SEE SHEET 2 FOR INDEX OF SHEETS

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

PROJECT NO.			
C 911-28-63, ETC.			
CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		1

FUNCTIONAL CLASS: MINOR COLLECTOR

A.D.T. (2024)= 100
A.D.T. (2044)= 125
DESIGN SPEED = N/A

PROJECT NO. C 911-28-63, ETC.

VARIOUS
HOUSTON, ETC.

CSJ	DESCRIPTION	FEET	MILES
0911-28-063	PR 44	4855.00	0.920
0118-03-005	PR 44	1952.00	0.370
0911-08-058	ALAZAN BAYOU WMA - BOTTOM RD	4038.56	0.765
0911-08-059	ALAZAN BAYOU WMA - OFFICE	600.00	0.114
0911-39-073	TOLEDO BEND WMA - ACCESS RD	1227.26	0.232
	TOTAL	10720.82	2.031

LIMITS: 0911-28-063 - WITHIN MISSION TEJAS SHS
0118-03-005 - FROM SH 21 TO END OF PAVEMENT INSIDE PARK
0911-08-058 - WITHIN ALAZAN BAYOU WMA
0911-08-059 - WITHIN ALAZAN BAYOU WMA
0911-39-073 - WITHIN TOLEDO BEND WMA

(CCSJ: 0911-28-063)
FOR THE CONSTRUCTION OF RESTORATION
CONSISTING OF RV PULLOUTS, PARK
ROADS, PARKING LOTS AND CAMPSITE PULLOUTS.

(CSJ: 0118-03-005)
FOR THE CONSTUCTION OF RESTORATION
CONSISTING OF RESTORATION OF PARK ROAD

(CSJ: 0911-08-058)
FOR THE CONSTRUCTION OF RESTORATION
CONSISTING OF MAINTAIN/REPAIR OF 0.75 MILES OF "BOTTOM" ROAD.

(CSJ: 0911-08-059)
FOR THE CONSTRUCTION OF SEAL COAT
CONSISTING OF SEAL COAT OFFICE ENTRANCE, PARKING LOTS,
AND COMPOUND ASPHALT.

(CSJ: 0911-39-073)
FOR THE CONSTRUCTION OF NEW LOCATION NON-FREEWAY
CONSISTING OF ADDITION OF APPROX 1,200' OF ACCESS ROAD.

SEE LOCATION MAP

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 PLANS, CONTRACT AND APPROVED CHANGE ORDERS.

_____ DATE _____

BARRICADES AND WARNING SIGNS

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

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

STATE OF TEXAS
M. CHAD CRISWELL
90114
LICENSED
PROFESSIONAL ENGINEER

2/15/2024

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION ON NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: SPECIAL LABOR PROVISIONS FOR STATE PROJECTS (000---008).

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: NONE

RECOMMENDED FOR LETTING: 2/16/2024

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

APPROVED FOR LETTING: 2/16/2024

DocuSigned by:
Kelly D. Morris, P.E.
F0442211639424B4...
DISTRICT ENGINEER

DATE: 2/15/2024 7:53:45 AM
FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/091128063-ORD/4 - Design/Plan Set/1. General/Title Sheet.dgn

	SHEET NO.	DESCRIPTION
		GENERAL
	1	TITLE SHEET
	2	INDEX OF SHEETS
	3	LOCATION MAP
	4-5	PROJECT LAYOUTS
	6-9	TYPICAL SECTIONS
	10,10A-10E	GENERAL NOTES
	11,11A	ESTIMATE & QUANTITY SHEET
	12-15	QUANTITY SUMMARIES
	16	SUMMARY OF SMALL SIGNS
		TRAFFIC CONTROL PLAN
	17-18	TRAFFIC CONTROL PLAN
$	19-30	BC(1)-21 THRU BC(12)-21
$	31	TCP(1-1)-18
$	32	TCP(1-2)-18
$	33	TCP(1-3)-18
		ROADWAY DETAILS
	34	SURVEY CONTROL INDEX SHEET (ALAZAN BAYOU WMA)
	35	HORIZONTAL & VERTICAL CONTROL SHEET (ALAZAN BAYOU WMA)
	36-37	SURVEY CONTROL INDEX SHEET (MISSION TEJAS SHS)
	38	HORIZONTAL & VERTICAL CONTROL SHEET (MISSION TEJAS SHS)
	39-47	HORIZONTAL ALIGNMENT DATA
	48-63	ROADWAY LAYOUTS
	64-66	PLAN LAYOUTS
	67-68	PLAN & PROFILE
	69-70	CAMPSITE DETAILS
	71	STAIR DETAIL
	72-73	MISCELLANEOUS DETAILS
$	74-75	SRR
$	76	PSET-RP
$	77-79	PRD-13
$	80	JS-14
$	81	CCCG-22

	SHEET NO.	DESCRIPTION
		TRAFFIC ITEMS
$	82	PM(AP)-21
$	83	PM(1)-22
$	84	PM(4)-22A
		ENVIRONMENTAL ISSUES
	85-90	STORMWATER POLLUTION PREVENTION PLAN(SWP3)
	91-92	EPIC
	93-108	ENVIRONMENTAL LAYOUT SHEETS
#	109	EC(1)-16
$	110	EC(2)-16
$	111-113	EC(9)-16

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED
PROFESSIONAL ENGINEER

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

DocuSigned by:
CHARLES M. BRAZIL, P.E.
CHARLES M. BRAZIL, P.E.
2/16/2024
DATE

STATE OF TEXAS
M. CHAD CRISWELL
90114
LICENSED
PROFESSIONAL ENGINEER

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

M. CHAD CRISWELL, P.E.
2/15/2024
DATE

Texas Department of Transportation

INDEX OF SHEETS

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		2

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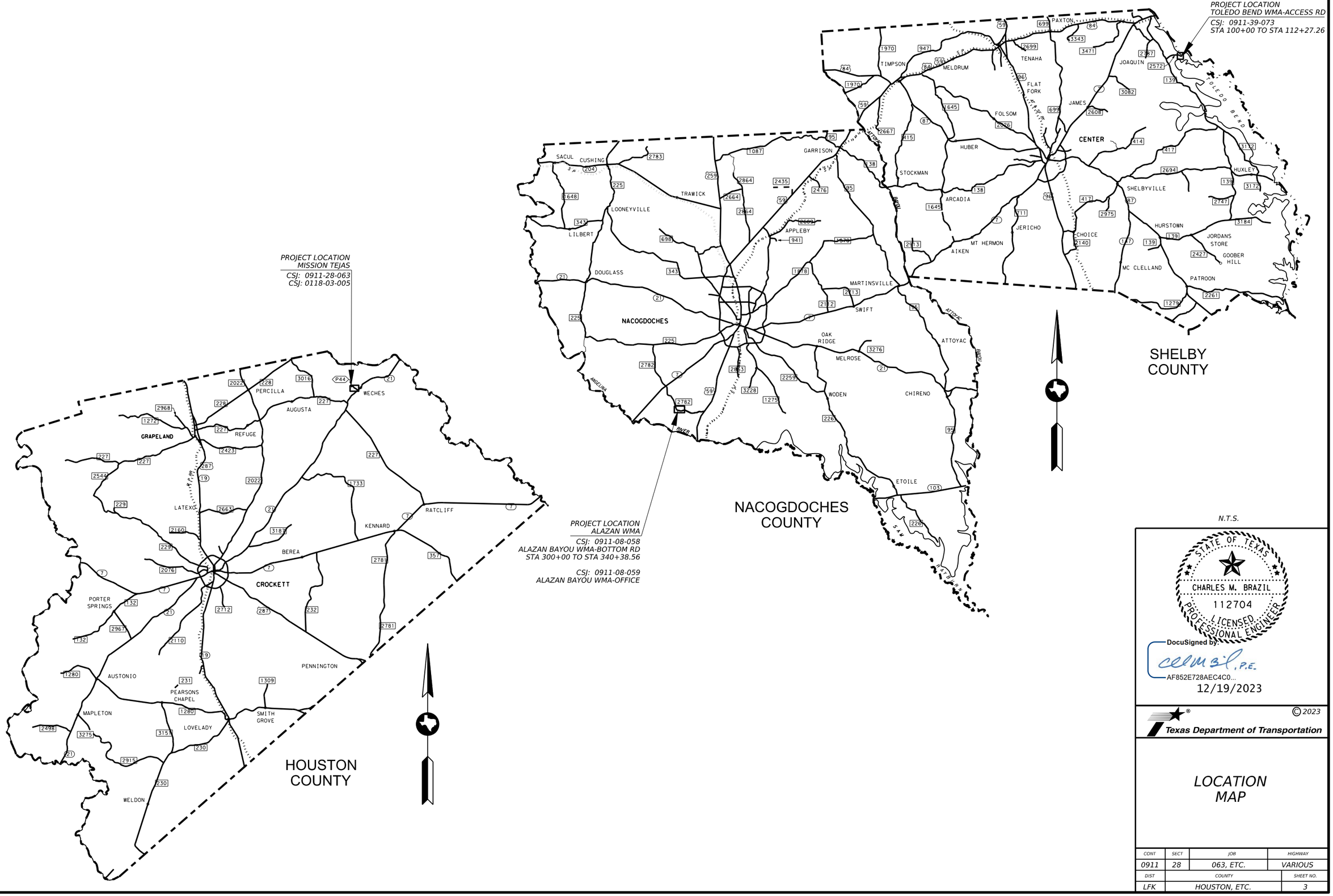

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
AF852E728AEC4C0...
12/19/2023

Texas Department of Transportation

LOCATION MAP

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		3

DATE: 12/11/2023 1:24:45 PM
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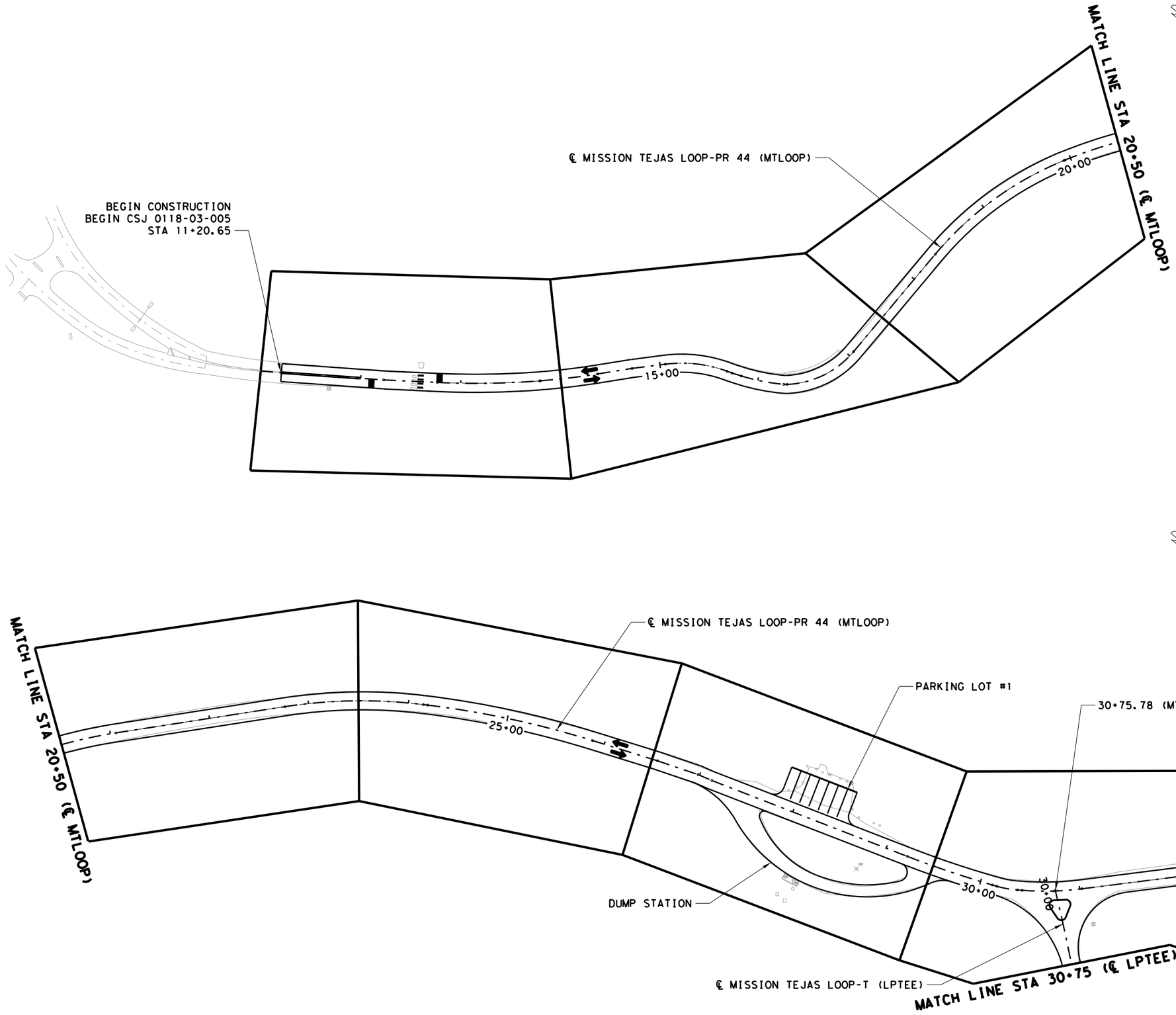

LEGEND

TRAFFIC DIRECTION

X CAMPSITE NUMBER

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

PROJECT LAYOUTS
(MISSION TEJAS)

SHEET 1 OF 2

Texas Department of Transportation

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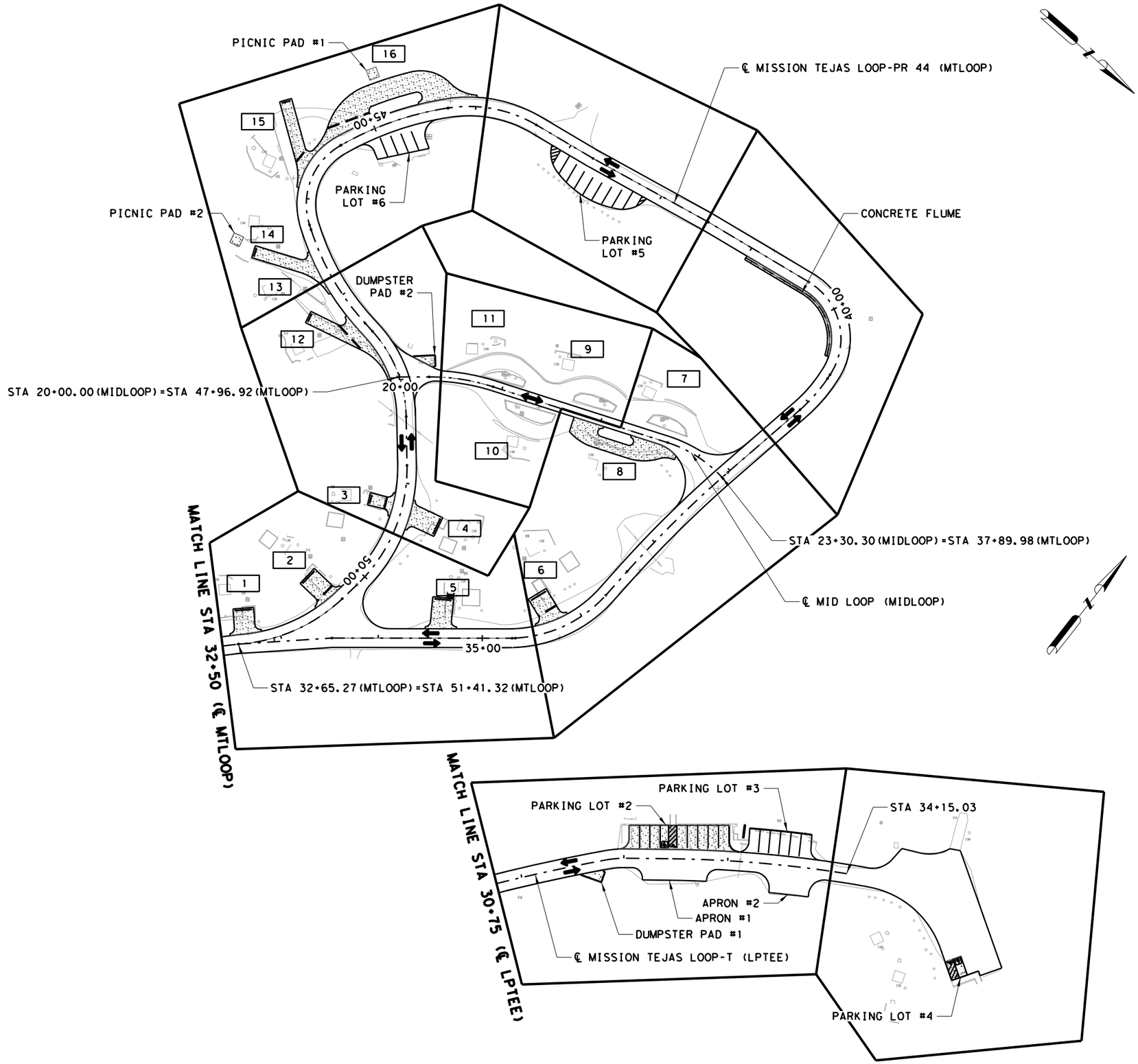
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		004

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER

0 50 100
SCALE: 1"=100'

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

PROJECT LAYOUTS
(MISSION TEJAS)

SHEET 2 OF 2

Texas Department of Transportation

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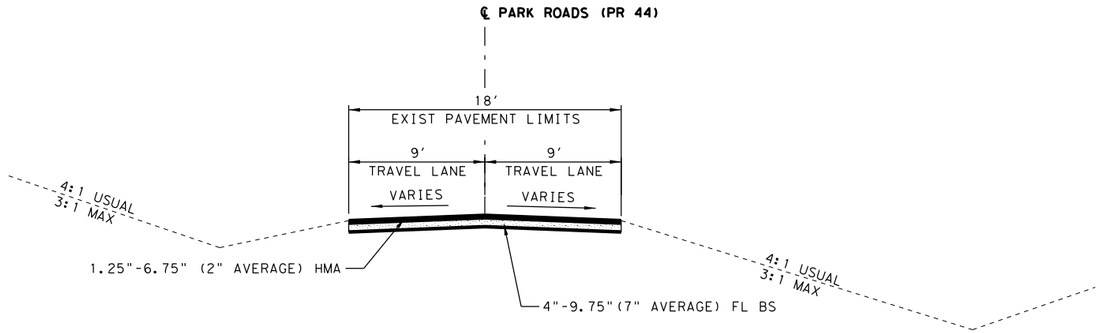
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		005

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

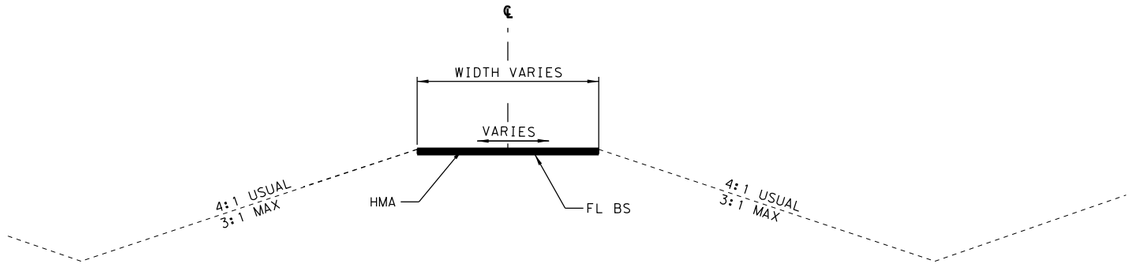


EXISTING TYPICAL SECTION

MISSION TEJAS LOOP-PR 44 (MTLOOP)
STA 11+20.65 TO STA 51+41.32

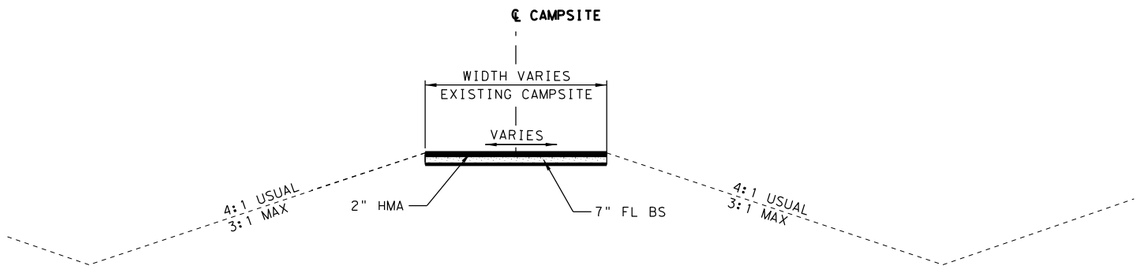
PAVEMENT CORE TABLE			
CORE NO.	LOCATION	LAYERS	DEPTH (IN)
1	DUMP STATION	HMA	2.5
		HMA/BASE	1.5
2	PARKING LOT #1	HMA	0.5
		HMA/BASE	1.0
3	PARKING LOT #2	HMA	2.5
		HMA/BASE	2.5
4	PARKING LOT #3	HMA	1.5
		HMA/BASE	2.0
5	PARKING LOT #4	HMA	1.9
		HMA/BASE	2.1
6	MID LOOP	HMA	1.3
		HMA/BASE	2.5
7	PARKING LOT #5	HMA	2.8
		HMA/BASE	2.8
8	PARKING LOT #6	HMA	0.5
		HMA/BASE	3.5

NOTE: CONCRETE SECTION IN PARKING LOT #2
NOT INCLUDED IN CORING.



EXISTING TYPICAL SECTION

VARIOUS LOCATIONS
(SEE PAVEMENT CORE TABLE)



EXISTING TYPICAL SECTION

CAMPSITES

0 5 10
SCALE: 1"=10'

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

TYPICAL SECTIONS
(EXISTING)
(CSJ 0911-28-063 & CSJ 0118-03-005)
SHEET 1 OF 4

Texas Department of Transportation

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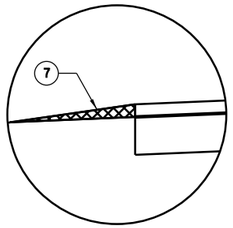
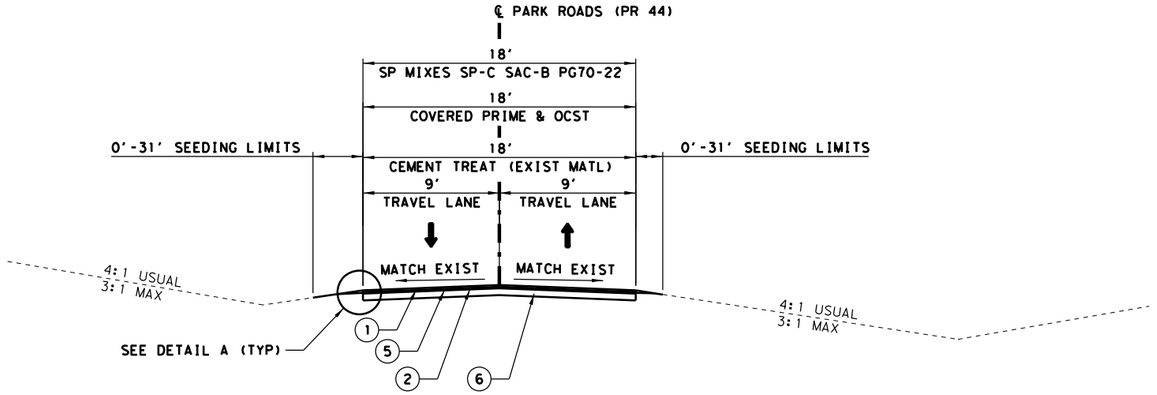
FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		006

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



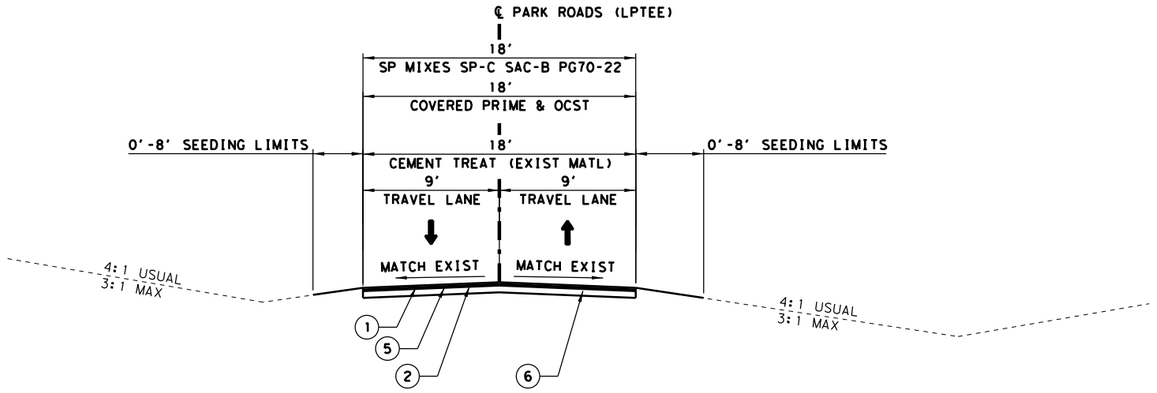
DETAIL A

NTS



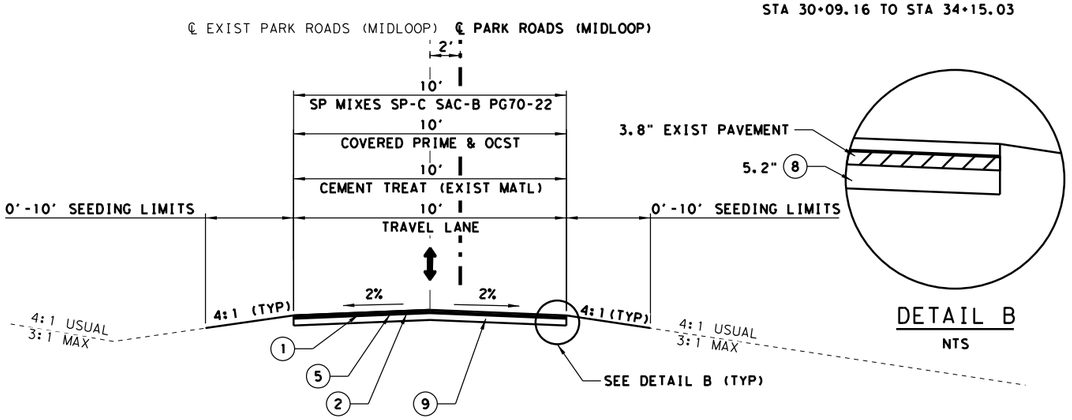
PROPOSED TYPICAL SECTION

MISSION TEJAS LOOP-PR 44 (MTLOOP)
STA 11+20.65 TO STA 51+41.32



PROPOSED TYPICAL SECTION

MISSION TEJAS LOOP-T (LPTEE)
STA 30+09.16 TO STA 34+15.03

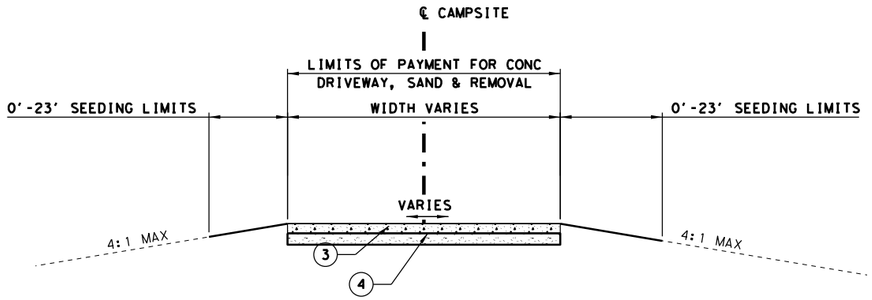


PROPOSED TYPICAL SECTION

MID LOOP (MIDLOOP)
STA 20+09.46 TO STA 23+21.29

DETAIL B

NTS



PROPOSED TYPICAL CAMPSITE

CAMPSITES

LEGEND

1. 2" SP MIXES SP-C SAC-B PG70-22
2. OCST
3. 6" CONCRETE
4. 6" SAND CUSHION (SUBSIDIARY TO ITEM 530)
5. COVERED PRIME
6. 9" CEMENT TREAT (EXIST MATL)
7. BACKFILL (TY A)
8. FLEXBASE (TY A)(GR 1-2)
9. CEMENT TREAT (MX EXST MTL & NW BS)(9")

NOTE:

1. PAVED SURFACE MUST BE SLOPED TO DRAIN AND NOT HOLD WATER.
2. CAMPSITES PAID UNDER ITEM 530: DRIVEWAYS (CONC)
3. TOP OF 9" CEMENT TREAT (EXIST MATL) AT THE ROADWAY CENTERLINE SHALL BE APPROXIMATELY AT THE SAME ELEVATION AS THE EXIST PGL UNLESS OTHERWISE SHOWN.
4. PROP PGL WILL BE 2" ABOVE EXIST PGL.

0 5 10
SCALE: 1"=10'

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

TYPICAL SECTIONS
(PROPOSED)
(CSJ 0911-28-063 &
CSJ 0118-03-005)

SHEET 2 OF 4

Texas Department of Transportation

BGE, Inc.
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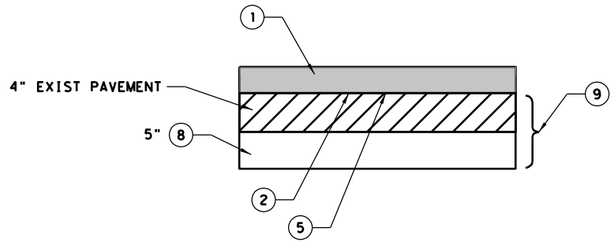
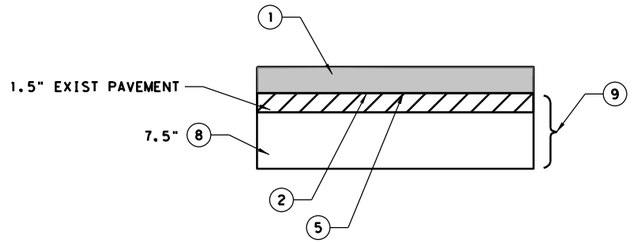
Tel: 281-558-8700 ▪ www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			007
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



PROPOSED TYPICAL SECTION

DUMP STATION

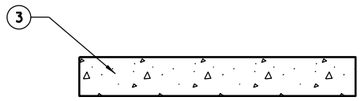


PROPOSED TYPICAL SECTION

PARKING LOT #1

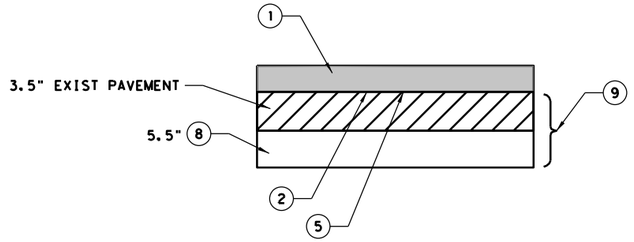
LEGEND

1. 2" SP MIXES SP-C SAC-B PG70-22
2. OCST
3. 6" CONCRETE
4. 6" SAND CUSHION (SUBSIDIARY TO ITEM 530)
5. COVERED PRIME
6. 9" CEMENT TREAT (EXIST MATL)
7. BACKFILL (TY A)
8. FLEXBASE (TY A)(GR 1-2)
9. CEMENT TREAT (MX EXST MTL & NW BS)(9")



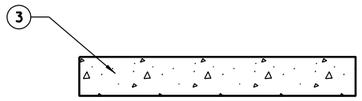
PROPOSED TYPICAL SECTION

PARKING LOT #2



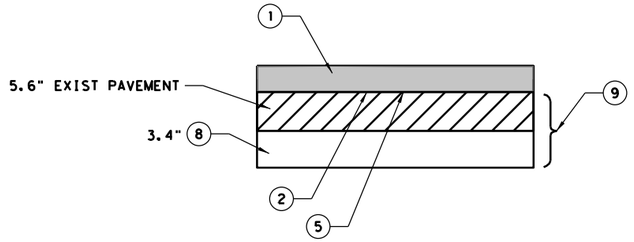
PROPOSED TYPICAL SECTION

PARKING LOT #3



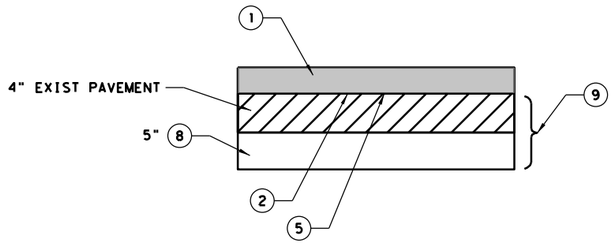
PROPOSED TYPICAL SECTION

PARKING LOT #4



PROPOSED TYPICAL SECTION

PARKING LOT #5



PROPOSED TYPICAL SECTION

PARKING LOT #6

0 5 10

SCALE: 1"=10'

STATE OF TEXAS
CARITA G. STEWART
129562
PROFESSIONAL LICENSED ENGINEER

2/12/2024

TYPICAL SECTIONS

(PROPOSED)
(CSJ 0911-28-063 &
CSJ 0118-03-005)

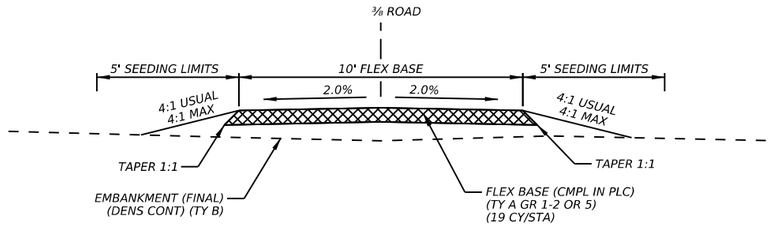
SHEET 3 OF 4

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 ● www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		008

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



PROPOSED TYPICAL SECTION

CSJ: 0911-39-073
TOLEDO BEND WMA; ACCESS ROAD
STA 100+00.00 TO STA 112+27.26

SCALE 1" = 5'

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
cmb P.E.
AF852E728AEC4C0...
12/19/2023

Texas Department of Transportation

TYPICAL SECTIONS

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0911	28	063, etc.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		9

DW | CK | DW | CK

DATE: 12/11/2023 9:34:20 AM
FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/091128063-ORD/4 - Design/Plan Set/1. General/Typical Section 1.dgn

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.

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.

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 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

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.

Item 5: Control of the Work

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.

Contractor will submit secondary control level loop analysis and findings prior to construction. Contractor and TxDOT will resolve any primary and secondary control discrepancies prior to construction. Prior to constructing pavement, forming concrete improvements, or ordering structures, the contractor will identify elevation differences, report to TxDOT, and resolve with TxDOT.

Texas Department of Licensing and Regulation (TDLR) will perform an inspection of sidewalks, pedestrian ramps and other pedestrian facilities upon completion of the project to verify conformance with Texas Accessibility Standards. Deficiencies found by TDLR shall be corrected as directed.

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/business/resources/highway/bridge/bridge-publications.html#design. Acceptance or denial of an alternate is at the sole discretion of the Engineer. Impacts to the project schedule and any additional costs resulting from the use of alternates are the sole responsibility of the Contractor.

Item 7: Legal Relations and Responsibilities

No significant traffic generator events identified.

The proposed work of this project is to Mission Tejas. The activity of Alazan WMA maintains the original line and grade, hydraulic capacity and original purpose of the site. Therefore, this project meets the definition of a routine maintenance activity as defined in the TPDES General Permit No. TXR150000 issued February 27, 2023 and TCEQ's TPDES CGP does not apply. However, the contractor shall place BMP's as directed.

The total disturbed area shown in the plans for Toledo Bend is less than 1 acre. The disturbed area in the plans and the Contractor project specific locations (PSLs) within 1 mile of the project limits for the Contract, will further establish the authorization requirements for storm water discharges. As the disturbed area including PSLs is less than 1 acre, the TPDES CGP does not apply, however, the contractor shall place BMP's as directed. 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.

The plans for Mission Tejas of this project has a soil disturbance of 5 acres or more.

The Department will be considered a primary operator for Operational Control Over Plans and Specifications as defined in TPDES GP TXR 150000 for construction activities in the right of

way. The Department will post a large site notice, file a notice of intent (NOI), notice of change (NOC), if applicable, and a notice of termination (NOT) along with other requirements per TPDES GP TXR 150000 as the entity having operational control over plans and specifications for work shown on the plans in the right of way.

The Contractor will be considered a primary operator for Day-to-Day Operational Control as defined in TPDES GP TXR 150000 for construction activities in the right of way. In addition to the Department's actions, the Contractor shall file a NOI, NOC, if applicable, and NOT and post a large site notice along with other requirements as the entity of having day-to-day operational control of the work shown on the plans in the right of way. This is in addition to the Contractor being responsible for TPDES GP TXR 150000 requirements for on- right of way and off- right of way PSL's. Adhere to all requirements of the SWP3 as shown on the plans.

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 nests (i.e. tree removal, tree limbing, bridge work) shall be conducted outside of the nesting season (March 15 to September 15). In the event birds or active nests (eggs and/or nestlings present) are encountered, contact the engineer prior to conducting work.

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".

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 100: Preparing Right of Way

The equipment used to trim limbs shall be approved. A boom axe will not be allowed.

Prep ROW shall be maintained until project acceptance.

Item 110: Excavation
Item 132: Embankment

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

Drying of material deeper than 6 inches below subgrade elevations will not be permitted without written permission.

Grading required for shaping driveways and side road turnouts for pipe culverts at all access locations, will be subsidiary to various bid items.

All blading, rolling, and scraper work to construct and remove temporary slopes adjacent to pavement drop-offs, will be subsidiary to various bid items.

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

Embankment with greater than 3,000 ppm sulfates from a borrow source shall not be brought to the project.

Item 166: Fertilizer

Fertilize all seeded or sodded areas.

Item 168: Vegetative Watering

Equip water trucks with sprinkler systems capable of watering all of the entire seeded or sodded areas from the roadway.

Water all newly placed sodded or seeded areas at the time of installation. Thereafter, maintain the sodded or seeded areas in a well-watered condition, at no time allow the areas to dry to a condition where water stress is evident.

Item 247: Flexible Base

Provide flexible base with a minimum plasticity index of 2.

Provide flexible base material with a minimum Bar Linear Shrinkage of 2% as determined by Test Method Tex-107-E, Part II.

Stockpiling of base material will not be required if testing has been performed and the material has been approved at the source. Deliver approved specified materials to the project.

Item 275: Cement Treatment (Road-Mixed)

No strength requirement is specified. The target cement content is 3%.

Compact and sprinkle pulverized sections for dust control as directed for traffic use.

Cement treat pulverized sections within 2 days, unless otherwise approved.

Item 316: Seal Coat

Apply the covered prime weekly.

Open season for asphalt placement is from May 1 thru August 31. Do not place asphalt outside the open season without written approval. Asphalt underseals may be placed through October 1 weather permitting with the approval of the engineer.

The uniformity and rate of distribution of asphaltic material will be checked periodically during construction. Apply the seal coat in lane widths unless otherwise directed. Where extra width of surfacing has been provided in transitions and climbing lanes, seal the entire surface width.

Resurface county road turnouts and intersection areas as directed.

Place surface on driveways and other road turnouts prior to placing the final roadway surface.

Cure the first course of the surface treatment as directed prior to placing the second course.

Cure the surface treatment as directed prior to placement of the overlay.

Cure the covered prime a minimum of 14 days prior to placement of the surface treatment.

Use precoated aggregate with AC-15P or CRS-2P, and use non-precoated aggregate with RC-250 and CRS-2P.

Furnish medium pneumatic tire rollers in accordance Item 210, "Rolling". Provide enough rollers to perform the work as directed.

Sweep all roadways with a powered rotary broom prior to placement of the surface treatment to remove all loose or excess material or debris. After rolling, sweep as soon as aggregate has sufficiently bonded to remove excess. Use a vacuum broom on all roadway sections having curb and gutter and all roadway sections within the city limits of any city.

Blade the existing paved shoulders prior to surface treatment operations to remove existing overgrowth. This work will be subsidiary to Item 316.

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 until backfilling of the initially extended portion of the structure is completed.

Item 423: Retaining Walls

Provide a 12” wide X 1 ½ “ thick sandstone colored natural flagstone cap surface finish for retaining walls.

The list of approved Mechanically Stabilized Earth (MSE) wall systems is available from:

http://www.txdot.gov

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.

Use "Do Not Pass" (R4-1) signs to mark the beginnings of roadway sections where passing is prohibited and use "Pass With Care" (R4-2) signs to mark the beginnings of roadway sections where passing is permitted. Install signs at the time signing for project limits are erected. Sign placement shall be verified and approved.

Furnishing, erecting, relocating and removing temporary speed zone signs is subsidiary to Item 502.

When pavement work begins, use flashing arrow panels and flaggers 24 hr. per day during inclement weather or as directed.

Install "No Center Line" (CW8-12) signs at 2-mile intervals. Install "Loose Gravel" (CW8-7) and "Next XX Miles" (CW7-3aP) signs as directed prior to the start of surface treatment operations.

In general, restrict construction work to single lane widths. Control traffic in accordance with standard drawings WZ(BTS-1) "Traffic Signal Installation Typical Details"; WZ(BTS-2)

"Traffic Signal Installation Barricades and Signs"; and, Part VI of the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways". Unless otherwise approved, use an advance warning, flashing arrow panel in addition to the necessary signs, barricades, or other traffic control devices at the work area.

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 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.

Halt traffic during the time asphalt is being applied to the roadway. No vehicles will be allowed to pass the asphalt distributor during asphalt application.

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 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 vertical panels or drums at 100-ft. spacings where drop-offs or construction work occurs along edges of existing pavement. Unless otherwise authorized, these shall remain in place until final striping.

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.

All blading, rolling and scraper work to construct and remove temporary slopes adjacent to pavement drop-offs, will be considered subsidiary to various bid items.

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 504: Field Office and Laboratory

Provide a Type D Structure. Asphalt content will be determined by the ignition method.

Provide a lockable file cabinet, desk and chair in a contractor’s field office for TxDOT use.

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 maintain compliance with the Construction General Permit. Notify the Engineer prior to making adjustments.

In areas designated for erosion control logs (ECL) in the plans, furnish only products listed on the Approved Product List for Erosion Control Products and those shall not contain UV degradable, photodegradable or polypropylene materials.

Furnish compost for core material in biodegradable erosion control logs.

The Storm Water Pollution Prevention Plan (SWP3) consists of temporary erosion control measures needed and provided for under this Item. The disturbed area is less than one acre and use of erosion control measures is not anticipated. If physical conditions encountered at the job site require necessary controls, BMP installation, maintenance, and removal will be paid as extra work on a force account basis per Articles 4.4 and 9.7.

Item 529: Concrete Curb, Gutter, and Combined Curb and Gutter

Concrete curb for the metal beam guard fence transition shall have one No. 3 or No. 4 bar for longitudinal reinforcement. Dowel the curb into the pavement structure using 12 in. long No. 3 or No. 4 bars at 18 in spacing.

Item 530: Intersections, Driveways, and Turnouts

Welded wire fabric will not be allowed for reinforcing concrete driveways. Use reinforcing steel consisting 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.

Unless otherwise directed, install 1/2 in. pre-molded expansion joint material between existing concrete and new concrete.

Item 666: Reflectorized Pavement Markings

Remove loose aggregate immediately prior to placing pavement markings.

Place reflectorized pavement markings no sooner than 3 days nor later than 14 days after placement of the surface treatment.

Before construction operations begin, observe and mark existing passing/no passing zones. Passing/no passing zones shall be verified prior to placement of permanent pavement markings.

Use Type II pavement markings as a sealer for Type I pavement markings.

Place a minimum of 500 ft. of double yellow no passing lines on the approach to all stop condition intersections for two lane roads unless otherwise shown in the plans or directed.

Item 3077: Superpave Mixtures

No Department-owned RAP is available.

Add hydrated lime to all HMA mixtures at a minimum rate of 1.0% by weight of the total aggregate, except for those mixtures containing RAP and/or RAS. Mixtures that contain RAP and/or RAS shall be designed at a minimum rate of 0.5 % of lime by weight and the test results will be evaluated by the engineer to determine if lime or a liquid anti-strip additive will be used. The hydrated lime shall meet the requirements of DMS-6350, "Lime and Lime Slurry". The hydrated lime shall be added in accordance with the construction method in Item 301, "Asphalt Antistripping Agents". This lime will be subsidiary to this item.

Trial batches may be required whenever the design has not been produced in the previous 12 months. Trial batches will be subsidiary to the bid item.

Cover each load of mixture with waterproof tarpaulins.

Operate the spreading and finishing machine at a uniform forward speed consistent with the plant production rate, hauling capability, and roller train capacity to result in a continuous operation. The speed shall be slow enough so that stopping between trucks is not ordinarily required. If, in the opinion of the Engineer, sporadic delivery of material is adversely affecting the HMA placement, the Engineer may require paving operations to cease until acceptable methods are employed to minimize starting and stopping of the paver.

A material transfer vehicle (MTV) will be required for all courses of HMA on this project. An MTV is defined as a self-propelled, wheel-mounted vehicle capable of receiving HMA from the haul trucks separate from the paver. The MTV shall have a minimum storage capacity of approximately 25 tons and shall be equipped with a pivoting discharge conveyor and a means of completely remixing the HMA prior to placement.

Remove and properly dispose of any piles of asphaltic concrete and all other debris left on the right of way daily.

On Table 1 under 3077.2.1.3, the Sand equivalent, %, Min is void and not replaced. The minimum percent for the sand equivalent shall be 45 for the combined aggregate.

Class B aggregate meeting all other requirements in Table 1 may be blended with a Class A aggregate to meet requirements for Class A materials. Ensure that at least 60% by weight, or volume if required, of the material retained on the No. 4 sieve comes from the Class A aggregate source when blending Class A and B aggregates to meet a Class A requirement. Blend by volume if the bulk specific gravities of the Class A and B aggregates differ by more than 0.300. Coarse aggregate from RAP and Recycled Asphalt Shingles (RAS) will be considered as Class B aggregate for blending purposes.

The Engineer may perform tests at any time during production, when the Contractor blends Class A and B aggregates to meet a Class A requirement, to ensure that at least 60% by weight, or volume if required, of the material retained on the No. 4 sieve comes from the Class A aggregate source. The Engineer will use the Department's mix design template, when electing to verify conformance, to calculate the percent of Class A aggregate retained on the No. 4 sieve by inputting the bin percentages shown from readouts in the control room at the time of production and stockpile gradations measured at the time of production. The Engineer may determine the gradations based on either washed or dry sieve analysis from samples obtained from individual aggregate cold feed bins or aggregate stockpiles. The Engineer may perform spot checks using the gradations supplied by the Contractor on the mixture design report as an input for the template; however, a failing spot check will require confirmation with a stockpile gradation determined by the Engineer.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0911-28-063 **DISTRICT** Lufkin **COUNTY** Houston, Nacogdoches, Shelby
HIGHWAY PR 44, Various

			CONTROL SECTION JOB	0118-03-005		0911-08-058		0911-08-059		0911-28-063		0911-39-073		TOTAL EST.	TOTAL FINAL
			PROJECT ID	A00194887		A00182649		A00182651		A00182639		A00182648			
			COUNTY	Houston		Nacogdoches		Nacogdoches		Houston		Shelby			
			HIGHWAY	PR 44		Various		Various		Various		Various			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	100-6001	PREPARING ROW	AC							0.200				0.200	
	100-6009	PREPARING ROW (TREE) (6" TO 24" DIA)	EA	1.000						16.000				17.000	
	100-6011	PREPARING ROW(TREE)(24" TO 36" DIA.)	EA							1.000				1.000	
	104-6022	REMOVING CONC (CURB AND GUTTER)	LF							23.000				23.000	
	104-6028	REMOVING CONC (MISC)	SY							90.000				90.000	
	105-6043	REMOVING STAB BASE & ASPH PAV (0-6")	SY							1,370.000				1,370.000	
	110-6001	EXCAVATION (ROADWAY)	CY	1.000						548.000		63.000		612.000	
	132-6004	EMBANKMENT (FINAL)(DENS CONT)(TY B)	CY	17.000						21.000		101.000		139.000	
	134-6001	BACKFILL (TY A)	STA	40.000						7.000				47.000	
	164-6009	BROADCAST SEED (TEMP) (WARM)	SY	1,195.000		211.000				299.000		682.000		2,387.000	
	164-6011	BROADCAST SEED (TEMP) (COOL)	SY	1,195.000		211.000				299.000		682.000		2,387.000	
	164-6054	BOND FBR MTRX SEED (PERM)(RURAL)(SAND)	SY	2,390.000		422.000				598.000		1,363.000		4,773.000	
	168-6001	VEGETATIVE WATERING	MG	96.000		16.900				24.000		54.500		191.400	
	247-6121	FL BS (RDWY DEL) (TY A GR 1-2)	TON							34.000				34.000	
	247-6466	FL BS (CIP)(TY A GR 1-2 OR 5) FINAL POS	CY							224.000				224.000	
	247-6516	FL BS (CMP IN PLC)(TY A GR 1-2 OR 5)	TON			180.000						414.000		594.000	
	275-6001	CEMENT	TON	110.000						50.000				160.000	
	275-6020	CEMENT TREAT (MX EXST MTL & NW BS)(9")	SY							1,889.000				1,889.000	
	275-6055	CEMENT TREAT (EXIST MATL) (DC) (9")	SY	8,033.000						1,847.000				9,880.000	
	316-6060	ASPH (RC-250)	TON	8.400						3.900				12.300	
	316-6417	AGGR (TY E OR L GR 5)	CY	55.000						27.000				82.000	
	316-6433	AGGR(TY PE,TY-PL,TY-E,TY-L GR-4)(SAC-B)	CY	60.000				55.000		29.000				144.000	
	316-6530	ASPH (AC-15P OR CRS-2P)	TON	14.100				14.000		6.400				34.500	
	420-6002	CL A CONC (MISC)	CY	14.000		79.000				1.000				94.000	
	420-6003	CL A CONC (MISC)	SY							97.000				97.000	
	420-6071	CL C CONC (COLLAR)	EA							1.000				1.000	
	432-6022	RIPRAP (STONE COMMON)(DRY)(6 IN)	CY							7.000				7.000	
	450-6049	RAIL (HANDRAIL)(TY C)	LF							13.000				13.000	
	464-6003	RC PIPE (CL III)(18 IN)	LF							6.000				6.000	
	467-6357	SET (TY II) (18 IN) (RCP) (3: 1) (P)	EA							1.000				1.000	
	496-6101	REMOV STR (RET WALL)	EA							10.000				10.000	
	500-6001	MOBILIZATION	LS	0.327		0.083		0.035		0.528		0.027		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO							12.000				12.000	
	506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF									60.000		60.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF									60.000		60.000	
	506-6034	CONSTRUCTION PERIMETER FENCE	LF									50.000		50.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	50.000		120.000				50.000		415.000		635.000	

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HIGHWAY PR 44, Various

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		HIGHWAY		**PR 44**		**Various**		**Various**		**Various**		**Various**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	50.000		120.000				50.000		415.000		635.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	72.000						2,215.000				2,287.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	72.000						2,215.000				2,287.000	
	529-6002	CONC CURB (TY II)	LF							194.000				194.000	
	529-6005	CONC CURB (MONO) (TY II)	LF							91.000				91.000	
	530-6004	DRIVEWAYS (CONC)	SY							1,274.000				1,274.000	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	2.000										2.000	
	644-6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	EA	4.000						2.000				6.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA	6.000						2.000				8.000	
	666-6170	REFL PAV MRK TY II (W) 4" (SLD)	LF							473.000				473.000	
	666-6212	REFL PAV MRK TY II (Y) 12" (SLD)	LF	64.000										64.000	
	666-6224	PAVEMENT SEALER 4"	LF							473.000				473.000	
	666-6232	PAVEMENT SEALER (WORD)	EA							4.000				4.000	
	666-6241	PAVEMENT SEALER (SYMBOL)	EA							2.000				2.000	
	666-6302	RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)	LF					1,135.000		594.000				1,729.000	
	666-6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	320.000										320.000	
	668-6076	PREFAB PAV MRK TY C (W) (24") (SLD)	LF	42.000				15.000						57.000	
	668-6085	PREFAB PAV MRK TY C (W) (WORD)	EA					4.000		4.000				8.000	
	668-6090	PREFAB PAV MRK TY C (W) (SYMBOL)	EA					3.000		2.000				5.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF					15.000						15.000	
	3077-6023	SP MIXES SP-C SAC-B PG70-22	TON	884.000						410.000				1,294.000	
	3084-6001	BONDING COURSE	GAL	402.000						187.000				589.000	
	5008-6001	WHEEL STOPS	EA							9.000				9.000	
	5054-6001	REMOV AND RESET PRECAST CONC WHEEL STOP	EA					26.000		6.000				32.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS							1.000				1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS							1.000				1.000	

SUMMARY OF ROADWAY QUANTITIES

ITEM DESC. CSJ 0911-28-063	STATION TO STATION		ITEM NO.			100			110	132	134	247	247	275			316
			BID CODE			6001	6009	6011	6001	6004	6001	6121	6466	6001	6020	6055	6029
			LENGTH	WIDTH	AREA*	PREPARING ROW	PREPARING ROW (TREE) (6" TO 24" DIA)	PREPARING ROW(TREE) (24" TO 36" DIA.)	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY B)	BACKFILL TY A	FL BS (RDWY DEL) (TY A GR 1-2)	FL BS (CIP) (TY A GR 1-2 OR 5) FINAL POS	CEMENT	CEMENT TREAT (MX EXST MTL & NW BS) (9")	CEMENT TREAT (EXIST MATL) (DC) (9")	ASPH (RC-250)
	FROM	TO	(FT)	(FT)	(SY)	AC	EA	EA	CY	CY	STA	TON 135 LB/CY	CY	TON (3%) 27.34 LB/SY	SY	SY	GAL (SEE NOTE 1) 0.25 GAL/SY
MISSION TEJAS LOOP	11+20.65	51+41.32	4021	18	8033		1		1	17	40			110		8033	2008
CSJ 0118-03-005 TOTAL						**0**	**1**	**0**	**1**	**17**	**40**	**0**	**0**	**110**	**0**	**8033**	**2008**
MISSION TEJAS LOOP-T	30+09.16	34+15.03	406	18	1847						4	31		25		1847	462
MISSION TEJAS MID LOOP	20+09.46	23+21.29	312	10	502						3		50	7	502		126
CAMPSITE 1			25	20	59				31								
CAMPSITE 2			30	20	70				36								
CAMPSITE 3			24	12	36		1		16								
CAMPSITE 4			30	20	70				32	1							
CAMPSITE 5			30	20	70		4		18								
CAMPSITE 6			30	20	71				39								
CAMPSITE 8			N/A		181		1		38	17							
CAMPSITE 12			72	12	120		3		37	3							
CAMPSITE 13			N/A														
CAMPSITE 14			65	12	101				27								
CAMPSITE 15			70	12	104		1		42								
CAMPSITE 16			N/A		362	0.2			108								
PARKING LOT 1			32	70	254		3						52	3	254		64
PARKING LOT 2			23	106	255												
APRON 1			12	62	85							1		1	85		21
PARKING LOT 3			23	60	162								23	2	162		41
APRON 2			18	38	90							2		1	90		23
PARKING LOT 4			N/A		34												
PARKING LOT 5			N/A		246			1					23	3	246		62
PARKING LOT 6			24	50	137								19	2	137		34
DUMPSTER PAD 1			N/A		15				15								
DUMPSTER PAD 2			N/A		15				15								
DUMP STATION			N/A		413		3		94				57	6	413		103
CSJ 0911-28-063 TOTAL						**0.2**	**16**	**1**	**548**	**21**	**7**	**34**	**224**	**50**	**1889**	**1847**	**936**
PROJECT TOTALS						**0.2**	**17**	**1**	**549**	**38**	**47**	**34**	**224**	**160**	**1889**	**9880**	**2944**

* AREA VERIFIED USING MICROSTATION, TPWD_LFK_QTY.DGN

SUMMARY OF ROADWAY QUANTITIES (CONTINUED)

ITEM DESC. CSJ 0911-28-063	STATION TO STATION		ITEM NO.			316					420	529	529	530	3077	3084	5008
			BID CODE			6060	6417	6433	6456	6530	6003	6002	6005	6004	6023	6001	6001
			LENGTH	WIDTH	AREA*	ASPH (RC-250)	AGGR (TY E OR L GR 5)	AGGR (TY PE,TY-PL,TY-E, TY-L GR-4) (SAC-B)	ASPH (AC-15P OR CRS-2P)	ASPH (AC-15P OR CRS-2P)	CL A CONC (MISC)	CONC CURB (TY II)	CONC CURB (MONO) (TY II)	DRIVEWAYS (CONC)	SP MIXES SP-C SAC-B PG70-22	BONDING COURSE	WHEEL STOPS
	FROM	TO	(FT)	(FT)	(SY)	TON (SEE NOTE 2)	CY 1 CY/ 145 SY	CY 1 CY/ 135 CY	GAL (SEE NOTE 1) 0.42 GAL/SY	TON (SEE NOTE 2) 0.42 GAL/SY	SY	LF	LF	SY	TON 220 LB/SY	GAL 0.05 GAL/SY	EA
MISSION TEJAS LOOP	11+20.65	51+41.32	4021	18	8033	8.4	55	60	3374	14.1					884	402	
CSJ 0118-03-005 TOTAL						**8.4**	**55**	**60**	**3374**	**14.1**	**0**	**0**	**0**	**0**	**884**	**402**	**0**
MISSION TEJAS LOOP-T	30+09.16	34+15.03	406	18	1847	1.9	13	14	776	3.2		64			203	92	
MISSION TEJAS MID LOOP	20+09.46	23+21.29	312	10	502	0.5	3	4	211	0.9					55	25	
CAMPSITE 1			25	20	59									59			1
CAMPSITE 2			30	20	70									70			1
CAMPSITE 3			24	12	36									36			1
CAMPSITE 4			30	20	70									70			1
CAMPSITE 5			30	20	70									70			1
CAMPSITE 6			30	20	71									71			1
CAMPSITE 8			N/A		181									181			
CAMPSITE 12			72	12	120									120			1
CAMPSITE 13			N/A														
CAMPSITE 14			65	12	101									101			1
CAMPSITE 15			70	12	104									104			1
CAMPSITE 16			N/A		362									362			
PARKING LOT 1			32	70	254	0.3	2	2	107	0.4		70			28	13	
PARKING LOT 2			23	106	255						41		29				
APRON 1			12	62	85	0.1	1	1	36	0.1					9	4	
PARKING LOT 3			23	60	162	0.2	1	1	68	0.3		60			18	8	
APRON 2			18	38	90	0.1	1	1	38	0.2					10	5	
PARKING LOT 4			N/A		34						34						
PARKING LOT 5			N/A		246	0.3	2	2	103	0.4					27	12	
PARKING LOT 6			24	50	137	0.1	1	1	58	0.2					15	7	
DUMPSTER PAD 1			N/A		15								31	15			
DUMPSTER PAD 2			N/A		15								31	15			
DUMP STATION			N/A		413	0.4	3	3	173	0.7					45	21	
CSJ 0911-28-063 TOTAL						**3.9**	**27**	**29**	**1570**	**6.4**	**75**	**194**	**91**	**1274**	**410**	**187**	**9**
PROJECT TOTALS						**12.3**	**82**	**89**	**4944**	**20.5**	**75**	**194**	**91**	**1274**	**1294**	**589**	**9**

* AREA VERIFIED USING MICROSTATION, TPWD_LFK_QTY.DGN

NOTE:
1. FOR CONTRACTOR'S INFORMATION ONLY.
2. ASPHALT ESTIMATED AT THE FOLLOWING RATE:
SPECIFIC GRAVITY OF ASPHALT (SGA) ESTIMATED AT 1.02*8.34

$$\text{TONS} = \frac{\text{RATE} * (\text{SGA}) * \text{SY}}{2000}$$

QUANTITY SUMMARIES
(MISSION TEJAS)

SHEET 1 OF 4

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		012

STATE	STATE DIST.NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

SUMMARY OF SWP3 QUANTITIES

ITEM NO.	164			168	506			
BID CODE	6009	6011	6054	6001	6038	6039	6041	6043
ITEM DESC. CSJ 0911-28-063	BROADCAST SEED (TEMP) (WARM)	BROADCAST SEED (TEMP) (COOL)	BOND FBR MTRX SEED (PERM) (RURAL) (SAND)	VEGETATIVE WATERING	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)
	SY	SY	SY	MG 2 APPLICATIONS (10 GAL/SY)	LF (SEE NOTE 1)	LF (SEE NOTE 1)	LF	LF
CSJ 0118-03-005 PROJECT AREA	1195	1195	2390	96			72	72
CSJ 0118-03-005 TOTAL	**1195**	**1195**	**2390**	**96**	**50**	**50**	**72**	**72**
CSJ 0911-28-063 PROJECT AREA	299	299	598	24			2215	2215
CSJ 0911-28-063 TOTAL	**299**	**299**	**598**	**24**	**50**	**50**	**2215**	**2215**
PROJECT TOTALS	**1494**	**1494**	**2988**	**120**	**100**	**100**	**2287**	**2287**

NOTES:
1. SEDIMENT CONTROL FENCE AND EROSION CONTROL LOG TO BE PLACED AS DIRECTED BY THE ENGINEER.
2. 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 MAINTAIN COMPLIANCE WITH THE CONSTRUCTION GENERAL PERMIT. NOTIFY THE ENGINEER PRIOR TO MAKING ADJUSTMENTS.
3. REMOVED ROCK WALLS SHOULD BE PLACED IN SURPLUS ROCK STORAGE AREA AS SHOWN ON ROADWAY LAYOUTS, SHEET 10 OF 16.

SUMMARY OF PAVEMENT MARKINGS

ITEM NO.	666							668		
BID CODE	6212	6224	6232	6241	6170	6302	6320	6076	6085	6090
ITEM DESC. CSJ 0911-28-063	REFL PAV MRK TY II (Y) 12" (SLD)	PAVEMENT SEALER 4"	PAVEMENT SEALER (WORD)	PAVEMENT SEALER (SYMBOL)	REFL PAV MRK TY II (W) 4" (SLD)	RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)	RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)	PREFAB PAV MRK TY C (W) (24") (SLD)	PREFAB PAV MRK TY C (W) (WORD)	PREFAB PAV MRK TY C (W) (SYMBOL)
	LF	LF	EA	EA	LF	LF	LF	LF	EA	EA
MISSION TEJAS LOOP	64						320	42		
CSJ 0118-03-005 TOTAL	**64**	**0**	**0**	**0**	**0**	**0**	**320**	**42**	**0**	**0**
PARKING LOT 1						192				
PARKING LOT 2		393	2	1	393				2	1
PARKING LOT 3						119				
PARKING LOT 4		80	2	1	80				2	1
PARKING LOT 5						203				
PARKING LOT 6						80				
CSJ 0911-28-063 TOTAL	**0**	**473**	**4**	**2**	**473**	**594**	**0**	**0**	**4**	**2**
PROJECT TOTALS	**64**	**473**	**4**	**2**	**473**	**594**	**320**	**42**	**4**	**2**

SUMMARY OF SIGNING

ITEM NO.		644	
BID CODE		6001	6060
SIGN NO.	ITEM DESC. CSJ 0911-28-063	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	IN SM RD SN SUP&AM TYTWT(1)WS(P)
		EA	EA
1	W11-2 R1-5L		1
2	W11-2 R1-5L		1
3	W1-4R	1	
	W13-1P		
4	W1-4R	1	
	W13-1P		
5	R2-1		1
8	M1-6P		1
CSJ 0118-03-005 TOTAL		**2**	**4**
6	R7-8T		1
	R7-8P		
	R7-8aPT		
7	R7-8T		1
	R7-8P		
	R7-8aPT		
CSJ 0911-28-063 TOTAL		**0**	**2**
PROJECT TOTALS		**2**	**6**

DRAINAGE SUMMARY

ITEM NO.	420	432	464	467
BID CODE	6071	6022	6003	6357
ITEM DESCRIPTION	CL C CONC (COLLAR)	RIPRAP (STONE COMMON) (DRY) (6 IN)	RC PIPE (CL III) (18 IN)	SET (TY II) (18 IN) (RCP) (3:1) (P)
	EA	CY	LF	EA
PARKING LOT #2	1	7	6	1
CSJ 0911-28-063 TOTAL	**1**	**7**	**6**	**1**
PROJECT TOTALS	**1**	**7**	**6**	**1**

SUMMARY OF REMOVALS

ITEM DESC. CSJ 0911-28-063	104 6022 REMOVING CONC (CURB AND GUTTER) LF	104 6028 REMOVING CONC (MISC) SY	105 6043 REMOVING STAB BASE & ASPH PAV (0-6") SY	496 6101 REMOV STR (RET WALL) EA (SEE NOTE 3)	644 6076 REMOVE SM RD SN SUP&AM EA	5054 6001 REMOV AND RESET PRECAST CONC WHEEL STOP EA
MISSION TEJAS LOOP					6	
CSJ 0118-03-005 TOTAL	**0**	**0**	**0**	**0**	**6**	**0**
CAMPSITE 1			86	1		
CAMPSITE 2			62	1		
CAMPSITE 3			46	2		
CAMPSITE 4			130	1		
CAMPSITE 5			97	1		
CAMPSITE 6			127	1		
CAMPSITE 8			138	2		
CAMPSITE 12			83			
CAMPSITE 13			95			
CAMPSITE 14			136	1		
CAMPSITE 15			102			
PARKING LOT 2	23	34	268		1	6
PARKING LOT 4		34			1	
PICNIC PAD #1		11				
PICNIC PAD #2		11				
CSJ 0911-28-063 TOTAL	**23**	**90**	**1370**	**10**	**2**	**6**
PROJECT TOTALS	**23**	**90**	**1370**	**10**	**8**	**6**

MISCELLANEOUS SUMMARY

ITEM NO.	420	420	450
BID CODE	6002	6003	6049
ITEM DESCRIPTION	CL A CONC (MISC)	CL A CONC (MISC)	RAIL (HANDRAIL) (TY C)
	CY	SY	LF
CONCRETE FLUME	14		
CSJ 0118-03-005 TOTAL	**14**	**0**	**0**
PICNIC PAD #1		11	
PICNIC PAD #2		11	
CONCRETE STAIRS	1		13
CSJ 0911-28-063 TOTAL	**1**	**22**	**13**
PROJECT TOTALS	**15**	**22**	**13**

QUANTITY SUMMARIES
(MISSION TEJAS)

SHEET 2 OF 4

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		013

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

SUMMARY OF ROADWAY QUANTITIES												
ITEM NO.				110	132	247	316	316	316	420	5054
BID CODE				6001	6004	6516	6530	6530	6433	6002	6001
							(3)	(1) (2)			
LOCATION	LENGTH	WIDTH	AREA	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY B)	FL BS (CMP IN PLC) (TY A GR 1-2 OR 5)	ASPH (AC-15P OR CRS-2P)		AGGR (TY PE, TY-PL,TY-E, TY-L GR-4) (SAC-B)	CL A CONC (MISC)	REMOV AND RESET PRECAST CONC WHEEL STOP
								(0.42 GAL/SY)	1 CY/135 SY		
	FT	FT	SY	CY	CY	TON	TON	GAL	CY	CY	EA
CSJ: 0911-08-058											
ALAZAN BAYOU WMA; BOTTOM ROAD											
STA 300+00.00 TO STA 339+07.09	3907	10	4341			180				79	
CSJ 0911-08-058 SUBTOTAL				0	0	180	0	0	0	79	0
CSJ: 0911-08-059											
ALAZAN BAYOU WMA; OFFICE											
SEE PLAN LAYOUT	VARIES	VARIES	7394				14	3105	55		26
CSJ 0911-08-059 SUBTOTAL				0	0	0	14	3105	55	0	26
CSJ: 0911-39-073											
TOLEDO BEND WMA; ACCESS ROAD											
STA 100+00.00 TO STA 112+27.26	1227	10	1363	63	101	414					
CSJ 0911-39-073 SUBTOTAL				63	101	414	0	0	0	0	0
SUMMARY TOTALS				63	101	594	14	3105	55	79	26

(1) FOR CONTRACTOR'S INFORMATION ONLY.

(2) USE PRECOATED AGGREGATE WITH AC-15P. USE NON-PRECOATED AGGREGATE WITH CRS-2P.

(3) TONS= $\frac{\text{RATE X (SGA) X SY}}{2000}$

SPECIFIC GRAVITY OF ASPHALT (SGA)
ESTIMATED AT 1.02 X 8.34

Texas Department of Transportation

QUANTITY SUMMARIES

(ALAZAN BAYOU WMA & TOLEDO BEND WMA)

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		14

DW: CK: DW: CK:

DATE: 2/16/2024 7:34:36 AM
FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/0911128063-ORD/4 - Design/Plan Set/1. General/OSUM_1.dgn

SUMMARY OF SWP3 QUANTITIES									
ITEM NO.	164	164	164	168	506	506	506	506	506
BID CODE	6009	6011	6054	6001	6034	6038	6039	6002	6011
				(4)	(5)				
LOCATION	BROADCAST SEED (TEMP) (WARM)	BROADCAST SEED (TEMP) (COOL)	BOND FBR MTRX SEED (PERM)(RURAL) (SAND)	VEGETATIVE WATERING	CONSTRUCTION PERIMETER FENCE	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	ROCK FILTER DAMS (INSTALL) (TY 2)	ROCK FILTER DAMS (REMOVE)
	SY	SY	SY	MG	LF	LF	LF	LF	LF
CSJ: 0911-08-058									
ALAZAN BAYOU WMA; BOTTOM ROAD									
STA 300+00.00 TO STA 339+07.09	211	211	422	16.9		120	120		
CSJ 0911-08-058 SUBTOTAL	211	211	422	16.9	0	120	120	0	0
CSJ: 0911-39-073									
TOLEDO BEND WMA; ACCESS ROAD									
STA 100+00.00 TO STA 112+27.26	682	682	1363	54.5	50	415	415	60	60
CSJ 0911-39-073 SUBTOTAL	682	682	1363	54.5	50	415	415	60	60
SUMMARY TOTALS	893	893	1785	71.4	50	535	535	60	60

NOTE: LOCATIONS AND TYPES OF BMP'S MAY REQUIRE ADJUSTMENTS PRIOR TO OR AFTER PLACEMENT AS DIRECTED BY THE ENGINEER. ADJUSTMENTS SHOULD BE MADE TO ENSURE BMP'S ARE WORKING EFFECTIVELY AND MAINTAIN COMPLIANCE WITH THE CONSTRUCTION GENERAL PERMIT. NOTIFY THE ENGINEER PRIOR TO MAKING ADJUSTMENTS.

(4) 2 APPLICATIONS AT 10 GAL/SY PER APPLICATION

(5) TOKEN AMOUNT PROVIDED TO BE USED AT ENGINEERS DIRECTION.

