DESIGN	FED. RD. DIV. NO.	FEDERAL AID or STATE PROJECT NO.		HIGHWAY NO.
HALFF	6	STP 2024 (995) HES		N/A
GRAPHICS PAF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	1
	CONTROL	SECTION	JOB	
CHECK DMS	0906	32	064	

INDEX OF SHEETS

SEE SHEET 2

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
PEDESTRIAN SAFETY IMPROVEMENTS

CITY OF MIDLAND
CSJ: 0906-32-064 PROJECT NO. N/A

MIDLAND COUNTY

LIMITS: W TEXAS AVE FROM NORTH A ST
TO NORTH C ST

TOTAL LENGTH OF PROJECT = 3,461.45 FT. = 0.655 MI.

TYPE OF WORK: FOR THE CONSTRUCTION OF SAFETY IMPROVEMENT PROJECTS CONSISTING OF: CURB RAMPS AND BULB-OUTS FOR PEDESTRIAN CROSSINGS

DESIGN SPEED = TEXAS = 30 MPH
ILLINOIS = 30 MPH
A STREET = 35 MPH

FINAL PLANS

NAME OF CONTRACTOR: ______

DATE OF LETTING: ______

DATE WORK BEGAN: ______

DATE WORK COMPLETED: ______

DATE WORK ACCEPTED: ______

SUMMARY OF CHANGE ORDERS:

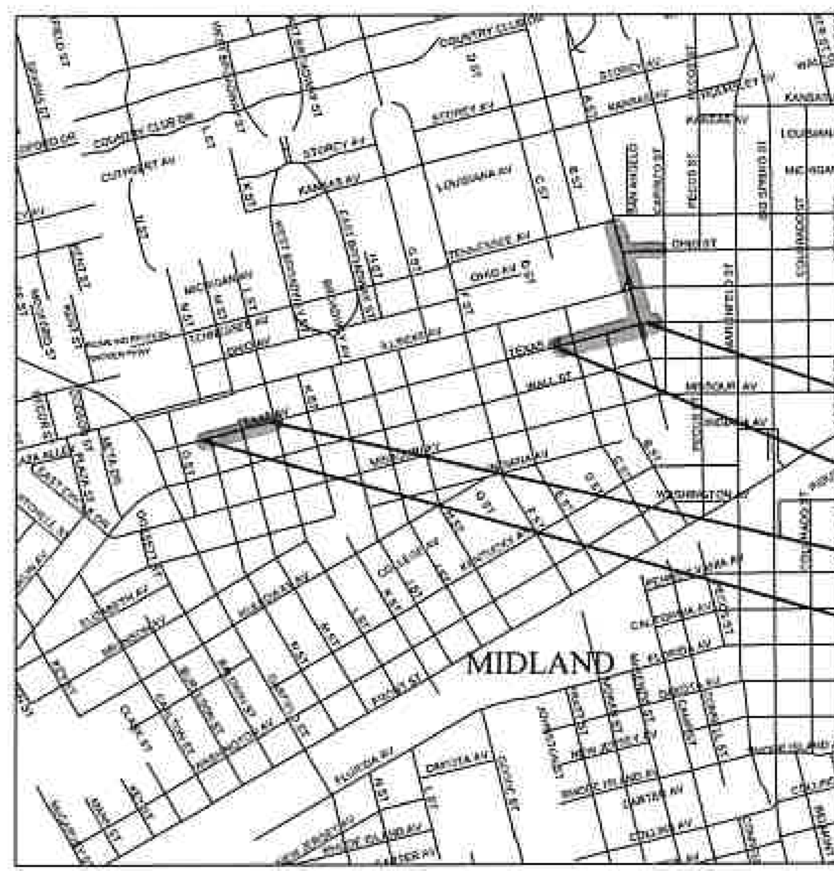
halff
3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED
PROFESSIONAL ENGINEER

NAME:
DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

N

MIDLAND COUNTY
SCALE: NTS



END PROJECT
CSJ 0906-32-064
STA 53+26.44, TEXAS AVE

BEGIN CONSTRUCTION
CSJ 0906-32-064
STA 40+82.61, TEXAS AVE

END CONSTRUCTION
CSJ 0906-32-064
STA 8+57.38, TEXAS AVE

BEGIN PROJECT
CSJ 0906-32-064
STA 1+00.00, TEXAS AVE

TEXAS DEPARTMENT OF TRANSPORTATION

CONCURRENCE: ______ 20__
DEPUTY CITY MANAGER
CITY OF MIDLAND

SUBMITTED FOR LETTING: 3/6/2024 20__
______, P.E.
AREA ENGINEER

RECOMMENDED FOR LETTING: 3/6/2024 20__
______, P.E.
DIRECTOR OF TRANSPORTATION PLANNING AND DEVELOPMENT

APPROVED FOR LETTING: 3/8/2024 20__
______, P.E.
DISTRICT ENGINEER

NOTE: TDLR INSPECTION REQUIRED

Registered Accessibility Specialist (RAS) inspection required. TDLR No. EABPRJ: 2024008906

NOTE:
SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014, AND THE CONTRACT PROVISIONS LISTED AND DATED AS FOLLOWS SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 23, 2023)

EQUATIONS: NONE
EXCEPTIONS: NONE
RAILROAD CROSSINGS: NONE

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

David M Smith , P.E. 03/01/2024
Signature of Registrant & Date

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

David M Smith
NAME:
DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

INDEX OF SHEETS

SCALE: NONE Sheet 1 of 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	2
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

Basis of Estimate

Item	Description	Rate	Unit
350	MICROSURFACING	25 lbs/SY	TON

Contractor questions on this project are to be addressed to the following individual(s):
ODA-PreLettingQuestions@txdot.gov

Questions may be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:
https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors

All contractor questions will be reviewed by the Engineer. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A 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. (gn4)

Item 5: Control of the Work

For any structures containing bird nests, schedule all work to complete the demolition of the existing structures identified in the plans between September 15, 2024 and March 15, 2025. Failure to complete this work during the specified timeframe may cause construction delays due to environmental regulations. (b5)

The existing alignment is the control for the Contractor staking. Establish reference points for the control prior to removing the existing surface. (c5)

Use Method C for construction surveying. (d5)

In the event the finished surface does not conform to the typical sections or does not meet the required IRI, rework the non-conforming area to the limits necessary and employ additional survey control as directed. (e5)

Item 6: Control of Materials

Restrict storage of equipment and materials to approved areas. The Engineer will not approve storage in any TxDOT yard. (a6)

Promptly and properly dispose of any waste generated from servicing equipment on the project. (b6)

To comply with the latest provisions of Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law, the contractor must submit a notarized original of the TxDOT Construction Material Buy America Certification Form for all items classified as construction materials. This form is not required for materials classified as a manufactured product. (c6)

Refer to the Buy America Material Classification Sheet for clarification on material categorization. (d6)

The Buy America Material Classification Sheet is located at the below link.
https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html for clarification on material categorization. (e6)

Item 7: Legal Relations and Responsibilities

If access to the project is required through a new or unapproved driveway (i.e. Material source, stockpile location, field office, etc.), obtain an approved “Permit to Construct Access Driveway Facilities on Highway Right Of Way” (TxDOT Form 1058) before beginning any construction operations. (a7)

Utilities (public, private and TxDOT) exist throughout the project. Prior to any excavation, investigate to determine the utility locations within the project right of way. Contact the TxDOT Odessa Traffic Operations shop at 432-498-4690 to investigate and determine the location of any TxDOT utility that may exist within the project right of way. Exercise caution when excavating in areas where investigations have determined that utilities exist. The contractor is responsible for maintaining utility markings (b7)

No significant traffic generator events identified. (c7)

As an element of ensuring public safety and convenience under Article 7.2.4, the Contractor is hereby directed to open all closed lanes and shoulder and remove all traffic control devices from any areas where work is not being actively performed unless overnight traffic control is required and approved by the engineer. Removed devices must be stored outside of the clear zones near the right of way line or removed from the right of way line entirely. (e7)

At any time during construction that a previously installed crash cushion is damaged by the traveling public and is requested to be repaired by the Engineer, the repair will be paid at the same unit cost as the original installation. (f7)

Item 8: Prosecution and Progress

The following portions of the plans may affect the Contractor's planned construction sequencing. The Contractor’s attention is directed to the appropriate plan sheet or standard sheet. (a8)

-Traffic Control Plan

-Storm Water Pollution Prevention Plan

-Environmental Permit, Issues And Commitments (EPIC)

Maintain ingress and egress to side streets and private property at all times. (b8)

Working days will be computed and charged in accordance with Article 8. 3.1.1. “Five-Day Workweek.” (g8)

90 day lead time is needed to allow for sufficient time to obtain and produce materials needed for various bid items in this project. (m8)

Item 105: Removing Treated and Untreated Base and Asphalt Pavement

Saw cut and remove existing asphaltic pavement by an approved method. (a105)

Item 110: Excavation

Broom the existing base or subgrade to remove any loose material dropped during excavation operations. This work is considered subsidiary to this item. (a110)

Before excavation and embankment operations begin, windrow all topsoil (approx. 4 inches) to be reused on side slopes or behind the proposed curb and gutter. This work is subsidiary to Item 110, "Excavation" and Item 132, "Embankment". (b110)

Start excavation when a mix design for hot mix asphalt Type B has been accepted. (c110)

Excavate only the volume of material that can reasonably be replaced with new HMAC within 24 hours of removal based on anticipated production rates. The Engineer may halt further excavation if any excavated volumes have not been replaced with HMAC within 48 hours of excavation. (d110)

Item 160: Topsoil

Topsoil will be typical of the soils in the area with no noxious weeds, grasses, sticks, roots, or stones present and will be consistent in texture. No rocks larger than two inches in diameter will be permitted. The topsoil and its source will be approved. (a160)

Item 247: Flexible Base

The estimated quantity of flexible base shown includes all roadways, intersecting streets and driveways. The measured area for payment will be the crown width only. The side slope tapers are not included in the measurements for the flexible base but are considered subsidiary to this item. (a247)

Assume responsibility for the disposal of all boulders not fractured during ordinary rolling methods and those too large to be incorporated into the foundation course as approved. (b247)

Maintain moisture during compaction as directed by the Engineer. Determine the moisture content of the material in accordance with Tex-115-E or Tex-103-E as directed by the Engineer. (c247)

Item 320: Equipment for Asphalt Concrete Pavement

A field laboratory is not required for this project. (a320)

Item 350: Microsurfacing

Furnish Class A aggregate. (a350)

Place a string line or other suitable marking where needed to assure smooth neat lines, or as directed by the Engineer. (d350)

Unless otherwise approved, apply tack coat uniformly at a rate between 0.04 and 0.10 gal. of residual asphalt per square yard of surface area. (e350)

Item 432: Riprap

Use approved expansion joint material and place between the proposed riprap and curb and gutter. (a432)

Broom finish all riprap on this project unless otherwise directed. (c432)

Polypropylene fiber may be used in lieu of reinforcing steel at a rate of 1.5 lbs. /cy. (d432)

Item 479: Adjusting Manholes and Inlets

Raise the manholes and water valves up to finished roadway elevation, matching the finish cross-slope. (a479)

Item 502: Barricades, Signs, and Traffic Handling

Stop work immediately if any major traffic control element such as an advanced warning flashing panel or TMA or PCMS is not in good working order or control setup. (a502)

Place orange fencing around sidewalk, wheelchair ramps and other pedestrian areas that pose a hazard to pedestrian traffic as directed. (c502)

Place chevrons, at a minimum, on every other drum used for outsides of curves, merging tapers and shifting tapers. (g502)

Vertical panels shall be self-righting. (h502)

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. (i502)

When construction operations result in a drop-off of more than 2 inches, a 3:1 or flatter slope will be required. The slope must be constructed with a compacted material capable of supporting vehicles as approved by the Engineer. This work shall be done expeditiously during daylight hours. Flaggers and appropriate signing to safely guide traffic through the work area will be required as directed by the Engineer. This shall be considered subsidiary to Item 502. (j502)

Item 506: Temporary Erosion, Sedimentation, and Environmental Controls

In accordance with the Construction General Permit (CGP), erosion control and stabilization measures should be initiated as soon as practicable to include (list what our stabilization measures are – for example, replacing topsoil from windrow, erosion control blankets, seeding, etc.) (a506)

It is not anticipated that erosion control devices will be needed on this project. In the event that devices are needed, the Storm Water Pollution Prevention Plan shall consist of using the following items and/or items as directed by the Engineer. Payment for the work may be determined in accordance with Item 4, Article 4. "Changes in the Work". (b506)

-Temporary Sediment Control Fence

-Rock Filter Dams

-Biodegradable Erosion Control Logs

-Construction Exits

-Earthwork For Erosion Control

The total disturbed area for this project is 2 Acres. The disturbed area in this project, all project locations in the contract, and Contractor Project Specific Locations (PSLS), within 1 mile of the project limits, for the contract will further establish the authorization requirements for storm water discharges. The department will obtain an authorization to discharge storm water from the Texas Commission On Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain any required authorization from the TCEQ for any Contractor PSLS for construction support activities on or off the right of way. When the total area disturbed for all projects in the contract and PSLS within 1 mile of the project limits exceeds 5 acres, provide a copy of the Contractor NOI for PSLS on the right of way, to the Engineer (or to the appropriate MS4 operator when on an off-state system route). (c506)

Upon acceptance of the project, all SW3P devices will become property of the State and maintenance responsibility is transferred to the State until final stabilization is attained. (d506)

When applying cement for emulsion, asphalt treatment, or any other soil stabilization, sprinkle water as needed to control cement from blowing and contaminating adjacent vegetation and waters. (e506)

Provide a minimum of two SW3P Signs. Obtain from the Engineer a copy of the project's completed TPDES Storm Water Program Construction Site Notice (TxDOT) and Contractor's copy of the Construction Site Notice. Laminate the sheets and bond with adhesive to 36" X 36" plywood sign blanks. Ensure the sheets remain dry. Apply Type C Blue reflective sheeting as the background and add the text "SW3P" in 5" white lettering, centered at the top. Attach the signs to approved temporary mounts and locate at each of the project limits just inside the right of way line at a readable height or as directed by the Engineer. If the sign cannot be placed outside the clear zone, it must adhere to the TMUTCD. SW3P signs, maintenance, and reposting (for replacement or as needed to ensure readability) will be subsidiary to Item 502. (f506)

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

Use and place approved expansion joint material between the existing curb and the proposed curb and at least every 50 feet in the proposed curb sections. (a529)

Polypropylene fibers may not be used in lieu of reinforcing steel. (c529)

After construction, restore the adjacent surface to a condition approved by the Engineer. Consider this work subsidiary to this bid item. (d529)

Item 530: Intersections, Driveways, and Turnouts

Reinforce concrete driveways with no. 3 bars spaced at 12" O.C.B.W. or with #4 bars spaced at 18" O.C.B.W. (a530)

Polypropylene fiber may not be used in lieu of reinforcing steel. (c530)

Item 531: Sidewalks

Polypropylene fiber reinforcing is required at a rate of 1.5 lbs./cy in lieu of wire reinforcing. (b531)

Item 618: Conduit

Place a single continuous piece of warning tape in accordance with this item along the entire length of each underground conduit installation. Locate warning tape approximately twelve inches above conduit as indication that a buried electrical line exists below the tape. Cement stabilized backfilled conduit is exempt from this requirement. Comply with warning tape requirements for any installation of buried conduit, including portions of conduit located outside of cement stabilized backfill. (a618)

When trenched conduit is proposed beneath roadways under construction, install conduit after grading operations have been completed and before any surfacing begins at that location. (b618)

When shown on the plans as bored conduit, install conduit by an approved directional boring method. (c618)

Maintain a minimum 24" depth from finish grade to top of conduit for conduit proposed beneath pavement. (d618)

Use an approved ditching method. Place and backfill conduit proposed beneath existing pavement in accordance with the section shown in the plans. Schedule and complete work so that all lanes open to traffic at night. (e618)

For conduit raceways that are intended to remain empty or unused, extend the lower end of conduit from the face of the foundation to a minimum of 1' beyond the edge of the foundation or the riprap apron, whichever is farthest, and use conduit cap fittings for both ends of conduit. Do not glue caps or use duct tape when capping ends of conduit raceways that are intended to remain empty. Prevent dirt and debris from entering raceways during construction by temporarily capping both ends of open raceways. Other than conduit raceways that are intended to remain unused, fit each exposed end of raceways with a bushing. Where steel raceway is used, install a ground-type bushing and connect the bushing and ground rod with a bonding jumper. (f618)

Item 620: Electrical Conductors

Note the requirements of Item 7, Article 18. Electrical Requirements, of the standard specifications. (a620)

Do not exceed four hundred and fifty feet (450') between ground boxes where conduit and conductor is used. (b620)

Item 644: Small Roadside Sign Assemblies

All new sign supports for stop and yield signs will have a 12" red strip of Type C High Specific Intensity Reflective tape. Place the top of the tape 4' above the edge of the roadway. This work will not be paid for directly and will be subsidiary to the pertinent bid item. (a644)

For standard small sign details and dimensions, refer to the "Standard Highway Sign Designs for Texas (SHSD)"; a supplement to the Texas Manual on Uniform Traffic Control Devices (TMUTCD)". (b644)

Locate and mark existing reference marker(s) perpendicular to the road and along the right of way, or as directed, prior to removal. Erect new reference marker(s) at the original location, upon completion of construction. (c644)

Item 666 Retroreflectorized Pavement Markings

Type I markings shall meet the minimum retroreflectivity values defined by Article 4.4 Retroreflectivity Requirements. (a666)

This Contract totals more than 200,000 feet of pavement markings; use a mobile retroreflectometer for retroreflectivity measurements. Portable retroreflectometers may not be used for this Contract. (b666)

Place Type I pavement markings with a ribbon-gun application. (c666)

Measure thickness for markings in accordance with Tex-854-B using usage rates (Part II). (d666)

Item 672: Raised Pavement Markers

Do not place raised pavement markers until the micro-surfacing has cured a minimum of 48 hours. (a672)

Item 677: Eliminating Existing Pavement Markings and Markers

Submit eliminating plan for approval by the Engineer in accordance with Item 677. (a677)

Item 680: Highway Traffic Signals

Provide an approved technician who is available at all times by an on-call basis for maintenance of any installed signal equipment during the period of time in which installed signals are operating, including the test period for this project. (c680)

Provide a minimum length of 24" for each signal cable in each signal pole. All conductors are to be continuous without splices between terminals. (d680)

Remove existing foundations which are to be abandoned a minimum of one foot (1') below subgrade or two feet (2') below natural ground. This work is considered subsidiary to Item 680, "Highway Traffic Signals". (e680)

Ensure the safe movement of traffic through any intersection where construction renders an existing traffic signal inoperable. Enlist off-duty law enforcement officers to assist in maintaining safe and efficient traffic movement through a disabled signalized intersection. Give the Engineer 48 hours advance notification prior to disabling any traffic signal and at that time inform the Engineer of the method or methods of ensuring safe movement of traffic through the intersection. Enlistment of off-duty law enforcement will not be paid for directly, but is considered subsidiary to this bid item. (i680)

Changes in the locations of poles, conduit, pull boxes, or other items as shown on the plans may be made in those instances deemed necessary, or when requested by the Contractor and approved. (j680)

Replace any LEDs that fail during the thirty (30) day test period in a timely manner. Equipment and incidentals necessary for replacement of failed LEDs are considered subsidiary to the various bid items and will not be paid for directly. (k680)

Item 684: Traffic Signal Cables

Attach permanent non-metallic tags to each signal cable in the access compartment of each signal pole and inside the traffic signal controller cabinet. Conductor(s) and/or cable(s) which connects signal heads to the terminal block will be tagged to indicate which specific signal head is being served. Signal cable at the traffic signal controller cabinet will be tagged to identify separate signal phases. Material, labor, tools, equipment, and incidentals are necessary to perform this work are subsidiary to the various bid items. (a684)

Item 690: Maintenance of Traffic Signals

Salvage signal equipment as determined. Salvaged signal equipment will be delivered to the Odessa District Signal Shop located at:

3901 East Highway 80
Odessa, Texas 79761
(432) 498-4960 (a690)

CONTROL POINT COORDINATES				
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
120	10695069.100	1750375.102	2805.882	BM*CP_120
121	10694979.08	1750231.696	2806.887	BTN
122	10694992.49	1749948.339	2809.122	BTN
123	10694895.93	1749924.339	2809.447	BTN
124	10695143.1	1750662.341	2803.577	BTN

CENTERLINE COORDINATES W TEXAS AVE			
STATION	NORTHING	EASTING	DESCRIPTION
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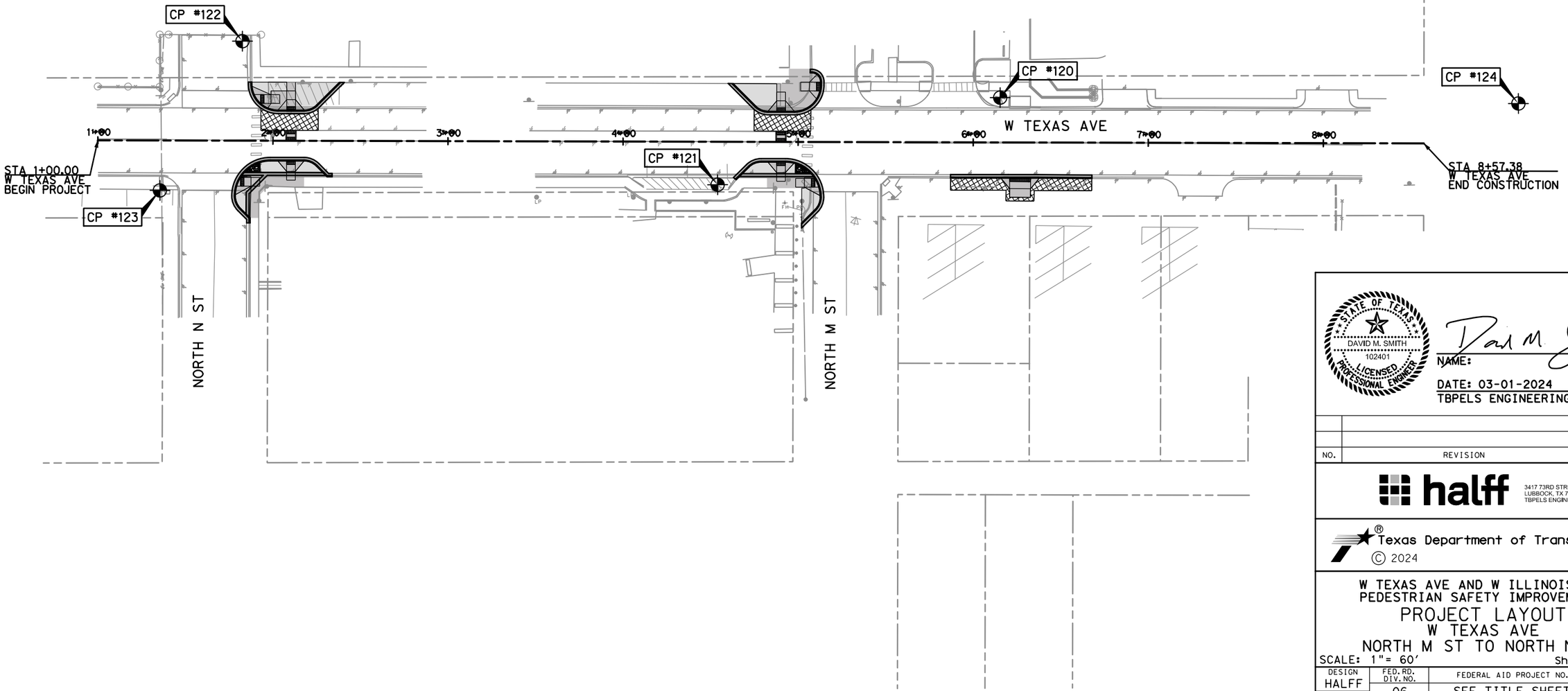

N

0 30 60 90

SCALE IN FEET

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED
PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff

3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PROJECT LAYOUT
W TEXAS AVE
NORTH M ST TO NORTH N ST

SCALE: 1"= 60'

Sheet 1 of 2

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS: HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK: DMS	TEXAS	ODA	MIDLAND	5
CHECK: JTH	CONTROL	SECTION	JOB	
	0906	32	064	

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CONTROL POINT COORDINATES					
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128	10694896.67	1754386.774	2785.087		BTRA
129	10694680.58	1753520.502	2789.903		BTRA
130	10694596.36	1753611.672	2790.312		BTRA
133	10694908.75	1753212.856	2790.038		BTRA

CENTERLINE COORDINATES W TEXAS AVE			
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49+79.87	10696138.0581	1754598.1670	P.T.
52+14.70	10696140.2261	1754832.9956	END W TEXAS AVE

CENTERLINE COORDINATES W ILLINOIS AVE			
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10+54.71	10696490.0790	1754389.3624	P.C.
12+18.19	10696511.7819	1754550.9910	P.T.
13+74.20	10696513.5805	1754706.9841	END W ILLINOIS AVE

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CENTERLINE COORDINATES NORTH B ST			
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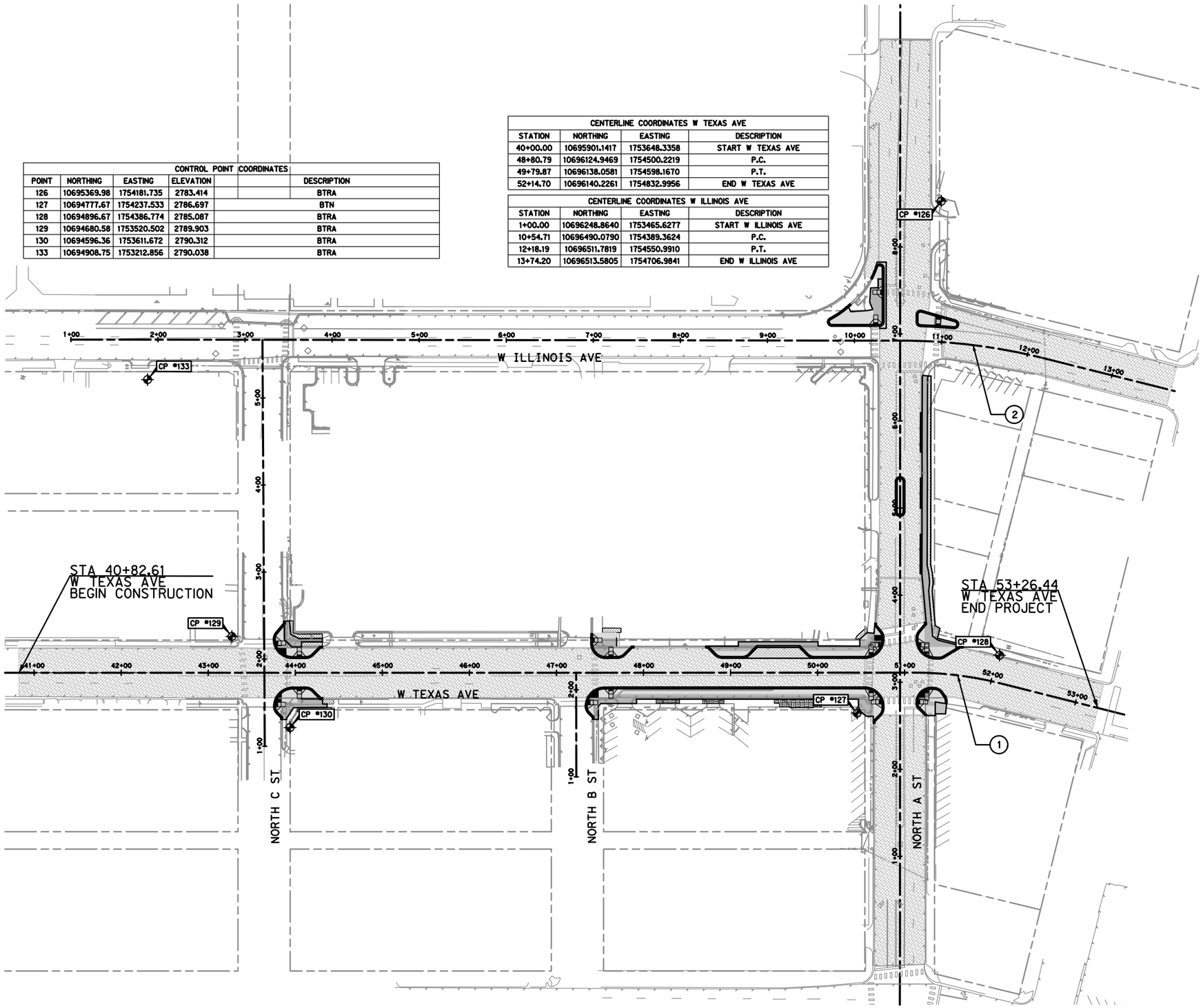

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L= 99.1'
T= 49.8'

(2) Δ= 13°58'28"
R= 670.3'
L= 163.5'
T= 82.1'

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

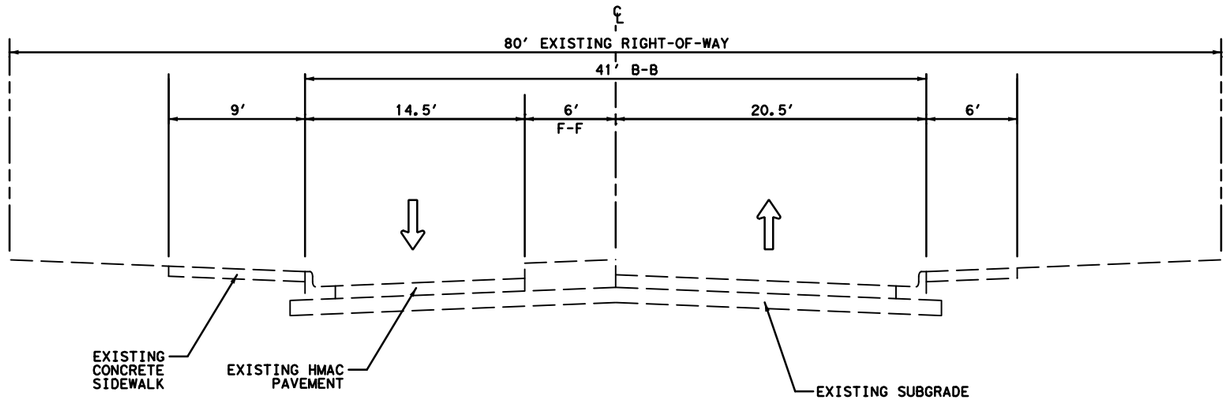
Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PROJECT LAYOUT
W TEXAS AVE & W ILLINOIS AVE

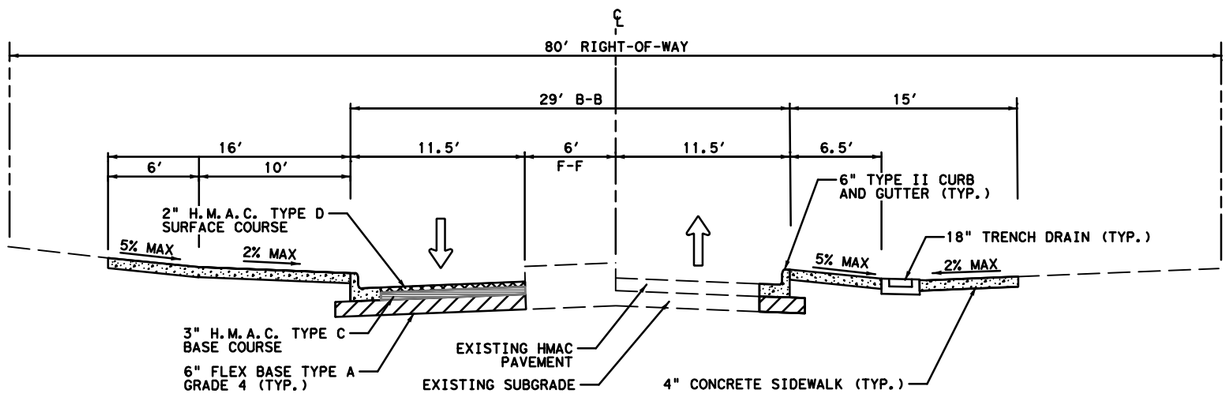
SCALE: 1"= 80' Sheet 2 of 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	6
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	



EXISTING TYPICAL SECTION
W TEXAS AVE
STA 2+00 & STA 5+00

SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
W TEXAS AVE
STA 2+00 & STA 5+00

SCALE: H: 1"=10'
V: 1"=5'

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

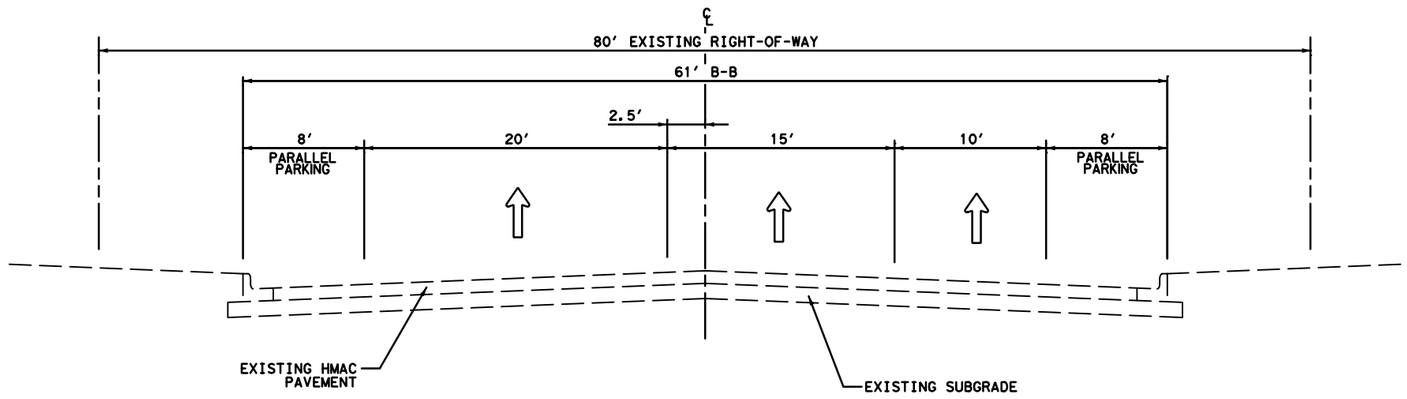
Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

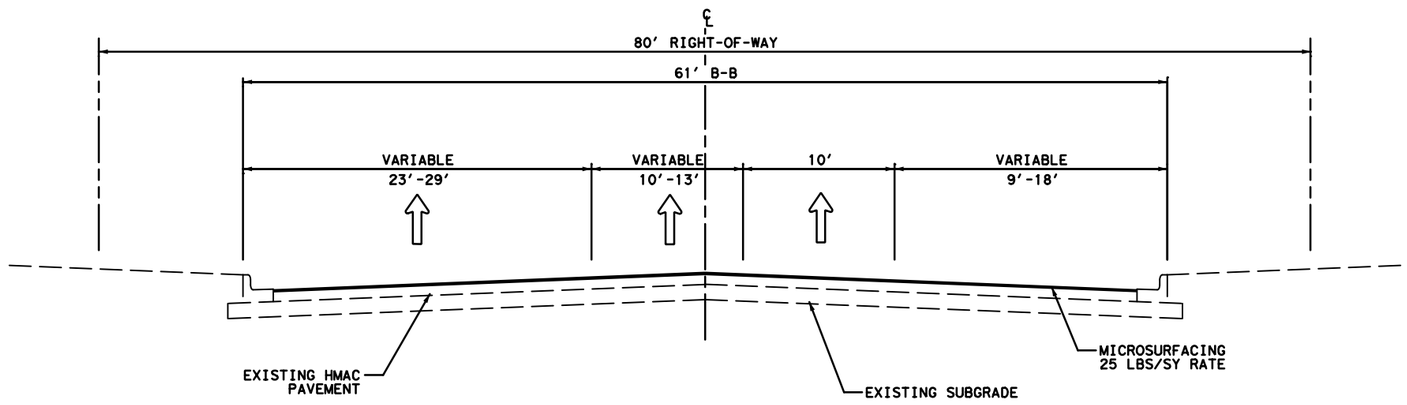
TYPICAL SECTIONS
W TEXAS AVE

SCALE: 1"= 10' Sheet 1 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	7
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	



EXISTING TYPICAL SECTION
W TEXAS AVE
STA 40+82.61 TO STA 42+35
SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
W TEXAS AVE
STA 40+82.61 TO STA 42+35
SCALE: H: 1"=10'
V: 1"=5'

DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

NAME:
DATE: 03-01-2024
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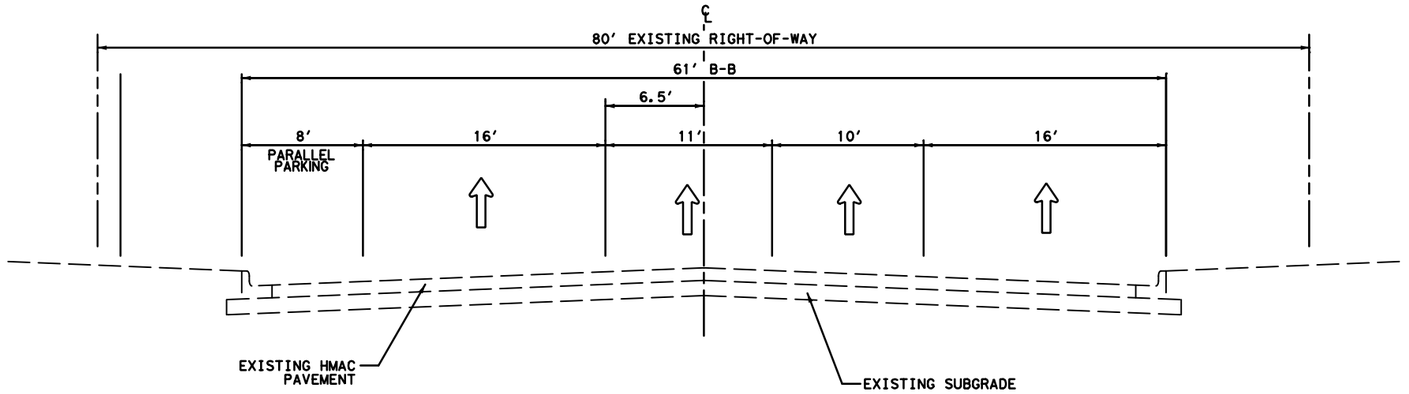
Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

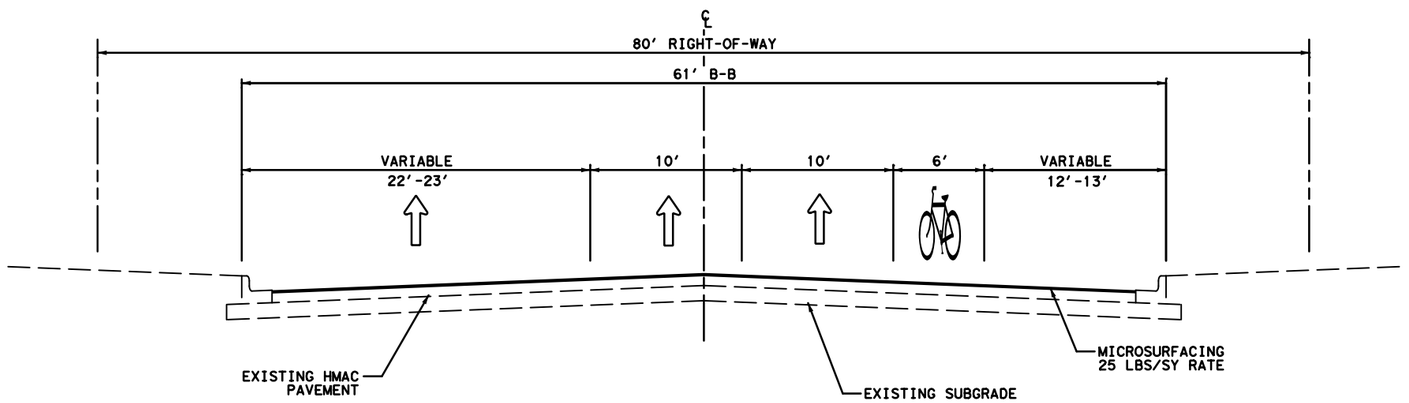
TYPICAL SECTIONS
W TEXAS AVE

SCALE: 1"= 10' Sheet 2 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	8
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	



EXISTING TYPICAL SECTION
W TEXAS AVE
STA 42+35 TO STA 43+90 AND
STA 44+28 TO STA 47+40
SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
W TEXAS AVE
STA 42+35 TO STA 43+90 AND
STA 44+28 TO STA 47+40
SCALE: H: 1"=10'
V: 1"=5'

STATE OF TEXAS
DAVID M. SMITH
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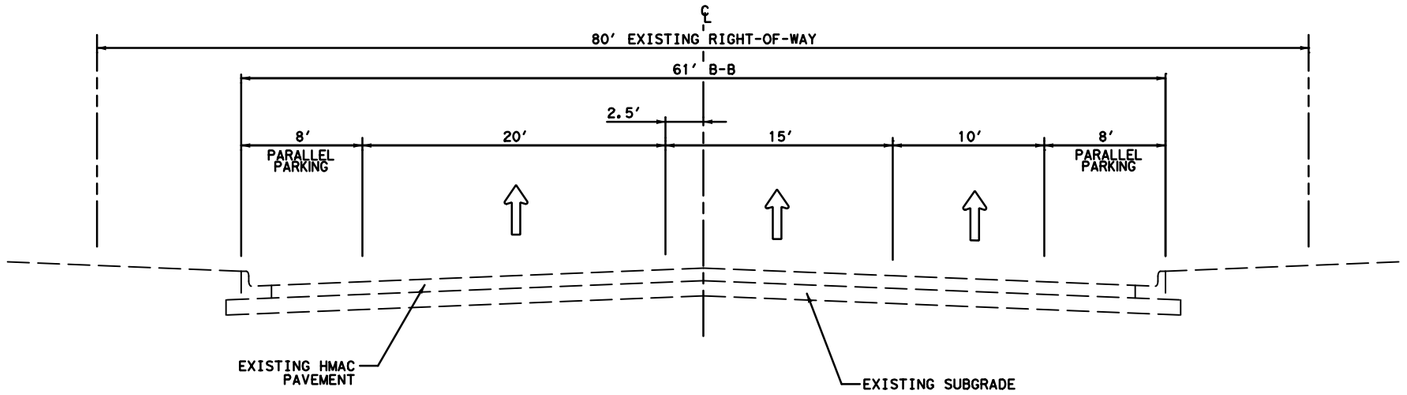
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

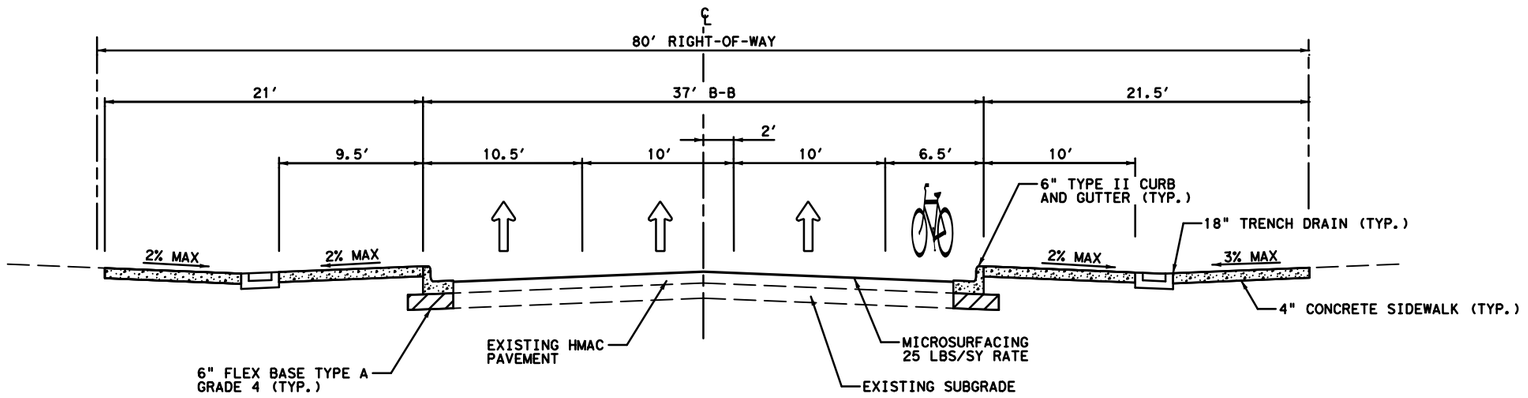
TYPICAL SECTIONS
W TEXAS AVE

SCALE: 1"= 10' Sheet 3 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS: HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK: DMS	TEXAS	ODA	MIDLAND	9
CHECK: JTH	CONTROL 0906	SECTION 32	JOB 064	



EXISTING TYPICAL SECTION
W TEXAS AVE
STA 43+90 TO STA 44+18
SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
W TEXAS AVE
STA 43+90 TO STA 44+18
SCALE: H: 1"=10'
V: 1"=5'

STATE OF TEXAS
DAVID M. SMITH
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DATE: 03-01-2024
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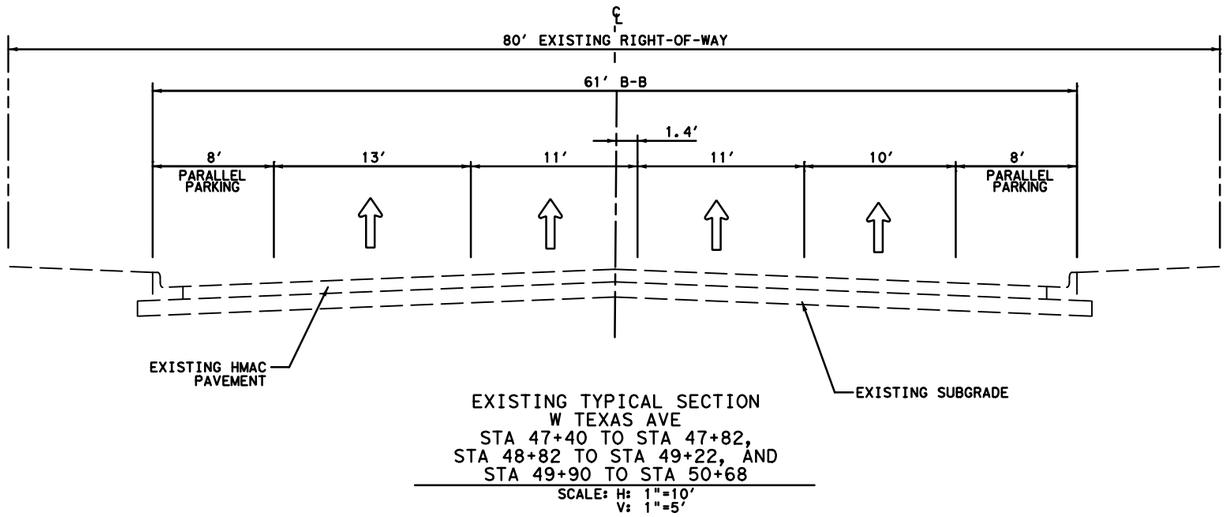
Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
W TEXAS AVE

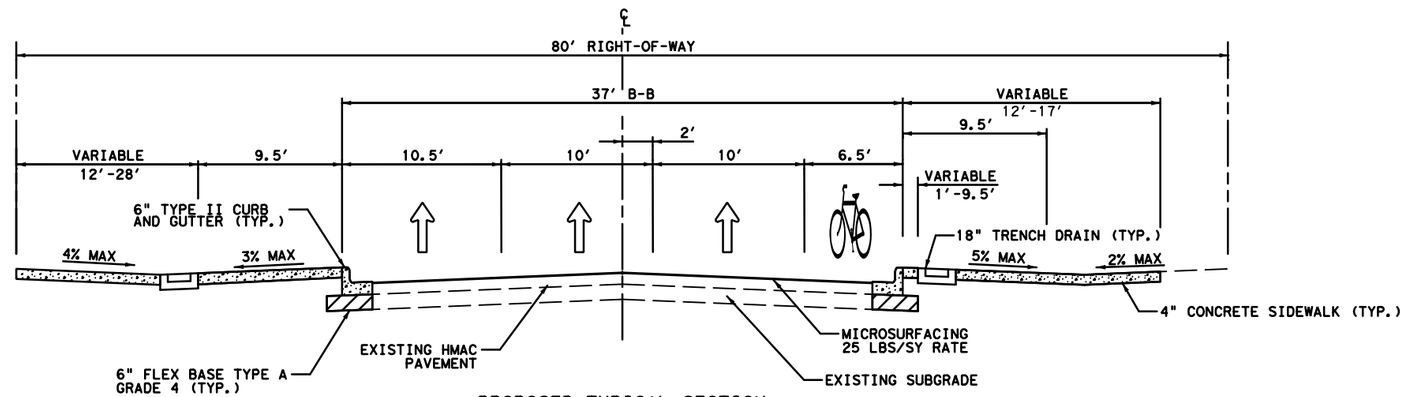
SCALE: 1"= 10' Sheet 4 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	10
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	



EXISTING TYPICAL SECTION
W TEXAS AVE
STA 47+40 TO STA 47+82,
STA 48+82 TO STA 49+22, AND
STA 49+90 TO STA 50+68

SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
W TEXAS AVE
STA 47+40 TO STA 47+82,
STA 48+82 TO STA 49+22, AND
STA 49+90 TO STA 50+68

SCALE: H: 1"=10'
V: 1"=5'

DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

NAME:

DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
W TEXAS AVE

SCALE: 1"= 10'

Sheet 5 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HALFF	TEXAS	ODA	MIDLAND	11
CHECK	CONTROL	SECTION	JOB	
DMS	0906	32	064	
CHECK				
JTH				

DATE:3/28/2024 TIME:4:54:04 PM PROJECT # 45715 OFFICE:FTW
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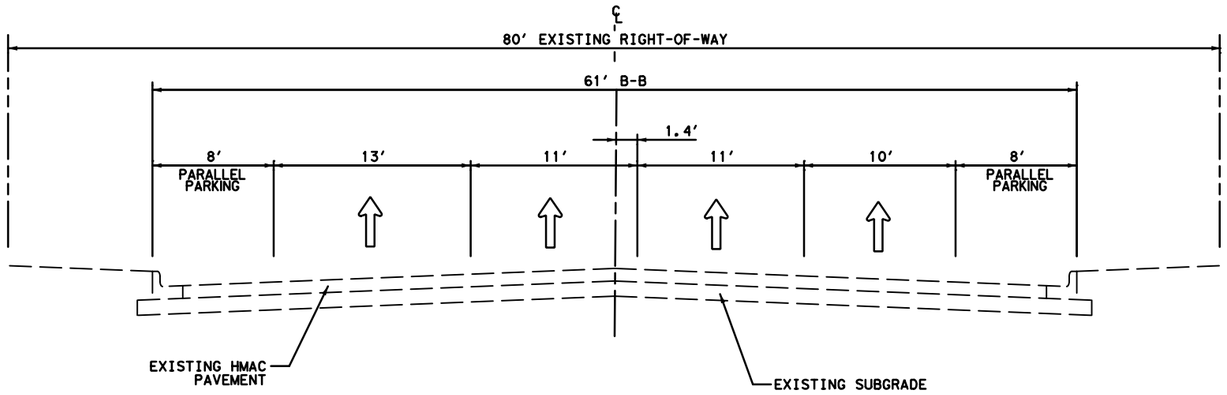
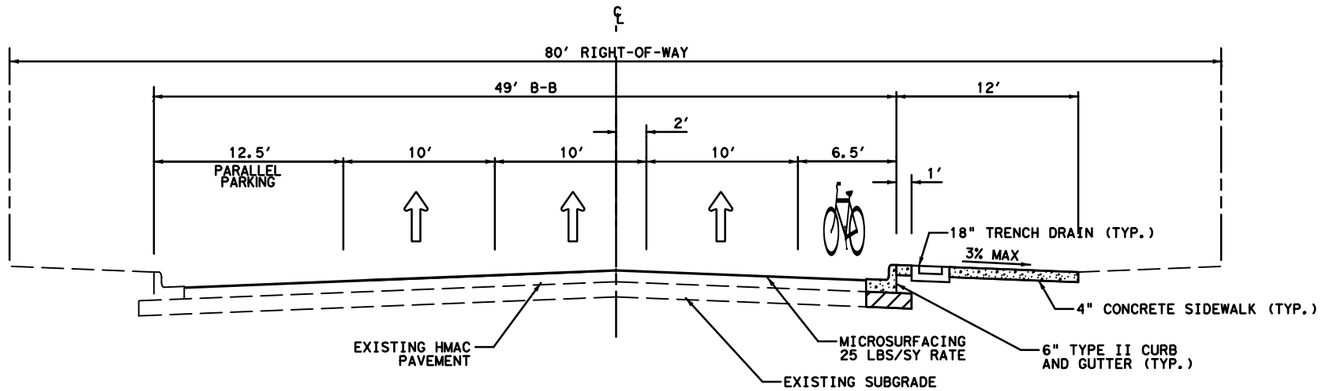


EXISTING TYPICAL SECTION
W TEXAS AVE
STA 47+82 TO STA 48+82

SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
W TEXAS AVE
STA 47+82 TO STA 48+82

SCALE: H: 1"=10'
V: 1"=5'

DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

NAME:

DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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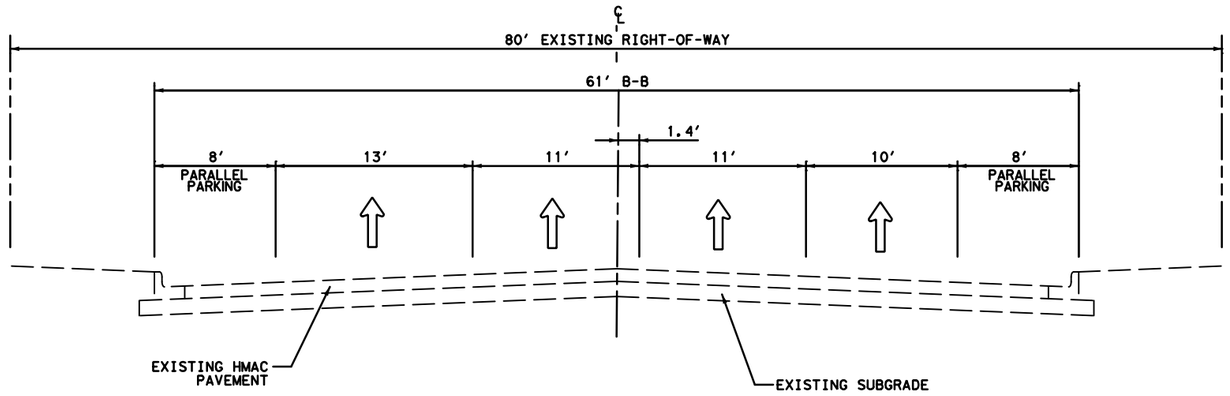
Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
W TEXAS AVE

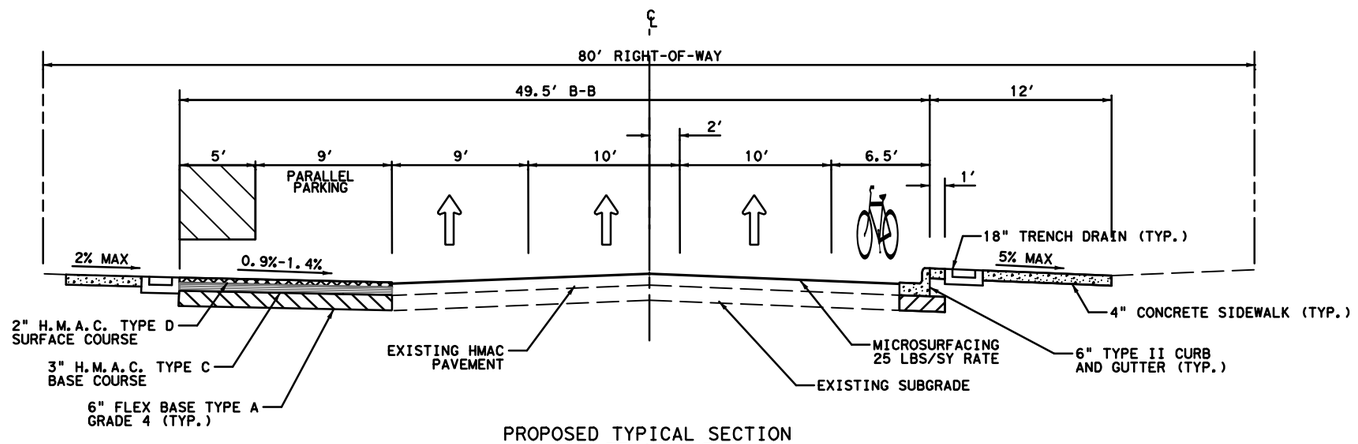
SCALE: 1"= 10' Sheet 6 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	12
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	



EXISTING TYPICAL SECTION
W TEXAS AVE
STA 49+22 TO STA 49+90

SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
W TEXAS AVE
STA 49+22 TO STA 49+90

SCALE: H: 1"=10'
V: 1"=5'

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

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Texas Department of Transportation

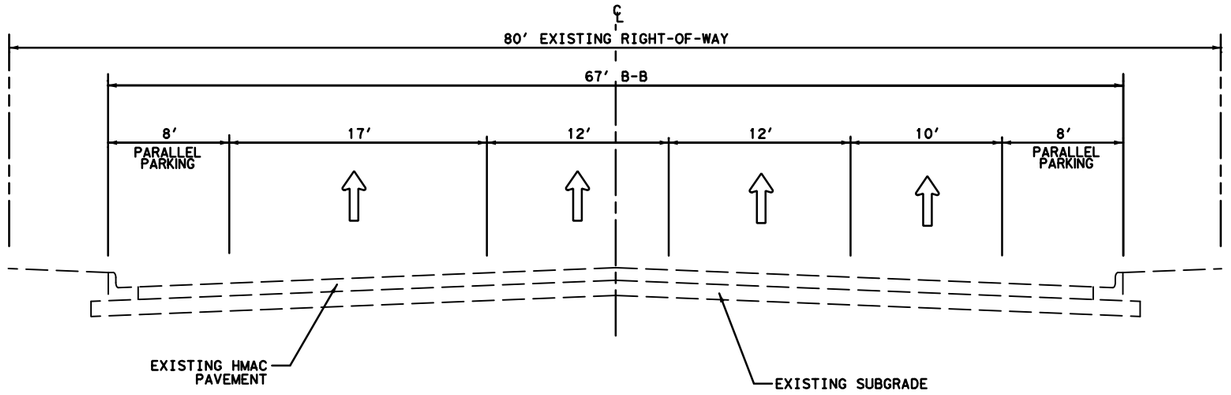
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
W TEXAS AVE

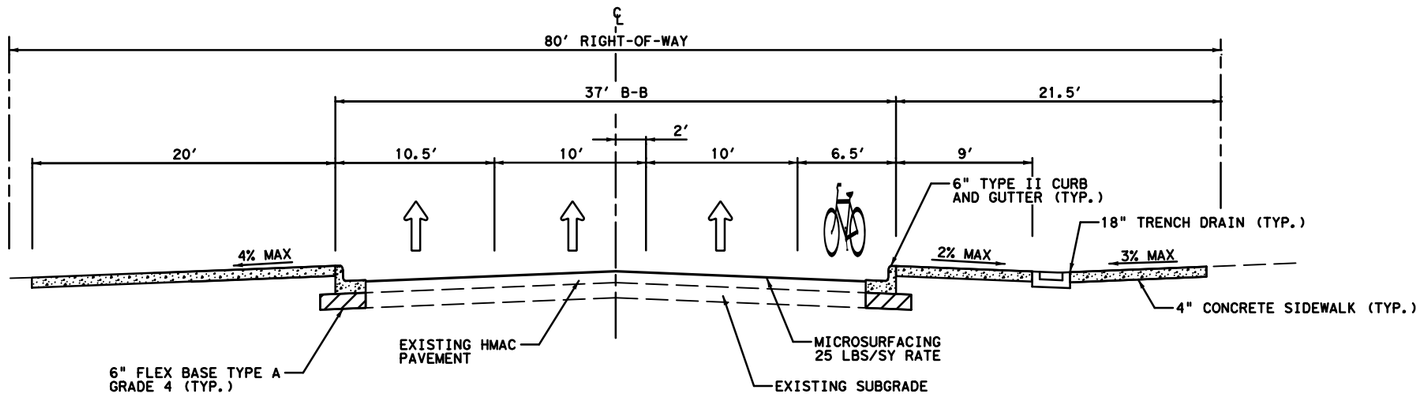
SCALE: 1"= 10'

Sheet 7 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	13
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	



EXISTING TYPICAL SECTION
W TEXAS AVE
STA 51+20 TO STA 51+54
SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
W TEXAS AVE
STA 51+20 TO STA 51+54
SCALE: H: 1"=10'
V: 1"=5'

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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TBPELS ENGINEERING FIRM #312

Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
W TEXAS AVE

SCALE: 1"= 10' Sheet 8 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	14
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

DATE:3/28/2024 TIME:4:54:05 PM PROJECT # 45715 OFFICE:FTW
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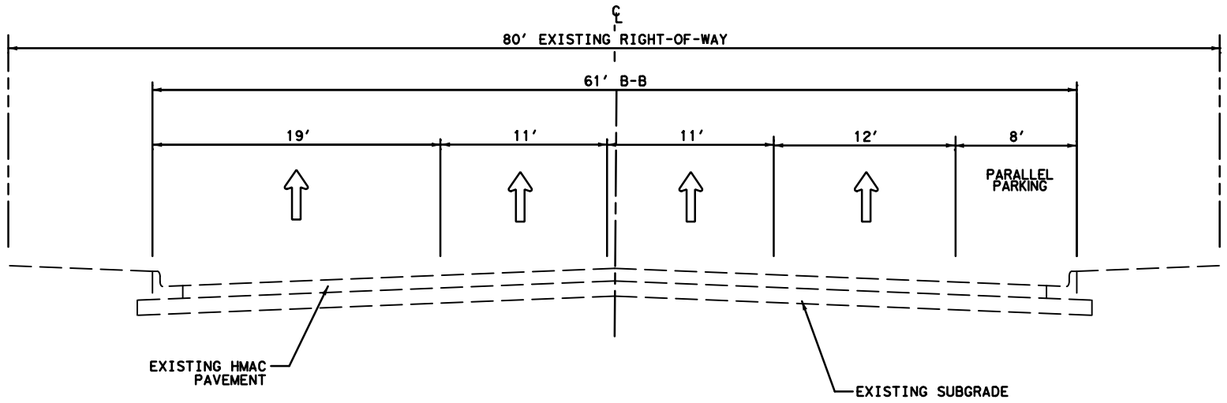
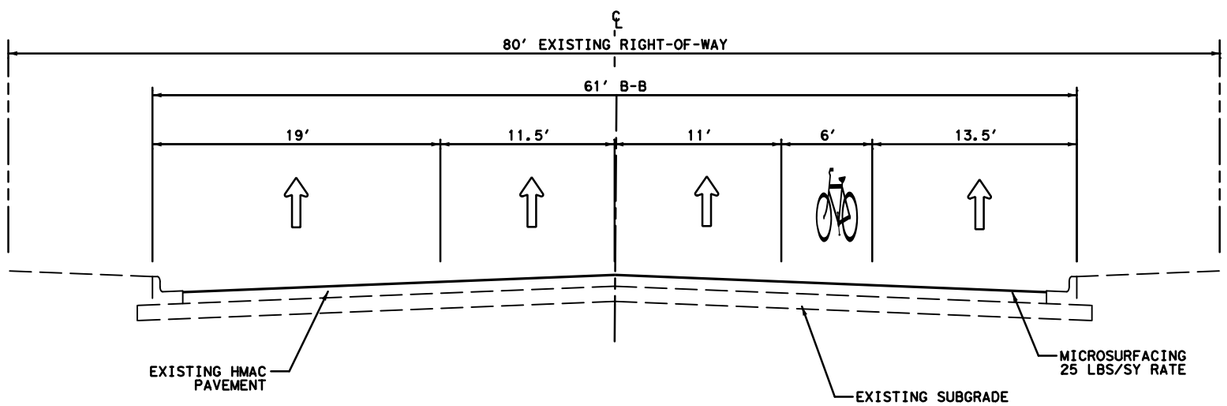


EXISTING TYPICAL SECTION
W TEXAS AVE
STA 51+54 TO STA 53.26.44
SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
W TEXAS AVE
STA 51+54 TO STA 53+26.44
SCALE: H: 1"=10'
V: 1"=5'

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:
DATE: 03-01-2024
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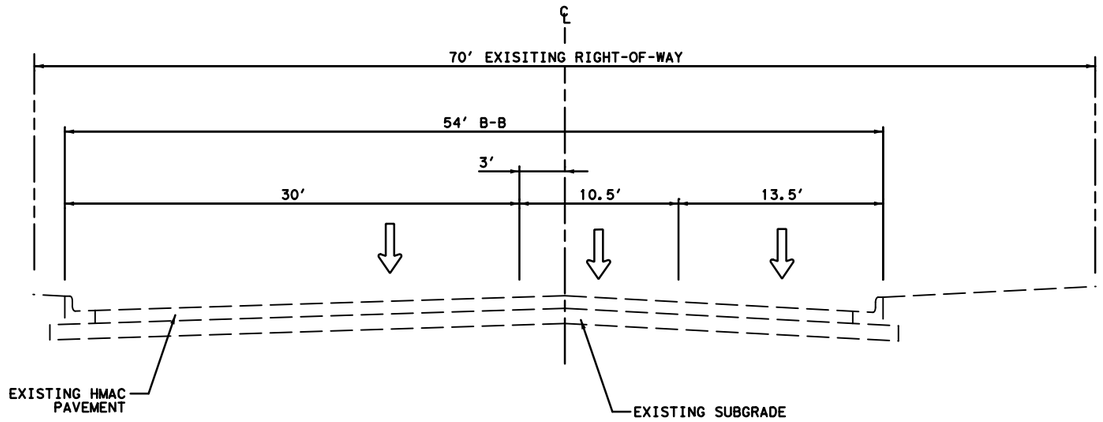
Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
W TEXAS AVE

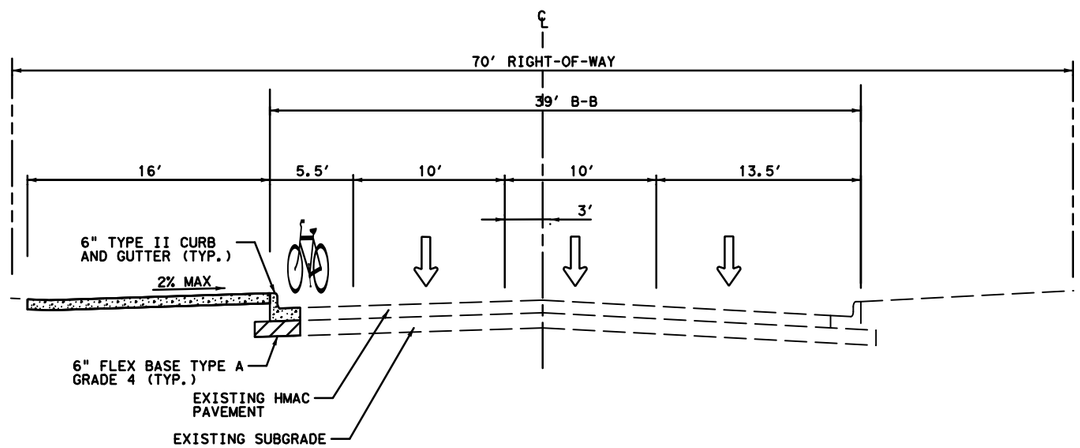
SCALE: 1"= 10'
Sheet 9 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	15
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	



