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FEDERAL AID PROJECT NO.			
CONT	SECT	JOB	
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		1

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DESIGN SPEED = N/A
A.D.T. (XXXX)= N/A
A.D.T. (XXXX)= N/A

INDEX OF SHEETS

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

PROJECT NO. BPM:646922001

IH 35, etc.
WEBB COUNTY, etc.

NET LENGTH OF ROADWAY = VARIOUS
NET LENGTH OF BRIDGE = VARIOUS
NET LENGTH OF PROJECT = VARIES WITHIN COUNTIES

FOR THE CONSTRUCTION OF BRIDGE PREVENTIVE MAINTENANCE CONSISTING OF CLEAN & SEALING JOINTS AND CONCRETE STRUCTURE REPAIRS OF VARIOUS BRIDGE FACILITIES

FINAL PLANS

LETTING DATE: ______

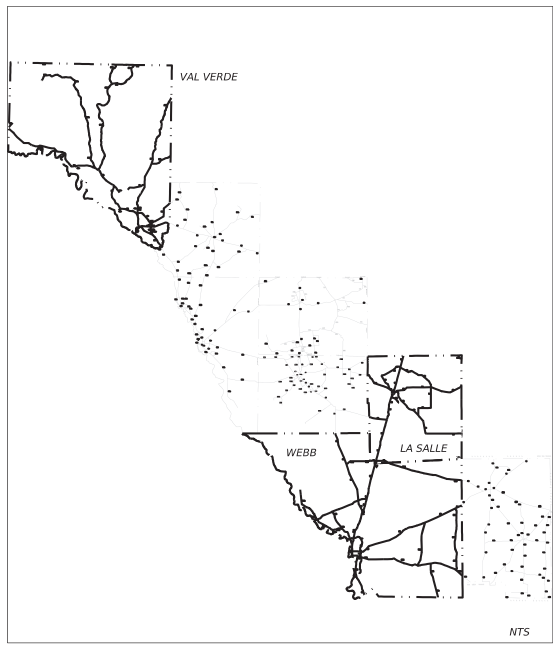
DATE CONTRACTOR BEGAN WORK: ______

DATE WORK WAS COMPLETED & ACCEPTED: ______

FINAL CONTRACT COST: $ ______

CONTRACTOR : ______

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



Texas Department of Transportation

APPROVED FOR LETTING:
DocuSigned by:
Vanessa Rosales-Herrera
70CAB6EA8F3B42B...
ANCE

RECOMMENDED FOR LETTING:
DocuSigned by:
A54CD9F731724EC...
AREA ENGINEER

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: NONE

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, SEPTEMBER 1, 2024 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, MAY 2012)

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STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED
PROFESSIONAL ENGINEER

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

DocuSigned by:
[signature] P.E.
307945B8A8784F3...

10/14/2024
DATE

Texas Department of Transportation

INDEX OF SHEET

©TxDOT 2024 SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.

DIST	COUNTY	SHEET NO.
22	WEBB,etc.	2

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BRIDGE LOCATION INFORMATION

COUNTY	LOCATION NUMBER	FEATURE CROSSED	BRIDGE NBI#	DESCRIPTION	HWY	APPROX. REFERENCE MARKER	BRIDGE TYPE	BRIDGE LENGTH FEET	BRIDGE LOCATION	LATITUDE	LONGITUDE
WEBB	1	JAMONCILLOS CREEK	222400001803158	8 - Span (2 - 4 Span Units) Continuous Reinforced Concrete Slab Bridge on Concrete Substructure With a 30 Degree Left Forward Skew	IH 35 SBML	0035 +00.161	SPAN	210	3.10 MI S OF LASALLE C/L	27.98907846	-99.37076846
WEBB	2	SAN ROMAN INTERCHANGE	222400001803160	3 - Simple Span Prestressed Concrete I-Beam Bridge on Concrete Substructure	IH 35 SBML	0032 +00.559	SPAN	130	5.70 MI S OF LASALLE C/L	27.95229974	-99.38162292
WEBB	3	RIGHT OF WAY @ SH 255	222400001804172	8 SIMPLE P.S. CONCRETE GIRDER SPANS ON CONCRETE CAPS, COLUMNS & DRILLED SHAFTS, NO SKEW	IH 35 WFR NORTH	0022 +00.652	SPAN	902	5.30 MI N OF US 83	27.83157537	-99.41081763
WEBB	4	ROW TERRAIN	222400001804173	4 SIMPLE P.S. CONCRETE GIRDER SPANS ON CONCRETE CAPS, COLUMNS & DRILLED SHAFTS, NO SKEW	IH 35 WFR SOUTH	0022 +00.488	SPAN	449	5.30 MI N OF US 83	27.82862731	-99.41170374
WEBB	5	IH 35 MAIN LANES	222400001805175	SINGLE P.S. CONCRETE GIRDER SPAN ON CONCRETE ABUTMENTS, NO SKEW	CARRIER DRIVE	0012 +00.746	SPAN	158	5.27 MI N OF LP 20	27.67832972	-99.46711446
WEBB	6	JEFFERSON ST	222400001806092	3 SIMPLE PRESTRESSED CONCRETE GIRDER SPANS ON CONCRETE CAPS, COLUMNS & DRILLED SHAFTS	IH 35 ML	0001 +00.607	SPAN	167	1.20 MI N OF US 83	27.5235554	-99.50298661
WEBB	7	MANN RD	222400001806084	4 SIMPLE PRESTRESSED CONCRETE GIRDER SPANS ON CONCRETE CAPS, COLUMNS & DRILLED SHAFTS, 25 DEG. RIGHT FORWARD SKEW	IH 35 SB	0003 +00.851	SPAN	164	1.80 MI N OF US 59	27.55649442	-99.50382837
WEBB	8	CALTON RD	222400001806079	4 SIMPLE PRESTRESSED CONCRETE GIRDER SPANS ON CONCRETE CAPS, COLUMNS & DRILLED SHAFTS, 15 DEG. LEFT FORWARD SKEW	IH 35 NBML	0002 +01.002	SPAN	155	0.90 MI N OF US 59	27.54392669	-99.50282797
WEBB	9	IH 35 ML; SBFR & UPRR	222400001806027	6 CONT PLATE GIRDER SPANS ON CONCRETE CAPS, COLUMNS & DRILLED SHAFTS, VARIABLE SKEW	FM 1472 NB DC	0440 +01.431	SPAN	1129	JUNCTION IH 35 & FM 1472	27.57278366	-99.50381837
WEBB	10	UPRR & IH 35 SBFR	222400001806184	4 CONT STEEL PLATE GIRDER SPANS ON CONCRETE CAPS, COLUMNS & DRILLED SHAFTS, VARIABLE SKEW	FM 1472 SB DC	0440 +01.431	SPAN	850	JUNCT IH 35 & FM 1472	27.57255882	-99.50416006
WEBB	11	LP 20 & FM 1472 NB	222400008614183	22 Span Bridge (4 Span Continuous Steel Plate Girder Unit and 18 Simple PSC Beam Spans) on Concrete Substructure	FM 1472SB TO LP20E	0438 +00.933	SPAN	2672	1.25 MI W OF IH 35	27.60604811	-99.51881511
WEBB	12	CHACON CREEK	222400008614064	4 Simple Span PSC Beam Bridge on Concrete Substructure	LP 20	0430 +00.306	SPAN	276	0.15 MI N OF US 59	27.53078367	-99.44559823
WEBB	13	RIVERBANK RD	222400008614179	3 Simple Span PSC Beam Bridge on Concrete Substructure	LP 20	0422 -03.193	SPAN	213	0.50 MI W OF FM 1472	27.60009604	-99.52555972
WEBB	14	KCS RR & DRAW	222400008614195	9 SIMPLE P.S. CONC GIRDER SPANS ON CONCRETE CAPS, COLUMNS & DRILLED SHAFTS, VARIABLE SKEW	LP 20 NBFR	0430 +01.800	SPAN	965	0.38 MI S OF SP 400	27.5086	-99.44829
WEBB	15	IH 35	222400001804171	3 SIMPLE P.S. CONCRETE GIRDER SPANS ON CONCRETE CAPS, COLUMNS & DRILLED SHAFTS, 15° L.F. SKEW	SH 255 TOLL ROAD	0438 +00.475	SPAN	257	5.30 MI N OF US 83	27.82902256	-99.41068181
WEBB	16	UPRR	222400358602021	4 SIMPLE P.S. CONC GIRDER SPANS ON CONC CAPS, COLUMNS & DRILLED SHAFTS, 15° L.F. SKEW	SH 255	0438 +00.372	SPAN	465	0.12 MI WEST OF IH35	27.82905276	-99.41173919
WEBB	17	CHACON CREEK	222400354301001	4 Simple Span PSC Beam Bridge on Concrete Substructure	SP 400	0432 +00.700	SPAN	270	0.40 MI W OF LP 20	27.51689874	-99.45533164
LASALLE	18	CIBOLO CREEK	221420001708143	3-Simple-Span Concrete Pan Girder Bridge on Concrete Bents	IH 35 SB	0078 +00.749	SPAN	120	1.0 MI N OF FM 469 E	28.59211976	-99.19346981
LASALLE	19	IH 35 C BUSINESS	221420001708244	3-Simple-Span Prestressed Concrete Beam Bridge On Concrete Bents	IH 35 SB	0068 +00.705	SPAN	220	0.85 MI NE OF FM 468	28.45090855	-99.23774811
LASALLE	20	FM 468	221420001708246	3-Simple-Span Prestressed Concrete Beam Bridge on Concrete Bents	IH 35 SB	0067 +00.824	SPAN	155	IH 35 @ FM 468	28.44418877	-99.24902329
LASALLE	21	NUECES RVR & TURNAROUND	221420001801098	17-Simple-Span Prestressed Concrete Beam Bridge On Concrete Bents	IH 35 SB	0066 +00.465	SPAN	1270	1.1 MI S OF FM 468	28.42725662	-99.25110225
LASALLE	22	IH 35 C BUSINESS	221420001801100	3-Simple-Span Prestressed Concrete Beam Bridge on Concrete Bents	IH 35 SB	0065 +00.974	SPAN	120	1.80 MI S OF FM 468	28.4176971	-99.25144222
LASALLE	23	SERVICE RD	221420001802131	3-Simple-Span Prestressed Concrete Beam Bridge on Concrete Bents	IH 35 SB	0048 +00.714	SPAN	130	10.55 MI N OF WEBB C/L	28.17784686	-99.31595326
LASALLE	24	JABONCILLOS CREEK	221420001802136	8-Simple-Span Concrete Flat Slab Bridge on Concrete Pile Bents At 15° RIght Forward Skew	IH 35 SB	0043 +00.131	SPAN	160	4.90 MI N OF WEBB C/L	28.0994735	-99.3367496
LASALLE	25	SERVICE RD	221420001802130	3-Simple-Span Prestressed Concrete Beam Bridge on Concrete Bents	IH 35 NB	0048 +00.714	SPAN	130	10.55 MI N OF WEBB C/L	28.17778586	-99.31576125
LASALLE	26	IH 35 C BUSINESS	221420001801099	3-Simple-Span Prestressed Concrete Beam Bridge on Concrete Bents	IH 35 NB	0065 +00.974	SPAN	120	1.80 MI S OF FM 468	28.41765511	-99.25124021
LASALLE	27	NUECES RVR & TURNAROUND	221420001801097	17-Simple-Span Prestressed Concrete Beam Bridge On Concrete Bents	IH 35 NB	0066 +00.465	SPAN	1270	1.10 MI S OF FM 468	28.42726062	-99.25089725
LASALLE	28	FM 468	221420001708245	3-Simple-Span Prestressed Concrete Beam Bridge On Concrete Bents	IH 35 NB	0067 +00.827	SPAN	155	IH 35 @ FM 468	28.44408478	-99.24885529
LASALLE	29	IH 35 C BUSINESS	221420001708243	3-Simple-Span Prestressed Concrete Beam Bridge On Concrete Bents	IH 35 NB	0068 +00.694	SPAN	220	0.85 MI NE OF FM 468	28.45074656	-99.2376401
LASALLE	30	CIBOLO CREEK	221420001708144	3-Simple-Span Concrete Pan Girder Bridge on Concrete Bents	IH 35 NB	0078 +00.754	SPAN	120	1.0 MI N OF FM 469 E	28.5916314	-99.19329711
LASALLE	31	YEAGER CREEK	221420048301035	4-Simple-Span Concrete Pan Girder Bridge on Concrete Bents	SH 97	0466 +00.944	SPAN	121	9.15 MI W OF MCMULLEN C/L	28.43988524	-98.90664076
LASALLE	32	SEVEN MILE CREEK	221420048301036	5-Simple-Span Concrete Pan Girder Bridge on Concrete Bents	SH 97	0472 +00.029	SPAN	152	4.05 MI W OF MCMULLEN C/L	28.45755404	-98.82930303
LASALLE	33	W BR OF LAS RAICES CREEK	221420023701012	2-Simple-Span Concrete Slab Bridge On Concrete Bents	FM 133	0442 +00.944	SPAN	50	3.9 MI W OF IH 35	28.28535306	-99.34732989
LASALLE	34	SAGE CREEK	221420154502005	6-Simple-Span Concrete Slab Bridge on Concrete Pile Bents	FM 468	0442 +01.213	SPAN	120	8.3 MI NW OF IH 35	28.49407767	-99.36913703
LASALLE	35	QUINTANA CREEK	221420237301019	5-Simple-Span Concrete Pan Girder Bridge On Concrete Bents At 27° RIght Forward	FM 624	0478 +01.210	SPAN	160	2.20 MI W OF MCMULLEN C/L	28.20208337	-98.83814461
VALVERDE	36	ANTONIO CREEK	222330002204013	7 - Simple Span Concrete T-Beam Bridge on Concrete Bents	US 90	0346 +00.903	SPAN	200	13.1 MI NW OF LP 25	29.90218504	-101.74892802
VALVERDE	37	SEMINOLE CANYON	222330002207075	4 - Simple Span Prestressed Concrete I-Beam Bridge on Concrete Bents	US 90	0380 +00.173	SPAN	300	8.25 MI NW OF SH 163	29.70854946	-101.30367233
VALVERDE	38	EVANS CREEK	222330002209069	5 - Simple Span Prestressed Concrete I-Beam Bridge on Concrete Bents	US 90	0402 +00.633	SPAN	392	13.5 MI NW OF US 277	29.52587773	-101.07153642
VALVERDE	39	BUFFALO CREEK	222330016004058	21-Simple-Span Prestressed Concrete I-Beam Bridge On Concrete Column Bents	US 277	0500 +01.112	SPAN	1207	21.45 MI N OF US 377	30.00850856	-100.74251428
VALVERDE	40	UPRR & L MARTINEZ BLVD	222330016103005	7-Simple-Span Prestressed Concrete I-Beam Bridge on Concrete Bents	SPUR 239	0504 +00.110	SPAN	555	1.10 MI SW OF SPUR 297	29.36335768	-100.89718419
TOTAL								16,879			

NOTE:
SEE BRIDGE PREVENTIVE MAINTENANCE LOCATION DETAILS FOR MORE INFORMATION.

Texas Department of Transportation

PROJECT LOCATION REFERENCE

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SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		3

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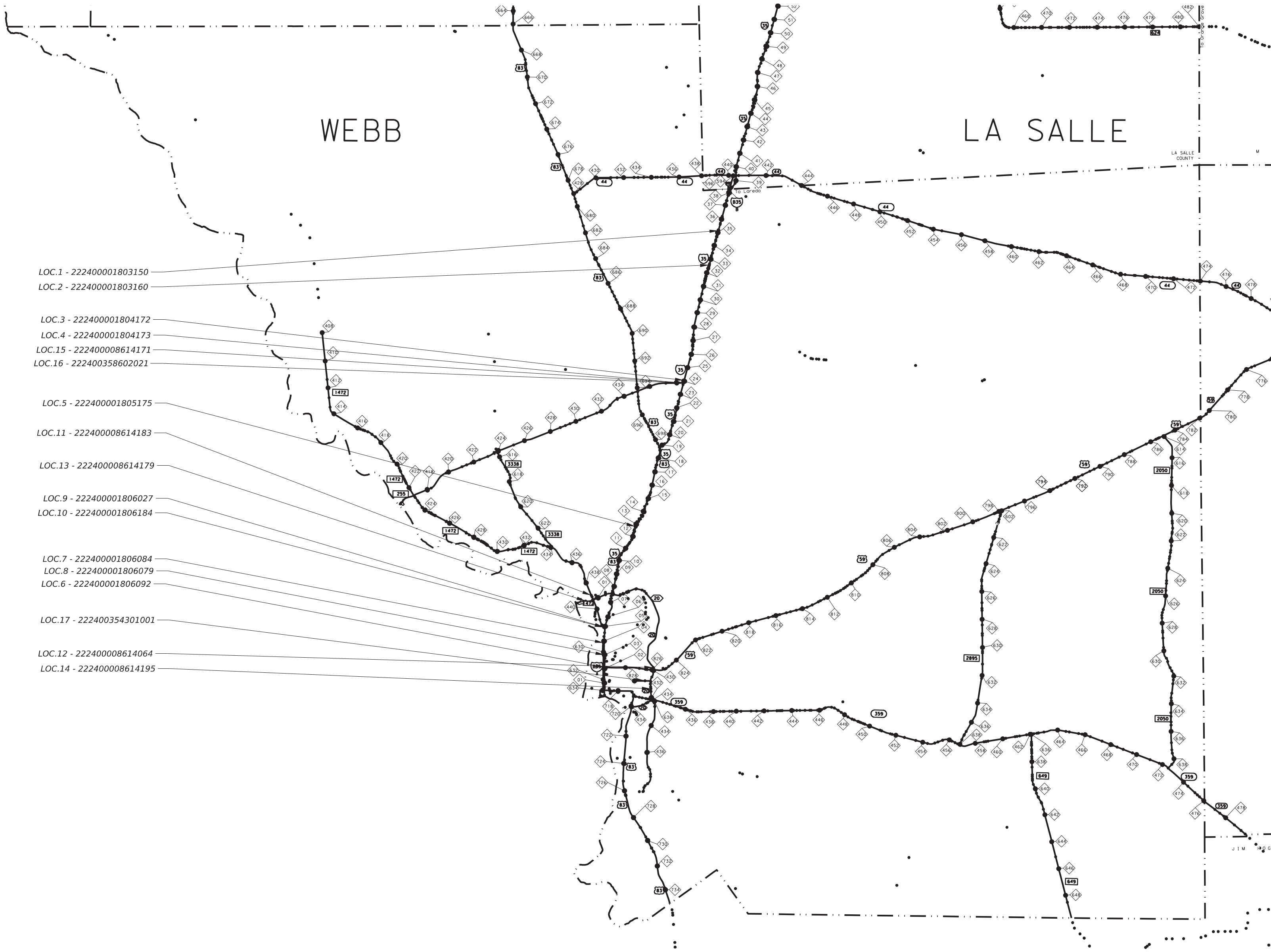

Texas Department of Transportation

LOCATION MAP

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SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.

DIST	COUNTY	SHEET NO.
22	WEBB,etc.	4

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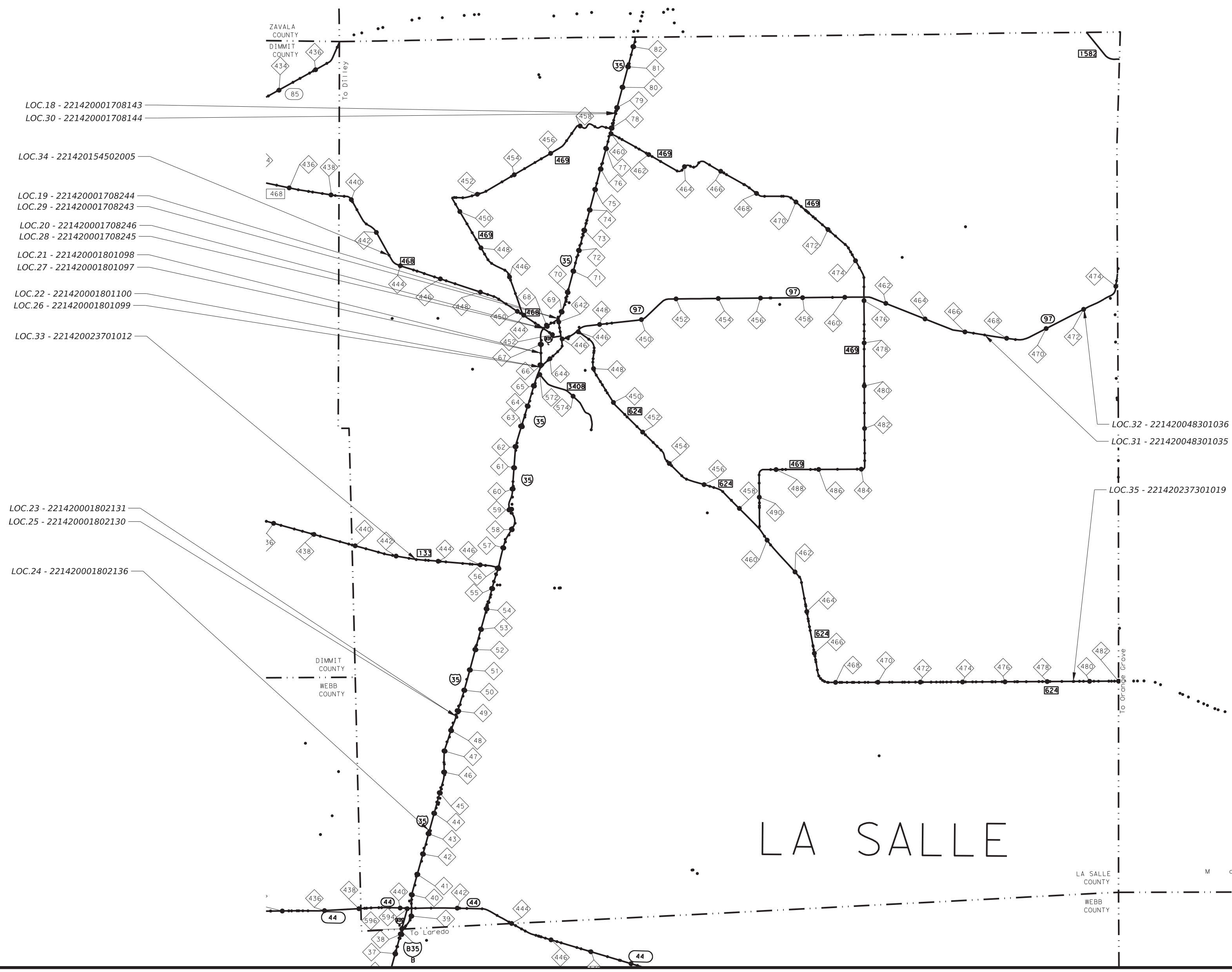

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LOCATION MAP

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SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		5

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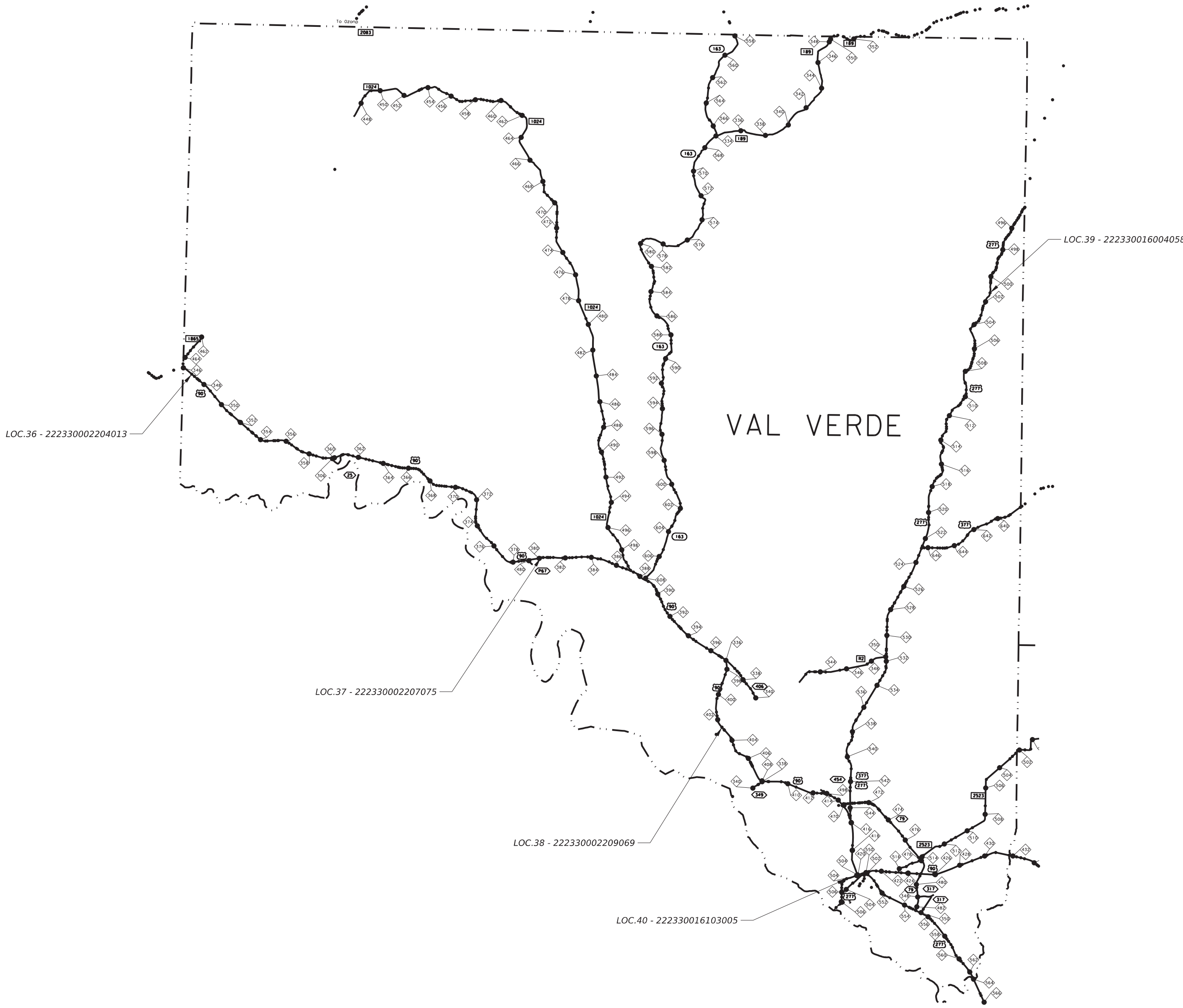

Texas Department of Transportation

LOCATION MAP

©TxDOT 2024		SHEET 3 OF 3	
CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		6

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

Rogelio Chapa, P.E. - rogelio.chapa@txdot.gov
Irazema Cavazos - irazema.cavazos@txdot.gov
Angel Alejo - angel.alejo@txdot.gov

Questions may be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following address:

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

All contractor questions will be reviewed by the Engineer. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A webpage.

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

Item 5 - Control of the Work

The Contractor shall maintain and preserve the integrity of all “existing survey markers” by avoiding the disturbance of such markers, which include all control points (horizontal and/or vertical), stakes, marks, and right-of-way markers. The Department will repair all Contractor disturbed control points, stakes, marks, and right-of-way markers. The cost for any and all repairs to the “existing survey markers” will be deducted from money due or to become due to the Contractor.

Reference all existing striping and pavement markings in a manner which allow the markings to be re-established. Place extra reference (if needed) to ensure that the markings (lane lines, edge lines, ramp gores, etc.) are in-line with signs on OSB’s, TMS arrows, etc.

When a precast or cast-in-place concrete element is included in the plans, a precast concrete alternate may be submitted in accordance with “Standard Operating Procedure for Alternate Precast Proposal Submission” found online at https://www.txdot.gov/inside-txdot/forms-publications/consultants-contractors/publications/bridge.html#design. Acceptance or denial of an alternate is at the sole discretion of the Engineer. Impacts to the project schedule and any additional costs resulting from the use of alternates are the sole responsibility of the Contractor.

Item 7 - Legal Relations and Responsibilities

No significant traffic generator events identified.

Roadway closures during the following key dates and/or special events are prohibited January 1st, Easter weekend, the last Monday in May, July 4th, the first Monday in September, the fourth Thursday in November, December 24th and 25th.

Jurisdictional Waters of the United States and Project Specific Locations (PSL) Coordination - This project requires permit(s) with environmental resource agencies. There is a high probability that environmentally sensitive areas will be encountered on contractor designated project specific locations (PSLS) for the project (including but not limited to haul roads, equipment staging areas, parking areas, etc.).

Requirements for Work within Jurisdictional Waters of the United States:
The department has been authorized to perform work within designated areas of the project under U.S. Army Corps of Engineers (USACE) nationwide permit (NWP) #14 and/or #3a and/or #3b.

The contractor will not initiate activities in a project specific location (PSL) associated with a U.S. Army Corps of Engineers (USACE) permit area (i.e. an area where the USACE has jurisdiction) that has not been previously evaluated by the USACE as part of the permitting for this project. Such activities include, but are not limited to, haul roads, equipment staging areas, borrow and disposal sites. Associated defined here includes materials delivered to or from the PSL. The permit area includes all waters of the U.S. and their associated wetlands affected by activities associated with this project. Special restrictions may be required for such work in these USACE jurisdictional areas. The contractor will be responsible for any and all consultations with the USACE regarding activities, including PSLs, which have not been previously evaluated by the USACE. The Contractor will provide the department with a copy of all consultation(s) or approval(s) 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 determination(s) that their activities do not affect a USACE permit area. The contractor will maintain copies of their determination(s) for review by the department and/or any regulatory agency.

The disturbed area for 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 ROW. When the total area disturbed in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, the Contractor shall provide a copy of the Contractor Notice of Intent (NOI) for the PSLs to the Engineer and to the local government operating a municipal separate storm sewer system (MS4) if applicable. If the total area of project disturbed areas and PSLs total between 1-acre but less than 5-acres, the Contractor shall post the appropriate Contractor Construction Site Notice for all Contractor PSLs to be in compliance with TCEQ storm water regulations.

In order to expedite the approval process for PSLs or to eliminate or minimize potential impacts to project progress, initiate coordination efforts with the U.S.A.C.E. within 30 days from the date of "authorization to begin work" for all PSLs that are in areas where the USACE has jurisdiction (i.e. USACE permit areas). If this is not done, the contractor waives the right to request any contract time considerations if project progress is impacted and PSL'S approval is still pending.

Requests submitted to the area engineer will be evaluated on this basis and will require documentation showing substantial early coordination efforts to expedite the approval process as herein stated. The request will include a detailed chronological summary status with dates of coordination activities with the resource agencies, including those occurring after the initial coordination, to be reviewed and confirmed by the district's environmental section.

For PSLs that fall within USACE permit areas, the Contractor must document and coordinate with the USACE, if required, before 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. The Contractor will document both the project specific location (PSL) and their authorization, and the Contractor will maintain copies for review by the Department and/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, then:

    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
    b. Temporary fill (Item 132, Embankment) within a USACE permit area may be restricted.
    c. Suitable embankment (Item 132) from within the USACE permit area is used as fill within a USACE evaluated area may be restricted; and,
    d. Unsuitable excavation or excess excavation ["Waste"] (Item 110) that is disposed of at an approved location within a USACE evaluated area may be restricted.

2. Contractor Materials from Areas Other than Previously Evaluated Areas. The Contractor will provide the Department with a copy of all USACE coordination or approvals before 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, including:

    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.

Storm Water Regulations Requirements:
The Contractor shall be responsible for (off ROW) PSLs applicable to the TCEQ Construction General Permit (CGP) requirements and will notify the Engineer of the disturbed acreage within one (1) mile of the project limits. The Contractor shall obtain any required authorization form the TCEQ for any Contractor PSLs for construction support activities on or off ROW.

The total disturbed areas within the ROW are anticipated at less than one (1) acre and/or this project is classified as "surface work" consisting of an asphalt overlay of an existing roadway without shoulder-up disturbances. Due to this type of construction, the project qualifies for exclusion under the *Construction General Permit* (CGP) issued by the Texas Commission on Environmental Quality (TCEQ) on March 5, 2023. However, should the sum of the Engineer's anticipated disturbances and all of the Contractor's (On ROW and off ROW) PSLs equal or exceed the one (1) acre threshold, both TxDOT and the Contractor shall have project responsibilities under the CGP that reverts to non-exclusion status. To ensure project compliance with all applicable water quality regulations, the Contractor shall obtain Engineer approval for all non-depicted areas of disturbance that increases the Engineer's initial soil and vegetation disturbed area estimates before associated work operations start.

Item 8 - Prosecution and Progress

Before starting work, provide a sequence of work and estimated progress schedule meeting the requirements of Section 8.5.2, “Progress Schedule.”

No closures will be allowed on the weekends which include the following holidays: January 1st, Easter weekend, the last Monday in May, July 4th, the first Monday in September, the fourth Thursday in November, December 24th and 25th.

Contract is a Standard Workweek contract, working days will be charged Monday through Friday, excluding national or state holidays, if weather or other conditions permit the performance of the principal unit of work underway, as determined by the Engineer.

Item 9 - Measurement and Payment

Coordinate and provide off-duty law enforcement officers with officially marked vehicles (if patrol cruisers are available from the enforcement agency involved) during the following operations: lane closure within the City of Laredo. For payment through TxDOT state force account method, complete the weekly tracking forms provided by the department and submit invoices that agree with the tracking form for payment at the end of each month approved services were provided.

Submit Material on hand (MOH) payment requests at least **5** working days prior to the end of the month for payment on that month’s estimate. For out-of-town MOH submit requests at least 10 working days prior to the end of the month.

Item 132 - Embankment

The embankment material must be consistent and homogeneous, free from vegetation or other objectionable matter, reasonably free from lumps of earth and suitable for forming a stable embankment.

For fill sections from embankment finished grade line and below, to a depth of 4 feet:
Field compact density to ≥ 98% dry density.
Plasticity Index (PI) limit is PI ≤ 25.
Liquid limit ≤ 45

For all other fill sections, Plasticity Index (PI) limit is less than or equal to 30.

It is the Contractor’s responsibility to advise the Engineer of the location of the source sufficiently in advance to avoid delay.

Item 421 - Hydraulic Cement Concrete

Sulfate resistant cement concrete shall be in all situations for structural elements in contact with natural ground. These includes, but it is not limited to, all reinforced concrete pipe, concrete pipe, drill shafts, bridge columns, bridge abutments, wingwalls, approach slabs, inlets, manholes, junction boxes, ground boxes and all concrete ripraps.

Air entrainment is not required. If concrete is supplied with air entrainment, the concrete must adhere to the requirements of item 421.4.2.4.

Item 429 - Concrete Structure Repair

Use the following types of repair materials:

Refer to Chapter 3, Section 2 - Intermediate Spall Repair from the concrete repair manual to perform concrete patching repairs.

Contractor’s personnel shall have a copy of *TxDOT’s Concrete Repair Manual*. The manual can be found and downloaded in the following link:

http://onlinemanuals.txdot.gov/TxDOTOnlineManuals/txdotmanuals/crm/crm.pdf

Item 438 – Cleaning and Sealing Joints

The contractor will advise the Engineer of any loose or damaged seal joint areas not noted in the plans. Upon approval from the Engineer, these areas will be addressed, and the Contractor compensated for such additional work.

After cleaning and sealing of joints, care will be taken to assure that the bent caps and abutment seats are clean of all debris. Cleaning and removal of this excess material will not be paid for directly but will be subsidiary to this item.

Class 3 – Hot poured rubber sealant shall be used with ACP overlay.
Class 4 – Low modulus silicone, nonsag shall be used on vertical faces on bridge elements.
Class 7 – Low modulus silicone, rapid curing, self-leveling shall be used without ACP overlay and existing armor joints.

Refer to the 2024 Standard Specification for additional information.

Item 500 - Mobilization

"Materials-on-Hand" payments will not be considered in determining percentages used to compute mobilization payments.

Project Number: 6469-22-001 **Sheet:G**

County: WEBB, ETC. **Control:** 6469-22-001

Highway: IH 35, ETC.

Item 502 - Barricades, Signs, and Traffic Handling

Designate, as the Contractor Responsible Person (CRP), an English-speaking employee on-call nights and weekends (or any other time that work is not in progress) with a local address and telephone number for maintenance of signs and barricades. This employee will be located within one (1) hour of traveling time to the project site.

Notify the Engineer in writing of the name, address, and telephone number of this employee. Furnish this information to local law enforcement officials.

When advanced warning flashing arrow panel(s) is/are specified, maintain one standby unit in good condition at the job site ready for immediate use is required.

Provide two-way radios in areas where flagmen do not have visual contact with one another or cannot communicate with one another.

Limit lane closures to a maximum of 2 miles. If more than one lane closure location is desired, provide a minimum of a 2 mile passing zone between locations. Provide a separate sign set up for each location.

Ensure equipment not in use, stockpile aggregate, and other working materials are:
A minimum of 30 feet from the edge of the travel lane;

Do not obstruct traffic or sight distance;
Do not interfere with the access from abutting property; or
Do not interfere with roadway drainage.

Erect signs in locations not obstructing the traveling public's view of the normal roadway signing or necessary sight distance at intersections and curves.

During the holiday time frame of December 21st through January 1st, every effort should be taken to ensure that all travel lanes remain open where possible.

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

Project Number: 6469-22-001 **Sheet:H**

County: WEBB, ETC. **Control:** 6469-22-001

Highway: IH 35, ETC.

Item 503 - Portable Changeable Message Sign

Provide two (2) electronic portable changeable message signs as required by the Engineer. Provide backups and keep operational and available on the jobsite at all times during traffic control operations. The electronic portable changeable message signs will be made available for utilization for the entire duration of the project, including all alternative locations.

Item 505 – Truck Mounted Attenuator (TMA) and Trailer

Provide 1 Truck Mounted Attenuator as required by the Engineer. Provide backup and always keep operational and available on the jobsite at all times during traffic control operations. The Truck Mounted Attenuator will be made available for utilization for the entire duration of the project, including all alternative locations.

Item 752 – Tree and Brush Removal

Grade around removal area to match existing terrain in such way that allows existing drainage patterns to function properly. Trees shall be removed and disposed of in accordance with standard sheet TRB – 24(1).

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 6469-22-001 **DISTRICT** Laredo **COUNTY** Webb
HIGHWAY IH0035

ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL
	104-7046	REMOV CONC (MISC)	SY	11.000	
	132-7001	EMBANK (FNL)(OC)(TY A)	CY	3.000	
	401-7001	FLOWABLE BACKFILL	CY	17.000	
	429-7001	CONC STR REPAIR(CLEAN & COAT WTH EPOXY)	SF	24.000	
	429-7004	CONC STR REPAIR(RAPID DECK REP(PRT DPT)	SF	10.000	
	429-7007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	756.000	
	432-7001	RIPRAP (CONC)(4 IN)	CY	11.000	
	432-7030	RIPRAP (STONE COMMON)(DRY)(8 IN)	CY	34.000	
	438-7001	CLEANING AND SEALING EXISTING JOINTS	LF	7,480.000	
	442-7017	MISC NON-BRIDGE (NBIS)	LB	56.000	
	459-7007	GABION MATTRESSES (GALV)(12 IN)	SY	80.000	
	500-7001	MOBILIZATION	LS	1.000	
	502-7001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	8.000	
	503-7002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000	
	505-7001	TMA (STATIONARY)	DAY	95.000	
	550-7004	CHAIN LINK FENCE (REPAIR) (4')	LF	50.000	
	752-7002	SPOT TREE TRIMMING / BRUSH REMOVAL	LF	15.000	
	752-7005	TREE REMOVAL (4" - 12" DIA)	EA	4.000	
	780-7002	CNC CRACK REPAIR (DISCRETE)(INJECT)	LF	20.000	
	780-7003	CONC CRCK REPR(DISCRETE)(ROUT AND SEAL)	LF	89.000	
	780-7004	CNC CRACK REPAIR (DISCRETE)(SURF SEAL)	LF	1,365.000	
	784-7024	REP STL BRIDGE MEMBER(REPL RIVET/BOLT)	EA	1.000	
	785-7002	BRIDGE JOINT REPAIR (HEADER)	LF	82.000	
	785-7004	BRIDGE JOINT REPAIR (ARMOR)	LF	67.600	
	7001-7002	BENT CAP/ABUTMENT CAP CLEANING	EA	206.000	
	18	LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000	

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SUMMARY OF QTY

	LOCATION - PSN	104 7046 REMOV CONC (MISC) SY	132 7001 EMBANK (FNL)(OC)(TY A) CY	401 7001 FLOWABLE BACKFILL CY	429 7001 CONC STR REPAIR(CLEAN & COAT WTH EPOXY) SF	429 7004 CONC STR REPAIR(RAPID DECK REP(PRT DPT) SF	429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD) SF	550 7004 CHAIN LINK FENCE (REPAIR) (4') LF	432 7001 RIPRAP (CONC)(4 IN) CY	432 7030 RIPRAP (STONE COMMON)(DRY)(8 IN) CY	438 7001 CLEANING AND SEALING EXISTING JOINTS LF	459 7007 GABION MATTRESSES (GALV)(12 IN) SY	785 7004 BRIDGE JOINT REPAIR (ARMOR) LF	752 7005 TREE REMOVAL (4" - 12" DIA) EA	752 7002 SPOT TREE TRIMMING / BRUSH REMOVAL LF	780 7002 CNC CRACK REPAIR (DISCRETE)(INJECT) LF	780 7003 CONC CRCK REPR(DISCRETE)(ROUT AND SEAL) LF	780 7004 CNC CRACK REPAIR (DISCRETE) (SURF SEAL) LF	7001 7002 BENT CAP/ABUTMENT CAP CLEANING EA	784 7024 REP STL BRIDGE MEMBER (REPL RIVET/BOLT) EA	442 7017 MISC NON-BRIDGE (NBIS) LB
1	222400001803158	0	0	0	2	0	6	0	0	0	0	0	40	0	0	0	0	20	4	0	0
2	222400001803160	0	2	0	2	0	6	0	0	0	0	80	0	0	0	0	0	80	4	1	0
3	222400001804172	0	0	0	0	0	4	0	0	0	168	0	0	0	0	0	0	80	4	0	0
4	222400001804173	0	0	0	0	0	10	0	0	0	168	0	0	0	0	0	0	30	4	0	0
5	222400001805175	0	0	0	0	0	4	0	0	0	130	0	0	0	0	0	0	80	2	0	0
6	222400001806092	0	0	0	0	0	12	0	0	0	228	0	0	0	0	0	0	0	4	0	0
7	222400001806084	0	0	0	0	0	20	0	0	0	170	0	0	0	0	0	0	0	5	0	0
8	222400001806079	0	0	0	0	10	20	0	0	0	0	0	0	0	0	0	0	0	5	0	56
9	222400001806027	0	0	0	0	0	32	0	0	0	204	0	0	0	0	0	0	0	5	0	0
10	222400001806184	0	0	1	0	0	10	0	0	0	120	0	0	0	0	0	0	0	4	0	0
11	222400008614183	0	0	0	0	0	10	0	0	0	225	0	27,6	0	0	0	0	0	1	0	0
12	222400008614064	11	0	0	0	0	24	50	11	0	0	0	0	0	0	0	0	0	5	0	0
13	222400008614179	0	0	0	0	0	15	0	0	0	204	0	0	0	0	0	0	0	2	0	0
14	222400008614195	0	0	0	0	0	4	0	0	0	136	0	0	0	0	0	0	80	4	0	0
15	222400001804171	0	0	0	0	0	4	0	0	0	352	0	0	0	0	0	0	80	3	0	0
16	222400358602021	0	0	0	0	0	4	0	0	0	258	0	0	0	10	0	0	0	3	0	0
17	222400354301001	0	1	2	0	0	4	0	0	8	172	0	0	0	5	0	0	0	2	0	0
18	221420001708143	0	0	2	0	0	34	0	0	0	80	0	0	0	0	0	0	0	4	0	0
19	221420001708244	0	0	0	0	0	16	0	0	0	85	0	0	0	0	0	0	80	3	0	0
20	221420001708246	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	80	4	0	0
21	221420001801098	0	0	0	12	0	4	0	0	0	761	0	0	0	0	20	0	0	18	0	0
22	221420001801100	0	0	0	8	0	4	0	0	0	0	0	0	0	0	0	0	80	3	0	0
23	221420001802131	0	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0	80	3	0	0
24	221420001802136	0	0	0	0	0	12	0	0	0	282	0	0	4	0	0	0	0	8	0	0
25	221420001802130	0	0	0	0	0	4	0	0	0	88	0	0	0	0	0	0	80	3	0	0
26	221420001801099	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	80	3	0	0
27	221420001801097	0	0	0	0	0	80	0	0	0	761	0	0	0	0	0	0	0	18	0	0
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31	221420048301035	0	0	0	0	0	12	0	0	0	128	0	0	0	0	0	0	80	4	0	0
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38	222330002209069	0	0	0	0	0	4	0	0	0	184	0	0	0	0	0	0	80	5	0	0
39	222330016004058	0	0	0	0	0	28	0	0	0	764	0	0	0	0	0	0	0	20	0	0
40	222330016103005	0	0	0	0	0	162	0	0	8	504	0	0	0	0	0	5	10	8	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PROJECT TOTALS	11	3	17	24	10	756	50	11	34	7480	80	67,6	4	15	20	89	1365	206	1	56

SUMMARY OF MOBILIZATION ITEMS

LOCATION - CSJ	*500 7001 MOBILIZATION*	*502 7001 BARRICADES, SIGNS AND TRAFFIC HANDLING*
	LS	*MO*
BPM - 646922001	*1.00*	*8.00*
PROJECT TOTALS	*1*	*8*

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS

LOCATION - CSJ	*503 7002 PORTABLE CHANGEABLE MESSAGE SIGN*	*505 7001 TMA (STATIONARY)*
	EA	*DAY*
BPM - 646922001	*2*	*95*
PROJECT TOTALS	*2*	*95*

Texas Department of Transportation

SUMMARY OF QUANTITIES

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SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		13

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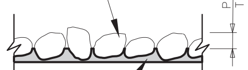
FOLLOW PROCEDURES AS PER THE TXDOT CONCRETE REPAIR MANUAL FOR DETAILS AND INSTRUCTIONS REGARDING THE REMOVAL, CLEANING, FORMING, MIXING AND POURING, CURING AND FINISHING OF CONCRETE REPAIRS. THE METHOD OF CONCRETE STRUCTURE REPAIR WILL VARY BY EACH LOCATION. REFER TO CHAPTER 3 "REPAIR MATERIALS AND PROCEDURES" FOR REPAIR IDENTIFICATION AND PROCEDURES.

