SEE SHEET 2 FOR INDEX OF SHEETS

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

PROJECT NO.			
BR 2B23(192)			
CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		1

DESIGN SPEED = N/A
A.D.T. = N/A

PROJECT NO. BR 2B23(192)

VARIOUS
ANGELINA COUNTY

LIMITS: VARIOUS LOCATIONS DISTRICTWIDE

FOR THE CONSTRUCTION OF BRIDGE MAINTENANCE

CONSISTING OF BRIDGE REPAIR MAINTENANCE

FINAL PLANS

LETTING DATE: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS COMPLETED: _____

DATE WORK WAS ACCEPTED: _____

FINAL CONTRACT COST: $ _____

CONTRACTOR : _____

CONSTRUCTION WORK ON THIS PROJECT WAS PERFORMED IN ACCORDANCE WITH THE PLANS, CONTRACT AND APPROVED CHANGE ORDERS.

_____ DATE _____

LOCATION MAP ON SHEETS 3-5

RAILROAD CROSSINGS:

SITE	COUNTY	STRUCTURE ID	LAT	LONG	LOCATION
F	174	11-174-0-0175-08-024	31.6625	-94.6593	US 59 BUS NB @ UPRR
L	174	11-174-0-2560-01-001	31.5760	-94.6577	LOOP 224 @ UPRR & DRAW & PRESS RD

BARRICADES AND WARNING SIGNS

PROVIDE AND ERECT BARRICADES AND WARNING SIGNS IN ACCORDANCE WITH THE BARRICADE & CONSTRUCTION STANDARDS, TCP STANDARDS, THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND AS DIRECTED.

Texas Department of Transportation

EXCEPTIONS: NONE
EQUATIONS: NONE

RECOMMENDED FOR LETTING: 6/22/2023

DocuSigned by:
Jennifer H. Adams
CE1DDBE07C00426...
DISTRICT ADVANCE TRANSPORTATION PLANNING DIRECTOR

APPROVED FOR LETTING: 6/23/2023

DocuSigned by:
Kelly D. Morris, P.E.
F04421163942B4...
DISTRICT ENGINEER

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, JULY 2022)

DATE: 6/14/2023 11:15:42 AM
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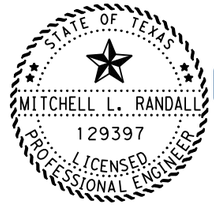


THE STANDARD SHEETS SPECIFICALLY IDENTIFIED BY * HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

6/23/2023

SIGNATURE: Mitchell L. Randall, P.E.

MITCHELL L. RANDALL, P.E — *DATE*

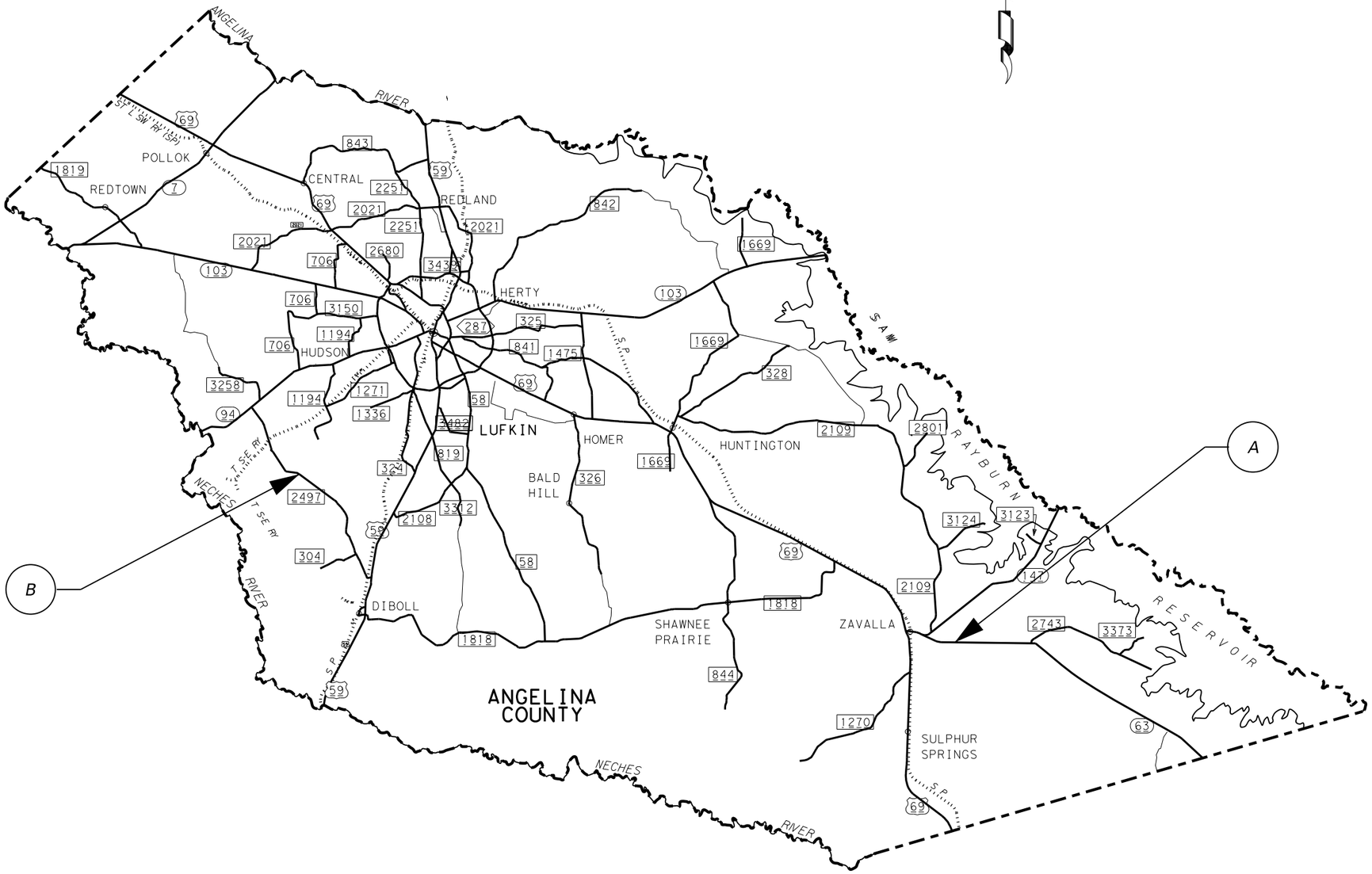
Texas Department of Transportation

INDEX OF SHEETS

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		2

DATE: 6/14/2023 11:35:13 AM
FILE: pw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/0911001116/4 - Design/Plan Set/1. General/002 INDEX OF SHEETS

SITE	COUNTY	STRUCTURE ID	LAT	LONG	LOCATION
A	003	11-003-0-0244-01-003	31.1521	-94.3948	SH 63 @ MILL CREEK
B	003	11-003-0-2589-01-002	31.2621	-94.8199	FM 2497 @ JACK CREEK RELIEF



N.T.S.

Texas Department of Transportation

LOCATION MAP

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		3

DATE: 4/25/2023 11:20:13 AM
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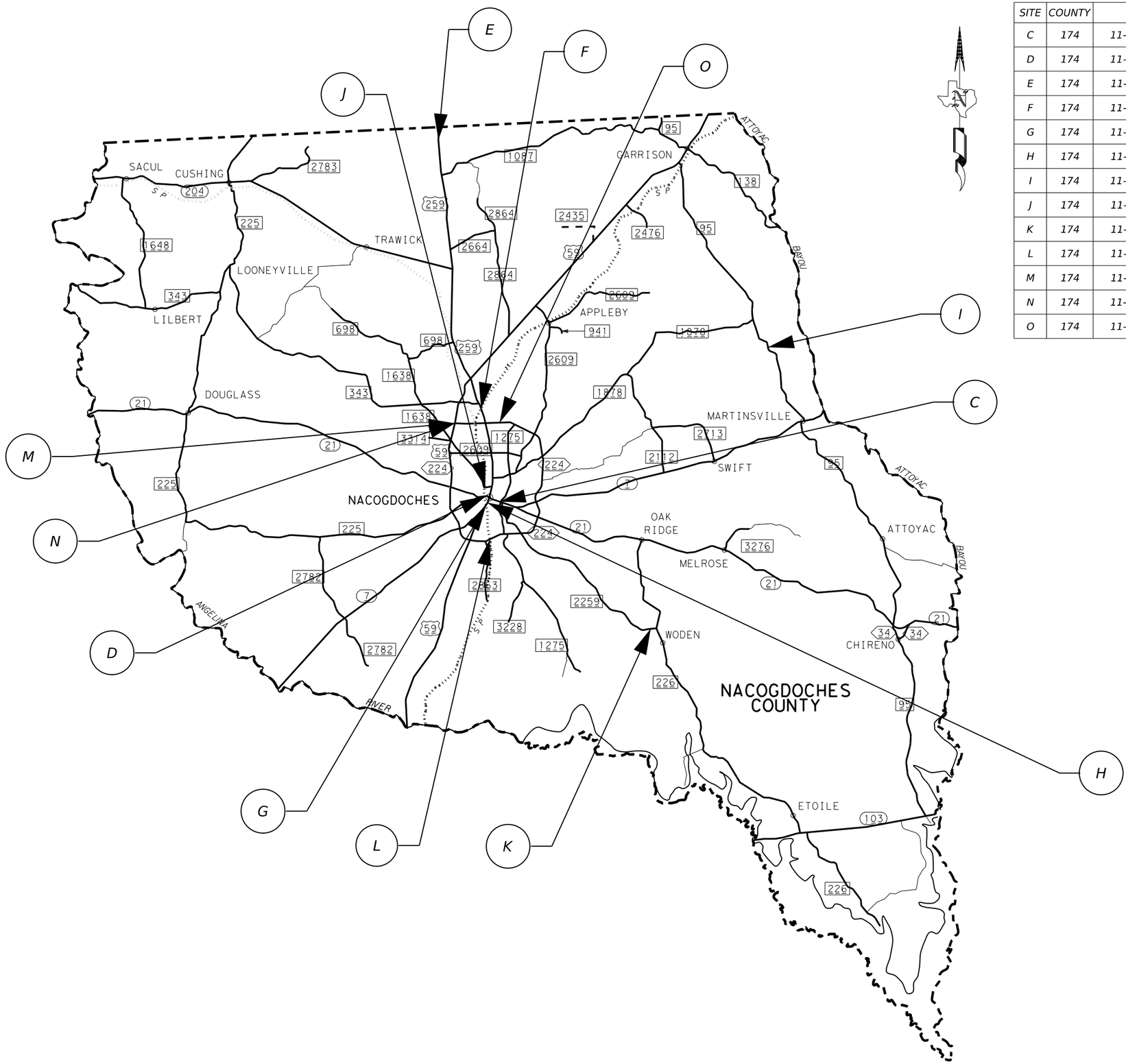

SITE	COUNTY	STRUCTURE ID	LAT	LONG	LOCATION
C	174	11-174-0-0118-08-055	31.6009	-94.6483	SH 21 @ LA NANA CREEK
D	174	11-174-0-0118-08-070	31.6049	-94.6583	SH 21 @ BANITA CREEK
E	174	11-174-0-0138-06-041	31.8412	-94.6811	US 259 @ BEECH CREEK
F	174	11-174-0-0175-08-024	31.6625	-94.6593	US 59 BUS NB @ T & NO RR
G	174	11-174-0-0176-01-044	31.5991	-94.6590	US 59 BUS SB @ SPRR & COX ST
H	174	11-174-0-0176-01-141	31.6017	-94.6571	US 59 BUS NB @ SPRR & COX ST
I	174	11-174-0-0706-03-020	31.6916	-94.4378	FM 95 @ TURKEY CREEK
J	174	11-174-0-1407-02-001	31.6107	-94.6578	FM 1638 @ BANITA CREEK
K	174	11-174-0-2116-01-001	31.5123	-94.5405	FM 2259 @ CARRIZO CREEK
L	174	11-174-0-2560-01-001	31.5760	-94.6577	LP 224 @ SPRR & DRAW & PRESS RD
M	174	11-174-0-2560-01-021	31.6529	-94.6797	US 59 NB @ LP 224
N	174	11-174-0-2560-01-022	31.6529	-94.6799	US 59 SB @ LP 224
O	174	11-174-0-2560-02-013	31.6522	-94.6420	LP 224 @ LA NANA CREEK

N.T.S.

Texas Department of Transportation

LOCATION MAP

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		4

DATE: 4/25/2023 11:21:51 AM
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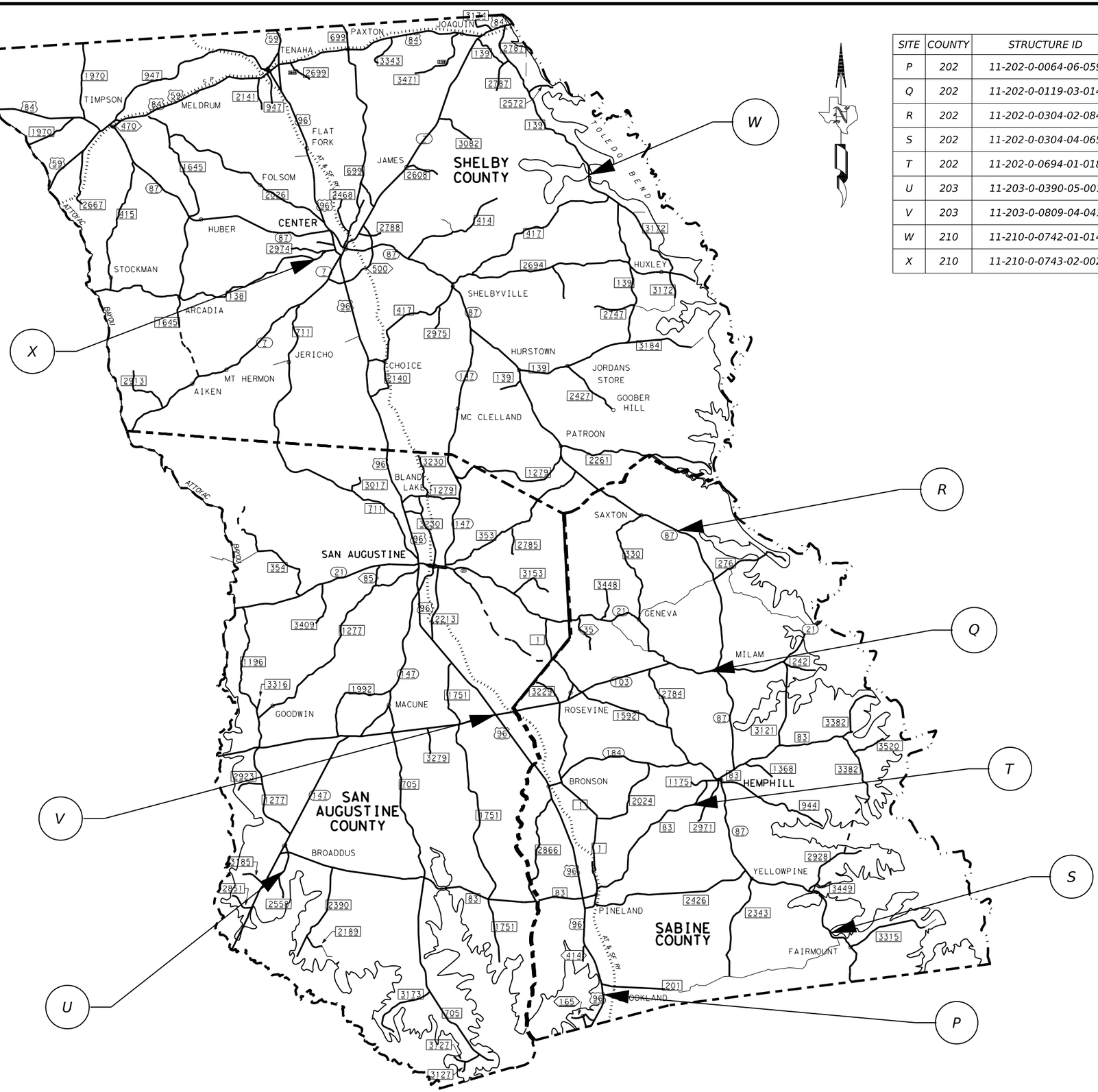

SITE	COUNTY	STRUCTURE ID	LAT	LONG	LOCATION
P	202	11-202-0-0064-06-059	31.1669	-93.9715	US 96 @ MCKIM CREEK
Q	202	11-202-0-0119-03-014	31.4306	-93.8573	SH 21 @ BOREGAS CREEK
R	202	11-202-0-0304-02-084	31.5580	-93.8970	SH 87 @ COLOROW CREEK
S	202	11-202-0-0304-04-065	31.2079	-93.7513	SH 87 @ BIG SANDY CREEK
T	202	11-202-0-0694-01-018	31.3221	-93.8768	FM 83 @ HOUSEN BAYOU
U	203	11-203-0-0390-05-001	31.285	-94.269	FM 2558 @ BIG OWL CREEK
V	203	11-203-0-0809-04-041	31.4059	-94.0573	SH 103 @ US 96
W	210	11-210-0-0742-01-014	31.8446	-93.9409	FM 139 @ TENAHA BAYOU
X	210	11-210-0-0743-02-002	31.7880	-94.2080	FM 138 @ SHAFNER CREEK

N.T.S.

Texas Department of Transportation

LOCATION MAP

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		5

DATE: 5/24/2023 2:01:24 PM
FILE: pw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/0911001164 - Design/Plan Set/1. General/003 LOCATION MAP

GENERAL NOTES:

Existing regulatory, warning and guide signs within project limits are to remain visible to the traveling public at all times. If a sign must be repositioned during construction operations, move and install the sign to an approved location. Use care when working near existing signs and repair or replace signs damaged by work operations. All work involved repositioning existing signs will be subsidiary to various bid items.

Furnish materials and make repairs to the existing roadway at any location damaged by construction operations. This work shall be done in an approved manner and will be subsidiary to various bid items.

Ensure drainage structures and outfall channels constructed on this project are free of silt and debris at the time of project acceptance. Final clean out work will be subsidiary to various bid items.

Maintain adequate surface drainage throughout the project limits during all phases of construction.

Roadway cross slopes shall conform approximately to the existing surface, unless otherwise directed.

Provide suitable access at all times to adjacent businesses, private property and side roads.

When construction work necessitates the moving of mailboxes, temporarily relocate them as necessary to keep them clear of construction operations and convenient for the mail carrier. Mounts for temporarily relocating mailboxes shall conform to the Department's "Compliant Work Zone Traffic Control Device List" or the mailbox standard. Temporary relocation of mailboxes will be subsidiary to various bid items.

Remove dirt, silt, rocks, debris and other foreign matter that accumulates in structures due to the Contractor's operations as directed. Keep stream channels open at all times. This work will not be paid for directly, but will be subsidiary to pertinent Items.

If dewatering is required at a particular location, it is subsidiary to pertinent Items.

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 web page. The Letting Pre-Bid Q&A web page 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.

The contractor's attention is directed to the EPIC sheet(s) included in this plan set for additional information regarding environmental permits, issues, and commitments.

Project Mowing

Mow the highway right of way within the project limits a maximum of 3 cycles per year as directed. Mowing will not be measured or paid for directly, but will be subsidiary to various bid items.

Mow at locations where contract work, equipment or stockpiles conflict with TxDOT's mowing operations. Mowing will not be measured or paid for directly, but will be subsidiary to various bid items.

The equipment used for mowing shall consist of approved mowing units capable of mowing on slopes without marring finished slope surfaces or injuring existing growth. The minimum cutting width shall not be less than 5 ft., unless otherwise approved.

Mow all areas of existing vegetation and vegetation placed during the project as directed. The mowing height shall be 5 in. unless otherwise directed. Repair portions of sod or grass that are injured during mowing operations as directed.

Mow as close as possible to all fixed objects, exercising extreme care not to damage trees, plants, shrubs, signs, delineators or other appurtenances which are part of the facility. Hand trim around such objects, unless otherwise specified.

Use safety chains or other manufacturer's safety device to prevent damage to people or property caused by flying debris propelled out from under rotary mowers. Chains shall be a minimum size of 5/16 in. and links spaced side by side around the mower's front, sides and rear. When mowing at the specified cutting height, the chains shall be long enough to drag the ground. If at any time, it is determined mowing or trimming equipment is defective to the point that it may affect the quality of work or create an unsafe condition, then that equipment shall be immediately repaired or replaced.

Litter Pickup

Remove litter from the right of way in the limits of this project a maximum of 3 cycles per year as directed. Litter pickup will not be measured or paid for directly, but will be subsidiary to various bid items.

In addition to the requirements in Item 5, Section 11, Final Cleanup; remove litter from the right of way at locations where the Contractor may be required to mow. Litter pickup will not be measured or paid for directly, but will be subsidiary to various bid items.

The equipment used for litter pickup shall be approved.

Collect and dispose of all litter deposited by construction operations or the traveling public including cans, bottles, paper, plastic items, metal scraps, lumber, etc. from within the project right of way or as directed. Properly dispose of all collected litter. Do not dump or stockpile collected litter on State property.

For removal of large dead animals, contact nearest TxDOT maintenance section for disposal instructions. Do not bury animal carcasses on State property.

Item 5: Control of the Work

There are several existing sewer manholes within the right of way. Work around them with care to prevent damage to the sewer system.

In the event utility lines needing unforeseen adjustments are encountered during construction operations, alter operations and continue to prosecute the contract in such a manner that will allow utility adjustments to be made by others. An extension of working time may be granted for any delays caused by the utility adjustments if deemed necessary.

Electronic files (pdf only) containing cross-sections will be available upon request.

Precast Alternate Proposals.
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 6: Control of Materials

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

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

The Buy America Material Classification Sheet is located at the below link.

https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html for clarification on material categorization.

Item 7: Legal Relations and Responsibilities

No significant traffic generator events identified.

To prevent the spread of Zebra Mussels and other exotic species:

1. Spray/rinse all equipment and vehicles, using hot and/or high-pressure water as soon as possible after exiting the waterbody.
2. Drain all water from receptacles before leaving the area.
3. Allow all equipment to dry completely before use in another waterbody.
4. If Zebra Mussels are encountered at the project location, contractor will not transport any equipment from the site and will notify the TxDOT project engineer immediately.

For more detailed information, see Texas Parks and Wildlife Website.

Work in this contract is required to be done on railroad property. Cooperate with the railroads and comply with all of their requirements including obtaining required insurance and training before performing work on railroad property.

This project consists of discrete construction projects separated a minimum ¼ mile by undisturbed areas: therefore they are treated as separate plans of development. These separate plans of development disturb less than 1 acre, however, the contractor shall place BMP's as directed. The disturbed area in the plans and the Contractor project specific locations (PSLs) within 1 mile of the project limits will further establish the authorization requirements for storm water discharges. If the total area disturbed shown in the plans and PSLs within 1 mi. of the project limits exceeds 1 acre, the engineer will develop an SWP3 site plan and post a small construction site notice for the construction activities.

Dispose of all vegetative matter and any other materials removed from State Right of Way in accordance with applicable environmental laws, rules, regulations and requirements.

Burning locations must be approved by the Engineer prior to beginning. Burning activities must be conducted in compliance with Texas Commission on Environmental Quality (TCEQ) regulations. Notify the Engineer when burning activities will take place.

In order to maintain compliance with Chapter 64 of the Texas Parks and Wildlife Code and Migratory Bird Treaty Act (MBTA), construction activities that may affect active nests (i.e. tree removal, tree limbing, bridge work) is prohibited during the nesting season (March 15 - September 15). For bridge work activities, inactive nests (no nestlings or eggs present) may be removed, and the use of exclusion devices is permitted to prevent active nests from forming so work can continue during nesting season. Notify Area Engineer prior to removing inactive nests or using exclusion devices on bridges.

Item 8: Prosecution and Progress

For this project, working days will be computed and charged in accordance with Item 8, Section 3.1.4 “Standard Workweek”.

No lane closures will be allowed after Noon on Fridays or on days preceding National Holidays unless otherwise approved.

Submit monthly progress schedules no later than the 20th calendar day of the month. Failure to comply with this deadline may result in the Engineer withholding progress (monthly) payments.

Provide a Critical Path Method (CPM) Construction Schedule unless otherwise approved.

Item 132: Embankment

Hauling materials with scrapers across or along existing roadways will not be permitted without written permission.

Compact embankment material used to reshape existing slopes to a density comparable with adjacent undisturbed material to the satisfaction of the Engineer.

Item 400: Excavation and Backfill for Structures

When cutting an existing roadway open to traffic, complete all operations including structural excavation, laying pipe and backfilling within daylight hours the day they are initiated.

Replace excavated material deemed unsuitable for backfilling with material approved by the Engineer, paid for under the pertinent bid items or as extra work. This provision does not apply to excavated materials that are too wet and are replaced for the contractor's convenience to expedite the work.

When excavation does not generate enough material to complete the backfill, additional material must be approved prior to use. Additional material will be subsidiary to various bid items.

Item 420: Concrete Substructures

Limit work on structures crossing the roadway to one side of the roadway at a time. No work shall begin on the opposite side of the roadway. Lead paint may be present. If so, the intent is not to disturb painted surfaces. If paint is disturbed, the contractor is responsible to have it tested and follow applicable laws.

Item 432: Riprap

Stone riprap will require the placement of filter fabric prior to placement of stones.

Welded wire fabric will not be allowed for reinforcing concrete riprap. Reinforcing shall consist of No. 3 or 4 bars meeting the requirements of grade 60 reinforcing steel. Place bars on 12 in. centers in each direction, supported on reinforcing chairs.

Item 459: Gabions and Gabion Mattresses

Type 2 filter fabric will be required beneath all gabions and gabion mattresses.

Anchor pins for securing the fabric shall be *3/16* in. diameter steel bars pointed at one end and fabricated with a head to retain a steel washer having an outside diameter of not less than *1.5* in. The pin length shall be not less than *18* in. U-shaped pins will be an acceptable option.

Item 480: Cleaning Existing Culverts

Certain box culverts will require cleaning to remove silt and other debris. Waters carried by these box culverts have been determined to be waters of the United States and are under jurisdiction of the U.S. Army Corps of Engineers. Silt and other debris removal shall be immediately hauled to an upland location for dumping. Material will not be side cast into either the water channel or its banks. Removal of the sediment is limited to the minimum necessary to restore the waterway to its configuration when the structure was built. No work will be allowed outside of the right-of-way. This work shall also be restricted to a distance of no more than 50 ft. from the end of the structure.

Item 502: Barricades, Signs, and Traffic Handling

Traffic Control Plan (TCP):

Ensure the Contractor’s Responsible Person (CRP) or their alternate for Barricades, Signs and Traffic Handling is available at all times and able to receive instructions from the Engineer or authorized Department representative. The CRP shall be a person that is usually at the project site during normal working hours.

For protection of the traveling public, direct traffic through the work area using signs, flaggers and other devices. Required signs are shown in the plans on the Barricade and Construction Standards and Traffic Control Plan Sheets. The latest edition of the "Texas Manual on Uniform Traffic Control Devices" shall also be used as a guide for handling traffic on this project.

Restrict construction work to single lane widths with only minor disruptions in traffic flow. Lane closures shall conform to the Traffic Control Plan for lane closures as shown in the plans. No overnight closures will be permitted.

Limit lane closures for multilane roads (4 or more lanes) to 2 mi. in length, unless otherwise approved.

Limit lane closures for 2 lane roads to 1 mi. in length, unless otherwise approved.

Lane closure lengths can exclude the end tapers.

Plan the sequence of work to minimize the time lane closures are in place. Install lane closures only where construction operations are anticipated to start within 1 hr. and limited to the amount of lane that can be reached by the construction activity within 2 hr. unless otherwise approved.

Provide flashing arrow panels to supplement required signs and devices for lane closures.

Provide temporary rumble strips as shown on work zone rumble strip standards. Temporary rumble strips shall be a product listed on the Compliant Work Zone Traffic Control Devices and shall be a two-piece rumble strip that hinges in the middle.

Provide adequate flaggers to protect the traveling public when working on or near a roadway carrying traffic. All flaggers shall wear hardhats and reflective vests.

Install “Be Prepared to Stop” (CW3-4) and “Flagger Ahead” (CW20-7aD) signs when flaggers are present. Position the signs where good visibility and traffic control can be maintained.

Use a flashing arrow board in addition to the required signs to warn motorists of flaggers.

Use additional flaggers at roadway intersections to direct traffic entering the work area, when deemed necessary by the Engineer.

Open all traffic lanes to traffic at the close of work each day.

Provide one high-intensity yellow, rotating dome-light on all equipment such as distributors, spreader boxes, lay-down machines, dump trucks, rollers, backhoes, road graders, loaders, etc. within the work zone. Mount lights high enough to be visible from all directions and operating when the equipment is in the work zone. On all other equipment such as automobiles, trailers, etc. use emergency flashers while within the work zone.

Install "Slow Down on Wet Road" (CW8-5aT), "Shoulder Drop-Off" (CW8-17), “Uneven Lanes” (CW8-11), “Bump” (CW8-1) and "Soft Shoulder" (CW8-4) signs during construction at one-half mile spacings as the hot mix asphalt is placed, unless otherwise directed. Maintain signs until the condition is eliminated.

Restrict construction operations so that no drop off along the edge of pavement will remain overnight.

Notify the Engineer prior to placing any materials or equipment on the right of way. Locate equipment, stockpiles or other materials not in use as far as possible from the driving lanes and in no case closer than 30 ft. unless otherwise authorized. Any equipment, stockpiles, or materials placed within 30 ft. of the driving lane must have adequate signs, barricades or other warning devices as approved. As a minimum place an 8 ft. wide TY III Barricade or barrels on the approach side of each site that is within 30 ft. of the driving lane. Use TY III Barricade or barrels for the site similarly on the departure side if the location is within 30 ft. of the opposing traffic lane.

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.

Texas Transportation Code 547.105 authorizes the use of warning lights to promote safety and provides an effective means of gaining the travelling public’s attention as they drive in areas where construction crews are present. In order to influence the public to move over when high risk construction activities are taking place, minimize the utilization of blue warning lights. These lights must be used only while performing work on or near the travel lanes or shoulder where the travelling public encounters construction crews that are not protected by a standard work zone set up such as a lane closure, shoulder closure, or one-way traffic control. Refrain from leaving the warning lights engaged while travelling from one work location to another or while parked on the right of way away from the pavement or a work zone.

Temporary stop lines as shown on TCP (2-2)-18 should be omitted.

Provide an illuminated flagger station when nighttime work is performed.

All workers on TxDOT right-of-way shall wear reflective clothing meeting ANSI Class II requirements during the day and ANSI Class III requirements during the night.

Item 506: Temporary Erosion, Sedimentation, and Environmental Controls

Locations and types of BMPs may require adjustments prior to or after placement as directed by the Engineer. Adjustments should be made to ensure BMPs are working effectively and efficiently or in accordance with Sect. 404/401 3A & 3C and Water quality permit. Notify the Engineer prior to making adjustments.

This project does not require coverage under the CGP; however, any erosion or sediment controls deemed necessary by the Engineer shall be installed as directed. Should this work become necessary, it will be paid for in accordance with Article 4.4, "Changes in the Work".

Place temporary sediment control fence at locations as directed.

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

1 TMA (stationary) will be required for this project. The contractor will be responsible for determining if multiple operations will be ongoing at the same time to determine the total number of TMAs needed for the project.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0911-00-116 **DISTRICT** Lufkin **COUNTY** Angelina
HIGHWAY Various

			CONTROL SECTION JOB		**0911-00-116**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00140132**		
			COUNTY		**Angelina**		
			HIGHWAY		**Various**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	104-6009	REMOVING CONC (RIPRAP)	SY	383.000		383.000	
	132-6019	EMBANKMENT (VEHICLE)(ORD COMP)(TY B)	CY	43.000		43.000	
	164-6001	BROADCAST SEED (PERM) (RURAL) (SANDY)	SY	396.000		396.000	
	400-6005	CEM STABIL BKFL	CY	15.000		15.000	
	401-6001	FLOWABLE BACKFILL	CY	66.000		66.000	
	420-6011	CL B CONC (FLUME)	CY	7.000		7.000	
	420-6158	CL C CONC(PILE ENCASEMENT)	LF	64.000		64.000	
	420-6166	CL C CONC (TIE BEAM)	CY	10.300		10.300	
	429-6003	CONC STR REPAIR(DECK REP(PART DEPTH))	SF	28.000		28.000	
	429-6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	338.000		338.000	
	432-6035	RIPRAP (STONE PROTECTION)(24 IN)	CY	699.000		699.000	
	438-6004	CLEANING AND SEALING EXIST JOINTS(CL7)	LF	1,110.000		1,110.000	
	459-6009	GABIONS (3' X 3')(GALV)	CY	30.000		30.000	
	480-6001	CLEAN EXIST CULVERTS	EA	1.000		1.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	25.000		25.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	350.000		350.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	350.000		350.000	
	778-6001	CONCRETE RAIL REPAIR (IN-KIND)	LF	3.000		3.000	
	785-6010	BRIDGE JOINT REPLACEMENT (ARMOR)	LF	28.000		28.000	
	6185-6002	TMA (STATIONARY)	DAY	23.000		23.000	
	7000-6001	REML & DISPL DRIFTWOOD & DEBRIS	CY	10.000		10.000	
	18	RAILROAD FLAGGING: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	

SUMMARY OF BRIDGE MAINTENANCE ITEMS

SITE	COUNTY	STRUCTURE ID	LATITUDE	LONGITUDE	HIGHWAY	FEATURE CROSSED	ITEM NO. 104 / BID CODE 6009 REMOVING CONC (RIPRAP) SY	132 / 6019 EMBANKMENT (VEHICLE) (ORD COMP) (TY B) CY	400 / 6005 CEM STABIL BKFL CY	401 / 6001 FLOWABLE BACKFILL CY	420 / 6011 CL B CONC (FLUME) CY	420 / 6158 CL C CONC (PILE ENCASEMENT) LF	420 / 6166 CL C CONC (TIE BEAM) CY	429 / 6003 CONC STR REPAIR (DECK REP (PART-DEPTH) SF	429 / 6007 CONC STR REPAIR (VERTICAL & OVERHEAD) SF	432 / 6035 RIPRAP (STONE PROTECTION) (24IN) CY	438 / 6004 CLEANING AND SEALING EXIST JOINTS (CL 7) LF	459 / 6009 GABIONS(3'X3') (GALV) CY	480 / 6001 CLEAN EXIST CULVERTS EA	778 / 6001 CONCRETE RAIL REPAIR (IN-KIND) LF	785 / 6010 BRIDGE JOINT REPLACEMENT (ARMOR) LF	7000 / 6001 REML & DISPL DRIFTWOOD & DEBRIS CY
A	ANGELINA	11-003-0-0244-01-003	31.1521	-94.3948	SH 63	MILL CREEK									40				1			
B	ANGELINA	11-003-0-2589-01-002	31.2621	-94.8199	FM 2497	JACK CREEK RELIEF				5						8						
C	NACOGDOCHES	11-174-0-0118-08-055	31.6009	-94.6483	SH 21	LA NANA CREEK		23							9	9						10
D	NACOGDOCHES	11-174-0-0118-08-070	31.6049	-94.6583	SH 21	BANITA CREEK			5						61		205					
E	NACOGDOCHES	11-174-0-0138-06-041	31.8412	-94.6811	US 259	BEECH CREEK										14						
F	NACOGDOCHES	11-174-0-0175-08-024	31.6625	-94.6593	US 59 BUS NB	T & NO RR											112					
G	NACOGDOCHES	11-174-0-0176-01-044	31.5991	-94.659	US 59 BUS SB	SPRR & COX ST								28	12		28				28	
H	NACOGDOCHES	11-174-0-0176-01-141	31.6017	-94.6571	US 59 BUS NB	SPRR & COX ST				5						5						
I	NACOGDOCHES	11-174-0-0706-03-020	31.6916	-94.4378	FM 95	TURKEY CREEK				5	6				1		68					
J	NACOGDOCHES	11-174-0-1407-02-001	31.6107	-94.6578	FM 1638	BANITA CREEK			5						142	3	168					
K	NACOGDOCHES	11-174-0-2116-01-001	31.5123	-94.5405	FM 2259	CARRIZO CREEK		20							30			30				
L	NACOGDOCHES	11-174-0-2560-01-001	31.576	-94.6577	LP 224	SPRR & DRAW & PRESS RD	383			10						255						
M	NACOGDOCHES	11-174-0-2560-01-021	31.6529	-94.6797	US 59 NB	LP 224											144					
N	NACOGDOCHES	11-174-0-2560-01-022	31.6529	-94.6799	US 59 SB	LP 224											144					
O	NACOGDOCHES	11-174-0-2560-02-013	31.6522	-94.642	LP 224	LA NANA CREEK											240					
P	SABINE	11-202-0-0064-06-059	31.1669	-93.9715	US 96	MCKIM CREEK			5		1					57						
Q	SABINE	11-202-0-0119-03-014	31.4306	-93.8573	SH 21	BOREGAS CREEK									6							
R	SABINE	11-202-0-0304-02-084	31.558	-93.897	SH 87	COLOROW CREEK										4						
S	SABINE	11-202-0-0304-04-065	31.2079	-93.7513	SH 87	BIG SANDY CREEK														3		
T	SABINE	11-202-0-0694-01-018	31.3221	-93.8768	FM 83	HOUSEN BAYOU						32				5						
U	SAN AUGUSTINE	11-203-0390-05-001	31.2851	-94.2698	FM 2558	BIG OWL CREEK						32										
V	SAN AUGUSTINE	11-203-0-0809-04-041	31.4059	-94.0573	SH 103	US 96									35							
W	SHELBY	11-210-0-0742-01-014	31.8446	-93.9409	FM 139	TENAHA BAYOU							10.3		2	334	1					
X	SHELBY	11-210-0-0743-02-002	31.788	-94.208	FM 138	SHAFNER CREEK				41						5						
						PROJECT TOTALS:	**383**	**43**	**15**	**66**	**7**	**64**	**10.3**	**28**	**338**	**699**	**1110**	**30**	**1**	**3**	**28**	**10**

SUMMARY OF EROSION CONTROL

SITE	LOCATION	STRUCTURE ID	ITEM NO. 164 / BID CODE 6001 BROADCAST SEED (PERM)(RURAL)(SANDY) SY	ITEM NO. 506 / BID CODE 6038 TEMP SEDMT CONT FENCE (INSTALL) LF	BID CODE 6039 TEMP SEDMT CONT FENCE (REMOVE) LF
A	SH 63 @ MILL CREEK	11-003-0-0244-01-003	45	40	40
B	FM 2497 @ JACK CREEK RELIEF	11-003-0-2589-01-002	45	40	40
C	SH 21 @ LA NANA CREEK	11-174-0-0118-08-055	45	40	40
E	US 259 @ BEECH CREEK	11-174-0-0138-06-041	23	20	20
K	FM 2259 @ CARRIZO CREEK	11-174-0-2116-01-001	45	40	40
P	US 96 @ MCKIM CREEK	11-202-0-0064-06-059	45	40	40
R	SH 87 @ COLOROW CREEK	11-202-0-0304-02-084	12	10	10
T	FM 83 @ HOUSEN BAYOU	11-202-0-0694-01-018	23	20	20
U	FM 2558 @ BIG OWL CREEK	11-203-0-0390-05-001	45	40	40
W	FM 139 @ TENAHA BAYOU	11-210-0-0742-01-014	23	20	20
X	FM 138 @ SHAFNER CREEK	11-210-0-0743-02-002	45	40	40
		PROJECT TOTALS:	**396**	**350**	**350**

LOCATIONS AND TYPES OF BMPs MAY REQUIRE ADJUSTMENTS PRIOR TO OR AFTER PLACEMENT AS DIRECTED BY THE ENGINEER. ADJUSTMENTS SHOULD BE MADE TO ENSURE BMPs ARE WORKING EFFECTIVELY. NOTIFY THE ENGINEER PRIOR TO MAKING ADJUSTMENTS.

TRAFFIC CONTROL

SITE	LOCATION	STRUCTURE ID	ITEM 6185 / BID CODE 6002 TMA (STATIONARY) DAY
D	SH 21 @ BANITA CREEK	11-174-0-0118-08-070	3
F	US 59 BUS NB @ T & NO RR	11-174-0-0175-08-024	2
G	US 59 BUS SB @ T & NO RR	11-174-0-0176-01-044	4
I	FM 95 @ TURKEY CREEK	11-174-0-0706-03-020	2
J	FM 1638 @ BANITA CREEK	11-174-0-1407-02-001	2
M	US 59 NB @ LP 224	11-174-0-2560-01-021	2
N	US 59 SB @ LP 224	11-174-0-2560-01-022	2
O	LP 224 @ LA NANA CREEK	11-174-0-2560-02-013	3
T	FM 83 @ HOUSEN BAYOU	11-202-0-0694-01-018	3
		PROJECT TOTALS:	**23**

SUMMARY OF TIE BEAM REPAIR QUANTITIES

SITE	LOCATION	STRUCTURE ID	ITEM NO. 420 / BID CODE 6166 CL C CONC (TIE BEAM) CY	429 / 6007 CONC STR REPR (VERTICAL & OVERHEAD) SF	432 / 6035 RIPRAP (STONE PROTECTION)(24IN) CY	438 / 6004 CLEANING EXISTING JOINT LF	442 / 6007 * STRUCTURAL STEEL (MISC. NON-BRIDGE) 2'-4" C5X9 CHANNEL LBS	442 / 6007 * STRUCTURAL STEEL (MISC. NON-BRIDGE) 5/8" DIA. THREADED ROD, TWO HEAVY HEX NUT AND HARDENED LBS
W	FM 139 @ TENAHA BAYOU	11-210-0-0742-01-014	10.3	2	334	1	42	6
		PROJECT TOTALS:	**10.3**	**2**	**334**	**1**	**42**	**6**

*FOR CONTRACTORS INFORMATION ONLY

Texas Department of Transportation

QUANTITY SUMMARIES

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		8

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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

SHEET 1 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	00	116	VA
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	LFK	ANGELINA		9
5-10 5-21				

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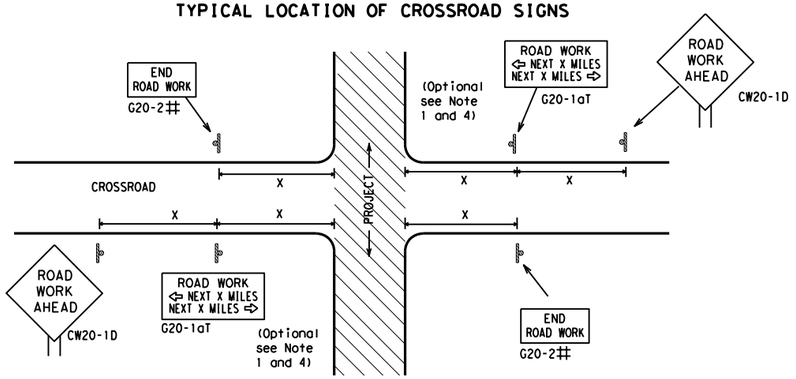
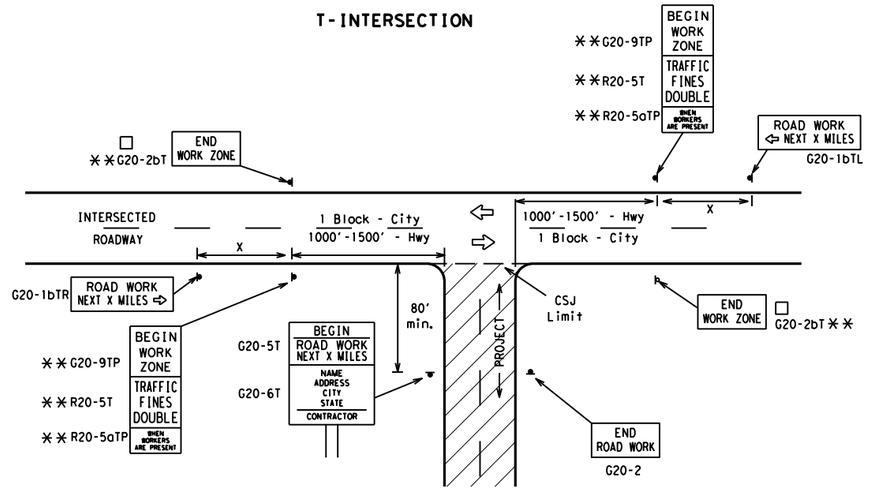
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

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

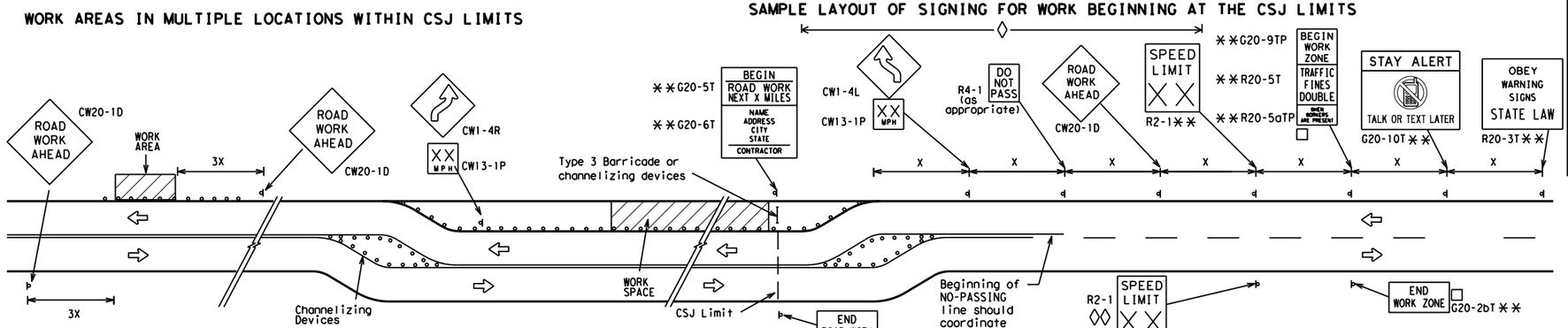
△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

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

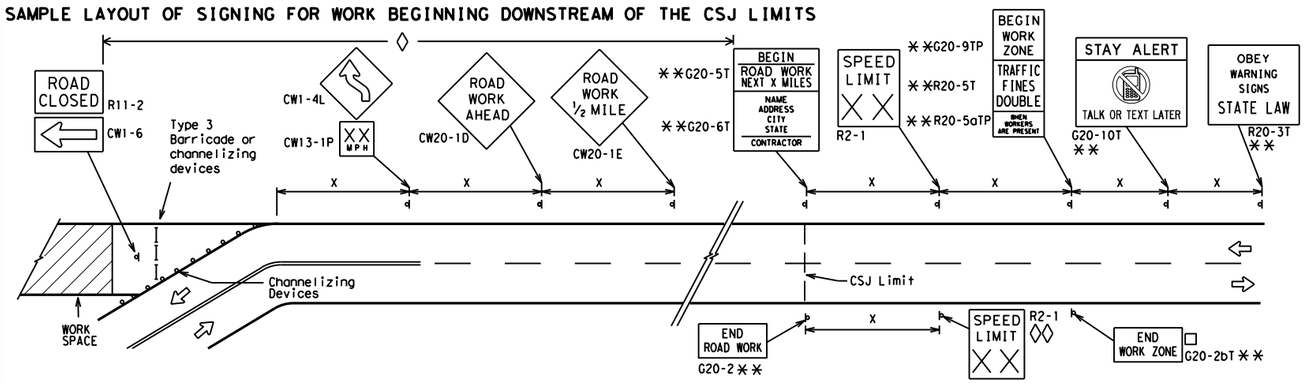
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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

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



NOTES

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

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

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

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

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

LEGEND

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	00	116	VA
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	LFK	ANGELINA		10

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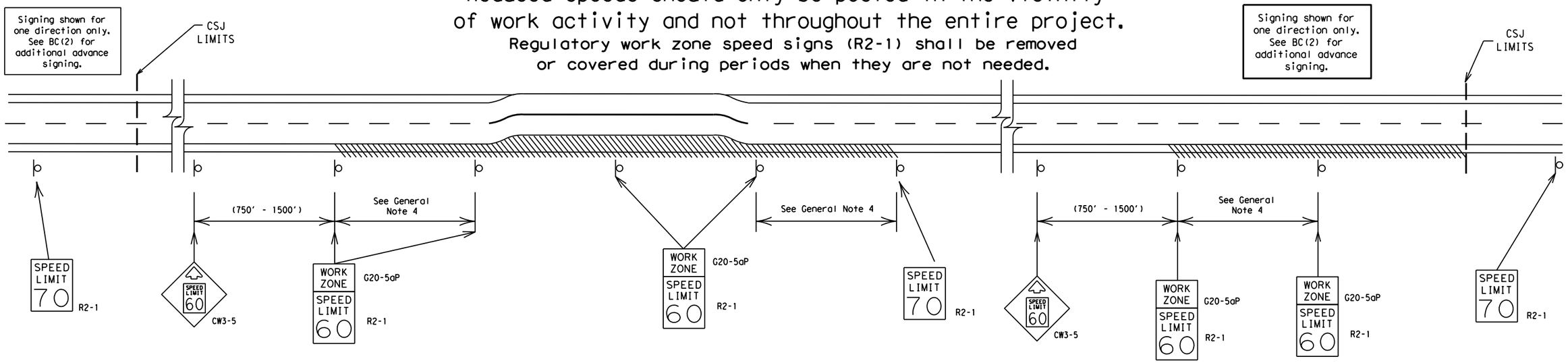
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation | Traffic Safety Division Standard

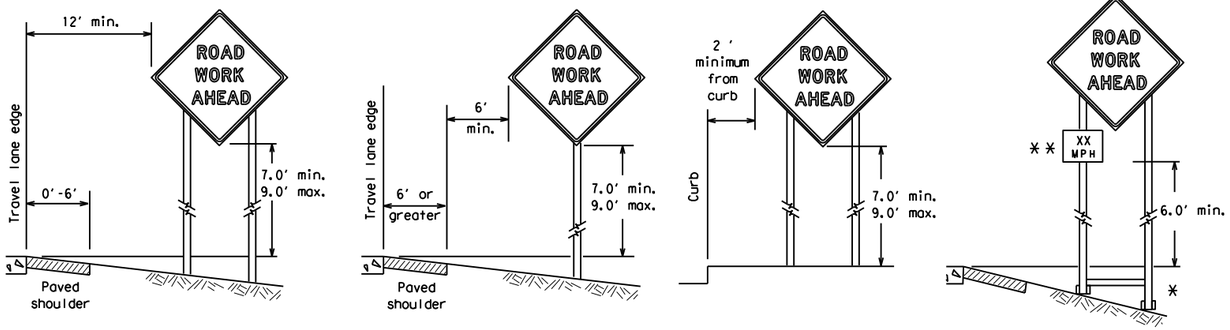
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	00	116	VA
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	LFK	ANGELINA		11

DATE: 1/26/2023 1:51:44 PM
FILE: pw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/091100116/4 - Design/Plan Set/2. TCP/bc-21.dgn

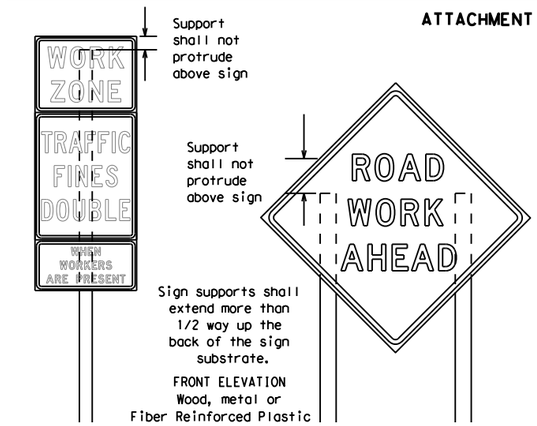
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

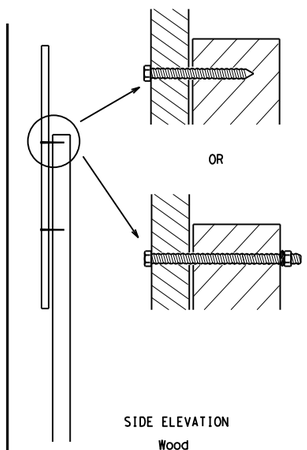


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





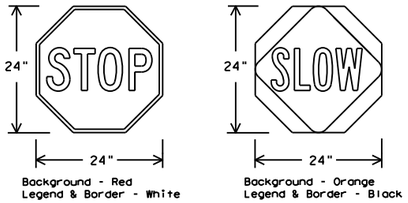
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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7-13 5-21	LFK	ANGELINA		12