EXISTING TYPICAL SECTION
W ILLINOIS AVE
STA 9+70 TO STA 10+72

SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
W ILLINOIS AVE
STA 9+70 STA 10+72

SCALE: H: 1"=10'
V: 1"=5'

DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

NAME:

DATE: 03-01-2024
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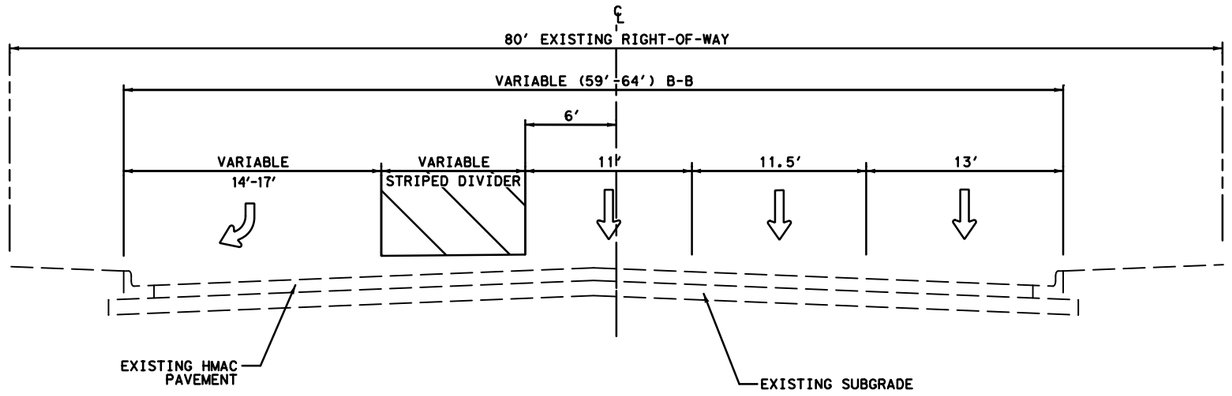
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
W ILLINOIS AVE

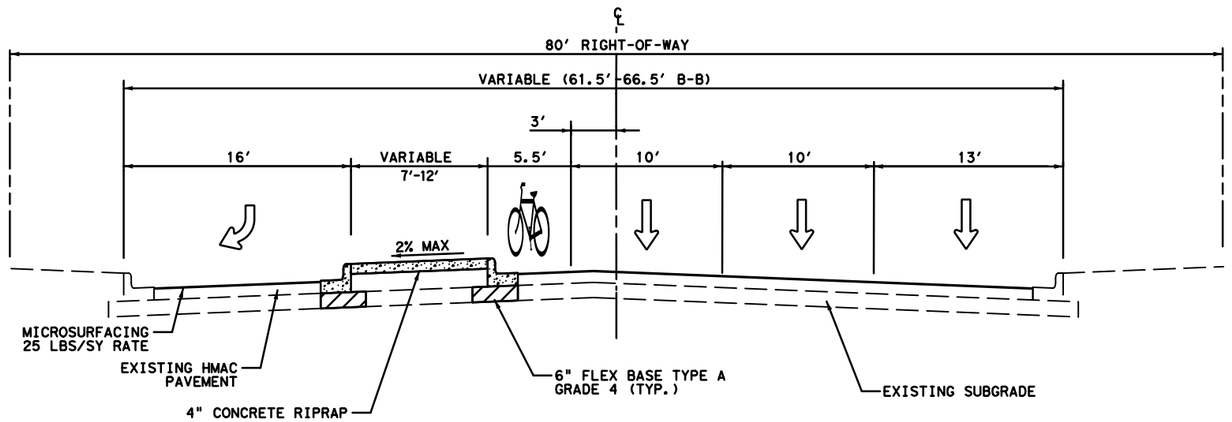
SCALE: 1"= 10'

Sheet 10 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	16
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	



EXISTING TYPICAL SECTION
W ILLINOIS AVE
STA 10+72 TO STA 11+17
SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
W ILLINOIS AVE
STA 10+72 TO STA 11+17
SCALE: H: 1"=10'
V: 1"=5'

STATE OF TEXAS
DAVID M. SMITH
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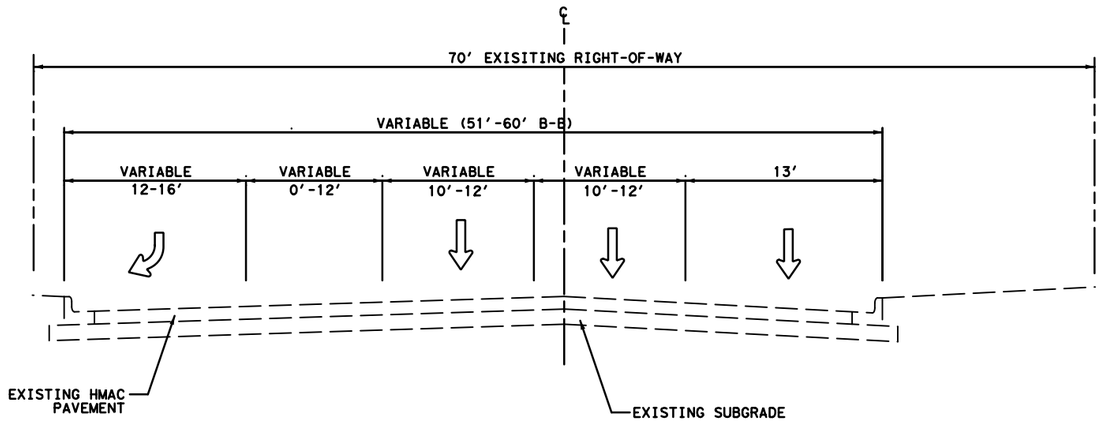
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
W ILLINOIS AVE

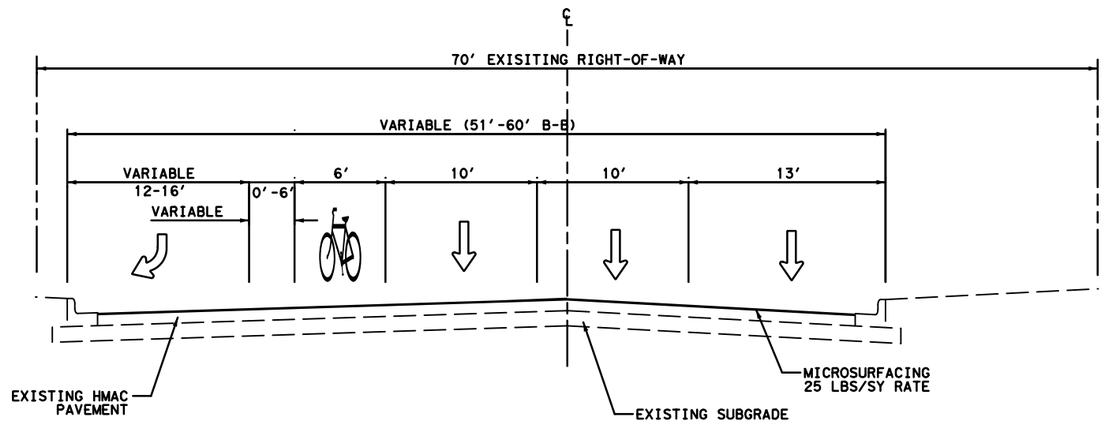
SCALE: 1"= 10' Sheet 11 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HALFF	TEXAS	ODA	MIDLAND	17
CHECK	CONTROL	SECTION	JOB	
DMS	0906	32	064	
CHECK				
JTH				



EXISTING TYPICAL SECTION
W ILLINOIS AVE
STA 11+17 TO STA 13+69.58

SCALE: H: 1"=10'
V: 1"=5'



EXISTING TYPICAL SECTION
W ILLINOIS AVE
STA 11+17 TO STA 13+69.58

SCALE: H: 1"=10'
V: 1"=5'

DAVID M. SMITH
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STATE OF TEXAS

NAME:

DATE: 03-01-2024
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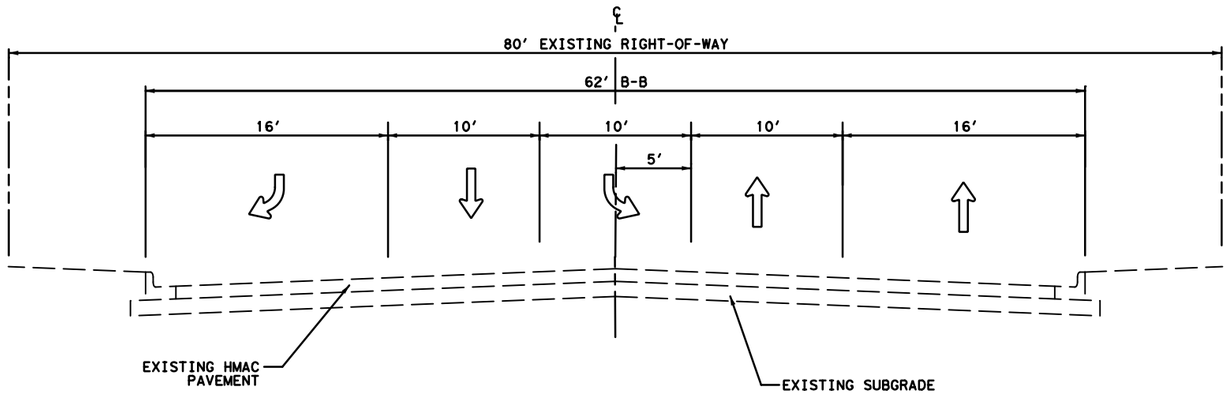
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
W ILLINOIS AVE

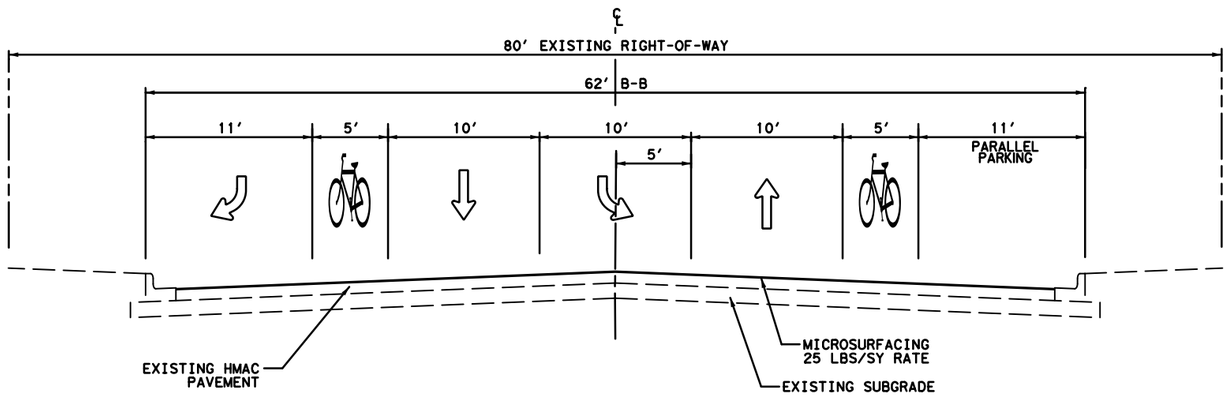
SCALE: 1"= 10'

Sheet 12 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS: HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK: DMS	TEXAS	ODA	MIDLAND	18
CHECK: JTH	CONTROL 0906	SECTION 32	JOB 064	



EXISTING TYPICAL SECTION
NORTH A ST
STA 1+33 TO STA 2+64
SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
NORTH A ST
STA 1+33 TO STA 2+64
SCALE: H: 1"=10'
V: 1"=5'

DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

NAME:
DATE: 03-01-2024
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NO.	REVISION	BY	DATE

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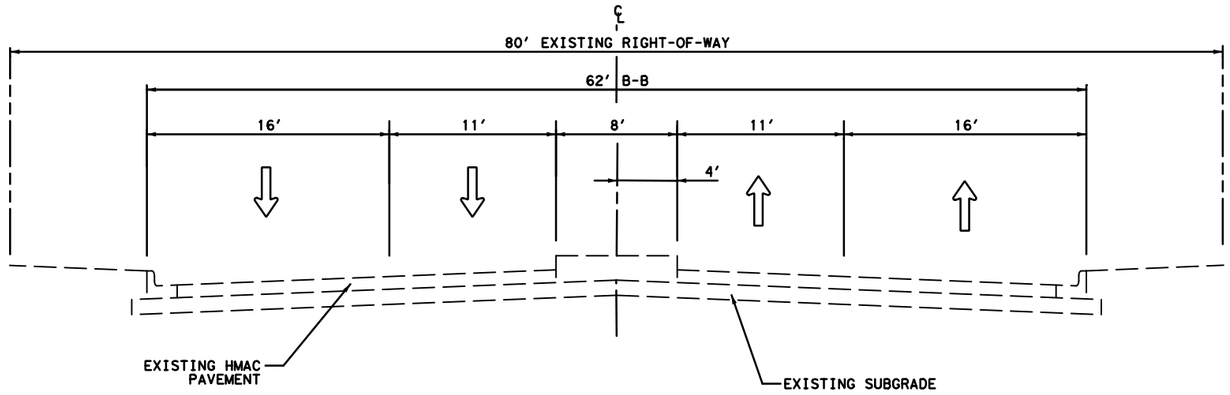
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

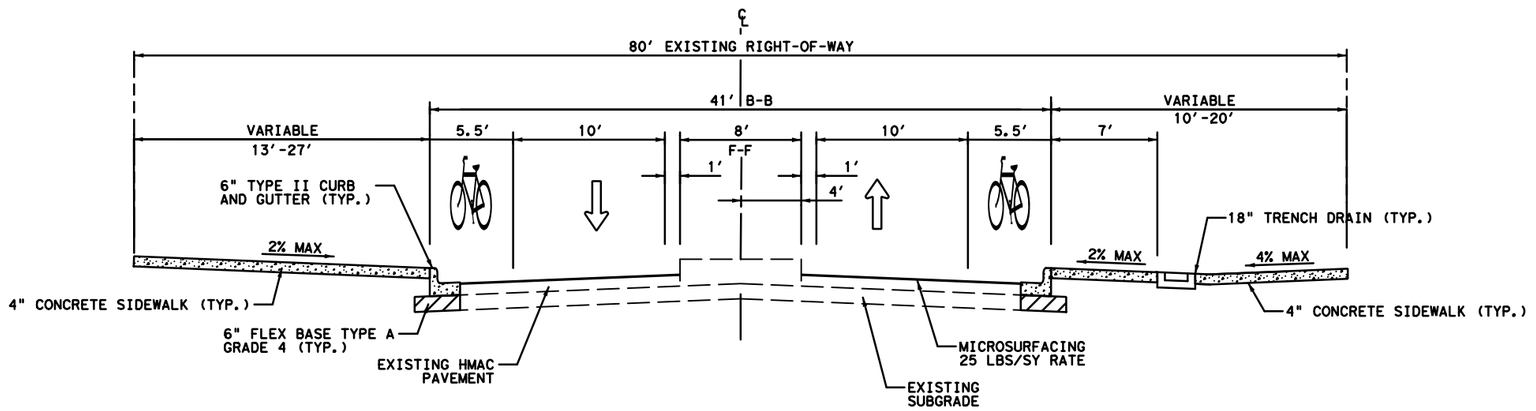
TYPICAL SECTIONS
NORTH A ST

SCALE: 1"= 10' Sheet 13 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	19
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	



EXISTING TYPICAL SECTION
NORTH A ST
STA 2+64 TO STA 2+92
SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
NORTH A ST
STA 2+64 TO STA 2+92
SCALE: H: 1"=10'
V: 1"=5'

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024
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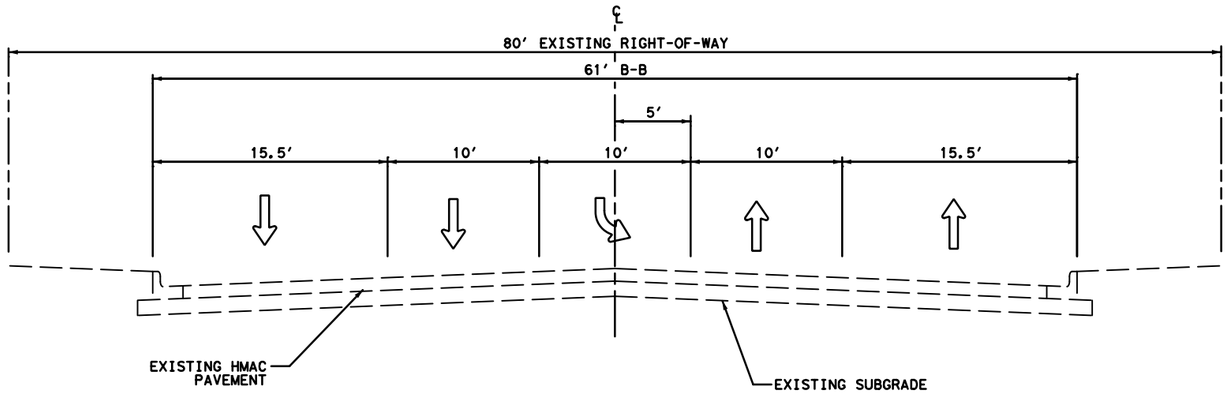
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

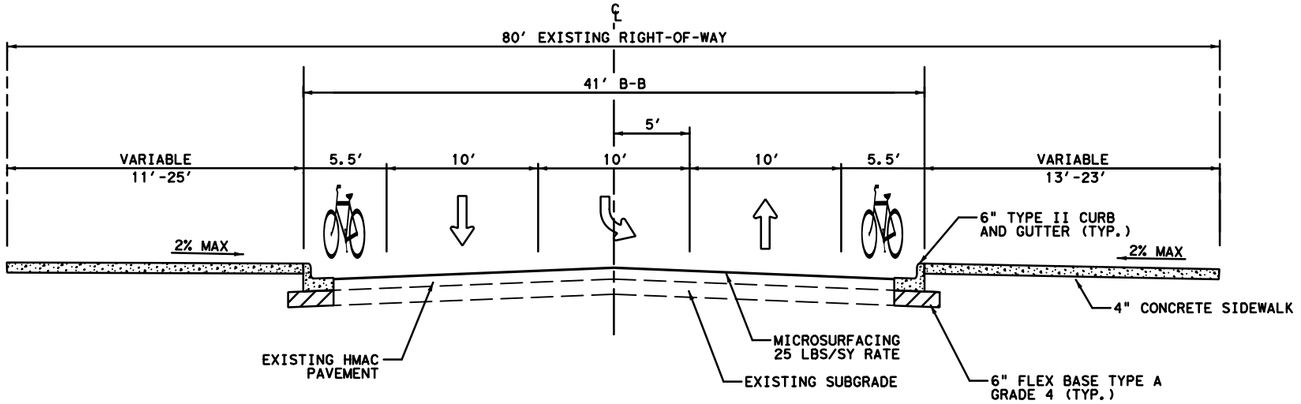
TYPICAL SECTIONS
NORTH A ST

SCALE: 1"= 10'

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	20
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	



EXISTING TYPICAL SECTION
NORTH A ST
STA 3+40 TO STA 3+60
SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
NORTH A ST
STA 3+40 TO STA 3+60
SCALE: H: 1"=10'
V: 1"=5'

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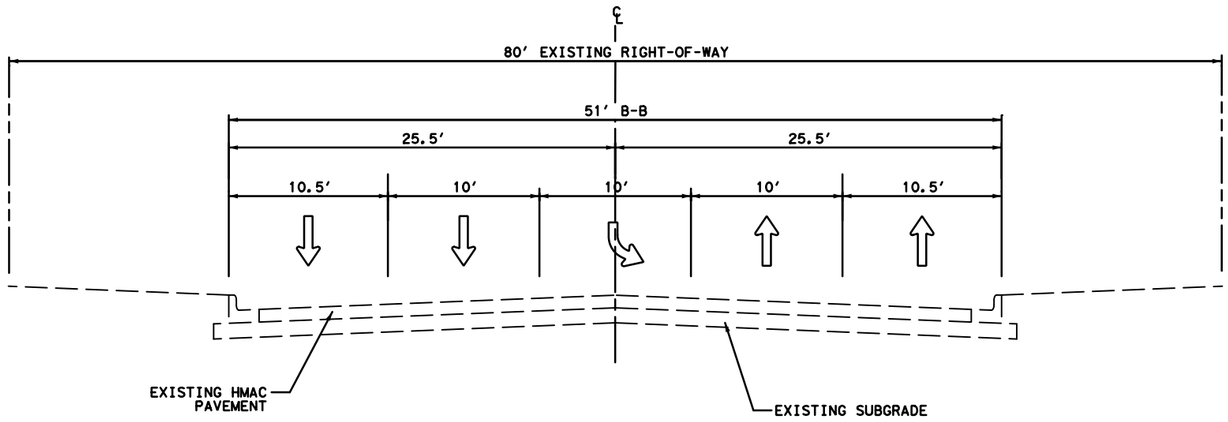
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
NORTH A ST

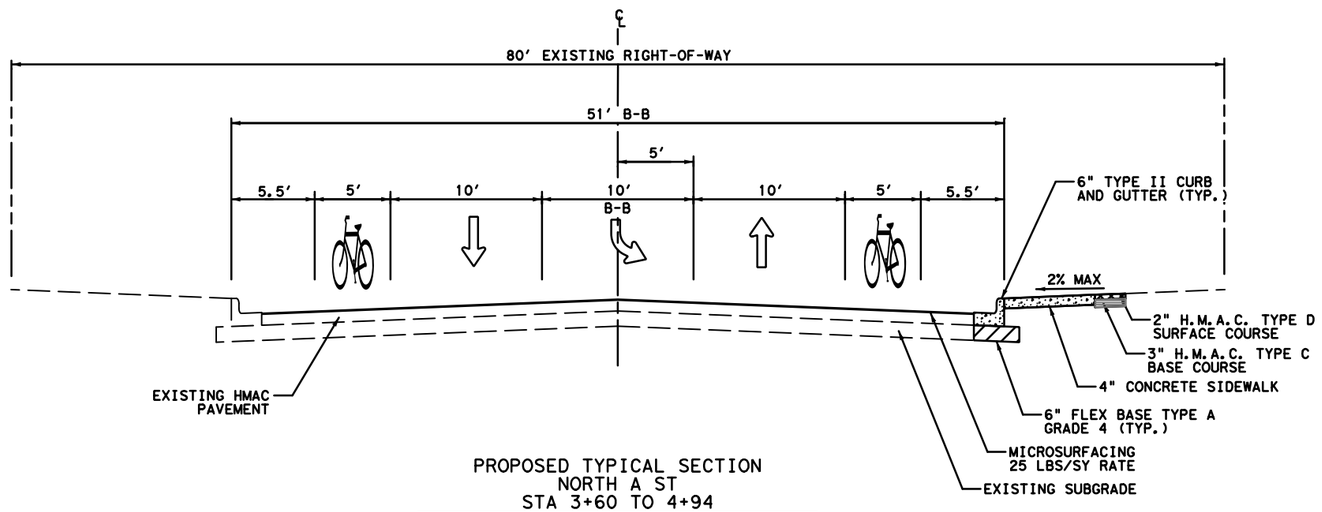
SCALE: 1"= 10'
Sheet 15 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HALFF	TEXAS	ODA	MIDLAND	21
CHECK	CONTROL	SECTION	JOB	
DMS	0906	32	064	
CHECK				
JTH				



EXISTING TYPICAL SECTION
NORTH A ST
STA 3+60 TO STA 4+94

SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
NORTH A ST
STA 3+60 TO 4+94

SCALE: H: 1"=10'
V: 1"=5'

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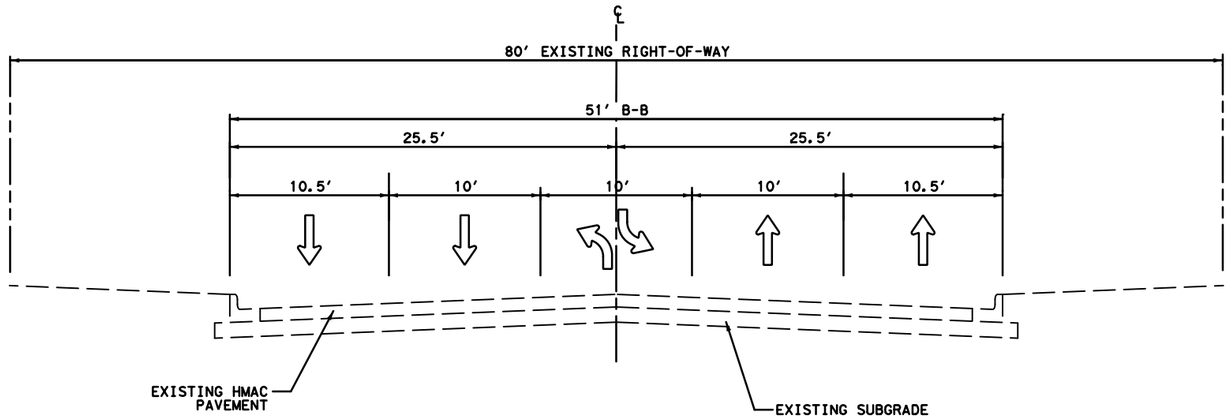
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
NORTH A ST

SCALE: 1"= 10'

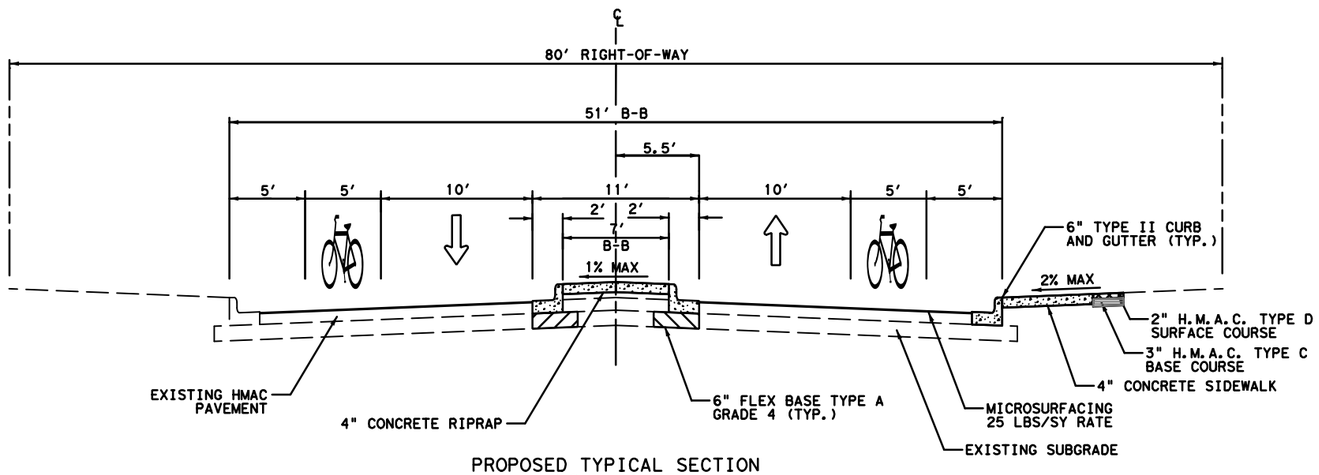
Sheet 16 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HALFF	TEXAS	ODA	MIDLAND	22
CHECK	CONTROL	SECTION	JOB	
DMS	0906	32	064	
CHECK				
JTH				



EXISTING TYPICAL SECTION
NORTH A ST
STA 4+94 TO STA 5+33

SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
NORTH A ST
STA 4.94 TO STA 5+33

SCALE: H: 1"=10'
V: 1"=5'

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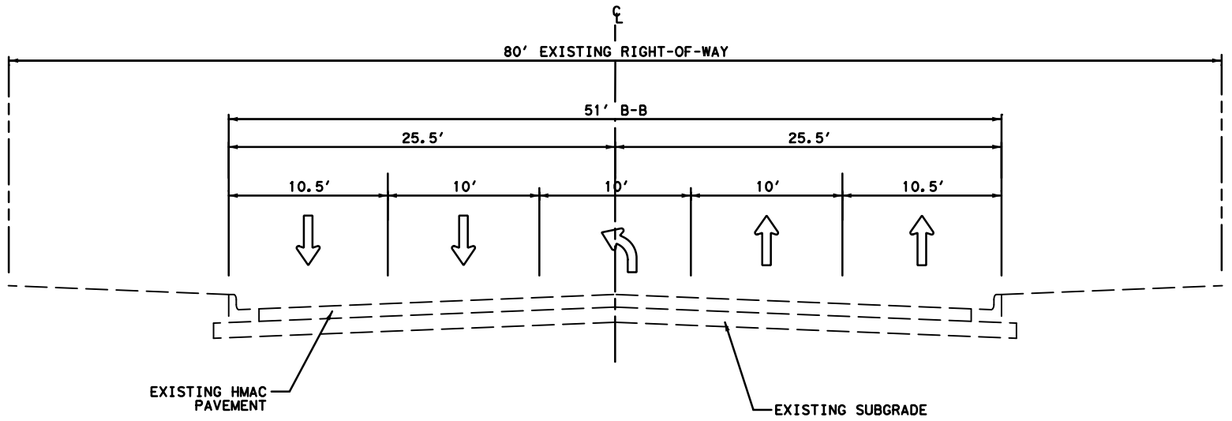
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
NORTH A ST

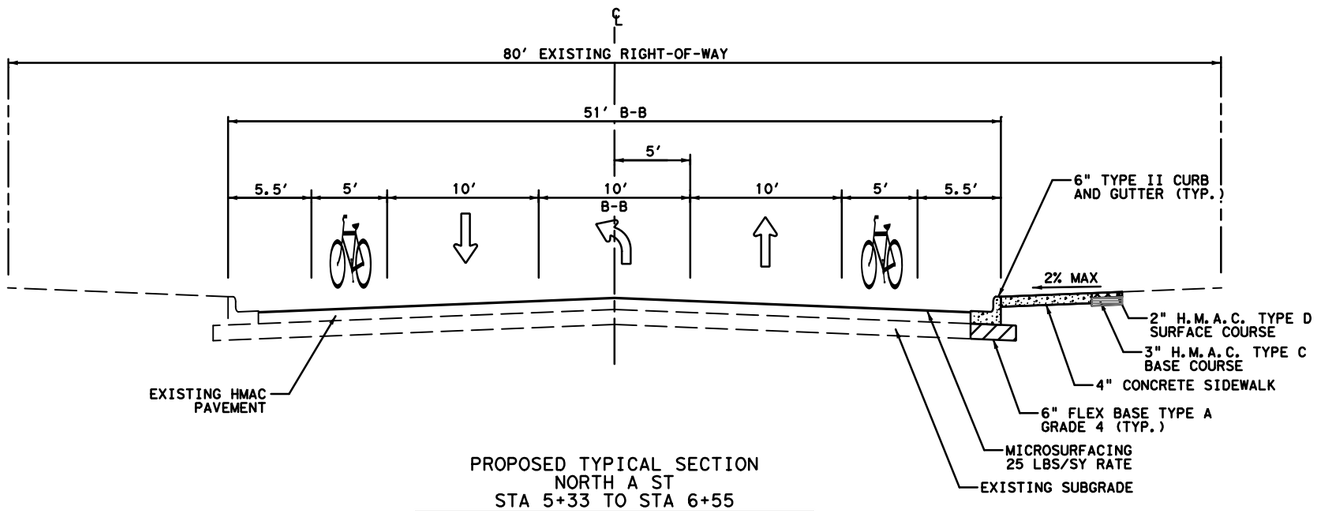
SCALE: 1"= 10'

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	23
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	



EXISTING TYPICAL SECTION
NORTH A ST
STA 5+33 TO 6+55

SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
NORTH A ST
STA 5+33 TO STA 6+55

SCALE: H: 1"=10'
V: 1"=5'

STATE OF TEXAS
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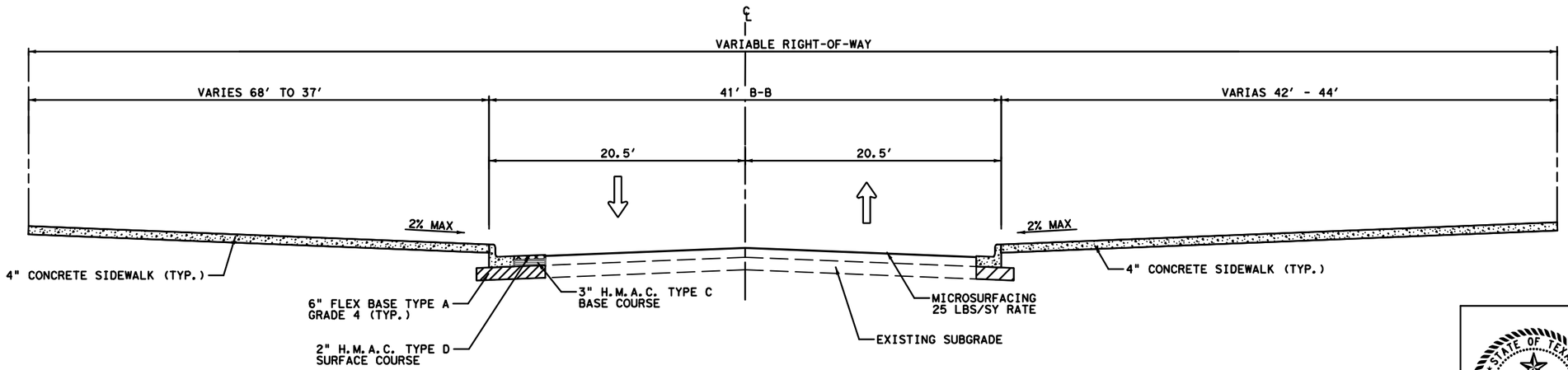
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
NORTH A ST

SCALE: 1"= 10' Sheet 18 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	24
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	



PROPOSED TYPICAL SECTION
NORTH A ST
STA 7+10 TO 7+31

SCALE: H: 1"=10'
V: 1"=5'

STATE OF TEXAS
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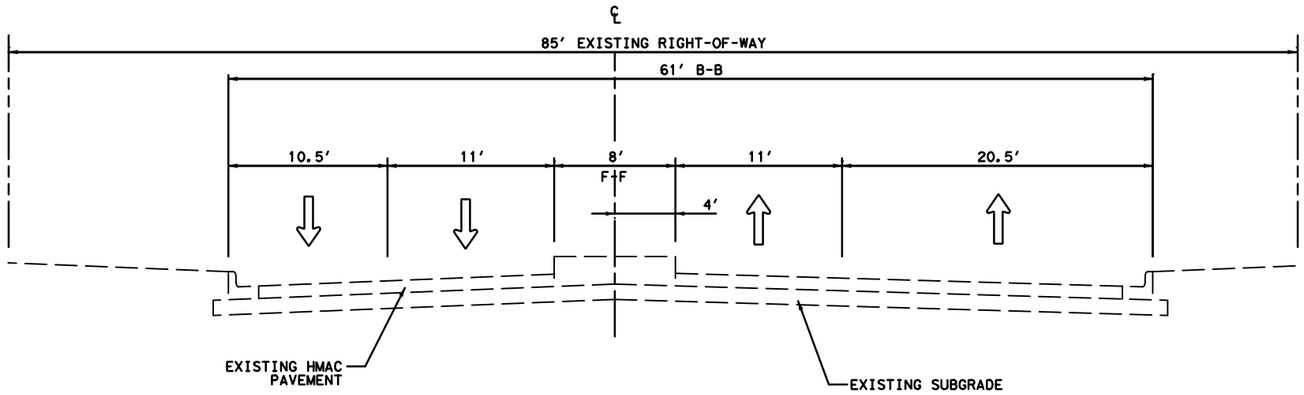
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

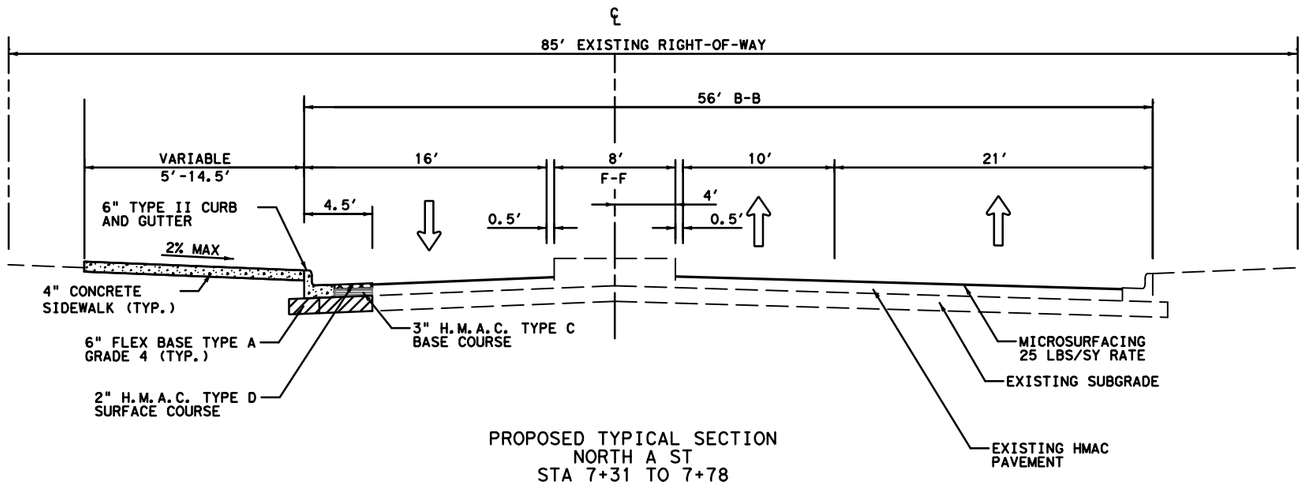
TYPICAL SECTIONS
NORTH A ST

SCALE: 1"= 10' Sheet 19 of24

DESIGN	FED.RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	25
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	



EXISTING TYPICAL SECTION
NORTH A ST
STA 7+31 TO 7+78
SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
NORTH A ST
STA 7+31 TO 7+78
SCALE: H: 1"=10'
V: 1"=5'

STATE OF TEXAS
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NAME:

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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
NORTH A ST

SCALE: 1"= 10'

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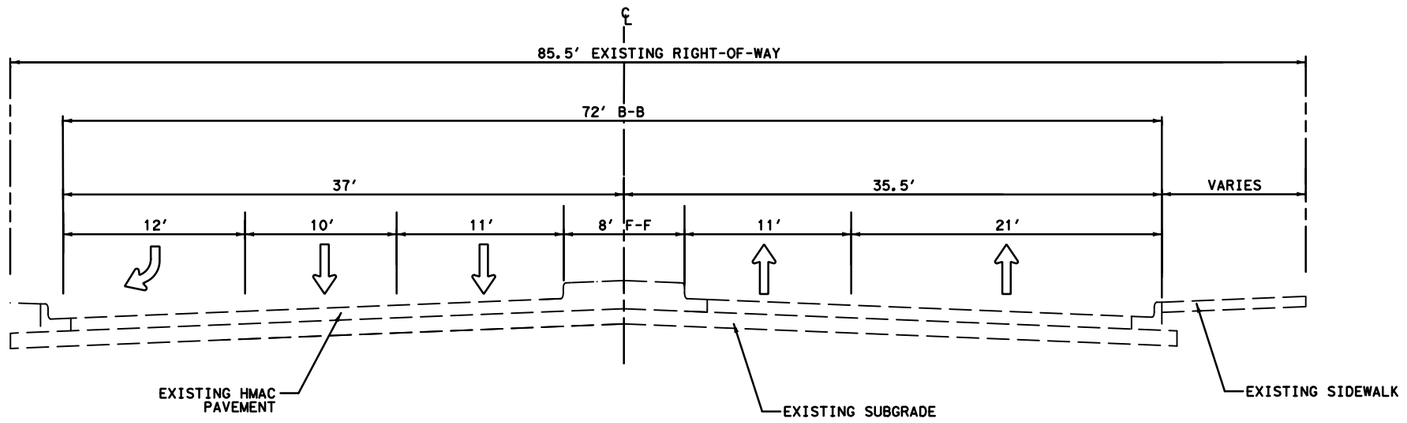
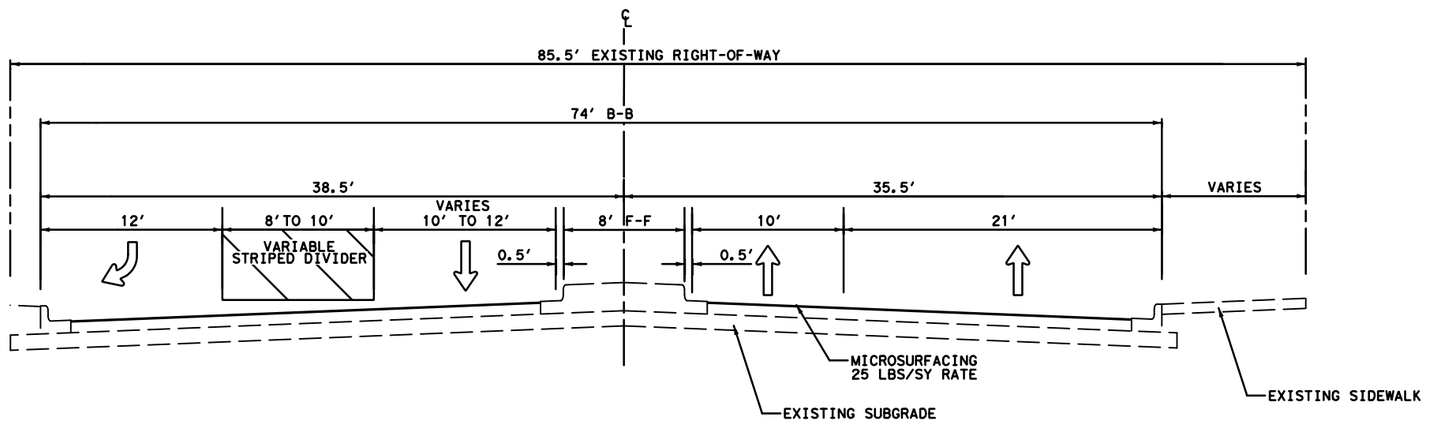
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HALFF	TEXAS	ODA	MIDLAND	26
CHECK	CONTROL	SECTION	JOB	
DMS				
CHECK	0906	32	064	
JTH				



EXISTING TYPICAL SECTION
NORTH A ST
STA 7+78 TO 8+54
SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
NORTH A ST
STA 7+78 TO 8+54
SCALE: H: 1"=10'
V: 1"=5'

STATE OF TEXAS
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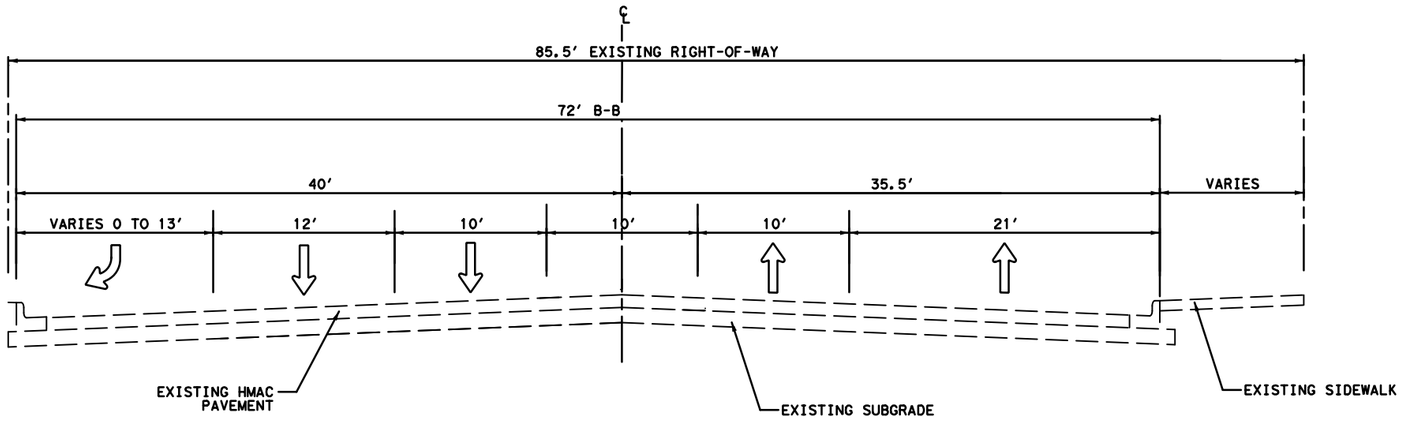
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

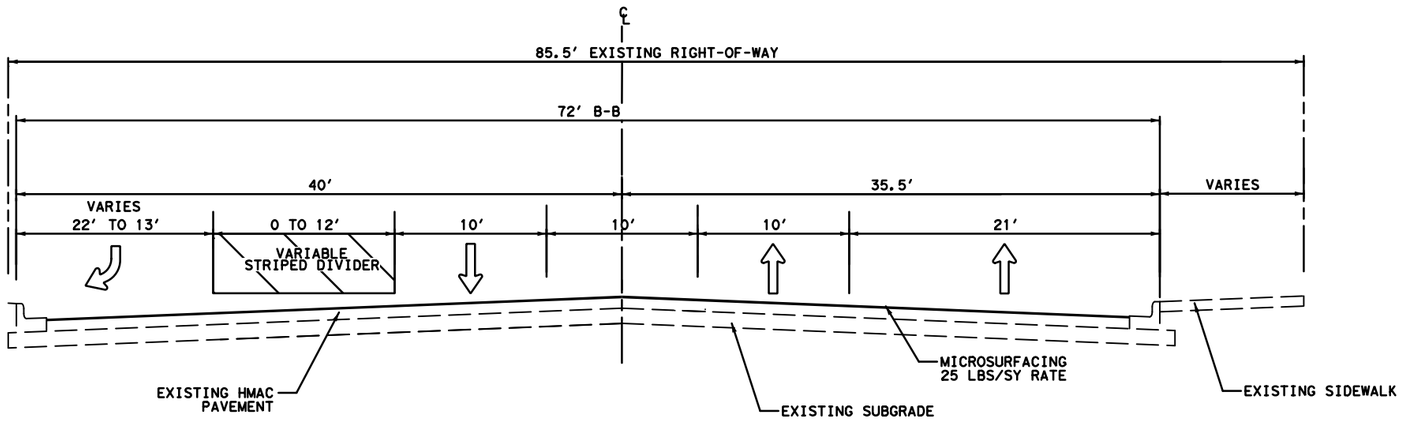
TYPICAL SECTIONS
NORTH A ST

SCALE: 1"= 10'

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	27
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	



EXISTING TYPICAL SECTION
NORTH A ST
STA 8+54 TO 10+38
SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
NORTH A ST
STA 8+54 TO 10+38
SCALE: H: 1"=10'
V: 1"=5'

STATE OF TEXAS
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DATE: 03-01-2024
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NO.	REVISION	BY	DATE

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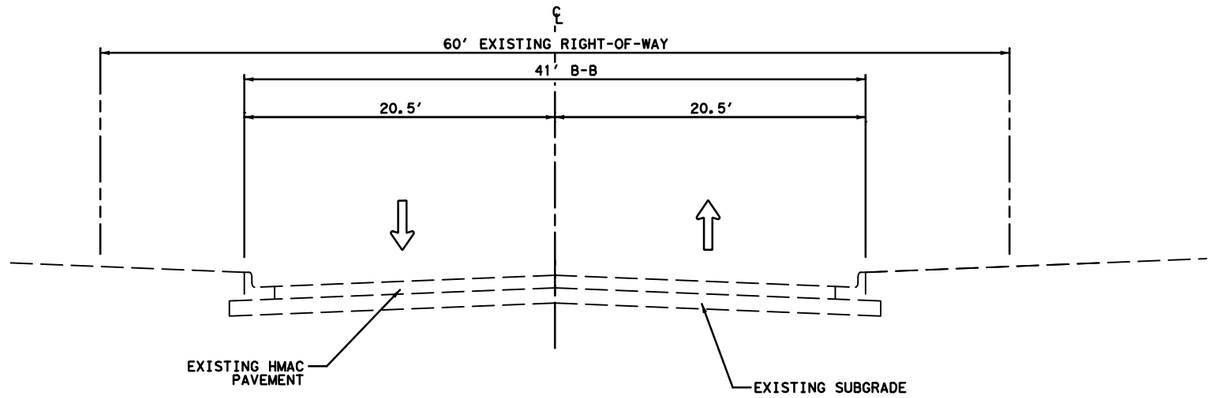
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
NORTH A ST

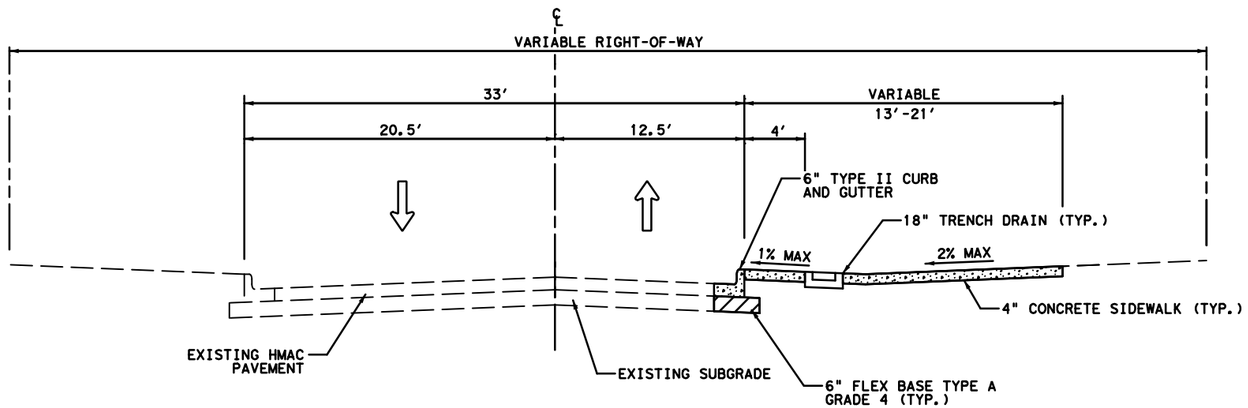
SCALE: 1"= 10'
Sheet 22 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	28
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	



EXISTING TYPICAL SECTION
NORTH C ST STA 1+50
NORTH B ST STA 1+80

SCALE: H: 1"=10'
V: 1"=5'



PROPOSED TYPICAL SECTION
NORTH C ST STA 1+50
NORTH B ST STA 1+80

SCALE: H: 1"=10'
V: 1"=5'

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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

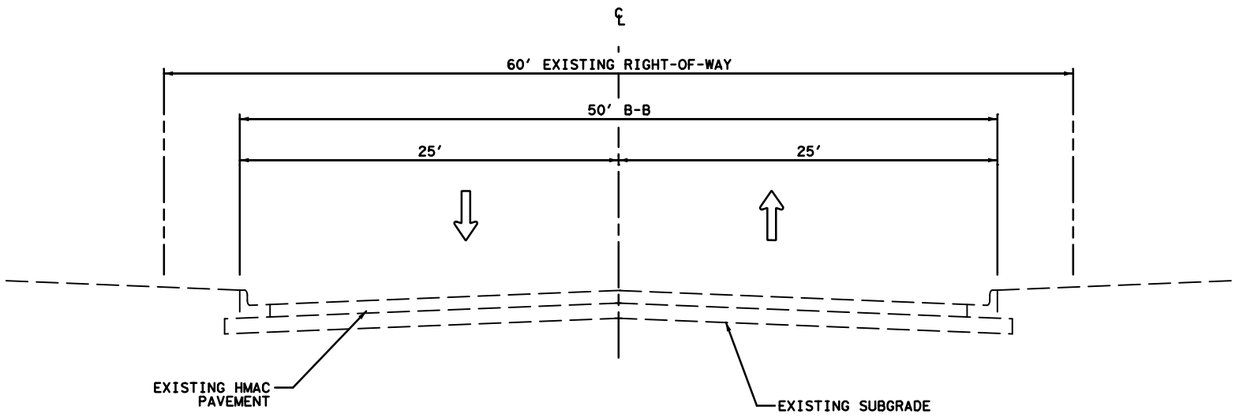
TYPICAL SECTIONS
NORTH A ST

SCALE: 1"= 10'

Sheet 23 of24

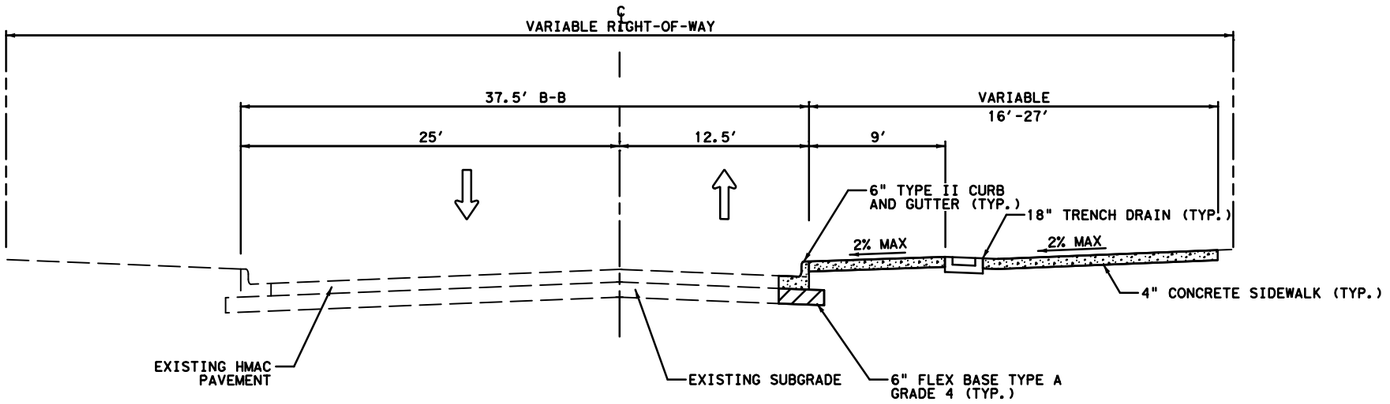
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	29
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

DATE:3/28/2024 TIME:4:54:09 PM PROJECT # 45715 OFFICE:FTW
A:\45000s\45715\009\PW\CADD\Sheets\C-PLAN-TYPS-23-45715-009.dgn
3/28/2024 4:54:09 PM:\45000s\45715\009\PW\CADD\Sheets\C-PLAN-TYPS-23-45715-009.dgn



EXISTING TYPICAL SECTION
NORTH C ST
STA 2+20

SCALE: H: 1"=5'
V: 1"=2.5'



PROPOSED TYPICAL SECTION
NORTH C ST
STA 2+20

SCALE: H: 1"=5'
V: 1"=2.5'

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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TYPICAL SECTIONS
NORTH A ST

SCALE: 1"= 10'

Sheet 24 of24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	30
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

SUMMARY OF REMOVAL ITEMS						
LOCATION	104 6001	104 6029	104 6036	105 6011	677 6002	677 6007
	REMOVING CONC (PAV)	REMOVING CONC (CURB OR CURB & GUTTER)	REMOVING CONC (SIDEWALK OR RAMP)	REMOVING STAB BASE AND ASPH PAV (2"-6")	ELIM EXT PAV MRK & MRKS (6")	ELIM EXT PAV MRK & MRKS (24")
	SY	LF	SY	SY	LF	LF
CSJ: 0906-32-064	504	795	520	2033	131	257
PROJECT TOTALS	**504**	**795**	**520**	**2033**	**131**	**257**

SUMMARY OF ROADWAY ITEMS												
LOCATION	110 6001	132 6001	160 6003	162 6002	247 6072	350 6001	432 6001	479 6001	479 6004	479 6005	529 6008	530 6004
	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL)(ORD COMP)(TY A)	FURNISHING AND PLACING TOPSOIL (4")	BLOCK SODDING	FL BS (CMP IN PLC)(TY C GR 4) (6")	MICROSURFACING	RIPRAP (CONC)(4 IN)	ADJUSTING MANHOLES	ADJUSTING MANHOLES (SANITARY)	ADJUSTING MANHOLES (WATER VALVE BOX)	CONC CURB & GUTTER (TY II)	DRIVEWAYS (CONC)
	CY	CY	SY	SY	SY	TON	CY	EA	EA	EA	LF	SY
CSJ: 0906-32-064	228	29	86	86	997	179	83	1	1	6	1918	18
PROJECT TOTALS	**228**	**29**	**86**	**86**	**997**	**179**	**83**	**1**	**1**	**6**	**1918**	**18**

SUMMARY OF ROADWAY ITEMS									
LOCATION	531 6001	531 6004	531 6016	531 6037	3076 6023	3076 6040	XXXX XXXX	XXXX XXXX	XXXX XXXX
	CONC SIDEWALKS (4")	CURB RAMPS (TY 1)	CURB RAMPS (TY 21)	CURB RAMP (TY 1) (MOD)	D-GR HMA TY-C PG70-22	D-GR HMA TY-D PG70-22	DECOMPOSED GRANITE (3" DEPTH)	ADJUST EXIST FIRE HYDRANT	TRENCH DRAIN (18")
	SY	EA	EA	EA	TON	TON	SY	EA	LF
CSJ: 0906-32-064	906	19	3	8	63	42	24	5	799
PROJECT TOTALS	**906**	**19**	**3**	**8**	**63**	**42**	**24**	**5**	**799**

SUMMARY OF TRAFFIC SIGNAL ITEMS						
LOCATION	618 6023	620 6009	624 6007	684 6029	684 6031	687 6001
	CONDT (PVC) (SCH 40) (2")	ELEC CONDR (NO.6) BARE	GROUND BOX TY C (162911)	TRF SIG CBL (TY A)(14 AWG)(3 CONDR)	TRF SIG CBL (TY A)(14 AWG)(5 CONDR)	PED POLE ASSEMBLY
	LF	LF	EA	LF	LF	EA
CSJ: 0906-32-064	110	110	5	860	890	6
PROJECT TOTALS	**110**	**110**	**5**	**860**	**890**	**6**

SUMMARY OF TRAFFIC SIGNAL ITEMS					
LOCATION	690 6006	690 6089	690 6094	690 6095	690 6123
	REMOVAL OF GROUND BOXES	REMOVE PED POLE ASSM	REMOV PED SIG LED TRAF SIG LAMP UNIT	INSTALL PED SGN LED TRAF SIG AMP UNIT	RELOCATE OF PEDESTRIAN PUSH BUTTON
	EA	EA	EA	EA	EA
CSJ: 0906-32-064	5	1	10	10	10
PROJECT TOTALS	**5**	**1**	**10**	**10**	**10**

SUMMARY OF SIGNING ITEMS			
LOCATION	636 6001	644 6001	644 6076
	ALUMINUM SIGNS (TY A)	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	REMOVE SM RD SN SUP&AM
	SF	EA	EA
CSJ: 0906-32-064	135	19	11
PROJECT TOTALS	**135**	**19**	**11**

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DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

SUMMARY OF QUANTITIES

SCALE: NONE Sheet 1 of 2

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	31
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

SUMMARY OF PAVEMENT MARKING ITEMS

LOCATION	666 6006	666 6042	666 6045	666 6048	666 6099	666 6096	666 6054	666 6111	666 6197	666 6198	666 6300	666 6306
	REFL PAV MRK TY I (W)4"(DOT)(100MIL)	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	REFL PAV MRK TY I (W)18"(SLD)(100MIL)	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	REF PAV MRK TY I(W)18"(YLD TRI)(100MIL)	REFL PAV MRK TY I (W)(SYMBOL)(100MIL)	REFL PAV MRK TY I (W)(ARROW)(100MIL)	REFL PAV MRK TY I(W)(BIKE SYML)(100MIL)	REFL PAV MRK TY II (W) (SYMBOL)	REFL PAV MRK TY II (W) 18" (YLD TRI)	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)
	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	LF	LF
CSJ:0906-32-064	357	87	193	1018	8	2	5	22	2	8	560	210
PROJECT TOTALS	**357**	**87**	**193**	**1018**	**8**	**2**	**5**	**22**	**2**	**8**	**560**	**210**

SUMMARY OF PAVEMENT MARKING ITEMS

LOCATION	666 6309	666 6318	666 6321	672 6008	672 6009	672 6010	678 6001	678 6002	678 6006	678 6007	678 6008
	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REFL PAV MRKR TY I-R	REFL PAV MRKR TY II-A-A	REFL PAV MRKR TY II-C-R	PAV SURF PREP FOR MRK (4")	PAV SURF PREP FOR MRK (6")	PAV SURF PREP FOR MRK (12")	PAV SURF PREP FOR MRK (18")	PAV SURF PREP FOR MRK (24")
	LF	LF	LF	EA	EA	EA	LF	LF	LF	LF	LF
CSJ:0906-32-064	5203	100	1762	4	5	34	917	7275	87	193	1018
PROJECT TOTALS	**5203**	**100**	**1762**	**4**	**5**	**34**	**917**	**7275**	**87**	**193**	**1018**

DATE:3/28/2024 TIME:4:54:10 PM PROJECT # 45715 OFFICE:FTW

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STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

SUMMARY OF QUANTITIES

SCALE: NONE Sheet 2 of 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	32
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

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DETOURS, BARRICADES, WARNING SIGNS, SEQUENCE OF WORK, ETC.

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE REQUIREMENTS OF ITEM 7, "LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC," OF THE STANDARD SPECIFICATIONS. IN ADDITION TO THESE REQUIREMENTS, THE FOLLOWING PROVISIONS SHALL ALSO GOVERN ON THIS CONTRACT:

GENERAL

1. TRAFFIC MUST BE HANDLED THROUGHOUT THE PROJECT DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SAFE AND COMFORTABLE PASSAGE FOR VEHICULAR AND PEDESTRIAN TRAFFIC WITH MINIMAL INCONVENIENCE TO THE PUBLIC, AS SHOWN IN THE PLANS OR AS DIRECTED/APPROVED BY THE ENGINEER.
2. THE CONTRACTOR MAY PROPOSE/RECOMMEND MODIFICATIONS TO THE SEQUENCE OF WORK FOR CONSIDERATION BY THE ENGINEER. ANY MAJOR RECOMMENDED MODIFICATION BY THE CONTRACTOR SHALL INCLUDE ANY CHANGES TO THE VARIOUS BID ITEMS, IMPACT TO TRAFFIC, EFFECT OF OVERALL PROJECT IN TIME AND COST, ETC. IF THIS PROPOSAL IS IMPLEMENTED, THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING DETAILED PLAN SHEETS TO BE SEALED BY A LICENSED PROFESSIONAL ENGINEER FOR INCLUSION WITH THE CHANGE ORDER. THE CONTRACTOR CANNOT PROCEED WITH ANY CONSTRUCTION OPERATIONS BASED ON A REVISED PHASE/SEQUENCE UNTIL WRITTEN APPROVAL IS OBTAINED FORM THE ENGINEER. IF AT ANY TIME DURING CONSTRUCTION THE CONTRACTOR'S PROPOSED PLAN OF OPERATION FOR HANDLING TRAFFIC DOES NOT PROVIDE FOR SAFE AND COMFORTABLE MOVEMENT, THE CONTRACTOR WILL IMMEDIATELY CHANGE THEIR OPERATION TO CORRECT THE UNSATISFACTORY CONDITION.
3. DO NOT STORE ANY CONSTRUCTION MATERIAL OR EQUIPMENT AT ANY LOCATION THAT WILL CONSTITUTE A HAZARD AND WILL ENDANGER TRAFFIC.
4. ACCESS TO ADJOINING PROPERTY MUST BE MAINTAINED AT ALL TIMES.
5. TEMPORARY DRAINAGE IS THE RESPONSIBILITY OF THE CONTRACTOR.
6. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL EXISTING DRAINAGE PATTERNS DURING CONSTRUCTION.
7. LANE CLOSURES SHALL BE BETWEEN THE HOURS OF 9:00AM TO 3:00PM

SAFETY

1. THE CONTRACTOR WILL PROVIDE, CONSTRUCT AND MAINTAIN BARRICADES AND SIGN IN ACCORDANCE WITH STATE STANDARDS BC (1-12)-21. ANY SIGNS REQUIRED THAT ARE NOT DETAILED IN THE STANDARD SHEETS SHALL BE IN THE CONFORMANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND "THE STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS."
2. BARRICADES AND WARNING SIGNS SHALL BE PLACED AS INDICATED ON THE PLANS. THIS SHALL BE CONSIDERED THE MINIMUM REQUIRED TO PROVIDE FOR THE SAFETY OF TRAFFIC DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN OTHER SUCH BARRICADES AND SIGN DEEMED NECESSARY BY THE ENGINEER OR AS DIRECTED BY FIELD CONDITIONS, TO PROVIDE FOR THE PASSAGE OF TRAFFIC IN SAFETY AT ALL TIMES.
3. THE CONTRACTOR SHALL KEEP THE ROADWAY CLEAN AND FREE OF DIRT OR OTHER MATERIALS DURING HAULING OPERATIONS. IF THE CONTRACTOR DOES NOT MAINTAIN A CLEAN ROADWAY, THEY SHALL CEASE ALL CONSTRUCTION OPERATIONS, WHEN DIRECTED BY THE ENGINEER, TO CLEAN THE ROADWAY TO THE SATISFACTION OF THE ENGINEER.

HAULING EQUIPMENT

1. THE USE OF RUBBER-TIRED EQUIPMENT WILL BE REQUIRED FOR MOVING DIRT OR OTHER MATERIALS ALONG OR ACROSS PAVEMENTED SURFACES. WHERE THE CONTRACTOR DESIRES TO MOVE ANY EQUIPMENT NOT LICENSED FOR OPERATION ON PUBLIC HIGHWAYS, ON OR ACROSS PAVEMENT. THEY SHALL PROTECT THE PAVEMENT FROM DAMAGE AS DIRECTED/APPROVED BY THE ENGINEER.

FINAL CLEAN UP

1. UPON COMPLETION OF THE WORK AND BEFORE FINAL ACCEPTANCE AND FINAL PAYMENT IS MADE, THE CONTRACTOR SHALL CLEAR AND REMOVE FROM THE SITE ALL SURPLUS AND DISCARDED MATERIALS AND DEBRIS OF EVERY KIND AND LEAVE THE ENTIRE PROJECT IN A SMOOTH, NEAT AND SIGHTLY CONDITION.

PAYMENT

1. ALL BARRICADES, SIGNS, AND FLAGGERS SHALL BE SUBSIDIARY TO ITEM 502 BARRICADES, SIGNS AND TRAFFIC HANDLING. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE SUBSIDIARY TO THE VARIOUS BID ITEMS UNLESS OTHERWISE INDICATED IN THE PLANS.

SEQUENCE OF WORK

THE INTENT OF THE CONSTRUCTION SEQUENCING PLAN IS TO ALLOW CONSTRUCTION TO PROCEED WITH MINIMAL IMPACT TO TRAFFIC. THE PROJECT SHALL BE CONSTRUCTED IN 7 MAJOR STAGES AS SHOWN IN THE PLANS. WORK SHALL PROCEED IN THE ORDER SHOWN. EACH PHASE OF CONSTRUCTION SHALL CONSIST OF THE FOLLOWING GENERAL ITEMS OF WORK:

1. INSTALL TRAFFIC CONTROL DEVICES, INCLUDING PROJECT LIMIT AND WORKZONE SIGNAGE AS SHOWN ON STANDARD DETAILS IN PLANS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER. ADJUST TRAFFIC CONTROL AS NECESSARY AS PROJECT PROGRESSES.
2. INSTALL EROSION CONTROL DEVICES AS SHOWN IN STANDARD DETAILS IN PLANS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER.
3. REMOVE PAVEMENT MARKINGS, AS NECESSARY.
4. REMOVE/COVER CONFLICTING ROADWAY SIGNAGE.
5. CONSTRUCT PAVING, SIDEWALKS, RAMPS AND RELATED APPURTENANCES PER PLANS.
6. MICROSURFACING.
7. PERMANENT PAVEMENT MARKINGS PERFORMED AFTER COMPLETION OF ALL PAVING PHASES.
8. INSTALL SIGNALS AND RELATED APPURTENANCES PER PLANS AND STANDARD DETAILS.
9. PLACE TOPSOIL, SOD, AND WATER TO ESTABLISHMENT.
10. PERFORM CLEAN UP OF CONSTRUCTION AREA. COMPLETE PUNCHLIST.
11. REMOVE EROSION CONTROL DEVICES.
12. REMOVE TRAFFIC CONTROL DEVICES.