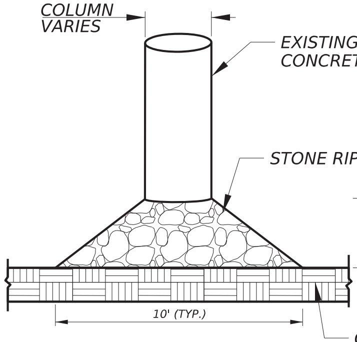
NOTES:

1. THE CONTRACTOR IS TO CONFIRM THE DAMAGED AREA FOR LOCATION, SIZE, LENGTH, AND AREA. REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE BEGINNING THE REPAIR.
2. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.
3. PROPOSED DIMENSIONS AND DEPICTED LOCATIONS OF SCOUR COUNTERMEASURES (STONE RIPRAP AND GABIONS) MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS PER THE ENGINEER. THE PROPOSED SCOUR COUNTERMEASURES ARE TO BE CONSTRUCTED FLUSH TO THE CULVERT FLOWLINE AND ALONG THE WINGWALL FOOTINGS AS SHOWN ON PLANS. REGRADING AND FILLING OF EXISTING EROSION HOLES MAY BE NECESSARY BEFORE PLACING COUNTERMEASURES. THIS WORK WILL BE SUBSIDIARY TO PERTINENT ITEM 459 OR ITEM 432.
4. PROPOSED DITCH CLEANING AND RESHAPING LOCATIONS TO BE FIELD VERIFIED BY CONTRACTOR AND APPROVED BY THE ENGINEER. IF ADDITIONAL QUANTITIES ARE IDENTIFIED, THESE WILL HAVE TO BE APPROVED BY THE ENGINEER BEFORE COMMENCING WORK.
5. ALL THE NECESSARY EQUIPMENT, MATERIAL, PERSONNEL, AND ANY INCIDENTALS NEEDED TO CARRY OUT THE CONSTRUCTION OF CONCRETE REPAIRS AND CLEANING & SEALING JOINTS, WILL BE CONSIDERED SUBSIDIARY TO THE PERTINENT BID ITEMS.
6. ITEM 401- "FLOWABLE BACKFILL"
   LOCATE AND MARK VISUAL EXISTING CONCRETE CRACKING AND GET APPROVAL FROM THE ENGINEER BEFORE COMMENCING CONSTRUCTION FOR THIS ITEM UNLESS OTHERWISE SPECIFIED BY THE ENGINEER. FLOWABLE BACKFILL TO BE USED FOR VOID BEFORE INSTALLATION OF SEALANT. A CONCRETE VIBRATOR IS TO BE USED TO ASSURE THAT THE CONCRETE IS WORKED INTO ALL VOID AREAS.
7. ITEM 429- "CONCRETE STRUCURE REPAIR"
   CAREFULLY REMOVE ANY LOOSE, DELAMINATED, AND UNSOUND CONCRETE AND PREPARE THE AREA IN ACCORDANCE WITH ITEM 429, AS APPLICABLE. CLEAN THE CONCRETE AND EXPOSED STEEL SURFACE. FOR ITEM 429, SAWCUT A CLEAN, SMOOTH 1/2" SQUARED EDGE PERIMETER AROUND THE DETERIORATED AREA. WHEN CLEANING, LIMIT THE SIZE OF THE CHIPPING HAMMER TO 15 LBS. VERIFY THAT THERE IS SUFFICIENT CLEARANCE BETWEEN THE STEEL AND EXIST. CONCRETE THAT IS TO REMAIN IN ORDER THAT THE NEW CONCRETE MAY BOND WELL AROUND THE PERIMETER OF THE REINFORCEMENT. DETERMINE THE NEED FOR REPLACEMENT OR SUPPLEMENTAL REINFORCEMENT, REFER TO ITEM 429 FOR GUIDANCE. REINFORCEMENT THAT IS IN GOOD CONDITION WILL BE INCORPORATED IN THE REPAIR.

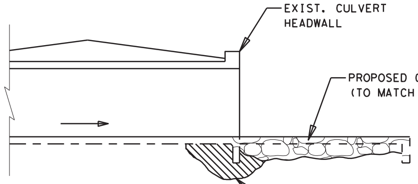
   AFTER THE AREA HAS BEEN CLEANED AND APPROVAL ISSUED FOR PREPARATION OF AREA, INSTALL ANCHOR STUDS OR STEEL PINS IN THE PATCHING AREA PER ITEM 429 TO MECHANICALLY BOND THE NEW PATCHING CONCRETE MATERIAL TO THE EXISTING SUBSTRATE MATERIAL.
8. ITEM 432- "RIPRAP (CONC)(4IN)"
   THE RECONSTRUCTED MOW STRIP RIPRAP WILL MATCH THE ROADWAY EXISTING EDGE OF PAVEMENT AND REMAINING PORTION OF MOW STRIP RIPRAP ELEVATIONS ALONG TWO OF ITS' EDGES THE PROPOSED RIPRAP SLOPES HAVE NOT BEEN DEFINED AND THUS THE MOW STRIP RIPRAP SURFACE ELEVATIONS MAY BE ADJUSTED IN ORDER TO ACHIEVE A SMOOTH TRANSITION BETWEEN DEFINED MATCHING ELEVATIONS
9. ITEM 438- "CLEANING AND SEALING EXISTING JOINTS"
   SPAN JOINT LIMITS WILL BE FIELD VERIFIED BY THE INSPECTOR OR DETERMINED BY THE ENGINEER ON THE TOTAL NUMBER OF SPANS TO BE WORK ON. USE THE APPROPRIATE JOINT SEALANT AS SHOWN ON THE PLANS AND TXDOT STANDARDS.
10. ITEM 780- "CONCRETE CRACK REPAIR"
    REFER TO CHAPTER 3 SECTION 7 CRACK REPAIR - ON THE TXDOT CONCRETE REPAIR MANUAL FOR MORE INFORMATION. CRACK REPAIRS TO BE DETERMINED BY THE ENGINEER OR ASSIGNED INSPECTOR.
11. PROPOSED DIMENSIONS AND DEPICTED LOCATION OF CONCRETE REPAIRS MAY BE ADJUSTED TO MEET FIELD CONDITIONS WHERE APPLICABLE.
12. REFER TO TXDOT STANDARDS, CONCRETE REPAIR MANUALS AND CLEANING & SEALING EXISTING BRIDGE JOINTS DETAIL SHEET(S) FOR MORE INFORMATION ON RECONSTRUCTION REPAIR(S).



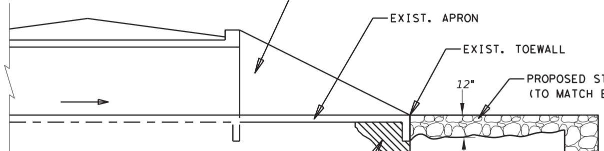
DETAIL 4
GROUTED STONE DETAIL



DETAIL 3
STONE PROTECTION AROUND COLUMNS



DETAIL 1
GABIONS CROSS SECTION



DETAIL 2
DRY STONE CROSS SECTION

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED
PROFESSIONAL ENGINEER
10/14/2024

DocuSigned by:
Rogelio Chapa
307945B8A8784F3...

Texas Department of Transportation

GENERAL BRIDGE
REPAIR DETAILS

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SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		14

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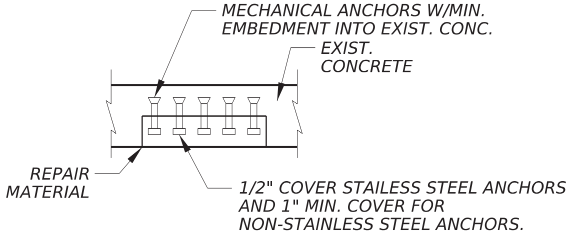
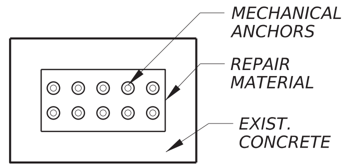
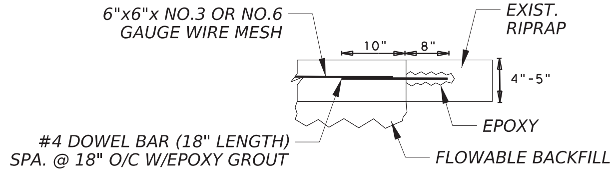


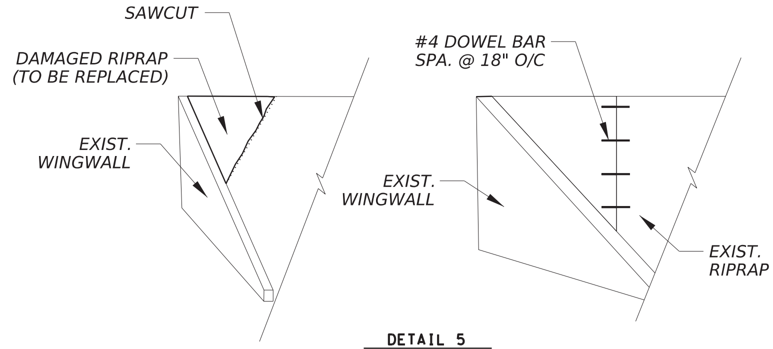
DETAIL 7
SECTIONAL
CONCRETE REPAIR
WITH MECHANICAL ANCHORS



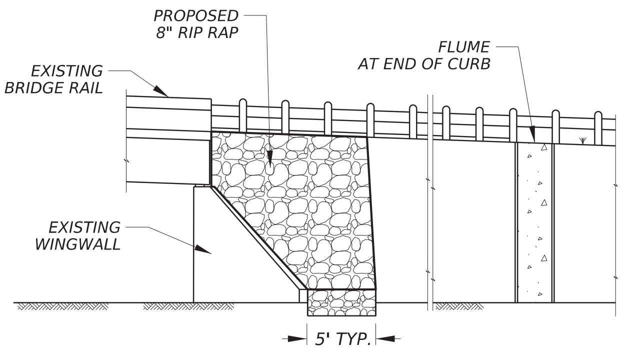
DETAIL 7
PLAN VIEW
CONCRETE REPAIR
WITH MECHANICAL ANCHORS
(Install anchors no more than 6" on center each way or as required by the engineer)



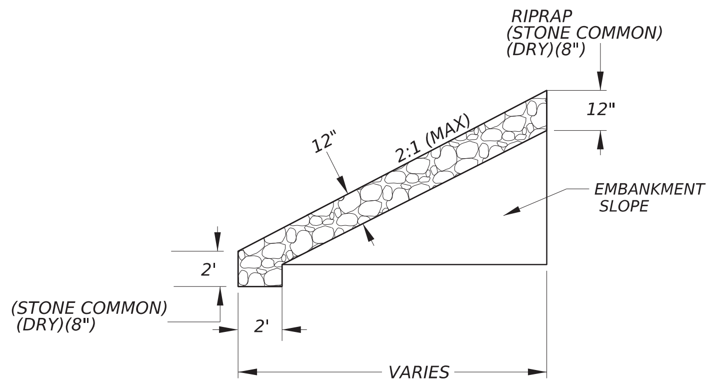
DETAIL 5
RIPRAP REPAIR (rebar)



DETAIL 5
RIPRAP REPAIR



DETAIL 6 - (FRONT VIEW)
STONE PROTECTION AROUND CULVERT



DETAIL 6 - (CROSS SECTION)
STONE PROTECTION AROUND CULVERT

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED
PROFESSIONAL ENGINEER
10/14/2024

DocuSigned by:
Rogelio Chapa
307945B8A8784F3...

Texas Department of Transportation

GENERAL BRIDGE
REPAIR DETAILS

©TxDOT 2024 SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.

DIST	COUNTY	SHEET NO.
22	WEBB,etc.	15

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TCP GENERAL NOTES

1. THIS IS A SUGGESTED TRAFFIC CONTROL PLAN. AN ALTERNATE TRAFFIC CONTROL PLAN, SIGNED AND SEALED BY A REGISTERED ENGINEER IN TEXAS, MAY BE SUBMITTED FOR REVIEW AND APPROVAL TO THE AREA ENGINEER.

2. REFER TO ITEM 8-PROSECUTION AND PROGRESS, PROJECT GENERAL NOTES, AND SEQUENCE OF WORK FOR ADDITIONAL INFORMATION REGARDING THE TRAFFIC CONTROL PLAN.

3. TAKE SPECIAL NOTICE OF THE REQUIREMENTS OF ITEM 7: "LEGAL RELATIONS AND RESPONSIBILITIES" OF THE STANDARD SPECIFICATIONS.

4. USE ADDITIONAL BARRICADES AND SIGNS TO SAFELY GUIDE TRAFFIC AND PROTECT THE WORKERS IN THE IMMEDIATE VICINITY OF CONSTRUCTION OPERATIONS, AS DIRECTED BY THE ENGINEER. ADDITIONAL SIGNS, BARRICADES, ETC. (IF ANY), WILL BE SUBSIDIARY TO ITEM 502 "BARRICADES, SIGNS, AND TRAFFIC HANDLING".

5. PLACE ALL BARRICADES AND SIGNS IN ACCORDANCE WITH THE LATEST VERSION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TxMUTCD), THE STATE STANDARD TRAFFIC CONTROL PLANS (TCP) SHEETS, THE BARRICADES, CONSTRUCTION (BC) SHEETS, AND THE TCP LAYOUT SHEETS INCLUDED IN THE PLANS. EXCEPT AS NOTED IN THE PLANS, ALL WORK AND MATERIALS REQUIRED FOR TRAFFIC HANDLING WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED SUBSIDIARY TO ITEM 502, "BARRICADES, SIGNS, AND TRAFFIC HANDLING".

6. ALL BARRICADES AND SIGNS WILL BE INSTALLED BY THE CONTRACTOR. AT ALL TIMES, THE CONTRACTOR WILL HAVE ENOUGH BARRICADES, CHANNELIZING DEVICES, AND SIGNS TO REPLACE THOSE DAMAGED.

7. REFER TO THE SEQUENCE OF WORK FOR CONSTRUCTION PHASING.

8. VERIFY THE LOCATION OF SIGNS, BARRICADES, AND CHANNELIZING DEVICES PRIOR TO THEIR PLACEMENT ALONG VERTICAL CURVES, HORIZONTAL CURVES, AND OTHER GEOMETRIC CONTRAINTS TO ENSURE THEIR VISIBILITY TO ALL MOTORISTS. VARY THE SPACING OF SIGNS TO MEET TRAFFIC CONDITIONS OR AS DIRECTED BY THE ENGINEER AND ASSURE THAT ALL TRAFFIC CONTROL DEVICES AND PAVEMENT MARKINGS ARE KEPT IN A HIGHLY VISIBLE CONDITION (CLEAN, UPRIGHT, AND IN THEIR PROPER LOCATION).

9. MAINTAIN THE ROADWAY SURFACE WITHIN THE PROJECT LIMITS WHILE THE TRAFFIC CONTROL PLAN IS IN EFFECT.

10. DURING CONSTRUCTION OPERATIONS, COVER ALL EXISTING SIGNS THAT CONFLICT WITH THE TRAFFIC CONTROL PLAN AND UNCOVER THEM DURING NON-WORKING HOURS OR AS DIRECTED BY THE ENGINEER. PARTIAL COVERAGE OF THE SIGN OR COVERAGE BY MATERIAL THAT DOES NOT COVER THE ENTIRE SIGN FOR THE REQUIRED TIME IS NOT PERMITTED.

11. ALL CONSTRUCTION TRAFFIC WILL BE REGULATED SO AS TO CAUSE A MINIMUM OF INCONVENIENCE TO THE TRAVELING PUBLIC. AT TIMES WHEN IT IS NECESSARY FOR TRUCKS OR OTHER CONSTRUCTION EQUIPMENT TO STOP, UNLOAD, SET-UP, OR CROSS ROADWAYS UNDER TRAFFIC, WARNING SIGNS AND FLAGGERS WILL BE PROVIDED AS DEEMED NECESSARY TO ADEQUATELY PROTECT THE TRAVELING PUBLIC, AND AS DIRECTED BY THE ENGINEER. FURNISH FLAGGERS WITH TWO-WAY RADIOS OR OTHER ENGINEER APPROVED METHODS OF COMMUNICATION FOR HANDLING OF TRAFFIC.

12. USE FLASHING WARNING LIGHTS AND FLAGS TO CALL ATTENTION TO ADVANCED WARNING SIGNS. USE FLASHING WARNING LIGHTS TO MARK CHANNELIZING DEVICES AT NIGHT AS NEEDED. PROVIDE THE NECESSARY FLAGGERS AND APPROPRIATE SIGNING (TO BE CONSIDERED SUBSIDIARY TO ITEM 502, "BARRICADES, SIGNS, AND TRAFFIC HANDLING") TO SAFELY GUIDE TRAFFIC THROUGH THE WORKING AREA.

13. DURING NON-WORKING HOURS, REMOVE ALL SIGNS, BARRICADES, AND CHANNELING DEVICES NOT IN EFFECT FROM THE CONSTRUCTION SITE AND STORE OFF STATE RIGHT-OF-WAY OR AS DIRECTED BY THE ENGINEER.

14. MAINTAIN ALL EXISTING DRAINAGE CONDITIONS DURING ALL CONSTRUCTION PHASES.

15. WORK VEHICLES, AND ALL SIGNS, BARRICADES, AND CHANNELIZING DEVICES NOT IN USE, STOCKPILED MATERIAL, AND WASTE MATERIAL WILL BE PLACED AT A MINIMUM OF 30 FEET FROM THE OUTER EDGE OF THE NEAREST TRAVEL LANE OR AS DIRECTED BY THE ENGINEER.

16. UPON COMPLETION OF WORK, CLEAN THE PROJECT OF ALL CONSTRUCTION MATERIALS, HAVE ALL EXCESS DEBRIS BROOMED AND ALL LOCATIONS ADEQUATELY CLEANED TO A FINAL ACCEPTANCE BEFORE BARRICADES MAY BE REMOVED FROM THE PROJECT.

17. USE OF PORTABLE CHANGEABLE MESSAGE SIGN AS ADVANCE NOTICE OF LANE CLOSURES WILL BE REQUIRED, AS DIRECTED BY THE ENGINEER. FOR LOCATIONS THAT ARE ADJACENT TO EACH OTHER, A SINGLE SIGN IN ADVANCE OF THE ENTIRE WORK AREA IS ACCEPTABLE.

18. PLACE THE CONTROL DEVICES ONLY WHEN WORK IS ACTUALLY IN PROGRESS OR A DEFINITE NEED EXISTS.

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED PROFESSIONAL ENGINEER
10/14/2024

DocuSigned by:
307945B8A8784F3...

Texas Department of Transportation

TCP
GENERAL NOTES

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SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.

DIST	COUNTY	SHEET NO.
22	WEBB,etc.	16

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SEQUENCE OF CONSTRUCTION

SUGGESTED SEQUENCE OF CONSTRUCTION

THE CONTRACTOR WILL PLACE ALL GENERAL PROJECT TRAFFIC CONTROL SIGNS, BARRICADES, AND CHANNELIZING DEVICES AS SHOWN IN THE TCP LAYOUTS INCLUDED IN THE PLANS, LATEST VERSION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TXMUTCD), BARRICADES AND CONSTRUCTION (BC)SHEETS, WORK ZONE STANDARD SHEETS, CONSTRUCTION STANDARD SHEETS, AND AS NOTED IN THE GENERAL NOTES.

THE FOLLOWING BRIEFLY DESCRIBES THE SEQUENCE OF WORK, UNLESS OTHERWISE SPECIFIED, ALL CONSTRUCTION TO BE PERFORMED OFF THE ROADWAY LIMITS USE TCP (2-1)-18.

A. IDENTIFY REPAIR LOCATION AS SHOWN ON PLANS.
B. CONCRETE REPAIR AREAS IDENTIFIED ON PLANS AS PER CONCRETE REPAIR MANUAL.
C. PLACE FLOWABLE BACKFILL AND RIPRAP AS DEPICTED ON PLANS.
D. RESHAPE DITCH AND TRIM TREES.
E. WHERE APPLICABLE, CONSTRUCT JOINT REPAIRS AND REPLACEMENT OF JOINTS.
F. CLEAN & RESEAL EXISTING JOINTS ON BRIDGES.

AFTER SUCH TASKS HAVE BEEN COMPLETED AND WITH THE APPROVAL OF THE ENGINEER, RELOCATE THE MATERIALS AS DIRECTED BY THE ENGINEER.

UPON COMPLETION OF ALL CONSTRUCTION WORK, INITIATE PROJECT CLEAN-UP WITH THE APPROVAL OF THE ENGINEER AND REMOVAL OF TCP MAY INITIATE.

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED
PROFESSIONAL ENGINEER
10/14/2024

DocuSigned by:
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Texas Department of Transportation

TCP
SEQUENCE OF CONSTRUCTION

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CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.

DIST	COUNTY	SHEET NO.
22	WEBB,etc.	17

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

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©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 7-13 / 8-14 / 5-21	6469	22	001	IH35,etc.
	DIST	COUNTY		SHEET NO.
	22	WEBB,etc.		18

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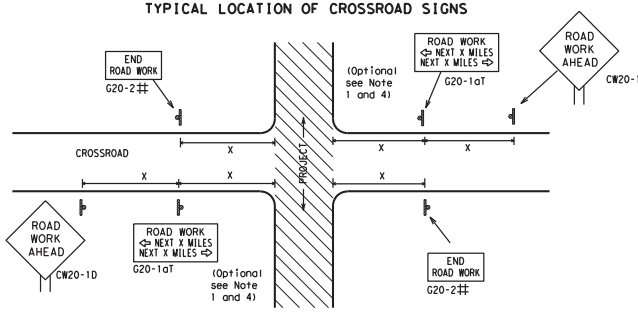
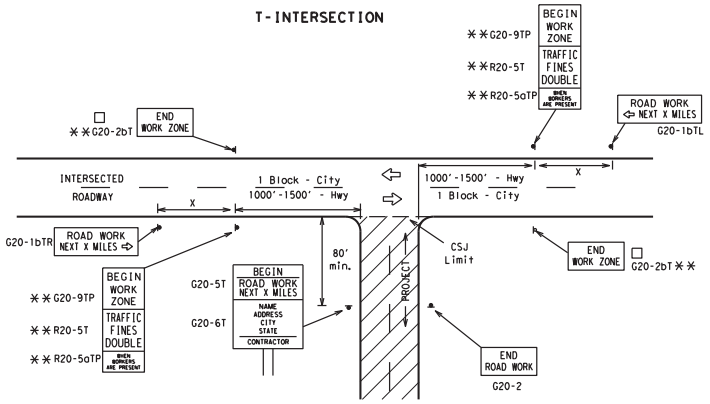
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING[4,5,6]

SIZE

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

SPACING

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

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

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

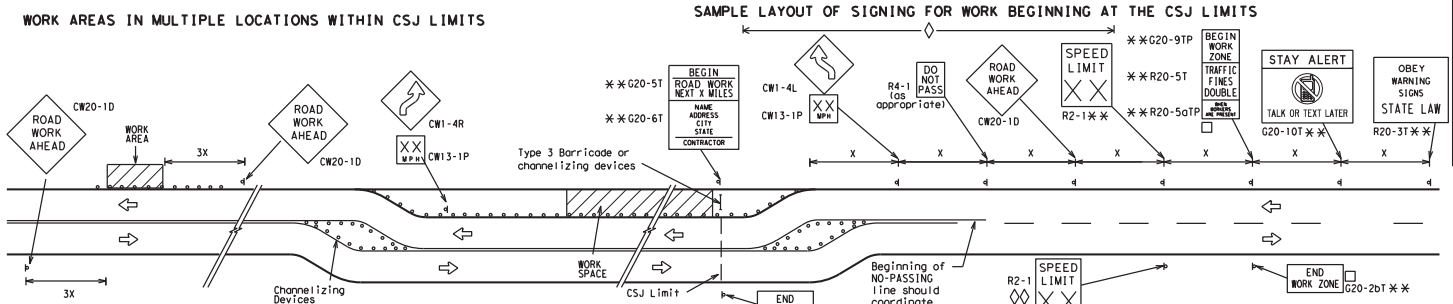
GENERAL NOTES

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

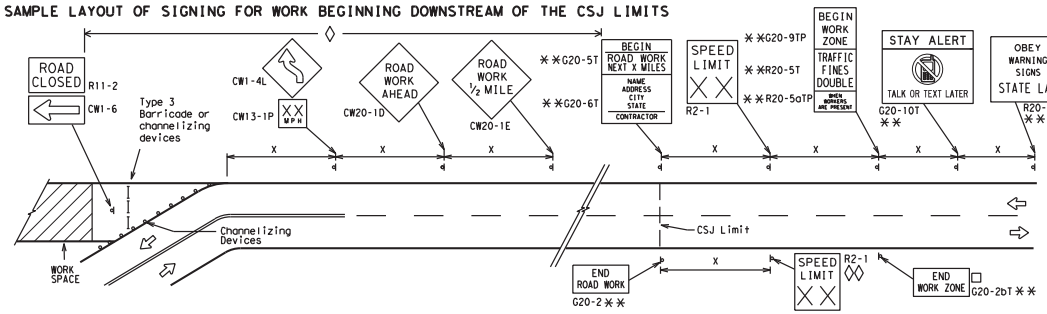
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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



NOTES

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

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

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

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

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

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

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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REVISIONS		6469	22	001	IH35, etc.
9-07 8-14		DIST	COUNTY		SHEET NO.
7-13 5-21		22	WEBB, etc.		19

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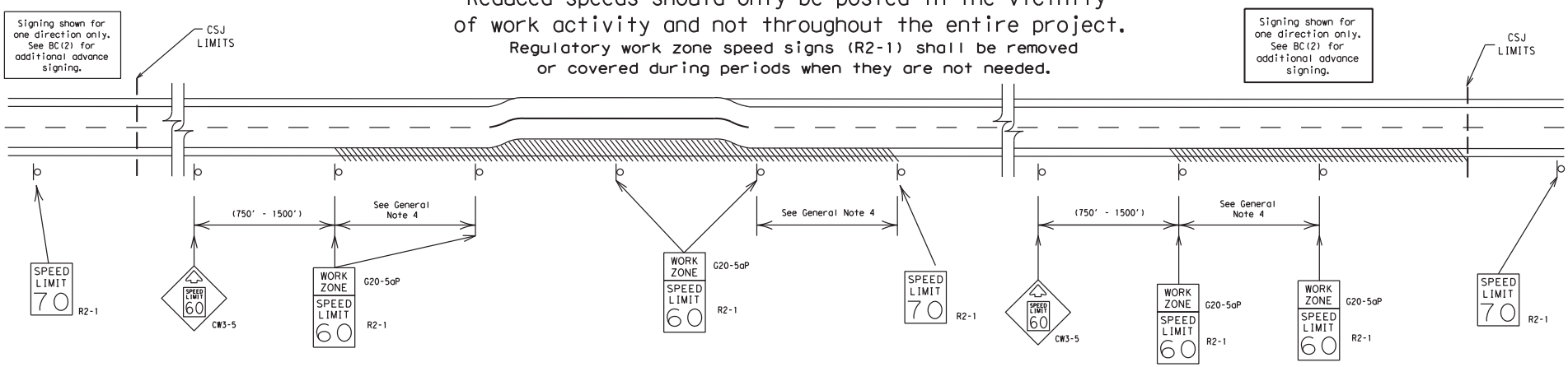
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

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SHEET 3 OF 12

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	6469	22	001	IH35,etc.
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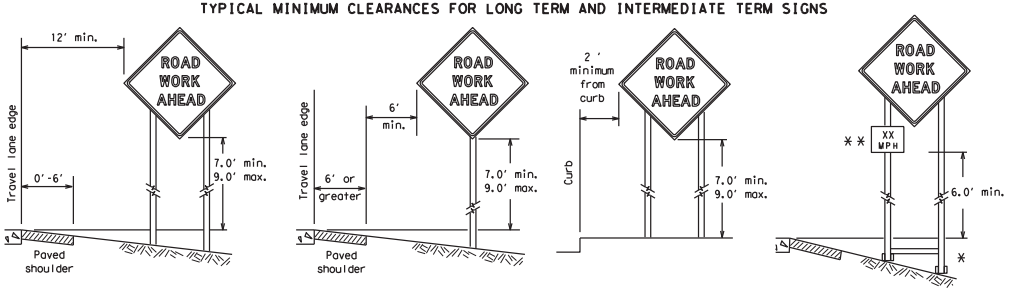
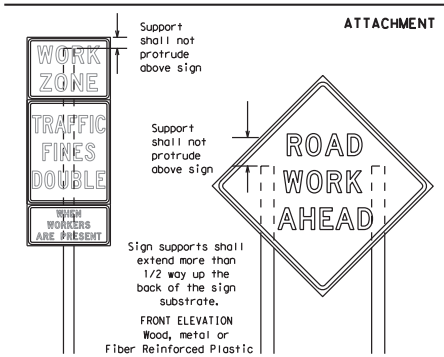
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



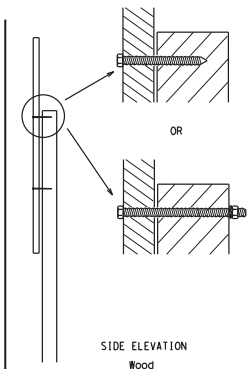
* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

** 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



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.

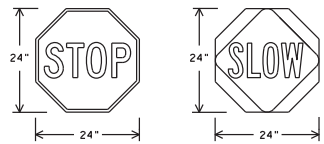


Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

STOP/SLOW PADDLES

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



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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7-13 5-21	22	WEBB,etc.		21

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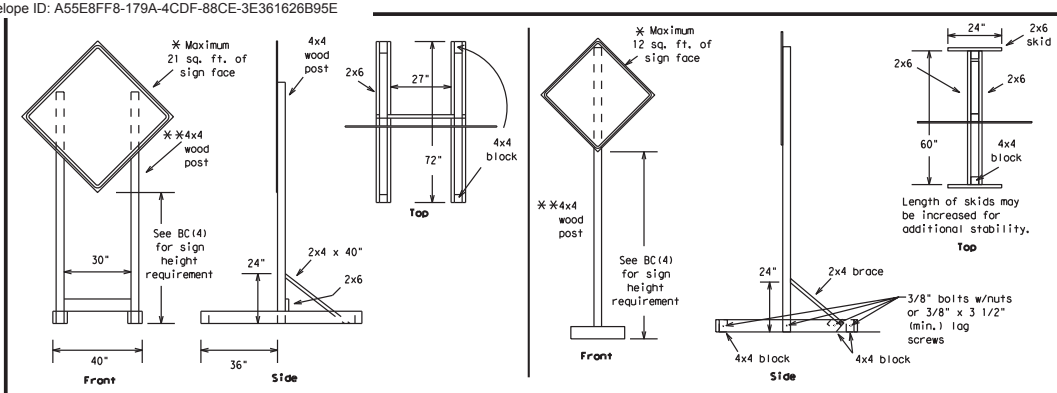
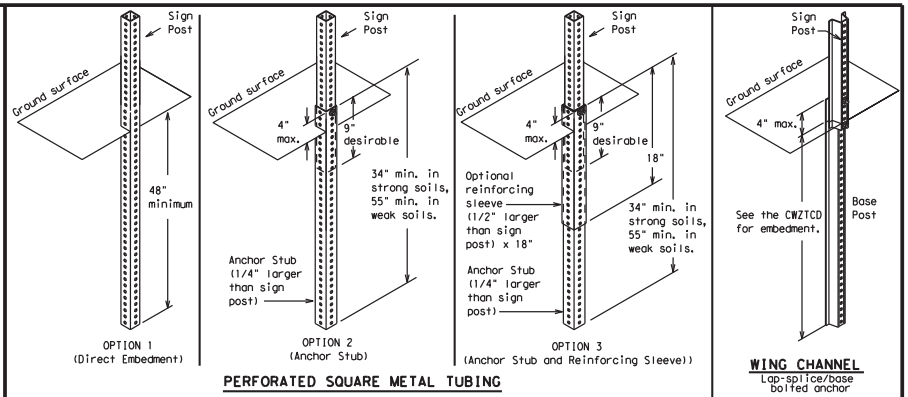


SKID MOUNTED WOOD SIGN SUPPORTS

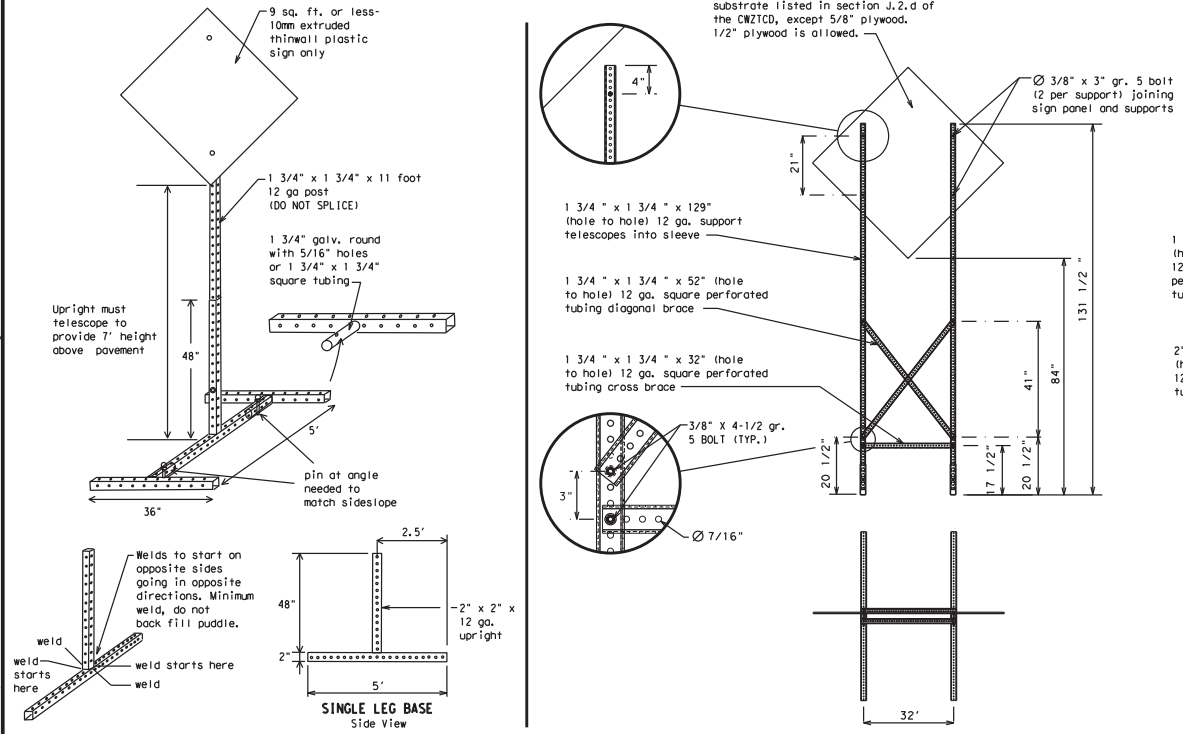
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



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.



SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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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	ROADWORK XXX FT	ROAD REPAIRS XXXX FT
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT	FLAGGER XXXX FT	LANE NARROWS XXXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT	RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
RIGHT X LANES CLOSED	RIGHT X LANES OPEN	MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
CENTER LANE CLOSED	DAYTIME LANE CLOSURES	LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED	DETOUR X MILE	ROUGH ROAD XXXX FT
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE	ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
EXIT CLOSED	RIGHT LN TO BE CLOSED	BUMP XXXX FT	US XXX EXIT X MILES
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI	TRAFFIC SIGNAL XXXX FT	LANES SHIFT *
XXXXXXXX BLVD CLOSED			

Other Condition List

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List		Location List	Warning List	** Advance Notice List
MERGE RIGHT	FORM X LINES RIGHT	AT FM XXXX	SPEED LIMIT XX MPH	TUE-FRI XX AM- X PM
DETOUR NEXT X EXITS	USE XXXXX RD EXIT	BEFORE RAILROAD CROSSING	MAXIMUM SPEED XX MPH	APR XX- XX X PM-X AM
USE EXIT XXX	USE EXIT I-XX NORTH	NEXT X MILES	MINIMUM SPEED XX MPH	BEGINS MONDAY
STAY ON US XXX SOUTH	USE I-XX E TO I-XX N	PAST US XXX EXIT	ADVISORY SPEED XX MPH	BEGINS MAY XX
TRUCKS USE US XXX N	WATCH FOR TRUCKS	XXXXXXX TO XXXXXXX	RIGHT LANE EXIT	MAY X-X XX PM - XX AM
WATCH FOR TRUCKS	EXPECT DELAYS	US XXX TO FM XXXX	USE CAUTION	NEXT FRI-SUN
EXPECT DELAYS	PREPARE TO STOP		DRIVE SAFELY	XX AM TO XX PM
REDUCE SPEED XXX FT	END SHOULDER USE		DRIVE WITH CARE	NEXT TUE AUG XX
USE OTHER ROUTES	WATCH FOR WORKERS			TONIGHT XX PM- XX AM
STAY IN LANE *				

** 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

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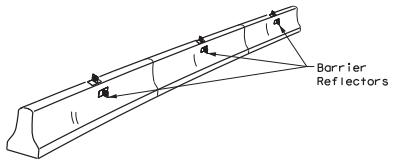
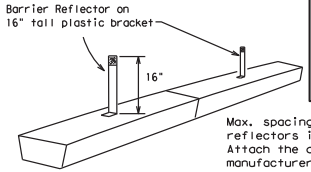
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



CONCRETE TRAFFIC BARRIER (CTB)

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

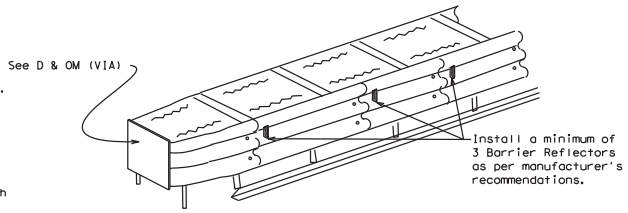


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

LOW PROFILE CONCRETE BARRIER (LPCB)

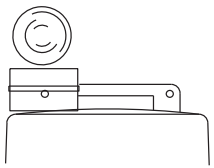


DELINEATION OF END TREATMENTS

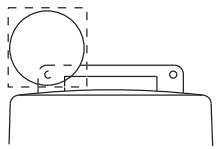
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

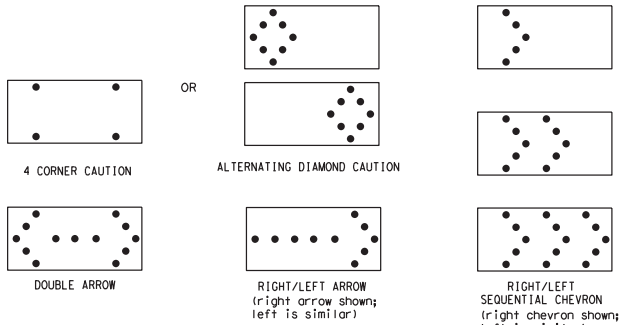
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation — Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	6469	22	001	IH35,etc.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	22	WEBB,etc.		24

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

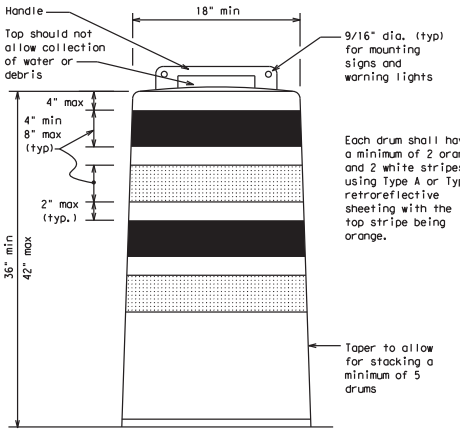
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

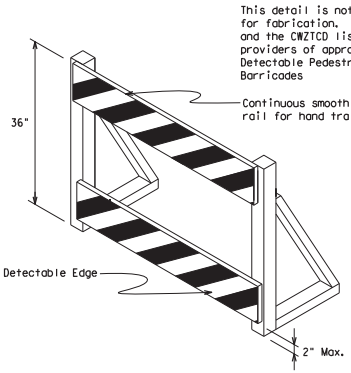
RETROREFLECTIVE SHEETING

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

BALLAST

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





DETECTABLE PEDESTRIAN BARRICADES

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

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

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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

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9-07 5-21	22	WEBB,etc.		25
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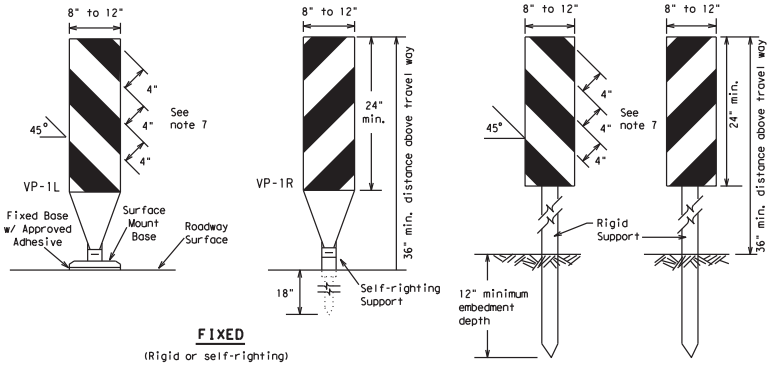
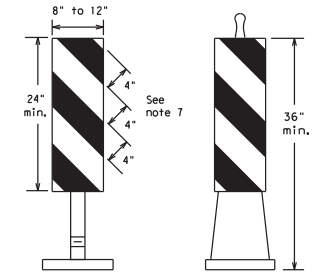


FIXED
(Rigid or self-righting)

DRIVEABLE

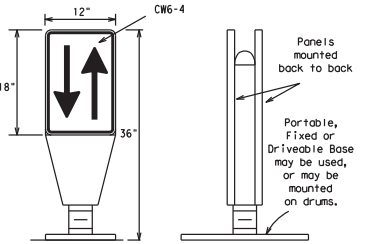


(Rigid or self-righting)

PORTABLE

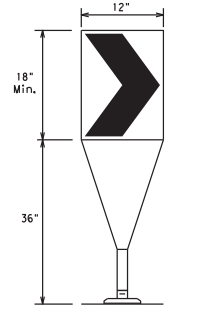
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is 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)



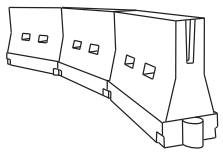
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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©TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS		6469	22	001	IH35, etc.
9-07 8-14		DIST	COUNTY		SHEET NO.
7-13 5-21		22	WEBB, etc.		26

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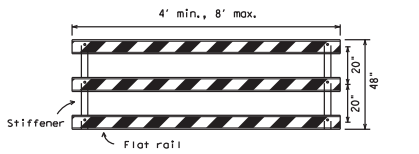
TYPE 3 BARRICADES

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.

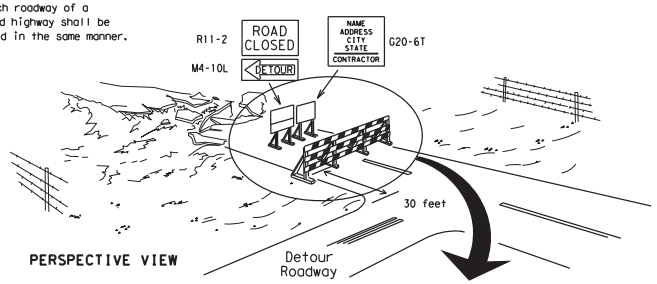
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

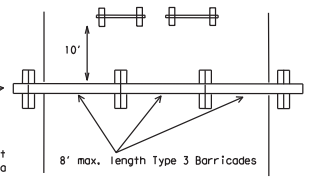
Each roadway of a divided highway shall be barricaded in the same manner.



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.

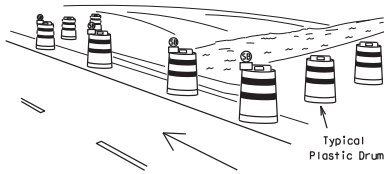
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

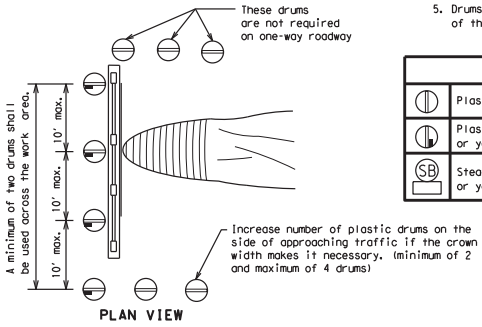
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

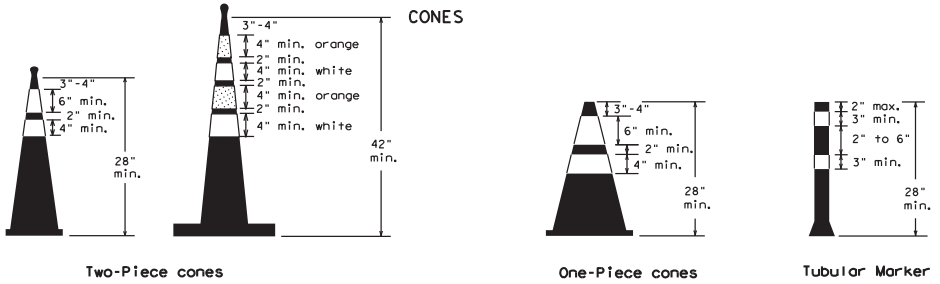
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder 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.