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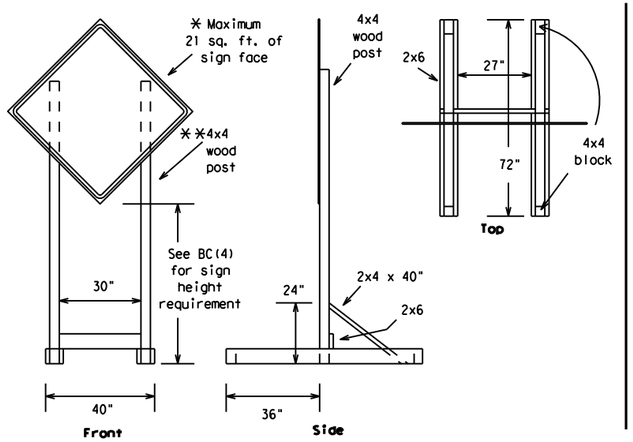
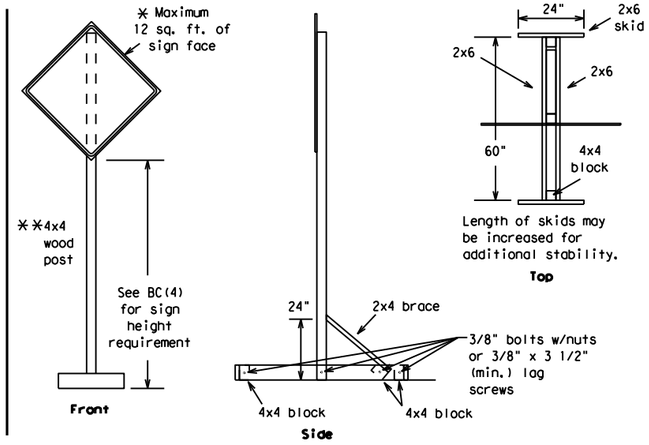
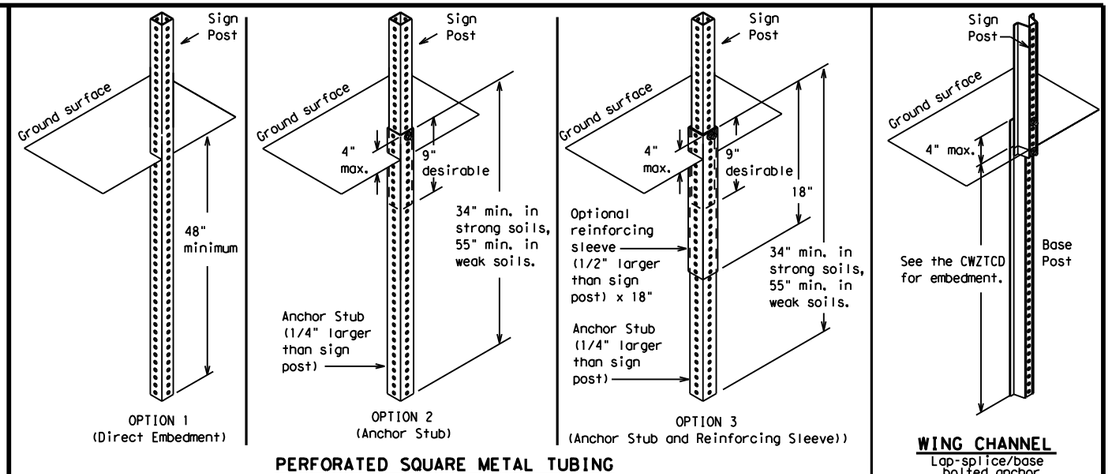




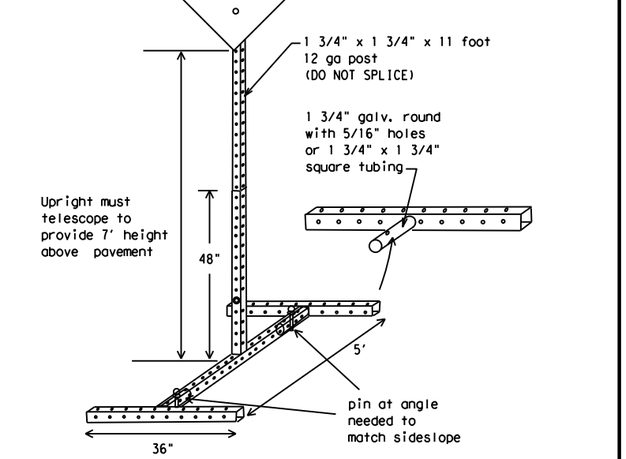
SKID MOUNTED WOOD SIGN SUPPORTS

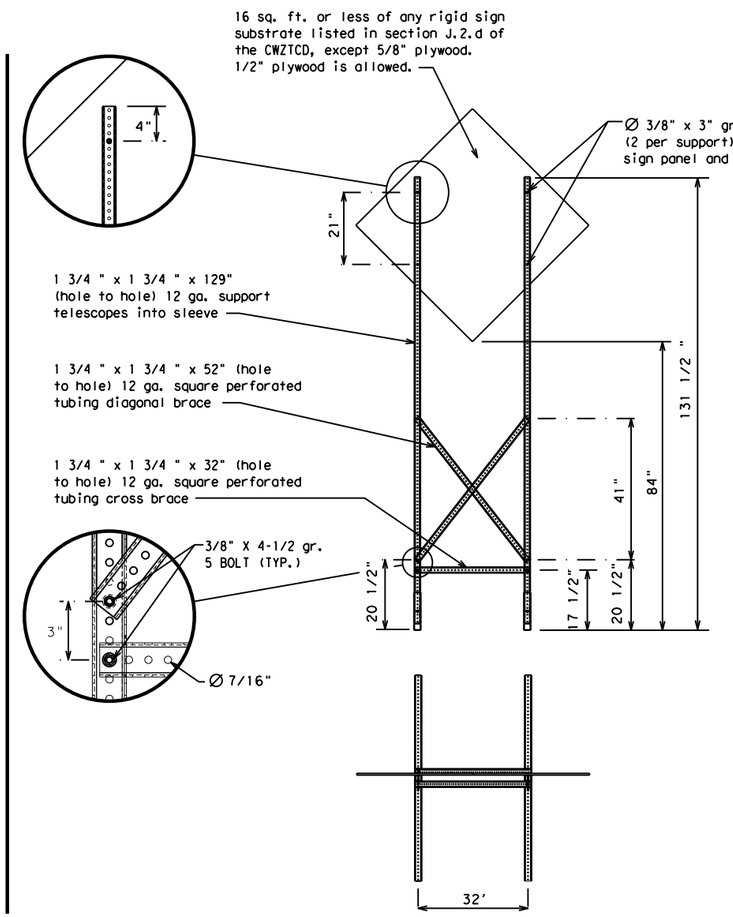
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

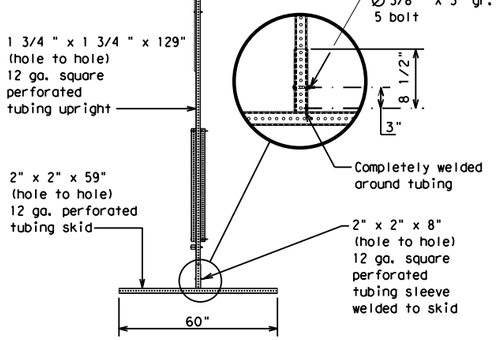


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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7-13 5-21	LFK	ANGELINA		13

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

** 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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7-13 5-21		LFK	ANGELINA		14

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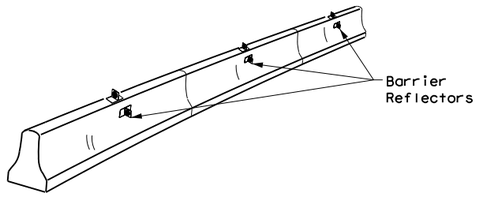
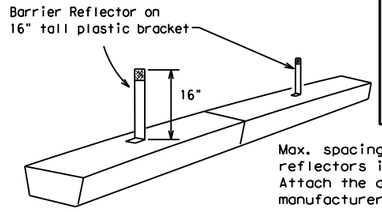
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



CONCRETE TRAFFIC BARRIER (CTB)

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

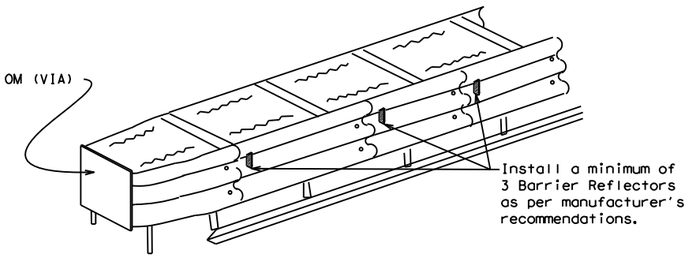


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

LOW PROFILE CONCRETE BARRIER (LPCB)

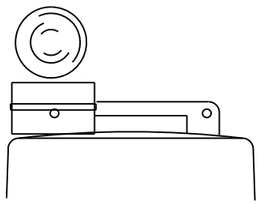


DELINEATION OF END TREATMENTS

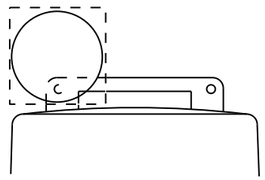
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

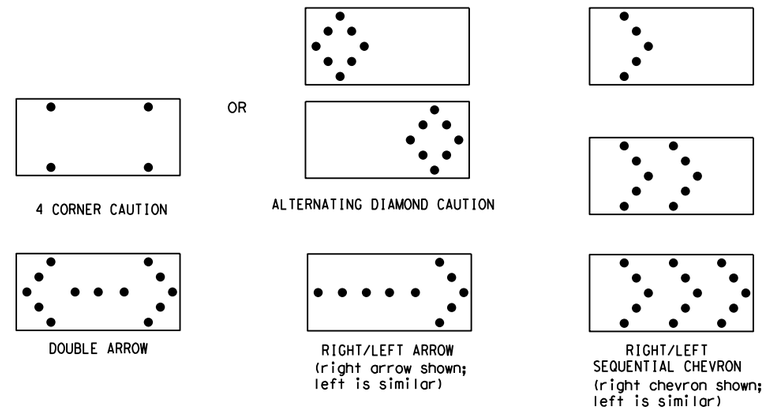
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage.
8. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
9. 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.
10. The sequential arrow display is NOT ALLOWED.
11. The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
12. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
13. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
14. 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.
15. 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	0911	00	116	VA
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	LFK	ANGELINA		15

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

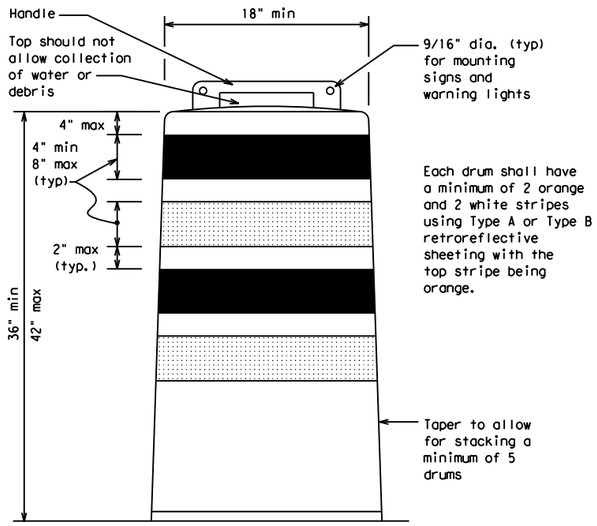
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

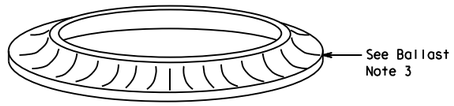
RETROREFLECTIVE SHEETING

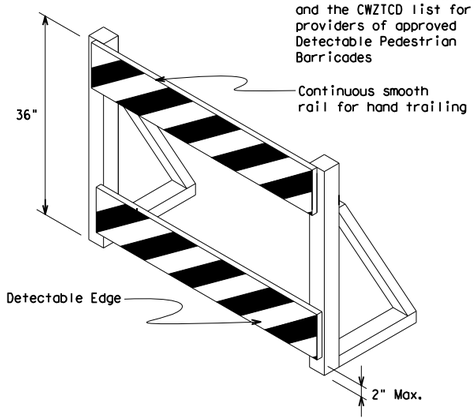
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

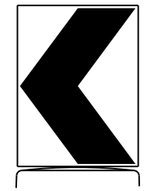




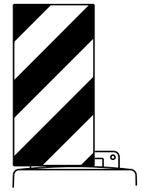


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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9-07 5-21	LFK	ANGELINA		16
7-13				

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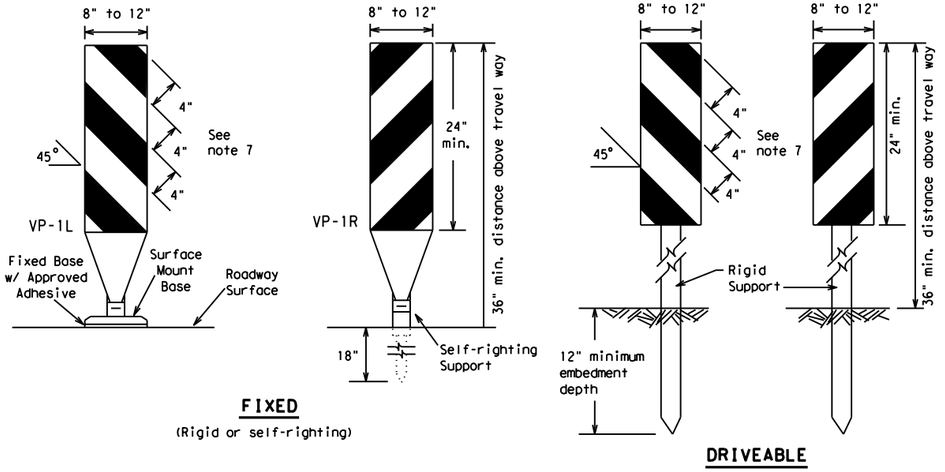
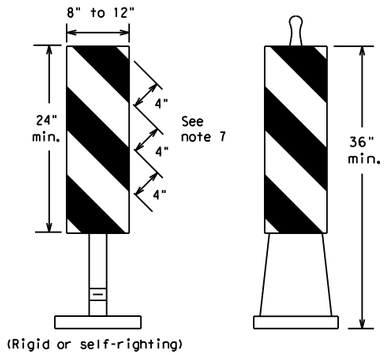


FIXED
(Rigid or self-righting)

DRIVEABLE

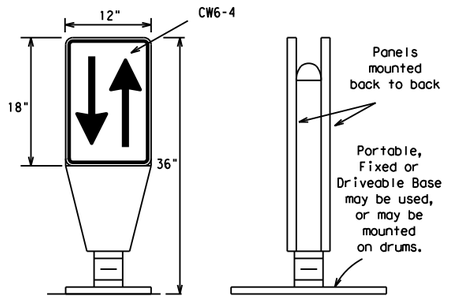


(Rigid or self-righting)

PORTABLE

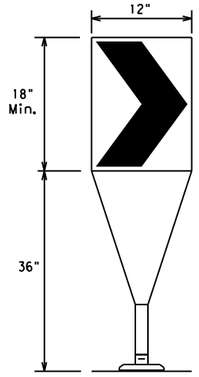
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

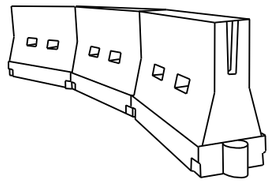
OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



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

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

CHEVRONS



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

GENERAL NOTES

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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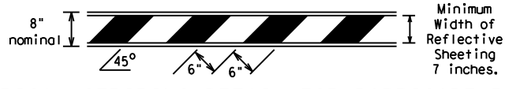
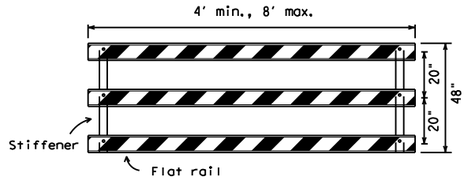
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



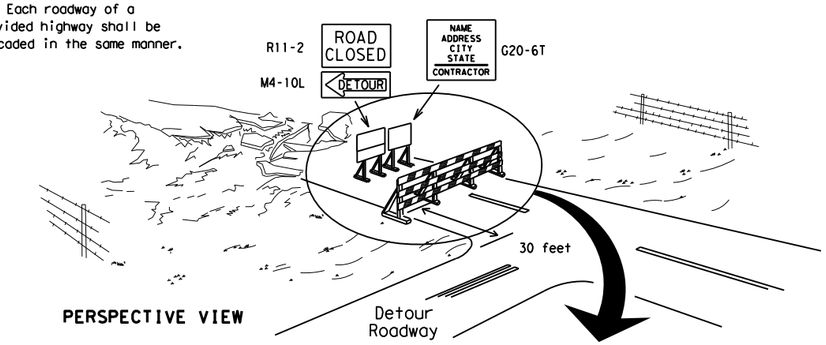
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

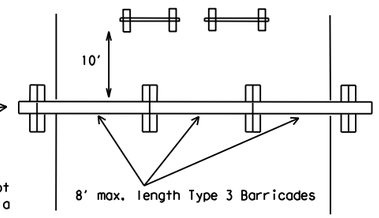
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

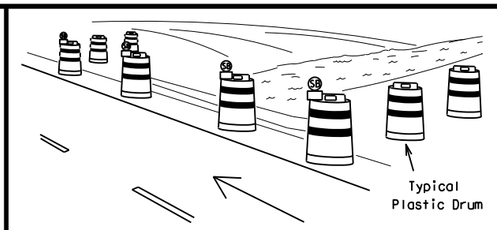
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

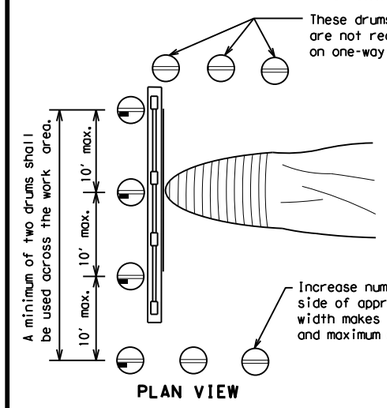
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

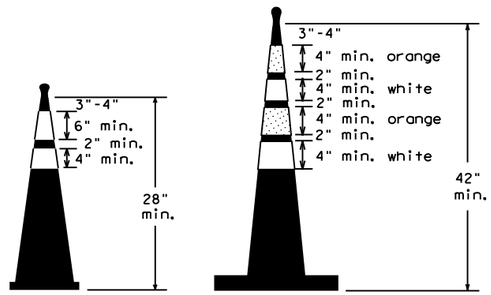
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



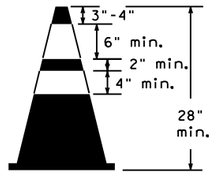
PLAN VIEW

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

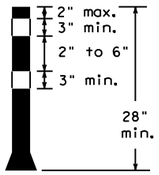
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

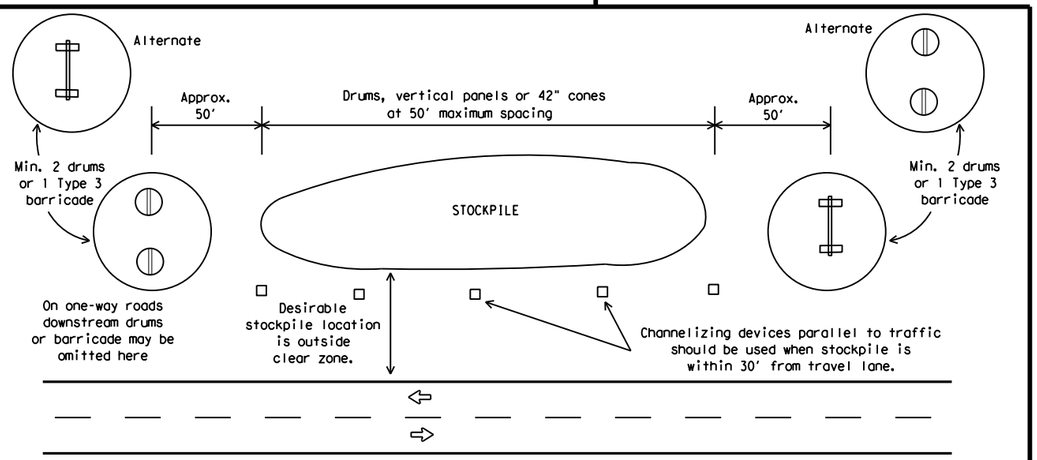


Tubular Marker

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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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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.

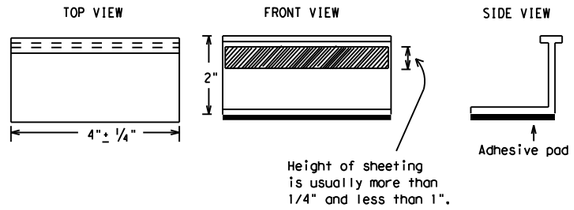
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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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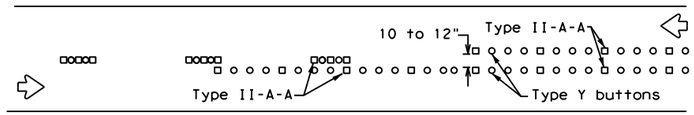
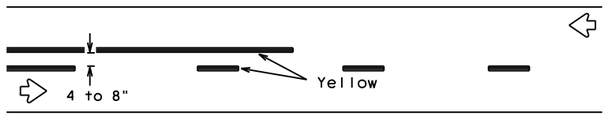
PAVEMENT MARKING PATTERNS

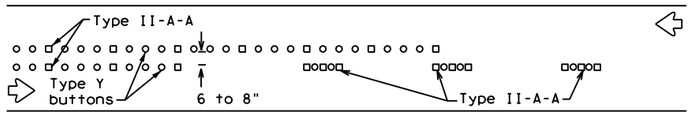
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



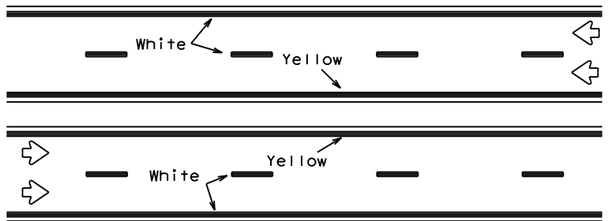
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



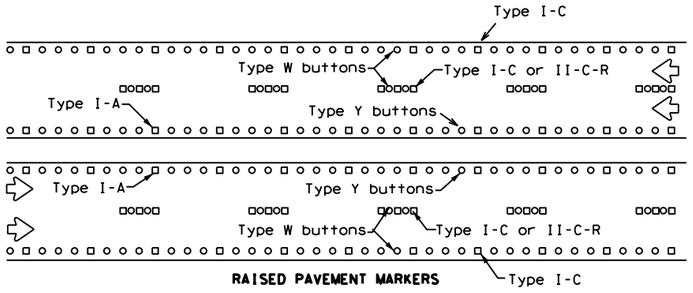
RAISED PAVEMENT MARKERS - PATTERN B

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



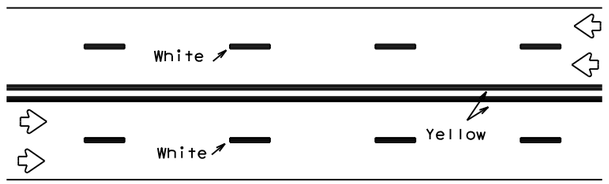
REFLECTORIZED PAVEMENT MARKINGS



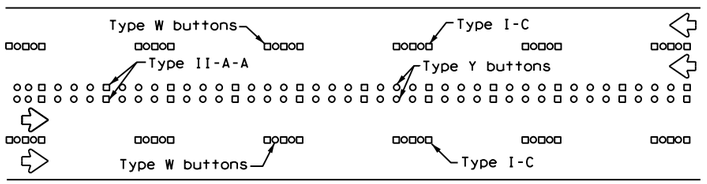
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



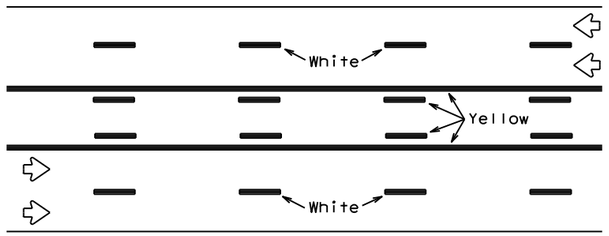
REFLECTORIZED PAVEMENT MARKINGS



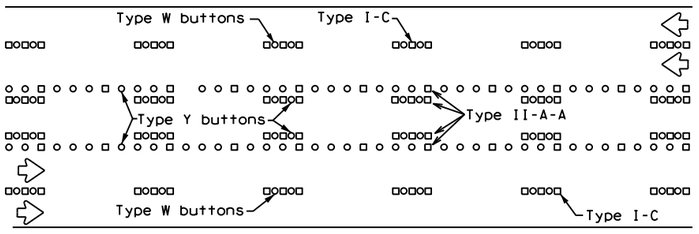
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

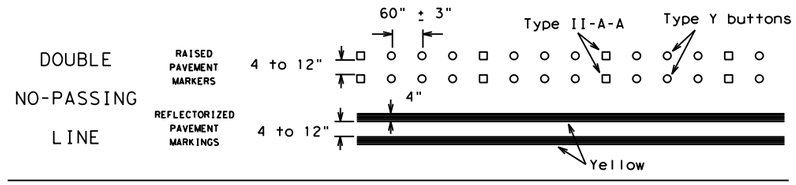
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

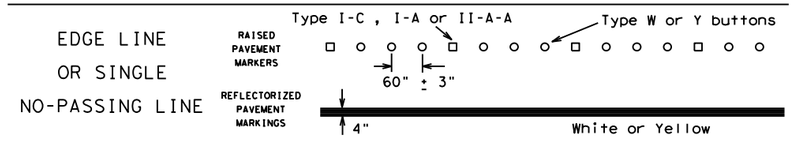
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

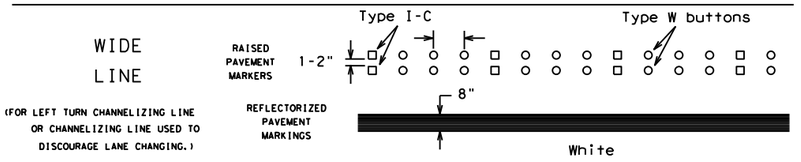


EDGE LINE OR SINGLE NO-PASSING LINE



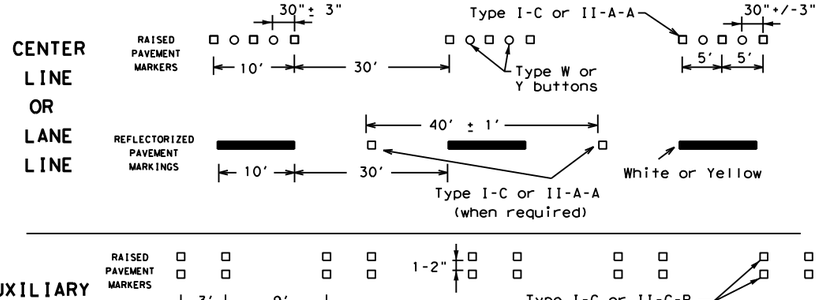
WIDE LINE

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

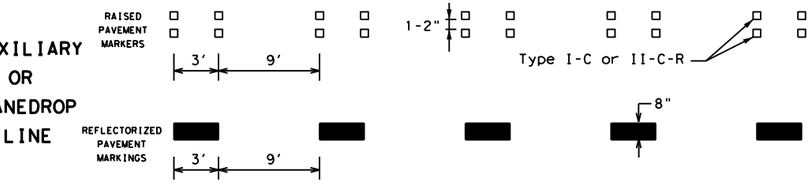


BROKEN LINES

CENTER LINE OR LANE LINE

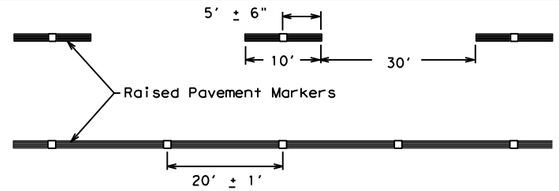


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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106

DATE: 1/26/2023
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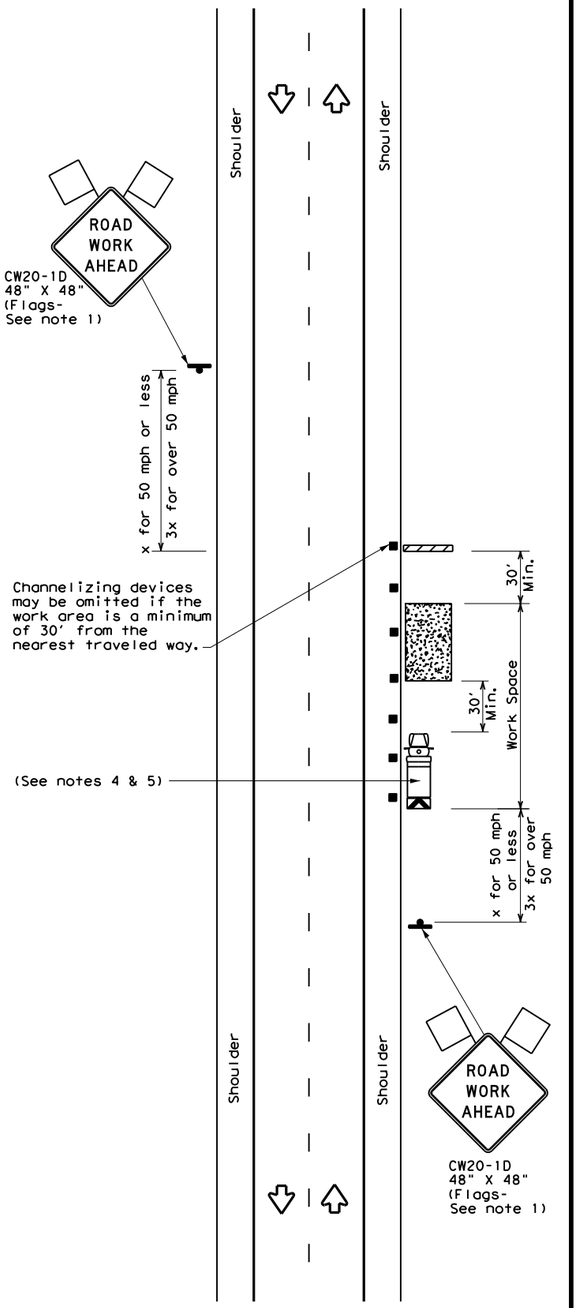
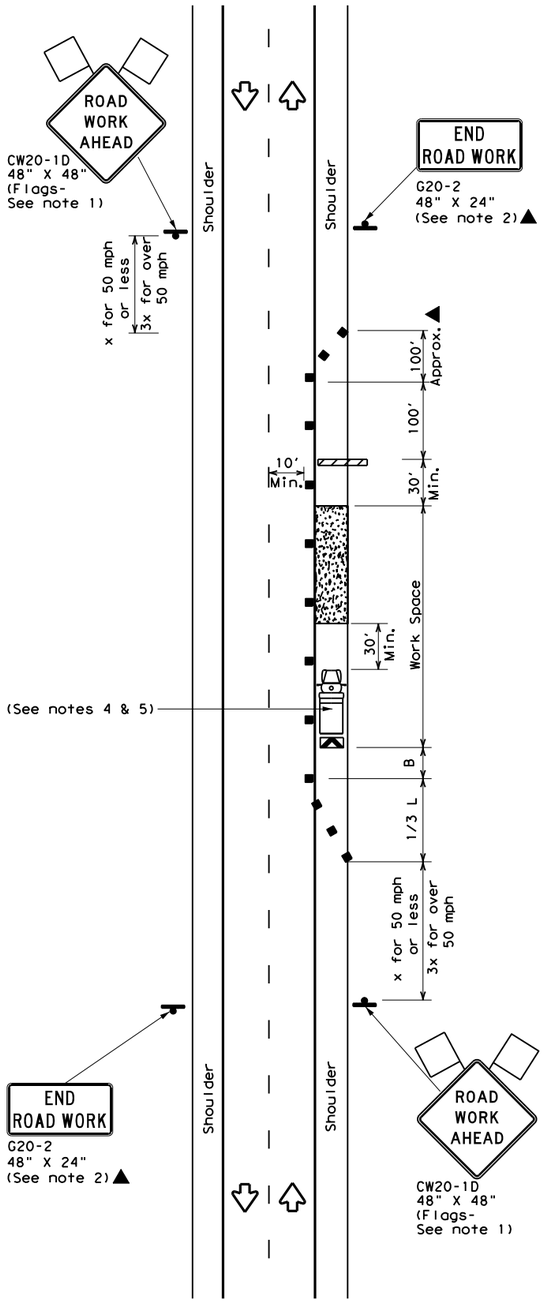


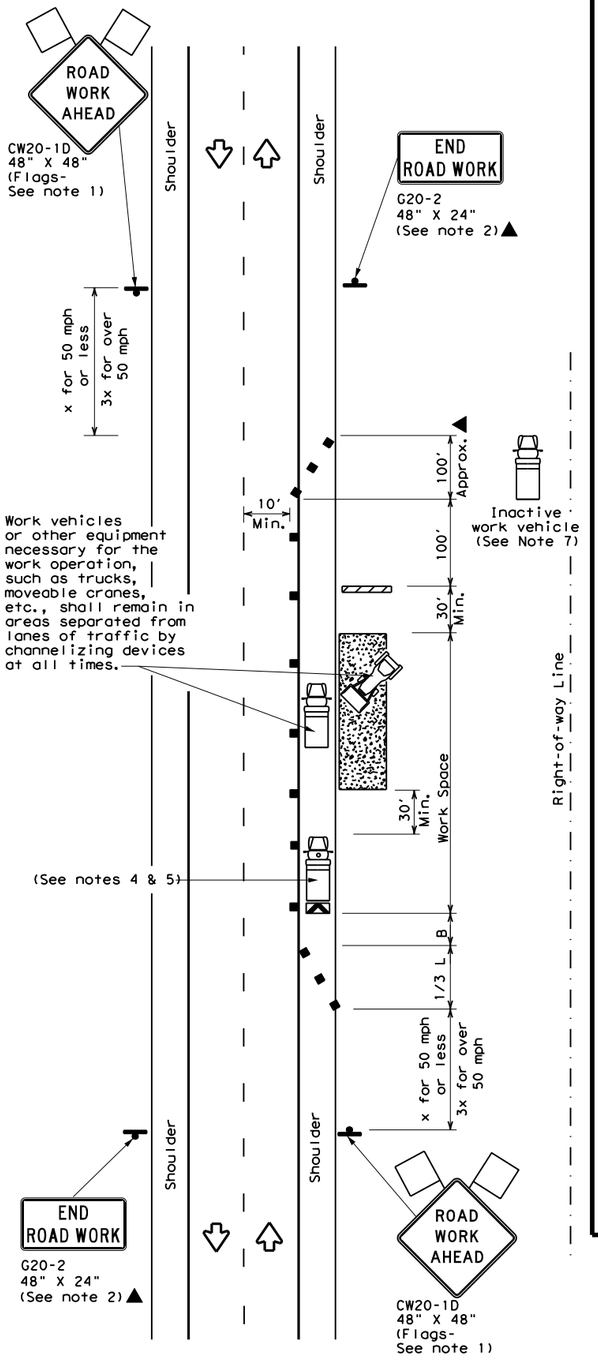
TCP (2-1a)

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.

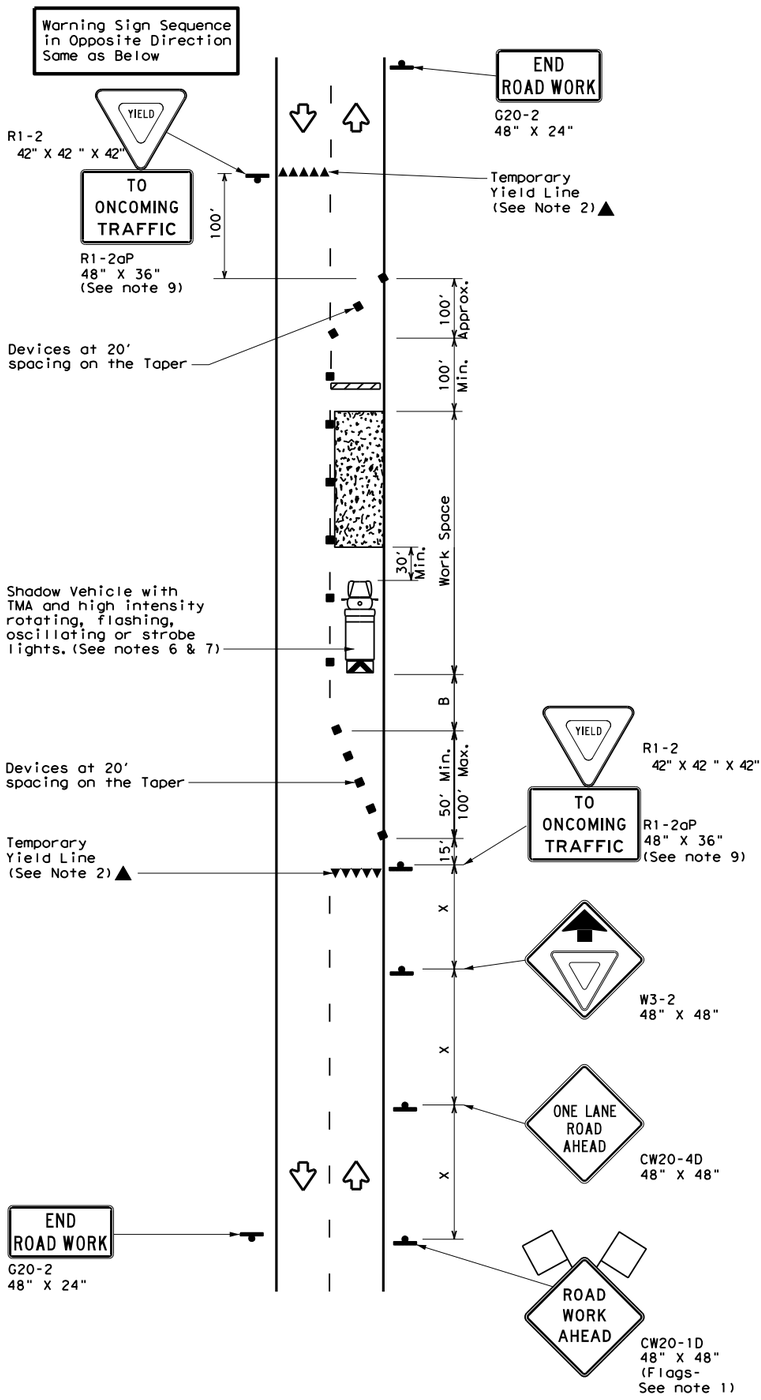
Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

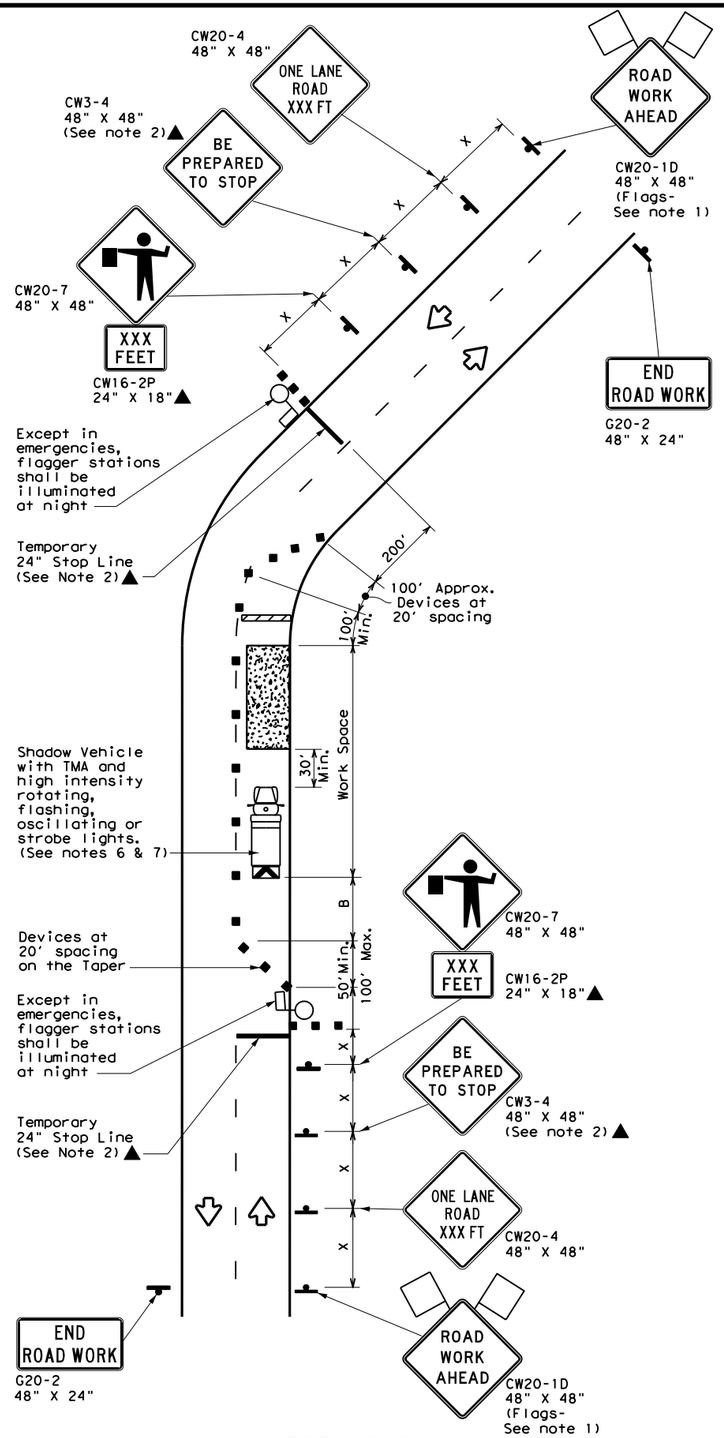
TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	00	116	VA
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	LFK	ANGELINA		21
1-97 2-18				

DATE: 1/26/2023
FILE: pw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/0911001116/4 - Design/Plan Set/2. TCP/tcp2-2-18.dgn



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.

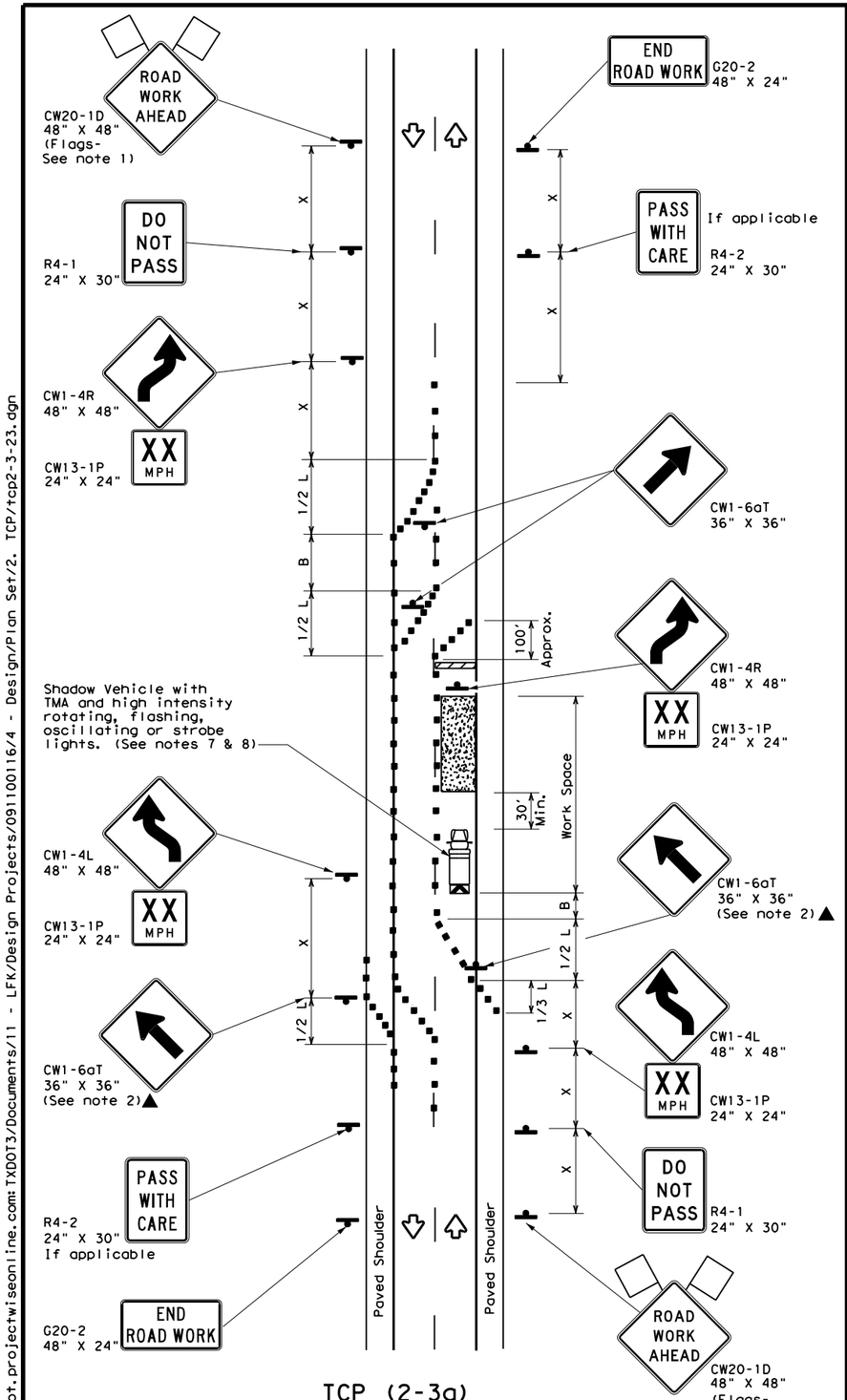
Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP(2-2)-18

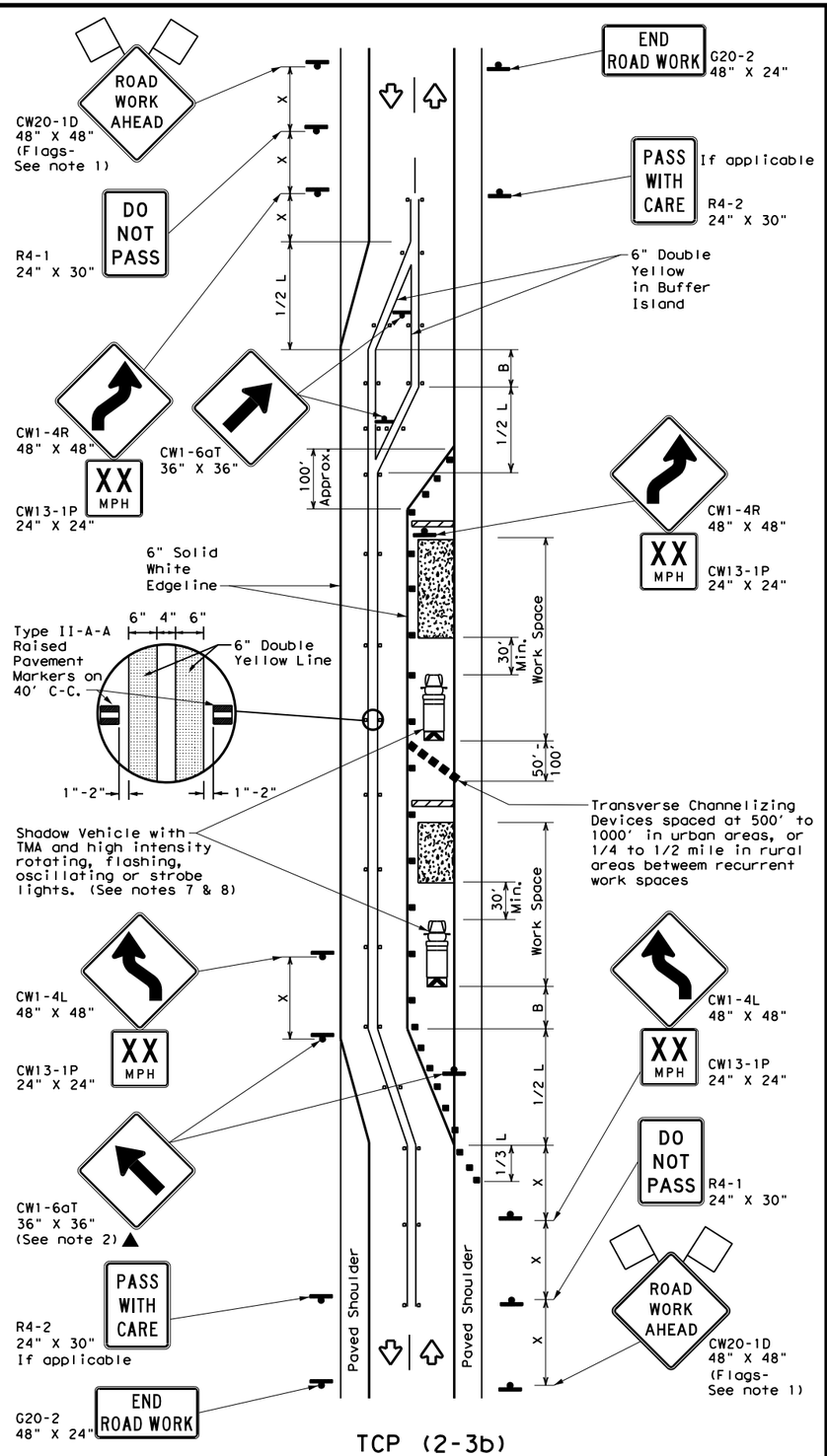
FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	00	116	VA
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	LFK	ANGELINA		22
4-98 2-18				

DATE: 5/5/2023
FILE: pw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/09110011 - Design/Plan Set/2. TCP/tcp2-3-23.dgn



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

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



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

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

TCP (2-3a)

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

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

TCP(2-3)-23

FILE: tcp(2-3)-23.dgn	DN:	CK:	DW:	CK:
© TxDOT April 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	00	116	VA
12-85 4-98 2-18	DIST	COUNTY		SHEET NO.
8-95 3-03 4-23	LFK	ANGELINA		23
1-97 2-12				

DATE: 1/26/2023
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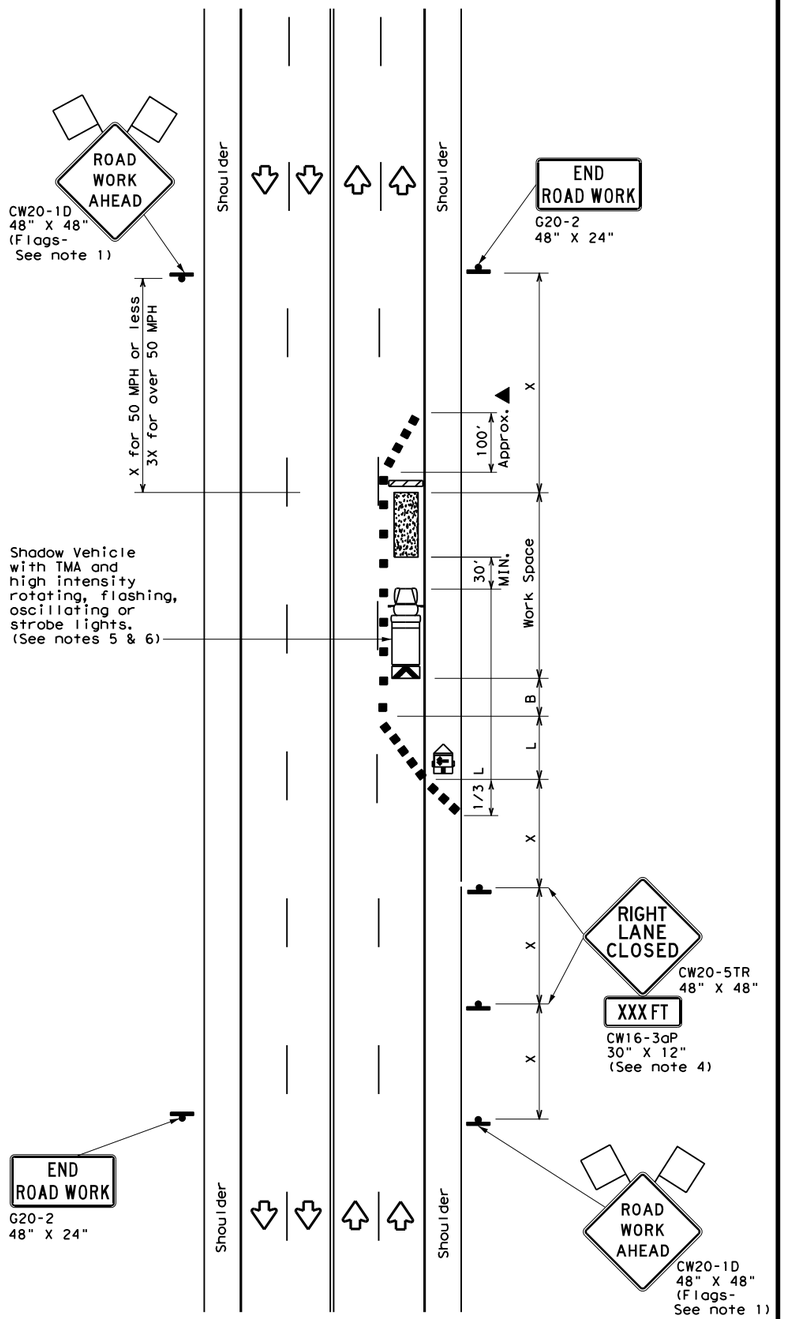
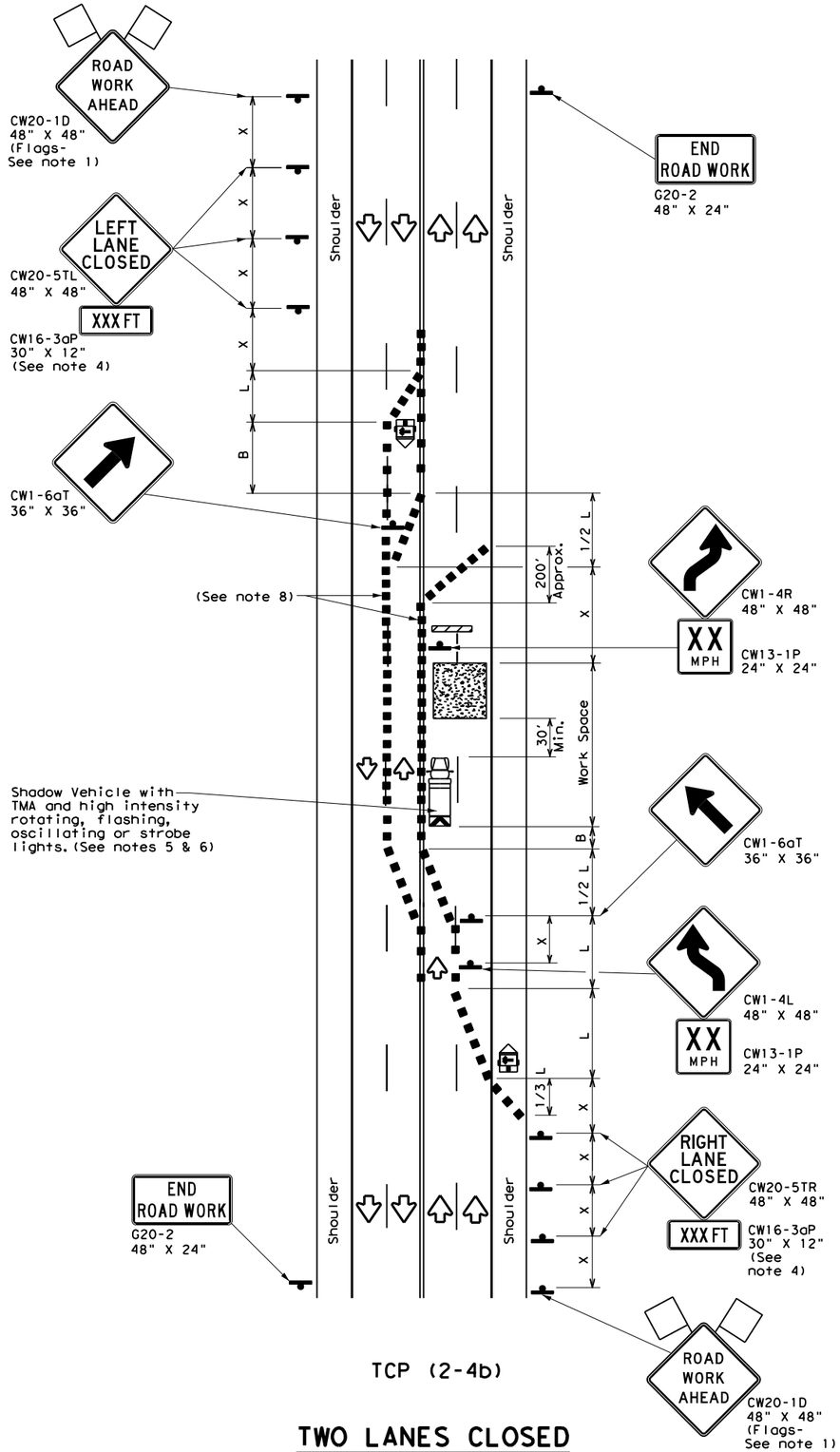


