INDEX OF SHEETS

SEE SHEET NO. 2

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

US 83 FUNCTIONAL CLASS = URBAN MINOR ARTERIAL
US 87 FUNCTIONAL CLASS = URBAN PRINCIPAL ARTERIAL
TERRAIN = LEVEL
DESIGN SPEED = 30 MPH
US 83 CURRENT ADT (2024) = 6,100
US 83 FUTURE ADT (2044) = 8,100
US 87 CURRENT ADT (2024) = 7,080
US 87 FUTURE ADT (2044) = 9,280

FEDERAL-AID PROJECT NUMBER			
F 2B24(364)			
CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC.	US 83, ETC.
DIST	COUNTY		SHEET NO.
SJT	CONCHO		1

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT F 2B24(364)

US 83
CONCHO

NET LENGTH OF PROJECT
ROADWAY = 2,578.93 FT = 0.488MI (C-S-J 0035-04-032)
ROADWAY = 650.07 FT = 0.123 MI (C-S-J 0035-03-047)
ROADWAY = 683.80 FT = 0.130 MI (C-S-J 0070-04-033)
TOTAL = 3,912.80 FT = 0.741 MI

LIMITS: FROM US 87 TO 0.5 MILES SOUTH OF US 87 (C-S-J 0035-04-032)
FROM BRYAN STREET TO US 87 (C-S-J 0035-03-047)
FROM CONCHO ST. IN EDEN TO SANTA FE ST. IN EDEN (C-S-J 0070-04-033)

FOR THE CONSTRUCTION OF WIDEN NON-FREEWAY
CONSISTING OF GRADING, HMA, CONCRETE PAVING, STRUCTURES,
SIGNALS, PAVEMENT MARKINGS AND SIGNS

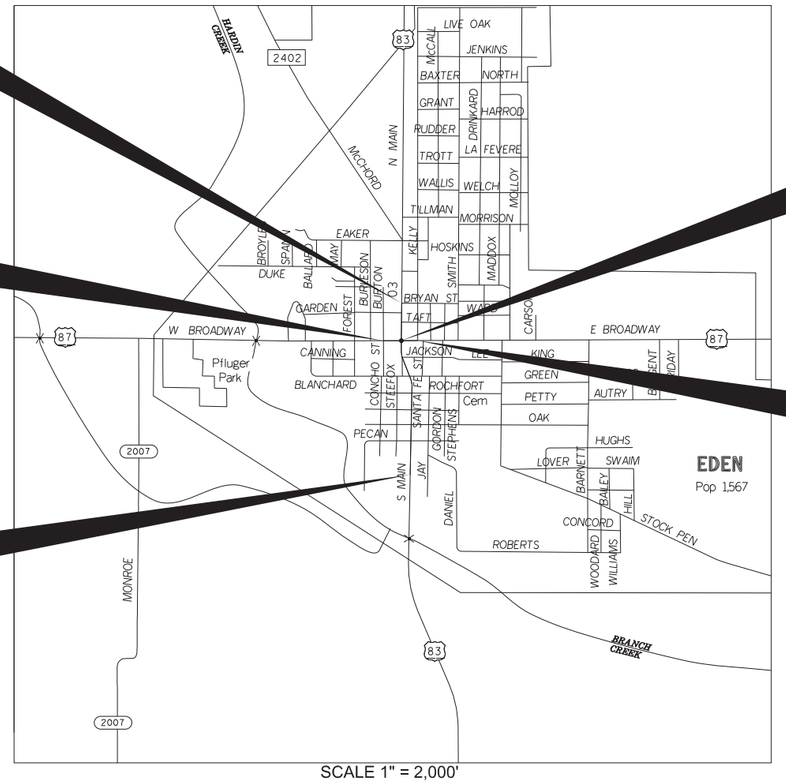
FINAL PLANS

Letting Date: _____
Name of Contractor: _____
Date Work Began: _____
Date Work Completed: _____
Date Work Accepted: _____
Final Contract Cost: _____

END PROJECT
END C-S-J 0035-03-047
STA 1239+29.00
TRM 422+1.387
DFO 404.923
MILE POINT 25.390
LATITUDE 31.217962°
LONGITUDE -99.845665°

BEGIN PROJECT
END C-S-J 0070-04-033
STA 1047+56.20
TRM 512+1.672
DFO 479.581
MILE POINT 20.678
LATITUDE 31.216282°
LONGITUDE -99.846654°

BEGIN PROJECT
END C-S-J 0035-04-032
STA 1207+00.00
TRM 422+1.999
DFO 405.535
MILE POINT 26.002
LATITUDE 31.210220°
LONGITUDE -99.845190°



SCALE 1" = 2,000'

EXCEPTIONS
NONE

EQUATIONS
NONE

RAILROAD CROSSINGS
NONE

END C-S-J 0035-04-032
BEGIN C-S-J 0035-03-047
STA 1232+78.93
TRM 422+1.530
DFO 405.066
MILE POINT 25.533
LATITUDE 31.216303°
LONGITUDE -99.845678°

END C-S-J 0070-04-033
STA 1054+40.00
TRM 512+1.775
DFO 479.684
MILE POINT 20.781
LATITUDE 31.216271°
LONGITUDE -99.844538°

Registered Accessibility Specialist
(RAS) inspection required

TDLR PROJECT NO. TABS2024020272

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

IDCUS
PLANNERS | ENGINEERS | MANAGERS

IDCUS, INC
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

SUBMITTED FOR LETTING:

STATE OF TEXAS
CHARLES M. SHINE
62999
PROFESSIONAL ENGINEER
5/22/2024

Consultant Engineer

2024
Texas Department of Transportation

SUBMITTED FOR LETTING: 5/28/2024

DocuSigned by:
Nicholas Greenly
DDF89C6522AF49E...
District Design Engineer

RECOMMENDED FOR LETTING: 5/28/2024

DocuSigned by:
826185212F51427...
District Director of P&D

APPROVED FOR LETTING: 5/29/2024

DocuSigned by:
BC10B17FA709437...
District Engineer

INDEX OF SHEETS

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER

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

P.E.
Omar Alducin, P.E. — 5/23/2024 DATE

STATE OF TEXAS
ALI ROSHANFEKR
124610
LICENSED
PROFESSIONAL ENGINEER

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

Ali Roshanfekr
Ali Roshanfekr, P.E. — 5/23/2024 DATE

STATE OF TEXAS
ERIC SIERRA-ORTEGA
124817
LICENSED
PROFESSIONAL ENGINEER

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

Eric Sierra-Ortega, P.E. — 5/23/2024 DATE

NO.	DATE	REVISION

Texas Department of Transportation

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HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

INDEX OF SHEETS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		2

DATE: 5/23/2024 8:34:09 AM
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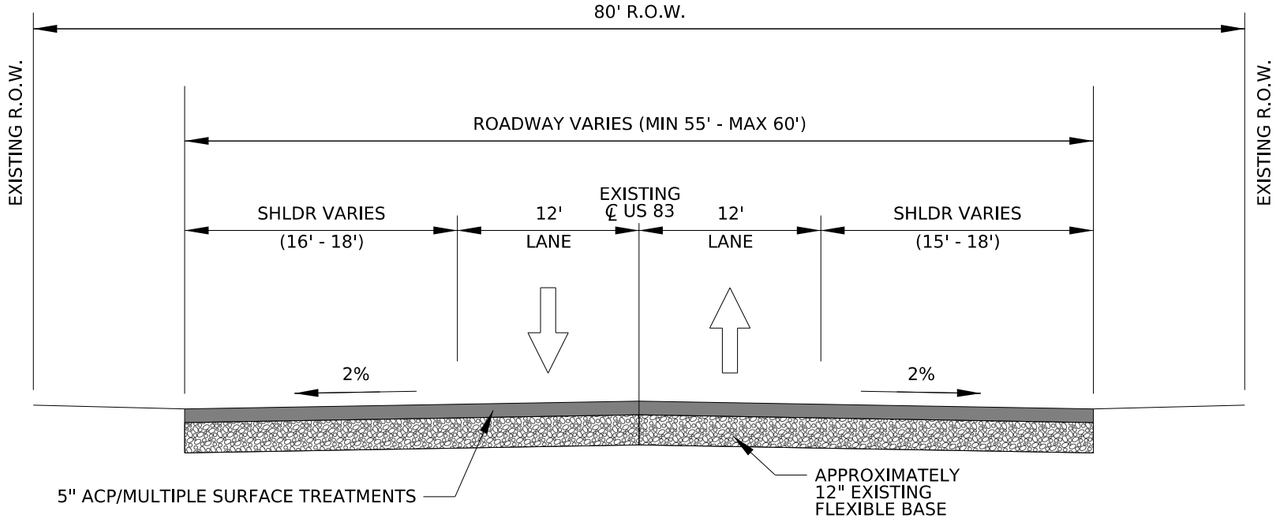
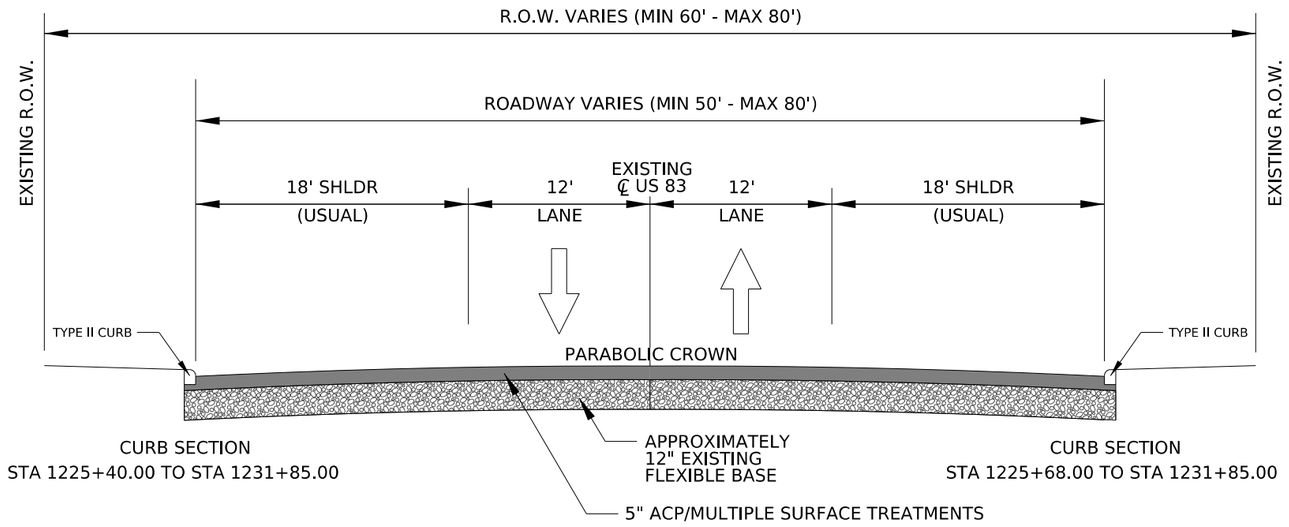


EXISTING TYPICAL SECTION (US 83)

STA 1207+00.00 TO STA 1225+40.00



EXISTING TYPICAL SECTION (US 83)

STA 1225+40.00 TO STA 1231+85.00

US 87 INTERSECTION

STA 1231+85.00 TO STA 1233+46.00

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER
5/22/2024
P.E.

NO.	DATE	REVISION

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TBPELS FIRM # F-6825

US 83

US 83
EXISTING
TYPYCAL SECTIONS

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		3

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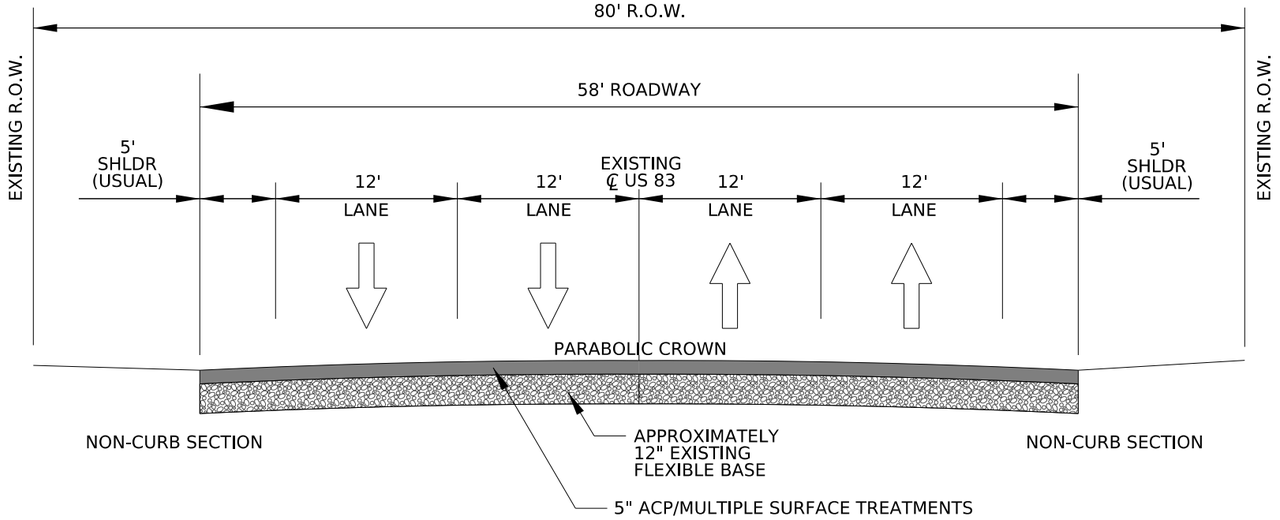

EXISTING TYPICAL SECTION (US 83)

STA 1233+46.00 TO STA 1239+29.00

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER
5/22/2024
P.E.

NO.	DATE	REVISION

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US 83

US 83
EXISTING
TYPYCAL SECTIONS

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		4

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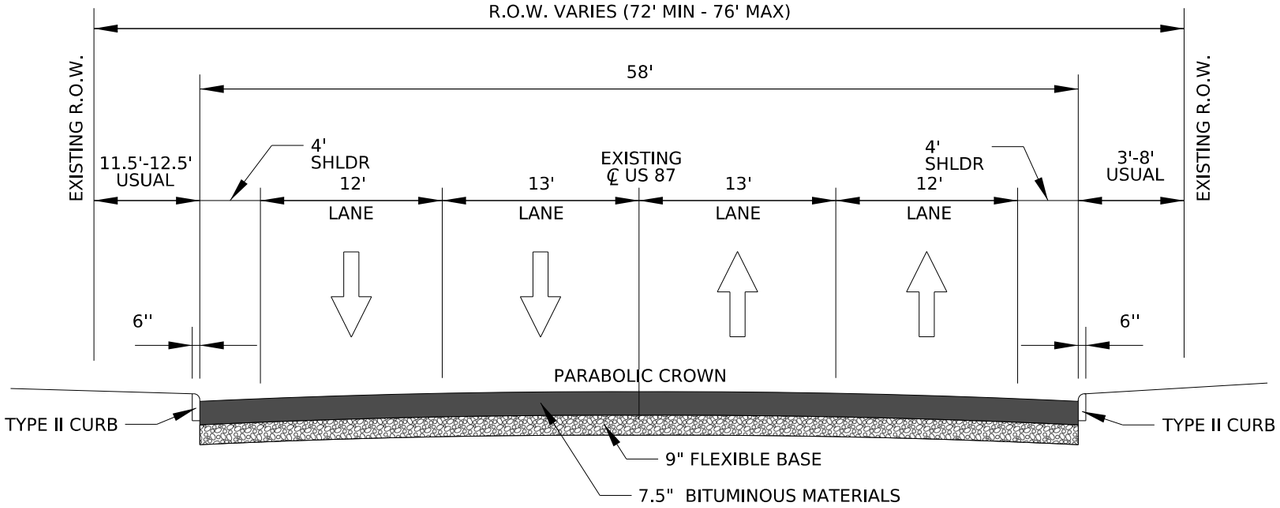
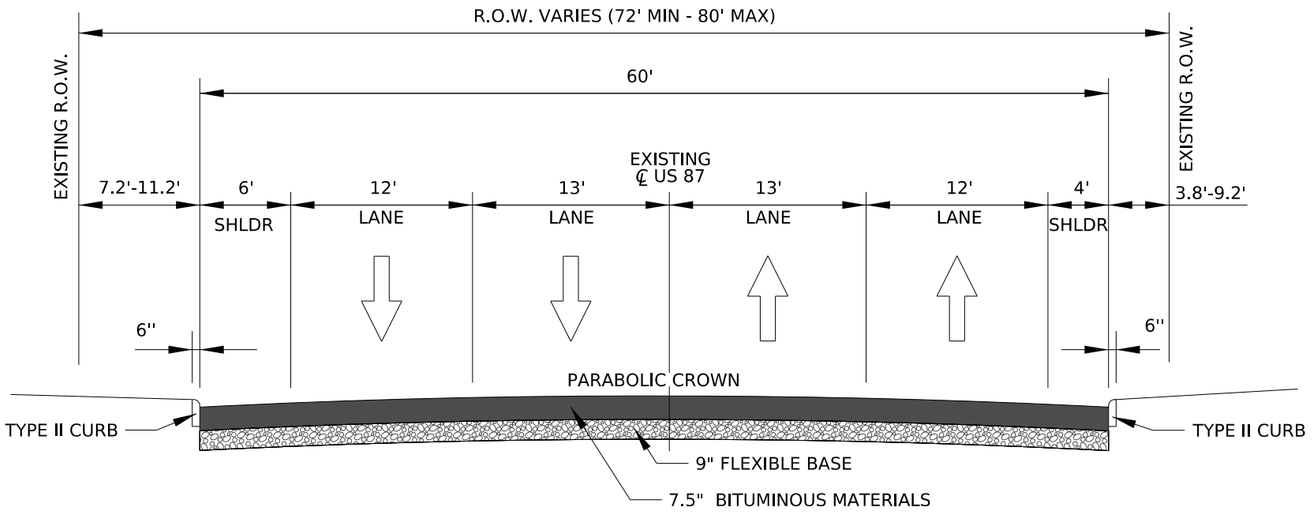


EXISTING TYPICAL SECTION (US 87)

STA 1047+56.20 TO STA 1050+06.00

US 83 INTERSECTION

STA 1050+06.00 TO STA 1051+58.00



EXISTING TYPICAL SECTION (US 87)

STA 1051+58.00 TO STA 1054+40.00

STATE OF TEXAS
OMAR ALDUCIN
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5/22/2024
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NO.	DATE	REVISION

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US 83

US 87
EXISTING
TYPYCAL SECTIONS

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		5

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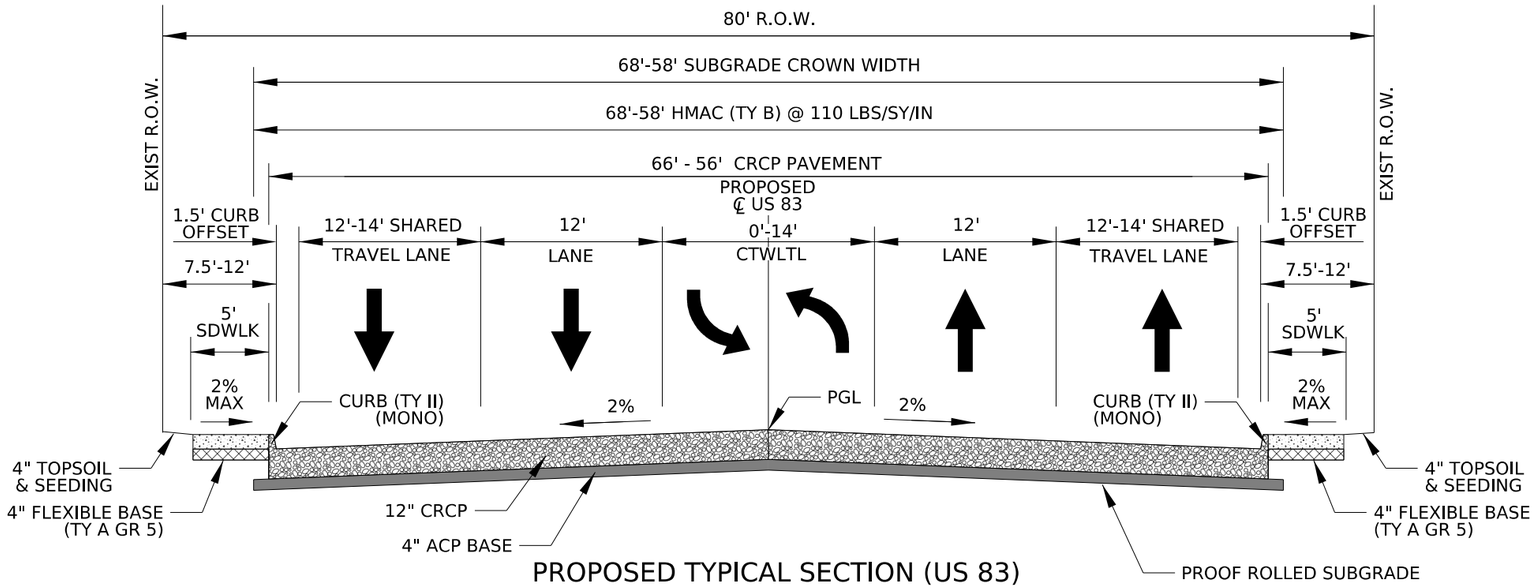
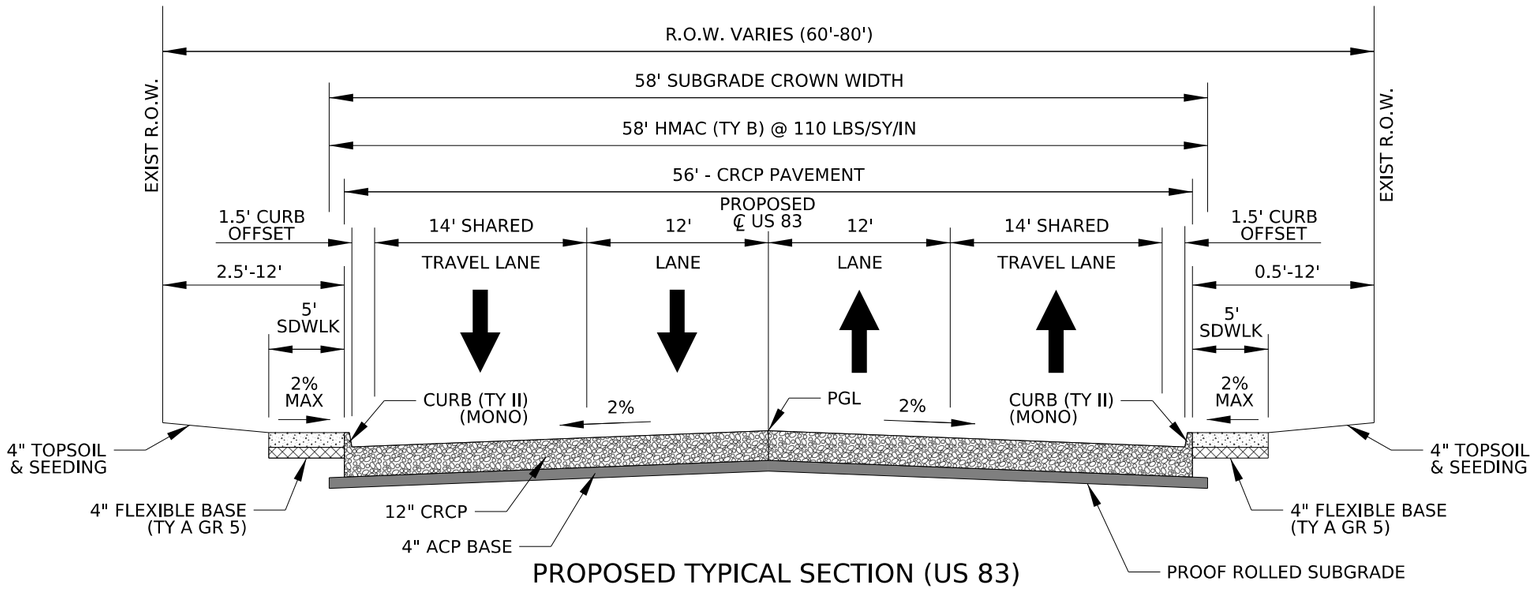


PROPOSED TYPICAL SECTION (US 83)

STA 1207+00.00 (66') TO STA 1210+00.00 (56')(TRANSITION)



PROPOSED TYPICAL SECTION (US 83)

STA 1210+00.00 TO STA 1231+96.69 (56')
STA 1233+61.00 TO STA 1239+29.00 (56')

US 87 INTERSECTION

STA 1231+96.69 TO STA 1233+61.00

STATE OF TEXAS
OMAR ALDUCIN
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5/22/2024
P.E.

NO.	DATE	REVISION

Texas Department of Transportation

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HOUSTON, TX 77094
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TBPELS FIRM # F-6825

IDCUS
PLANNERS | ENGINEERS | MANAGERS

US 83

US 83
PROPOSED
TYPYCAL SECTIONS

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		6

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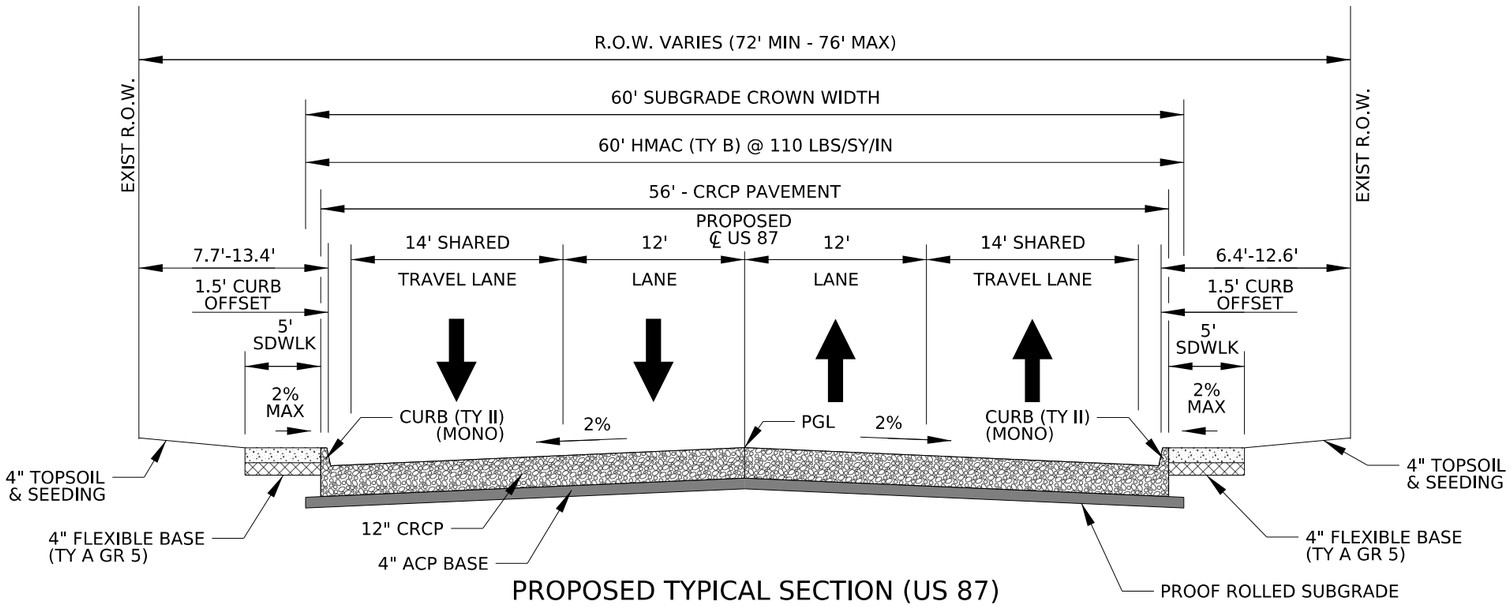

PROPOSED TYPICAL SECTION (US 87)

STA 1047+56.20 TO STA 1050+03.34 (56')

US 83 INTERSECTION

STA 1050+03.34 TO STA 1051+57.52

STA 1051+57.52 TO STA 1054+00.00 (56')
STA 1054+00.00 TO STA 1054+40.00 (34' LT 28' RT)

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STATE OF TEXAS
OMAR ALDUCIN
131479
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PROFESSIONAL ENGINEER
5/22/2024
P.E.

NO.	DATE	REVISION

Texas Department of Transportation

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TBPELS FIRM # F-6825

US 83

US 87
PROPOSED
TYPYCAL SECTIONS

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		7

BASIS OF ESTIMATE

Item No.	Description	Usage	Area or Length		Rate		Estimated Quantity	
# 204	Sprinkling	Dust Control	25,201.3	SY	0.014	MG/SY		MG
216	Proof Rolling	Subgrade	25,201.3	SY	750	SY/HR	33.6	HR
3076	Dense-Graded Hot-Mix Asphalt TY B	Surface Course	25,201.3	SY	440	LB/SY (4" DEPTH)	5,544.3	TON
3076	Dense-Graded Hot-Mix Asphalt TY B	Surface Course	47.1	SY	1,320	LB/SY (12" DEPTH)	31.1	TON
3076	Dense-Graded Hot-Mix Asphalt	Tack Coat	4,273.8	SY	0.08	GAL/SY	341.9	GAL
3077	Superpave Mixture	Surface Course	4,273.8	SY	220	LB/SY (2" DEPTH)	235.1	TON

Quantity is shown for Contractor's information only (not a pay item).

County: Concho **Sheet:** 8A

Highway: US 83, etc. **Control:** 0035-03-047, etc.

GENERAL NOTES

The following Standard Sheets have been modified: NONE

Locate the project bulletin board at an approved location within the project limits such as at a field office, staging area, or stockpile, and make accessible to the public at all times. Do not remove the bulletin board from the project until approved. If a construction site notice is required for the project, post a copy at each geographically separated work location.

In those instances where fixed features require, vary the governing slopes indicated in these plans from within the limits to the extent determined.

If Contractor elects to establish a pit within 200 ft. of a public road, construct a barrier or other device in accordance with Natural Resources Code, Chapter 133, and Section 133.041.

Do not use salt water with solids in excess of 10,000 parts per million, as determined by evaporation.

Contractor questions on this project are to be addressed by the following individual:

Jesus Garcia, P.E.; email jesus.garcia9@txdot.gov and Randy Baiza, P.E.; email randy.baiza@txdot.gov

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

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.

A copy of the 3D model or cross-sections and earthwork data may be obtained by qualified bidders by sending a request to the following set of email addresses:

Jesus Garcia, P.E.; email jesus.garcia9@txdot.gov and Randy Baiza, P.E.; email randy.baiza@txdot.gov

Data as provided is for non-construction purposes only and it is the responsibility of the prospective bidder to validate this information with the appropriate plans and Specifications.

Item 5, "Control of the Work"

State Highway right of way markers destroyed by the Contractor shall be replaced by a Texas Registered Professional Land Surveyor (RPLS) at no cost to the State. Provide written documentation from the RPLS attesting to the replacement of the right of way markers.

Make suitable advance notification to affected non-participating municipalities regarding Class B underground facilities, call the Department's San Angelo District Traffic Office at telephone number (325) 947-9208 to have the Department's existing traffic signal and illumination utilities located, and call the Department's San Angelo District Maintenance Office at telephone number (325) 947-9322 to have the Department's existing irrigation utilities located.

Responsibility for construction surveying shall conform to Section 5.9.3., "Method C."

Submit shop drawings electronically for the fabrication of structural items and other items specifically listed in the plans to SJT_ShopPlanReview@txdot.gov. For instructions on submitting shop drawings electronically see "Guide to Electronic Shop Drawing Submittal" at http://www.txdot.gov/business/resources/specifications/shop-drawings.html.

Item 6, "Control of Materials"

When allowed, store materials and equipment in approved areas within the right of way.

Access the work area from the right of way.

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

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

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

Item 7, "Legal Relations and Responsibilities"

No significant traffic generator events have been identified.

County: Concho **Sheet:** 8B

Highway: US 83, etc. **Control:** 0035-03-047, etc.

Item 8, "Prosecution and Progress"

Submit the sequence of work and estimated progress schedule on paper or as a Portable Document Format (PDF) electronic file compatible with Adobe Systems Incorporated "Acrobat Reader XI".

A delay start provision is included in the contract to allow time to procure construction materials including aggregates for asphalt concrete pavement, Portland cement concrete, and precast drainage components.

Changes for working days shall conform to Section 8.3.1.4., "Standard Workweek."

Nighttime work is allowed. Provide adequate lighting to allow satisfactory inspection.

The daily road user cost disincentive for substantial completion of the project will be $953.00 per day.

Create, maintain, and submit for approval, a Critical Path Method (CPM) project schedule using computer software that is fully compatible with the latest version of Primavera Systems, Inc. or Primavera Project Planner (P3 or P6).

Item 9, "Measurement and Payment"

The progress payment period shall end two working days before the last working day of the month. Deliver invoices to be paid as material on hand on or before the end of the progress payment period.

For projects that include a disadvantaged business enterprises (DBE) goal, provide a conversion rate for units of payment for work subcontracted to DBE if units of payments differ from those shown on the plans.

Item 204, "Sprinkling"

Apply water for dust control to un-surfaced bases during the work day, at the end of each work day, and on non-work days as directed.

Item 247, "Flexible Base"

Stockpile flexible base produced for this project separately from any other stockpiled material and label stockpile with project number, material type, and grade.

Provide 24 hours written notice of intent to begin crushing operations. Materials produced prior to this notice will not be accepted.

Compact using ordinary compaction.

Item 320, "Equipment for Asphalt Concrete Pavement"

Provide production equipment that ensures a uniform continuous production rate of at least 150 tons per hour.

A Type D Structure is required.

Apply tack coat at a total rate of 0.09 gallons per square yard. Dilute the emulsion 1 part water (0.03 gallons per square yard) to 2 parts asphalt (0.06 gallons per square yard). Residual asphalt rate is 0.06 gallons per square yard.

Item 354, "Planing and Texturing Pavement"

Remove and dispose of existing raised pavement markers, jiggle bars, and traffic buttons before planing.

Mark and saw cut straight lines at the boundaries of planed areas. Do not saw cut pavement until the lines are approved.

Take measures to prevent reclaimed asphalt pavement (RAP) from entering storm drain grates, inlets and waterways, or from falling onto roadbeds below.

All reclaimed asphalt pavement (RAP) not incorporated into the project shall become the property of the Contractor.

Maintain approved sediment control measures around the stockpile of reclaimed asphalt pavement (RAP) material at all times. This shall not be paid for directly but shall be considered as included in payment for this item.

Item 360, "Concrete Pavement"

A metal-tine texture finish is not required.

Item 400, "Excavation and Backfill for Structures"

If excavating beyond the dimensions shown on the plans, furnish and install cement stabilized backfill in such areas at no cost.

Item 421, "Hydraulic Cement Concrete"

Provide sulfate-resistant concrete (containing Type II cement) for all concrete identified as structural concrete in Table 8, except for the following: bridge railing, approach slabs, concrete traffic barrier, prestressed concrete panels, Class H concrete, and Class S concrete.

Entrained air is required in all slip formed concrete, but is not required for other structural concrete. Adjust the dosage of air entraining agent for low air content as directed by the Engineer. If entrained air is provided where not required, only the upper limits of the applicable Special Provision will be enforced.

County: Concho **Sheet:** 8C

Highway: US 83, etc. **Control:** 0035-03-047, etc.

Provide only the following items listed in 421.3.3, "Testing Equipment": test molds, wheelbarrow, maturity meter, and curing facility.

Item 432, "Riprap"

Furnish and install 1/2-in. thick joint filler board conforming to DMS-6310, "Joint Sealants and Fillers" between concrete riprap and adjacent existing concrete, and where directed.

Item 496, "Removing Structures"

This item shall include the complete removal and proper disposal of existing structures, including but not limited to the following: culvert barrels, railing, wingwalls, headwalls, retaining walls, safety end treatments, pipe runners, riprap, deck, overlay, approach slabs, joints, beams, bracing, drains, conduits, pipes, bents, abutments, columns, pilings, footings, web-walls, drilled shafts, reinforcing steel, bridge protective assemblies, clearance signs, etc. Portions of the structure at least 2 ft. below the permanent ground line may be left in place as directed.

Item 502, "Barricades, Signs and Traffic Handling"

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could 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.

Shadow vehicles shown on the plans are required.

Lead vehicles shown on the plans are required.

Trail vehicles shown on the plans are required.

Traffic control devices denoted with the triangle symbol on the plans may be

omitted. Use high level warning flags on advance warning signs during daytime

operations.

Provide flaggers at such times and locations as directed to ensure the safe passage of traffic through construction areas. When flaggers are used to control traffic, furnish and install signs CW20-7 "FLAGGER SYMBOL", CW20-7aD "FLAGGER AHEAD", and CW3-4 "BE PREPARED TO STOP". Flaggers shall use 24 in. STOP/SLOW paddles.

Warning reflectors mounted on plastic drums may be substituted in place of Type C steady burn warning lights.

Temporarily relocate existing mailbox assemblies on portable mailbox stands as shown on the plans, or as directed. Use materials conforming to the Compliant Work Zone Traffic Control Device List (CWZTCDL).

Prior to each work day, make provisions to exclude vehicles from parking within work areas.

Temporarily relocate existing permanent sign assemblies to temporary supports as shown on the plans, or as directed.

Omit advance warning signs and furnish and install reduced size signs CW20-1 "ROAD WORK AHEAD" mounted back-to-back with reduced size signs G20-2 "END ROAD WORK" signs at intersecting city streets and county roads.

Furnish and install signs CW20-1D "ROAD WORK AHEAD", G20-1aT "ROAD WORK ←NEXT X MILES, NEXT X MILES→", and G20-2 "END ROAD WORK" at intersecting state highways.

In addition to providing a Contractor's Responsible Person and a phone number for emergency contact, have employee(s) available to respond on the project for emergencies and for taking corrective measures within 30 minutes.

Item 504, "Field Office and Laboratory"

Furnish one Type B structure. Provide internet connectivity, a printer/fax/scan/copier capable of handling 11x17 documents, and telephone.

Furnish one Type D structure. Provide equipment for performing tests referenced in the specifications for asphalt concrete pavement. Asphalt content will be determined by the ignition method. The Type D structure and test equipment will not be shared with the Contractor.

Item 531, "Sidewalks"

Flexible base shall conform to the requirements of Item 247, Flexible Base" Type A, Grade 2 (without minimum strengths or classification). Flexible base used as a foundation for sidewalks will not be measured and paid for separately, but is considered as included in payment for the pertinent Items.

Item 636, "Signs"

Install the prismatic sheeting for overhead signs material to within 30 degrees of the manufacturer-specified orientation.

Before removal from the project site, spray-paint (with an oil-based paint), an "X" across the face of non-salvageable signs as directed.

County: Concho **Sheet:** *8D*

Highway: US 83, etc. **Control:** 0035-03-047, etc.

Item 644, "Small Roadside Sign Assemblies"

Furnish and install omni-directional sign post wrap (12 in. by 12 in. Type C retroreflective sheeting with pressure sensitive backing) on sign posts that have sign faces that do not face the predominant direction of traffic, as directed. Sign post wrap shall be yellow for signs R6-1 "ONE WAY" and shall be red for signs R1-2 "YIELD", R5-1 "DO NOT ENTER", R5-1a "WRONG WAY", and R1-1 "STOP". Place the bottom of sign post wrap a height of 4 ft. above the edge of travel lane.

Where foundations protrude through riprap or other concrete areas, wrap the foundation with 1/4-in. thick bituminous fiber sheets before placing concrete or repairing the concrete area. Bituminous fiber sheet tubes may be used for forming sign foundations instead of removable forms and shall be left in place below the finished concrete or riprap surface. Neatly trim the bituminous fiber sheets flush with the finished surface after the concrete has cured.

Drill and pour small roadside sign foundations on the same day or suitably cover the drilled hole.

Signs indicated to be mounted on the back of another sign or on a traffic signal pole or mast arm may require punch spacing different from that shown on the Standard Sheets. Adjust punch spacing on affected signs.

Cover each unfinished sign base with a reflectorized traffic cone.

Item 658, "Delineator and Object Marker Assemblies"

Remove existing object markers and delineators. Removal is not a pay item.

Item 662, "Work Zone Pavement Markings"

Do not use temporary flexible-reflective roadway marker tabs to delineate words, symbols, shapes, or diagonal or transverse lines.

Paint and beads are allowed for nonremovable markings.

Item 666, "Retroreflectorized Pavement Markings"

Place glass beads for pavement markings in accordance with the following table:

Marking Types	Glass Bead (Double Drop) Types	Glass Bead Rates	
		Surface Treatment	Asphalt Concrete Pavement, Microsurfacing, Concrete Pavement
TY I markings	Type II	12 LB per 100 SF	6 LB per 100 SF
	Type III	12 LB per 100 SF	6 LB per 100 SF
TY II markings	Type II	12 LB per GAL	6 LB per GAL
	Type III	12 LB per GAL	6 LB per GAL

Apply TY II marking material at a rate of 25 gallons per mile.

The striper speed shall not exceed 5 MPH during application. Convert to gravity-flow beaders (if not in use) to obtain optimum bead application, when directed.

Clean striper tanks before use if there is a build-up of dry paint, as directed. Flush lines and guns before use.

Reference existing markings before performing work that disturbs the markings, so that the markings can be re-established.

Provide a double-drop of Type II and Type III glass beads.

Item 668, "Prefabricated Pavement Markings"

When applying Type C specialty markings (symbols, words, etc.) over existing thermoplastic markings, first apply heat to the surface of the existing markings and roughen the surface with a shovel. Remove existing Type A, B, or C prefabricated markings prior to placing the new Type C markings.

Item 677, "Eliminating Existing Pavement Markings and Markers"

Use the following method: Blasting and or Mechanical.

Item 3076, "Dense-Graded Hot-Mix Asphalt"

Liquid antistripping agents are not allowed.

Do not dump and reload hot mix asphalt into a material transfer device, truck, or asphalt paver using a front-end loader.

County: Concho **Sheet:** 8E

Highway: US 83, etc. **Control:** 0035-03-047, etc.

Should the paving operation stop three times in one day due to equipment malfunction or mixture flow interruption, the Engineer may require the Contractor to immediately suspend operations until the next working day.

Hauling equipment is subject to weight verification.

Substitute PG binder is not allowed.

Unless otherwise approved, do not pave during the months of December, January, and February.

Item 6306, "Video Imaging Vehicle Detection System"

The existing detection system shall remain operational during the various construction phases of the intersection of US 83 and US 87. Once the roadway is fully open with all the proposed travel lanes, the existing video detection system shall be relocated from the existing traffic signal to the proposed traffic signal installation. The Contractor shall take reasonable care not to damage the video detection equipment during the relocation process. Any damaged equipment will be replaced at Contractor's expense.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0035-03-047 **DISTRICT** San Angelo **COUNTY** Concho
HIGHWAY US 83, US 87

			CONTROL SECTION JOB	**0035-03-047**		**0035-04-032**		**0070-04-033**		TOTAL EST.	TOTAL FINAL
			PROJECT ID	**A00070553**		**A00070561**		**A00072353**			
			COUNTY	**Concho**		**Concho**		**Concho**			
			HIGHWAY	**US 83**		**US 83**		**US 87**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	100-6002	PREPARING ROW	STA	6.400		25.700		6.800		38.900	
	104-6013	REMOVING CONC (FOUNDATIONS)	SY	9.000						9.000	
	104-6015	REMOVING CONC (SIDEWALKS)	SY	165.100		122.800		168.300		456.200	
	104-6017	REMOVING CONC (DRIVEWAYS)	SY	165.700		426.700		352.800		945.200	
	104-6021	REMOVING CONC (CURB)	LF	162.300		748.700		266.400		1,177.400	
	104-6022	REMOVING CONC (CURB AND GUTTER)	LF			285.200				285.200	
	104-6028	REMOVING CONC (MISC)	SY	40.700		196.600				237.300	
	105-6075	REMOV STAB BASE AND ASPH PAV (10"-18")	SY	4,830.100		18,904.200		4,969.400		28,703.700	
	110-6001	EXCAVATION (ROADWAY)	CY	1,274.300		7,769.800		1,933.100		10,977.200	
	132-6003	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY	19.800		10.100		20.400		50.300	
	160-6010	FURNISH AND PLACE TOPSOIL (5")	SY	632.400		2,768.800		121.800		3,523.000	
	164-6023	CELL FBR MLCH SEED(PERM)(RURAL)(CLAY)	SY	632.400		2,768.800		121.800		3,523.000	
	164-6029	CELL FBR MLCH SEED(TEMP)(WARM)	SY	316.200		1,384.400		60.900		1,761.500	
	164-6031	CELL FBR MLCH SEED(TEMP)(COOL)	SY	316.200		1,384.400		60.900		1,761.500	
	168-6001	VEGETATIVE WATERING	MG	3.800		16.600		0.700		21.100	
	216-6001	PROOF ROLLING	HR	7.400		22.200		9.900		39.500	
	354-6021	PLANE ASPH CONC PAV(0" TO 2")	SY	1,359.700				2,914.600		4,274.300	
	360-6085	CONC PVMT (CONT REINF-CRCP) (HES)(12")	SY	3,961.600		16,116.800		4,290.100		24,368.500	
	400-6005	CEM STABIL BKFL	CY					290.000		290.000	
	401-6001	FLOWABLE BACKFILL	CY					30.000		30.000	
	402-6001	TRENCH EXCAVATION PROTECTION	LF	797.000		2,755.000		841.000		4,393.000	
	416-6002	DRILL SHAFT (24 IN)	LF			30.000				30.000	
	416-6031	DRILL SHAFT (TRF SIG POLE) (30 IN)	LF			11.000				11.000	
	416-6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF			36.000				36.000	
	420-6010	CL A CONC (PLUG)	EA					2.000		2.000	
	432-6002	RIPRAP (CONC)(5 IN)	CY	19.300				33.400		52.700	
	462-6006	CONC BOX CULV (5 FT X 2 FT)	LF			725.000				725.000	
	464-6005	RC PIPE (CL III)(24 IN)	LF	519.000		307.000		443.000		1,269.000	
	464-6008	RC PIPE (CL III)(36 IN)	LF	246.000				396.000		642.000	
	464-6009	RC PIPE (CL III)(42 IN)	LF	32.000		1,723.000				1,755.000	
	465-6004	MANH (COMPL)(PRM)(72IN)	EA	6.000		14.000		5.000		25.000	
	465-6021	INLET (COMPL)(PCO)(5FT)(NONE)	EA	1.000		3.000		1.000		5.000	
	465-6022	INLET (COMPL)(PCO)(5FT)(LEFT)	EA			4.000		2.000		6.000	
	465-6023	INLET (COMPL)(PCO)(5FT)(RIGHT)	EA	1.000		2.000		2.000		5.000	
	465-6024	INLET (COMPL)(PCO)(5FT)(BOTH)	EA	5.000		5.000		1.000		11.000	
	465-6103	INLET (COMPL)(PSL)(SH)(8FTX8FT-3FTX3FT)	EA			4.000				4.000	
	465-6136	INLET (COMPL)(PSL)(FG)(5FTX5FT-3FTX5FT)	EA					2.000		2.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0035-03-047 **DISTRICT** San Angelo **COUNTY** Concho
HIGHWAY US 83, US 87

				CONTROL SECTION JOB	0035-03-047		0035-04-032		0070-04-033		TOTAL EST.	TOTAL FINAL
				PROJECT ID	A00070553		A00070561		A00072353			
				COUNTY	Concho		Concho		Concho			
				HIGHWAY	US 83		US 83		US 87			
ALT	BID CODE	DESCRIPTION	UNIT		EST.	FINAL	EST.	FINAL	EST.	FINAL		
	465-6160	INLET(COMPL)(PAZD)(FG)(4FTX4FT-4FTX4FT)	EA		2.000						2.000	
	479-6001	ADJUSTING MANHOLES	EA				1.000				1.000	
	479-6004	ADJUSTING MANHOLES (SANITARY)	EA		2.000				1.000		3.000	
	479-6005	ADJUSTING MANHOLES (WATER VALVE BOX)	EA				2.000				2.000	
	496-6002	REMOV STR (INLET)	EA						1.000		1.000	
	496-6043	REMOV STR (SMALL FENCE)	LF				54.000				54.000	
	500-6001	MOBILIZATION	LS		0.158		0.662		0.180		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO				16.000				16.000	
	506-6021	CONSTRUCTION EXITS (INSTALL) (TY 2)	SY		222.000		222.000		444.000		888.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY		222.000		222.000		444.000		888.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF				1,123.000				1,123.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF				1,123.000				1,123.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF		164.000		236.000		149.000		549.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF		164.000		236.000		149.000		549.000	
	508-6001	CONSTRUCTING DETOURS	SY						200.000		200.000	
	529-6002	CONC CURB (TY II)	LF				31.600		72.500		104.100	
	529-6005	CONC CURB (MONO) (TY II)	LF		1,032.700		4,311.700		766.500		6,110.900	
	530-6004	DRIVEWAYS (CONC)	SY		604.900		2,241.300		541.500		3,387.700	
	531-6002	CONC SIDEWALKS (5")	SY		387.300		1,673.900		226.500		2,287.700	
	531-6004	CURB RAMPS (TY 1)	EA		4.000		6.000				10.000	
	531-6008	CURB RAMPS (TY 5)	EA		1.000		2.000				3.000	
	531-6013	CURB RAMPS (TY 10)	EA		13.000		50.000		16.000		79.000	
	531-6016	CURB RAMPS (TY 21)	EA		1.000		5.000		2.000		8.000	
	533-6006	RUMBLE STRIPS (CENTERLINE) CONCRETE	LF				434.000				434.000	
	550-6003	CHAIN LINK FENCE (REMOVE)	LF		92.000						92.000	
	560-6001	MAILBOX INSTALL-S (TWG-POST) TY 1	EA				3.000				3.000	
	560-6002	MAILBOX INSTALL-D (TWG-POST) TY 1	EA				2.000				2.000	
	560-6003	MAILBOX INSTALL-M (TWG-POST) TY 1	EA				1.000				1.000	
	618-6053	CONDT (PVC) (SCH 80) (3")	LF				325.000				325.000	
	618-6059	CONDT (PVC) (SCH 80) (4") (BORE)	LF				240.000				240.000	
	620-6007	ELEC CONDR (NO.8) BARE	LF				665.000				665.000	
	620-6008	ELEC CONDR (NO.8) INSULATED	LF				30.000				30.000	
	621-6005	TRAY CABLE (4 CONDR) (12 AWG)	LF				945.000				945.000	
	624-6009	GROUND BOX TY D (162922)	EA				9.000				9.000	
	628-6002	REMOVE ELECTRICAL SERVICES	EA				1.000				1.000	
	628-6144	ELC SRV TY D 120/240 060(NS)SS(E)PS(U)	EA				1.000				1.000	
	636-6001	ALUMINUM SIGNS (TY A)	SF		12.000		16.000		12.000		40.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0035-03-047 **DISTRICT** San Angelo **COUNTY** Concho
HIGHWAY US 83, US 87

			CONTROL SECTION JOB	**0035-03-047**		**0035-04-032**		**0070-04-033**		TOTAL EST.	TOTAL FINAL
			PROJECT ID	**A00070553**		**A00070561**		**A00072353**			
			COUNTY	**Concho**		**Concho**		**Concho**			
			HIGHWAY	**US 83**		**US 83**		**US 87**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	12.000		21.000		16.000		49.000	
	644-6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	1.000		1.000		2.000		4.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA	16.000		30.000		21.000		67.000	
	662-6064	WK ZN PAV MRK REMOV (W)6"(BRK)	LF	1,172.000		3,516.000		1,438.000		6,126.000	
	662-6067	WK ZN PAV MRK REMOV (W)6"(SLD)	LF	11,939.000		32,765.000		12,909.000		57,613.000	
	662-6075	WK ZN PAV MRK REMOV (W)24"(SLD)	LF	48.000		48.000		48.000		144.000	
	662-6096	WK ZN PAV MRK REMOV (Y)6"(BRK)	LF			2,213.000				2,213.000	
	662-6098	WK ZN PAV MRK REMOV (Y)6"(SLD)	LF	18,910.000		40,329.000		17,398.000		76,637.000	
	666-6225	PAVEMENT SEALER 6"	LF	8,843.000		24,219.000		15,631.000		48,693.000	
	666-6230	PAVEMENT SEALER 24"	LF	196.000		116.000		233.000		545.000	
	666-6234	PAVEMENT SEALER (DBL ARROW)	EA	4.000		4.000				8.000	
	666-6305	RE PM W/RET REQ TY I (W)6"(BRK)(090MIL)	LF	1,013.000		3,343.000		1,770.000		6,126.000	
	666-6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	4,035.000		9,640.000		7,012.000		20,687.000	
	666-6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF			1,380.000				1,380.000	
	666-6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	3,795.000		9,856.000		6,849.000		20,500.000	
	668-6076	PREFAB PAV MRK TY C (W) (24") (SLD)	LF	196.000		116.000		233.000		545.000	
	668-6078	PREFAB PAV MRK TY C (W) (DBL ARROW)	EA	4.000		4.000				8.000	
	672-6007	REFL PAV MRKR TY I-C	EA	51.000		167.000		89.000		307.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	48.000		194.000		86.000		328.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	9,576.000		19,135.000		14,004.000		42,715.000	
	677-6002	ELIM EXT PAV MRK & MRKS (6")	LF	25,178.000		69,720.000		29,164.000		124,062.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	48.000		197.000		108.000		353.000	
	678-6002	PAV SURF PREP FOR MRK (6")	LF	8,843.000		24,219.000		15,631.000		48,693.000	
	678-6008	PAV SURF PREP FOR MRK (24")	LF	196.000		116.000		233.000		545.000	
	678-6010	PAV SURF PREP FOR MRK (DBL ARROW)	EA	4.000		4.000				8.000	
	680-6004	REMOVING TRAFFIC SIGNALS	EA			1.000				1.000	
	680-6005	INS HY TRF SIG (DPT SUP CNT & CAB)(ISO)	EA			1.000				1.000	
	682-6001	VEH SIG SEC (12")LED(GRN)	EA			8.000				8.000	
	682-6003	VEH SIG SEC (12")LED(YEL)	EA			8.000				8.000	
	682-6005	VEH SIG SEC (12")LED(RED)	EA			8.000				8.000	
	682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA			8.000				8.000	
	682-6054	BACKPLATE W/REF BRDR(3 SEC)(VENT)ALUM	EA			8.000				8.000	
	684-6012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF			3,481.000				3,481.000	
	686-6035	INS TRF SIG PL AM(S)1 ARM(32')LUM	EA			1.000				1.000	
	686-6039	INS TRF SIG PL AM(S)1 ARM(36')LUM	EA			1.000				1.000	
	686-6043	INS TRF SIG PL AM(S)1 ARM(40')LUM	EA			1.000				1.000	
	686-6047	INS TRF SIG PL AM(S)1 ARM(44')LUM	EA			1.000				1.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0035-03-047 **DISTRICT** San Angelo **COUNTY** Concho
HIGHWAY US 83, US 87

				CONTROL SECTION JOB	0035-03-047		0035-04-032		0070-04-033		TOTAL EST.	TOTAL FINAL
				PROJECT ID	A00070553		A00070561		A00072353			
				COUNTY	Concho		Concho		Concho			
				HIGHWAY	US 83		US 83		US 87			
ALT	BID CODE	DESCRIPTION	UNIT		EST.	FINAL	EST.	FINAL	EST.	FINAL		
	687-6001	PED POLE ASSEMBLY	EA				5.000				5.000	
	688-6001	PED DETECT PUSH BUTTON (APS)	EA				8.000				8.000	
	688-6003	PED DETECTOR CONTROLLER UNIT	EA				1.000				1.000	
	752-6010	TREE REMOVAL (36" - 42" DIA)	EA				2.000				2.000	
	1004-6001	TREE PROTECTION	EA				6.000				6.000	
	3076-6007	D-GR HMA TY-B SAC-B PG70-22	TON		899.400		3,667.600		1,020.800		5,587.800	
	3077-6022	SP MIXES SP-C SAC-A PG70-22	TON		74.800				160.300		235.100	
	3077-6075	TACK COAT	GAL		108.800				233.700		342.500	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA		1.000		1.000		2.000		4.000	
	6185-6002	TMA (STATIONARY)	DAY		58.000		161.000		58.000		277.000	
	6185-6003	TMA (MOBILE OPERATION)	HR		51.000		200.000		53.000		304.000	
	6306-6007	VIVDS CABLING	LF				940.000				940.000	
	6306-6013	VIVDS PROSR SYS (RELOCATE)	EA				1.000				1.000	
	6306-6014	VIVDS CAM ASSY (RELOCATE)	EA				5.000				5.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS		1.000						1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS		1.000						1.000	

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SUMMARY OF TCP QUANTITIES

PHASE	STA	TO	STA	LENGTH		508-6001 CONSTRUCTING DETOURS	662-6064 WK ZN PAV MRK REMOV (W)6"(BRK)	662-6067 WK ZN PAV MRK REMOV (W)6"(SLD)	662-6075 WK ZN PAV MRK REMOV (W)24"(SLD)	662-6096 WK ZN PAV MRK REMOV (Y)6"(BRK)	662-6098 WK ZN PAV MRK REMOV (Y)6"(SLD)	677-6001 ELIM EXT PAV MRK & MRKS (4")	677-6002 ELIM EXT PAV MRK & MRKS (6")	677-6007 ELIM EXT PAV MRK & MRKS (24")	6001-6002 PORTABLE CHANGEABLE MESSAGE SIGN	6185-6002 TMA (STATIONARY)	6185-6003 TMA (MOBILE OPERATION)
	---->			FT	MI	SY	LF	LF	LF	LF	LF	LF	LF	LF	EA	DAY	HR
	US 83 CSJ: 0035-04-032																
2	1179+40.00	TO	1232+74.85	5,334.85	1.01		455	10,490	12		10,670	19,135		161		87	
3	1186+30.00	TO	1232+74.85	4,644.85	0.88		805	8,650	12	345	14,010		8,735			49	
4	1207+10.00	TO	1232+74.85	2,564.85	0.49		1,320	9,110	12	1,040	9,290		20,180	12			
5	1223+65.00	TO	1232+74.85	909.85	0.17		936	4,515	12	828	6,360		10,180	12			
6	1223+65.00	TO	1232+74.85	909.85	0.17								30,625	12		25	200
					US 83 CSJ: 0035-04-032 SUBTOTAL	0	3,516	32,765	48	2,213	40,329	19,135	69,720	197	1	161	200
	US 83 CSJ: 0035-03-047																
1	1232+74.85	TO	1239+00.00	625.15	0.12			625									
2	1232+74.85	TO	1246+30.00	1,355.15	0.26		220	1,688	12		4,688	5,778		24			
3	1232+74.85	TO	1248+95.00	1,620.15	0.31		316	3,100	12		3,100	1,193	6,596	12			
4	1232+74.85	TO	1254+34.00	2,159.15	0.41		321	2,892	12		6,866	2,426	3,513			36	
5	1232+74.85	TO	1254+74.00	2,199.15	0.42		315	4,256	12		4,256	180	6,242			15	
6	1232+74.85	TO	1254+74.00	2,199.15	0.42								8,827	12		6	51
					US 83 CSJ: 0035-03-047 SUBTOTAL	0	1,172	11,936	48	0	18,910	9,576	25,178	48	1	58	51
	US 87 CSJ: 0070-04-033																
1	1046+63.27	TO	1056+30.00	966.73	0.18	200.0		970								5	
2	1029+75.00	TO	1062+45.00	3,270.00	0.62		484	5,629	24		7,514	14,004		48		14	
3	1029+75.00	TO	1062+45.00	3,270.00	0.62											15	
4	1037+36.20	TO	1066+90.00	2,953.80	0.56		954	6,310	24		9,884		12,015	12		10	
5	1037+36.20	TO	1066+90.00	2,953.80	0.56											8	
6	1037+36.20	TO	1066+90.00	2,953.80	0.56								17,149	48		7	53
					US 87 CSJ: 0070-04-033 SUBTOTAL	200	1,438	12,909	48	0	17,398	14,004	29,164	108	2	58	53
					US 83 PROJECT TOTAL	200	6,126	57,610	144	2,213	76,637	42,715	124,062	353	4	277	304

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

IDCUS
PLANNERS | ENGINEERS | MANAGERS

US 83

SUMMARY OF TCP QUANTITIES

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		10

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SUMMARY OF REMOVAL QUANTITIES

				100-6002	104-6013	104-6015	104-6017	104-6021	104-6022	104-6028	105-6075	496-6043	550-6003	752-6010	1004-6001
DESCRIPTION	STA	TO	STA	PREPARING ROW	REMOVING CONC (FOUNDATIONS)	REMOVING CONC (SIDEWALKS)	REMOVING CONC (DRIVEWAYS)	REMOVING CONC (CURB)	REMOVING CONC (CURB AND GUTTER)	REMOVING CONC (MISC)	REMOV STAB BASE AND ASPH PAV (10"-18")	REMOV STR (SMALL FENCE)	CHAIN LINK FENCE (REMOVE)	TREE REMOVAL (36" - 42" DIA)	TREE PROTECTION
Unit	---->			STA	SY	SY	SY	LF	LF	SY	SY	LF	LF	EA	EA
US 83	CSJ: 0035-04-032														
SHEET 1 OF 6	1207+00.00	TO	1212+00.00	5.0		3.7	95.7	0.0	0.0	0.0	3,311.6	54		2	4
SHEET 2 OF 6	1212+00.00	TO	1218+00.00	6.0		4.4	128.4	3.2	0.0	0.0	4,003.8				2
SHEET 3 OF 6	1218+00.00	TO	1224+00.00	6.0		0.0	171.5	10.4	0.0	71.0	4,196.7				
SHEET 4 OF 6	1224+00.00	TO	1230+00.00	6.0		20.5	31.1	272.7	95.4	31.2	5,499.6				
SHEET 5 OF 6	1230+00.00	TO	1232+74.80	2.7		94.2	0.0	462.4	189.8	94.4	1,892.5				
US 83 CSJ: 0035-04-032 SUBTOTAL				25.7	0.0	122.8	426.7	748.7	285.2	196.6	18,904.2	54	0	2	6
US83	CSJ: 0035-03-047														
SHEET 5 OF 6	1232+74.80	TO	1236+00.00	3.0	9.0	165.1	106.9	122.1	0.0	40.7	2,336.6		92		
SHEET 6 OF 6	1236+00.00	TO	1242+00.00	3.4		0.0	58.8	40.2	0.0	0.0	2,493.5				
US 83 CSJ: 0035-03-047 SUBTOTAL				6.4	9.0	165.1	165.7	162.3	0.0	40.7	4,830.1	0	92	0	0
US87	CSJ: 0070-04-033														
SHEET 1 OF 2	1045+00.00	TO	1051+00.00	3.4		38.2	254.5	153.5	0.0	0.0	2,591.3				
SHEET 2 OF 2	1051+00.00	TO	1057+00.00	3.4		130.1	98.3	112.9	0.0	0.0	2,378.1				
US 87 CSJ: 0070-04-033 SUBTOTAL				6.8	0.0	168.3	352.8	266.4	0.0	0.0	4,969.4	0	0	0	0
US 83 PROJECT TOTAL				38.9	9.0	456.2	945.2	1,177.4	285.2	237.3	28,703.7	54	92	2	6

NO.	DATE	REVISION

Texas Department of Transportation

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IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

SUMMARY OF REMOVAL QUANTITIES

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83

DIST	COUNTY	SHEET NO.
SJT	CONCHO	11

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SUMMARY OF ROADWAY QUANTITIES

				110-6001	132-6003	432-6002	479-6001	479-6004	479-6005	529-6002	529-6005	530-6004	531-6002	531-6004	531-6008	531-6013	531-6016	560-6001	560-6002	560-6003
DESCRIPTION	STA	TO	STA	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL)(ORD COMP)(TY B)	RIPRAP (CONC)(5 IN)	ADJUSTING MANHOLES	ADJUSTING MANHOLES (SANITARY)	ADJUSTING MANHOLES (WATER VALVE BOX)	CONC CURB (TY II)	CONC CURB (MONO) (TY II)	DRIVEWAYS (CONC)	CONC SIDEWALKS (5")	CURB RAMPS (TY 1)	CURB RAMPS (TY 5)	CURB RAMPS (TY 10)	CURB RAMPS (TY 21)	MAILBOX INSTALL-S (TWG-POST) TY 1	MAILBOX INSTALL-D (TWG-POST) TY 1	MAILBOX INSTALL-M (TWG-POST) TY 1
Unit	---->		---->	CY	CY	CY	EA	EA	EA	LF	LF	SY	SY	EA	EA	EA	EA	EA	EA	EA
US 83	CSJ: 0035-04-032																			
SHEET 1 OF 6	1207+00.00	TO	1212+00.00	1,110.2	3.7		1				750.8	293.6	194.4			18	1	1	1	1
SHEET 2 OF 6	1212+00.00	TO	1218+00.00	2,004.2	0.0						931.1	636.2	228.8			16	2		1	
SHEET 3 OF 6	1218+00.00	TO	1224+00.00	1,632.6	0.6				1		950.6	476.6	330.1		2	11	1	2		
SHEET 4 OF 6	1224+00.00	TO	1230+00.00	1,993.5	5.8				1	31.6	1,108.1	742.8	425.7	1		5	1			
SHEET 5 OF 6	1230+00.00	TO	1232+74.80	1,029.3	0.0						571.1	92.1	494.9	5						
US 83 CSJ: 0035-04-032 SUBTOTAL				7,769.8	10.1	0.0	1	0	2	31.6	4,311.7	2,241.3	1,673.9	6	2	50	5	3	2	1
US83	CSJ: 0035-03-047																			
SHEET 5 OF 6	1232+74.80	TO	1236+00.00	1,026.8	0.0	19.3		1			477.2	319.7	235.6	4		6				
SHEET 6 OF 6	1236+00.00	TO	1242+00.00	247.4	19.8			1			555.5	285.2	151.7		1	7	1			
US 83 CSJ: 0035-03-047 SUBTOTAL				1,274.3	19.8	19.3	0	2	0	0.0	1,032.7	604.9	387.3	4	1	13	1	0	0	0
US87	CSJ: 0070-04-033																			
SHEET 1 OF 2	1045+00.00	TO	1051+00.00	1,056.2	4.8	32.0		1		72.5	415.5	298.1	123.6			10	1			
SHEET 2 OF 2	1051+00.00	TO	1057+00.00	876.9	15.6	1.4					351.0	243.4	102.9			6	1			
US 87 CSJ: 0070-04-033 SUBTOTAL				1,933.1	20.4	33.4		1	0	72.5	766.5	541.5	226.5	0	0	16	2	0	0	0
US 83 PROJECT TOTAL				10,977.1	50.3	52.7	1	3	2	104.1	6,110.9	3,387.7	2,287.7	10	3	79	8	3	2	1

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Texas Department of Transportation

IDCUS
PLANNERS | ENGINEERS | MANAGERS
IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

SUMMARY OF ROADWAY QUANTITIES

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		12

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SUMMARY OF ROADWAY QUANTITIES

STA	TO	STA	LENGTH	AVERAGE WIDTH	AREA	216-6001	354-6021	360-6085	3076-6007	3076-6007	3077-6022	3077-6075
						PROOF ROLLING	PLANE ASPH CONC PAV(0" TO 2")	CONC PVMT (CONT REINF-CRCP) (HES)(12")	D-GR HMA TY-B SAC-B PG70-22	D-GR HMA TY-B SAC-B PG70-22	SP MIXES SP-C SAC-A PG70-22	TACK COAT
Unit			FT	FT	SY	HR	SY	SY	TON	TON	TON	GAL
Depth									4 IN	12 IN	2 IN	
Rate						750 SY/HR			440 LBS/SY	1,320 LBS/SY	220 LBS/SY/IN	0.08 GAL/SY
US 83 CSJ: 0035-04-032												
1207+00.00	TO	1210+00.00	300.00	59.00	1,966.7	2.7		1,966.7	447.3			
1210+00.00	TO	1231+47.19	2,147.19	56.00	13,360.3	18.4		13,360.3	3,044.2			
1231+47.19	TO	1231+96.56	49.37	58.00	318.2	0.4		318.2	72.4			
1231+96.56	TO	1232+78.93	82.37					US 87 INTERSECTION				
		SOUTHWEST FILLET			265.5	0.4		265.5	58.4			
		SOUTHEAST FILLET			206.1	0.3		206.1	45.3			
				US 83 CSJ: 0035-04-032 SUBTOTAL	16,116.72	22.2	0.0	16,116.8	3,667.6	0.0	0.0	0.0
CSJ: 0035-03-047												
		NORTHWEST FILLET			238.2	0.3		238.2	52.4			
		NORTHEAST FILLET			188.9	0.3		188.9	41.6			
1232+78.93	TO	1233+60.96	82.03					US 87 INTERSECTION				
1233+60.96	TO	1239+29.00	568.04	56.00	3,534.5	4.9		3,534.5	805.4			
1239+29.00	TO	1241+29.00	200.00	61.19	1,359.7		1,359.7				74.8	108.8
				US 83 CSJ: 0035-03-047 SUBTOTAL		5.5	1,359.7	3,961.6	899.4	0.0	74.8	108.8
CSJ: 0070-04-033												
1045+56.20	TO	1047+56.20	200.00	64.98	1,444.0		1,444.0				79.4	115.5
1047+56.20	TO	1048+27.86	71.66	58.77	468.0	0.6		468.0	106.5			
1048+27.86	TO	1050+03.35	175.49	56.00	1,091.9	1.5		1,091.9	248.8			
1050+03.35	TO	1051+57.54	154.19	56.00	959.4	1.3		959.4	218.6			
1051+57.54	TO	1054+00.00	242.46	56.00	1,508.6	2.1		1,508.6	343.8			
1054+00.00	TO	1054+40.00	40.00	59.00	262.2	0.4		262.2	59.6			
1054+40.00	TO	1056+40.00	200.00	66.18	1,470.6		1,470.6				80.9	117.6
STORM SEWER BACKFILL PAVEMENT												
1054+40.00	TO	1055+24.73	84.73	7.00	65.9					43.5		
				US 87 CSJ: 0070-04-033 SUBTOTAL		5.9	2,914.6	4,290.1	977.3	43.5	160.3	233.2
					US 83 PROJECT TOTAL	33.6	4,274.3	24,368.5	5,544.3	43.5	235.1	341.9

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

IDCUS
PLANNERS | ENGINEERS | MANAGERS

US 83

SUMMARY OF ROADWAY QUANTITIES

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		13

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DW: AM
CK: AR
DW: MN

SUMMARY OF DRAINAGE QUANTITIES

LOCATION				400	401	402	420	462	464	464	464	465	465	465	465
				6005	6001	6001	6010	6006	6005	6008	6009	6004	6021	6022	6023
DESCRIPTION	STA.	TO	STA.	CEM STABIL BKFL	FLOWABLE BACKFILL	TRENCH EXCAVATION PROTECTION	CL A CONC (PLUG)	CONC BOX CULV (5 FT X 2 FT)	RC PIPE (CL III) (24 IN)	RC PIPE (CL III) (36 IN)	RC PIPE (CL III) (42 IN)	MANH (COMPL) (PRM)(72IN)	INLET (COMPL) (PCO)(5FT) (NONE)	INLET (COMPL) (PCO)(5FT) (LEFT)	INLET (COMPL) (PCO)(5FT) (RIGHT)
UNIT	---		---	CY	CY	LF	EA	LF	LF	LF	LF	EA	EA	EA	EA
US 83	CSJ: 0035-04-032														
Sheet 1 of 6	1207+00	TO	1212+00			648			50		598	3			
Sheet 2 of 6	1212+00	TO	1224+00			1236		725	151		360	1		3	2
Sheet 3 of 6	1224+00	TO	1232+74.80			871			106		765	10	3	1	
US 83 CSJ: 0035-04-032 SUBTOTAL						2755		725	307		1723	14	3	4	2
US 83	CSJ: 0035-03-047														
Sheet 3 of 6	1232+74.80	TO	1236+00			391			113	246	32	4	1		
Sheet 4 of 6	1236+00	TO	1241+00			406			406			2			1
US 83 CSJ: 0035-03-047 SUBTOTAL						797			519	246	32	6	1		1
US 87	CSJ: 0070-04-033														
Sheet 5 of 6 EB	1048+00	TO	1056+00			430			430			2		1	2
Sheet 6 of 6 WB	1048+00	TO	1056+00	290	30	411	2		13	396		3	1	1	
US 87 CSJ: 0070-04-033 SUBTOTAL				290	30	841	2		443	396		5	1	2	2
US 83 PROJECT TOTAL				290	30	4393	2	725	1269	642	1755	25	5	6	5

LOCATION				465	465	465	465	496
				6024	6103	6136	6160	6002
DESCRIPTION	STA.	TO	STA.	INLET (COMPL) (PCO)(5FT) (BOTH)	INLET (COMPL) (PSL)(SH) (8FTX8FT-3FTX3FT)	INLET (COMPL) (PSL)(FG) (5FTX5FT-3FTX5FT)	INLET(COMPL) (PAZD)(FG) (4FTX4FT-4FTX4FT)	REMOV STR (INLET)
UNIT	---		---	EA	EA	EA	EA	EA
US 83	CSJ: 0035-04-032							
Sheet 1 of 6	1207+00	TO	1212+00	2				
Sheet 2 of 6	1212+00	TO	1224+00	2	4			
Sheet 3 of 6	1224+00	TO	1232+74.80	1				
US 83 CSJ: 0035-04-032 SUBTOTAL				5	4			
US 83	CSJ: 0035-03-047							
Sheet 3 of 6	1232+74.80	TO	1236+00	2			2	
Sheet 4 of 6	1236+00	TO	1241+00	3				
US 83 CSJ: 0035-03-047 SUBTOTAL				5			2	
US 87	CSJ: 0070-04-033							
Sheet 5 of 6 EB	1048+00	TO	1056+00					
Sheet 6 of 6 WB	1048+00	TO	1056+00	1		2		1
US 87 CSJ: 0070-04-033 SUBTOTAL				1		2		1
US 83 PROJECT TOTAL				11	4	2	2	1

NOTES:

1. FOR CONTRACTORS INFORMATION ONLY.
2. STRUCTURAL EXCAVATION FOR PIPE WILL NOT BE PAID FOR DIRECTLY BUT ARE SUBSIDIARY TO PERTINENT ITEMS.
3. EXCAVATION AND BACKFILL ARE SUBSIDIARY TO PLUGGING THE PIPES.

NO.	DATE	REVISION

Texas Department of Transportation

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15915 KATY FREEWAY, SUITE 300
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TBPELS FIRM # F-6825

IDCUS PLANNERS | ENGINEERS | MANAGERS

F-23347

CASCADE CIVIL SERVICES, LLC
1500 S Dairy Ashford Rd
Suite 450
Houston, Texas, 77077

US 83

SUMMARY OF DRAINAGE QUANTITIES

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		14

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SUMMARY OF SIGNAL QUANTITIES

	416-6002	416-6031	416-6032	618-6053	618-6059	620-6007	620-6008	621-6005	624-6009	628-6002	628-6144	680-6004	680-6005	682-6001	682-6003	682-6005
DESCRIPTION	DRILL SHAFT (24 IN)	DRILL SHAFT (TRF SIG POLE) (30 IN)	DRILL SHAFT (TRF SIG POLE) (36 IN)	CONDT (PVC) (SCH 80) (3")	CONDT (PVC) (SCH 80) (4") (BORE)	ELEC CONDR (NO.8) BARE	ELEC CONDR (NO.8) INSULATED	TRAY CABLE (4 CONDR) (12 AWG)	GROUND BOX TY D (162922)	REMOVE ELECTRICAL SERVICES	ELC SRV TY D 120/240 060(NS)SS(E)PS(U)	** REMOVING TRAFFIC SIGNALS	* INS HY TRF SIG (DPT SUP CNT & CAB)(ISO)	VEH SIG SEC (12") LED (GRN)	VEH SIG SEC (12") LED (YEL)	VEH SIG SEC (12") LED (RED)
Unit	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA
US 83/US 87 INTERSECTION	30	11	36	325	240	665	30	945	9	1	1	1	1	8	8	8
US 83 PROJECT TOTAL	30	11	36	325	240	665	30	945	9	1	1	1	1	8	8	8

	682-6018	682-6054	684-6012	686-6035	686-6039	686-6043	686-6047	687-6001	688-6001	688-6003	6306-6007	6306-6013	6306-6014
DESCRIPTION	PED SIG SEC (LED)(COUNTDOWN)	BACKPLATE W/REF BRDR(3 SEC)(VENT)ALUM	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	INS TRF SIG PL AM(S)1 ARM(32')LUM	INS TRF SIG PL AM(S)1 ARM(36')LUM	INS TRF SIG PL AM(S)1 ARM(40')LUM	INS TRF SIG PL AM(S)1 ARM(44')LUM	PED POLE ASSEMBLY	PED DETECT PUSH BUTTON (APS)	PED DETECTOR CONTROLLER UNIT	VIVDS CABLING	** VIVDS PROSR SYS (RELOCATE)	** VIVDS CAM ASSY (RELOCATE)
Unit	EA	EA	LF	EA	EA	EA	EA	EA	EA	EA	LF	EA	EA
US 83/US 87 INTERSECTION	8	8	3,481	1	1	1	1	5	8	1	940	1	5
US 83 PROJECT TOTAL	8	8	3,481	1	1	1	1	5	8	1	940	1	5

* CONTROLLER CABINET WILL BE PROVIDED BY TXDOT.

** DURING REMOVAL OF TRAFFIC SIGNAL, SALVAGE COMPLETE TRAFFIC SIGNAL CONTROLLER CABINET, ALL VIVDS PROCESSORS, CAMERAS AND CAMERA SUPPORTS. VIVDS CAMERAS AND PROCESSOR WILL BE PROVIDED BY TXDOT.

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NO.	DATE	REVISION

Texas Department of Transportation

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15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

SUMMARY OF SIGNAL QUANTITIES

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83

DIST	COUNTY	SHEET NO.
SJT	CONCHO	15

CK
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SUMMARY OF SIGNING AND PAVEMENT MARKING QUANTITIES

				533-6006	636-6001	644-6001	644-6004	644-6076	666-6225	666-6230	666-6234	666-6305	666-6308	666-6317	666-6320
DESCRIPTION	STA	TO	STA	RUMBLE STRIPS (CENTERLINE) CONCRETE	ALUMINUM SIGNS (TY A)	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	REMOVE SM RD SN SUP&AM	PAVEMENT SEALER 6"	PAVEMENT SEALER 24"	PAVEMENT SEALER (DBL ARROW)	RE PM W/RET REQ TY I (W)6"(BRK)(090MIL)	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)
Unit	----->			LF	SF	EA	EA	EA	LF	LF	EA	LF	LF	LF	LF
US 83	CSJ: 0035-04-032														
SHEET 1 OF 7	1179+40.00	TO	1206+00.00						13,300			1,330	5,320	1,330	5,320
SHEET 2 OF 7	1206+00.00	TO	1212+00.00	200		1		1	4,050			1,200	1,200	50	1,600
SHEET 3 OF 7	1212+00.00	TO	1218+00.00	234		5		6	2,102			245	974		883
SHEET 4 OF 7	1218+00.00	TO	1224+00.00			7		9	1,933			225	898		810
SHEET 5 OF 7	1224+00.00	TO	1230+00.00		16	6	1	9	2,149			248	989		912
SHEET 6 OF 7	1230+00.00	TO	1232+74.80			2		5	685	116	4	95	259		331
US 83 CSJ: 0035-04-032 SUBTOTAL				434	16	21	1	30	24,219	116	4	3,343	9,640	1,380	9,856
US83	CSJ: 0035-03-047														
SHEET 6 OF 7	1232+74.80	TO	1236+00.00			4		5	963	118	4	115	458		390
SHEET 7 OF 7	1236+00.00	TO	1254+74.00		12	8	1	11	7,880	78		898	3,577		3,405
US 83 CSJ: 0035-03-047 SUBTOTAL				0	12	12	1	16	8,843	196	4	1,013	4,035.0	0	3,795
US87	CSJ: 0070-04-033														
SHEET 1 OF 2	1029+75.00	TO	1051+00.00			7	1	9	8,857	111		994	3,979		3,884
SHEET 2 OF 2	1051+00.00	TO	1066+90.00		12	9	1	12	6,774	122		776	3,033		2,965
US 87 CSJ: 0070-04-033 SUBTOTAL				0	12	16	2	21	15,631	233	0	1,770	7,012	0	6,849
US 83 PROJECT TOTAL				434	40	49	4	67	48,693	545	8	6,126	20,687	1,380	20,500

				668-6076	668-6078	672-6007	672-6009	678-6002	678-6008	678-6010
DESCRIPTION	STA	TO	STA	PREFAB PAV MRK TY C (W) (24") (SLD)	PREFAB PAV MRK TY C (W) (DBL ARROW)	REFL PAV MRKR TY I-C	REFL PAV MRKR TY II-A-A	PAV SURF PREP FOR MRK (6")	PAV SURF PREP FOR MRK (24")	PAV SURF PREP FOR MRK (DBL ARROW)
Unit	----->			LF	EA	EA	EA	LF	LF	EA
US 83	CSJ: 0035-04-032									
SHEET 1 OF 7	1179+40.00	TO	1206+00.00			67	133	13,300		
SHEET 2 OF 7	1206+00.00	TO	1212+00.00			60	25	4,050		
SHEET 3 OF 7	1212+00.00	TO	1218+00.00			12	11	2,102		
SHEET 4 OF 7	1218+00.00	TO	1224+00.00			11	10	1,933		
SHEET 5 OF 7	1224+00.00	TO	1230+00.00			12	11	2,149		
SHEET 6 OF 7	1230+00.00	TO	1232+74.80	116	4	5	4	685	116	4
US 83 CSJ: 0035-04-032 SUBTOTAL				116	4	167	194	24,219	116	4
US83	CSJ: 0035-03-047									
SHEET 6 OF 7	1232+74.80	TO	1236+00.00	118	4.0	6	5	963	118	4
SHEET 7 OF 7	1236+00.00	TO	1254+74.00	78		45	43	7,880	78	
US 83 CSJ: 0035-03-047 SUBTOTAL				196	4.0	51	48	8,843	196	4
US87	CSJ: 0070-04-033									
SHEET 1 OF 2	1029+75.00	TO	1051+00.00	111		50	49	8,857	111	
SHEET 2 OF 2	1051+00.00	TO	1066+90.00	122		39	37	6,774	122	
US 87 CSJ: 0070-04-033 SUBTOTAL				233	0.0	89	86	15,631	233	0
US 83 PROJECT TOTAL				545	8.0	307	328.0	48,693.0	545	8

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US 83

SUMMARY OF SIGNING AND PAVEMENT MARKING QUANTITIES

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		16

DATE: 5/22/2024 6:29:06 PM
FILE: c:\bms\idcus-pw-01\omar.alducin\dms06621\US83 GNSMSPM SHEET 01.dgn

CK
DW
CK
DW

SUMMARY OF SW3P QUANTITIES

				160-6010	164-6023	164-6029	164-6031	168-6001	506-6021	506-6024	506-6038	506-6039	506-6041	506-6043
DESCRIPTION	STA	TO	STA	FURNISH AND PLACE TOPSOIL (5")	CELL FBR MLCH SEED(PERM)(RURAL)(CLAY)	CELL FBR MLCH SEED(TEMP)(WARM)	CELL FBR MLCH SEED(TEMP)(COOL)	* VEGETATIVE WATERING	CONSTRUCTION EXITS (INSTALL) (TY 2)	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)
Unit	---->		---->	SY	SY	SY	SY	MG	SY	SY	LF	LF	LF	LF
US 83	CSJ: 0035-04-032													
SHEET 1 OF 6	1207+00.00	TO	1212+00.00	486.3	486.3	243.2	243.2	2.9	222	222			66	66
SHEET 2 OF 6	1212+00.00	TO	1218+00.00	721.4	721.4	360.7	360.7	4.3					45	45
SHEET 3 OF 6	1218+00.00	TO	1224+00.00	731.7	731.7	365.9	365.9	4.4			267	267	60	60
SHEET 4 OF 6	1224+00.00	TO	1230+00.00	829.4	829.4	414.7	414.7	5.0			856	856	45	45
SHEET 5 OF 6	1230+00.00	TO	1232+74.80	0.0	0.0	0.0	0.0	0.0					20	20
US 83 CSJ: 0035-04-032 SUBTOTAL				2,768.8	2,768.8	1,384.4	1,384.4	16.6	222	222	1,123	1,123	236	236
US83	CSJ: 0035-03-047													
SHEET 5 OF 6	1232+74.80	TO	1236+00.00	184.1	184.1	92.1	92.1	1.1					104	104
SHEET 6 OF 6	1236+00.00	TO	1242+00.00	448.3	448.3	224.2	224.2	2.7	222	222			60	60
US 83 CSJ: 0035-03-047 SUBTOTAL				632.4	632.4	316.2	316.2	3.8	222	222	0	0	164	164
US87	CSJ: 0070-04-033													
SHEET 1 OF 2	1045+00.00	TO	1051+00.00	0.0	0.0	0.0	0.0	0.0	222	222			30	30
SHEET 2 OF 2	1051+00.00	TO	1057+00.00	121.8	121.8	60.9	60.9	0.7	222	222			119	119
US 87 CSJ: 0070-04-033 SUBTOTAL				121.8	121.8	60.9	60.9	0.7	444	444	0	0	149	149
US 83 PROJECT TOTAL				3,523.0	3,523.0	1,761.5	1,761.5	21.1	888	888	1,123	1,123	549	549

* VEGETATIVE WATERING BASED ON 2 APPLICATIONS AT A RATE OF 0.003 MG/SY/CYCLE

DATE: 5/22/2024 3:33:33 PM
FILE: c:\bms\idcus-pw-01\copy of angel.gallegos\dms06621\US83_GNSMSW3P_SHEET 01.dgn

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US 83

SUMMARY OF SW3P QUANTITIES

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		17

TRAFFIC CONTROL NARRATIVE

GENERAL REQUIREMENTS

1. DURING REMOVAL OF THE EXISTING MATERIAL, PLACEMENT OF CRCP AND ACP, ACCESS TO EACH DRIVEWAY/STREET WILL BE MAINTAINED TO THE EXTEND POSSIBLE DURING WORK HOURS AND WILL BE ACCESSIBLE AT THE END OF EACH WORKDAY.

2. WORK WILL BE LIMITED TO MINIMIZE DISTURBANCE TO INDIVIDUAL BUSINESSES/RESIDENCES DURING PREPARATION AND PLACEMENT OF THE CONCRETE PAVEMENT. CRITICAL ACCESS WILL BE DEFINED AS THOSE DRIVEWAYS/STREETS WHERE ACCESS IS ONLY AVAILABLE BY AN INDIVIDUAL POINT AND SPECIAL ATTENTION WILL BE GIVEN TO THOSE AREAS AS DIRECTED. UNLESS OTHERWISE DIRECTED ACCESS WILL BE AVAILABLE TO ALL BUSINESS/RESIDENTS AT ALL TIMES. THIS WORK WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED SUBSIDIARY TO THE VARIOUS TRAFFIC CONTROL BID ITEMS.

3. OPERATIONS WILL BE LIMITED TO DISTANCES THAT WILL MAXIMIZE ACCESS TO ADJACENT DRIVEWAYS/STREETS AS DIRECTED.

4. CONSTRUCT US 83/US 87 INTERSECTION IN QUADRANTS AS PER CORRESPONDING PHASING BELOW USING WEEKEND CLOSURES. WEEKEND CLOSURES ARE RESTRICTED FROM 9 PM FRIDAY THROUGH 5 AM MONDAY, UNLESS OTHERWISE APPROVED BY THE ENGINEER IN WRITTING.

PHASE 1 (CONSTRUCTION OF TEMPORARY PAVEMENT AT US 87 WBML WEST OF US 83)

1. INSTALL PROJECT LIMIT BARRICADES.

2. ENSURE ALL UTILITIES ARE CLEAR FROM THE WORK AREA BEFORE COMMENCING WORK.

3. USING SIGNS AND CHANNELIZING DEVICES, MERGE EXISTISTING US 83 SB LANES AND US 87 WB LANES TO 1-LANE AS SHOWN IN THE PLANS.

4. REMOVE EXISTING CURB AND SIDEWALK AND CONSTRUCT TEMP PAVEMENTON US 87 WBML AS SHOWN IN PLANS.

PHASE 2 STEP 1 (CONSTRUCTION OF US 83 NBML'S SOUTH OF US 87)

1. ELIMINATE EXISTING PAVEMENT MARKINGS AND INSTALL WORKZONE MARKINGS TO CONVERT EXISTING US 83 NBML'S/Shoulder TO TWO-LANE TWO-WAY FOR US 83 NB/SB ML TRAFFIC OPERATIONS AND CLOSE EXISTING US 83 NBML'S AS SHOWN IN THE PLANS AND REFERENCING TXDOT TCP(2-5b).

2. NSTALL PROPOSED STORM DRAIN SYSTEM AND CONSTRUCT PROPOSED PAVEMENT ON US 83 NBML'S AS SHOWN IN THE TCP LAYOUTS.

PHASE 2 STEP 2 (CONSTRUCTION OF US 83 /US 87 SE QUADRANT)

1. ELIMINATE EXISTING PAVEMENT MARKINGS AND INSTALL SIGNS, BARRIACDES, CHANNNELIZING DEVICES AND WORKZONE MARKING TO CONVERT EXISTING US 87 WBML'S TO TWO-LANE TWO-WAY FOR US 87 EB/WB ML TRAFFIC OPERATIONS AND CLOSE EXISTING US 87 EBML'S AS SHOWN IN THE PLANS AND REFERENCING TXDOT TCP(2-5b). COORDINATE WITH SAN ANGELO DISTRICT TRAFFIC SECTIONS FOR ADJUSTMENT TO THE EXISTING VEHICLE DETECTION CAMERAS WITH PHASE 2 TRAFFIC CONFIGURATION. MAINTAIN PREVIOUSLY INSTALLED PHASE 2 STEP 1 TRAFFIC CONFIGURATION. COORDINATE WITH SAN ANGELO DISTRICT TRAFFIC SECTIONS FOR ADJUSTMENT TO THE EXISTING VEHICLE DETECTION CAMERAS WITH PHASE 2 TRAFFIC CONFIGURATION.

2. CONSTRUCTION FOR THIS STEP SHALL BE COMPLETED DURING A SINGLE WEEKEND AND OPEN BACK TO TRAFFIC.

3. INSTALL STORM DRAIN SYSTEM, SIGNAL FOUNDATION/GROUND BOXES, AND PAVEMENT ON US 83 / US 87 SE QUADRANT AS SHOWN IN THE TCP LAYOUTS.

PHASE 2 STEP 3 (CONSTRUCTION OF US 87 EBML'S EAST OF US 83)

1. MAINTAIN PREVIOUSLY INSTALLED STEP 1 AND 2 TRAFFIC CONFIGURATION.

2. INSTALL PROPOSED STORM DRAIN SYSTEM AND CONSTRUCT PROPOSED PAVEMENT ON US 87 EBML'S AS SHOWN IN THE TCP LAYOUTS.

PHASE 3 STEP 1 (CONSTRUCTION OF US 83 SBML'S SOUTH OF US 87)

1. INSTALL SIGNS, BARRIACDES AND WORKZONE MARKING AND CHANNNELIZING DEVICES ON NEW US 83 NBML'S AND SWITCH US83 NB/SB TO TWO-LANE TWO-WAY TRAFFIC OPERATIONS. CLOSE EXISTING US 83 SBML'S/SHOULDER MAINTAIN PREVIOUS PHASE 2 STEP 2 TCP on US 87 AS SHOWN IN THE PLANS AND REFERENCING TXDOT TCP(2-5b). COORDINATE WITH SAN ANGELO DISTRICT TRAFFIC SECTIONS FOR ADJUSTMENT TO THE EXISTING VEHICLE DETECTION CAMERAS WITH PHASE 3 TRAFFIC CONFIGURATION.

2. NSTALL PROPOSED STORM DRAIN SYSTEM AND CONSTRUCT PROPOSED PAVEMENT ON US 83 SBML'S AS SHOWN IN THE TCP LAYOUTS.

PHASE 3 STEP 2 (CONSTRUCTION OF US 87 SW QUADRANT)

1. MAINTAIN PREVIOUS PHASE 2 TCP SETUP ON US 87.

2. CONSTRUCTION FOR THIS STEP SHALL BE COMPLETED DURING A SINGLE WEEKEND AND OPEN BACK TO TRAFFIC.
3. INSTALL PROPOSED STORM DRAIN SYSTEM AND CONSTRUCT PROPOSED PAVEMENT US 83 / US 87 SW QUADRANT AS SHOWN IN THE TCP LAYOUTS.

PHASE 3 STEP 3 (CONSTRUCTION OF US 87 EBML'S WEST OF US 83)

1. MAINTAIN PREVIOUS PHASE 2 TCP SETUP ON US 87.

2. INSTALL PROPOSED STORM DRAIN SYSTEM AND CONSTRUCT PROPOSED PAVEMENT ON US 87 EBML'S AS SHOWN IN THE TCP LAYOUTS.

PHASE 4 STEP 1 (CONSTRUCTION OF US 83 / US 87 NE QUADRANT)

1. INSTALL SIGNS, BARRIACDES AND WORKZONE MARKING AND CHAMNNELIZING DEVICES TO SWITCH BOTH US 83 NB/SB ML'S AND US 87 EB/WB ML'S TWO-LANE TWO-WAY TRAFFIC OPERATIONS TO PROPOSED US 83 SBML'S AND US 87 EBML RESPEVCTIVELY. CLOSE PROPOSED US 83 NBML'S AND US 83 WBML'S AS SHOWN IN THE PLANS AND REFERENCING TXDOT TCP(2-5b). COORDINATE WITH SAN ANGELO DISTRICT TRAFFIC SECTIONS FOR ADJUSTMENT TO THE EXISTING VEHICLE DETECTION CAMERAS.

2. CONSTRUCTION FOR THIS STEP SHALL BE COMPLETED DURING A SINGLE WEEKEND AND OPEN BACK TO TRAFFIC.

3. INSTALL STORM DRAIN SYSTEM, SIGNAL FOUNDATION/GROUND BOXES, AND PAVEMENT ON US 83 / US 87 NE QUADRANT AS SHOWN IN THE TCP LAYOUTS.

PHASE 4 STEP 2 (CONSTRUCTION OF US 83 NBML'S NORTH OF US 87 AND US 87 WBML'S WEST OF US 83)

1. MAINTAIN TCP SETUP INSTALLED IN PHASE 4 STEP 1

2. NSTALL PROPOSED STORM DRAIN SYSTEM AND CONSTRUCT PROPOSED PAVEMENT ON US 83 NBML'S AND US 87 WBML'S AS SHOWN IN THE TCP LAYOUTS.

PHASE 5 STEP 1 (CONSTRUCTION OF US 83 SBML'S NORTH OF US 87 AND CONSTRUCTION OF US 87 WBML'S WEST OF US 83)

1. INSTALL SIGNS, BARRIACDES AND WORKZONE MARKING AND CHANNNELIZING DEVICES TO SWITCH US 83 NB/SB ML'S TWO-LANE TWO-WAY TRAFFIC OPERATIONS TO NEW US 83 NBML'S. CLOSE PROPOSED US 83 SBML'S AND MAINTAIN TCP SETUP ON US 87 PHASE 4 STEP 1 AS SHOWN IN THE PLANS AND REFERENCING TXDOT TCP(2-5b). COORDINATE WITH SAN ANGELO DISTRICT TRAFFIC SECTIONS FOR ADJUSTMENT TO THE EXISTING VEHICLE DETECTION CAMERAS.

2. NSTALL PROPOSED STORM DRAIN SYSTEM AND CONSTRUCT PROPOSED PAVEMENT ON US 83 SBML'S US 87 WBML'S AS SHOWN IN THE TCP LAYOUTS

PHASE 5 STEP 2 (CONSTRUCTION OF US 83 / US 87 NW QUADRANT)

1. MAINTAIN US 83 AND US 87 TCP SETUP INSTALLED IN PHASE 5 STEP 1

2. CONSTRUCTION FOR THIS STEP SHALL BE COMPLETED DURING A SINGLE WEEKEND AND OPEN BACK TO TRAFFIC.

3. INSTALL STORM DRAIN SYSTEM, SIGNAL FOUNDATION/GROUND BOXES, AND PAVEMENT ON US 83 / US 87 SE QUADRANT AS SHOWN IN THE TCP LAYOUTS.

PHASE 6 (ACTIVATE SIGNALS FOR PROPOSED TRAFFIC CONFIGURATION, INSTALL SIGNS/PAVEMENT MARKING, AND FINAL CLEAN UP)

1. COMPLETE PLACEMENT OF ACP TRANSITIONS AT THE 4 ENDS OF THE CONCRETE PAVEMENT. SET-UP REMOVABLE SHORTTERM TAPE FOR MILL/FILL AT ENDS OF CRCP. THIS WORK WILL BE COMPLETED USING TCP (2-4).

2. REMOVE EXISTING TRAFFIC SIGNAL, INSTALL PROPOSED TRAFFIC SIGNAL AND PEDESTRIAL POLES USING WZ(BTS-1)-13. COMPLETE SIDEWALK CONSTRUCTION. ACTIVIATE SIGNALS AND PERFORM TEST.

3. REMOVE EXISTING WORK ZONE MARKINGS AND PLACE PERMANENT PAVEMENT MARKINGS AND MARKERS AND SIGNS. THIS WORK WILL BE COMPLETED USING TCP (3-1) & TCP (3-3).

4. PERFORM FINAL CLEAN-UP AND PROJECT CLOSEOUT.

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US 83

TCP
SEQUENECE OF WORK

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		18

DATE: 5/23/2024 4:03:22 PM
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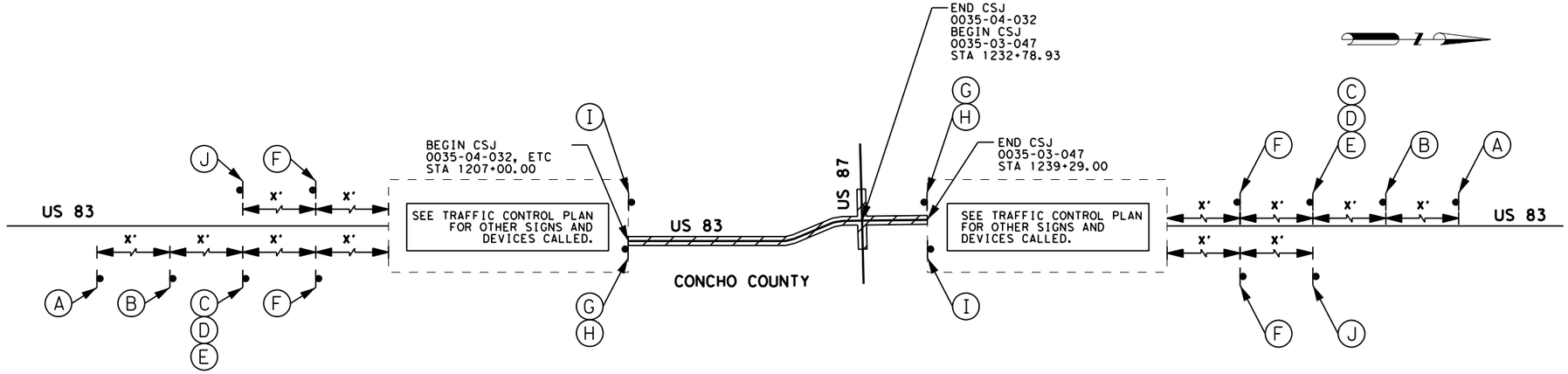


SIGNING LAYOUT AT US 83

LEGEND

WORK ZONE

SIGN

POSTED SPEED	MINIUM SIGN SPACING X DISTANCE
30	120′
35	160′
40	240′
45	320′
50	400′
55	500′
60	600′
65	700′
70	800′
75	900′

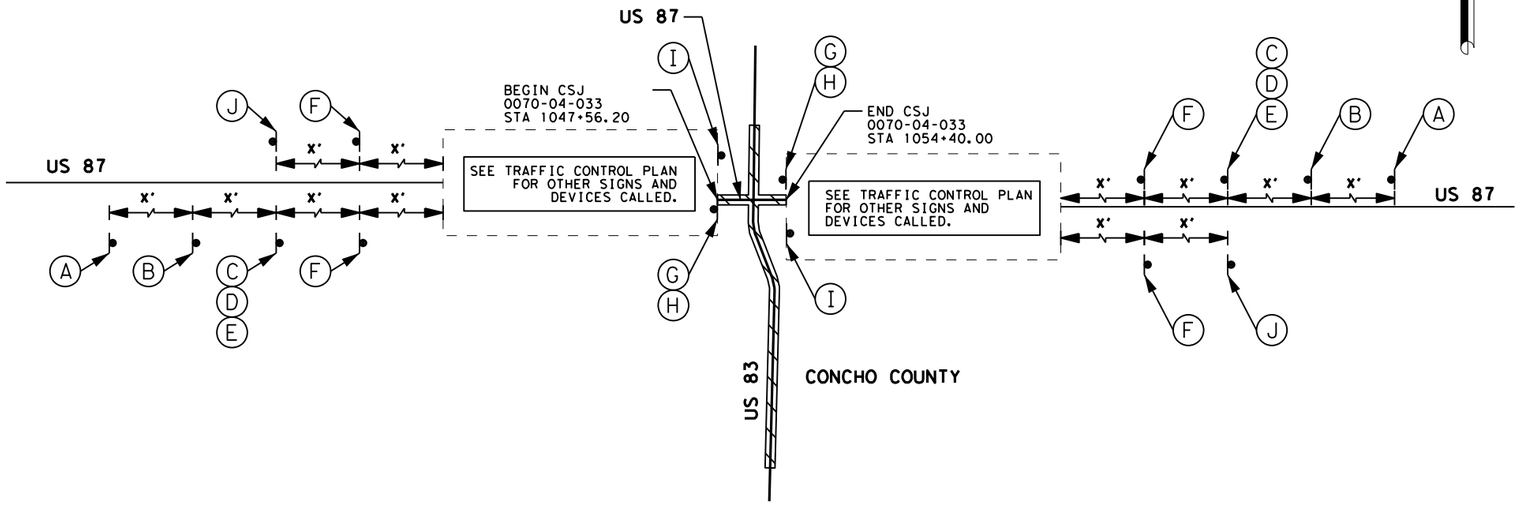
NOTES:

1. THE TCP IS BASED ON THE EXISTING POSTED SPEED LIMITS. THE CONTRACTOR SHALL VERIFY THE EXISTING POSTED SPEED LIMITS PRIOR AND MAKE NECESSARY ADJUSTMENTS AS NEEDED TO THE TCP SET UP.

2. REFER TO BC STANDARDS FOR ADDITIONAL INFORMATION.

EXISTING POSTED SPEED (1)	
US 83	75 MPH
US 87	70 MPH
ALL COUNTY RD	TBD

SEE NOTE 1



SIGNING LAYOUT AT US 87

A — OBEY WARNING SIGNS / STATE LAW — R20-3T, 48" X 42"

B — STAY ALERT / TALK OR TEXT LATER — G20-10T, 60" X 48"

C — BEGIN WORK ZONE — G20-9TP, 36" X 36"

D — TRAFFIC FINES DOUBLE — R20-5T, 36" X 36"

E — WHEN WORKERS ARE PRESENT — R20-5aTP, 36" X 18"

F — SPEED LIMIT XX — R2-1, 30" X 36"

G — BEGIN ROAD WORK NEXT X MILES — G20-5T, 48" X 24"

H — NAME ADDRESS CITY STATE / CONTRACTOR — G20-6T, 48" X 30"

I — END ROAD WORK — G20-2, 48" X 24"

J — END WORK ZONE — G20-2bT, 48" X 24"

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5/23/2024

Rolando Escamilla P.E.