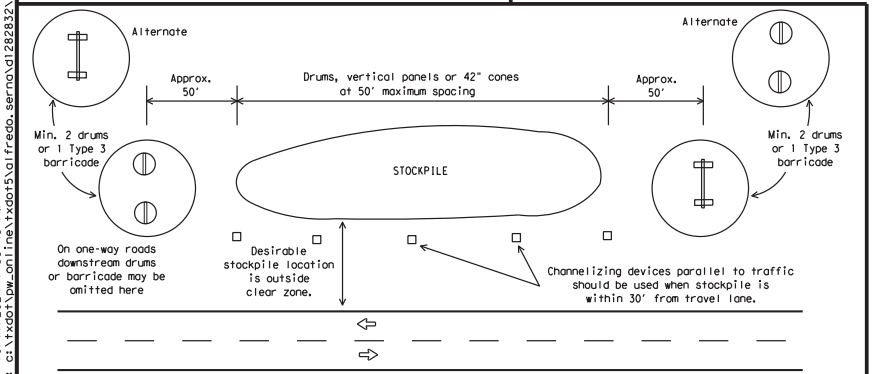
PLAN VIEW

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

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.

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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	22	WEBB,etc.		27

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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.

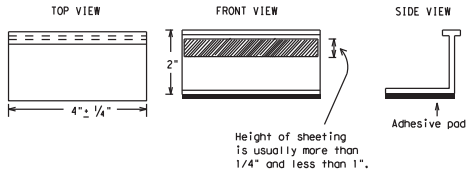
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

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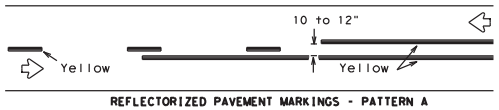
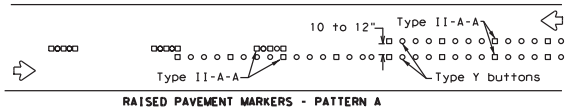
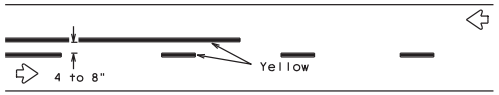
PAVEMENT MARKING PATTERNS



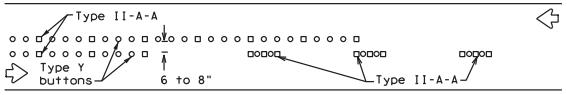
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



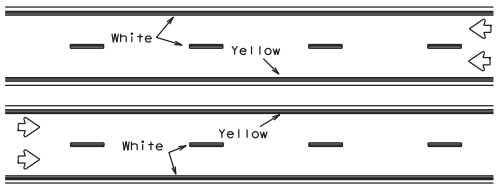
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



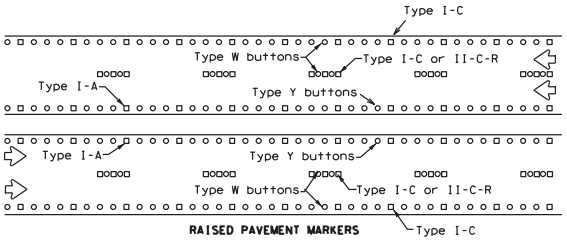
RAISED PAVEMENT MARKERS - PATTERN B

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



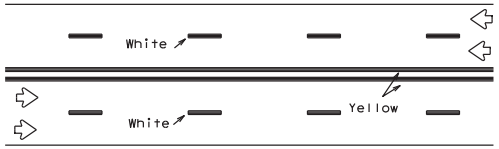
REFLECTORIZED PAVEMENT MARKINGS



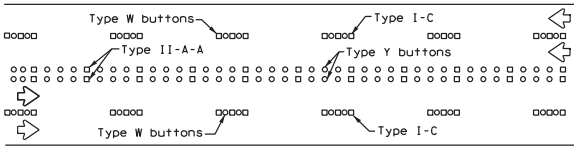
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



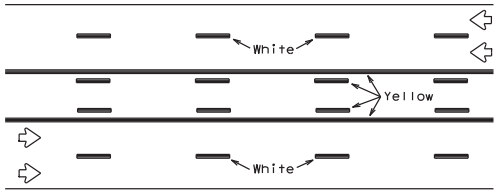
REFLECTORIZED PAVEMENT MARKINGS



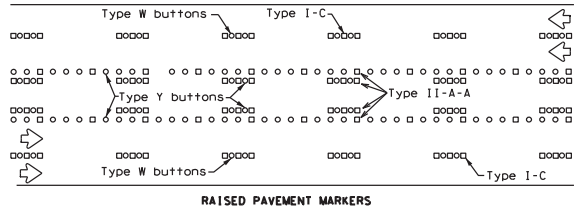
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

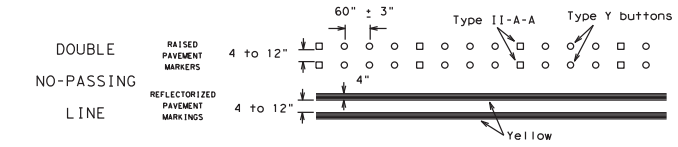


RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

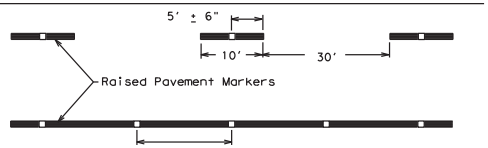
TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



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

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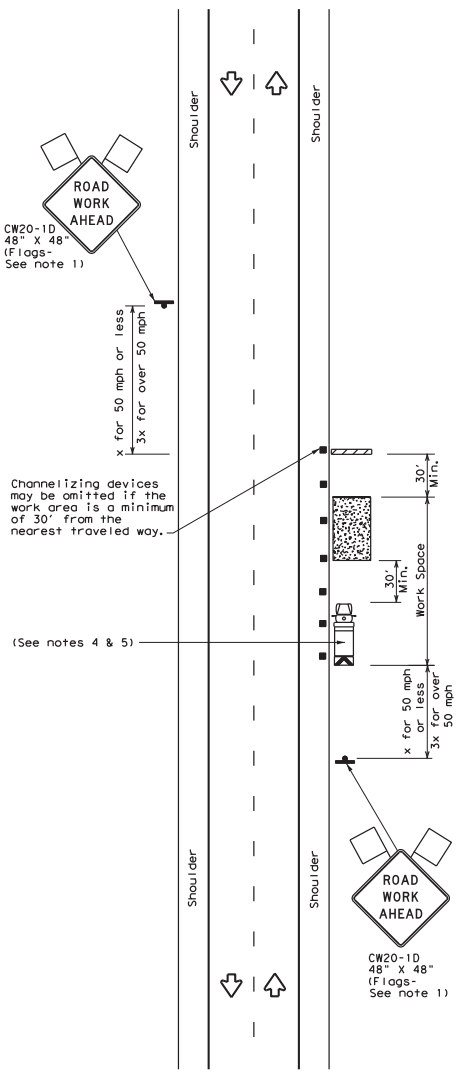
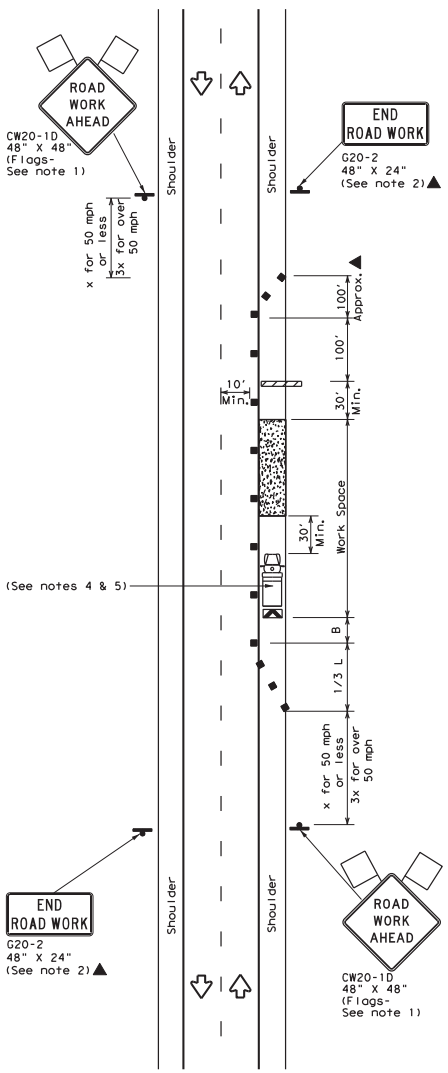


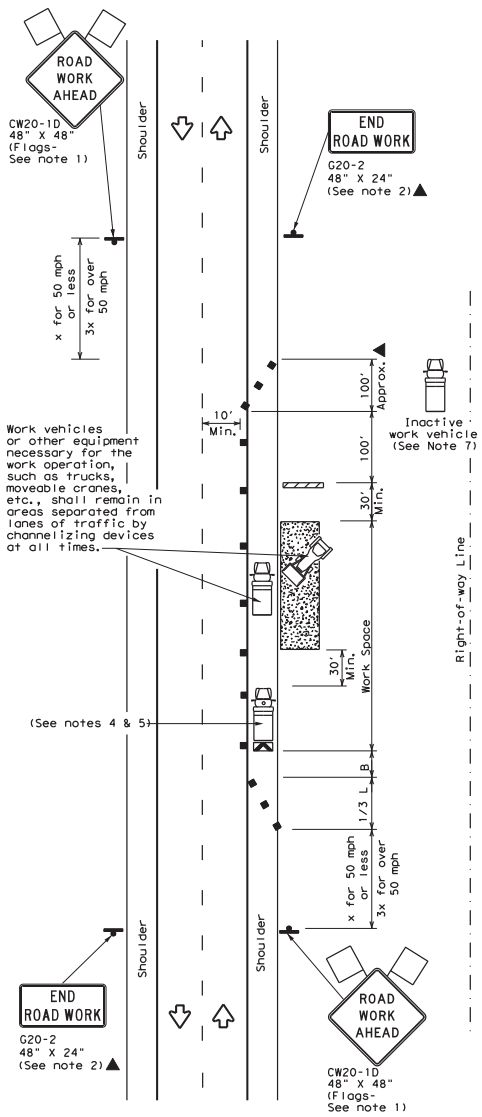
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	6469	22	001	IH35,etc.
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	22	WEBB,etc.		30
1-97 2-18				

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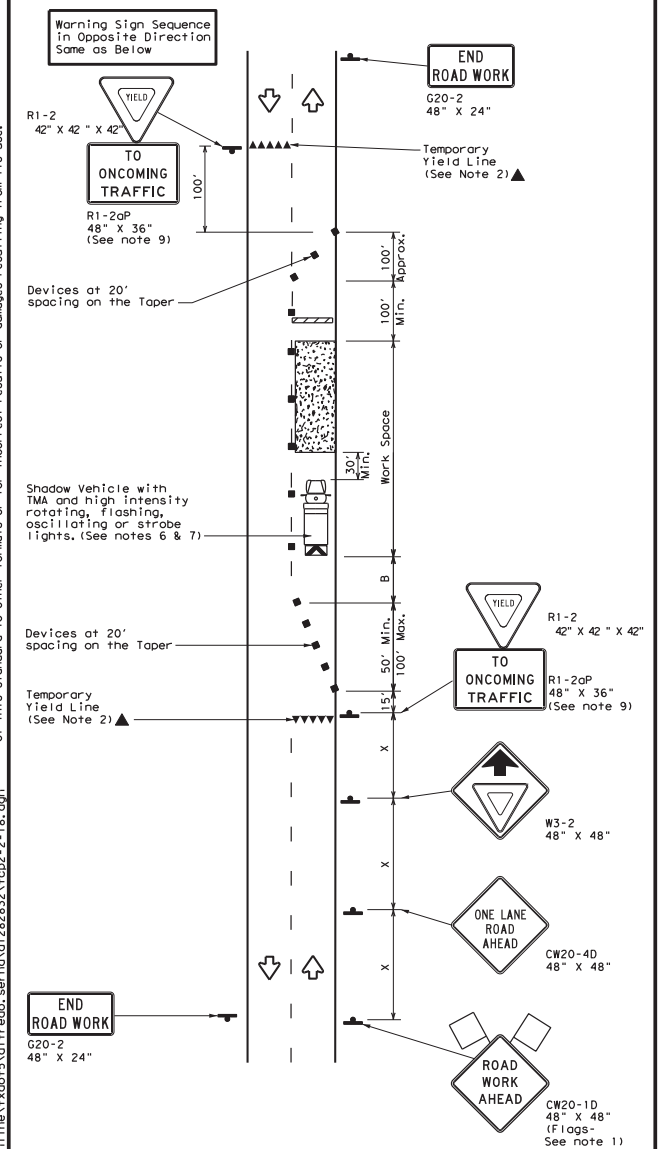
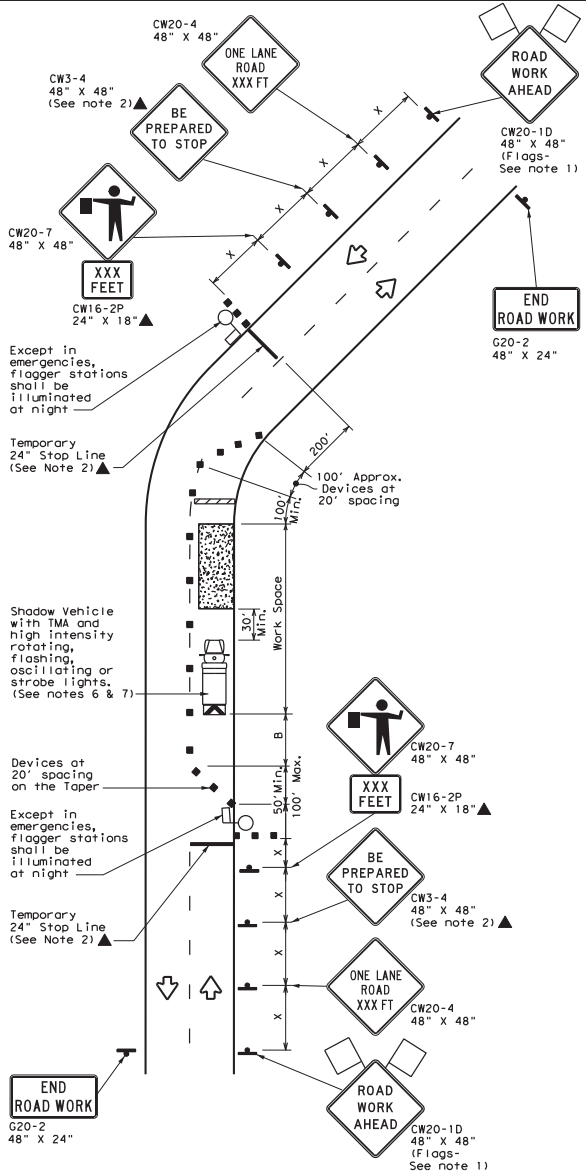


TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



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

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

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

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

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

GENERAL NOTES

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

TCP (2-2a)

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

TCP (2-2b)

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

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(2-2)-18

FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	6469	22	001	IH35, etc.
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	22	WEBB, etc.		31
4-98 2-18				

162

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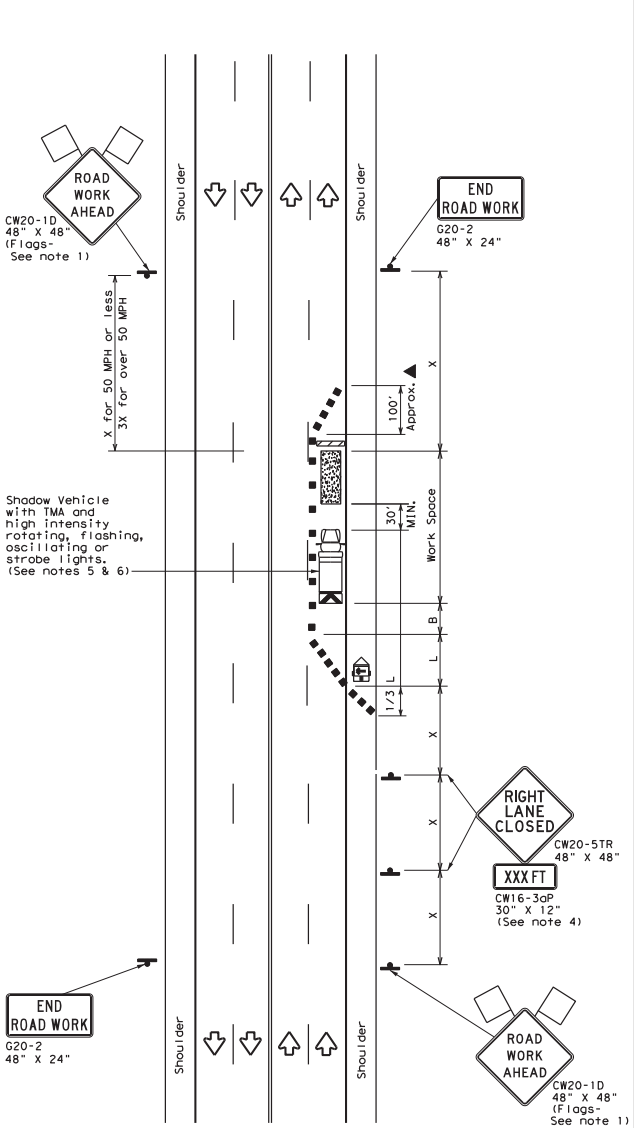
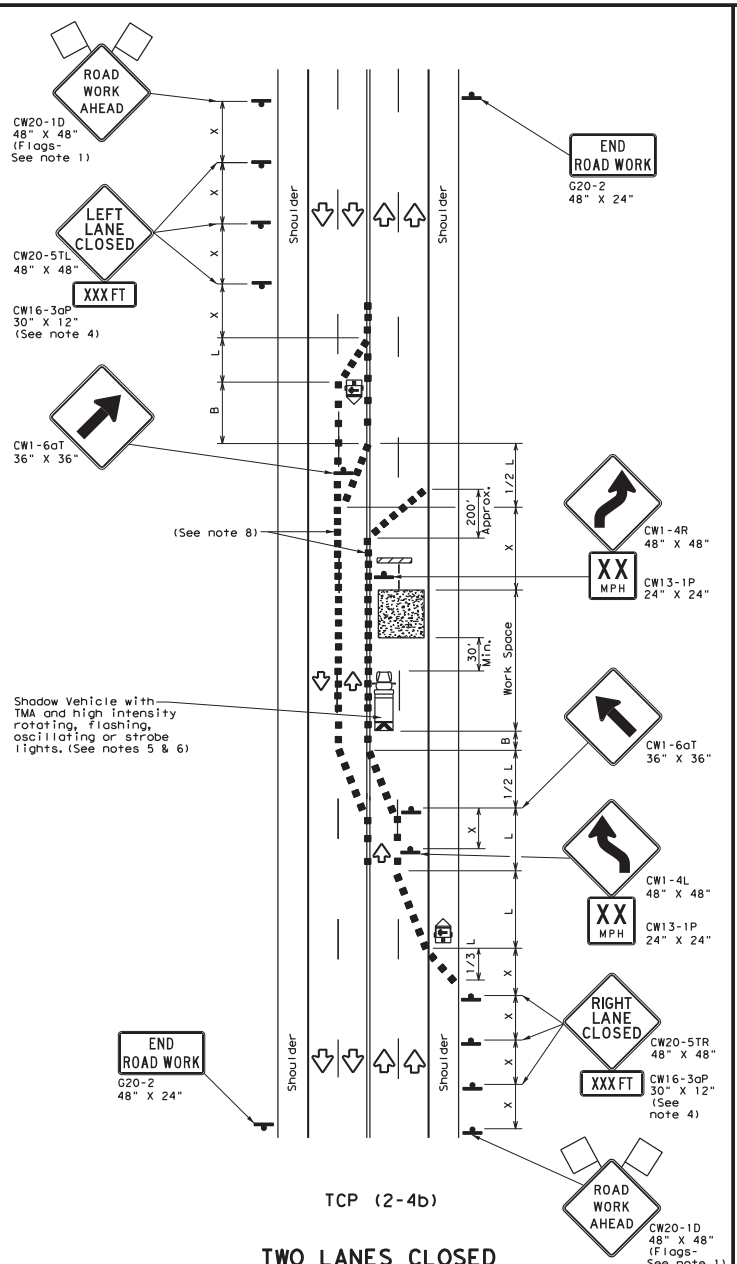


TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

TCP (2-4a)

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

TCP (2-4b)

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

Texas Department of Transportation — *Traffic Operations Division Standard*

TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(2-4)-18

FILE: tcp2-4-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03	6469	22	001	IH35, etc.
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	22	WEBB, etc.		32

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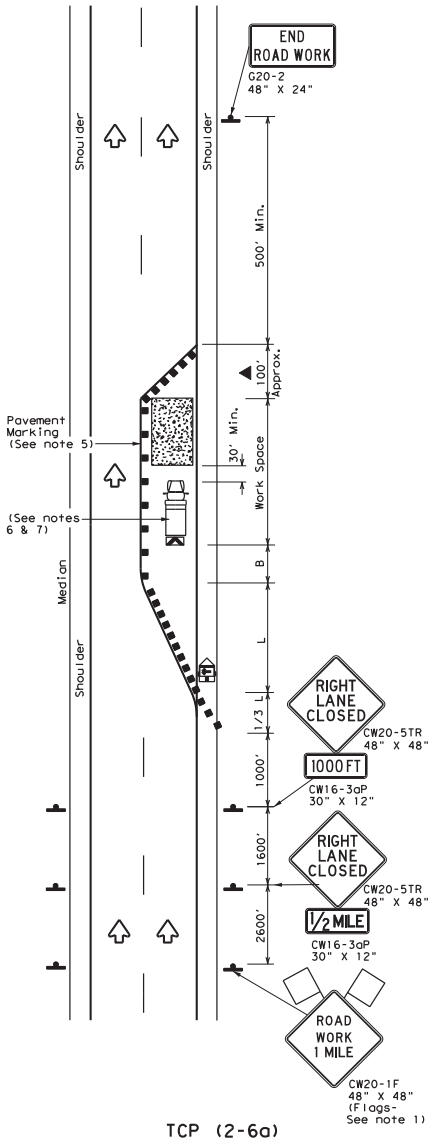
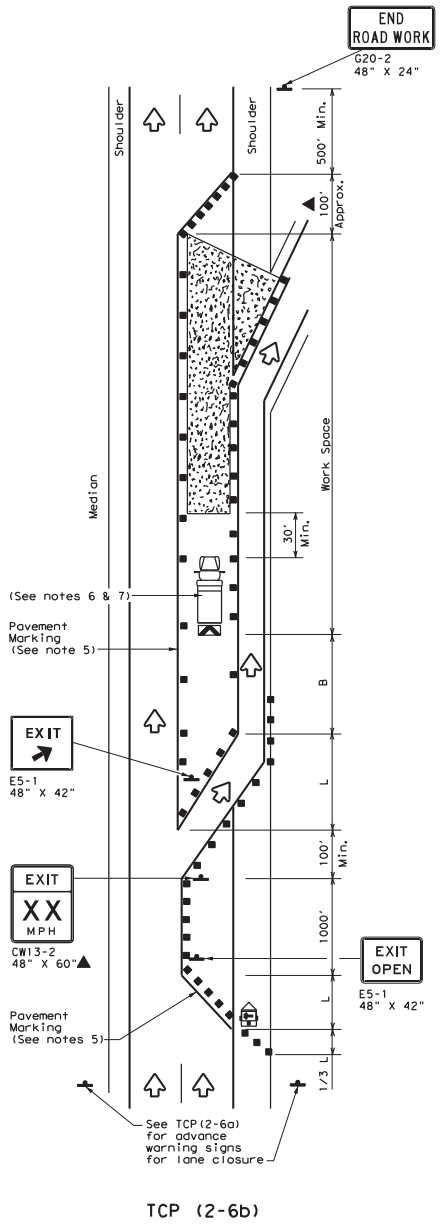


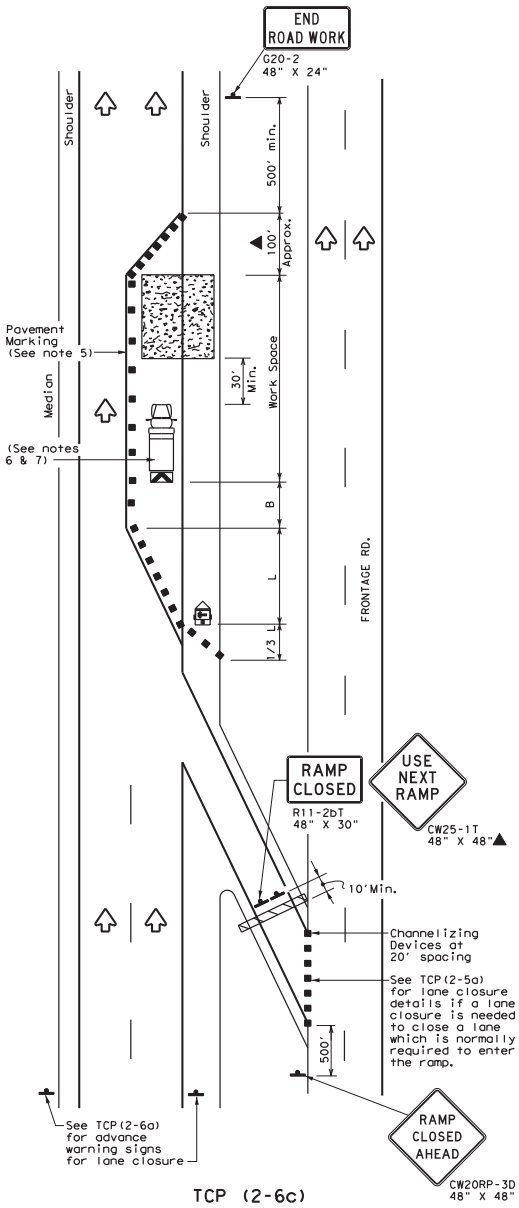
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-6c)

LANE CLOSURE NEAR ENTRANCE RAMPS

LEGEND

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

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

* Conventional Roads Only

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

TYPICAL USAGE

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

TCP(2-6)-18

FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	6469	22	001	IH35, etc.
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	22	WEBB, etc.		33
1-97 2-18				

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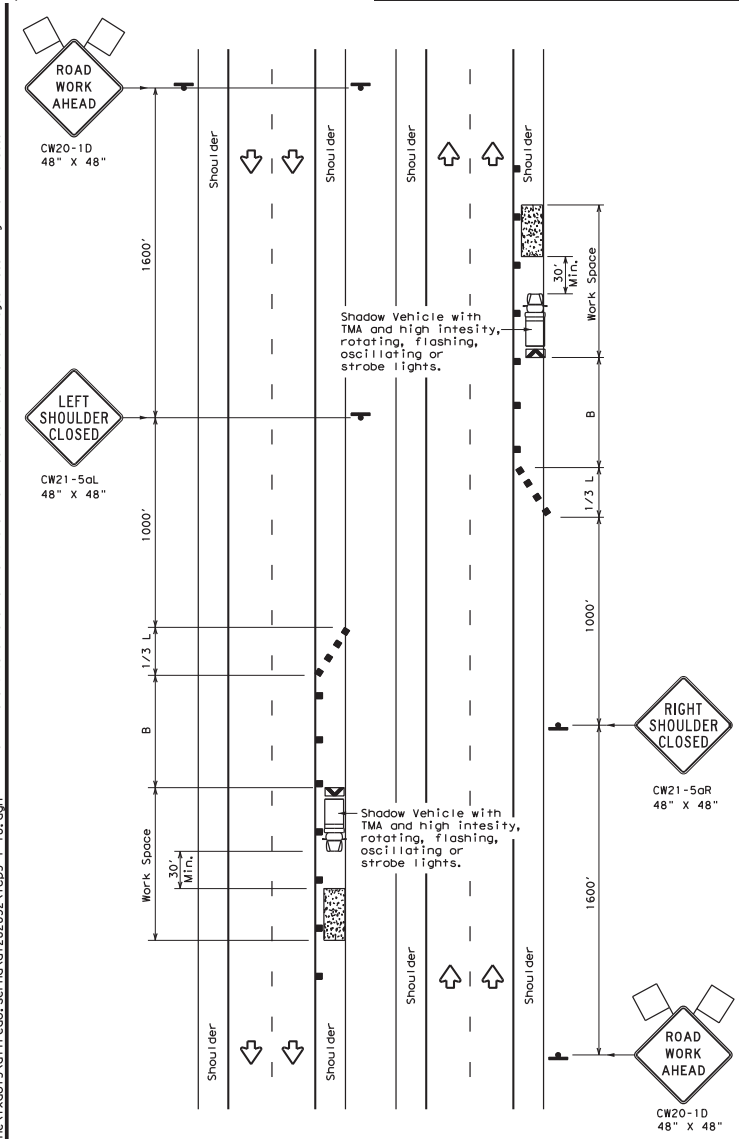
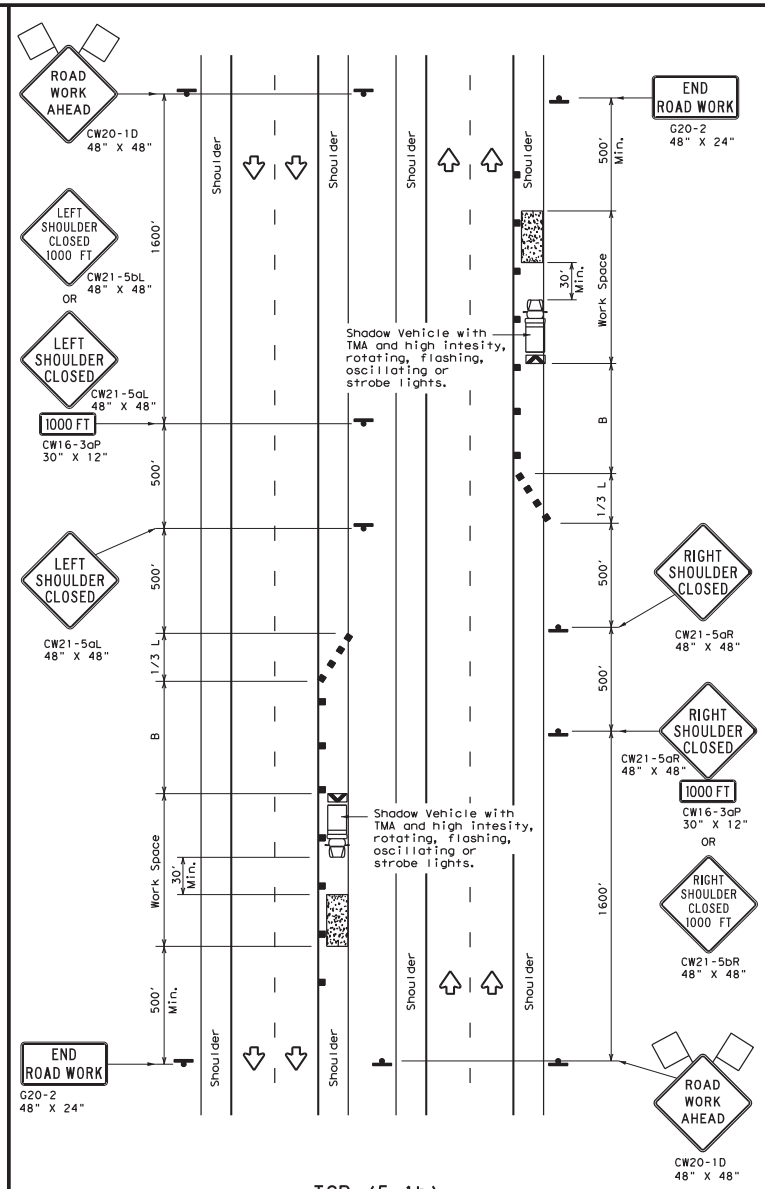


TCP (5-1a)

WORK AREA ON SHOULDER



TCP (5-1b)

WORK AREA ON SHOULDER

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	90'
35		205'	225'	245'	35'	70'	120'
40		265'	295'	320'	40'	80'	155'
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	TCP(5-1a)	TCP(5-1b)	TCP(5-1b)	

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN SHOULDER WORK FOR FREEWAYS / EXPRESSWAYS

TCP(5-1)-18

FILE: tcp5-1-18.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-18	6469	22	001	IH35, etc.
	DIST	COUNTY		SHEET NO.
	22	WEBB, etc.		34

190

Docusign Envelope ID: A55E8FF8-179A-4CDF-88CE-3E361626B95E

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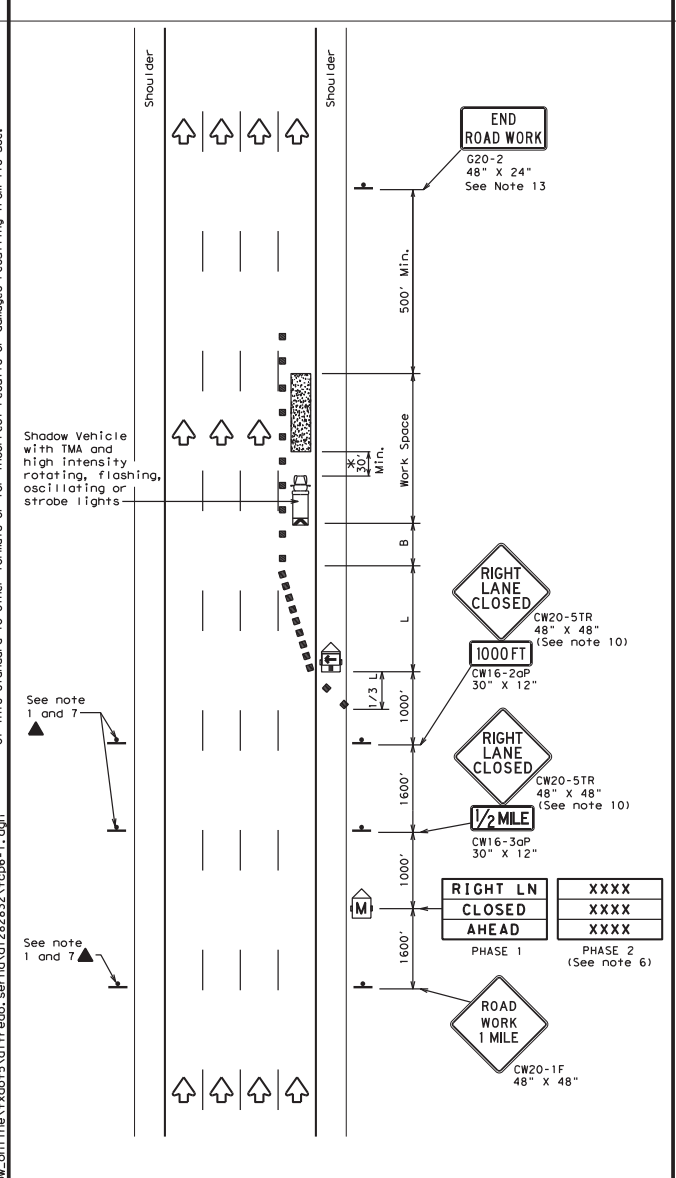
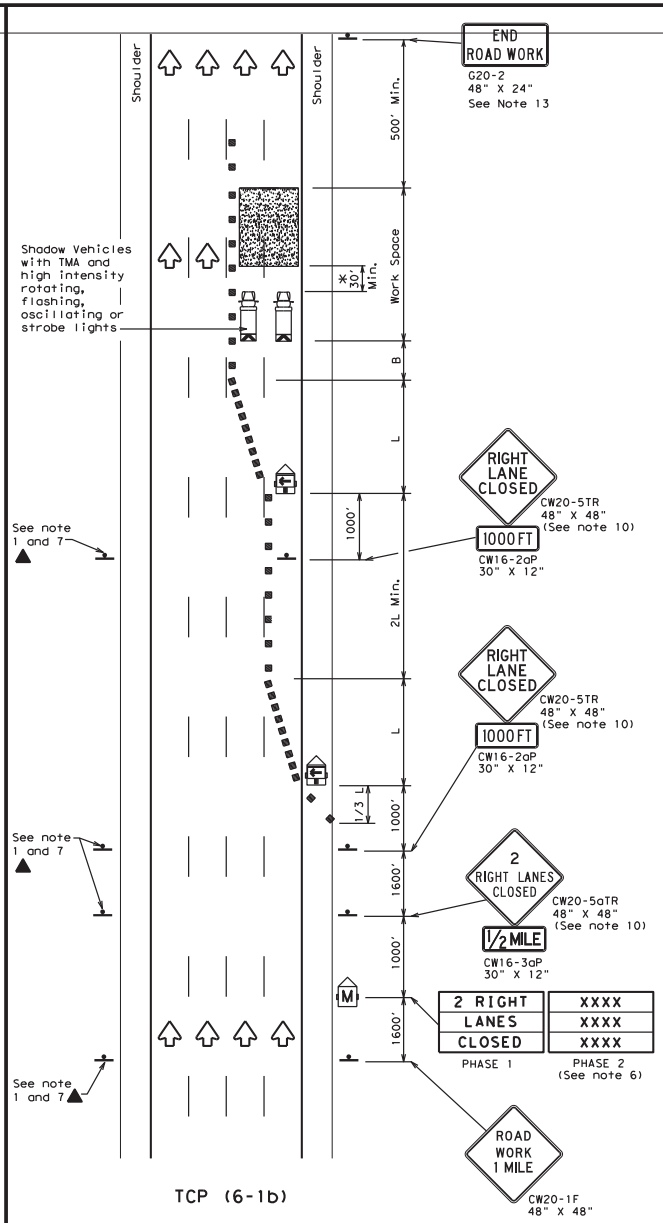


TCP (6-1a)

TYPICAL FREEWAY ONE LANE CLOSURE



TCP (6-1b)

TYPICAL FREEWAY TWO LANE CLOSURE

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

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

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

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

GENERAL NOTES

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

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

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN FREEWAY LANE CLOSURES

TCP(6-1)-12

FILE: tcp6-1.dgn		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS		6469	22	001	IH35, etc.
8-12		DIST	COUNTY		SHEET NO.
		22	WEBB, etc.		35

201

Docusign Envelope ID: A55E8FF8-179A-4CDF-88CE-3E361626B95E

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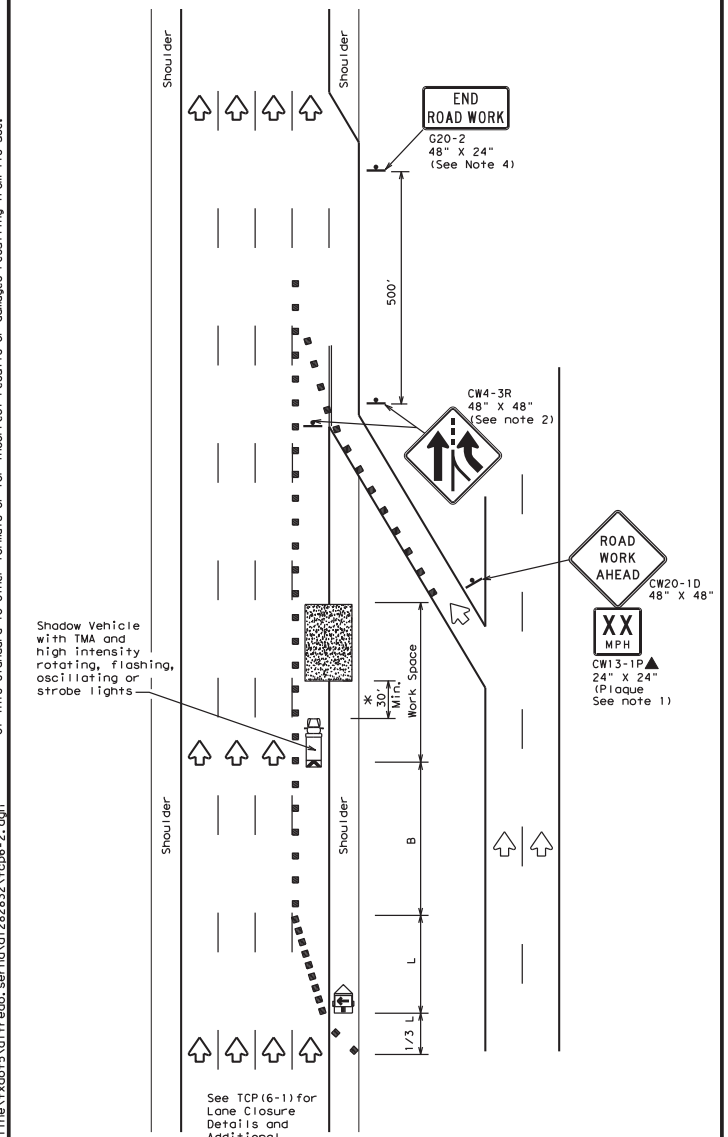
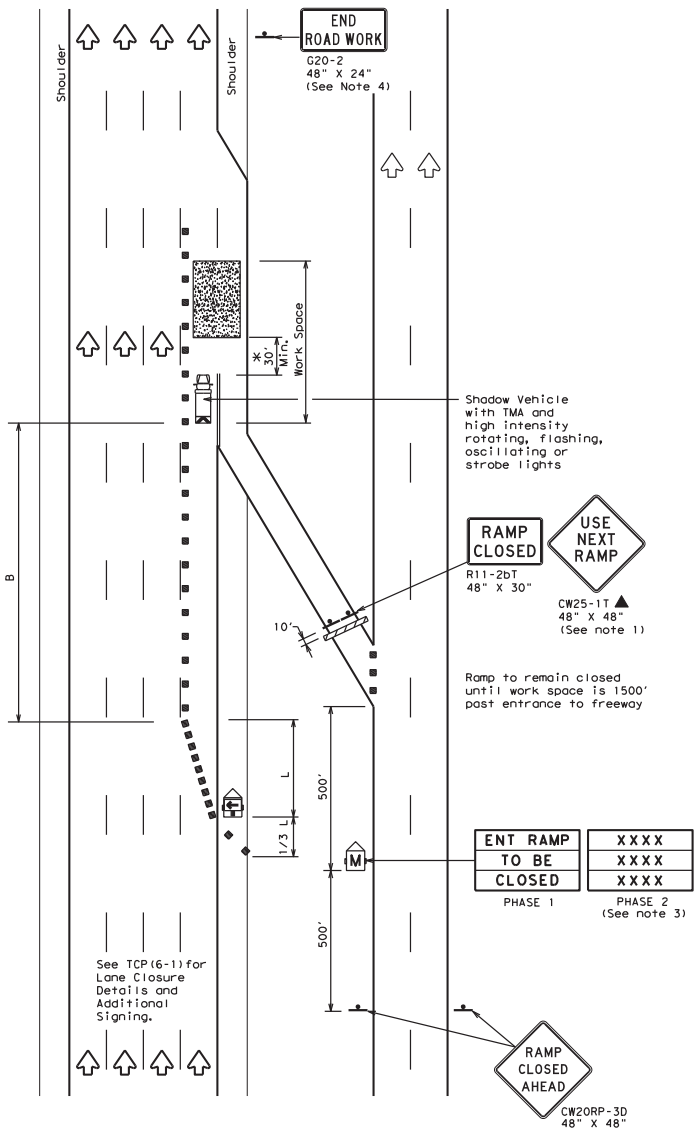


TCP (6-2a)

ENTRANCE RAMP OPEN
WORK WITHIN 500' OF RAMP



TCP (6-2b)

ENTRANCE RAMP CLOSED

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

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

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

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

GENERAL NOTES

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

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

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

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA NEAR RAMP

TCP(6-2)-12

FILE: tcp6-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	6469	22	001	IH35,etc.
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	22	WEBB,etc.		36