TCP (2-4a)

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

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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03	0911	00	116	VA
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	LFK	ANGELINA		24

DATE: 1/27/2023
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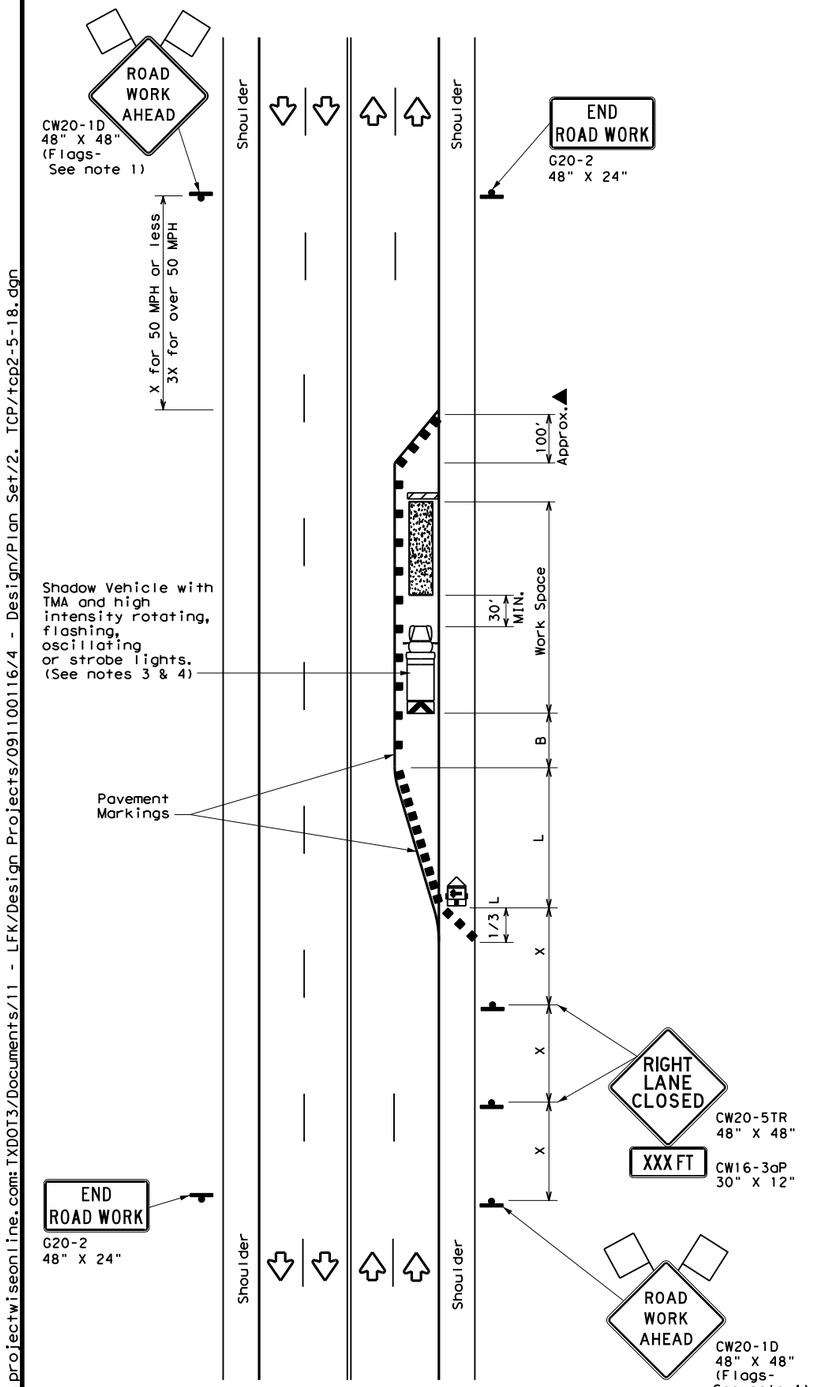
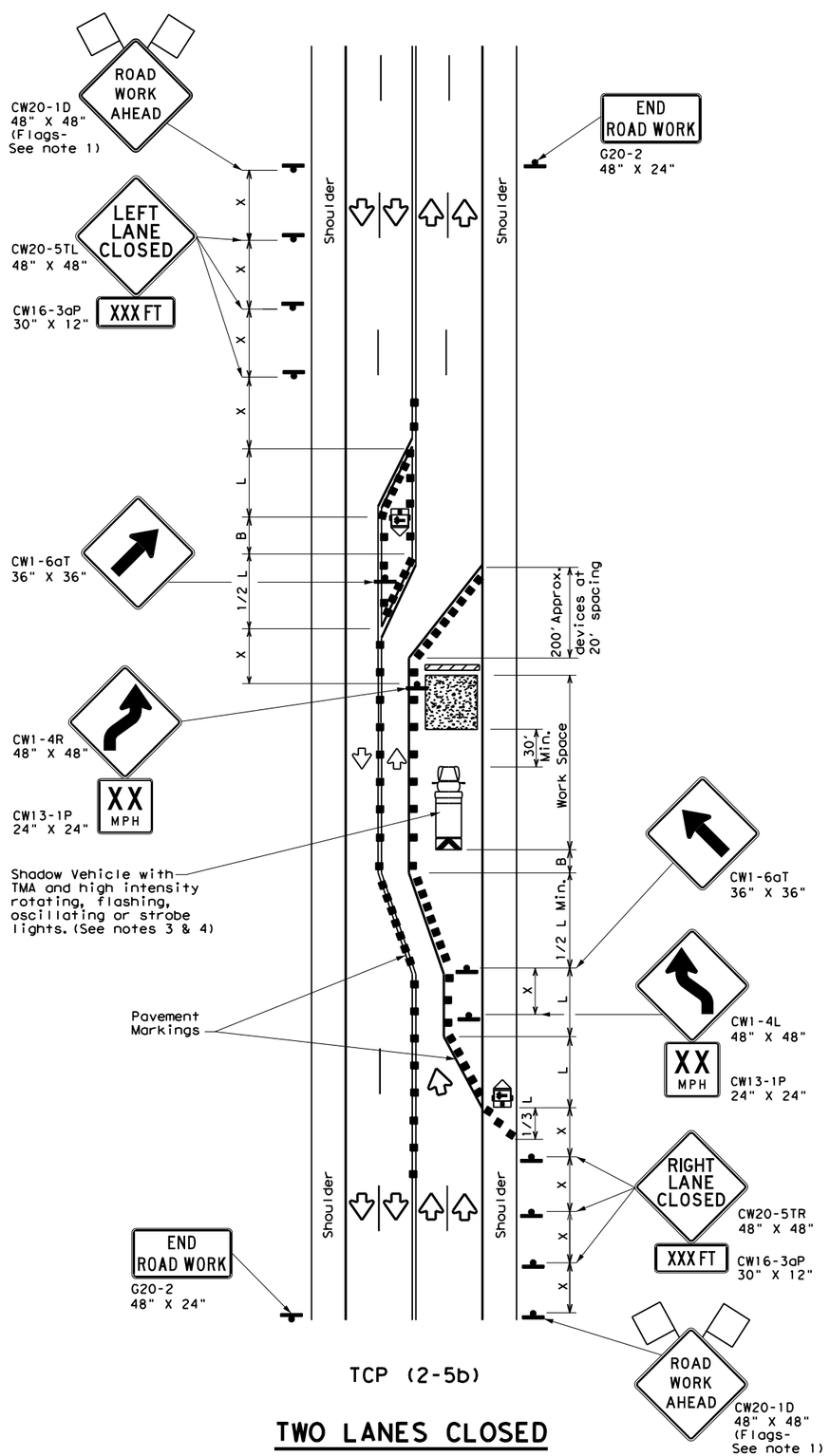


TCP (2-5a)

ONE LANE CLOSED



TCP (2-5b)

TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew eposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substitutued for the Shadow Vehicle and TMA.
4. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
5. The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.

TCP (2-5a)

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

TCP (2-5b)

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

Texas Department of Transportation

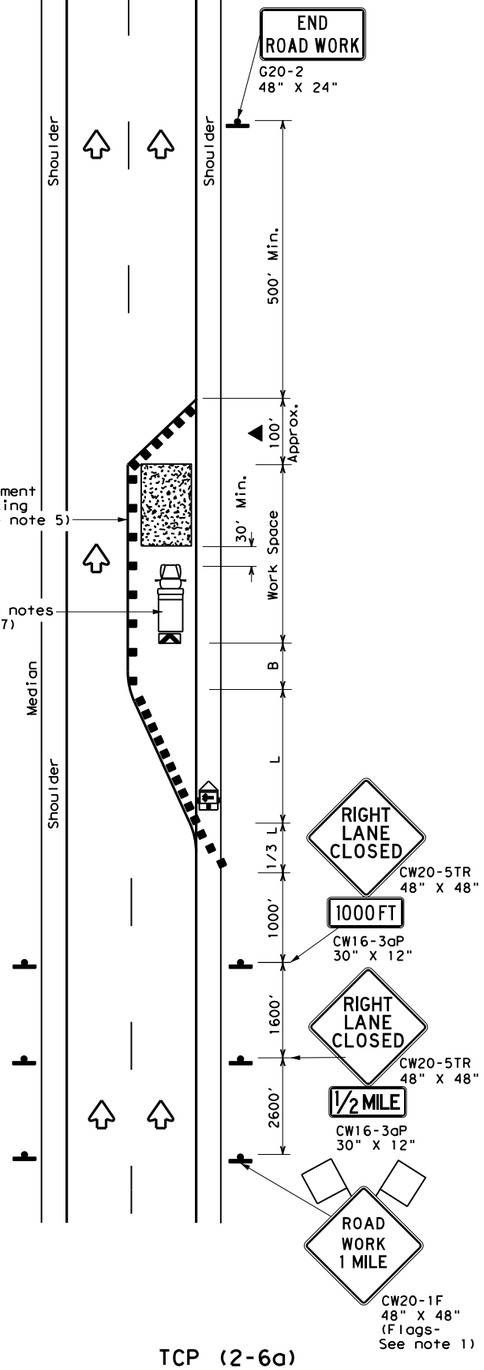
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL RDS.

TCP(2-5)-18

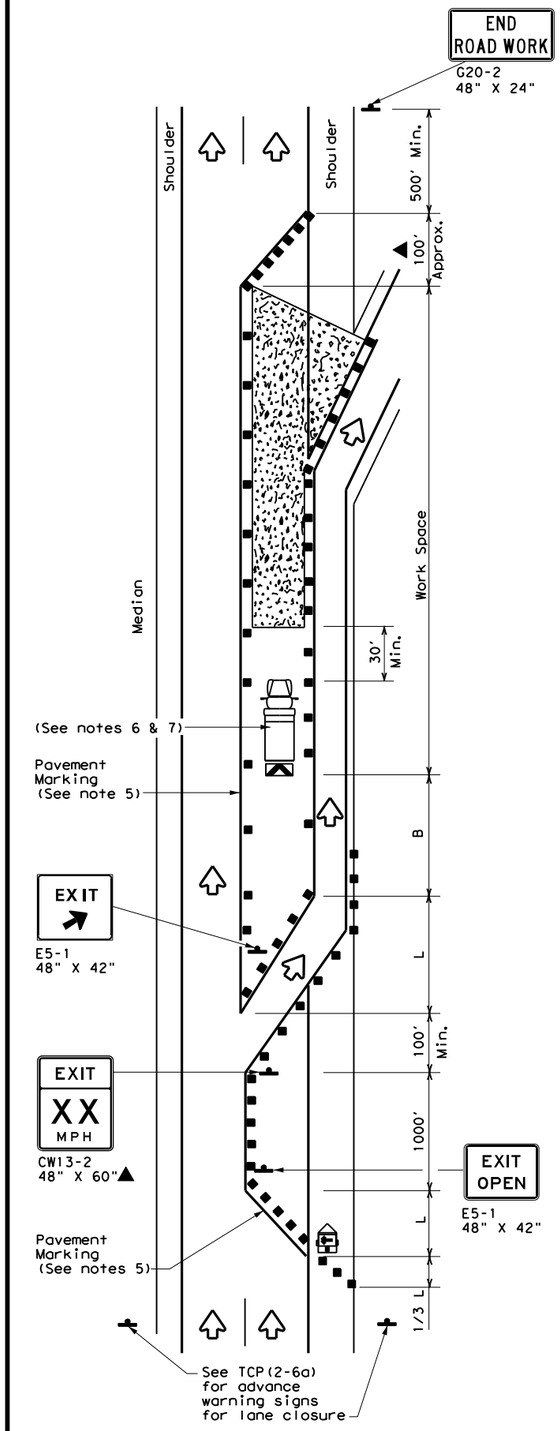
FILE: tcp2-5-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	00	116	VA
8-95 2-12	DIST	COUNTY		SHEET NO.
1-97 3-03	LFK	ANGELINA		25
4-98 2-18				

DATE: 1/27/2023
FILE: pw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/09110016/4 - Design/Plan Set/2. TCP/tcp2-6-18.dgn



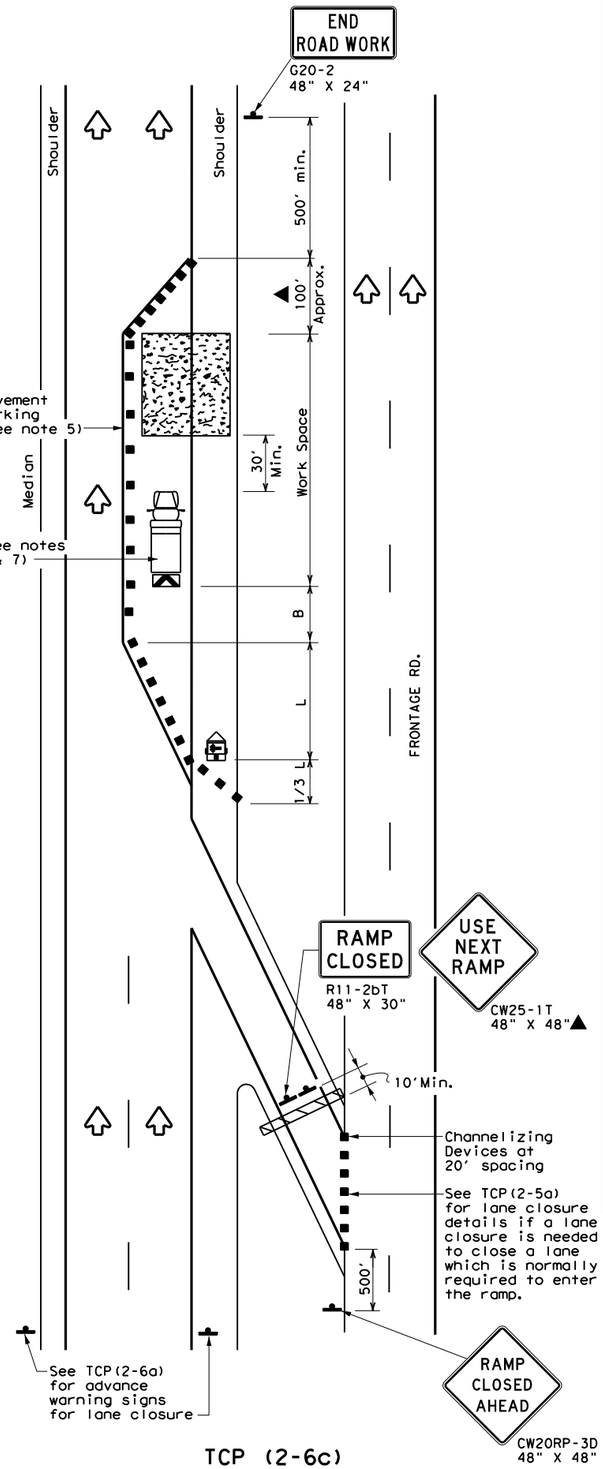
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-6c)

LANE CLOSURE NEAR ENTRANCE RAMPS

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

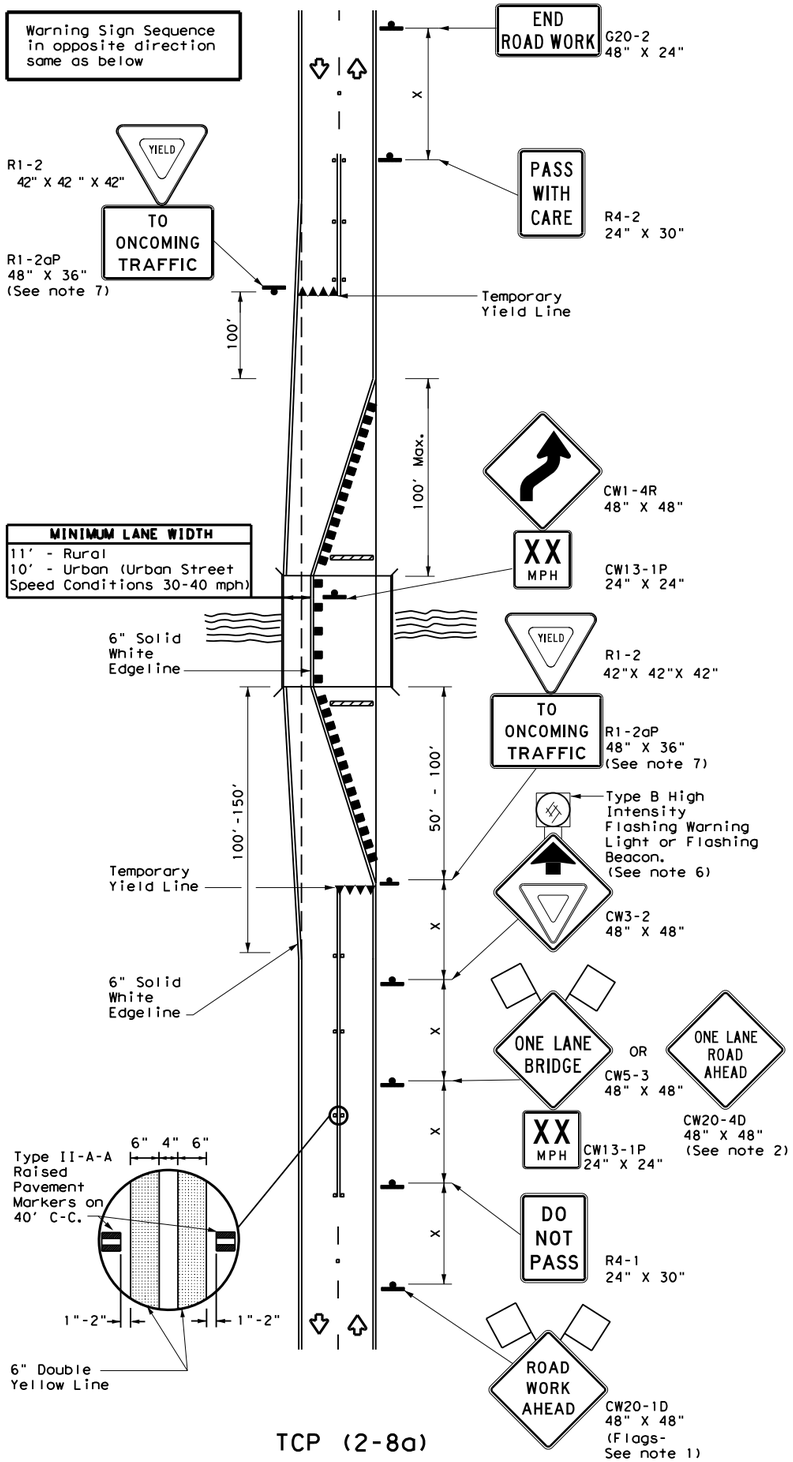
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

TCP(2-6)-18

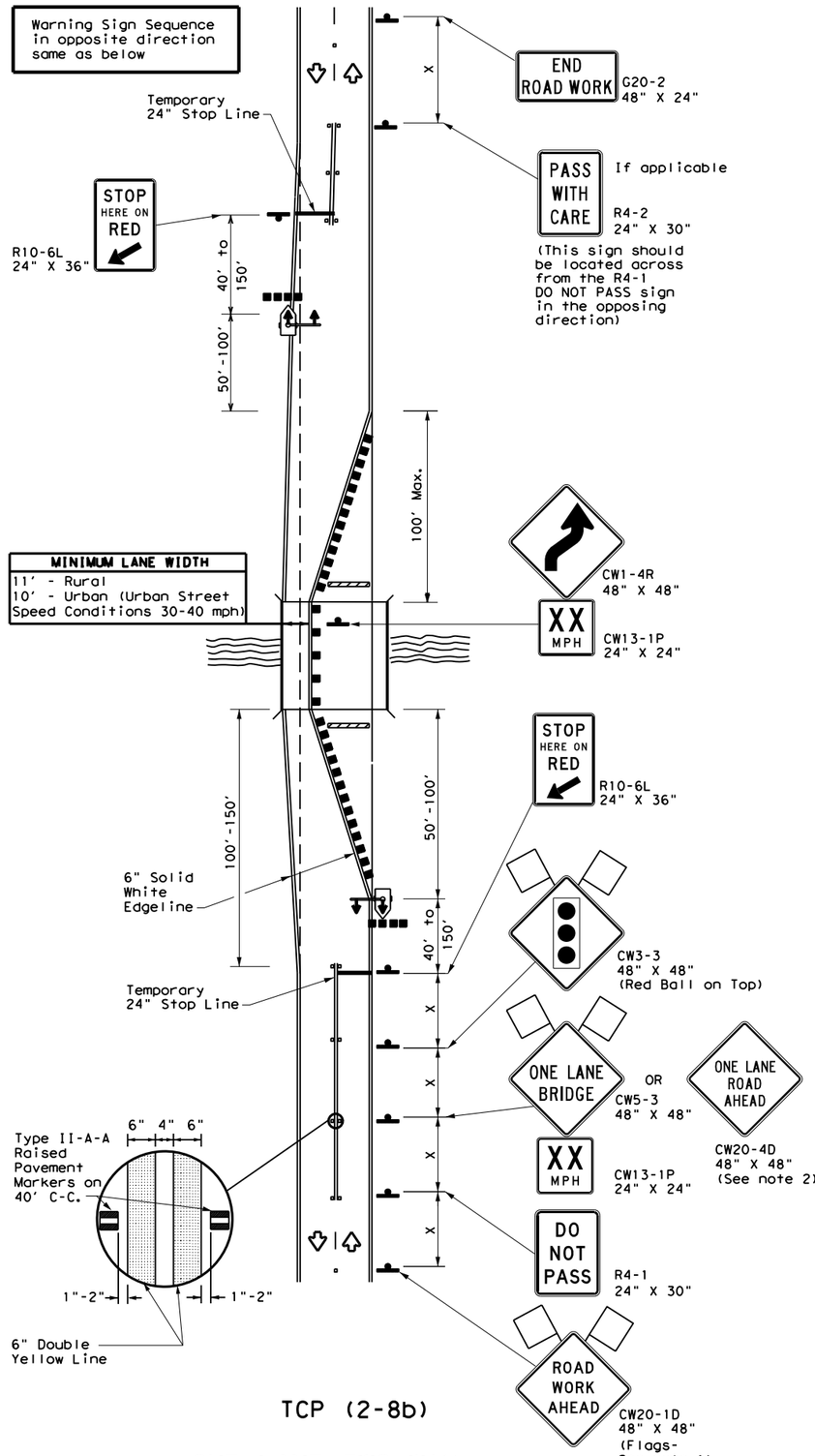
FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	0911	00	116	VA
	DIST	COUNTY		SHEET NO.
	LFK	ANGELINA		26

DATE: 5/5/2023
FILE: dw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/091100116/4 - Design/Plan Set/2. TCP/tcp2-8-23.dgn



TCP (2-8a)

ONE LANE TWO-WAY
TRAFFIC CONTROL WITH YIELD SIGNS
(Less Than 2000 ADT-See Note 5)



TCP (2-8b)

ONE LANE TWO-WAY
TRAFFIC CONTROL WITH TRAFFIC SIGNAL

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Sign		Traffic Flow
	Flag		Flagger
	Raised Pavement Markers Ty II-AA		Temporary or Portable Traffic Signal

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

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. When this TCP is used at a location which does not involve a bridge, a 48" x 48" CW20-4D "ONE LANE ROAD AHEAD" signs should be used in lieu of the CW5-3 "ONE LANE BRIDGE" signs. The CW13-1P Advisory Speed Plaque is required with either warning sign.
3. Raised pavement markers shall be placed 40 feet c-c on centerline between DO NOT PASS signs and stop or yield lines.
4. For intermediate term situations, when it is not feasible to remove and restore pavement markings, the channelization must be made dominant by using a very close spacing. This is especially important in locations of conflicting information, such as where traffic is directed over a double yellow centerline. In such locations a maximum channelizing device spacing of 20 feet is recommended. The 20 foot channelizing device spacing recommendation is intended for the area of conflicting information and not the entire work zone.

TCP (2-8a)

5. Traffic control by CW3-2 "YIELD AHEAD" symbol signs for one lane two-way traffic control operations should be limited to work spaces less than 400 feet long and roadways with less than 2000 ADT. Otherwise, portable traffic signals should be used.
6. If power is available, a flashing beacon should be attached to the CW3-2 "YIELD AHEAD" symbol sign for emphasis.
7. The R1-2 "YIELD" and R1-2aP "TO ONCOMING TRAFFIC" signs and other regulatory signs shall be installed at 7 foot minimum mounting height.

TCP (2-8b)

8. A list of approved Portable Traffic Signals can be found in the "Compliant Work Zone Traffic Control Devices" list.
9. Portable traffic signals should be located to provide adequate stopping sight distance for approaching motorist (See table above).

Texas Department of Transportation

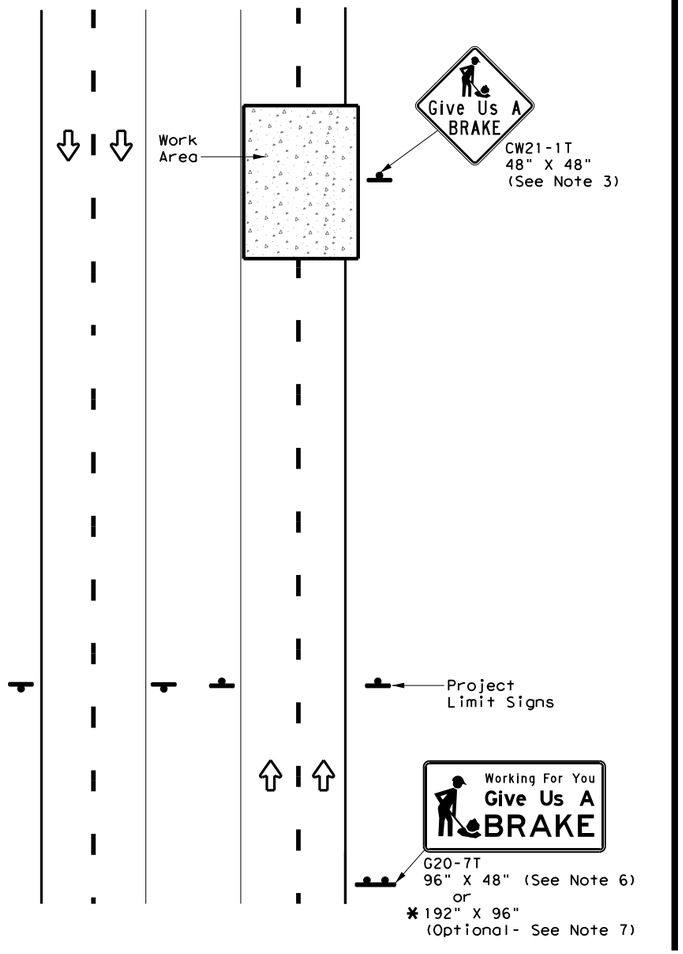
Traffic Safety Division Standard

TRAFFIC CONTROL PLAN
LONG TERM ONE-LANE TWO-WAY CONTROL

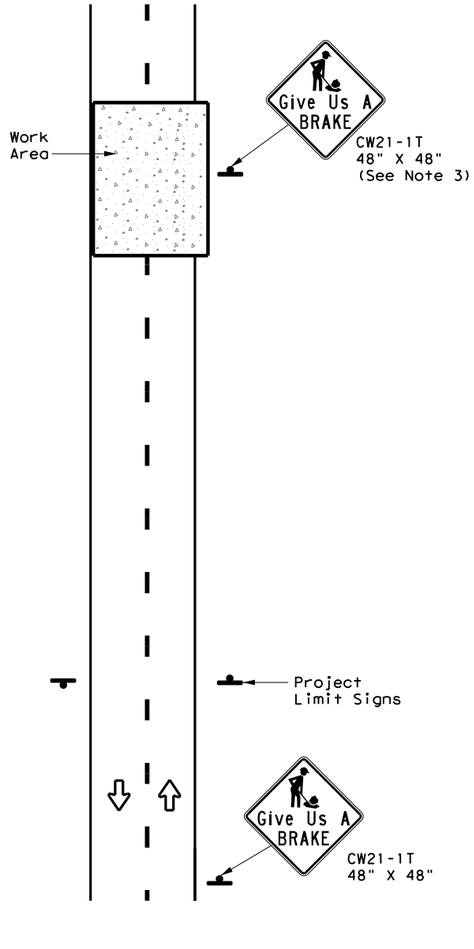
TCP(2-8)-23

FILE: tcp2-8-23.dgn	DN:	CK:	DW:	CK:
© TxDOT April 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	00	116	VA
12-85 4-98 2-18	DIST	COUNTY		SHEET NO.
8-95 3-03 4-23	LFK	ANGELINA		27
1-97 2-12				

DATE: 1/27/2023
FILE: pw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/091100116/4 - Design/Plan Set/2. TCP/wzbrk-13.dgn



DIVIDED HIGHWAY



UNDIVIDED HIGHWAY

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

* When the optional larger WORKING FOR YOU GIVE US A BRAKE (G20-7T) 192" x 96" sign is required, the locations shall be noted elsewhere in the plans.

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL			DRILLED SHAFT 24" DIA. (LF)
						Size	(LF) ①	(LF) ②	
Orange	G20-7T	Working For You Give Us A BRAKE	96" X 48"	Type B_{FL} or C_{FL}	32	▲	▲	▲	▲
Orange	G20-7T	Working For You Give Us A BRAKE	192" X 96"	Type B_{FL} or C_{FL}	128	W8x18	16	17	12

▲ See Note 6 Below

LEGEND	
	Sign
	Large Sign
	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL}
BLACK	LEGEND & BORDERS	NON-REFLECTIVE ACRYLIC FILM

GENERAL NOTES

1. See BC and SMD sheets for additional sign support details.
2. Sign locations shall be approved by the Engineer.
3. For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
4. Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
5. Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
6. The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
7. The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
   Item 636 - Aluminum Signs
   Item 647 - Large Roadside Sign Supports and Assemblies.
   Item 416 - Drilled Shaft Foundations
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.

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE "GIVE US A BRAKE" SIGNS

WZ(BRK)-13

FILE: wzbrk-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	00	116	VA
6-96 5-98 7-13	DIST	COUNTY		SHEET NO.
8-96 3-03	LFK	ANGELINA		28

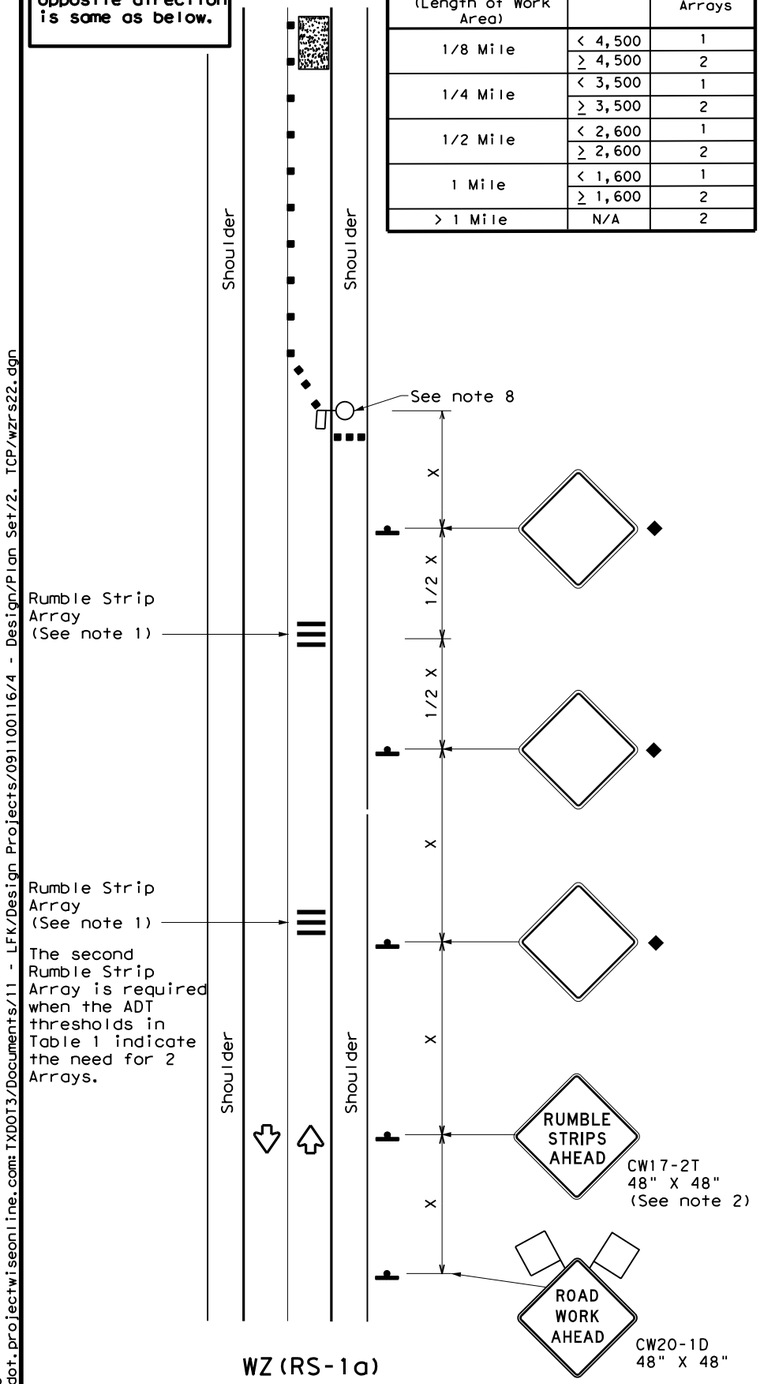
116

DATE: 5/8/2023
FILE: pw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/0911001164 - Design/Plan Set/2. TCP/wzrs22.dgn

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

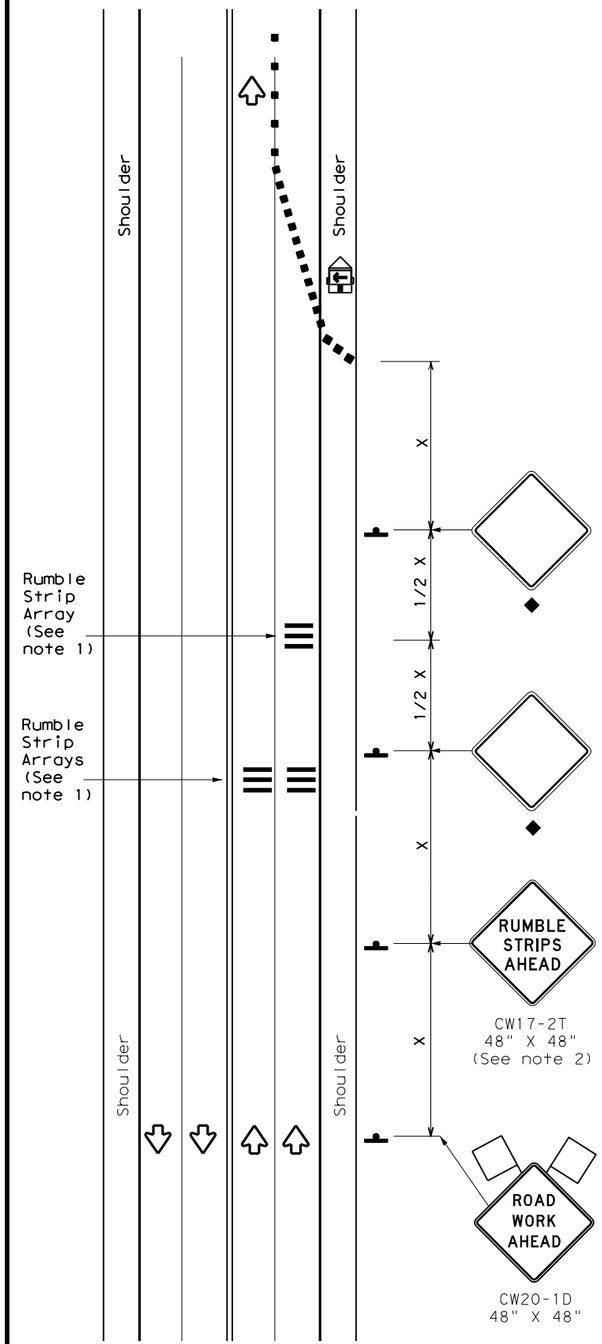
TABLE 1

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



WZ(RS-1a)

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



WZ(RS-1b)

RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

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

LEGEND

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

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

* Conventional Roads Only

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

TYPICAL USAGE

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

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

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

TABLE 2

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

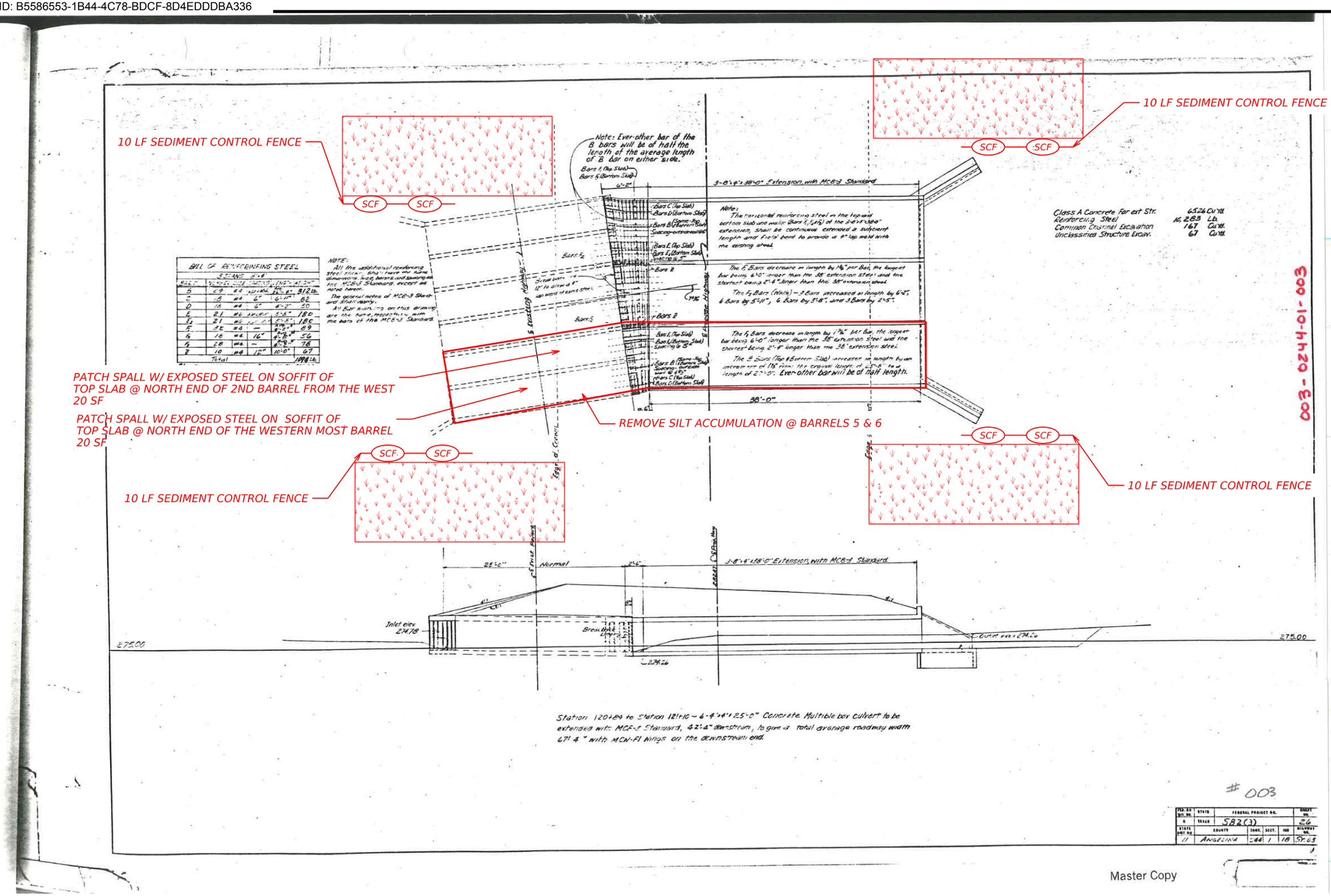
Texas Department of Transportation — Traffic Safety Division Standard

TEMPORARY RUMBLE STRIPS

WZ(RS)-22

FILE: wzrs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-14 1-22 4-16	0911	00	116	VA
	DIST	COUNTY		SHEET NO.
	LFK	ANGELINA		29

117



LEGEND

SCF — SEDIMENT CONTROL FENCE

BROADCAST SEEDING

N.T.S.

STATE OF TEXAS
MITCHELL L. RANDALL
129397
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
Mitchell L. Randall, P.E.
FF6D8503742F43A...
6/2/2023

Texas Department of Transportation

BRIDGE LAYOUT

SHEET 1 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		30

SITE A - ANGELINA COUNTY
SH 63 @ MILL CREEK
11-003-0-0244-01-003

003-10-0244

DATE: 5/30/2023 11:53:33 AM
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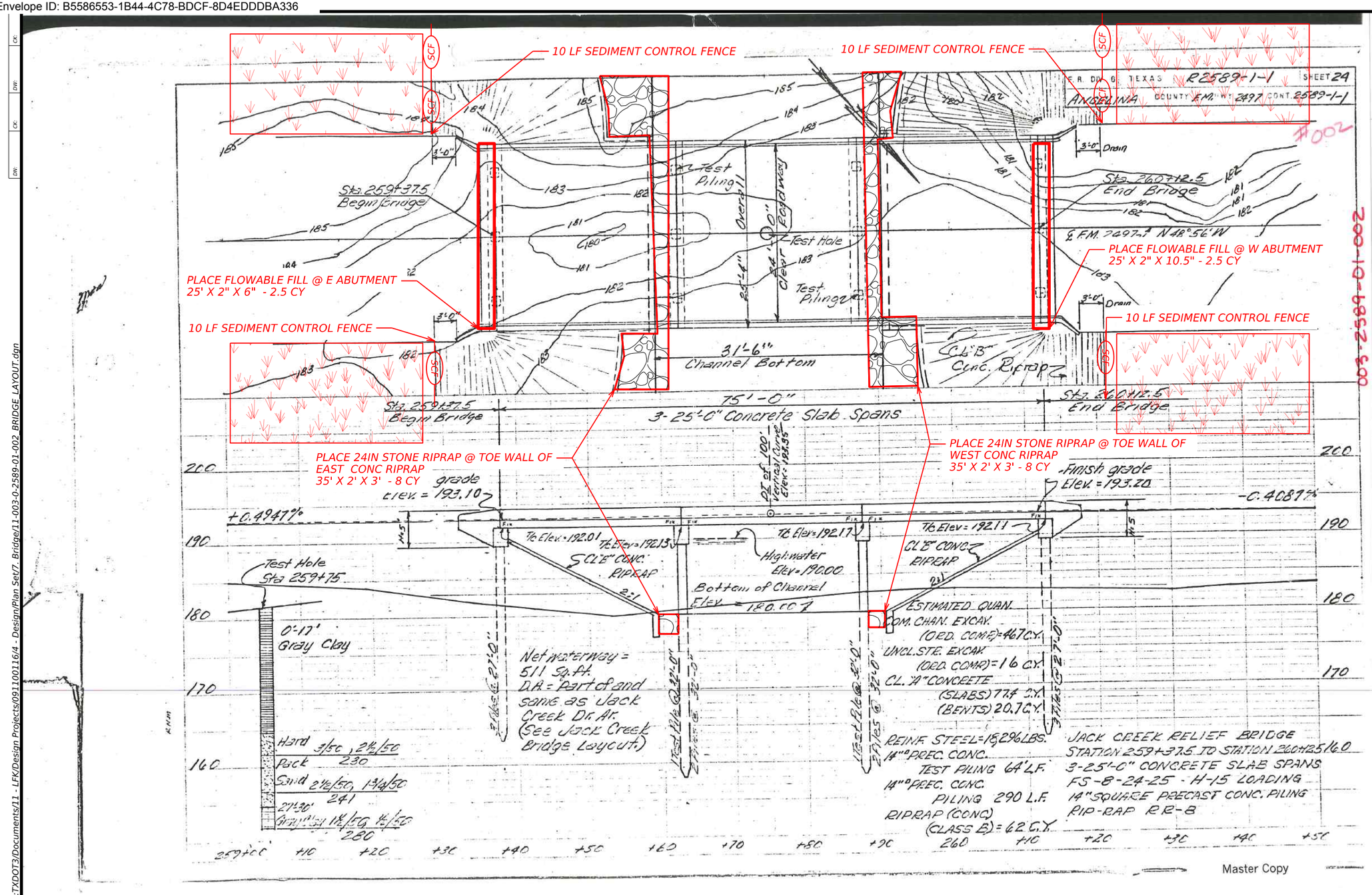

LEGEND

SCF — SEDIMENT CONTROL FENCE

BROADCAST SEEDING

ACCESS PLAN & TIMBER MAT PLACEMENT SUBSIDIARY TO ROCK RIPRAP PLACEMENT SEE EPIC SHEET FOR MORE INFORMATION

SITE B - ANGELINA COUNTY
FM 2497 @ JACK CREEK RELIEF
11-003-0-2589-01-002

N.T.S.

STATE OF TEXAS
MITCHELL L. RANDALL
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6/2/2023

Texas Department of Transportation

BRIDGE LAYOUT

SHEET 2 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		31

003-2589-01-002

DATE: 5/30/2023 12:57:14 PM
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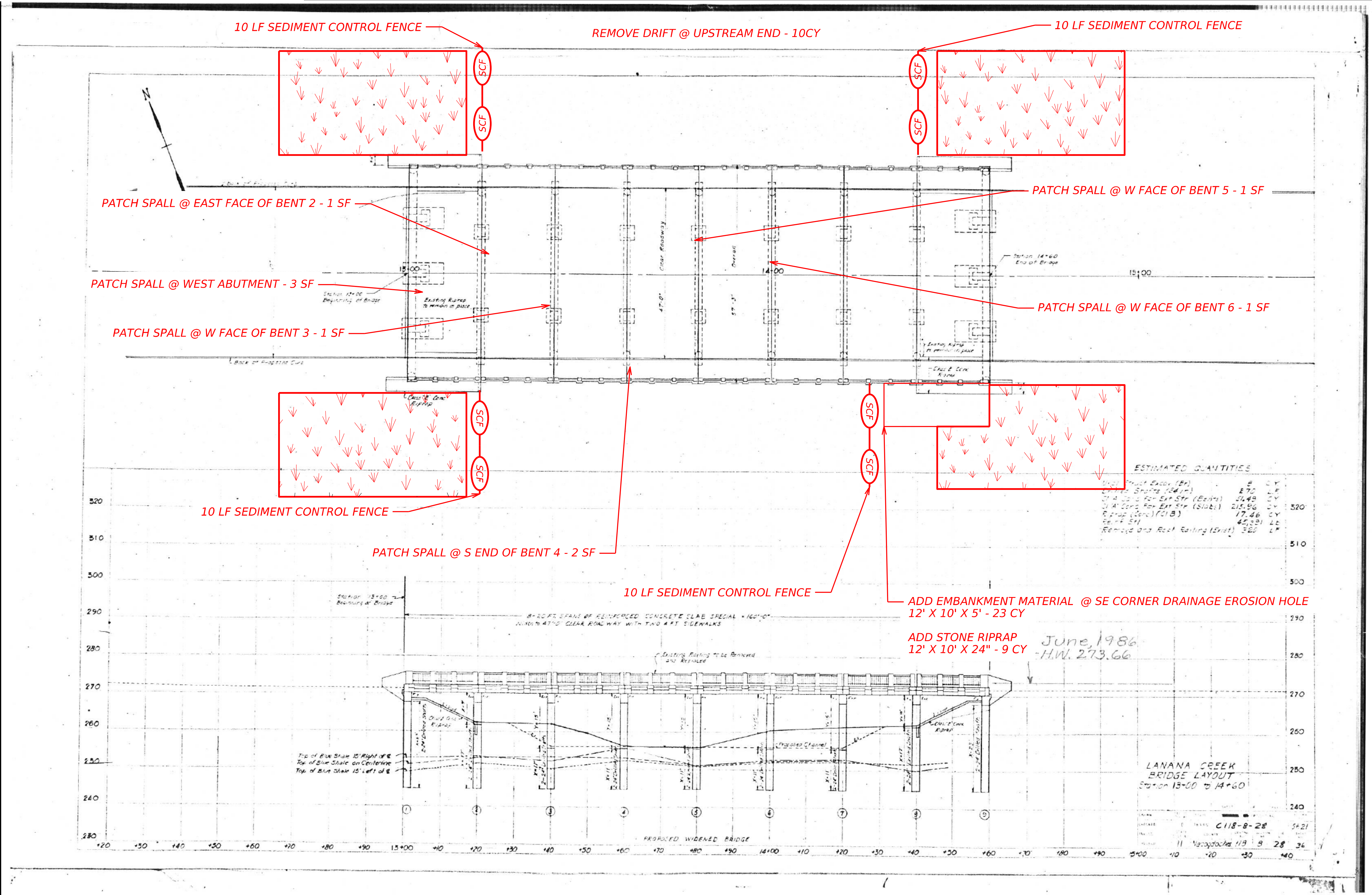
10 LF SEDIMENT CONTROL FENCE
REMOVE DRIFT @ UPSTREAM END - 10CY
10 LF SEDIMENT CONTROL FENCE
SCF
PATCH SPALL @ EAST FACE OF BENT 2 - 1 SF
PATCH SPALL @ W FACE OF BENT 5 - 1 SF
PATCH SPALL @ WEST ABUTMENT - 3 SF
PATCH SPALL @ W FACE OF BENT 6 - 1 SF
PATCH SPALL @ W FACE OF BENT 3 - 1 SF
10 LF SEDIMENT CONTROL FENCE
PATCH SPALL @ S END OF BENT 4 - 2 SF
10 LF SEDIMENT CONTROL FENCE
ADD EMBANKMENT MATERIAL @ SE CORNER DRAINAGE EROSION HOLE
12' X 10' X 5' - 23 CY
ADD STONE RIPRAP
12' X 10' X 24" - 9 CY
ESTIMATED QUANTITIES
June, 1986
H.W. 273.66
LANANA CREEK
BRIDGE LAYOUT
Station 13+00 to 14+60
PROPOSED WIDENED BRIDGE

LEGEND

SCF — SEDIMENT CONTROL FENCE

BROADCAST SEEDING

N.T.S.