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15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
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US 83

TCP
ADVANCE WARNING SIGNS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		19

DATE: 5/23/2024 4:04:04 PM
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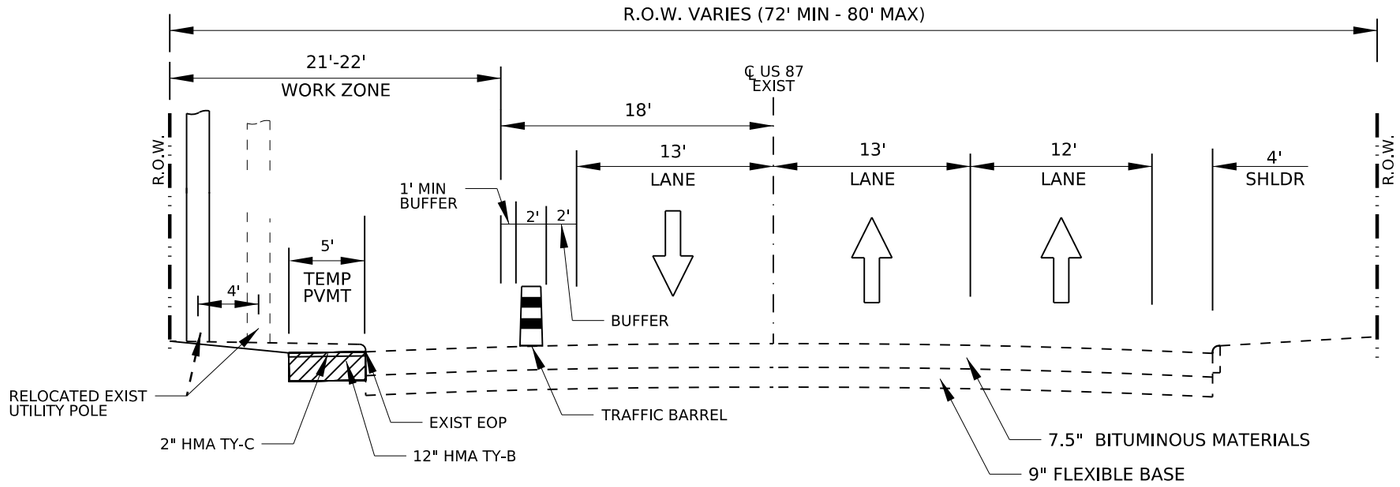

TCP PHASE 1
TYPICAL SECTION (US 87)
STA 1046+63.27 TO STA 1050+23.30

LEGEND:

- *CONSTRUCTION CURRENT PHASE*
- *CONSTRUCTION PREVIOUS PHASE*
- *BARRELS*
- *EXIST TRAFFIC CONFIGURATION FLOW ARROW*
- *PROP TRAFFIC CONFIGURATION FLOW ARROW*

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US 83

TCP
TYPYCAL SECTIONS

SHEET 1 OF 5

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		20

DATE: 5/23/2024 4:04:41 PM
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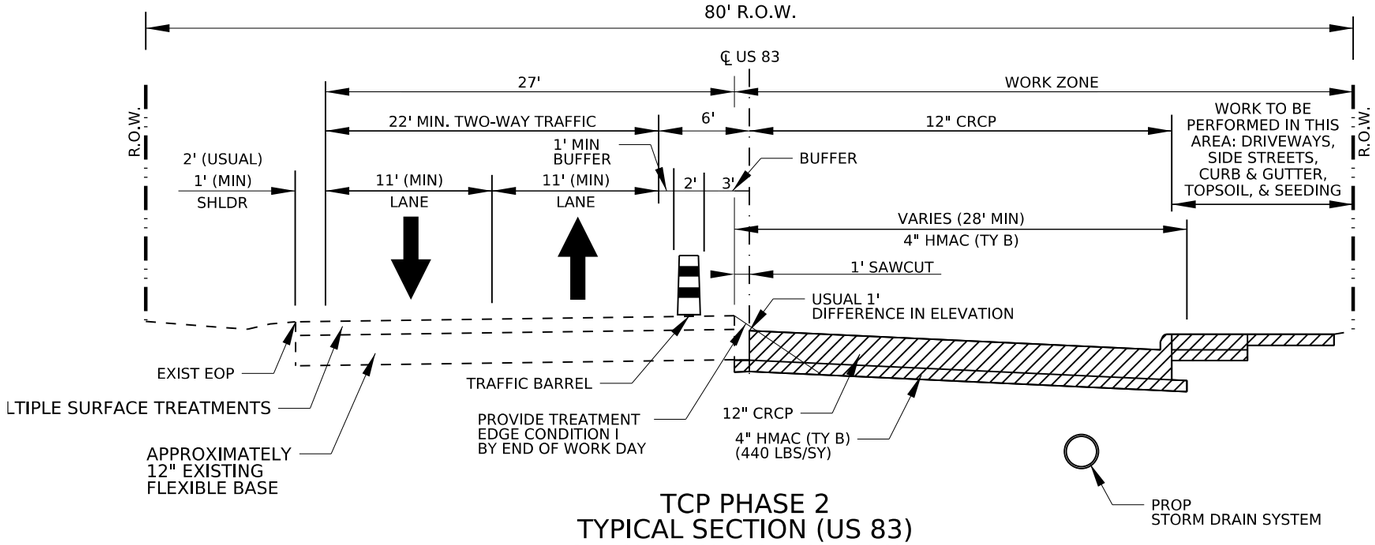
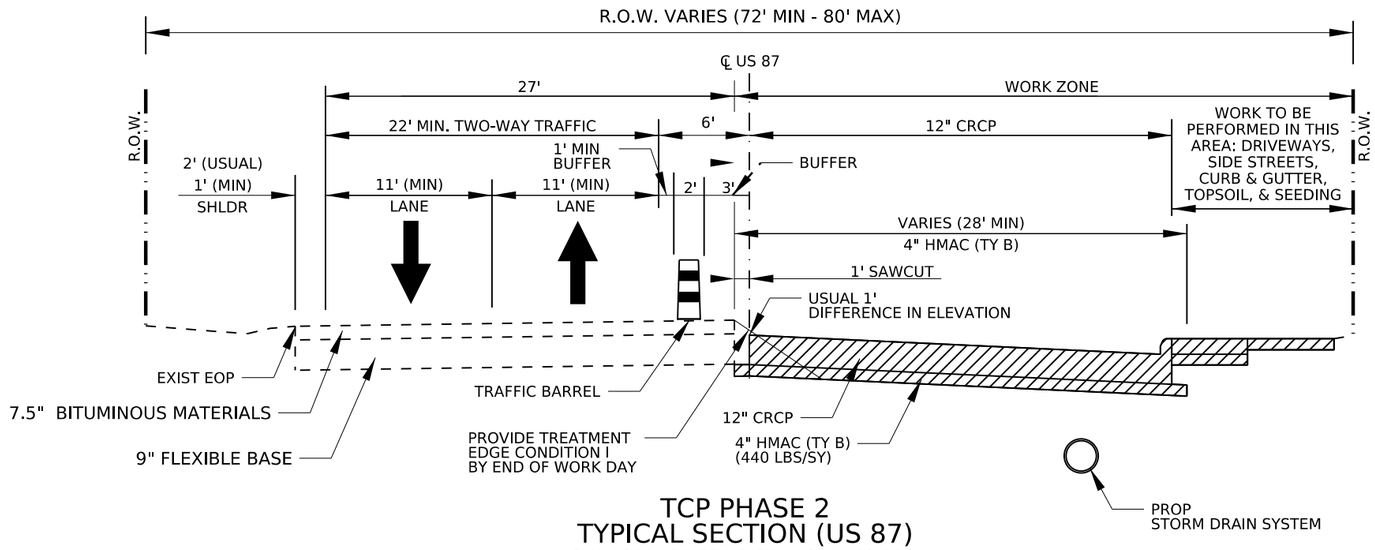


TCP PHASE 2
TYPICAL SECTION (US 83)
STA 1207+00.00 TO STA 1231+96.69

US 83 INTERSECTION (SE QUADRANT)
STA 1231+96.69 TO STA 1232+79.07



TCP PHASE 2
TYPICAL SECTION (US 87)
STA 1051+57.52 TO STA 1054+40.00

US 87 INTERSECTION (SE QUADRANT)
STA 1050+90.44 TO STA 1051+57.52

LEGEND:

- *CONSTRUCTION CURRENT PHASE*
- *CONSTRUCTION PREVIOUS PHASE*
- *BARRELS*
- *EXIST TRAFFIC CONFIGURATION FLOW ARROW*
- *PROP TRAFFIC CONFIGURATION FLOW ARROW*

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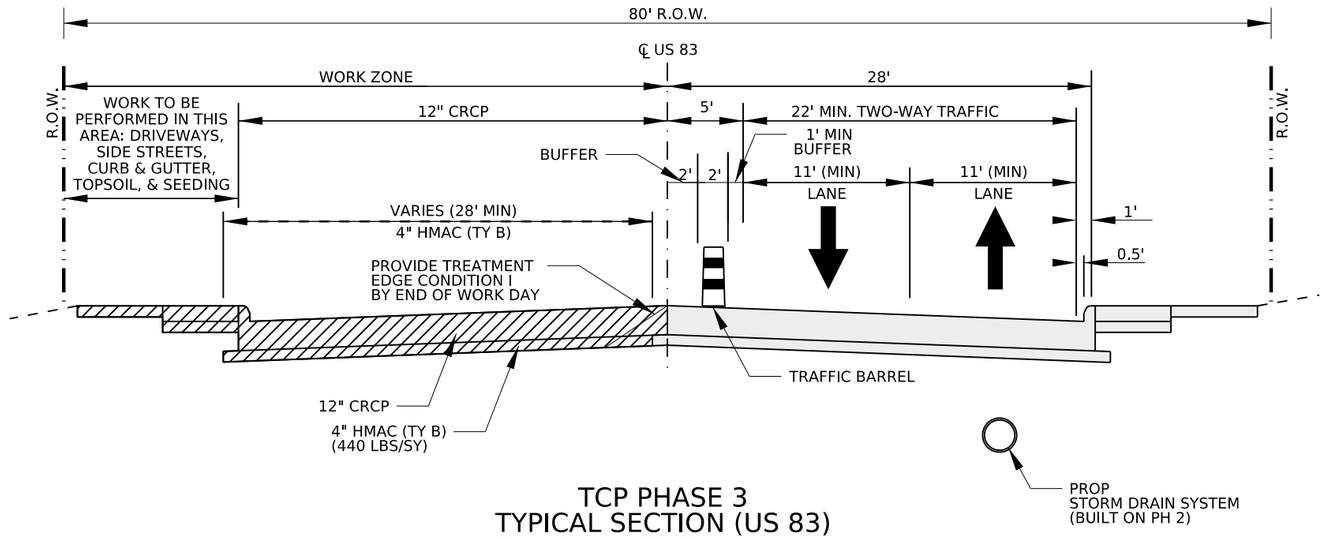
US 83

TCP
TYPYCAL SECTIONS

SHEET 2 OF 5

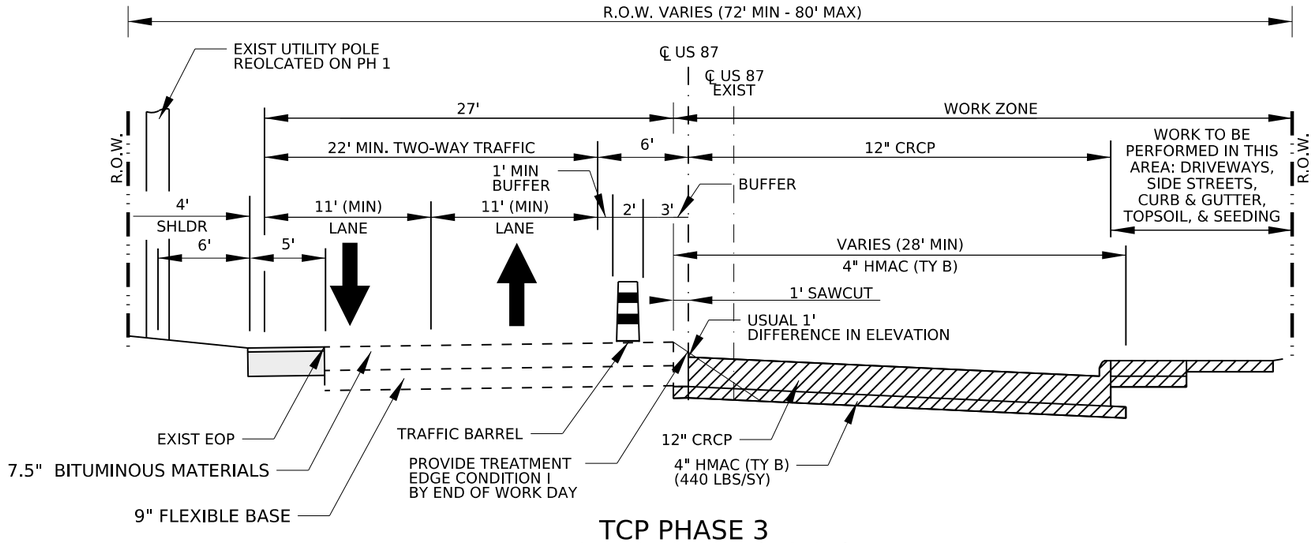
CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		21

DATE:
FILE:



TCP PHASE 3
TYPICAL SECTION (US 83)
STA 1207+00.00 TO STA 1231+96.69

US 83 INTERSECTION (SW QUADRANT)
STA 1231+96.69 TO STA 1232+79.07



TCP PHASE 3
TYPICAL SECTION (US 87)
STA 1047+56.20 TO STA 1050+03.34

US 87 INTERSECTION (SW QUADRANT)
STA 1050+03.34 TO STA 1050+90.44

LEGEND:

- *CONSTRUCTION CURRENT PHASE*
- *CONSTRUCTION PREVIOUS PHASE*
- *BARRELS*
- *EXIST TRAFFIC CONFIGURATION FLOW ARROW*
- *PROP TRAFFIC CONFIGURATION FLOW ARROW*

STATE OF TEXAS
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90128
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TBPELS FIRM # F-6825

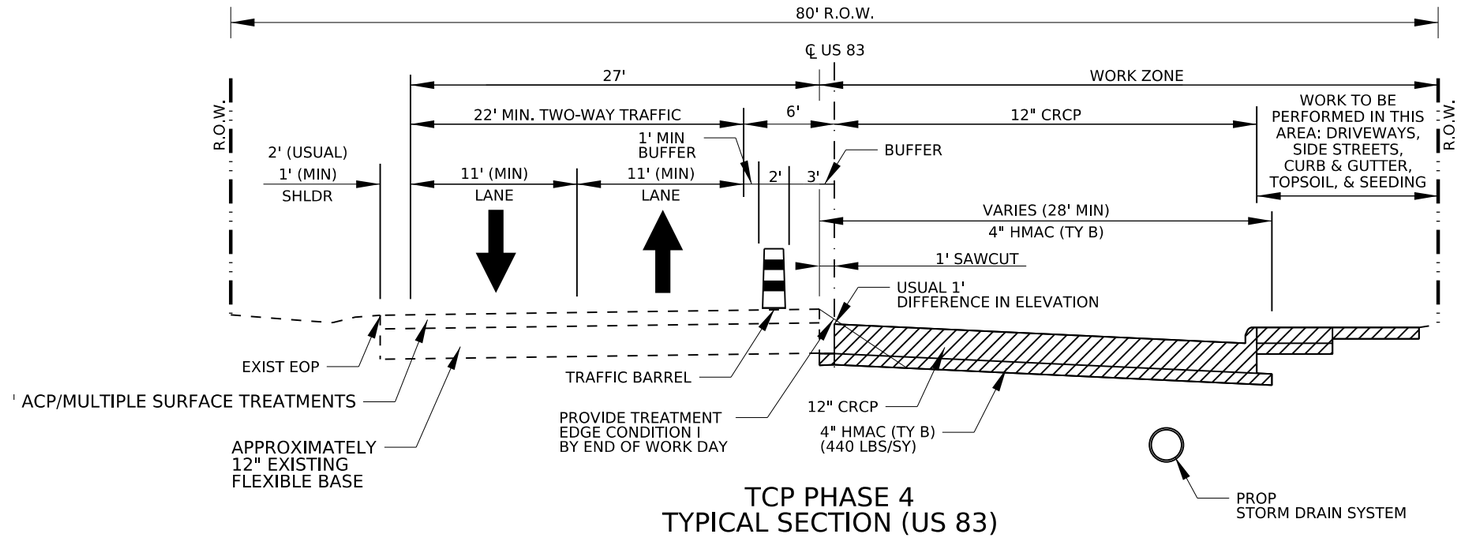
US 83

TCP
TYPYCAL SECTIONS

SHEET 3 OF 5

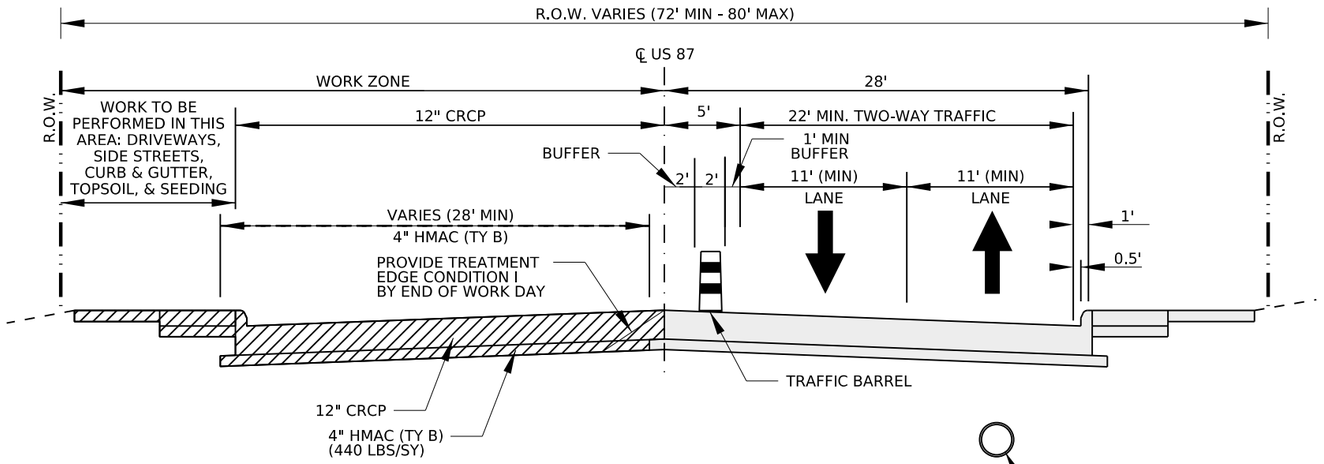
CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		22

DATE:
FILE:



TCP PHASE 4
TYPICAL SECTION (US 83)
STA 1233+61.00 TO STA 1239+29.00

US 83 INTERSECTION (NE QUADRANT)
STA 1232+79.07 TO STA 1233+61.00



TCP PHASE 4
TYPICAL SECTION (US 87)
STA 1051+57.52 TO STA 1054+40.00

US 87 INTERSECTION (NE QUADRANT)
STA 1050+90.44 TO STA 1051+57.52

LEGEND:

- *CONSTRUCTION CURRENT PHASE*
- *CONSTRUCTION PREVIOUS PHASE*
- *BARRELS*
- *EXIST TRAFFIC CONFIGURATION FLOW ARROW*
- *PROP TRAFFIC CONFIGURATION FLOW ARROW*

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US 83

TCP
TYPYCAL SECTIONS

SHEET 4 OF 5

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		23

DATE: 5/23/2024 4:06:23 PM
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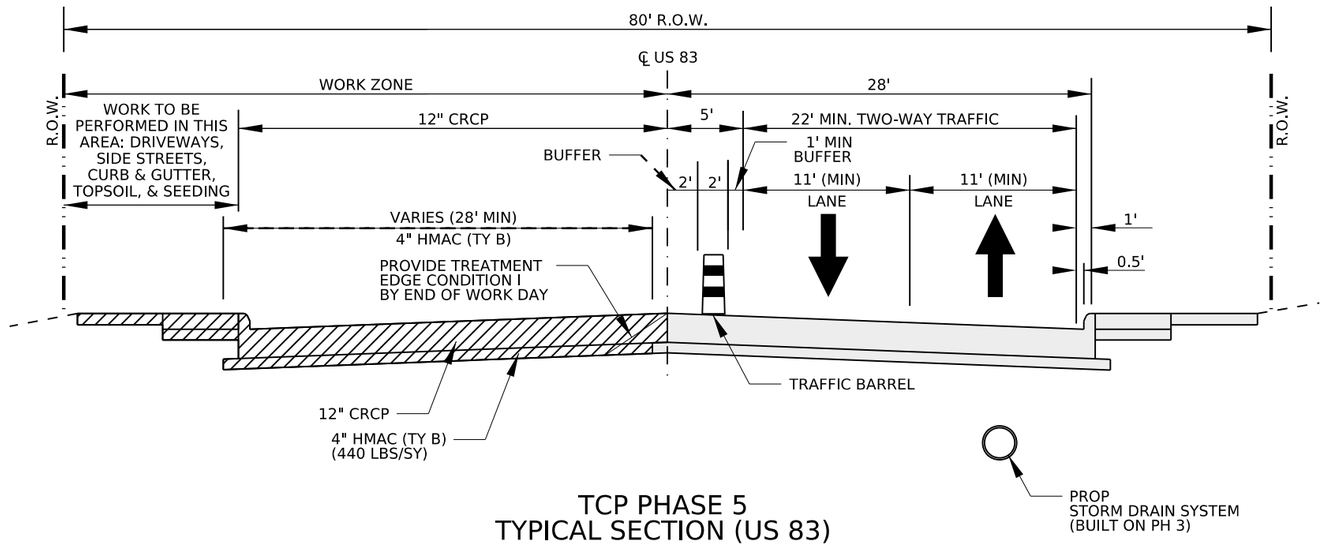
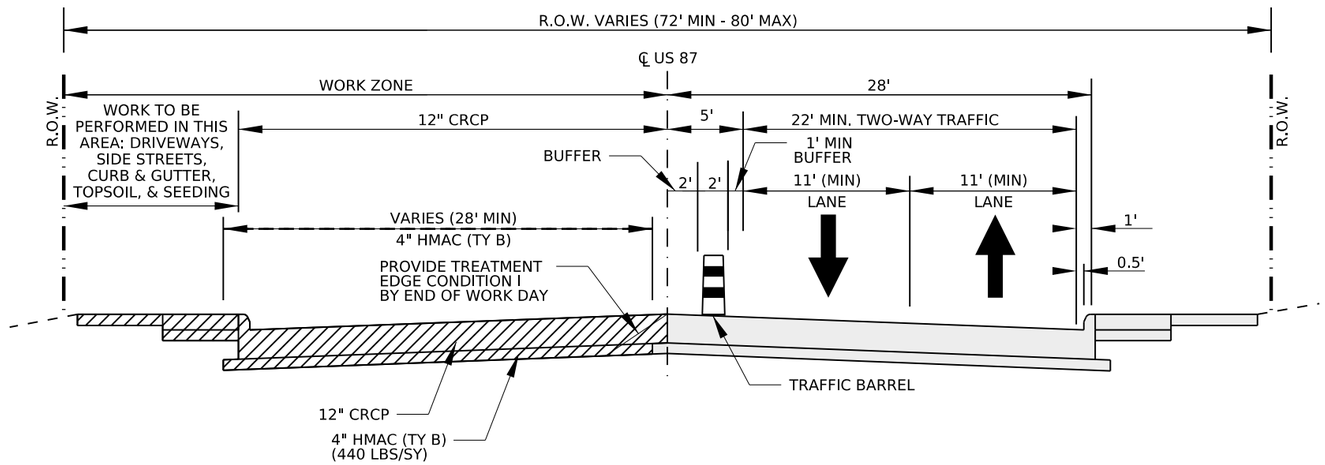


TCP PHASE 5
TYPICAL SECTION (US 83)
STA 1233+61.00 TO STA 1239+29.00

US 83 INTERSECTION (NW QUADRANT)
STA 1232+79.07 TO STA 1233+61.00



TCP PHASE 5
TYPICAL SECTION (US 87)
STA 1047+56.20 TO STA 1050+03.34

US 87 INTERSECTION (NW QUADRANT)
STA 1050+03.34 TO STA 1050+90.44

LEGEND:

- CONSTRUCTION CURRENT PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW

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US 83

TCP
TYPYCAL SECTIONS

SHEET 5 OF 5

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		24

DATE: 5/23/2024 4:06:55 PM
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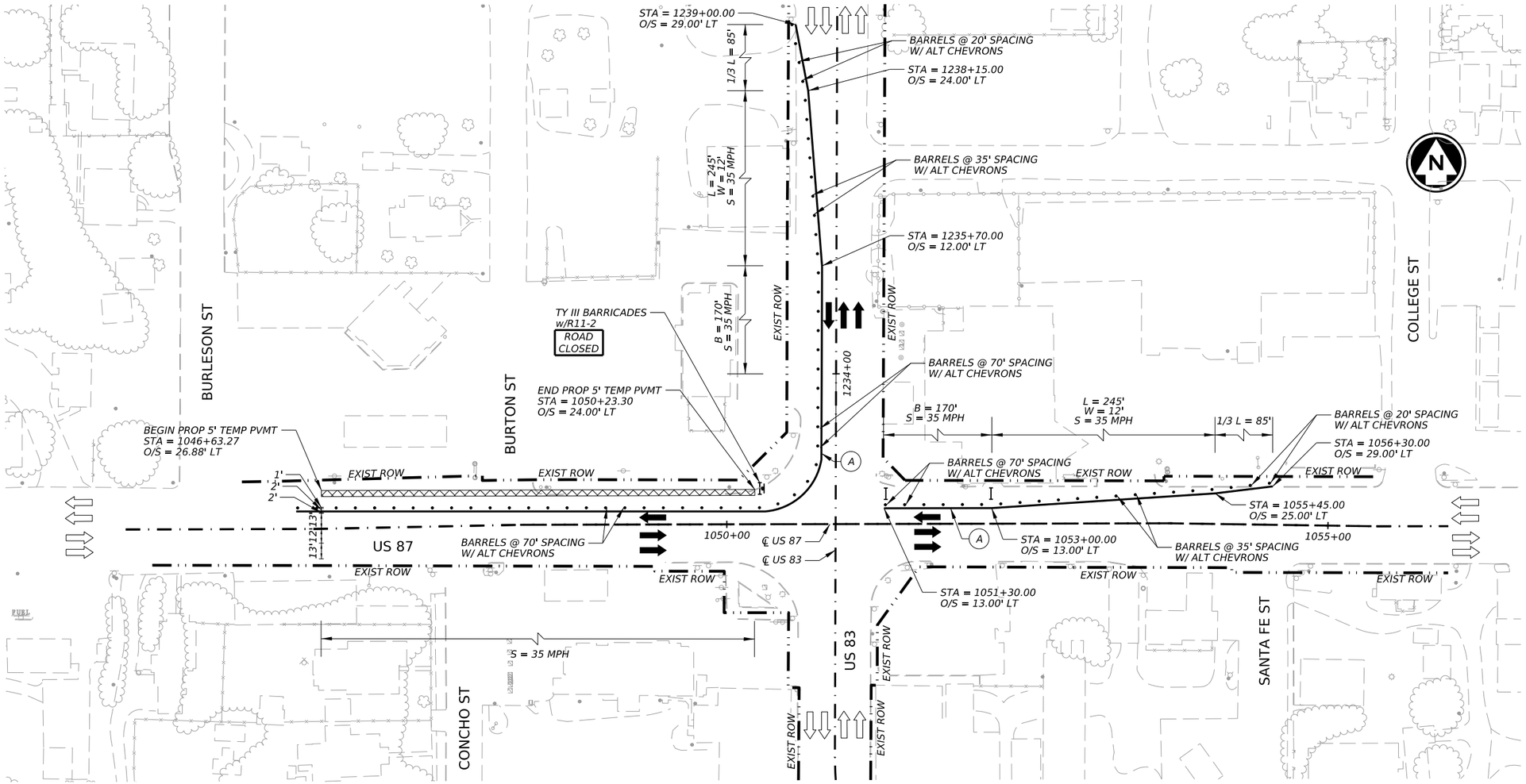

LEGEND:

- TEMP PAVEMENT
- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW
- TYPE III BARRICADE
- SIGN

(A) WK ZN PAV MRK REMOV (W) 4" (SLD)
(B) WK ZN PAV MRK REMOV (Y) 4" (SLD)(DBL)
(C) WK ZN PAV MRK REMOV (W) 12" (SLD)

NOTES:

1. TCP DEVICES SHALL BE PLACED IN ACCORDANCE WITH APPLICABLE BC AND TCP STANDARDS.
2. CONTRACTOR SHALL LOCATE SIGNS, BARRICADES & CHANNELIZATION DEVICES AS APPROVED BY THE ENGINNER.
3. CONTRACTOR TO MANTAIN ACCESS TO ADJACENT PROPERTIES AT ALL TIMES.

HORZ 0' 50' 100'
SCALE IN FEET

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US 83

US 83
TCP
PHASE 1

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		25

DATE: 5/23/2024 5:11:17 PM
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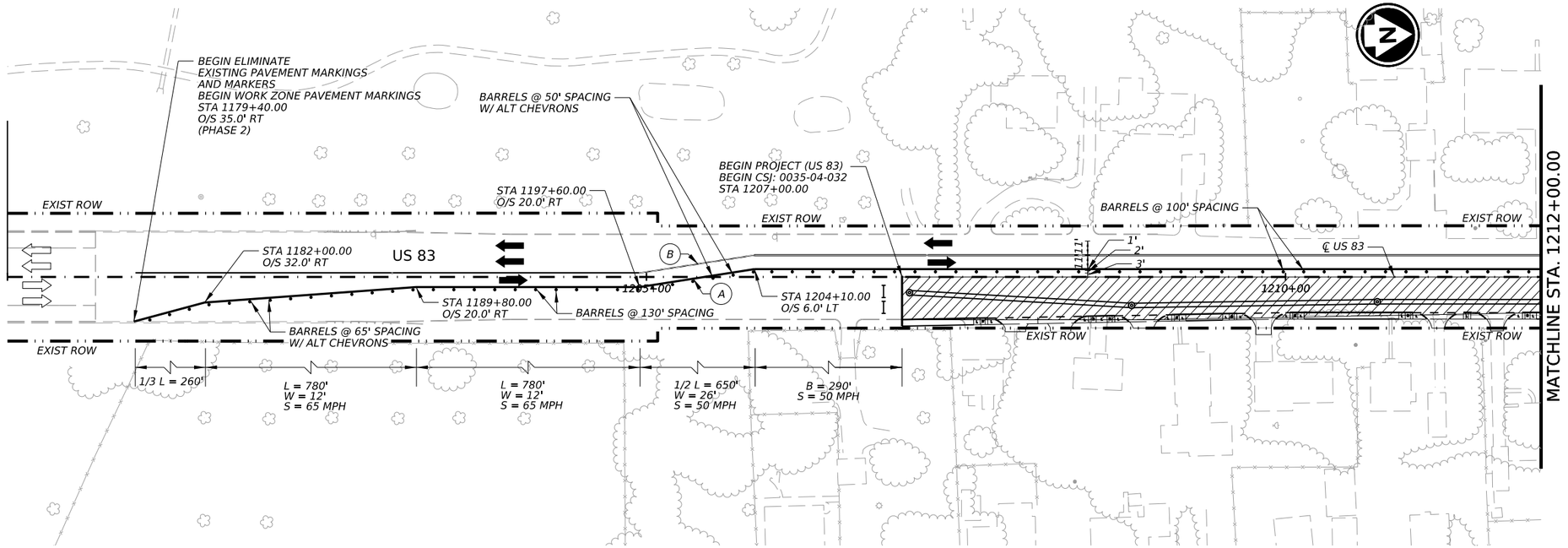

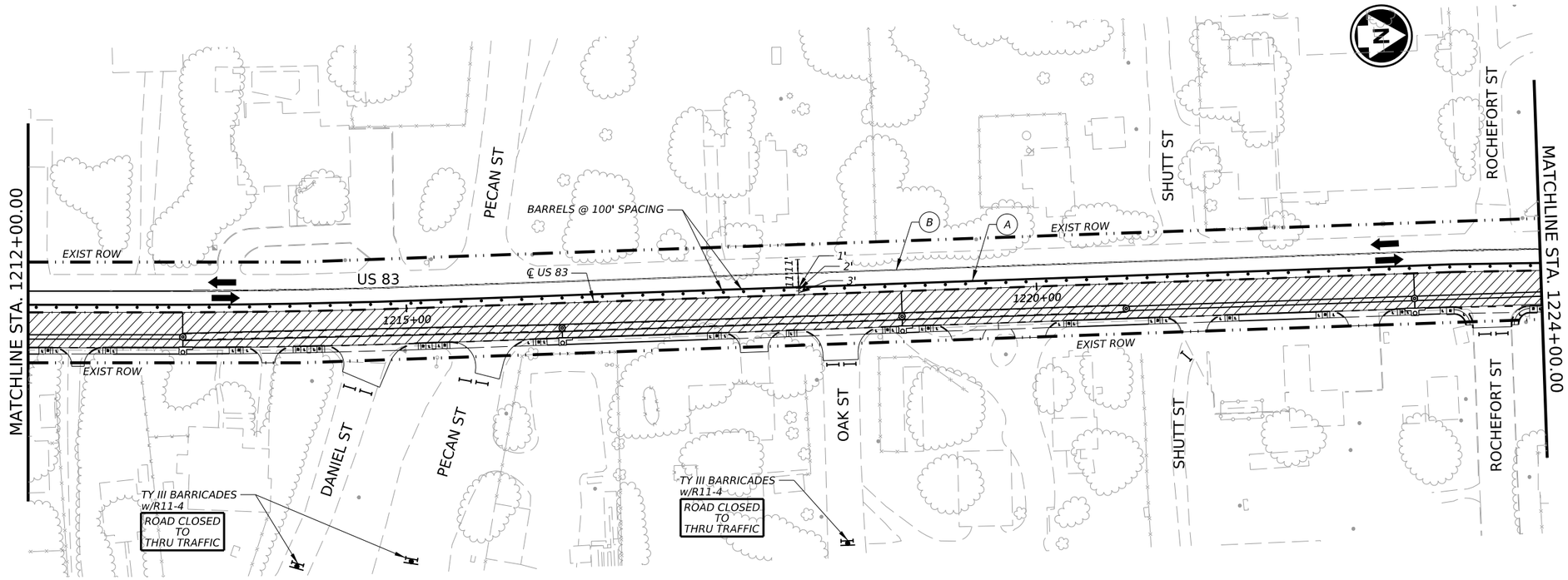

LEGEND:

- TEMP PAVEMENT
- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW
- TYPE III BARRICADE
- SIGN
- (A) WK ZN PAV MRK REMOV (W) 4" (SLD)
- (B) WK ZN PAV MRK REMOV (Y) 4" (SLD)(DBL)
- (C) WK ZN PAV MRK REMOV (W) 12" (SLD)

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4. REFER TO TCP NARRATIVE FOR PREVIOUS TCP SETUPS THAT ARE TO BE MAINTAINED DURING THIS PHASE/STEP.

HORZ 0' 50' 100'
SCALE IN FEET

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US 83

US 83
TCP
PHASE 2
STEP 1

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		26

DATE: 5/23/2024 5:11:50 PM
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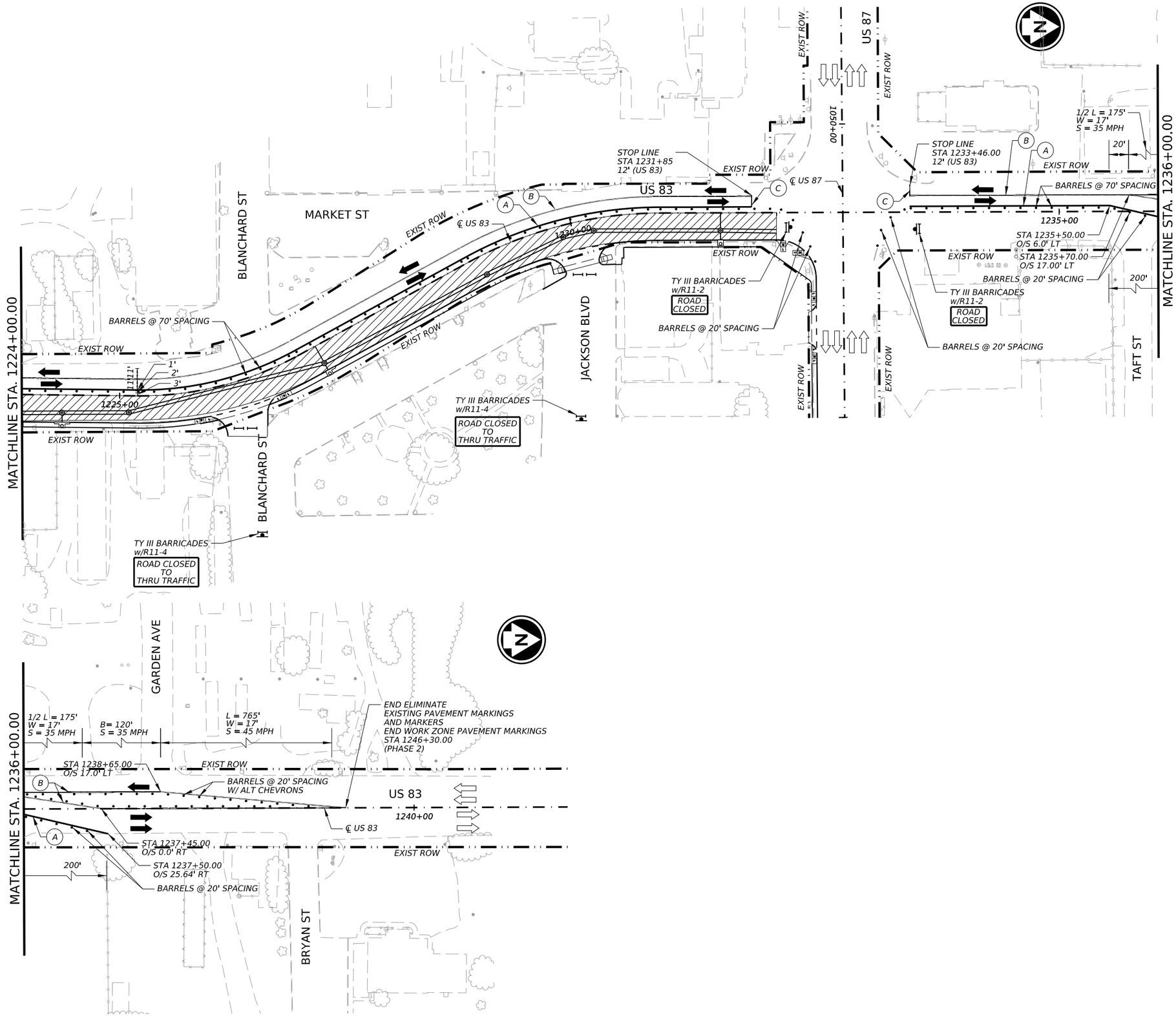

LEGEND:

- TEMP PAVEMENT
- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW
- TYPE III BARRICADE
- SIGN
- (A) WK ZN PAV MRK REMOV (W) 4" (SLD)
- (B) WK ZN PAV MRK REMOV (Y) 4" (SLD)(DBL)
- (C) WK ZN PAV MRK REMOV (W) 12" (SLD)

NOTES:

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HORZ 0' 50' 100'
SCALE IN FEET

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US 83

US 83
TCP
PHASE 2
STEP 1

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		27

DATE: 5/23/2024 5:12:22 PM
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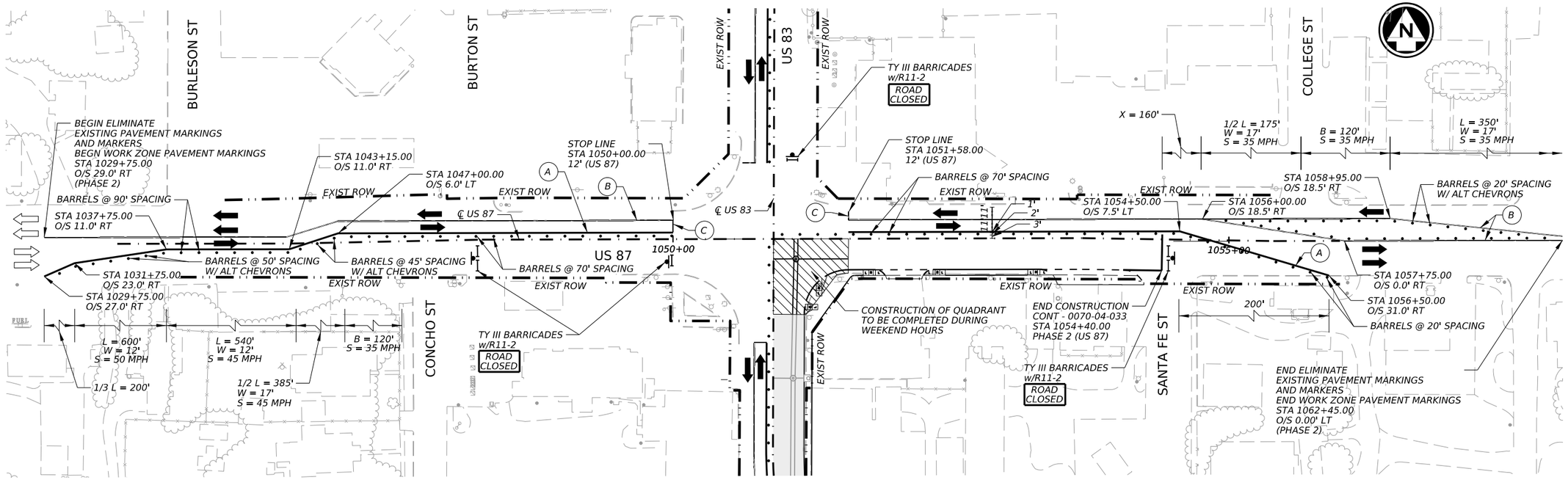

HORZ 0' 50' 100'

SCALE IN FEET

LEGEND:

- TEMP PAVEMENT
- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW
- TYPE III BARRICADE
- SIGN
- (A) WK ZN PAV MRK REMOV (W) 4" (SLD)
- (B) WK ZN PAV MRK REMOV (Y) 4" (SLD)(DBL)
- (C) WK ZN PAV MRK REMOV (W) 12" (SLD)

NOTES:

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US 83

US 83
TCP
PHASE 2
STEP 2

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		28

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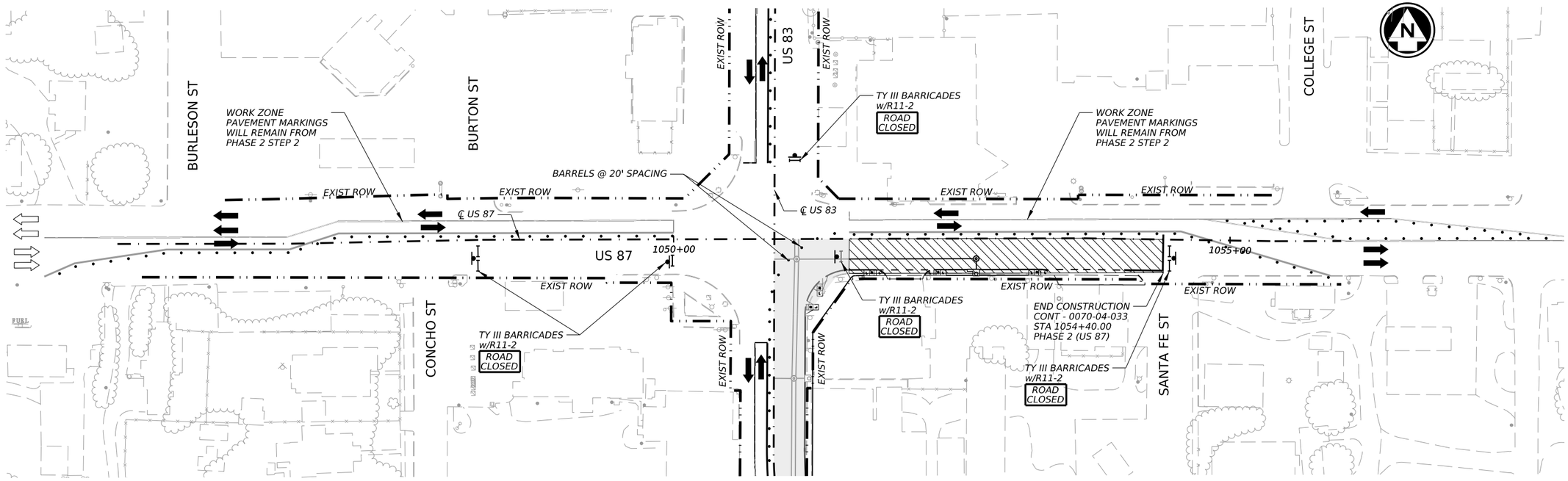

HORZ 0' 50' 100'

SCALE IN FEET

LEGEND:

- TEMP PAVEMENT
- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW
- TYPE III BARRICADE
- SIGN
- (A) WK ZN PAV MRK REMOV (W) 4" (SLD)
- (B) WK ZN PAV MRK REMOV (Y) 4" (SLD)(DBL)
- (C) WK ZN PAV MRK REMOV (W) 12" (SLD)

NOTES:

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US 83
TCP
PHASE 2
STEP 3

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		29

DATE: 5/23/2024 5:13:25 PM
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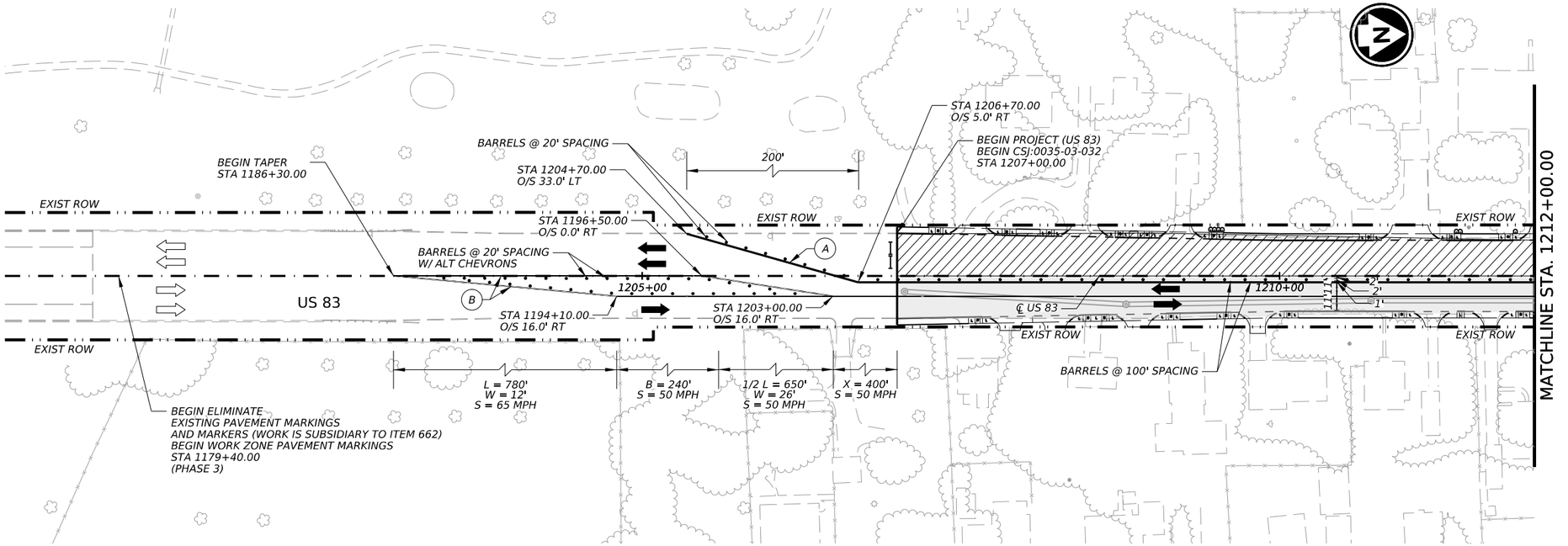

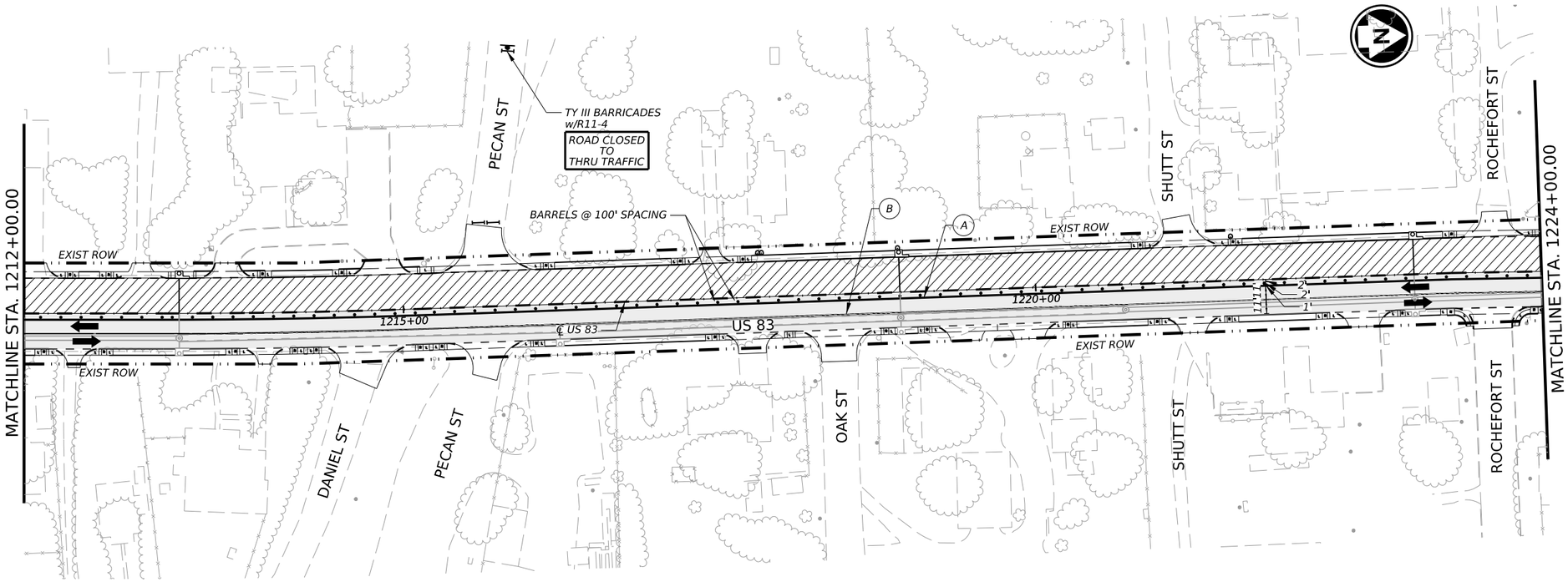

LEGEND:

- TEMP PAVEMENT
- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW
- TYPE III BARRICADE
- SIGN
- (A) WK ZN PAV MRK REMOV (W) 4" (SLD)
- (B) WK ZN PAV MRK REMOV (Y) 4" (SLD)(DBL)
- (C) WK ZN PAV MRK REMOV (W) 12" (SLD)

NOTES:

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4. REFER TO TCP NARRATIVE FOR PREVIOUS TCP SETUPS THAT ARE TO BE MAINTAINED DURING THIS PHASE/STEP.

HORZ 0' 50' 100'
SCALE IN FEET

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US 83

US 83
TCP
PHASE 3
STEP 1

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		30

DATE: 5/23/2024 5:13:53 PM
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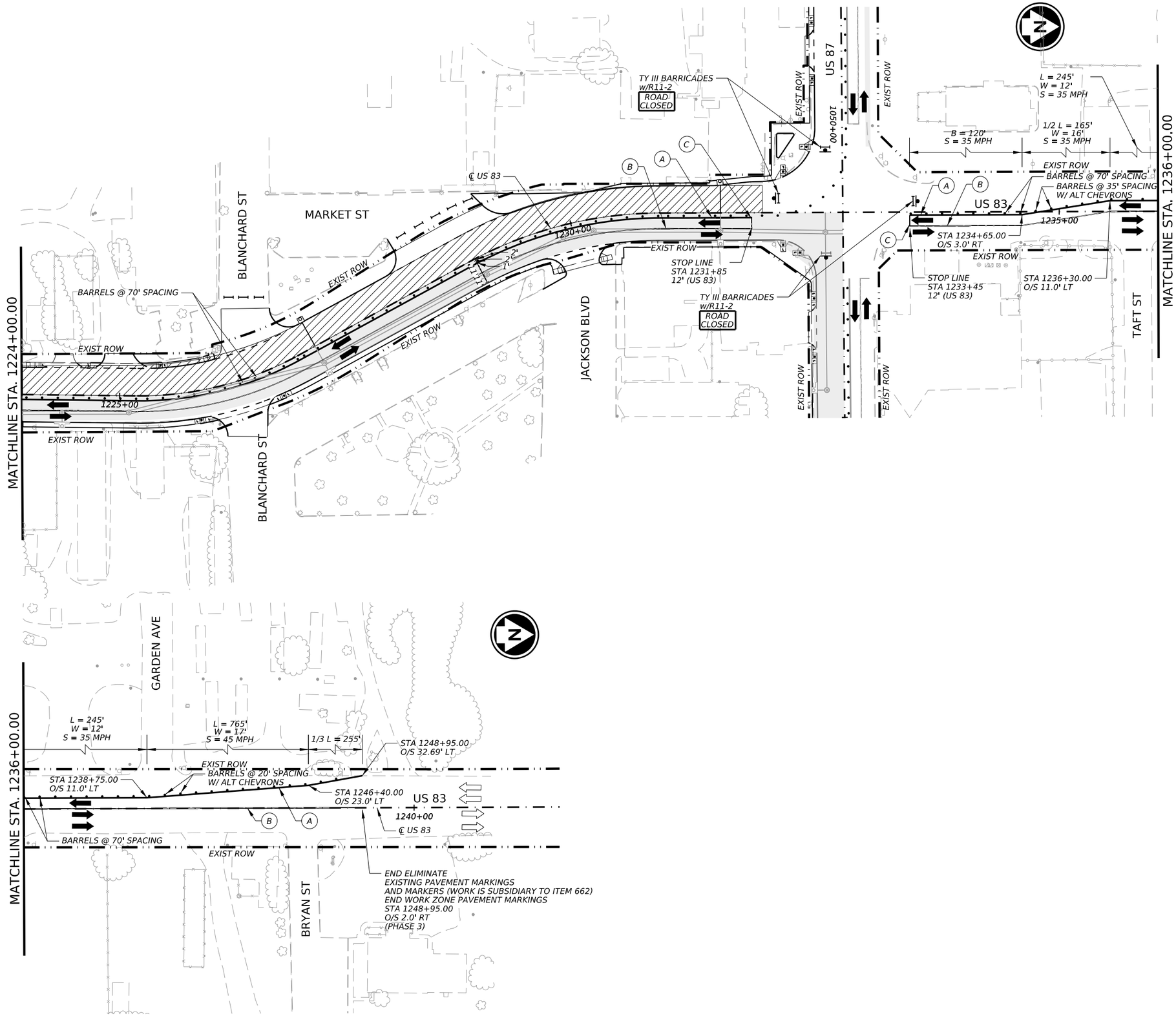

LEGEND:

- TEMP PAVEMENT
- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW
- TYPE III BARRICADE
- SIGN
- (A) WK ZN PAV MRK REMOV (W) 4" (SLD)
- (B) WK ZN PAV MRK REMOV (Y) 4" (SLD)(DBL)
- (C) WK ZN PAV MRK REMOV (W) 12" (SLD)

NOTES:

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4. REFER TO TCP NARRATIVE FOR PREVIOUS TCP SETUPS THAT ARE TO BE MAINTAINED DURING THIS PHASE/STEP.

HORZ 0' 50' 100'

SCALE IN FEET

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US 83

US 83
TCP
PHASE 3
STEP 1

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		31

DATE: 5/23/2024 5:14:22 PM
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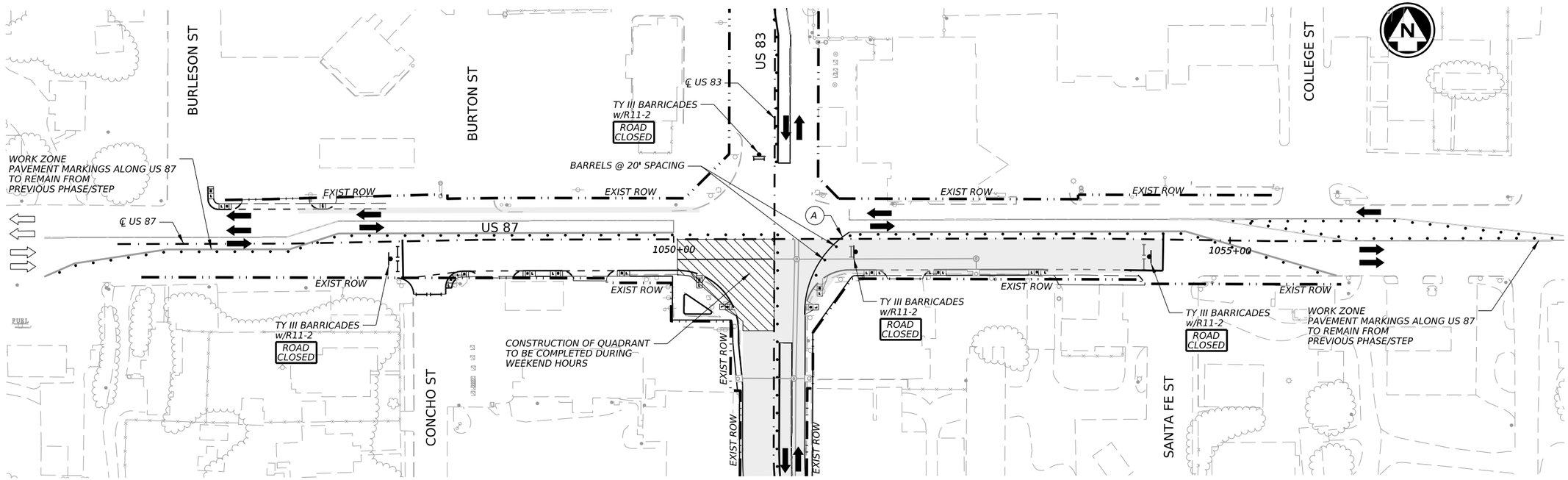

HORZ 0' 50' 100'

SCALE IN FEET

LEGEND:

- TEMP PAVEMENT
- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW
- TYPE III BARRICADE
- SIGN
- (A) WK ZN PAV MRK REMOV (W) 4" (SLD)
- (B) WK ZN PAV MRK REMOV (Y) 4" (SLD)(DBL)
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NOTES:

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US 83

US 83
TCP
PHASE 3
STEP 2

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		32

DATE: 5/23/2024 5:14:54 PM
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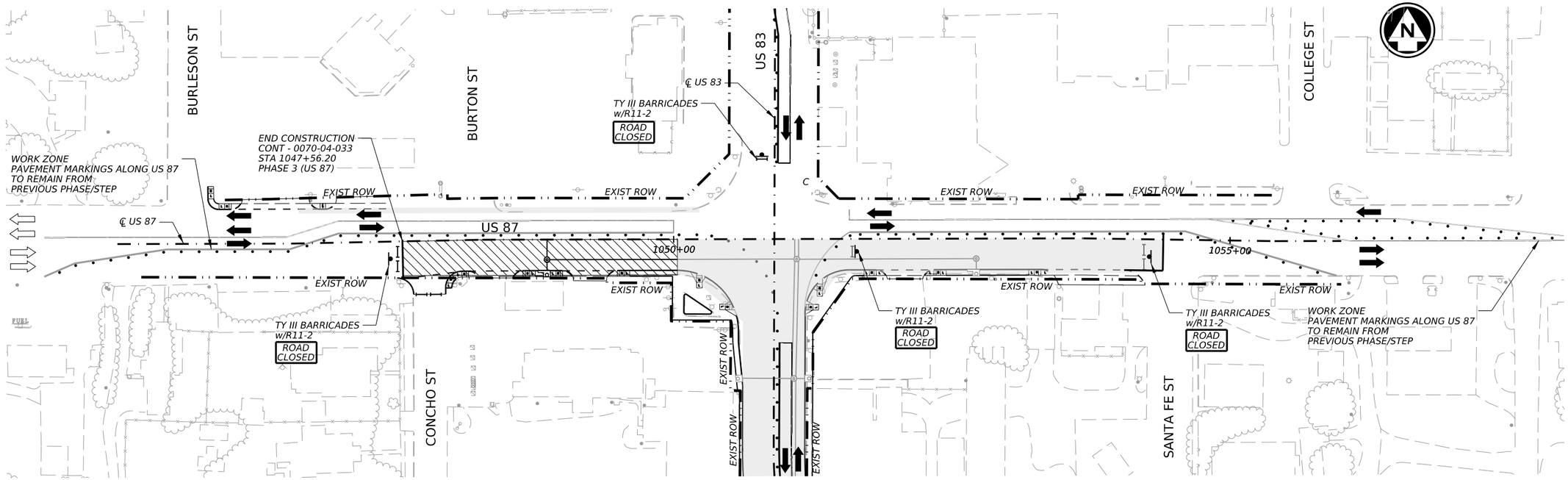

HORZ 0' 50' 100'

SCALE IN FEET

LEGEND:

- TEMP PAVEMENT
- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW
- TYPE III BARRICADE
- SIGN
- (A) WK ZN PAV MRK REMOV (W) 4" (SLD)
- (B) WK ZN PAV MRK REMOV (Y) 4" (SLD)(DBL)
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PROF. LICENSED PROFESSIONAL ENGINEER
5/23/2024

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS
PLANNERS | ENGINEERS | MANAGERS
IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

US 83
TCP
PHASE 3
STEP 3

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		33

DATE: 5/23/2024 5:15:23 PM
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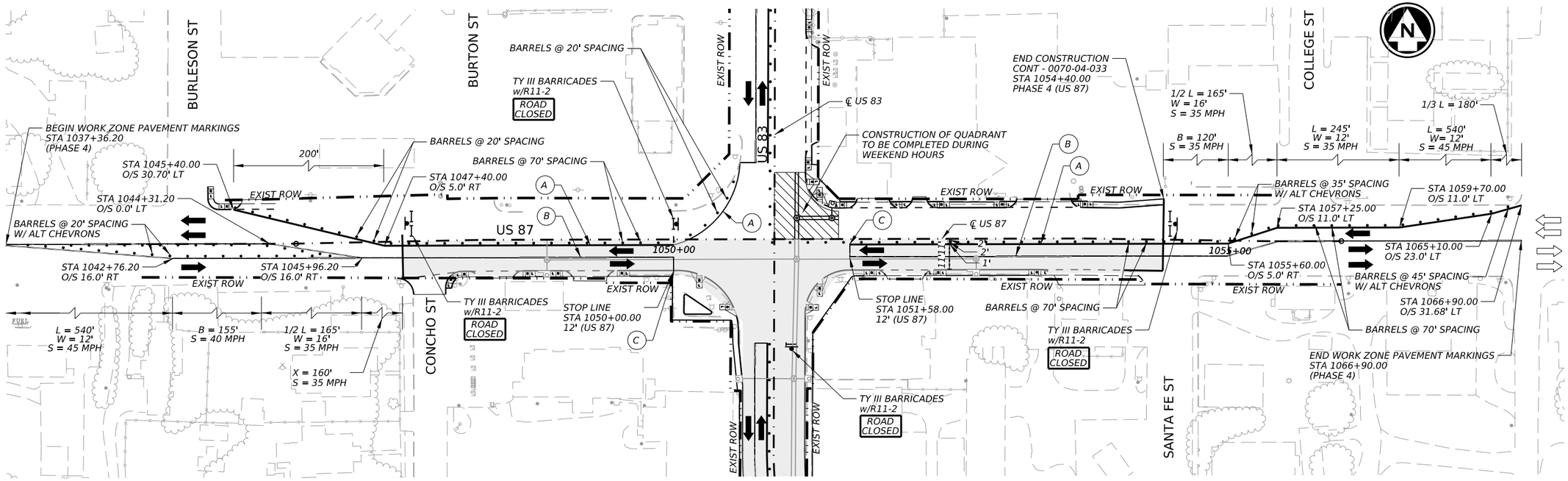

REFER TO PHASE 4 STEP 2 (US 83)
FOR TRAFFIC SHIFT CONFIGURATION

HORZ 0' 50' 100'
SCALE IN FEET

STATE OF TEXAS
ROLANDO ESCAMILLA
90128
PROF. LICENSED PROFESSIONAL ENGINEER
5/23/2024
Rolando Escamilla P.E.

LEGEND:

- TEMP PAVEMENT
- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW
- TYPE III BARRICADE
- SIGN
- (A) WK ZN PAV MRK REMOV (W) 4" (SLD)
- (B) WK ZN PAV MRK REMOV (Y) 4" (SLD)(DBL)
- (C) WK ZN PAV MRK REMOV (W) 12" (SLD)

NOTES:

1. TCP DEVICES SHALL BE PLACED IN ACCORDANCE WITH APPLICABLE BC AND TCP STANDARDS.
2. CONTRACTOR SHALL LOCATE SIGNS, BARRICADES & CHANNELIZATION DEVICES AS APPROVED BY THE ENGINNER.
3. CONTRACTOR TO MANTAIN ACCESS TO ADJACENT PROPERTIES AT ALL TIMES.
4. REFER TO TCP NARRATIVE FOR PREVIOUS TCP SETUPS THAT ARE TO BE MAINTAINED DURING THIS PHASE/STEP.

NO.	DATE	REVISION

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(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

US 83
TCP
PHASE 4
STEP 1

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		34

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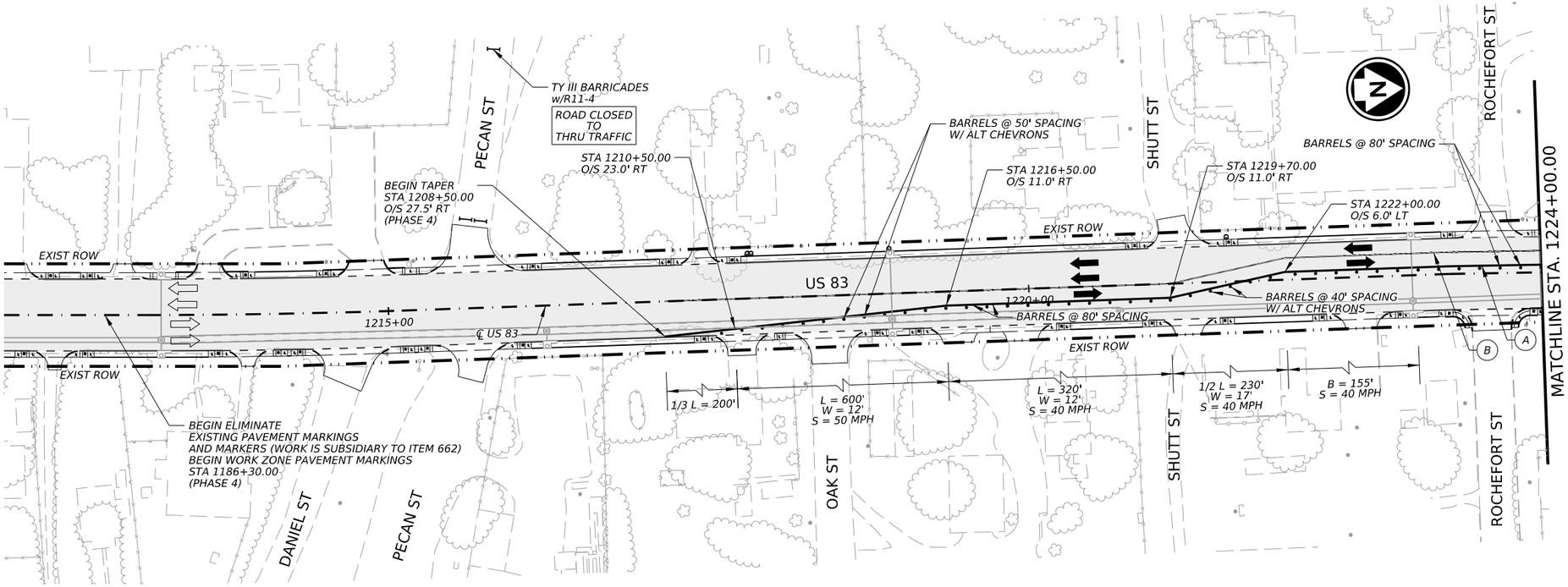

LEGEND:

- TEMP PAVEMENT
- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW
- TYPE III BARRICADE
- SIGN

(A) WK ZN PAV MRK REMOV (W) 4" (SLD)

(B) WK ZN PAV MRK REMOV (Y) 4" (SLD)(DBL)

(C) WK ZN PAV MRK REMOV (W) 12" (SLD)

NOTES:

1. TCP DEVICES SHALL BE PLACED IN ACCORDANCE WITH APPLICABLE BC AND TCP STANDARDS.
2. CONTRACTOR SHALL LOCATE SIGNS, BARRICADES & CHANNELIZATION DEVICES AS APPROVED BY THE ENGINNER.
3. CONTRACTOR TO MANTAIN ACCESS TO ADJACENT PROPERTIES AT ALL TIMES.
4. REFER TO TCP NARRATIVE FOR PREVIOUS TCP SETUPS THAT ARE TO BE MAINTAINED DURING THIS PHASE/STEP.

HORZ 0' 50' 100'

SCALE IN FEET

STATE OF TEXAS
ROLANDO ESCAMILLA
90128
LICENSED
PROFESSIONAL ENGINEER

5/23/2024

Rolando Escamilla P.E.

NO.	DATE	REVISION

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15915 KATY FREEWAY, SUITE 300
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TBPELS FIRM # F-6825

US 83

US 83
TCP
PHASE 4
STEP 2

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		35

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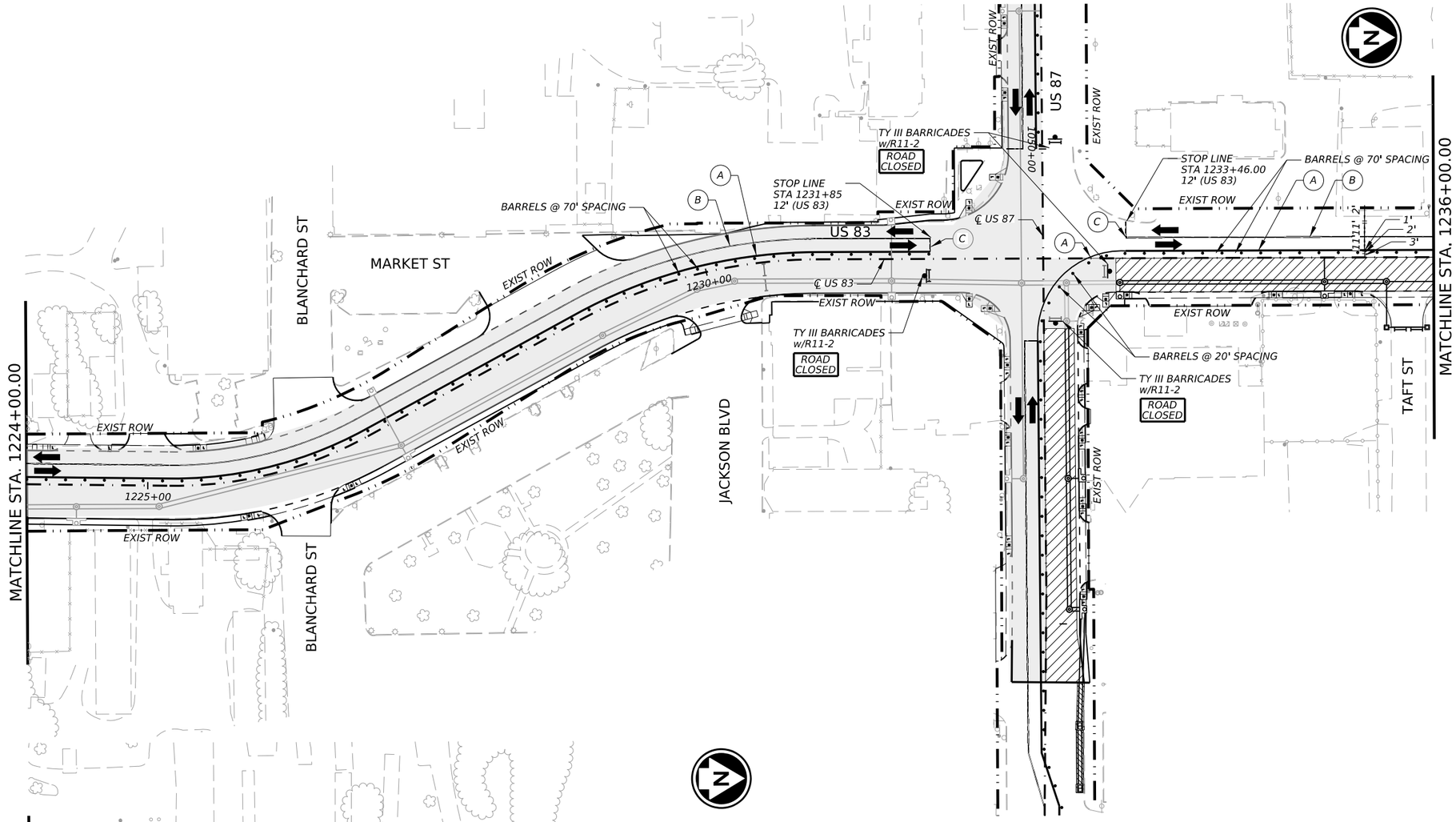

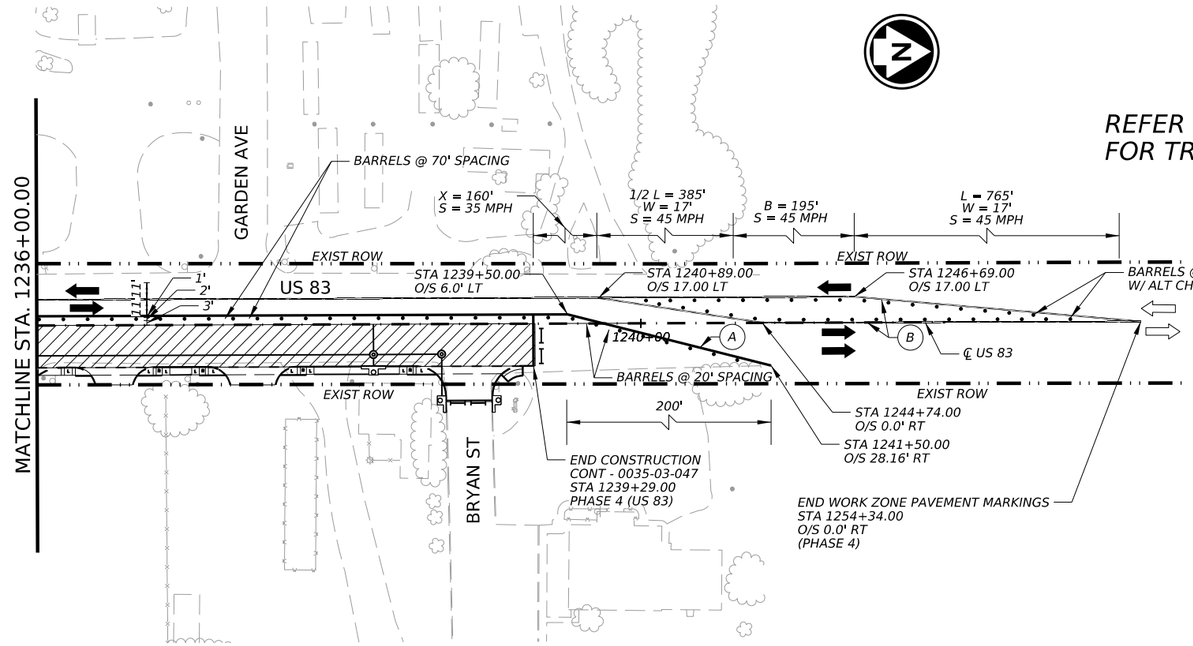

REFER TO PHASE 4 STEP 1 (US 83)
FOR TRAFFIC SHIFT CONFIGURATION

LEGEND:

- TEMP PAVEMENT
- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW
- TYPE III BARRICADE
- SIGN
- (A) WK ZN PAV MRK REMOV (W) 4" (SLD)
- (B) WK ZN PAV MRK REMOV (Y) 4" (SLD)(DBL)
- (C) WK ZN PAV MRK REMOV (W) 12" (SLD)

NOTES:

1. TCP DEVICES SHALL BE PLACED IN ACCORDANCE WITH APPLICABLE BC AND TCP STANDARDS.
2. CONTRACTOR SHALL LOCATE SIGNS, BARRICADES & CHANNELIZATION DEVICES AS APPROVED BY THE ENGINNER.
3. CONTRACTOR TO MANTAIN ACCESS TO ADJACENT PROPERTIES AT ALL TIMES.
4. REFER TO TCP NARRATIVE FOR PREVIOUS TCP SETUPS THAT ARE TO BE MAINTAINED DURING THIS PHASE/STEP.

HORZ 0' 50' 100'
SCALE IN FEET

STATE OF TEXAS
ROLANDO ESCAMILLA
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5/23/2024

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HOUSTON, TX 77094
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US 83

US 83
TCP
PHASE 4
STEP 2

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		36

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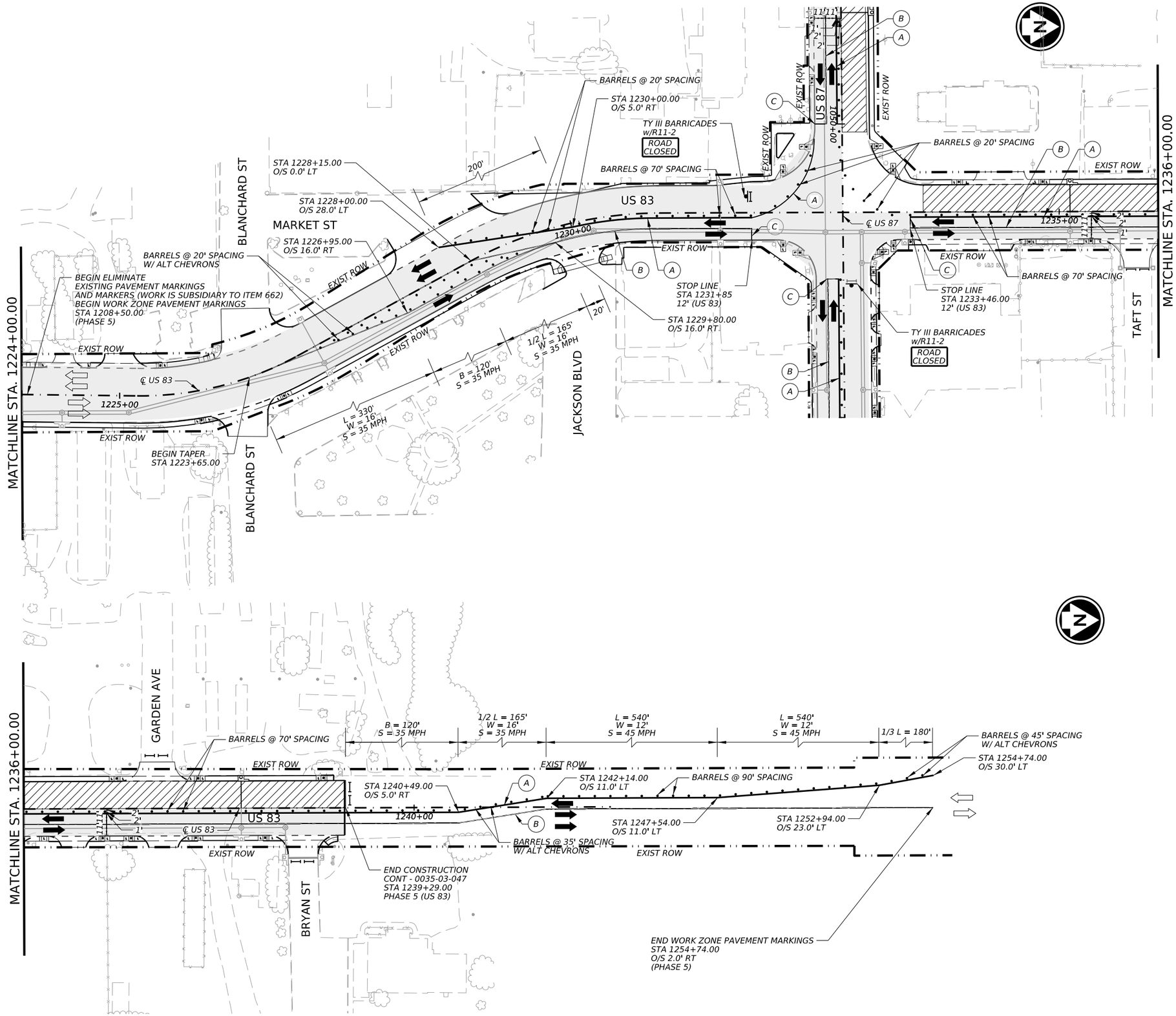

LEGEND:

- TEMP PAVEMENT
- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW
- TYPE III BARRICADE
- SIGN
- (A) WK ZN PAV MRK REMOV (W) 4" (SLD)
- (B) WK ZN PAV MRK REMOV (Y) 4" (SLD)(DBL)
- (C) WK ZN PAV MRK REMOV (W) 12" (SLD)

NOTES:

1. TCP DEVICES SHALL BE PLACED IN ACCORDANCE WITH APPLICABLE BC AND TCP STANDARDS.
2. CONTRACTOR SHALL LOCATE SIGNS, BARRICADES & CHANNELIZATION DEVICES AS APPROVED BY THE ENGINNER.
3. CONTRACTOR TO MANTAIN ACCESS TO ADJACENT PROPERTIES AT ALL TIMES.
4. REFER TO TCP NARRATIVE FOR PREVIOUS TCP SETUPS THAT ARE TO BE MAINTAINED DURING THIS PHASE/STEP.

HORZ 0' 50' 100'
SCALE IN FEET

STATE OF TEXAS
ROLANDO ESCAMILLA
90128
LICENSED
PROFESSIONAL ENGINEER
5/23/2024

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

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US 83

US 83
TCP
PHASE 5
STEP 1

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		37

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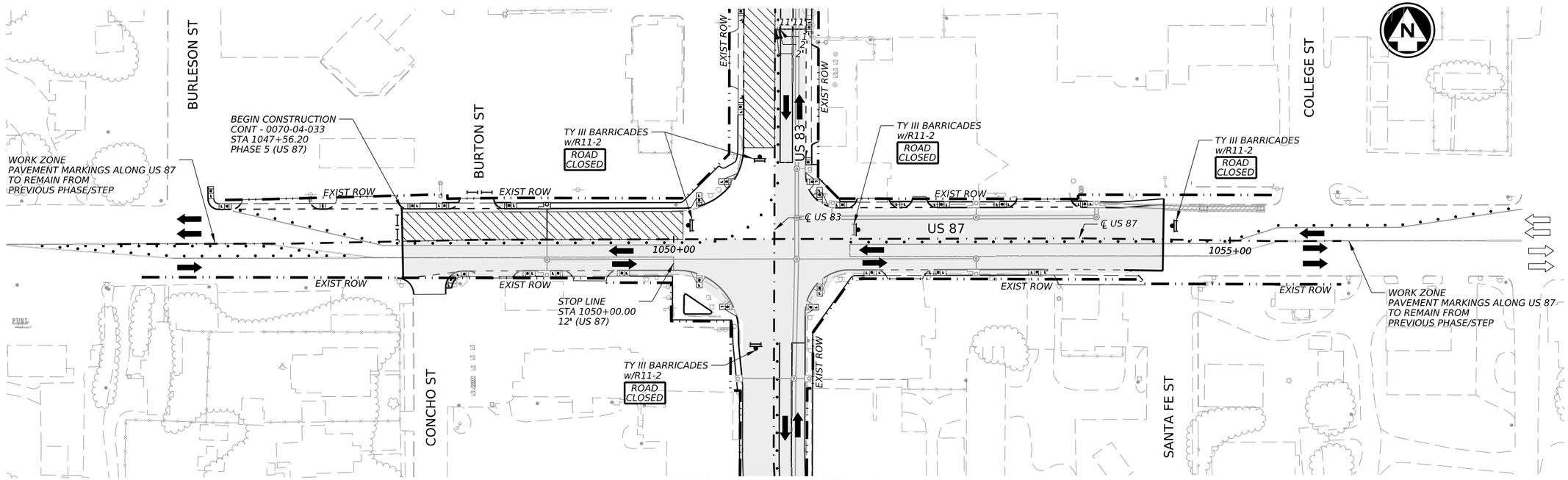
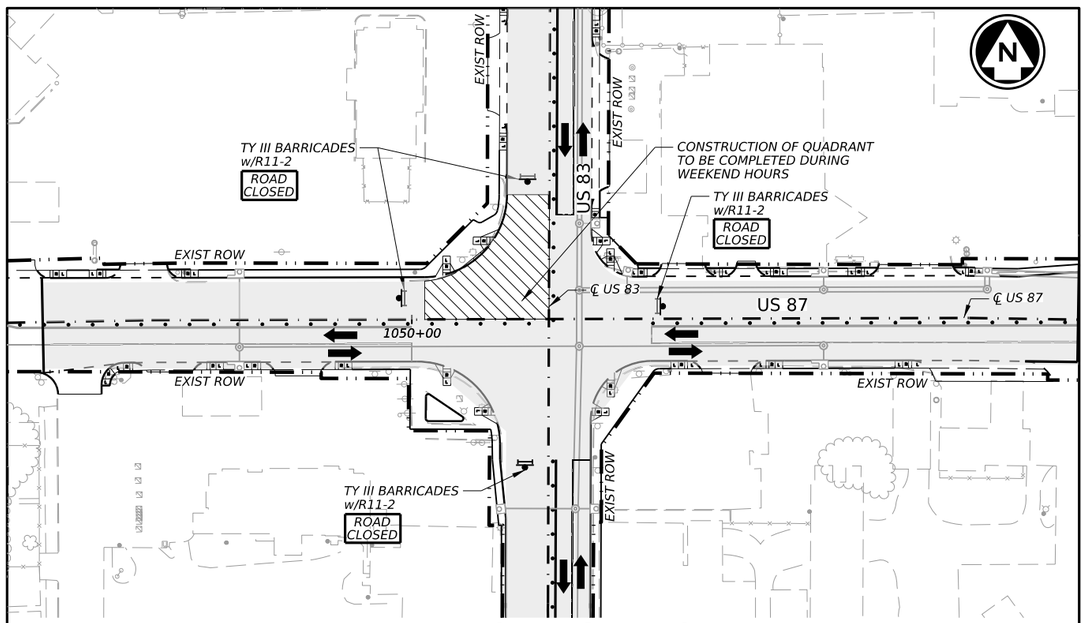


PHASE 5 STEP 1



PHASE 5 STEP 2

HORZ 0' 50' 100'

SCALE IN FEET

LEGEND:

- TEMP PAVEMENT
- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREVIOUS PHASE
- BARRELS
- EXIST TRAFFIC CONFIGURATION FLOW ARROW
- PROP TRAFFIC CONFIGURATION FLOW ARROW
- TYPE III BARRICADE
- SIGN
- (A) WK ZN PAV MRK REMOV (W) 4" (SLD)
- (B) WK ZN PAV MRK REMOV (Y) 4" (SLD)(DBL)
- (C) WK ZN PAV MRK REMOV (W) 12" (SLD)

NOTES:

1. TCP DEVICES SHALL BE PLACED IN ACCORDANCE WITH APPLICABLE BC AND TCP STANDARDS.
2. CONTRACTOR SHALL LOCATE SIGNS, BARRICADES & CHANNELIZATION DEVICES AS APPROVED BY THE ENGINNER.
3. CONTRACTOR TO MANTAIN ACCESS TO ADJACENT PROPERTIES AT ALL TIMES.
4. REFER TO TCP NARRATIVE FOR PREVIOUS TCP SETUPS THAT ARE TO BE MAINTAINED DURING THIS PHASE/STEP.

STATE OF TEXAS
ROLANDO ESCAMILLA
90128
LICENSED
PROFESSIONAL ENGINEER

5/23/2024

P.E.

NO.	DATE	REVISION

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PLANNERS | ENGINEERS | MANAGERS
IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
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TBPELS FIRM # F-6825

US 83

US 83
TCP
PHASE 5
STEP 1 & 2

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		38

DATE: 5/23/2024 5:18:07 PM
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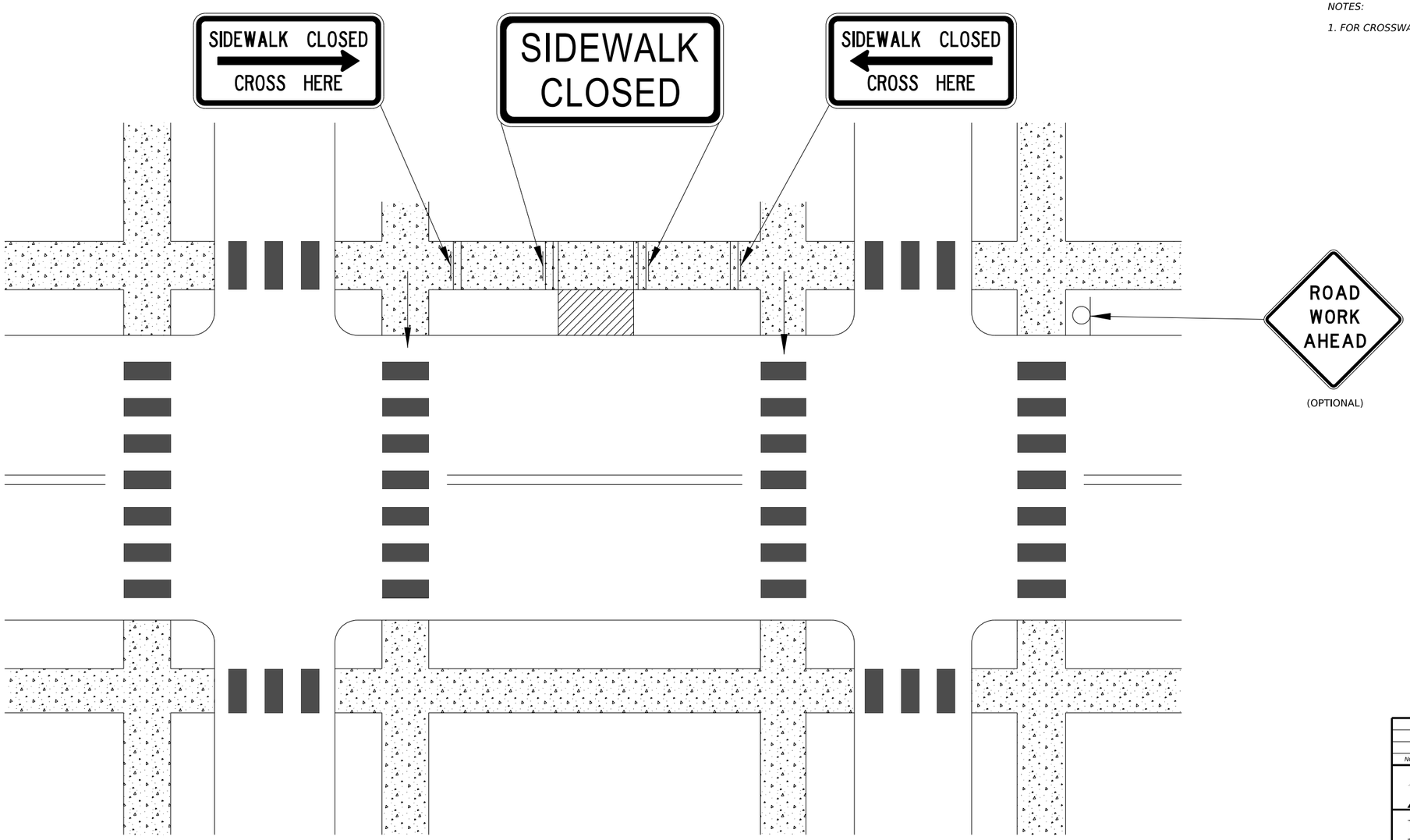

NOTES:

1. FOR CROSSWALK DETAILS REFER TO PM(4)-22A STANDARD.

STATE OF TEXAS
ROLANDO ESCAMILLA
90128
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PROFESSIONAL ENGINEER

5/23/2024

Rolando Escamilla P.E.

NO.	DATE	REVISION

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15915 KATY FREEWAY, SUITE 300
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TBPELS FIRM # F-6825

US 83

US 83
SIDEWALK DETOUR

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		39

DATE: 5/23/2024 4:47:50 PM
FILE: c:\bms\idcus-pw-01\omar.alduci\idms06735\SIDEWALK_DETOUR.dgn

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	SJT	CONCHO		40
5-10 5-21				

DATE: 5/22/2024 5:19:56 PM
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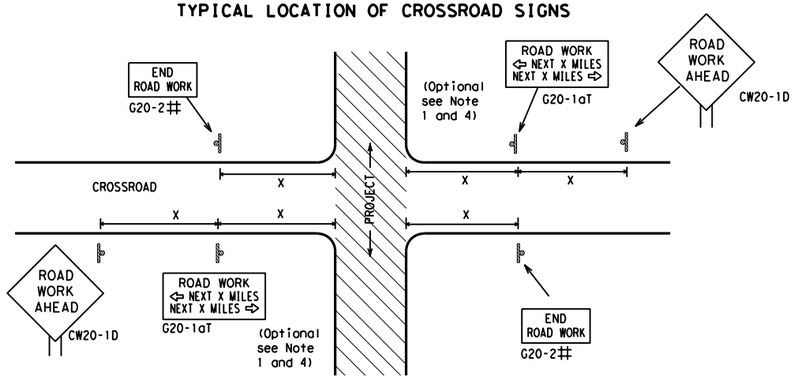
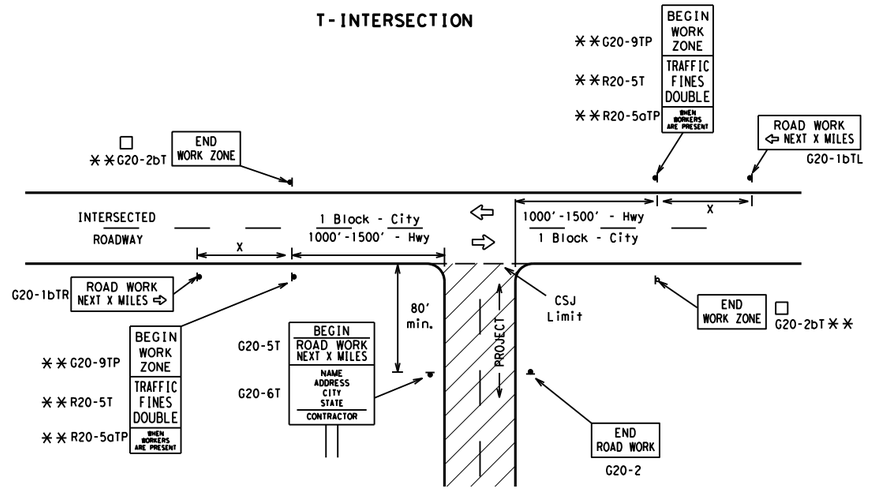
TYPICAL LOCATION OF CROSSROAD SIGNS



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]

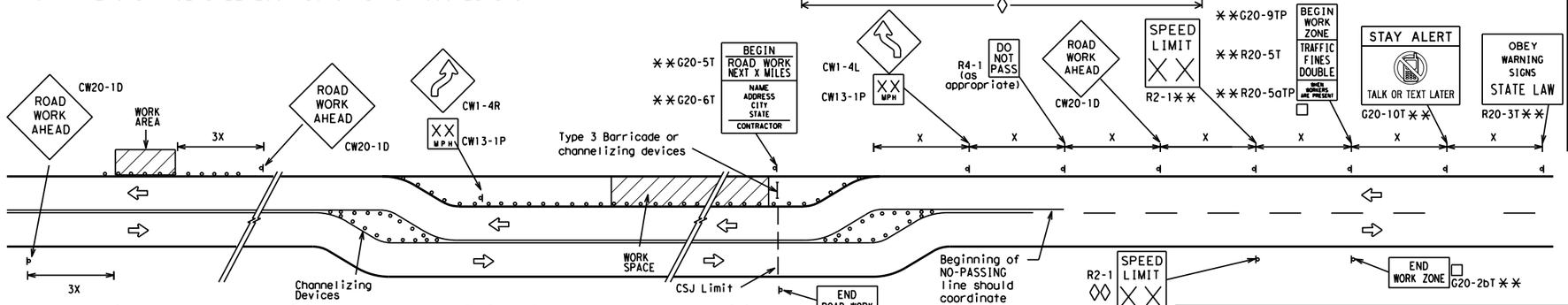
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ 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.

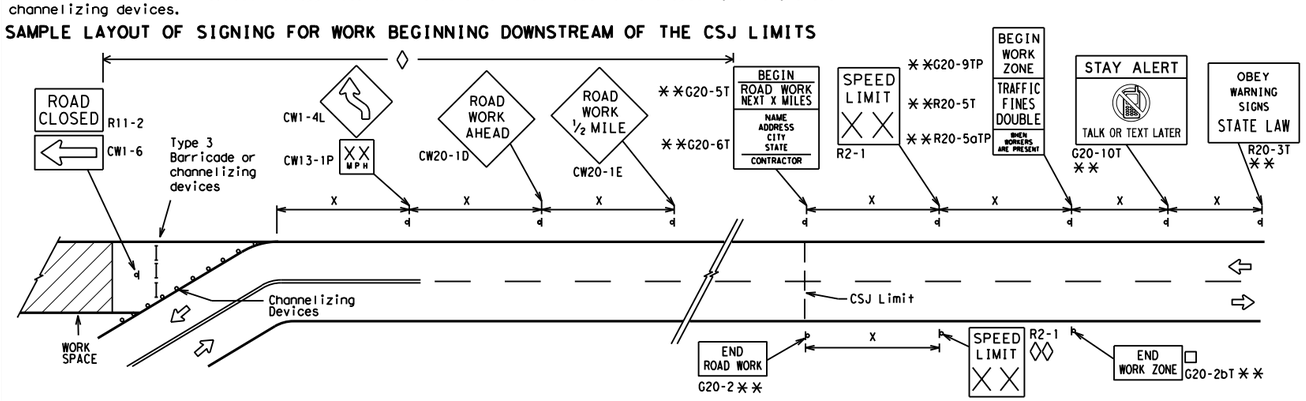
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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.

SHEET 2 OF 12

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	0035	03	047	US 83
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SJT	CONCHO		41

96

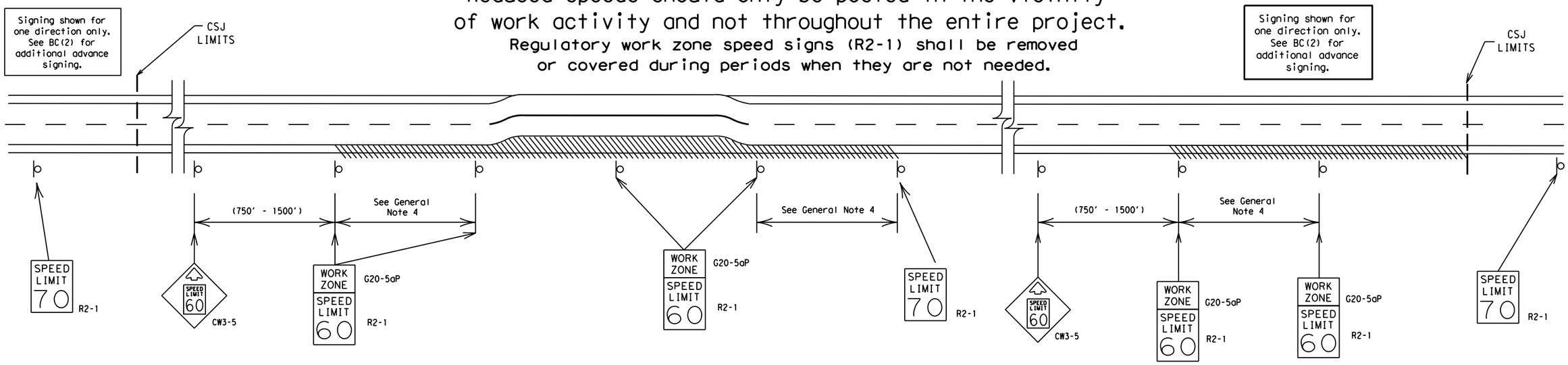
DATE: 5/22/2024 5:19:57 PM
FILE: c:\pms\dcus-pw-01\omar.alducin\dms06737\(7)bc-21.dgn

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	0035	03	047	US 83
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SJT	CONCHO		42

DATE: 5/22/2024 5:19:57 PM
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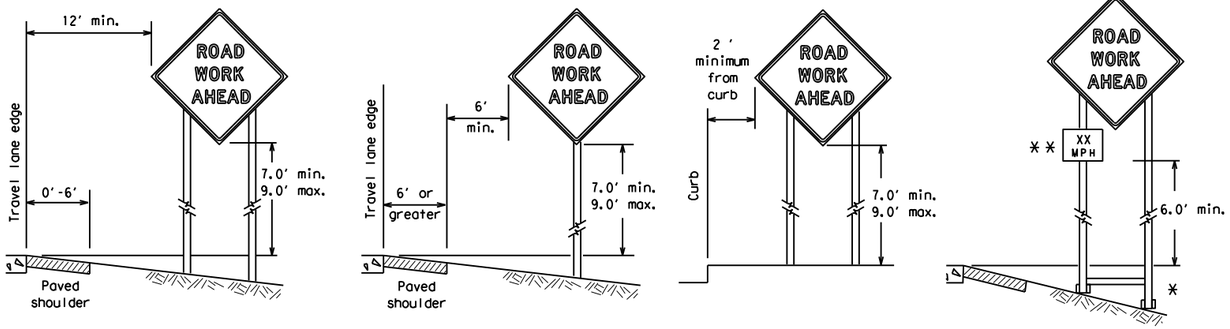
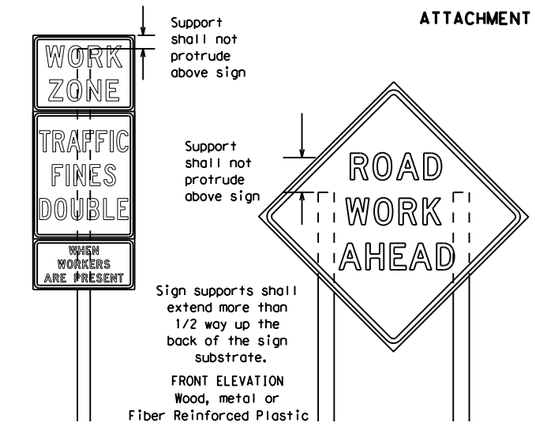
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

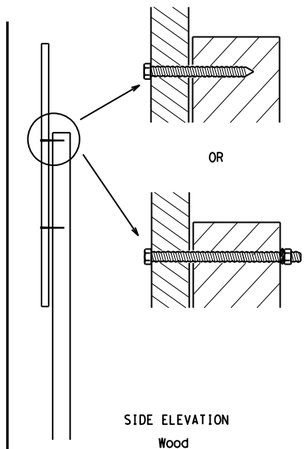


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





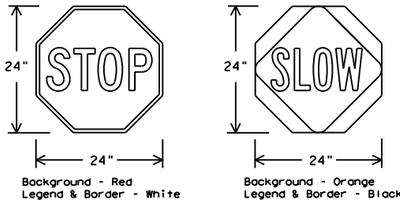
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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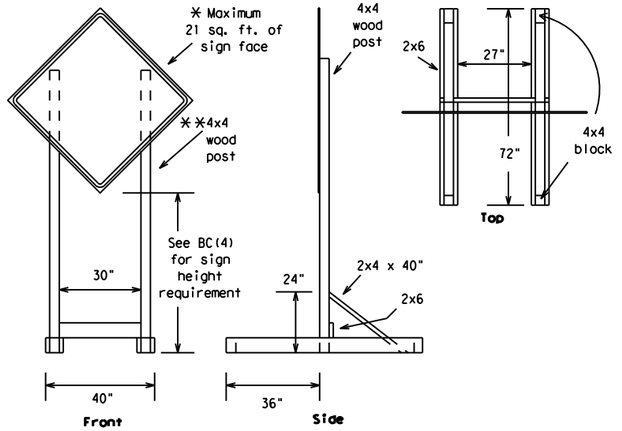
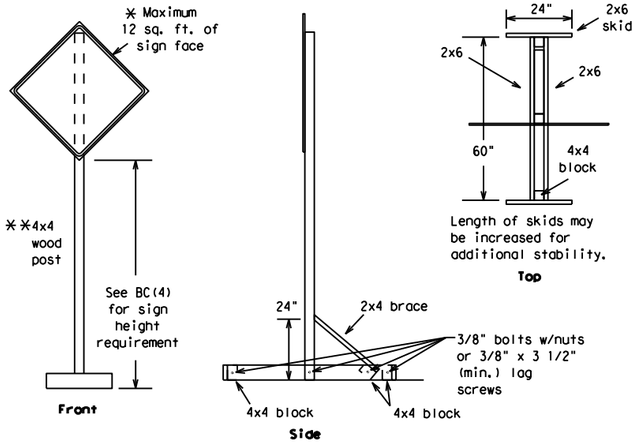
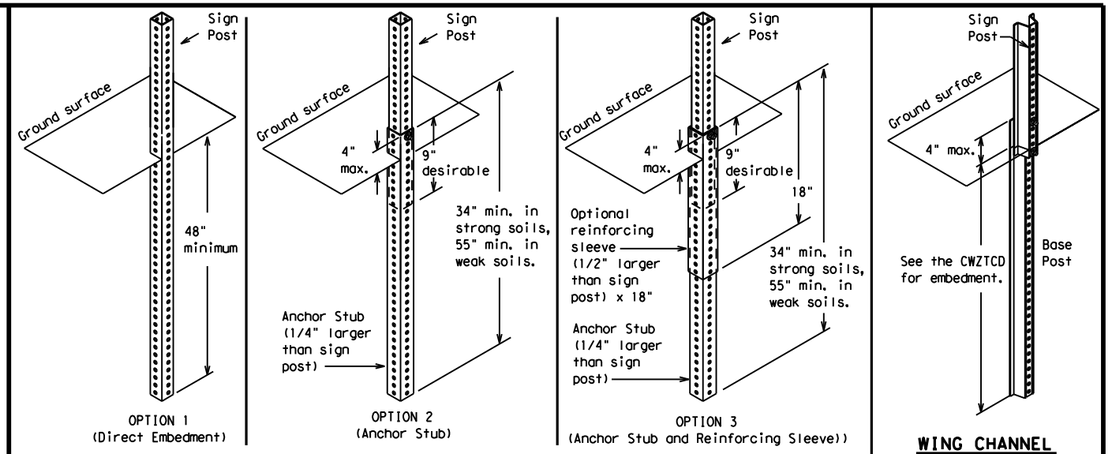




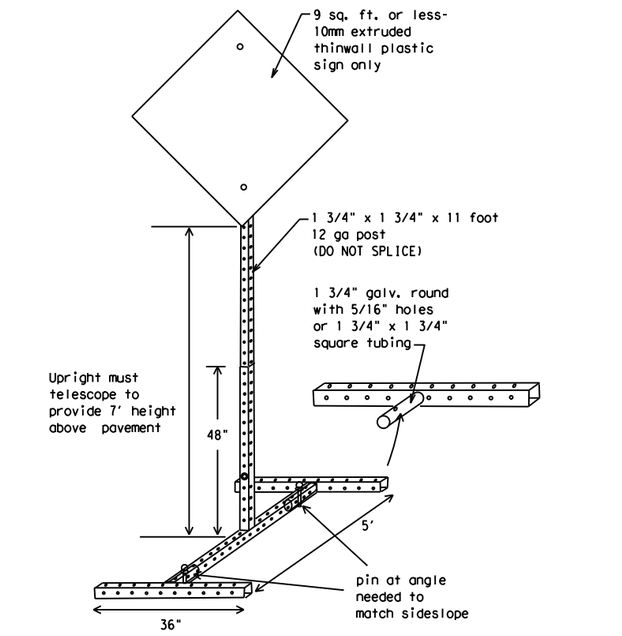
SKID MOUNTED WOOD SIGN SUPPORTS

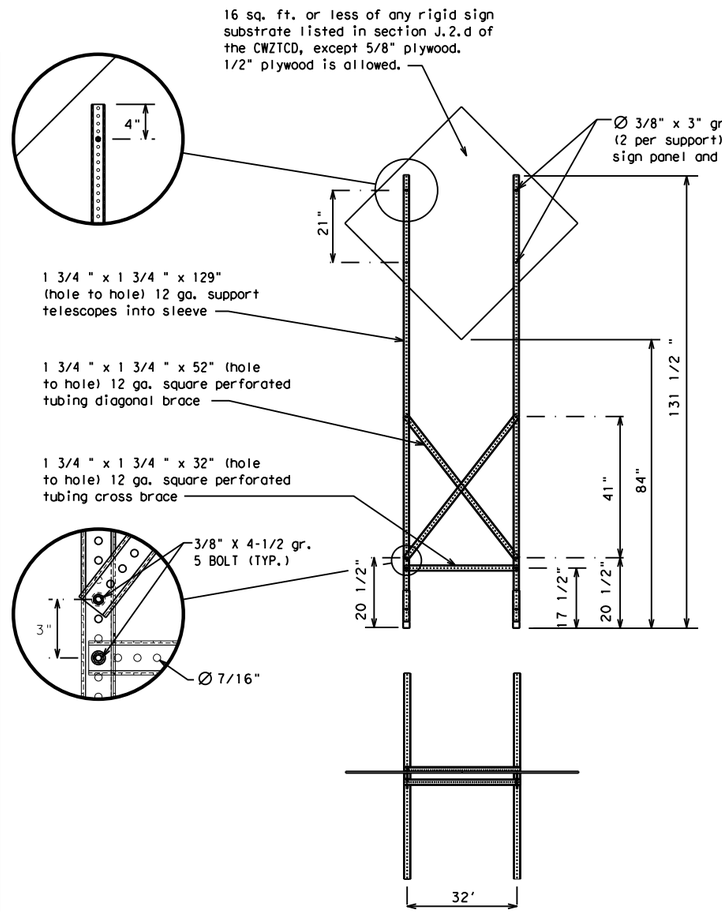
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

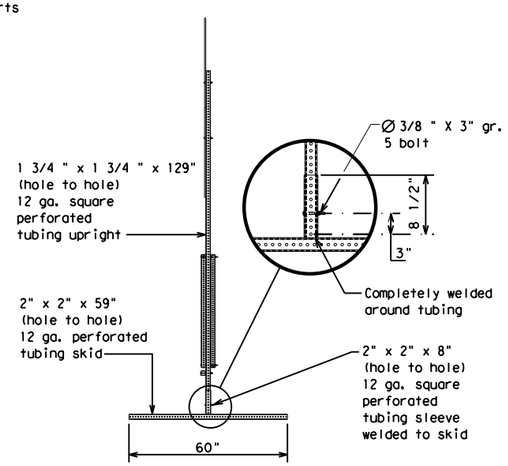


GROUND MOUNTED SIGN SUPPORTS

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

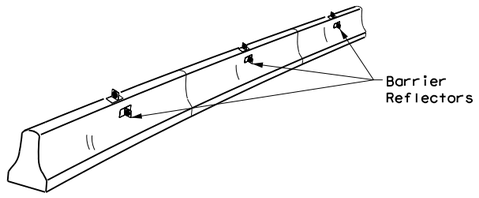
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

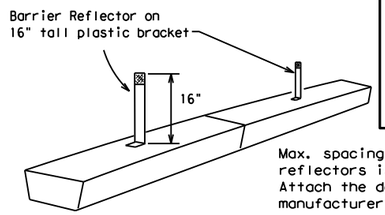
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SJT	CONCHO		45

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.

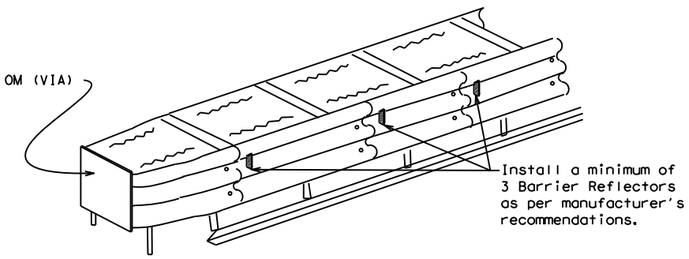


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

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)

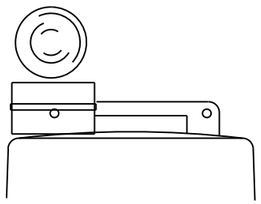


DELINEATION OF END TREATMENTS

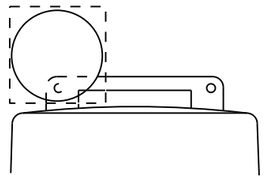
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

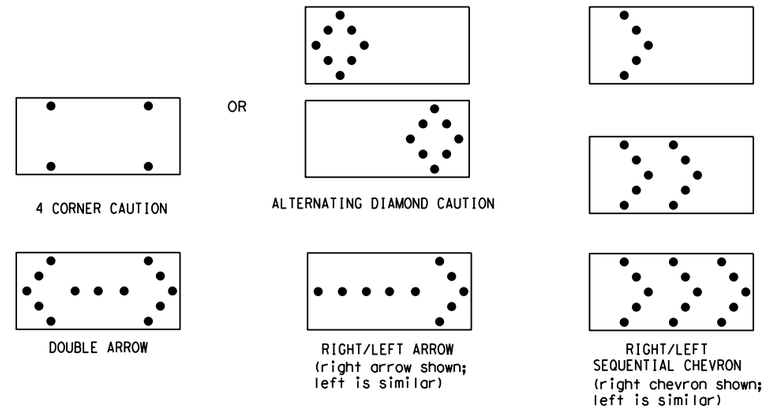
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing 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

SHEET 7 OF 12

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	0035	03	047	US 83
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SJT	CONCHO		46

101

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:

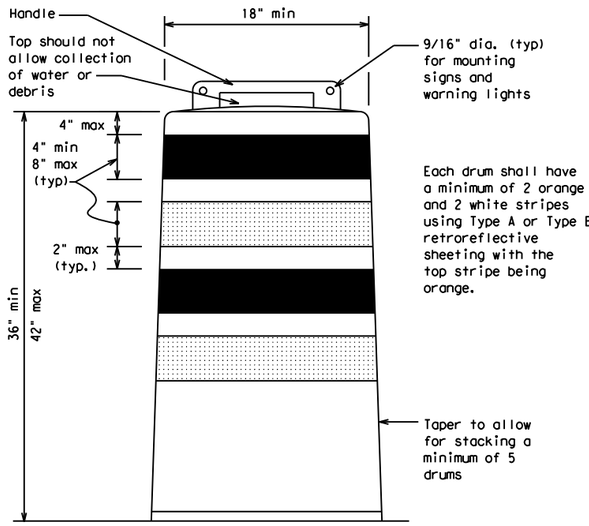
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

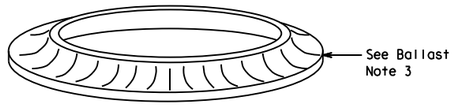
RETROREFLECTIVE SHEETING

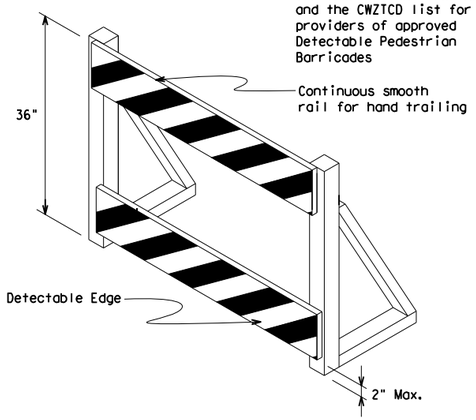
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

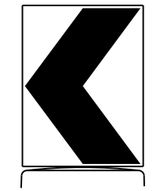




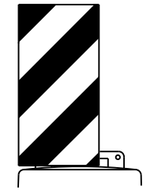


DETECTABLE PEDESTRIAN BARRICADES

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	0035	03	047	US 83
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	SJT	CONCHO		47
7-13				

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DATE: 5/22/2024 5:19:59 PM
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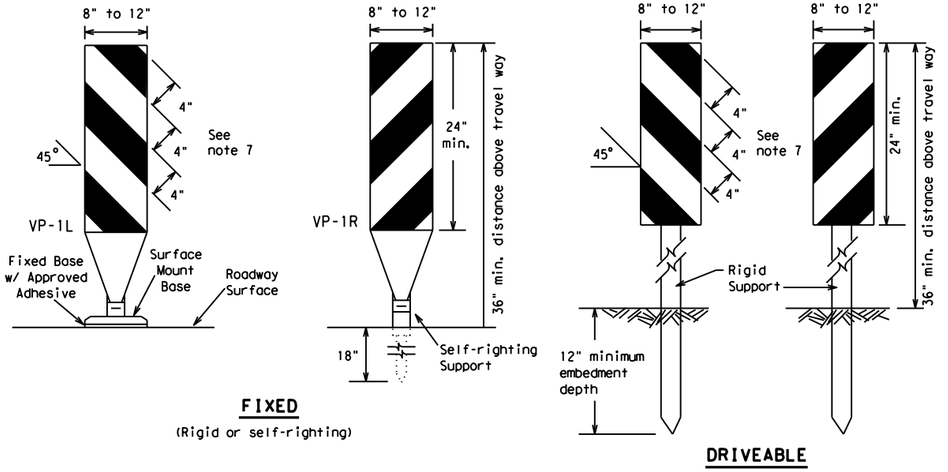
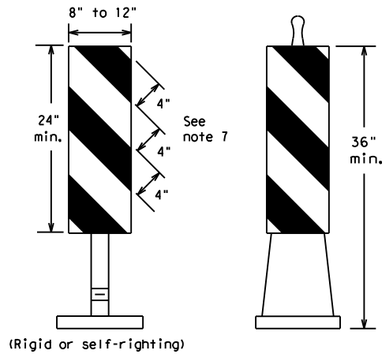


FIXED
(Rigid or self-righting)

DRIVEABLE

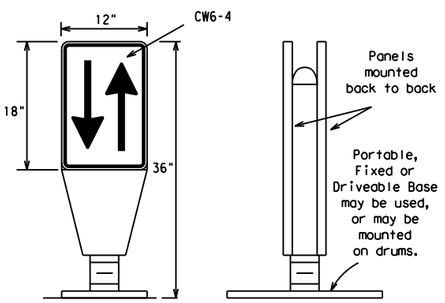


(Rigid or self-righting)

PORTABLE

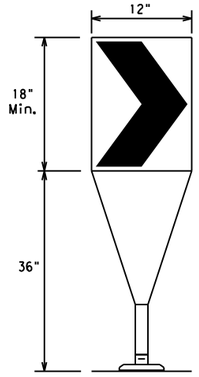
VERTICAL PANELS (VPs)

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.