SUMMARY OF PAVEMENT MARKINGS					
ITEM NO.	666	668	668	668	677
BID CODE	6302	6085	6090	6076	6007
LOCATION	RE PM W/RET REQ TY I (W)4"(SLD) (090MIL)	PREFAB PAV MRK TY C (W) (WORD)	PREFAB PAV MRK TY C (W) (SYMBOL)	PREFAB PAV MRK TY C (W) (24")(SLD)	ELIM EXT PAV MRK & MRKS (24")
	LF	EA	EA	LF	LF
CSJ: 0911-08-059					
ALAZAN BAYOU WMA; OFFICE					
SEE PLAN LAYOUT	1135	4	3	15	15
CSJ 0911-08-059 SUBTOTAL	1135	4	3	15	15
PROJECT TOTALS	1135	4	3	15	15

Texas Department of Transportation

QUANTITY SUMMARIES

(ALAZAN BAYOU WMA & TOLEDO BEND WMA)

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		15

SUMMARY OF SMALL SIGNS

ROADWAY LAYOUT SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX): POST TYPE (FRP = Fiberglass, TWT = Thin-Wall, 10BWG = 10 BWG, S80 = Sch 80)	POSTS (1 or 2)	ANCHOR TYPE (UA=Universal Conc, UB=Universal Bolt, SA=Slipbase-Conc, SB=Slipbase-Bolt, WS=Wedge Steel, WP=Wedge Plastic)	MOUNTING DESIGNATION: PREFABRICATED (P = "Plain", T = "T", U = "U")	MOUNTING DESIGNATION (1EXT or 2EXT = # of Ext, BM = Extruded Wind Beam, WC = 1.12 #/ft Wing Channel, EXAL= Extruded Alum Sign Panels)	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE: TY N, TY S
1	1	R1-5B	STOP HERE TO <PED SYMBOL + LT ARROW>	36 x 36	X		TWT	1	WS	P		
1	2	R1-5B	STOP HERE TO <PED SYMBOL + LT ARROW>	36 x 36	X		TWT	1	WS	P		
2	3	W1-4R	SYMBOL - REVERSE CURVE RIGHT	36 x 36	X		10BWG	1	SA	P		
		W13-1P	(SPEED) MPH <ADVISORY SPEED PLAQUE>	18 x 18	X							
			15									
4	4	W1-4R	SYMBOL - REVERSE CURVE RIGHT	36 x 36	X		10BWG	1	SA	P		
		W13-1P	(SPEED) MPH <ADVISORY SPEED PLAQUE>	18 x 18	X							
			15									
6	5	R2-1	SPEED LIMIT (SPEED)	24 x 30	X		TWT	1	WS	P		
			25									
8	6	D9-6	SYMBOL - ACCESSIBLE TO HANDICAPPED	24 x 24	X		TWT	1	WS	P		
		D9-6P	VAN ACCESSIBLE <PLAQUE>	18 x 9	X							
9	7	D9-6	SYMBOL - ACCESSIBLE TO HANDICAPPED	24 x 24	X		TWT	1	WS	P		
		D9-6P	VAN ACCESSIBLE <PLAQUE>	18 x 9	X							
13	8	M1-6P	PARK ROAD ROUTE MARKER	24 x 24	X		TWT	1	WS	P		
			44									

ALUMINUM SIGN BLANKS THICKNESS

Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
http://www.txdot.gov/

NOTE:

1. Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.
2. For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.
3. For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).

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Texas Department of Transportation
Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS
(MISSION TEJAS)

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-16 8-16	0911	28	063, ETC.	VARIOUS
	DIST		COUNTY	SHEET NO.
	LFK		HOUSTON, ETC.	16

TCP GENERAL NOTES

(NOTES BELOW APPLICABLE TO ALL PROJECTS UNLESS OTHERWISE NOTED)

1. REMOVE FROM THE WORK AREA ALL LOOSE MATERIALS AND DEBRIS RESULTING FROM CONSTRUCTION OPERATIONS AT THE END OF EACH WORK DAY.

2. THE CONTRACTOR IS REQUIRED TO COORDINATE WITH TEXAS PARKS AND WILDLIFE DEPARTMENT AND ADJUST CONSTRUCTION EFFORTS WITH THE DAILY OPERATIONS OF THE PARK. ESTABLISHMENT OF ANY MATERIAL AND/OR EQUIPMENT STAGING OR STORAGE AREAS OTHER THAN THOSE SHOWN ON THE PLANS MUST BE APPROVED BY THE ENGINEER AND THE PARK SUPERINTENDENT PRIOR TO THE START OF WORK AND THEREAFTER IF A CHANGE OF LOCATION BECOMES NECESSARY. AS PART OF THIS COORDINATION THE CONTRACTOR WILL BE REQUIRED TO:

   A. CONTACT PARK SUPERINTENDENT PRIOR TO CONSTRUCTION TO COORDINATE THE REMOVAL OF FIRE PITS, GRILLS, AND LAMP POSTS. (APPLICABLE TO MISSION TEJAS ONLY)

   B. HOLD A WEEKLY MEETING WITH A TxDOT REPRESENTATIVE, THE PARK SUPERINTENDENT, AND THE CONTRACTOR'S SUPERINTENDENT TO REVIEW AND DISCUSS THE CONSTRUCTION WORK PLANNED FOR THE FOLLOWING TWO WEEK PERIOD.

   C. PRIOR TO THE START OF CONSTRUCTION, DELINEATE THE LIMITS OF THE WORK AREA WITH STAKES AND FLAGGING TO IDENTIFY WHERE NON-WORK AREAS BEGIN SO THAT DAMAGE TO ADJACENT PARK PROPERTY BY CONSTRUCTION EQUIPMENT AND OTHER VEHICLES IS AVOIDED.

   D. MITIGATE OR REPLACE UNNECESSARY DAMAGE TO TREES OR SHRUBS WITHIN AND ADJACENT TO THE LIMITS OF CONSTRUCTION. THE CONTRACTOR SHALL REPLACE OR MITIGATE DAMAGED TREES OR SHRUBS WITH LIKE SIZE AND TYPES OF TREES OR SHRUBS DAMAGED. FINAL DETERMINATION OF THE REPLACEMENT OR MITIGATION REQUIREMENTS WILL BE DETERMINED BY THE TxDOT LANDSCAPE ARCHITECT. ALL COST ASSOCIATED WITH THE REPLACEMENT OR MITIGATION COST WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

   E. REPAIR OR REPLACE ANY UNNECESSARY DAMAGE TO ARBORS OR UTILITIES WITHIN AND ADJACENT TO THE LIMITS OF CONSTRUCTION. ANY REPLACEMENT COST WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

   F. THE CONTRACTOR WILL BE RESPONSIBLE TO OBTAIN ALL NECESSARY PERMITS FOR UTILITIES.

SEQUENCE OF WORK:

PARKS WILL BE CONSTRUCTED IN THE FOLLOWING ORDER:

ORDER	CSJ	PARK
1	0911-28-063	MISSION TEJAS
2	0911-08-059	ALAZAN SEAL COAT
3	0911-08-058	ALAZAN BOTTOM COAT
4	0911-39-073	TOLEDO BEND WMA

THE CONTRACTOR SHALL WORK ON ONE PARK AT A TIME UNLESS APPROVED IN WRITING BY THE ENGINEER.

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
CMB, P.E.
AF852E728AEC4C0...
6/26/2024

TRAFFIC CONTROL PLAN
(GENERAL NOTES)

SHEET 1 OF 2

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		17

STATE	STATE DIST.NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC.	VARIOUS

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TRAFFIC CONTROL PLAN NARRATIVE - MISSION TEJAS

GENERAL:

FOLLOW THE CONSTRUCTION SEQUENCING UNLESS OTHERWISE APPROVED.

MISSION TEJAS WILL BE CLOSED TO PUBLIC TRAFFIC FOR DURATION OF CONSTRUCTION.

INSTALL, "ROAD CLOSED" SIGN, BARRICADE, APPROPRIATE ADVANCE WARNING SIGNS, AND TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH APPLICABLE BC STANDARDS PRIOR TO COMMENCING WORK.

CONSTRUCTION SEQUENCE:

1. INSTALL TEMPORARY EROSION CONTROL DEVICES FOR CONSTRUCTION ACTIVITIES AS SHOWN ON ENVIRONMENTAL LAYOUTS.
2. REMOVE MARKED TREES IN ACCORDANCE WITH MIGRATORY BIRD TREATY ACT.
3. CONSTRUCT EXISTING CAMPSITE IMPROVEMENTS.
4. CONSTRUCT EXCAVATION AND EMBANKMENT FOR LIMITS OF ROADWAY.
5. PLACE FLEX BASE AND CEMENT TREAT EXIST AND NEW MATERIAL FOR LIMITS OF PROJECT.
6. AFTER COMPLETION OF CEMENT TREATMENT, PLACE PRIME COAT AND ALLOW 14 DAYS, UNLESS OTHERWISE APPROVED, BEFORE PLACING ONE COURSE SURFACE TREATMENT.
7. COMPLETE EMBANKMENT AND SEEDING ON ALL FRONT SLOPES.
8. PLACE FINAL PAVEMENT MARKINGS AND OPEN TO TRAFFIC.
9. REMOVE ALL BMPs.

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

TRAFFIC CONTROL PLAN

(NARRATIVE - MISSION TEJAS)

SHEET 2 OF 2

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		018

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13 9-07 8-14 5-10 5-21	0911	28	063, ETC.	VARIOUS
	DIST	COUNTY		SHEET NO.
	LFK	HOUSTON, ETC.		19

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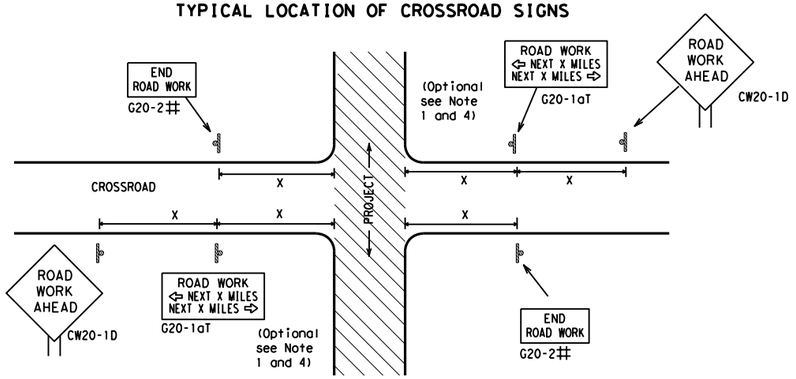
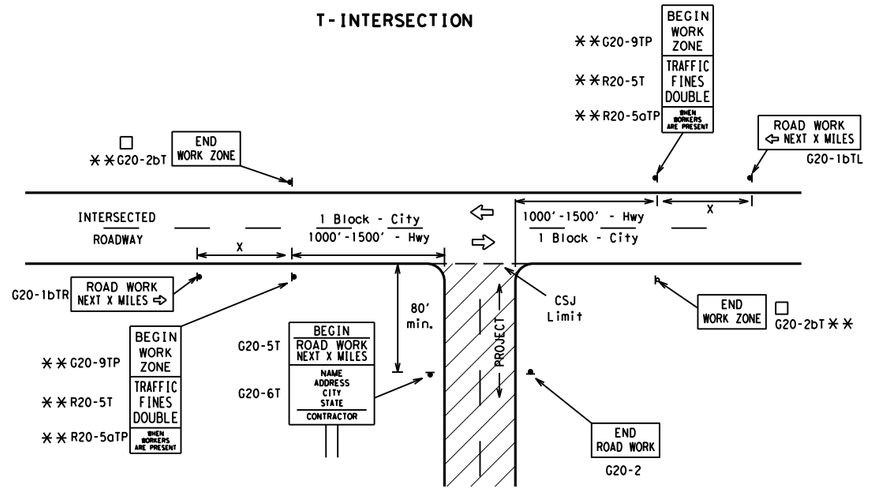
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

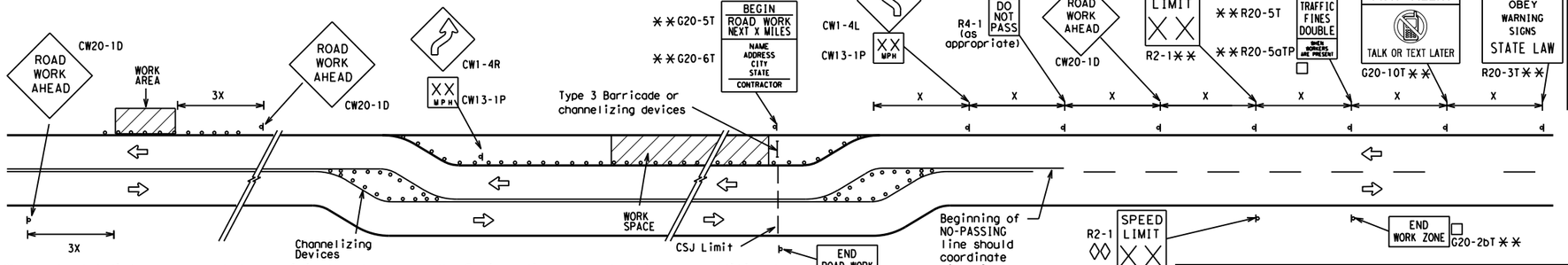
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

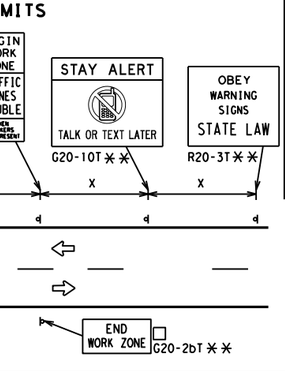
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

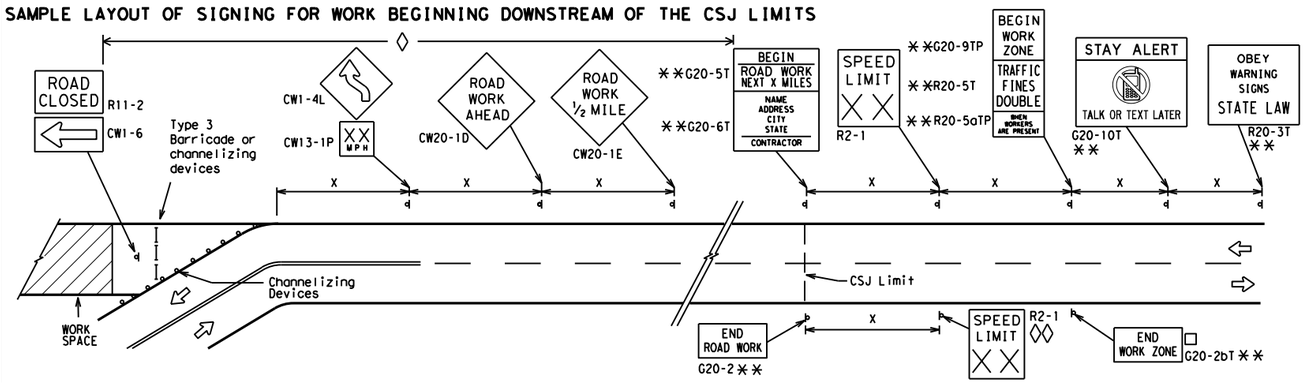


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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



NOTES

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

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

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

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

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

LEGEND

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

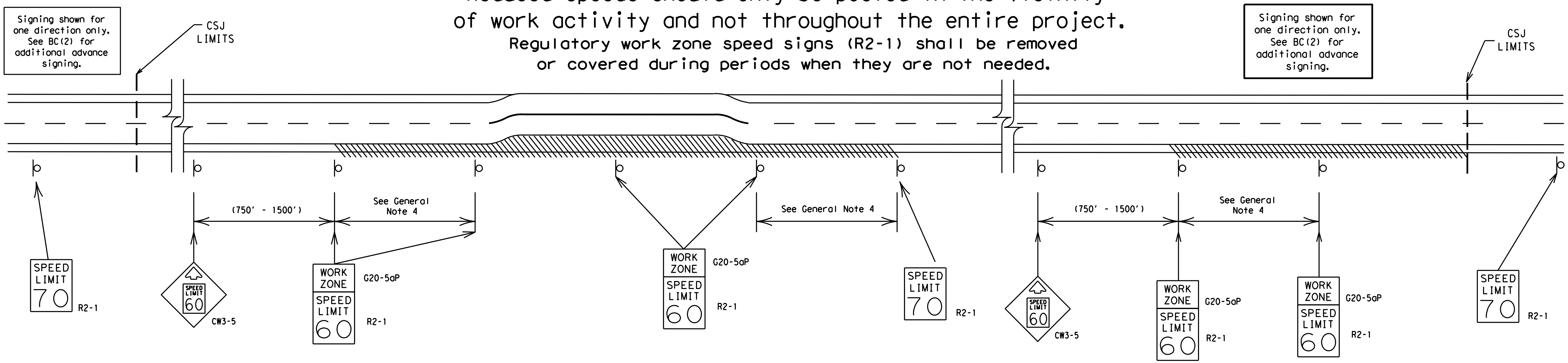
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	LFK	HOUSTON, ETC.		20

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 9-07 8-14 7-13 5-21	0911	28	063, ETC.	VARIOUS
	DIST		COUNTY	SHEET NO.
	LFK		HOUSTON, ETC.	21

97

DATE: 12/8/2023 2:39:24 PM
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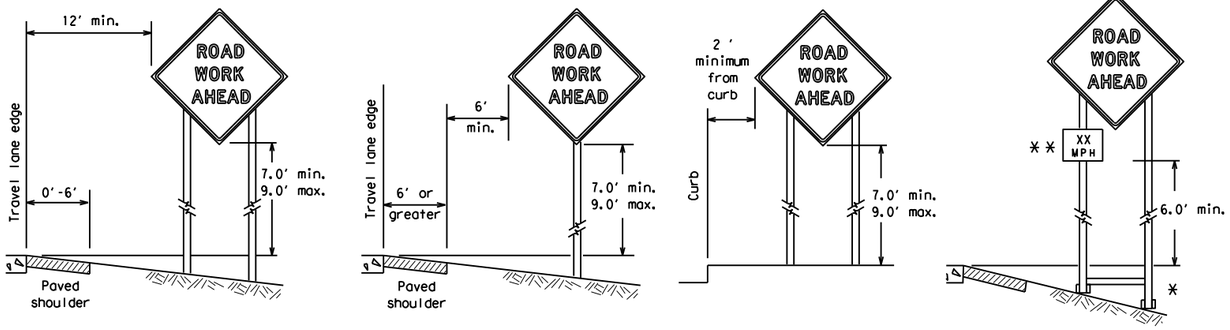
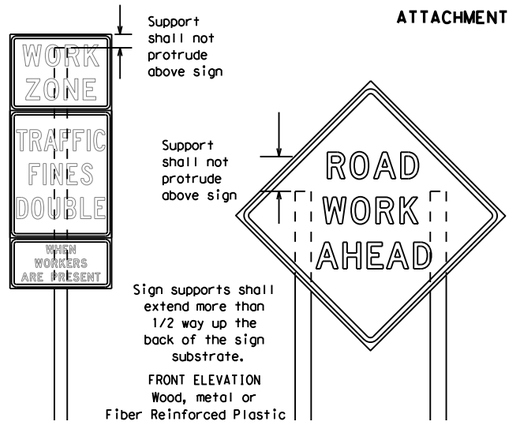
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

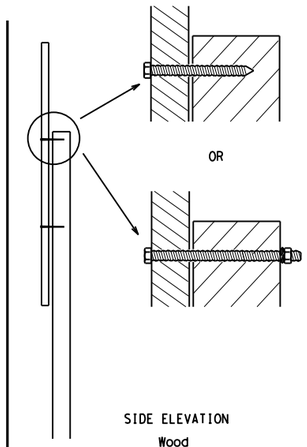


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





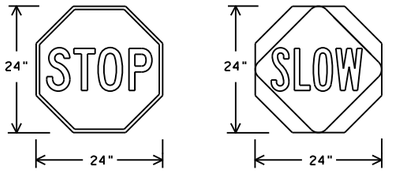
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	LFK	HOUSTON, ETC.		22

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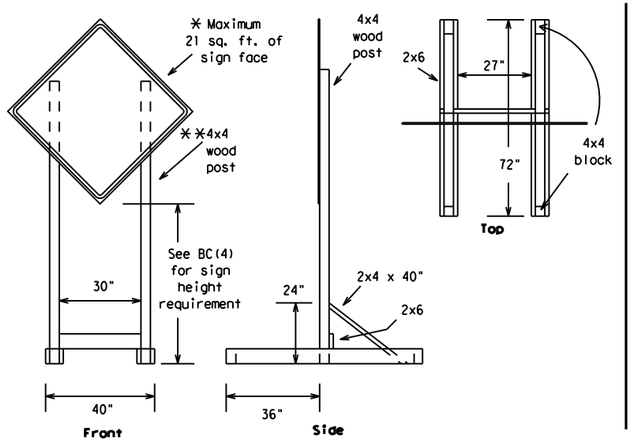
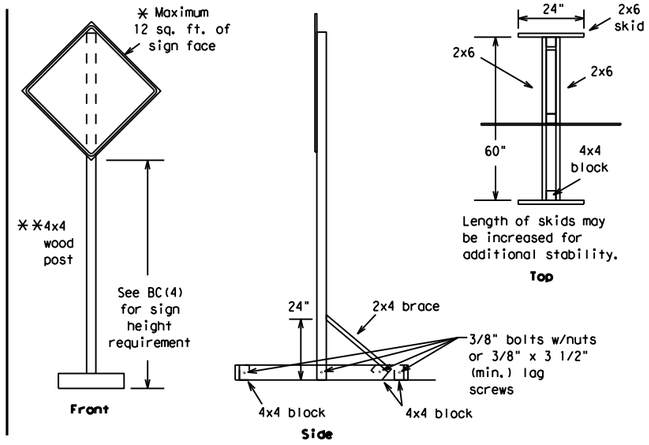
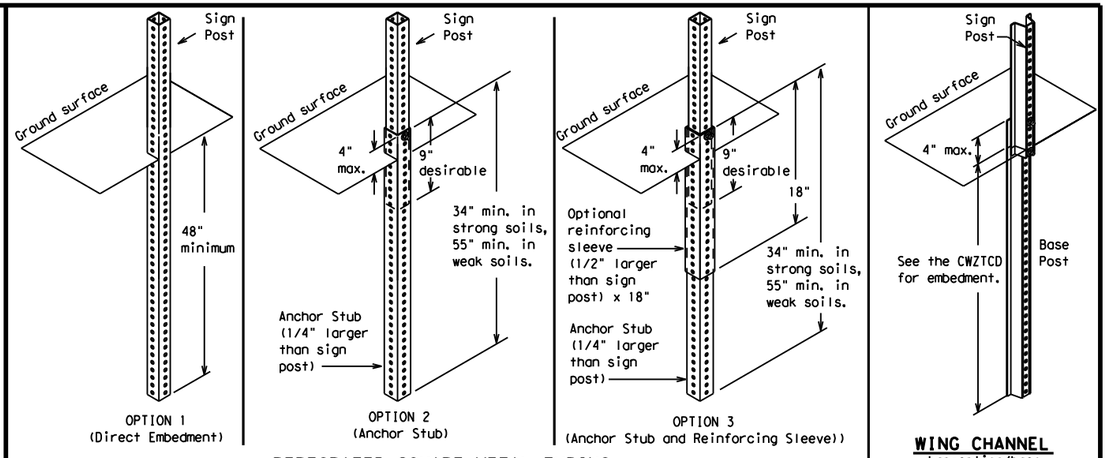




SKID MOUNTED WOOD SIGN SUPPORTS

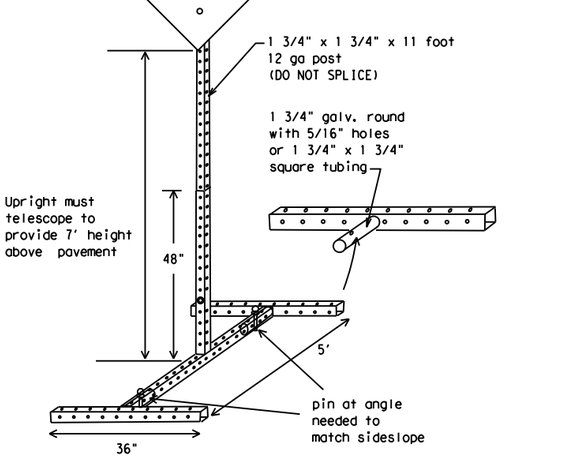
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

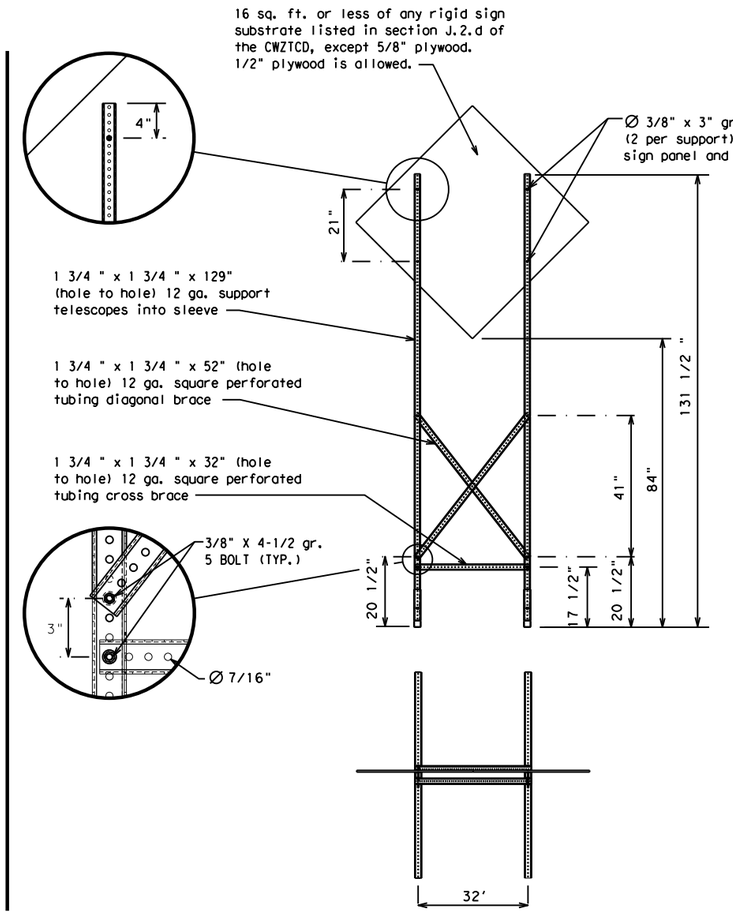


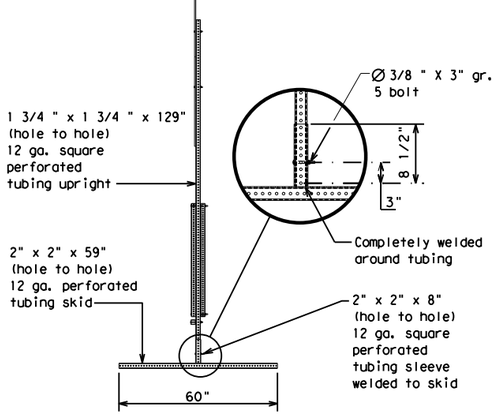
PERFORATED SQUARE METAL TUBING

GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	LFK	HOUSTON, ETC.		23

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FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/0911280063-ORD/4 - Design/Plan Set/2. TCP/bc-21.dgn

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

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

Phase 2: Possible Component Lists

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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	LFK	HOUSTON, ETC.		24

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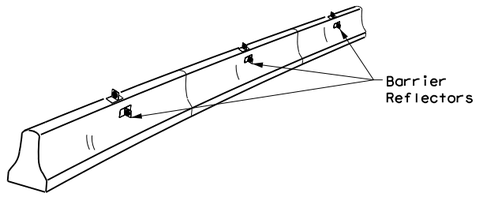
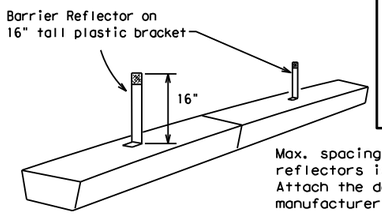
FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/091128063-ORD/4 - Design/Plan Set/2. TCP/bc-21.dgn

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



CONCRETE TRAFFIC BARRIER (CTB)

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

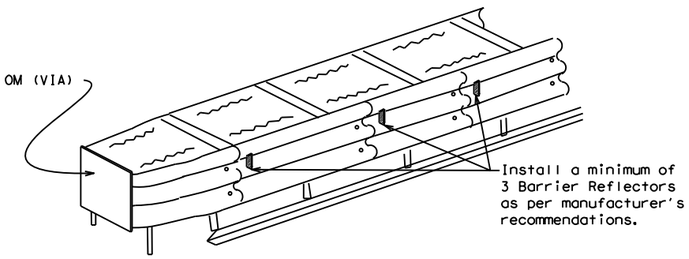


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

LOW PROFILE CONCRETE BARRIER (LPCB)

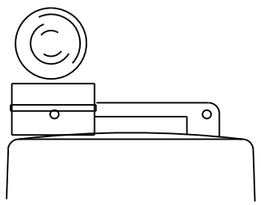


DELINEATION OF END TREATMENTS

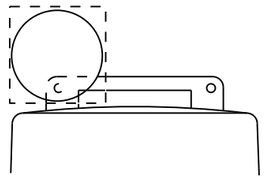
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

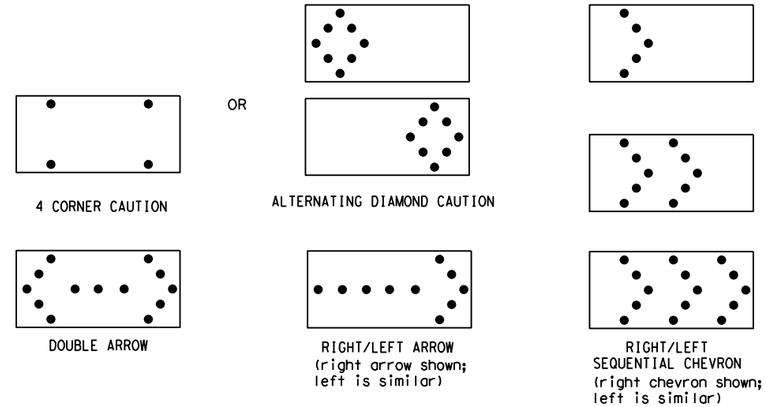
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	LFK	HOUSTON, ETC.		25

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

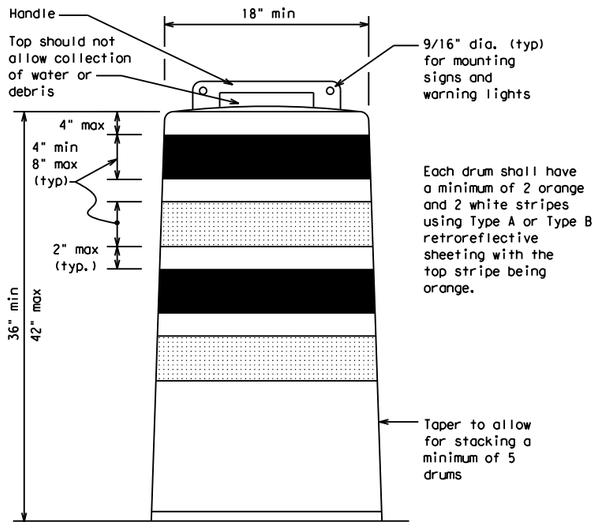
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

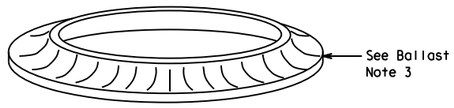
RETROREFLECTIVE SHEETING

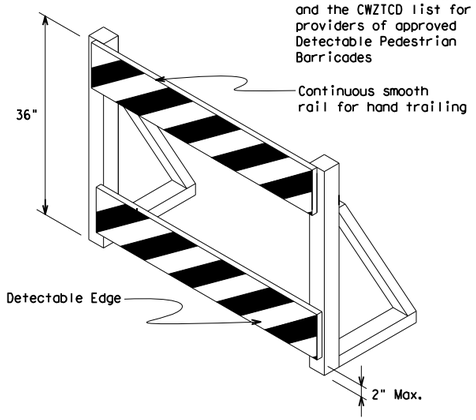
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

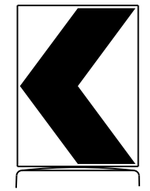




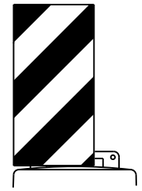


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	LFK	HOUSTON, ETC.		26
7-13				

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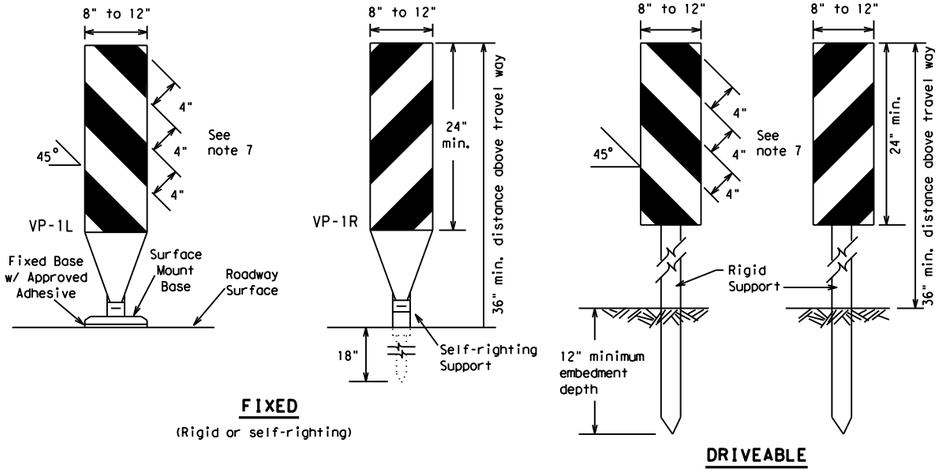
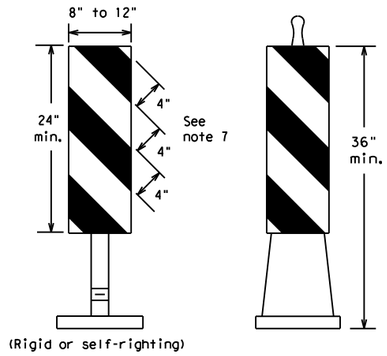


FIXED
(Rigid or self-righting)

DRIVEABLE

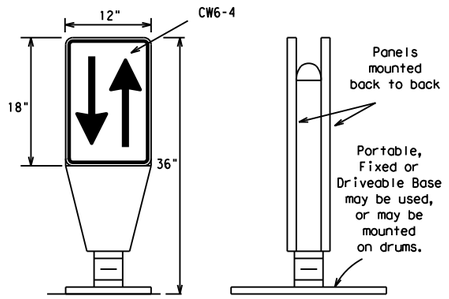


(Rigid or self-righting)

PORTABLE

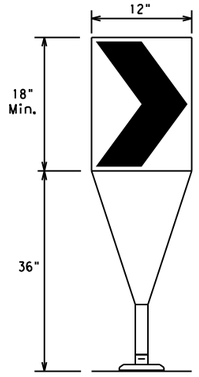
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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



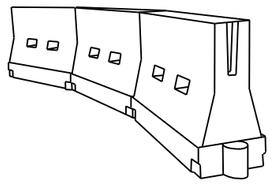
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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REVISIONS	0911	28	063, ETC.	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	LFK	HOUSTON, ETC.		27

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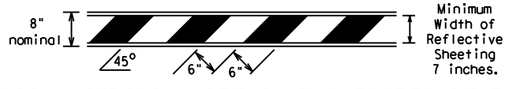
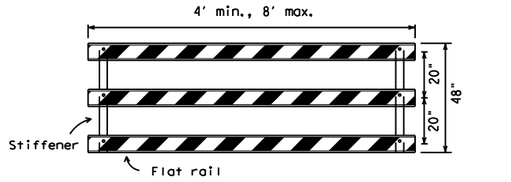
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



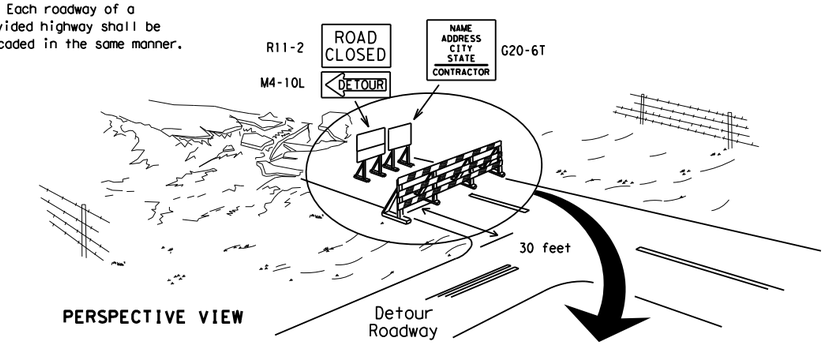
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

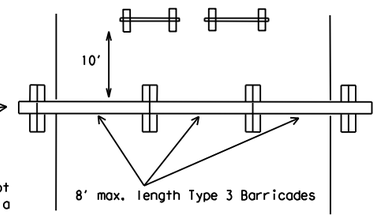
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

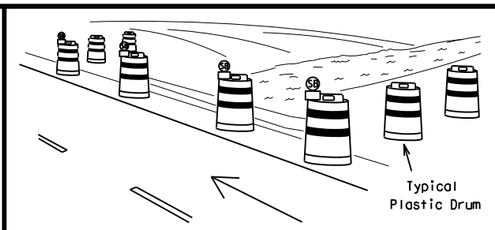
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

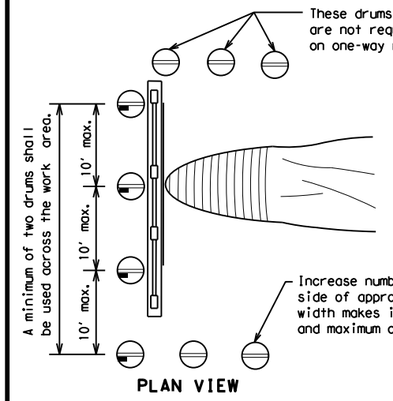
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

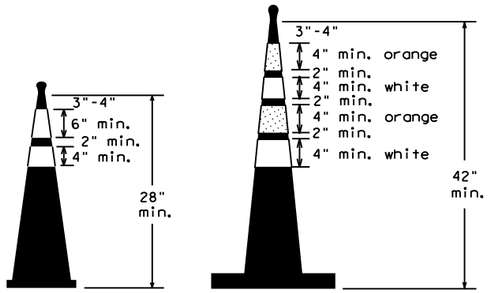
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



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

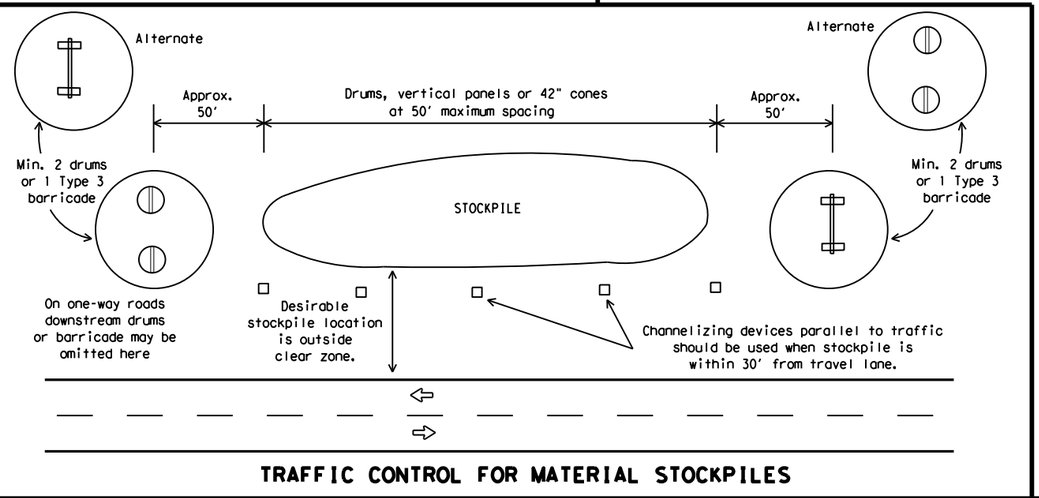
PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



28" Cones shall have a minimum weight of 9 1/2 lbs.
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0911	28	063, ETC.	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
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104

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

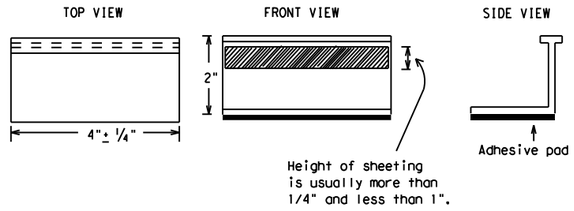
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0911	28	063, ETC.	VARIOUS
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	LFK	HOUSTON, ETC.		29
11-02 8-14				

105

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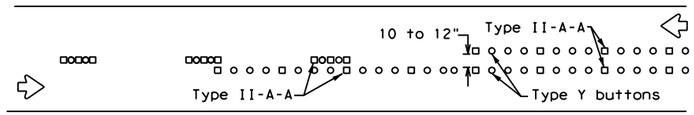
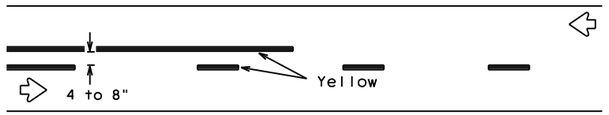
PAVEMENT MARKING PATTERNS

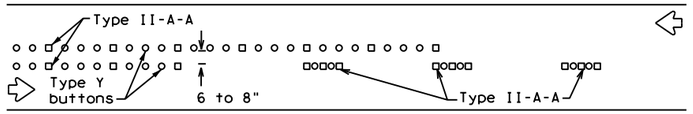
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



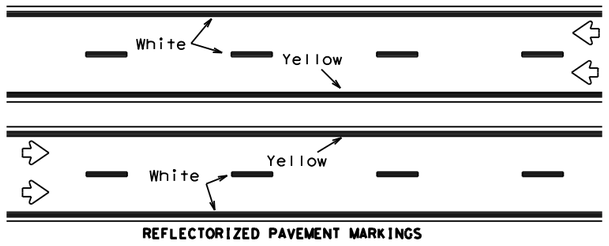
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



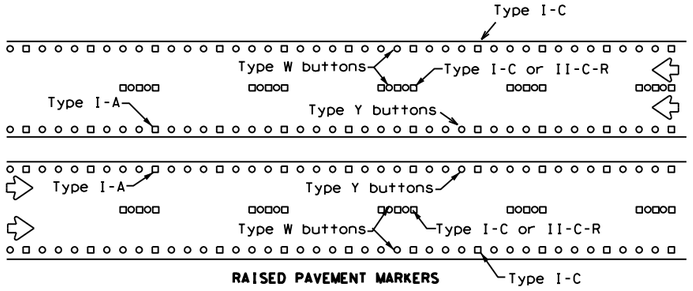
RAISED PAVEMENT MARKERS - PATTERN B

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



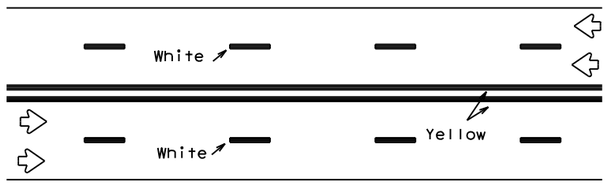
REFLECTORIZED PAVEMENT MARKINGS



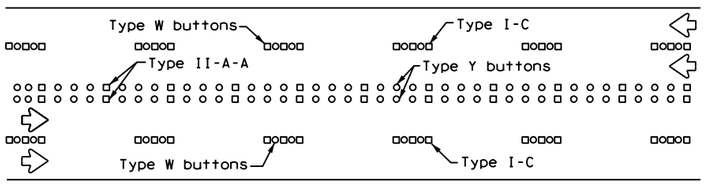
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



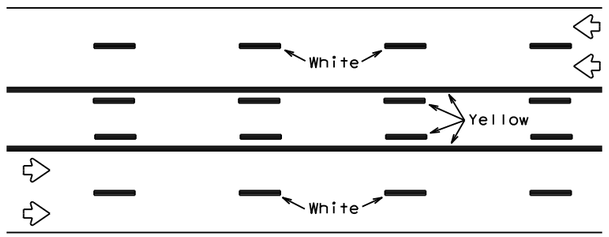
REFLECTORIZED PAVEMENT MARKINGS



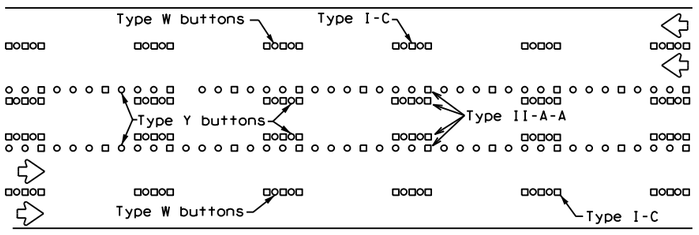
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

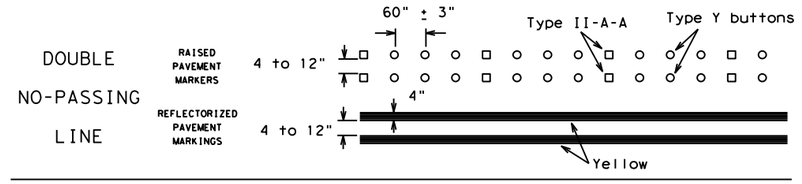
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

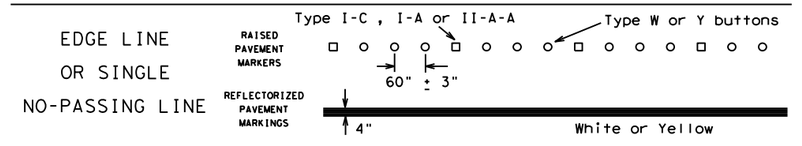
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

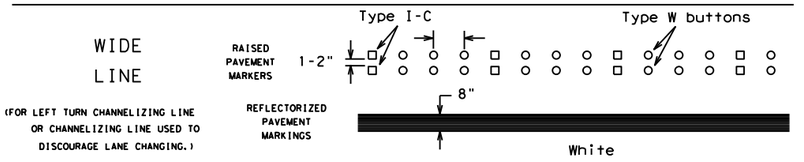


EDGE LINE OR SINGLE NO-PASSING LINE



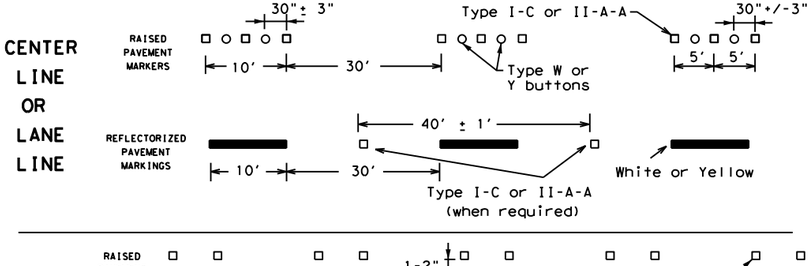
WIDE LINE

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

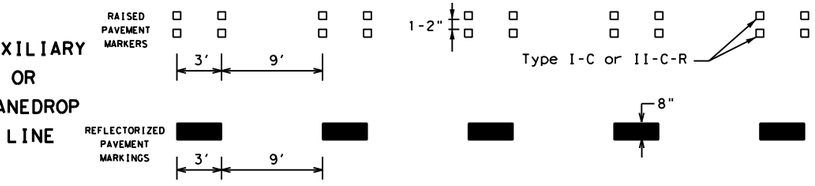


BROKEN LINES

CENTER LINE OR LANE LINE

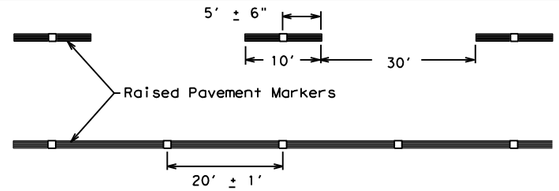


AUXILIARY OR LANEDROP LINE



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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	LFK	HOUSTON, ETC.		30

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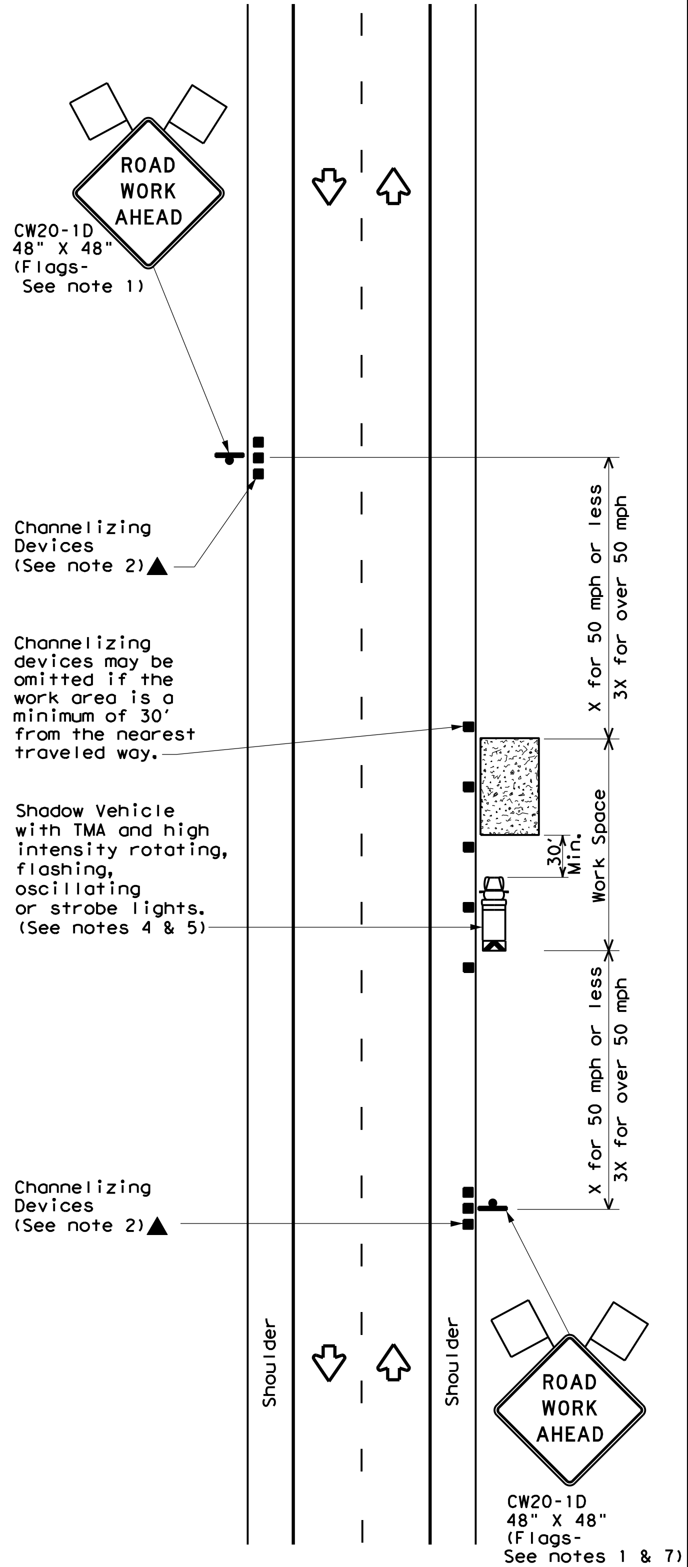
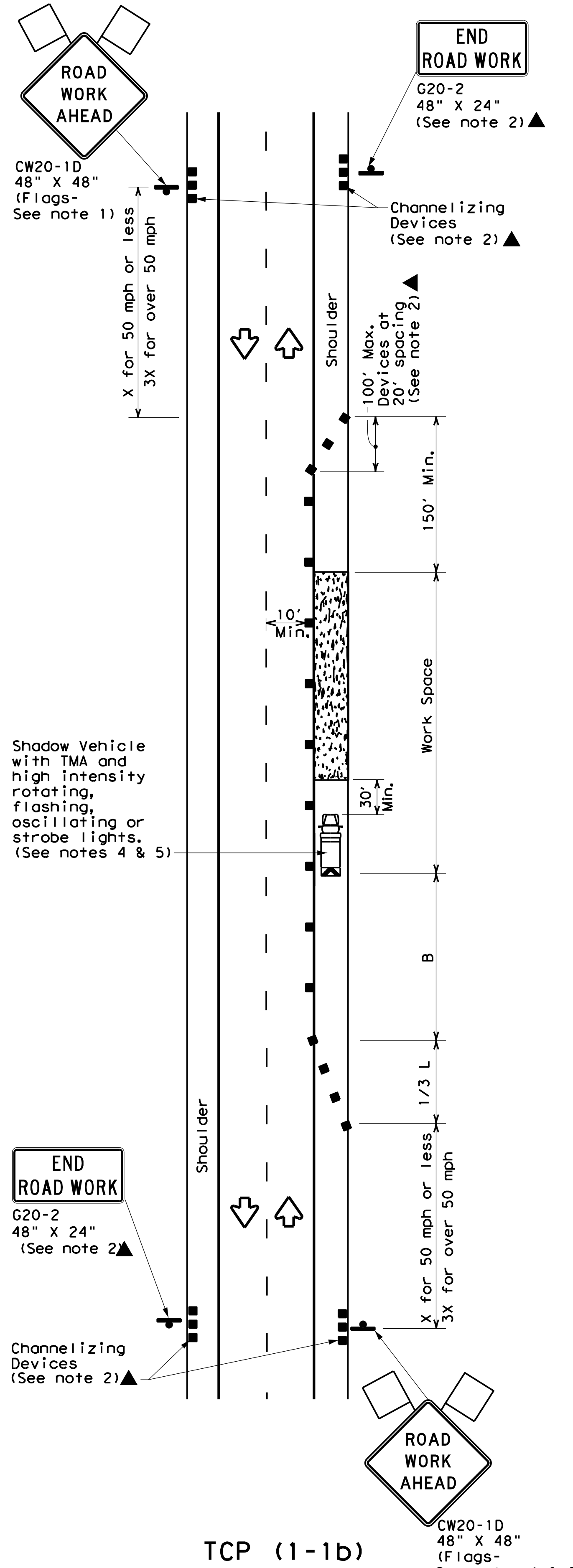


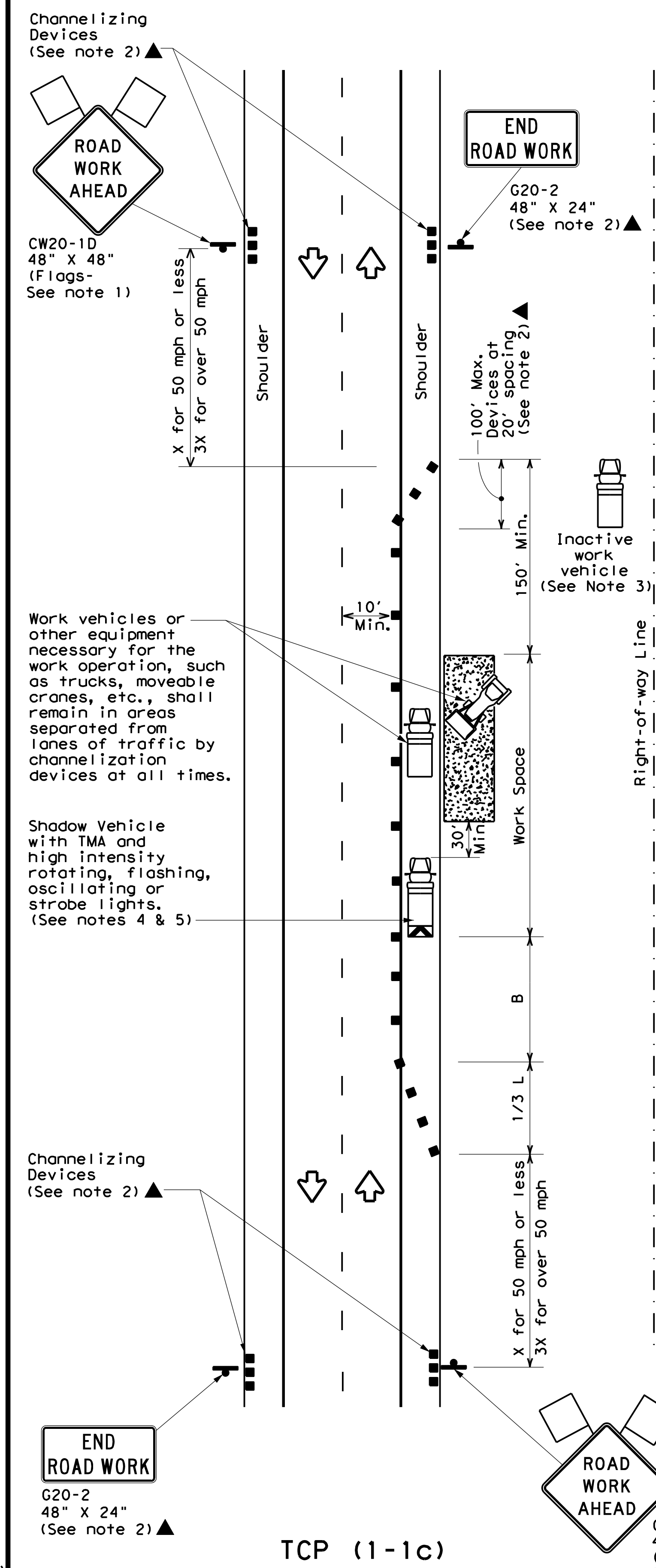
TCP (1-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (1-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (1-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

LEGEND

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			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. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
4. 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 wider work spaces.
6. See TCP(5-1)for shoulder work on divided highways, expressways and freeways.
7. 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(1-1)-18

FILE: tcp1-1-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
2-94 4-98	DIST		COUNTY	SHEET NO.
8-95 2-12 / 1-97 2-18	LFK		HOUSTON, ETC.	31

151

DATE: 12/8/2023 2:39:55 PM
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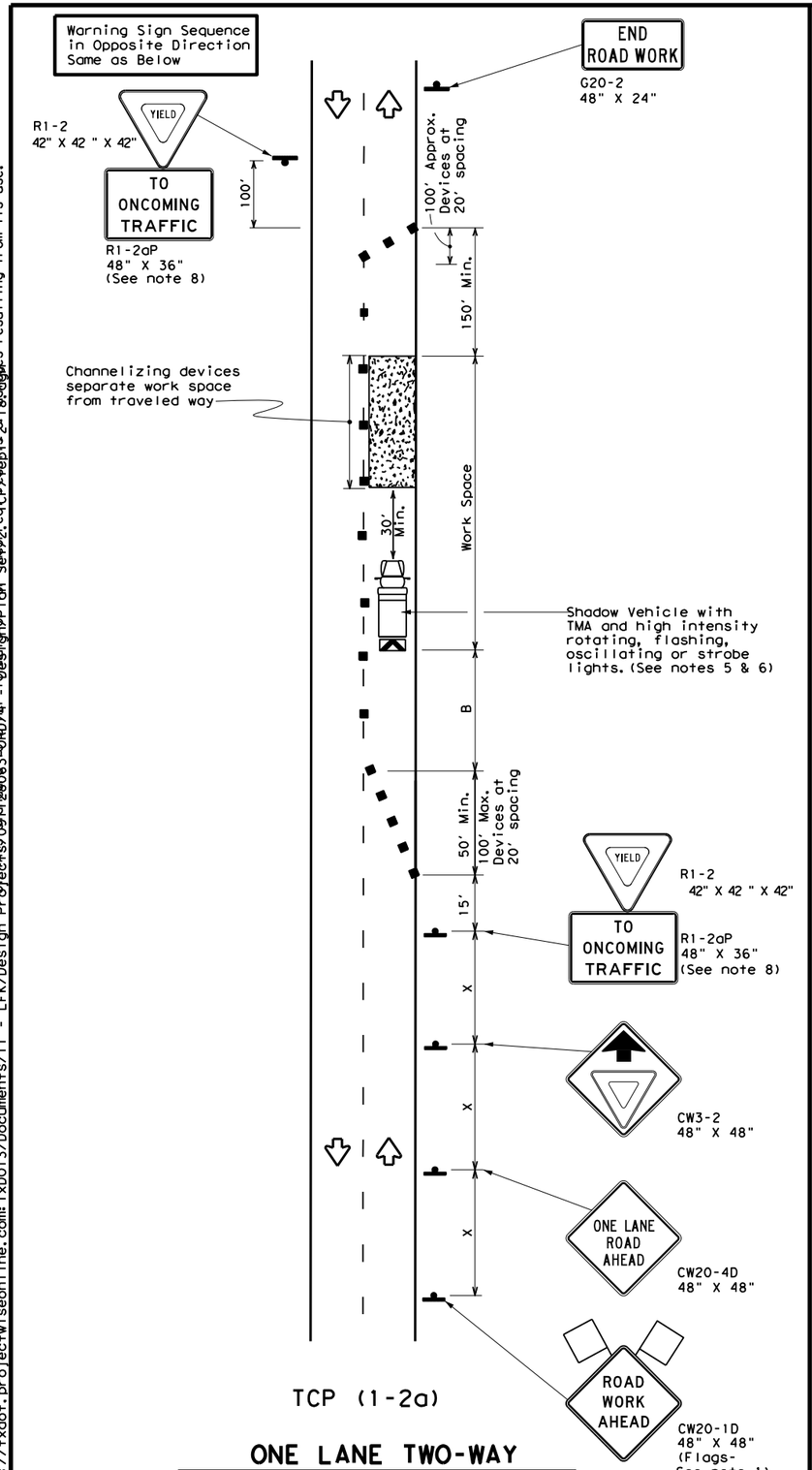
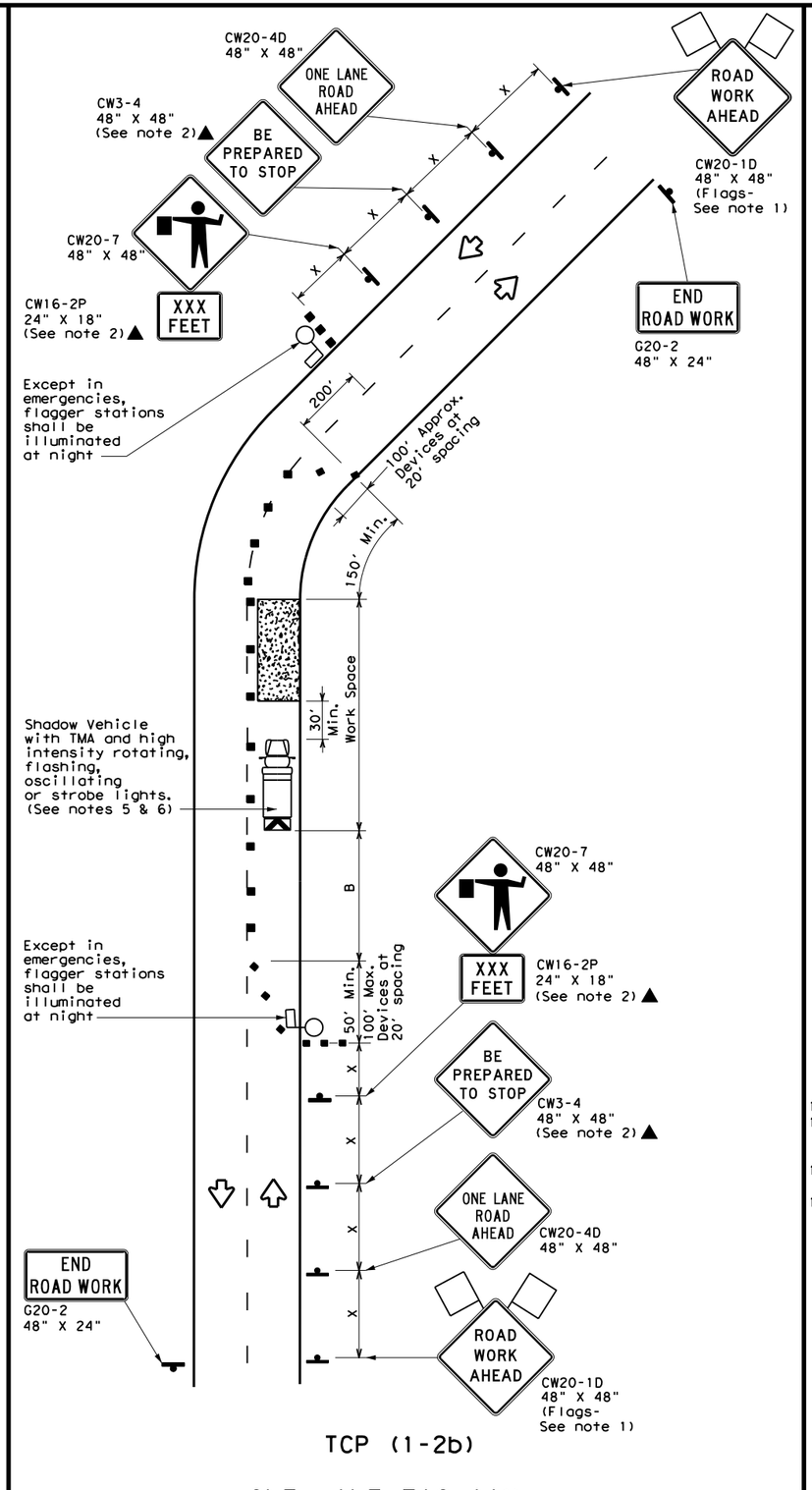


TCP (1-2a)

ONE LANE TWO-WAY CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See note 7)



TCP (1-2b)

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 CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
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 off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

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

TCP (1-2b)

9. Flaggers should use two-way radios or other methods of communication to control traffic.
10. Length of work space should be based on the ability of flaggers to communicate.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
13. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Department of Transportation | Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(1-2)-18

FILE: tcp1-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-90 4-98 2-94 2-12 1-97 2-18	0911	28	063, ETC.	VARIOUS
	DIST	COUNTY		SHEET NO.
	LFK	HOUSTON, ETC.		32

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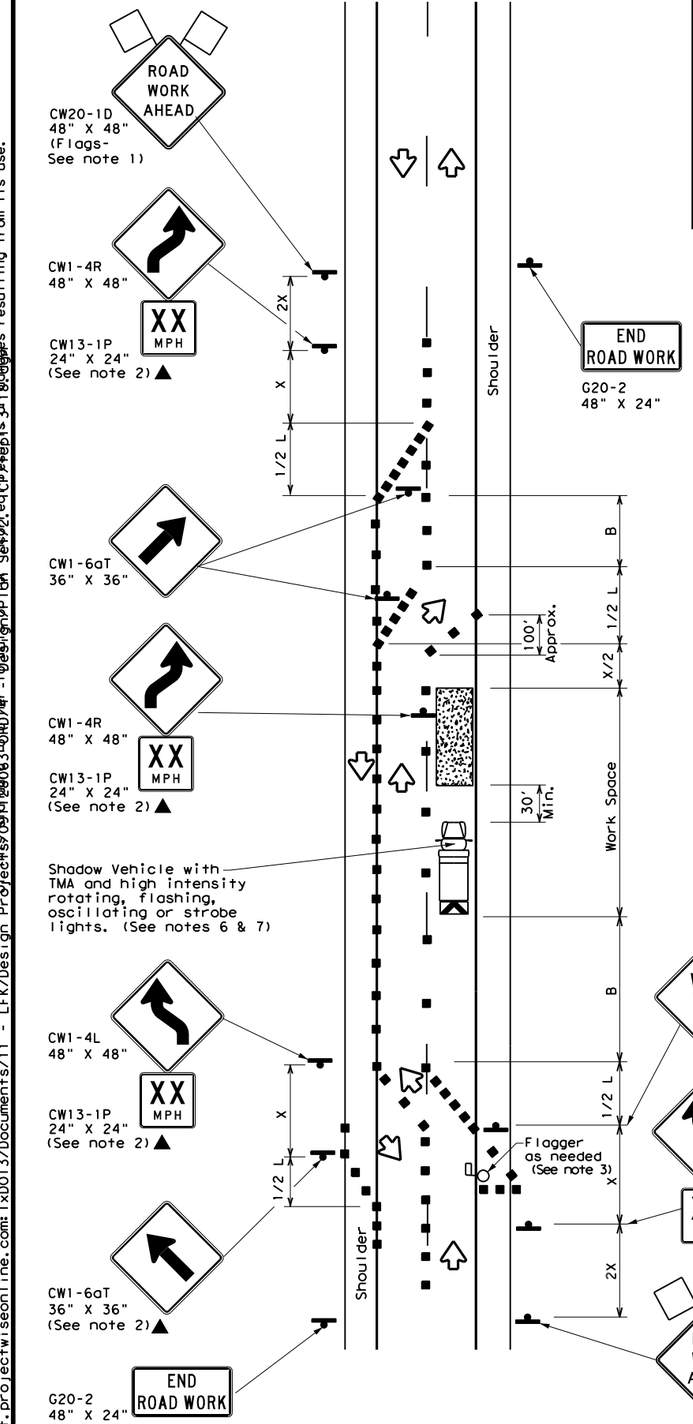
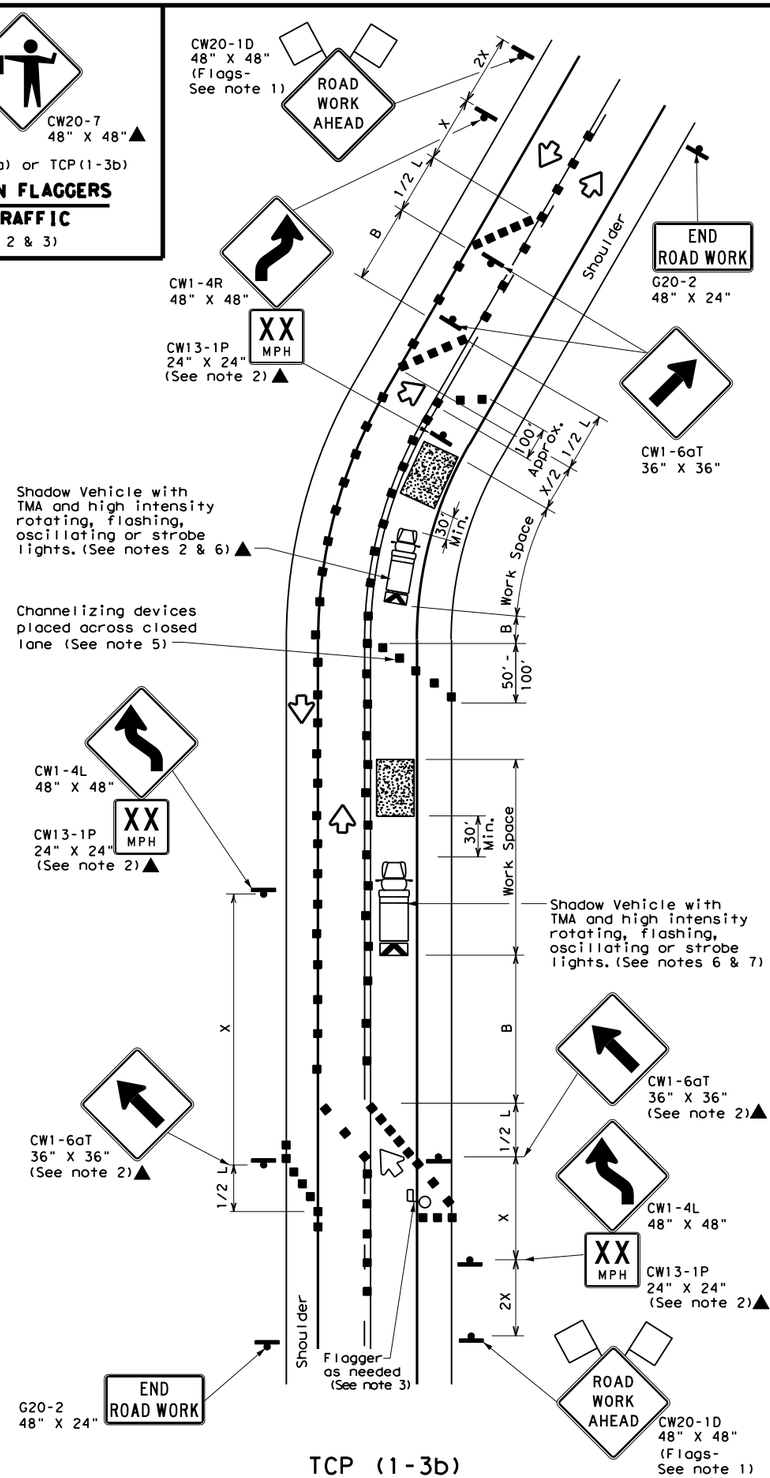


TCP (1-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW

BE PREPARED TO STOP
CW3-4 48" X 48"
CW20-7 48" X 48"
For either TCP(1-3a) or TCP(1-3b)
USE ONLY WHEN FLAGGERS CONTROL TRAFFIC
(See Notes 2 & 3)



TCP (1-3b)
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	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. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Additional flaggers may be positioned in advance of traffic queues to alert traffic to reduce speed.
4. DO NOT PASS, PASS WITH CARE and construction regulatory speed zone signs may be installed downstream of the ROAD WORK AHEAD signs.
5. When the work zone is made up of several work spaces, channelizing devices should be placed laterally across the closed lane to re-emphasize closure. Laterally placed channelizing devices should be repeated every 500 to 1000 feet in urban areas and every 1/4 to 1/2 mile in rural areas.
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 wider work spaces.
8. 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 speed are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device 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 TRAFFIC SHIFTS ON TWO LANE ROADS

TCP(1-3)-18

FILE: tcp1-3-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	LFK	HOUSTON, ETC.		33
1-97 2-18				

NOTES:

1. ALL BEARINGS AND COORDINATES ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83), 2011 ADJUSTMENT, EPOCH 2010.00. MONUMENTS HELD FOR HORIZONTAL: GPS OBSERVATIONS (TXDOT RTN)

2. ALL DISTANCES AND COORDINATES ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.00012. ALL MEASUREMENTS ARE IN U.S. SURVEY FEET.

