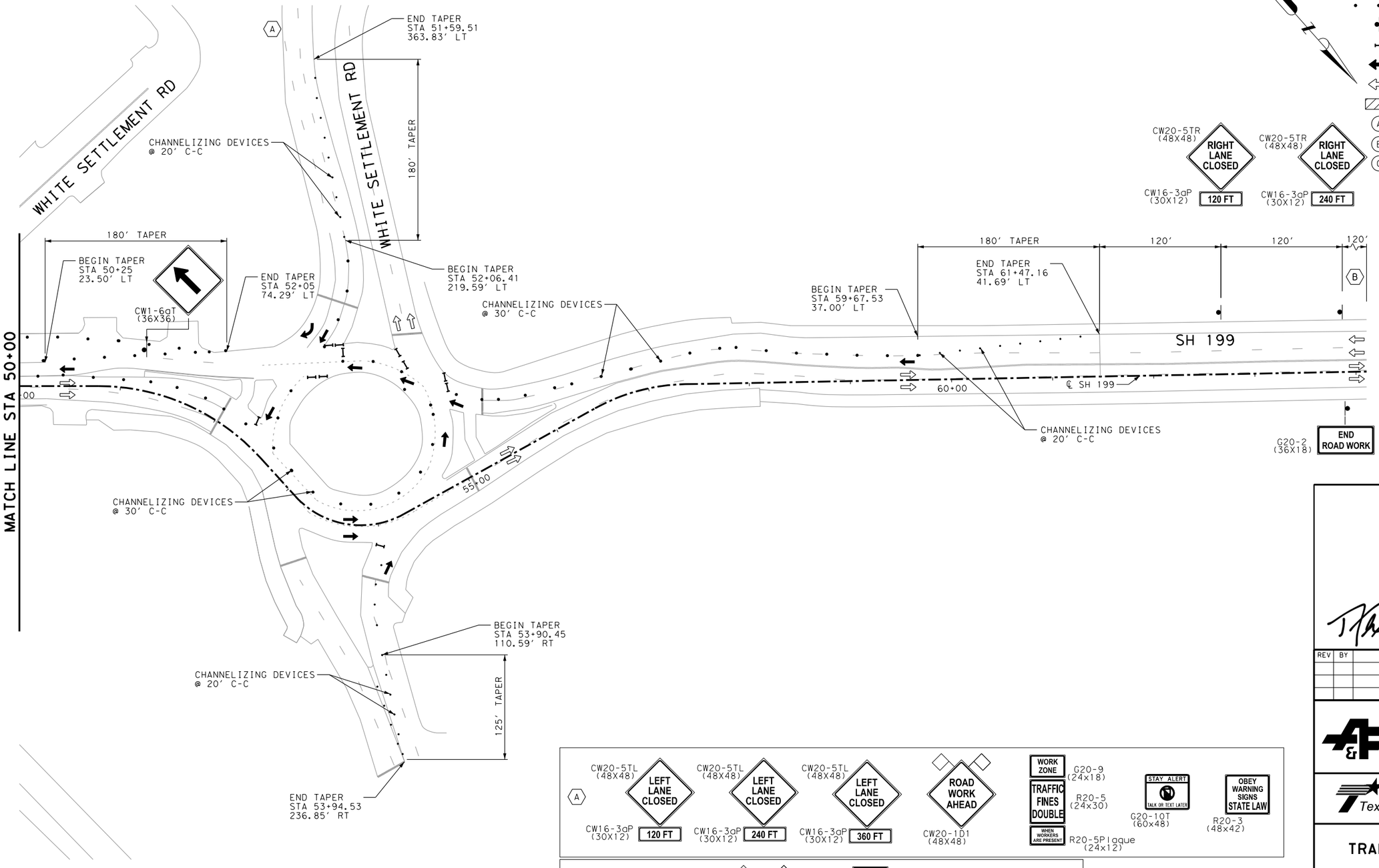

LEGEND

- CONC TRAFFIC BARRIER
- CHANNELIZING DEVICES
- SIGN POST
- TYP III BARRICADE
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- WORKZONE
- (A) 4" WZ (W) SGL SLD REMOVABLE
- (B) 4" WZ (Y) DBL SLD REMOVABLE
- (C) 4" WZ (W) BRK REMOVABLE

CW20-5TR (48X48) RIGHT LANE CLOSED
CW16-3aP (30X12) 120 FT

CW20-5TR (48X48) RIGHT LANE CLOSED
CW16-3aP (30X12) 240 FT

NOTES:

1. FOR ADVANCED WARNING SIGNS LAYOUT REFER TO STANDARD BC(2)-21.
2. ADD BARRIER REFLECTORS TO LPCBs. REFER TO D&OM(1)-20 & D&OM(2)-20 FOR DETAILS.
3. FOR TCP LAYOUT REFER TO STANDARD TCP(2-5)-18.

(A)

CW20-5TL (48X48) LEFT LANE CLOSED
CW16-3aP (30X12) 120 FT

CW20-5TL (48X48) LEFT LANE CLOSED
CW16-3aP (30X12) 240 FT

CW20-5TL (48X48) LEFT LANE CLOSED
CW16-3aP (30X12) 360 FT

ROAD WORK AHEAD
CW20-1D1 (48X48)

WORK ZONE
TRAFFIC FINES DOUBLE
WHEN WORKERS ARE PRESENT
G20-9 (24x18)
R20-5 (24x30)
R20-5Plaque (24x12)

STAY ALERT
TALK OR TEXT LATER
G20-10T (60x48)

OBEY WARNING SIGNS STATE LAW
R20-3 (48x42)

(B)

CW20-5TR (48X48) RIGHT LANE CLOSED
CW16-3aP (30X12) 360 FT

ROAD WORK AHEAD
CW20-1D1 (48X48)

G20-9 (24x18) WORK ZONE
R20-5 (24x30) TRAFFIC FINES DOUBLE
R20-5Plaque (24x12) WHEN WORKERS ARE PRESENT

STAY ALERT
TALK OR TEXT LATER
G20-10T (60x48)

OBEY WARNING SIGNS STATE LAW
R20-3 (48x42)

STATE OF TEXAS
ALEX I. GARCIA
107317
PROFESSIONAL ENGINEER
LICENSED

10/06/2023

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

TRAFFIC CONTROL PLAN PHASE 3

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	16
CONTROL	SECTION NO.	JOB	
0171	05	083	

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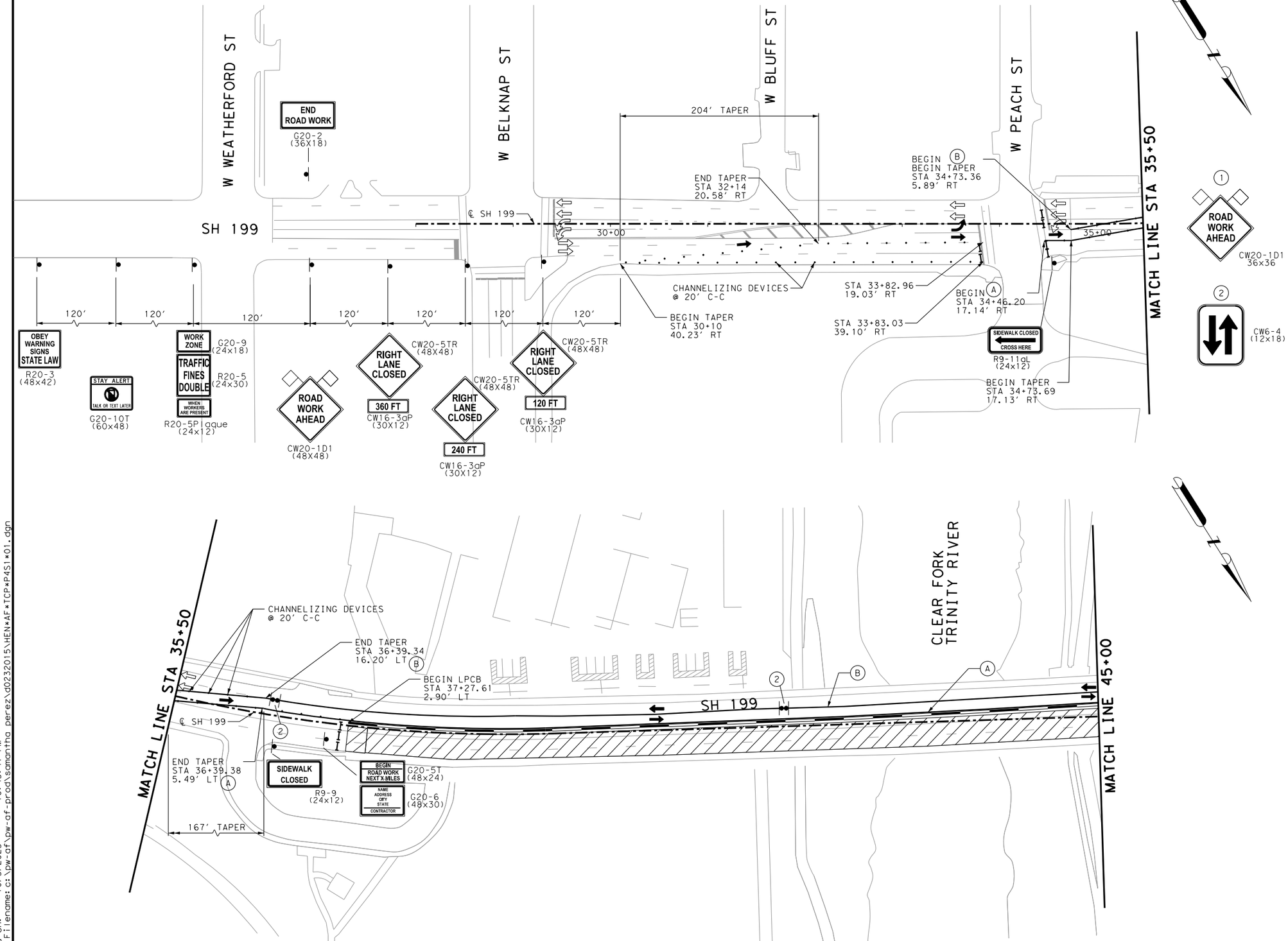

LEGEND

- CONC TRAFFIC BARRIER
- CHANNELIZING DEVICES
- SIGN POST
- TYP III BARRICADE
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- WORKZONE
- (A) 4" WZ (W) SGL SLD REMOVABLE
- (B) 4" WZ (Y) DBL SLD REMOVABLE
- (C) 4" WZ (W) BRK REMOVABLE

NOTES:

1. FOR ADVANCED WARNING SIGNS LAYOUT REFER TO STANDARD BC(2)-21.
2. ADD BARRIER REFLECTORS TO LPCBs. REFER TO D&OM(1)-20 & D&OM(2)-20 FOR DETAILS.

0 50' 100'

SCALE: 1" = 100'

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER
10.4.23

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

TRAFFIC CONTROL PLAN PHASE 4

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

SHEET 1 OF 3

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	17
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/3/2023 10:43:41 PM
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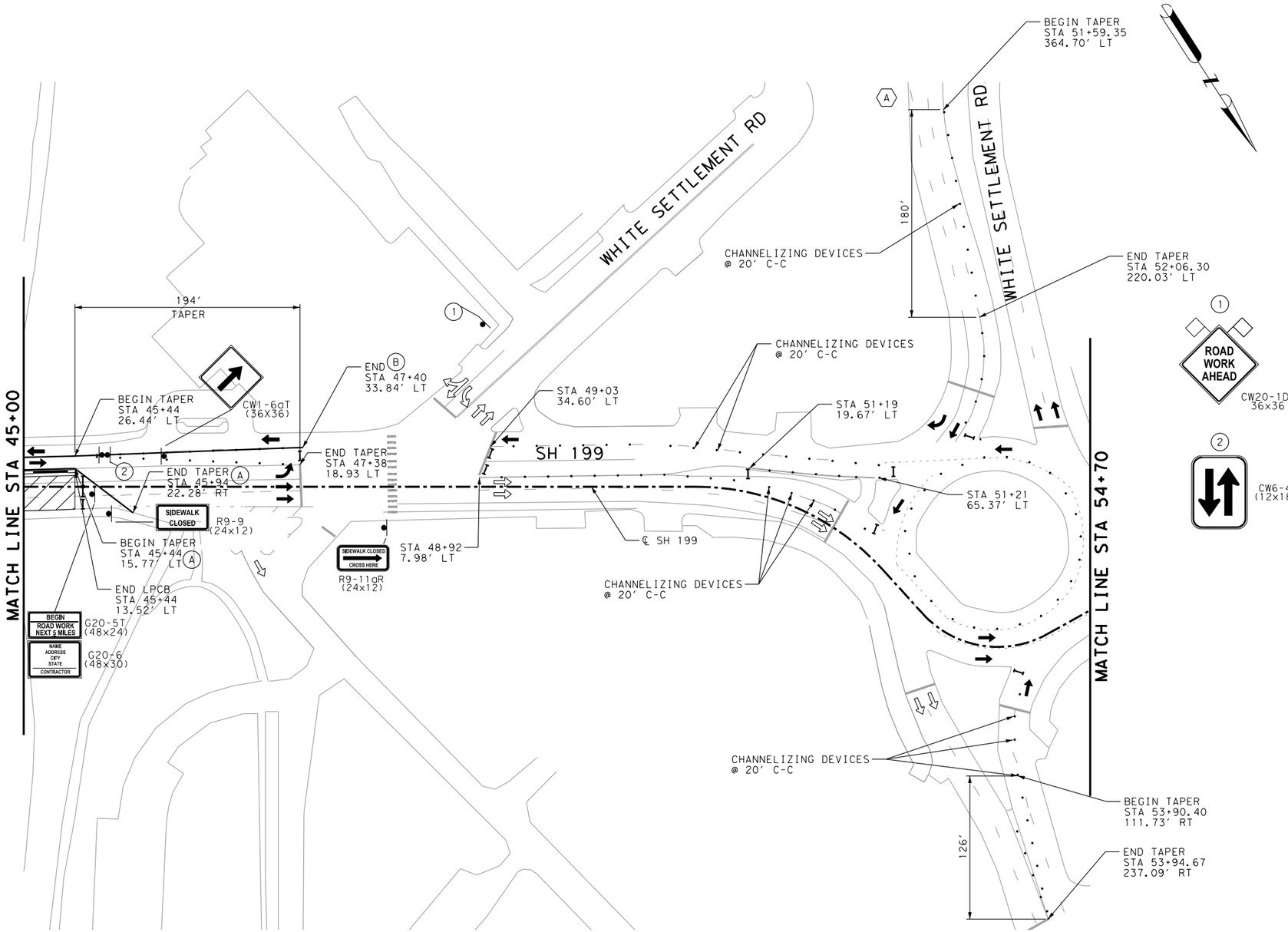

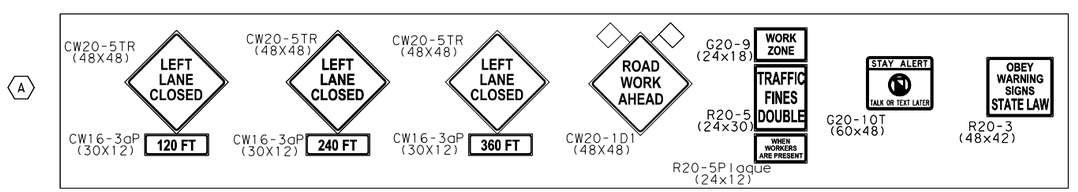

LEGEND

- CONC TRAFFIC BARRIER
- CHANNELIZING DEVICES
- SIGN POST
- TYP III BARRICADE
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- WORKZONE
- (A) 4" WZ (W) SGL SLD REMOVABLE
- (B) 4" WZ (Y) DBL SLD REMOVABLE
- (C) 4" WZ (W) BRK REMOVABLE

NOTES:

1. FOR ADVANCED WARNING SIGNS LAYOUT REFER TO STANDARD BC(2)-21.
2. ADD BARRIER REFLECTORS TO LPCBs. REFER TO D&OM(1)-20 & D&OM(2)-20 FOR DETAILS.
3. FOR TCP LAYOUT REFER TO STANDARD TCP(2-5)-18.

0 50' 100'

SCALE: 1" = 100'

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

10/06/2023

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

TRAFFIC CONTROL PLAN PHASE 4

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

SHEET 2 OF 3

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	18
CONTROL	SECTION NO.	JOB	
0171	05	083	

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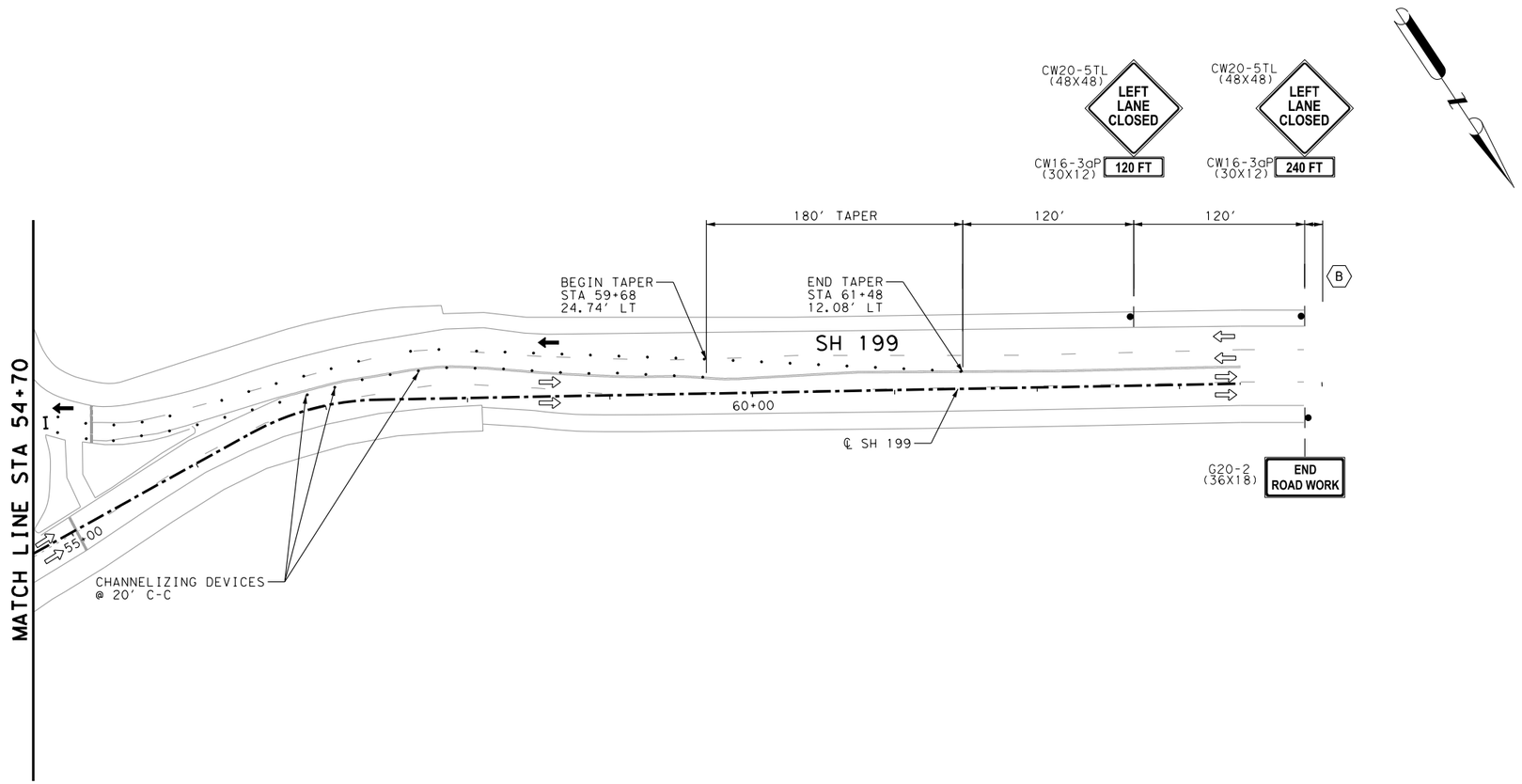


LEGEND

- CONC TRAFFIC BARRIER
- • • • CHANNELIZING DEVICES
- SIGN POST
- TYP III BARRICADE
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- WORKZONE
- (A) 4" WZ (W) SGL SLD REMOVABLE
- (B) 4" WZ (Y) DBL SLD REMOVABLE
- (C) 4" WZ (W) BRK REMOVABLE

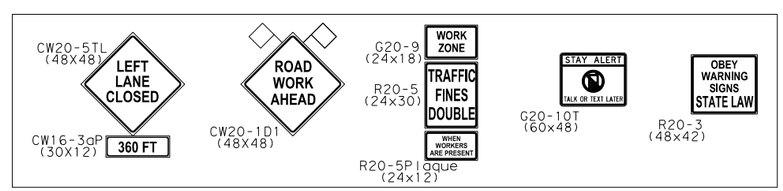
NOTES:

1. FOR ADVANCED WARNING SIGNS LAYOUT REFER TO STANDARD BC(2)-21.
2. ADD BARRIER REFLECTORS TO LPCBs. REFER TO D&OM(1)-20 & D&OM(2)-20 FOR DETAILS.
3. FOR TCP LAYOUT REFER TO STANDARD TCP(2-5)-18.

0 50' 100'

SCALE: 1" = 100'

B



STATE OF TEXAS
ALEX I. GARCIA
107317
PROFESSIONAL LICENSED ENGINEER

10/06/2023

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

TRAFFIC CONTROL PLAN PHASE 4

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

SHEET 3 OF 3

FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
6	BR 2008(909)	SH 199
STATE	DISTRICT / COUNTY	SHEET NO.
TEXAS	FTW / TARRANT	19
CONTROL	SECTION NO. / JOB	
0171	05 / 083	

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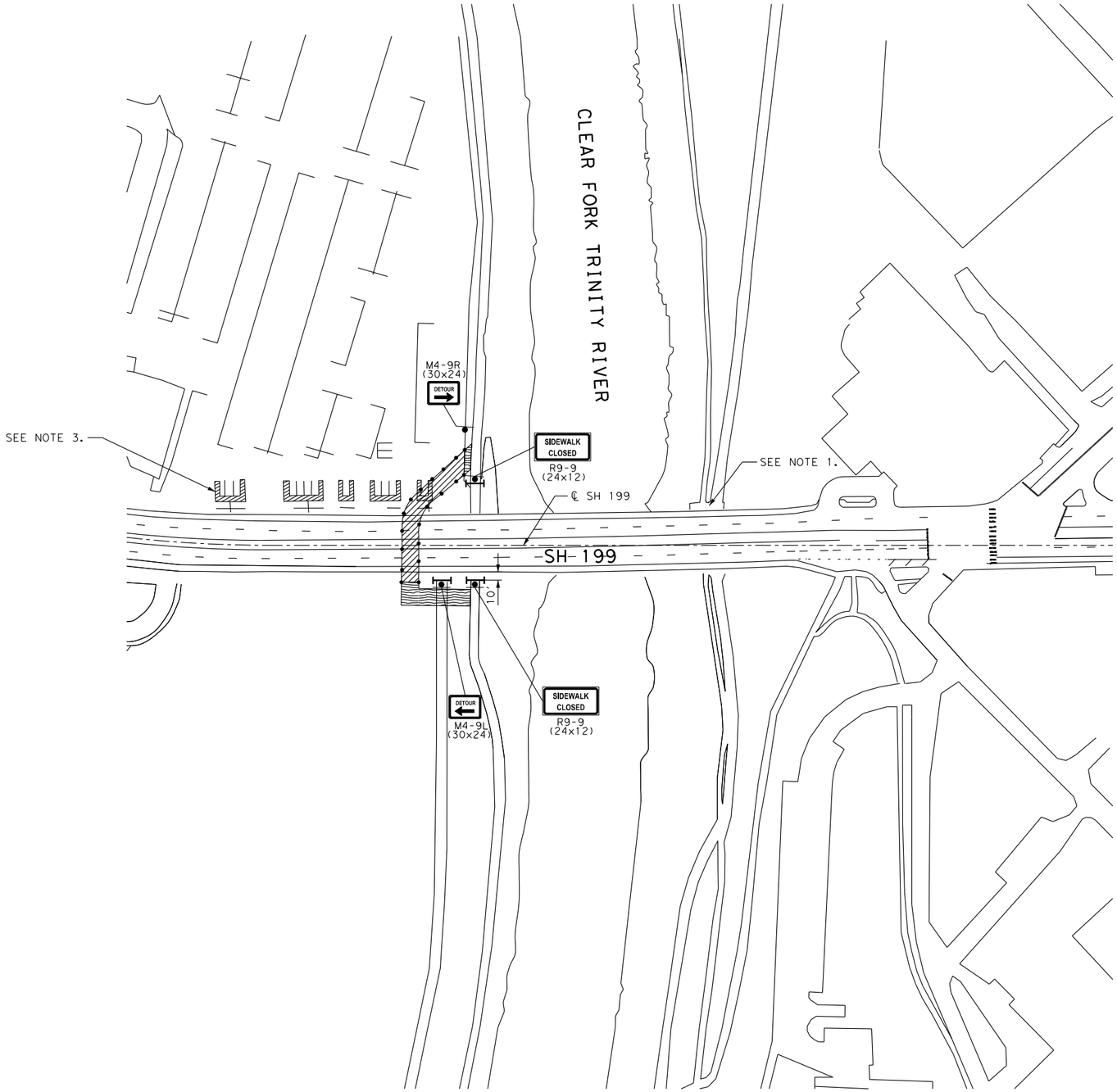

LEGEND

- TY III BARRICADE
- • • • CHANNELIZING DEVICES
- SIGN POST
- TEMPORARY TRAIL
- 4" WOODCHIP

NOTES:

1. SHUT DOWN HALF OF THE TRAIL BASED ON FIELD OPERATIONS ABOVE. ADD CONSTRUCTION PERIMETER FENCE.
2. CONTRACTOR SHALL EXECUTE A TEMPORARY ACCESS AGREEMENT WITH THE CITY OF FORT WORTH PARKS & REC DEPT 30 DAYS PRIOR TO ANY WORK DONE ON PUBLIC PARKLAND.
3. PARKING LOT BENEATH BRIDGE SHOULD BE BARRICADED DURING TIMES WHERE CONSTRUCTION IS TAKING PLACE ABOVE.

0 75′ 150′

SCALE: 1" = 150′

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER

10-4-23

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

TRAFFIC CONTROL PLAN PEDESTRIAN TRAIL DETOUR

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	20
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: c:\pw-af\pw-af-prod\samantha.perez\d0232015\HEN*AF*TCP*PED*DET*01.dgn

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

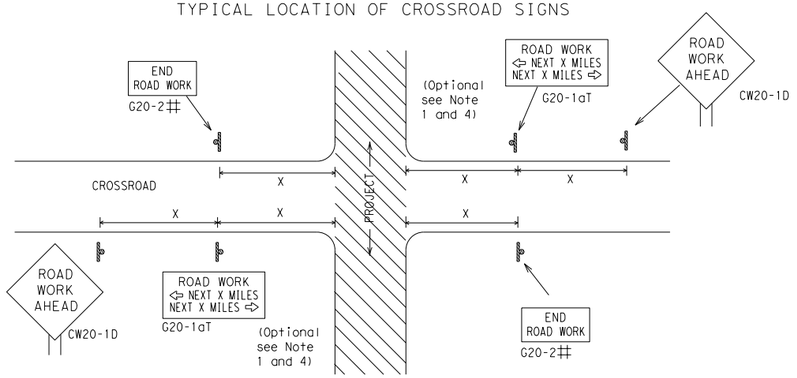
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

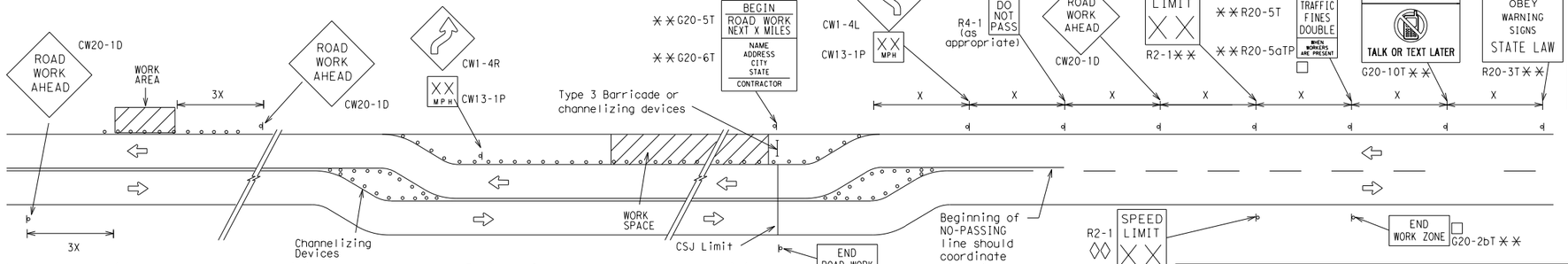
BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13	0171	05	083	SH 199
9-07 8-14	DIST	COUNTY		SHEET NO.
5-10 5-21	FTW	TARRANT		21

TYPICAL LOCATION OF CROSSROAD SIGNS

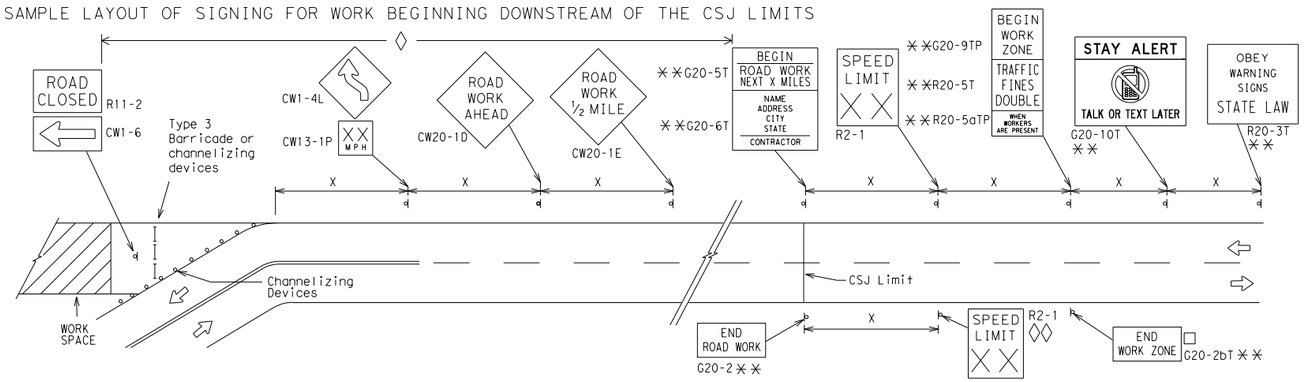


WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

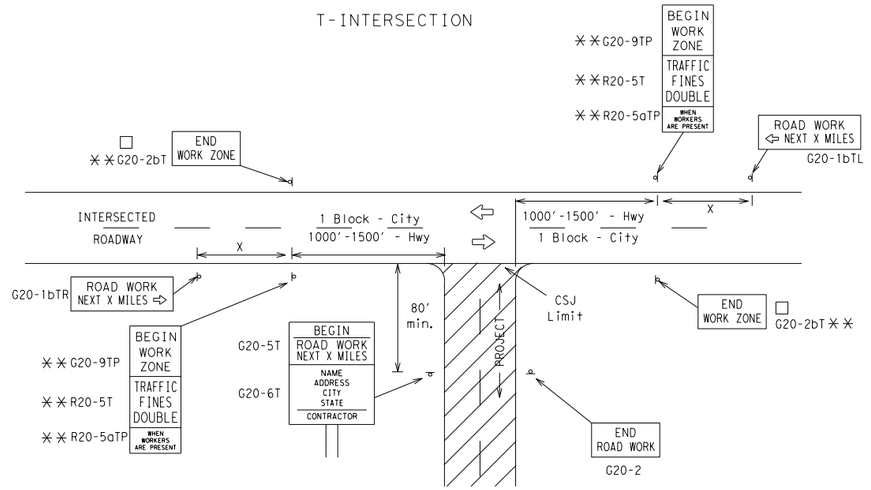


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

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



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.

NOTES

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

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

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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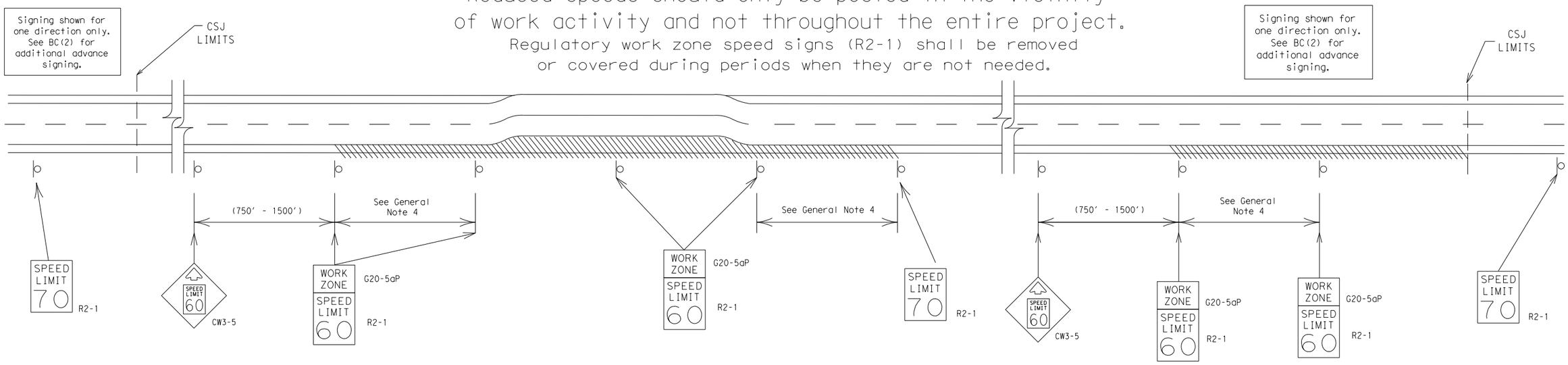
REVISIONS	0171	05	083	SH 199
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	FTW	TARRANT		22

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 9-07 8-14 7-13 5-21	0171	05	083	SH 199
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		23

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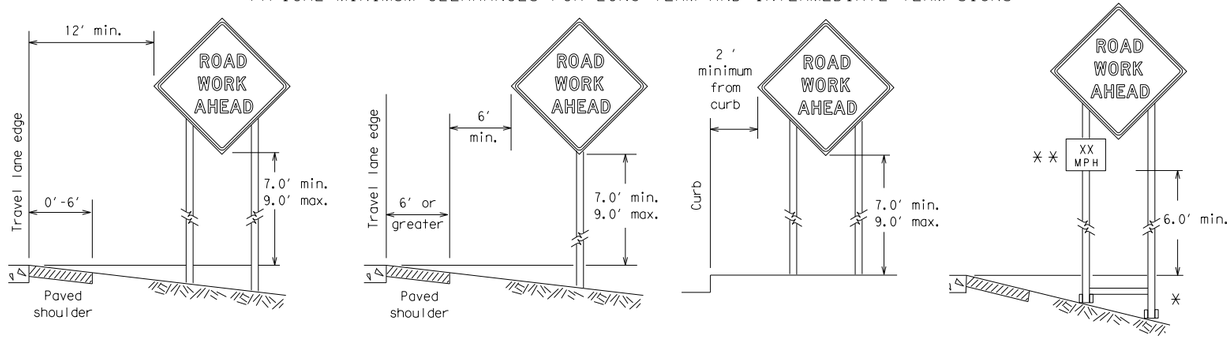
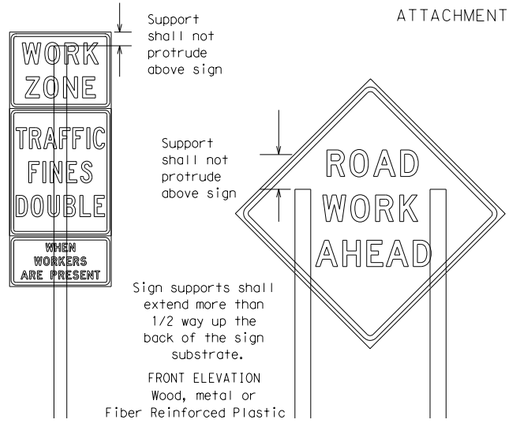
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

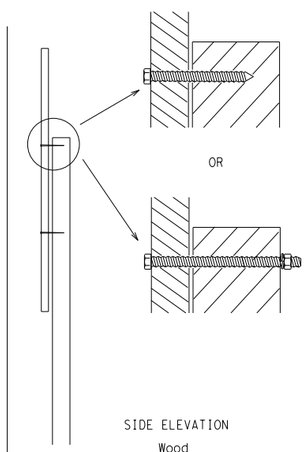


⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





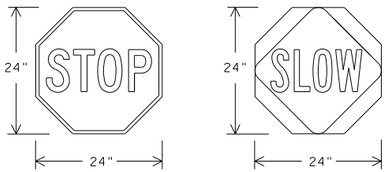
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0171	05	083	SH 199
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	FTW	TARRANT		24

DATE: 10/3/2023 10:44:11 PM
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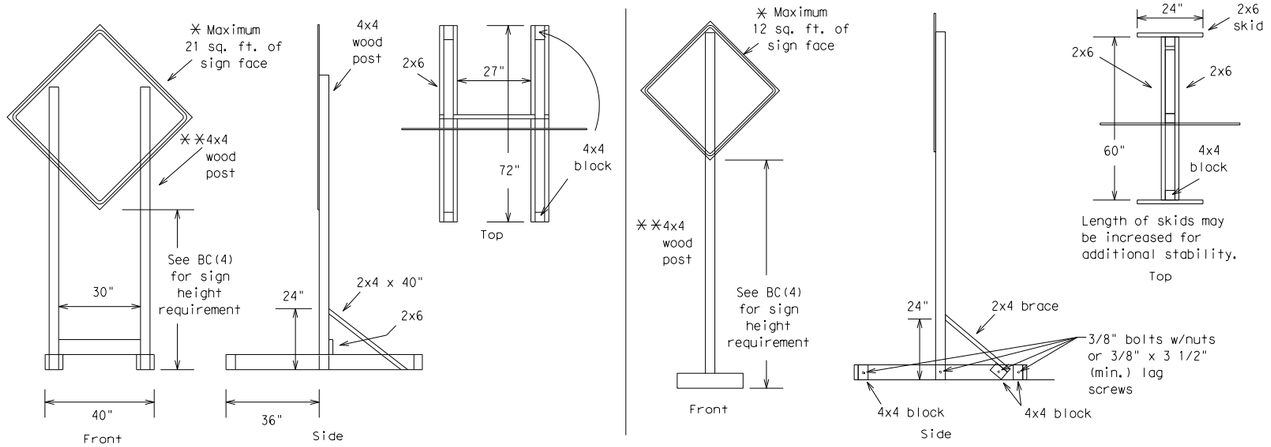
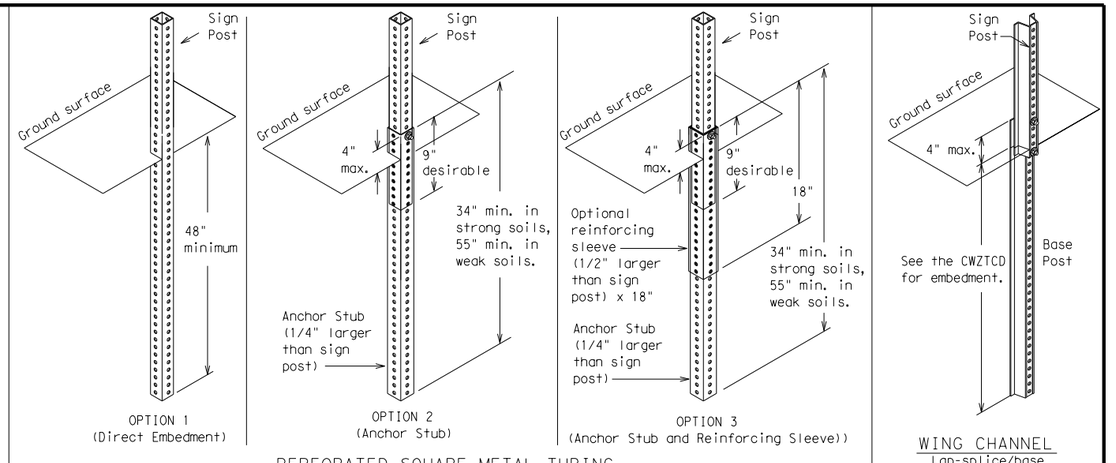


SKID MOUNTED WOOD SIGN SUPPORTS

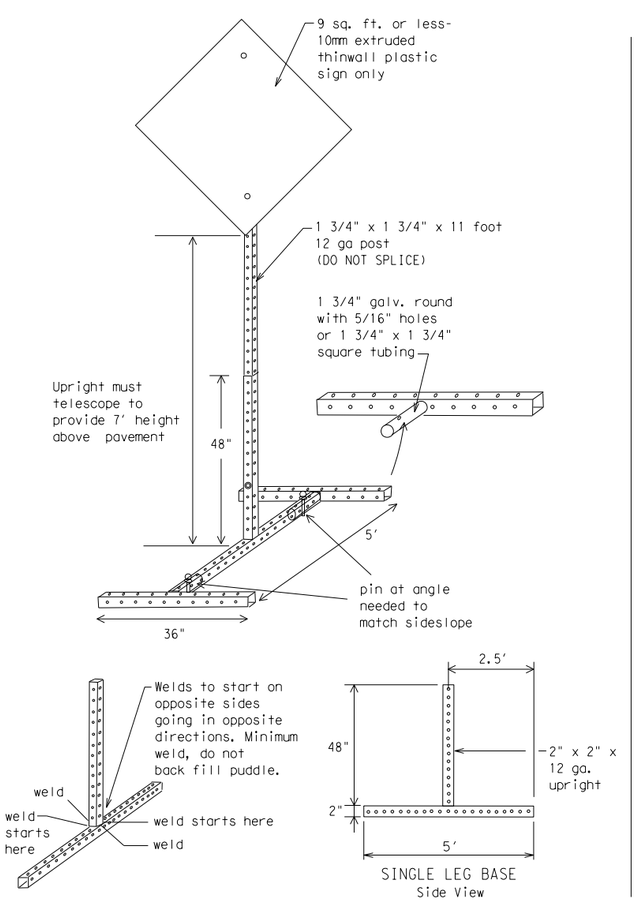
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

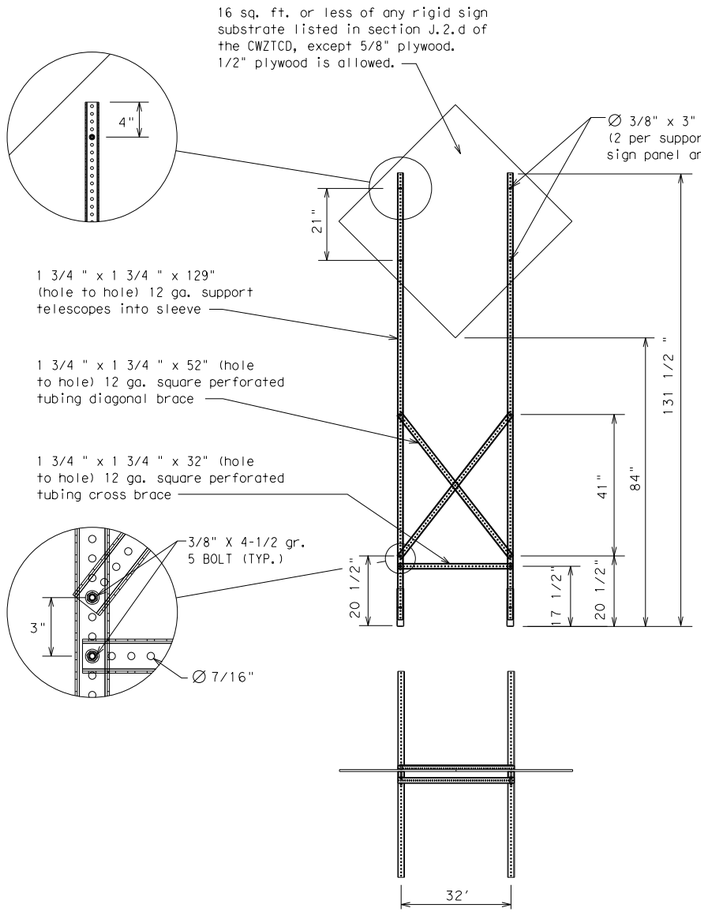


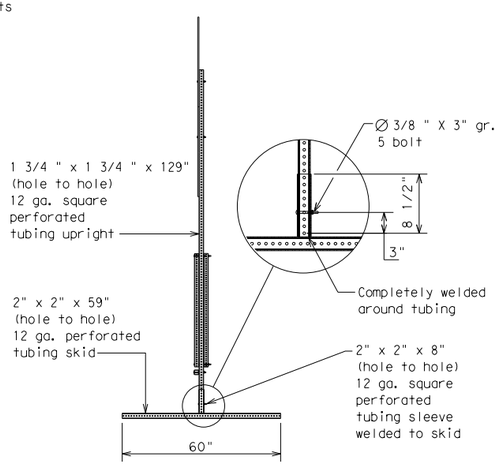
PERFORATED SQUARE METAL TUBING

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.







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.

SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

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
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0171	05	083	SH 199
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	FTW	TARRANT		25

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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 *

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	0171	05	083	SH 199
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	FTW	TARRANT		26

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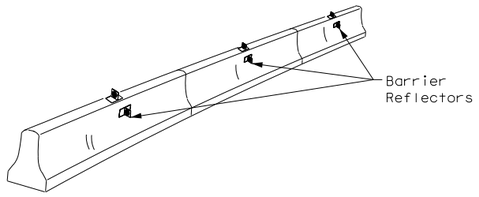
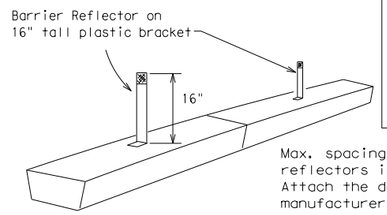
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



CONCRETE TRAFFIC BARRIER (CTB)

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

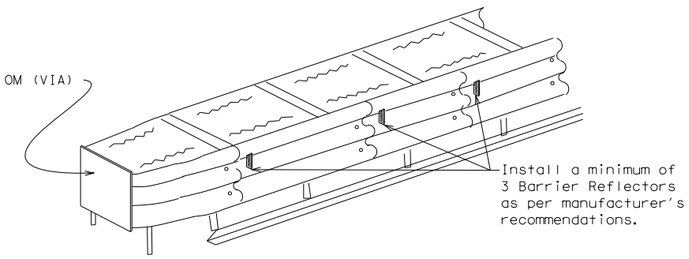


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

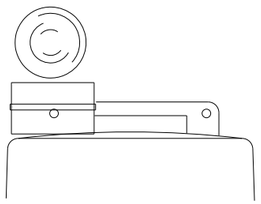


DELINEATION OF END TREATMENTS

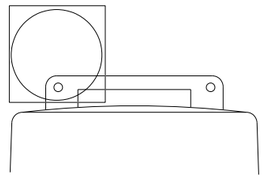
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

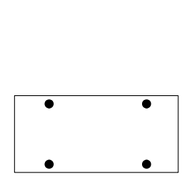
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

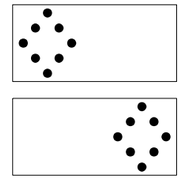
Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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

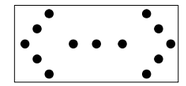


4 CORNER CAUTION

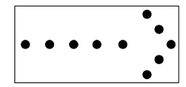
OR



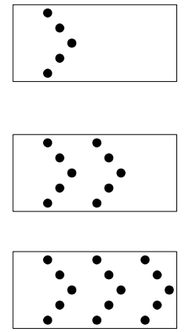
ALTERNATING DIAMOND CAUTION



DOUBLE ARROW



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



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

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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0171	05	083	SH 199
9-07 8-14	DIST	COUNTY		SHEET NO.
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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

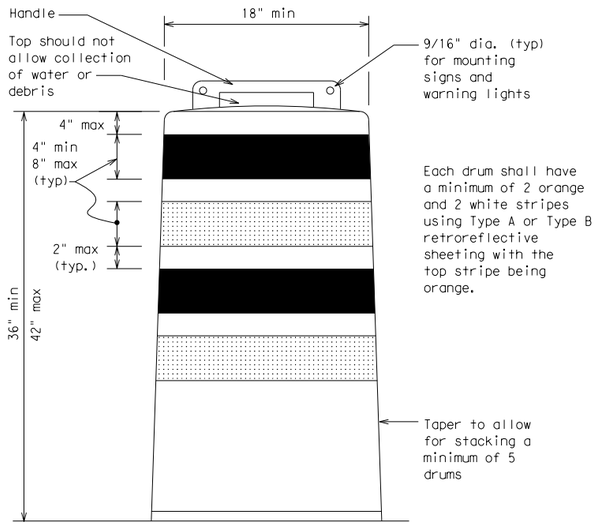
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

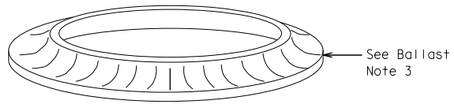
RETROREFLECTIVE SHEETING

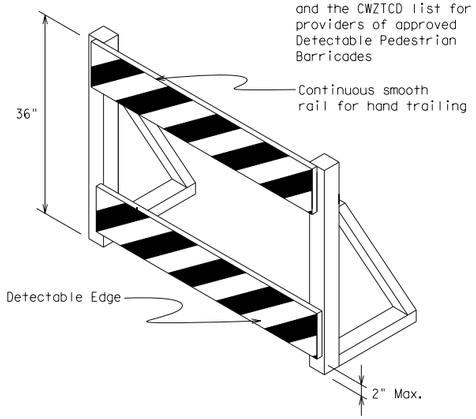
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

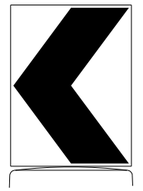




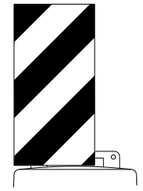


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0171	05	083	SH 199
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	FTW	TARRANT		28
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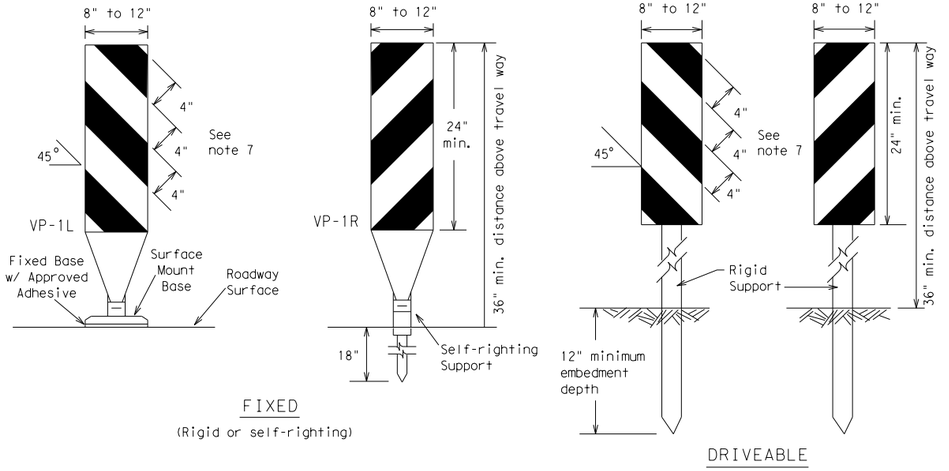
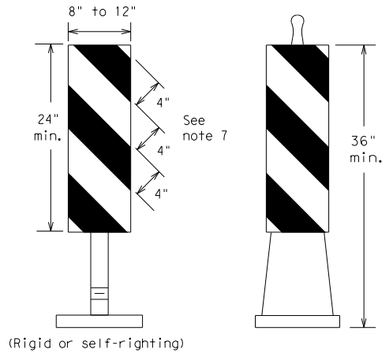


FIXED

(Rigid or self-righting)

DRIVEABLE

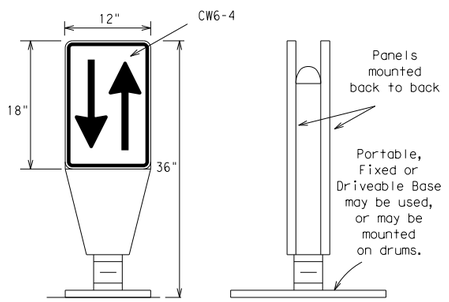


(Rigid or self-righting)

PORTABLE

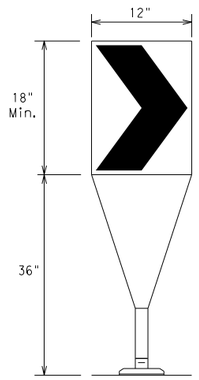
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



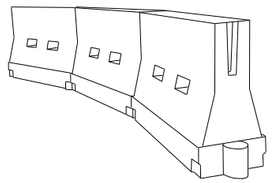
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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7-13 5-21	FTW	TARRANT		29

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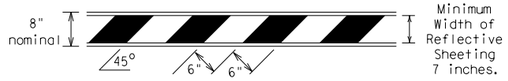
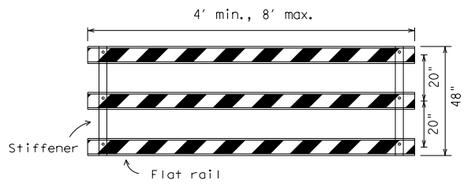
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



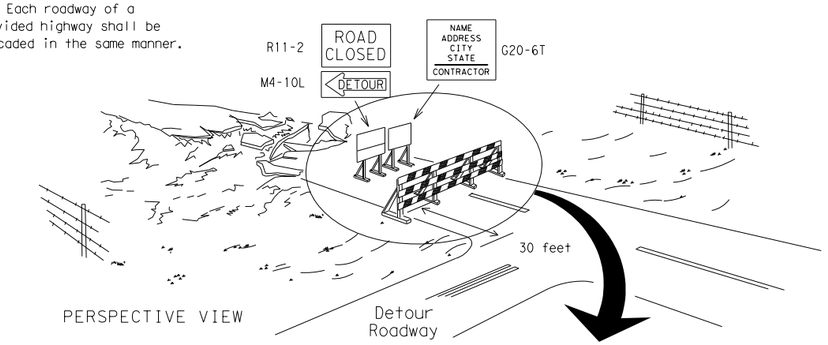
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

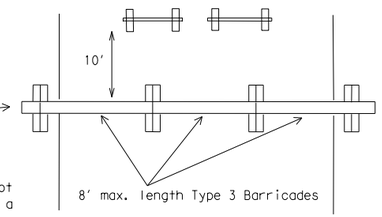
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

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

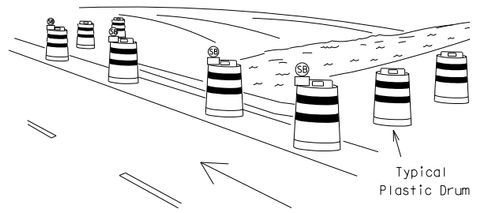
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

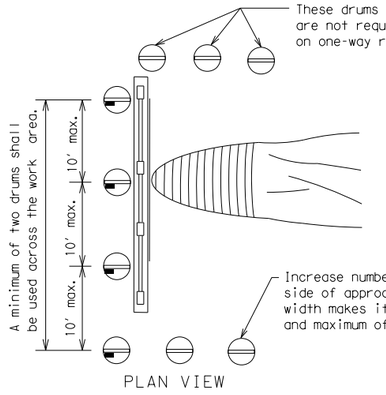
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

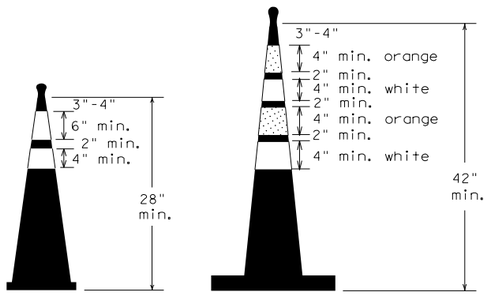
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



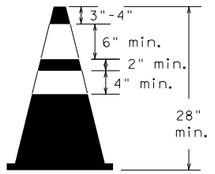
PLAN VIEW

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

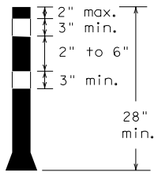
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

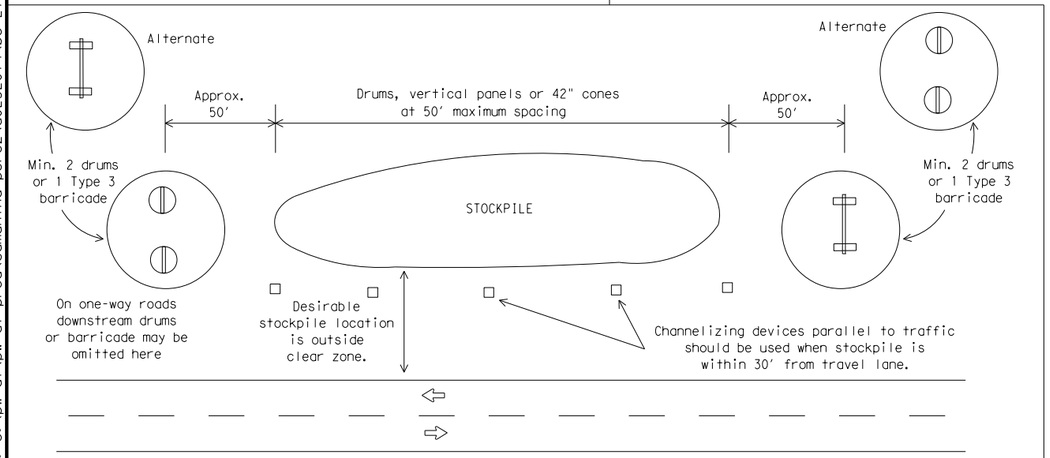


Tubular Marker

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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0171	05	083	SH 199
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	FTW	TARRANT		30

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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

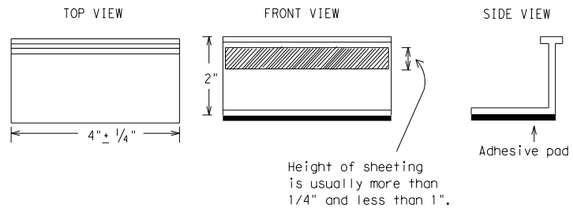
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 2-98 9-07 5-21	0171	05	083	SH 199
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11-02 8-14	FTW	TARRANT		31

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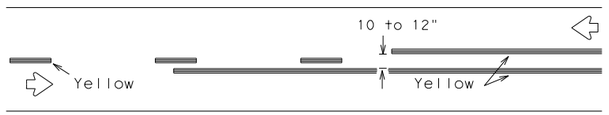
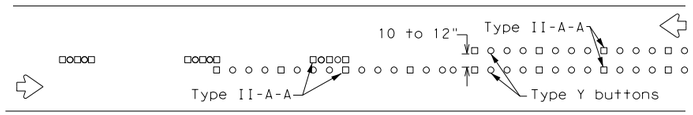
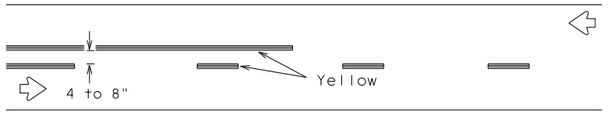
PAVEMENT MARKING PATTERNS



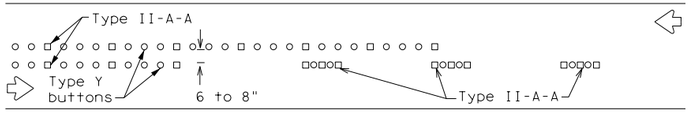
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



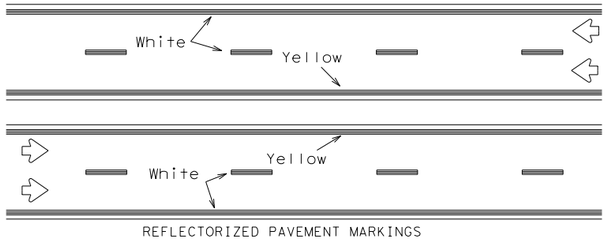
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



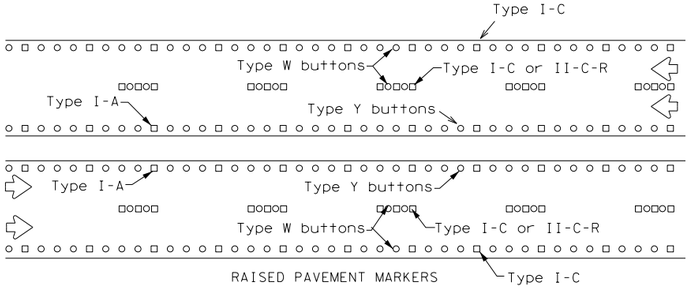
RAISED PAVEMENT MARKERS - PATTERN B

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



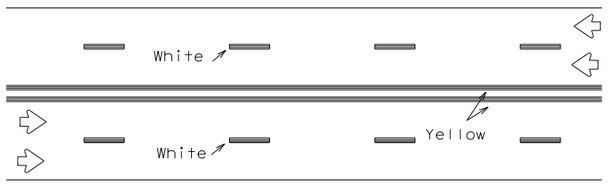
REFLECTORIZED PAVEMENT MARKINGS



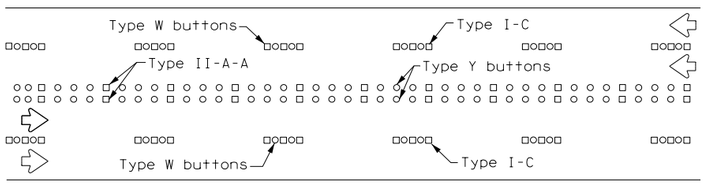
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



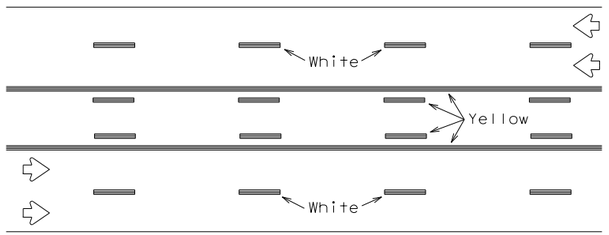
REFLECTORIZED PAVEMENT MARKINGS



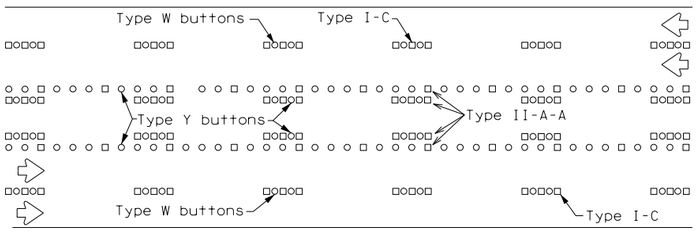
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

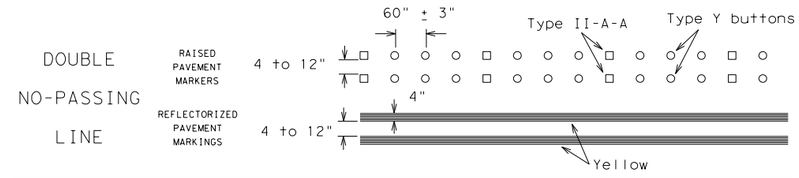
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

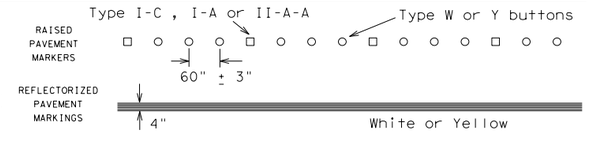
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

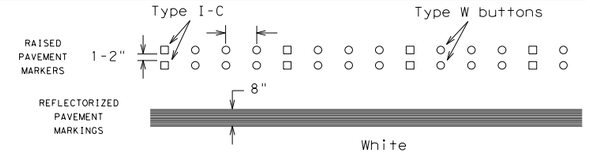


EDGE LINE OR SINGLE NO-PASSING LINE



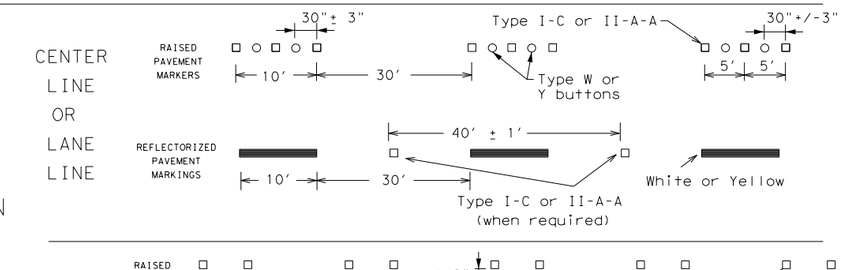
WIDE LINE

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

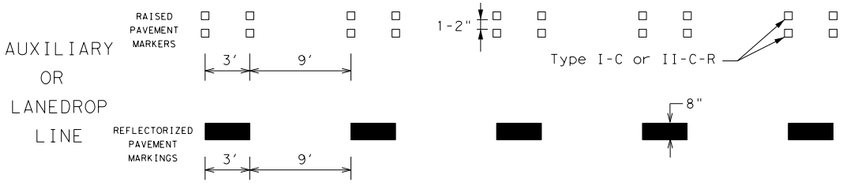


BROKEN LINES

CENTER LINE OR LANE LINE

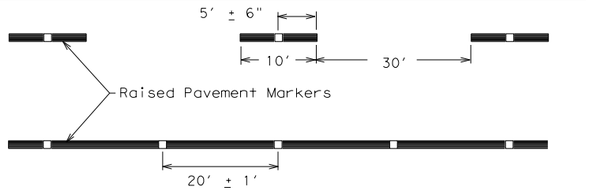


AUXILIARY OR LANEDROP LINE



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."

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0171	05	083	SH 199
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	FTW	TARRANT		32

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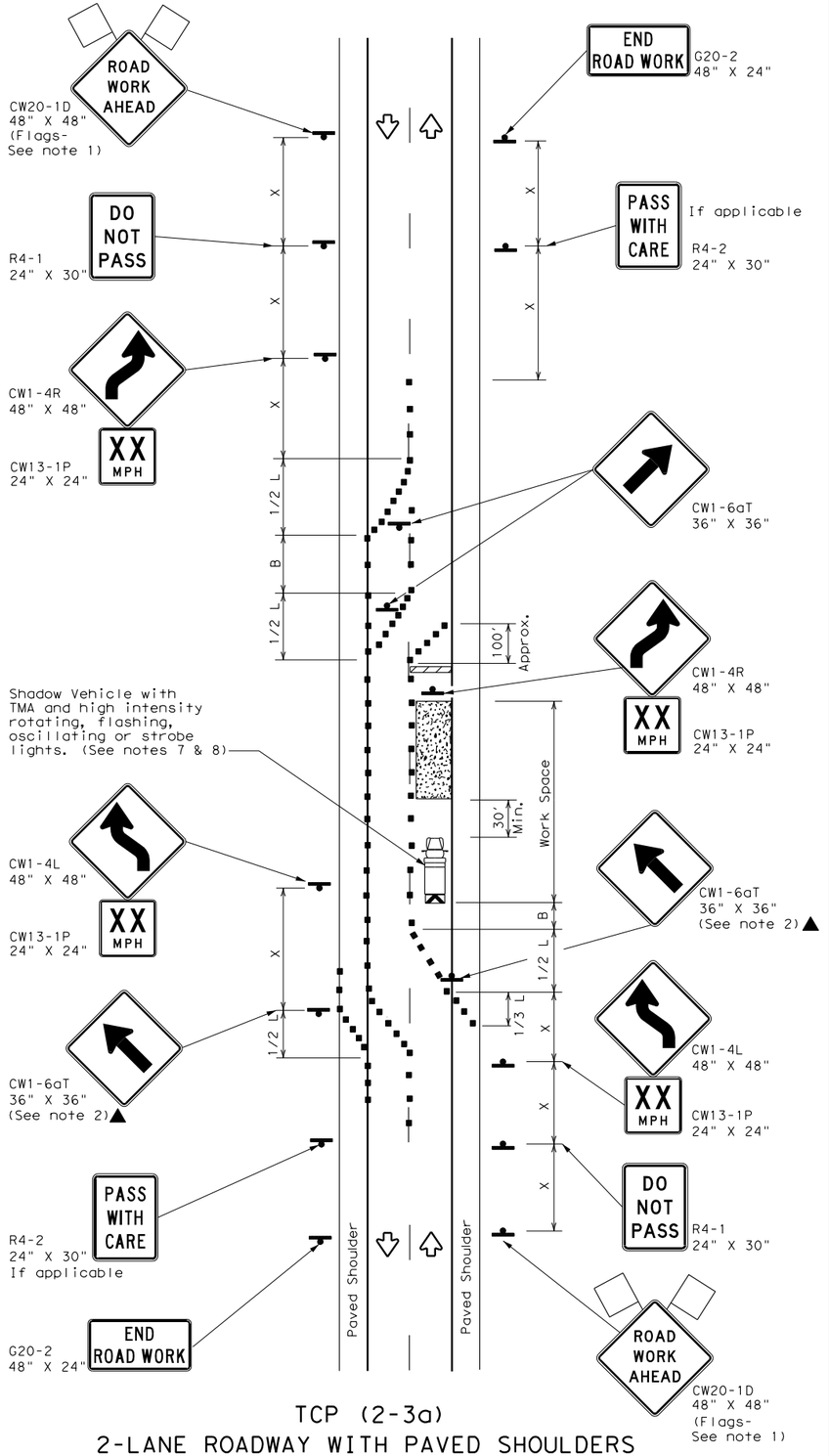
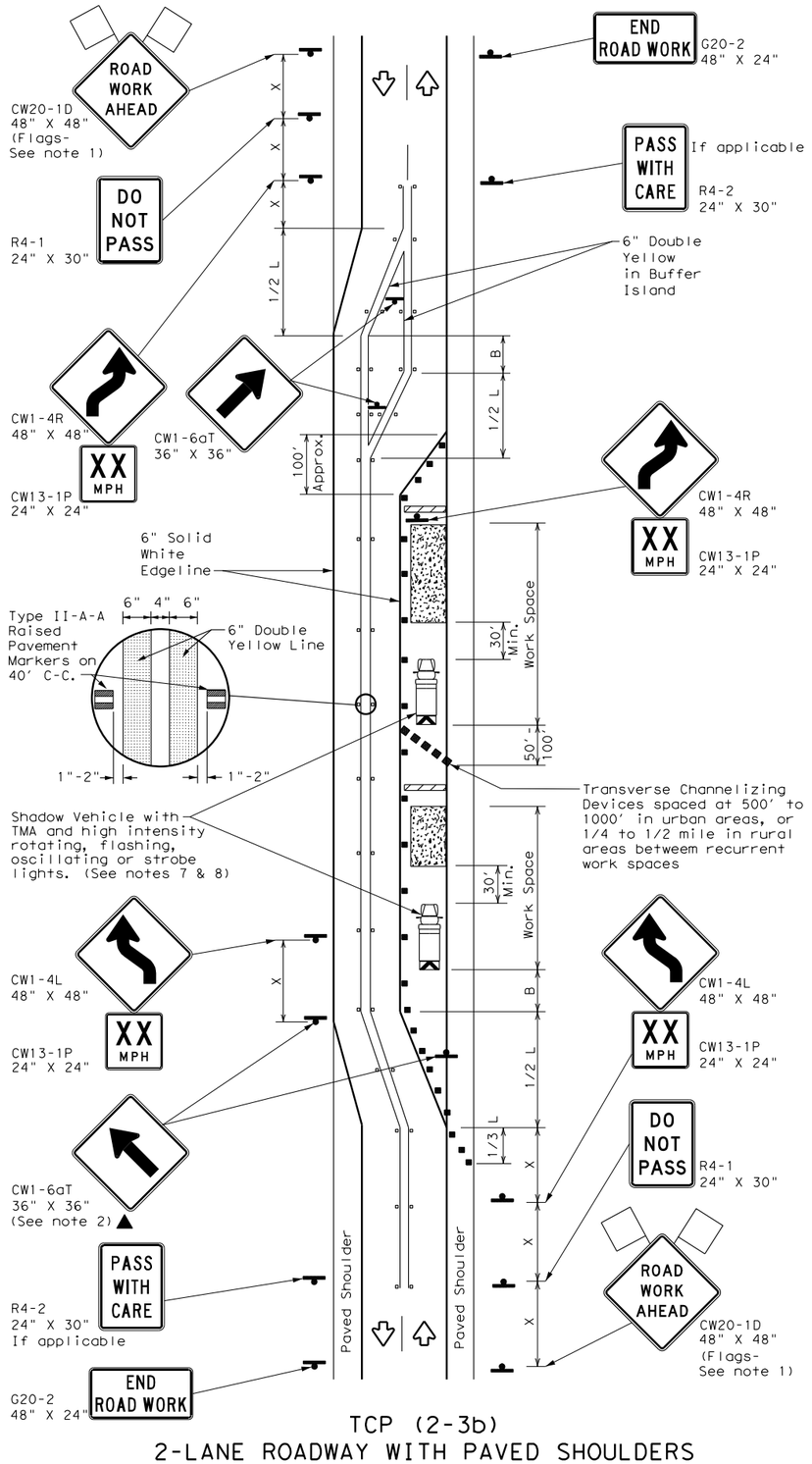


TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



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

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
4. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
5. The R4-1 "DO NOT PASS," R4-2 " PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
6. Conflicting pavement marking shall be removed for long term projects.
7. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted.
8. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-3a)

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

TCP(2-3)-23

FILE: tcp(2-3)-23.dgn	DN:	CK:	DW:	CK:
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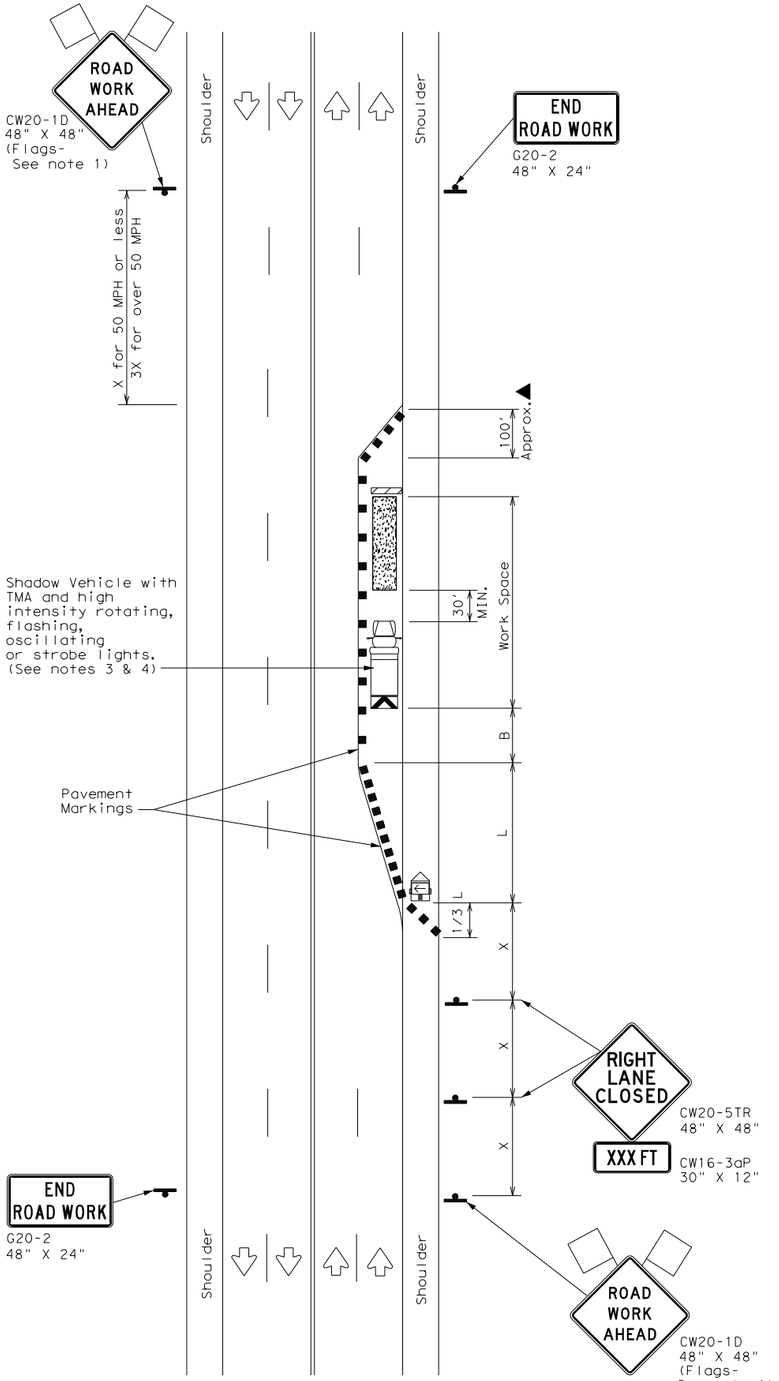
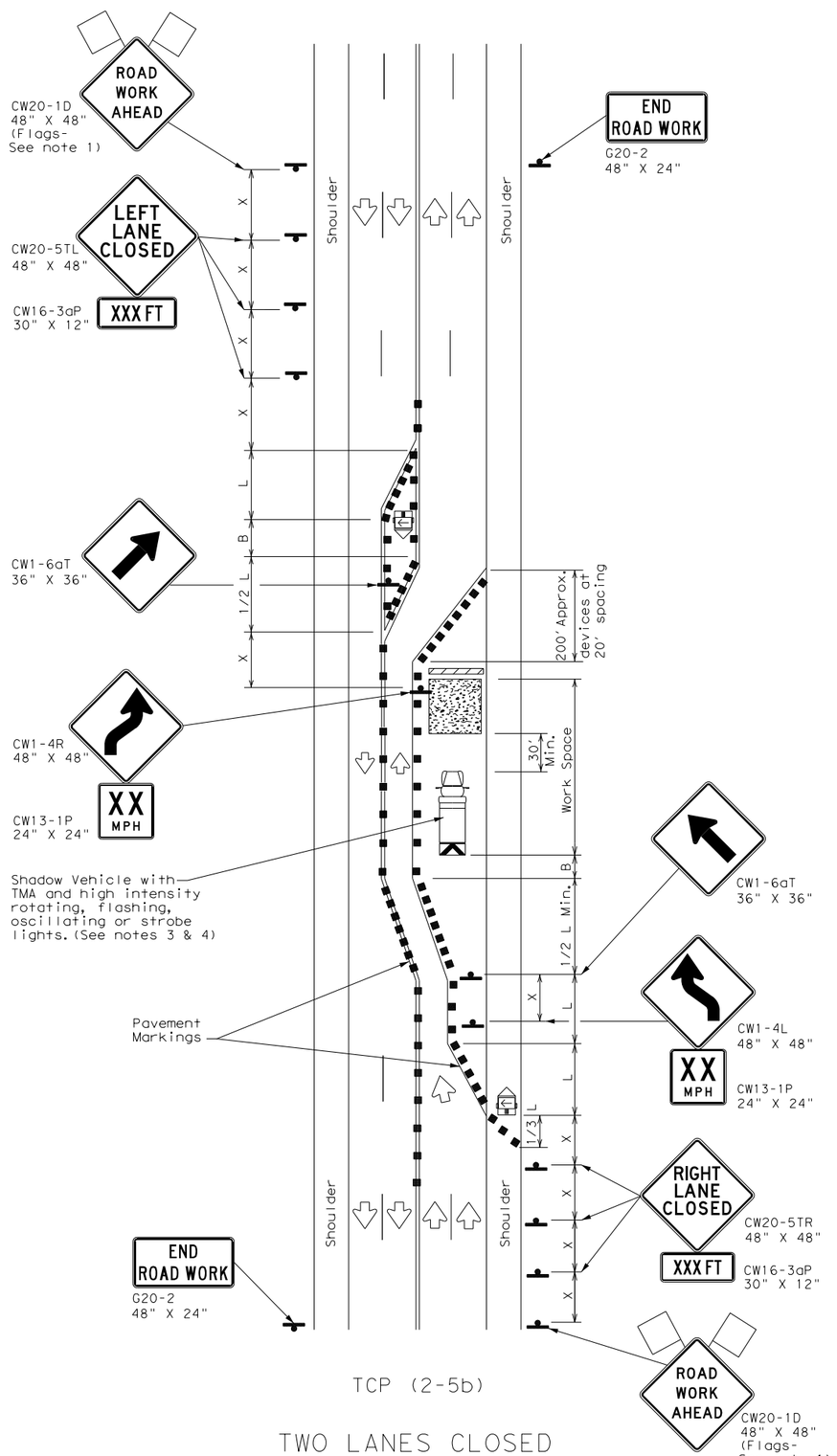
REVISIONS 12-85 4-98 2-18	0171	05	083	SH 199
8-95 3-03 4-23	DIST	COUNTY		SHEET NO.
1-97 2-12	FTW	TARRANT		33



TCP (2-5a)

ONE LANE CLOSED



TCP (2-5b)

TWO LANES CLOSED

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 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. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew eposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substitutued for the Shadow Vehicle and TMA.
4. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
5. The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.

TCP (2-5a)

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

TCP (2-5b)

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
LONG TERM LANE CLOSURES
MULTILANE CONVENTIONAL RDS.

TCP(2-5)-18

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©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 2-12	0171	05	083	SH 199
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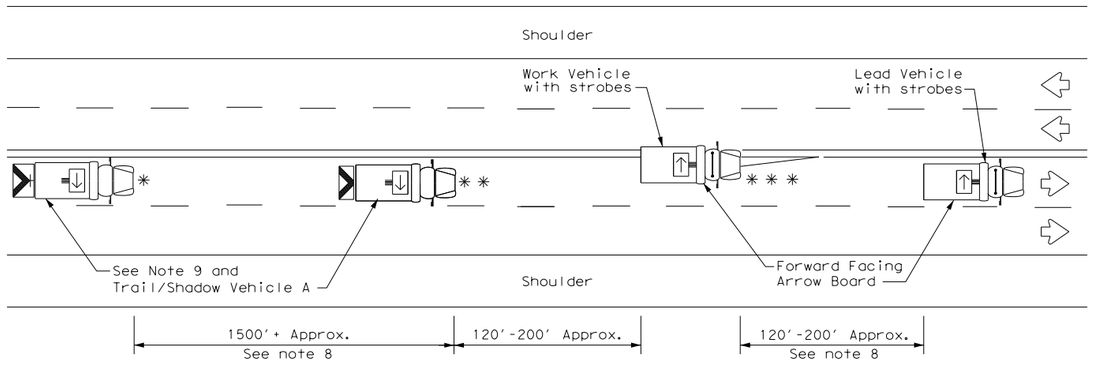
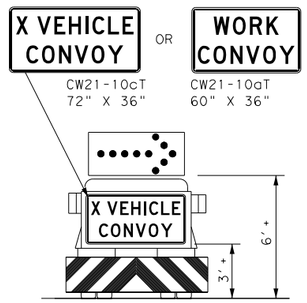


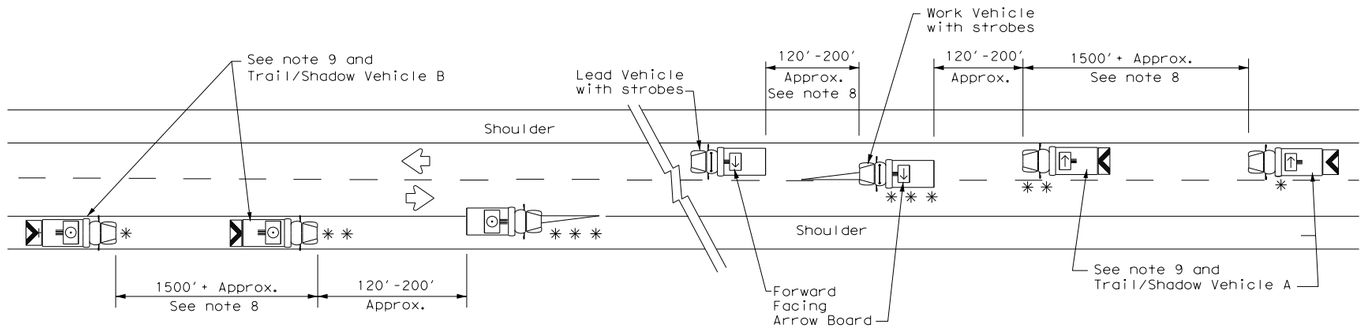
TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

with RIGHT Directional display Flashing Arrow Board

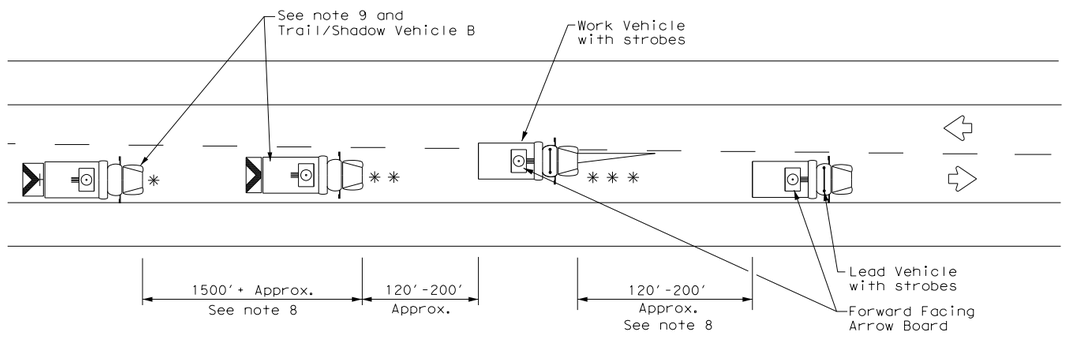


WORK ON SHOULDER

WORK ON TRAVEL LANE

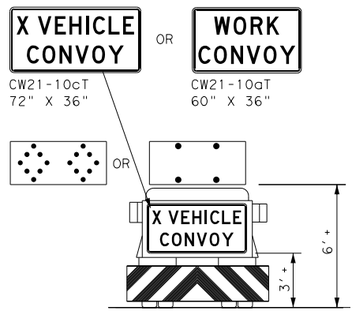
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

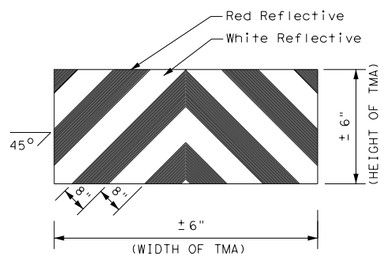
with Flashing Arrow Board in CAUTION display

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

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

GENERAL NOTES

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



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

TCP(3-1)-13

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©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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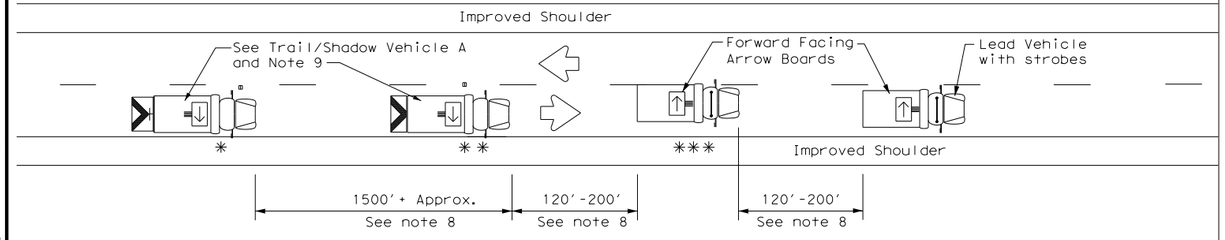
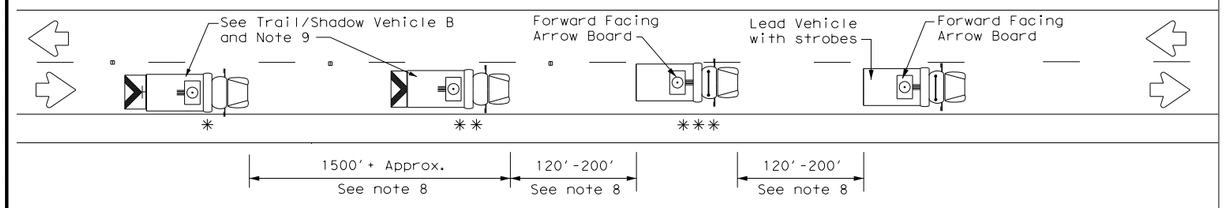
	FTW	TARRANT		35

175



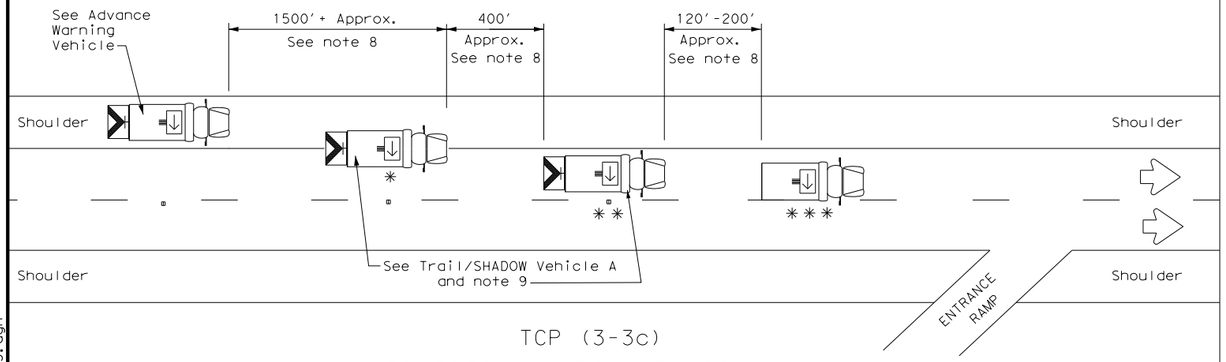
TCP (3-3a)

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



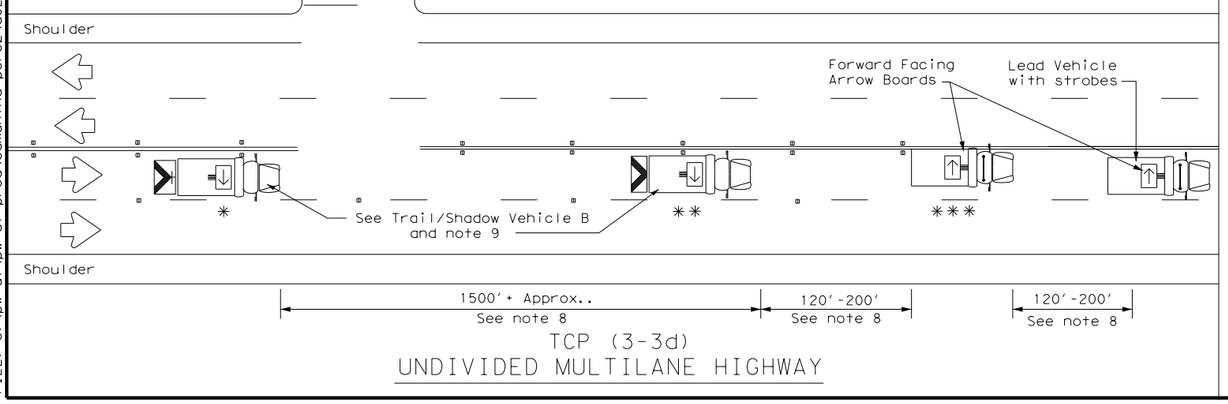
TCP (3-3b)

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



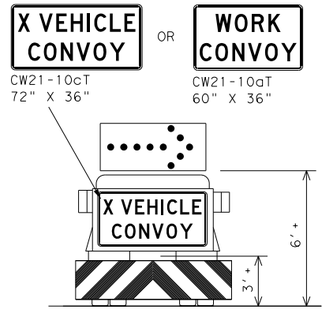
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



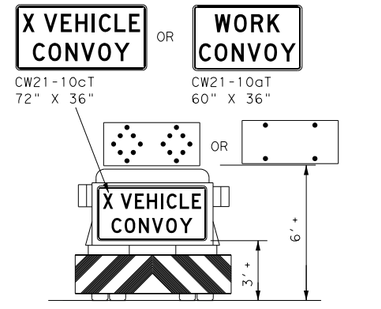
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



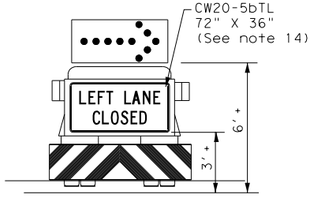
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

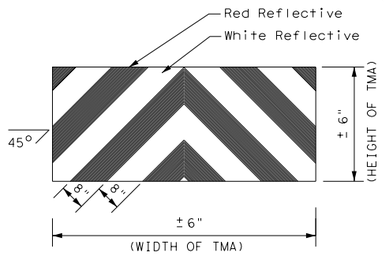


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

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

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©TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
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8-95 7-13	FTW	TARRANT		36
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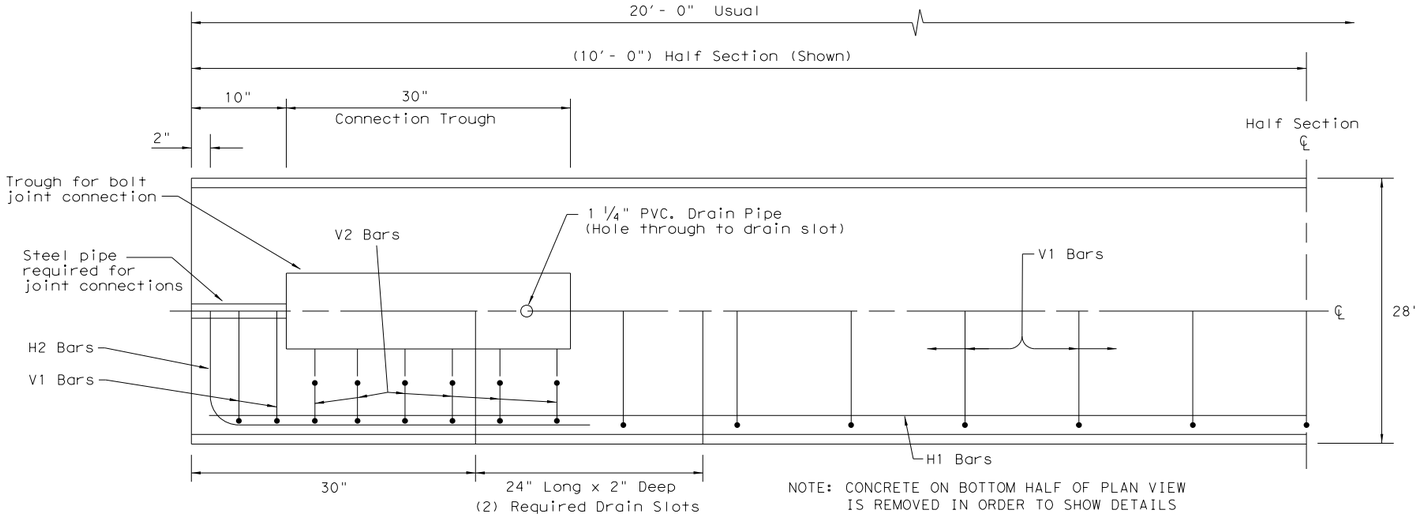
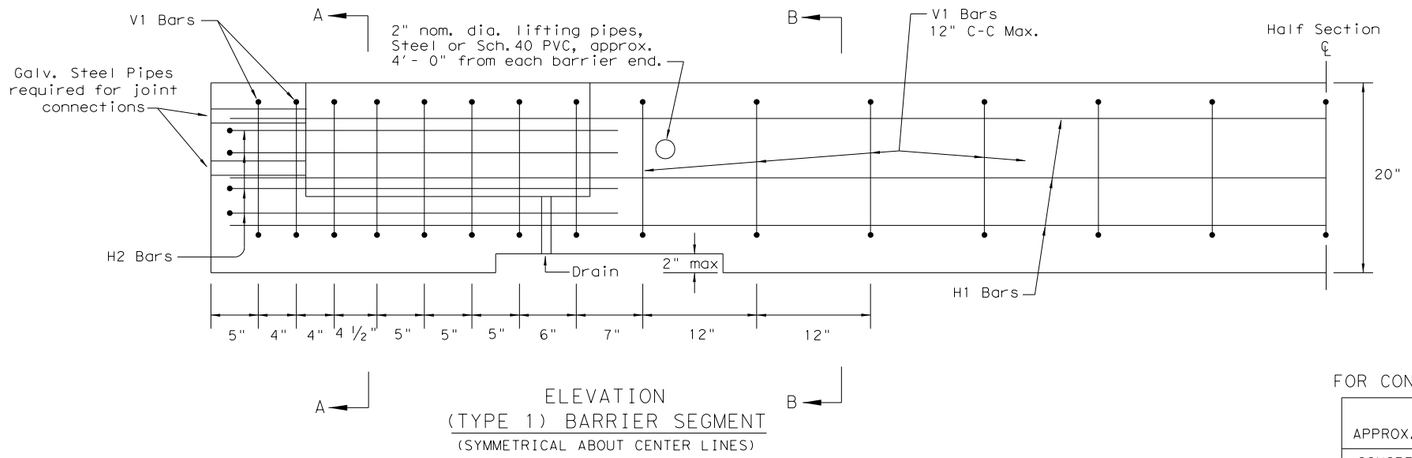
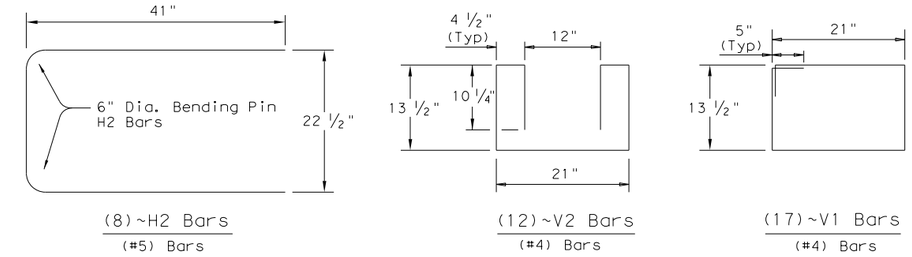


PLAN
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)



ELEVATION
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)



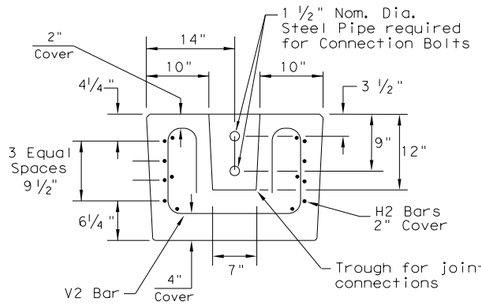
(8)~H2 Bars
(#5) Bars

(12)~V2 Bars
(#4) Bars

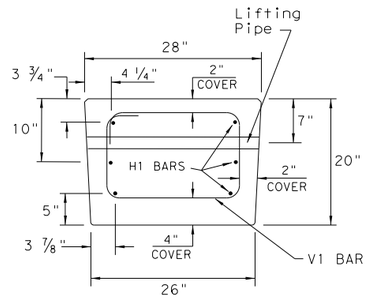
(17)~V1 Bars
(#4) Bars

REINFORCING STEEL DETAILS
TYPE 1 - BARRIER SEGMENT

Note: Use 2" Dia. Bending Pin, unless otherwise shown



SECTION A-A



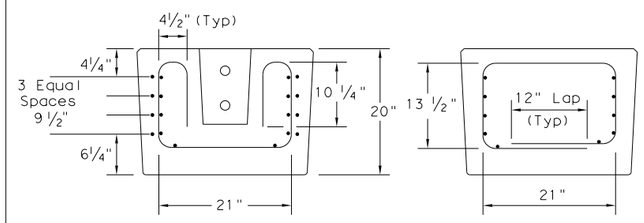
SECTION B-B

GENERAL NOTES

1. Low Profile Concrete Barrier (LPCB), is approved for use in temporary work zone locations, where the posted speed is 45 mph, or less.
2. Concrete shall be Class H for precast barrier with a minimum compressive strength of 3,600 psi.
3. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
4. Precast LPCB barrier length shall be 20 ft.
5. All barrier edges shall have ¾" chamfer or a tooled radius.
6. Joint connection hardware shall be in accordance with Item 449, "Anchor Bolts." and is considered subsidiary.
7. Steel pipe required for joint connection bolts shall be galvanized in accordance with Item 445,"Galvanizing."
8. Welded wire reinforcement (WWR) may be used in lieu of conventional reinforcement for Type 1 barrier, and shall meet the requirements shown.

FOR CONTRACTORS INFORMATION ONLY

(TYPE 1) APPROX. QUANTITIES 20 FT. SECTION		
CONCRETE	CY	2.6
REINFORCING STEEL	LBS	330
TOTAL BARRIER WT.	LBS	11000



SECTION A-A SECTION B-B

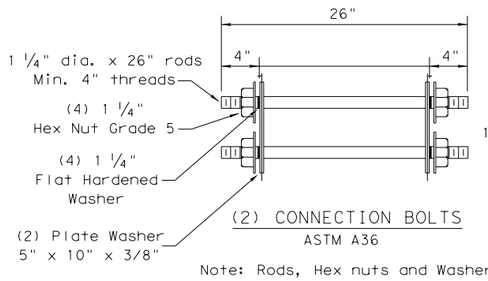
(WWR) GENERAL NOTES

1. Deformed Welded Wire Reinforcement shall conform to ASTM A497.
2. Welded wire cage may be cut or bent, if necessary, but must be approved by the Engineer.
3. Combinations of reinforcing steel and WWR are permitted, as directed by the Engineer. The dimensions from the end of the barrier section to the first wire shall not exceed 3".

REQUIRED (WWR) WIRE DESIGN

8 ~ (D31) Horizontal Wires (Equally spaced)
10 ~ (D20) Horizontal Wires (Equally spaced)
29 ~ (D20) Vertical Wires (Spaced as shown in Elevation View)

WELDED WIRE REINFORCEMENT (WWR)- OPTIONAL REINFORCING



(2) CONNECTION BOLTS
ASTM A36

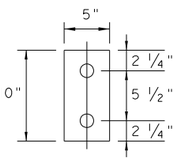


PLATE WASHER
5" x 10" x ⅜"

Note: Rods, Hex nuts and Washers shall be Galvanized.