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



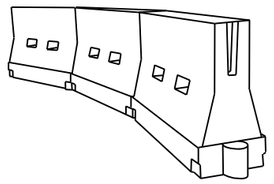
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0035	03	047	US 83
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7-13 5-21	SJT	CONCHO		48

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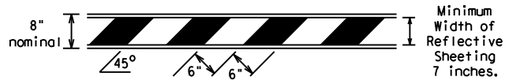
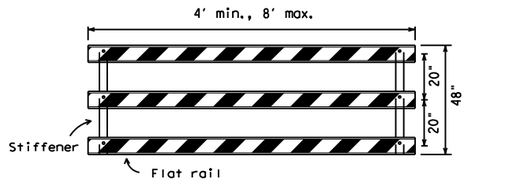
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



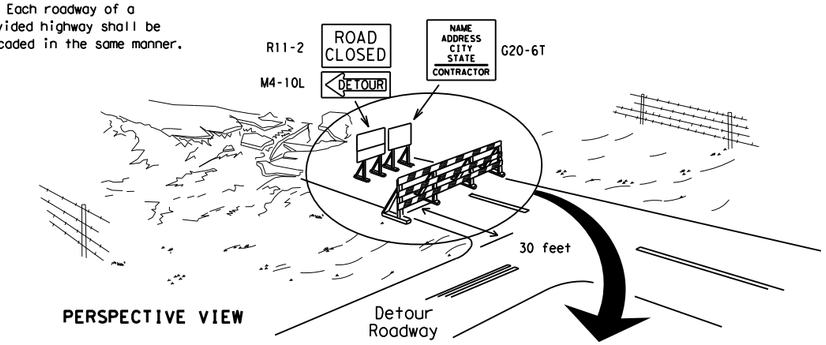
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

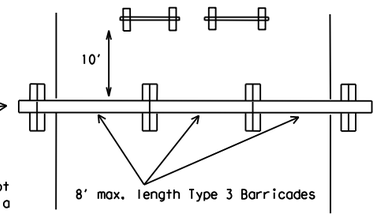
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

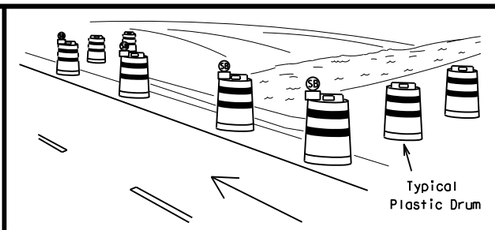
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

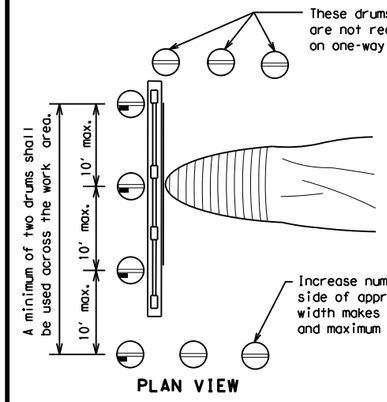
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

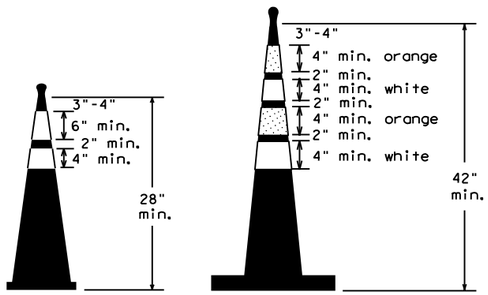
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



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

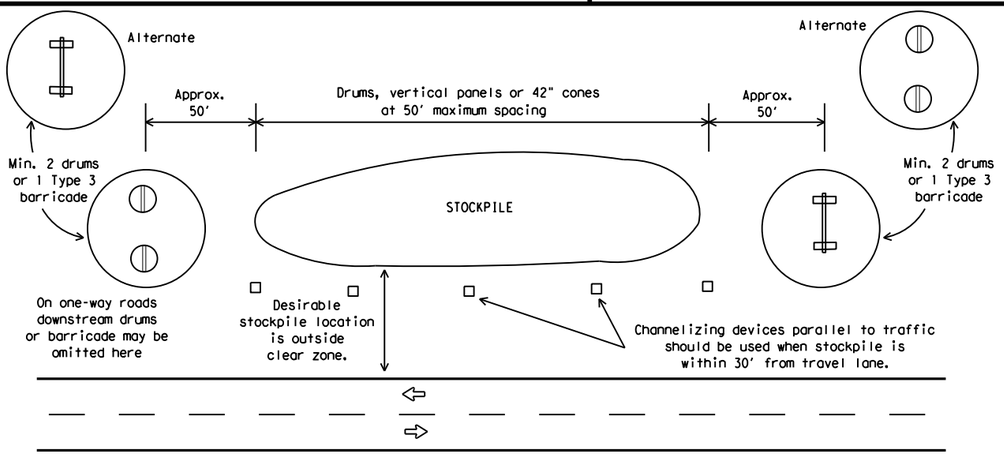
PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

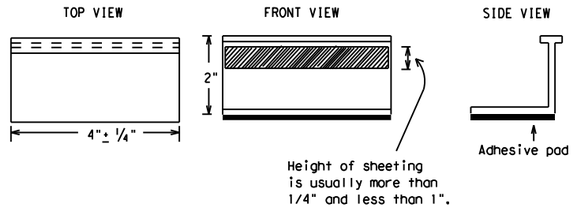
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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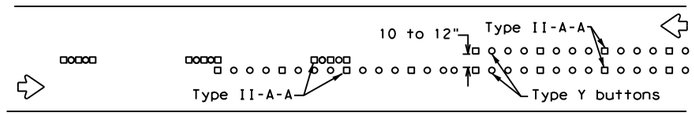
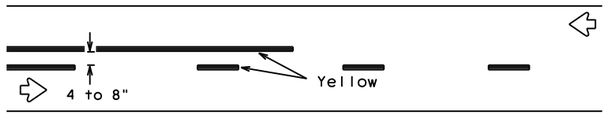
PAVEMENT MARKING PATTERNS

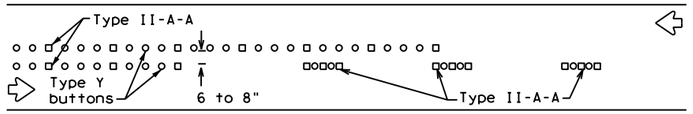
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



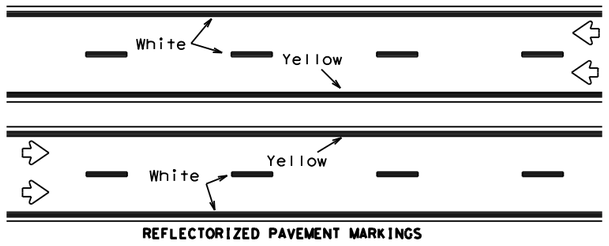
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



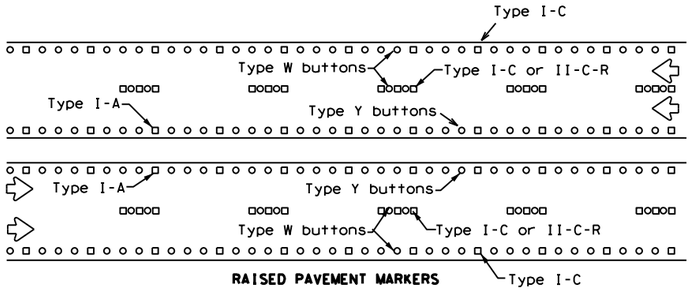
RAISED PAVEMENT MARKERS - PATTERN B

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

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



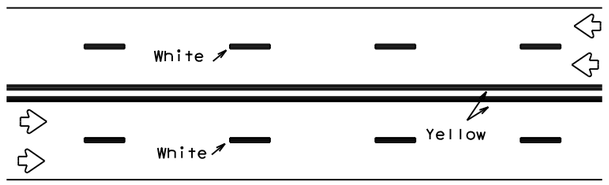
REFLECTORIZED PAVEMENT MARKINGS



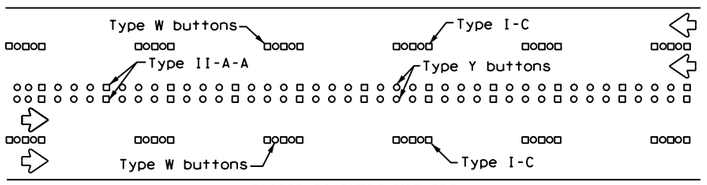
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



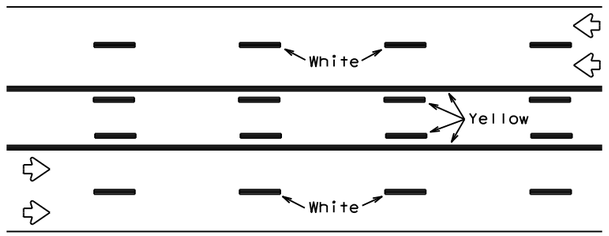
REFLECTORIZED PAVEMENT MARKINGS



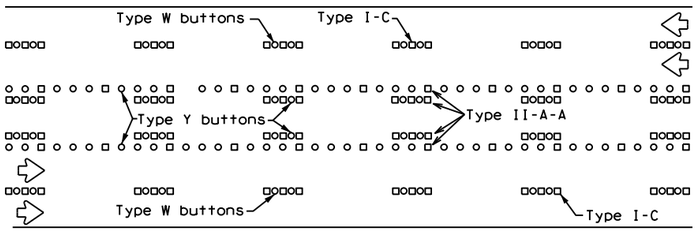
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

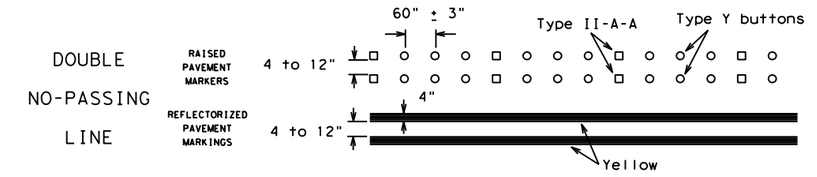


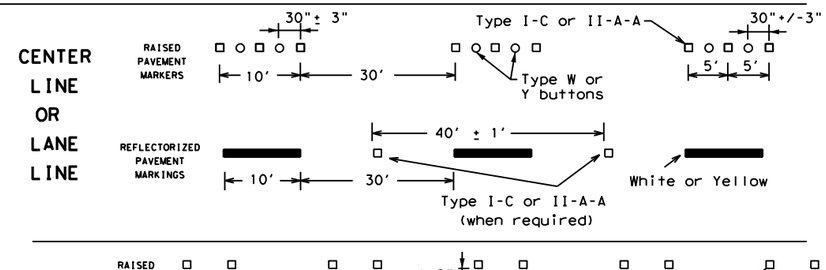
RAISED PAVEMENT MARKERS

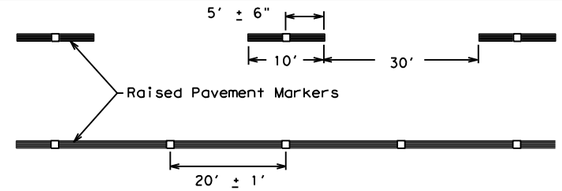
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS







REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		51

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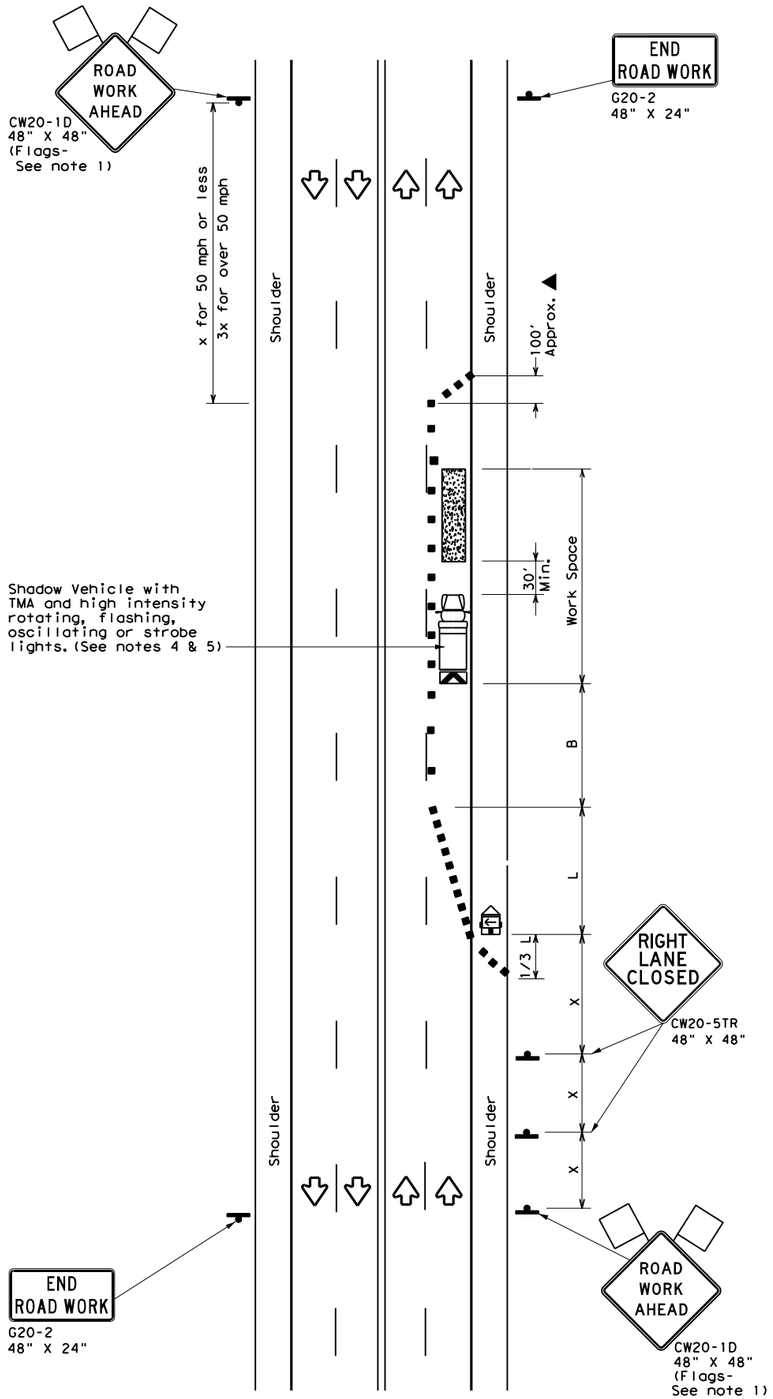
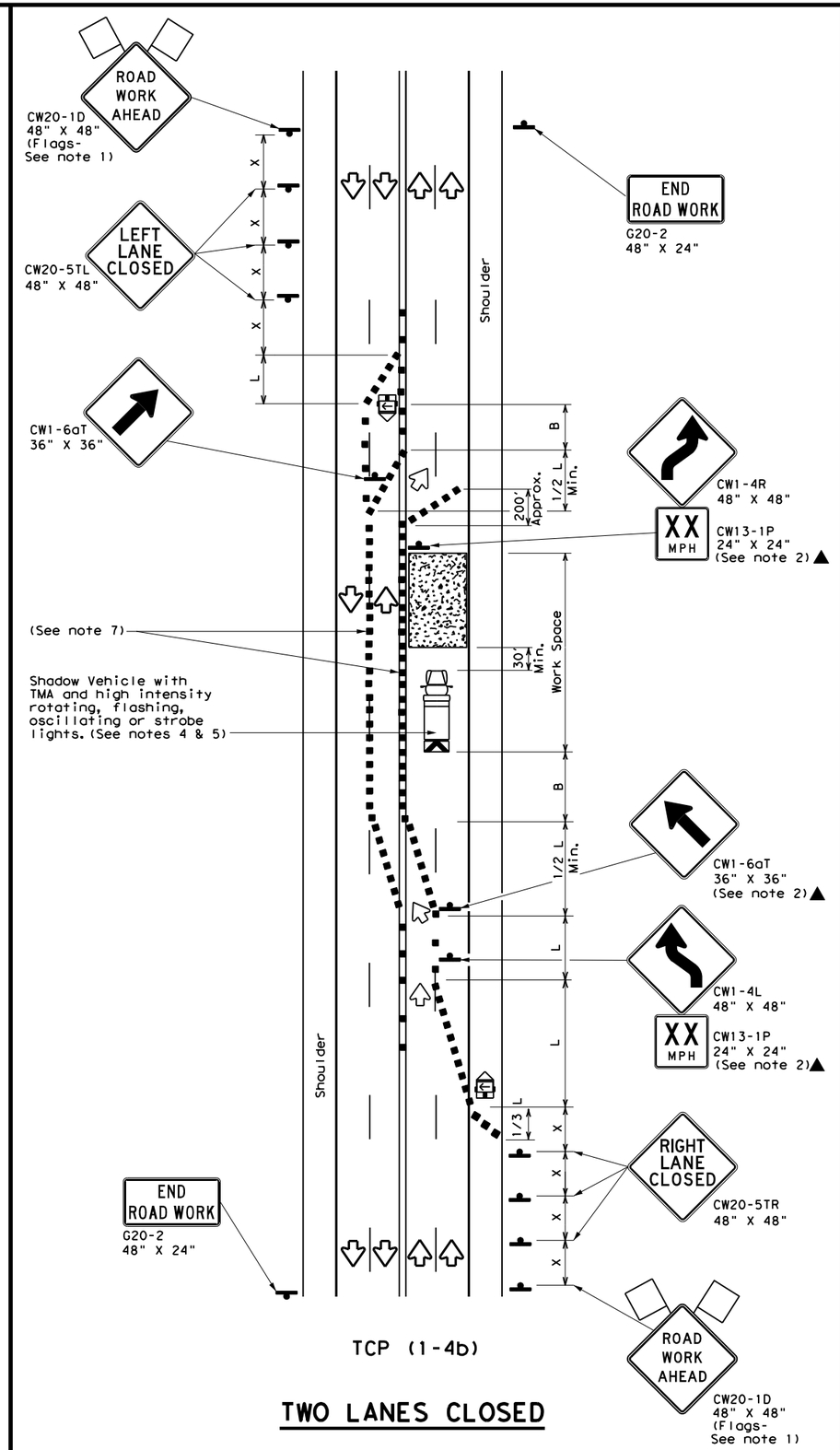


TCP (1-4a)

ONE LANE CLOSED



TCP (1-4b)

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 CW20-1D "ROAD WORK AHEAD" sign may be repeated if the visibility of the work zone is less than 1500 feet.
4. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-4a)

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

TCP (1-4b)

7. 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 1/2S where S is the speed in mph. This tighter device spacing is intended for the areas 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(1-4)-18

FILE: tcp1-4-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	SJT	CONCHO		52
1-97 2-18				

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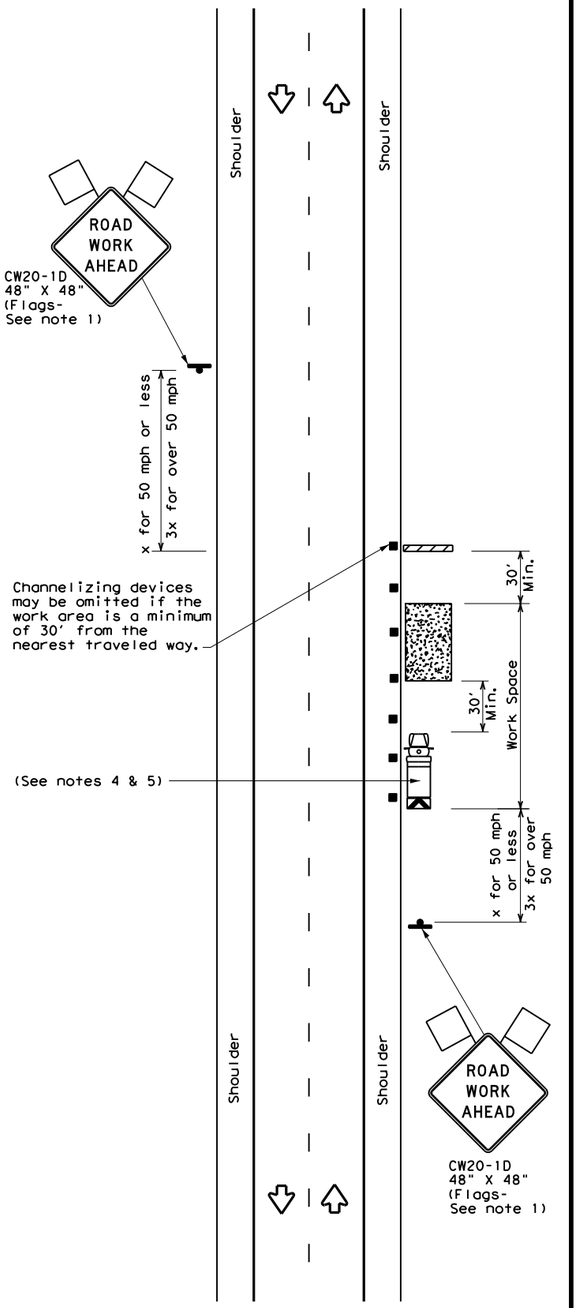
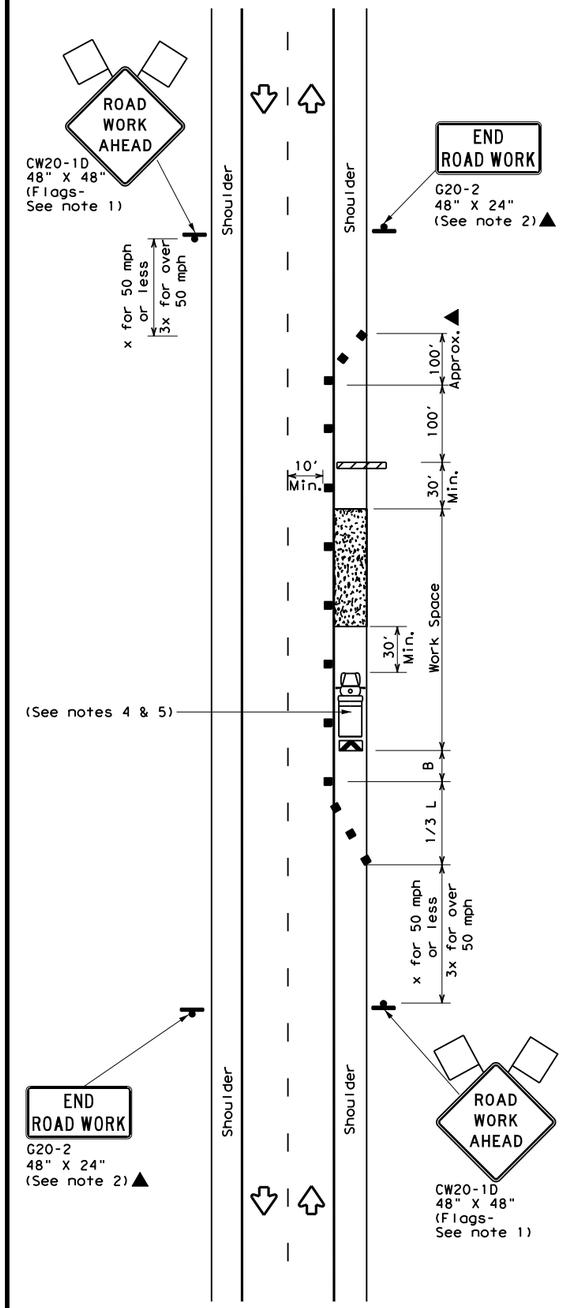


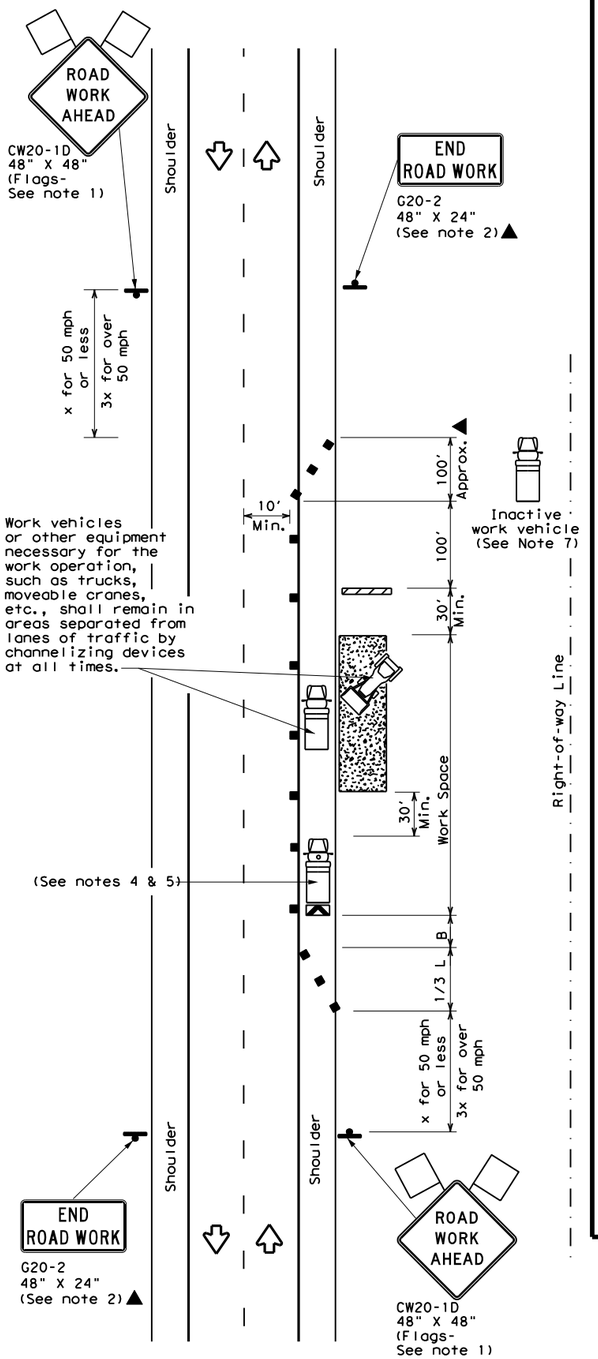
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

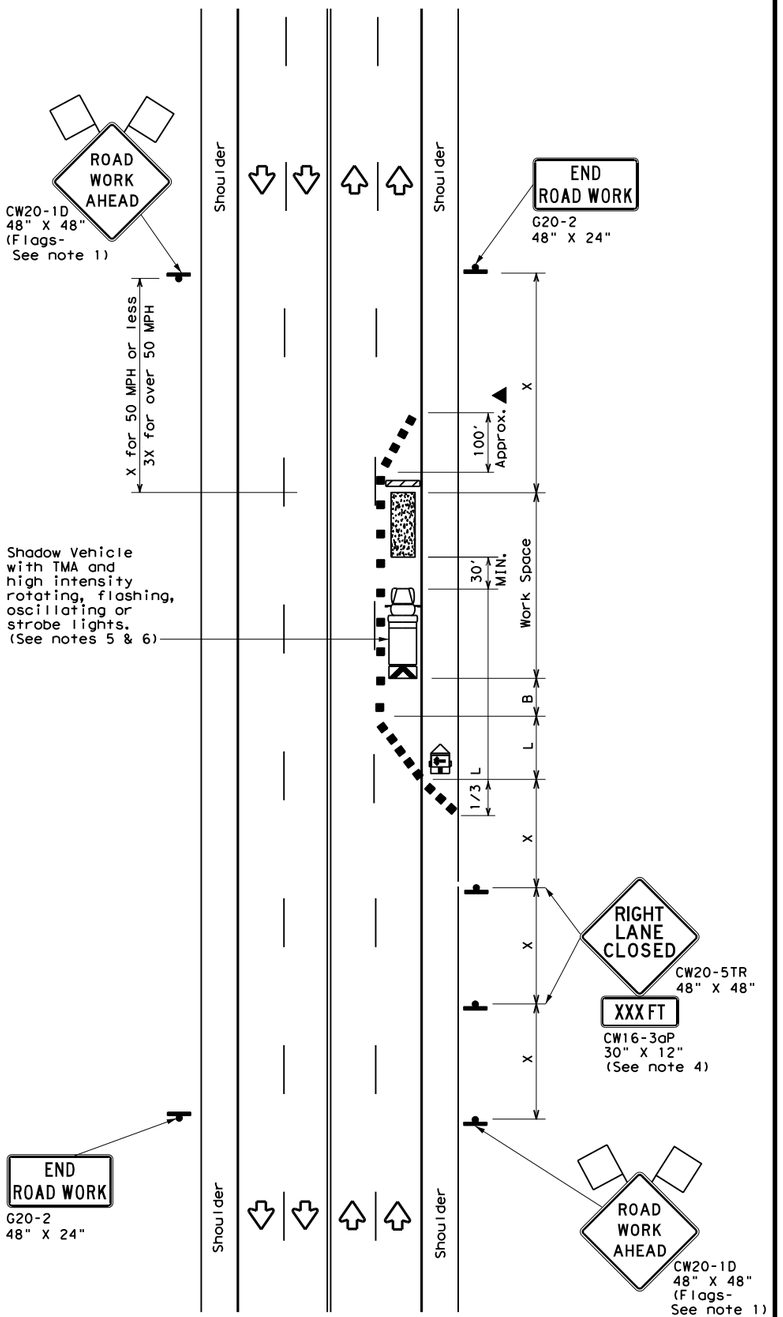
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

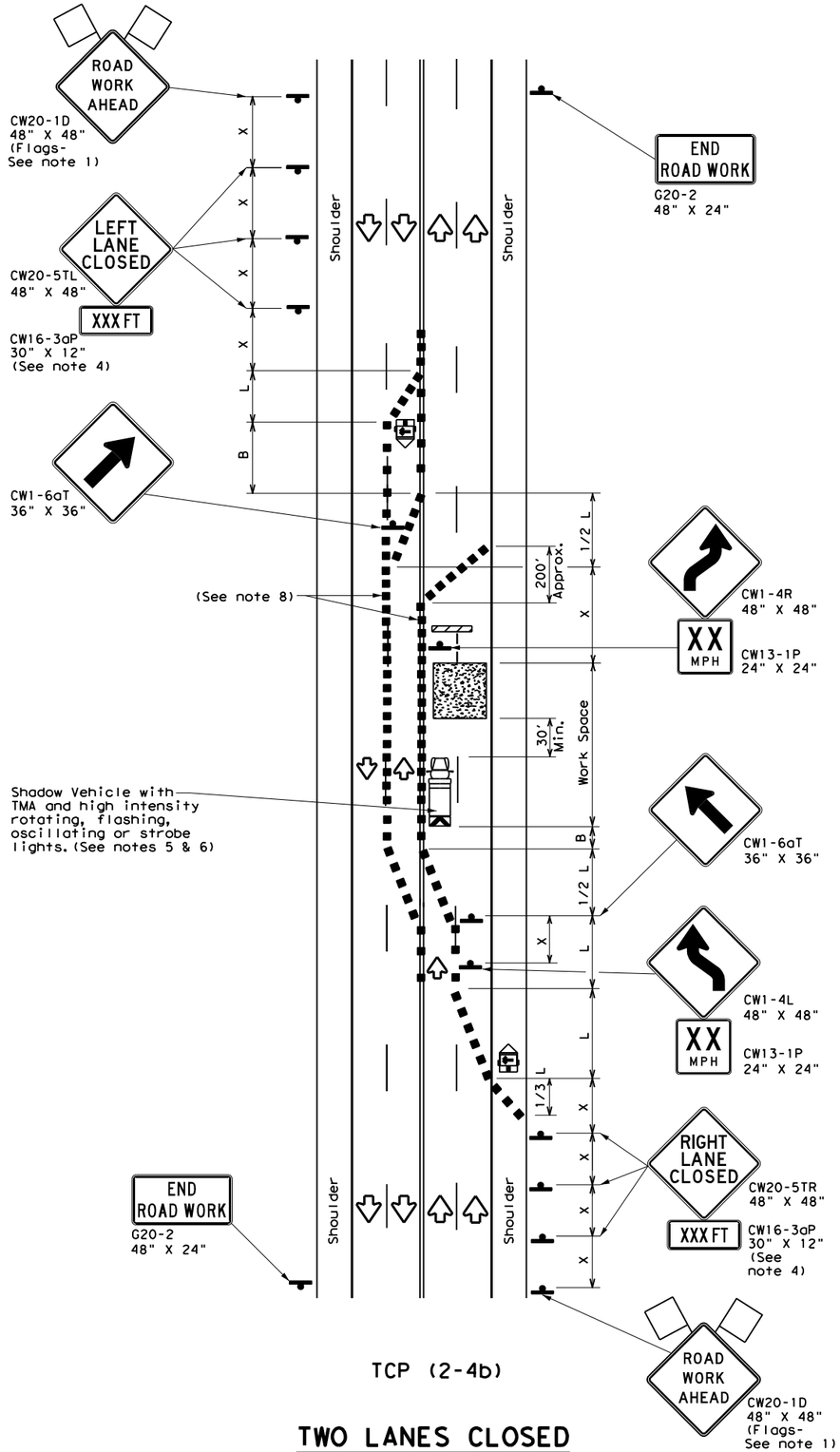
TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	SJT	CONCHO		53
1-97 2-18				



TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

TCP (2-4a)

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

TCP (2-4b)

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

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(2-4)-18

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REVISIONS 8-95 3-03	0035	03	047	US 83
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	SJT	CONCHO		54

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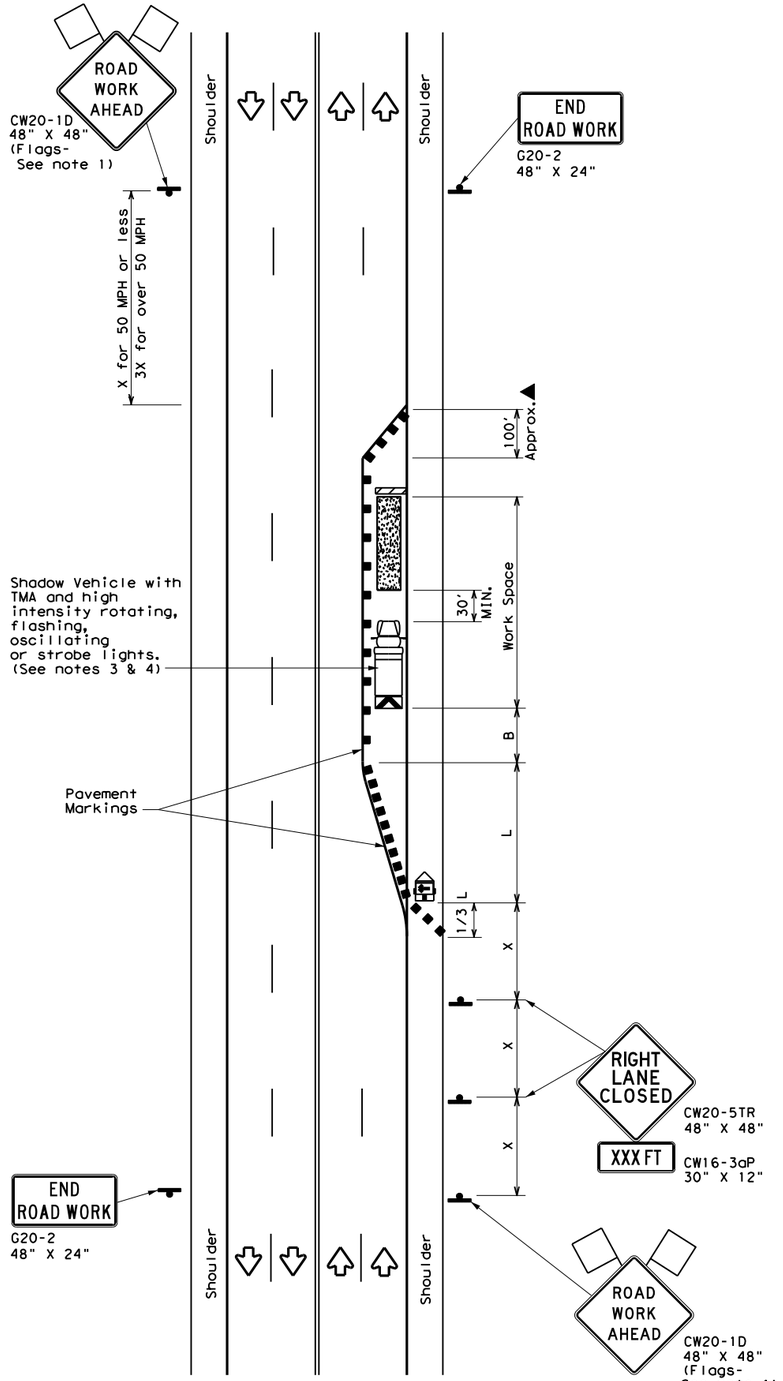
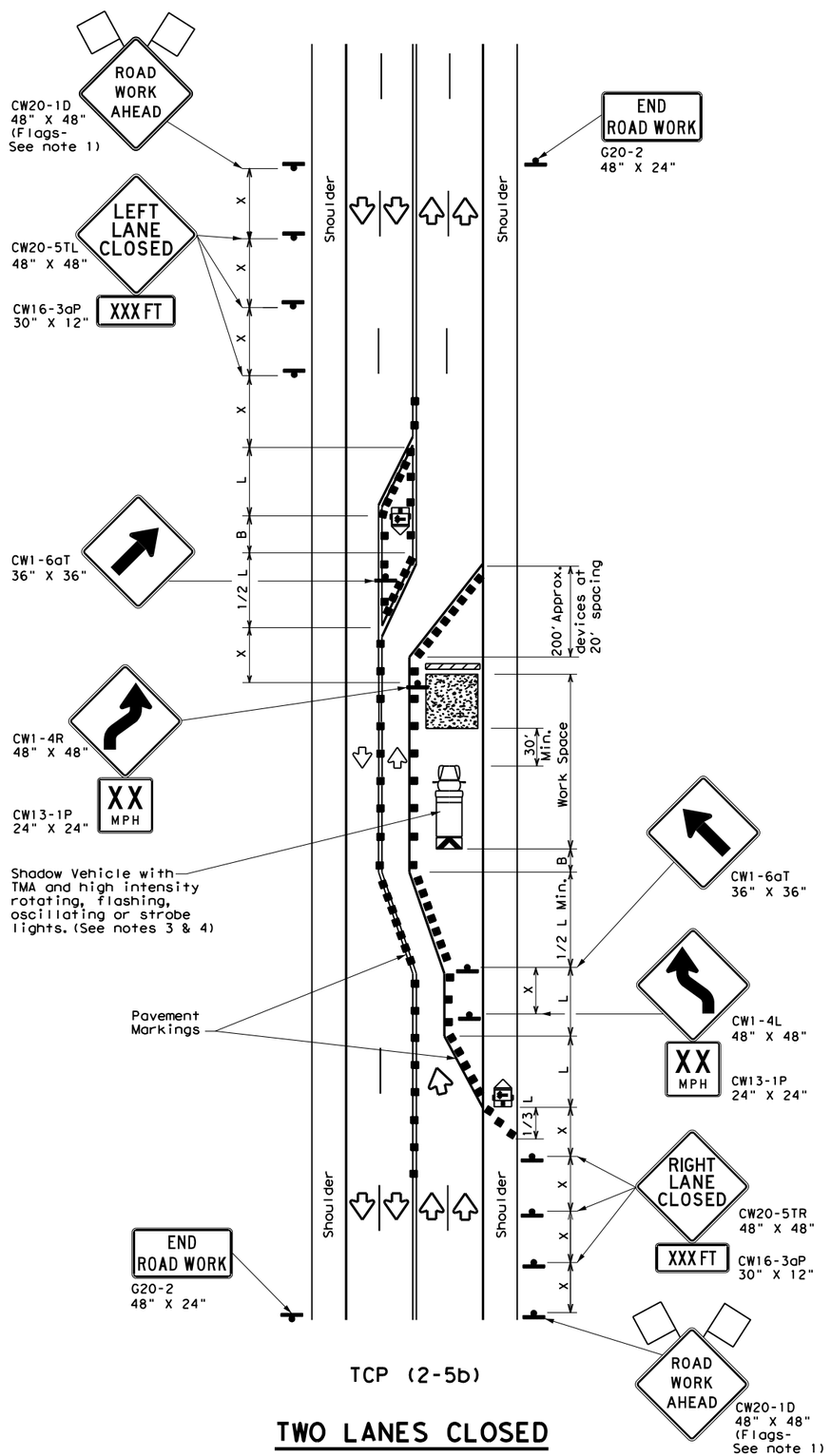


TCP (2-5a)

ONE LANE CLOSED



TCP (2-5b)

TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

TCP (2-5a)

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

TCP (2-5b)

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL RDS.

TCP(2-5)-18

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©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 2-12	0035	03	047	US 83
1-97 3-03	DIST	COUNTY		SHEET NO.
4-98 2-18	SJT	CONCHO		55

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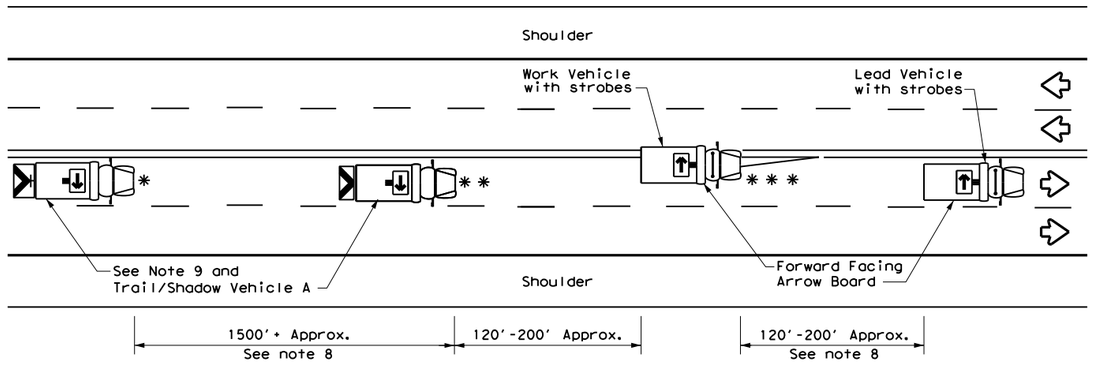
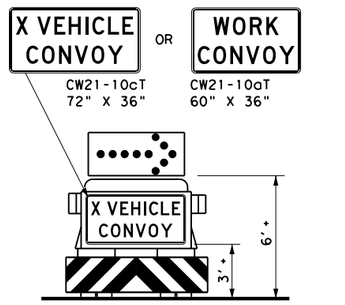


TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

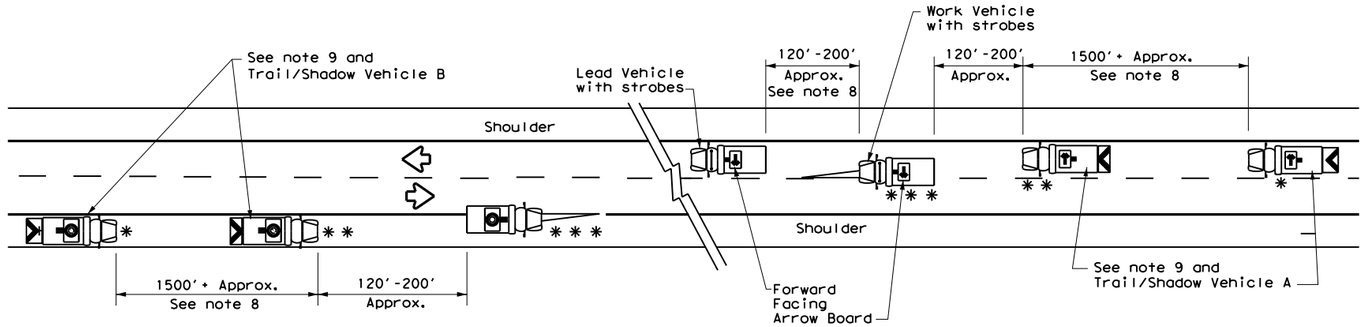
with RIGHT Directional display Flashing Arrow Board

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

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

GENERAL NOTES

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

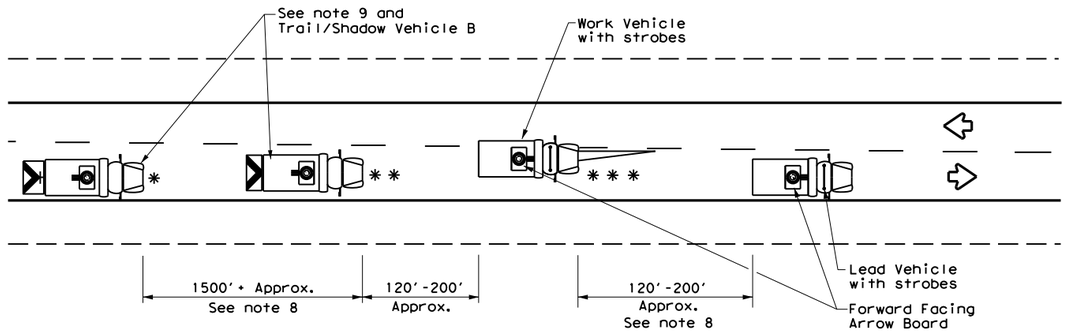


WORK ON SHOULDER

WORK ON TRAVEL LANE

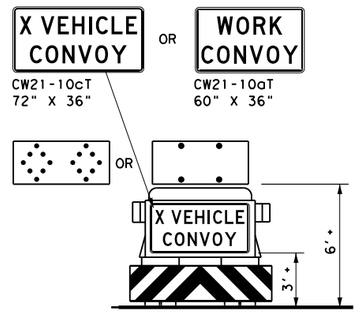
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



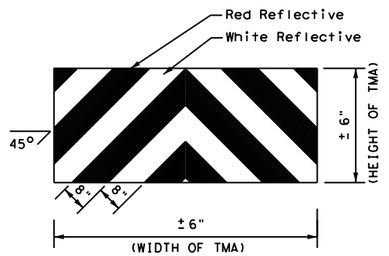
TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board in CAUTION display



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

TCP(3-1)-13

FILE: tcp3-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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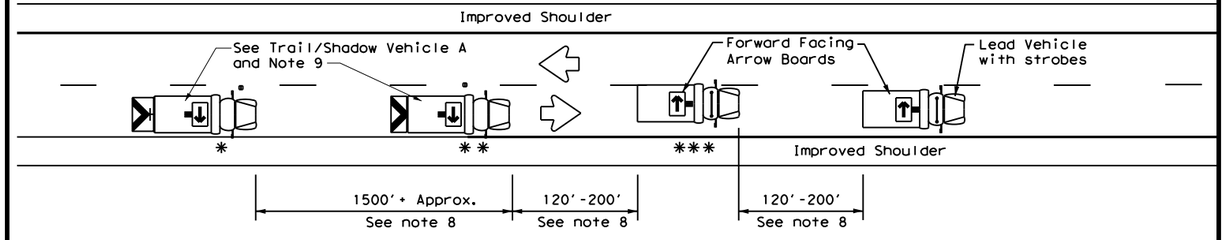
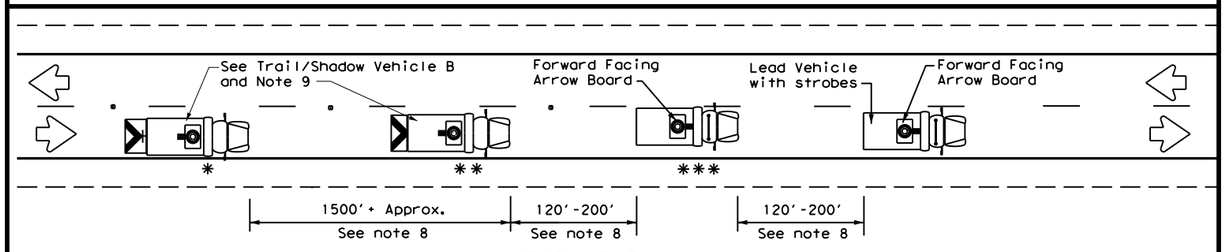


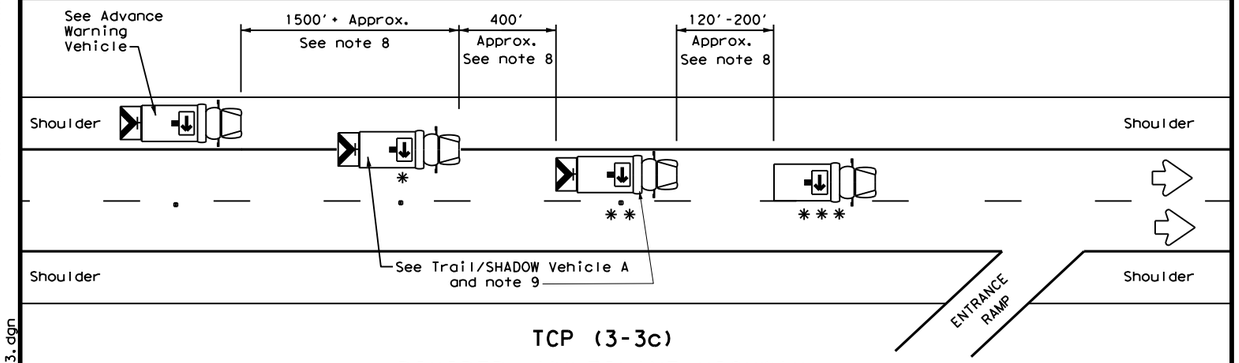
TCP (3-3a)

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



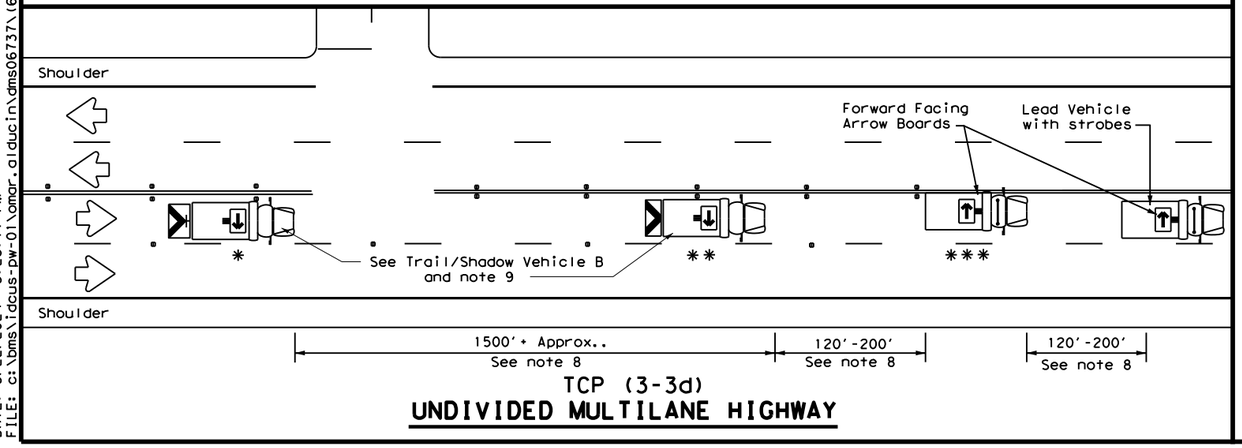
TCP (3-3b)

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



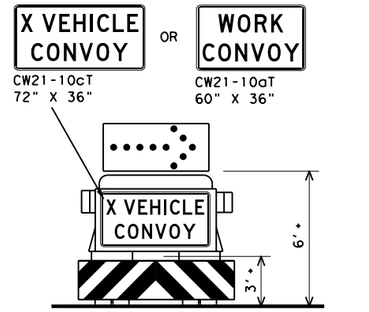
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



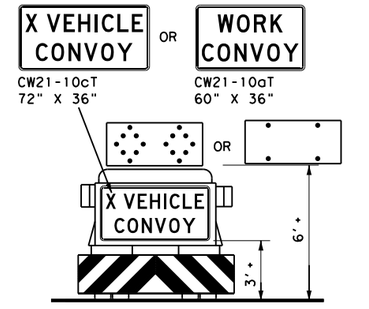
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



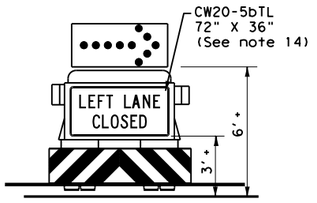
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

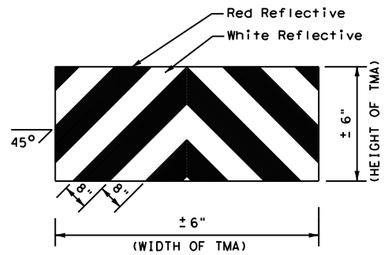


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

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

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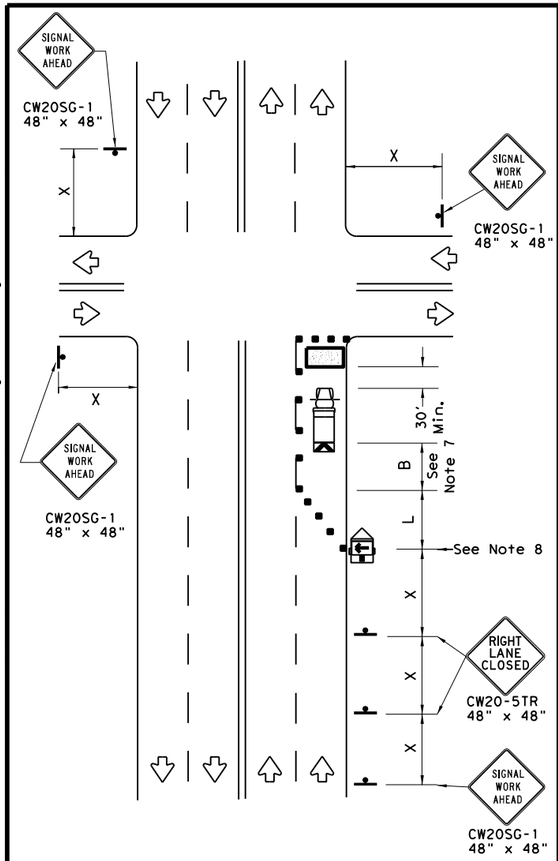
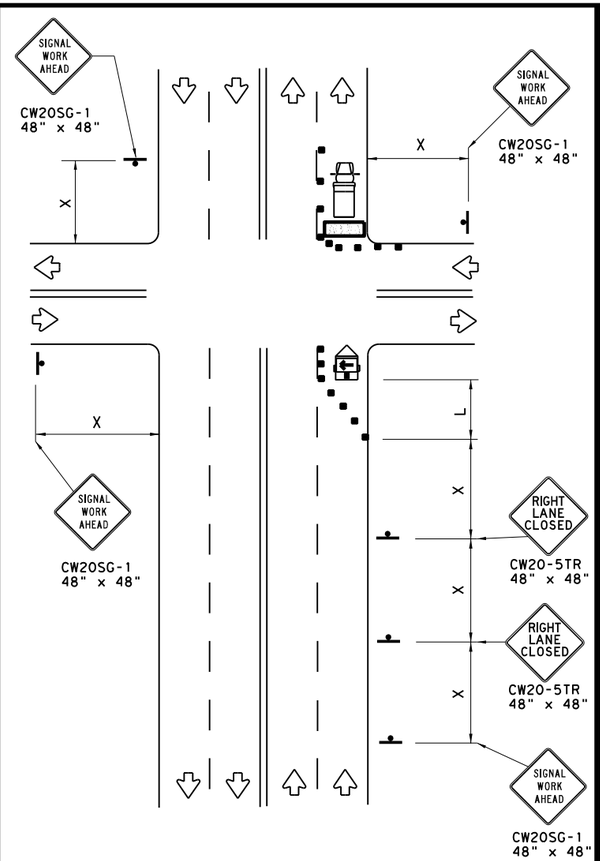


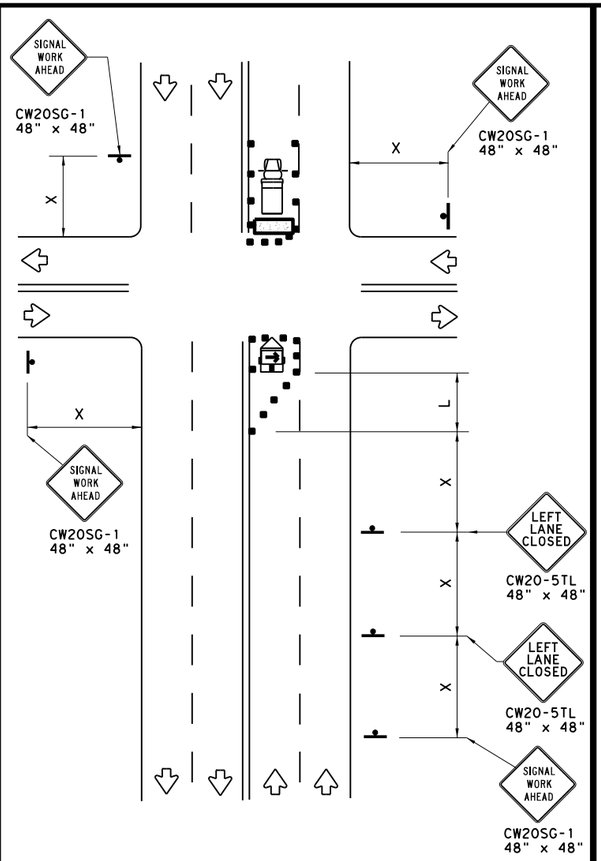
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE RIGHT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY

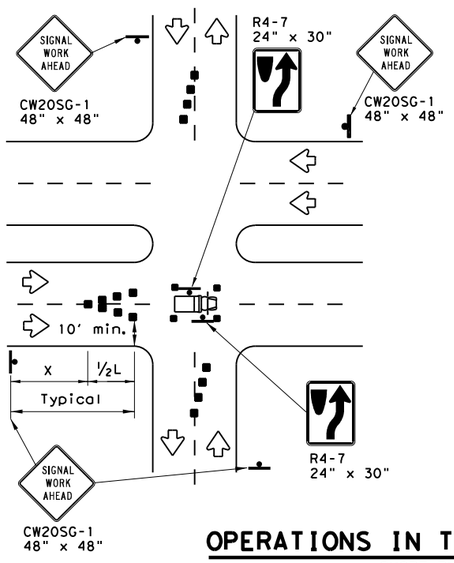
LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

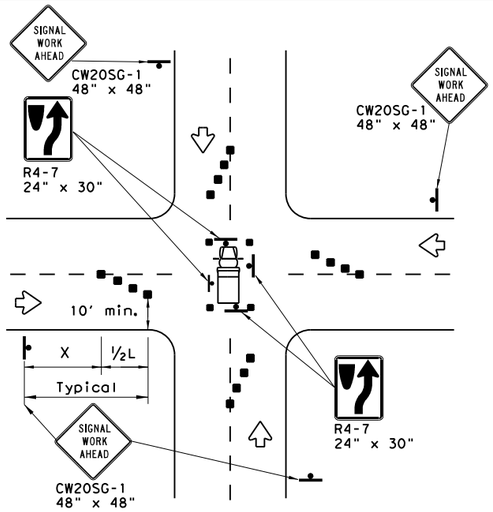
Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	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)

WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.





OPERATIONS IN THE INTERSECTION

SHORT DURATION

GENERAL NOTES

1. The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
2. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
3. Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
4. Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
5. High level warning devices (flag trees) may be used at corners of the vehicle.
6. When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
7. For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
8. The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
9. Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5TL) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

Texas Department of Transportation | Traffic Operations Division Standard

TRAFFIC SIGNAL WORK TYPICAL DETAILS

WZ(BTS-1)-13

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©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
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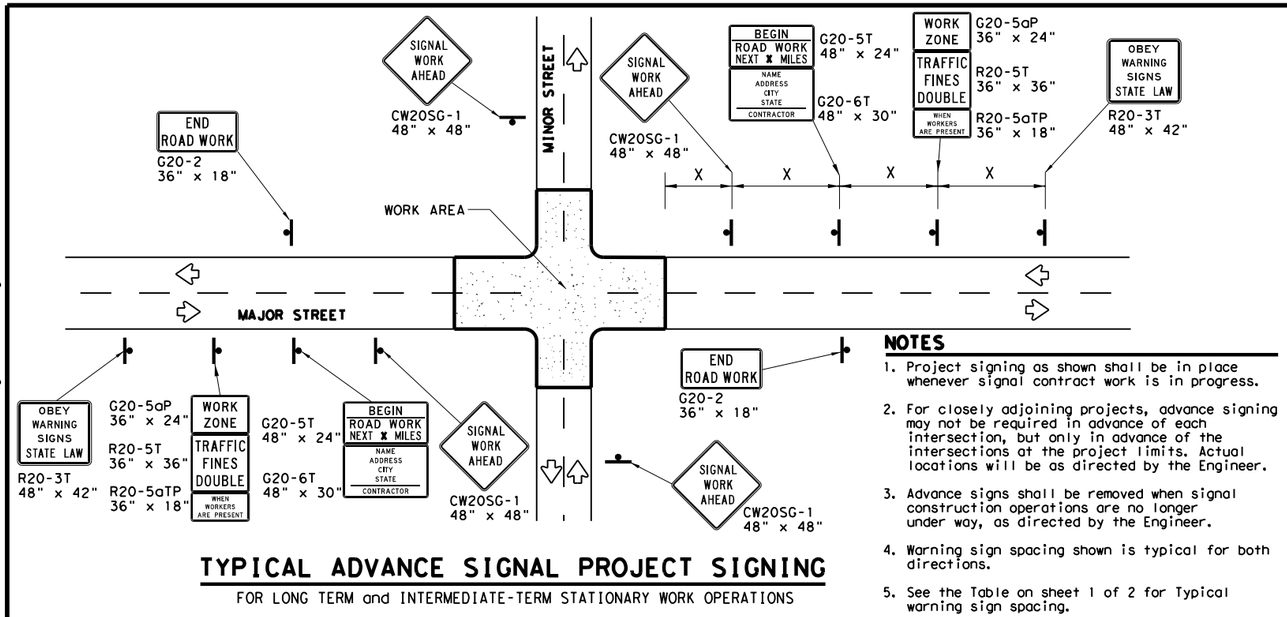


TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

NOTES

1. Project signing as shown shall be in place whenever signal contract work is in progress.
2. For closely adjoining projects, advance signing may not be required in advance of each intersection, but only in advance of the intersections at the project limits. Actual locations will be as directed by the Engineer.
3. Advance signs shall be removed when signal construction operations are no longer under way, as directed by the Engineer.
4. Warning sign spacing shown is typical for both directions.
5. See the Table on sheet 1 of 2 for Typical warning sign spacing.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Signs shall be installed and maintained in a straight and plumb condition.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. Nails shall NOT be used to attach signs to any support.
5. All signs shall be installed in accordance with the plans or as directed by the Engineer.
6. The Contractor shall furnish the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD).
7. The Contractor shall furnish sign supports and substrates listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD), installed as per the manufacturer's recommendations.
8. Temporary signs that have damaged or cracked substrates and/or damaged or marred reflective sheeting shall be replaced as directed by the Engineer.
9. 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".
10. Damaged wood posts shall be replaced. Splicing wood posts will not be allowed.

DURATION OF WORK

1. Work zone durations are defined in Part 6, Section 6G.02 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

SIGN MOUNTING HEIGHT

1. Sign height of Long-term/Intermediate-term warning signs shall be as shown on Figure 6F-1 of the TMUTCD.
2. Sign height of Short-term/Short Duration warning signs shall be as shown on Figure 6F-2 of the TMUTCD.
3. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered, unless otherwise approved by the Engineer.
2. 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. Burlap, or heavy materials such as plywood or aluminum shall not be used to cover signs.
3. Duct tape or other adhesive material shall NOT be affixed to a sign face.
4. Signs and anchor stubs shall be removed and holes back filled upon completion of the work.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the requirements of the DMS and color usage table shown on this sheet.

SIGN SUPPORT WEIGHTS

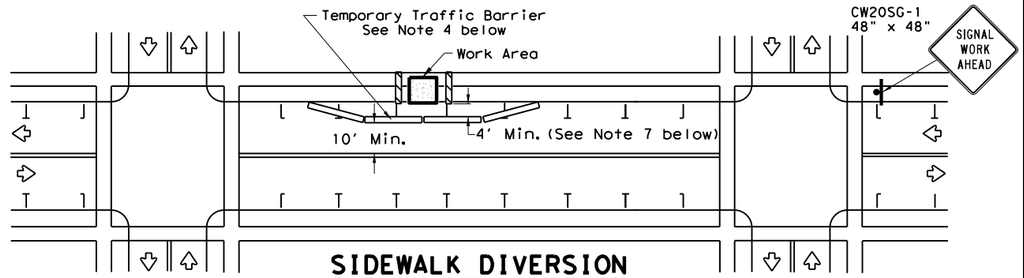
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support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

LEGEND	
	Sign
	Channelizing Devices
	Type 3 Barricade

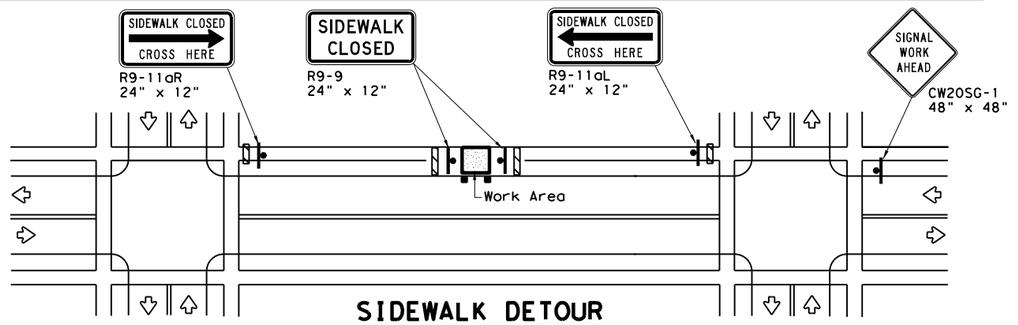
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

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

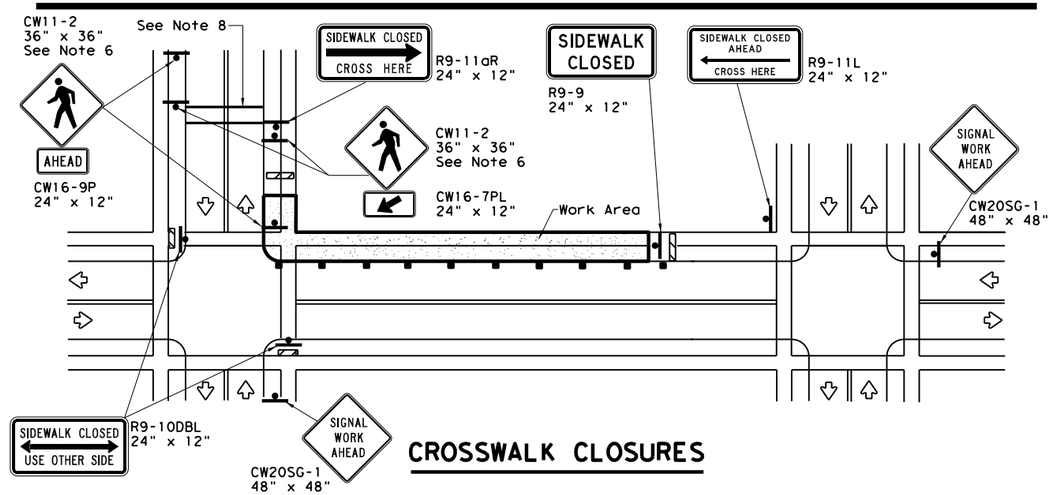
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

1. Holes, trenches or other hazards shall be adequately protected by covering, delineating or surrounding the hazard with orange plastic pedestrian fencing or longitudinal channelizing devices, or as directed by the Engineer.
2. "CROSSWALK CLOSURES" as detailed above will require the Engineer's approval prior to installation.
3. R9 series signs shown may be placed on supports detailed on the BC standards or CWZTCD list, or when fabricated from approved lightweight plastic substrates, they may be mounted on top of a plastic drum at or near the location shown.
4. For speeds less than 45 mph longitudinal channelizing devices may be used instead of traffic barriers when approved by the Engineer. Attenuation of blunt ends and installation of water filled devices shall be as per BC(9) and manufacturer's recommendations.
5. Location of devices are for general guidance. Actual device spacing and location must be field adjusted to meet actual conditions.
6. Where pedestrians with visual disabilities normally use the closed sidewalk Detectable Pedestrian Barricades should be used instead of the Type 3 Barricades shown.
7. The width of existing sidewalk should be maintained if practical.
8. Pavement markings for mid-block crosswalks shall be paid for under the appropriate bid items.
9. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ(BTS-2)-13

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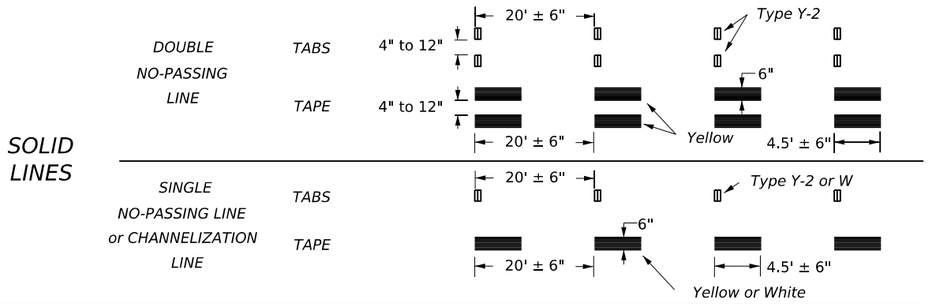
WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



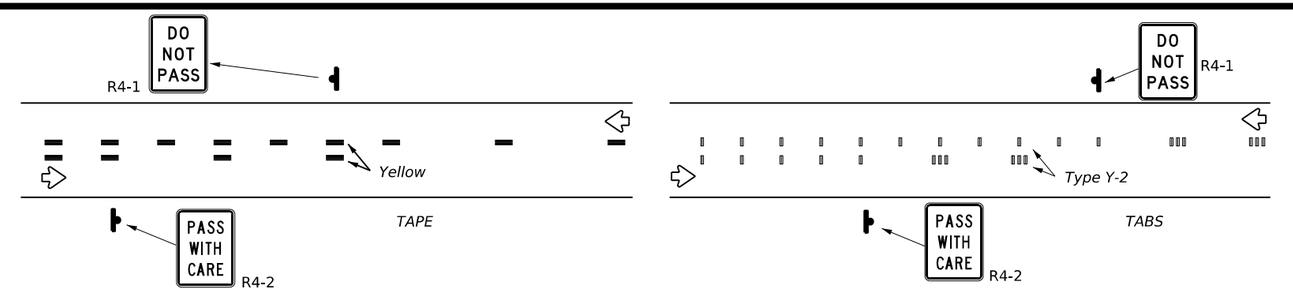
NOTES:

1. Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible reflective roadway marker tabs unless otherwise specified elsewhere in plans.
2. Short term pavement markings shall NOT be used to simulate edge lines.
3. Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.
4. Temporary flexible-reflective roadway marker tabs will require normal maintenance replacement when used on roadways with an ADT per lane of up to 7500 vehicles with no more than 10% truck mix. When roadways exceed these values, additional maintenance replacement of devices should be planned.
5. No segment of roadway open to traffic shall remain without permanent pavement markings for a period greater than 14 calendar days. The Contractor will be responsible for maintaining short term pavement markings until permanent pavement markings are in place. When the Contractor is responsible for placement of permanent pavement markings, no segment of roadway shall remain without permanent pavement markings for a period greater than 14 calendar days unless weather conditions prohibit placement. Permanent pavement markings shall be placed as soon as weather permits.
6. For two lane, two-way roadways, DO NOT PASS signs shall be erected to mark the beginning of sections where passing is prohibited and PASS WITH CARE signs shall be erected to mark the beginning of sections where passing is permitted. Signs shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and may be used to indicate the limits of no-passing zones for up to 14 calendar days. Permanent pavement markings should then be placed.
7. For low volume two lane, two-way roadways of 4000 ADT or less, no-passing lines may be omitted when approved by the Engineer. DO NOT PASS and PASS WITH CARE signs shall be erected (see note 6).
8. For exit gores where a lane is being dropped place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are not allowed for this purpose.

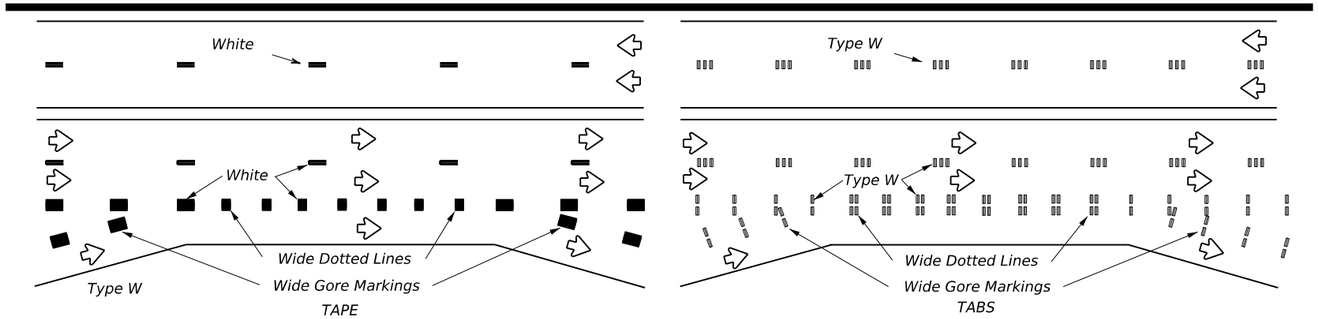
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

1. Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
2. Tabs shall meet requirements of Departmental Material Specification DMS-8242.
3. When dry, tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low-beam head light at night, unless sight distance is restricted by roadway geometrics.
4. No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 3.

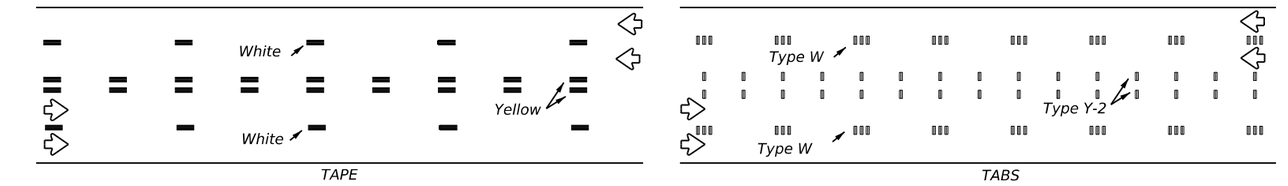
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



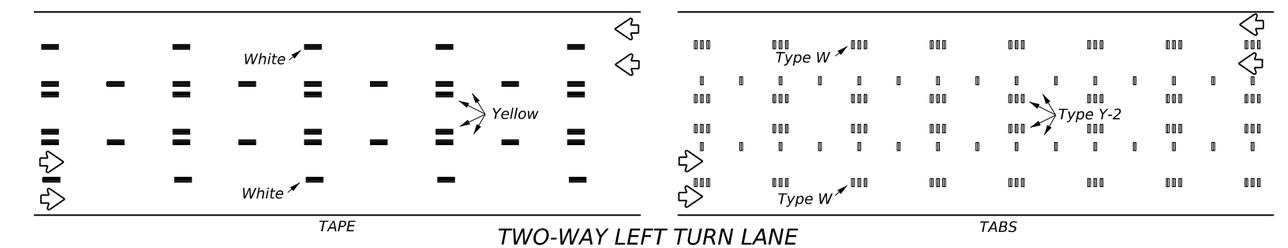
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



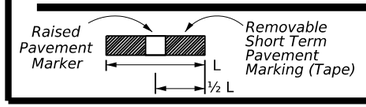
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



If raised pavement markers are used to supplement REMOVABLE short term markings, the markers shall be applied to the top of the tape at the approximate mid length of the tape. This allows an easier removal of raised markers and tape.

PREFABRICATED PAVEMENT MARKINGS

1. Temporary Removable Prefabricated Pavement Markings shall meet the requirements of DMS-8241.
2. Non-removable Prefabricated Pavement Markings shall meet the requirements of either DMS-8240 "Permanent Prefabricated Pavement Markings" or DMS-8243 "Temporary Costruction-Grade Prefabricated Pavement Markings."

RAISED PAVEMENT MARKERS

1. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and DMS-4200.

DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

1. DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:

http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

Texas Department of Transportation

Traffic Safety Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

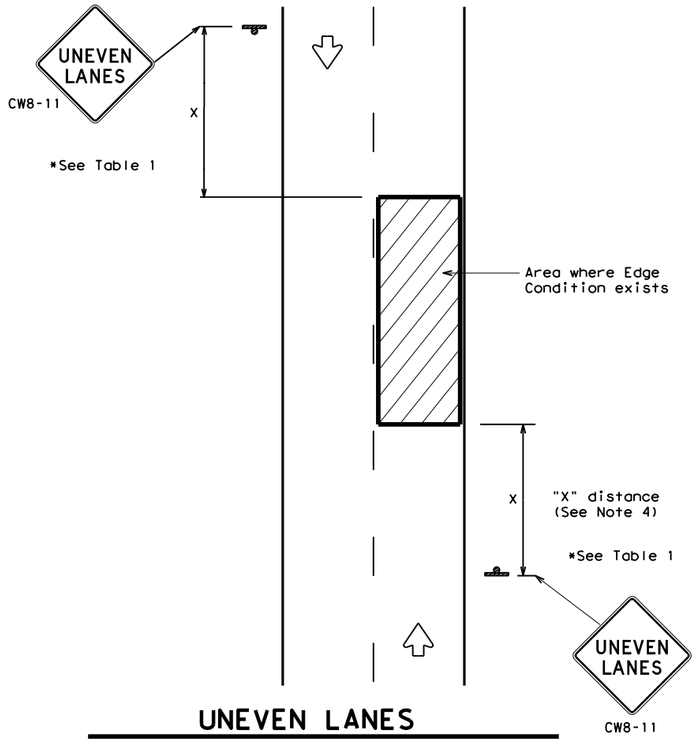
WZ(STPM)-23

FILE: wzstpm-23.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
4-92 7-13 1-97 2-23 3-03	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		60

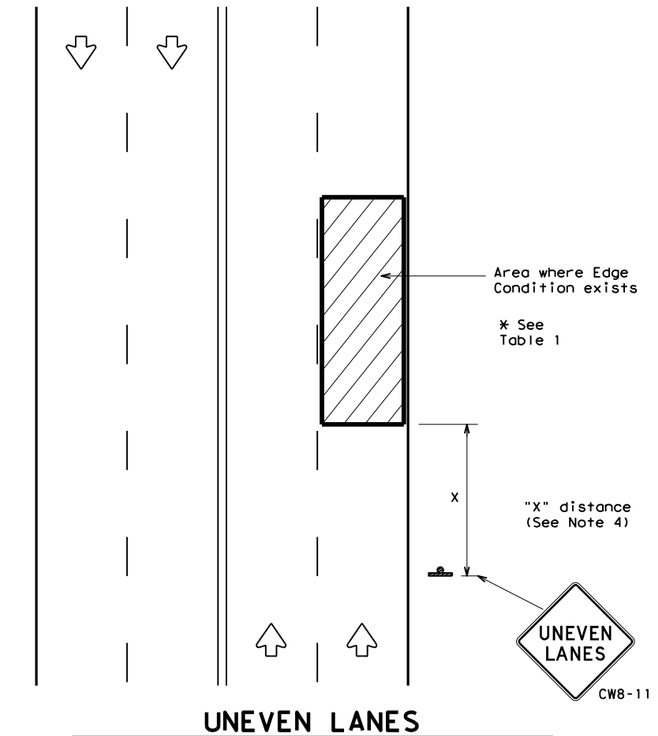
111

DATE: 5/22/2024 5:24:19 PM
FILE: c:\bmsitdcus-pw-01\omar.alducin\dms06737\(8)wz(stpm)-23.dgn

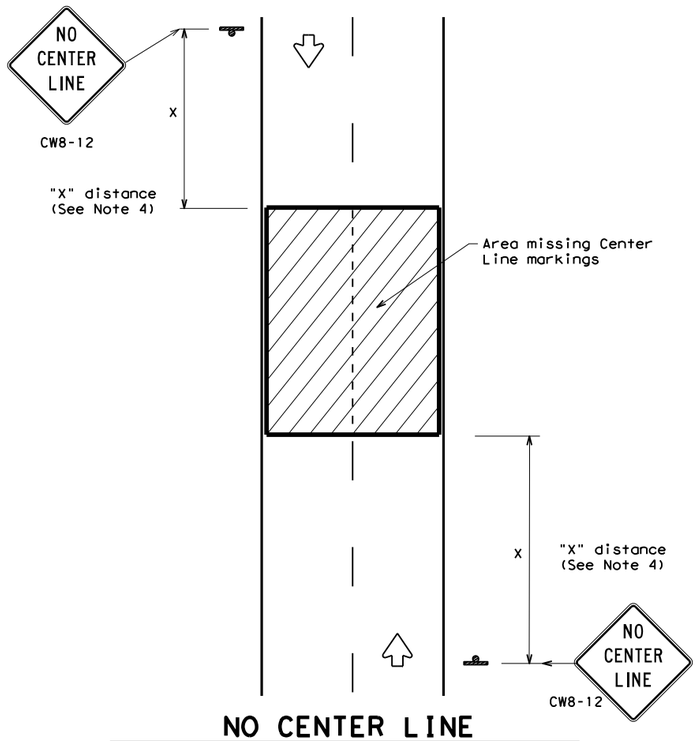
DATE: 5/22/2024 5:24:55 PM
FILE: c:\bms\ldcus-pw-01\omar.alduc\n\dms06737\(9)wzul-13.dgn



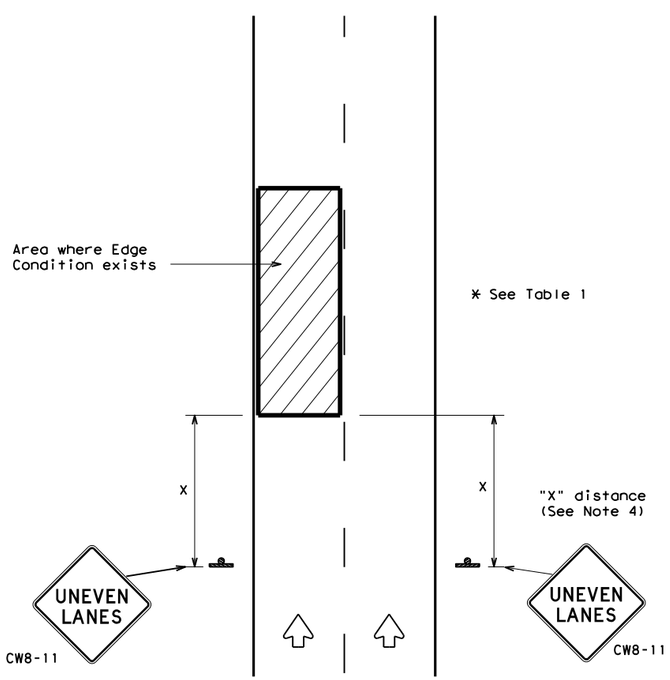
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

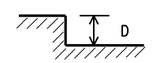
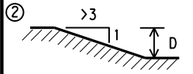
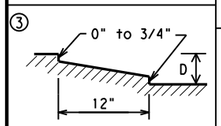
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

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

GENERAL NOTES

1. If spalling or holes occur, ROUGH ROAD (CW8-8) signs should be placed in advance of the condition and be repeated every two miles where the condition persists.
2. UNEVEN LANES (CW8-11) signs shall be installed in advance of the condition and repeated every mile. Signs installed along the uneven lane condition may be supplemented with the NEXT XX MILES (CW7-3aP) plaque or Advisory Speed (CW13-1P) plaque.
3. NO CENTER LINE (CW8-12) signs and temporary pavement markings as per the WZ(STPM) standard shall be installed if yellow centerlines separating two way traffic are obscured or obliterated. Repeat NO CENTER LINE signs every two miles where the center line markings are not in place. The signs and markings shall remain in place until permanent pavement markings are installed.
4. Signs shall be spaced at the distances recommended as per BC standards.
5. Additional signs may be required as directed by the Engineer. Signs shall remain in place until final surface is applied. Signs shall be considered subsidiary to Item 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING."
6. Signs shall be fabricated and mounted on supports as shown on the BC standards and/or listed on the "Compliant Work Zone Traffic Control Devices" list.
7. Short term markings shall not be used to simulate edge lines.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition.

TABLE 1

Edge Condition	Edge Height (D)	* Warning Devices
① 	Less than or equal to: 1¼" (maximum-planing) 1½" (typical-overlay)	Sign: CW8-11
	Distance "D" may be a maximum of 1 1/4 " for planing operations and 2" for overlay operations if uneven lanes with edge condition 1 are open to traffic after work operations cease.	
② 	Less than or equal to 3"	Sign: CW8-11
③  Notched Wedge Joint	Distance "D" may be a maximum of 3" if uneven lanes with edge condition 2 or 3 are open to traffic after work operations cease. Uneven lanes should not be open to traffic when "D" is greater than 3".	

TRAFFIC CONTROL DURING PLANING, OVERLAY AND LEVELING OPERATIONS ARE SHOWN ELSEWHERE IN THE PLANS.

MINIMUM WARNING SIGN SIZE	
Conventional roads	36" x 36"
Freeways/expressways, divided roadways	48" x 48"

Texas Department of Transportation

Traffic Operations Division Standard

SIGNING FOR UNEVEN LANES

WZ(UL)-13

FILE: wzul-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
8-95 2-98 7-13	DIST	COUNTY		SHEET NO.
1-97 3-03	SJT	CONCHO		61

HORIZONTAL ALIGNMENT REPORT

Alignment name: US83 CL
Alignment description:
Report Created: Monday, March 18, 2024
Time: 10:35:30 AM

	STATION	X	Y
POT	120000.000 R1	2449643.666	10405288.796
PC	121310.354 R1	2449690.418	10406598.316
Tangential Direction:	N2.045?E		
Tangential Length:	1310.354		
PC	121310.354 R1	2449690.418	10406598.316
PI	121410.379 R1	2449693.987	10406698.277
CC		2443963.341	10406802.783
PT	121510.384 R1	2449694.065	10406798.303
Radius:	5730.726		
Delta:	2.000? Left		
Degree of Curvature(Arc):	1.000?		
Length:	200.030		
Tangent:	100.025		
Chord:	200.020		
Middle Ordinate:	0.873		
External:	0.873		
Tangent Back Direction:	N2.045?E		
Radial Direction:	S87.955?E		
Chord Direction:	N1.045?E		
Radial Direction:	S89.955?E		
Tangent Ahead Direction:	N0.045?E		
PT	121510.384 R1	2449694.065	10406798.303
PI	122328.732 R1	2449694.705	10407616.651
Tangential Direction:	N0.045?E		
Tangential Length:	818.348		
PI	122328.732 R1	2449694.705	10407616.651
PC	122518.037 R1	2449698.157	10407805.924
Tangential Direction:	N1.045?E		
Tangential Length:	189.305		
PC	122518.037 R1	2449698.157	10407805.924
PI	122605.203 R1	2449699.746	10407893.075
CC		2449365.212	10407811.996
PT	122688.543 R1	2449658.432	10407969.828
Radius:	333.000		
Delta:	29.337? Left		
Degree of Curvature(Arc):	17.206?		
Length:	170.506		
Tangent:	87.166		
Chord:	168.649		
Middle Ordinate:	10.853		
External:	11.219		
Tangent Back Direction:	N1.045?E		
Radial Direction:	S88.955?E		
Chord Direction:	N13.624?W		
Radial Direction:	N61.708?E		
Tangent Ahead Direction:	N28.292?W		
PT	122688.543 R1	2449658.432	10407969.828
PC	122888.034 R1	2449563.880	10408145.488
Tangential Direction:	N28.292?W		
Tangential Length:	199.491		
PC	122888.034 R1	2449563.880	10408145.488
PI	122991.827 R1	2449514.685	10408236.883
CC		2449924.021	10408339.342
PT	123091.330 R1	2449515.023	10408340.676
Radius:	409.000		
Delta:	28.479? Right		
Degree of Curvature(Arc):	14.009?		
Length:	203.296		
Tangent:	103.794		
Chord:	201.209		
Middle Ordinate:	12.566		
External:	12.965		
Tangent Back Direction:	N28.292?W		
Radial Direction:	N61.708?E		
Chord Direction:	N14.053?W		
Radial Direction:	S89.813?E		
Tangent Ahead Direction:	N0.187?E		

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER
5/22/2024
P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS
PLANNERS | ENGINEERS | MANAGERS
IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

US 83
ALIGNMENT DATA SHEET

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		62

DATE: 5/22/2024 5:26:02 PM
FILE: c:\bms\idcus-pw-01\omar.alducin\dms06699\US83_ALIDATA_01.dgn

	PT	123091.330 R1	2449515.023
10408340.676			
	POT	124201.096 R1	2449518.643
10409450.437			
Tangential Direction:		N0.187?E	
Tangential Length:		1109.767	

HORIZONTAL ALIGNMENT REPORT

Alignment name: US87
Alignment description:
Report Created: Monday, March 18, 2024
Time: 10:38:52 AM

	STATION	X	Y
POT	104500.000 R1	2448925.232	10408523.817
PI	104656.200 R1	2449081.432	10408524.204
Tangential Direction:	N89.858?E		
Tangential Length:	156.200		
PI	104656.200 R1	2449081.432	10408524.204
PI	104828.096 R1	2449253.294	10408527.628
Tangential Direction:	N88.858?E		
Tangential Length:	171.896		
PI	104828.096 R1	2449253.294	10408527.628
PI	105368.156 R1	2449793.352	10408528.964
Tangential Direction:	N89.858?E		
Tangential Length:	540.060		
PI	105368.156 R1	2449793.352	10408528.964
PI	105540.052 R1	2449965.229	10408526.389
Tangential Direction:	S89.142?E		
Tangential Length:	171.896		
PI	105540.052 R1	2449965.229	10408526.389
POT	105600.000 R1	2450025.177	10408526.537
Tangential Direction:	N89.858?E		
Tangential Length:	59.948		

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER
5/22/2024
P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS
PLANNERS | ENGINEERS | MANAGERS
IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

US 83
ALIGNMENT DATA SHEET

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		63

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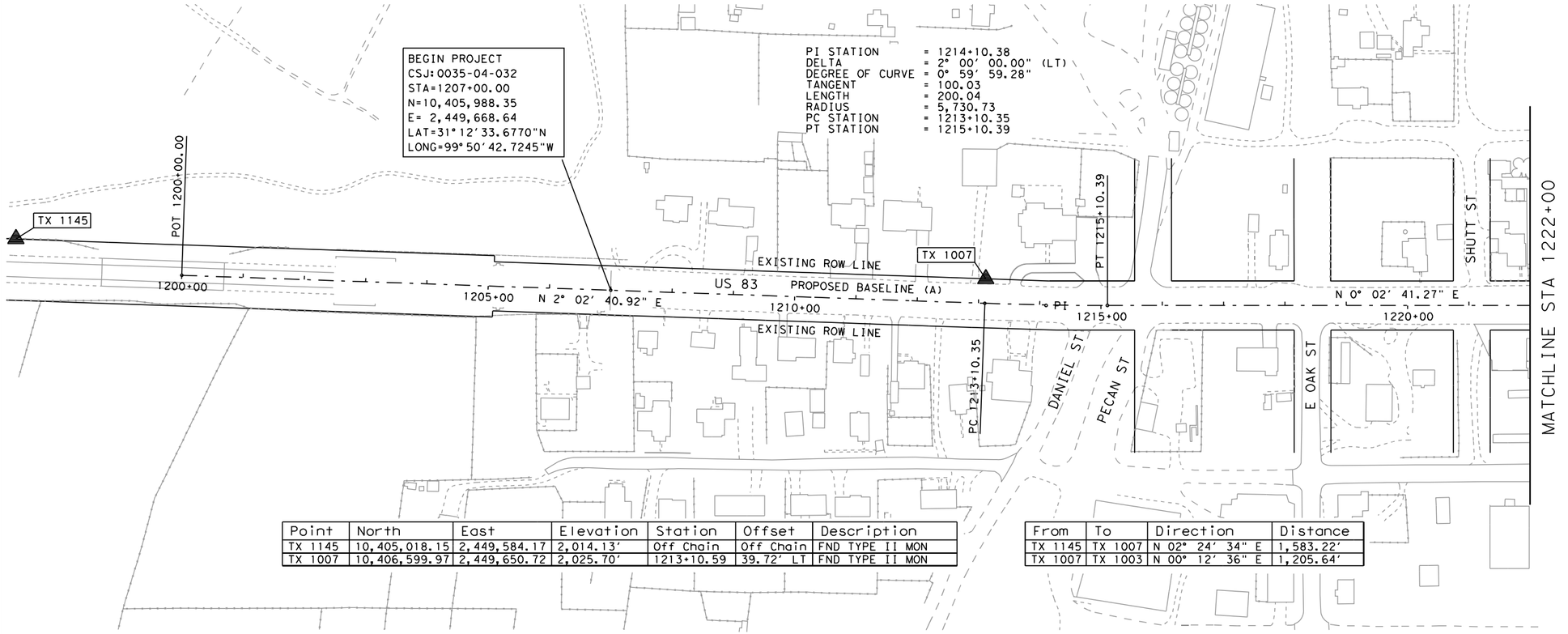


Point	North	East	Elevation	Station	Offset	Description
TX 1145	10,405,018.15	2,449,584.17	2,014.13'	Off Chain	Off Chain	FND TYPE II MON
TX 1007	10,406,599.97	2,449,650.72	2,025.70'	1213+10.59	39.72' LT	FND TYPE II MON

From	To	Direction	Distance
TX 1145	TX 1007	N 02° 24' 34" E	1,583.22'
TX 1007	TX 1003	N 00° 12' 36" E	1,205.64'

LEGEND
▲ - CONTROL POINT
✕ - AERIAL TARGET

Unit of Measure: U.S. Survey Feet

0 100' 200' 300'
SCALE 1"=200'

NOTES:
1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE (4203), NORTH AMERICAN DATUM OF 1983 (NAD83) (2011 ADJ.; EPOCH 2010.00).

2. ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (GEOID 18).

3. COORDINATES AND DISTANCES ARE U.S. SURVEY FEET, DISPLAYED IN SURFACE VALUES, AND MAY BE CONVERTED TO GRID VALUES BY DIVIDING BY THE SURFACE ADJUSTMENT FACTOR FOR CONCHO COUNTY OF 1.00020.

4. HORIZONTAL COORDINATES PROVIDED WERE VERIFIED AS ACCEPTABLE WITH REDUNDANT GPS RTN OBSERVATIONS MEASURED FROM TxDOT CORS TXEN DURING NOVEMBER 2023, EXCEPT FOR POINT TX 1103 WHICH HAS BEEN REVISED.

5. ELEVATIONS PROVIDED WERE ALL VERIFIED AS ACCEPTABLE WITH DIGITAL LEVELING.

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

STATE OF TEXAS
REGISTERED
JIMMY D. WALTON
5889
PROFESSIONAL
LAND SURVEYOR

5-7-2024

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E

Sheet 1 of 2
Survey Date: NOVEMBER, 2023

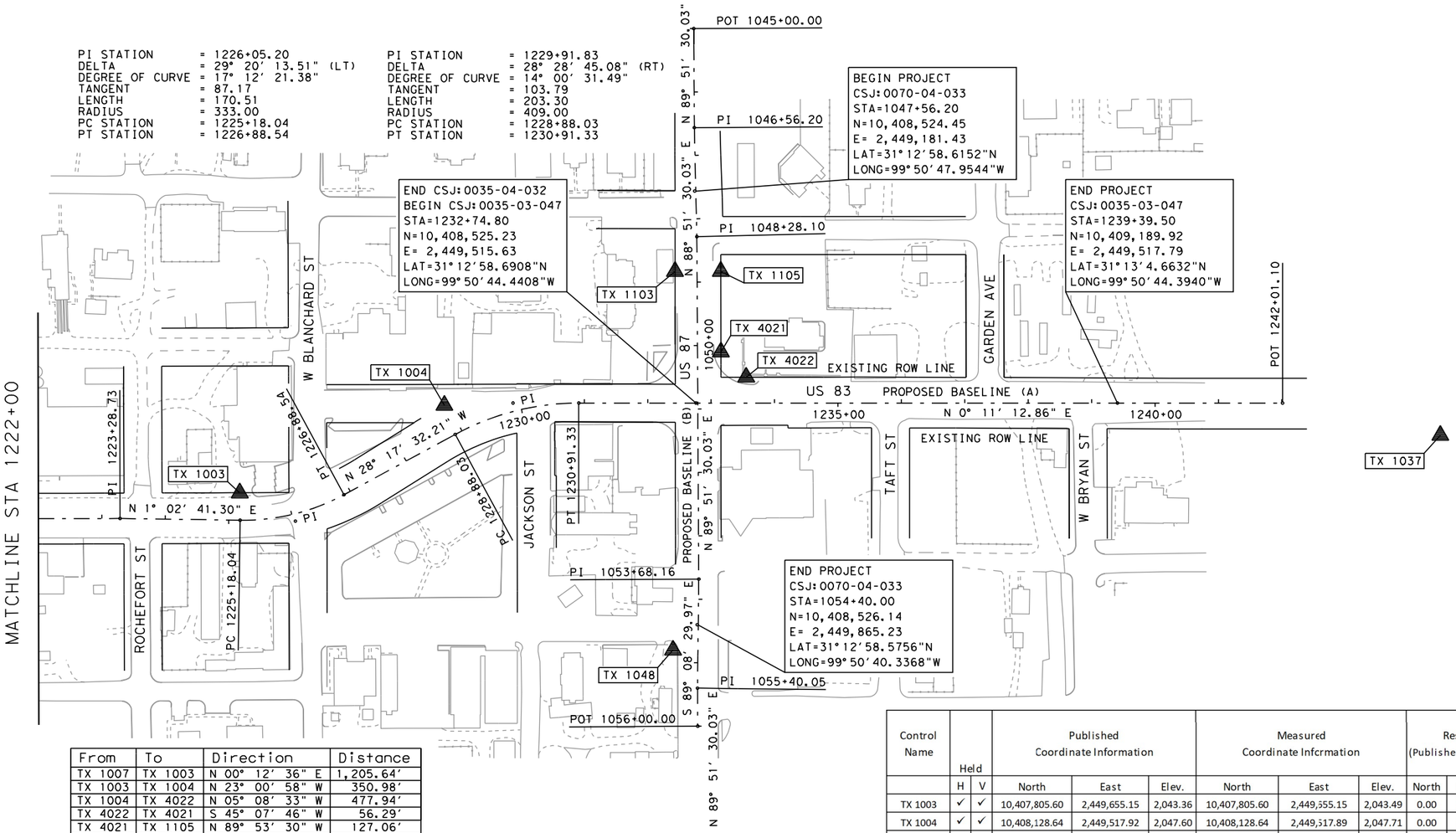
RODS Surveying, Inc.
Central Infrastructure Transportation Land Development
6810 LEE ROAD, STE.100
SPRING, TEXAS 77379
TEL (281) 257-4020
FAX (281) 257-4021
TBPELS SURVEYING FIRM REG. No. 10030700

Texas Department of Transportation

US 83
SURVEY CONTROL INDEX SHEET

FEDERAL AID PROJECT NO.				SHEET NO.
SEE COVER SHEET				64
FED. RD. DIV. NO.	STATE	DISTRICT		COUNTY
6	TEXAS	SJT		CONCHO
STATE DIST. NO.	CONTROL	SECTION	JOB	HIGHWAY
7	0035	04	032	US 83

N:\IDC 382\22234001\CAD\H&V Control\H&V Index Sheet 1.dgn



From	To	Direction	Distance
TX 1007	TX 1003	N 00° 12′ 36" E	1,205.64′
TX 1003	TX 1004	N 23° 00′ 58" W	350.98′
TX 1004	TX 4022	N 05° 08′ 33" W	477.94′
TX 4022	TX 4021	S 45° 07′ 46" W	56.29′
TX 4021	TX 1105	N 89° 53′ 30" W	127.06′
TX 1105	TX 1103	S 00° 06′ 12" W	72.06′
TX 1103	TX 1048	S 89° 30′ 52" E	597.10′
TX 4022	TX 1048	S 74° 49′ 47" E	445.53′
TX 4022	TX 1037	N 04° 58′ 26" E	1,098.48′

Point	North	East	Elevation	Baseline	Station	Offset	Description
TX 1003	10,407,805.60	2,449,655.15	2,043.36′	A	1225+16.93	42.99′ LT	FND TYPE II MON
TX 1004	10,408,128.64	2,449,517.92	2,047.60′	A	1228+94.25	48.51′ LT	FND 2" ALUM CAP
TX 1048	10,408,488.07	2,449,905.07	2,052.41′	A	1232+40.00	389.57′ RT	FND TYPE I MON
				B	1054+80.48	39.22′ RT	
TX 1103	10,408,493.13	2,449,308.00	2,051.08′	A	1232+43.11	207.52′ LT	FND 2" ALUM CAP
				B	1048+82.72	34.63′ RT	
TX 1105	10,408,565.20	2,449,308.12	2,051.29′	A	1233+15.17	207.62′ LT	FND 2" ALUM CAP
				B	1048+83.02	37.43′ LT	
TX 4021	10,408,564.95	2,449,435.19	2,052.33′	A	1233+15.34	80.56′ LT	FND BRASS DISK
				B	1050+10.08	36.87′ LT	
TX 4022	10,408,604.65	2,449,475.08	2,052.55′	A	1233+55.18	40.80′ LT	FND BRASS DISK
				B	1050+50.07	76.48′ LT	
TX 1037	10,409,698.99	2,449,570.33	2,058.57′	N/A	Off Chain	Off Chain	FND TYPE I MON

LEGEND

▲ - CONTROL POINT

✕ - AERIAL TARGET

Control Name	Held		Published Coordinate Information			Measured Coordinate Infcrmation			Residuals (Published - Measured)		
	H	V	North	East	Elev.	North	East	Elev.	North	East	Elev.
TX 1003	✓	✓	10,407,805.60	2,449,655.15	2,043.36	10,407,805.60	2,449,555.15	2,043.49	0.00	0.00	-0.13
TX 1004	✓	✓	10,408,128.64	2,449,517.92	2,047.60	10,408,128.64	2,449,517.89	2,047.71	0.00	0.03	-0.11
TX 1007	✓	✓	10,406,599.97	2,449,650.73	2,025.70	10,406,599.96	2,449,550.83	2,025.80	0.01	-0.10	-0.10
TX 1037	✓	✓	10,409,699.00	2,449,570.32	2,058.57	10,409,698.94	2,449,570.26	2,058.73	0.06	0.06	-0.16
TX 1145	✓	✓	10,405,018.15	2,449,584.17	2,014.13	10,405,018.09	2,449,584.17	2,014.13	0.06	0.00	0.00
TX 1048	✓	✓	10,408,488.07	2,449,905.08	2,052.41	10,408,487.97	2,449,905.04	2,052.38	0.10	0.04	0.03
TX 1103		✓	10,408,493.28	2,449,308.08	2,051.08	10,408,493.13	2,449,308.00	2,051.02	0.15	0.08	0.06
TX 1105	✓	✓	10,408,565.19	2,449,308.13	2,051.29	10,408,565.20	2,449,308.12	2,051.23	-0.01	0.00	0.06
TX 4021	✓	✓	10,408,564.95	2,449,435.19	2,052.33	10,408,564.92	2,449,435.18	2,052.30	0.03	0.01	0.03
TX 4022	✓	✓	10,408,604.66	2,449,475.08	2,052.55	10,408,604.67	2,449,475.13	2,052.55	-0.01	-0.05	0.00

Notes:

1. Measured values shown hereon were established during November 2024 with redundant GPS VRS observations measured from CORS TXEN, constrained to the published values for recovered points TX 1003 and TX 1145 are based on NAD83 (2011), TXC (4203), NAVD88 (Geoid 18) and an applied project surface adjustment factor for Concho County of 1.00020. The resultant horizontal and vertical shifts applied to observed GPS values are as follows: Translation North = -0.048', Translation East = -0.043', rotation = -00°00'04.054", vertical shift = -0.07'. Published values were verified as acceptable, except for TX1103's horizontal values which were updated during this survey.

2. Published values prepared by Landtech Consultants are according to one control index and two control sketches sheets provided by the State, for US 83, bearing CSJ Nos. 0035-03-047 & 0070-04-034 and RPLS signature & seal dated June 23, 2016.

Unit of Measure: U.S. Survey Feet

0 100′ 200′ 300′

SCALE 1"=200′

NOTES:

1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE (4203), NORTH AMERICAN DATUM OF 1983 (NAD83) (2011 ADJ.; EPOCH 2010.00).

2. ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (GEOID 18).

3. COORDINATES AND DISTANCES ARE U.S. SURVEY FEET, DISPLAYED IN SURFACE VALUES, AND MAY BE CONVERTED TO GRID VALUES BY DIVIDING BY THE SURFACE ADJUSTMENT FACTOR FOR CONCHO COUNTY OF 1.00020.

4. HORIZONTAL COORDINATES PROVIDED WERE VERIFIED AS ACCEPTABLE WITH REDUNDANT GPS RTN OBSERVATIONS MEASURED FROM TxDOT CORS TXEN DURING NOVEMBER 2023, EXCEPT FOR POINT TX 1103 WHICH HAS BEEN REVISED.

5. ELEVATIONS PROVIDED WERE ALL VERIFIED AS ACCEPTABLE WITH DIGITAL LEVELING.

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

STATE OF TEXAS
REGISTERED
JIMMY D. WALTON
5889
PROFESSIONAL
LAND SURVEYOR

5-7-2024

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E

Sheet 2 of 2
Survey Date: NOVEMBER, 2023

RODS Surveying, Inc.
6810 LEE ROAD, STE. 100
SPRING, TEXAS 77379
TEL (281) 257-4020
FAX (281) 257-4021
TBPELS SURVEYING FIRM REG. No. 10030700

Control Infrastructure Transportation Land Development

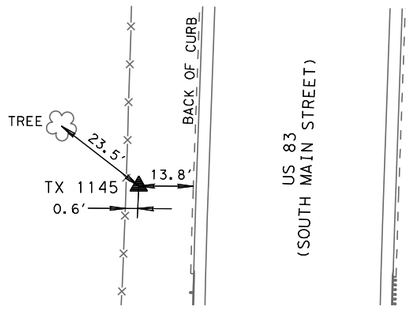
Texas Department of Transportation

US 83
SURVEY CONTROL INDEX SHEET

FEDERAL AID PROJECT NO.				SHEET NO.
SEE COVER SHEET				65
FED. RD. DIV. NO.	STATE	DISTRICT		COUNTY
6	TEXAS	SJT		CONCHO
STATE DIST. NO.	CONTROL	SECTION	JOB	HIGHWAY
7	0035	03	047, ETC	US 83

N:\IDC 382\22234001\CAD\H&V Control\H&V Index Sheet 2.dgn

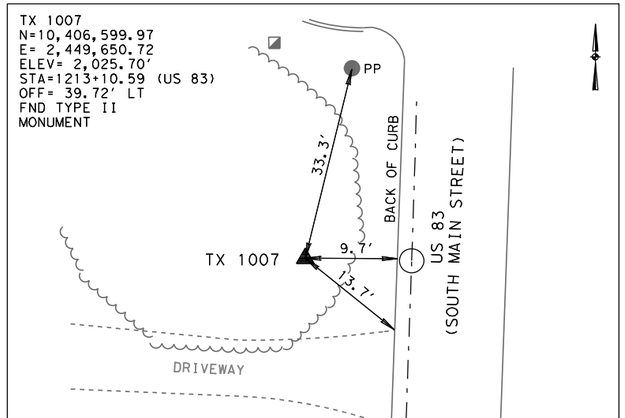
TX 1145
N=10,405,018.15
E= 2,449,584.17
ELEV= 2,014.13'
STA= OFF CHAIN
OFF= OFF CHAIN
FND TYPE II
MONUMENT



U.S. Survey Feet, Not-to-Scale

STATION IS LOCATED ON WEST RIGHT-OF-WAY OF US 83 (SOUTH MAIN ST.) APPROXIMATELY 1,800 FEET SOUTH OF SOUTH ROW OF PECAN ST.

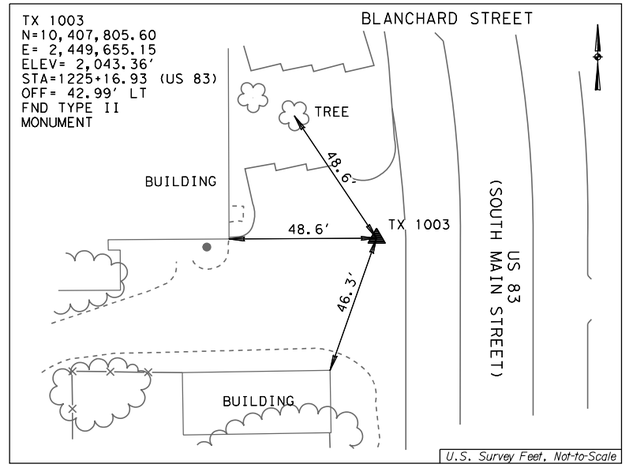
TX 1007
N=10,406,599.97
E= 2,449,650.72
ELEV= 2,025.70'
STA=1213+10.59 (US 83)
OFF= 39.72' LT
FND TYPE II
MONUMENT



U.S. Survey Feet, Not-to-Scale

STATION IS LOCATED 240 FEET SOUTH OF THE SOUTHWEST CORNER OF US 83 (SOUTH MAIN ST.) AND PECAN ST.

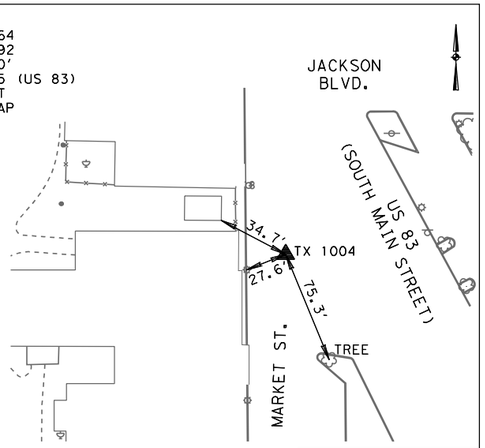
TX 1003
N=10,407,805.60
E= 2,449,655.15
ELEV= 2,043.36'
STA=1225+16.93 (US 83)
OFF= 42.99' LT
FND TYPE II
MONUMENT



U.S. Survey Feet, Not-to-Scale

STATION IS LOCATED 75 FEET SOUTH OF THE SOUTHWEST CORNER OF US 83 (SOUTH MAIN ST.) AND BLANCHARD ST.

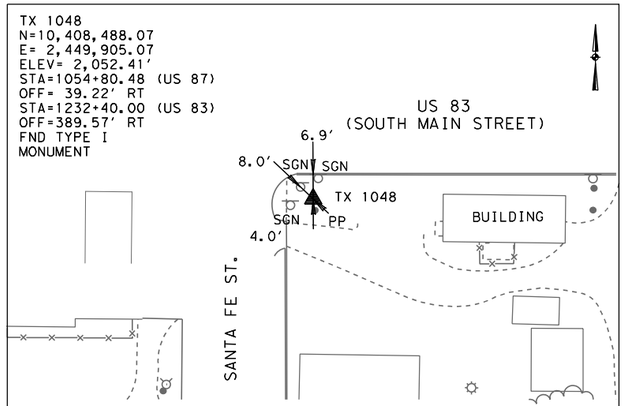
TX 1004
N=10,408,128.64
E= 2,449,517.92
ELEV= 2,047.60'
STA=1228+94.25 (US 83)
OFF= 48.51' LT
FND 2" ALUM CAP
N CONC



U.S. Survey Feet, Not-to-Scale

STATION IS LOCATED AT INTERSECTION OF CENTERLINE OF MARKET ST. AND THE SOUTH RIGHT-OF-WAY OF US 83 (SOUTH MAIN ST.)

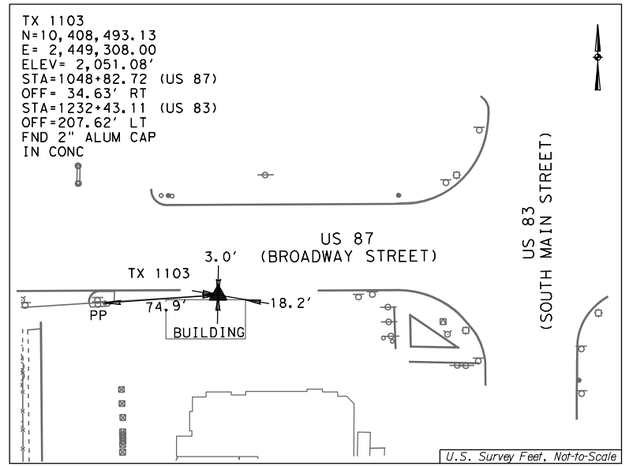
TX 1048
N=10,408,488.07
E= 2,449,905.07
ELEV= 2,052.41'
STA=1054+80.48 (US 87)
OFF= 39.22' RT
STA=1232+40.00 (US 83)
OFF=389.57' RT
FND TYPE I
MONUMENT



U.S. Survey Feet, Not-to-Scale

STATION IS LOCATED AT SOUTHWEST CORNER OF THE INTRESECTION OF US 87 (BROADWAY ST.) AND SANTA FE ST.

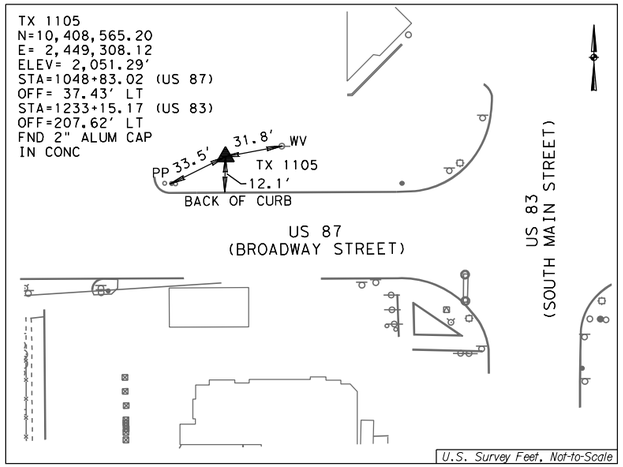
TX 1103
N=10,408,493.13
E= 2,449,308.00
ELEV= 2,051.08'
STA=1048+82.72 (US 87)
OFF= 34.63' RT
STA=1232+43.11 (US 83)
OFF=207.62' LT
FND 2" ALUM CAP
IN CONC



U.S. Survey Feet, Not-to-Scale

STATION IS LOCATED ON SOUTH RIGHT-OF-WAY OF US 87 (BROADWAY ST.) APPROXIMATELY 175' WEST OF WEST RIGHT-OF-WAY OF US 83 (S. MAIN ST.)

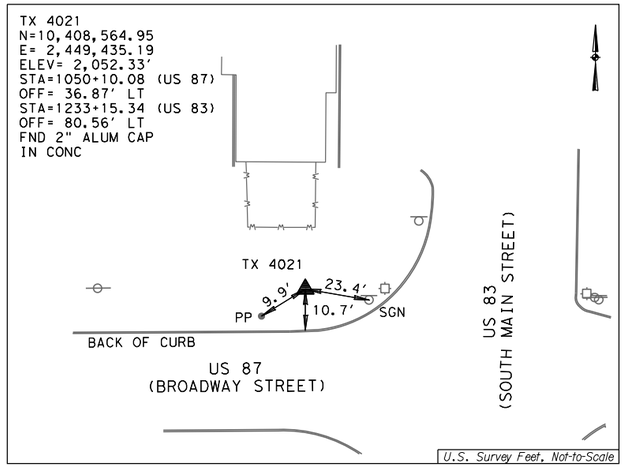
TX 1105
N=10,408,565.20
E= 2,449,308.12
ELEV= 2,051.29'
STA=1048+83.02 (US 87)
OFF= 37.43' LT
STA=1233+15.17 (US 83)
OFF=207.62' LT
FND 2" ALUM CAP
IN CONC



U.S. Survey Feet, Not-to-Scale

STATION IS LOCATED ON NORTH RIGHT-OF-WAY OF US 87 (BROADWAY ST.) APPROXIMATELY 25 FEET EAST OF THE EAST RIGHT-OF-WAY OF BURTON ST.

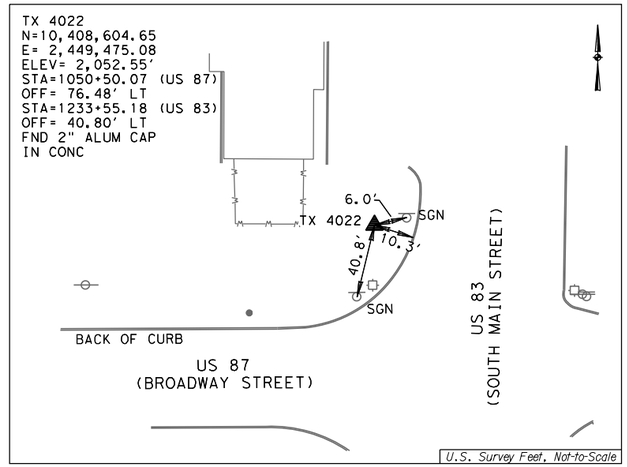
TX 4021
N=10,408,564.95
E= 2,449,435.19
ELEV= 2,052.33'
STA=1050+10.08 (US 87)
OFF= 36.87' LT
STA=1233+15.34 (US 83)
OFF= 80.56' LT
FND 2" ALUM CAP
IN CONC



U.S. Survey Feet, Not-to-Scale

STATION IS LOCATED AT SOUTHWEST CORNER OF THE NORTHWEST CUT BACK CORNER OF US 83 AND US 87 INTERSECTION.

TX 4022
N=10,408,604.65
E= 2,449,475.08
ELEV= 2,052.55'
STA=1050+50.07 (US 87)
OFF= 76.48' LT
STA=1233+55.18 (US 83)
OFF= 40.80' LT
FND 2" ALUM CAP
IN CONC



U.S. Survey Feet, Not-to-Scale

STATION IS LOCATED AT THE NORTHEAST CORNER OF THE NORTHWEST CUT BACK CORNER OF US 83/US 87 INTERSECTION.

NOTES:
1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE (4203), NORTH AMERICAN DATUM OF 1983 (NAD83) (2011 ADJ.; EPOCH 2010.00).

2. ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (GEOID 18).

3. COORDINATES AND DISTANCES ARE U.S. SURVEY FEET, DISPLAYED IN SURFACE VALUES, AND MAY BE CONVERTED TO GRID VALUES BY DIVIDING BY THE SURFACE ADJUSTMENT FACTOR FOR CONCHO COUNTY OF 1.00020.

4. HORIZONTAL COORDINATES PROVIDED WERE VERIFIED AS ACCEPTABLE WITH REDUNDANT GPS RTN OBSERVATIONS MEASURED FROM TxDOT CORS TXEN DURING NOVEMBER 2023, EXCEPT FOR POINT TX 1103 WHICH HAS BEEN REVISED.

5. ELEVATIONS PROVIDED WERE ALL VERIFIED AS ACCEPTABLE WITH DIGITAL LEVELING.

LEGEND
▲ - CONTROL POINT ✕ - AERIAL TARGET

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

STATE OF TEXAS
REGISTERED
JIMMY D. WALTON
5889
PROFESSIONAL
LAND SURVEYOR

5-7-2024

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E

Sheet 1 of 2
Survey Date: NOVEMBER, 2023

RODS
Surveying, Inc.
6810 LEE ROAD, STE. 100
SPRING, TEXAS 77379
TEL (281) 257-4020
FAX (281) 257-4021
TBPELS SURVEYING FIRM REG. No. 10030700

Control Infrastructure Transportation Land Development

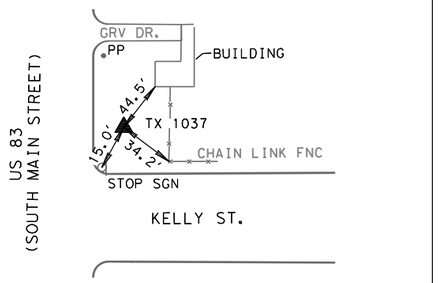
Texas Department of Transportation

US 83
HORIZONTAL & VERTICAL CONTROL SHEET

FEDERAL AID PROJECT NO.				SHEET NO.
SEE COVER SHEET				66
FED. RD. DIV. NO.	STATE	DISTRICT		COUNTY
6	TEXAS	SJT		CONCHO
STATE DIST. NO.	CONTROL	SECTION	JOB	HIGHWAY
7	0035	04	032	US 83

N:\IDC 382\2223400I\CAD\H&V Control\H&V Sketches.dgn

TX 1037
N=10,409,698.99
E= 2,449,570.33
ELEV= 2,058.57'
STA= OFF CHAIN
OFF= OFF CHAIN
FND TYPE I
MONUMENT



U.S. Survey Feet, Not-to-Scale

STATION IS LOCATED AT NORTHEAST CORNER OF US 83 (NORTH MAIN ST.) AND KELLY ST.

NOTES:
1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE (4203), NORTH AMERICAN DATUM OF 1983 (NAD83) (2011 ADJ.; EPOCH 2010.00).

2. ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (GEOID 18).

3. COORDINATES AND DISTANCES ARE U.S. SURVEY FEET, DISPLAYED IN SURFACE VALUES, AND MAY BE CONVERTED TO GRID VALUES BY DIVIDING BY THE SURFACE ADJUSTMENT FACTOR FOR CONCHO COUNTY OF 1.00020.

4. HORIZONTAL COORDINATES PROVIDED WERE VERIFIED AS ACCEPTABLE WITH REDUNDANT GPS RTN OBSERVATIONS MEASURED FROM TxDOT CORS TXEN DURING NOVEMBER 2023, EXCEPT FOR POINT TX 1103 WHICH HAS BEEN REVISED.

5. ELEVATIONS PROVIDED WERE ALL VERIFIED AS ACCEPTABLE WITH DIGITAL LEVELING.

LEGEND
▲ - CONTROL POINT ✻ - AERIAL TARGET

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

STATE OF TEXAS
REGISTERED
JIMMY D. WALTON
5889
PROFESSIONAL
LAND SURVEYOR

5-7-2024

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E

Sheet 2 of 2
Survey Date: NOVEMBER, 2023

RODS
Surveying, Inc.
6810 LEE ROAD, STE.100
SPRING, TEXAS 77379
TEL (281) 257-4020
FAX (281) 257-4021
TBPELS SURVEYING FIRM REG. No. 10030700

Central Infrastructure Transportation Land Development

Texas Department of Transportation

US 83
HORIZONTAL & VERTICAL CONTROL SHEET

FEDERAL AID PROJECT NO.				SHEET NO.
SEE COVER SHEET				67
FED. RD. DIV. NO.	STATE	DISTRICT		COUNTY
6	TEXAS	SJT		CONCHO
STATE DIST. NO.	CONTROL	SECTION	JOB	HIGHWAY
7	0035	04	032	US 83

N:\IDC 382\22234001\CAD\H&V Control\H&V Sketches.dgn

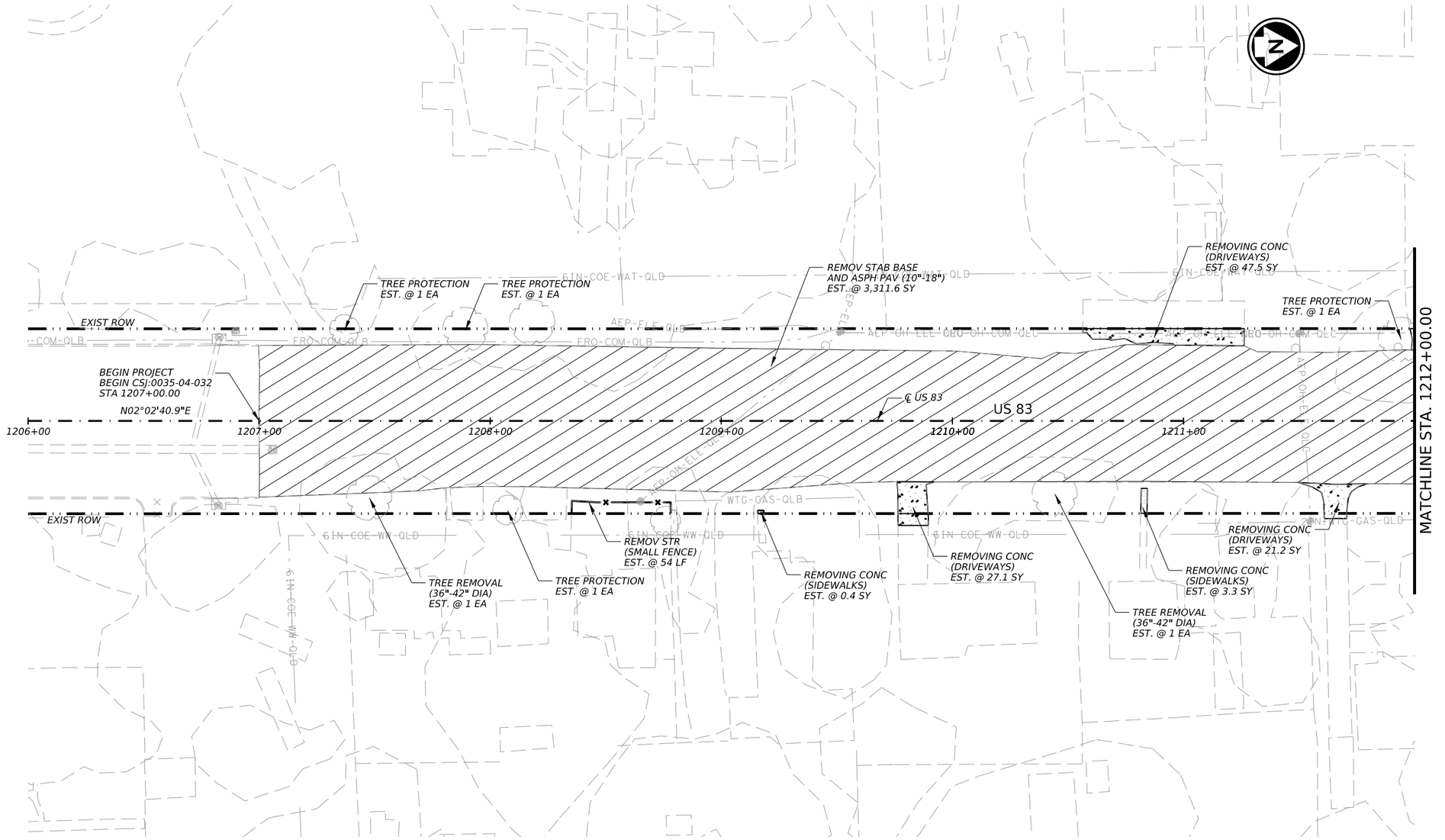
CK
DW
CK
DW

LEGEND

- REMOV STAB BASE AND ASPH PAV (10"-18")
- REMOV CONC SIDEWALK
- REMOV CONC DRIVEWAY
- REMOV CONC CURB
- REMOV CONC MISC

NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
2. FOR DRIVEWAY DETAILS REFER TO DRIVEWAY SUMMARY SHEET.