3. ALL PROJECT ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). ELEVATION FOR PRI 01 WAS ESTABLISHED USING TXDOT RTN AND ELEVATION FOR PRI 02 WAS ESTABLISHED BY CLOSED A LEVEL LOOP USING A DIGITAL LEVEL. MONUMENTS HELD FOR VERTICAL: GPS OBSERVATIONS (TXDOT RTN SOLUTION FOR PRI 01)

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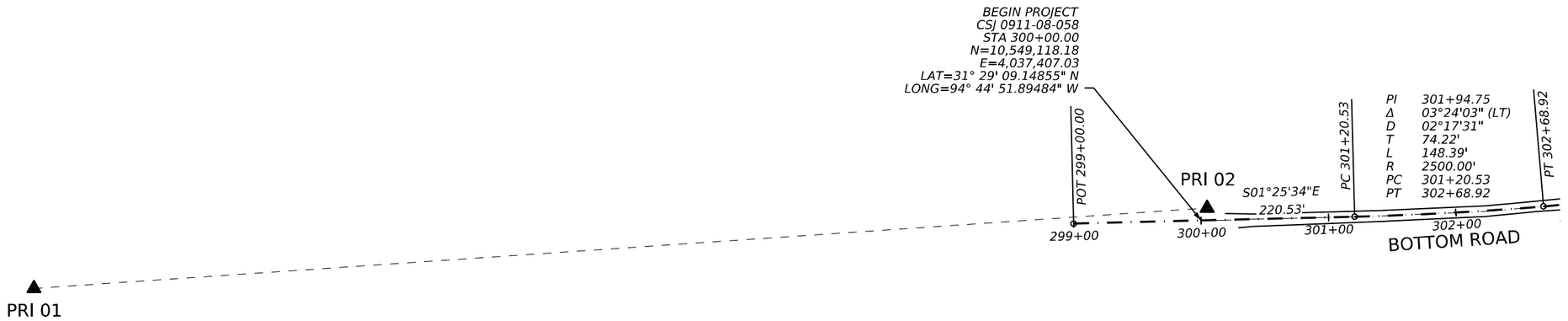


SURVEY CONTROL TRAVERSE TABLE		
TRAVERSE LEG	BEARING	DISTANCE
PRI 01 TO PRI 02	S03°54'40"E	922.64'

SURVEY CONTROL TABLE						
CONTROL POINT NUMBER	STATION	OFFSET	NORTHING	EASTING	ELEVATION	DESCRIPTION
PRI 01	290+83.24	30.40' RT	10,550,033.90	4,037,353.82	181.89'	SET 5/8" IRON ROD W/TXDOT ALUMINUM CAP IN CONCRETE
PRI 02	300+05.01	9.60' LT	10,549,113.41	4,037,416.75	181.13'	SET 5/8" IRON ROD W/TXDOT ALUMINUM CAP IN CONCRETE

UNIT OF MEASURE: US SURVEY FEET

STATE OF TEXAS
REGISTERED
ANTHONY L. MEIER
6712
PROFESSIONAL
LAND SURVEYOR
02-12-2024

THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER
2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

SURVEY CONTROL INDEX SHEET

(ALAZAN BAYOU WMA)

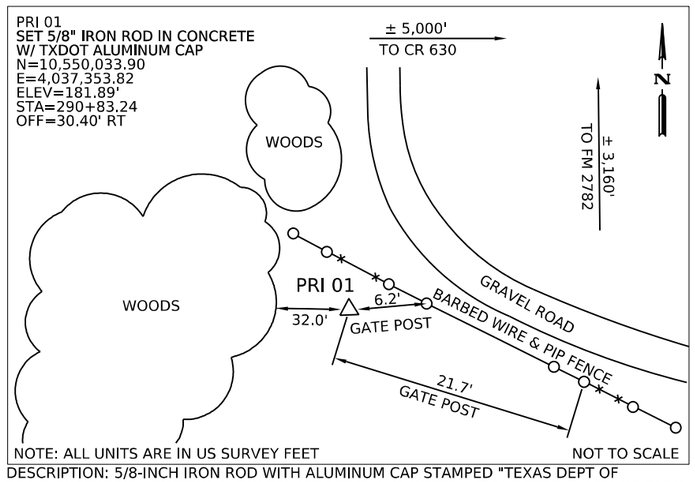
(CSJ 0911-08-058)

Texas Department of Transportation

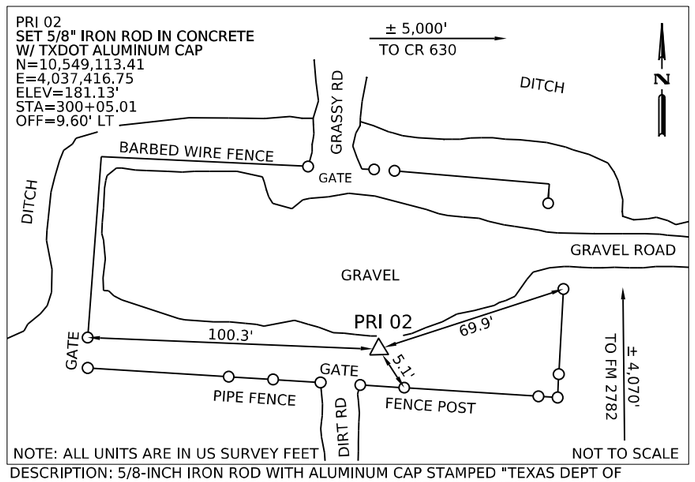
BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-6700 • www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		034

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC.	VARIOUS



DESCRIPTION: 5/8-INCH IRON ROD WITH ALUMINUM CAP STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK PRI 01" SET IN CONCRETE, ±3,160 FEET SOUTH OF FARM TO MARKET 2782, FROM A POINT ±5,000 FEET WEST OF COUNTY ROAD 630, 6.2 FEET WEST OF A GATE POST, 21.7 FEET NORTHWEST OF A GATE POST, AND 32.0 FEET EAST OF THE EDGE OF A WOODED AREA.



DESCRIPTION: 5/8-INCH IRON ROD WITH ALUMINUM CAP STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK PRI 02" SET IN CONCRETE, ±4,070 FEET SOUTH OF FARM TO MARKET 2782, FROM A POINT ±5,000 FEET WEST OF COUNTY ROAD 630, 5.1 FEET NORTHWEST OF A PIPE FENCE, 100.3 FEET EAST OF A GATE POST, AND 69.9 FEET SOUTHWEST OF GATE POST.

NOTES:

1. ALL BEARINGS AND COORDINATES ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83), 2011 ADJUSTMENT, EPOCH 2010.00.
MONUMENTS HELD FOR HORIZONTAL: GPS OBSERVATIONS (TXDOT RTN)

2. ALL DISTANCES AND COORDINATES ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.00012. ALL MEASUREMENTS ARE IN U.S. SURVEY FEET.

3. ALL PROJECT ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). ELEVATION FOR PRI 01 WAS ESTABLISHED USING TXDOT RTN AND ELEVATION FOR PRI 02 WAS ESTABLISHED BY CLOSED A LEVEL LOOP USING A DIGITAL LEVEL.
MONUMENTS HELD FOR VERTICAL: GPS OBSERVATIONS (TXDOT RTN SOLUTION FOR PRI 01)

STATE OF TEXAS
REGISTERED
ANTHONY L. MEIER
6712
PROFESSIONAL
LAND SURVEYOR

02-12-2024

THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

HORIZONTAL & VERTICAL CONTROL SHEET

(ALAZAN BAYOU WMA)

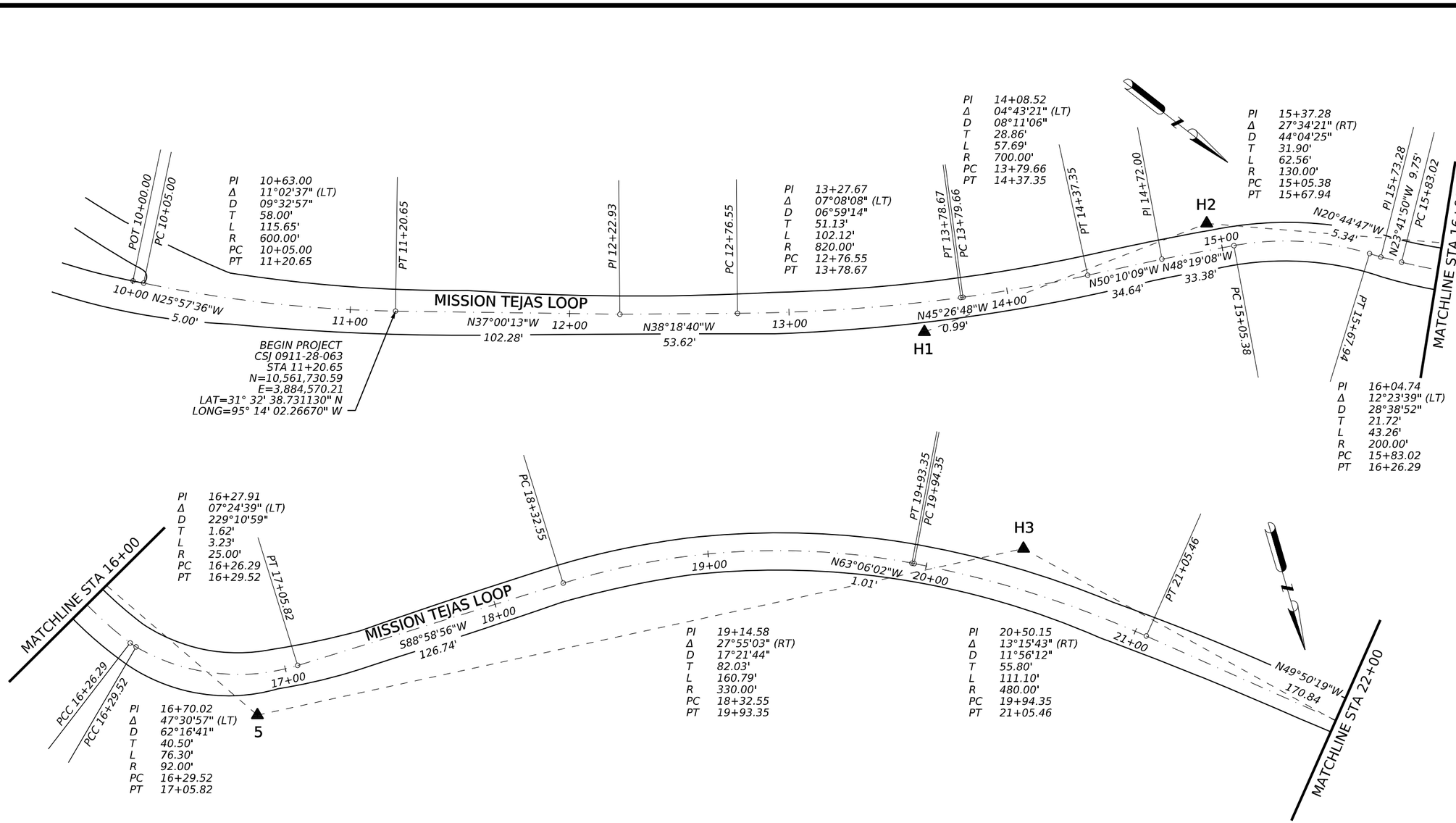
(CSJ 0911-08-058)

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		035

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC.	VARIOUS



NOTES:

1. ALL BEARINGS AND COORDINATES ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83), 2011 ADJUSTMENT, EPOCH 2010.00. MONUMENTS HELD FOR HORIZONTAL: RUSK CORS TXRU

2. ALL DISTANCES AND COORDINATES ARE GRID AND MAY BE CONVERTED TO SURFACE BY APPLYING A COMBINED ADJUSTMENT FACTOR OF 1.00012. ALL MEASUREMENTS ARE IN U.S. SURVEY FEET.

3. ALL PROJECT ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) 1991 ADJUSTMENT AND WERE ESTABLISHED BY CLOSED LEVEL LOOPS USING A DIGITAL LEVEL. MONUMENTS HELD FOR VERTICAL: RUSK CORS TXRU

0 25 50

SCALE: 1"=50'

STATE OF TEXAS
REGISTERED
ANTHONY L. MEIER
6712
PROFESSIONAL
LAND SURVEYOR

02-12-2024

THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

SURVEY CONTROL TRAVERSE TABLE		
TRAVERSE LEG	BEARING	DISTANCE
H1 TO H2	N58°51'03"W	137.88'
H2 TO 5	N33°08'46"W	198.49'
5 TO H3	N86°03'10"W	357.35'
H3 TO 6	N44°54'31"W	442.28'

SURVEY CONTROL TABLE						
CONTROL POINT NUMBER	STATION	OFFSET	NORTHING	EASTING	ELEVATION	DESCRIPTION
H1	13+60.39	13.57' RT	10,561,926.82	3,884,429.90	425.26'	SET 5/8" IRON ROD W/BGE ALUMINUM CAP
H2	14+95.04	12.23' LT	10,561,998.14	3,884,311.90	419.90'	SET 5/8" IRON ROD W/BGE ALUMINUM CAP
5	16+85.55	18.90' RT	10,562,164.33	3,884,203.37	400.87'	SET 5/8" IRON ROD W/TXDOT ALUMINUM CAP IN CONCRETE
H3	20+40.42	18.23' LT	10,562,188.93	3,883,846.86	364.31'	SET 5/8" IRON ROD W/BGE ALUMINUM CAP

UNIT OF MEASURE: US SURVEY FEET

(TEXAS PARKS & WILDLIFE DEPARTMENT)

SURVEY CONTROL INDEX SHEET

(MISSION TEJAS SHS)

(CSJ 0911-28-063)

SHEET 1 OF 2

Texas Department of Transportation

BGE, Inc.
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Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		036

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC.	VARIOUS

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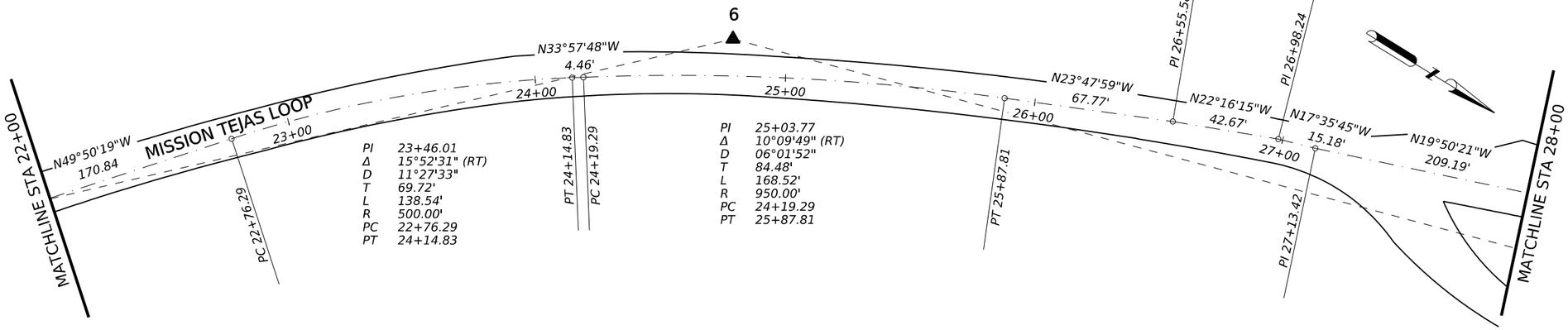
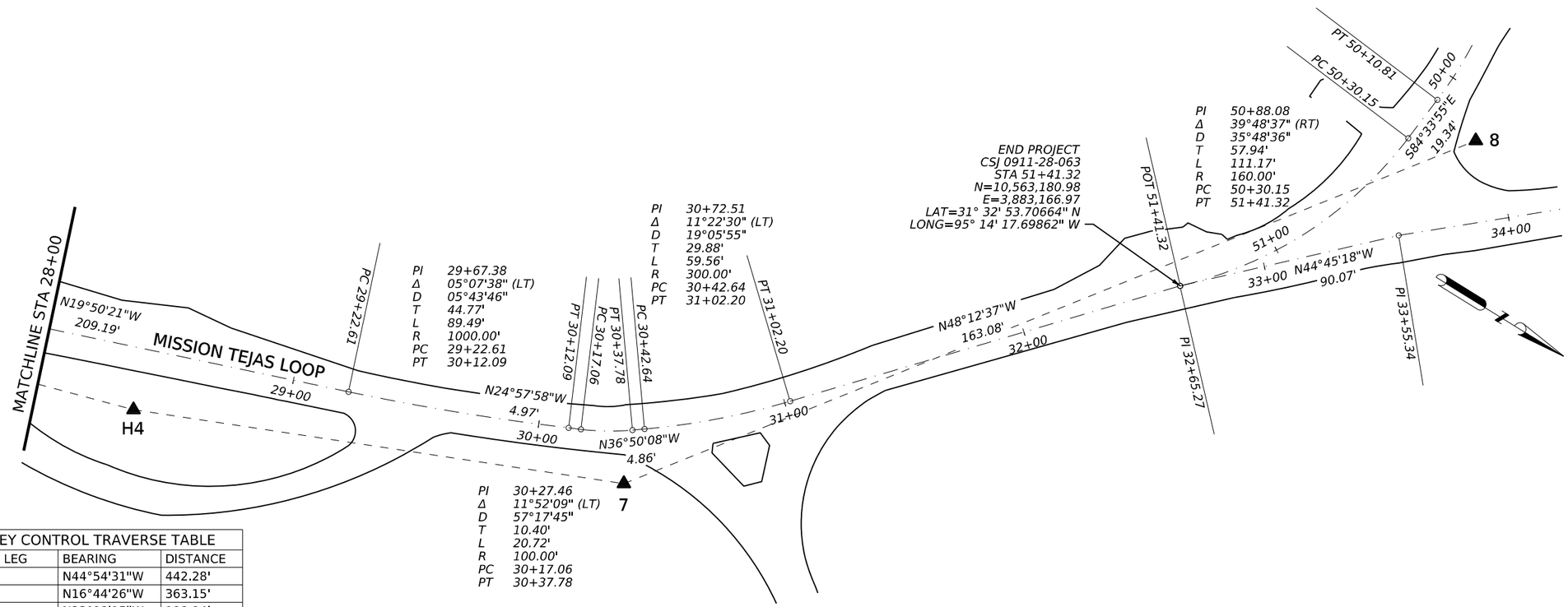




SURVEY CONTROL TRAVERSE TABLE		
TRAVERSE LEG	BEARING	DISTANCE
H3 TO 6	N44°54'31"W	442.28'
6 TO H4	N16°44'26"W	363.15'
H4 TO 7	N23°08'15"W	198.94'
7 TO 8	N53°39'43"W	368.41'

SURVEY CONTROL TABLE						
CONTROL POINT NUMBER	STATION	OFFSET	NORTHING	EASTING	ELEVATION	DESCRIPTION
6	24+78.62	14.78' LT	10,562,502.17	3,883,534.62	335.95'	SET 5/8" IRON ROD W/TXDOT ALUMINUM CAP IN CONCRETE
H4	28+39.68	24.77' RT	10,562,849.93	3,883,430.02	317.33'	SET 5/8" IRON ROD W/BGE ALUMINUM CAP
7	30+33.38	21.22' RT	10,563,032.87	3,883,351.85	311.37'	SET 5/8" IRON ROD W/TXDOT ALUMINUM CAP IN CONCRETE
8	33+91.97	32.53' LT	10,563,251.17	3,883,055.09	293.88'	SET 5/8" IRON ROD W/TXDOT ALUMINUM CAP IN CONCRETE

NOTES:

1. ALL BEARINGS AND COORDINATES ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83), 2011 ADJUSTMENT, EPOCH 2010.00. MONUMENTS HELD FOR HORIZONTAL: RUSK CORS TXRU

2. ALL DISTANCES AND COORDINATES ARE GRID AND MAY BE CONVERTED TO SURFACE BY APPLYING A COMBINED ADJUSTMENT FACTOR OF 1.00012. ALL MEASUREMENTS ARE IN U.S. SURVEY FEET.

3. ALL PROJECT ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) 1991 ADJUSTMENT AND WERE ESTABLISHED BY CLOSED LEVEL LOOPS USING A DIGITAL LEVEL. MONUMENTS HELD FOR VERTICAL: RUSK CORS TXRU

0 25 50

SCALE: 1"=50'

STATE OF TEXAS
REGISTERED
ANTHONY L. MEIER
6712
PROFESSIONAL
LAND SURVEYOR

02-12-2024

THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
CARITA G. STEWART
129562
PROFESSIONAL
LICENSED
ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

SURVEY CONTROL INDEX SHEET

(MISSION TEJAS SHS)

(CSJ 0911-28-063)

SHEET 2 OF 2

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-6700 • www.bgeinc.com
TBPE Registration No. F-1046

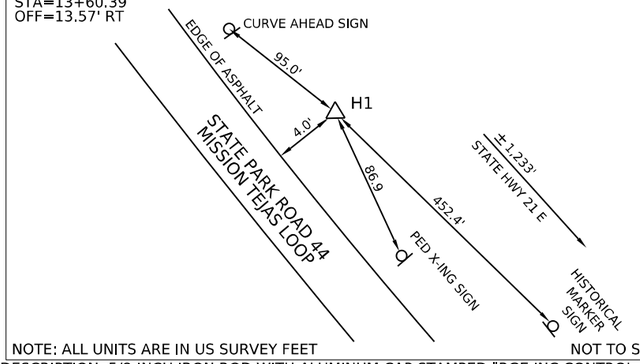
FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		037

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC.	VARIOUS

UNIT OF MEASURE: US SURVEY FEET

PEN TABLE: $PENTBL$
PLOT DRIVER: G:\TXC\OpenroadsDesignerCE\Configuration\Organization-Civil\TXDOT - Survey
MODEL NAME: MT Ctrl Indx Sh2
DATE: 2/12/2024 5:26:24 PM
FILE: G:\TXN\Projects\TxDOT\7005-07-LFK Texas Parks and Wildlife\SV\04 Finals\Drawings\Control\PS&E Ctrl Index.dgn

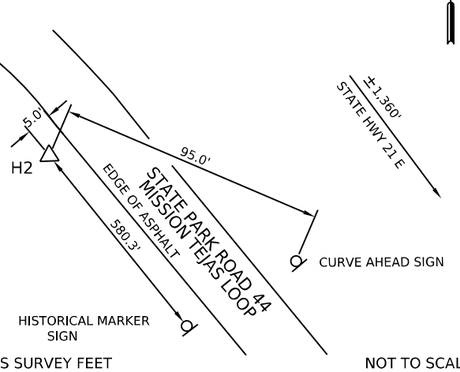
H1
SET 5/8" IRON ROD
W/ BGE ALUMINUM CAP
N=10,561,926.82
E=3,884,429.90
ELEV=425.26'
STA=13+60.39
OFF=13.57' RT



NOTE: ALL UNITS ARE IN US SURVEY FEET NOT TO SCALE

DESCRIPTION: 5/8-INCH IRON ROD WITH ALUMINUM CAP STAMPED "BGE INC CONTROL POINT H1" SET ±1,233 FEET NORTHWEST OF STATE HIGHWAY 21 EAST, 452.40 FEET NORTHWEST OF A HISTORICAL MARKER SIGN, 4.0 FEET NORTHEAST OF THE EDGE OF ASPHALT OF MISSION TEJAS LOOP, AND 95.0 FEET SOUTHEAST OF A CURVE AHEAD SIGN.

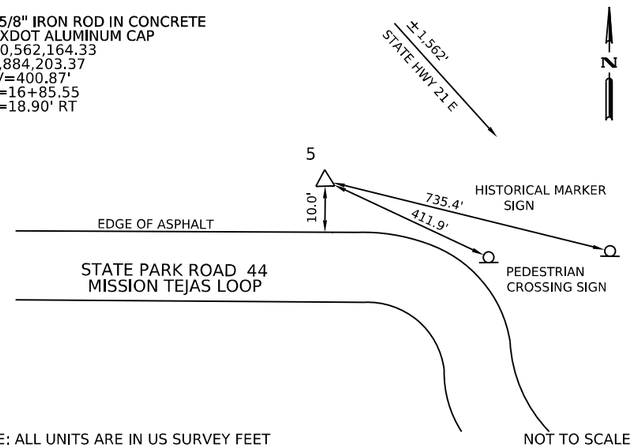
H2
SET 5/8" IRON ROD
W/ BGE ALUMINUM CAP
N=10,561,998.14
E=3,884,311.90
ELEV=419.90'
STA=14+95.04
OFF=12.23' LT



NOTE: ALL UNITS ARE IN US SURVEY FEET NOT TO SCALE

DESCRIPTION: 5/8-INCH IRON ROD WITH ALUMINUM CAP STAMPED "BGE INC CONTROL POINT H2" SET ±1,360 FEET NORTHWEST OF STATE HIGHWAY 21 EAST, 5.0 FEET SOUTHWEST OF THE EDGE OF ASPHALT OF MISSION TEJAS LOOP, 95.0 FEET NORTHWEST OF A CURVE AHEAD SIGN, AND 580.3 FEET NORTHWEST OF A HISTORICAL MARKER SIGN.

5
SET 5/8" IRON ROD IN CONCRETE
W/ TXDOT ALUMINUM CAP
N=10,562,164.33
E=3,884,203.37
ELEV=400.87'
STA=16+85.55
OFF=18.90' RT



NOTE: ALL UNITS ARE IN US SURVEY FEET NOT TO SCALE

DESCRIPTION: 5/8-INCH IRON ROD WITH ALUMINUM CAP STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK 5" SET IN CONCRETE ±1,562 FEET NORTH OF STATE HIGHWAY 21 EAST, 10.0 FEET NORTH OF THE EDGE OF ASPHALT OF MISSION TEJAS LOOP, 411.9 FEET NORTHWEST OF A PEDESTRIAN CROSSING SIGN, AND 735.4 FEET NORTHWEST OF A HISTORICAL MARKER SIGN.

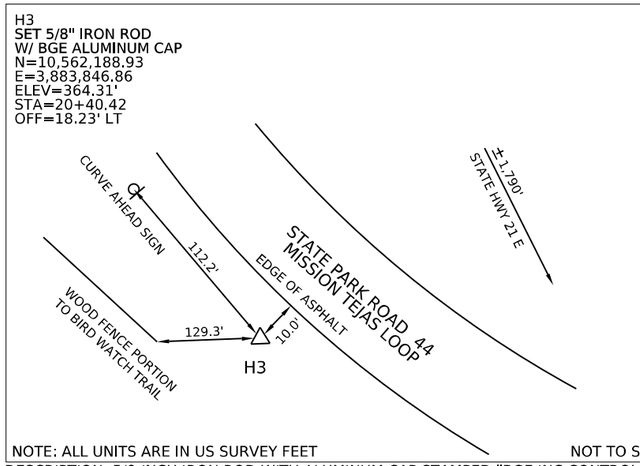
NOTES:

1. ALL BEARINGS AND COORDINATES ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83), 2011 ADJUSTMENT, EPOCH 2010.00. MONUMENTS HELD FOR HORIZONTAL: RUSK CORS TXRU

2. ALL DISTANCES AND COORDINATES ARE GRID AND MAY BE CONVERTED TO SURFACE BY APPLYING A COMBINED ADJUSTMENT FACTOR OF 1.00012. ALL MEASUREMENTS ARE IN U.S. SURVEY FEET.

3. ALL PROJECT ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) 1991 ADJUSTMENT AND WERE ESTABLISHED BY CLOSED LEVEL LOOPS USING A DIGITAL LEVEL. MONUMENTS HELD FOR VERTICAL: RUSK CORS TXRU

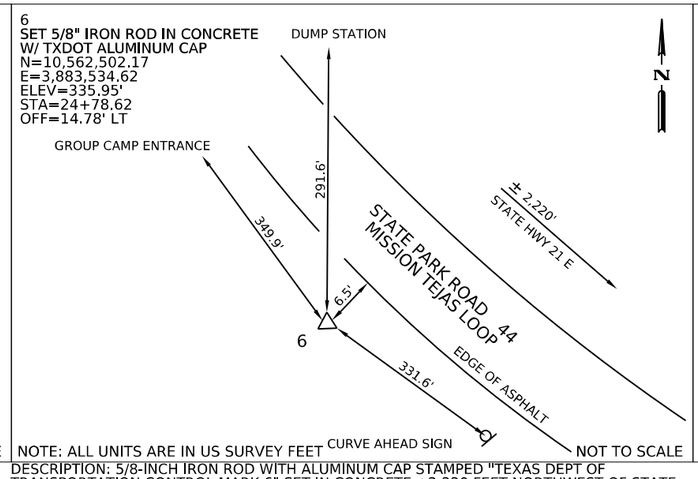
H3
SET 5/8" IRON ROD
W/ BGE ALUMINUM CAP
N=10,562,188.93
E=3,883,846.86
ELEV=364.31'
STA=20+40.42
OFF=18.23' LT



NOTE: ALL UNITS ARE IN US SURVEY FEET NOT TO SCALE

DESCRIPTION: 5/8-INCH IRON ROD WITH ALUMINUM CAP STAMPED "BGE INC CONTROL POINT H3" SET ±1,790 FEET NORTH OF STATE HIGHWAY 21 EAST, 10.0 FEET SOUTHWEST OF THE EDGE OF ASPHALT OF MISSION TEJAS LOOP, 112.2 FEET SOUTHEAST OF A CURVE AHEAD SIGN, AND 129.3 FEET EAST OF A WOOD FENCE.

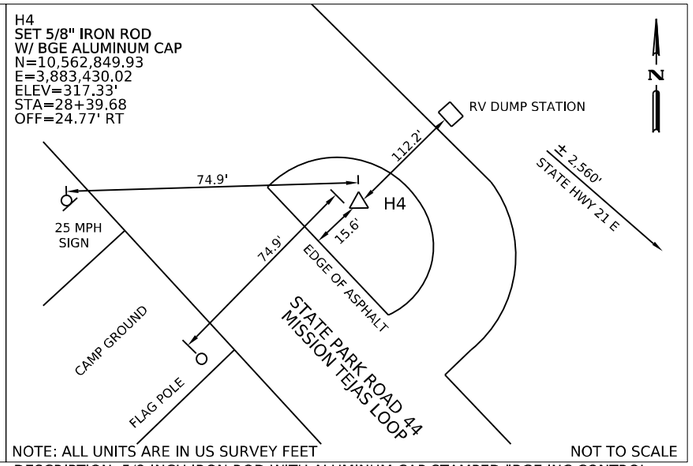
6
SET 5/8" IRON ROD IN CONCRETE
W/ TXDOT ALUMINUM CAP
N=10,562,502.17
E=3,883,534.62
ELEV=335.95'
STA=24+78.62
OFF=14.78' LT



NOTE: ALL UNITS ARE IN US SURVEY FEET NOT TO SCALE

DESCRIPTION: 5/8-INCH IRON ROD WITH ALUMINUM CAP STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK 6" SET IN CONCRETE ±2,220 FEET NORTHWEST OF STATE HIGHWAY 21 EAST, 6.5 FEET SOUTHWEST OF THE EDGE OF ASPHALT OF MISSION TEJAS LOOP, 349.9 FEET SOUTHEAST OF A GROUP CAMP ENTRANCE, 331.6 FEET NORTHWEST OF A CURVE AHEAD SIGN, AND 291.6 FEET SOUTH OF A DUMP STATION.

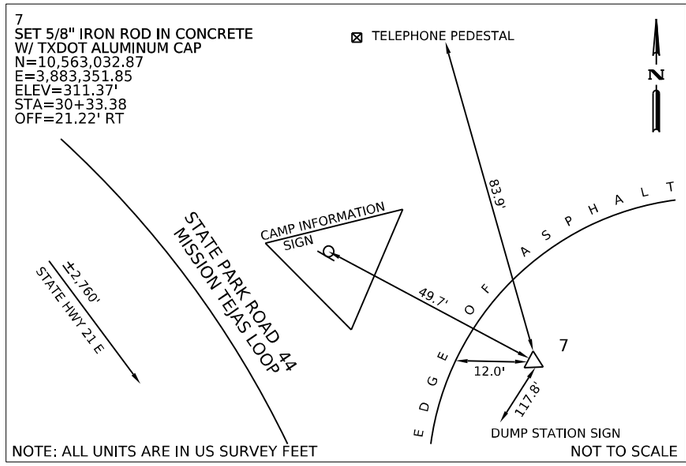
H4
SET 5/8" IRON ROD
W/ BGE ALUMINUM CAP
N=10,562,849.93
E=3,883,430.02
ELEV=317.33'
STA=28+39.68
OFF=24.77' RT



NOTE: ALL UNITS ARE IN US SURVEY FEET NOT TO SCALE

DESCRIPTION: 5/8-INCH IRON ROD WITH ALUMINUM CAP STAMPED "BGE INC CONTROL POINT H4" SET ±2,560 FEET NORTHWEST OF STATE HIGHWAY 21 EAST, 15.6 FEET NORTHEAST OF EDGE OF ASPHALT OF MISSION TEJAS LOOP, 74.9 FEET NORTHEAST OF A FLAG POLE, 74.9 FEET EAST OF A 25 MPH SIGN, AND 112.2 FEET SOUTHWEST OF AN RV DUMP STATION.

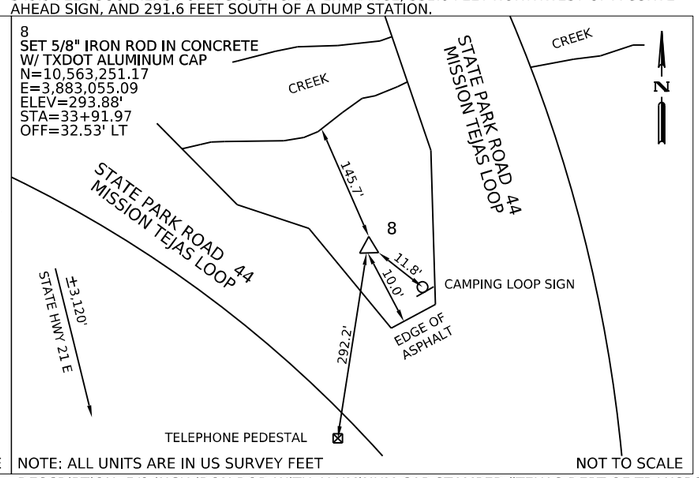
7
SET 5/8" IRON ROD IN CONCRETE
W/ TXDOT ALUMINUM CAP
N=10,563,032.87
E=3,883,351.85
ELEV=311.37'
STA=30+33.38
OFF=21.22' RT



NOTE: ALL UNITS ARE IN US SURVEY FEET NOT TO SCALE

DESCRIPTION: 5/8-INCH IRON ROD WITH ALUMINUM CAP STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK 7" SET IN CONCRETE ±2,760 FEET NORTHWEST OF STATE HIGHWAY 21 EAST, 12.0 FEET EAST OF EDGE OF ASPHALT OF MISSION TEJAS LOOP, 49.7 FEET SOUTHEAST OF A CAMP SIGN, 83.9 FEET SOUTH OF A TELEPHONE PEDESTAL, AND 117.8 FEET NORTHEAST OF A DUMP STATION SIGN.

8
SET 5/8" IRON ROD IN CONCRETE
W/ TXDOT ALUMINUM CAP
N=10,563,251.17
E=3,883,055.09
ELEV=293.88'
STA=33+91.97
OFF=32.53' LT



NOTE: ALL UNITS ARE IN US SURVEY FEET NOT TO SCALE

DESCRIPTION: 5/8-INCH IRON ROD WITH ALUMINUM CAP STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK 8" SET IN CONCRETE ±3,120 FEET NORTH OF STATE HIGHWAY 21 EAST, 10.0 FEET NORTH OF THE EDGE OF ASPHALT OF MISSION TEJAS LOOP, 292.2 FEET NORTH OF A TELEPHONE PEDESTAL, 145.7 FEET SOUTH OF A CREEK, AND 11.8 FEET NORTHWEST OF A CAMPING LOOP SIGN.

STATE OF TEXAS
REGISTERED
ANTHONY L. MEIER
6712
PROFESSIONAL
LAND SURVEYOR
02-12-2024

THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER
2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

HORIZONTAL & VERTICAL CONTROL SHEET

(MISSION TEJAS SHS)
(CSJ 0911-28-063)

Texas Department of Transportation

BGE, Inc.
10777 Westheimer Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			038
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC.	VARIOUS

MISSION TEJAS LOOP-T

<* 1 DESCRIBE CHAIN LOOPTEE

Chain LOOPTEE contains:
LOOPTEE01 CUR LOOPTEE1 CUR LOOPTEE2 CUR LOOPTEE3 CUR LOOPTEE4

Beginning chain LOOPTEE description

Point LOOPTEE01 N 10,563,052.1281 E 3,883,306.3842 Sta 29+98.00

Course from LOOPTEE01 to PC LOOPTEE1 N 36° 05′ 38.51" E Dist 30.9284

Curve Data

Curve LOOPTEE1						
P.I. Station		31+04.47	N	10,563,138.1602	E	3,883,369.1062
Delta	=	5° 34′ 49.00"	(RT)			
Degree	=	3° 41′ 47.41"				
Tangent	=	75.5402				
Length	=	150.9610				
Radius	=	1,550.0000				
External	=	1.8397				
Long Chord	=	150.9014				
Mid. Ord.	=	1.8375				
P.C. Station		30+28.93	N	10,563,077.1198	E	3,883,324.6045
P.T. Station		31+79.89	N	10,563,194.5840	E	3,883,419.3325
C.C.			N	10,562,163.9960	E	3,884,577.0840
Back	= N	36° 05′ 38.51" E				
Ahead	= N	41° 40′ 27.51" E				
Chord Bear	= N	38° 53′ 03.01" E				

Course from PT LOOPTEE1 to PC LOOPTEE2 N 41° 40′ 27.49" E Dist 3.4411

Curve Data

Curve LOOPTEE2						
P.I. Station		31+92.93	N	10,563,204.3212	E	3,883,428.0003
Delta	=	10° 57′ 41.79"	(RT)			
Degree	=	57° 17′ 44.81"				
Tangent	=	9.5951				
Length	=	19.1316				
Radius	=	100.0000				
External	=	0.4593				
Long Chord	=	19.1025				
Mid. Ord.	=	0.4572				
P.C. Station		31+83.33	N	10,563,197.1543	E	3,883,421.6205
P.T. Station		32+02.46	N	10,563,210.1442	E	3,883,435.6264
C.C.			N	10,563,130.6647	E	3,883,496.3142
Back	= N	41° 40′ 27.51" E				
Ahead	= N	52° 38′ 09.30" E				
Chord Bear	= N	47° 09′ 18.40" E				

Course from PT LOOPTEE2 to PC LOOPTEE3 N 52° 38′ 09.30" E Dist 44.1040

Curve Data

Curve LOOPTEE3						
P.I. Station		33+25.03	N	10,563,284.5257	E	3,883,533.0398
Delta	=	7° 48′ 21.75"	(RT)			
Degree	=	4° 58′ 56.07"				
Tangent	=	78.4600				
Length	=	156.6773				
Radius	=	1,150.0000				
External	=	2.6734				
Long Chord	=	156.5562				
Mid. Ord.	=	2.6672				
P.C. Station		32+46.57	N	10,563,236.9100	E	3,883,470.6801
P.T. Station		34+03.24	N	10,563,323.2304	E	3,883,601.2887
C.C.			N	10,562,322.8955	E	3,884,168.5895
Back	= N	52° 38′ 09.30" E				
Ahead	= N	60° 26′ 31.05" E				
Chord Bear	= N	56° 32′ 20.17" E				

Course from PT LOOPTEE3 to PC LOOPTEE4 N 60° 26′ 31.05" E Dist 11.7852

Curve Data

Curve LOOPTEE4						
P.I. Station		34+57.62	N	10,563,350.0531	E	3,883,648.5858
Delta	=	9° 44′ 13.16"	(RT)			
Degree	=	11° 27′ 32.96"				
Tangent	=	42.5882				
Length	=	84.9713				
Radius	=	500.0000				
External	=	1.8105				
Long Chord	=	84.8691				
Mid. Ord.	=	1.8039				
P.C. Station		34+15.03	N	10,563,329.0441	E	3,883,611.5402
P.T. Station		35+00.00	N	10,563,364.4940	E	3,883,688.6509
C.C.			N	10,562,894.1159	E	3,883,858.1927
Back	= N	60° 26′ 31.05" E				
Ahead	= N	70° 10′ 44.21" E				
Chord Bear	= N	65° 18′ 37.63" E				

Ending chain LOOPTEE description

MISSION TEJAS MID LOOP

Beginning chain MIDLP description

Point MDLP01 N 10,563,127.5796 E 3,882,873.0004 Sta 19+98.00

Course from MDLP01 to PC MIDLP1 N 41° 12′ 57.44" W Dist 30.6192

Curve Data

Curve MIDLP1						
P.I. Station		20+60.15	N	10,563,174.3296	E	3,882,832.0508
Delta	=	17° 55′ 02.86"	(RT)			
Degree	=	28° 38′ 52.40"				
Tangent	=	31.5292				
Length	=	62.5437				
Radius	=	200.0000				
External	=	2.4700				
Long Chord	=	62.2892				
Mid. Ord.	=	2.4398				
P.C. Station		20+28.62	N	10,563,150.6123	E	3,882,852.8254
P.T. Station		20+91.16	N	10,563,203.2878	E	3,882,819.5803
C.C.			N	10,563,282.3921	E	3,883,003.2717
Back	= N	41° 12′ 57.44" W				
Ahead	= N	23° 17′ 54.58" W				
Chord Bear	= N	32° 15′ 26.01" W				

Course from PT MIDLP1 to PC MIDLP2 N 23° 17′ 54.58" W Dist 176.2767

Curve Data

Curve MIDLP2						
P.I. Station		22+99.55	N	10,563,394.6804	E	3,882,737.1596
Delta	=	29° 46′ 07.69"	(RT)			
Degree	=	47° 25′ 43.25"				
Tangent	=	32.1083				
Length	=	62.7654				
Radius	=	120.8041				
External	=	4.1942				
Long Chord	=	62.0618				
Mid. Ord.	=	4.0535				
P.C. Station		22+67.44	N	10,563,365.1903	E	3,882,749.8591
P.T. Station		23+30.21	N	10,563,426.5841	E	3,882,740.7779
C.C.			N	10,563,412.9709	E	3,882,860.8125
Back	= N	23° 17′ 54.58" W				
Ahead	= N	6° 28′ 13.11" E				
Chord Bear	= N	8° 24′ 50.73" W				

Course from PT MIDLP2 to MDLP02 N 6° 28′ 13.10" E Dist 2.0000

Point MDLP02 N 10,563,428.5714 E 3,882,741.0032 Sta 23+32.21

Ending chain MIDLP description

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

HORIZONTAL ALIGNMENT DATA
(MISSION TEJAS)

SHEET 1 OF 9

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		039

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

MISSION TEJAS LOOP (PR 44)

Beginning chain MTLOOP description
Description: MISSION TEJAS LOOP

Point MTLOOP1 N 10,561,627.6237 E 3,884,632.7033 Sta 10+00.00

Course from MTLOOP1 to PC MTLOOP1 N 25° 57′ 36.39" W Dist 5.0000

Curve Data

Curve MTLOOP1					
P.I. Station	10+63.00	N	10,561,684.2702	E	3,884,605.1237
Delta =	11° 02′ 36.84" (LT)				
Degree =	9° 32′ 57.47"				
Tangent =	58.0037				
Length =	115.6480				
Radius =	600.0000				
External =	2.7972				
Long Chord =	115.4690				
Mid. Ord. =	2.7842				
P.C. Station	10+05.00	N	10,561,632.1192	E	3,884,630.5145
P.T. Station	11+20.65	N	10,561,730.5918	E	3,884,570.2133
C.C.		N	10,561,369.4720	E	3,884,091.0551
Back = N	25° 57′ 36.40" W				
Ahead = N	37° 00′ 13.23" W				
Chord Bear = N	31° 28′ 54.82" W				

Course from PT MTLOOP1 to MTLOOP2 N 37° 00′ 13.24" W Dist 102.2788

Point MTLOOP2 N 10,561,812.2713 E 3,884,508.6551 Sta 12+22.93

Course from MTLOOP2 to PC MTLOOP2 N 38° 18′ 39.87" W Dist 53.6184

Curve Data

Curve MTLOOP2					
P.I. Station	13+27.67	N	10,561,894.4607	E	3,884,443.7201
Delta =	7° 08′ 08.07" (LT)				
Degree =	6° 59′ 14.24"				
Tangent =	51.1272				
Length =	102.1222				
Radius =	820.0000				
External =	1.5924				
Long Chord =	102.0562				
Mid. Ord. =	1.5893				
P.C. Station	12+76.55	N	10,561,854.3434	E	3,884,475.4154
P.T. Station	13+78.67	N	10,561,930.3301	E	3,884,407.2870
C.C.		N	10,561,346.0002	E	3,883,831.9970
Back = N	38° 18′ 39.87" W				
Ahead = N	45° 26′ 47.94" W				
Chord Bear = N	41° 52′ 43.90" W				

Course from PT MTLOOP2 to PC MTLOOP3 N 45° 26′ 47.87" W Dist 0.9895

Curve Data

Curve MTLOOP3					
P.I. Station	14+08.52	N	10,561,951.2744	E	3,884,386.0135
Delta =	4° 43′ 20.62" (LT)				
Degree =	8° 11′ 06.40"				
Tangent =	28.8638				
Length =	57.6949				
Radius =	700.0000				
External =	0.5948				
Long Chord =	57.6786				
Mid. Ord. =	0.5943				
P.C. Station	13+79.66	N	10,561,931.0243	E	3,884,406.5818
P.T. Station	14+37.35	N	10,561,969.7624	E	3,884,363.8479
C.C.		N	10,561,432.2061	E	3,883,915.4806
Back = N	45° 26′ 47.94" W				
Ahead = N	50° 10′ 08.56" W				
Chord Bear = N	47° 48′ 28.25" W				

Course from PT MTLOOP3 to MTLOOP3 N 50° 10′ 08.56" W Dist 34.6433

Point MTLOOP3 N 10,561,991.9523 E 3,884,337.2440 Sta 14+72.00

Course from MTLOOP3 to PC MTLOOP4 N 48° 19′ 08.28" W Dist 33.3833

Curve Data

Curve MTLOOP4					
P.I. Station	15+37.28	N	10,562,035.3633	E	3,884,288.4881
Delta =	27° 34′ 21.44" (RT)				
Degree =	44° 04′ 25.24"				
Tangent =	31.8981				
Length =	62.5603				
Radius =	130.0000				
External =	3.8562				
Long Chord =	61.9584				
Mid. Ord. =	3.7451				
P.C. Station	15+05.38	N	10,562,014.1516	E	3,884,312.3115
P.T. Station	15+67.94	N	10,562,065.1931	E	3,884,277.1887
C.C.		N	10,562,111.2432	E	3,884,398.7593
Back = N	48° 19′ 08.28" W				
Ahead = N	20° 44′ 46.85" W				
Chord Bear = N	34° 31′ 57.56" W				

Course from PT MTLOOP4 to MTLOOP4 N 20° 44′ 46.85" W Dist 5.3379

Point MTLOOP4 N 10,562,070.1849 E 3,884,275.2979 Sta 15+73.28

Course from MTLOOP4 to PC MTLOOP5 N 23° 41′ 49.62" W Dist 9.7473

Curve Data

Curve MTLOOP5					
P.I. Station	16+04.74	N	10,562,098.9960	E	3,884,262.6524
Delta =	12° 23′ 39.32" (LT)				
Degree =	28° 38′ 52.40"				
Tangent =	21.7168				
Length =	43.2641				
Radius =	200.0000				
External =	1.1756				
Long Chord =	43.1798				
Mid. Ord. =	1.1687				
P.C. Station	15+83.02	N	10,562,079.1103	E	3,884,271.3804
P.T. Station	16+26.29	N	10,562,116.5449	E	3,884,249.8596
C.C.		N	10,561,998.7300	E	3,884,088.2439
Back = N	23° 41′ 49.61" W				
Ahead = N	36° 05′ 28.93" W				
Chord Bear = N	29° 53′ 39.27" W				

Curve Data

Curve MTLOOP6					
P.I. Station	16+27.91	N	10,562,117.8532	E	3,884,248.9059
Delta =	7° 24′ 39.06" (LT)				
Degree =	229° 10′ 59.42"				
Tangent =	1.6191				
Length =	3.2336				
Radius =	25.0000				
External =	0.0524				
Long Chord =	3.2313				
Mid. Ord. =	0.0523				
P.C. Station	16+26.29	N	10,562,116.5449	E	3,884,249.8596
P.T. Station	16+29.52	N	10,562,119.0276	E	3,884,247.7913
C.C.		N	10,562,101.8180	E	3,884,229.6576
Back = N	36° 05′ 28.93" W				
Ahead = N	43° 30′ 08.00" W				
Chord Bear = N	39° 47′ 48.46" W				

Curve Data

Curve MTLOOP7					
P.I. Station	16+70.02	N	10,562,148.4013	E	3,884,219.9146
Delta =	47° 30′ 56.55" (LT)				
Degree =	62° 16′ 40.87"				
Tangent =	40.4960				
Length =	76.2961				
Radius =	92.0000				
External =	8.5183				
Long Chord =	74.1285				
Mid. Ord. =	7.7964				
P.C. Station	16+29.52	N	10,562,119.0276	E	3,884,247.7913
P.T. Station	17+05.82	N	10,562,147.6819	E	3,884,179.4249
C.C.		N	10,562,055.6964	E	3,884,181.0593
Back = N	43° 30′ 08.00" W				
Ahead = S	88° 58′ 55.45" W				
Chord Bear = N	67° 15′ 36.27" W				

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED PROFESSIONAL ENGINEER

2/12/2024

HORIZONTAL ALIGNMENT DATA
(MISSION TEJAS)

SHEET 2 OF 9

Texas Department of Transportation

BGE, Inc.
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TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		040

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

Course from PT MTLOOP7 to PC MTLOOP8 S 88° 58′ 55.45" W Dist 126.7352

			Curve Data			

Curve MTLOOP8						
P.I. Station		19+14.58	N	10,562,143.9732	E	3,883,970.6967
Delta	=	27° 55′ 03.00"	(RT)			
Degree	=	17° 21′ 44.49"				
Tangent	=	82.0259				
Length	=	160.7933				
Radius	=	330.0000				
External	=	10.0415				
Long Chord	=	159.2074				
Mid. Ord.	=	9.7450				
P.C. Station		18+32.55	N	10,562,145.4304	E	3,884,052.7097
P.T. Station		19+93.35	N	10,562,181.0840	E	3,883,897.5459
C.C.			N	10,562,475.3783	E	3,884,046.8472
Back	= S 88° 58′ 55.45" W					
Ahead	= N 63° 06′ 01.54" W					
Chord Bear	= N 77° 03′ 33.05" W					

Course from PT MTLOOP8 to PC MTLOOP9 N 63° 06′ 01.59" W Dist 1.0075

			Curve Data			

Curve MTLOOP9						
P.I. Station		20+50.15	N	10,562,206.7856	E	3,883,846.8845
Delta	=	13° 15′ 42.71"	(RT)			
Degree	=	11° 56′ 11.83"				
Tangent	=	55.8005				
Length	=	111.1023				
Radius	=	480.0000				
External	=	3.2325				
Long Chord	=	110.8545				
Mid. Ord.	=	3.2109				
P.C. Station		19+94.35	N	10,562,181.5399	E	3,883,896.6474
P.T. Station		21+05.46	N	10,562,242.7737	E	3,883,804.2400
C.C.			N	10,562,609.6043	E	3,884,113.8129
Back	= N 63° 06′ 01.54" W					
Ahead	= N 49° 50′ 18.84" W					
Chord Bear	= N 56° 28′ 10.19" W					

Course from PT MTLOOP9 to PC MTLOOP10 N 49° 50′ 18.84" W Dist 170.8387

			Curve Data			

Curve MTLOOP10						
P.I. Station		23+46.01	N	10,562,397.9173	E	3,883,620.4015
Delta	=	15° 52′ 30.61"	(RT)			
Degree	=	11° 27′ 32.96"				
Tangent	=	69.7151				
Length	=	138.5370				
Radius	=	500.0000				
External	=	4.8368				
Long Chord	=	138.0943				
Mid. Ord.	=	4.7905				
P.C. Station		22+76.29	N	10,562,352.9550	E	3,883,673.6799
P.T. Station		24+14.83	N	10,562,455.7386	E	3,883,581.4543
C.C.			N	10,562,735.0702	E	3,883,996.1516
Back	= N 49° 50′ 18.84" W					
Ahead	= N 33° 57′ 48.23" W					
Chord Bear	= N 41° 54′ 03.54" W					

Course from PT MTLOOP10 to PC MTLOOP11 N 33° 57′ 48.23" W Dist 4.4594

			Curve Data			

Curve MTLOOP11						
P.I. Station		25+03.77	N	10,562,529.5051	E	3,883,531.7667
Delta	=	10° 09′ 48.83"	(RT)			
Degree	=	6° 01′ 52.08"				
Tangent	=	84.4808				
Length	=	168.5183				
Radius	=	950.0000				
External	=	3.7489				
Long Chord	=	168.2974				
Mid. Ord.	=	3.7342				
P.C. Station		24+19.29	N	10,562,459.4372	E	3,883,578.9630
P.T. Station		25+87.81	N	10,562,606.8017	E	3,883,497.6751
C.C.			N	10,562,990.1672	E	3,884,366.8879
Back	= N 33° 57′ 48.23" W					
Ahead	= N 23° 47′ 59.40" W					
Chord Bear	= N 28° 52′ 53.82" W					

Course from PT MTLOOP11 to MTLOOP5 N 23° 47′ 59.40" W Dist 67.7671

Point MTLOOP5 N 10,562,668.8059 E 3,883,470.3282 Sta 26+55.58

Course from MTLOOP5 to MTLOOP6 N 22° 16′ 15.37" W Dist 42.6669

Point MTLOOP6 N 10,562,708.2900 E 3,883,454.1580 Sta 26+98.24

Course from MTLOOP6 to MTLOOP7 N 17° 35′ 45.05" W Dist 15.1802

Point MTLOOP7 N 10,562,722.7600 E 3,883,449.5690 Sta 27+13.42

Course from MTLOOP7 to PC MTLOOP12 N 19° 50′ 20.50" W Dist 209.1852

			Curve Data			

Curve MTLOOP12						
P.I. Station		29+67.38	N	10,562,961.6457	E	3,883,363.3810
Delta	=	5° 07′ 37.84"	(LT)			
Degree	=	5° 43′ 46.48"				
Tangent	=	44.7730				
Length	=	89.4861				
Radius	=	1,000.0000				
External	=	1.0018				
Long Chord	=	89.4563				
Mid. Ord.	=	1.0008				
P.C. Station		29+22.61	N	10,562,919.5300	E	3,883,378.5760
P.T. Station		30+12.09	N	10,563,002.2349	E	3,883,344.4831
C.C.			N	10,562,580.1513	E	3,882,437.9262
Back	= N 19° 50′ 20.50" W					
Ahead	= N 24° 57′ 58.34" W					
Chord Bear	= N 22° 24′ 09.42" W					

Course from PT MTLOOP12 to PC MTLOOP13 N 24° 57′ 58.35" W Dist 4.9667

			Curve Data			

Curve MTLOOP13						
P.I. Station		30+27.46	N	10,563,016.1612	E	3,883,337.9991
Delta	=	11° 52′ 09.32"	(LT)			
Degree	=	57° 17′ 44.81"				
Tangent	=	10.3951				
Length	=	20.7158				
Radius	=	100.0000				
External	=	0.5388				
Long Chord	=	20.6787				
Mid. Ord.	=	0.5359				
P.C. Station		30+17.06	N	10,563,006.7375	E	3,883,342.3867
P.T. Station		30+37.78	N	10,563,024.4810	E	3,883,331.7671
C.C.			N	10,562,964.5291	E	3,883,251.7310
Back	= N 24° 57′ 58.34" W					
Ahead	= N 36° 50′ 07.66" W					
Chord Bear	= N 30° 54′ 03.00" W					

Course from PT MTLOOP13 to PC MTLOOP14 N 36° 50′ 07.66" W Dist 4.8590

			Curve Data			

Curve MTLOOP14						
P.I. Station		30+72.51	N	10,563,052.2828	E	3,883,310.9419
Delta	=	11° 22′ 29.52"	(LT)			
Degree	=	19° 05′ 54.94"				
Tangent	=	29.8775				
Length	=	59.5587				
Radius	=	300.0000				
External	=	1.4841				
Long Chord	=	59.4609				
Mid. Ord.	=	1.4768				
P.C. Station		30+42.64	N	10,563,028.3700	E	3,883,328.8540
P.T. Station		31+02.20	N	10,563,072.1931	E	3,883,288.6653
C.C.			N	10,562,848.5143	E	3,883,088.7459
Back	= N 36° 50′ 07.66" W					
Ahead	= N 48° 12′ 37.18" W					
Chord Bear	= N 42° 31′ 22.42" W					

Course from PT MTLOOP14 to MTLOOP8 N 48° 12′ 37.18" W Dist 163.0756

Point MTLOOP8 N 10,563,180.8664 E 3,883,167.0767 Sta 32+65.27

Course from MTLOOP8 to MTLOOP9 N 44° 45′ 17.71" W Dist 90.0737

Point MTLOOP9 N 10,563,244.8300 E 3,883,103.6580 Sta 33+55.34

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SHEET 3 OF 9

Texas Department of Transportation

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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			041
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

Course from MTLOOP9 to MTLOOP10 N 40° 56′ 49.31" W Dist 173.4854

Point MTLOOP10 N 10,563,375.8662 E 3,882,989.9625 Sta 35+28.83

Course from MTLOOP10 to PC MTLOOP15 N 43° 46′ 37.39" W Dist 3.0877

Curve Data

Curve MTLOOP15						
P.I. Station	35+84.06	N	10,563,415.7458	E	3,882,951.7500	
Delta =	45° 17′ 14.31"	(LT)				
Degree =	45° 50′ 11.84"					
Tangent =	52.1443					
Length =	98.8016					
Radius =	125.0000					
External =	10.4401					
Long Chord =	96.2497					
Mid. Ord. =	9.6354					
P.C. Station	35+31.92	N	10,563,378.0957	E	3,882,987.8262	
P.T. Station	36+30.72	N	10,563,416.5972	E	3,882,899.6127	
C.C.		N	10,563,291.6139	E	3,882,897.5715	
Back = N	43° 46′ 37.36" W					
Ahead = N	89° 03′ 51.66" W					
Chord Bear = N	66° 25′ 14.51" W					

Course from PT MTLOOP15 to PC MTLOOP16 N 89° 03′ 51.66" W Dist 30.8163

Curve Data

Curve MTLOOP16						
P.I. Station	37+29.42	N	10,563,418.2090	E	3,882,800.9263	
Delta =	7° 03′ 45.83"	(RT)				
Degree =	5° 12′ 31.35"					
Tangent =	67.8833					
Length =	135.5947					
Radius =	1,100.0000					
External =	2.0926					
Long Chord =	135.5088					
Mid. Ord. =	2.0886					
P.C. Station	36+61.54	N	10,563,417.1005	E	3,882,868.8005	
P.T. Station	37+97.13	N	10,563,427.6546	E	3,882,733.7033	
C.C.		N	10,564,516.9538	E	3,882,886.7629	
Back = N	89° 03′ 51.66" W					
Ahead = N	82° 00′ 05.84" W					
Chord Bear = N	85° 31′ 58.75" W					

Course from PT MTLOOP16 to PC MTLOOP17 N 82° 00′ 05.84" W Dist 92.1531

Curve Data

Curve MTLOOP17						
P.I. Station	39+09.45	N	10,563,443.2832	E	3,882,622.4775	
Delta =	15° 18′ 48.17"	(LT)				
Degree =	38° 11′ 49.87"					
Tangent =	20.1654					
Length =	40.0903					
Radius =	150.0000					
External =	1.3494					
Long Chord =	39.9711					
Mid. Ord. =	1.3374					
P.C. Station	38+89.28	N	10,563,440.4772	E	3,882,642.4466	
P.T. Station	39+29.37	N	10,563,440.7156	E	3,882,602.4762	
C.C.		N	10,563,291.9364	E	3,882,621.5749	
Back = N	82° 00′ 05.84" W					
Ahead = S	82° 41′ 05.99" W					
Chord Bear = N	89° 39′ 29.93" W					

Course from PT MTLOOP17 to PC MTLOOP18 S 82° 41′ 05.95" W Dist 4.2519

Curve Data

Curve MTLOOP18						
P.I. Station	39+99.92	N	10,563,431.7327	E	3,882,532.4992	
Delta =	92° 55′ 24.35"	(LT)				
Degree =	90° 56′ 44.45"					
Tangent =	66.2994					
Length =	102.1746					
Radius =	63.0000					
External =	28.4582					
Long Chord =	91.3392					
Mid. Ord. =	19.6031					
P.C. Station	39+33.63	N	10,563,440.1742	E	3,882,598.2589	
P.T. Station	40+35.80	N	10,563,366.4891	E	3,882,544.2835	
C.C.		N	10,563,377.6870	E	3,882,606.2804	
Back = S	82° 41′ 05.99" W					
Ahead = S	10° 14′ 18.36" E					
Chord Bear = S	36° 13′ 23.81" W					

Course from PT MTLOOP18 to MTLOOP11 S 10° 14′ 18.36" E Dist 112.6791

Point MTLOOP11 N 10,563,255.6042 E 3,882,564.3117 Sta 41+48.48

Course from MTLOOP11 to MTLOOP12 S 12° 05′ 30.20" E Dist 126.5928

Point MTLOOP12 N 10,563,131.8200 E 3,882,590.8300 Sta 42+75.07

Course from MTLOOP12 to PC MTLOOP19 S 10° 28′ 35.46" E Dist 63.5662

Curve Data

Curve MTLOOP19						
P.I. Station	43+84.31	N	10,563,024.3983	E	3,882,610.6939	
Delta =	39° 16′ 39.66"	(LT)				
Degree =	44° 45′ 44.38"					
Tangent =	45.6765					
Length =	87.7472					
Radius =	128.0000					
External =	7.9057					
Long Chord =	86.0391					
Mid. Ord. =	7.4458					
P.C. Station	43+38.64	N	10,563,069.3134	E	3,882,602.3884	
P.T. Station	44+26.39	N	10,562,994.8882	E	3,882,645.5579	
C.C.		N	10,563,092.5880	E	3,882,728.2546	
Back = S	10° 28′ 35.46" E					
Ahead = S	49° 45′ 15.12" E					
Chord Bear = S	30° 06′ 55.29" E					

Course from PT MTLOOP19 to PC MTLOOP20 S 49° 45′ 15.16" E Dist 0.6353

Curve Data

Curve MTLOOP20						
P.I. Station	44+82.23	N	10,562,958.8095	E	3,882,688.1821	
Delta =	20° 51′ 16.73"	(LT)				
Degree =	19° 05′ 54.94"					
Tangent =	55.2082					
Length =	109.1947					
Radius =	300.0000					
External =	5.0376					
Long Chord =	108.5929					
Mid. Ord. =	4.9544					
P.C. Station	44+27.02	N	10,562,994.4777	E	3,882,646.0428	
P.T. Station	45+36.22	N	10,562,940.4795	E	3,882,740.2585	
C.C.		N	10,563,223.4617	E	3,882,839.8632	
Back = S	49° 45′ 15.12" E					
Ahead = S	70° 36′ 31.85" E					
Chord Bear = S	60° 10′ 53.48" E					

Course from PT MTLOOP20 to PC MTLOOP21 S 70° 36′ 31.65" E Dist 0.6353

Curve Data

Curve MTLOOP21						
P.I. Station	45+89.69	N	10,562,922.7254	E	3,882,790.6989	
Delta =	78° 12′ 54.93"	(LT)				
Degree =	88° 08′ 50.47"					
Tangent =	52.8384					
Length =	88.7324					
Radius =	65.0000					
External =	18.7669					
Long Chord =	82.0013					
Mid. Ord. =	14.5624					
P.C. Station	45+36.85	N	10,562,940.2686	E	3,882,740.8578	
P.T. Station	46+25.58	N	10,562,967.9330	E	3,882,818.0516	
C.C.		N	10,563,001.5814	E	3,882,762.4388	
Back = S	70° 36′ 31.85" E					
Ahead = N	31° 10′ 33.22" E					
Chord Bear = N	70° 17′ 00.69" E					

Course from PT MTLOOP21 to PC MTLOOP22 N 31° 10′ 33.21" E Dist 4.8614

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SHEET 4 OF 9

Texas Department of Transportation

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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			042
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

Curve Data

Curve MTLOOP22
P.I. Station 46+83.59 N 10,563,017.5594 E 3,882,848.0779
Delta = 24° 28' 34.62" (LT)
Degree = 23° 23' 09.72"
Tangent = 53.1416
Length = 104.6620
Radius = 245.0000
External = 5.6971
Long Chord = 103.8680
Mid. Ord. = 5.5676
P.C. Station 46+30.44 N 10,562,972.0924 E 3,882,820.5682
P.T. Station 47+35.11 N 10,563,070.3381 E 3,882,854.2776
C.C. N 10,563,098.9208 E 3,882,610.9506
Back = N 31° 10' 33.22" E
Ahead = N 6° 41' 58.60" E
Chord Bear = N 18° 56' 15.91" E

Course from PT MTLOOP22 to PC MTLOOP23 N 6° 41' 58.60" E Dist 10.3823

Curve Data

Curve MTLOOP23
P.I. Station 47+92.63 N 10,563,127.4719 E 3,882,860.9889
Delta = 41° 19' 42.15" (RT)
Degree = 45° 50' 11.84"
Tangent = 47.1443
Length = 90.1645
Radius = 125.0000
External = 8.5949
Long Chord = 88.2225
Mid. Ord. = 8.0419
P.C. Station 47+45.49 N 10,563,080.6495 E 3,882,855.4889
P.T. Station 48+35.65 N 10,563,159.0004 E 3,882,896.0393
C.C. N 10,563,066.0665 E 3,882,979.6353
Back = N 6° 41' 58.60" E
Ahead = N 48° 01' 40.75" E
Chord Bear = N 27° 21' 49.68" E

Course from PT MTLOOP23 to PC MTLOOP24 N 48° 01' 40.75" E Dist 46.9065

Curve Data

Curve MTLOOP24
P.I. Station 49+50.61 N 10,563,235.8805 E 3,882,981.5072
Delta = 47° 24' 24.52" (RT)
Degree = 36° 57' 54.07"
Tangent = 68.0512
Length = 128.2478
Radius = 155.0000
External = 14.2807
Long Chord = 124.6207
Mid. Ord. = 13.0760
P.C. Station 48+82.56 N 10,563,190.3700 E 3,882,930.9130
P.T. Station 50+10.81 N 10,563,229.4351 E 3,883,049.2525
C.C. N 10,563,075.1319 E 3,883,034.5720
Back = N 48° 01' 40.75" E
Ahead = S 84° 33' 54.73" E
Chord Bear = N 71° 43' 53.01" E

Course from PT MTLOOP24 to PC MTLOOP25 S 84° 33' 54.73" E Dist 19.3376

Curve Data

Curve MTLOOP25
P.I. Station 50+88.08 N 10,563,222.1164 E 3,883,126.1781
Delta = 39° 48' 37.01" (RT)
Degree = 35° 48' 35.50"
Tangent = 57.9354
Length = 111.1713
Radius = 160.0000
External = 10.1661
Long Chord = 108.9485
Mid. Ord. = 9.5588
P.C. Station 50+30.15 N 10,563,227.6036 E 3,883,068.5032
P.T. Station 51+41.32 N 10,563,180.9750 E 3,883,166.9691
C.C. N 10,563,068.3229 E 3,883,053.3491
Back = S 84° 33' 54.73" E
Ahead = S 44° 45' 17.71" E
Chord Bear = S 64° 39' 36.22" E

Ending chain MTLOOP description

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SHEET 5 OF 9

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FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		043

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

CK | DW | CK | DW

HORIZONTAL ALIGNMENT REPORT

Alignment name: ToledoBend
Alignment description:
Report Created: Monday, October 17, 2022