SHEET 1 OF 2

Texas Department of Transportation

Design Division Standard

LOW PROFILE CONCRETE BARRIER
PRECAST BARRIER (TYPE 1)
LPCB-13

FILE: lpcb13.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
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	FTW	TARRANT		37

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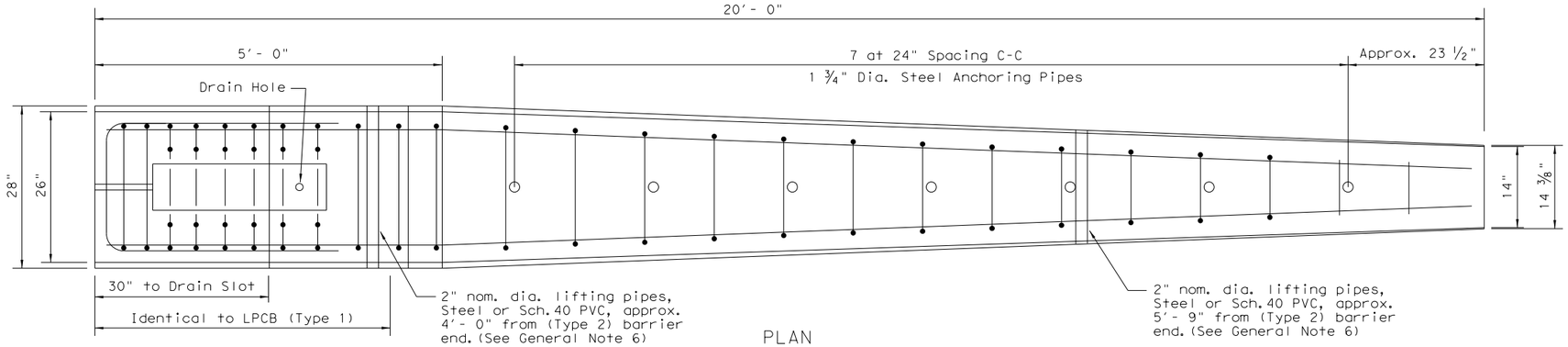
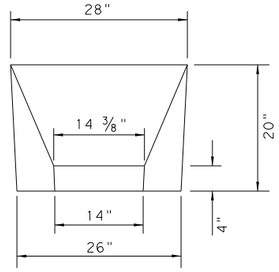
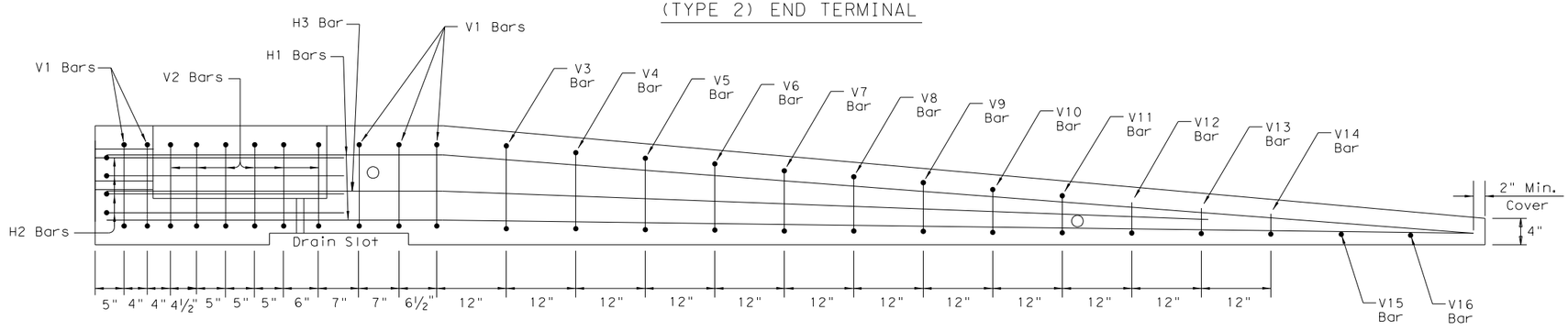


PLAN
(TYPE 2) END TERMINAL

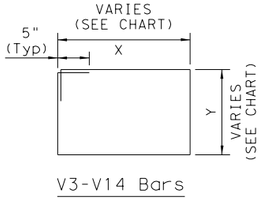


APPROACH VIEW



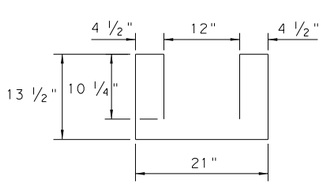
ELEVATION
(TYPE 2) END TERMINAL

Note:
Anchoring pipes not shown in Elevation View

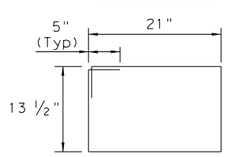


V3-V14 Bars

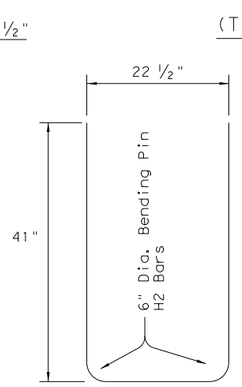
BAR(#4)	X (IN.)	Y (IN.)
V3 BAR	20 ¼	14 ½
V4 BAR	19 ½	13 ½
V5 BAR	18 ½	12 ¼
V6 BAR	17 ½	11 ¼
V7 BAR	17	10 ¼
V8 BAR	16 ¼	9
V9 BAR	15 ½	8
V10 BAR	14 ½	7
V11 BAR	13 ¾	6



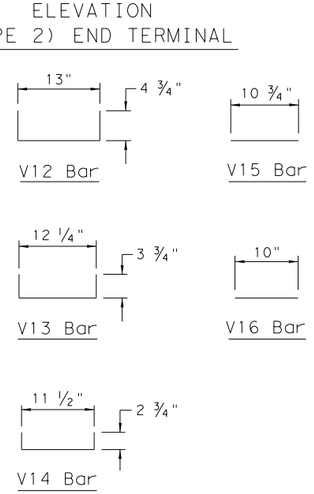
(6)~V2 Bars



(5)~V1 Bars

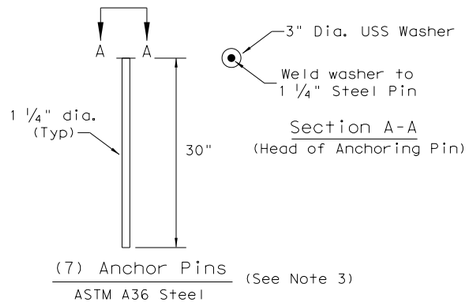


(4)~H2 Bars
(#5) Bars



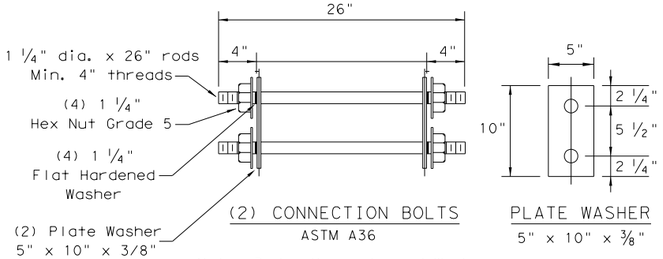
Note: All V Bars are (#4)

REINFORCING STEEL DETAILS
TYPE 2 - END TERMINAL



(7) Anchor Pins
ASTM A36 Steel (See Note 3)

Section A-A
(Head of Anchoring Pin)



(2) CONNECTION BOLTS
ASTM A36

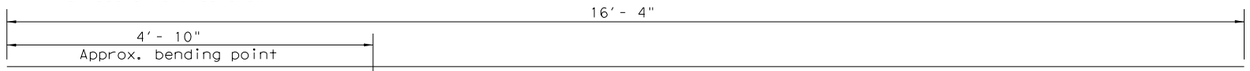
PLATE WASHER
5" x 10" x ⅜"

Note: Rods, Hex nuts and Washers shall be Galvanized.

TYPE 2 - NOTES

1. Welded wire reinforcment (WWR) is "not" an option for Type 2 Barrier.
2. Type 2 Barrier shall be used as an end treatment for the Type 1 barrier segments, when applicable.
3. The end treatment can be used without the anchor pins in locations that can accommodate approximately 4 ft. of lateral displacement of the end treatment. The use of non-pinned end treatment does not affect the performance or the deflection of the Low-Profile barrier system.
4. The anchor pins are all the same length and are to be driven flush with the top of the (Type 2) barrier surface.
5. The bends in the H3 and H1 bars are slight, no formal bend is necessary.
6. The Type 2 barrier segment must be lifted from the rear first, to prevent cracking of sloped section.
7. See LPCB sheet 1 for additional information.

Note: Use 2" Dia. Bending Pin, unless otherwise shown



(2)~H3 Bars
(#5) Bar

Note: Bends on H1 and H3 bars are slight and do not require formal bends.

(4)~H1 Bars
(#5) Bar

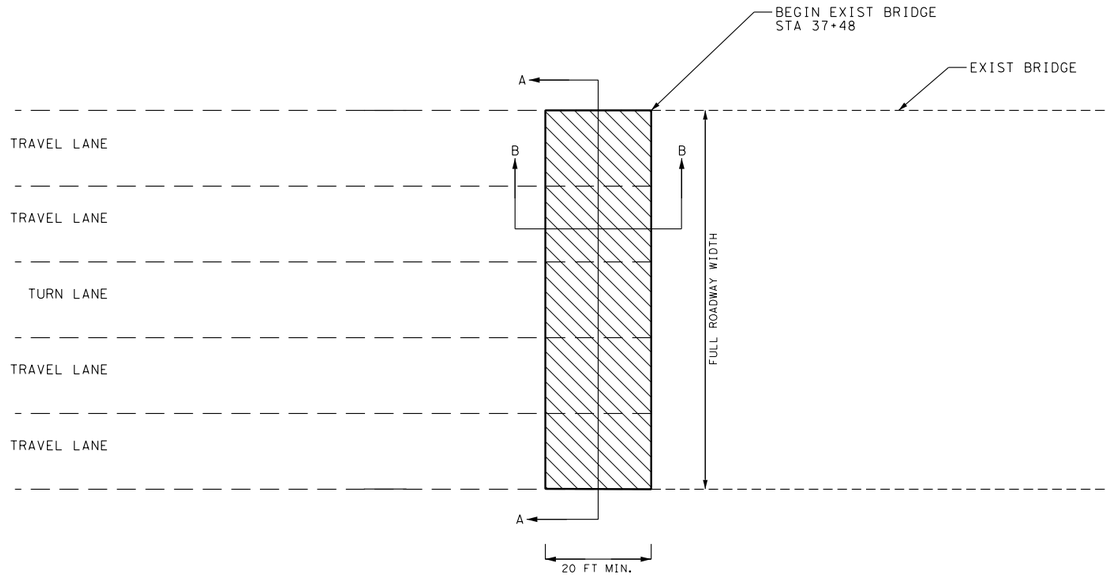
FOR CONTRACTORS INFORMATION ONLY

(TYPE 2) APPROX. QUANTITIES	20 FT. SECTION	
CONCRETE	CY	1.65
REINFORCING STEEL	LBS	240
TOTAL BARRIER WT.	LBS	7000

Texas Department of Transportation
Design Division Standard

LOW PROFILE CONCRETE BARRIER
PRECAST BARRIER (TYPE 2)
LPCB-13

FILE: lpcb13.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
© TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0171	05	083	SH 199
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		38

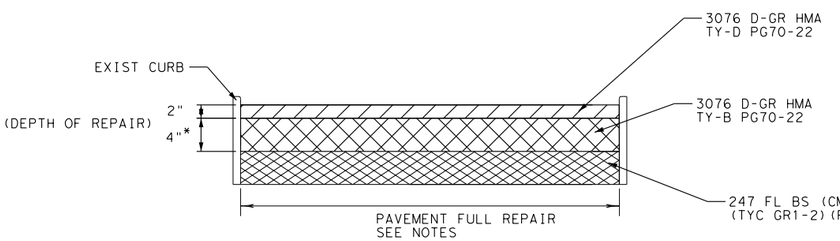


FLEXIBLE PAVEMENT REPAIR DETAIL

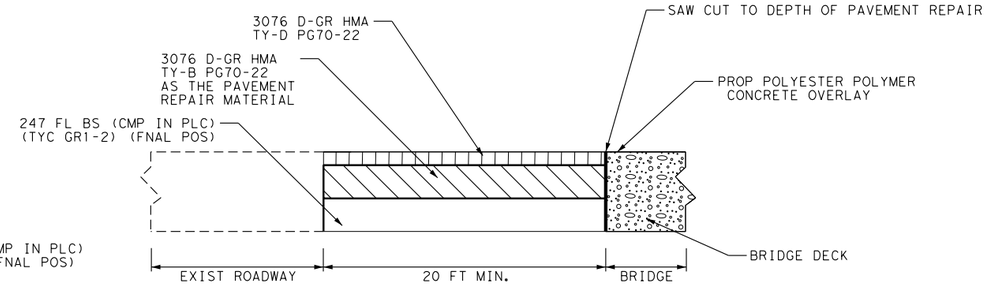
STA 37+28 TO STA 37+48
(PLAN VIEW)
NOT TO SCALE

NOTES:

1. THE DEPTH OF ALL PAVEMENT REPAIRS SHALL BE AS DIRECTED BY THE ENGINEER.
2. THE ENGINEER SHALL MARK AND VERIFY ALL AREAS TO BE REPAIRED PRIOR TO THE COMMENCEMENT OF WORK.
3. FLEXIBLE PAVEMENT REPAIR ITEMS COVERED UNDER ITEM 351 6002 FLEXIBLE PAVEMENT STRUCTURE REPAIR (6").



SECTION A-A
NOT TO SCALE
*APPROX. FIELD VERIFY



SECTION B-B
NOT TO SCALE

FLEXIBLE PAVEMENT REPAIR

TYPICAL SECTION

STATE OF TEXAS
ALEX I. GARCIA
107317
PROFESSIONAL LICENSED ENGINEER
10-4-23

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

FLEXIBLE PAVEMENT REPAIR DETAILS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	39
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/3/2023 10:45:08 PM
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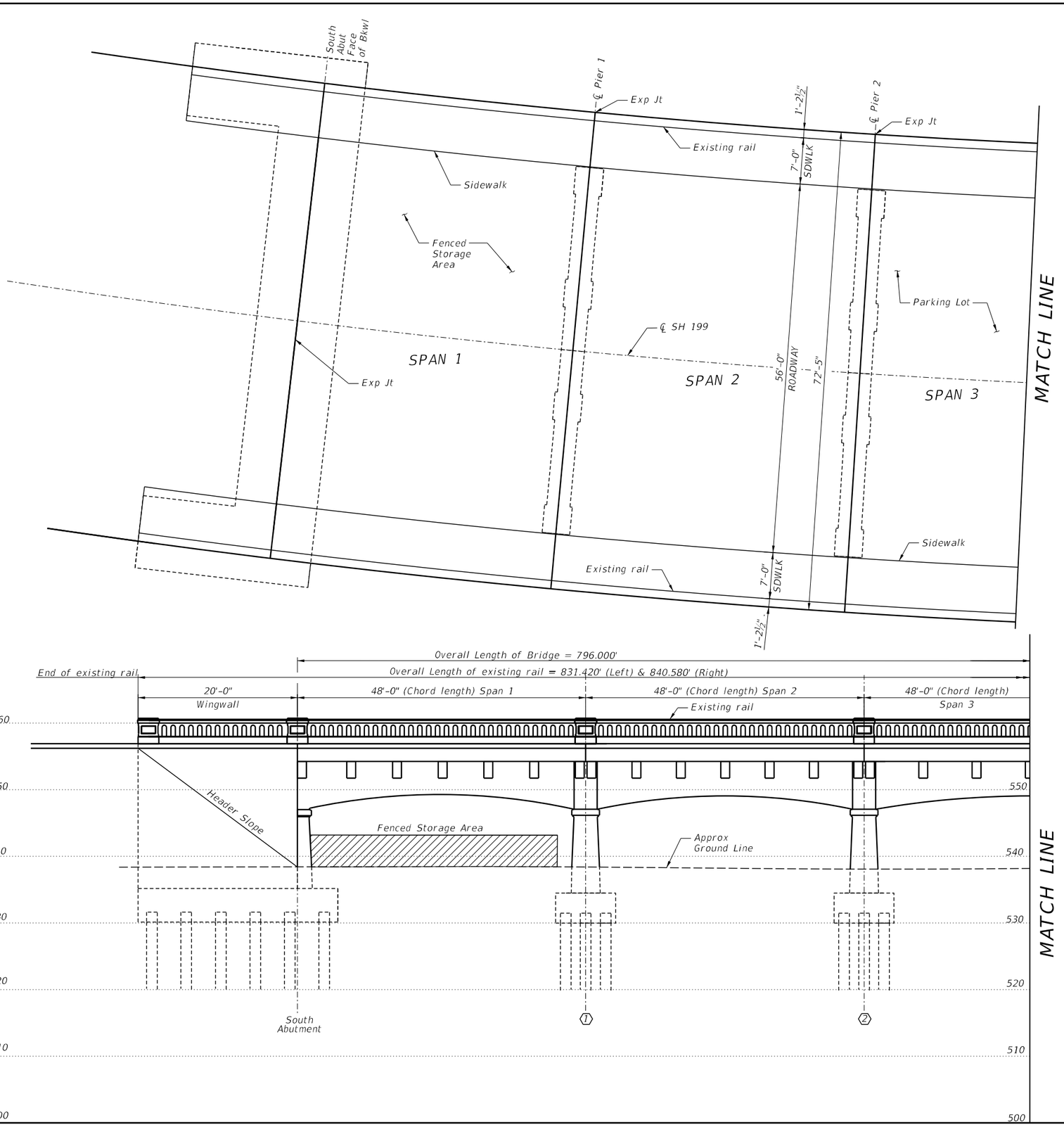

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

BRIDGE LAYOUT

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 7

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	40
CONTROL	SECTION NO.	JOB	
0171	05	083	

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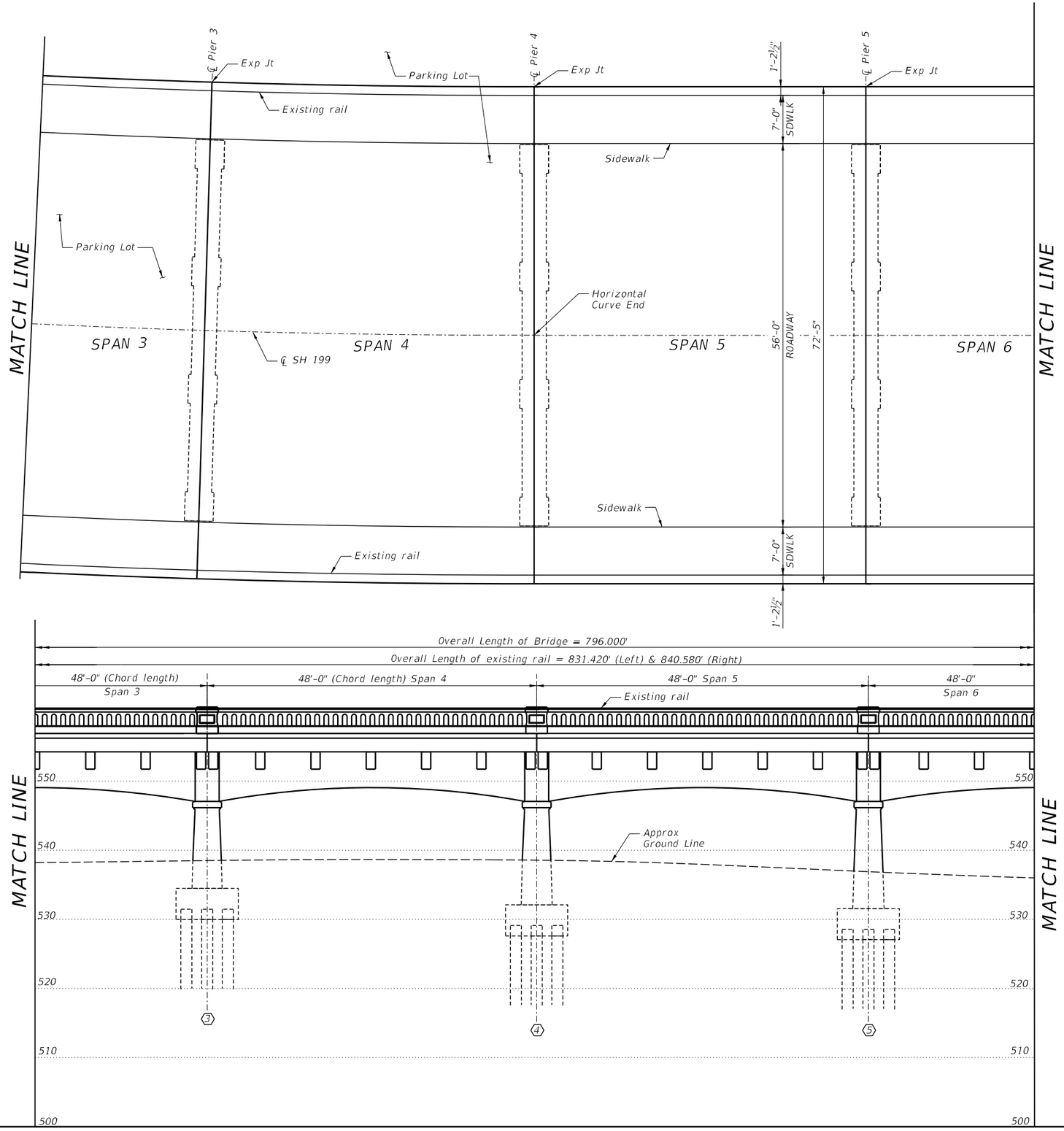

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
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BRIDGE LAYOUT

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 7

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	41
CONTROL	SECTION NO.	JOB	
0171	05	083	

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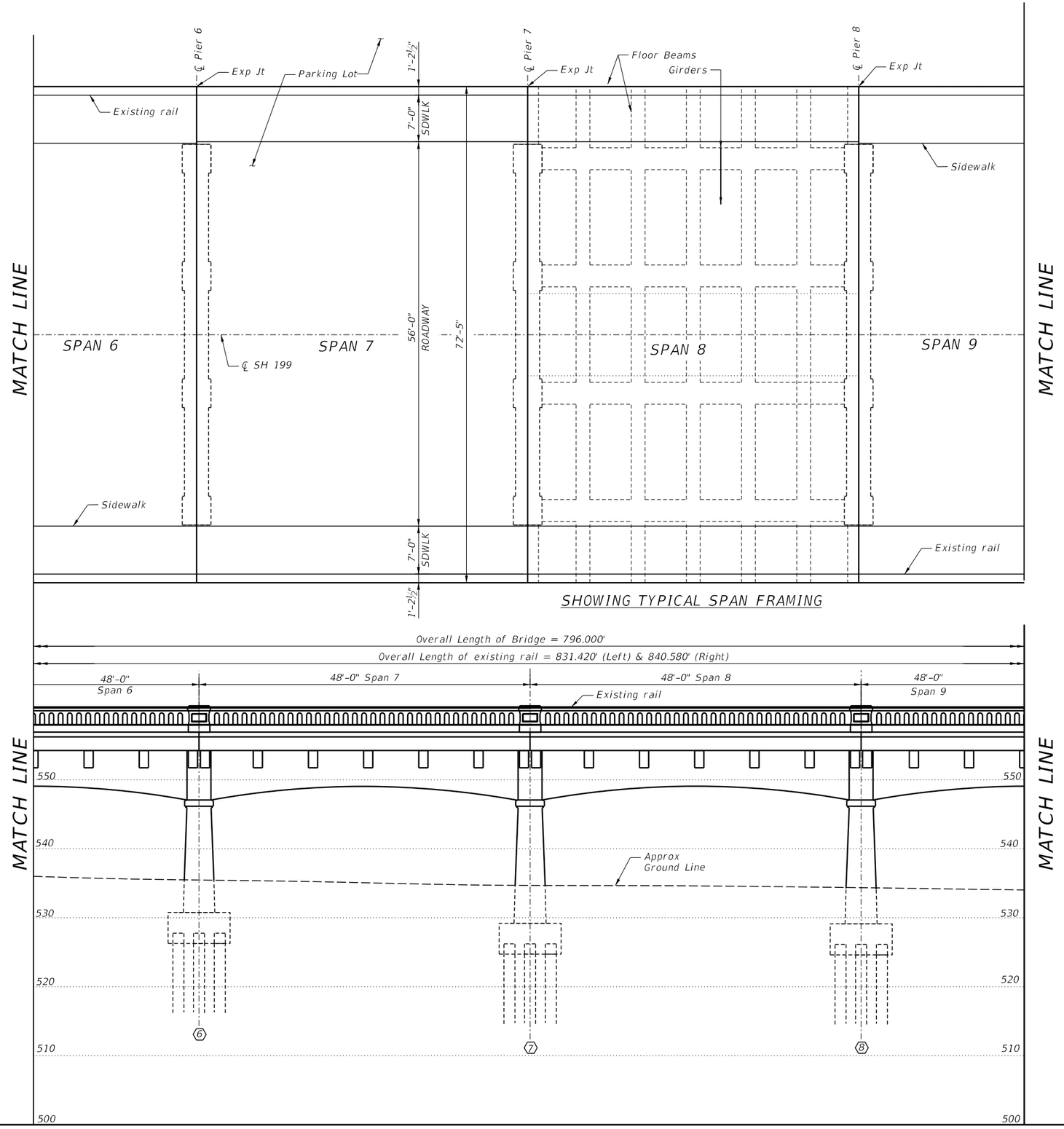

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
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10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

BRIDGE LAYOUT

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 3 OF 7

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	42
CONTROL	SECTION NO.	JOB	
0171	05	083	

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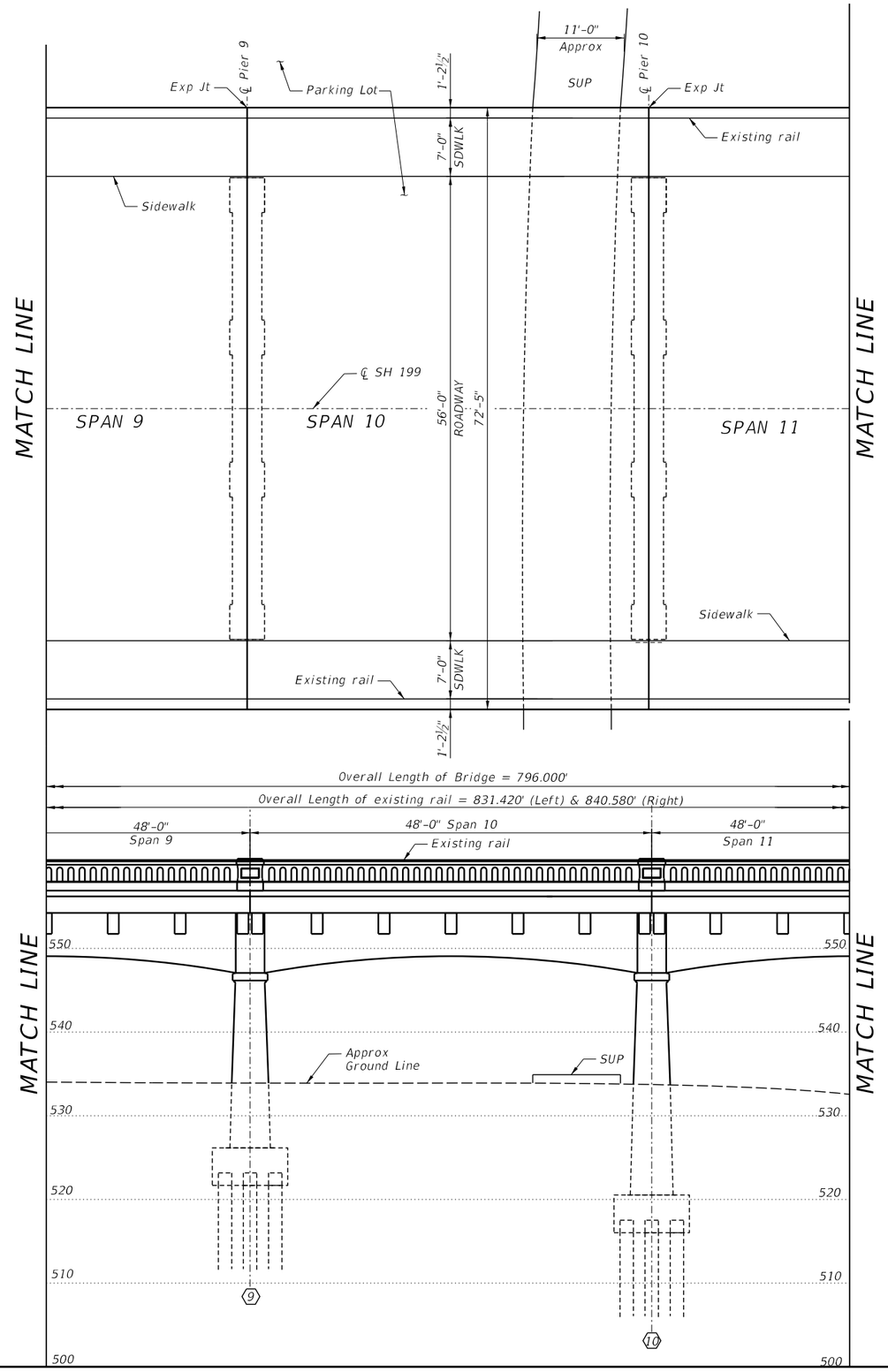

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
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10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

BRIDGE LAYOUT

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 4 OF 7

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	43
CONTROL	SECTION NO.	JOB	
0171	05	083	

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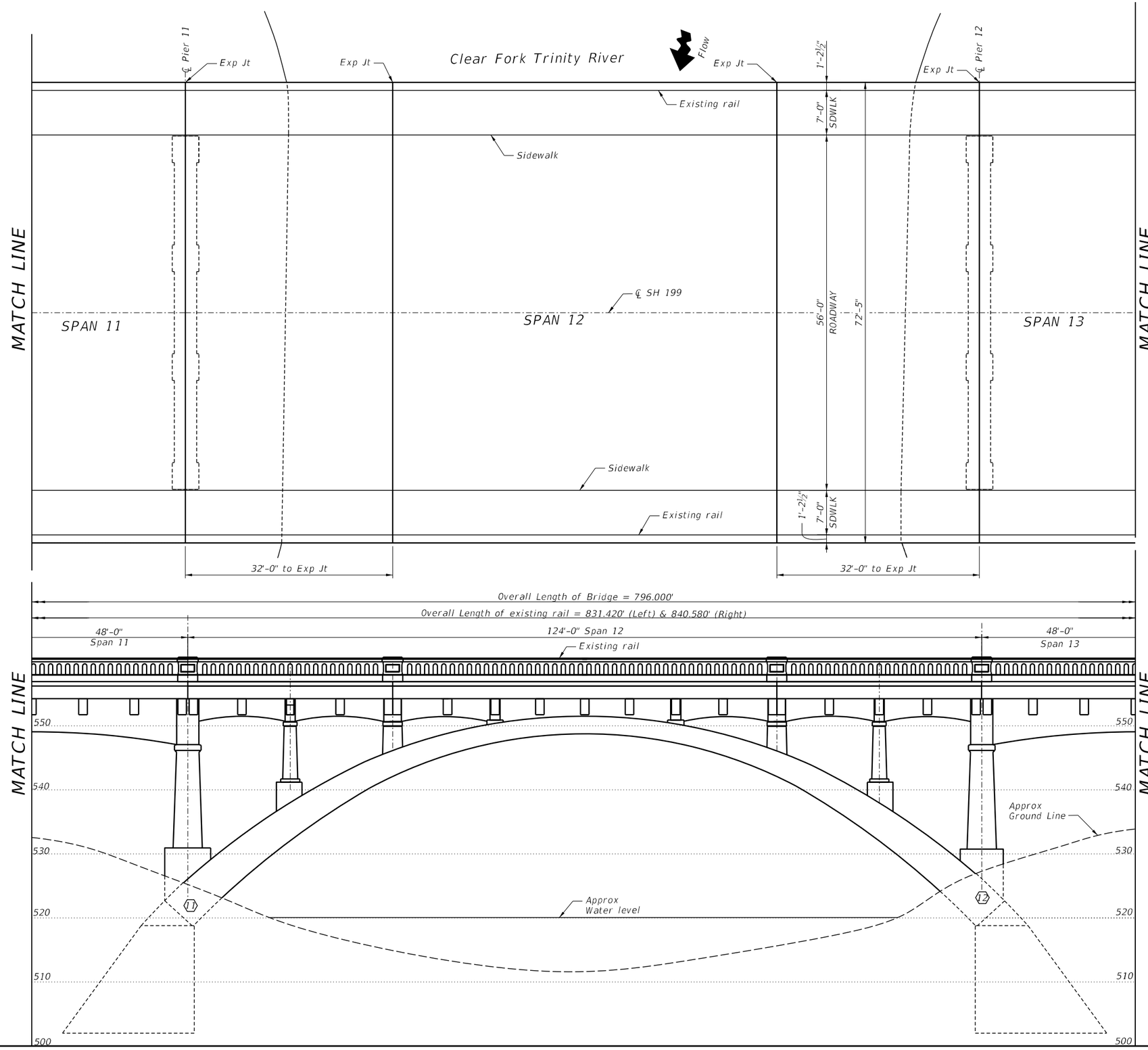

SCALE: NTS

STATE OF TEXAS
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10/6/2023

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Texas Department of Transportation

BRIDGE LAYOUT

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 5 OF 7

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	44
CONTROL	SECTION NO.	JOB	
0171	05	083	

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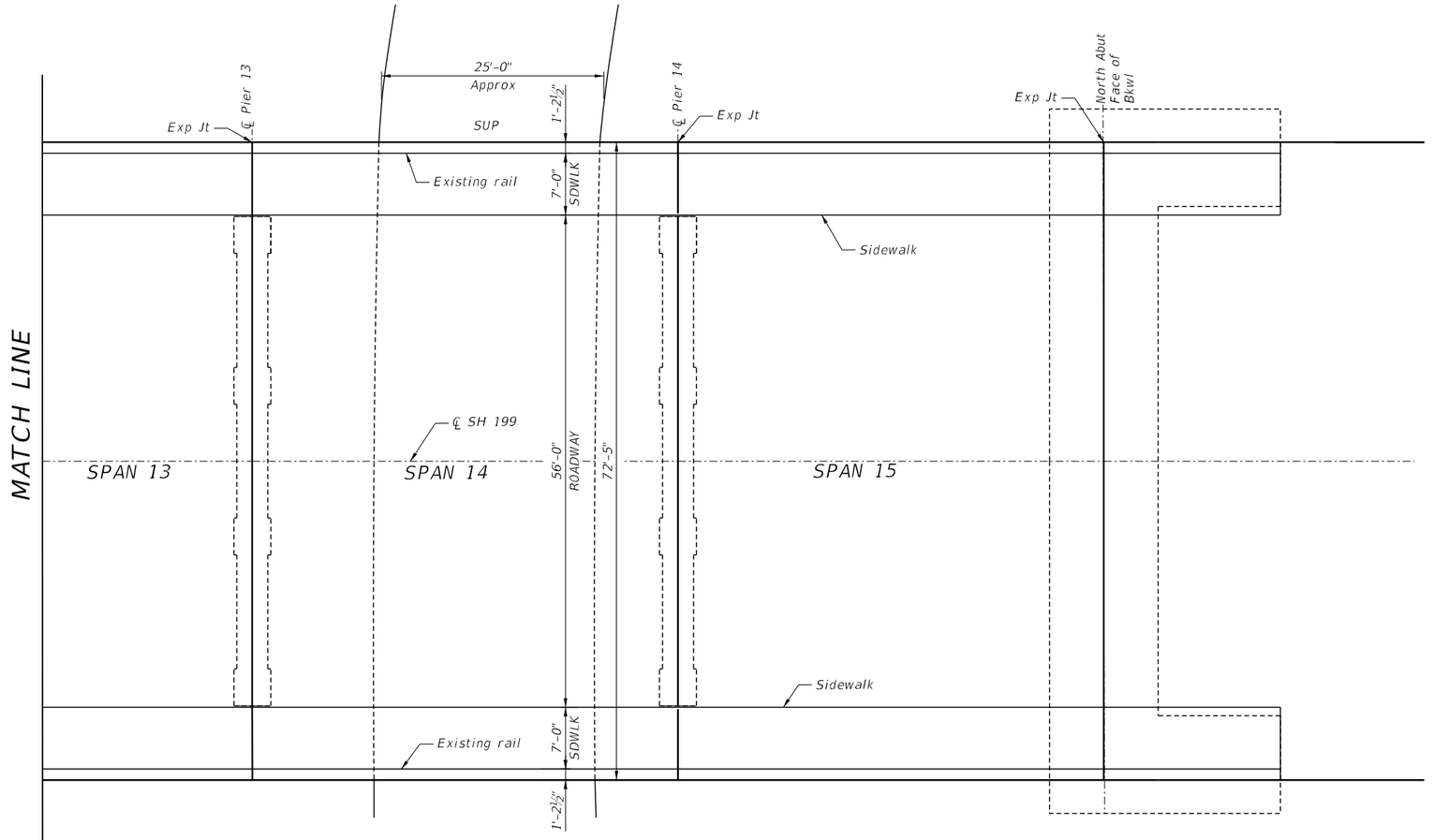

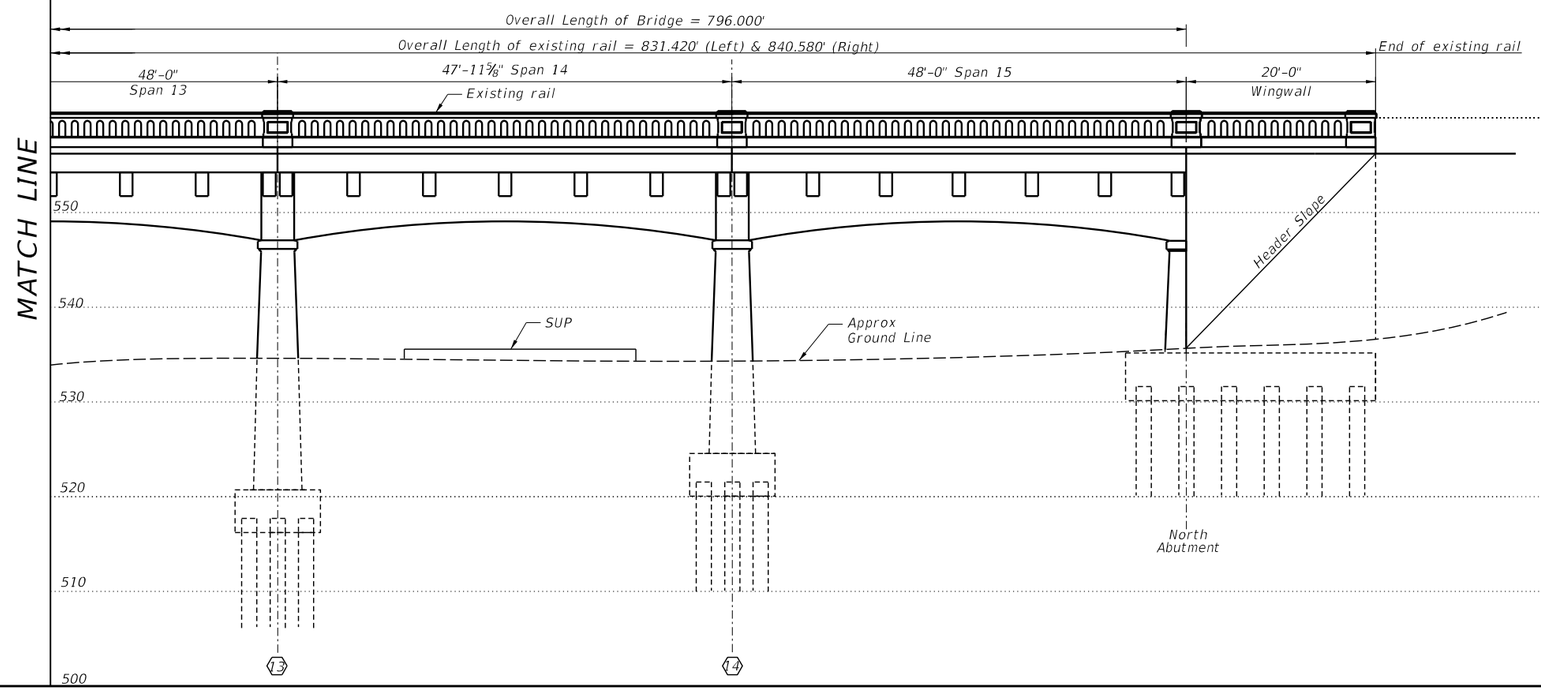

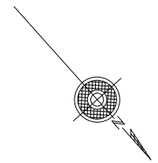

SCALE: NTS

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BRIDGE LAYOUT

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 6 OF 7

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	45
CONTROL	SECTION NO.	JOB	
0171	05	083	

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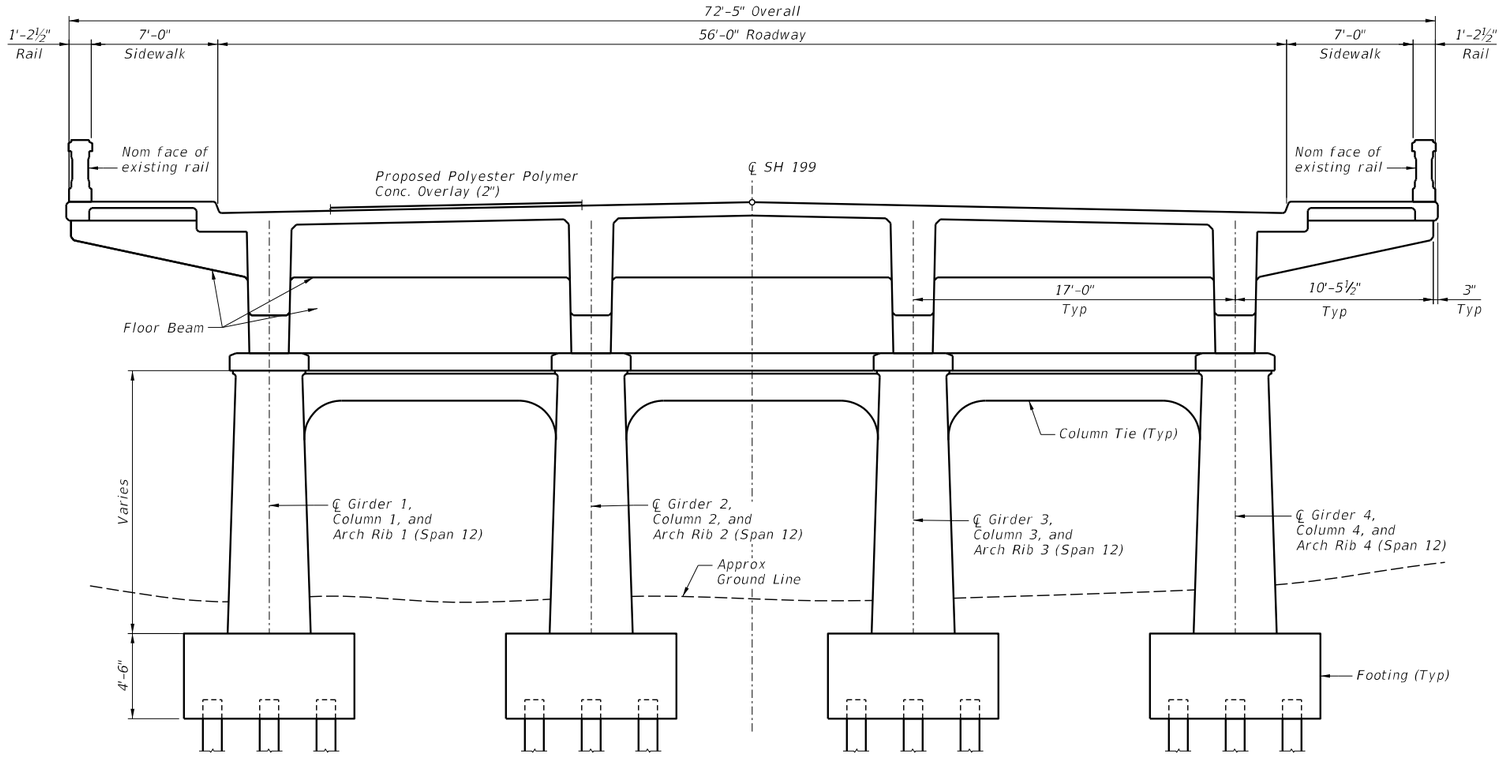
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 bridge.dgn

GENERAL NOTES

1. STRUCTURE, ELEVATIONS, AND GROUND LINES SHOWN ARE RECREATED FROM AS-BUILT PLANS, DATED 1930. THEY ARE NOT TO SCALE, WITH SOME ELEMENT SIZES ENHANCED FOR CLARITY.
2. PRIOR TESTING INDICATES NO HAZARDOUS MATERIALS (ABSESTOS OR LEAD-BASED PAINT). TEST REPORTS ARE AVAILABLE FROM THE ENGINEER.
3. PHOTOS OF OBSERVED AND KNOWN CRACKS AND SPALLS ARE DOCUMENTED IN APPENDIX C OF THE BRIDGE CONDITION ASSESSMENT REPORT, DATED DECEMBER 2021. THIS REPORT IS AVAILABLE FROM THE ENGINEER.



TYPICAL SECTION

Looking North
(Spans 1-11 and 13-15
Span 12 similar)

REPAIR NOTES

1. APPLY PENETRATING CONCRETE SURFACE TREATMENT IN ACCORDANCE WITH ITEM 428 ON ALL EXPOSED AND ACCESSIBLE CONCRETE SURFACES EXCEPT FOR TOP OF DECK.
2. SEE SHEET 134 FOR CRACK AND SPALL REPAIR DETAILS AND NOTES. CONFINE SPALL REPAIRS OVER PARKING LOT, DRIVE, AND ANY PEDESTRIAN WALKWAY WITH CFRP.
3. SEE SHEET 133 FOR EXISTING OVERLAY REMOVAL AND REPLACEMENT WITH 2-IN. POLYESTER POLYMER CONCRETE OVERLAY (SPECIAL SPECIFICATION 4106).
4. SEE SHEETS 133 & 135 FOR EXPANSION JOINT DETAILS AND SIDEWALK COVER PLATES.
5. SEE SHEET 53 FOR RAILING REPAIR DETAILS.

EXISTING NBI NUMBER: 02-220-0-0171-05-018

FUNCTIONAL CLASSIFICATION: PRINCIPAL ARTERIAL - OTHER

DESIGN SPEED: 30 MPH

EXISTING ADT: 32,209 (2022)

FUTURE ADT: 39,939 (2042)

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

BRIDGE LAYOUT

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 7 OF 7

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	46
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 bridge.dgn

SUMMARY OF ESTIMATED QUANTITIES

BID CODES	0354 6220	0401 6001	0428 6001	0429 6003	0429 6007	0438 6002	0438 6004	0442 6007	0531 6002	0778 6001	0780 6004	0786 6001	4106 6003
BID ITEM DESCRIPTION	PLAN ASPH CONC PAV (0"-2" MICRO)	FLOWABLE BACKFILL	PENETRATING CONCRETE SURFACE TREATMENT	CONC STR REPAIR(DECK REP(PART DEPTH))	CONC STR REPAIR (VERTICAL & OVERHEAD)	CLEANING AND SEALING EXIST JOINTS(CL3)	CLEANING AND SEALING EXIST JOINTS(CL7)	STR STEEL (MISC NON - BRIDGE)	CONC SIDEWALKS (5")	CONCRETE RAIL REPAIR (IN-KIND) ①	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL)	CARBON FIBER REINF POLYMER PROTECTION	POLYESTER POLYMER CONC OVERLAY (2")
BRIDGE ELEMENT	SY	CY	SY	SF	SF	LF	LF	LB	SY	LF	LF	SF	SY
SUPERSTRUCTURE													
Span 1	299	-	968	69	74.03	56	56	248	-	-	-	31.9	299
Span 2	299	-	968	61	63.46	-	56	124	-	-	-	36.6	299
Span 3	299	-	968	66	117.23	-	56	124	-	-	-	88.4	299
Span 4	299	-	968	60	148.85	-	56	124	-	-	-	109.4	299
Span 5	299	-	968	60	98.53	-	56	124	-	-	-	54.9	299
Span 6	299	-	968	55	116.47	-	56	124	-	-	-	76.5	299
Span 7	299	-	968	58	87.72	-	56	124	-	-	-	71.8	299
Span 8	299	-	968	72	78.10	-	56	124	-	2.5	-	54.5	299
Span 9	299	-	968	48	107.03	-	56	124	-	-	-	78.8	299
Span 10	299	-	968	65	41.28	-	56	124	-	-	-	26.6	299
Span 11	299	-	968	52	25.85	-	56	124	-	-	-	-	299
Span 12	772	-	2299	52	394.93	-	168	498	-	1.5	-	-	772
Span 13	299	-	968	52	56.26	-	56	124	-	-	-	-	299
Span 14	299	-	968	46	69.22	-	56	124	-	-	-	50.2	299
Span 15	299	-	968	46	71.41	56	-	124	-	-	-	-	299
SUBSTRUCTURE													
South Abutment	-	5	262	-	2.66	-	-	-	1 ②	-	79.1	2.7	-
North Abutment	-	-	262	-	7.98	-	-	-	-	-	-	-	-
Pier 1	-	-	127	-	29.26	-	-	-	-	-	-	29.3	-
Pier 2	-	-	131	-	31.92	-	-	-	-	-	-	31.9	-
Pier 3	-	-	143	-	46.22	-	-	-	-	-	13.6	46.2	-
Pier 4	-	-	156	-	26.60	-	-	-	-	-	13.6	26.6	-
Pier 5	-	-	168	-	31.92	-	-	-	-	-	-	31.9	-
Pier 6	-	-	181	-	39.90	-	-	-	-	-	-	39.9	-
Pier 7	-	-	194	-	34.58	-	-	-	-	-	-	34.6	-
Pier 8	-	-	205	-	82.46	-	-	-	-	-	-	82.5	-
Pier 9	-	-	228	-	13.64	-	-	-	-	-	-	13.6	-
Pier 10	-	-	288	-	26.60	-	-	-	-	-	-	26.6	-
Pier 11 & Arch + Small Columns	-	-	1514	-	41.23	-	-	-	-	-	-	-	-
Pier 12	-	-	226	-	31.26	-	-	-	-	-	-	-	-
Pier 13	-	-	275	-	6.65	-	-	-	-	-	-	6.7	-
Pier 14	-	-	227	-	15.63	-	-	-	-	-	-	-	-
TOTAL	4953	5	20437	862	2018.88	112	896	2358	1	4.0	106.3	1052.0	4953

① Repair materials for railing shall match color of existing railing, as approved by the Engineer.

② Quantity is to level up bridge sidewalk with approach sidewalk at south abutment.

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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OMEGAENGINEERS.COM
TX PE Firm Reg. No. F-2147
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Texas Department of Transportation

SUMMARY OF ESTIMATED QUANTITIES

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 1

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	47
CONTROL	SECTION NO.	JOB	
0171	05	083	

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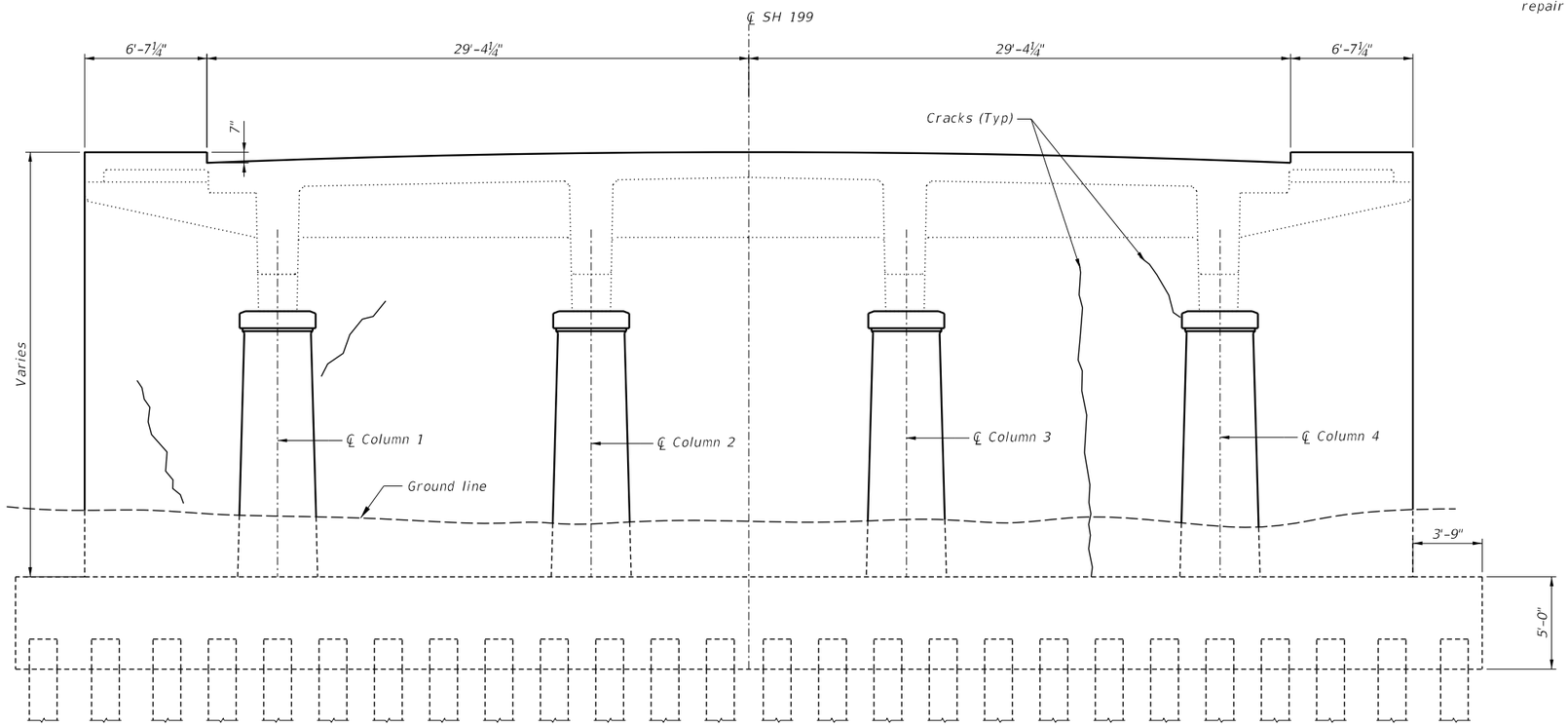
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

GENERAL NOTES:

Details provided on this sheet are for the purpose of illustrating typical noted defects and estimated quantities. Note that the repair quantities provided in the tables are increased (compared to the damage quantity) to account for surface preparation as required by the TxDOT Concrete Repair Manual.