HORZ 0' 25' 50'

SCALE IN FEET

5/22/2024

P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS
PLANNERS | ENGINEERS | MANAGERS
IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

US 83
REMOVAL PLAN LAYOUT
BEGIN TO STA 1212+00.00

SHEET 1 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		68

DATE: 5/22/2024 5:26:46 PM
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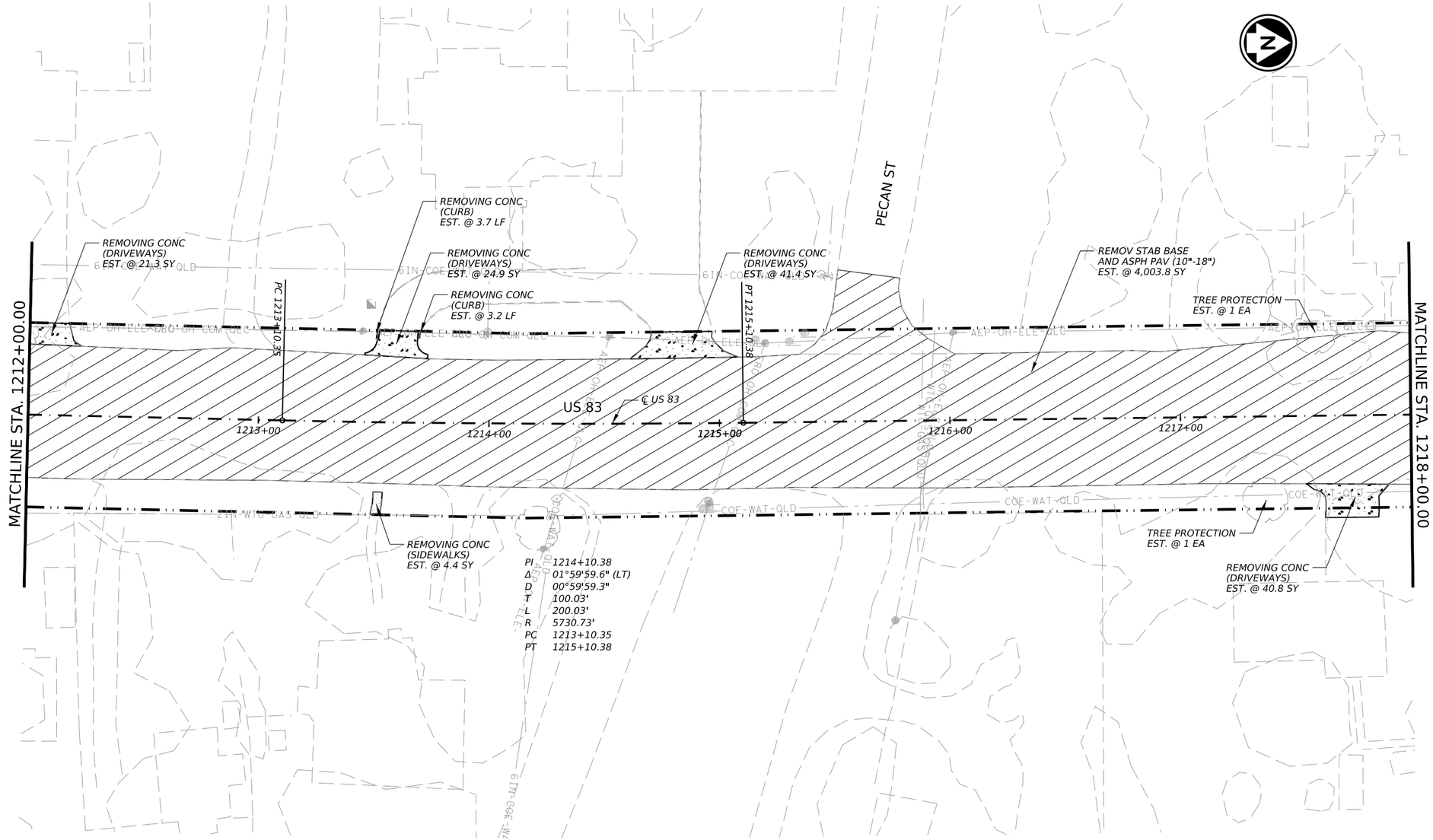

LEGEND

- REMOV STAB BASE AND ASPH PAV (10"-18")
- REMOV CONC SIDEWALK
- REMOV CONC DRIVEWAY
- REMOV CONC CURB
- REMOV CONC MISC

NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
2. FOR DRIVEWAY DETAILS REFER TO DRIVEWAY SUMMARY SHEET.

HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER

5/22/2024

P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

IDCUS
PLANNERS | ENGINEERS | MANAGERS

US 83

US 83
REMOVAL PLAN LAYOUT
STA 1212+00.00 TO STA 1218+00.00

SHEET 2 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		69

DATE: 5/22/2024 5:27:18 PM
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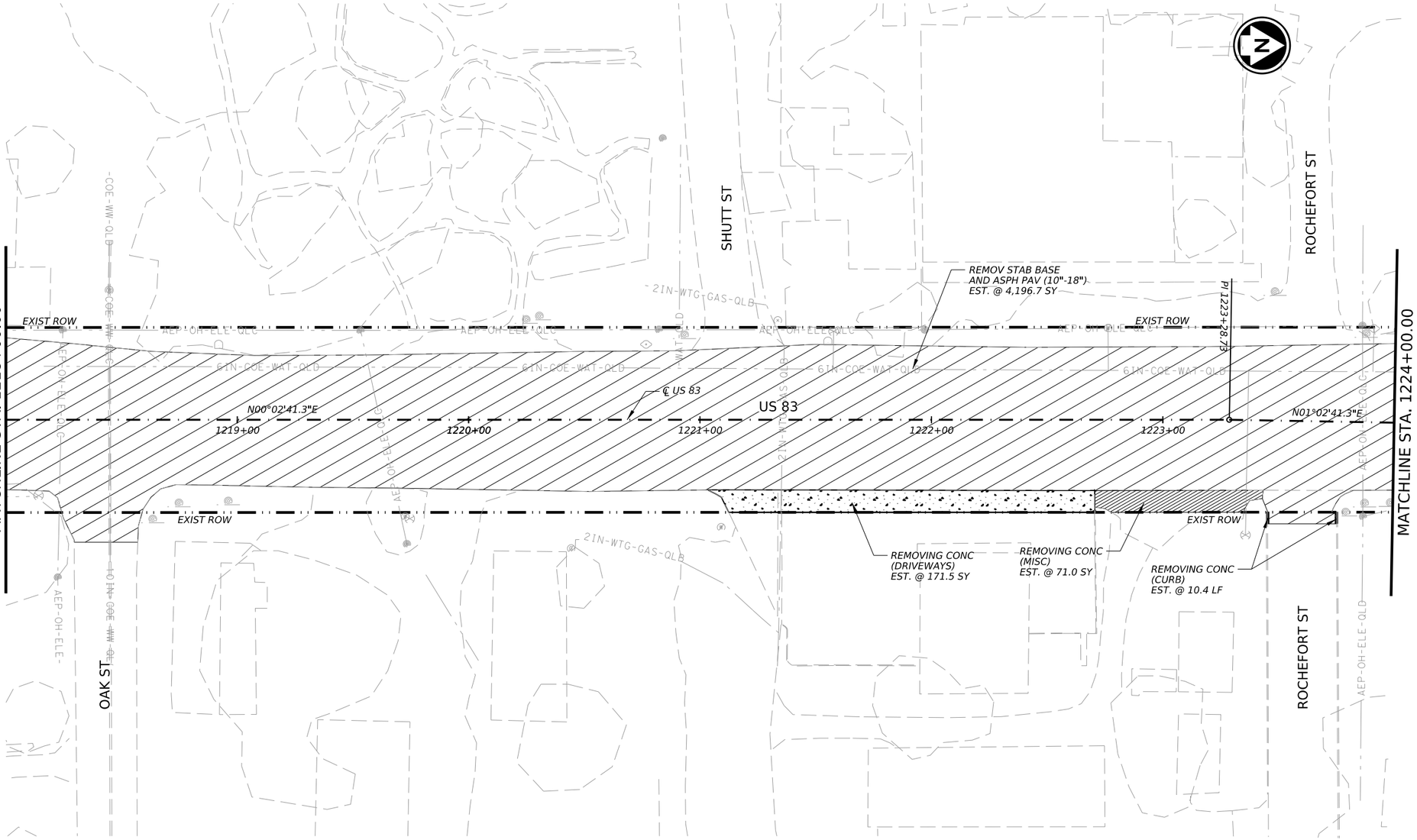

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER
5/22/2024
P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

IDCUS
PLANNERS | ENGINEERS | MANAGERS

US 83

US 83
REMOVAL PLAN LAYOUT
STA 1218+00.00 TO STA 1224+00.00

SHEET 3 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		70

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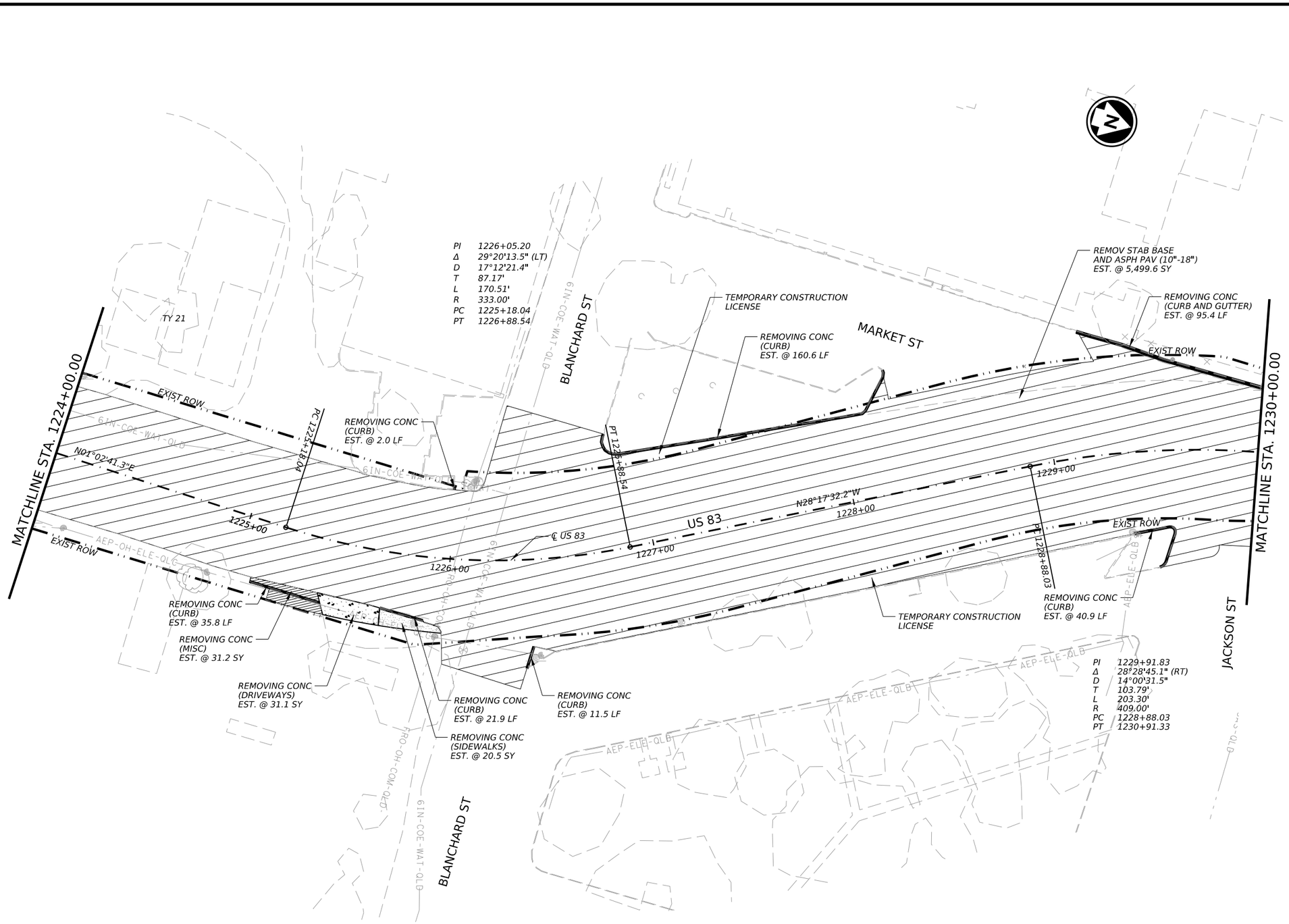

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER
5/22/2024
P.E.

NO.	DATE	REVISION

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Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

IDCUS
PLANNERS | ENGINEERS | MANAGERS

US 83

US 83
REMOVAL PLAN LAYOUT
STA 1224+00.00 TO STA 1230+00.00

SHEET 4 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		71

DATE: 5/22/2024 5:28:26 PM
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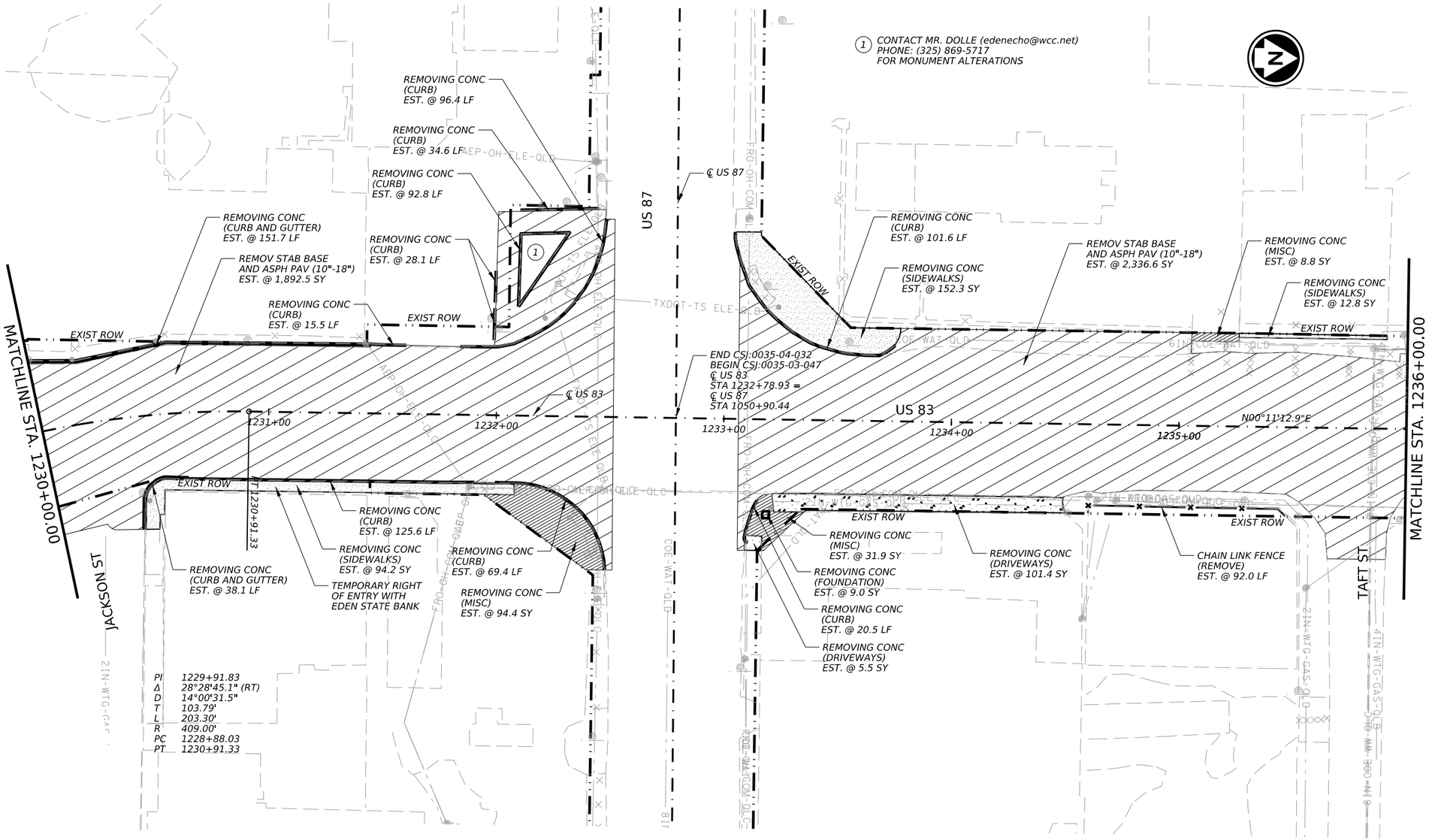

LEGEND

- REMOV STAB BASE AND ASPH PAV (10"-18")
- REMOV CONC SIDEWALK
- REMOV CONC DRIVEWAY
- REMOV CONC CURB
- REMOV CONC MISC

NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
2. FOR DRIVEWAY DETAILS REFER TO DRIVEWAY SUMMARY SHEET.

HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER

5/22/2024

P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

IDCUS PLANNERS | ENGINEERS | MANAGERS

US 83

US 83
REMOVAL PLAN LAYOUT
STA 1230+00.00 TO STA 1236+00.00

SHEET 5 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		72

DATE: 5/22/2024 5:29:00 PM
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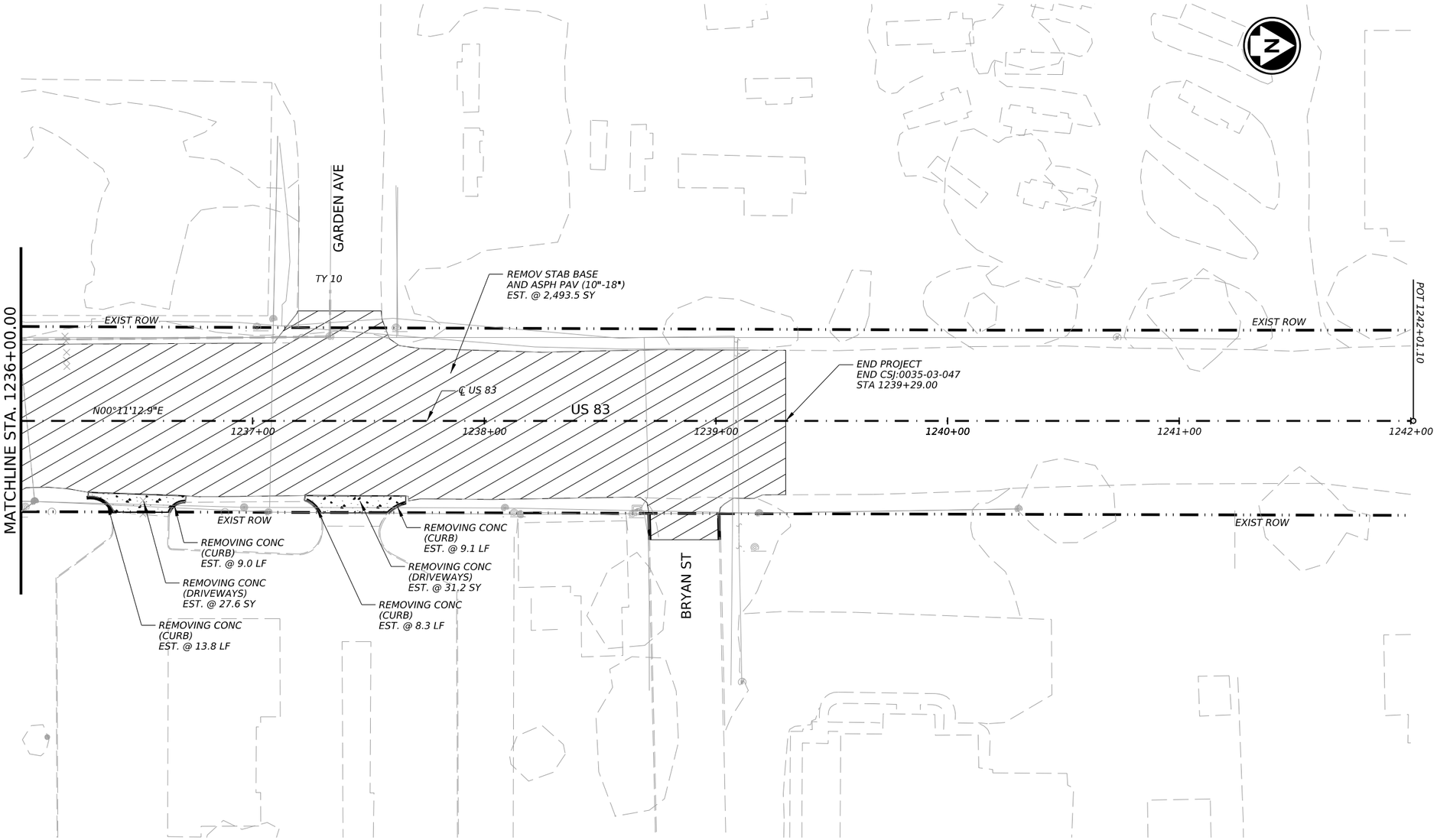
CK
DW
CK
DW

LEGEND

- REMOV STAB BASE AND ASPH PAV (10"-18")
- REMOV CONC SIDEWALK
- REMOV CONC DRIVEWAY
- REMOV CONC CURB
- REMOV CONC MISC

NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
2. FOR DRIVEWAY DETAILS REFER TO DRIVEWAY SUMMARY SHEET.



HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER

5/22/2024

P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

IDCUS
PLANNERS | ENGINEERS | MANAGERS

US 83

US 83
REMOVAL PLAN LAYOUT
STA 1236+00.00 TO END

SHEET 6 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		73

DATE: 5/22/2024 5:29:33 PM
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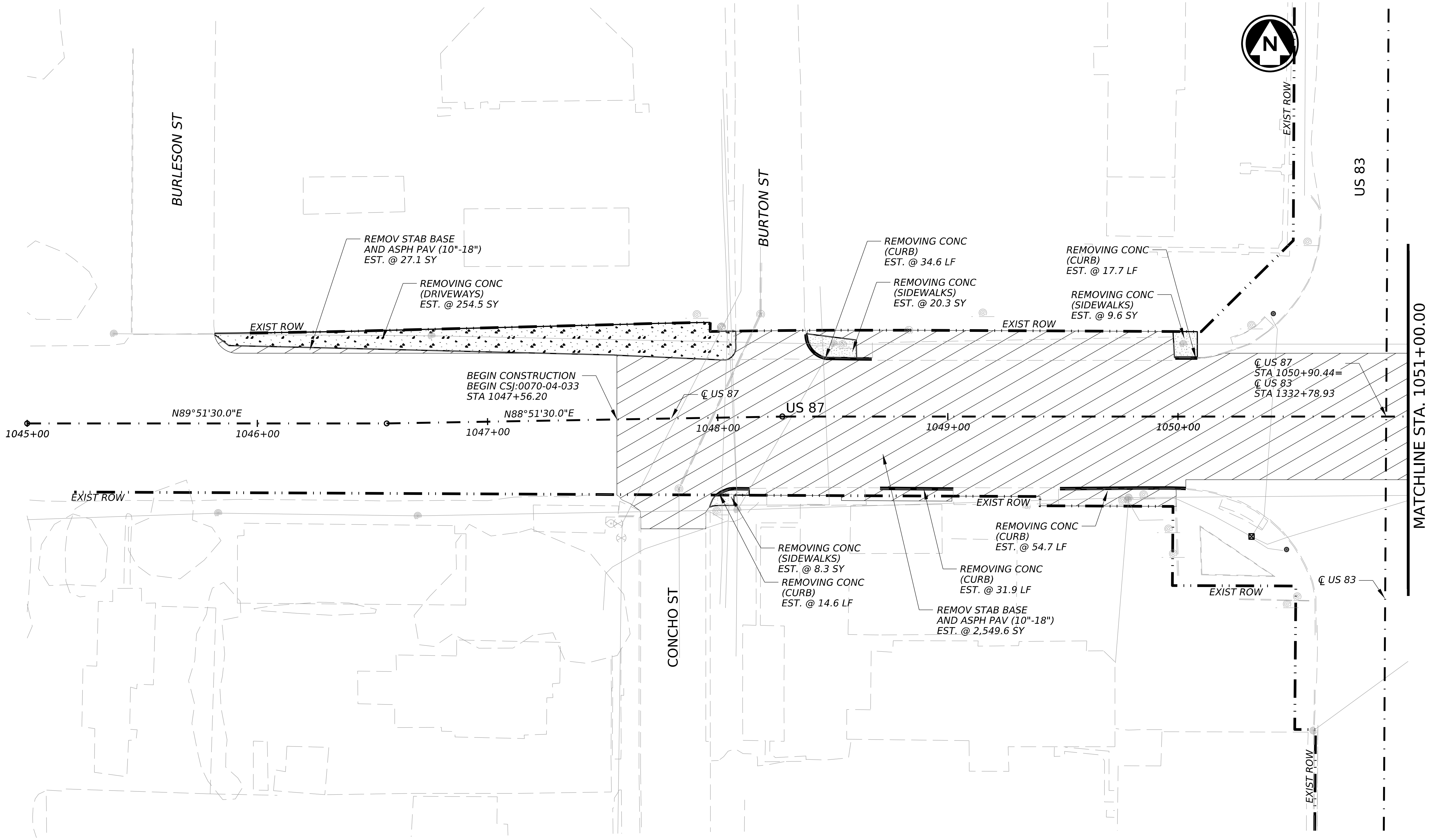
LEGEND

- REMOV STAB BASE AND ASPH PAV (10"-18")
- REMOV CONC SIDEWALK
- REMOV CONC DRIVEWAY
- REMOV CONC CURB
- REMOV CONC MISC



NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
2. FOR DRIVEWAY DETAILS REFER TO DRIVEWAY SUMMARY SHEET.

HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER

5/22/2024

P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS PLANNERS | ENGINEERS | MANAGERS

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

US 87
REMOVAL PLAN LAYOUT
BEGIN TO STA 1051+00.00

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST		COUNTY	SHEET NO.
SJT		CONCHO	74

DATE: 5/22/2024 5:30:11 PM
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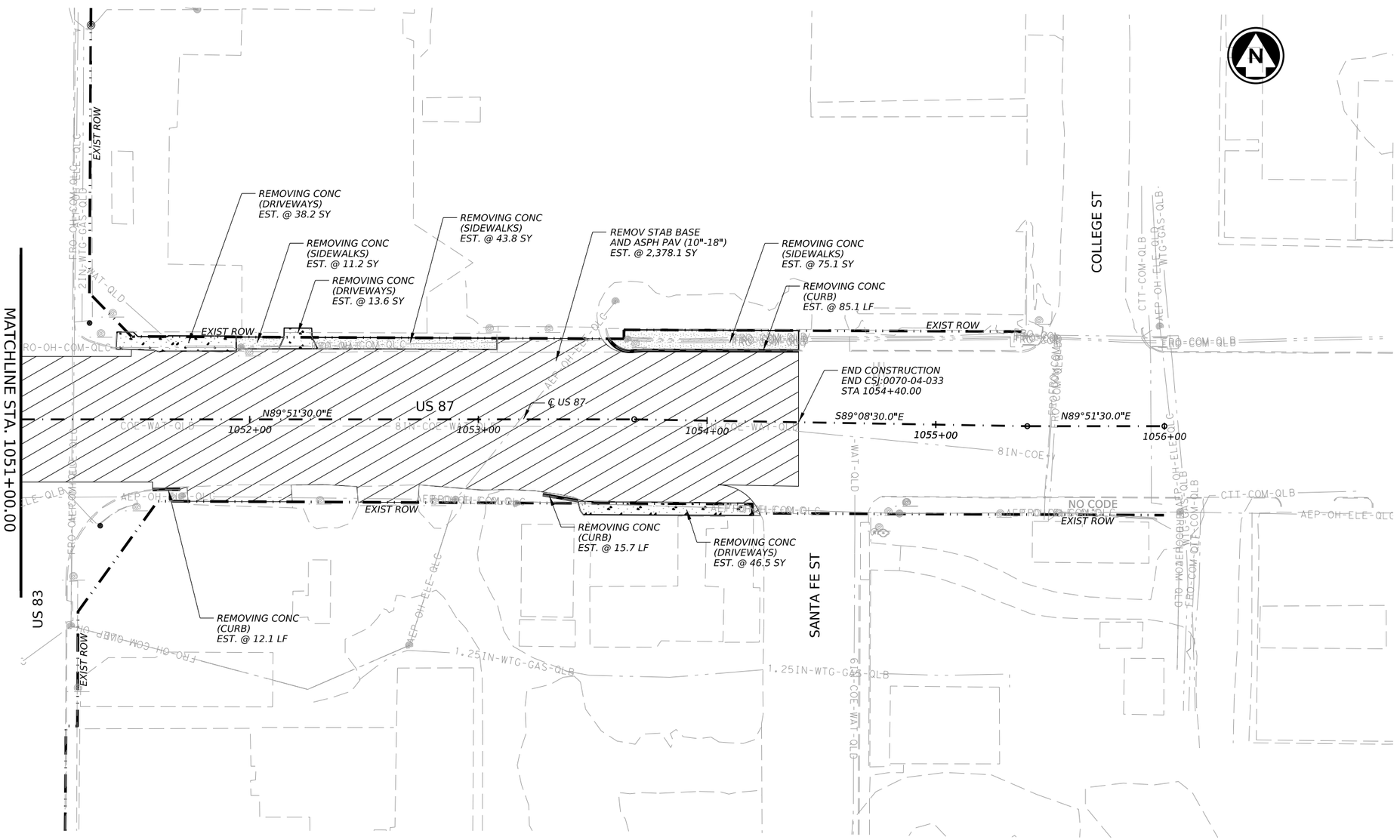

LEGEND

- *REMOV STAB BASE AND ASPH PAV (10"-18")*
- *REMOV CONC SIDEWALK*
- *REMOV CONC DRIVEWAY*
- *REMOV CONC CURB*
- *REMOV CONC MISC*

NOTES:

1. *CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION.*
2. *FOR DRIVEWAY DETAILS REFER TO DRIVEWAY SUMMARY SHEET.*

HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER

5/22/2024

P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS
PLANNERS | ENGINEERS | MANAGERS
IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

US 87
REMOVAL PLAN LAYOUT
STA 1051+00.00 TO END

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		75

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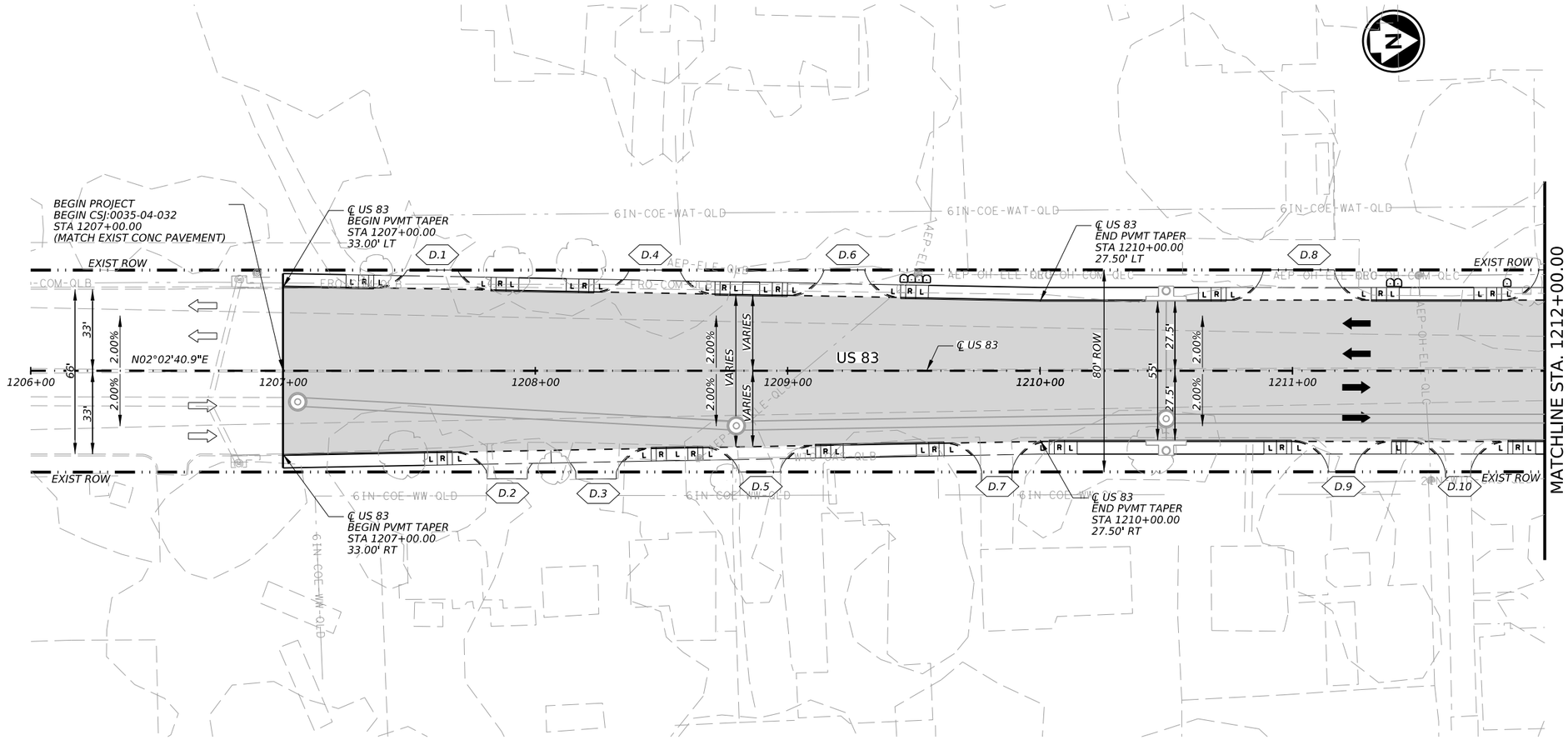

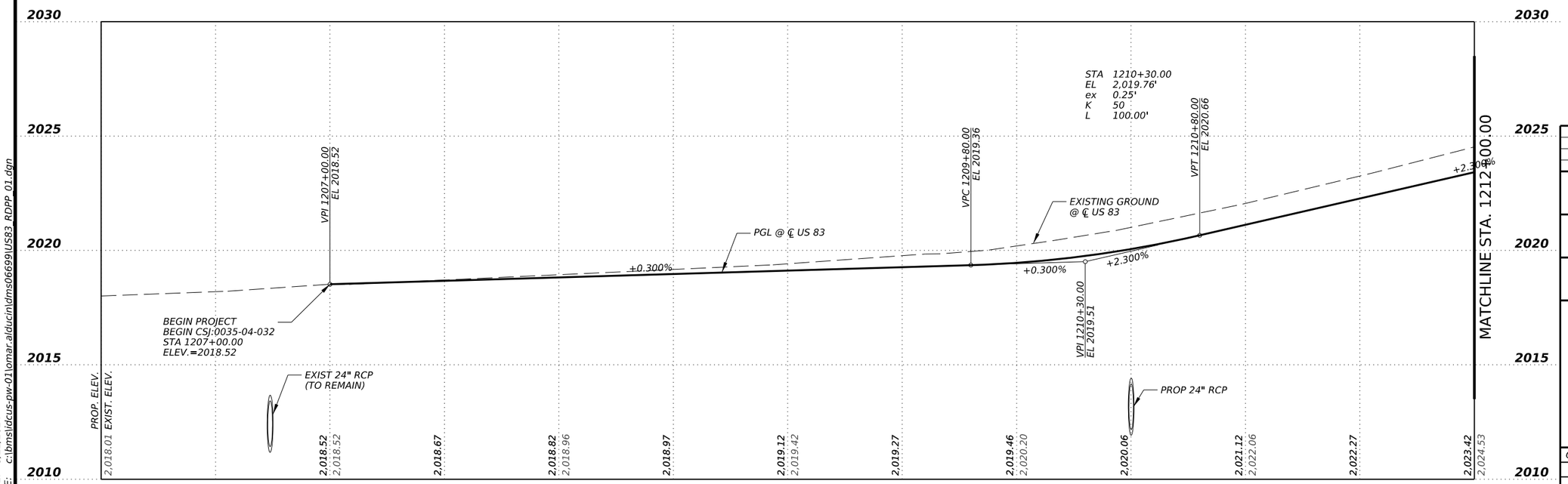

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER
5/22/2024
P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3591
TBPELS FIRM # F-6825

IDCUS PLANNERS | ENGINEERS | MANAGERS

US 83

US 83
ROADWAY PLAN AND PROFILE
BEGIN TO STA 1212+00.00

SHEET 1 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		76

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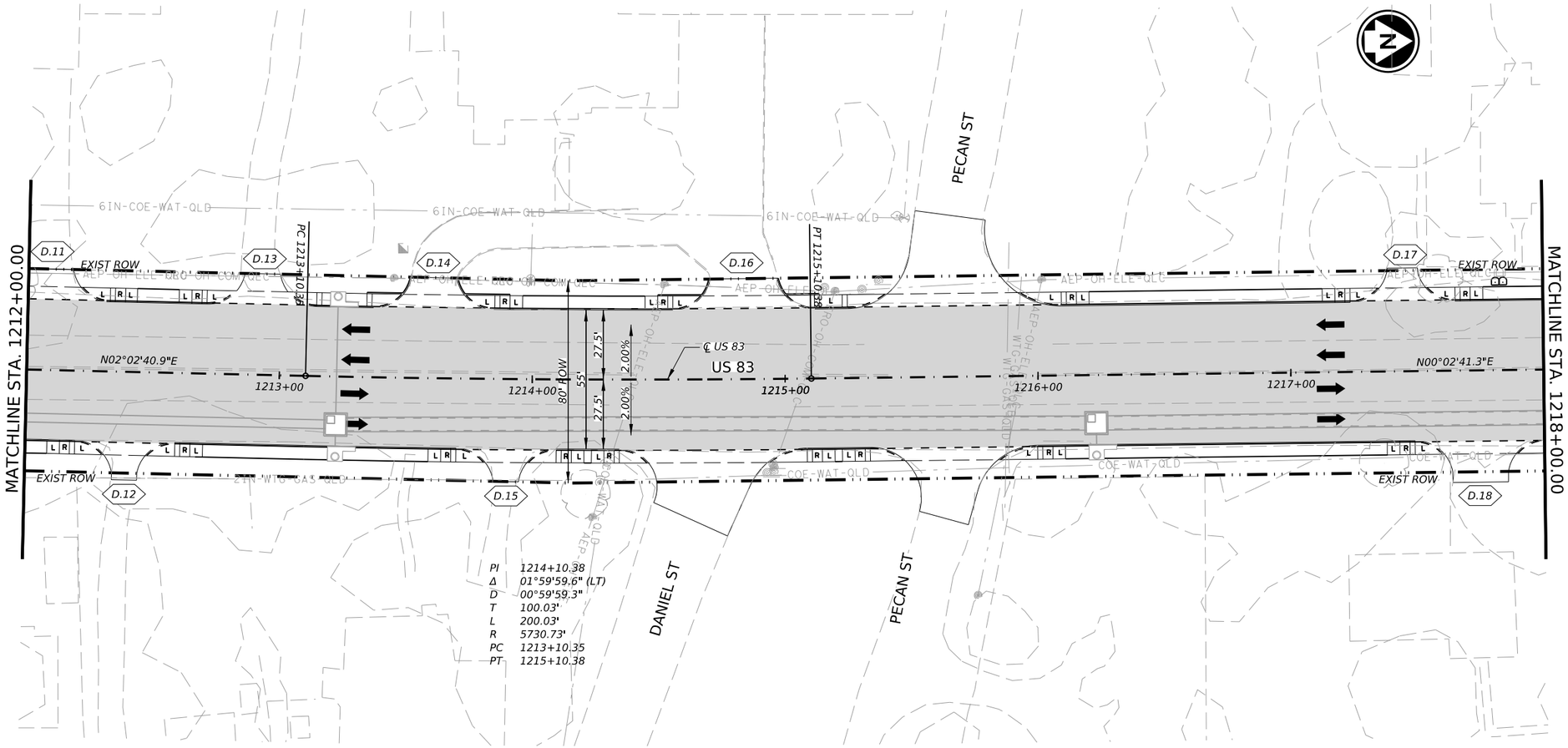

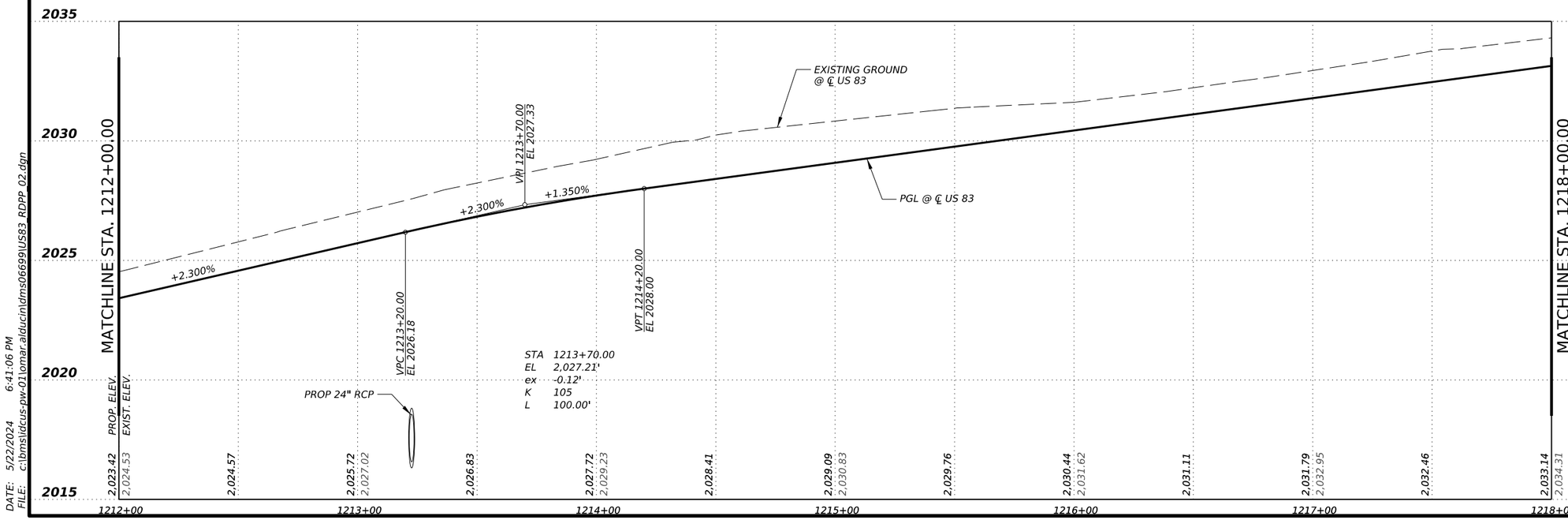

NOTES:

1. ALL MEASUREMENTS TO FACE OF CURB UNLESS NOTED OTHERWISE.
2. REFER TO STORM SEWER PLAN & PROFILE SIGNING AND PAVEMENT MARKING, INTERSECTIONS LAYOUTS, HORIZONTAL ALIGNMENT FOR DETAIL.
3. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
4. FOR DRIVEWAY AND CROSS STREET DETAILS REFER TO DRIVEWAY SUMMARY SHEET AND CROSS SECTIONS.

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US 83

US 83
ROADWAY PLAN AND PROFILE
STA 1212+00.00 TO STA 1218+00.00

SHEET 2 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		77

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LEGEND

- PROP 12" CONC PAVEMENT
- PLANE ASPHAL 0"-2"
- D.XX DRIVEWAY NUMBER
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE

NOTES:

1. ALL MEASUREMENTS TO FACE OF CURB UNLESS NOTED OTHERWISE.
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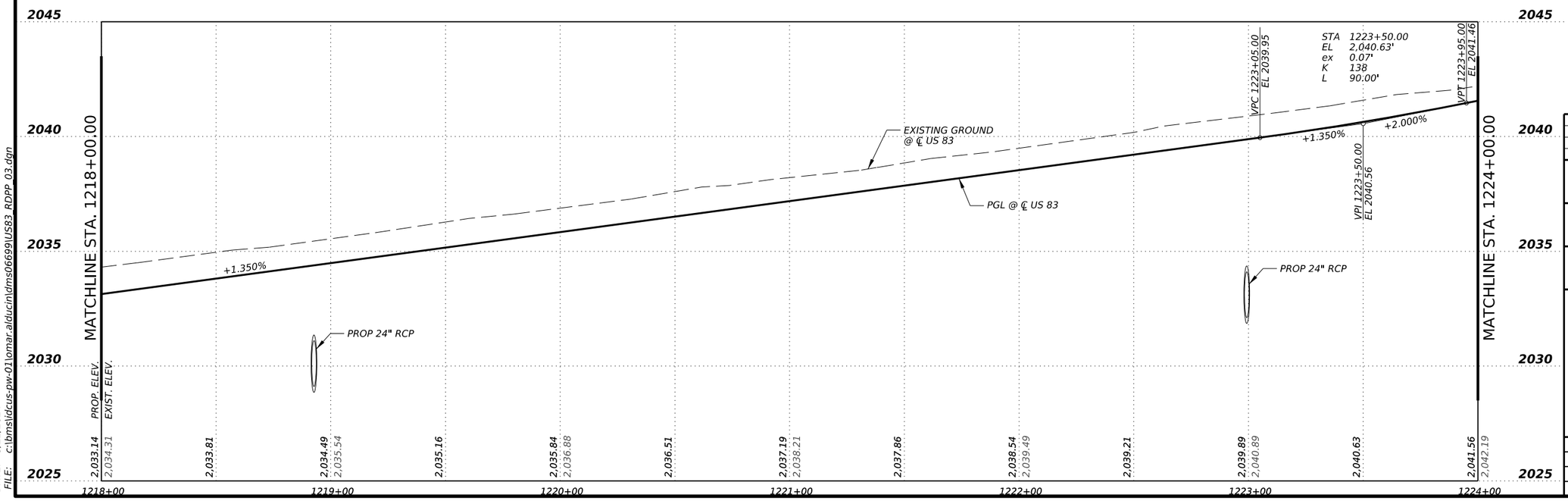
HORZ 0' 25' 50'
VERT 0' 5' 10'
SCALE IN FEET



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US 83

US 83
ROADWAY PLAN AND PROFILE
STA 1218+00.00 TO STA 1224+00.00

SHEET 3 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		78

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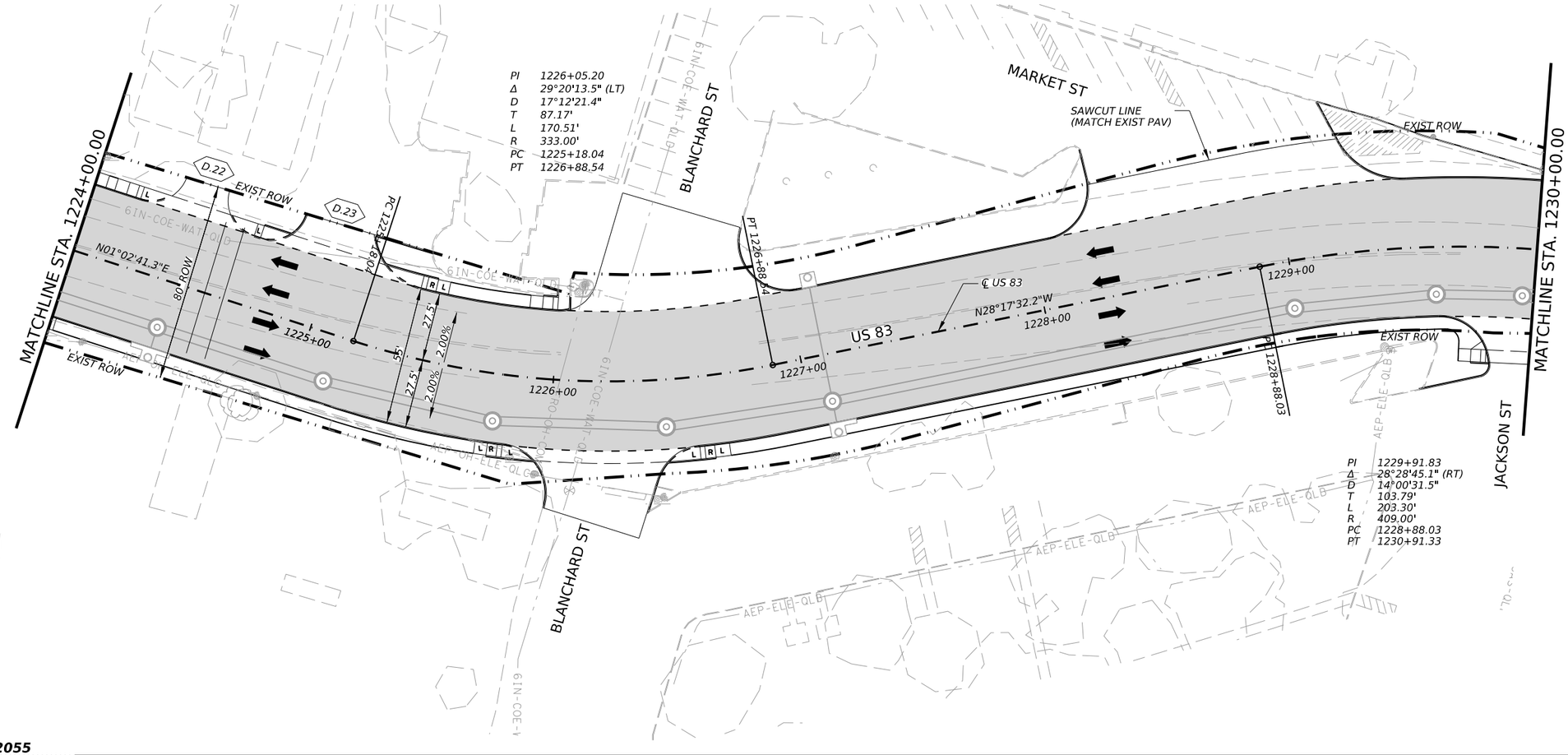

LEGEND

- PROP 12" CONC PAVEMENT
- PLANE ASPHAL 0"-2"
- D.XX DRIVEWAY NUMBER
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE

NOTES:

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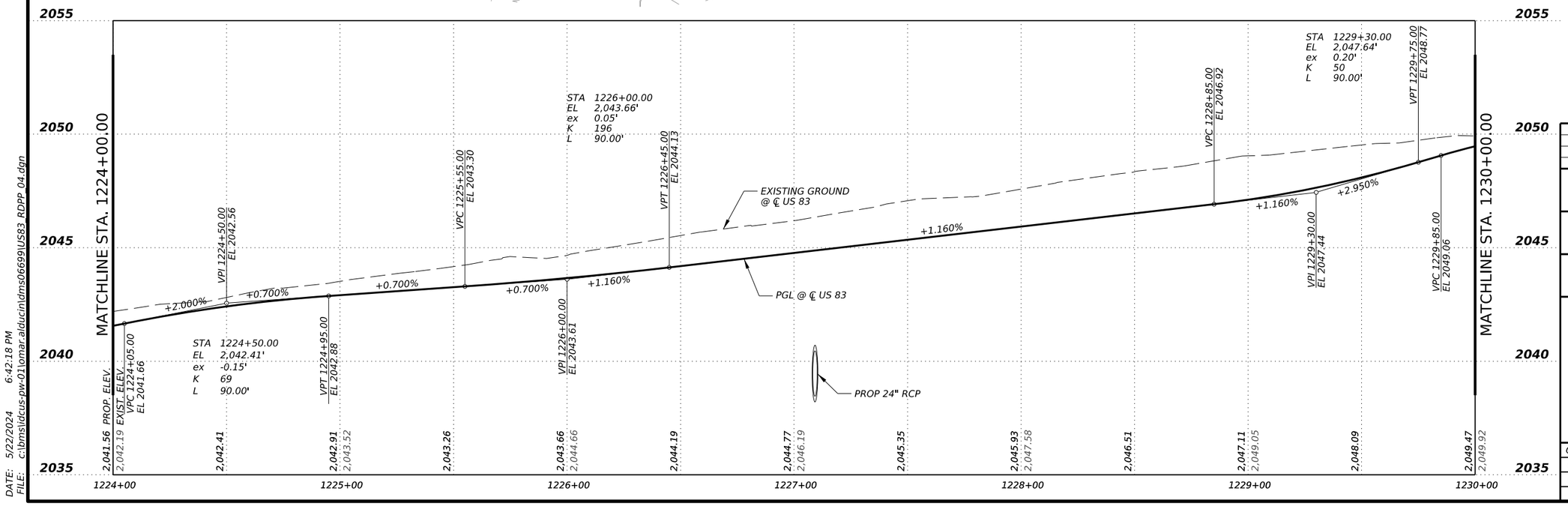
HORZ 0' 25' 50'
VERT 0' 5' 10'
SCALE IN FEET



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US 83

US 83
ROADWAY PLAN AND PROFILE
STA 1224+00.00 TO STA 1230+00.00

SHEET 4 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		79

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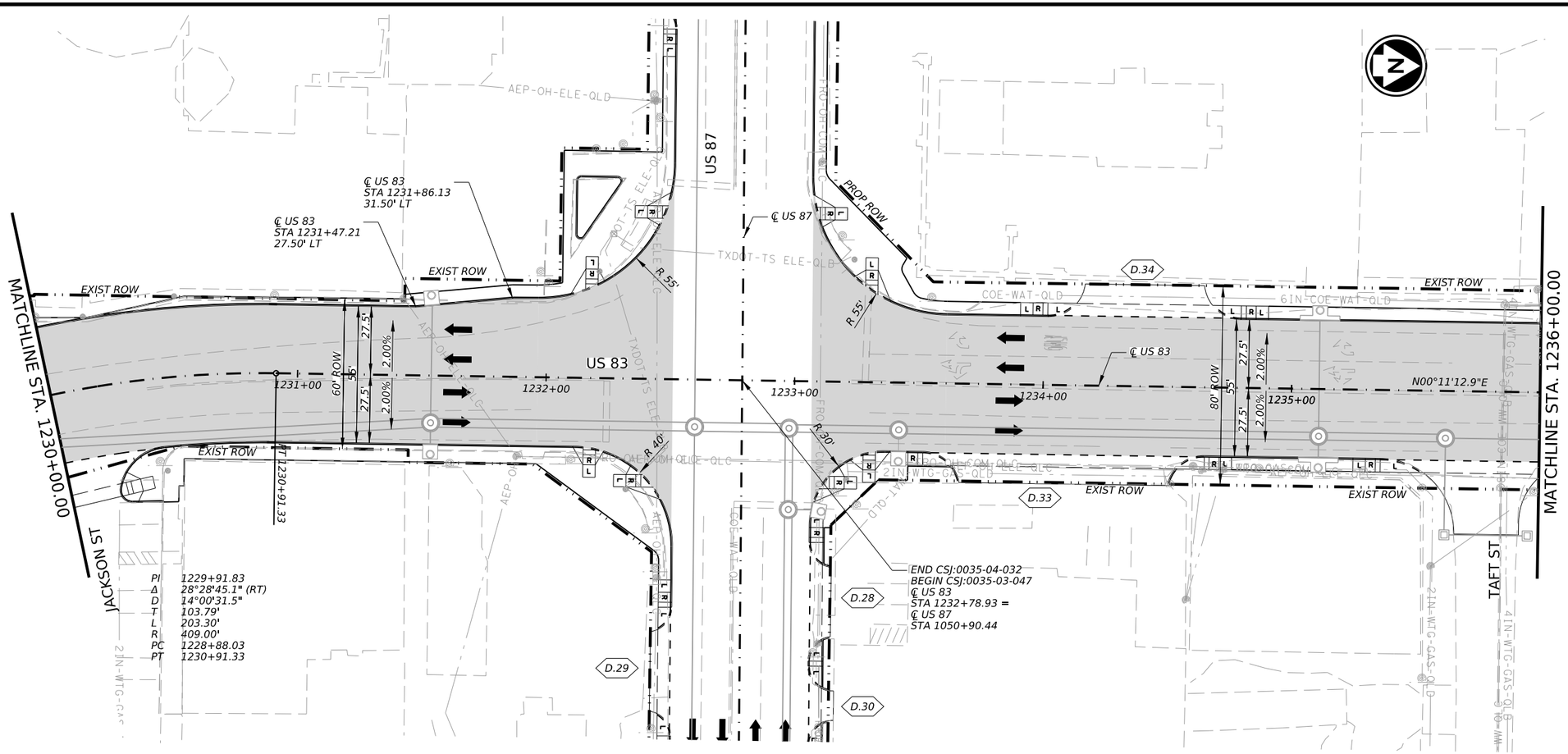

LEGEND

- PROP 12" CONC PAVEMENT
- PLANE ASPHAL 0"-2"
- D.XX DRIVEWAY NUMBER
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE

NOTES:

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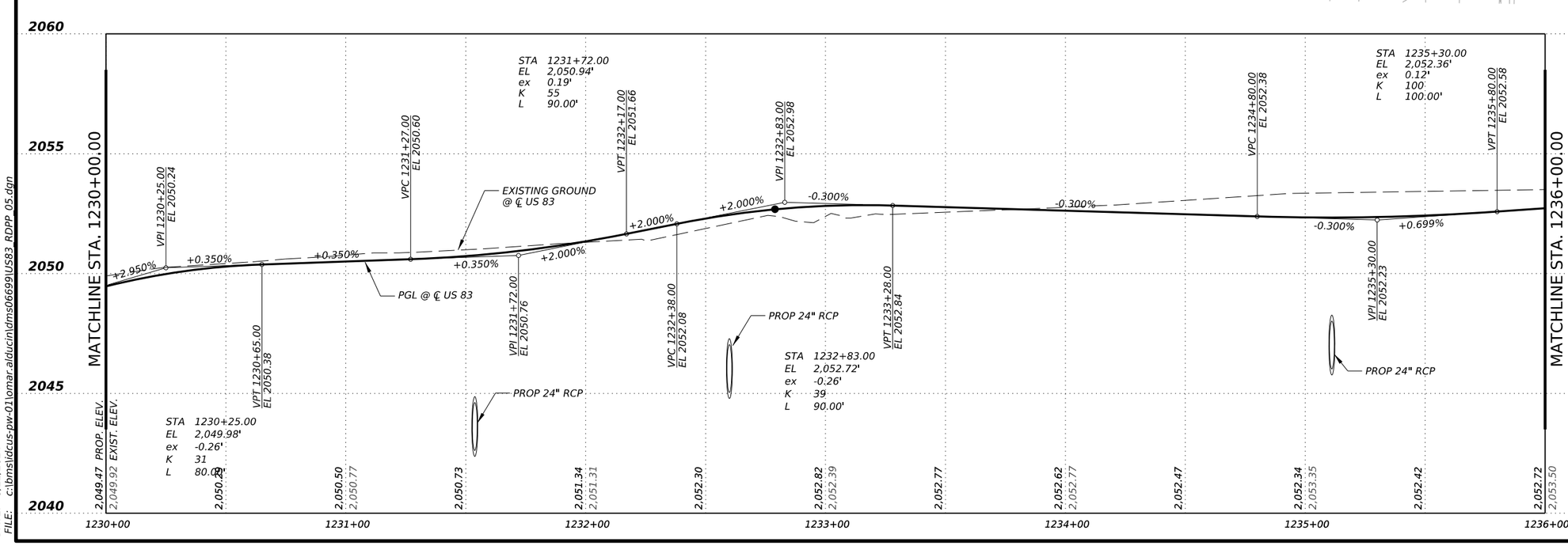
HORZ 0' 25' 50'
VERT 0' 5' 10'
SCALE IN FEET



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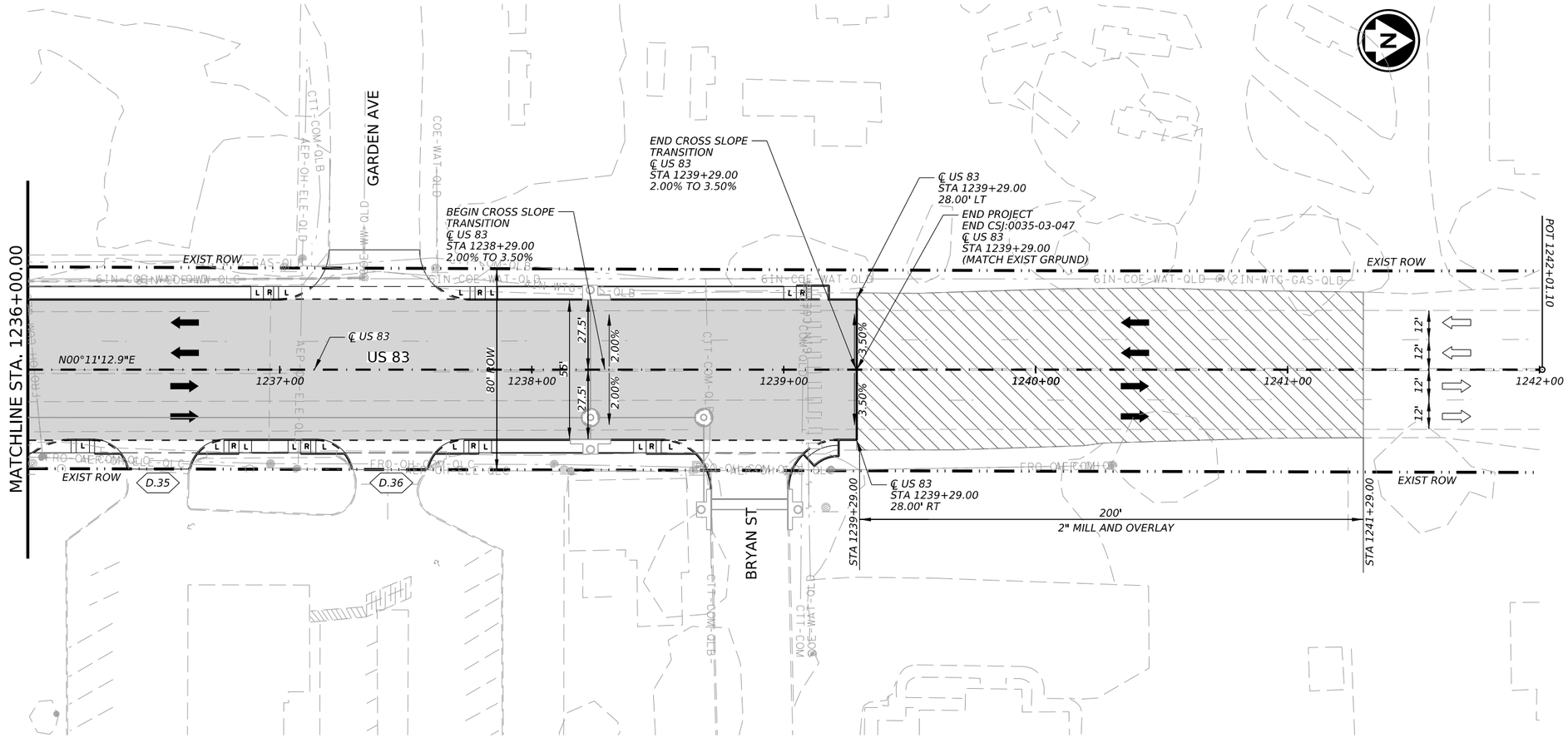
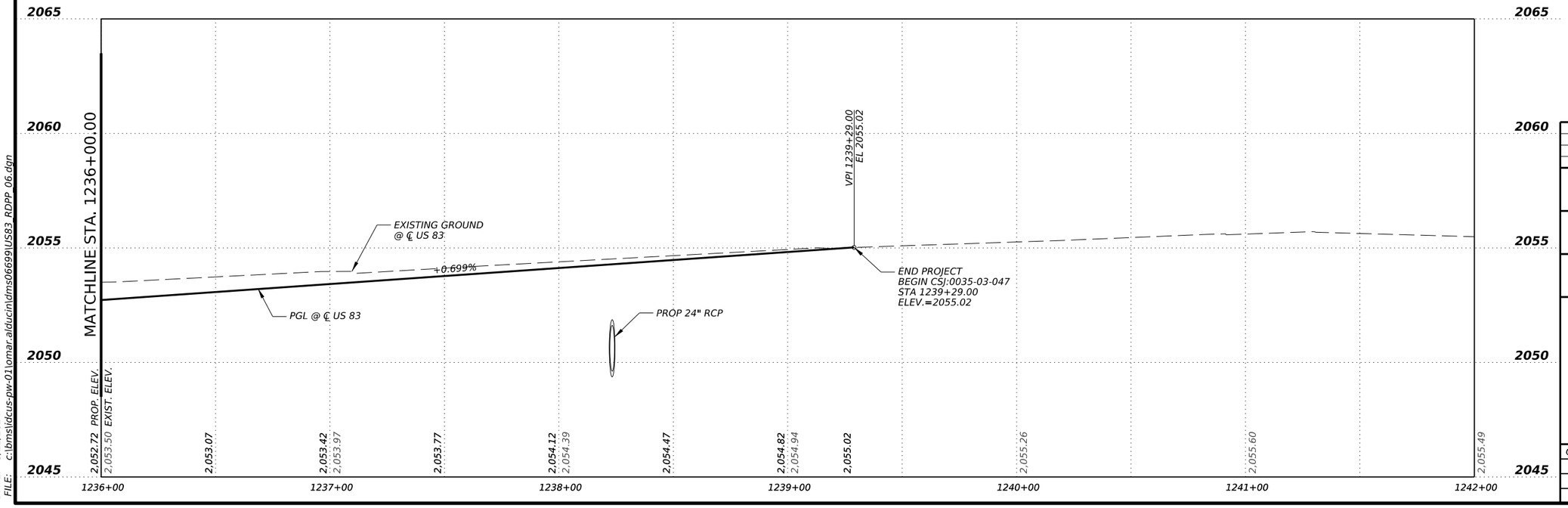
US 83

US 83
ROADWAY PLAN AND PROFILE
STA 1230+00.00 TO STA 1236+00.00

SHEET 5 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		80





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US 83

US 83
ROADWAY PLAN AND PROFILE
STA 1236+00.00 TO END

SHEET 6 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		81

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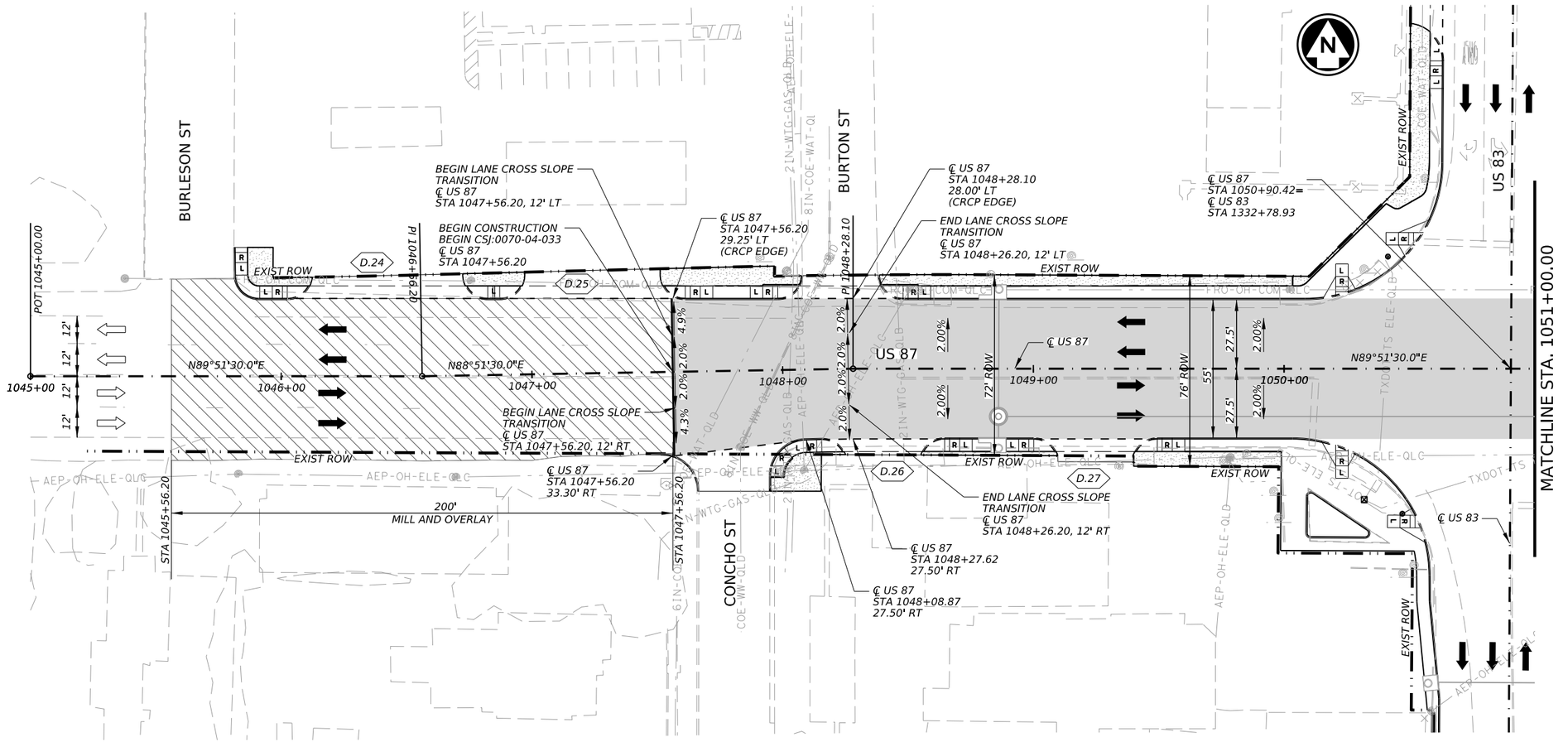

LEGEND

- PROP 12" CONC PAVEMENT
- PLANE ASPHAL 0"-2"
- D.XX DRIVEWAY NUMBER
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE

NOTES:

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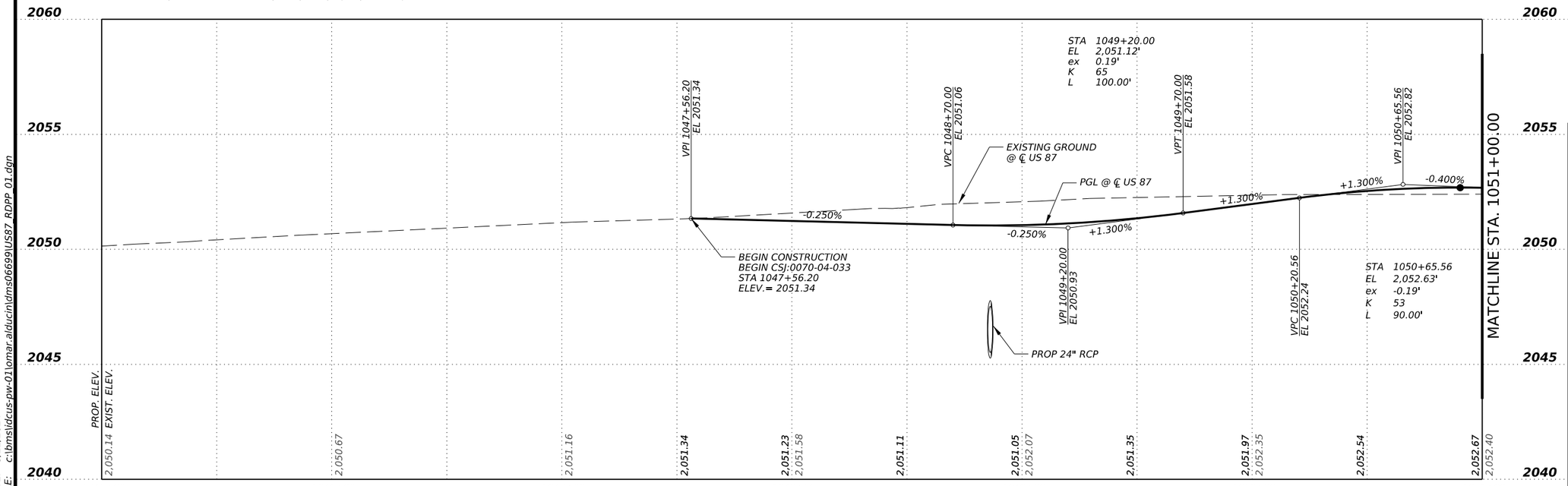
4. FOR DRIVEWAY AND CROSS STREET DETAILS REFER TO DRIVEWAY SUMMARY SHEET AND CROSS SECTIONS.

HORZ 0' 25' 50'
VERT 0' 5' 10'
SCALE IN FEET



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STATE OF TEXAS
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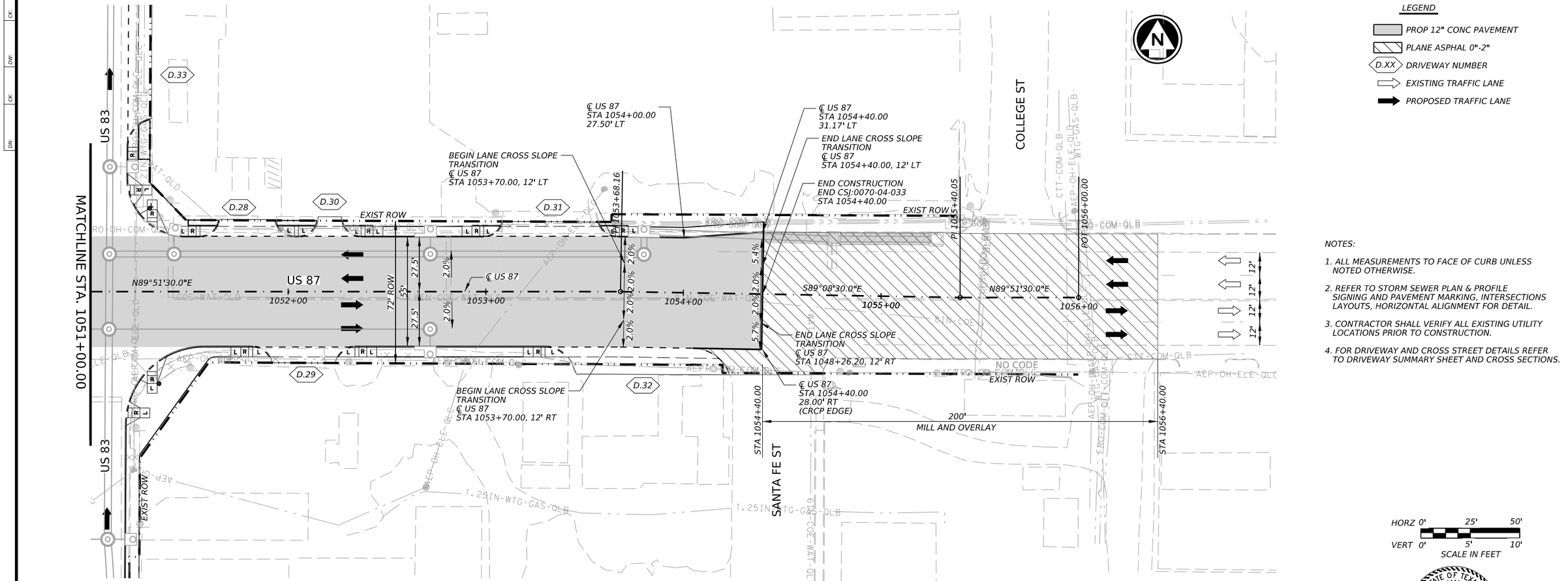
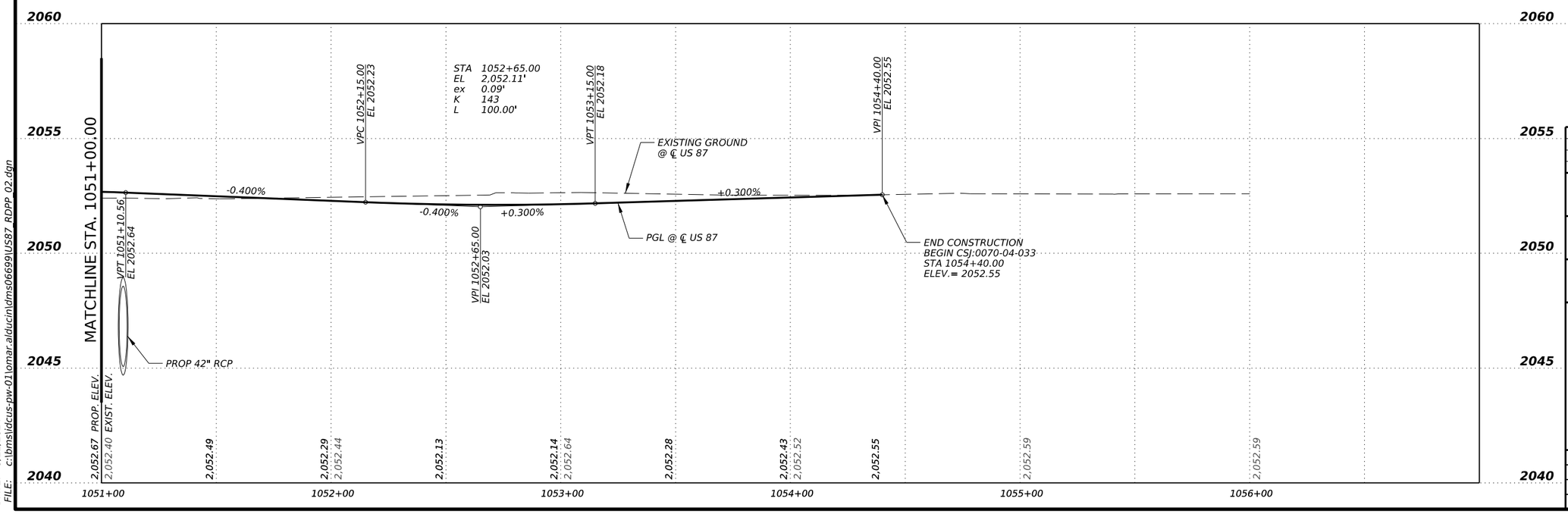
US 83

US 87
ROADWAY PLAN AND PROFILE
BEGIN TO STA 1051+00.00

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		82





LEGEND

- PROP 12" CONC PAVEMENT
- PLANE ASPHAL 0"-2"
- D.XX DRIVEWAY NUMBER
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE

NOTES:

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HORZ 0' 25' 50'
VERT 0' 5' 10'
SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
131479
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5/22/2024
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NO.	DATE	REVISION

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US 83

US 87
ROADWAY PLAN AND PROFILE
STA 1051+00.00 TO END

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		83

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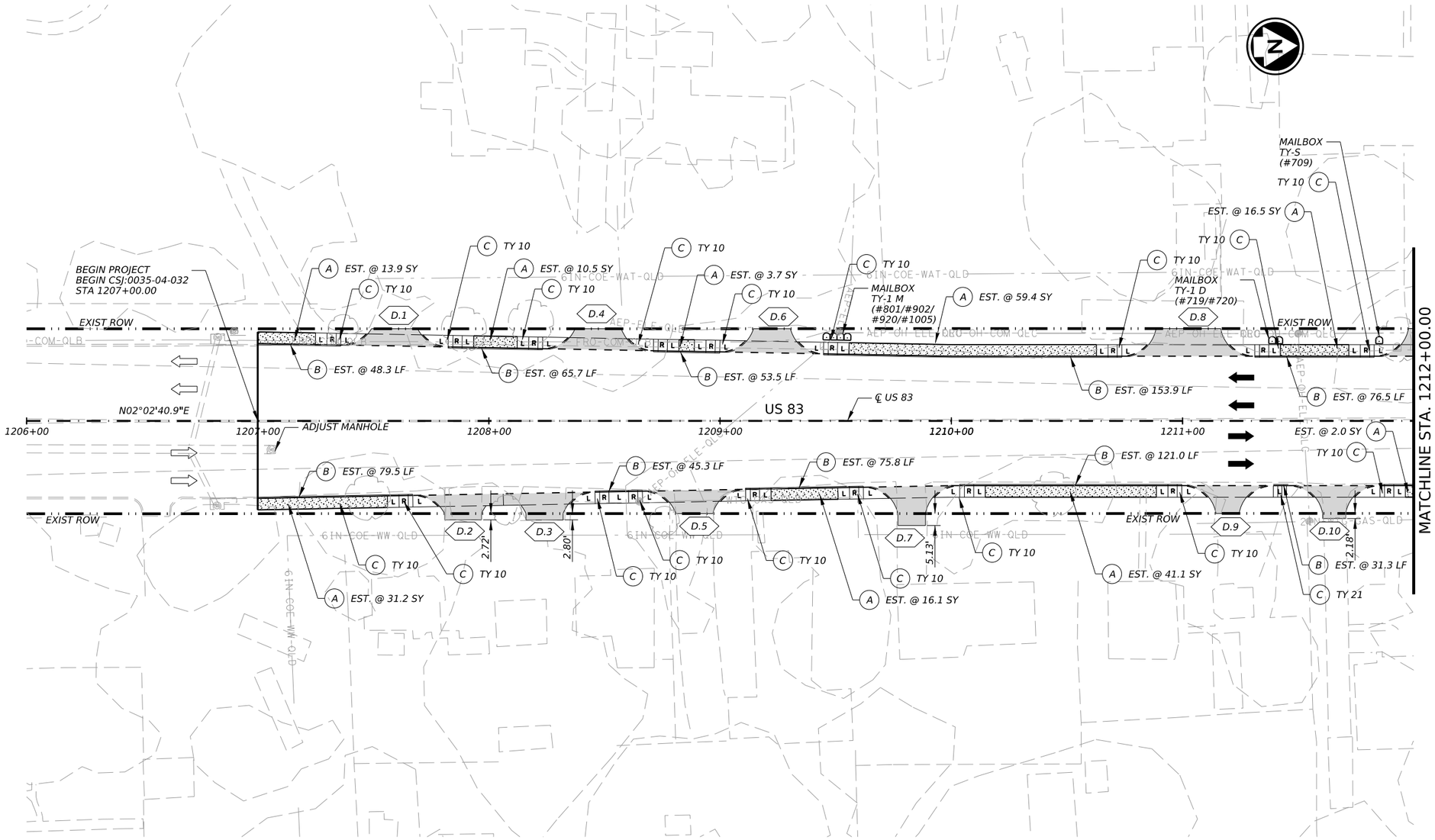

LEGEND

- A — 5" CONC SIDEWALK
- B — CONC CURB (MONO)(TY II)
- C — CURB RAMP
- D — 5" CONC RIPRAP
- D.XX — DRIVEWAY NUMBER
- MAILBOX
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE

NOTES:

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HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
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US 83

US 83
ROADWAY PLAN LAYOUT
BEGIN TO STA 1212+00.00

SHEET 1 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		84

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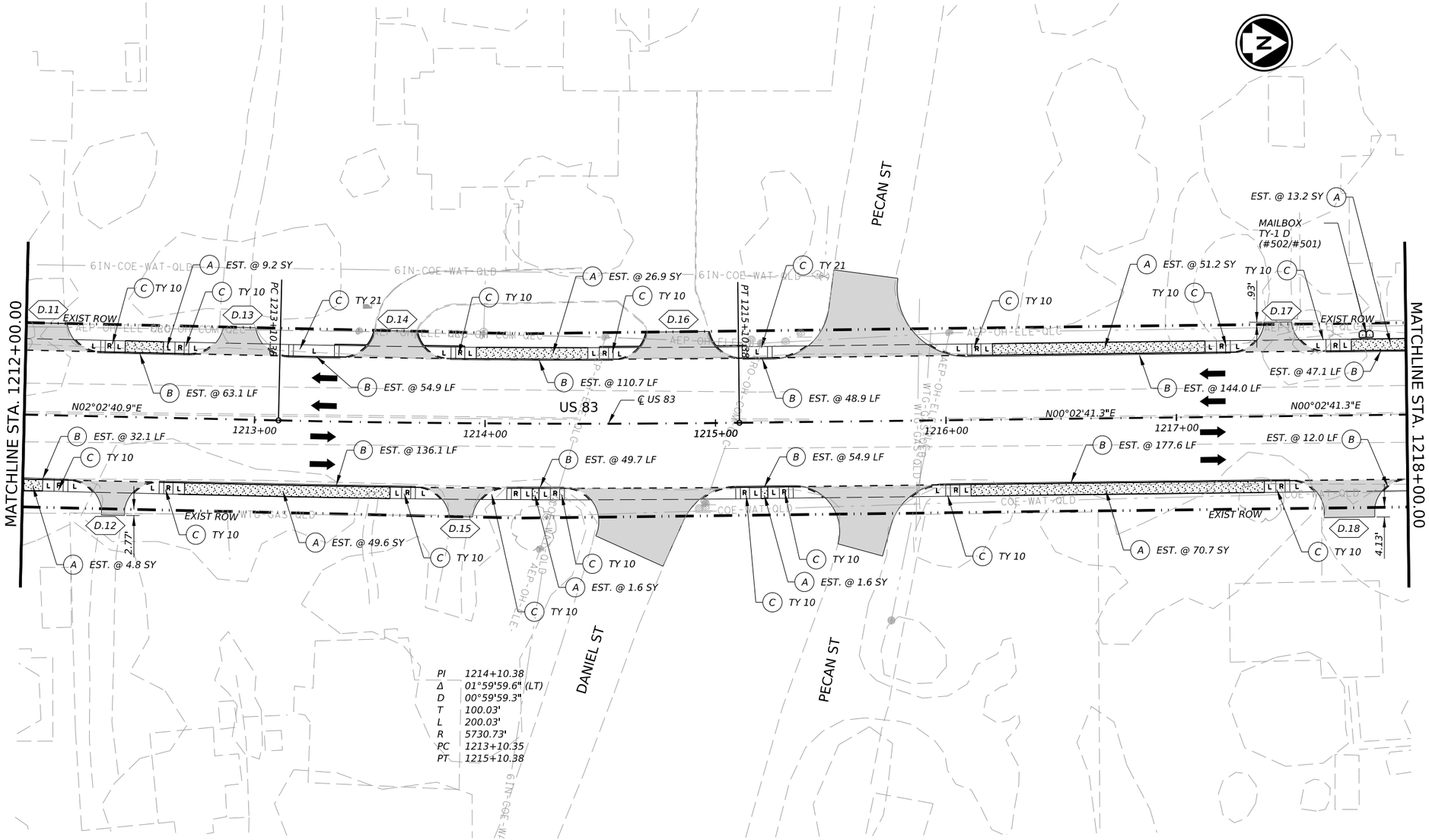

PI	1214+10.38
Δ	01°59'59.6" (LT)
D	00°59'59.3"
T	100.03'
L	200.03'
R	5730.73'
PC	1213+10.35
PT	1215+10.38

LEGEND

- A — 5" CONC SIDEWALK
- B — CONC CURB (MONO)(TY II)
- C — CURB RAMP
- D — 5" CONC RIPRAP
- D.XX — DRIVEWAY NUMBER
- MAILBOX
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE

NOTES:

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HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
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TBPELS FIRM # F-6825

US 83

US 83
ROADWAY PLAN LAYOUT
STA 1212+00.00 TO STA 1218+00.00

SHEET 2 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		85

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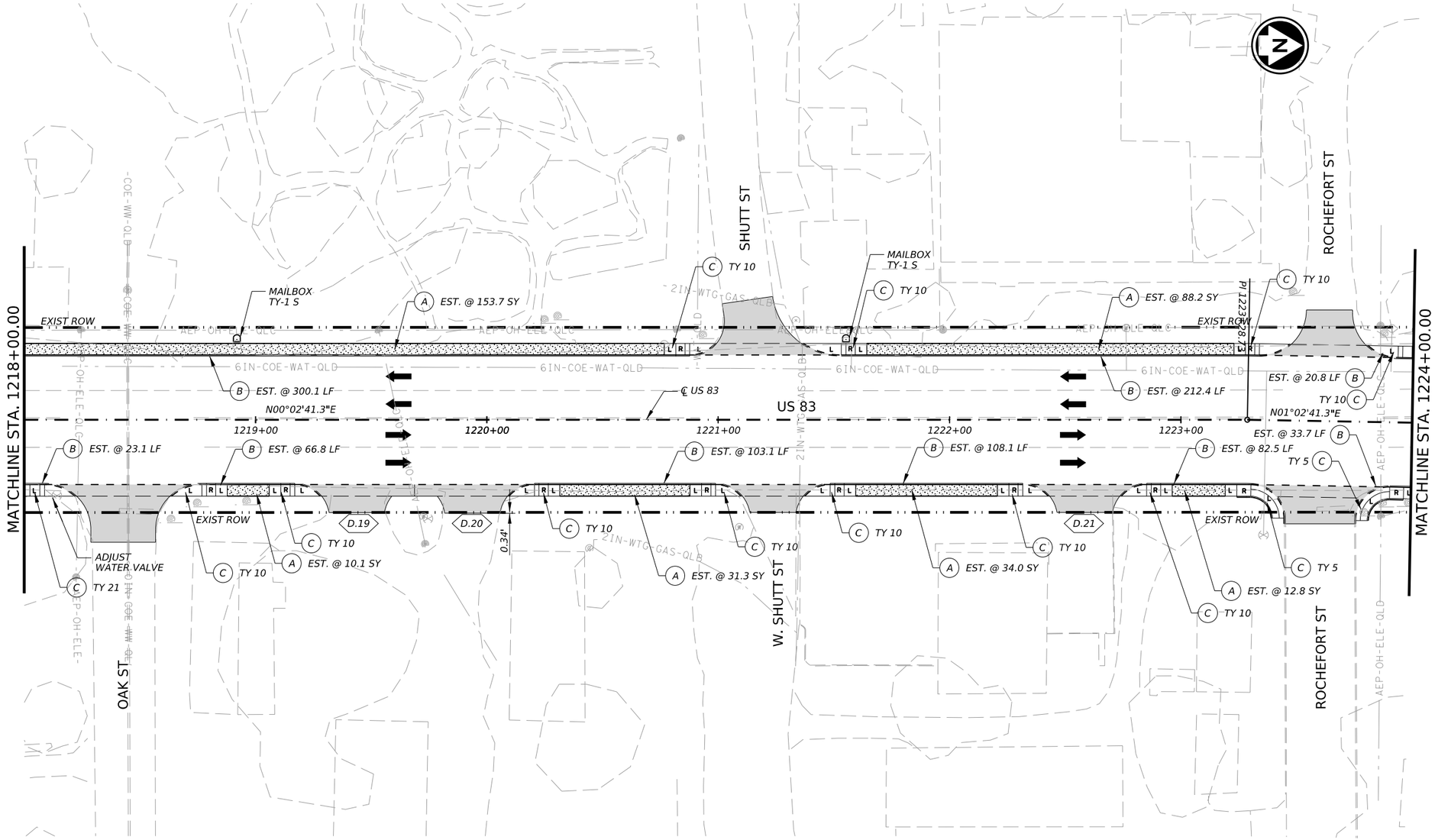

LEGEND

- A — 5" CONC SIDEWALK
- B — CONC CURB (MONO)(TY II)
- C — CURB RAMP
- D — 5" CONC RIPRAP
- D.XX — DRIVEWAY NUMBER
- MAILBOX
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE

NOTES:

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HORZ 0' 25' 50'

SCALE IN FEET

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TBPELS FIRM # F-6825

US 83

US 83
ROADWAY PLAN LAYOUT
STA 1218+00.00 TO STA 1224+00.00

SHEET 3 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		86

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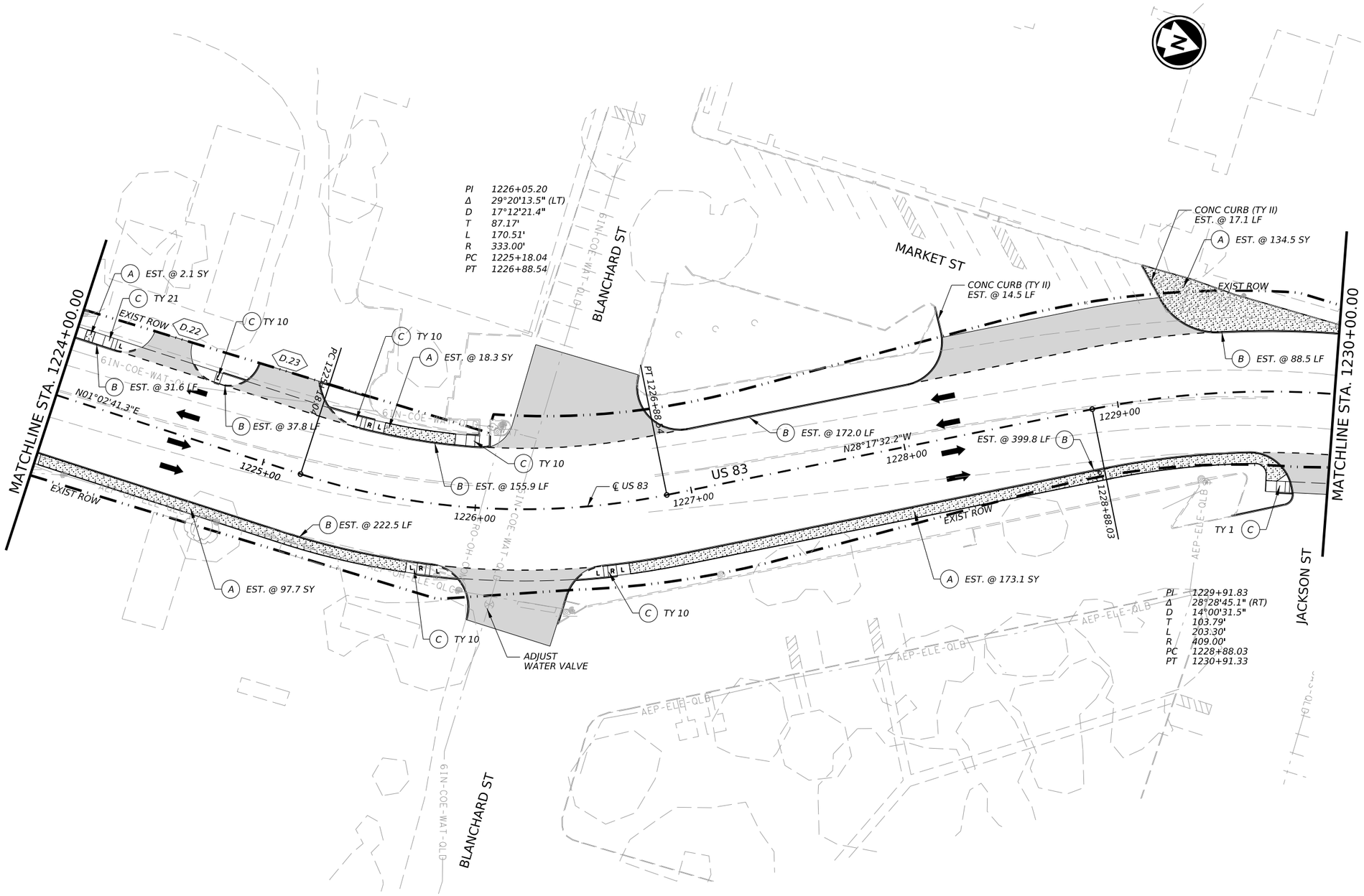

LEGEND

- A — 5" CONC SIDEWALK
- B — CONC CURB (MONO)(TY II)
- C — CURB RAMP
- D — 5" CONC RIPRAP
- D.XX — DRIVEWAY NUMBER
- MAILBOX
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE

NOTES:

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HORZ 0' 25' 50'

SCALE IN FEET

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TBPELS FIRM # F-6825

IDCUS PLANNERS|ENGINEERS|MANAGERS

US 83

US 83
ROADWAY PLAN LAYOUT
STA 1224+00.00 TO STA 1230+00.00

SHEET 4 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		87

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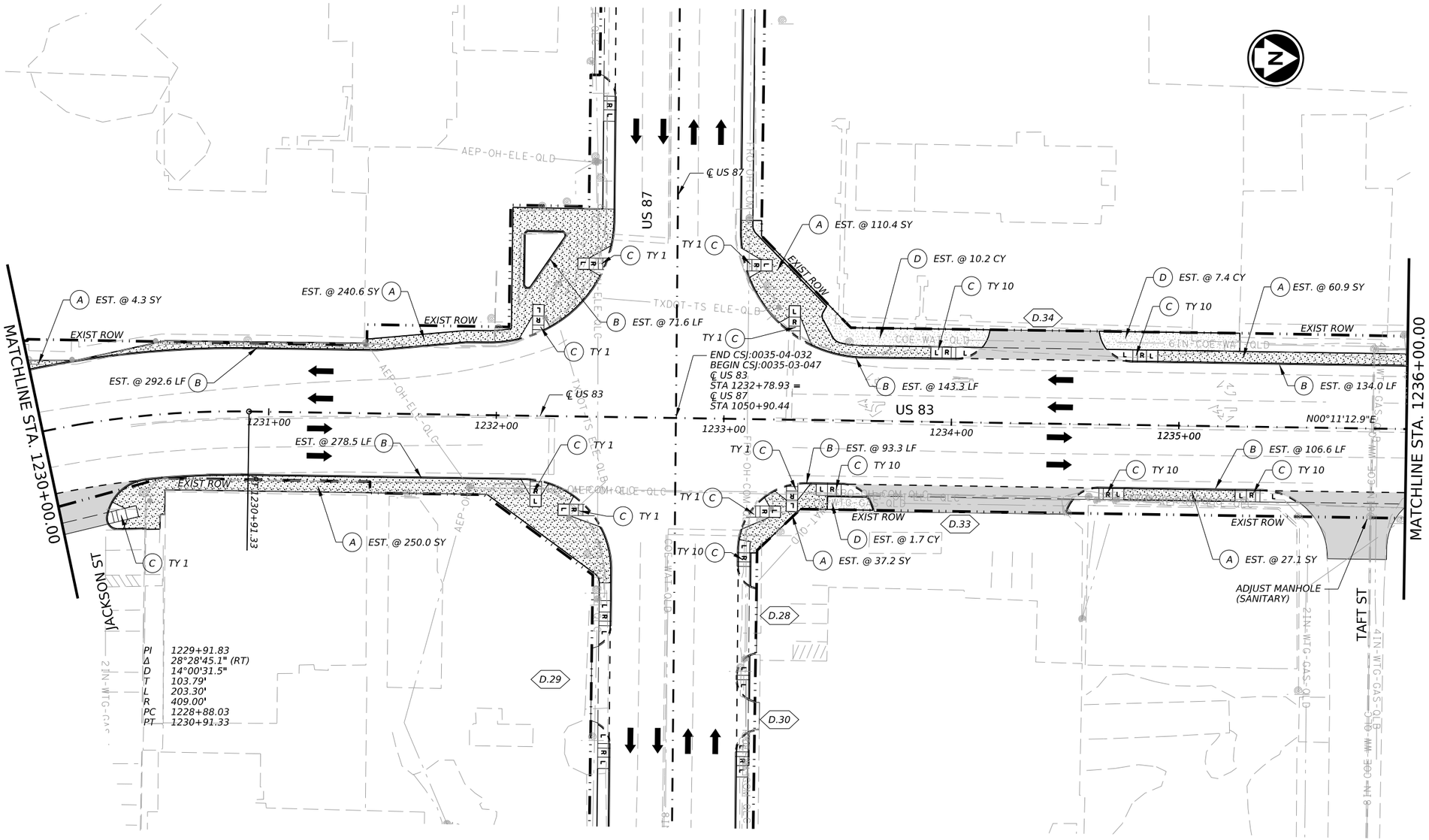

LEGEND

- (A) 5" CONC SIDEWALK
- (B) CONC CURB (MONO)(TY II)
- (C) CURB RAMP
- (D) 5" CONC RIPRAP
- D.XX DRIVEWAY NUMBER
- MAILBOX
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE

NOTES:

1. ALL MEASUREMENTS TO FACE OF CURB UNLESS NOTED OTHERWISE.
2. REFER TO STORM SEWER PLAN & PROFILE SIGNING AND PAVEMENT MARKING, INTERSECTIONS LAYOUTS, HORIZONTAL ALIGNMENT FOR DETAIL.
3. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
4. FOR DRIVEWAY AND CROSS STREET DETAILS REFER TO DRIVEWAY SUMMARY SHEET AND CROSS SECTIONS.

HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER
5/23/2024
P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

IDCUS
PLANNERS | ENGINEERS | MANAGERS

US 83

US 83
ROADWAY PLAN LAYOUT
STA 1230+00.00 TO STA 1236+00.00

SHEET 5 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		88

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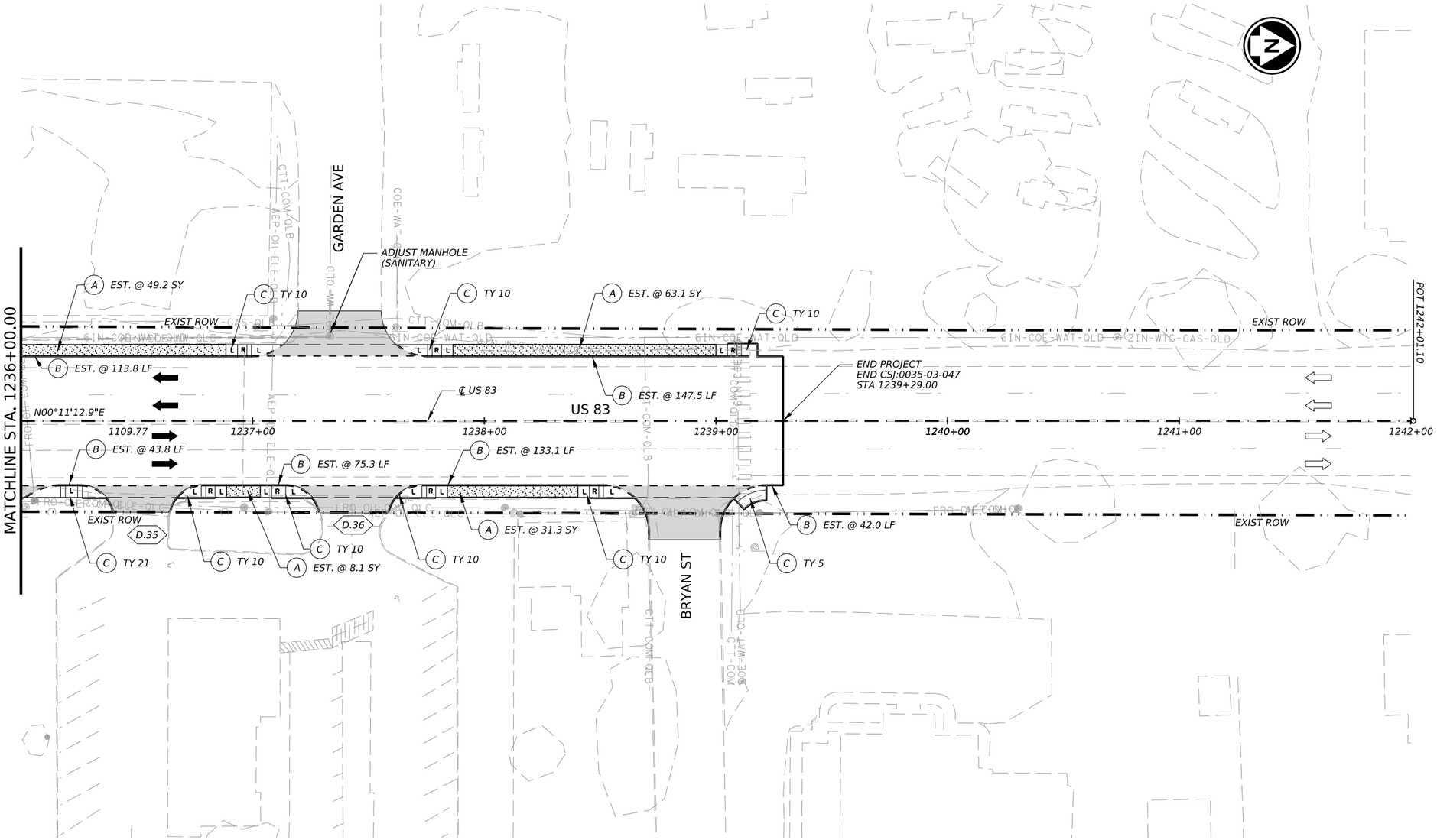

LEGEND

- A — 5" CONC SIDEWALK
- B — CONC CURB (MONO)(TY II)
- C — CURB RAMP
- D — 5" CONC RIPRAP
- D.XX — DRIVEWAY NUMBER
- MAILBOX
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE

NOTES:

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SCALE IN FEET

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TBPELS FIRM # F-6825

IDCUS
PLANNERS | ENGINEERS | MANAGERS

US 83

US 83
ROADWAY PLAN LAYOUT
STA 1236+00.00 TO END

SHEET 6 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		89

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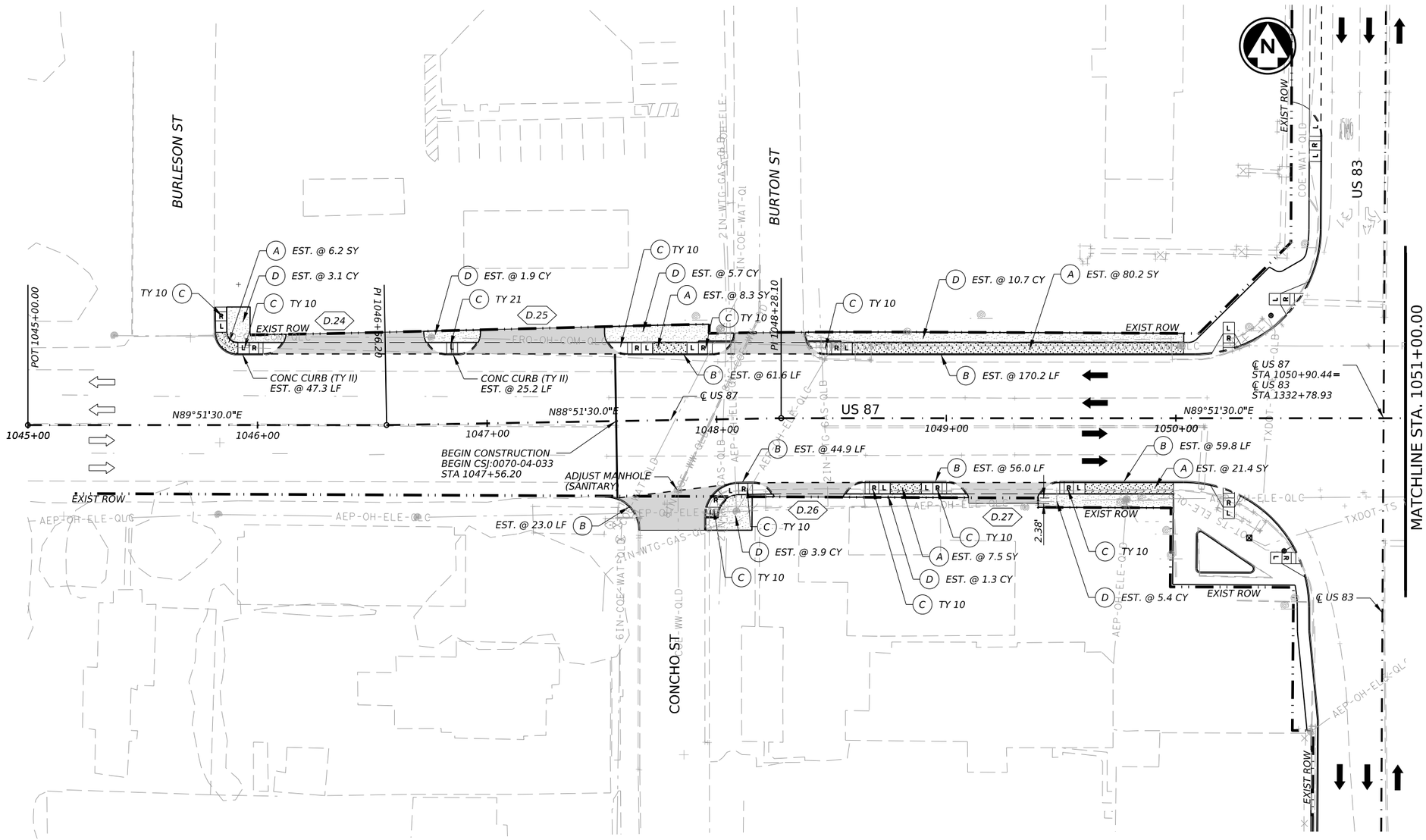
ADJUST MAN
(SANITARY)



LEGEND

- (A) 5" CONC SIDEWALK
- (B) CONC CURB (MONO)(TY II)
- (C) CURB RAMP
- (D) 5" CONC RIPRAP
- D.XX DRIVEWAY NUMBER
- MAILBOX
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE

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HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
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TBPELS FIRM # F-6825

IDCUS
PLANNERS|ENGINEERS|MANAGERS

US 83

US 87
ROADWAY PLAN LAYOUT
BEGIN TO STA 1051+00.00

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		90

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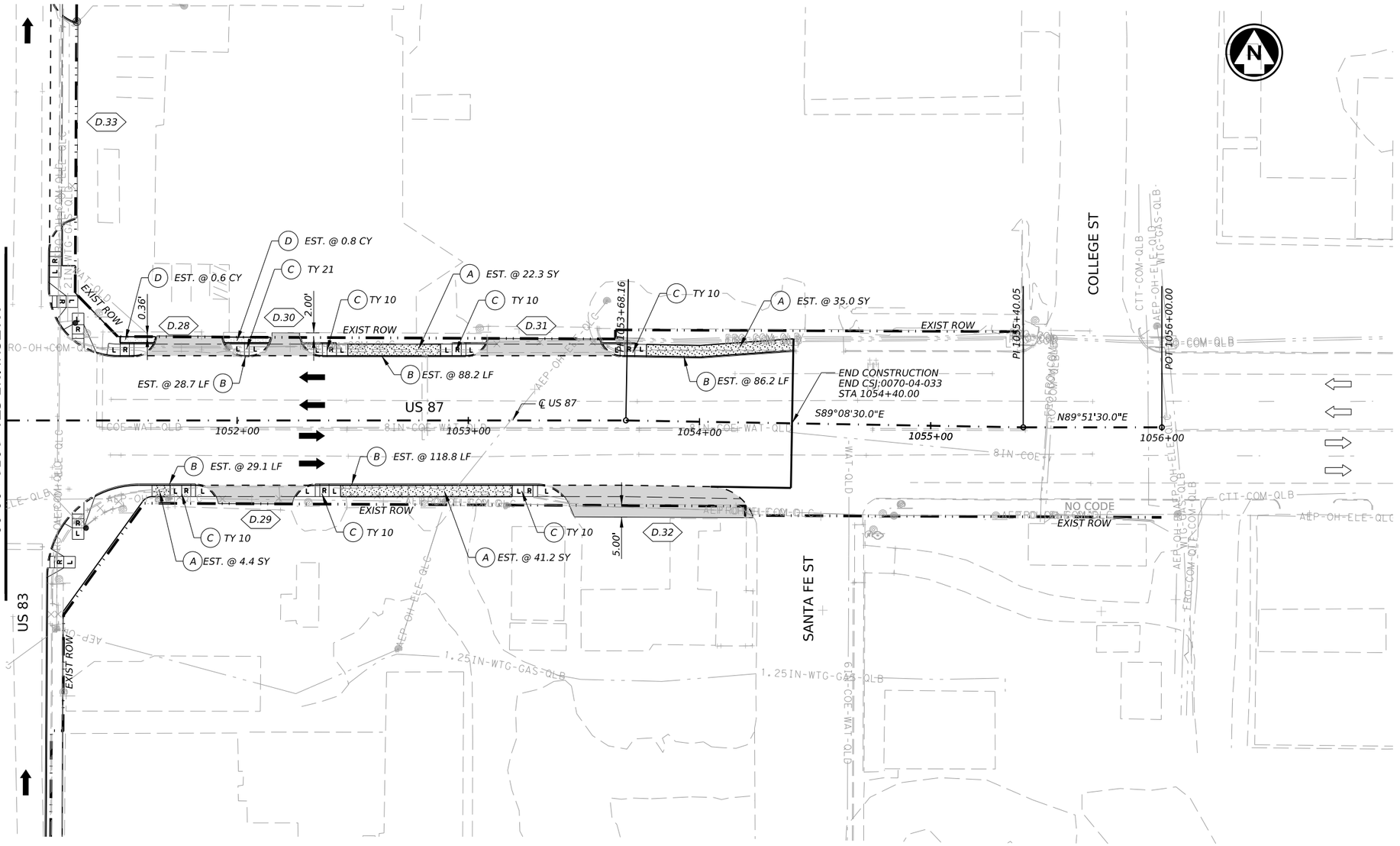

LEGEND

- A — 5" CONC SIDEWALK
- B — CONC CURB (MONO)(TY II)
- C — CURB RAMP
- D — 5" CONC RIPRAP
- D.XX — DRIVEWAY NUMBER
- MAILBOX
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE

NOTES:

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SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
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NO.	DATE	REVISION

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IDCUS
PLANNERS | ENGINEERS | MANAGERS

US 83

US 87
ROADWAY PLAN LAYOUT
STA 1051+00.00 TO END

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		91

DATE: 5/22/2024 6:49:59 PM
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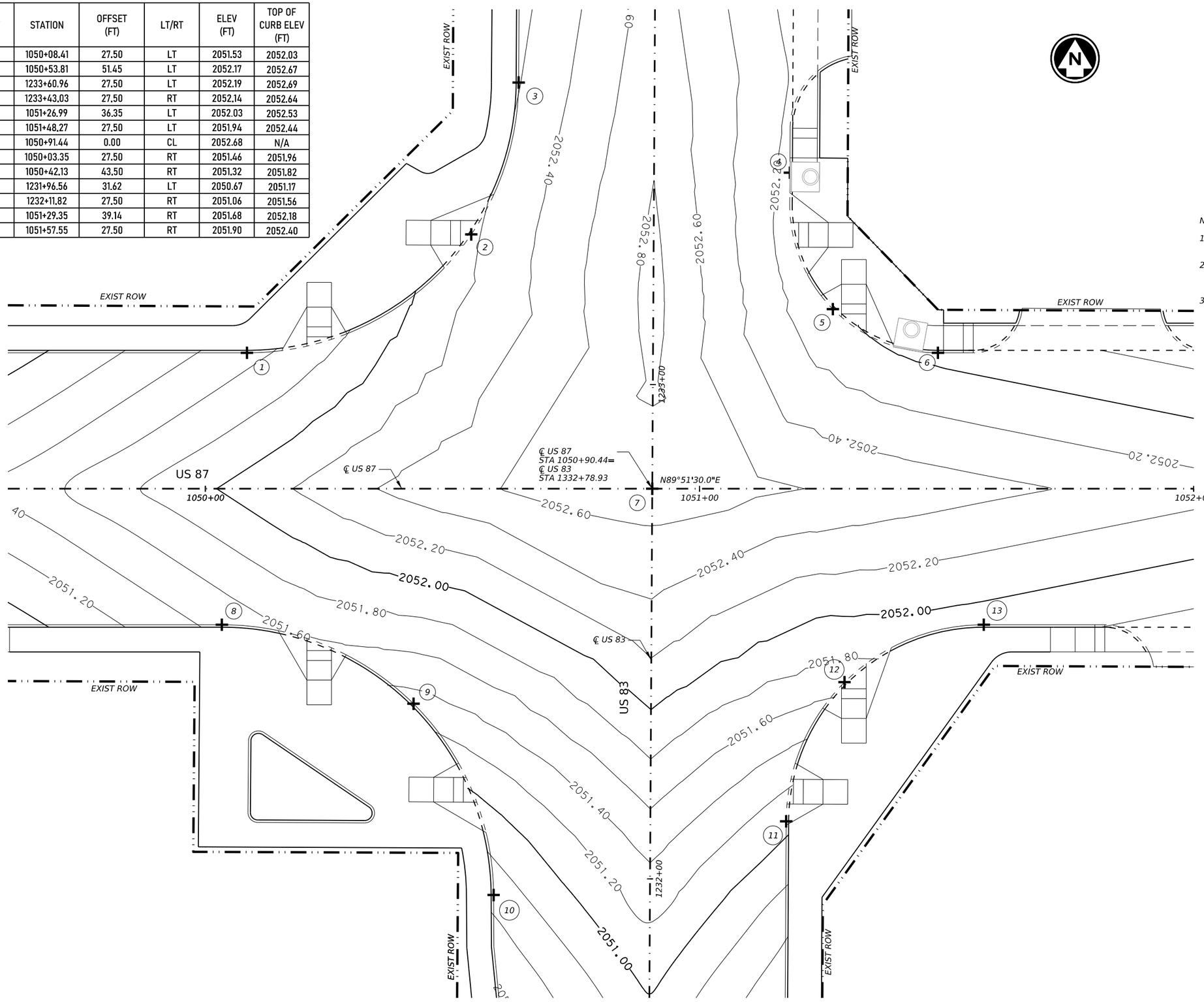
PT. NO	ALIGNMENT	STATION	OFFSET (FT)	LT/RT	ELEV (FT)	TOP OF CURB ELEV (FT)
1	US87	1050+08.41	27.50	LT	2051.53	2052.03
2	US87	1050+53.81	51.45	LT	2052.17	2052.67
3	US83	1233+60.96	27.50	LT	2052.19	2052.69
4	US83	1233+43.03	27.50	RT	2052.14	2052.64
5	US87	1051+26.99	36.35	LT	2052.03	2052.53
6	US87	1051+48.27	27.50	LT	2051.94	2052.44
7	US87	1050+91.44	0.00	CL	2052.68	N/A
8	US87	1050+03.35	27.50	RT	2051.46	2051.96
9	US87	1050+42.13	43.50	RT	2051.32	2051.82
10	US83	1231+96.56	31.62	LT	2050.67	2051.17
11	US83	1232+11.82	27.50	RT	2051.06	2051.56
12	US87	1051+29.35	39.14	RT	2051.68	2052.18
13	US87	1051+57.55	27.50	RT	2051.90	2052.40



LEGEND

- SPOT MARK
- (#) SPOT NUMBER
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE

NOTES:

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HORZ 0' 10' 20'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER
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(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

US 83
INTERSECTION LAYOUT SHEET

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		92

DATE: 5/22/2024 5:31:55 PM
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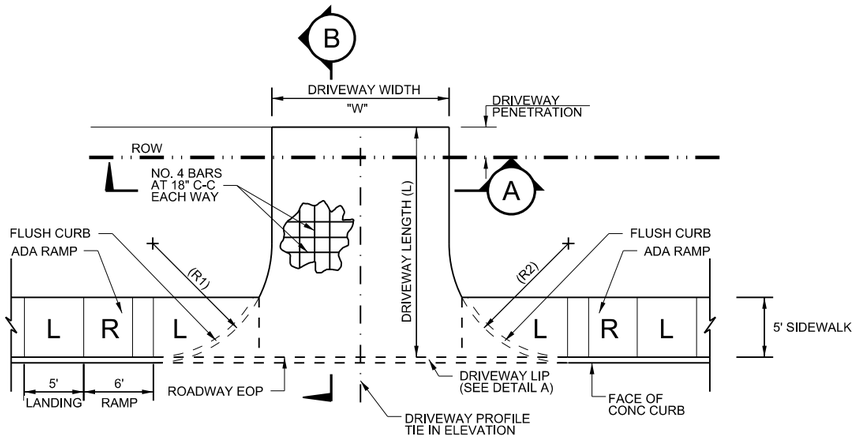
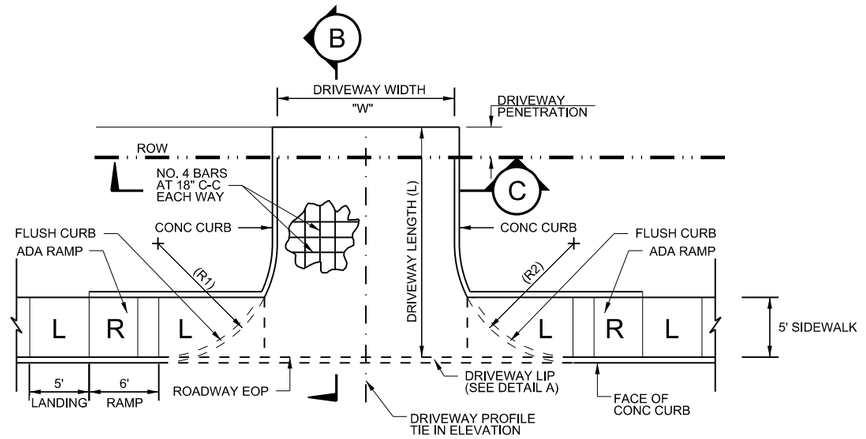


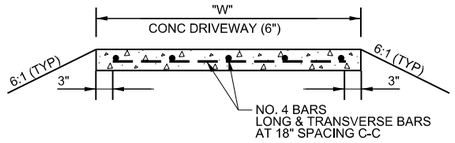
CONCRETE DRIVEWAY / CROSS STREET PLAN VIEW

DRIVEWAY AND CURB RAMP DETAIL



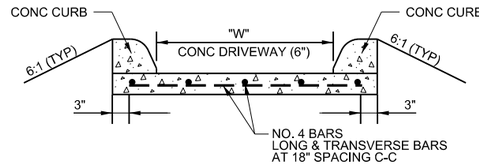
CONCRETE DRIVEWAY / CROSS STREET W/CURB PLAN VIEW

DRIVEWAY AND CURB RAMP DETAIL



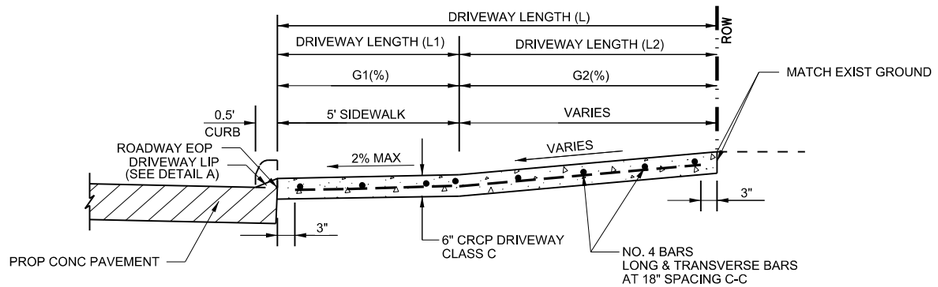
SECTION A

CONTRETE DRIVEWAY / CROSS STREET TYPICAL SECTION



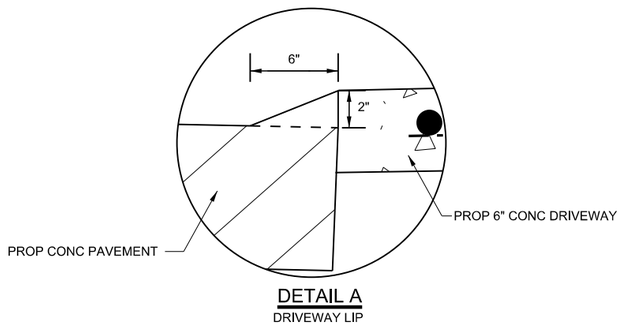
SECTION C

CONTRETE DRIVEWAY / CROSS STREET TYPICAL SECTION



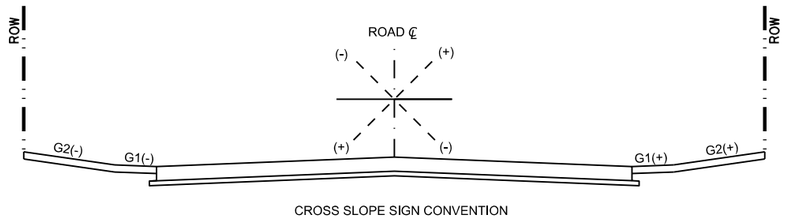
SECTION B

CONCRETE DRIVEWAY / CROSS STREET ELEVATION VIEW



DETAIL A

DRIVEWAY LIP



CROSS SLOPE SIGN CONVENTION

NOTES:

1. *DRIVEWAY CONSTRUCTION EASEMENTS ARE NOT PLATTED OR MAPPED AND ARE FOR CONTRACTOR'S INFORMATION ONLY. DRIVEWAY CONSTRUCTION EASEMENT RIGHTS ARE TO BE SECURED BY TXDOT DURING CONSTRUCTION. CONSTRUCT DRIVEWAYS TO THE RIGHT-OF-WAY LINE, MAINTAINING ADA REQUIREMENTS, WHERE DRIVEWAY CONSTRUCTION EASEMENT ROGHTS HAVE NOT BEEN SECURED.*
2. *SEE "SUMMARY OF DRIVEWAYS" FOR WIDTHS, LENGTHS, AND RADII.*
3. *CONCRETE PAVEMENT SHALL BE 6" FOR RESIDENTIAL & SECONDARY DRIVEWAYS*
4. *FOR EXISTING CONCRETE DRIVEWAYS, REMOVE CONCRETE TO NEAREST EXPANSION JOINT. IF ONE EXIST WITHIN 5' OF THE "L" DIMENSION, IF NOT, SAW CUT AT THE DIMENSION "L". SAW CUT A MIN. 1" DEPTH JOINT, BREAL BACK THE EXIST PAVEMENT EXPOSE & CLEAN 18" OF STEEL REINFORCING. THIS REMOVAL WILL BE PAID FOR UNDER ITEM 104.*
5. *REMOVE PORTIONS OF EXISTING ACP OR SURF TREAT DRIVEWAYS BY SAW CUTTING TO NEAT LINES UNLESS OTHERWISE DIRECTED. THIS REMOVAL WILL BE CONSIDERED SUBSIDIARY TO ITEM 530.*
6. *THICKNESS OF MATERIALS MAY VARY IN SUPERELEVATION AREAS. CONTRACTOR MAY USE EMBANKMENT TYPE "B" TO SHAPE DRIVEWAYS IN ORDER TO ACHIEVE OPTIMUM DEPTH FOR PAVEMENT STRUCTURES. THIS WILL BE SUBSIDIARY TO ITEM 530.*
7. *DRTIVEWAY LOCATIONS MAY BE SHIFTED AT THE TIME OF CONSTRUCTION AS DIRECTED BY THE ENGINEER TO MATCH FIELD CONDITIONS.*
8. *FOR CPCD PAVEMENT, DO NOT PLACE DOWEL BARS BOTH SIDES OF THE PAVEMENT JOINT (BASKET). PLACEMENT OF DOWELS WILL BE SUBSIDIARY TO ITEM 530.*
9. *SEE DRIVEWAY AND CROSS STREET CROSS SECTIONS FOR ADDITIONAL DETAILS.*
10. *EXPANSION JOINTS SHALL BE SPACED AT EQUAL DIVISIONS OF "L" WITH A MAXIMUM SPACING OF 20'. EXPANSION JOINTS WILL BE SUBSIDIARY TO ITEM 530.*
11. *PROPOSED CULVERT FLOW LINE AND ALIGNMENT TO MATCH THE PROPOSED OR EXISTING DITCH GRADE. IF NEEDED, BURY THE CULV/SET UP TO 1/3 DIAMETER OF THE PIPE OR BOX TO ACHIEVE THE DEPTH NECESSARY FOR THE DRIVEWAY PAVEMENT ELEMENTS.*

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER
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TBPELS FIRM # F-6825

US 83

US 83
DRIVEWAY DETAILS

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		93

DATE: 5/22/2024 5:32:31 PM
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DRIVEWAY NO. / CROSS STREET	CL CHAIN	CL STATION	LT/RT (OF CL)	RESIDENTIAL/ COMMERCIAL	WIDTH "W" (FT)	LENGTH "L1" (FT)	LENGTH "L2" (FT)	LENGTH "L" (FT)	RADIUS-LT "R" (FT)	RADIUS-RT "R" (FT)	G1 (%)	G2 (%)	AREA (SF)	CONC AREA (SY)	DRIVEWAY PENETRATION
D.1	US83	1207+59.11	LT	RESIDENTIAL	20	5.00	2.45	7.45	15	15	-2.00	1.76	209.0	23.2	
D.2	US83	1207+88.76	RT	RESIDENTIAL	16	5.00	5.98	10.98	15	15	2.00	7.87	259.4	28.8	Yes, 2.72'
D.3	US83	1208+22.07	RT	RESIDENTIAL	16	5.00	6.66	11.66	15	15	2.00	7.83	274.7	30.5	Yes, 2.80'
D.4	US83	1208+47.25	LT	RESIDENTIAL	20	5.00	4.08	9.08	15	15	-2.00	6.04	253.9	28.2	
D.5	US83	1208+88.82	RT	RESIDENTIAL	16	5.00	5.07	10.07	15	15	2.00	11.65	240.2	26.7	
D.6	US83	1209+22.43	LT	RESIDENTIAL	16	5.00	5.47	10.47	15	15	-2.00	-4.87	248.9	27.7	
D.7	US83	1209+82.87	RT	RESIDENTIAL	12	5.00	11.91	16.91	15	15	2.00	12.00	291.6	32.4	Yes, 5.13'
D.8	US83	1211+02.53	LT	RESIDENTIAL	28	5.00	6.93	11.93	15	15	-2.00	-5.82	422.7	47.0	
D.9	US83	1211+19.50	RT	RESIDENTIAL	10	5.00	7.07	12.07	15	15	2.00	9.63	210.0	23.3	
D.10	US83	1211+65.58	RT	RESIDENTIAL	10	5.00	9.24	14.24	15	15	2.00	10.00	231.7	25.7	Yes, 2.18'
D.11	US83	1212+07.72	LT	RESIDENTIAL	20	5.00	6.95	11.95	15	15	-2.00	-4.46	327.7	36.4	
D.12	US83	1212+39.46	RT	RESIDENTIAL	10	5.00	9.82	12.05	15	15	2.00	10.00	237.4	26.4	Yes, 2.77'
D.13	US83	1212+92.53	LT	RESIDENTIAL	14	5.00	6.96	11.96	15	15	-2.00	-4.08	256.3	28.5	
D.14	US83	1213+60.67	LT	RESIDENTIAL	19	5.00	6.74	11.74	15	15	-2.00	-1.35	305.7	34.0	
D.15	US83	1213+89.86	RT	RESIDENTIAL	10	4.99	7.58	12.57	15	15	2.00	9.95	216.5	24.1	
D.16	US83	1214+83.86	LT	RESIDENTIAL	28	5.01	6.75	11.76	15	15	-2.00	-9.08	407.6	45.3	
DANIEL ST	US83	1214+87.66	RT	COMMERCIAL	32	5.45	24.55	30.01	25	15	2.00	4.18	1118.4	124.3	
PECAN ST	US83	1215+56.73	LT	COMMERCIAL	28	5.05	31.17	36.23	25	30	-2.17	-2.76	1366.9	151.9	
PECAN ST	US83	1215+78.24	RT	COMMERCIAL	20	5.20	23.73	28.93	25	20	1.55	2.86	799.9	88.9	
D.17	US83	1217+44.54	LT	RESIDENTIAL	12	5.00	7.81	11.88	15	15	-2.00	-9.96	242.2	26.9	Yes, 0.93'
D.18	US83	1217+74.59	RT	RESIDENTIAL	22	5.00	11.25	12.12	15	15	2.00	8.78	446.9	49.7	Yes, 4.13'
OAK ST	US83	1218+42.77	RT	COMMERCIAL	28	5.00	19.94	24.94	20	20	2.00	3.58	864.7	96.1	
D.19	US83	1219+43.71	RT	RESIDENTIAL	24	5.00	7.08	12.08	15	15	2.00	11.27	408.3	45.4	
D.20	US83	1219+93.72	RT	RESIDENTIAL	24	5.00	7.41	12.07	15	15	2.00	11.98	416.2	46.2	Yes, 0.34'
SHUTT ST	US83	1221+19.99	LT	COMMERCIAL	22	5.05	18.90	23.95	15	30	-1.79	-2.62	725.1	80.6	
SHUTT ST	US83	1221+23.62	RT	COMMERCIAL	20	5.00	7.04	12.04	15	15	2.00	7.73	330.1	36.7	
D.21	US83	1222+58.45	RT	RESIDENTIAL	24	5.00	7.01	12.01	15	15	2.00	8.96	377.5	41.9	
ROCHEFORT ST	US83	1223+60.05	RT	COMMERCIAL	31	4.50	11.96	16.46	15	15	2.03	0.36	600.4	63.0	
ROCHEFORT ST	US83	1223+64.27	LT	COMMERCIAL	20	5.00	15.03	20.03	20	20	-1.97	2.92	567.1	66.7	
D.22	US83	1224+43.17	LT	RESIDENTIAL	18	5.00	9.03	14.03	15	15	-2.00	-7.47	346.7	38.5	
D.23	US83	1224+98.80	LT	RESIDENTIAL	28	5.00	10.01	15.01	15	25	-2.00	-7.65	582.9	64.8	
BLANCHARD ST	US83	1226+31.25	LT	COMMERCIAL	49			41.96	15	20	-1.99		2311.8	256.9	
BLANCHARD ST	US83	1226+33.19	RT	COMMERCIAL	41	5.25	25.02	30.27	20	20	1.61	4.11	1409.4	156.6	
MARKET ST	US83	1228+77.59	LT	COMMERCIAL	101			18.00	20	30	-5.98		2034.7	226.1	
JACKSON ST	US83	1230+02.27	RT	COMMERCIAL	35	13.20	5.00	18.20	20	20	5.02	2.00	828.8	92.1	
D.24	US87	1046+43.10	LT	COMMERCIAL	60	5.00	4.19	9.19	10	10	-2.00	4.37	594.6	66.1	
D.25	US87	1047+24.84	LT	COMMERCIAL	54	5.00	6.19	11.19	10	10	-2.00	-1.08	647.4	71.9	
CONCHO ST	US87	1047+80.61	RT	COMMERCIAL	29			17.14	15	15	-4.08		578.3	64.3	
BURTON ST	US87	1048+23.68	LT	COMMERCIAL	30	5.00	4.26	9.26	10	10	-2.00	0.60	325.8	36.2	
D.26	US87	1048+40.08	RT	COMMERCIAL	30	5.00	1.32	6.32	10	10	2.00	1.95	225.7	25.1	
D.27	US87	1049+24.74	RT	COMMERCIAL	30	5.00	4.10	9.10	10	10	2.00	12.00	310.8	34.5	Yes, 2.38'
D.28	US87	1051+78.80	LT	COMMERCIAL	29	5.00	3.43	8.43	10	10	-2.00	12.00	289.5	32.2	Yes, 0.36'
D.29	US87	1052+07.64	RT	RESIDENTIAL	32	5.00	3.07	8.07	10	10	2.00	-11.63	299.8	33.3	
D.30	US87	1052+21.06	LT	RESIDENTIAL	13	5.00	6.87	11.87	10	10	-2.00	-12.00	162.8	18.1	Yes, 2.00'
D.31	US87	1053+32.76	LT	COMMERCIAL	48	5.00	2.34	7.34	10	10	-2.00	7.81	394.6	43.8	
D.32	US87	1053+84.79	RT	COMMERCIAL	81	5.00	8.62	13.62	15	15	2.00	1.50	1044.2	116.0	Yes, 5.00'
D.33	US83	1234+08.66	RT	COMMERCIAL	84	5.00	6.80	11.80	15	15	2.00	8.28	1082.9	120.3	Yes, 0.65'
D.34	US83	1234+40.40	LT	COMMERCIAL	48	5.01	7.86	12.88	15	15	-2.00	-7.19	710.6	79.0	
TAFT ST	US83	1235+79.13	RT	COMMERCIAL	26	5.00	24.50	29.50	30	25	2.00	3.31	1083.9	120.4	
D.35	US83	1236+52.03	RT	RESIDENTIAL	24	5.00	6.44	11.44	15	15	2.00	8.87	367.5	40.8	
GARDEN AVE	US83	1237+37.52	LT	COMMERCIAL	36	5.00	14.50	19.50	20	20	-2.00	0.60	868.4	96.5	
D.36	US83	1237+43.65	RT	RESIDENTIAL	30	5.00	6.78	11.78	15	15	2.00	1.84	440.3	48.9	
BRYAN ST	US83	1238+86.46	RT	COMMERCIAL	31	5.00	18.39	23.39	20	20	2.00	-1.48	890.6	99.0	

CK
DW
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STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER
5/22/2024
P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

IDCUS
PLANNERS | ENGINEERS | MANAGERS

US 83

US 83
INTERSECTIONS AND DRIVEWAYS
SUMMARY SHEET

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		94

DATE: 5/22/2024 5:33:04 PM
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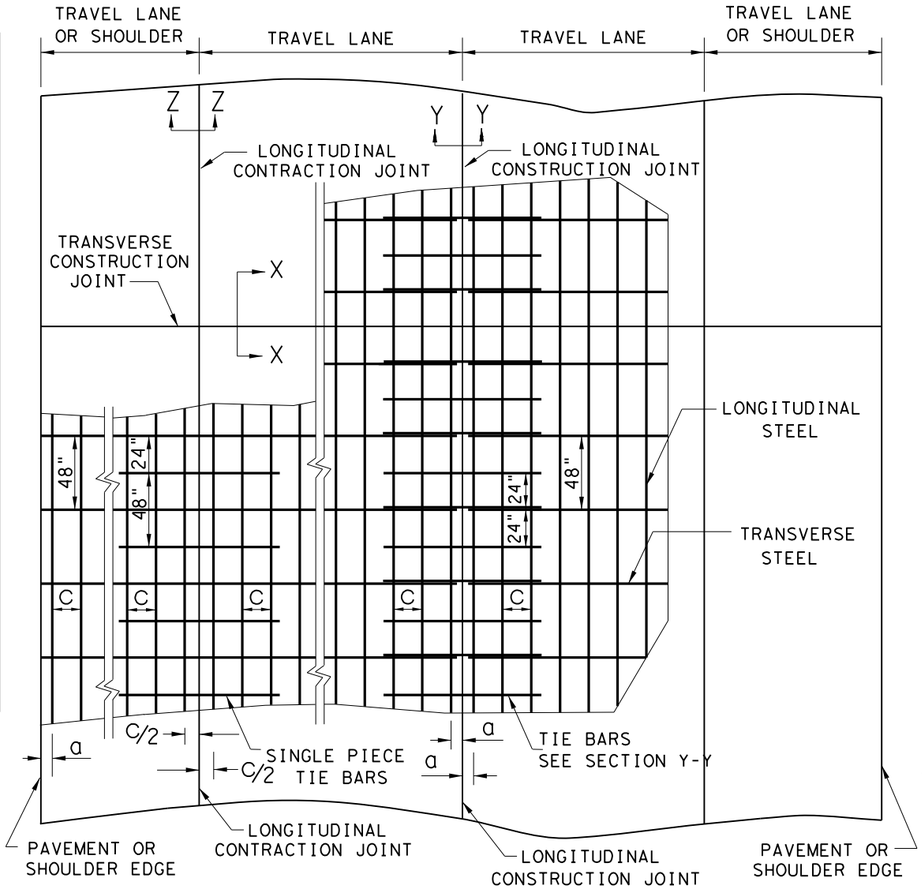
TABLE NO. 1 LONGITUDINAL STEEL				
SLAB THICKNESS AND BAR SIZE		LONGITUDINAL STEEL BARS	FIRST SPACING AT EDGE OR JOINT	LONG. STEEL VERTICAL POSITION FROM BOTTOM OF PAVEMENT
T (IN.)	BAR SIZE	SPACING C (IN.)	SPACING a (IN.)	T1 (IN.)
7.0	#5	6.5	3 TO 4	3.5
7.5	#5	6.0	3 TO 4	3.75
8.0	#6	9.0	3 TO 4	4.0
8.5	#6	8.5	3 TO 4	4.25
9.0	#6	8.0	3 TO 4	4.5
9.5	#6	7.5	3 TO 4	4.75
10.0	#6	7.0	3 TO 4	5.0
10.5	#6	6.75	3 TO 4	5.5
11.0	#6	6.5	3 TO 4	6.0
11.5	#6	6.25	3 TO 4	6.5
12.0	#6	6.0	3 TO 4	7.0
12.5	#6	5.75	3 TO 4	7.5
13.0	#6	5.5	3 TO 4	8.0

TABLE NO. 2 TRANSVERSE STEEL AND TIE BARS						
SLAB THICKNESS (IN.)	TRANSVERSE STEEL		TIE BARS AT LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z)		TIE BARS AT LONGITUDINAL CONSTRUCTION JOINT (SECTION Y-Y)	
	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)
7.0 - 7.5	#5*	48	#5*	48	#5*	24
8.0 - 13.0	#5*	48	#6	48	#6	24

*CONTRACTOR MAY USE #6 REINFORCING STEEL INSTEAD OF #5 REINFORCING STEEL OR COMBINATION OF EACH SIZE

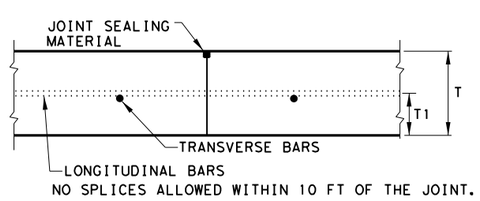


TYPICAL PAVEMENT LAYOUT

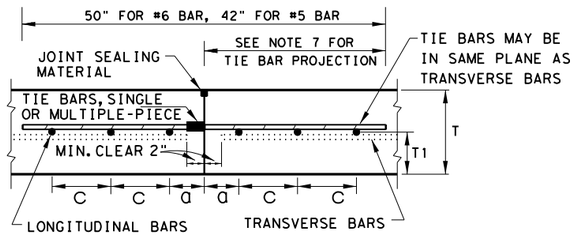
PLAN VIEW (NOT TO SCALE)

GENERAL NOTES

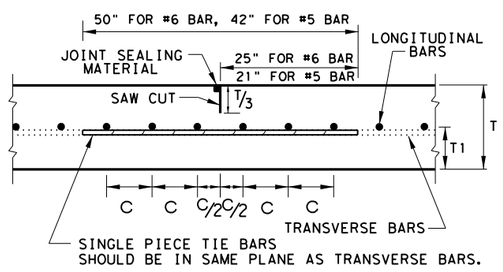
1. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. FOR PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT, ADDITIONAL DETAIL MAY BE SHOWN ELSEWHERE IN THE PLANS.
2. USE COARSE AGGREGATES WITH A RATED COEFFICIENT OF THERMAL EXPANSION (CoTE) OF NOT MORE THAN 5.5 X 10^{-6} IN/IN/ °F AS LISTED IN THE CONCRETE RATED SOURCE QUALITY CATALOG (CRSQC).
3. ALL THE REINFORCING STEEL AND TIE BARS SHALL BE DEFORMED STEEL BARS CONFORMING TO ASTM A 615 (GRADE 60) OR ASTM A 996 (GRADE 60) OR ABOVE. STEEL BAR SIZES AND SPACINGS SHALL CONFORM TO TABLE NO.1 AND TABLE NO.2.
4. STEEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1 IN. HORIZONTALLY AND +/- 0.5 IN. VERTICALLY. CALCULATED AVERAGE BAR SPACING (CONCRETE PLACEMENT WIDTH / NUMBER OF LONGITUDINAL BARS) SHALL CONFORM TO TABLE NO.1.
5. ADJUST REINFORCING STEEL VERTICALLY USING SHIMS OR OTHER METHODS, AS APPROVED, TO MEET VERTICAL TOLERANCES PRIOR TO CONCRETE PLACEMENT.
6. PAVEMENT WIDTHS OF MORE THAN 15 FT. SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR SECTION Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6 IN. OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
7. THE MINIMUM PROJECTION OF TIE BARS INTO THE ADJACENT PLACEMENT IS 22.5 IN. for #6 BARS AND 18.5 IN. FOR #5 BARS.
8. SEE STANDARD SHEET "CONCRETE CURB AND CURB AND GUTTER," FOR DETAILS WHEN TYING CONCRETE CURB OR CURB GUTTER AT A LONGITUDINAL JOINT.
9. REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING MIN.10 IN. DEEP AND GROUTING TIE BARS WITH TYPE III, CLASS C EPOXY. MEET THE PULL-OUT TEST REQUIREMENTS IN ITEM 361.
10. OMIT TIE BARS LOCATED WITHIN 18-IN. OF THE TRANSVERSE CONSTRUCTION JOINTS (SECTION X-X). USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL FORMED JOINTS.
11. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."



TRANSVERSE CONSTRUCTION JOINT
SECTION X - X



LONGITUDINAL CONSTRUCTION JOINT
SECTION Y - Y



LONGITUDINAL CONTRACTION JOINT
SECTION Z - Z

SHEET 1 OF 2

Texas Department of Transportation | Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

ONE LAYER STEEL BAR PLACEMENT T - 7 to 13 INCHES

CRCP(1)-23

FILE: crcp123.dgn	DN: TxDOT	CK: KM	DW: CES	CK:
© TxDOT: APRIL 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
APRIL 2023: REVISED LONG. STEEL VERTICAL LOCATION. REMOVED ADDITIONAL TIEBAR AT TRANSVERSE CONSTRUCTION JOINTS	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		95

DATE: 5/22/2024 5:33:04 PM
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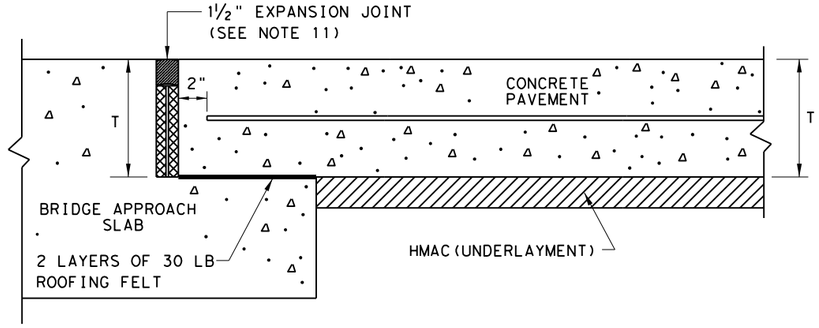
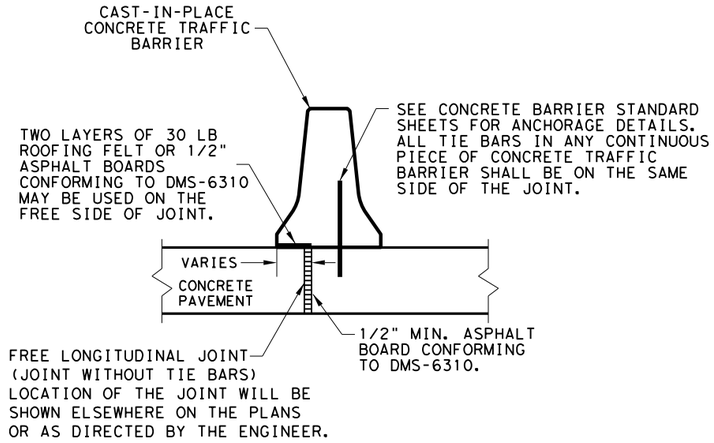
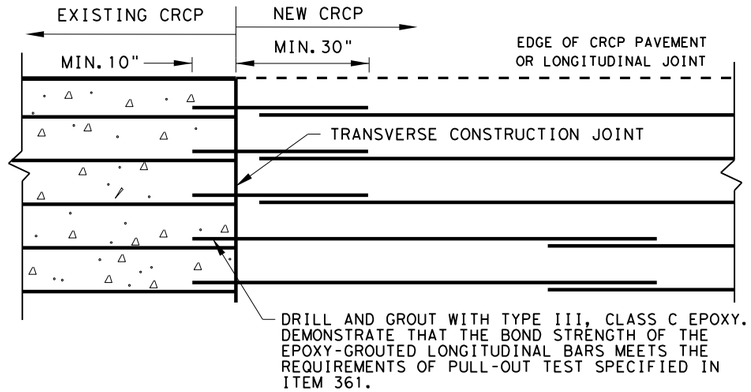


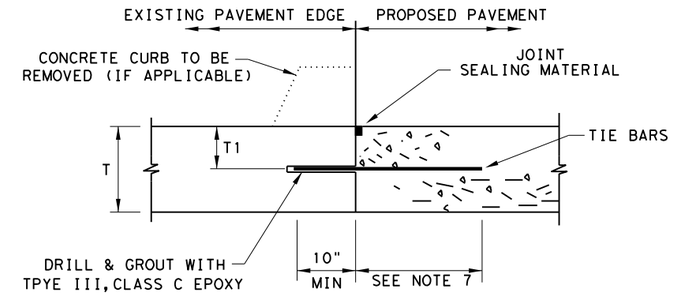
TRANSVERSE EXPANSION JOINT DETAIL
AT BRIDGE APPROACH



CENTERLINE FREE LONGITUDINAL JOINT DETAIL

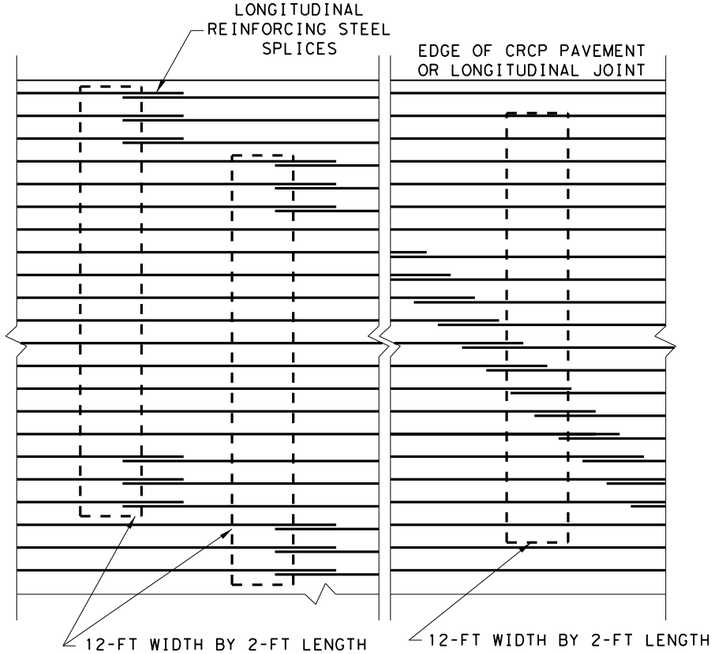


OPTION A: DRILL AND EPOXY
PLAN VIEW (NOT TO SCALE)



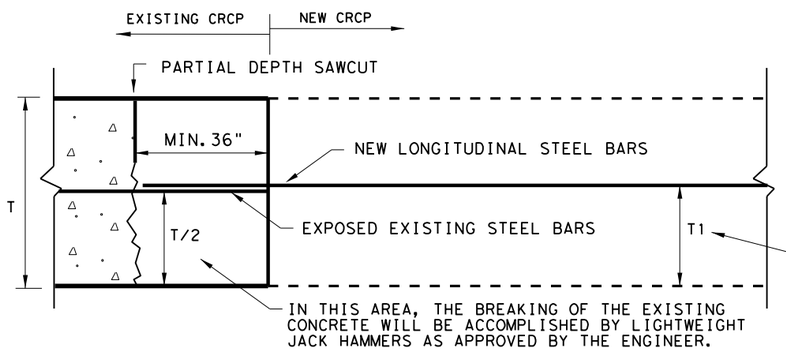
1. BEFORE CONCRETE PLACEMENT, PERFORM PULL-OUT TESTS ON EPOXY-GROUTED TIE BARS IN ACCORDANCE WITH ITEM 360.
2. SPACE TIE BARS AT 24" SPACING. USE #6 TIE BARS FOR 8" AND THICKER PAVEMENTS, USE #5 TIE BARS FOR LESS THAN 8" THICK PAVEMENTS.

LONGITUDINAL WIDENING JOINT DETAIL



STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT. ANY OTHER LAP CONFIGURATION MEETING THIS REQUIREMENT WILL BE ALLOWED.

EXAMPLES OF LAP CONFIGURATION
PLAN VIEW (NOT TO SCALE)



OPTION B: BREAKBACK AND LAP

TRANSVERSE TIE JOINT DETAIL
NEW CRCP TO EXISTING CRCP

SHEET 2 OF 2

Texas Department of Transportation | Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

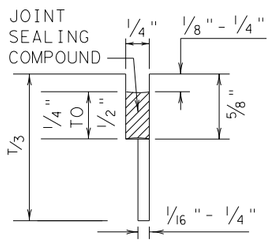
ONE LAYER STEEL BAR PLACEMENT
T - 7 to 13 INCHES

CRCP(1)-23

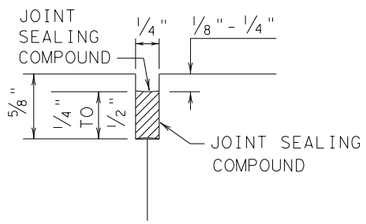
FILE: crcp123.dgn	DN: TxDOT	CK: KM	DW: CES	CK:
© TxDOT: APRIL 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
APRIL 2023: MODIFIED EXPANSION JOINT DETAIL AT BRIDGE APPROACH SLAB	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		96

DATE: 5/22/2024
FILE: c:\bms\vdcus-pw-01\omar.alducin\dms06701\(2)js14.dgn

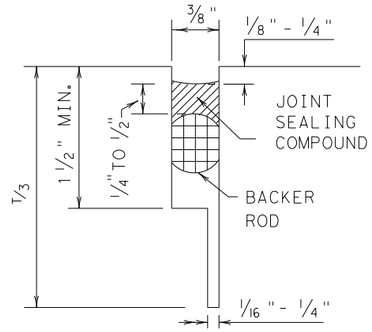
METHOD B: JOINT SEALING COMPOUND



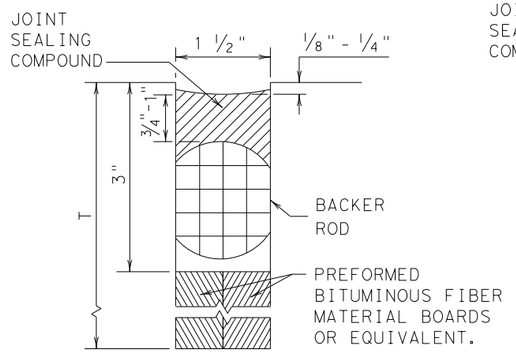
LONGITUDINAL SAWED
CONTRACTION JOINT



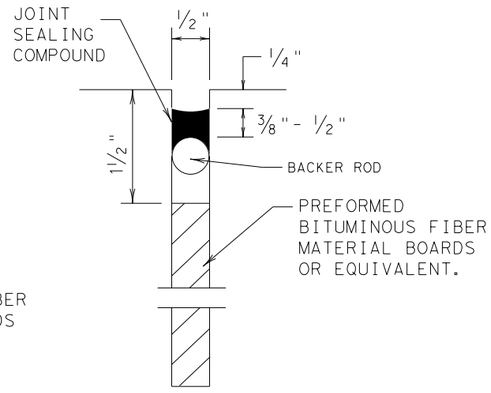
LONGITUDINAL OR TRANSVERSE
CONSTRUCTION JOINT



TRANSVERSE SAWED
CONTRACTION JOINT

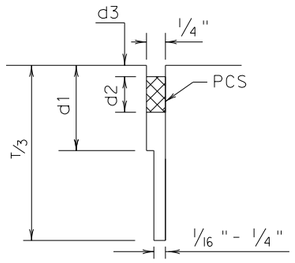


TRANSVERSE FORMED
EXPANSION JOINT

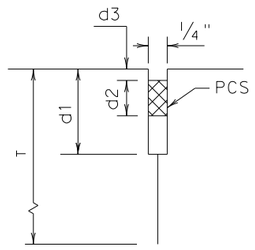


FORMED
ISOLATION JOINT

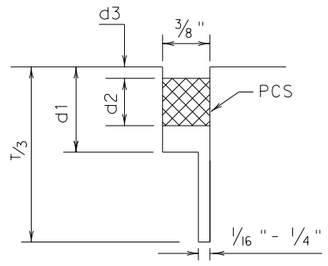
METHOD A: PREFORMED COMPRESSION SEALS (PCS)(DMS-6310 CLASS 6)



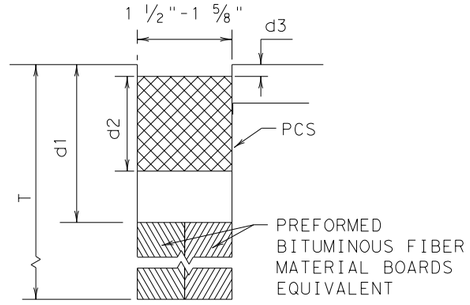
LONGITUDINAL SAWED
CONTRACTION JOINT



LONGITUDINAL
CONSTRUCTION JOINT



TRANSVERSE SAWED
CONTRACTION JOINT



TRANSVERSE FORMED
EXPANSION JOINT

GENERAL NOTES

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

Texas Department of Transportation | Design Division Standard

CONCRETE PAVING DETAILS

JOINT SEALS

JS-14

FILE: js14.dgn	DN: TxDOT	DN: HC	DW: HC	CK: AN
©TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		97

DATE: 5/22/2024
FILE: c:\bms\ldgus-pw-01\omar.olducin\dms06701\(3)ped18.dgn

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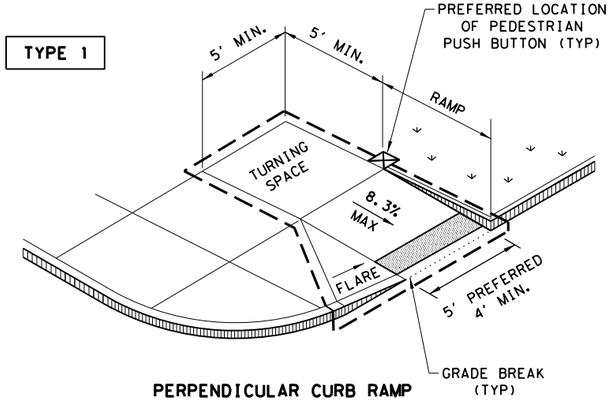
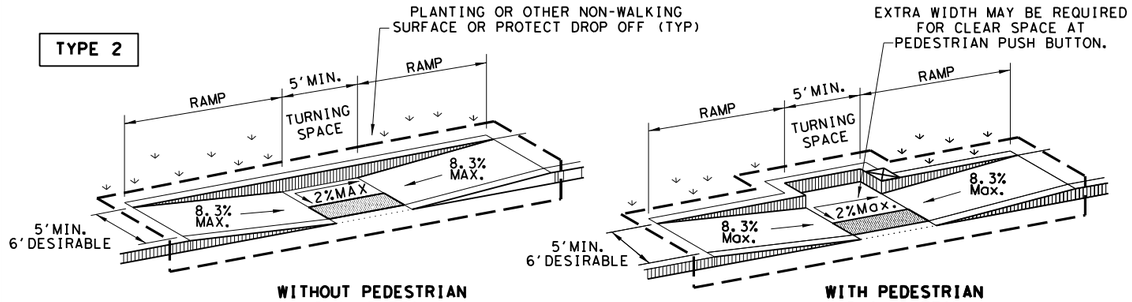


PERPENDICULAR CURB RAMP

TYPE 2

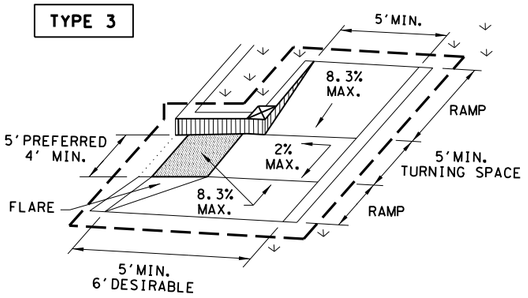


WITHOUT PEDESTRIAN PUSH BUTTON

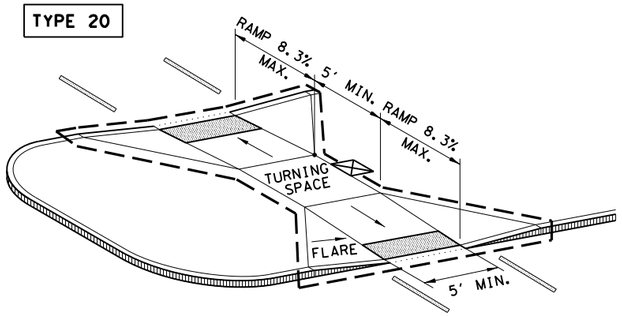
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

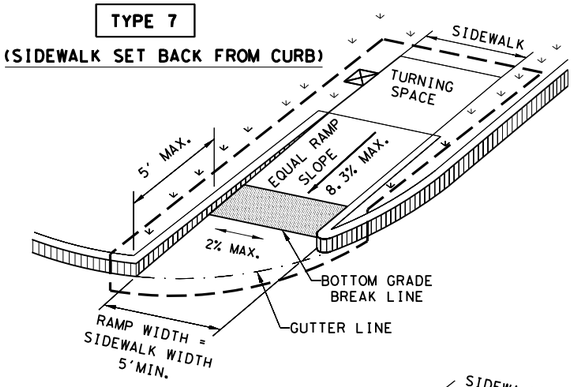


TYPE 20

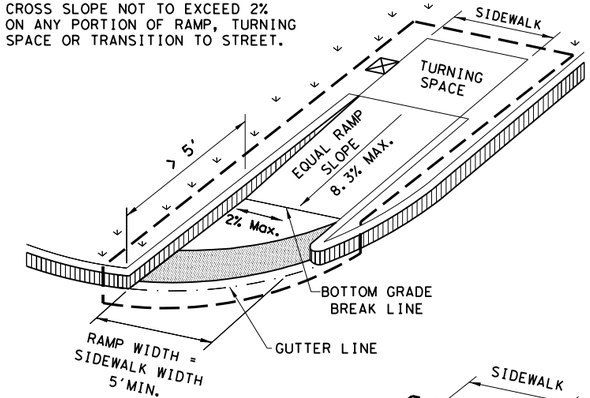


CURB RAMPS AT MEDIAN ISLANDS

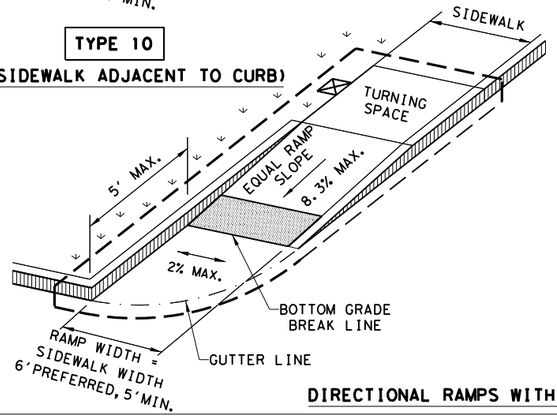
TYPE 7
(SIDEWALK SET BACK FROM CURB)



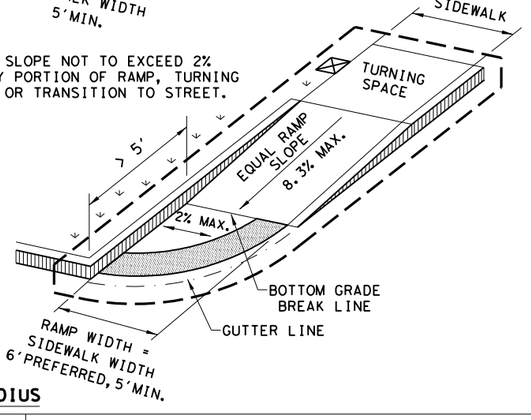
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



TYPE 10
(SIDEWALK ADJACENT TO CURB)

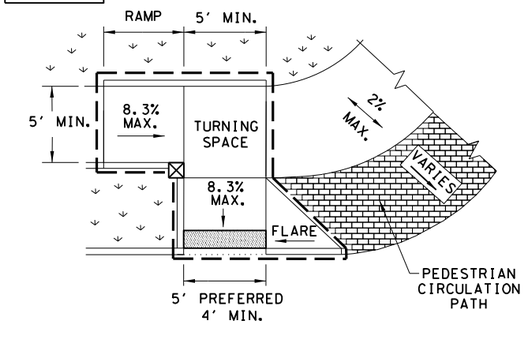


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



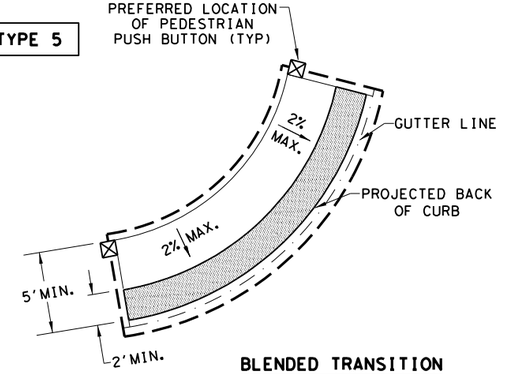
DIRECTIONAL RAMPS WITHIN RADIUS

TYPE 6



COMBINATION CURB RAMPS

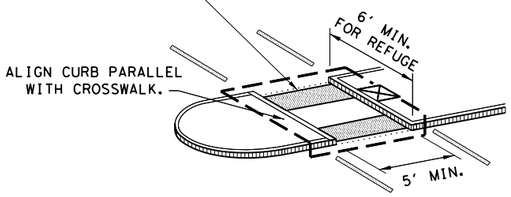
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

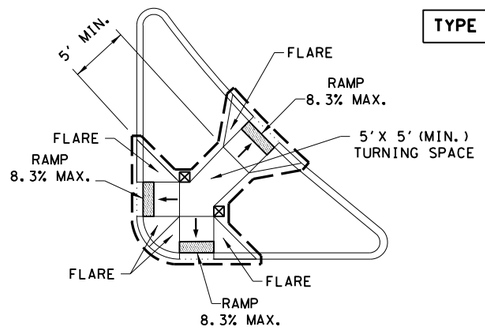
TYPE 21

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.



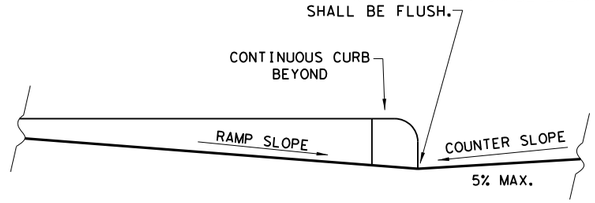
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

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 — —

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	0035	03	047	US 83
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		98

DATE: 5/22/2024
FILE: c:\bms\vidcus-pw-01\omar.alducin\dms06701\(3)ped18.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

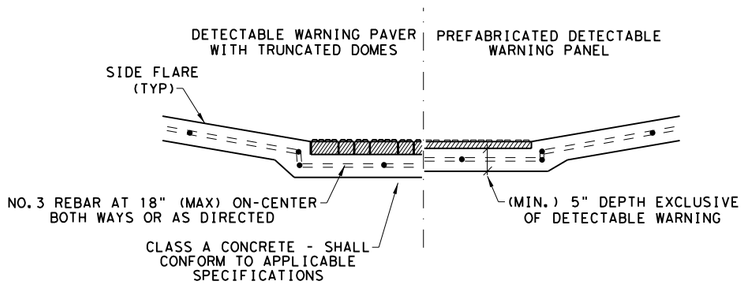
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material 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.

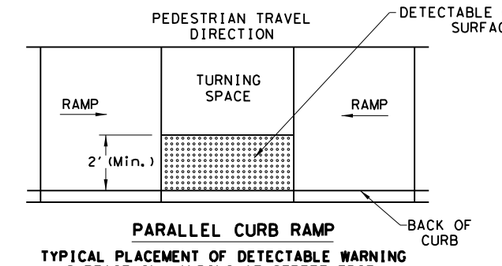
SIDEWALKS

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.

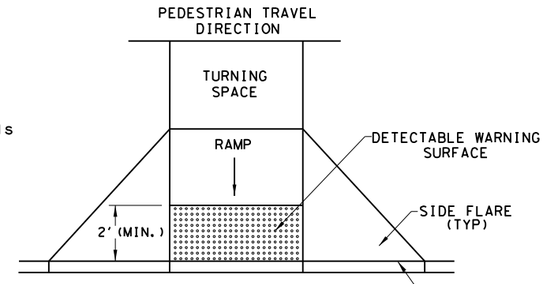


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

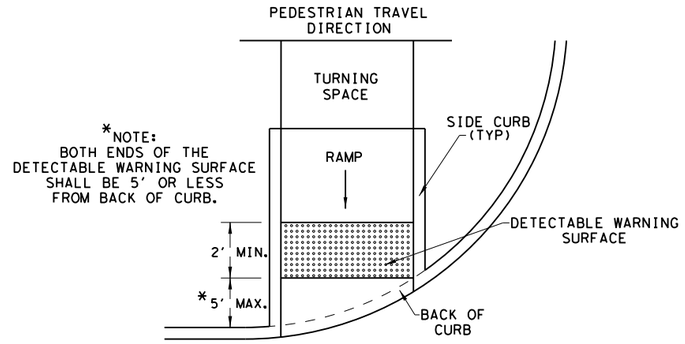
DETECTABLE WARNING SURFACE DETAILS



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

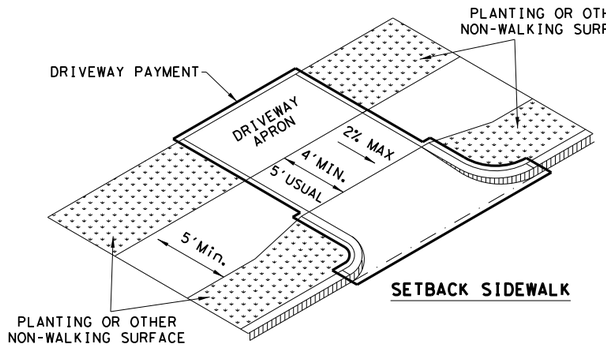
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

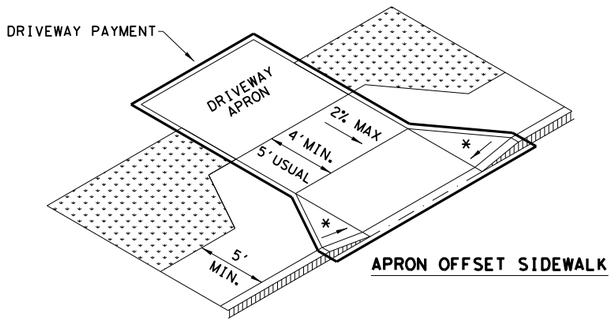
FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0035	03	047		US 83
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	SJT	CONCHO			99

DATE: 5/22/2024
FILE: c:\bms\vidcus-pw-01\omar.olducin\dms06701\(3)ped18.dgn

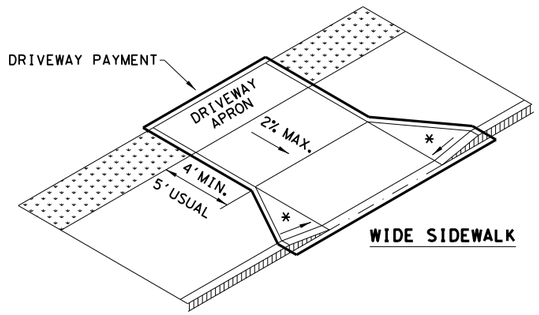
SIDEWALK TREATMENT AT DRIVEWAYS



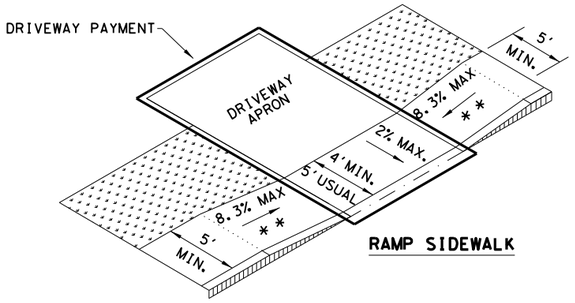
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

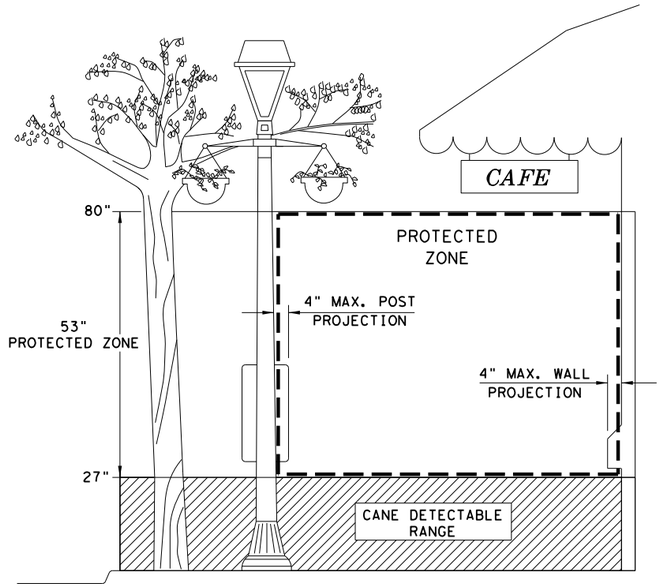


RAMP SIDEWALK

NOTES:

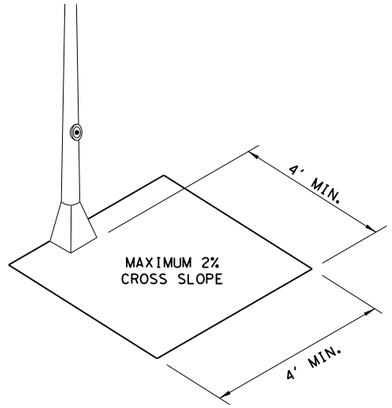
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

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

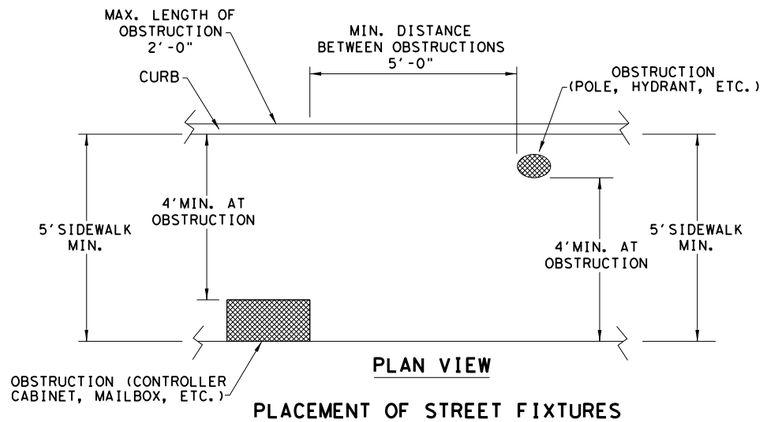


PROTECTED ZONE

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



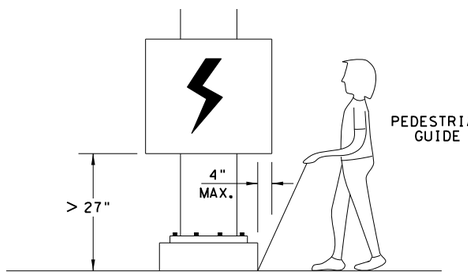
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



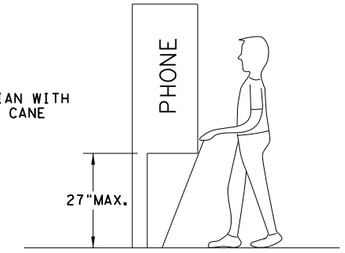
PLAN VIEW

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

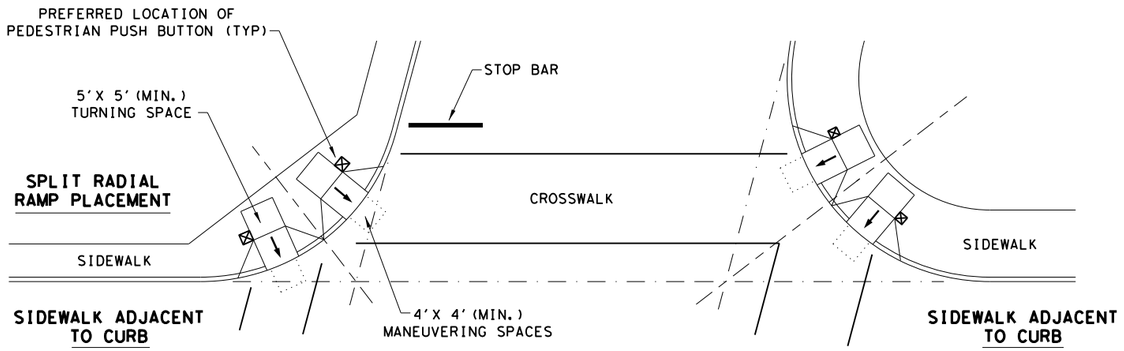
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

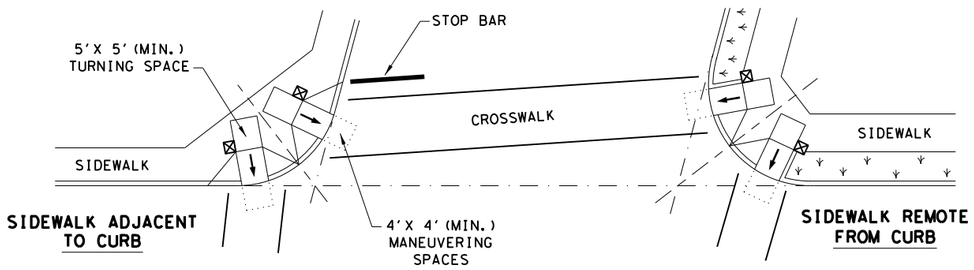
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		100

DATE: 5/22/2024
FILE: c:\pms\dcus-pw-01\omar.alducin\dms06701\i3)ped18.dgn

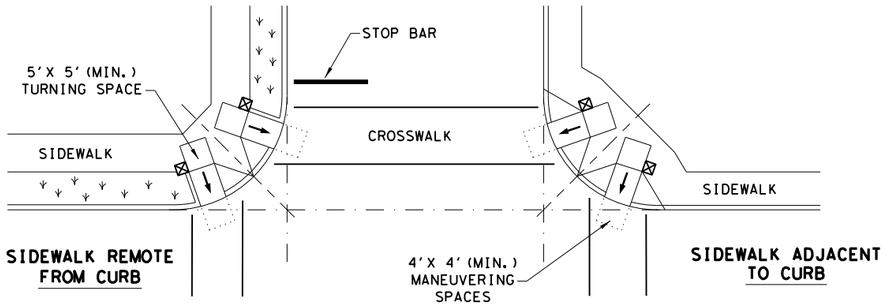
TYPICAL CROSSING LAYOUTS
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



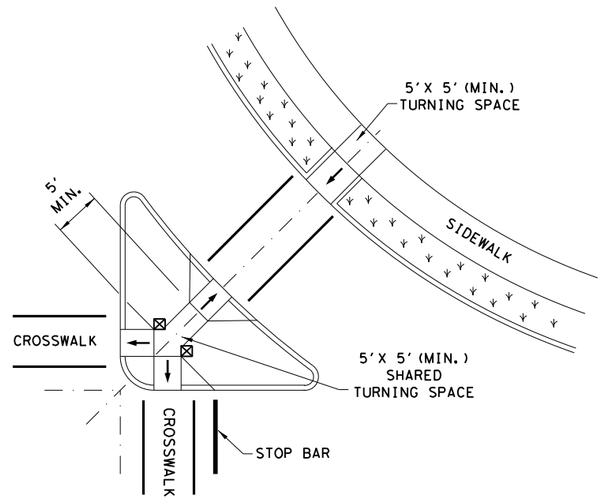
SKEWED INTERSECTION WITH "LARGE" RADIUS



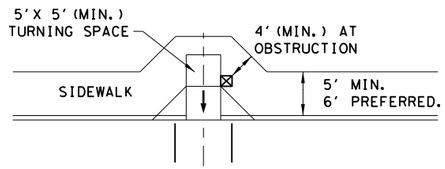
SKEWED INTERSECTION WITH "SMALL" RADIUS

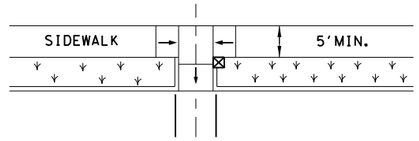


NORMAL INTERSECTION WITH "SMALL" RADIUS



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	0035	03	047		US 83
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY			SHEET NO.
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DATE: 5/22/2024
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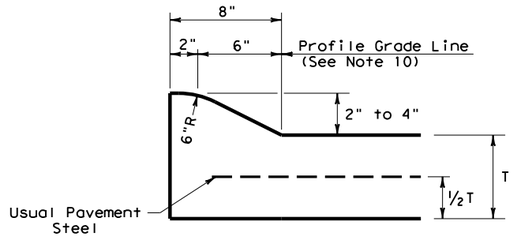
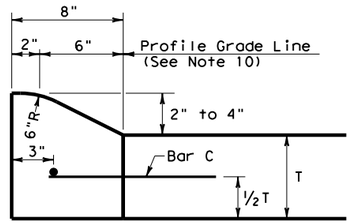
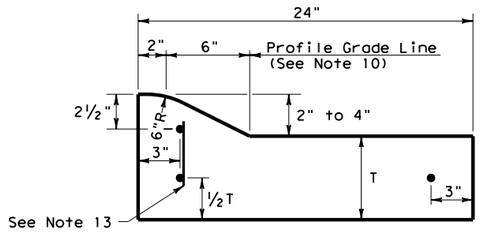


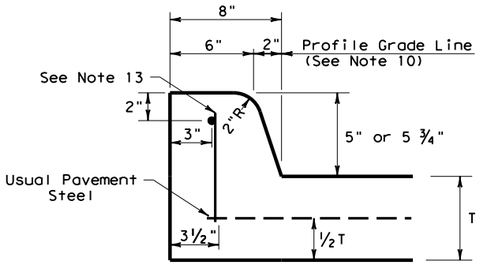
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



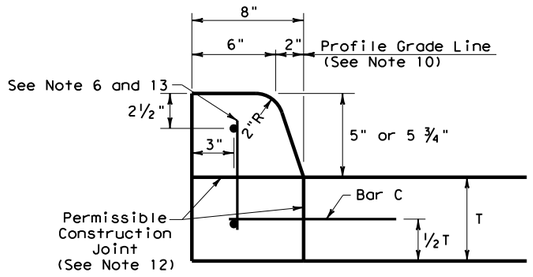
TYPE I CURB
2" - 4" HEIGHT



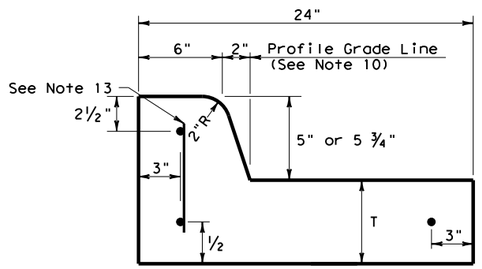
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



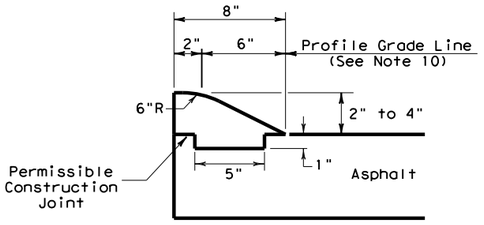
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



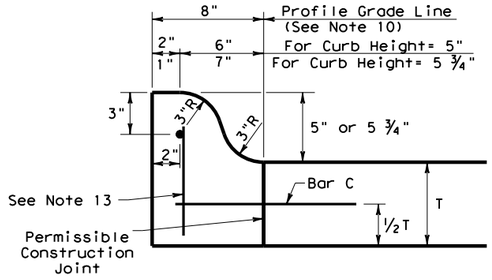
TYPE II CURB
5" - 5 ¾" HEIGHT



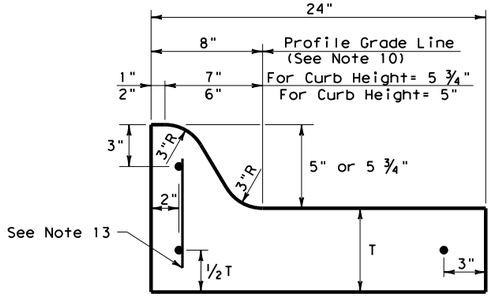
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



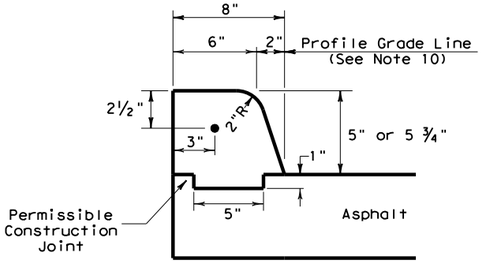
TYPE III CURB (KEYED)
2" - 4" HEIGHT



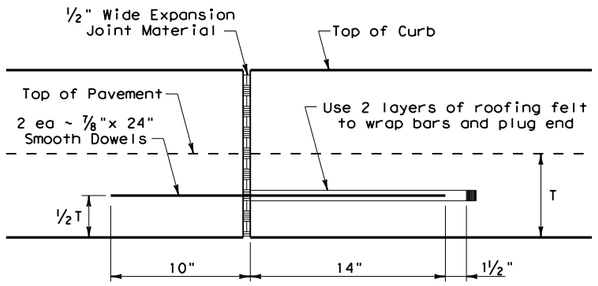
TYPE IIa CURB
5" - 5 ¾" HEIGHT



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

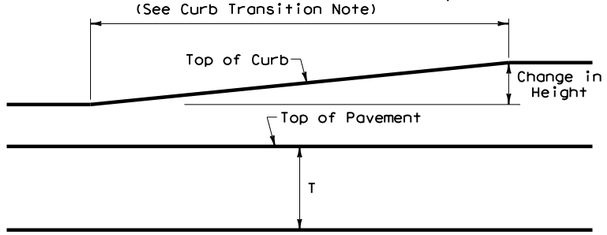


TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



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.

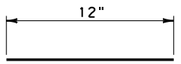


CURB TRANSITION
Note: To be paid for as Highest Curb

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

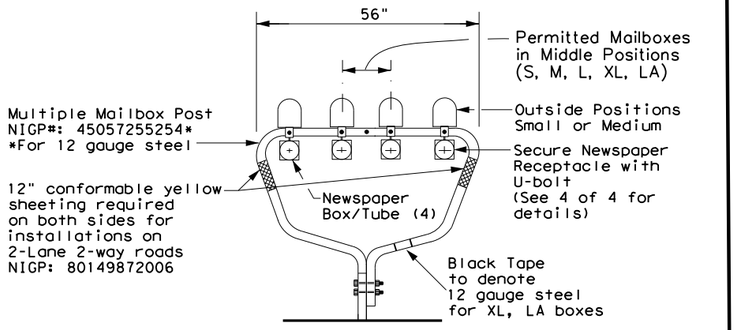
Design Division Standard

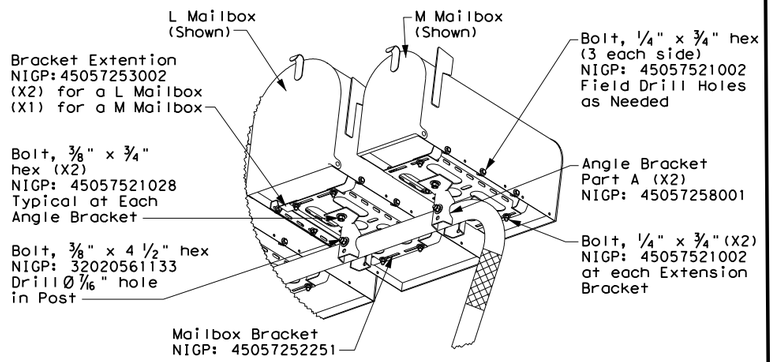
CONCRETE CURB AND CURB AND GUTTER

CCCG-22

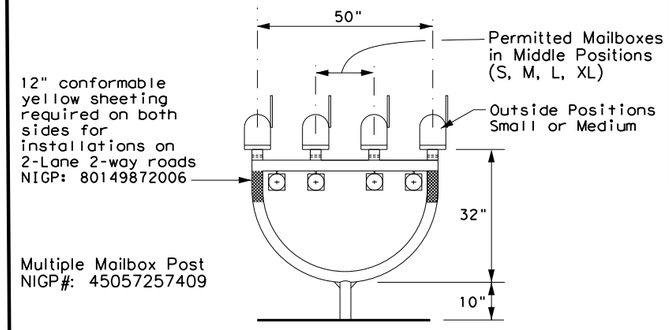
FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: CS	CK: KM
© TxDOT: JUNE 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		102

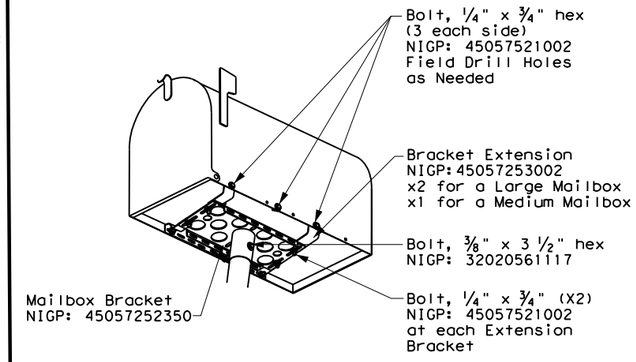
TYPE 1 - MULTIPLE





TYPE 4 - MULTIPLE





MAILBOX SIZES

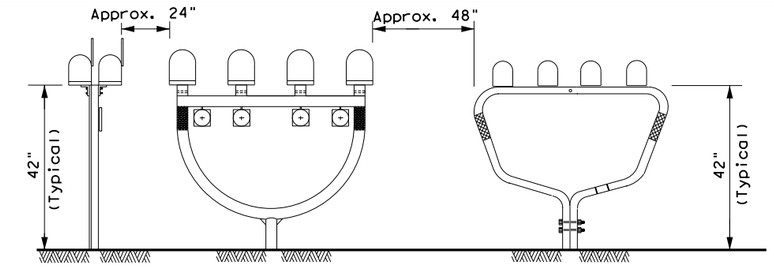
MAILBOX SIZE	TYPICAL DIMENSIONS			MAX **
	LENGTH	WIDTH	HEIGHT	WEIGHT
SMALL	19 1/2"	6"	7"	6 LBS
MEDIUM	22 1/2" *	8" *	11 1/2" *	8 LBS
LARGE	23 1/2"	11 1/2"	13 1/2"	11 LBS
EXTRA LARGE	18"	14"	12"	13 LBS
LOCKABLE	18"	11 1/2"	15"	23 LBS

* See Note 1.
** Excluding Molded Plastic on 4 X 4 Post

GENERAL NOTES:

1. Dimensions shown (length, width, and height) are typical, not maximums. However, anytime a medium size mailbox is mounted on a single/double mount or on the outside position on a multi mount, the dimensions shown are maximums.
2. Mailboxes shall be made of light weight sheet metal or light weight plastic. Heavy steel, cast iron or decorative mailboxes shall not be used on the state highway system.

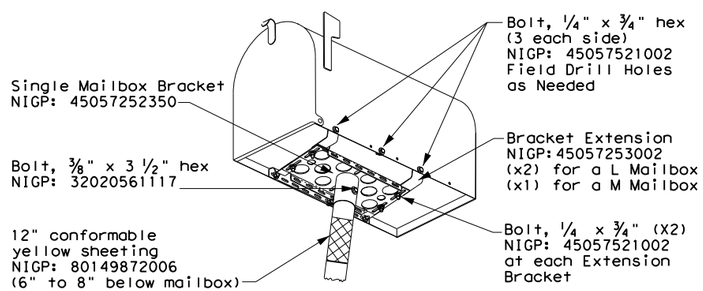
TYPICAL INSTALLATION MEASUREMENTS

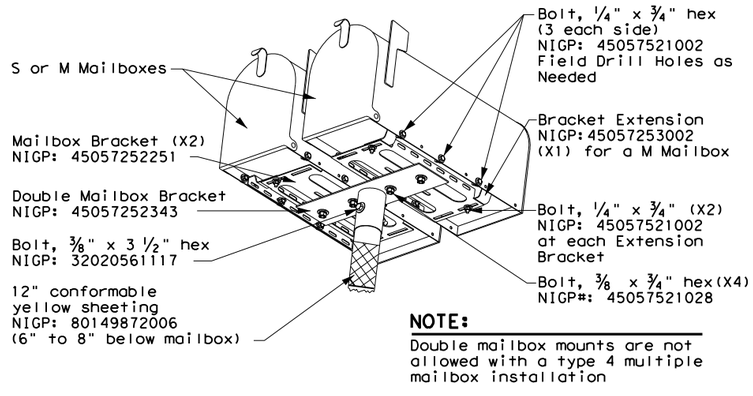


NOTE:

Mailbox installations in sidewalk areas shall be in accordance with the latest TxDOT Design Standard sheets PED-Pedestrian Facilities Curb Ramps.

TYPE 2 and 4 - SINGLE/DOUBLE

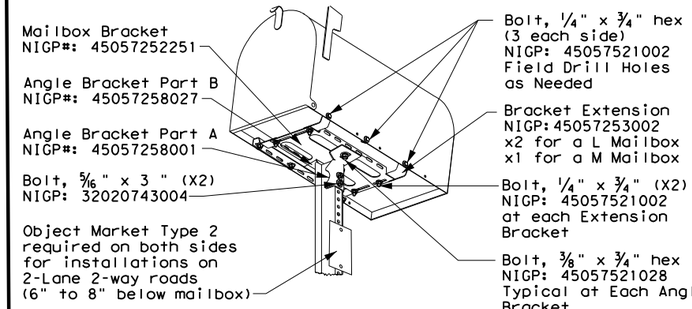


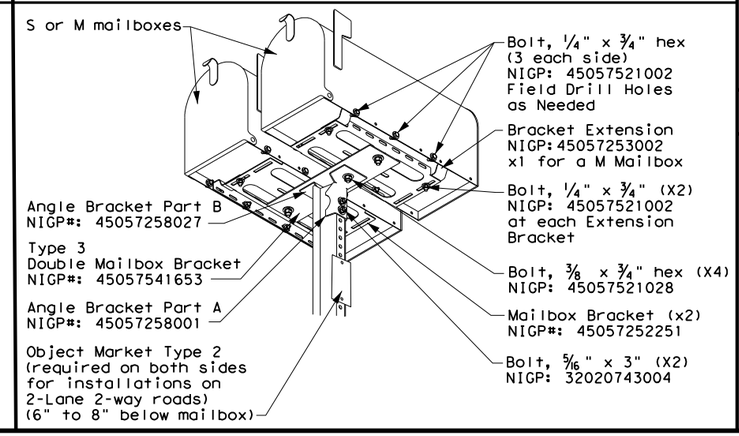


NOTE:

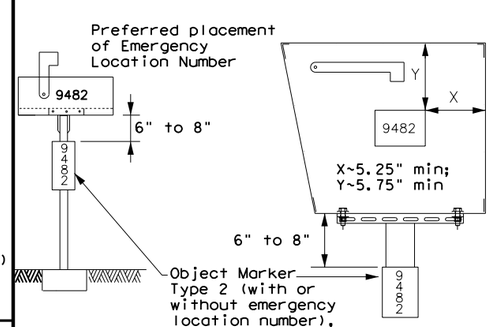
Double mailbox mounts are not allowed with a type 4 multiple mailbox installation

TYPE 3 - SINGLE/DOUBLE





PLACEMENT OF EMERGENCY LOCATION NUMBER

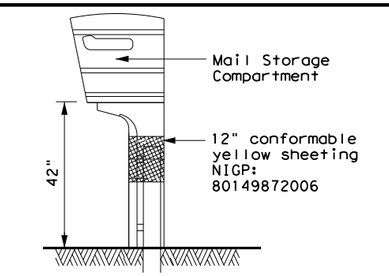


NOTES:

1. Location numbers are provided by homeowner. Minimum size 1" height.
2. Location number is typically placed on the mailbox in a contrasting color.
3. Black numbers may be placed on the Type 2 object marker if the numbers cannot be placed on the mailbox.
4. Alternatively, a green or blue plate with white numbers attached may be mounted below the object marker. Other contrasting color configuration, as approved, may be used.
5. See 3 of 4 for Foundation details.
6. See 4 of 4 for Hardware details.

SHEET 1 OF 4

TYPE 5



Typical Molded Plastic Mailbox

Texas Department of Transportation — Maintenance Division Standard

MAILBOX MOUNTING AND ASSEMBLY

MB(1)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		103

DATE: 5/22/2024 5:35:14 PM
FILE: c:\bms\ldous-pw-01\omar.alducin\dms06701\(5)mb-21.dgn

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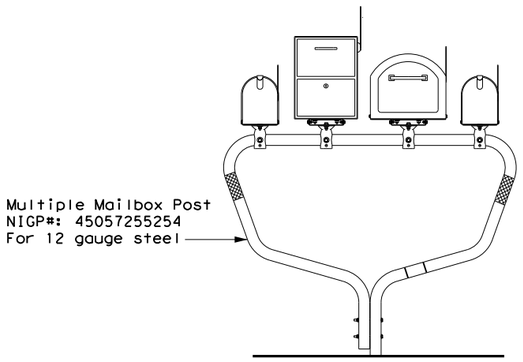
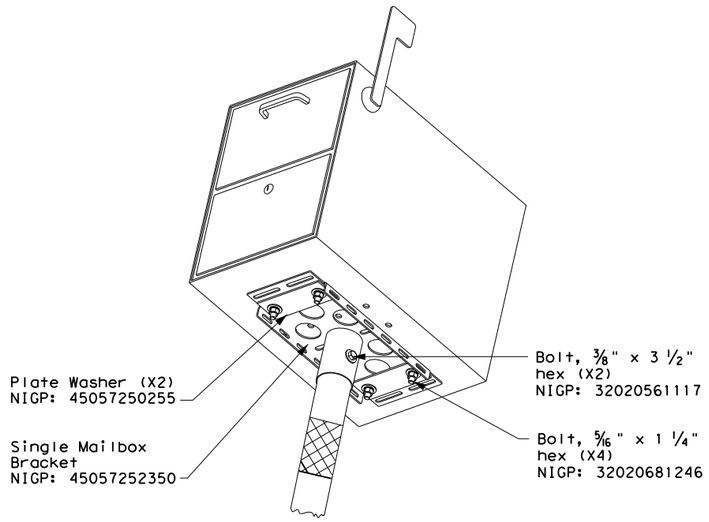
DATE: 5/22/2024 5:35:15 PM
FILE: c:\bms\vidcus-pw-01\omar.alducin\dms06701\(5)mb-21.dgn

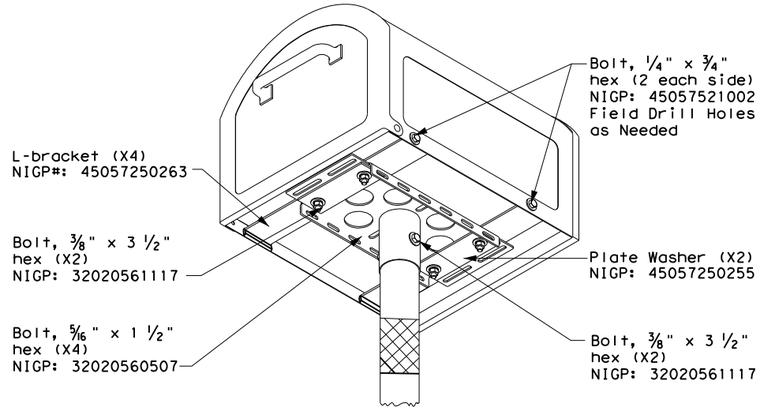
TYPE 1- MULTI LOCKABLE AND XL MAILBOX



TYPE 2/4 - SINGLE LOCKABLE MAILBOX

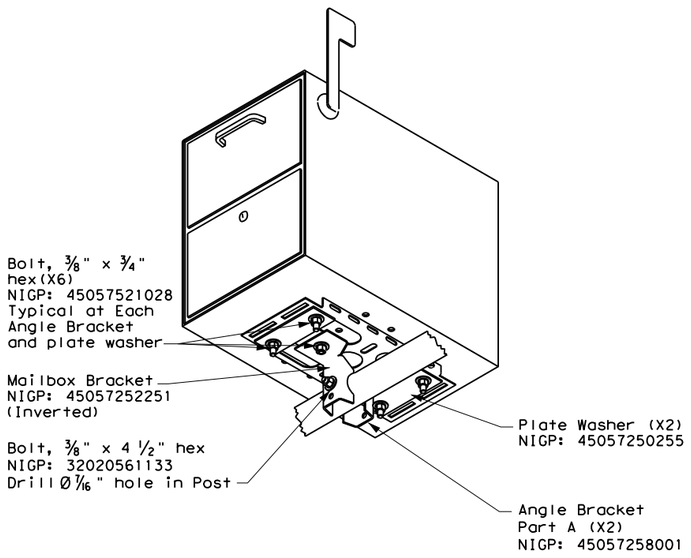


TYPE 2/4 - SINGLE XL MAILBOX

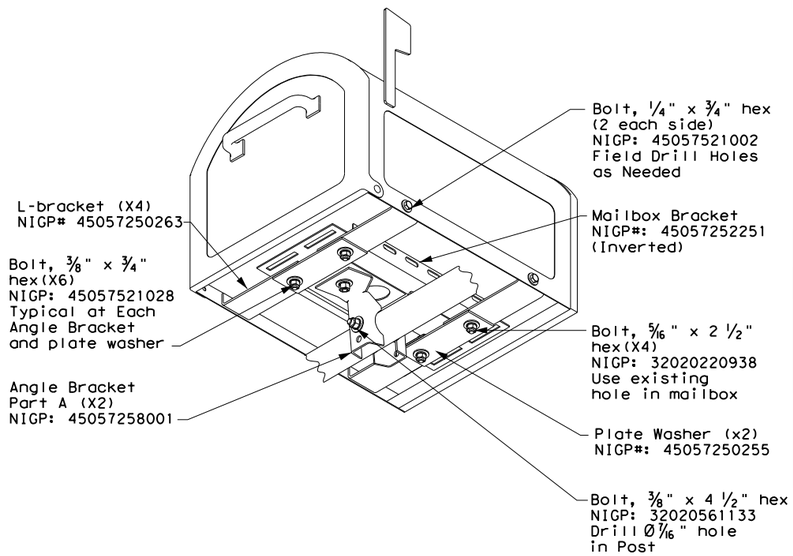


NOTE:
Follow same configuration when mounting an XL mailbox on a Type 4 multi post.

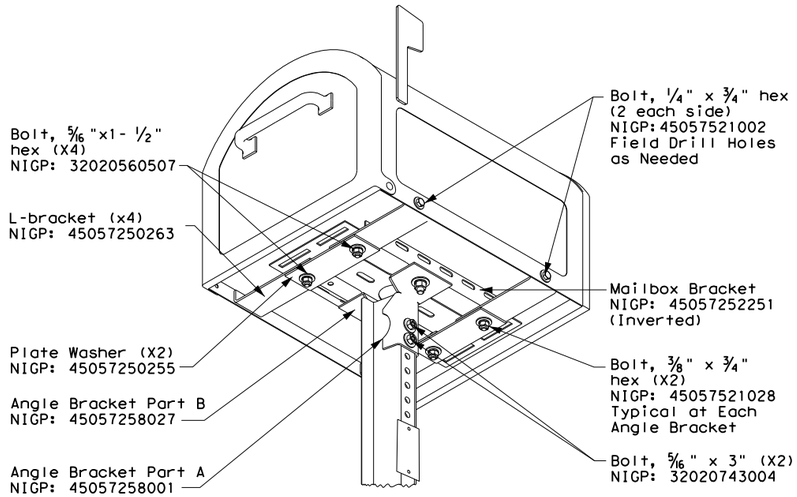
TYPE 1 MULTI – LOCKABLE ARCHITECTURAL (LA)



TYPE 1 MULTI – XL MAILBOX



TYPE 3 - XL MAILBOX MOUNTING



Texas Department of Transportation | Maintenance Division Standard

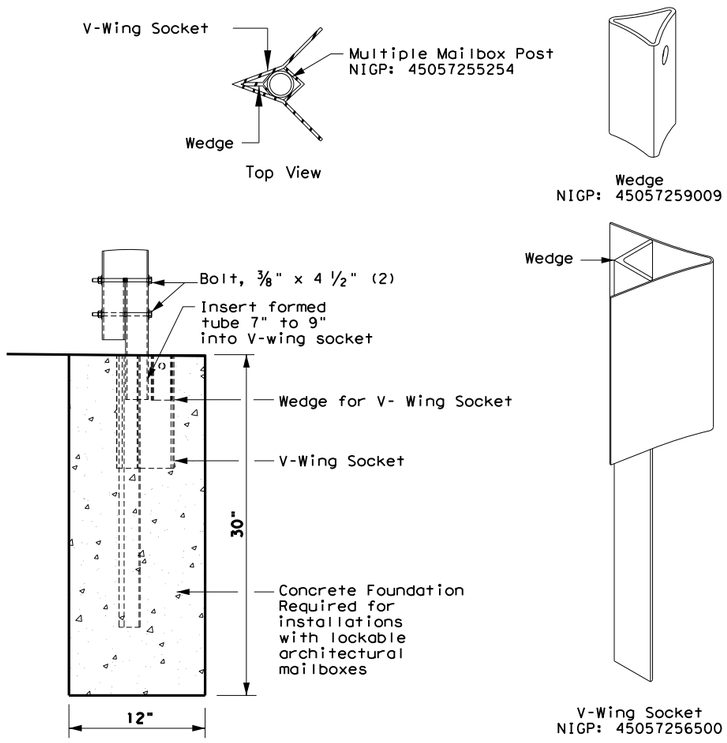
XL AND LOCKABLE ARCHITECTURAL MAILBOX ASSEMBLY

MB(2)-21

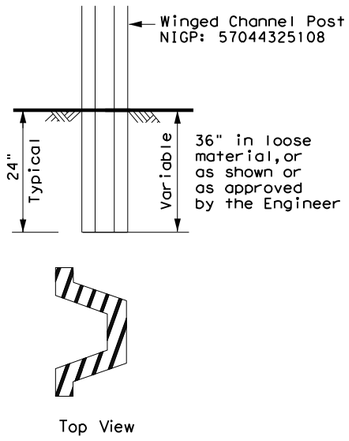
FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		104

TYPE 1 - SUPPORT/FOUNDATION

Thin Wall Tube w/ V-LOC Anchorage



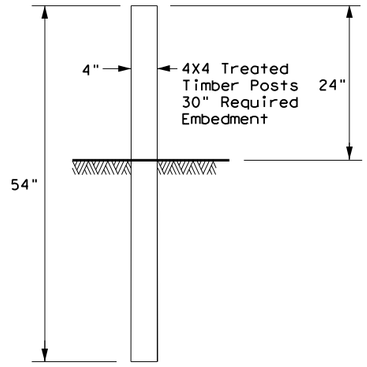
TYPE 3 - SUPPORT/FOUNDATION



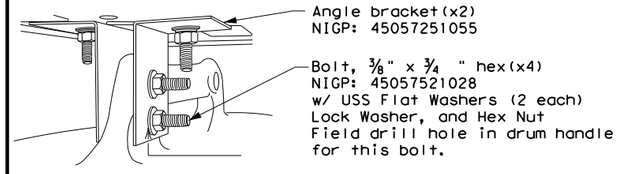
NOTES:

1. Attach Object Marker (OM) facing direction of traffic.
2. OM will also be required on opposite side if installed on a 2-Lane, 2-Way roadway.

TYPE 5 - SUPPORT/FOUNDATION



TYPE 6 - TEMPORARY MAILBOX SUPPORT



Plastic Drum NIGP: 55093383655
Rubber Collar NIGP: 55093387102

NOTES:

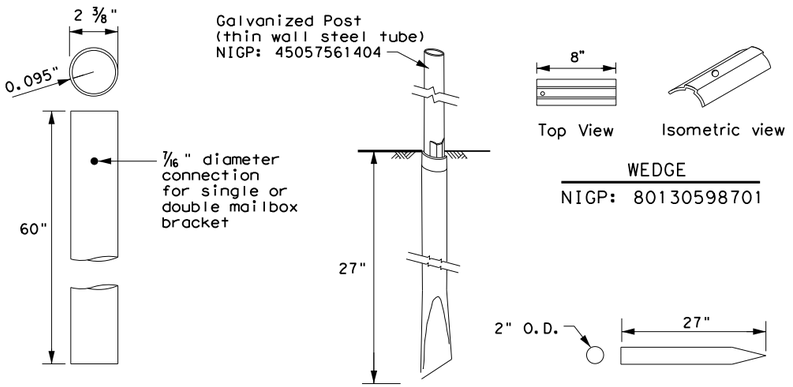
1. Place on approved plastic drum as shown in the Compliant Work Zone Traffic Control Devices (CWZTCD).
2. Existing attachment hardware shall be used unless damaged. Damaged hardware shall be replaced.

GENERAL NOTES:

1. Erect post plumb or vertical.
2. When galvanized part is required galvanize in accordance with Item 445.
3. Use a concrete footing as shown or when directed. Concrete footing will be required when soils do not hold the support/foundations in a stable condition, only on Type 1, Type 2, and Type 4

TYPE 2 - SUPPORT/FOUNDATION

Thin Wall Steel Tube w/Wedge Anchor System

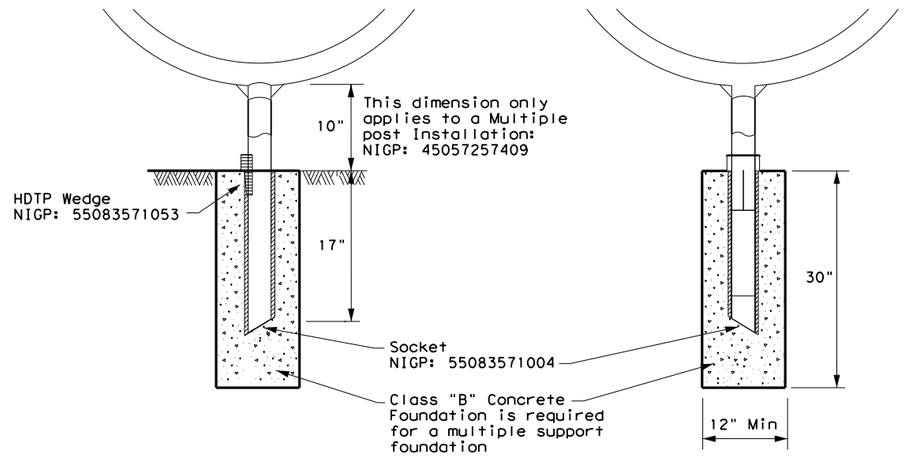


MAILBOX POST

WEDGE ANCHOR
NIGP: 80130238407

TYPE 4 - SUPPORT/FOUNDATION

Whitecoated steel post NIGP: 45057561107
Multiple post NIGP: 45057257409
Recycled Rubber post (RR) NIGP: 45057561057



SHEET 3 OF 4

Texas Department of Transportation

Maintenance Division Standard

MAILBOX SUPPORT AND FOUNDATION

MB(3)-21

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REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	0035	03	047	US 83
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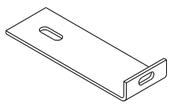
	SJT	CONCHO		105

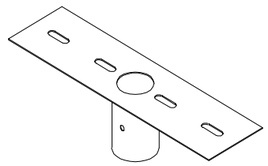
DATE: 5/22/2024 5:35:15 PM
FILE: c:\txmslidcus-pw-01\omar.alducin\dms06701\(5)mb-21.dgn

TYPE	TYPE 1	TYPE 2	TYPE 3	TYPE 4			TYPE 5	TYPE 6
Configuration	Multiple	Single or Double	Single or Double	Single	Double	Multiple	Single	Single
Mailbox Size NIGP #	Outside Position: S or M Inside Position: S, M, L, XL, or LA	Single: S, M, L, XL, or LA Double: SS, SM, MM	Single: S, M, L, or XL Double: SS, SM, MM	S, M, L, XL, or LA	SS, SM, or MM	Outside Position: S or M Inside Position: S, M, L, or XL	Molded Plastic	S, or M
Mailbox Post NIGP #	45057255254 (Galvanized Multiple)	45057561404 (Thin Walled Gavanize)	57044325108 (Wing Channel Post)	45057561107 (Thin walled white powder coated) 45057561057 (Recycled Rubber Post: S or M only)	45057561107 (Thin Walled White Powder Coated)	45057257409 (White Powder Coated Multiple)	4x4 Timber	Construction Barrel
Post and Mailbox Hardware NIGP #	45057259009 (Wedge) 45057256500 (V-Wing Socket) 45057253002 (Bracket Extension) 45057252251 (Mailbox Bracket) 45057258001 (Part A Angle Bracket x2) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	80130598701 (Wedge) 80130238407 (Wedge Anchor) 45057253002 (Bracket Extension) 45057252343 (Double MB Bracket) 45057252350 (S. Mailbox Bracket) 45057252251 (Mailbox Bracket) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket forXL x4)	45057541653 (Type 3 Double Mailbox Bracket) 45057252251 (Mailbox Bracket) 45057253002 (Bracket Extension) 45057258001 (Part A Angle Bracket) 45057258027 (Part B Angle Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)	55083571053 (Wedge) 55083571004 (Socket) 45057252350 (Single Mailbox Bracket) 45057253002 (Bracket Extension) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	55083571053 (Wedge) 55083571004 (Socket) 45057253002 (Bracket Extension) 45057252343 (Double Mount Bracket) 45057252251 (Mailbox Bracket x2)	55083571053 (Wedge) 55083571004 (Socket) 45057253002 (Bracket Extension) 45057252350 (Single Mount Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)	None	45057251055 Angle Bracket (x2)
Foundation Used	Class B Concrete (Required for LA Mailboxes)	Class B Concrete (Required for LA Mailboxes)	None	Class B Concrete (not used with recycled rubber post, required for LA Mailboxes)	Class B Concrete (not required)	Class B Concrete	None	None



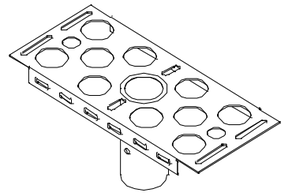
NIGP: 45057250263

L-Bracket x4 for
XL sized mailboxes



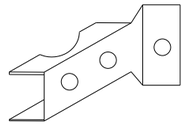
NIGP: 45057252343

Double Mailbox Bracket
For Type 2 and Type 4
double mount



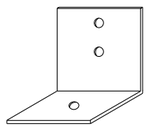
NIGP: 45057252350

Single Mailbox Bracket
For Type 2 single and for
Type 4 single and multi mount



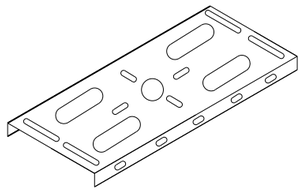
NIGP: 45057258001

Part "A" Angle Bracket
For Type 1 multi (2 per mailbox)
and Type 3 single and double



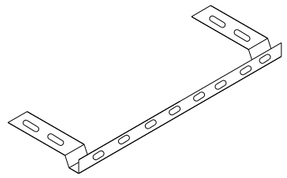
NIGP: 45057251055

Type 6 Angle Bracket
(2 per mailbox)



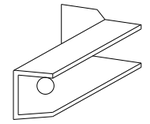
NIGP: 45057252251

Mailbox Bracket
For Type 1 multi and
any double mount (use 2)



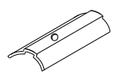
NIGP: 45057253002

Bracket Extension
Use 1 for a medium Mailbox
Use 2 for a Large Mailbox



NIGP: 45057258027

Part "B" Angle Bracket
For Type 3 single
and double



NIGP: 80130598701

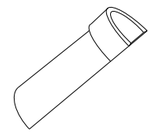
Wedge for Type 2

NIGP: 45057250255

Plate Washer for Architecural
and XL Mailboxes

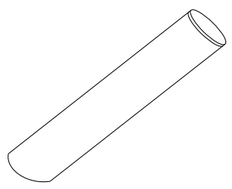
NIGP: 45057541653

Type 3 double mailbox bracket



NIGP: 55083571053

Type 4 Mailbox Wedge

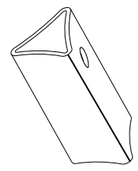


NIGP: 55083571004

Type 4 Mailbox Socket

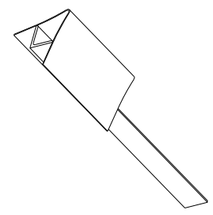
NIGP: 80130238407

Type 2 Wedge Anchor



NIGP: 45057259009

Wedge for Type 1 V-wing Socket



NIGP: 45057256500

V-wing Socket for
Type 1 Foundation

NIGP #	OBJECT MARKERS AND CONFORMABLE SHEETING
55008311759	Type 2 OM 4"x4" (3 Needed) for Type 3 Wing Channel Post
55008312906	Type 2 OM 6"x12" (1 needed) for Type 3 Wing Channel Post
80149872006	12" Conformable Reflective Yellow Sheeting for Flexible Posts

NOTES:

1. Type 2 object marker in accordance with Traffic Engineering Standard Delineators & Object Markers.
2. A light weight receptacle for newspaper delivery can be attached to mailbox posts if the receptacle does not touch the mailbox, present a hazard to traffic or delivery of the mail, extend beyond the front of the mailbox, or display advertising, except the publication title.

BID CODES FOR CONTRACTS

MB-(X) ASSM TY (XXX) (X)

Type of Mailbox
- S = Single
- D = Double
- M = Multiple
- MP = Molded Plastic

Type of Post
- WC = Winged Channel Post
- RR = Recycled Rubber
- TWW = Thin Walled White Tubing
- TWG = Thin Walled Galvanized Tubing
- TIM = Timber

Type of Foundation
- Ty 1 = V-Loc
- Ty 2 = Wedge Anchor Steel System
- Ty 3 = Winged Channel post
- Ty 4 = Wedge Anchor Plastic System
- Ty 5 = 4 X 4 Post

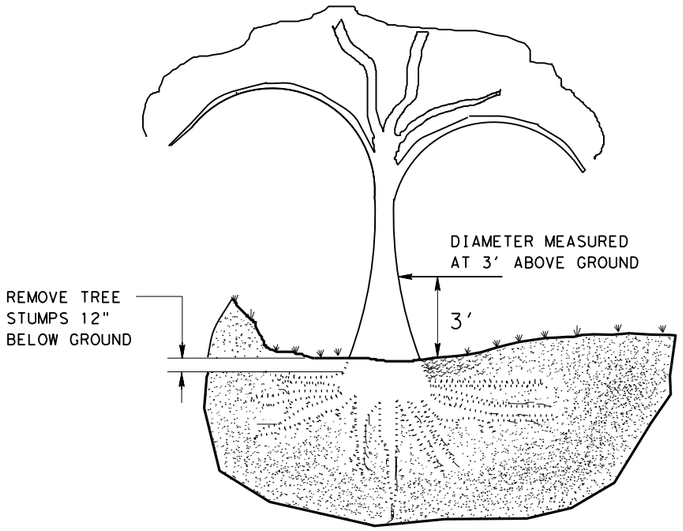
DATE: 5/22/2024 5:35:15 PM
FILE: c:\bms\dcus-pw-01\omar.alducin\dms06701\(5)mb-21.dgn

Texas Department of Transportation — Maintenance Division Standard

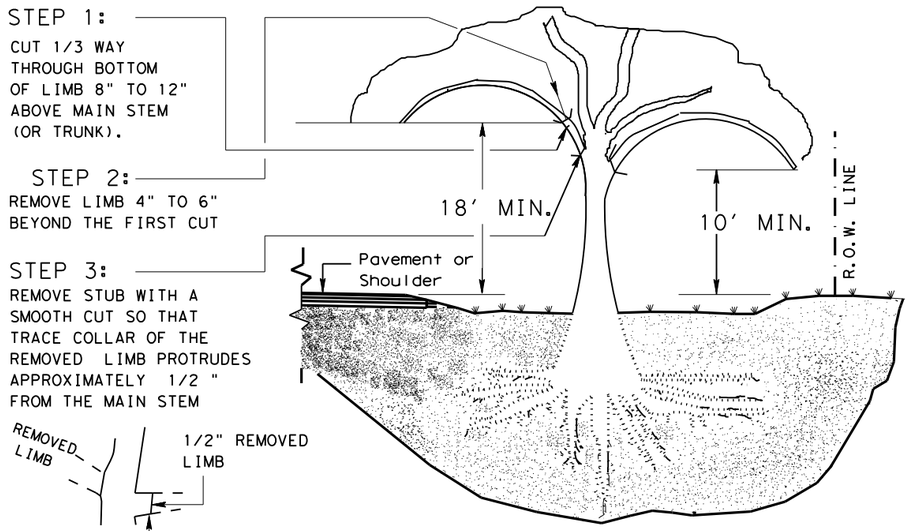
NIGP PARTS LIST AND COMPATIBILITY

MB(4)-21

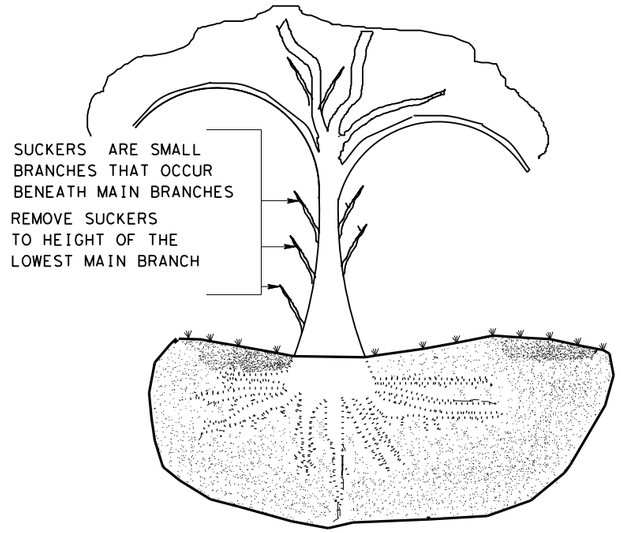
FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		106



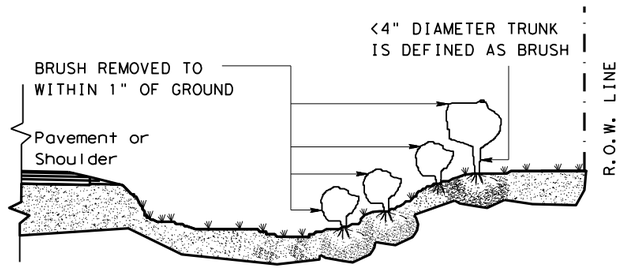
TREE REMOVAL



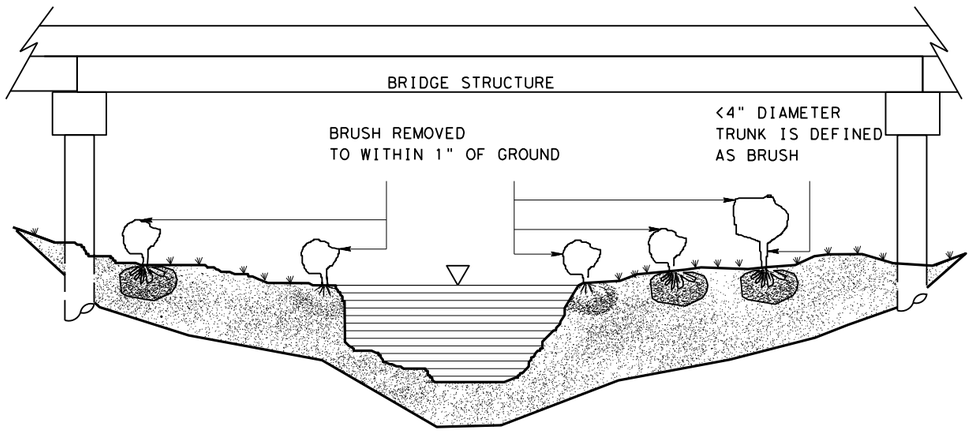
TREE TRIMMING



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



BRUSH REMOVAL



BRUSH REMOVAL UNDER BRIDGE AND IN CHANNEL

GENERAL NOTES:

TREE TRIMMING

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

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

TREE REMOVAL

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

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

TABLE 1
TREE TRUNK SIZE FOR TREE REMOVAL PAYMENT

PAY ITEM	RANGE FOR PAY ITEMS			
	TRUNK DIAMETER *		TRUNK CIRCUMFERENCE	
	LOWER LIMIT IS GREATER THAN	UPPER LIMIT IS LESS THAN OR EQUAL TO	LOWER LIMIT IS GREATER THAN	UPPER LIMIT IS LESS THAN OR EQUAL TO
752 6005	4	12	12 1/2	37 1/2
752 6006	12	18	37 1/2	56 1/2
752 6007	18	24	56 1/2	75 1/2
752 6008	24	30	75 1/2	94
752 6009	30	36	94	113
752 6010	36	42	113	132
752 6011	42	48	132	151
752 6012	48	60	151	188 1/2
752 6013	60	72	188 1/2	226
752 6019	72	84	226	264
	84	GREATER THAN 84	264	NOT APPLICABLE

***SEE GENERAL NOTE *3.**

Texas Department of Transportation — Maintenance Division Standard

TREE AND BRUSH REMOVAL

TRB-15(1)

FILE:	DN: JEO	CK: LJB	DW: JEO	CK:
© TxDOT MARCH 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
Revised table 1 to 2014 Specification	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		107

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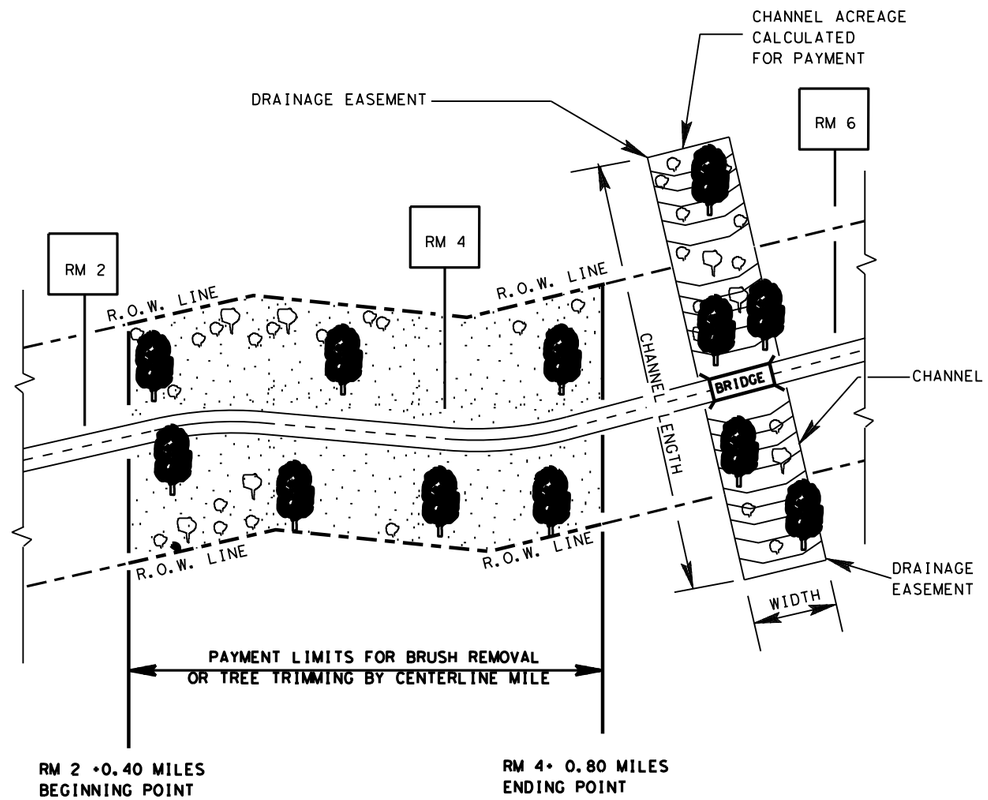
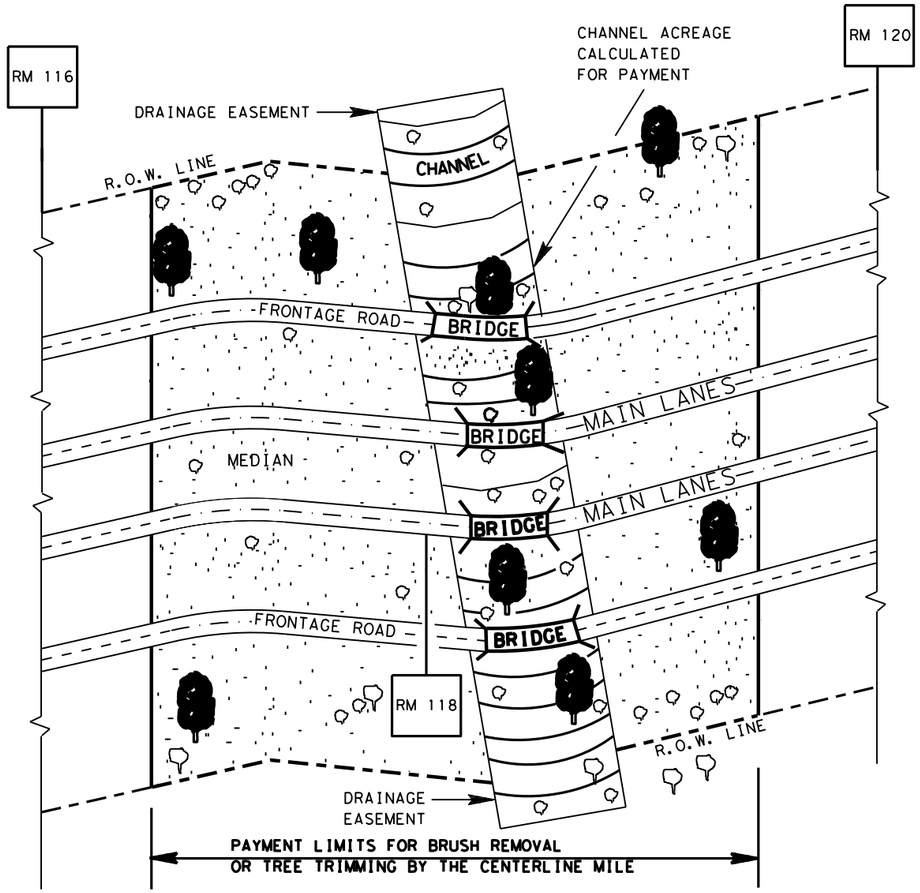


BRUSH REMOVED TO
WITHIN 1" OF GROUND
<4" DIAMETER TRUNK
IS DEFINED AS BRUSH
UNLESS OTHERWISE DIRECTED

EXAMPLE: UNDIVIDED HIGHWAY



BRUSH REMOVED TO
WITHIN 1" OF GROUND
<4" DIAMETER TRUNK
IS DEFINED AS BRUSH
UNLESS OTHERWISE DIRECTED

EXAMPLE: DIVIDED HIGHWAY WITH FRONTAGE ROADS

GENERAL NOTES:

TREE TRIMMING AND BRUSH REMOVAL

1. PAYMENT BY THE CENTERLINE MILE IS MADE TO THE NEAREST 1/100 (0.01) MILE.
2. LIMITS OF WORK ARE SHOWN AS DISTANCES FROM REFERENCE MARKERS (RM).
3. PAY ITEMS BY THE CENTERLINE MILE INCLUDE ALL TREE TRIMMING OR BRUSH REMOVAL IN THE RIGHT OF WAY ON BOTH SIDES OF THE HIGHWAY. FOR DIVIDED HIGHWAYS, THE MEDIAN IS INCLUDED. FOR HIGHWAYS WITH FRONTAGE ROADS, THE AREAS BETWEEN THE FRONTAGE ROADS AND MAIN LANES, AND THE AREAS OUTSIDE OF THE FRONTAGE ROADS ARE INCLUDED.
4. BRUSH REMOVAL AND TREE TRIMMING UNDER BRIDGES, IN AND ALONG CHANNELS AND EASEMENTS ARE PAID FOR BY THE ACRE FOR AREAS DESIGNATED ON THE PLANS.