	STATION	X	Y
POT	99+00.00 R1	5182.3921	4723.3349
PC	100+00.00 R1	5223.1079	4631.9991
Tangential Direction:	S24°01'35.0"E		
Tangential Length:	100.00		
PC	100+00.00 R1	5223.1079	4631.9991
PI	100+33.08 R1	5236.5775	4601.7833
CC		5166.4797	4606.7553
PT	100+60.78 R1	5218.9778	4573.7713
Radius:	62.00		
Delta:	56°10'01.58" Right		
Degree of Curvature(Arc):	92°24'45.17"		
Length:	60.78		
Tangent:	33.08		
Chord:	58.37		
Middle Ordinate:	7.30		
External:	8.27		
Tangent Back Direction:	S24°01'35.0"E		
Radial Direction:	S65°58'25.0"W		
Chord Direction:	S04°03'25.8"W		
Radial Direction:	N57°51'33.4"W		
Tangent Ahead Direction:	S32°08'26.6"W		
PT	100+60.78 R1	5218.9778	4573.7713
PC	100+83.71 R1	5206.7790	4554.3553
Tangential Direction:	S32°08'26.6"W		
Tangential Length:	22.93		
PC	100+83.71 R1	5206.7790	4554.3553
PI	101+48.76 R1	5172.1743	4499.2778
CC		5333.7906	4474.5552
PT	102+06.46 R1	5188.7313	4436.3740
Radius:	150.00		
Delta:	46°53'13.63" Left		
Degree of Curvature(Arc):	38°11'49.87"		
Length:	122.75		
Tangent:	65.05		
Chord:	119.35		
Middle Ordinate:	12.38		
External:	13.50		
Tangent Back Direction:	S32°08'26.6"W		
Radial Direction:	N57°51'33.4"W		
Chord Direction:	S08°41'49.7"W		
Radial Direction:	S75°15'12.9"W		
Tangent Ahead Direction:	S14°44'47.1"E		
PT	102+06.46 R1	5188.7313	4436.3740
PC	102+84.18 R1	5208.5152	4361.2102
Tangential Direction:	S14°44'47.1"E		
Tangential Length:	77.72		
PC	102+84.18 R1	5208.5152	4361.2102
PI	103+34.29 R1	5221.2707	4312.7494
CC		5268.4731	4376.9918
PT	103+68.47 R1	5271.3289	4315.0576
Radius:	62.00		
Delta:	77°53'37.10" Left		
Degree of Curvature(Arc):	92°24'45.17"		
Length:	84.29		
Tangent:	50.11		
Chord:	77.95		
Middle Ordinate:	13.78		
External:	17.72		
Tangent Back Direction:	S14°44'47.1"E		
Radial Direction:	S75°15'12.9"W		
Chord Direction:	S53°41'35.6"E		
Radial Direction:	S02°38'24.2"E		
Tangent Ahead Direction:	N87°21'35.8"E		
PT	103+68.47 R1	5271.3289	4315.0576
PC	103+90.33 R1	5293.1627	4316.0644
Tangential Direction:	N87°21'35.8"E		
Tangential Length:	21.86		
PC	103+90.33 R1	5293.1627	4316.0644
PI	104+28.56 R1	5331.3508	4317.8252
CC		5296.0185	4254.1302
PT	104+58.84 R1	5350.0736	4284.4952
Radius:	62.00		
Delta:	63°18'55.04" Right		
Degree of Curvature(Arc):	92°24'45.17"		
Length:	68.51		
Tangent:	38.23		
Chord:	65.08		
Middle Ordinate:	9.23		
External:	10.84		
Tangent Back Direction:	N87°21'35.8"E		
Radial Direction:	S02°38'24.2"E		
Chord Direction:	S60°58'56.6"E		
Radial Direction:	S60°40'30.9"W		
Tangent Ahead Direction:	S29°19'29.1"E		
PT	104+58.84 R1	5350.0736	4284.4952
PC	106+70.77 R1	5453.8662	4099.7261
Tangential Direction:	S29°19'29.1"E		
Tangential Length:	211.93		

HORIZONTAL ALIGNMENT REPORT

Alignment name: ToledoBend
Alignment description:
Report Created: Monday, October 17, 2022

	STATION	X	Y
PC	106+70.77 R1	5453.8662	4099.7261
PI	107+20.65 R1	5478.2953	4056.2380
CC		5628.2378	4197.6780
PT	107+68.53 R1	5520.2850	4029.3147
Radius:	200.00		
Delta:	28°00'27.61" Left		
Degree of Curvature(Arc):	28°38'52.40"		
Length:	97.77		
Tangent:	49.88		
Chord:	96.79		
Middle Ordinate:	5.94		
External:	6.13		
Tangent Back Direction:	S29°19'29.1"E		
Radial Direction:	S60°40'30.9"W		
Chord Direction:	S43°19'42.9"E		
Radial Direction:	S32°40'03.3"W		
Tangent Ahead Direction:	S57°19'56.7"E		
PT	107+68.53 R1	5520.2850	4029.3147
PC	108+08.98 R1	5554.3352	4007.4820
Tangential Direction:	S57°19'56.7"E		
Tangential Length:	40.45		
PC	108+08.98 R1	5554.3352	4007.4820
PI	108+17.14 R1	5561.2065	4003.0763
CC		5500.3588	3923.3004
PT	108+25.27 R1	5567.2723	3997.6145
Radius:	100.00		
Delta:	09°19'57.87" Right		
Degree of Curvature(Arc):	57°17'44.81"		
Length:	16.29		
Tangent:	8.16		
Chord:	16.27		
Middle Ordinate:	0.33		
External:	0.33		
Tangent Back Direction:	S57°19'56.7"E		
Radial Direction:	S32°40'03.3"W		
Chord Direction:	S52°39'57.8"E		
Radial Direction:	S42°00'01.1"W		
Tangent Ahead Direction:	S47°59'58.9"E		
PT	108+25.27 R1	5567.2723	3997.6145
PC	109+56.89 R1	5665.0841	3909.5434
Tangential Direction:	S47°59'58.9"E		
Tangential Length:	131.62		
PC	109+56.89 R1	5665.0841	3909.5434
PI	109+80.97 R1	5682.9760	3893.4333
CC		5731.9976	3983.8575
PT	110+04.14 R1	5706.2395	3887.2318
Radius:	100.00		
Delta:	27°04'25.49" Left		
Degree of Curvature(Arc):	57°17'44.81"		
Length:	47.25		
Tangent:	24.08		
Chord:	46.81		
Middle Ordinate:	2.78		
External:	2.86		
Tangent Back Direction:	S47°59'58.9"E		
Radial Direction:	S42°00'01.1"W		
Chord Direction:	S61°32'11.6"E		
Radial Direction:	S14°55'35.6"W		
Tangent Ahead Direction:	S75°04'24.4"E		
PT	110+04.14 R1	5706.2395	3887.2318
PC	110+93.99 R1	5793.0593	3864.0877
Tangential Direction:	S75°04'24.4"E		
Tangential Length:	89.85		
PC	110+93.99 R1	5793.0593	3864.0877
PI	111+14.55 R1	5812.9175	3858.7940
CC		5812.3778	3936.5570
PT	111+34.11 R1	5832.7004	3864.3629
Radius:	75.00		
Delta:	30°38'54.30" Left		
Degree of Curvature(Arc):	76°23'39.74"		
Length:	40.12		
Tangent:	20.55		
Chord:	39.64		
Middle Ordinate:	2.67		
External:	2.76		
Tangent Back Direction:	S75°04'24.4"E		
Radial Direction:	S14°55'35.6"W		
Chord Direction:	N89°36'08.5"E		
Radial Direction:	S15°43'18.7"E		
Tangent Ahead Direction:	N74°16'41.3"E		
PT	111+34.11 R1	5832.7004	3864.3629
PC	111+78.18 R1	5875.1203	3876.3040
Tangential Direction:	N74°16'41.3"E		
Tangential Length:	44.07		

HORIZONTAL ALIGNMENT REPORT

Alignment name: ToledoBend
Alignment description:
Report Created: Monday, October 17, 2022

	STATION	X	Y
PC	111+78.18 R1	5875.1203	3876.3040
PI	112+04.09 R1	5900.0561	3883.3234
CC		5891.9203	3816.6235
PT	112+27.26 R1	5922.5735	3870.5158
Radius:	62.00		
Delta:	45°21'08.95" Right		
Degree of Curvature(Arc):	92°24'45.17"		
Length:	49.08		
Tangent:	25.90		
Chord:	47.80		
Middle Ordinate:	4.79		
External:	5.19		
Tangent Back Direction:	N74°16'41.3"E		
Radial Direction:	S15°43'18.7"E		
Chord Direction:	S83°02'44.2"E		
Radial Direction:	S29°37'50.3"W		
Tangent Ahead Direction:	S60°22'09.7"E		
PT	112+27.26 R1	5922.5735	3870.5158
POT	112+77.26 R1	5966.0350	3845.7955
Tangential Direction:	S60°22'09.7"E		
Tangential Length:	50.00		

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED PROFESSIONAL ENGINEER

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12/19/2023

Texas Department of Transportation

HORIZONTAL ALIGNMENT DATA

(TOLEDO BEND)

SHEET 6 OF 9

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		44

DATE: 12/11/2023 10:16:51 AM
FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/091128063-ORD/4 - Design/Plan Set/3. Roadway/Alignment Data Toledo 1.dgn

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HORIZONTAL ALIGNMENT REPORT

Alignment name: AlazanBottom
Alignment description:
Report Created: Wednesday, November 2, 2022

	STATION	X	Y
POT	299+00.00 R1	4037404.5389	10549218.1456
PI	300+00.00 R1	4037407.0276	10549118.1766
Tangential Direction:	S1.426°E		
Tangential Length:	100.000		
PI	300+00.00 R1	4037407.0276	10549118.1766
PC	301+20.53 R1	4037410.0273	10548997.6807
Tangential Direction:	S1.426°E		
Tangential Length:	120.533		
PC	301+20.53 R1	4037410.0273	10548997.6807
PI	301+94.75 R1	4037411.8743	10548923.4878
CC		4039909.2529	10549059.8984
PT	302+68.92 R1	4037418.1192	10548849.5350
Radius:	2500.000		
Delta:	3.40° Left		
Degree of Curvature(Arc):	2.29°		
Length:	148.388		
Tangent:	74.216		
Chord:	148.366		
Middle Ordinate:	1.101		
External:	1.101		
Tangent Back Direction:	S1.426°E		
Radial Direction:	S88.574°W		
Chord Direction:	S3.126°E		
Radial Direction:	S85.173°W		
Tangent Ahead Direction:	S4.827°E		
PT	302+68.92 R1	4037418.1192	10548849.5350
PC	303+93.57 R1	4037428.6081	10548725.3248
Tangential Direction:	S4.827°E		
Tangential Length:	124.652		
PC	303+93.57 R1	4037428.6081	10548725.3248
PI	304+75.17 R1	4037435.4742	10548644.0162
CC		4037239.2820	10548709.3372
PT	305+47.72 R1	4037381.2389	10548583.0509
Radius:	190.000		
Delta:	46.48° Right		
Degree of Curvature(Arc):	30.16°		
Length:	154.145		
Tangent:	81.598		
Chord:	149.952		
Middle Ordinate:	15.419		
External:	16.781		
Tangent Back Direction:	S4.827°E		
Radial Direction:	S85.173°W		
Chord Direction:	S18.415°W		
Radial Direction:	N48.343°W		
Tangent Ahead Direction:	S41.657°W		
PT	305+47.72 R1	4037381.2389	10548583.0509
PC	307+15.63 R1	4037269.6373	10548457.6008
Tangential Direction:	S41.657°W		
Tangential Length:	167.907		
PC	307+15.63 R1	4037269.6373	10548457.6008
PI	307+43.20 R1	4037251.3080	10548436.9970
CC		4039137.4921	10546795.9394
PT	307+70.78 R1	4037233.4376	10548415.9939
Radius:	2500.000		
Delta:	1.26° Left		
Degree of Curvature(Arc):	2.29°		
Length:	55.151		
Tangent:	27.577		
Chord:	55.150		
Middle Ordinate:	0.152		
External:	0.152		
Tangent Back Direction:	S41.657°W		
Radial Direction:	N48.343°W		
Chord Direction:	S41.025°W		
Radial Direction:	N49.607°W		
Tangent Ahead Direction:	S40.393°W		
PT	307+70.78 R1	4037233.4376	10548415.9939
PC	309+40.02 R1	4037123.7675	10548287.0983
Tangential Direction:	S40.393°W		
Tangential Length:	169.238		
PC	309+40.02 R1	4037123.7675	10548287.0983
PI	309+77.55 R1	4037099.4468	10548258.5141
CC		4036979.0594	10548410.2224
PT	310+14.12 R1	4037066.0843	10548241.3241
Radius:	190.000		
Delta:	22.35° Right		
Degree of Curvature(Arc):	30.16°		
Length:	74.107		
Tangent:	37.531		
Chord:	73.638		
Middle Ordinate:	3.602		
External:	3.671		
Tangent Back Direction:	S40.393°W		
Radial Direction:	N49.607°W		
Chord Direction:	S51.566°W		
Radial Direction:	N27.260°W		
Tangent Ahead Direction:	S62.740°W		

HORIZONTAL ALIGNMENT REPORT

Alignment name: AlazanBottom
Alignment description:
Report Created: Wednesday, November 2, 2022

	STATION	X	Y
PT	310+14.12 R1	4037066.0843	10548241.3241
PC	312+22.38 R1	4036880.9545	10548145.9359
Tangential Direction:	S62.740°W		
Tangential Length:	208.259		
PC	312+22.38 R1	4036880.9545	10548145.9359
PI	312+60.33 R1	4036847.2212	10548128.5548
CC		4037006.9117	10547901.4777
PT	312+97.80 R1	4036819.4558	10548102.6873
Radius:	275.000		
Delta:	15.71° Left		
Degree of Curvature(Arc):	20.83°		
Length:	75.419		
Tangent:	37.948		
Chord:	75.183		
Middle Ordinate:	2.581		
External:	2.606		
Tangent Back Direction:	S62.740°W		
Radial Direction:	N27.260°W		
Chord Direction:	S54.883°W		
Radial Direction:	N42.973°W		
Tangent Ahead Direction:	S47.027°W		
PT	312+97.80 R1	4036819.4558	10548102.6873
PC	314+65.92 R1	4036696.4464	10547988.0862
Tangential Direction:	S47.027°W		
Tangential Length:	168.121		
PC	314+65.92 R1	4036696.4464	10547988.0862
PI	315+11.29 R1	4036663.2525	10547957.1613
CC		4034992.3019	10549817.2640
PT	315+56.65 R1	4036628.9585	10547927.4610
Radius:	2500.000		
Delta:	2.08° Right		
Degree of Curvature(Arc):	2.29°		
Length:	90.724		
Tangent:	45.367		
Chord:	90.719		
Middle Ordinate:	0.412		
External:	0.412		
Tangent Back Direction:	S47.027°W		
Radial Direction:	N42.973°W		
Chord Direction:	S48.066°W		
Radial Direction:	N40.894°W		
Tangent Ahead Direction:	S49.106°W		
PT	315+56.65 R1	4036628.9585	10547927.4610
PC	316+88.09 R1	4036529.6000	10547841.4120
Tangential Direction:	S49.106°W		
Tangential Length:	131.440		
PC	316+88.09 R1	4036529.6000	10547841.4120
PI	317+47.38 R1	4036484.7806	10547802.5963
CC		4036955.1307	10547350.0632
PCC	318+06.34 R1	4036447.7237	10547756.3121
Radius:	650.000		
Delta:	10.42° Left		
Degree of Curvature(Arc):	8.81°		
Length:	118.255		
Tangent:	59.291		
Chord:	118.092		
Middle Ordinate:	2.687		
External:	2.699		
Tangent Back Direction:	S49.106°W		
Radial Direction:	N40.894°W		
Chord Direction:	S43.894°W		
Radial Direction:	N51.318°W		
Tangent Ahead Direction:	S38.682°W		
PCC	318+06.34 R1	4036447.7237	10547756.3121
PI	318+81.80 R1	4036400.5620	10547697.4069
CC		4036642.8803	10547600.0626
PT	319+52.91 R1	4036393.8664	10547622.2455
Radius:	250.000		
Delta:	33.59° Left		
Degree of Curvature(Arc):	22.92°		
Length:	146.570		
Tangent:	75.459		
Chord:	144.480		
Middle Ordinate:	10.665		
External:	11.140		
Tangent Back Direction:	S38.682°W		
Radial Direction:	N51.318°W		
Chord Direction:	S21.886°W		
Radial Direction:	N84.909°W		
Tangent Ahead Direction:	S5.091°W		
PT	319+52.91 R1	4036393.8664	10547622.2455
PC	320+23.74 R1	4036387.5819	10547551.6994
Tangential Direction:	S5.091°W		
Tangential Length:	70.825		

HORIZONTAL ALIGNMENT REPORT

Alignment name: AlazanBottom
Alignment description:
Report Created: Wednesday, November 2, 2022

	STATION	X	Y
PC	320+23.74 R1	4036387.5819	10547551.6994
PI	320+55.03 R1	4036384.8055	10547520.5326
CC		4035989.1597	10547587.1921
PT	320+86.19 R1	4036377.2164	10547490.1767
Radius:	400.000		
Delta:	8.95° Right		
Degree of Curvature(Arc):	14.32°		
Length:	62.453		
Tangent:	31.290		
Chord:	62.390		
Middle Ordinate:	1.218		
External:	1.222		
Tangent Back Direction:	S5.091°W		
Radial Direction:	N84.909°W		
Chord Direction:	S9.564°W		
Radial Direction:	N75.964°W		
Tangent Ahead Direction:	S14.036°W		
PT	320+86.19 R1	4036377.2164	10547490.1767
PC	321+63.88 R1	4036358.3733	10547414.8054
Tangential Direction:	S14.036°W		
Tangential Length:	77.691		
PC	321+63.88 R1	4036358.3733	10547414.8054
PI	322+28.83 R1	4036342.6214	10547351.7988
CC		4036794.9371	10547305.6630
PT	322+92.88 R1	4036345.3280	10547286.9094
Radius:	450.000		
Delta:	16.42° Left		
Degree of Curvature(Arc):	12.73°		
Length:	129.001		
Tangent:	64.946		
Chord:	128.560		
Middle Ordinate:	4.615		
External:	4.662		
Tangent Back Direction:	S14.036°W		
Radial Direction:	N75.964°W		
Chord Direction:	S5.824°W		
Radial Direction:	S87.612°W		
Tangent Ahead Direction:	S2.388°E		
PT	322+92.88 R1	4036345.3280	10547286.9094
PC	323+48.17 R1	4036347.6322	10547231.6669
Tangential Direction:	S2.388°E		
Tangential Length:	55.291		

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED
PROFESSIONAL ENGINEER

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12/19/2023

Texas Department of Transportation

HORIZONTAL ALIGNMENT DATA

(ALAZAN BOTTOM ROAD)

SHEET 7 OF 9

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		45

DATE: 12/8/2023 2:40:57 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/091128063-ORD/4 - Design/Plan Set/3. Roadway/Alignment_Data_AlazanBottom_1.dgn

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HORIZONTAL ALIGNMENT REPORT

Alignment name: AlazanBottom
Alignment description:
Report Created: Wednesday, November 2, 2022

	STATION	X	Y
PC	323+48.17 R1	4036347.6322	10547231.6669
PI	323+90.33 R1	4036349.3889	10547189.5517
CC		4035748.1535	10547206.6622
PT	324+32.34 R1	4036345.2399	10547147.6046
Radius:	600.000		
Delta:	8.04° Right		
Degree of Curvature(Arc):	9.55°		
Length:	84.165		
Tangent:	42.152		
Chord:	84.096		
Middle Ordinate:	1.475		
External:	1.479		
Tangent Back Direction:	S2.388°E		
Radial Direction:	S87.612°W		
Chord Direction:	S1.630°W		
Radial Direction:	N84.351°W		
Tangent Ahead Direction:	S5.649°W		

PT	324+32.34 R1	4036345.2399	10547147.6046
PC	325+86.65 R1	4036330.0512	10546994.0436
Tangential Direction:	S5.649°W		
Tangential Length:	154.310		

PC	325+86.65 R1	4036330.0512	10546994.0436
PI	326+86.33 R1	4036320.2396	10546894.8453
CC		4036653.4731	10546962.0540
PT	327+80.09 R1	4036367.7341	10546807.2050
Radius:	325.000		
Delta:	34.10° Left		
Degree of Curvature(Arc):	17.63°		
Length:	193.444		
Tangent:	99.682		
Chord:	190.601		
Middle Ordinate:	14.287		
External:	14.943		
Tangent Back Direction:	S5.649°W		
Radial Direction:	N84.351°W		
Chord Direction:	S11.403°E		
Radial Direction:	S61.546°W		
Tangent Ahead Direction:	S28.454°E		

PT	327+80.09 R1	4036367.7341	10546807.2050
PC	329+16.91 R1	4036432.9232	10546686.9132
Tangential Direction:	S28.454°E		
Tangential Length:	136.820		

PC	329+16.91 R1	4036432.9232	10546686.9132
PI	329+53.55 R1	4036450.3784	10546654.7035
CC		4036762.6220	10546865.5852
PRC	329+89.95 R1	4036473.7375	10546626.4812
Radius:	375.000		
Delta:	11.16° Left		
Degree of Curvature(Arc):	15.28°		
Length:	73.039		
Tangent:	36.635		
Chord:	72.924		
Middle Ordinate:	1.777		
External:	1.785		
Tangent Back Direction:	S28.454°E		
Radial Direction:	S61.546°W		
Chord Direction:	S34.034°E		
Radial Direction:	S50.386°W		
Tangent Ahead Direction:	S39.614°E		

PRC	329+89.95 R1	4036473.7375	10546626.4812
PI	330+37.70 R1	4036504.1806	10546589.6999
CC		4036377.4427	10546546.7798
PT	330+81.17 R1	4036502.3509	10546541.9894
Radius:	125.000		
Delta:	41.81° Right		
Degree of Curvature(Arc):	45.84°		
Length:	91.216		
Tangent:	47.746		
Chord:	89.205		
Middle Ordinate:	8.228		
External:	8.808		
Tangent Back Direction:	S39.614°E		
Radial Direction:	S50.386°W		
Chord Direction:	S18.709°E		
Radial Direction:	N87.804°W		
Tangent Ahead Direction:	S2.196°W		

PT	330+81.17 R1	4036502.3509	10546541.9894
PC	331+18.78 R1	4036500.9095	10546504.4072
Tangential Direction:	S2.196°W		
Tangential Length:	37.610		

HORIZONTAL ALIGNMENT REPORT

Alignment name: AlazanBottom
Alignment description:
Report Created: Wednesday, November 2, 2022

	STATION	X	Y
PC	331+18.78 R1	4036500.9095	10546504.4072
PI	331+59.16 R1	4036499.3619	10546464.0541
CC		4036775.7075	10546493.8684
PT	331+98.97 R1	4036509.4810	10546424.9596
Radius:	275.000		
Delta:	16.71° Left		
Degree of Curvature(Arc):	20.83°		
Length:	80.192		
Tangent:	40.383		
Chord:	79.909		
Middle Ordinate:	2.918		
External:	2.949		
Tangent Back Direction:	S2.196°W		
Radial Direction:	N87.804°W		
Chord Direction:	S6.158°E		
Radial Direction:	S75.488°W		
Tangent Ahead Direction:	S14.512°E		

PT	331+98.97 R1	4036509.4810	10546424.9596
PC	332+36.07 R1	4036518.7783	10546389.0397
Tangential Direction:	S14.512°E		
Tangential Length:	37.104		

PC	332+36.07 R1	4036518.7783	10546389.0397
PI	333+02.30 R1	4036535.3741	10546324.9223
CC		4036702.7166	10546436.6494
PT	333+63.53 R1	4036588.2311	10546285.0148
Radius:	190.000		
Delta:	38.44° Left		
Degree of Curvature(Arc):	30.16°		
Length:	127.456		
Tangent:	66.230		
Chord:	125.079		
Middle Ordinate:	10.588		
External:	11.212		
Tangent Back Direction:	S14.512°E		
Radial Direction:	S75.488°W		
Chord Direction:	S33.729°E		
Radial Direction:	S37.053°W		
Tangent Ahead Direction:	S52.947°E		

PT	333+63.53 R1	4036588.2311	10546285.0148
PC	334+26.10 R1	4036638.1682	10546247.3117
Tangential Direction:	S52.947°E		
Tangential Length:	62.572		

PC	334+26.10 R1	4036638.1682	10546247.3117
PI	334+46.98 R1	4036654.8280	10546234.7335
CC		4036562.8488	10546147.5521
PCC	334+67.47 R1	4036666.4965	10546217.4245
Radius:	125.000		
Delta:	18.96° Right		
Degree of Curvature(Arc):	45.84°		
Length:	41.368		
Tangent:	20.875		
Chord:	41.179		
Middle Ordinate:	1.707		
External:	1.731		
Tangent Back Direction:	S52.947°E		
Radial Direction:	S37.053°W		
Chord Direction:	S43.466°E		
Radial Direction:	S56.015°W		
Tangent Ahead Direction:	S33.985°E		

PCC	334+67.47 R1	4036666.4965	10546217.4245
PI	335+40.73 R1	4036707.4459	10546156.6807
CC		4036426.0338	10546055.3206
PT	336+10.98 R1	4036714.6343	10546083.7767
Radius:	290.000		
Delta:	28.35° Right		
Degree of Curvature(Arc):	19.76°		
Length:	143.513		
Tangent:	73.258		
Chord:	142.053		
Middle Ordinate:	8.832		
External:	9.110		
Tangent Back Direction:	S33.985°E		
Radial Direction:	S56.015°W		
Chord Direction:	S19.808°E		
Radial Direction:	S84.369°W		
Tangent Ahead Direction:	S5.631°E		

PT	336+10.98 R1	4036714.6343	10546083.7767
PC	336+63.71 R1	4036719.8080	10546031.3050
Tangential Direction:	S5.631°E		
Tangential Length:	52.726		

HORIZONTAL ALIGNMENT REPORT

Alignment name: AlazanBottom
Alignment description:
Report Created: Wednesday, November 2, 2022

	STATION	X	Y
PC	336+63.71 R1	4036719.8080	10546031.3050
PI	337+08.89 R1	4036724.2414	10545986.3413
CC		4036839.2289	10546043.0799
PRC	337+50.13 R1	4036757.2289	10545955.4671
Radius:	120.000		
Delta:	41.26° Left		
Degree of Curvature(Arc):	47.75°		
Length:	86.423		
Tangent:	45.182		
Chord:	84.568		
Middle Ordinate:	7.697		
External:	8.224		
Tangent Back Direction:	S5.631°E		
Radial Direction:	S84.369°W		
Chord Direction:	S26.263°E		
Radial Direction:	S43.105°W		
Tangent Ahead Direction:	S46.895°E		

PRC	337+50.13 R1	4036757.2289	10545955.4671
PI	337+90.91 R1	4036787.0007	10545927.6027
CC		4036415.5622	10545590.4139
PT	338+31.51 R1	4036811.8641	10545895.2824
Radius:	500.000		
Delta:	9.32° Right		
Degree of Curvature(Arc):	11.46°		
Length:	81.374		
Tangent:	40.777		
Chord:	81.285		
Middle Ordinate:	1.655		
External:	1.660		
Tangent Back Direction:	S46.895°E		
Radial Direction:	S43.105°W		
Chord Direction:	S42.233°E		
Radial Direction:	S52.430°W		
Tangent Ahead Direction:	S37.570°E		

PT	338+31.51 R1	4036811.8641	10545895.2824
PC	339+19.46 R1	4036865.4950	10545825.5670
Tangential Direction:	S37.570°E		
Tangential Length:	87.957		

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
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P.E.
12/19/2023

Texas Department of Transportation

HORIZONTAL ALIGNMENT DATA

(ALAZAN BOTTOM ROAD)

SHEET 8 OF 9

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		46

DATE: 12/8/2023 2:41:13 PM
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CK | DW | CK | DW

HORIZONTAL ALIGNMENT REPORT

Alignment name: AlazanBottom
Alignment description:
Report Created: Wednesday, November 2, 2022

	STATION	X	Y
PC	339+19.46 R1	4036865.4950	10545825.5670
PI	339+42.59 R1	4036879.5991	10545807.2329
CC		4037182.5365	10546069.4618
PRC	339+65.67 R1	4036895.7227	10545790.6468
Radius:	400.000		
Delta:	6.62° Left		
Degree of Curvature(Arc):	14.32°		
Length:	46.212		
Tangent:	23.132		
Chord:	46.186		
Middle Ordinate:	0.667		
External:	0.668		
Tangent Back Direction:	S37.570°E		
Radial Direction:	S52.430°W		
Chord Direction:	S40.880°E		
Radial Direction:	S45.810°W		
Tangent Ahead Direction:	S44.190°E		

PRC	339+65.67 R1	4036895.7227	10545790.6468
PI	339+71.93 R1	4036900.0816	10545786.1628
CC		4036851.2665	10545747.4304
PRC	339+78.14 R1	4036903.4573	10545780.8986
Radius:	62.000		
Delta:	11.52° Right		
Degree of Curvature(Arc):	92.41°		
Length:	12.465		
Tangent:	6.254		
Chord:	12.444		
Middle Ordinate:	0.313		
External:	0.315		
Tangent Back Direction:	S44.190°E		
Radial Direction:	S45.810°W		
Chord Direction:	S38.430°E		
Radial Direction:	S57.329°W		
Tangent Ahead Direction:	S32.671°E		

PRC	339+78.14 R1	4036903.4573	10545780.8986
PI	339+93.24 R1	4036911.6080	10545768.1884
CC		4036987.6361	10545834.8796
PT	340+08.11 R1	4036923.1480	10545758.4512
Radius:	100.000		
Delta:	17.17° Left		
Degree of Curvature(Arc):	57.30°		
Length:	29.972		
Tangent:	15.099		
Chord:	29.860		
Middle Ordinate:	1.121		
External:	1.133		
Tangent Back Direction:	S32.671°E		
Radial Direction:	S57.329°W		
Chord Direction:	S41.257°E		
Radial Direction:	S40.157°W		
Tangent Ahead Direction:	S49.843°E		

PT	340+08.11 R1	4036923.1480	10545758.4512
POT	340+38.56 R1	4036946.4200	10545738.8150
Tangential Direction:	S49.843°E		
Tangential Length:	30.449		

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STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
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12/19/2023

Texas Department of Transportation

HORIZONTAL ALIGNMENT DATA

(ALAZAN BOTTOM ROAD)

SHEET 9 OF 9

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		47

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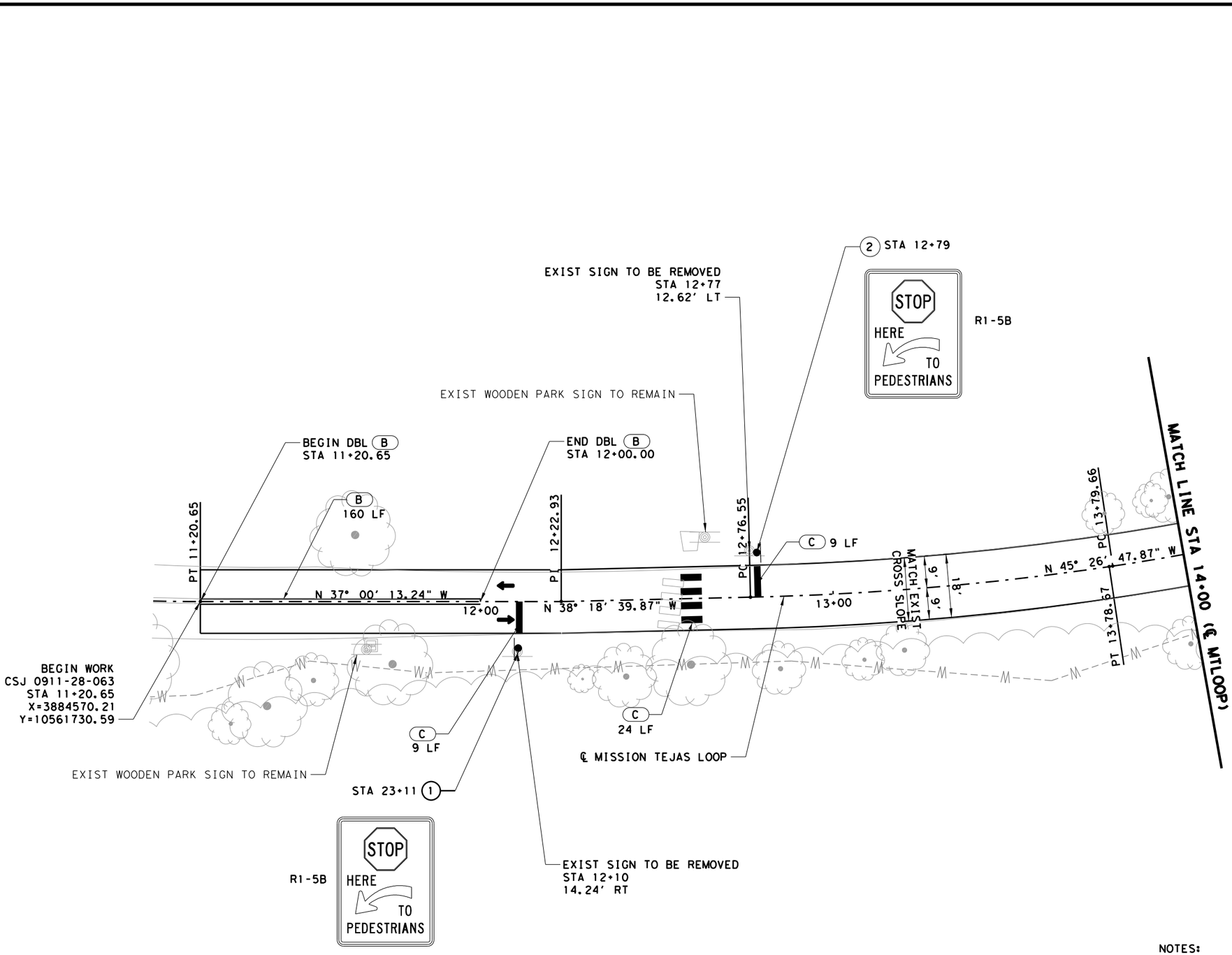

LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- # — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- A — RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- B — RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)
- C — PREFAB PAV MRK TY B (W) (24") (SLD)
- D — PREFAB PAV MRK TY C (W) (WORD)
- E — PREFAB PAV MRK TY C (W) (SYMBOL)
- F — WHEEL STOP
- G — REFL PAV MRK TY II (Y) 12" (SLD)
- H — REMOVE PRECAST CONCRETE WHEEL STOPS
- X — PROPOSED GROUND ELEVATION
- S-# — SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- —W—W— WATERLINE
- — X — X — REMOVE EXIST ROCK WALL

0 15 30
SCALE: 1"=30'

NOTES:

1. ALL UTILTIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY.
2. REMOVAL OF EXISTING CAMPSITE SUBSIDIARY TO ITEM 530.

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 1 OF 16

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		048

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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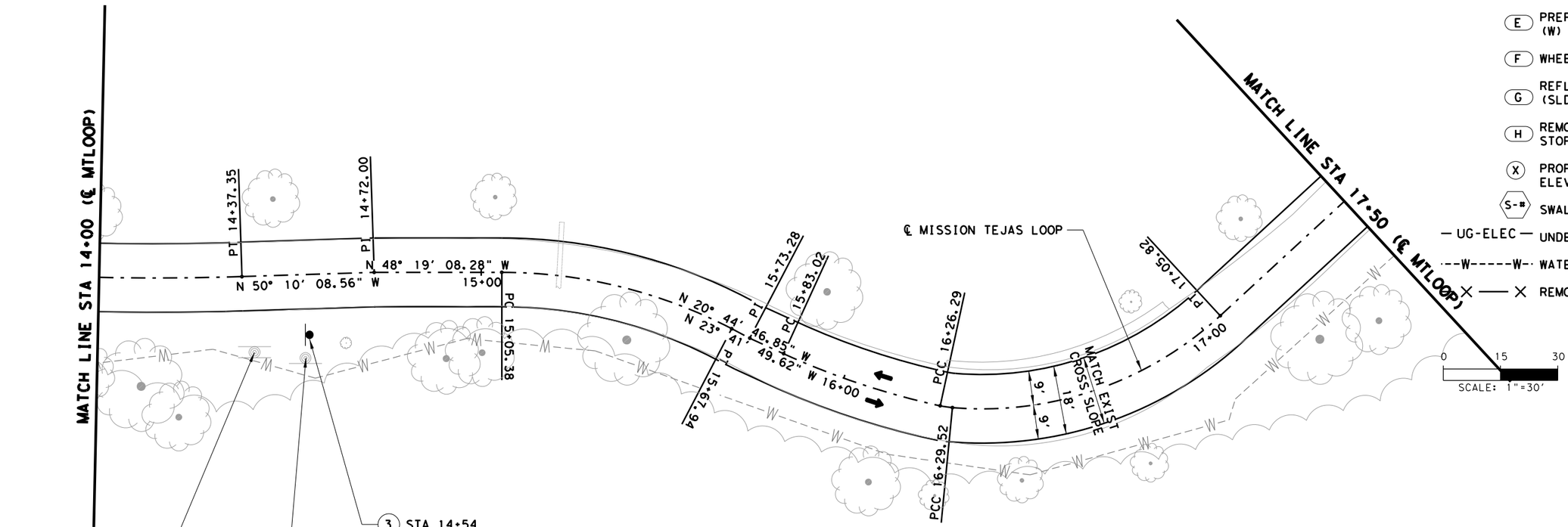

LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- (#) — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- (A) RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- (B) RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)
- (C) PREFAB PAV MRK TY B (W) (24") (SLD)
- (D) PREFAB PAV MRK TY C (W) (WORD)
- (E) PREFAB PAV MRK TY C (W) (SYMBOL)
- (F) WHEEL STOP
- (G) REFL PAV MRK TY II (Y) 12" (SLD)
- (H) REMOVE PRECAST CONCRETE WHEEL STOPS
- (X) PROPOSED GROUND ELEVATION
- (S-#) SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- ---W-----W-- WATERLINE
- X —— X REMOVE EXIST ROCK WALL

NOTES:

1. ALL UTILTIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY.
2. REMOVAL OF EXISTING CAMPSITE SUBSIDIARY TO ITEM 530.

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 2 OF 16

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
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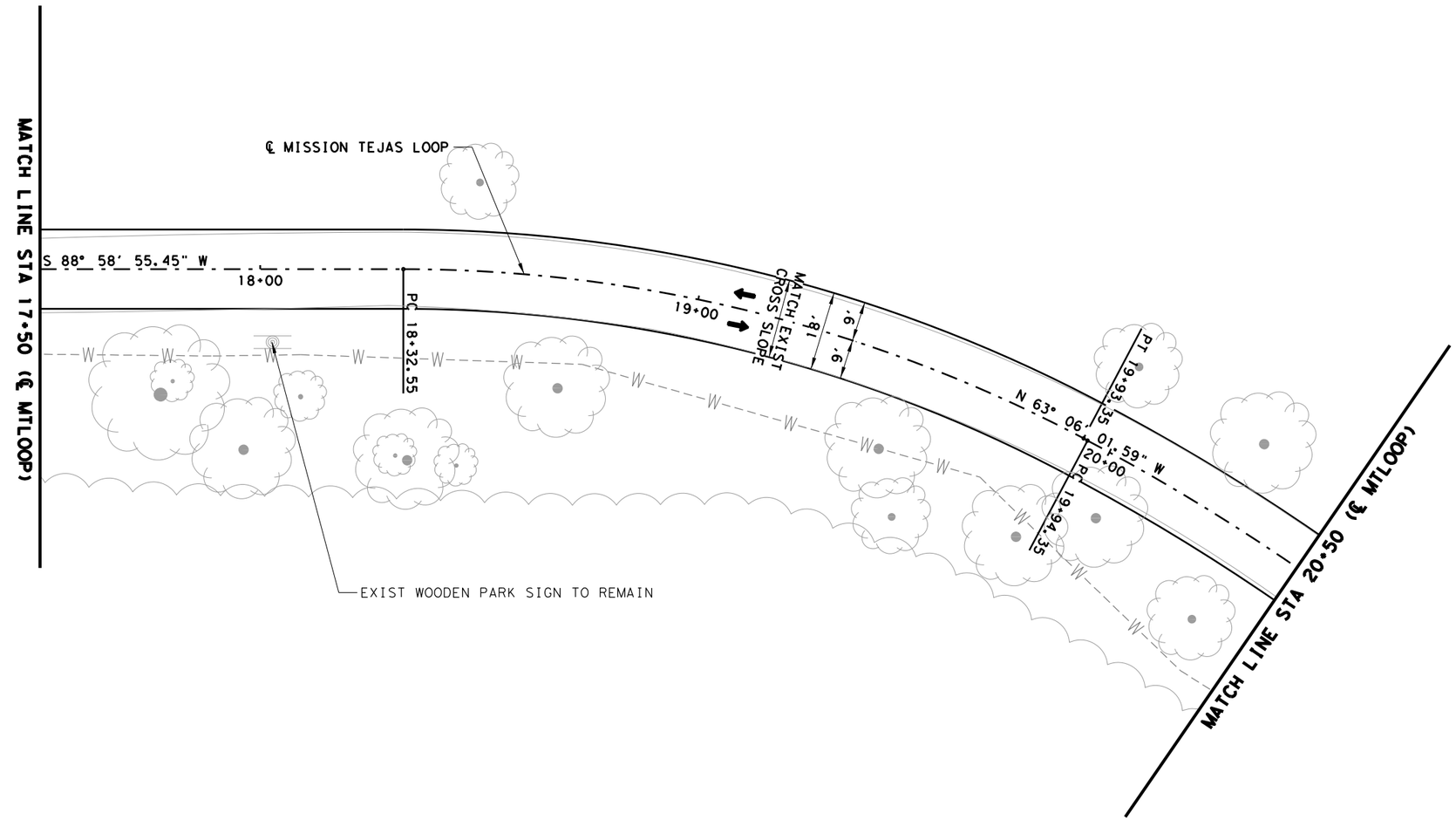
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			049
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- # — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- A — RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- B — RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)
- C — PREFAB PAV MRK TY B (W) (24") (SLD)
- D — PREFAB PAV MRK TY C (W) (WORD)
- E — PREFAB PAV MRK TY C (W) (SYMBOL)
- F — WHEEL STOP
- G — REFL PAV MRK TY II (Y) 12" (SLD)
- H — REMOVE PRECAST CONCRETE WHEEL STOPS
- X — PROPOSED GROUND ELEVATION
- S-# — SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- ·--W-----W-· WATERLINE
- — X —— X — REMOVE EXIST ROCK WALL

0 15 30
SCALE: 1"=30'

NOTES:

1. ALL UTILTIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY.
2. REMOVAL OF EXISTING CAMPSITE SUBSIDIARY TO ITEM 530.

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 3 OF 16

Texas Department of Transportation

BGE, Inc.
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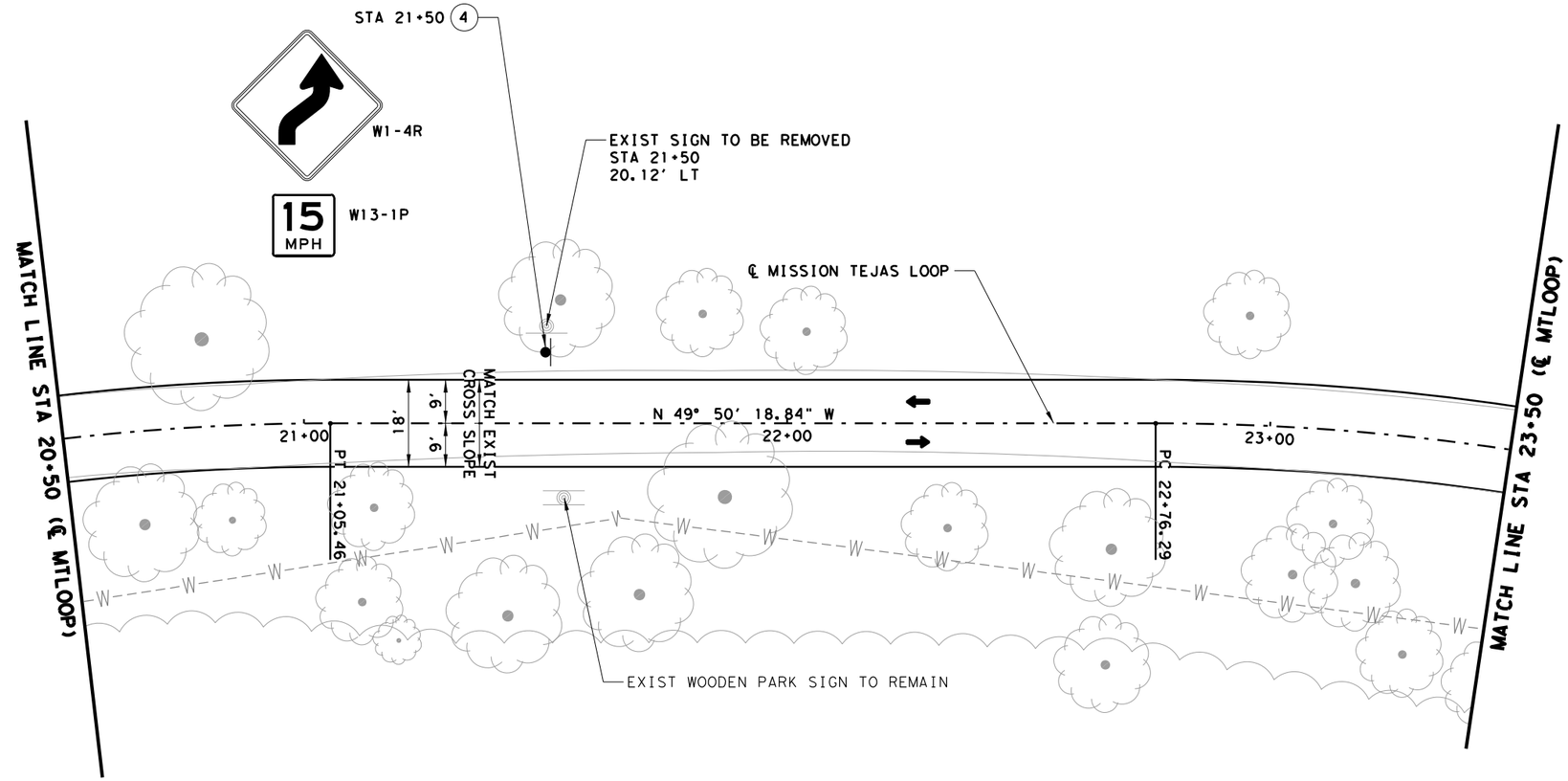
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			050
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- (#) — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- (A) RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)
- (B) RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)
- (C) PREFAB PAV MRK TY B (W)(24")(SLD)
- (D) PREFAB PAV MRK TY C (W) (WORD)
- (E) PREFAB PAV MRK TY C (W) (SYMBOL)
- (F) WHEEL STOP
- (G) REFL PAV MRK TY II (Y) 12" (SLD)
- (H) REMOVE PRECAST CONCRETE WHEEL STOPS
- (X) PROPOSED GROUND ELEVATION
- (S-#) SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- -W-----W- WATERLINE
- — X —— X — REMOVE EXIST ROCK WALL

0 15 30
SCALE: 1"=30'

NOTES:

1. ALL UTILTIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY.
2. REMOVAL OF EXISTING CAMPSITE SUBSIDIARY TO ITEM 530.

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 4 OF 16

Texas Department of Transportation

BGE, Inc.
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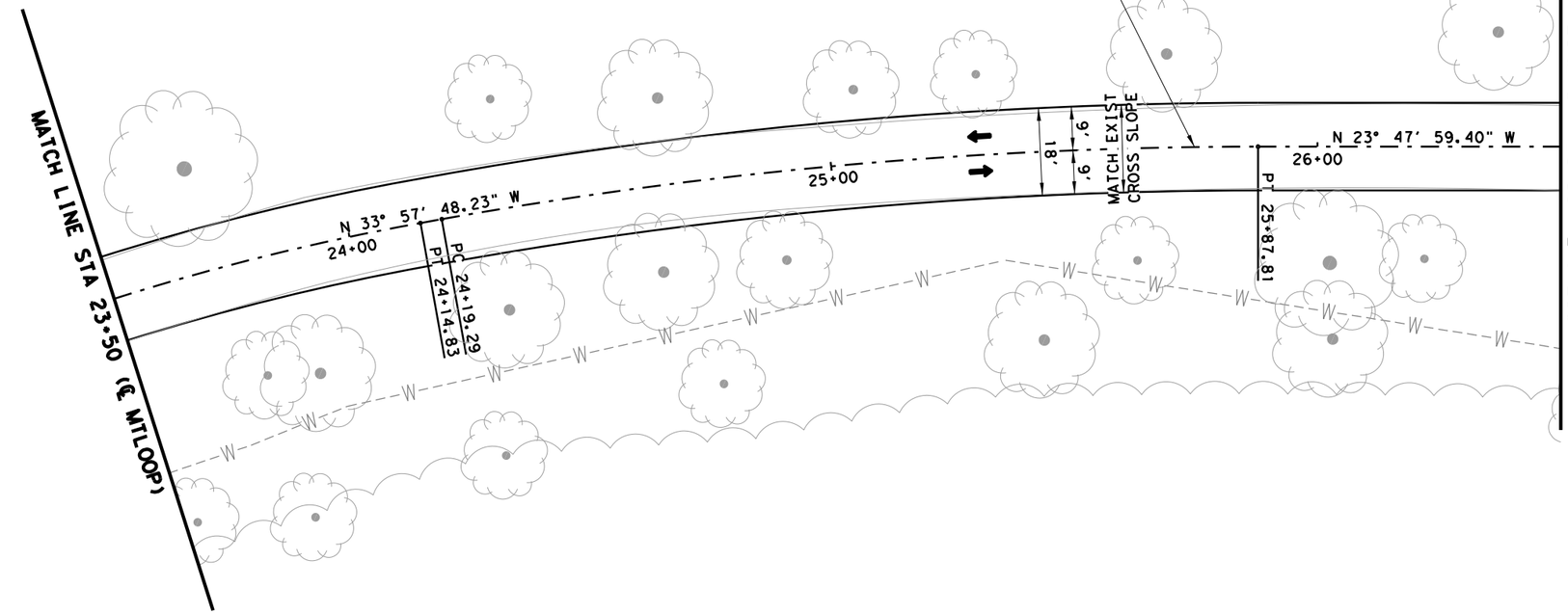
Tel: 281-558-8700 ▪ www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			051
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- (#) — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- (A) RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- (B) RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)
- (C) PREFAB PAV MRK TY B (W) (24") (SLD)
- (D) PREFAB PAV MRK TY C (W) (WORD)
- (E) PREFAB PAV MRK TY C (W) (SYMBOL)
- (F) WHEEL STOP
- (G) REFL PAV MRK TY II (Y) 12" (SLD)
- (H) REMOVE PRECAST CONCRETE WHEEL STOPS
- (X) PROPOSED GROUND ELEVATION
- (S-#) SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- ---W-----W--- WATERLINE
- — X —— X — REMOVE EXIST ROCK WALL

0 15 30
SCALE: 1"=30'

NOTES:

1. ALL UTILTIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY.
2. REMOVAL OF EXISTING CAMPSITE SUBSIDIARY TO ITEM 530.

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

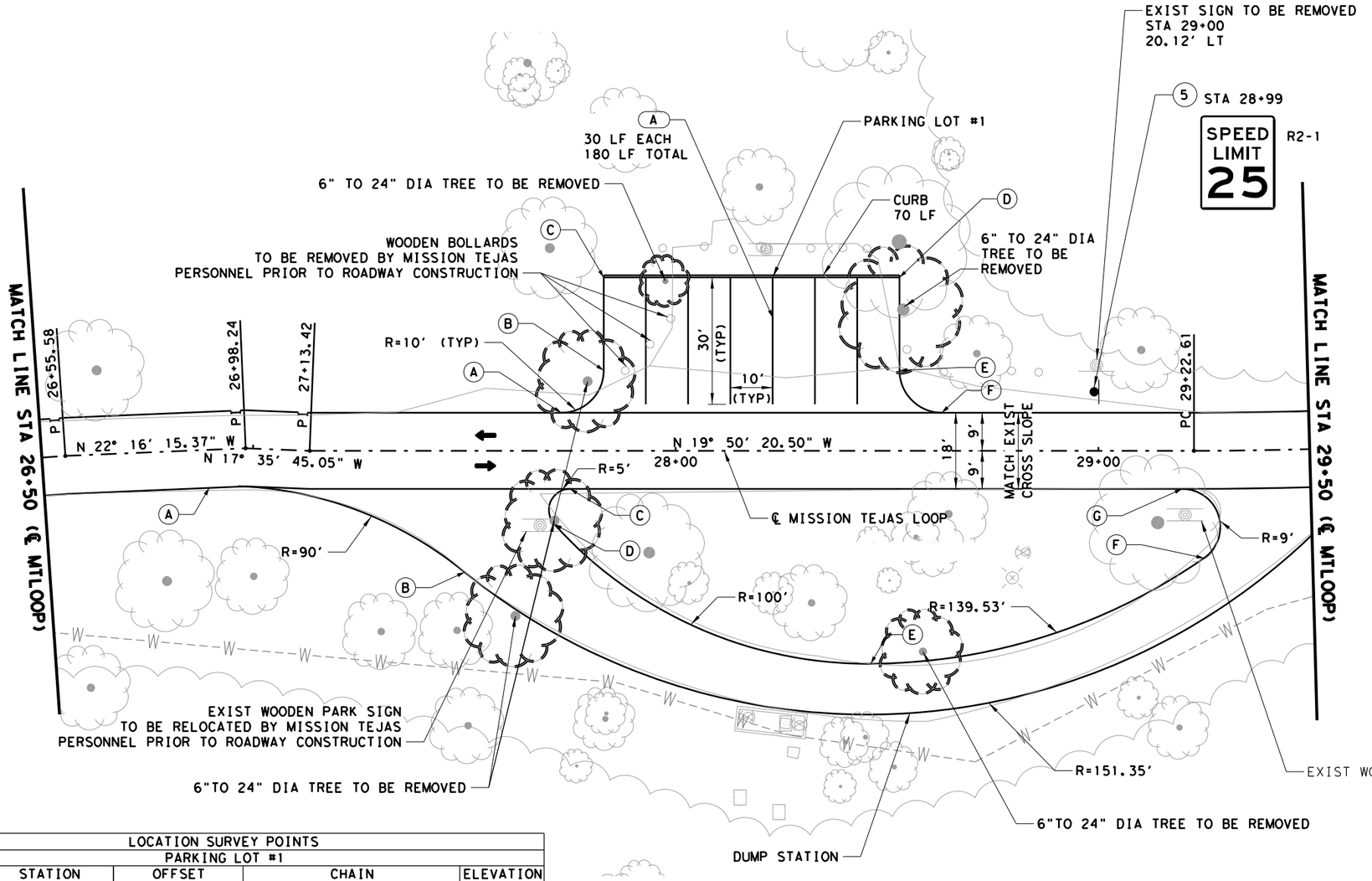
SHEET 5 OF 16

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		052

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- # — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- A — RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- B — RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)
- C — PREFAB PAV MRK TY B (W) (24") (SLD)
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- S-# — SWALE POINTS
- UG-ELEC — UNDERGROUND ELECTRIC
- W — WATERLINE
- REMOVE EXIST ROCK WALL

0 15 30
SCALE: 1"=30'

LOCATION SURVEY POINTS				
PARKING LOT #1				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	27+72.96	9.00' LT	MISSION TEJAS LOOP	321.21
B	27+82.96	19.00' LT	MISSION TEJAS LOOP	320.56
C	27+82.96	41.00' LT	MISSION TEJAS LOOP	319.66
D	28+52.96	41.00' LT	MISSION TEJAS LOOP	317.12
E	28+52.96	19.00' LT	MISSION TEJAS LOOP	317.37
F	28+62.96	9.00' LT	MISSION TEJAS LOOP	
DUMP STATION				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	26+89.28	9.00' RT	MISSION TEJAS LOOP	324.88
B	27+50.07	28.70' RT	MISSION TEJAS LOOP	321.28
C	27+75.00	9.00' RT	MISSION TEJAS LOOP	320.76
D	27+71.29	17.35' RT	MISSION TEJAS LOOP	320.55
E	28+46.14	50.37' RT	MISSION TEJAS LOOP	316.11
F	29+24.93	25.39' RT	MISSION TEJAS LOOP	314.68
G	29+19.85	9.00' RT	MISSION TEJAS LOOP	315.44

TREE REMOVAL LOG			
STATION	OFFSET	TREE DESC	CHAIN
27+62.11	39.05' RT	24 IN PINE	MISSION TEJAS LOOP
27+71.32	16.51' RT	24 IN PINE	MISSION TEJAS LOOP
27+79.18	16.43' LT	24 IN PINE	MISSION TEJAS LOOP
27+97.57	40.13' LT	*12 IN CEDAR	MISSION TEJAS LOOP
28+53.87	33.39' LT	24 IN PINE	MISSION TEJAS LOOP
28+58.50	47.50' RT	20 IN PINE	MISSION TEJAS LOOP

NOTE: CONTRACTOR TO COORDINATE TREE REMOVAL WITH MISSION TEJAS SUPERINTENDENT.
*USE SPECIAL CARE WHEN TRANSPORTING TREE TO "SURPLUS ROCK STORAGE AREA" SHOWN ON ROADWAY LAYOUT 10 OF 16.

NOTES:

1. ALL UTILTIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY.
2. REMOVAL OF EXISTING CAMPSITE SUBSIDIARY TO ITEM 530.
3. STATIONS, OFFSETS, AND ELEVATIONS ARE PROVIDED TO THE FACE OF CURB.

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 6 OF 16

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			053
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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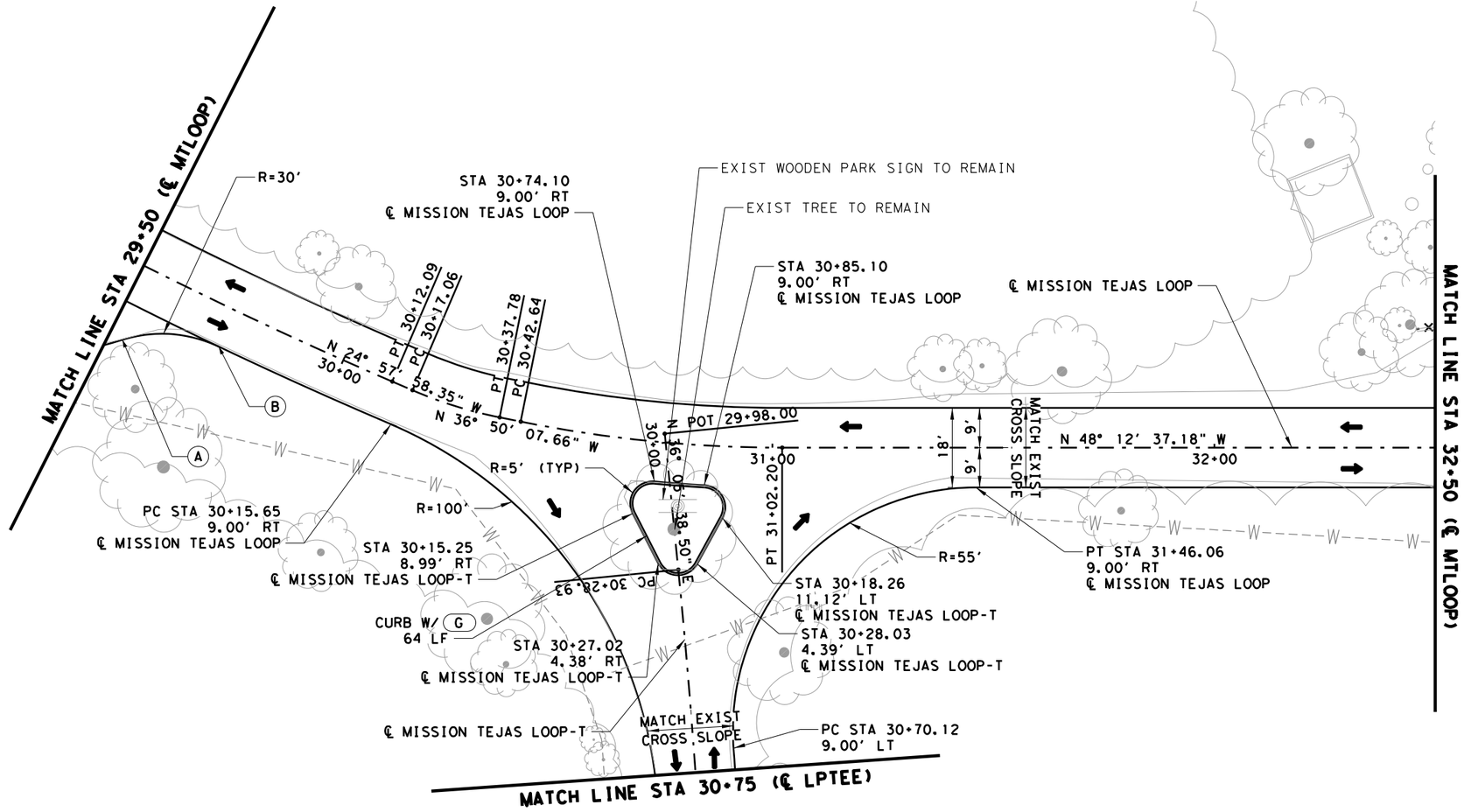

LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- # — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- A — RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- B — RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)
- C — PREFAB PAV MRK TY B (W) (24") (SLD)
- D — PREFAB PAV MRK TY C (W) (WORD)
- E — PREFAB PAV MRK TY C (W) (SYMBOL)
- F — WHEEL STOP
- G — REFL PAV MRK TY II (Y) 12" (SLD)
- H — REMOVE PRECAST CONCRETE WHEEL STOPS
- X — PROPOSED GROUND ELEVATION
- S-# — SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- —W—W— WATERLINE
- — X — X — REMOVE EXIST ROCK WALL

0 15 30
SCALE: 1"=30'

LOCATION SURVEY POINTS				
DUMP STATION				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	29+53.21	17.19' RT	MISSION TEJAS LOOP	313.86
B	29+73.24	9.00' RT	MISSION TEJAS LOOP	313.64

NOTES:

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STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 7 OF 16

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
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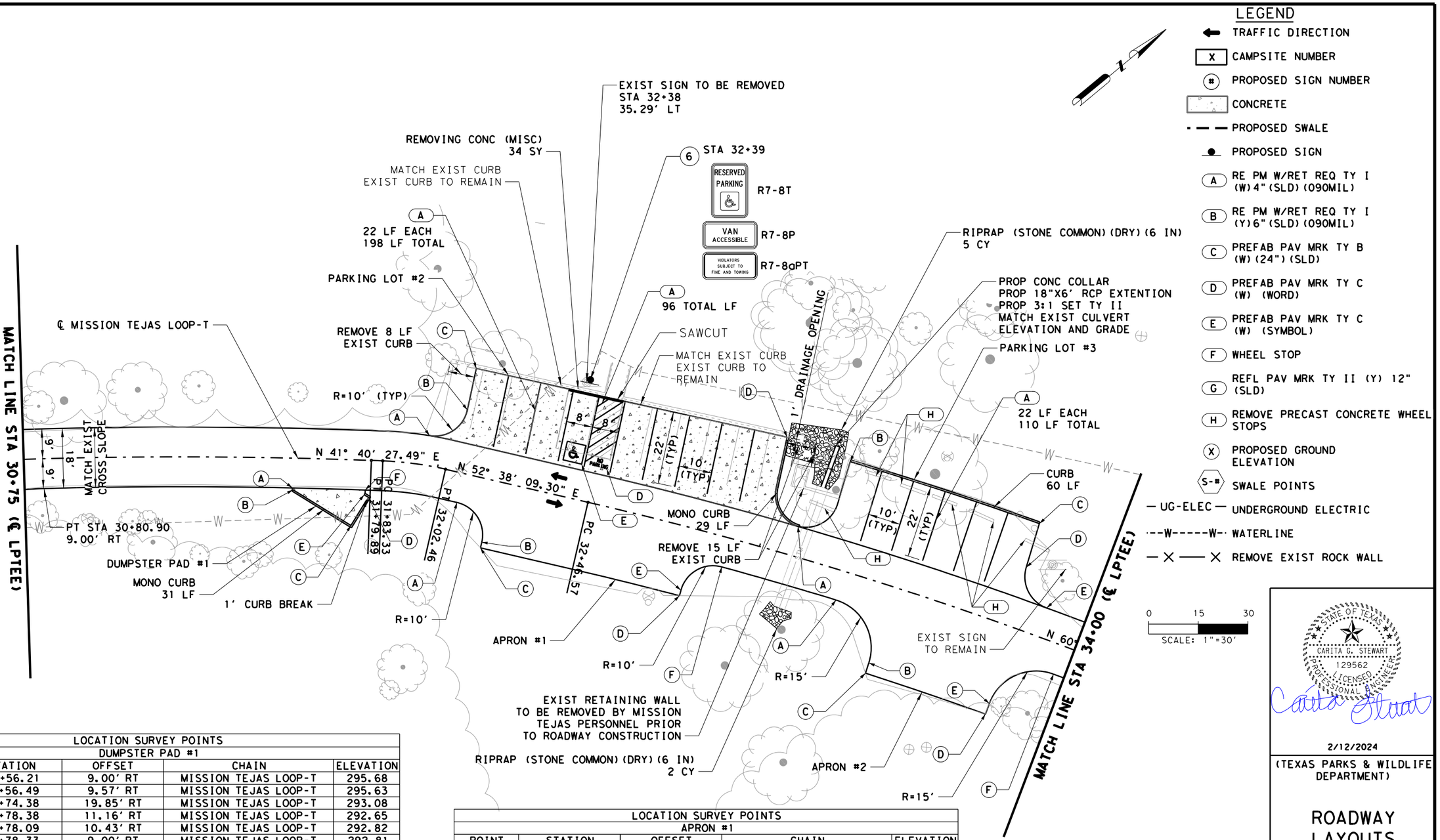
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			054
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- # — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- A — RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- B — RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)
- C — PREFAB PAV MRK TY B (W) (24") (SLD)
- D — PREFAB PAV MRK TY C (W) (WORD)
- E — PREFAB PAV MRK TY C (W) (SYMBOL)
- F — WHEEL STOP
- G — REFL PAV MRK TY II (Y) 12" (SLD)
- H — REMOVE PRECAST CONCRETE WHEEL STOPS
- X — PROPOSED GROUND ELEVATION
- S-# — SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- —W—W— WATERLINE
- — X — X — REMOVE EXIST ROCK WALL

0 15 30
SCALE: 1"=30'

LOCATION SURVEY POINTS				
DUMPSTER PAD #1				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	31+56.21	9.00' RT	MISSION TEJAS LOOP-T	295.68
B	31+56.49	9.57' RT	MISSION TEJAS LOOP-T	295.63
C	31+74.38	19.85' RT	MISSION TEJAS LOOP-T	293.08
D	31+78.38	11.16' RT	MISSION TEJAS LOOP-T	292.65
E	31+78.09	10.43' RT	MISSION TEJAS LOOP-T	292.82
F	31+78.33	9.00' RT	MISSION TEJAS LOOP-T	292.81
PARKING LOT #2				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	31+90.63	9.00' LT	MISSION TEJAS LOOP-T	291.44
B	31+99.04	18.41' LT	MISSION TEJAS LOOP-T	290.13
C	31+99.22	31.70' LT	MISSION TEJAS LOOP-T	288.95
D	33+02.54	34.22' LT	MISSION TEJAS LOOP-T	283.62
E	33+04.19	9.00' LT	MISSION TEJAS LOOP-T	285.65
PARKING LOT #3				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	33+18.87	9.00' LT	MISSION TEJAS LOOP-T	285.47
B	33+18.87	32.20' LT	MISSION TEJAS LOOP-T	284.89
C	33+77.24	32.20' LT	MISSION TEJAS LOOP-T	284.15
D	33+77.95	18.44' LT	MISSION TEJAS LOOP-T	284.10
E	33+87.79	9.00' LT	MISSION TEJAS LOOP-T	284.05

LOCATION SURVEY POINTS				
APRON #1				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	32+08.08	9.00' RT	MISSION TEJAS LOOP-T	289.74
B	32+18.08	19.00' RT	MISSION TEJAS LOOP-T	288.33
C	32+18.08	20.71' RT	MISSION TEJAS LOOP-T	288.18
D	32+80.45	20.71' RT	MISSION TEJAS LOOP-T	285.53
E	32+80.45	19.04' RT	MISSION TEJAS LOOP-T	285.55
F	32+90.62	9.00' RT	MISSION TEJAS LOOP-T	285.81
APRON #2				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	33+26.82	9.00' RT	MISSION TEJAS LOOP-T	285.37
B	33+42.14	24.10' RT	MISSION TEJAS LOOP-T	285.91
C	33+42.14	27.40' RT	MISSION TEJAS LOOP-T	285.98
D	33+81.32	27.40' RT	MISSION TEJAS LOOP-T	285.36
E	33+81.34	24.03' RT	MISSION TEJAS LOOP-T	285.16
F	33+96.66	9.00' RT	MISSION TEJAS LOOP-T	283.76

NOTES:

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STATE OF TEXAS
CARITA G. STEWART
129562
PROFESSIONAL ENGINEER
LICENSED
2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 8 OF 16

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 ▪ www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		055

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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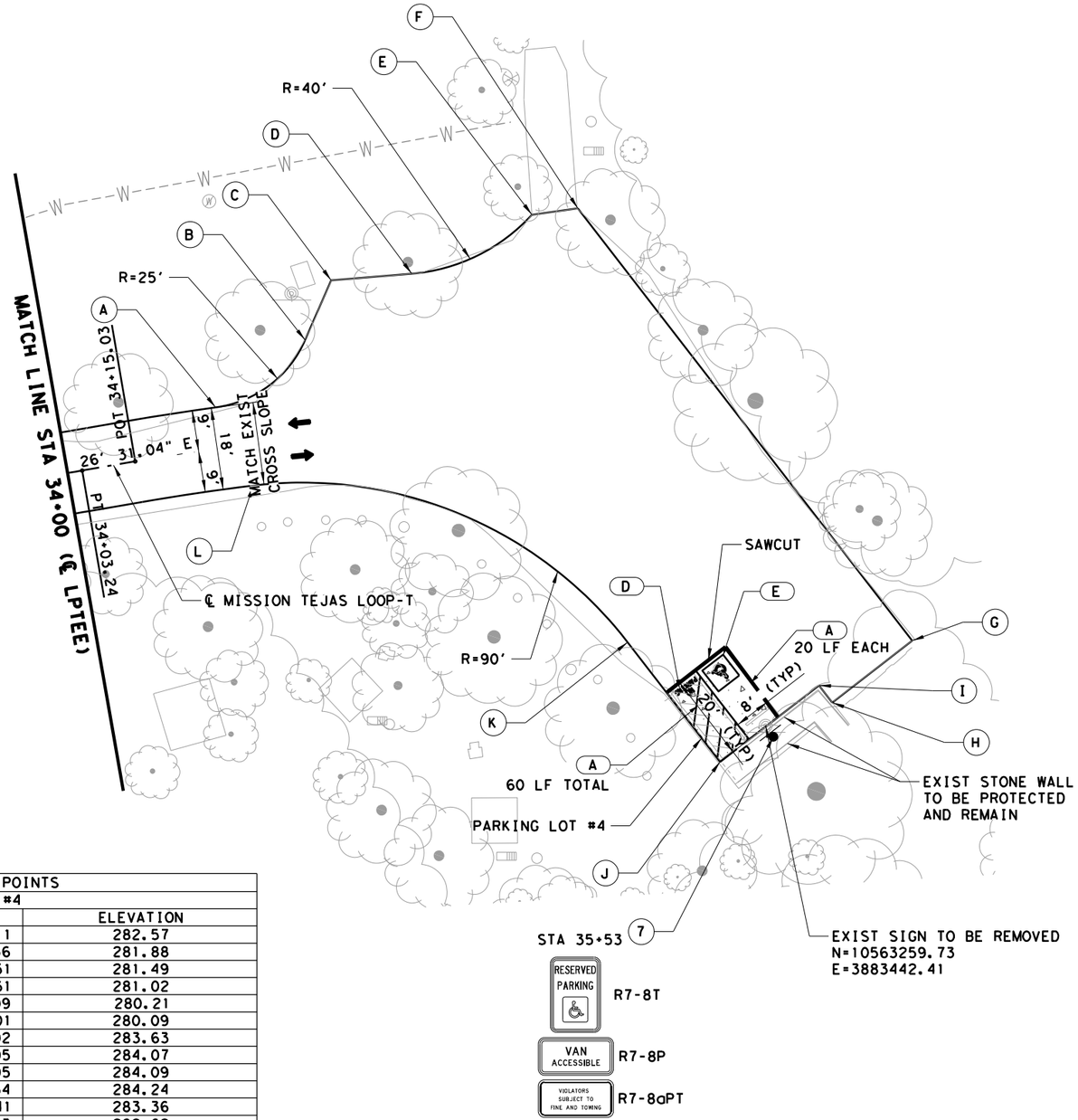

LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- (#) — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- (A) — RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- (B) — RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)
- (C) — PREFAB PAV MRK TY B (W) (24") (SLD)
- (D) — PREFAB PAV MRK TY C (W) (WORD)
- (E) — PREFAB PAV MRK TY C (W) (SYMBOL)
- (F) — WHEEL STOP
- (G) — REFL PAV MRK TY II (Y) 12" (SLD)
- (H) — REMOVE PRECAST CONCRETE WHEEL STOPS
- (X) — PROPOSED GROUND ELEVATION
- (S-#) — SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- ·--W-----W-· WATERLINE
- — X —— X — REMOVE EXIST ROCK WALL

0 15 30
SCALE: 1"=30'

LOCATION SURVEY POINTS			
PARKING LOT #4			
POINT	NORTHING	EASTING	ELEVATION
A	10,563,346.10	3,883,624.11	282.57
B	10,563,366.62	3,883,637.56	281.88
C	10,563,380.86	3,883,638.51	281.49
D	10,563,388.18	3,883,654.61	281.02
E	10,563,409.23	3,883,674.99	280.21
F	10,563,413.94	3,883,684.01	280.09
G	10,563,349.67	3,883,784.92	283.63
H	10,563,331.02	3,883,773.05	284.07
I	10,563,333.58	3,883,773.05	284.09
J	10,563,310.50	3,883,754.34	284.24
K	10,563,328.29	3,883,726.41	283.36
L	10,563,332.79	3,883,637.63	282.62

NOTES:

1. ALL UTILTIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY.
2. REMOVAL OF EXISTING CAMPSITE SUBSIDIARY TO ITEM 530.