STATE OF TEXAS
MITCHELL L. RANDALL
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Mitchell L. Randall, P.E.
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6/2/2023

Texas Department of Transportation

BRIDGE LAYOUT

SHEET 3 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		32

SITE C - NACOGDOCHES COUNTY
SH 21 @ LA NANA CREEK
11-174-0-0118-08-055

DATE: 5/30/2023 1:03:26 PM
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CLEAN & SEAL ALL JOINTS - 205 LF

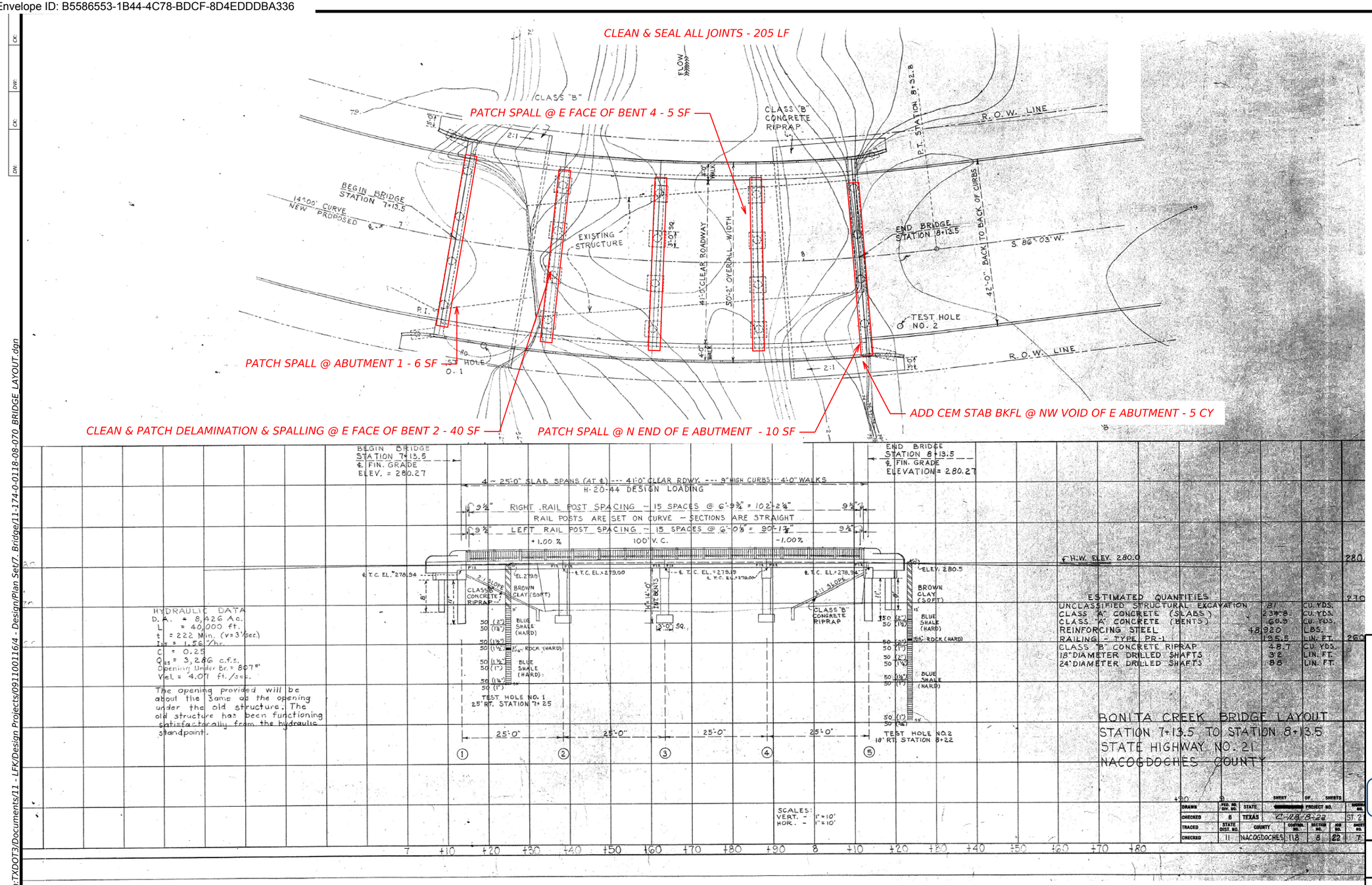
PATCH SPALL @ E FACE OF BENT 4 - 5 SF

PATCH SPALL @ ABUTMENT 1 - 6 SF

CLEAN & PATCH DELAMINATION & SPALLING @ E FACE OF BENT 2 - 40 SF

PATCH SPALL @ N END OF E ABUTMENT - 10 SF

ADD CEM STAB BKFL @ NW VOID OF E ABUTMENT - 5 CY



HYDRAULIC DATA
D.A. = 8,426 Ac.
L = 40,000 ft.
t = 222 Min. (v=3'/sec.)
I₂₅ = 1.56"/hr.
C = 0.25
Q_{25} = 3,286 c.f.s.
Opening Under Br. = 807'
Vel. = 4.07 ft./sec.

The opening provided will be about the same as the opening under the old structure. The old structure has been functioning satisfactorally from the hydraulic standpoint.

ESTIMATED QUANTITIES

UNCLASSIFIED STRUCTURAL EXCAVATION	81	CU. YDS.
CLASS "A" CONCRETE (SLABS)	234.8	CU. YDS.
CLASS "A" CONCRETE (BENTS)	60.9	CU. YDS.
REINFORCING STEEL	48,920	LBS.
RAILING - TYPE PR-1	195.5	LIN. FT.
CLASS "B" CONCRETE RIPRAP	48.7	CU. YDS.
18" DIAMETER DRILLED SHAFTS	32	LIN. FT.
24" DIAMETER DRILLED SHAFTS	88	LIN. FT.

BONITA CREEK BRIDGE LAYOUT
STATION 7+13.5 TO STATION 8+13.5
STATE HIGHWAY NO. 21
NACOGDOCHES COUNTY

DRAWN	FED. RD. DIV. NO.	STATE	PROJECT NO.				
CHECKED	6	TEXAS	11-174-0-0118-08-070				ST. 21
TRACED	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.	
CHECKED	11	NACOGDOCHES	118	8	22	7	

SITE D - NACOGDOCHES COUNTY
SH 21 @ BANITA CREEK
11-174-0-0118-08-070

N.T.S.

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DocuSigned by:
Mitchell L. Randall, P.E.
FF6D8503742F43A...
6/2/2023

BRIDGE LAYOUT

SHEET 4 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		33

DATE: 5/10/2023 3:15:03 PM
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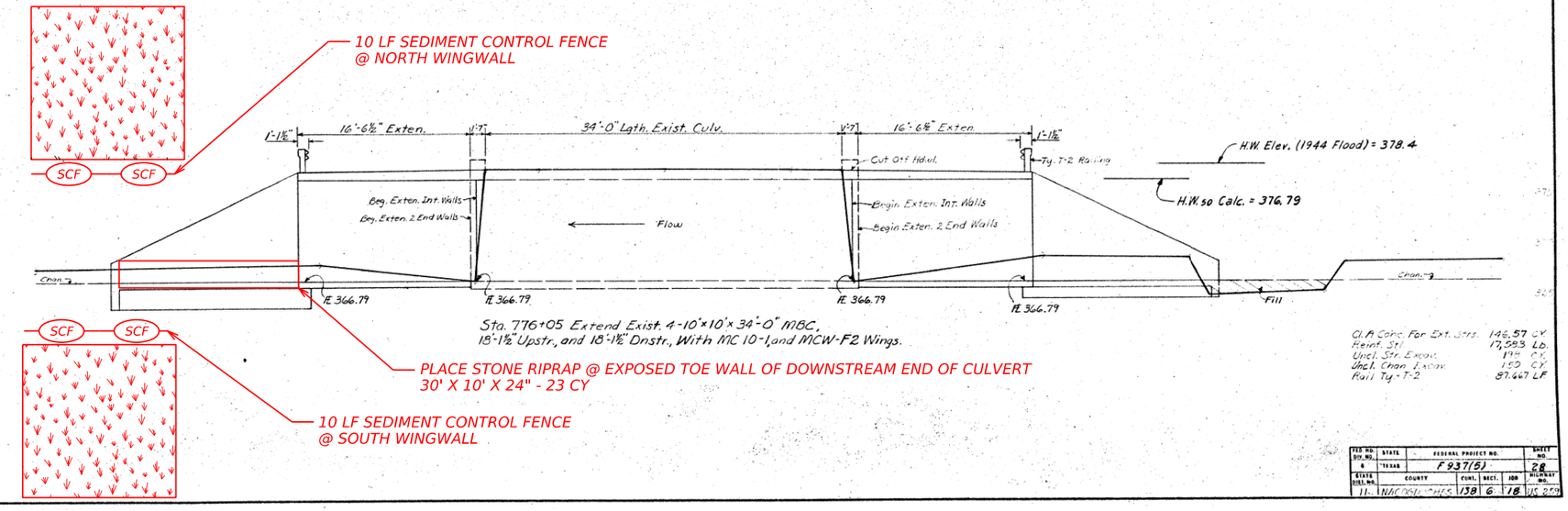


Cl. A Conc. For Ext. Strs.	146.57 CY
Reinf. Stl.	17,293 Lb.
Uncl. Str. Excav.	114 CY.
Uncl. Chan. Excav.	150 CY.
Rail Ty. T-2	87.667 LF

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.				SHEET NO.
6	TEXAS	F 937(5)				28
STATE DIST. NO.	COUNTY		CONT.	SECT.	JOB	HIGHWAY NO.
11	NACOGDOCHES		138	6	78	US 259

LEGEND

SCF — SEDIMENT CONTROL FENCE

BROADCAST SEEDING

N.T.S.

STATE OF TEXAS
MITCHELL L. RANDALL
129397
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
Mitchell L. Randall, P.E.
FF6D8503742F43A...
6/2/2023

Texas Department of Transportation

BRIDGE LAYOUT

SHEET 5 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		34

SITE E - NACOGDOCHES COUNTY
US 259 @ BEECH CREEK
11-174-0-0138-06-041

DATE: 5/30/2023 1:08:09 PM
FILE: pw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/0911001116/4 - Design/Plan Set/7. Bridge/11-174-0-0138-06-041_BRIDGE_LAYOUT

CK | DW | CK | DW

CROSS-SECTION OF TRACK SHOWING LINES. Note: All TS & ____ Wires pass beneath the deck of present Overpass.

CLEAN & SEAL ALL JOINTS - 112 LF

Existing Structure to be widened from 24' Rdwy to 28' Rdwy

0175-08-032

0175-08-024

Class B Concrete Riprap Drain

BCF-41 BRIDGE APPROACH CURB

℄ of Proposed Left Lane

℄ of Present Highway U.S. 59

PROPOSED GRADE LINE

PRESENT GROUND LINE

ORIGINAL GROUND LINE

PRESENT SURFACE OF ROAD

LEFT LANE PROPOSED STRUCTURE

RIGHT LANE EXISTING STRUCTURE RENOVATED

LAYOUT OF T&NO OVERPASSES HIGHWAY U.S.59 NACOGDOCHES COUNTY

N.T.S.

STATE OF TEXAS
MITCHELL L. RANDALL
129397
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
Mitchell L. Randall, P.E.
FF6D8503742F43A...
6/2/2023

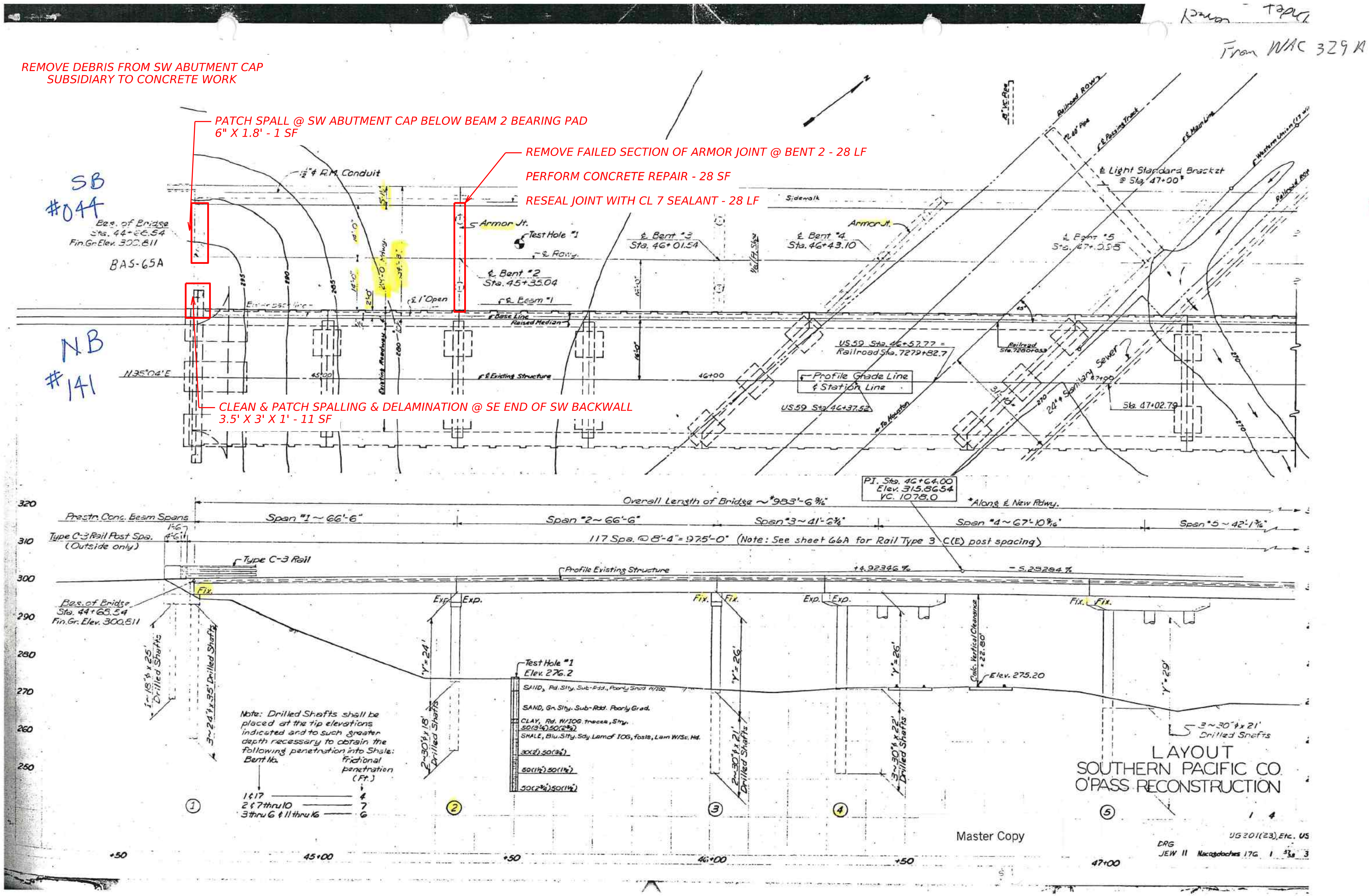
BRIDGE LAYOUT

SHEET 6 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		35

SITE F - NACOGDOCHES COUNTY
US 59 BUS NB @ T&NO RR
11-174-0-0175-08-024

DATE: 5/10/2023 3:17:30 PM
FILE: pw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/09110011616/4 - Design/Plan Set/7. Bridge/11-174-0-0175-08-024_BRIDGE_LAYOUT.dgn



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6/2/2023

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BRIDGE
LAYOUT

SHEET 7 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		36

SITE G - NACOGDOCHES COUNTY
US 59 BUS SB @ SPRR & COX ST
11-174-0-0176-01-044
(SHEET 1 OF 4)

DATE: 5/24/2023 4:07:30 PM
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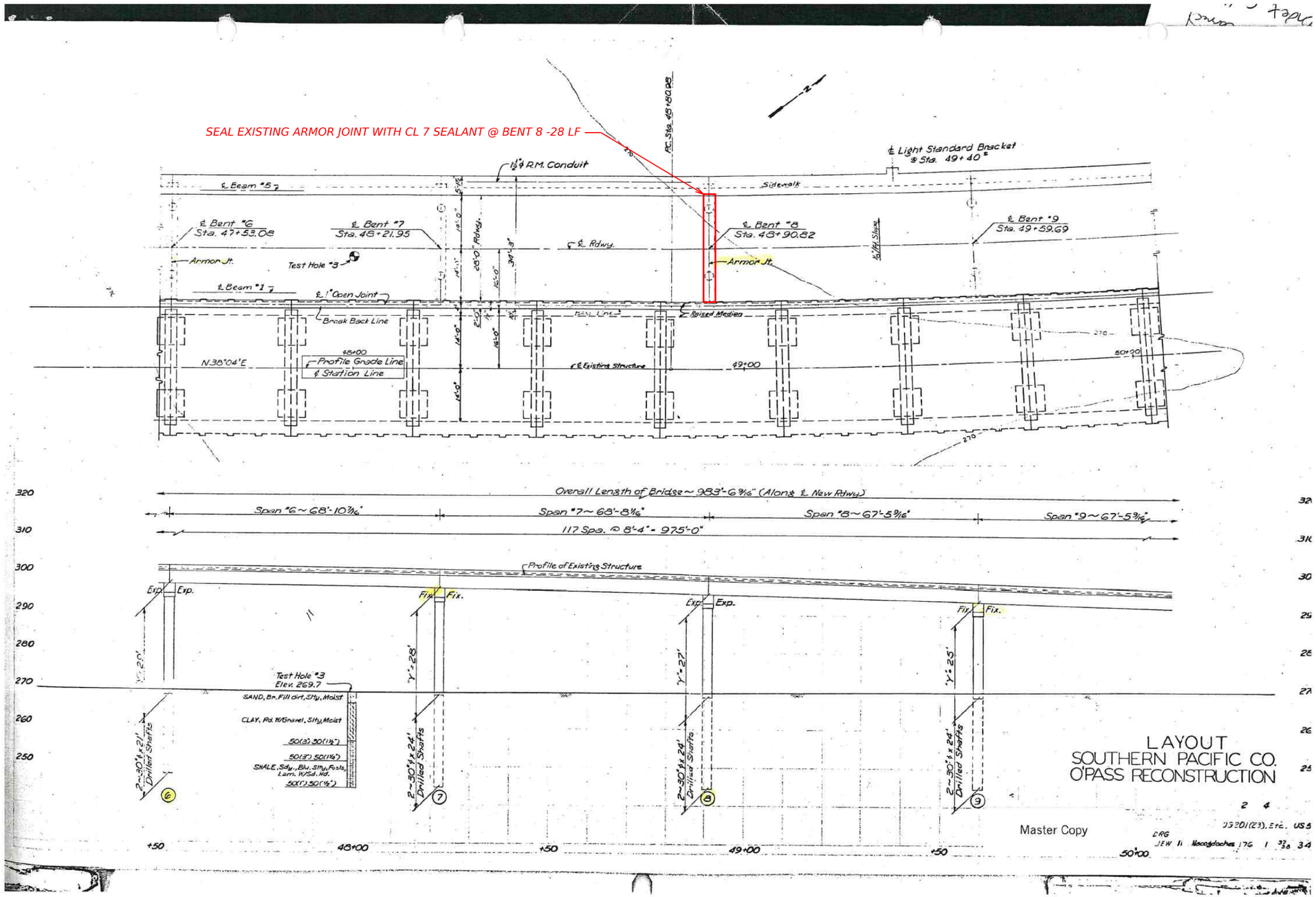
SEAL EXISTING ARMOR JOINT WITH CL 7 SEALANT @ BENT 8 -28 LF



LAYOUT
SOUTHERN PACIFIC CO.
O'PASS RECONSTRUCTION

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6/2/2023

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BRIDGE LAYOUT

SHEET 8 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		37

SITE G - NACOGDOCHES COUNTY
US 59 BUS SB @ SPRR & COX ST
11-174-0176-01-044
(SHEET 2 OF 4)

174-0176-01-044

DATE: 5/24/2023 3:41:40 PM
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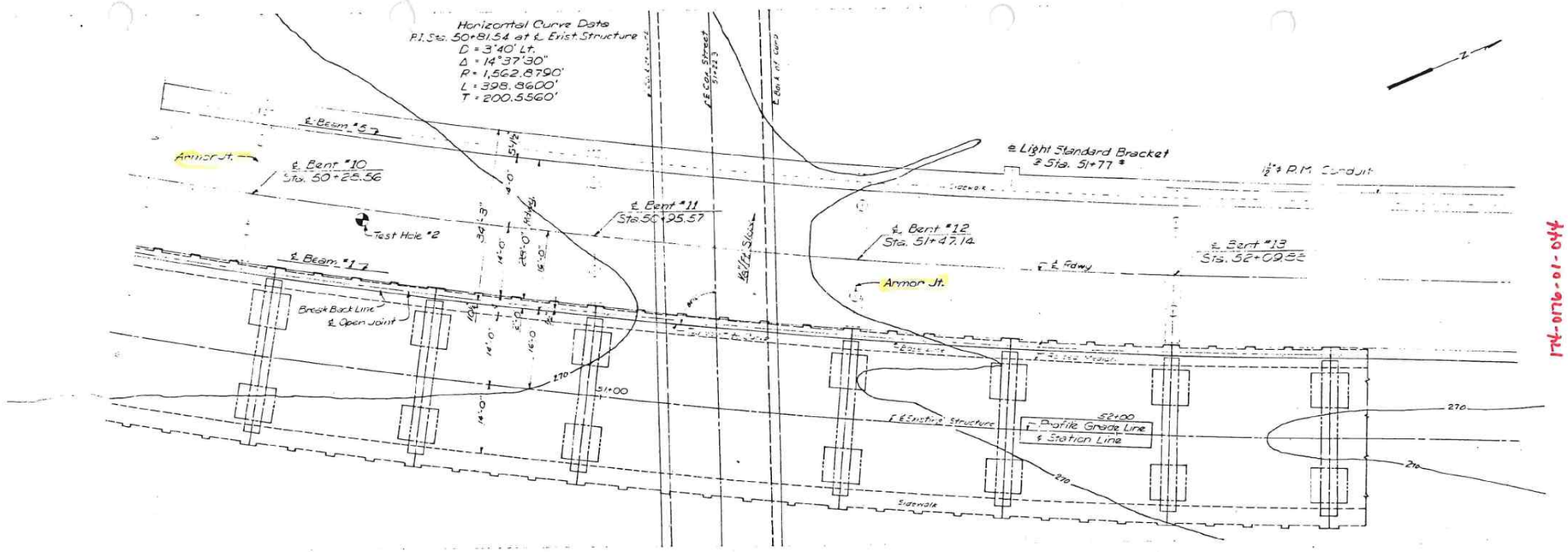

LAYOUT
SOUTHERN PACIFIC CO.
O'PASS RECONSTRUCTIC

3 4

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DRG
JEW 11 Nacogdoches 176

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174-0176-01-044

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BRIDGE
LAYOUT

SITE G - NACOGDOCHES COUNTY
US 59 BUS SB @ SPRR & COX ST
11-174-0-0176-01-044
(SHEET 3 OF 4)

SHEET 9 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		38

DATE: 5/10/2023 3:20:31 PM
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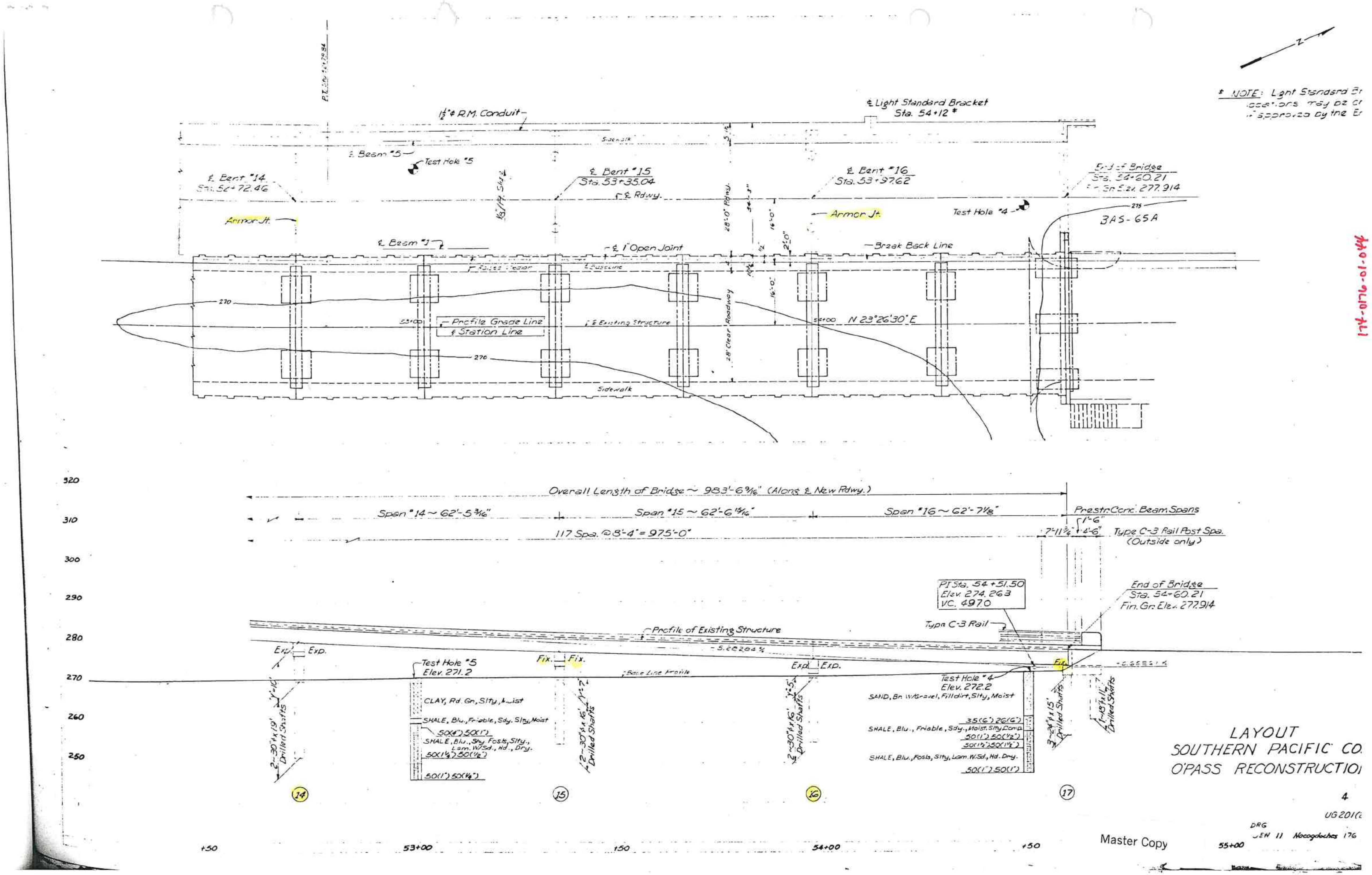

1½" ⌀ R.M. Conduit
℄ Light Standard Bracket Sta. 54+12 *
* NOTE: Light Standard Br locations may be ch if approved by the Er
℄ Beam #5
Test Hole #5
℄ Bent #14 Sta. 52+72.46
℄ Bent #15 Sta. 53+35.04
℄ Bent #16 Sta. 53+97.62
End of Bridge Sta. 54+60.21 Fin. Gr. Elev. 277.914
3AS-65A
Armor Jt.
Test Hole #4
℄ Beam #1
℄ 1" Open Joint
Break Back Line
Profile Grade Line
℄ Station Line
℄ Existing Structure
N 23°26'30" E
Sidewalk
28' Clear Roadway
174-0176-01-044
Overall Length of Bridge ~ 983'-6 9/16" (Along ℄ New Rdwy.)
Span #14 ~ 62'-5 3/16"
Span #15 ~ 62'-6 15/16"
Span #16 ~ 62'-7 1/8"
Prestr. Conc. Beam Spans
117 Spa. @ 8'-4" = 975'-0"
Type C-3 Rail Post Spa. (Outside only)
PI Sta. 54+51.50 Elev. 274.263 VC. 497.0
End of Bridge Sta. 54+60.21 Fin. Gr. Elev. 277.914
Type C-3 Rail
Profile of Existing Structure
Test Hole #5 Elev. 271.2
CLAY, Rd. Gn, Silty, Moist
SHALE, Blu., Friable, Sdy., Slty, Moist
SHALE, Blu., Sdy. Fosls, Silty, Lam. W/Sd., Hd., Dry.
Test Hole #4 Elev. 272.2
SAND, Br. W/Gravel, Filldirt, Silty, Moist
SHALE, Blu., Friable, Sdy., Moist, Slty Comp.
SHALE, Blu., Fosls, Silty, Lam. W.Sd., Hd. Dry.
Exp. Exp.
Fix. Fix.
Drilled Shafts
320
310
300
290
280
270
260
250
14
15
16
17
+50
53+00
+50
54+00
+50
55+00
LAYOUT
SOUTHERN PACIFIC CO.
O'PASS RECONSTRUCTION
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STATE OF TEXAS
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129397
LICENSED PROFESSIONAL ENGINEER

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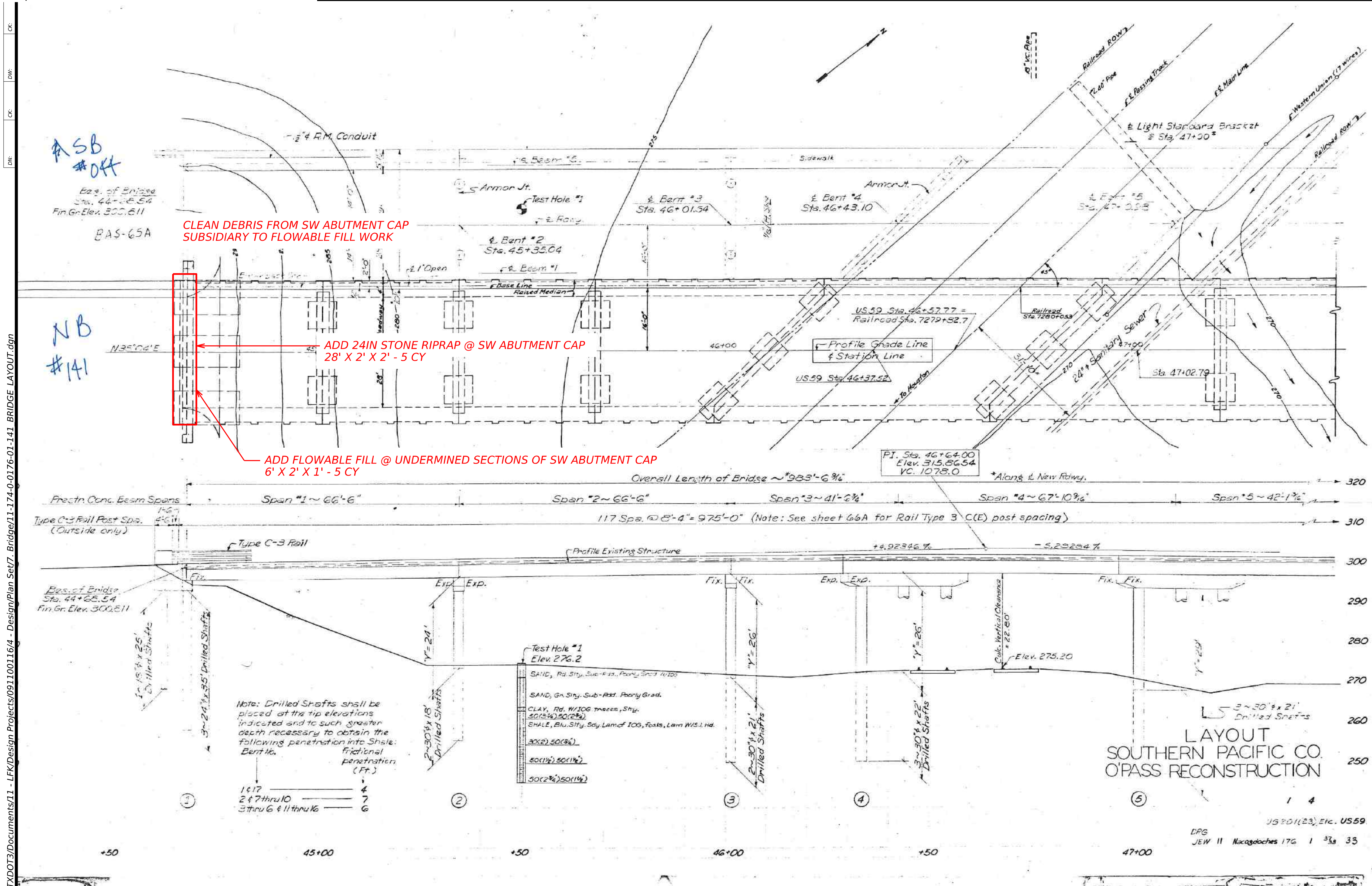
6/2/2023

BRIDGE LAYOUT

SITE G - NACOGDOCHES COUNTY
US 59 BUS SB @ SPRR & COX ST
11-174-0-0176-01-044
(SHEET 4 OF 4)

SHEET 10 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST		COUNTY	SHEET NO.
LFK		ANGELINA	39



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BRIDGE LAYOUT

SHEET 11 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST		COUNTY	SHEET NO.
LFK		ANGELINA	40

SITE H - NACOGDOCHES COUNTY
US 59 BUS NB @ SPRR & COX ST
11-174-0-0176-01-141
(SHEET 1 OF 4)

DATE: 5/10/2023 3:25:19 PM
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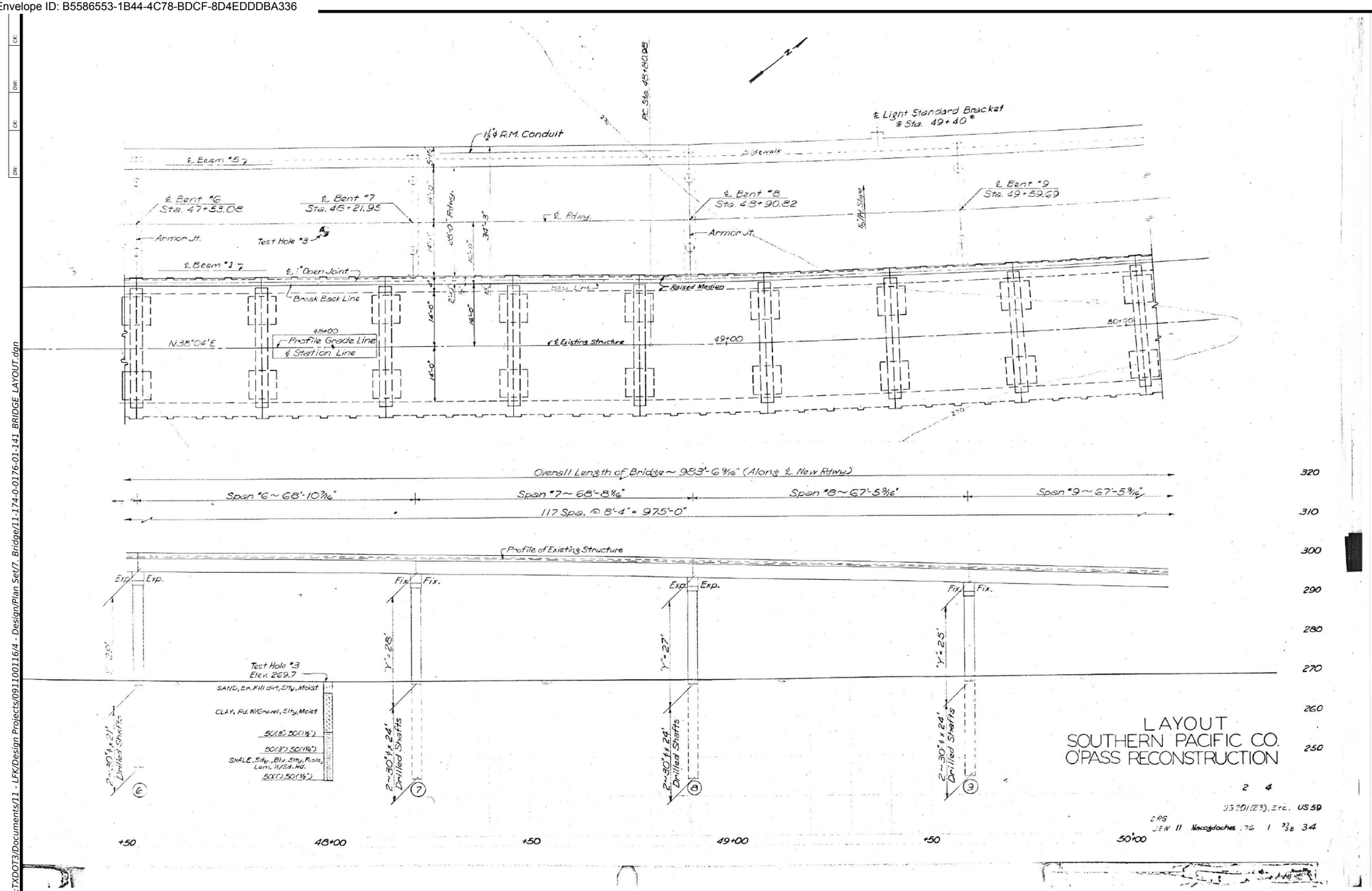

LAYOUT
SOUTHERN PACIFIC CO.
O'PASS RECONSTRUCTION

2 4

US 59(29), Etc. US 59

CRS
JEN 11 Nacogdoches 176 1 3/8 34

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SITE H - NACOGDOCHES COUNTY
US 59 BUS NB @ SPRR & COX ST
11-174-0-0176-01-141
(SHEET 2 OF 4)

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BRIDGE LAYOUT

SHEET 12 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		41

DATE: 5/10/2023 3:25:57 PM
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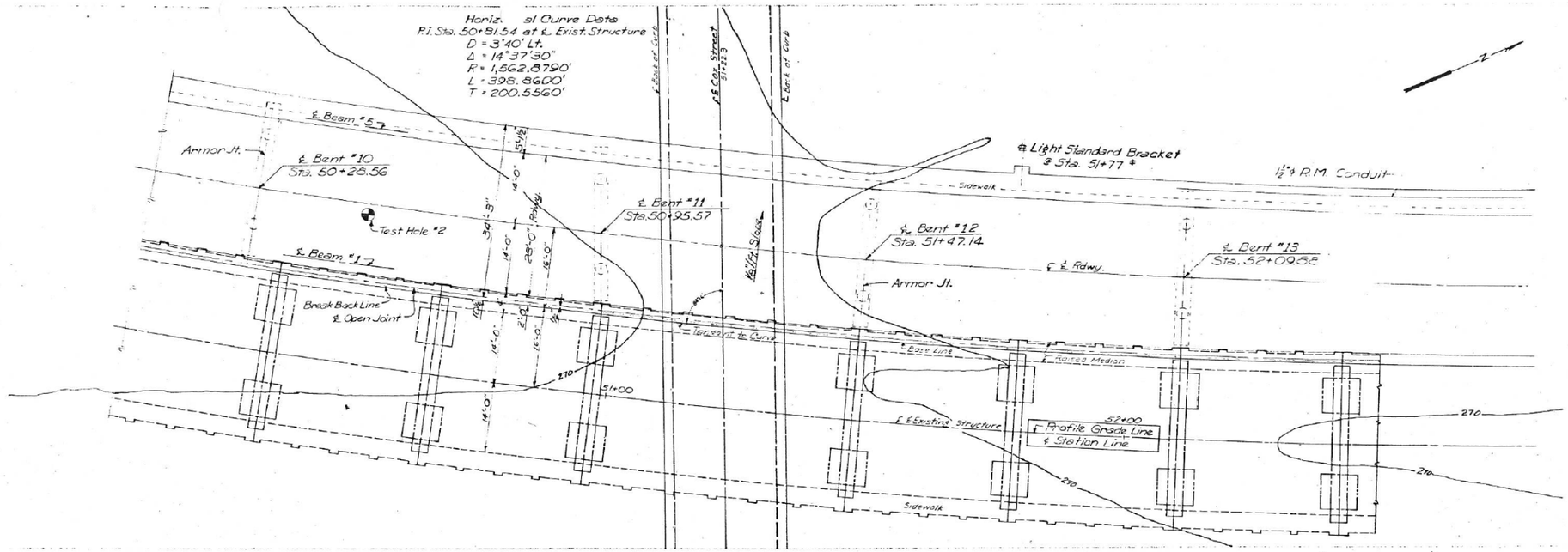

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BRIDGE LAYOUT

SHEET 13 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		42

SITE H - NACOGDOCHES COUNTY
US 59 BUS NB @ SPRR & COX ST
11-174-0-0176-01-141
(SHEET 3 OF 4)

DATE: 5/10/2023 3:26:44 PM
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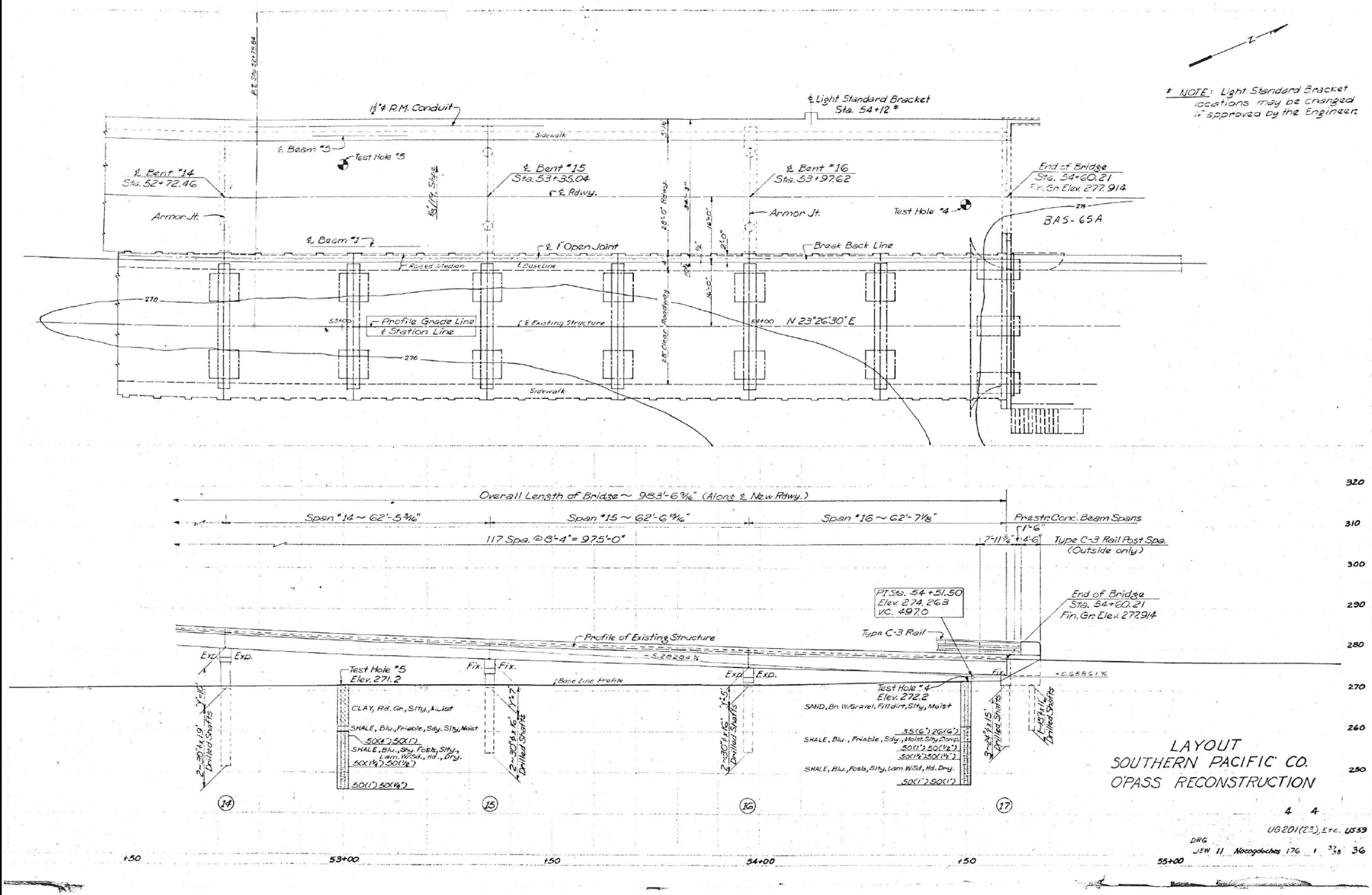

* NOTE: Light Standard Bracket locations may be changed if approved by the Engineer.

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SITE H - NACOGDOCHES COUNTY
US 59 BUS NB @ SPRR & COX ST
11-174-0-0176-01-141
(SHEET 4 OF 4)

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BRIDGE LAYOUT

SHEET 14 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		43

UG 201(23), Etc. 6559

DRG JEW 11 Nacogdoches 176 1 37/38 36

DATE: 5/10/2023 3:27:29 PM
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INSTALL CL B CONC FLUME @ NE BRIDGE CORNER CURB
20'X2'X1' - 1.5CY

INSTALL CL B CONC FLUME @ SE BRIDGE CORNER CURB
20'X2'X1' - 1.5CY

FILL VOID WITH FLOWABLE FILL @ NW CORNER
3' X 1' X 1' - 1 CY

CLEAN & SEAL JOINTS @ N & S ABUTMENTS
68 LF

FILL VOID WITH FLOWABLE FILL @ SE CORNER
1' X 2' X 1' - 1 CY

FILL VOID WITH FLOWABLE FILL @ NE CORNER
8' X 1' X 1' - 3 CY

INSTALL CL B CONC FLUME @ NW BRIDGE CORNER CURB
20'X2'X1' - 1.5CY

INSTALL CL B CONC FLUME @ SW BRIDGE CORNER CURB
20'X2'X1' - 1.5CY

PATCH SPALL @ EAST PAN GIRDER
FOR SPANS 2 & 3 OVER BENT 3
1' X 1' - 1 SF

ESTIMATED QUANTITIES

Drilled Shafts (24in)	336. LF
Cl "C" Conc. (Bent)	26.2 CY
Cl "C" Conc. (Abut)	18.8 CY
Cl "S" Conc. (Pan Gird)	279.6 CY
* Conc. For Str. App. Slabs (CIA)	37.62 CY
** Reinf. Steel	[illegible] LB
Rail (Ty T501)	346. LF
Riprap (Conc) (CIB)	53.36 CY
Conc. Surf. Treatment	604.51
Structural Steel (Armor Joint)	1,376. LB
* MBGF	350. LF
* Term. Anch. Sect.	4. Ea.