202

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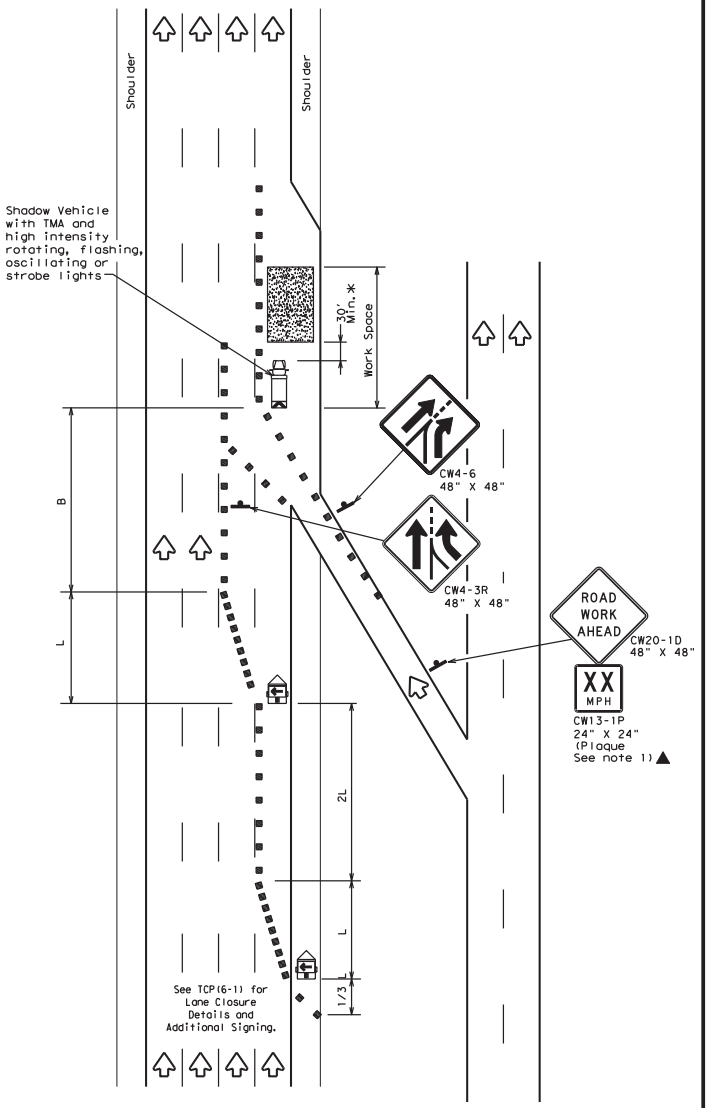
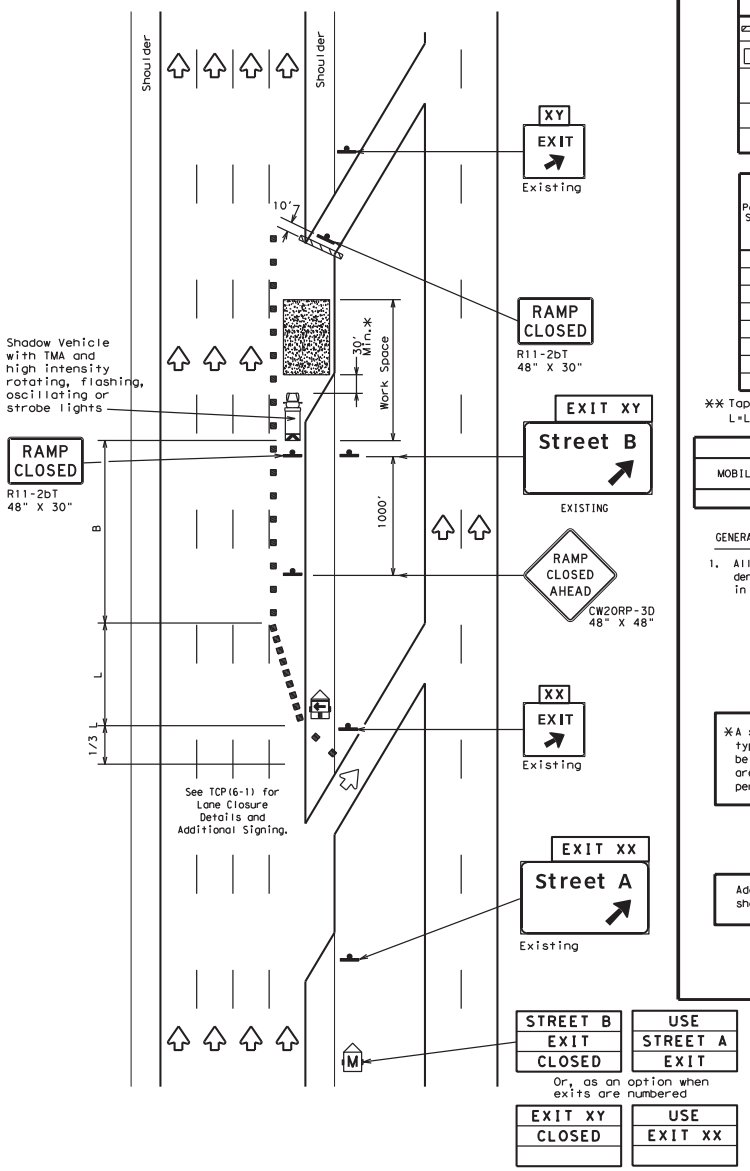


TCP (6-3a)

ENTRANCE RAMP OPEN



TCP (6-3b)

EXIT RAMP CLOSED
TRAFFIC EXITS PRIOR TO CLOSED RAMP

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

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

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

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

GENERAL NOTES:

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

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

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

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA BEYOND RAMP

TCP(6-3)-12

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©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	6469	22	001	IH35,etc.
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	22	WEBB,etc.		37

203

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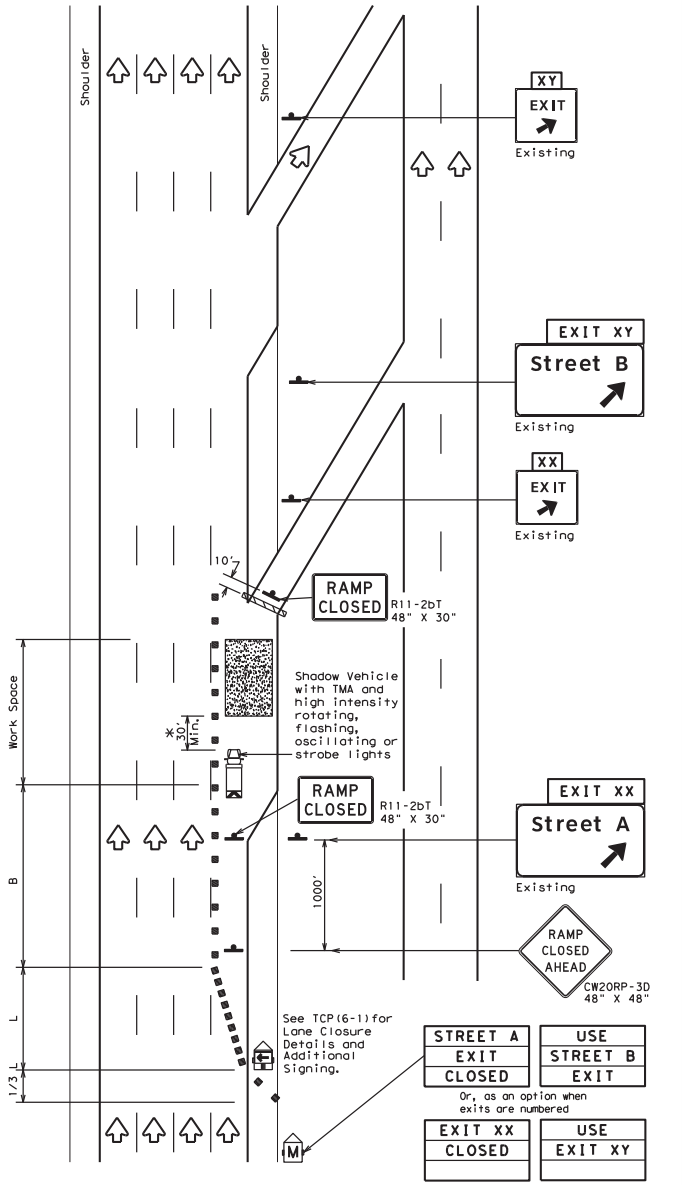
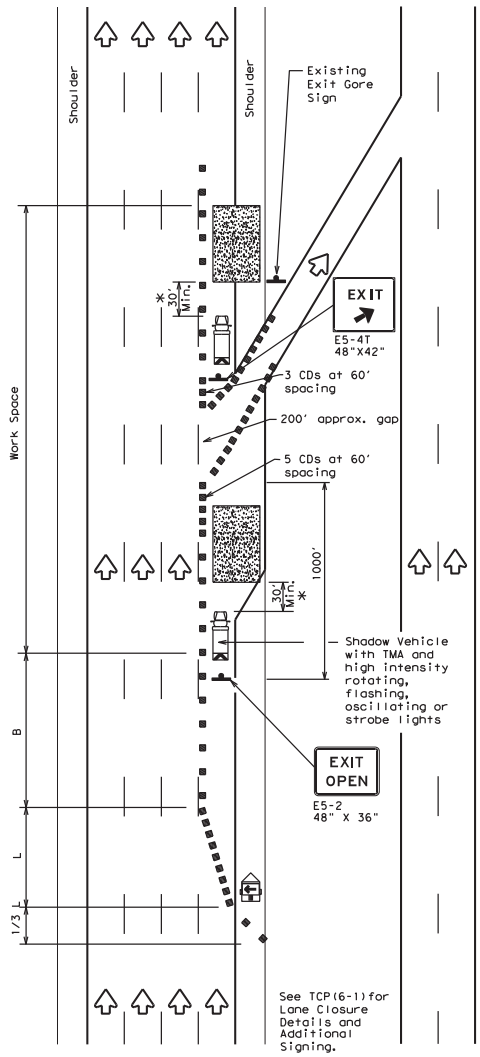


TCP (6-4a)

EXIT RAMP CLOSED
TRAFFIC EXITS PAST CLOSED RAMP



TCP (6-4b)

EXIT RAMP OPEN

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

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

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

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

GENERAL NOTES

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

2. See BC Standards for sign details.

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

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

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA AT EXIT RAMP

TCP(6-4)-12

FILE: tcp6-4.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT Feburary 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	6469	22	001	IH35,etc.
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	22	WEBB,etc.		38

204

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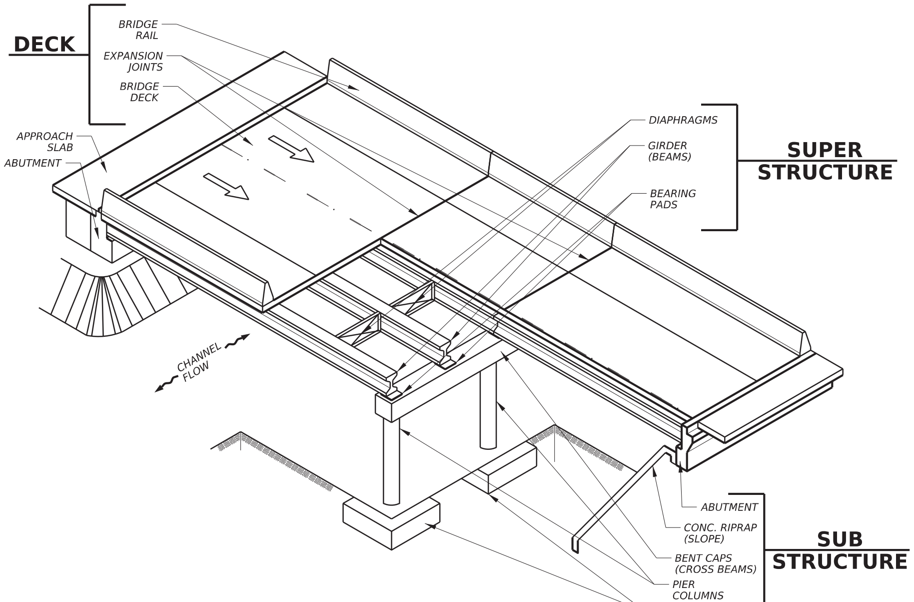


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

NOTES:

1. *IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.*
2. *SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.*

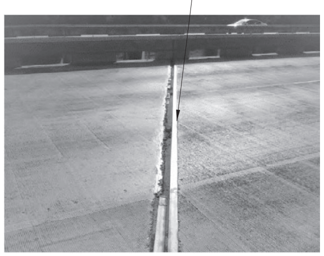
REPAIR CALLOUTS:

A. DECK
1. JOINTS ARE FILLED WITH GRAVEL AND DEBRIS. BENT 5 JOINT SEALANT HAS FAILED. A SECTION OF BENT 5 JOINT STEEL ARMOR PLATE, APPROX. 30" LONG, IS MISSING (SEE PHOTO), REMAINING SECTION HAS SHIFTED, APPROX. 1.5" AND SETTLED AT WEST SHOULDER.
2. END OF NORTHWEST CORNER BRIDGE RAILING EXTENSION HAS FRACTURED, APPROX. 4 SF AREA X FULL DEPTH (SEE PHOTO).

B. SUPER-STRUCTURE
1. OUTSIDE FASCIAS OF SLABS HAVE MINOR VERTICAL CRACKS, SOME WITH EFFLORESCENCE OVER CONTINUOUS BENTS. SLAB SOFFIT HAS MINOR LONGITUDINAL AND DIAGONAL CRACK, SOME WITH EFFLORESCENCE AND RUST STAINING (SEE SUPERSTRUCTURE PHOTO).

C. SUB-STRUCTURE
1. CLEAN DEBRIS OVER ABUTMENTS AND BENT CAPS
2. ABUTMENT CAPS HAVE MINOR VERTICAL CRACKS. ENDS OF NORTH ABUTMENT CAP HAS MINOR SPALLS, UP TO 1 SF AREA X 1" DEEP.
3. BENT CAPS HAVE MINOR FLEXURAL CRACKS, SOME WITH EFFLORESCENCE OVER AND BETWEEN COLUMNS. WEST END OF BENT CAP 5 HAS WATER STAINING DUE TO JOINT LEAKAGE. NORTH FASCIA OF BENT CAP 6 HAS A MINOR SPALL, APPROX. 6" DIA. X 1" DEEP, NEAR EAST COLUMN.

LOCATION - PSN		429 7001 CONC STR REPAIR(CLEAN & COAT WTH EPOXY)	429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	785 7004 BRIDGE JOINT REPAIR (ARMOR)	780 7004 CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
1	222400001803158						
COMPONENT	CALLOUT:	SF	SF	LF	LF	EA	
A. DECK	1			40			634436
	2		4				634437
	3						
	4						
	5						
B. SUPER STRUCTURE	1				20		
	2						
	3						
	4						
	5						
C. SUB STRUCTURE	1					4	
	2	2					
	3		2				
	4						
	5						
	TOTAL	2	6	40	20	4	



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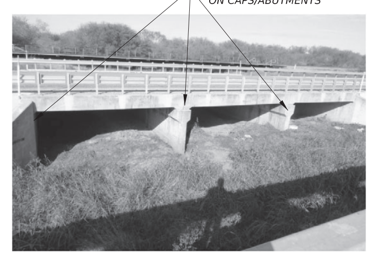
A2

B1



C1

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED
PROFESSIONAL ENGINEER
10/14/2024

DocuSigned by:
307945B8A8784F3...

Texas Department of Transportation

BRIDGE PREVENTIVE MAINTENANCE

PSN:222400001803158

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CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		39

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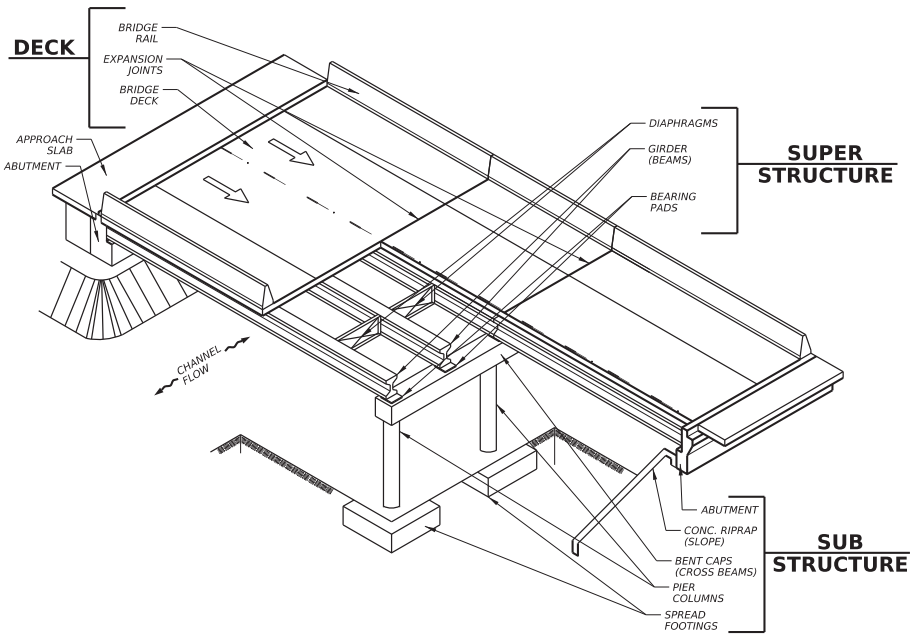

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. JOINTS ARE PAVED OVER.
2. CONCRETE BRIDGE RAILINGS HAVE MINOR VERTICAL CRACKS AND MINOR IMPACT SCRAPES. SOUTH END OF WEST BRIDGE RAILING EXTENSION HAS A MINOR FRACTURE, APPROX. 2 SF AREA, AND SPALLS WITH EXPOSED REBAR.

B. SUPER STRUCTURE
1. BOTTOM FLANGES OF BEAMS 4 TO 6 FROM EAST IN SPAN 2 HAVE MINOR SPALLS, UP TO 2 SF AREA X UP TO 1" DEEP AND SCRAPES (SEE PHOTO).

C. SUB STRUCTURE
1. MINOR TO MODERATE ASPHALT, DEBRIS AND GRAVEL ACCUMULATION AROUND BEARING AREAS ON TOP OF ABUTMENT CAPS (SEE PHOTO).

F. APPROACH
1. RIPRAPS HAVE MINOR CRACKS, UP TO 1/16" WIDE, MOST CRACKS AND JOINTS ARE SEALED. SOME RIPRAP JOINT SEALANTS HAS MINOR DETERIORATION AND CRACKS. RIPRAPS AT NORTHWEST AND SOUTHWEST BRIDGE CORNERS HAVE SETTLED UP TO 2" ALONG WINGWALLS CREATING GAPS. THESE GAPS HAVE BEEN PREVIOUSLY SEALED BUT SEALANTS HAVE FAILED. THE GAP BETWEEN RIPRAP AND WINGWALL AT SOUTHWEST BRIDGE CORNER HAS BEEN PARTIALLY REPAIRED (SEE PHOTO).
2. END OF SOUTHWEST CONCRETE APPROACH RAILING HAS A MINOR FRACTURE, APPROX. 2 SF AREA AND SPALLS WITH EXPOSED REBAR.

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION-PSN		429 7001	429 7007	438 7030	459 7007	780 7003	7001 7002	784 7024	132 7001	
		CONC STR REPAIR(CLEAN & COAT WITH EPOXY)	CONC STR REPAIR (VERTICAL & OVERHEAD)	RIPRAP (STONE COMMON) (DRY) (6 IN)	CLEANING AND SEALING EXISTING JOINTS	CNC CRACK REPAIR (DISCRETE)(INJECT)	CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	REP STL BRIDGE MEMBER (REPL RIVET/BOLT)	EMBANK (FNL)(OC)(TY A)	FUA ID
2	.2224000001803160									
COMPONENT	CALLOUT:	SF	SF	CY	LF	LF	LF	EA	CY	
A. DECK	1				80				2	
	2		2							
	3									
	4									
	5									
B. SUPER STRUCTURE	1		2							
	2			3				1		634443
	3									
	4									
	5									
C. SUB STRUCTURE	1						4			634443
	2									
	3									
	4									
	5									
F. APPROACHES	1	2				80				634442
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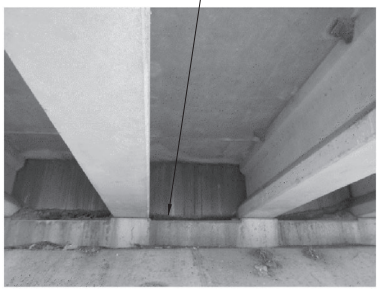
	3									
	4									
	5									
TOTAL		2	6	3	80	80	4	1	2	

A1

F1



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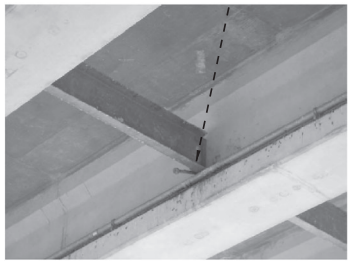

B2

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED
PROFESSIONAL ENGINEER

10/14/2024

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Rogelio Chapa
307945B8A8784F3...

Texas Department of Transportation

BRIDGE PREVENTIVE MAINTENANCE

PSN:2224000001803160

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SHEET 2 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		40

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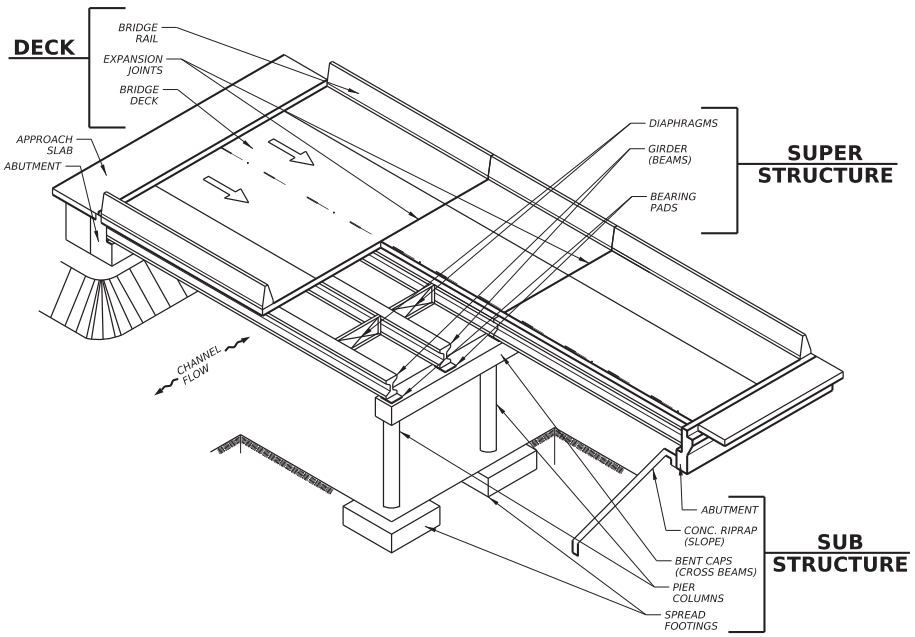

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. JOINTS ARE FILLED WITH DIRT AND GRAVEL. BENTS (1,4,7,9) JOINT SEALANT HAS MINOR ADHESION FAILURE, APPROX. 1/2 LENGTH OF JOINT (SEE PHOTO).

F. APPROACH
1. SOUTH RELIEF JOINT SEALANT HAS MINOR ADHESION FAILURE.

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION-PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	780 7004 CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
3	222400001804172					
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1		168			504852
	2	4		80		
	3					
	4					
	5					
C. SUB STRUCTURE	1				4	504868
	2					
	3					
	4					
	5					
TOTAL		4	168	80	4	

A1

A1

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED PROFESSIONAL ENGINEER

10/14/2024

DocuSigned by:
Rogelio Chapa
307945B8A8784F3...

Texas Department of Transportation

BRIDGE PREVENTIVE MAINTENANCE

PSN: 222400001804172

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CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		41

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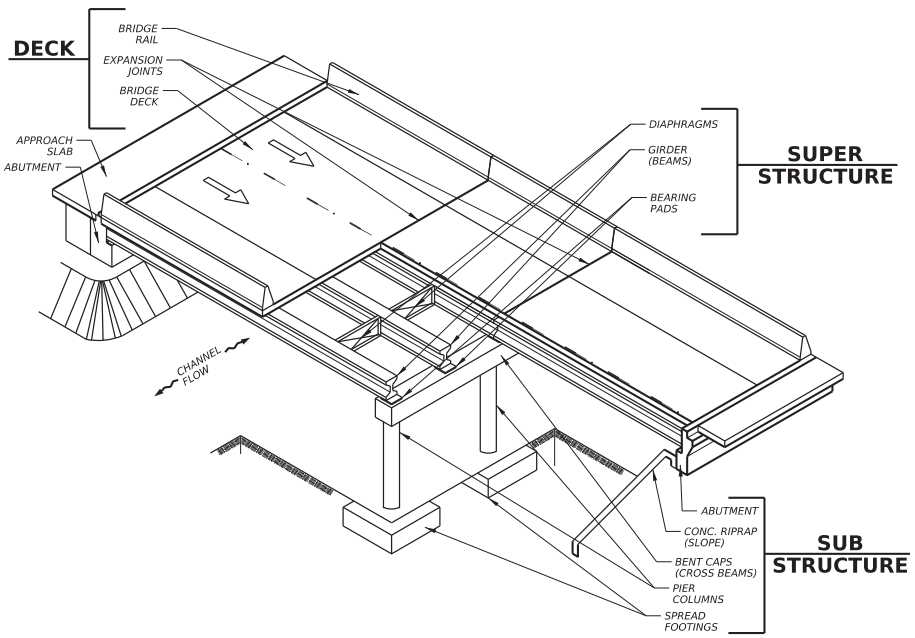

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. MOST OF BENT 3 JOINT SEALANT HAS ADHESION FAILURE (SEE PHOTO). ABUTMENT JOINTS ARE PARTIALLY FILLED WITH DIRT AND GRAVEL.
2. CONCRETE BRIDGE RAILINGS HAVE MINOR VERTICAL CRACKS. WEST BRIDGE RAILING IN NORTH SPAN HAS SEVERE IMPACT DAMAGE SPALLS WITH MISSING SECTIONS AT TWO LOCATIONS, UP TO 11' LONG (SEE PHOTOS).

F. APPROACHES
1. COPING PANELS HAVE MINOR CRACKS AT BRIDGE CORNERS. MODERATE CRACK AND DELAMINATION ON COPING AT SOUTHWEST BRIDGE CORNER (SEE PHOTO). ALSO, A FEW COPINGS AT SOUTH RIPRAP HAVE SHIFTED OUT UP TO 1" WITH VEGETATION GROWTH INBETWEEN PANEL JOINTS AT SOUTHWEST BRIDGE CORNER.

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION- PSN		429 7007	438 7001	778 7002	780 7004	7001 7002	FUA ID
		CONC STR REPAIR (VERTICAL & OVERHEAD)	CLEANING AND SEALING EXISTING JOINTS	CONCRETE RAIL REPAIR (MISC)	CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	BENT CAP/ABUTMENT CAP CLEANING	
4	222400001804173						
COMPONENT	CALLOUT:	SF	LF	LF	LF	EA	
A. DECK	1		168	15			504887
	2			15			504890
	3						
	4						
	5						
C. SUB STRUCTURE	1					4	
	2				30		
	3						
	4						
	5						
F. APPROACHES	1	10					629750
	2						
	3						
	4						
	5						
TOTAL		10	168	30	30	4	

A1

F1

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PSN: 222400001804173

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SHEET 4 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		42

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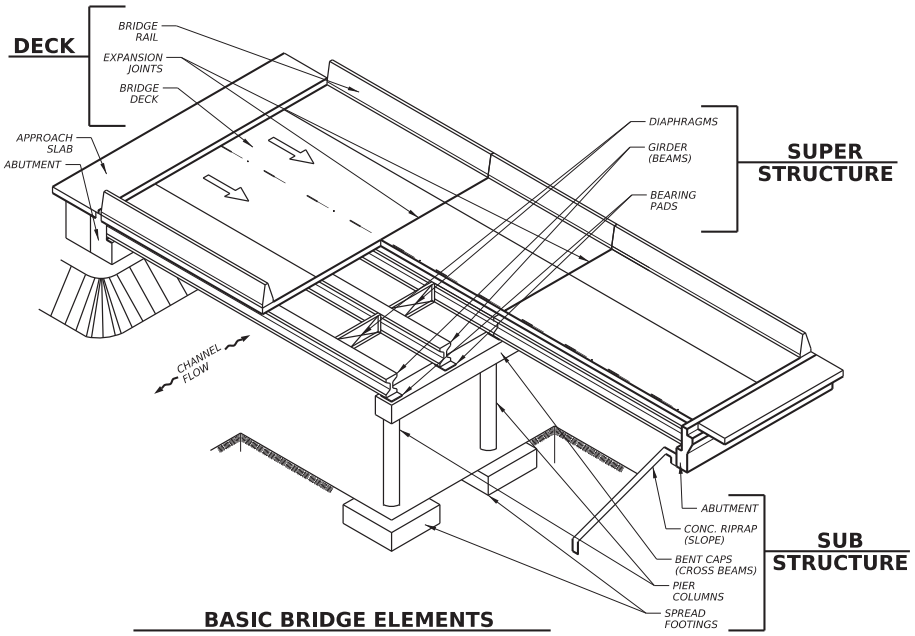

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

A1

REPAIR CALLOUTS:

A. DECK
1. ABUTMENT JOINTS ARE FILLED WITH DEBRIS AND GRAVEL AND SHOW SIGNS OF LEAKAGE.

F. APPRAOCHES
1. EAST RELIEF JOINT SEAL HAS FAILED (SEE PHOTO).

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION 5 - PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	780 7004 CNC CRACK REPAIR (DISCRETE)(SURF SEAL)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
5	222400001805175					
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1		130			505099
	2	4				
	3			80		
	4					
	5					
C. SUB STRUCTURE	1				2	
	2					
	3					
	4					
	5					
TOTAL		4	130	80	2	

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CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		43

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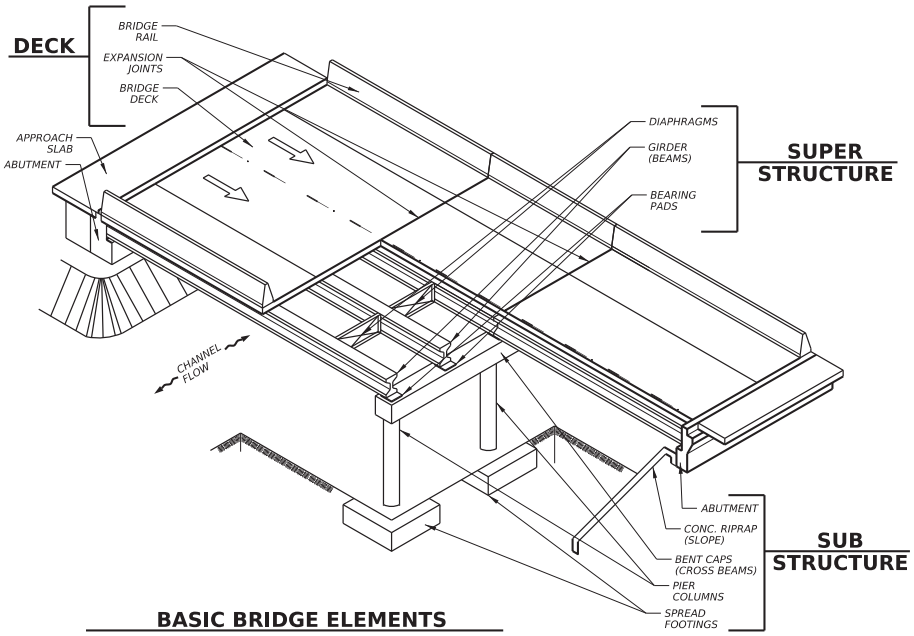


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. BENT 2 JOINT SEALANT HAS A MISSING SECTION, APPROX. 10' LONG.

B. SUPER STRUCTURE
1. BEAMS 1 TO 4 FROM WEST IN NORTH SPAN AND SEVERAL BEAMS IN CENTER SPAN HAVE MINOR IMPACT SCRAPES AND SPALLS. WEST BEAM IN CENTER SPAN HAS MODERATE IMPACT SPALLS WITH NO EXPOSED STRANDS (SEE PHOTO).

C. SUB STRUCTURE
1. BENT CAPS HAVE MINOR VERTICAL AND DIAGONAL CRACKS AND MINOR DELAMINATION UP TO 2SF AREA.

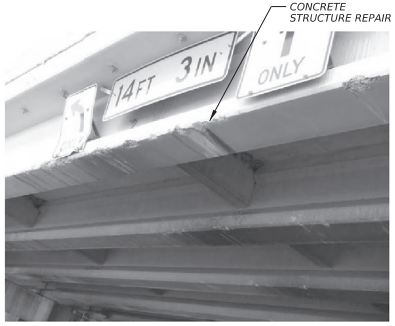
NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION - PSN		429 7007	438 7001	7001 7002	FUA ID
		CONC STR REPAIR (VERTICAL & OVERHEAD)	CLEANING AND SEALING EXISTING JOINTS	BENT CAP/ABUTMENT CAP CLEANING	
6	222400001806092				
COMPONENT	CALLOUT:	SF	LF	EA	
A. DECK	1		228		
	2				
	3				
	4				
	5				
B. SUPER STRUCTURE	1	10			505163
	2				
	3				
	4				
	5				
C. SUB STRUCTURE	1	2			
	2			4	
	3				
	4				
	5				
TOTAL		12	228	4	

A1



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CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		44

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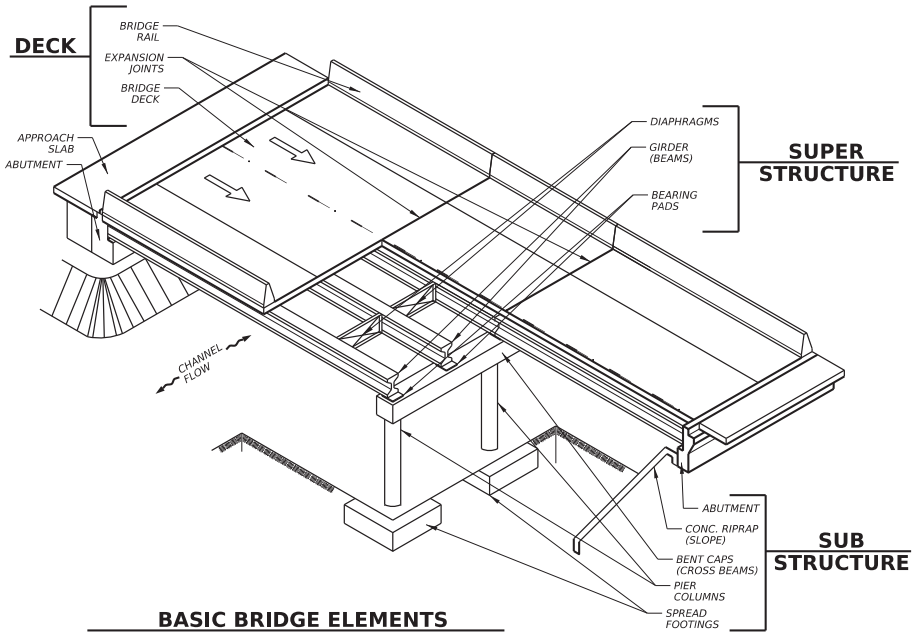


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

NOTES:

1. *IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.*
2. *SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.*

REPAIR CALLOUTS:

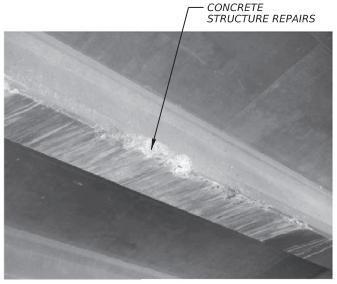
A. DECK
1. JOINTS ARE PAVED OVER.

B. SUPER STRUCTURE
1. BEAMS 3 TO 5 FROM WEST IN SPAN 1 HAVE MINOR IMPACT SCRAPES. BEAMS IN SPAN 2 HAVE MINOR TO MODERATE SCRAPES AND SPALLS. BEAMS 2 AND 3 FROM WEST IN SPAN 2 HAVE MODERATE PATCHED AREAS. BEAM 4 FROM WEST IN SPAN 2 HAS SPALLS WITH AN EXPOSED STRAND (SEE PHOTO). BEAMS IN SPANS 3 AND 4 HAVE MINOR IMPACT SCRAPES AND SPALLS.

C. SUB STRUCTURE
1. CLEAN DEBRIS ON CAPS/ABUTMENTS
2. EAST COLUMN AT BENT 2 HAS MINOR CRACKS. WEST COLUMN AT BENT 3 HAS MODERATE IMPACT SPALLS

LOCATION - PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
7	222400001806084				
COMPONENT	CALLOUT:	SF	LF	EA	
A. DECK	1		170		
	2				
	3				
	4				
	5				
B. SUPER STRUCTURE	1	10			505152
	2				
	3				
	4				
	5				
C. SUB STRUCTURE	1			5	
	2	10			
	3				
	4				
	5				
TOTAL		20	170	5	

A1



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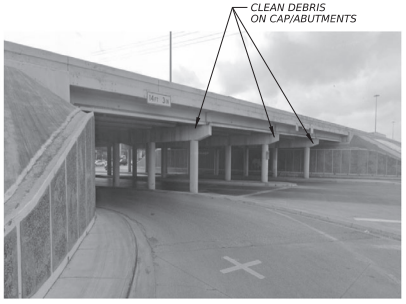

C1

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SHEET 7 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		45

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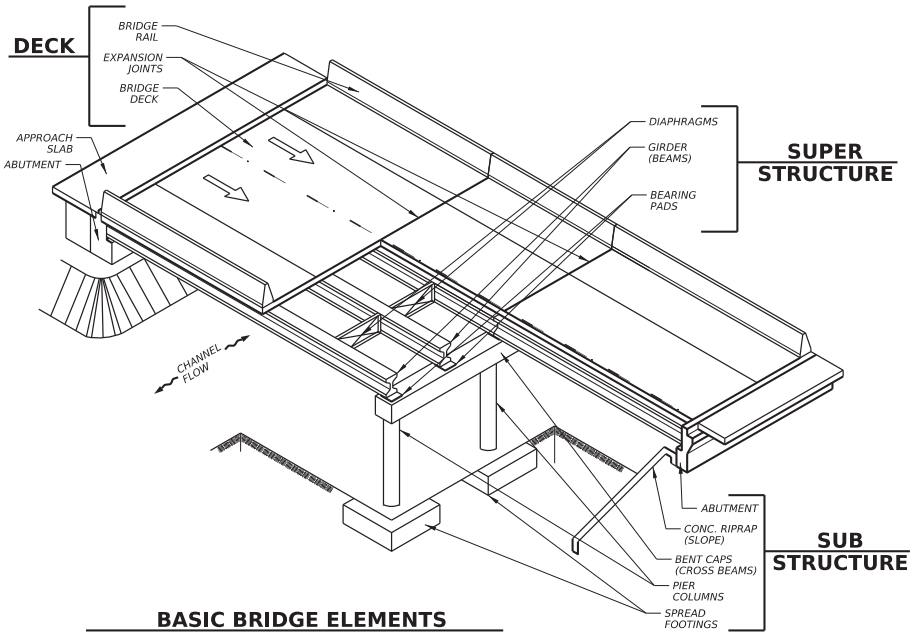


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

NOTES:

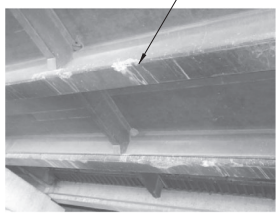
1. *IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.*
2. *SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.*

REPAIR CALLOUTS:

B. SUPER STRUCTURE
1. BEAMS 4 AND 5 FROM EAST IN SPAN 2 AND BEAMS 1 TO 3 IN SPAN 3 HAVE MINOR OVERHEIGHT IMPACT SPALLS (SEE PHOTO). MODERATE OVERHEIGHT IMPACT SPALL ON BEAM 3 FROM EAST IN SPAN 3.
2. THREE DIAPHRAGMS IN SPAN 3 HAVE BEEN RE-BROKEN DURING INSTALLATION OF REPLACEMENT BEAM (SEE PHOTO).
3. THE BRIDGE DISPLAYS THE WRONG BRIDGE ID (SEE PHOTO).

C. SUB STRUCTURE
1. COLUMN 4 FROM EAST AT BENT 2 HAS MINOR MAP CRACKING. WEST COLUMN AT BENT 4 HAS MODERATE MAP CRACKING.

LOCATION - PSN		442 7017	429 7004	429 7007	7001 7002	FUA ID
		MISC NON-BRIDGE (NBIS)	CONC STR REPAIR(RAPID DECK REP(PRT DPT)	CONC STR REPAIR (VERTICAL & OVERHEAD)	BENT CAP/ABUTMENT CAP CLEANING	
8	222400001806079					
COMPONENT	CALLOUT:	LB	SF	SF	EA	
B. SUPER STRUCTURE	1			10		505145
	2		10			505146
	3	56				622275
	4					
	5					
C. SUB STRUCTURE	1			10		
	2				5	
	3					
	4					
	5					
TOTAL		56	10	20	5	



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B2

B3

C1

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SHEET 8 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		46

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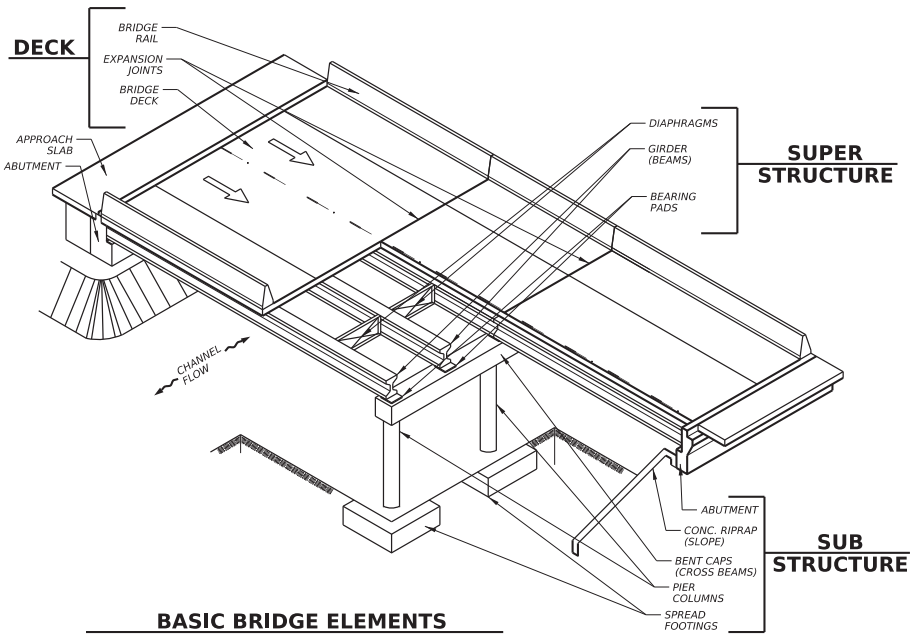

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. JOINT SEALANTS ARE DETERIORATED AND JOINTS ARE FILLED WITH DEBRIS AND GRAVEL (SEE PHOTO).

C. SUB STRUCTURE
1. ABUTMENT BACKWALLS HAVE MINOR HORIZONTAL CRACKS

F. APPROACHES
1. NORTHWEST APPROACH SLAB HAS SETTLED, APPROX. 5", ALONG THE SOUTHWEST SIDE CAUSING WEST CORNER APPROACH RAILING TO FRACTURE (SEE PHOTO).
2. CONCRETE APPROACH ROADWAYS HAVE MINOR CRACKS.

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION-PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
9	222400001806027				
COMPONENT	CALLOUT:	SF	LF	EA	
A. DECK	1		204		505101
	2				
	3				
	4				
	5				
C. SUB STRUCTURE	1	10		5	
	2				
	3				
	4				
	5				
F. APPROACHES	1	12			505132
	2	10			
	3				
	4				
	5				
TOTAL		32	204	5	

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C1

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CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		47

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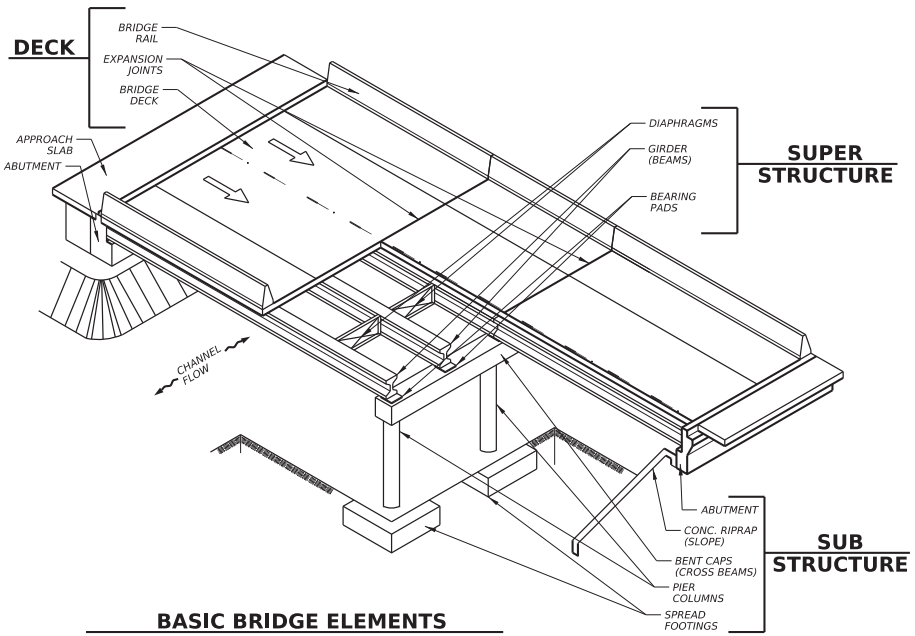

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. SOUTH ABUTMENT JOINT SEALANT IS DETERIORATED (SEE PHOTO).

F. APPROACHES
1. NORTHWEST APPROACH SLAB HAS SETTLED, UP TO 3", CREATING A GAP BETWEEN PAVEMENT AND NORTH CORNER APPROACH RAILING (SEE PHOTO).

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION-PSN		401 7001 FLOWABLE BACKFILL	429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
10	222400001806184					
COMPONENT	CALLOUT:	CY	SF	LF	EA	
A. DECK	1			120		612529
	2					
	3					
	4					
	5					
C. SUB STRUCTURE	1				4	
	2					
	3					
	4					
	5					
F. APPROACHES	1	1	10			621355
	2					
	3					
	4					
	5					
TOTAL		1	10	120	4	

A1

F1

C1

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SHEET 10 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		48

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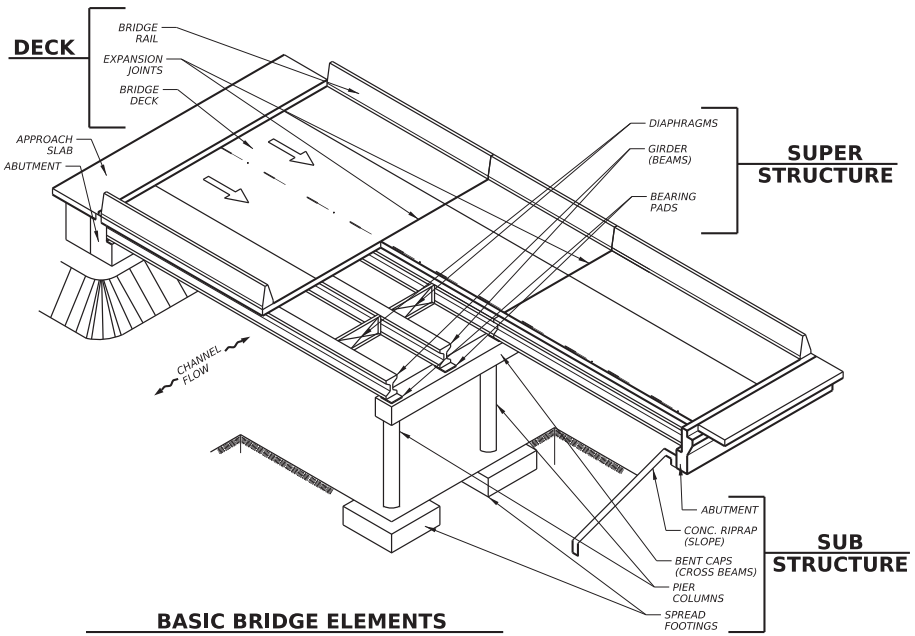

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. JOINTS ARE PARTIALLY FILLED WITH DIRT AND GRAVEL. BENT 7 JOINT SEALANT HAS ADHESION FAILURE (SEE PHOTO). EAST ABUTMENT JOINT STEEL ARMOR PLATE IS LOOSE, APPROX. 50% OF JOINT LENGTH AND RATTLES UNDER TRAFFIC (SEE PHOTO).