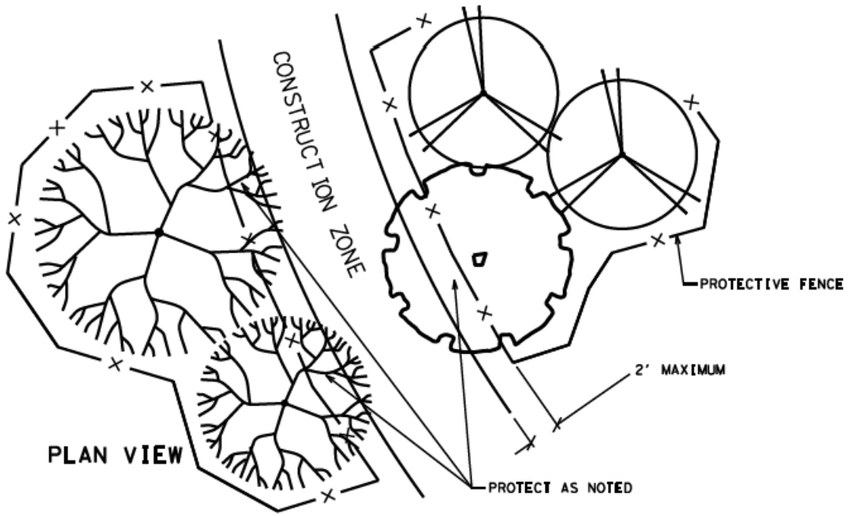
Texas Department of Transportation
Maintenance Division
Standard Plans

TREE AND BRUSH REMOVAL

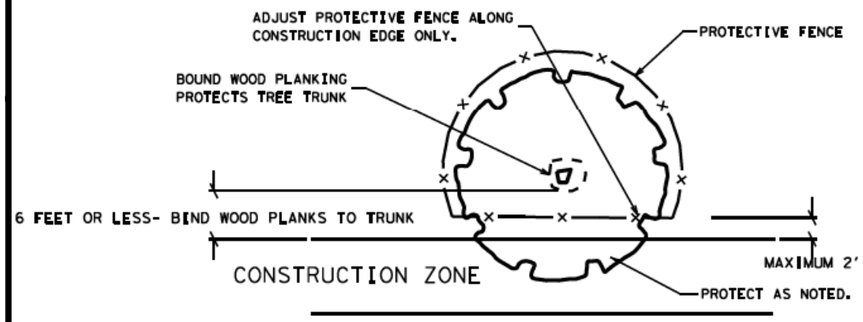
TRB-15(2)

NOT TO SCALE — SHEET 2 OF 2

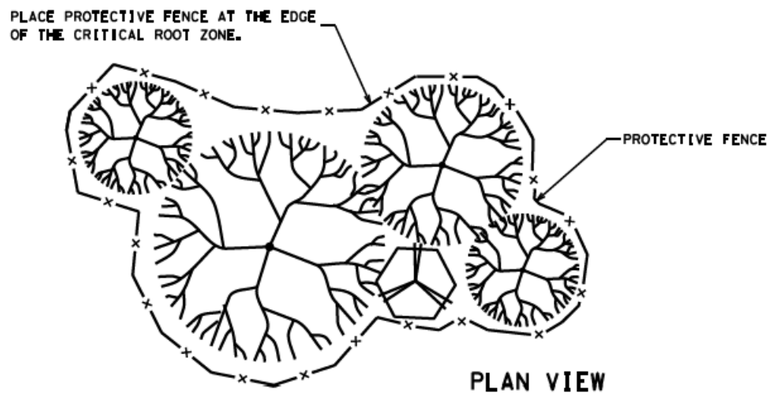
FILE: TRB-15(2).DGN	DRAWN: JEO MODIFIED:		CHECKED: DM; LJB	DW: -	CK: -		NEG NO.:	
© TxDOT APRIL 2015		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT				SHEET
REVISED: 5/13/2004	LJB	SJT						108
REVISED: 9/24/2004	LJB	COUNTY			CONTROL	SECTION	JOB	HIGHWAY
REVISED: APRIL 2015	JEO	CONCHO			0035	03	047	US 83



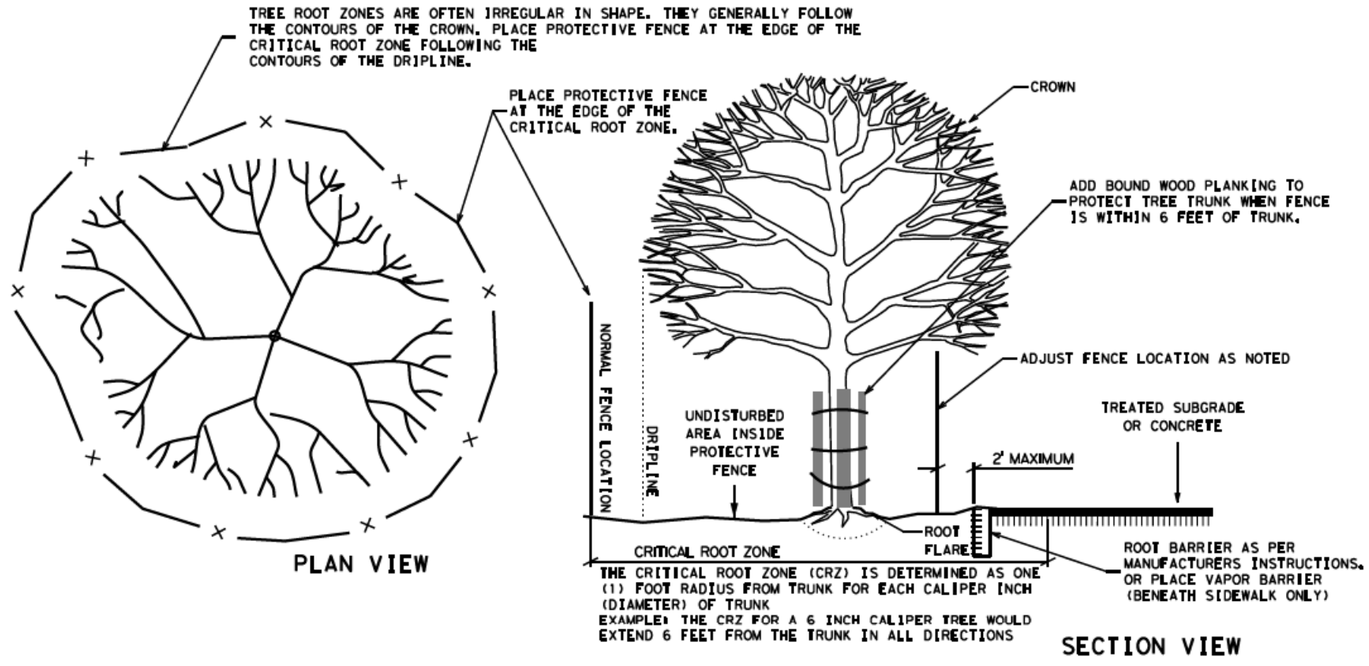
LINEAR CONSTRUCTION THROUGH STAND OF TREES



PLAN VIEW
PAVING UNDER TREES



TYPICAL TREE GROUPING PROTECTION



TYPICAL TREE PROTECTION

NOTES:

CRITICAL ROOT ZONE IS 1 FT. AWAY FROM TREE TRUNK FOR EVERY 1 IN. OF TREE DIAMETER MEASURED AT 4 FT. HEIGHT.

WATER TREES EVERY 2 WEEKS WITH A MINIMUM OF 100 GALLONS PER TREE.

SPRAY TREE WITH WATER TO REMOVE CONSTRUCTION DUST WHEN DIRECTED.

CONSTRUCTION FENCE SHALL BE 4 FT. TALL.

DO NOT PERFORM WORK OR STORE EQUIPMENT WITHIN PROTECTED AREA.

COVER THE CRITICAL ROOT ZONE BETWEEN THE PROTECTED AREA AND THE CONSTRUCTION ZONE WITH 4 IN. OF MULCH

PERFORM TREE TRIMMING AND WOUND REPAIR PER STANDARD SPECIFICATIONS.

DAMAGED AND EXPOSED ROOTS SHALL BE TRIMMED AND TREATED PER STANDARD SPECIFICATIONS. BACKFILL EXPOSED ROOTS WITH TOPSOIL WITHIN 24 HOURS OF EXPOSURE.

PLACE PLASTIC UNDER CONCRETE PLACED IN THE CRITICAL ROOT ZONE.

PLACE A ROOT BARRIER IN THE CRITICAL ROOT ZONE AT THE EDGE OF TREATED SUBGRADE TO THE DEPTH OF THE SUBGRADE.

ALL WORK IS SUBSIDIARY TO BID ITEM.

Texas Department of Transportation | Austin District Standard

TREE PROTECTION DETAILS

TPD-19(AUS)

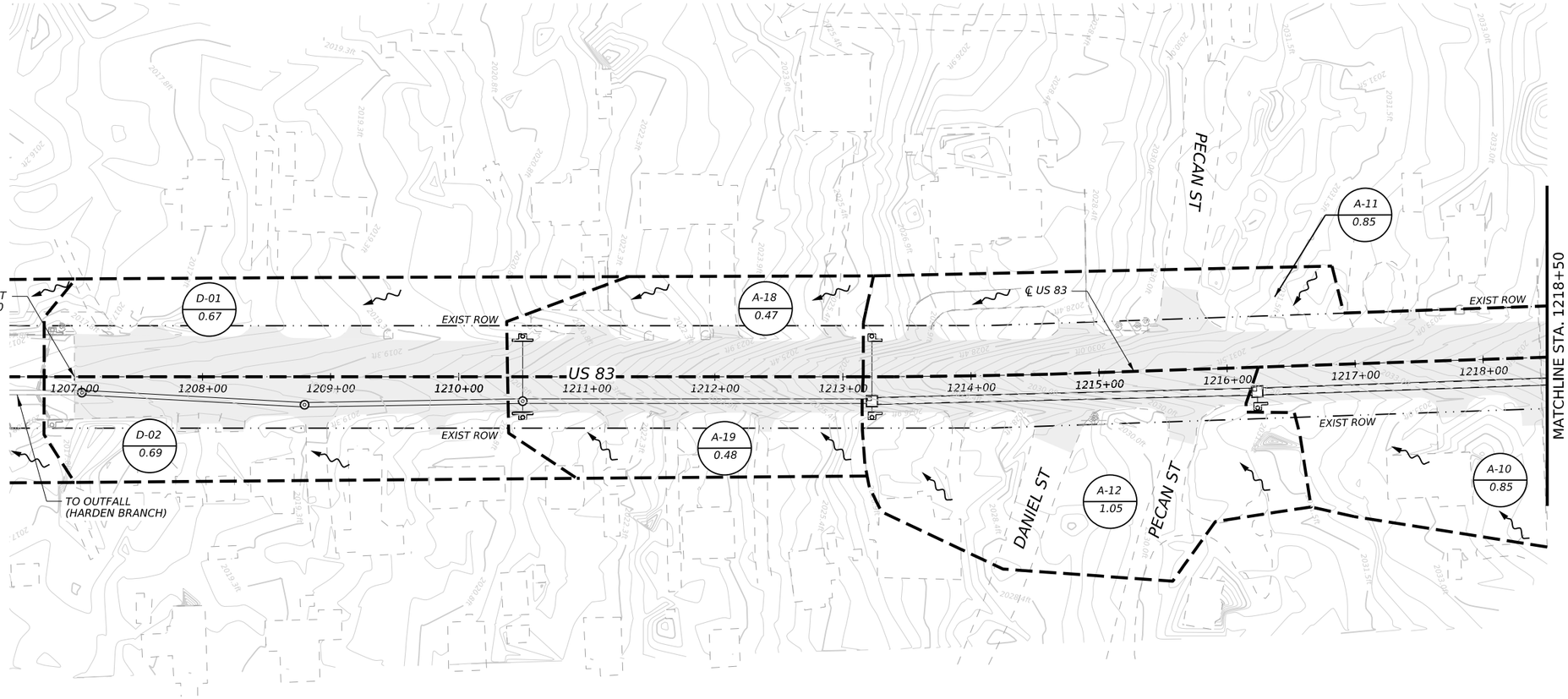
REVISIONS
08/16: SHEET CREATED
04/19: APPROVED

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		109

DN: MN CK: AR DW: AM CK: AR

LEGEND

- DRAINAGE AREA BOUNDARY
- SURFACE RUNOFF DIRECTION
- EXIST CONTOURS
- EXIST ROW
- X-X / X.XX — WATERSHED NAME / AREA (AC)



NOTES:

1. SEE SHEET 4 OF 4 FOR RUNOFF COMPUTATIONS.

0 25 50 100
SCALE: 1"=100'

STATE OF TEXAS
GAURAV GARG
102055
LICENSED
PROFESSIONAL ENGINEER
5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

F-23347
1500 S Dairy Ashford Rd
Suite 450
Houston, Texas, 77077

US 83

US 83
DRAINAGE AREA MAP
BEGIN PROJECT TO STA 1218+50

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		110

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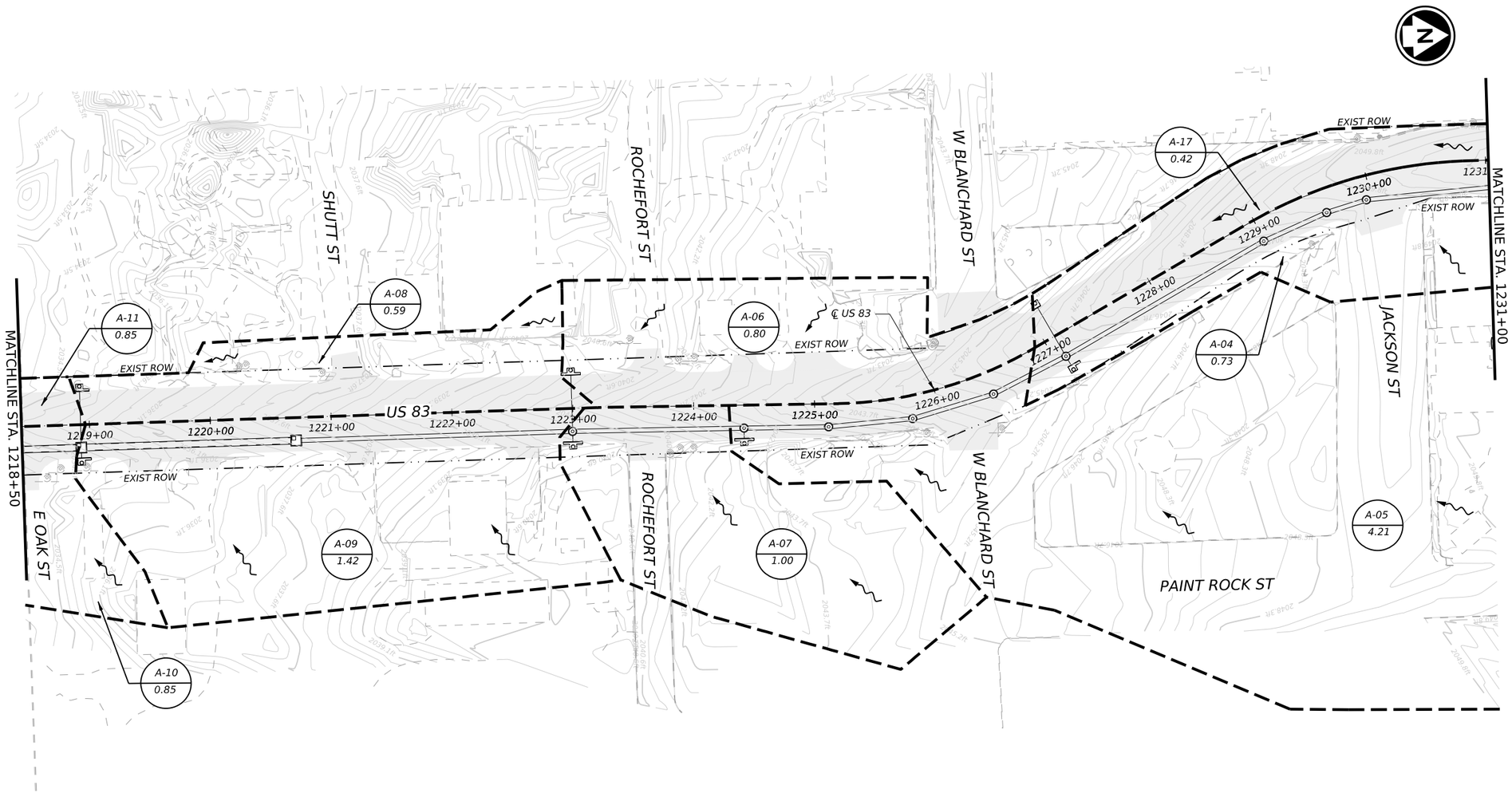
CK: AR
DN: MN

LEGEND

- DRAINAGE AREA BOUNDARY
- SURFACE RUNOFF DIRECTION
- EXIST CONTOURS
- EXIST ROW
- X-X / X.XX — WATERSHED NAME / AREA (AC)



NOTES:

1. SEE SHEET 4 OF 4 FOR RUNOFF COMPUTATIONS.

0 25 50 100
SCALE: 1"=100'

STATE OF TEXAS
GAURAV GARG
102055
LICENSED
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5/22/2024

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15915 KATY FREEWAY, SUITE 300
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TBPELS FIRM # F-6825

IDCUS PLANNERS | ENGINEERS | MANAGERS

F-23347

CASCADE CIVIL SERVICES, LLC
1500 S Dairy Ashford Rd
Suite 450
Houston, Texas, 77077

US 83

US 83
DRAINAGE AREA MAP
STA 1218+50 TO STA 1231+00

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		111

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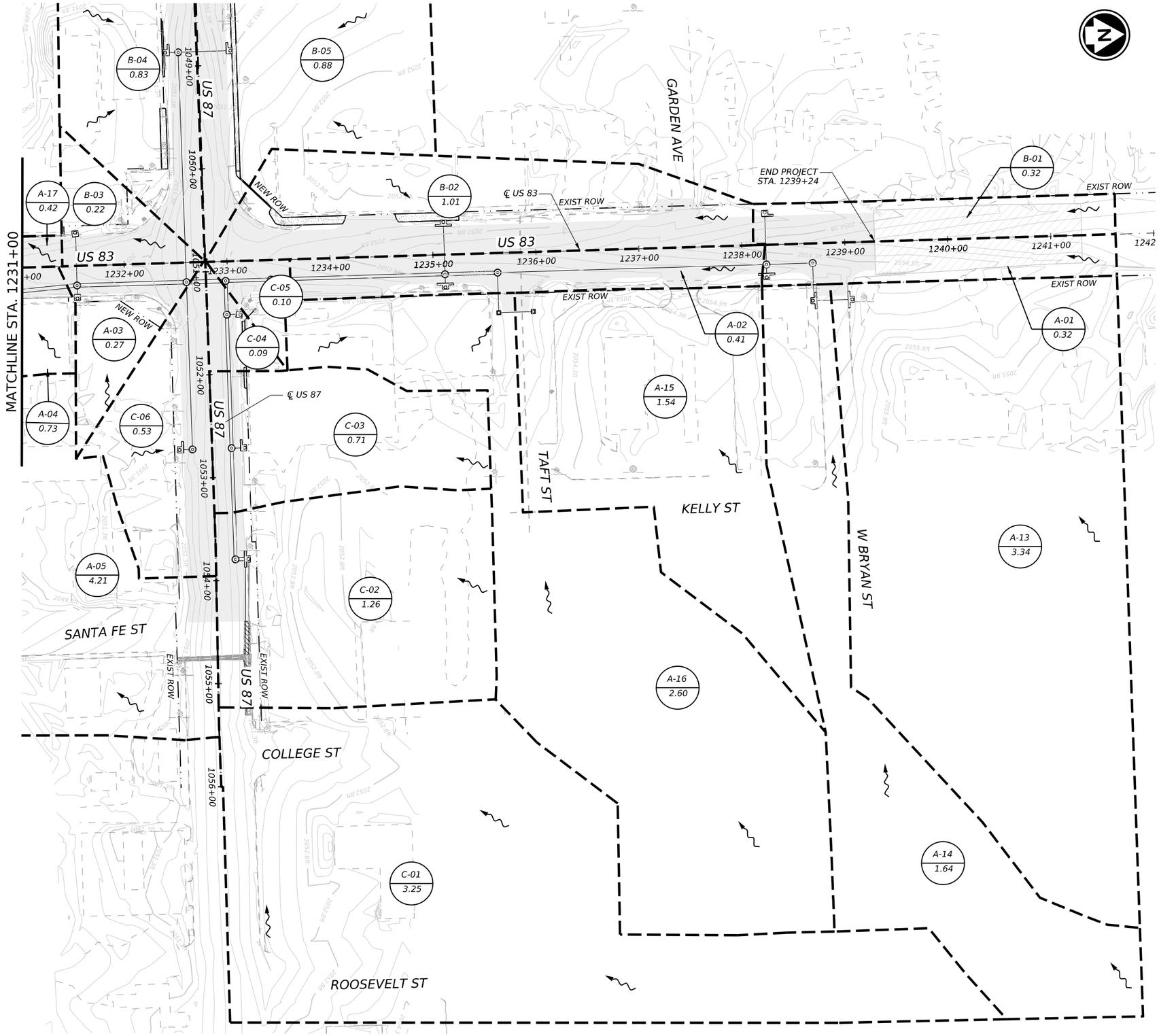

LEGEND

- DRAINAGE AREA BOUNDARY
- SURFACE RUNOFF DIRECTION
- EXIST CONTOURS
- EXIST ROW
- X-X / X.XX — WATERSHED NAME / AREA (AC)

NOTES:

1. SEE SHEET 4 OF 4 FOR RUNOFF COMPUTATIONS.

0 25 50 100

SCALE: 1"=100'

STATE OF TEXAS
GAURAV GARG
102055
LICENSED
PROFESSIONAL ENGINEER

5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

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IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

F-23347
CASCADE CIVIL SERVICES, LLC
1500 S Dairy Ashford Rd
Suite 450
Houston, Texas, 77077

US 83

US 83
DRAINAGE AREA MAP
STA 1231+00 TO END PROJECT

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		112

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CK: AR
DN: MN

DRAINAGE AREAS

DRAINAGE AREA ID	TOTAL AREA (ACRES)	COMPOSITE C	C x A	TIME OF CONCENTRATION (MIN)	5-YR RAINFALL INTENSITY (IN/HR) I	5-YR PEAK FLOW (CFS) Q	METHOD
A-01	0.32	0.87	0.27	10	5.36	1.5	RATIONAL
A-02	0.41	0.88	0.36	10	5.36	1.9	RATIONAL
A-03	0.27	0.74	0.20	10	5.36	1.1	RATIONAL
A-04	0.73	0.79	0.57	10	5.36	3.1	RATIONAL
A-05	4.21	0.65	2.74	12	4.97	13.6	RATIONAL
A-06	0.80	0.75	0.60	10	5.36	3.2	RATIONAL
A-07	1.00	0.53	0.53	10	5.36	2.8	RATIONAL
A-08	0.59	0.79	0.46	10	5.36	2.5	RATIONAL
A-09	1.42	0.68	0.96	11	5.15	5.0	RATIONAL
A-10	0.85	0.64	0.54	10	5.36	2.9	RATIONAL
A-11	0.85	0.77	0.66	10	5.36	3.5	RATIONAL
A-12	1.05	0.68	0.71	10	5.36	3.8	RATIONAL
A-13	3.34	0.60	2.01	12	4.97	10.0	RATIONAL
A-14	1.64	0.68	1.11	11	5.15	5.7	RATIONAL
A-15	1.54	0.70	1.08	11	5.15	5.6	RATIONAL
A-16	2.60	0.81	2.11	12	4.97	10.5	RATIONAL
A-17	0.42	0.66	0.28	10	5.36	1.5	RATIONAL
A-18	0.47	0.70	0.33	10	5.36	1.7	RATIONAL
A-19	0.48	0.71	0.34	10	5.36	1.8	RATIONAL
B-01	0.32	0.90	0.29	10	5.36	1.5	RATIONAL
B-02	1.01	0.90	0.91	10	5.36	4.9	RATIONAL
B-03	0.22	0.80	0.17	10	5.36	0.9	RATIONAL
B-04	0.83	0.75	0.62	10	5.36	3.3	RATIONAL
B-05	0.88	0.86	0.76	10	5.36	4.1	RATIONAL
C-01	3.25	0.69	2.24	11	5.15	11.5	RATIONAL
C-02	1.26	0.69	0.87	10	5.36	4.7	RATIONAL
C-03	0.71	0.84	0.60	10	5.36	3.2	RATIONAL
C-04	0.09	0.82	0.08	10	5.36	0.4	RATIONAL
C-05	0.10	0.82	0.08	10	5.36	0.4	RATIONAL
C-06	0.53	0.75	0.40	10	5.36	2.1	RATIONAL
D-01 *	0.67	0.70	0.47	10	5.36	2.5	RATIONAL
D-02 *	0.69	0.71	0.49	10	5.36	2.6	RATIONAL

* EXIST INLET DRAINAGE AREA

NOTES:

1. RESULTS ARE BASED ON 5-YEARS TXDOT ATLAS 14 PARTIAL DURATION SERIES EBD COEFFICIENTS FOR CONCHO COUNTY
2. ALL CALCULATIONS CARRIED OUT USING OPENROADS DESIGNER - DRAINAGE & UTILITIES IN THE TXDOT 10.10 WORKSPACE.
3. e=0.7979, b=58.7929, d=10.1323

STATE OF TEXAS
GAURAV GARG
102055
LICENSED
PROFESSIONAL ENGINEER
5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
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IDCUS PLANNERS|ENGINEERS|MANAGERS

F-23347

CASCADE CIVIL SERVICES, LLC
1500 S Dairy Ashford Rd
Suite 450
Houston, Texas, 77077

US 83

DRAINAGE AREA MAP
RUNOFF COMPUTATIONS

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		113

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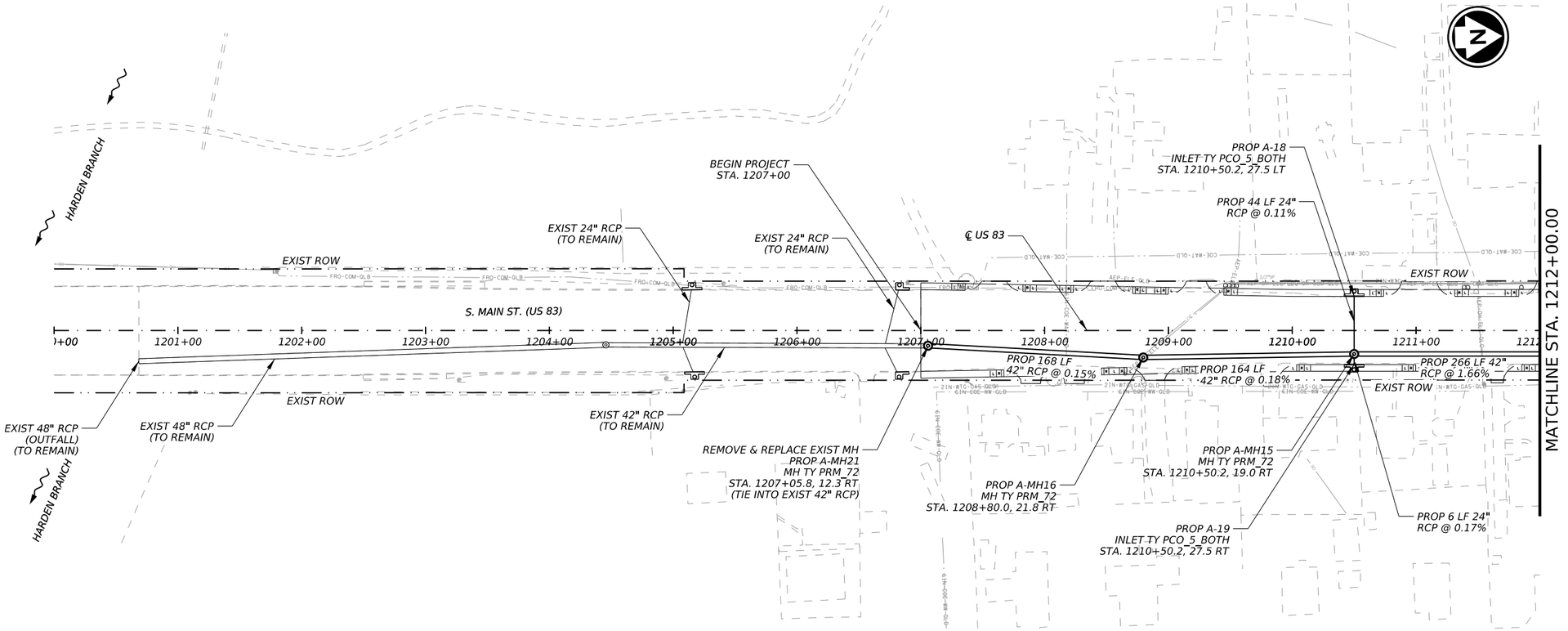


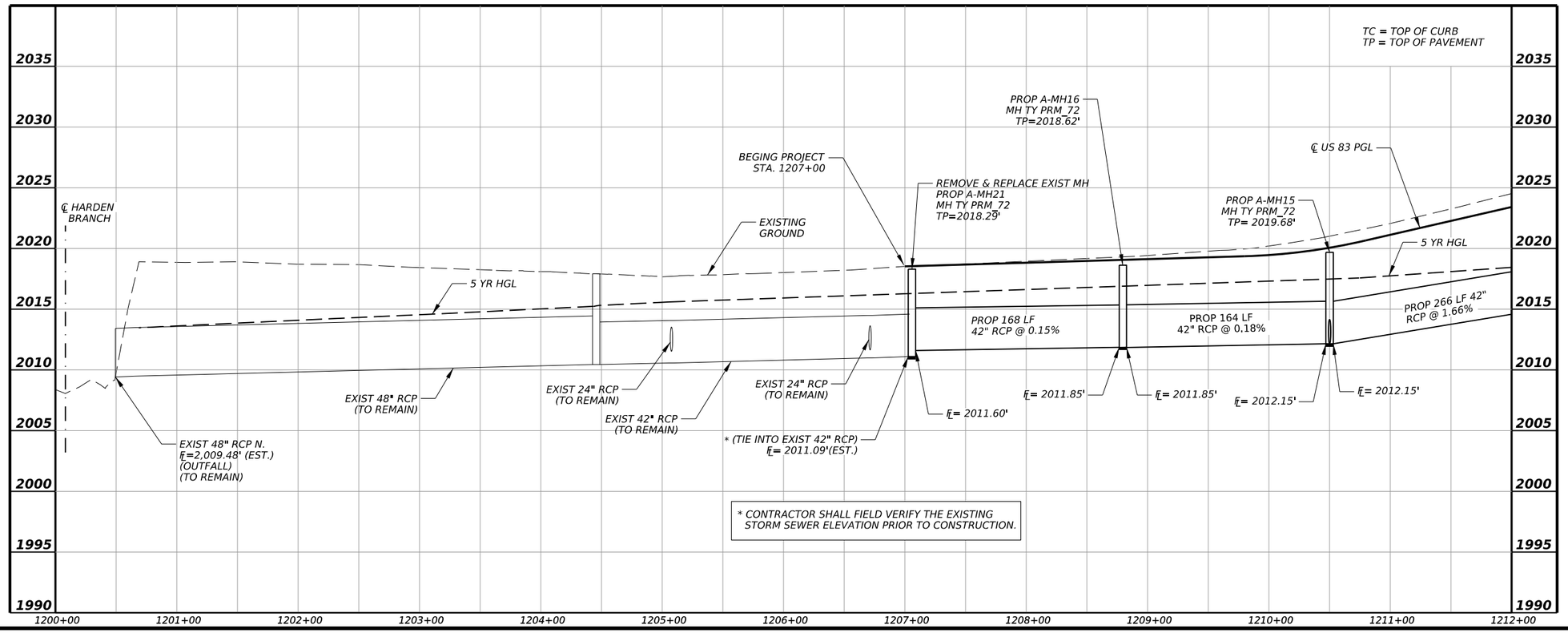
LEGEND

- PROP STORM SEWER
- EXIST STORM SEWERS
- PROP TYPE PCO INLET
- PROP GRATE INLET / JB
- PROP MANHOLE
- EXIST ROW
- PROP PGL
- N.G. @ ℄

NOTES:

1. EXISTING STORM SEWERS TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.
2. ALL PIPES LENGTH ARE ACTUAL LENGTH.
3. REFER TO DRAINAGE AREA MAP SHEETS FOR DRAINAGE AREAS AND FLOW CALCULATIONS.
4. REFER TO UTILITY SHEETS FOR UTILITY LEGEND.
5. REFER TO DRAINAGE LATERALS FOR LATERAL DETAILS.
6. REFER TO HYDRAULIC DATA SHEETS FOR HYDRAULIC CALCULATIONS.
7. THE CONTRACTOR SHALL FIELD VERIFY THE STORM SEWER AND CONNECTION DETAILS FOR FLOW LINES AND CONFLICTS PRIOR TO FABRICATION.
8. ROCK LAYERS MAYBE ENCOUNTERED DURING EXCAVATION. IF ENCOUNTERED, EXCAVATION OF ROCK SHALL BE CONSIDERED SUBSIDIARY TO ITEMS 462, 464, AND 465.
9. OFFSETS ARE MEASURED FROM THE CENTERLINE TO THE CENTER OF GRATE INLETS/MANHOLES AND AT CURB FOR CURB INLETS.

HORIZ. 0 25 50 100
VERT. 0 5 10



* CONTRACTOR SHALL FIELD VERIFY THE EXISTING STORM SEWER ELEVATION PRIOR TO CONSTRUCTION.

STATE OF TEXAS
ALI ROSHANFEKR
124610
LICENSED
PROFESSIONAL ENGINEER
Ali Roshanfekr
5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS
PLANNERS | ENGINEERS | MANAGERS
IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

F-23347
CASCADE CIVIL SERVICES, LLC
1500 S Dairy Ashford Rd
Suite 450
Houston, Texas, 77077

US 83

US 83
DRAINAGE PLAN AND PROFILE
BEGIN PROJECT TO STA 1212+00

SHEET 1 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		114

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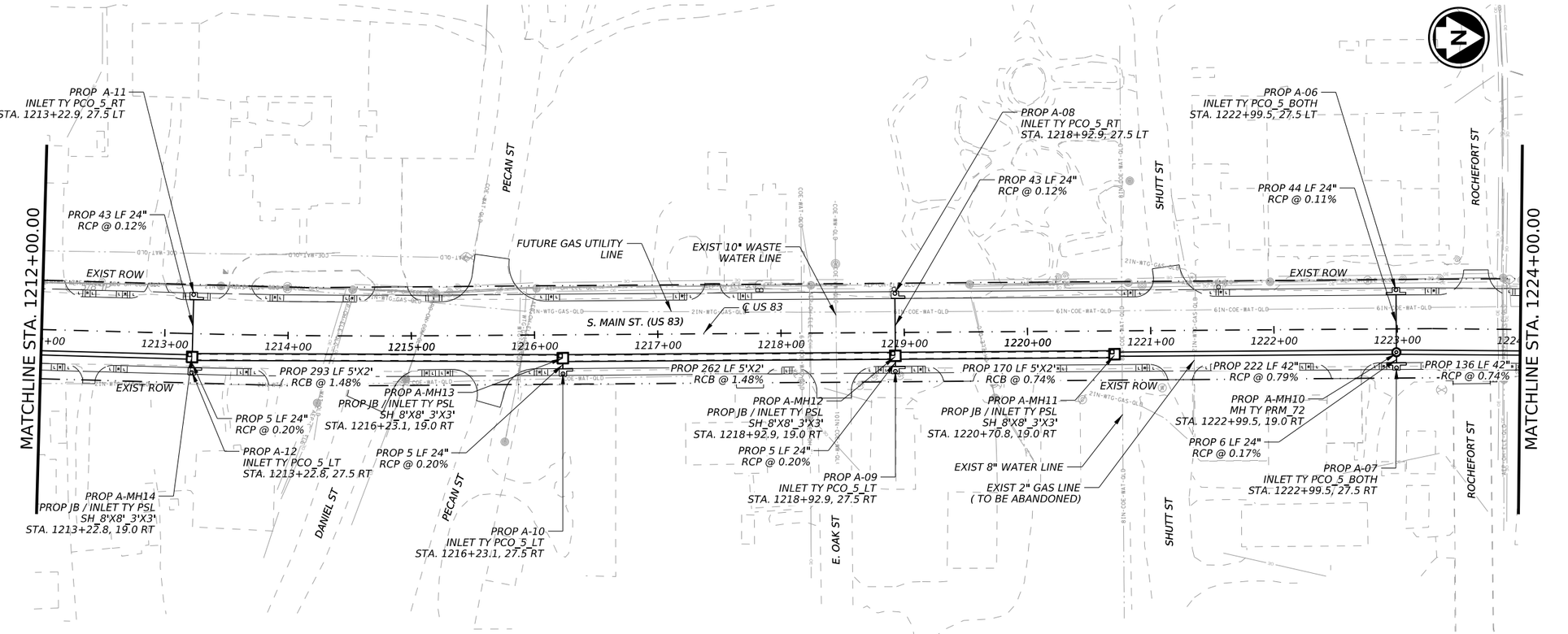

LEGEND

- PROP STORM SEWER
- EXIST STORM SEWERS
- PROP TYPE PCO INLET
- PROP GRATE INLET / JB
- PROP MANHOLE
- EXIST ROW
- PROP PGL
- N.G. @ ℄

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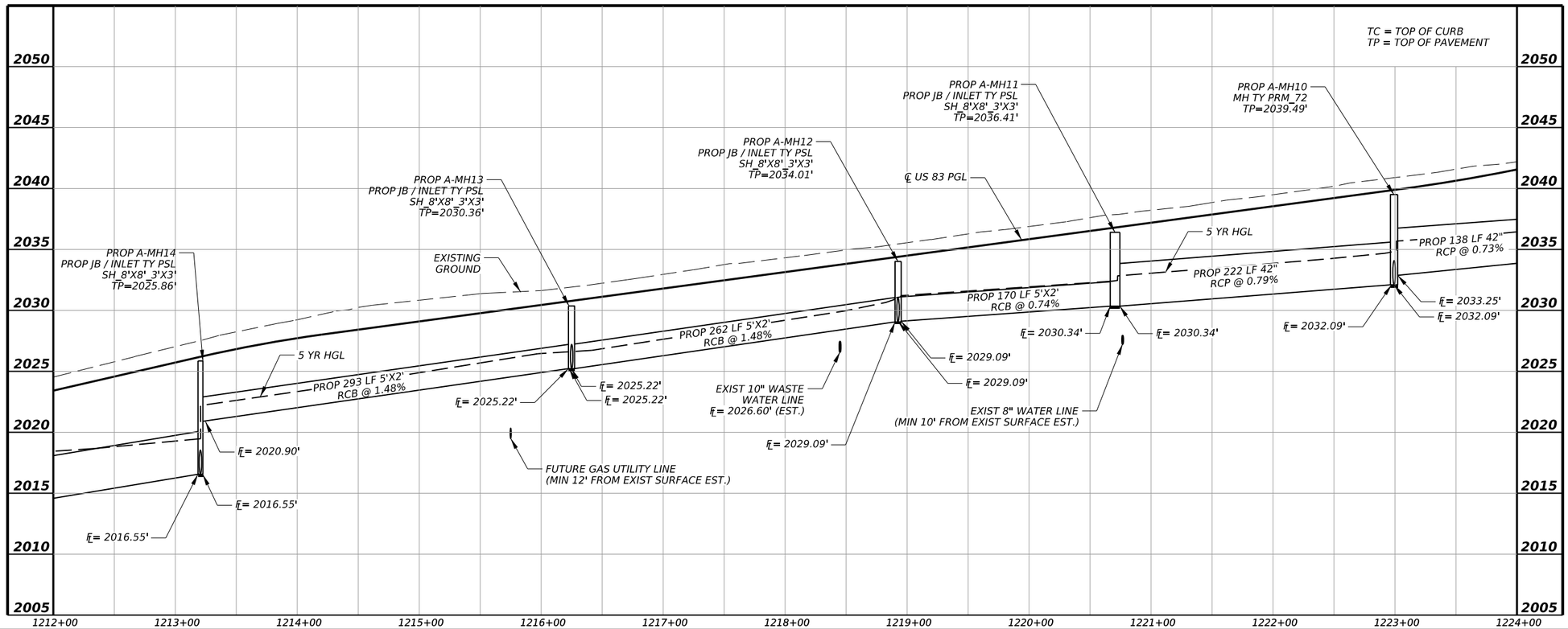

HORIZ. 0 25 50 100
VERT. 0 5 10

STATE OF TEXAS
ALI ROSHANFEKR
124610
LICENSED
PROFESSIONAL ENGINEER
Ali Roshanfekr
5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS
PLANNERS | ENGINEERS | MANAGERS
IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

CASCADE CIVIL SERVICES, LLC
F-23347
1500 S Dairy Ashlord Rd
Suite 450
Houston, Texas, 77077

US 83

US 83
DRAINAGE PLAN AND PROFILE
STA 1212+00 TO STA 1224+00

SHEET 2 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		115

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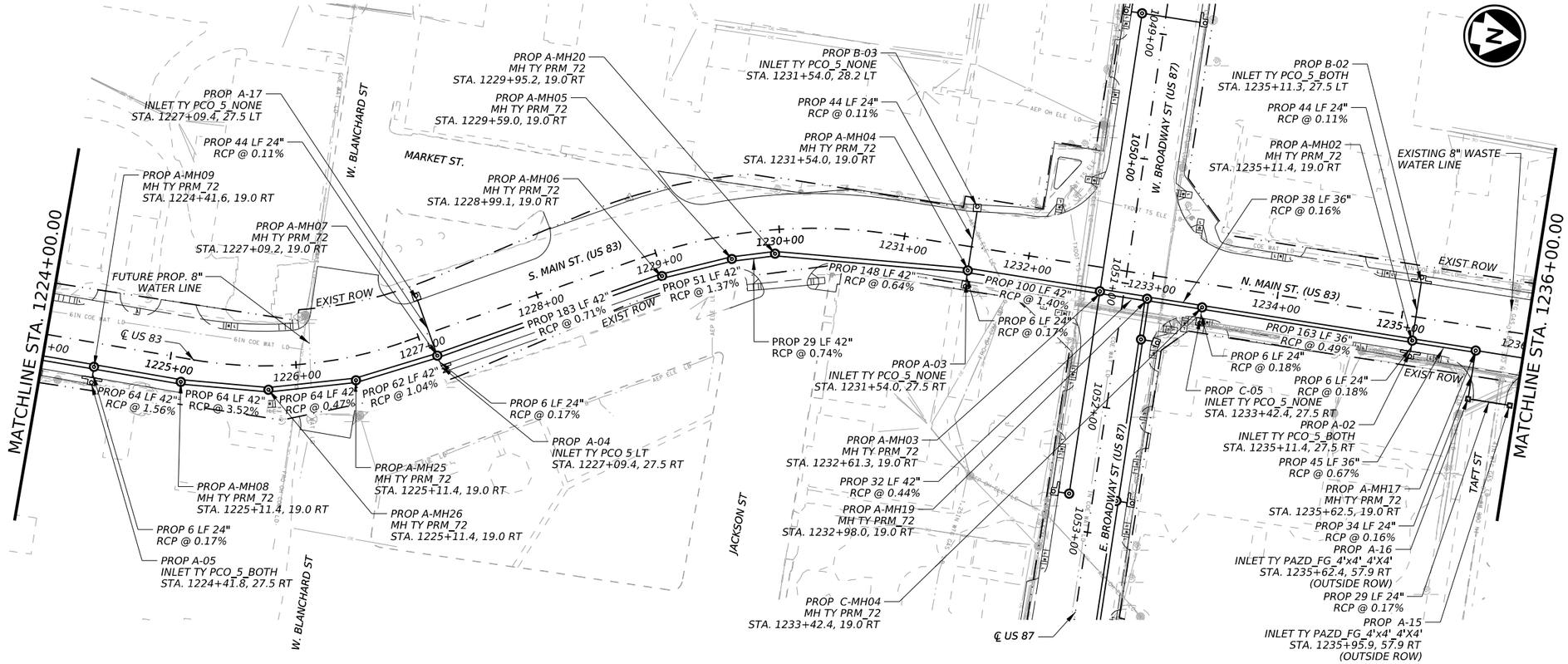

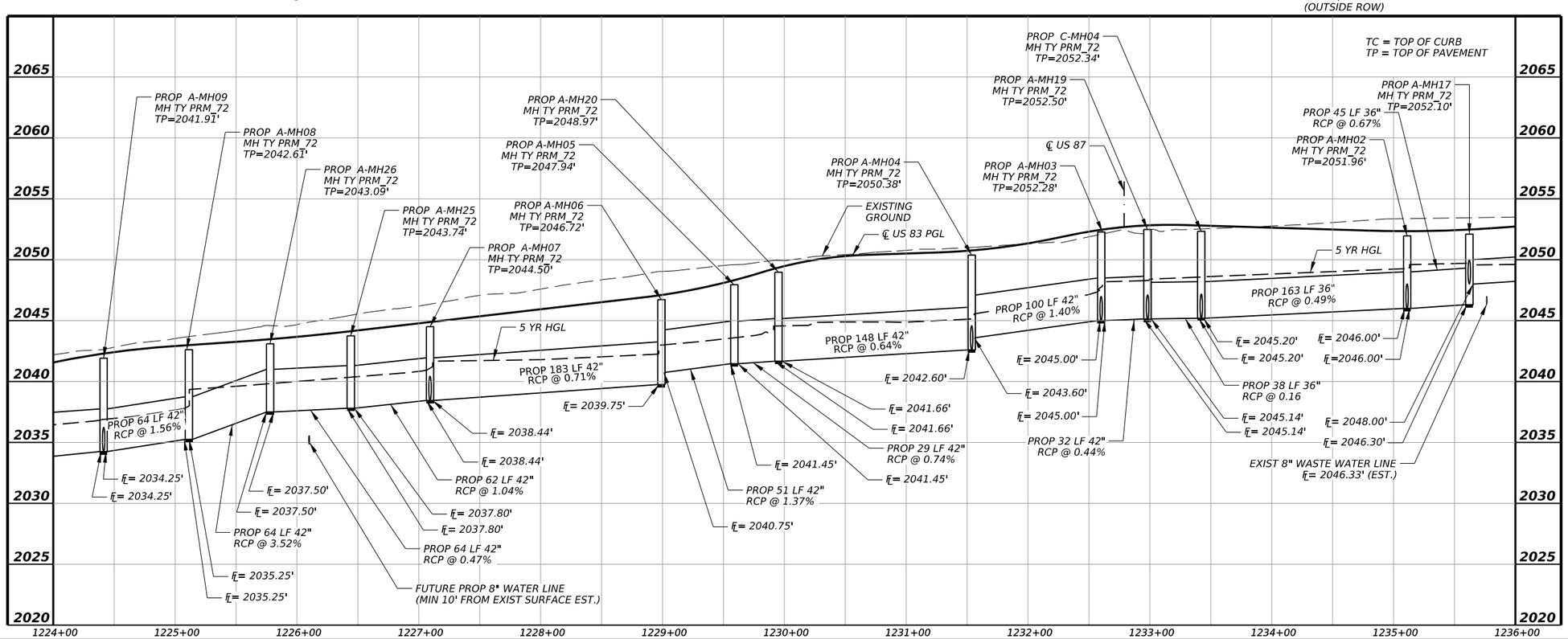

LEGEND

- PROP STORM SEWER
- EXIST STORM SEWERS
- PROP TYPE PCO INLET
- PROP GRATE INLET / JB
- PROP MANHOLE
- EXIST ROW
- PROP PGL
- N.G. @ ℄

NOTES:

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VERT. 0 5 10

STATE OF TEXAS
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1500 S Dairy Ashford Rd
Suite 450
Houston, Texas, 77077

US 83

US 83
DRAINAGE PLAN AND PROFILE
STA 1224+00 TO STA 1236+00

SHEET 3 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		116

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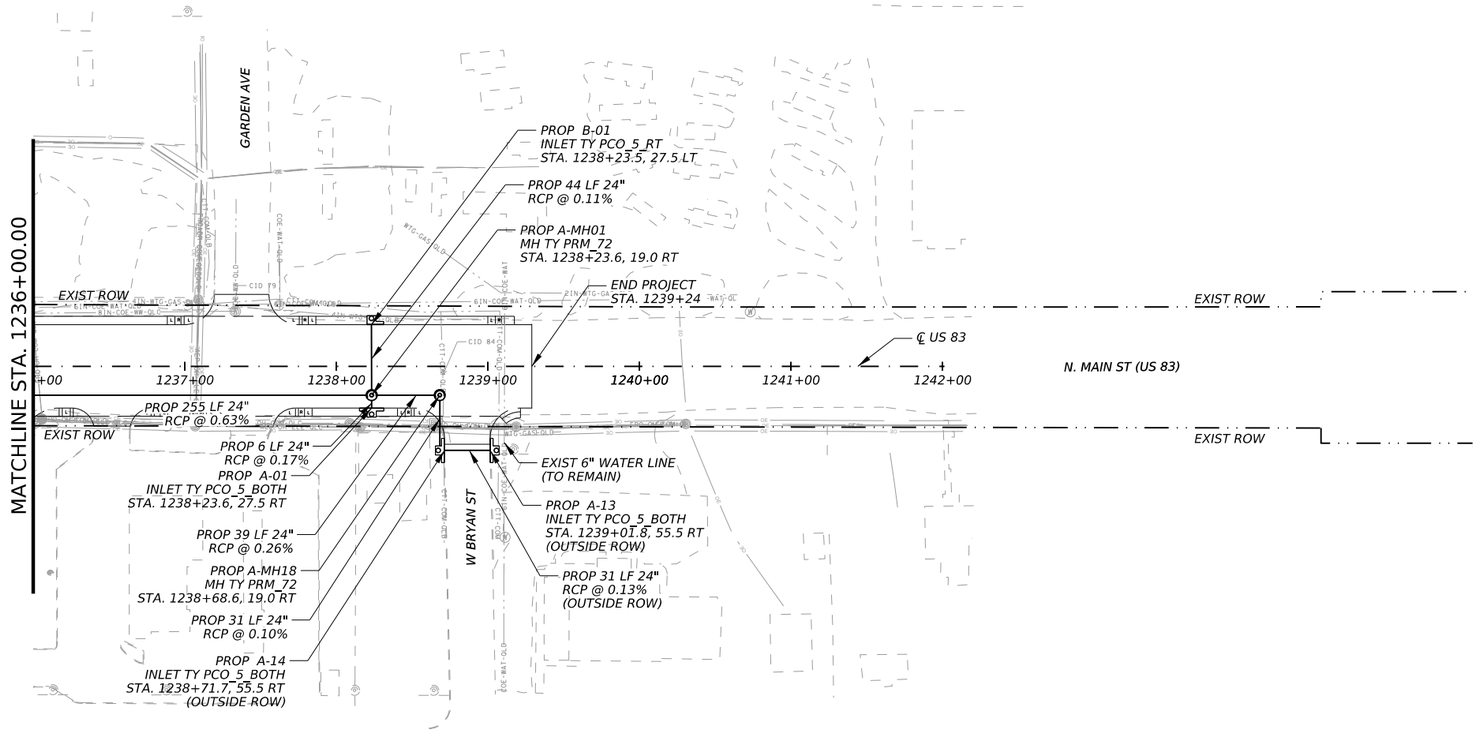

LEGEND

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- PROP GRATE INLET / JB
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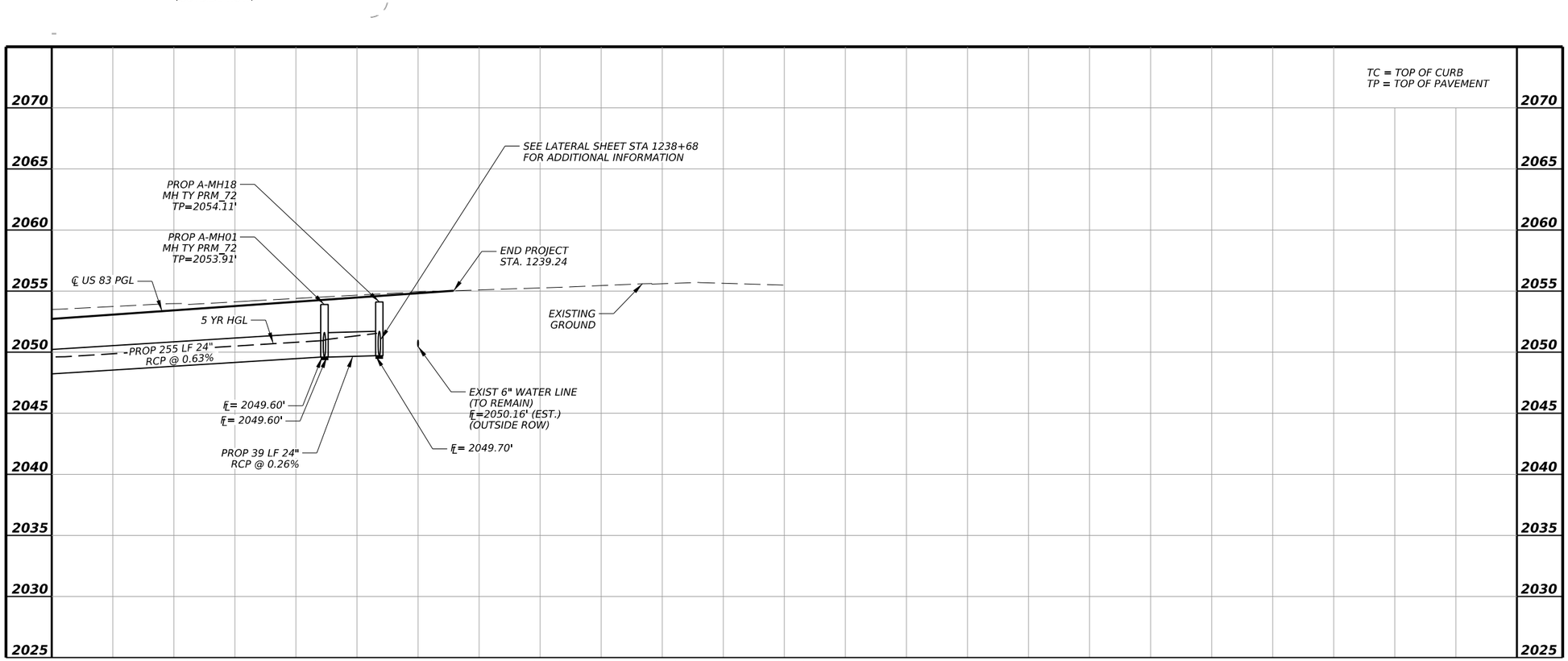

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STATE OF TEXAS
ALI ROSHANFEKR
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CASCADE CIVIL SERVICES, LLC
1500 S Dairy Ashford Rd
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Houston, Texas, 77077

US 83

US 83
DRAINAGE PLAN AND PROFILE
STA 1236+00 TO END PROJECT

SHEET 4 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		117

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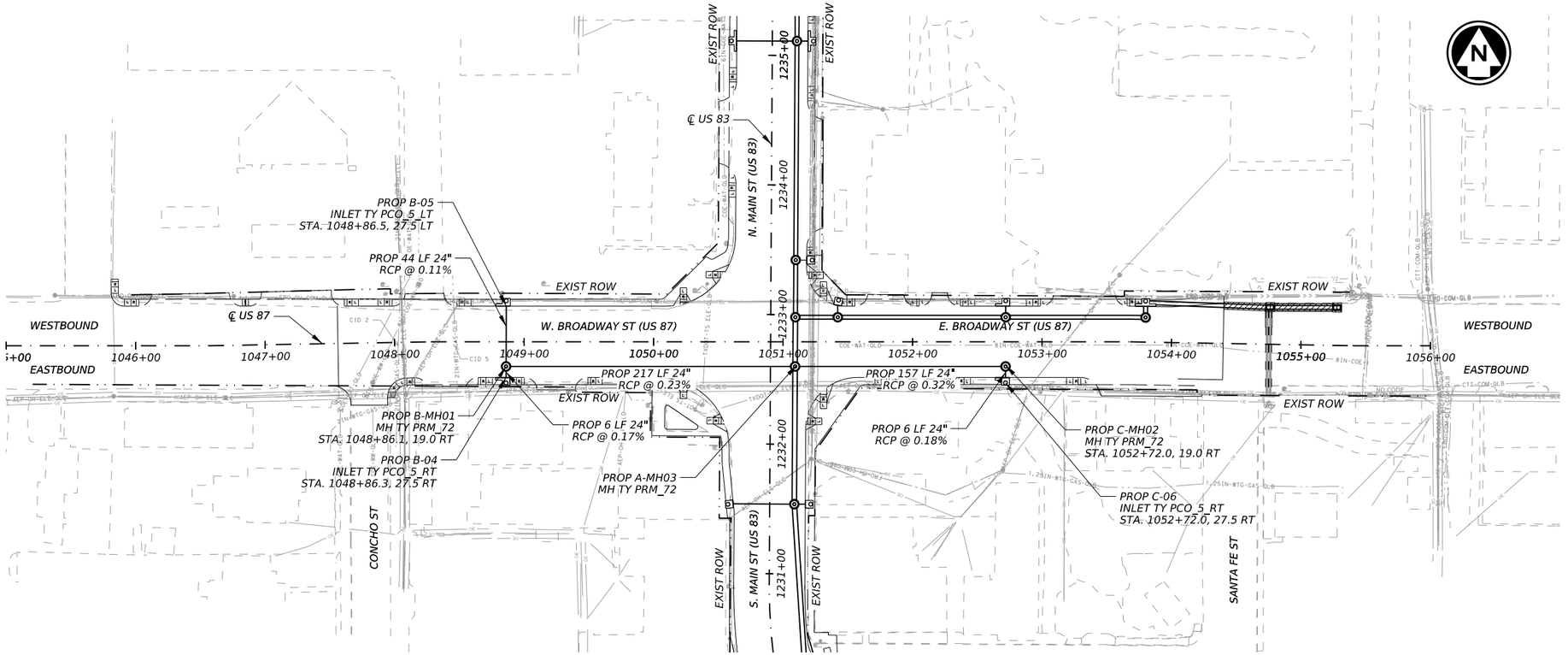

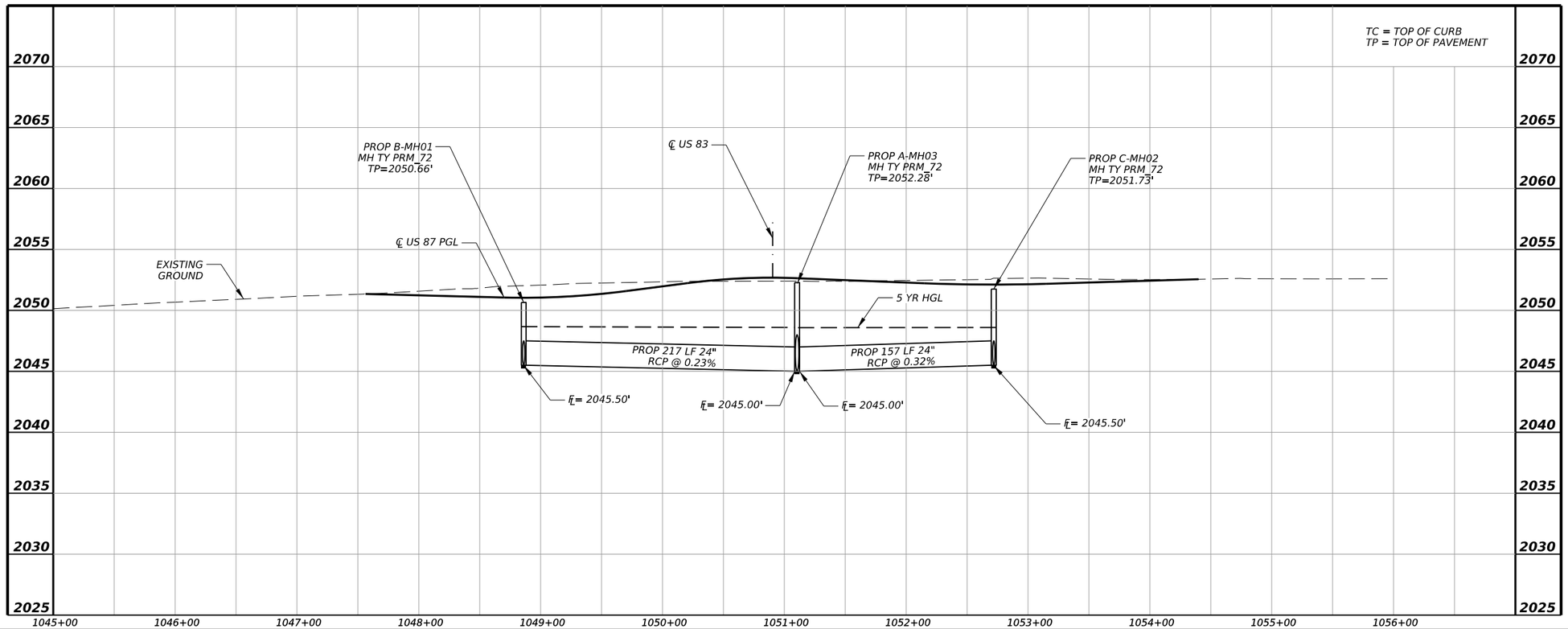

LEGEND

- PROP STORM SEWER
- EXIST STORM SEWERS
- PROP TYPE PCO INLET
- PROP GRATE INLET / JB
- PROP MANHOLE
- EXIST ROW
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VERT. 0 5 10

STATE OF TEXAS
ALI ROSHANFEKR
124610
LICENSED
PROFESSIONAL ENGINEER
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5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

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15915 KATY FREEWAY, SUITE 300
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F-23347
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1500 S Dairy Ashford Rd
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Houston, Texas, 77077

US 83

US 87 - EASTBOUND
DRAINAGE PLAN AND PROFILE
STA 1048+00 TO STA 1056+00

SHEET 5 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		118

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SECTION A-A
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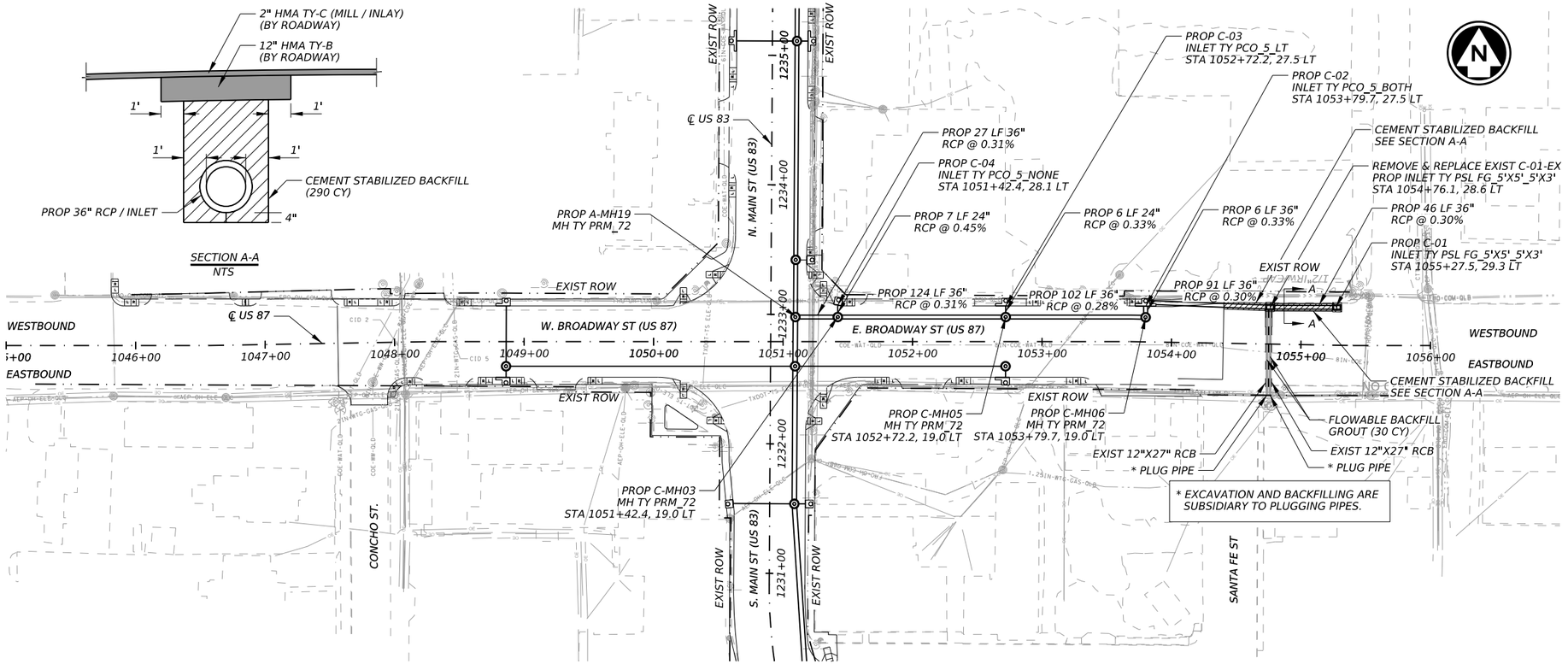

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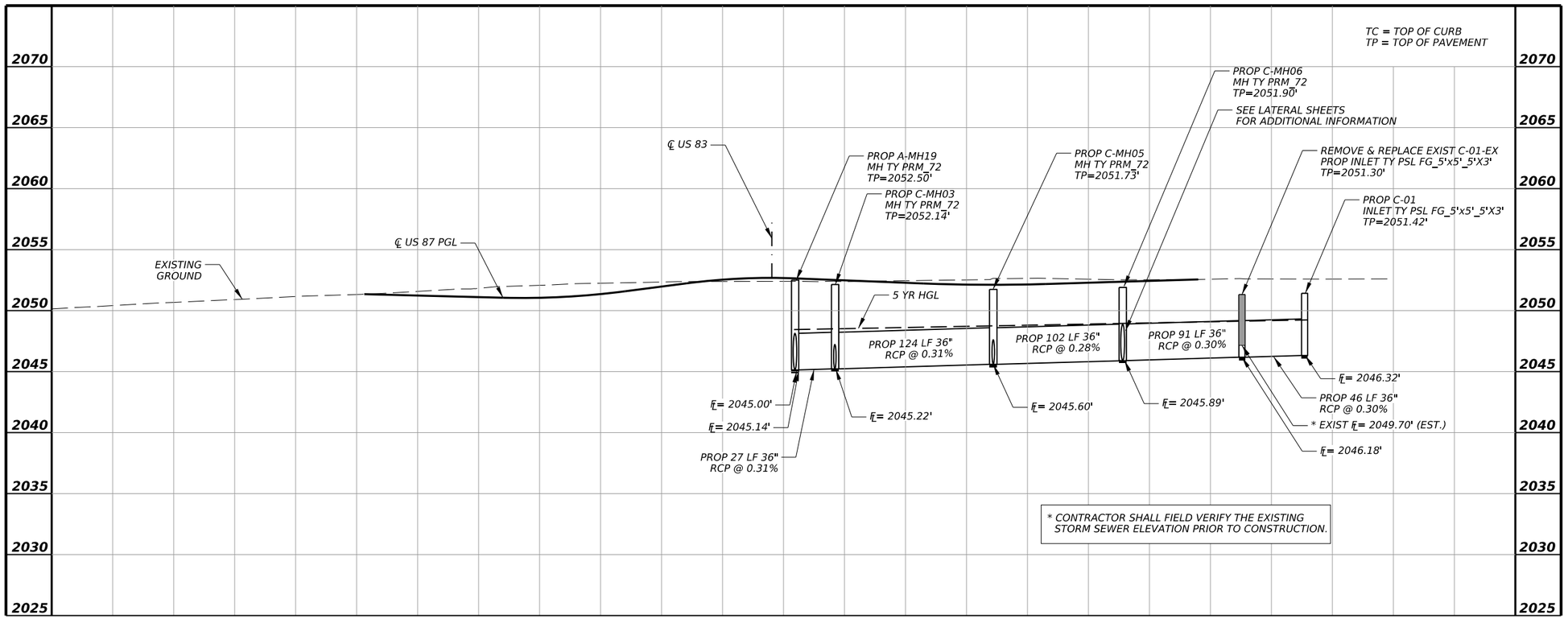

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TBPELS FIRM # F-6825

F-23347
CASCADE CIVIL SERVICES, LLC
1500 S Dairy Ashford Rd
Suite 450
Houston, Texas, 77077

US 83

US 87 - WESTBOUND
DRAINAGE PLAN AND PROFILE
STA 1048+00 TO STA 1056+00

SHEET 6 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		119

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CK: AR
DW: AM
CK: AR
DW: MN

INLET ON GRADE HYDRAULIC OUTPUT

INLET NO.	INLET TYPE	STATION (US 83 / US 87) CL	OFFSET (FT)	LT / RT ---	LONGITUDINAL SLOPE (%)	DISCHARGE (CFS)	BYPASS FLOW (CFS)	INLET CAPACITY (CFS)	CURB INLET LENGTH (FT)	ALLOWABLE PONDED WIDTH (FT)	ACTUAL PONDED WIDTH (FT)
A-01	PCO_5ft_Both	1238+23.6	27.5	RT	0.80	8.20	3.03	5.17	14	15.50	15.31
A-03	PCO_5ft_None	1231+54.0	27.5	RT	2.00	1.09	0.45	0.64	5	15.50	6.06
A-04	PCO_5ft_LT/RT	1227+09.4	27.5	RT	1.16	3.55	1.36	2.19	9.5	15.50	10.43
A-05	PCO_5ft_Both	1224+41.8	27.5	RT	2.50	14.96	9.25	5.71	14	15.50	15.49
A-06	PCO_5ft_Both	1222+99.5	27.5	LT	2.00	4.11	1.49	2.62	14	15.50	9.95
A-07	PCO_5ft_Both	1222+99.5	27.5	RT	2.00	12.84	7.33	5.51	14	15.50	15.25
A-08	PCO_5ft_LT/RT	1218+92.9	27.5	LT	1.35	4.00	1.71	2.29	9.5	15.50	10.60
A-09	PCO_5ft_LT/RT	1218+92.9	27.5	RT	1.35	5.01	2.37	2.64	9.5	15.50	11.54
A-10	PCO_5ft_LT/RT	1216+23.1	27.5	RT	1.35	10.27	6.16	4.11	9.5	15.50	15.10
A-11	PCO_5ft_LT/RT	1213+22.9	27.5	LT	1.35	5.26	2.53	2.73	9.5	15.50	11.74
A-12	PCO_5ft_LT/RT	1213+22.8	27.5	RT	1.35	10.00	5.96	4.04	9.5	15.50	14.95
A-13	PCO_5ft_Both	1239+01.8	55.5	RT	1.28	10.04	4.77	5.27	14	15.50	15.12
A-14	PCO_5ft_Both	1238+71.7	55.5	RT	1.28	10.74	6.47	4.27	9.5	15.50	15.51
A-17	PCO_5ft_None	1227+09.4	27.5	LT	1.16	1.87	0.86	1.01	5	15.50	8.20
A-18	PCO_5ft_Both	1210+50.2	27.5	LT	0.70	4.29	0.90	3.39	14	15.50	12.31
A-19	PCO_5ft_Both	1210+50.2	27.5	RT	0.70	7.79	2.64	5.15	14	15.50	15.40
B-01	PCO_5ft_LT/RT	1238+23.5	27.5	LT	0.80	1.54	0.22	1.32	9.5	15.50	8.18
B-03	PCO_5ft_None	1231+54.0	28.2	LT	2.00	0.94	0.36	0.58	5	15.50	5.72
C-01 **	PSL_FG_5x5_3x5	1055+27.5	29.3	LT	0.80	6.68	3.14	3.54	N/A	15.50	14.17
C-01-EX**	PSL_FG_5x5_3x5	1054+76.1	28.6	LT	0.80	8.10	4.04	4.06	N/A	15.50	15.23
C-02	PCO_5ft_Both	1053+79.7	27.5	LT	0.90	8.89	3.58	5.31	14	15.50	15.43
C-03	PCO_5ft_LT/RT	1052+72.2	27.5	LT	0.00	6.82	0.00	6.82	9.5	15.50	11.58
C-04	PCO_5ft_None	1051+42.4	28.1	LT	0.40	0.42	0.00	0.42	5	15.50	5.70
C-05	PCO_5ft_None	1233+42.4	27.5	RT	0.30	0.43	0.00	0.43	5	15.50	6.11
C-06	PCO_5ft_LT/RT	1052+72.0	27.5	RT	0.00	2.16	0.00	2.16	9.5	15.50	7.72
D-01 *	PCO_5ft_LT/RT	1206+83.0	32.6	LT	0.50	3.43	0.86	2.57	9.5	15.50	12.05
D-02 *	PCO_5ft_LT/RT	1206+82.7	33.7	RT	0.50	5.27	1.84	3.43	9.5	15.50	14.17

* EXISTING INLET
** SPLIT FLOW FROM C-01 DRAINAGE AREA

INLET IN SAG HYDRAULIC OUTPUT

INLET NO.	INLET TYPE	STATION (US 83 / US 87) CL	OFFSET (FT)	LT / RT	DISCHARGE (CFS)	INLET CAPACITY (CFS)	COMPUTED PONDED DEPTH (FT)	ALLOWABLE PONDED DEPTH (FT)
A-02	PCO_5ft_Both	1235+11.4	27.5	RT	4.99	4.99	0.49	0.50
A-15	PAZD_FG_4x4_4x4	1235+95.9	57.9	RT	5.60	5.60	0.29	0.50
A-16	PAZD_FG_4x4_4x4	1235+62.4	57.9	RT	10.55	10.55	0.44	0.50
B-02	PCO_5ft_Both	1235+11.3	27.5	LT	5.15	5.15	0.50	0.50
B-04	PCO_5ft_LT/RT	1048+86.3	27.5	RT	3.36	3.36	0.39	0.50
B-05	PCO_5ft_LT/RT	1048+86.5	27.5	LT	4.09	4.09	0.42	0.50
C-03	PCO_5ft_LT/RT	1052+72.2	27.5	LT	6.82	6.82	0.48	0.50
C-06	PCO_5ft_LT/RT	1052+72.0	27.5	RT	2.16	2.16	0.36	0.50

NOTES:

1. RESULTS ARE BASED ON 5-YEARS TXDOT ATLAS 14 PARTIAL DURATION SERIES EBD COEFFICIENTS FOR CONCHO COUNTY
2. ALL CALCULATIONS CARRIED OUT USING OPENROADS DESIGNER - DRAINAGE & UTILITIES IN THE TXDOT 10.10 WORKSPACE.

STATE OF TEXAS
ALI ROSHANFEKR
124610
LICENSED
PROFESSIONAL ENGINEER
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US 83

DRAINAGE
HYDRAULIC COMPUTATIONS

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		120

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DW: MN

STORM SEWER HYDRAULIC OUTPUT

LINK	NODE FROM	NODE TO	DESCRIPTION	DESCRIPTION	INVERT ELEVATION UPSTREAM	INVERT ELEVATION DOWNSTREAM	ACTUAL LENGTH	PIPE SLOPE	HYDRAULIC LENGTH	HGL UPSTREAM	HGL DOWNSTREAM	CUMULATIVE DISCHARGE	CAPACITY	ACTUAL VELOCITY
ID	ID	ID	SIZE	TYPE	(FT)	(FT)	(FT)	(%)	(FT)	(FT)	(FT)	(CFS)	(CFS)	(FT/S)
A-01	A-01	A-MH01	24"	RCP	2049.61	2049.60	6	0.17	12	2051.71	2051.71	5.2	6.7	1.65
A-02	A-02	A-MH02	24"	RCP	2046.01	2046.00	6	0.18	12	2049.69	2049.69	5.0	6.7	1.59
A-03	A-03	A-MH04	24"	RCP	2042.61	2042.60	6	0.17	12	2046.30	2046.30	0.6	6.7	0.20
A-04	A-04	A-MH07	24"	RCP	2038.45	2038.44	6	0.17	12	2042.19	2042.19	2.2	6.7	0.70
A-05	A-05	A-MH09	24"	RCP	2034.26	2034.25	6	0.17	12	2038.14	2038.14	5.7	6.7	1.82
A-06	A-06	A-MH10	24"	RCP	2032.14	2032.09	44	0.11	50	2036.22	2036.21	2.6	7.2	0.83
A-07	A-07	A-MH10	24"	RCP	2032.10	2032.09	6	0.17	12	2036.21	2036.20	5.5	6.7	1.75
A-08	A-08	A-MH12	24"	RCP	2029.14	2029.09	43	0.12	50	2032.05	2032.05	2.3	7.2	0.73
A-09	A-09	A-MH12	24"	RCP	2029.10	2029.09	5	0.20	12	2032.05	2032.05	2.7	6.7	0.84
A-10	A-10	A-MH13	24"	RCP	2025.23	2025.22	5	0.20	12	2028.24	2028.23	4.1	6.7	1.31
A-11	A-11	A-MH14	24"	RCP	2016.60	2016.55	43	0.12	50	2021.32	2021.31	2.7	7.2	0.87
A-12	A-12	A-MH14	24"	RCP	2016.56	2016.55	5	0.20	12	2021.31	2021.31	4.0	6.7	1.29
A-13	A-13	A-14	24"	RCP	2049.77	2049.73	31	0.13	36	2052.06	2052.04	5.3	7.5	1.68
A-14	A-14	A-MH18	24"	RCP	2049.73	2049.70	31	0.10	37	2051.86	2051.80	9.3	6.5	2.95
A-15	A-15	A-16	24"	RCP	2048.10	2048.05	29	0.17	33	2050.51	2050.49	5.6	8.7	1.78
A-16	A-16	A-MH17	24"	RCP	2048.05	2048.00	34	0.16	39	2049.86	2049.44	16.0	8.4	6.59
A-17	A-17	A-MH07	24"	RCP	2038.49	2038.44	44	0.11	50	2042.18	2042.18	1.0	7.2	0.32
A-18	A-18	A-MH15	24"	RCP	2012.20	2012.15	44	0.11	50	2019.27	2019.26	3.4	7.2	1.08
A-19	A-19	A-MH15	24"	RCP	2012.16	2012.15	6	0.17	12	2019.26	2019.25	5.2	6.7	1.64
A-MH01	A-MH01	A-MH17	24"	RCP	2049.60	2048.00	255	0.63	261	2051.02	2049.40	15.0	17.7	6.40
A-MH02	A-MH02	C-MH04	36"	RCP	2046.00	2045.20	163	0.49	169	2049.23	2048.67	38.5	45.9	5.44
A-MH03	A-MH03	A-MH04	42"	RCP	2045.00	2043.60	100	1.40	106	2047.50	2045.54	62.0	115.5	11.66
A-MH04	A-MH04	A-MH20	42"	RCP	2042.60	2041.66	148	0.64	154	2045.12	2044.81	62.8	78.7	7.05
A-MH05	A-MH05	A-MH06	42"	RCP	2041.45	2040.75	51	1.37	57	2043.95	2042.80	62.1	111.4	10.92
A-MH06	A-MH06	A-MH07	42"	RCP	2039.75	2038.44	183	0.71	189	2042.25	2041.52	61.9	83.7	7.09
A-MH07	A-MH07	A-MH25	42"	RCP	2038.44	2037.80	62	1.04	68	2040.98	2041.10	63.9	98.0	6.97
A-MH08	A-MH08	A-MH09	42"	RCP	2035.25	2034.25	64	1.56	70	2037.78	2037.49	63.3	120.3	6.98
A-MH09	A-MH09	A-MH10	42"	RCP	2034.25	2033.25	136	0.74	142	2036.87	2035.68	68.1	84.5	9.81
A-MH10	A-MH10	A-MH11	42"	RCP	2032.09	2030.34	222	0.79	229	2034.82	2032.85	74.0	88.0	10.29
A-MH11	A-MH11	A-MH12	5' X 2'	RCB	2030.34	2029.09	170	0.74	178	2032.50	2031.30	73.2	76.6	7.49
A-MH12	A-MH12	A-MH13	5' X 2'	RCB	2029.09	2025.22	262	1.48	270	2031.06	2027.43	76.3	109.4	7.81
A-MH13	A-MH13	A-MH14	5' X 2'	RCB	2025.22	2020.90	293	1.48	301	2027.22	2022.21	78.6	109.4	12.35
A-MH14	A-MH14	A-MH15	42"	RCP	2016.55	2012.15	266	1.66	273	2020.09	2018.16	82.9	127.8	8.81
A-MH15	A-MH15	A-MH16	42"	RCP	2012.15	2011.85	164	0.18	170	2018.45	2017.78	88.1	42.2	7.21
A-MH16	A-MH16	A-MH21	42"	RCP	2011.85	2011.60	168	0.15	174	2017.67	2017.00	87.1	38.1	7.13
A-MH17	A-MH17	A-MH02	36"	RCP	2046.30	2046.00	45	0.67	51	2049.58	2049.48	29.8	51.1	4.22
A-MH18	A-MH18	A-MH01	24"	RCP	2049.70	2049.60	39	0.26	45	2051.69	2051.62	9.2	10.7	2.93
A-MH19	A-MH19	A-MH03	42"	RCP	2045.14	2045.00	32	0.44	38	2048.29	2048.20	54.2	60.9	6.03
A-MH20	A-MH20	A-MH05	42"	RCP	2041.66	2041.45	29	0.74	35	2044.51	2044.45	62.2	78.5	7.26
A-MH21	A-MH21	A-MH22	42"	RCP	2011.09	2010.98	29	0.38	35	2016.90	2016.77	86.1	56.6	7.05
* A-MH22	A-MH22	A-MH23	42"	RCP	2010.98	2010.57	157	0.26	163	2016.60	2015.92	90.3	50.4	7.39
* A-MH23	A-MH23	A-MH24	42"	RCP	2010.57	2010.44	56	0.23	62	2015.69	2015.39	97.0	46.0	7.94
* A-MH24	A-MH24	A-OUT	48"	RCP	2010.44	2009.48	374	0.26	377	2015.29	2013.48	96.7	72.6	7.91
A-MH25	A-MH25	A-MH26	42"	RCP	2037.80	2037.50	64	0.47	70	2040.86	2040.62	63.7	65.9	7.21
A-MH26	A-MH26	A-MH08	42"	RCP	2037.50	2035.25	64	3.52	70	2040.03	2038.24	63.4	180.5	7.43
B-01	B-01	A-MH01	24"	RCP	2049.65	2049.60	44	0.11	50	2051.66	2051.66	1.3	7.2	0.42
B-02	B-02	A-MH02	24"	RCP	2046.05	2046.00	44	0.11	50	2049.71	2049.69	5.2	7.2	1.64
B-03	B-03	A-MH04	24"	RCP	2042.65	2042.60	44	0.11	50	2046.30	2046.30	0.6	7.1	0.18
B-04	B-04	B-MH01	24"	RCP	2045.51	2045.50	6	0.17	12	2048.98	2048.97	3.4	6.7	1.07
B-05	B-05	B-MH01	24"	RCP	2045.55	2045.50	44	0.11	50	2048.99	2048.97	4.1	7.2	1.30
B-MH01	B-MH01	A-MH03	24"	RCP	2045.50	2045.00	217	0.23	223	2048.87	2048.64	7.3	10.7	2.31
C-01	C-01	C-01-EX	36"	RCP	2046.32	2046.18	46	0.30	51	2049.25	2049.24	3.5	34.8	0.50
C-01-EX	C-01-EX	C-02	36"	RCP	2046.18	2045.91	91	0.30	96	2049.23	2049.21	7.5	35.3	1.06
C-02	C-02	C-MH06	36"	RCP	2045.91	2045.89	6	0.33	12	2049.15	2049.14	11.9	27.8	1.75
C-03	C-03	C-MH05	24"	RCP	2045.62	2045.60	6	0.33	12	2049.06	2049.05	6.8	9.4	2.17
C-04	C-04	C-MH03	24"	RCP	2045.25	2045.22	7	0.45	12	2048.99	2048.99	0.4	11.2	0.13
C-05	C-05	C-MH04	24"	RCP	2045.21	2045.20	6	0.18	12	2049.08	2049.08	0.4	6.7	0.14
C-06	C-06	C-MH02	24"	RCP	2045.51	2045.50	6	0.18	12	2048.70	2048.70	2.2	6.7	0.69
C-MH02	C-MH02	A-MH03	24"	RCP	2045.50	2045.00	157	0.32	163	2048.69	2048.67	2.1	12.6	0.68
C-MH03	C-MH03	A-MH19	36"	RCP	2045.22	2045.14	27	0.31	33	2048.89	2048.87	17.2	33.8	2.53
C-MH04	C-MH04	A-MH19	36"	RCP	2045.20	2045.14	38	0.16	44	2048.62	2048.48	38.2	24.4	5.40
C-MH05	C-MH05	C-MH03	36"	RCP	2045.60	2045.22	124	0.31	130	2049.00	2048.90	17.3	36.1	2.55
C-MH06	C-MH06	C-MH05	36"	RCP	2045.89	2045.60	102	0.28	108	2049.11	2049.07	11.9	34.6	1.74

* EXISTING STORM SEWER

NOTES:

1. RESULTS ARE BASED ON 5-YEARS TXDOT ATLAS 14 PARTIAL DURATION SERIES EBD COEFFICIENTS FOR CONCHO COUNTY
2. ALL CALCULATIONS CARRIED OUT USING OPENROADS DESIGNER - DRAINAGE & UTILITIES IN THE TXDOT 10.10 WORKSPACE.

STATE OF TEXAS
ALI ROSHANFEKR
124610
LICENSED
PROFESSIONAL ENGINEER
Ali Roshanfekr
5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825
PLANNERS|ENGINEERS|MANAGERS

F-23347
CASCADE CIVIL SERVICES, LLC
1500 S Dairy Ashford Rd
Suite 450
Houston, Texas, 77077

US 83

DRAINAGE
HYDRAULIC COMPUTATIONS

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		121

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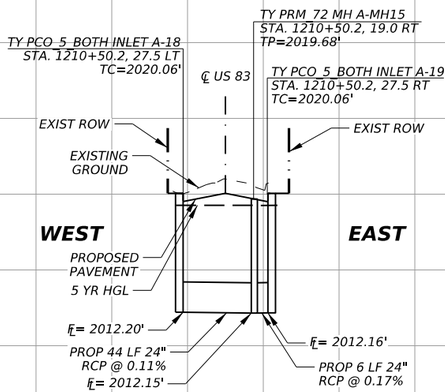
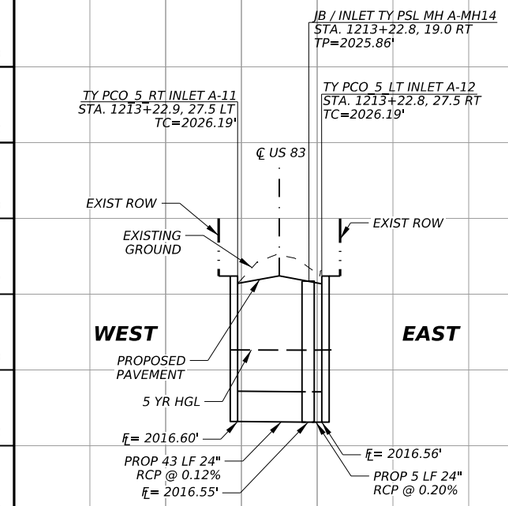
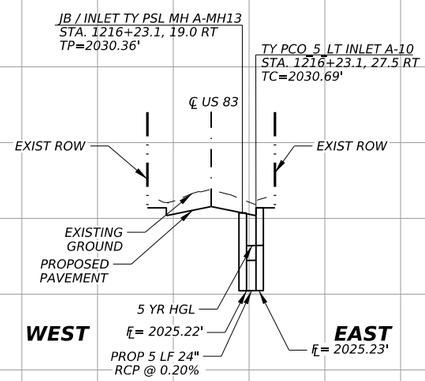


STA. 1210+50



STA. 1213+23



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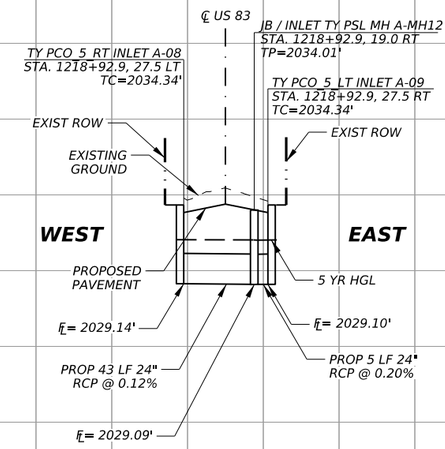

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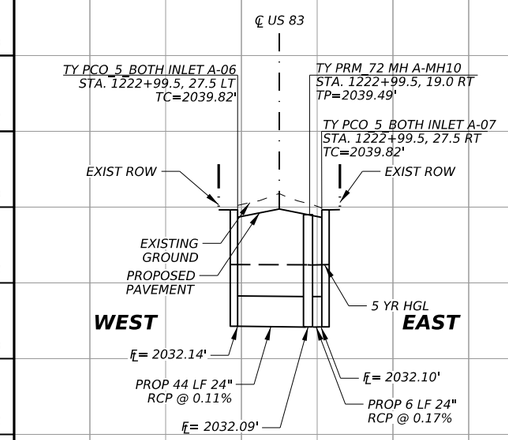

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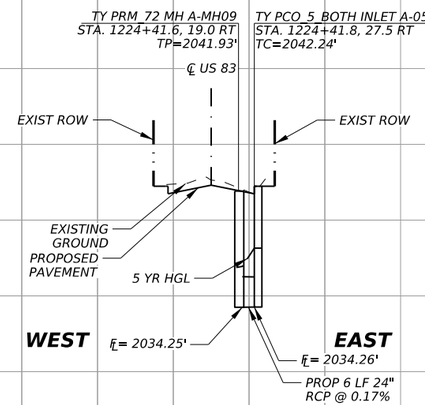

STA. 1224+41

LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- TC = TOP OF CURB
- TP = TOP OF PAVEMENT

NOTES:

1. SEE HYDRAULIC DRAINAGE SHEETS FOR MORE INFORMATION.
2. PIPE LENGTH SHOWN ARE PAY LENGTHS.
3. PIPES ARE CLASS III, UNLESS OTHERWISE NOTED.

HORIZ. 0 25 50 100
VERT. 0 5 10

STATE OF TEXAS
ALI ROSHANFEKR
124610
LICENSED PROFESSIONAL ENGINEER
Ali Roshanfekr
5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825
IDCUS PLANNERS | ENGINEERS | MANAGERS

F-23347
CASCADE CIVIL SERVICES, LLC
1500 S Dairy Ashford Rd
Suite 450
Houston, Texas, 77077

US 83

US 83
DRAINAGE STORM SEWER
LATERALS

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		122

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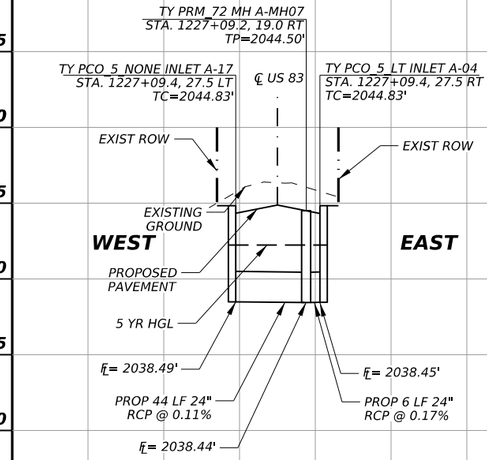

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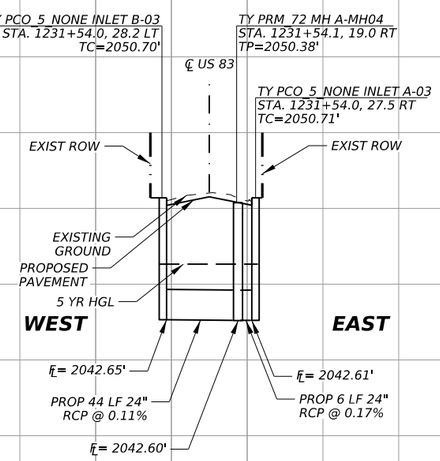
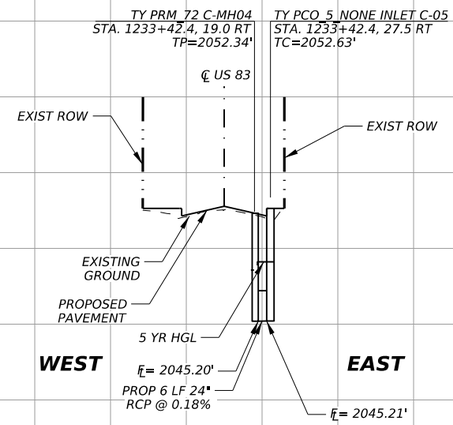
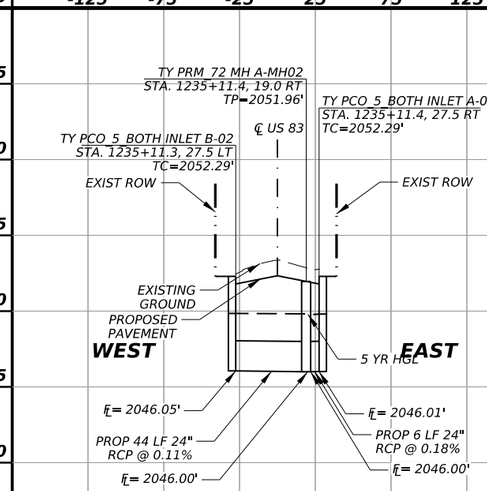


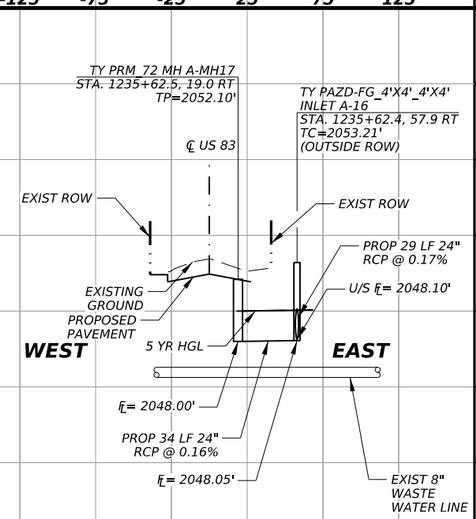
STA. 1231+54



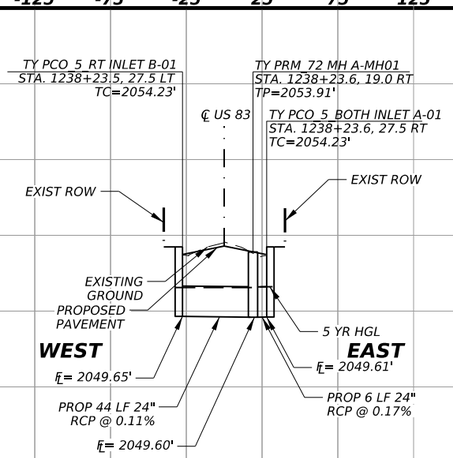
STA. 1233+42



STA. 1235+11



STA. 1235+62



STA. 1238+23

-125 -75 -25 25 75 125

LEGEND

- EXISTING GROUND
- PROPOSED GROUND

TC = TOP OF CURB

TP = TOP OF PAVEMENT

NOTES:

1. SEE HYDRAULIC DRAINAGE SHEETS FOR MORE INFORMATION.
2. PIPE LENGTH SHOWN ARE PAY LENGTHS.
3. PIPES ARE CLASS III, UNLESS OTHERWISE NOTED.

HORIZ. 0 25 50 100

VERT. 0 5 10

STATE OF TEXAS
ALI ROSHANFEKR
124610
LICENSED
PROFESSIONAL ENGINEER
Ali Roshanfekr
5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

IDCUS PLANNERS | ENGINEERS | MANAGERS

F-23347

CASCADE CIVIL SERVICES, LLC
1500 S Dairy Ashford Rd
Suite 450
Houston, Texas, 77077

US 83

US 83
DRAINAGE STORM SEWER
LATERALS

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		123

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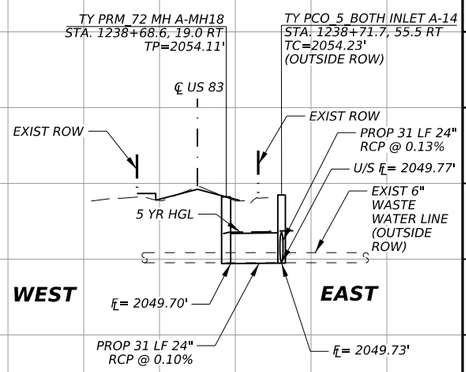

STA. 1238+68

LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- TC = TOP OF CURB
- TP = TOP OF PAVEMENT

NOTES:

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HORIZ. 0 25 50 100
VERT. 0 5 10

STATE OF TEXAS
ALI ROSHANFEKR
124610
LICENSED
PROFESSIONAL ENGINEER
Ali Roshanfekr
5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

IDCUS PLANNERS | ENGINEERS | MANAGERS

F-23347
CASCADE CIVIL SERVICES, LLC
1500 S Dairy Ashford Rd
Suite 450
Houston, Texas, 77077

US 83

US 83
DRAINAGE STORM SEWER
LATERALS

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		124

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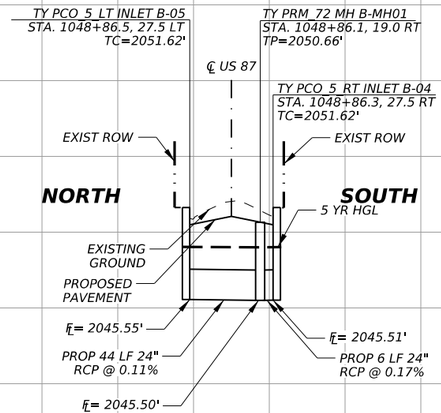

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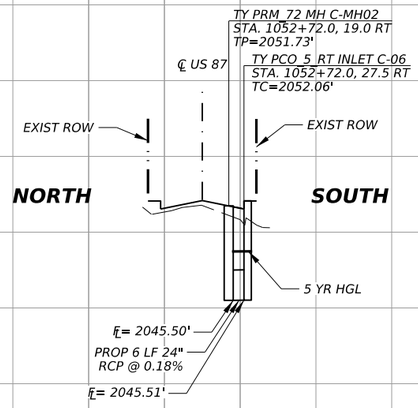
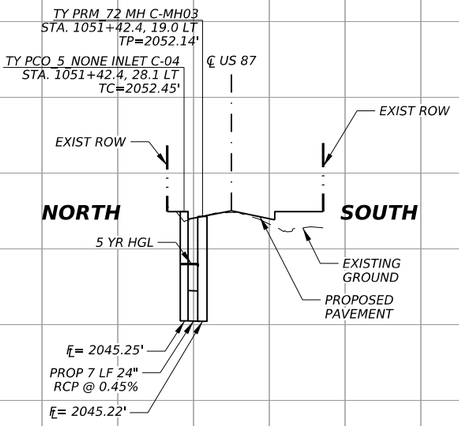
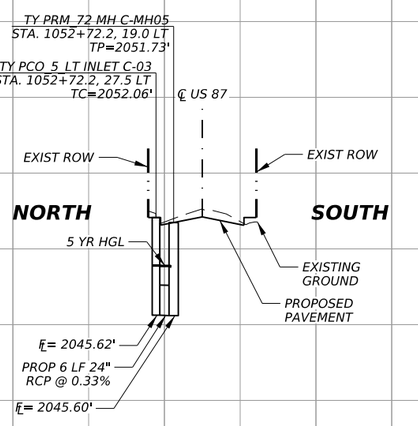


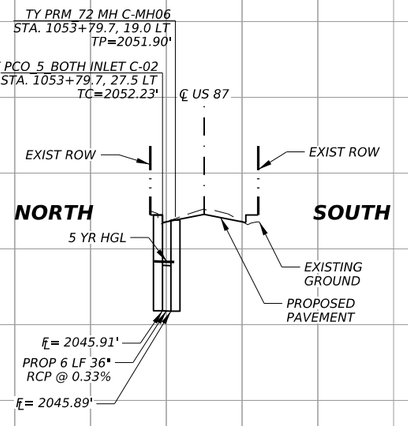
STA. 1052+72 (EASTBOUND)



STA. 1051.42 (WESTBOUND)



STA. 1052+72 (WESTBOUND)



STA. 1053+80 (WESTBOUND)

LEGEND

- EXISTING GROUND
- PROPOSED GROUND

TC = TOP OF CURB

TP = TOP OF PAVEMENT

NOTES:

1. SEE HYDRAULIC DRAINAGE SHEETS FOR MORE INFORMATION.
2. PIPE LENGTH SHOWN ARE PAY LENGTHS.
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HORIZ. 0 25 50 100

VERT. 0 5 10

STATE OF TEXAS
ALI ROSHANFEKR
124610
LICENSED
PROFESSIONAL ENGINEER
Ali Roshanfekr
5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

F-23347

CASCADE CIVIL SERVICES, LLC
1500 S Dairy Ashford Rd
Suite 450
Houston, Texas, 77077

US 83

US 87
DRAINAGE STORM SEWER
LATERALS

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0035	03	047, ETC	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		125

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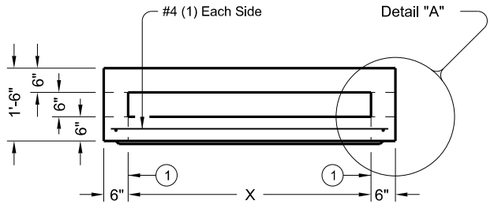
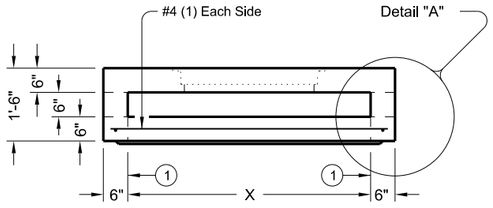


ELEVATION VIEW



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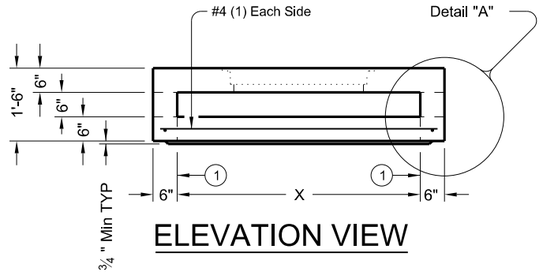
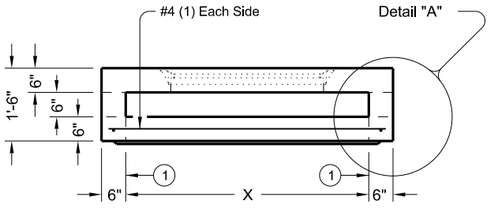
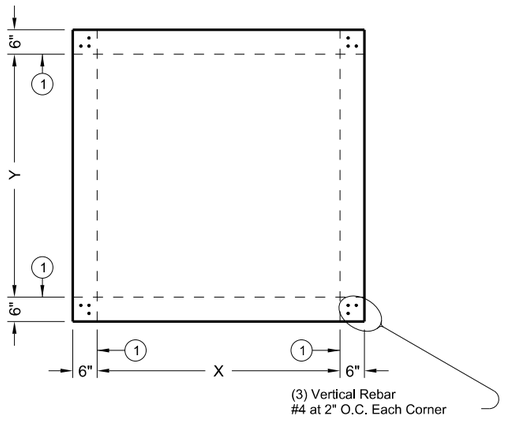


ELEVATION VIEW

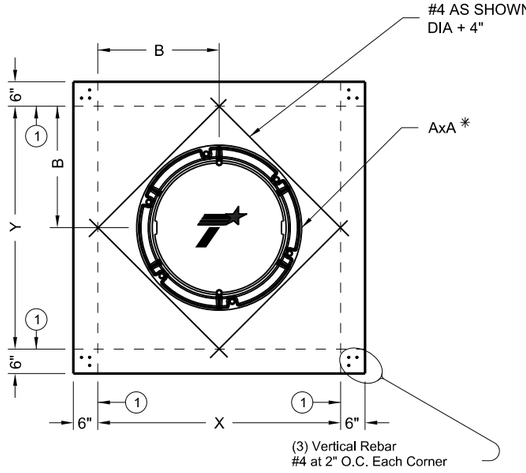


ELEVATION VIEW



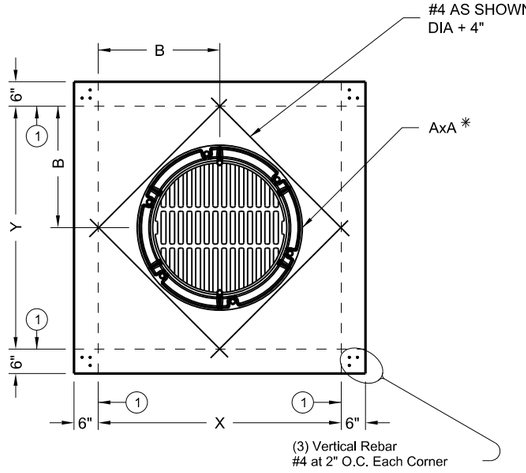
PLAN VIEW
NO OPENINGS

STYLE 'SL'



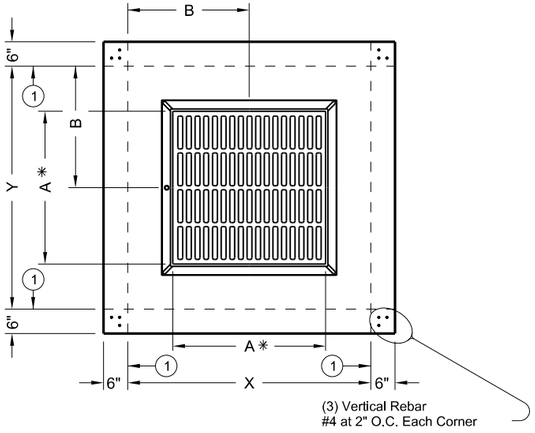
PLAN VIEW
32" DIA CAST-IN RING & COVER

STYLE 'RC'



PLAN VIEW
32" DIA CAST-IN RING & GRATE

STYLE 'RG'



PLAN VIEW
CAST-IN FRAME & GRATE

STYLE 'FG'

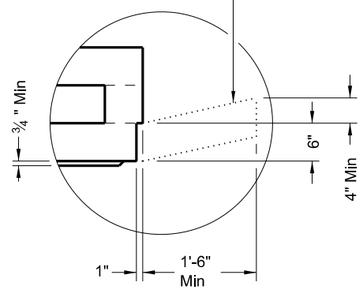
(1) Matches inside face of wall of precast base or riser below inlet.

FABRICATION NOTES:
1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide clear cover of ¾" to reinforcing from bottom of slab for structural reinforcement. Place short span reinforcing closest to surface.
4. No substitution is allowed for diagonal #4 bars around openings.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
6. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:
1. PAZD is for use in ditches and medians outside of the horizontal clearance (clear zone). Precast Area Zone Drain is not intended for direct traffic and may not be placed in roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:
1. Designed according to ASTM C913.
2. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Construct cast-in-place reinforced concrete apron when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PAZD. Apron is 1'-6" Min width around precast zone drain.



DETAIL "A"
(Reinforcing not shown for clarity)
When an apron is to be cast around PAZD, use detail above to create an apron ledge on all 4 sides.

Style	Size (X x Y)	A x A ✳	B x B	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	n/a	n/a	0.37 in□/ft	0.37 in□/ft
RC,RG	3'x3'	32" Dia	1.5'x1.5'	0.37 in□/ft	0.37 in□/ft
FG	3'x3'	3'x3'	1.5'x1.5'	0.37 in□/ft	0.37 in□/ft
SL	4'x4'	n/a	n/a	0.34 in□/ft	0.34 in□/ft
RC,RG	4'x4'	32" Dia	2'x2'	0.34 in□/ft	0.34 in□/ft
FG	4'x4'	3'x3'	2'x2'	0.34 in□/ft	0.34 in□/ft
FG	4'x4'	4'x4'	2'x2'	0.34 in□/ft	0.34 in□/ft
SL	5'x5'	n/a	n/a	0.43 in□/ft	0.43 in□/ft
RC,RG	5'x5'	32" Dia	2.5'x2.5'	0.68 in□/ft	0.68 in□/ft
FG	5'x5'	3'x3'	2.5'x2.5'	0.43 in□/ft	0.43 in□/ft
FG	5'x5'	4'x4'	2.5'x2.5'	0.43 in□/ft	0.43 in□/ft

✳ Nominal frame/grate or ring/cover size.

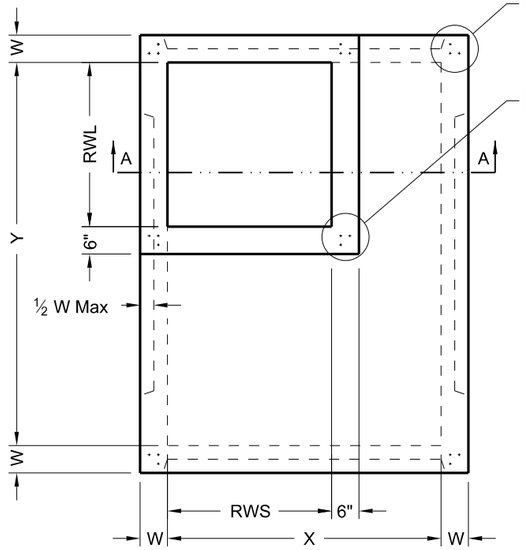
Texas Department of Transportation

Bridge Division Standard

PRECAST AREA ZONE DRAIN

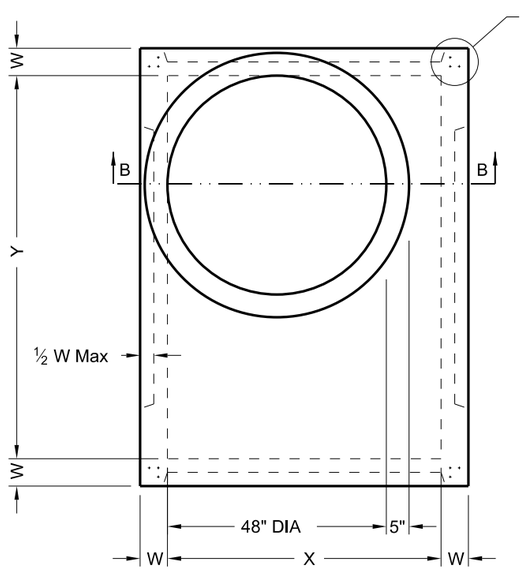
PAZD

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047, ETC	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		126



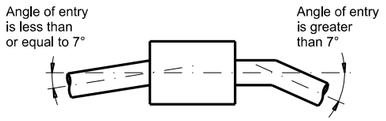
PLAN VIEW "A"

SQUARE REDUCED RISER OPTION



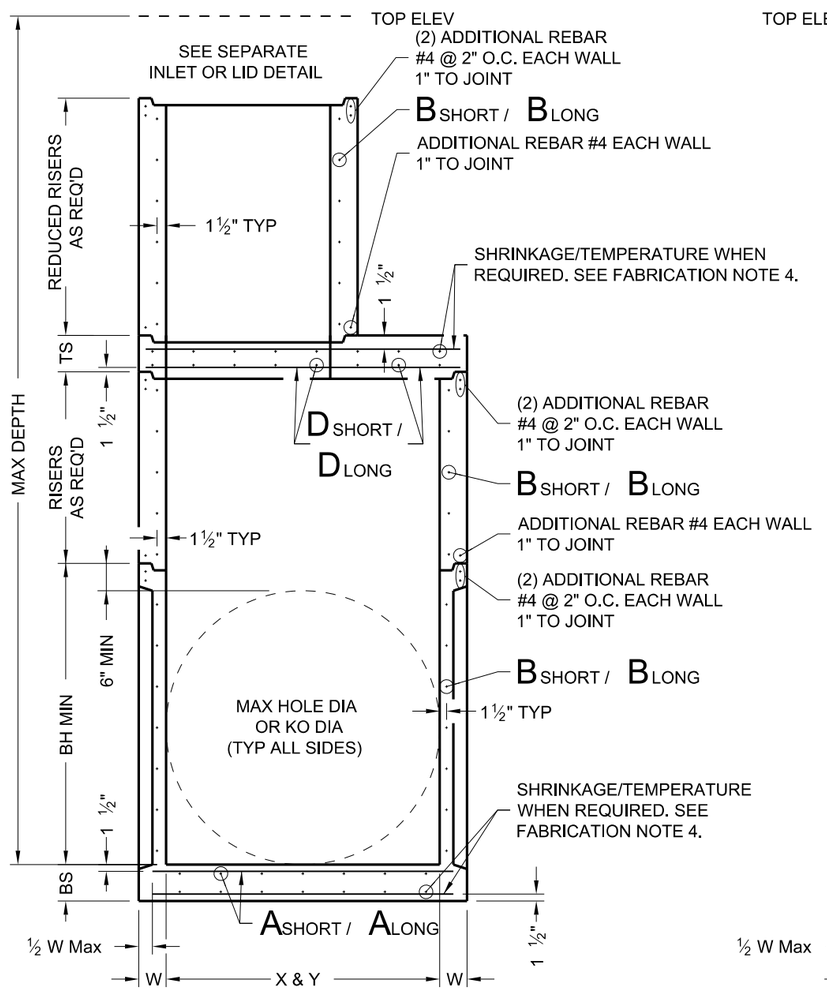
PLAN VIEW "B"

ROUND REDUCED RISER OPTION



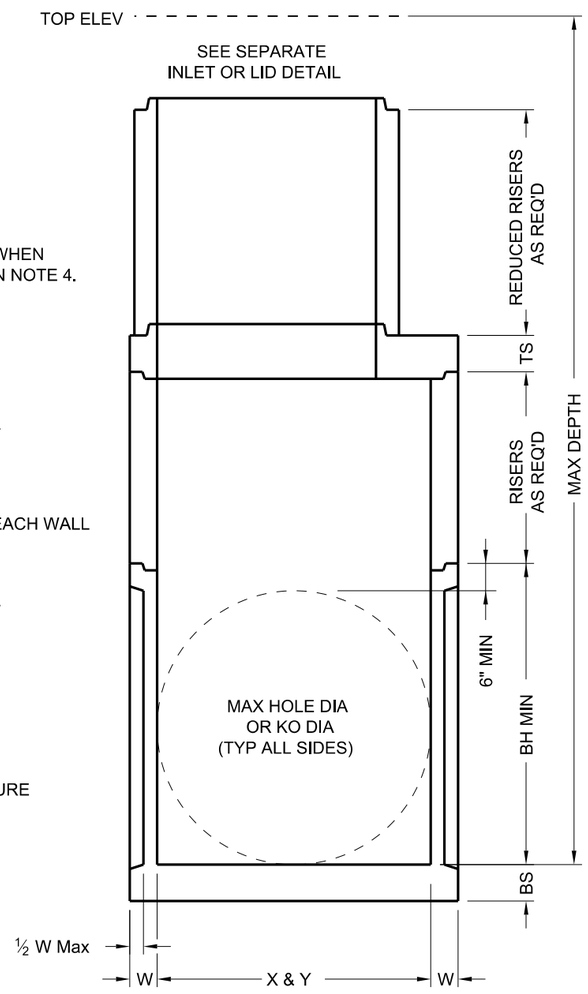
PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PB wall.
If necessary, use pipe elbow or curved approach alignment to stay within this limit.