* Rdwy. Items
** Subsidiary to Item 421

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BRIDGE LAYOUT

SHEET 15 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		44

SITE I - NACOGDOCHES COUNTY
FM 95 @ TURKEY CREEK
11-174-0-0706-03-020

18

BRIDGE LAYOUT
TURKEY CREEK

BRS D-50 (4) FM95

Rev. 01-06-87

DATE: 5/10/2023 3:31:13 PM
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CLEAN & PATCH DELAMINATIONS ALONG E FACE @ BENT 3 - 14 SF

CLEAN & PATCH DELAMINATIONS ALONG E FACE @ BENT 4 - 18 SF

CLEAN & SEAL ALL JOINTS - 168 LF

CLEAN & PATCH DELAMINATIONS ALONG ENTIRE LENGTH OF W FACE @ BENT 2 - 46 SF

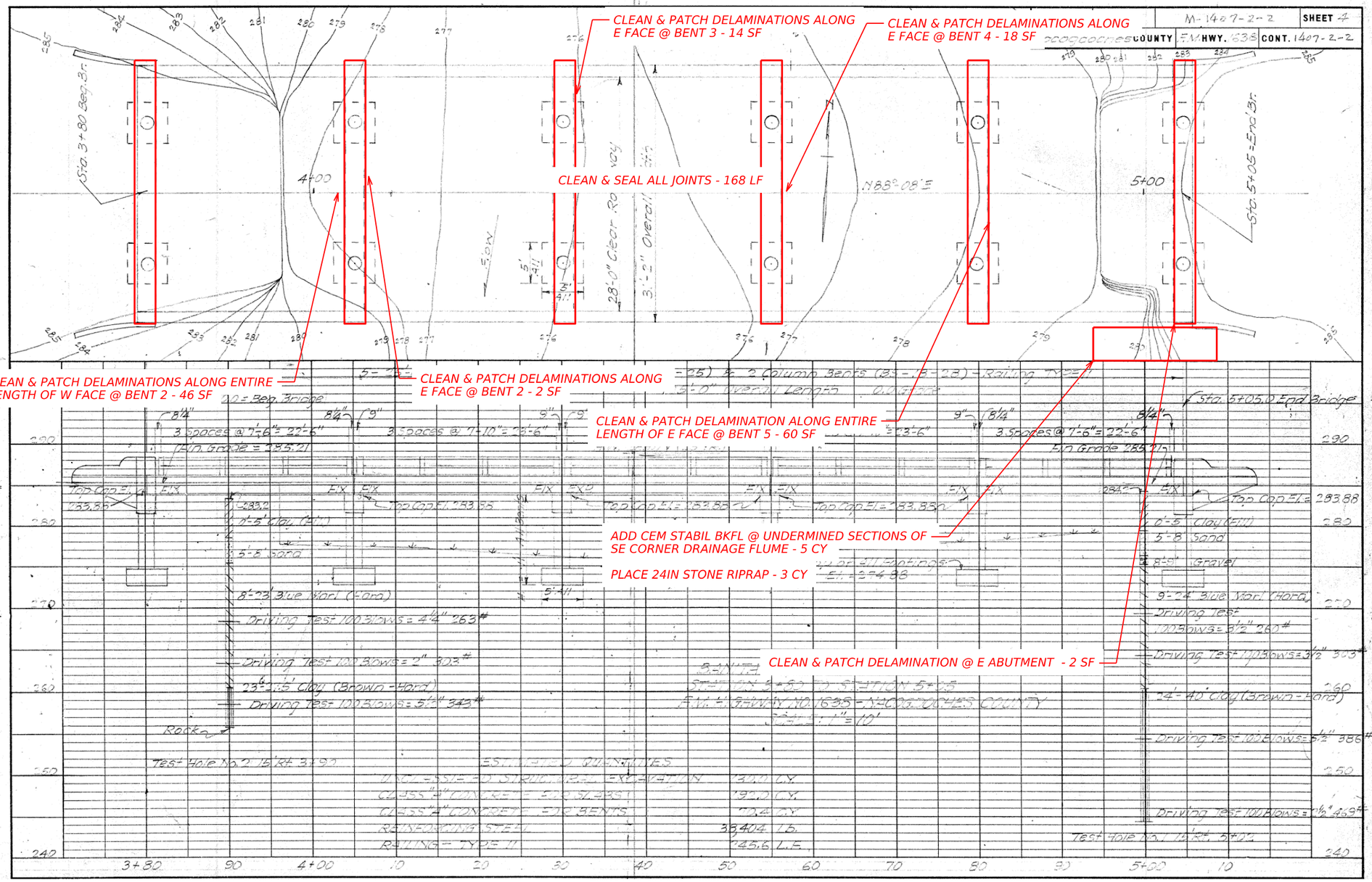
CLEAN & PATCH DELAMINATIONS ALONG E FACE @ BENT 2 - 2 SF

CLEAN & PATCH DELAMINATION ALONG ENTIRE LENGTH OF E FACE @ BENT 5 - 60 SF

ADD CEM STABIL BKFL @ UNDERMINED SECTIONS OF SE CORNER DRAINAGE FLUME - 5 CY

PLACE 24IN STONE RIPRAP - 3 CY

CLEAN & PATCH DELAMINATION @ E ABUTMENT - 2 SF



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BRIDGE LAYOUT

SHEET 16 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		45

SITE J - NACOGDOCHES COUNTY
FM 1638 @ BANITA CREEK
11-174-0-1407-02-001

DATE: 5/10/2023 3:32:45 PM
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10 LF SEDIMENT CONTROL FENCE

PATCH SPALL @ N END OF BENT 5 - 1SF

CLEAN & PATCH DELAMINATION @ W FACE OF N END OF BENT 2 - 3SF

PLACE GABION BASKETS @ BENT 6
40' X 6' X 3' - 30 CY

BACKFILL WITH EMBANKMENT
25' X 6' X 5' - 20 CY

PATCH SPALL @ N END OF WEST ABUTMENT - 3SF

PATCH SPALL @ S END OF WEST ABUTMENT - 1SF

CLEAN & PATCH DELAMINATION @ W FACE OF BENT 5 - 15SF

CLEAN & PATCH DELAMINATION @ EAST FACE OF BENT 8 - 4 SF

10 LF SEDIMENT CONTROL FENCE

SEE GABION DETAIL

LEGEND
SCF — SEDIMENT CONTROL FENCE
BROADCAST SEEDING

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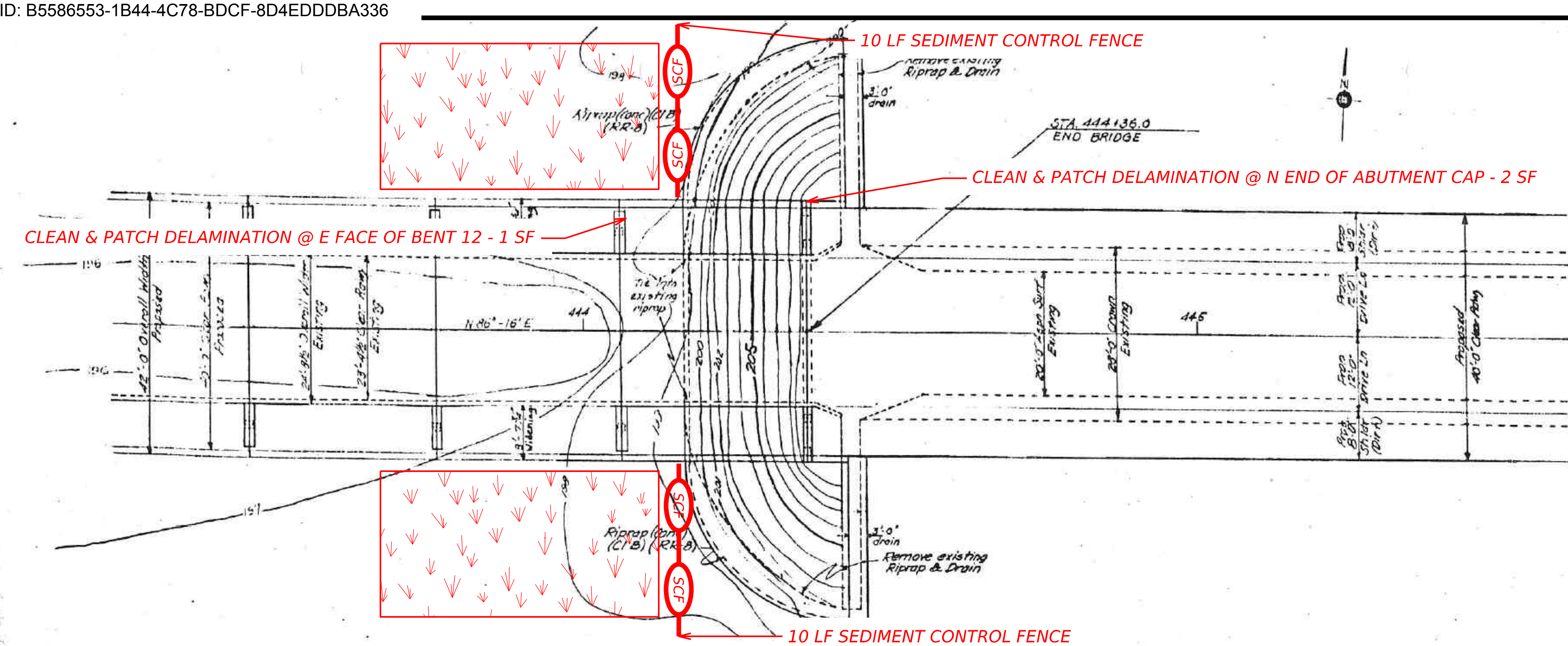
BRIDGE LAYOUT

SHEET 17 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		46

SITE K - NACOGDOCHES
FM 2259 @ CARRIZO CREEK
11-174-0-2116-01-001
(SHEET 1 OF 2)

DATE: 5/30/2023 1:16:19 PM
FILE: pw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/091100116/4 - Design/Plan Set/7. Bridge/11-174-0-2116-01-001 BRIDGE LAYOUT.dgn



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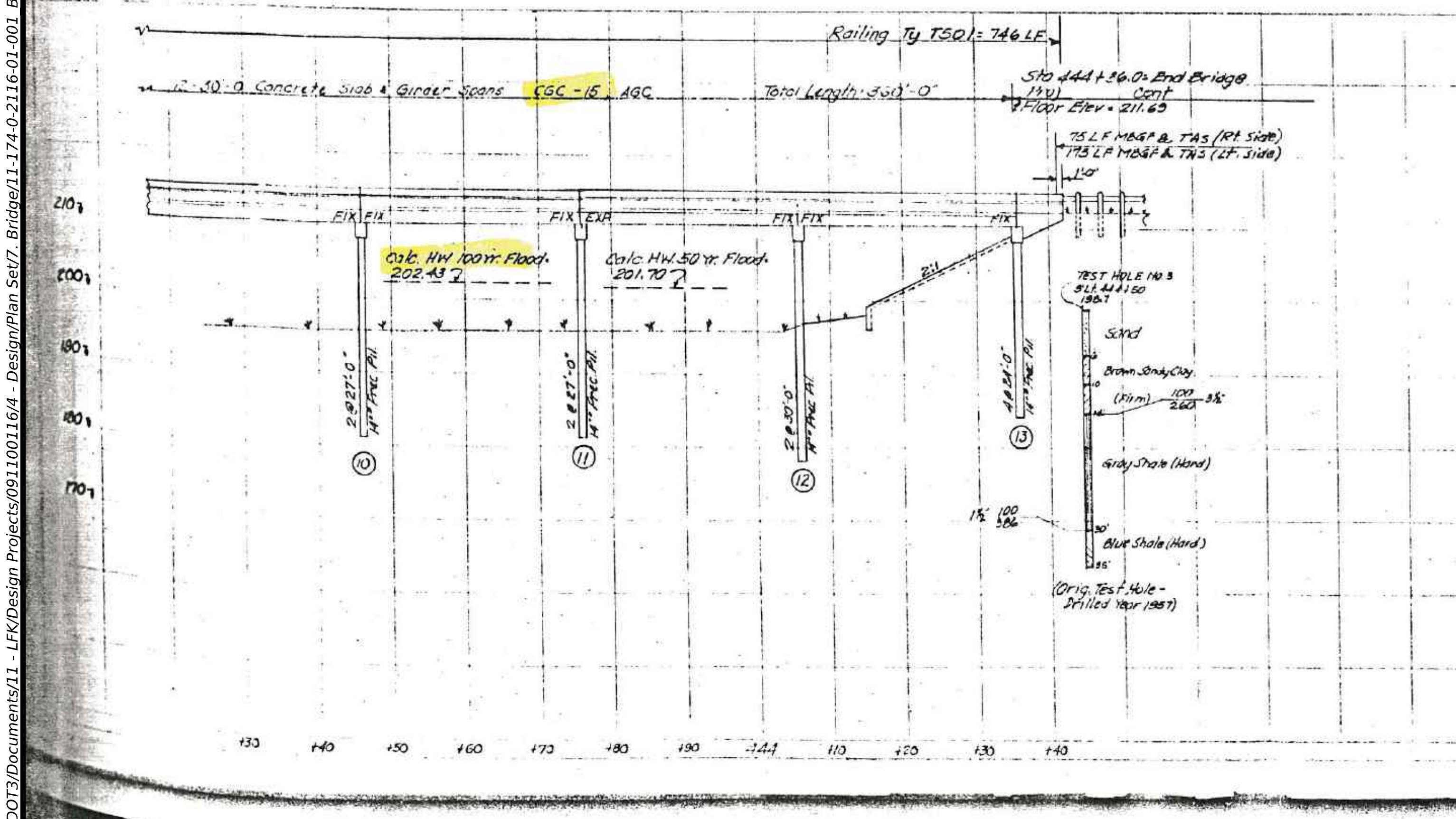

ESTIMATED QUANTITIES

Item *	Description	Quant.	Unit
104	Rem Old Conc (Riprp)	338.	SY
409	Conc Pil - 14"° Prec	838.	LF
428	Conc Surf Treat.	578.	SY
430	C1S Conc Ext Str (Pavmt)	235.2	CY
430	C1C Conc Ext Str (Bent)	18.7	CY
430	C1C Conc Ext Str (Abut)	6.8	CY
432	Riprap (Conc)(Cl B)	72.64	CY
440	Reinf. Steel	64,070	LB
450	Rail (TY T501)	746.0	LF

* Rdwy. Item

PERMANENT STRUCTURE No. 1

BRIDGE LAYOUT
BAYOU CARRIZO BRIDGE
WIDENING

LEGEND

SCF — SEDIMENT CONTROL FENCE

BROADCAST SEEDING

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MITCHELL L. RANDALL
129397
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6/2/2023

SEE GABION DETAIL

BRIDGE
LAYOUT

SITE K - NACOGDOCHES
FM 2259 @ CARRIZO CREEK
11-174-0-2116-01-001
(SHEET 2 OF 2)

SHEET 18 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST		COUNTY	SHEET NO.
LFK		ANGELINA	47

DATE: 5/30/2023 1:16:54 PM
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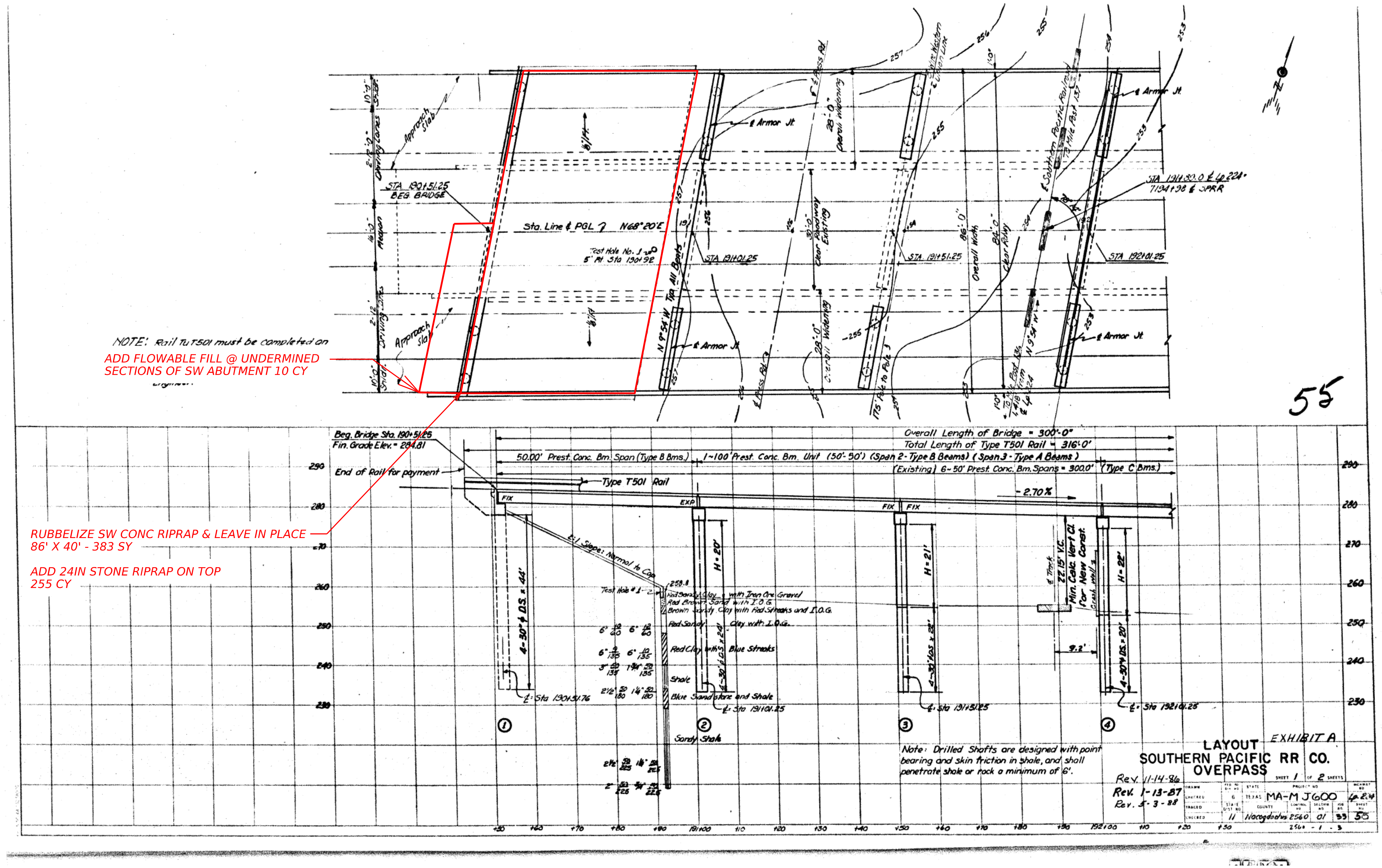

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STATE OF TEXAS
MITCHELL L. RANDALL
129397
LICENSED PROFESSIONAL ENGINEER

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Mitchell L. Randall, P.E.
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6/2/2023

BRIDGE LAYOUT

SITE L - NACOGDOCHES COUNTY
LP 224 @ SPRR & DRAW & PRESS RD
11-174-0-2560-01-001
(SHEET 1 OF 2)

SHEET 19 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		48

DATE: 6/1/2023 10:40:48 AM
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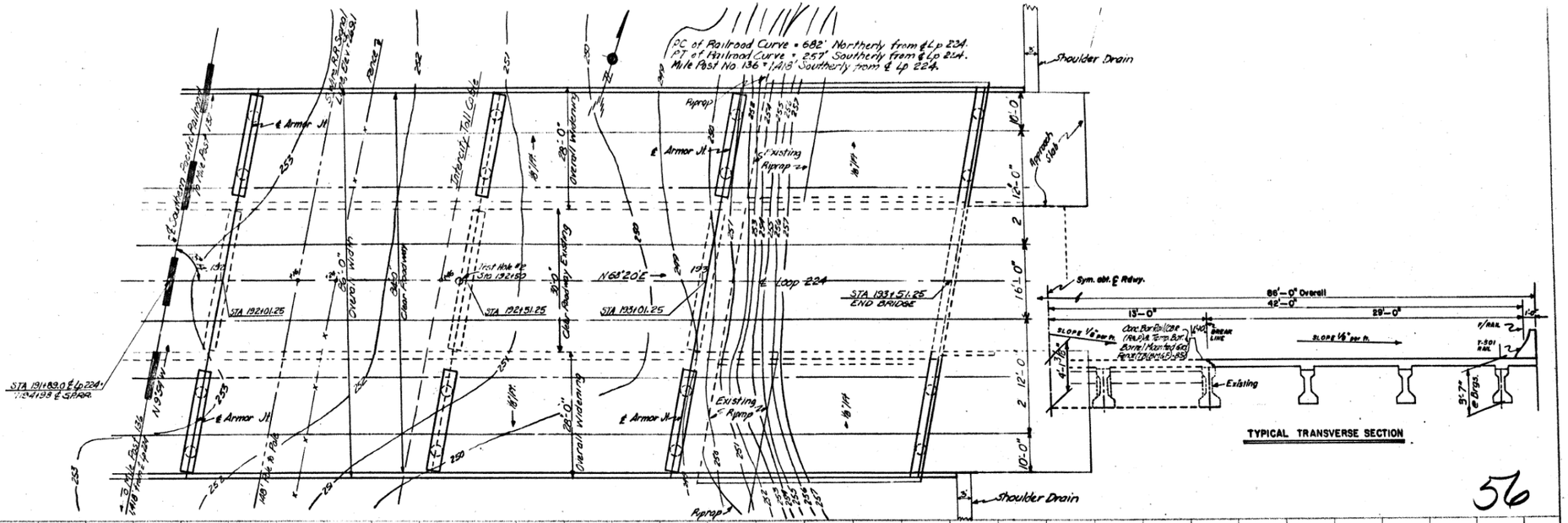

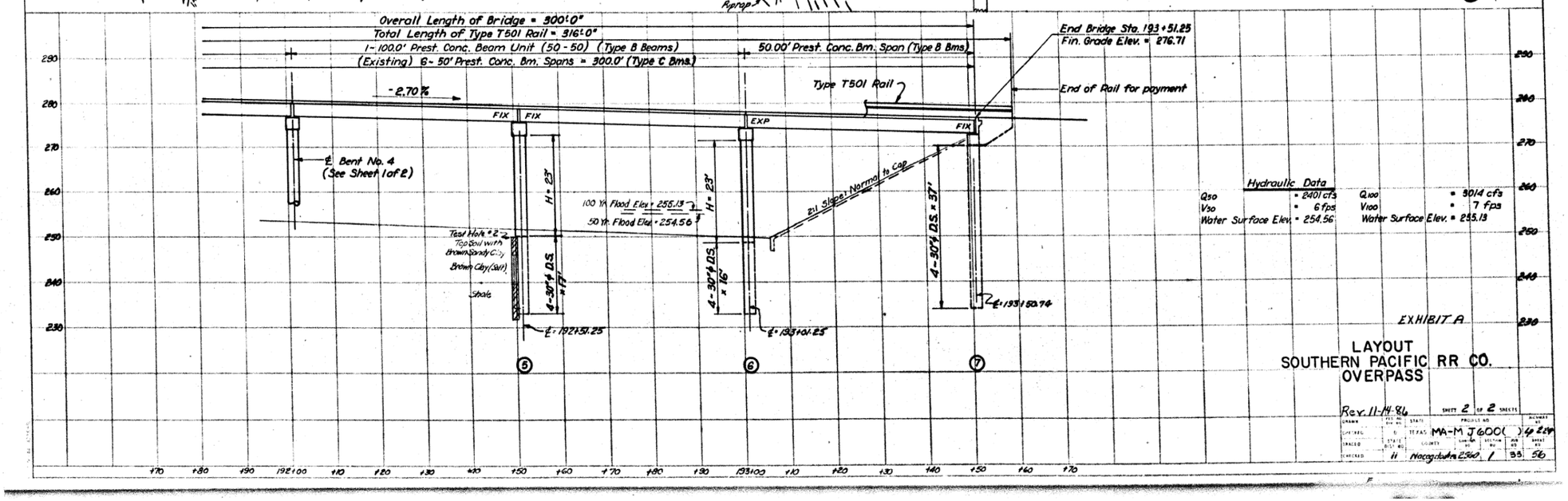

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6/2/2023

Texas Department of Transportation

BRIDGE LAYOUT

SHEET 20 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		49

SITE L - NACOGDOCHES COUNTY
LP 224 @ SPRR & DRAW & PRESS RD
11-174-0-2560-01-001
(SHEET 2 OF 2)

DATE: 5/10/2023 3:37:36 PM
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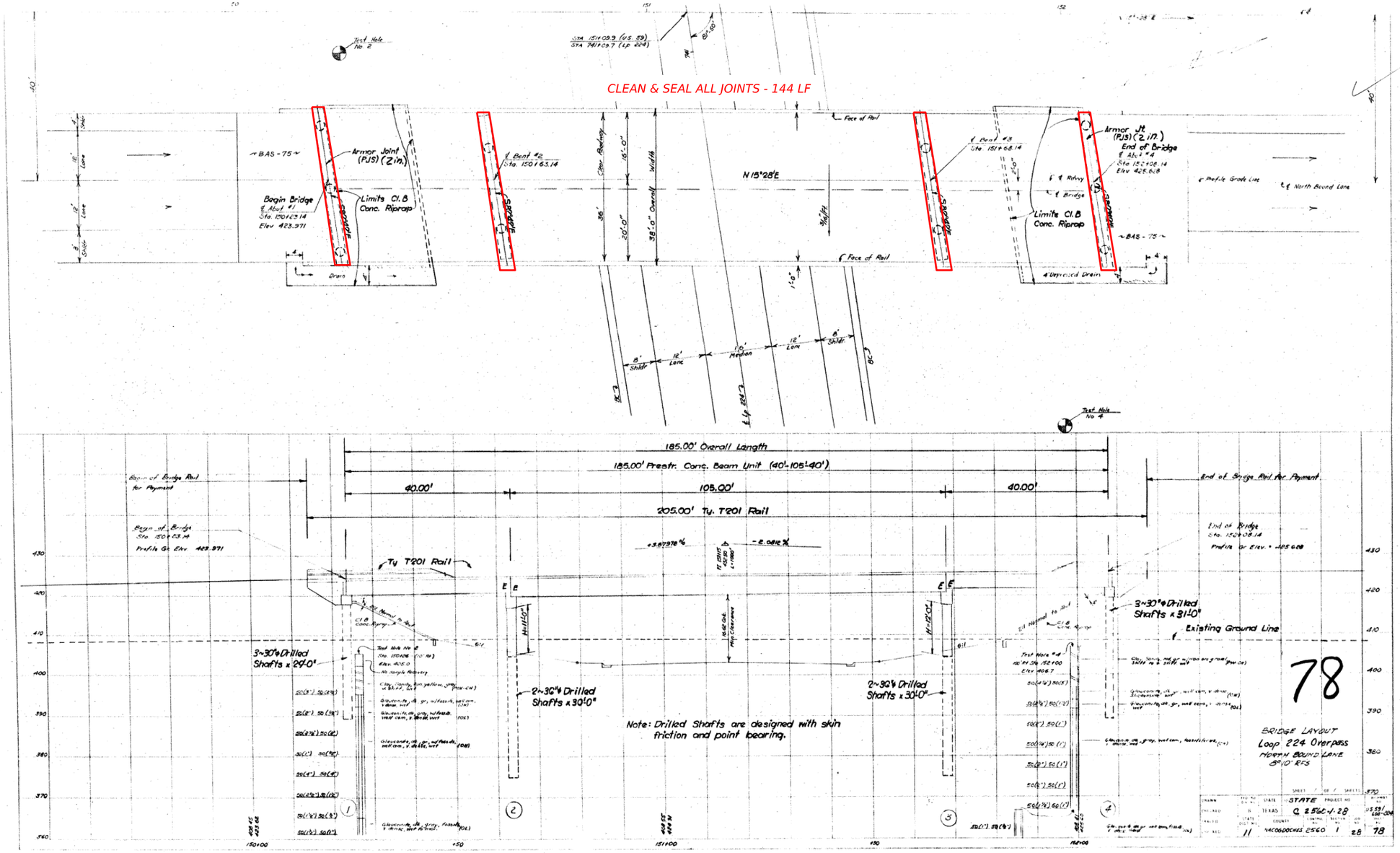

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129397
LICENSED PROFESSIONAL ENGINEER

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Texas Department of Transportation

BRIDGE LAYOUT

SHEET 21 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		50

SITE M - NACOGDOCHES COUNTY
US 59 NB @ LP 224
11-174-0-2560-01-021

DATE: 5/10/2023 3:08:12 PM
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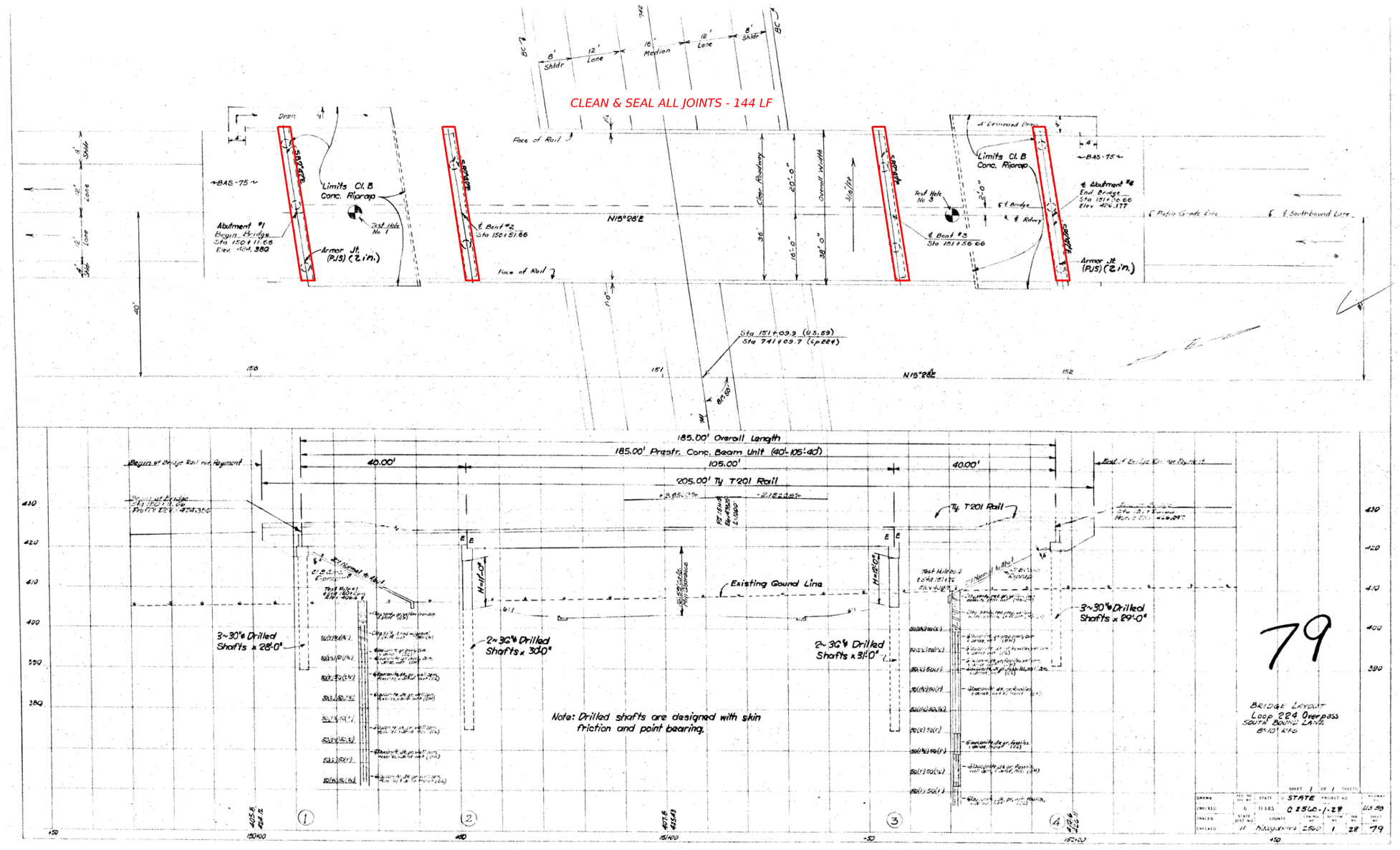

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BRIDGE LAYOUT

SHEET 22 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		51

SITE N - NACOGDOCHES
US 59 SB @ LP 224
11-174-0-2560-01-022

DATE: 5/11/2023 8:47:53 AM
FILE: pw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/091100116/4 - Design/Plan Set/7. Bridge/11-174-0-2560-01-022_BRIDGE_LAYOUT.dgn

CLEAN & SEAL ALL JOINTS - 240 LF

DESIGN LOAD
Abut. Bents - 42 Tons per shaft

DESIGN LOAD
Interior Bents - 62 Tons per shaft.

DESIGN LOAD
Abut Bents - 42 Tons per shaft.

ESTIMATED QUANTITIES

ITEM	BRIDGE QUANTITY	BRIDGE UNIT	ROADWAY QUANTITY	ROADWAY UNIT
Uncl Str Excav (Br)	36.9	C.Y.	-	-
Drill Shaft (24")	384	L.F.	-	-
Bell Exc	7.4	C.Y.	-	-
Cl C Conc (Abutment Bents)	22.6	C.Y.	-	-
Cl C Conc (Interior Bents)	39.2	C.Y.	-	-
Cl C Conc (Pan Gird)	242.4	C.Y.	-	-
Reinf Stl	59750	Lb.	-	-
Rail (Ty T1)	262.5	L.F.	-	-
Riprap (Conc)(Cl B)	84.5	C.Y.	-	-
Cl A Conc (BAS-69 MOD)(Appr Slab)	-	-	53.19	C.Y.
Reinf Stl (BAS-69 MOD)(Appr Slab)	-	-	5,554*	Lb.*
Conc Surf Treat	GTT	S.Y.		

* Non-Pay Steel - For Contractor's Information Only.

LA NANA CREEK BRIDGE LAYOUT
Sta. 622+39.33 - Sta. 623+60.66
LOOP 224
NACOGDOCHES COUNTY
SCALE: 1"=10' Vert. & 1"=10' Horiz.

52

C 2560-2-3 Loop 224
11 NACOGDOCHES 2560 2 3 52

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BRIDGE LAYOUT

SHEET 23 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		52

SITE O - NACOGDOCHES COUNTY
LP 224 @ LA NANA CREEK
11-174-0-2560-02-013

DATE: 5/11/2023 8:50:43 AM
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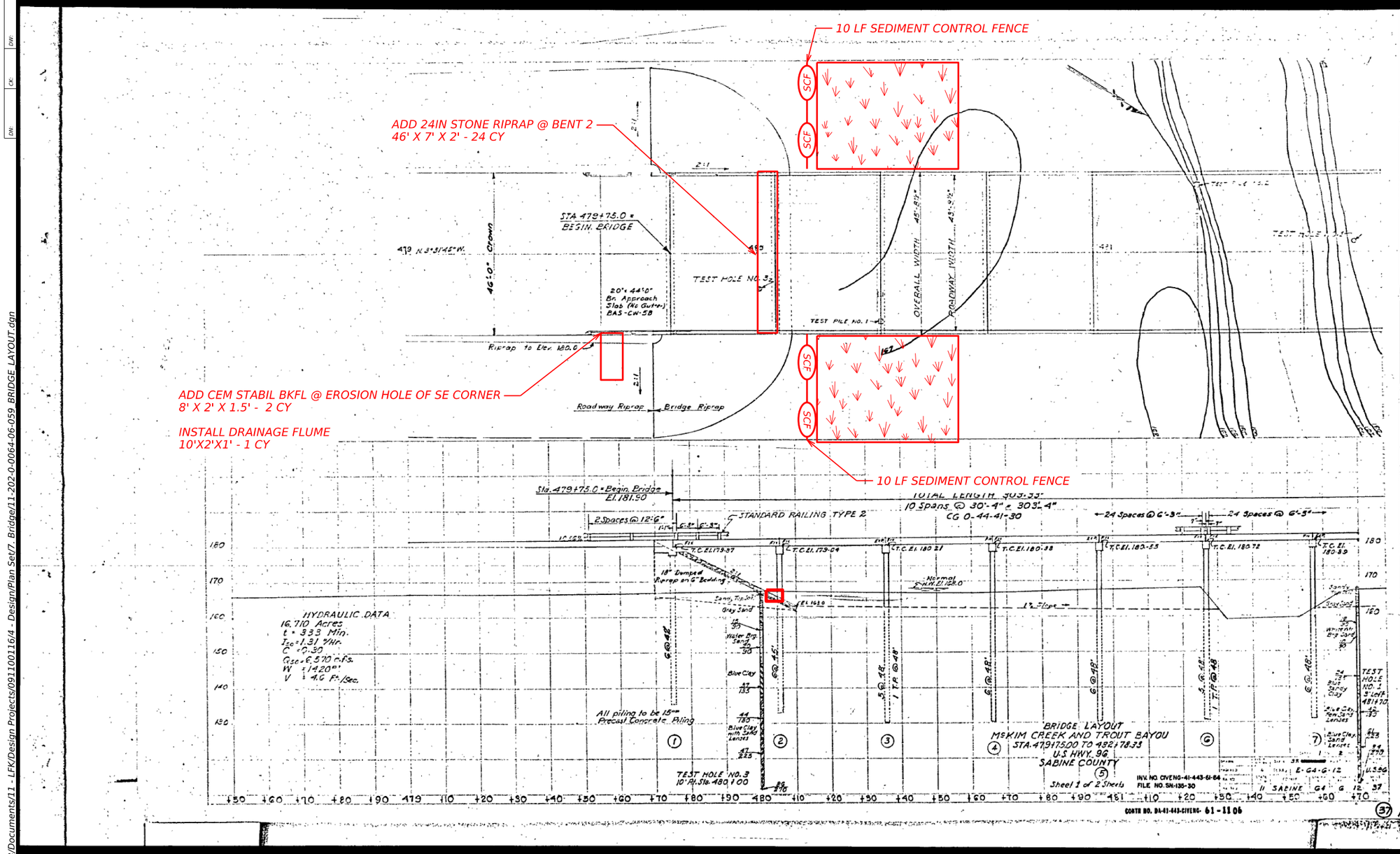

LEGEND

SCF — SEDIMENT CONTROL FENCE

BROADCAST SEEDING

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BRIDGE LAYOUT

SHEET 24 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		53

SITE P - SABINE COUNTY
US 96 @ MCKIM CREEK
11-202-0-0064-06-059
(SHEET 1 OF 2)

DATE: 5/30/2023 1:40:27 PM
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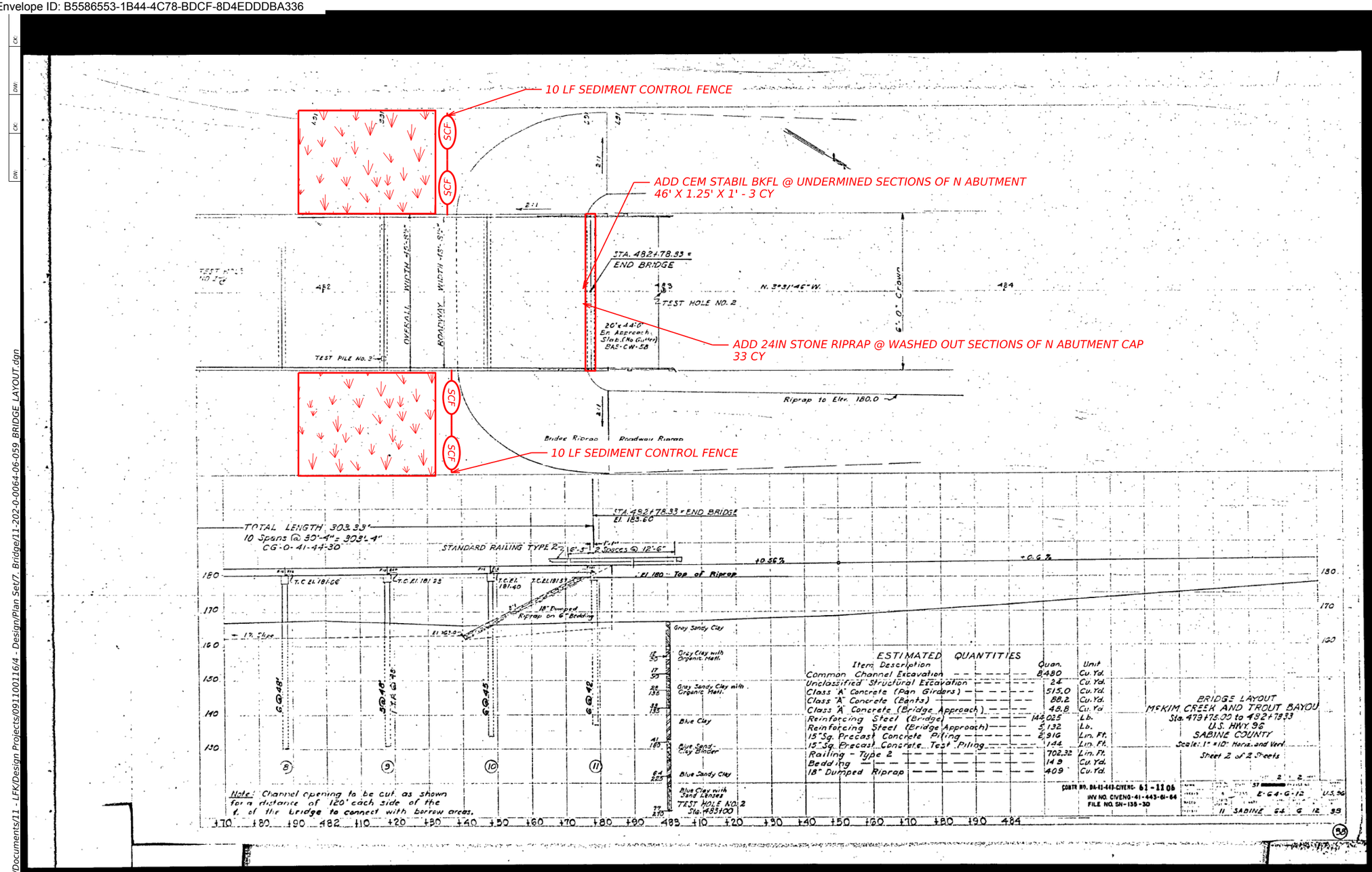

ESTIMATED QUANTITIES

Item	Description	Quan.	Unit
Common	Channel Excavation	8,480	Cu. Yd.
Unclassified	Structural Excavation	24	Cu. Yd.
Class 'A'	Concrete (Pan Girders)	515.0	Cu. Yd.
Class 'A'	Concrete (Bents)	88.2	Cu. Yd.
Class 'A'	Concrete (Bridge Approach)	48.8	Cu. Yd.
Reinforcing	Steel (Bridge)	142,025	Lb.
Reinforcing	Steel (Bridge Approach)	5,132	Lb.
15" Sq. Precast	Concrete Piling	2,916	Lin. Ft.
15" Sq. Precast	Concrete Test Piling	144	Lin. Ft.
Railing -	Type 2	702.32	Lin. Ft.
Bedding		14.9	Cu. Yd.
18" Dumped	Riprap	409	Cu. Yd.

CONTR NO. 04-13-443-CIVENG- 61-1106
HWY NO. CIVENG-41-443-61-64
FILE NO. SN-135-30

BRIDGE LAYOUT
McKIM CREEK AND TROUT BAYOU
Sta. 473+75.00 to 482+78.33
U.S. HWY. 96
SABINE COUNTY
Scale: 1" = 10' Horiz. and Vert.
Sheet 2 of 2 Sheets

E-G4-G-12 U.S. 96
11 SABINE 54 G 12 99

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BRIDGE LAYOUT

SHEET 25 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		54

SITE P - SABINE COUNTY
US 96 @ MCKIM CREEK
11-202-0-0064-06-059
(SHEET 2 OF 2)

DATE: 5/30/2023 1:41:22 PM
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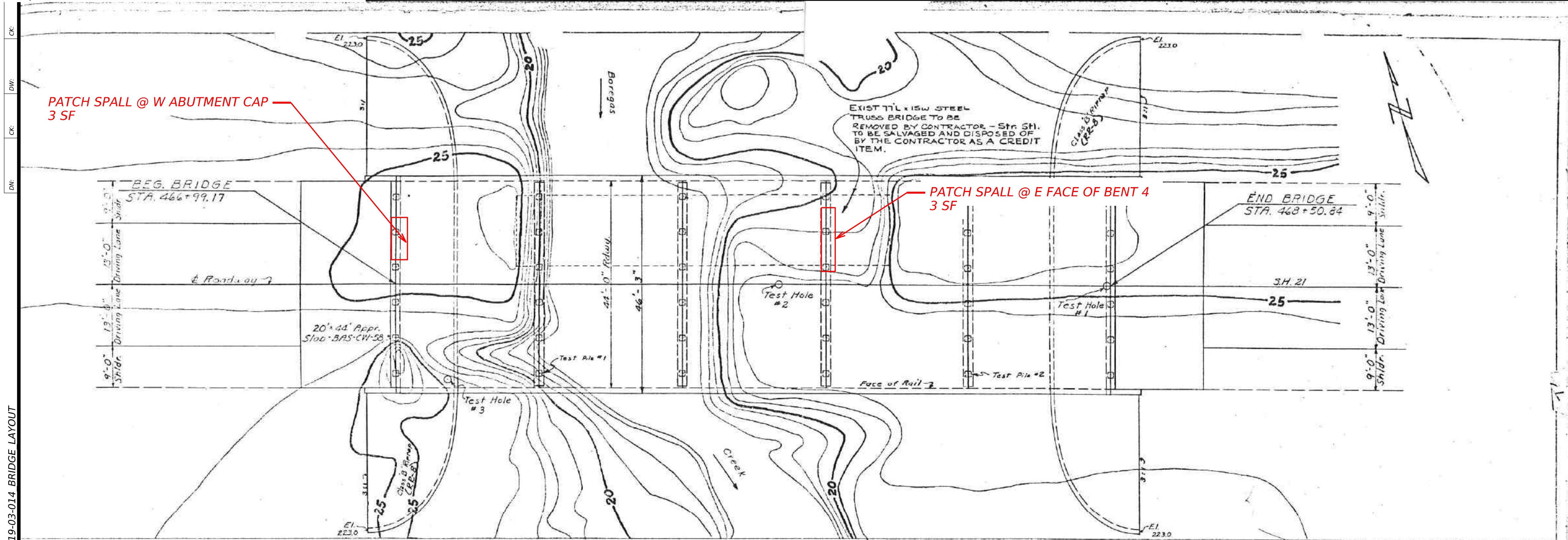

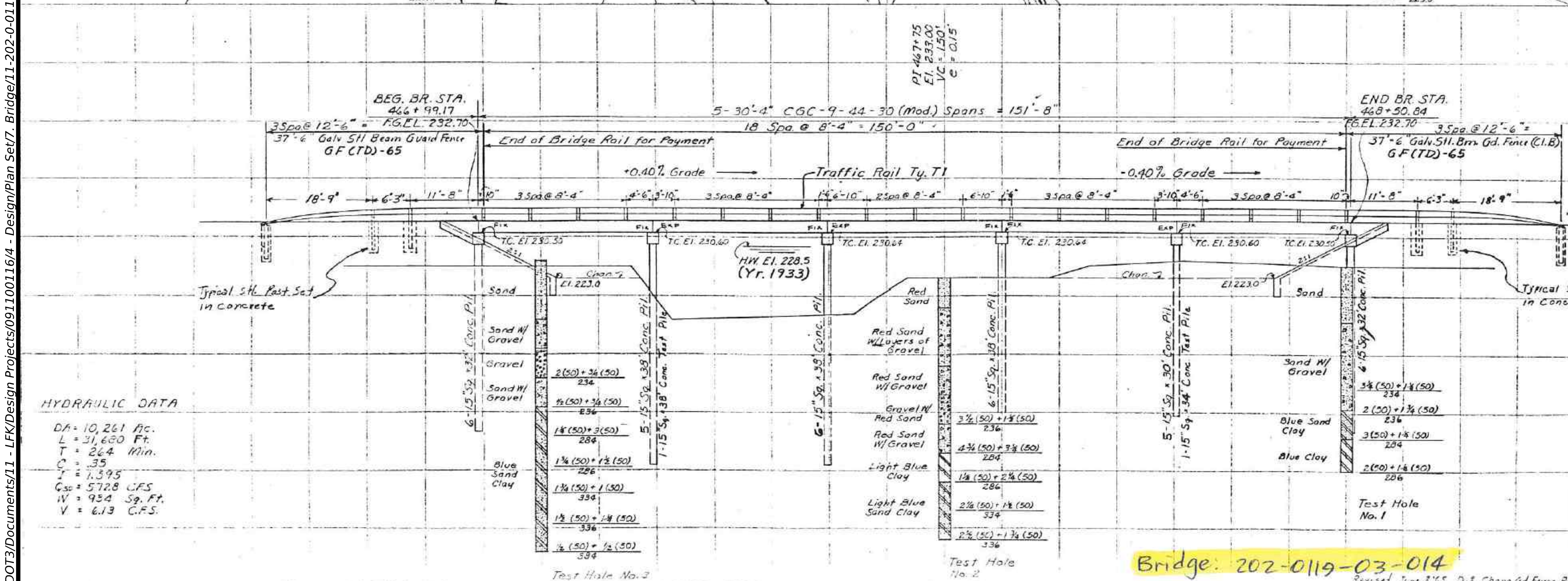

QUANTITIES

DESCRIPTION	UNIT	ESTIMATE	FINAL
Com Chan Excav (Ord Comp)	CY.	380	
Uncl Str Excav (Br)	CY	28	
Conc Pil (15 In Sq)	LF	1180	
Cl A Conc (Bents)	CY	44.8	
Cl A Conc (Pan Gird)	CY	265.5	
Riprap (Conc)(Cl B)	CY	76.0	
Reinf Stl	Lb	53,644	
Traffic Rail Ty T1	LF	300.0	
Conc Test Pil (15 In Sq)	LF	72.	
Galv Stl Bm Gd Fence (Cl B)	LF	150.0	

APPROACH SLAB

Cl A Conc. (Appr. Slab)	C.Y.	48.0	
Reinf. Stl.	Lb.	5134	

BOREGAS CREEK BRIDGE
STA. 466+99.17 TO 468+50.84
5 SPANS CGC-9-44-30(MOD)

#014

Bridge: 202-0119-03-014

Revised June 8 '65 D.R. Chang Gd Fence Post spacing.

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BRIDGE LAYOUT

SHEET 26 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST		COUNTY	SHEET NO.
LFK		ANGELINA	55

SITE Q - SABINE COUNTY
SH 21 @ BOREGAS CREEK
11-202-0-0119-03-014

DATE: 5/11/2023 9:20:10 AM
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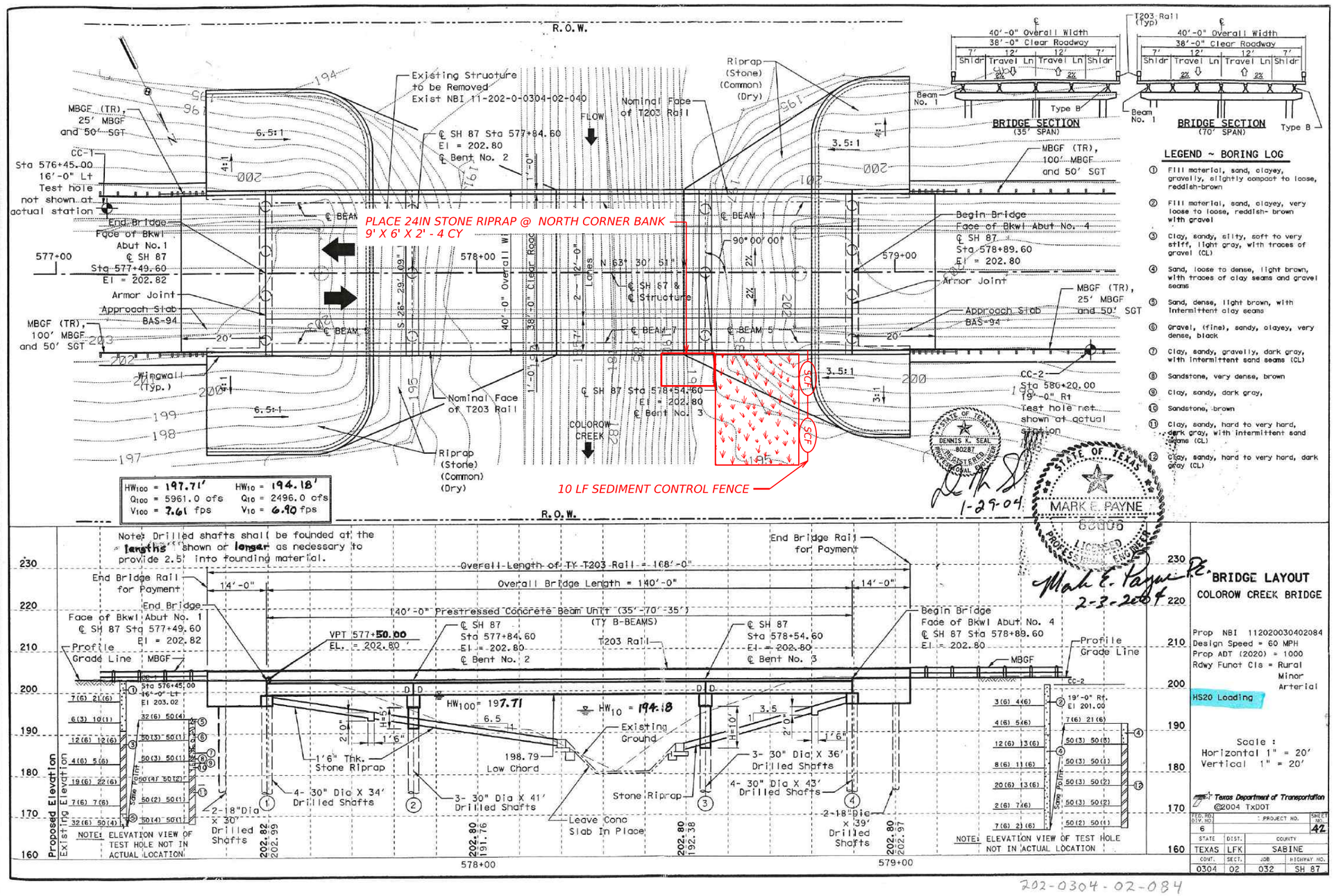

202-0304-02-084

LEGEND
SCF — SEDIMENT CONTROL FENCE
BROADCAST SEEDING

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BRIDGE LAYOUT

SHEET 27 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		56

SITE R - SABINE COUNTY
SH 87 @ COLOROW CREEK
11-202-0-0304-02-084

DATE: 5/30/2023 1:49:01 PM
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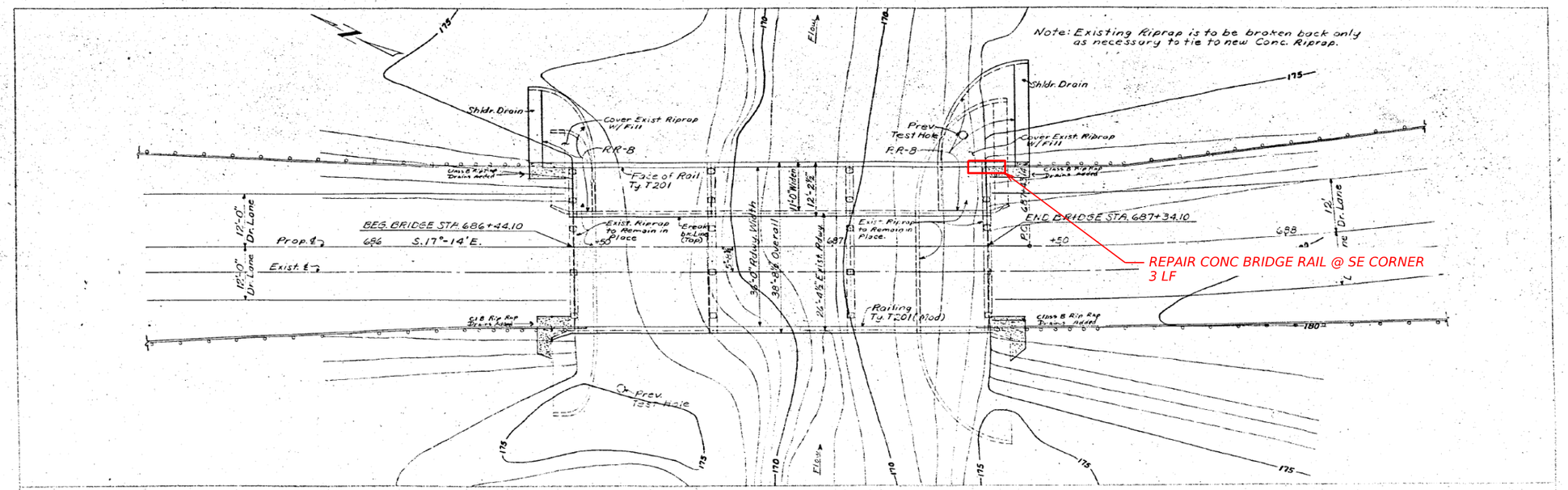

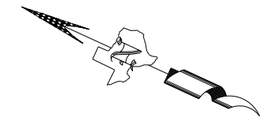

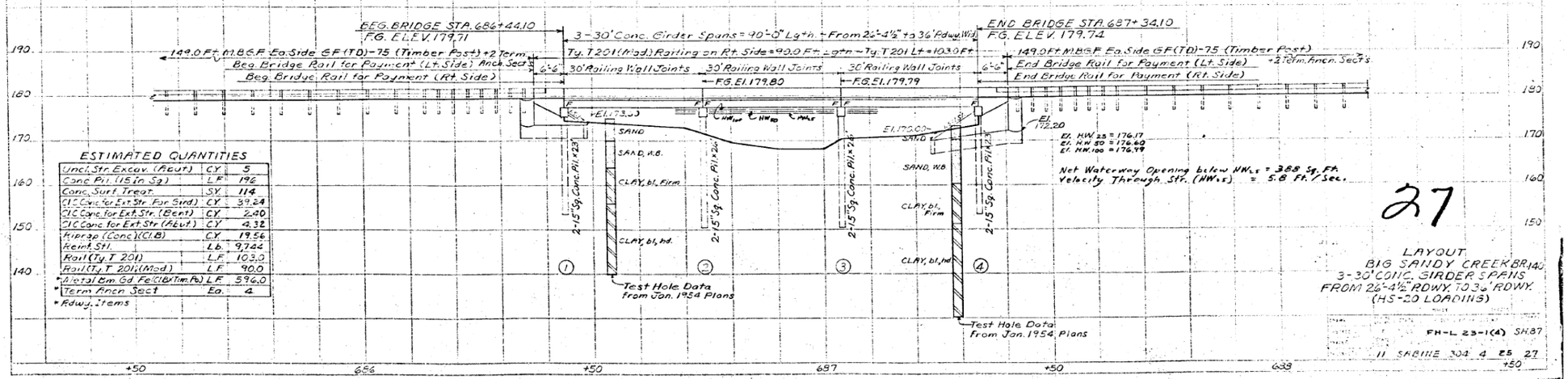

ESTIMATED QUANTITIES

Uncl. Str. Excav. (Abut)	CY	5
Conc. Pil. (15 in Sq)	LF	196
Conc. Surf. Treat.	SY	114
CIC Conc for Ext. Str. For Strd.)	CY	39.24
CIC Conc. for Ext. Str. (Bent)	CY	2.40
CIC Conc for Ext. Str. (Abut)	CY	4.32
Riprap (Conc) (CI.B)	CY	19.56
Reinf. Stl.	Lb.	9,744
Rail (Ty. T 201)	LF	103.0
Rail (Ty. T 201, (Mod.)	LF	90.0
Metal Cm. Gd. Fe. (Ex. Tim. Po.)	LF	596.0
Term. Anch. Sect	Ea.	4