See MISCELLANEOUS REPAIR DETAILS sheet for guidance and details for each repair specified.



SOUTH & NORTH ABUTMENTS

(Looking North)

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER

10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

ABUTMENT REPAIR DETAILS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 1

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	48
CONTROL	SECTION NO.	JOB	
0171	05	083	

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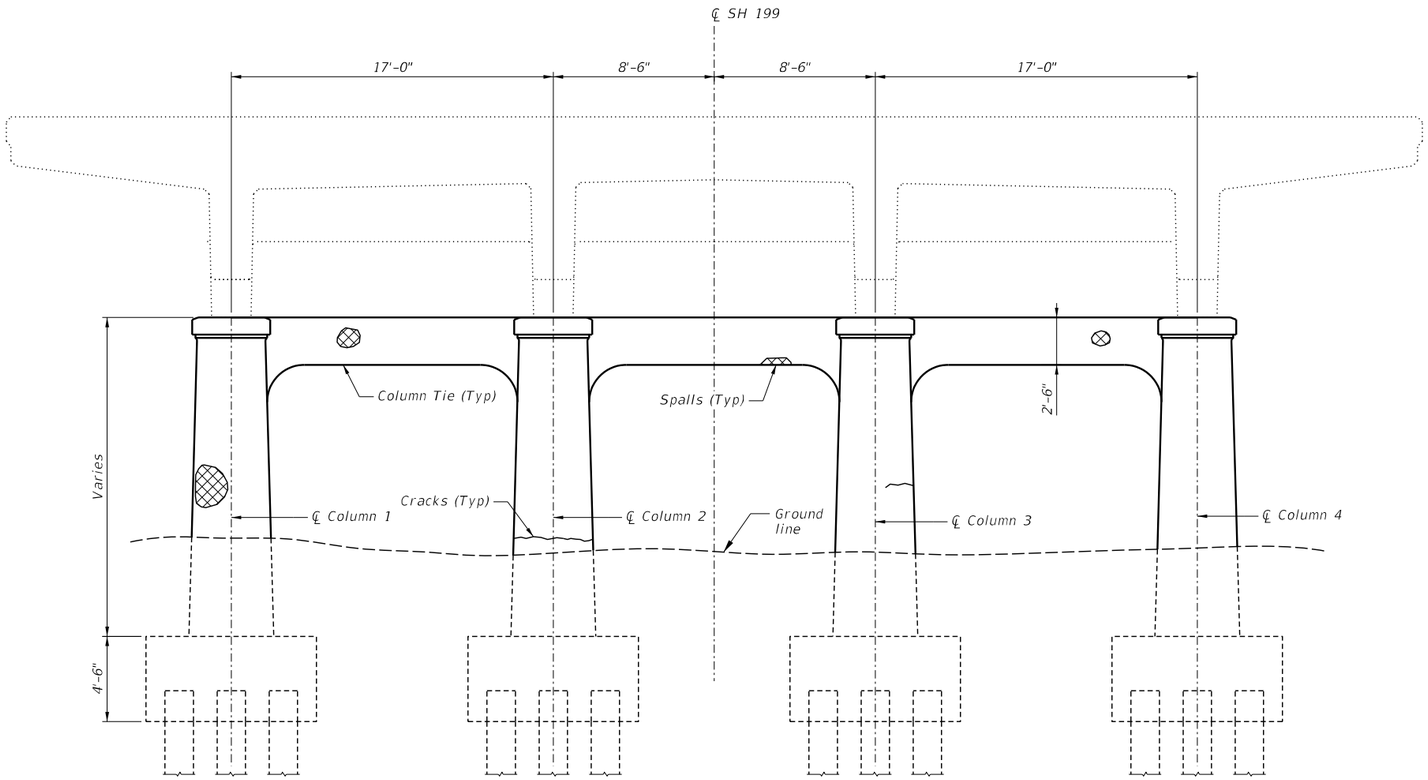

PIERS 1 - 10 & 13 - 14

(Looking North)

GENERAL NOTES:

Details provided on this sheet are for the purpose of illustrating typical noted defects and estimated quantities. Note that the repair quantities provided in the tables are increased (compared to the damage quantity) to account for surface preparation as required by the TxDOT Concrete Repair Manual.

See MISCELLANEOUS REPAIR DETAILS sheet for guidance and details for each repair specified.

Contractor is to notify TxDOT when repairs are complete for elements with murals, which will allow murals to be repainted by the City of Fort Worth.

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

BENT REPAIR DETAILS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 1

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	49
CONTROL	SECTION NO.	JOB	
0171	05	083	

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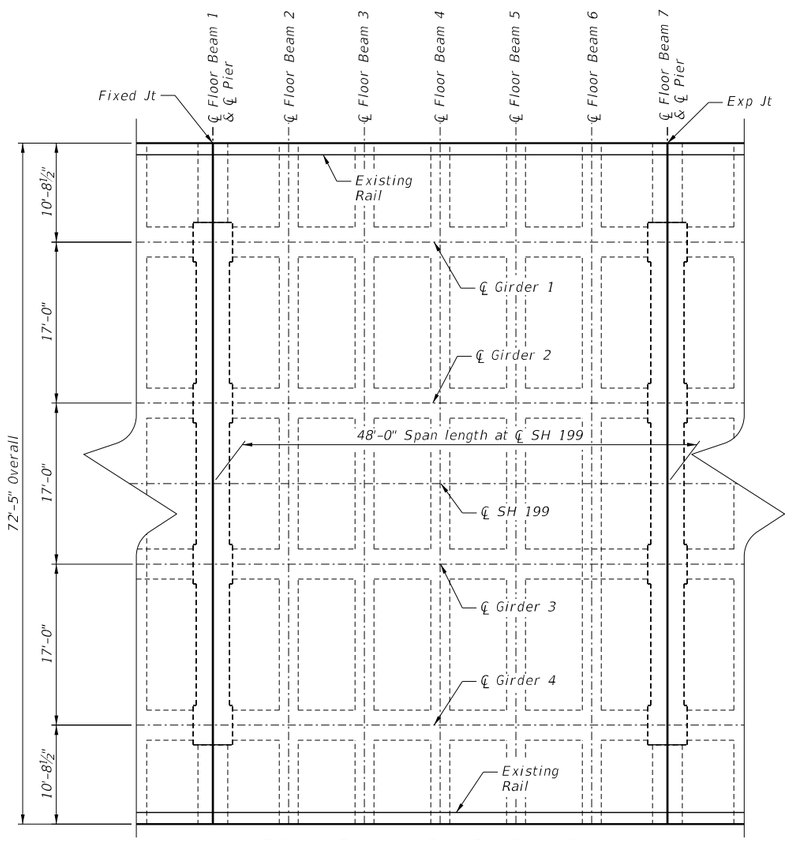
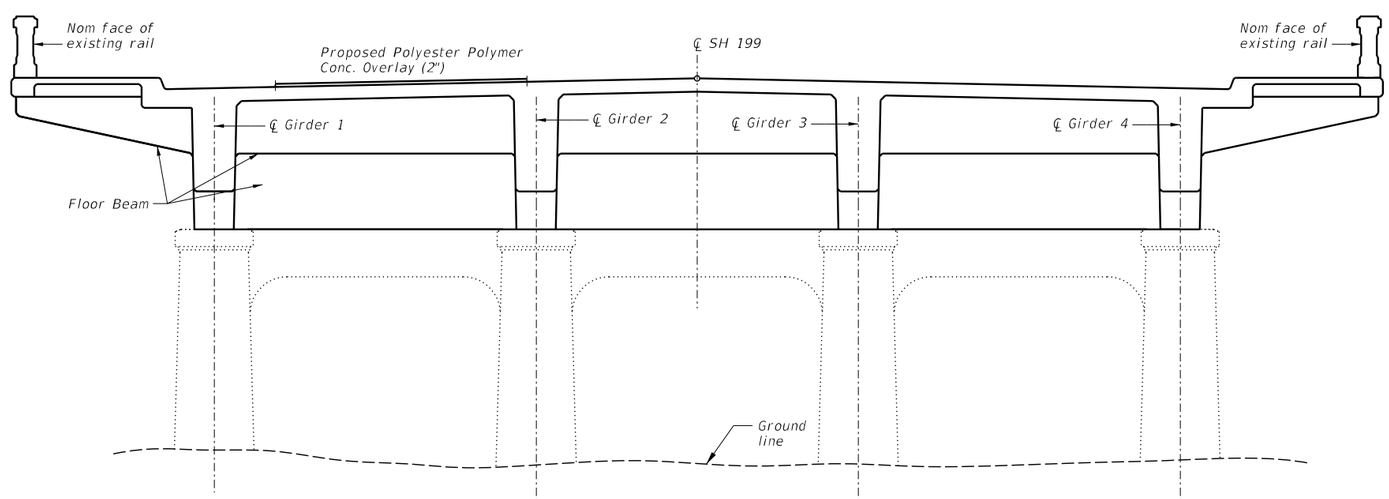


SPANS 1-11 & 13-15 - PLAN



SPANS 1-11 & 13-15 - TYPICAL SECTION

(Looking North)

GENERAL NOTES:

Details provided on this sheet are for the purpose of illustrating typical noted defects and estimated quantities. Note that the repair quantities provided in the tables are increased (compared to the damage quantity) to account for surface preparation as required by the TxDOT Concrete Repair Manual.

See MISCELLANEOUS REPAIR DETAILS sheet for guidance and details for each repair specified.

Seal all fixed and expansion joints as per "Joint and Overlay Details Sheet".

SCALE: NTS

STATE OF TEXAS
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10/6/2023

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SPAN REPAIR DETAILS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 1

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	50
CONTROL	SECTION NO.	JOB	
0171	05	083	

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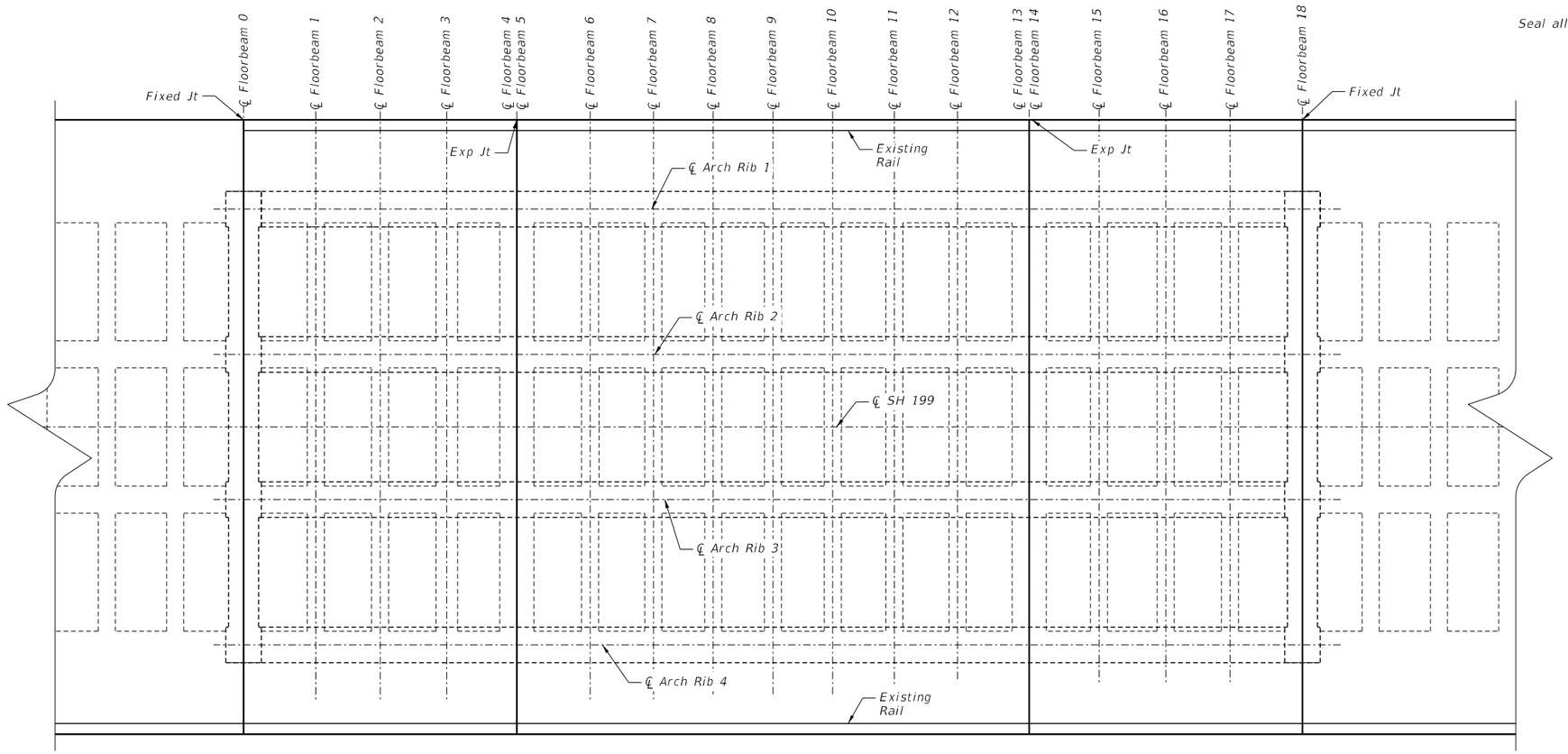
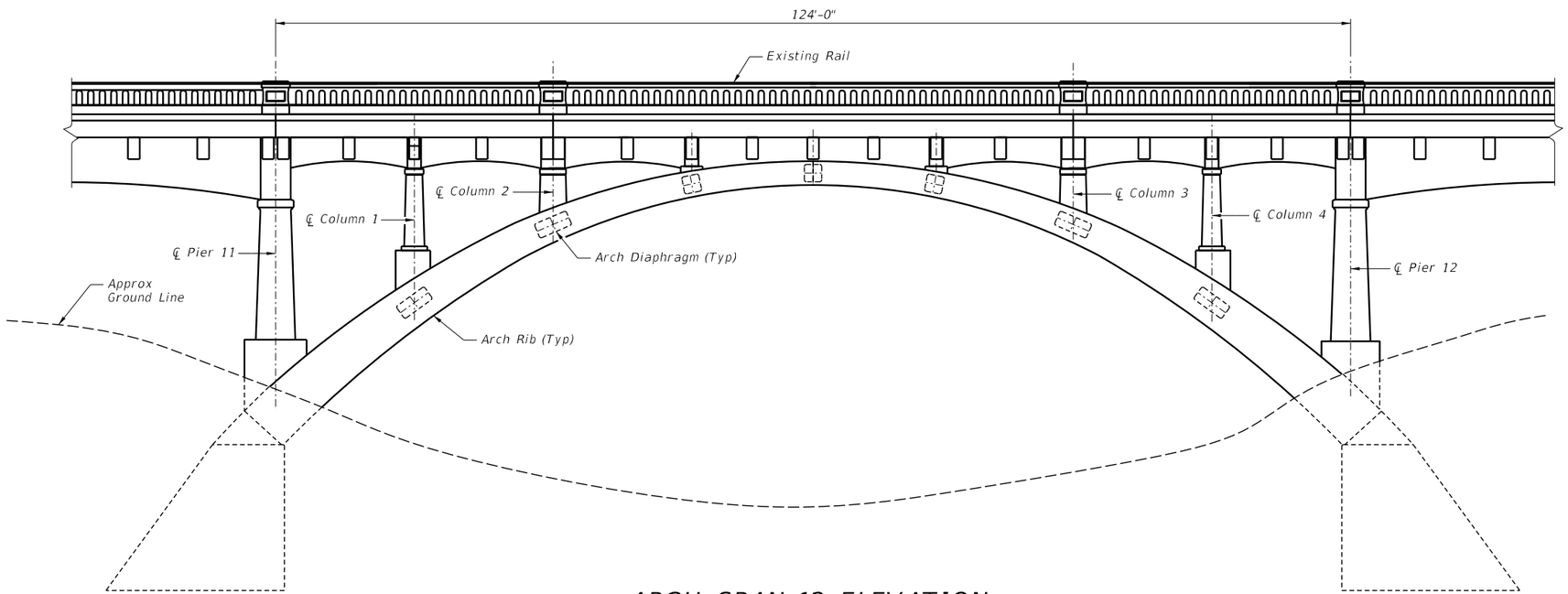
Seal all fixed and expansion joints as per "Joint and Overlay Details Sheet".



ARCH SPAN 12 PLAN



ARCH SPAN 12 ELEVATION

SCALE: NTS

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ARCH SPAN REPAIR DETAILS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	51
CONTROL	SECTION NO.	JOB	
0171	05	083	

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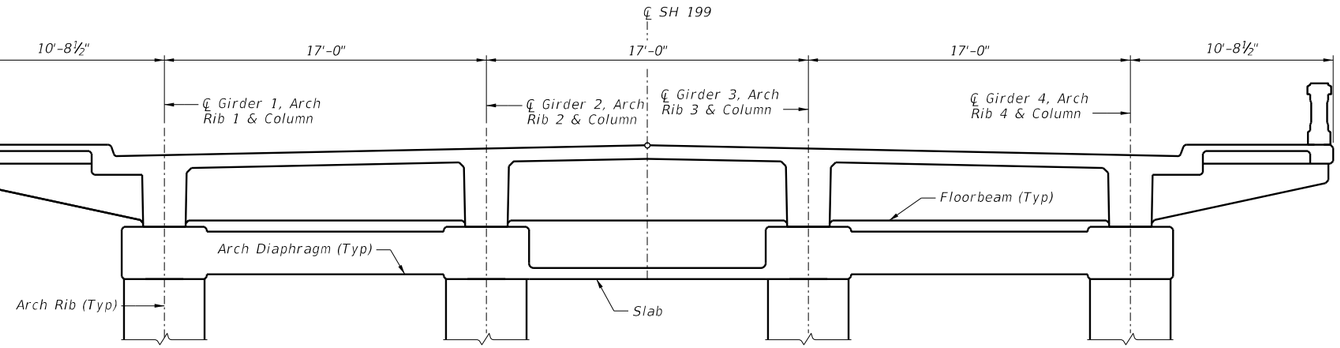
GENERAL NOTES:

Details provided on this sheet are for the purpose of illustrating typical noted defects and estimated quantities. Note that the repair quantities provided in the tables are increased (compared to the damage quantity) to account for surface preparation as required by the TxDOT Concrete Repair Manual.

See MISCELLANEOUS REPAIR DETAILS sheet for guidance and details for each repair specified.



ARCH RIB (SPAN 12) - TYPICAL SECTION AT CROWN

(Looking North)

SCALE: NTS

STATE OF TEXAS
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ARCH SPAN REPAIR DETAILS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	52
CONTROL	SECTION NO.	JOB	
0171	05	083	

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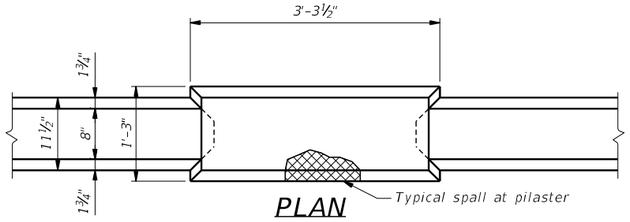
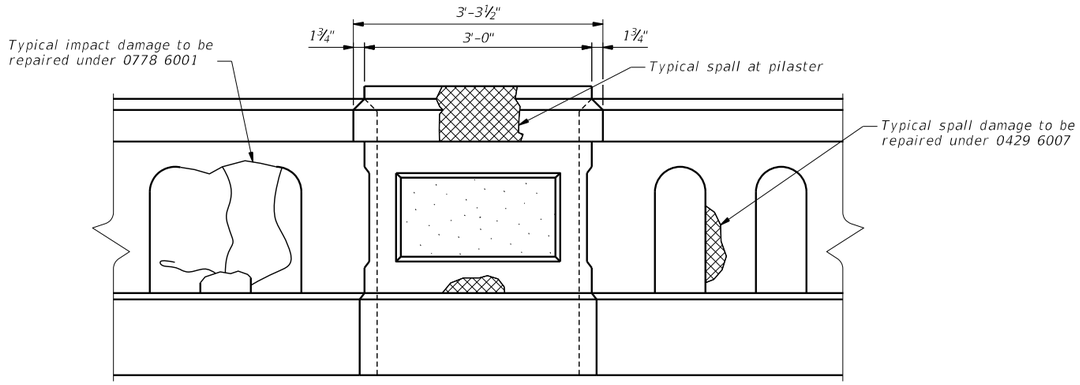
Typical spall damage at post

Typical pilaster spall damage

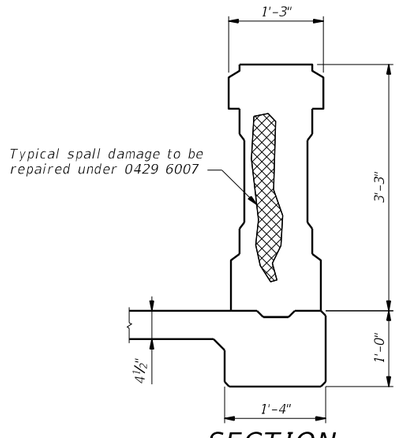
Typical impact damage at post



PLAN



ELEVATION



SECTION

GENERAL NOTES:

Details provided on this sheet are for the purpose of illustrating typical noted defects and estimated quantities. Note that the repair quantities provided in the tables are increased (compared to the damage quantity) to account for surface preparation as required by the TxDOT Concrete Repair Manual.

See MISCELLANEOUS REPAIR DETAILS sheet for guidance and details for each repair specified.

Fill existing junction boxes with repair material.

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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RAILING REPAIR DETAILS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 1

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	53
CONTROL	SECTION NO.	JOB	
0171	05	083	

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TABLE OF REPAIRS - SPAN 1

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 1														
Girders and Floor Beams														
Span 1: Beam 1, West Surface - concrete popouts from nails typical.	Minor		1	1	1	1								
Span 1: Beam 1, 5' from Pier 1, West Surface - (5) minor spalls with exposed reinforcing steel.	Minor		1	1	1	1								
Span 1: Beam 4 near Pier 1, East Surface - approximately 20"x8"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 1: Beam 4, 4' from Pier 1, Bottom Surface - approximately 12"x12"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 1: Floorbeam 1 near the outboard surface of Beam 4, Bottom Surface - approximately 4"x4"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 1: Floorbeam 1 near the outboard surface of Beam 4, North Surface - approximately 5"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 1: Floorbeam 2 near the outboard surface of Beam 4, North Surface - approximately 4"x4"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 1: Floorbeam 3 near the outboard surface of Beam 4, North Surface - approximately 5"x4"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 1: Floorbeam 3 near the outboard surface of Beam 1, Bottom Surface - approximately 12"x4"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 1: Floorbeam 5 near the outboard surface of Beam 4, Bottom Surface - approximately 8"x6"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 1: Floorbeam 6 near the outboard surface of Beam 4, Bottom Surface - approximately 18"x10"x1-1/2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 1: Floorbeam 6 near the outboard surface of Beam 1, Bottom Surface - approximately 10"x2"x1" spall adjacent to Pier 1 Column 1 with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 1: Floorbeam 6 between Beam 3 and Beam 4, Bottom Surface - approximately 8"x3"x1-1/2" spall adjacent to G4 with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Deck														
Span 1: Deck near the outboard surface of Girder 1 at Pier 1, Bottom Surface - approximately 20"x12"x1" spall with exposed reinforcing	Intermediate	2		2.66	2.66	2.66								
Span 1: Deck near the outboard surface of Girder 1 between Floorbeam 0 and Floorbeam 1, Bottom Surface - transverse crack and approximately 8"x12"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 1: Deck near the outboard surface of Girder 1 between Floorbeam 1 and Floorbeam 2, Bottom Surface - transverse crack and approximately 12"x1"x1" spall with exposed reinforcing steel.	Minor		1	1	1	1								

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

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Texas Department of Transportation

SPAN 1 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	54
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: $FILE$ $DATE$

TABLE OF REPAIRS - SPAN 1

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Span 1: Deck near the outboard surface of Girder 1 between Floorbeam 4 and Floorbeam 5, Bottom Surface - (2) transverse cracks with efflorescence and (1) approximately 12"x1"x1" spall with exposed reinforcing steel.	Minor		1	1	1	1								
Span 1: Deck near the outboard surface of Girder 1 between Floorbeam 5 and Floorbeam 6, Bottom Surface - transverse crack and approximately 18"x2"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 1: Deck near the outboard surface of Girder 4 between Floorbeam 0 and Floorbeam 1, Bottom Surface - full-length transverse crack with efflorescence and approximately 30"x4"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 1: Deck near the outboard surface of Girder 4 between Floorbeam 1 and Floorbeam 2, Bottom Surface - full-length transverse crack with efflorescence and approximately 18"x4"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 1: Deck near the outboard surface of Girder 4 between Floorbeam 3 and Floorbeam 4, Bottom Surface - (2) half-length transverse cracks with efflorescence and (1) approximately 12"x4"x1-1/2" spall and (1) approximately 18"x4"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 1: Deck near the outboard surface of Girder 4 between Floorbeam 5 and Floorbeam 6, Bottom Surface - full-length transverse crack with efflorescence and approximately 4"x4"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Railing														
Span 1: West Railing Concrete Spalls				25.22	25.22									
Span1: East Railing Concrete Spalls				16.88	16.88									
Span 1: West Railing Concrete Rail Repair							-							
Span1: East Railing Concrete Rail Repair							-							
Joints														
Joint at South Approach Span - Span 1 with 80"x23"x2" spall	Intermediate	13		28.3									28.3	
Joint at Span 1 - Span 2 with 60"x18"x1" spall	Intermediate	8		23.3									23.3	
Joint at Span 1 - Span 2 with 2"x80"x1/2" spall	Intermediate	2		17.3									17.3	
Joint at South Approach Span - Span 1 - Cleaning and sealing exist joints(CL3)								56						124
Joint at Span 1 - Span 2 - Cleaning and sealing exist joints(CL7)									56					124
Pavement Overlay														
Span 1: Roadway Asphalt Overlay 56' wide x 48' long										299				
Span 1: Roadway PPC Overlay 56' wide x 48' long											299			
Concrete Surface Treatment														
Span 1 : Penetrating Concrete Surface Treatment on Girders												266		
Span 1 : Penetrating Concrete Surface Treatment on Floorbeams												271		
Span 1 : Penetrating Concrete Surface Treatment under side of deck slab												264		
Span 1 : Penetrating Concrete Surface Treatment on sidewalk												76		
Span 1 : Penetrating Concrete Surface Treatment on East and West Railing												91		
Total Quantity		44	4	142.93	74.03	31.9	0	56	56	299	299	968	68.9	248

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

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SPAN 1 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	55
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: $FILE$

EXAMPLE OF SPAN 1 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
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REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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SPAN 1 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 3 OF 3

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	56
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – SPAN 2

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 2														
Girders and Floor Beams														
Span 2: Beam 1 at Pier 1, Bottom Surface - 20"x12"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 2: Beam 1 at Pier 2, East Surface - 5"x6"x1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 2: Beam 1 at Pier 3, East Surface - 12"x15"x3/4" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 2: Beam 1 at Pier 4, East Surface - 7"x3-1/2"x1/2" spall.	Intermediate	1		1.33	1.33	1.33								
Span 2: Beam 2 at Pier 2, West Surface - 14"x6"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 2: Beam 4 between Floorbeam 3 and 4, Bottom Surface - 10"x9"x1-1/2" spall.	Intermediate	1		1.33	1.33	1.33								
Span 2: Beam 4 at Floorbeam 4, Bottom Surface - 24"x39"x2" spall.	Intermediate	7		9.31	9.31	9.31								
Span 2: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 12"x8"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 2: Floorbeam 1 near the outboard surface of Beam 4, Bottom Surface - 10"x8"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 2: Floorbeam 5 near the outboard surface of Beam 4, Bottom Surface - 6" diameter x 1/2" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 2: Floorbeam 6 near the outboard surface of Beam 4, Bottom Surface - 13"x10"x1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 2: Floorbeam 6 near the outboard surface of Beam 1, Bottom Surface - 8"x1/2"x1/2" spall with exposed reinforcing steel.	Minor		1	1	1	1								
Span 2: Floorbeam 6 between Beam 1 and Beam 2, Bottom Surface - 18"x12"x1" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	2		2.66	2.66	2.66								
Span 2: Soffit near the outboard surface of Beam 1 at Floorbeam 4, Bottom Surface - 2"x4"x1/2" spall with exposed reinforcing steel.	Minor		1	1	1	1								
Deck														
Span 2: Deck near the outboard surface of Girder 1 between Floorbeam 0 and Floorbeam 1, Bottom Surface - 6" dia x 1/2" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 2: Deck near the outboard surface of Girder 1 between Floorbeam 5 and Floorbeam 6, Bottom Surface - 4"x10"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185
MODJESKI and MASTERS
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OMEGA ENGINEERS, INC.
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AUSTIN, TEXAS 78759
OMEGAENGINEERS.COM
TX PE Firm Reg. No. F-2147
P:512 575 2288 F:281 647 9184

SPAN 2 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	57
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILEL$

TABLE OF REPAIRS - SPAN 2

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Span 2: Deck near the outboard surface of Girder 4 at Floorbeam 3, Bottom Surface - 20"x8"x1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 2: Deck near the outboard surface of Girder 4 between Floorbeam 4 and Floorbeam 5, Bottom Surface - 12"x4"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Railing														
Span 2: West Railing Concrete Spalls				14.77	14.77									
Span 2: East Railing Concrete Spalls				12.11	12.11									
Span 2: West Railing Concrete Rail Repair							-							
Span 2: East Railing Concrete Rail Repair							-							
Joints														
Joint at Span 2 - Span 3 with 80"x14"x1" spall	Intermediate	8		30.9									30.9	
Joint at Span 2 - Span 3 with 12"x80"x1-1/2" spall	Intermediate	7		29.9									29.9	
Joint at Span 2 - Span 3 - Cleaning and sealing exist joints(CL7)									56					124
Pavement Overlay														
Span 2: Roadway Asphalt Overlay 56' wide x 48' long										299				
Span 2: Roadway PPC Overlay 56' wide x 48' long											299			
Concrete Surface Treatment														
Span 2: Penetrating Concrete Surface Treatment on Girders												266		
Span 2: Penetrating Concrete Surface Treatment on Floorbeams												271		
Span 2: Penetrating Concrete Surface Treatment under side of deck												264		
Span 2: Penetrating Concrete Surface Treatment on sidewalk												76		
Span 2: Penetrating Concrete Surface Treatment on East and West Railing												91		
Total Quantity		41	2	124.26	63.46	36.6	0	0	56	299	299	968	60.8	124

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

SPAN 2 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 3

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	58
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $DATE$ $FILEL$

EXAMPLE OF SPAN 2 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185
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Texas Department of Transportation

SPAN 2 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 3 OF 3

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	59
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 1:37:03 PM
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS - SPAN 3

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 3														
Girders and Floor Beams														
Span 3: Beam 1, Bottom Surface - 10"x5"x1" spall with wood pieces within with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Beam 1, Bottom Surface - 8"x4"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Beam 1 at Pier 2, East Surface - (1) 16"x16"x1" spall and (1) 20"x6"x1" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99	3.99								
Span 3: Beam 2 at Pier 2, West Surface - 12"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Beam 2 at Pier 2, West Surface - 8"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Beam 2 at Pier 3, West Surface - 36"x6"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 3: Beam 3 at Pier 3, East Face Surface - 14"x10-1/2"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Beam 3 between Floorbeam 3 and Floorbeam 4, Bottom Surface - full-depth crack and 13"x9"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Beam 4 at Pier 2, Bottom Surface - 36"x12"x2-1/2" spall with exposed reinforcing steel with Severe section loss.	Intermediate	3		3.99	3.99	3.99								
Span 3: Beam 4 at Pier 2, Bottom Surface - 30"x18"x2" spall with wood pieces within with exposed reinforcing steel.	Intermediate	4		5.32	5.32	5.32								
Span 3: Beam 4 at Floorbeam 2, East Surface - 10"x9"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Beam 4 between Floorbeam 3 and Floorbeam 4, East Surface - (1) 6"x6"x1" spall and (1) 10"x4"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 12"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 0 near the outboard surface of Beam 1, North Surface - 12"x3"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 0 between Beam 1 and Beam 2, North Surface - 16"x2"x1" imminent spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 0 between Beam 1 and Beam 2, North Surface - 4"x6"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 0 between Beam 3 and Beam 4, North Surface - 7"x22"x2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 3: Floorbeam 0 between Beam 3 and Beam 4, Bottom Surface - 14"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 0 between Beam 3 and Beam 4, Bottom Surface - 10"x10"x1" spall adjacent to Beam 4 with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 0 near outboard surface of Beam 4, East Surface - 6"x4"x1" spall with exposed reinforcing steel with Minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 0 near outboard surface of Beam 4, East Surface - 8"x6"x1" spall with exposed reinforcing steel with Minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 0 near outboard surface of Beam 4, East Surface - 24"x14"x2" spall with exposed reinforcing steel with Minor section loss.	Intermediate	3		3.99	3.99	3.99								
Span 3: Floorbeam 1 near the outboard surface of Beam 1, South Surface - 16"x3"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 1 between Beam 2 and Beam 3, Bottom Surface - 6"x7"x2" spall.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 1 near outboard surface of Beam 4, North Surface - (1) 6"x6"x1" spall and (1) 9"x7"x1" spall with exposed reinforcing	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 2 between Beam 2 and Beam 3, South Surface - 10"x5"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

SPAN 3 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 4

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	60
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILE$

TABLE OF REPAIRS - SPAN 3

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Span 3: Floorbeam 3 between Beam 2 and Beam 3, South Surface - 5"x5"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 4 between Beam 2 and Beam 3, Bottom Surface - 6"x8"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 5 between Beam 2 and Beam 3, Bottom Surface - 5"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 5 near the outboard surface of Beam 4, Bottom Surface - (1) 7"x7"x1" spall (1) 12"x16"x1-1/2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 3: Floorbeam 5 near the outboard surface of Beam 4, Bottom Surface - 12"x10"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Floorbeam 6 between Beam 1 and Beam 2, Bottom Surface - 6"x5"x1" spall adjacent to Beam 1 with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Deck														
Span 3: Deck near the outboard surface of Girder 1 at Floorbeam 0 , Bottom Surface - 12"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck near the outboard surface of Girder 1 at Floorbeam 0 , North Surface - 12"x3"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck near the outboard surface of Girder 1 at Floorbeam 1, South Surface - 16"x3"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck near the outboard surface of Girder 1 between Floorbeam 2 and Floorbeam 3, Bottom Surface - 12"x7"x1" spall with exposed	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck between Girder 2 and Girder 3 at Floorbeam 1, Bottom Surface - 6"x7"x2" spall.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck between Girder 2 and Girder 3 at Floorbeam 2, South Surface - 10"x5"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck between Girder 2 and Girder 3 at Floorbeam 3, South Surface - 5"x5"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck between Girder 2 and Girder 3 at Floorbeam 4, Bottom Surface - 6"x8"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck between Girder 2 and Girder 3 at Floorbeam 5, Bottom Surface - 5"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck between Girder 3 and Girder 4 at Floorbeam 0, Bottom Surface - 14"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck between Girder 3 and Girder 4 at Floorbeam 0, Bottom Surface - 10"x10"x1" spall adjacent to Girder 4 with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck between Girder 3 and Girder 4 at Floorbeam 1, Bottom Surface - 3"x3"x1/2" spall.	Minor		1	1	1	1								
Span 3: Deck between Girder 3 and Girder 4 at Floorbeam 2, Bottom Surface - 4"x3"x1" spall.	Minor		1	1	1	1								
Span 3: Deck between Girder 3 and Girder 4 at Floorbeam 2, Bottom Surface - 9"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck between Girder 3 and Girder 4 and between Floorbeam 3 and Floorbeam 4, Bottom Surface - 20"x6"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck between Girder 3 and Girder 4 at Floorbeam 4, Bottom Surface - 5"x4"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck near outboard surface of Girder 4 above Floorbeam 3, Bottom Surface - transverse crack and 16"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck near the outboard surface of Girder 4 at Floorbeam 5, Bottom Surface - (1) 6"x6"x1" spall and (1) 10"x4"x1" spall and (1) 10"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck near the outboard surface of Girder 4 at Floorbeam 5, Bottom Surface - 5"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185
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Texas Department of Transportation

SPAN 3 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	61
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $FILE$ $DATE$

TABLE OF REPAIRS - SPAN 3

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Span 3: Deck near the outboard surface of Girder 4 at Floorbeam 5, Bottom Surface - 12"x10"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 3: Deck near the outboard surface of Girder 4 at Floorbeam 5, Bottom Surface - (1) 7"x7"x1" spall (1) 12"x16"x1-1/2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 3: Deck near the outboard surface of Girder 4 above Floorbeam 6, Bottom Surface - 16"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Railing														
Span 3: West Railing Concrete Spalls				17.11	17.11									
Span 3: East Railing Concrete Spalls				11.67	11.67									
Span 3: West Railing Concrete Rail Repair							-							
Span 3: East Railing Concrete Rail Repair							-							
Joints														
Joint at Span 3 - Span 4 with 80"x30" delamination	Intermediate	17		39.9									39.9	
Joint at Span 3 - Span 4 with 4"x80"x2" spall	Intermediate	3		25.9									25.9	
Joint at Span 3 - Span 4 - Cleaning and sealing exist joints(CL7)									56					124
Pavement Overlay														
Span 3: Roadway Asphalt Overlay 56' wide x 48' long										299				
Span 3: Roadway PPC Overlay 56' wide x 48' long											299			
Concrete Surface Treatment														
Span 3: Penetrating Concrete Surface Treatment on Girders												266		
Span 3: Penetrating Concrete Surface Treatment on Floorbeams												271		
Span 3: Penetrating Concrete Surface Treatment under side of deck												264		
Span 3: Penetrating Concrete Surface Treatment on sidewalk												76		
Span 3: Penetrating Concrete Surface Treatment on East and West Railing												91		
Total Quantity		85	2	183.03	117.23	88.4	0	0	56	299	299	968	65.8	124

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

MODJESKI and MASTERS
Experience great bridges.

OMEGA ENGINEERS, INC.
8200 N. MOPAC EXPRESSWAY, STE #280
AUSTIN, TEXAS 78759
OMEGAENGINEERS.COM
TX PE Firm Reg. No. F-2147
P:512 575 2288 F:281 647 9184

Texas Department of Transportation

SPAN 3 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 3 OF 4

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	62
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $DATE$ $FILEL$

EXAMPLE OF SPAN 3 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 3 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 4 OF 4

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	63
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 1:37:47 PM
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – SPAN 4

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 4														
Girders and Floor Beams														
Span 4: Beam 1 at Floorbeam 2, West Surface – (1) 10"x14"x1" spall & (1) 4"x2"x1" spall with exposed reinforcing steel.	Intermediate	1	1	1.33	1.33	1.33								
Span 4: Beam 1, East Surface – 6"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Beam 1, East Surface – 4"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Beam 1, 4' from Pier 3, Bottom Surface – 10"x10"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Beam 1, 4' from Pier 3, Bottom Surface – 5"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Beam 1 at Pier 3, East Surface – (1) 10"x8"x1-1/2" spall and (1) 9"x8"x1-1/2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 4: Beam 2, West Surface – crack extending from bottom of Floorbeam 0 to Pier 3 cap and 18"x8"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Beam 2, East Surface – 14"x12"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 4: Beam 2, East Surface – 4"x6"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 4: Beam 2 at Pier 3, East Surface – 20"x4"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Beam 3 at Pier 4, West Surface – 12"x4"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Beam 3, approximately 5' from Pier 3, Bottom Surface – 12"x24"x1" spall due to poor consolidation of concrete during installation with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 4: Beam 4 at Pier 3, West Surface – 10"x10"x3" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 4: Beam 4 at Pier 4, West Surface – 16"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Beam 4 between Floorbeam 0 and Floorbeam 1, East Surface – 6"x5"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface – 12"x10"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 0 between Beam 1 and Beam 2, Bottom Surface – 3" diameter spall.	Minor		1	1	1	1								
Span 4: Floorbeam 0 between Beam 1 and Beam 2, Bottom Surface – 10"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface – 10"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface – 10"x12"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface – 12"x10"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface – 8"x12"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface – 8"x10"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface – 10"x12"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface – 8"x8"x1" with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 0 between Beam 3 and Beam 4, West Surface – 48"x12"x3-1/2" spall with additional unsound concrete surrounding with exposed reinforcing steel with minor section loss.	Intermediate	4		5.32	5.32	5.32								
Span 4: Floorbeam 0 near outboard surface of Beam 4, Bottom Surface – 8"x8"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 4 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 4

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	64
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$
Design Filename: $FILE$ $TIME$

TABLE OF REPAIRS - SPAN 4

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Span 4: Floorbeam 1 near the outboard surface of Beam 1, Bottom Surface - 10"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 2 near the outboard surface of Beam 1, Bottom Surface - 6"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 2 near the outboard surface of Beam 1, Bottom Surface - 6"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 2 near outboard surface of Beam 4, Bottom Surface - 14"x10"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 3 between Beam 1 and Beam 2, Bottom Surface - 7"x4"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 3 between Beam 1 and Beam 2, Bottom Surface - 4"x2"x1/2" spall.	Minor		1	1	1	1								
Span 4: Floorbeam 3 near outboard surface of Beam 4, Bottom Surface - (1) 8"x4"x1" spall and (1) 10"x5"x1" spall with exposed reinforcing	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 3 near outboard surface of Beam 4, Bottom Surface - 3"x3"x1" spall with exposed reinforcing steel.	Minor		1	1	1	1								
Span 4: Floorbeam 3 near outboard surface of Beam 4, Bottom Surface - (1) 6"x4"x1" spall and (1) 10"x6"x1" spall with exposed reinforcing	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 4 between Beam 1 and Beam 2, Bottom Surface - 5"x2"x1/2" spall.	Minor		1	1	1	1								
Span 4: Floorbeam 4 between Beam 2 and Beam 3, Bottom Surface - 8"x6"x1/2" spall.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 4 near outboard surface of Beam 4, Bottom Surface - 8"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 5 outboard of Beam 1, Bottom Surface - (1) 3"x3"x1/2" spall and (1) 8"x4"x1" spall and (1) 6"x5"x1" spall with exposed reinforcing steel.	Intermediate	1	1	1.33	1.33	1.33								
Span 4: Floorbeam 5 between Beam 1 and Beam 2, Bottom Surface - 6"x2"x1/2" spall.	Minor		1	1	1	1								
Span 4: Floorbeam 5 near outboard surface of Beam 4, Bottom Surface - 12"x8"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 5 near outboard surface of Beam 4, Bottom Surface - 4"x6"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 6 outboard of Beam 1, Bottom Surface - 9"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 6 outboard of Beam 1, Bottom Surface - 6"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 6 between Beam 2 and Beam 3, South Surface - 12"x4"x6" spall extending to bottom face with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 6 between Beam 2 and Beam 3, South Surface - 10"x6"x12" spall extending to bottom face with exposed reinforcing	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 6 between Beam 2 and Beam 3, South Surface - 8"x6"x1" spall extending to bottom face with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 6 between Beam 2 and Beam 3, South Surface - 12"x6"x6" spall extending to bottom face with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 6 between Beam 2 and Beam 3, South Surface - 12"x8"2" spall extending to bottom face with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Floorbeam 6 between Beam 3 and Beam 4, Bottom Surface - 4"x3"x1" spall.	Minor		1	1	1	1								
Span 4: Floorbeam 6 near outboard surface of Beam 4, Bottom Surface - 34"x13"x2" spall with exposed reinforcing steel with minor section	Intermediate	4		5.32	5.32	5.32								
Span 4: Floorbeam 6 near outboard surface of Beam 4, Bottom Surface - (1) 6"x6"x1" spall and (1) 4"x8"x1" spall with exposed reinforcing steel with minor section loss.	Minor		1	1	1	1								
Span 4: Floorbeam 6 near outboard surface of Beam 4, Bottom Surface - (1) 6"x10"x1" spall and 10"x10"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 4: Floorbeam 6 near outboard surface of Beam 4, Bottom Surface - 7"x7"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 4 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	65
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILEL$

TABLE OF REPAIRS – SPAN 4

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Deck														
Span 4: Deck near the outboard surface of Girder 1 at Floorbeam 0, Bottom Surface – 12"x10"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Deck near the outboard surface of Girder 1 at Floorbeam 1, Bottom Surface – 10"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Deck near the outboard surface of Girder 1 at Floorbeam 2, Bottom Surface – 6"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Deck near the outboard surface of Girder 1 at Floorbeam 2, Bottom Surface – 6"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Deck outboard of Girder 1 at Floorbeam 5, Bottom Surface – 18"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Deck outboard of Girder 1 at Floorbeam 6, Bottom Surface – 6"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Deck above Girder 1, 4' from Pier 3, Bottom Surface – 10"x10"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Deck above Girder 1, 4' from Pier 3, Bottom Surface – 5"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Deck between Girder 1 and Girder 2 at Floorbeam 5, Bottom Surface – 12"x10"x1" spall adjacent to Girder 1 with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Deck near outboard surface of Girder 4 at Floorbeam 2, Bottom Surface – 10"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Deck near outboard surface of Girder 4 between Floorbeam 2 and Floorbeam 3, Bottom Surface – 16"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Deck near outboard surface of Girder 4 at Floorbeam 3, Bottom Surface – 14"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Deck near outboard surface of Girder 4 between Floorbeam 4 and Floorbeam 5, Bottom Surface – transverse crack with efflorescence connecting (1) 12"x5"x1" spall and (1) 6"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 4: Deck near outboard surface of Girder 4 above Floorbeam 5, Bottom Surface – 60"x14"x1-1/2" spall with exposed reinforcing steel.	Intermediate	6		7.98	7.98	7.98								
Railing														
Span 4: West Railing Concrete Spalls				18.55	18.55									
Span 4: East Railing Concrete Spalls				20.89	20.89									
Span 4: West Railing Concrete Rail Repair							–							
Span 4: East Railing Concrete Rail Repair							–							
Joints														
Joint at Span 4 – Span 5 with 70"x14"x1" spall	Intermediate	7		29.9									29.9	
Joint at Span 4 – Span 5 with 60"x15"x1/2" spall	Intermediate	7		29.9									29.9	
Joint at Span 4 – Span 5 – Cleaning and sealing exist joints(CL7)									56					124
Pavement Overlay														
Span 4: Roadway Asphalt Overlay 56' wide x 48' long										299				
Span 4: Roadway PPC Overlay 56' wide x 48' long											299			
Concrete Surface Treatment														
Span 4: Penetrating Concrete Surface Treatment on Girders												266		
Span 4: Penetrating Concrete Surface Treatment on Floorbeams												271		
Span 4: Penetrating Concrete Surface Treatment under side of deck												264		
Span 4: Penetrating Concrete Surface Treatment on sidewalk												76		
Span 4: Penetrating Concrete Surface Treatment on East and West Railing												91		
Total Quantity		91	9	208.65	148.85	109.4	0	0	56	299	299	968	59.8	124

SCALE: NTS

10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 4 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 3 OF 4

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	66
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $DATE$ $FILE$

EXAMPLE OF SPAN 4 SPALL DAMAGE

SCALE: NTS

JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
STATE OF TEXAS

10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

SPAN 4 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 4 OF 4

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	67
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 1:38:21 PM
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – SPAN 5

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 5														
Girders and Floor Beams														
Span 5: Beam 1, West Surface – 8"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Beam 1 at Floorbeam 4, West Surface – 8"x8"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 5: Beam 1, West Surface – 4"x6"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 5: Beam 1, East Surface – 6"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Beam 2, West Surface – 14"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Beam 2 at Pier 4, West Surface – 18"x8"x3" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 5: Beam 2, East Surface – (1) 4"x3"x1/2" spall and (1) 8"x4"x1" spall with exposed reinforcing steel.	Intermediate	1	1	1.33	1.33	1.33								
Span 5: Beam 3 at Floorbeam 5, West Surface – 5"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Beam 4, approximately 5' from Pier 4, Bottom Surface – 17"x10"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 5: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface – 10"x6"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 0 between Beam 1 and Beam 2, Bottom Surface – 10"x8"x1" spall with honeycombing.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 0 between Beam 1 and Beam 2, North Surface – 36"x8"x2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 5: Floorbeam 0 between Beam 1 and Beam 2, Bottom Surface – 36"x12"x3" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99	3.99								
Span 5: Floorbeam 0 between Beam 3 and Beam 4, North Surface – 10"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 0 near outboard surface of Beam 4, Bottom Surface – 12"x6"x1-1/2" spall with exposed tie wire with exposed reinforcing	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 1 between Beam 2 and Beam 3, Bottom Surface – 5"x5"x1/2" spall.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 1 near outboard surface of Beam 4, Bottom Surface – 8"x2"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 1 near outboard surface of Beam 4, Bottom Surface – 10"x3"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 2 between Beam 2 and Beam 3, Bottom Surface – 4"x2"x1/2" spall.	Minor		1	1	1	1								
Span 5: Floorbeam 2 between Beam 3 and Beam 4, Bottom Surface – 8"x2"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 3 between Beam 1 and Beam 2, Bottom Surface – 3"x4"x1" spall.	Minor		1	1	1	1								
Span 5: Floorbeam 3 near outboard surface of Beam 4, Bottom Surface – (2) 10"x6"x1" spalls with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 4 between Beam 1 and Beam 2, Bottom Surface – 6"x4"x1/2" spall.	Intermediate	1		1.33	1.33	1.33								

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

SPAN 5 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 3

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	68
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILE$