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:
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TBPELS ENGINEERING FIRM #312

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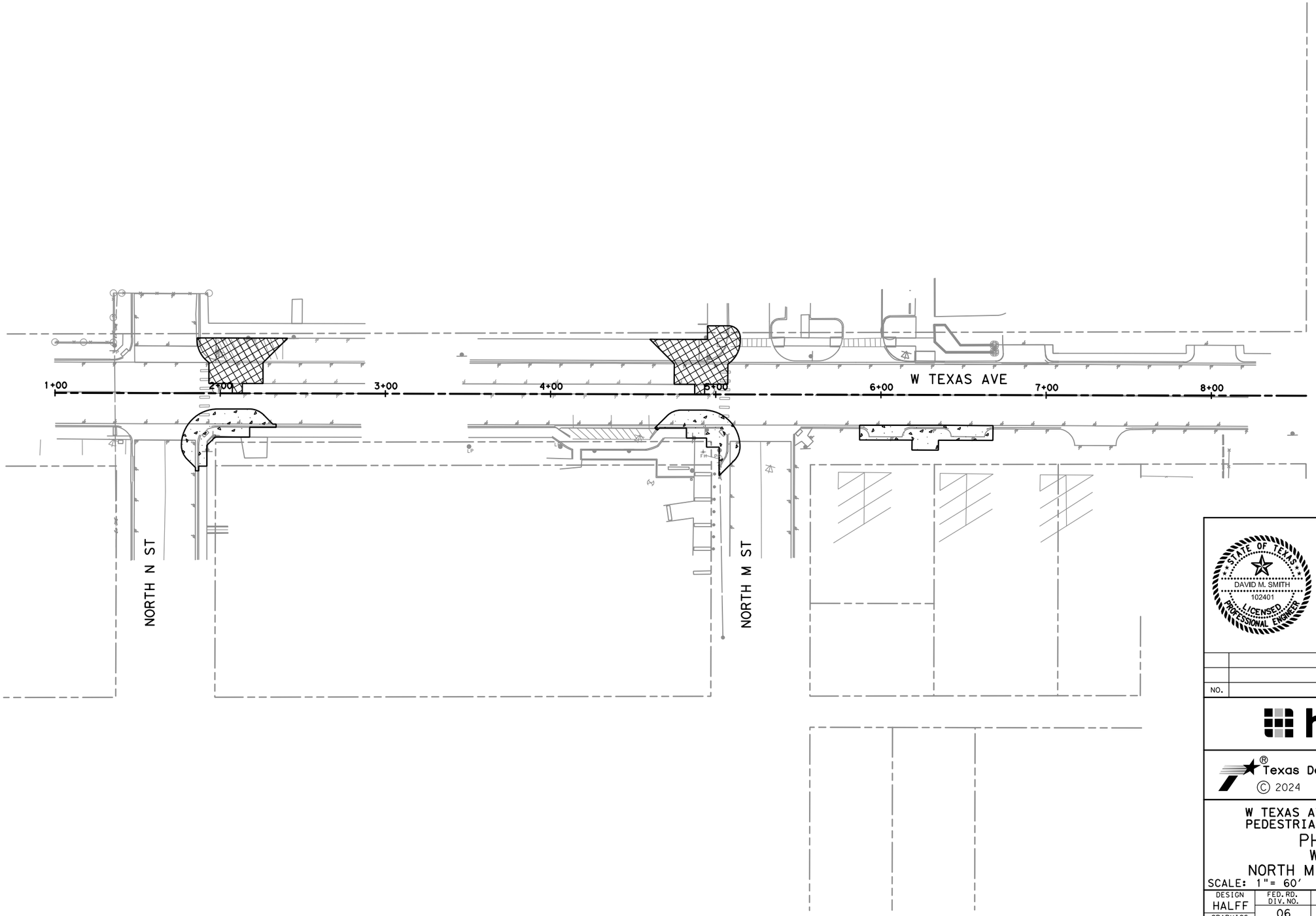
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TRAFFIC CONTROL NARRATIVE

SCALE: NONE Sheet 1 of 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	33
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	



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0 30 60 90
SCALE IN FEET

LEGEND

PHASE 1

PHASE 2

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

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LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

Texas Department of Transportation

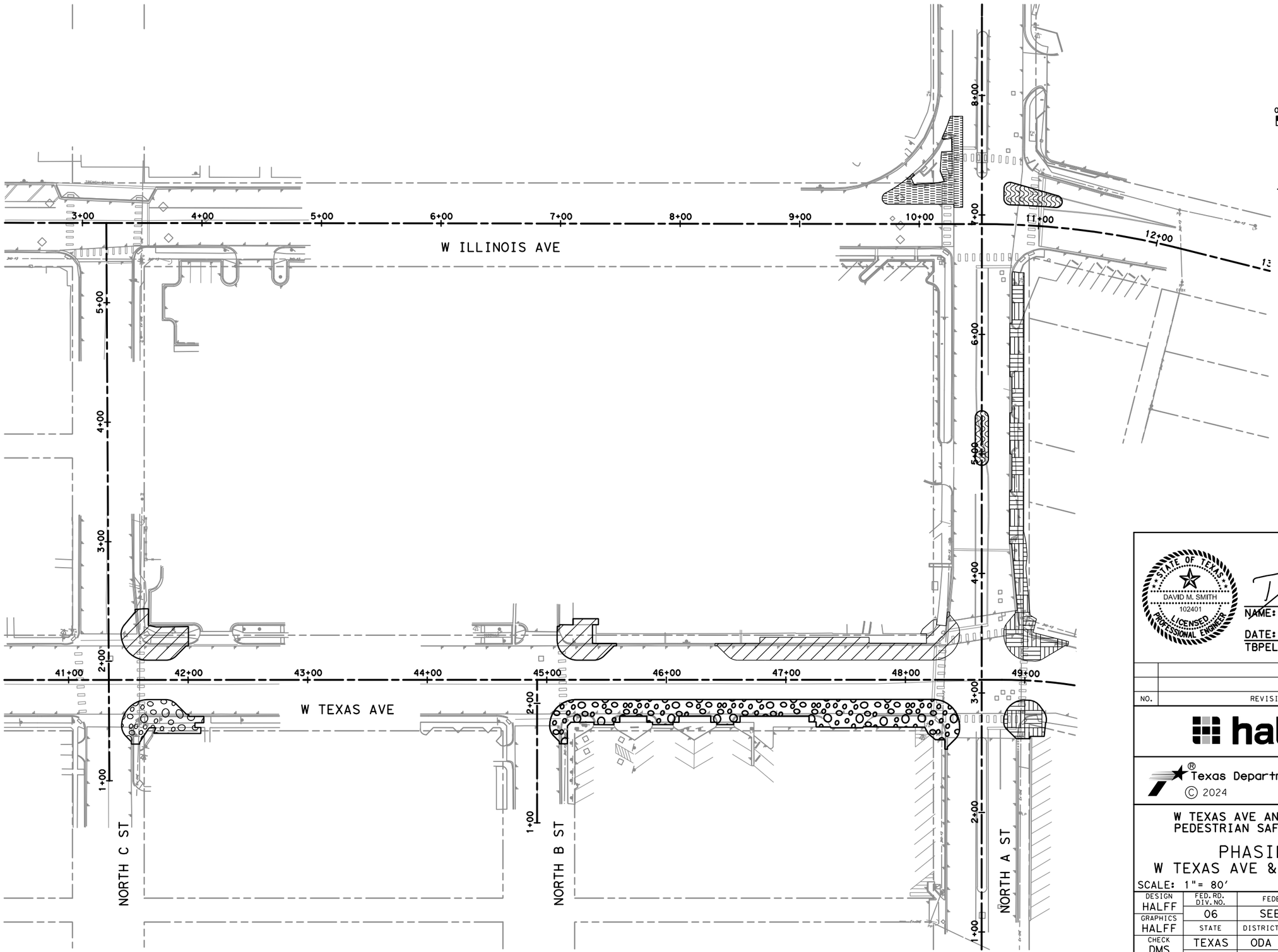
W TEXAS AVE AND W ILLINOIS AVE PEDESTRIAN SAFETY IMPROVEMENTS

PHASING PLAN
W TEXAS AVE
NORTH M ST TO NORTH N ST

SCALE: 1"= 60'

Sheet 1 of 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HALFF	TEXAS	ODA	MIDLAND	
CHECK	CONTROL	SECTION	JOB	34
DMS	0906	32	064	
CHECK				
JTH				



DATE:3/28/2024 TIME:4:54:11 PM PROJECT # 45715 OFFICE:FTW

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STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED
PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024
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TBPELS ENGINEERING FIRM #312

Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PHASING PLAN
W TEXAS AVE & W ILLINOIS AVE

SCALE: 1"= 80′ Sheet 2 of 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	35
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	

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	0906	32	064	N/A
9-07 8-14	DIST	COUNTY		SHEET NO.
5-10 5-21	ODA	MIDLAND		36

DATE:3/28/2024
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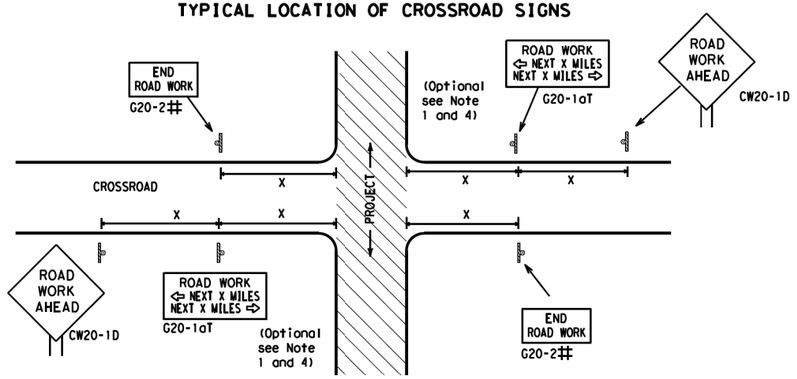
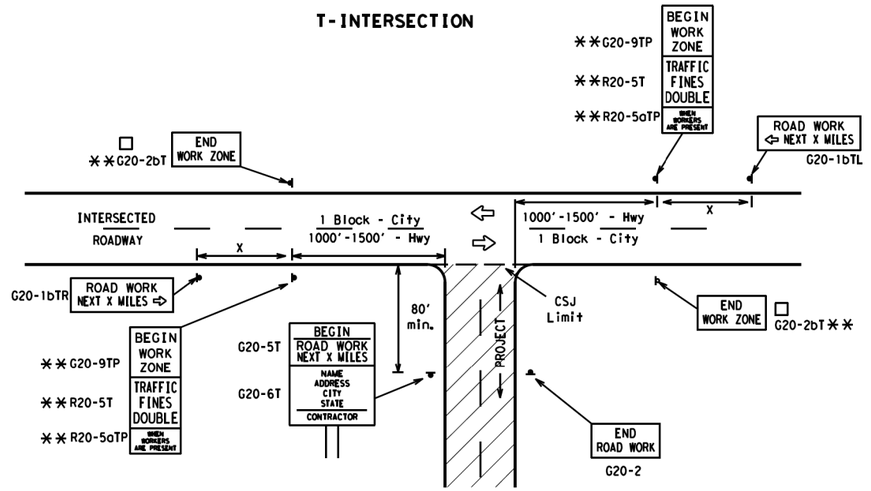
TYPICAL LOCATION OF CROSSROAD SIGNS



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]

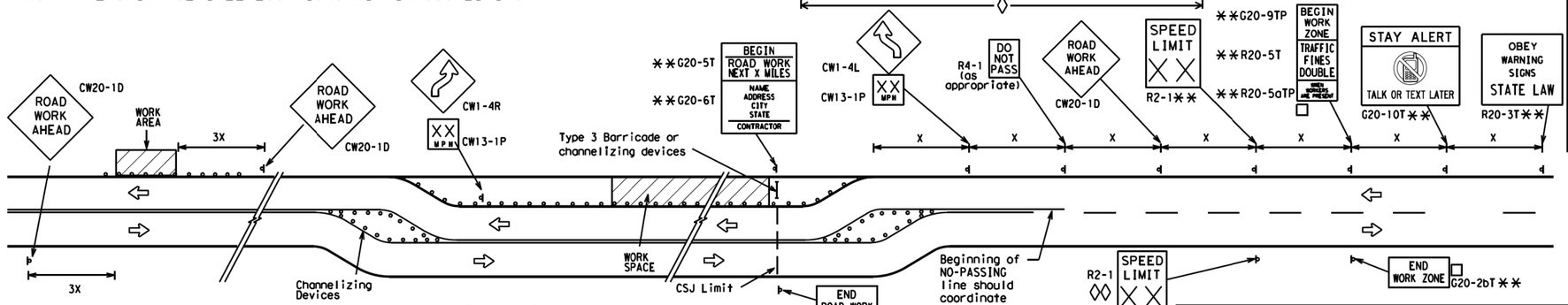
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ 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.

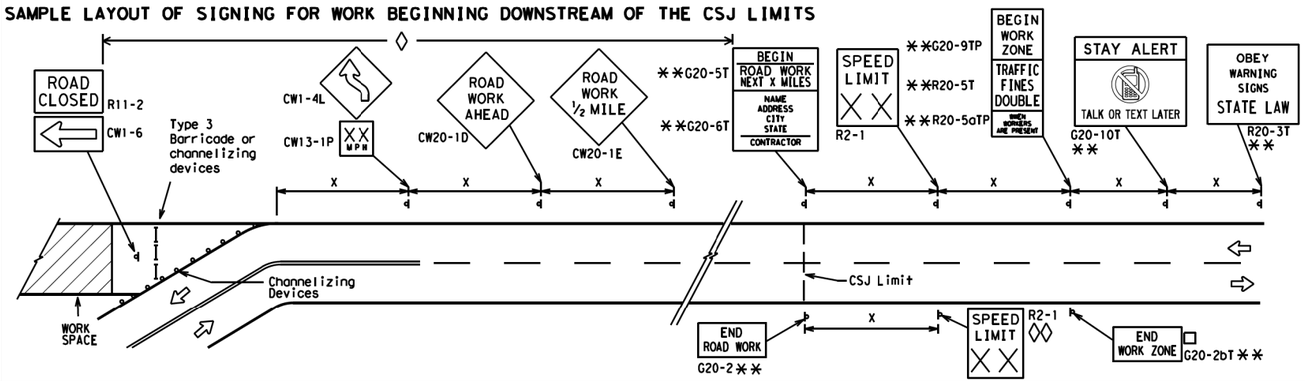
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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	0906	32	064	N/A
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ODA	MIDLAND		37

DATE:3/28/2024
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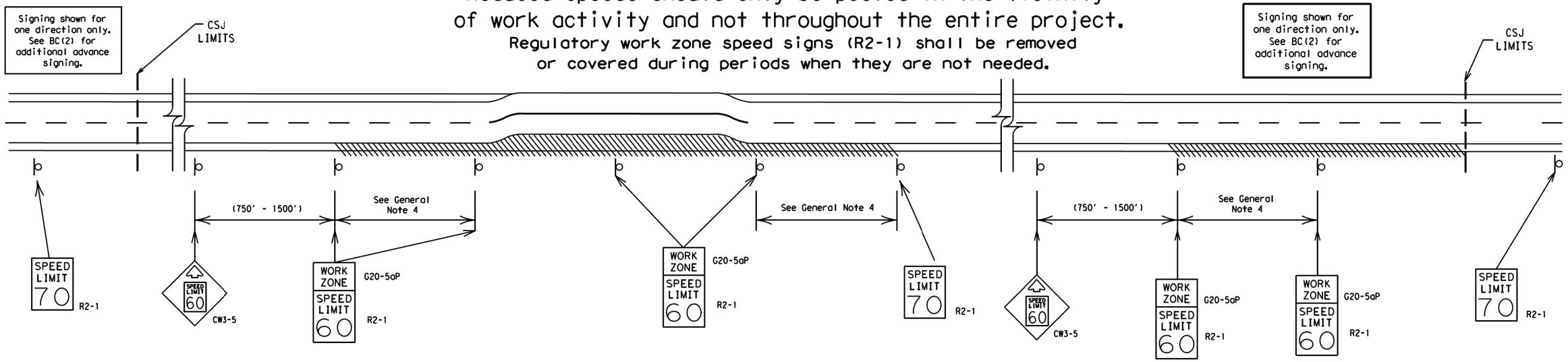
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

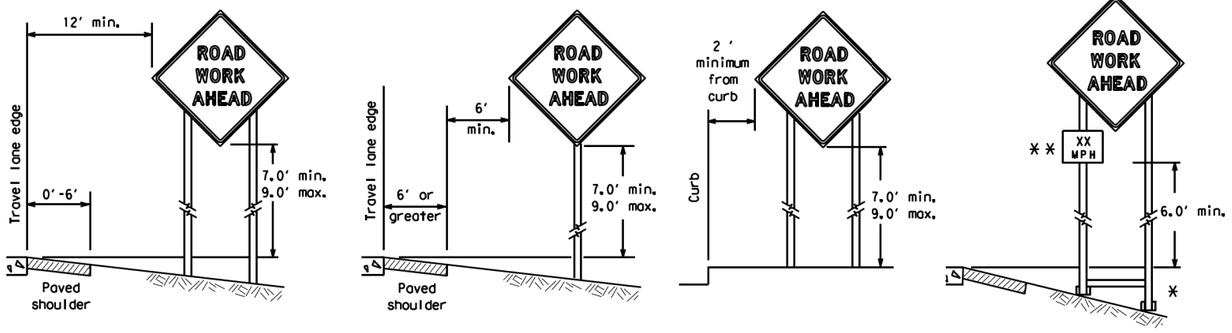
Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0906	32	064	N/A
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ODA	MIDLAND		38

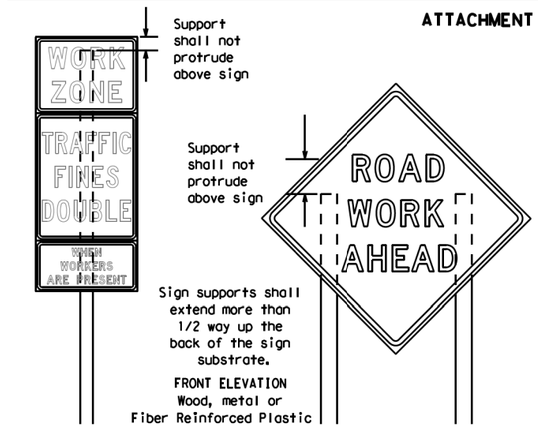
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

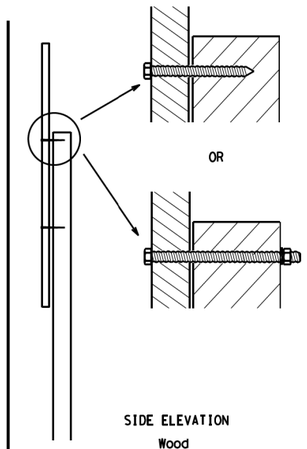


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

* * 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





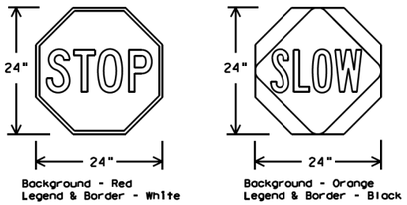
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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 boses 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
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REVISIONS	0906	32	064	N/A
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ODA	MIDLAND		39

DATE:3/28/2024
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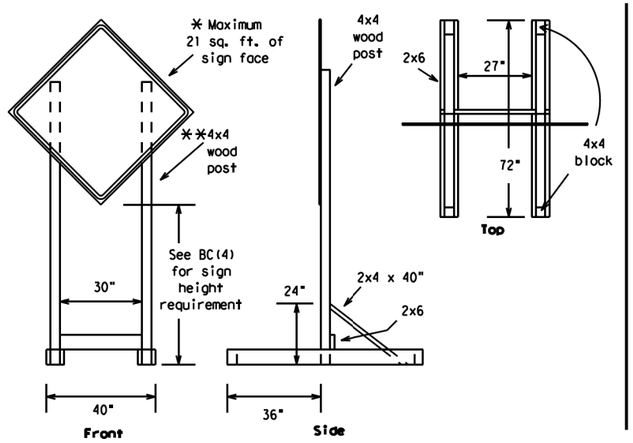
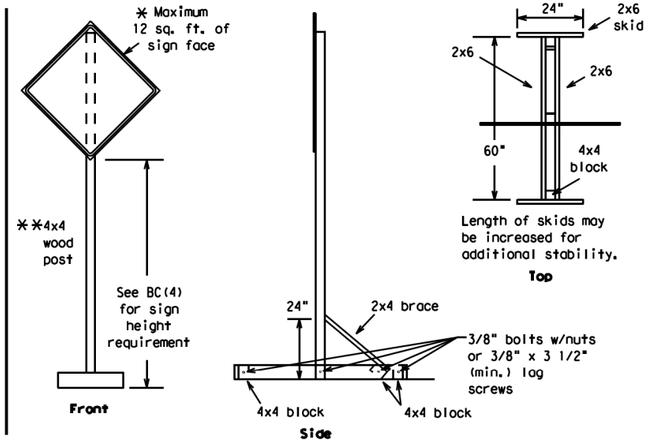
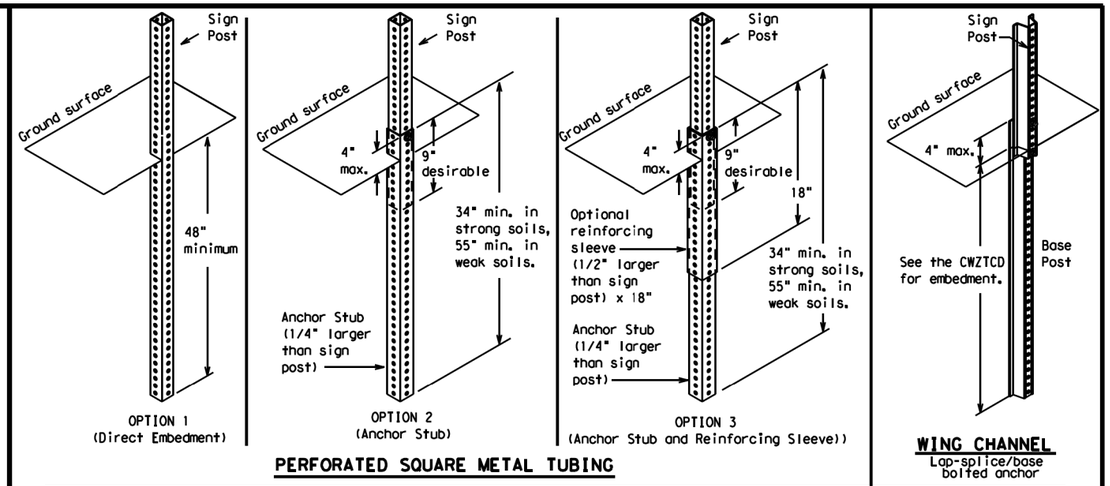




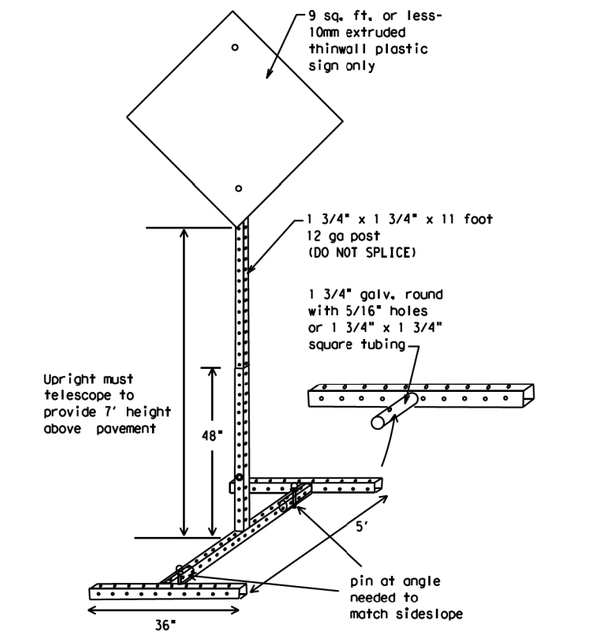
SKID MOUNTED WOOD SIGN SUPPORTS

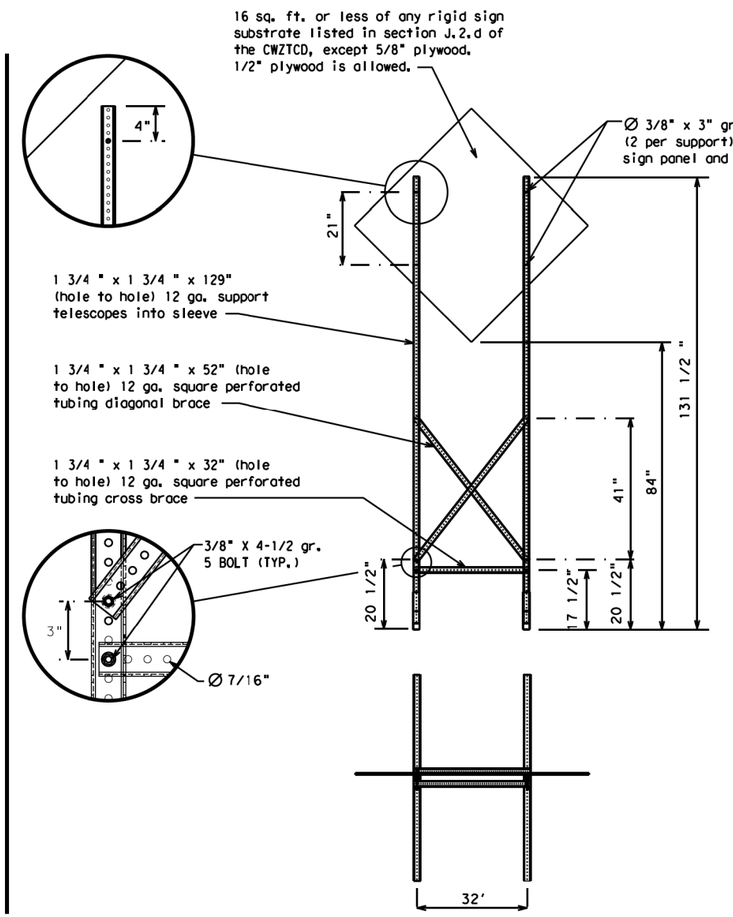
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

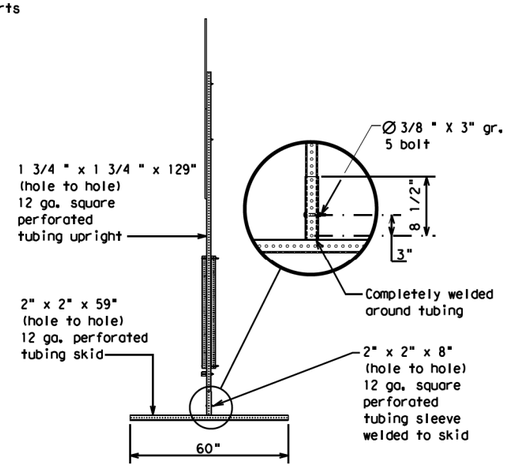


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

SHEET 5 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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REVISIONS	0906	32	064	N/A
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ODA	MIDLAND		40

DATE:3/28/2024
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WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

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

WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

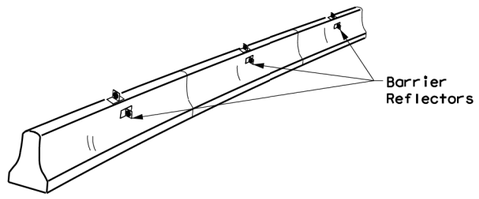
BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE:	bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS		0906	32	064	N/A
9-07	8-14	DIST	COUNTY		SHEET NO.
7-13	5-21	ODA	MIDLAND		41

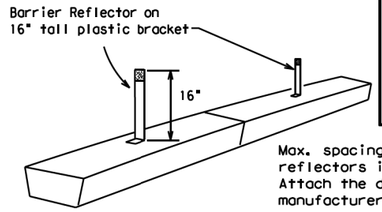
100

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.

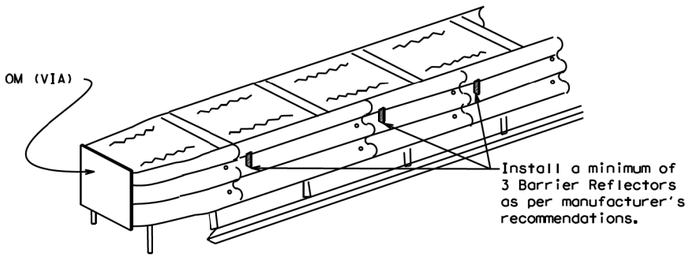


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

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)

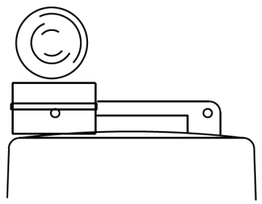


DELINEATION OF END TREATMENTS

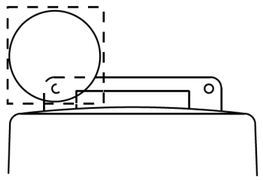
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

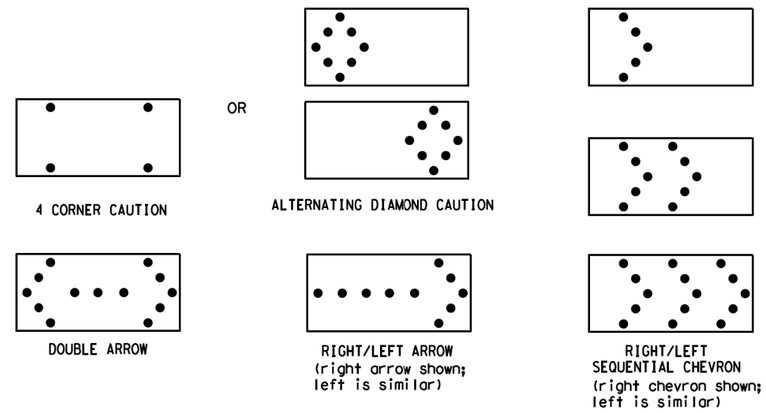
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing 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	0906	32	064	N/A
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ODA	MIDLAND		42

101

DATE: 3/28/2024
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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:

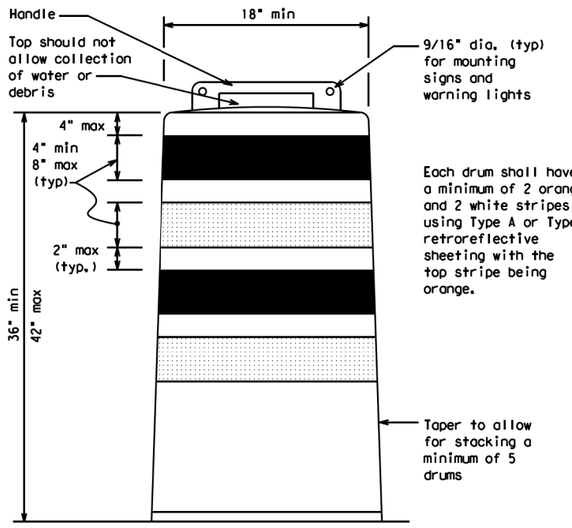
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

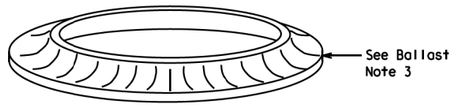
RETROREFLECTIVE SHEETING

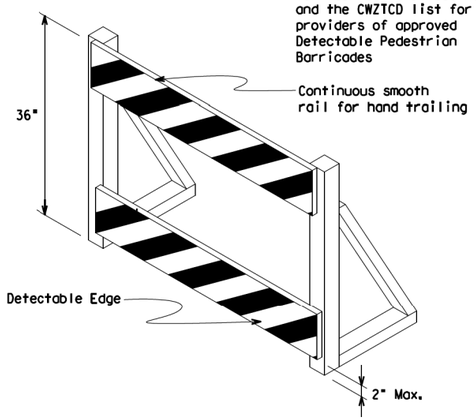
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

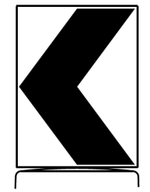




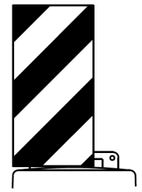


DETECTABLE PEDESTRIAN BARRICADES

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	0906	32	064	N/A
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	ODA	MIDLAND		43
7-13				

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DATE:3/28/2024
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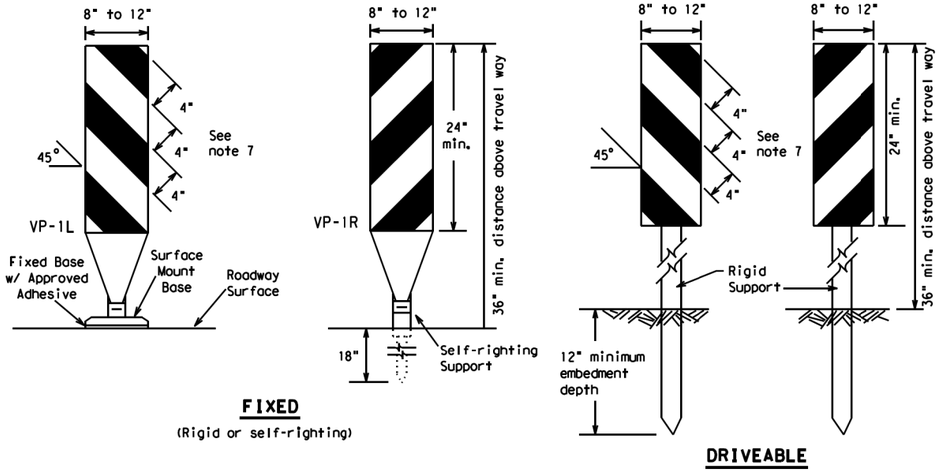
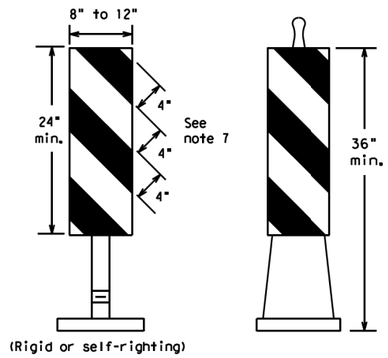


FIXED
(Rigid or self-righting)

DRIVEABLE

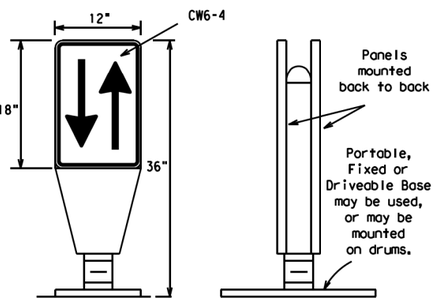


(Rigid or self-righting)

PORTABLE

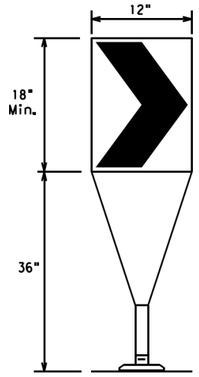
VERTICAL PANELS (VPs)

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.



OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

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.



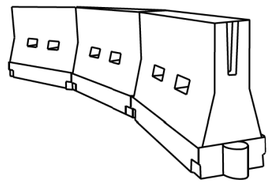
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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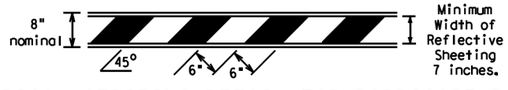
REVISIONS	0906	32	064	N/A
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ODA	MIDLAND		44

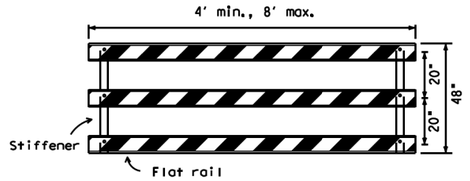
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



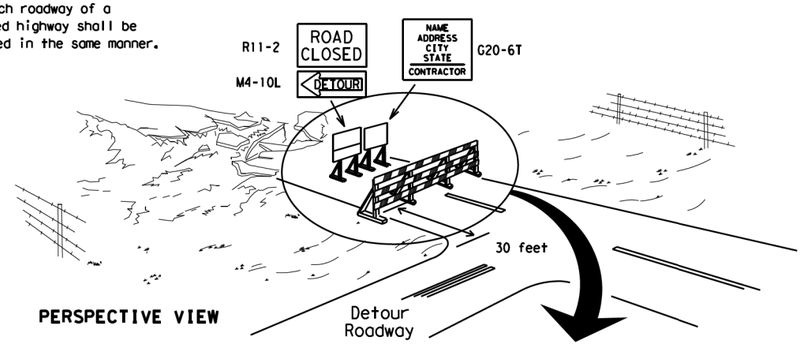
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

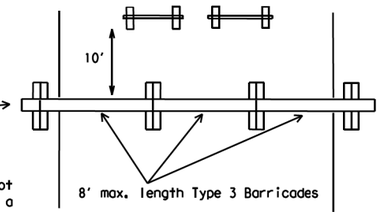
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

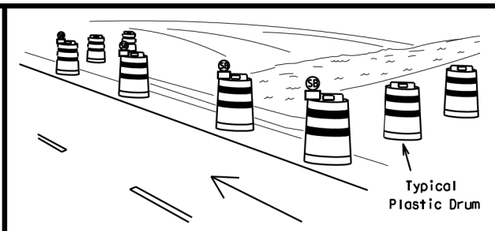
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

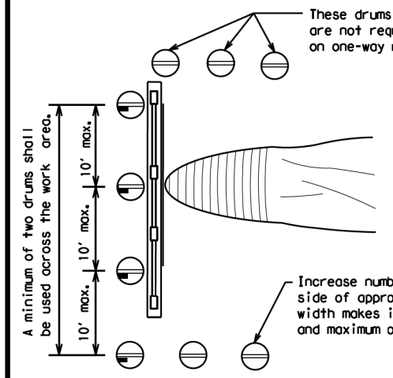
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

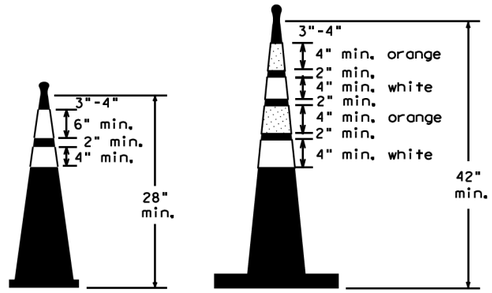
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



PLAN VIEW

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

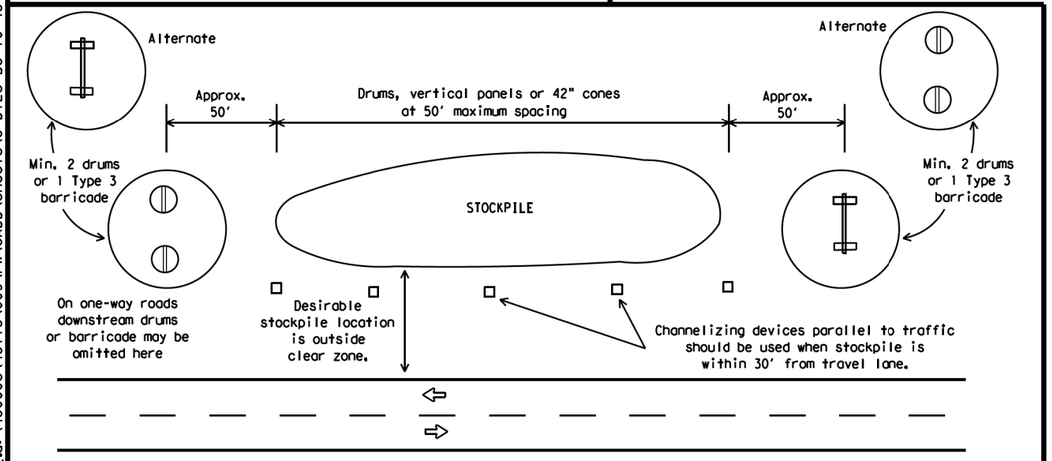
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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 9-07 8-14 7-13 5-21	0906	32	064	N/A
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	ODA	MIDLAND		45

104

DATE: 3/28/2024
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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

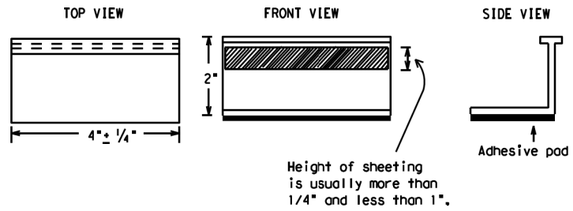
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

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BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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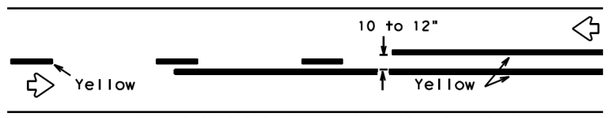
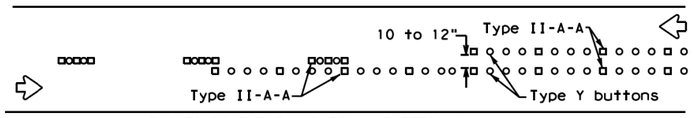
REVISIONS	0906	32	064	N/A
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	ODA	MIDLAND		46
11-02 8-14				

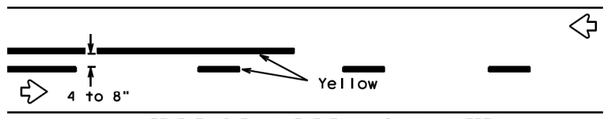
PAVEMENT MARKING PATTERNS



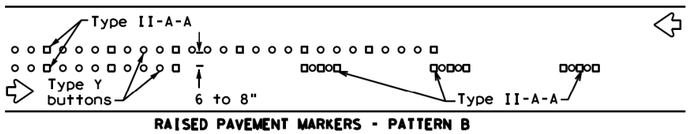
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



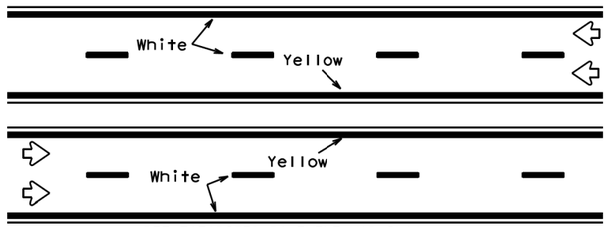
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



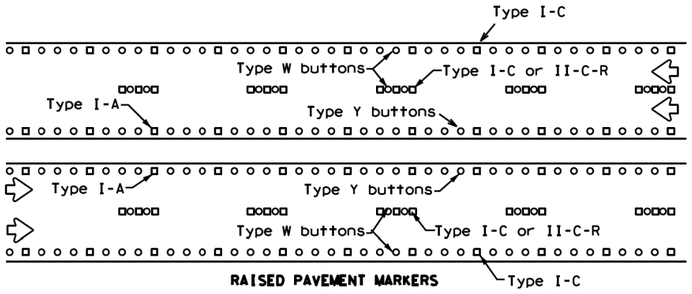
RAISED PAVEMENT MARKERS - PATTERN B

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

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



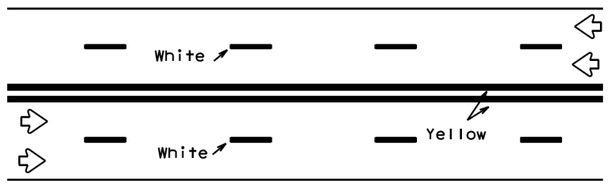
REFLECTORIZED PAVEMENT MARKINGS



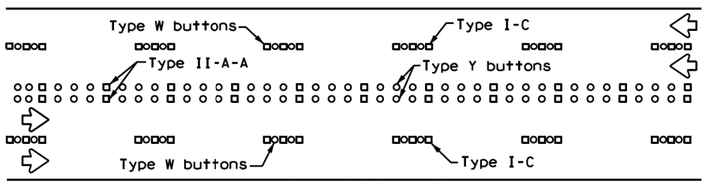
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



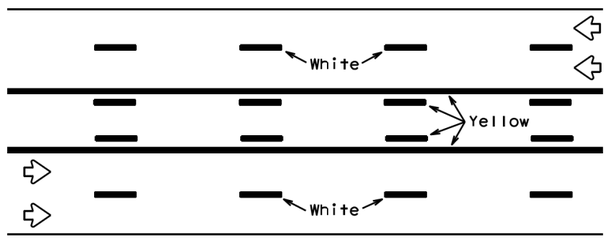
REFLECTORIZED PAVEMENT MARKINGS



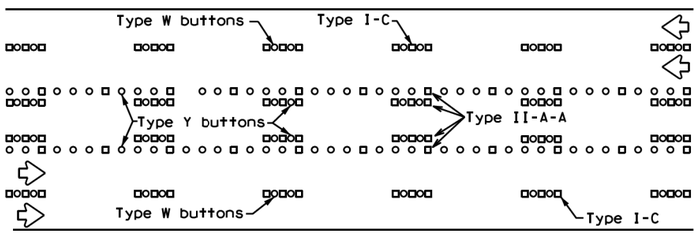
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

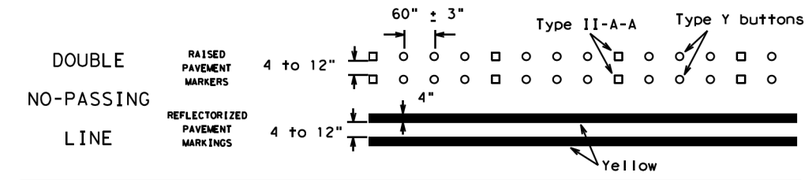
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

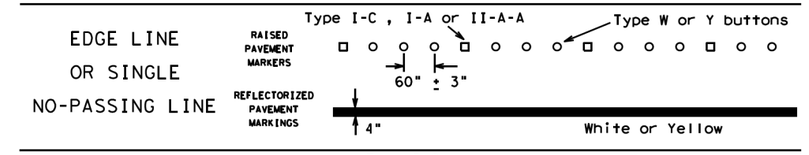
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

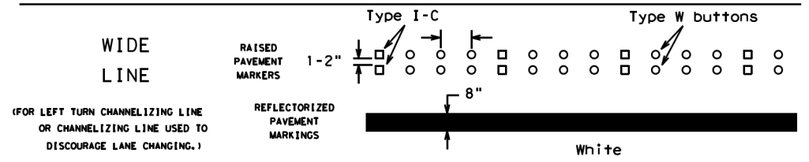


EDGE LINE OR SINGLE NO-PASSING LINE



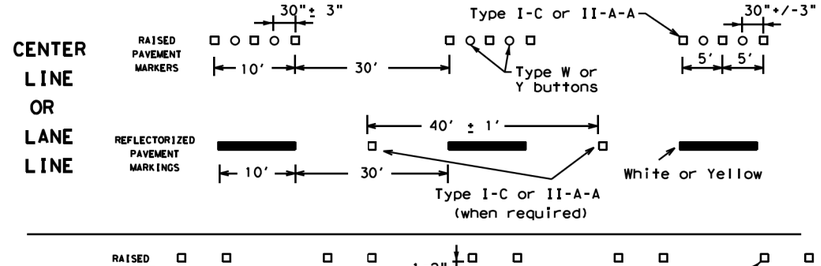
WIDE LINE

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

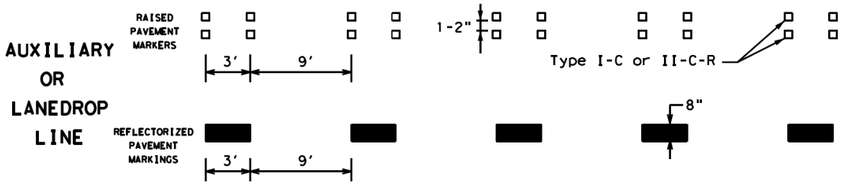


BROKEN LINES

CENTER LINE OR LANE LINE

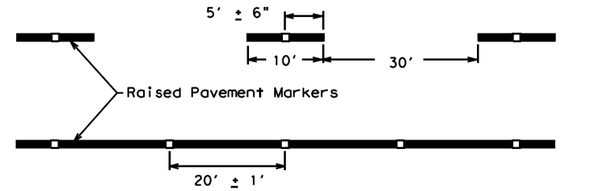


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

SHEET 12 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

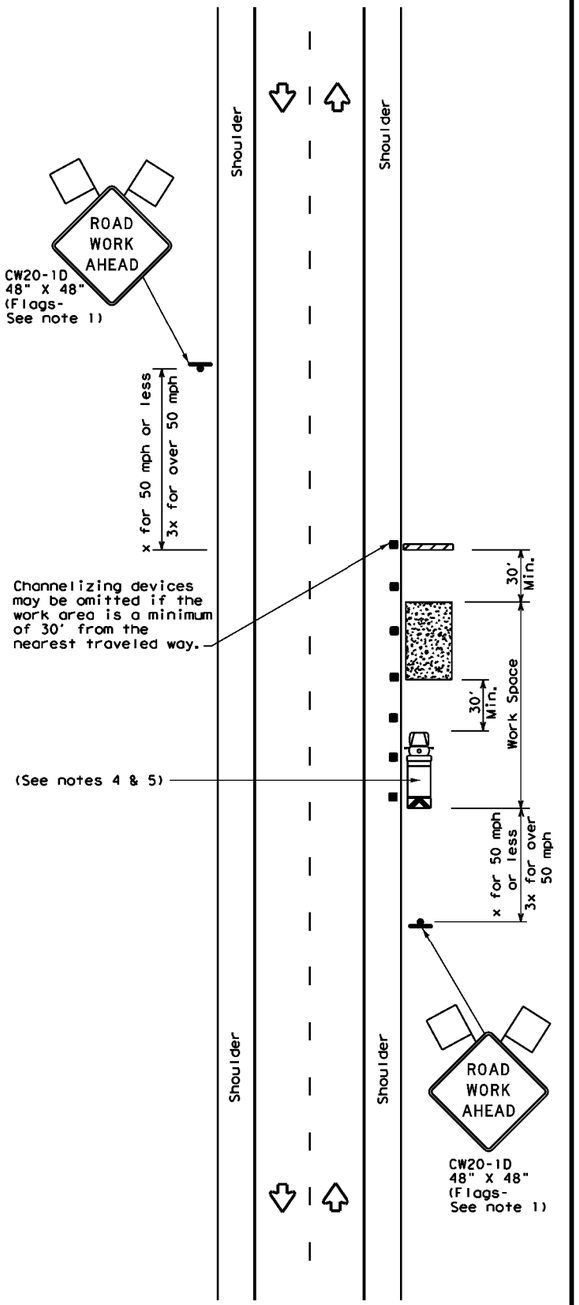
BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0906	32	064	N/A
	DIST	COUNTY		SHEET NO.
	ODA	MIDLAND		47

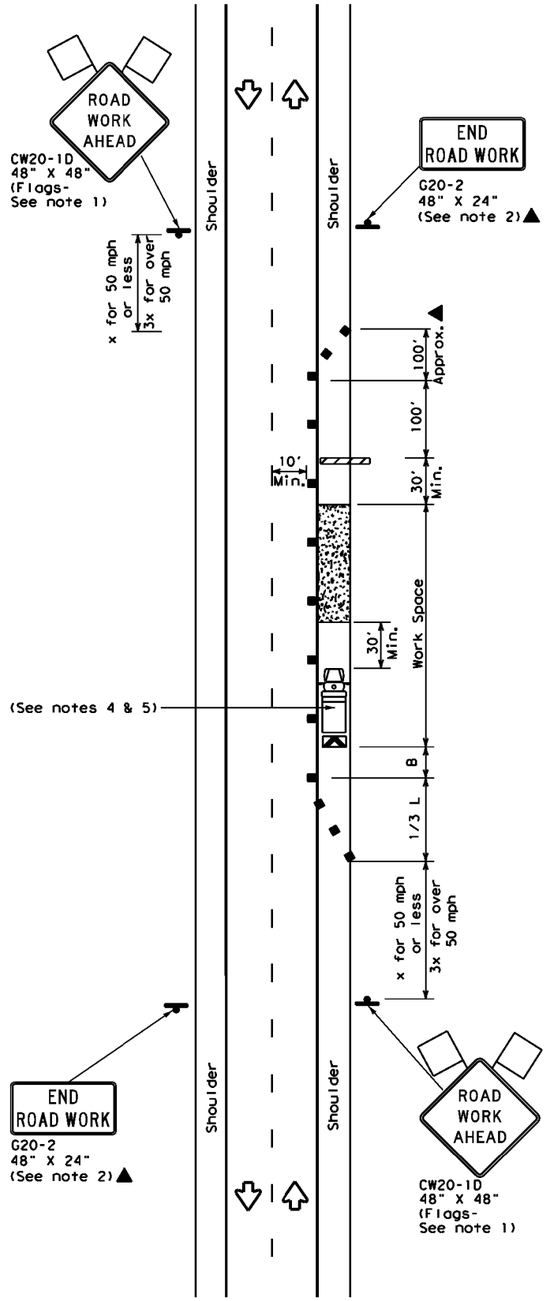
106

DATE: 3/28/2024
FILE: \45000s\45715\009\PW\CADD\Sheets\C-DTLS-BC-12-45715-009.dgn



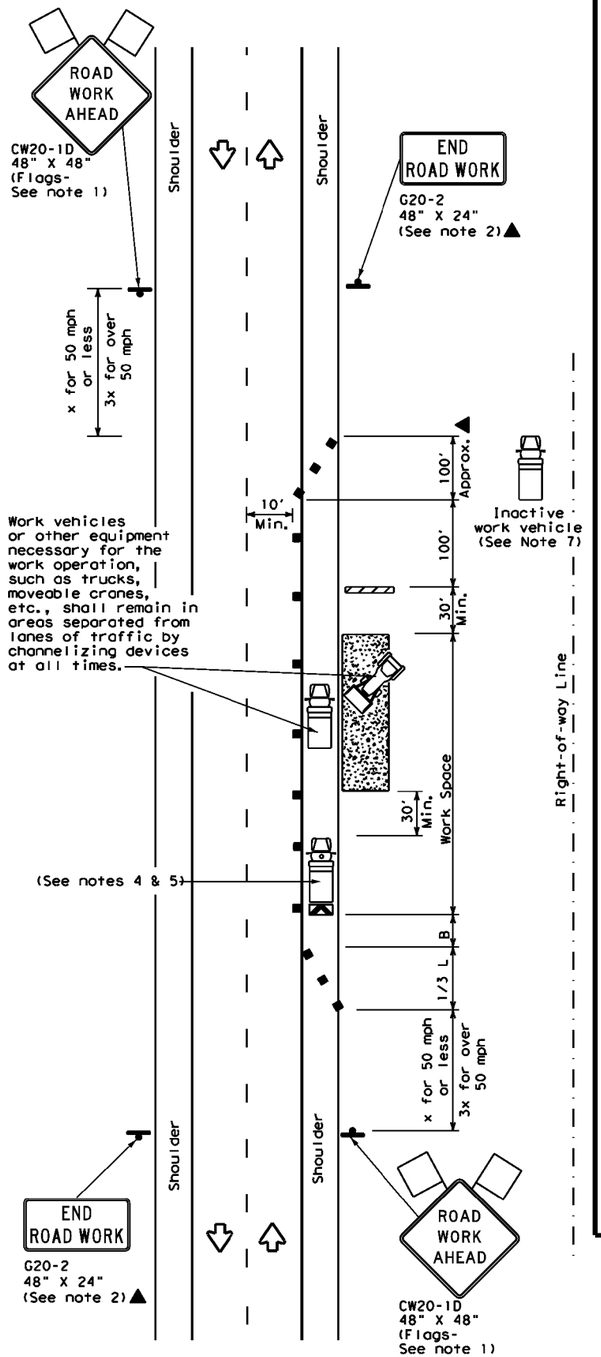
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

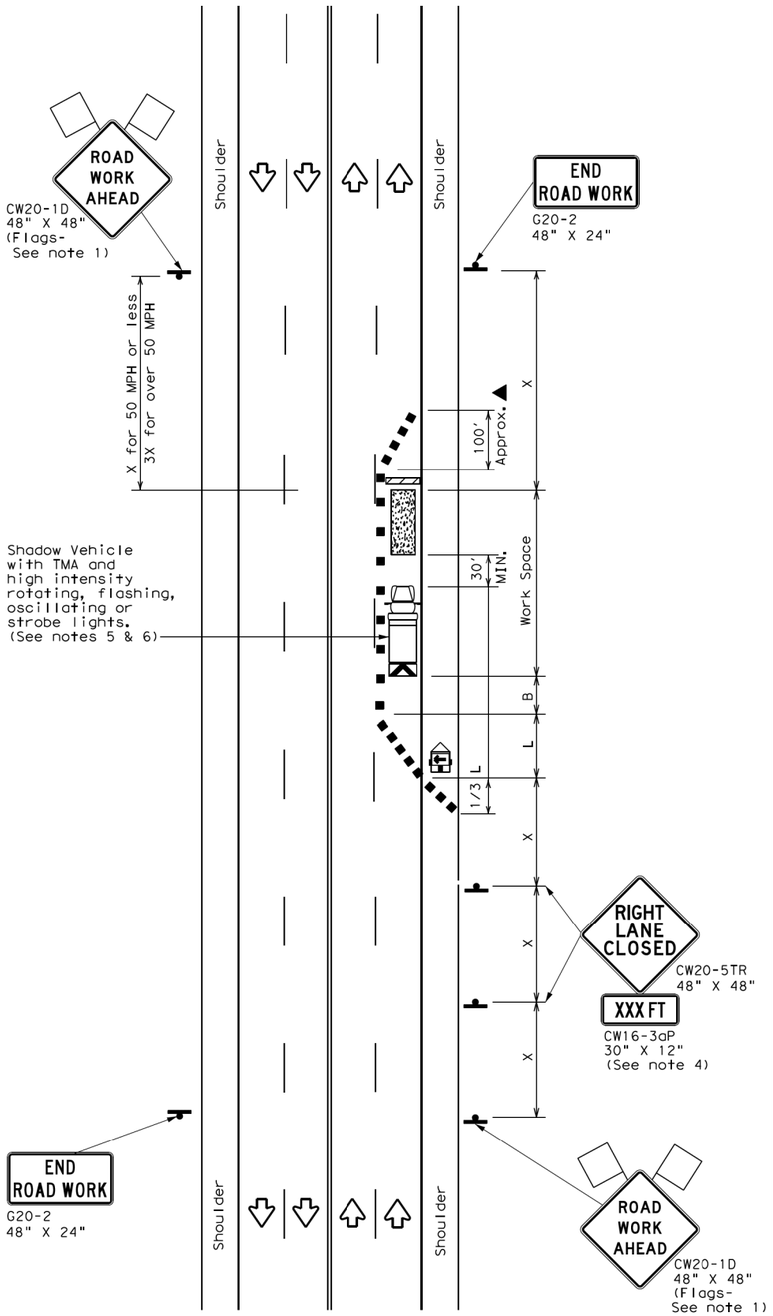
TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0906	32	064	N/A
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	ODA	MIDLAND		48
1-97 2-18				

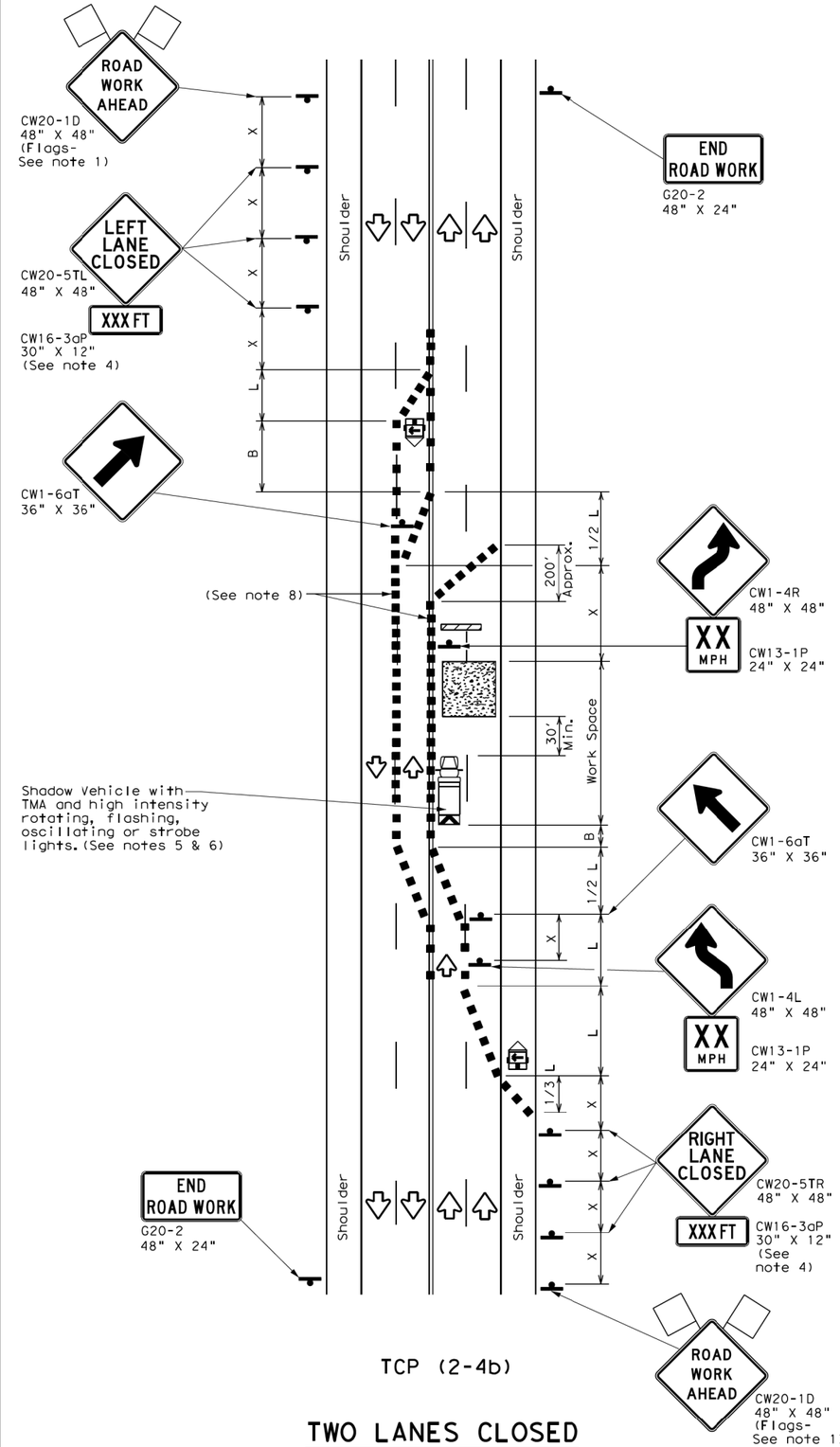
161

DATE: 3/28/2024
FILE: \45000s\45715\009\PW\CADD\Sheets\C-DTLS-TCP21-45715-009.dgn



TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

TCP (2-4a)

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

TCP (2-4b)

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(2-4)-18

FILE: tcp2-4-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03	0906	32	064	N/A
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	ODA	MIDLAND		49

DATE:3/28/2024
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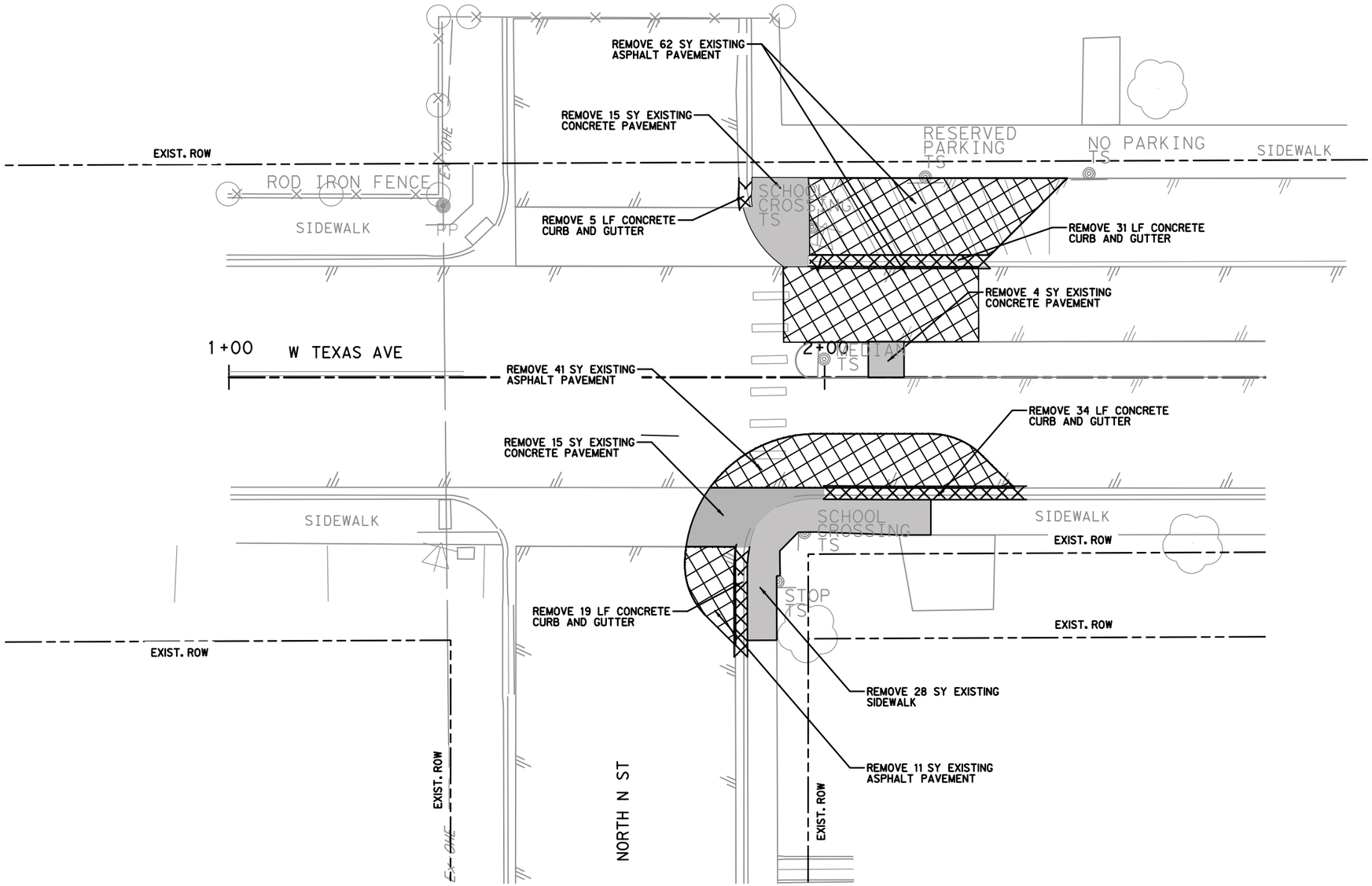