STATE OF TEXAS
CARITA G. STEWART
129562
PROFESSIONAL LICENSED ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 9 OF 16

Texas Department of Transportation

BGE, Inc.
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TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		056

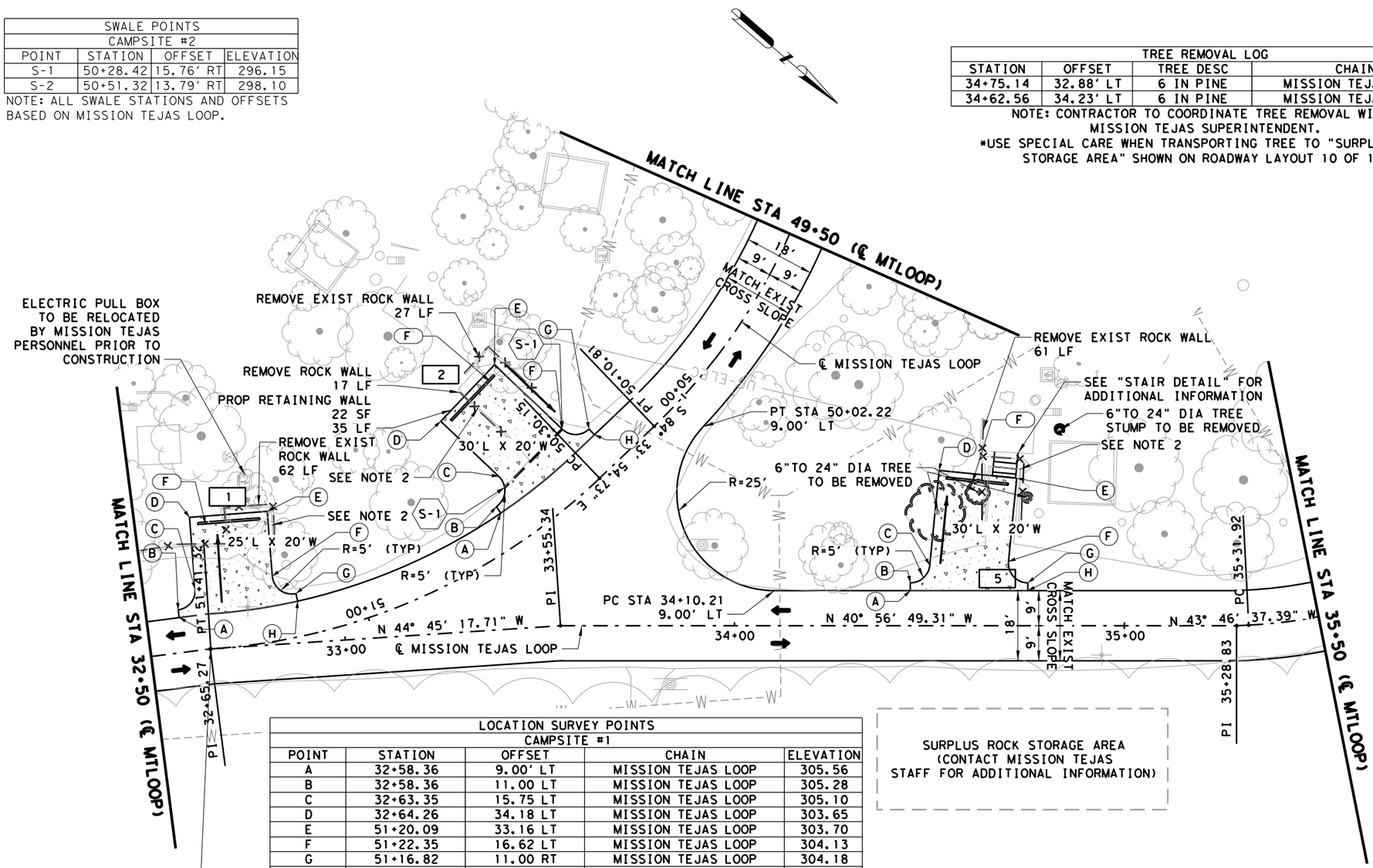
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

SWALE POINTS			
CAMPSITE #2			
POINT	STATION	OFFSET	ELEVATION
S-1	50+28.42	15.76' RT	296.15
S-2	50+51.32	13.79' RT	298.10

NOTE: ALL SWALE STATIONS AND OFFSETS BASED ON MISSION TEJAS LOOP.

TREE REMOVAL LOG			
STATION	OFFSET	TREE DESC	CHAIN
34+75.14	32.88' LT	6 IN PINE	MISSION TEJAS LOOP
34+62.56	34.23' LT	6 IN PINE	MISSION TEJAS LOOP

NOTE: CONTRACTOR TO COORDINATE TREE REMOVAL WITH MISSION TEJAS SUPERINTENDENT.
*USE SPECIAL CARE WHEN TRANSPORTING TREE TO "SURPLUS ROCK STORAGE AREA" SHOWN ON ROADWAY LAYOUT 10 OF 16.



LOCATION SURVEY POINTS				
CAMPSITE #1				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	32+58.36	9.00' LT	MISSION TEJAS LOOP	305.56
B	32+58.36	11.00 LT	MISSION TEJAS LOOP	305.28
C	32+63.35	15.75 LT	MISSION TEJAS LOOP	305.10
D	32+64.26	34.18 LT	MISSION TEJAS LOOP	303.65
E	51+20.09	33.16 LT	MISSION TEJAS LOOP	303.70
F	51+22.35	16.62 LT	MISSION TEJAS LOOP	304.13
G	51+16.82	11.00 RT	MISSION TEJAS LOOP	304.18
H	51+16.82	9.00 RT	MISSION TEJAS LOOP	304.21
CAMPSITE #2				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	50+56.27	9.00' LT	MISSION TEJAS LOOP	299.09
B	50+56.27	11.00' RT	MISSION TEJAS LOOP	299.09
C	50+50.80	16.97' RT	MISSION TEJAS LOOP	299.01
D	50+55.52	37.15' RT	MISSION TEJAS LOOP	299.04
E	50+29.57	39.66 RT	MISSION TEJAS LOOP	297.52
F	50+28.42	15.76 RT	MISSION TEJAS LOOP	296.15
G	50+23.42	11.00 RT	MISSION TEJAS LOOP	295.66
H	50+23.42	9.00' RT	MISSION TEJAS LOOP	295.68
CAMPSITE #5				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	34+45.12	11.00' LT	MISSION TEJAS LOOP	289.50
B	34+52.52	39.84 LT	MISSION TEJAS LOOP	286.67
C	34+72.42	37.86 LT	MISSION TEJAS LOOP	286.57
D	34+75.27	11.00 LT	MISSION TEJAS LOOP	287.23
E	34+75.27	9.00 LT	MISSION TEJAS LOOP	287.27
F	34+70.29	16.50 LT	MISSION TEJAS LOOP	286.82
G	34+75.27	11.00 LT	MISSION TEJAS LOOP	287.23
H	34+75.27	9.00 LT	MISSION TEJAS LOOP	287.27

END WORK
CSJ 0911-28-063
STA 51+41.32
X=3883166.97
Y=10563180.98

SURPLUS ROCK STORAGE AREA
(CONTACT MISSION TEJAS STAFF FOR ADDITIONAL INFORMATION)

LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- (#) — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- (A) RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- (B) RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)
- (C) PREFAB PAV MRK TY B (W) (24") (SLD)
- (D) PREFAB PAV MRK TY C (W) (WORD)
- (E) PREFAB PAV MRK TY C (W) (SYMBOL)
- (F) WHEEL STOP
- (G) REFL PAV MRK TY II (Y) 12" (SLD)
- (H) REMOVE PRECAST CONCRETE WHEEL STOPS
- (X) PROPOSED GROUND ELEVATION
- (S-#) SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- ---W-----W--- WATERLINE
- — X —— X — REMOVE EXIST ROCK WALL

0 15 30
SCALE: 1"=30'

NOTES:

1. ALL UTILITIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY.
2. REMOVAL OF EXISTING CAMPSITE SUBSIDIARY TO ITEM 530.

STATE OF TEXAS
CARITA G. STEWART
129562
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2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 10 OF 16

Texas Department of Transportation

BGE, Inc.
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TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			057
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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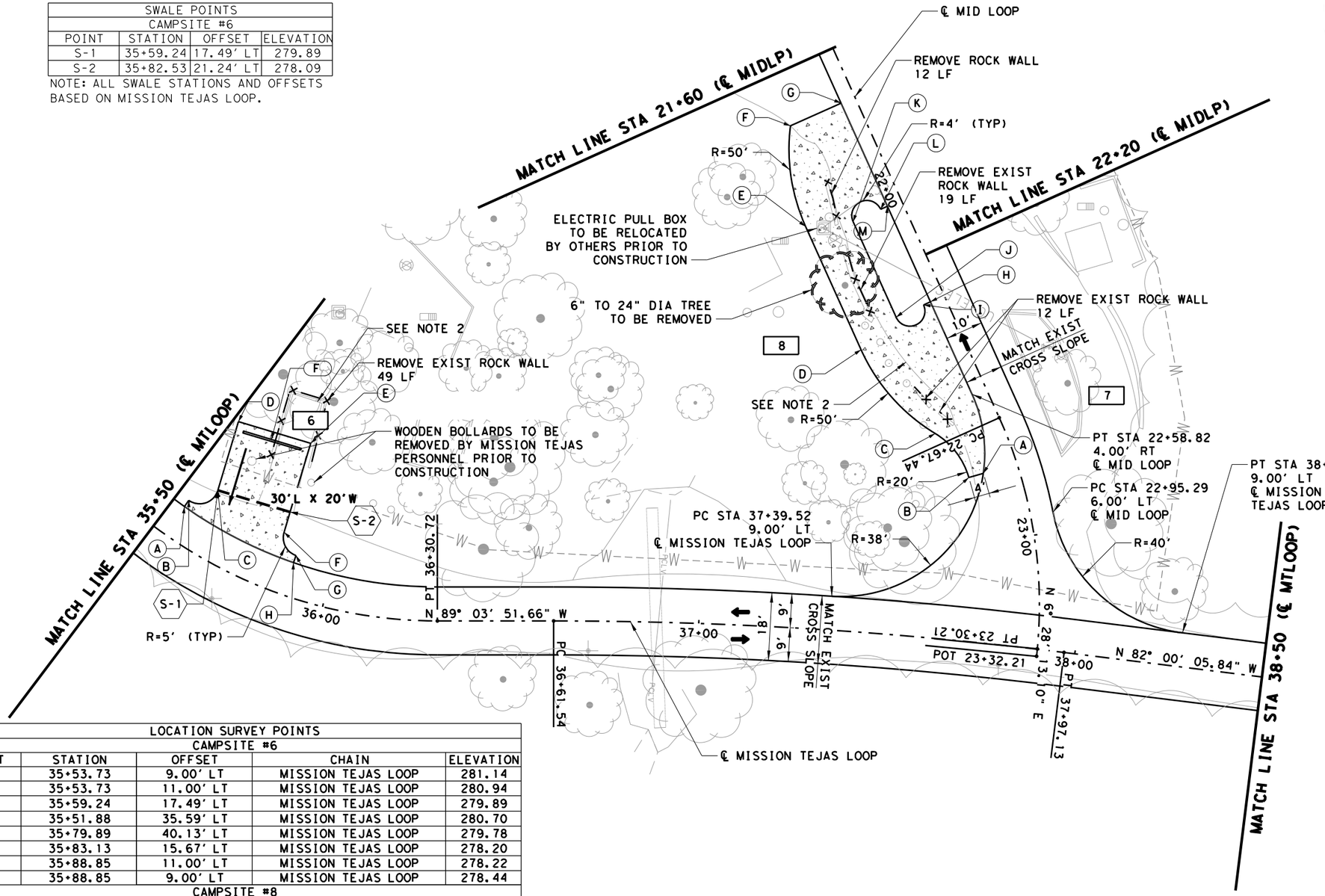
SWALE POINTS			
CAMPSITE #6			
POINT	STATION	OFFSET	ELEVATION
S-1	35+59.24	17.49' LT	279.89
S-2	35+82.53	21.24' LT	278.09

NOTE: ALL SWALE STATIONS AND OFFSETS BASED ON MISSION TEJAS LOOP.



LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- (*) — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- (A) RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- (B) RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)
- (C) PREFAB PAV MRK TY B (W) (24") (SLD)
- (D) PREFAB PAV MRK TY C (W) (WORD)
- (E) PREFAB PAV MRK TY C (W) (SYMBOL)
- (F) WHEEL STOP
- (G) REFL PAV MRK TY II (Y) 12" (SLD)
- (H) REMOVE PRECAST CONCRETE WHEEL STOPS
- (X) PROPOSED GROUND ELEVATION
- (S-*) SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- ---W-----W--- WATERLINE
- — X —— X — REMOVE EXIST ROCK WALL

0 15 30
SCALE: 1"=30'

LOCATION SURVEY POINTS				
CAMPSITE #6				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	35+53.73	9.00' LT	MISSION TEJAS LOOP	281.14
B	35+53.73	11.00' LT	MISSION TEJAS LOOP	280.94
C	35+59.24	17.49' LT	MISSION TEJAS LOOP	279.89
D	35+51.88	35.59' LT	MISSION TEJAS LOOP	280.70
E	35+79.89	40.13' LT	MISSION TEJAS LOOP	279.78
F	35+83.13	15.67' LT	MISSION TEJAS LOOP	278.20
G	35+88.85	11.00' LT	MISSION TEJAS LOOP	278.22
H	35+88.85	9.00' LT	MISSION TEJAS LOOP	278.44
CAMPSITE #8				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	22+80.14	9.28' RT	MID LOOP	272.13
B	22+79.96	13.27' RT	MID LOOP	272.01
C	22+67.10	15.12' RT	MID LOOP	272.75
D	22+35.96	26.00' RT	MID LOOP	273.80
E	22+00.18	26.00' RT	MID LOOP	274.90
F	21+74.22	18.74' RT	MID LOOP	275.58
G	21+74.22	4.00' RT	MID LOOP	276.85
H	22+31.96	4.00' RT	MID LOOP	274.63
I	22+31.96	6.00' RT	MID LOOP	274.62
J	22+31.96	14.00' RT	MID LOOP	274.00
K	22+04.18	14.00' RT	MID LOOP	275.20
L	22+04.18	6.00' RT	MID LOOP	275.44
M	22+04.18	4.00' RT	MID LOOP	275.70

TREE REMOVAL LOG			
STATION	OFFSET	TREE DESC	CHAIN
22+18.69	22.86' RT	*18 IN OAK	MID LOOP

NOTE: CONTRACTOR TO COORDINATE TREE REMOVAL WITH MISSION TEJAS SUPERINTENDENT.
*USE SPECIAL CARE WHEN TRANSPORTING TREE TO "SURPLUS ROCK STORAGE AREA" SHOWN ON ROADWAY LAYOUT 10 OF 16.

NOTES:

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2. REMOVAL OF EXISTING CAMPSITE SUBSIDIARY TO ITEM 530.

STATE OF TEXAS
CARITA G. STEWART
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2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 11 OF 16

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 ▪ www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		058

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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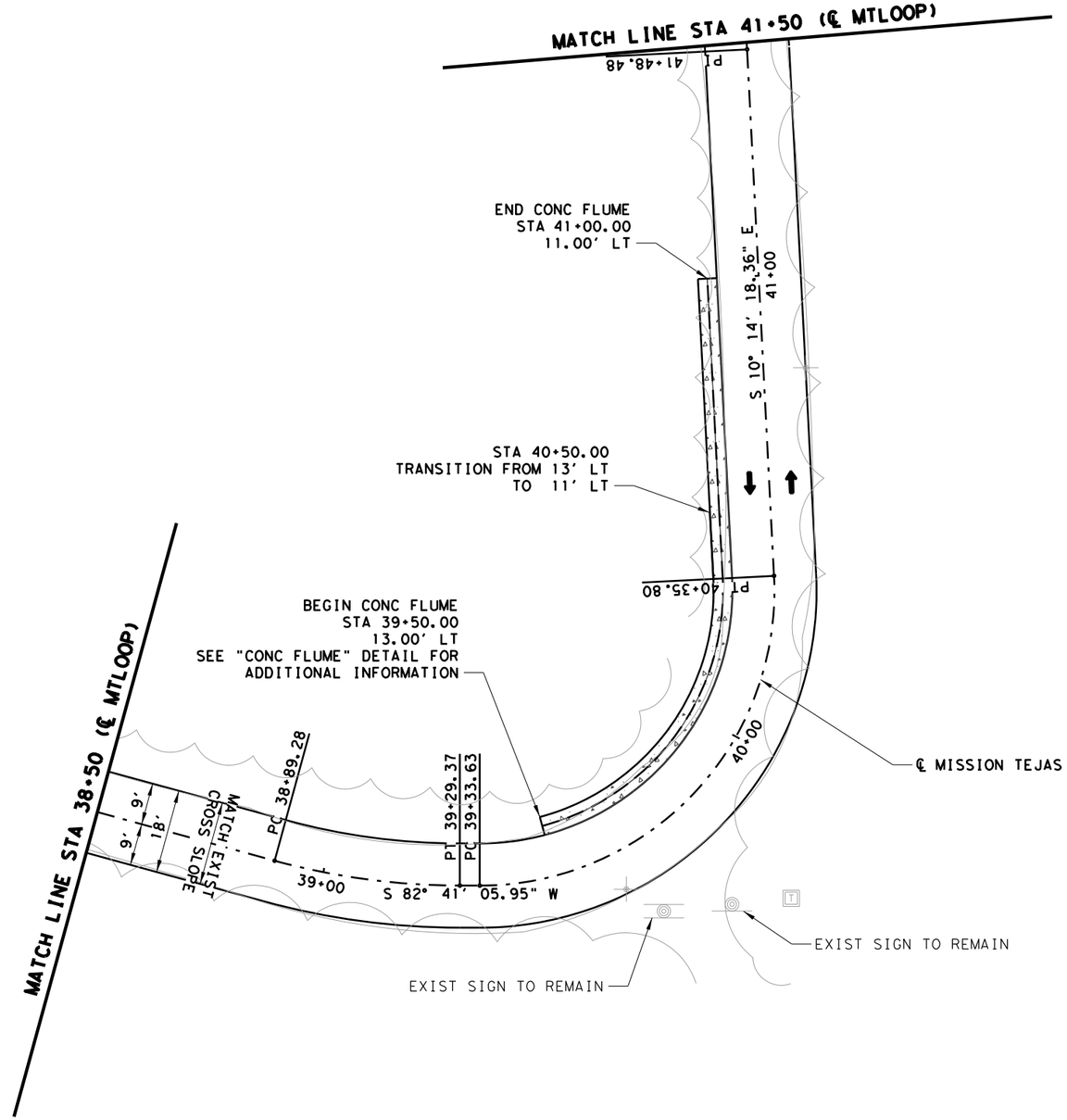


LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- # — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- A — RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- B — RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)
- C — PREFAB PAV MRK TY B (W) (24") (SLD)
- D — PREFAB PAV MRK TY C (W) (WORD)
- E — PREFAB PAV MRK TY C (W) (SYMBOL)
- F — WHEEL STOP
- G — REFL PAV MRK TY II (Y) 12" (SLD)
- H — REMOVE PRECAST CONCRETE WHEEL STOPS
- X — PROPOSED GROUND ELEVATION
- S-# — SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- ---W-----W--- WATERLINE
- — X —— X — REMOVE EXIST ROCK WALL

0 15 30
SCALE: 1"=30'

NOTES:

1. ALL UTILTIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY.
2. REMOVAL OF EXISTING CAMPSITE SUBSIDIARY TO ITEM 530.

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 12 OF 16

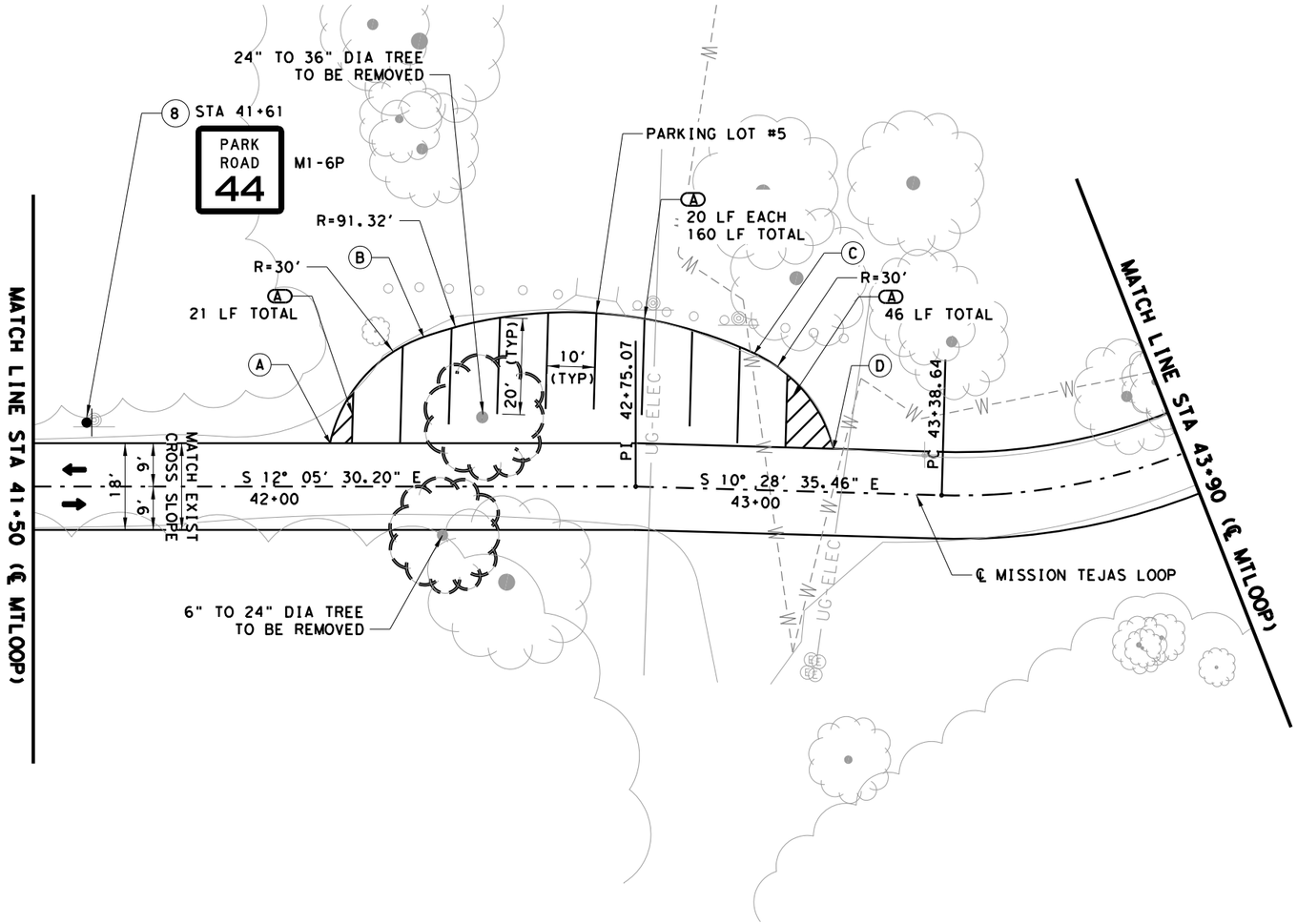
Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			059
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

TREE REMOVAL LOG			
STATION	OFFSET	TREE DESC	CHAIN
42+34.97	10.11' RT	24 IN PINE	MID LOOP
42+43+21	14.40' LT	26 IN PINE	MID LOOP

NOTE: CONTRACTOR TO COORDINATE TREE REMOVAL WITH MISSION TEJAS SUPERINTENDENT.
*USE SPECIAL CARE WHEN TRANSPORTING TREE TO "SURPLUS ROCK STORAGE AREA" SHOWN ON ROADWAY LAYOUT 10 OF 16.



LOCATION SURVEY POINTS PARKING LOT #5				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	42+11.61	9.00' LT	MISSION TEJAS LOOP	297.95
B	42+31.05	31.08' LT	MISSION TEJAS LOOP	300.85
C	42+98.96	28.34' LT	MISSION TEJAS LOOP	302.62
D	43+15.92	9.00' LT	MISSION TEJAS LOOP	302.01

LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- # — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- A — RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- B — RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)
- C — PREFAB PAV MRK TY B (W) (24") (SLD)
- D — PREFAB PAV MRK TY C (W) (WORD)
- E — PREFAB PAV MRK TY C (W) (SYMBOL)
- F — WHEEL STOP
- G — REFL PAV MRK TY II (Y) 12" (SLD)
- H — REMOVE PRECAST CONCRETE WHEEL STOPS
- X — PROPOSED GROUND ELEVATION
- S-# — SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- ---W-----W--- WATERLINE
- — X — X — REMOVE EXIST ROCK WALL

0 15 30
SCALE: 1"=30'

NOTES:

1. ALL UTILITIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY.
2. REMOVAL OF EXISTING CAMPSITE SUBSIDIARY TO ITEM 530.

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 13 OF 16

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 ▪ www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			060
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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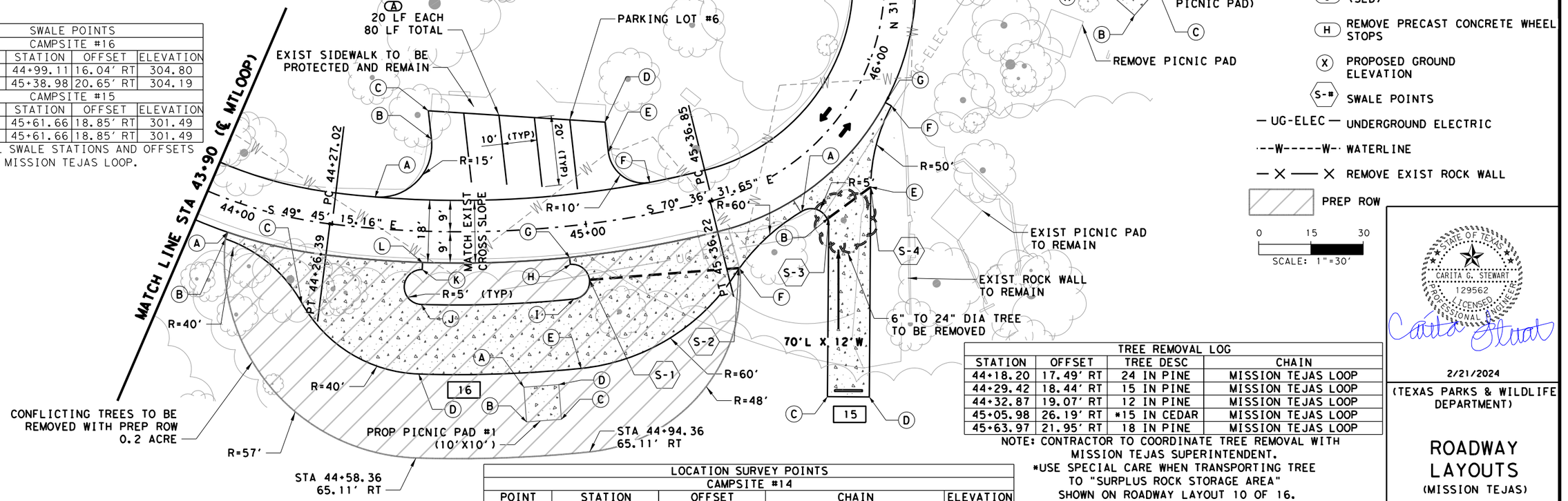
LOCATION SURVEY POINTS				
PARKING LOT #6				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	44+38.72	9.00' LT	MISSION TEJAS LOOP	304.28
B	44+54.87	26.50' LT	MISSION TEJAS LOOP	304.73
C	44+53.67	34.06' LT	MISSION TEJAS LOOP	305.43
D	45+09.92	27.70' LT	MISSION TEJAS LOOP	305.37
E	45+09.54	19.60' LT	MISSION TEJAS LOOP	304.81
F	45+20.21	9.00' LT	MISSION TEJAS LOOP	304.48
CAMPSITE #16				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	43+99.31	9.00' RT	MISSION TEJAS LOOP	303.55
B	43+99.31	11.00' RT	MISSION TEJAS LOOP	303.36
C	44+21.93	23.52' RT	MISSION TEJAS LOOP	303.50
D	44+53.36	41.00' RT	MISSION TEJAS LOOP	304.00
E	44+94.36	41.00' RT	MISSION TEJAS LOOP	305.40
F	45+38.98	20.65' RT	MISSION TEJAS LOOP	304.19
G	44+94.36	9.00' RT	MISSION TEJAS LOOP	305.10
H	44+94.36	11.00' RT	MISSION TEJAS LOOP	305.02
I	44+94.36	21.00' RT	MISSION TEJAS LOOP	305.50
J	44+53.36	21.00' RT	MISSION TEJAS LOOP	304.25
K	44+53.36	11.00' RT	MISSION TEJAS LOOP	304.50
L	44+53.36	9.00' RT	MISSION TEJAS LOOP	304.53
PICNIC PAD #1				
POINT	STATION	OFFSET	CHAIN	
A	44+79.71	45.11' RT	MISSION TEJAS LOOP	
B	44+79.89	55.11' RT	MISSION TEJAS LOOP	
C	44+88.34	55.04' RT	MISSION TEJAS LOOP	
D	44+88.40	45.04' RT	MISSION TEJAS LOOP	

SWALE POINTS			
CAMPSITE #16			
POINT	STATION	OFFSET	ELEVATION
S-1	44+99.11	16.04' RT	304.80
S-2	45+38.98	20.65' RT	304.19
CAMPSITE #15			
POINT	STATION	OFFSET	ELEVATION
S-3	45+61.66	18.85' RT	301.49
S-4	45+61.66	18.85' RT	301.49

NOTE: ALL SWALE STATIONS AND OFFSETS BASED ON MISSION TEJAS LOOP.



LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- (*) — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- (A) RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)
- (B) RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)
- (C) PREFAB PAV MRK TY B (W)(24")(SLD)
- (D) PREFAB PAV MRK TY C (W) (WORD)
- (E) PREFAB PAV MRK TY C (W) (SYMBOL)
- (F) WHEEL STOP
- (G) REFL PAV MRK TY II (Y) 12" (SLD)
- (H) REMOVE PRECAST CONCRETE WHEEL STOPS
- (X) PROPOSED GROUND ELEVATION
- (S-*) SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- ---W-----W--- WATERLINE
- — X — X — REMOVE EXIST ROCK WALL
- PREP ROW

0 15 30
SCALE: 1"=30'

TREE REMOVAL LOG			
STATION	OFFSET	TREE DESC	CHAIN
44+18.20	17.49' RT	24 IN PINE	MISSION TEJAS LOOP
44+29.42	18.44' RT	15 IN PINE	MISSION TEJAS LOOP
44+32.87	19.07' RT	12 IN PINE	MISSION TEJAS LOOP
45+05.98	26.19' RT	*15 IN CEDAR	MISSION TEJAS LOOP
45+63.97	21.95' RT	18 IN PINE	MISSION TEJAS LOOP

NOTE: CONTRACTOR TO COORDINATE TREE REMOVAL WITH MISSION TEJAS SUPERINTENDENT.
*USE SPECIAL CARE WHEN TRANSPORTING TREE TO "SURPLUS ROCK STORAGE AREA" SHOWN ON ROADWAY LAYOUT 10 OF 16.

LOCATION SURVEY POINTS				
CAMPSITE #15				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	45+57.40	13.00' RT	MISSION TEJAS LOOP	302.00
B	46+61.66	18.85' RT	MISSION TEJAS LOOP	301.49
C	45+46.26	63.86' RT	MISSION TEJAS LOOP	302.52
D	45+51.64	68.93' RT	MISSION TEJAS LOOP	302.52
E	45+73.16	20.03' RT	MISSION TEJAS LOOP	301.31
F	45+91.22	11.00' RT	MISSION TEJAS LOOP	298.18
G	45+91.22	9.00' RT	MISSION TEJAS LOOP	298.26

LOCATION SURVEY POINTS				
CAMPSITE #14				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	46+49.54	9.00' RT	MISSION TEJAS LOOP	291.47
B	46+49.54	11.00' RT	MISSION TEJAS LOOP	290.97
C	46+53.13	19.19' RT	MISSION TEJAS LOOP	289.28
D	46+28.70	55.77' RT	MISSION TEJAS LOOP	287.18
E	46+36.90	62.72' RT	MISSION TEJAS LOOP	286.94
F	46+63.05	25.06' RT	MISSION TEJAS LOOP	288.30
G	46+92.69	11.00' RT	MISSION TEJAS LOOP	287.22
H	46+92.69	9.00' RT	MISSION TEJAS LOOP	287.24
PICNIC PAD #2				
POINT	STATION	OFFSET	CHAIN	
A	46+21.53	64.19' RT	MISSION TEJAS LOOP	
B	46+18.58	72.04' RT	MISSION TEJAS LOOP	
C	46+22.13	78.27' RT	MISSION TEJAS LOOP	
D	46+25.22	70.78' RT	MISSION TEJAS LOOP	

NOTES:

1. ALL UTILTIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY.
2. REMOVAL OF EXISTING CAMPSITE SUBSIDIARY TO ITEM 530.
3. STATIONS, OFFSETS, AND ELEVATIONS ARE PROVIDED TO THE FACE OF CURB.

CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER
2/21/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 14 OF 16

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		061

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063,ETC	VARIOUS

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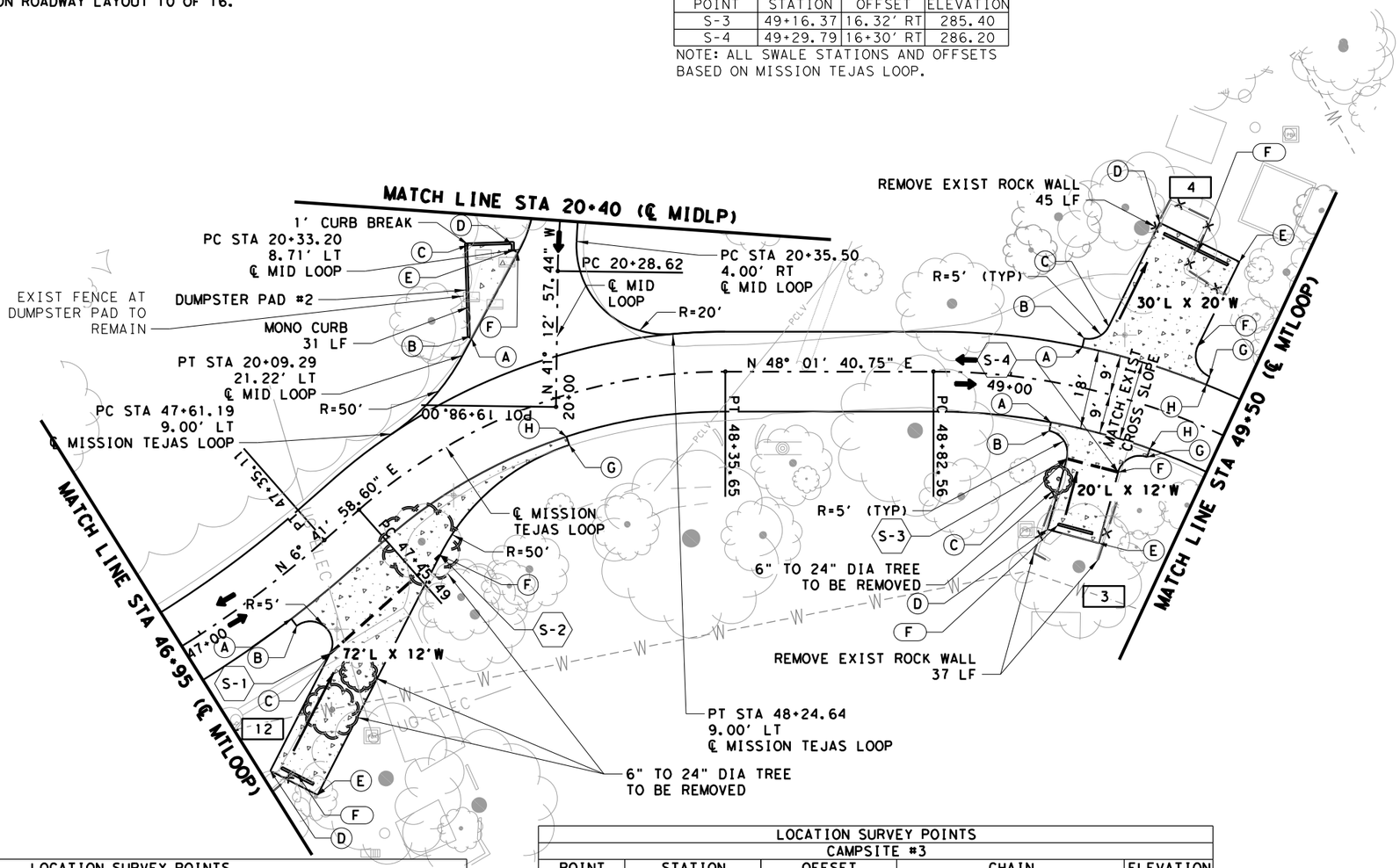
TREE REMOVAL			
STATION	OFFSET	TREE DESC	CHAIN
47+13.85	30.89' RT	12 IN PINE	MISSION TEJAS LOOP
47+22.71	27.84' RT	*8 IN OAK	MISSION TEJAS LOOP
47+52.13	14.59' RT	*18 IN OAK	MISSION TEJAS LOOP

NOTE: CONTRACTOR TO COORDINATE TREE REMOVAL WITH MISSION TEJAS SUPERINTENDENT.
*USE SPECIAL CARE WHEN TRANSPORTING TREE TO "SURPLUS ROCK STORAGE AREA" SHOWN ON ROADWAY LAYOUT 10 OF 16.

SWALE POINTS			
CAMPSITE #12			
POINT	STATION	OFFSET	ELEVATION
S-1	47+20.40	20.52' RT	283.80
S-2	47+53.71	19.54' RT	281.43
CAMPSITE #3			
POINT	STATION	OFFSET	ELEVATION
S-3	49+16.37	16.32' RT	285.40
S-4	49+29.79	16+30' RT	286.20

NOTE: ALL SWALE STATIONS AND OFFSETS BASED ON MISSION TEJAS LOOP.



LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- (*) — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- (A) — RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- (B) — RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)
- (C) — PREFAB PAV MRK TY B (W) (24") (SLD)
- (D) — PREFAB PAV MRK TY C (W) (WORD)
- (E) — PREFAB PAV MRK TY C (W) (SYMBOL)
- (F) — WHEEL STOP
- (G) — REFL PAV MRK TY II (Y) 12" (SLD)
- (H) — REMOVE PRECAST CONCRETE WHEEL STOPS
- (X) — PROPOSED GROUND ELEVATION
- (S-*) — SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- ---W-----W--- WATERLINE
- — X —— X — REMOVE EXIST ROCK WALL

SCALE: 1"=30'

LOCATION SURVEY POINTS				
CAMPSITE #12				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	47+18.41	9.00' RT	MISSION TEJAS LOOP	284.94
B	47+18.41	11.00' RT	MISSION TEJAS LOOP	283.94
C	47+20.40	20.52' RT	MISSION TEJAS LOOP	283.80
D	46+96.81	34.38' RT	MISSION TEJAS LOOP	284.50
E	47+01.97	44.78' RT	MISSION TEJAS LOOP	284.60
F	47+53.71	19.54' RT	MISSION TEJAS LOOP	281.43
G	47+96.43	11.00' RT	MISSION TEJAS LOOP	280.01
H	47+96.43	9.00' RT	MISSION TEJAS LOOP	280.50
DUMPSTER PAD #2				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	20+13.13	19.61' LT	MID LOOP	280.63
B	20+13.61	20.57' LT	MID LOOP	280.61
C	20+33.60	10.59' LT	MID LOOP	280.05
D	20+34.25	10.49' LT	MID LOOP	280.21
E	20+32.85	10.49' LT	MID LOOP	280.23
F	20+32.46	9.10' LT	MID LOOP	280.26

LOCATION SURVEY POINTS				
CAMPSITE #3				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	49+10.80	9.00' RT	MISSION TEJAS LOOP	284.73
B	49+10.80	11.00' RT	MISSION TEJAS LOOP	284.73
C	49+16.37	16.32' RT	MISSION TEJAS LOOP	285.40
D	49+15.42	32.84' RT	MISSION TEJAS LOOP	286.50
E	49+30.66	32.87' RT	MISSION TEJAS LOOP	287.10
F	49+29.79	16.30' RT	MISSION TEJAS LOOP	286.20
G	49+35.36	11.00' RT	MISSION TEJAS LOOP	286.90
H	49+35.36	9.00' RT	MISSION TEJAS LOOP	286.90
CAMPSITE #4				
POINT	STATION	OFFSET	CHAIN	ELEVATION
A	49+14.52	9.00' LT	MISSION TEJAS LOOP	285.04
B	49+14.52	11.00' LT	MISSION TEJAS LOOP	285.04
C	49+18.94	14.83' LT	MISSION TEJAS LOOP	285.34
D	49+23.48	40.31' LT	MISSION TEJAS LOOP	284.60
E	49+39.31	37.49' LT	MISSION TEJAS LOOP	284.80
F	49+37.59	16.43' LT	MISSION TEJAS LOOP	286.66
G	49+42.10	11.00' LT	MISSION TEJAS LOOP	287.28
H	49+42.10	9.00' LT	MISSION TEJAS LOOP	287.51

NOTES:

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3. STATIONS, OFFSETS, AND ELEVATIONS ARE PROVIDED TO THE FACE OF CURB.

STATE OF TEXAS
CARITA G. STEWART
129562
PROFESSIONAL LICENSED ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 15 OF 16

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			062
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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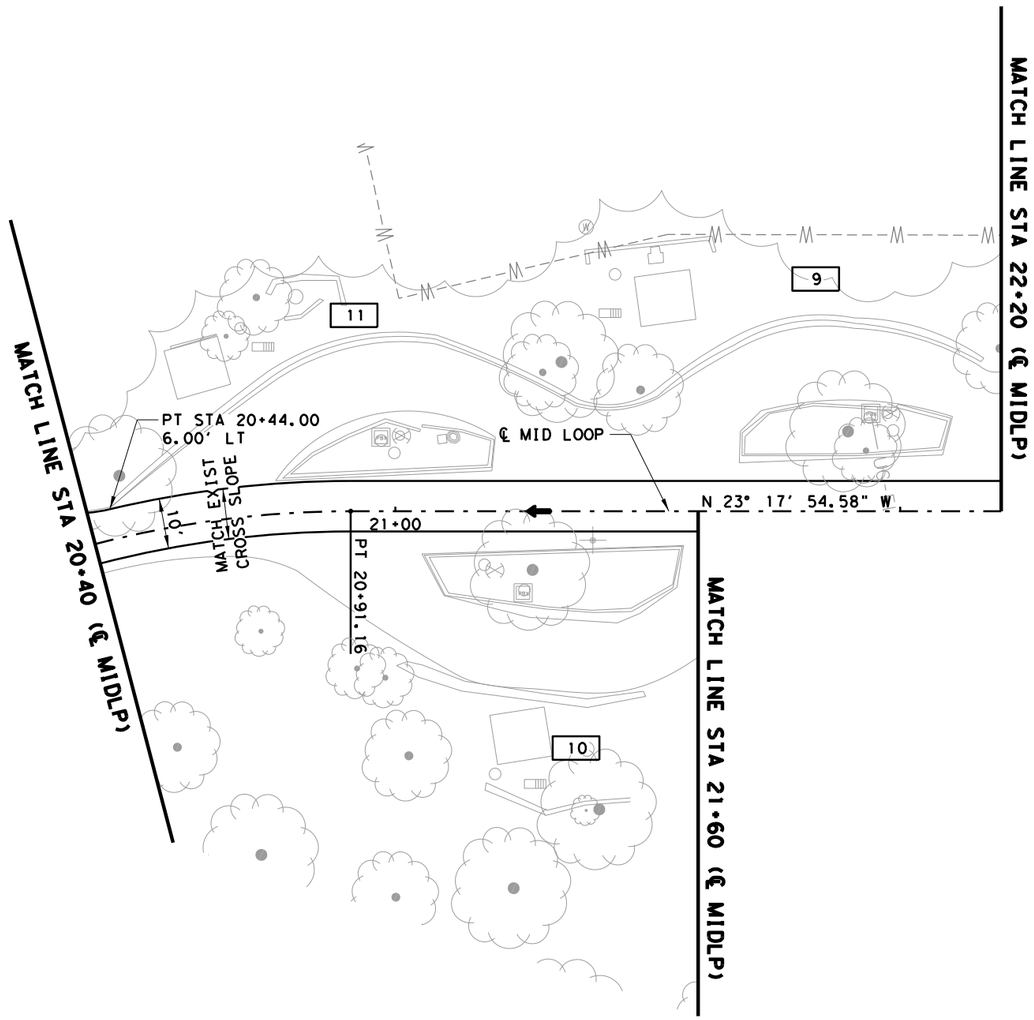

LEGEND

- TRAFFIC DIRECTION
- X — CAMPSITE NUMBER
- (#) — PROPOSED SIGN NUMBER
- CONCRETE
- PROPOSED SWALE
- PROPOSED SIGN
- (A) RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- (B) RE PM W/RET REQ TY I (Y) 6" (SLD) (090MIL)
- (C) PREFAB PAV MRK TY B (W) (24") (SLD)
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- (E) PREFAB PAV MRK TY C (W) (SYMBOL)
- (F) WHEEL STOP
- (G) REFL PAV MRK TY II (Y) 12" (SLD)
- (H) REMOVE PRECAST CONCRETE WHEEL STOPS
- (X) PROPOSED GROUND ELEVATION
- (S-#) SWALE POINTS
- — UG-ELEC — UNDERGROUND ELECTRIC
- --W-----W-- WATERLINE
- — X —— X — REMOVE EXIST ROCK WALL

0 15 30
SCALE: 1"=30'

NOTES:

1. ALL UTILTIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY.
2. REMOVAL OF EXISTING CAMPSITE SUBSIDIARY TO ITEM 530.

STATE OF TEXAS
CARITA G. STEWART
129562
PROFESSIONAL ENGINEER
LICENSED

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ROADWAY LAYOUTS
(MISSION TEJAS)

SHEET 16 OF 16

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 ▪ www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		063

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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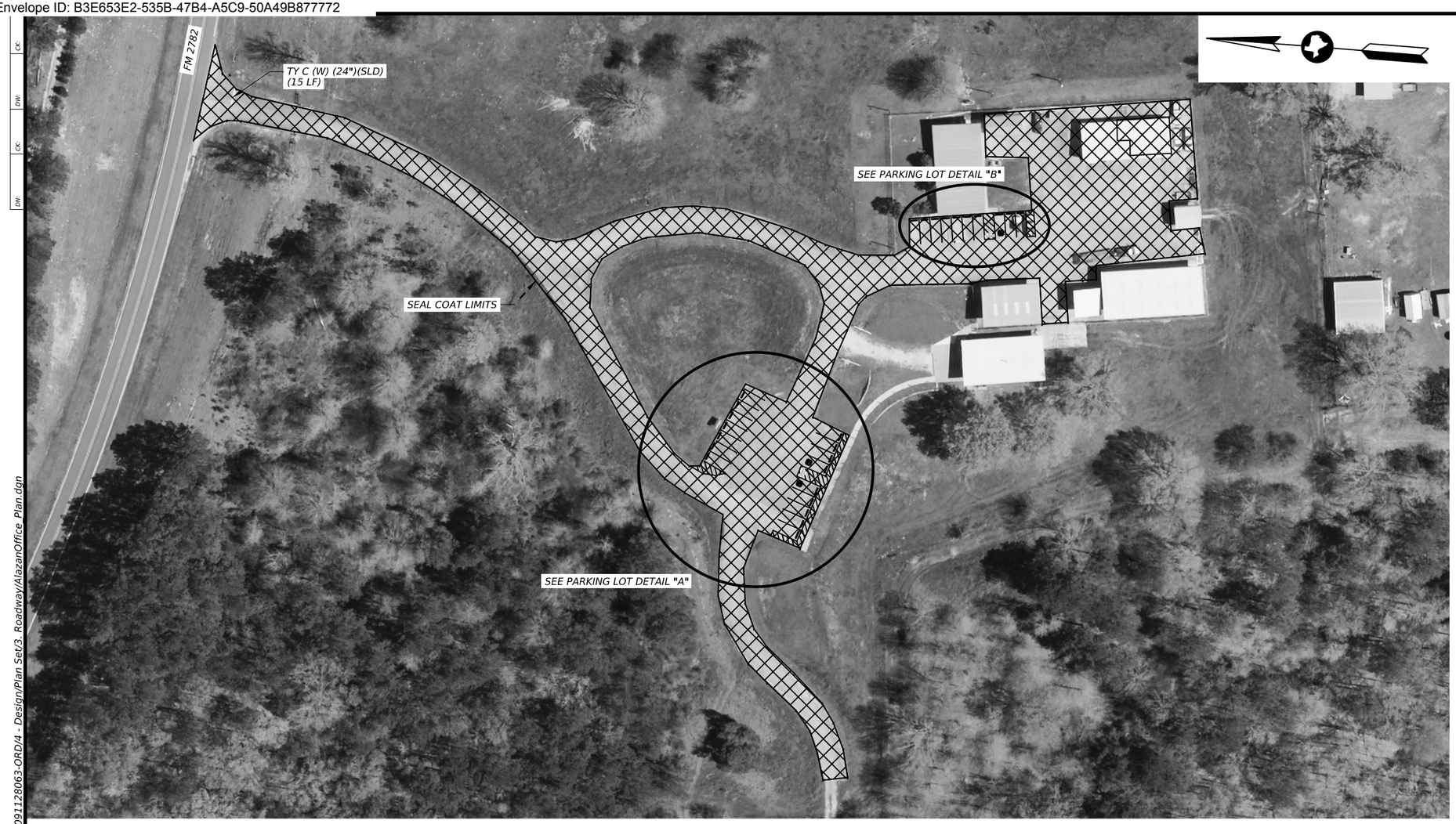
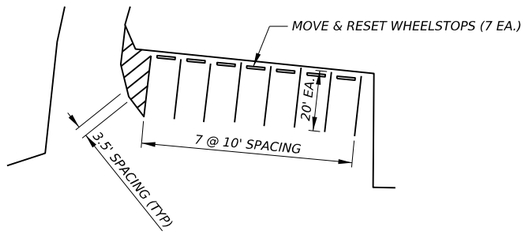
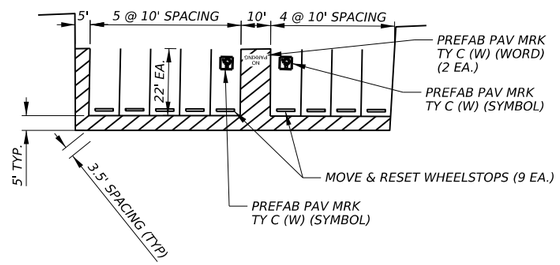


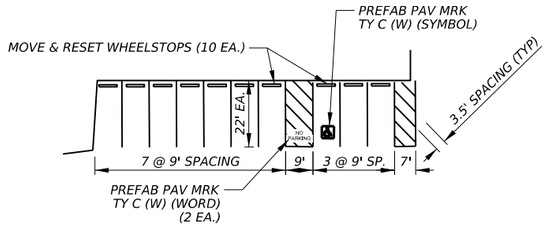
LEGEND

PROPOSED SEAL COAT





PARKING LOT DETAIL "A"



PARKING LOT DETAIL "B"

SCALE 1" = 100'

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
AF852E728AEC4C0...

2/16/2024

Texas Department of Transportation

PLAN LAYOUTS

(ALAZAN BAYOU WMA; OFFICE)

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		64

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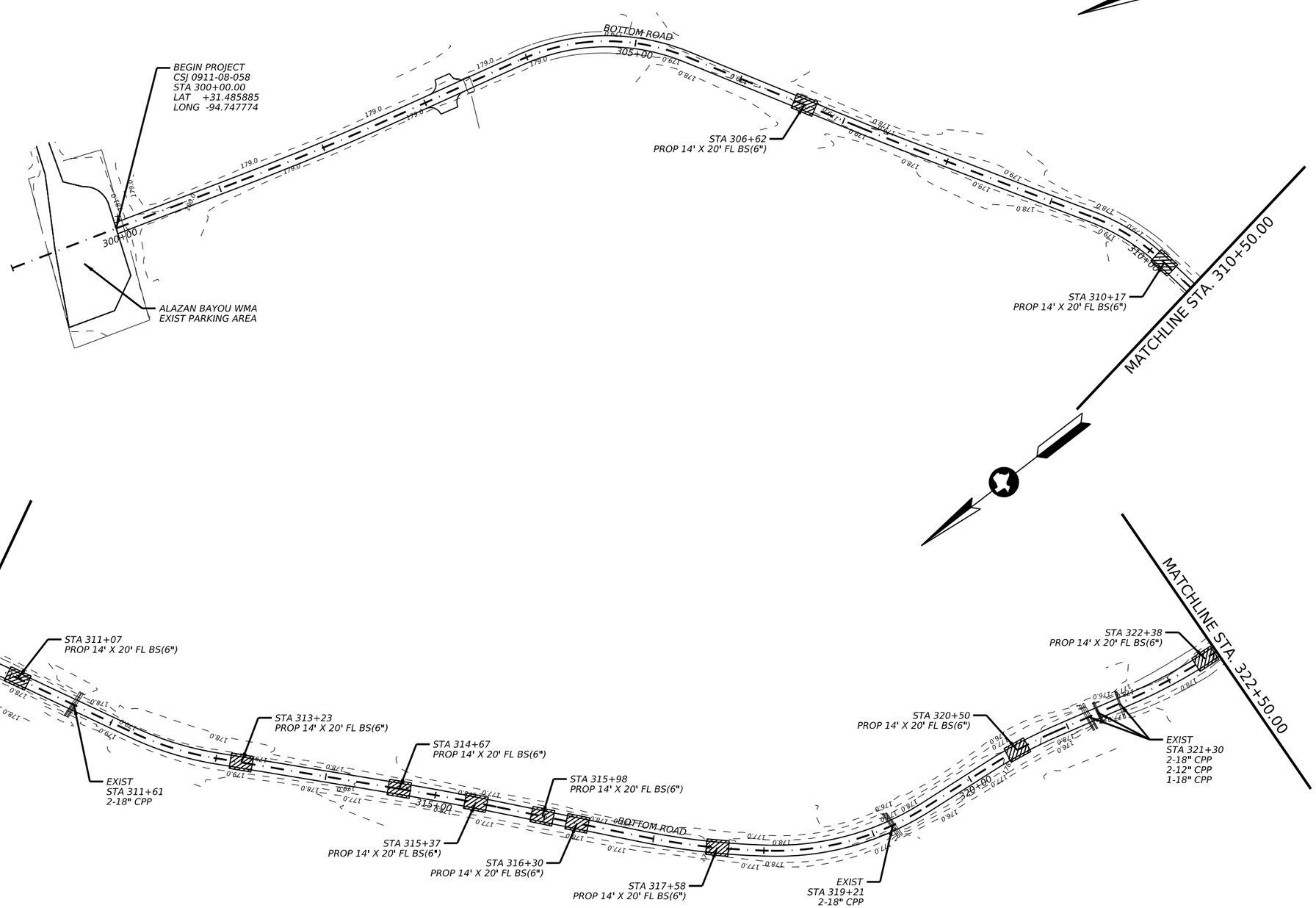
LEGEND

- RFD2 — ROCK FILTER DAM (TY 2)
- SCF — SEDIMENT CONT FENCE
- FLOW DIRECTION



SCALE 1" = 100'

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
AF852E728AEC4C0...
12/19/2023

Texas Department of Transportation

PLAN LAYOUTS

(ALAZAN BAYOU WMA; BOTTOM ROAD)

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		65

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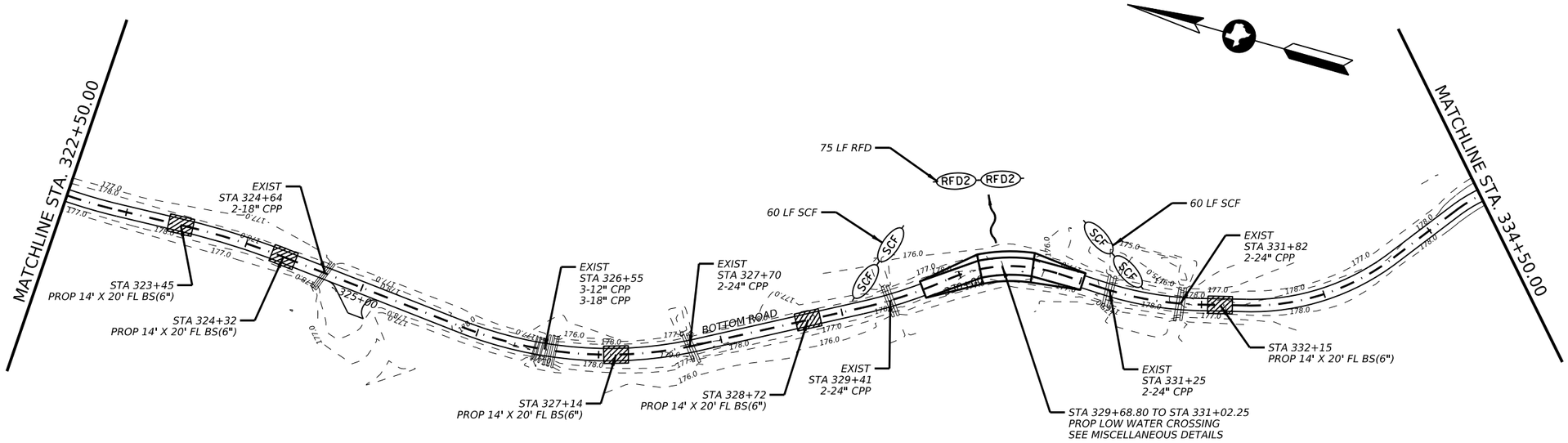

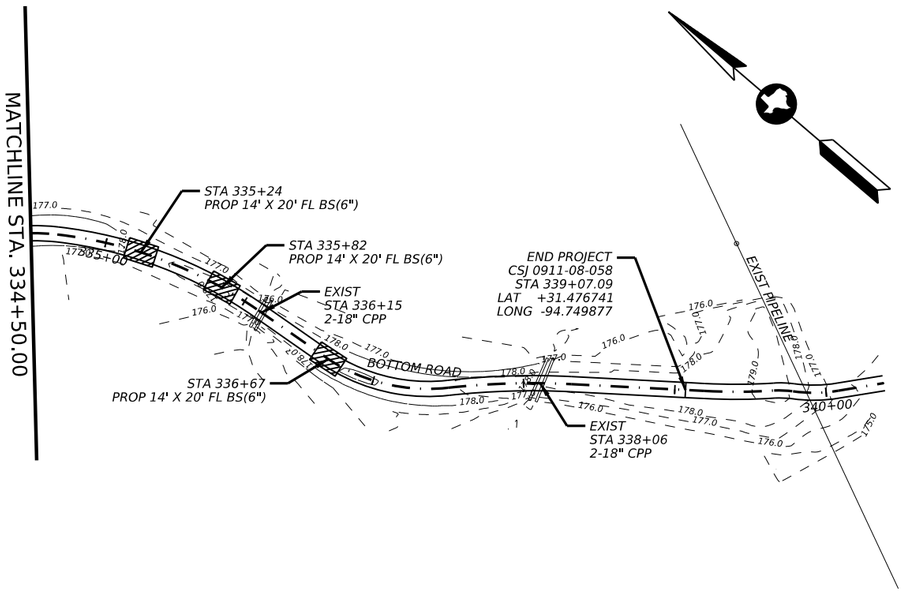

LEGEND

- RFD2 — ROCK FILTER DAM (TY 2)
- SCF — SEDIMENT CONT FENCE
- FLOW DIRECTION

SCALE 1" = 100'

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED
PROFESSIONAL ENGINEER

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12/19/2023

Texas Department of Transportation

PLAN LAYOUTS

(ALAZAN BAYOU WMA; BOTTOM ROAD)

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		66

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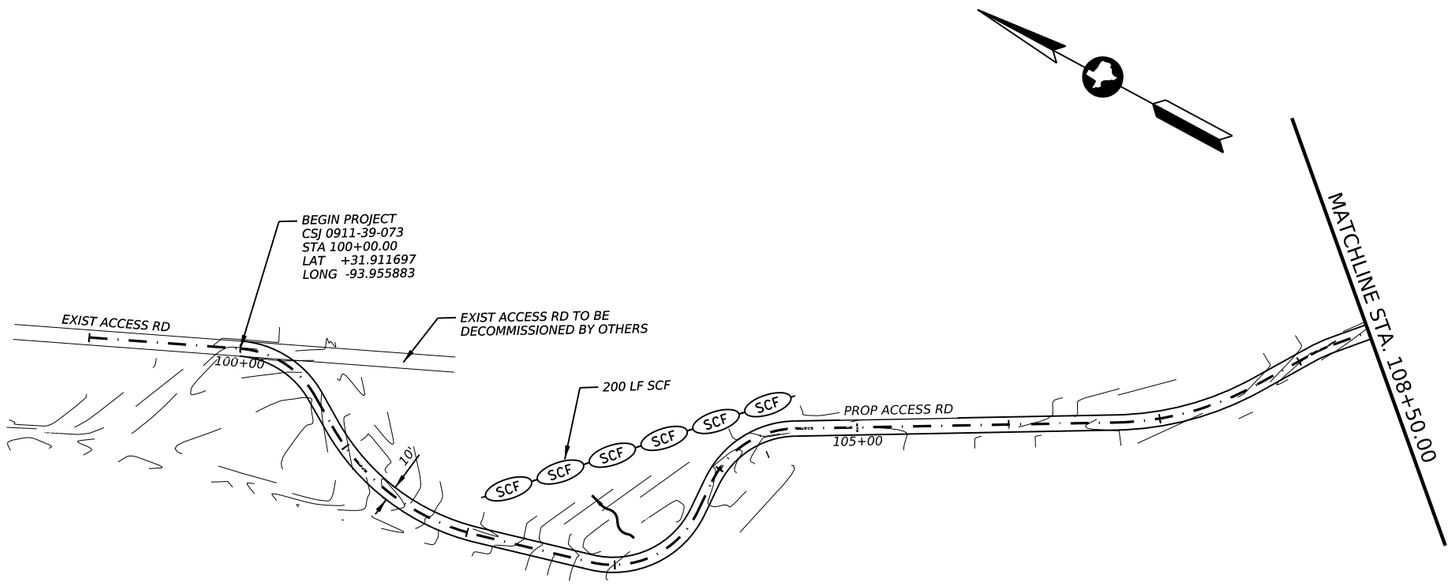
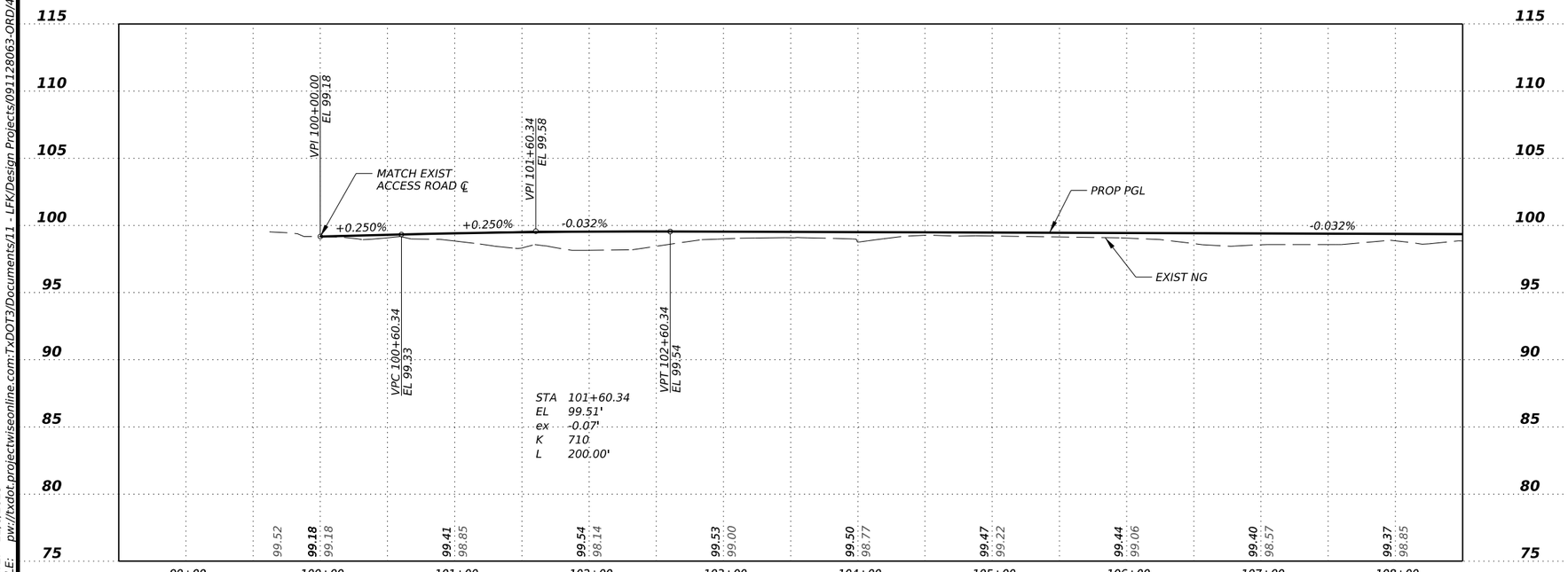
LEGEND

- RFD2 — ROCK FILTER DAM (TY 2)
- SCF — SEDIMENT CONT FENCE
- FLOW DIRECTION





HORIZ: 0 50 100
VERT: 0 5 10
SCALE IN FEET

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
AF852E728AEC4C0...
P.E.
12/19/2023

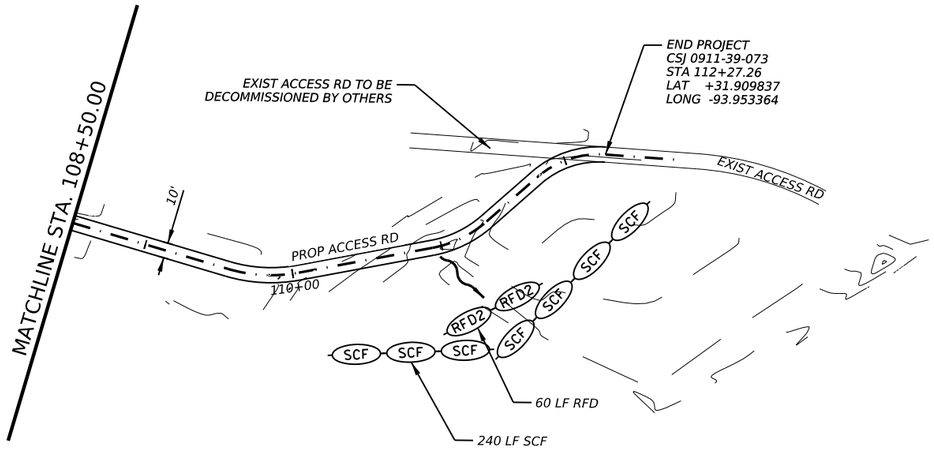
Texas Department of Transportation

PLAN & PROFILE

(TOLEDO BEND WMA; ACCESS ROAD)

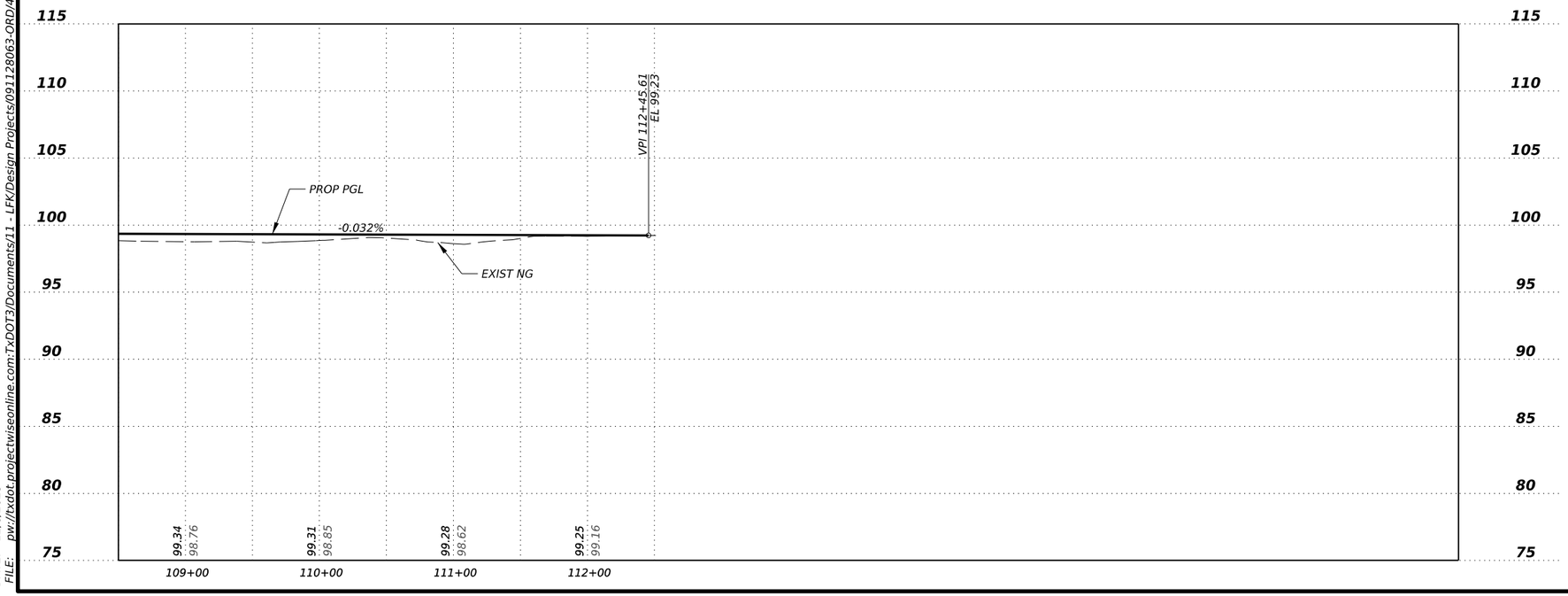
SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		67



LEGEND

- RFD2 — ROCK FILTER DAM (TY 2)
- SCF — SEDIMENT CONT FENCE
- FLOW DIRECTION



HORIZ: 0 50 100
VERT: 0 5 10
SCALE IN FEET

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
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12/19/2023

Texas Department of Transportation

PLAN & PROFILE

(TOLEDO BEND WMA; ACCESS ROAD)

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		68

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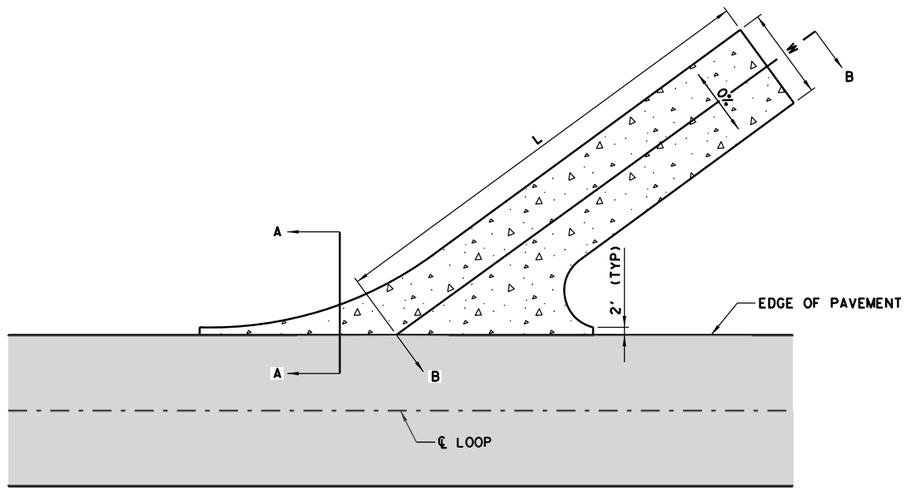
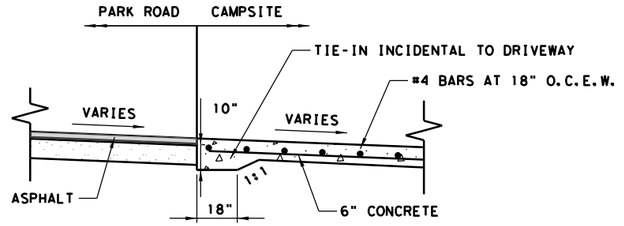


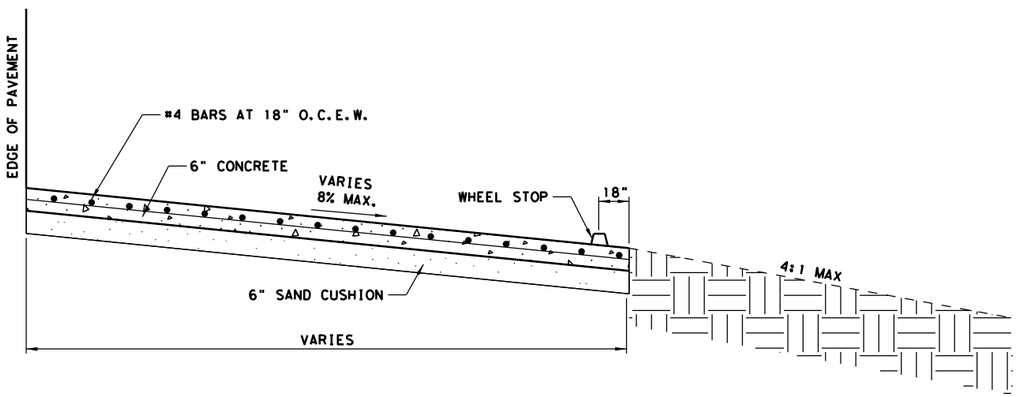
CAMPSITE TIE-IN PLAN LAYOUT

2-FOOT OFFSET OUTSIDE OF ROADWAY PAVEMENT
NOTE: CAMPSITES TO BE PAID FOR UNDER ITEM 530 DRIVEWAYS (CONC)



CAMPSITE TIE-IN LAYOUT

CROSS SECTION A-A
NOTE: CAMPSITES TO BE PAID FOR UNDER ITEM 530 DRIVEWAYS (CONC)



CAMPSITE TIE-IN PROFILE LAYOUT

LONGITUDINAL SECTION B-B
NOTE: CAMPSITES TO BE PAID FOR UNDER ITEM 530 DRIVEWAYS (CONC)

LEGEND

- CONCRETE
- ASPHALT
- SAND CUSHION

NTS

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

CAMPSITE DETAILS
(MISSION TEJAS)

SHEET 1 OF 2

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
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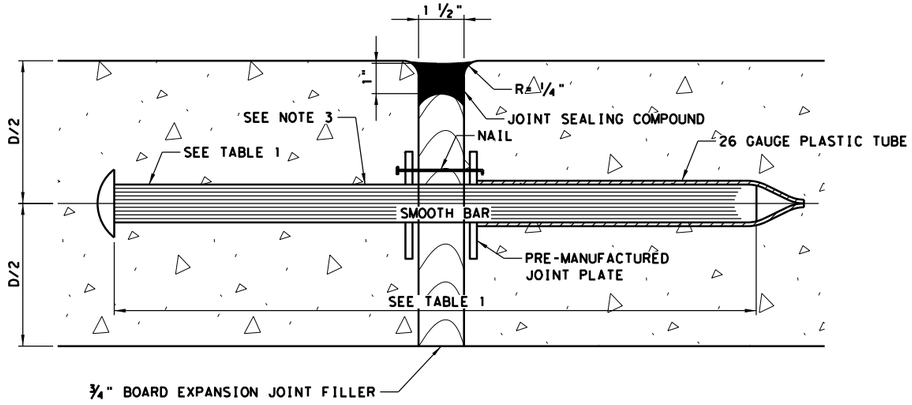
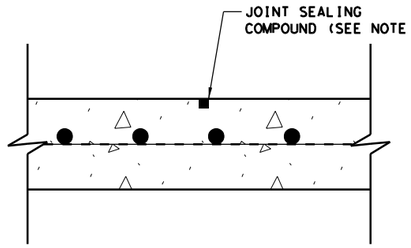
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			069

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



SECTION DOWEL TYPE EXPANSION JOINT



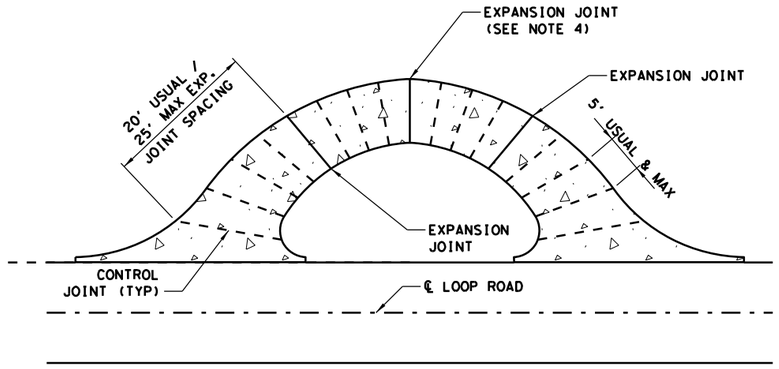
SECTION CONTROL JOINT

NOTES:

1. SEE STANDARD JS-14 FOR JOINT SEALS DETAILS.
2. PAVEMENT WIDTH OF MORE THAN 15 FT SHALL HAVE A LONGITUDINAL CONTRACTION/ CONTROL JOINT SHALL BE CENTERED ON THE CAMPSITE PAD.
3. CENTER DOWEL HORIZONTALLY ON JOINT.
4. DO NOT PLACE EXPANSION JOINT AT GRADING BREAK.