C. SUBSTRUCTURE
1. A FEW BENT CAPS HAVE MINOR HAIRLINE CRACKS, MINOR DELAMINATION AND SPALLS. NORTH FACE OF STRADDLE CAP 13 HAS MODERATE SPALLS BEHIND BEAMS 2 AND 3 FROM WEST (SEE PHOTO). ALSO, MINOR VERTICAL AND DIAGONAL CRACKS AND MINOR HAIRLINE TRANSVERSE CRACKS ON BOTTOM OF STRADDLE CAP 13.

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION-PSN		429 7007	438 7001	785 7004	7001 7002	FUA ID
		CONC STR REPAIR (VERTICAL & OVERHEAD)	CLEANING AND SEALING EXISTING JOINTS	BRIDGE JOINT REPAIR (ARMOR)	BENT CAP/ABUTMENT CAP CLEANING	
11	222400008614183					
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1		225	27.6	1	633655
	2					
	3					
	4					
	5					
C. SUB STRUCTURE	1	10				636402
	2					
	3					
	4					
	5					
TOTAL		10	225	27.6	1	

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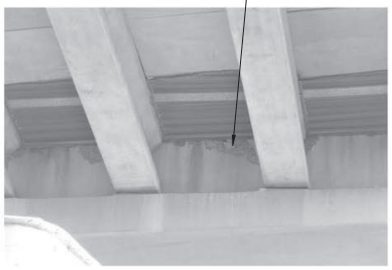

C1

BRIDGE ELEVATION LOOKING WEST

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SHEET 11 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
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22	WEBB,etc.		49

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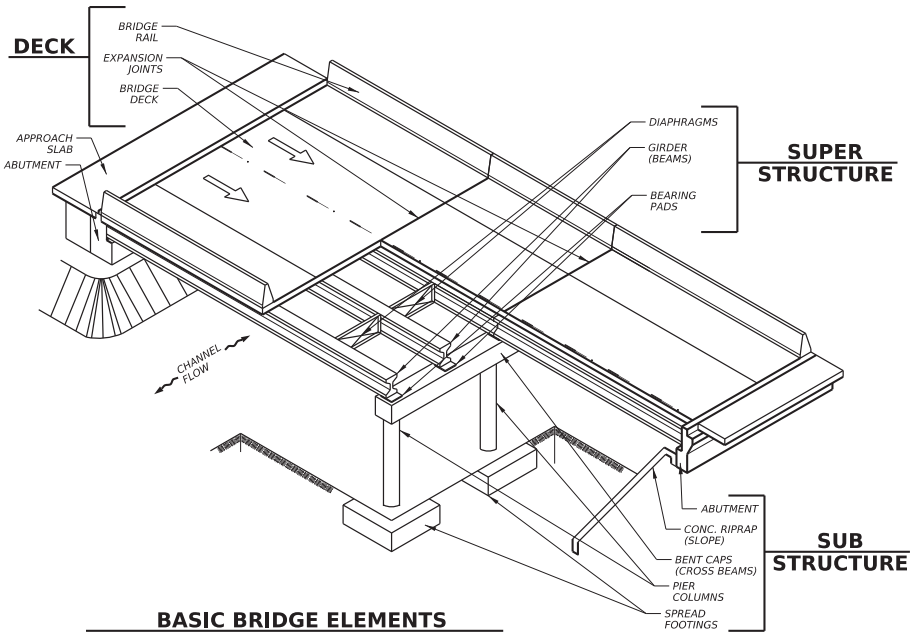

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

REPAIR CALLOUTS:

B. SUPER STRUCTURE
1. DEBRIS ACCUMULATION AROUND BEARING AREAS AT EAST END OF SOUTH ABUTMENT CAP (SEE PHOTO). MINOR DEBRIS ACCUMULATION AROUND BEARING AREAS ON NORTH ABUTMENT CAP.

C. SUB STRUCTURE
1. ABUTMENT CAPS HAVE MINOR VERTICAL CRACKS. SOUTH ABUTMENT CAP HAS A FEW MINOR SPALLS AT RIPRAP INTERFACE. DEBRIS ACCUMULATION AROUND BEARING AREAS AT EAST END OF SOUTH ABUTMENT CAP (SEE PHOTO). MINOR DEBRIS ACCUMULATION AROUND BEARING AREAS ON NORTH ABUTMENT CAP.
2. ABUTMENT BACKWALLS HAVE MINOR VERTICAL AND DIAGONAL CRACKS. TOP SURFACE OF ABUTMENT BACKWALLS HAVE MINOR CRACK AND EDGE SPALLS. SOUTHWEST WINGWALL HAS MINOR CRACKS.
3. BOTTOM OF COLUMN 4 FROM WEST AT BENT 2 HAS MODERATE HONEYCOMBING WITH EXPOSED AND CORRODED REBAR AT ITS BASE.

F. APPROACHES
1. CONCRETE SIDEWALK AT SOUTHWEST BRIDGE CORNER HAS SETTLED UP TO 4" (SEE PHOTO).
2. IMPACT DAMAGE TO CHAIN-LINK FENCE AT NORTHWEST BRIDGE CORNER, APPROX. 50' LONG (SEE PHOTO), TXDOT IS AWARE OF DAMAGE DUE TO PRESENCE OF BARRELS.

LOCATION-PSN		104 7046	429 7007	550 7004	432 7001	7001 7002	
		REMOV CONC (MISC)	CONC STR REPAIR (VERTICAL & OVERHEAD)	CHAIN LINK FENCE (REPAIR) (4')	RIPRAP (CONC)(4 IN)	BENT CAP/ABUTMENT CAP CLEANING	FUA ID
12	222400008614064						
COMPONENT	CALLOUT:	SY	SF	LF	CY	EA	
C. SUB STRUCTURE	1		10			5	633553
	2		10				
	3		4				
	4						
	5						
F. APPROACHES	1	11			11		633547
	2			50			633548
	3						
	4						
	5						
TOTAL		11	24	50	11	5	

C1

F1

F2

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED
PROFESSIONAL ENGINEER

10/14/2024

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Texas Department of Transportation

BRIDGE PREVENTIVE MAINTENANCE

PSN: 222400008614064

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CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		50

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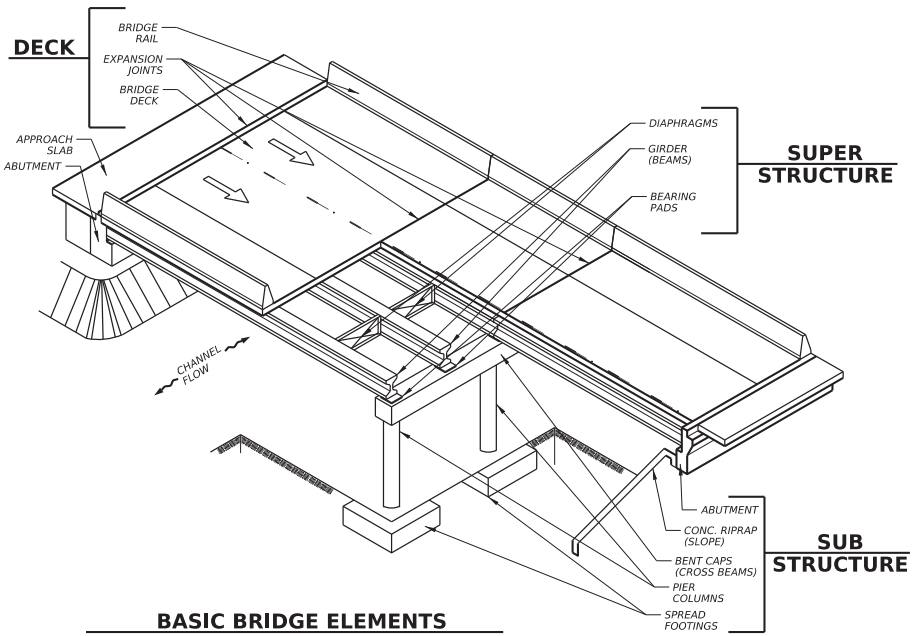

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

B. SUPER STRUCTURE
1. BEAM 4 FROM SOUTH HAS MINOR SURFACE SPALLS ON TOP FLANGE OVER WEST ABUTMENT CAP. BEAM 4 FROM NORTH HAS MINOR DELAMINATION ON BOTTOM FLANGE OVER WEST ABUTMENT CAP.

C. SUB STRUCTURE
1. MINOR IMPACT SCRAPES ON BOTTOM OF WEST BENT CAP BETWEEN COLUMNS 2 AND 3 FROM SOUTH.

F. APPROACHES
1. RELIEF JOINT SEALANTS HAVE ADHESION FAILURE (SEE PHOTO).

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION-PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
13	222400008614179				
COMPONENT	CALLOUT:	SF	LF	EA	
B. SUPER STRUCTURE	1	10			
	2				
	3				
	4				
	5				
C. SUB STRUCTURE	1	5		2	
	2				
	3				
	4				
	5				
F. APPROACHES	1		204		
	2				
	3				
	4				
	5				
TOTAL		15	204	2	

F1

B1

STATE OF TEXAS
ROGELIO CHAPA JR.
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10/14/2024

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SHEET 13 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		51

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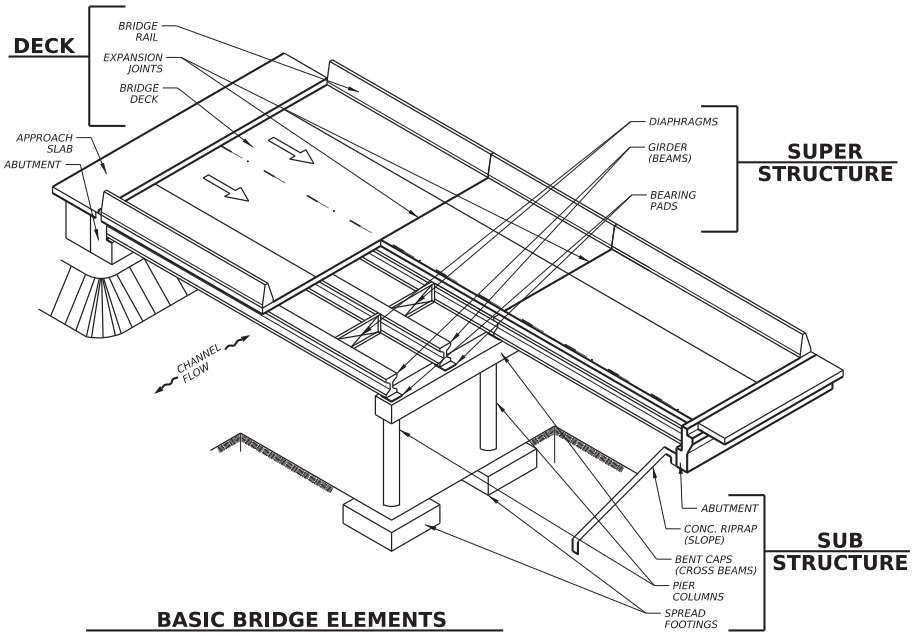

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

NOTES:

1. *IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.*
2. *SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.*

REPAIR CALLOUTS:

A. DECK
1. JOINTS ARE PARTIALLY FILLED WITH DEBRIS. JOINT SEALANTS HAVE MODERATE DETERIORATION (SEE PHOTO).

LOCATION-PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	780 7004 CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
14	222400008614195					
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1		136			634704
	2					
	3					
	4					
	5					
C. SUB STRUCTURE	1				4	
	2			80		
	3	4				
	4					
	5					
TOTAL		4	136	80	4	

A1

C1

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SHEET 14 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		52

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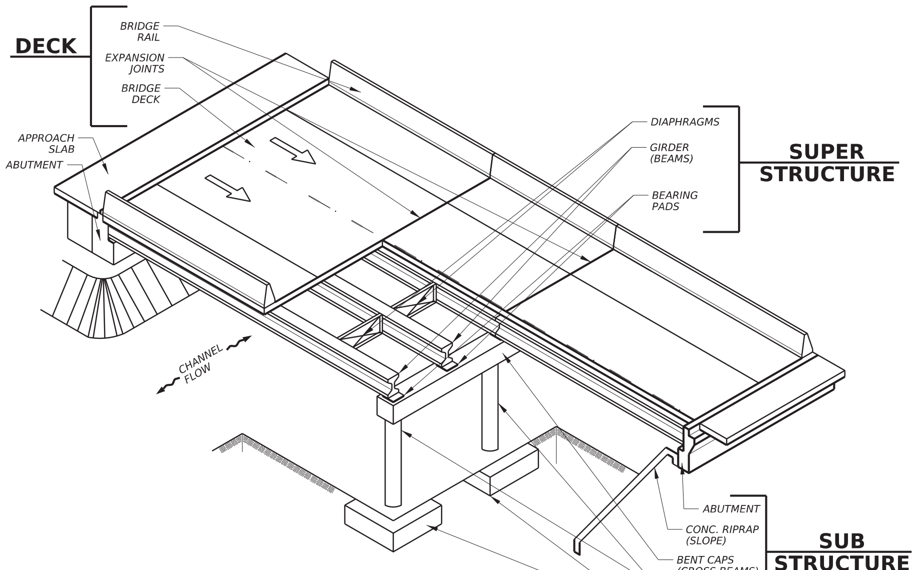

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. WEST ABUTMENT AND EAST BENT JOINTS ARE FILLED WITH DIRT AND GRAVEL.

F. APPROACHES
1. RELIEF JOINT SEALANTS HAVE MINOR ADHESION FAILURE (SEE PHOTO).

NOTES:

1. *IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.*
2. *SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.*

LOCATION - PSN		429 7007	438 7001	780 7004	7001 7002	FUA ID
		CONC STR REPAIR (VERTICAL & OVERHEAD)	CLEANING AND SEALING EXISTING JOINTS	CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	BENT CAP/ABUTMENT CAP CLEANING	
15	222400001804171					
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1		176			504205
	2					
	3					
	4					
	5					
C. SUB STRUCTURE	1				3	
	2			80		
	3	4				
	4					
	5					
F. APPROACHES	1		176			
	2					
	3					
	4					
	5					
	TOTAL	4	352	80	3	

CLEAN & SEAL JOINTS

A1

CLEAN & SEAL JOINTS

F1

CLEAN DEBRIS ON CAPS/ABUTMENTS

C1

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SHEET 15 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST		COUNTY	SHEET NO.
22		WEBB,etc.	53

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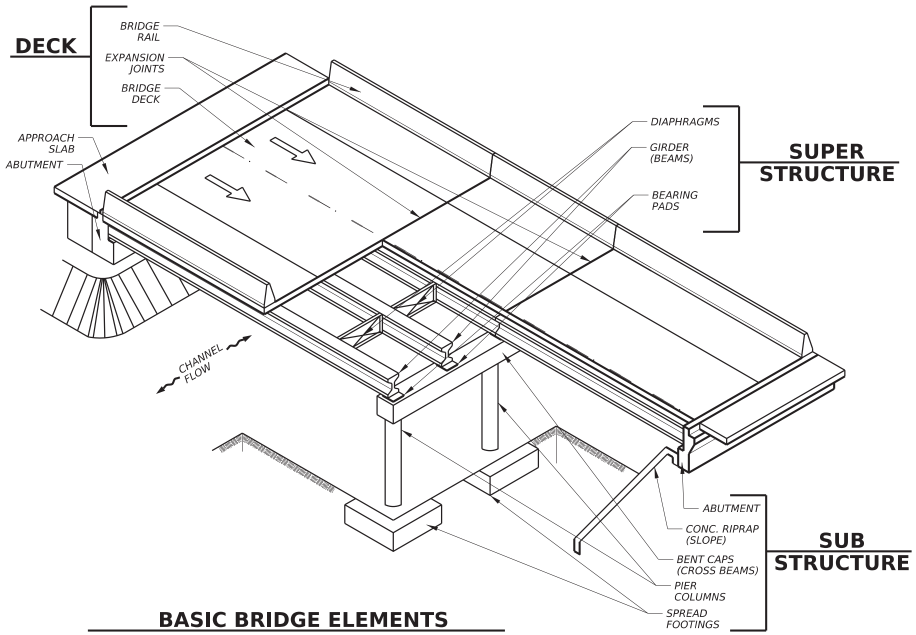

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. WEST ABUTMENT AND EAST INTERIOR BENT JOINTS ARE FILLED WITH DIRT AND GRAVEL. BENT 4 JOINT SEALANT HAS A FAILED SECTION, APPROX. 25' LONG, ON WB LANE (SEE PHOTO).

F. APPROACHES
1. CONCRETE RIPRAPS HAVE MINOR CRACKS. PREVIOUSLY REPORTED TREES GROWING IN-BETWEEN JOINT NEAR SOUTH END OF WEST RIPRAP HAVE BEEN CUT DOWN (SEE PHOTO).

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION - PSN		429 7007	438 7001	752 7002	7001 7002	
16	222400358602021	CONC STR REPAIR (VERTICAL & OVERHEAD)	CLEANING AND SEALING EXISTING JOINTS	SPOT TREE TRIMMING / BRUSH REMOVAL	BENT CAP/ABUTMENT CAP CLEANING	FUA ID
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1		172			614066
	2					505790
	3					505785
	4					
	5					
C. SUB STRUCTURE	1				3	
	2	4				
	3					
	4					
	5					
F. APPROACHES	1		86			
	2			10		
	3					
	4					
	5					
	TOTAL	4	258	10	3	

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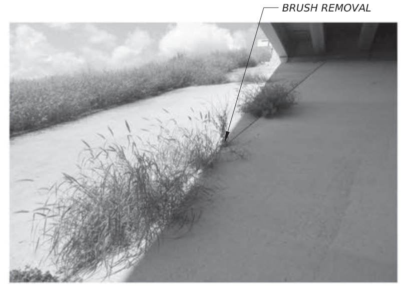

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C1

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CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST		COUNTY	SHEET NO.
22		WEBB,etc.	54

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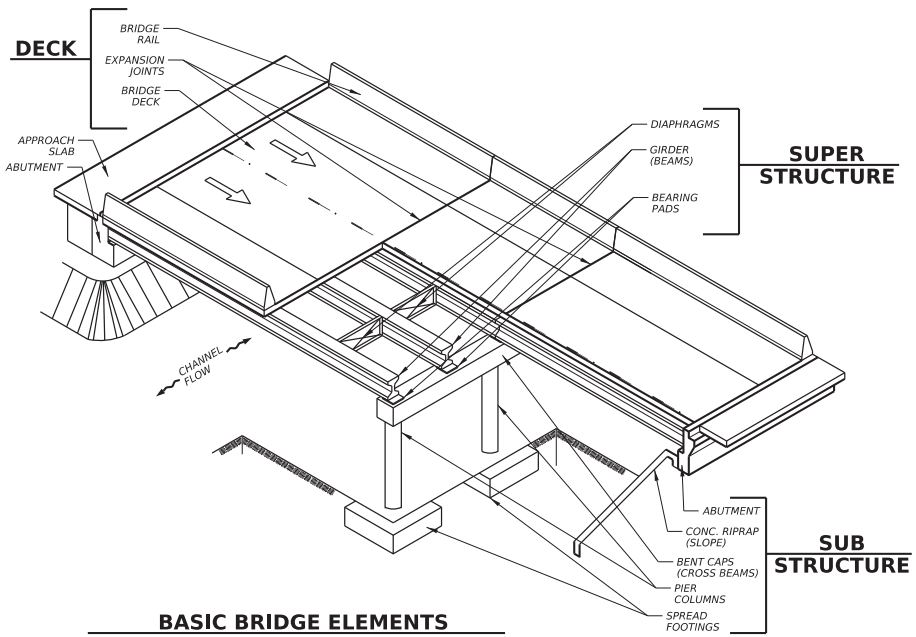

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. JOINT SEALANTS HAVE FAILED (SEE PHOTO).

D. CHANNEL
1. CHANNEL BANKS HAVE MINOR EROSION EXPOSING RIPRAP TOEWALL UP TO 18" AT SOUTHEAST BRIDGE CORNER (SEE PHOTO).
2. RIPRAPS HAVE MINOR CRACKS AND HAVE SETTLED ALONG WINGWALLS. MODERATE VEGETATION AND TREES GROWTH IN-BETWEEN JOINTS AT A FEW JOINT LOCATIONS.

F. APPROACHES
1. MODERATE SETTLEMENT OF CONCRETE RIPRAP AT NORTHEAST AND SOUTHEAST BRIDGE CORNERS AT CURB INLETS OUTLETS ALLOWING THE UNDERMINING OF RIPRAPS (SEE PHOTO).
2. PEDESTRIAN RAILINGS HAVE AREAS OF MINOR IMPACT DAMAGE AND ARE DISCONNECTED AT SEVERAL JOINTS. ONE PIPE IS MISSING AT SOUTHWEST CORNER RAILING.

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION - PSN		401 7001	429 7007	432 7030	438 7001	752 7002	7001 7002	132 7001	
		FLOWABLE BACKFILL	CONC STR REPAIR (VERTICAL & OVERHEAD)	RIPRAP (STONE COMMON)(DRY)(8 IN)	CLEANING AND SEALING EXISTING JOINTS	SPOT TREE TRIMMING / BRUSH REMOVAL	BENT CAP/ABUTMENT CAP CLEANING	EMBANK (FNL)(OC)(TY A)	FUA ID
17	222400354301001								
COMPONENT	CALLOUT:	CY	SF	CY	LF	LF	EA	CY	
A. DECK	1				172				634918
	2								
	3								
	4								
	5								
C. SUB STRUCTURE	1						2		
	2								
	3								
	4								
	5								
D. CHANNEL	1	2		8					634916
	2		4			5			634917
	3								
	4								
	5								
F. APPROACHES	1							1	
	2								
	3								
	4								
	5								
TOTAL		2	4	8	172	5	2	1	

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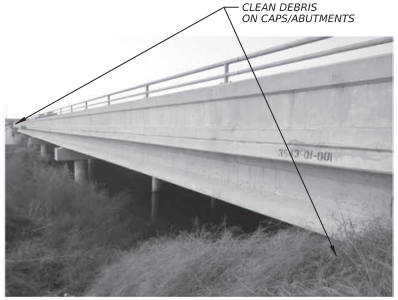
D2



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STATE OF TEXAS
ROGELIO CHAPA JR.
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BRIDGE PREVENTIVE MAINTENANCE

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SHEET 17 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		55

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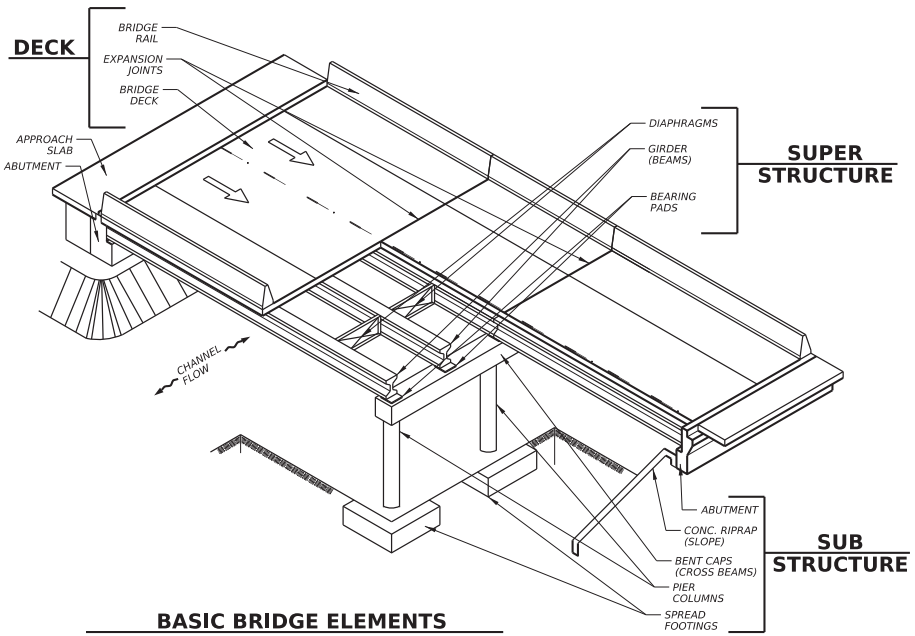

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. JOINTS ARE PAVED OVER IN TRAVEL LANES AND EXPOSED OVER SHOULDERS WHERE SEALS ARE IN GOOD CONDITION WITH MINOR DETERIORATION

F. APPROACHES
1. MINOR EMBANKMENT EROSION HOLE AT TOP OF SOUTH RIPRAP AT CENTER OF MEDIAN DITCH SLIGHTLY UNDERMINING RIPRAP.
2. NORTHEAST TRANSITION CONNECTION AT END OF CONCRETE RAIL HAS MODERATE IMPACT DAMAGE FRACTURING CONCRETE RAIL AT BOLT PROTRUSIONS. (REPAIR 5FTx3FTx2SIDES PLUS TOP SURFACE 1FTx4FT)

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION-PSN		401 7001	429 7007	438 7001	7001 7002	FUA ID
		FLOWABLE BACKFILL	CONC STR REPAIR (VERTICAL & OVERHEAD)	CLEANING AND SEALING EXISTING JOINTS	BENT CAP/ABUTMENT CAP CLEANING	
18	221420001708143					
COMPONENT	CALLOUT:	CY	SF	LF	EA	
A. DECK	1			80		527603
	2					
	3					
	4					
	5					
C. SUB STRUCTURE	1				4	
	2					
	3					
	4					
	5					
F. APPROACHES	1	2				527604
	2		34			698372
	3					
	4					
	5					
TOTAL		2	34	80	4	

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STATE OF TEXAS
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BRIDGE PREVENTIVE MAINTENANCE

PSN:221420001708143

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SHEET 18 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		56

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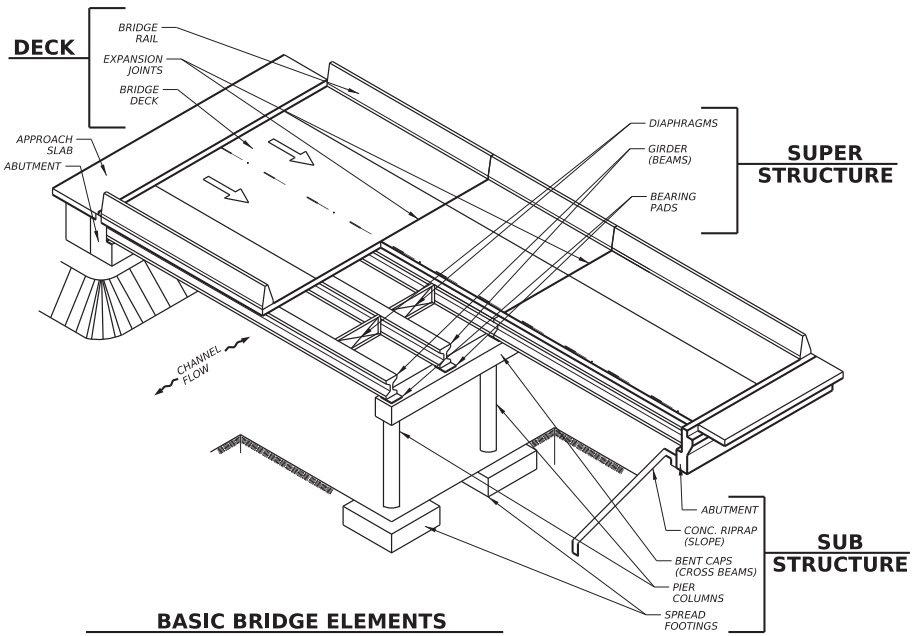


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. JOINTS ARE SHOWING MINOR DETERIORATION WITH SOME LOSS OF ADHESION.

B. SUPER STRUCTURE
1. BEAMS (1,2,3) FROM WEST OF SPAN 2 HAVE SEVERAL IMPACT SPALLS UP TO 1'-LONG IN THEIR BOTTOM FLANGES WITH NO EXPOSED TENDONS AND IMPACT SCRAPES. (SEE PHOTO)
BOTTOM FLANGES OF BEAMS 2 & 3 HAVE HORIZONTAL CRACKS AT IMPACT SPALLS; 2'-LONG IN BEAM2 & 2EAx2'-LONG IN BEAM3 (SEE PHOTO)
2. TOPS OF ABUTMENTS AND BENT2 AT BEAM BEARING SEATS HAVE ASPHALT ACCUMULATION AROUND BEAM ENDS. (SEE PHOTO)

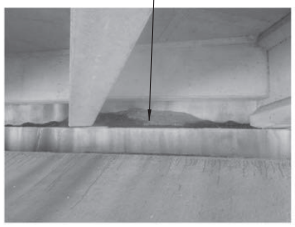
C. SUB STRUCTURE
1. WEST COLUMN AT BENT3 HAS AN 9"-LONG COVER SPALL WITH EXPOSED STEEL. (SEE PHOTO)

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION-PSN		429 7007	438 7001	780 7004	7001 7002	
		CONC STR REPAIR (VERTICAL & OVERHEAD)	CLEANING AND SEALING EXISTING JOINTS	CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	BENT CAP/ABUTMENT CAP CLEANING	FUA ID
19	221420001708244					
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1		85			
	2			80		
	3					
	4					
	5					
B. SUPER STRUCTURE	1	4				527638
	2	4				527638
	3	8				527638
	4					
	5					
C. SUB STRUCTURE	1				3	592912
	2					
	3					
	4					
	5					
TOTAL		16	85	80	3	



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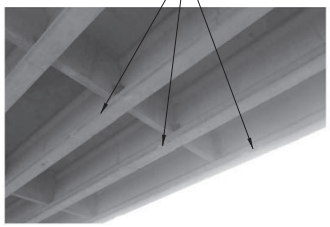

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B2

C1

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SHEET 19 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		57

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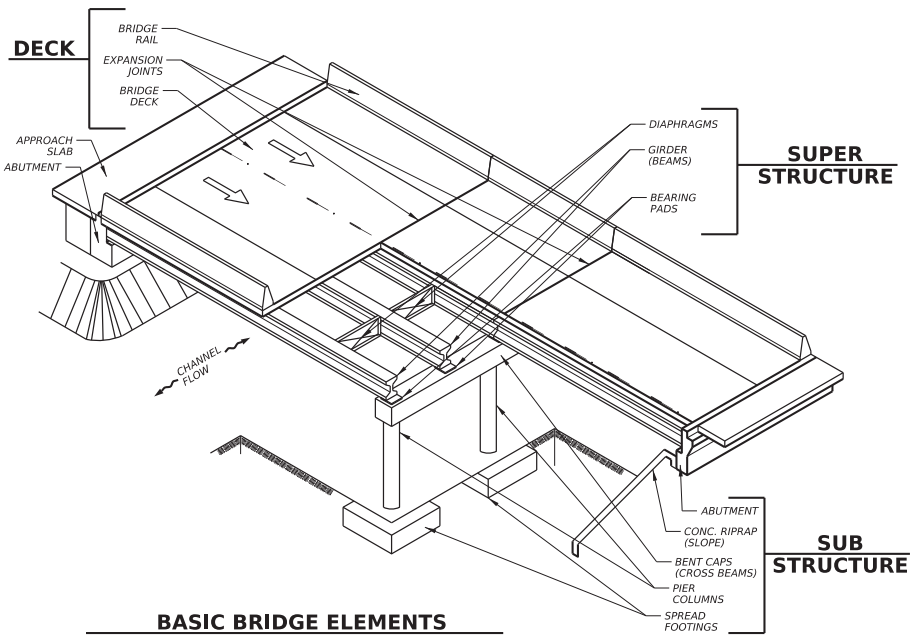

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

C. SUBSTRUCTURE
1. ACCUMULATION OF DIRT AND ASPHALT

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION-PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	780 7004 CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
20	221420001708246				
COMPONENT	CALLOUT:	SF	LF	EA	
C. SUB STRUCTURE	1			4	527641
	2	4			
	3		80		
	4				
	5				
	TOTAL	4	80	4	

C1

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CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		58

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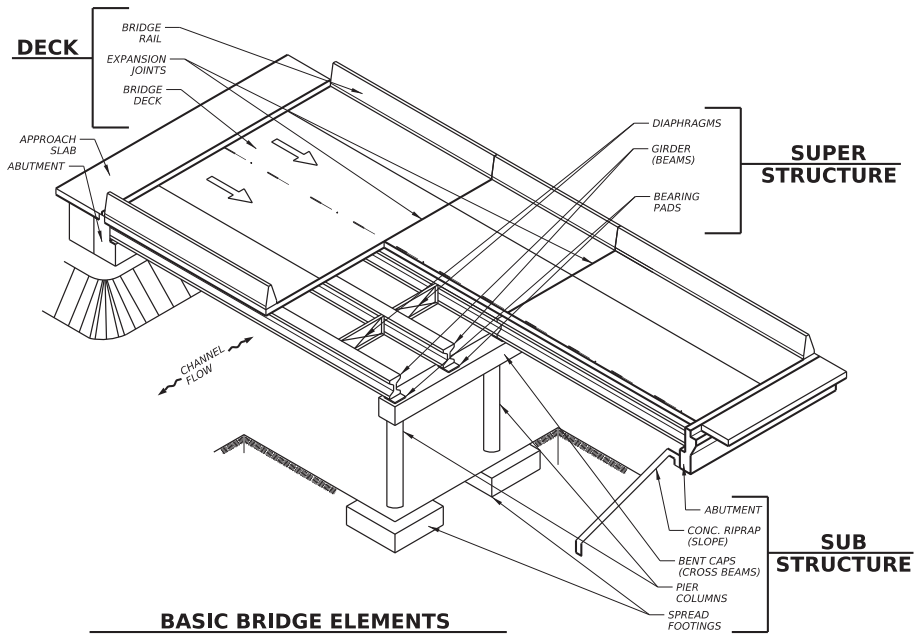


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

REPAIR CALLOUTS:

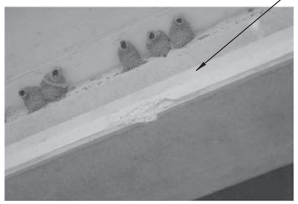
A. DECK
1. EXPANSION JOINT SEALS HAVE WIDESPREAD TEARING AND DETERIORATION AT MOST BENTS. (SEE PHOTO)
2. DECK HEADER PAVEMENT JOINTS OVER BENT6 HAS SPALLED OVER A 3'-LONG SECTION IN OUTSIDE LANE NEAR EDGE LINE.

B. SUPER STRUCTURE
1. SPALL IN SPAN 2 BEAM 5 BOTTOM FLANGE DUE TO OVERHEIGHT IMPACT LOOKING WEST 9SEE PHOTO)
2. BENT 16 CENTER COLUMN HAS TWO 6" DIA. X 2" D GUNSHOT SPALLS LOOKING SOUTH (SEE PHOTO)

C. APPROACH
1. SOUTH APPROACH SLAB HAS LONGITUDINAL AND TRANSVERSE CRACKS UP TO 1/8-IN WIDE LOOKING SOUTHEAST (SEE PHOTO)

LOCATION-PSN		429 7001 CONC STR REPAIR(CLEAN & COAT WTH EPOXY)	429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	780 7002 CNC CRACK REPAIR (DISCRETE)(INJECT)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
21	221420001801098						
COMPONENT	CALLOUT:	SF	SF	LF	LF	EA	
A. DECK	1	4					527646
	2		4	761			
	3						
	4						
	5						
B. SUPER STRUCTURE	1	4					527646
	2	4			20		527646
	3						
	4						
	5						
C. SUB STRUCTURE	1					18	
	2						
	3						
	4						
	5						
TOTAL		12	4	761	20	18	

A1



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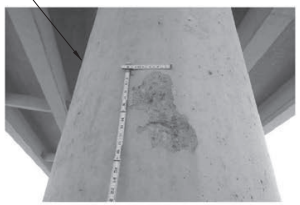

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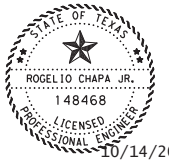

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BRIDGE PREVENTIVE MAINTENANCE

PSN:221420001801098

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SHEET 21 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		59

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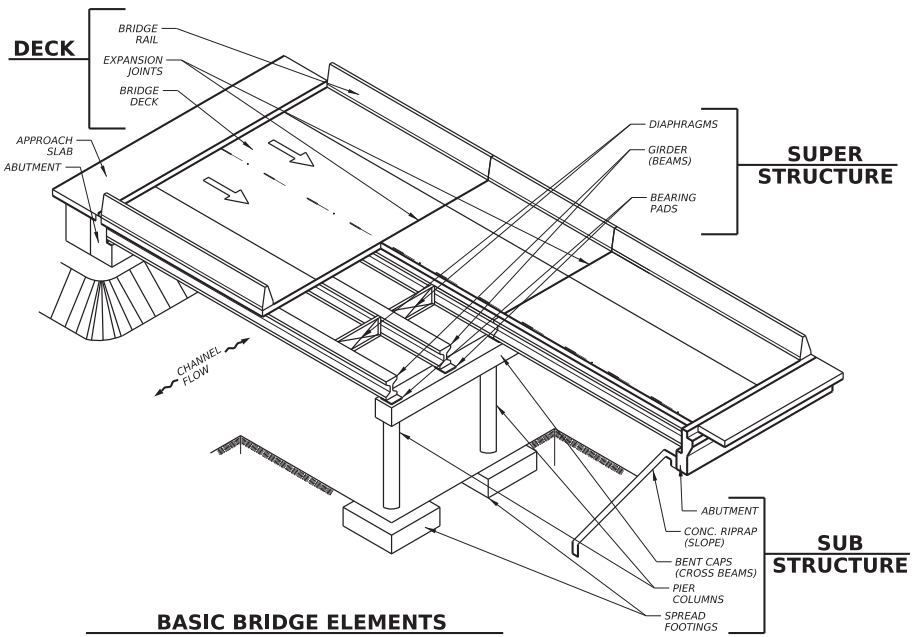


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

B. SUPERSTR
1.WEST BEAM IN SPAN2 HAS ONE MINOR TO MODERATE IMPACT SPALL IN BOTTOM FLANGE OVER EASTBOUND LANE. (SEE PHOTO)
2.IMPACT SPALL AT WEST BEAM IN SPAN2

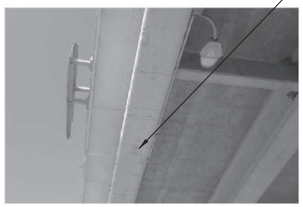
C. SUBSTRUCTURE
1.DIRT ACCUMULATION ON CAPS AT BEARINGS (SEE PHOTO)

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION-PSN		429 7001 CONC STR REPAIR(CLEAN & COAT WTH EPOXY)	429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	780 7004 CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
22	221420001801100					
COMPONENT	CALLOUT:	SF	SF	LF	EA	
B. SUPER STRUCTURE	1	4				527651
	2	4				527651
	3		4			
	4			80		
	5					
C. SUB STRUCTURE	1				3	527652
	2					
	3					
	4					
	5					
TOTAL		8	4	80	3	


B1


CONC STR REPAIR(CLEAN & COAT WTH EPOXY)
B2


BENT CAP/ABUTMENT CAP CLEANING
C1

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ROGELIO CHAPA JR.
148468
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PSN:221420001801100

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CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		60

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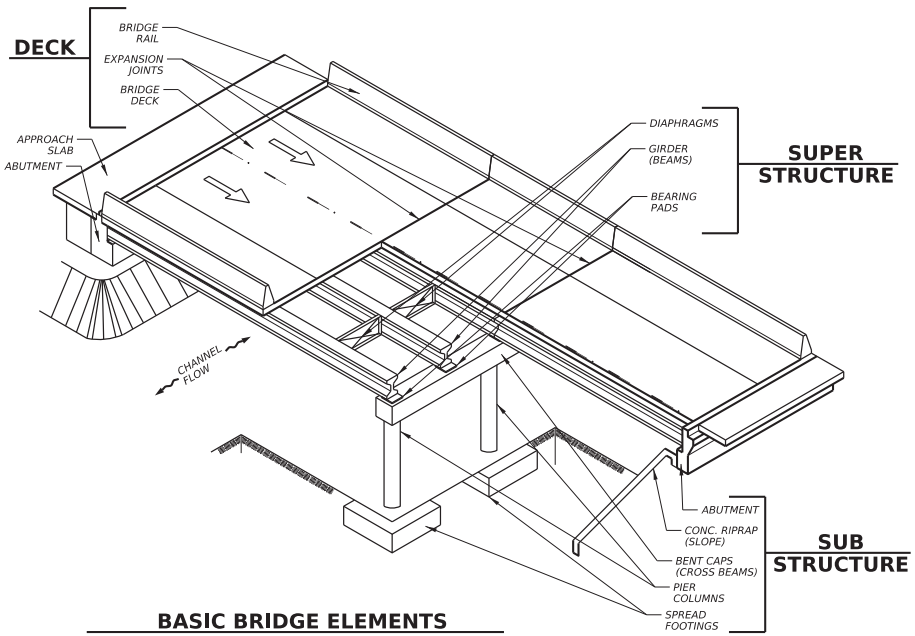


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1.NO JOINT SEAL MATERIAL PRESENT AT ARMOR JOINTS
2.EAST CONRETE RAIL OVER SOUTHEAST WINGWALL HAS A LARGE SPALL WITH EXPOSED REBAR-3' LONG (SEE PHOTO)
3.SIMILAR SPALL IN EAST RAIL IN SPAN2

B. SUPERSTR
1.WEST BEAM IN SPAN2 HAS NUMEROUS MINOR IMPACT SPALLS TO BOTTOM FLANGE WITH LARGEST BEING 8"DIA. X 1"DEEP. (SEE PHOTO)
2.MODERATE ACCUMULATION OF DEBRIS ON ABUTMENT CAPS AROUND BEARINGS AND BETWEEN BACK OF BEAMS AND BACKWALLS PREVENTING EXPANSION. (SEE PHOTO)

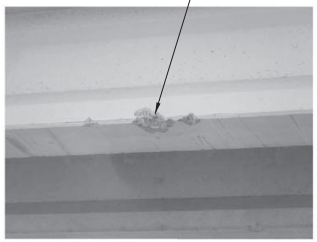
NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION-PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	780 7004 CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
23	221420001802131				
COMPONENT	CALLOUT:	SF	LF	EA	
A. DECK	1	12			527693
	2	12			527693
	3		80		
	4				
	5				
B. SUPER STRUCTURE	1	12			
	2				
	3				
	4				
	5				
C. SUB STRUCTURE	1			3	527694
	2				
	3				
	4				
	5				
TOTAL		36	80	3	

A2



B1

B2

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SHEET 23 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		61

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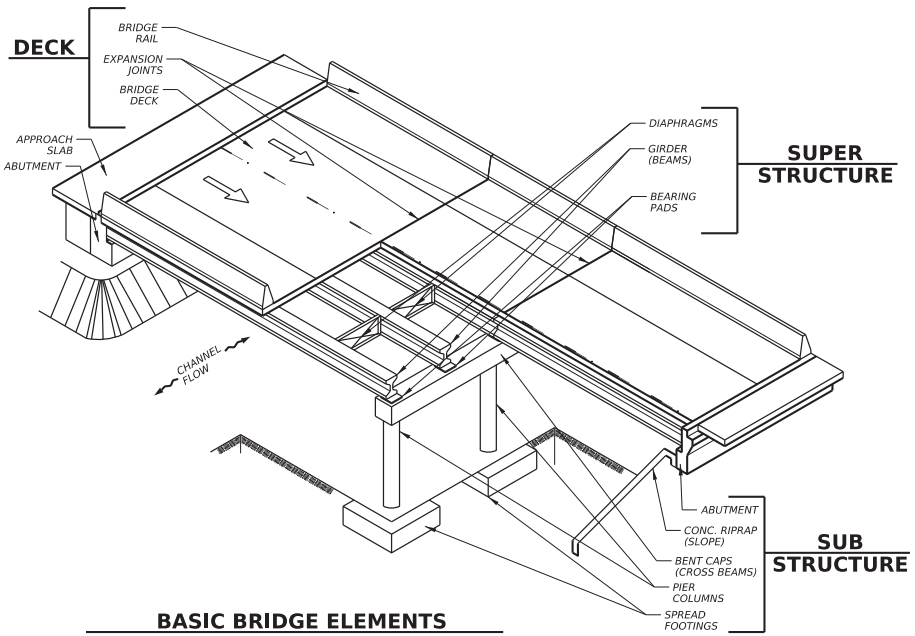


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. JOINT SEALS HAVE MODERATE DETERIORATION AT ABUTMENTS (SEE PHOTO)
2. JOINT SEAL HEADERS NEED TO BE REPAIRED (SEE PHOTO)

C. SUB STRUCTURE
1. CAP AT BENT 6 HAS MULTIPLE DELAMINATIONS AND SPALLS ALONG NORTH FACE AT TOP EDGE. TWO WITH EXPOSED REBAR. (SEE PHOTO)
2. PERFORM CONCRETE REPAIR TO SPALLS (HORIZONTAL, VERTICAL, OVERHEAD)

F. APPROCHES
1. VEGETATION OVERHANGS WEST RAIL IN SPANS 2, 3, 5, 7. (SEE PHOTO)

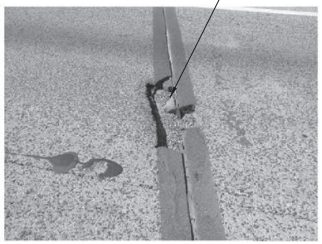
NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION - PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	785 7002 BRIDGE JOINT REPAIR (HEADER)	752 7005 TREE REMOVAL (4" - 12" DIA)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
24	221420001802136						
COMPONENT	CALLOUT:	SF	LF	LF	EA	EA	
A. DECK	1		282				527695
	2			40			527695
	3						
	4						
	5						
C. SUB STRUCTURE	1					8	598458
	2	12					598458
	3						
	4						
	5						
F. APPROACHES	1				4		699037
	2						
	3						
	4						
	5						
TOTAL		12	282	40	4	8	

A1



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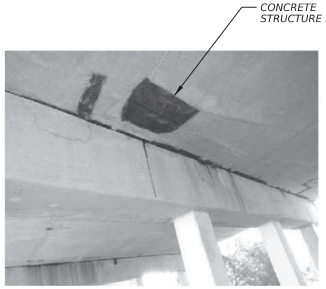

C2

F1

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SHEET 24 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		62

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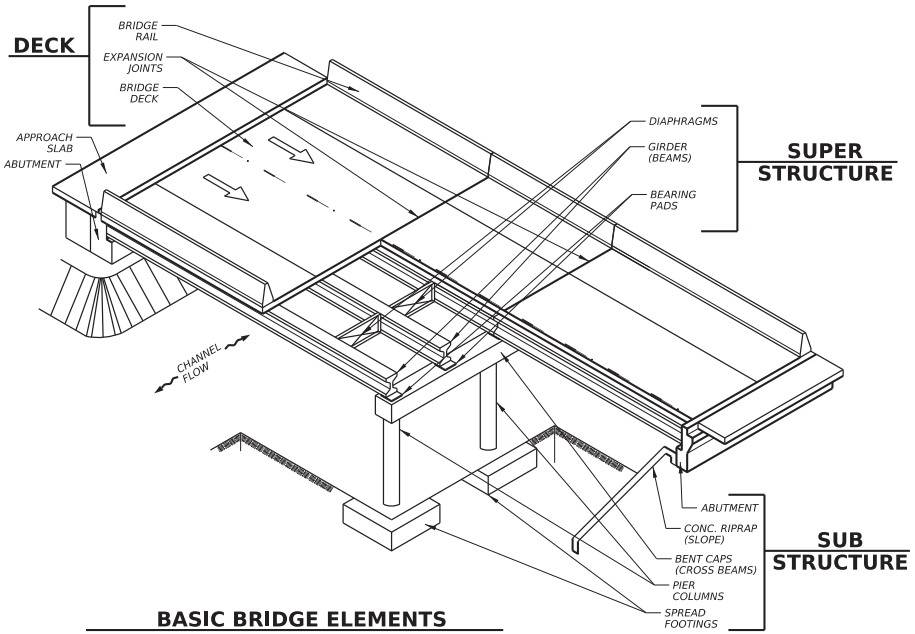


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. JOINTS HAVE BEEN SEALED WITH SOME MINOR DETERIORATION OF SEAL AT NORTH ABUTMENT.