N

0 10 20 30
SCALE IN FEET

LEGEND

- ASPHALT PAVEMENT TO BE REMOVED
- CONCRETE FLATWORK TO BE REMOVED
- CONCRETE CURB AND GUTTER TO BE REMOVED

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

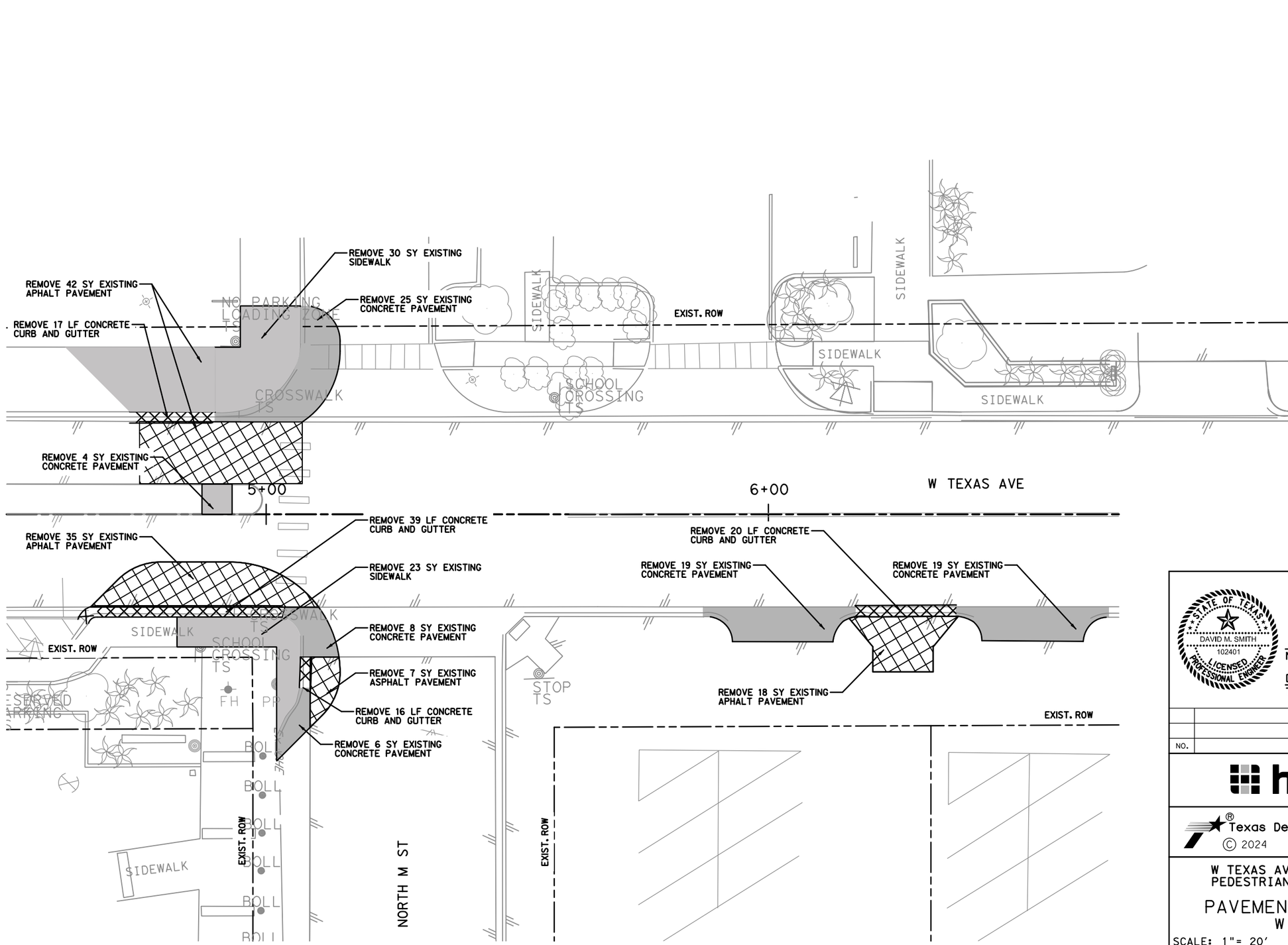
halff
3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT REMOVAL PLAN
W TEXAS AVE

SCALE: 1"= 20'

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	50
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	



STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER
NAME:
DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT REMOVAL PLAN
W TEXAS AVE

SCALE: 1"= 20'

Sheet 2 of 9

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
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CHECK JTH	CONTROL	SECTION	JOB	
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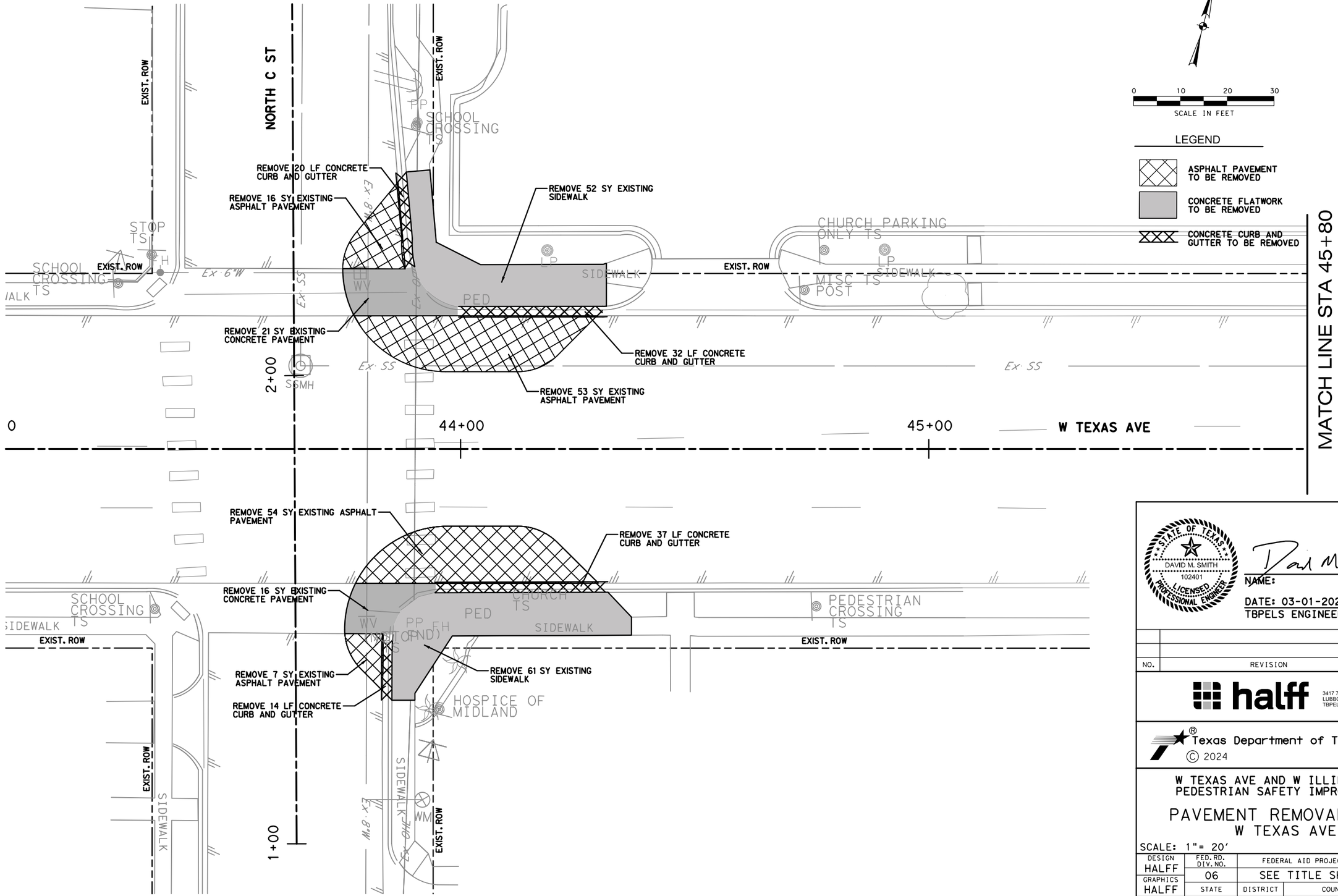

DAVID M. SMITH
102401
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STATE OF TEXAS

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3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT REMOVAL PLAN
W TEXAS AVE

SCALE: 1"= 20'

Sheet 3 of 9

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	52
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	

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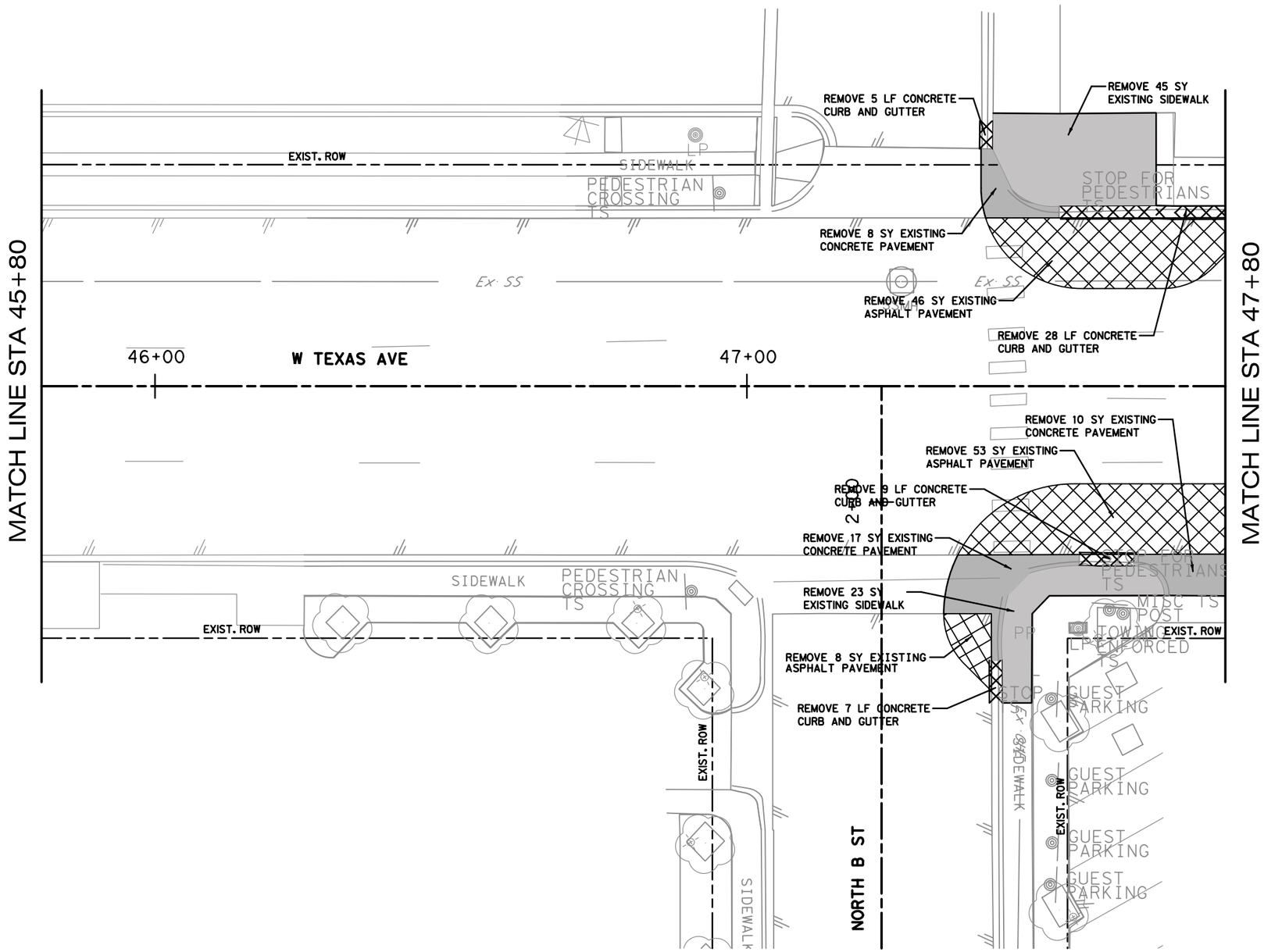

STATE OF TEXAS
DAVID M. SMITH
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NAME:

DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT REMOVAL PLAN
W TEXAS AVE

SCALE: 1"= 20'

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	53
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

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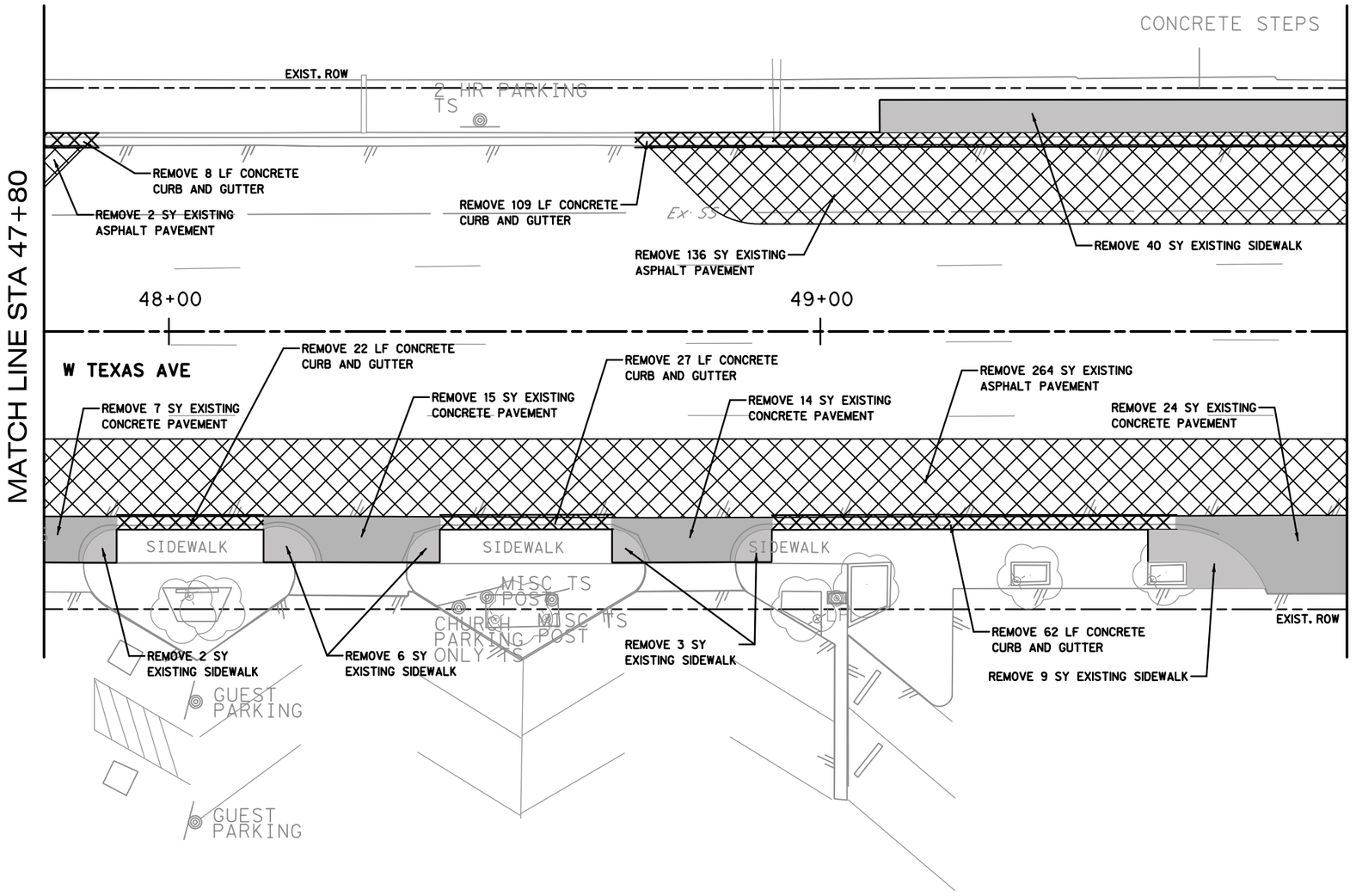

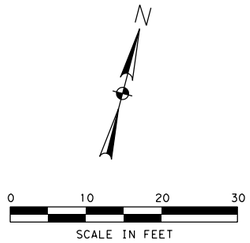

LEGEND

- ASPHALT PAVEMENT TO BE REMOVED
- CONCRETE FLATWORK TO BE REMOVED
- CONCRETE CURB AND GUTTER TO BE REMOVED

NAME:

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT REMOVAL PLAN
W TEXAS AVE

SCALE: 1"= 20'

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	54
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

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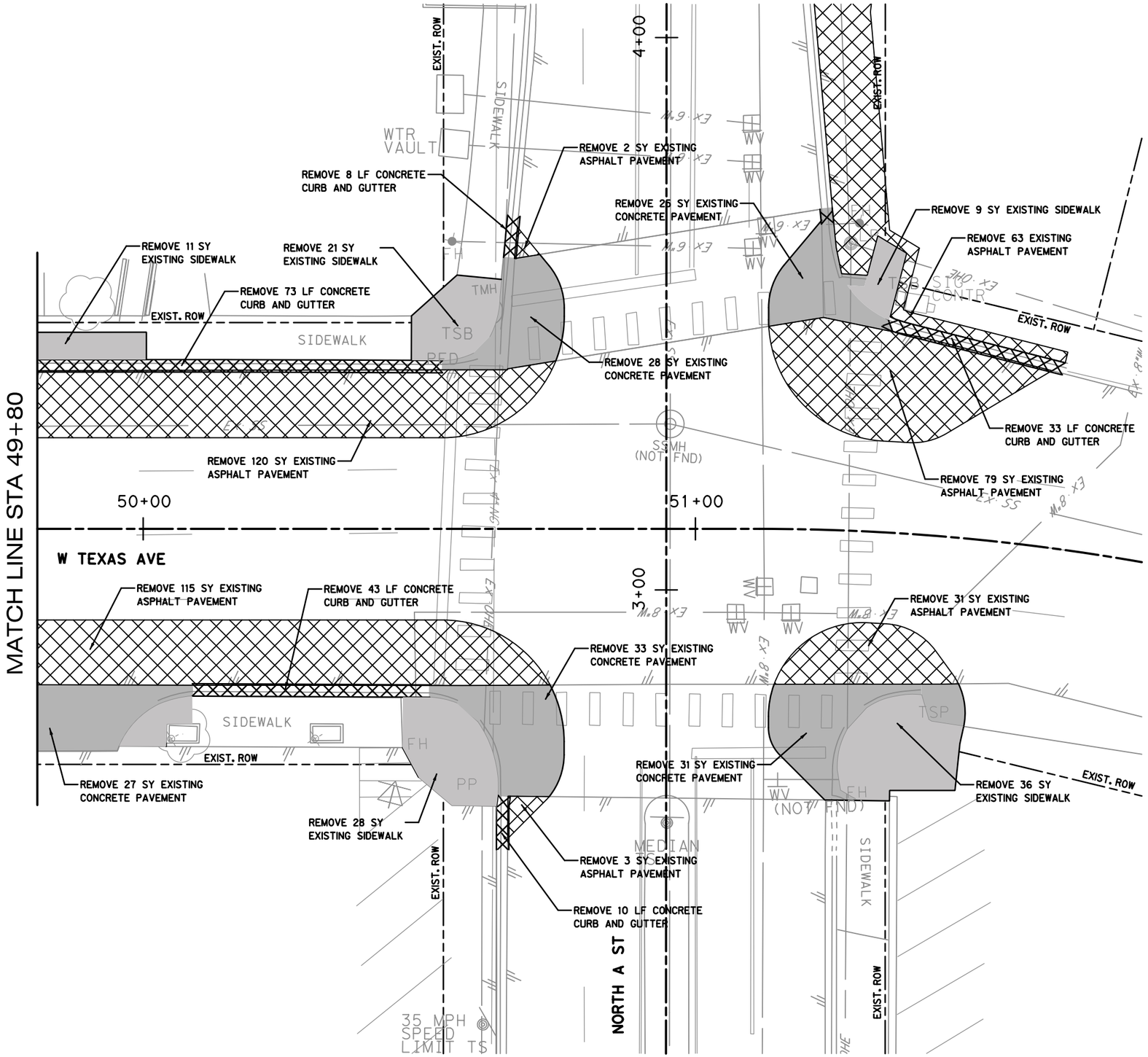

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT REMOVAL PLAN
W TEXAS AVE

SCALE: 1"= 20'

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
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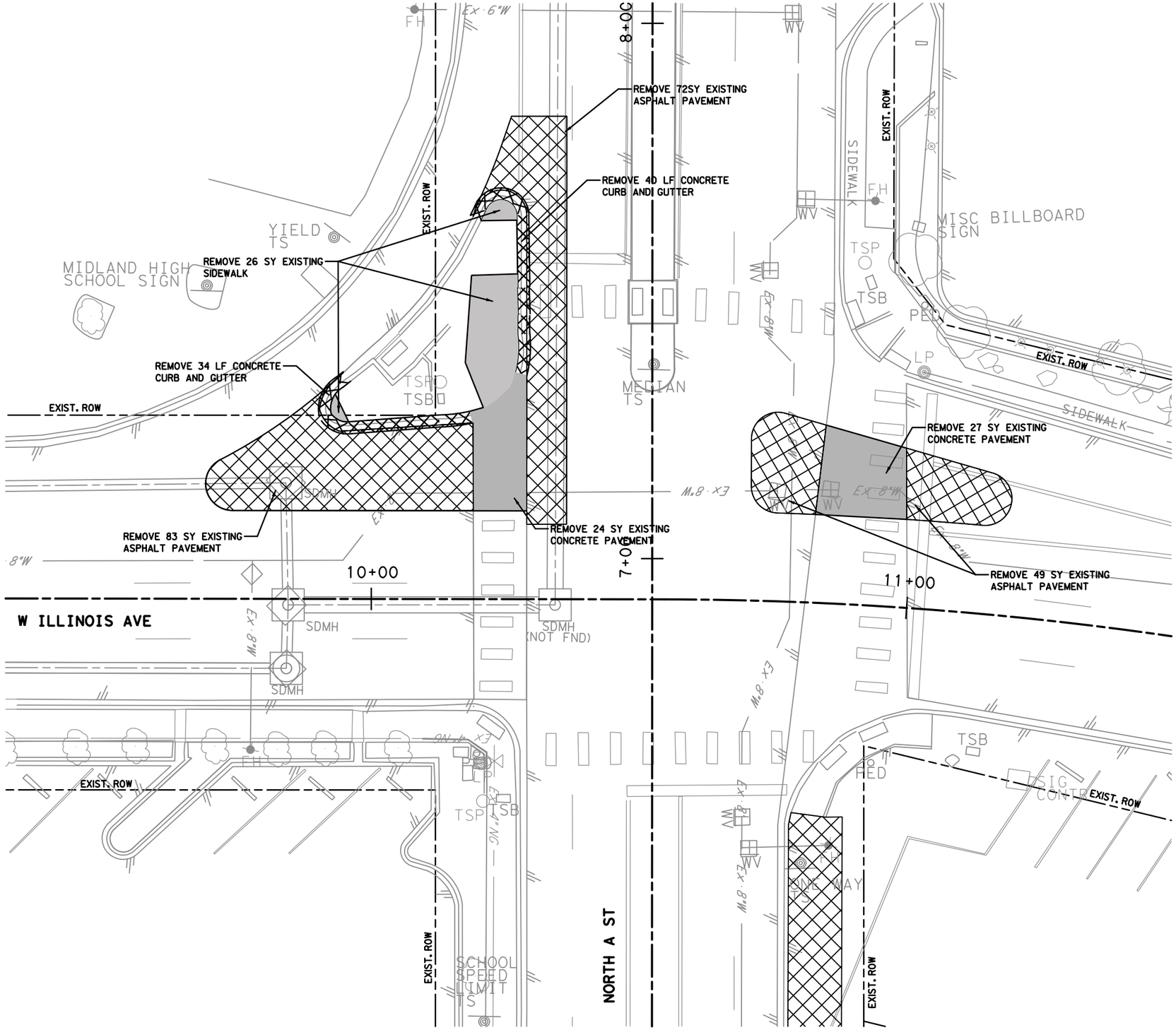

N

0 10 20 30

SCALE IN FEET

LEGEND

- ASPHALT PAVEMENT TO BE REMOVED
- CONCRETE FLATWORK TO BE REMOVED
- CONCRETE CURB AND GUTTER TO BE REMOVED

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT REMOVAL PLAN
W ILLINOIS AVE

SCALE: 1"= 20'

Sheet 7 of 9

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
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CHECK JTH	CONTROL	SECTION	JOB	
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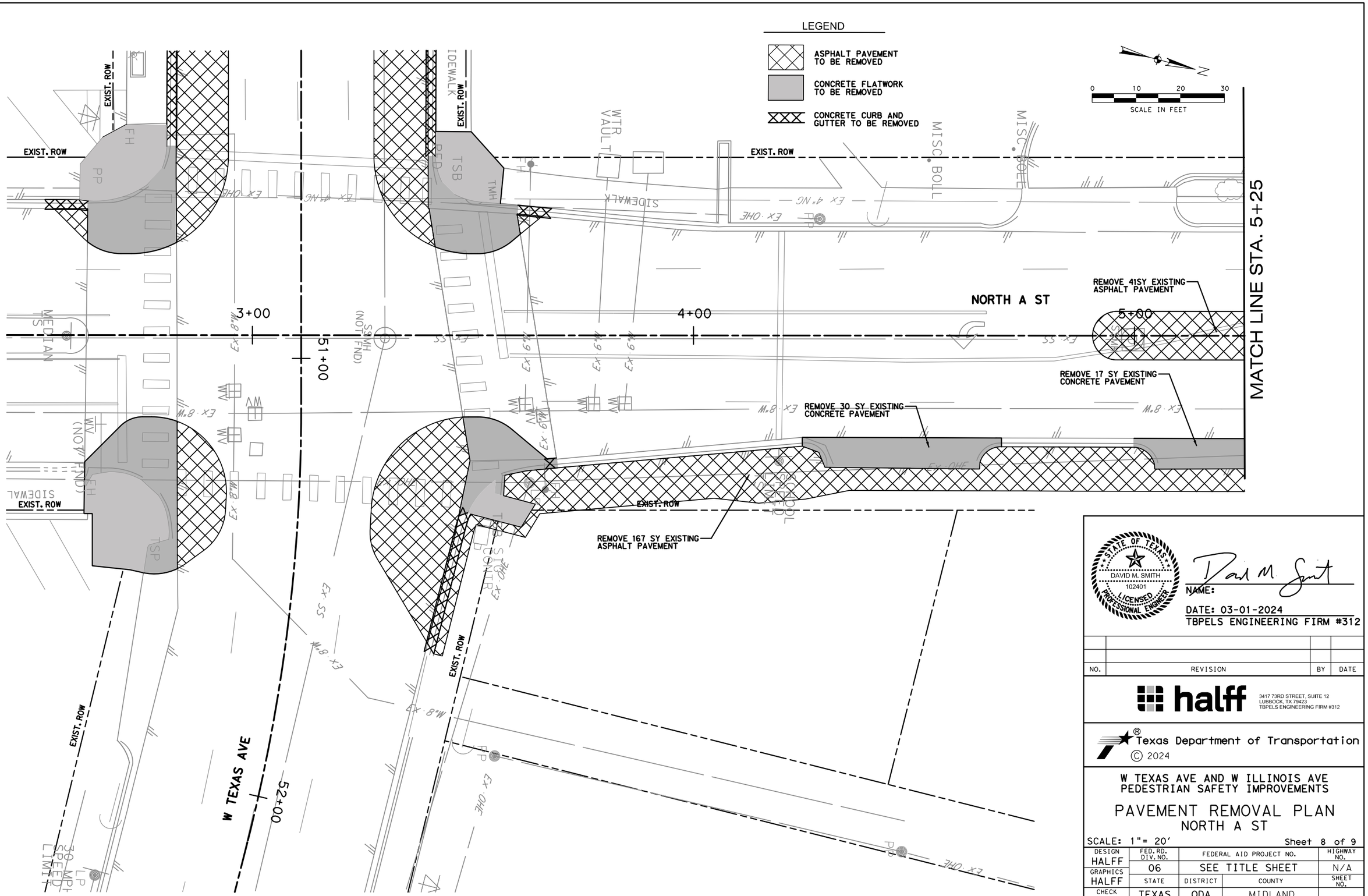

DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

NAME:

DATE: 03-01-2024
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LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

Texas Department of Transportation
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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT REMOVAL PLAN
NORTH A ST

SCALE: 1"= 20'

Sheet 8 of 9

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	57
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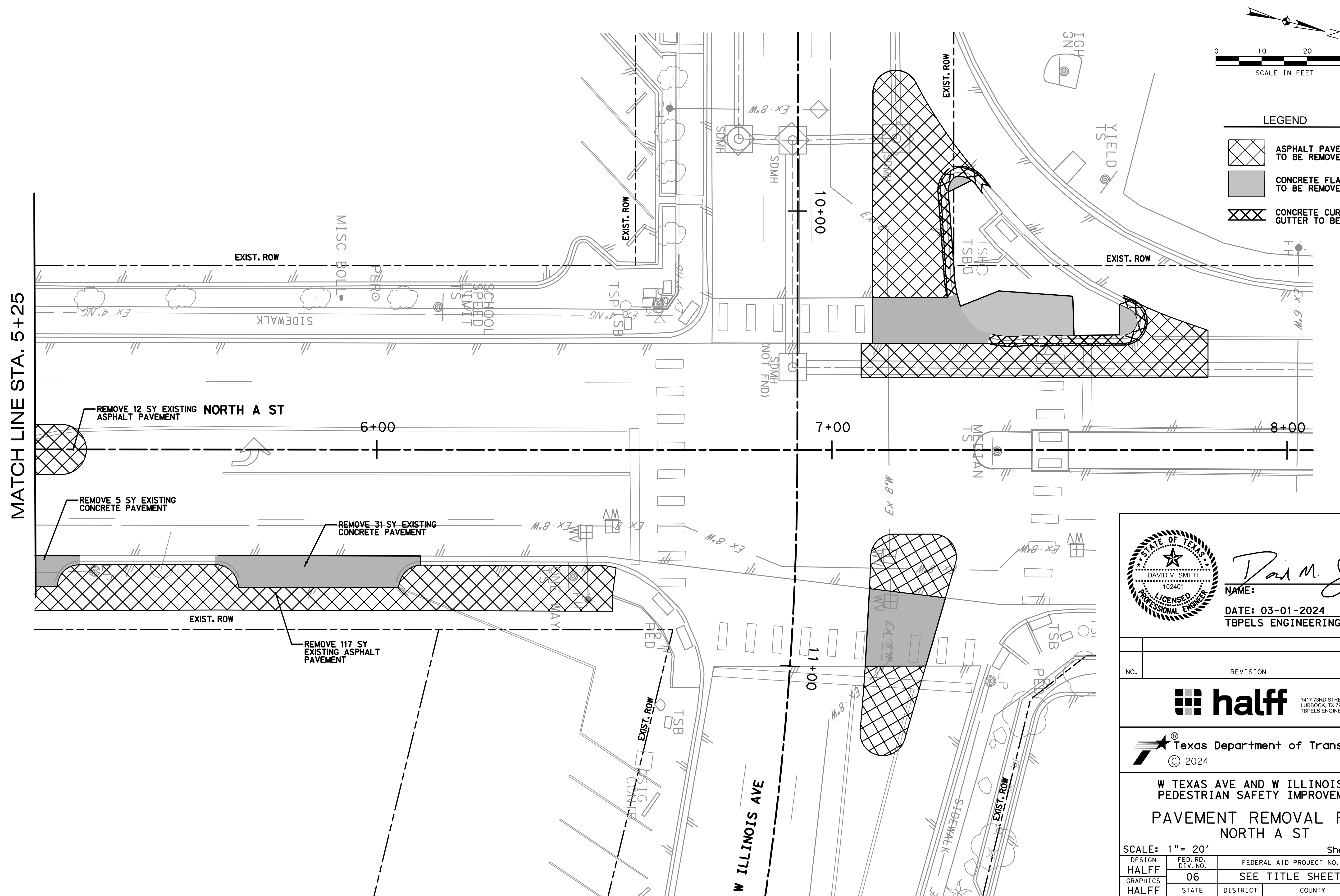

SCALE IN FEET
0 10 20 30
LEGEND
ASPHALT PAVEMENT TO BE REMOVED
CONCRETE FLATWORK TO BE REMOVED
CONCRETE CURB AND GUTTER TO BE REMOVED
MATCH LINE STA. 5+25
REMOVE 12 SY EXISTING ASPHALT PAVEMENT
NORTH A ST
REMOVE 5 SY EXISTING CONCRETE PAVEMENT
REMOVE 31 SY EXISTING CONCRETE PAVEMENT
REMOVE 117 SY EXISTING ASPHALT PAVEMENT
EXIST. ROW
W ILLINOIS AVE
SIDEWALK
6+00
7+00
8+00
10+00
11+00
SDMH
SCHOOL SPEED LIMIT
MEDIAN
YIELD

DAVID M. SMITH 102401 LICENSED PROFESSIONAL ENGINEER — STATE OF TEXAS

NAME:

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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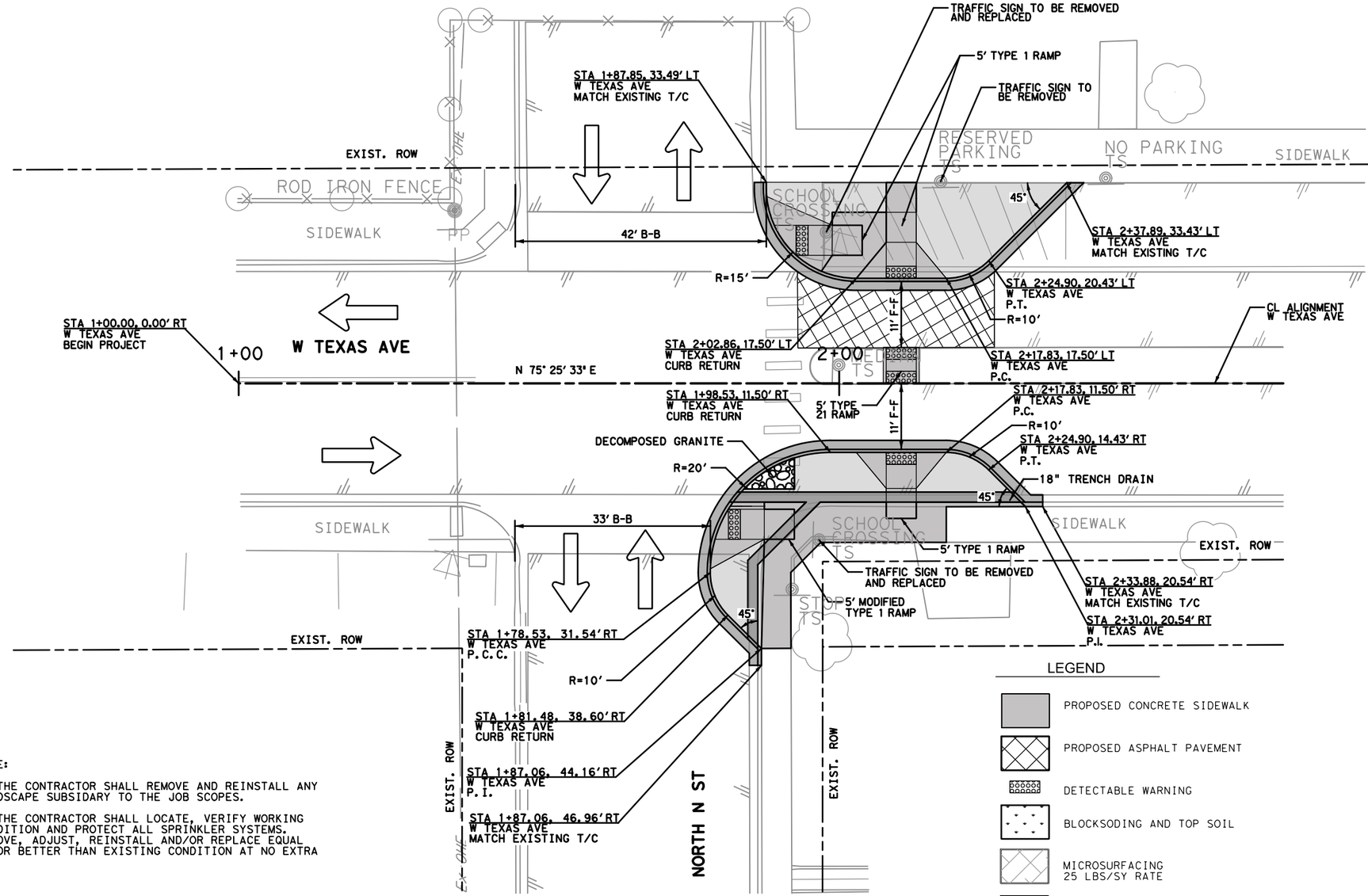
W TEXAS AVE AND W ILLINOIS AVE PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT REMOVAL PLAN
NORTH A ST

SCALE: 1"= 20' Sheet 9 of 9

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	58
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	



NOTE:

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LEGEND

- PROPOSED CONCRETE SIDEWALK
- PROPOSED ASPHALT PAVEMENT
- DETECTABLE WARNING
- BLOCKSODING AND TOP SOIL
- MICROSURFACING 25 LBS/SY RATE
- DECOMPOSED GRANITE
- PROPOSED CONCRETE RIPRAP

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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LUBBOCK, TX 79423
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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVING PLAN
W TEXAS AVE

SCALE: 1"= 20' Sheet 1 of15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
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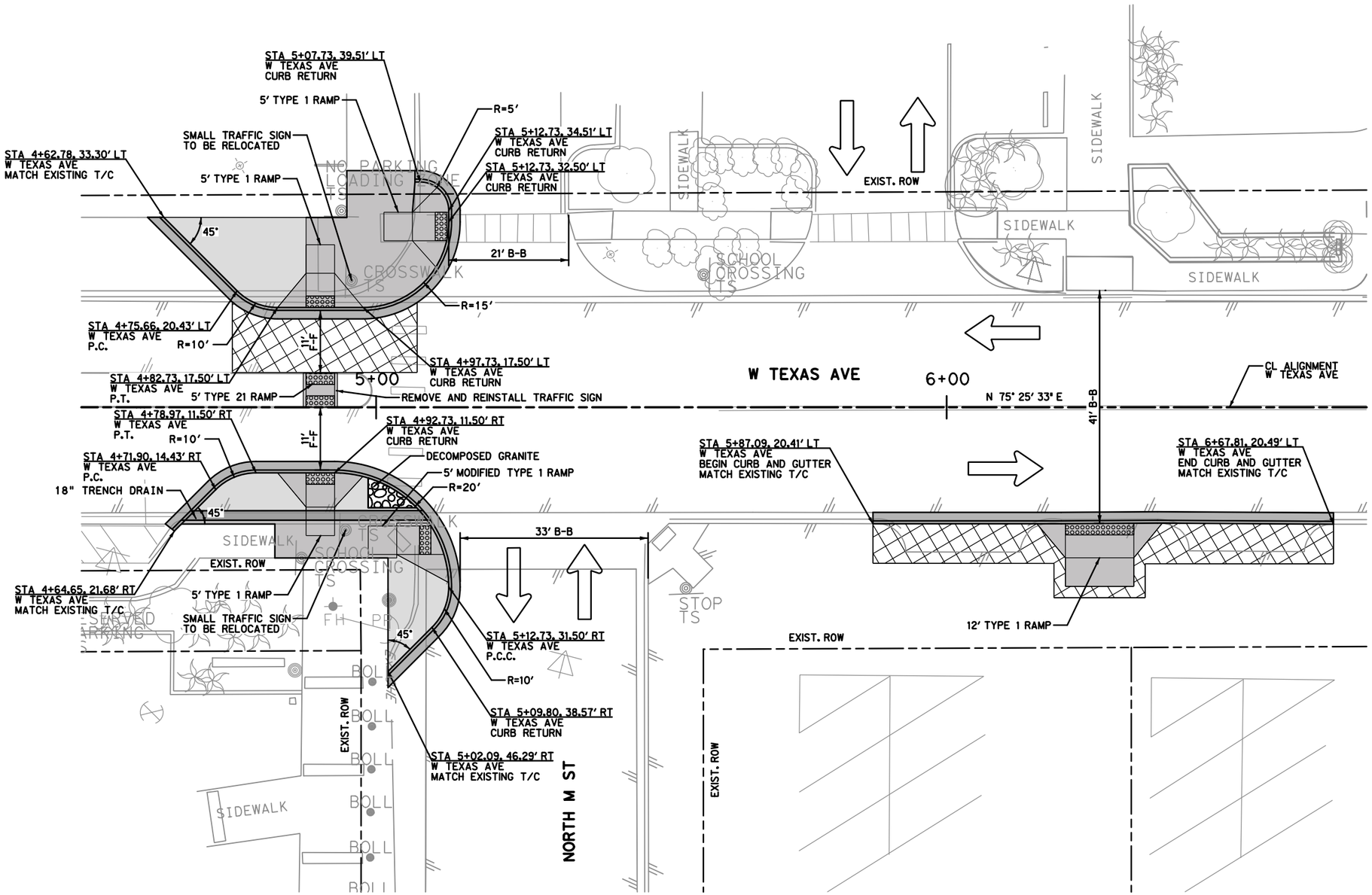
JTH				



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SCALE IN FEET

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Texas Department of Transportation

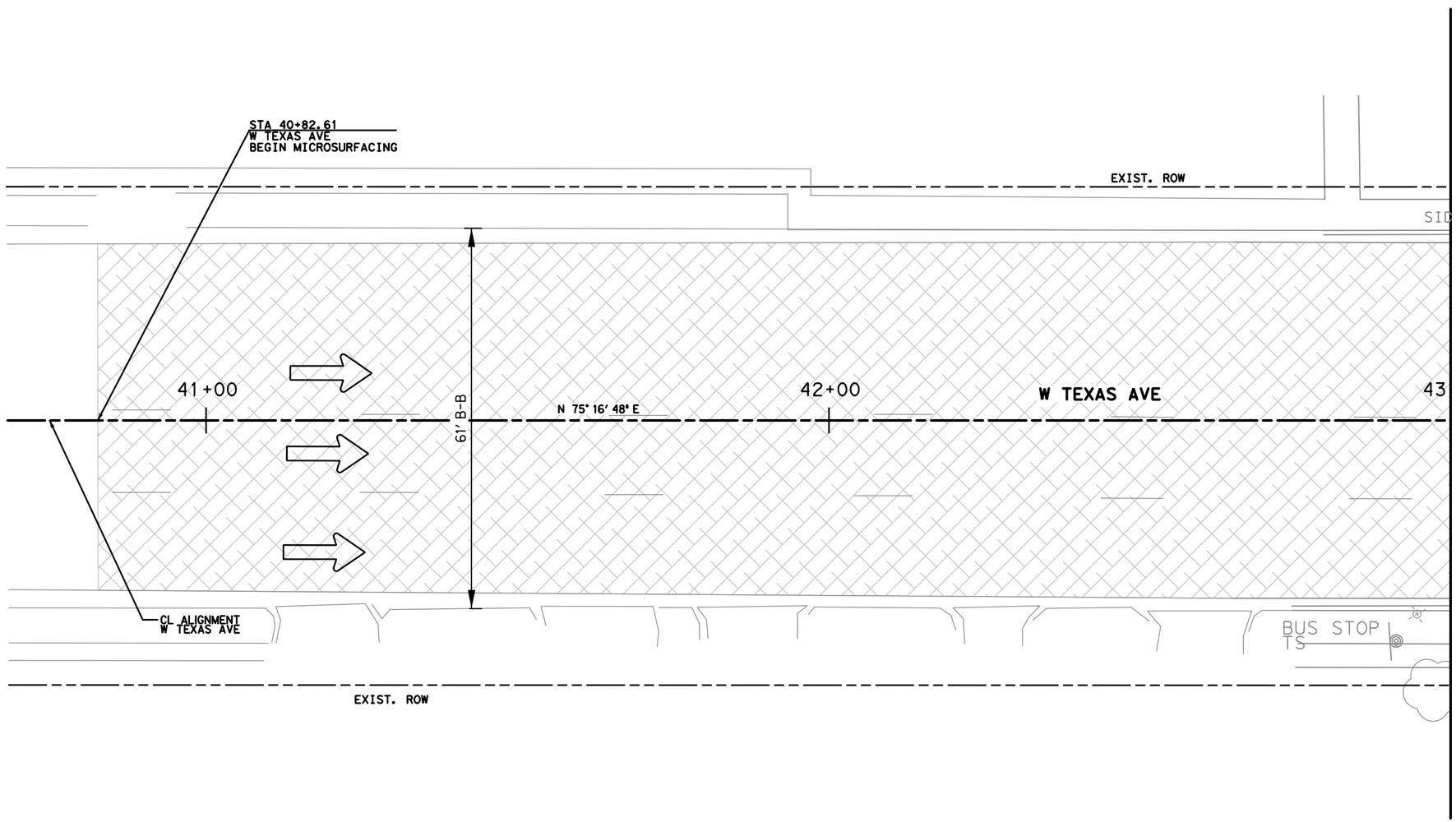
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVING PLAN
W TEXAS AVE

SCALE: 1"= 20'

Sheet 2 of15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HALFF	TEXAS	ODA	MIDLAND	
CHECK	CONTROL	SECTION	JOB	60
DMS	0906	32	064	
CHECK				
JTH				



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Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
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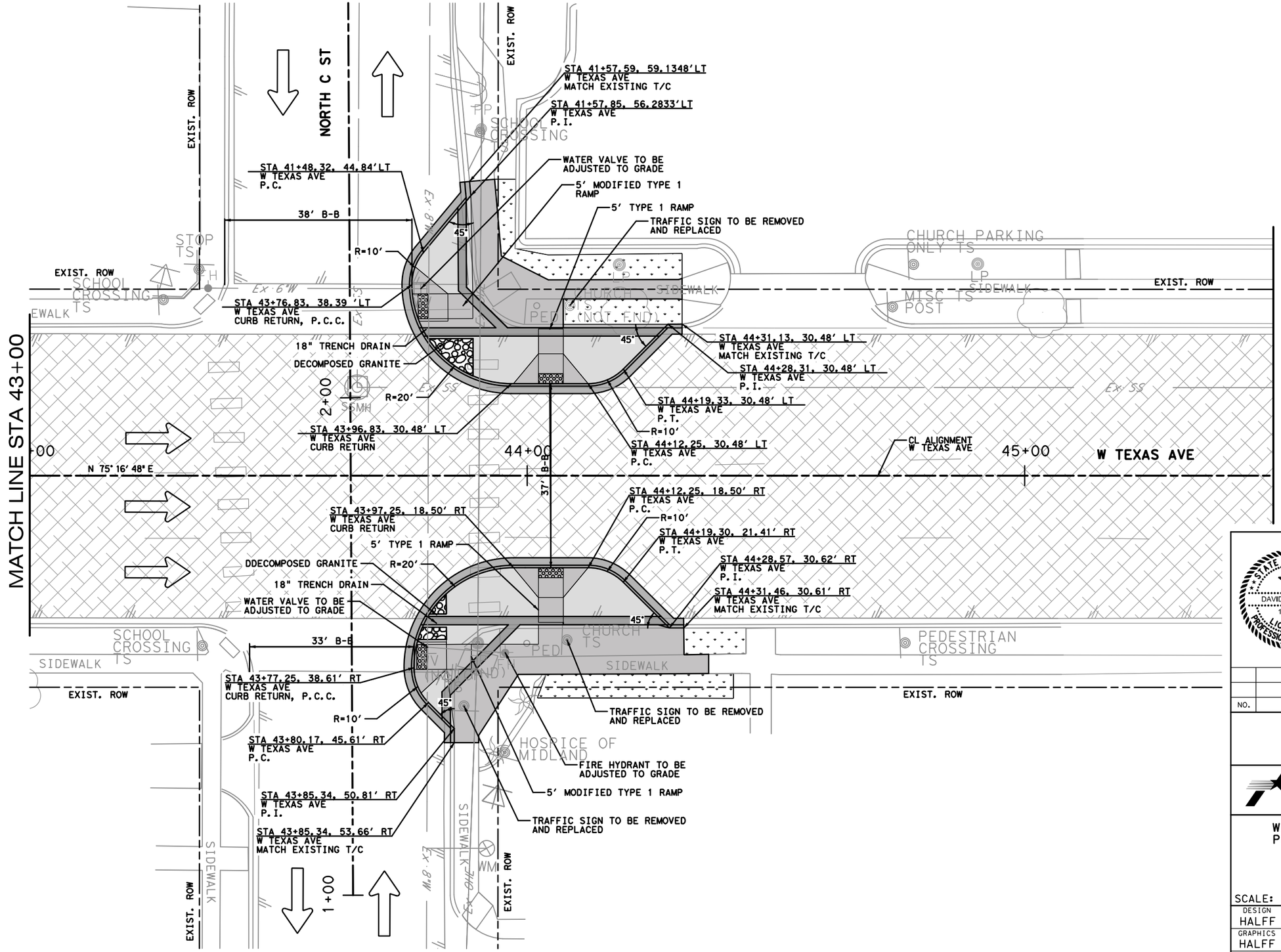
PAVING PLAN
W TEXAS AVE

SCALE: 1"= 20'

Sheet 3 of15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	61
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	



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W TEXAS AVE AND W ILLINOIS AVE
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PAVING PLAN
W TEXAS AVE

SCALE: 1"= 20'

Sheet 4 of15

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HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	62
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

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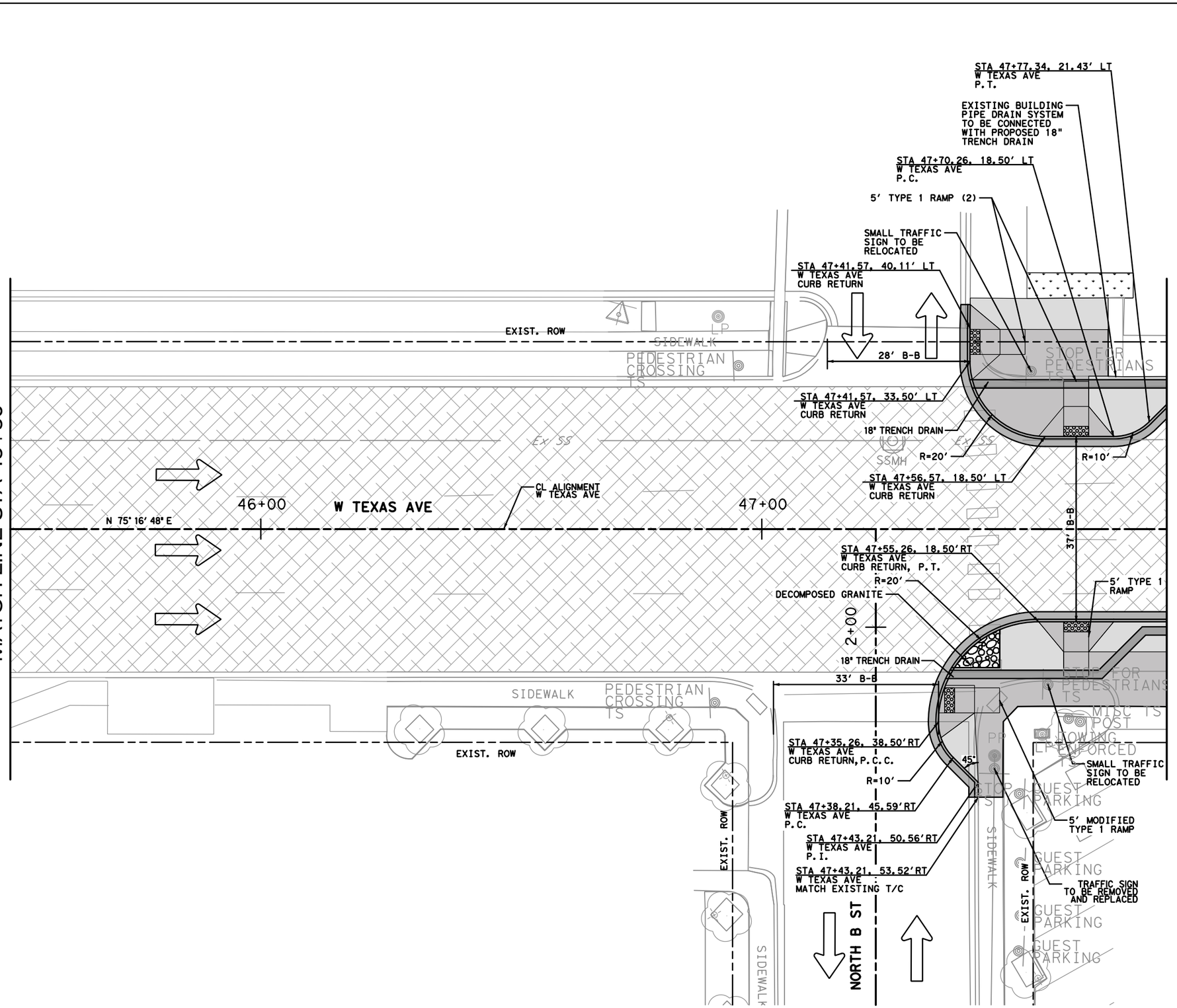

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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVING PLAN
W TEXAS AVE

SCALE: 1"= 20' Sheet 5 of15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	63
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	

DATE:3/28/2024 TIME:4:55:27 PM PROJECT # 45715 OFFICE:FTW

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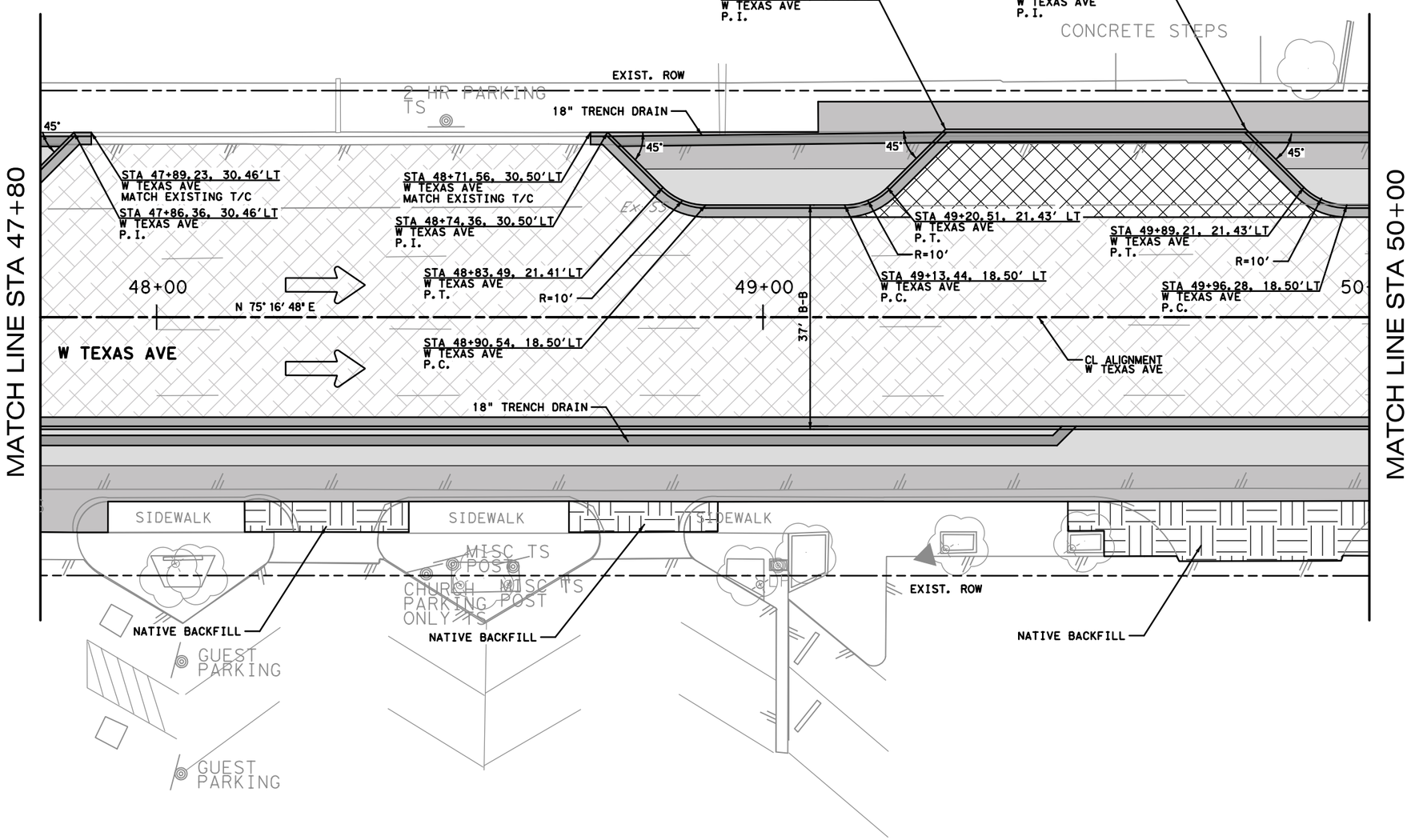

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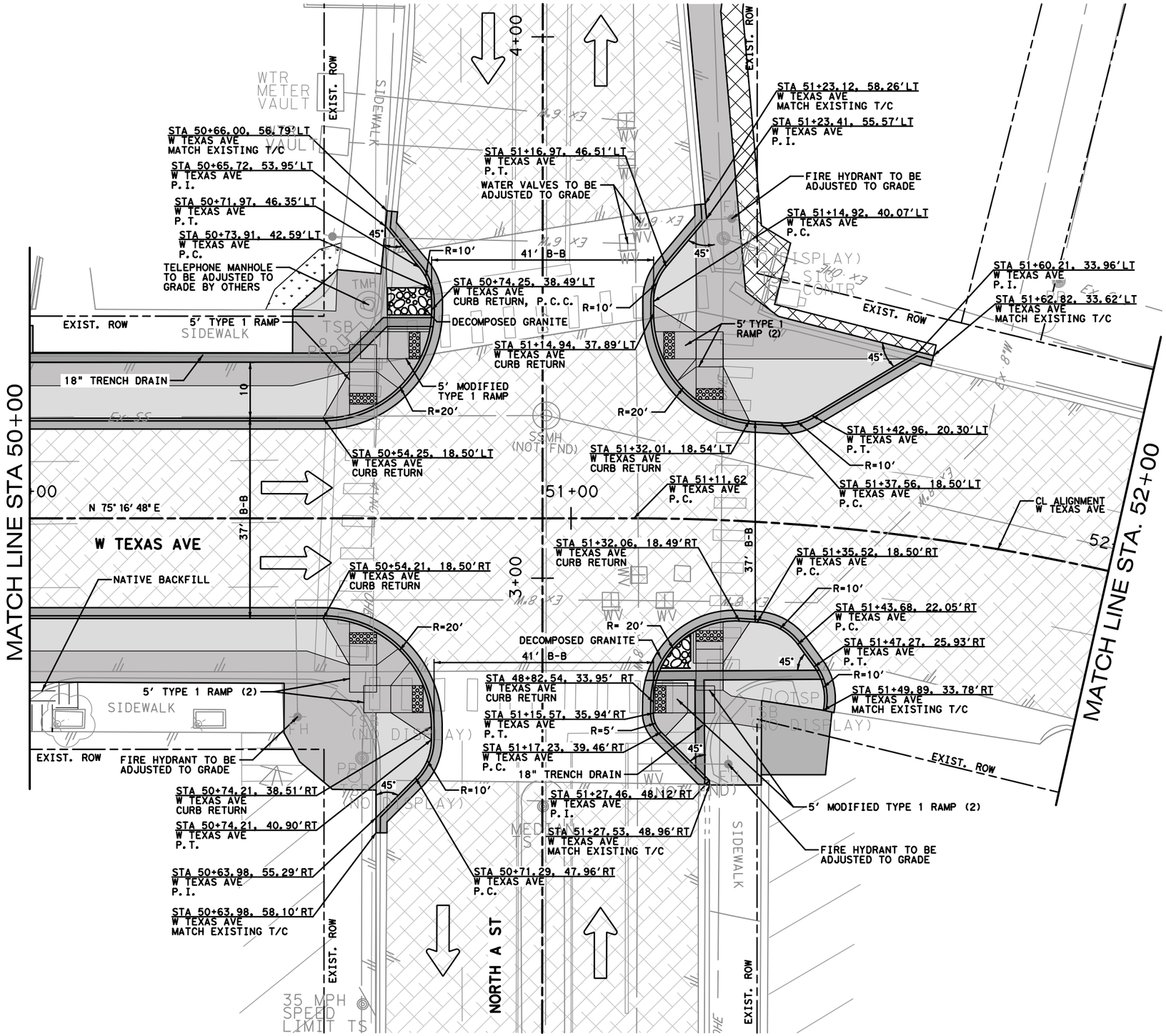
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVING PLAN
W TEXAS AVE

SCALE: 1"= 20'

Sheet 6 of15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	64
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	



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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVING PLAN
W TEXAS AVE

SCALE: 1"= 20'

Sheet 7 of15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	65
CHECK JTH	CONTROL	SECTION	JOB	
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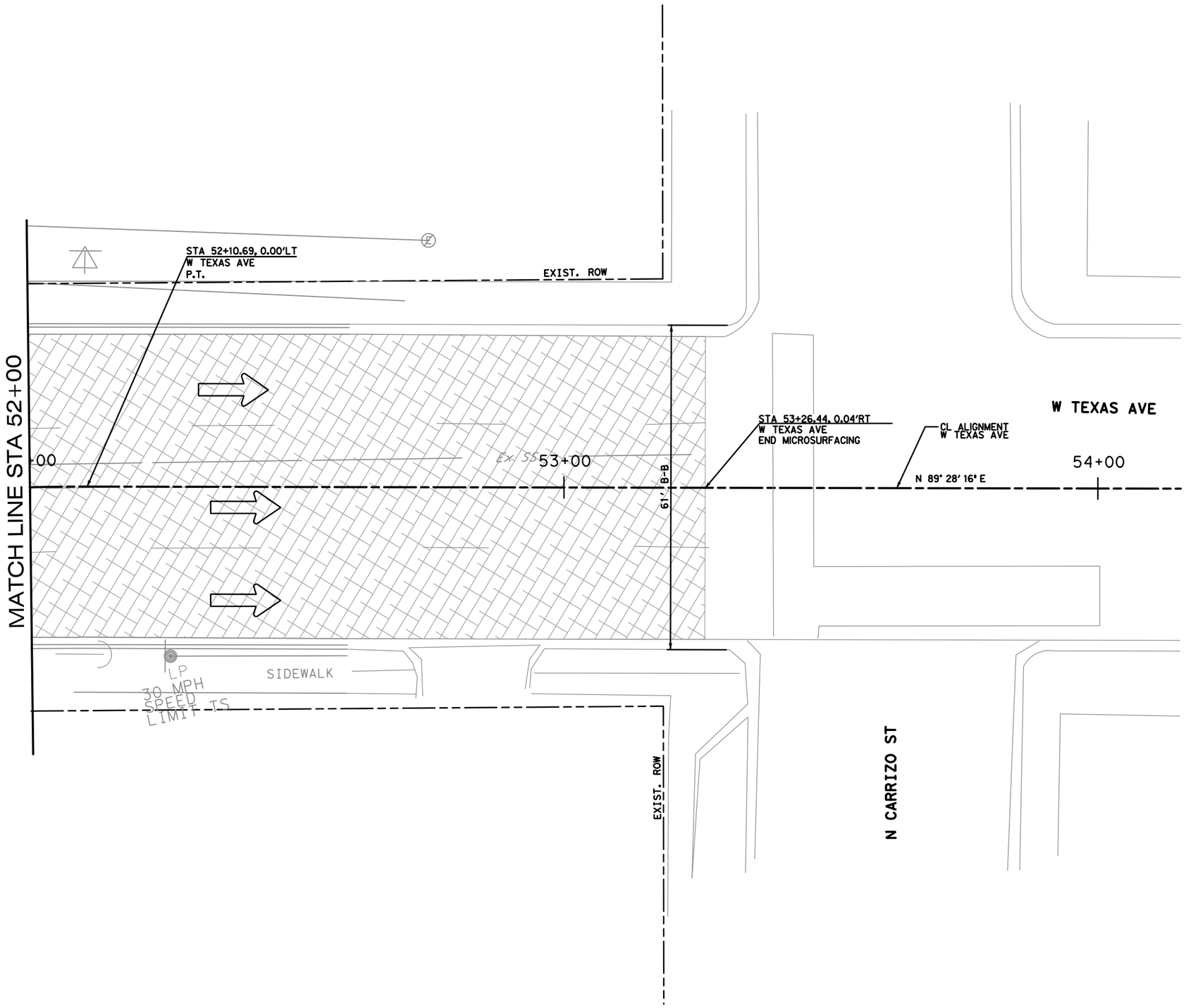

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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVING PLAN
W TEXAS AVE

SCALE: 1"= 20'

Sheet 8 of15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	66
CHECK JTH	CONTROL	SECTION	JOB	
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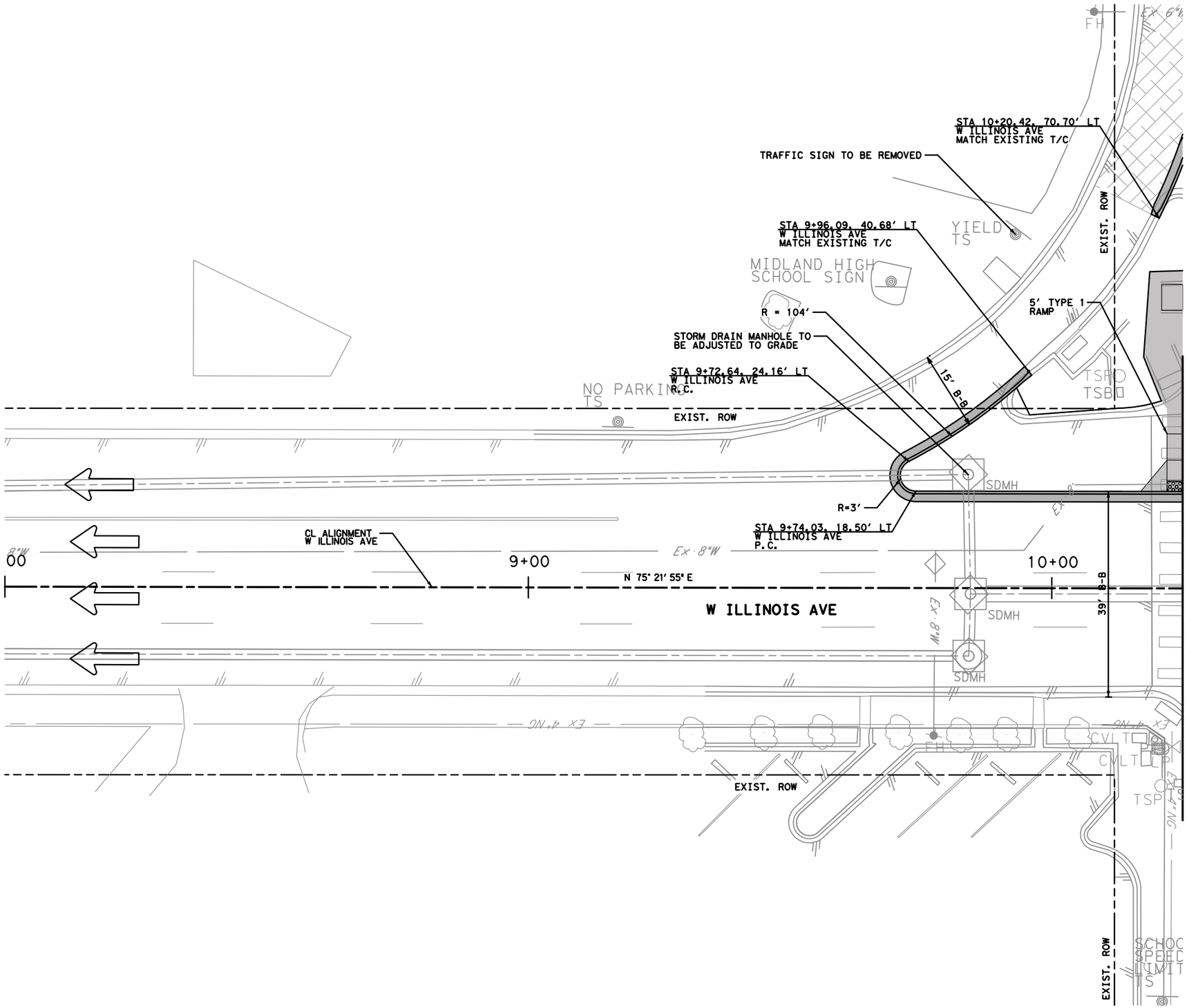