TABLE OF REPAIRS – SPAN 5

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Span 5: Floorbeam 2 between Beam 2 and Beam 3, Bottom Surface - 4"x2"x1/2" spall.	Minor		1	1	1	1								
Span 5: Floorbeam 2 between Beam 3 and Beam 4, Bottom Surface - 8"x2"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 3 between Beam 1 and Beam 2, Bottom Surface - 3"x4"x1" spall.	Minor		1	1	1	1								
Span 5: Floorbeam 3 near outboard surface of Beam 4, Bottom Surface - (2) 10"x6"x1" spalls with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 4 between Beam 1 and Beam 2, Bottom Surface - 6"x4"x1/2" spall.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 4 near outboard surface of Beam 4, Bottom Surface - 6"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 5 between Beam 2 and Beam 3, South Surface - 6"x2"x1" spall.	Minor		1	1	1	1								
Span 5: Floorbeam 5 between Beam 2 and Beam 3, Bottom Surface - 5"x3"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 5 near outboard surface of Beam 4, Bottom Surface - (1) 12"x8"x1" spall and (1) 10"x5"x1" spall with exposed reinforcing	Intermediate	2		2.66	2.66	2.66								
Span 5: Floorbeam 6 between Beam 2 and Beam 3, Bottom Surface - 5"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 6 between Beam 3 and Beam 4, Bottom Surface - 5"x3"x1/2" spall.	Intermediate	1		1.33	1.33	1.33								
Span 5: Floorbeam 6 near outboard surface of Beam 4, Bottom Surface - (1) 9"x8"x1" spall and (1) 8"x5"x1" spall and (1) 10"x6"x1" spall and (1) 8"x3"x2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Deck														
Span 5: Deck near the outboard surface of Girder 1 at Floorbeam 0 , Bottom Surface - 10"x6"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 5: Deck near the outboard surface of Girder 1 at Floorbeam 1, Bottom Surface - 10"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Deck near the outboard surface of Girder 1 at Floorbeam 2, Bottom Surface - 8"x2"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Deck near the outboard surface of Girder 1 at Floorbeam 3, Bottom Surface - 8"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Deck near the outboard surface of Girder 1 at Floorbeam 3, Bottom Surface - 8"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 5: Deck near the outboard surface of Girder 1 at Floorbeam 5, Bottom Surface - 10"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Railing														
Span 5: West Railing Concrete Spalls				8.67	8.67									
Span 5: East Railing Concrete Spalls				34.99	34.99									
Span 5: West Railing Concrete Rail Repair							-							
Span 5: East Railing Concrete Rail Repair							-							
Joints														
Joint at Span 5 - Span 6 with 20"x8"x2" spall	Intermediate	2		24.9									24.9	
Joint at Span 5 - Span 6 with 20"x80"x1" spall	Intermediate	12		34.9									34.9	
Joint at Span 5 - Span 6 - Cleaning and sealing exist joints(CL7)									56					124
Pavement Overlay														
Span 5: Roadway Asphalt Overlay 56' wide x 48' long										299				
Span 5: Roadway PPC Overlay 56' wide x 48' long											299			
Concrete Surface Treatment														
Span 5: Penetrating Concrete Surface Treatment on Girders												266		
Span 5: Penetrating Concrete Surface Treatment on Floorbeams												271		
Span 5: Penetrating Concrete Surface Treatment under side of deck												264		
Span 5: Penetrating Concrete Surface Treatment on sidewalk												76		
Span 5: Penetrating Concrete Surface Treatment on East and West Railing												91		
Total Quantity		53	4	158.33	98.53	54.9	0	0	56	299	299	968	59.8	124

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

SPAN 5 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	69
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $DATE$ $FILEL$

EXAMPLE OF SPAN 5 SPALL DAMAGE

SCALE: NTS

JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

SPAN 5 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 3 OF 3

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	70
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 1:38:56 PM
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS - SPAN 6

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 6														
Girders and Floor Beams														
Span 6: Beam 1 at Pier 5, East Surface - 3"x4"x1" spall.	Minor		1	1	1	1								
Span 6: Beam 1 at Pier 5, East Surface - 5"x4"x3" spall.	Intermediate	1		1.33	1.33	1.33								
Span 6: Beam 1 at Pier 6, West Surface - 6"x2"x1" spall with wood piece within.	Minor		1	1	1	1								
Span 6: Beam 2 at Pier 5, Bottom Surface - 24"x9"x3" spall.	Intermediate	2		2.66	2.66	2.66								
Span 6: Beam 2 at Pier 6, West Surface - 12"x8"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Beam 3 at Pier 5, East Surface - 45"x10"x1-1/2" spall at location of previous repair with exposed reinforcing steel.	Intermediate	4		5.32	5.32	5.32								
Span 6: Beam 3 at Pier 6, Bottom Surface - 16"x12"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 6: Beam 4 at Floorbeam 5, West Surface - 6"x3"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Beam 4, 5' from Pier 5, Bottom Surface - 6"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - (1) 8"x5"x1" spall and (1) 5"x4"x1" spall and (1) 6"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 10"x4"x1" spall and (1) 14"x12"x1" spall and (1) 5"x24"x2" imminent spall and (1) 10"x8"x1" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99	3.99								
Span 6: Floorbeam 0 between Beam 1 and Beam 2, Bottom Surface - 18"x14"x2-1/2" spall adjacent to Beam 2 with exposed reinforcing steel with moderate section loss.	Intermediate	2		2.66	2.66	2.66								
Span 6: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface - 6"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Floorbeam 0 between Beam 3 and Beam 4, Bottom Surface - 14"x12"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 6: Floorbeam 0 between Beam 3 and Beam 4, Bottom Surface - 8"x6"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 6: Floorbeam 0 near the outboard surface of Beam 4, Bottom Surface - 14"x6"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 6: Floorbeam 0 near the outboard surface of Beam 4, Bottom Surface - (1) 14"x8"x1" spall & (1) 12"x10"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 6: Floorbeam 0 near the outboard surface of Beam 4, Bottom Surface - 14"x12"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 6: Floorbeam 1 near the outboard surface of Beam 4, Bottom Surface - (1) 7"x3"x1" spall & (1) 8"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Floorbeam 4 near the outboard surface of Beam 4, Bottom Surface - 12"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Floorbeam 4 near the outboard surface of Beam 4, Bottom Surface - 10"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
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REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 6 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	71
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILEL$

TABLE OF REPAIRS - SPAN 6

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Span 6: Floorbeam 5 near the outboard surface of Beam 4, Bottom Surface - 10"x18"x1".	Intermediate	2		2.66	2.66	2.66								
Span 6: Floorbeam 6 near the outboard surface of Beam 1, Bottom Surface - (1) 10"x3"x1" spall and (1) 10"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Floorbeam 6 near the outboard surface of Beam 1, South Surface - 6"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Floorbeam 6 between Beam 1 and Beam 2, Bottom Surface - 18"x8"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 6: Floorbeam 6 between Beam 2 and Beam 3, Bottom Surface - (1) 10"x6"x1" spall and (1) 10"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Floorbeam 6 between Beam 2 and Beam 3, Bottom Surface - 8"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Floorbeam 6 between Beam 2 and Beam 3, Bottom Surface - 8"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Floorbeam 6 between Beam 2 and Beam 3, Bottom Surface - 18"x9"x1-1/2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 6: Floorbeam 6 between Beam 3 and Beam 4, Bottom Surface - 24"x15"x1" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99	3.99								
Span 6: Floorbeam 6 near the outboard surface of Beam 4, South Surface - (1) 8"x14"x1" spall and (1) 14"x20"x2" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99	3.99								
Deck														
Span 6: Deck near the outboard surface of Girder 1 at Floorbeam 2, Bottom Surface - 30"x5"x1-1/2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 6: Deck near the outboard surface of Girder 1 at Floorbeam 5, Bottom Surface - 24"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Deck between Girder 1 and Girder 2 and between Floorbeam 3 and Floorbeam 4, Bottom Surface - (1) 12"x6"x1" spall and (1) 15"x6"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 6: Deck between Girder 2 and Girder 3 and between Floorbeam 5 and Floorbeam 6, Bottom Surface - 10"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Deck near the outboard surface of Girder 4 at Floorbeam 2, Bottom Surface - 10"x8"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 6: Deck near the outboard surface of Girder 4 at Floorbeam 5, Bottom Surface - 18"x10"x1-1/2" with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 6: Deck near the outboard surface of Girder 4 above Floorbeam 6, Bottom Surface - 12" diameter hole in deck and joint with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Railing														
Span 6: West Railing Concrete Spalls				21.77	21.77									
Span 6: East Railing Concrete Spalls				18.22	18.22									
Span 6: West Railing Concrete Rail Repair							-							
Span 6: East Railing Concrete Rail Repair							-							
Joints														
Joint at Span 6 - Span 7 with 80"x8"x1" spall	Intermediate	5		27.9									27.9	
Joint at Span 6 - Span 7 with 80"x6" hole	Intermediate	4		26.9									26.9	
Joint at Span 6 - Span 7 - Cleaning and sealing exist joints(CL7)									56					124
Pavement Overlay														
Span 6: Roadway Asphalt Overlay 56' wide x 48' long										299				
Span 6: Roadway PPC Overlay 56' wide x 48' long											299			
Concrete Surface Treatment														
Span 6: Penetrating Concrete Surface Treatment on Girders												266		
Span 6: Penetrating Concrete Surface Treatment on Floorbeams												271		
Span 6: Penetrating Concrete Surface Treatment under side of deck												264		
Span 6: Penetrating Concrete Surface Treatment on sidewalk												76		
Span 6: Penetrating Concrete Surface Treatment on East and West Railing												91		
Total Quantity		65	2	171.27	116.47	76.5	0	0	56	299	299	968	54.8	124

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

SPAN 6 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	72
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILEL$

EXAMPLE OF SPAN 6 SPALL DAMAGE

SCALE: NTS

JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
STATE OF TEXAS

10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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AUSTIN, TEXAS 78759
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Texas Department of Transportation

SPAN 6 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 3 OF 3

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	73
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 1:39:31 PM
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS - SPAN 7

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 7														
Girders and Floor Beams														
Span 7: Beam 1, West Surface - 5"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 7: Beam 1, West Surface - 10"x6"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 7: Beam 2 at Floorbeam 5, East Surface - 4"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 7: Beam 3 at Pier 7, East Surface - 24"x15"x2" spall with exposed reinforcing steel with moderate section loss.	Intermediate	3		3.99	3.99	3.99								
Span 7: Beam 4 at Floorbeam 5, East Surface - 22"x8"x1-1/2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 7: Beam 4, 7' from Pier 7, Bottom Surface - (1) 12"x10"x1-1/2" spall & (1) 10"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 6"x8"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 0 near the outboard surface of Beam 1, North Surface - 6"x8"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 0 between Beam 1 and Beam 2, North Surface - 48"x7"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99	3.99								
Span 7: Floorbeam 0 between Beam 1 and Beam 2, North Surface - 76"x6"x3" spall with exposed reinforcing steel with minor section loss.	Intermediate	4		5.32	5.32	5.32								
Span 7: Floorbeam 0 between Beam 1 and Beam 2, Bottom Surface - 12"x18"2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 7: Floorbeam 0 between Beam 2 and Beam 3, North Surface - 20"x6"x3" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface - 20"x7"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface - 14"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 0 between Beam 3 and Beam 4, Bottom Surface - 6" crack and 48"x3"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 0 between Beam 3 and Beam 4, North Surface - crack with efflorescence and 16"x4"x1" spall with exposed reinforcing	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 0 between Beam 3 and Beam 4, North Surface - crack and 10"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 0 between Beam 3 and Beam 4, North Surface - (1) 10"x3"x1" spall and (1) 3"x4"x1" spall and (1) 10"x4"x1" spall with exposed reinforcing steel.	Intermediate	1	1	1.33	1.33	1.33								
Span 7: Floorbeam 1 between Beam 2 and Beam 3, Bottom Surface - 5"x3"x1/2" spall.	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 2 near the outboard surface of Beam 1, Bottom Surface - 6"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 3 near the outboard surface of Beam 1, Bottom Surface - 4"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 3 between Beam 2 and Beam 3, Bottom Surface - (1) 6"x3"x1" spall & (1) 3"x2"x1/2" spall.	Intermediate	1	1	1.33	1.33	1.33								
Span 7: Floorbeam 5 near the outboard surface of Beam 1, Bottom Surface - transverse crack with efflorescence and 20"x5"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 6 near the outboard surface of Beam 1, South Surface - 14"x8"x2" spall with exposed reinforcing steel with moderate section loss.	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 6 near the outboard surface of Beam 1, Bottom Surface - 14"x8"x3" spall with exposed reinforcing steel with moderate section loss.	Intermediate	1		1.33	1.33	1.33								
Span 7: Floorbeam 6 between Beam 2 and Beam 3, South Surface - 22"x12"x2-1/2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 7: Floorbeam 6 between Beam 2 and Beam 3, Bottom Surface - 12"x14"x2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 7 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 3

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	74
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $DATE$ $FILEL$

TABLE OF REPAIRS – SPAN 7

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Deck														
Span 7: Deck near the outboard surface of Girder 1 between Floorbeam 2 and Floorbeam 3, Bottom Surface - transverse crack and 12"x6"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 7: Deck between Girder 1 and Girder 2 and between Floorbeam 2 and Floorbeam 3, Bottom Surface - 24"x4"x1-1/2" spall.	Intermediate	1		1.33	1.33	1.33								
Span 7: Deck between Girder 1 and Girder 2 and between Floorbeam 2 and Floorbeam 3, Bottom Surface - 14"x10"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 7: Deck between Girder 1 and Girder 2 and between Floorbeam 3 and Floorbeam 4, Bottom Surface - 48"x8"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99	3.99								
Span 7: Deck between Girder 1 and Girder 2 and between Floorbeam 5 and Floorbeam 6, Bottom Surface - 44"x4"x1-1/2" spall adjacent to Girder 1 with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 7: Deck between Girder 3 and Girder 4 and between Floorbeam 1 and Floorbeam 2, Bottom Surface - 26"x8"x1-1/2" spall with exposed reinforcing steel with moderate section loss.	Intermediate	2		2.66	2.66	2.66								
Span 7: Deck between Girder 3 and Girder 4 and between Floorbeam 1 and Floorbeam 2, Bottom Surface - 16"x12"1-1/2" spall with exposed reinforcing steel with moderate section loss.	Intermediate	2		2.66	2.66	2.66								
Span 7: Deck between Girder 3 and Girder 4 and between Floorbeam 2 and Floorbeam 3, Bottom Surface - 26"x5"x1" spall adjacent to Girder 4 with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 7: Deck between Girder 3 and Girder 4 and between Floorbeam 3 and Floorbeam 4, Bottom Surface - 16"x6"x1-1/2" spall adjacent to Girder 4 with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 7: Deck between Girder 3 and Girder 4 at Floorbeam 5, Bottom Surface - 5"x4"x1/2" spall.	Intermediate	1		1.33	1.33	1.33								
Span 7: Deck near the outboard surface of Girder 4 at Floorbeam 4, Bottom Surface - 8"x12"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Railing														
Span 7: West Railing Concrete Spalls				10.89	10.89									
Span 7: East Railing Concrete Spalls				5.01	5.01									
Span 7: West Railing Concrete Rail Repair							-							
Span 7: East Railing Concrete Rail Repair							-							
Joints														
Joint at Span 7 - Span 8 with 20"x80"x3" spall	Intermediate	12		57.87									57.9	
Joint at Span 7 - Span 8 - Cleaning and sealing exist joints(CL7)									56					124
Pavement Overlay														
Span 7: Roadway Asphalt Overlay 56' wide x 48' long										299				
Span 7: Roadway PPC Overlay 56' wide x 48' long											299			
Concrete Surface Treatment														
Span 7: Penetrating Concrete Surface Treatment on Girders												266		
Span 7: Penetrating Concrete Surface Treatment on Floorbeams												271		
Span 7: Penetrating Concrete Surface Treatment under side of deck												264		
Span 7: Penetrating Concrete Surface Treatment on sidewalk												76		
Span 7: Penetrating Concrete Surface Treatment on East and West Railing												91		
Total Quantity		66	2	145.59	87.72	71.8	0	0	56	299	299	968	57.9	124

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 7 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 3

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	75
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $DATE$ $FILEL$

EXAMPLE OF SPAN 7 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 7 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 3 OF 3

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	76
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 1:40:06 PM
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS - SPAN 8

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 8														
Girders and Floor Beams														
Span 8: Beam 1 at Pier 7, East Surface - 6"x4"x1-1/2" spall.	Intermediate	1		1.33	1.33	1.33								
Span 8: Beam 1 at Column 1 Pier 8, East Surface - (1) 10"x3"x1" spall and (1) 14"x12"x1-1/2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 8: Beam 2 at Pier 7, West Surface - 30"x16"x2-1/2" spall with exposed reinforcing steel.	Intermediate	4		5.32	5.32	5.32								
Span 8: Beam 2 at Pier 8, West Surface - 8"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 8: Beam 3 at Pier 8, East Surface - (1) 12"x6"x1" spall and (1) 12"x4"x1" spall with exposed tie wire.	Intermediate	1		1.33	1.33	1.33								
Span 8: Beam 3 between Floorbeam 4 and Floorbeam 5, East Surface - 13"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 8: Beam 3 at Pier 8 Column 3, East Surface - 18"x8"x4" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 8: Beam 4 below Floorbeam 5, East Surface - 12"x7"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 8: Floorbeam 0 near the outboard surface of Beam 1, South Surface - 14"x6"x2" spall with exposed reinforcing steel with moderate section loss.	Intermediate	1		1.33	1.33	1.33								
Span 8: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 6"x6"x1" spall with exposed reinforcing steel with moderate section loss.	Intermediate	1		1.33	1.33	1.33								
Span 8: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 26"x14"x4" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99	3.99								
Span 8: Floorbeam 0 near the outboard surface of Beam 1, South Surface - 24"x6"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 8: Floorbeam 0 between Beam 1 and Beam 2, Bottom Surface - 14"x18"x4" spall with exposed reinforcing steel with moderate section loss.	Intermediate	2		2.66	2.66	2.66								
Span 8: Floorbeam 0 between Beam 1 and Beam 2, Bottom Surface - 8"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 8: Floorbeam 5 between Beam 1 and Beam 2, South Surface - 4"x4"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 8: Floorbeam 6 near the outboard surface of Beam 1, Bottom Surface - 14"x10"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 8: Floorbeam 6 between Beam 2 and Beam 3, Bottom Surface - 7"x7"x1-1/2" spall.	Intermediate	1		1.33	1.33	1.33								
Span 8: Floorbeam 6 between Beam 2 and Beam 3, South Surface - 7"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

SPAN 8 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	77
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILE$

TABLE OF REPAIRS – SPAN 8

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Deck														
Span 8: Deck near the outboard surface of Girder 1 at Floorbeam 6, Bottom Surface - 14"x10"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 8: Deck between Girder 1 and Girder 2 and between Floorbeam 0 and Floorbeam 1, Bottom Surface - longitudinal crack and 42"x6"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 8: Deck between Girder 1 and Girder 2 and between Floorbeam 2 and Floorbeam 3, Bottom Surface - (1) 12"x6"x2" spall and (1) 16"x8"x1-1/2" spall with exposed reinforcing steel with minor section	Intermediate	2		2.66	2.66	2.66								
Span 8: Deck between Girder 1 and Girder 2 and between Floorbeam 4 and Floorbeam 5, Bottom Surface - 24"x8"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 8: Deck between Girder 2 and Girder 3 at Floorbeam 6, Bottom Surface - 7"x7"x1-1/2" spall.	Intermediate	1		1.33	1.33	1.33								
Span 8: Deck between Girder 3 and Girder 4 above Floorbeam 1, Bottom Surface - 16"x10"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 8: Deck between Girder 3 and Girder 4 and between Floorbeam 1 and Floorbeam 2, Bottom Surface - 14"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 8: Deck between Girder 3 and Girder 4 at Floorbeam 2, Bottom Surface - 28"x6"x1-1/2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 8: Deck between Girder 3 and Girder 4 above Floorbeam 3, Bottom Surface - 36"x10"x2" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99	3.99								
Railing														
Span 8: West Railing Concrete Spalls				10.34	10.34									
Span 8: East Railing Concrete Spalls				13.23	13.23									
Span 8: West Railing Concrete Rail Repair							2.50							
Span 8: East Railing Concrete Rail Repair														
Joints														
Joint at Span 8 - Span 9 with 80"x14"x2" spall	Intermediate	8		30.9									30.9	
Joint at Span 8 - Span 9 with 32"x80"x1" spall	Intermediate	18		40.9									40.9	
Joint at Span 8 - Span 9 - Cleaning and sealing exist joints(CL7)									56					124
Pavement Overlay														
Span 8: Roadway Asphalt Overlay 56' wide x 48' long										299				
Span 8: Roadway PPC Overlay 56' wide x 48' long											299			
Concrete Surface Treatment														
Span 8: Penetrating Concrete Surface Treatment on Girders												266		
Span 8: Penetrating Concrete Surface Treatment on Floorbeams												271		
Span 8: Penetrating Concrete Surface Treatment under side of deck												264		
Span 8: Penetrating Concrete Surface Treatment on sidewalk												76		
Span 8: Penetrating Concrete Surface Treatment on East and West Railing												91		
Total Quantity		67	0	149.9	78.10	54.5	2.5	0	56	299	299	968	71.8	124

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

SPAN 8 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	78
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $FILEL$ $DATE$

EXAMPLE OF SPAN 8 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185
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Texas Department of Transportation

SPAN 8 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 3 OF 3

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	79
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 1:40:42 PM
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – SPAN 9

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 9														
Girders and Floor Beams														
Span 9: Beam 2 at Pier 8 Cap, West Face Surface - 18"x12"x2" spall with exposed reinforcing steel with moderate section loss.	Intermediate	2		2.66	2.66	2.66								
Span 9: Beam 3 at Pier 11, East Face Surface - 16"x14"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 9: Beam 4 at Floorbeam 4, East Face Surface - 16"x8"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 9: Beam 4 at Floorbeam 5, Bottom Surface - 12"x12"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 9: Beam 4 at Pier 8, Bottom Surface - 56"x18"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	7		9.31	9.31	9.31								
Span 9: Floorbeam 0 , Bottom Surface - 48"x14"x3" spall with exposed reinforcing steel with significant section loss.	Intermediate	5		6.65	6.65	6.65								
Span 9: Floorbeam 0 , North Face Surface - 48"x10"x3" spall with exposed reinforcing steel with significant section loss.	Intermediate	4		5.32	5.32	5.32								
Span 9: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface - 9"x14"x2-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 9: Floorbeam 0 between Beam 3 and Beam 4, Bottom Surface - 24"x14"x3-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99	3.99								
Span 9: Floorbeam 0 near the outboard surface of Beam 4, Bottom Surface - 8"x10"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 9: Floorbeam 6, Bottom Surface - 8"x6"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 9: Floorbeam 6, Bottom Surface - 8"x8"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 9: Floorbeam 6 between Beam 2 and Beam 3, Bottom Surface - 12"x6"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 9: Joint between Floorbeam 0 and Floorbeam 6, Bottom Surface - 24"x6"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 9: Joint between Floorbeam 0 and Floorbeam 6, Bottom Surface - 18"x10"x2-1/2" spall.	Intermediate	2		2.66	2.66	2.66								
Span 9: Joint between Floorbeam 0 and Floorbeam 6, Bottom Surface - 10"x5"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 9: Soffit at Joint between Floorbeam 0 and Floorbeam 6, East Face Surface - 10"x6"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Deck														
Span 9: Deck near the outboard surface of Girder 1 at Floorbeam 2, Bottom Surface - 12"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 9: Deck near the outboard surface of Girder 1 at Floorbeam 3, Bottom Surface - (2) 12"x4"x1-1/2" spalls with exposed reinforcing steel with moderate section loss.	Intermediate	1		1.33	1.33	1.33								

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
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10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 9 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	80
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $FILE$ $DATE$

TABLE OF REPAIRS - SPAN 9

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Span 9: Deck near the outboard surface of Girder 1 at Floorbeam 5, Bottom Surface - 8"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 9: Deck near the outboard surface of Girder 1 at Floorbeam 5, Bottom Surface - 6"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 9: Deck between Girder 1 and Girder 2 and between Floorbeam 1 and Floorbeam 2, Bottom Surface - 12"x8"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 9: Deck between Girder 1 and Girder 2 and between Floorbeam 2 and Floorbeam 3, Bottom Surface - 12"x8"x1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 9: Deck between Girder 1 and Girder 2 and between Floorbeam 2 and Floorbeam 3, Bottom Surface - 12"x5"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 9: Deck between Girder 1 and Girder 2 and between Floorbeam 2 and Floorbeam 3, Bottom Surface - (1) 14"x4"x1" spall and (1) 10"x5"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 9: Deck between Girder 1 and Girder 2 and between Floorbeam 3 and Floorbeam 4, Bottom Surface - 16"x7"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 9: Deck between Girder 1 and Girder 2 and between Floorbeam 3 and Floorbeam 4, Bottom Surface - 24"x6"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 9: Deck between Girder 1 and Girder 2 and between Floorbeam 5 and Floorbeam 6, Bottom Surface - 48"x6"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 9: Deck between Girder 2 and Girder 3 at Floorbeam 0 , Bottom Surface - 9'x14"x2-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 9: Deck between Girder 2 and Girder 3 at Floorbeam 0 , Bottom Surface - 16"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 9: Deck between Girder 2 and Girder 3 at Floorbeam 5, Bottom Surface - (2) diagonal spalls with minor spalls with exposed reinforcing steel.	Minor		2	2	2	2								

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
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10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 9 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	81
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $DATE$ $FILEL$

TABLE OF REPAIRS - SPAN 9

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Span 9: Deck between Girder 3 and Girder 4 at Floorbeam 0, Bottom Surface - 18"x8"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 9: Deck between Girder 3 and Girder 4 at Floorbeam 0, Bottom Surface - 6"x4"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 9: Deck between Girder 3 and Girder 4 at Floorbeam 0, Bottom Surface - 5" diameter x 1" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 9: Deck near the outboard surface of Girder 4 at Diapragm 1, Bottom Surface - transverse crack and 3" diameter spall with exposed reinforcing steel.	Minor		1	1	1	1								
Span 9: Deck near the outboard surface of Girder 4 at Diapragm 3, Bottom Surface - 30"x8"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 9: Deck near the outboard surface of Girder 4 at Diapragm 5, Bottom Surface - 32"x8"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 9: Deck near the outboard surface of Girder 4 at Diapragm 5, Bottom Surface - 14"x6"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Railing														
Span 9: West Railing Concrete Spalls				16.33	16.33									
Span 9: East Railing Concrete Spalls				11.89	11.89									
Span 9: West Railing Concrete Rail Repair							-							
Span 9: East Railing Concrete Rail Repair							-							
Joints														
Joint at Span 9 - Span 10 with 15"x15"x1" spall	Intermediate	2		47.87									47.9	
Joint at Span 9 - Span 10 - Cleaning and sealing exist joints(CL7)									56					124
Pavement Overlay														
Span 9: Roadway Asphalt Overlay 56' wide x 48' long										299				
Span 9: Roadway PPC Overlay 56' wide x 48' long											299			
Concrete Surface Treatment														
Span 9: Penetrating Concrete Surface Treatment on Girders												266		
Span 9: Penetrating Concrete Surface Treatment on Floorbeams												271		
Span 9: Penetrating Concrete Surface Treatment under side of deck												264		
Span 9: Penetrating Concrete Surface Treatment on sidewalk												76		
Span 9: Penetrating Concrete Surface Treatment on East and West Railing												91		
Total Quantity		59	3	154.9	107.03	78.8	0	0	56	299	299	968	47.9	124

SCALE: NTS

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 9 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	82
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILEL$

EXAMPLE OF SPAN 9 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER

10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

SPAN 9 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 4 OF 4

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	83
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – SPAN 10

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 10														
Girders and Floor Beams														
Span 10: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 12"x14"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 10: Floorbeam 0 between Beam 1 and Beam 2, Bottom Surface - 18"x12"x1" spall.	Intermediate	1		1.33	1.33	1.33								
Span 10: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface - 24"x10"1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 10: Floorbeam 0 between Beam 2 and Beam 3, North Surface - 12"x3"x1/2" spall with exposed reinforcing steel with minor section	Intermediate	1		1.33	1.33	1.33								
Span 10: Floorbeam 6 between Beam 2 and Beam 3, Bottom Surface - 14"x12"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 10: Floorbeam 6 near the outboard surface of Beam 4, Bottom Surface - 14"x8"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Deck														
Span 10: Deck near the outboard surface of Girder 1 at Floorbeam 0, Bottom Surface - 12"x14"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 10: Deck near the outboard surface of Girder 1 at Floorbeam 1, Bottom Surface - 14"x5"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 10: Deck near the outboard surface of Girder 1 at Floorbeam 1, Bottom Surface - 22"x3"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 10: Deck near the outboard surface of Girder 1 at Floorbeam 2, Bottom Surface - 20"x12"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 10: Deck between Girder 1 and Girder 2 and between Floorbeam 3 and Floorbeam 4, Bottom Surface - 20"x2"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 10: Deck between Girder 2 and Girder 3 and between Floorbeam 1 and Floorbeam 2, Bottom Surface - 28"x3"x1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 10: Deck Soffit near the outboard surface of Girder 4 between Floorbeam 3 and Floorbeam 4, Bottom Surface - 36"x"10"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99	3.99								
Railing														
Span 10: West Railing Concrete Spalls				4.33	4.33									
Span 10: East Railing Concrete Spalls				10.35	10.35									
Span 10: West Railing Concrete Rail Repair							-							
Span 10: East Railing Concrete Rail Repair							-							
Joints														
Joint at Span 10 - Span 11 with 80"x16"x2" spall	Intermediate	9		31.9									31.9	
Joint at Span 10 - Span 11 with 80"x18"x1" spall	Intermediate	10		32.9									32.9	
Joint at Span 10 - Span 11 - Cleaning and sealing exist joints(CL7)									56					124
Pavement Overlay														
Span 10: Roadway Asphalt Overlay 56' wide x 48' long										299				
Span 10: Roadway PPC Overlay 56' wide x 48' long											299			
Concrete Surface Treatment														
Span 10: Penetrating Concrete Surface Treatment on Girders												266		
Span 10: Penetrating Concrete Surface Treatment on Floorbeams												271		
Span 10: Penetrating Concrete Surface Treatment under side of deck slab												264		
Span 10: Penetrating Concrete Surface Treatment on sidewalk												76		
Span 10: Penetrating Concrete Surface Treatment on East and West Railing												91		
Total Quantity		39	0	106.08	41.28	26.6	0	0	56	299	299	968	64.8	124

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
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REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 10 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	84
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILEL$

EXAMPLE OF SPAN 10 SPALL DAMAGE

SCALE: NTS

JOHN W. HOLT
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STATE OF TEXAS

10/6/2023

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Texas Department of Transportation

SPAN 10 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	85
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 1:41:58 PM
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS - SPAN 11

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 11														
Girders and Floor Beams														
Span 11: Beam 1 at Floorbeam 1, Bottom Surface - 10" diameter delamination.	Intermediate	1		1.33	1.33									
Span 11: Beam 1 at Pier 11, East Surface - 36"x8"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66									
Span 11: Beam 3 at Pier 11, West Surface - 14"x12"x1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66									
Span 11: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 8" diameter x 1/2" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 11: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 6" diameter x 1/2" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 11: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 12"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 11: Floorbeam 1 near the outboard surface of Beam 1, Bottom Surface - 8"x10"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 11: Floorbeam 4 near the outboard surface of Beam 4, Bottom Surface - 12"x1"x1/2" spall with exposed reinforcing steel.	Minor		1	1	1									
Span 11: Floorbeam 6 near the outboard surface of Beam 4, Bottom Surface - 12"x3"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Span 11: Floorbeam 6 near the outboard surface of Beam 1, Bottom Surface - 12"x12"x1" spall with exposed reinforcing steel with minor	Intermediate	1		1.33	1.33									
Railing														
Span 11: West Railing Concrete Spalls				8.33	8.33									
Span 11: East Railing Concrete Spalls				1.89	1.89									
Span 11: West Railing Concrete Rail Repair														
Span 11: East Railing Concrete Rail Repair														
Joints														
Joint at Span 11 - Span 12 with 10"x14"x1/2" spall	Intermediate	1		23.9									23.9	
Joint at Span 11 - Span 12 with 40"x16"x1/2" spall	Intermediate	5		27.9									27.9	
Joint at Span 11 - Span 12 - Cleaning and sealing exist joints(CL7)									56					124
Pavement Overlay														
Span 11: Roadway Asphalt Overlay 56' wide x 48' long										299				
Span 11: Roadway PPC Overlay 56' wide x 48' long											299			
Concrete Surface Treatment														
Span 11: Penetrating Concrete Surface Treatment on Girders												266		
Span 11: Penetrating Concrete Surface Treatment on Floorbeams												271		
Span 11: Penetrating Concrete Surface Treatment under side of deck slab												264		
Span 11: Penetrating Concrete Surface Treatment on sidewalk												76		
Span 11: Penetrating Concrete Surface Treatment on East and West Railing												91		
Total Quantity		17	1	77.65	25.85	0	0	0	56	299	299	968	51.8	124

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 11 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	86
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $DATE$ $FILEL$

EXAMPLE OF SPAN 11 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
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REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Experience great bridges.

OMEGA ENGINEERS, INC.
8200 N. MOPAC EXPRESSWAY, STE #280
AUSTIN, TEXAS 78759
OMEGAENGINEERS.COM
TX PE Firm Reg. No. F-2147
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Texas Department of Transportation

SPAN 11 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	87
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 1:42:35 PM
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS - SPAN 12

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 12														
Girders, Floor Beams, Ribs and Arch														
Span 12: Rib 1, Bottom Surface - 6"x1.5"x8' spall.	Minor		1	1	1									
Span 12: Rib 1, Bottom Surface - 3'x14"x18" spall with 8' long delamination with exposed reinforcing steel.	Intermediate	4		5.32	5.32									
Span 12: Rib 1, East Surface - 20"x18"x1" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99									
Span 12: Rib 1, East Surface - 20"x5"x48" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 1, Bottom Surface - 12"x35"x5" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99									
Span 12: Rib 1, West Surface - 12"x6"x3" spall & 6'x6"x6" delamination.	Intermediate	3		3.99	3.99									
Span 12: Rib 1 between Column 1 and Column 2, Top Surface - 12"x4"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 1 between Column 1 and Column 2, Top Surface - 14"x6"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 1 between Column 1 and Column 2, Top Surface - 8"x4"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 1 between Column 1 and Column 2, Top Surface - 4"x4"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 1 between Column 1 and Column 2, Top Surface - 6"x2"x1/2" spall with exposed reinforcing steel.	Minor		1	1	1									
Span 12: Rib 1 between Column 1 and Column 2, Top Surface - 12"x6"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 1 at Column 2, West Surface - 8" diameter x 1/2" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 1 at Column 3, Top Surface - 24"x5"x1" spall.	Intermediate	1		1.33	1.33									
Span 12: Rib 1 between Column 2 and Column 3, West Surface - 12"x6"x1" spall.	Intermediate	1		1.33	1.33									
Span 12: Rib 1 between Column 2 and Column 3, West Surface - 8"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 1 between Column 3 and Column 4, West Surface - 7"x18"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 1 between Column 3 and Column 4, East Surface - 6"x10"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 1 between Column 3 and Column 4, Top Surface - 6"x10"x1/2" spall.	Intermediate	1		1.33	1.33									
Span 12: Rib 1 between Column 3 and Column 4, West Surface - 12"x12"x3" spall with exposed reinforcing steel with significant section loss.	Intermediate	1		1.33	1.33									
Span 12: Rib 1 between Column 3 and Column 4, West Surface - 48"x6" delamination.	Intermediate	2		2.66	2.66									
Span 12: Rib 1 between Column 4 and Pier 12, Top Surface - 60"x27"x4" spall with exposed reinforcing steel with minor section loss.	Intermediate	12		15.96	15.96									
Span 12: Rib 1 between Column 4 and Pier 12, Top Surface - 18"x16"x7" spall with exposed reinforcing steel.	Major	2		5.32	5.32									
Span 12: Rib 1 between Column 4 and Pier 12, East Surface - 24"x22" delamination.	Intermediate	4		5.32	5.32									
Span 12: Rib 2, Bottom Surface - 12"x16"x3" spall with exposed reinforcing steel with Minor section loss.	Intermediate	2		2.66	2.66									
Span 12: Rib 2, Bottom Surface - 14"x8"x3" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 2, Bottom Surface - 13"x8"x1" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	1		1.33	1.33									
Span 12: Rib 2, Bottom Surface - 14"x12"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66									
Span 12: Rib 2, Bottom Surface - 1'x14"x2" spall with exposed reinforcing steel with Minor section loss.	Intermediate	2		2.66	2.66									
Span 12: Rib 2, Bottom Surface - 14"x36" delamination.	Intermediate	4		5.32	5.32									
Span 12: Rib 2, Bottom Surface - 2'x6"x2" spall.	Intermediate	1		1.33	1.33									

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 12 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 6

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	88
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$
Design Filename: $FILE$ $TIME$

TABLE OF REPAIRS - SPAN 12

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Span 12: Rib 2, Bottom Surface - 2'x8"x2" spall with exposed reinforcing steel with Minor section loss.	Intermediate	2		2.66	2.66									
Span 12: Rib 2 at Column 1, East Surface - 28"x6" delamination.	Intermediate	2		2.66	2.66									
Span 12: Rib 2 at Column 1, East Surface - 24"x4"1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 2 Between Pier 11 and Column 1, East Surface - 14"x28"x3" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99									
Span 12: Rib 2 Between Pier 11 and Column 1, East Surface - 19"x7"x2" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	1		1.33	1.33									
Span 12: Rib 2 at Pier 11, East Surface - 16"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Slab Between Rib 2 and Rib 3, Bottom Surface - 1" diameter spall with exposed reinforcing steel.	Minor		1	1	1									
Span 12: Slab Between Rib 2 and Rib 3, Bottom Surface - 9" diameter spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Slab Between Rib 2 and Rib 3, Bottom Surface - (2) 6" diameter spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 3, Bottom Surface - 2"x16"x4" spall with exposed reinforcing steel with Minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Rib 3, East Surface - 18"x16"x6" with 6' long delamination with exposed reinforcing steel.	Intermediate	2		2.66	2.66									
Span 12: Rib 3, East Surface - 48"x12"x5" spall with 12"x7" delamination with exposed reinforcing steel with Minor section loss.	Intermediate	4		5.32	5.32									
Span 12: Rib 3, Bottom Surface - 24"x3"x1" spall.	Intermediate	1		1.33	1.33									
Span 12: Rib 3, Top Surface - 8"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 3, Top Surface - 20"x15"x1" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99									
Span 12: Rib 3, West Surface - 20"x7"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 3 at Column 1, West Surface - 24"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 3 at Column 2, Top Surface - 8"x4"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 3 at Column 2, East Surface - 4"x18"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 3 at Column 2, East Surface - 14"x8"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 3 near Column 4, East Surface - 8" diameter x 1" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 3 at Column 4, Bottom Surface - 10"x10"x3" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Rib 4, West Surface - 4'x1'x1" spall with exposed reinforcing steel.	Intermediate	4		5.32	5.32									
Span 12: Rib 4, East Surface - 2'x1'3"x3-1/2" spall with exposed reinforcing steel with Minor section loss.	Intermediate	3		3.99	3.99									
Span 12: Rib 4, Bottom Surface - 54"x10"x3-1/2" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	4		5.32	5.32									
Span 12: Rib 4, Bottom Surface - 20"x10"x5" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	2		2.66	2.66									
Span 12: Rib 4 at Column 1, East Surface - 24"x7"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66									
Span 12: Rib 4 at Column 1, Top Surface - 5" dia x 1" deep spall with exposed reinforcing steel.	Minor		1	1	1									
Span 12: Rib 4 at Column 1, West Surface - 14"x12"x2" spall with exposed reinforcing steel with Minor section loss.	Intermediate	2		2.66	2.66									
Span 12: Rib 4 between Column 1 and Column 2, Bottom Surface - 54"x36"x4" spall with exposed reinforcing steel with Minor section	Intermediate	14		18.62	18.62									
Span 12: Rib 4 at Column 2, East Surface - 4"x5"x1/2" spall.	Intermediate	1		1.33	1.33									
Span 12: Rib 4 between Column 2 and Column 3, Top Surface - 8"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 4 between Column 2 and Column 3, Top Surface - 18"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Rib 4 between Column 3 and Column 4, Top Surface - 40"x10"x1" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99									
Span 12: Rib 4 between Column 3 and Column 4, Top Surface - 34"x33"x1" spall with exposed reinforcing steel.	Intermediate	8		10.64	10.64									
Span 12: Rib 4 between Column 3 and Column 4, Top Surface - 15"x15"1" spall.	Intermediate	2		2.66	2.66									
Span 12: Rib 4 between Column 3 and Column 4, Top Surface - 14"x8"x1" spall.	Intermediate	1		1.33	1.33									
Span 12: Rib 4 between Column 3 and Column 4, Top Surface - 10"x10"x1" spall.	Intermediate	1		1.33	1.33									

SCALE: NTS

STATE OF TEXAS
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10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 12 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 6

FED.RD. DIV.NO.	PROJECT NO.	HIGHWAY NO.
6	BR 2008(909)	SH 199
STATE	DISTRICT / COUNTY	SHEET NO.
TEXAS	FTW / TARRANT	89
CONTROL	SECTION NO. / JOB	
0171	05 / 083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILEL$

TABLE OF REPAIRS - SPAN 12

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Span 12: Rib 4 between Column 3 and Column 4, Bottom Surface - 10"x54" spall.	Intermediate	4		5.32	5.32									
Span 12: Rib 4 between Column 3 and Column 4, East Surface - 20"x5"x1" spall with 30" delamination.	Intermediate	1		1.33	1.33									
Span 12: Rib 4 at Column 4, Bottom Surface - 54" x 15" delamination.	Intermediate	6		7.98	7.98									
Span 12: Arch Diaphragm 1, South Surface - 24"x7"x2" spall with exposed reinforcing steel with Minor section loss.	Intermediate	2		2.66	2.66									
Span 12: Arch Diaphragm 2, South Surface - 6'x22"x4" spall with exposed reinforcing steel with Significant section loss.	Intermediate	11		14.63	14.63									
Span 12: Arch Diaphragm 2, North Surface - 6"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Arch Diaphragm 2 at Rib 2, South Surface - 28"x14"x4" spall with exposed reinforcing steel with Minor section loss.	Intermediate	3		3.99	3.99									
Span 12: Arch Diaphragm 2 between Ribs 3 and 4, South Surface - 30"x4"x14" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99									
Span 12: Arch Diaphragm 6 between Rib 1 and Rib 2, North Surface - 20"x6"x4" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Arch Diaphragm 6 between Rib 3 and Rib 4, North Surface - 54"x20"x2" spall with exposed reinforcing steel with minor section	Intermediate	8		10.64	10.64									
Span 12: Arch Diaphragm 6 between Rib 3 and Rib 4, North Surface - 28"x12"x4" spall adjacent to Rib 4 with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99									
Span 12: Column 1 at Rib 4, North Surface - 9"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Column 1 at Rib 4, North Surface - 14"x7"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Column 1 at Rib 4, North Surface - 6"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Column 1 at Rib 4, North Surface - 10"x7"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Column 2 at Rib 1, Southwest Surface - 36"x7"x4" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66									
Span 12: Column 2 at Rib 1, South Surface - 12"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Column 2 at Rib 2, West Surface - 12"x2"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Column 2 at Rib 4, North Surface - 14"x4"x2" spall with exposed reinforcing steel with Minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Column 2 at Rib 4, Top Surface - 18"x10"x2" spall.	Intermediate	2		2.66	2.66									
Span 12: Column 2 at Rib 4, South Surface - 17"x6"x1" spall with exposed reinforcing steel with Minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Column 2 at Rib 4, South Surface - 6"x9"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Column 4 at Rib 4, South Surface - 12"x5"x3" spall.	Intermediate	1		1.33	1.33									
Span 12: Beam 1 at Column 2, East Surface - 8"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Beam 1 at Column 3, East Surface - 10"x6"x9" spall.	Intermediate	1		1.33	1.33									
Span 12: Beam 1 over Column 3, East Surface - 9"x9"x1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Beam 2 at Column 2, West Surface - 7"x2"x1/4" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Beam 3 at Column 2, West Surface - 10"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Beam 3 at Pier 11, Bottom Surface - 1"x12"x1/2" spall with exposed reinforcing steel.	Minor		1	1	1									
Span 12: Beam 4 at Column 2, West Surface - 8" dia x 1/2" deep spall with exposed reinforcing steel with Minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Beam 4 Pedestal At Pier 12, South Surface - 12"x10"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 8" diameter x 1/2" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									

SCALE: NTS

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10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 12 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	90
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $DATE$ $FILEL$

TABLE OF REPAIRS - SPAN 12

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Span 12: Beam 3 at Column 2, West Surface - 10"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Beam 3 at Pier 11, Bottom Surface - 1"x12"x1/2" spall with exposed reinforcing steel.	Minor		1	1	1									
Span 12: Beam 4 at Column 2, West Surface - 8" dia x 1/2" deep spall with exposed reinforcing steel with Minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Beam 4 Pedestal At Pier 12, South Surface - 12"x10"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 8" diameter x 1/2" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 0 between Beam 2 and 3, South Surface - 16"x10"x1" spall with exposed reinforcing steel with minor section	Intermediate	2		2.66	2.66									
Span 12: Floorbeam 0 near the outboard surface of Beam 4, Bottom Surface - 8"x1"x1/2" spall with exposed reinforcing steel.	Minor		1	1	1									
Span 12: Floorbeam 2 near the outboard surface of Beam 4, Bottom Surface - 12"x4"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 2 near the outboard surface of Beam 4, Bottom Surface - 14"x2"x1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 2 near the outboard surface of Beam 4, Bottom Surface - 6"x2"x1/2" spall with exposed reinforcing steel.	Minor		1	1	1									
Span 12: Floorbeam 4 near the outboard surface of Rib 1, Bottom Surface - 4"x6"x1/2" spall with exposed reinforcing steel with Minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 4 between Rib 1 and Rib 2, Bottom Surface - 12"x6"x1" spall with exposed reinforcing steel with Minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 4 between Rib 2 and Rib 3, North Surface - 10"x24"x1" spall adjacent to Rib 2 with exposed reinforcing steel.	Intermediate	2		2.66	2.66									
Span 12: Floorbeam 5 between Beam 2 and Beam 3, North Surface - 4" dia x 1/2" deep spall with exposed reinforcing steel.	Minor		1	1	1									
Span 12: Floorbeam 5 between Beam 2 and Beam 3, North Surface - 4" dia x 1/2" deep spall with exposed reinforcing steel.	Minor		1	1	1									
Span 12: Floorbeam 5 between Beam 2 and Beam 3, North Surface - 8"x3"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 5 between Beam 2 and Beam 3, North Surface - 1"x4"x1/2" spall with exposed reinforcing steel.	Minor		1	1	1									
Span 12: Floorbeam 5 between Beam 2 and Beam 3, Bottom Surface - 5"x12"x1" spall with exposed reinforcing steel with Minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 5 between Beam 2 and Beam 3, Bottom Surface - 12"x16"x1-1/2" spall with exposed reinforcing steel with Minor section loss.	Intermediate	2		2.66	2.66									
Span 12: Floorbeam 5 between Beam 2 and Beam 3, North Surface - 12"x2'x1-1/2" spall with exposed reinforcing steel with Minor section loss.	Intermediate	2		2.66	2.66									
Span 12: Floorbeam 5 between Beam 2 and Beam 3, North Surface - 4"x2"x1/2" spall with exposed reinforcing steel.	Minor		1	1	1									
Span 12: Floorbeam 5 between Beam 2 and Beam 3, North Surface - 16"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 5 between Beam 2 and Beam 3, Bottom Surface - 12"x7"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 5 between Beam 2 and Beam 3, Bottom Surface - 24"x12"x2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66									
Span 12: Floorbeam 5 between Beam 2 and Beam 3, North Surface - 24"x10"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66									
Span 12: Floorbeam 5 near the outboard surface of Rib 1, Bottom Surface - 12"x5"x1" spall with exposed reinforcing steel with Minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 5 between Rib 1 and Rib 2, Bottom Surface - 48"x9"x2" spall with exposed reinforcing steel with Minor section loss.	Intermediate	3		3.99	3.99									
Span 12: Floorbeam 5 near the outboard surface of Beam 4, Bottom Surface - 6"x4"x1/2" spall with exposed reinforcing steel with Minor section loss.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 5 between Rib 2 and Rib 3, North Surface - 3"x5"x1/2" spall adjacent to Rib 2 with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 6 between Beam 3 and Beam 4, Bottom Surface - 2'x6" honeycombing.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 13 between Beam 2 and Beam 3, Bottom Surface - 36"x12"x3" spall with exposed reinforcing steel with minor section	Intermediate	3		3.99	3.99									
Span 12: Floorbeam 13 between Beam 3 and Beam 4, Bottom Surface - 12"x3"x1/2" spall with exposed reinforcing steel with 1/16" section	Intermediate	1		1.33	1.33									

Plotted on: $TIME$
Design Filename: $DATE$ $FILEL$

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185
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Texas Department of Transportation

SPAN 12 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB
EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	91
CONTROL	SECTION NO.	JOB	
0171	05	083	

TABLE OF REPAIRS - SPAN 12

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Span 12: Floorbeam 13 outboard of Beam 1, Bottom Surface - 12"x12"x1-1/2" spall with exposed reinforcing steel with minor section	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 14 between Beam 2 and Beam 3, Bottom Surface - 22"x12"x1" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	2		2.66	2.66									
Span 12: Floorbeam 14 between Beam 2 and Beam 3, Bottom Surface - 12"x12"x1-1/2" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	1		1.33	1.33									
Span 12: Floorbeam 14 near the outboard surface of Beam 4, Bottom Surface - 6"x3"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Deck														
Span 12: Deck near the outboard surface of Girder 1 near Floorbeam 10, Bottom Surface - 24"x12"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66									
Span 12: Deck near the outboard surface of Girder 1 near Floorbeam 13, Bottom Surface - 18"x24"x1-1/2" spall with exposed reinforcing	Intermediate	3		3.99	3.99									
Span 12: Deck between Girder 1 and Girder 2 and between Floorbeam 14 and Floorbeam 15, Bottom Surface - 20"x9"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66									
Span 12: Deck between Girder 2 and Girder 3 and between Floorbeam 14 and Floorbeam 15, Bottom Surface - 38"x6"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66									
Span 12: Deck between Girder 3 and Girder 4 and between Floorbeam 17 and Floorbeam 18, Bottom Surface - 4'x10"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	4		5.32	5.32									
Span 12: Deck near the outboard surface of Girder 4 between Floorbeam 2 and Floorbeam 3, Bottom Surface - 4"x3"x1/2" spall with exposed reinforcing steel.	Minor		1	1	1									
Span 12: Deck near the outboard surface of Girder 4 between Floorbeam 2 and Floorbeam 3, Bottom Surface - 14"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Railing														
Span 12: West Railing Concrete Spalls				19.78	19.78									
Span 12: East Railing Concrete Spalls				21.34	21.34									
Span 12: West Railing Concrete Rail Repair							-							
Span 12: East Railing Concrete Rail Repair							1.50							
Joints														
Joint at Span 12 - Span 13 with 80"x7"x1" spall	Intermediate	4		26.9									26.9	
Joint at Span 12 - Span 13 with 12"x18"x1" spall	Intermediate	2		24.9									24.9	
Joint at Span 12 - Span 13 - Cleaning and sealing exist joints(CL7)									56					124
2-Intermediate joints in Span 12 - Span 13 - Cleaning and sealing exist joints(CL7)									112					373
Pavement Overlay														
Span 12: Roadway Asphalt Overlay 56' wide x 48' long										772				
Span 12: Roadway PPC Overlay 56' wide x 48' long											772			
Concrete Surface Treatment														
Span 12: Penetrating Concrete Surface Treatment on Girders												393		
Span 12: Penetrating Concrete Surface Treatment on Floorbeams												765		
Span 12: Penetrating Concrete Surface Treatment under side of deck slab												710		
Span 12: Penetrating Concrete Surface Treatment on sidewalk												197		
Span 12: Penetrating Concrete Surface Treatment on East and West Railing												234		
Total Quantity		261	12	446.73	394.93	0	1.5	0	168	772	772	2299	51.8	498