C. SUB STRUCTURE
1. SOME ACCUMULATION OF ASPHALT OVER CAPS APPEARS BETWEEN BACK OF BEAMS AND BACKWALLS PREVENTING MOVEMENT.

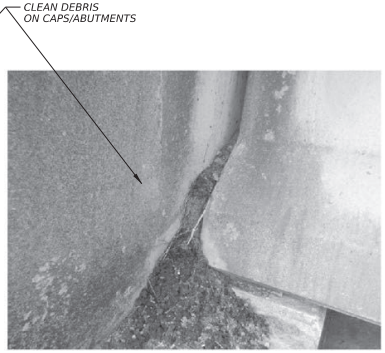
NOTES:

1. *IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.*
2. *SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.*

LOCATION - PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	780 7004 CNC CRACK REPAIR (DISCRETE)(SURF SEAL)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
25	221420001802130					
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1		88			
	2	4				
	3			80		
	4					
	5					
C. SUB STRUCTURE	1				3	527692
	2					
	3					
	4					
	5					
TOTAL		4	88	80	3	

A1

C1



C1

STATE OF TEXAS
ROGELIO CHAPA JR.
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LICENSED PROFESSIONAL ENGINEER

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SHEET 25 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		63

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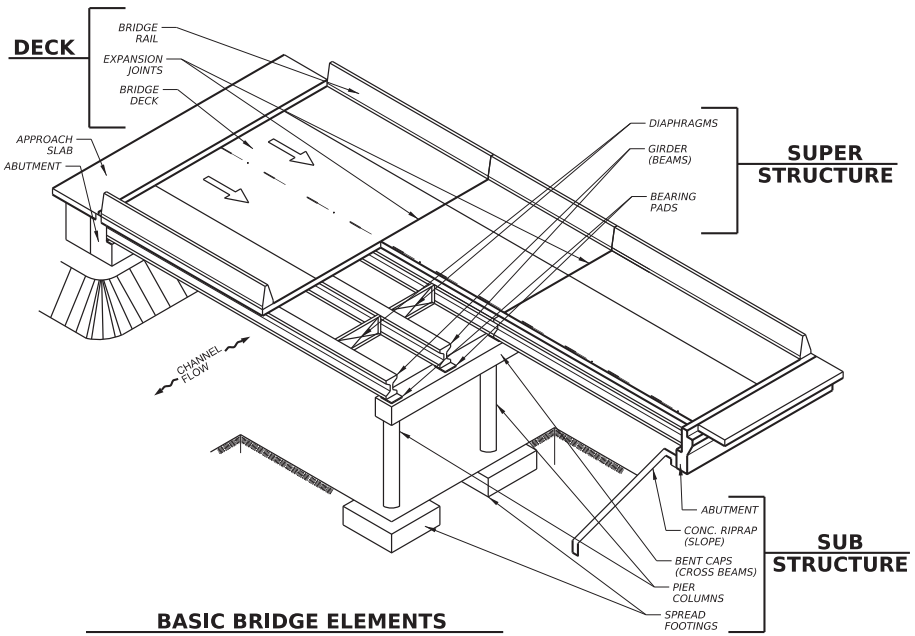


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

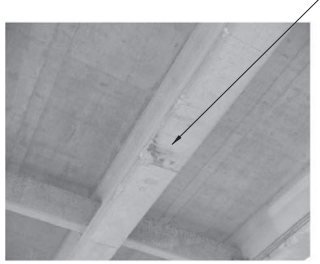
B. SUPER STRUCTURE
1. IN SPAN2 BEAMS2-5 FROM EAST ALL HAVE NUMEROUS MINOR TO MODERATE SHALLOW IMPACT SPALLS. (SEE PHOTO)

C. SUB STRUCTURE
1. MODERATE ACUMULATION OF DIRT AND ASPHALT ON ABUTMENT CAPS AROUND BEARINGS AND BEHIND BEAMS. (SEE PHOTO)

NOTES:

1. *IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.*
2. *SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.*

LOCATION - PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	780 7004 CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
26	221420001801099				
COMPONENT	CALLOUT:	SF	LF	EA	
B. SUPER STRUCTURE	B1	6			527648
	B2		80		
	B3				
	B4				
	B5				
C. SUB STRUCTURE	C1			3	527649
	C2				
	C3				
	C4				
	C5				
TOTAL		6	80	3	



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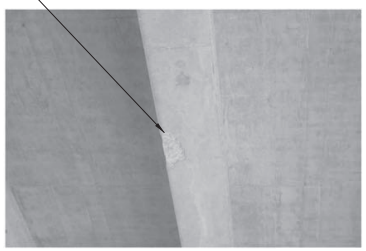

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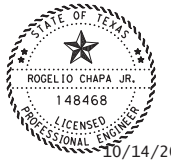
C1

C1



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BRIDGE PREVENTIVE MAINTENANCE

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SHEET 26 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		64

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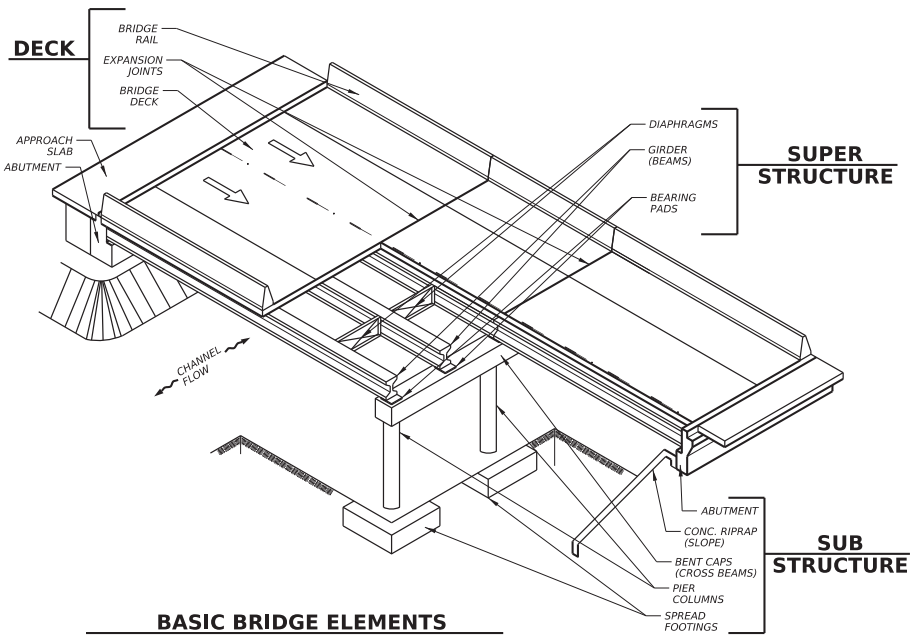


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. JOINT SEALS HAVE MINOR TO MODERATE DETERIORATION WITH SOME LOSS OF ADHESION.
2. JOINTA HAVE SOME SPALLING ALONG JOINT HEADERS. (SEE PHOTO).
3. BENT 15 SPAN 14 HAS AN AREA OF DELAMINATION UP TO 2 SF WITH CRACKING UP TO 1/32 IN WIDE IN BOTTOM OF DECK BETWEEN BEAMS 2 AND 3, LOOKING SOUTHWEST.

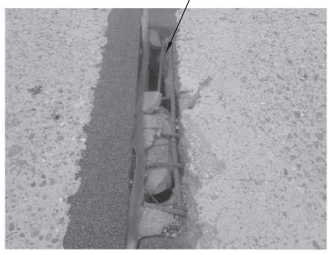
NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION - PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	785 7002 BRIDGE JOIN REPAIR (HEADER)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
27	221420001801097					
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1		761			704323
	2			42		704323
	3	80				575415
	4					
	5					
C. SUB STRUCTURE	1				18	527645
	2					
	3					
	4					
	5					
TOTAL		80	761	42	18	

A1



A2

A3

C1

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED
PROFESSIONAL ENGINEER

10/14/2024

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BRIDGE PREVENTIVE MAINTENANCE

PSN: 221420001801097

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SHEET 27 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		65

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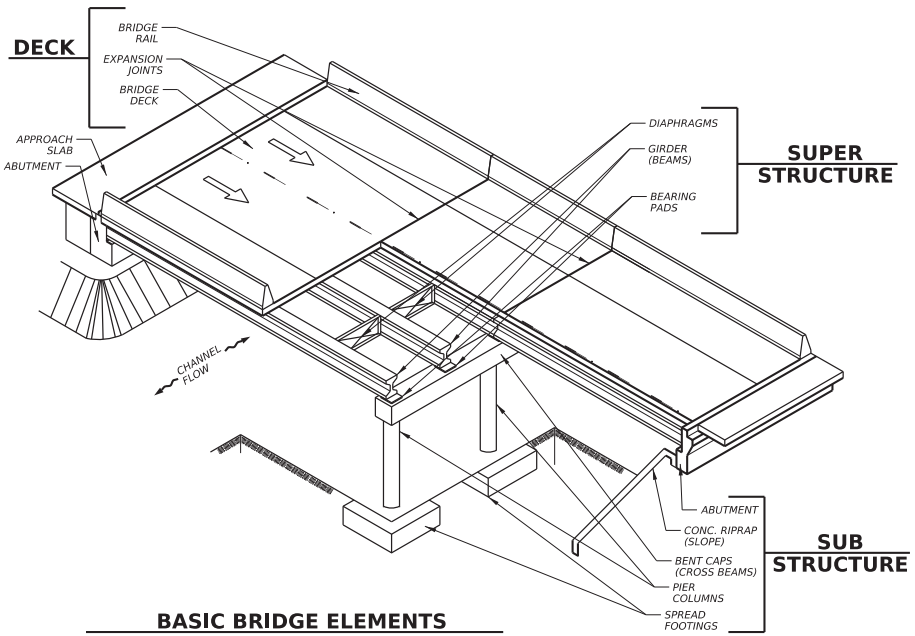


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. 7 JOINT SEALS ARE DETERIORATED WITH AREAS OF LOST ADHESION. (SEE PHOTO)

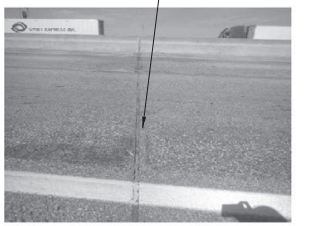
C. SUPERSTR
1. 6 BEATING PAD AREAS HAVE ACCUMULATION OF ASPHALT AROUND AND BEHIND BEAM ENDS AND ABUTMENTS. (SEE PHOTO).

LOCATION-PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	780 7004 CNC CRACK REPAIR (DISCRETE) (SURF SEAL.)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
28	221420001708245					
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1		84			527639
	2	4				
	3					
	4					
	5					
C. SUB STRUCTURE	1				3	527640
	2			80		
	3					
	4					
	5					
	TOTAL	4	84	80	3	

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.



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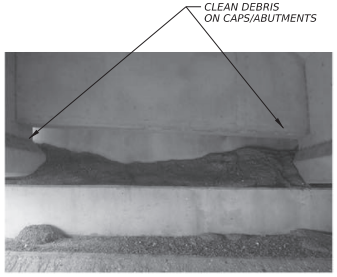

C1

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED
PROFESSIONAL ENGINEER

10/14/2024

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Texas Department of Transportation

BRIDGE PREVENTIVE MAINTENANCE

PSN: 221420001708245

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SHEET 28 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		66

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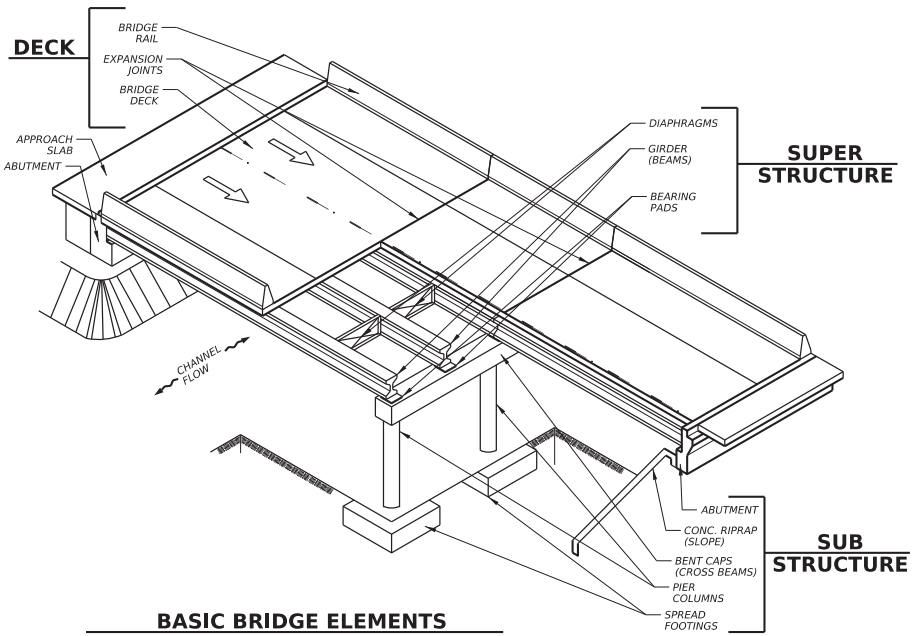


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. 6 SURFACING IA ROUGH AND WORN THIN WITH AREAS WITH EXPOSED CONCRETE DECK. (SEE PHOTO)
2. 7 JOINTS ARE SHOWING DETERIORATION WITH SOME LOSS OF ADHESION
3. 6 CONCRETE RAIL HAS HAIRLINE VERTICAL CRACKS, EAST RAIL HAS SEVERAL SPALLS ALONG THE TOP OF THE REAIL IN ALL 3 SPANS WITH SOME EXPOSED REBAR. (SEE PHOTO) (REPAIRING SEA PER SIDE)
4. IN ADDITION TOP OF EAST RAILING HAS A SPALL UP TO 6'Lx2'Hx4"D WITH EXPOSED REINFORCING AT SOUTH BRIDGE END DUE TO IMPACT LOOKING WEST

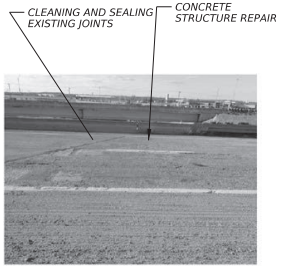
B. SUPERSTR
1. 7 BEAMS 1-3 FROM WEST OF SPAN2 HAVE IMPACT SPALLS, WORST IN BEAM1 (SEE PHOTO)
2. IN ADDITION SPALL AND CRACK UP 18" IN WIDE WITH RUST STAINING TO NORTH FACE OF EAST COLUMN IN SPAN3 LOOKING SOUTH
3. 7 TOPS OF ABUTMENTS AT BEAM BEARINGS SEATS HAVE ASPHALT ACCUMULATION AROUND BEAM ENDS. (SEE PHOTO)

LOCATION-PSN		429 7007	438 7001	780 7004	7001 7002	FUA ID
		CONC STR REPAIR (VERTICAL & OVERHEAD)	CLEANING AND SEALING EXISTING JOINTS	CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	BENT CAP/ABUTMENT CAP CLEANING	
29	221420001708243					
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1	10				
	2		85			
	3	10				527637
	4	13				527637
	5			80		
B. SUPER STRUCTURE	1	4				
	2	12				
	3				3	592852
	4					
	5					
	TOTAL	49	85	80	6	

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.



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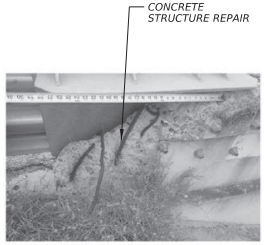

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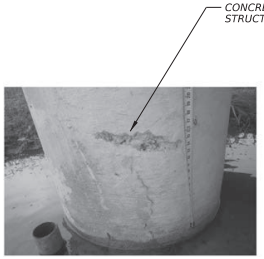

B2

B3

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SHEET 29 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		67

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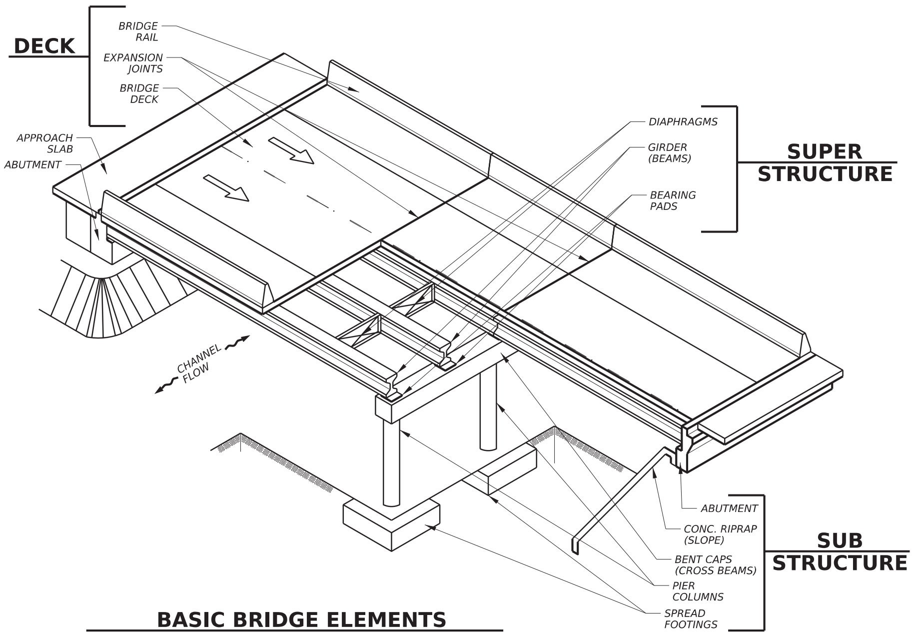

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

NOTES:

1. *IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.*
2. *SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.*

REPAIR CALLOUTS:

A. DECK
1. JOINTS SEALS ARE DETERIORATED WITH TEARIN AND LOST ADHESION 9SEE PHOTO)

C. SUB STRUCTURE
1. CAP3 FROM NORTH HAS MODERATE SPALL ON ITS NORTH FACE. (SEE PHOTO)
2. CAP2 FROM NORTH HAS MODERATE SPALL ON THE WEST END.

LOCATION-PSN		401 7001	429 7007	438 7001	780 7004	7001 7002	FUA ID
		FLOWABLE BACKFILL	CONC STR REPAIR (VERTICAL & OVERHEAD)	CLEANING AND SEALING EXISTING JOINTS	CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	BENT CAP/ABUTMENT CAP CLEANING	
30	221420001708144						
COMPONENT	CALLOUT:	CY	SF	LF	LF	EA	
A. DECK	1			80			527605
	2						
	3						
	4						
	5						
C. SUB STRUCTURE	1		4			3	527606
	2		4				527606
	3				80		
	4						
	5						
F. APPROACHES	1	10					
	2						
	3						
	4						
	5						
	TOTAL	10	8	80	80	3	

CLEANING AND SEALING EXISTING JOINTS

A1

REPAIR SPALLING

C1

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SHEET 30 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		68

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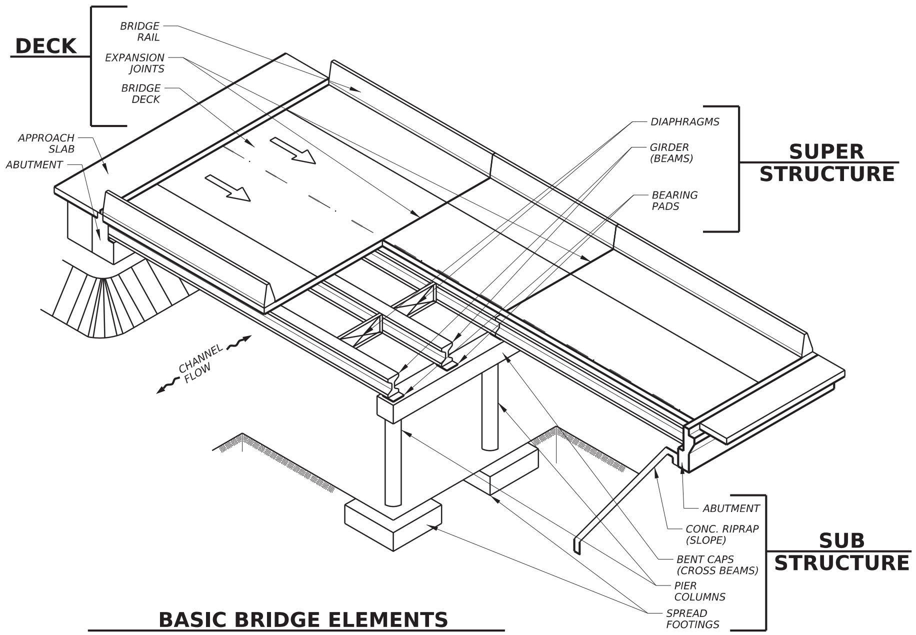


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A.DECK
1.6 JOINTS HAVE MOSTLY FAILED WITH DIRT AND GRAVEL IN JOINTS. (SEE PHOTO)

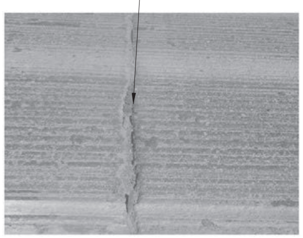
B.SUPERSTRUCTURE
1. 6 NORTH BEAM AT WEST ABUTMENT HAS A MINOR SPALL.
2. SPALL MEASURING 3-IN IN NORTHWEST WINGWALL LOOKING SOUTH. (SEE PHOTO)
3. 6 SPALL IN SOUTH EAST CORNER OF BRIDGE AT EAST BEAM/WINGWALL/DECK INTERFACE LOOKING NORTH. (SEE PHOT0)

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION-PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	780 7004 CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
31	221420048301035					
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1		128	80		699184
	2					
	3					
	4					
	5					
B. SUPER STRUCTURE	1	4				
	2	4				
	3	4				
	4					
	5					
C. SUB STRUCTURE	1				4	
	2					
	3					
	4					
	5					
	TOTAL	12	128	80	4	



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CONT	SECT	JOB	HIGHWAY
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DIST	COUNTY		SHEET NO.
22	WEBB,etc.		69

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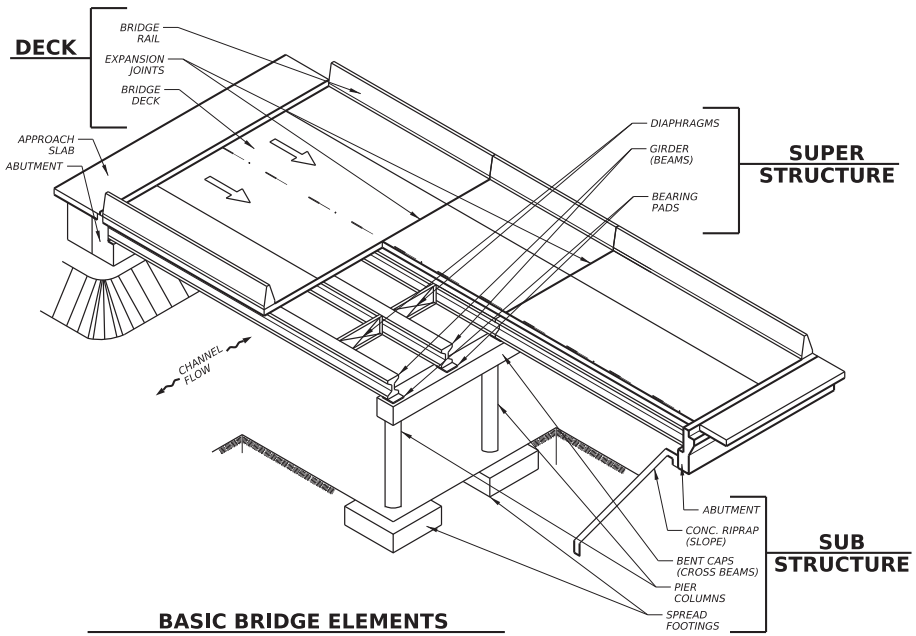

BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A.DESK
1. JOINTS HAVE MOSTLY FAILED. (SEE PHOTO)

B.SUPER STRUCTURE
1. DECK SURFACE HAS A FEW MINOR SPALLS UP TO -2x1'. (SEE PHOTO)

C.SUBSTRUCTURE
1. CAP3 HAS MODERATE DELAMINATIONS AND SPALLING IN ITS SOUTHWEST FACE WITH SOME SLIGHTLY EXPOSED REBAR WITH SPALLING OVER-1/3 OF CAP LENGTH AND UP TO 3" DEEP. (SEE PHOTO)
2. CAP2 HAS A FEW DELAMINATIONS ON ITS SOUTHWEST FACE (UP TO -1SF EACH).

D.CHANNEL
1. CONCRETE RIPRAP HAS LIGHT SCALING AND MINOR CRACK WITH SOME SMALL VEGETATION GROWTH IN CONSTRUCTION JOINTS.
2. NORTH SECTION OF NORTHEAST ABUTMENT RIPRAP HAS CBUCKLE SLIGHTLY AND SETTLED ALONG THE NORTH RIPRAP CONSTRUCTION JOINT ALLOWING UNDERMINING OF THE RIPRAP WITH A 2'-VOID UNDER RIPRAP. (SEE PHOTO)

NOTES:

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2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION - PSN		401 7001 FLOWABLE BACKFILL	429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
32	221420048301036					
COMPONENT	CALLOUT:	CY	SF	LF	EA	
A. DECK	1			170		527720
	2					
	3					
	4					
	5					
B. SUPER STRUCTURE	1		2			
	2					
	3					
	4					
	5					
C. SUB STRUCTURE	1		18		5	595120
	2		18			
	3		18			
	4					
	5					
D. CHANNEL	1	1				
	2	1				595121
	3					
	4					
	5					
TOTAL		2	56	170	5	

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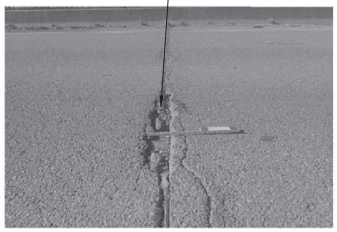

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C1

D1

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SHEET 32 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		70

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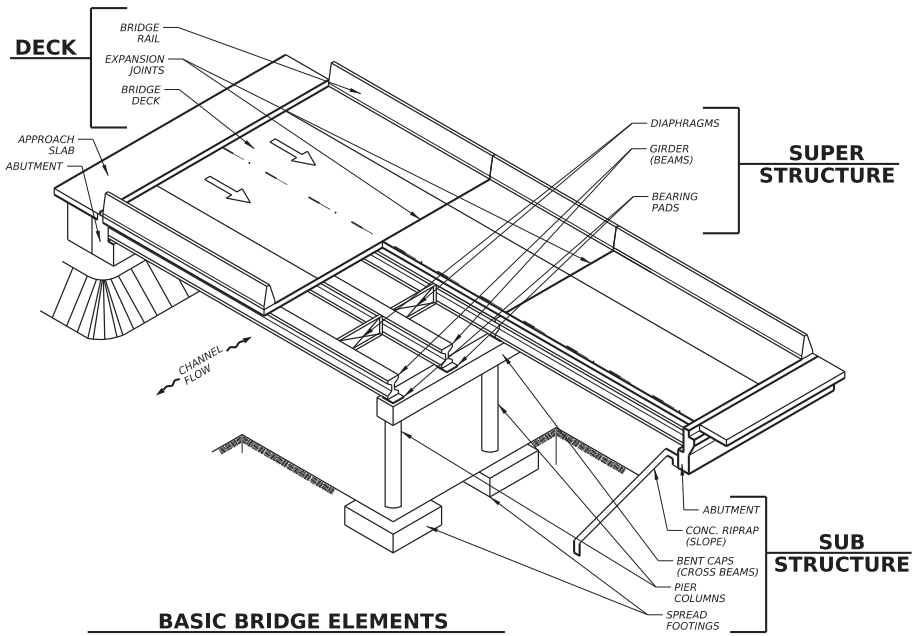


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A.DECK
1. JOINTS ARE PAVED OVER

C. SUB STRUCTURE
1. NORTH END OF CAP2 HAS MODERATE SCALING WITH 1' LONG SECTION OF HEAVY SCALING OR POOR CONSOLIDATION WITH LOSS OF AGGREGATE.
2. SOFFIT OF CAP AT WIDENING JOINT BETWEEN COLUMNS2 & 3 FROM NORTH HAS A MODERATE SPALL WITH EXPOSED REBAR. (SEE PHOTO)

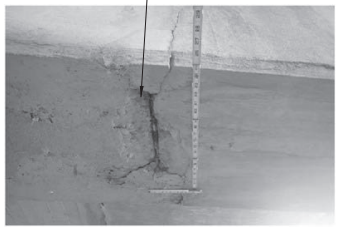
NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION - PSN		429 7001	429 7007	438 7001	780 7003	7001 7002	FUA ID
		CONC STR REPAIR(CLEAN & COAT WTH EPOXY)	CONC STR REPAIR (VERTICAL & OVERHEAD)	CLEANING AND SEALING EXISTING JOINTS	CONC CRCK REPR(DISCRETE)(ROUT AND SEAL)	BENT CAP/ABUTMENT CAP CLEANING	
33	221420023701012						
COMPONENT	CALLOUT:	SF	SF	LF	LF	EA	
A. DECK	1			36			
	2						
	3						
	4						
	5						
B. SUPER STRUCTURE	1		4				
	2		4				
	3						
	4						
	5						
C. SUB STRUCTURE	1				4	2	
	2	4	4				576439
	3						
	4						
	5						
TOTAL		4	12	36	4	2	

A1



C2

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SHEET 33 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		71

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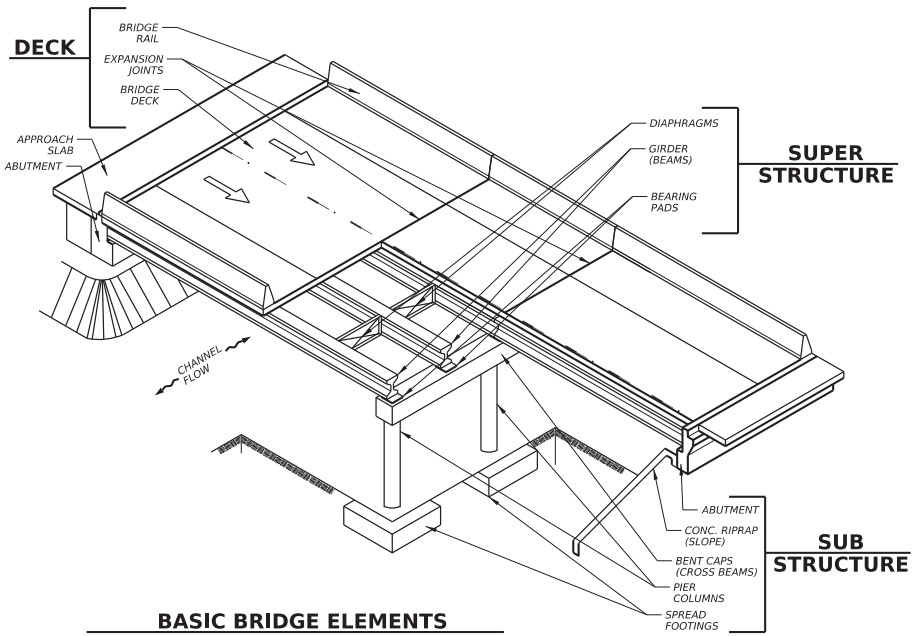


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. JOINTS HAVE MOSTLY FAILED. (SEE PHOTO)

C. SUBSTR
1. BENT CAP3 HAS A SPALL MEASURING 34"x16"x2" DEEP IN ITS SOUTHEAST FACE. (SEE PHOTO)

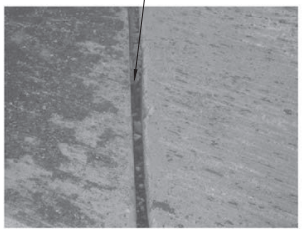
D. CHANNEL
1. CHANNEL UNDER BRIDGE HAS ERODED/SCOURED-2'-3' BELOW THE GROUND OUTSIDE OF THE BRIDGE CREATIG A POND. SCOUR /EROSION HAS EXPOSED THE RIPRAP TOE WALLS UP TO -18'. (SEE PHOTO)
2. CONCRETE RIPAP HAS LIGHT SCALING AND MINOR CRACKS.

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION - PSN		429 7007	432 7030	438 7001	7001 7002	FUA ID
		CONC STR REPAIR (VERTICAL & OVERHEAD)	RIPRAP (STONE COMMON)(DRY)(8 IN)	CLEANING AND SEALING EXISTING JOINTS	BENT CAP/ABUTMENT CAP CLEANING	
34	221420154502005					
COMPONENT	CALLOUT:	SF	CY	LF	EA	
A. DECK	1			190		699266
	2					
	3					
	4					
	5					
C. SUB STRUCTURE	1	6			6	527736
	2					
	3					
	4					
	5					
D. CHANNEL	1		9			579525
	2		9			
	3					
	4					
	5					
TOTAL		6	18	190	6	



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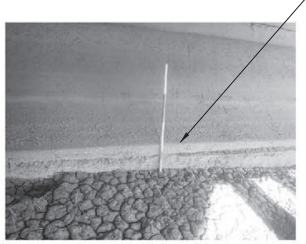

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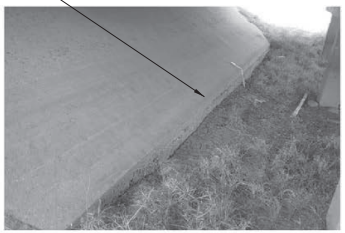

D1

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SHEET 34 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		72

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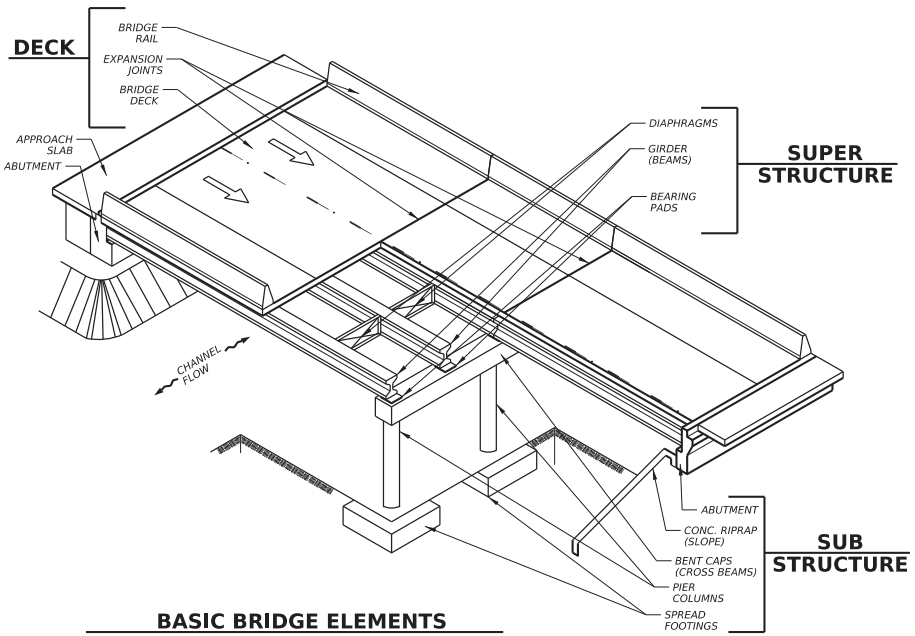


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. JOINTS ARE PAVED OVER WITH SURFACING CRACKED OVER JOINTS

B. SUPER STR
1. SEVERAL DIAPHRAGMS HAVE WIDE CRACKING, DELAMINATION AND SPALLING AT BENT CAP SHEAR KEYS. (SEE PHOTO)

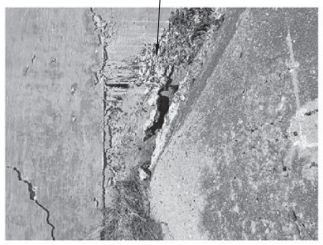
C. SUB STR
1. WINGWALLS HAVE SOME MINOR CRACKS AND SPALLS WITH A FEW SEALED CRACKS. NORTHEAST BACKWALL CORNER HAS A SMALL SPALL. SOUTHWEST WINGWALL EXTENSION HAS DELAMINATION CRACKING AND SPALLING DUE TO RAIL IMPACT. (SEE PHOTO)
2. CAP2 HAS -2'x3' AREAS OF DELAMINATING ON ITS EAST FACE AT BOTH SHEAR KEYS. (SEE PHOTO)
3. COLUMNS AT BENTS3-5 HAVE HAIRLINE TO NARROW VERTICAL CRACKS. (SEE PHOTO)

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION - PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	780 7004 CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
35	221420237301019					
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1		124			
	2					
	3					
	4					
	5					
B. SUPER STRUCTURE	1	6				527745
	2					
	3					
	4					
	5					
C. SUB STRUCTURE	1	6			5	527743
	2	6		20		
	3			5		527746
	4					
	5					
TOTAL		18	124	25	5	



B1

C1

C2

C3

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED PROFESSIONAL ENGINEER

10/14/2024

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BRIDGE PREVENTIVE MAINTENANCE

PSN: 221420237301019

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SHEET 35 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		73

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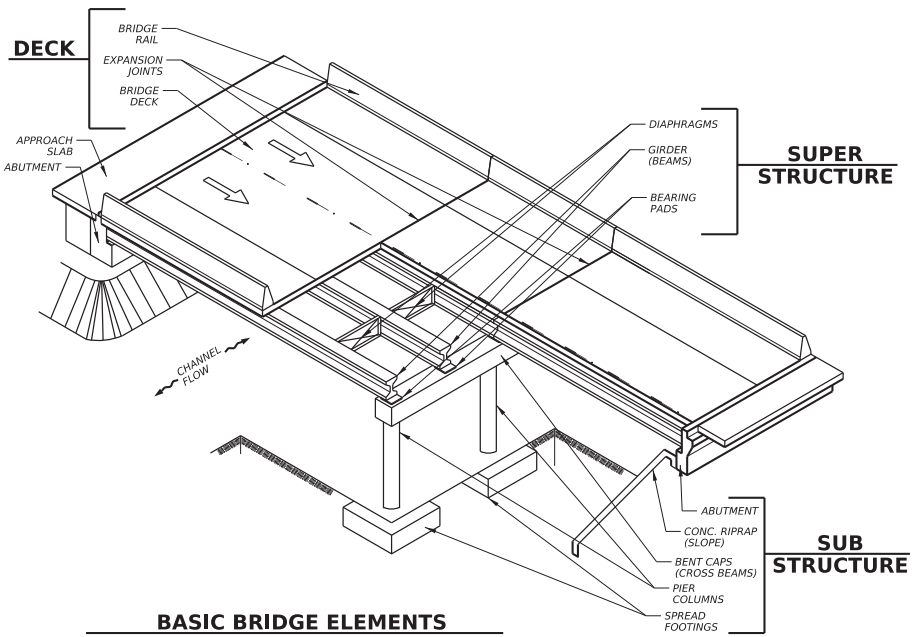


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

A. DECK
1. SOME JOINT SEALS ARE FAILING AND SOME APPEAR TO HAVE BEEN PARTIALLY RE-SEALED.

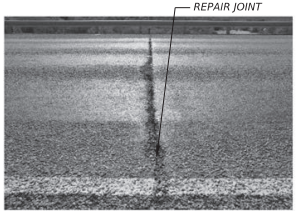
C. SUBSTRUCTURE
1. THE BEARING PAD MATERIAL IS PRESSED OUT BETWEEN THE T-BEAMS AND CAPS ON THE NW SIDE OF ALL OF THE INTERIOR BENTS AND THE SE SIDE OF BENT2.

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION - PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	780 7004 CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
36	222330002204013					
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1		301			493869
	2					
	3					
	4					
	5					
C. SUB STRUCTURE	1				6	493870
	2			80		
	3	4				
	4					
	5					
TOTAL		4	301	80	6	



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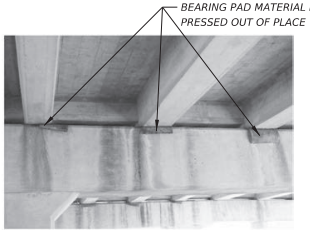

C1

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CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		74

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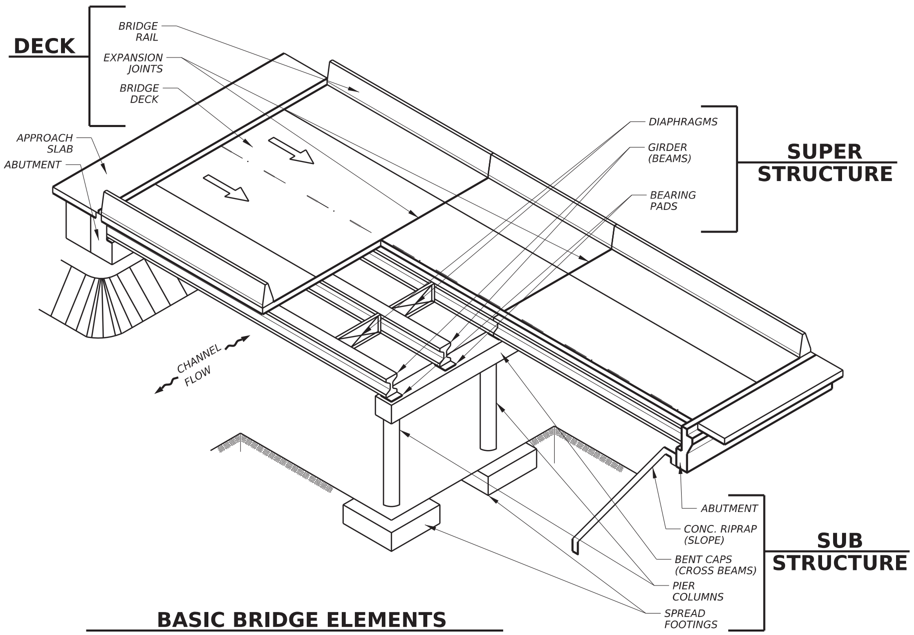
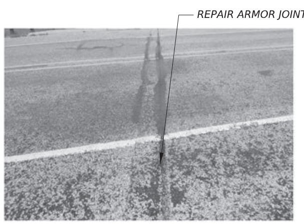


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)



C1

REPAIR CALLOUTS:

C. SUBSTRUCTURE

1. ABUTMENT JOINTS APPEAR TO BE IN GOOD CONDITION WITH INSIGNIFICANT DETERIORATION.

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.
2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION - PSN		429 7007	432 7031	438 7001	7001 7002	FUA ID
		CONC STR REPAIR (VERTICAL & OVERHEAD)	RIPRAP (STONE COMMON)(DRY)(12 IN)	CLEANING AND SEALING EXISTING JOINTS	BENT CAP/ABUTMENT CAP CLEANING	
37	222330002207075					
COMPONENT	CALLOUT:	SF	CY	LF	EA	
A. DECK	1			238		493877
	2					
	3					
	4					
	5					
C. SUB STRUCTURE	1				5	493877
	2		1			
	3	4				
	4					
	5					
	TOTAL	4	1	238	5	

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CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.