* Rdwy. Items

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BRIDGE LAYOUT

SHEET 28 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		57

SITE S - SABINE COUNTY
SH 87 @ BIG SANDY CREEK
11-202-0-0304-04-065

DATE: 5/11/2023 9:28:41 AM
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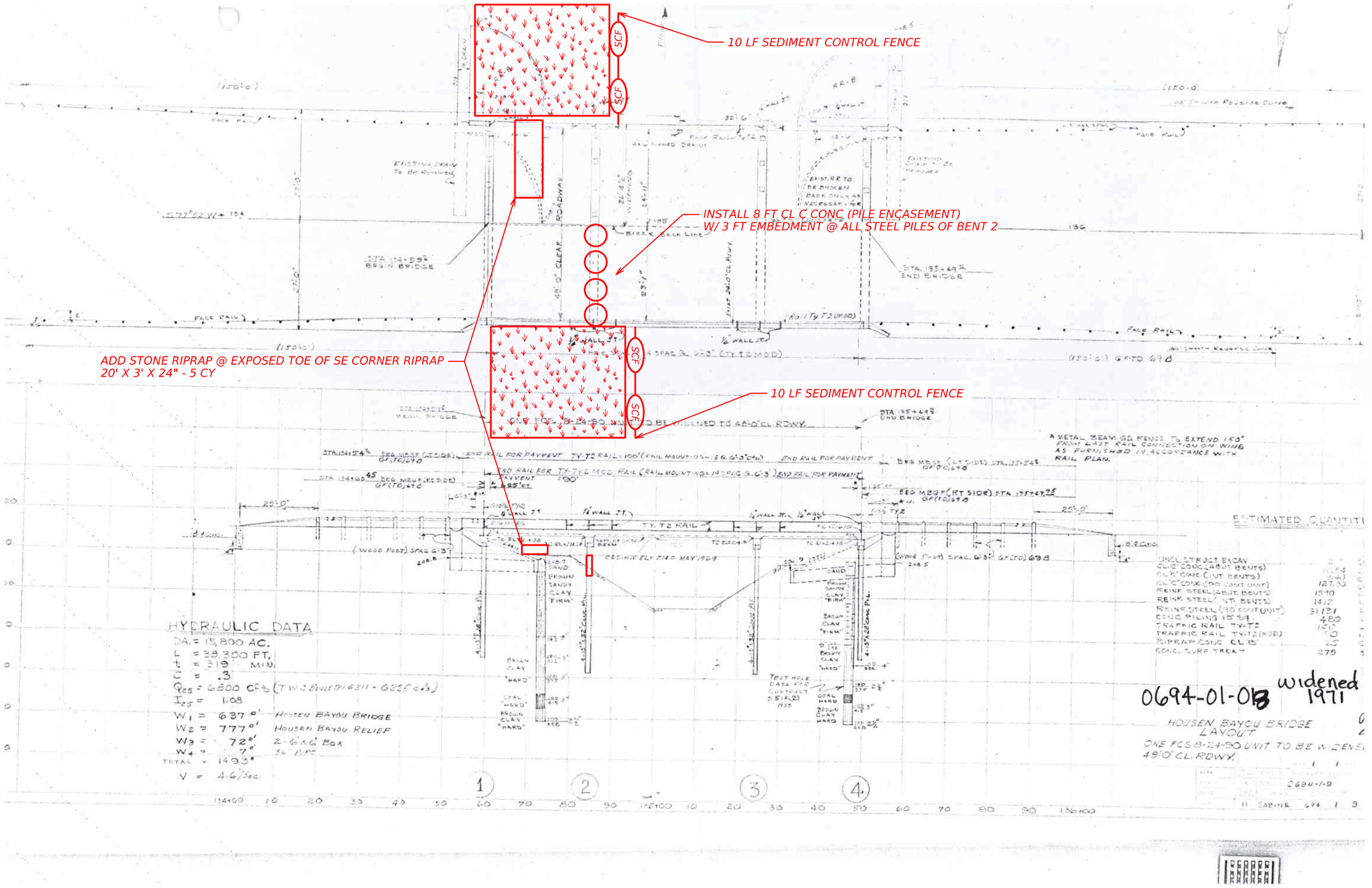

SEE PILE ENCASEMENT DETAIL FOR MORE INFORMATION

LEGEND

SCF — SEDIMENT CONTROL FENCE

BROADCAST SEEDING

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BRIDGE LAYOUT

SHEET 29 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		58

SITE T - SABINE COUNTY
FM 83 @ HOUSEN BAYOU
11-202-0-0694-01-018

DATE: 6/15/2023 8:56:48 AM
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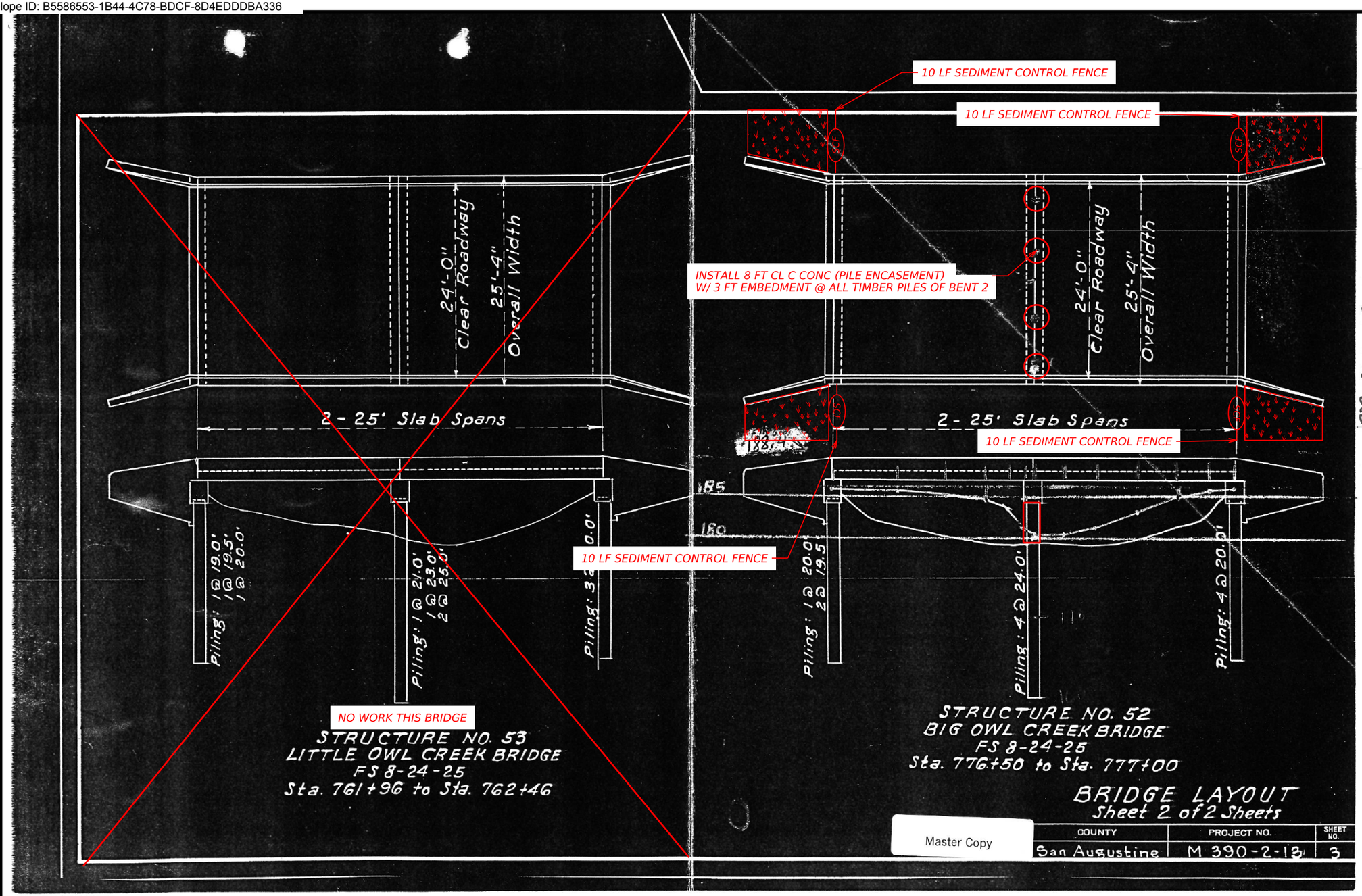

SEE TIMBER PILE ENCASEMENT DETAIL FOR MORE INFORMATION

LEGEND

SCF — SEDIMENT CONTROL FENCE

BROADCAST SEEDING

203-0390-05-001

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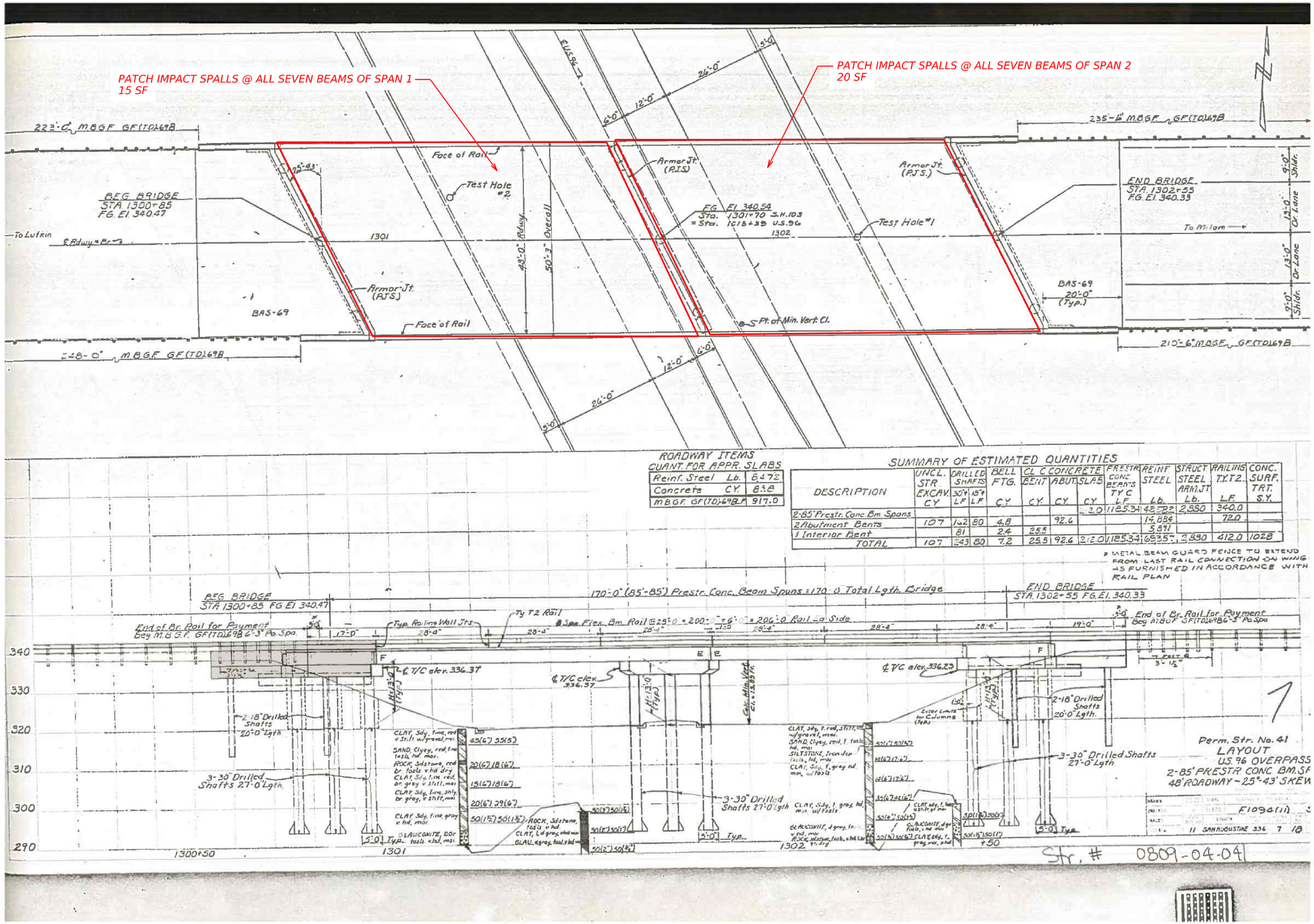
BRIDGE LAYOUT

SHEET 30 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		59

SITE U - SAN AUGUSTINE COUNTY
FM 2558 @ BIG OWL CREEK
11-203-0-0390-05-001



ROADWAY ITEMS
QUANT. FOR APPR. SLABS

Reinf. Steel	Lb.	6472
Concrete	CY	83.8
MBGF GF(TD)69BF		917.0

SUMMARY OF ESTIMATED QUANTITIES

DESCRIPTION	UNCL. STR EXCAV. CY	DRILLED SHAFTS 30" LF	DRILLED SHAFTS 18" LF	BELL FTG. CY	CL C CONCRETE BENT CY	CL C CONCRETE ABUT. CY	CL C CONCRETE SLAB CY	PRESTR CONC BEAMS TY C LF	REINF STEEL Lb.	STRUCT STEEL ARM JT Lb.	RAILING TXT2 LF	CONC. SURF. TRT. S.Y.
2-85' Prestr. Conc. Bm. Spans							2.0	1185.34	48322	2,850	340.0	
2 Abutment Bents	107	142	80	4.8		92.6			14,884		72.0	
1 Interior Bent		81		2.4	255				3,891			
TOTAL	107	343	80	7.2	255	92.6	2.0	1185.34	69935*	2,850	412.0	1028

* METAL BEAM GUARD FENCE TO EXTEND FROM LAST RAIL CONNECTION ON WING AS FURNISHED IN ACCORDANCE WITH RAIL PLAN

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BRIDGE LAYOUT

SHEET 31 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		60

SITE V - SAN AUGUSTINE COUNTY
SH 103 @ US 96
11-203-0-0809-04-041

DATE: 5/12/2023 10:11:34 AM
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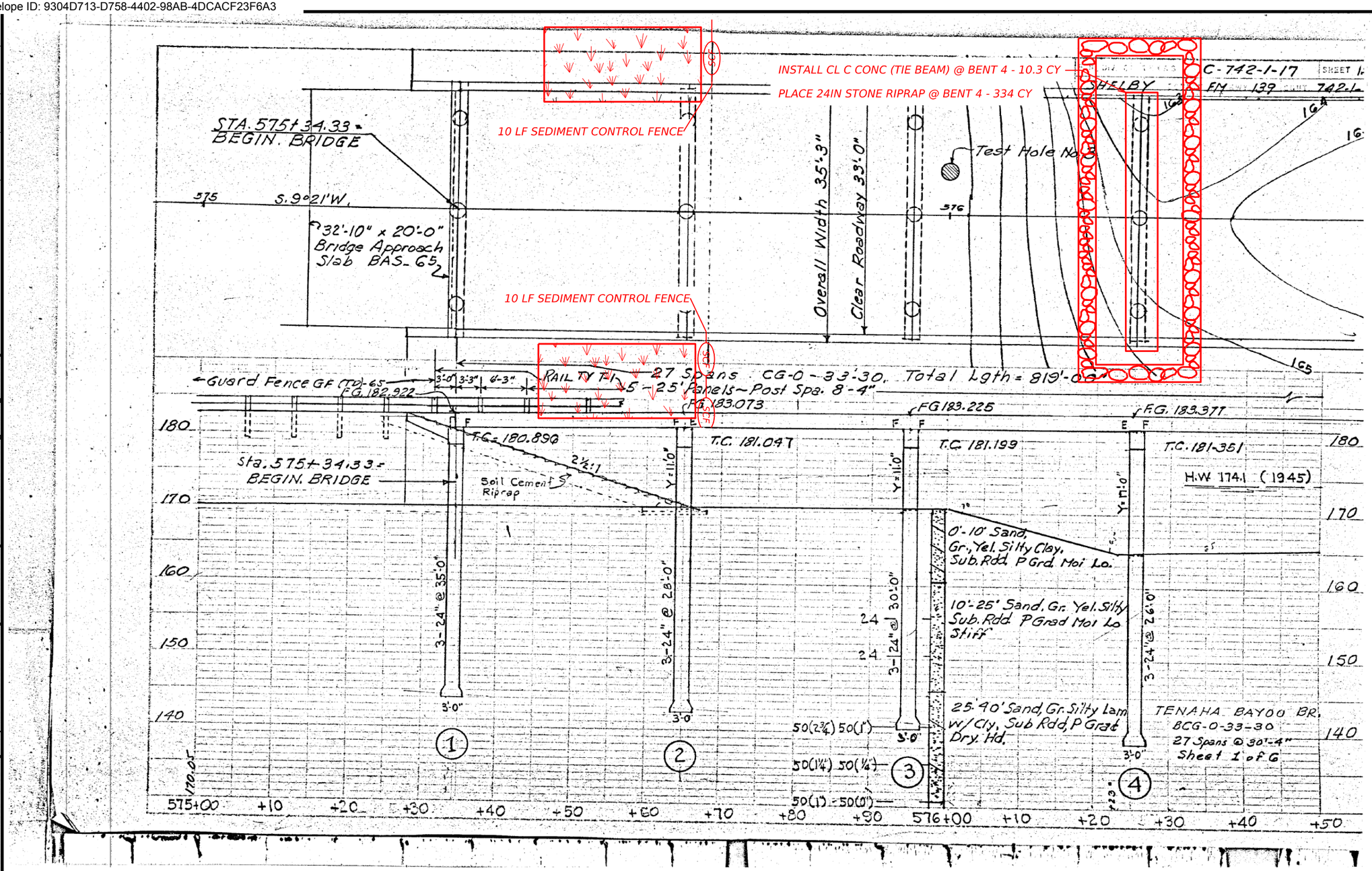

SEE TIE BEAM DETAIL FOR MORE INFORMATION

SITE W - SHELBY COUNTY
FM 139 @ TENAHA BAYOU
11-210-0-0742-01-014
(SHEET 1 0F 6)

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BRIDGE LAYOUT

SHEET 32 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		61

DATE: 6/15/2023 9:04:37 AM
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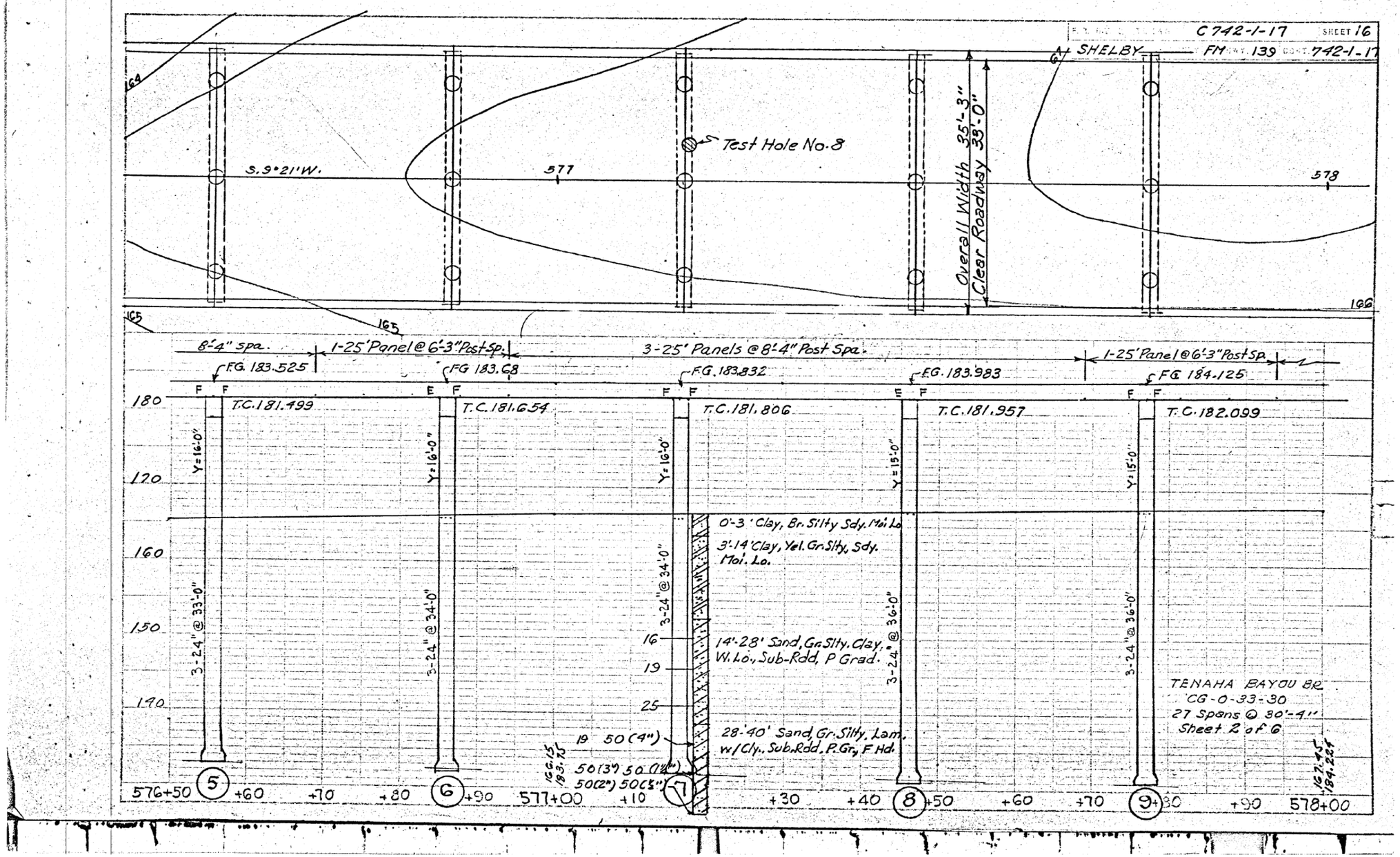

NO WORK THIS SHEET

SITE W - SHELBY COUNTY
FM 139 @ TENAHA BAYOU
11-210-0-0742-01-014
(SHEET 2 0F 6)

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BRIDGE LAYOUT

SHEET 33 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		62

DATE: 6/15/2023 9:05:23 AM
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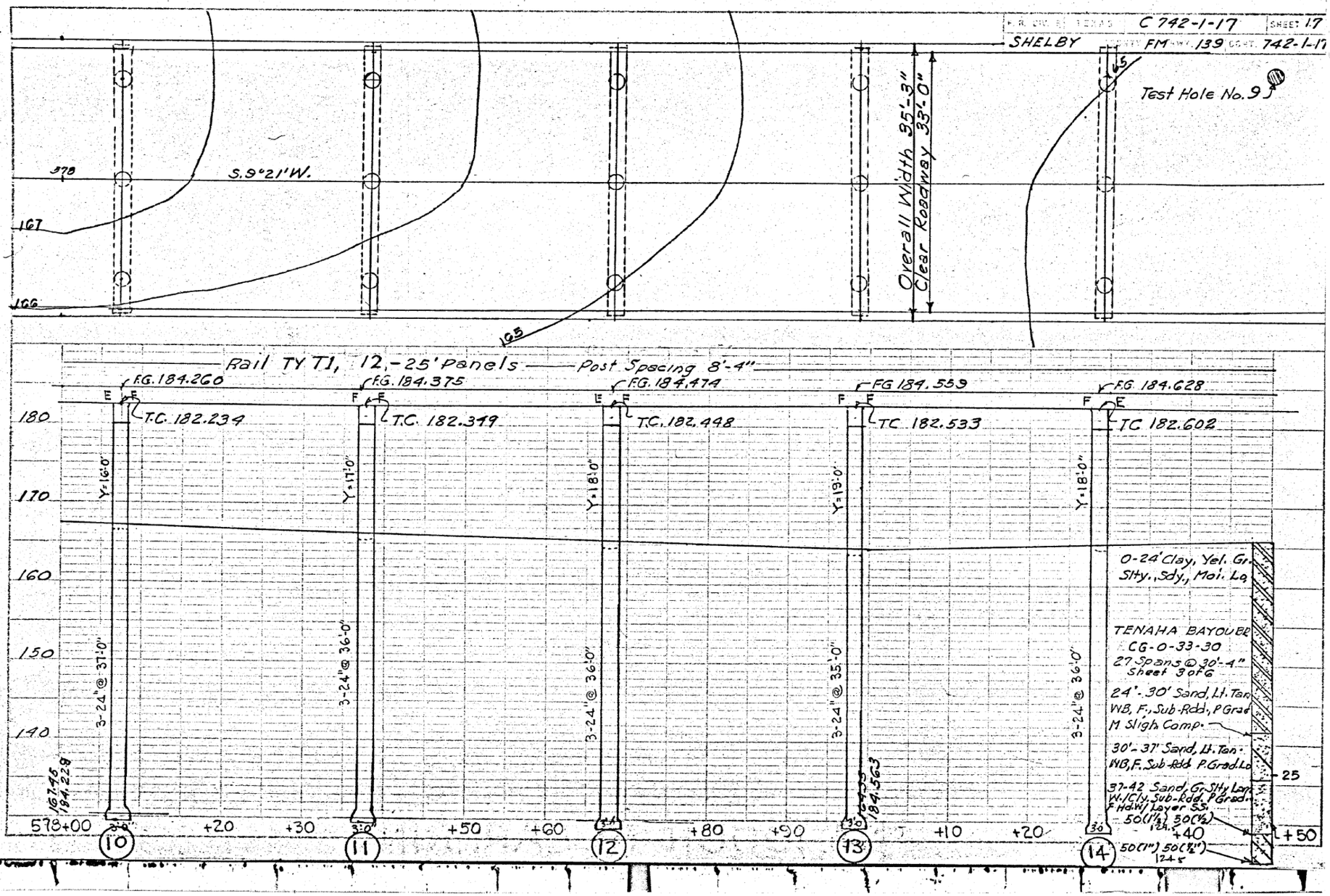

NO WORK THIS SHEET

SITE W - SHELBY COUNTY
FM 139 @ TENAHA BAYOU
11-210-0-0742-01-014
(SHEET 3 0F 6)

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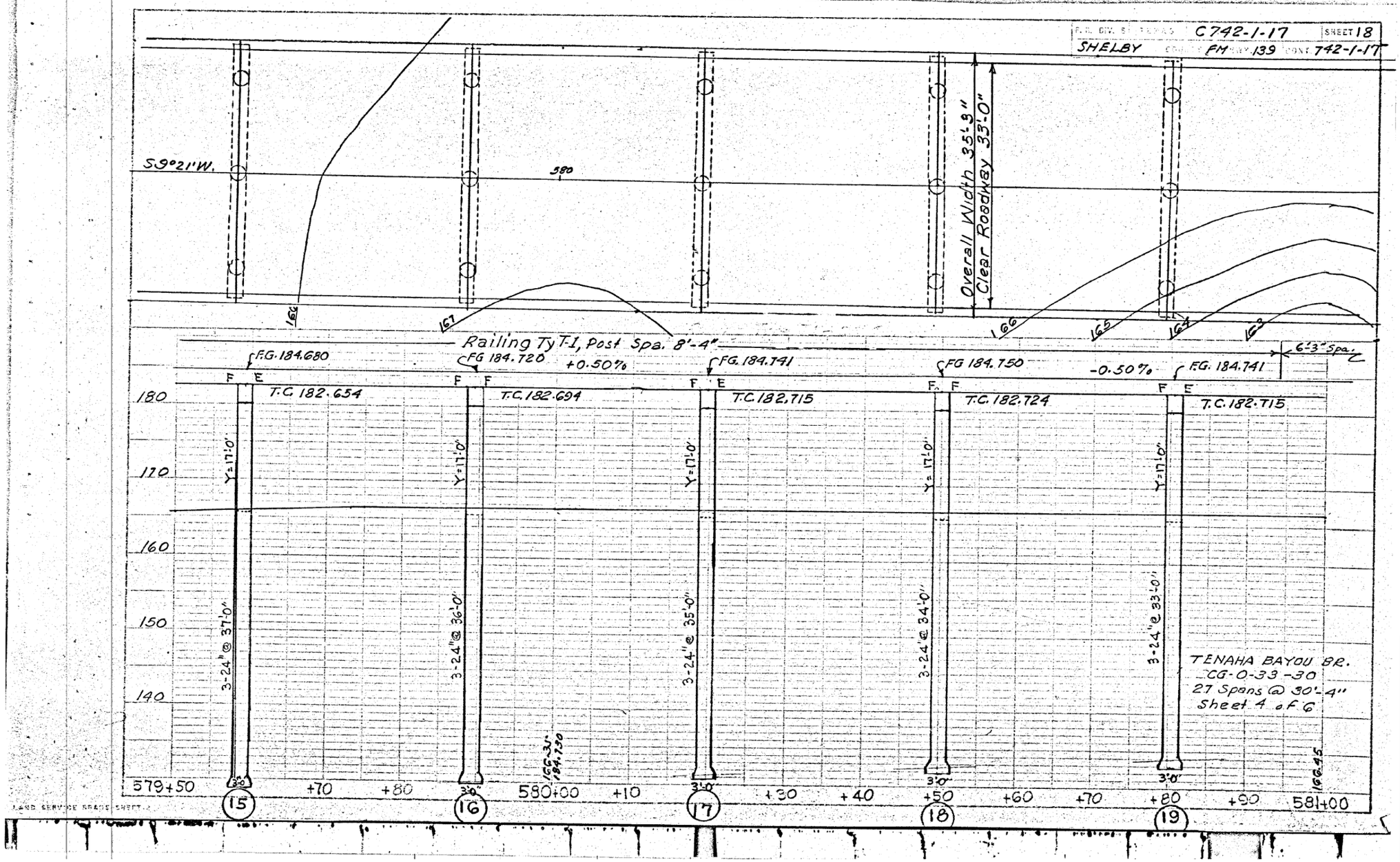
BRIDGE LAYOUT

SHEET 34 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		63

DATE: 6/15/2023 9:06:01 AM
FILE: pw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/0911001116/4 - Design/Plan Set/7. Bridge/11-210-0-0742-01-014 BRIDGE LAYOUT.dgn



NO WORK THIS SHEET

SITE W - SHELBY COUNTY
FM 139 @ TENAHA BAYOU
11-210-0-0742-01-014
(SHEET 4 OF 6)

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6/21/2023

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BRIDGE LAYOUT

SHEET 35 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		64

DATE: 6/15/2023 9:06:40 AM
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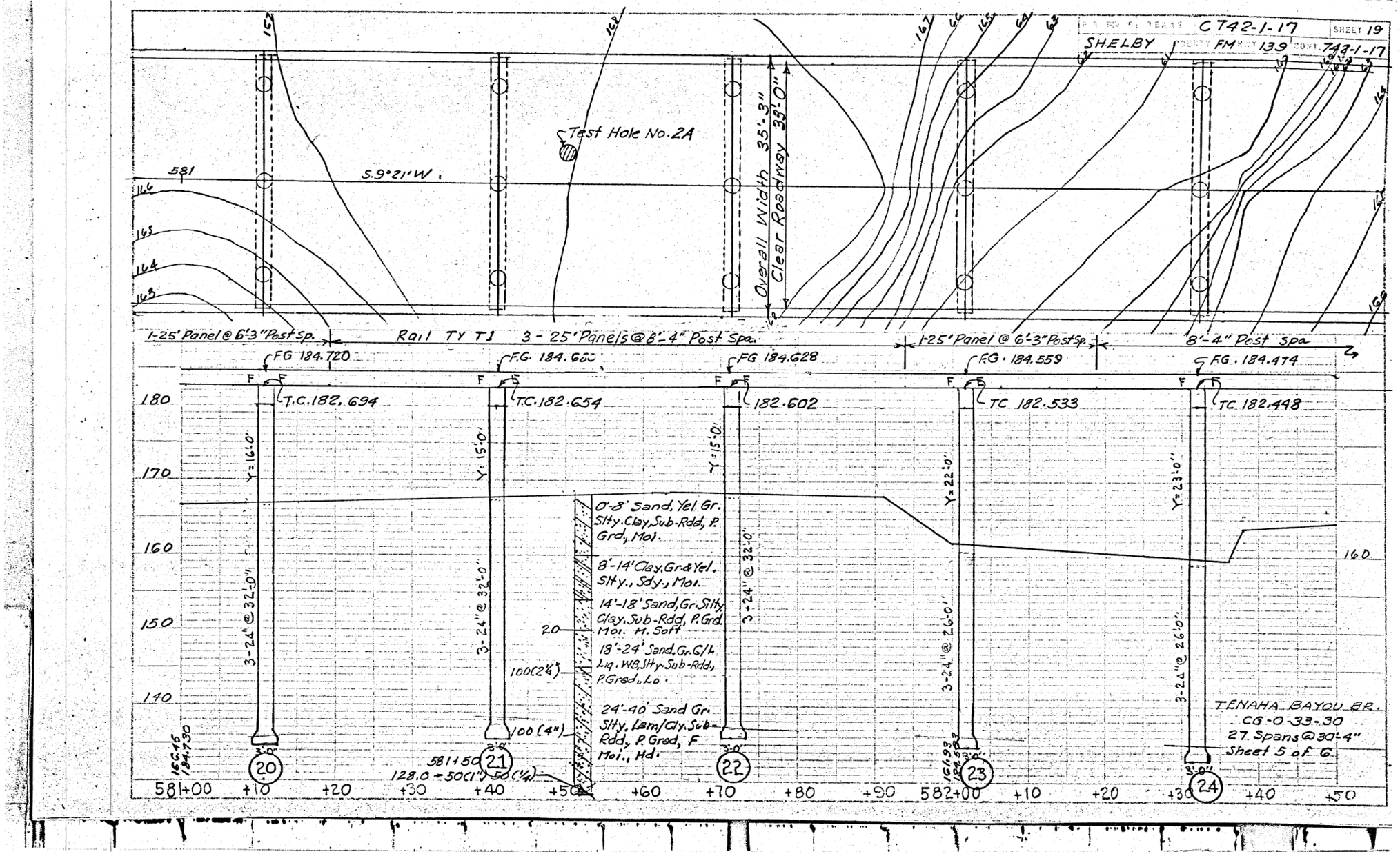

NO WORK THIS SHEET

N.T.S.

STATE OF TEXAS
MITCHELL L. RANDALL
129397
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
Mitchell L. Randall, P.E.
FF6D8503742F43A...

6/21/2023

Texas Department of Transportation

BRIDGE LAYOUT

SHEET 36 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		65

SITE W - SHELBY COUNTY
FM 139 @ TENAHA BAYOU
11-210-0-0742-01-014
(SHEET 5 OF 6)

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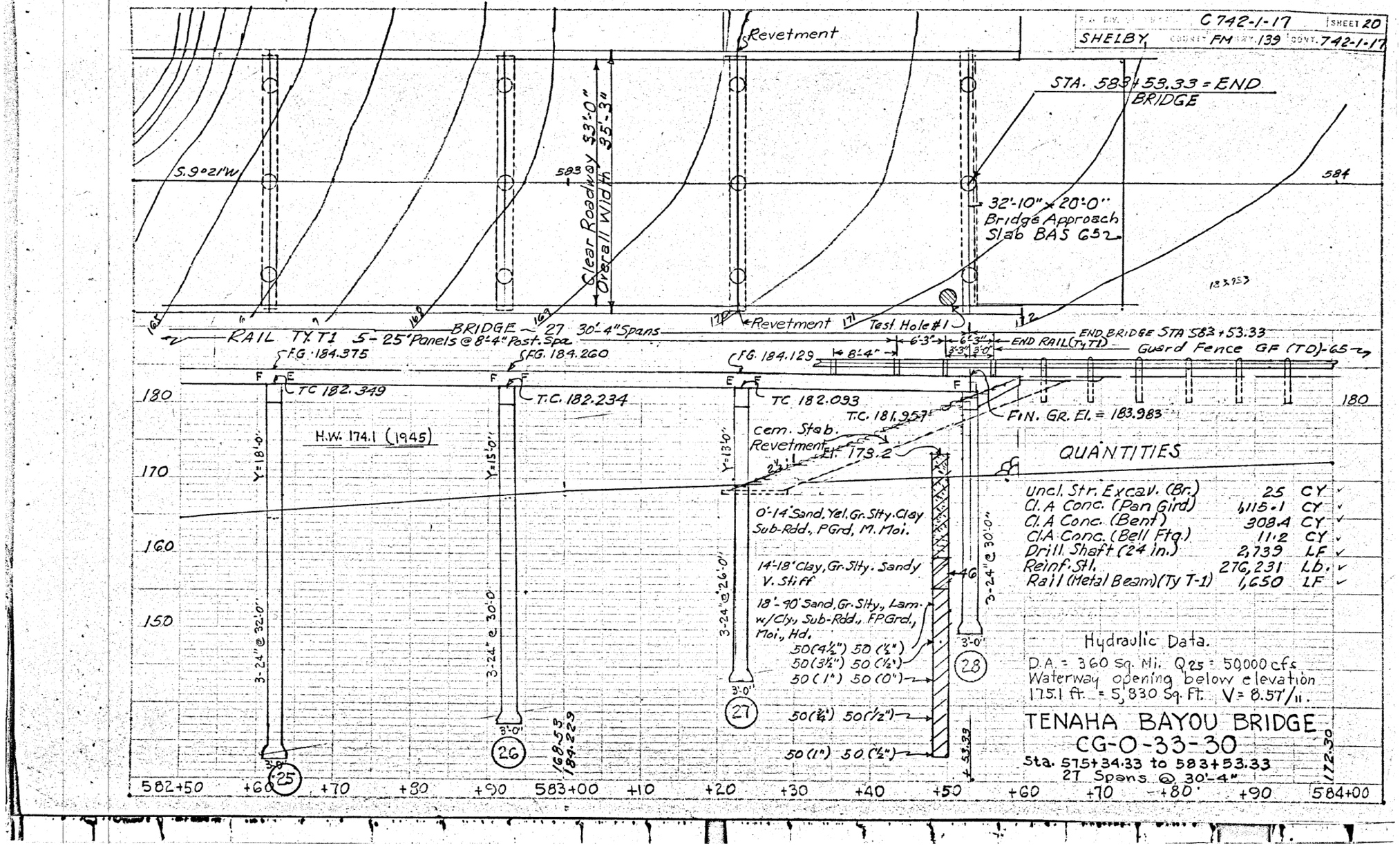

QUANTITIES

Uncl. Str. Excav. (Br.)	25	CY
Cl. A Conc. (Pan Gird)	6115.1	CY
Cl. A Conc. (Bent)	308.4	CY
Cl. A Conc. (Bell Ftg.)	11.2	CY
Drill Shaft (24 in.)	2,739	LF
Reinf. Stl.	276,231	Lb.
Rail (Metal Beam)(Ty T-1)	1,650	LF

Hydraulic Data.
D.A. = 360 Sq. Mi. Q_{25} = 50,000 cfs
Waterway opening below elevation 175.1 ft. = 5,830 Sq. Ft. V = 8.57'/11.

TENAHA BAYOU BRIDGE
CG-0-33-30
Sta. 575+34.33 to 583+53.33
2T Spans @ 30'-4"

NO WORK THIS SHEET

SITE W - SHELBY COUNTY
FM 139 @ TENAHA BAYOU
11-210-0-0742-01-014
(SHEET 6 OF 6)

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STATE OF TEXAS
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6/21/2023

Texas Department of Transportation

BRIDGE LAYOUT

SHEET 37 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		66

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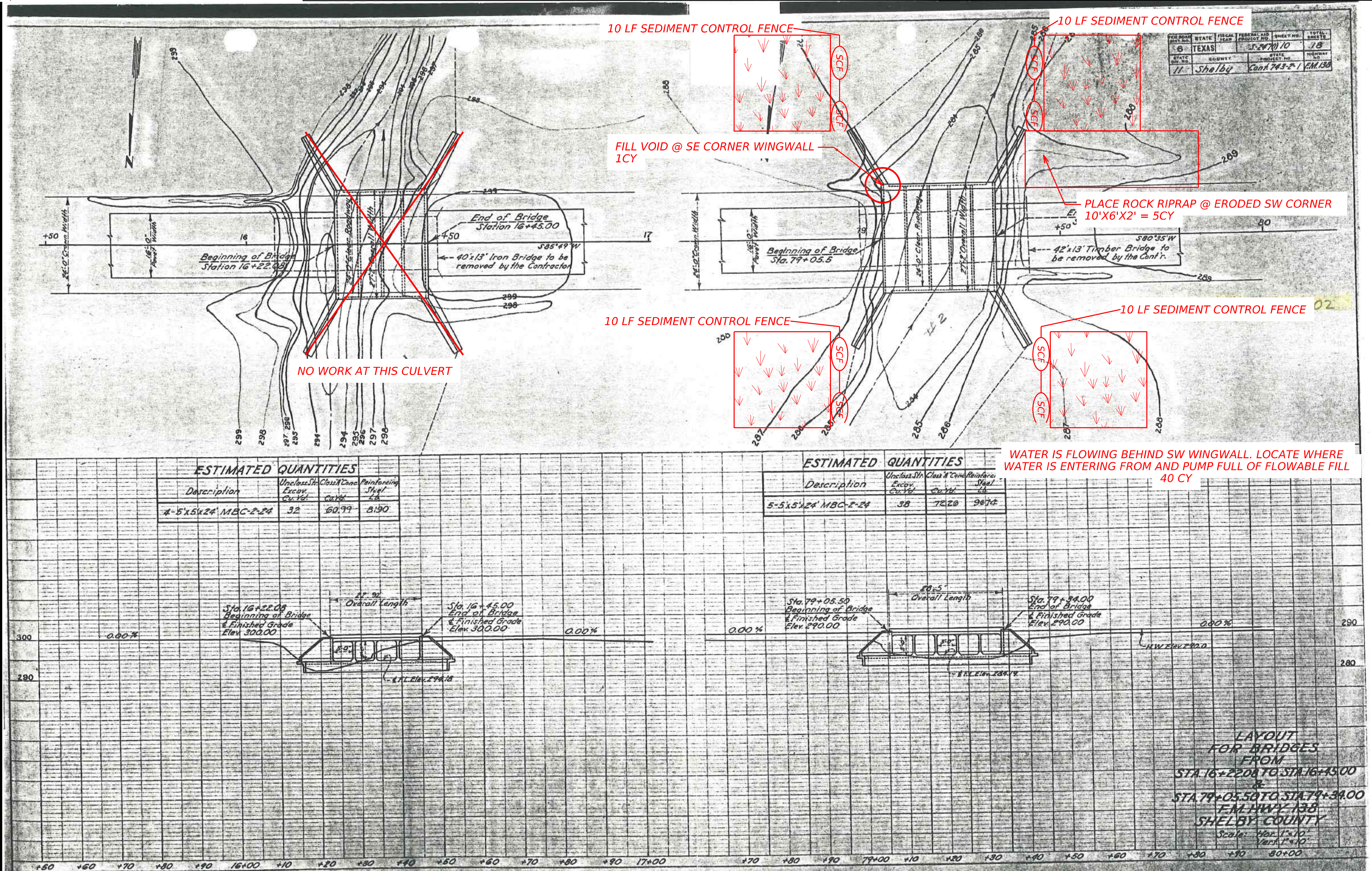

ESTIMATED QUANTITIES

Description	Unclass. Str. Excav. Cu. Yd.	Class 'A' Conc. Cu. Yd.	Reinforcing Steel Lb.
4-5'x5'x24' MBC-2-24	32	60.99	8190

ESTIMATED QUANTITIES

Description	Unclass. Str. Excav. Cu. Yd.	Class 'A' Conc. Cu. Yd.	Reinforcing Steel Lb.
5-5'x5'x24' MBC-2-24	38	72.20	9674

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BRIDGE LAYOUT

SHEET 38 OF 38

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		67

SITE X - SHELBY COUNTY
FM 138 @ SHAFNER CREEK
11-210-0-0743-02-002

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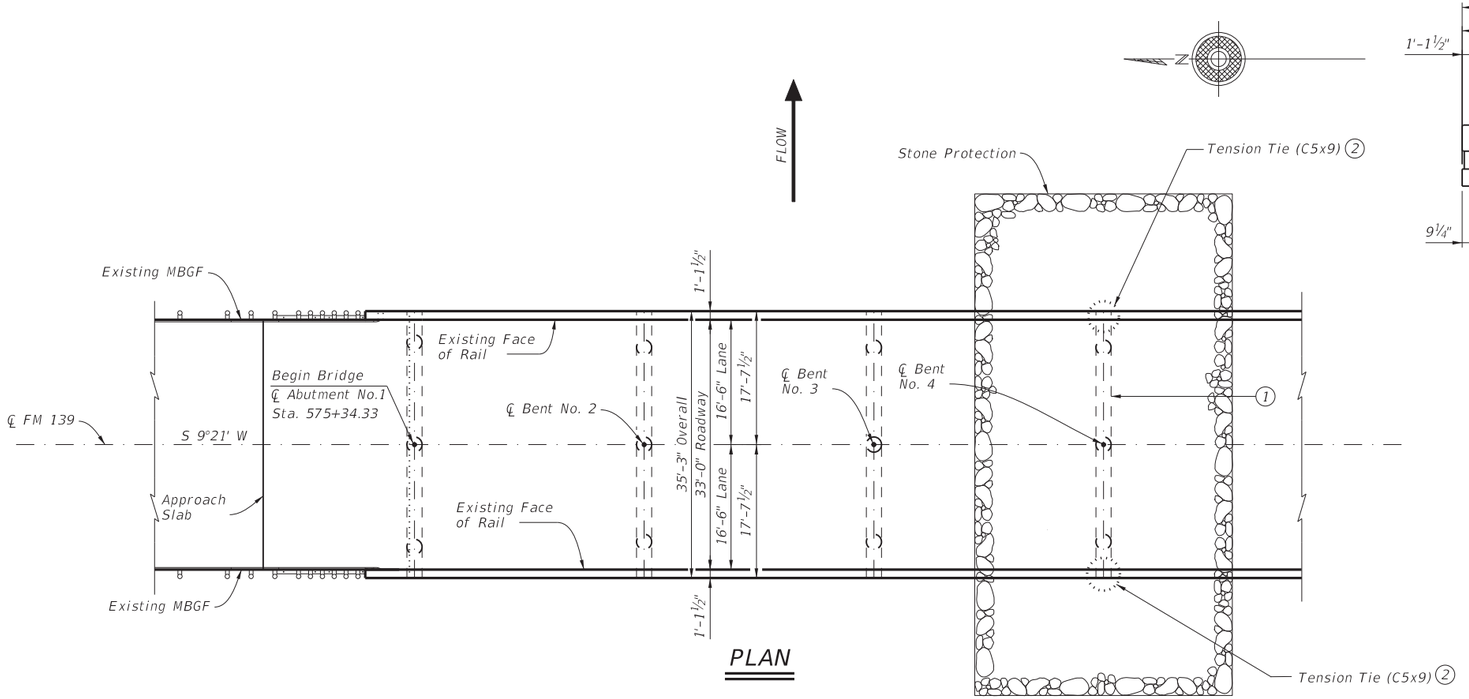
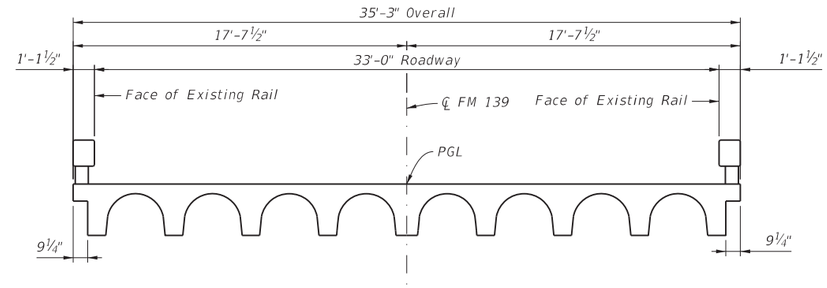


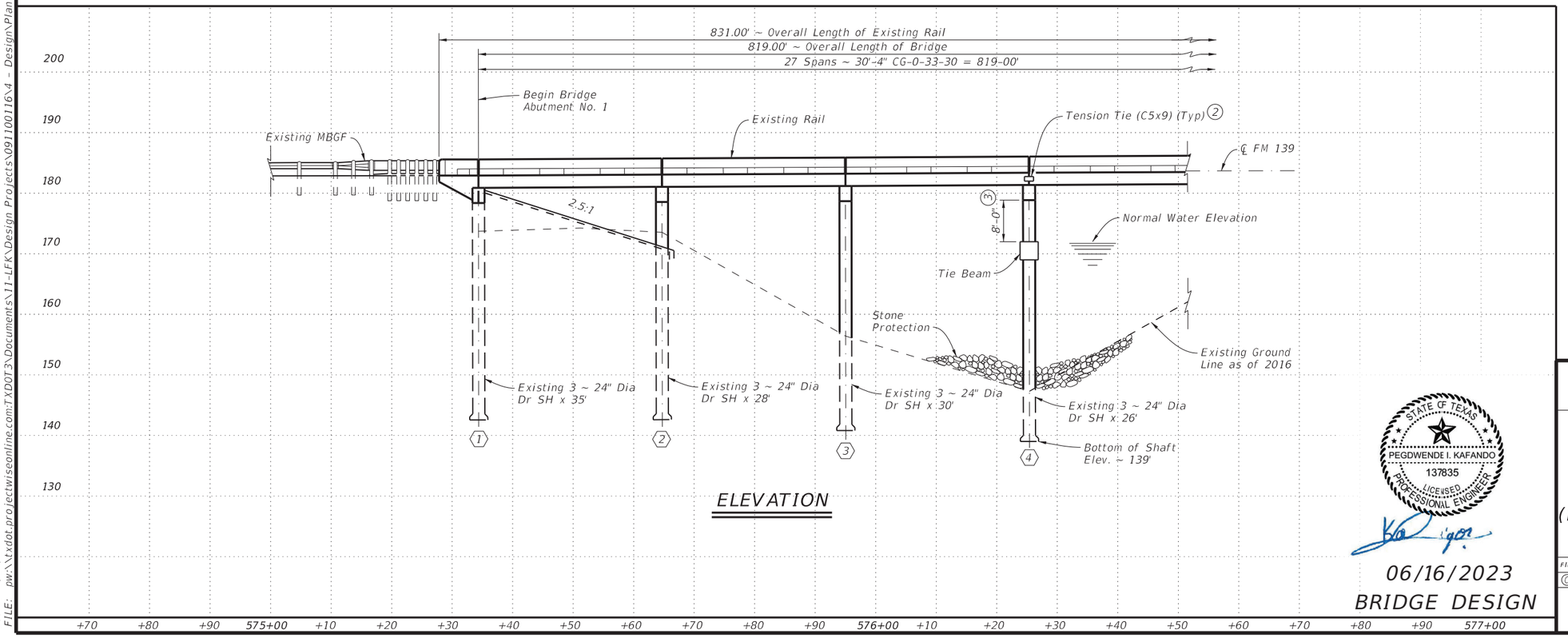


TYPICAL TRANSVERSE SECTION

(1) See BENT NO. 4 REPAIR DETAILS for New Tie Beam Details.

(2) See TENSION TIE DETAILS, for Tension Tie Details.

(3) This is an estimated height. Adjust height based on field conditions at the time of construction. Submit the water elevation at the time of construction to the Engineer of Record for approval prior to starting construction of the tie beam.