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PAVING PLAN
W ILLINOIS AVE

SCALE: 1"= 20'

Sheet 9 of15

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HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HALFF	TEXAS	ODA	MIDLAND	67
CHECK	CONTROL	SECTION	JOB	
DMS	0906	32	064	
CHECK				
JTH				

DATE:3/28/2024 TIME:4:55:29 PM PROJECT # 45715 OFFICE:FTW

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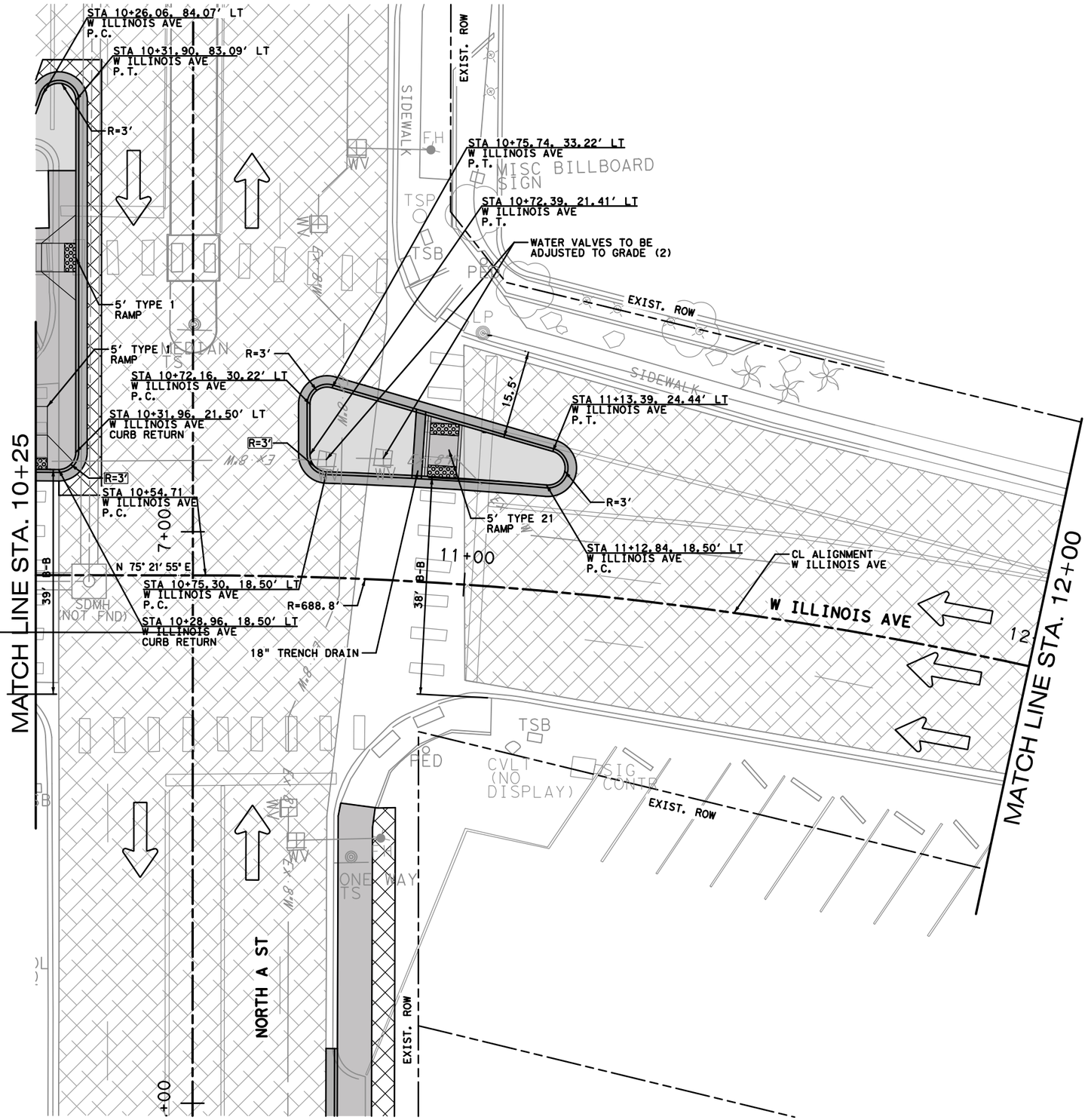

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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVING PLAN
W ILLINOIS AVE

SCALE: 1"= 20'

Sheet 10 of15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	68
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

DATE:3/28/2024 TIME:4:55:29 PM PROJECT # 45715 OFFICE:FTW
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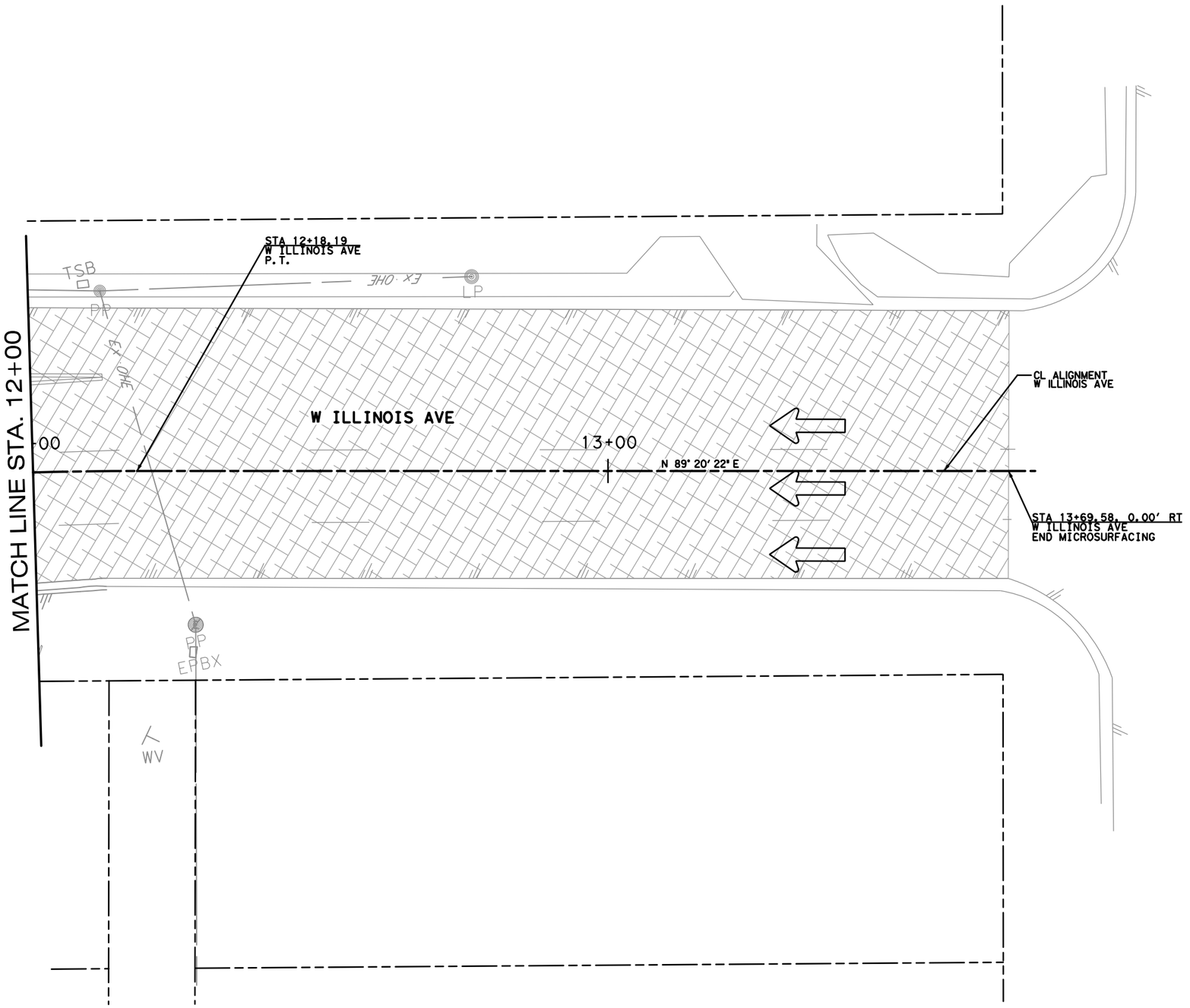

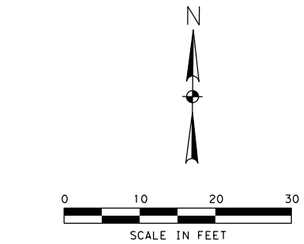

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PAVING PLAN
W ILLINOIS AVE

SCALE: 1"= 20'

Sheet 11 of15

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GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	69
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

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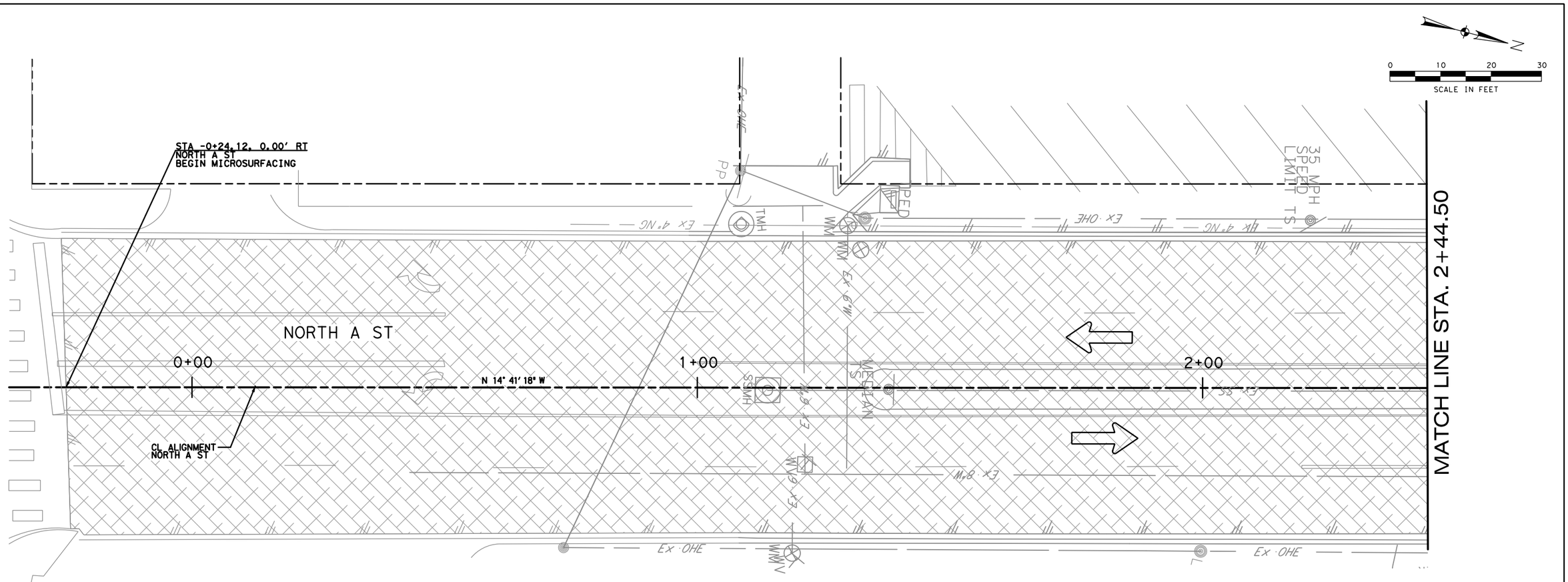

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LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVING PLAN
NORTH A ST

SCALE: 1"= 20'

Sheet 12 of15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	70
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	

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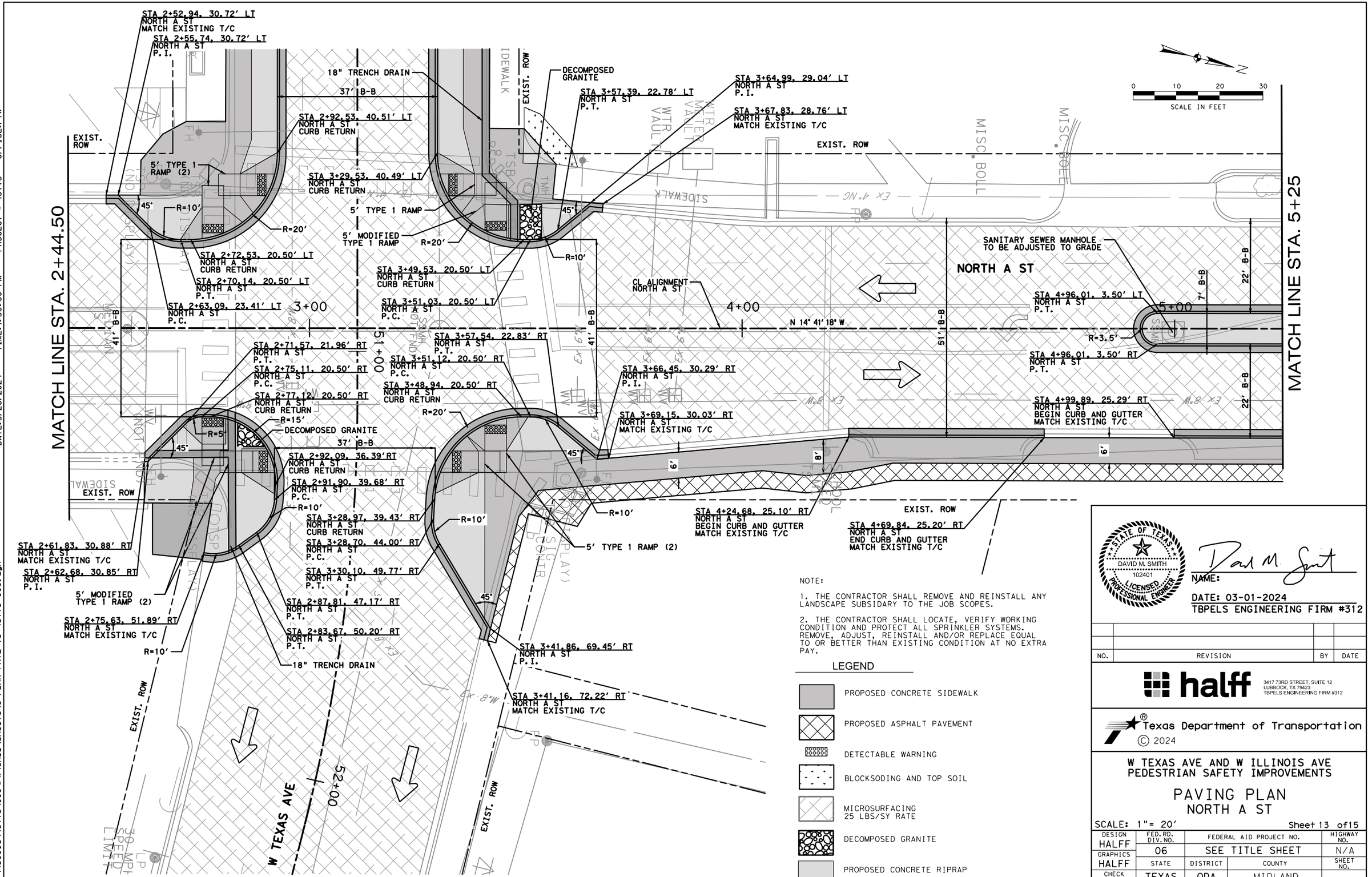

NOTE:

1. THE CONTRACTOR SHALL REMOVE AND REINSTALL ANY LANDSCAPE SUBSIDARY TO THE JOB SCOPES.

2. THE CONTRACTOR SHALL LOCATE, VERIFY WORKING CONDITION AND PROTECT ALL SPRINKLER SYSTEMS. REMOVE, ADJUST, REINSTALL AND/OR REPLACE EQUAL TO OR BETTER THAN EXISTING CONDITION AT NO EXTRA PAY.

LEGEND

- PROPOSED CONCRETE SIDEWALK
- PROPOSED ASPHALT PAVEMENT
- DETECTABLE WARNING
- BLOCKSODING AND TOP SOIL
- MICROSURFACING 25 LBS/SY RATE
- DECOMPOSED GRANITE
- PROPOSED CONCRETE RIPRAP

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE PEDESTRIAN SAFETY IMPROVEMENTS

PAVING PLAN
NORTH A ST

SCALE: 1"= 20'

Sheet 13 of15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HALFF	TEXAS	ODA	MIDLAND	71
CHECK	CONTROL	SECTION	JOB	
DMS	0906	32	064	
CHECK				
JTH				

DATE:3/28/2024 TIME:4:55:30 PM PROJECT # 45715 OFFICE:FTW
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LEGEND

- PROPOSED CONCRETE SIDEWALK
- PROPOSED ASPHALT PAVEMENT
- DETECTABLE WARNING
- BLOCKSODING AND TOP SOIL
- MICROSURFACING 25 LBS/SY RATE
- DECOMPOSED GRANITE
- PROPOSED CONCRETE RIPRAP

NOTE:

1. THE CONTRACTOR SHALL REMOVE AND REINSTALL ANY LANDSCAPE SUBSIDARY TO THE JOB SCOPES.

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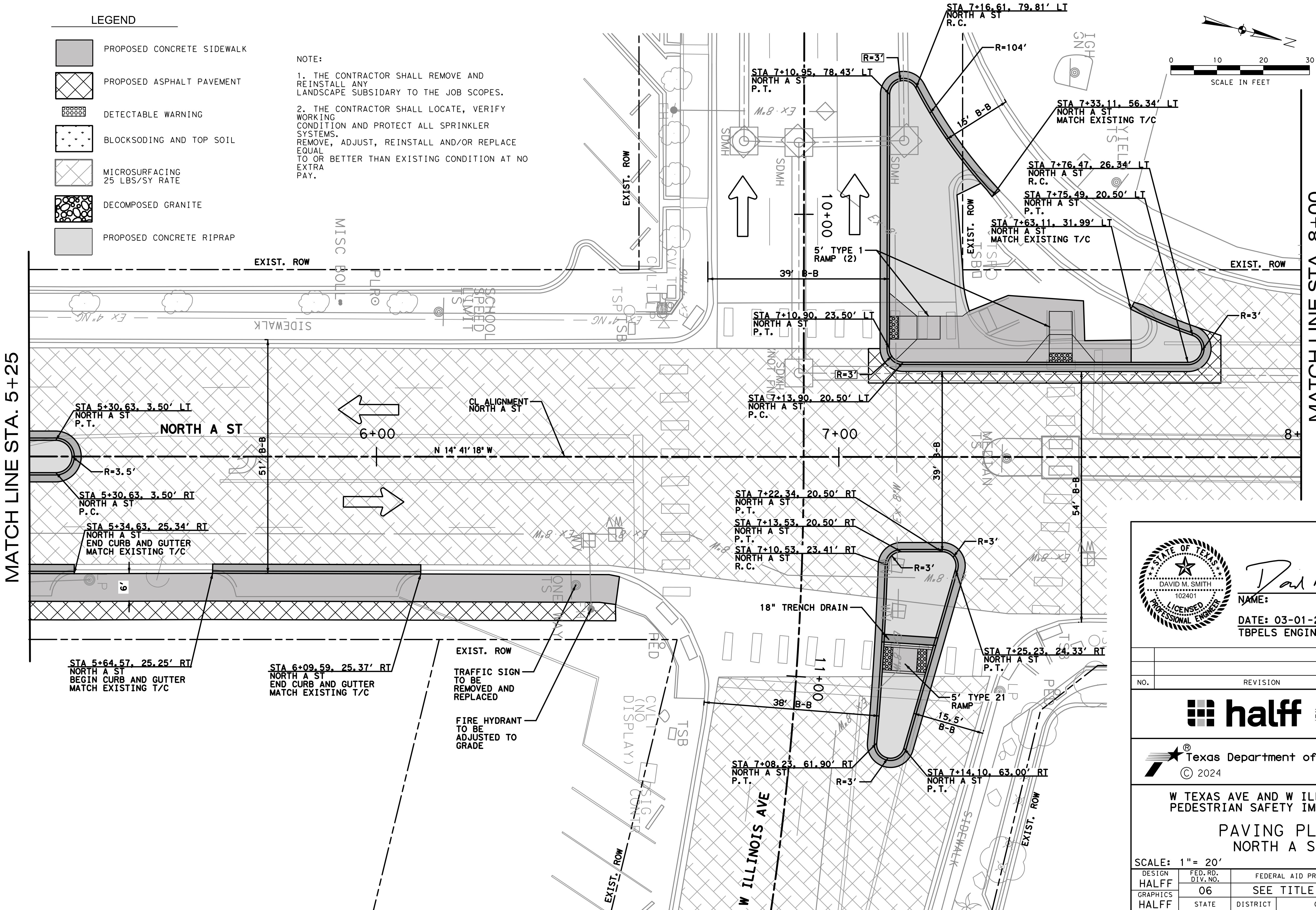

DAVID M. SMITH 102401 LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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W TEXAS AVE AND W ILLINOIS AVE PEDESTRIAN SAFETY IMPROVEMENTS

PAVING PLAN
NORTH A ST

SCALE: 1"= 20'   Sheet 14 of 15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	72
CHECK	CONTROL	SECTION	JOB	
JTH	0906	32	064	

DATE:3/28/2024 TIME:4:55:30 PM PROJECT # 45715 OFFICE:FTW

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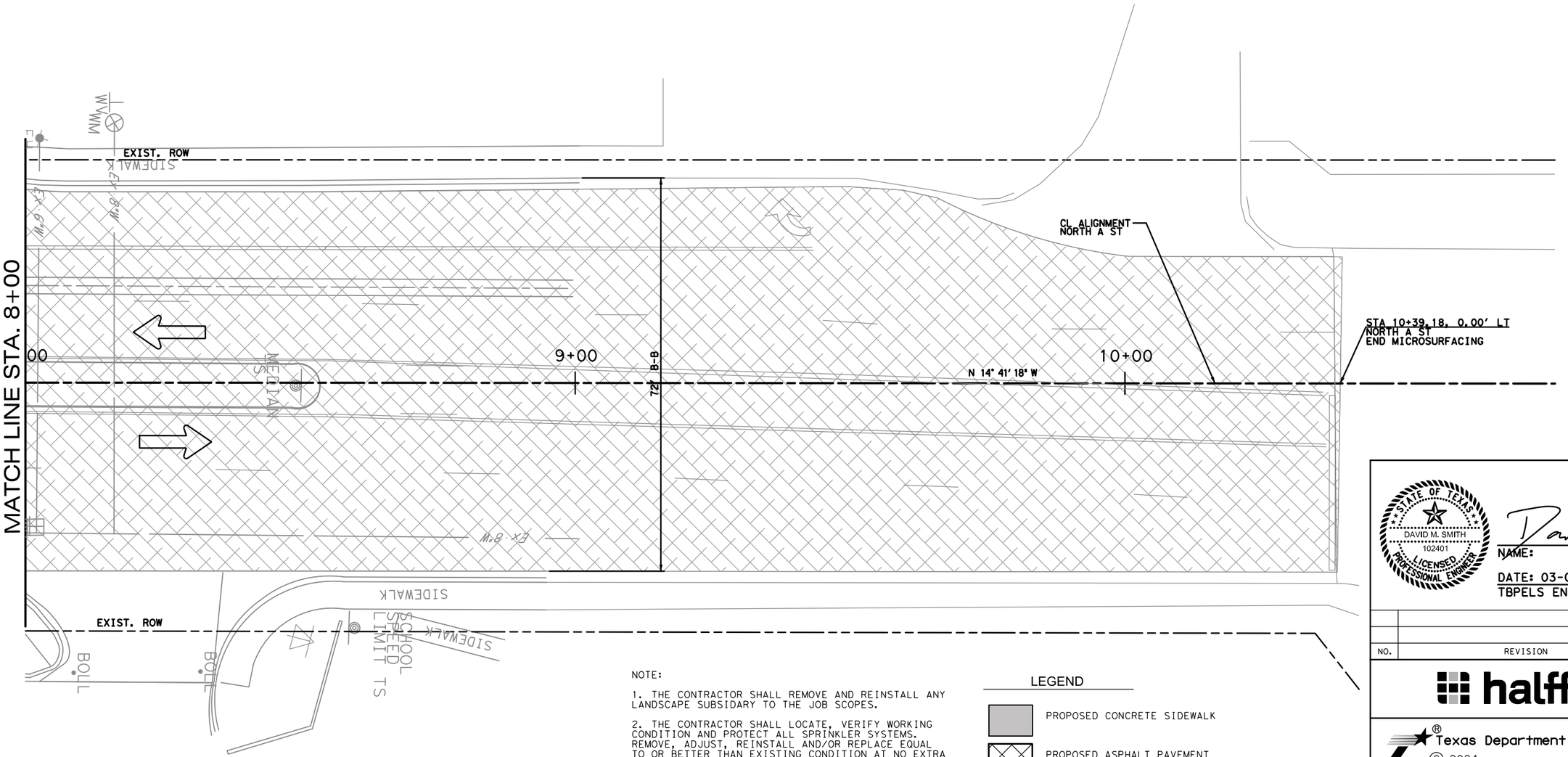

NOTE:

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2. THE CONTRACTOR SHALL LOCATE, VERIFY WORKING CONDITION AND PROTECT ALL SPRINKLER SYSTEMS. REMOVE, ADJUST, REINSTALL AND/OR REPLACE EQUAL TO OR BETTER THAN EXISTING CONDITION AT NO EXTRA PAY.

LEGEND

- PROPOSED CONCRETE SIDEWALK
- PROPOSED ASPHALT PAVEMENT
- DETECTABLE WARNING
- BLOCKSODING AND TOP SOIL
- MICROSURFACING 25 LBS/SY RATE
- DECOMPOSED GRANITE
- PROPOSED CONCRETE RIPRAP

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

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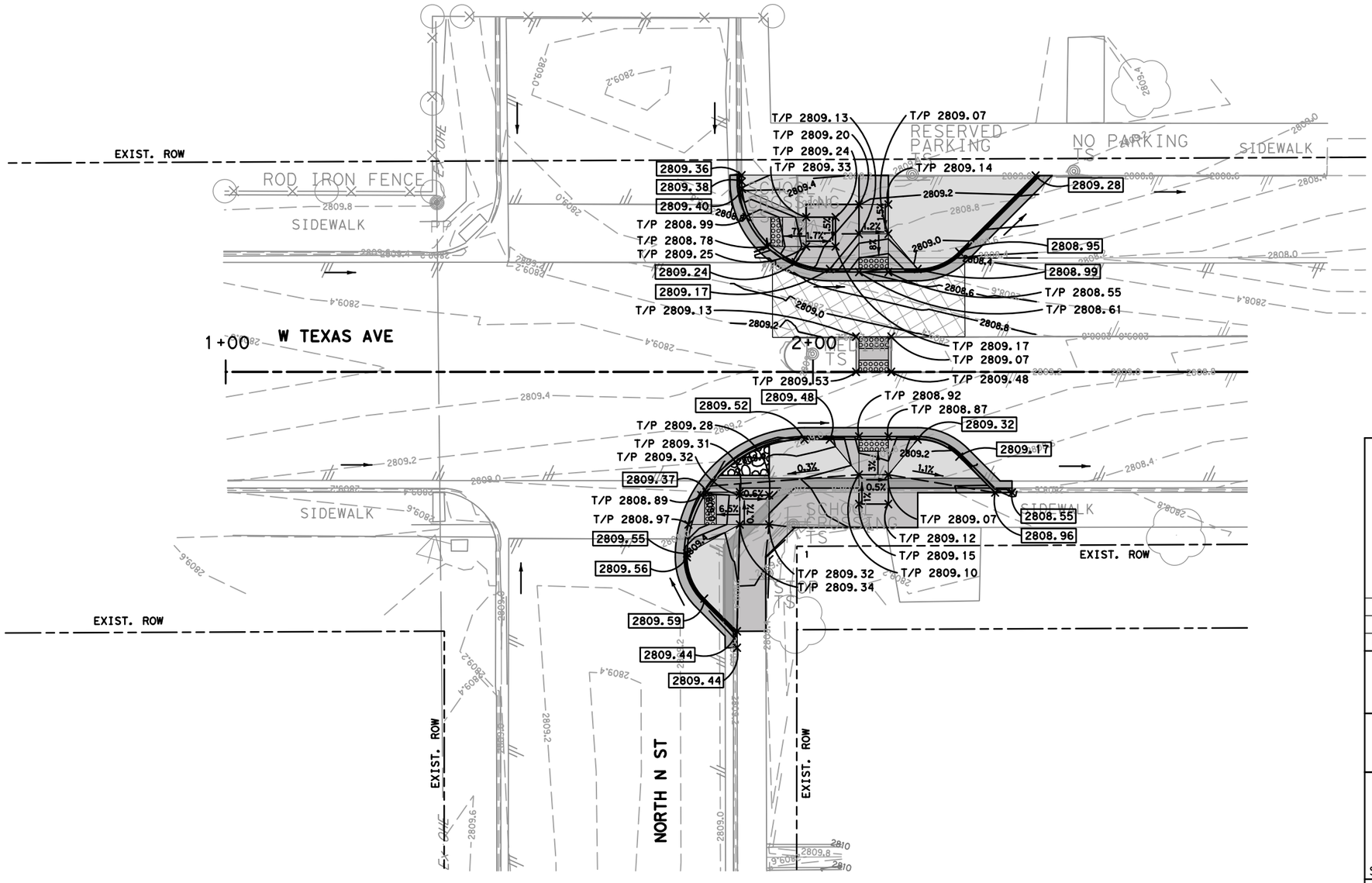
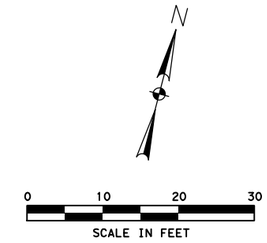
W TEXAS AVE AND W ILLINOIS AVE PEDESTRIAN SAFETY IMPROVEMENTS

PAVING PLAN
NORTH A ST

SCALE: 1"= 20' Sheet 15 of15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	73
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	





LEGEND

2809	PROPOSED CONTOUR
2809	EXISTING CONTOUR
	BREAK LINE
T/P 2808.97	PROPOSED TOP OF PAVEMENT
2808.97	PROPOSED TOP OF CURB

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

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TBPELS ENGINEERING FIRM #312

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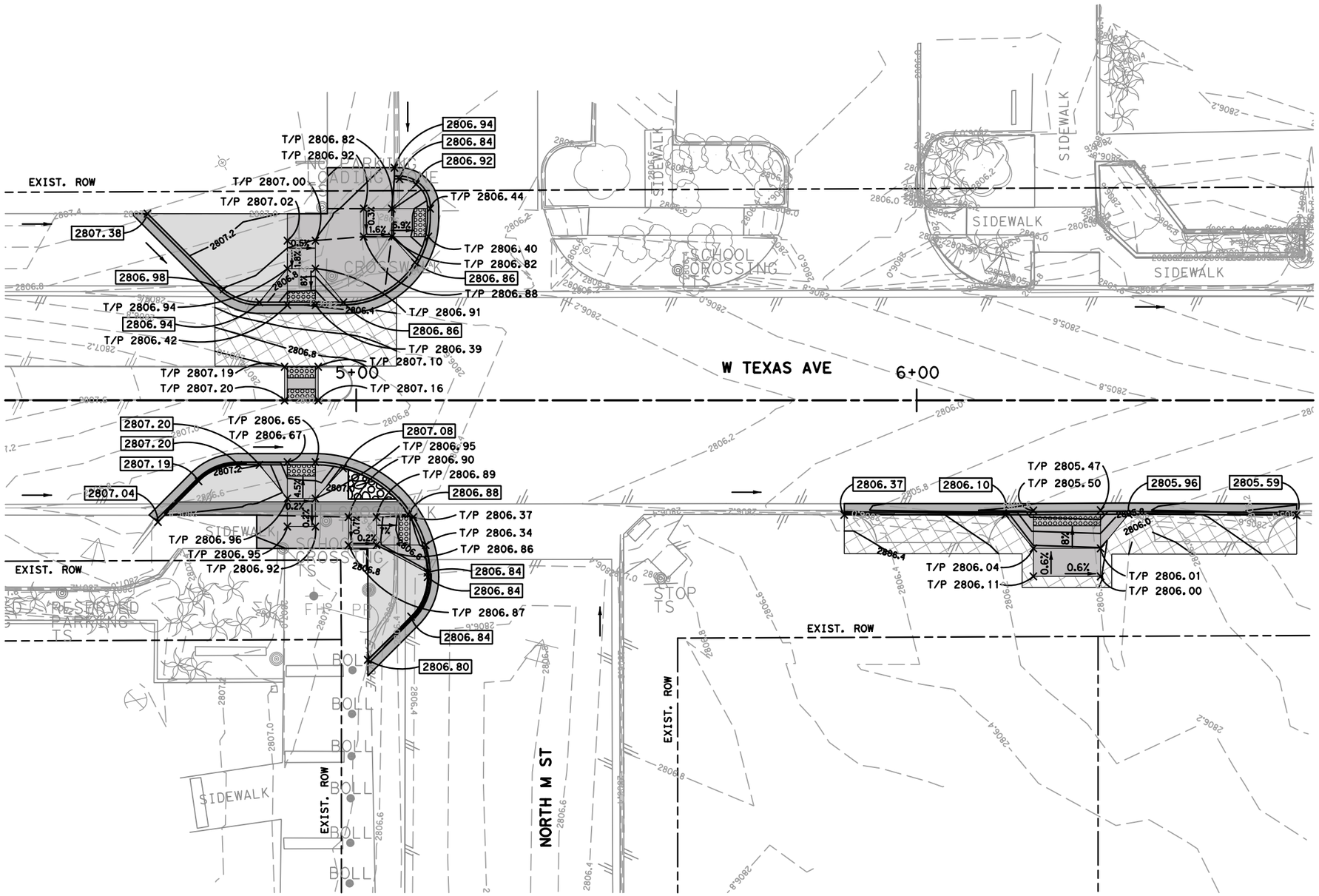
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

GRADING PLAN
W TEXAS AVE

SCALE: 1"= 20' Sheet 1 of 9

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	74
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	



N

0 10 20 30

SCALE IN FEET

LEGEND

2809	PROPOSED CONTOUR
2809	EXISTING CONTOUR
	BREAK LINE
T/P 2808.97	PROPOSED TOP OF PAVEMENT
2808.97	PROPOSED TOP OF CURB

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

GRADING PLAN
W TEXAS AVE

SCALE: 1"= 20'

Sheet 2 of 9

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HALFF	TEXAS	ODA	MIDLAND	
CHECK	CONTROL	SECTION	JOB	75
DMS	0906	32	064	
CHECK				
JTH				

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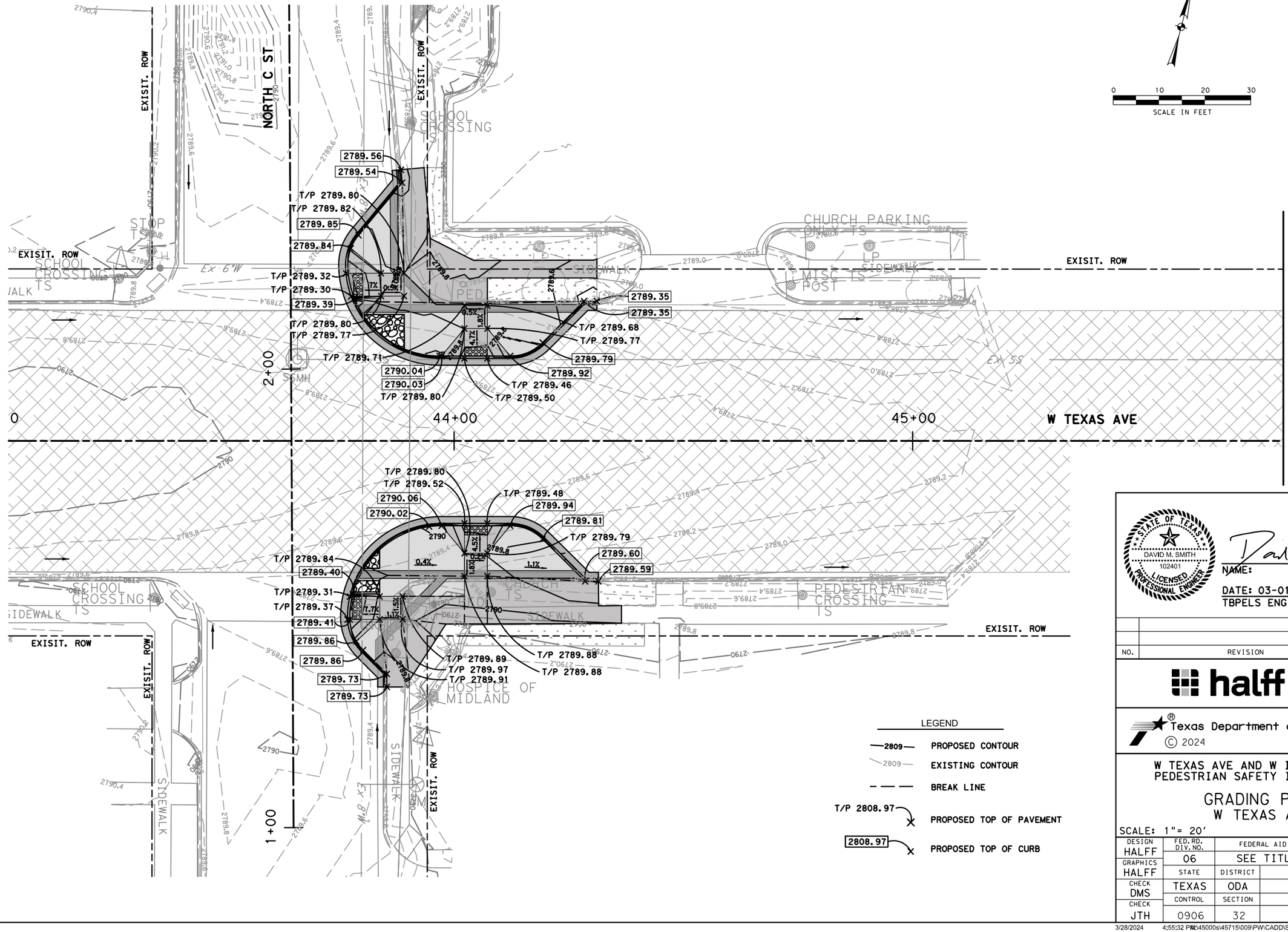

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STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

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Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

GRADING PLAN
W TEXAS AVE

SCALE: 1"= 20' Sheet 3 of 9

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	76
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	

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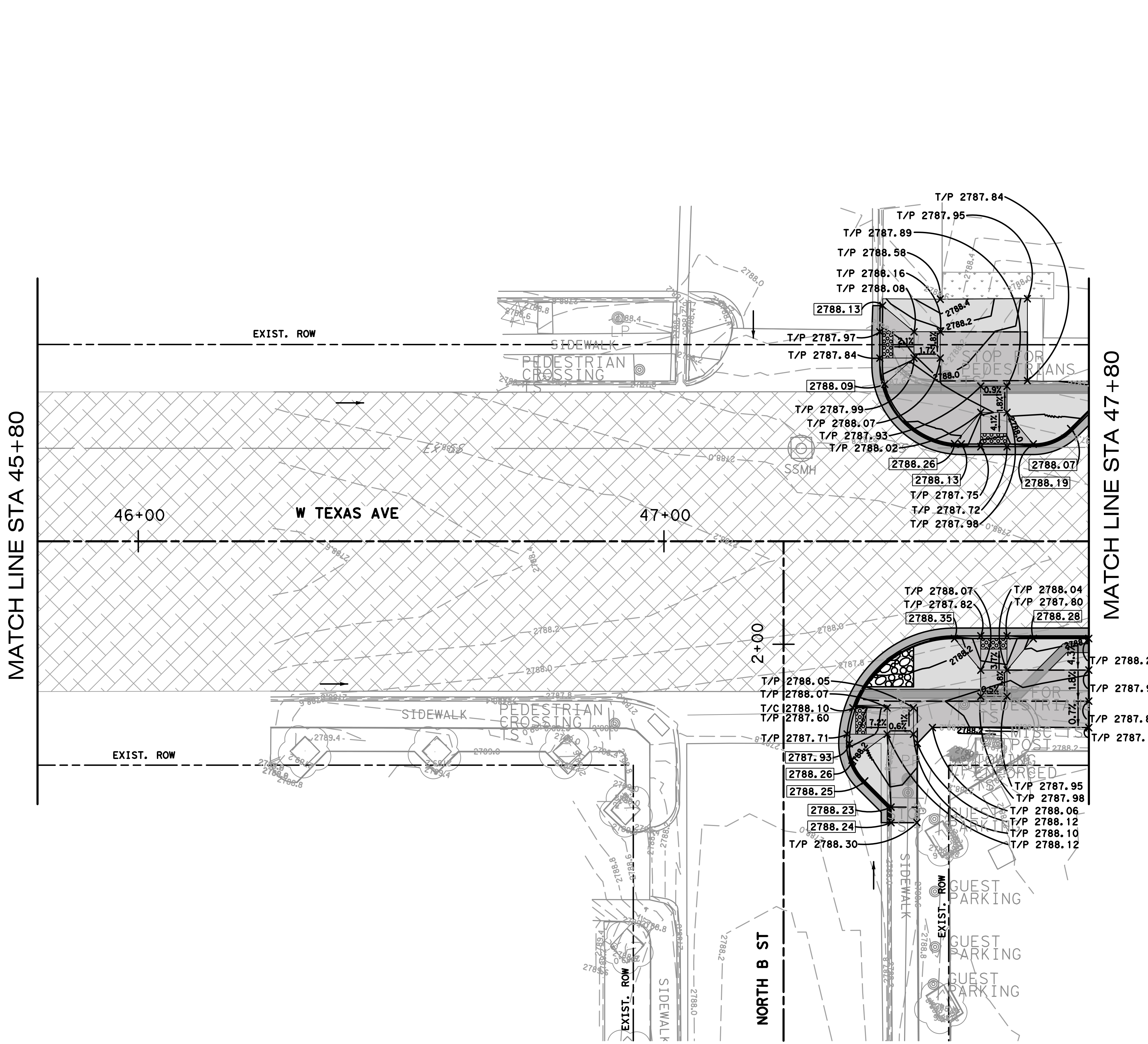

LEGEND

2809	PROPOSED CONTOUR
2809	EXISTING CONTOUR
— — —	BREAK LINE
T/P 2808.97 ×	PROPOSED TOP OF PAVEMENT
2808.97 ×	PROPOSED TOP OF CURB

STATE OF TEXAS — DAVID M. SMITH — 102401 — LICENSED PROFESSIONAL ENGINEER

NAME: David M. Smith

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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W TEXAS AVE AND W ILLINOIS AVE PEDESTRIAN SAFETY IMPROVEMENTS

GRADING PLAN
W TEXAS AVE

SCALE: 1"= 20'

DESIGN HALFF	FED. RD. DIV. NO. 06	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. N/A
GRAPHICS HALFF	STATE TEXAS	DISTRICT ODA	COUNTY MIDLAND	SHEET NO. 77
CHECK DMS				
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

DATE:3/28/2024 TIME:4:55:33 PM PROJECT # 45715 OFFICE:FTW

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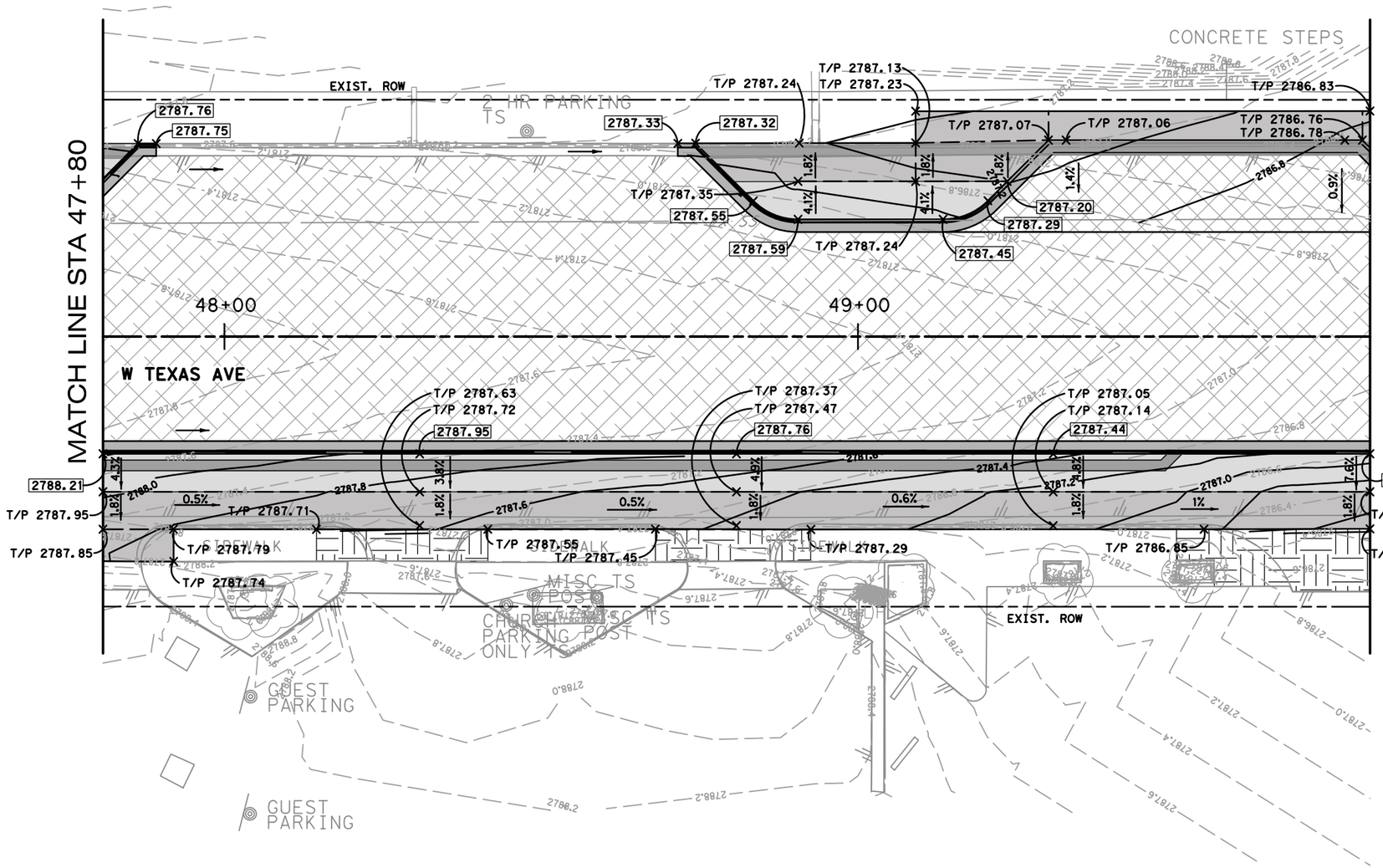

N

0 10 20 30

SCALE IN FEET

LEGEND

- 2809 — PROPOSED CONTOUR
- 2809 — EXISTING CONTOUR
- BREAK LINE
- T/P 2808.97 — PROPOSED TOP OF PAVEMENT
- 2808.97 — PROPOSED TOP OF CURB

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE PEDESTRIAN SAFETY IMPROVEMENTS

GRADING PLAN
W TEXAS AVE

SCALE: 1"= 20' Sheet 5 of 9

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HALFF	TEXAS	ODA	MIDLAND	78
CHECK	CONTROL	SECTION	JOB	
DMS				
CHECK	0906	32	064	
JTH				

DATE:3/28/2024 TIME:4:55:33 PM PROJECT # 45715 OFFICE:FTW

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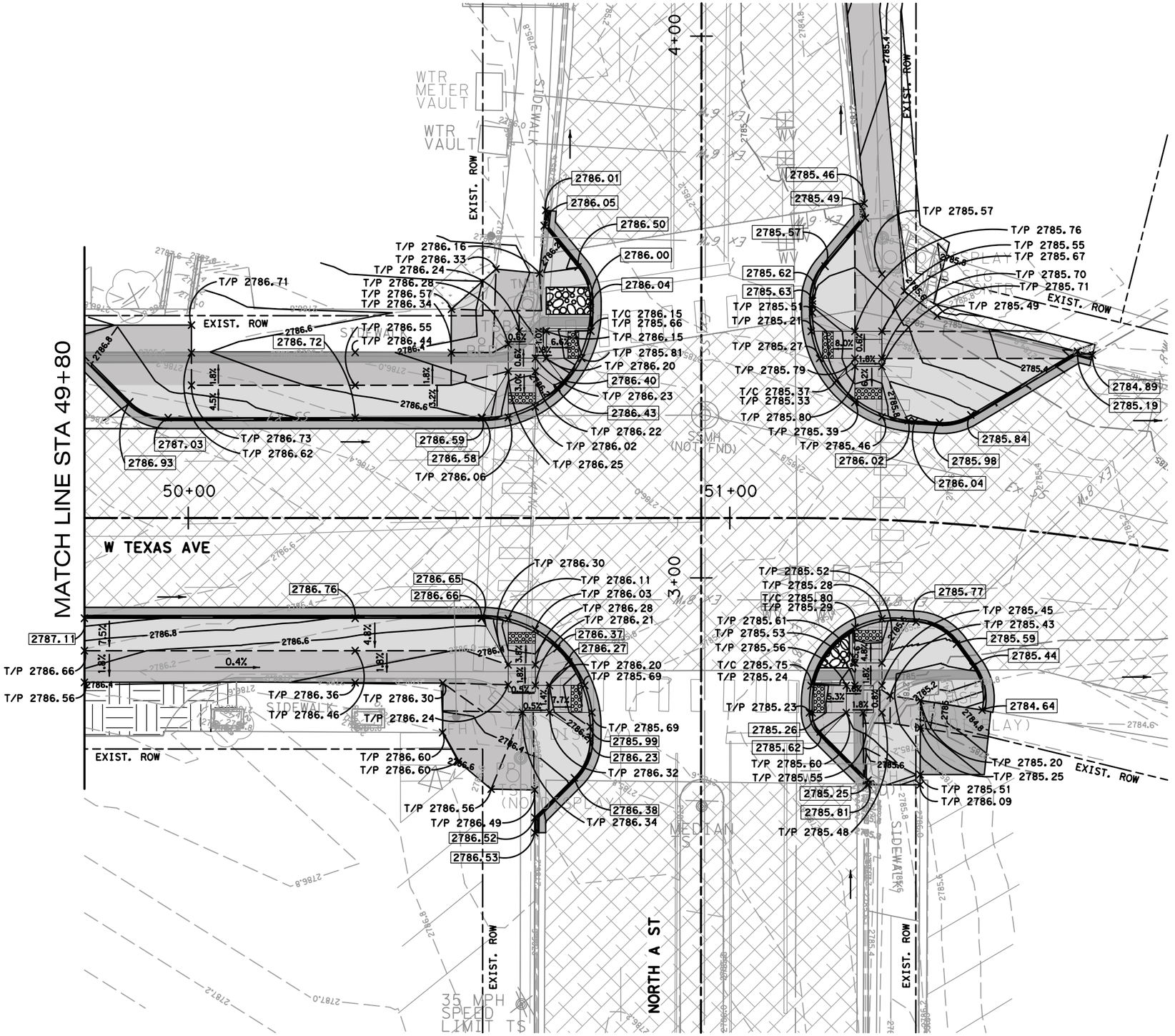

N

0 10 20 30

SCALE IN FEET

LEGEND

- 2809 — PROPOSED CONTOUR
- 2809 — EXISTING CONTOUR
- — — BREAK LINE
- T/P 2808.97 — PROPOSED TOP OF PAVEMENT
- 2808.97 — PROPOSED TOP OF CURB

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

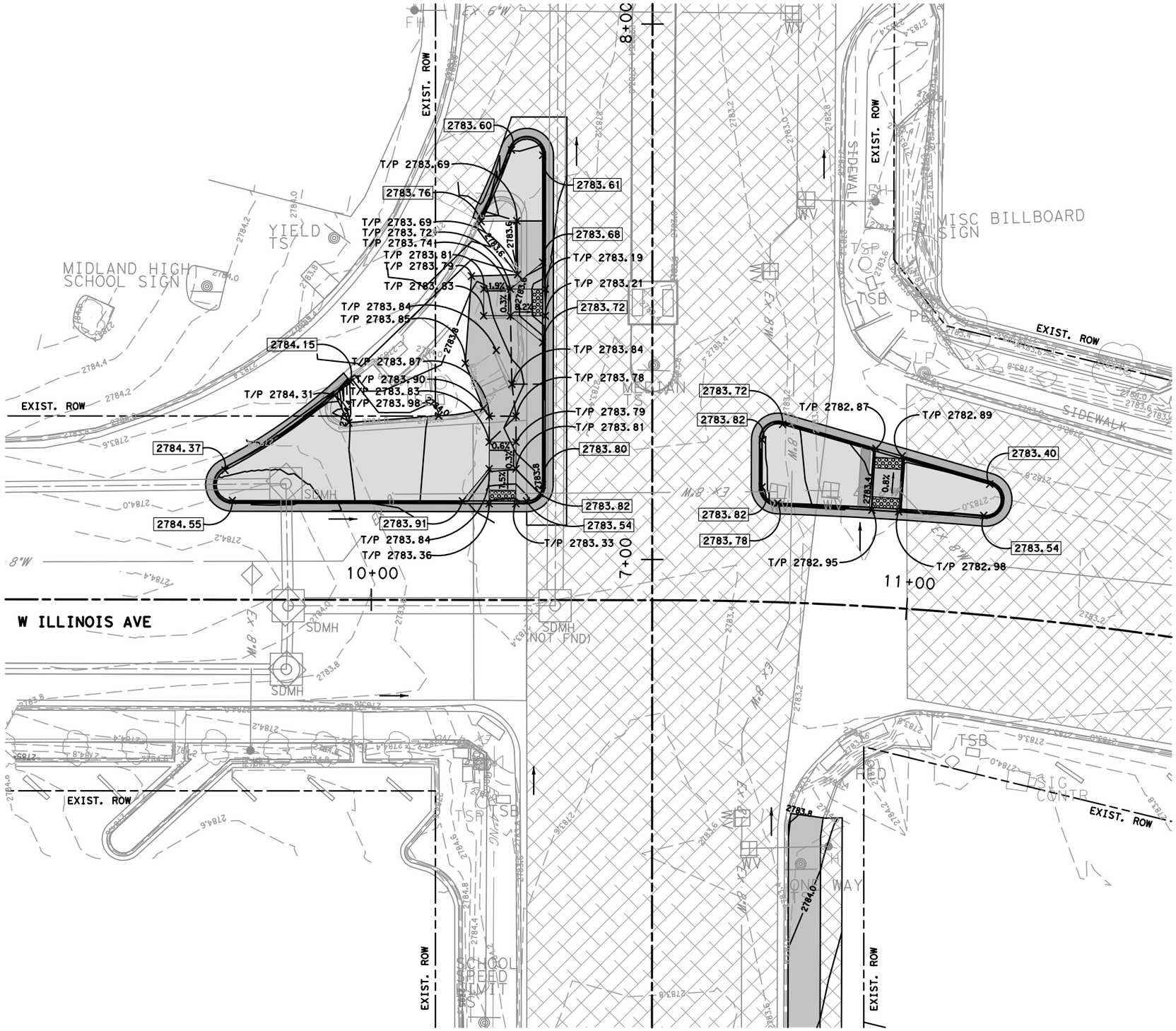
Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

GRADING PLAN
W TEXAS AVE

SCALE: 1"= 20' Sheet 6 of 9

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HALFF	TEXAS	ODA	MIDLAND	
CHECK	CONTROL	SECTION	JOB	79
DMS	0906	32	064	
CHECK				
JTH				



N

0 10 20 30

SCALE IN FEET

LEGEND

- 2809 — PROPOSED CONTOUR
- 2809 — EXISTING CONTOUR
- BREAK LINE
- T/P 2808.97 — PROPOSED TOP OF PAVEMENT
- 2808.97 — PROPOSED TOP OF CURB

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024

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3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE PEDESTRIAN SAFETY IMPROVEMENTS

GRADING PLAN
W ILLINOIS AVE

SCALE: 1"= 20'

Sheet 7 of 9

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	80
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	

DATE:3/28/2024 TIME:4:55:33 PM PROJECT # 45715 OFFICE:FTW

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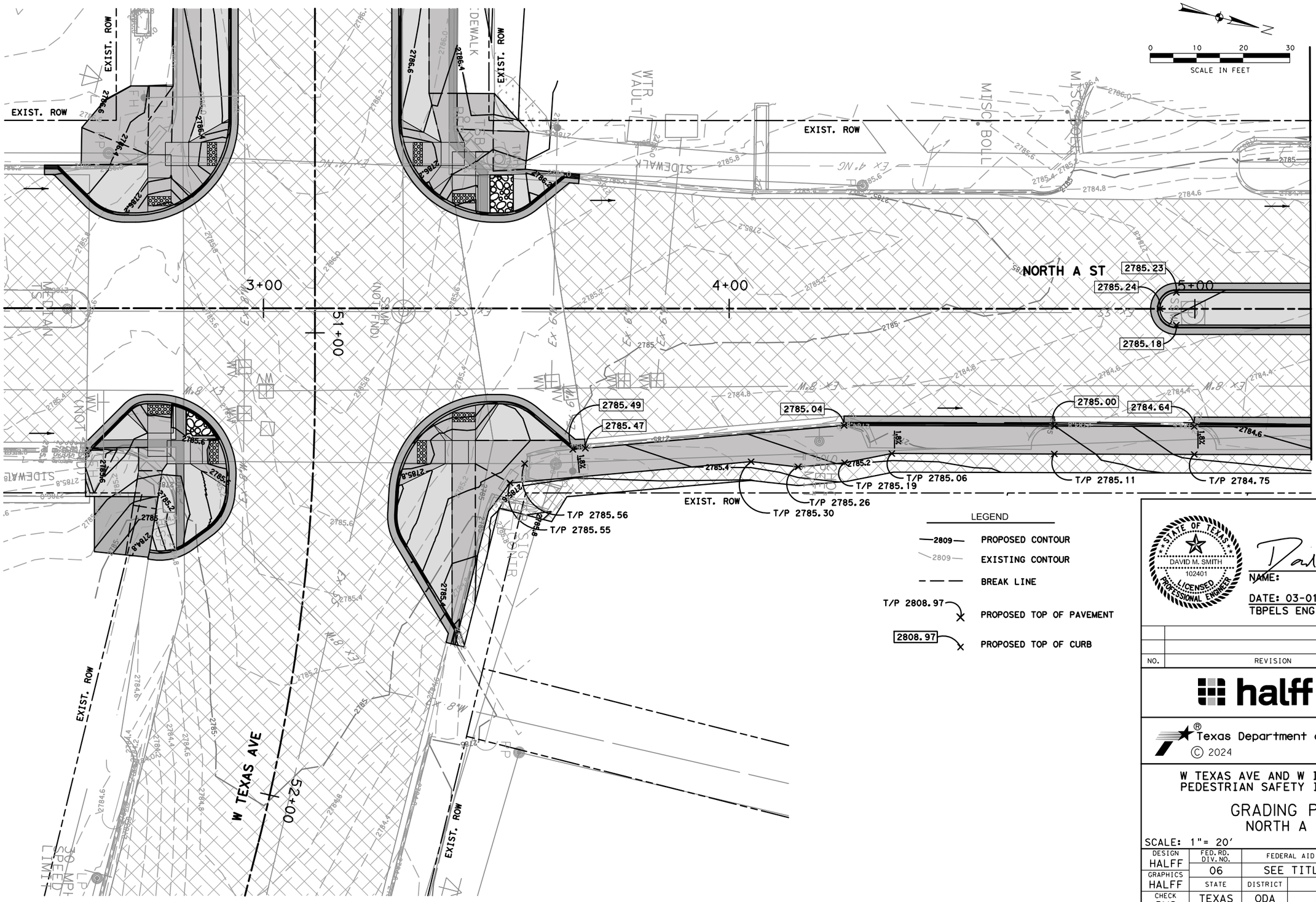

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STATE OF TEXAS
DAVID M. SMITH
102401
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NAME:

DATE: 03-01-2024
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NO.	REVISION	BY	DATE

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TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

GRADING PLAN
NORTH A ST

SCALE: 1"= 20'

Sheet 8 of 9

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	81
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	

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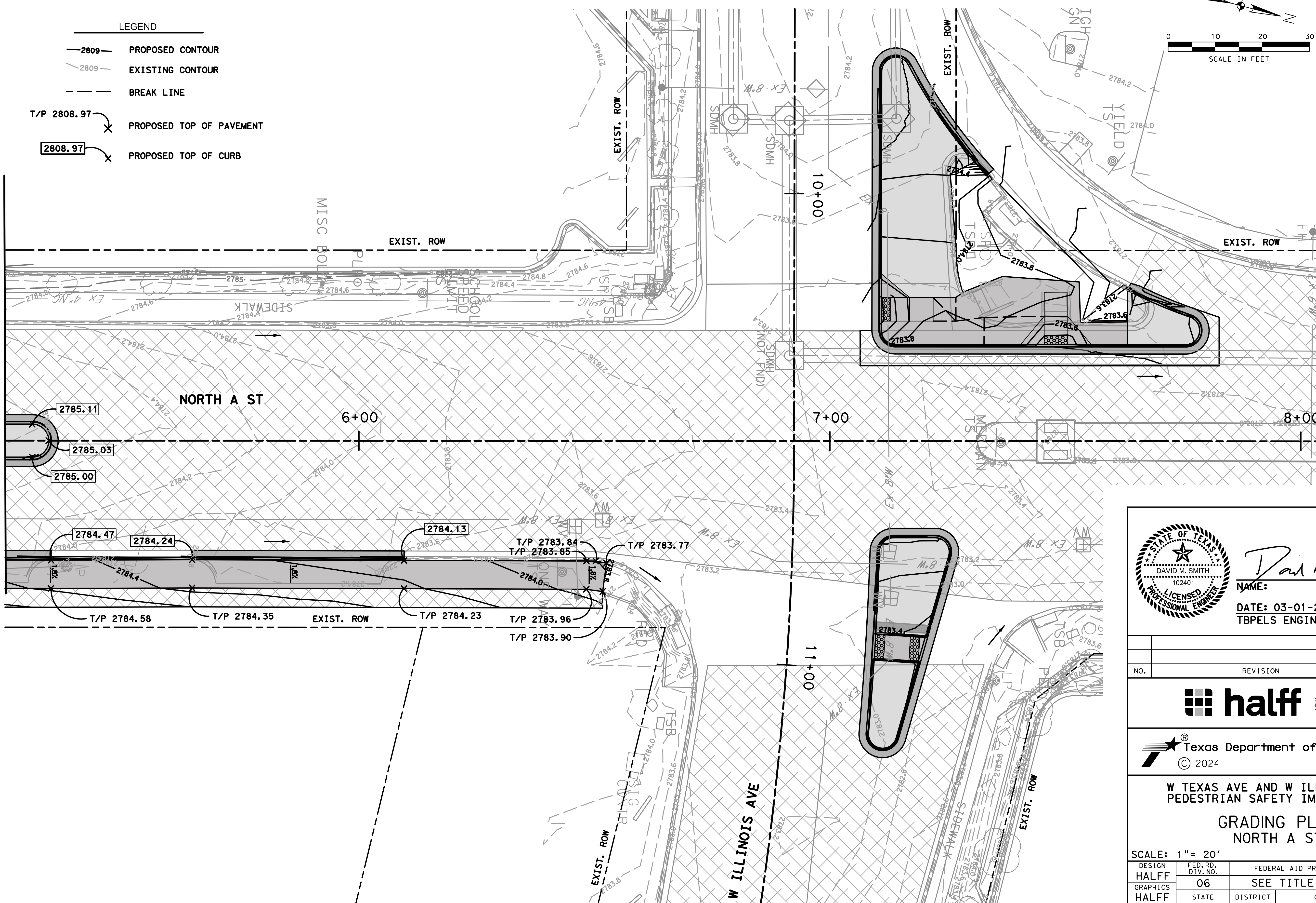
LEGEND

2809	PROPOSED CONTOUR
2809	EXISTING CONTOUR
— — —	BREAK LINE
T/P 2808.97	PROPOSED TOP OF PAVEMENT
2808.97	PROPOSED TOP OF CURB



DAVID M. SMITH 102401 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

NAME:

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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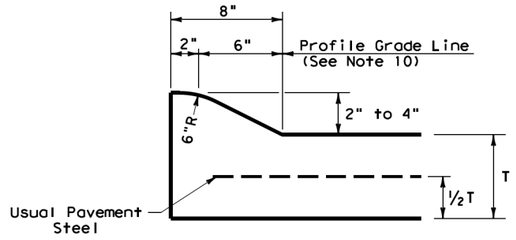
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

GRADING PLAN
NORTH A ST

SCALE: 1"= 20' Sheet 9 of 9

DESIGN HALFF	FED. RD. DIV. NO. 06	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	82
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

DATE: 3/28/2024
FILE: \45000s\45715\009\PW\CADD\Sheets\C-DTLS-CCG-45715-009.dgn



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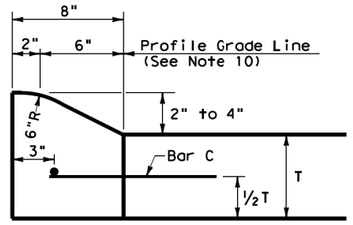
2" - 4" HEIGHT



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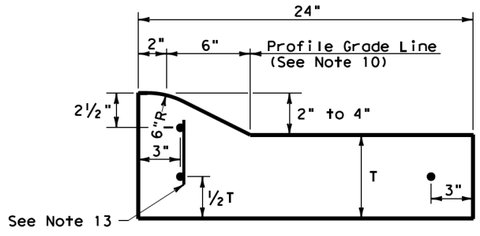
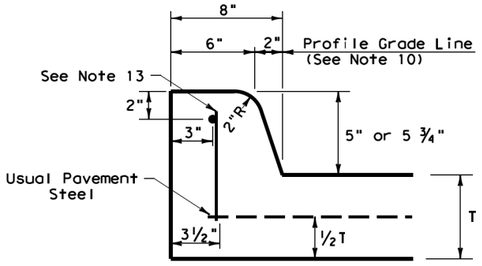
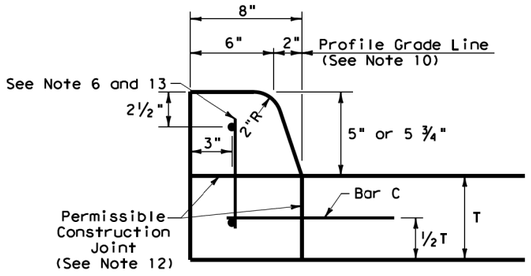
2" - 4" HEIGHT



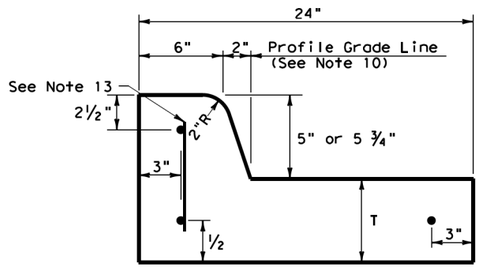
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



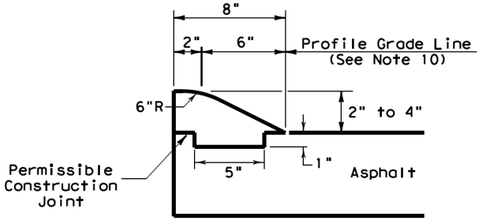
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



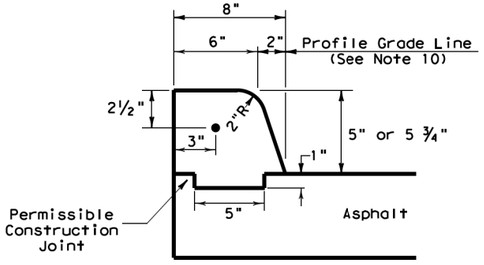
TYPE II CURB
5" - 5 ¾" HEIGHT



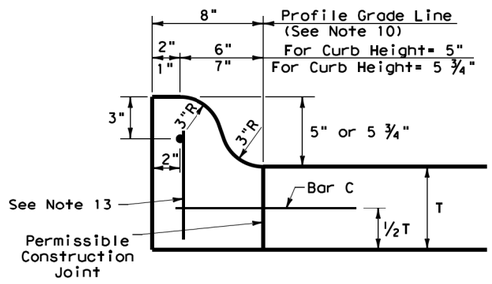
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



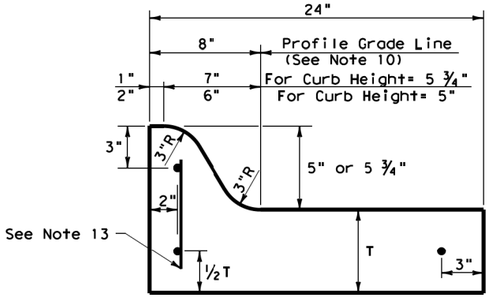
TYPE III CURB (KEYED)
2" - 4" HEIGHT



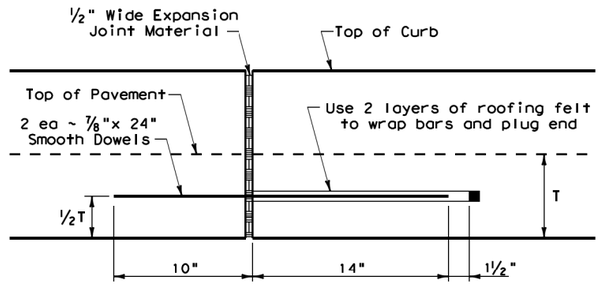
TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



TYPE IIa CURB
5" - 5 ¾" HEIGHT

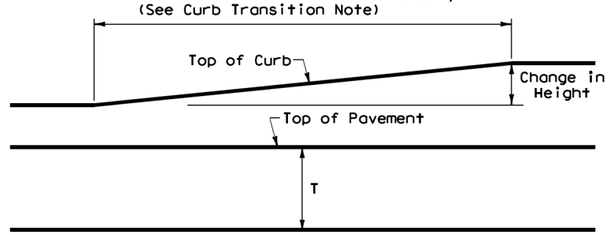


TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

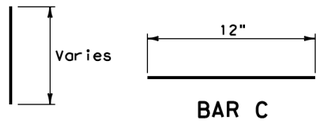
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



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

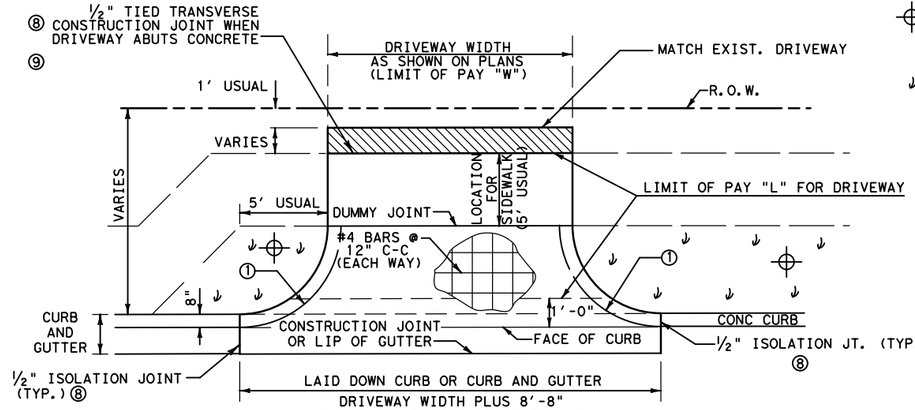
Texas Department of Transportation

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	0906	32	064	N/A
	DIST	COUNTY		SHEET NO.
	ODA	MIDLAND		83



SHOWING SIDEWALK ADJACENT TO CURB

SHOWING SIDEWALK REMOTE FROM CURB

PLAN VIEW

DO NOT PAVE AREA BETWEEN SIDEWALK AND DRIVEWAY CURB. SEED, SOD, OR LANDSCAPE AS DIRECTED.