DIST	COUNTY	SHEET NO.
22	WEBB,etc.	75

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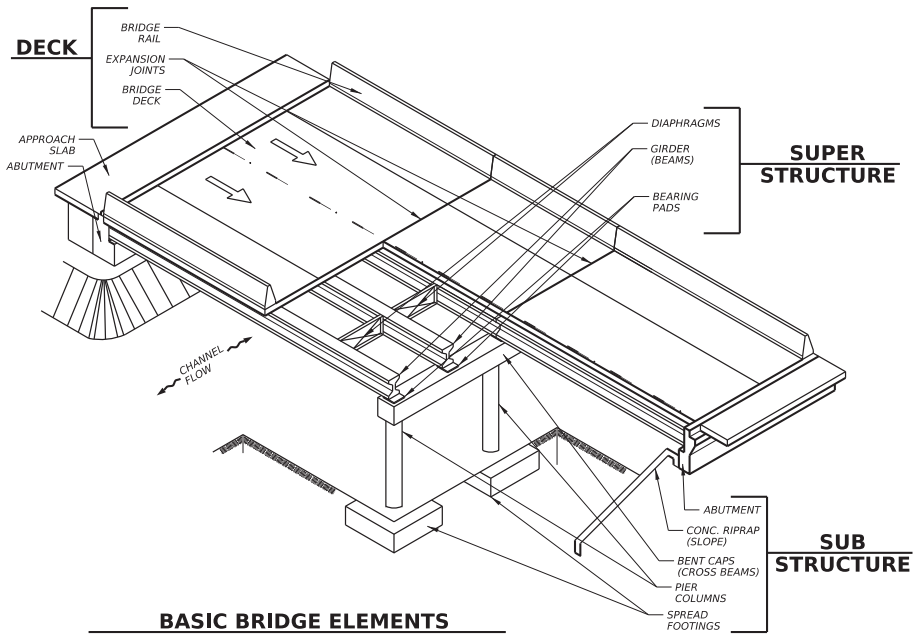


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)

REPAIR CALLOUTS:

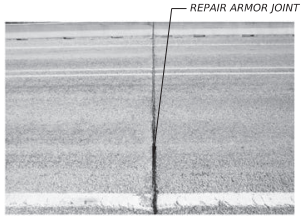
A. DECK
1. JOINTS APPEAR TO HAVE INSIGNIFICANT SEAL ADHESION LOSS REMAINS.

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION - PSN		429 7007 CONC STR REPAIR (VERTICAL & OVERHEAD)	438 7001 CLEANING AND SEALING EXISTING JOINTS	780 7004 CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	7001 7002 BENT CAP/ABUTMENT CAP CLEANING	FUA ID
38	222330002209069					
COMPONENT	CALLOUT:	SF	LF	LF	EA	
A. DECK	1		184			493881
	2					
	3					
	4					
	5					
C. SUB STRUCTURE	1				5	
	2			80		
	3	4				
	4					
	5					
TOTAL		4	184	80	5	



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CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		76

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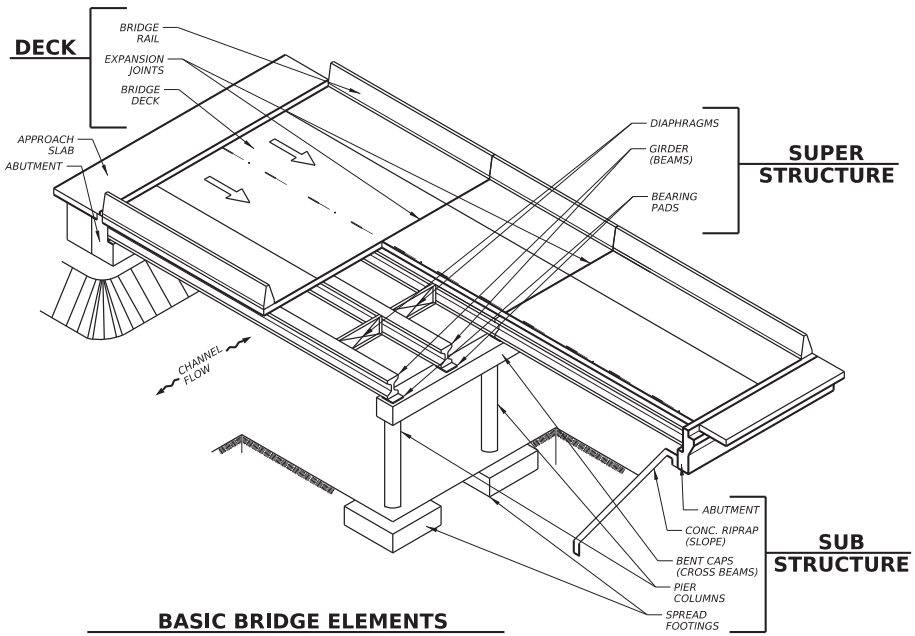
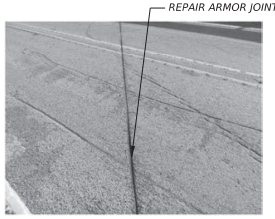


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)



A1

REPAIR CALLOUTS:

A. DECK
1. JOINT SEALS ARE DETERIORATING

B. SUPER STRUCTURE
1. SEVERAL BEAMS HAVE CRACKS AND SPALLS ON THE ENDS OVER CAPS. THOSE BEAMS HAVE ADJACENT CONCRETE PEDESTALS RETROFITTED TO TRANSFER LOAD THROUGH DIAPHRAGMS.

C. SUB STRUCTURE
1. THE CAPS AT BENTS (2,6,11) HAVE SMALL SPALLS. THE WEST END OF THE CAP AT BENT 15 HAS A SPALL ABOUT -2SF. ONE PEDESTAL AT BENT 15 HAS A SPALL WITH REBAR EXPOSED.

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION - PSN		429 7007	438 7001	7001 7002	FUA ID
		CONC STR REPAIR (VERTICAL & OVERHEAD)	CLEANING AND SEALING EXISTING JOINTS	BENT CAP/ABUTMENT CAP CLEANING	
39	222330016004058				
COMPONENT	CALLOUT:	SF	LF	EA	
A. DECK	1		764		622736
	2				
	3				
	4				
	5				
B. SUPER STRUCTURE	1	8			
	2				
	3				
	4				
	5				
C. SUB STRUCTURE	1	12		20	
	2	4			
	3	4			
	4				
	5				
TOTAL		28	764	20	

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CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		77

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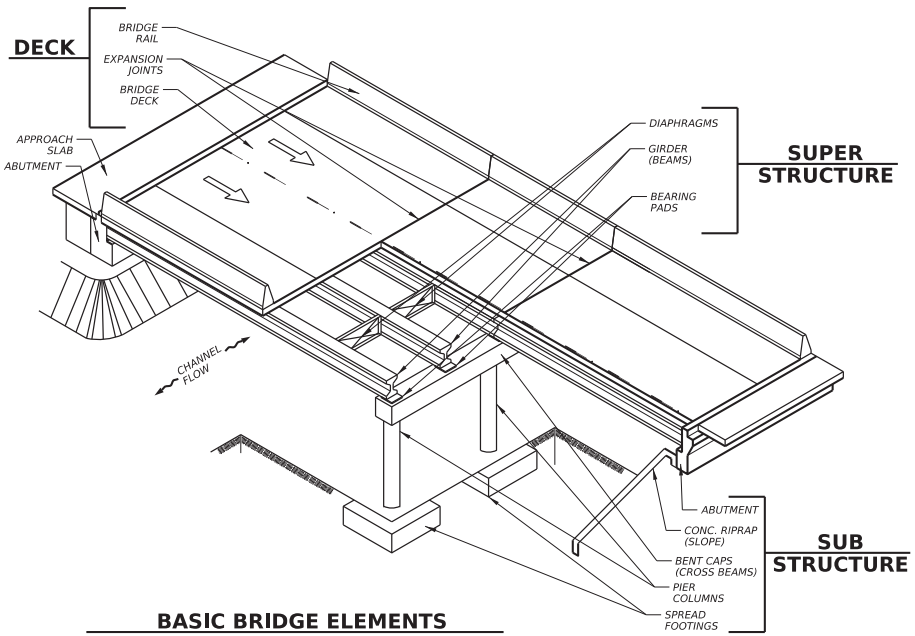
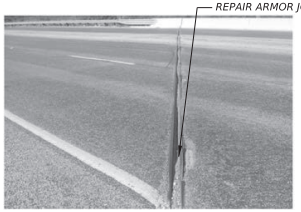


BASIC BRIDGE ELEMENTS
TYPICAL SPAN (ISOMETRIC VIEW)



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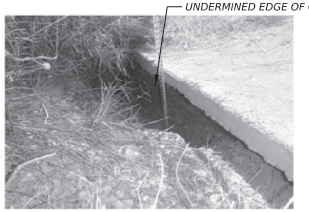

C1

REPAIR CALLOUTS:

A. DECK
1. About 5.5' long missing section of armor along joint at bent 4 & ~3' long missing section of armor along SW abutment joint. Moderate debris accumulation in strip seal expansion joints.
2. Asphalt adjacent to SW abutment joint has 2" deep moderate spalling.

B. SUPER STRUCTURE
1. About 3' long horizontal hairline crack on bottom flange of SE exterior beam in SW span.

C. SUB STRUCTURE
1. Hairline flexural & shear cracking on bent caps.
2. Undermined edge of concrete drainage flume (~1') due to erosion at east corner 2' deep.

NOTES:

1. IMAGES DO NOT ILLUSTRATE THE TOTAL DISTRESSES. SUMMARY OF QUANTITIES TABLE ACCOUNTS FOR THE TOTAL ITEM QUANTITIES WIDESPREAD THROUGHOUT THIS BRIDGE LOCATION.

2. SEE GENERAL NOTES AND GENERAL BRIDGE REPAIR DETAIL SHEET(S) FOR TXDOT STANDARDS PROCEDURES ON PAY ITEMS SPECIFICATIONS.

LOCATION - PSN		401 7001	429 7007	432 7030	438 7001	780 7003	780 7004	7001 7002	
		FLOWABLE BACKFILL	CONC STR REPAIR (VERTICAL & OVERHEAD)	RIPRAP (STONE COMMON)(DRY)(8 IN)	CLEANING AND SEALING EXISTING JOINTS	CONC CRCK REPR(DISCRETE)(ROUT AND SEAL)	CNC CRACK REPAIR (DISCRETE) (SURF SEAL)	BENT CAP/ABUTMENT CAP CLEANING	FUA ID
40	222330016103005								
COMPONENT	CALLOUT:	CY	SF	CY	LF	LF	LF	EA	
A. DECK	1				504				621103
	2		162						
	3								
	4								
	5								
B. SUPER STRUCTURE	1					5			
	2								
	3								
	4								
	5								
C. SUB STRUCTURE	1							8	
	2						10		
	3								
	4								
	5								
F. APPROACHES	1			8					621105
	2								
	3								
	4								
	5								
TOTAL		0	162	8	504	5	10	8	

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SHEET 40 OF 40

CONT	SECT	JOB	HIGHWAY
6469	22	001	IH35,etc.
DIST	COUNTY		SHEET NO.
22	WEBB,etc.		78

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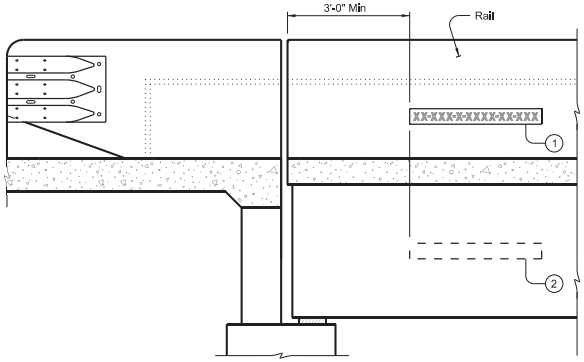

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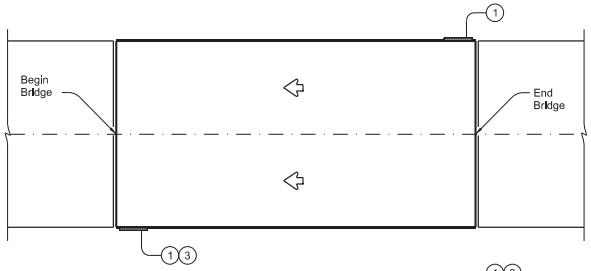
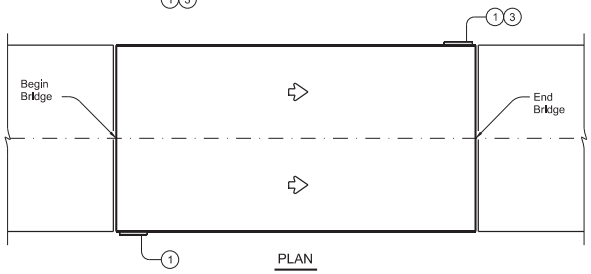
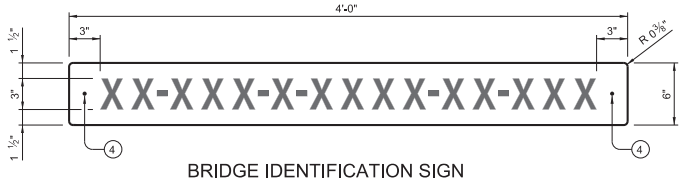


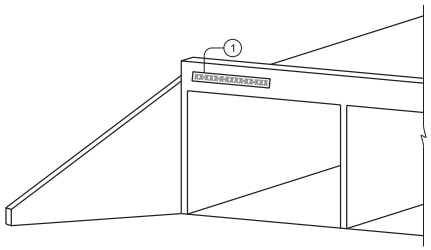


PLAN

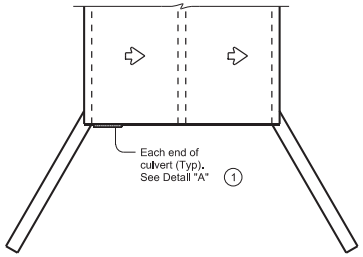
BRIDGE SIGN LOCATIONS



BRIDGE IDENTIFICATION SIGN

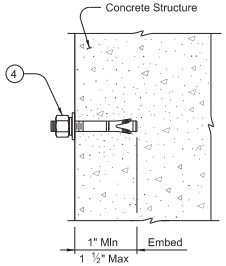


DETAIL "A"



PLAN

BRIDGE CLASS CULVERT SIGN PLACEMENT



ANCHOR DETAIL

SHEETING REQUIREMENTS

Usage	Color	Sign Face Material
Background	White	Type B or C Sheeting
Letters and Symbols	Black	Type B or C Sheeting

1. Bridge identification sign location
2. Alternate sign placement location for exterior concrete beams.
3. If adjacent bridges are less than 2 feet apart, these signs may be omitted.
4. ¼" Diameter stainless steel expansion anchor with hex nut, washer, and lock washer.

SIGN NOTES:

Standard sign designs can be found in the Standard Highway Sign Designs for Texas (SHSD).
Use the Clearview Alphabet CV-2W for the letters and symbols.

MATERIAL NOTES:

Provide lateral spacing between letters and numerals conforming with the SHSD, and any approved changes thereto. Provide a balanced appearance when spacing is not shown.
Provide aluminum sign blanks with a minimum thickness of 0.080" that meet the requirements of DMS-7110.
Provide sign face materials that meet the requirements of DMS-8300 and the sheeting requirements shown in the table.
Provide ¼" diameter stainless steel expansion anchors with one hex head nut, one flat washer, and one lock washer each.
Use torque controlled mechanical expansion anchors that are approved for use in cracked concrete by the International Code Council, Evaluation Service (ICC-ES). Provide anchor products that have a designated ICC-ES Evaluation Report number. The approval status must be maintained on the ICC-ES website under Division 031600 for Concrete Anchors.
Unless otherwise approved by the Engineer: do not use adhesive anchors; do not use expansion anchors that are not included in the ICC-ES approval list; and do not use expansion anchors that are only approved for use in uncracked concrete.
Use anchors manufactured with stainless steel expansion wedges. Anchors manufactured with carbon steel expansion wedges are not allowed. Anchor bodies can be either zinc-plated carbon steel or stainless steel. For application in marine environments, provide both stainless steel anchor bodies and expansion wedges.

GENERAL NOTES:

Prior to hole drilling, locate rebar to ensure clearing of existing reinforcement and/or strands.
Prior to installation, obtain approval of sign locations from the Engineer. Avoid placement of sign over travel lanes and pedestrian walkways. Submit proposed installation method to Engineer prior to beginning work. Install anchors as shown on plans and in accordance with the anchor manufacturer's published installation instructions.
Do not install anchors sections of members under tension.
For new construction, the signs and anchors are subsidiary to the bridge. For installations on existing structures, the signs and anchors are paid under Item 442, "Metal for Structures." Each sign weighs 28 lbs.

Texas Department of Transportation

Bridge Division Standard

NBIS
BRIDGE IDENTIFICATION SIGN STANDARD

NBIS

FILE: MS-NBIS-23.dgn	DN: TAR	CK: TxDOT	DW: JER	CK: TAR
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REVISIONS	6469	22	001	IH35,etc.
	DIST	COUNTY		SHEET NO.
	22	WEBB,etc.		79

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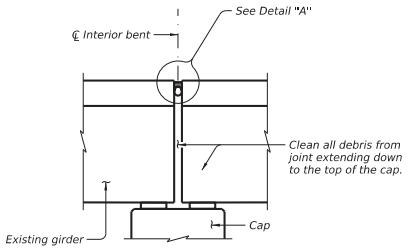
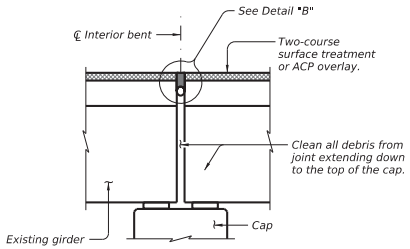


JOINT WITH SILICONE SEAL

(Used without ACP overlay)



JOINT W/ HOT-POURED RUBBER SEAL

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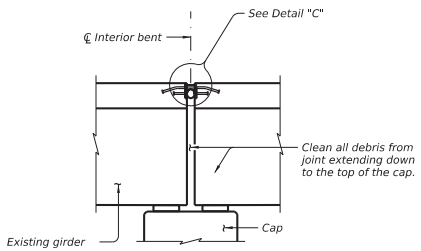

ARMOR JOINT

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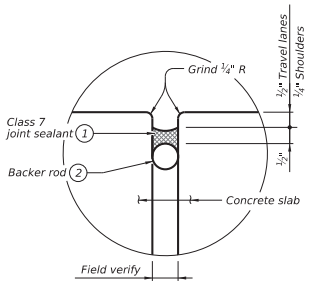
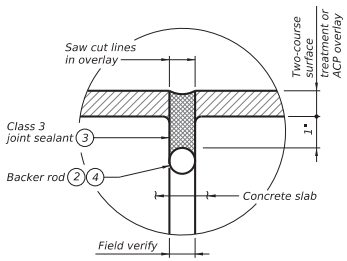


DETAIL "A"



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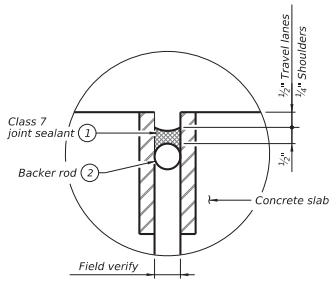

DETAIL "C"

(Stud anchors not shown for clarity.)

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

PROCEDURE FOR CLEANING AND SEALING EXISTING JOINT WITH SILICONE SEAL:

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

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

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

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

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

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

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

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

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

PROCEDURE FOR CLEANING AND SEALING EXISTING ARMOR JOINTS:

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

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

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

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

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

GENERAL NOTES:

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

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

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

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

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

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10/14/2024

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CLEANING AND SEALING EXISTING BRIDGE JOINTS

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	DIST	COUNTY			SHEET NO.	
	22	WEBB,etc.			80	

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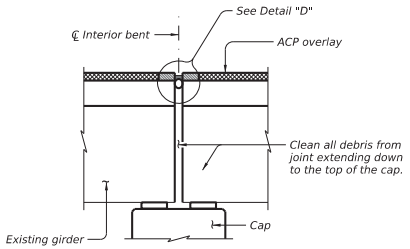

HEADER JOINT WITH SILICONE SEAL

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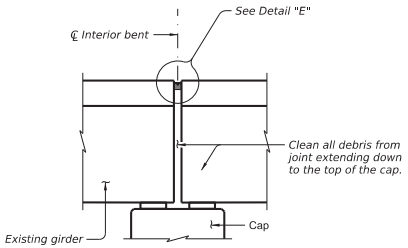
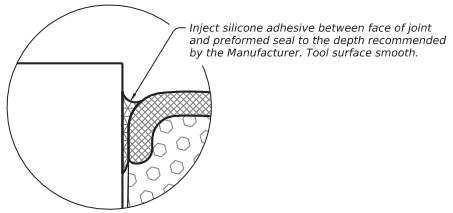
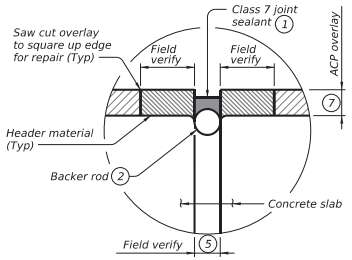


JOINT WITH PRECOMPRESSED FOAM AND SILICONE SEAL

(Used without ACP overlay)



SILICONE INJECTION



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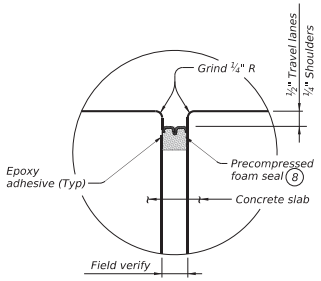

DETAIL "E"

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

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

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

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

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

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

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

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

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

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

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

4) Wipe down joint surfaces to remove contaminants.

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

6) Apply epoxy to joint opening side surfaces.

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

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

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

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

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

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

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

(7) Maximum thickness is 3".

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

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CLEANING AND SEALING EXISTING BRIDGE JOINTS

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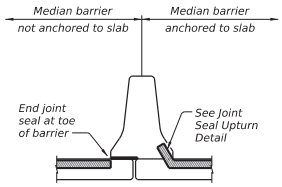
APPROVED PRECOMPRESSED FOAM SEAL MANUFACTURERS

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



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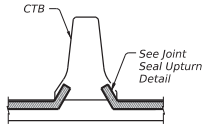

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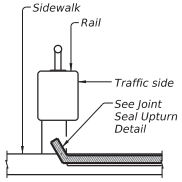
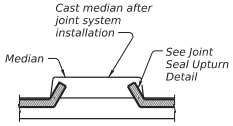


SIDEWALK BEHIND BRIDGE RAIL



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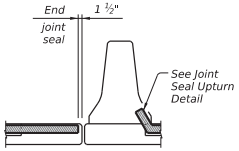

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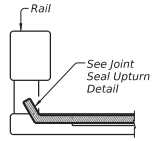

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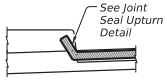

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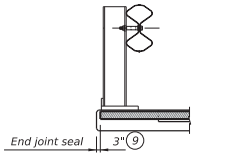
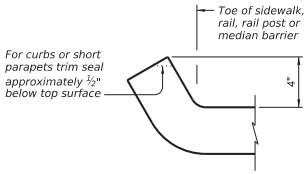


STEEL POST BRIDGE RAIL

JOINT SEALANT TERMINATION DETAILS

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



JOINT SEAL UPTURN DETAIL

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CLEANING AND SEALING EXISTING BRIDGE JOINTS

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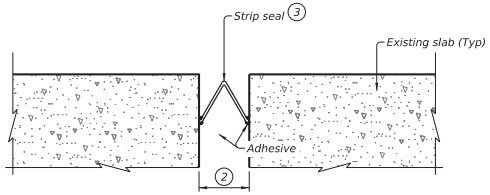
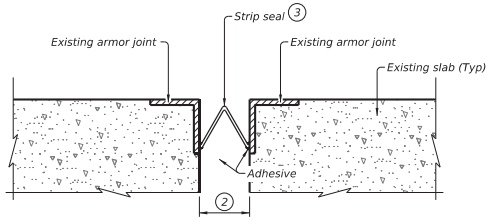
APPROVED STRIP SEAL SYSTEM MANUFACTURERS

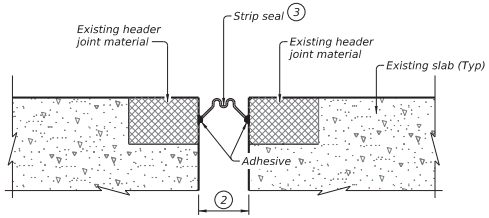
Manufacturer	Strip Seal Seal Type
D.S. Brown	V-400
R.J. Watson	SF-400
SSI	SSS-400
Watson Bowman ACME	SPS-400



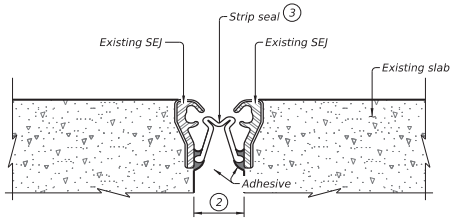
BONDED STRIP SEAL ON CONCRETE



BONDED STRIP SEAL ON ARMOR JOINT



BONDED STRIP SEAL ON HEADER JOINT



BONDED STRIP SEAL ON SEJ-M

Used to repair failed strip seals. Showing SEJ-M. Other sections similar.

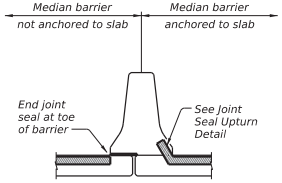
1. *The PRE-INSTALLATION CONDITIONS and INSTALLATION PROCEDURE FOR NEW AND EXISTING JOINTS are meant to be general guides. See manufacturer specific procedures and instructions for detailed guidance.*
2. *Recommended minimum installation width is 2".*
3. *Regardless of seal type shown, any strip seal system from the table above may be used in this application.*

PRE-INSTALLATION CONDITIONS (1)

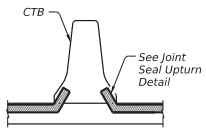
- *Ambient and surface temperatures must be at least 40°F.*
- *Joint surfaces must be completely dry. Do not install strip seal system immediately after a rain event or if precipitation is forecast for the day.*
- *Prepare joints and install strip seal system on the same day.*
- *No traffic is allowed to cross over primed and sandblasted joints.*
- *If necessary, repair existing joint appropriately per TxDOT Item 785, "Bridge Joint Repair or Replacement."*
- *Ensure that all materials associated with preparation and installation of strip seal are compatible.*

INSTALLATION PROCEDURE FOR NEW AND EXISTING JOINTS: (1)

- *Abrasive blast the vertical faces of the joint (steel or concrete) then clean with a cloth saturated in denatured alcohol.*
- *Apply the surface primer to the vertical joint faces. Follow all manufacturer's instructions for preparation and application of surface primer.*
- *Ready the strip seal next to the joint opening and clean thoroughly with a cloth saturated in denatured alcohol.*
- *Using a caulking tool, apply an initial bead of adhesive at least ⅜" in diameter to both vertical faces of the joint below the top surface of the joint.*
- *Place the strip seal into the joint above the initial bead of adhesive. Gradually press the seal downward while maintaining contact between the seal's sides and joint header. Position the strip seal so that seal top is at least ½" below the riding surface.*
- *Place a second bead of adhesive along each side of the strip seal no higher than the top of the strip seal's serrations. Ensure that this layer of adhesive is in contact with the strip seal and joint faces.*
- *Tool the second layer of adhesive with a tongue depressor (or other suitable tool) to create a concave face that is completely in contact with the joint faces.*
- *Cure the strip seal system per manufacturer's recommendations prior to permitting traffic on the bridge.*



OPEN DECK JOINT BELOW MEDIAN BARRIER



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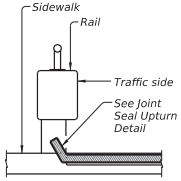
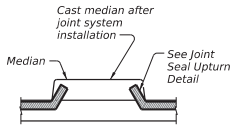


SIDEWALK BEHIND BRIDGE RAIL



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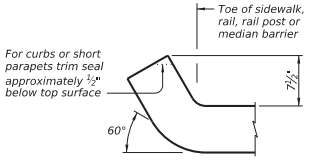
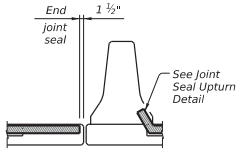
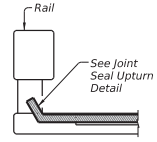


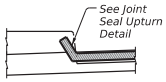
JOINT SEAL UPTURN DETAIL



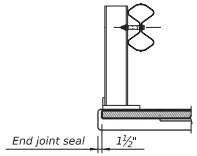
OPEN DECK JOINT ADJACENT TO MEDIAN BARRIER



CONCRETE BRIDGE RAIL



SIDEWALK



STEEL POST BRIDGE RAIL

JOINT SEALANT TERMINATION DETAILS

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED PROFESSIONAL ENGINEER

10/14/2024

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Rogelio Chapa
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Texas Department of Transportation — Bridge Division

CLEANING AND SEALING EXISTING BRIDGE JOINTS
(STRIP SEAL)

FILE: WD-CSBJ(SS)-24.dgn		ON: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2024	CONT	SECT	JOB	HIGHWAY	
REVISIONS	6469	22	001	IH35,etc.	
	DIST	COUNTY		SHEET NO.	
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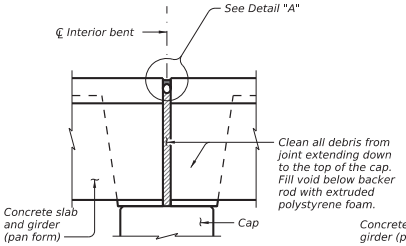
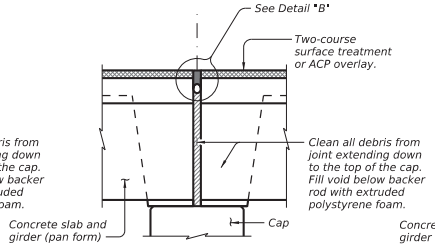


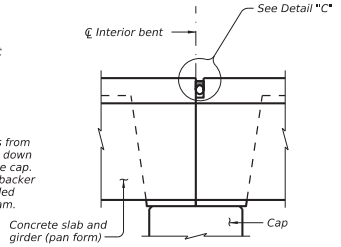
JOINT WITH SILICONE SEAL

(Used without ACP overlay)

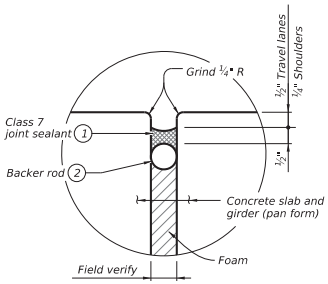


JOINT W/ HOT-POURED RUBBER SEAL

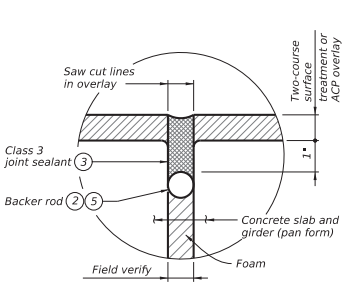
(Used with ACP overlay)



FIXED JOINT



DETAIL "A"



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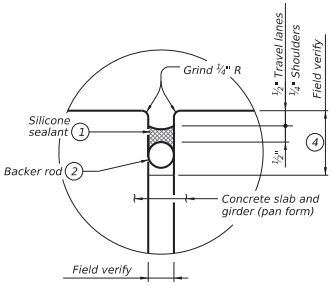

DETAIL "C"

1. Use Class 7 joint sealant. Prepare joint and seal in accordance with Item 438, "Cleaning and Sealing Joints."
2. Provide backer rod 25% larger than joint opening and compatible with the sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.
3. Use Class 3 joint sealant. Prepare joint and seal in accordance with Item 438, "Cleaning and Sealing Joints."
4. Backer rod may be omitted if existing joint depth is less than 1 ½".
5. Backer rod must be compatible with the hot poured rubber sealant and rated for a minimum of 400°F.

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

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

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

3) Fill void with extruded polystyrene foam.

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

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

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

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

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

3) Fill void with extruded polystyrene foam.

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

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

PROCEDURE FOR CLEANING AND SEALING EXISTING FIXED JOINTS:

1) Remove existing seal and debris from recess.

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

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

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

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

GENERAL NOTES:

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

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

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

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

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

STATE OF TEXAS
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10/14/2024

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Texas Department of Transportation — Bridge Division

CLEANING AND SEALING EXISTING BRIDGE JOINTS

(PAN GIRDER BRIDGES)

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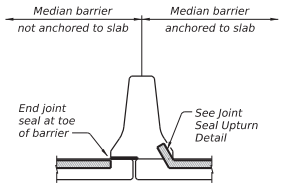
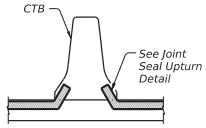
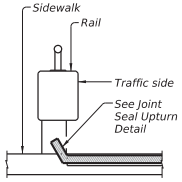


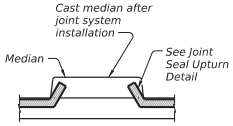
OPEN DECK JOINT BELOW MEDIAN BARRIER



CONCRETE TRAFFIC BARRIER



SIDEWALK BEHIND BRIDGE RAIL



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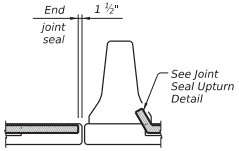
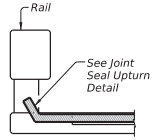
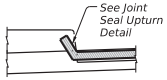


OPEN DECK JOINT ADJACENT TO MEDIAN BARRIER



CONCRETE BRIDGE RAIL



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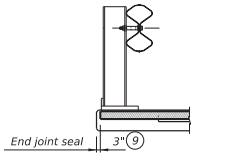
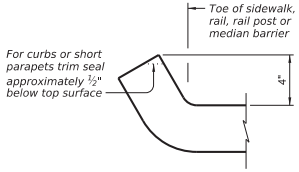


STEEL POST BRIDGE RAIL

JOINT SEALANT TERMINATION DETAILS

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



JOINT SEAL UPTURN DETAIL

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED PROFESSIONAL ENGINEER
10/14/2024

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SHEET 2 OF 2

Texas Department of Transportation | Bridge Division

CLEANING AND SEALING EXISTING BRIDGE JOINTS

(PAN GIRDER BRIDGES)

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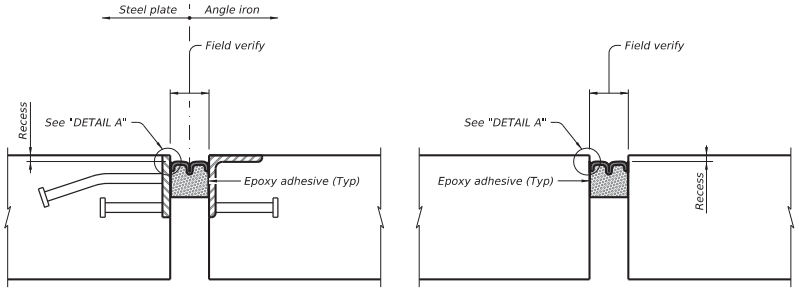
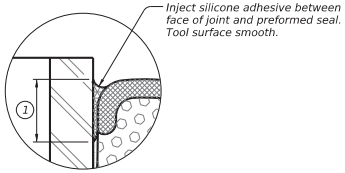
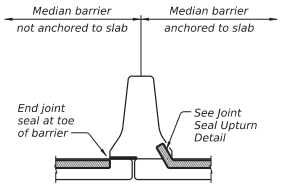


STEEL NOSING **CONCRETE NOSING**

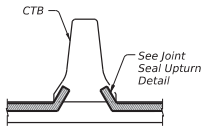


DETAIL A

JOINT SECTIONS



OPEN DECK JOINT BELOW MEDIAN BARRIER



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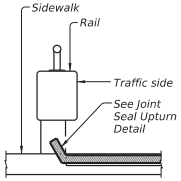
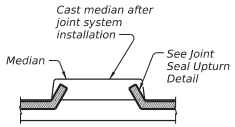


SIDEWALK BEHIND BRIDGE RAIL



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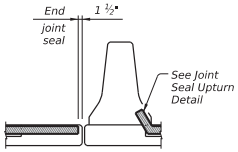

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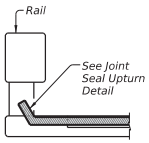
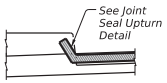


CONCRETE BRIDGE RAIL



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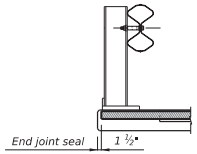
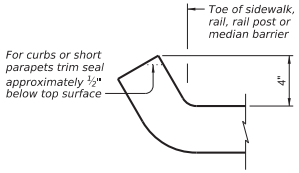


STEEL POST BRIDGE RAIL

JOINT SEALANT TERMINATION DETAILS



JOINT SEAL UPTURN DETAIL

APPROVED PRECOMPRESSED FOAM SEAL MANUFACTURERS

Manufacturer (2)	Steel or Concrete Section	Seal Type
Watson Bowman Acme	As shown	Wabo FS
SSI	As shown	Silspec SES
Sealtite	As shown	Sealtite 50N
EMSEAL	As shown	BEJS
TuffTex	As shown	RepJoint PF-UV

(1) Injection depth as recommended by Manufacturer.

(2) Other manufacturers of bridge expansion joint foam seal may be listed on the plans.

PROCEDURES:

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

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

3) Wipe down joint surfaces to remove contaminants.

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

5) Apply epoxy to joint opening side surfaces.

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

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

8) Inject silicone adhesive along top interface of seal with joint side surface. Tool to spread adhesive as necessary.

CONSTRUCTION NOTES:

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

Splice and install seal in accordance with the Manufacturer's directions and with the adhesive provided by the Manufacturer.

Extend sealant up into rail or curb 4 inches on low side or sides of deck.

GENERAL NOTES:

Provide pre-compressed silicone and foam hybrid joint seal in the size and at locations shown on the plans.

Payment is based on the length of seal placed and in accordance with Item 438, "Cleaning and Sealing Joints."

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10/11/2024

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PRECOMPRESSED FOAM EXPANSION JOINT SEAL

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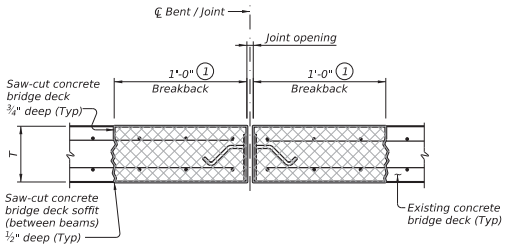
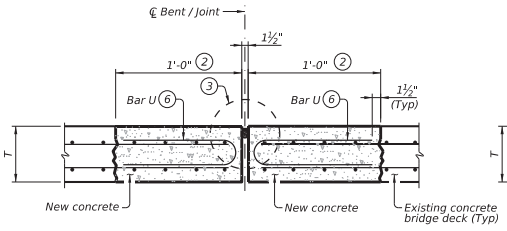
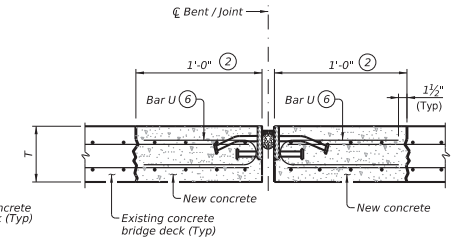


REMOVAL DETAIL



RECONSTRUCTION DETAIL

Silicone Joint Seal



RECONSTRUCTION DETAIL (4)

Showing armor joint. SEJ Similar

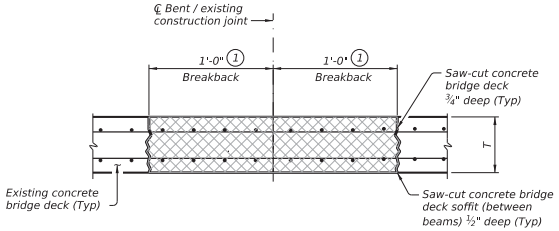
EXPANSION JOINT DETAILS

1. Saw cut deck ¾" at the breakback line prior to concrete removal. Remove concrete bridge deck as shown. Use hand tools, power driven chipping hammers (30-lb class maximum), or hydro-demolition to remove concrete. Do not damage existing reinforcing, existing beams, or any other portion of the structure to remain.
2. Clean and extend existing reinforcing. Repair damaged coating for epoxy coated or galvanized rebar. Contractor may opt for replacing transverse reinforcing at no additional cost to the Department. Provide minimum lap according to Reinforcing Bar Table if bars are cut. Extend repair concrete to be flush with existing surface. Removal of expansion joint, if present, is subsidiary to Item 785, "Bridge Joint Repair or Replacement."
3. See elsewhere in plans for joint seal information.
4. Provide replacement armor joint or SEJ as shown on the plans. Position to be flush with riding surface. See applicable standard for notes and details not shown.
5. 1½" vinyl or plastic joint former at controlled joints (Stress Cap, Zip Strip, Stress Lock, or equal as approved by the Engineer).
6. Space Bars U at 12" maximum, center to center. Bars may be bundled with existing longitudinal reinforcing. Adjust Bars U spacing as needed to avoid joint anchorage.

REINFORCING BAR TABLE

Size	Bar Laps	
	Uncoated	Coated
#4	1'-7"	2'-5"
#5	2'-0"	3'-0"

Reinforcing steel is approximately 3 lbs/sf per mat



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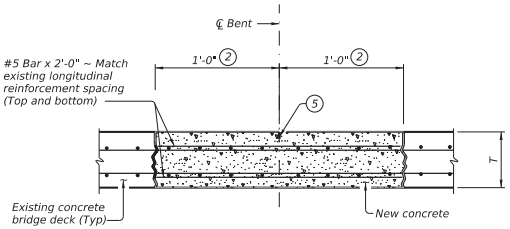
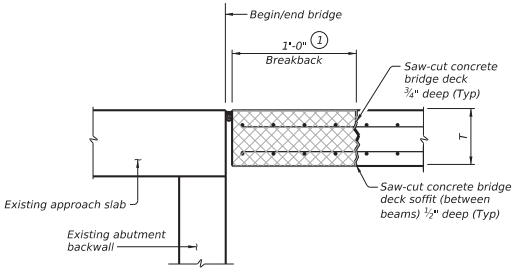


RECONSTRUCTION DETAIL

CONTINUOUS SLAB DETAILS



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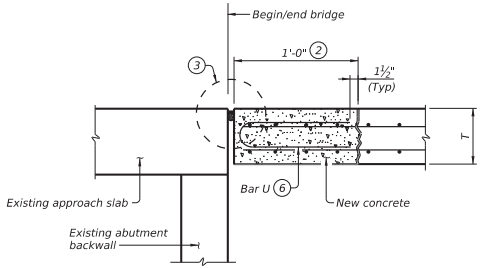
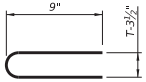


RECONSTRUCTION DETAIL



BARS U (#5)

BEGIN/END OF BRIDGE SLAB DETAILS

With Pourable Joint Seal

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

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

GENERAL NOTES:

Perform work in accordance with the TXDOT Concrete Repair Manual, Chapter 3, Section 4 and Item 785, "Bridge Joint Repair or Replacement." A copy of the Concrete Repair Manual must be available onsite during all concrete repair operations. All work to remove existing joint and install new joint, including repair concrete and installing new reinforcing steel, is paid in accordance with Item 785 and measured by the linear foot.

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

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED PROFESSIONAL ENGINEER
10/14/2024

DocuSigned by:
Rogelio Chapa
307945B8A8784F3...