TABLE 1

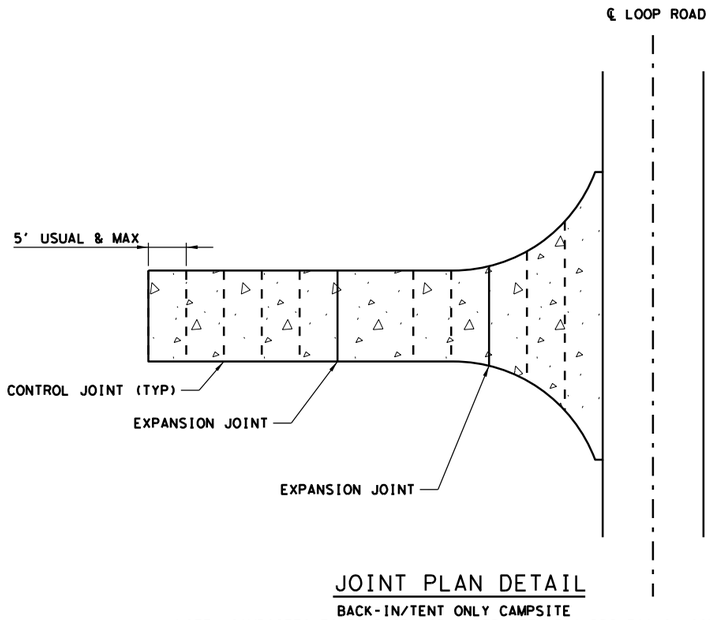
PAVEMENT THICKNESS	DOWEL SIZES AND SPACING		
	DIAMETER	LENGTH	SPACING
(IN)	(IN)	(IN)	(IN)
6	0.75	18	12



JOINT PLAN DETAIL

PULL-THROUGH CAMPSITE

NOTE: CAMPSITES TO BE PAID FOR UNDER ITEM 530 DRIVEWAYS (CONC)



JOINT PLAN DETAIL

BACK-IN/TENT ONLY CAMPSITE

NOTE: CAMPSITES TO BE PAID FOR UNDER ITEM 530 DRIVEWAYS (CONC)

NTS

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

CAMPSITE DETAILS

(MISSION TEJAS)

SHEET 2 OF 2

Texas Department of Transportation

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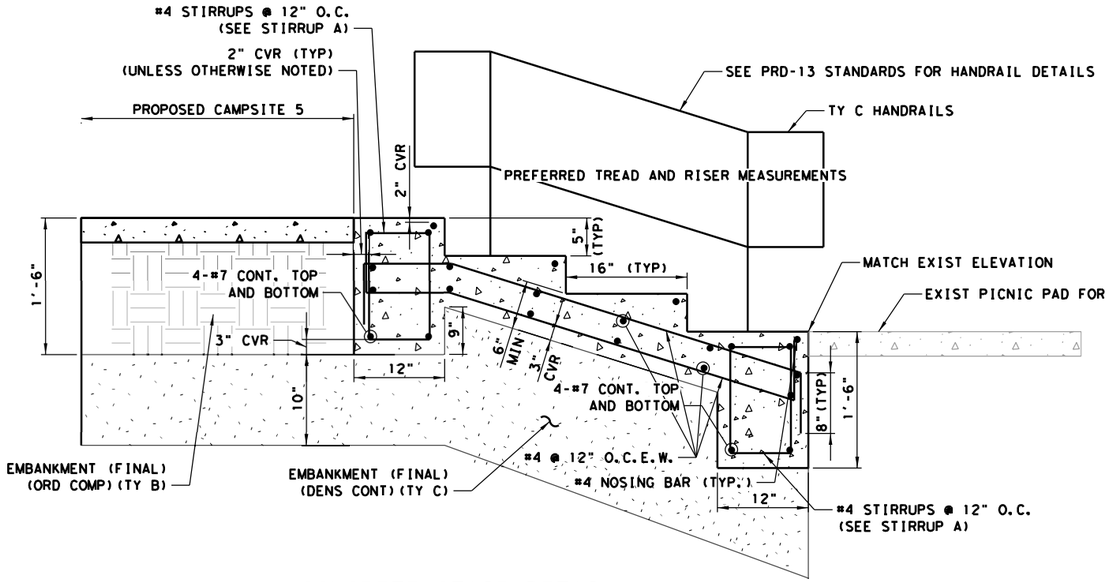
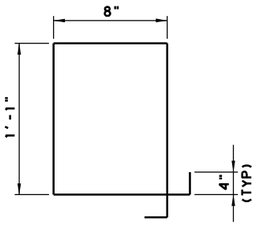
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			070
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



CONCRETE STAIR DETAIL

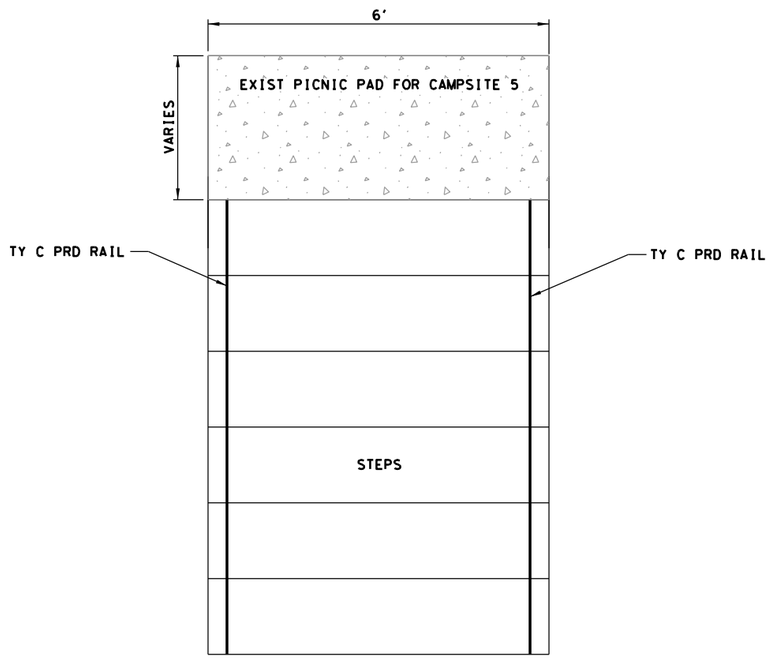
NOTE: STAIRS TO BE PAID FOR UNDER ITEM 420 CL A CONC (MISC)
HANDRAILS TO BE PAID FOR UNDER ITEM 450 RAIL (HANDRAIL)(TY C)



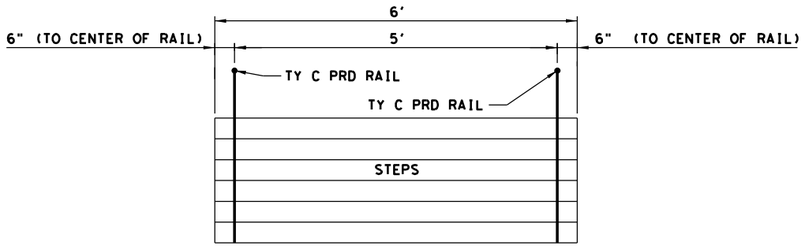
STIRRUP A

GENERAL NOTES FOR STAIRS:

1. ALL STEPS ON ALL FLIGHTS OF STAIRS SHALL HAVE UNIFORM RISER HEIGHTS AND TREAD WIDTHS. MINIMUM TREAD DEPTH SHALL BE 11" UNLESS OTHERWISE NOTED.
2. UNDERSIDE OF NOSING SHALL NOT BE ABRUPT. RADIUS OF CURVATURE AT LEADING EDGE SHALL NOT EXCEED 1/2". RISER SHALL BE SLOPED OR UNDERSIDE OF NOSING SHALL HAVE AN ANGLE NOT LESS THAN 60 DEGREES. NOSING SHALL PROJECT NO MORE THAN 1-1/2".
3. CONCRETE SHALL BE 3000 PSI.
4. REINFORCING STEEL SHALL BE GRADE 60.
5. COVER DIMENSIONS ARE CLEAR DIMENSIONS UNLESS OTHERWISE NOTED.
6. TYPE C HANDRAILS ARE REQUIRED AT BOTH SIDES OF ALL STAIRS.
7. SEE PRD-13 FOR PEDESTRIAN HANDRAIL DETAILS.
8. SEE "ROADWAY SUMMARY" FOR STAIR AND RAIL QUANTITIES.



PLAN VIEW



ELEVATION VIEW

NTS

STATE OF TEXAS
WANZHI LIU
142707
LICENSED
PROFESSIONAL ENGINEER

Wanzhi Liu

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

STAIR DETAIL
(MISSION TEJAS)

Texas Department of Transportation

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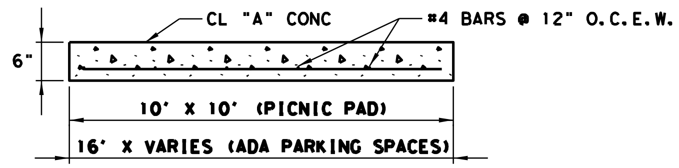
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		071

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

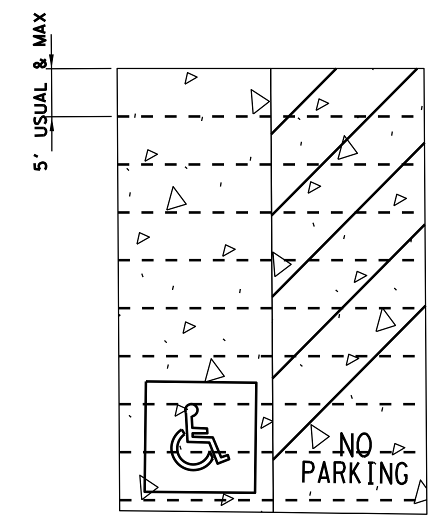


PICNIC PAD/ ADA PARKING LOTS

ELEVATION VIEW

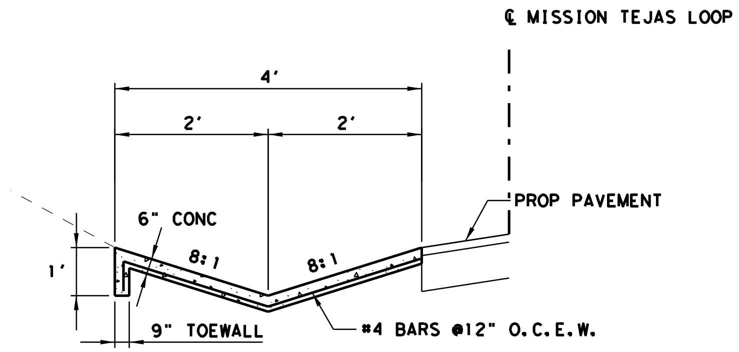
PROVIDE A MINIMUM OF SIX INCHES OF SAND OR APPROVED FILL MATERIAL BETWEEN THE BOTTOM OF THE SLAB AND THE TOP OF THE EXISTING GROUND ONLY FOR PICNIC PAD. JOINTS TO BE SAWED AND NOT TOOLED.

PICNIC PAD, PARKING LOT #2 & PARKING LOT #4 TO BE PAID FOR UNDER ITEM 420 CL A CONC (MISC).



JOINT PLAN DETAIL

PARKING LOT #2 & ADA PARKING

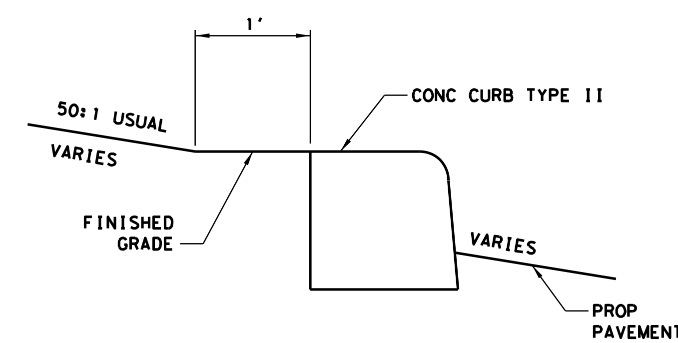


CONC FLUME DETAIL

(PROFILE VIEW)

STA 39+50 TO STA 41+00

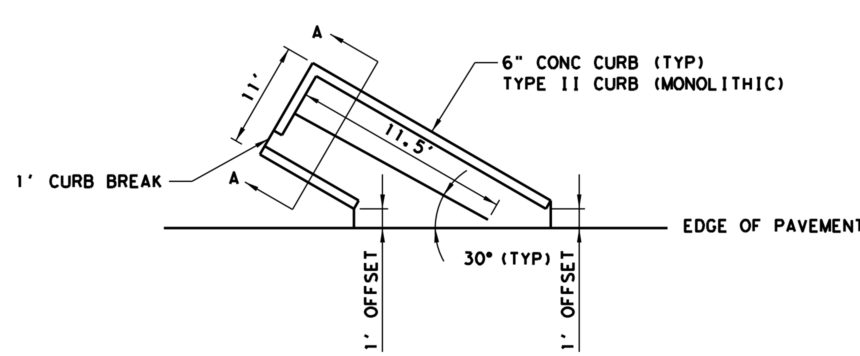
NOTE: CONC FLUME TO BE PAID FOR UNDER ITEM 432 RIPRAP (CONC)(6 IN). TOEWALL SHOULD BE PLACED AT INLET AND OUTLET EDGES OF CONC FLUME.



CURBED ISLAND DETAIL

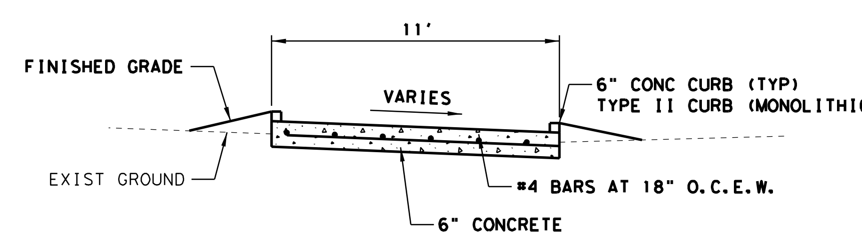
DO NOT DISTURB EXISTING TREE ROOTS

NOTE: CURB TO BE PAID FOR UNDER ITEM 529 CONC CURB (TY II).



DUMPSTER PAD PLAN DETAIL

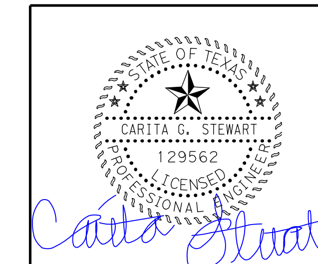
NOTE: DUMPSTER PAD TO BE PAID FOR UNDER ITEM 530 DRIVEWAYS (CONC). CURB TO BE PAID FOR UNDER ITEM 529 CONC CURB (MONO)(TY II).



DUMPSTER PAD SECTION DETAIL

SECTION A-A

NTS



2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

MISCELLANEOUS DETAILS

(MISSION TEJAS)

SHEET 1 OF 2

Texas Department of Transportation

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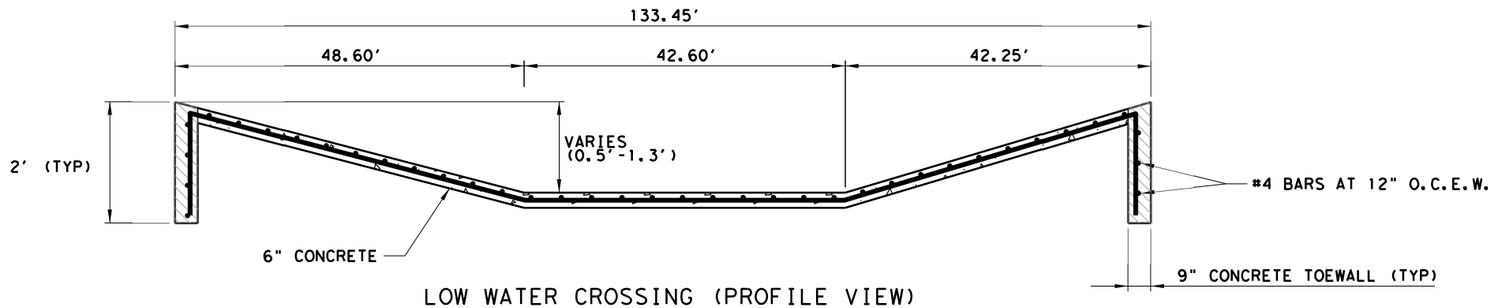
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			072
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063,ETC	VARIOUS

LEGEND

- 6" CONCRETE
- 5" CONCRETE
- 9" CONCRETE TOEWALL

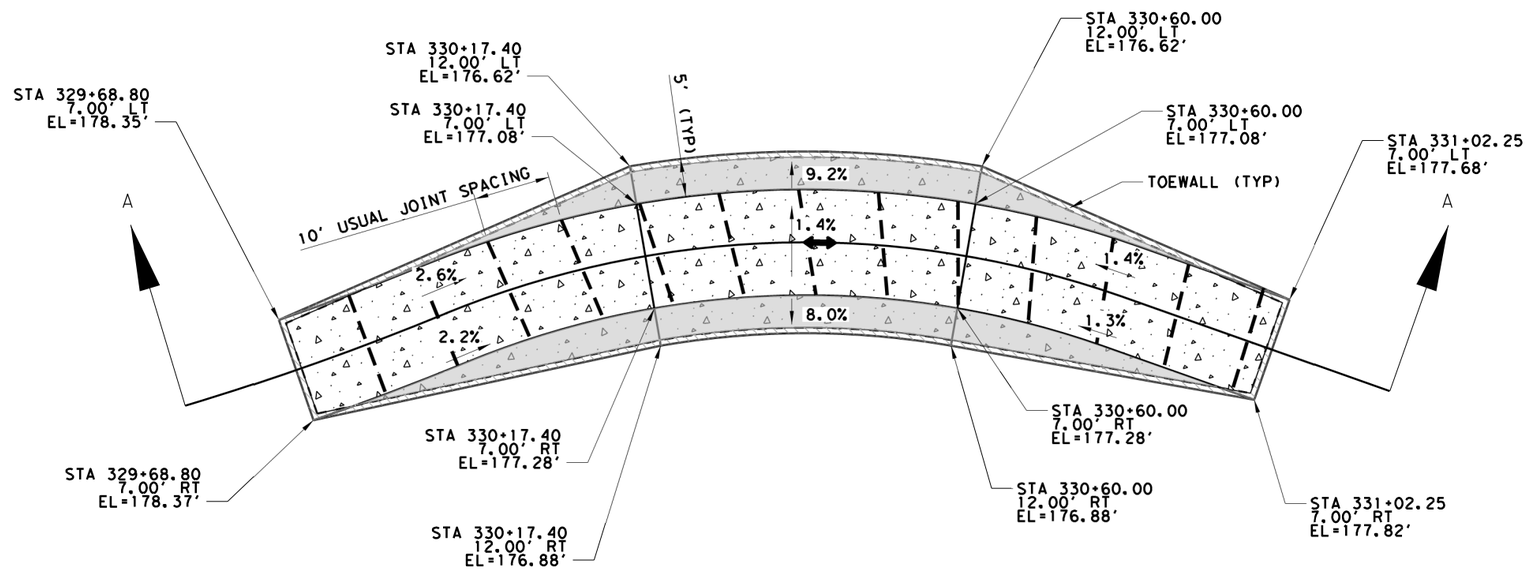


LOW WATER CROSSING (PROFILE VIEW)

(SECTION A-A)

NOTE:

1. PLACE TOEWALL ON ALL SIDES OF THE LOW WATER CROSSING.
2. SEE STANDARD JS-14 FOR JOINT SEALS DETAILS.



LOW WATER CROSSING (PLAN VIEW)

NTS

STATE OF TEXAS
M. CHAD CRISWELL
90114
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

MISCELLANEOUS DETAILS

(ALAZAN BAYOU)

SHEET 2 OF 2

Texas Department of Transportation

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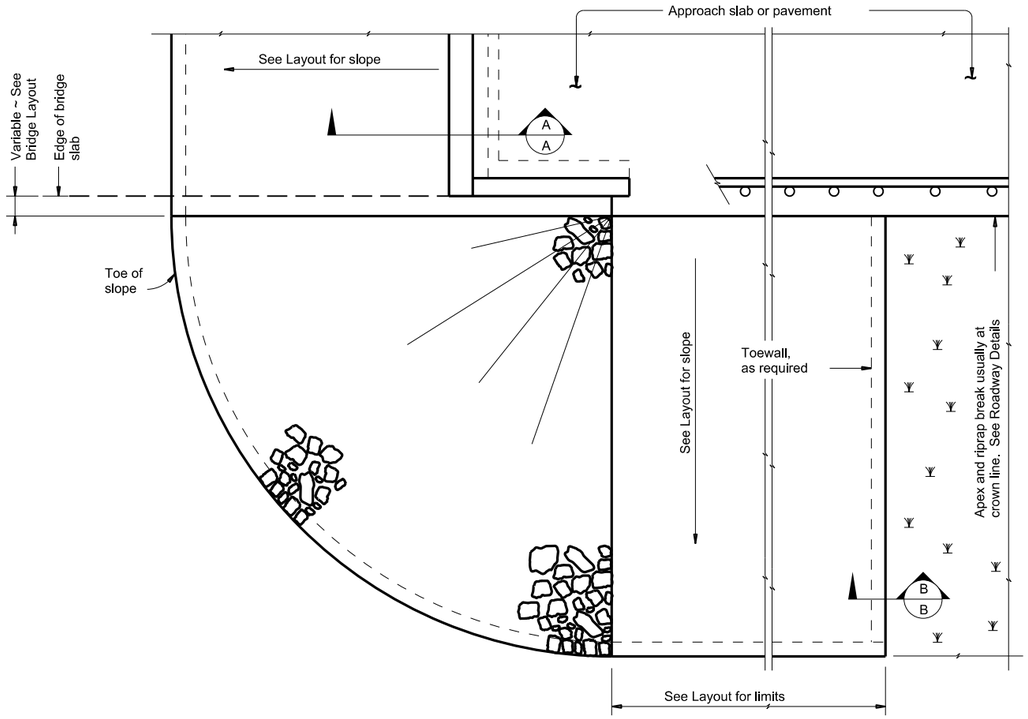
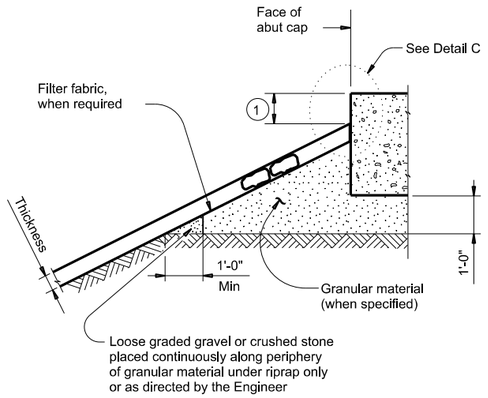
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		073

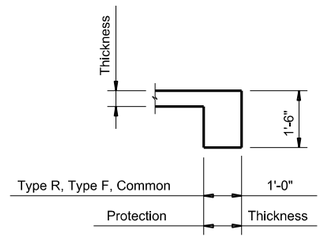
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



PLAN

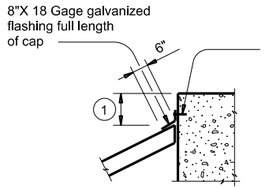


SECTION A-A AT CAP

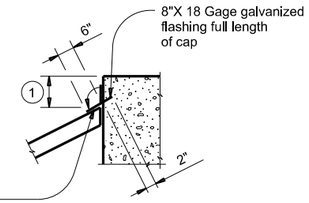


SECTION B-B

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

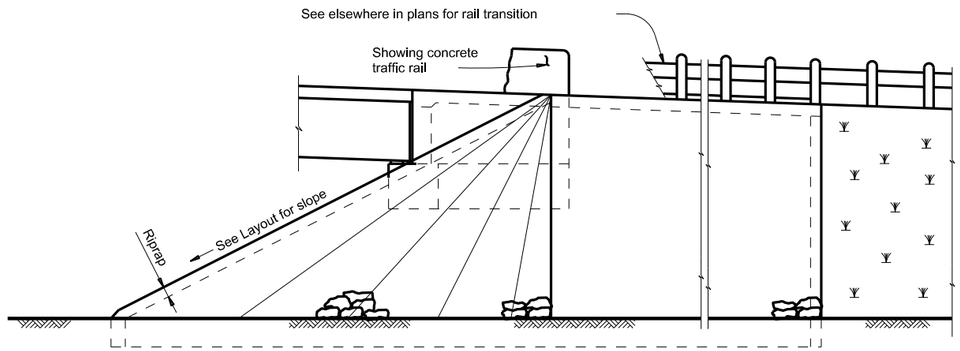


CAP OPTION A



CAP OPTION B

DETAIL C



ELEVATION

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

GENERAL NOTES:

Refer to Item 432, "Riprap" for stone size and gradation, and construction details. See Layout for limits and thickness of riprap specified.

See elsewhere in plans for locations and details of shoulder drains.

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE:	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
	DIST	COUNTY		SHEET NO.
	LFK	HOUSTON, ETC.		74

DATE: 12/11/2023 11:08:03 AM
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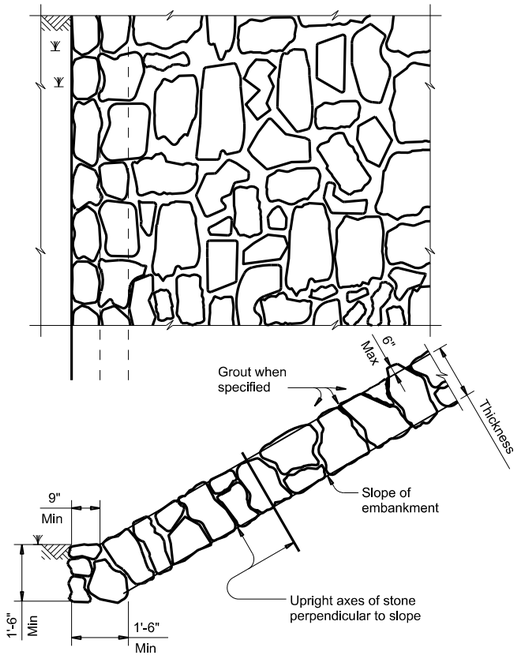


FIGURE 1 ~ TYPE R STONE RIPRAP

dry or grouted

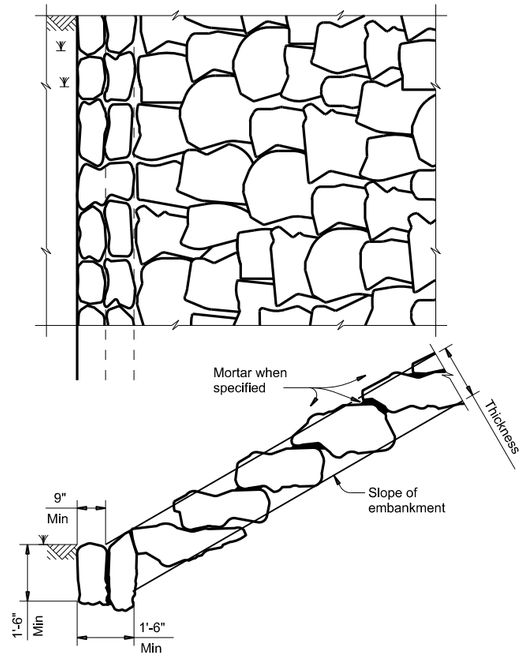


FIGURE 2 ~ TYPE F STONE RIPRAP

dry or mortared

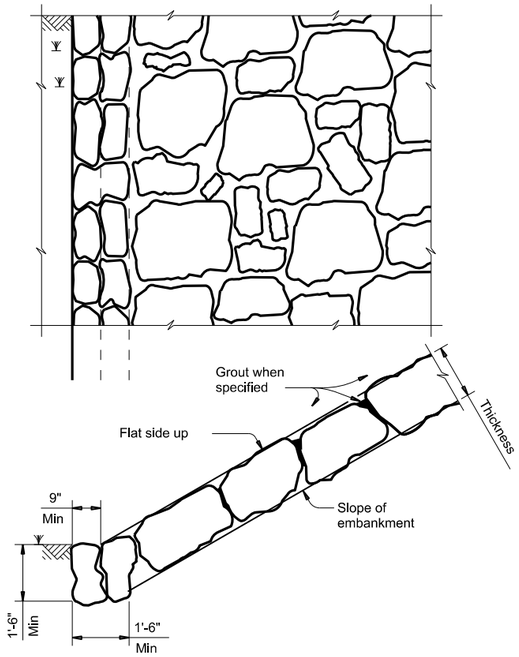


FIGURE 3 ~ TYPE F STONE RIPRAP

grouted

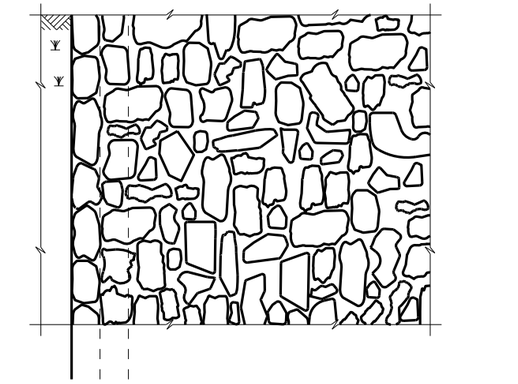


FIGURE 4 ~ COMMON STONE RIPRAP

dry or grouted

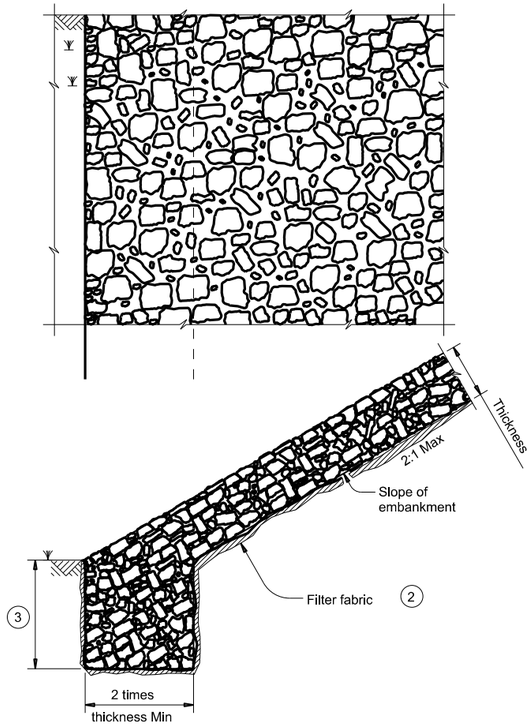


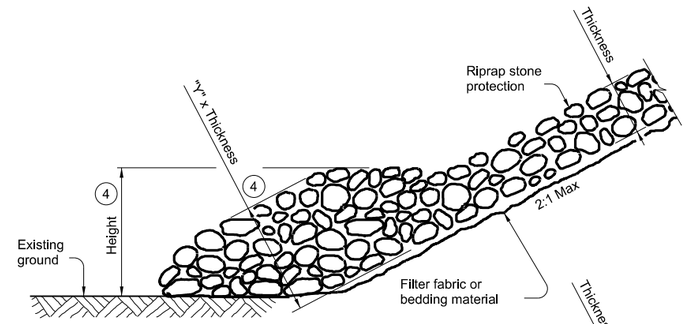
FIGURE 5 ~ PROTECTION STONE RIPRAP 5

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

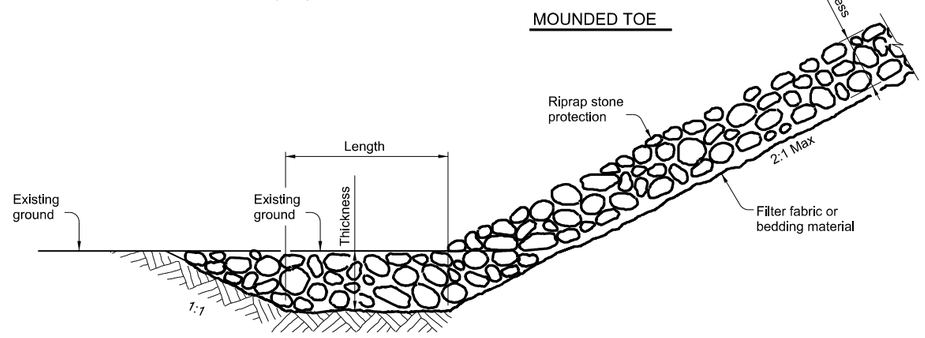
3 Minimum toe depth is the larger of the maximum scour depth or 2 times the riprap thickness.

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

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



MOUNDED TOE



EXTENDED ROCK FILLED TRENCH

PROTECTION STONE RIPRAP TOE OPTIONS 5

SHEET 2 OF 2

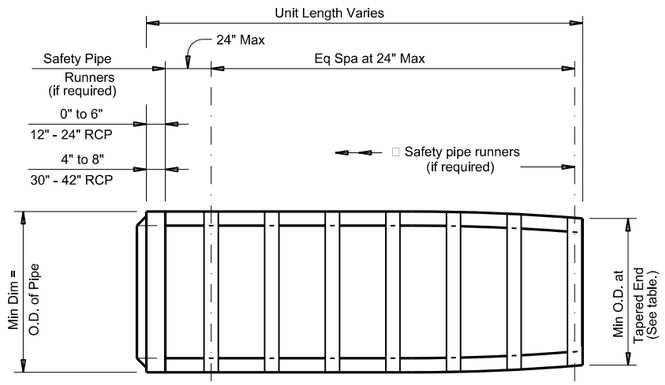
Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

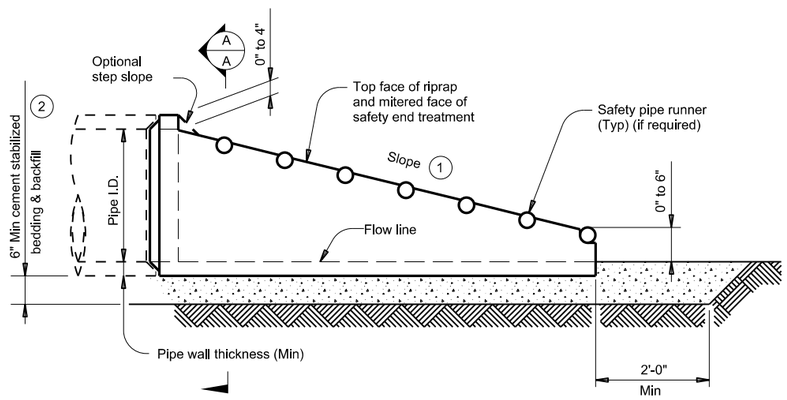
SRR

FILE:	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
	DIST	COUNTY		SHEET NO.
	LFK	HOUSTON, ETC.		75



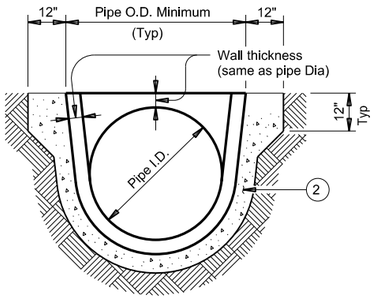
PLAN VIEW - 12" THRU 24"

(Showing spigot end connection.)

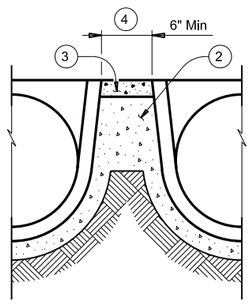


LONGITUDINAL ELEVATION - 12" THRU 24"

(Showing spigot end connection.)



SECTION A-A



MULTIPLE PIPE INSTALLATION

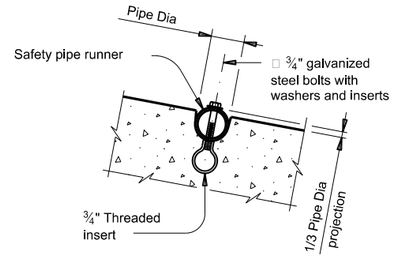
(1) Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.

(2) Provide cement stabilized bedding and backfill in accordance with the Item, "Excavation and Backfill for Structures." Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment." When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.

(3) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment."

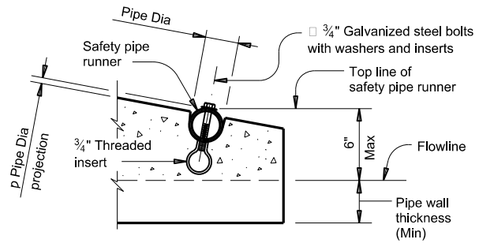
(4) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

(5) Safety pipe runners are required for multiple pipe culverts with more than two pipes.

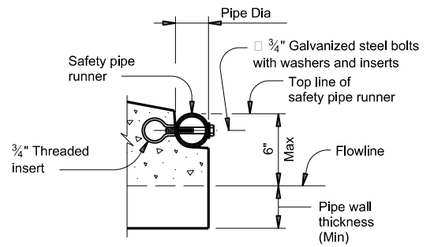


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



OPTION A



OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	Min Wall Thickness	Min O.D.	Min O.D. at Tapered End	Min Reinf Requirements (sq. in. per ft. of Pipe)	Max Slope	Min Length of Unit	Pipe Runner Requirements		Required Pipe Runner Sizes		
							Single Pipe	Multiple Pipe	Nominal Dia	O.D.	I.D.
12"	2"	16"	16"	0.07 Circ.	6:1	4' - 0"	No	(5)	3" STD	3.500"	3.068"
15"	2 ¼"	19 ½"	19"	0.07 Circ.	6:1	5' - 8"	No	(5)	3" STD	3.500"	3.068"
18"	2 ½"	23"	21 ½"	0.07 Circ.	6:1	7' - 3"	No	(5)	3" STD	3.500"	3.068"
24"	3"	30"	27"	0.07 Circ.	6:1	10' - 6"	No	(5)	3" STD	3.500"	3.068"
30"	3 ½"	37"	31"	0.18 Circ.	6:1	12' - 1"	No	Yes	4" STD	4.500"	4.026"
36"	4"	44"	36"	0.19 Ellip.	6:1	15' - 4"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 ½"	51"	41 ½"	0.23 Ellip.	6:1	18' - 7"	Yes	Yes	4" STD	4.500"	4.026"

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.

Galvanize steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP) may be used for TYPE II end treatment as specified in Item 467, "Safety End Treatment."

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Manufacture precast concrete end sections in accordance with Item 464, "Reinforced Concrete Pipe" and in accordance with ASTM Specification C-76, Class III, Wall B for circular pipe.

Provide precast concrete end sections with a spigot or bell end for compatibility to upstream or downstream end conditions with sufficient annular space to allow for grout, mortar, cold applied asphalt joint compound or pre-formed plastic gasket material.

Methods of lifting shall be provided by the manufacturer for ease of loading, unloading and installation.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Texas Department of Transportation

Bridge Division Standard

PRECAST SAFETY END TREATMENT

TYPE II ~ PARALLEL DRAINAGE

PSET-RP

FILE:	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
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	LFK	HOUSTON, ETC.		76

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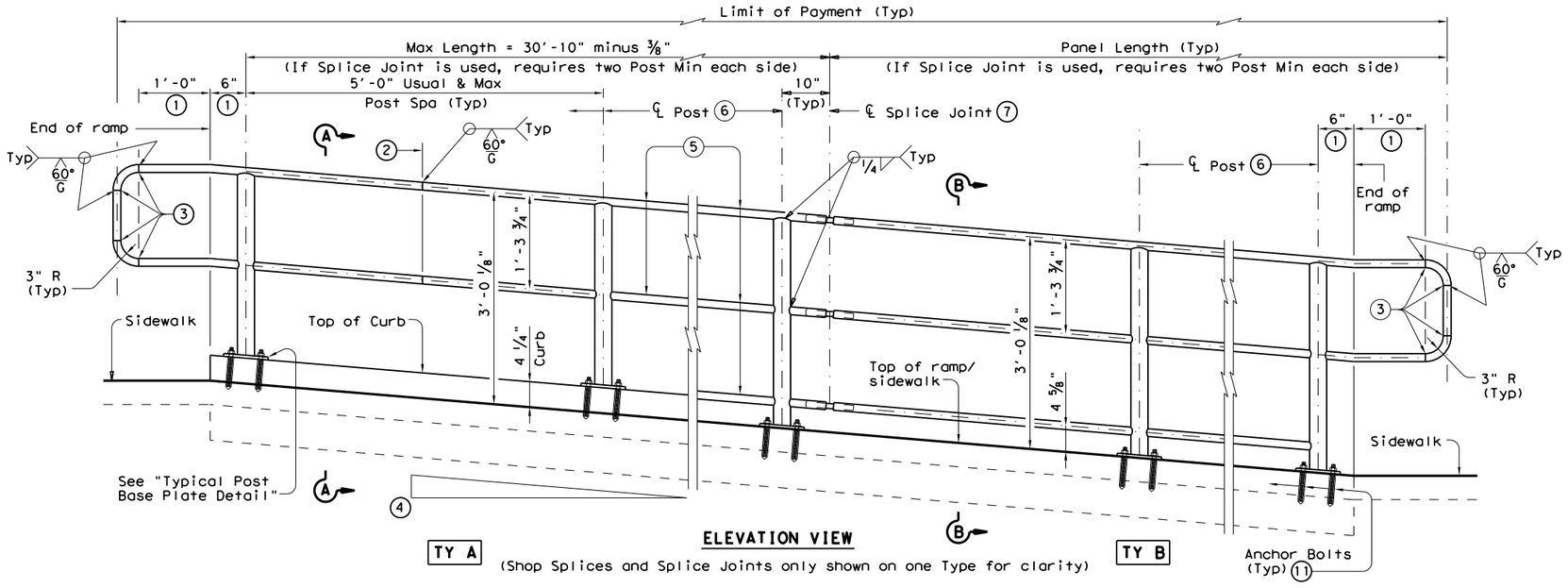
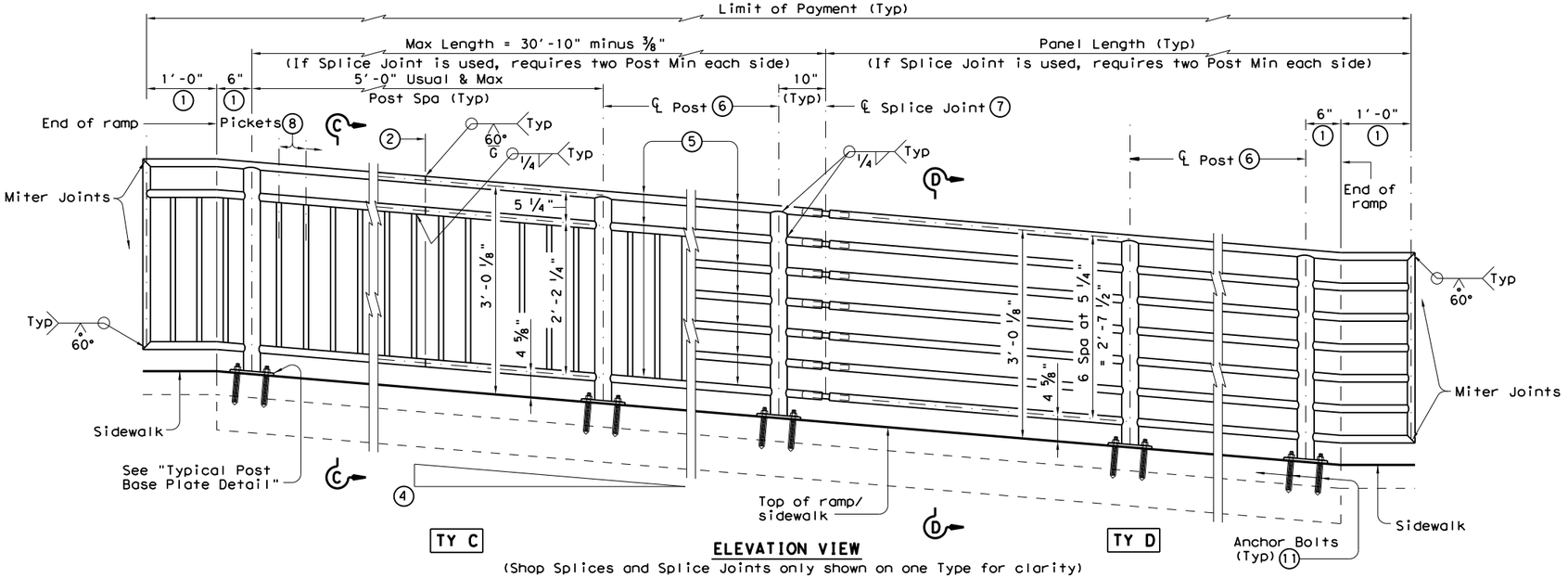


TY A

ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)

TY B



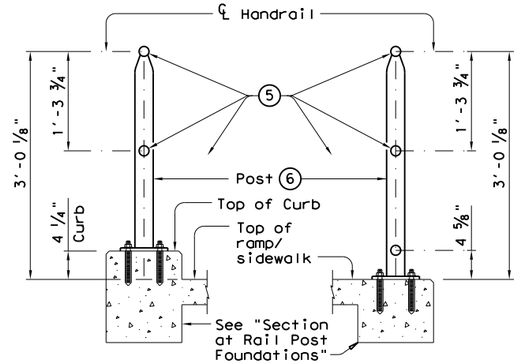
TY C

ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)

TY D

RECOMMENDED USAGE ⑨⑩	
Dropoff Height/ Condition	Recommended Rail Options
<30" dropoff	TY A, TY B, TY C, or TY D
≥ 30" dropoff, or along Bike Path	TY E or TY F

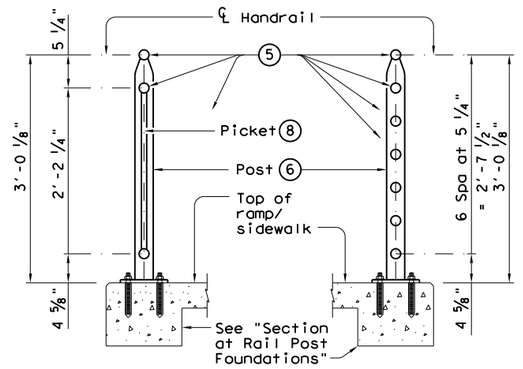


SECTION A-A

(Showing Handrail **TY A**)

SECTION B-B

(Showing Handrail **TY B**)



SECTION C-C

(Showing Handrail **TY C**)

SECTION D-D

(Showing Handrail **TY D**)

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
9. When needed for accessibility (grade > 5 percent) or as needed for pedestrian safety.
10. Not to be used on bridges.
11. See "General Notes" for anchor bolt information.

SHEET 1 OF 3

Texas Department of Transportation

Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

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©TxDOT Decmeber 2006	CONT	SECT	JOB	HIGHWAY
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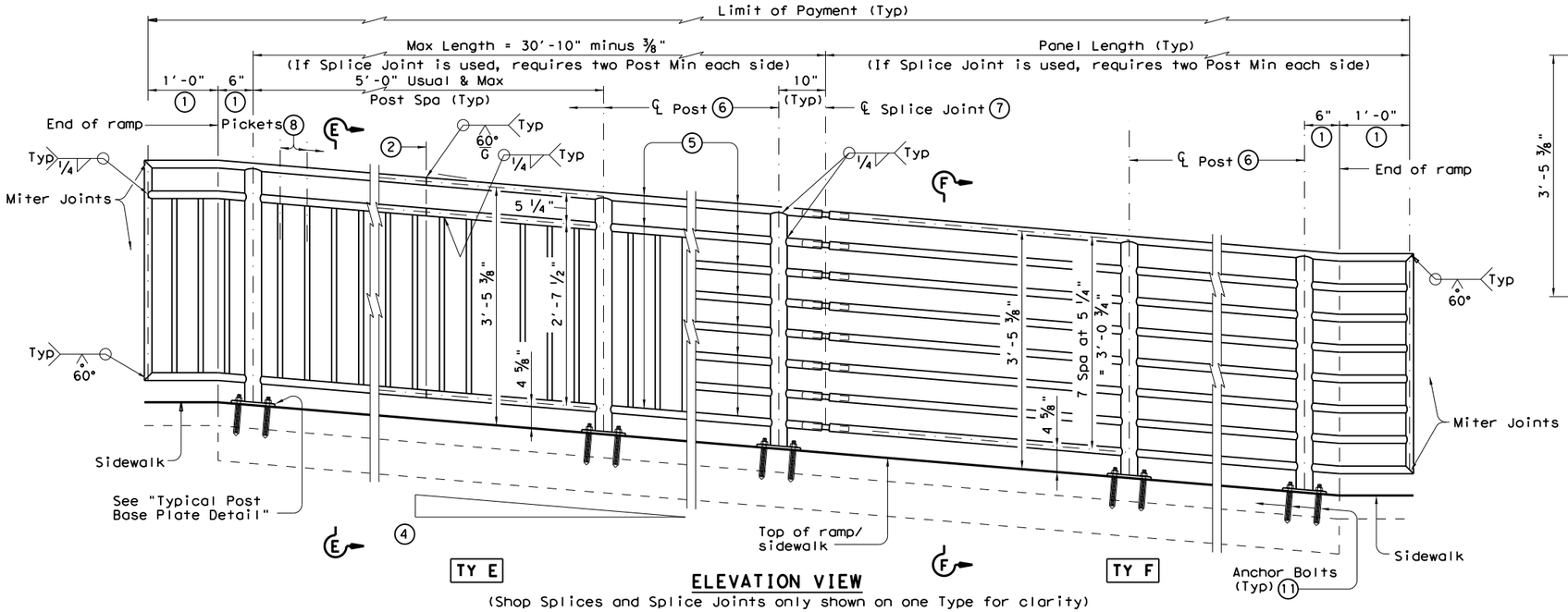
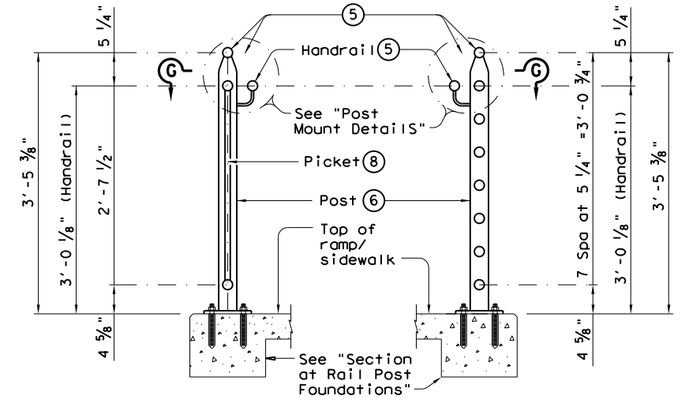


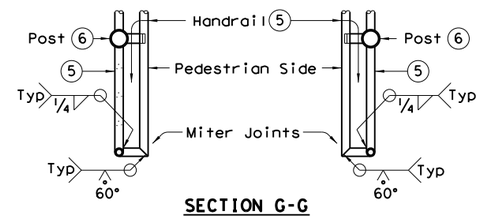
ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)



SECTION E-E
(Showing Handrail **TY E**)

SECTION F-F
(Showing Handrail **TY F**)



SECTION G-G
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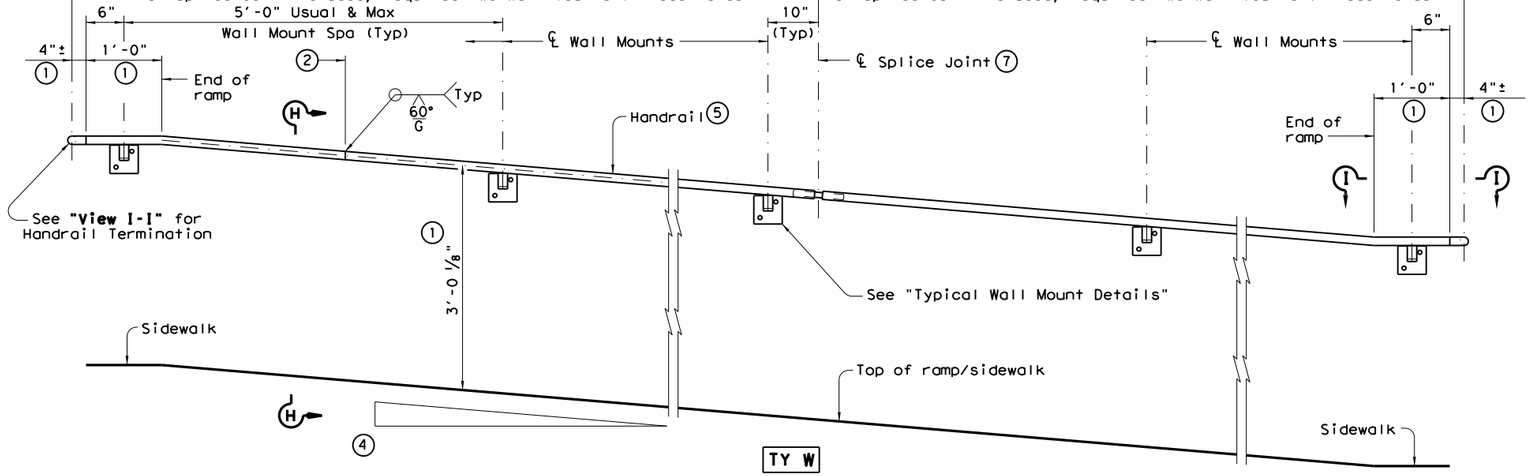
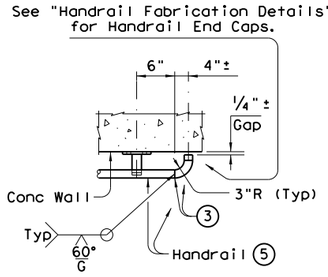
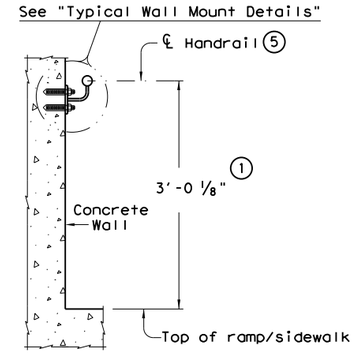


ELEVATION VIEW



VIEW I-I
(Showing Handrail Termination)



SECTION H-H
(Showing Handrail **TY W**)

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
11. See "General Notes" for anchor bolt information.

Texas Department of Transportation — Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
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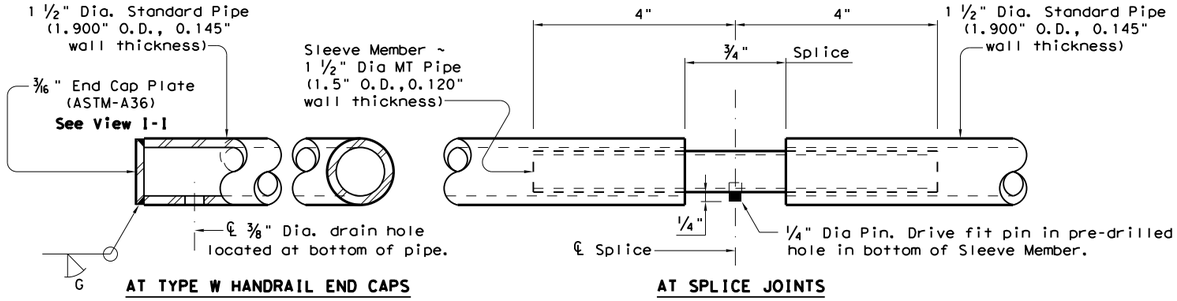
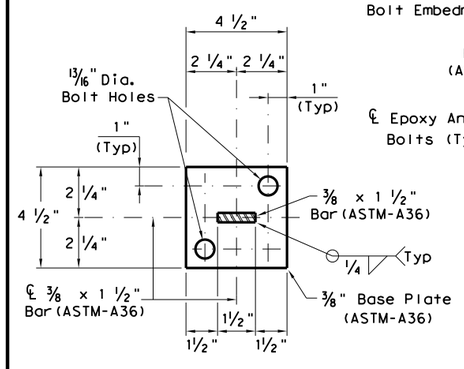


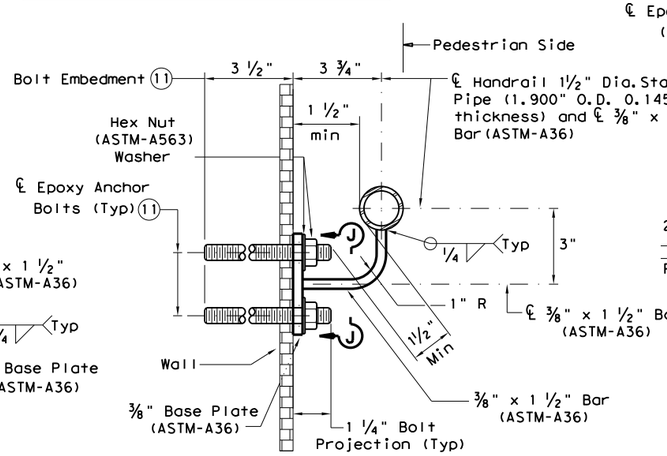
AT TYPE W HANDRAIL END CAPS

AT SPLICE JOINTS

HANDRAIL FABRICATION DETAILS

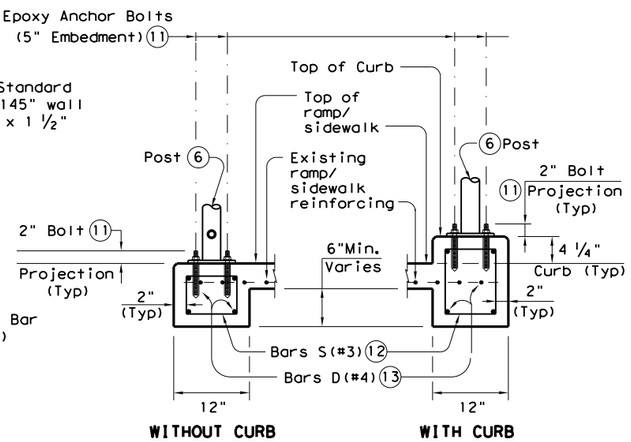


SECTION J-J
(Anchor Bolts not shown for clarity)



SECTION AT WALL MOUNT

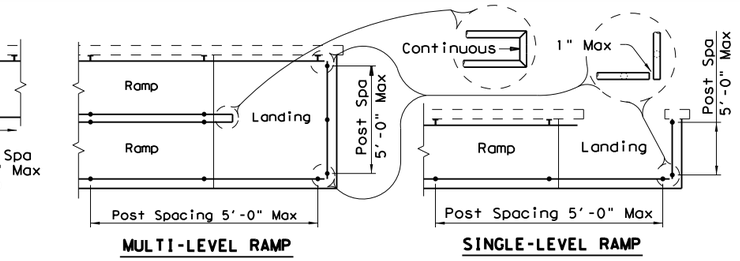
TYPICAL WALL MOUNT DETAILS



WITHOUT CURB

WITH CURB

SECTION AT RAIL POST FOUNDATIONS



RAMP INTERSECTION

MULTI-LEVEL RAMP

SINGLE-LEVEL RAMP

PLAN SHOWING RAIL AT RAMP CONDITIONS

GENERAL NOTES

Designed according to ADAAG, Texas Accessibility Standards, Uniform Building Code, and AASHTO LRFD Specifications.

Handrail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Pipe will conform to ASTM-A53 Grade B or A500 Grade B. Steel plates and steel bars will conform to ASTM-A36. Mechanical tubing (MT) will conform to ASTM A513 Grade 1015 or higher. Galvanize all steel components except reinforcing steel unless noted otherwise.

Concrete for foundations will be in accordance with Item 531 "Sidewalks". All reinforcing steel must be Grade 60. Bar laps, where required, will be as follows: Uncoated ~ #4 = 1'-5" Epoxy coated ~ #4 = 2'-1"

When the plans require painted steel, follow the requirements for painting galvanized steel in Item 446, "Cleaning and Painting Steel". Sleeve Members will receive galvanization and only get field painted after installation unless directed otherwise by Engineer.

Epoxy Anchor bolts for wall mount and post base plate will be ⅝" Dia. ASTM A36 threaded rods with one hex nut and one hardened steel washer at each bolt. ⅝" Dia. threaded rod embedment depth for wall mounts is 3 ½" and embedment depth for post base plate is 5".

Embed threaded rods into concrete with a Type III (Class C) epoxy meeting the requirements of DMS-6100, "Epoxies and Adhesives". Mix and dispense adhesive with the manufacturer's static mixing nozzle/dual cartridge system. Core drill holes (percussion drilling not permitted).

At the contractor's option the post base plate anchor bolts may be cast with the Ramp/Sidewalk (See Cast-in-Place Anchor Bolt Options).

Optional cast-in-place anchor bolts will be ⅝" Dia ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt. Embedment depth of cast-in-place bolt will be 8" for post base plate.

Handrails and any wall or other surface adjacent to them will be free of any sharp or abrasive elements.

Submit shop drawings to the Engineer unless otherwise noted. For curved handrail applications, fabricate the handrail to the curve if radius is less than 600 ft. Shop drawings are required when rail is fabricated to the curve.

For all handrails, erection drawings will be submitted to the Engineer for approval to ensure proper installation.

Drawings will show handrail mount locations with bolts setting, spacing, ramp slope, and/or splice joint locations, and handrail lengths with identification showing where each handrail goes on the layout.

Payment for concrete sidewalks or curb ramps will be paid for in accordance with Item 531 "Sidewalks".

Payment for all items shown is to be included in unit price bid in accordance with Item 450 "Railing" of the type specified.