ELEVATION

STATE OF TEXAS
WORKU Y. MERGIA
115879
LICENSED PROFESSIONAL ENGINEER

06/20/2023
FOUNDATION DESIGN

SCALE: 1" = 10'

STATE OF TEXAS
PEGDWENDE I. KAFANDO
137835
LICENSED PROFESSIONAL ENGINEER

06/16/2023
BRIDGE DESIGN

Texas Department of Transportation | Bridge Division

BRIDGE REPAIR LAYOUT

(FM 139 @ TENAHA BAYOU BRIDGE
NBI: 11-210-0-0742-01-014)

FILE: FM0139_BRG_LAYOUT_sp740ly01.dgn	DN: PIK	CK: DJF	DW: JEB	CK: PIK
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	DIST	COUNTY		SHEET NO.
	LFK	ANGELINA		68

DATE: 3/27/2023 8:32:20 AM
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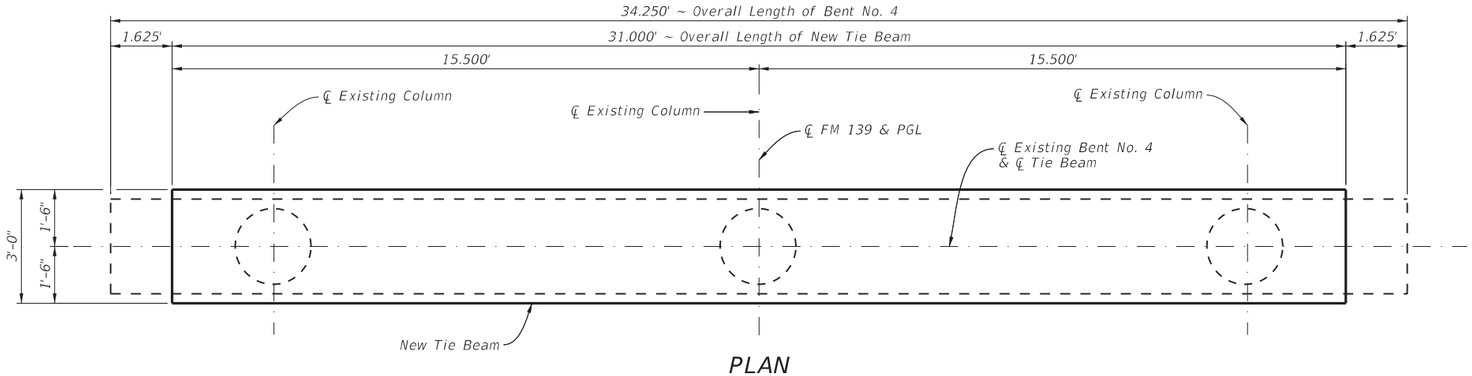

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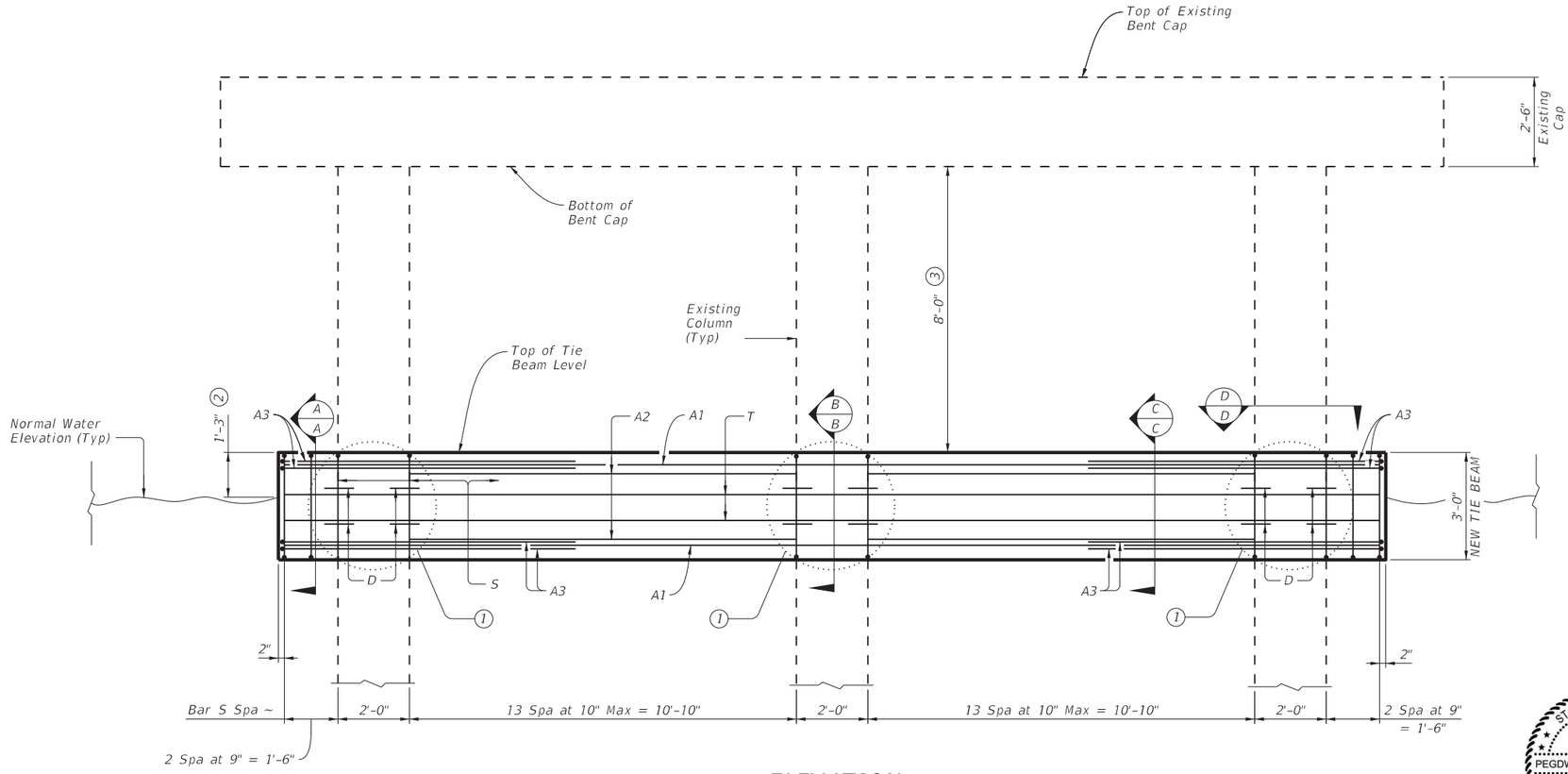

ELEVATION

1. See Section A–A and Section C–C for typical reinforcing details near existing columns.
2. Top of Tie Beam to be cast 1'-3" above normal water elevation.
3. This is an estimated height. Adjust height based on field conditions at the time of construction. Submit the water elevation at the time of construction to the Engineer of Record for approval prior to starting construction of the tie beam.

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05/31/2023

SHEET 1 OF 2

Texas Department of Transportation | Bridge Division

BENT NO. 4
REPAIR DETAILS

(FM 139 @ TENAHA BAYOU BRIDGE
NBI: 11-210-0-0742-01-014)

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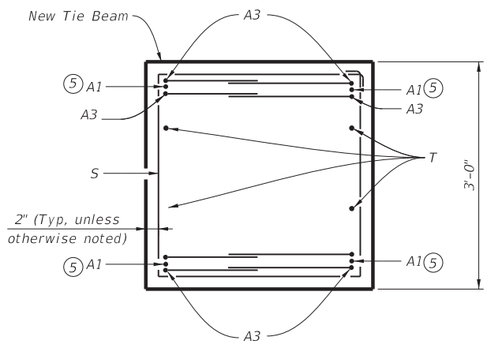
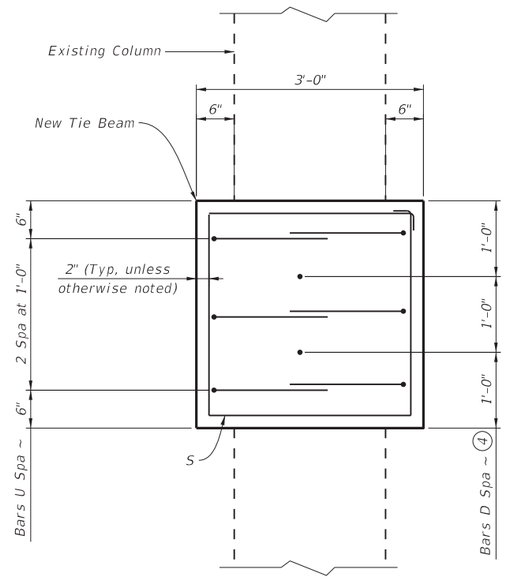


SECTION A-A



SECTION B-B

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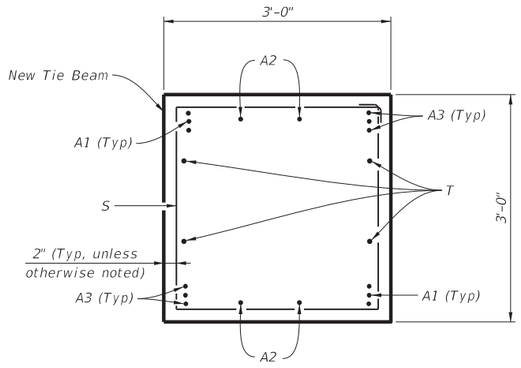
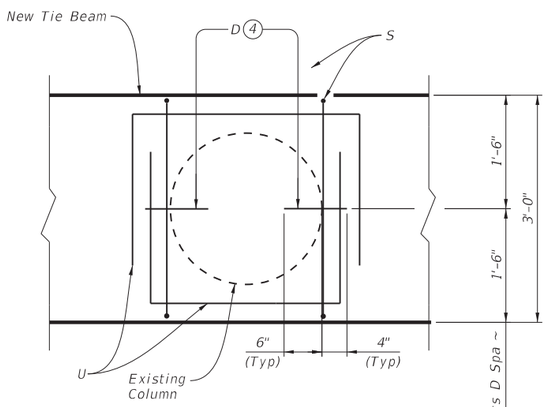


SECTION C-C



SECTION D-D

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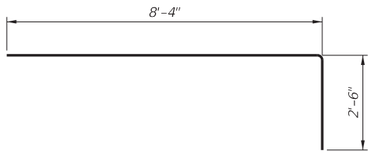
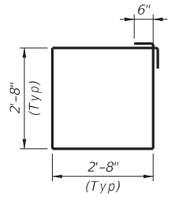
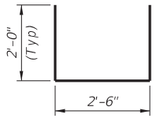


BAR A3



BAR S



BAR U

4 Drill and epoxy Bars D into existing columns, is shown with Type III Class C, D, E or F Epoxy Anchorage System. Follow manufacturer's directions for installing the epoxy anchor Bars.

5 Bars A1, lap 6'-10" with A3.

6 Quantities provided for Tie Beam only.

TABLE OF ESTIMATED QUANTITIES 6

Bar	No.	Size	Length	Weight
A_1	4	#11	30'-8"	652
A_2	8	#11	10'-10"	460
A_3	16	#6	10'-10"	260
T	4	#11	30'-8"	652
S	34	#5	11'-8"	414
D	12	#6	0'-10"	15
U	18	#5	6'-6"	122
Reinforcing Steel			Lb	2,575
Class "C" Concrete (TIE BEAM)			CY	10.3

CONCRETE PLACEMENT NOTES:

Make forms or cofferdams tight enough to prevent any water current passing through the space in which the concrete is being deposited.

Submerge the lower end of the pump hose in the concrete at all times. Use continuous placing operations until the work is complete.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications, 2014, 7th Edition with Interims.

Except for vehicle loading which was designed for an HS20 Truck.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

Provide Class "C" Concrete strength (f'c = 3600 psi) in accordance with Item 420, Section 4.7.13 (Place Concrete in Water). Place Concrete using a pump.

Design the concrete mix in accordance with Item 421, "Hydraulic Cement Concrete", with a minimum cement content of 650 lb. per cubic yard for concrete to be placed under water.

Add anti-wash admixture to the concrete mix design. The Department does not keep an approved materials list for anti-wash admixtures, one will need to be selected by the Concrete Supplier/Contractor and approved by Engineer.

It may be necessary to increase cementitious material or other admixtures to account for strength reductions due to the anti-washout admixture.

Anti-wash admixtures can increase the resistance pressure by 2 or 4 times that of conventional concrete.

The Contractor is responsible for obtaining a suitable pump truck capable of pumping the concrete with the anti-wash admixture.

Cover dimensions are clear dimensions, unless noted otherwise.

Reinforcing bar dimensions shown are out-to-out of bar.

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER

05/31/2023

Texas Department of Transportation | Bridge Division

BENT NO. 4 REPAIR DETAILS

(FM 139 @ TENAHA BAYOU BRIDGE NBI: 11-210-0-0742-01-014)

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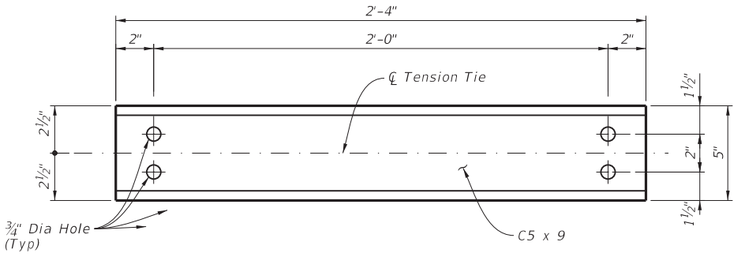
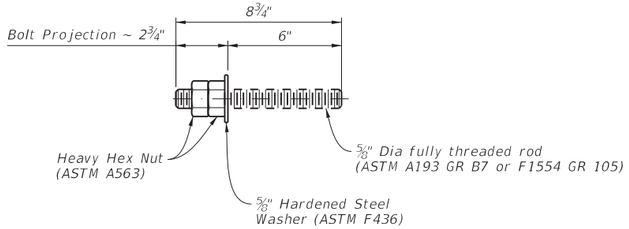
REVISIONS	0911	00	116	VA
	DIST	COUNTY		SHEET NO.
	LFK	ANGELINA		70

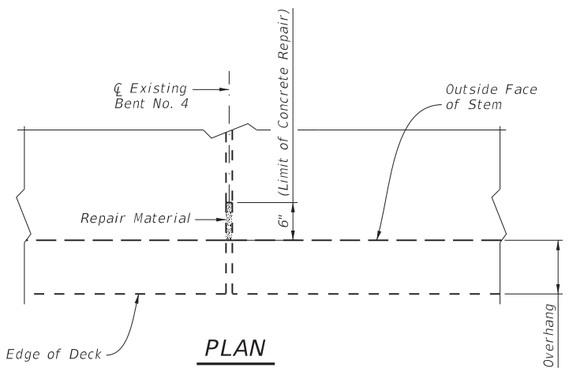
Item	Part Description	Material Description	Lbs/Tie	Qty.	Total
0442 Structural Steel (Misc. Non-Bridge)	Tension Tie	2'-4" C5x9 Channel	21.0	2	42
	Threaded Rod Assembly	5/8" Dia. Threaded rod, two heavy hex nut and hardened washer	3	2	6
				Total (Lbs)	48
0438 Cleaning Existing Joint				LF	1
0429 CONC STR REPR (Vertical & Overhead)				SF	2



TENSION TIE DETAILS



THREADED ROD ASSEMBLY DETAILS



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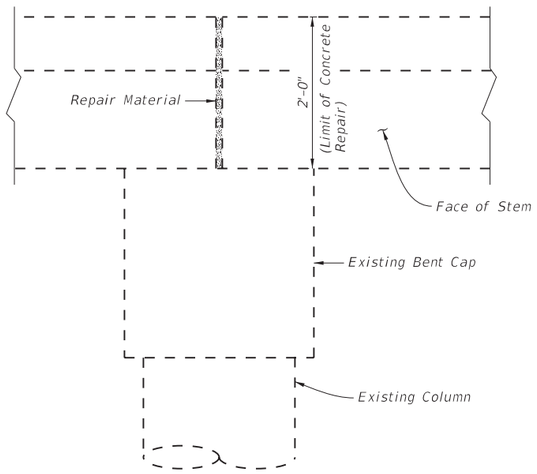
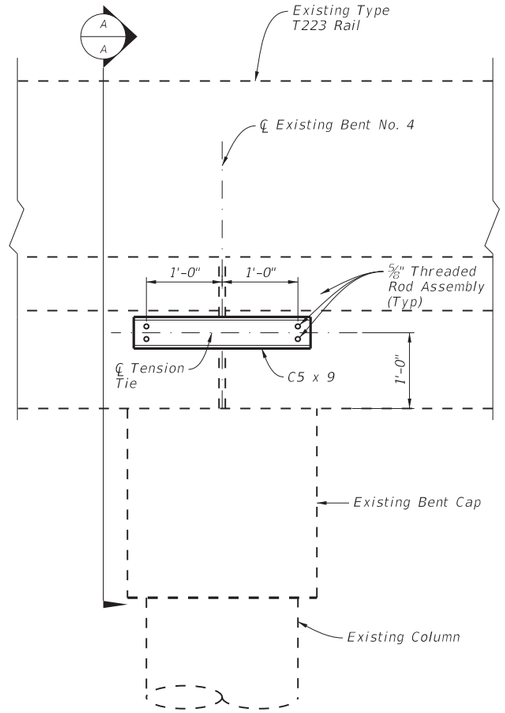


ELEVATION

Showing North or South Side

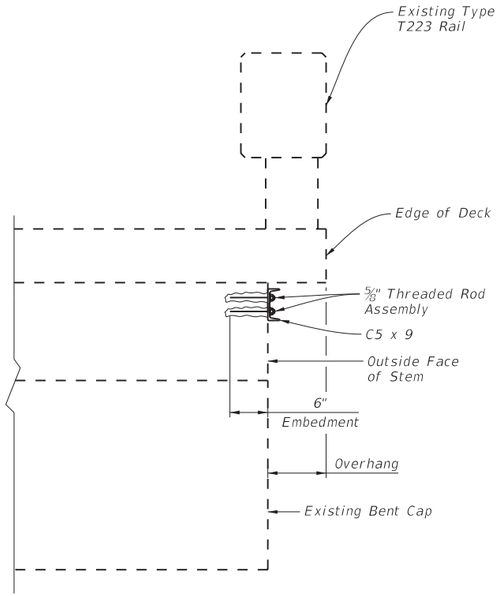
JOIN TREATMENT DETAILS



ELEVATION

Showing North or South Side

TENSION TIE PLACEMENT



SECTION A-A

CONSTRUCTION NOTES:

Ensure that Tension Ties and concrete repair as shown in joint treatment details are installed on both the North and South sides of the bridge at Bent 4.

Round or chamfer all exposed edges of steel components 1/16" by grinding prior to galvanizing.

SEQUENCE:

1) Remove existing preformed bituminous fiber board material or other spacer material the full depth of the joint (2'-0") along with all other debris in the joint opening to the depth of 6" (measure from the face of stem) on both sides of the structure (Bent 4).
2) Fill the voids on both sides of the structure (Bent 4) with the recommended (W.R. Meadows Meadow crete GPS D0T) repair material allow 24 hours before proceeding to the next step.
3) Drill and epoxy in threaded anchor rods for mounting tension tie (C5x9 channels).

GENERAL NOTES:

Designed according to AASHT0 LRFD Bridge Design Specifications, 2014, 7th Edition with interims. Except for vehicle loading which was designed for an HS20 Truck.

Provide W.R. Meadows Meadow-crete GPS D0T or an approved equal in accordance with DMS 4655, "Concrete Repair Materials."

Remove of bituminous fiber and debris in accordance with ITEM 438, "Cleaning and Sealing Joints".

Place concrete material in voids in accordance with Item 429, "Concrete Structure Repair".

MATERIAL NOTES:

Galvanize all metal components of the Tension Tie Assembly. Anchor bolts must receive galvanization prior to installation.

Anchor bolts must be ⅝" Dia ASTM A193 Gr B7 or F1554 Gr 105 fully threaded rods with two heavy hex nut and one hardened steel washer (ASTM F436) each. Nuts must conform to ASTM A563 requirements. Embed fully threaded rods into concrete girder stem 6" with Hilti HIT-RE 500 V3 epoxy adhesive. Other Type III Class C, D, E, or F epoxy adhesive meeting the requirements of DMS-6100, "Epoxies and Adhesives", may be used if it can be demonstrated that they meet or exceed the strength of Hilti HIT-RE 500 V3 with the same embedment depth and anchor rod size and spacing. Follow Manufacturer's directions for installing the fully threaded epoxied anchor rods.

Provide ASTM A36 steel for the C5x9 channel sections.

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER

05/31/2023

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TENSION TIE DETAILS

(FM 139 @ TENAHA BAYOU BRIDGE
NBI: 11-210-0-0742-01-014)

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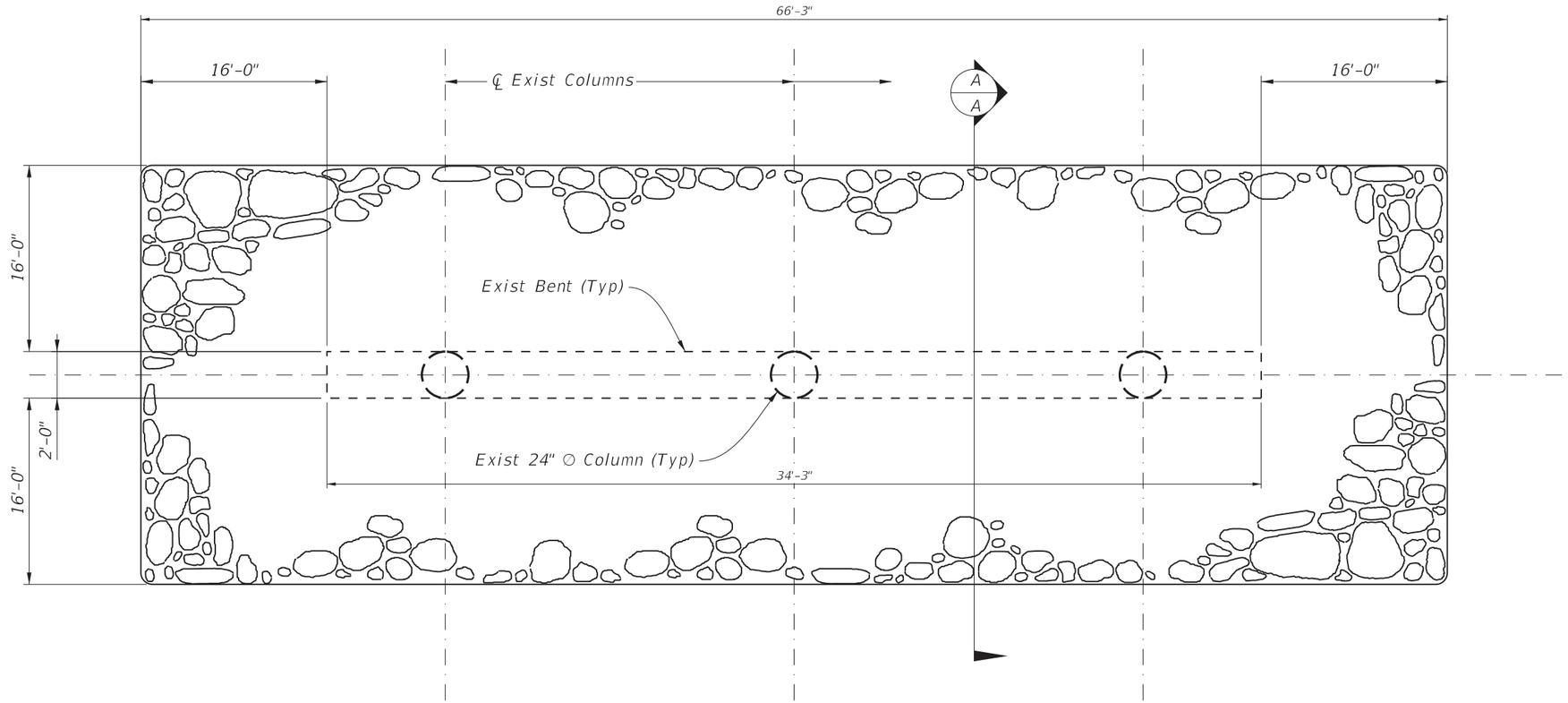
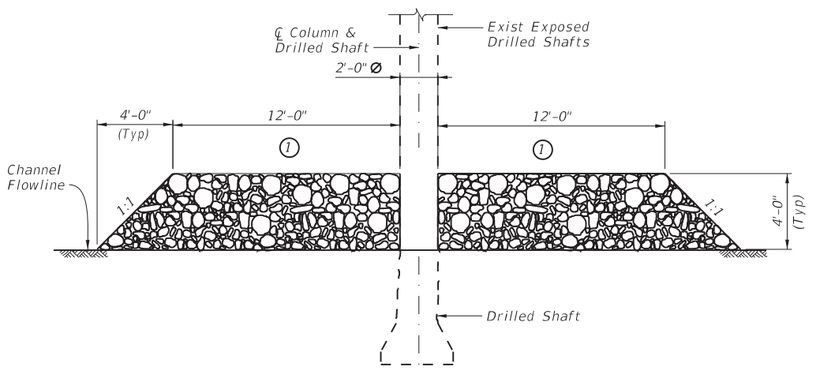


PLAN VIEW - COLUMN ON DRILLED SHAFT



SECTION A-A

NOTES:

1. Surface of stone protection will slope away from the bent, but not to exceed 2:1.

GENERAL NOTES:

Refer to Item 432 for the gradation of stone protection, alternate gradations are not permitted.

Placement of stone protection will not be performed in a manner that will cause segregation such as dumping or pushing material in place. Contractor to provide method of placement for approval.

See Layout for limits and thickness of riprap specified. All work will be performed in accordance with Item 432. Filter fabric and/or bedding material will not be required.

Survey area around Bent 4 before and after placement of stone protection to verify limits and thickness of in place stone protection. Readings from a weighted tape at reference points could be used.

Placement of Stone Protection is to armor Bent 4 from further scour.

Quantity calculated assuming a volume of 66'-3" x 34' x 4' thick.

BID ITEM	BID CODE	0432
BRIDGE ELEMENT \ BID ITEM DESCRIPTION		RIPRAP (STONE PROTECTION) (24 IN)
		CY
Bent 4		334
OVERALL TOTALS:		334

STATE OF TEXAS
WORKU Y. MERGIA
115879
LICENSED
PROFESSIONAL ENGINEER

05/31/2023

Texas Department of Transportation — Bridge Division

FLEXIBLE RIPRAP STONE PROTECTION

(FM 139 @ TENAHA BAYOU BRIDGE NBI: 11-210-0-0742-01-014)

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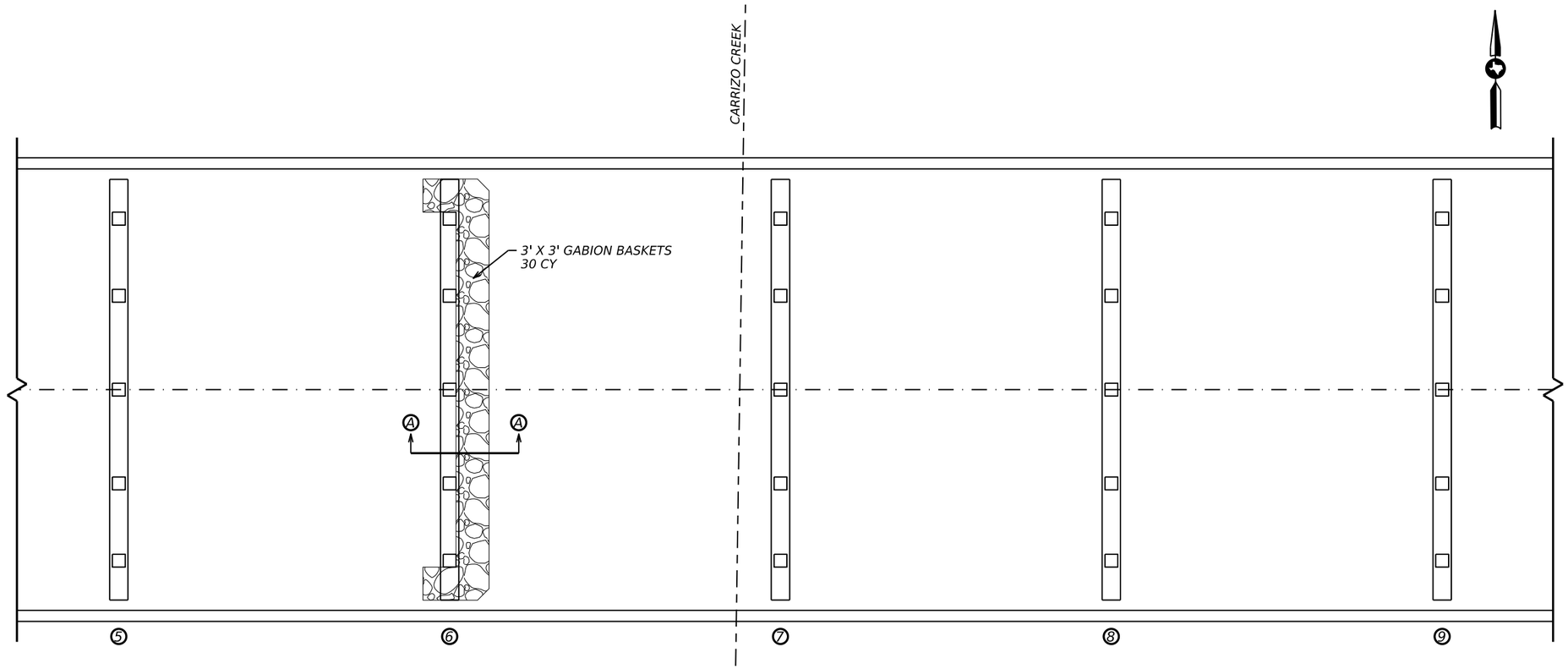

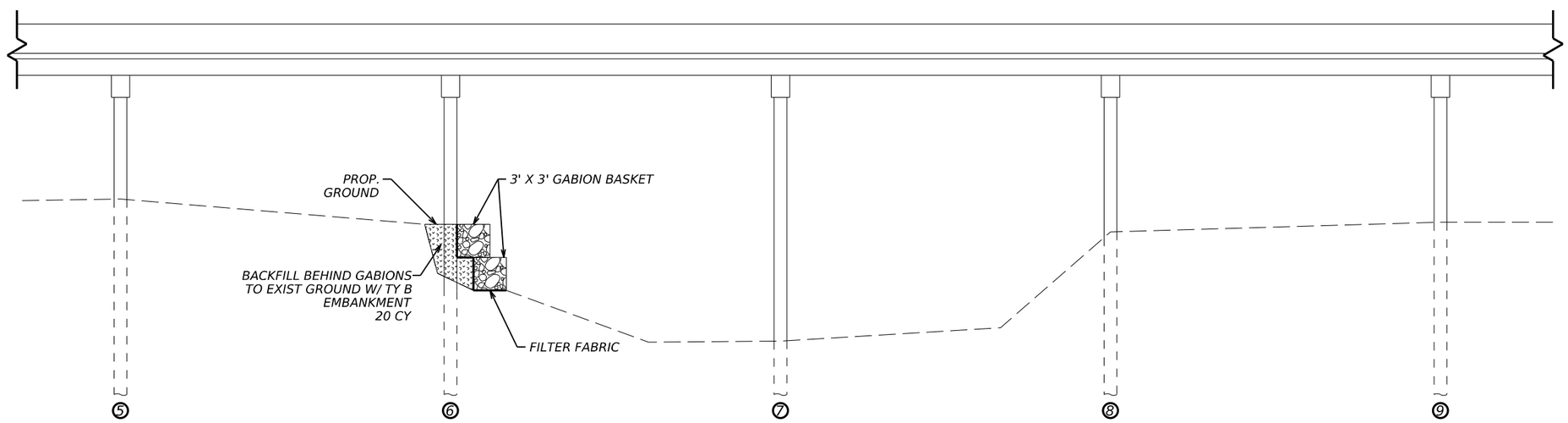

SECTION A-A

GABION BASKETS AT BENTS 6

N.T.S.

STATE OF TEXAS
MITCHELL L. RANDALL
129397
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
Mitchell L. Randall, P.E.
FF6D8503742F43A...
6/2/2023

Texas Department of Transportation

SITE K GABION DETAILS

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		73

DATE: 5/12/2023 12:49:27 PM
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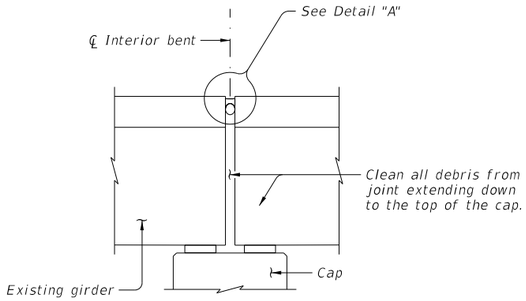
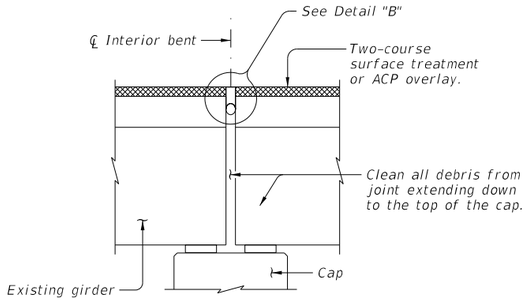


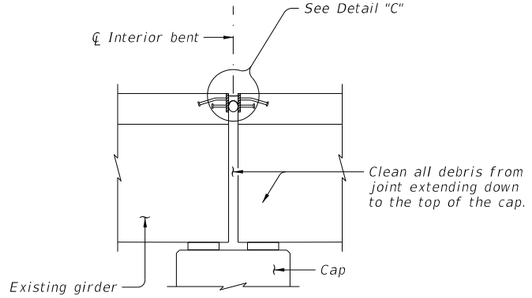
JOINT WITH SILICONE SEAL

(Used without ACP overlay)



JOINT W/ HOT-POURED RUBBER SEAL

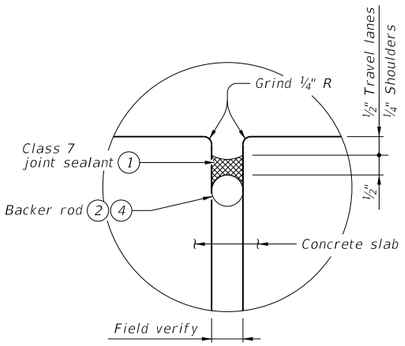
(Used with ACP overlay)



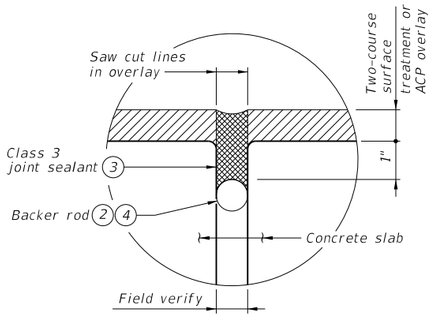
ARMOR JOINT

(Shown without ACP overlay. Armor joint with ACP overlay similar.)

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.



DETAIL "A"



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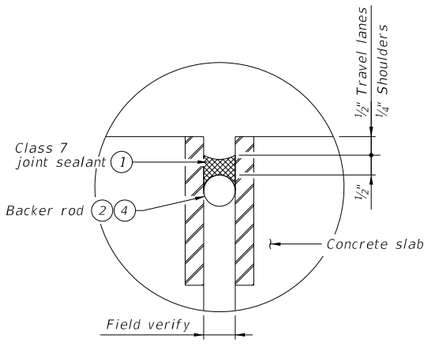

DETAIL "C"

(Stud anchors not shown for clarity.)

GENERAL NOTES:

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

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

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

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

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

PROCEDURE FOR CLEANING AND SEALING EXISTING JOINT WITH SILICONE SEAL:

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.

N.T.S

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6/21/2023

Texas Department of Transportation

CLEAN & SEAL JOINT DETAIL

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		74

DATE: 5/12/2023 12:52:51 PM
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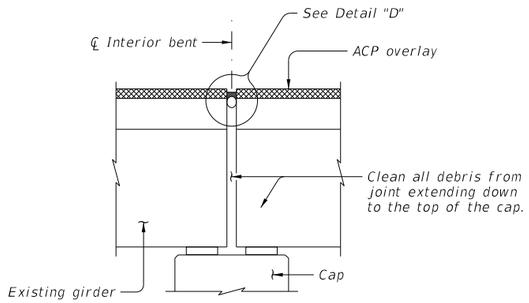
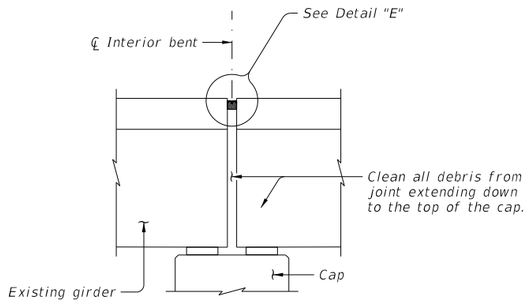


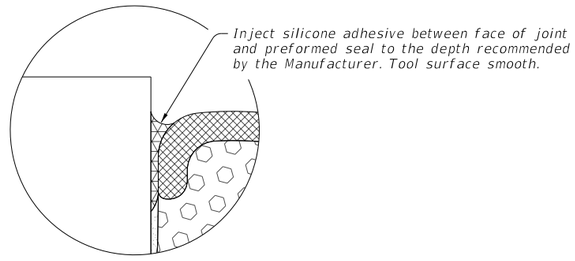
HEADER JOINT WITH SILICONE SEAL

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

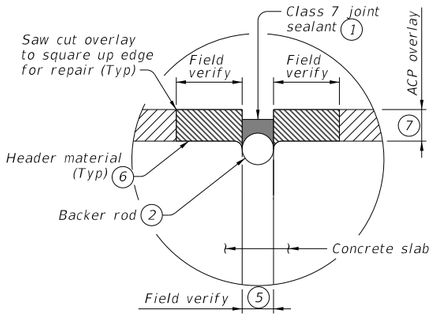


JOINT WITH PRECOMPRESSED FOAM AND SILICONE SEAL

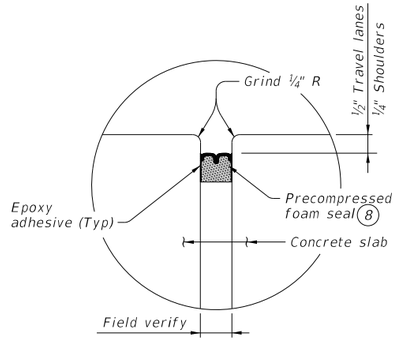
(used without ACP overlay)



SILICONE INJECTION



DETAIL "D"



DETAIL "E"

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

1) Clean joint opening of all old expansion materials/devices, dirt, and all other 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 4". Place header material flush with roadway surface. Do not cantilever header material over the joint opening. Repair of header material will be paid for in accordance with Item 785-6006, "Bridge Joint Repair (Header)."

(7) Maximum thickness is 4".

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

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6/21/2023

Texas Department of Transportation

CLEAN & SEAL JOINT DETAIL

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		75

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CK | DW | CK | DW

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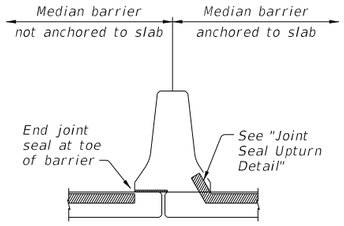
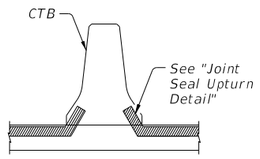
APPROVED PRECOMPRESSED FOAM SEAL MANUFACTURERS

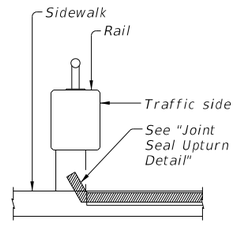
MANUFACTURER	SEAL TYPE
Watson Bowman Acme	Wabo FS
SSI	Silspec SES
Sealtite	Sealtite 50N
EMSEAL	BEJS



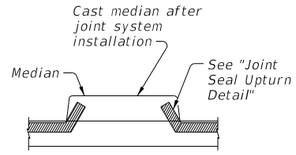
WITH OPEN DECK JOINT BELOW MEDIAN BARRIER



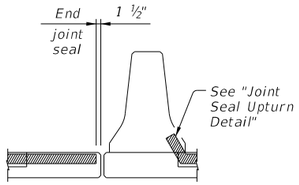
AT CONCRETE TRAFFIC BARRIER



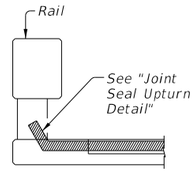
AT SIDEWALK BEHIND BRIDGE RAIL



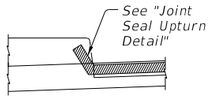
AT RAISED MEDIAN



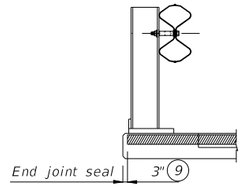
WITH OPEN DECK JOINT ADJACENT TO MEDIAN BARRIER



AT CONCRETE BRIDGE RAIL



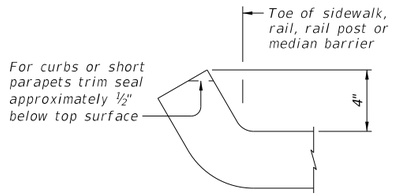
AT SIDEWALK



AT STEEL POST BRIDGE RAIL

JOINT SEALANT TERMINATION DETAILS

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



JOINT SEAL UPTURN DETAIL

N.T.S

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6/21/2023

Texas Department of Transportation

CLEAN & SEAL JOINT DETAIL

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		76

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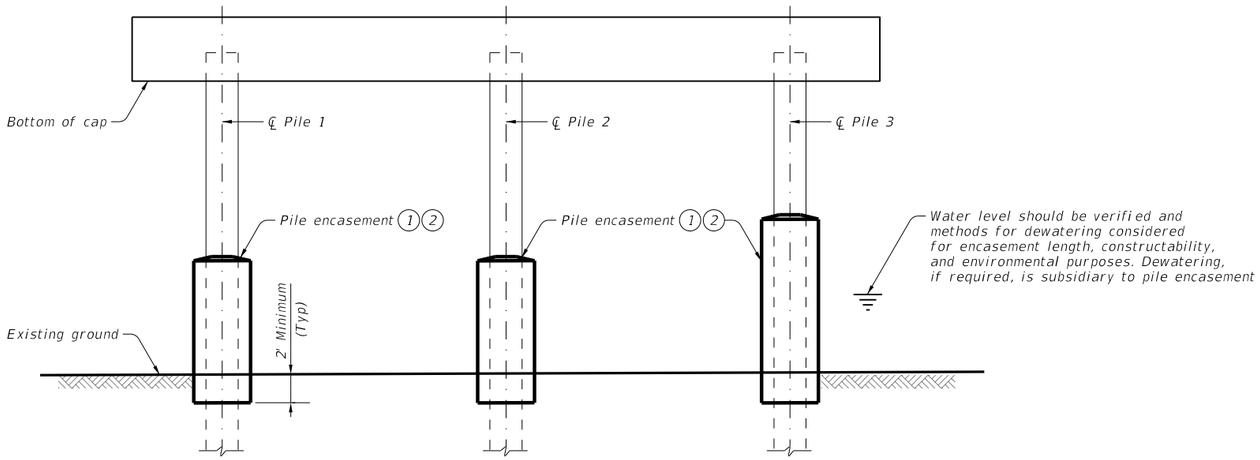


TYPICAL BENT ELEVATION

(Looking upstation)

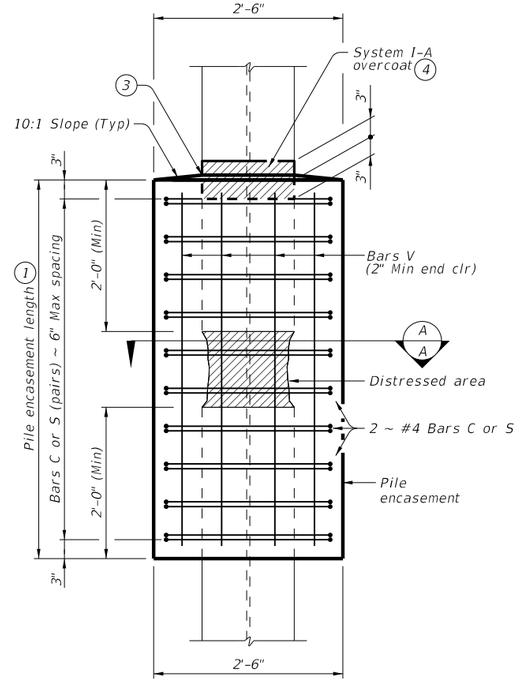
TABLE OF PILE ENCASEMENT LENGTHS			
Bent	Pile	Length of Pile Encasement (ft)	Bent Total (ft)
2	1	8	32
	2	8	
	3	8	
	4	8	
		Total	32

PILE ENCASEMENT PROCEDURE:

1) Verify channel line elevations and report to the Engineer for possible adjustments.
2) Submit a concrete mix design and procedures for casting the encasements for approval.
3) Place and secure the steel reinforcement and install formwork.
4) Place the concrete in the encasement per approved procedures and in accordance with Item 420, "Concrete Substructures."
5) Leave forms in-place for at least 48 hours.

PAINTING NOTES:

1) Clean the area to be painted with hand tools and high pressure water blasting.
2) Apply a minimum of 4.0 mils DFT coating conforming to DMS-8105 as shown.
3) Allow coating to cure a minimum of 24 hours prior to placing concrete.



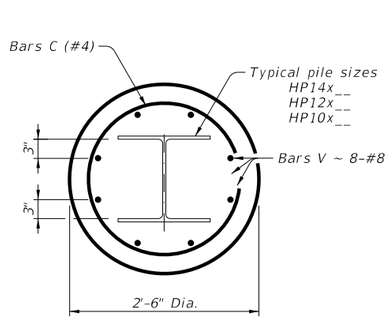
ELEVATION OF PILE ENCASEMENT

(1) See Table of Pile Encasement Lengths.

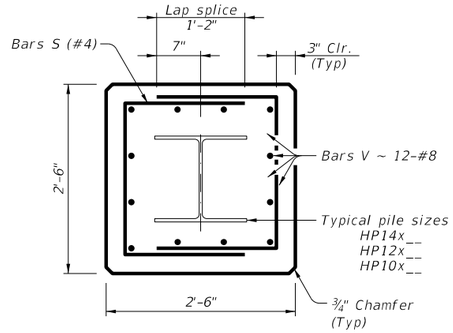
(2) Field adjust encasement length based on actual conditions.

(3) Seal gap with Class 4 or Class 7 joint sealant (DMS-6310).

(4) Apply System I-A overcoat (or alternate coating system, as specified) per Item 446, "Field Cleaning and Painting Steel" to an area covering 3" above and 3" below the top of concrete encasement as shown. Refer to Painting Notes for more information. Payment for this work is subsidiary to Item 420, "Concrete Substructures."

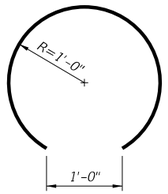


ROUND ENCASEMENT



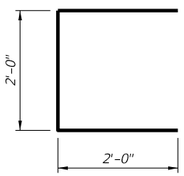
SQUARE ENCASEMENT

SECTION A-A



BAR C (#4)

Arrange Bar C pairs to provide 1'-0" opening on opposite faces:



BAR S (#4)

GENERAL NOTES:

Verify dimensions for steel H-piling encasements and ground elevations. Pile Encasement Length may be adjusted by the Engineer based on actual channel and ground line elevations.

Existing conditions may be under water. Contractor is responsible for dewatering. Payment for dewatering is subsidiary to Item 420, "Concrete Substructures." The Contractor may submit a plan that adequately demonstrates the ability to perform the repairs without dewatering to the Engineer for approval. If approved, dewatering may be waived.

Obtain approval for the mix design and the construction procedures before beginning work.

If underwater placement is approved, concrete mix should be designed for underwater placement and may require the use of anti-washout admixtures.

Provide concrete for the H-piling encasement capable of attaining an average concrete compressive strength of 3,000 psi within 24 hours and consisting of coarse aggregate grades not greater than No. 5 (¾"). Provide a concrete mix with 2 gallons of corrosion inhibitor per CY.

Pile encasement will be paid for per the unit bid price for each linear foot of encasement, per Item 420, "Concrete Substructures." Payment for collars is subsidiary to Item 420, "Concrete Substructures."

Provide Grade 60 reinforcing steel.

N.T.S

Texas Department of Transportation

Bridge Division

PILE ENCASEMENT DETAILS

(NBI: 11-202-0-0694-01-018)

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6/2/2023

FILE: WD-PED-22.dgn	DN:	CK:	DW:	CK:
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REVISIONS	0911	00	116	VA
	DIST	COUNTY		SHEET NO.
	LFK	ANGELINA		77

DATE:
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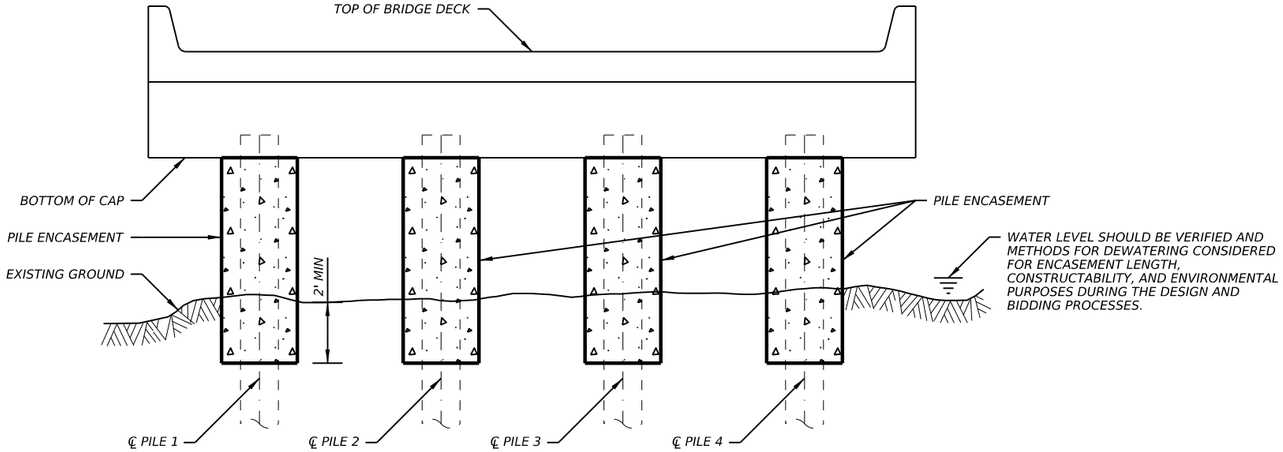


TYPICAL BENT ELEVATION

TABLE OF PILE ENCASEMENT LENGTHS			
BENT	PILE	LENGTH OF PILE ENCASEMENT (FT)	BENT TOTAL (FT)
2	1	7	28
	2	7	
	3	7	
	4	7	

PILE ENCASEMENT PROCEDURE

1) VERIFY CHANNEL LINE ELEVATIONS AND REPORT TO THE ENGINEER FOR POSSIBLE ADJUSTMENTS.

2) SUBMIT A CONCRETE MIX DESIGN AND PROCEDURES FOR CASTING THE ENCASEMENTS FOR APPROVAL.

3) INSTALL LAG BOLTS AT QUARTER POINTS IN PILE WITH EPOXY RESIN. PLACE AND SECURE THE STEEL REINFORCEMENT TYING LONGITUDINAL STEEL TO LAG BOLTS AND INSTALL FORMWORK.

4) PLACE THE CONCRETE IN THE ENCASEMENT PER APPROVED PROCEDURES AND IN ACCORDANCE WITH ITEM 420, "CONCRETE SUBSTRUCTURES." IF COMPLETE CONTACT CANNOT BE OBTAINED AT THE BOTTOM OF THE CAP, CONTRACTOR MAY DRY BACK STIFF CONCRETE MATERIAL TO FILL VOID.

5) LEAVE FORMS IN-PLACE FOR AT LEAST 48 HOURS.

GENERAL NOTES

VERIFY DIMENSIONS FOR TIMBER PILING ENCASEMENTS AND GROUND ELEVATIONS. PILE ENCASEMENT LENGTH MAY BE ADJUSTED BY THE ENGINEER BASED ON ACTUAL CHANNEL AND GROUND LINE ELEVATIONS.

EXISTING CONDITIONS MAY BE UNDER WATER. CONTRACTOR IS RESPONSIBLE FOR DEWATERING. PAYMENT FOR DEWATERING IS SUBSIDIARY TO ITEM 420, "CONCRETE SUBSTRUCTURES." THE CONTRACTOR MAY SUBMIT A PLAN THAT ADEQUATELY DEMONSTRATES THE ABILITY TO PERFORM THE REPAIRS WITHOUT DEWATERING TO THE ENGINEER FOR APPROVAL. IF APPROVED, DEWATERING MAY BE WAIVED.

OBTAIN APPROVAL FOR THE MIX DESIGN AND THE CONSTRUCTION PROCEDURES BEFORE BEGINNING WORK.

IF UNDERWATER PLACEMENT IS APPROVED, CONCRETE MIX SHOULD BE DESIGNED FOR UNDERWATER PLACEMENT AND MAY REQUIRE THE USE OF ANTI-WASHOUT ADMIXTURES.

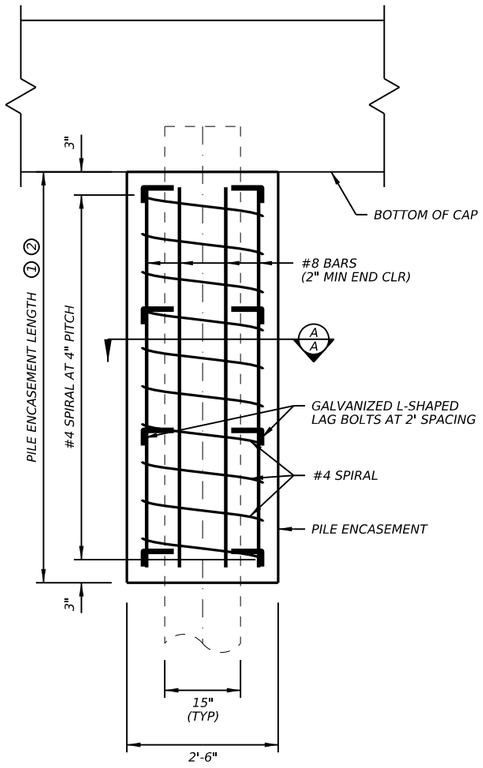
PROVIDE CONCRETE FOR THE H-PILING ENCASEMENT CAPABLE OF ATTAINING AN AVERAGE CONCRETE COMPRESSIVE STRENGTH OF 3,000 PSI WITHIN 24 HOURS AND CONSISTING OF COARSE AGGREGATE GRADES NOT GREATER THAN NO. 5 (¾").

PILE ENCASEMENT WILL BE PAID FOR PER THE UNIT BID PRICE FOR EACH LINEAR FOOT OF ENCASEMENT, PER ITEM 420, "CONCRETE SUBSTRUCTURES." PAYMENT FOR COLLARS IS SUBSIDIARY TO ITEM 420, "CONCRETE SUBSTRUCTURES."

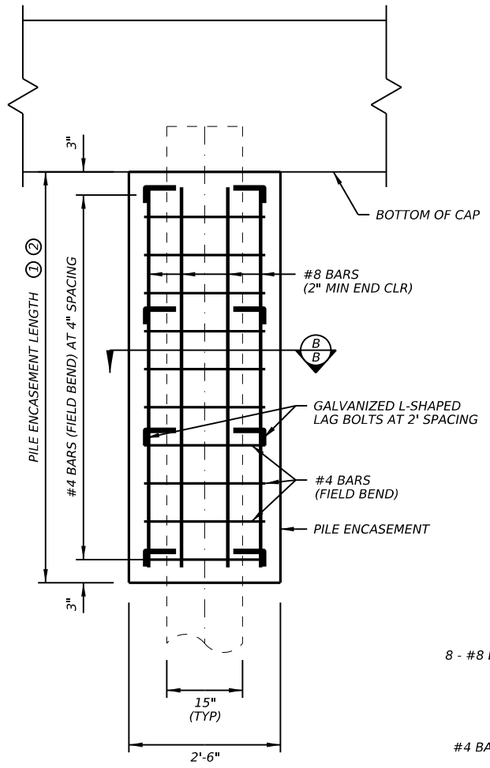
PROVIDE GRADE 60 REINFORCING STEEL.