SECTION A-A

SQUARE REDUCED RISER OPTION



SECTION B-B

ROUND REDUCED RISER OPTION

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

INSTALLATION NOTES:

1. If required elsewhere. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to specified inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for precast base is subsidiary to the specified inlet, per Item 465, "Junction Boxes, Manholes, and Inlets."

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST BASE

PB

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047, ETC	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		127

DATE:
FILE:

DATE: 5/22/2024 4:02:35 PM
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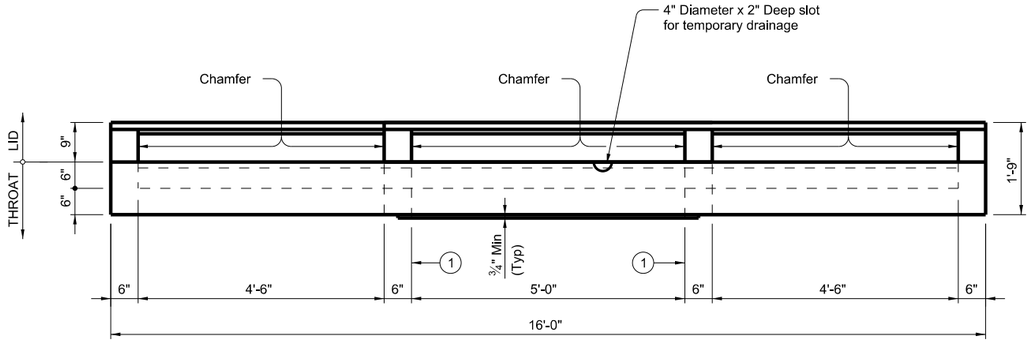
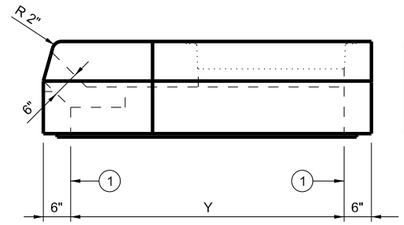
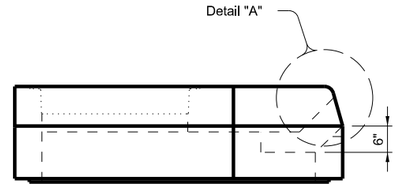


FRONT VIEW
(Showning left and right extensions)

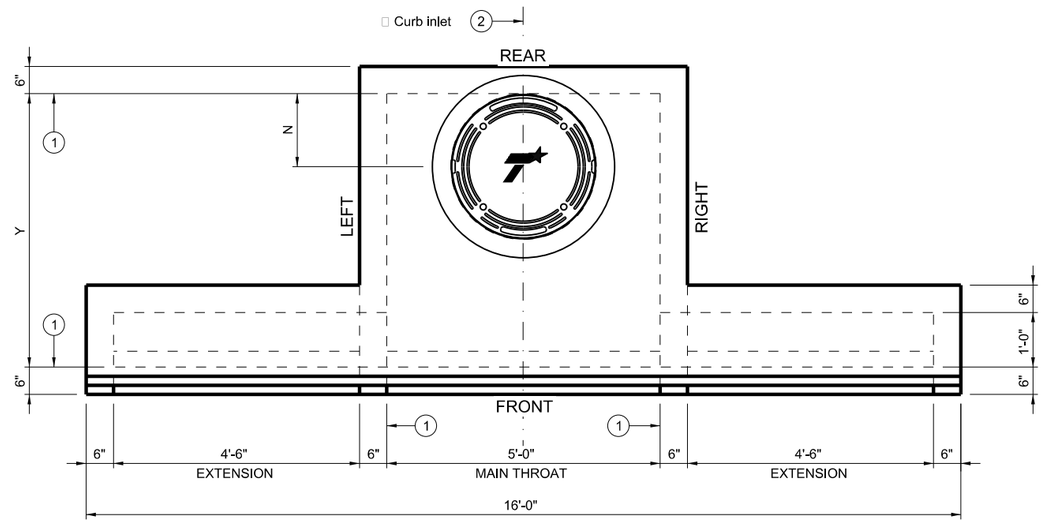


RIGHT VIEW

REAR VIEW
(Extensions not shown)

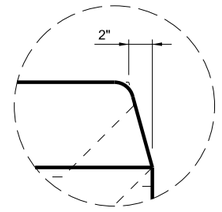


LEFT VIEW



PLAN VIEW
(Showning left and right extensions)

1. Matches inside face of wall of precast base or riser below inlet.
2. Reference point is located where the ℄ of the main throat intersects the normal gutter line. See Curb and Gutter Transition Details for PCO Inlet (CGT-PCO) standard for more information.



DETAIL "A"

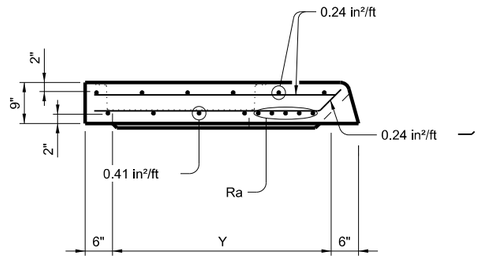
HS20 LOADING SHEET 1 OF 2

Texas Department of Transportation | Bridge Division Standard

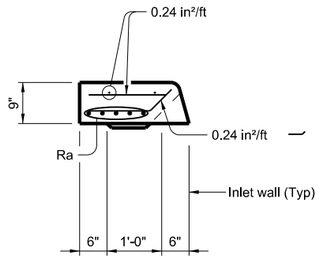
PRECAST CURB INLET OUTSIDE ROADWAY

PCO

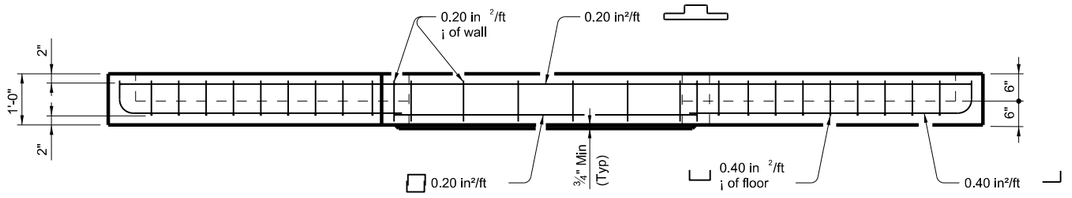
FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047, ETC	US 83
06-2023: Added reference point.	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		128



LID SECTION A-A

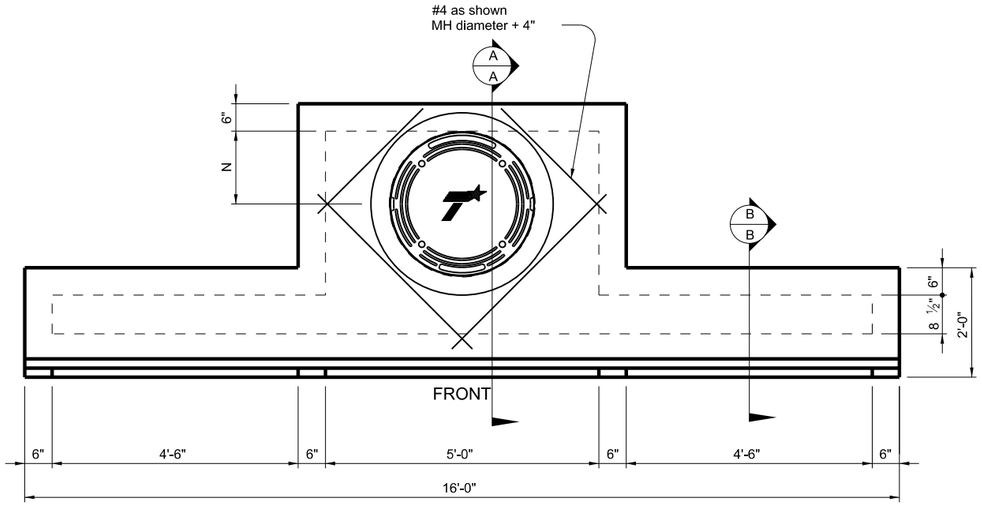


LID SECTION B-B



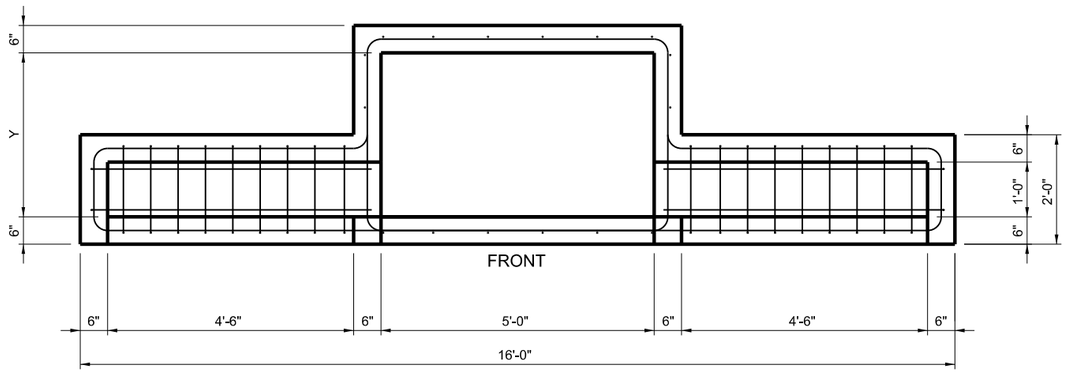
THROAT ELEVATION VIEW

(Showning left and right extensions)



LID PLAN VIEW

(Showning left and right extensions)



THROAT PLAN VIEW

(Showning left and right extensions)

Size (Y)	N	MH Dia*	Ra
3'	9"	18"	(4) #5 Additional
4'	16"	32"	(4) #5 Additional
5'	16"	32"	(4) #5 Additional
6'	16"	32"	(4) #5 Additional

*Nominal ring and cover size.

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Extensions may be right, left, both or none. Provide extensions as specified elsewhere in the plans.
4. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾". Lid may employ a butt joint with dowels at the Contractor's option.
5. Provide lifting devices in conformance with Manufacturer's recommendations.
6. Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.
7. Chamfer vertical edges of inlet lid ¾" as shown in Front View, sheet 1.

INSTALLATION NOTES:

1. Inlet throat and lid are not intended for direct traffic. Do not place in roadway.
2. Seal tongue and groove joints and butt joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Open area of main throat = 360 sq in. Open area of one extension throat = 324 sq in.
3. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, size, and extension placement. Extensions are subsidiary to inlet.

Cover dimensions are clear dimensions, unless noted otherwise.

HS20 LOADING

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

PRECAST CURB INLET OUTSIDE ROADWAY

PCO

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047, ETC	US 83
06-2023: Added reference point.	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		129

DATE: 5/22/2024 4:03:47 PM
FILE: T:\0070-01-01\CADD\Drainage\Standards\CD-PCO-23 (1 & 2 OF 2).dgn

	Size	MAX DEPTH = 15 ft. to top of BASE SLAB										MAX DEPTH = 25 ft. to top of BASE SLAB										Min Height (See Gen Note 3)	Max HOLE DIA (See Fab Note 2)	Max KO DIA (See Fab Note 2)
		Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)				Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)						
		Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness			
	X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA
	ft.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	ft.	in.	in.
Precast Junction Box (PJB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	0.37	0.37	9	0.29	0.29	6	0.24	0.24	6	N/A	0.37	0.37	9	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	0.41	0.41	9	0.47	0.47	6	0.38	0.38	6	N/A	0.41	0.41	9	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	N/A	0.48	0.48	9	0.39	0.18	6	0.23	0.59	6	N/A	0.48	0.48	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	N/A	0.42	0.42	9	0.53	0.26	6	0.39	0.59	6	N/A	0.42	0.42	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	N/A	0.43	0.43	9	0.62	0.62	6	0.59	0.59	6	N/A	0.43	0.43	9	5.5	60	60
	5x6	0.27	0.27	9	0.34	0.45	6	N/A	0.48	0.48	9	0.47	0.45	9	0.38	0.54	8	N/A	0.48	0.48	9	5.5	60/72	60/72
	6x6	0.27	0.27	9	0.45	0.45	6	N/A	0.56	0.56	9	0.52	0.52	9	0.54	0.54	8	N/A	0.56	0.56	9	6.5	72	72
	8x8	0.46	0.46	9	0.51	0.51	8	N/A	0.45	0.45	12	0.87	0.87	9	0.59	0.59	10	N/A	0.45	0.45	12	8.5	96	72
Precast Base (PB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	N/A	N/A	N/A	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	0.47	0.47	6	0.38	0.38	6	N/A	N/A	N/A	N/A	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	3x3	0.30	0.34	9	0.39	0.18	6	0.23	0.59	6	3x3	0.40	0.40	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x3	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	3x3	0.46	0.37	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	4x4	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	4x4	0.39	0.39	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	48"	0.39	0.39	9	0.53	0.26	6	0.39	0.59	6	48"	0.47	0.47	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x5	0.33	0.40	9	0.53	0.26	6	0.39	0.59	6	3x5	0.48	0.48	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	3x3	0.34	0.34	9	0.62	0.62	6	0.59	0.59	6	3x3	0.53	0.53	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	4x4	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	4x4	0.64	0.64	9	5.5	60	60
	5x5	0.38	0.38	6	0.34	0.34	6	48"	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	48"	0.64	0.64	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	3x5	0.34	0.40	9	0.62	0.62	6	0.59	0.59	6	3x5	0.53	0.53	9	5.5	60	60
	5x6	0.31	0.31	9	0.34	0.45	6	3x3	0.34	0.34	9	0.47	0.45	9	0.38	0.54	8	3x3	0.61	0.50	9	5.5	60/72	60/72
	5x6	0.27	0.27	9	0.34	0.45	6	4x4	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	4x4	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	48"	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	48"	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	3x5	0.45	0.45	9	0.47	0.45	9	0.38	0.54	8	3x5	0.61	0.61	9	5.5	60/72	60/72
	6x6	0.29	0.29	9	0.45	0.45	6	3x3	0.41	0.41	9	0.52	0.52	9	0.54	0.54	8	3x3	0.74	0.74	9	6.5	72	72
	6x6	0.27	0.27	9	0.45	0.45	6	4x4	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	4x4	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	48"	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	48"	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	3x5	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	3x5	0.87	0.87	9	6.5	72	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x3	0.61	0.61	12	0.91	0.91	9	0.70	0.70	10	3x3	0.85	0.85	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	4x4	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	4x4	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	48"	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	48"	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x5	0.70	0.85	12	0.87	0.87	9	0.70	0.70	10	3x5	1.01	1.01	12	8.5	96	72

** Unless otherwise indicated.

FABRICATION NOTES:
1. Maximum spacing of reinforcement is 8".
2. At manufacturer's option, provide cast or cored holes or thin wall panels (KO) to the maximum diameter shown for each. When no penetration is required, it is acceptable to provide a wall with no sectional reduction.

GENERAL NOTES:
1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PJB for details.
2. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PB for details.
3. Min Height shown is for stock base units. Use stock base units whenever practical. Smaller height base units can be used in special installation circumstances, when noted elsewhere in the plans. Absolute minimum height of base units is 2'-6".

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

DESIGN DATA FOR PRECAST BASE AND JUNCTION BOX

PDD

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047, ETC	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		130

DATE: 5/22/2024 3:50:39 PM
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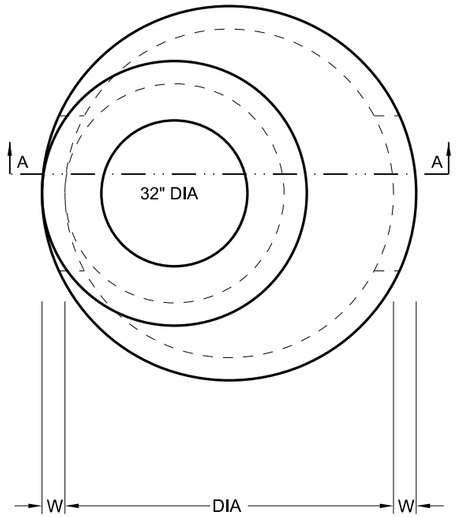
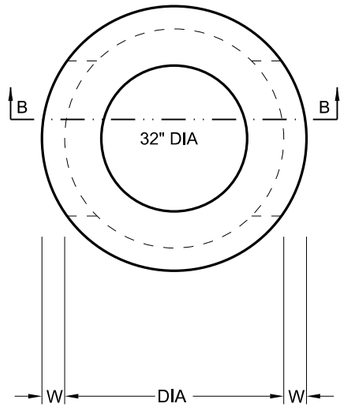
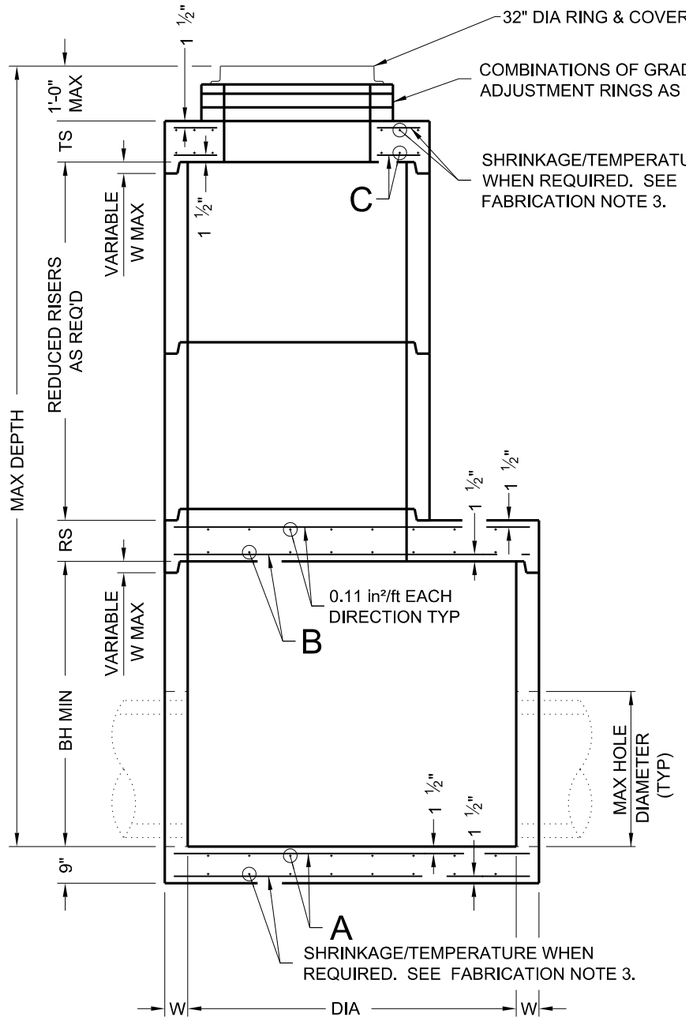


PLAN VIEW "A"

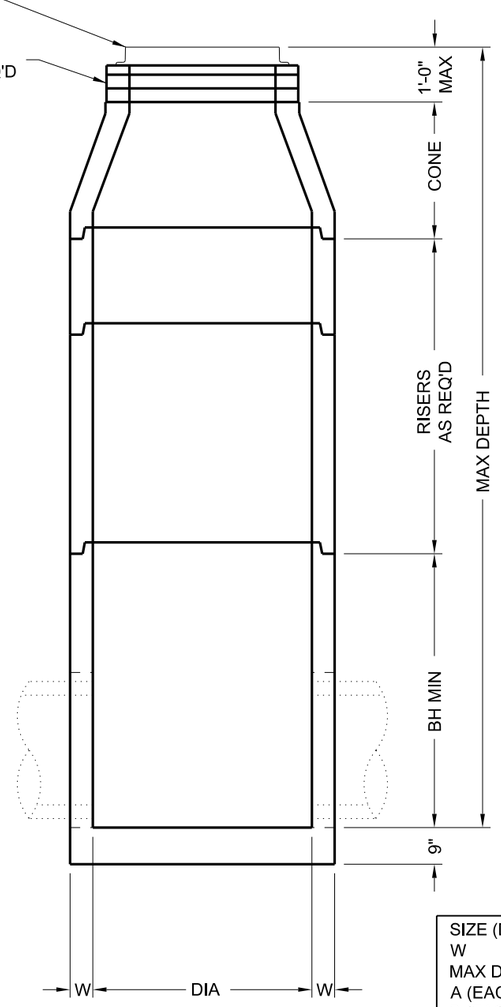


PLAN VIEW "B"



SECTION A-A

ROUND REDUCED RISER OPTION
SHOWING FLAT SLAB TOP



SECTION B-B

ROUND RISER OPTION
SHOWING CONE

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR. Provide circumferential reinforcing steel in vertical walls of base, riser and cone in accordance with ASTM C478.
3. Slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
4. Manufacture base and risers to nearest 3" increment.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
6. Provide lifting devices in conformance with Manufacturer's recommendations.
7. Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.

INSTALLATION NOTES:

1. Cones may be concentric or eccentric. Reduction cones are acceptable. See Manufacturer for cone dimensions.
2. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to this item.
3. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
4. Do not grout rubber gasket joints without Manufacturer's recommendation.
5. Initial installation of grade adjustment rings is limited to 1'-0" Max as shown.
6. Grade adjustment rings may be increased to 2'-0" Max when future construction affects final grade of structure. Make adjustments greater than 2'-0" with additional risers. Adjustments may be made up to the Max depth shown. Structure must be evaluated if Max depth will be exceeded.

GENERAL NOTES:

1. Designed according to ASTM C478.
2. Payment for manhole is per Item 465, "Junction Boxes, Manholes, and Inlets" by type and size.
3. Pipe OD + placement tolerance must be equal or less than Max hole diameter. For rigid pipe, placement tolerance is 4" Max, 2" Min. For flexible pipe, consult boot/seal manufacturer's specification for placement tolerance.

Cover dimensions are clear dimensions, unless noted otherwise.

SIZE (DIA)	48 in	60 in	72 in
W	5 in	6 in	7 in
MAX DEPTH	25 ft	25 ft	25 ft
A (EACH WAY)	0.22 in²/ft	0.30 in²/ft	0.45 in²/ft
B (EACH WAY)	N/A	0.37 in²/ft	0.62 in²/ft
C (EACH WAY)	0.24 in²/ft	0.46 in²/ft	0.46 in²/ft
BH MIN	12 in	36 in	36 in
TS	9 in	9 in	9 in
RS	N/A	9 in	12 in
REDUCED RISER DIA	N/A	48 in	48/60 in
MAX HOLE DIA	32 in	40 in	54 in

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST ROUND MANHOLE

PRM

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 3/2023 – Corrected TS and RS callout	0035	03	047, ETC	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		131

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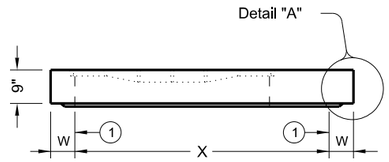
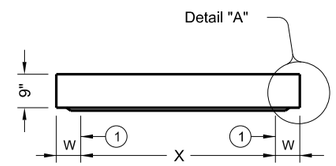
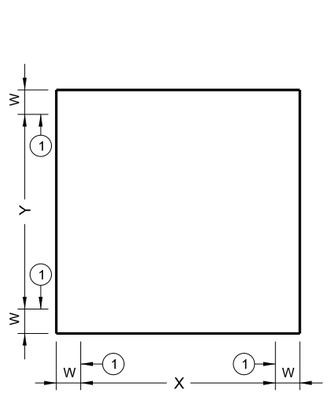


STYLE 'FG'

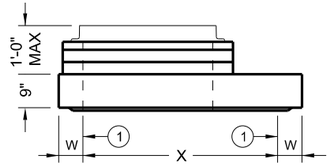


ELEVATION VIEW



PLAN VIEW
NO OPENINGS

STYLE 'SL'



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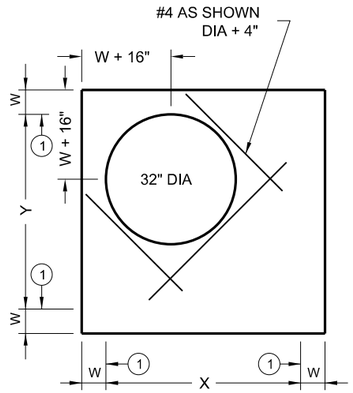
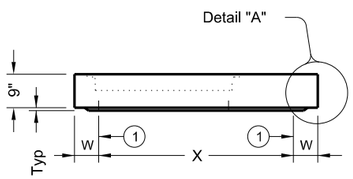
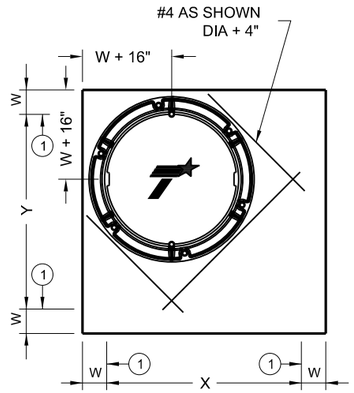


PLAN VIEW
SHIP LOOSE RING & COVER

STYLE 'RH'

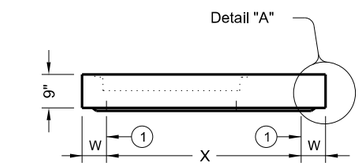


ELEVATION VIEW

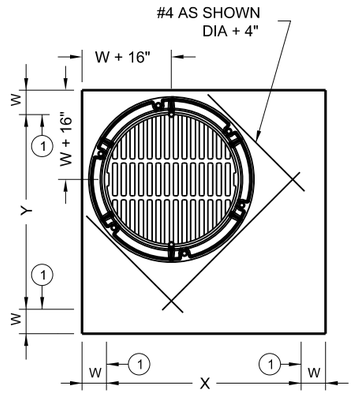


PLAN VIEW
32" DIA CAST-IN RING & COVER

STYLE 'RC'

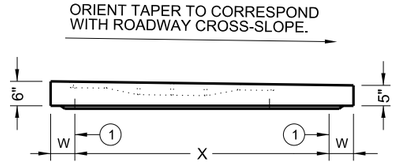


ELEVATION VIEW

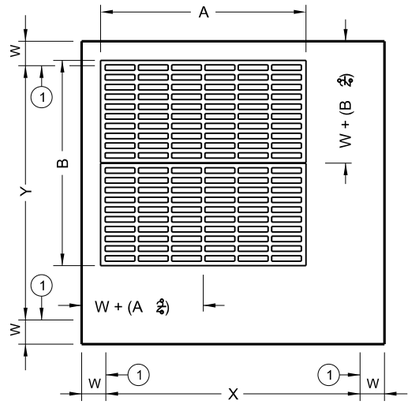


PLAN VIEW
32" DIA CAST-IN RING & GRATE

STYLE 'RG'

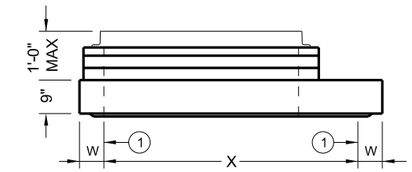


STYLE 'SFG'
ELEVATION VIEW

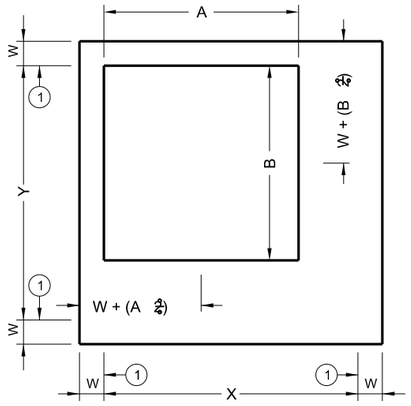


PLAN VIEW
CAST-IN FRAME & GRATE

STYLES 'FG' & 'SFG'

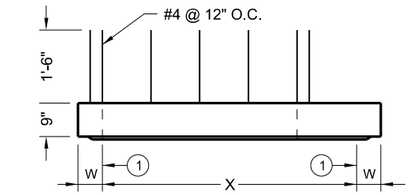


ELEVATION VIEW

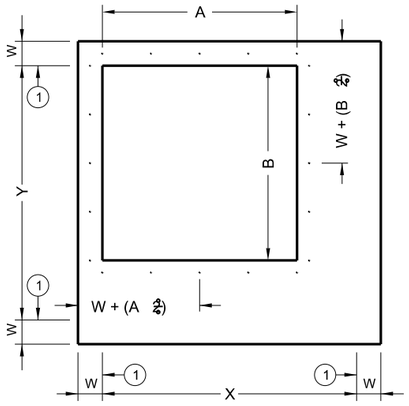


PLAN VIEW
SHIP LOOSE FRAME & GRATE

STYLE 'SH'



ELEVATION VIEW



PLAN VIEW
EXPOSED REBAR

STYLE 'S1'

(1) Matches inside face of wall of precast base or riser below inlet.

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

PSL

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0035	03	047, ETC	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		132

DATE: 5/22/2024 3:59:07 PM
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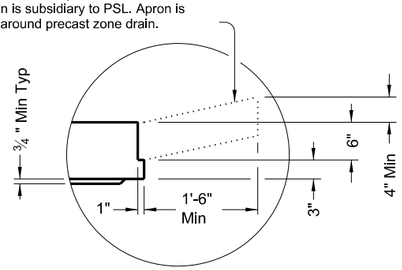
Style	Size (X x Y)	W (2)	A x B (nominal)	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	6"	n/a	0.37 in□/ft	0.37 in□/ft
RH,RC,RG,SH,S1,FG	3'x3'	6"	3'x3' or 32" Dia	0.37 in□/ft	0.37 in□/ft
SFG	3'x3'	6"	3'x3'	0.32 in□/ft	0.32 in□/ft
SL	4'x4'	6"	n/a	0.34 in□/ft	0.34 in□/ft
RH,RC,RG,SH,S1,FG	4'x4'	6"	3'x3' or 32" Dia	0.41 in□/ft	0.41 in□/ft
SH,S1,FG	4'x4'	6"	4'x4'	0.41 in□/ft	0.41 in□/ft
SFG	4'x4'	6"	4'x4'	0.32 in□/ft	0.32 in□/ft
SL	3'x5'	6"	n/a	0.39 in□/ft	0.39 in□/ft
RH,RC,RG,SH,S1,FG	3'x5'	6"	3'x3' or 32" Dia	0.48 in□/ft	0.48 in□/ft
SH,S1,FG	3'x5'	6"	3'x5'	0.48 in□/ft	0.48 in□/ft
SFG	3'x5'	6"	3'x5'	0.32 in□/ft	0.32 in□/ft
SL	4'x5'	6"	n/a	0.42 in□/ft	0.42 in□/ft
RH,RC,RG,SH,S1,FG	4'x5'	6"	3'x3' or 32" Dia	0.42 in□/ft	0.42 in□/ft
SH,S1,FG	4'x5'	6"	4'x4'	0.63 in□/ft	0.63 in□/ft
SH,S1,FG	4'x5'	6"	3'x5'	0.66 in□/ft	0.66 in□/ft
SL	5'x5'	6"	n/a	0.36 in□/ft	0.36 in□/ft
RH,RC,RG,SH,S1,FG	5'x5'	6"	3'x3' or 32" Dia	0.43 in□/ft	0.43 in□/ft
SH,S1,FG	5'x5'	6"	4'x4'	0.63 in□/ft	0.63 in□/ft
SH,S1,FG	5'x5'	6"	3'x5'	0.63 in□/ft	0.63 in□/ft
SL	5'x6'	6"/8"	n/a	0.48 in□/ft	0.48 in□/ft
RH,RC,RG,SH,S1,FG	5'x6'	6"/8"	3'x3' or 32" Dia	0.48 in□/ft	0.48 in□/ft
SH,S1,FG	5'x6'	6"/8"	4'x4'	0.60 in□/ft	0.60 in□/ft
SH,S1,FG	5'x6'	6"/8"	3'x5'	0.60 in□/ft	0.60 in□/ft
SL	6'x6'	6"/8"	n/a	0.43 in□/ft	0.43 in□/ft
RH,RC,RG,SH,S1,FG	6'x6'	6"/8"	3'x3' or 32" Dia	0.56 in□/ft	0.56 in□/ft
SH,S1,FG	6'x6'	6"/8"	4'x4'	0.56 in□/ft	0.56 in□/ft
SH,S1,FG	6'x6'	6"/8"	3'x5'	0.59 in□/ft	0.59 in□/ft
SL	8'x8'	8"/10"	n/a	0.45 in□/ft	0.45 in□/ft
RH,RC,RG,SH,S1,FG	8'x8'	8"/10"	3'x3' or 32" Dia	0.45 in□/ft	0.45 in□/ft
SH,S1,FG	8'x8'	8"/10"	4'x4'	0.45 in□/ft	0.45 in□/ft
SH,S1,FG	8'x8'	8"/10"	3'x5'	0.45 in□/ft	0.45 in□/ft

(2) See sheet PDD for corresponding wall thickness (W) of base unit or riser.

Construct cast-in-place reinforced concrete apron, when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PSL. Apron is 1'-6" Min width around precast zone drain.



DETAIL "A"

(Reinforcing not shown for clarity)

When an apron is to be cast around PSL, use detail above to create an apron ledge on all 4 sides.

FABRICATION NOTES:

1. Locate penetration (Style 'RH'), ring and cover (Style 'RC'), ring and grate (Style 'RG'), and frame and grate (Style 'FG') in a corner. Only one penetration is allowed per slab lid.
2. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
3. Provide Grade 60 reinforcing steel or equivalent area of WWR.
4. Provide clear cover of ¾" to reinforcing from lower outside shoulder of slab for structural reinforcement, and 2" from top of slab for shrinkage and temperature reinforcement. Place short span reinforcing closest to surface.
5. Slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing. Provide steel area = 0.11 in²/ft each way.
6. No substitution is allowed for diagonal #4 bars around openings.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:

1. Precast slab lids are intended for direct traffic and may be placed in roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. Initial installation of grade adjustment rings for Styles 'RH' and 'SH' is limited to 1'-0" Max as shown.
5. Grade adjustment rings for Styles 'RH' and 'SH' may be increased to 2'-0" Max when future construction affects final grade of structure. Make adjustments greater than 2'-0" with additional risers. Adjustments can be made up to Max depth shown on sheet PDD. Structure must be evaluated if Max depth will be exceeded.
6. Orient long dimension of grate slots perpendicular to traffic, unless noted otherwise on plans

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Payment for lid is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

PSL

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
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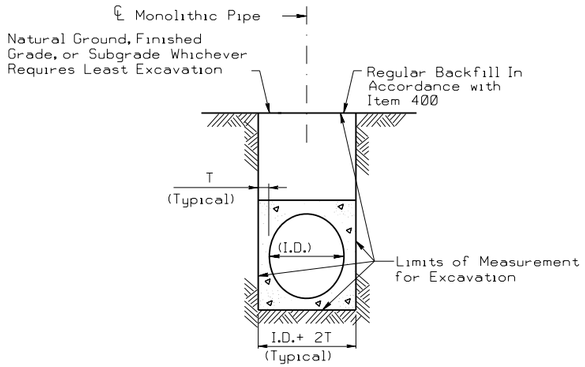
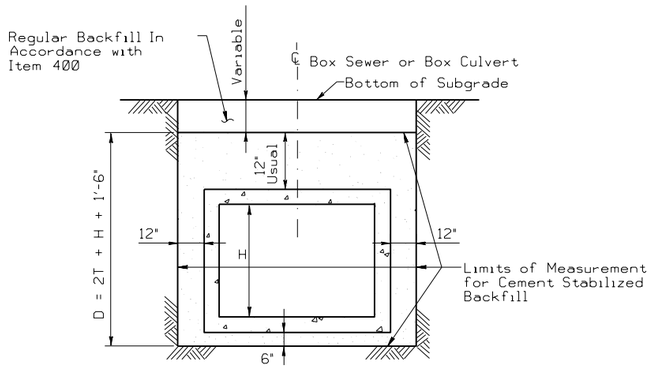


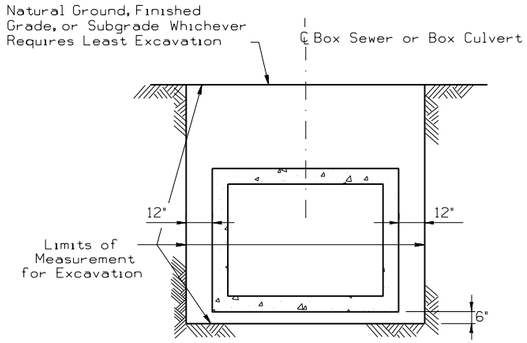
EXCAVATION DETAIL

MONOLITHIC PIPE
IN A PAVED OR GRADED AREA



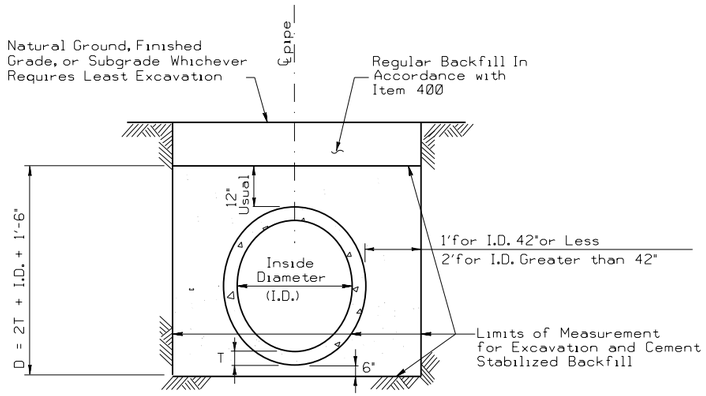
BACKFILL DETAIL

BOX CULVERTS
IN A GRADED OR PAVED AREA
INCLUDING DETOURS *



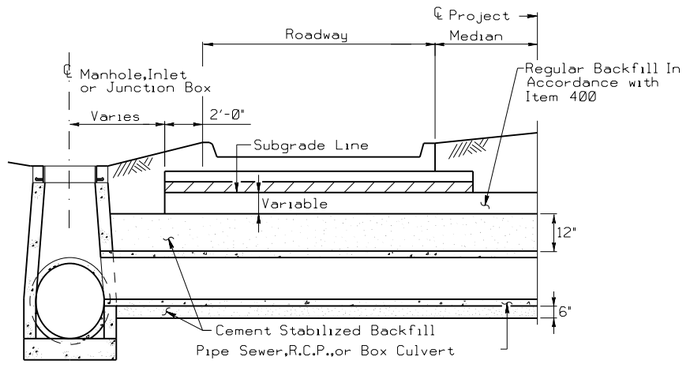
EXCAVATION DETAIL

BOX CULVERTS
IN A GRADED AREA



EXCAVATION & BACKFILL DETAIL

REINFORCED CONCRETE PIPE
IN A GRADED OR PAVED AREA
INCLUDING DETOURS



BACKFILL DETAIL

AT MANHOLE, INLET OR JUNCTION BOX

D = Depth
H = Height
T = Thickness
R = Radius
Dia = Diameter

REINFORCED CONCRETE PIPE

EXCAVATION AND BACKFILL QUANTITIES

PIPE DIA. IN.	T FT.	CULVERT OR SEWER EXCAVATION IN A PAVED OR GRADED AREA C.Y.PER L.F.PER FT.OF DEPTH	CEMENT STABILIZED BACKFILL IN A PAVED OR GRADED AREA C.Y.PER L.F. OF PIPE
18	0.19	0.144	0.383
24	0.23	0.165	0.478
30	0.29	0.188	0.586
36	0.33	0.210	0.692
42	0.38	0.231	0.808
48	0.42	0.327	1.394
54	0.46	0.349	1.560
60	0.50	0.370	1.731
66	0.54	0.392	1.907
72	0.58	0.414	2.088
78	0.62	0.435	2.275
84	0.67	0.457	2.474

MONOLITHIC PIPE

EXCAVATION QUANTITIES

PIPE DIA. IN.	T FT.	EXCAVATION C.Y.PER L.F.PER FT.OF DEPTH
36	0.417	0.142
42	0.458	0.164
48	0.458	0.182
54	0.500	0.204
60	0.583	0.228
66	0.583	0.247
72	0.625	0.269
78	0.625	0.287
84	0.625	0.306

NOTE:

Cement stabilized backfill may be omitted in private driveways as indicated elsewhere in the plans.

Rubber gaskets shall be required for all joints on proposed cross drainage, pipe culverts and proposed storm sewer systems, unless otherwise shown in the plans.

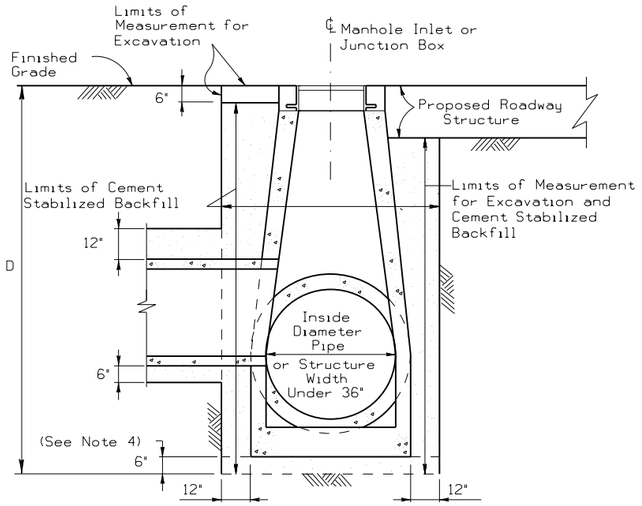
* Backfill with cement stabilized material will be required for all structures under detours unless noted otherwise in the General Notes.

Texas Department of Transportation

EXCAVATION AND BACKFILL DIAGRAMS

E&BD

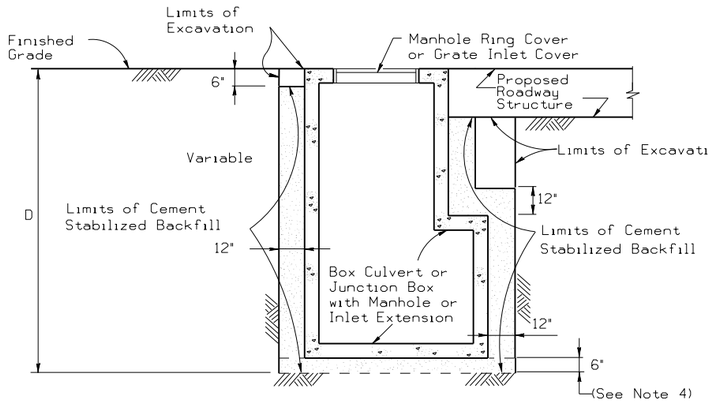
FILE: STDE1.DGN	DN: TxDot	CK: TxDot	DW: TxDot	CK: TxDot
© TxDOT FEB 2010	DIST	FED REG	PROJECT NO.	SHEET
REVISIONS REVISED 11/05 REVISED 2/2010 Added note to Table 1.Sht 2 of 2. REVISED 6/12	SJT	6		134
	COUNTY		CONTROL SECT JOB	HIGHWAY
	CONCHO		0035 03 047, ETC	US 83



EXCAVATION AND BACKFILL DETAIL

MANHOLES SMALLER THAN 36 IN.
IN A PAVED OR GRADED AREAS

N.T.S.



EXCAVATION AND BACKFILL DETAIL

JUNCTION BOXES IN A
PAVED OR GRADED AREA

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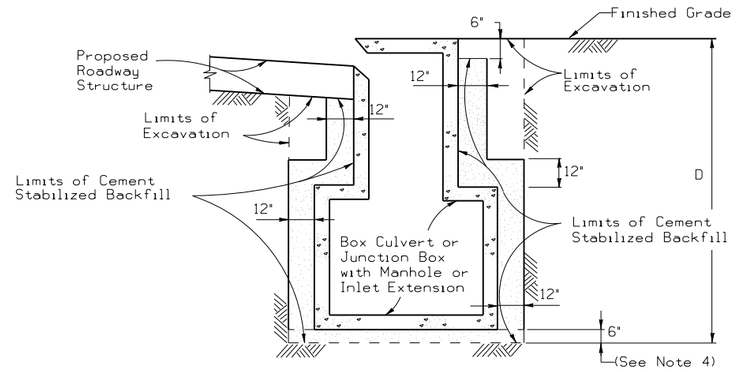
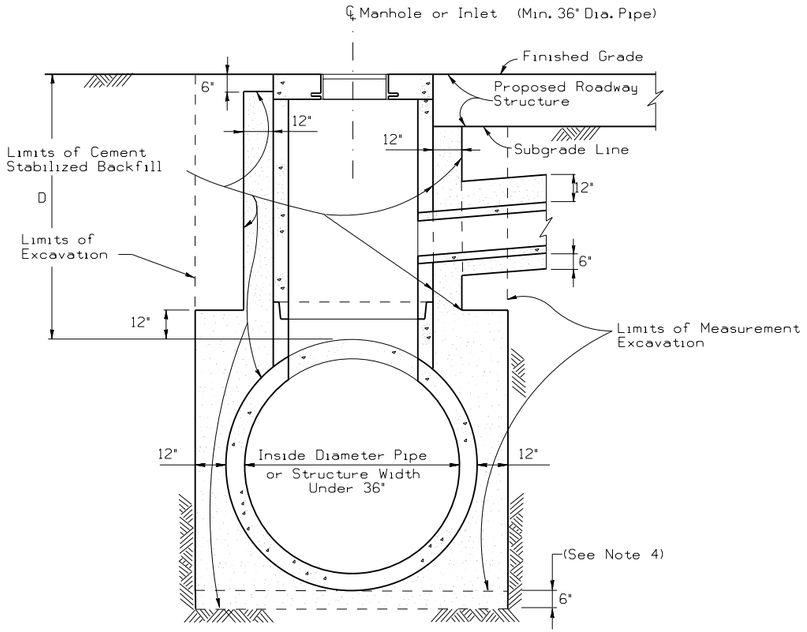


EXCAVATION AND BACKFILL DETAIL

INLET EXTENSIONS ON A BOX CULVERT
IN A PAVED OR GRADED AREA

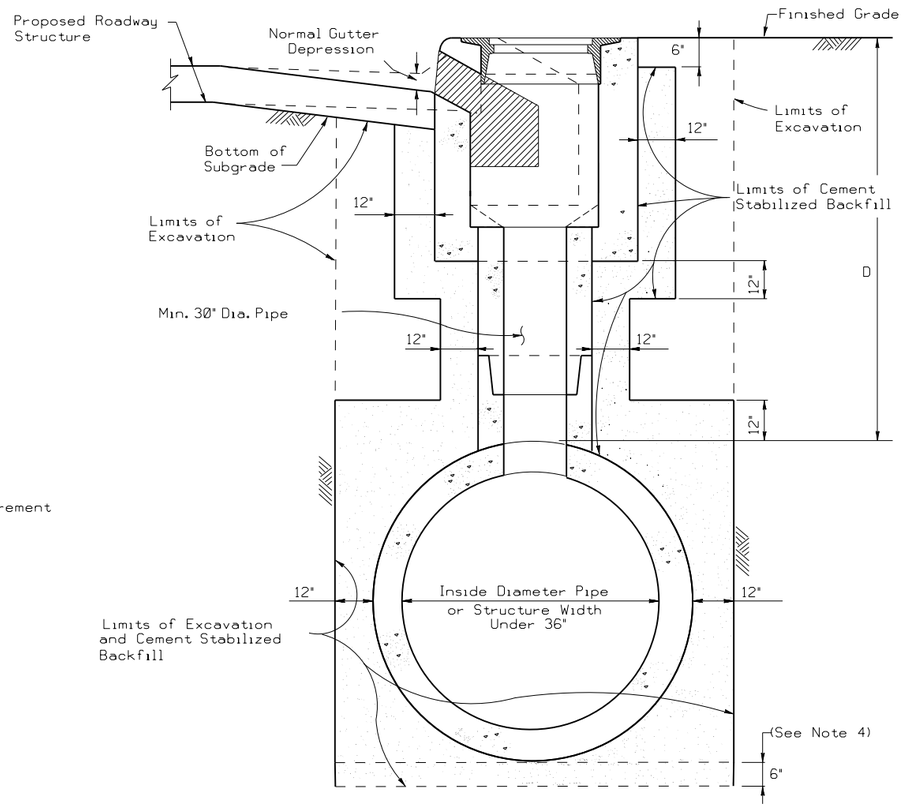
N.T.S.



EXCAVATION AND BACKFILL DETAIL

MANHOLES 36 IN. AND GREATER
IN A PAVED OR GRADED AREA

N.T.S.



EXCAVATION AND BACKFILL DETAIL

CURB INLETS IN A PAVED OR GRADED AREA

N.T.S.

D = Depth
H = Height
T = Thickness
R = Radius
Dia = Diameter

TABLE 1

SCHEDULE FOR PAY QUANTITIES OF CEMENT STABILIZED BACKFILL (SEE NOTE 1)

MANHOLE OR INLET DEPTH (D) IN FEET	CEMENT STABILIZED BACKFILL IN CUBIC YARDS
Ø through 5	5.75
> 5 through 10	8.25
greater than 10	12.75

TO BE PAID UNDER ITEM 400-2016 CEMENT STABILIZED BACKFILL (INLET OR MANHOLE)

NOTES:

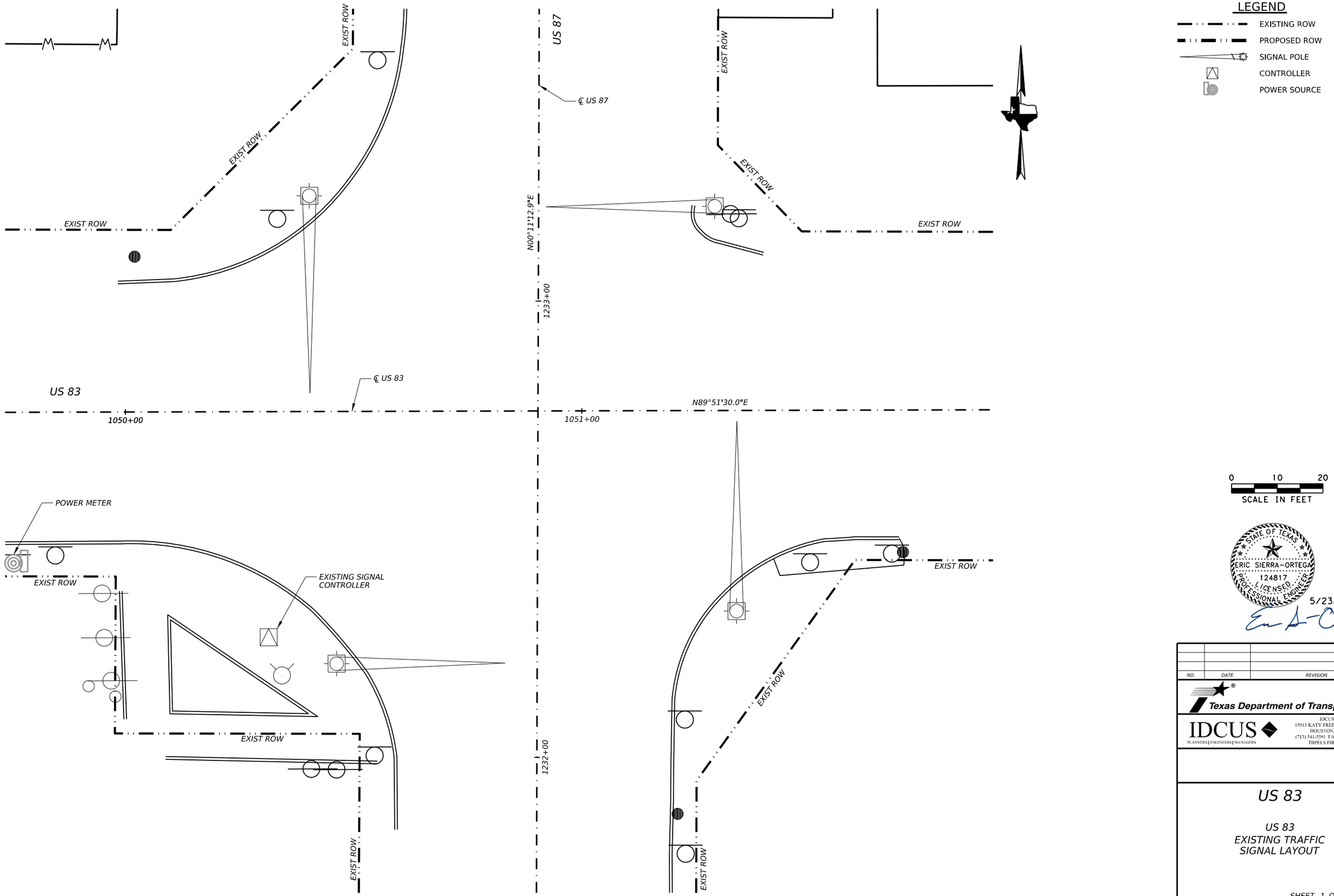
1. The Contractor is paid a fixed estimated amount for cement stabilized backfill based on depth (D) and Table. 1.
2. Proposed roadway structure includes pavement, base and any subgrade.
3. For backfill of intersecting pipes and box culverts, see "Excavation and Backfill Diagram for Pipes and Box Culverts."
4. 6" cement stabilized backfill will be required only for precast units.

Texas Department of Transportation

EXCAVATION AND BACKFILL DIAGRAMS

E&BD

FILE: STDE1.DGN	DN: TxDot	CK: TxDot	DW: TxDot	CK: TxDot
© TxDOT FEB 2010	DIST	FED REG	PROJECT NO.	SHEET
REVISIONS REVISED 11/05 REVISED 2/2010 Added note to Table 1. REVISED 6/12	SJT	6		135
	COUNTY		CONTROL SECT JOB	HIGHWAY
	CONCHO		0035 03	047, ETC US 83



LEGEND

- EXISTING ROW
- PROPOSED ROW
- SIGNAL POLE
- CONTROLLER
- POWER SOURCE

0 10 20
SCALE IN FEET

STATE OF TEXAS
ERIC SIERRA-ORTEGA
124817
LICENSED
PROFESSIONAL ENGINEER

5/23/2024

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TBPELS FIRM # F-6825

US 83

US 83
EXISTING TRAFFIC
SIGNAL LAYOUT

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		136

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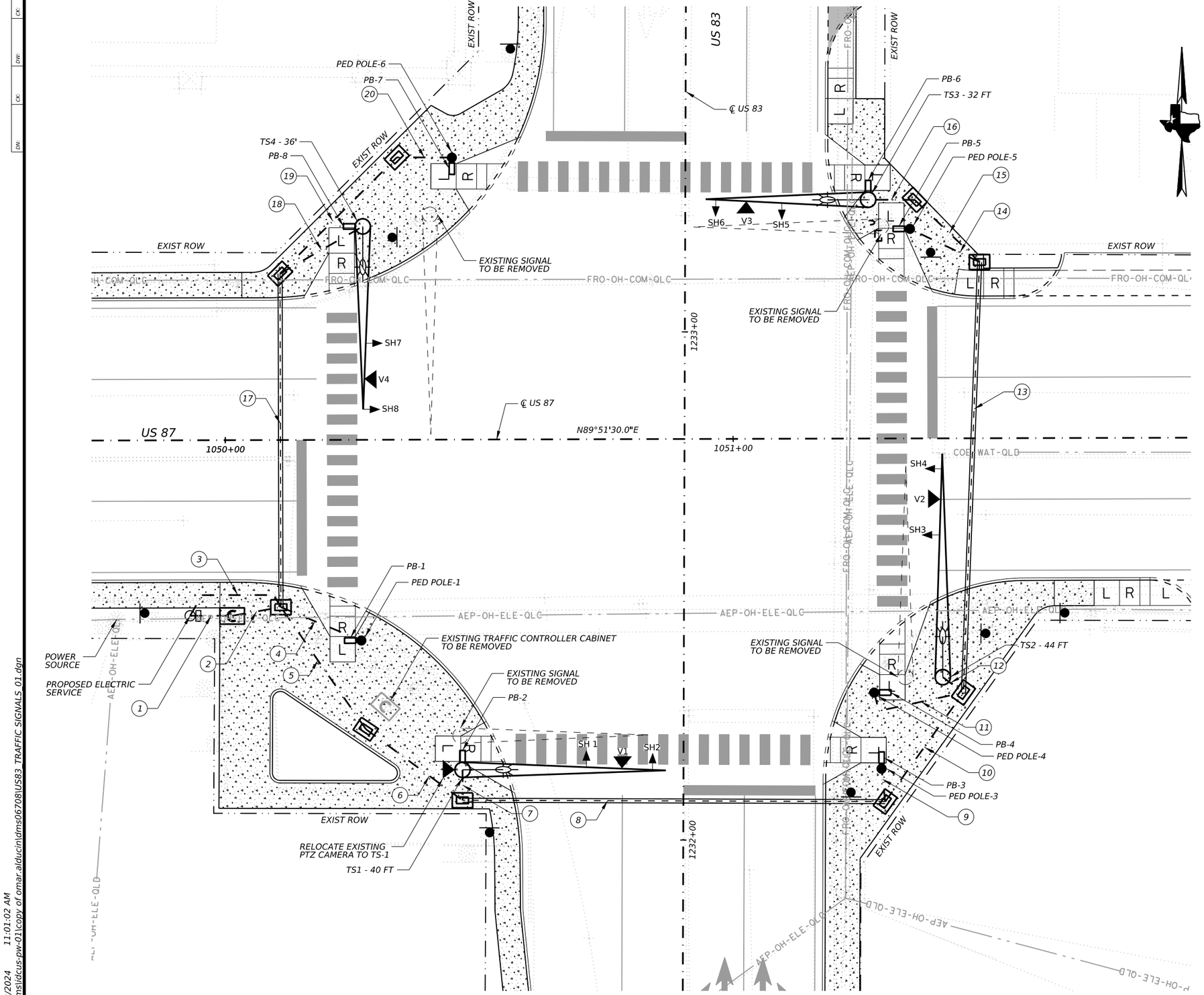

LEGEND

- CONDUIT (PVC) (SCHD 40)
- CONDUIT (PVC) (SCHD 80) BORE
- CONDUCTOR/CONDUIT RUN NUMBER
- PROPOSED GROUND BOX (TY D)
- PROPOSED TRAFFIC SIGNAL POLE & MAST ARM W/SIGNAL HEADS & LUMINAIRE
- EXISTING TRAFFIC SIGNAL POLE & MAST ARM
- PROPOSED VIVDS CAMERA
- PROPOSED TRAFFIC CONTROLLER CABINET
- EXISTING TRAFFIC CONTROLLER CABINET
- PROPOSED ELECTRIC SERVICE
- EXISTING ELECTRIC SERVICE
- EXISTING ELECTRIC POLE
- PROPOSED PEDESTRIAN POLE
- PROPOSED STORM SEWER
- W1(D) EXISTING UNDERGROUND WATER LINE
- OE-1 EXISTING OVERHEAD ELECTRIC LINES
- OHT-1 EXISTING OVERHEAD TELEPHONE LINES
- CTV-1 EXISTING OVERHEAD CABLE TV LINES

0 10 20
SCALE IN FEET

STATE OF TEXAS
ERIC SIERRA-ORTEGA
124817
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HOUSTON, TX 77094
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US 83

US 83
PROPOSED TRAFFIC SIGNAL LAYOUT

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		137

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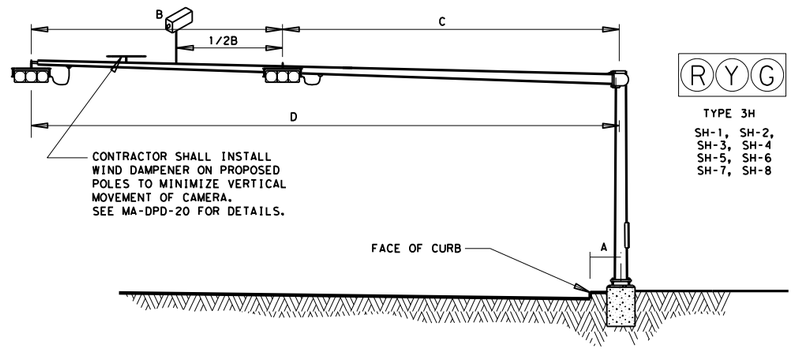
TRAFFIC SIGNAL QUANTITIES			
BID ITEM	ITEM DESCRIPTION	UNIT	SHEET TOTAL
416-6002	DRILL SHAFT (24 IN)	LF	30
416-6031	DRILL SHAFT (TRF SIG POLE) (30 IN)	LF	11
416-6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	36
618-6053	CONDT (PVC) (SCH 80) (3")	LF	325
618-6059	CONDT (PVC) (SCH 80) (4") (BORE)	LF	240
620-6007	ELEC CONDR (NO.8) BARE	LF	665
620-6008	ELEC CONDR (NO.8) INSULATED	LF	30
621-6005	TRAY CABLE (4 CONDR) (12 AWG)	LF	945
624-6009	GROUND BOX TY D (162922)	EA	9
628-6002	REMOVE ELECTRICAL SERVICES	EA	1
628-6037	ELC SRV TY A 240/480 060(NS)AL(T)GC(O)	EA	1
** 680-6004	REMOVING TRAFFIC SIGNALS	EA	1
* 680-6005	INS HY TRF SIG (DPT SUP CNT & CAB)(ISO)	EA	1
682-6001	VEH SIG SEC (12") LED (GRN)	EA	8
682-6003	VEH SIG SEC (12") LED (YEL)	EA	8
682-6005	VEH SIG SEC (12") LED (RED)	EA	8
682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA	8
682-6054	BACKPLATE W/REF BRDR(3 SEC)(VENT)ALUM	EA	8
684-6012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	3,481
686-6035	INS TRF SIG PL AM(S)1 ARM(32')LUM	EA	1
686-6039	INS TRF SIG PL AM(S)1 ARM(36')LUM	EA	1
686-6043	INS TRF SIG PL AM(S)1 ARM(40')LUM	EA	1
686-6047	INS TRF SIG PL AM(S)1 ARM(44')LUM	EA	1
687-6001	PED POLE ASSEMBLY	EA	5
688-6001	PED DETECT PUSH BUTTON (APS)	EA	8
688-6003	PED DETECTOR CONTROLLER UNIT	EA	1
** 6306-6013	VIVDS PROSR SYS (RELOCATE)	EA	1
** 6306-6014	VIVDS CAM ASSY (RELOCATE)	EA	5
6306-6007	VIVDS CABLING	LF	940

* CONTROLLER CABINET WILL BE PROVIDED BY TXDOT.

** DURING REMOVAL OF TRAFFIC SIGNALS, SALVAGE COMPLETE TRAFFIC SIGNAL CONTROLLER CABINET, ALL VIVDS PROCESSORS, CAMERAS AND CAMERA SUPPORTS. VIVDS CAMERAS AND PROCESSOR WILL BE PROVIDED BY TXDOT.

SIGNAL HEAD AND POLE PLACEMENT									
SIG HEAD AND POLE	SIG TYPE	BACK PLATE	A (LF)	B (LF)	C (LF)	D (LF)	7 CONDR (LF)	COAXIAL (LF)	ELEV. OF FOUNDATION
TS-1			9			40	20	51	****
TS-2			14			44	20	55	****
TS-3			6			32	20	44	****
TS-4			11			36	20	50	****
SH-1	3H	3-SEC			24		44		
SH-2	3H	3-SEC		13			57		
SH-3	3H	3-SEC			28		48		
SH-4	3H	3-SEC		13			61		
SH-5	3H	3-SEC			17		37		
SH-6	3H	3-SEC		13			50		
SH-7	3H	3-SEC			23		43		
SH-8	3H	3-SEC		13			56		
PED POLE-1	PED-1						10		FLUSH W/ LANDING
	PED-2						10		
PED POLE-3	PED-3						10		FLUSH W/ LANDING
PED POLE-4	PED-4						10		FLUSH W/ LANDING
PED POLE-5	PED-5						10		FLUSH W/ LANDING
PED POLE-6	PED-6						10		FLUSH W/ LANDING
	PED-7						10		
	PED-8						10		

**** NO MORE THAN 2" ABOVE THE LANDING



TYPE 3H
SH-1, SH-2, SH-3, SH-4 SH-5, SH-6 SH-7, SH-8

PED SIG SEC
(2 INDICATIONS IN 1 SEC)
P-1 Thru P-8

ESTIMATED CONDUIT AND CONDUCTOR RUNS (THIS SHEET ONLY)							
RUN NO.	CONDUIT LENGTH (LF) 3" PVC (SCH 80) (TRENCH)	CONDUIT LENGTH (LF) 4" PVC (SCH 80) (BORE)	CONDUCTOR LENGTH & NUMBER OF RUN(S) (LF) 7 CONDR NO. 12 TRAFFIC SIGNAL CABLE	CONDUCTOR LENGTH & NUMBER OF RUN(S) (LF) 4 CONDR NO. 12 ILLUMINATION TRAY CABLE	CONDUCTOR LENGTH & NUMBER OF RUN(S) (LF) NO. 8 INSULATED (MULTI-WIRE)	CONDUCTOR LENGTH & NUMBER OF RUN(S) (LF) NO. 8 BARE	WIRE LENGTH & NUMBER OF RUN(S) (LF) VIVIDS COAXIALE CABLE
1	10				30 (2 RUNS)	15	
2	10		240 (16 RUNS)			15	75 (5 RUNS)
3	25			120 (4 RUNS)		30	
4	20		25 (1 RUN)			25	
5	30		385 (11 RUNS)	105 (3 RUNS)		35	140 (4 RUNS)
6	25		330 (11 RUNS)	90 (3 RUNS)		30	120 (4 RUNS)
7	10		45 (3 RUNS)	15 (1 RUN)		15	30 (2 RUNS)
8		85	720 (8 RUNS)	180 (2 RUNS)		90	90 (1 RUN)
9	10		15 (1 RUN)			15	
10	30		245 (7 RUNS)	70 (2 RUNS)		35	35 (1 RUN)
11	25		30 (1 RUN)			30	
12	10		30 (2 RUNS)	15 (1 RUN)		15	15 (1 RUN)
13		85	360 (4 RUNS)	90 (1 RUN)		90	
14	20		25 (1 RUN)			25	
15	20		75 (3 RUNS)	25 (1 RUN)		25	
16	10		45 (3 RUNS)	15 (1 RUN)		15	
17		70	300 (4 RUNS)	75 (1 RUN)		75	150 (2 RUNS)
18	20		75 (3 RUNS)	25 (1 RUN)		25	25 (1 RUN)
19	35		40 (1 RUN)			40	40 (1 RUN)
20	15		20 (1 RUN)			20	20 (1 RUN)

7 CONDR NO. 12 TRAFFIC SIGNAL CABLE RAN TO THE NEAREST TRAFFIC SIGNAL POLE & TERMINATED ON THE TERMINAL STRIP. THESE CABLES ARE FOR ALL THE PED HEADS & AUDIBLE PEDESTRIAN SIGNAL UNITS.

ELECTRICAL SERVICE DATA											
ELECTRICAL SERVICE ID	ELECTRICAL SERVICE DESCRIPTION	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BKR. POLE/AMP	LIGHTING CONTACTOR AMPS	PANELBD./ LOADCENTER AMP RATING	BRANCH CIRCUIT ID	BRANCH CKT. BRK. POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
SERVICE POLE #1	ELC SERV TY D (120/240) 060 (NS) SS (E) PS (U)	2"	3/#6	N/A	2P/60	2P/30	100	TRAFFIC SIGNAL LIGHTING	1P/50 2P/15	40 4	5.8

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TBPELS FIRM # F-6825

US 83

US 83 TRAFFIC SIGNAL DETAILS

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		138

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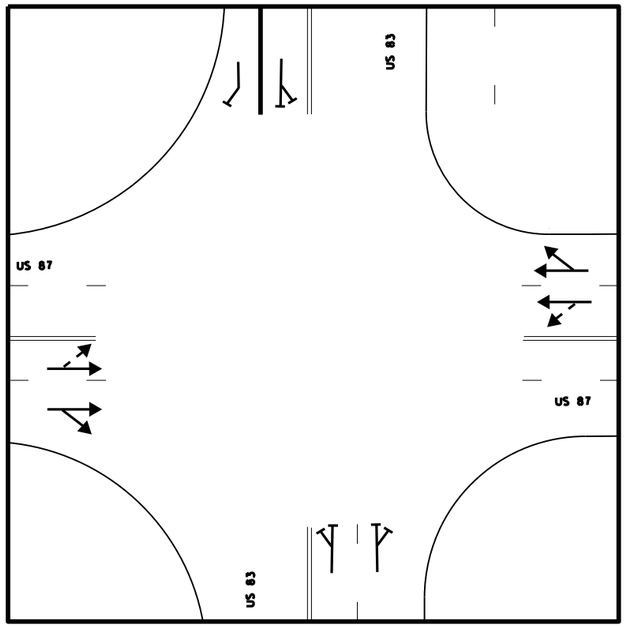
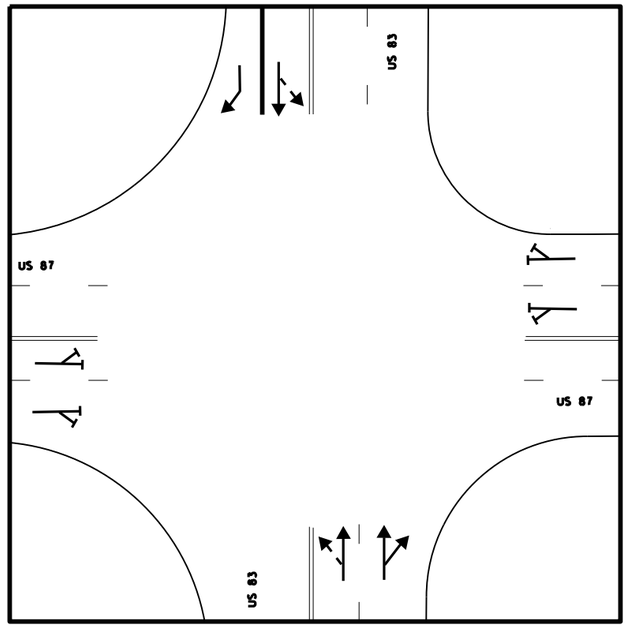


Φ 4 & 8



Φ 2 & 6

EXISTING CONDITION

SEQUENCE CHART

INTERVAL	4&8			2&6			FLASHING OPERATIONS
SIGNAL NO.	ROW	CLEAR 4&8	CLEAR ALL OTHER PHASES	ROW	CLEAR 2&6	CLEAR ALL OTHER PHASES	NORMAL & EMERGENCY
SH-1, SH-2	R	R	R	G	Y	R	R
SH-3, SH-4	G	Y	R	R	R	R	R
SH-5, SH-6	R	R	R	G	Y	R	R
SH-7, SH 8	G	Y	R	R	R	R	R
P-1, P-8	DW	DW	DW	W/FDW	DW	DW	
P-2, P-3	W/FDW	DW	DW	DW	DW	DW	
P-4, P-5	DW	DW	DW	W/FDW	DW	DW	
P-6, P-7	W/FDW	DW	DW	DW	DW	DW	

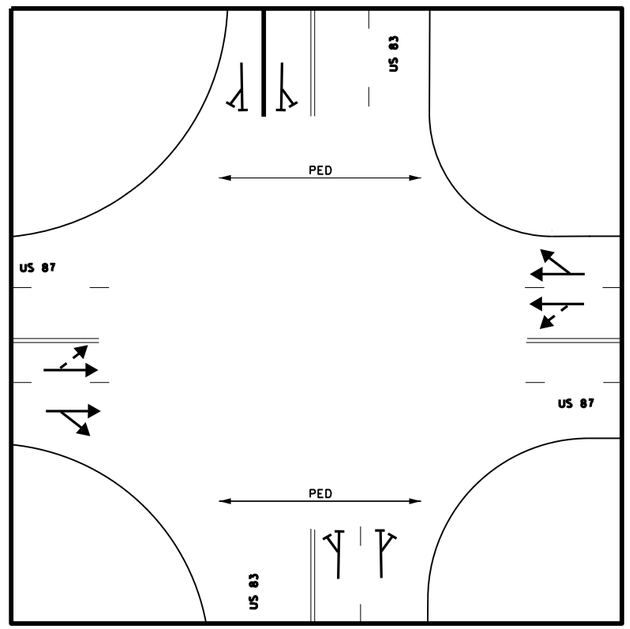
NOTE:

1. TXDOT TO PROVIDE TRAFFIC SIGNAL TIMING INFORMATION.

N

PED BUTTON PHASING LAYOUT			
		PHASE TIME	
PED BUTTON	PHASE ALLOWED	WALK	DON'T WALK
P-2, P-3 P-6, P-7	PHASE 4 & 8	7	20
P-1, P-8 P-4, P-5	PHASE 2 & 6	7	18

APS MESSAGE CHART			
POLE LOCATION	PEDESTRIAN MOVEMENT	FUNCTIONS	SPEECH MESSAGE/ SOUND DETAILS
P-1, P-8 P-4, P-5	PHASE 2&6	BUTTON PUSH ON DW	WAIT
		LOCATOR TONE	SLOW TICK
		WALK INDICATOR	WALK IS ON FOR US 87
P-2, P-3 P-6, P-7	PHASE 4&8	BUTTON PUSH ON DW	WAIT
		LOCATOR TONE	SLOW TICK
		WALK INDICATOR	WALK SIGN IS ON FOR US 83



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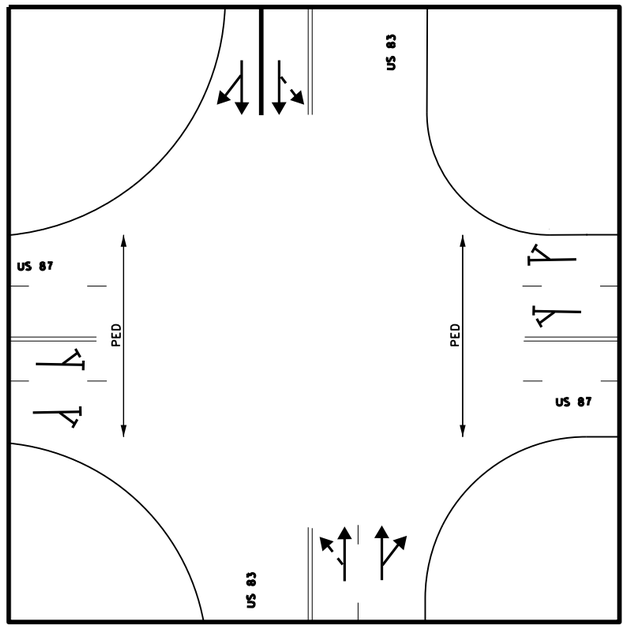
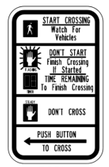


Φ 2 & 6

NEW PHASE DIAGRAM



SIGN
R10-3eL
9" X 15"

SIGN
R10-3eR
9" X 15"

SIGN DETAILS

STATE OF TEXAS
ERIC SIERRA-ORTEGA
124817
LICENSED
PROFESSIONAL ENGINEER

5/23/2024

NO.	DATE	REVISION

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(713) 541-5591 FAX: (713) 541-3501
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US 83

US 83
TRAFFIC SIGNAL
PHASING

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		139

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DATE: 5/22/2024 7:11:26 PM
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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

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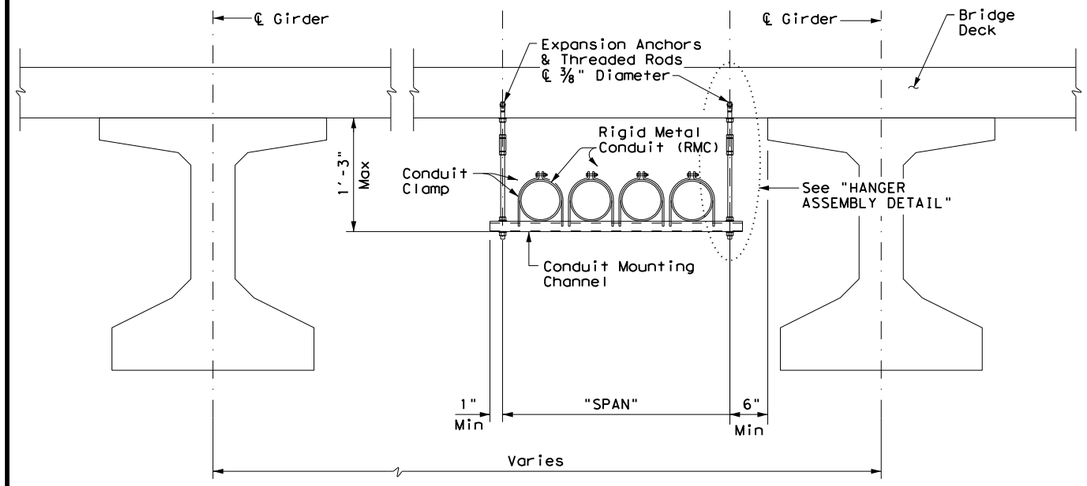
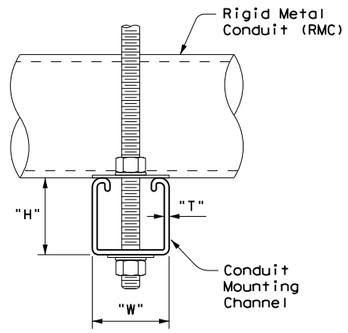
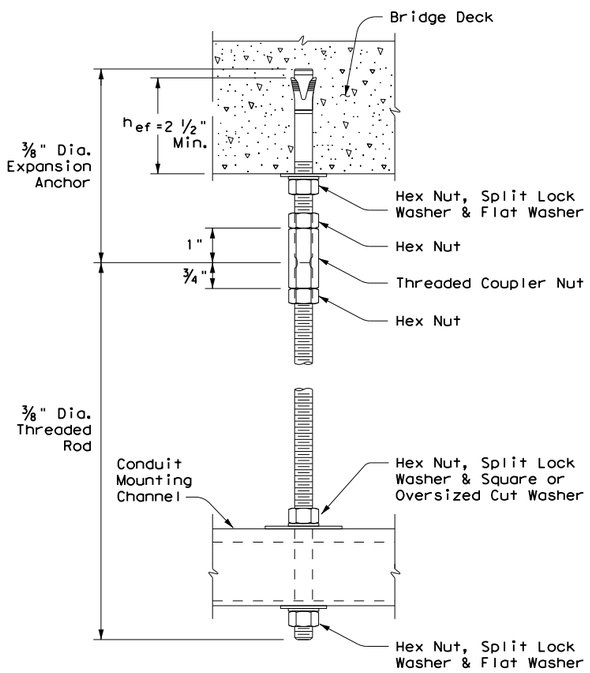


CONDUIT HANGING DETAIL

CONDUIT MOUNTING CHANNEL		
"SPAN"	"W" x "H"	"T"
less than 2'	1 5/8" x 1 3/8"	12 Ga.
2'-0" to 2'-6"	1 5/8" x 1 5/8"	12 Ga.
>2'-6" to 3'-0"	1 5/8" x 2 7/16"	12 Ga.

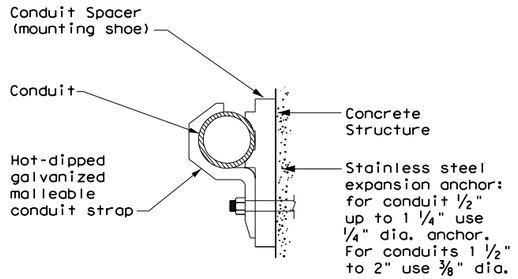
Channels with round or short slotted hole patterns are allowed, if the load carrying capacity is not reduced by more than 15%.

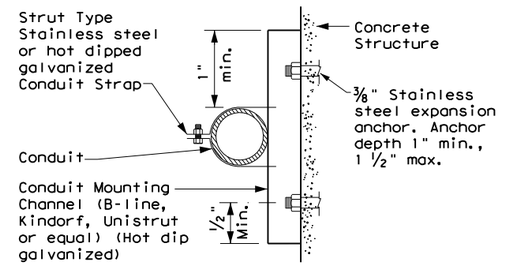




HANGER ASSEMBLY DETAIL

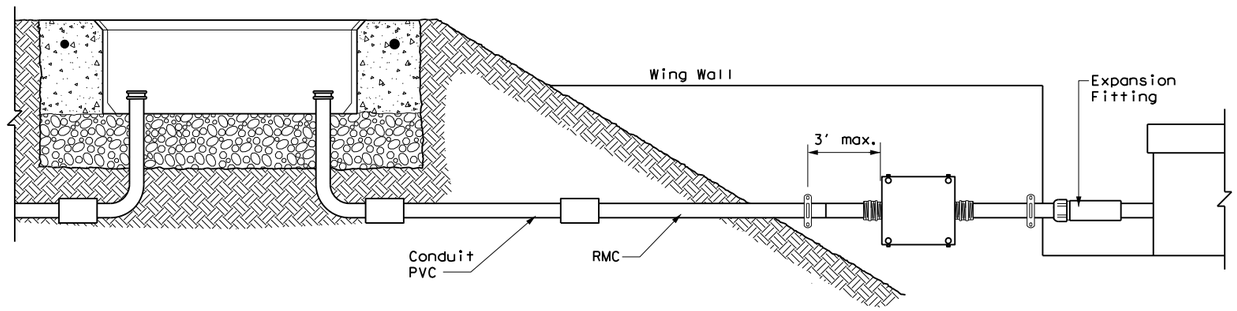
ELECTRIC CONDUIT TO BRIDGE DECK ATTACHMENT





CONDUIT MOUNTING OPTIONS

Attachment to concrete surfaces
See ED(1)B.2



TYPICAL CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL

EXPANSION ANCHOR NOTES FOR BRIDGE DECK ATTACHMENT

1. Use torque controlled mechanical expansion anchors that are approved for use in cracked concrete by the International Code Council, Evaluation Service (ICC-ES). The chosen anchor product shall have a designated ICC-ES Evaluation Report number, and its approval status shall be maintained on the ICC-ES website under Division 031600 for Concrete Anchors.
2. Unless otherwise approved by the Engineer: do not use adhesive anchors; do not use expansion anchors that are not included in the ICC-ES approval list; and do not use expansion anchors that are only approved for use in uncracked concrete.
3. Use anchors manufactured with stainless steel expansion wedges. Anchors manufactured with carbon steel expansion wedges are not allowed. Anchor bodies can be either zinc-plated carbon steel or stainless steel. For application in marine environment, both the anchor body and expansion wedge shall be stainless steel.
4. Install anchors as shown on the plans and in accordance with the anchor manufacturer's published installation instructions. Arrange a field demonstration test to evaluate the procedures and tools. The test shall be witnessed and approved by the Engineer prior to furnishing anchors on the structure.
5. Prior to hole drilling, use rebar locator to ensure clearing of existing deck strands or reinforcement. Install anchors to ensure a minimum effective embedment depth, (h_{ef}), as shown. Increase (h_{ef})as needed to ensure sufficient thread length for proper torqueing and tightening of anchors.
6. Use anchors of minimum 1600 Lbs tensile capacity (minimum of steel, concrete breakout, and concrete pullout strengths as determined by ACI 318 Appendix D) at the required minimum embedment depth (h_{ef}). No lateral loads shall be introduced after conduit installation.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUIT SUPPORTS

ED(2)-14

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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.

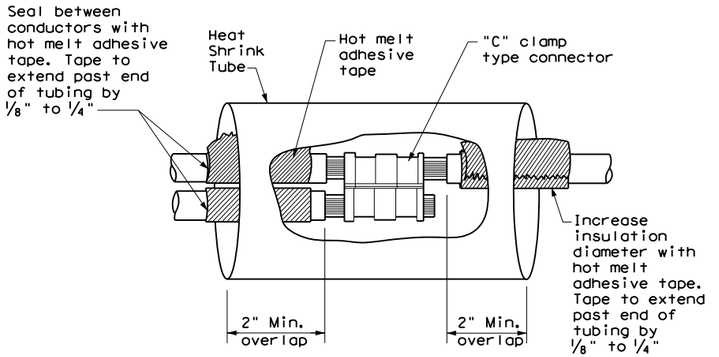
GROUND RODS & GROUNDING ELECTRODES

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.



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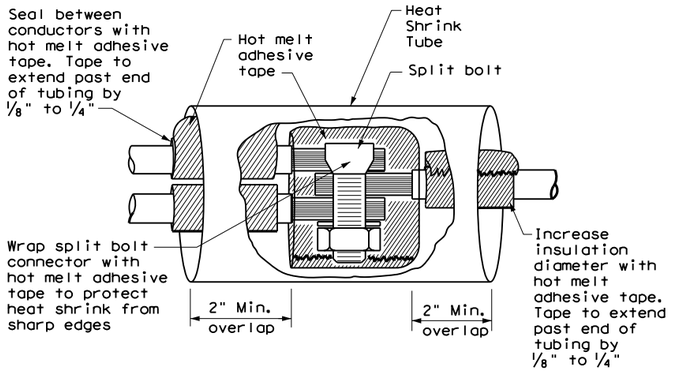
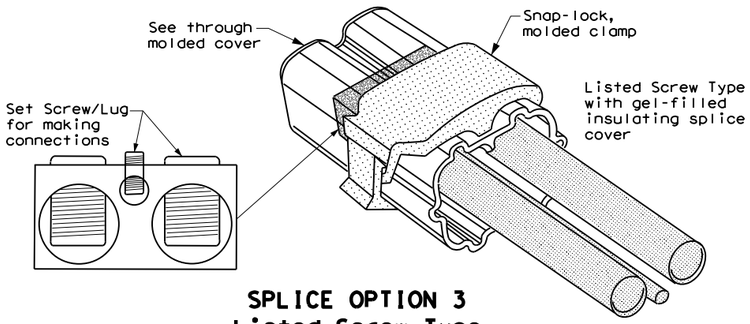


SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

Texas Department of Transportation
Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUCTORS

ED(3)-14

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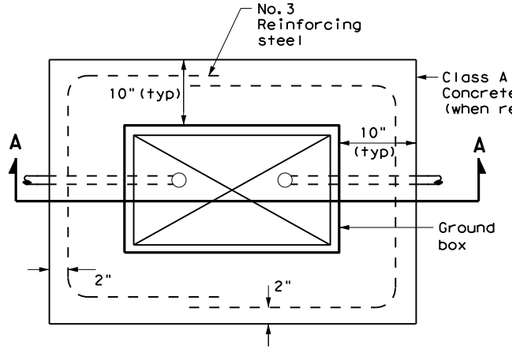
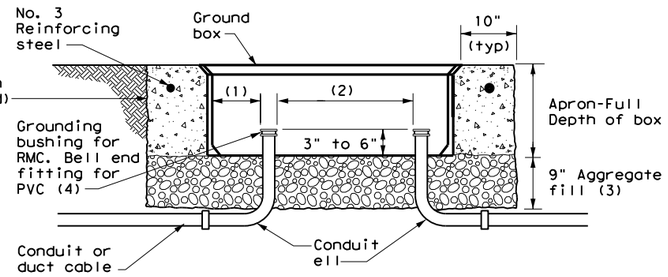


PLAN VIEW



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.

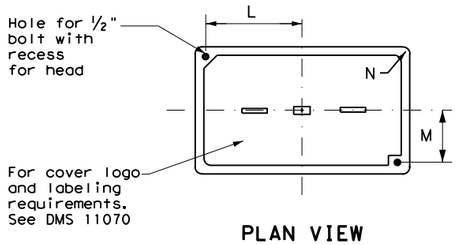
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(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



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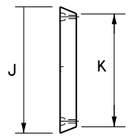

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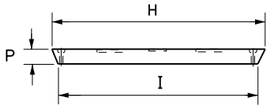

SIDE

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

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ELECTRICAL SERVICES NOTES

1. Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.

2. Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services,"DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

3. Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.

4. Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

5. The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

6. Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

7. When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

8. Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.

9. All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.

10. Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.

11. Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.

12. Ensure all mounting hardware and installation details of services conform to utility company specifications.

13. For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.

14. When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.

15. Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

1. Provide threaded hub for all conduit entries into the top of enclosure.

2. Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.

3. Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.

4. Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

1. Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.

2. When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

PHOTOELECTRIC CONTROL

1. Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

*ELECTRICAL SERVICE DATA

Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit **Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 ¼"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 ¼"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National ELectrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X XXX/XXX XXX (XX) XX (X) XX (X)

Schematic Type

Service Voltage V / V

Disconnect Amp Rating
000 indicates main lug only/
Typically Type T

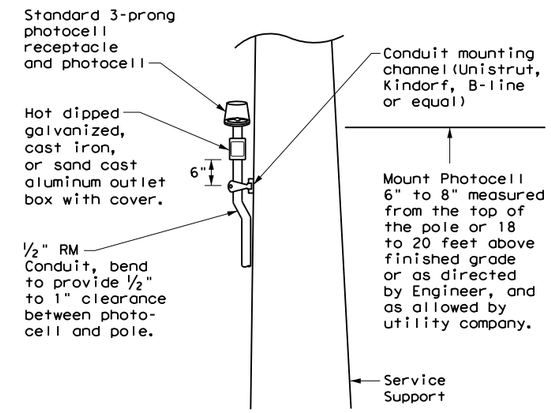
(SS)= Safety Switch Ahead of Meter-Check with Utility
(NS)= No safety Switch Ahead of Meter-Check with Utility

Enclosure Type
GS= Galvanized steel("off the shelf")
SS= Stainless steel(Custom Enclosure)See MPL
AL= Aluminum (Custom Enclosure)See MPL

Photocell Mounting Location
(E)= Inside Service/Enclosure Mounted
(T)= Top of pole
(L)= Luminaire mounted
(N)= None/No Photocell or Lighting Contactor Required

Service Support Type
GC= Granite concrete
OC= Other concrete
TP= Timber pole
SP= Steel pole
SF= Steel frame
OT= Pole by others or paid for separately
EX= Existing pole
TS= Service on traffic signal pole
PS= Pedestal Service

O= Overhead Service Feed from Utility
U= Underground Service Feed from Utility



TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

ED(5)-14

FILE: ed5-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
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	SJT	CONCHO		144

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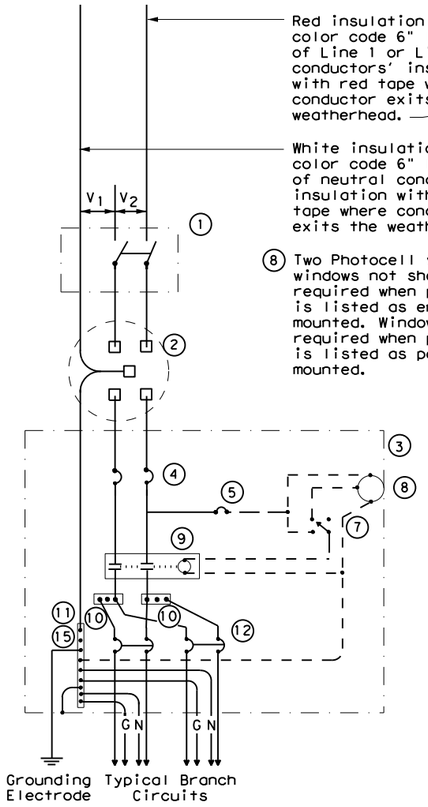
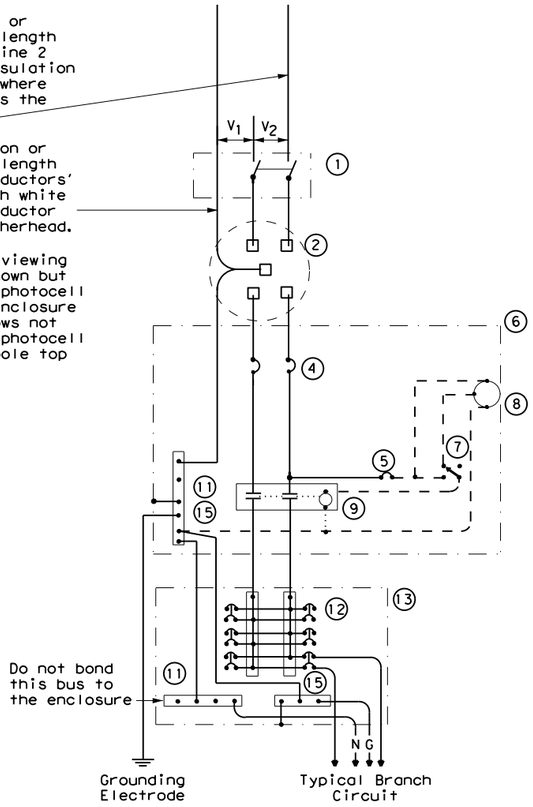
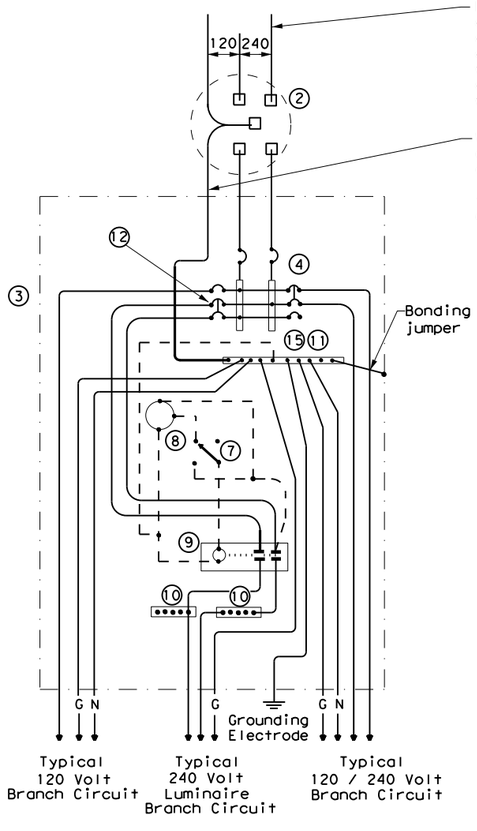


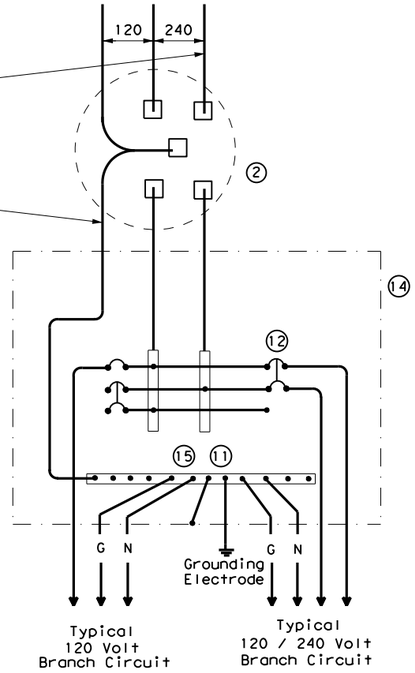
SCHEMATIC TYPE A
THREE WIRE



SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE

Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

WIRING LEGEND	
———	Power Wiring
- - - -	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES

ED(6)-14

FILE: ed6-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		145

71F

SUPPORT TYPE STEEL POLE (SP) AND STEEL FRAME (SF)

1. Provide steel pole and steel frame supports as per TxDOT Departmental Material Specification (DMS)11080 "Electrical Services." Mount all equipment and conduit on 12 gauge galvanized steel or stainless steel channel strut, 1 ½ in. or 1 ⅝ in. wide by 1 in. up to 3 ¾ in. deep Unistrut, Kindorf, B-line or equal. Bolt or weld all channel and hardware to vertical members as approved. Do not stack channel. File smooth and paint field cut ends of all channel with zinc-rich paint before installing.

2. Provide poles for overhead service with an eyebolt or similar fitting for attachment of the service drop to the pole in conformance with the electric utility provider's specifications.

3. Provide and install galvanized ¾ in. x 18 in. x 4 in. (dia. x length x hook length) anchor bolts for underground service supports. Provide and install galvanized ¾ in. x 56 in. x 4 in. anchor bolts for overhead service supports. Ensure anchor bolts have 3 in of thread, with 3 ¼ in. to 3 ½ in. of the exposed anchor bolt projecting above finished foundation. Provide and install leveling nuts for all anchor bolts.

4. Bond one of the anchor bolts to the rebar cage with 6 AWG bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. See Inset B.

5. Furnish and install rigid metallic ells in all steel pole and steel frame foundations for all conduits entering the service from underground.

6. Use class C concrete for foundations. Ensure reinforcing steel is Grade 60 with 3" of unobstructed concrete cover.

7. Drill and tap steel poles and frames for ½ in. X 13 UNC tank ground fitting. For steel pole service supports, provide and install tank ground fitting 4 in. to 6 in. below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. For steel frame service supports, provide and install tank ground fitting on steel frame post. Install service grounding electrode conductor in a non-metallic conduit or tubing from the enclosure to the steel frame post. Connect electrical service grounding electrode conductor to the tank ground fitting. See steel frame and steel pole details and Inset A for more information. Size service entrance conduit and branch circuit conduit as shown in the plans. For underground conduit runs from the electrical service, extend RMC from the service enclosure to an RMC elbow, and then connect the schedule type and size of conduit shown in the plans. Provide and install grounding bushings where RMC terminates in the enclosure. Grounding bushings are not required when RMC is fitted into a sealing hub or threaded boss.

8. If Steel pole or frame is painted, bond each separate painted piece with a bonding jumper attached to a tapped hole.

9. Provide ¼" - 20 machine screws for bonding. Do not use sheet metal screws. Remove all non-conductive material at contact points. Terminate bonding jumpers with listed devices. Install minimum size 6 AWG stranded copper bonding jumpers. Make up all threaded bonding connections wrench tight.

10. Avoid contact of the service drop and service entrance conductors with the metal pole to prevent abrasion of the insulated conductors.

11. Shop drawings are not required for service support structure unless specifically stated elsewhere or directed by the Engineer.

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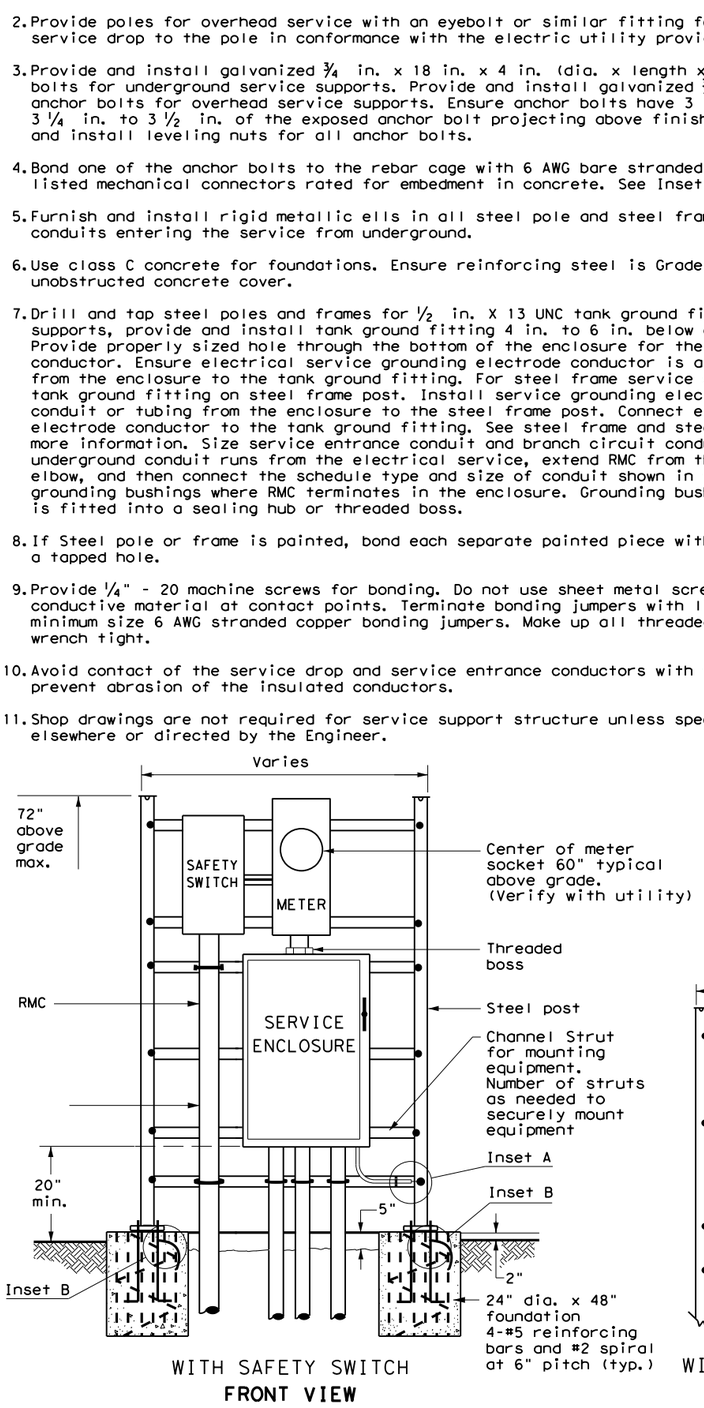
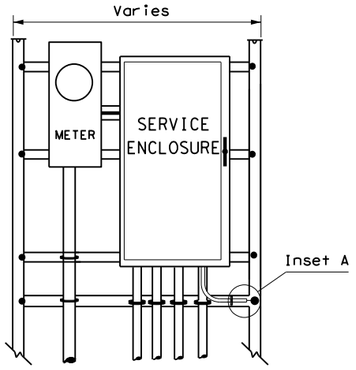
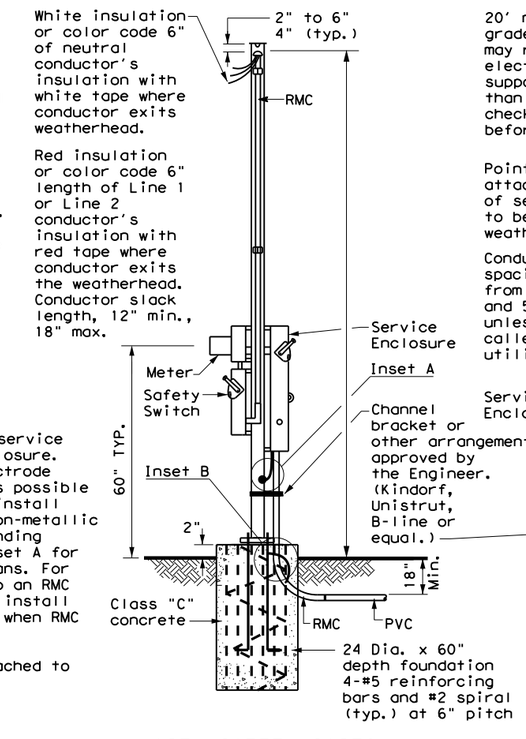


WITH SAFETY SWITCH
FRONT VIEW

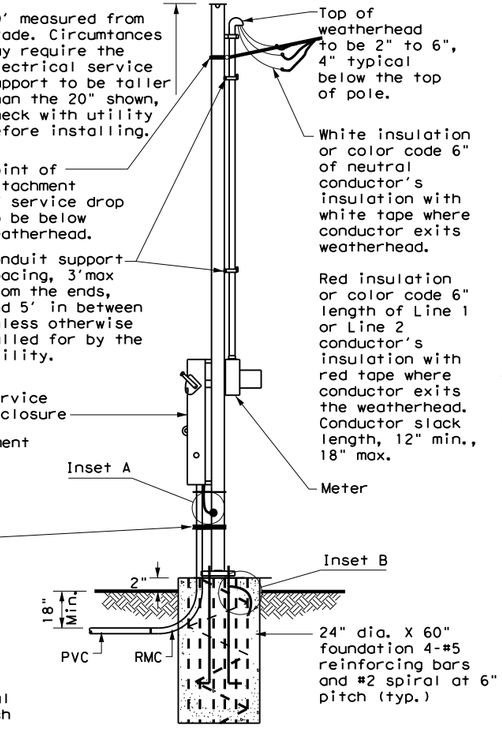


WITHOUT SAFETY SWITCH

SERVICE SUPPORT TYPE SF(U) - UNDERGROUND SERVICE



WITH SAFETY SWITCH



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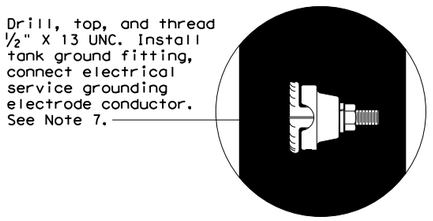
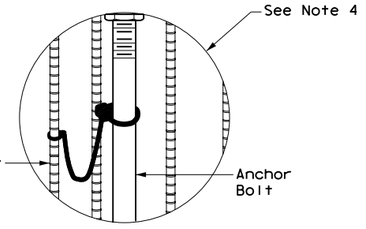
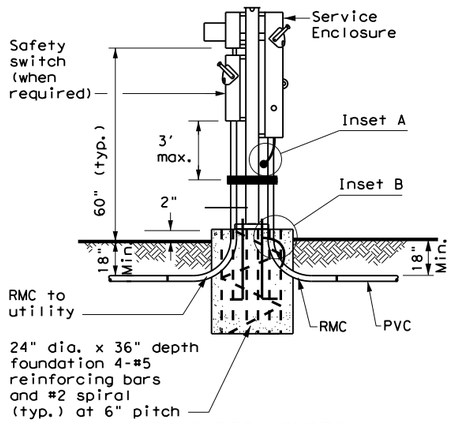
SERVICE SUPPORT TYPE SP (O) - OVERHEAD SERVICE



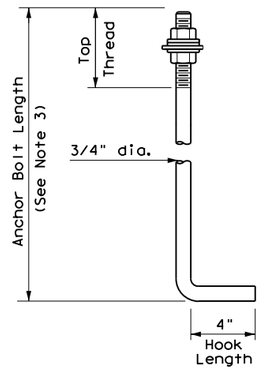
FRONT VIEW
INSET A



INSET B

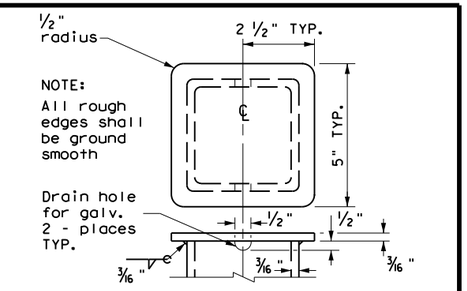


WITH SAFETY SWITCH

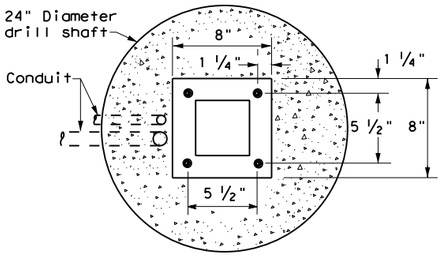


HOOKED ANCHOR DETAIL

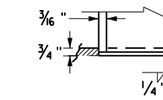
SERVICE SUPPORT TYPE SP(U) - UNDERGROUND SERVICE



POLE TOP PLATE

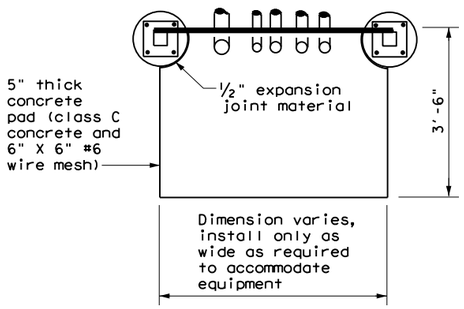


BASE PLATE DETAIL



BOTTOM OF POLE

SERVICE SUPPORT TYPE SF & SP



TOP VIEW

SERVICE SUPPORT TY SF (O) & SF (U)

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE SUPPORT TYPES SF & SP

ED(7)-14

FILE: ed7-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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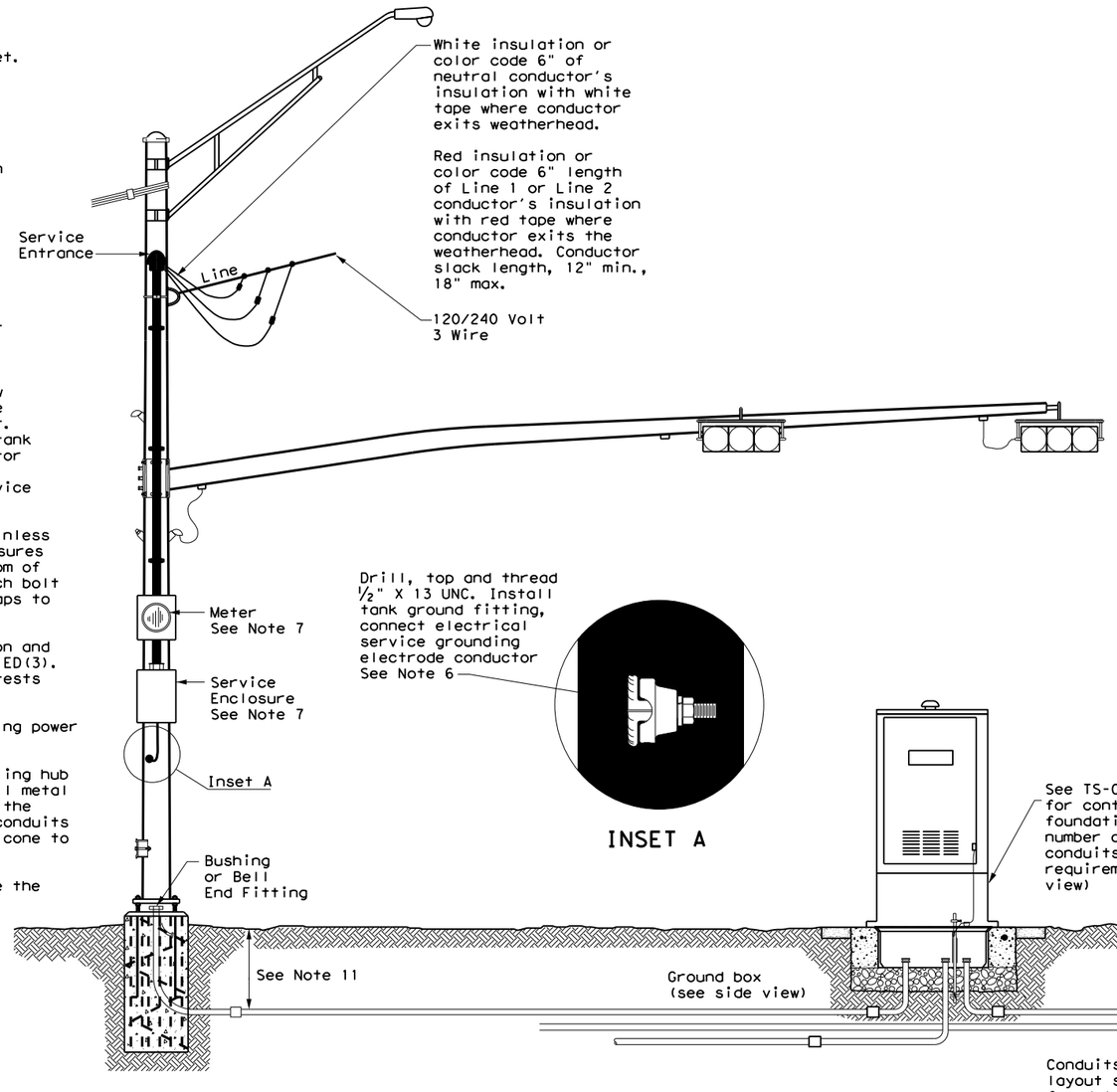
REVISIONS	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		146

TRAFFIC SIGNAL NOTES

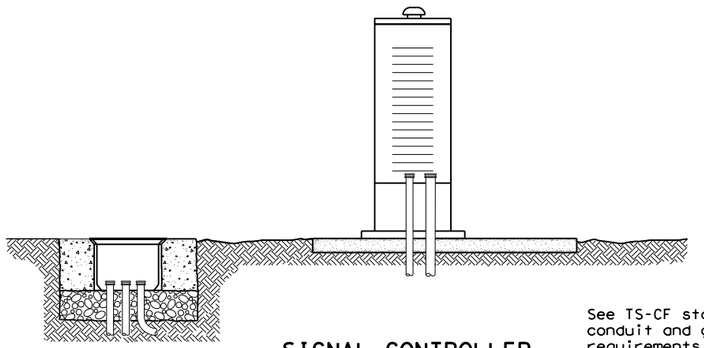
1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material and construction sections of Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.
4. If internally illuminated street name signs are approved for use, ground the fixture to the pole with a 12 AWG green XHHW conductor.
5. Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.
6. Drill and tap signal poles for ½ in. X 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of ¾ in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.
8. Conduct pull tests and insulation resistance tests on all illumination and power conductors as required in Item 620 "Electrical Conductors" and ED(3). To prevent electronics damage, do not conduct insulation resistance tests on traffic signal cables after termination.
9. Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.
11. For all conduits, ensure the burial depth is a minimum of 18". Ensure the minimum burial depth for conduit placed under a roadway is 24".



INSET A

SIGNAL POLE WITH SERVICE

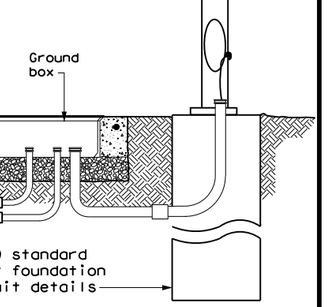
Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.



SIGNAL CONTROLLER SIDE VIEW

See TS-CF standard for conduit and grounding requirements. See layout sheets for ground box locations and any additional conduits that are required.

SIGNAL CONTROLLER FRONT VIEW



SIGNAL POLE

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS

ED(8)-14

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PEDESTAL SERVICE NOTES

1. Manufacture pedestal electrical services in accordance with Departmental Material Specifications (DMS)11080 "Electrical Services", 11085 "Electrical Services-Pedestal (PS)" and Item 628 "Electrical Services. "Provide pedestal electrical services as listed on the Material Producers list (MPL) on the Department's web site under "Roadway Illumination and Electrical Supplies," Item 628. Ensure all mounting hardware and installation details of services meet utility company specifications. Contact the local utility company for approval of pedestal details prior to installing the electrical pedestal service. Submit any changes required by the utility company prior to manufacturing the pedestal enclosure.

2. When a meter socket is required, provide a socket with a minimum 100 amp rating that complies with local utility requirements.

3. Provide Class A or C concrete for pedestal service foundations in accordance with Item 420, "Concrete Substructures," except that concrete will not be paid for directly but is considered subsidiary to Item 628.