All exposed edges will be rounded or chamfered to approximately ⅛" by grinding.

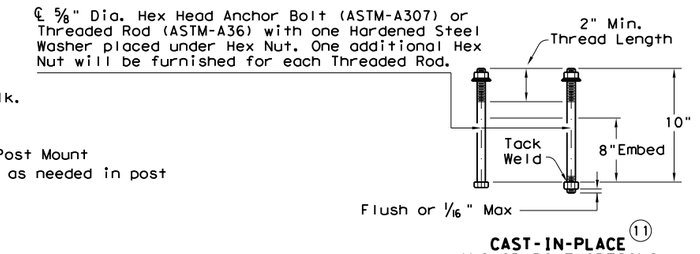
(5) 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.

(6) 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diamenter of top rail. Provide holes as needed in post for galvanizing drainage and venting.

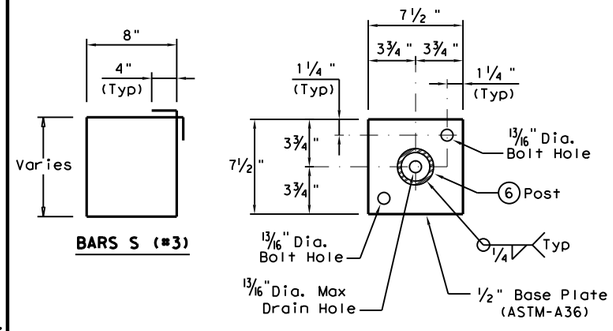
(11) See "General Notes" for anchor bolt information.

(12) Bars S(#3) spaced at 12" Max (Spaced 3" from outside edge of overall length of Ramp/Sidewalk).

(13) Provide 1 ½" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.

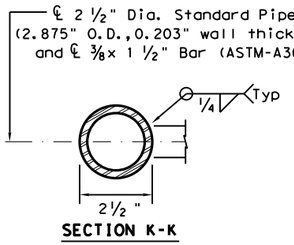


CAST-IN-PLACE ANCHOR BOLT OPTIONS
(Used for Post Base Plate only)



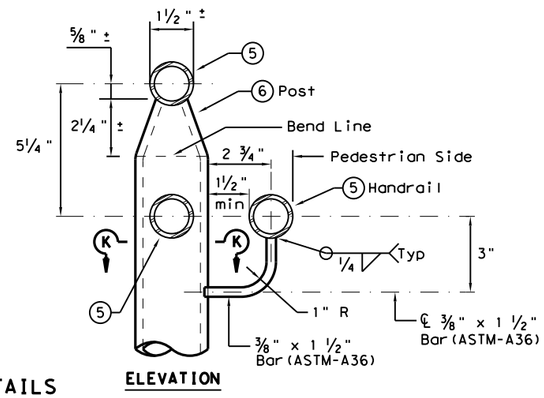
BARS S (#3)

TYPICAL POST BASE PLATE DETAIL



SECTION K-K

POST MOUNT DETAILS



ELEVATION

SHEET 3 OF 3

Texas Department of Transportation

Design Division Standard

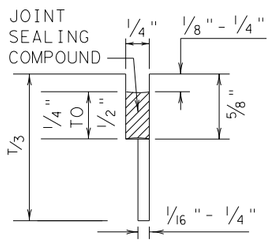
PEDESTRIAN HANDRAIL DETAILS

PRD-13

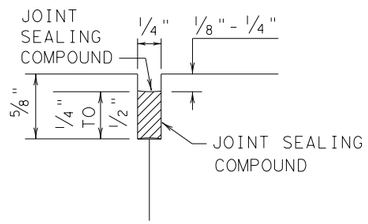
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO.
	LFK	HOUSTON, ETC.		79

DATE: 12/8/2023
FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/0911 28063-ORD/4 - Design/Plan Set/3. Roadway/js14.dgn

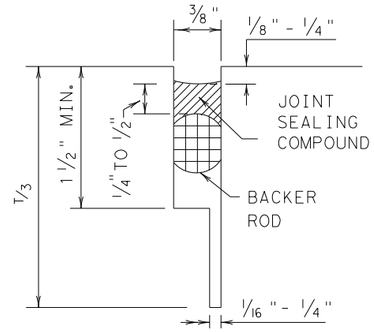
METHOD B: JOINT SEALING COMPOUND



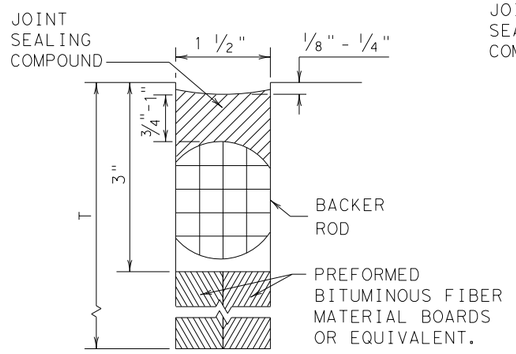
LONGITUDINAL SAWED CONTRACTION JOINT



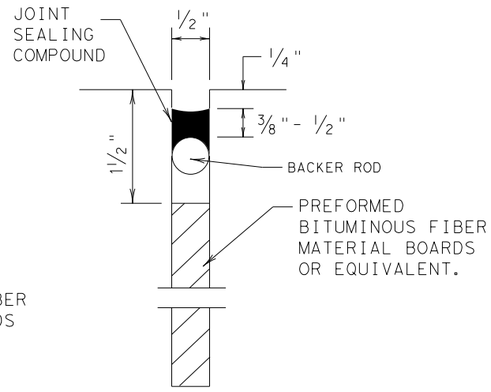
LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT

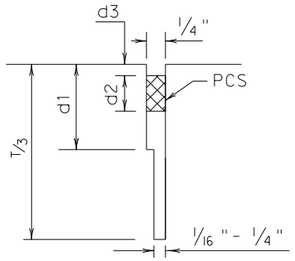


TRANSVERSE FORMED EXPANSION JOINT

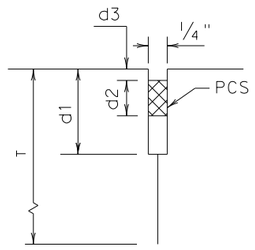


FORMED ISOLATION JOINT

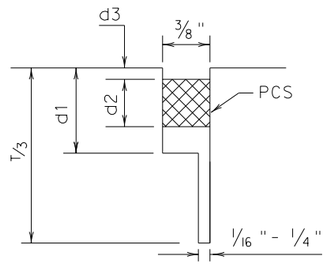
METHOD A: PREFORMED COMPRESSION SEALS (PCS)(DMS-6310 CLASS 6)



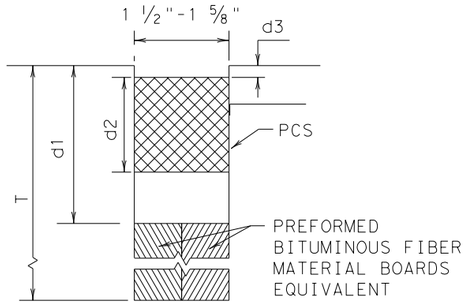
LONGITUDINAL SAWED CONTRACTION JOINT



LONGITUDINAL CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT



TRANSVERSE FORMED EXPANSION JOINT

GENERAL NOTES

1. UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
2. THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
3. THE JOINT RESERVOIR FOR SEALANT OR PCS SHALL BE SAWED UNLESS OTHERWISE SHOWN ON THE PLANS FOR THE LONGITUDINAL AND TRANSVERSE CONSTRUCTION JOINTS AND THE SAWED JOINTS.
4. DIMENSIONS d1, d2, AND d3 SHOWN IN METHOD A SHALL BE IN ACCORDANCE WITH THE PREFORMED COMPRESSION SEAL MANUFACTURER'S RECOMMENDATION.
5. REFER TO DMS-6310 "JOINT SEALANTS AND FILLERS" FOR THE CLASSIFICATIONS.
6. FOR SAWED LONGITUDINAL JOINT, LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT, USE JOINT SEALANT CLASS 5 OR 8 UNLESS OTHERWISE SHOWN ON THE PLAN OR APPROVED.
7. FOR TRANSVERSE SAWED CONTRACTION, TRANSVERSE FORMED EXPANSION JOINT, AND ISOLATION JOINT USE JOINT SEALANT CLASS 5 OR 8 AT NEW JOINTS. USE JOINT SEALANT CLASS 4,5,7,OR 8 FOR MAINTAINING EXISTING JOINTS.
8. THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE ITEM 438 "CLEANING AND SEALING JOINTS" OR ITEM 713 "CLEANING AND SEALING JOINTS AND CRACKS (CONCRETE PAVEMENT)".
9. ISOLATION JOINTS ACCOMMODATE HORIZONTAL AND VERTICAL MOVEMENTS THAT OCCUR BETWEEN A PAVEMENT AND A STRUCTURE. ISOLATION JOINTS MAY BE USED FOR BRIDGE ABUTMENTS, INTERSECTIONS, CURB AND GUTTER, OLD AND NEW PAVEMENTS, OR AROUND DRAINAGE INLETS, MANHOLES, FOOTINGS AND LIGHTING STRUCTURES.

Texas Department of Transportation | Design Division Standard

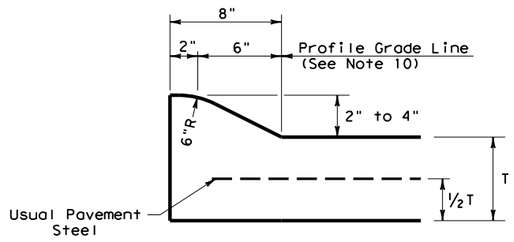
CONCRETE PAVING DETAILS

JOINT SEALS

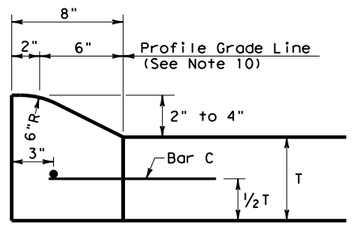
JS-14

FILE: js14.dgn	DN: TxDOT	DN: HC	DW: HC	CK: AN
©TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
	DIST	COUNTY		SHEET NO.
	LFK	HOUSTON, ETC.		80

DATE: 12/8/2023
FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/091128063-ORD/4 - Design/Plan Set/3. Roadway/cccg22.dgn



TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



TYPE I CURB
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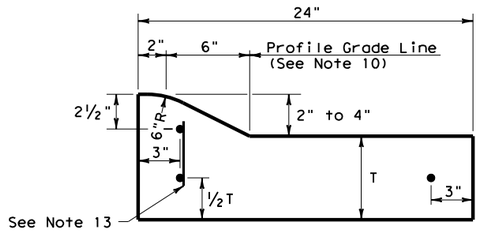
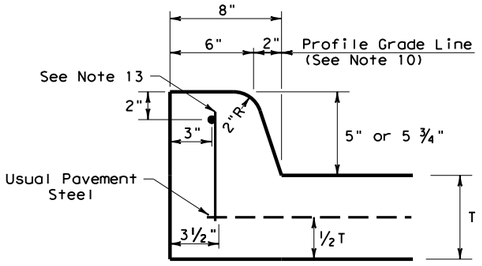


TYPE I CURB AND GUTTER
2" - 4" HEIGHT



TYPE II CURB (MONOLITHIC)
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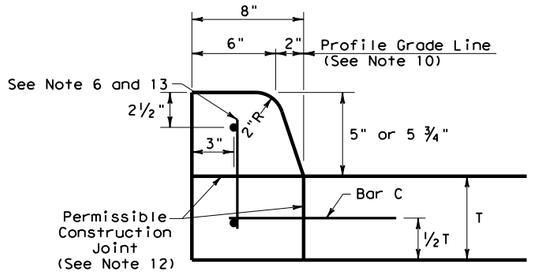

TYPE II CURB
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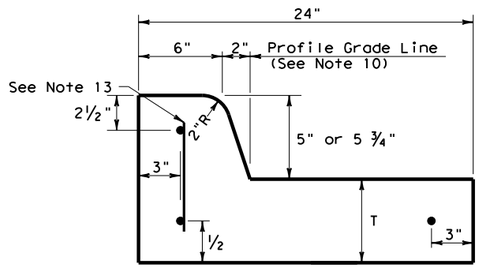

TYPE II CURB AND GUTTER
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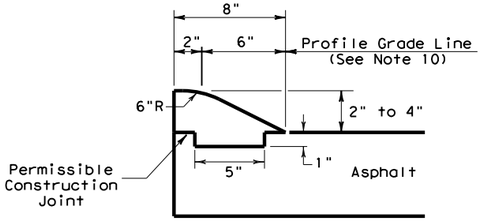
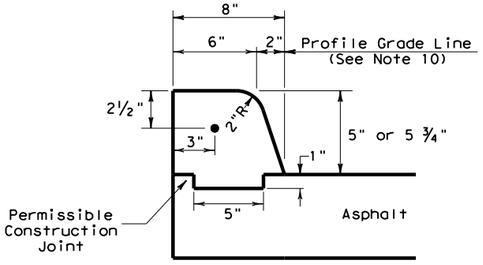


TYPE III CURB (KEYED)
2" - 4" HEIGHT



TYPE IV CURB (KEYED)
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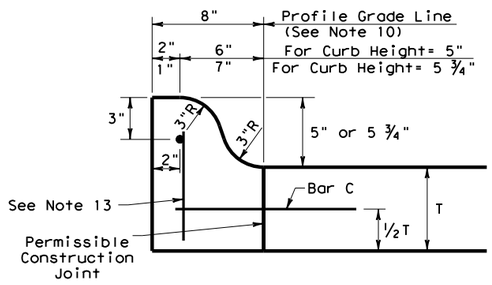
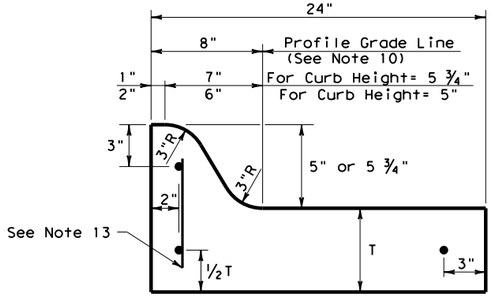
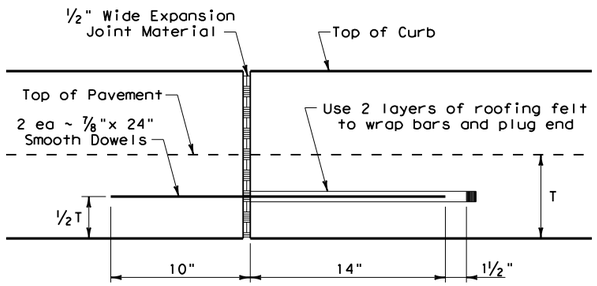


TYPE IIa CURB
5" - 5 ¾" HEIGHT

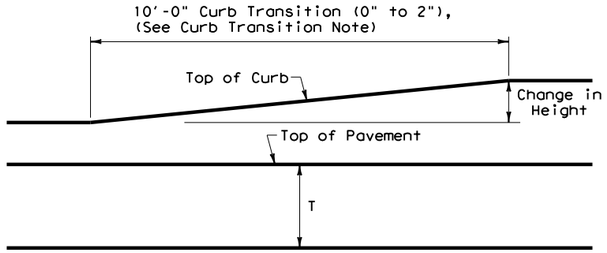


TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

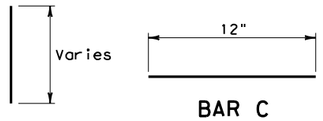
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



CURB TRANSITION
Note: To be paid for as Highest Curb

GENERAL NOTES

1. All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
2. Concrete shall be Class A.
3. When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
4. Round exposed sharp edges with a rounding tool, to a minimum radius of ¼ inch.
5. All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
6. Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and grouted in place, or may be inserted into fresh concrete.
7. Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
8. Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C~C.
9. Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
10. Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
11. One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
12. When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
13. Bar B placement as needed (typically at four ft. C-C) to support curb reinforcing steel during concrete placement.



BAR B

BAR C

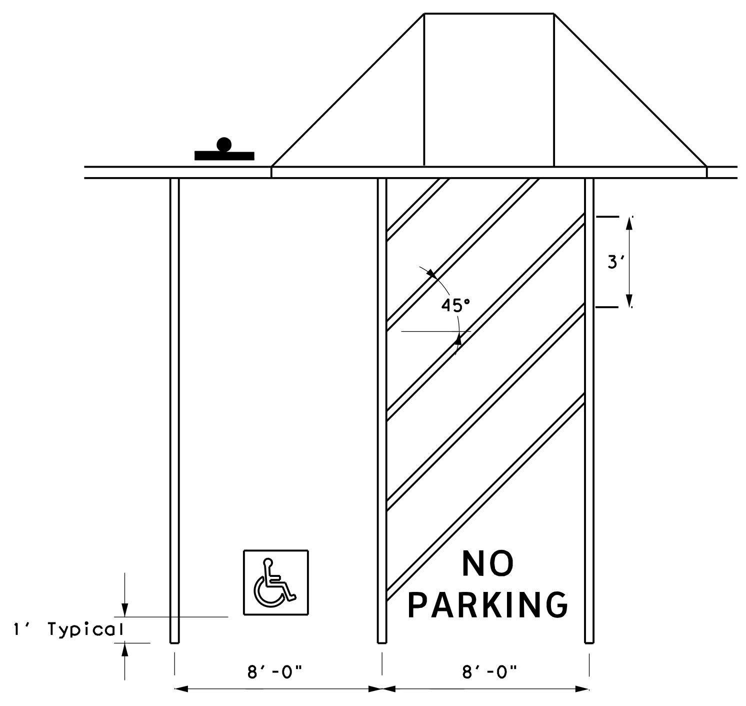
Texas Department of Transportation

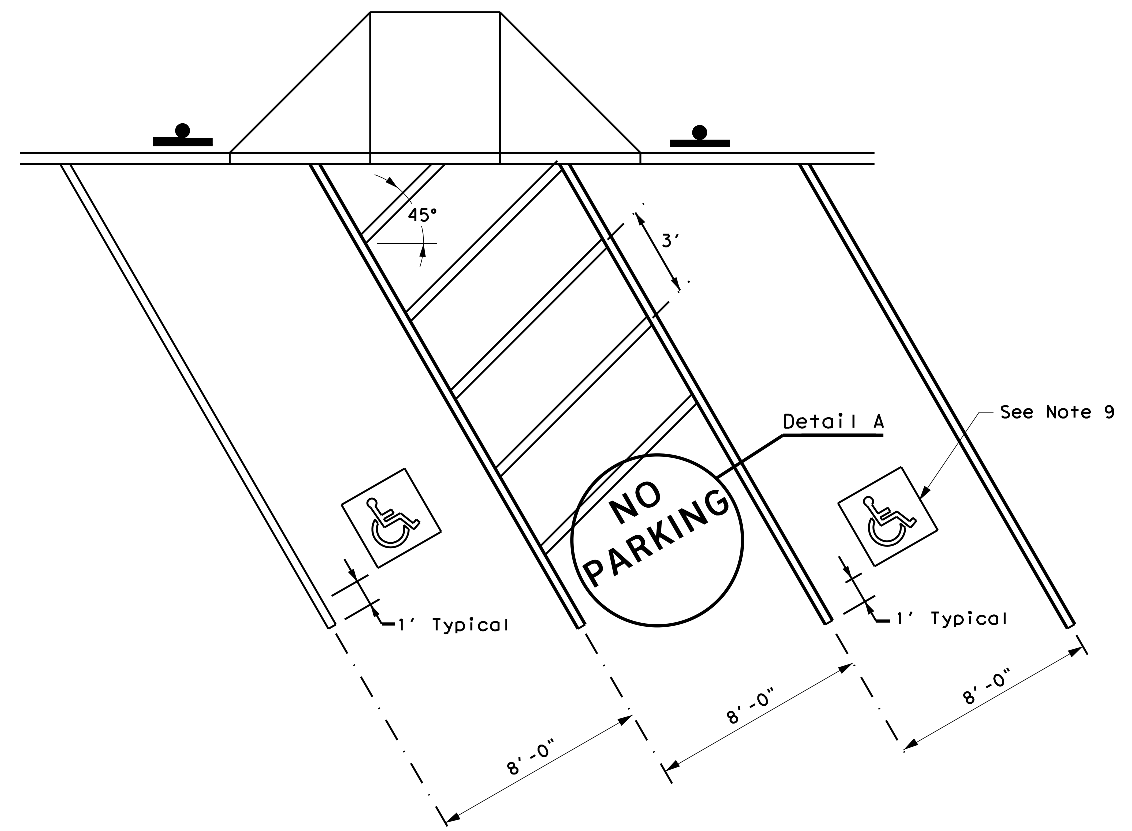
Design Division Standard

CONCRETE CURB AND CURB AND GUTTER

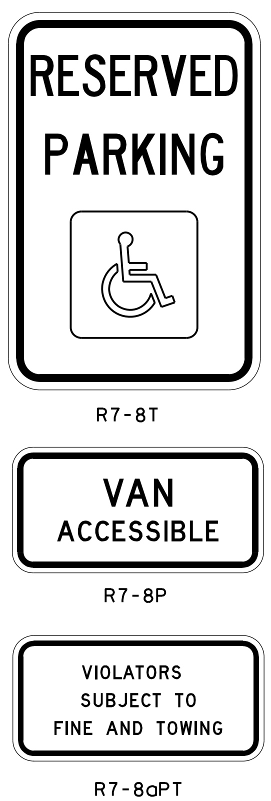
CCCG-22

FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: CS	CK: KM
© TxDOT: JUNE 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
	DIST	COUNTY		SHEET NO.
	LFK	HOUSTON, ETC.		81

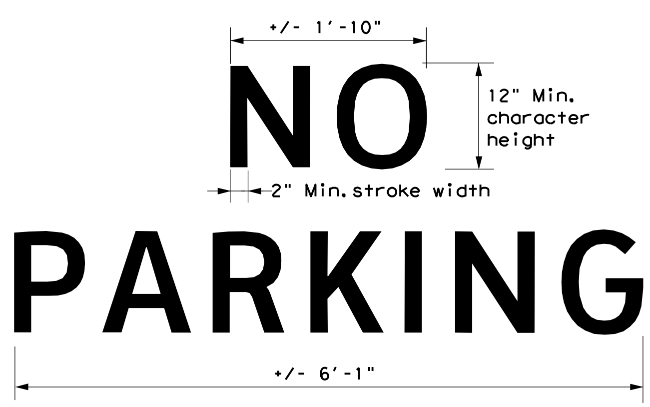




PERPENDICULAR OR ANGLED ACCESSIBLE PARKING SPACE DIMENSIONS



ACCESSIBLE PARKING SIGNS



Detail A

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
SIGN FACE MATERIALS	DMS-8300

GENERAL NOTES:

1. All paved accessible parking space limit lines shall be 4" solid white lines.

2. Paved accessible parking spaces must include a white International Symbol of Accessibility applied conspicuously on the surface in a color that contrasts the pavement. A blue background with white border may supplement the symbol for additional contrast.

3. The words "NO PARKING" must be applied on any access aisle adjacent to the parking space. The words must be white, applied:

   a) in all capital letters.

   b) centered within each access aisle adjacent to the parking space.

4. RESERVED PARKING (R7-8T) sign including the International Symbol of Accessibility.

   a) shall be REQUIRED for each accessible parking space.

   b) shall NOT be placed between two accessible parking spaces.

   c) shall NOT be placed in a location that restricts movement of wheelchairs within the adjacent sidewalk.

   d) shall have a mounting height of 7 feet to the bottom of the sign.

5. A sign identifying the consequences of parking illegally in a paved accessible parking space. Must:

   a) at a minimum state "VIOLATORS SUBJECT TO FINE AND TOWING" (Plaque)(R7-8aPT).

   b) be mounted on a pole, post, wall or freestanding board.

   c) be no more than eight inches (8") below sign R7-8T a sign required by the Texas Accessibility Standards, 502.6.

   d) be installed so that the bottom edge of the sign is no lower than 48 inches and no higher than 80 inches above the ground level.

6. Signs identifying van parking spaces shall contain the designation "VAN ACCESSIBLE" (R7-8P) Signs shall be 60 inches minimum above the ground level measured to the bottom of the sign.

7. Perpendicular or angled parking spaces shall be 8 feet wide minimum with an access aisle 8 feet minimum wide (van accessible). Two parking spaces are permitted to share a common access aisle.

8. Access aisles shall be at street level, extend the full length of the parking space they serve, follow ADA surface requirements, and marked to discourage parking in the access aisle. Curb ramps shall connect the access aisle to the adjacent pedestrian access route. Curb ramps shall not be located within the access aisle.

9. International Symbol of Accessibility Parking Space Marking and sign details can be found in The Standard Highway Sign Designs for Texas (SHSD) at the following website. http://www.txdot.gov/

Texas Department of Transportation

Traffic Safety Division Standard

PAVEMENT MARKINGS AND SIGNING FOR ACCESSIBLE PARKING

PM(AP)-21

FILE: pm(ap)-21	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT July 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
	DIST		COUNTY	SHEET NO.
	LFK		HOUSTON, ETC.	82

22F

DATE: 12/8/2023 2:49:39 PM
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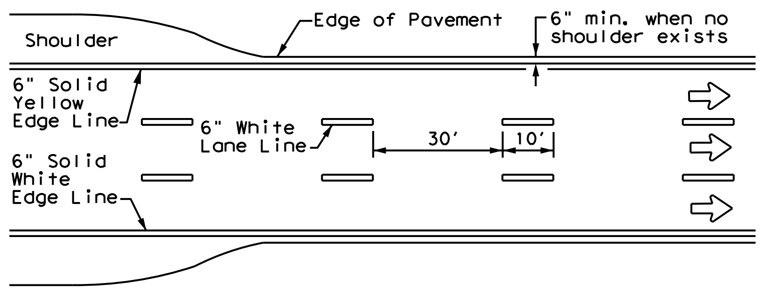
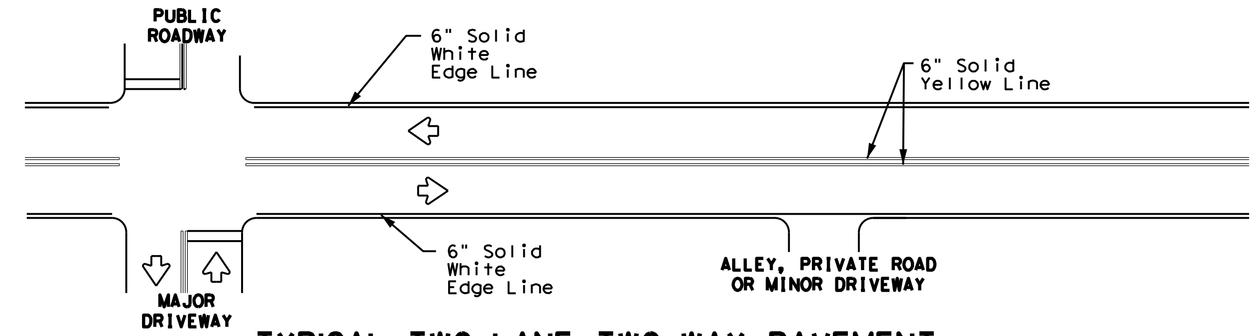


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

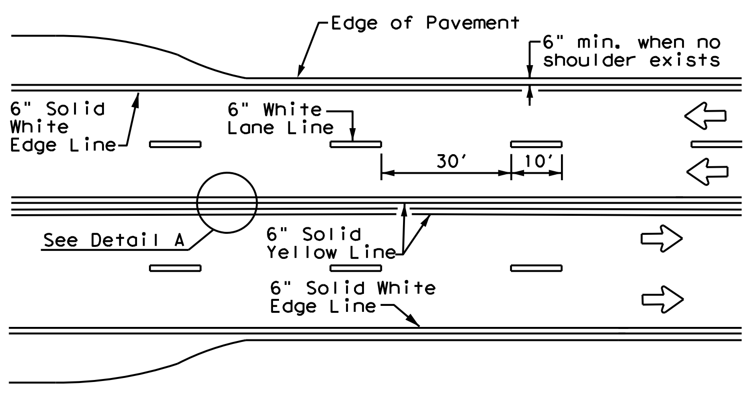
GENERAL NOTES

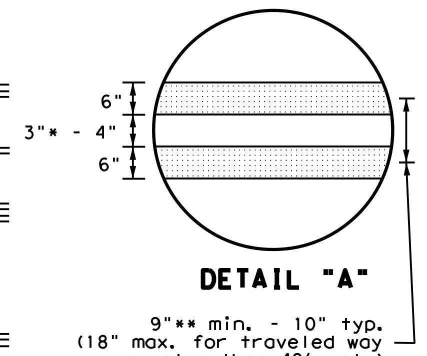
1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.

2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.





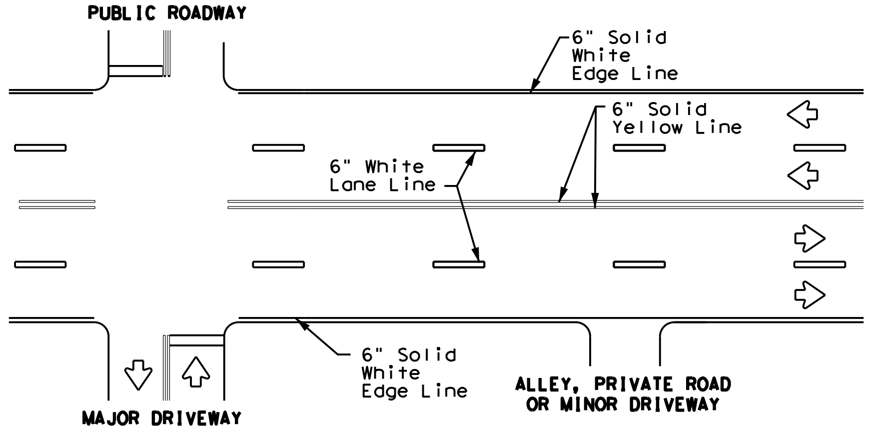
DETAIL "A"

9"** min. - 10" typ. (18" max. for traveled way greater than 48' only)

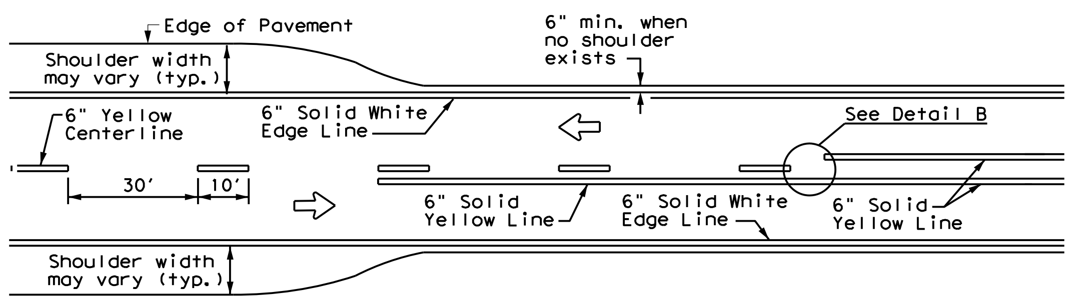
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

* 2" minimum for restripe projects when approved by the Engineer.

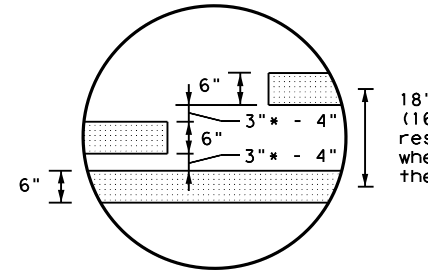
** 8" minimum for restripe projects when approved by the Engineer.



TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

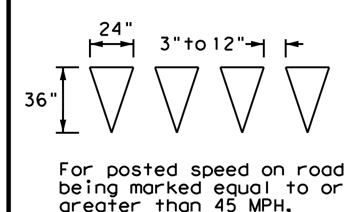


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

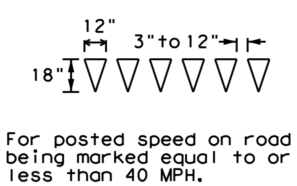


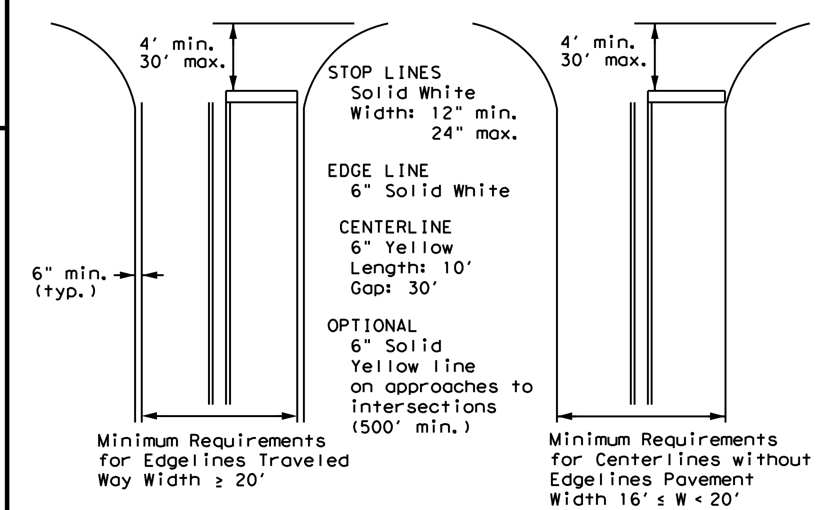
DETAIL "B"

* 2" minimum for restripe projects when approved by the Engineer.



YIELD LINES

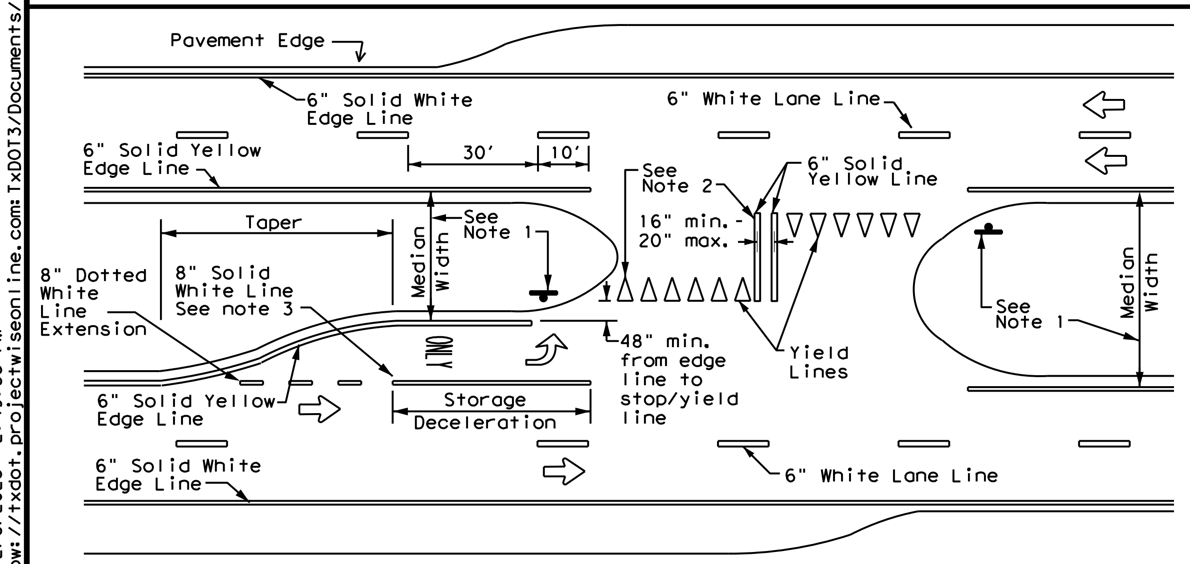




NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.

2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.

3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

Texas Department of Transportation — Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

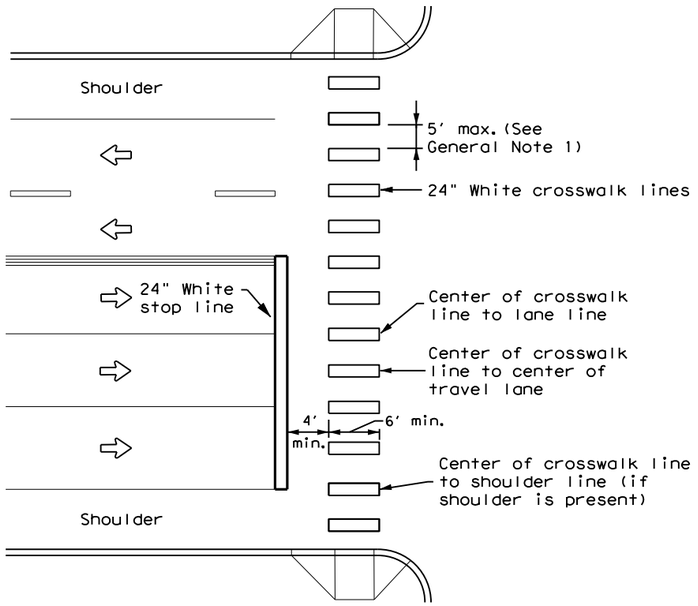
PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20	0911	28	063, ETC.	VARIOUS
8-95 3-03 12-22	DIST		COUNTY	SHEET NO.
5-00 2-12	LFK		HOUSTON, ETC.	83

22A

DATE: 12/8/2023 2:49:55 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/0911-28063-ORD/Lufkin District/Standards/pm1-22.dgn

DATE:
FILE:



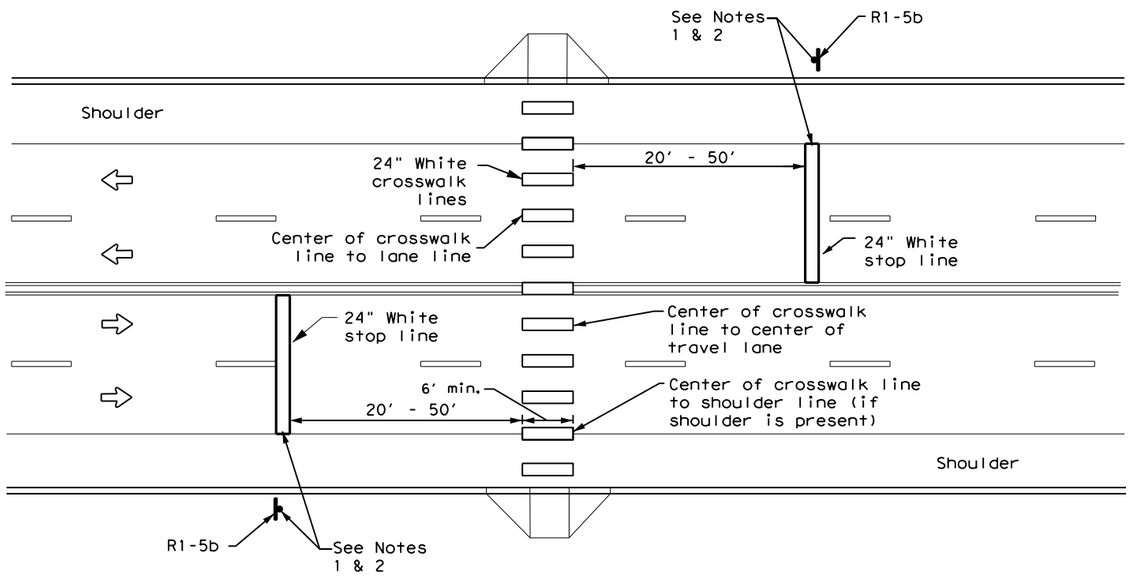
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with Stop Here For Pedestrians (R1-5b) signs at unsignalized midblock cross walks.
2. Use stop bars with STOP HERE ON RED (R10-6 or R10-6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

FILE: pm4-22a.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
6-20	DIST	COUNTY		SHEET NO.
6-22	LFK	HOUSTON, ETC.		84
12-22				

22D

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

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

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
CSJ 0911-28-063 & CSJ 0118-03-005

1.2 PROJECT LIMITS:
From: at Mission Tejas State Park

To:

1.3 PROJECT COORDINATES:
BEGIN: (Lat) 31.5441° ,(Long) 95.2340°

END: (Lat) 31.5483° ,(Long) 95.2383°

1.4 TOTAL PROJECT AREA (Acres): 7.61 AC

1.5 TOTAL AREA TO BE DISTURBED (Acres): 7.61 AC

1.6 NATURE OF CONSTRUCTION ACTIVITY:
Improve RV Pullouts, restore park road, parking lots, and campsite pullouts

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Kirvin gravelly fine sandy loam, 1-5% slopes STA 19+97 to STA 27+77	14.5% loam, well-drained, high rate of runoff, and slight erosion potential
Lilbert loamy fine sand, 2-5% slopes STA 40+55 to STA 48+27	20.4% sand, well-drained, very low rate of runoff, and slight erosion potential
Trawick fine sandy loam, 5-15% slopes Begin Project to STA 19+97 STA 27+77 to STA 40+55 STA 48+27 to End Project	65.1% loam, well-drained, high rate of runoff, and severe erosion potential

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
N/A	

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

1.9 CONSTRUCTION ACTIVITIES:
(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

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

1.10 POTENTIAL POLLUTANTS AND SOURCES:

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

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

Tributaries	Classified Waterbody
Unnamed tributaries to San Pedro Creek	*Neches River (0604); Impaired for dioxin and mercury in edible tissue

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- ☒ Development of plans and specifications
- ☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- ☒ Post Construction Site Notice
- ☒ Submit NOI/CSN to local MS4
- ☒ Perform SWP3 inspections
- ☒ Maintain SWP3 records and update to reflect daily operations
- ☒ Complete and submit Notice of Termination to TCEQ
- ☒ Maintain SWP3 records for 3 years
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- ☒ Day To Day Operational Control
- ☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- ☒ Post Construction Site Notice
- ☒ Submit NOI/CSN to local MS4
- ☒ Maintain schedule of major construction activities
- ☒ Install, maintain and modify BMPs
- ☒ Complete and submit Notice of Termination to TCEQ
- ☒ Maintain SWP3 records for 3 years
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity
N/A

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

July 2023 Sheet 1 of 6

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			85
STATE	STATE DIST.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

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

2.2 SEDIMENT CONTROL BMPs:

T / P

- X ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- ☐ ☐ Inlet Protection
- X ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- X ☐ 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

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- ☐ ☐ Sediment Trap
  - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - ☐ 3,600 cubic feet of storage per acre drained
- ☐ ☐ Sedimentation Basin
  - X Not required (<10 acres disturbed)
  - ☐ Required (>10 acres) and implemented.
    - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - ☐ 3,600 cubic feet of storage per acre drained
  - ☐ Required (>10 acres), but not feasible due to:
    - ☐ Available area/Site geometry
    - ☐ Site slope/Drainage patterns
    - ☐ Site soils/Geotechnical factors
    - ☐ Public safety
    - ☐ Other: _____

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To
N/A		

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
- X Stabilized construction exit
- ☐ Daily street sweeping
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

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

2.6 VEGETATED BUFFER ZONES:

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

Type	Stationing	
	From	To
N/A		

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

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

2.8 DEWATERING:

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

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

When dewatering activities are present, a daily inspection will be conducted once per day during those activities and documented in accordance with CGP and TxDOT requirements.

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

July 2023 Sheet 2 of 6

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			86
STATE	STATE DIST.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

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

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

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

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0911-08-058

1.2 PROJECT LIMITS:
From: WITHIN ALAZAN BAYOU WMA

To:

1.3 PROJECT COORDINATES:
BEGIN: (Lat) 31.485885° ,(Long) -94.747774°

END: (Lat) 31.476741° ,(Long) -94.749877°

1.4 TOTAL PROJECT AREA (Acres): 3.000

1.5 TOTAL AREA TO BE DISTURBED (Acres): 0.400

1.6 NATURE OF CONSTRUCTION ACTIVITY:
INSTALL CONCRETE LOW-WATER CROSSING
INSTALL FLEX BASE IN VARIOUS LOW SPOT LOCATIONS
MAINTAIN/REPAIR OF 0.75 MI OF "BOTTOM" ROAD

1.7 MAJOR SOIL TYPES:

Soil Type	Description
MANTACHIE SOILS, 0-1% SLOPES, STA 317+00-STA 339+07	65.5% CLAY LOAM, SOMEWHAT POORLY DRAINED,HIGH RATE OF RUNOFF, FREQUENTLY FLOODED
TUSCOSSO CLAY LOAM, 0-1% SLOPES, STA 300+00-STA 317+00	34.5% LOAM, MODERATELY WELL-DRAINED, LOW RATE OF RUNOFF, FEQUENTLY FLOODED

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: _____
☐ Other: _____
☐ Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

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

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

Tributaries	Classified Waterbody
ALAZAN BAYOU	

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

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

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

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

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
AF852E728AEC4C0...
P.E.

2/26/2024

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

July 2023 Sheet 3 of 6

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			87
STATE	STATE DIST.	COUNTY	
TEXAS	LFK	HOUSTON, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC.	VARIOUS

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

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

2.2 SEDIMENT CONTROL BMPs:

T / P

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

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

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
cmb, P.E.
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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 DEWATERING:

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

2.9 INSPECTIONS:

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

2.10 MAINTENANCE:

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

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

July 2023 Sheet 4 of 6

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			88
STATE	STATE DIST.	COUNTY	
TEXAS	LFK	HOUSTON, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC.	VARIOUS

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

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

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

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

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0911-39-073

1.2 PROJECT LIMITS:
From: WITHIN TOLEDO BEND WMA

To:

1.3 PROJECT COORDINATES:
BEGIN: (Lat) 31.970807° ,(Long) -93.955021°

END: (Lat) 31.909128° ,(Long) -93.952469°

1.4 TOTAL PROJECT AREA (Acres): 0.620

1.5 TOTAL AREA TO BE DISTURBED (Acres): 0.620

1.6 NATURE OF CONSTRUCTION ACTIVITY:
INSTALL FLEX BASE MAT'L ROAD
ADDITION OF APPROX 1,200' OF ACCESS ROAD

1.7 MAJOR SOIL TYPES:

Soil Type	Description
OWENTOWN FINE SANDY LOAM, 0-1% SLOPES	100% LOAM, MODERATELY WELL-DRAINED, OCCASIONALLY FLOODED, NEGLIGIBLE EROSION

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: _____
☐ Other: _____
☐ Other: _____

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

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

Tributaries	Classified Waterbody
	TOLEDO BEND RESERVOIR

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT
☒ Development of plans and specifications
☒ Perform SWP3 inspections
☒ Maintain SWP3 records and update to reflect daily operations
☐ Other: _____
☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR
☒ Day To Day Operational Control
☒ Maintain schedule of major construction activities
☒ Install, maintain and modify BMPs
☐ Other: _____
☐ Other: _____
☐ Other: _____

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
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2/26/2024

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

July 2023 Sheet 5 of 6
Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			89
STATE	STATE DIST.	COUNTY	
TEXAS	LFK	HOUSTON, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC.	VARIOUS

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

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

2.2 SEDIMENT CONTROL BMPs:

T / P

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

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

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

STATE OF TEXAS
CHARLES M. BRAZIL
112704
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
cmb P.E.
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2/26/2024

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:

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	From	To

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- ☒ Springs
- ☒ Uncontaminated groundwater
- ☒ Water used to wash vehicles or control dust
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2.8 DEWATERING:

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

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

July 2023 Sheet 6 of 6

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			90
STATE	STATE DIST.	COUNTY	
TEXAS	LFK	HOUSTON, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC.	VARIOUS

CK
DW
CK
DW

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.

This project disturbs more than 5 acres of soil
1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
2. Comply with the SWP3 and revise when necessary to control pollution or required by the Engineer.
3. Project requires that a NOI and Large Site Notice be posted on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
4. NOT must be filed with TCEQ for the project when final stabilization has been achieved.

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 (1/10th to < 1/2 acre, 1/3 in tidal waters)*
☐ *Individual 404 Permit Required*
☐ *Other Nationwide Permit Required: NWP # _____*

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

1. Various un-named creeks and streams

Best Management Practices:

Erosion	*Sedimentation*	*Post-Cconstruction TSS*
☒ *Temporary Vegetation*	☒ *Silt Fence*	☐ *Vegetative Filter Strips*
☐ *Blankets/Matting*	☒ *Rock Berm*	☐ *Retention/Irrigation Systems*
☒ *Mulch*	☐ *Triangular Filter Dike*	☐ *Extended Detention Basin*
☐ *Sodding*	☐ *Sand Bag Berm*	☐ *Constructed Wetlands*
☐ *Interceptor Swale*	☐ *Straw Bale Dike*	☐ *Wet Basin*
☐ *Diversion Dike*	☐ *Brush Berms*	☐ *Erosion Control Compost*
☐ *Erosion Control Compost*	☐ *Erosion Control Compost*	☐ *Mulch Filter Berm and Socks*
☐ *Mulch Filter Berm and Socks*	☐ *Mulch Filter Berm and Socks*	☐ *Compost Filter Berm and Socks*
☒ *Compost Filter Berm and Socks*	☒ *Compost Filter Berm and Socks*	☒ *Vegetation Lined Ditches*
	☐ *Stone Outlet Sediment Traps*	☐ *Sand Filter Systems*
	☐ *Sediment Basins*	☐ *Grassy Swales*

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

☒ *No Action Required* ☐ *Required Action*

Action No.

1. N/A

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical.
Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

☒ *No Action Required* ☐ *Required Action*

Action No.

1. N/A

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

☐ *No Action Required* ☒ *Required Action*

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately.

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 nests (i.e. tree removal, tree limbing, bridge work) shall be conducted outside of the nesting season (March 15 to September 15). In the event birds or active nests (eggs and/or nestlings present) are encountered, contact the engineer prior to conducting work.

2. Cover trenches left open over night. Inspect excavation areas priot to backfill for trapped wildlife. Examine heavy equipment stored on site before use, particulary after rain events, to ensure use will not harm wildlife that may be seeking refuge.

3. Install and maintain Water Quality BMPs associated with Section 404 & 401 permits (i.e. silt fence, rock filter dams, avoid/minmize impacts to WOTUS, etc.) around creeks and streams that cross the project area to avoid impacts to aquatic wildlife. Refer to ENV layouts.

4. Eastern Box Turtles and Neches Crayfish may occur within the project area. Avoid harming species if encountered and allow them to safely leave the project area

5. Avoid or minimize disturbing burrows, logs-stumps, creayfish burrows, debris or leaf litter, when feasible. Avoid removing large hollow trees, when feasible.

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 Treat 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 rquired.
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.

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*

VII. OTHER ENVIRONMENTAL ISSUES

☒ *No Action Required* ☐ *Required Action*

Texas Department of Transportation

EPIC

(ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS)

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		91

DATE: 2/15/2024 11:45:03 AM
FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/0911128063-ORD/4 - Design/Environmental/EPIC Sheet 1.dgn

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 EXTEND 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 #14

AS APPLICABLE TO
THIS PROJECT

ACTIVITIES REQUIRED FOR CROSSINGS OF WATERS OF THE UNITED STATES ASSOCIATED WITH THE CONSTRUCTION, EXPANSION, MODIFICATION, OR IMPROVEMENT OF LINEAR TRANSPORTATION PROJECTS (E.G., ROADS, HIGHWAYS, RAILWAYS, TRAILS, AIRPORT RUNWAYS, AND TAXIWAYS) IN THE WATERS OF THE U.S. FOR LINEAR TRANSPORTATION PROJECTS IN NON-TIDAL WATERS, THE DISCHARGE CANNOT CAUSE THE LOSS OF GREATER THAN 1/2-ACRE OF WATERS OF THE U.S. ANY STREAM CHANNEL MODIFICATION, INCLUDING BANK STABILIZATION, IS LIMITED TO THE MINIMUM NECESSARY TO CONSTRUCT OR PROTECT THE LINEAR TRANSPORTATION PROJECT; SUCH MODIFICATIONS MUST BE IN THE IMMEDIATE VICINITY OF THE PROJECT.

THIS NWP ALSO AUTHORIZES TEMPORARY STRUCTURES, FILLS, AND WORK NECESSARY TO CONSTRUCT THE BANK STABILIZATION ACTIVITY. APPROPRIATE MEASURES MUST BE TAKEN TO MAINTAIN 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.

THIS NWP CANNOT BE USED TO AUTHORIZE NON-LINEAR FEATURES COMMONLY ASSOCIATED WITH TRANSPORTATION PROJECTS, SUCH AS VEHICLE MAINTENANCE OR STORAGE BUILDINGS, PARKING LOTS, TRAIN STATIONS, OR AIRCRAFT HANGARS.

NOTIFICATION: THE PERMITTEE MUST SUBMIT A PRE-CONSTRUCTION NOTIFICATION (PCN) TO THE DISTRICT ENGINEER PRIOR TO COMMENCING ACTIVITY IF: (1) THE LOSS OF WATERS OF THE U.S. EXCEEDS 1/10-ACRE; OR (2) THERE IS A DISCHARGE IN A SPECIAL AQUATIC SITE, INCLUDING WETLANDS.

NOTE:

THE PROJECT CROSSES JURISDICTIONAL WATERS OF THE U.S. AND A NWP #14 WITH A PRE-CONSTRUCTION NOTIFICATION (PCN) HAS BEEN UTILIZED. THIS PERMIT AUTHORIZES THE ACTIVITIES WHICH WILL IMPACT WATERS OF THE U.S. THE NWP GENERAL CONDITIONS AND THE NWP #14 LIMITS DESCRIBED IN THE PCN MUST BE FOLLOWED IN ORDER TO MAINTAIN COMPLIANCE WITH THE NWP. IF IMPACTS WILL EXCEED THOSE SET FORTH IN THE PCN, CONTACT THE TxDOT LUFKIN DISTRICT ENVIRONMENTAL SECTION AT 1-800-687-8087 PRIOR TO INITIATING WORK AS ADDITIONAL COORDINATION WITH THE USACE MAY BE REQUIRED.

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC):

USACE

Texas Department of Transportation

EPIC

(ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS)

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0911	28	063, ETC.	VARIOUS
DIST	COUNTY		SHEET NO.
LFK	HOUSTON, ETC.		92

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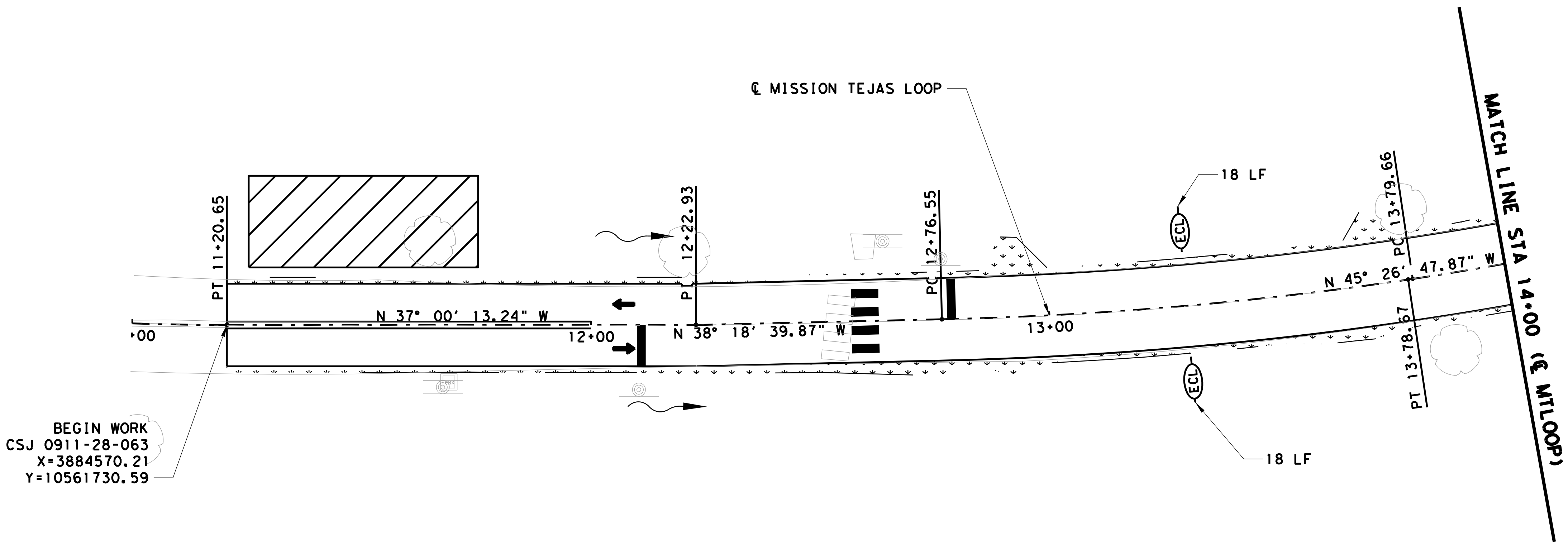

LEGEND

- DIRECTION OF FLOW
- ECL — 12" EROSION CONTROL LOG
- SCF — SEDIMENT CONTROL FENCE
- X — CAMPSITE NUMBER
- TRAFFIC DIRECTION
- SEEDING/DISTURBED LIMITS
- CONSTRUCTION EXIT

NOTE:
1. LOCATIONS OF CONSTRUCTION EXITS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.
2. SCF & ECL TO BE PLACED AS DIRECTED BY THE ENGINEER.

0 15 30
SCALE: 1"=30'

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ENVIRONMENTAL LAYOUT SHEETS

(MISSION TEJAS)

SHEET 1 OF 16

Texas Department of Transportation

BGE, Inc.
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Tel: 281-558-8700 • www.bgeinc.com
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			093
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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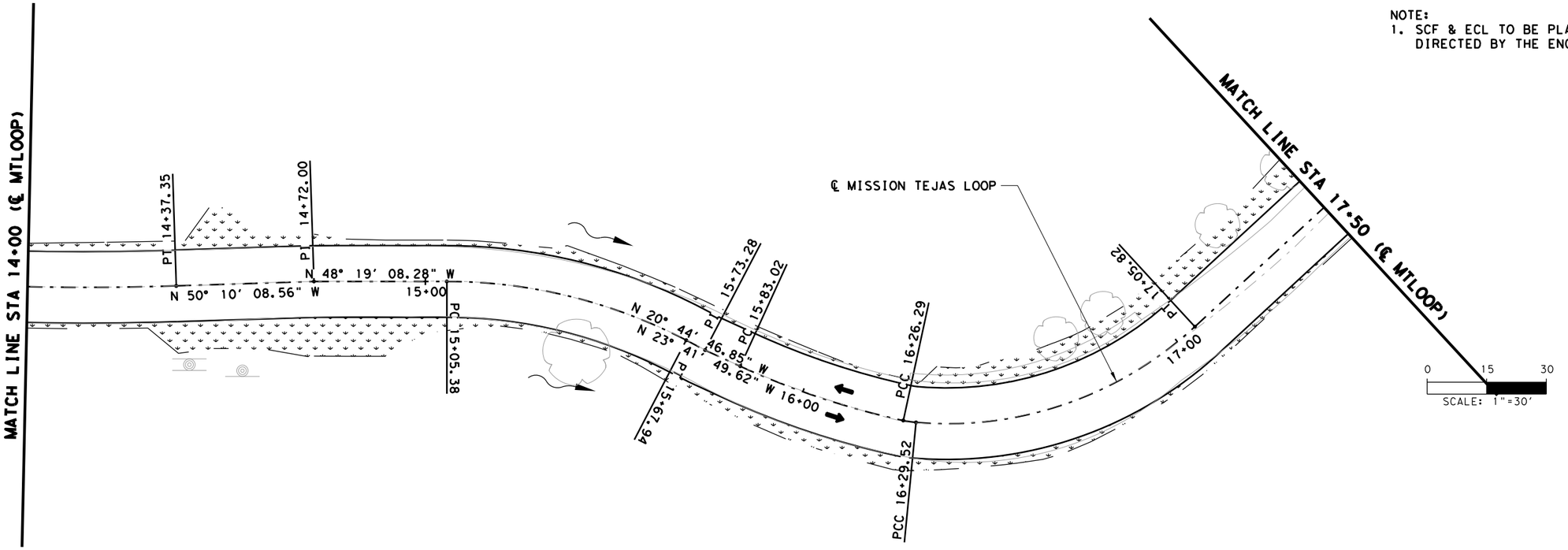

LEGEND

- DIRECTION OF FLOW
- (ECL) 12" EROSION CONTROL LOG
- (SCF) SEDIMENT CONTROL FENCE
- [X] CAMPSITE NUMBER
- TRAFFIC DIRECTION
- SEEDING/DISTURBED LIMITS
- CONSTRUCTION EXIT

NOTE:
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STATE OF TEXAS
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ENVIRONMENTAL LAYOUT SHEETS

(MISSION TEJAS)

SHEET 2 OF 16

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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			094
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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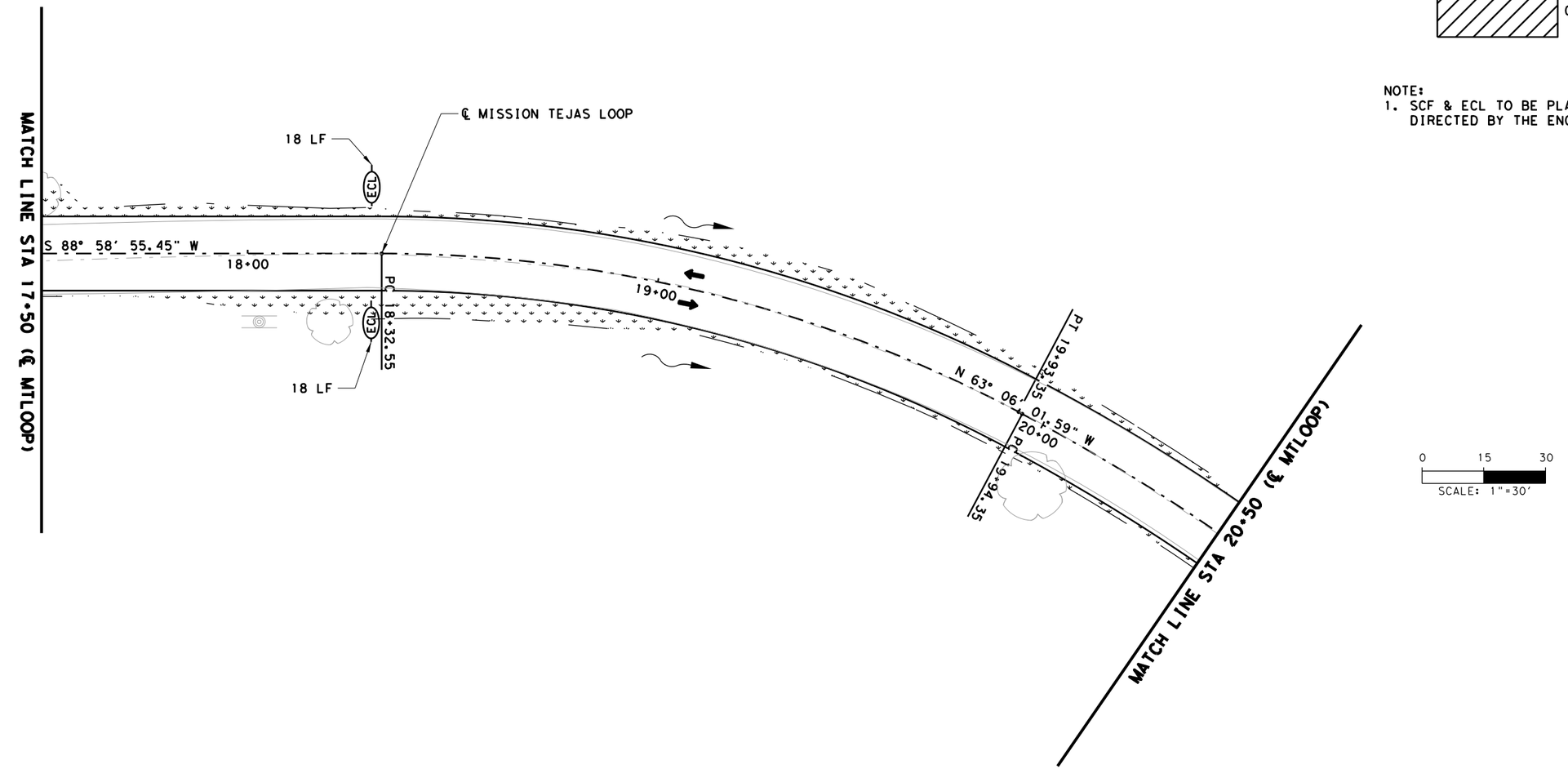

LEGEND

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- ECL — 12" EROSION CONTROL LOG
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0 15 30
SCALE: 1"=30'

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ENVIRONMENTAL LAYOUT SHEETS

(MISSION TEJAS)

SHEET 3 OF 16

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FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		095

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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LEGEND

- DIRECTION OF FLOW
- (ECL) 12" EROSION CONTROL LOG
- (SCF) SEDIMENT CONTROL FENCE
- [X] CAMPSITE NUMBER
- TRAFFIC DIRECTION
- SEEDING/DISTURBED LIMITS
- CONSTRUCTION EXIT

NOTE:
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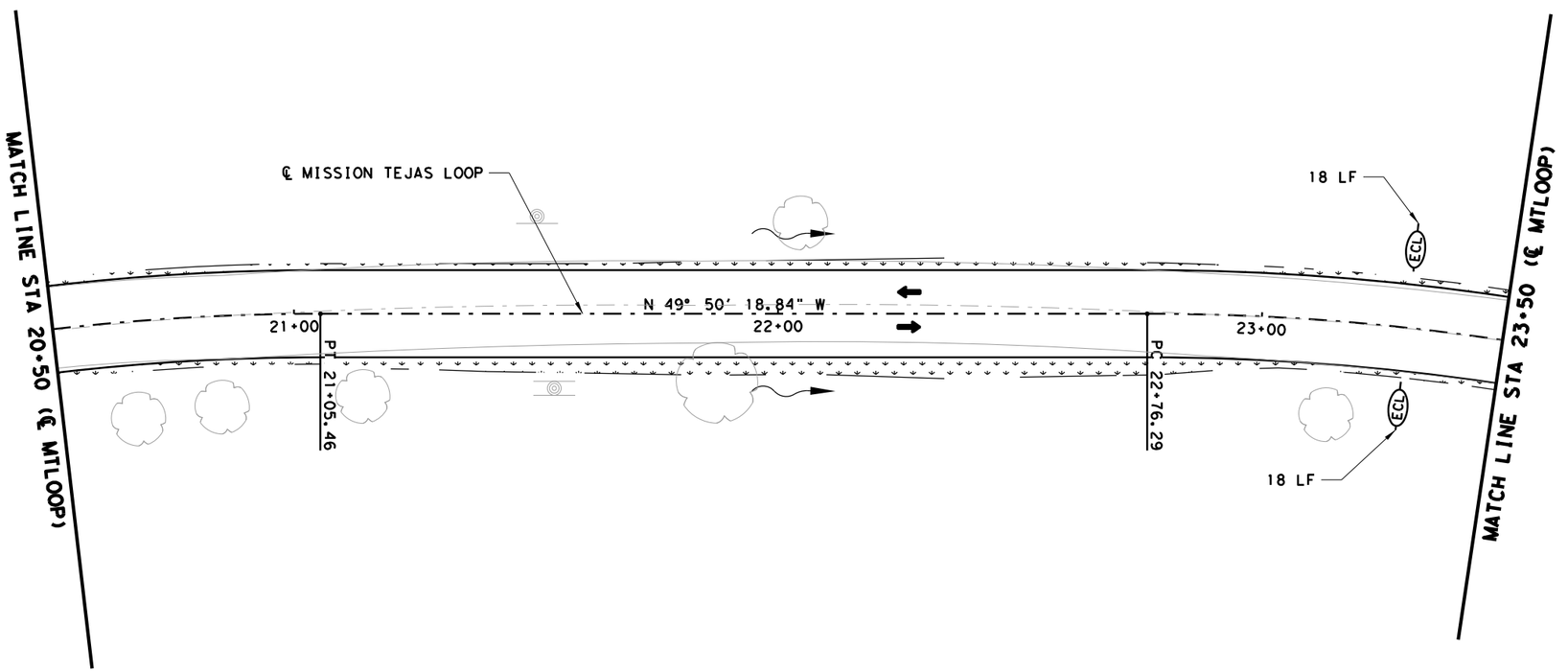

0 15 30
SCALE: 1"=30'

STATE OF TEXAS
CARITA G. STEWART
129562
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2/12/2024

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ENVIRONMENTAL LAYOUT SHEETS

(MISSION TEJAS)

SHEET 4 OF 16

Texas Department of Transportation

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FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		096

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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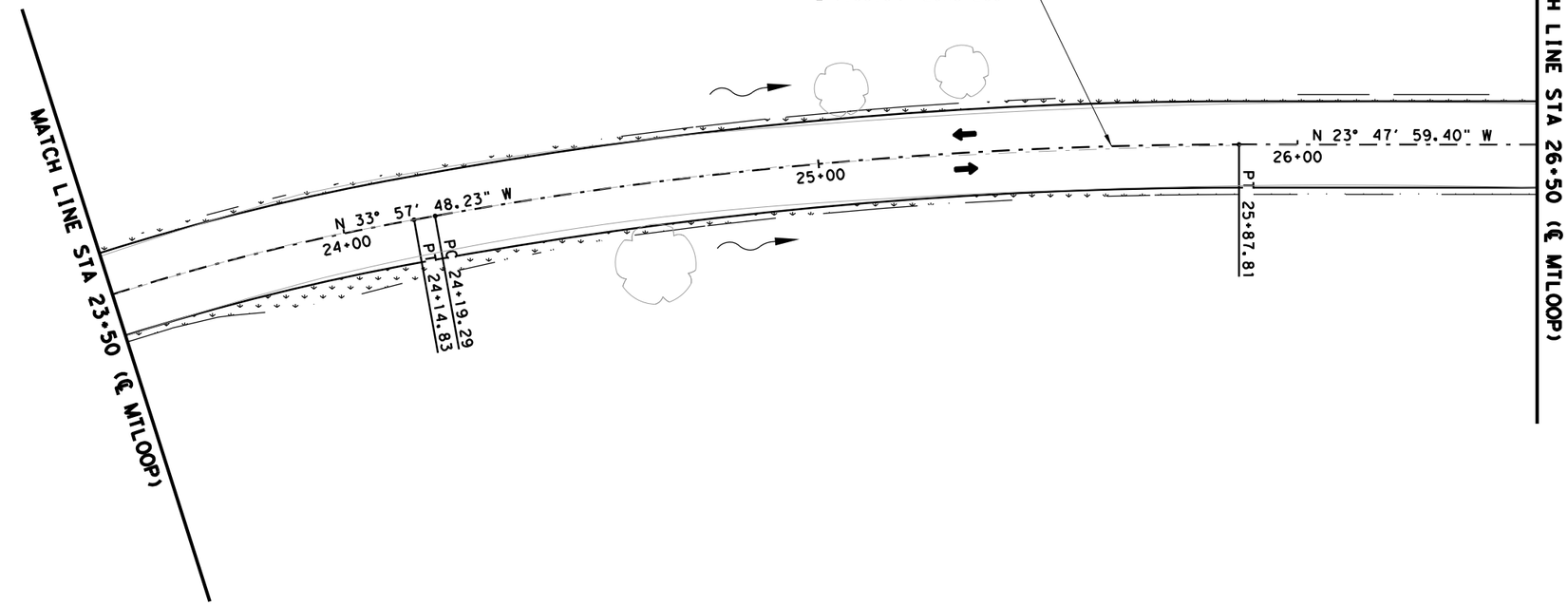