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
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REGISTERED PROFESSIONAL ENGINEER
10/6/2023

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Texas Department of Transportation

SPAN 12 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 5 OF 6

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	92
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $FILE$ $DATE$

EXAMPLE OF SPAN 12 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185
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Texas Department of Transportation

SPAN 12 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 6 OF 6

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	93
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $FILEL$ $DATE$

TABLE OF REPAIRS - SPAN 13

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 13														
Girders and Floor Beams														
Span 13: Beam 1 Pedestal, East Surface - 30"x12"x3" spall with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99									
Span 13: Beam 1 Pedestal, South Surface - 20"x10"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66									
Span 13: Beam 1 Pedestal, East Surface - 20"x6"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66									
Span 13: Beam 2 Pedestal, South Surface - 1"x6"x1/4" spall with exposed reinforcing steel.	Minor		1	1	1									
Span 13: Beam 4 at Floorbeam 5, Bottom Surface - 10"x4"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 13: Floorbeam 0 between Beam 2 and Beam 3, North Surface - 10"x4"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 13: Floorbeam 6 between Beam 1 and Beam 2, Bottom Surface - 3" diameter x 1/2" deep spall with exposed reinforcing steel with minor	Minor		1	1	1									
Span 13: Floorbeam 6 between Beam 1 and Beam 2, Bottom Surface - 14"x10"x1" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	1		1.33	1.33									
Span 13: Floorbeam 6 between Beam 2 and Beam 3, Bottom Surface - 41"x14"x2" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	4		5.32	5.32									
Span 13: Floorbeam 6 near the outboard surface of Beam 4, Bottom Surface - 8" diameter x 1" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Span 13: Floorbeam 6 near the outboard surface of Beam 4, North Surface - 14"x24"1" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99									
Deck														
Span 13: Deck near the outboard surface of Girder 4 at Floorbeam 0, Bottom Surface - 10"x10"x1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Span 13: Deck near the outboard surface of Girder 4 at Floorbeam 6, Bottom Surface - 10"x6"x1/2" spall with exposed reinforcing steel with	Intermediate	1		1.33	1.33									
Railing														
Span 13: West Railing Concrete Spalls				12.11	12.11									
Span 13: East Railing Concrete Spalls				15.55	15.55									
Span 13: West Railing Concrete Rail Repair							-							
Span 13: East Railing Concrete Rail Repair							-							
Joints														
Joint at Span 13 - Span 14 with 10"x80"x1" spall	Intermediate	6		51.87									51.9	
Joint at Span 13 - Span 14 - Cleaning and sealing exist joints(CL7)									56					124
Pavement Overlay														
Span 13: Roadway Asphalt Overlay 56' wide x 48' long										299				
Span 13: Roadway PPC Overlay 56' wide x 48' long											299			
Concrete Surface Treatment														
Span 13: Penetrating Concrete Surface Treatment on Girders												266		
Span 13: Penetrating Concrete Surface Treatment on Floorbeams												271		
Span 13: Penetrating Concrete Surface Treatment under side of deck slab												264		
Span 13: Penetrating Concrete Surface Treatment on sidewalk												76		
Span 13: Penetrating Concrete Surface Treatment on East and West Railing												91		
Total Quantity		26	2	108.13	56.26	0	0	0	56	299	299	968	51.9	124

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185
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Texas Department of Transportation

SPAN 13 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	94
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $FILEL$ $DATE$

EXAMPLE OF SPAN 13 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185
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AUSTIN, TEXAS 78759
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TX PE Firm Reg. No. F-2147
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Texas Department of Transportation

SPAN 13 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	95
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 1:44:14 PM
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – SPAN 14

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 14														
Girders and Floor Beams														
Span 14: Beam 1 at Pier 14, East Surface - 5" diameter x 1/2" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 14: Beam 2 at Pier 14, West Surface - 22"x19"1" spall with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99	3.99								
Span 14: Beam 2 at Pier 14, West Surface - 13"x13"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66								
Span 14: Beam 3 at Pier 14, West Surface - 22"x24"1" spall with exposed reinforcing steel with minor section loss.	Intermediate	4		5.32	5.32	5.32								
Span 14: Beam 4 near Pier 14, Bottom Surface - 12"x4"x1" spall with honeycombing.	Intermediate	1		1.33	1.33	1.33								
Span 14: Beam 4 at Pier 14, West Surface - 12"x14"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66								
Span 14: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 8"x5"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 14: Floorbeam 0 between Beam 1 and Beam 2, North Surface - 6"x3"x1/2" spall with exposed reinforcing steel with minor section	Intermediate	1		1.33	1.33	1.33								
Span 14: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface - 12"x6"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 14: Floorbeam 0 between Beam 3 and Beam 4, Bottom Surface - 8'-6"x14"x3" spall with exposed reinforcing steel with 1/16" section	Intermediate	10		13.3	13.3	13.3								
Span 14: Floorbeam 1 near the outboard surface of Beam 4, Bottom Surface - 12"x3"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Span 14: Floorbeam 1 near the outboard surface of Beam 4, Bottom Surface - 8"x6"x1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33								
Span 14: Floorbeam 6 near the outboard surface of Beam 1, Bottom Surface - 14"x10"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33								
Deck														
Span 14: Deck near the outboard surface of Girder 1 at Floorbeam 4, Bottom Surface - 26"x24"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	5		6.65	6.65	6.65								
Span 14: Deck near the outboard surface of Girder 1 at Floorbeam 3, Bottom Surface - 24"x16"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99	3.99								
Span 14: Deck near the outboard surface of Girder 1 at Floorbeam 2, Bottom Surface - 3" diameter x 1/2" deep spall with exposed reinforcing steel.	Minor		1	1	1	1								
Railing														
Span 14: West Railing Concrete Spalls				8.89	8.89									
Span 14: East Railing Concrete Spalls				10.12	10.12								45.9	
Span 14: West Railing Concrete Rail Repair							-							
Span 14: East Railing Concrete Rail Repair							-							
Joints														
Joint at Span 14 - Span 15 - Cleaning and sealing exist joints(CL7)									56					124
Pavement Overlay														
Span 14: Roadway Asphalt Overlay 56' wide x 48' long										299				
Span 14: Roadway PPC Overlay 56' wide x 48' long											299			
Concrete Surface Treatment														
Span 14: Penetrating Concrete Surface Treatment on Girders												266		
Span 14: Penetrating Concrete Surface Treatment on Floorbeams												271		
Span 14: Penetrating Concrete Surface Treatment under side of deck slab												264		
Span 14: Penetrating Concrete Surface Treatment on sidewalk												76		
Span 14: Penetrating Concrete Surface Treatment on East and West Railing												91		
Total Quantity		37	1	69.22	69.22	50.2	0	0	56	299	299	968	45.9	124

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

SPAN 14 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	96
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILE$

EXAMPLE OF SPAN 14 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185
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Texas Department of Transportation

SPAN 14 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	97
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 1:44:54 PM
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – SPAN 15

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
SPAN 15														
Girders and Floor Beams														
Span 15: Beam 2 near Pier 15, Bottom Surface - 14"x8"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Beam 3 at Pier 15, Bottom Surface - 3"x2"x1/2" spall with exposed reinforcing steel.	Minor		1	1	1									
Span 15: Beam 3 at Pier 15, Bottom Surface - 24"x8"x2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66									
Span 15: Beam 4 at Floorbeam 1, Bottom Surface - 24"x30"x1" spall with exposed reinforcing steel.	Intermediate	5		6.65	6.65									
Span 15: Beam 4 near Pier 15, East Surface - 8"x5"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Beam 4 near Pier 15, East Surface - 8"x3"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Beam 4 near Pier 15, East Surface - 14"x3"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Beam 4 at Pier 15, Bottom Surface - 20"x5"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Beam 4 at North Abutment, Bottom Surface - 14"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 8"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 0 near the outboard surface of Beam 1, Bottom Surface - 5" diameter x 1" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 0 between Beam 1 and Beam 2, Bottom Surface - 22"x14"x2" spall with exposed reinforcing steel with minor section	Intermediate	3		3.99	3.99									
Span 15: Floorbeam 0 between Beam 1 and Beam 2, Bottom Surface - 26"x14"x2" spall with exposed reinforcing steel with 1/8" section loss.	Intermediate	3		3.99	3.99									
Span 15: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface - 6"x8"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 0 between Beam 2 and Beam 3, Bottom Surface - 9"x8"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 0 between Beam 2 and Beam 3, North Surface - 10"x19"x1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66									
Span 15: Floorbeam 0 between Beam 3 and Beam 4, Bottom Surface - 10"x14"x1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 0 near the outboard surface of Beam 4, Bottom Surface - 12"x8"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 0 near the outboard surface of Beam 4, Bottom Surface - 3"x6"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 1 near the outboard surface of Beam 4, Bottom Surface - 8"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 1 near the outboard surface of Beam 4, Bottom Surface - 12"x14"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66									
Span 15: Floorbeam 3 near the outboard surface of Beam 4, North Surface - 6"x5"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									

SCALE: NTS

STATE OF TEXAS
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Texas Department of Transportation

SPAN 15 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	98
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $DATE$ $FILEL$

TABLE OF REPAIRS - SPAN 15

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	CONCRETE RAIL REPAIR (IN-KIND) (LF)	CLEANING AND SEALING EXIST JOINTS(CL3) (LF)	CLEANING AND SEALING EXIST JOINTS(CL7) (LF)	PLAN ASPH CONC PAV (0"-2" MICRO) (SY)	POLYESTER POLYMER CONC OVERLAY (2") (SY)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CONC STR REPAIR(DECK REP(PART DEPTH)) (SF)	STR STEEL (MISC NON - BRIDGE) (LB)
		Intermediate	Minor	Total	0429 6007	0786 6001	0778 6001	0438 6002	0438 6004	0354 6220	4106 6003	0428 6001	0429 6003	0442 6007
Span 15: Floorbeam 5 near the outboard surface of Beam 1, North Surface - 16"x9"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 5 near the outboard surface of Beam 1, North Surface - 16"x9"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 5 near the outboard surface of Beam 1, North Surface - 4" diameter x 1/2" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 5 near the outboard surface of Beam 1, North Surface - 16"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 5 near the outboard surface of Beam 1, North Surface - 4" diameter x 1/2" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 5 near the outboard surface of Beam 1, Bottom Surface - 10"x10"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 5 near the outboard surface of Beam 4, Bottom Surface - 6" diameter x 1" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 5 near the outboard surface of Beam 4, Bottom Surface - 10"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 6 near the outboard surface of Beam 4, Bottom Surface - 6" diameter x 1" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Span 15: Floorbeam 6 near the outboard surface of Beam 4, Bottom Surface - 10"x8"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33									
Deck														
Span 15: Deck near the outboard surface of Girder 1 at the North Abutment, North Surface - 12"x8"x3-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Span 15: Deck near outboard surface of Girder 4 between Floorbeam 3 and Floorbeam 4, Bottom Surface - 36"x5"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66									
Span 15: Walkway near outboard surface of Girder 4 at Floorbeam 4, Bottom Surface - 12"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33									
Railing														
Span 15: West Railing Concrete Spalls				6.22	6.22									
Span 15: East Railing Concrete Spalls				3.01	3.01								45.9	
Span 15: West Railing Concrete Rail Repair							-							
Span 15: East Railing Concrete Rail Repair							-							
Joints														
Joint at Span 15 - North Approach Span - Cleaning and sealing exist joints(CL3)								56	-					124
Pavement Overlay														
Span 15: Roadway Asphalt Overlay 56' wide x 48' long										299				
Span 15: Roadway PPC Overlay 56' wide x 48' long											299			
Concrete Surface Treatment														
Span 15: Penetrating Concrete Surface Treatment on Girders												266		
Span 15: Penetrating Concrete Surface Treatment on Floorbeams												271		
Span 15: Penetrating Concrete Surface Treatment under side of deck slab												264		
Span 15: Penetrating Concrete Surface Treatment on sidewalk												76		
Span 15: Penetrating Concrete Surface Treatment on East and West Railing												91		
Total Quantity		46	1	71.41	71.41	0	0	56	0	299	299	968	45.9	124

SCALE: NTS

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SPAN 15 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	99
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: $DATE$ $FILEL$

EXAMPLE OF SPAN 15 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
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SPAN 15 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 3 OF 3

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	100
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS - SOUTH ABUTMENT

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
South Abutment									
Abument Wall									
South Abutment: South Abutment wall near the outboard surface of Beam 1, North Surface - 15' diagonal crack.								15.0	
South Abutment: South Abutment wall between Beam 2 and Beam 3, North Surface - (2) full-length vert cracks.								17.9	
South Abutment: South Abutment wall between Beam 3 and Beam 4, North Surface - full-length vertical crack.								17.9	
South Abutment: South Abutment wall between Beam 3 and Beam 4, East Surface - diagonal crack with efflorescence.								24.7	
South Abutment: South Abutment wall between Beam 3 and Beam 4, East Surface - 3' diagonal crack with exposed reinforcing steel.								3.0	
South Abutment: South Abutment wall between Beam 3 and Beam 4, East Surface - 16"x17"x6" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66			
South Abutment: South Abutment wall between Beam 3 and Beam 4, East Surface - 3/4-length vertical crack with efflorescence.								0.8	
Concrete Surface Treatment									
South Abutment: 3 faces of abutment - surface treatment, Surface - .							262		
Level up Bridge side walk and approach side walk									1
Total Quantity				2.66	2.66	2.7	262	79.1	1

SCALE: NTS

STATE OF TEXAS
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SOUTH ABUTMENT REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	101
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: $DATE$ $FILE$

EXAMPLE OF SOUTH ABUTMENT SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
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SOUTH ABUTMENT REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	102
CONTROL	SECTION NO.	JOB	
0171	05	083	

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TABLE OF REPAIRS - PIER 1

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
Pier 1									
Columns and Caps									
Pier 1: Column 1 Cap at Pier 1, West Surface - 24"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 1: Column 1 Cap at Pier 1, West Surface - 8" diameter x 1" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 1: Pier 1 Cap at Beam 1, North Surface - approximately 15"x15"x2" spall.	Intermediate	2		2.66	2.66	2.66			
Pier 1: Pier 1 Cap at Beam 2, Northeast Surface - approximately 10"x10"x3" spall.	Intermediate	1		1.33	1.33	1.33			
Pier 1: Pier 1 Cap between Beam 2 and Beam 3, East Surface - approximately 24"x6"x1" spall adjacent to Beam 2 with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 1: Pier 1 Cap between Beam 2 and Beam 3, North Surface - approximately 12"x3"x1" spall adjacent to Beam 2 with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 1: Pier 1 Cap at Beam 3, North Surface - approximately 48"x6"x3" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66			
Pier 1: Pier 1 Cap at Beam 4, West Surface - approximately 24"x5"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 1: Pier 1 Cap at Beam 4, North Surface - approximately 48"x6"x4" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66			
Pier 1: Column 4, East Surface - approximately 3'x8"x2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66			
Pier 1: Column 4, West Surface - approximately 2'x12"x2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66			
Pier 1: Column Tie between Pier 1 Column 1 and Column 2, Bottom Surface - 17"x11"x1/2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66			
Pier 1: Column Tie between Pier 1 Column 2 and Column 3, Bottom Surface - 11"x4"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 1: Column Tie between Pier 1 Column 3 and Column 4, Bottom Surface - 10"x10"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 1: Column Tie between Pier 1 Column 3 and Column 4, Bottom Surface - 8"x3"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 1: Column Tie between Pier 1 Column 3 and Column 4, North Surface - 10"x12"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Concrete Surface Treatment									
Pier 1: Bent and Columns - Surface Treatment, Surface - .							127		
Total Quantity				29.26	29.26	29.3	127	0.0	0

SCALE: NTS

STATE OF TEXAS
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Texas Department of Transportation

PIER 1 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	103
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $FILE$
$DATE$

EXAMPLE OF PIER 1 SPALL DAMAGE

SCALE: NTS

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STATE OF TEXAS

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PIER 1 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	104
CONTROL	SECTION NO.	JOB	
0171	05	083	

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TABLE 0F REPAIRS – PIER 2

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
Pier 2									
Columns and Caps									
Pier 2: Column 1, East Surface – 6"x6"x1/2" spall adjacent to Beam 1 with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 2: Column 1, East Surface – 14"x10"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 2: Column 2, South Surface – 12" diameter x 1/2" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 2: Column 4, North Surface – 15"x7"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 2: Column 4, North Surface – 20"x7"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 2: Column Tie between Beam 1 and Beam 2, Bottom Surface – 7"x4"x1/2" spall with exposed reinforcing steel with minor section	Intermediate	1		1.33	1.33	1.33			
Pier 2: Column 1 Cap at Pier 2, West Surface – 10"x4"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 2: Column 1 Cap at Pier 2, South Surface – 9"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 2: Column 2 Cap at Pier 2, East Surface – 9"x5"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 2: Column 2 Cap at Pier 2, West Surface – 9"x8"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 2: Column 3 Cap at Pier 2, South Surface – 15"x4"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 2: Column 4 Cap at Pier 1, North Surface – 41"x8"x4" spall with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99	3.99			
Pier 2: Column 4 Cap at Pier 1, East Surface – 34"x8"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 2: Column 4 Cap at Pier 2, East Surface – 18"x10"x1" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 2: Column Tie between Pier 2 Column 3 and Column 4, South Surface – 20"x12"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 2: Column Tie between Pier 2 Column 3 and Column 4, South Surface – 8"x5"x1" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 2: Column Tie between Pier 2 Column 3 and Column 4, South Surface – 12"x8"x1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 2: Pier 2 Cap between Beam 1 and Beam 2, North Surface – (1) 14"x6"x3" spall and (1) 10"x6"x2" spall and (1) 12"x6"x3" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66			
Concrete Surface Treatment									
Pier 2: Bent and Columns – Surface Treatment, Surface – .							131		
Total Quantity				31.92	31.92	31.9	131	0.0	0

SCALE: NTS

STATE OF TEXAS
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REV	BY	DESCRIPTION	DATE

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PIER 2 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	105
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: $FILE$ $DATE$

EXAMPLE OF PIER 2 SPALL DAMAGE

SCALE: NTS

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PIER 2 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	106
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – PIER 3

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
Pier 3									
Columns and Caps									
Pier 3: Column 1 Cap, West Surface – 44"x2"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Column 1 Cap, North Surface – 10"x8"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Column 1 Cap, North Surface – 20"x8"x3" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 3: Column Tie between Beam 1 and Beam 2, Bottom Surface – 24"x32"x2" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	6		7.98	7.98	7.98			
Pier 3: Column Tie between Beam 1 and Beam 2, North Surface – 9" diameter x 1" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Column Tie between Beam 1 and Beam 2, Bottom Surface – 9" diameter x 1" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Column 2 Cap, North Surface – 24"x8"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 3: Column 2 Cap, East Surface – 12"x3"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Column 2 Cap, West Surface – 8"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Column Tie between Beam 2 and Beam 3, Bottom Surface – 9"x3"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Column 3, East Surface – 6" diameter x 1" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Column 3 Cap, North Surface – 12"x8"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Column 3 Cap, East Surface – 6"x5"x2" spall.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Column 3 Cap, South Surface – 12"x5"x1" spall.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Column 3 Cap, West Surface – 5"x5"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Column Tie between Column 3 and Column 4, North Surface – 44"x10"x1" spall with exposed reinforcing steel.	Intermediate	4		5.32	5.32	5.32			
Pier 3: Column 4 Cap, East Surface – 13"x2"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Column 4 Cap, South Surface – 13"x6"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Column 4 Cap, South Surface – 15"x10"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 3: Pier 3 Cap between Beam 1 and Beam 2, Top Surface – longitudinal cracks typical.								13.60	
Pier 3: Pier 3 Cap between Beam 1 and Beam 2, West Surface – 8"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Pier 3 Cap at Beam 3, West Surface – 8"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Pier 3 Cap at Beam 3, South Surface – 4"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Pier 3 Cap at Beam 3, South Surface – 16"x4"x1" spall.	Intermediate	1		1.33	1.33	1.33			
Pier 3: Pier 3 Cap at Beam 3, Southeast Surface – 4"x3"x1-1/2" spall.	Minor		1	1	1	1			
Concrete Surface Treatment									
Pier 3: Bent and Columns – Surface Treatment, Surface – .							143		
Total Quantity				46.22	46.22	46.2	143	13.6	0

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

PIER 3 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	107
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILE$

EXAMPLE OF PIER 3 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
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REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

PIER 3 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	108
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – PIER 4

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
Pier 4									
Columns and Caps									
Pier 4: Column 1, West Surface – 12"x8"x3" spall.	Intermediate	1		1.33	1.33	1.33			
Pier 4: Column 1, West Surface – 18"x10"x3" spall.	Intermediate	2		2.66	2.66	2.66			
Pier 4: Column 1, West Surface – 4" diameter x 1/2" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 4: Column 2, South Surface – 36"x10"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99	3.99			
Pier 4: Column 2, East Surface – 8"x3"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 4: Column 2, North Surface – 20"x6"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 4: Column 3, North Surface – 10" diameter x 1" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 4: Column 3, North Surface – 14"x8"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 4: Column 3, West Surface – 9"x8"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 4: Column Tie between Column 3 and Column 4, Bottom Surface – 40"x20"x2" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	6		7.98	7.98	7.98			
Pier 4: Column Tie between Column 3 and Column 4, South Surface – 14"x9"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 4: Column 4 Cap, West Surface – 8"x7"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 4: Column Tie between Beam 1 and Beam 2, Top Surface – cracks typical.								13.60	
Concrete Surface Treatment									
Pier 4: Bent and Columns – Surface Treatment, Surface – .							156		
Total Quantity				26.6	26.6	26.6	156	13.6	0

SCALE: NTS

JOHN M. HOLT
68237
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STATE OF TEXAS

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REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

PIER 4 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	109
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: $DATE$ $FILEL$

EXAMPLE OF PIER 4 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

PIER 4 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	110
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – PIER 5

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
Pier 5									
Columns and Caps									
Pier 5: Column 1, East Surface – 6" diameter x 1/2" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 5: Column 1 Cap, South Surface – 36"x10"x2" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99	3.99			
Pier 5: Column 1 Cap, East Surface – 10"x10"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 5: Column 2 Cap, North Surface – 18"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 5: Column 3 Cap, North Surface – 40"x8"x3" spall with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99	3.99			
Pier 5: Column 3 Cap, South Surface – 8"x2"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 5: Column 3 Cap, South Surface – 16"x8"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 5: Column 3 Cap, East Surface – 6"x4"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 5: Column 4 Cap, North Surface – 48"x12"x3" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	4		5.32	5.32	5.32			
Pier 5: Column 4 Cap, East Surface – 12"x12"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 5: Column Tie between Column 1 and Column 2, Bottom Surface – 16"x6"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 5: Column Tie between Column 2 and Column 3, Bottom Surface – 16"x14"x1/2" spall with exposed reinforcing steel with 1/16" section	Intermediate	2		2.66	2.66	2.66			
Pier 5: Column Tie between Column 3 and Column 4, Bottom Surface – 10"x10"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 5: Column Tie between Column 3 and Column 4, Bottom Surface – 6"x10"x1/2" spall with exposed reinforcing steel with minor section	Intermediate	1		1.33	1.33	1.33			
Pier 5: Column Tie between Column 3 and Column 4, Bottom Surface – 10"x6"x1/2" spall with exposed reinforcing steel with minor section	Intermediate	1		1.33	1.33	1.33			
Pier 5: Column Tie between Column 3 and Column 4, Bottom Surface – 12"x8"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Concrete Surface Treatment									
Pier 5: Bent and Columns – Surface Treatment, Surface – .							168		
Total Quantity				31.92	31.92	31.9	168	0.0	0

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
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10/6/2023

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Texas Department of Transportation

PIER 5 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	111
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $DATE$ $FILE$

EXAMPLE OF PIER 5 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
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10/6/2023

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Texas Department of Transportation

PIER 5 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	112
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – PIER 6

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
Pier 6									
Columns and Caps									
Pier 6: Column 1 Cap, Northeast Surface – 12"x4"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 6: Column 1 Cap, West Surface – 18"x10"x2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66			
Pier 6: Column 1 Cap, South Surface – 10"x6"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 6: Column 2 Cap, North Surface – 24"x10"x3" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66			
Pier 6: Column 2 Cap, South Surface – 50"x8"x3" spall extending to corners & across top 10" deep with exposed reinforcing steel.	Intermediate	3		3.99	3.99	3.99			
Pier 6: Column 3 Cap, Southeast Surface – 10"x8"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 6: Column 3 Cap, Southwest Surface – 10"x10"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 6: Column 4 Cap, East Surface – 20"x8"x2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66			
Pier 6: Column 4 Cap, North Surface – 16"x10"x2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66	2.66			
Pier 6: Column 4 Cap, North Surface – 14"x5"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 6: Column 4 Cap, Northwest Surface – 10"x4"x1-1/2" spall extending 6" to West Face with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 6: Column Tie between Column 1 and Column 2, South Surface – 14"x10"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 6: Column Tie Between Column 1 and Column 2, Bottom Surface – 36"x9"x2-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99	3.99			
Pier 6: Column Tie between Column 1 and Column 2, Bottom Surface – 36"x2"x9" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 6: Column Tie between Column 1 and Column 2, Bottom Surface – 14"x8"x1" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 6: Column Tie Between Column 1 and Column 2, North Surface – 14"x6"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 6: Column Tie between Column 2 and Column 3, Bottom Surface – 8"x2"x3" spall with exposed reinforcing steel with 1/8" section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 6: Column Tie Between Column 3 and Column 4, South Surface – (1) 8"x6"x1-1/2" spall and (1) 7"x6"x1/2" spall with exposed reinforcing	Intermediate	1		1.33	1.33	1.33			
Pier 6: Column Tie between Column 3 and Column 4, Bottom Surface – 36"x14"x2" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	4		5.32	5.32	5.32			
Concrete Surface Treatment									
Pier 6: Bent and Columns - Surface Treatment, Surface - .							181		
Total Quantity				39.9	39.9	39.9	181	0.0	0

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

PIER 6 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	113
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILE$

EXAMPLE OF PIER 6 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

PIER 6 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	114
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – PIER 7

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
Pier 7									
Columns and Caps									
Pier 7: Column 1 Cap, West Surface – 9"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column 1 Cap, South Surface – 11"x8"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column 1 Cap, Southeast Surface – 12"x10"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column 1 Cap, East Surface – 10"x6"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column 1 Cap, East Surface – 32"x3"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column 2 Cap, Northeast Corner Surface – 16"x6"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column 2 Cap, North Surface – 10"x6"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column 2 Cap, East Surface – 8"x4"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column 2 Cap, Southeast Surface – 16"x6"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column 3 Cap, North Surface – 16"x8"x2" spall at the northwest corner with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column 3 Cap, West Surface – 10"x6"x2" spall at the northwest corner with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column 3 Cap, Southeast Surface – 10"x8"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column 4 Cap, Southwest Surface – 16"x10"x3" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 7: Column 4 Cap, South Surface – 14"x8"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column Tie between Column 1 and Column 2, South Surface – 6"x6"x1-1/2" spall with exposed reinforcing steel with minor section	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column Tie between Column 1 and Column 2, South Surface – 14"x6"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column Tie between Column 1 and Column 2, South Surface – 16"x16"x2-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 7: Column Tie between Column 1 and Column 2, South Surface – 16"x10"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 7: Column Tie between Column 3 and Column 4, Bottom Surface – 12"x6"x1" spall adjacent to Column 4 with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column Tie between Beam 2 and Beam 3, South Surface – 10"x8"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 7: Column Tie between Beam 3 and Beam 4, South Surface – 16"x12"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 7: Column Tie between Beam 3 and Beam 4, South Surface – 7"x4"x1-1/2" spall with exposed reinforcing steel with minor section	Intermediate	1		1.33	1.33	1.33			
Concrete Surface Treatment									
Pier 7: Bent and Columns – Surface Treatment, Surface – .							194		
Total Quantity				34.58	34.58	34.6	194	0.0	0

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
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10/6/2023

REV	BY	DESCRIPTION	DATE

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PIER 7 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	115
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $FILE$ $DATE$

EXAMPLE OF PIER 7 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

PIER 7 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	116
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 1:51:04 PM
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS - PIER 8

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
Pier 8									
Columns and Caps									
Pier 8: Column 2, East Surface - 7" diameter x 1/2" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 3, Bottom Surface - 10"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 4, West Surface - 11"x12"x1-1/2" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 1 Cap, West Surface - 18"x8"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 1 Cap, Southeast Corner Surface - 12"x8"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 1 Cap, East Surface - 10"x8"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 2 Cap, North Surface - 24"x12"x3" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 8: Column 2 Cap, North Surface - 12"x3"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 2 Cap, North Surface - 18"x7"x2" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 2 Cap, Southeast Surface - 18"x10"x2-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 8: Column 2 Cap, Southwest Surface - 12"x9"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 2 Cap, West Surface - (1) 10"x8"x2" spall and (1) 6"x3"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 3 Cap, North Surface - 14"x6"x2" spall at the northeast corner with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 3 Cap, East Surface - 10"x8"x2" spall at the northeast corner with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 3 Cap, South Surface - 22"x9"x1-1/2" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 8: Column 3 Cap, North Surface - 12"x10"x1-1/2" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 4 Cap, North Surface - 16"x6"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 4 Cap, North Surface - 14"x5"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column 4 Cap, South Surface - 20"x8"x1" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 8: Column Tie between Column 1 and Column 2, Bottom Surface - 24"x38"x2" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	7		9.31	9.31	9.31			
Pier 8: Column Tie between Column 1 and Column 2, Bottom Surface - 18"x18"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99	3.99			
Pier 8: Column Tie between Column 1 and Column 2, Bottom Surface - 6" diameter x 1/2" deep spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column Tie between Column 2 and Column 3, Bottom Surface - 4'x2'x2-1/2" spall with exposed reinforcing steel with 1/16" section	Intermediate	8		10.64	10.64	10.64			
Pier 8: Column Tie between Column 2 and Column 3, Bottom Surface - 32"x24"x2-1/2" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	6		7.98	7.98	7.98			
Pier 8: Column Tie between Column 2 and Column 3, Bottom Surface - 24"x18"x2" spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	3		3.99	3.99	3.99			
Pier 8: Column Tie between Column 3 and Column 4, Bottom Surface - 9"x9"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column Tie between Column 3 and Column 4, Bottom Surface - 20"x16"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99	3.99			
Pier 8: Column Tie between Column 3 and Column 4, Bottom Surface - 12" diameter x 1/2" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column Tie between Column 3 and Column 4, Bottom Surface - 20"x24"x3" spall with exposed reinforcing steel with 1/8" section loss.	Intermediate	4		5.32	5.32	5.32			
Pier 8: Column Tie between Column 3 and Column 4, South Surface - 12"x6"x1/2" spall with exposed reinforcing steel with minor section	Intermediate	1		1.33	1.33	1.33			
Pier 8: Column Tie between Beam 3 and Beam 4, North Surface - 5"x6"x1" spall.	Intermediate	1		1.33	1.33	1.33			
Concrete Surface Treatment									
Pier 8: Bent and Columns - Surface Treatment, Surface - .							205		
Total Quantity				82.46	82.46	82.5	205	0.0	0

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
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10/6/2023

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Texas Department of Transportation

PIER 8 REPAIRS

SH 199 AT CLEAR FORK
TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	117
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILEL$

EXAMPLE OF PIER 8 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
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10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

PIER 8 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	118
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 1:51:45 PM
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – PIER 9

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
Pier 9									
Columns and Caps									
Pier 9: Column 1, West Surface – (15) 3" diameter concrete pop outs.	Minor		3	3	3	3			
Pier 9: Column 3, West Surface – 15"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 9: Column 3, West Surface – 12"x7"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 9: Column 4, West Surface – 36"x9"x1" spall with exposed reinforcing steel.	Intermediate	3		3.99	3.99	3.99			
Pier 9: Column 1 Cap, East Surface – 10"x6"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 9: Column 2 Cap, North Surface – 7"x5"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 9: Column 1 Cap between Beam 1 and Beam 2, East Face Surface – 7"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Concrete Surface Treatment									
Pier 9: Bent and Columns – Surface Treatment, Surface – .							228		
Total Quantity				13.64	13.64	13.6	228	0.0	0

SCALE: NTS

STATE OF TEXAS
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PIER 9 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	119
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $FILEL$ $DATE$

EXAMPLE OF PIER 9 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
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PIER 9 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	120
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – PIER 10

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
Pier 10									
Columns and Caps									
Pier 10: Column 2, West Surface – 8" diameter x 2" deep spall.	Intermediate	1		1.33	1.33	1.33			
Pier 10: Column 4, North Surface – 6" diameter x 1" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 10: Column 4, North Surface – 9" diameter x 1" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 10: Column 4, North Surface – 6" diameter x 1" deep spall with exposed reinforcing steel with 1/16" section loss.	Intermediate	1		1.33	1.33	1.33			
Pier 10: Column 3 Cap at Pier 10, Southwest Surface – 12"x8"x1-1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 10: Column Tie between Column 1 and Column 2, North Surface – 14"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 10: Column Tie between Column 1 and Column 2, Bottom Surface – 25"x20"x1/2" spall with exposed reinforcing steel with minor section	Intermediate	4		5.32	5.32	5.32			
Pier 10: Column Tie between Column 3 and Column 4, South Surface – 8" diameter x 1" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 10: Column Tie between Column 3 and Column 4, Bottom Surface – 42"x18"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	6		7.98	7.98	7.98			
Pier 10: Column Tie between Column 3 and Column 4, Bottom Surface – 20"x20"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	3		3.99	3.99	3.99			
Concrete Surface Treatment									
Pier 10: Bent and Columns – Surface Treatment, Surface – .							288		
Total Quantity				26.6	26.6	26.6	288	0.0	0

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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PIER 10 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	121
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $FILE$ $DATE$

EXAMPLE OF PIER 10 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
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10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

PIER 10 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	122
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

TABLE OF REPAIRS – PIER 11

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
Pier 11									
Columns and Caps									
Pier 11: Column 1, South Surface – 9" diameter x 1" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33				
Pier 11: Column 1, East Surface – 13"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33				
Pier 11: Column 2, East Surface – 50"x12"x1-1/2" spall with exposed reinforcing steel.	Intermediate	5		6.65	6.65				
Pier 11: Column 2, South Surface – 8" diameter honeycombing.	Intermediate	1		1.33	1.33				
Pier 11: Column 2, East Surface – 16"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33				
Pier 11: Column 3, West Surface – 16"x10"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66				
Pier 11: Column 4, West Surface – 6"x4"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33				
Pier 11: Column 4, South Surface – 10"x4"x1" spall.	Intermediate	1		1.33	1.33				
Pier 11: Column 4, South Surface – 12"x10"x1" spall.	Intermediate	1		1.33	1.33				
Pier 11: Column 4, South Surface – 8"x8"x1" spall.	Intermediate	1		1.33	1.33				
Pier 11: Column 1 Cap, East Surface – 6"x4"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33				
Pier 11: Column 1 Cap, North Surface – 10"x6"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33				
Pier 11: Column 1 Cap, Southwest Surface – 48"x12"x2" spall with exposed reinforcing steel with minor section loss.	Intermediate	4		5.32	5.32				
Pier 11: Column 4 Cap, South Surface – 16"x4"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Pier 11: Column 4 Cap, East Surface – 14"x4"x1-1/2" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Pier 11: Column 4 Cap, North Surface – 36"x8"x2" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66				
Pier 11: Column Tie between Beam 1 and Beam 2, Bottom Surface – 14"x12"x1/2" spall adjacent to Beam 1 with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66				
Pier 11: Column Tie between Beam 1 and Beam 2, Bottom Surface – 8"x3"x1/2" spall adjacent to Beam 2 with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Pier 11: Column Tie between Beam 2 and Beam 3, Bottom Surface – 8"x2"x1/2" spall adjacent to Beam 2 with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Pier 11: Column Tie between Beam 2 and Beam 3, Bottom Surface – 12"x3"x1/2" spall adjacent to Beam 3 with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Pier 11: Column Tie between Beam 3 and Beam 4, Bottom Surface – 16"x6"x1" spall adjacent to Beam 3 with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Concrete Surface Treatment									
Pier 11: Bent and Columns – Surface Treatment, Arch and Small Column 1 & 2 Included.							1514		
Total Quantity				41.23	41.23	0	1514	0.0	0

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
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REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

PIER 11 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	123
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $DATE$ $FILE$

EXAMPLE OF PIER 11 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

PIER 11 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	124
CONTROL	SECTION NO.	JOB	
0171	05	083	

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TABLE OF REPAIRS – PIER 12

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
Pier 12									
Columns and Caps									
Pier 12: Column 1, East Surface – 20"x10"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66				
Pier 12: Column 1, East Surface – 10" diameter x 1" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33				
Pier 12: Column 1, East Surface – 8" diameter x 1" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33				
Pier 12: Column 3, East Surface – 6" diameter x 1/2" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Pier 12: Column 1, West Surface – 16"x8"x2" spall.	Intermediate	1		1.33	1.33				
Pier 12: Column 3, East Surface – 6" diameter x 1/2" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Pier 12: Column 3, East Surface – 6" diameter x 1/2" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Pier 12: Column 3, East Surface – 10"x12"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Pier 12: Column 3, South Surface – 39"x7"x1" spall with exposed reinforcing steel.	Intermediate	2		2.66	2.66				
Pier 12: Column 3, South Surface – 5"x5"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33				
Pier 12: Column 4, West Surface – 4" diameter x 1/2" deep spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33				
Pier 12: Column 4, South Surface – 10"x8"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33				
Pier 12: Column 4, East Surface – 14"x10"x3" spall adjacent to Beam 4 with exposed reinforcing steel.	Intermediate	1		1.33	1.33				
Pier 12: Column 4 Cap, South Surface – 12"x10"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Pier 12: Column 4 Cap, East Surface – 20"x7"x2" spall adjacent to Beam 4 with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Pier 12: Column Tie between Beam 2 and Beam 3, Bottom Surface – 10"x1"x1/4" spall with exposed reinforcing steel with minor section	Minor		1	1	1				
Pier 12: Column Tie between Beam 2 and Beam 3, North Surface – 8" diameter x 1/2" deep spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Pier 12: Column Tie between Beam 2 and Beam 3, North Surface – 4"x10"x1/2" spall with exposed reinforcing steel with minor section	Intermediate	1		1.33	1.33				
Pier 12: Column Tie between Beam 2 and Beam 3, North Surface – 10" dia x 1/2" deep with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Pier 12: Column Tie between Beam 2 and Beam 3, North Surface – 6" dia x 1/2" deep with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33				
Pier 12: Column Tie between Beam 2 and Beam 3, North Surface – 6"x4"x1/2" spall with exposed reinforcing steel with minor section	Intermediate	1		1.33	1.33				
Pier 12: Column Tie between Beam 3 and Beam 4, Bottom Surface – 1"x12"x1/2" spall adjacent to Beam 4 with exposed reinforcing steel with minor section loss.	Minor		1	1	1				
Concrete Surface Treatment									
Pier 12: Bent and Columns – Surface Treatment, Small Column 3 & 4 Included.							226		
Total Quantity				31.26	31.26	0	226	0.0	0

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER

10/6/2023

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Texas Department of Transportation

PIER 12 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	125
CONTROL	SECTION NO.	JOB	
0171	05	083	

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EXAMPLE OF PIER 12 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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PIER 12 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	126
CONTROL	SECTION NO.	JOB	
0171	05	083	

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TABLE OF REPAIRS – PIER 13

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
Pier 13									
Columns and Caps									
Pier 13: Column 1 Cap, South Surface – 16"x6"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 13: Column 4 Cap, East Surface – 12"x4"x1" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Pier 13: Column Tie between Column 1 and Column 2, Bottom Surface – 16"x16"x2" spall adjacent to Column 2 with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	2.66			
Pier 13: Column Tie between Column 1 and Column 2, Bottom Surface – 12"x4"x1/2" spall adjacent to Column 2 with exposed reinforcing steel.	Intermediate	1		1.33	1.33	1.33			
Concrete Surface Treatment									
Pier 13: Bent and Columns – Surface Treatment, Surface – .							275		
Total Quantity				6.65	6.65	6.7	275	0.0	0

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
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10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

PIER 13 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	127
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $TIME$
Design Filename: $FILEL$ $DATE$

EXAMPLE OF PIER 13 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
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10/6/2023

REV	BY	DESCRIPTION	DATE

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PIER 13 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	128
CONTROL	SECTION NO.	JOB	
0171	05	083	

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TABLE OF REPAIRS - PIER 14

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
Pier 14									
Columns and Caps									
Pier 14: Column 4, East Surface - 23"x3"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	0			
Pier 14: Column 1 Cap, Southeast Surface - 12"x8"x2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	0			
Pier 14: Column 2 Cap, Top Surface - 8"x6"x3" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	0			
Pier 14: Column 3 Cap, East Surface - 4"x2"x1" spall with exposed reinforcing steel.	Minor		1	1	1	0			
Pier 14: Column 3 Cap, North Surface - 17"x10"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	0			
Pier 14: Column 3 Cap, East Surface - 8"x3"x1/2" spall with exposed reinforcing steel.	Intermediate	1		1.33	1.33	0			
Pier 14: Column 4 Cap, West Surface - 8"x5"x1" spall with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	0			
Pier 14: Column Tie between Column 1 and Column 2, Bottom Surface - 12"x5"x1" spall adjacent to Column 1 with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	0			
Pier 14: Column Tie between Column 2 and Column 3, Bottom Surface - 16"x7"x1" spall adjacent to Column 2 with exposed reinforcing steel with minor section loss.	Intermediate	1		1.33	1.33	0			
Pier 14: Column Tie between Column 3 and Column 4, Bottom Surface - 9"x17"x2" spall adjacent to Column 4 with exposed reinforcing steel with minor section loss.	Intermediate	2		2.66	2.66	0			
Concrete Surface Treatment									
Pier 14: Bent and Columns - Surface Treatment, Surface - .							227		
Total Quantity				15.63	15.63	0	227	0.0	0

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
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10/6/2023

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Texas Department of Transportation

PIER 14 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	129
CONTROL	SECTION NO.	JOB	
0171	05	083	

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Design Filename: $DATE$ $FILE$

EXAMPLE OF PIER 14 SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
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10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

PIER 14 REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	130
CONTROL	SECTION NO.	JOB	
0171	05	083	

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TABLE OF REPAIRS – NORTH ABUTMENT

Caption	Spall Size	Damage Area (SF)	Damage Area (SF)	Repair Area (SF)	CONC STR REPAIR (VERTICAL & OVERHEAD) (SF)	CARBON FIBER REINF POLYMER PROTECTION (SF)	PENETRATING CONCRETE SURFACE TREATMENT (SY)	CNC CRCK REPAR(DISCRETE)(ROUT AND SEAL) (LF)	CONC SIDEWALKS (5")
		Intermediate	Minor	Total	0429 6007	0786 6001	0428 6001	0780 6004	0531 6002
North Abutment									
Abutment Wall									
North Abutment: North abutment backwall, South Surface – 36"x24"x4" spall with exposed reinforcing steel.	Intermediate	6		7.98	7.98	0			
Concrete Surface Treatment									
North Abutment: Bent and Columns – Surface Treatment, Surface – .							262		
Total Quantity				7.98	7.98	0	262	0.0	0

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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Texas Department of Transportation

NORTH ABUTMENT REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	131
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: $DATE$ $TIME$
Design Filename: $FILEL$

EXAMPLE OF NORTH ABUTMENT SPALL DAMAGE

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

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Texas Department of Transportation

NORTH ABUTMENT REPAIRS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	132
CONTROL	SECTION NO.	JOB	
0171	05	083	

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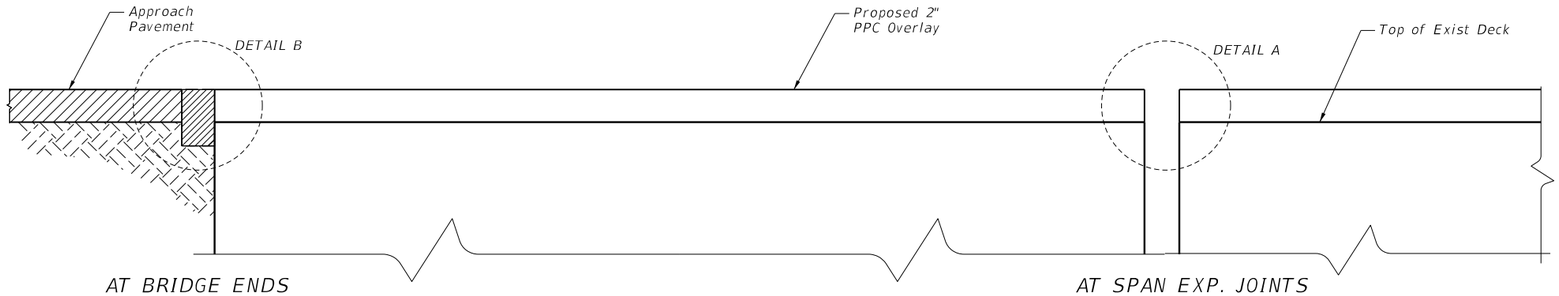
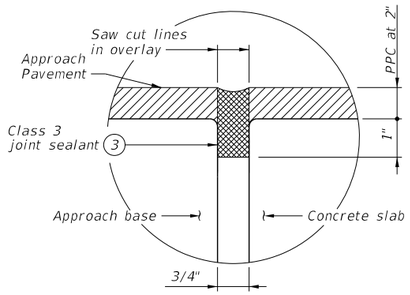


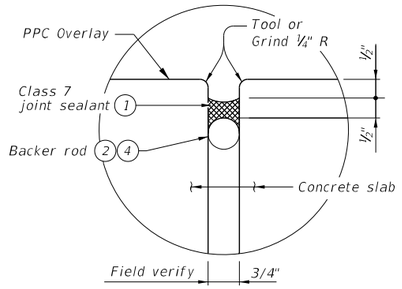
AT BRIDGE ENDS

AT SPAN EXP. JOINTS



DETAIL "B"

at Abutment



DETAIL "A"

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

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

(3) Use Class 3 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers". Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."

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

GENERAL NOTES:

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

Obtain approval for all tools, equipment, materials and techniques proposed to clean and seal the joint.

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

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

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

PROCEDURE FOR CLEANING AND SEALING EXISTING JOINT WITH SILICONE SEAL AT PPC OVERLAY:

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

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

3) Block out joints during PPC overlay placement

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

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

PROCEDURE FOR SEALING JOINT WITH HOT-POURED RUBBER SEAL:

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

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

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

POLYESTER POLYMER CONCRETE (PPC) OVERLAY NOTES:

Perform work in accordance with Special Specification 4106 and below instructions. A technical representative of the overlay manufacturer should be present at the pre-construction meeting and execution of all work associated with the overlay installation.

1. Plane asphalt from bridge deck per Item 354, "Planing and Texturing Pavement." The thickness of the existing ACP is approximately 2 inch.

2. Inspect the bridge deck for any potential deck repairs or delaminated concrete. Perform partial and/or full depth bridge deck repairs in accordance with Item 429, "Concrete Structure Repair" and Chapter 3, Section 4 of TxDOT Concrete Repair Manual. Cure repairs in accordance with Manufacturer's recommendations unless approved otherwise. This work will be paid for in accordance with Item 429, "Concrete Structure Repair."

3. Prepare the deck surface by shot blasting and cleaning with high pressure air. Remove all oil and other contaminants. Provide a surface profile with no less than ¼" deviation. This work is subsidiary to Special Specification 4106.

4. Mask existing joints and deck drains. Saw cutting of joints after overlay installation is prohibited.

5. Install 2 inch Polyester Polymer Concrete Overlay per Special Specification 4106.

6. The Contractor is responsible for the ride quality of the finished surface. See Article 422.4.10, "Defective Work" for acceptance criteria to be enforced for this work.

7. Install pavement markings as shown on plans.

SCALE: NTS

STATE OF TEXAS
JOHN M. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185

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JOINT & OVERLAY DETAILS

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 1

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	133
CONTROL	SECTION NO.	JOB	
0171	05	083	

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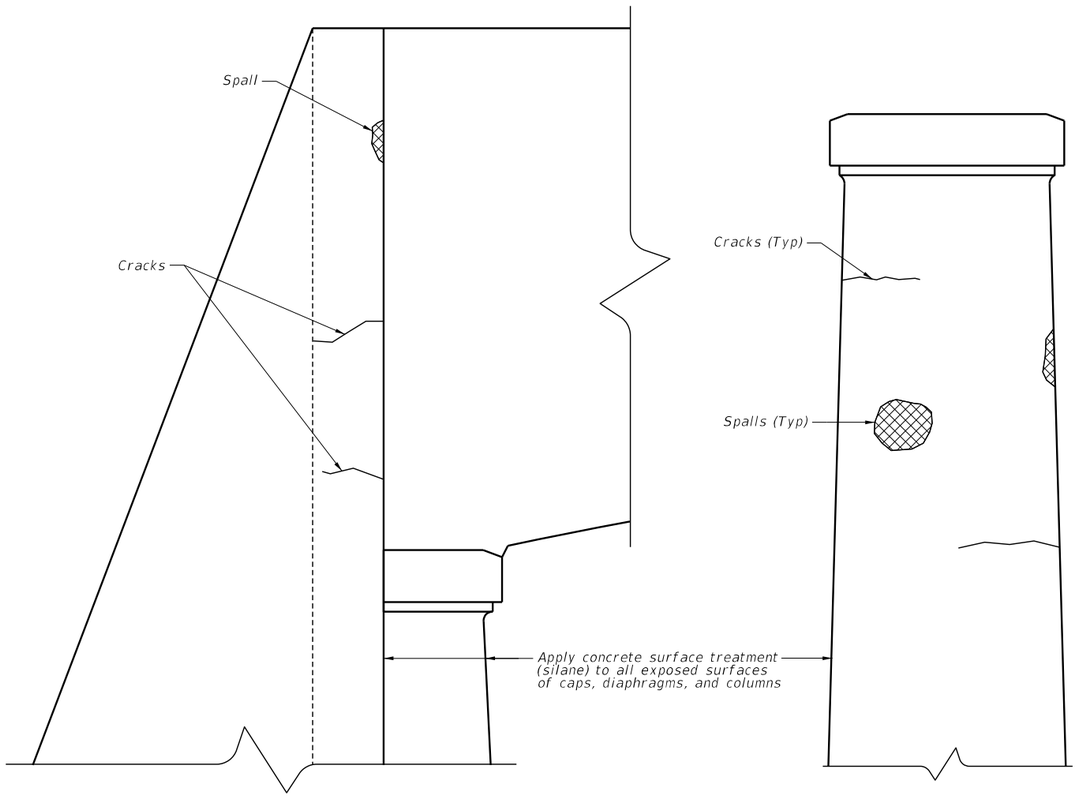
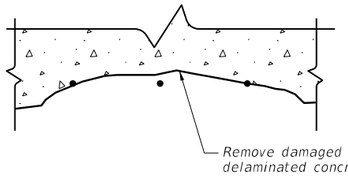


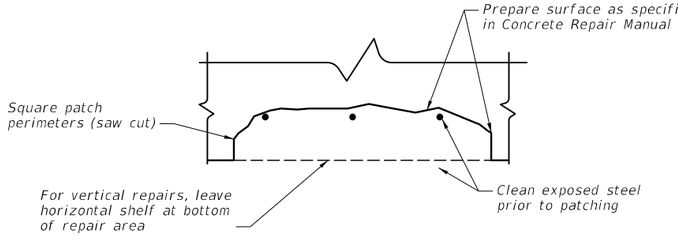
ABUTMENT

PIER

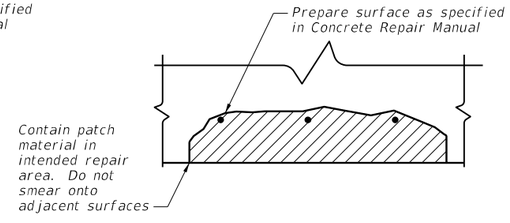
CRACK & EDGE SPALL REPAIR DETAILS



DAMAGED CONDITION



BREAKBACK & PREPARATION



PATCHING

SURFACE SPALL REPAIR DETAILS

SCALE: NTS

STATE OF TEXAS
JOHN W. HOLT
68237
REGISTERED PROFESSIONAL ENGINEER
10/6/2023

REV	BY	DESCRIPTION	DATE

TEXAS P.E. Registration No F-12185
MODJESKI and MASTERS
Experience great bridges.