① SEE TABLE OF PILE ENCASEMENT LENGTHS.

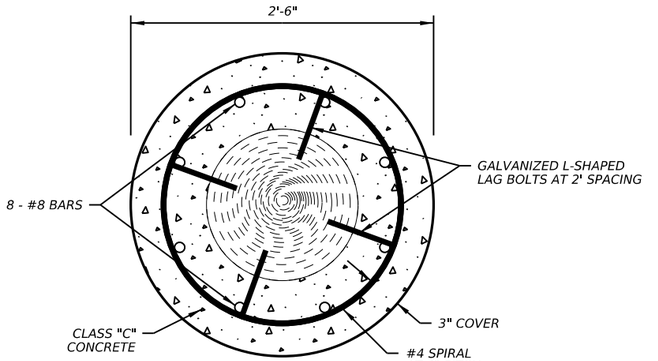
② FIELD ADJUST ENCASEMENT LENGTHS BASED ON ACTUAL CONDITIONS.



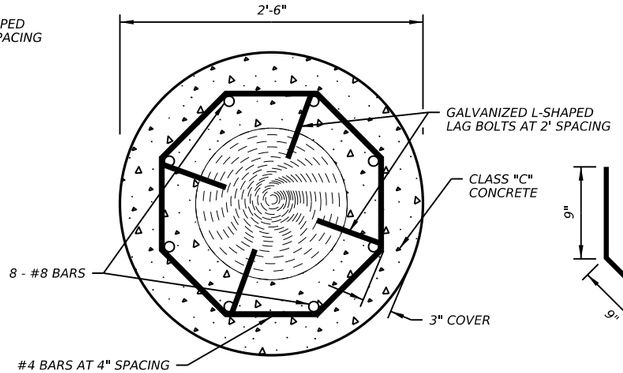
ELEVATION OF PILE ENCASEMENT
(OPTION 1)



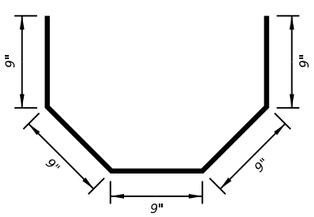
ELEVATION OF PILE ENCASEMENT
(OPTION 2)



SECTION A-A
(OPTION 1)



SECTION B-B
(OPTION 2)



#4 BARS
(FIELD BEND)
(OPTION 2)

N.T.S.

STATE OF TEXAS
MITCHELL L. RANDALL
129397
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
Mitchell L. Randall, P.E.
FF6D8503742F43A...
6/2/2023

Texas Department of Transportation

TIMBER PILE ENCASEMENT DETAIL

(11-203-0-0390-05-001)

CONT	SECT	JOB	HIGHWAY
0911	00	116	VA
DIST	COUNTY		SHEET NO.
LFK	ANGELINA		78

DATE: 6/2/2023 11:50:42 AM
FILE: pw://txdot.projectwiseonline.com:TXDOT3/Documents/11 - LFK/Design Projects/0911001164 - Design/Plan Set/7. Bridge/Timber Pile Encasement Detail.dgn

PART 1 - GENERAL

1.01 DESCRIPTION

This project includes construction work within the right of way and/or properties of the Railroad and adjacent to its tracks, wire lines and other facilities. These sheets describe the minimum special requirements for coordination with the Railroad when working upon, over or under Railroad Right of Way or when impacting current or future Railroad operations. Coordinate with the Railroad while performing the work outlined herein, and afford the same cooperation with the Railroad as with TxDOT. Complete all submittals and work in accordance with TxDOT Standard Specifications, Railroad Guidelines and AREMA recommendations as modified by these minimum special requirements or as directed in writing by the Railroad Designated Representative.

For purposes of this project, the Railroad Designated Representative is the person or persons designated by the Railroad Manager of Industry and Public Projects to handle specific tasks related to the project.

1.02 REQUEST FOR INFORMATION / CLARIFICATION

Submit Requests for Information ("RFI") involving work within any Railroad Right of Way to the TxDOT Engineer. The TxDOT Engineer will submit the RFI to the Railroad Designated Representative for review and approval for RFI's corresponding to work within Railroad Right of Way. Allow six (6) weeks total time for review and approval, which includes four (4) weeks for review and approval by the Railroad.

1.03 PLANS / SPECIFICATIONS

TxDOT has received written Railroad approval of the plans and specifications for this project. Any revisions or changes in the plans after award of the Contract must have the approval of TxDOT and the Railroad.

PART 2 - UTILITIES AND FIBER OPTIC

Construct all utility installations in accordance with current AREMA recommendations, Railroad, TxDOT and owning utility specifications and requirements. Railroad general guidelines can be found on the Railroad website or by contacting the Railroad Designated Representative.

PART 3 - CONSTRUCTION

3.01 GENERAL

A. Perform all work in compliance with all applicable Railroad, Federal Railroad Administration (FRA), and TxDOT rules and regulations. Arrange and conduct work in a manner that does not endanger or interfere with the safe operation of the tracks and property of the Railroad and the traffic moving on such tracks, or the wires, signals and other property of the Railroad, its tenants or licensees, at or in the vicinity of the Work. The safe operation of railroad train movements takes precedence over any work to be performed by the Contractor. The Contractor is responsible for train delay cost and lost revenue claims due to any delays or interruption of train operations resulting from Contractor's construction or other activities.

B. Construction activities within 15 feet of the operational tracks will only be allowed if absolutely necessary and the Railroad's Designated Representative grants approval. Construction activities within 15 feet of the operational track(s) preferably allow the tracks to stay operational. In such cases, coordination and approval by the Railroad Track Manager is required with regard to schedule, flagging, and slow orders. See Sections 3.07 and 3.08 for additional information.

C. Provide track protection for all work equipment (including rubber tired equipment) operating within 25 feet from nearest rail. When not in use, keep Contractor machinery and materials at least 50 feet from the Railroad's nearest track.

D. Vehicular crossings of railroad track are allowed only at existing crossings, or haul road crossings developed with Railroad approval.

E. The Contractor is also advised that new railroad facilities within the project may be built by the Railroad. If applicable, these facilities are delineated in the plans. Be aware of the limits of responsibilities and coordinate efforts with the Railroad and TxDOT.

F. Railroad requirements do not allow work within 50 feet of track centers when a train passes the work site and all personnel must clear the area within 50 feet of the track centerline and secure all equipment. Additional allowances may be pursued as outlined in 3.02 and 3.03.

G. All permanent clearances shall be verified before project closing.

3.02 RAILROAD OPERATIONS

A. Trains and/or equipment are expected on any track, at any time, in either direction. Become familiar with the train schedules in this location and structure bid assuming intermittent track windows in this period, as defined in Paragraph B that follows.

B. All railroad tracks within and adjacent to the contract site are active, and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. Coordinate and schedule the work so that construction activities do not interfere with railroad operations.

C. Coordinate work windows with TxDOT and the Railroad's Designated Representative. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:

1. Conditional Work Window: A Conditional Work Window is a period of time that railroad operations have priority over construction activities. When construction activities may occur on and/or adjacent to the railroad tracks within 25 feet of the nearest track, a railroad flag person will be required. At the direction of the railroad flag person, upon approach of a train, and when trains are present on the tracks, the tracks must be cleared (i.e., no construction equipment, materials or personnel within 25 feet, or as directed by the Railroad Designated Representative, from the tracks). Conditional Work Windows are available for the Project.

2. Absolute Work Window: An Absolute Work Window is a period of time that construction activities are given priority over railroad operations. During this time frame, the designated railroad track(s) will be inactive for train movements and may be fouled by the Contractor. At the end of an Absolute Work Window, the railroad tracks and/or signals must be completely operational for train operations and all Railroad, Public Utilities Commission (PUC) and FRA requirements, codes and regulations for operational tracks must be satisfied. In the situation where the operating tracks and/or signals have been affected, the Railroad will perform inspections of the work prior to placing that track back into service. Railroad flag persons will be required for construction activities requiring an Absolute Work Window. Absolute Work Windows will not generally be granted. Any request will require a detailed explanation for Railroad review.

3.03 RIGHT OF ENTRY, ADVANCE NOTICE AND WORK STOPPAGES

A. Do not perform any work within Railroad Right of Way without a valid executed Right of Entry Agreement if required on this project.

B. Give advance notice to the Railroad as required in the "Contractor's Right of Entry Agreement" before commencing work in connection with construction upon or over Railroad Right of Way and observe the Railroad's rules and regulations with respect thereto.

C. Perform all work upon Railroad Right of Way in a manner to avoid interference with or endanger the operations of the Railroad. Whenever work may affect the operations or safety of trains, submit the work method to the Railroad Designated Representative for approval. Approval does not relieve the Contractor from liability. Do not commence any work which requires flagging service or inspection service until the flagging protection required by the Railroad is available at the job site. See Section 3.15 for railroad flagging requirements.

D. Make requests in writing for both Absolute and Conditional Work Windows, at least 30 days in advance of any work. Include in the written request:
1. Exactly what the work entails.
2. The days and hours that work will be performed.
3. The exact location of work, and proximity to the tracks.
4. The type of window requested and the amount of time requested.
5. The designated contact person.

Provide a written confirmation notice to the Railroad at least 48 hours before commencing work in connection with approved work windows when work is within 25 feet of nearest rail. Perform all work in accordance with previously approved work plans.

E. Make provisions to protect operations and property of the Railroad should a condition arising from, or in connection with the work, require immediate and unusual action. If in the judgment of the Railroad Designated Representative such provisions are insufficient, the Railroad Designated Representative may require or provide such provisions as deemed necessary. In any event, such provisions shall be at the Contractor's expense and without cost to the Railroad or TxDOT. The Railroad or TxDOT shall have the right to order the Contractor to temporarily cease operations in the event of an emergency or, if in the opinion of the Railroad Designated Representative, the Contractor's operations could endanger railroad operations. In the event of such an order, immediately notify TxDOT of the order.

3.04 INSURANCE

Do not begin work upon or over Railroad Right of Way until furnishing the Railroad with the insurance policies, binders, certificates and endorsements required by the "Contractor's Right of Entry Agreement", and until the Railroad Designated Representative has advised TxDOT that such insurance is in accordance with the Agreement.

3.05 RAILROAD SAFETY ORIENTATION

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

"UPRR, BNSF, KCS/TEXMEX will not accept on-track safety training certificates from other railroads. Refer to Railroad specific contractor right of entry for training information."

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

3.06 COOPERATION

The Railroad will cooperate with Contractor so that work may be conducted in an efficient manner, and will cooperate with Contractor in enabling use of Railroad Right of Way in performing the work.

3.07 MINIMUM CONSTRUCTION CLEARANCES FOR FALSEWORK AND OTHER TEMPORARY STRUCTURES

Abide by the following minimum temporary clearances during the course of construction:
A. 15' - 0" (BNSF)(UPRR)and 14'-0" (KCS) horizontal from centerline of track
B. 22' (KCS) and 21' - 6" (UPRR & BNSF) vertically above top of rail.

For construction clearance less than listed above, obtain local Railroad Operating Unit review and approval.

3.08 APPROVAL OF REDUCED CLEARANCES

A. Maintain minimum track clearances during construction as specified in Section 3.07.

B. Submit any proposed infringement on the specified minimum clearances to the Railroad Designated Representative through TxDOT at least 30 days in advance of the work. Do not proceed with such infringement without written approval by the Railroad Designated Representative.

C. Do not commence work involving an approved infringement without receiving written assurance from the Railroad Designated Representative that arrangements have been made for any necessary flagging service.

Texas Department of Transportation | Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS March 2020	0911	00	116	VA
	DIST	COUNTY		SHEET NO.
	LFK	ANGELINA		79

DATE: 5/12/2023

3.09 MAINTENANCE OF RAILROAD FACILITIES

A. Maintain all ditches and drainage structures free of silt or other obstructions resulting from Contractor's operations. Repair eroded areas and any other damage within Railroad Right of Way and repair any other damage to the property of the Railroad, or its tenants.

B. Perform all such maintenance and repair of damages due to the Contractors's operations at Contractor's expense.

C. Submit a proposed method of erosion control for review by the Railroad prior to beginning any grading on the project site. Comply with all applicable local, state and federal regulations when developing and implementing such erosion control.

3.10 SITE INSPECTIONS BY RAILROAD's DESIGNATED REPRESENTATIVE

A. In addition to the office reviews of construction submittals, site inspections may be performed by the Railroad Designated Representative at significant points during construction, including the following if applicable:
   1. Pre-construction meetings.
   2. Pile driving/drilling of caissons or drilled shafts.
   3. Reinforcement and concrete placement for railroad bridge substructure and/or superstructure.
   4. Erection of precast concrete or steel bridge superstructure.
   5. Placement of waterproofing (prior to placing ballast on bridge deck).
   6. Completion of the bridge structure.

B. Site inspection is not limited to the milestone events listed above. Site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by the Railroad.

C. Provide a detailed construction schedule, including the proposed temporary horizontal and vertical clearances and construction sequence for all work to TxDOT for submittal to the Railroad Designated Representative for review prior to commencement of work. Include the anticipated dates when the above listed events will occur. Update this schedule for the above listed events as necessary and each month at a minimum to allow the Railroad to schedule site inspections.

3.11 RAILROAD REPRESENTATIVES

Railroad representatives, conductors, flag person or watch person will be provided by the Railroad at expense of TxDOT to protect Railroad facilities, property and movements of its trains or engines. In general, the Railroad will furnish such personnel or other protective services as follows:

A. When any part of any equipment is standing or being operated within 25 feet, measured horizontally, from nearest rail of any track on which trains may operate, or when any object is off the ground and any dimension thereof could extend inside the 25 foot limit, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.

B. For any excavation below elevation of track subgrade if, in the opinion of the Railroad Designated Representative, track or other railroad facilities may be subject to settlement or movement.

C. During any clearing, grubbing, excavation or grading in proximity to railroad facilities, which, in the opinion of the Railroad Designated Representative, may endanger railroad facilities or operations.

D. During any Contractor's operations when, in the opinion of the Railroad Designated Representative, railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines, or pipe lines, may be endangered.

E. Arrange with the Railroad Designated Representative to provide the adequate number of flag persons to accomplish the work.

3.12 COMMUNICATIONS AND SIGNAL LINES

If required, the Railroad will rearrange its communications and signal lines, its grade crossing warning devices, train signals and tracks, and facilities that are in use and maintained by the Railroad's forces in connection with its operation at expense of TxDOT. This work by the Railroad will be done by its own forces and it is not a part of the Work under this Contract.

3.13 TRAFFIC CONTROL

Coordinate any operations that control traffic across or around railroad facilities with the Railroad Designated Representative.

3.14 CONSTRUCTION EXCAVATIONS AND BORING ACTIVITIES UNDER TRACK

A. Take special precaution and care in connection with excavating and shoring. Excavations for construction of footings, piers, columns, walls or other facilities that require shoring shall comply with requirements of TxDOT, OSHA, AREMA and Railroad "Guidelines for Temporary Shoring".

B. The project plans indicate whether there are fiber optic lines or other such telecommunications systems that require consideration. Regardless, contact the necessary call center to determine if such cable systems are present:

   UPRR 1-800-336-9193
   7:00 AM to 9:00 PM CST Monday-Friday except holidays,
   staffed 24 hrs/day for emergencies
   48 hrs notice required

   BNSF 1-800-533-2891
   24 hour number
   5 working days notice required

   KCS 1-800-344-8377
   Texas One Call, a 24 hour number
   48 hrs notice required, excluding weekends and holidays

   If a telecommunications system is buried anywhere on or near railroad property, coordinate with TxDOT, the Railroad and the Telecommunication Company(ies) to arrange for relocation or protective measures prior to beginning work on or near railroad property. Refer to the project General Notes for additional information.

C. Projects involving a boring or jack and bore operation under track such as drainage pipes or culverts and utilities require an installation plan reviewed and approved by the Railroad and TxDOT prior to proceeding with such construction. A railroad inspector and contractor assisted monitoring of ground and track movement is required to maintain safe passage of rail traffic. Stop installation and do not allow passage of trains if movements in excess of 1/4 inch vertical or horizontal is detected in the tracks. Immediately repair the damage to the satisfaction of TxDOT and the Railroad before proceeding.

3.15 RAILROAD FLAGGING

Per the Right of Entry Agreement for flagging, notify the Railroad Representative at least 10 working days in advance of Contractor's work and at least 30 working days in advance of any Contractor's work in which any person or equipment will be within 25 feet of nearest rail or as specified in the Contractor Right of Entry (CROE).

3.16 CLEANING OF RIGHT-OF-WAY

When work is complete, remove all tools, implements, and other materials brought into Railroad Right of Way and leave the right of Way in a clean and presentable condition to the satisfaction of TxDOT and the Railroad.

Texas Department of Transportation | Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS March 2020	0911	00	116	VA
	DIST	COUNTY		SHEET NO.
	LFK	ANGELINA		80

DATE:5/12/2023

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

DOT #: 756012J
Crossing Type: HIGHWAY OVERPASS
RR Company Owning Track at Crossing: UNION PACIFIC RAILROAD (UPRR)
Operating RR Company at Track: UNION PACIFIC RAILROAD (UPRR)
RR MP: 142.370
RR Subdivision: LUFKIN
City: NACOGDOCHES
County: NACOGDOCHES
CSJ at this Crossing: 0175-08
Highway/Roadway name crossing the railroad: BU 59F/NORTH ST
# of regularly scheduled trains per day at this crossing: 8
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: 2%

Scope of Work at this Crossing to Be Performed by State Contractor:
THIS PROJECT IS FOR BRIDGE PREVENTATIVE MAINTENANCE CONSISTING OF CLEANING AND RESEALING THE JOINTS ON THE NORTHBOUND BRIDGE.

Scope of Work at this Crossing to Be Performed by Railroad Company:
N/A

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

III. FLAGGING & INSPECTION

of Days of Railroad Flagging Expected: 4

On this project, night or weekend flagging is:

- [ ] Expected
- [X] Not Expected

Flagging services will be provided by:

- [ ] Railroad Company: TxDOT will pay flagging invoices
- [X] Outside Party: Contractor will pay flagging invoices, to be reimbursed by TxDOT

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

Contact Information for Flagging:

- [X] UPRR - UP.info@railpros.com
  Call Center 877-315-0513, Select #1 for flagging
  - UP.request@nrssinc.net
  Call Center 877-984-6777
- [ ] BNSF - BNSF.info@railpros.com
  Call Center 877-315-0513, Select #1 for flagging
- [ ] KCS - KCS.info@railpros.com
  Call Center 877-315-0513, Select #1 for flagging
  - Bottom Line On-Track Safety Services
  bottomline076@aol.com, 903-767-7630
- [ ] OTHERS

Contractor must incorporate Construction Inspection into anticipated construction schedule.

- [X] Not Required
- [ ] Required: Contact Information for Construction Inspection:

IV. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

On this project, construction work to be performed by a railroad company is:

- [ ] Required
- [X] Not Required

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

V. RAILROAD INSURANCE REQUIREMENTS

Railroad reference number shall be provided by TxDOT CST or DO.

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

Insurance policies must be issued for and on behalf of the Railroad. Where more than one Railroad Company is operating on the same right of way or where several Railroad Companies are involved and operate on their own separate rights of way, provide separate insurance policies in the name of each Railroad Company.

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

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

Railroad Protective Liability		
[ ]	Not Required	
[X]	Non - Bridge Projects	$2,000,000 / $6,000,000
[ ]	Bridge Projects	$5,000,000 / $10,000,000
[ ]	Other	

VI. CONTRACTOR'S RIGHT OF ENTRY (ROE) AGREEMENT

On this project, an ROE agreement is:

- [ ] Not Required
- [ ] Required: TxDOT CST to assist in obtaining with the UPRR (see Item 5, Article 8.3)
- [X] Required: UPRR Maintenance Consent Letter. TxDOT CST to assist.
- [ ] Required: Contractor to obtain (see Item 5, Article 8.4)
  With the following railroad companies:

To view previously approved ROE Agreement templates agreed upon between the State and Railroad, see:

http://www.txdot.gov/inside-txdot/division/rail/samples.html

Approved ROE Agreement templates are not to be modified by the Contractor.

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

VII. RAILROAD COORDINATION MEETING

On this project, a Railroad Coordination Meeting is:

- [X] Not Required
- [ ] Required

See Item 5, Article 8.1 for more details.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are required to maintain the same insurance coverage as required of the Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
Call Union Pacific Railroad Company
Railroad Emergency Line at 888-877-7267
Location: DOT 756012J
RR Milepost 142.370
Subdivision Lufkin

Texas Department of Transportation — Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

FILE: RR Scope of Work.dgn	DN: TxDOT	CK:	DW:	CK:
© TxDOT June 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS 9/2021	0911	00	116	VA
	DIST	COUNTY		SHEET NO.
	LFK	ANGELINA		81

DATE: 6/15/2023

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

DOT #: 755841C
Crossing Type: HIGHWAY OVERPASS
RR Company Owning Track at Crossing: UNION PACIFIC RAILROAD (UPRR)
Operating RR Company at Track: UNION PACIFIC RAILROAD (UPRR)
RR MP: 136.260
RR Subdivision: LUFKIN
City: NACOGDOCHES
County: NACOGDOCHES
CSJ at this Crossing: 2560-01
Highway/Roadway name crossing the railroad: LOOP 224/SE STALLINGS DR
# of regularly scheduled trains per day at this crossing: 8
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: 17.0%

Scope of Work at this Crossing to Be Performed by State Contractor:
THIS PROJECT IS FOR BRIDGE PREVENTATIVE MAINTENANCE CONSISTING OF ADDING FLOWABLE FILL AT SOUHWEST ABUTMENT.

Scope of Work at this Crossing to Be Performed by Railroad Company:
N/A

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

III. FLAGGING & INSPECTION

of Days of Railroad Flagging Expected: 10

On this project, night or weekend flagging is:

- [ ] Expected
- [X] Not Expected

Flagging services will be provided by:

- [ ] Railroad Company: TxDOT will pay flagging invoices
- [X] Outside Party: Contractor will pay flagging invoices, to be reimbursed by TxDOT

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

Contact Information for Flagging:

- [X] UPRR - UP.info@railpros.com
  Call Center 877-315-0513, Select #1 for flagging
  - UP.request@nrssinc.net
  Call Center 877-984-6777
- [ ] BNSF - BNSF.info@railpros.com
  Call Center 877-315-0513, Select #1 for flagging
- [ ] KCS - KCS.info@railpros.com
  Call Center 877-315-0513, Select #1 for flagging
  - Bottom Line On-Track Safety Services
  bottomline076@aol.com, 903-767-7630
- [ ] OTHERS

Contractor must incorporate Construction Inspection into anticipated construction schedule.

- [X] Not Required
- [ ] Required: Contact Information for Construction Inspection:

IV. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

On this project, construction work to be performed by a railroad company is:

- [ ] Required
- [X] Not Required

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

V. RAILROAD INSURANCE REQUIREMENTS

Railroad reference number shall be provided by TxDOT CST or DO.

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

Insurance policies must be issued for and on behalf of the Railroad. Where more than one Railroad Company is operating on the same right of way or where several Railroad Companies are involved and operate on their own separate rights of way, provide separate insurance policies in the name of each Railroad Company.

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

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

Railroad Protective Liability		
[ ]	Not Required	
[X]	Non - Bridge Projects	$2,000,000 / $6,000,000
[ ]	Bridge Projects	$5,000,000 / $10,000,000
[ ]	Other	

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  With the following railroad companies:

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VII. RAILROAD COORDINATION MEETING

On this project, a Railroad Coordination Meeting is:

- [X] Not Required
- [ ] Required

See Item 5, Article 8.1 for more details.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are required to maintain the same insurance coverage as required of the Contractor.

IX. EMERGENCY NOTIFICATION

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Railroad Emergency Line at 888-877-7267
Location: DOT 755841C
RR Milepost 136.260
Subdivision Lufkin

DATE:6/15/2023

Texas Department of Transportation | Rail Division

RAILROAD SCOPE OF WORK

PROJECT SPECIFIC DETAILS

FILE: RR Scope of Work.dgn	DN: TxDOT	CK:	DW:	CK:
© TxDOT June 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS 9/2021	0911	00	116	VA
	DIST	COUNTY		SHEET NO.
	LFK	ANGELINA		82

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

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

For all projects with any soil disturbing activities, TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SWP3 shall be kept at the appropriate TxDOT Area Office.

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

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0911-00-116

1.2 PROJECT LIMITS:
From: *VARIOUS LOCATIONS DISTRICTWIDE*

To: _____

1.3 PROJECT COORDINATES:

BEGIN: (Lat)_____,(Long)_____

END: (Lat)_____,(Long)_____

1.4 TOTAL PROJECT AREA (Acres): *< 1 ACRE*

1.5 TOTAL AREA TO BE DISTURBED (Acres): *.081*

1.6 NATURE OF CONSTRUCTION ACTIVITY:
BRIDGE REPAIR MAINTENANCE

1.7 MAJOR SOIL TYPES:

SITE	LOCATION	SOIL TYPE	DESCRIPTION
A	SH 63 @ MILL CREEK	TENAHA LOAMY FINE SAND	5-15% SLOPE WELL DRAINED LOW RUNOFF CLASS
B	FM 2497 @ JACK CREEK RELIEF	KOURY LOAM	0-1% SLOPE MODERATELY WELL DRAINED
C	SH 21 @ LA NANA CREEK	HANNAHATCHEE	0-1% SLOPE WELL DRAINED NEGLIGIBLE RUNOFF
E	US 259 @ BEECH CREEK	MANTACHIE	0-1% SLOPE POORLY DRAINED HIGH RUNOFF CLASS
K	FM 2259 @ CARRIZO CREEK	TUSCOSSO	0-1% SLOPE MODERATELY DRAINED LOW RUNOFF CLASS
P	US 96 @ MCKIM CREEK	MATTEX-IULUS COMPLEX	0-1% SLOPE POORLY DRAINED LOW RUNOFF CLASS
R	SH 87 @ COLOROW CREEK	LANEVILLE LOAM	0-1% SLOPE MODERATELY DRAINED LOW RUNOFF CLASS
T	FM 83 @ HOUSEN BAYOU	POPHERS SILT LOAM	0-1% SLOPE POORLY DRAINED HIGH RUNOFF CLASS
U	FM 2558 @ BIG OWL CREEK	MATTEX-IULUS COMPLEX	0-1% SLOPE POORLY DRAINED LOW RUNOFF CLASS
W	FM 139 @ TENAHA BAYOU	SAWTOWN VERY FINE SANDY LOAM	0-2% SLOPE WELL DRAINED VERY LOW RUNOFF
X	FM 138 @ SHAFNER CREEK	LANEVILLE LOAM	0-1% SLOPE MODERATELY DRAINED LOW RUNOFF CLASS

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

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

Type	Sheet #s

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

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

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

1.10 POTENTIAL POLLUTANTS AND SOURCES:

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

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

SITE	TRIBUTARIES	CLASSIFIED WATERBODY
A	SH 63 @ MILL CREEK	NECHES RIVER BELOW LAKE PALESTINE - 0604
B	FM 2497 @ JACK CREEK RELIEF	NECHES RIVER BELOW LAKE PALESTINE - 0604
C	SH 21 @ LA NANA CREEK	ANGELINA RIVER ABOVE SAM RAYBURN RESERVOIR - 0611
E	US 259 @ BEECH CREEK	ANGELINA RIVER ABOVE SAM RAYBURN RESERVOIR - 0611
K	FM 2259 @ CARRIZO CREEK	SAM RAYBURN RESERVOIR - 0610
P	US 96 @ MCKIM CREEK	SAM RAYBURN RESERVOIR - 0610
R	SH 87 @ COLOROW CREEK	TOLEDO BEND RESERVOIR - 0504
T	FM 83 @ HOUSEN BAYOU	TOLEDO BEND RESERVOIR - 0504
U	FM 2558 @ BIG OWL CREEK	SAM RAYBURN RESERVOIR - 0610
W	FM 139 @ TENAHA BAYOU	TOLEDO BEND RESERVOIR - 0504
X	FM 138 @ SHAFNER CREEK	TOLEDO BEND RESERVOIR - 0504

1.12 ROLES AND RESPONSIBILITIES: TxDOT

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

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

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

STATE OF TEXAS
MITCHELL L. RANDALL
129397
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
Mitchell L. Randall, P.E.
8/1/2023

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

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			83
STATE	STATE DIST.	COUNTY	
TEXAS	11	ANGELINA	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	00	116	VA

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

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

2.2 SEDIMENT CONTROL BMPs:

T / P

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

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

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

TYPE	SITE	LOCATION
ROCK RIPRAP	B	FM 2497 @ JACK CREEK RELIEF
ROCK RIPRAP	C	SH 21 @ LA NANA CREEK
ROCK RIPRAP	E	US 259 @ BEECH CREEK
ROCK RIPRAP	H	US 59 BUS NB @ SPRR & COX ST
ROCK RIPRAP	J	FM 1638 @ BANITA CREEK
ROCK RIPRAP	L	LP 224 @ SPRR & DRAW &
ROCK RIPRAP	P	US 59 @ MCKIM CREEK
ROCK RIPRAP	R	SH 87 @ BIG SANDY CREEK
ROCK RIPRAP	T	FM 83 @ HOUSEN BAYOU
ROCK RIPRAP	W	FM 139 @ TENAHA BAYOU
ROCK RIPRAP	X	FM 138 @ SHAFNER CREEK

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

2.5 POLLUTION PREVENTION MEASURES:

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

2.6 VEGETATED BUFFER ZONES:

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

Type	Stationing	
	From	To

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

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

2.8 INSPECTIONS:

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

2.9 MAINTENANCE:

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

STATE OF TEXAS
MITCHELL L. RANDALL
129397
LICENSED
PROFESSIONAL ENGINEER

Docusigned by:
Mitchell L. Randall, P.E.
8/11/2023

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

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			84
STATE	STATE DIST.	COUNTY	
TEXAS	11	ANGELINA	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	00	116	VA

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

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. N/A

☒ No Action Required ☐ Required Action

Action No.

1. N/A

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= 3 A and C PCN not required

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. Locations Site A: SH 63 at Mill Creek; Site B: FM 2497 at Jack Creek Relief; Site C: SH 21 at La Nana Creek; Site E: US 259 at Beech Creek; Site K: FM 2259 at Carrizo Creek; Site P: US 96 at McKim Creek; Site R: SH 87 at Colorow Creek; Site T: FM 83 at Housen Bayou; Site U: FM 2558 at Big Owl Creek; Site W: FM 139 at Tenaha Bayou; and Site X: FM 138 at Shafner Creek

2. No fill or equipment shall be placed in creek channel for use of temporary work access. If methods are deemed necessary, contractor shall develop and provide access plan to Area Engineer for approval.

3. Wetlands are present Northeast side of Site B: FM 2497 at Jack Creek Relief Bridge within the State Right-of-Way . If access for equipment is required, contractor must submit work access plan to Area Engineer for approval. Access through wetlands will require the use of mats or non-erodible fill (i.e. timber mats, non-erodible rock fill) with filter fabric placed underneath. The construction mats and filter fabric may not remain in the wetland for more than 180 consecutive days. After construction is complete, the construction mats and filter fabric must be removed and the pre-construction elevation restored.

4. Refer to EPIC Sheet 2 of 2 for Nationwide Permit (NWP) 3A and 3C requirements in regard to temporary work access, suitable material, maintaining stream flow, and general conditions.

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

Site D: SH 21 at Banito Creek is located WITHIN the Nacogdoches Downtown Historic District. Site C: SH 21 at La Nana Creek; Site G: US 59 BUS SB at SPRR & Cox St; and Site H: US 59 BUS NB at SPRR & Cox St are ADJACENT to Nacogdoches Downtown Historic District and Festival Park.

Action No.
1. Equipment storage or stockpiling of materials is ONLY permitted within State Right-of-Way.

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.

Site P: US 96 at McKim Creek; Site S: SH 87 at Big Sandy Creek; Site R: SH 87 at Colorow Creek; and Site W: FM 139 at Tenaha Bayou project areas occur in part or in whole within the Sabine National Forest Boundary (USFS).

☐ No Action Required ☒ Required Action

Action No.

1. NO stockpiling or storage of materials and equipment within the USFS boundary

2. Area Engineer shall notify the USFS prior to commencing work at the above bridge locations.

3. NO trees shall be removed without the approval from the Area Engineer and the USFS.

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. In order to maintain compliance with Chapter 64 of the Texas Parks and Wildlife Code and Migratory Bird Treaty Act (MBTA), construction activities that may affect active nests (i.e. tree removal, tree limbing) is prohibited during the nesting season (March 15 - September 15). For bridge work activities, inactive nests (no nestlings or eggs present) may be removed and the use of exclusion devices is permitted to prevent active nests from forming so work can continue during nesting season. Notify Area Engineer prior to removing inactive nests or using exclusion devices on bridges
2. Gulf coast waterdog, Southern crawfish frog, Strecker's chorus frog , Blackbelted crayfish, Neches crayfish, Sabine shiner, Blackspot shiner, Mississippi silvery minnow, Eastern spotted skunk, Swamp Rabbit, Long-tailed weasel, Eastern box turtle, Timber rattlesnake, Pygmy rattlesnake, and Western box turtle, may occur within the project area. Avoid harming species if encountered and allow them to safely leave the project area.
3. Visually inspect excavation (if any) areas prior to backfill for trapped wildlife. Examine heavy equipment stored on site before use, particularly after rain events, to ensure use will not harm wildlife that may be seeking refuge.
4. Avoid or minimize disturbing leaf litter, burrows, stumps, logs, or debris, where feasible. Minimize impacts to shoreline basking/overwinter sites (e.g. sand bars, exposed rock, debris piles, crayfish burrows) where feasible. Project specific locations (PSLs) proposed within the state-owned ROW should be located in uplands away from aquatic features. Establish revegetation/soil stabilization of disturbed areas
5. Install and maintain Water Quality BMPs associated with Section 404 & 401 permits (i.e. silt fence, seeding avoid/minimize impacts to WOTUS, etc.) around creeks and streams and aquatic features that cross the project area to avoid impacts to aquatic wildlife. Activities should not obstruct or impeded flow or movement of aquatic & terrestrial wildlife.

LIST OF ABBREVIATIONS

BMP:	Best Management Practice	SPCC:	Spill Prevention Control and Countermeasure
CGP:	Construction General Permit	SWP3:	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

1. TxDOT suspects coating on steel pilings at Site T: FM 83 at Housen Bayou Bridge contains hazardous materials. No testing or abatement work has been performed because the intent of the proposed work and procedures is to not disturb paint. If paint is disturbed, contractor is responsible for testing and follow applicable laws. Any contracting personnel who may disturb the steel pilings should be made aware so they may use proper OSHA procedures

VII. OTHER ENVIRONMENTAL ISSUES

☐ No Action Required ☒ Required Action

1. Site P: US 96 at McKim Creek: Proposed work shown in plans below flowage easement elevation of 179-ft has been approved by USACE Sam Rayburn Lake Manager as it is considered Maintenance & Operation activities. No changes in proposed work at this location shown in plans or work outside this location shall occur without approval from USACE.

2. Site W: FM 139 at Tenaha Bayou: Proposed work shown in plans has been approved by Sabine River Authority (SRA). No changes in proposed work at this location shown in plans or work outside this location shall occur without approval from SRA.

3. Site W: FM 139 at Tenaha Bayou: Bubba Cowser boat ramp is a section 4f property. TxDOT received permission to close ramp to the public. If ramp closure is needed, 1) ramp may only be closed while working in the water and must be re-opened immediately upon completion. 2) occupied portions of property must be returned to as-found conditions or better.

Texas Department of Transportation

Design Division Standard

EPIC

(ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS)

SHEET 1 OF 2

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR
© TxDOT:	CONT	SECT	JOB	HIGHWAY
	0911	00	116	VA
	DIST	COUNTY		SHEET NO.
	LFK	ANGELINA		85

NWP GENERAL CONDITIONS

AS APPLICABLE TO
THIS PROJECT

2. AQUATIC LIFE MOVEMENTS. NO ACTIVITY MAY SUBSTANTIALLY DISRUPT THE NECESSARY LIFE CYCLE MOVEMENTS OF THOSE SPECIES OF AQUATIC LIFE INDIGENOUS TO THE WATERBODY, INCLUDING THOSE SPECIES THAT NORMALLY MIGRATE THROUGH THE AREA, UNLESS THE ACTIVITY'S PRIMARY PURPOSE IS TO IMPOUND WATER.

3. SPAWNING AREAS. ACTIVITIES IN SPAWNING AREAS DURING SPAWNING SEASONS MUST BE AVOIDED TO THE MAXIMUM EXTENT PRACTICABLE. ACTIVITIES THAT RESULT IN THE PHYSICAL DESTRUCTION (E.G., THROUGH EXCAVATION, FILL, OR DOWNSTREAM SMOTHERING BY SUBSTANTIAL TURBIDITY) OF AN IMPORTANT SPAWNING AREA ARE NOT AUTHORIZED.

6. SUITABLE MATERIAL. NO ACTIVITY MAY USE UNSUITABLE MATERIAL (E.G., TRASH, DEBRIS, CAR BODIES, ASPHALT, ETC.). MATERIAL USED FOR CONSTRUCTION OR DISCHARGED MUST BE FREE FROM TOXIC POLLUTANTS IN TOXIC AMOUNTS (SEE SECTION 307 OF THE CLEAN WATER ACT).

8. ADVERSE EFFECTS FROM IMPOUNDMENTS. IF THE ACTIVITY CREATES AN IMPOUNDMENT OF WATER, ADVERSE EFFECTS TO THE AQUATIC SYSTEM DUE TO ACCELERATING THE PASSAGE OF WATER, AND/OR RESTRICTING ITS FLOW MUST BE MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE.

9. MANAGEMENT OF WATER FLOWS. TO THE MAXIMUM EXTENT PRACTICABLE, THE PRE-CONSTRUCTION COURSE, CONDITION, CAPACITY, AND LOCATION OF OPEN WATERS MUST BE MAINTAINED FOR EACH ACTIVITY, INCLUDING STREAM CHANNELIZATION AND STORM WATER MANAGEMENT ACTIVITIES, EXCEPT AS PROVIDED BELOW. THE ACTIVITY MUST BE CONSTRUCTED TO WITHSTAND EXPECTED HIGH FLOWS. THE ACTIVITY MUST NOT RESTRICT OR IMPEDE THE PASSAGE OF NORMAL OR HIGH FLOWS, UNLESS THE PRIMARY PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER OR MANAGE HIGH FLOWS. THE ACTIVITY MAY ALTER THE PRE-CONSTRUCTION COURSE, CONDITION, CAPACITY, AND LOCATION OF OPEN WATERS IF IT BENEFITS THE AQUATIC ENVIRONMENT (E.G., STREAM RESTORATION OR RELOCATION ACTIVITIES).

11. EQUIPMENT. HEAVY EQUIPMENT WORKING IN WETLANDS OR MUD FLATS MUST BE PLACED ON MATS, OR OTHER MEASURES MUST BE TAKEN TO MINIMIZE SOIL DISTURBANCE.

12. SOIL EROSION AND SEDIMENT CONTROLS. APPROPRIATE SOIL EROSION AND SEDIMENT CONTROLS MUST BE USED AND MAINTAINED IN EFFECTIVE OPERATING CONDITION DURING CONSTRUCTION, AND ALL EXPOSED SOIL AND OTHER FILLS, AS WELL AS ANY WORK BELOW THE ORDINARY HIGH WATER MARK OR HIGH TIDE LINE, MUST BE PERMANENTLY STABILIZED AT THE EARLIEST PRACTICABLE DATE. PERMITTEES ARE ENCOURAGED TO PERFORM WORK WITHIN WATERS OF THE UNITED STATES DURING PERIODS OF LOW-FLOW OR NO-FLOW.

13. REMOVAL OF TEMPORARY FILLS. TEMPORARY FILLS MUST BE REMOVED IN THEIR ENTIRETY AND THE AFFECTED AREAS RETURNED TO PRE-CONSTRUCTION ELEVATIONS. THE AFFECTED AREAS MUST BE REVEGETATED, AS APPROPRIATE.

14. PROPER MAINTENANCE. ANY AUTHORIZED STRUCTURE OR FILL SHALL BE PROPERLY MAINTAINED, INCLUDING MAINTENANCE TO ENSURE PUBLIC SAFETY AND COMPLIANCE WITH APPLICABLE NWP GENERAL CONDITIONS, AS WELL AS ANY ACTIVITY-SPECIFIC CONDITIONS ADDED BY THE DISTRICT ENGINEER TO AN NWP AUTHORIZATION.

23. MITIGATION. THE DISTRICT ENGINEER WILL CONSIDER SEVERAL FACTORS WHEN DETERMINING APPROPRIATE AND PRACTICABLE MITIGATION NECESSARY TO ENSURE THAT ADVERSE EFFECTS ON THE AQUATIC ENVIRONMENT ARE MINIMAL.

25. WATER QUALITY. WHERE STATES AND AUTHORIZED TRIBES, OR EPA WHERE APPLICABLE, HAVE NOT PREVIOUSLY CERTIFIED COMPLIANCE OF AN NWP WITH CWA SECTION 401, INDIVIDUAL 401 WATER QUALITY CERTIFICATION MUST BE OBTAINED OR WAIVED (SEE 33 CFR 330.4(C)). THE DISTRICT ENGINEER OR STATE OR TRIBE MAY REQUIRE ADDITIONAL WATER QUALITY MANAGEMENT MEASURES TO ENSURE THAT THE AUTHORIZED ACTIVITY DOES NOT RESULT IN MORE THAN MINIMAL DEGRADATION OR WATER QUALITY.

27. REGIONAL AND CASE-BY-CASE CONDITIONS. THE ACTIVITY MUST COMPLY WITH ANY REGIONAL CONDITIONS THAT MAY HAVE BEEN ADDED BY THE DIVISION ENGINEER (SEE 33 CFR 330.4(E)) AND WITH ANY CASE SPECIFIC CONDITIONS ADDED BY THE CORPS OR BY THE STATE, INDIAN TRIBE, OR U.S. EPA IN ITS SECTION 401 WATER QUALITY CERTIFICATION, OR BY THE STATE IN ITS COASTAL ZONE MANAGEMENT ACT CONSISTENCY DETERMINATION.

FOR A COMPLETE LIST OF GENERAL CONDITIONS GO TO:

http://www.swf.usace.army.mil/Missions/Regulatory/Permitting/NationwideGeneralPermits.aspx

USACE - PERMIT #3(A) & (C)

AS APPLICABLE TO
THIS PROJECT

(A) THE REPAIR, REHABILITATION, OR REPLACEMENT OF ANY PREVIOUSLY AUTHORIZED, CURRENTLY SERVICEABLE STRUCTURE, OR FILL, OR OF ANY CURRENTLY SERVICEABLE STRUCTURE OR FILL AUTHORIZED BY 33 CFR 330.3, PROVIDED THAT THE STRUCTURE OR FILL IS NOT TO BE PUT TO USES DIFFERING FROM THOSE USES SPECIFIED OR CONTEMPLATED FOR IT IN THE ORIGINAL PERMIT OR THE MOST RECENTLY AUTHORIZED MODIFICATION. MINOR DEVIATIONS IN THE STRUCTURE'S CONFIGURATION OR FILLED AREA, INCLUDING THOSE DUE TO CHANGES IN MATERIALS, CONSTRUCTION TECHNIQUES, REQUIREMENTS OF OTHER REGULATORY AGENCIES, OR CURRENT CONSTRUCTION CODES OR SAFETY STANDARDS THAT ARE NECESSARY TO MAKE THE REPAIR, REHABILITATION, OR REPLACEMENT ARE AUTHORIZED. ANY STREAM CHANNEL MODIFICATION IS LIMITED TO THE MINIMUM NECESSARY FOR THE REPAIR, REHABILITATION, OR REPLACEMENT OF THE STRUCTURE OR FILL; SUCH MODIFICATIONS, INCLUDING THE REMOVAL OF MATERIAL FROM THE STREAM CHANNEL, MUST BE IMMEDIATELY ADJACENT TO THE PROJECT. THIS NWP ALSO AUTHORIZES THE REMOVAL OF ACCUMULATED SEDIMENT AND DEBRIS WITHIN, AND IN THE IMMEDIATE VICINITY OF, THE STRUCTURE OR FILL. THIS NWP ALSO AUTHORIZES THE REPAIR, REHABILITATION, OR REPLACEMENT OF THOSE STRUCTURES OR FILLS DESTROYED OR DAMAGED BY STORMS, FLOODS, FIRE OR OTHER DISCRETE EVENTS, PROVIDED THE REPAIR, REHABILITATION, OR REPLACEMENT IS COMMENCED, OR IS UNDER CONTRACT TO COMMENCE, WITHIN TWO YEARS OF THE DATE OF THEIR DESTRUCTION OR DAMAGE. IN CASES OF CATASTROPHIC EVENTS, SUCH AS HURRICANES OR TORNADOES, THIS TWO-YEAR LIMIT MAY BE WAIVED BY THE DISTRICT ENGINEER, PROVIDED THE PERMITTEE CAN DEMONSTRATE FUNDING, CONTRACT, OR OTHER SIMILAR DELAYS.

(C) THIS NWP ALSO AUTHORIZES TEMPORARY STRUCTURES, FILLS AND WORK, INCLUDING THE USE OF TEMPORARY MATS, NECESSARY TO CONDUCT THE MAINTENANCE ACTIVITY. APPROPRIATE MEASURES MUST BE TAKEN TO MAINTAIN NORMAL DOWNSTREAM FLOWS AND MINIMIZE FLOODING TO THE MAXIMUM EXTENT PRACTICABLE, WHEN TEMPORARY STRUCTURES, WORK AND DISCHARGES, INCLUDING COFFERDAMS, ARE NECESSARY FOR CONSTRUCTION ACTIVITIES, ACCESS FILLS, OR DEWATERING OF CONSTRUCTION SITES. TEMPORARY FILLS MUST CONSIST OF MATERIALS, AND BE PLACED IN A MANNER, THAT WILL NOT BE ERODED BY EXPECTED HIGH FLOWS. TEMPORARY FILLS MUST BE REMOVED IN THEIR ENTIRETY AND THE AFFECTED AREAS RETURNED TO PRE-CONSTRUCTION ELEVATIONS. THE AREAS AFFECTED BY TEMPORARY FILLS MUST BE REVEGETATED, AS APPROPRIATE.

NOTE: THIS NWP AUTHORIZES THE REPAIR, REHABILITATION, OR REPLACEMENT OF ANY PREVIOUSLY AUTHORIZED STRUCTURE OR FILL THAT DOES NOT QUALIFY FOR THE CLEAN WATER ACT SECTION 404(F) EXEMPTION FOR MAINTENANCE.

NOTE:

THE PROJECT CROSSES JURISDICTIONAL WATERS OF THE U.S. AND A NWP #3A,C WILL BE UTILIZED. THIS PERMIT AUTHORIZES THE REPAIR, REHABILITATION, OR REPLACEMENT OF CURRENTLY SERVICEABLE STRUCTURES OR FILL THAT WERE PREVIOUSLY AUTHORIZED. THE NWP GENERAL CONDITIONS AND THE NWP GUIDELINES MUST BE FOLLOWED IN ORDER TO MAINTAIN COMPLIANCE WITH THE NWP. NO COORDINATION HAS TAKEN PLACE WITH THE USACE. IF COORDINATION MAY BE NEEDED, CONTACT THE TXDOT LUFKIN DISTRICT ENVIRONMENTAL SECTION AT 1-800-687-8087.

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC) :

USACE

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

Texas Department of Transportation

EPIC

(ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS)

SHEET 2 OF 2

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR
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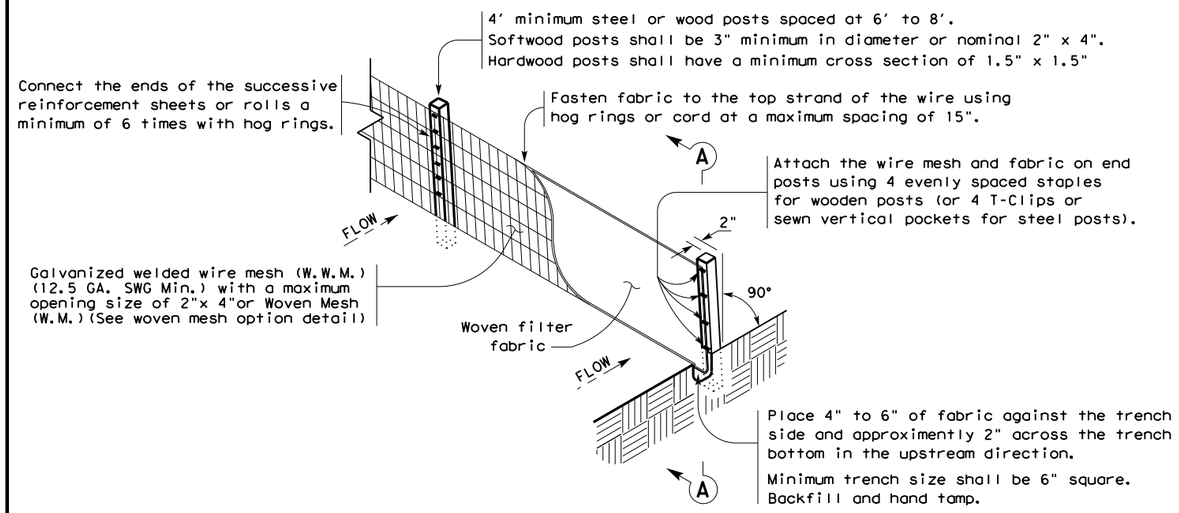
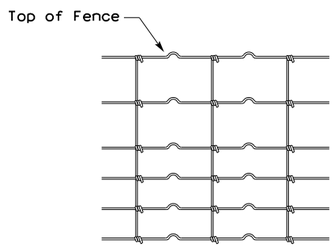
	LFK	ANGELINA		86

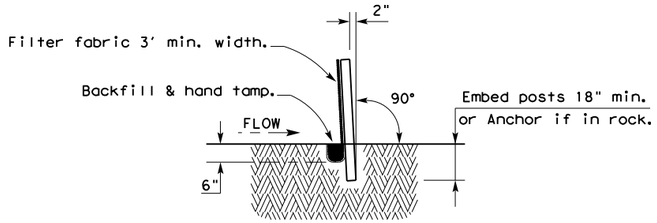
DATE 5/12/2023



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.

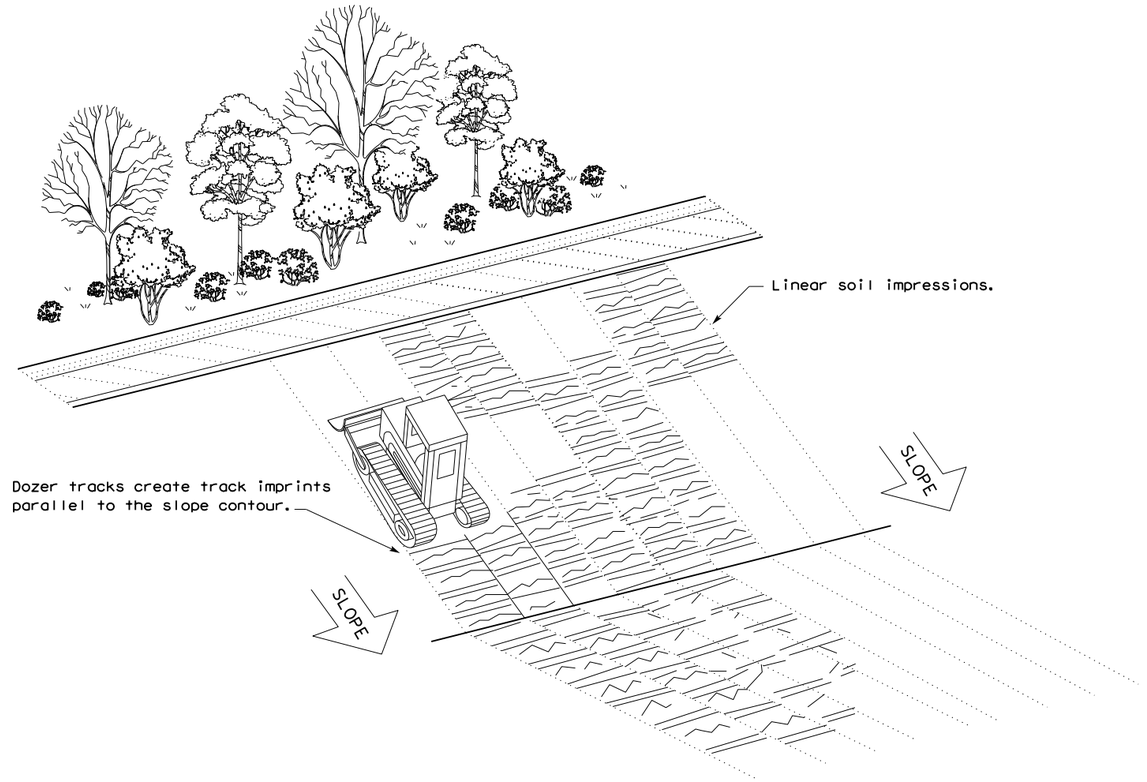
LEGEND

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
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	LFK	ANGELINA			87	