↓ - SEEDING OR OTHER SURFACE NOT SUITABLE AS PEDESTRIAN WALKWAY.

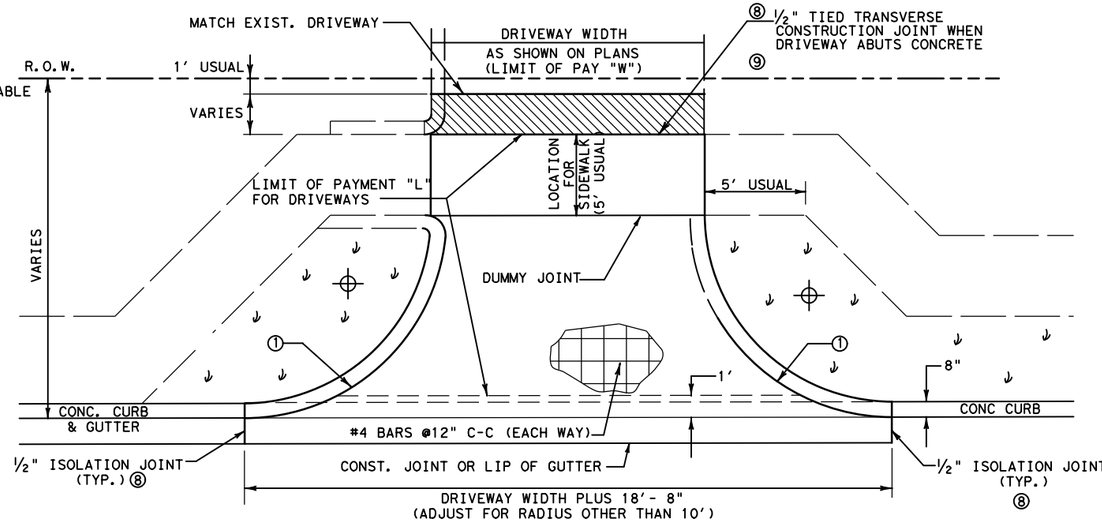
PAY AREA FOR DRIVEWAY SHALL BE THE PRODUCT OF "L" x "W"

S.Y. NON-PAY CONCRETE IN DRIVEWAY RADIUS	
2-90° RADII (FT)	NON-PAY CONC. (S.Y.)
5	0.42
10	3.04
15	10.73
20	15.36
25	29.81
30	37.19

① RADII AS SHOWN ON PLANS

SEE ROADWAY DESIGN MANUAL, APPENDIX C FOR RECOMMENDED RADII.

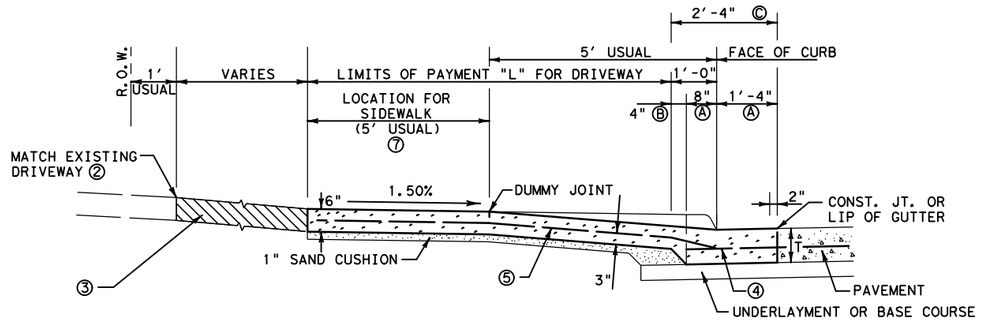
② FULL DEPTH SAW CUT IF CONCRETE

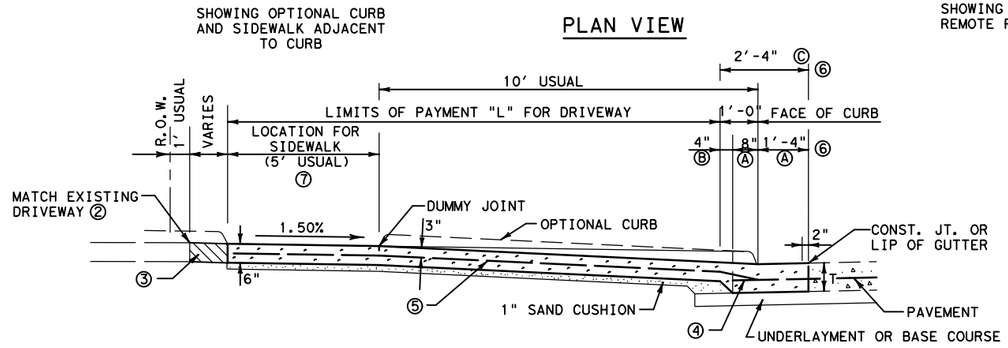


SHOWING OPTIONAL CURB AND SIDEWALK ADJACENT TO CURB

SHOWING SIDEWALK REMOTE FROM CURB

PLAN VIEW





SECTION VIEW

CONCRETE RESIDENTIAL DRIVEWAY

SECTION VIEW

CONCRETE COMMERCIAL DRIVEWAY

③ REPLACE EXISTING DRIVEWAY WITH EQUAL OR BETTER MATERIAL:

IF CONCRETE, PAY FOR AS CONCRETE DRIVEWAY.

IF HOT MIX OR OTHER MATERIAL, PAY FOR IN ACCORDANCE WITH APPROPRIATE BID ITEMS.

④ WHERE DRIVEWAY IS ADJACENT TO CONCRETE PAVEMENT, 36" - #4 TIE BAR, 12" EMBEDMENT INTO PAVEMENT (CAST-IN-PLACE OR DRILLED AND GROUTED). SPACING TO MATCH TRANSVERSE STEEL IN CONCRETE PAVEMENT.

MULTIPLE-PIECE TIE BARS OR 24" EXTENSION OF TRANSVERSE PAVING STEEL MAY BE USED IN LIEU OF TIE BARS.

LONGITUDINAL STEEL IN GUTTER PORTION TO MATCH CONCRETE PAVEMENT OR CONCRETE CURB AND GUTTER DETAILS.

⑤ #4 BARS @ 12" C-C EACH WAY (EXTEND TO FACE OF CURB) BEND AS REQ'D TO TIE TO PAVING STEEL OR TIE BARS.

⑥ IF ADJACENT TO CONCRETE PAVEMENT:
Ⓐ PAID FOR AS CONCRETE PAVEMENT,
Ⓑ PAID FOR AS CONCRETE CURB.

IF ADJACENT TO HOT MIX OR FLEXIBLE PAVEMENT:
Ⓒ PAID FOR AS CONCRETE CURB AND GUTTER.

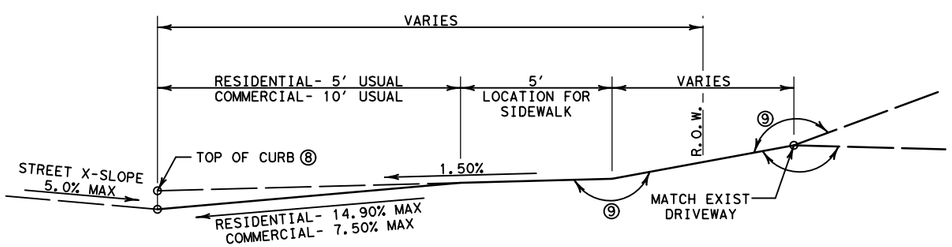
T = THICKNESS OF CONCRETE PAVEMENT OR CONCRETE CURB AND GUTTER

⑦ LOCATION FOR SIDEWALK TO BE PROVIDED ON ALL DRIVEWAYS

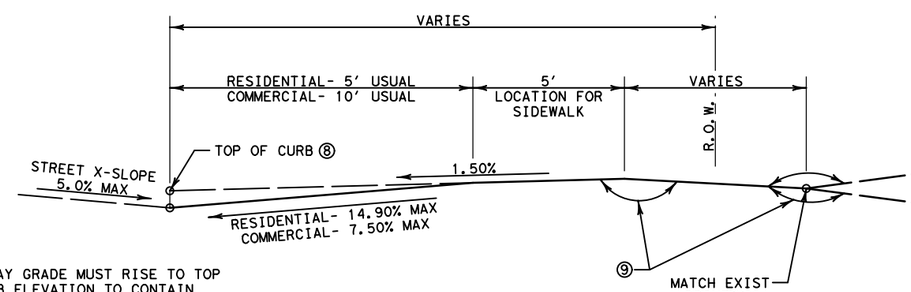
FOR SIDEWALK DETAILS, SEE STANDARD CSWD(FTW)

⑧ SEE STANDARD JS (FTW) FOR JOINT DETAILS.

⑨ IF, IN THE OPINION OF THE ENGINEER, ADJACENT CONCRETE IS NOT SOUND, 1/2" ISOLATION JOINT MAY BE USED IN LIEU OF TIED JOINT.



SAG CONDITION



CREST CONDITION

⑧ DRIVEWAY GRADE MUST RISE TO TOP OF CURB ELEVATION TO CONTAIN DRAINAGE IN STREET GUTTER.

⑨ 8% MAX CHANGE IN GRADE

ALLOWABLE DRIVEWAY GRADES

Texas Department of Transportation

Odessa District Standard

CONCRETE DRIVEWAY DETAILS CDD (ODA)

ORIGINAL DRAWING: 02/2024	cdd-oda.dgn	PROJECT NO.			SHEET NO.
DATE	REVISIONS	SEE TITLE SHEET			84
02/2024	NEW STANDARD	STATE	STATE DIST. NO.	COUNTY	
		TEXAS	ODA	MIDLAND	
		CONT.	SECT.	JOB	HIGHWAY NO.
		0906	32	064	N/A

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DATE: 3/28/2024
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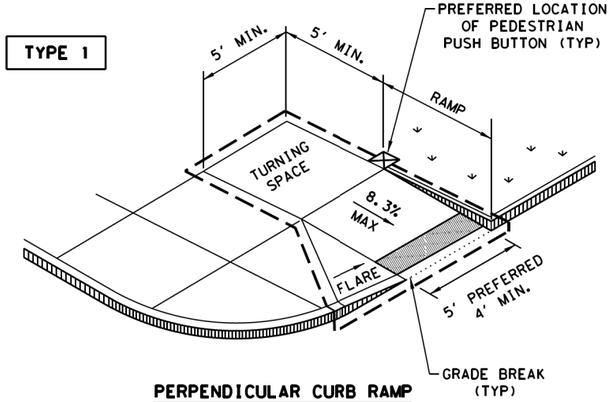
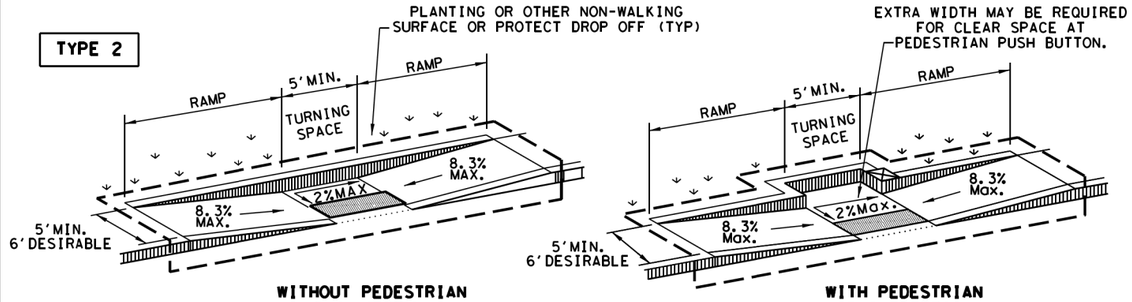
TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

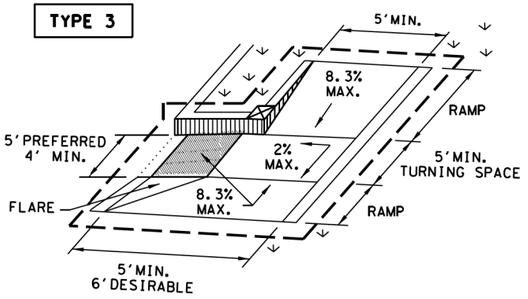


WITHOUT PEDESTRIAN PUSH BUTTON

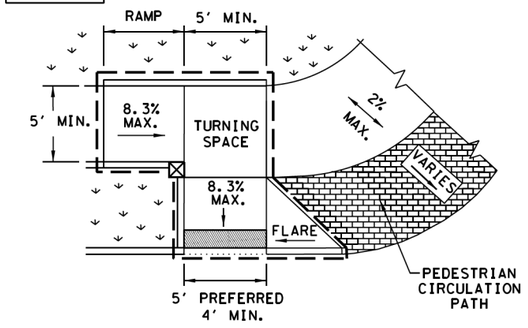
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

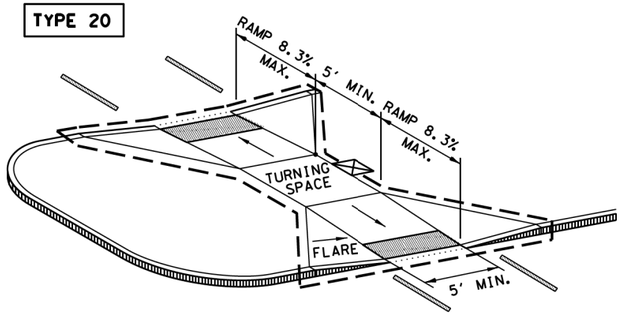


TYPE 6



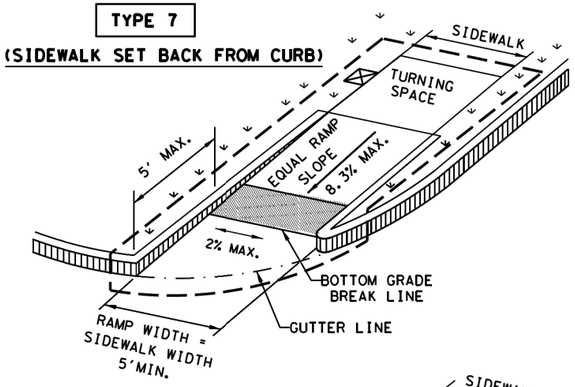
COMBINATION CURB RAMPS

TYPE 20

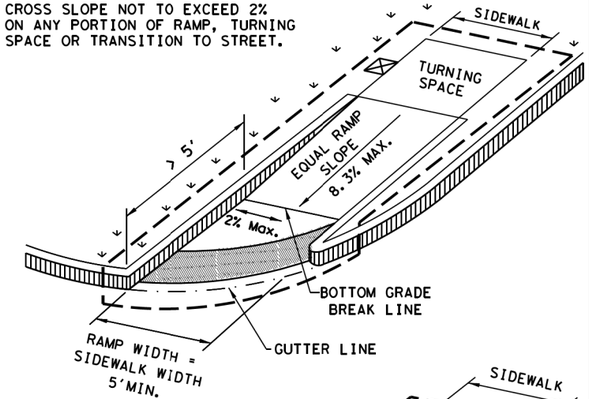


CURB RAMPS AT MEDIAN ISLANDS

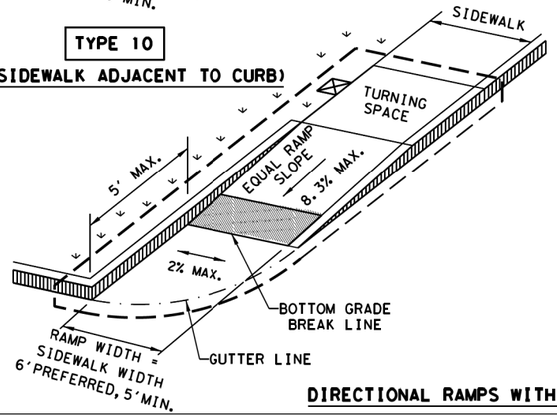
TYPE 7
(SIDEWALK SET BACK FROM CURB)



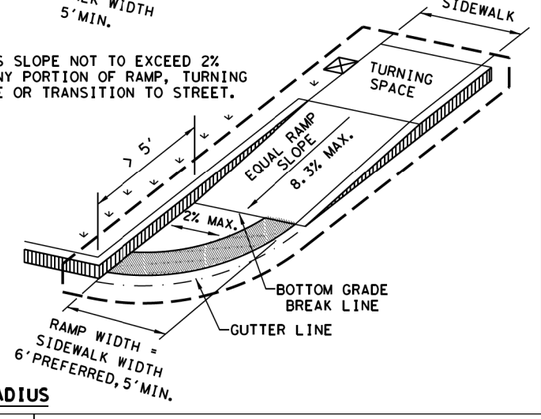
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



TYPE 10
(SIDEWALK ADJACENT TO CURB)

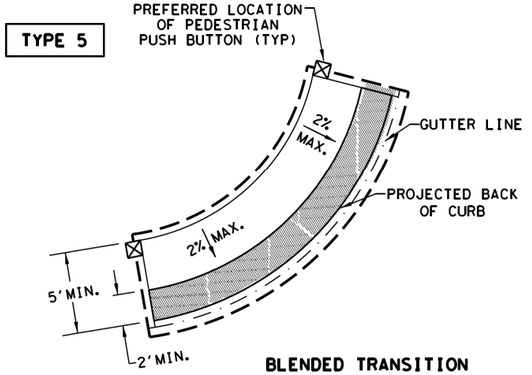


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

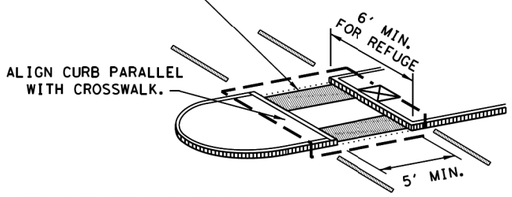
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

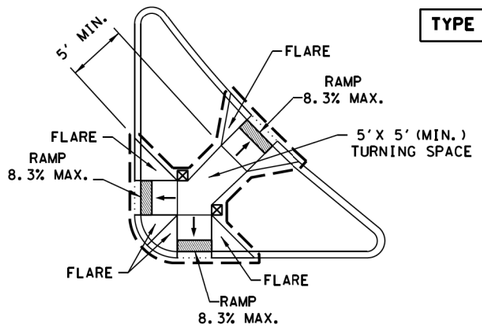
TYPE 21

INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.



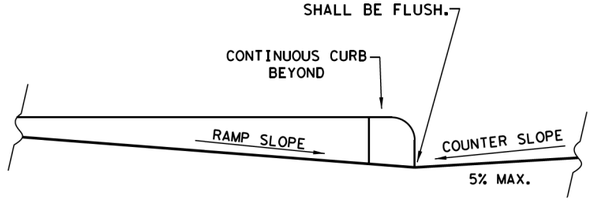
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

BOTTOM GRADE BREAK OF CURB RAMP WILL NORMALLY BE AT GUTTER LINE. SURFACE SLOPES AT GRADE BREAKS SHALL BE FLUSH.



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0906	32	064		N/A
REVISED 08,2009 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	ODA	MIDLAND			85

DATE:3/28/2024 TIME:4:55:44 PM PROJECT # 45715 OFFICE:FTW
FILE:d:\45000s\45715\009\PW\CADD\Sheets\C-DTLS-PED18-02-45715-009.dgn

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicalble standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

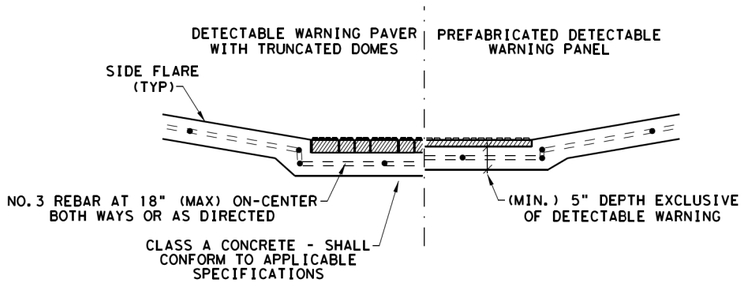
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

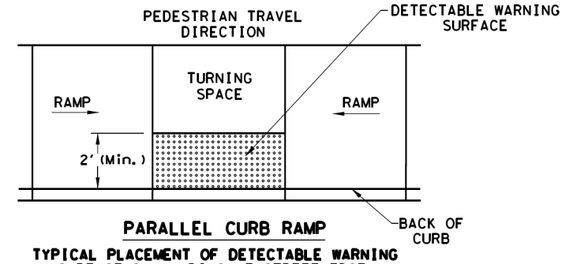
SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.

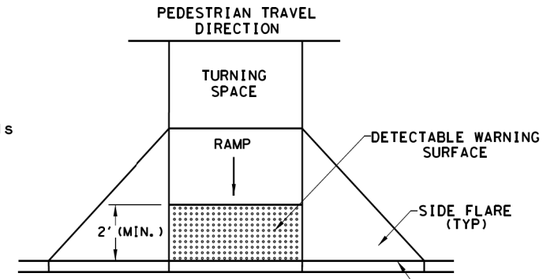


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

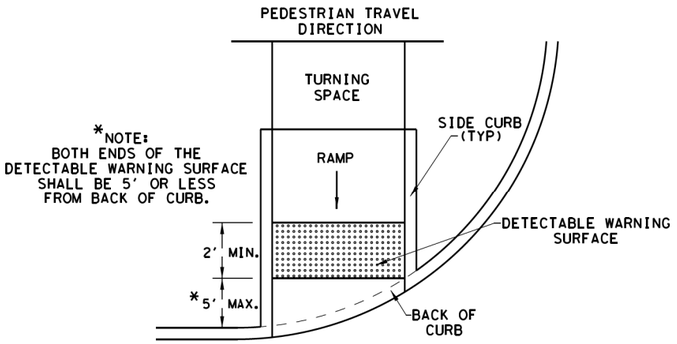
DETECTABLE WARNING SURFACE DETAILS



PARALLEL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

SHEET 2 OF 4

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0906	32	064		N/A
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY			SHEET NO.
	ODA	MIDLAND			86

DATE:3/28/2024 TIME:4:55:50 PM PROJECT # 45715 OFFICE:FTW
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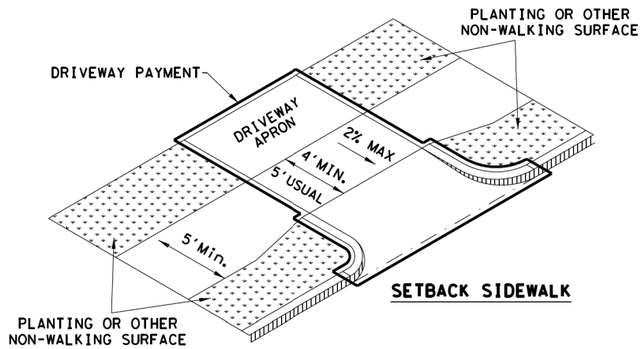
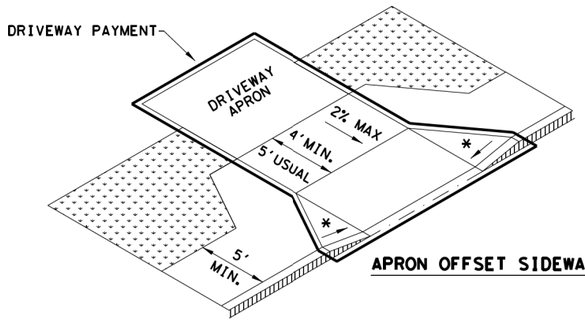
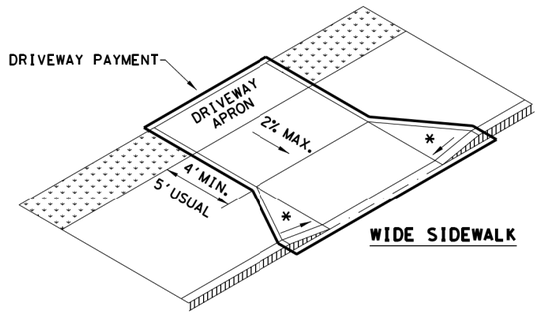
SIDEWALK TREATMENT AT DRIVEWAYS



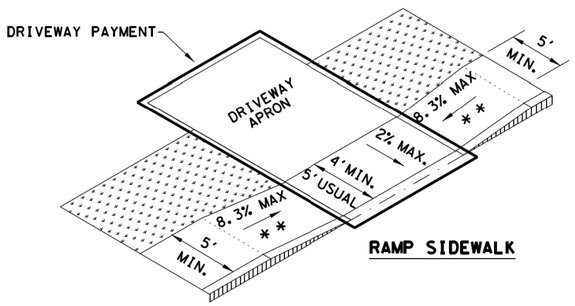
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

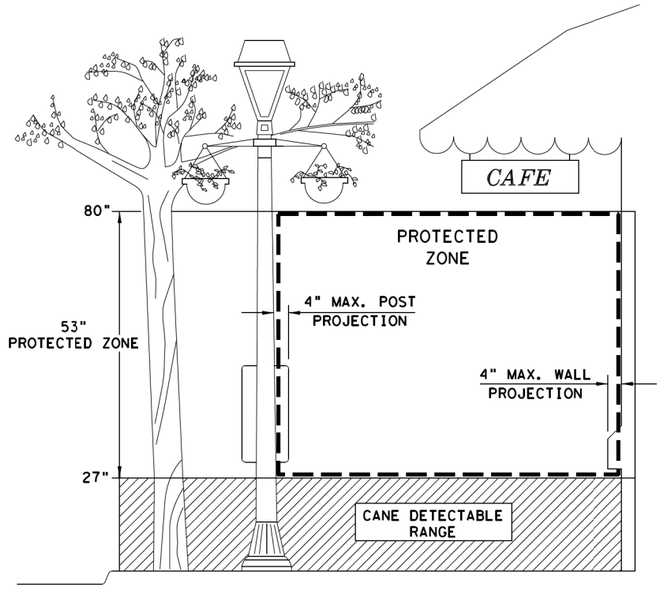


RAMP SIDEWALK

NOTES:

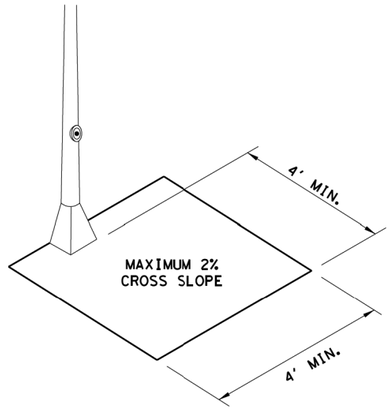
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

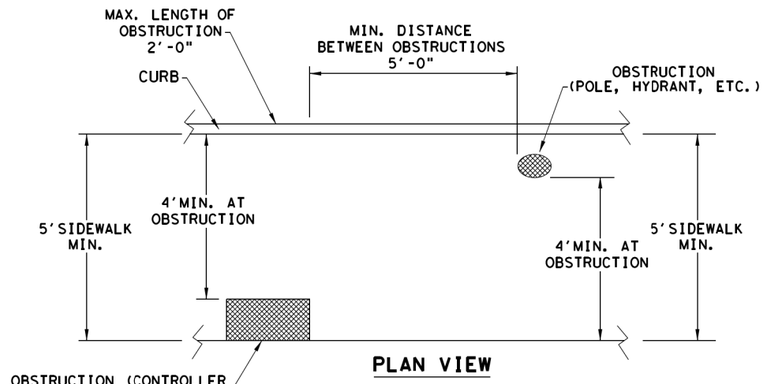


PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



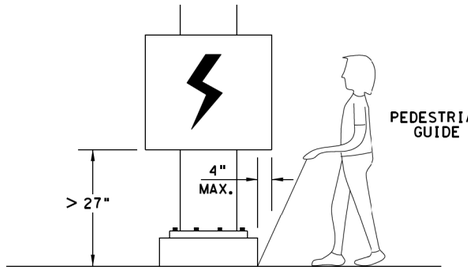
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



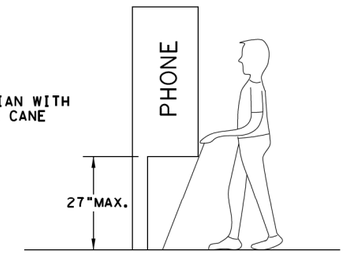
PLAN VIEW

PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.



PROTRUDING OBJECTS OF A HEIGHT ≤ 27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

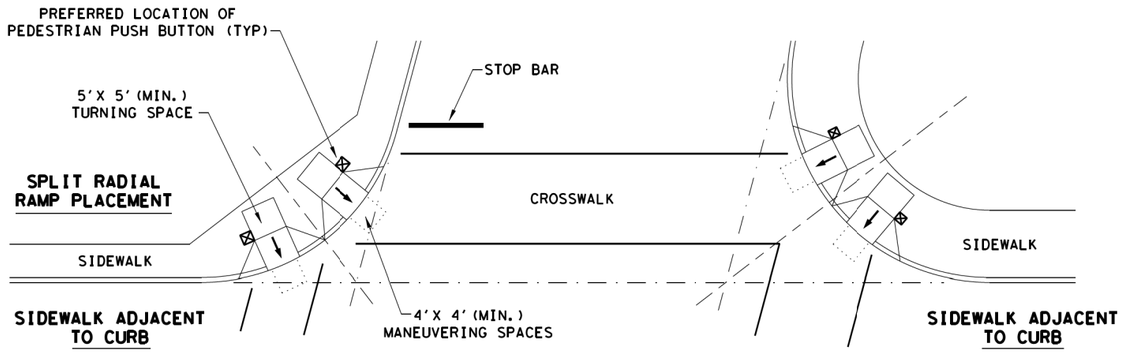
PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG	
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0906	32	064		N/A	
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY			SHEET NO.	
	ODA	MIDLAND			87	

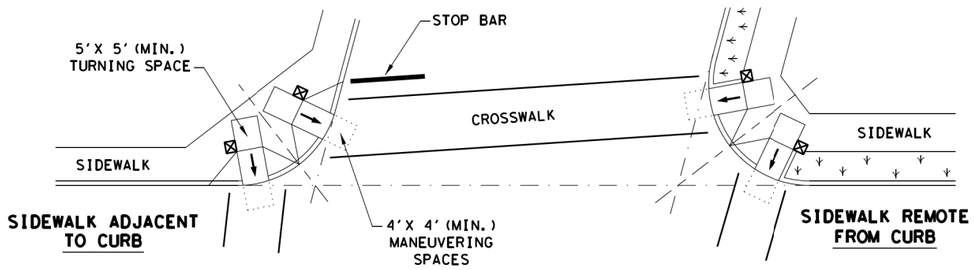
DATE: 3/28/2024
FILE: \45000s\45715\009\PW\CADD\Sheets\C-DTLS-PED18-04-45715-009.dgn

TYPICAL CROSSING LAYOUTS

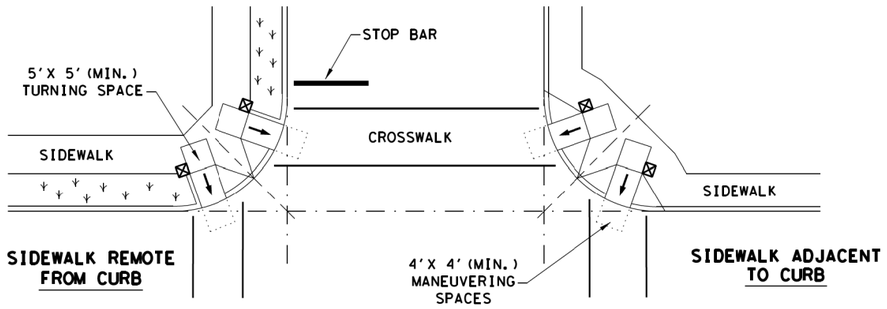
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



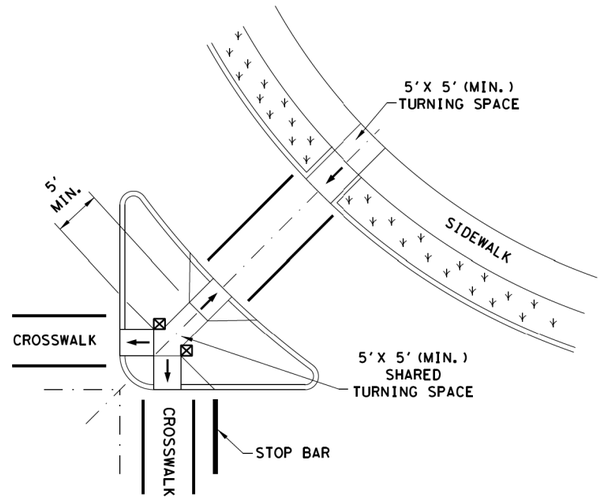
SKEWED INTERSECTION WITH "LARGE" RADIUS



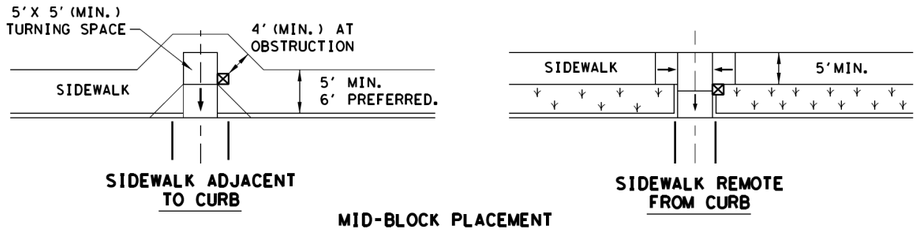
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ☒

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

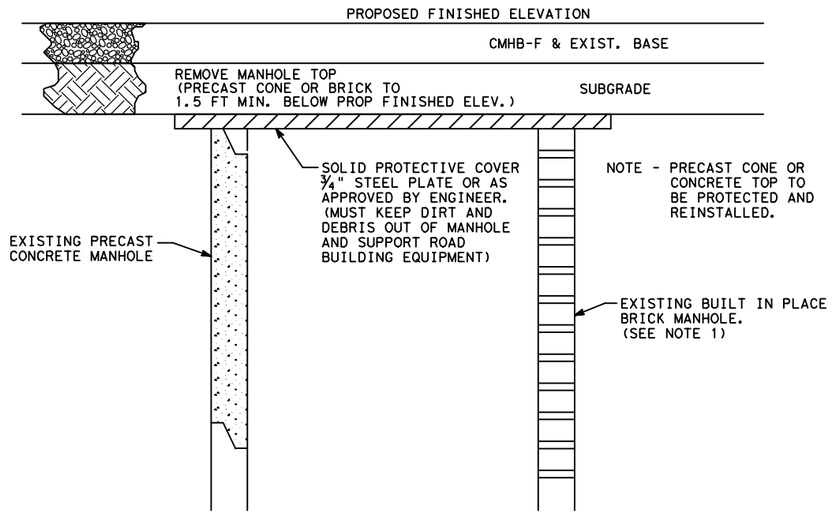
SHEET 4 OF 4

Texas Department of Transportation | Design Division Standard

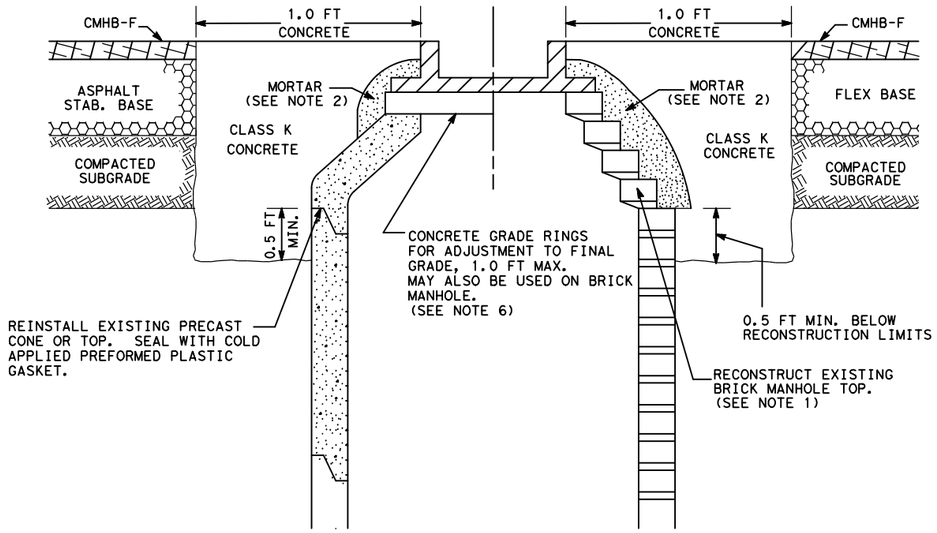
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0906	32	064	N/A
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
	ODA	MIDLAND		88



DETAIL 1
MANHOLE TOP REMOVED



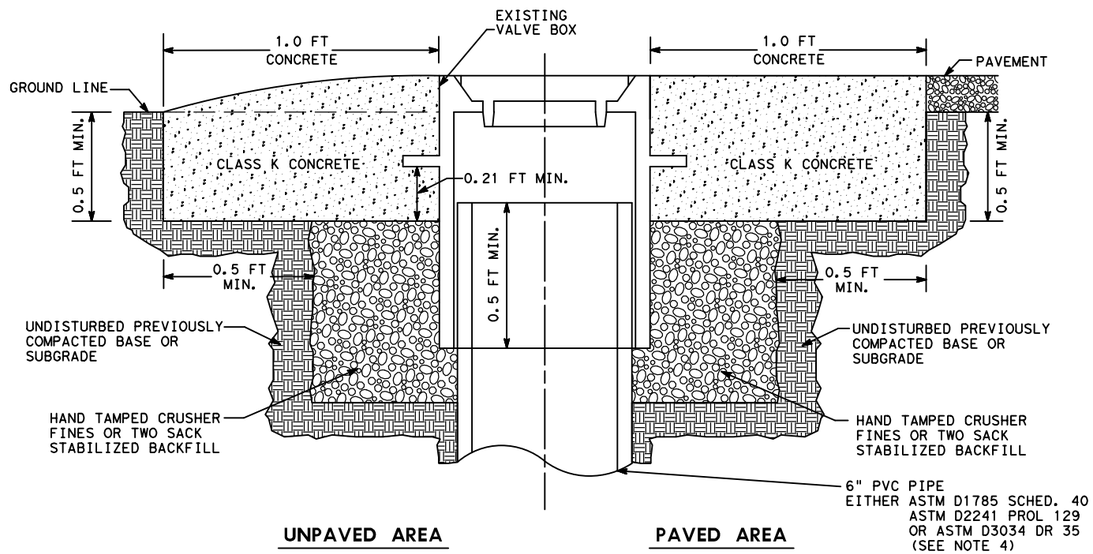
DETAIL 2
MANHOLE TOP REINSTALLED

NOTES:

1. MANHOLE BRICK TO BE NO. 1 COMMON BRICK - ASTM C-31 GRADE AM.
2. MORTAR ASTM C-150 TYPE 1 AND 3 PARTS WASHED SAND. ONE-THIRD OF 1 PART OF HYDRATED LIME MAY BE ADDED TO MORTAR.
3. ALL CONCRETE IS TO BE PROPERLY CONSOLIDATED.
4. WORK MAY REQUIRE ADDING PVC PIPE WHEN ADJUSTING WATER VALVE BOX TO PAVEMENT GRADE. IF ADDITIONAL PIPE IS REQUIRED, USE BELL SECTION WITH GASKET AND SET BELL DOWN OVER EXISTING PIPE RISER. A GASKETTED SELF-CENTERING COLLAR MAY BE USED IN LIEU OF THE BELL SECTION. ANY ADDITIONAL PVC PIPE REQUIRED SHALL BE SUBSIDIARY TO ADJUSTING WATER VALVES ITEM.
5. GRADE RINGS SHALL MEET STANDARD ASTM C478 AND SHALL BE OF 2", 4", 6" THICKNESS AS REQUIRED TO MATCH SITE CONDITIONS.

MANHOLE ADJUSTMENTS

LOCATIONS FOUND ON PLAN-PLAN SHEETS



DETAIL FOR ADJUSTING VALVE BOX

LOCATIONS FOUND ON PLAN-PLAN SHEETS

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED
PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024
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LUBBOCK, TX 79423
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Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

MANHOLE & VALVE BOX DETAILS

SCALE: NONE Sheet 1 of 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	89
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

DATE:3/28/2024 TIME:4:55:58 PM PROJECT # 45715 OFFICE:FTW

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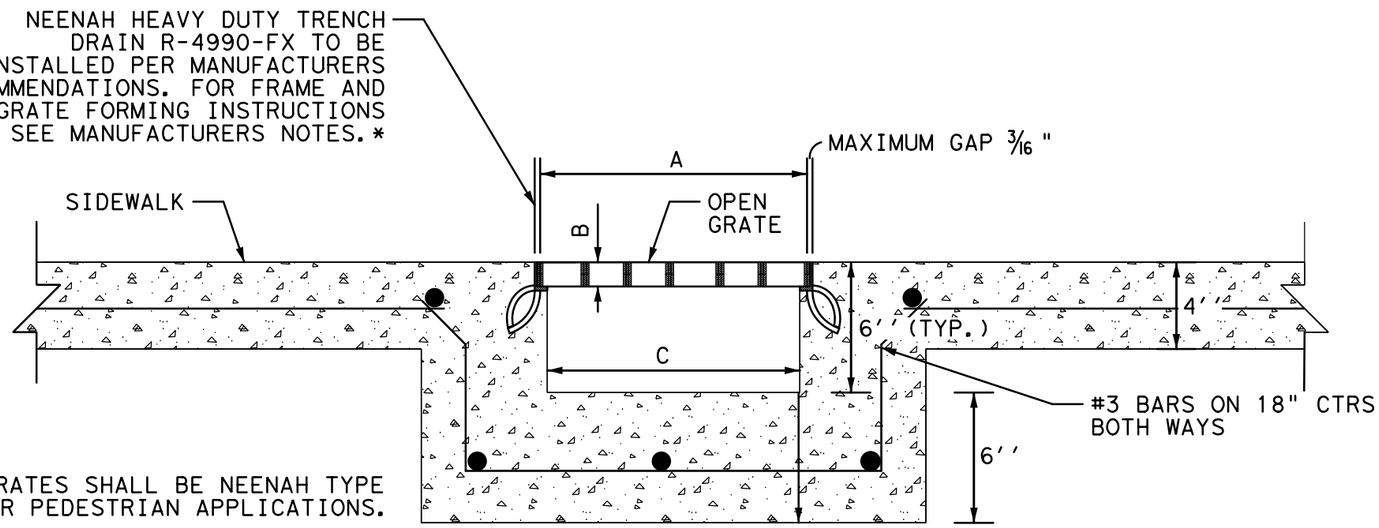
NEENAH HEAVY DUTY TRENCH DRAIN R-4990-FX TO BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS. FOR FRAME AND GRATE FORMING INSTRUCTIONS SEE MANUFACTURERS NOTES.*



*GRATES SHALL BE NEENAH TYPE P FOR PEDESTRIAN APPLICATIONS.

18" TRENCH DRAIN:
A = 20 INCHES
B = 1 1/2 INCHES
C = 18 INCHES

TRENCH DRAIN DETAIL
N.T.S.

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:
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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

TRENCH DRAIN DETAILS

SCALE: NONE Sheet 1 of 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
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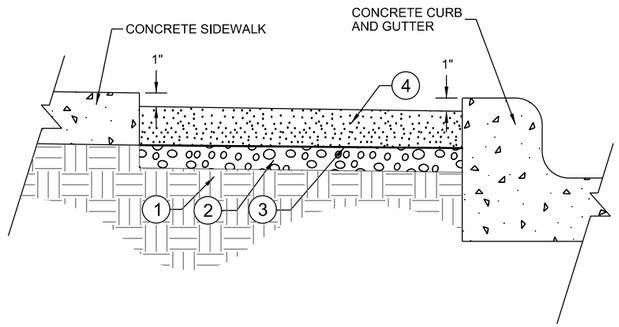

KEY:

1. COMPACTED SUBGRADE TO 95% MAX. DENSITY.
2. 2" THICK TY A GRADE 1-2 FLEX BASE
3. FILTER FABRIC.
4. 4" DEPTH #2 SIEVE DECOMPOSED GRANITE, WET AND COMPACTED TO 3" DEPTH. SLOPE TO DRAIN.

NOTES:

1) DECOMPOSED SURFACES SHALL BE WETTED AND COMPACTED TO FORM A STABLE, FIRM AND SLIP RESISTANT SURFACE WHEN DRY.

2) DECOMPOSED GRANITE SHALL BE #2 SIEVE: COLOR TAN. CONTRACTOR TO SUBMIT SAMPLE FOR APPROVAL.

3) PAYMENT FOR DECOMPOSED GRANITE SHALL INCLUDE FILTER FABRIC AND FLEX BASE

DECOMPOSED GRANITE DETAIL
N.T.S.

STATE OF TEXAS
DAVID M. SMITH
102401
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PROFESSIONAL ENGINEER

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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

DECOMPOSED GRANITE DETAIL

SCALE: NONE Sheet 1 of 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
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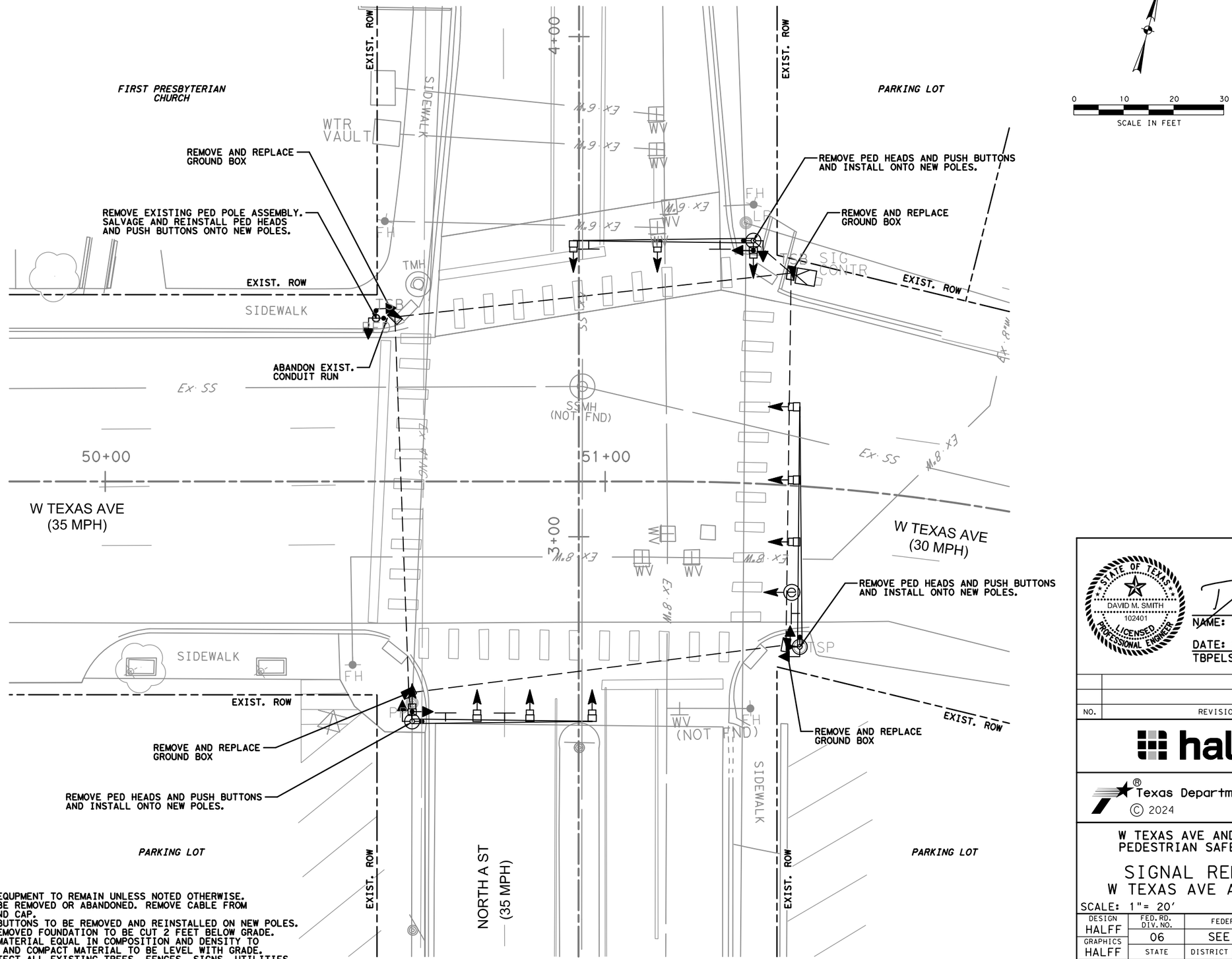

NOTES:
1) ALL EXISTING SIGNAL EQUPMENT TO REMAIN UNLESS NOTED OTHERWISE.
2) EXISTING CONDUIT TO BE REMOVED OR ABANDONED. REMOVE CABLE FROM ABANDONED CONDUITS AND CAP.
3) ALL PEDESTRIAN PUSH BUTTONS TO BE REMOVED AND REINSTALLED ON NEW POLES.
4) WHEN POLE IS TO BE REMOVED FOUNDATION TO BE CUT 2 FEET BELOW GRADE. BACKFILL HOLES WITH MATERIAL EQUAL IN COMPOSITION AND DENSITY TO SURROUNDING THE AREA AND COMPACT MATERIAL TO BE LEVEL WITH GRADE.
5) CONTRACTOR SHALL PROTECT ALL EXISTING TREES, FENCES, SIGNS, UTILITIES, RETAINING WALLS, AND STRUCTURES UNLESS OTHERWISE NOTED.

DAVID M. SMITH
102401

Dad M. Smt
NAME:
DATE: 03-01-2024
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Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

SIGNAL REMOVAL PLAN
W TEXAS AVE AND NORTH A ST

SCALE: 1"= 20' Sheet 1 of 4

DESIGN HALFF	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS HALFF	06	SEE TITLE SHEET		N/A
	STATE	DISTRICT	COUNTY	SHEET NO.
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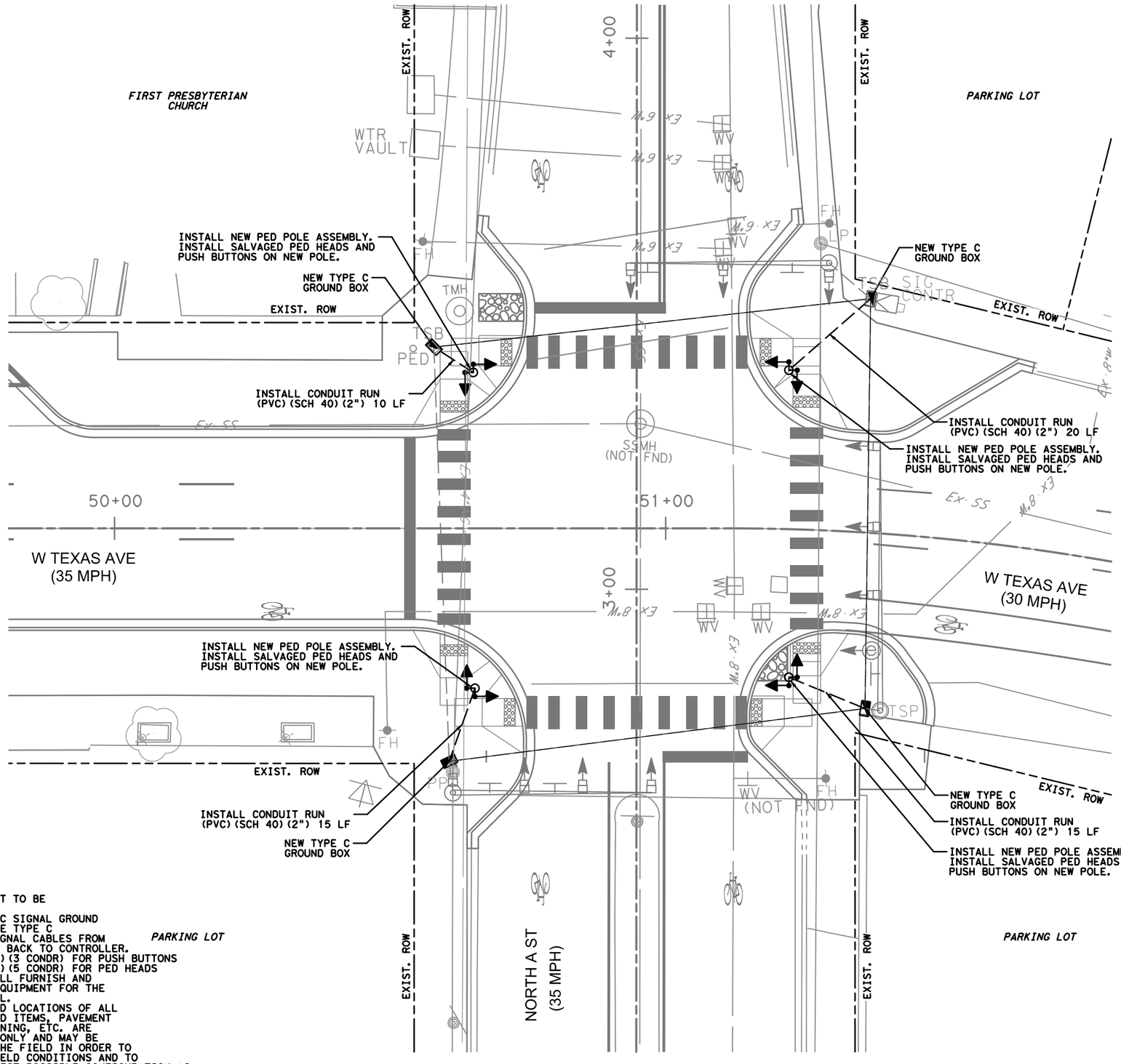

NOTES:
1) ALL NEW CONDUIT TO BE SCHEDULE 40.
2) ALL NEW TRAFFIC SIGNAL GROUND BOXES SHALL BE TYPE C
3) INSTALL NEW SIGNAL CABLES FROM NEW PED POLES BACK TO CONTROLLER.
   (TY A)(14 AWG)(3 CONDR) FOR PUSH BUTTONS
   (TY A)(14 AWG)(5 CONDR) FOR PED HEADS
4) CONTRACTOR SHALL FURNISH AND INSTALL ALL EQUIPMENT FOR THE TRAFFIC SIGNAL.
5) ALL HEIGHTS AND LOCATIONS OF ALL SIGNAL RELATED ITEMS, PAVEMENT MARKINGS, SIGNING, ETC. ARE DIAGRAMMATIC ONLY AND MAY BE ADJUSTED IN THE FIELD IN ORDER TO ACCOMODATE FIELD CONDITIONS AND TO ACHIEVE THE BEST POSSIBLE CONFIGURATION AS DIRECTED BY THE TRAFFIC ENGINEER.

DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

NAME:

DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PROPOSED SIGNAL PLAN
W TEXAS AVE AND NORTH A ST

SCALE: 1"= 20'

Sheet 2 of 4

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	93
CHECK JTH	CONTROL	SECTION	JOB	
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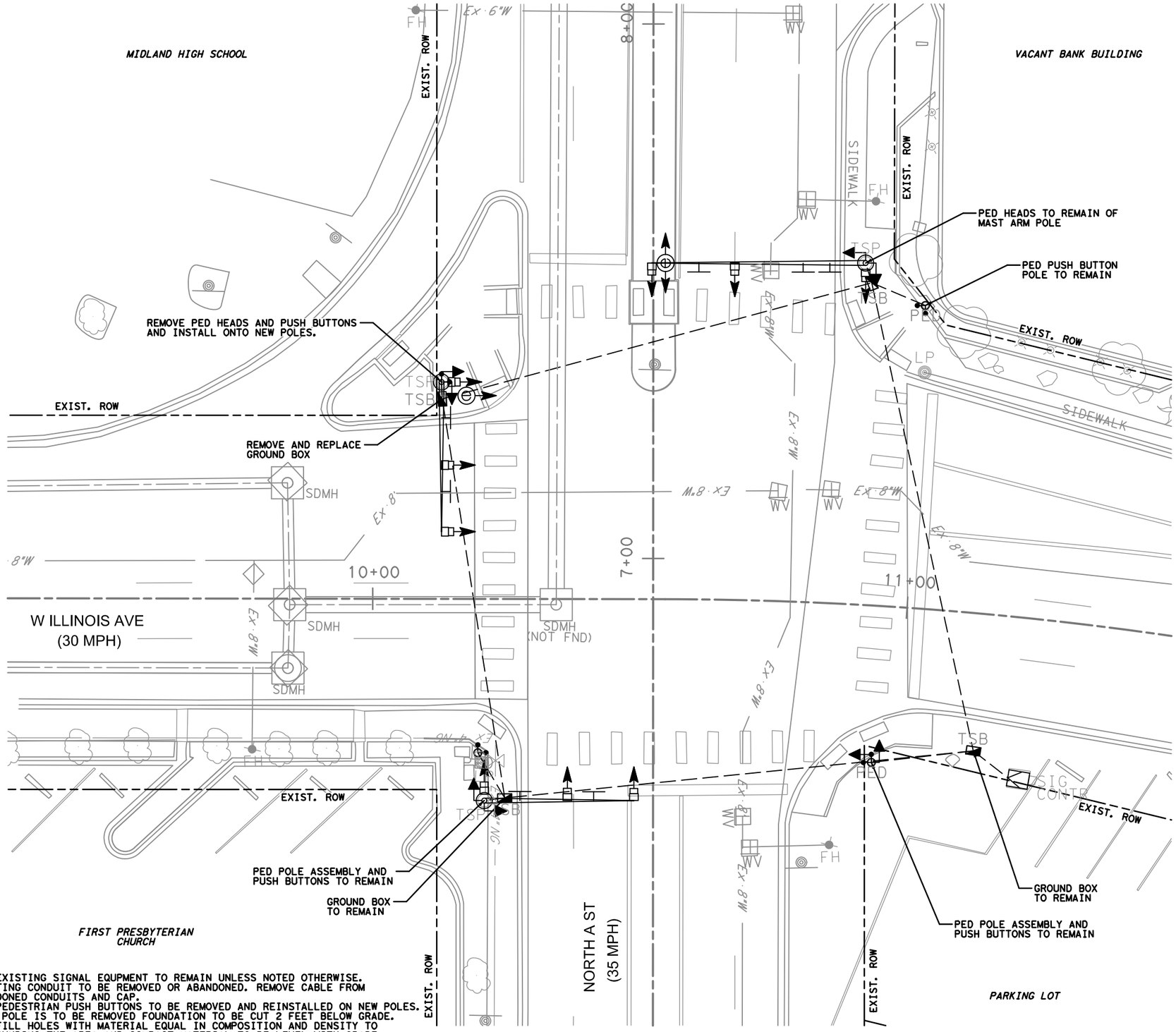

NOTES:
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STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

SIGNAL REMOVAL PLAN
W ILLINOIS AVE AND NORTH A ST

SCALE: 1"= 20'

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
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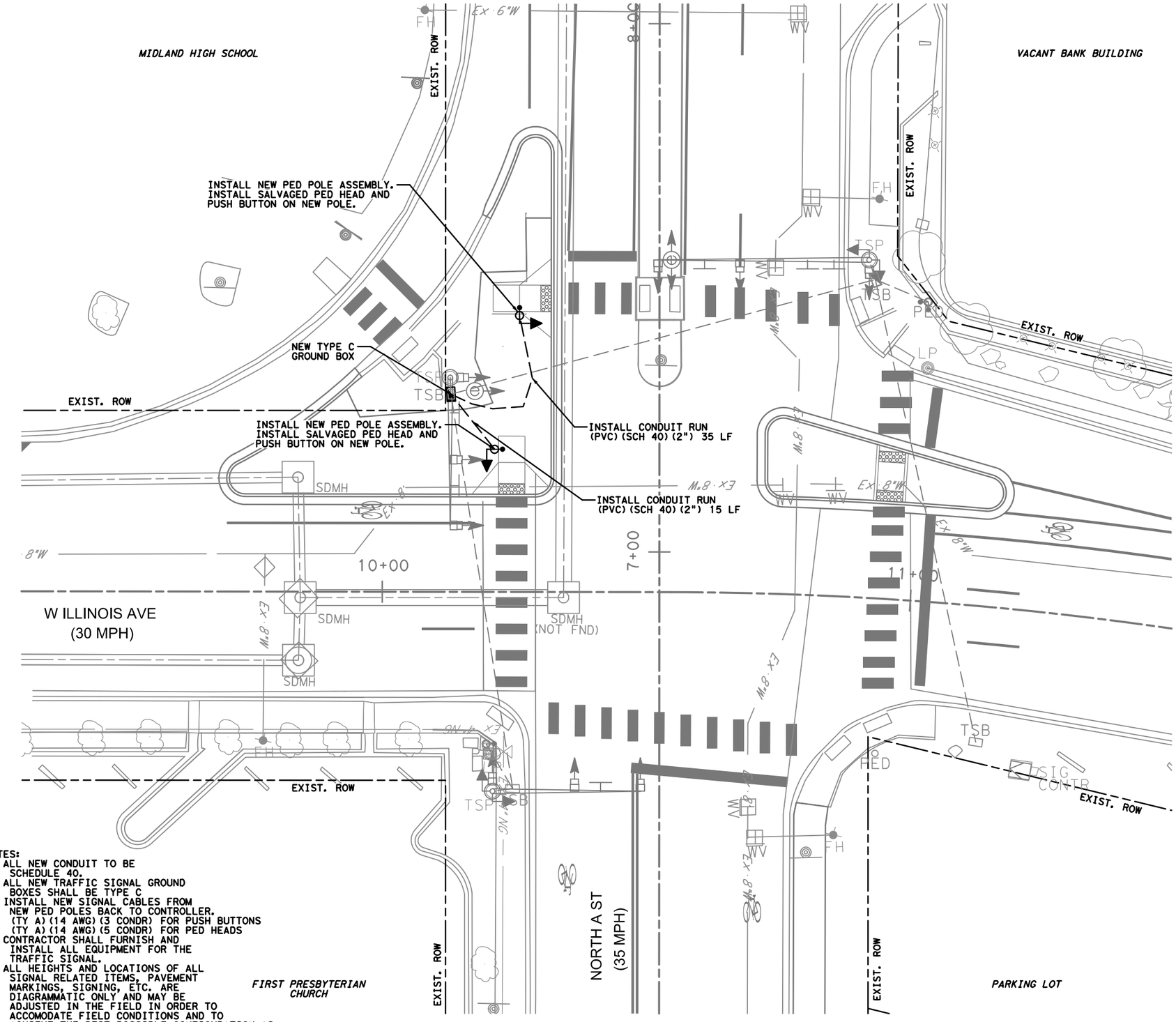

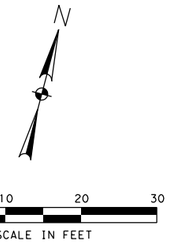

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STATE OF TEXAS
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NAME:

DATE: 03-01-2024
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TBPELS ENGINEERING FIRM #312

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PROPOSED SIGNAL PLAN
W ILLINOIS AVE AND NORTH A ST

SCALE: 1"= 20'

Sheet 4 of 4

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
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CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	

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3/28/2024 4:56:00PM d:\45000s\45715\009\PW\CADD\Sheets\C-PLAN-SGNL-PROP-02-45715-009.dgn

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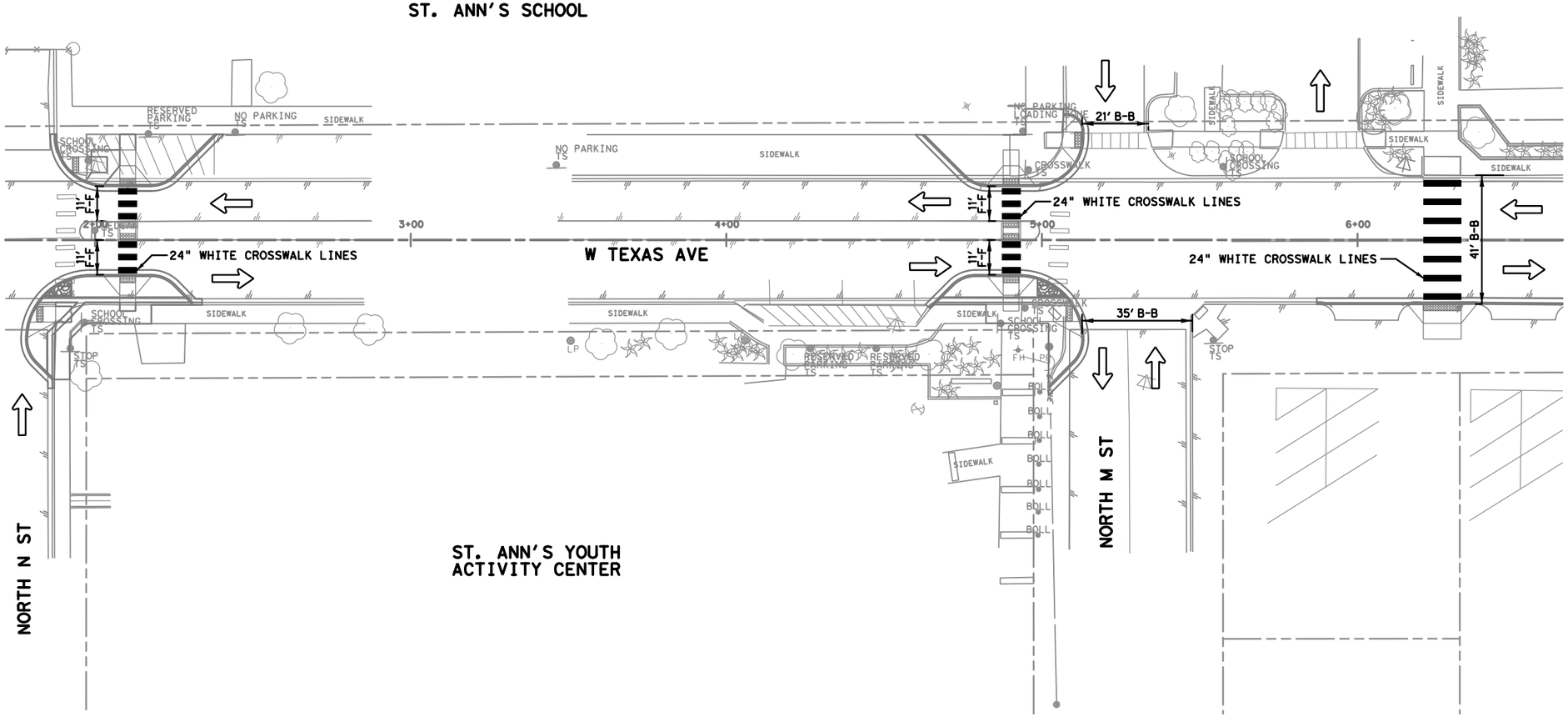

N

0 20 40 60

SCALE IN FEET

LEGEND

⇨ TRAFFIC FLOW ARROW NOT A PAVEMENT MARKING

NOTE:

1. REMOVE ALL EXISTING PAVEMENT MARKINGS THAT CONFLICT WITH THE INTENT OF THE PAVEMENT MARKING PLANS.

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff

3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT MARKINGS AND SIGNAGE W TEXAS AVE

SCALE: 1"= 40'

Sheet 1 of 11

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	96
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	

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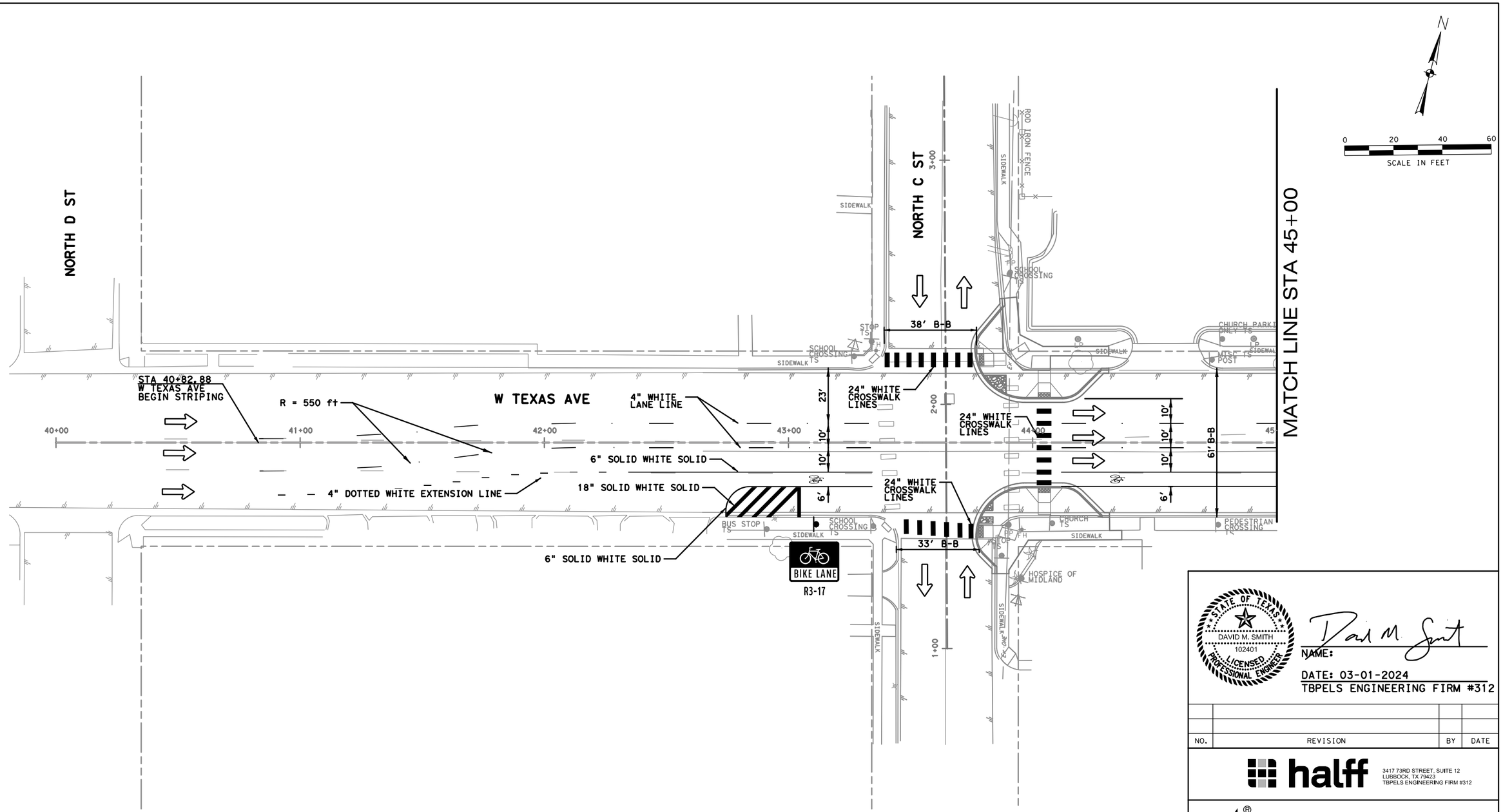

LEGEND

TRAFFIC FLOW ARROW
NOT A PAVEMENT MARKING

NOTE:

1. REMOVE ALL EXISTING PAVEMENT MARKINGS THAT CONFLICT WITH THE INTENT OF THE PAVEMENT MARKING PLANS.

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

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LUBBOCK, TX 79423
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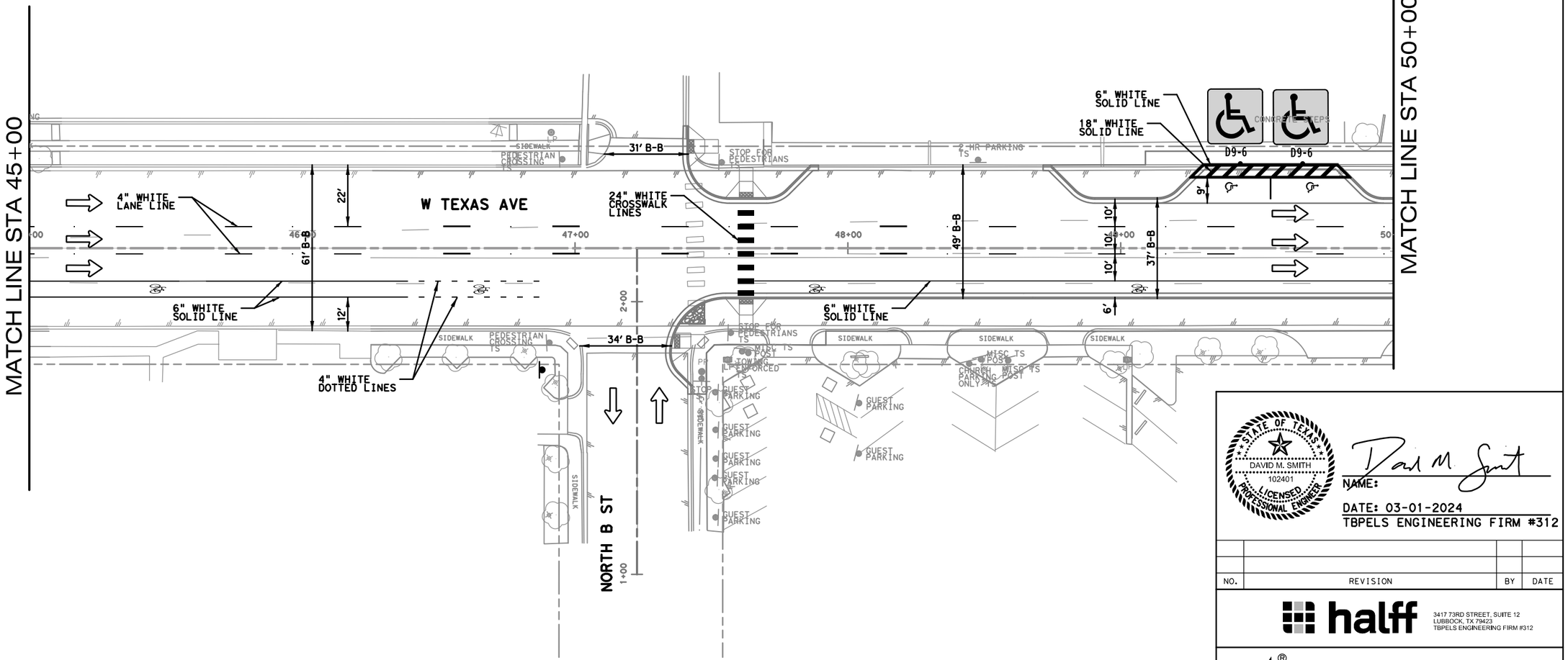
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT MARKINGS AND SIGNAGE
W TEXAS AVE

SCALE: 1"= 40'

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	97
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	



LEGEND

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Texas Department of Transportation

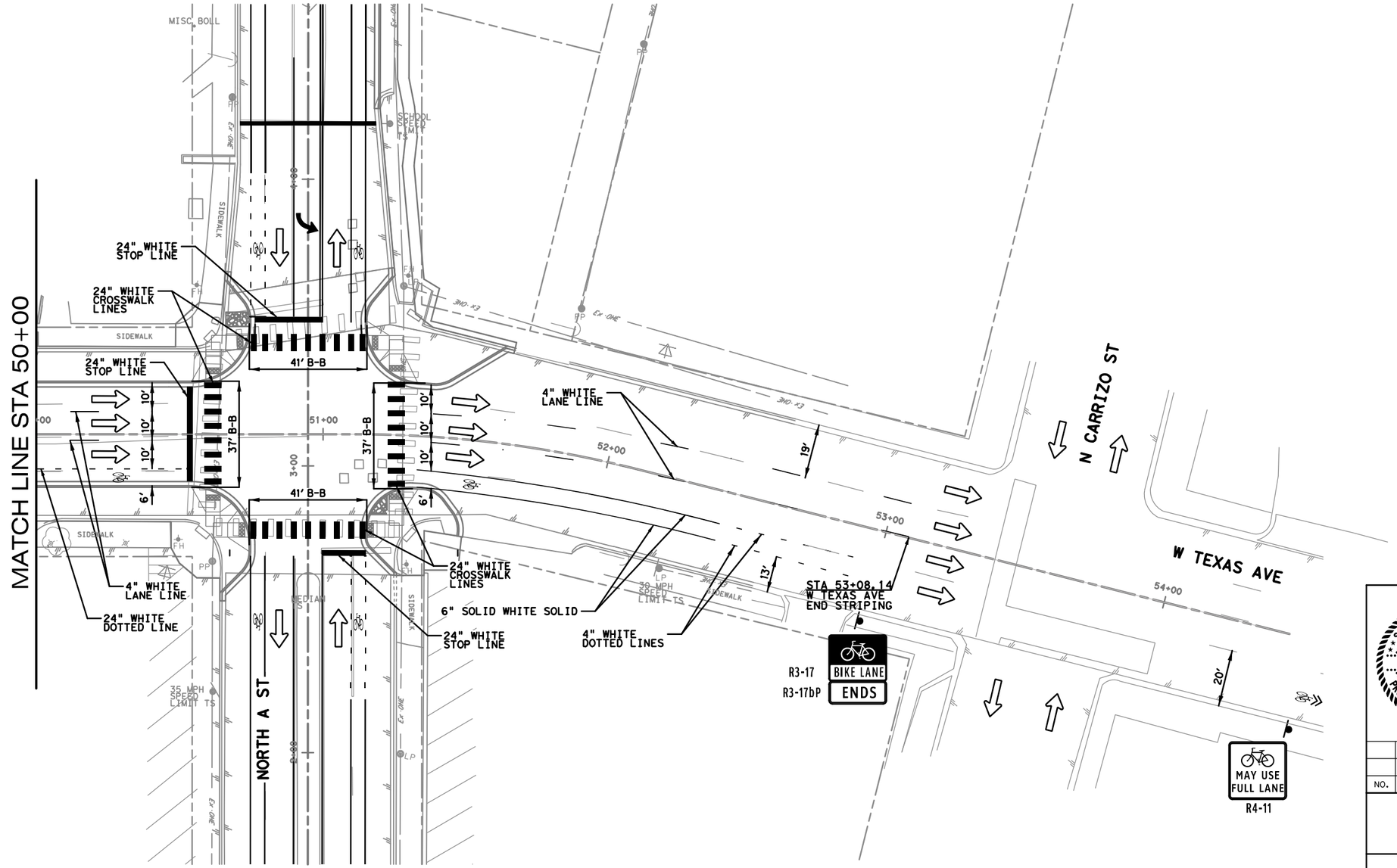
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT MARKINGS AND SIGNAGE
W TEXAS AVE

SCALE: 1"= 40'

Sheet 3 of 11

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	98
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	



LEGEND

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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT MARKINGS AND SIGNAGE
W TEXAS AVE

SCALE: 1"= 40'

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HALFF	TEXAS	ODA	MIDLAND	99
CHECK	CONTROL	SECTION	JOB	
DMS	0906	32	064	
CHECK				
JTH				

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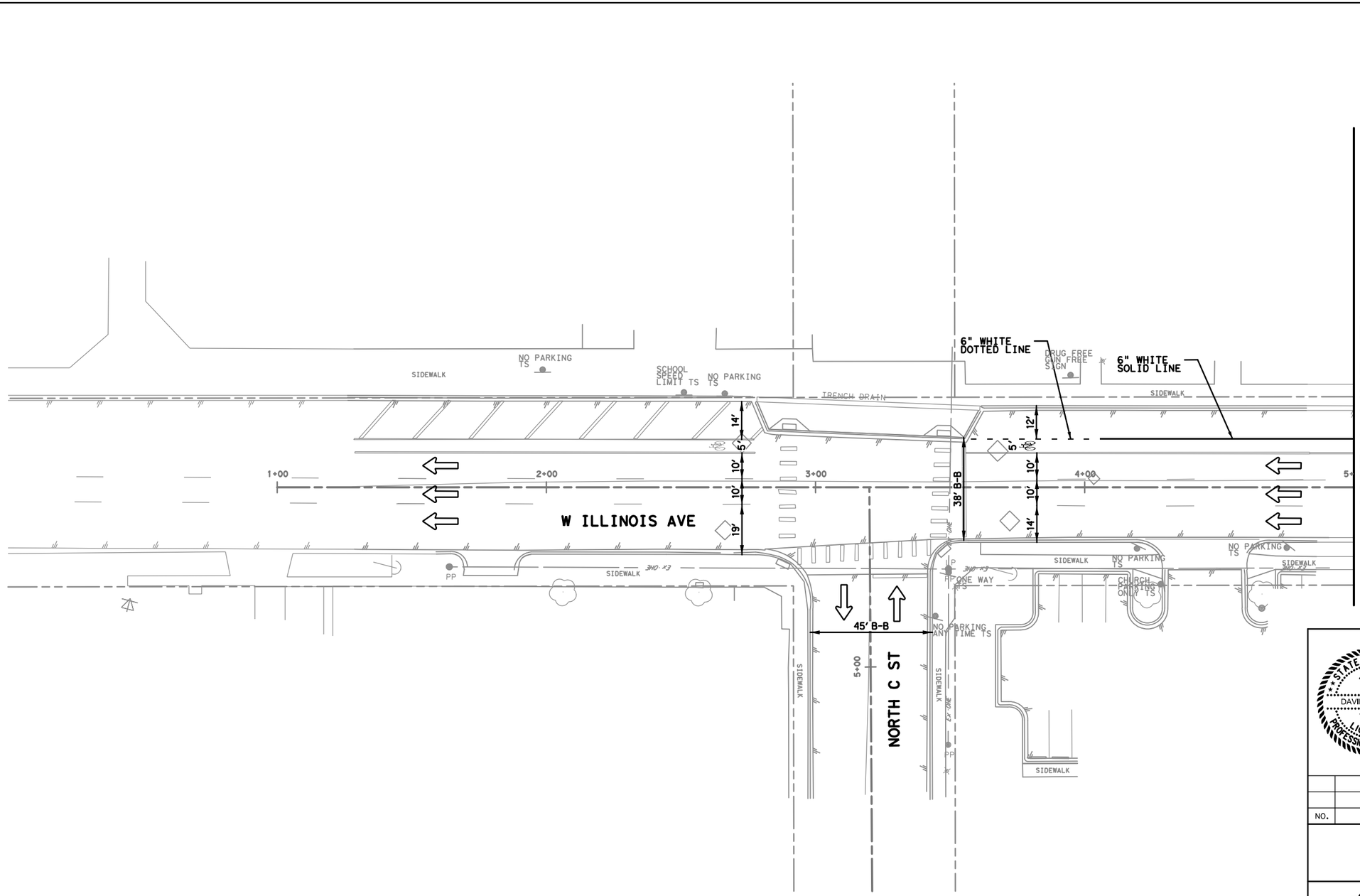
3/29/2024 11:29:13 AM A:\45000s\45715\009\PW\CADD\Sheets\C-PLAN-PMKS-04-45715-009.dgn



N

0 20 40 60
SCALE IN FEET

LEGEND

⇨ TRAFFIC FLOW ARROW NOT A PAVEMENT MARKING

NOTE:

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Texas Department of Transportation

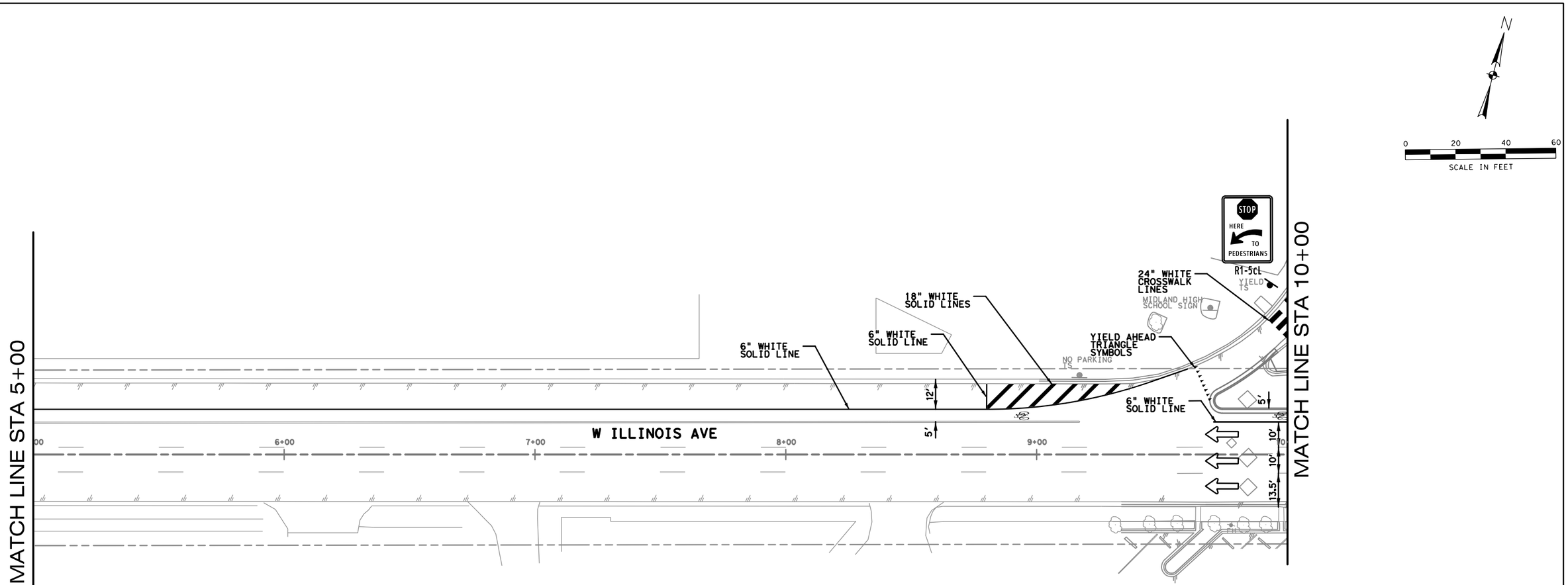
W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT MARKINGS AND SIGNAGE
W ILLINOIS AVE

SCALE: 1"= 40' Sheet 5 of 11

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	100
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

DATE:3/29/2024 TIME:11:29:13 AM PROJECT # 45715 OFFICE:FTW



LEGEND

⇨ TRAFFIC FLOW ARROW NOT A PAVEMENT MARKING

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STATE OF TEXAS
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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT MARKINGS AND SIGNAGE
W ILLINOIS AVE

SCALE: 1"= 40'

Sheet 6 of 11

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	101
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

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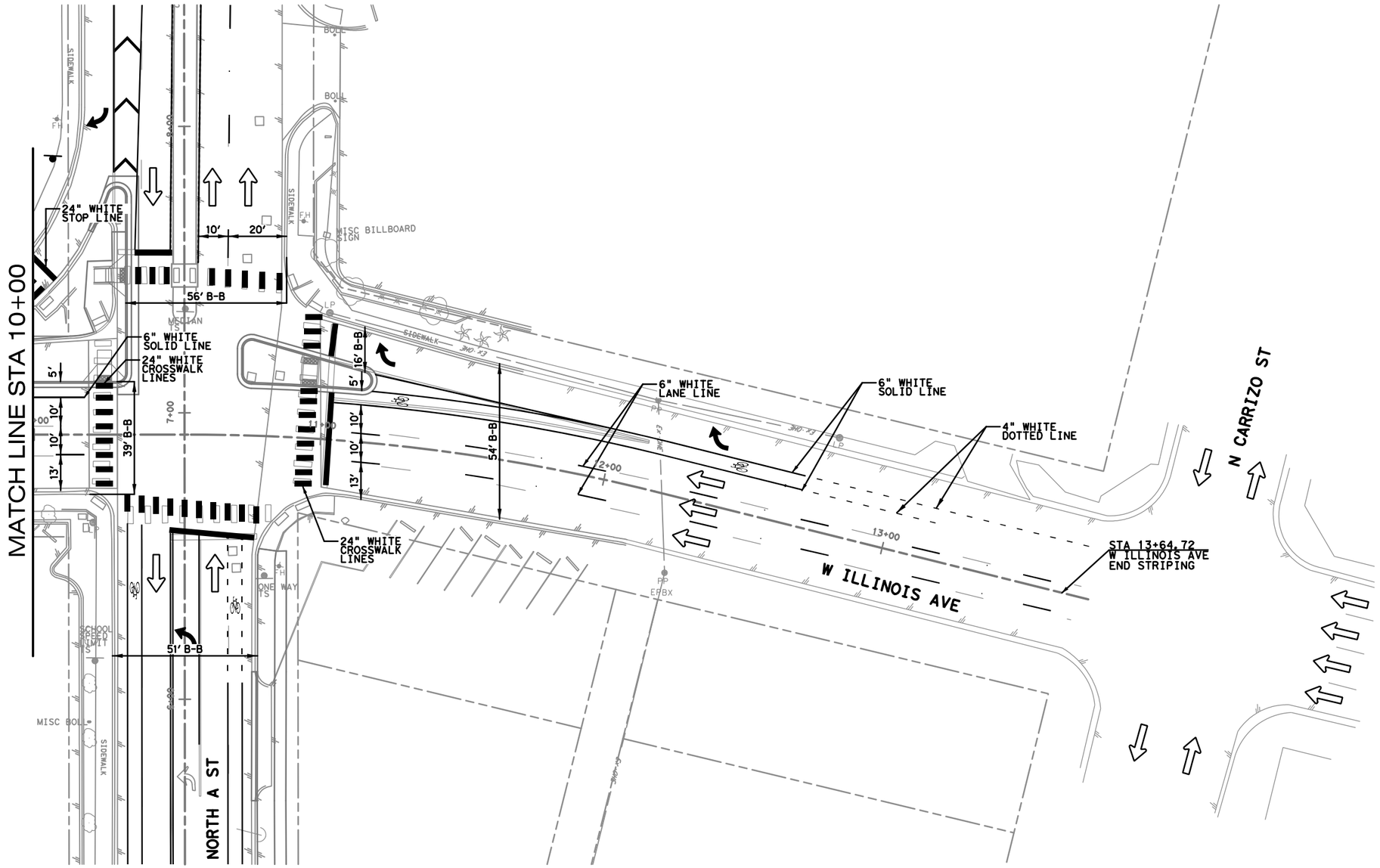

LEGEND

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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT MARKINGS AND SIGNAGE
W ILLINOIS AVE

SCALE: 1"= 40'

Sheet 7 of 11

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	102
CHECK JTH	CONTROL	SECTION	JOB	
	0906	32	064	

DATE:3/29/2024 TIME:11:29:14 AM PROJECT # 45715 OFFICE:FTW

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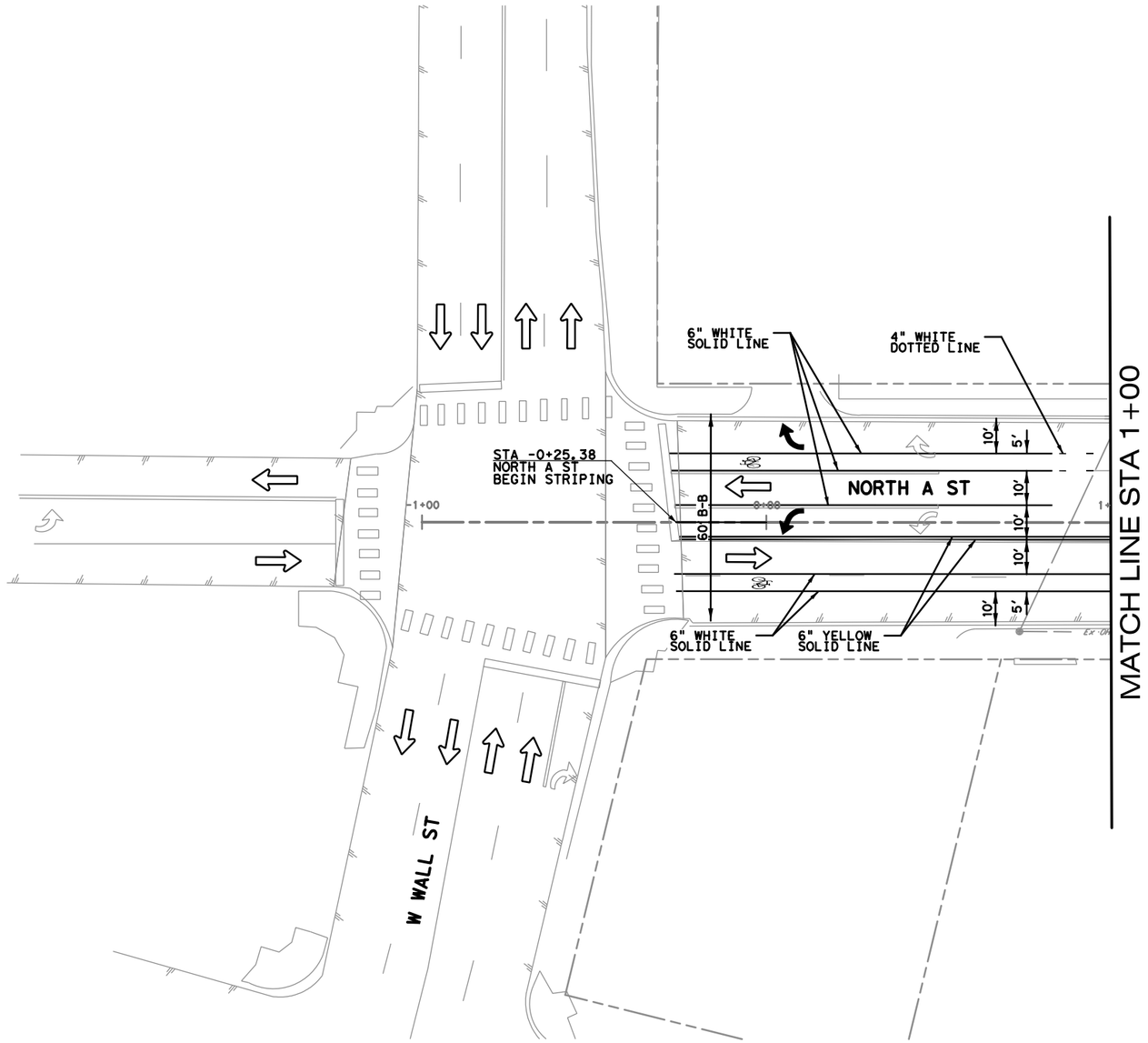

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0 20 40 60
SCALE IN FEET

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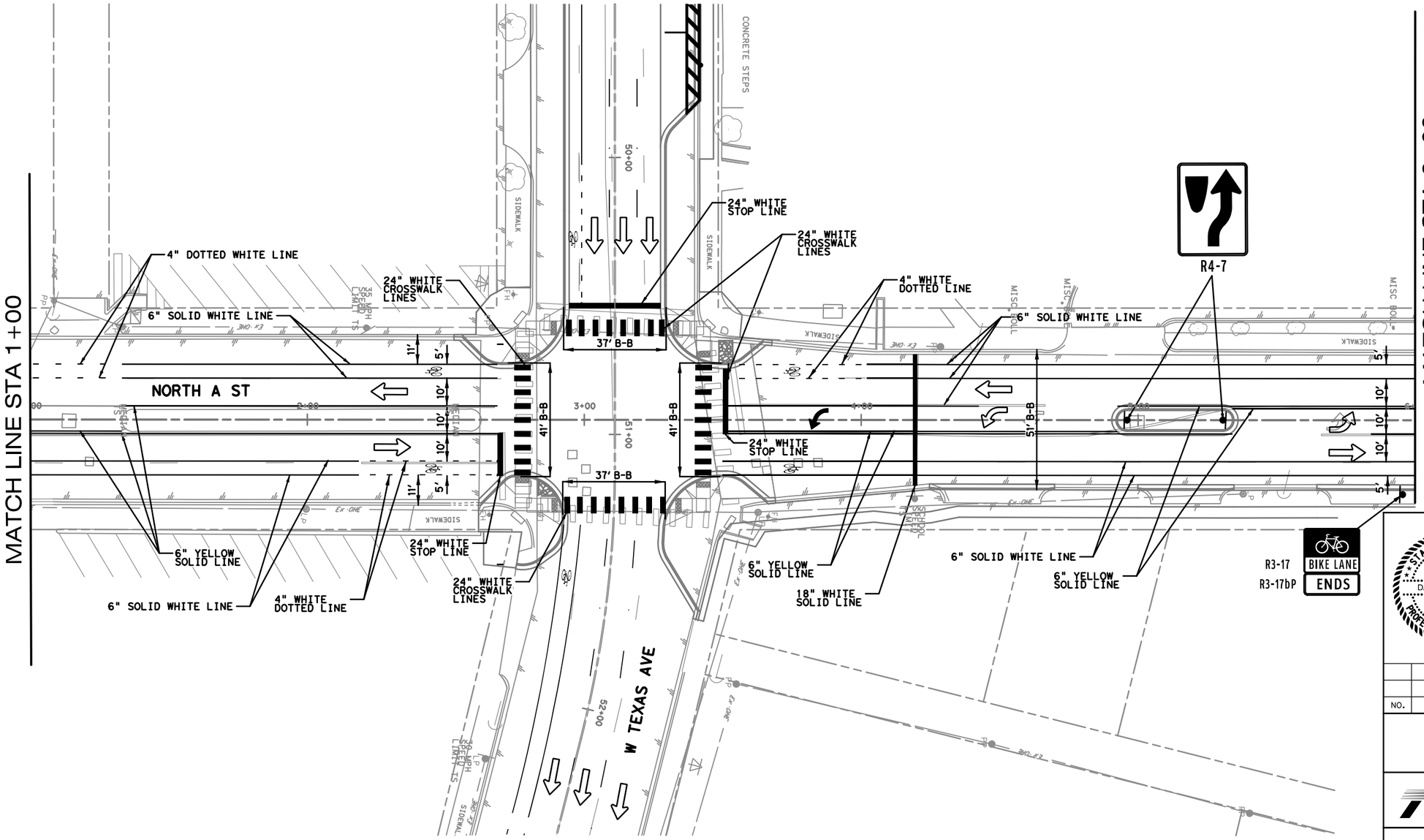
Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT MARKINGS AND SIGNAGE
NORTH A ST

SCALE: 1"= 40' Sheet 8 of 11

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	103
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	



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Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

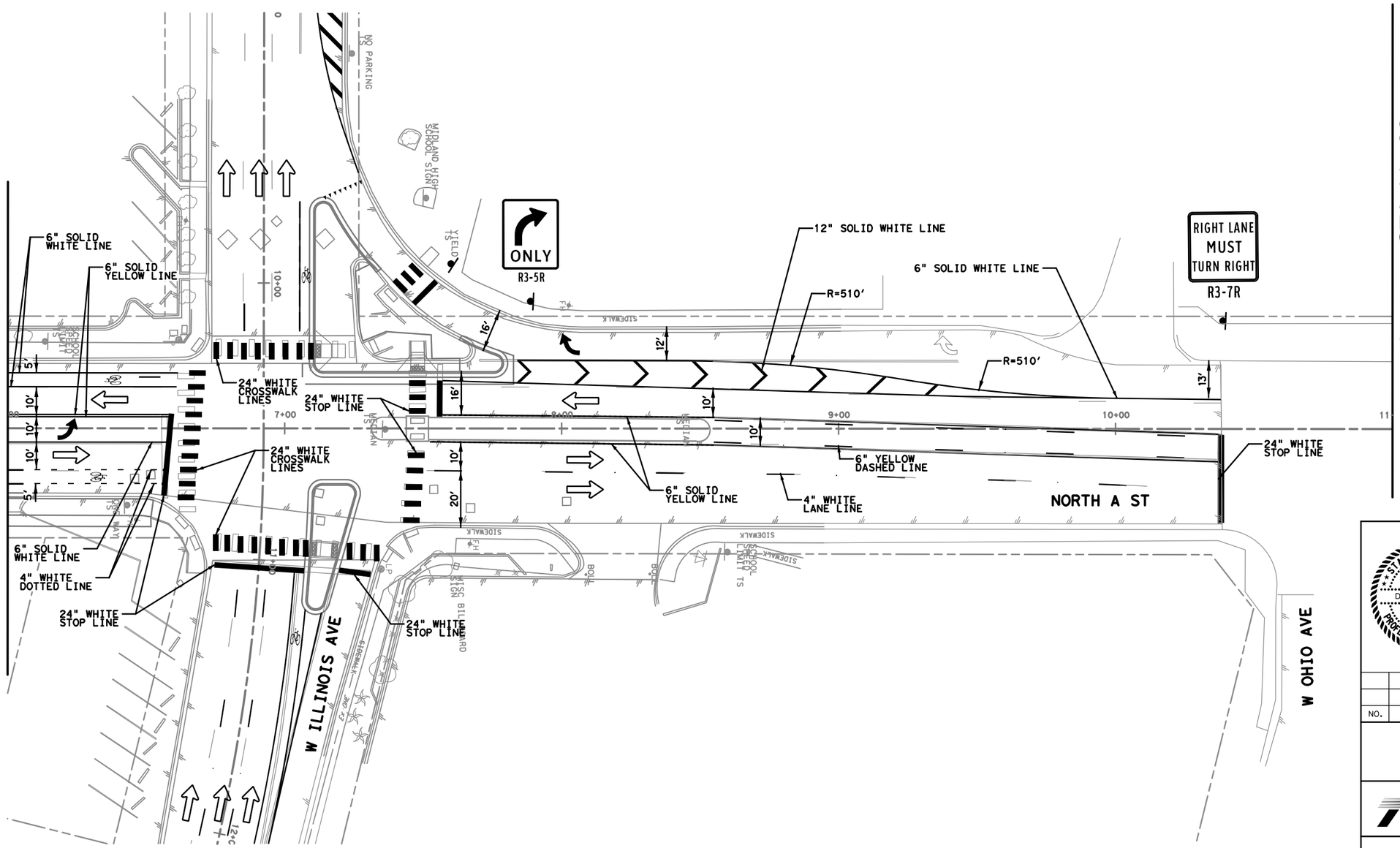
PAVEMENT MARKINGS AND SIGNAGE
NORTH A ST

SCALE: 1"= 40'

Sheet 9 of 11

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HALFF	TEXAS	ODA	MIDLAND	104
CHECK	CONTROL	SECTION	JOB	
DMS	0906	32	064	
CHECK				
JTH				

DATE:3/29/2024 TIME:11:29:15 AM PROJECT # 45715 OFFICE:FTW



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0 20 40 60
SCALE IN FEET

STATE OF TEXAS
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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT MARKINGS AND SIGNAGE
NORTH A ST

SCALE: 1"= 40' Sheet 10 of 11

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	105
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

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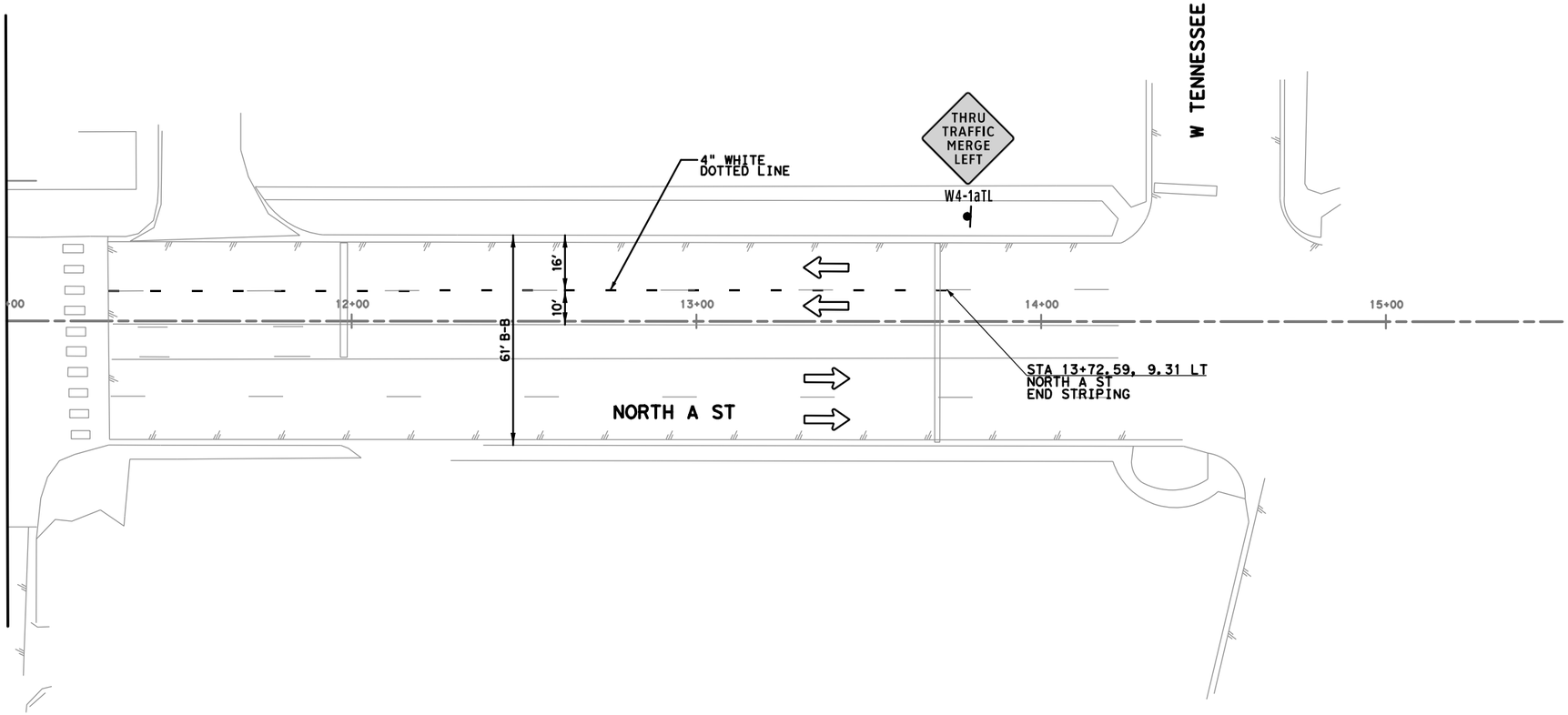
DATE:3/29/2024 TIME:11:29:15 AM PROJECT # 45715 OFFICE:FTW



0 20 40 60
SCALE IN FEET

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W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

PAVEMENT MARKINGS AND SIGNAGE
NORTH A ST

SCALE: 1"= 40' Sheet 11 of 11

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	106
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

REF. MRK	LOC.	SIGN TYPE	SIGN TEXT	SIGN DIMENSIONS	0644-6076 REMOVE SM RD SM SUP & AM
W TEXAS AVE					EA.
1+96.65	SOUTH	S1-1	SCHOOL ZONE	36X36	1
1+96.66	SOUTH	SW16-7P	DIAGONAL ARROW	24X12	1
1+97.86	NORTH	S1-1	SCHOOL ZONE	36X36	1
1+97.87	NORTH	SW16-7P	DIAGONAL ARROW	24X12	1
4+93.03	NORHT	R4-7	KEEP RIGHT	24X30	1
4+94.63	SOUTH	R1-6b	IN-STREET PED CROSSING (TO BE RELOCATED BY CITY)	12X36	0
4+95.68	NORTH	R1-6b	IN-STREET PED CROSSING (TO BE RELOCATED BY CITY)	12X36	0
43+87.29	SOUTH	R1-1	STOP	36X36	1
44+08.59	NORTH	MISC-CHURCH	CHURCH	36X36	1
44+08.01	SOUTH	MISC-CHURCH	CHURCH	36X36	1
47+46.43	SOUTH	R1-1	STOP	36X36	1
47+53.77	NORTH	R1-6b	IN-STREET PED CROSSING (TO BE RELOCATED BY CITY)	12X36	0
47+57.11	SOUTH	R1-6b	IN-STREET PED CROSSING (TO BE RELOCATED BY CITY)	12X36	0
				SUBTOTAL:	9

REF. MRK	LOC.	SIGN TYPE	SIGN TEXT	SIGN DIMENSIONS	0644-6076 REMOVE SM RD SM SUP & AM
W ILLINOIS AVE					EA.
9+92.96	NORTH	R1-2	YIELD	36X36X36	1
				SUBTOTAL:	1

REF. MRK	LOC.	SIGN TYPE	SIGN TEXT	SIGN DIMENSIONS	0644-6076 REMOVE SM RD SM SUP & AM
NORTH A ST					EA.
6+43.14	SOUTH	R6-1	ONE WAY	36X12	1
				SUBTOTAL:	1
				SHEET SUBTOTAL:	11

DAVID M. SMITH
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STATE OF TEXAS

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Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS
SUMMARY OF SMALL SIGNS REMOVAL

SCALE: NONE Sheet 1 of 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	107
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

DATE:3/28/2024 TIME:4:56:10 PM PROJECT # 45715 OFFICE:FTW
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PROJECT # 45715 OFFICE:FTW

TIME:4:56:10 PM

DATE:3/28/2024

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SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN TEXT	DIMENSIONS	FLAT ALUMINUM (TYPE A)	FLAT ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION	
							FRP=FIBERGLASS TWT=THIN-WALL 10BWG= 10 BWG S80=SCH 80	1 OR 2	UA=UNIVERSAL CONC UB= UNIVERSAL BOLT SA=SLIPBASE-CONC SB=SLIPBASE-BOLT WS= WEDGE STEEL WP=WEDGE PLASTIC	PREFABRICATED P= "PLAIN" T="T" U="U"	1EXT OR 2EXT = # OF EXT BM = EXTRUDED WIND BEAM WC = 1.12 #/FT WING CHANNEL EXAL= EXTRUDED ALUM SIGN PANELS
57	1	S1-1	SCHOOL	36" X 36"			10 BWG	1	SA	P	
		SW16-7P	DIAGONAL ARROW	24" X 12"							
	2	S1-1	SCHOOL	36" X 36"			10 BWG	1	SA	P	
		SW16-7P	DIAGONAL ARROW	24" X 12"							
58	3	R1-6b	IN-STREET PED CROSSING	12" X 36"			EXISTING TO BE RELOCATED BY THE CITY				
	4	R1-6b	IN-STREET PED CROSSING	12" X 36"			EXISTING TO BE RELOCATED BY THE CITY				
60	5	MISC-CHURCH	CHURCH	36" X 36"			10 BWG	1	SA	P	
	6	MISC-CHURCH	CHURCH	36" X 36"			10 BWG	1	SA	P	
	7	R1-1	STOP	36" X 36"			10 BWG	1	SA		
61	8	R1-1	STOP	36" X 36"			10 BWG	1	SA	P	
	9	R1-6b	IN-STREET PED CROSSING	12" X 36"			EXISTING TO BE RELOCATED BY THE CITY				
	10	R1-6b	IN-STREET PED CROSSING	12" X 36"			EXISTING TO BE RELOCATED BY THE CITY				
70	11	R6-1	ONE WAY	36" X 12"			10 BWG	1	SA	P	
95	12	R3-17	BIKE LANE	24" X 18"			10 BWG	1	SA	P	
96	13	D9-6	HANDICAPPED	24" X 24"			10 BWG	1	SA	P	
	14	D9-6	HANDICAPPED	24" X 24"			10 BWG	1	SA	P	
97	15	R3-17	BIKE LANE	24" X 18"			10 BWG	1	SA	P	
		R3-17bP	BIKE LANE (PLAQUES) - ENDS	24" X 8"							
	16	R4-11	BICYCLES MAY USE FULL LANE	30" X 30"			10 BWG	1	SA	P	
99	17	R1-5cL	STOP HERE FOR PEDESTRIANS	36" X 48"			10 BWG	1	SA	P	
102	18	R4-7	KEEP RIGHT	24" X 30"			10 BWG	1	SA	P	
	19	R4-7	KEEP RIGHT	24" X 30"			10 BWG	1	SA	P	
	20	R3-17	BIKE LANE	24" X 18"			10 BWG	1	SA	P	
		R3-17bP	BIKE LANE (PLAQUES) - ENDS	24" X 8"							
103	21	R3-7R	RIGHT LANE MUST TURN RIGHT	36" X 36"			10 BWG	1	SA	P	
	22	R3-5R	RIGHT TURN ONLY	30" X 36"			10 BWG	1	SA	P	
104	23	W4-1aTL	THRU TRAFFIC MERGE LEFT	36" X 36"			10 BWG	1	SA	P	

STATE OF TEXAS
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Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

SUMMARY OF SMALL SIGNS

SCALE: NONE Sheet 1 of 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DMS	TEXAS	ODA	MIDLAND	108
CHECK JTH	CONTROL 0906	SECTION 32	JOB 064	

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

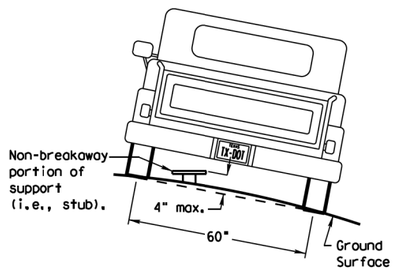
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-1) to (SLIP-3))

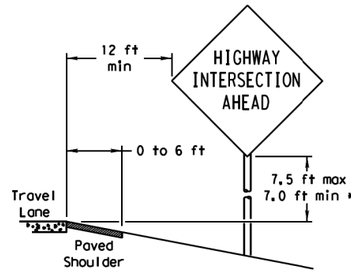
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

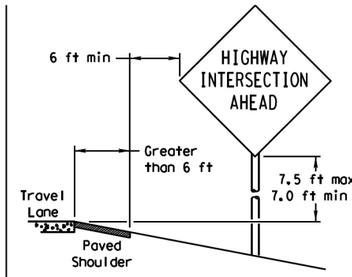
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

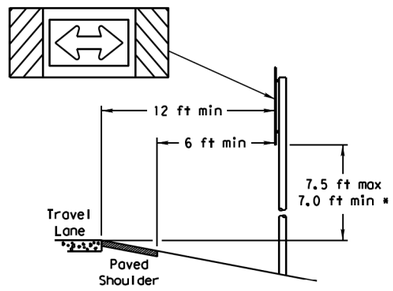
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



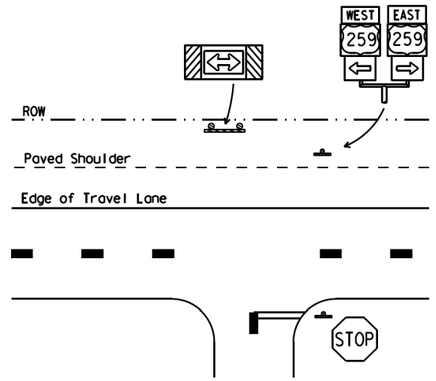
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

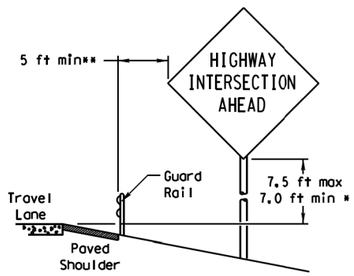
T-INTERSECTION



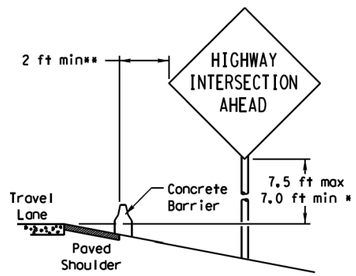
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

* Signs shall be mounted using the following condition that results in the greatest sign elevation:

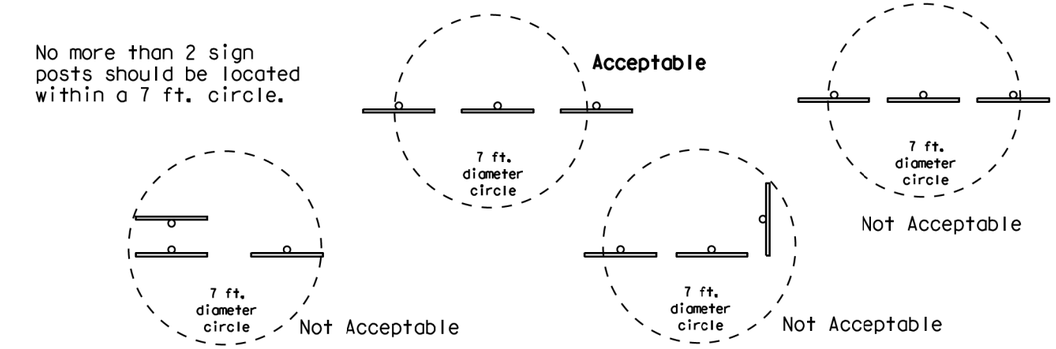
(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

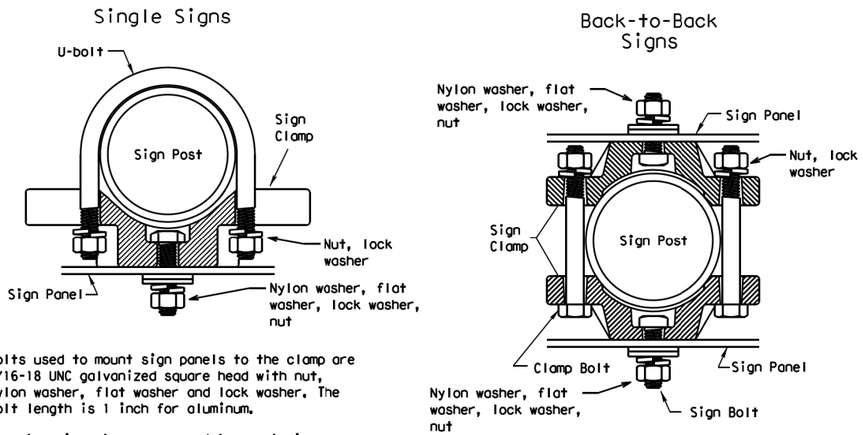
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
http://www.txdot.gov/publications/traffic.htm



TYPICAL SIGN ATTACHMENT DETAIL



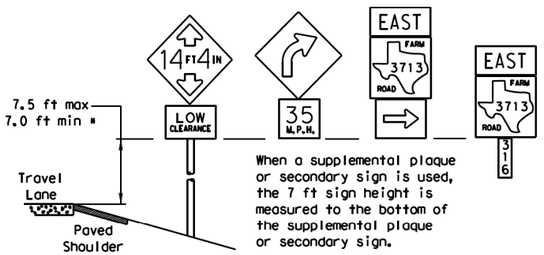
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

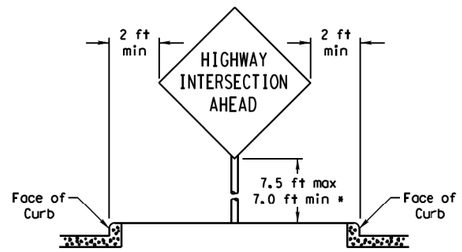
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



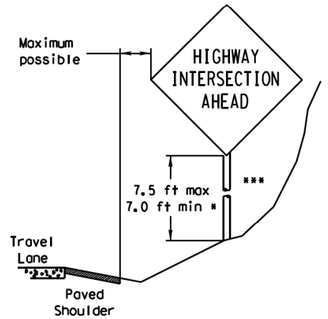
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

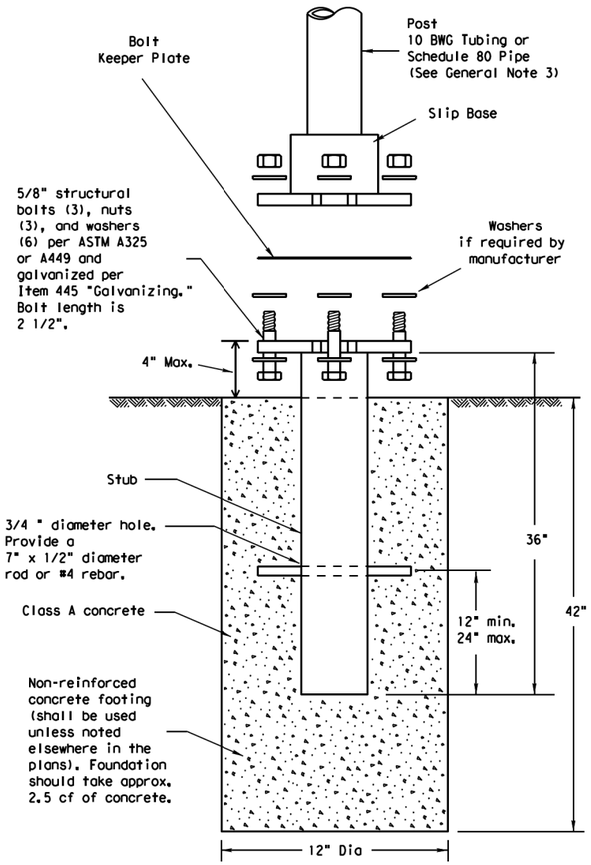
SMD(GEN)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
0906	32	064	N/A
DIST	COUNTY		SHEET NO.
ODA	MIDLAND		109

9-08 REVISIONS

DATE: 3/28/2024
FILE: d:\45000s\45715\009\PW\CADD\Sheets\C-DTLS-SMDGEN-45715-009.dgn

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

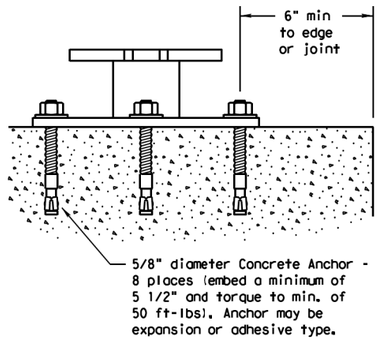
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	0906	32	064	N/A
	DIST	COUNTY		SHEET NO.
	ODA	MIDLAND		110

DATE:3/28/2024
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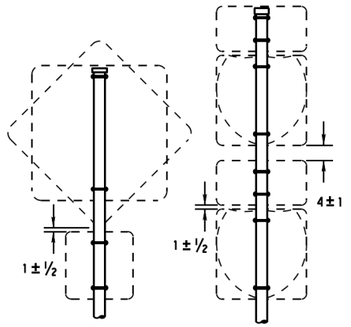
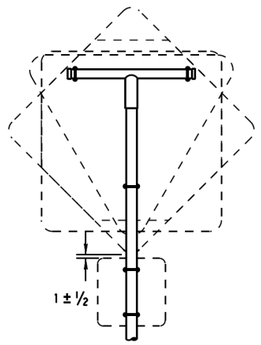
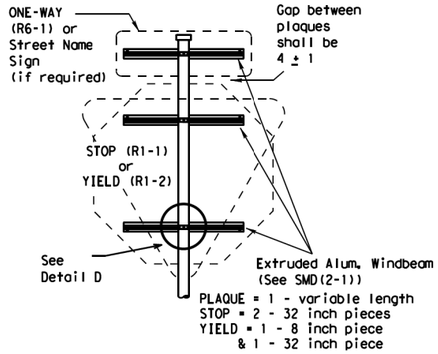


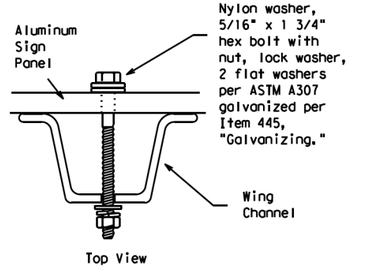
SM RD SGN ASSM TY XXXXX(1)XX(P)



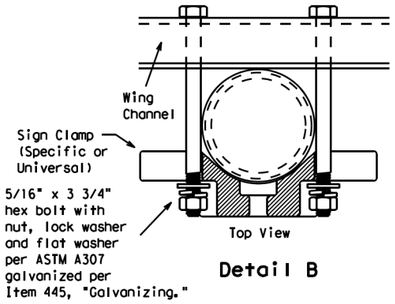
SM RD SGN ASSM TY XXXXX(1)XX(T)



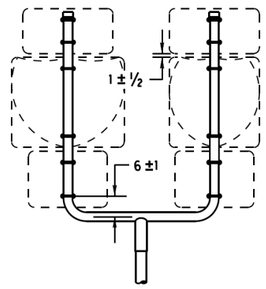
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



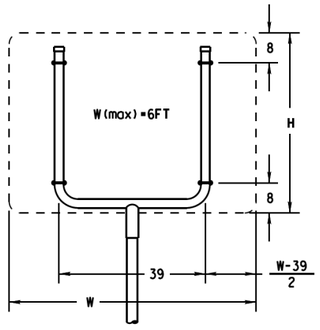
Detail A



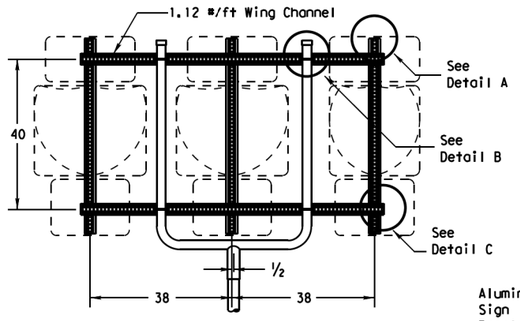
Detail B



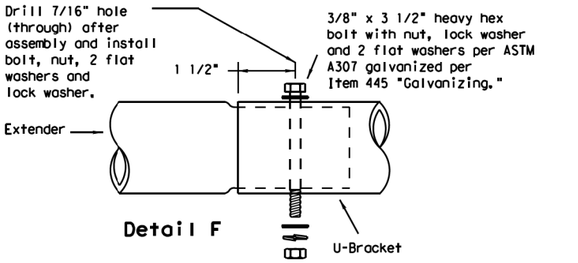
SM RD SGN ASSM TY XXXXX(1)XX(U)



SM RD SGN ASSM TY XXXXX(1)XX(U)

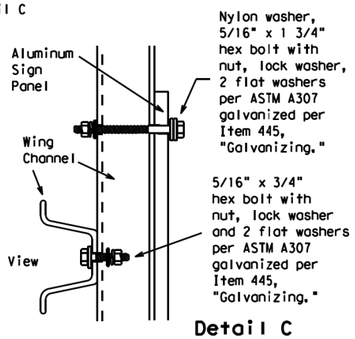


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

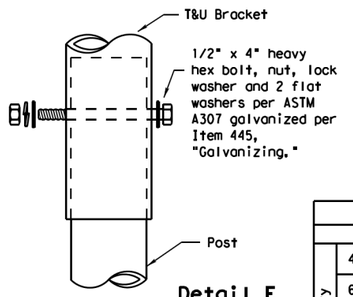


Detail F

Splices shall only be allowed behind the sign substrate.