OMEGA ENGINEERS, INC.
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OMEGAENGINEERS.COM
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Texas Department of Transportation

MISCELLANEOUS REPAIR DETAILS

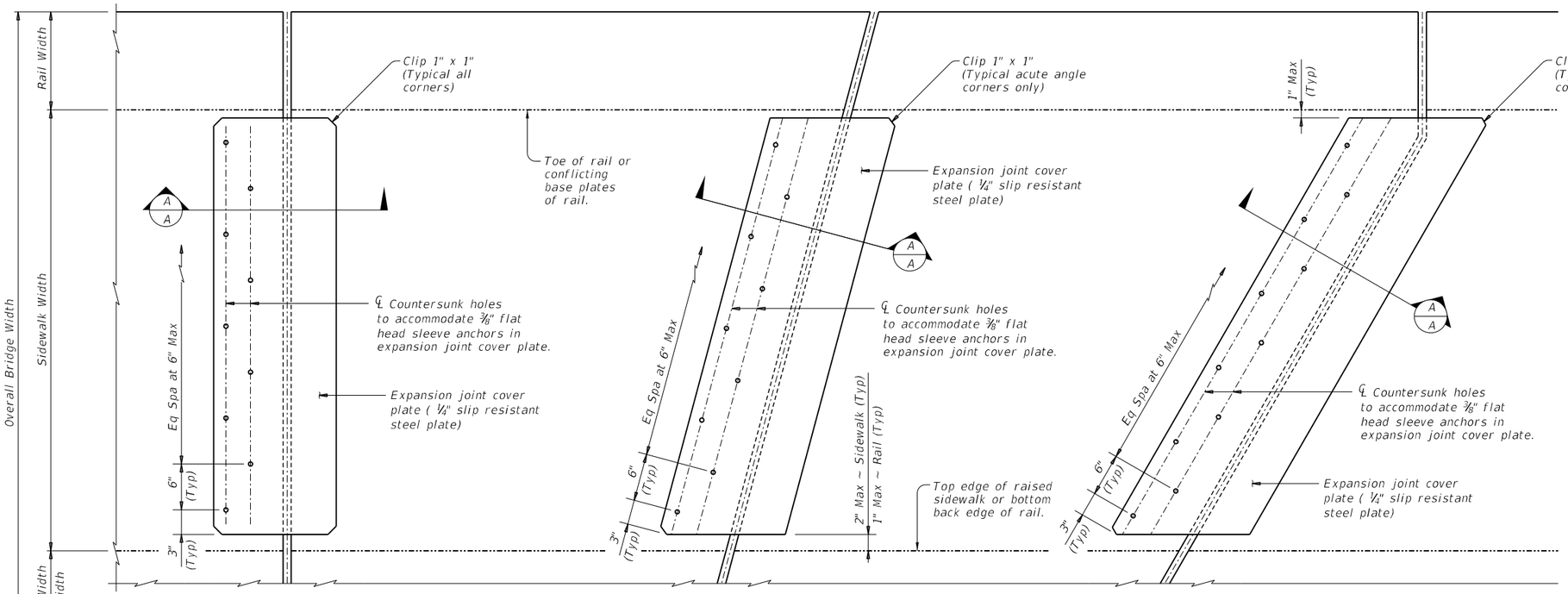
SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

EXISTING NBI NO: 02-220-0-0171-05-018

SHEET 1 OF 1

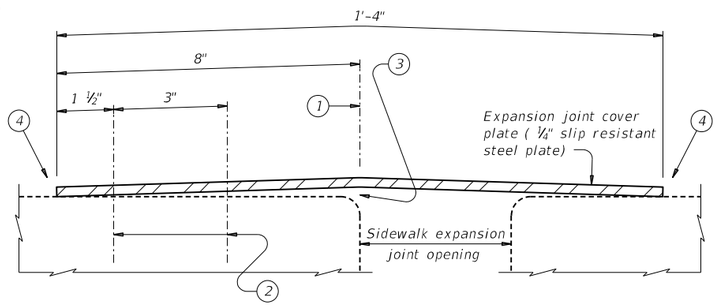
FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	134
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/6/2023 1:56:51 PM
Design Filename: L:\Projects\4526_OMEGA_SH199atTrinityRehab\CADD\Structural\SH 199 Henderson at Trinity\SH199 Bents.dgn

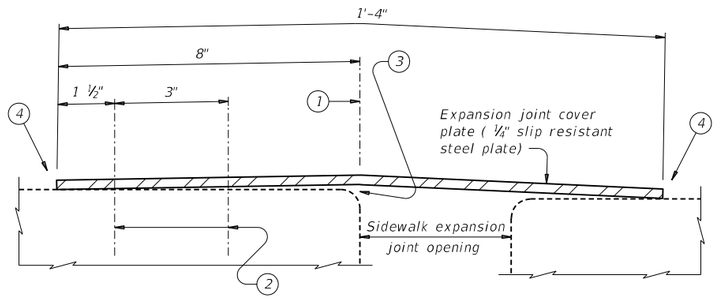


NO SKEW | SKEW WITHOUT SLAB BREAKBACK | SKEW WITH SLAB BREAKBACK

PLAN



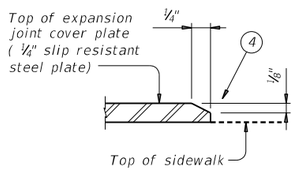
SHOWING LEVEL EXP JOINT



SHOWING UNLEVEL EXP JOINT
(Install sleeve anchors on high side of expansion joint)

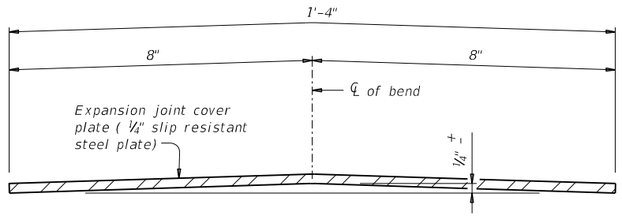
SECTION A-A

1. ℄ Expansion joint cover plate and edge of expansion joint.
2. ℄ ⅜" x 2 ½" Min, Flat Head Sleeve Anchors, Stainless Steel. Countersink Flat Head Sleeve Anchors in ¼" Slip Resistant Steel Plate.
3. It is not necessary to remove plate crown provided the plate is firmly secured to the sidewalk.
4. Transverse edges must be in contact with sidewalk surface after installation.



EXP JOINT COVER PLATE BEVEL DETAIL

Bevel all plate edges as shown.



BENDING DIAGRAM OF EXP JOINT COVER PLATE

APPROVED SLIP RESISTANT PLATE	
Product	Manufacturer Website
Algrip™, Steel	www.algrip.com
Mebac® #3, Steel	www.harscoikg.com
SlipNOT® Grade 2, Steel	www.slipnot.com

Provide cover plates fabricated with a product from this list. No exceptions are permitted.

FABRICATION NOTES:

Shop drawings for the fabrication of Bridge Sidewalk Expansion Joint Cover Plate will not require the Engineer's approval if fabrication is in accordance with the details shown on this standard.

A Bridge Sidewalk Expansion Joint Cover Plate Layout which identifies location side of sleeve anchors and orientation of all cover plate sections must be developed by the fabricator. Mark each steel section in accordance with the Bridge Sidewalk Expansion Joint Cover Plate Layout. A copy of the Bridge Sidewalk Expansion Joint Cover Plate Layout is to be provided to the Engineer.

Sidewalk expansion joint cover plates must be hot-dipped galvanized ¼" slip resistant steel plate. Checker plate or diamond plate is not allowed nor are slip resistant tapes, films and non-metallic coatings.

Minimum required yield strength of steel plate is 36 ksi.

Hot-dip galvanize slip resistant steel plate after fabrication in accordance with Item 445, "Galvanizing".

Provide stainless steel flat head sleeve anchors meeting the requirements of ASTM F 593, Group I, Alloy 304. Countersink holes in slip-resistant plate for sleeve anchors. Drill holes in sidewalk as per sleeve anchor manufacturer's recommendations. Install sleeve anchors flush with, or slightly recessed below, top surface of sidewalk expansion joint cover plate.

GENERAL NOTES:

Sidewalk expansion joint cover plates can only accommodate up to a 7" maximum expansion joint opening.

Details provided are applicable to concrete walkway surfaces only.

Payment for sidewalk expansion joint cover plates are by the pound of "Structural Steel (Misc Non-Bridge)" as per Item 442, "Metal for Structures".

Estimated weight of one sidewalk expansion joint cover plate is 14 plf.

Texas Department of Transportation

Bridge Division Standard

BRIDGE SIDEWALK EXPANSION JOINT COVER PLATE (ALL SKEWS)

BS-EJCP

FILE: bsejste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0171	05	083	SH 199
8-20: Closer tolerances on cover plate.	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		135

DATE: 10/6/2023 1:56:52 PM
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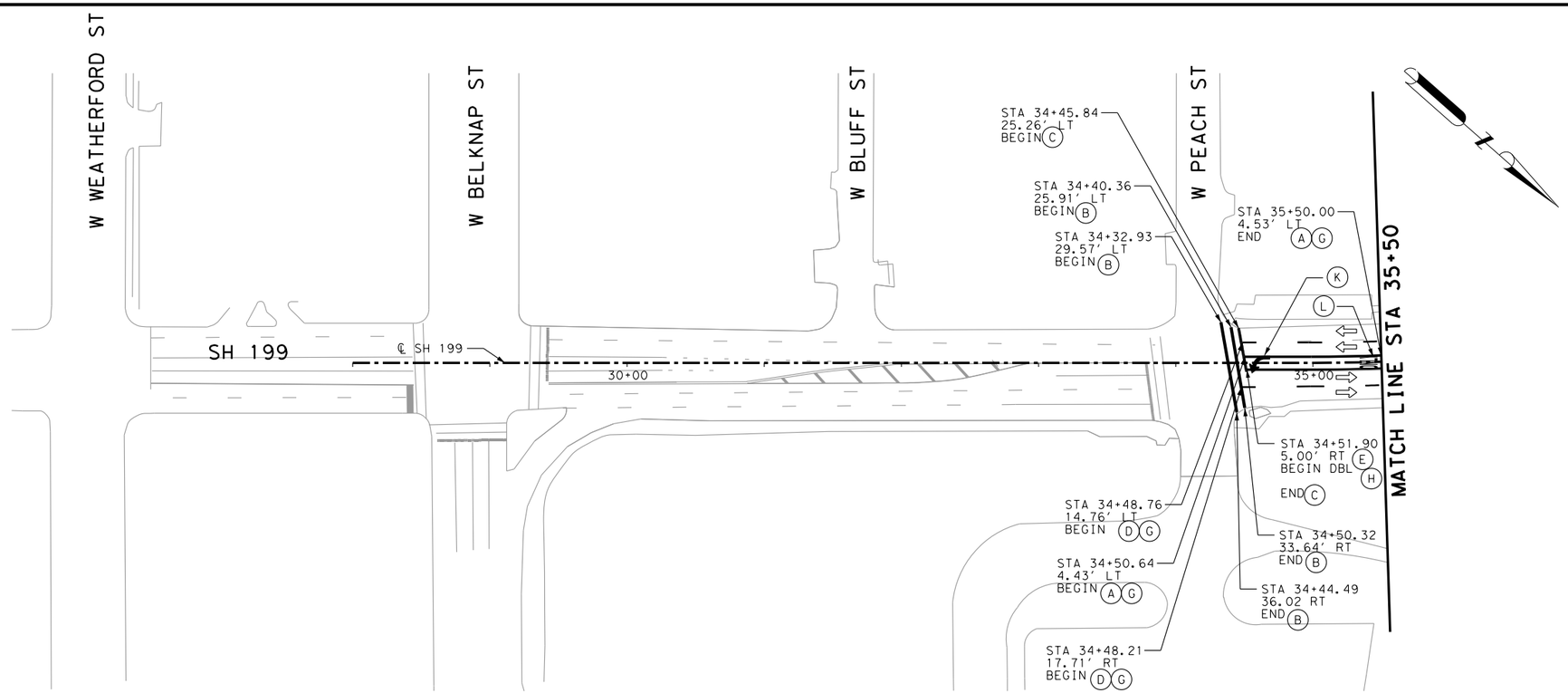

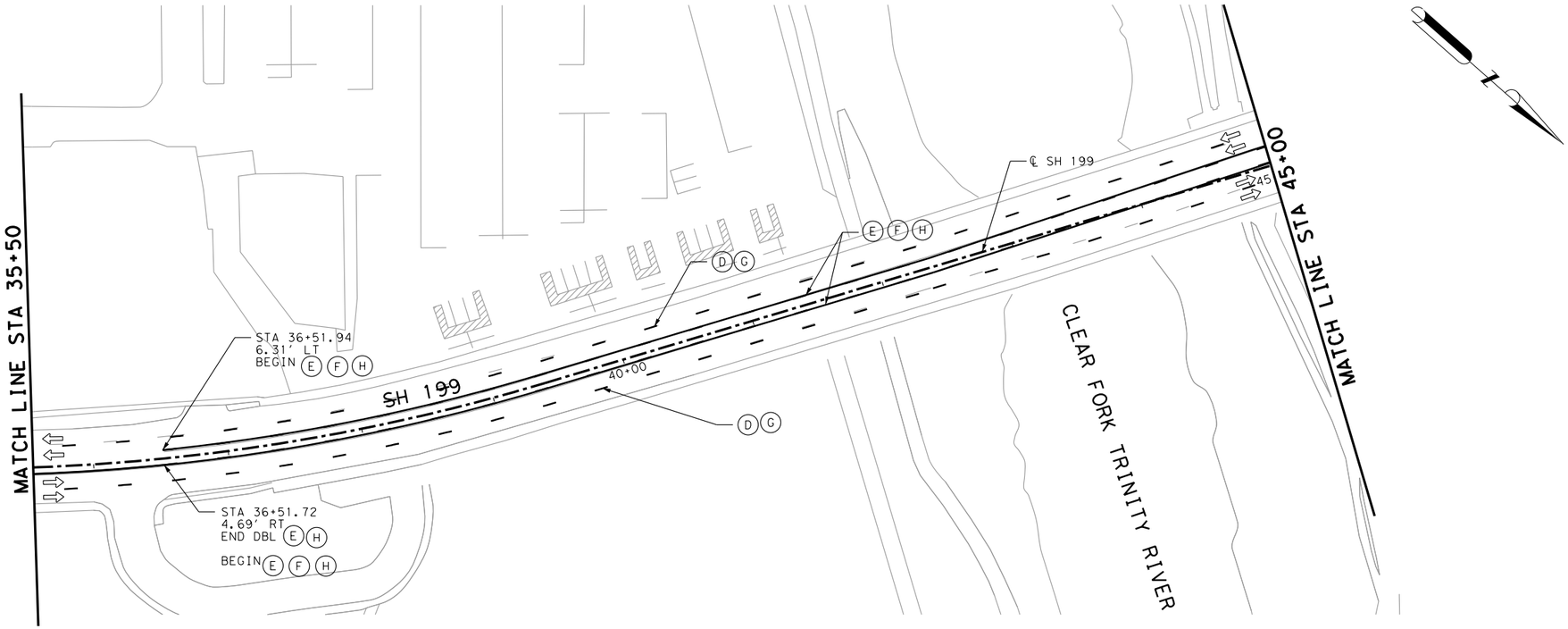

LEGEND

⇦	TRAFFIC FLOW DIRECTIONAL ARROW
(A)	TY II (W)8"(SLD)(100 MIL)
(B)	TY II (W)12"(SLD)(100 MIL)
(C)	TY II (W)24"(SLD)(100 MIL)
(D)	TY II (W)6"(BRK)(100 MIL)
(E)	TY II (Y)6"(SLD)(100 MIL)
(F)	TY II (Y)6"(BRK) (100 MIL)
(G)	TY I-C MRKR
(H)	TY II A-A MRKR
(I)	TY II (W)6" (SLD) (100 MIL)
(J)	TY II (W)8" (DOT) (100 MIL)
(K)	TY II (W)(ARROW) (100 MIL)
(L)	TY II (W)(WORD) (100 MIL)

NOTE:
1. ALL TYPE II STRIPING TO INCLUDE TYPE I STRIPING.
2. PAVEMENT MARKINGS BEGIN AT STA 34+32.93.

0 50' 100'

SCALE: 1" = 100'

STATE OF TEXAS
ALEX I. GARCIA
107317
PROFESSIONAL ENGINEER
LICENSED
10423

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

SIGNING AND PAVEMENT MARKING

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	136
CONTROL	SECTION NO.	JOB	
0171	05	083	

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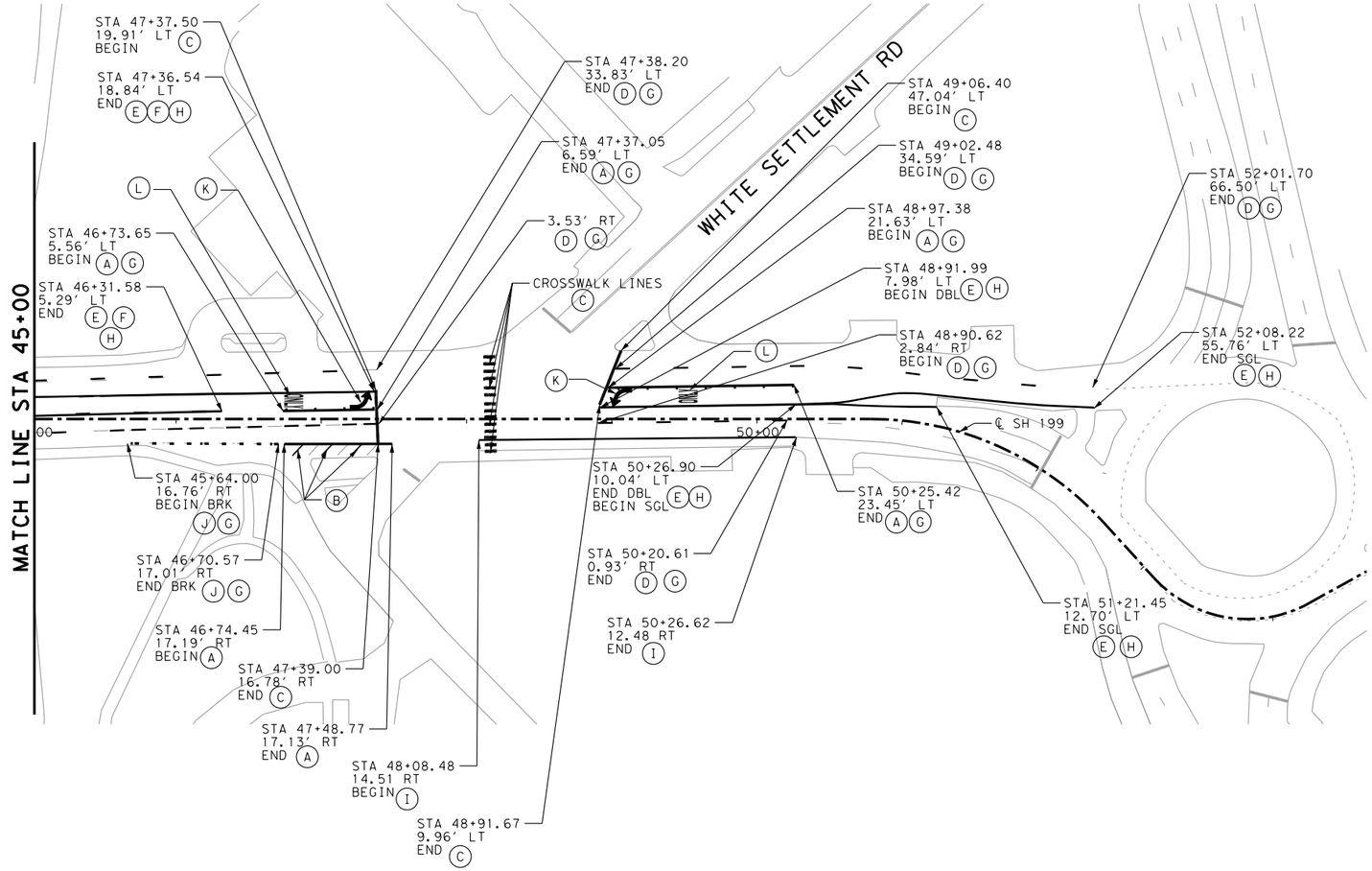

LEGEND

⇦	TRAFFIC FLOW DIRECTIONAL ARROW
A	TY II (W)8"(SLD)(100 MIL)
B	TY II (W)12"(SLD)(100 MIL)
C	TY II (W)24"(SLD)(100 MIL)
D	TY II (W)6"(BRK)(100 MIL)
E	TY II (Y)6"(SLD)(100 MIL)
F	TY II (Y)6"(BRK) (100 MIL)
G	TY I-C MRKR
H	TY II A-A MRKR
I	TY II (W)6" (SLD) (100 MIL)
J	TY II (W)8" (DOT) (100 MIL)
K	TY II (W)(ARROW) (100 MIL)
L	TY II (W)(WORD) (100 MIL)

NOTE:
1. ALL TYPE II STRIPING TO INCLUDE TYPE I STRIPING.
2. PAVEMENT MARKINGS BEGIN AT STA 34+32.93.

0 50' 100'

SCALE: 1" = 100'

STATE OF TEXAS
ALEX I. GARCIA
107317
PROFESSIONAL ENGINEER
LICENSED
10-4-23

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

SIGNING AND PAVEMENT MARKING

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	137
CONTROL	SECTION NO.	JOB	
0171	05	083	

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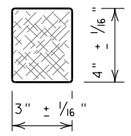
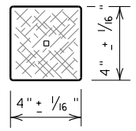
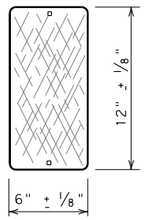
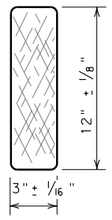
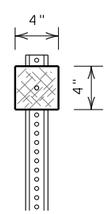
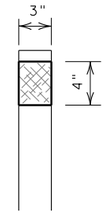
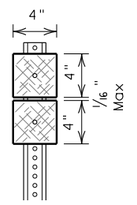
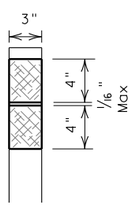
DATE:
FILE:

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX(XX)

NUMBER OF REFLECTORS
S = Single
D = Double

COLOR OF REFLECTORS
W = White
Y = Yellow
R = Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC = Wing Channel Post
YFLX = Yellow Flexible Post
WFLX = White Flexible Post
BRF = Barrier Reflector

TYPE OF MOUNT
GND = Embedded (drivable or set in concrete)
CTB = Concrete Barrier Mount
GF1 or GF2 = Guard Fence Attachment
SRF = Surface Mount

DIRECTION
If Required
BI = Bi-Directional
BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

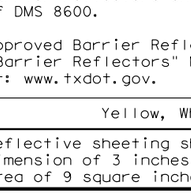
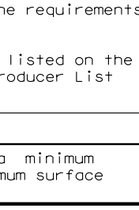
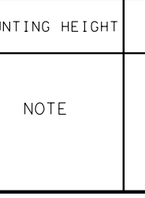
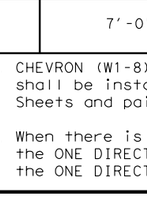
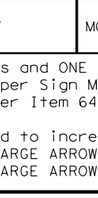
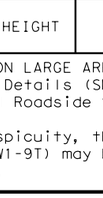
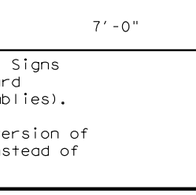
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s)(Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
WFLX = White Flexible Post
TWT = Thin Walled Tubing

TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

DIRECTION
If Required
BI = Bi-Directional

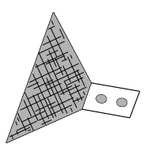
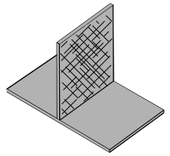
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

DEPARTMENTAL MATERIAL SPECIFICATIONS

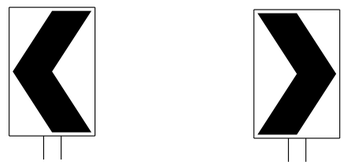
FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

BARRIER REFLECTORS (BRF)

	GF1	GF2	CTB
DEVICE			
	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.		
SHEETING	Yellow, White, Red		
NOTE	1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.		

CHEVRONS

DEVICE



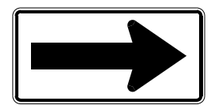
W1-8

SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	

NOTE
1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies).
2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).

ONE DIRECTION LARGE ARROW

DEVICE



W1-6

SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

NOTE:

Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

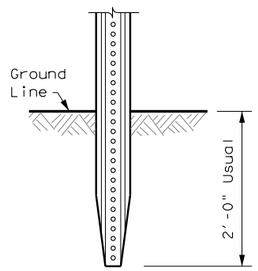
FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	130	SH 199
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	FTW	TARRANT		138

20A

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

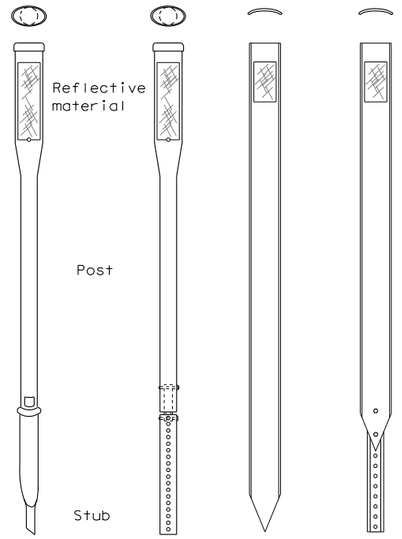


NOTES

1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

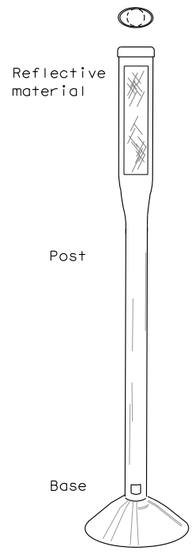
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



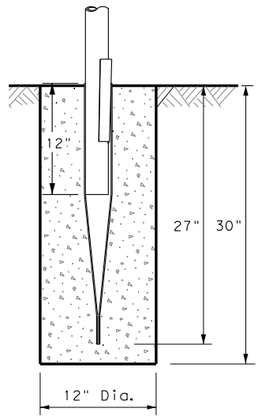
SURFACE MOUNT

NOTES

1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.

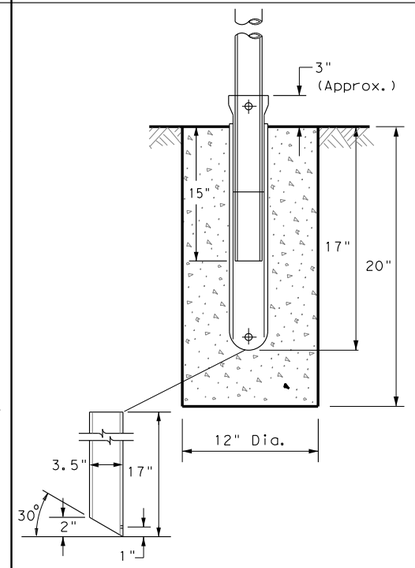
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

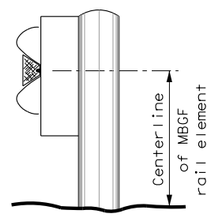
NOTE

1. Install per manufacturer's recommendations.

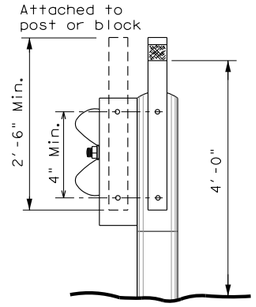
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

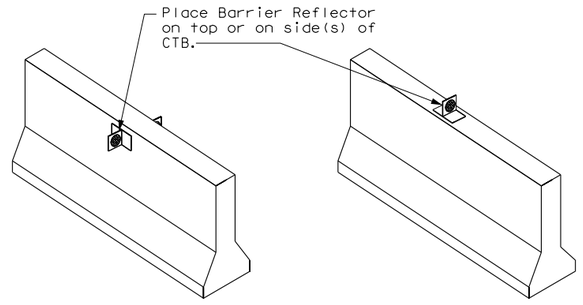
GF1



GF2



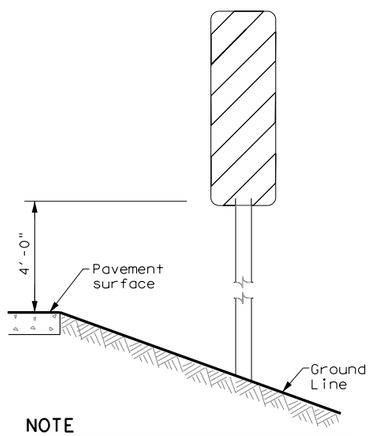
CONCRETE TRAFFIC BARRIER (CTB)



GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

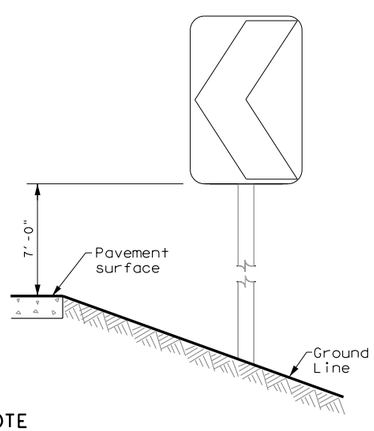
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

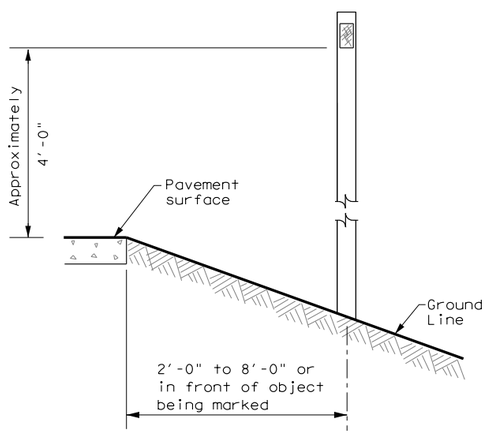
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation

Traffic Safety Division Standard

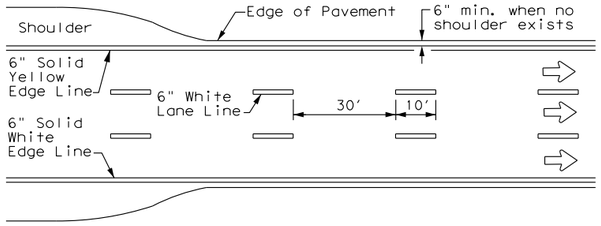
DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

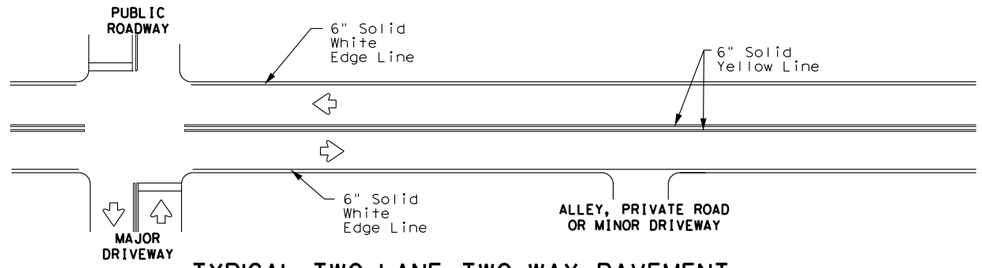
FILE: dom2-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	130	SH 199
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	FTW	TARRANT		139

20B

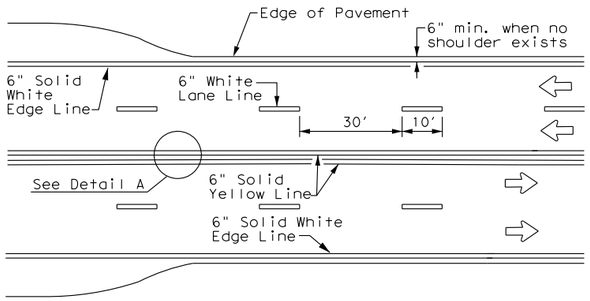
DATE:
FILE:

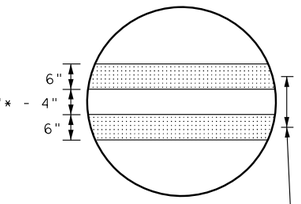


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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





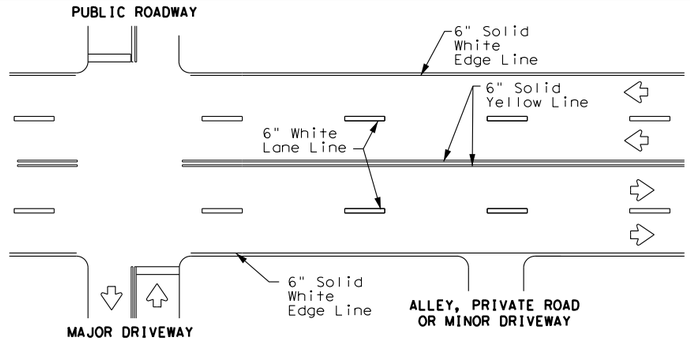
DETAIL "A"

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

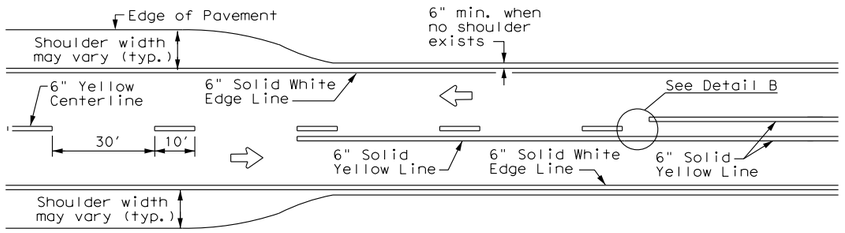
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

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

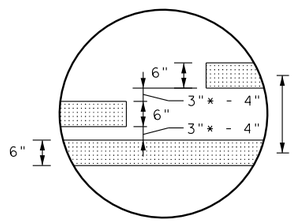
** 8" minimum for restripe projects when approved by the Engineer.



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

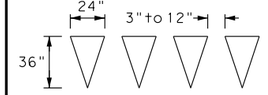


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



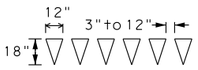
DETAIL "B"

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

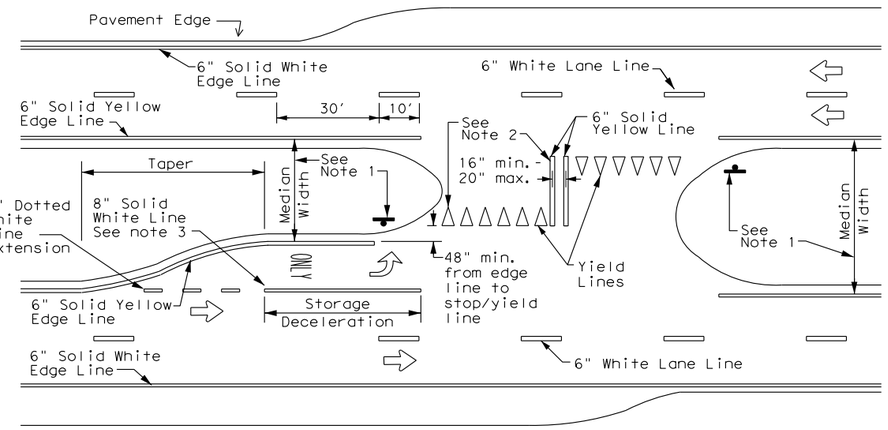


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



For posted speed on road being marked equal to or less than 40 MPH.



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

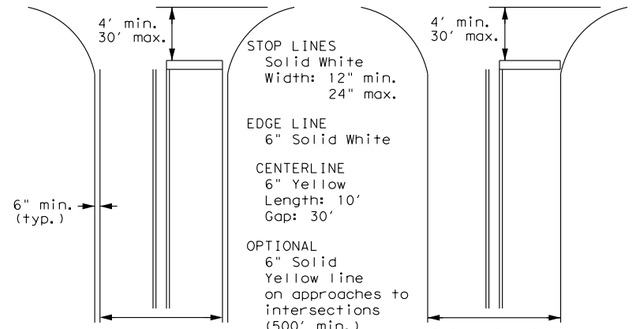
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling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

GENERAL NOTES

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

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

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



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

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

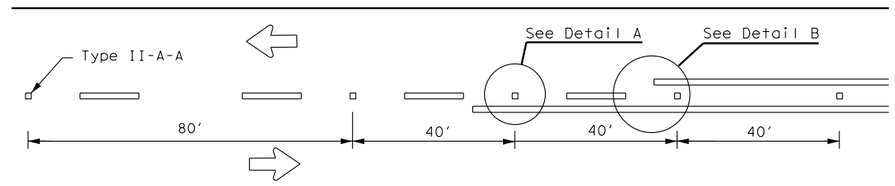
TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

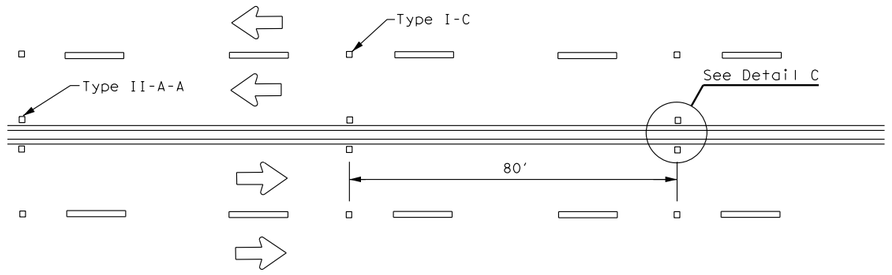
FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20	0171	05	083	SH 199
8-95 3-03 12-22	DIST	COUNTY		SHEET NO.
5-00 2-12	FTW	TARRANT		140

22A

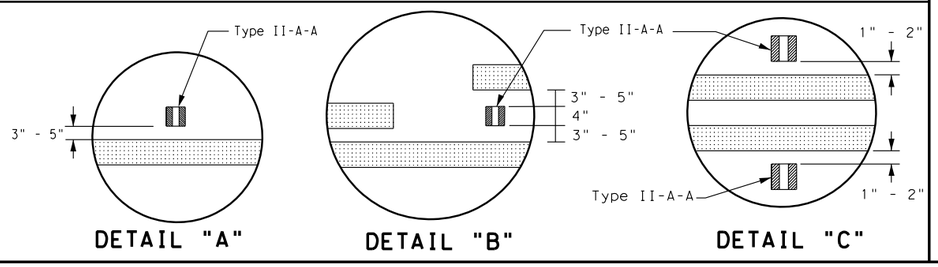
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

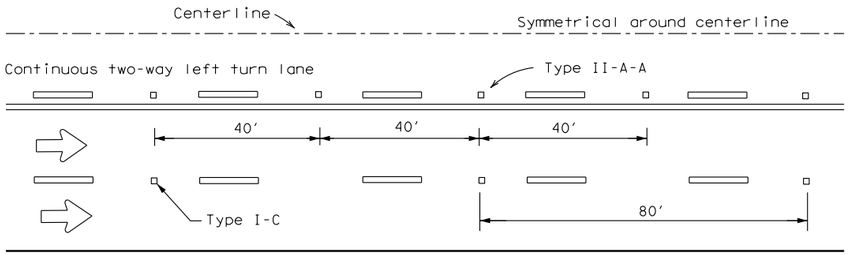


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

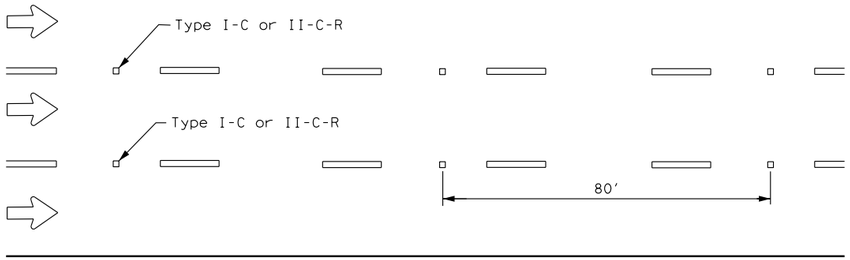


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS





CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



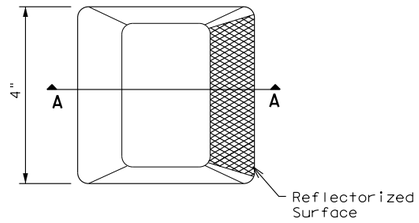
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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

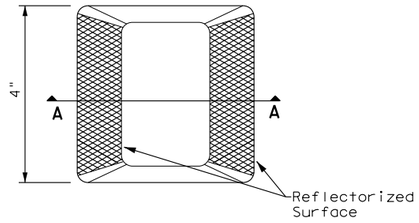
See Note 3.

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

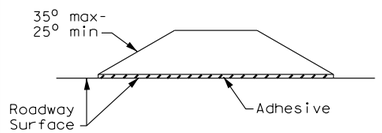
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

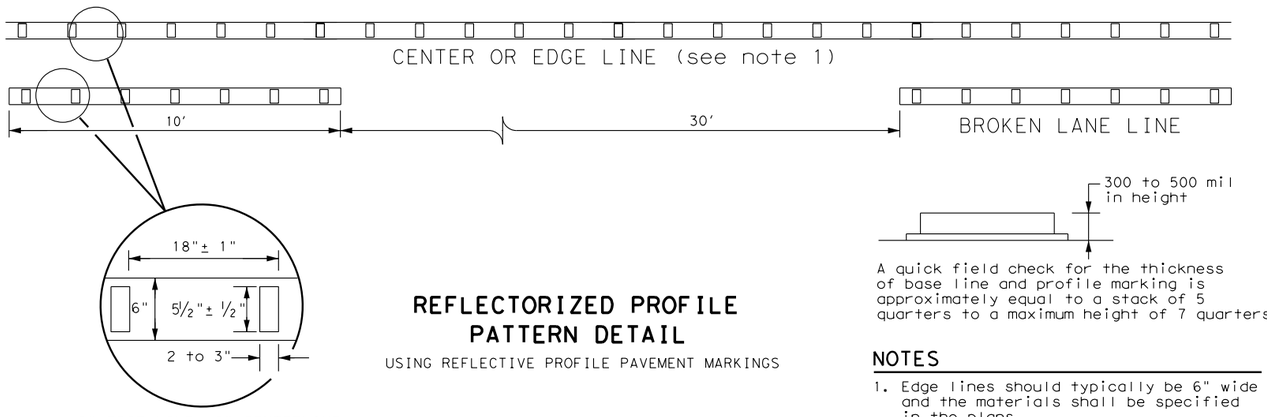


Type II (Top View)



SECTION A

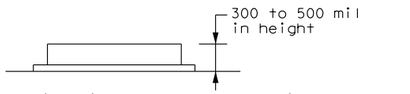
RAISED PAVEMENT MARKERS



6" EDGE LINE, 6" CENTERLINE OR 6" LANE LINE

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS



A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

NOTES

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

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

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-77 8-00 6-20 4-92 2-10 12-22 5-00 2-12	0171	05	083	SH 199
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		141

22B

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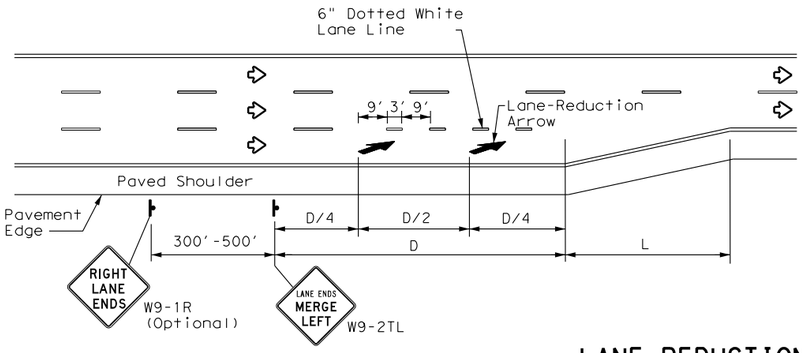


LANE REDUCTION

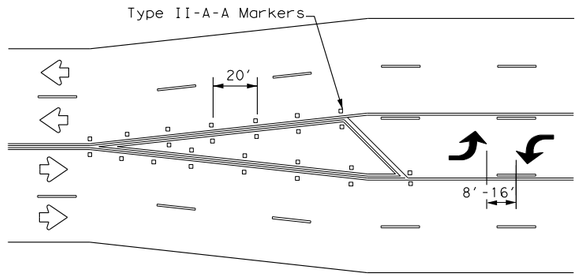
NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

GENERAL NOTES

1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

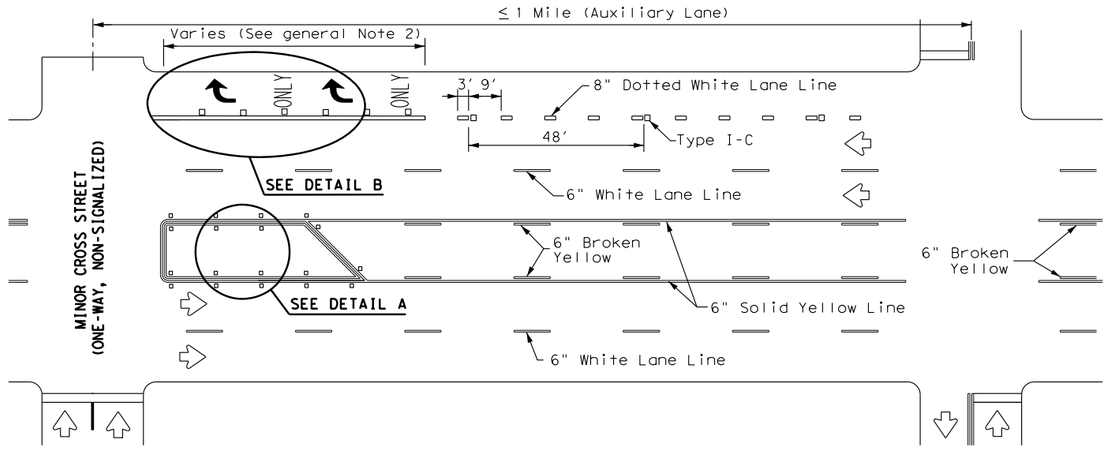


A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

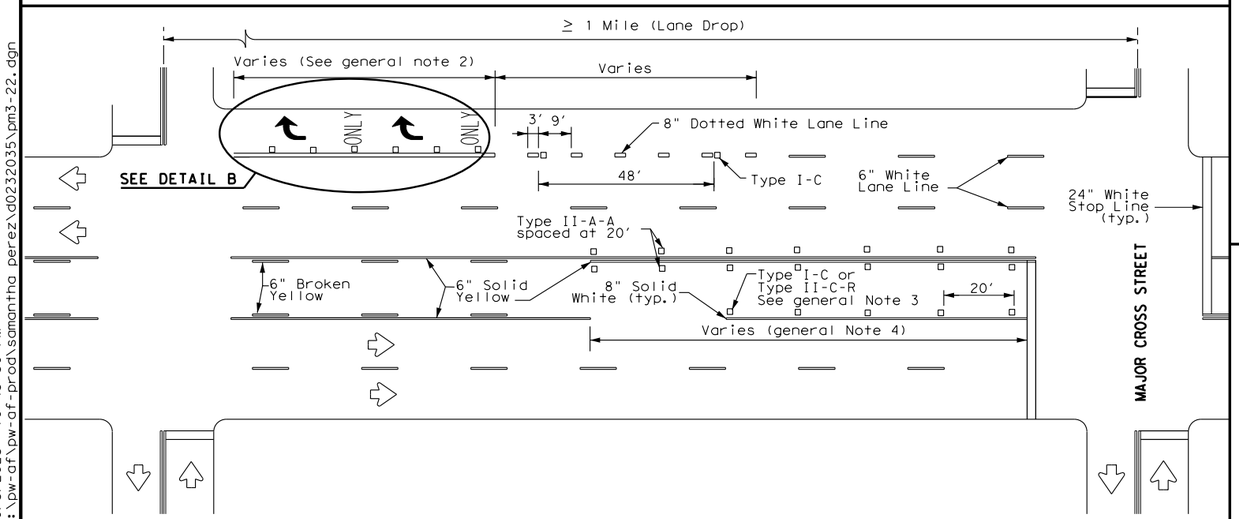
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

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

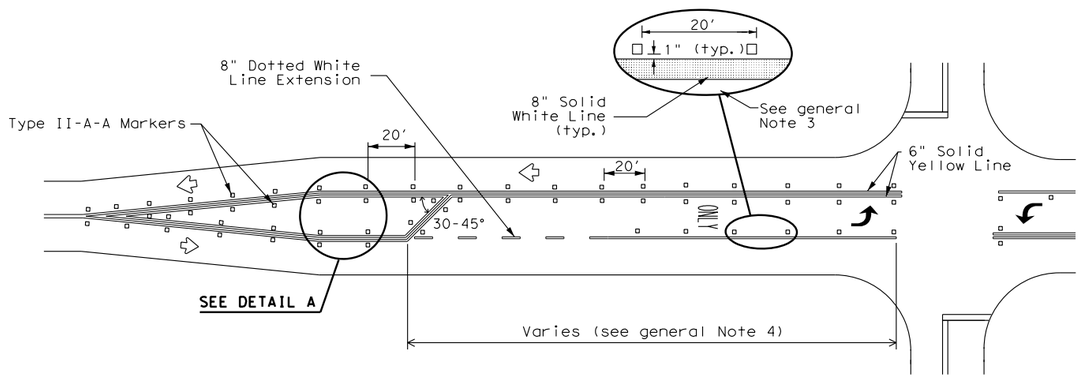
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



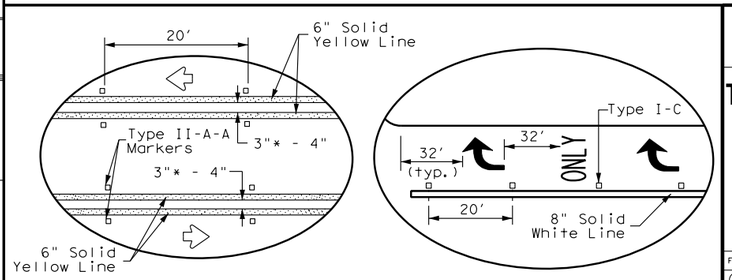
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



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

Texas Department of Transportation

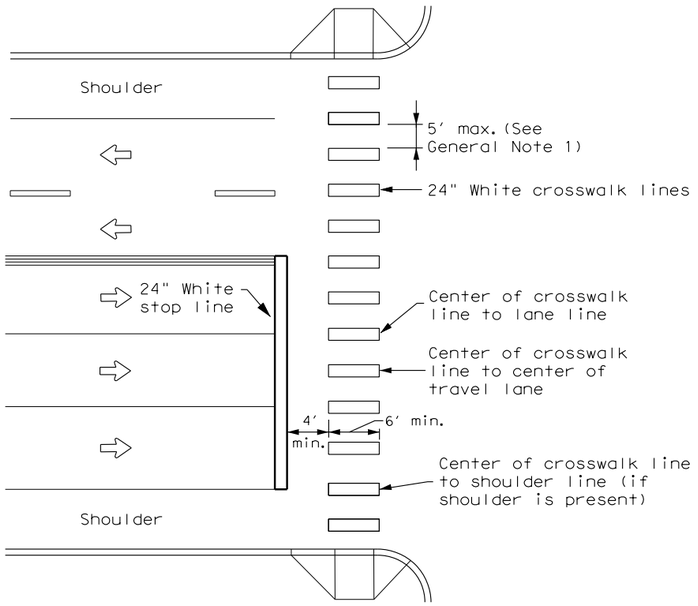
Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS

PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 3-03 6-20 5-00 2-10 12-22 8-00 2-12	0171	05	083	SH 199
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		142

22C



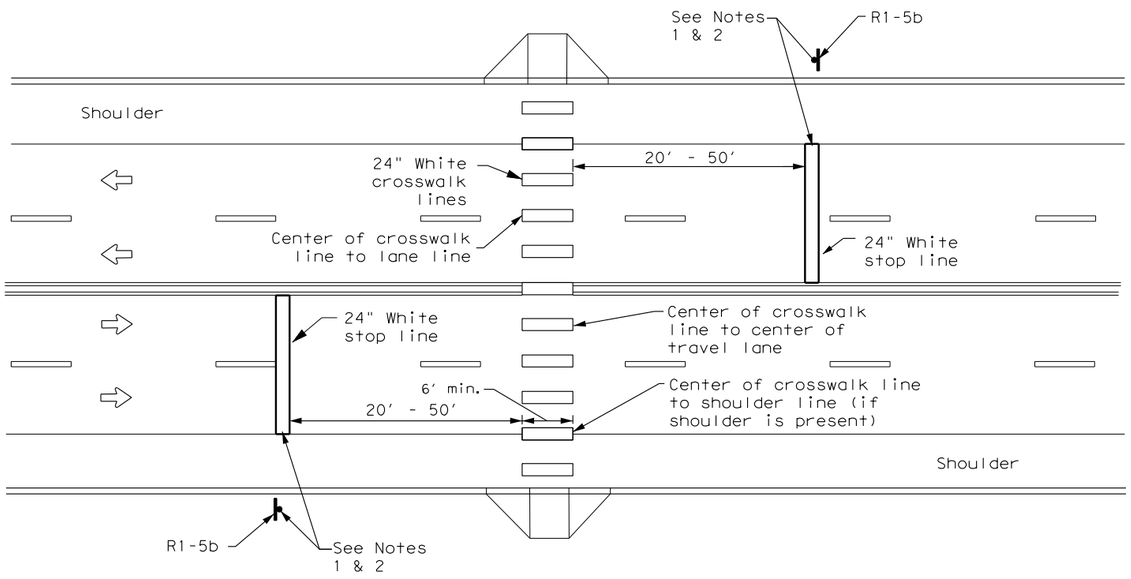
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6′ wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

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

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



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with Stop Here For Pedestrians (R1-5b) signs at unsignalized midblock cross walks.
2. Use stop bars with STOP HERE ON RED (R10-6 or R10-6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

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©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0171	05	083	SH 199
6-20	DIST	COUNTY		SHEET NO.
6-22	FTW	TARRANT		143
12-22				

220

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STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with any soil disturbing activities, TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SWP3 shall be kept in the appropriate TxDOT Area Office.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0171-05-083

1.2 PROJECT LIMITS:
From: At Clear Fork of Trinity River in Fort Worth

To:

1.3 PROJECT COORDINATES:
BEGIN: (Lat) 32°45'24.65" N ,(Long) 97°20'.26.91" W

END: (Lat) 32°45'30.40" N ,(Long) 97°20'.33.92" W

1.4 TOTAL PROJECT AREA (Acres): 1.39 Acres

1.5 TOTAL AREA TO BE DISTURBED (Acres): 1.13 Acres

1.6 NATURE OF CONSTRUCTION ACTIVITY:
BRIDGE AND PAVEMENT REHABILITATION CONSISTING OF STRUCTURE AND PAVEMENT MARKINGS.

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Clayey Soils	Small particle size, highly absorptive, poor drainage.