LEGEND

- DIRECTION OF FLOW
- (ECL) 12" EROSION CONTROL LOG
- (SCF) SEDIMENT CONTROL FENCE
- [X] CAMPSITE NUMBER
- TRAFFIC DIRECTION
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ENVIRONMENTAL LAYOUT SHEETS

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SHEET 5 OF 16

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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			097
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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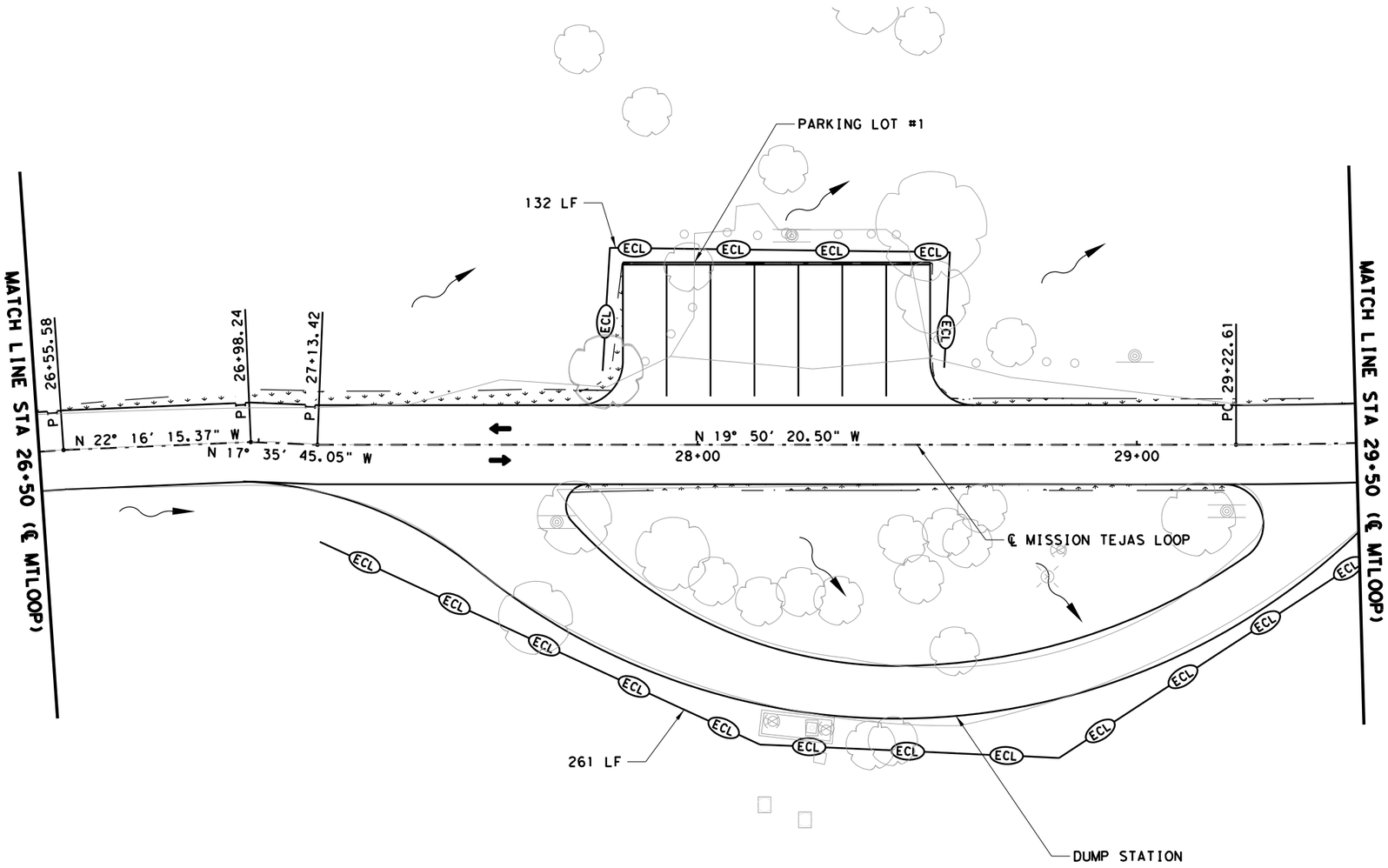

LEGEND

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ENVIRONMENTAL LAYOUT SHEETS
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SHEET 6 OF 16

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FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		098

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063,ETC	VARIOUS

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LEGEND

- DIRECTION OF FLOW
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- [X] CAMPSITE NUMBER
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- SEEDING/DISTURBED LIMITS
- CONSTRUCTION EXIT

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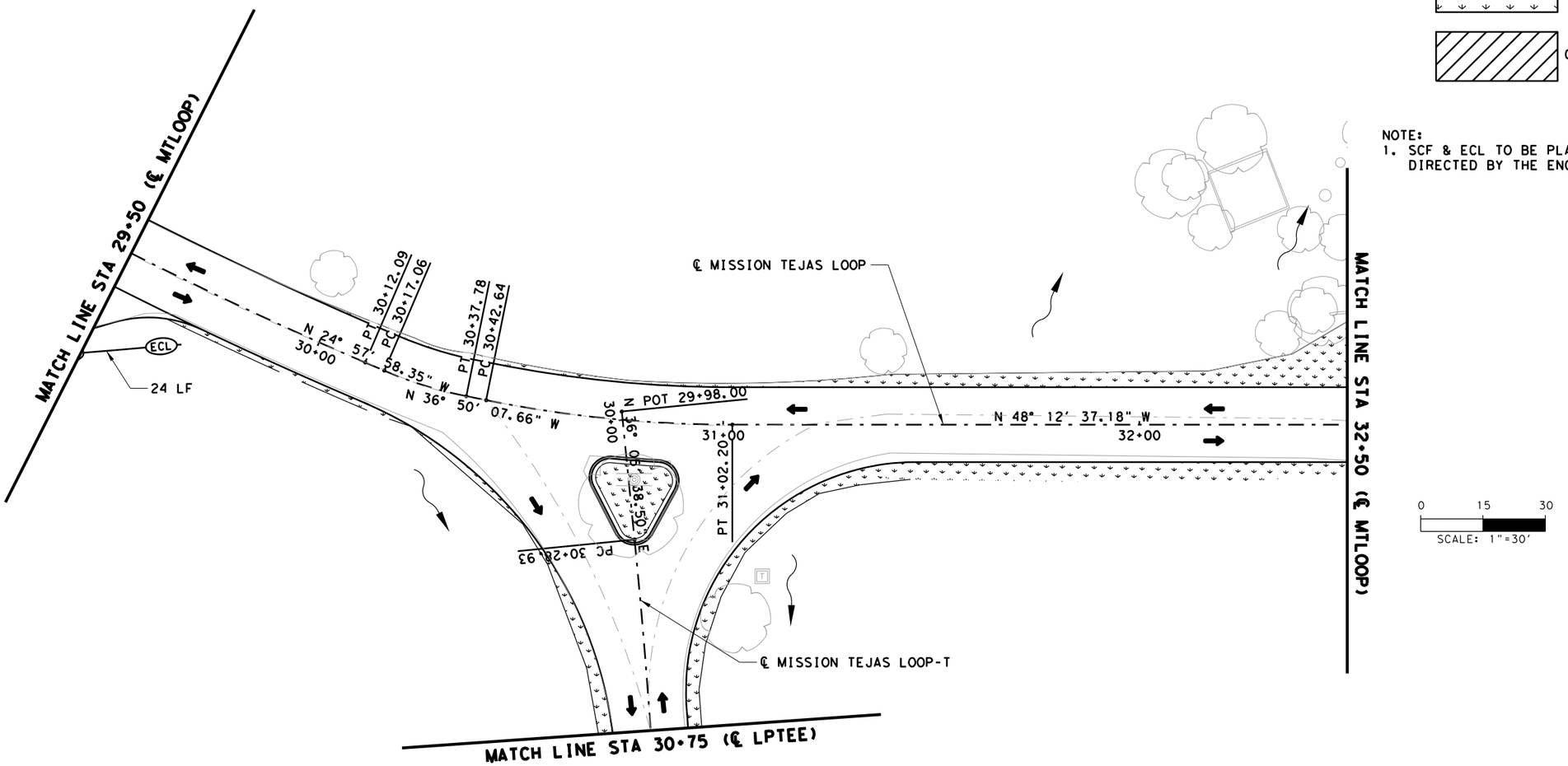

0 15 30
SCALE: 1"=30'

STATE OF TEXAS
CARITA G. STEWART
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ENVIRONMENTAL LAYOUT SHEETS

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SHEET 7 OF 16

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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			099
STATE	STATE DIST. NO.	COUNTY	
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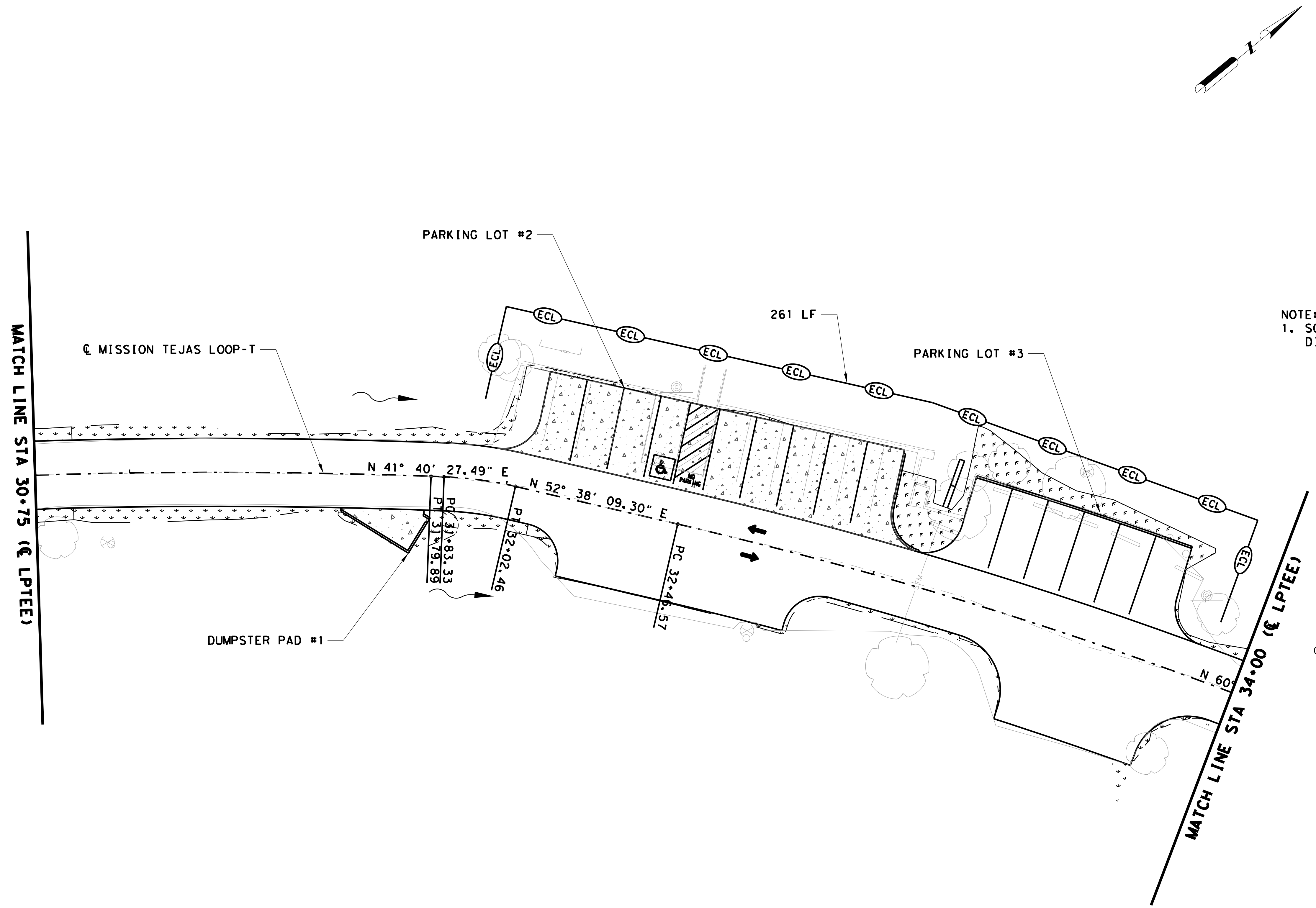
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



LEGEND

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STATE OF TEXAS
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2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ENVIRONMENTAL LAYOUT SHEETS

(MISSION TEJAS)

SHEET 8 OF 16

Texas Department of Transportation

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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			100
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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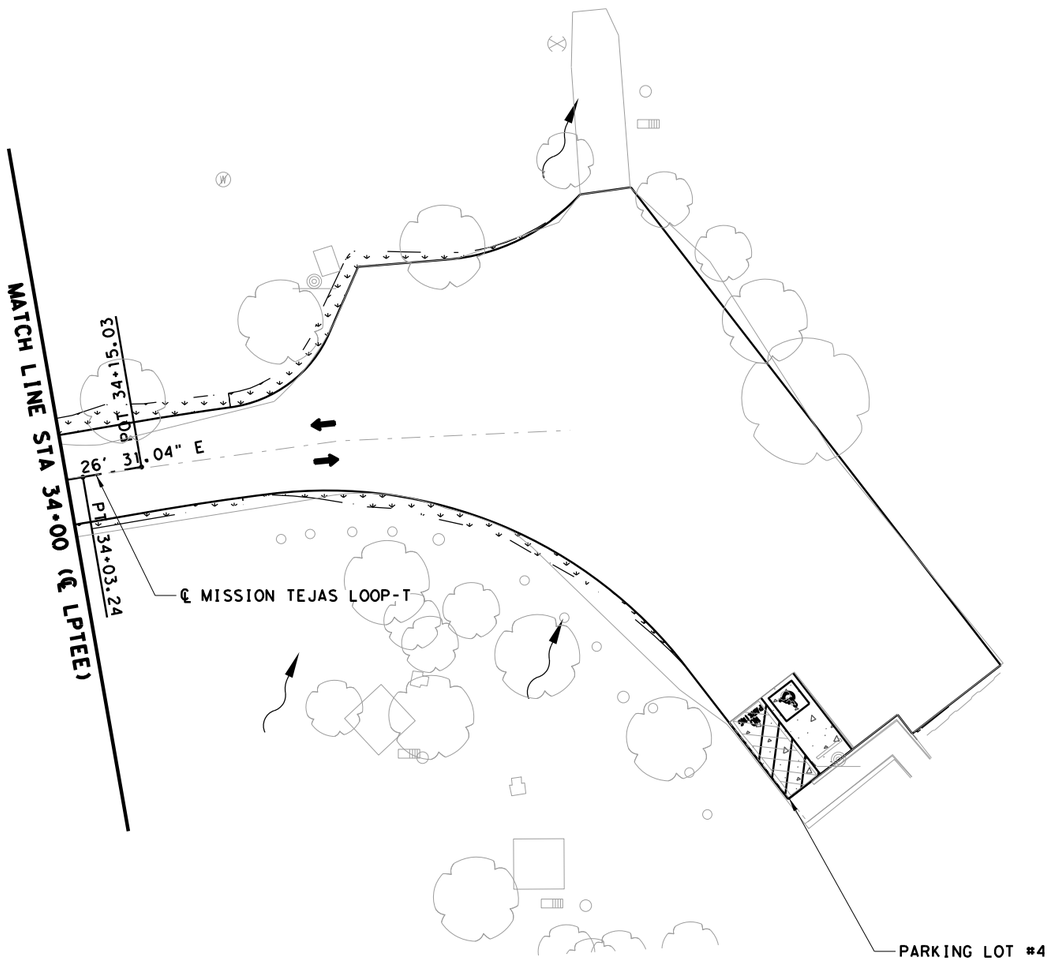

LEGEND

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- ECL — 12" EROSION CONTROL LOG
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- X — CAMPSITE NUMBER
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NOTE:
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0 15 30
SCALE: 1"=30'

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ENVIRONMENTAL LAYOUT SHEETS

(MISSION TEJAS)

SHEET 9 OF 16

Texas Department of Transportation

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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			101
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

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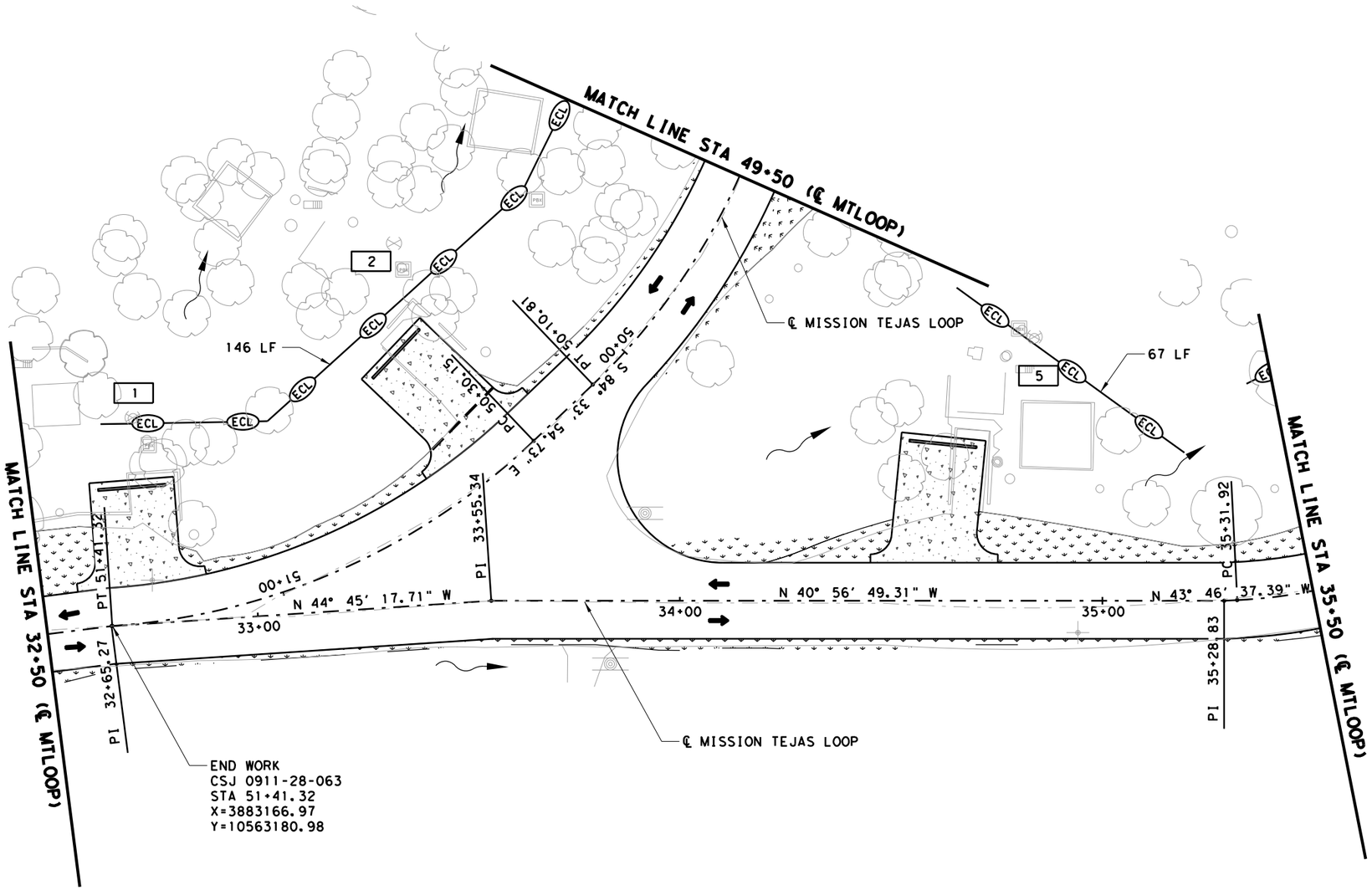

LEGEND

- DIRECTION OF FLOW
- ECL — 12" EROSION CONTROL LOG
- SCF — SEDIMENT CONTROL FENCE
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0 15 30
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2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ENVIRONMENTAL LAYOUT SHEETS
(MISSION TEJAS)

SHEET 10 OF 16

Texas Department of Transportation

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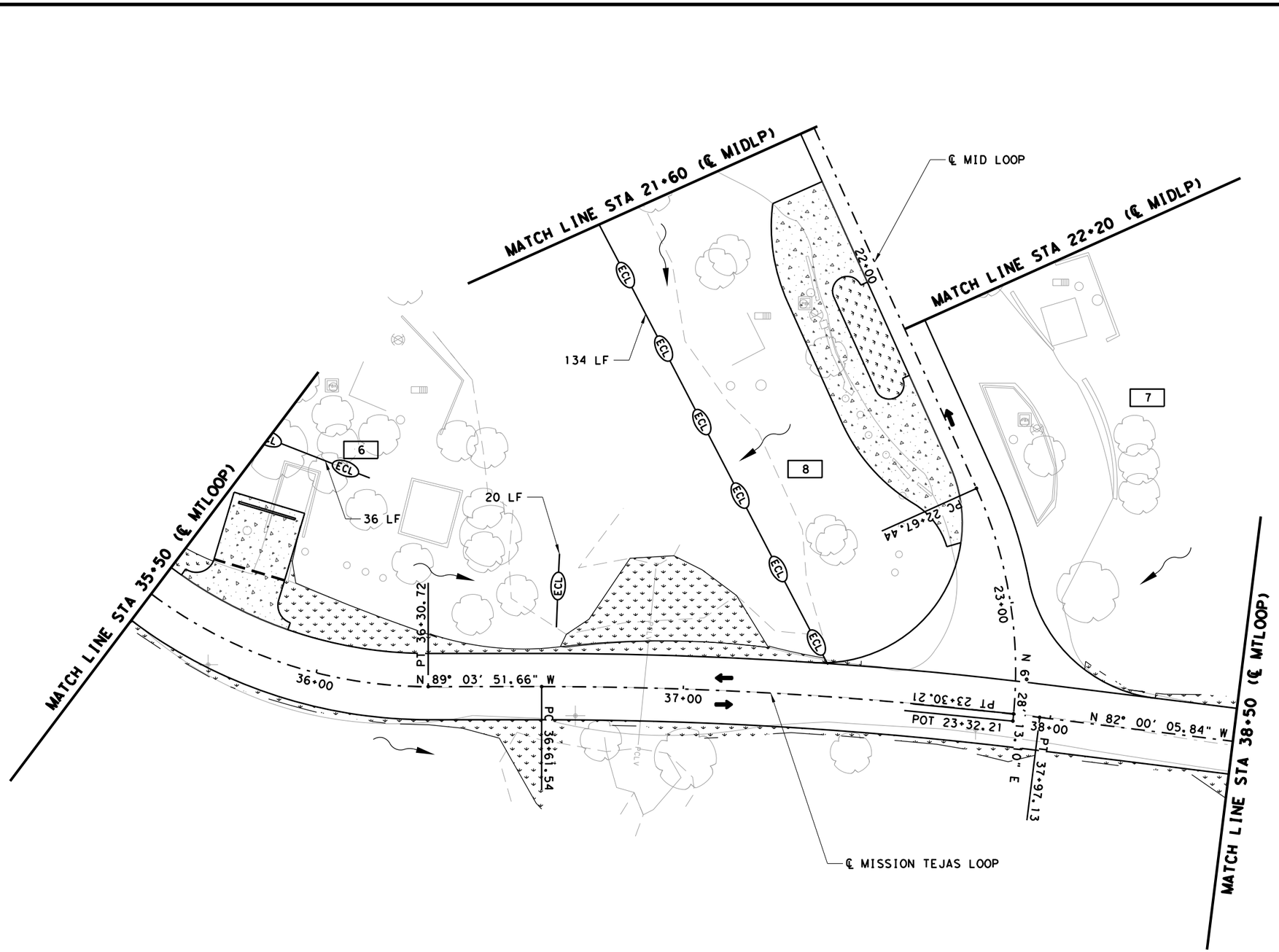
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			102

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



LEGEND

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- ECL — 12" EROSION CONTROL LOG
- SCF — SEDIMENT CONTROL FENCE
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SCALE: 1"=30'

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ENVIRONMENTAL LAYOUT SHEETS
(MISSION TEJAS)

SHEET 11 OF 16

Texas Department of Transportation

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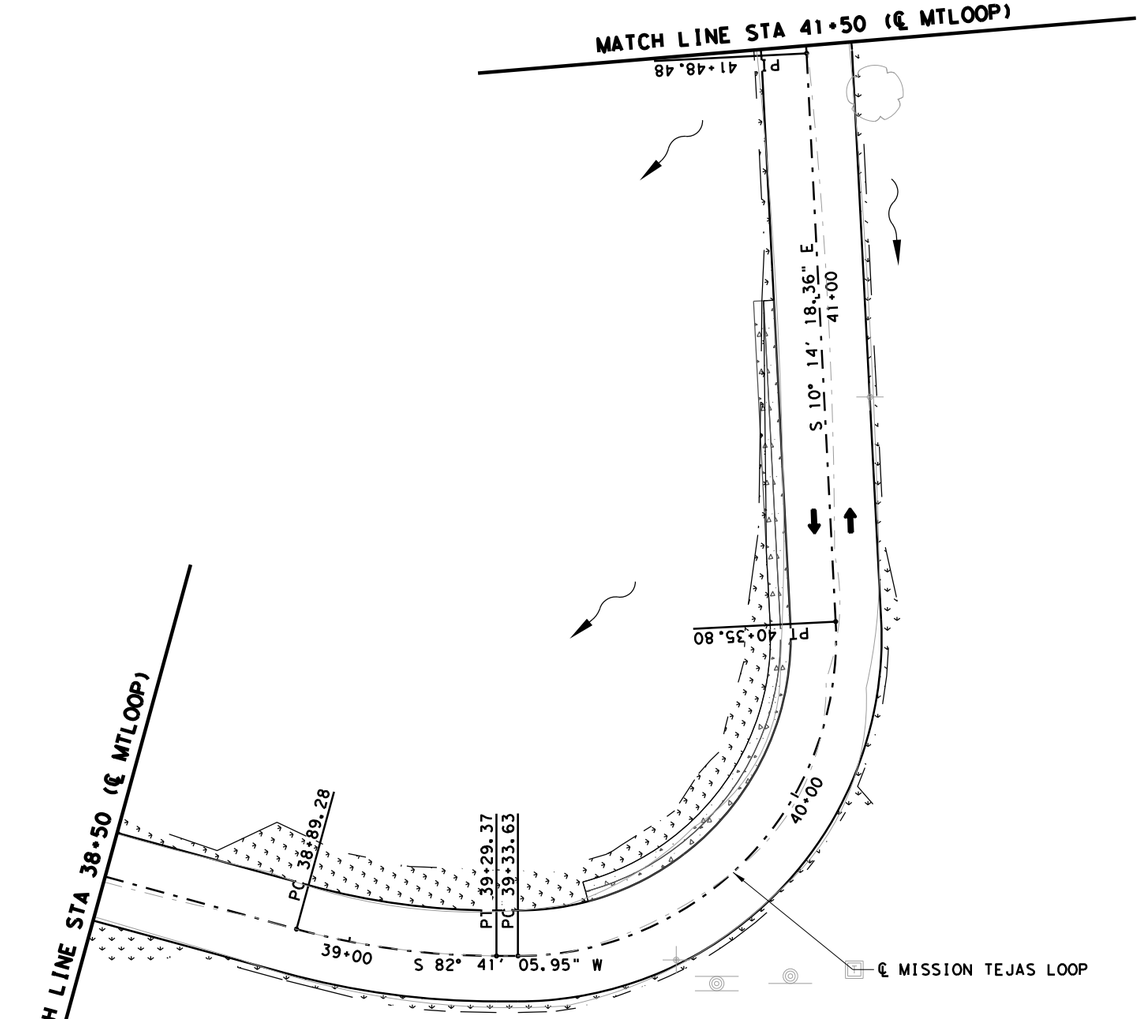
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			103

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



LEGEND

- DIRECTION OF FLOW
- ECL — 12" EROSION CONTROL LOG
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STATE OF TEXAS
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ENVIRONMENTAL LAYOUT SHEETS

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SHEET 12 OF 16

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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			104
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS

LEGEND

- DIRECTION OF FLOW
- ECL — 12" EROSION CONTROL LOG
- SCF — SEDIMENT CONTROL FENCE
- X — CAMPSITE NUMBER
- TRAFFIC DIRECTION
- SEEDING/DISTURBED LIMITS
- CONSTRUCTION EXIT

NOTE:
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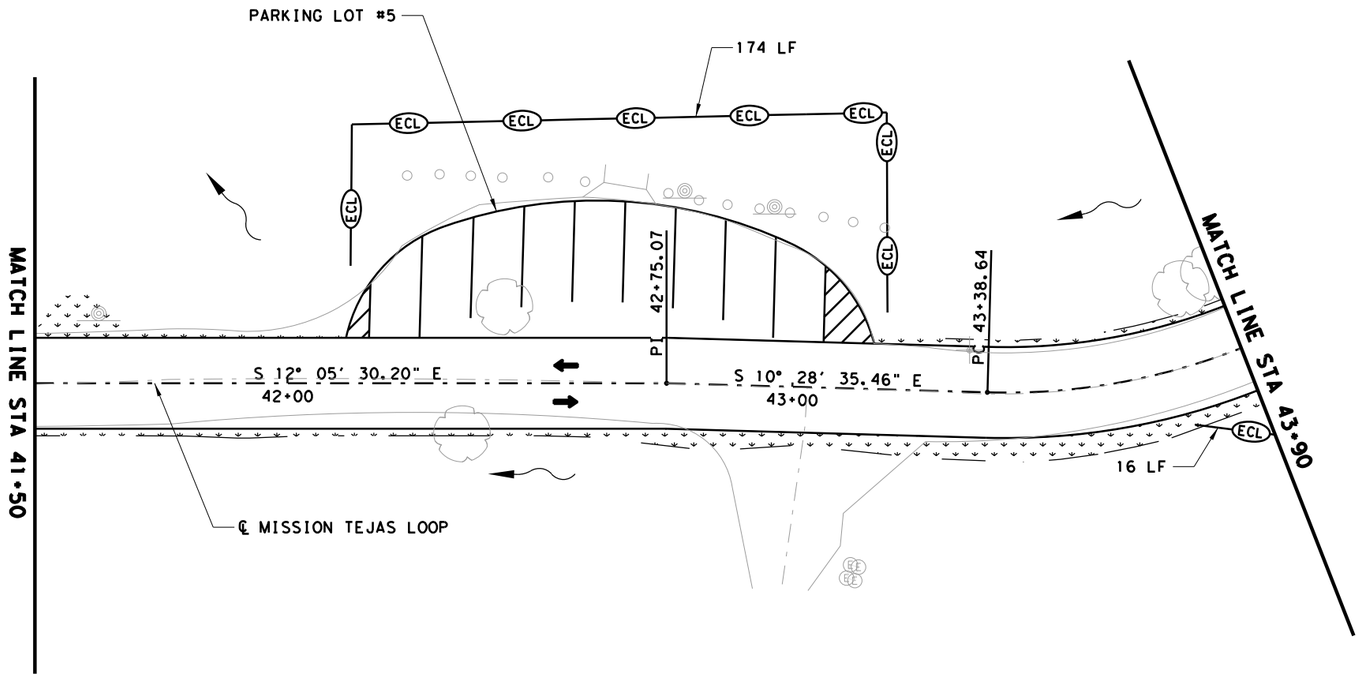

0 15 30
SCALE: 1" = 30'

STATE OF TEXAS
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2/12/2024

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ENVIRONMENTAL LAYOUT SHEETS

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SHEET 13 OF 16

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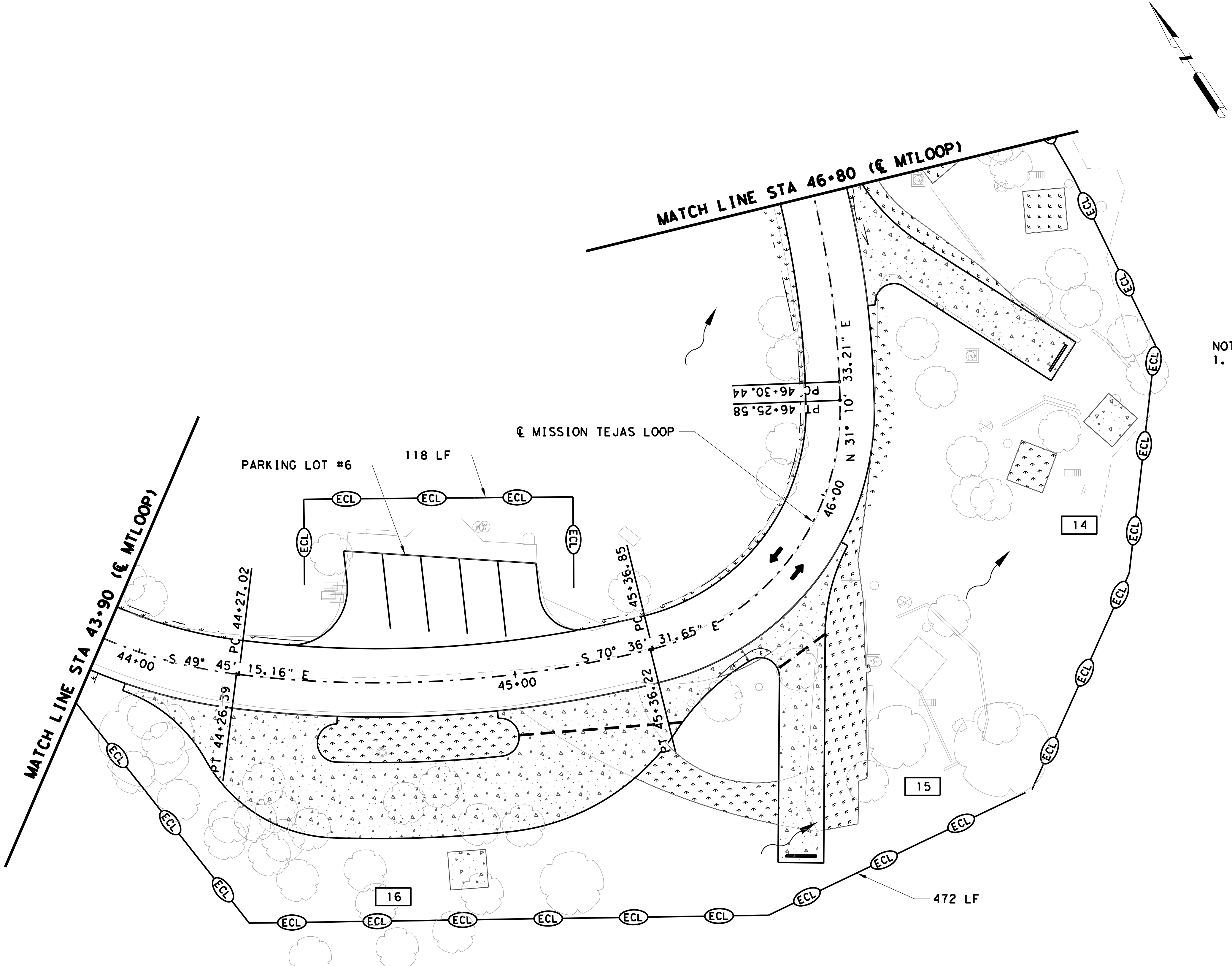
FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		105

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



LEGEND

- DIRECTION OF FLOW
- ECL — 12" EROSION CONTROL LOG
- SCF — SEDIMENT CONTROL FENCE
- X — CAMPSITE NUMBER
- TRAFFIC DIRECTION
- SEEDING/DISTURBED LIMITS
- CONSTRUCTION EXIT

NOTE:
1. SCF & ECL TO BE PLACED AS DIRECTED BY THE ENGINEER.

0 15 30
SCALE: 1"=30'

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ENVIRONMENTAL LAYOUT SHEETS

(MISSION TEJAS)

SHEET 14 OF 16

Texas Department of Transportation

BGE, Inc.
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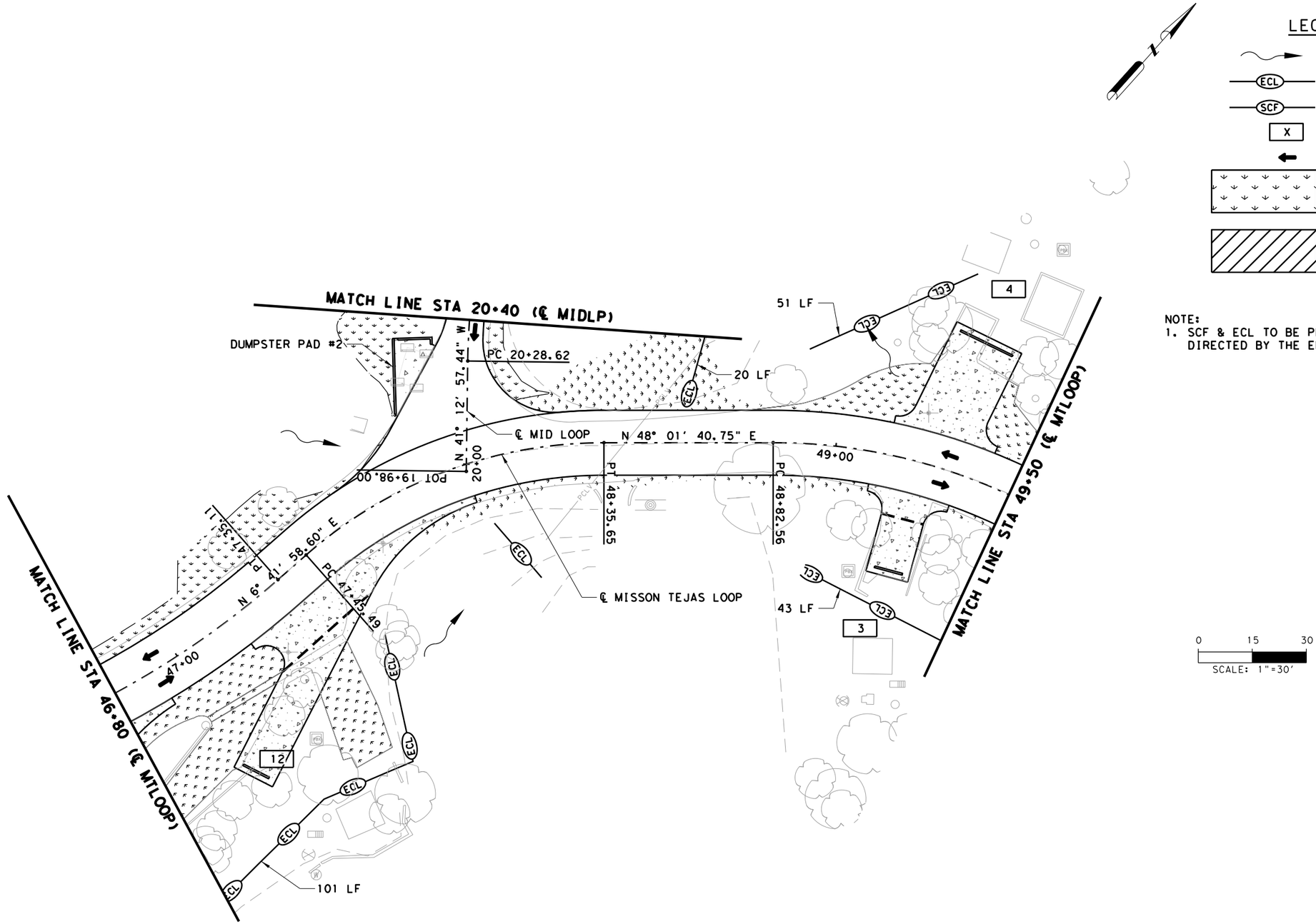
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			106
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED
PROFESSIONAL ENGINEER

2/12/2024

(TEXAS PARKS & WILDLIFE DEPARTMENT)

ENVIRONMENTAL LAYOUT SHEETS

(MISSION TEJAS)

SHEET 15 OF 16

Texas Department of Transportation

BGE, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
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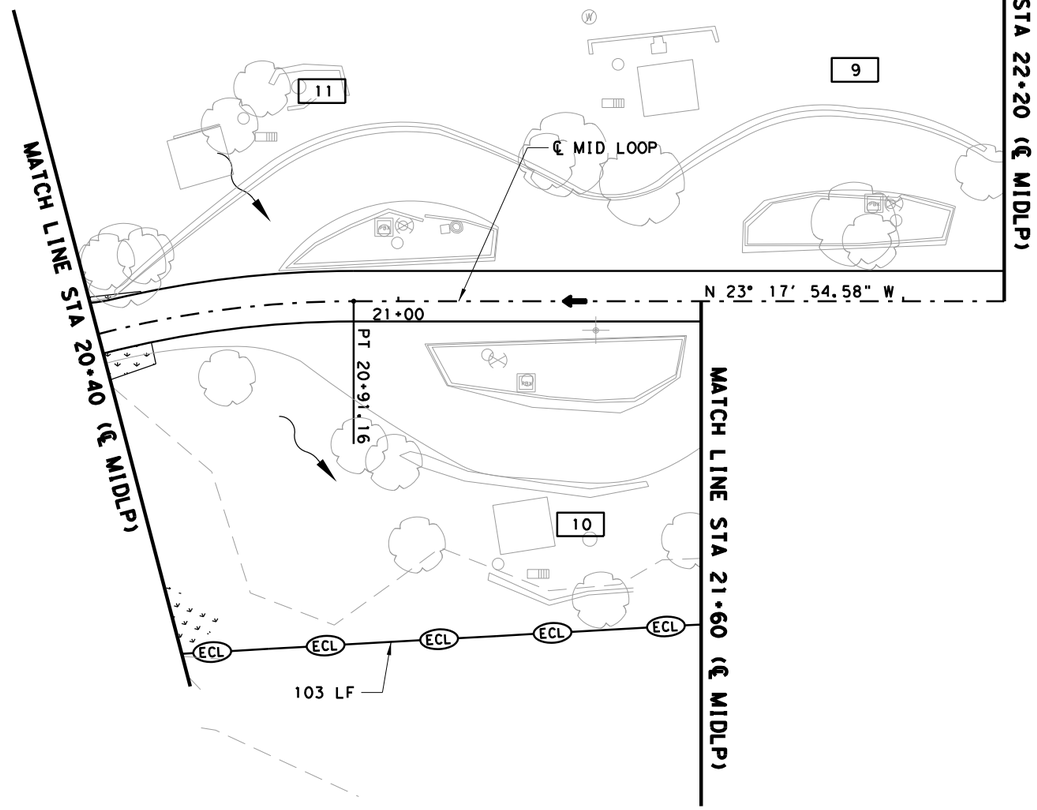
TBPE Registration No. F-1046

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			107
STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



LEGEND

- DIRECTION OF FLOW
- (ECL) 12" EROSION CONTROL LOG
- (SCF) SEDIMENT CONTROL FENCE
- [X] CAMPSITE NUMBER
- TRAFFIC DIRECTION
- SEEDING/DISTURBED LIMITS
- CONSTRUCTION EXIT

0 15 30
SCALE: 1"=30'

STATE OF TEXAS
CARITA G. STEWART
129562
LICENSED PROFESSIONAL ENGINEER

2/12/2024

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ENVIRONMENTAL LAYOUT SHEETS

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SHEET 16 OF 16

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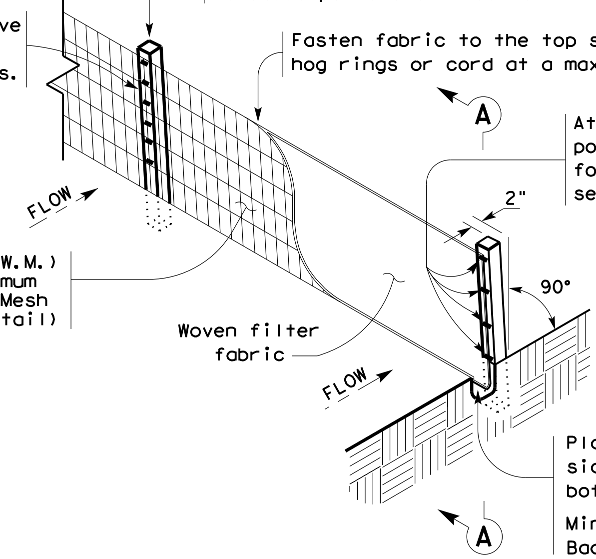
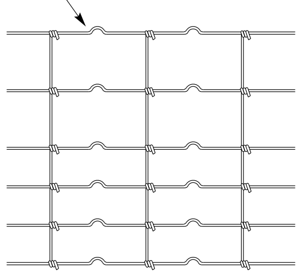
FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		108

STATE	STATE DIST. NO.	COUNTY	
TEXAS	LFK	HOUSTON, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0911	28	063, ETC	VARIOUS



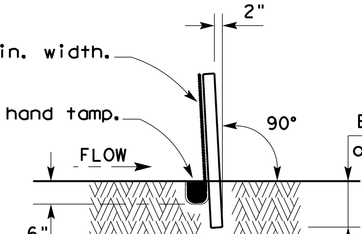
TEMPORARY SEDIMENT CONTROL FENCE

SCF



HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.



SECTION A-A

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

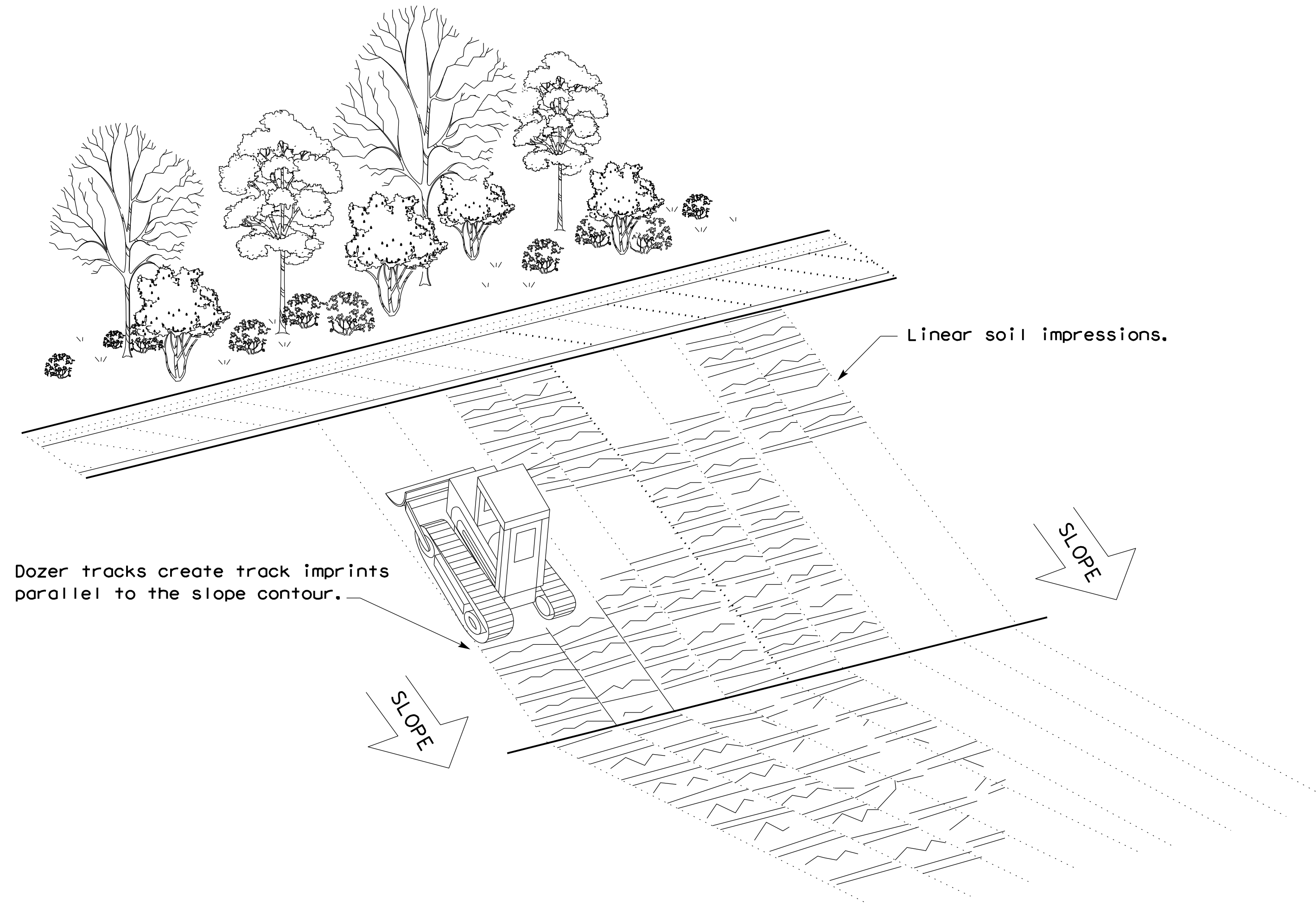
Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

LEGEND

Sediment Control Fence — SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation — Design Division Standard

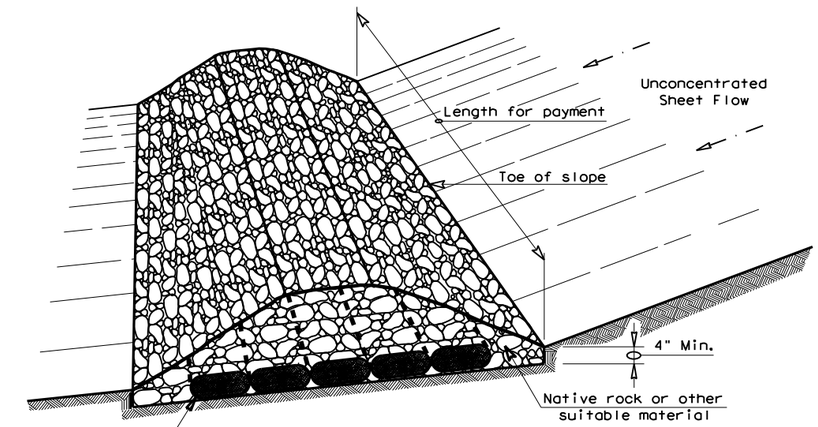
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

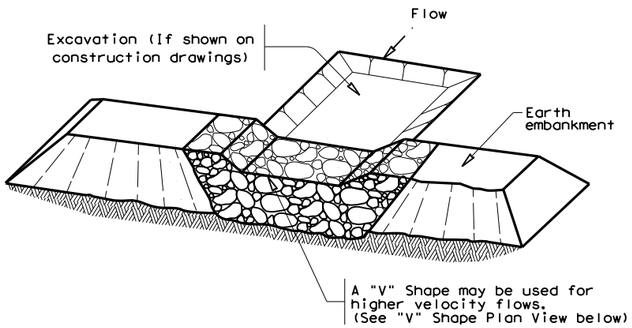
FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
	DIST	COUNTY		SHEET NO.
	LFK	HOUSTON, ETC.		109

DATE: 12/8/2023
FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/091128063-ORD/4 - Design/Plan Set/9. Environmental/ec216.dgn



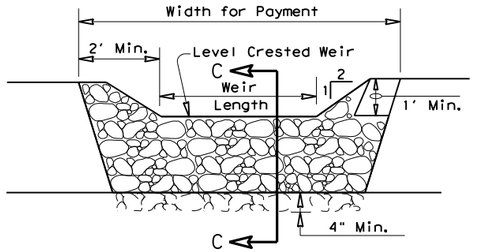
FILTER DAM AT TOE OF SLOPE

RFD1

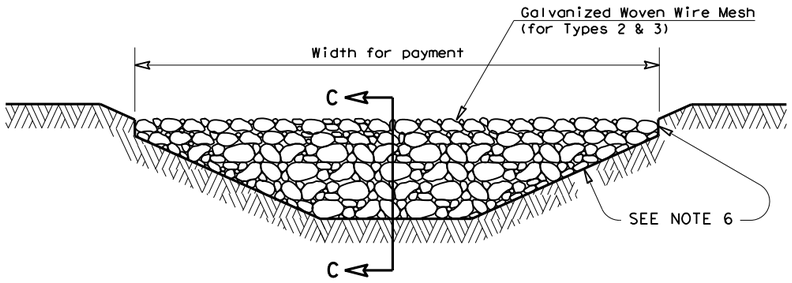


FILTER DAM AT SEDIMENT TRAP

RFD1 — OR — RFD2

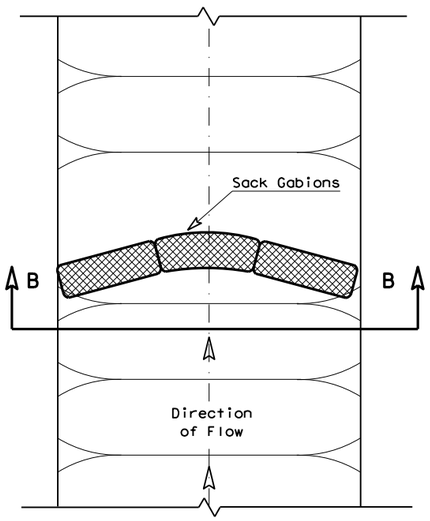


PROFILE

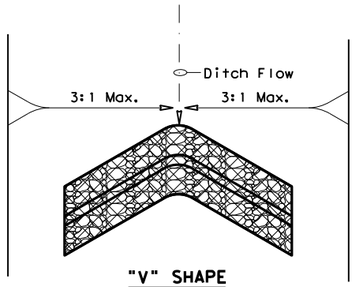


FILTER DAM AT CHANNEL SECTIONS

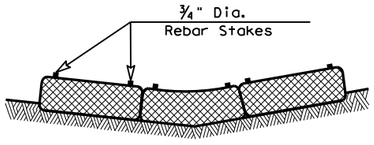
RFD1 — OR — RFD2 — OR — RFD3



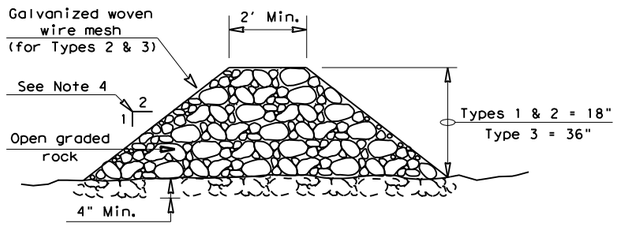
PLAN VIEW



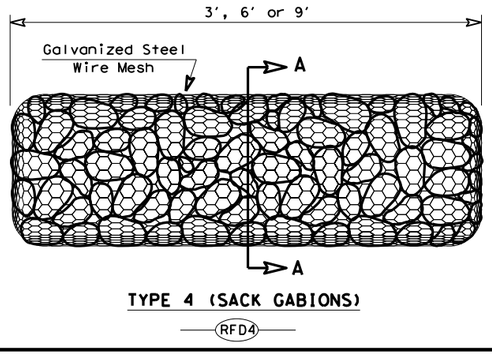
"V" SHAPE
PLAN VIEW



SECTION B-B

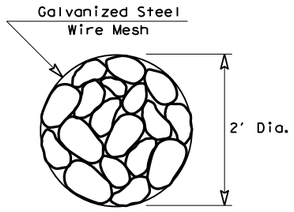


SECTION C-C



TYPE 4 (SACK GABIONS)

RFD4



SECTION A-A

ROCK FILTER DAM USAGE GUIDELINES

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

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

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

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

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

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

GENERAL NOTES

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

PLAN SHEET LEGEND

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

Texas Department of Transportation — Design Division Standard

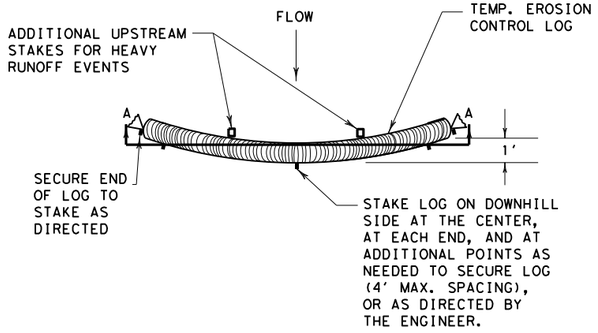
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

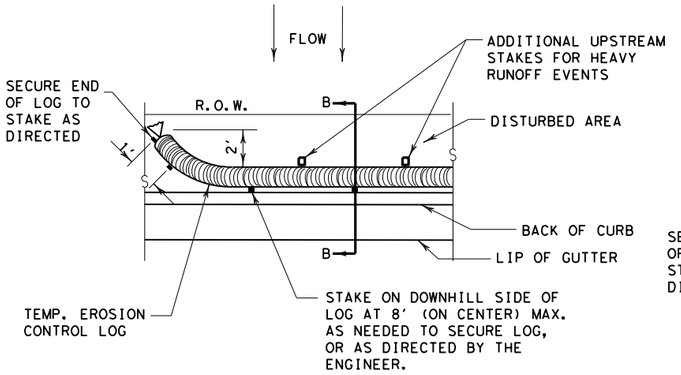
EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
	DIST	COUNTY		SHEET NO.
	LFK	HOUSTON, ETC.		110

DATE: 12/8/2023
FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/091128063-ORD/4 - Design/Plan Set/9. Environmental/ec916.dgn



PLAN VIEW



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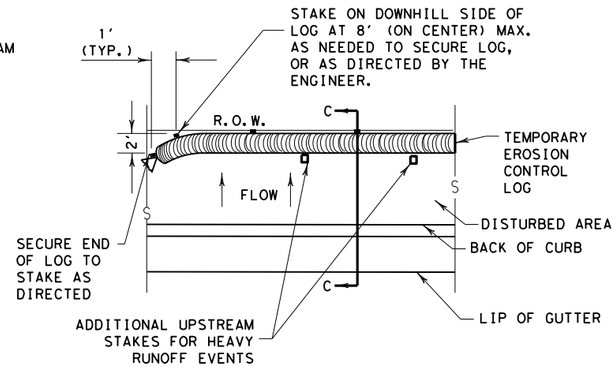

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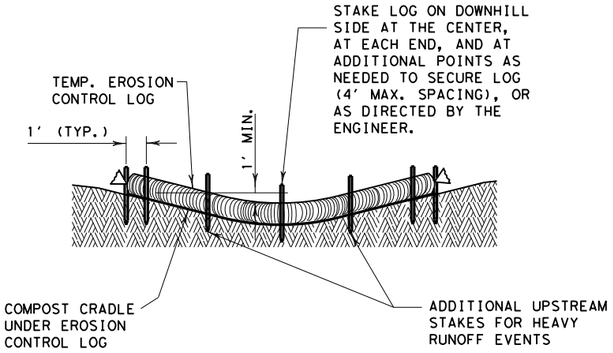
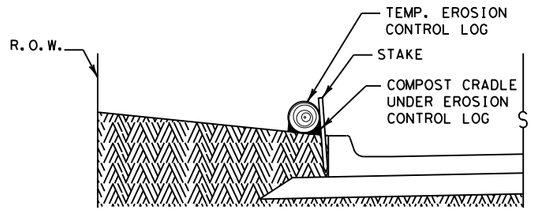


SECTION A-A

EROSION CONTROL LOG DAM

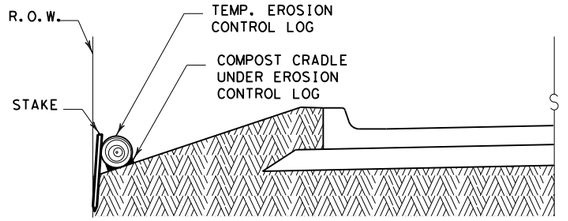
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

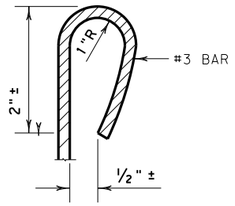
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



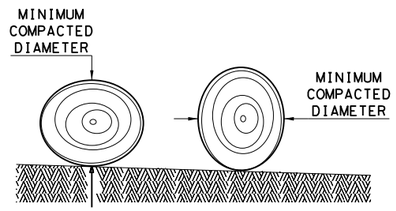
REBAR STAKE DETAIL

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

Texas Department of Transportation — Design Division Standard

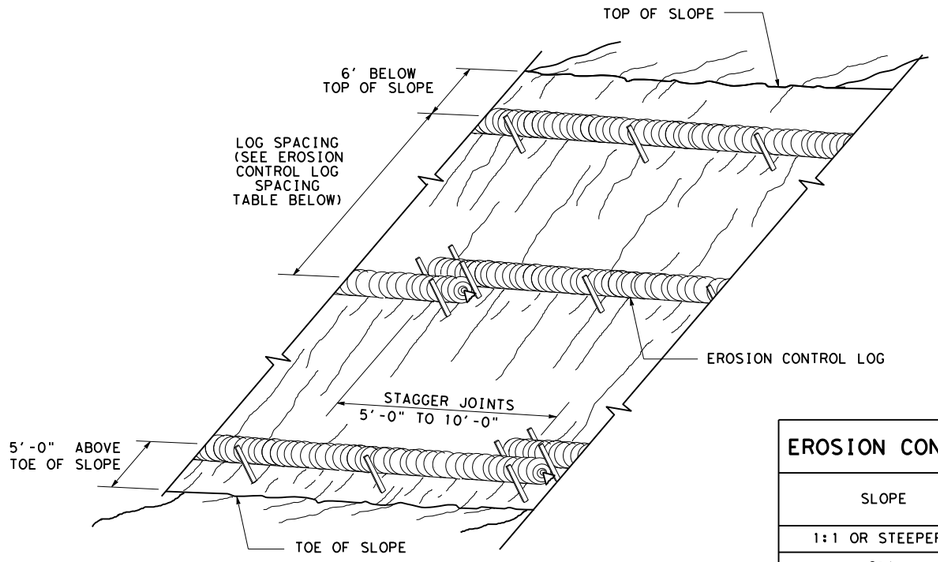
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

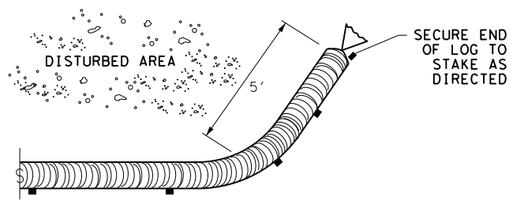
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
	DIST	COUNTY		SHEET NO.
	LFK	HOUSTON, ETC.		111

DATE: 12/8/2023
FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/091128063-ORD/4 - Design/Plan Set/9. Environmental/ec916.dgn



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

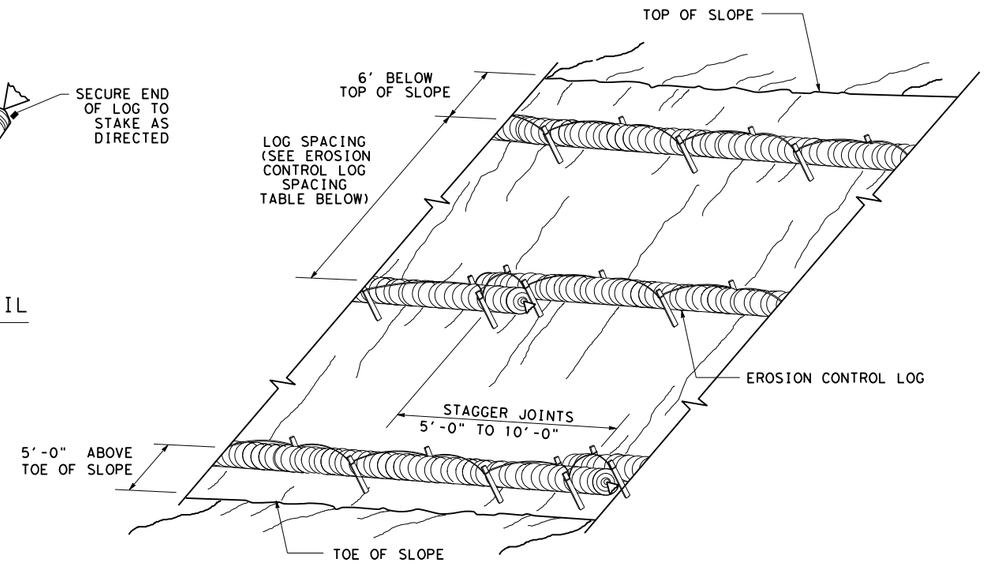
CL-SST



END SECTION RAP DETAIL

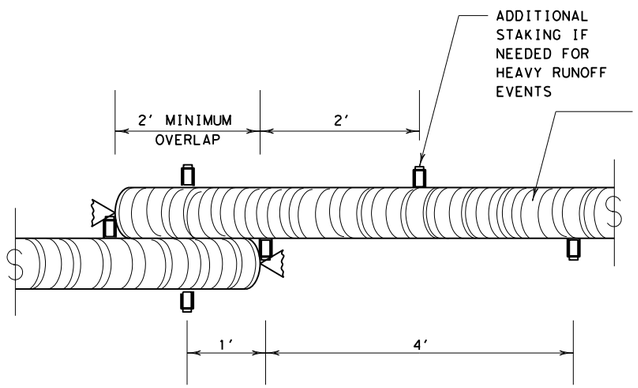
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

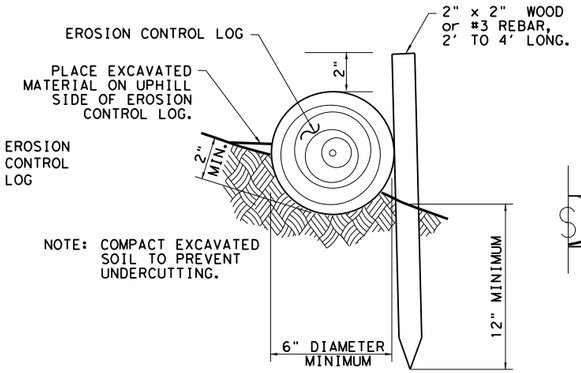
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

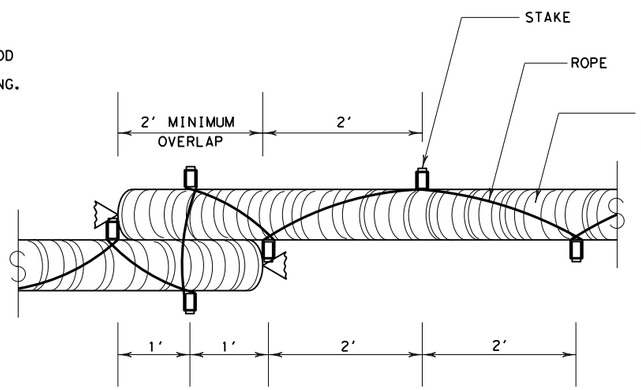


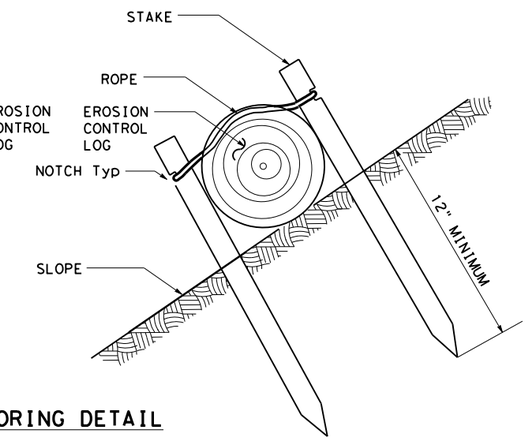


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

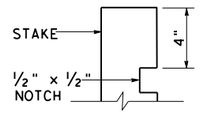
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

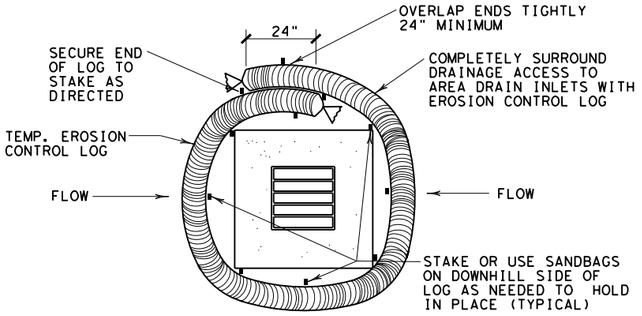
SHEET 2 OF 3

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

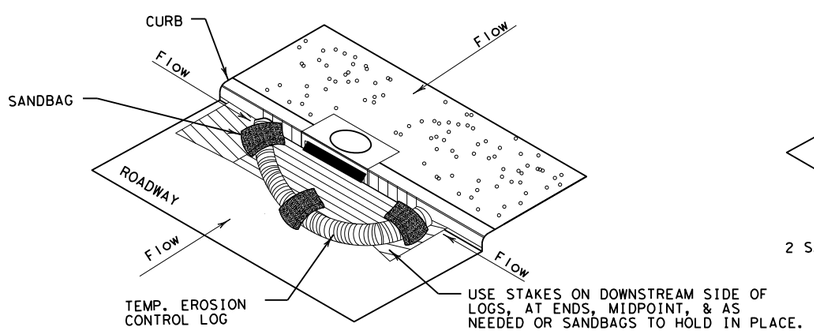
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
	DIST	COUNTY		SHEET NO.
	LFK	HOUSTON, ETC.		112

DATE: 12/8/2023
FILE: pw://txdot.projectwiseonline.com:TxDOT3/Documents/11 - LFK/Design Projects/091128063-ORD/4 - Design/Plan Set/9. Environmental/ec916.dgn



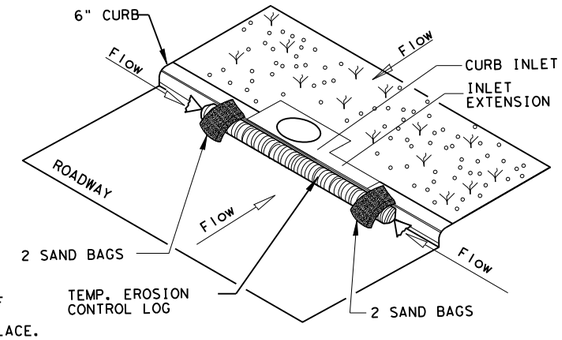
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

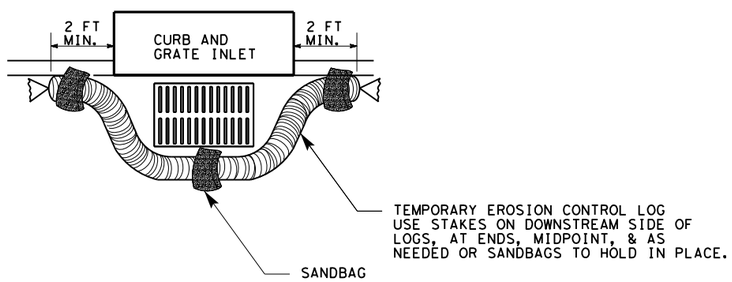
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

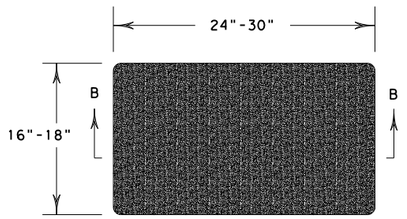
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI

SECTION B-B



SANDBAG DETAIL

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0911	28	063, ETC.	VARIOUS
	DIST	COUNTY		SHEET NO.
	LFK	HOUSTON, ETC.		113