Texas Department of Transportation — Bridge Division

JOINT REPAIR AND REPLACEMENT DETAILS

BRIDGES WITHOUT ASPHALT OVERLAY

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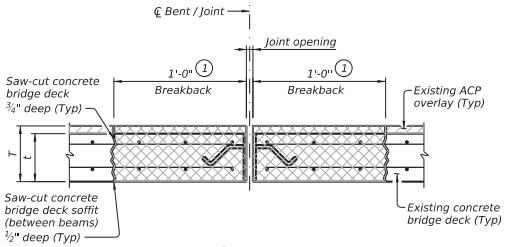

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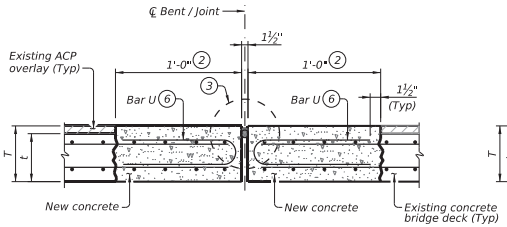
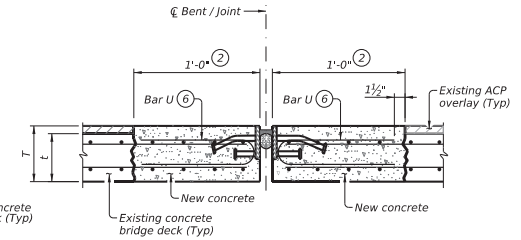


RECONSTRUCTION DETAIL

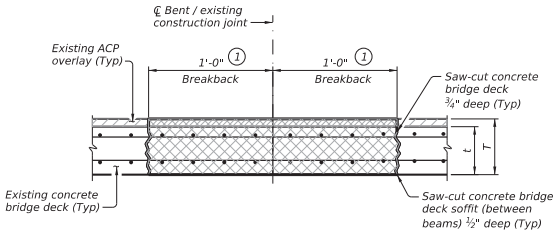
Silicone Joint Seal



RECONSTRUCTION DETAIL (4)

Showing armor joint. SEJ Similar

EXPANSION JOINT DETAILS



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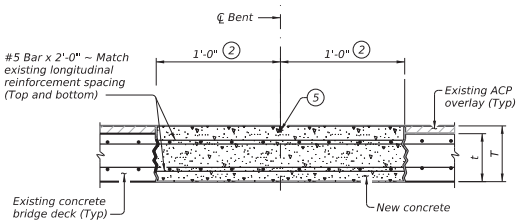
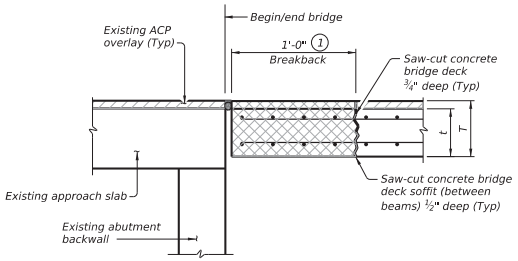


RECONSTRUCTION DETAIL

CONTINUOUS SLAB DETAILS



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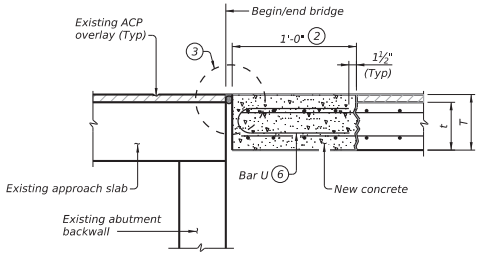
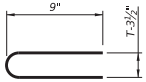


RECONSTRUCTION DETAIL

BEGIN/END OF BRIDGE SLAB DETAILS

With Pourable Joint Seal



BARS U (#5)

(1) Saw cut deck ¾" at the breakback line prior to concrete removal. Remove concrete bridge deck as shown. Use hand tools, power driven chipping hammers (30-lb class maximum), or hydro-demolition to remove concrete. Do not damage existing reinforcing, existing beams, or any other portion of the structure to remain.

(2) Clean and extend existing reinforcing. Repair damaged coating for epoxy coated or galvanized rebar. Contractor may opt for replacing transverse reinforcing at no additional cost to the Department. Provide a minimum lap according to the Reinforcing Bar Table if bars are cut. Extend repair concrete to be flush with existing surface. Removal of expansion joint, if present, is subsidiary to Item 785, "Bridge Joint Repair or Replacement."

(3) See elsewhere in plans for joint seal information.

(4) Provide replacement armor joint or SEJ as shown on the plans. Position to be flush with riding surface. See applicable standard for notes and details not shown.

(5) 1½" vinyl or plastic joint former at controlled joints (Stress Cap, Zip Strip, Stress Lock, or equal as approved by the Engineer).

(6) Space Bars U at 12" maximum, center to center. Bars may be bundled with existing longitudinal reinforcing. Adjust Bars U spacing as needed to avoid joint anchorage.

REINFORCING BAR TABLE

Size	Bar Laps	
	Uncoated	Coated
#4	1'-7"	2'-5"
#5	2'-0"	3'-0"

Reinforcing steel is approximately 3 lbs/sf per mat

LEGEND	
T	Thickness of joint repair (t + ACP thickness)
t	Existing deck thickness

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

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

GENERAL NOTES:

Perform work in accordance with the TXDOT Concrete Repair Manual, Chapter 3, Section 4 and Item 785, "Bridge Joint Repair or Replacement." A copy of the Concrete Repair Manual must be available onsite during all concrete repair operations. All work to remove existing joint and install new joint, including repair concrete and installing new reinforcing steel, is paid in accordance with Item 785, "Bridge Joint Repair or Replacement" and measured by the linear foot.

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

STATE OF TEXAS
ROGELIO CHAPA JR.
148468
LICENSED PROFESSIONAL ENGINEER

10/14/2024

DocuSigned by:
Rogelio Chapa
307945B8A8784F3...

Texas Department of Transportation — Bridge Division

JOINT REPAIR AND REPLACEMENT DETAILS

BRIDGES WITH ASPHALT OVERLAY

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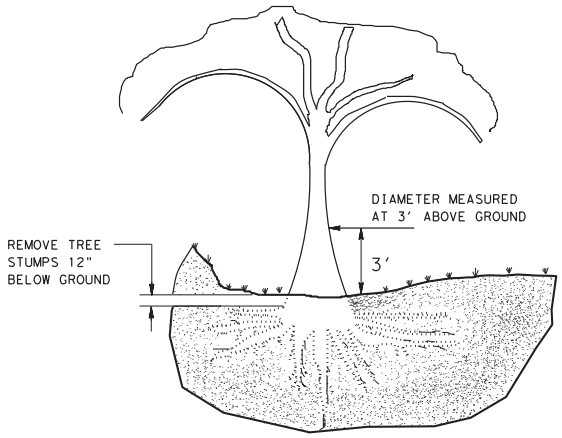
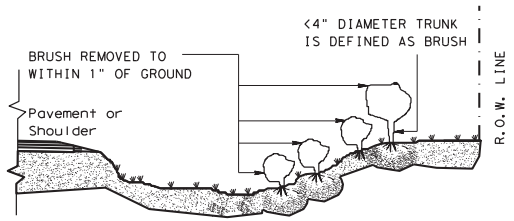
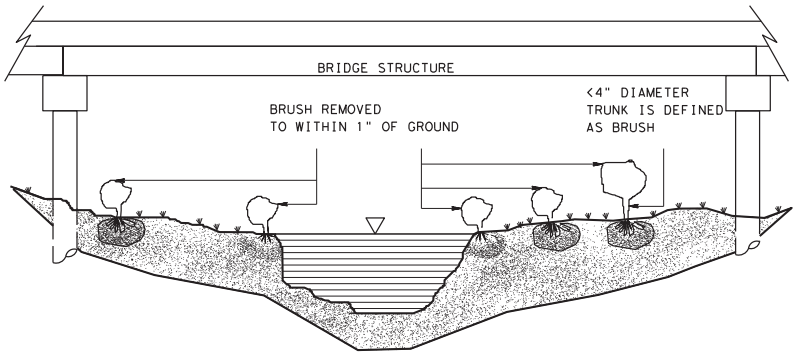


TREE REMOVAL



BRUSH REMOVAL

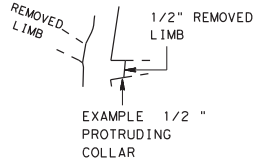


BRUSH REMOVAL UNDER BRIDGE AND IN CHANNEL

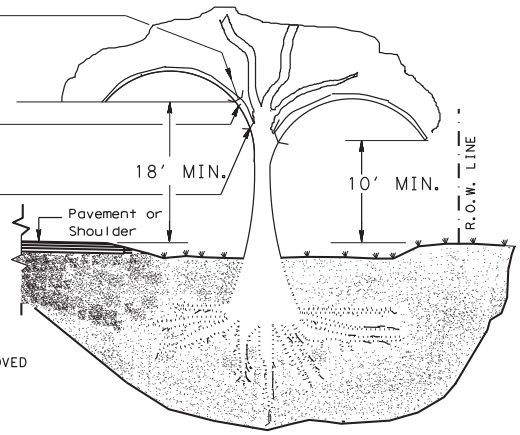
STEP 1:
CUT 1/3 WAY THROUGH BOTTOM OF LIMB 8" TO 12" ABOVE MAIN STEM (OR TRUNK).

STEP 2:
REMOVE LIMB 4" TO 6" BEYOND THE FIRST CUT

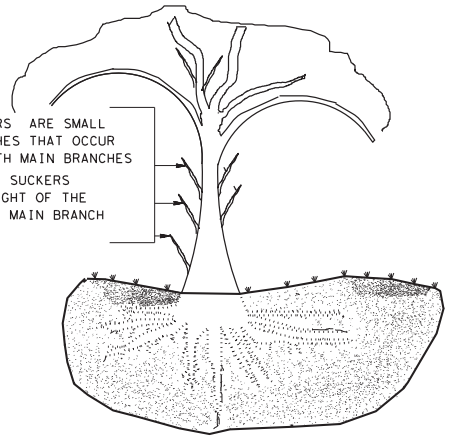
STEP 3:
REMOVE STUB WITH A SMOOTH CUT SO THAT TRACE COLLAR OF THE REMOVED LIMB PROTRUDES APPROXIMATELY 1/2 " FROM THE MAIN STEM



EXAMPLE 1/2 " PROTRUDING COLLAR



TREE TRIMMING



STEPS 1, 2 AND 3 APPLY WHEN REMOVING LIMBS 2" IN DIAMETER OR LARGER.

GENERAL NOTES:

TREE TRIMMING

1. TRIM AND REMOVE ALL TREE LIMBS ON THE PAVEMENT SIDE OF THE TRUNK 18' ABOVE THE PAVEMENT OR BRIDGE DECK ELEVATION, UNLESS OTHERWISE SHOWN ON THE PLANS.

2. TRIM AND REMOVE ALL TREE LIMBS BETWEEN THE TRUNK AND R.O.W. LINE 10' ABOVE NATURAL GROUND, TERRAIN OR OTHER STRUCTURE ELEVATION, UNLESS OTHERWISE SHOWN ON THE PLANS.

TREE REMOVAL

3. FOR TREES MARKED FOR REMOVAL, THE DIAMETER OF TREES ARE DETERMINED BY MEASUREMENT OF THE TRUNK CIRCUMFERENCE 3' ABOVE THE GROUND. TREES WITH TRUNKS OF LESS THAN 4" DIAMETER ARE CONSIDERED TO BE BRUSH. TREES WITH MULTIPLE TRUNKS AT THE POINT OF MEASUREMENT ARE MEASURED AND PAID FOR SEPARATELY.

4. MEASUREMENTS FOR PAYMENT OF TREE DIAMETERS ARE DIVIDED INTO THE RANGES SHOWN IN TABLE 1.

TABLE 1
TREE TRUNK SIZE FOR TREE REMOVAL PAYMENT

PAY ITEM	RANGE FOR PAY ITEMS			
	TRUNK DIAMETER *		TRUNK CIRCUMFERENCE	
	LOWER LIMIT IS GREATER THAN	UPPER LIMIT IS LESS THAN OR EQUAL TO	LOWER LIMIT IS GREATER THAN	UPPER LIMIT IS LESS THAN OR EQUAL TO
752 7005	4	12	12 1/2	37 1/2
752 7006	12	18	37 1/2	56 1/2
752 7007	18	24	56 1/2	75 1/2
752 7008	24	30	75 1/2	94
752 7009	30	36	94	113
752 7010	36	42	113	132
752 7011	42	48	132	151
752 7012	48	60	151	188 1/2
752 7013	60	72	188 1/2	226

***SEE GENERAL NOTE #3.**

Texas Department of Transportation — Maintenance Division Standard

TREE AND BRUSH REMOVAL

TRB-24 (1)

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	22	WEBB, etc.		89

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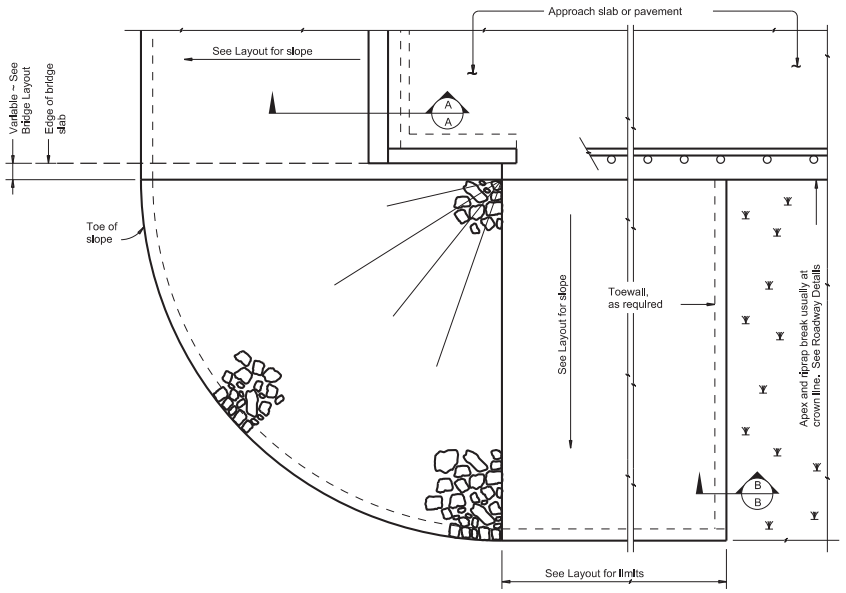
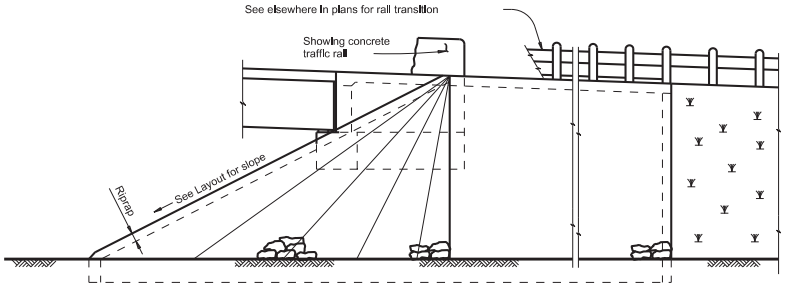
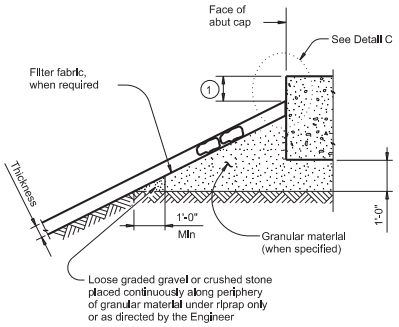


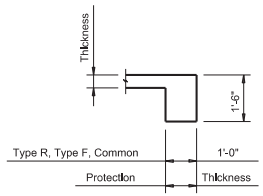
PLAN



ELEVATION

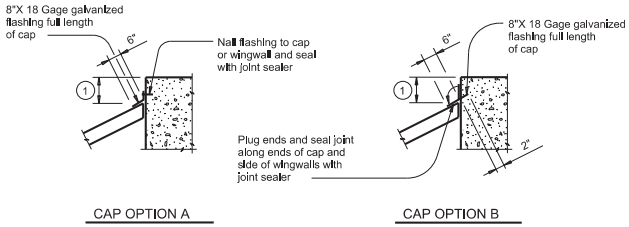


SECTION A-A AT CAP



SECTION B-B

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



CAP OPTION A

CAP OPTION B

DETAIL C

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

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

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

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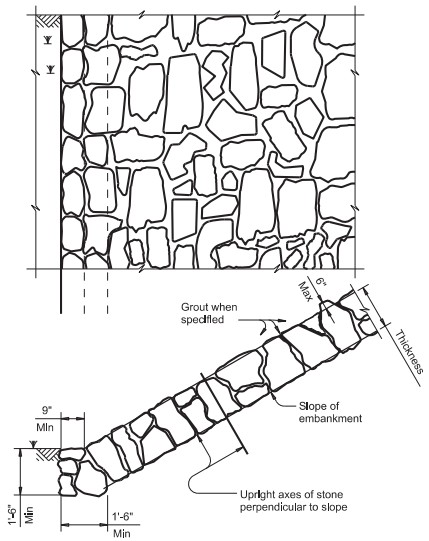


FIGURE 1 ~ TYPE R STONE RIPRAP
dry or grouted

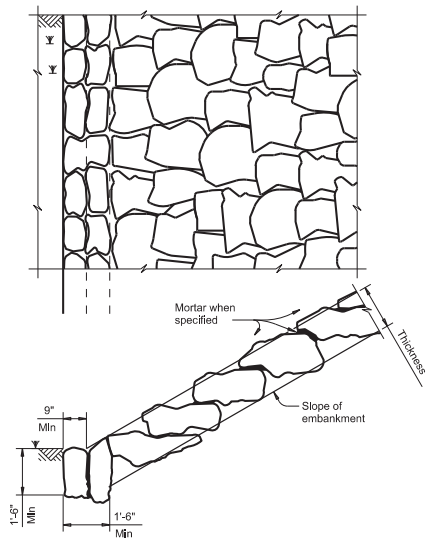


FIGURE 2 ~ TYPE F STONE RIPRAP
dry or mortared

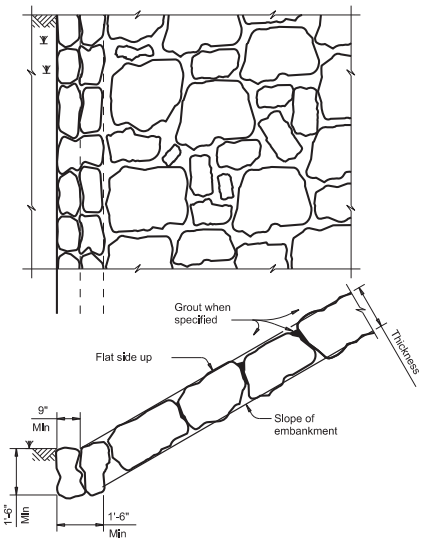


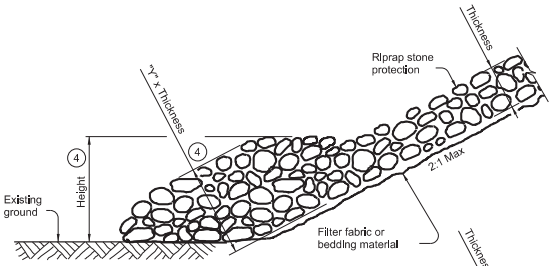
FIGURE 3 ~ TYPE F STONE RIPRAP
grouted

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

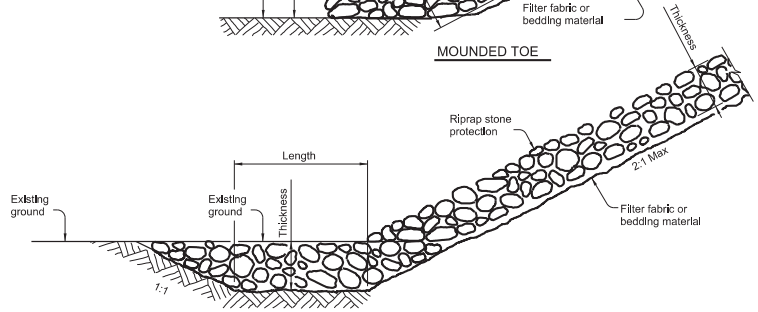
(3) Minimum toe depth is the larger of the maximum scour depth or 2 times the riprap thickness.

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

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



MOUNDED TOE



EXTENDED ROCK FILLED TRENCH

PROTECTION STONE RIPRAP TOE OPTIONS (5)

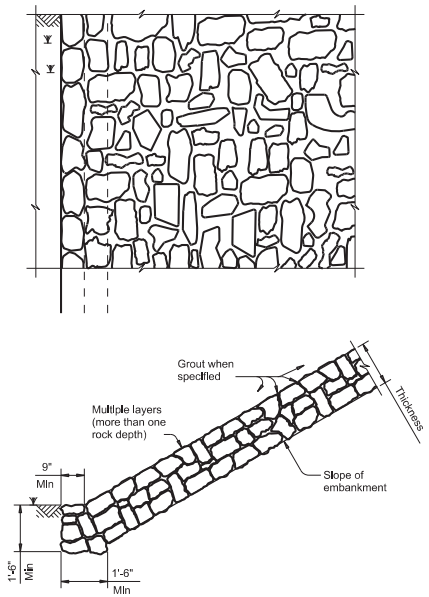


FIGURE 4 ~ COMMON STONE RIPRAP
dry or grouted

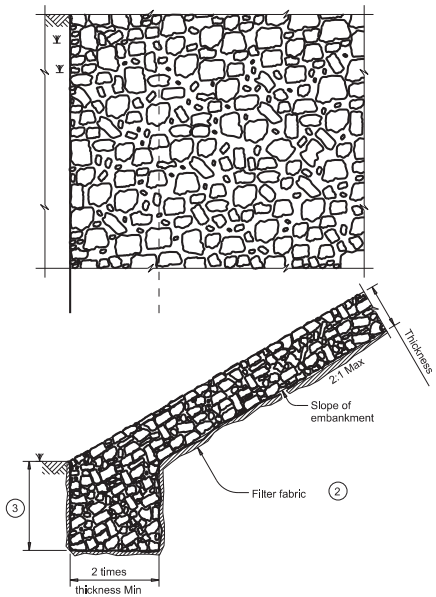


FIGURE 5 ~ PROTECTION STONE RIPRAP (5)

SHEET 2 OF 2

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STONE RIPRAP

SRR

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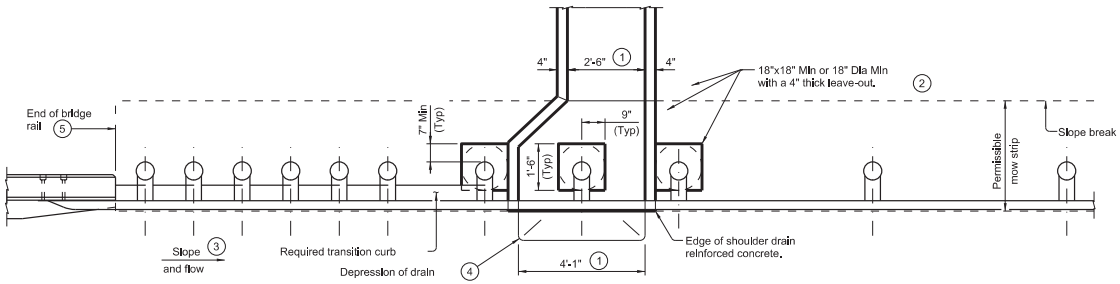
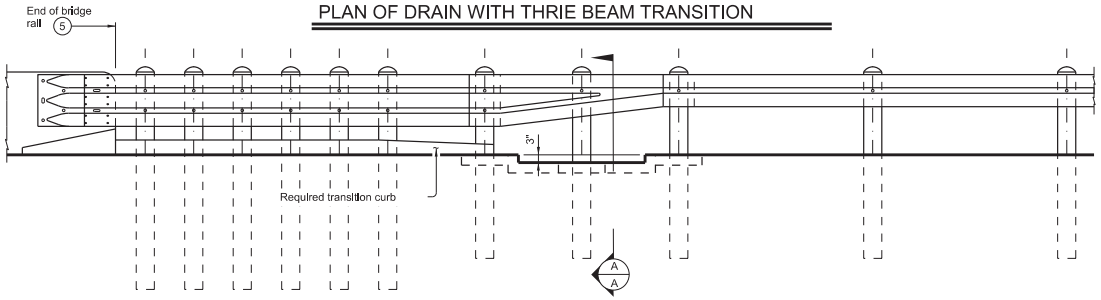
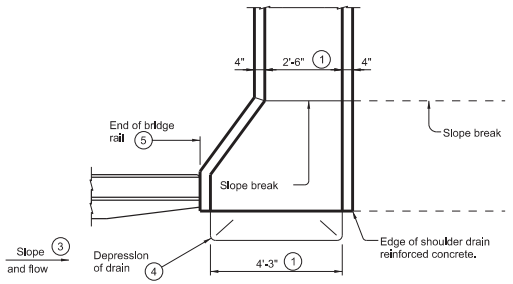


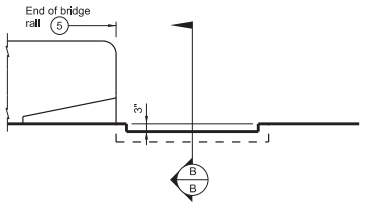
PLAN OF DRAIN WITH THRIE BEAM TRANSITION



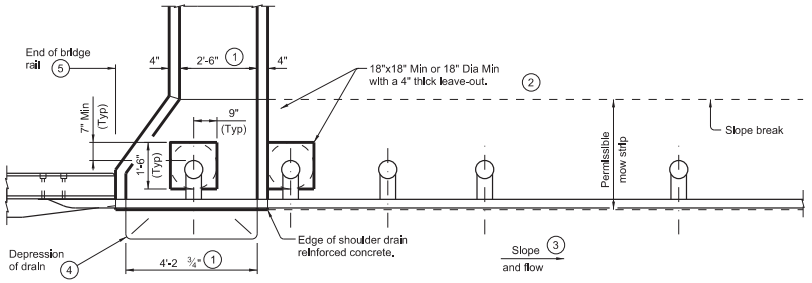
ROADWAY ELEVATION OF DRAIN WITH THRIE BEAM TRANSITION



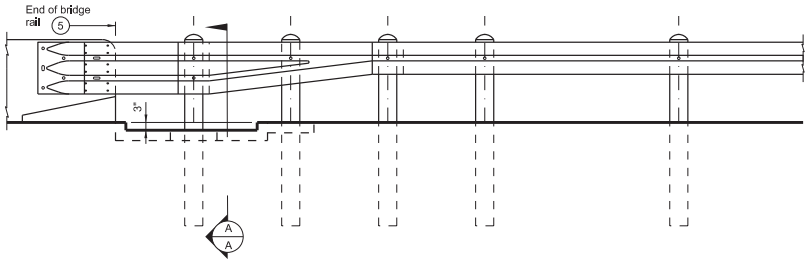
PLAN OF DRAIN WITHOUT MBGF TRANSITION



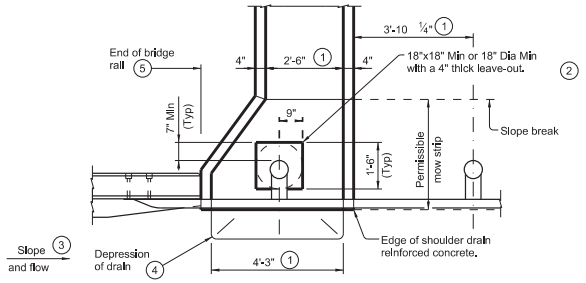
ROADWAY ELEVATION OF DRAIN WITHOUT MBGF TRANSITION



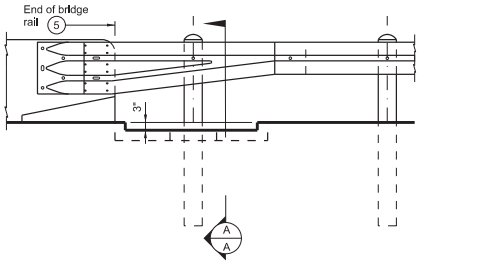
PLAN OF DRAIN WITH TL-2 (LOW SPEED) TRANSITION



ROADWAY ELEVATION OF DRAIN WITH TL-2 (LOW SPEED) TRANSITION



PLAN OF DRAIN WITH DOWNSTREAM ANCHOR TERMINAL



ROADWAY ELEVATION OF DRAIN WITH DOWNSTREAM ANCHOR TERMINAL

(1) Use wider or other drain configurations if shown elsewhere in plans or if directed by the Engineer. Location of shoulder drain must consider limitation imposed by rail transition. Do not locate shoulder drains at expansion joints between approach slab and concrete pavement.

(2) Fill leave-outs with no more than a 2-sack grout mixture (1 part cement, 5 parts water, and 14 parts sand by volume) with a 28-day compressive strength of approximately 120 psi or less. Provide grout of a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (20" Max leave-out).

(3) For other slope and flow directions drain configuration may be mirrored wider or tapered wider if shown elsewhere in the plans or directed by the Engineer.

(4) Form depression into concrete, asphalt pavement, or approach slab.

(5) See Bridge Layout for rail type.

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

SHOULDER DRAIN AT END OF BRIDGE RAIL

SD-EBR

FILE: MS-SD-EBR-19.dgn	DN: TxDOT	CK: TAR	DW: JTR	CK: TAR
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	6469	22	001	IH35, etc.
	DIST	COUNTY		SHEET NO.
	22	WEBB, etc.		92

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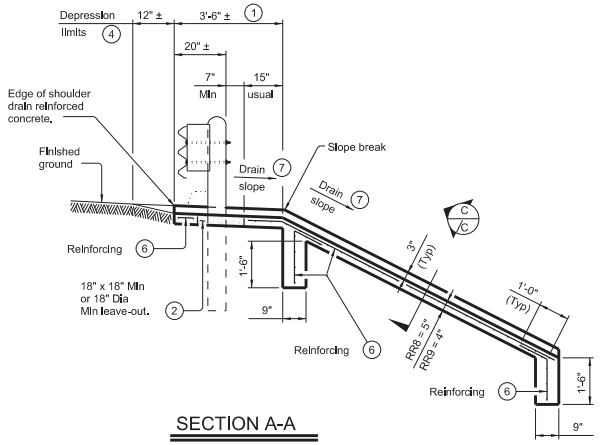
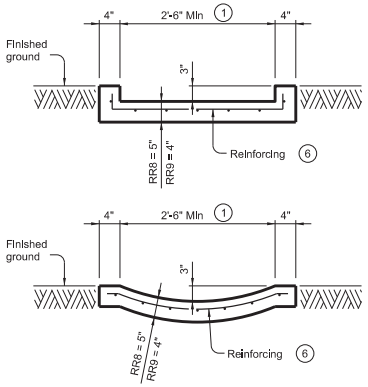
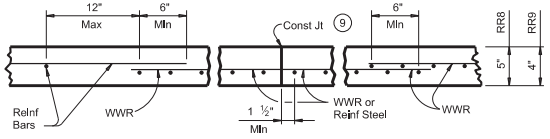


SECTION A-A



SECTION C-C

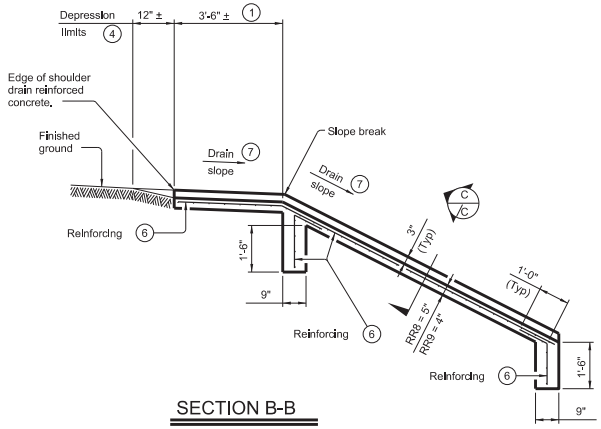
Sections shown without integrated riprap.



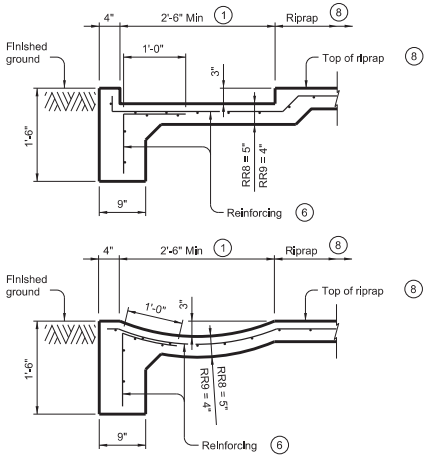
REINFORCEMENT DETAILS 6

See General Notes for optional synthetic fiber reinforcement.

1. Use wider or other drain configurations if shown elsewhere in plans or if directed by the Engineer. Location of shoulder drain must consider limitation imposed by rail transition. Do not locate shoulder drains at expansion joints between approach slab and concrete pavement.
2. Fill leave-outs with no more than a 2-sack grout mixture (1 part cement, 5 parts water, and 14 parts sand by volume) with a 28-day compressive strength of approximately 120 psi or less. Provide grout of a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (20" Max leave-out).
4. Form depression into concrete, asphalt pavement, or approach slab.
6. Provide (#3) reinforcing bar at 18" spacing c-c or welded wire reinforcement (WWR) as 6x6-D2.9xD2.9 or D3xD3. Combinations of WWR and reinforcing bars may be used if both are permitted. Use lap splices of a minimum 6 inches, measured from the transverse wire of WWR, and the ends of reinforcing bars, unless shown otherwise.
7. See elsewhere in plans or as directed by the Engineer.
8. See CRR standard for details and notes not shown.
9. WWR or reinforcing steel is continuous through riprap construction joints. Provide WWR or reinforcing steel that extends 1'-1" minimum into adjacent riprap on each side of construction joint even if synthetic fiber is utilized.



SECTION B-B



SECTION C-C

Sections shown with integrated riprap.

GENERAL NOTES:

Provide Class "B" concrete with a minimum compressive strength of 2,000 psi unless noted elsewhere in plans.

Provide Grade 60 reinforcing steel.

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

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

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

See Metal Beam Guard Fence (Mow Strip) standard for details and notes not shown.

Payment for furnishing and placing 2-sack grout mixture will be subsidiary to shoulder drain.

Payment for shoulder drain will be as per Item 420, "Cl B Conc (Flume)". All details shown herein are subsidiary to shoulder drain.

See Layout for limits of shoulder drain.

RR8 is to be used on stream crossings.

RR9 is to be used on other embankments.

Texas Department of Transportation

Bridge Division Standard

SHOULDER DRAIN AT END OF BRIDGE RAIL

SD-EBR

FILE: MS-SD-EBR-19.dgn	DN: TxDOT	CK: TAR	DW: JTR	CK: TAR
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	6469	22	001	IH35, etc.
	DIST	COUNTY		SHEET NO.
	22	WEBB, etc.		93

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DATE:
FILE:

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

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

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

1.

2.

☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

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

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

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

☐ No Permit Required

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

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

☐ Individual 404 Permit Required

☒ Other Nationwide Permit Required: NWP# 3o

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. All Locations

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.

1.

2.

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.

2.

3.

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

☐ No Action Required ☒ Required Action

Action No.

1. Texas Horned Lizard - The Contractor will avoid harvester ant mound in the selection of PSLs where feasible
2. Texas Tortoise -The Contractor should cover utility trenches overnight, and should visually inspect all trenches before filling.
3. Reticulated Collared Lizard - This lizard may potentially occur in the project area. The Contractor shall avoid harming or handling this species.
4. Texas Indigo Snake - This snake may potentially occur in the project area. The Contractor shall avoid harming or handeling this species.

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

LIST OF ABBREVIATIONS

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

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

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

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

Contact the Engineer if any of the following are detected:

- Dead or distressed vegetation (not identified as normal)
- Trash piles, drums, canister, barrels, etc.
- Undesirable smells or odors
- Evidence of leaching or seepage of substances

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

☐ Yes ☒ No

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

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

☐ Yes ☒ No

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

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

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

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

VII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Texas Department of Transportation | Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: JR
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	4449	22	001	IH35, etc.
12-12-2011 (DS)	DIST	COUNTY		SHEET NO.
05-07-14 ADDED NOTE SECTION IV.				
01-23-2015 SECTION I. (CHANGED ITEM 1122 TO ITEM 504, ADDED GRASSY SWALES.	22	WEBB, etc.		94

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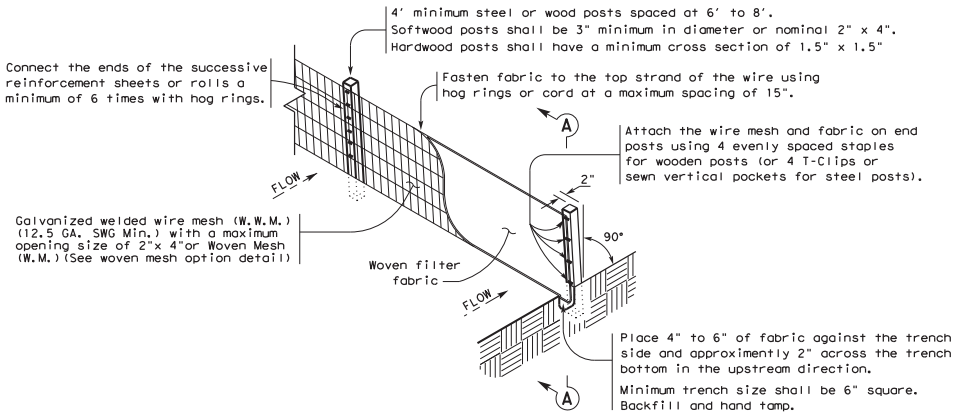
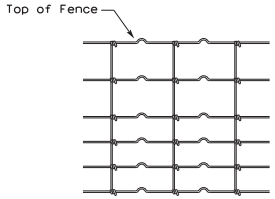
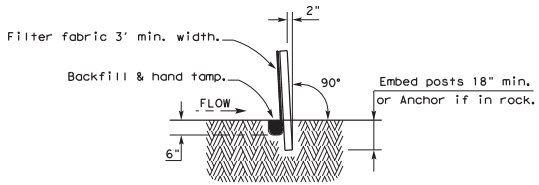


TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

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.

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.

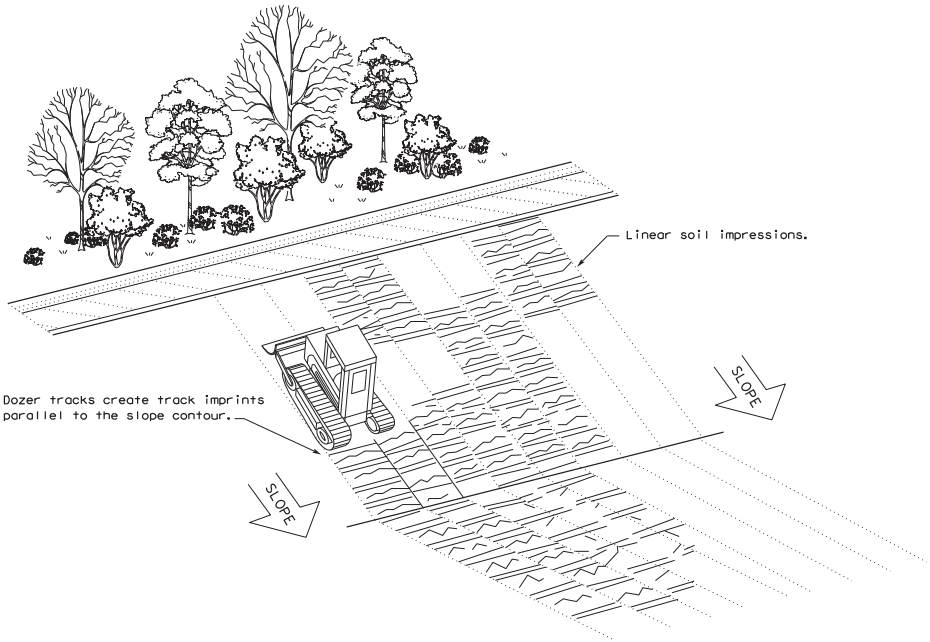
LEGEND

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	6469	22	001	IH35, etc.
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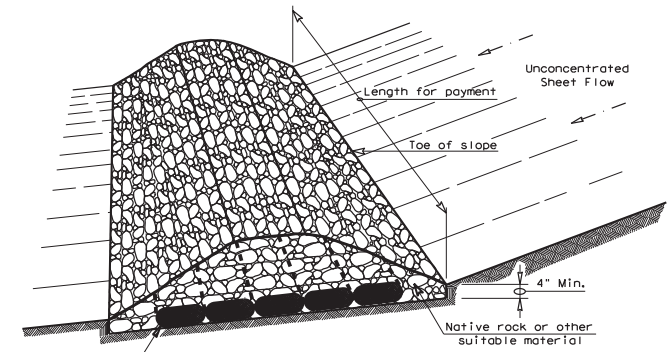
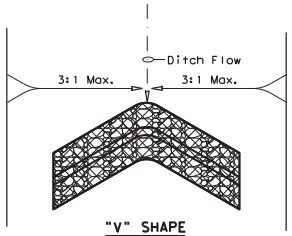
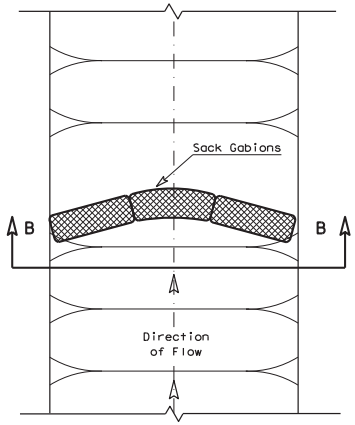


FILTER DAM AT TOE OF SLOPE

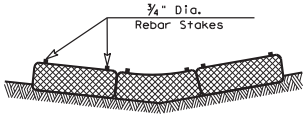
RFD1



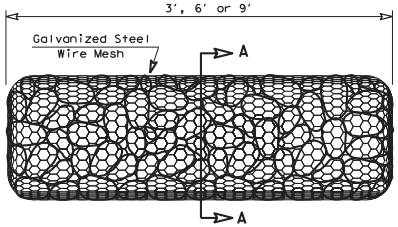
"V" SHAPE PLAN VIEW



PLAN VIEW

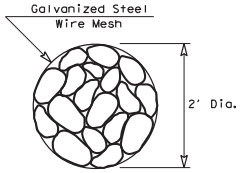


SECTION B-B

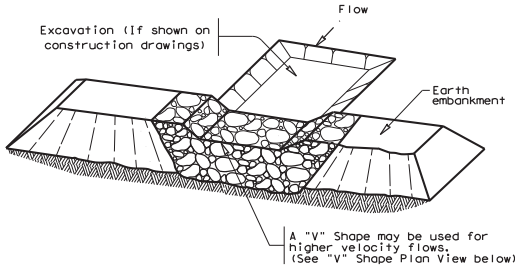


TYPE 4 (SACK GABIONS)

RFD4

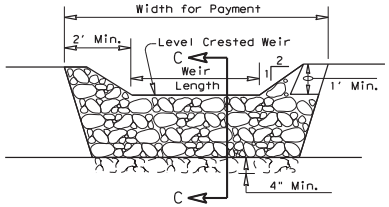


SECTION A-A

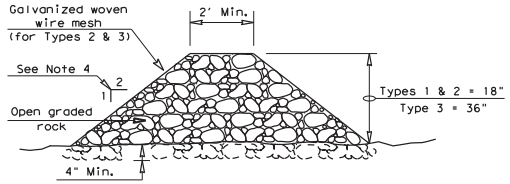


FILTER DAM AT SEDIMENT TRAP

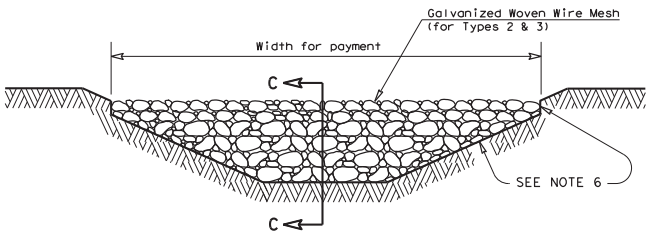
RFD1 OR RFD2



PROFILE



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam — RFD1
Type 2 Rock Filter Dam — RFD2
Type 3 Rock Filter Dam — RFD3
Type 4 Rock Filter Dam — RFD4

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
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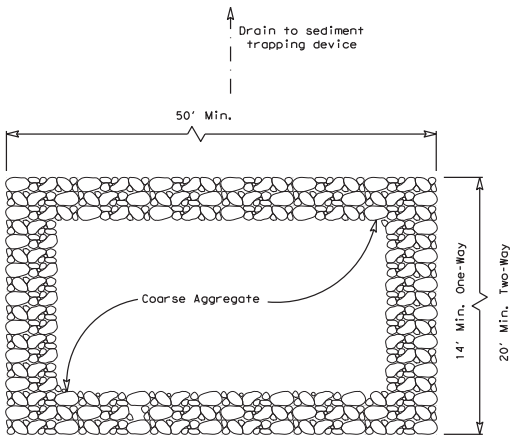
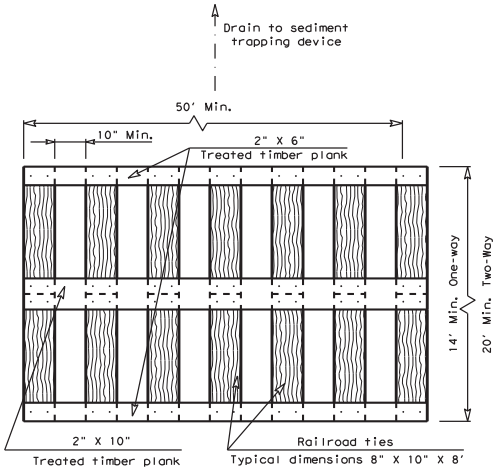
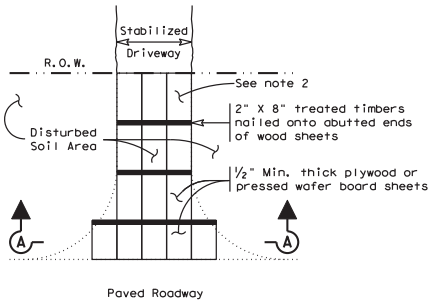


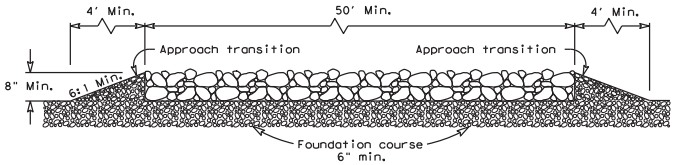
PLAN VIEW



PLAN VIEW



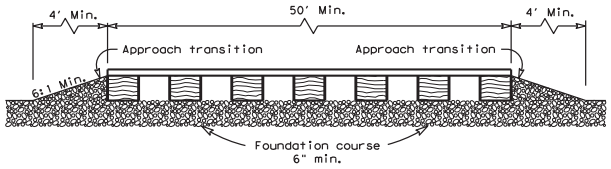
PLAN VIEW



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

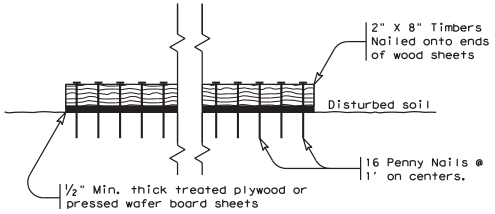
ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

SHORT 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.

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

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