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

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

Type	Sheet #s

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

1.9 CONSTRUCTION ACTIVITIES:
(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

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

1.10 POTENTIAL POLLUTANTS AND SOURCES:

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

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

Tributaries	Classified Waterbody
Trinity River	River

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

☒ Development of plans and specifications
☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
☒ Post Construction Site Notice
☒ Submit NOI/CSN to local MS4
☒ Perform SWP3 inspections
☒ Maintain SWP3 records and update to reflect daily operations
☒ Complete and submit Notice of Termination to TCEQ
☒ Maintain SWP3 records for 3 years
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

☒ Day To Day Operational Control
☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
☒ Post Construction Site Notice
☒ Submit NOI/CSN to local MS4
☒ Maintain schedule of major construction activities
☒ Install, maintain and modify BMPs
☒ Complete and submit Notice of Termination to TCEQ
☒ Maintain SWP3 records for 3 years
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity
City of Fort Worth

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	BR 2008(909)		144
STATE	STATE DIST.	COUNTY	
TEXAS	FTW	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0171	05	083	SH 199

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☐ X Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- X ☐ Temporary Seeding
- ☐ X 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

- X ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- ☐ ☐ Inlet Protection
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- X ☐ Sediment Control Fence
- X ☐ 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

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- ☐ ☐ Sediment Trap
  - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - ☐ 3,600 cubic feet of storage per acre drained
- ☐ ☐ Sedimentation Basin
  - ☐ Not required (<10 acres disturbed)
  - ☐ Required (>10 acres) and implemented.
    - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - ☐ 3,600 cubic feet of storage per acre drained
  - ☐ Required (>10 acres), but not feasible due to:
    - ☐ Available area/Site geometry
    - ☐ Site slope/Drainage patterns
    - ☐ Site soils/Geotechnical factors
    - ☐ Public safety
    - ☐ Other: _____

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

2.5 POLLUTION PREVENTION MEASURES:

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

2.6 VEGETATED BUFFER ZONES:

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

Type	Stationing	
	From	To

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

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

2.8 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3 .

2.9 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	BR 2008(909)		145
STATE	STATE DIST.	COUNTY	
TEXAS	FTW	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0171	05	083	SH 199

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I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

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

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

1. City of Fort Worth, Municipal Separate Stormwater Sewer System (MS4), Industrial Stormwater Program
2. TxDOT, MS4, Fort Worth District

☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000.
2. Comply with the SWP3 and revise when necessary to control pollution or as required by the Engineer.
3. Post Construction Site Notice (CSN) with SWP3 information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
4. When Contractor project specific locations (PSLs) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

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

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

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

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

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

1. Clear Fork of Trinity River
2.
3.
4.

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

Best Management Practices:

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

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

IV. VEGETATION RESOURCES

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

☐ No Action Required ☒ Required Action

Action No.

1. Efforts shall be taken to avoid and minimize disturbance to vegetation and soils.
2. Refer to Section V for Migratory Bird Treaty Act (MBTA) requirements regarding vegetation.

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

☐ No Action Required ☒ Required Action

See Sheet 2 of 2.

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

LIST OF ABBREVIATIONS

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

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

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

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

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

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

☒ Yes ☐ No

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

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

☐ Yes ☒ No

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

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

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

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

☒ No Action Required ☐ Required Action

Action No.

VII. OTHER ENVIRONMENTAL ISSUES

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

☐ No Action Required ☒ Required Action

Action No.

1. Make every reasonable effort to minimize construction noise and vehicle emissions through abatement measures such as work-hour controls, appropriate maintenance of muffler systems, emissions control devices, limiting unnecessary idling of construction vehicles, and other measures as directed by the engineer.
2. Minimize particulate matter emissions from construction sites by using fugitive dust control measures such as covering or treating disturbed areas with dust suppression techniques, sprinkling, covering loaded trucks, and other dust abatement controls, as appropriate.
3. Mitigation must be provided to prevent debris from all construction activities from entering the Clear Fork of Trinity River below.
4. Any change orders and/or deviations from the final design must be reported to the Engineer prior to commencement of construction activities, as additional environmental clearance may be required.

Texas Department of Transportation — Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

SHEET 1 OF 2

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©TxDOT: February 2015	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0171	05	083		SH 199		
12-12-2011 (DS)	DIST	COUNTY			SHEET NO.		
05-07-14 ADDED NOTE SECTION IV.	FTW	TARRANT			146		
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.							

DATE: 10/5/2023
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1. General Design and Construction BMP:

o Employees and contractors will be provided information prior to start of construction to educate personnel of the potential for all state-listed threatened species or other SGCN to occur within the project area and should be advised of relevant rules and regulations to protect plants, fish, and wildlife.
o Contractors will be informed to avoid harming all wildlife species if encountered and allow them to safely leave the project site. Due diligence should be used to avoid killing or harming any wildlife species in the implementation of transportation projects.
o Direct animals away from the construction area with the judicious use and placement of sediment control fencing to exclude wildlife. Exclusion fence should be buried at least 6 inches and be at least 24 inches high, maintained for the life of the project, and removed after construction is completed. Contractors should examine the inside of the exclusion area daily to determine if any wildlife species have been trapped inside the area of impact and provide safe egress opportunities prior to initiation of construction activities.
o Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas around wetlands and in riparian areas.
o If erosion control blankets or mats will be used, the product should not contain netting, but should only contain loosely woven natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic netting should be avoided.
o Project staging areas, stockpiles, temporary construction easements, and other project related sites should be situated in previously disturbed areas to avoid or minimize impacts to sensitive or unique habitats including intact native vegetation, floodplains, riparian corridors, wetlands, playa lakes, and habitat for wildlife species.
o When lighting is added, consider wildlife impacts from light pollution and incorporating dark-sky practices into design strategies. Minimize sky glow by focusing light downward, with full cutoff luminaries to avoid light emitting above the horizontal. The minimum amount of night-time lighting needed for safety and security should be used.

2. Aquatic Amphibian and Reptile BMP:

o Minimize impacts to wetlands, temporary and permanent open water features, including depressions, and riverine habitats.
o Maintain the existing hydrologic regime and any connections between wetlands and other aquatic features.
o Use barrier fencing to direct animal movements away from construction activities and areas of potential wildlife-vehicle collisions in construction areas directly adjacent, or that may directly impact, potential habitat for the target species.
o Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or re-vegetation of disturbed areas around wetlands and in riparian areas. If erosion control blankets or mats will be used, the product should not contain netting, but should only contain loosely woven natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic netting should be avoided.
o Project specific locations (PSLs) proposed within state-owned ROW should be located in uplands away from aquatic features.
o When work is directly adjacent to the water, minimize impacts to shoreline basking sites (e.g., downed trees, sand bars, exposed bedrock) and refugia/overwinter sites (e.g., brush and debris piles, crayfish burrows, aquatic logjams, and leaf packs).
o If gutters and curbs are part of the roadway design, install gutters that do not include the side box inlet and include sloped (i.e., mountable) curbs to allow small animals to leave roadway. If this modification to the entire curb system is not possible, install sections of sloped curb on either side of the storm water drain for several feet to allow small animals to leave the roadway. Priority areas for these design recommendations are those with nearby wetlands or other aquatic features.

3. Bat BMP:

The following survey and exclusion protocols should be followed prior to commencement of construction activities. For the purposes of this document, structures are defined as bridges, culverts (concrete or metal), wells, and buildings.
* Inform TPWD WHAB during initial collaborative review phase for projects that may impact the following bat species:
    o Any Myotis spp.
    o Tricolored bat (Perimyotis subflavus)
* If identification of a bat species is in question, consult with TPWD or a qualified TxDOT biologist during initial collaborative review phase.
* For activities that have the potential to impact structures, cliffs or caves, or trees; a qualified biologist will perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible or within one year before project letting.
* For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats.
* If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction.
* Exclusion devices can be installed by a qualified individual between September 1 and March 31. Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime temperatures are above 70°F. Prior to exclusion, ensure that alternate roosting habitat is available in the immediate area. If no suitable roosting habitat is available, installation of alternate roosts is recommended to replace the loss of an occupied roost. If alternate roost sites are not provided, bats may seek shelter in other inappropriate sites, such as buildings, in the surrounding area.
* If feature(s) used by bats are removed as a result of construction, replacement structures should incorporate bat-friendly design or artificial roosts should be constructed to replace these features.
* Conversion of property containing cave or cliff features to transportation purposes should be avoided.
* In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.
* Coordinate with TPWD about the latest bat handling restrictions and protocols involving COVID-19 and bat handling. In general, all staff must follow the guidelines listed below:
    o Do not handle bats if not part of a critical or time-sensitive research project. Contact TPWD to discuss your project needs before beginning work.
    o All participants must follow CDC social-distancing guidelines.
    o Wear a face mask to minimize the exchange of respiratory droplets such as a surgical mask, dust mask, or cloth mask when within 6 feet of a living bat.
    o Use disposable exam gloves or other reusable gloves (e.g., rubber dish-washing gloves) that can be decontaminated to prevent spread of pathogens. Do not touch your face or other potentially contaminated surfaces with your gloves prior to handling bats.
    o Limit handling to as few handlers as possible.
    o Do not blow on bats for any reason.
    o Use separate temporary holding containers for each bat such as disposable paper bags.
    o Caves housing bats should be avoided unless absolutely necessary. o Implement additional disinfection, quarantine, and cleaning procedures.
* Bat surveys of structures should include visual inspections of structural fissures (cracked or spalled concrete, damaged or split beams, split or damaged timber railings), crevices (expansion joints, space between parallel beams, spaces above supports piers), and alternative structures (drainage pipes, bolt cavities, open sections between support beams, swallow nests) for the presence of bats.
* Before excluding bats from any occupied structure, bat species, weather, temperature, season, and geographic location must be incorporated into any exclusion plans to avoid unnecessary harm or death to bats. Winter exclusion must entail a survey to confirm either, 1) bats are absent or 2) present but active (i.e., continuously active 13#32 not intermittently active due to arousals from hibernation).
    o Avoid using materials that degrade quickly, like paper, steel wool or rags, to close holes.
    o Avoid using products or making structural modifications that may block natural ventilation, like hanging plastic sheeting over an active roost entrance, thereby altering roost microclimate.
o Avoid using chemical and ultrasonic repellents.
    o Avoid use of silicone, polyurethane or similar non-water-based caulk products.
    o Avoid use of expandable foam products at occupied sites.
    o Avoid the use of flexible netting attached with duct tape.
* In order to avoid entombing bats, exclusion activities should be only implemented by a qualified individual. A qualified individual or company should possess at least the following minimum qualifications:
    o Experience in bat exclusion (the individual, not just the company).
    o Proof of rabies pre-exposure vaccinations.
    o Demonstrated knowledge of the relevant bat species, including maternity season date range and habitat requirements.
    o Demonstrated knowledge of rabies and histoplasmosis in relation to bat roosts.
* Contact TPWD for additional resources and information to assist in executing successful bat exclusions that will avoid unnecessary harm or death in bats.

4. Water Quality BMP:

In addition to BMP required for a TCEQ Storm Water Pollution Prevention Plan and/or 401 Water Quality Certification:
o Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges.
o When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing.
o Wet-Bottomed detention ponds are recommended to benefit wildlife and downstream water quality. Consider potential wildlife-vehicle interactions when siting detention ponds.
o Rubbish found near bridges on TxDOT ROW should be removed and disposed of properly to minimize the risk of pollution. Rubbish does not include brush piles or snags.

5. Depending on where work will occur, Amphibian and Reptile Exclusion Fence will be used as necessary.

6. Bird BMP:

In addition to complying with the Migratory Bird Treaty Act (MBTA) and Chapter 64 of the Parks and Wildlife Code (PWC) regarding nongame bird protections, perform the following BMP:
o Avoid vegetation clearing activities during the general bird nesting season, March through August, to minimize adverse impacts to birds.
o Prior to construction, perform daytime surveys for nests including under bridges and in culverts to determine if they are active before removal. Nests that are active should not be disturbed. If active nests are observed during surveys, TPWD recommends a 150-foot buffer of vegetation remain around the nests until the young have fledged or the nest is abandoned.
o Do not disturb, destroy, or remove active nests, including ground nesting birds, during the nesting season.
o If unoccupied, inactive nests will be removed, ensure that nests are not protected under the Endangered Species Act (ESA), MBTA, or BGEPA.
o Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair.
o Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.
o Minimize extended human presence near nesting birds during construction and maintenance activities. Protect sensitive habitat areas with temporary barriers or fencing to limit human foot-traffic and off-road vehicle use to alert and discourage contractors from causing any unintentional impacts.
o Minimize construction noise above ambient levels during general bird nesting season to minimize adverse impacts on birds.
o Minimize construction lighting during the general bird nesting season by scheduling work activities between dawn and dusk.

7. Terrestrial Amphibian and Reptile BMP:

o For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling
o Avoid or minimize disturbing or removing cover objects, such as downed trees, rotting stumps, brush piles, and leaf litter. If avoidance or minimization is not practicable, consider removing cover objects prior to the start of the project and replace them at project completion.
o Examine heavy equipment stored on site before use, particularly after rain events when reptile and amphibian movements occur more often, to ensure use will not harm individuals that might be seeking temporary refuge.
o Due to increased activity (mating) of reptiles and amphibian during the spring, construction activities like clearing or grading should attempt to be scheduled outside of the spring (March-May) season. Also, timing ground disturbing activities before October when reptiles and amphibians become less active and may be using burrows in the project area is also encouraged.
o When designing roads with curbs, consider using Type I or Type III curbs to provide a gentle slope to enable turtles and small animals to get out of roadways.
o If Texas tortoises (Gopherus berlandieri) or box turtles (Terrepene spp.) are present in a project area, they should be removed from the area and relocated between 100 and 200 meters from the project area. After removal of the individuals, the area that will be disturbed during active construction and project specific locations should be fenced off to exclude reentry by turtles, tortoises, and other reptiles. The exclusion fence should be constructed and maintained as follows:
    o The exclusion fence should be constructed with metal flashing or drift fence material.
    o Rolled erosion control mesh material should not be used.
    o The exclusion fence should be buried at least 6 inches deep and be at least 24 inches high.
    o The exclusion fence should be maintained for the life of the project and only removed after the construction is completed and the disturbed site has been revegetated.
o After project is complete, revegetate disturbed areas with an appropriate locally sourced native seed mix. If erosion control blankets or mats will be used, the product should not contain netting, but should only contain loosely woven natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic netting should be avoided.

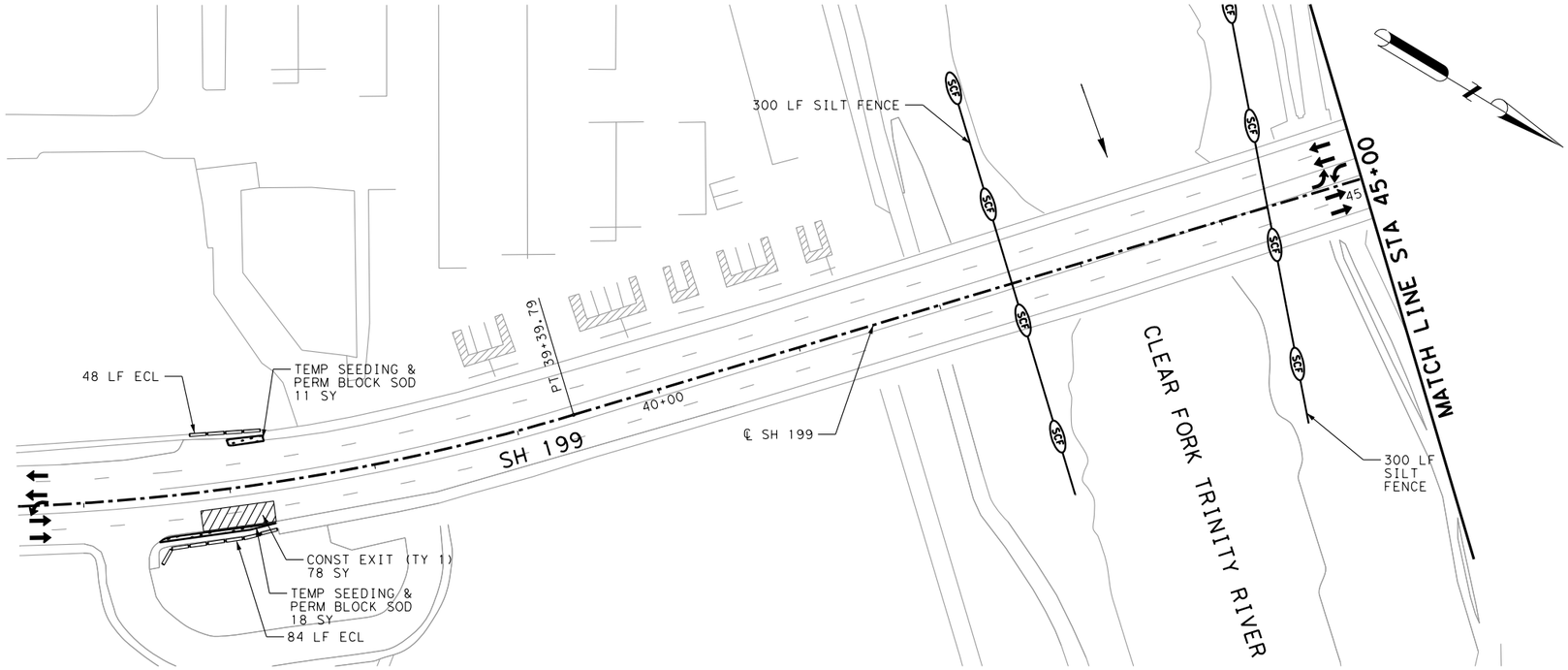
Texas Department of Transportation

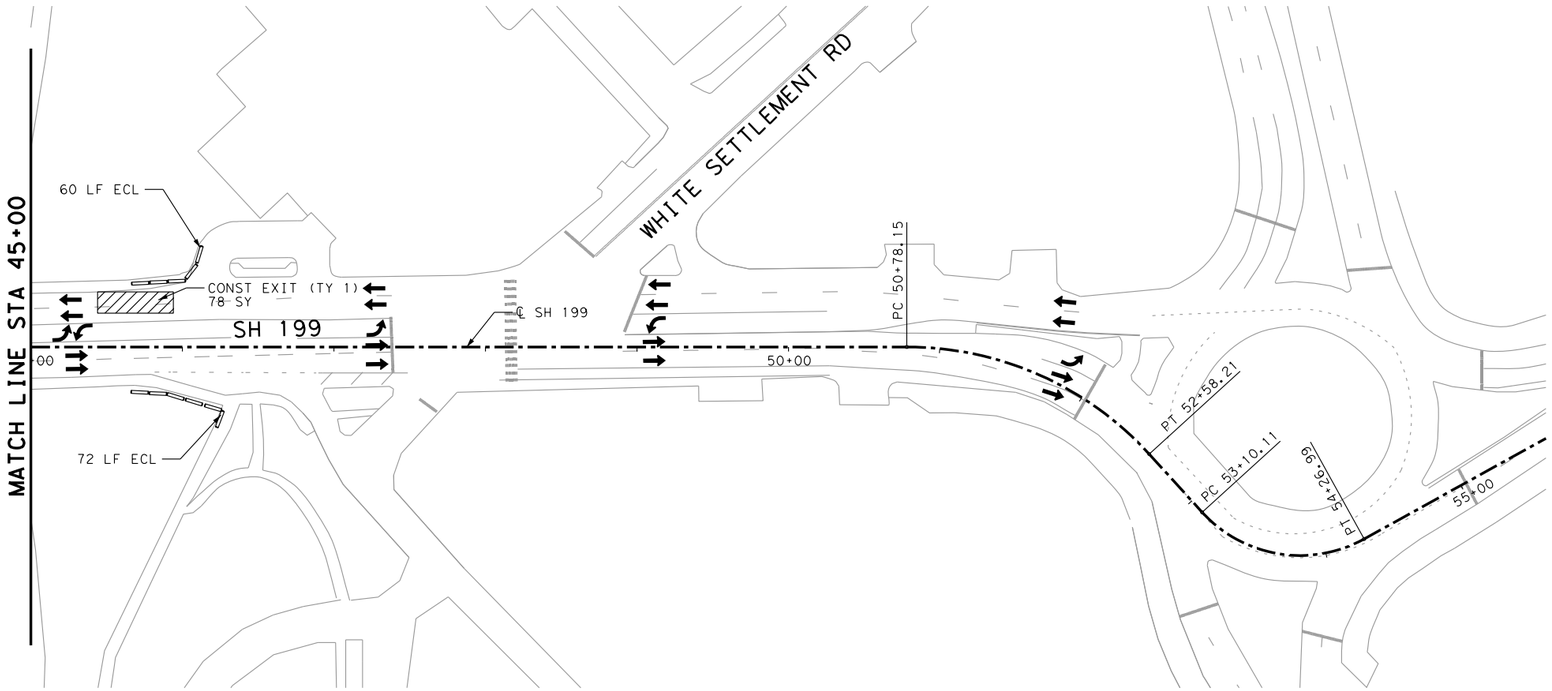
Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR
	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-12-2011 (DS) 05-07-14 ADDED NOTE SECTION IV. 01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	0171	05	083	SH 199
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		147





LEGEND

- BLOCK SOD
- TRAFFIC DIRECTION
- DIRECTION OF FLOW
- BIODEG EROSN CONT LOGS
- SCF — SILT FENCE
- CONSTRUCTION EXIT

NOTES:

1. SILT FENCES MUST BE PLACED UNDER THE BRIDGE.

0 50′ 100′

SCALE: 1" = 100′

STATE OF TEXAS
ALEX I. GARCIA
107317
PROFESSIONAL LICENSED ENGINEER

10423

REV	BY	DESCRIPTION	DATE

AGUIRRE & FIELDS
ENGINEERING INNOVATORS
TBPE FIRM REGISTRATION #739

Texas Department of Transportation

STORMWATER POLLUTION PREVENTION PLAN

SH 199 AT CLEAR FORK TRINITY RIVER BRIDGE REHAB

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	BR 2008(909)		SH 199
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	148
CONTROL	SECTION NO.	JOB	
0171	05	083	

Plotted on: 10/3/2023 11:12:48 PM
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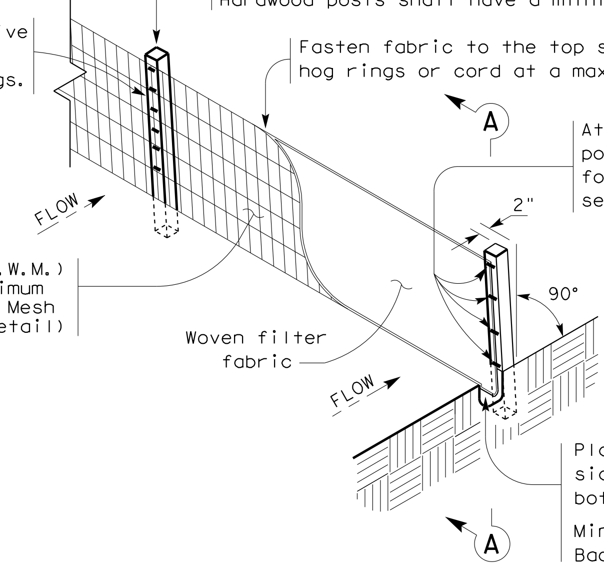
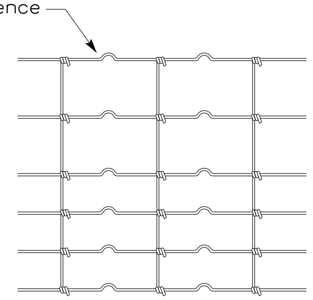


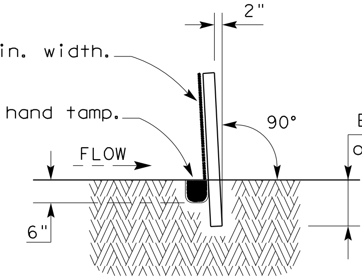
TEMPORARY SEDIMENT CONTROL FENCE

SCF



HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.



SECTION A-A

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

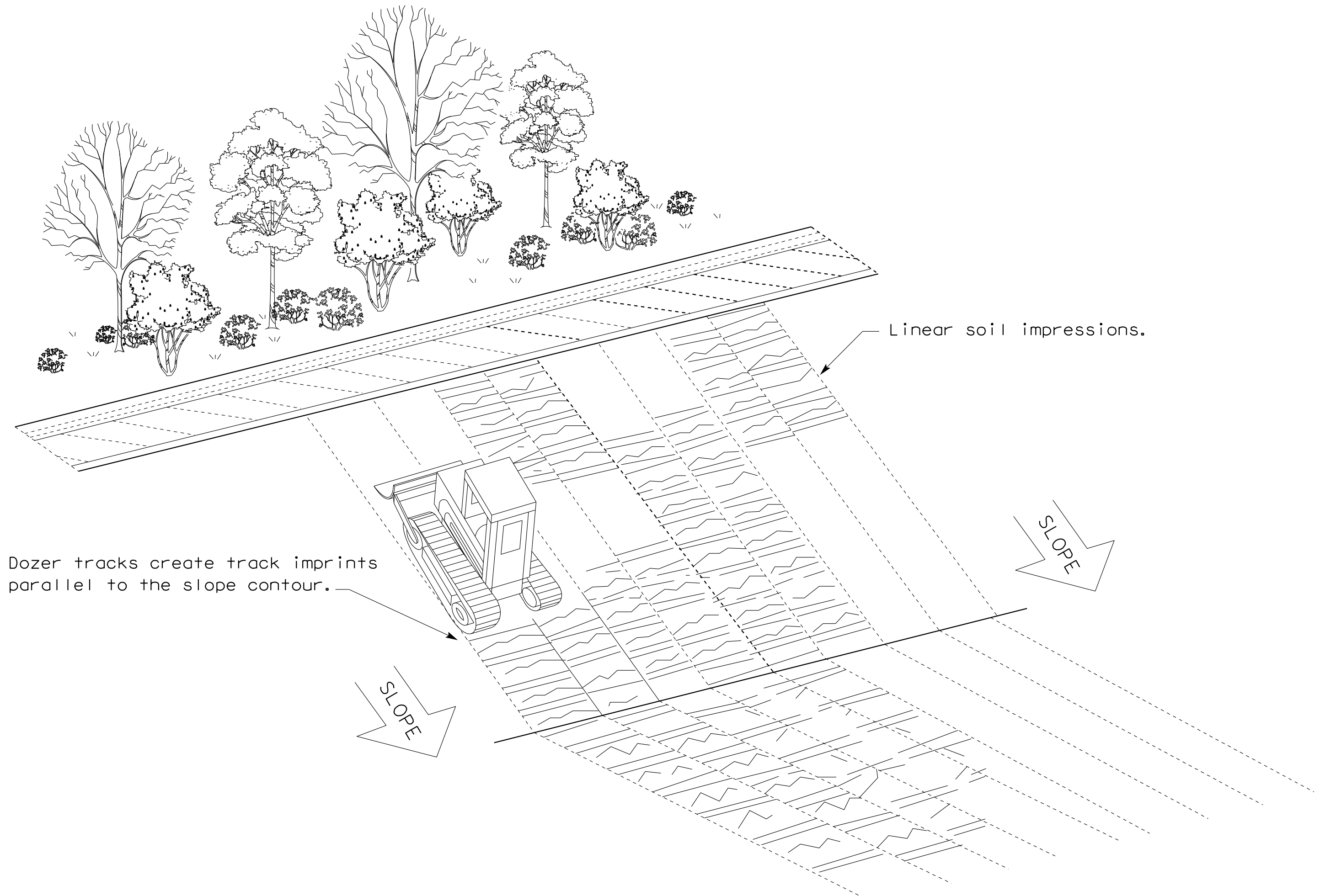
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0171	05	083	SH 199
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		149

pw-af\pw-af-prod\samantha perez\d0232039\ec116.dgn

DATE: 10/3/2023
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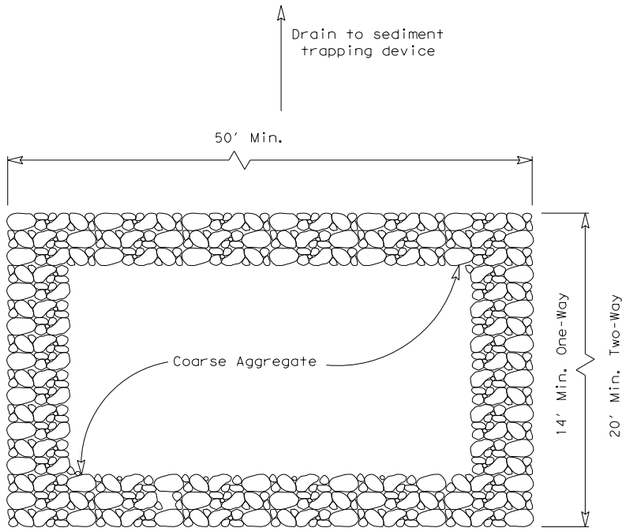
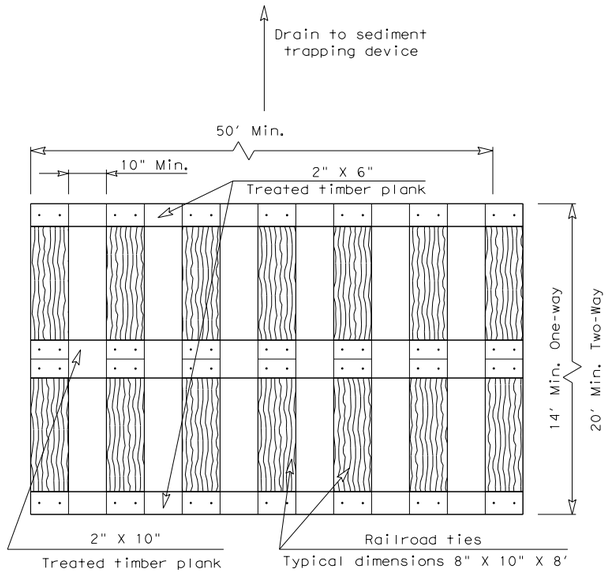


PLAN VIEW



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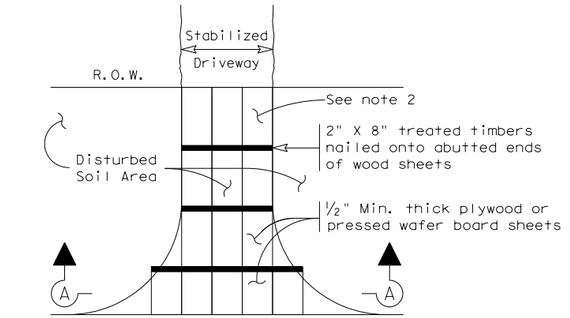

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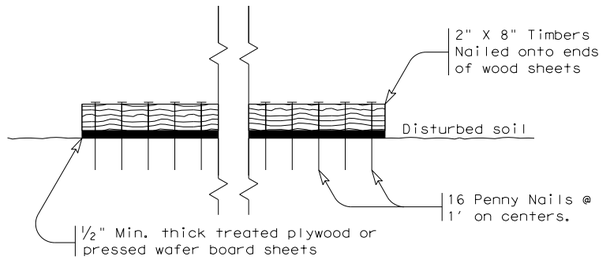
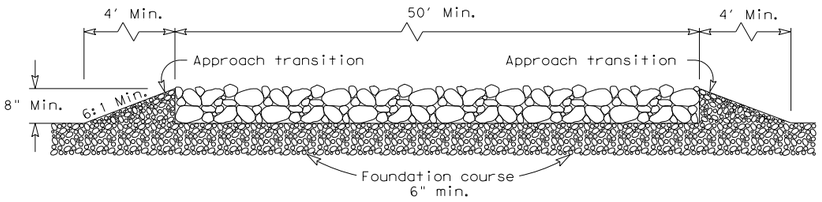


SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

SHORT TERM



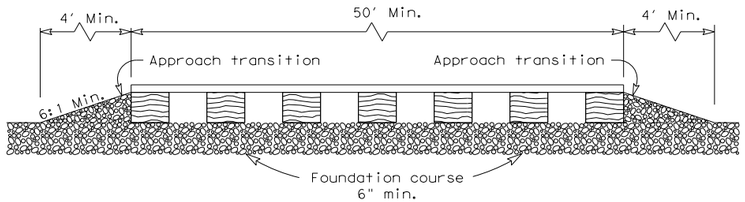
ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50′.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50′.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
	CONT	SECT	JOB	HIGHWAY
REVISIONS	0171	05	083	SH 199
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		150

DATE: 10/3/2023
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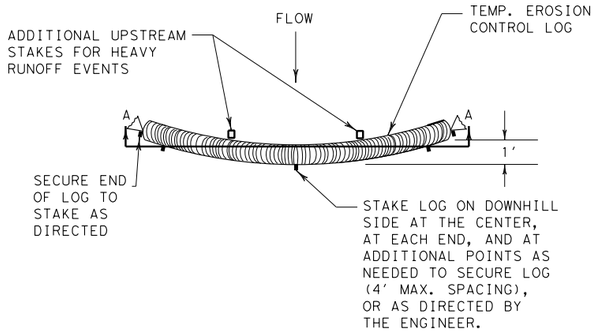
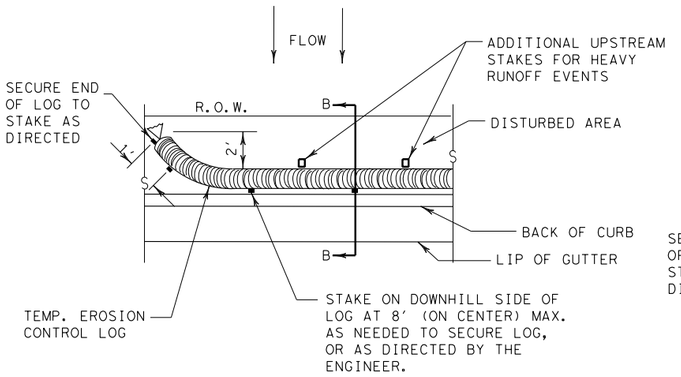


PLAN VIEW



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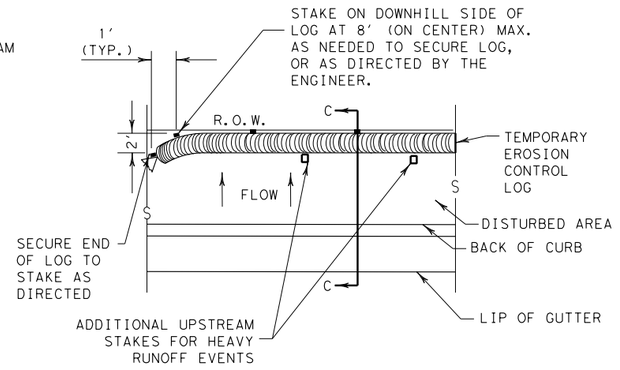

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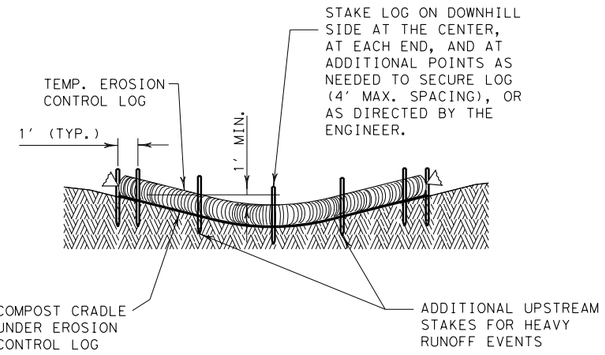
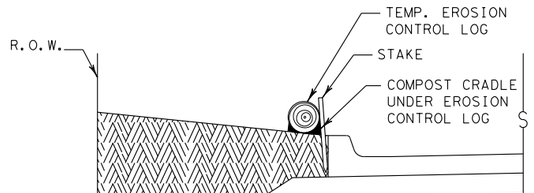


SECTION A-A

EROSION CONTROL LOG DAM

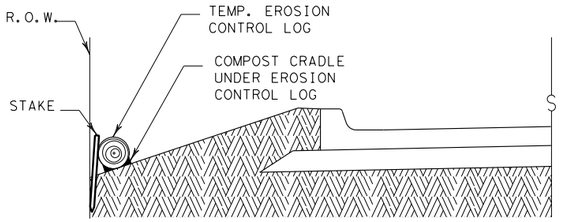
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

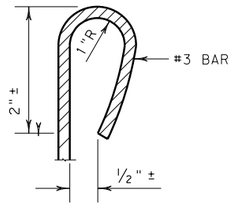
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

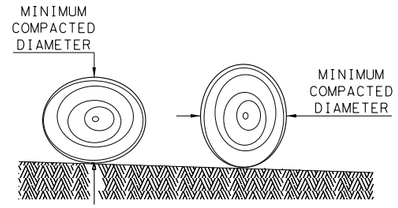
Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
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	FTW	TARRANT		151

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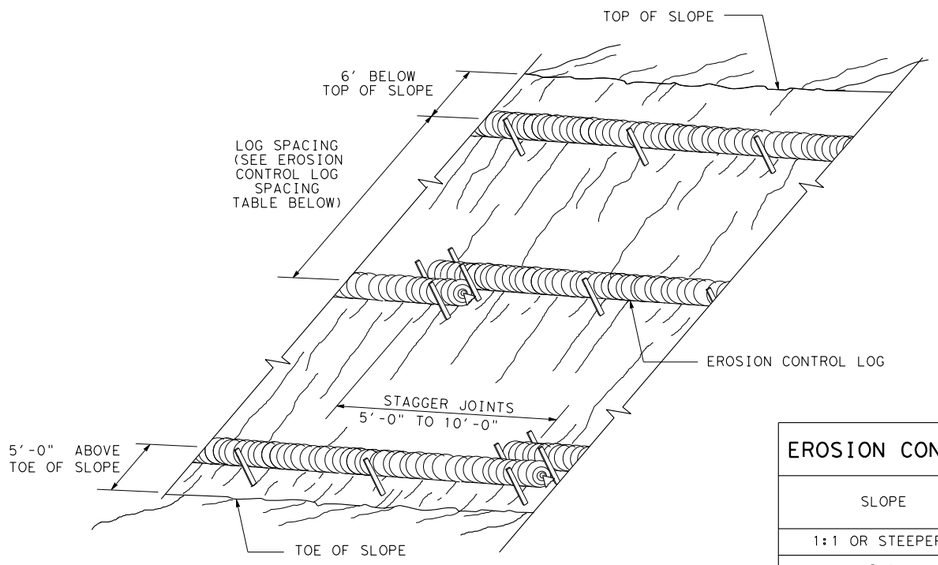
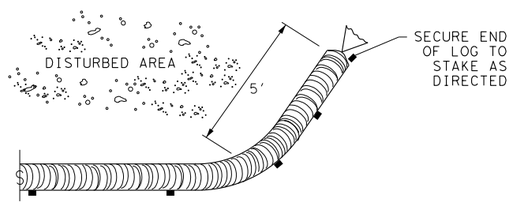


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

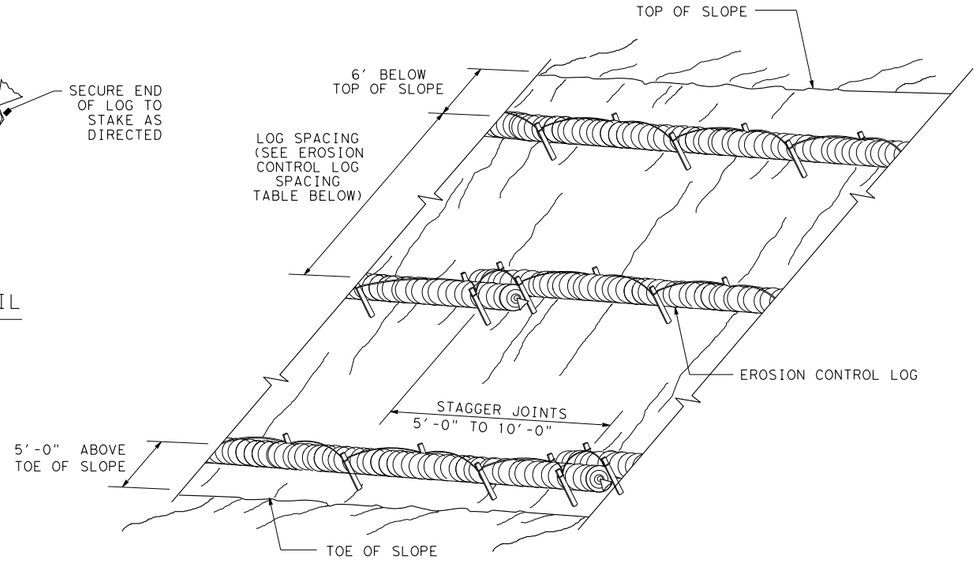
CL-SST



END SECTION RAP DETAIL

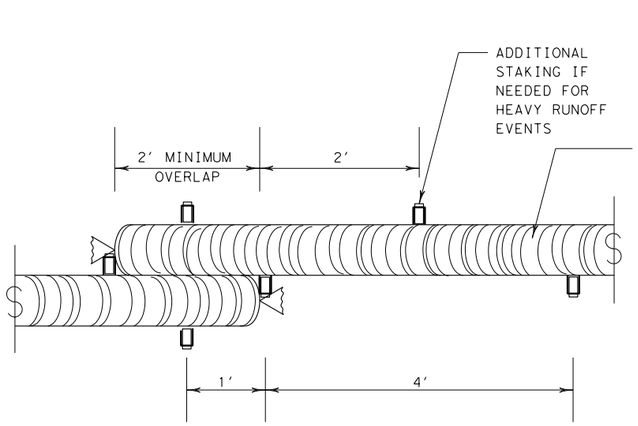
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

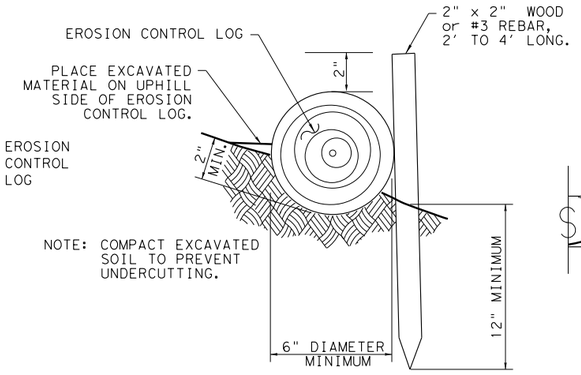
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

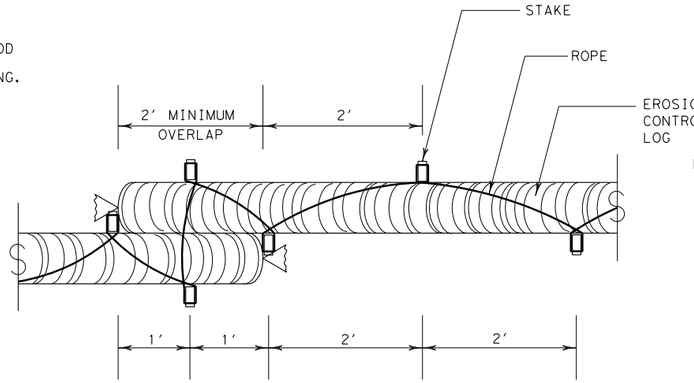


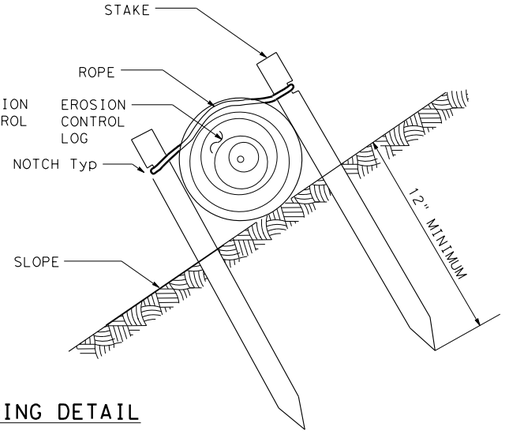


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

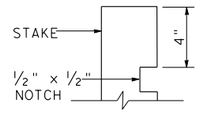
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



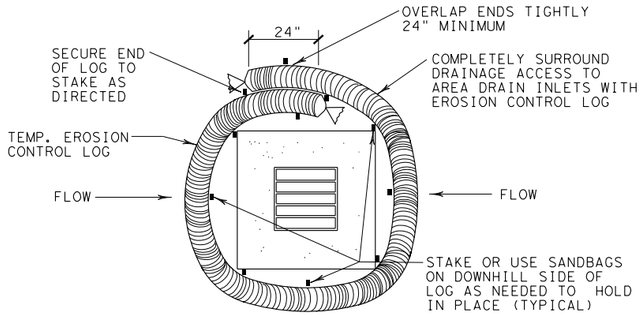
STAKE NOTCH DETAIL

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

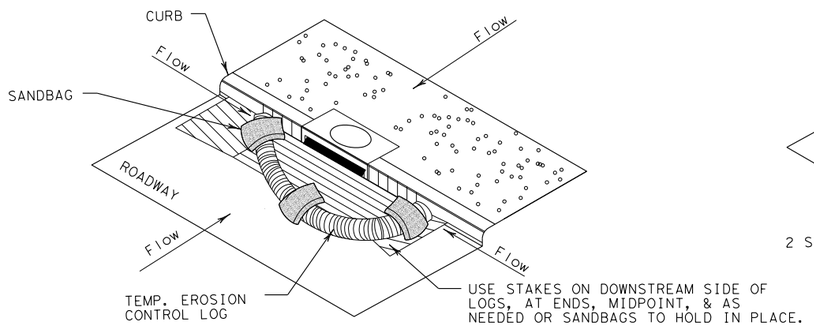
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0171	05	083	SH 199	
	DIST	COUNTY		SHEET NO.	
	FTW	TARRANT		152	

DATE: 10/3/2023
FILE: c:\pw-df\pw-df-prod\samantha perez\d0291680\ec916.dgn .dgn



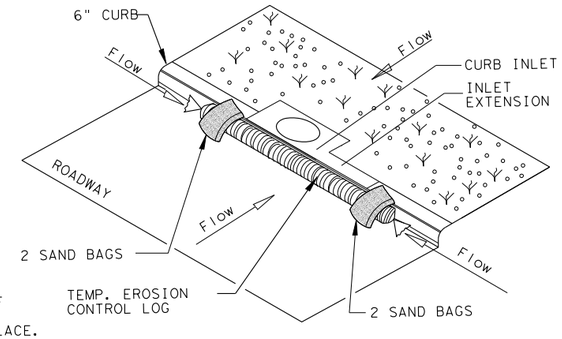
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

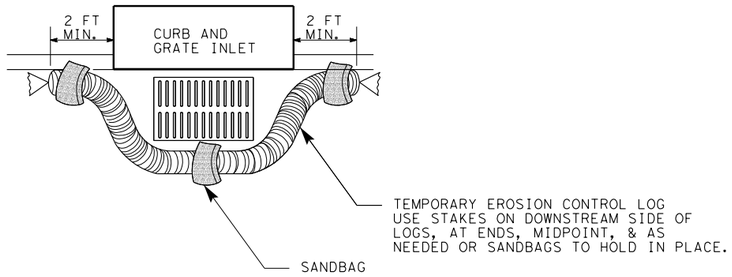
CL-CI



EROSION CONTROL LOG AT CURB INLET

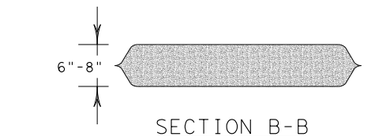
CL-CI

NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.

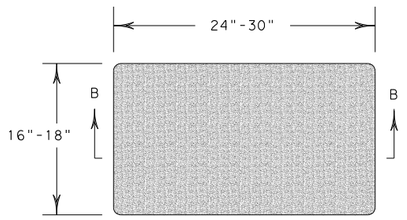


EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT		CK: KM		DW: LS/PT		CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0171	05	083		SH 199		
	DIST	COUNTY					SHEET NO.
	FTW	TARRANT					153