Detail C

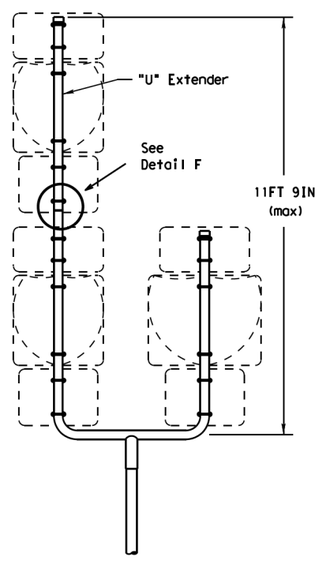


Detail E

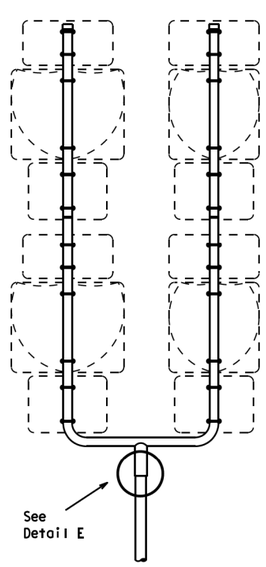
GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

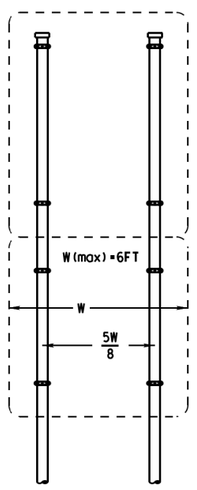
1.
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

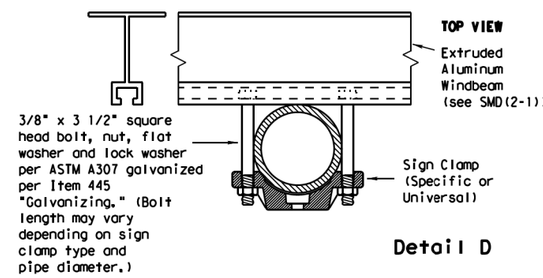


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

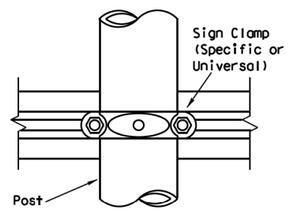


SM RD SGN ASSYM TY XXXXX(2)XX(P)

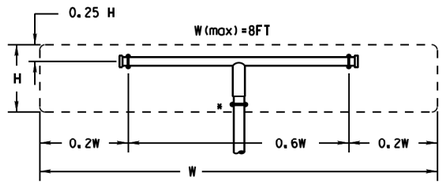
SIDE VIEW



Detail D



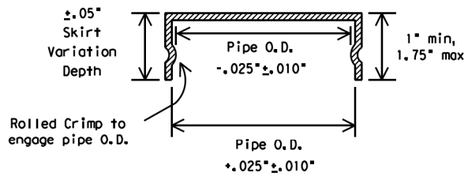
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)



All dimensions are in english unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

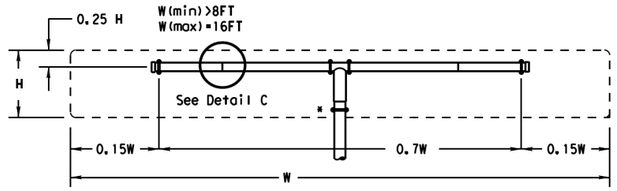
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

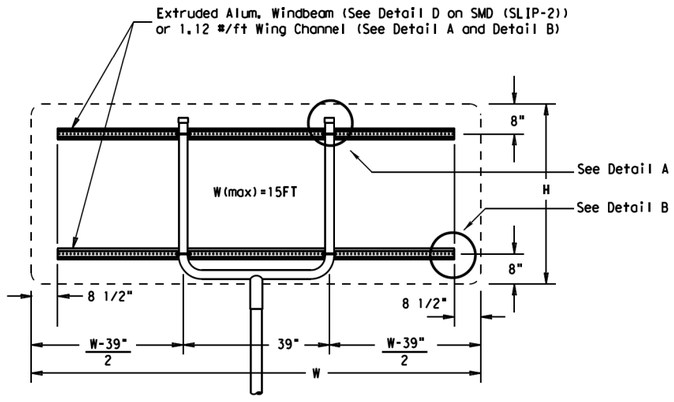
SMD(SLIP-2)-08

9-08 REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
	CONT	SECT	JOB	HIGHWAY
	0906	32	064	N/A
	DIST	COUNTY		SHEET NO.
	ODA	MIDLAND		111

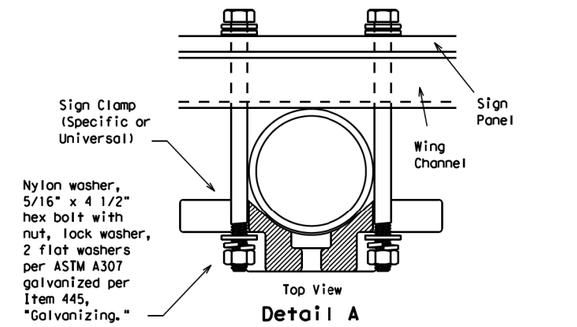
DATE: 3/28/2024
FILE: \45000s\45715\009\PW\CADD\Sheets\C-DTLS-SMDS-02-45715-009.dgn



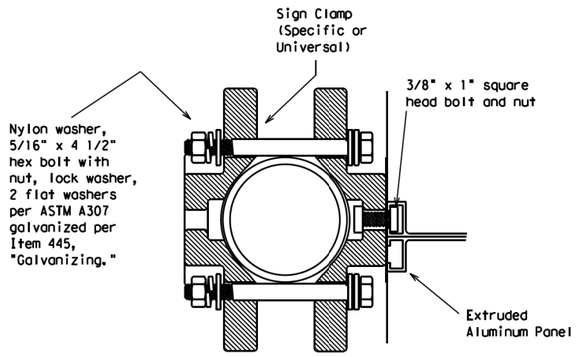
SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



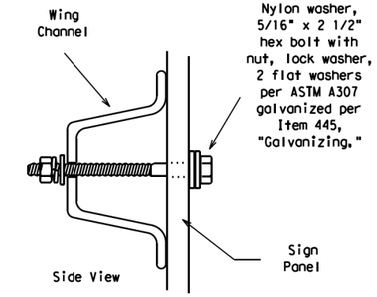
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



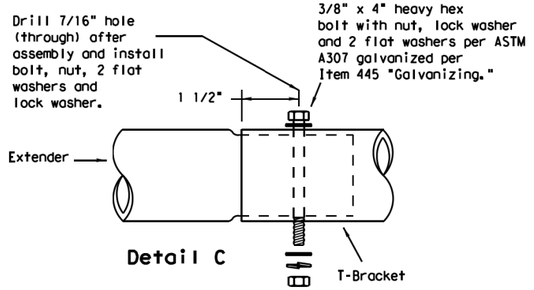
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

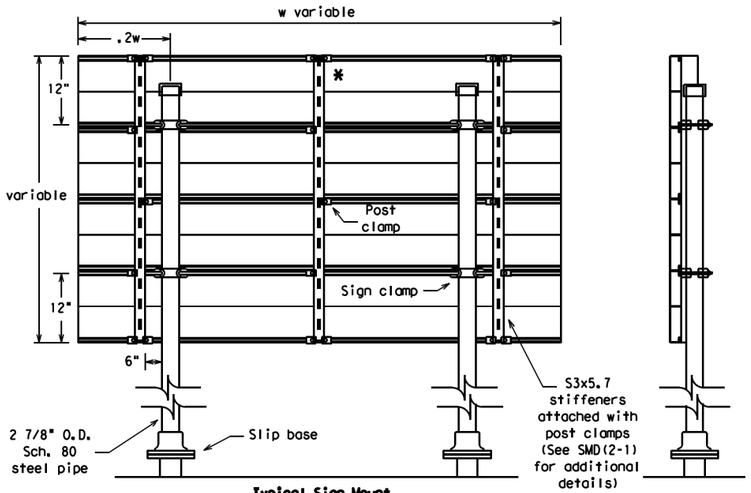


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

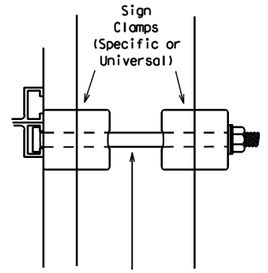


Typical Sign Mount

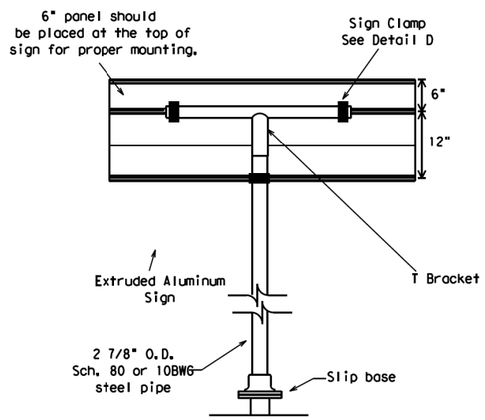
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

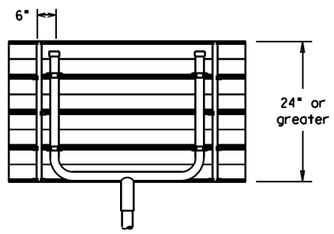
See Detail E
for clamp installation



Detail E



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

1. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
6. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
9. Sign blanks shall be the sizes and shapes shown on the plans.
10. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
11. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

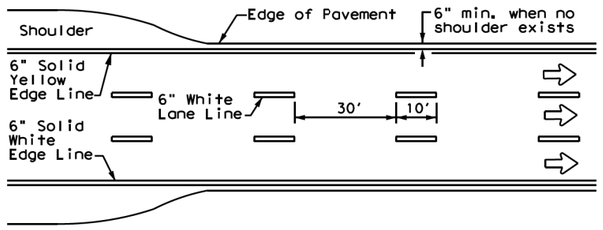
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

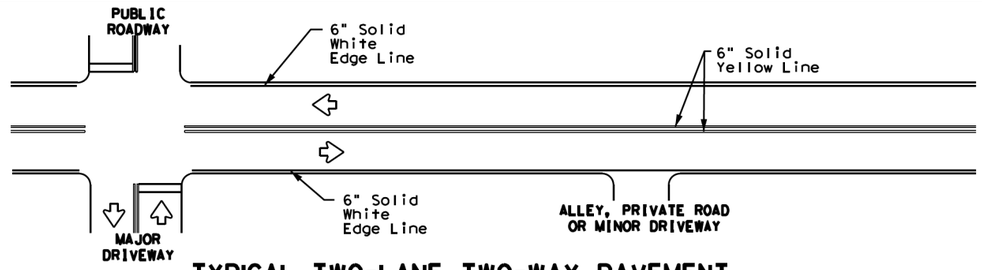
REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	0906	32	064	N/A
	DIST	COUNTY		SHEET NO.
	ODA	MIDLAND		112

26D

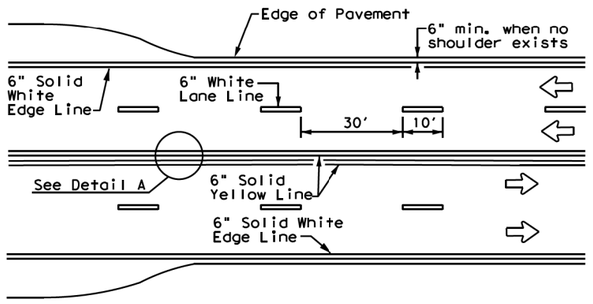
DATE: 3/28/2024
FILE: \45000s\45715\009\PW\CADD\Sheets\C-DTLS-SMDS-03-45715-009.dgn

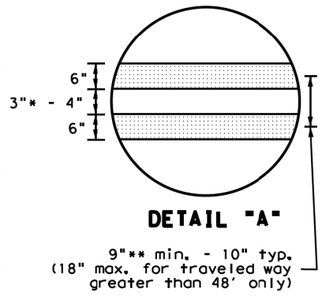


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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





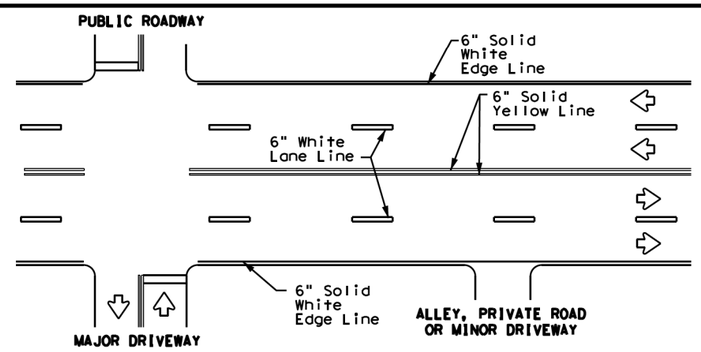
DETAIL "A"

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

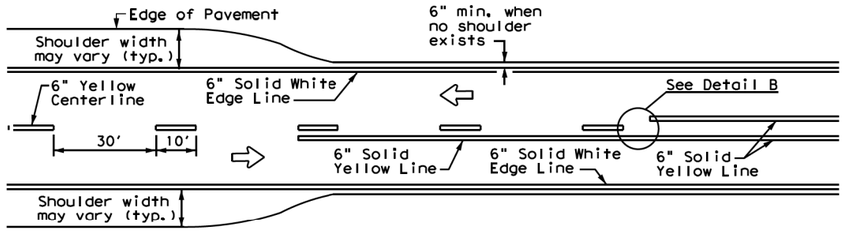
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

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

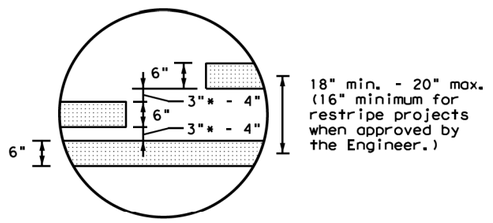
** 8" minimum for restripe projects when approved by the Engineer.



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

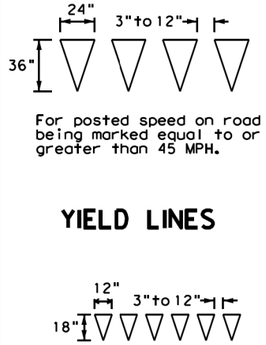


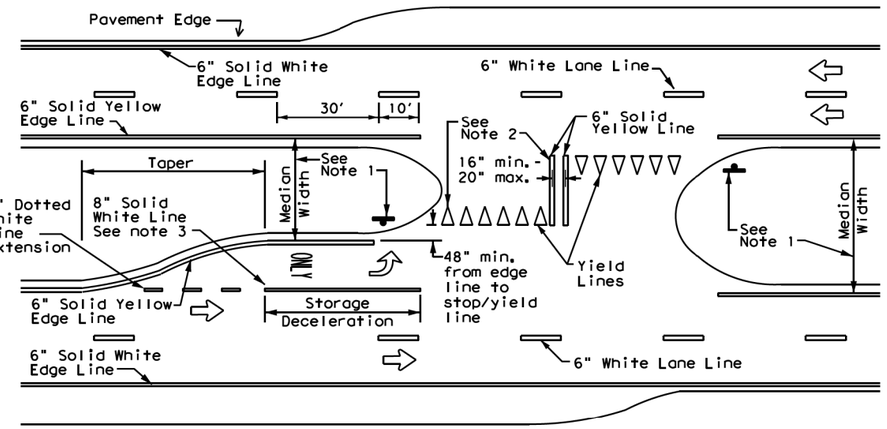
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



DETAIL "B"

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





FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

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

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

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

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

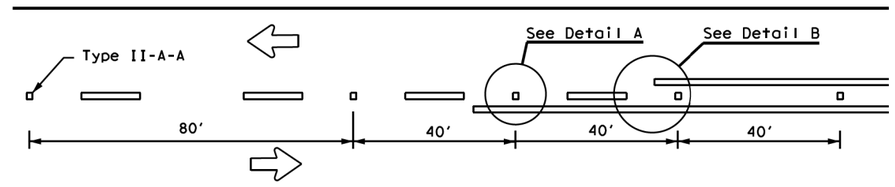
PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20	0906	32	064	N/A
8-95 3-03 12-22	DIST	COUNTY		SHEET NO.
5-00 2-12	ODA	MIDLAND		113

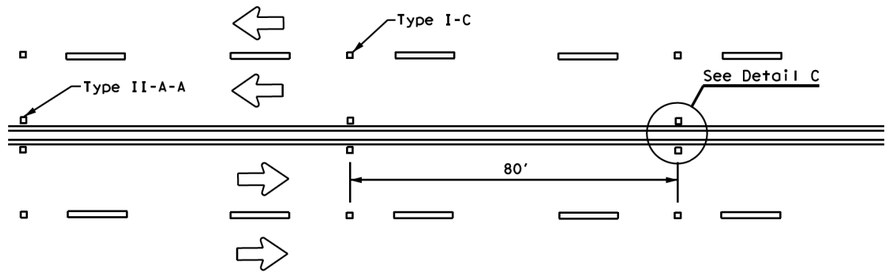
22A

DATE: 3/28/2024
FILE: d:\45000s\45715\009\PW\CADD\Sheets\C-DTLS-PM-01-45715-009.dgn

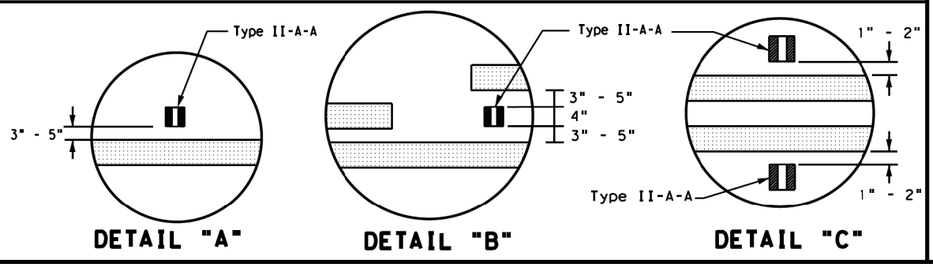
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



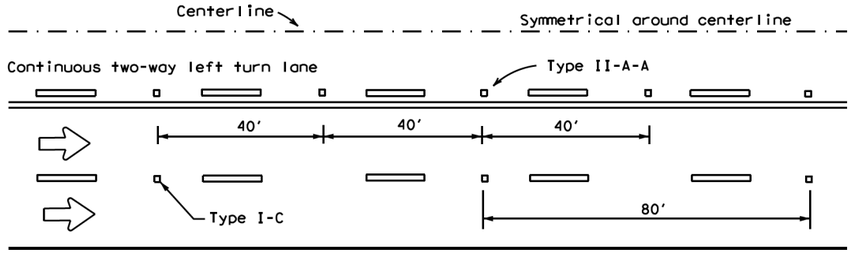
CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



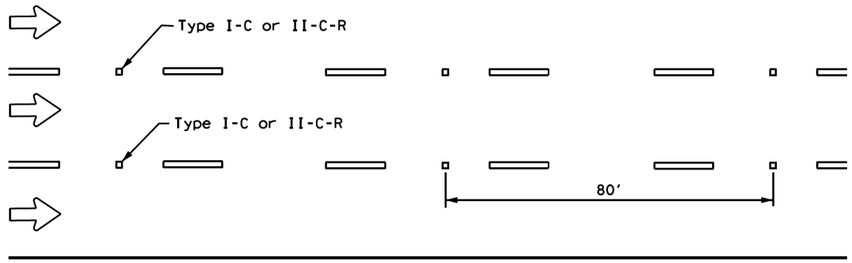
CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS



DETAIL "A" **DETAIL "B"** **DETAIL "C"**



CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



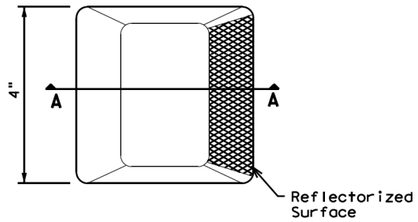
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

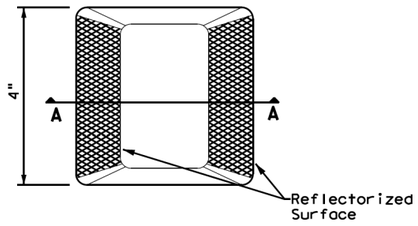
See Note 3.

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

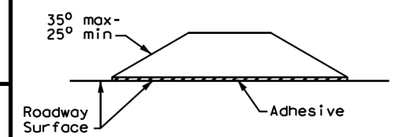
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

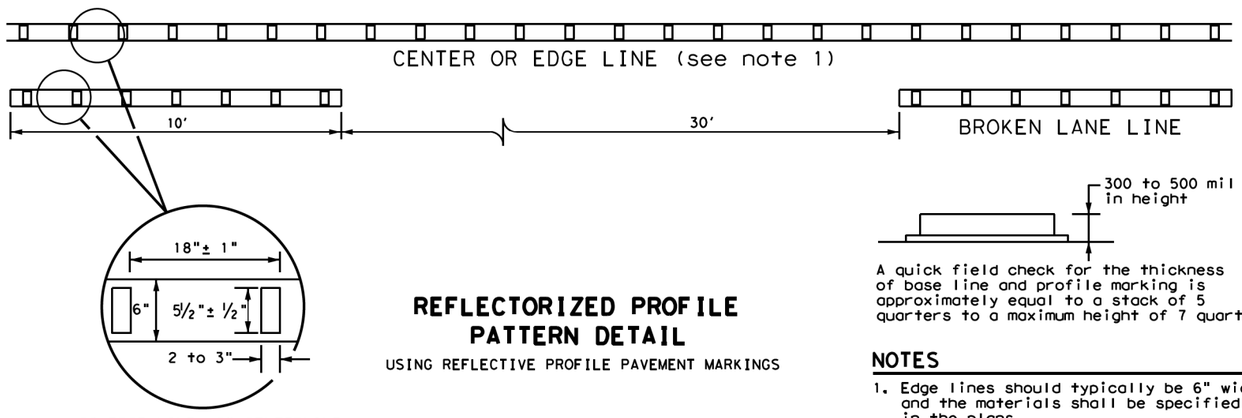


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



6" EDGE LINE, 6" CENTERLINE OR 6" LANE LINE

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

NOTES

1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

Texas Department of Transportation

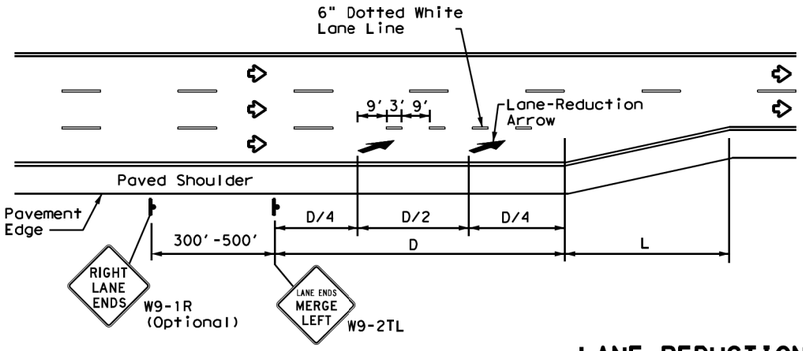
Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-77 8-00 6-20 4-92 2-10 12-22 5-00 2-12	0906	32	064	N/A
	DIST	COUNTY		SHEET NO.
	ODA	MIDLAND		114

22B

DATE: 3/28/2024
FILE: \45000s\45715\009\PW\CADD\Sheets\C-DTLS-PM-02-45715-009.dgn

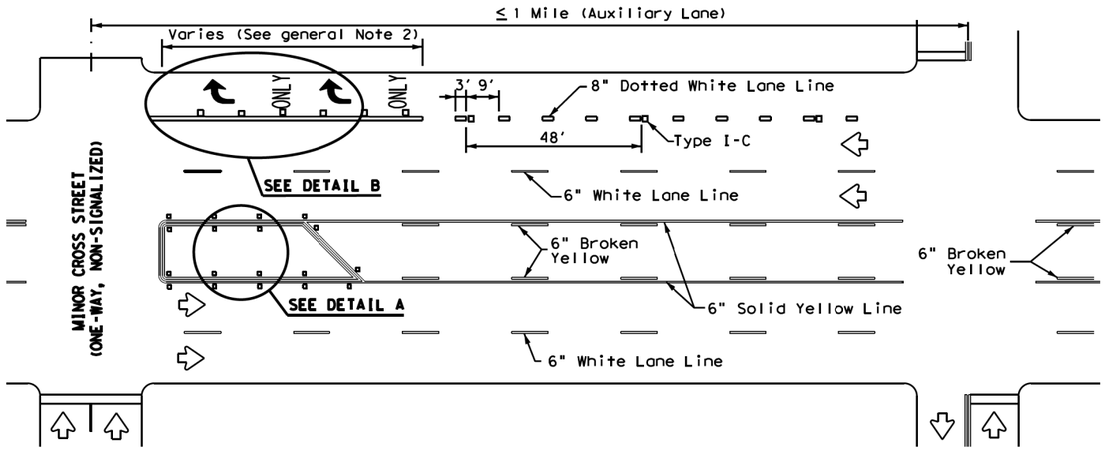


LANE REDUCTION

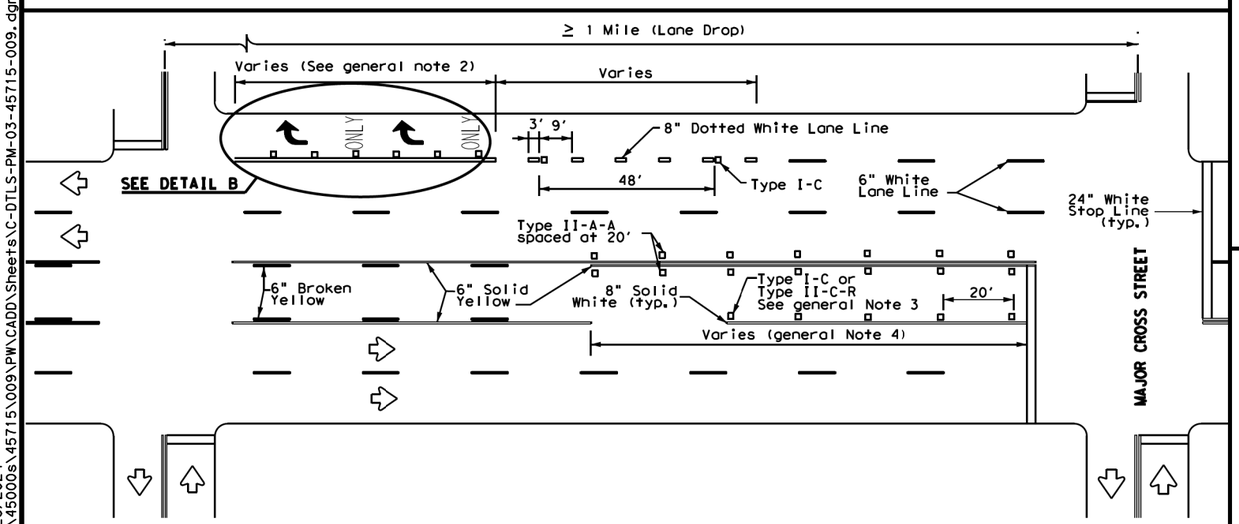
NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

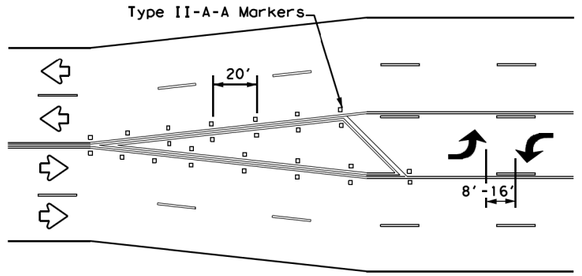
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	



TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

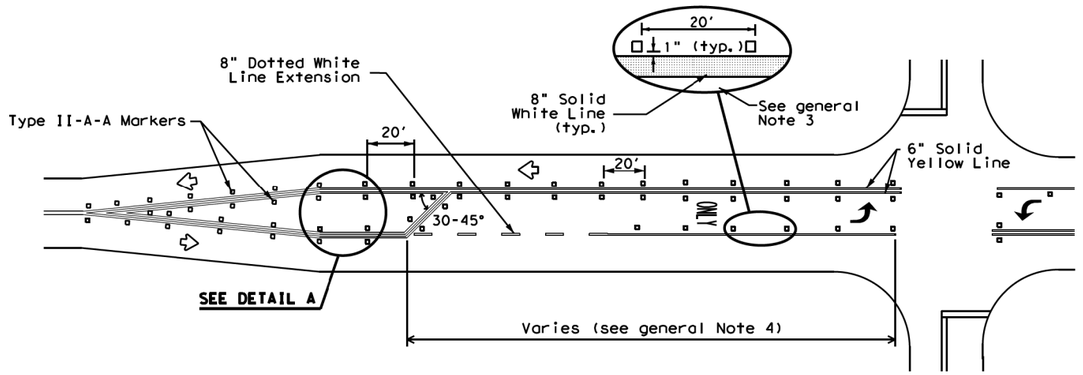
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

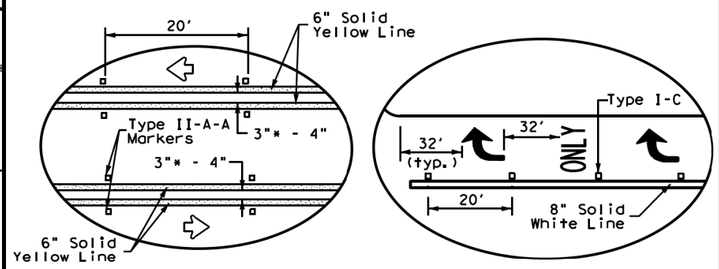
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

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

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



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



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

Texas Department of Transportation

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 3-03 6-20, 5-00 2-10 12-22, 8-00 2-12	0906	32	064	N/A
	DIST	COUNTY		SHEET NO.
	ODA	MIDLAND		115

22C

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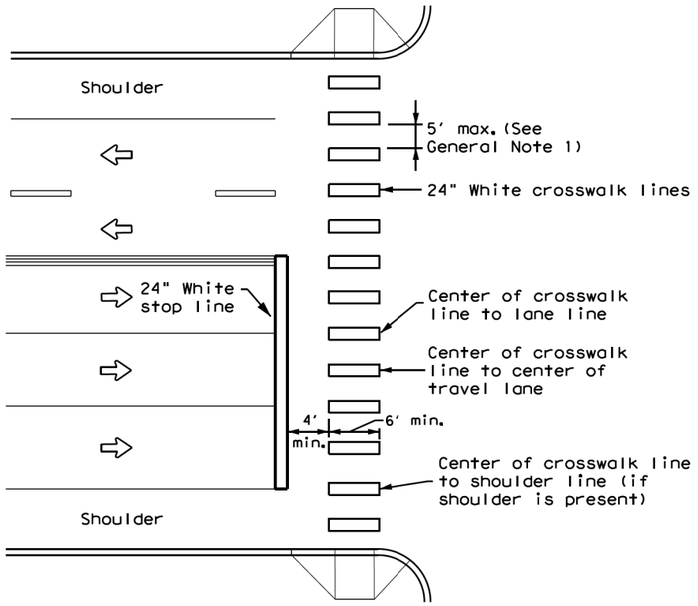


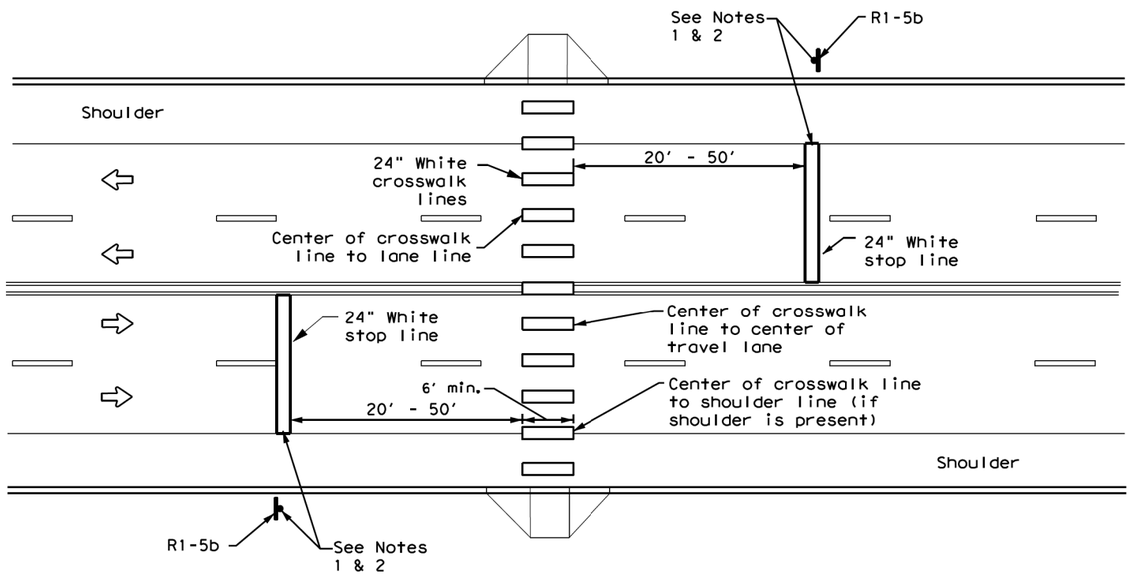
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

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

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



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with Stop Here For Pedestrians (R1-5b) signs at unsignalized midblock cross walks.
2. Use stop bars with STOP HERE ON RED (R10-6 or R10-6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

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REVISIONS	0906	32	064	N/A
6-20	DIST	COUNTY		SHEET NO.
6-22	ODA	MIDLAND		116
12-22				
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DATE: 3/28/2024
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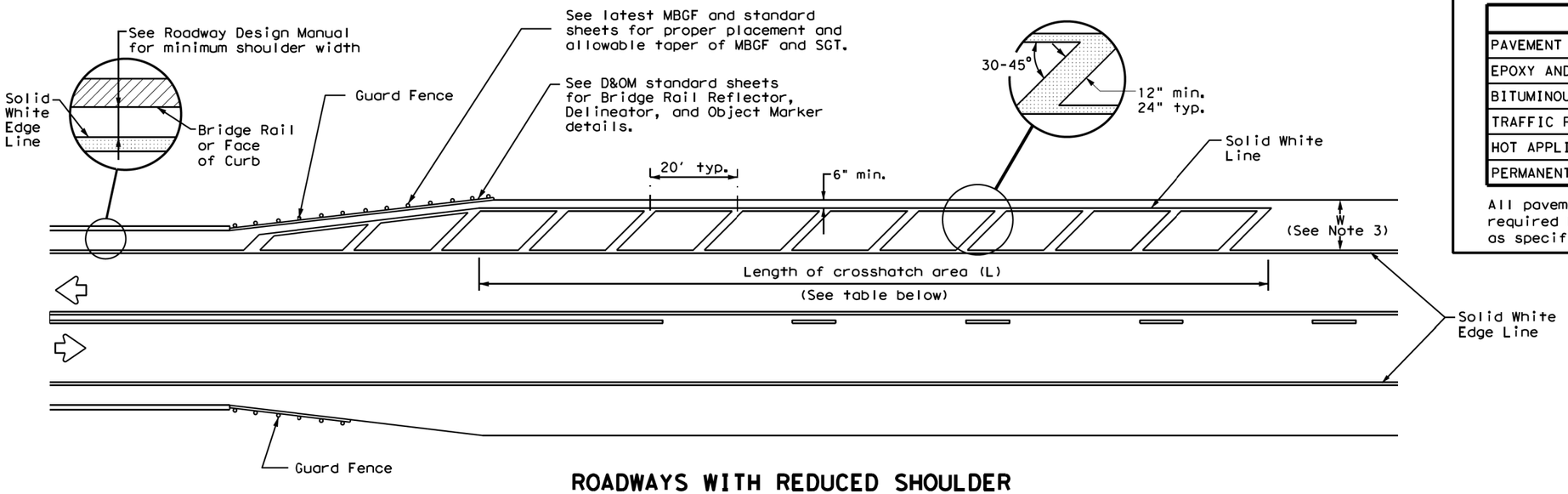

ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT

CROSSHATCH LENGTH (L)	
Posted Speed (MPH)	L (ft)
30	300 ft
35	
40	
45	
50	500 ft
55	
60	
65	
70	
75	

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 4 inches from the bridge rail or face of curb or 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions.
2. No-passing zone on bridge approach is optional. If used, the no-passing zone shall be a minimum 500 feet long from the beginning of the bridge.
3. The crosshatching should be required if the shoulder width in advance of the bridge is 4 feet or wider and a reduction of at least 3 feet in shoulder width across the bridge occurs.
4. On divided highways, review both the right and left shoulder widths for the need for narrow bridge pavement markings.

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.

Texas Department of Transportation

Traffic Safety Division Standard

PAVEMENT MARKINGS FOR ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT

PM(5)-22

FILE: pm5-22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0906	32	064	N/A
	DIST	COUNTY		SHEET NO.
	ODA	MIDLAND		117

22E

DATE: 3/28/2024
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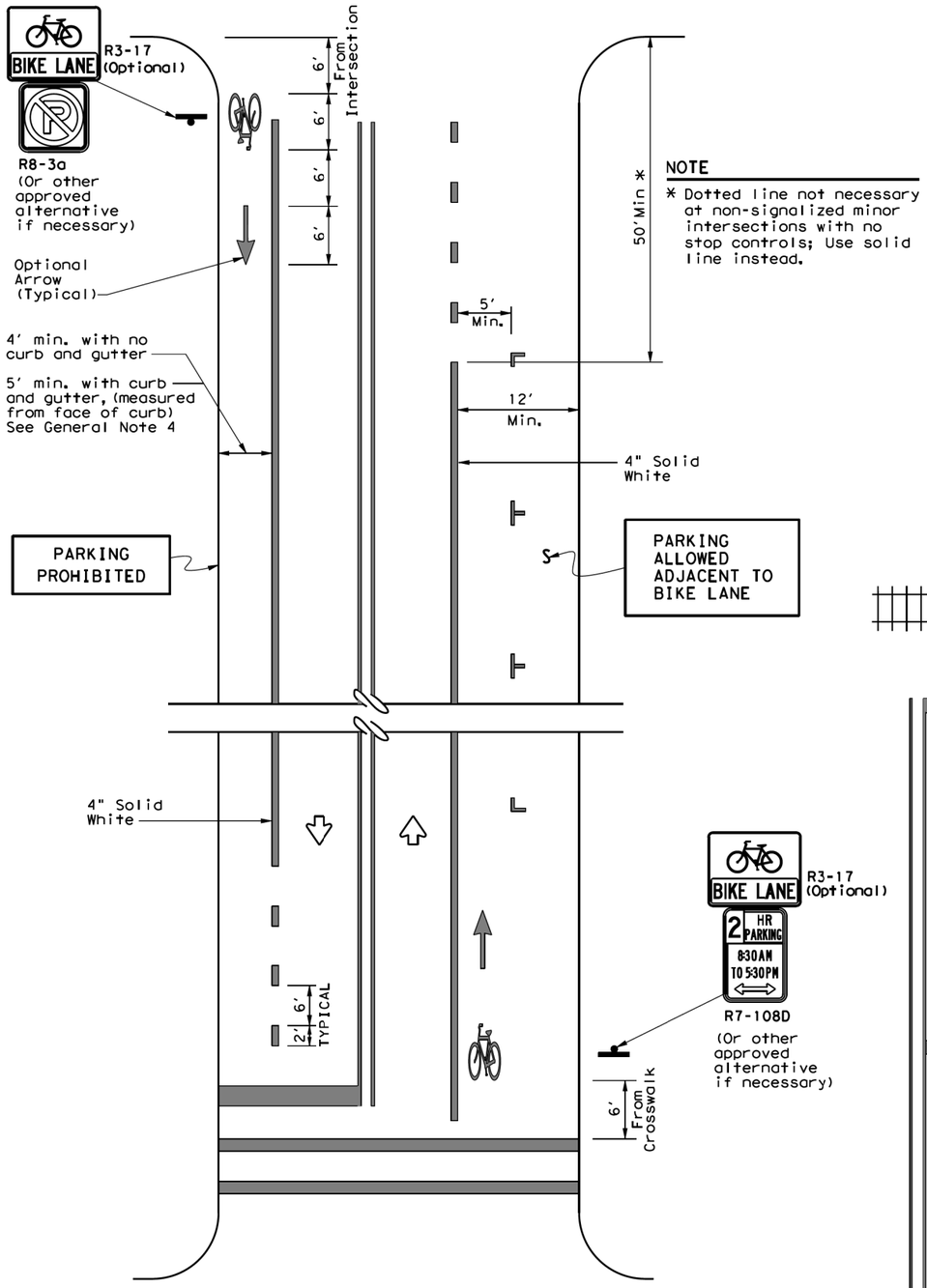


NOTE

* Dotted line not necessary at non-signalized minor intersections with no stop controls; Use solid line instead.

NOTES

1. Bicycle lane pavement markings typically repeated after each intersection or signalized driveway.
2. On uninterrupted sections of roadway, bicycle lane pavement markings typically repeated as follows:

   -1200' for 45 MPH or less roads
   -2500' for 50 MPH and greater roads.

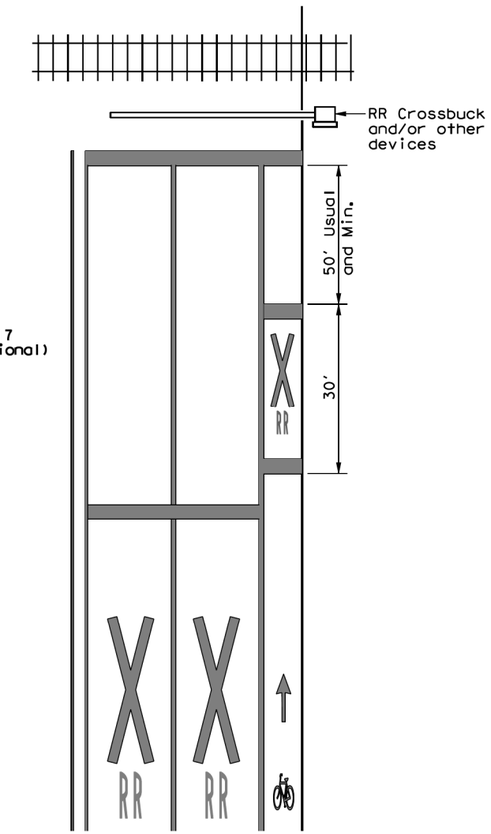
TWO-WAY STREET

GENERAL NOTES

1. All bicycle lane pavement markings shall be white unless otherwise noted.
2. All pavement marking materials shall meet the required Department Material Specifications as specified by the plans.
3. Exact sign placement and details are shown elsewhere in the plans.
4. The current edition of AASHTO'S Guide for the Development of Bicycle Facilities should be referenced for variations in design, other geometric conditions, and lane width options.
5. Other bicycle lane symbol or word markings as shown in the Texas Manual on Uniform Traffic Control Devices may be used. Details for words, arrows and symbols as shown in the Standard Highway Sign Designs for Texas.
6. The "BIKE LANE" (R3-17) sign with the "AHEAD" (R3-17a) sign mounted directly below should be installed in advance of the beginning of a marked bike lane.
7. The "BIKE LANE" (R3-17) sign with the "END" (R3-17b) sign mounted directly below should be installed at the end of marked bicycle lane.

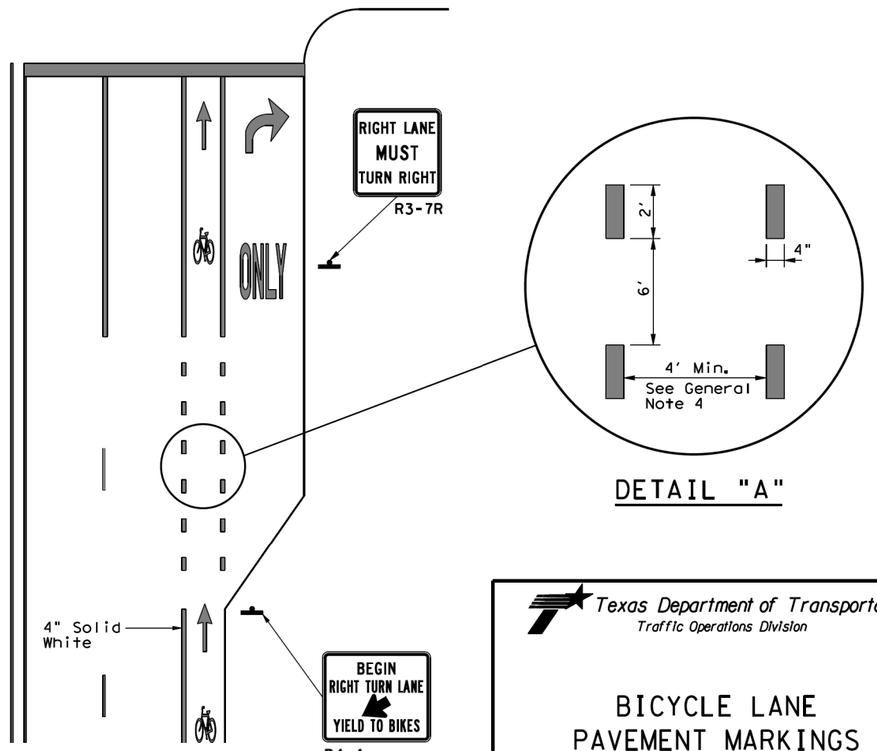
LEGEND	
	Sign
	Traffic Flow

SPECIFICATION REFERENCE TABLE	
Traffic Paint	DMS-8200
Hot Applied Thermoplastic	DMS-8220
Permanent Prefabricated Pavement Markings	DMS-8240
Glass Traffic Beads	DMS-8290



(See RCPM Standard for travel lane details)

RAILROAD CROSSING APPROACH



RIGHT TURN ONLY LANE

DETAIL "A"

Texas Department of Transportation
Traffic Operations Division

BICYCLE LANE PAVEMENT MARKINGS

BLPM-10

REVISIONS

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0906	32	064	N/A

DIST	COUNTY	SHEET NO.
ODA	MIDLAND	118

DATE: 3/28/2024
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GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is ½ in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

FILE:	ed1-14.dgn	DN:	CK:	DW:	CK:
©TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
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		DIST	COUNTY		SHEET NO.
		ODA	MIDLAND		119

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ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.

2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.

3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.

4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.

2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.

3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.

4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.

5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.

6. Support conductors in illumination poles with a J-hook at the top of the pole.

7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.

8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.

9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.

10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.

11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.

2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.

3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.

4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.

5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.

2. Do not place ground rods in the same drilled hole as a timber pole.

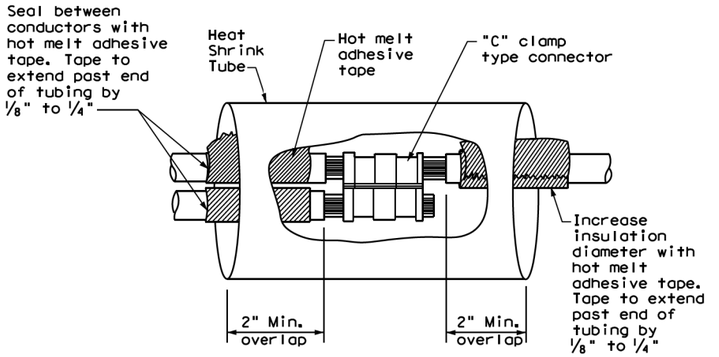
3. Install ground rods so the imprinted part number is at the upper end of the rod.

4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.

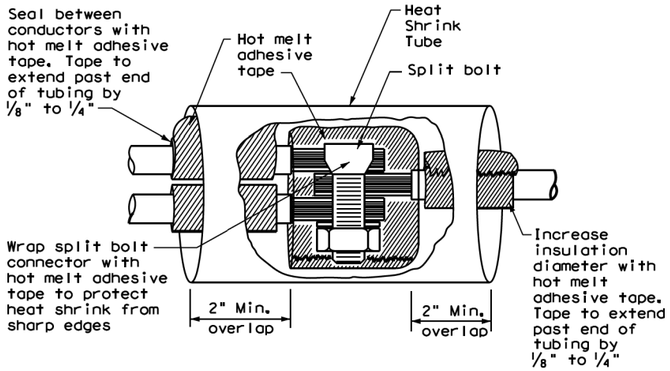
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.

6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.

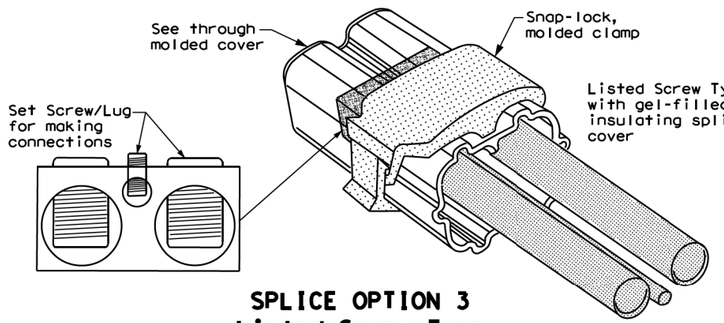
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUCTORS

ED(3)-14

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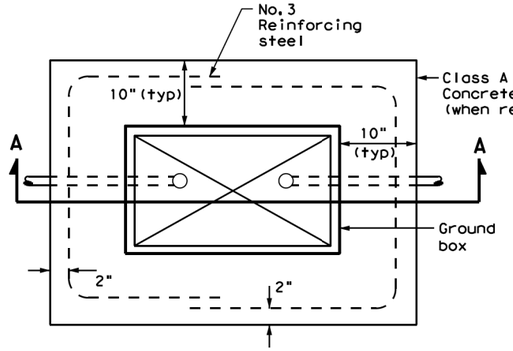
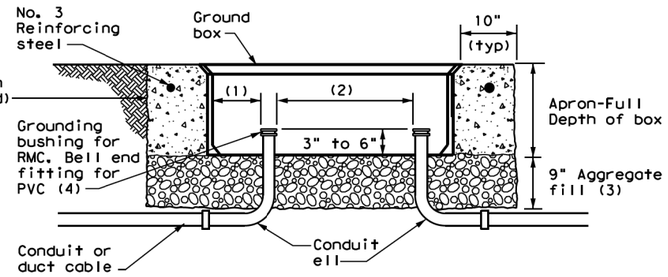
		ODA	MIDLAND		120

71C



PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

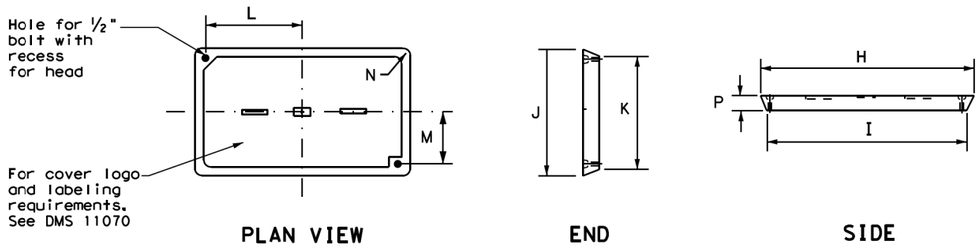
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW END SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."
2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.
3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.
4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.
2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.
3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.
4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.
5. Temporarily seal all conduits in the ground box until conductors are installed.
6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.
7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.
8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.
9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.
10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.
11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

Texas Department of Transportation

Traffic Operations Division Standard

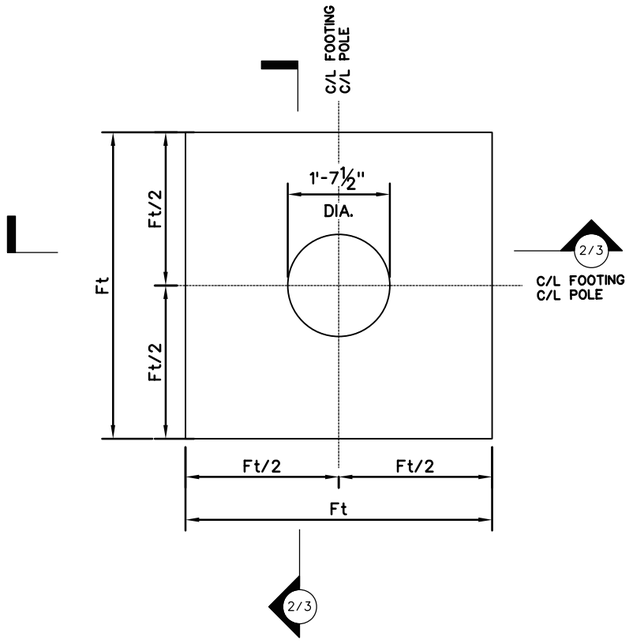
ELECTRICAL DETAILS GROUND BOXES

ED(4)-14

FILE: ed4-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0906	32	064	N/A
	DIST	COUNTY		SHEET NO.
	ODA	MIDLAND		121

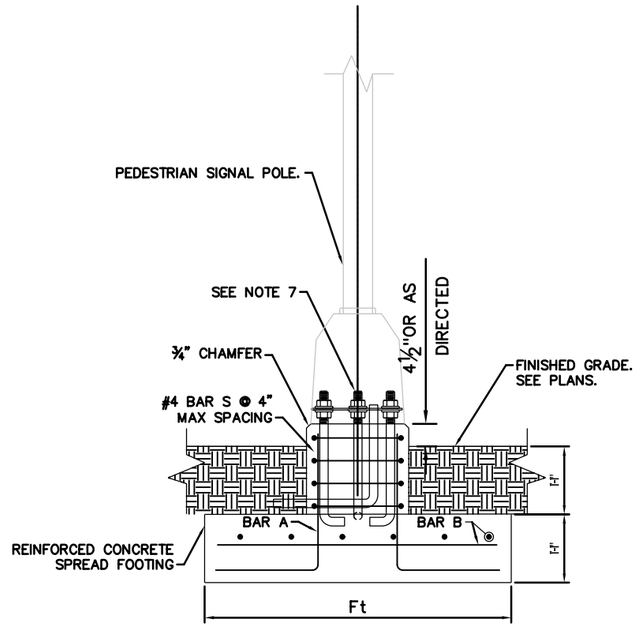
71D

DATE: 3/28/2024
FILE: d:\45000s\45715\009\PW\CADD\Sheets\C-DTLS-ED4-45715-009.dgn



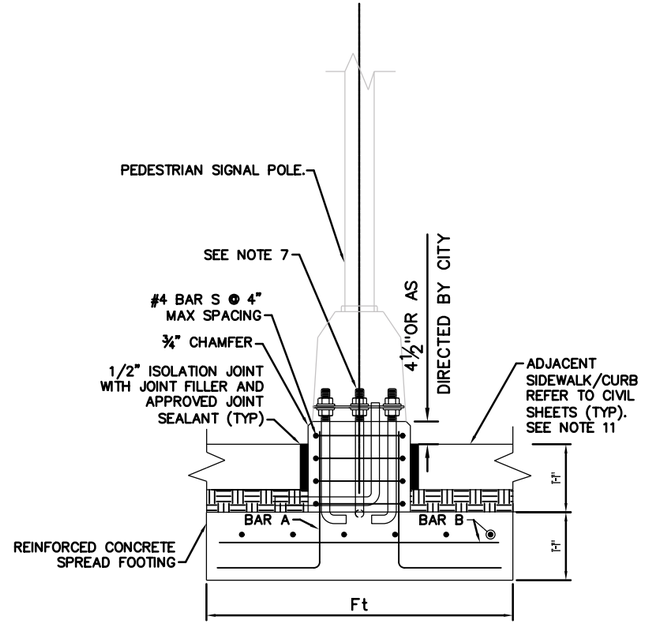
1 FOUNDATION PEDESTAL POLE DETAIL

SCALE: 1/2"=1'-0"



2 SECTION CUT

SCALE: 1/2"=1'-0"

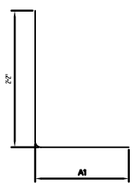


3 ISOLATION JOINT DETAIL

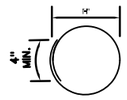
SCALE: 1/2"=1'-0"

PEDESTRIAN POLE				
DESCRIPTION	Ft*	BAR A	"A1"	BAR B
10/14 FOOT POLE	5'-0"	#5 @ 9"	1'-9"	#4 @ 6"
5 FOOT POLE	3'-0"	#5 @ 9"	0'-9"	#4 @ 6"

* Ft DIMENSION SHALL APPLY TO LENGTH AND WIDTH. FOUNDATION SHALL BE SQUARE.



BAR A



BAR S

1. FOUNDATION IS DESIGNED IN ACCORDANCE WITH 2013 EDITION OF AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.
2. CONCRETE SHALL BE CAST AGAINST UNDISTURBED, IN-SITU MATERIAL.
3. ALL CONCRETE SHALL BE DESIGNED, MIXED, TRANSPORTED, AND PLACED IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR ALL CONSTRUCTION PROJECTS, AND THE LATEST EDITION OF ACI-318.
4. CONCRETE FOR STRUCTURES SHALL BE CLASS S AND HAVE A MINIMUM 28-DAY COMPRESSION STRENGTH OF 3,600 PSI.
5. ALL REINFORCING STEEL SHALL BE ASTM A-615 GRADE 60
6. ALL REINFORCING DIMENSIONS ARE TO OUTSIDE OF BAR UNLESS OTHERWISE NOTED.
7. JOINT SEALERS AND FILLERS SHALL BE IN ACCORDANCE WITH TXDOT ITEM 438 "CLEANING AND SEALING JOINTS." SUBMIT PRODUCT DATA FOR ALL JOINTS AND SEALANTS FOR APPROVAL.
8. ALL CLEAR COVER FOR REINFORCING SHALL BE 2" WHERE FORMED AND 3" WHERE CAST AGAINST EARTH, UNLESS OTHERWISE NOTED ON THE PLANS.
9. DESIGN IS BASED ON THE FOLLOWING GEOTECHNICAL ASSUMPTIONS.
   - 9.A. MINIMUM GROSS ALLOWABLE BEARING PRESSURE = 1.5 KSF
   - 9.B. MINIMUM ANGLE OF INTERNAL FRICTION = 20
   - 9.C. MINIMUM COEFFICIENT OF BASE FRICTION = 0.30
10. IF PAVEMENT ABOVE FOOTING IS PLACED DIRECTLY ON FOOTING, APPLY A BOND BREAKER TO THE TOP OF FOOTING.

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME:

DATE: 03-01-2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
3417 73RD STREET, SUITE 12
LUBBOCK, TX 79423
TBPELS ENGINEERING FIRM #312

Texas Department of Transportation

W TEXAS AVE AND W ILLINOIS AVE
PEDESTRIAN SAFETY IMPROVEMENTS

SPREAD FOOTING
PEDESTAL POLE FOUNDATION

SCALE: NONE — Sheet 1 of 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HALFF	06	SEE TITLE SHEET		N/A
GRAPHICS: HALFF	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK: DMS	TEXAS	ODA	MIDLAND	122
CHECK: JTH	CONTROL 0906	SECTION 32	JOB 064	

DATE:3/28/2024 TIME:4:57:14 PM PROJECT # 45715 OFFICE:FTW
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DATE: 3/28/2024
FILE: d:\45000s\45715\009\PW\CADD\Sheets\C-DTLS-EPIC-45715-009.dgn

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

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

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

1. CITY OF MIDLAND

2.

☒ No Action Required ☐ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000

2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.

3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.

4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

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

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

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

☒ No Permit Required

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

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

☐ Individual 404 Permit Required

☐ Other Nationwide Permit Required: NWP# _____

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.

2.

3.

4.

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
☐ Temporary Vegetation	☐ Silt Fence	☐ Vegetative Filter Strips
☐ Blankets/Matting	☐ Rock Berm	☐ Retention/Irrigation Systems
☐ Mulch	☐ Triangular Filter Dike	☐ Extended Detention Basin
☒ Sodding	☐ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Mulch Filter Berm and Socks
☐ Mulch Filter Berm and Socks	☐ Mulch Filter Berm and Socks	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☐ Vegetation Lined Ditches
	☐ Stone Outlet Sediment Traps	☐ Sand Filter Systems
	☐ Sediment Basins	☐ Grassy Swales

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical.
Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

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

LIST OF ABBREVIATIONS

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

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

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

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

Contact the Engineer if any of the following are detected:
* Dead or distressed vegetation (not identified as normal)
* Trash piles, drums, canister, barrels, etc.
* Undesirable smells or odors
* Evidence of leaching or seepage of substances

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

☐ Yes ☒ No

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

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

☐ Yes ☒ No

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

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

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

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

VII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Texas Department of Transportation

Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT		CK: RG	DW: VP	CK: AR
©TxDOT: February 2015	CONT	SECT	JOB		HIGHWAY
REVISIONS 12-12-2011 (DS) 05-07-14 ADDED NOTE SECTION IV. 01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	0906	32	064		N/A
	DIST	COUNTY			SHEET NO.
	ODA	MIDLAND			123

STORM WATER POLLUTION PREVENTION PLAN (SW3P):

This SW3P has been developed in accordance with TPDES General Permit TXR150000. The operator, The Texas Department of Transportation ensures that: Project specifications provide that adequate BMPs have been developed for this project. The contractor shall be the party responsible for implementing the BMPs described herein. The contractor shall implement changes approved by the Project Engineer to the SW3P within the times specified in the SW3P or the TPDES General Permit. Operators affected by modifications to specifications will be notified in a timely manner.

1. SITE OR PROJECT DESCRIPTION:

NATURE OF THE CONSTRUCTION ACTIVITY: SEE TITLE SHEET

POTENTIAL POLLUTANTS AND	**SOURCES:**
Sediment laden storm water	*Storm water conveyance over disturbed areas*
Fuels, oils, and lubricants	*Construction vehicles and storage areas*
Transported soil	*Off site vehicle tracking*
Construction debris and waste	*Various construction activities*
Sanitary waste	*Restroom facilities*
Trash	*Construction site and Receptacles*

SEQUENCE OF ACTIVITIES THAT WILL DISTURB SOILS:

1. *Excavation, embankment, and grading operations.*
2. *Cement emulsion, asphalt treatment or any other soil stabilization.*
3.
4.
5.
6.
7.
8.

AREAS:

TOTAL AREA OF PROJECT: 2.00 ACRES

TOTAL AREA OF SOIL DISTURBANCE: 2.00 ACRES

TOTAL AREA OFF-SITE: N/A

DATA DESCRIBING THE SOIL: *Soils type C and D located within the project limits. Heavy infiltration rates apply to both.*

GENERAL LOCATION MAP: SEE TITLE SHEET

DETAILED SITE MAP: N/A

THE LOCATION AND DESCRIPTION OF CONCRETE AND ASPHALT PLANTS:

Supporting Concrete Plant Facilities shall be located off site. See note DEDICATED CONCRETE PLANTS.

Supporting Asphalt Plant Facilities shall be located off site. See note DEDICATED ASPHALT PLANTS.

NAME OF RECEIVING WATERS: *Storm Water from this project area flows generally to Scharbauer Draw.*

A COPY OF TPDES CGP TXR150000 IS INCLUDED IN THE SW3P FILE.

REMARKS: *N/A*

401 WATER QUALITY CERTIFICATION: YES____ NO__X__

2. BEST MANAGEMENT PRACTICES (BMPs):

EROSION AND SEDIMENT CONTROLS: Erosion and sediment controls have been designed to retain sediment on-site. Controls shall be utilized to reduce off site transport of suspended sediments and pollutants if it is necessary to pump water from the site. Control measures shall be installed per specifications or as directed. Sediment must be removed from controls per the plan requirements or manufacturers recommendations, but no later than the time that design capacity has been reduced by 50%. If sediment escapes the site, accumulations will be removed to minimize further negative effects. Controls will be developed to limit the off site transportation of litter, construction debris, and construction materials.

INTERIM(INT), PERMANENT(PER), AND 401 CERTIFICATION BMP'S:

EROSION CONTROLS:	401	INT	PER
☐ *Blankets and Matting*	__	__	__
☐ *Sod*	__	__	__
☐ *Preserve Existing Vegetation*	__	__	__
☐ *Soil Stabilization*	__	__	__
☐ *Permanent Vegetation*	__	__	__
☒ *No Erosion Controls are Required.*			

SEDIMENT CONTROLS:	401	INT	PER
☐ *Silt Fence*	__	__	__
☐ *Rock Berm*	__	__	__
☐ *Buffer Zones*	__	__	__
☐ *Vegetative Filter Strips*	__	__	__
☐ *Ditch Block*	__	__	__
☐ ***Erosion Control Logs***	__	__	__
☒ *No Sediment Controls are Required.*			

POST CONSTRUCTION TSS CONTROL (401 CERTIFICATION ONLY):

☐ *Vegetation Lined Drainage Ditch*	☐ *Grassy Swales*
☐ *Retention/Irrigation*	☐ *Vegetative Filter Strips*
☐ *Erosion Control Compost*	☒ *No Post Construction TSS Control Required.*

SEQUENCE OR SCHEDULE OF IMPLEMENTATION:

1. *N/A*
2.
3.
4.
5.
6.
7.
8.

The dates of major grading activities, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization practices are initiated, are available in the project diary or SW3P. Stabilization measures must be initiated as soon as practicable in portions of the site where construction has temporarily or permanently ceased. The Odessa District is located in a semi-arid area and the 14 and 21 day requirements are not applicable except, as directed by the Engineer.

3. STRUCTURAL CONTROL PRACTICES:

Structural control practices for this project are listed elsewhere herein.

4. PERMANENT STORM WATER CONTROLS:

Structural control practices installed during construction will be maintained and inspected after construction has ceased on the site and until final stabilization is attained. Unless specified in the plans, after project acceptance TxDOT will assume maintenance responsibilities for the controls and measures. Other permanent controls include existing and proposed; riprap at culvert inlets and outlets, diversion dikes, swales, retaining walls, and other similar devices.

5. OTHER CONTROLS:

OFF-SITE VEHICLE TRACKING OF SEDIMENTS AND THE GENERATION OF DUST: The off site vehicle tracking of sediments shall be minimized by removal of excess dirt from the road and at entrances to the work site. Stabilized Construction Entrances and Exits shall be constructed per the plans or as directed by the Project Engineer. The generation of dust will be minimized as directed by the Project Engineer by dampening haul roads and covering haul trucks with a tarpaulin.

CONSTRUCTION AND WASTE MATERIALS: The contractor will maintain a clean, orderly construction site. Construction waste including trash, rubble, scrap and vegetation shall be disposed of in lidded dumpsters or in a manner approved by the Project Engineer. Disposal methods must meet Federal, State, and Local waste management guidelines. No construction waste will be buried or burned on site. Spoils disposal, material storage, and materials resulting from the destruction of existing roads and structures shall be stored in areas designated by the Project Engineer and protected from run-off. All waterways shall be cleared of temporary embankment, temporary bridges, matting, false work, piling, debris, or other obstructions placed during construction operations, that are not part of the finished work, as soon as practicable. All excess soil generated by the construction will be collected and disposed of by the contractor. Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wetland, water body, or stream bed.

POLLUTANT SOURCES FROM AREAS OTHER THAN CONSTRUCTION: Staging areas and vehicle maintenance areas shall be located and constructed in a manner to minimize the runoff of pollutants. If potential pollutant sources are identified after the start of construction, controls and measures shall be implemented as directed by the Project Engineer.

5. OTHER CONTROLS (CONT):

DEDICATED ASPHALT PLANTS: Asphalt or asphaltic material for this project will be produced off site. If the project requires a dedicated asphalt plant and the plant within 1 mile of the project limits it will be considered an off site PSL. Consideration shall be given to on site plant and storage facilities and measures implemented as directed by the Project Engineer.

DEDICATED CONCRETE PLANTS: Cement or Concrete material for this project will be produced off site. If the project requires a dedicated concrete plant and the plant is within 1 mile of the project limits it will be considered an off site PSL. Consideration shall be given to on site plant and storage facilities and measures implemented as directed by the Project Engineer. Concrete trucks shall be wasted or washed out in locations designated by the Project Engineer. The locations shall be protected by a berm sufficient to contain all waste and wash water. Wash water shall not be allowed to enter any storm drainage system or waterway. The residual material and contaminated soil shall be collected and disposed of in accordance with Federal, State, and Local guidelines. Staging areas and vehicle maintenance areas shall be located and constructed in a manner to minimize the runoff of pollutants.

HAZARDOUS MATERIALS AND SPILL REPORTING: The contractor shall take appropriate measures to prevent, minimize, and control the spillage or leakage of hazardous materials and any associated wastes on site and in maintenance and staging areas. hazardous materials shall include but are not limited to paints, acids, solvents, asphalt products, chemical additives, curing compounds, oils, fuels, and lubricants. Hazardous materials shall not be stored, accumulated, or transported in open containers subject to precipitation or spillage, but shall be stored, accumulated, or transported in closed containers of the type recommended by the manufacturer. In the event of a spill the Project Engineer should be contacted immediately. All spills shall be immediately cleaned and any contaminated soil removed and disposed of in accordance with Local, State, and Federal laws. Fuel tanks shall be protected by a secondary containment, such as a lined berm, capable of containing 1.5 times the capacity of the tank, or as approved by the Project Engineer.

OFF SITE PSLs: All off site project specific locations including dedicated asphalt plants, concrete plants, or utility installations, required by the contractor, are the contractor's responsibility. The contractor shall secure all permits required by local, state, or federal laws for off site PSLs. The contractor shall provide diagrams and areas of disturbance for all PSL's within 1 mile of the project.

SANITARY FACILITIES: All sanitary or septic wastes that are generated onsite shall be treated and disposed of in accordance with state and local regulations. Raw sewage or septage shall not be discharged or buried on site. Precaution shall be taken to prevent illicit discharges to storm water. Licensed waste management contractors shall be required to dispose of sanitary waste. Porta johns will be required for the laboratory and construction site or as directed by the Project Engineer.

VELOCITY DISSIPATION DEVICES: Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as shown in the plans or as directed by the Project Engineer to provide a non-erosive flow velocity from the structure to a watercourse so that the natural physical and biological characteristics and functions are maintained and protected.

6. APPROVED STATE AND LOCAL PLANS:

This SW3P is consistent with requirements specified in applicable sediment and erosion site plans or site permits, or storm water management site plans or permits approved by federal, state, or local officials.

7. MAINTENANCE:

Control measures shall be properly installed according to specifications. If inspections or other information indicates a control has been installed, used, or is performing inadequately, the contractor must replace or modify the control as soon as practicable after discovery. Control measures shall be maintained in effective operating condition. If inspections determine that BMPs are not operating effectively maintenance will be performed as necessary to continue the effectiveness of the controls. Maintenance must be accomplished as soon as practicable. Controls adjacent to creeks, culverts, bridges, and water crossings shall have priority. Controls that have been disabled, run over, removed, or otherwise rendered ineffective must be corrected immediately upon discovery.

8. INSPECTION OF CONTROLS:

A TxDOT inspector will inspect disturbed areas of the site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, and structural controls for evidence of, or the potential for, pollutants entering the drainage system. Sediment and erosion controls measures identified in the SW3P will be inspected to ensure that they are operating correctly. Locations where vehicles enter or exit the site will be inspected for evidence of off-site vehicle tracking. Inspections will be conducted every month and within 24 hours after the end of a storm event of 0.5 inches or greater. The SW3P will be modified based on the result of these inspections. Revisions will be completed within 7 Calendar days following the inspection. Revised implementation schedules will be described in the SW3P and implemented as soon as practicable. Rain gages will be maintained on site for the duration of the project. Reports summarizing the scope of the inspections are included in the SW3P file.

9. NON-STORM WATER COMPONENTS:

The contractor shall be required to implement appropriate pollution prevention controls and measures for all eligible non-storm water components of the discharge as approved and directed by the Project Engineer.

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

NAME: David M. Smith

DATE: 03-01-2024

TBPELS ENGINEERING FIRM #312

SW3P NOTES

SW3P NOTES

Texas Department of Transportation

REV: 10-25-16

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
06	*		124
STATE	**STATE DIST.**	**COUNTY**	
TEXAS	ODA	MIDLAND	
CONT.	**SECT.**	**JOB**	**HIGHWAY NO.**
0906	32	064	N/A

SW3P Notes.dgn