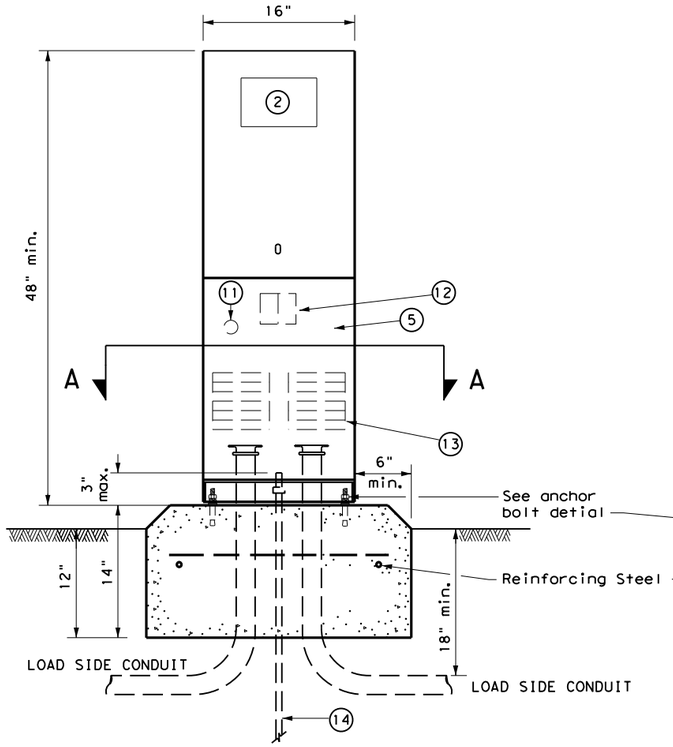
4. Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."

5. Install ½ in. X 2 ⁵⁄₁₆ in. minimum length concrete single expansion type anchors for mounting pedestal enclosure to foundation. Anchor location to match mounting holes in each corner of enclosure. Secure each of the four corners of the pedestal enclosure to the anchors in the foundation with a ½ in. galvanized or stainless steel machine thread bolt, a properly sized locknut and a flat washer.

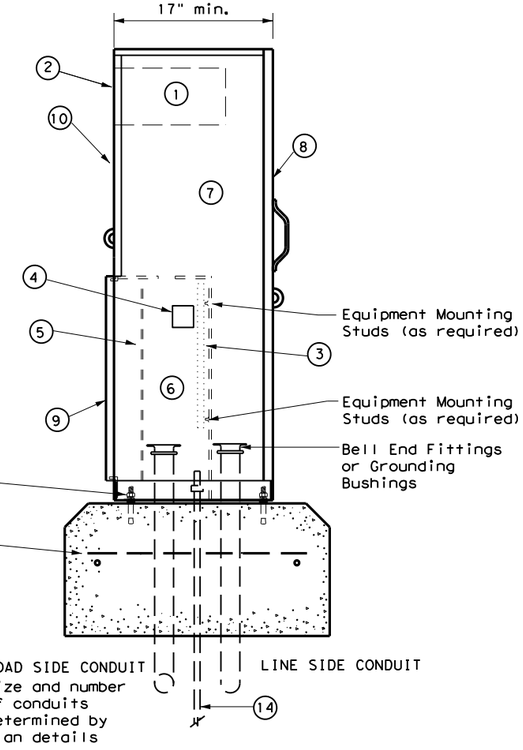
6. Finish top of concrete foundation in a neat and workmanlike manner. If leveling washers are used, ensure no more than ⅛ in. gap at any corner. Do not exceed a maximum dip or rise in the foundation of ⅛ in. per foot. When properly installed, ensure the top of the service enclosure is level front to back and side to side within ¼ in. Repair rocking or movement of the service enclosure at no additional cost to the department.

7. Do not use liquidtight flexible metal conduit (LFMC) on pedestal type services.

8. Ensure all elbows in the foundation are sized as per utility provider's conduit requirements for underground conduit and feeders. PVC extensions may be installed provided the ends of the rigid metal conduits are more than 2 in. below the top of the concrete foundation. Where extension conduits are metal, grounding bushings must be installed with a bonding jumper properly terminated.

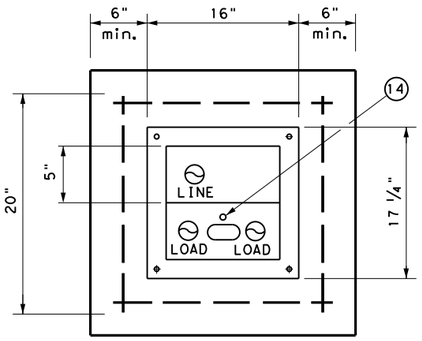


FRONT VIEW

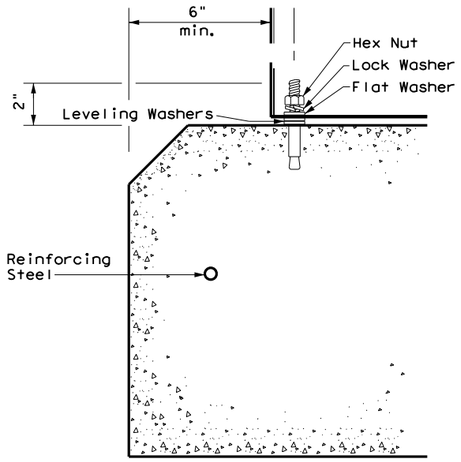


SIDE VIEW

TYPE C shown, TYPE A similar except that TYPE A shall have individual circuit breakers (CB) mounted on an equipment mounting panel. CB Handles shall protrude through hinged deadfront trim.



SECTION A-A



ANCHOR BOLT DETAIL

LEGEND	
1	Meter Socket, (when required)
2	Meter Socket Window, (when required)
3	Equipment Mounting Panel
4	Photo Electric Control Window, (When required)
5	Hinged Deadfront Trim
6	Load Side Conduit Trim
7	Line Side Conduit Area
8	Utility Access Door, with handle
9	Pedestal Door
10	Hinged Meter Access
11	Control Station (H-O-A Switch)
12	Main Disconnect
13	Branch Circuit Breakers
14	Copper Clad Ground Rod - 5/8" X 10'

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
ELECTRICAL SERVICE SUPPORT
PEDESTAL SERVICE TYPE PS
ED(9)-14

FILE: ed9-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		148

71J

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TIMBER POLE (TP) SERVICE SUPPORT NOTES

1. Ensure electrical service support is a class 5 treated timber pole as per Item 627 "Treated Timber Poles." Embed timber pole to depth required in Item 627.
2. Conduit and electrical conductors attached to the electrical service pole and underground within 12 in. of service pole are not paid for directly but are subsidiary to the electrial service.
3. Install pole-top mounted photocell (T) on north side of pole, or in service enclosure (E) as required. See Electrical Service Data chart in plan set.
4. Gain pole as required to provide flat surface for each channel. Gain timber pole to 5/8 in. max. depth and 1 7/8 in. max. height. Gain pole in a neat and workmanlike manner.
5. Mount meter and service equipment on stainless steel or galvanized channel (Unistrut, Kindorf, or equal). Provide channel sized 1 in. to 3 3/4 in. maximum depth, and 1 1/2 in. to 1 5/8 in. maximum width. File smooth the cut ends of galvanized channel and paint with zinc rich paint before installing on pole. Secure each channel section to timber pole with two galvanized or SS lag bolts, 1/4 in. minimum diameter by 1 1/2 in. minimum length. Use a galvanized or SS flat washer on each lag bolt. Do not stack channel.
6. When excess length must be trimmed from poles, trim from the top end only.

(1) Class 5 pole, height as required

(2) Service drop from utility company (attached below weatherhead)

(3) Service conduit (RMC) and service entrance conductors - One Red, One Black, One White (See Electrical Service Data)

(4) Safety switch (when required)

(5) Meter (when required)

(6) Service enclosure

(7) 6 AWG bare grounding electrode conductor in 1/2 in. PVC to ground rod - extend 1/2 in. PVC 6 in. underground.

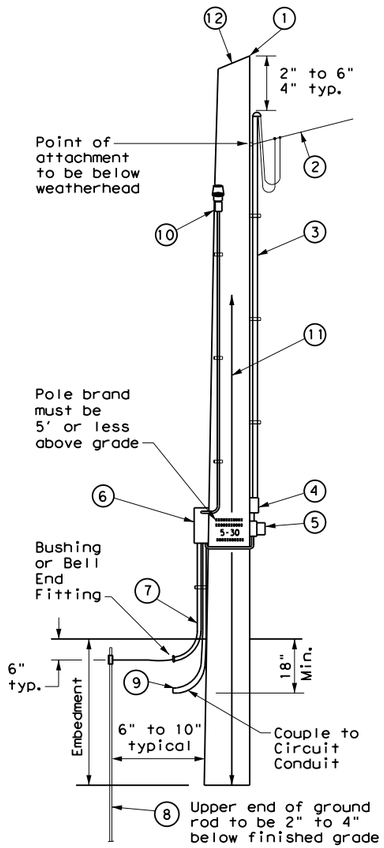
(8) 5/8 in. x 8 ft. Copper clad ground rod - drive ground rod to a depth of 2 in. to 4 in. below grade.

(9) RMC same size as branch circuit conduit.

(10) See pole-top mounted photocell detail on ED(5).

(11) When required by the serving utility provide bare 6 AWG copper conductor. Run wire from pole top to butt wrap or copper butt plate. Protect conductor with non-conductive material to a height of 8 ft. above finished grade.

(12) When required by utility, cut top of pole at an angle to enhance rain run off.

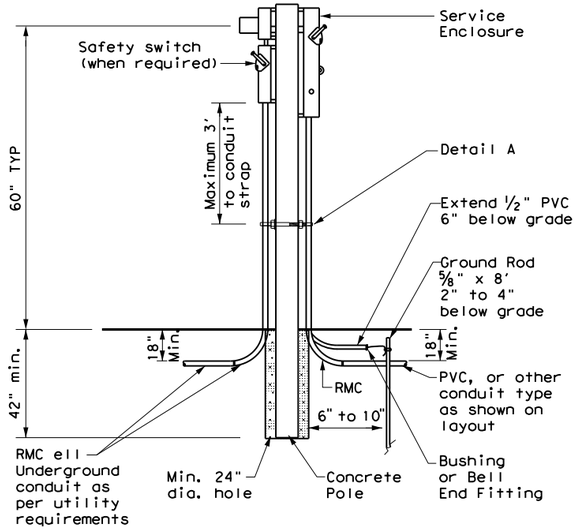


SERVICE SUPPORT TYPE TP (O)

GRANITE CONCRETE (GC) & OTHER CONCRETE (OC) NOTES

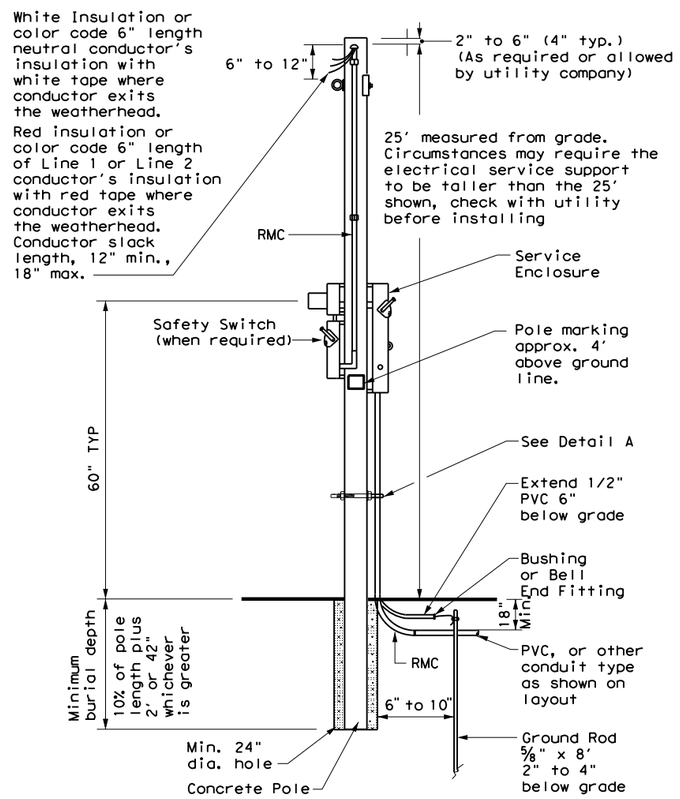
Ensure electrical service support structures bid as type Granite Concrete (GC) or Other Concrete (OC) meet the following requirements.

1. Provide GC and OC poles that meet the requirements of DMS 11080 "Electrical Services."
2. Provide prestressed concrete poles suitable for direct embedment into the ground without special foundations.
3. Verify poles are marked as required on DMS 11080. Location of marking should be approximately 4' above final grade. Use the two-point pickup locations when handling pole in horizontal position, and one-point pickup location for use in raising the pole to a vertical position. These marks are small but conspicuous.
4. Embed poles 42 in. or 10% of the length plus 2 ft., whichever is greater.
5. Ensure all installation details of services are in accordance with utility company specifications.
6. Install a one point rack or eye bolt bracket 6 inches to 12 inches below the weatherhead as an overhead service drop anchoring point for the electric utility.
7. Furnish and install galvanized or stainless steel channel strut 1 1/2 in. or 1 5/8 in. wide by 1 in. up to 3 3/4 in. deep (Unistrut, Kindorf, B-line or equal). Attach channel strut with stainless steel concrete anchors (max. 1" depth), square U-bolts or back to back channel strut with long bolts, or other secure mounting as approved by the Engineer. Ensure bolts are galvanized in accordance with ASTM A153. Do not stack channel struts.
8. Backfill the holes thoroughly by tamping in 6 in. lifts. After tamping to grade, place additional backfill material in a 6 inch high cone around the pole to allow for settling. Use material equal in composition and density to the surrounding area. Backfilling will not be paid for directly but is subsidiary to various bid items.



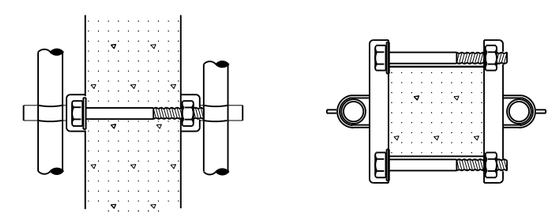
CONCRETE SERVICE SUPPORT

Underground (U)



CONCRETE SERVICE SUPPORT

Overhead (O)



DETAIL A

See Note 7. Before installing channel that has been cut, file sharp edges and paint with zinc-rich paint. Ensure there is no paint splatter on the pole.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE SUPPORT TYPES GC, OC, & TP

ED(10)-14

FILE: ed10-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		149

71K

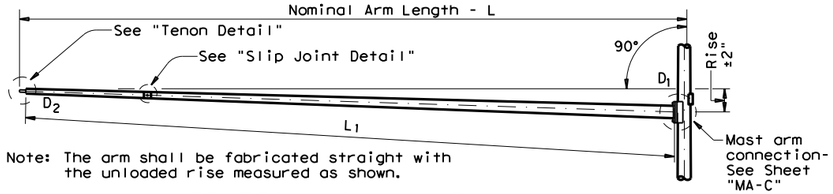
Arm Length	ROUND POLES					POLYGONAL POLES					Foundation Type
	D_B	D_{19}	D_{24}	D_{30}	① thk	D_B	D_{19}	D_{24}	D_{30}	① thk	
ft.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
20	10.5	7.8	7.1	6.3	.179	11.5	8.5	7.7	6.8	.179	30-A
24	11.0	8.3	7.6	6.8	.179	12.0	9.0	8.2	7.3	.179	30-A
28	11.5	8.8	8.1	7.3	.179	12.5	9.5	8.7	7.8	.179	30-A
32	12.5	9.8	9.1	8.3	.179	12.0	9.0	8.2	7.3	.239	30-A
36	12.0	9.3	8.6	7.8	.239	12.5	9.5	8.7	7.8	.239	36-A
40	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
44	12.5	9.8	9.1	8.3	.239	14.0	11.0	10.2	9.3	.239	36-A
48	13.0	10.3	9.6	8.8	.239	15.0	12.0	11.2	10.3	.239	36-A

Arm Length	ROUND ARMS					POLYGONAL ARMS				
	L_1	D_1	D_2	① thk	Rise	L_1	D_1	② D_2	① thk	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	6.5	3.8	.179	1'-9"	19.1	7.0	3.5	.179	1'-8"
24	23.1	7.5	4.3	.179	1'-10"	23.1	7.5	3.5	.179	1'-9"
28	27.1	8.0	4.2	.179	1'-11"	27.1	8.0	3.5	.179	1'-10"
32	31.0	9.0	4.7	.179	2'-1"	31.0	9.0	3.5	.179	2'-0"
36	35.0	9.5	4.6	.179	2'-4"	35.0	10.0	3.5	.179	2'-1"
40	39.0	9.5	4.1	.239	2'-8"	39.0	9.5	3.5	.239	2'-3"
44	43.0	10.0	4.1	.239	2'-11"	43.0	10.0	3.5	.239	2'-6"
48	47.0	10.5	4.1	.239	3'-4"	47.0	11.0	3.5	.239	2'-9"

D_B = Pole Base O.D.
D_{19} = Pole Top O.D. with no Luminaire and no ILSN
D_{24} = Pole Top O.D. with ILSN w/out Luminaire
D_{30} = Pole Top O.D. with Luminaire
D_1 = Arm Base O.D.
D_2 = Arm End O.D.
L_1 = Shaft Length
L = Nominal Arm Length

① Thickness shown are minimums, thicker materials may be used.

② D_2 may be increased by up to 1" for polygonal arms.



Note: The arm shall be fabricated straight with the unloaded rise measured as shown.

TRAFFIC SIGNAL ARM

(Fixed Mount)

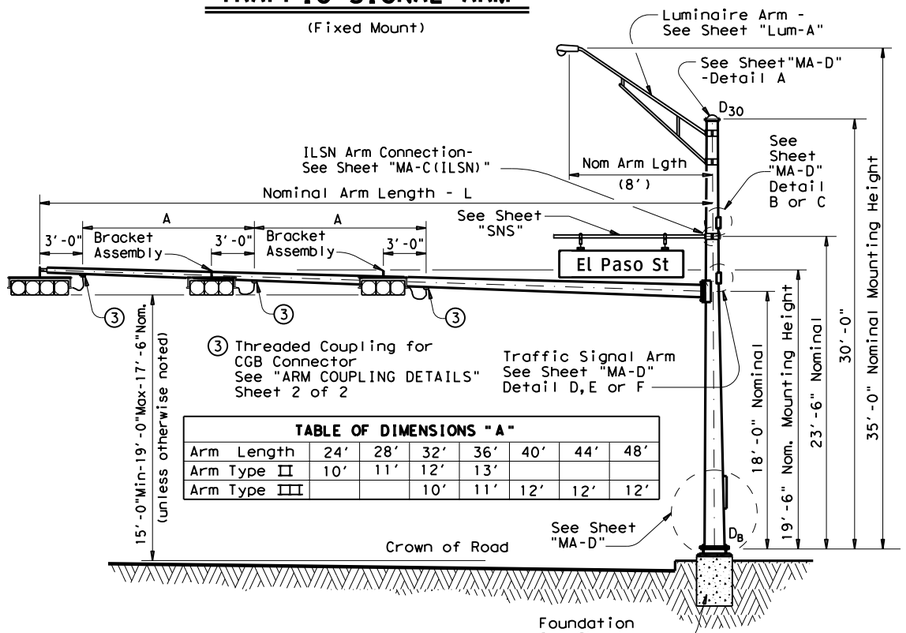


TABLE OF DIMENSIONS "A"

Arm Length	24'	28'	32'	36'	40'	44'	48'
Arm Type II	10'	11'	12'	13'			
Arm Type III			10'	11'	12'	12'	12'

STRUCTURE ASSEMBLY

SHIPPING PARTS LIST

Ship each pole with the following attached: enlarged hand hole, pole cap, fixed-arm connection bolts and washers and any additional hardware listed in the table.

Nominal Arm Length	30' Poles With Luminaire		24' Poles With ILSN		19' Poles With No Luminaire and No ILSN	
	Above hardware plus: One (or two if ILSN attached) small hand hole, clamp-on simplex		Above hardware plus one small hand hole		See note above	
ft	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20L-80		20S-80		20-80	
24	24L-80		24S-80		24-80	
28	28L-80		28S-80		28-80	
32	32L-80	1	32S-80		32-80	
36	36L-80	2	36S-80		36-80	
40	40L-80		40S-80		40-80	
44	44L-80	1	44S-80		44-80	
48	48L-80		48S-80		48-80	

Traffic Signal Arms (1 per Pole) Ship each arm with the listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal)		Type II Arm (2 Signals)		Type III Arm (3 Signals)	
	1 CGB connector		1 Bracket Assembly and 2 CGB Connectors		2 Bracket Assemblies and 3 CGB Connectors	
ft	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-80					
24	24I-80		24II-80			
28	28I-80		28II-80			
32			32II-80	1	32III-80	
36			36II-80	2	36III-80	
40					40III-80	
44					44III-80	1
48					48III-80	

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	4

ILSN Arm (Max. 2 per pole) Ship with clamps, bolts and washers

Nominal Arm Length	Quantity
7' Arm	
9' Arm	

Anchor Bolt Assemblies (1 per pole)

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
1 ½"	3'-4"	1
1 ¾"	3'-10"	3

Each anchor bolt assembly consists of the following: Top and Bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers, and 4 nut anchor devices (Type 2) per Standard Drawing "TS-FD".

Templates may be removed for shipment.

SHEET 1 OF 2

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

SINGLE MAST ARM ASSEMBLY

(80 MPH WIND ZONE)

SMA-80(1)-12

5/22/2024

REVISIONS
5-96
11-99
1-12

DN: MS	CK: JSY	DW: MMF	CK: JSY
CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		150

122A

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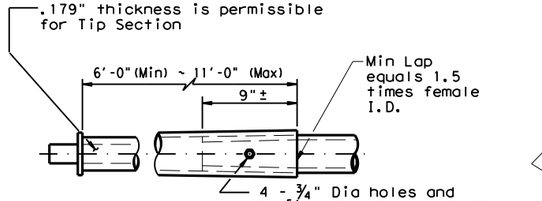
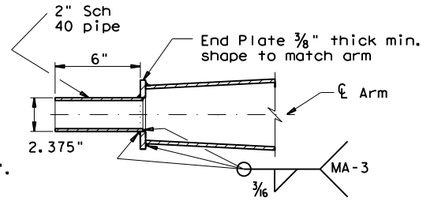


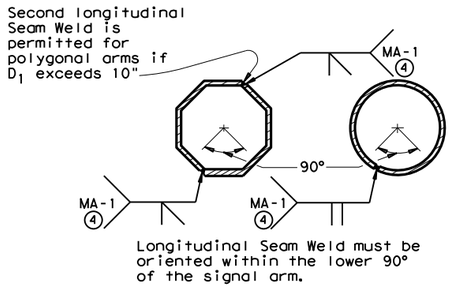
SLIP JOINT DETAIL



TENON DETAIL

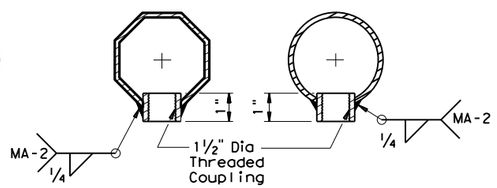
Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1 ½" Dia Threaded Coupling.

BRACKET ASSEMBLY



ARM WELD DETAIL

④ 60% Min. penetration 100% pemetration within 6" of circumferential base welds.



ARM COUPLING DETAILS

VIBRATION WARNING

Mast Arms of SMA and DMA structures and clamp-on Arms of LMA structures of approximately 40 ft or longer are subject to harmonic vertical vibrations in light wind conditions due to the aeroelastic characteristics of a few of the myriads of possible combinations of the following: signal numbers, weights and positions; existence/solidity of backplates; presence of additional attachments to the arm, such as signs and cameras; arm-wind orientation; and arm-pole stiffness.

Such vibrations may cause fatigue damage to the structure and may lead to galloping in moderate wind conditions which may further damage the structure and alarm the public. Tests have indicated that when wind is blowing toward the back side of signal heads having un-vented backplates attached the probability of unacceptable harmonic vibration and/or galloping is rather high.

If backplates are not required for improved visibility they should not be applied to the signal heads or, if they must be applied, they should be vented as a first and inexpensive measure to mitigate vibrations.

The traffic signal mast arms shall be visually inspected in 5 to 20 mph wind conditions after installation of signal heads and any attachments, including any required backpates. If vertical movements with a total excursion (maximum upward excursion to maximum downward excursion) of more than approximately 8" are observed at the arm tip, a damping plate shall be fitted to the arm. See "Damping Plate Mounting Details" on standard sheet, MA-DPD-10.

This visual inspection shall be repeated after each modification of the structure that could affect its aeroelastic response. Excessive vibrations shall not be allowed to continue for more than two days.

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor.

Poles are designed to support one 8'-0" luminaire arm, one 9'-0" internally lighted street name sign and one traffic signal arm with a length as tabulated. The specified luminaire load applied at the end of the luminaire arm equals 60 lbs vertical dead load plus the horizontal wind load on an effective projected area of 1.6 sq ft. The specified internally lighted street name sign load applied 4.5 ft from the centerline of the pole equals 85 lbs vertical dead load plus horizontal wind load on an effective projected area of 11.5 sq ft. The specified signal load applied at the end of the traffic signal arm equals 180 lbs vertical dead load plus the horizontal wind load on an effective projected area of 32.4 sq ft (actual area times drag coefficient).

See Standard Sheet "MA-D" for pole details, "MA-C" for traffic signal arm connection details, "MA-C (ILSN)" for internally lighted street name sign arm connection details, "LUM-A" for luminaire arm and connection details, "SNS" for internally lighted street name sign details, and "TS-FD" for anchor bolt and foundation details. See "MA-C" for material specifications.

Fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing", after fabrication.

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

SINGLE MAST ARM ASSEMBLY

(80 MPH WIND ZONE)

SMA-80(2)-12

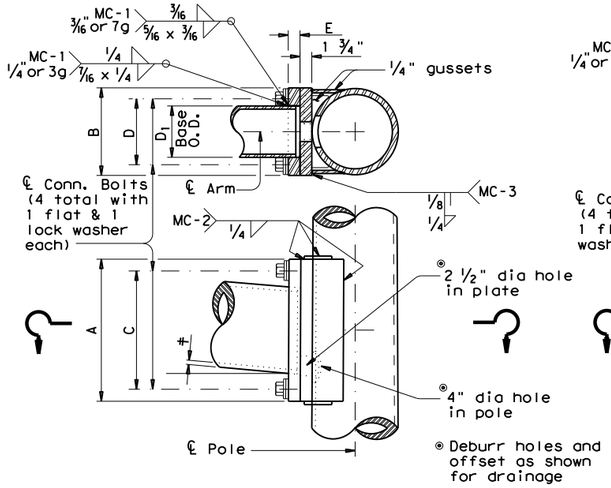
DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
1-12

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		151

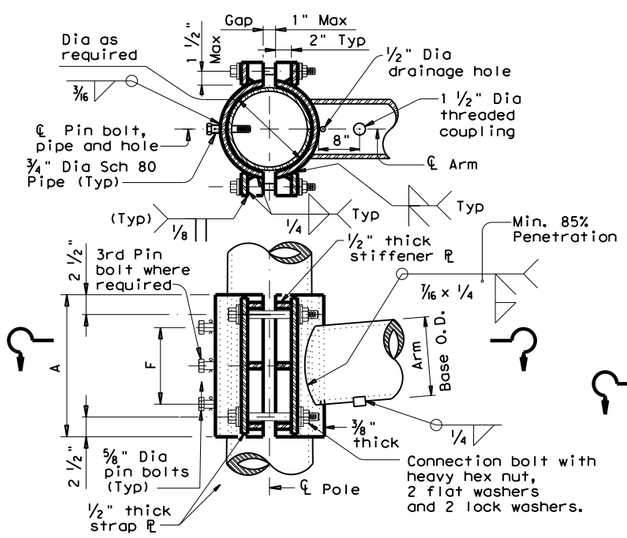
122B

ARM SIZE D_1	ARM SIZE ǂ	A	B	C	D	E	CONN BOLT DIA
in.	in.	in.	in.	in.	in.	in.	in.
6.5	.179	12	9	9	6	1 ¾	1
7.5	.179	13	9	10	6	1 ¾	1
8.0	.179	14	10	11	7	2	1 ¼
9.0	.179	16	11	13	8	2	1 ¼
9.5	.179	17	12	14	9	2	1 ¼
9.5	.239	18	12	15	9	2	1 ¼
10.0	.239	18	12	15	9	2	1 ¼
10.5	.239	18	13	15	10	3	1 ½
11.0	.239	18	13	15	10	3	1 ½



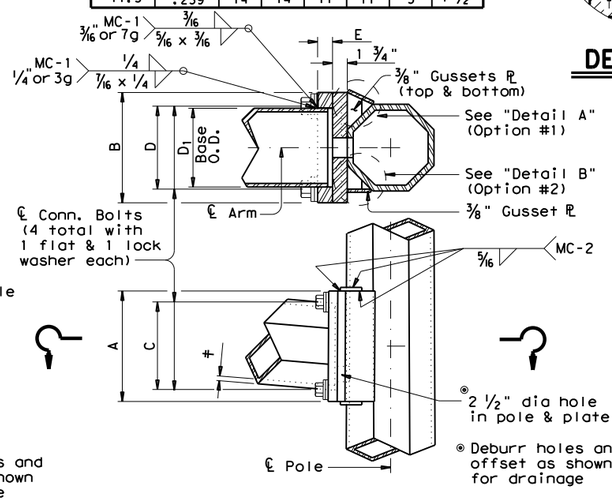
FIXED MOUNT DETAIL 1

ARM SIZE D_1	ARM SIZE ǂ	A	F	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	ea.	in.	ea.	in.
6.5	.179	12	6	4	1	2	⅝
7.5	.179	14	8	4	1	2	⅝
8.0	.179	14	8	4	1	2	⅝
9.0	.179	16	10	4	1	2	⅝
9.5	.179	18	12	4	1 ¼	3	⅝
9.5	.239	18	12	4	1 ¼	3	⅝
10.0	.239	18	12	4	1 ¼	3	⅝



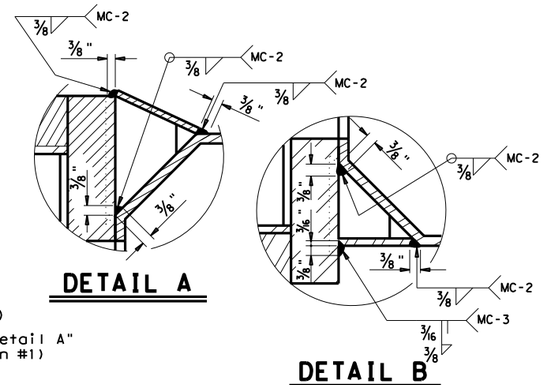
CLAMP-ON DETAIL 1

ARM SIZE D_1	ARM SIZE ǂ	A	F	T	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	in.	ea.	in.	ea.	in.
7.0	.179	12	6	¾	4	¾	2	⅝
7.5	.179	14	8	¾	4	¾	2	⅝
8.0	.179	14	8	¾	4	¾	2	⅝
9.0	.179	16	10	⅞	4	1	2	⅝
10.0	.179	18	10	⅞	4	1	2	⅝
9.5	.239	18	10	1	6	1	3	⅝
10.0	.239	18	10	1	6	1	3	⅝



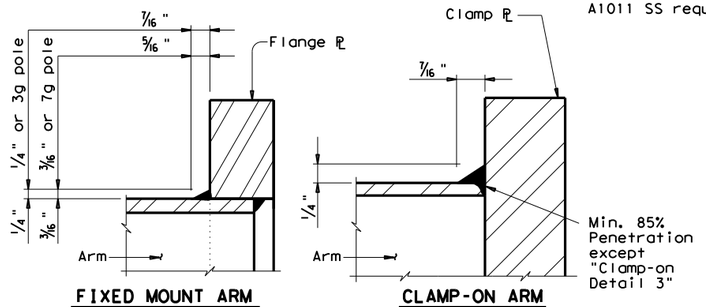
FIXED MOUNT DETAIL 2

ARM SIZE D_1	ARM SIZE ǂ	A	F	T	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	in.	ea.	in.	ea.	in.
7.0	.179	11	11	8	8	1 ¾	1 ¼	
7.5	.179	11	11	8	8	1 ¾	1 ¼	
8.0	.179	11	11	8	8	2	1 ¼	
9.0	.179	13	13	10	10	2	1 ¼	
10.0	.179	13	13	10	10	2	1 ¼	
9.5	.239	13	13	10	10	2	1 ¼	
10.0	.239	14	14	11	11	2	1 ½	
11.0	.239	14	14	11	11	3	1 ½	
11.5	.239	14	14	11	11	3	1 ½	



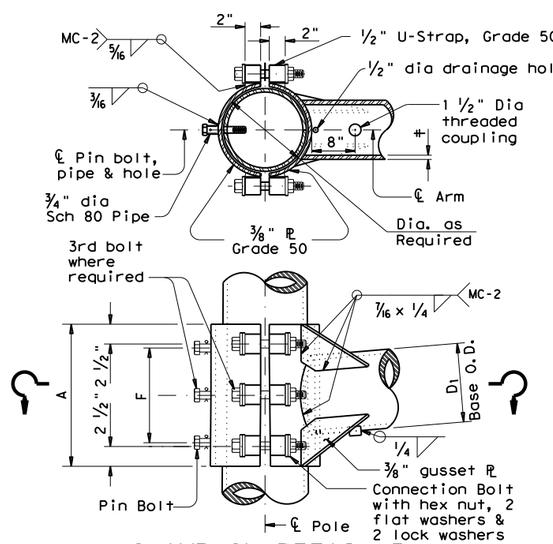
DETAIL A

DETAIL B



ARM BASE WELD DETAILS

ARM SIZE D_1	ARM SIZE ǂ	A	F	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	ea.	in.	ea.	in.
6.5	.179	12	6	4	1	2	⅝
7.5	.179	14	8	4	1	2	⅝
8.0	.179	14	8	4	1	2	⅝
9.0	.179	16	10	4	1	2	⅝
9.5	.179	18	12	6	1	3	⅝
9.5	.239	18	12	6	1	3	⅝
10.0	.239	18	12	6	1	3	⅝



CLAMP-ON DETAIL 2

CLAMP-ON DETAIL 3

MATERIALS	
Round Shafts or Polygonal Shafts ①	ASTM A595 Gr.A, A588, A1008 HSLAS Gr.50 Class 2, A1011 HSLAS Gr.50 Class 2, A572 Gr.50 or A1011 SS Gr.50 ②
Plates ①	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325 or A449, except where noted
Pin Bolts	ASTM A325
Pipe ①	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50, A1011 HSLAS-F Gr.50
Misc. Hardware	Galvanized steel or stainless steel or as noted

① ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.

② ASTM A1011 SS Gr.50 material shall also have a minimum elongation of 18 percent in 8 inches or 23 percent in 2 inches. Material thickness in excess of those stipulated under A1011 SS will be acceptable providing the material meets all other A1011 SS requirements and the requirements of this item.

GENERAL NOTES:

Clamp-on details are used for the second arm on dual mast arm assemblies. A Maximum 1 ½" wide vertical slotted hole shall be cut in the front clamp plate to facilitate drainage during galvanizing. The slot shall be centered behind the arm and shall be no longer than the arm diameter minus 1"

Fixed mount details are used for single mast arm assemblies and for the first arm on dual mast arm assemblies.

Where duplicate parts occur on a detail, welds shown for one part shall apply to all similar parts on the detail.

Pin bolts are required to prevent rotation of clamp-on arms under design wind forces.

NOTE:

Pin bolts shall be A325 with threads excluded from the shear plane. Pin bolt and ¾" dia pipe shall have 3/16" dia holes for a ⅛" dia galvanized cotter pin. Back clamp plate shall be furnished with a ¾" dia hole for each pin bolt. An 11/16" dia hole for each pin bolt shall be field drilled through the pole after arm orientations have been approved by the Engineer.

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY FOR TRAFFIC SIGNAL SUPPORT STRUCTURES

MAST ARM CONNECTIONS

MA-C-12

DN: MS	CK: JSY	DW: MMF	CK: JSY
REVISIONS			
5-96			
5-09			
1-12			

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		152

126A

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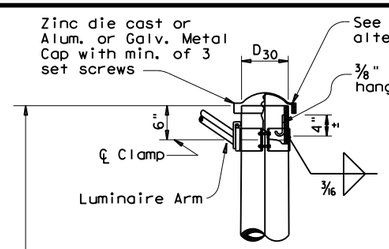
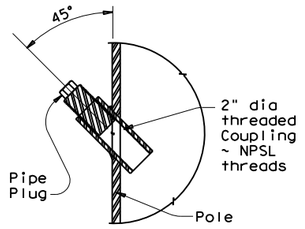
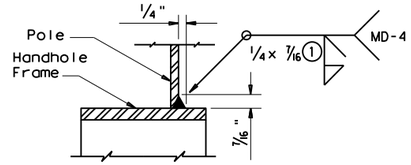


DETAIL A

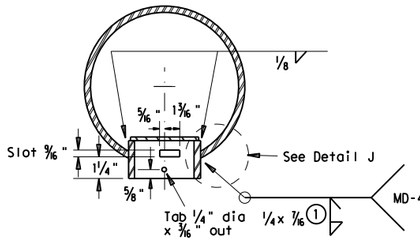
(for pole with luminaire)



POLE COUPLING DETAIL

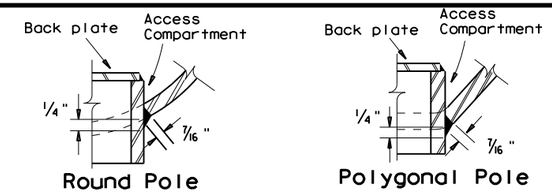


DETAIL G

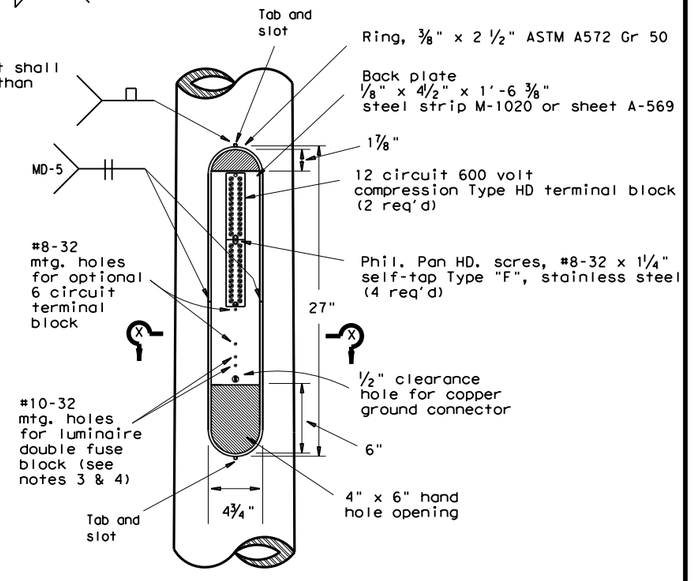


SECTION X-X

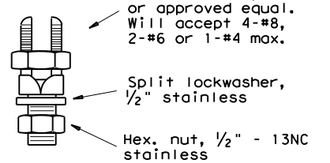
Opening for access compartment shall be no more than 1/16 inch wider than the access compartment itself.



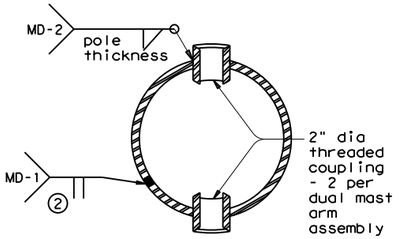
DETAIL J



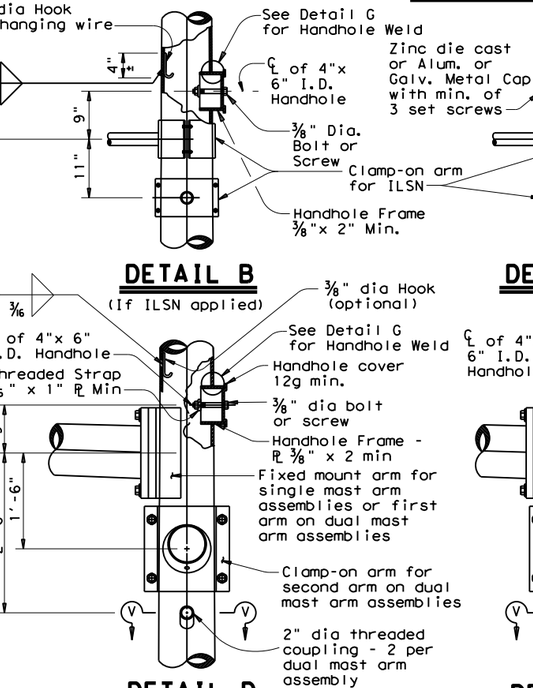
ACCESS COMPARTMENT



COPPER GROUND CONNECTOR

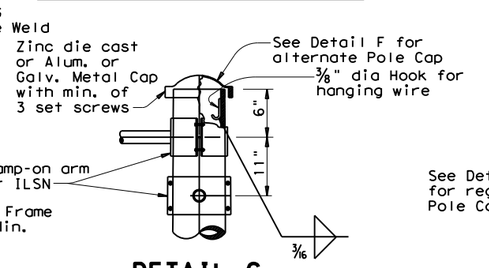


SECTION V-V

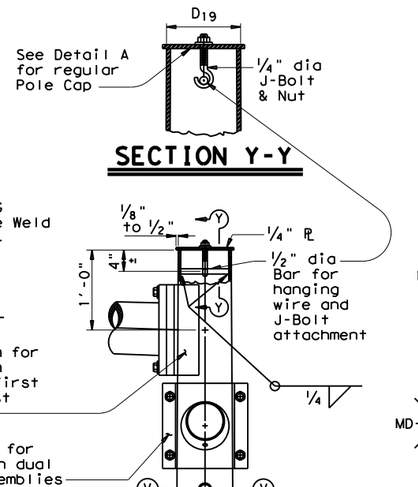


DETAIL B

(If ILSN applied)



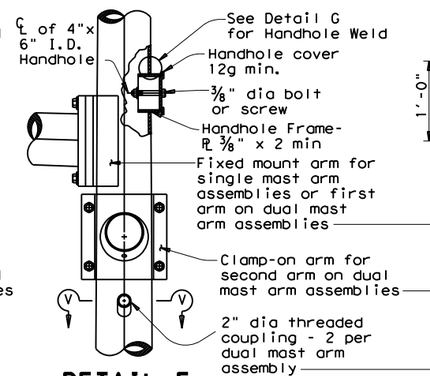
DETAIL C



SECTION Y-Y

DETAIL D

(for 30' pole with luminaire and ILSN sign)



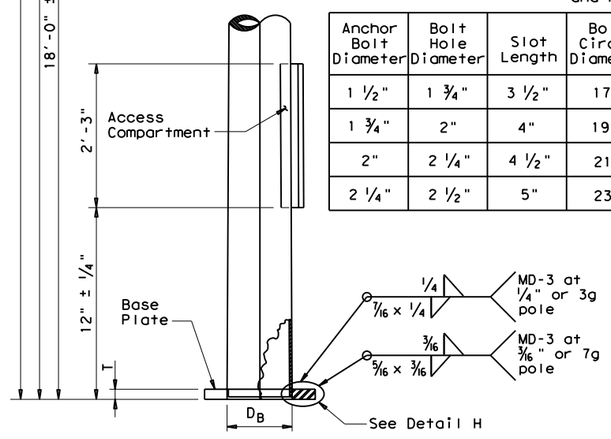
DETAIL E

(for 24' pole with ILSN sign and no luminaire)

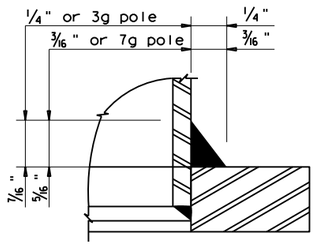
DETAIL F

(for 19' pole with no ILSN sign and no luminaire)

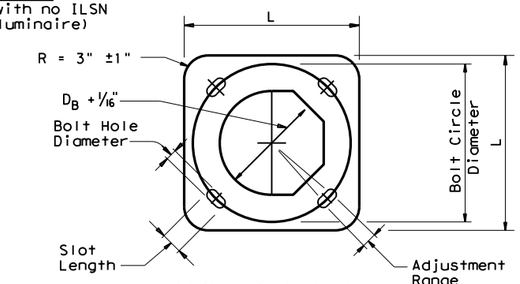
Anchor Bolt Diameter	Bolt Hole Diameter	Slot Length	Bolt Circle Diameter	Base PL Dim. L x T	Adjust. Range
1 1/2"	1 3/4"	3 1/2"	17"	18" x 1 1/2"	13.4°
1 3/4"	2"	4"	19"	20" x 1 3/4"	13.5°
2"	2 1/4"	4 1/2"	21"	22" x 2"	13.6°
2 1/4"	2 1/2"	5"	23"	24" x 2 1/4"	13.7°



POLE ELEVATION



DETAIL H



BASE PLATE PLAN

(1) 85% Min. penetration

(2) 60% Min. penetration 100% pemetration within 6" of circumferential base welds.

NOTES:

1. The cover shall be one piece formed from ABS plastic, shall be a pearl gray color, and shall be suitable for exposure to harsh sunlight and extreme weather. Cover shall latch with two screw latches and shall fit tightly to the enclosure ring to create a rainproof seal. Latch screws shall be 1/4-20 stainless flat socket head screws with tamper proof feature.
2. The pole manufacturer shall provide with each pole a separate kit consisting of: one cover with two latching assemblies, two terminal strips (Marathon #985GP12CU or approved equal), four #8-32 x 1 1/4" self tapping type "F" stainless steel pan head screws, and one ground connector (Blackburn TTC, Burndy KC22J12T13, or Ilsco SSS-5). The traffic signal contractor shall install the kit items in the field.
3. The screw hole spacing on the enclosure back plate shall be for two Marathon #985GP12 terminal strips, one Marathon #985GP06CU terminal strip, and one Bussmann #BM6032B fuse block.
4. Install one Bussmann #BM6032B, Littelfuse #L60030M-2C, or Ferraz-Shawmut #30352 fuse block for poles where luminaires are to be installed.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES MAST ARM POLE DETAILS

MA-D-12

REVISIONS
8-99
1-12

DN: MS	CK: JSY	DW: FDN	CK: CAL

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		153

FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft ④, ⑤, ⑥			ANCHOR BOLT DESIGN ①				FOUNDATION DESIGN LOAD ②		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft 10	15	40	ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	¾"	36	12 ¾"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 ½"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 ¾"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 ¼"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

NOTES:

① Anchor bolt design develops the foundation capacity given under Foundation Design Loads.

② Foundation Design Loads are the allowable moments and shears at the base of the structure.

③ Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

④ Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.

⑤ If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

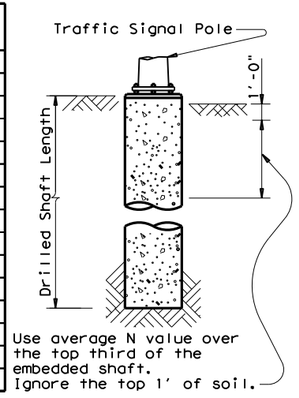
⑥ Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

FOUNDATION SUMMARY TABLE ③

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH ⑥ (FEET) 24-A	30-A	36-A	36-B	42-A
TS-1--40"	15	36-A	1			12		
TS-2--44"	15	36-A	1			12		
TS-3--32"	15	30-A	1		11			
TS-4--36"	15	36-A	1			12		
PED POLE - 1	15	24-A	1	6				
PED POLE - 3	15	24-A	1	6				
PED POLE - 4	15	24-A	1	6				
PED POLE - 5	15	24-A	1	6				
PED POLE - 6	15	24-A	1	6				
TOTAL DRILLED SHAFT LENGTHS				30	11	36		

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

		FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	32'	48'		
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 28'	32' X 32'		
			36' X 36'		
			40' X 36'		
			44' X 28'	44' X 36'	
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS		24' X 24'		
			28' X 28'		
			32' X 24'	32' X 32'	
				36' X 36'	
				40' x24'	40' X 36'
					44' x 36'

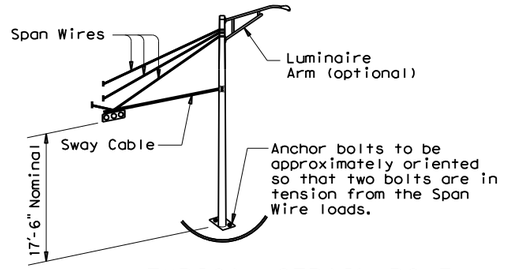


ANCHOR BOLT & TEMPLATE SIZES

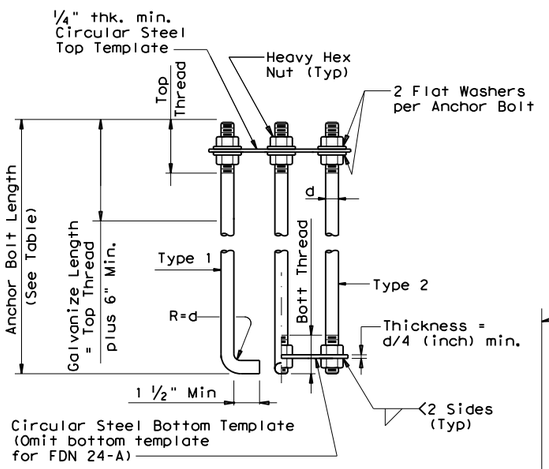
BOLT DIA IN.	⑦ BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
¾"	1'-6"	3"	—	12 ¾"	7 ⅛"	5 ⅝"
1 ½"	3'-4"	6"	4"	17"	10"	7"
1 ¾"	3'-10"	7"	4 ½"	19"	11 ¼"	7 ¾"
2"	4'-3"	8"	5"	21"	12 ½"	8 ½"
2 ¼"	4'-9"	9"	5 ½"	23"	13 ¾"	9 ¼"

⑦ Min dimensions given, longer bolts are acceptable.

EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.

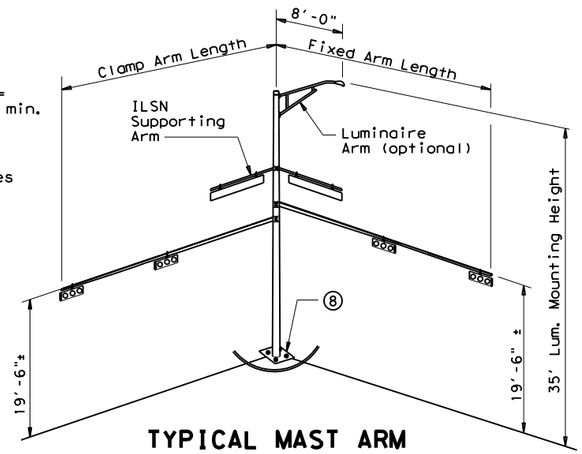


TYPICAL STRAIN POLE ASSEMBLY



HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY



TYPICAL MAST ARM ASSEMBLY

⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.

FOUNDATION DETAILS

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".

STATE OF TEXAS
ERIC SIERRA-ORTEGA
124817
LICENSED
PROFESSIONAL ENGINEER
5/22/2024

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

DN: MS	CK: JSY	DW: MAO/MMF	CK: JSY/TEB

REVISIONS 5-96 11-99 1-12

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		154

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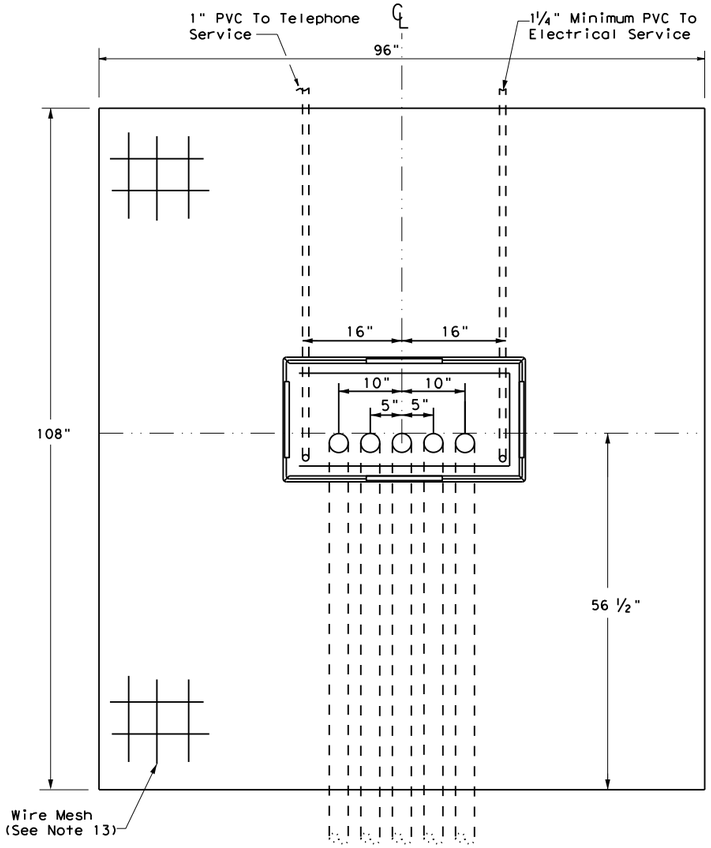
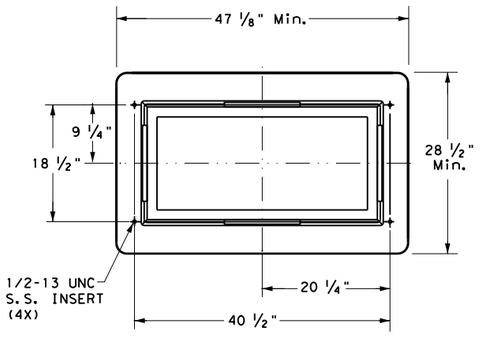
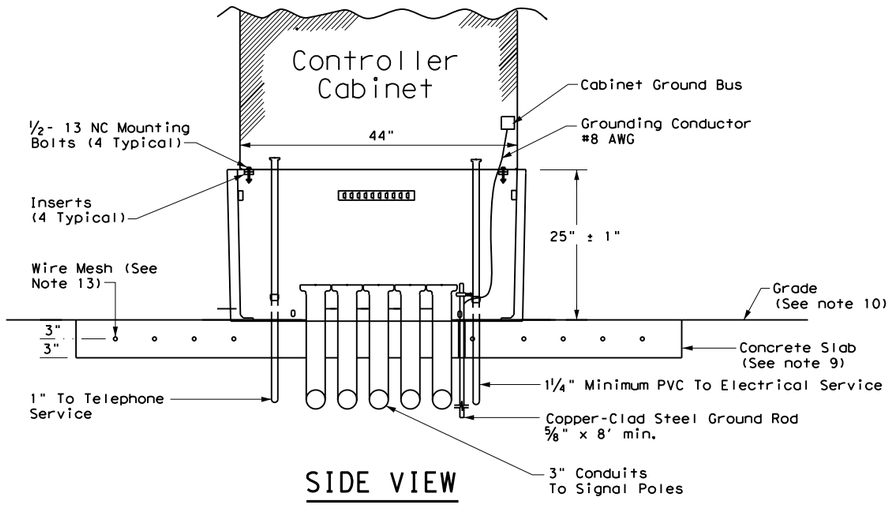


TOP VIEW



CABINET BASE



SIDE VIEW

TRAFFIC SIGNAL CONTROLLER BASE:

1. Provide a traffic signal controller base (cabinet base) manufactured of polymer concrete material consisting of calcareous and siliceous stone; glass fibers and thermoset polyester resin. The polymer concrete cabinet base must be reinforced on the inside of the cabinet base with fiberglass matting. Provide one of the following bases: Armorcast Part # A6001848X24, Quazite Model # PG3048Z709, or other as approved by TxDOT Traffic Safety Division.
2. The polymer concrete material must have a minimum compressive strength of 10,300 pounds per square inch (psi), minimum flexural strength of 3600 psi, and minimum shear strength of 3600 psi.
3. The polymer concrete cabinet base must conform to the dimensions shown and must accommodate a standard TxDOT basemount cabinet.
4. Supply the cabinet base with four 1#2"-13 UNC stainless steel inserts for attachment of the cabinet to the base. Inserts must withstand a minimum torque of 50 ft-lb and a minimum straight pull out strength of 750 lbs.
5. Provide the cabinet base with 4 cable racks mounted one on each side of the base 2" to 7 " from the top edge of the base. Unless approved otherwise, cable racks must be 1-1/2 x 9#16x 3#16inch steel channel with eight T-slots spaced at 1-1/2 inches. The cable racks must easily accommodate the insertion of tie wraps to attach field wiring to the racks to serve as strain relief. Secure cable racks to the base using 1#2"-13 UNC stainless steel screws and inserts.
6. The cabinet base, when secured to the concrete slab with controller cabinet attached, must withstand a minimum wind load of 125 mph or a 850 lb force applied at 49" above the bottom of the base without causing the base or cabinet to come out of their anchored position or cause any permanent deformation. The manufacturer must supply certification by an independent testing laboratory or sealed by a Texas Licensed Professional Engineer. Provide the cabinet base with hardware for attachment to a concrete slab.
7. The traffic signal base must be permanently marked either by impress or by permanent ink with the manufacturer's model number and name or logo.
8. Seal the base to the concrete with a silicone caulk bead and fastened to the slab per manufacturer's instructions.

CONCRETE SLAB:

9. Traffic signal controller pad must be a portland cement concrete slab poured in place, must conform to the dimensions shown, and must be level.
10. Grade earthwork such that it is flush with the concrete pad on all four sides, unless otherwise shown on the plans. Subsidiary to ITEM 680, four inch rip rap may be used in lieu of earthwork. Slopes shall gradually contour to match plans.
11. Bond a #8 AWG copper ground wire and an 8 ft ground rod bonded to the reinforcing mesh by a suitable UL Listed clamp and terminated to the cabinet grounding bus for the purpose of providing a local ground for the electrical grounding conductor. The electrical grounding conductor specified in Item 680-3.A.4 is required and must be terminated to the cabinet ground bus.
12. Install a PVC sleeve to prevent the ground rod from direct embedment in the slab.
13. Provide welded wire mesh 6X6-W2.9 X W2.9 for reinforcement. Provide joints and splices in the mesh with a minimum 6-inch overlap. Center the mesh between top and bottom and provide a minimum 3 inch cover on the edges.
14. Provide Class B concrete minimum for the slab in accordance with Item 421. Construct the slab in accordance with Item 531.

CONDUITS:

15. Stub up and run 3-inch conduits through the slab to the various traffic signal poles and ground boxes as shown on the layouts. Install the number of conduits as shown on layouts plus two additional 3 inch conduits for future use. Terminate the conduits with a bushing between 2 and 4-inches above the slab.
16. Extend conduits for future use at least 18-inches from the edge of the slab, terminate underground with a coupling, and cap and seal so that the seal can be removed without damaging the coupling. This must also apply to unused telephone conduit.
17. Stub up two separate conduits through the slab from the electrical and telephone services. Run the conduit for the electrical feed directly to the electrical service enclosure. Run the conduit for the telephone line directly to the telephone service, usually located on the same pole as the electrical service. Telephone must not under any circumstance share a conduit with any other function.
18. Terminate electric and telephone conduits above the slab with a coupling. After the base is installed, extend the conduits above the top of the base and secure to the base using a steel one-hole strap or similar suitable substitute.

CONTROLLER CABINET:

19. Anchor the controller cabinet to the base using four stainless steel 1/2-13 NC bolts.
20. The silicone caulk bead specified in Item 680.3.B must be RTV 133.

PAYMENT:

21. Bid TS-CF as subsidiary to Item 680.

Texas Department of Transportation

Traffic Safety Division Standard

TRAFFIC SIGNAL CONTROLLER CABINET BASE AND PAD
TS-CF-21

FILE: ts-cf-21.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2000	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
12-04	DIST	COUNTY		SHEET NO.
2-21	SJT	CONCHO		155

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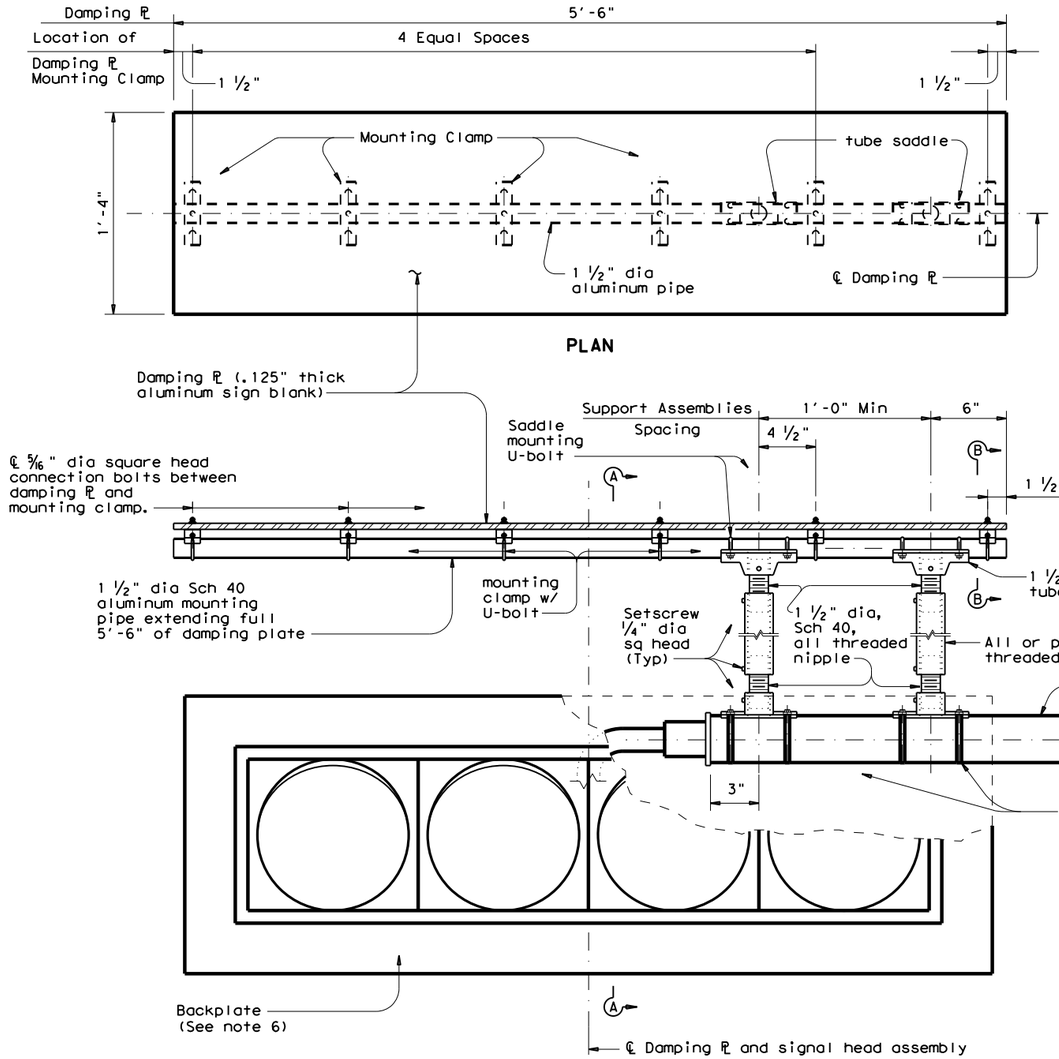
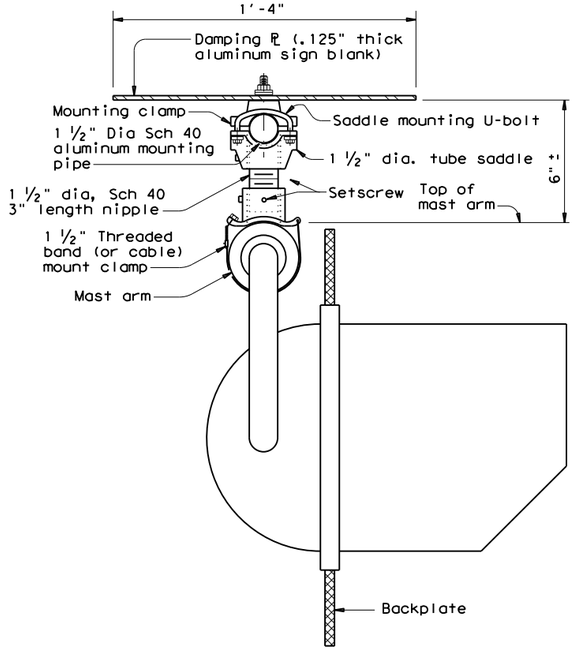


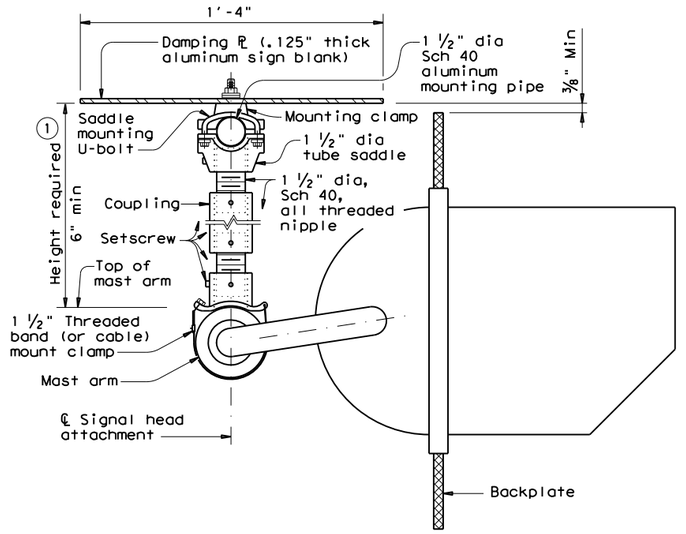
DAMPING PLATE MOUNTING DETAILS

(Showing alternate placement of signal head)



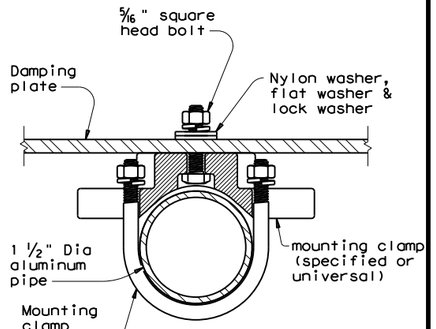
SECTION A-A

(Showing standard placement of signal head)
(Mounting clamp U-bolt is not shown for clarity)



SECTION A-A

(Showing alternate placement of signal head)
(Mounting clamp U-bolt is not shown for clarity)



SECTION B-B

(Showing damping plate attachment)

① Recommended supporting assemblies to achieve required height for horizontal section heads			
Height required	One nipple each length	Two nipples each length plus	One coupling each length
6"-6 ¾"	3"	-	-
7"-8 ½"	4"	-	-
9"-10 ½"	6"	-	-
11"-15 ½"	-	4"	5"
16"-24"	-	6"	10"

GENERAL NOTES:

1. In accordance with the findings of TxDOT sponsored research, the installation of a damping plate in accordance with the details shown here at the end of signal mast arms of SMA and DMA standard structures reduces excessive harmonic vertical vibration, and thus fatigue damage. Any deviation from these details may reduce the effectiveness of this damping device.
2. Aluminum sign blank for damping plate will conform to Departmental Material Specifications DMS-7110. Materials for mast arm mounting clamp and tube saddle will be aluminum castings or aluminum alloys as in accordance with manufacturers' stipulations. Mounting pipe, pipe nipple and coupling will be aluminum alloy 6061-T6 or 6063-T6. Damping plate mounting clamp and u-bolt assemblies will conform to Standard sheet SMD(GEN). U-bolts for saddle mounting will have a minimum yield strength of 36 ksi.
3. Damping plate will be mounted horizontally. Position centerline of damping plate to align with centerline of mast arm or horizontal signal head assembly. Vertical clearance between signal head (with or without backing plate)and bottom of damping plate will be maintained as shown. The attachments shown here are examples only, other supporting details which meet both alignment and vertical clearance requirements are also acceptable.
4. Unless stipulated by the manufacturers, all steel parts will be galvanized finish in accordance with Standard Specification Item 445, "Galvanizing".
5. Contractor will verify applicable field dimensions before the installation.
6. Backplates are optional for traffic signals. When backplates are used, Backplates will have a 2-inch fluorescent yellow AASHTO Type B_{FL} or C_{FL} retroreflective border conforming to TxDOT DMS-8300 "Sign Face Materials." See Sheet TS-BP-20 for backplate details.

Texas Department of Transportation

Traffic Safety Division Standard

MAST ARM DAMPING PLATE DETAILS

MA-DPD-20

FILE: ma-dpd-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2012	CONT	SECT	JOB	HIGHWAY
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6-20	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		156

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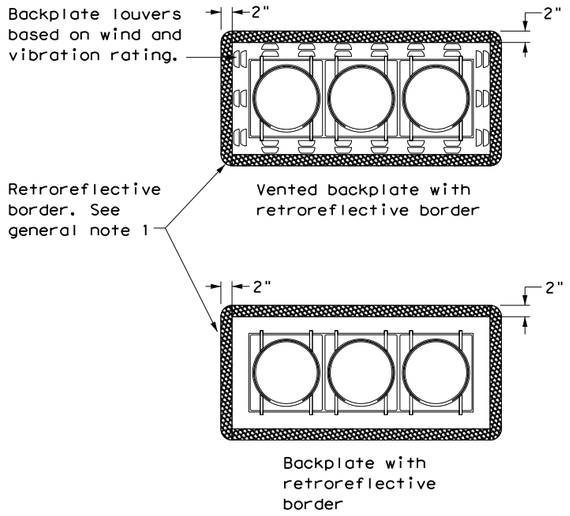
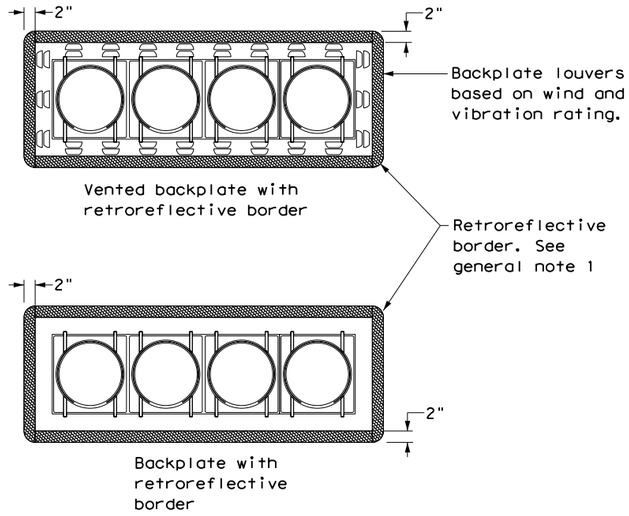
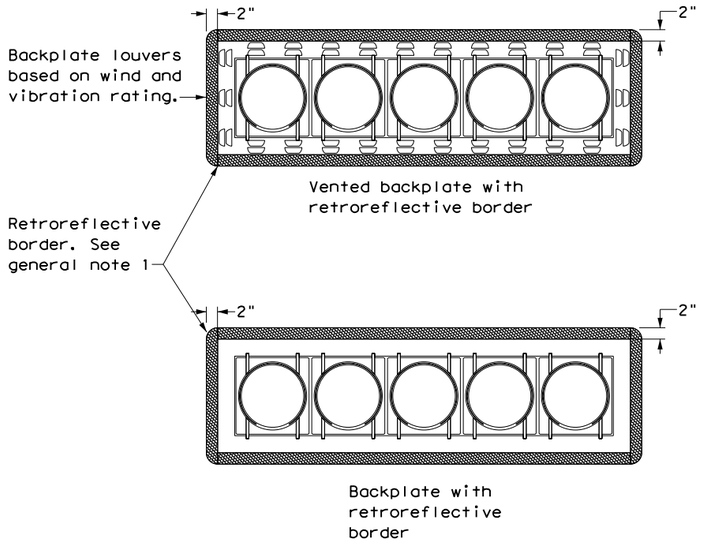


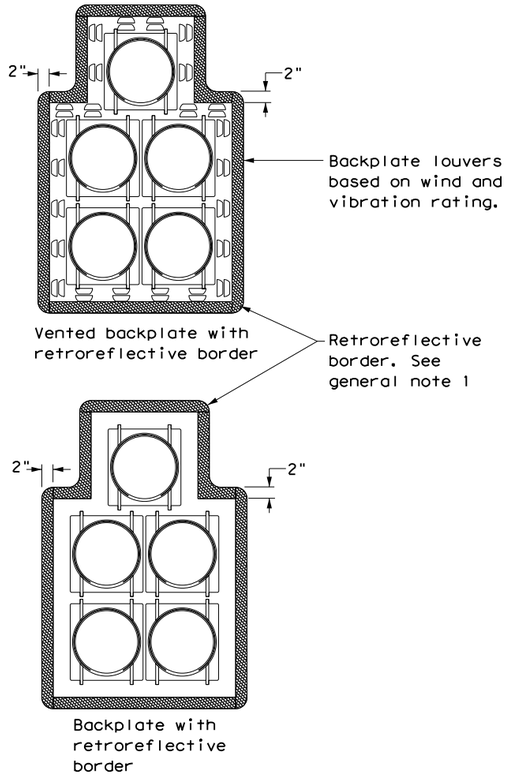
THREE-SECTION HEAD
HORIZONTAL OR VERTICAL



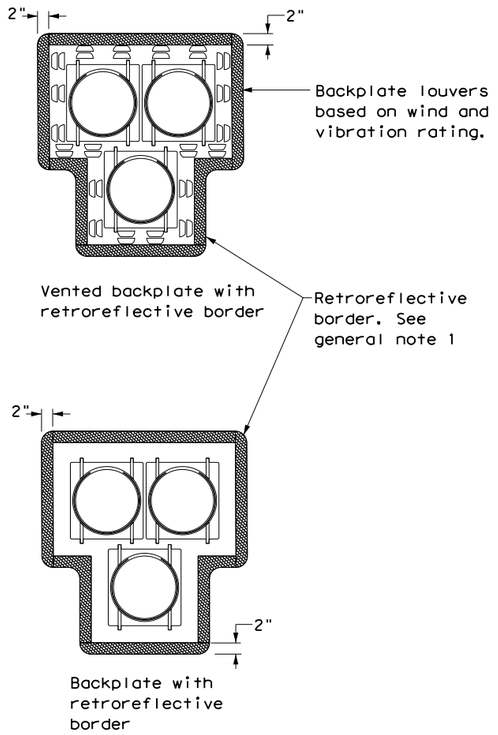
FOUR-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
CLUSTER



PEDESTRIAN HYBRID
BEACON

GENERAL NOTES:

1. Backplates are optional for traffic signals and pedestrian hybrid beacons. When backplates are used, a 2-inch wide fluorescent yellow AASHTO Type B_{FL} or C_{FL} retroreflective border conforming to TxDOT DMS-8300 is required. Place on all approaches when used.
2. Signal head and backplate compatability must be verified by the contractor prior to installation.
3. When using backplates on signal heads, venting is preferred to reduce cyclic vibration stress.
4. When a vented backplate is used, the retroreflective border must not be placed over the louvers.
5. This standard sheet applies to all signal heads with backplates, including but not limited to:
   - Pole mounted
   - Overhead mounted
   - Span wire mounted
   - Mast arm mounted
   - Vertical signal heads
   - Horizontal signal heads
   - Clustered signal heads
   - Pedestrian hybrid beacons

Texas Department of Transportation

Traffic Safety Division Standard

TRAFFIC SIGNAL HEAD WITH BACKPLATE
TS-BP-20

FILE: ts-bp-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		157

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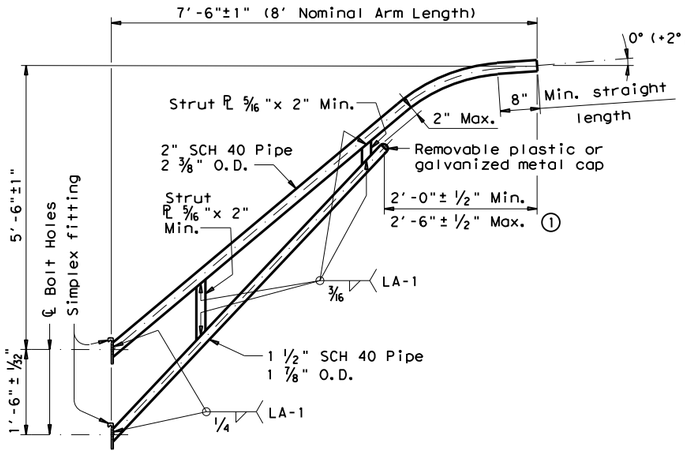
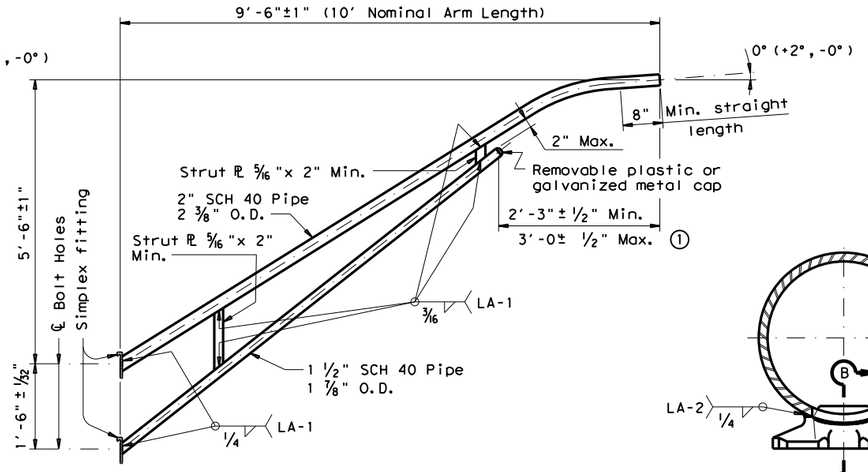


8-FOOT LUMINAIRE ARM



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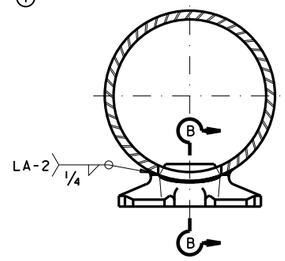


DIRECT ATTACHMENT DETAIL

MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr.65-35 or A148 Gr.80-50, A576 Gr.1021 (3), or A36 (Arm only)
Arm Pipes	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50 (4), or A1011 HSLAS-F Gr.50 (4)
Arm Strut Plates (2)	ASTM A36, A572 Gr.50 (4), or A588
Misc.	ASTM designations as noted

(1) Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.

(2) Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.

(3) A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.

(4) ASTM A572, A1008 HSLAS-F, and A1011 HSLAS-F may have higher yield strengths but shall not have less elongation than the grade indicated.

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. Design Wind Speed equals 90 mph plus a 1.3 gust factor. Arms are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq. ft.

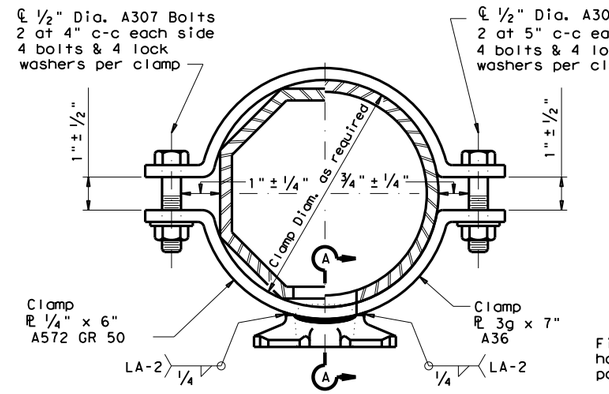
Materials and fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absense of specified Fabricaton tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.

Unless otherwise noted, all parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing".

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

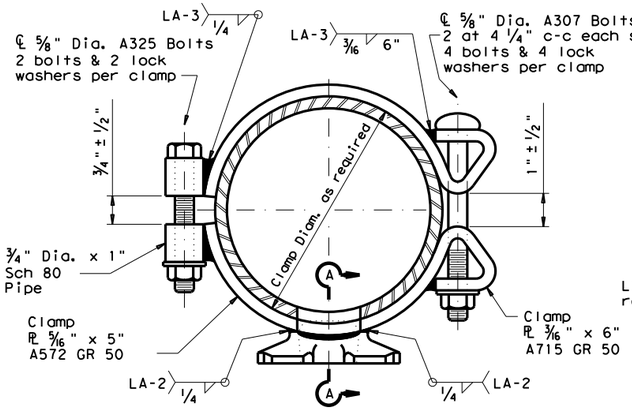
Each pole simplex fitting shall be supplied with 2 ASTM A325 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans. When clamp attachment is specified, the Fabricator shall ship the clamp assembly securely attached to the pole at the location shown on the plans.

If clamp assemblies are ordered without poles, the Fabricator shall ship one upper and one lower clamp assembly together in a single package, including all nuts and washers required for the clamps and simplex fittings.



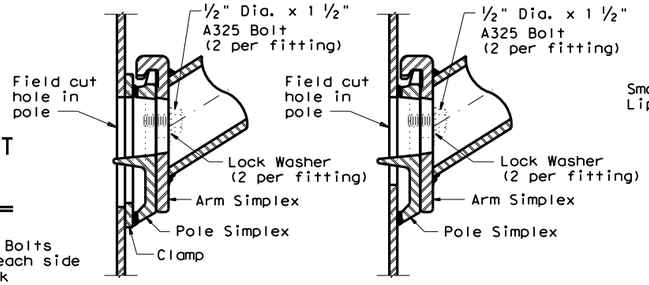
CLAMP ATTACHMENT DETAIL NO. 1 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 2 (HALF SECTION)



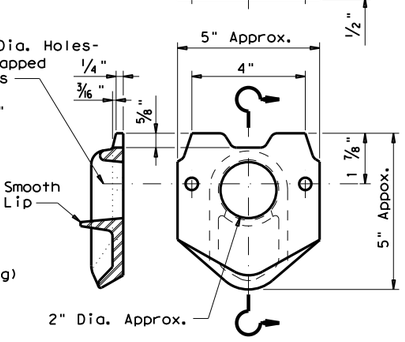
CLAMP ATTACHMENT DETAIL NO. 3 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 4 (HALF SECTION)

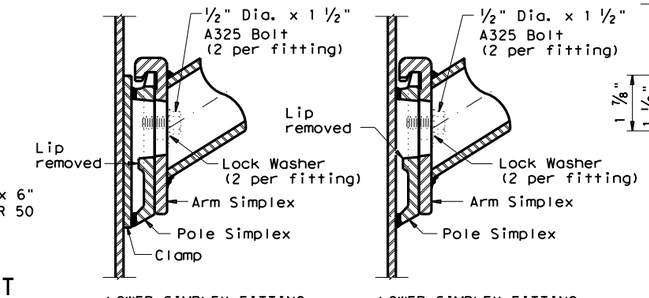


UPPER SIMPLEX FITTING

UPPER SIMPLEX FITTING



POLE SIMPLEX DETAIL

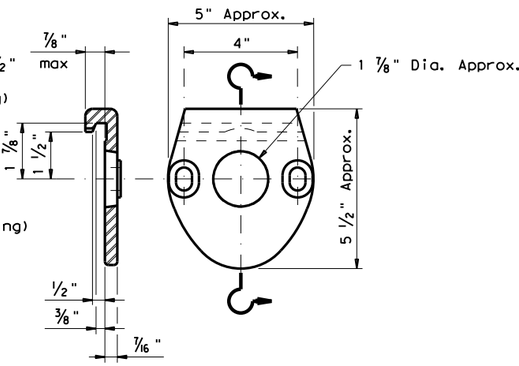


LOWER SIMPLEX FITTING

LOWER SIMPLEX FITTING

SECTON A-A

SECTON B-B



ARM SIMPLEX DETAIL

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY DRAWINGS FOR LUMINAIRE SUPPORT STRUCTURES

ARM DETAILS

LUM-A-12

DN: LEH	CK: JSY	DW: LTT	CK: TEB

REVISIONS
5-96
1-99
1-12

CONT	SECT	JOB	HIGHWAY
0035		047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		158

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
165	01	D3-1G	BRIDGE	48" X 48"			10BWG	1	SA	P		
			MAY ICE IN									
			COLD									
			WEATHER									
166	02	D3-1G	*DANIEL ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	*S. MAIN ST.	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"	✓		10BWG					
166	03	R2-1	SPEED LIMIT 40	30" X 30"	✓		10BWG	1	SA	P		
166	04	R2-1	SPEED LIMIT 50	30" X 30"	✓		10BWG	1	SA	P		
166	05	D3-1G	*PECAN ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	*S. MAIN ST.	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"	✓		10BWG					
166	06	D3-1G	*PECAN ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	*S. MAIN ST.	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"	✓		10BWG					
167	07	D3-1G	*OAK ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	*S. MAIN ST.	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"	✓		10BWG					
167	08	M2-1	JCT	21" X 15"	✓		10BWG	1	SA	P		
		M1-4	US 83	24" X 24"	✓		10BWG					
167	09	D3-1G	*SHUTT ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	*S. MAIN ST.	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"	✓		10BWG					
167	10	D3-1G	*SHUTT ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	*S. MAIN ST.	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"	✓		10BWG					
167	11	D3-1G	*ROCHEFORD ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	*S. MAIN ST.	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"	✓		10BWG					
167	12	D3-1G	*ROCHEFORD ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	*S. MAIN ST.	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"	✓		10BWG					
167	13	M3-3	SIGNAL AHEAD	24" X 12"	✓		MOUNT ON EXISTING FLASHING BEACON ASSEMBLY					
168	14	M3-3	SOUTH	24" X 12"	✓		10BWG	1	SA	P		
		M1-4	US 83	24" X 24"	✓		10BWG					
168	15	R2-1	SPEED LIMIT 35	30" X 30"	✓		10BWG	1	SA	P		
168	16	R2-1	SPEED LIMIT 40	30" X 30"	✓		10BWG	1	SA	P		
168	17	D3-1G	*BLANCHARD ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	*S. MAIN ST.	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"	✓		10BWG					
168	18	D3-1G	*BLANCHARD ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	*S. MAIN ST.	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"	✓		10BWG					

* USE EXISTING CITY STREET SIGNS.

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

NOTE:

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

Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

SHEET 1 OF 3

FILE:	sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	May 1987	CONT	SECT	JOB	HIGHWAY
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4-16		DIST	COUNTY		SHEET NO.
8-16		SJT	CONCHO		159

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SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
168	19	D1-2	← San Angelo Brady →	72" X 24"	✓		10BWG	1	SA	T		
169	20	D3-1G	* JACKSON ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	* S. MAIN ST.	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"	✓		10BWG					
169	21	M1-4	US 87	24" X 24"	✓		10BWG	1	SA	P		
		M6-4	⟷	21" X 15"	✓		10BWG					
169	22	M1-4	US 87	24" X 24"	✓		10BWG	1	SA	P		
		M6-4	⟷	21" X 15"	✓		10BWG					
169	23	M3-1	NORTH	24" X 12"	✓		10BWG	1	SA	P		
		M1-4	US 83	24" X 24"	✓		10BWG					
169	24	S1-1	SCHOOL CROSSING	36" X 36"	✓		10BWG	1	SA	P		
		M1-4	AHEAD	36" X 24"	✓		10BWG					
169	25	D3-1G	* TAFT ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	* N. MAIN ST.	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"	✓		10BWG					
170	26	M2-1	JCT	21" X 15"	✓		10BWG	1	SA	P		
		M1-6F	FARM ROAD 2402	24" X 24"	✓		10BWG					
170	27	R2-1	SPEED LIMIT 35	30" X 30"	✓		10BWG	1	SA	P		
		S5-2aTP	END SCHOOL ZONE	24" X 10"	✓		10BWG					
170	28	S5-1	SCHOOL/SPEED LIMIT 30/WHEN FLASHING	48" X 24"	✓		MOUNT ON EXISTING FLASHING BEACON ASSEMBLY					
		S7-1T	CELL PHONE USE PROHIBITED/UP TO $200 FINE	24" X 18"	✓							
170	29	D3-1G	* GARDEN ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	* N. MAIN ST.	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"	✓		10BWG					
170	30	D1-2	← Brady San Angelo →	72" X 24"	✓		10BWG	1	SA	T		
170	31	D3-1G	* BRYAN ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	* N. MAIN ST.	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"	✓		10BWG					
170	32	S1-1	SCHOOL CROSSING	36" X 24"	✓		10BWG	1	SA	P		
		M6-2aL	↙	21" X 15"	✓		10BWG					
170	33	S1-1	SCHOOL CROSSING	36" X 24"	✓		10BWG	1	SA	P		
		M6-2aL	↙	21" X 15"	✓		10BWG					
170	34	M2-1	JCT	21" X 15"	✓		10BWG	1	SA	P		
		M1-4	US 83	24" X 24"	✓		10BWG					
171	35	D3-1G	* BURLESON ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	* W. BROADWAY	VAR X 8"	✓		10BWG					
		R1-1	STOP	30" X 30"								
171	36	D1-2	← Paint Rock Menard →	72" X 24"	✓		10BWG	1	SA	T		

* USE EXISTING CITY STREET SIGNS.

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

NOTE:

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

Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

SHEET 2 OF 3

FILE:	sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS		0035	03	047	US 83
4-16		DIST	COUNTY		SHEET NO.
8-16		SJT	CONCHO		160

18

DATE: 5/22/2024 7:12:57 PM
FILE: c:\oms\ldcus-pw-01\omar.alducin\dms06663\sums16.dgn

SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE: FRP = Fiberglass, TWT = Thin-Wall, 10BWG = 10 BWG, S80 = Sch 80	POSTS: 1 or 2	ANCHOR TYPE: UA=Universal Conc, UB=Universal Bolt, SA=Slipbase-Conc, SB=Slipbase-Bolt, WS=Wedge Steel, WP=Wedge Plastic	MOUNTING DESIGNATION: PREFABRICATED P = "Plain", T = "T", U = "U"	MOUNTING DESIGNATION: 1EXT or 2EXT = # of Ext, BM = Extruded Wind Beam, WC = 1.12 #/ft Wing Channel, EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE: TY N, TY S
171	37	D9-2	HOSPITAL	24" X 24"	✓		10BWG	1	SA	P		
		M6-1L	←	21" X 15"	✓							
171	38	D3-1G	* BURTON ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	* W. BROADWAY	VAR X 8"	✓							
		R1-1	STOP	30" X 30"	✓							
171	39	D3-1G	* CONCHO ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	* W. BROADWAY	VAR X 8"	✓							
		R1-1	STOP	30" X 30"	✓							
171	40	M3-1	NORTH	24" X 12"	✓		10BWG	1	SA	P		
		M1-4	US 87	24" X 24"	✓		10BWG					
171	41	R7-1	NO PARKING ANY TIME	18" X 12"	✓		10BWG	1	SA	P		
			←									
171	42	M1-4	US 83	24" X 24"	✓		10BWG	1	SA	P		
		M6-4	⟷	21" X 15"	✓		10BWG					
172	43	M1-4	US 83	24" X 24"	✓		10BWG	1	SA	P		
		M6-4	⟷	21" X 15"	✓		10BWG					
172	44	S1-1	SCHOOL CROSSING	36" X 36"	✓		10BWG	1	SA	P		
		SW16-9P	AHEAD	36" X 24"	✓		10BWG					
172	45	R7-1	NO PARKING ANY TIME	18" X 12"	✓		10BWG	1	SA	P		
			←									
172	46	S5-1	SCHOOL/SPEED LIMIT 30/WHEN FLASHING	48" X 24"	✓		MOUNT ON EXISTING FLASHING BEACON ASSEMBLY					
		S7-1T	CELL PHONE USE PROHIBITED/UP TO $200 FINE	24" X 18"	✓							
172	47	R2-1	SPEED LIMIT 35	30" X 30"	✓		10BWG	1	SA	P		
172	48	M3-3	SOUTH	24" X 12"	✓		10BWG	1	SA	P		
		M1-4	US 87	24" X 24"	✓		10BWG					
172	49	D3-1G	* SANTA FE ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	* E. BROADWAY	VAR X 8"	✓							
		R1-1	STOP	30" X 30"	✓							
172	50	R7-1	NO PARKING ANY TIME	18" X 12"	✓		10BWG	1	SA	P		
			←									
172	51	D3-1G	* COLLEGE ST.	VAR X 8"	✓		10BWG	1	SA	P		
		D3-1G	* E. BROADWAY	VAR X 8"	✓							
		R1-1	STOP	30" X 30"	✓							
172	52	D1-2	← Menard	72" X 24"	✓		10BWG	1	SA	T		
			Paint Rock →									

* USE EXISTING CITY STREET SIGNS.

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

NOTE:

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2. For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.
3. For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).

Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

SHEET 3 OF 3

FILE:	sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS		0035	03	047	US 83
4-16		DIST	COUNTY		SHEET NO.
8-16		SJT	CONCHO		161

18

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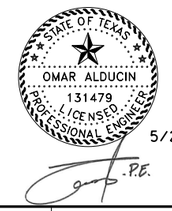
PLAN SHEET NO.	SIGN NO.	SIGN	REMOVE
2 OF 7	1	BRIDGE MAY ICE IN COLD WEATHER	X
3 OF 7	2	STOP SIGN	X
3 OF 7	3	DANIEL ST./S. MAIN ST.	X
3 OF 7	4	SPEED LIMIT 40	X
3 OF 7	5	SPEED LIMIT 50	X
3 OF 7	6	PECAN ST./S. MAIN ST.	X
3 OF 7	7	STOP SIGN	X
4 OF 7	8	STOP SIGN	X
4 OF 7	9	OAK ST./S. MAIN ST.	X
4 OF 7	10	JCT/US 83	X
4 OF 7	11	STOP SIGN	X
4 OF 7	12	STOP SIGN	X
4 OF 7	13	STOP SIGN	X
4 OF 7	14	ROCHEFORD ST./S. MAIN ST.	X
4 OF 7	15	ROCHEFORD ST./S. MAIN ST.	X
4 OF 7	16	TRAFFIC LIGHT AHEAD WITH FGLASHERS	X
5 OF 7	17	SOUTH/US 83	X
5 OF 7	18	SPEED LIMIT 35	X
5 OF 7	19	SPEED LIMIT 40	X
5 OF 7	20	STOP SIGN	X
5 OF 7	21	STOP SIGN	X
5 OF 7	22	NO PARKING ANY TIME	X
5 OF 7	23	JCT\US 87	X
5 OF 7	24	NO PARKING ANY TIME	X
5 OF 7	25	PARALLEL PARKING/ARROW LEFT AND RIGHT	X
6 OF 7	26	STOP SIGN	X
6 OF 7	27	PARALLEL PARKING/ARROW LEFT AND RIGHT	X
6 OF 7	28	ARROW LEFT/SAN ANGELO/RIGHT A RROW/BRADY	X
6 OF 7	29	US 87/ARROW RIGHT AND LEFT	X
6 OF 7	30	NO PARKING ANY TIME	X
6 OF 7	31	US 87/ARROW RIGHT AND LEFT	X
6 OF 7	32	RIGHT LANE/MUST/TURN RIGHT	X
6 OF 7	33	NORTH/US 83	X
6 OF 7	34	SCHOOL CROSSING/AHEAD	X
6 OF 7	35	STOP SIGN	X

PLAN SHEET NO.	SIGN NO.	SIGN	REMOVE
7 OF 7	36	TAFT ST./N. MAIN ST.	X
7 OF 7	37	JCT/FM 2402	X
7 OF 7	38	SPEED LIMIT 35/END SCHOOL ZONE	X
7 OF 7	39	SCHOOL/SPEED LIMIT 30 WHEN FLASHING/CELL PHONE USE PROHIBITED UP TO $200 FINE	X
7 OF 7	40	GARDEN ST./N. MAIN ST.	X
7 OF 7	41	STOP SIGN	X
7 OF 7	42	ARROW LEFT BRADY/SAN ANGELO ARROW RIGHT	X
7 OF 7	43	STOP SIGN	X
7 OF 7	44	BRYAN ST./N. MAIN ST.	X
7 OF 7	45	SCHOOL CROSSING/ARROW 45^ LEFT DOWN	X
7 OF 7	46	SCHOOL CROSSING/ARROW 45^ LEFT DOWN	X
1 OF 2	47	BURLESON ST./W. BROADWAY	X
1 OF 2	48	STOP SIGN	X
1 OF 2	49	HOSPITAL/ARROW LEFT	X
1 OF 2	50	STOP SIGN	X
1 OF 2	51	STOP SIGN	X
1 OF 2	52	NORTH/US 87	X
1 OF 2	53	ARROW LEFT POINT ROCK/MENARD ARROW RIGHT	X
1 OF 2	54	NO PARKING ANY TIME	X
1 OF 2	55	US 83/ARROW LEFT AND RIGHT	X
2 OF 2	56	US 83/ARROW LEFT AND RIGHT	X
2 OF 2	57	SCHOOL CROSSING/AHEAD	X
2 OF 2	58	NO PARKING ANY TIME	X
2 OF 2	59	SOUTH/US 87	X
2 OF 2	60	SCHOOL/SPEED LIMIT 30 WHEN FLASHING/CELL PHONE USE PROHIBITED UP TO $200 FINE	X
2 OF 2	61	ARROW LEFT MENARD/BALLINGER ARROW RIGHT	X
2 OF 2	62	STOP SIGN	X
2 OF 2	63	SANTA FE ST./E. BROADWAY	X
2 OF 2	64	NO PARKING ANY TIME	X
2 OF 2	65	STOP SIGN	X
2 OF 2	66	ROAD/MAY FLOOD	X
2 OF 2	67	ARROW LEFT MENARD/BALLINGER ARROW RIGHT	X

NOTE:

1. SALVAGE AND REUSE EXISTING CITY STREET NAME SIGNS.



5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

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PLANNERS | ENGINEERS | MANAGERS
IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

US 83
EXISTING SMALL
SIGN INVENTORY

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		162

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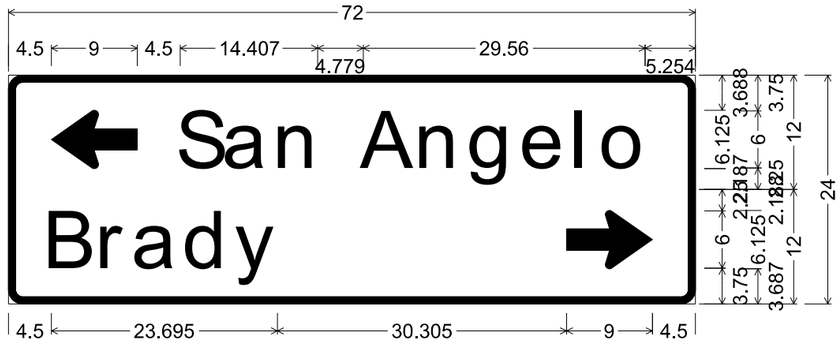
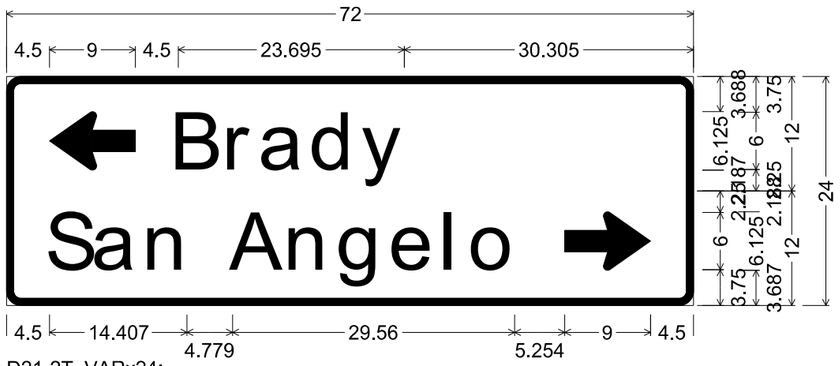


D21-2T_VARx24;

1.500" Radius, 0.750" Border, White on Green;
Standard Arrow Custom 9.000" X 6.125" 180°;
"San Angelo", ClearviewHwy-3-W;

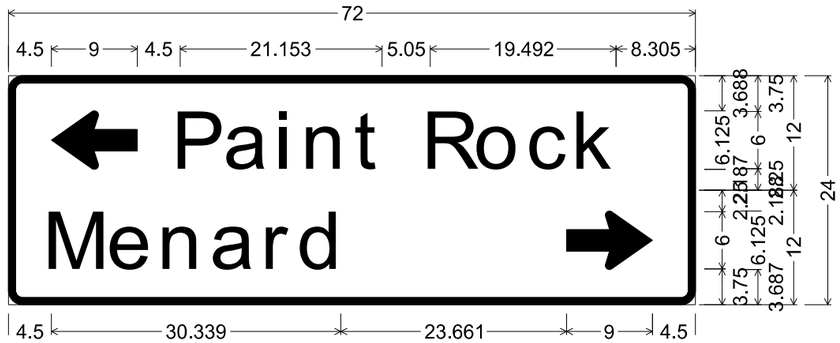
1.500" Radius, 0.750" Border, White on Green;
"Brady", ClearviewHwy-3-W;
Standard Arrow Custom 9.000" X 6.125" 0°;



D21-2T_VARx24;

1.500" Radius, 0.750" Border, White on Green;
Standard Arrow Custom 9.000" X 6.125" 180°;
"Brady", ClearviewHwy-3-W;

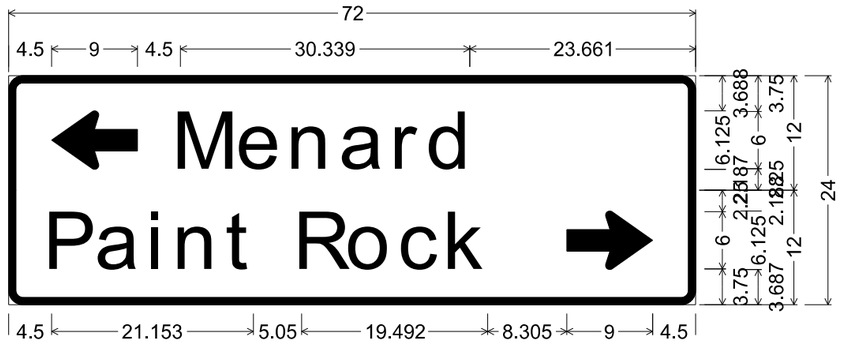
1.500" Radius, 0.750" Border, White on Green;
"San Angelo", ClearviewHwy-3-W;
Standard Arrow Custom 9.000" X 6.125" 0°;



D21-2T_VARx24;

1.500" Radius, 0.750" Border, White on Green;
Standard Arrow Custom 9.000" X 6.125" 180°;
"Paint Rock", ClearviewHwy-3-W;

1.500" Radius, 0.750" Border, White on Green;
"Menard", ClearviewHwy-3-W;
Standard Arrow Custom 9.000" X 6.125" 0°;



D21-2T_VARx24;

1.500" Radius, 0.750" Border, White on Green;
Standard Arrow Custom 9.000" X 6.125" 180°;
"Menard", ClearviewHwy-3-W;

1.500" Radius, 0.750" Border, White on Green;
"Paint Rock", ClearviewHwy-3-W;
Standard Arrow Custom 9.000" X 6.125" 0°;

STATE OF TEXAS
JUAN E TREVIÑO-GUERRA
141908
LICENSED
PROFESSIONAL ENGINEER
5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

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(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

SIGN DETAILS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		163

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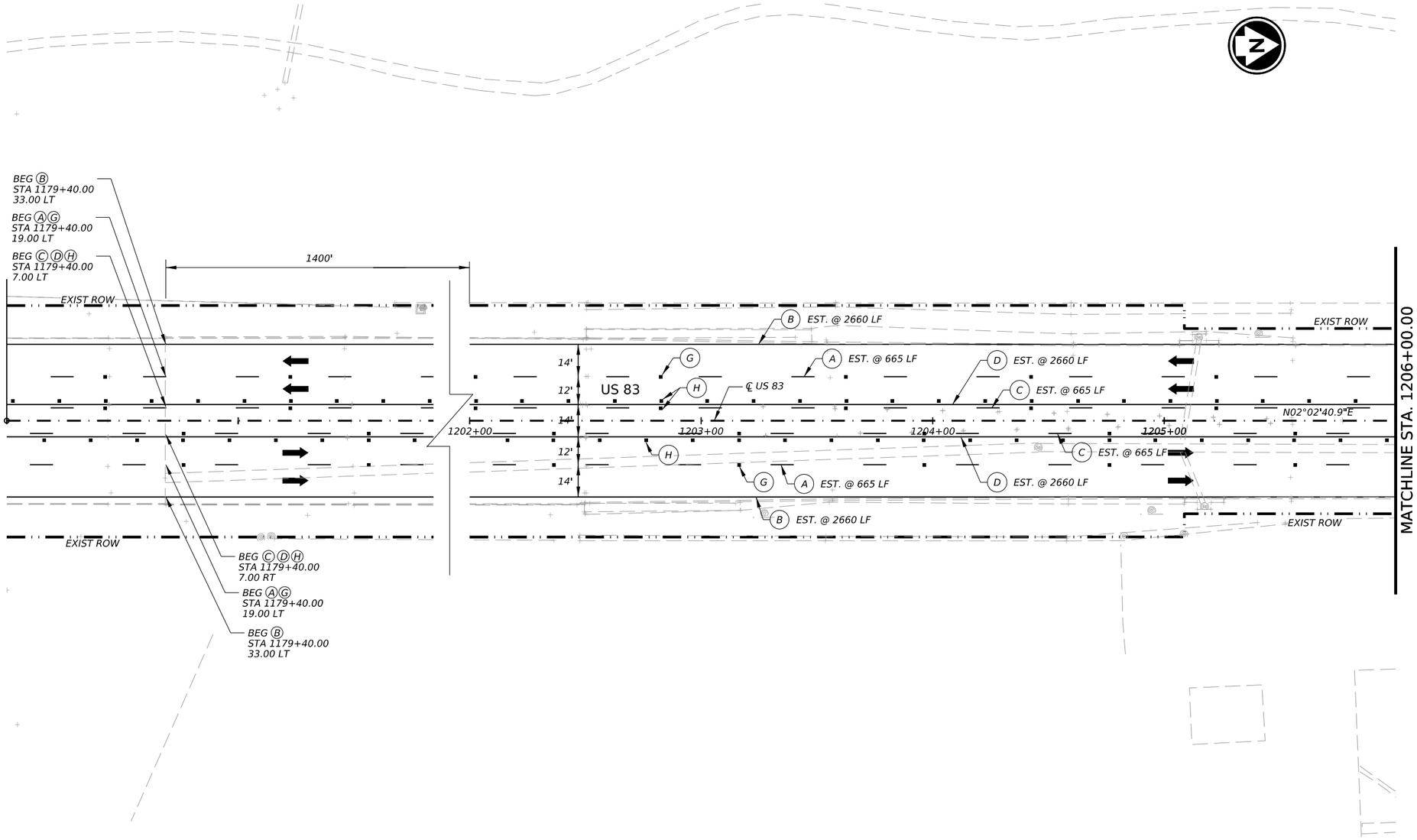

LEGEND

- (A) 6" WHITE BRK
- (B) 6" WHITE SLD
- (C) 6" YELLOW BRK
- (D) 6" YELLOW SLD
- (E) 24" WHITE SLD
- (F) ARROW
- (G) REFL PAV MRKR TY I-C
- (H) REFL PAV MRKR TY II-A-A
- (I) CENTERLINE RUMBLE STRIPS
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE
- PROPOSED SMALL SIGN & NUMBER (XX)
- EXISTING SMALL SIGN TO BE REMOVED (XX)

HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER

5/22/2024

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TBPELS FIRM # F-6825

US 83

US 83
SIGNING AND PAVEMENT MARKING
PLAN LAYOUT
BEGIN TO STA 1206+00.00

SHEET 1 OF 7

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		164

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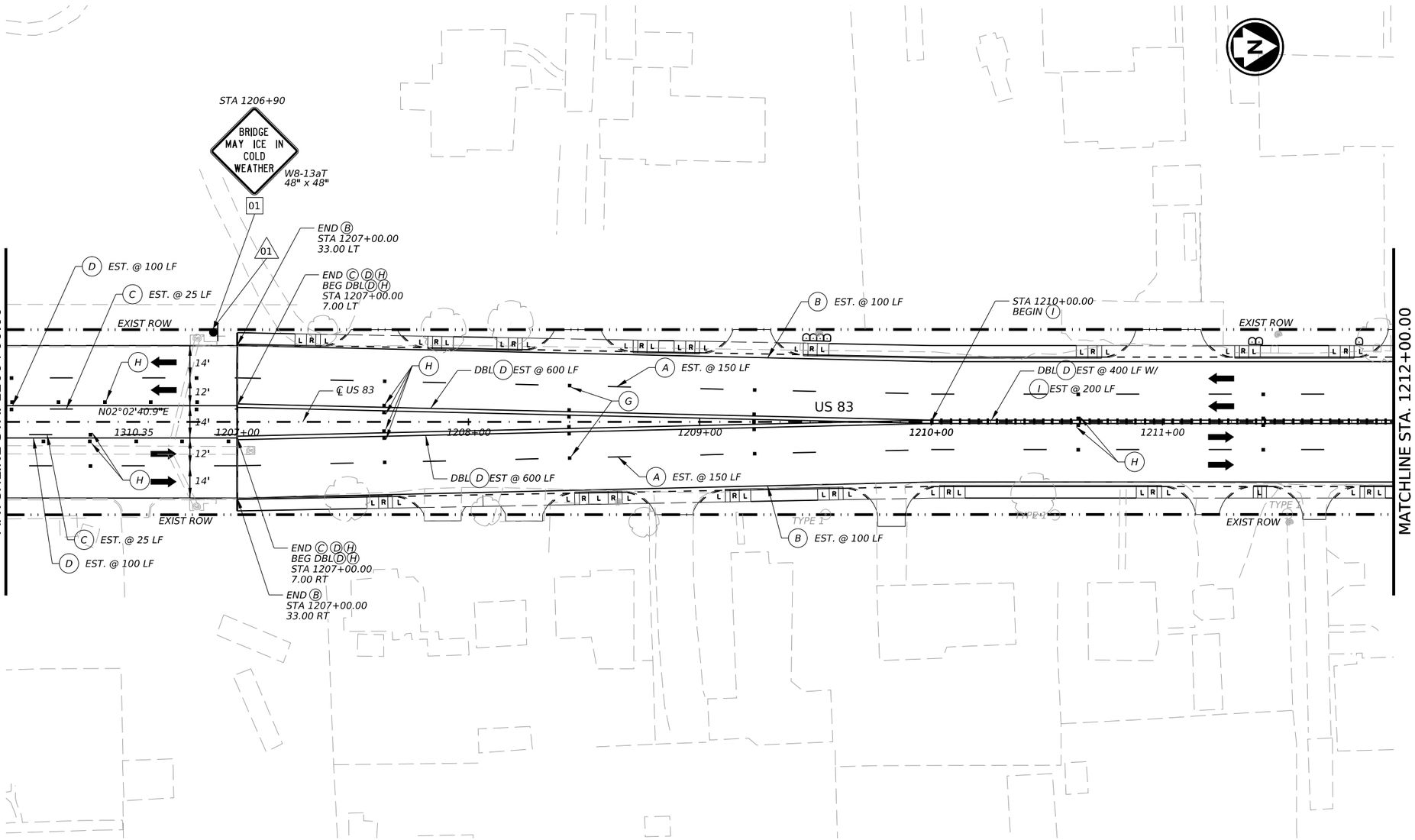

LEGEND

- (A) 6" WHITE BRK
- (B) 6" WHITE SLD
- (C) 6" YELLOW BRK
- (D) 6" YELLOW SLD
- (E) 24" WHITE SLD
- (F) ARROW
- (G) REFL PAV MRKR TY I-C
- (H) REFL PAV MRKR TY II-A-A
- (I) CENTERLINE RUMBLE STRIPS
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE
- PROPOSED SMALL SIGN & NUMBER
- EXISTING SMALL SIGN TO BE REMOVED

HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER
5/22/2024
P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
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HOUSTON, TX 77094
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TBPELS FIRM # F-6825

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PLANNERS | ENGINEERS | MANAGERS

US 83

US 83
SIGNING AND PAVEMENT MARKING
PLAN LAYOUT
STA 1206+00.00 TO STA 1212+00.00

SHEET 2 OF 7

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		165

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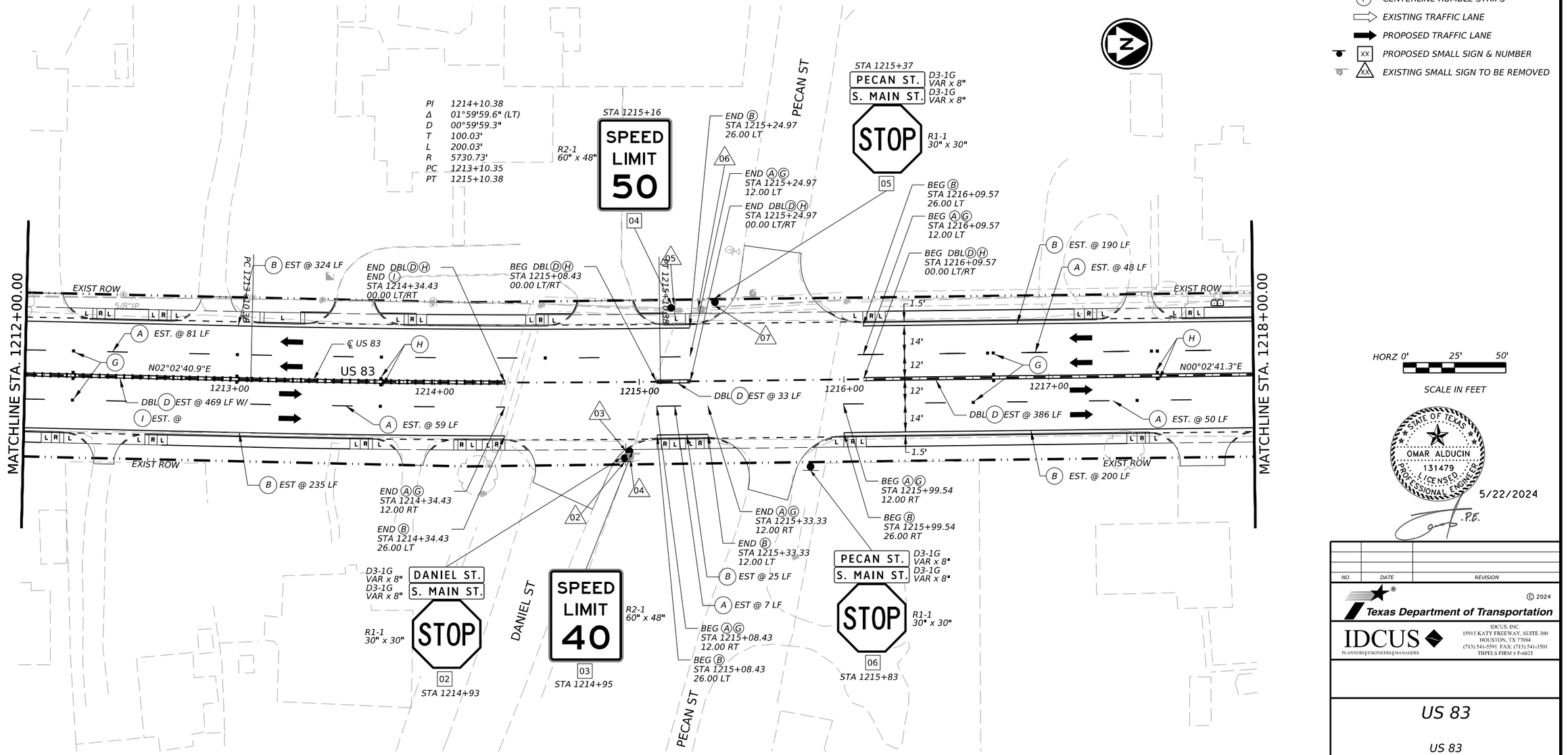

NO.	DATE	REVISION

Texas Department of Transportation

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(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

US 83
SIGNING AND PAVEMENT MARKING
PLAN LAYOUT
STA 1212+00.00 TO STA 1218+00.00

SHEET 3 OF 7

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		166

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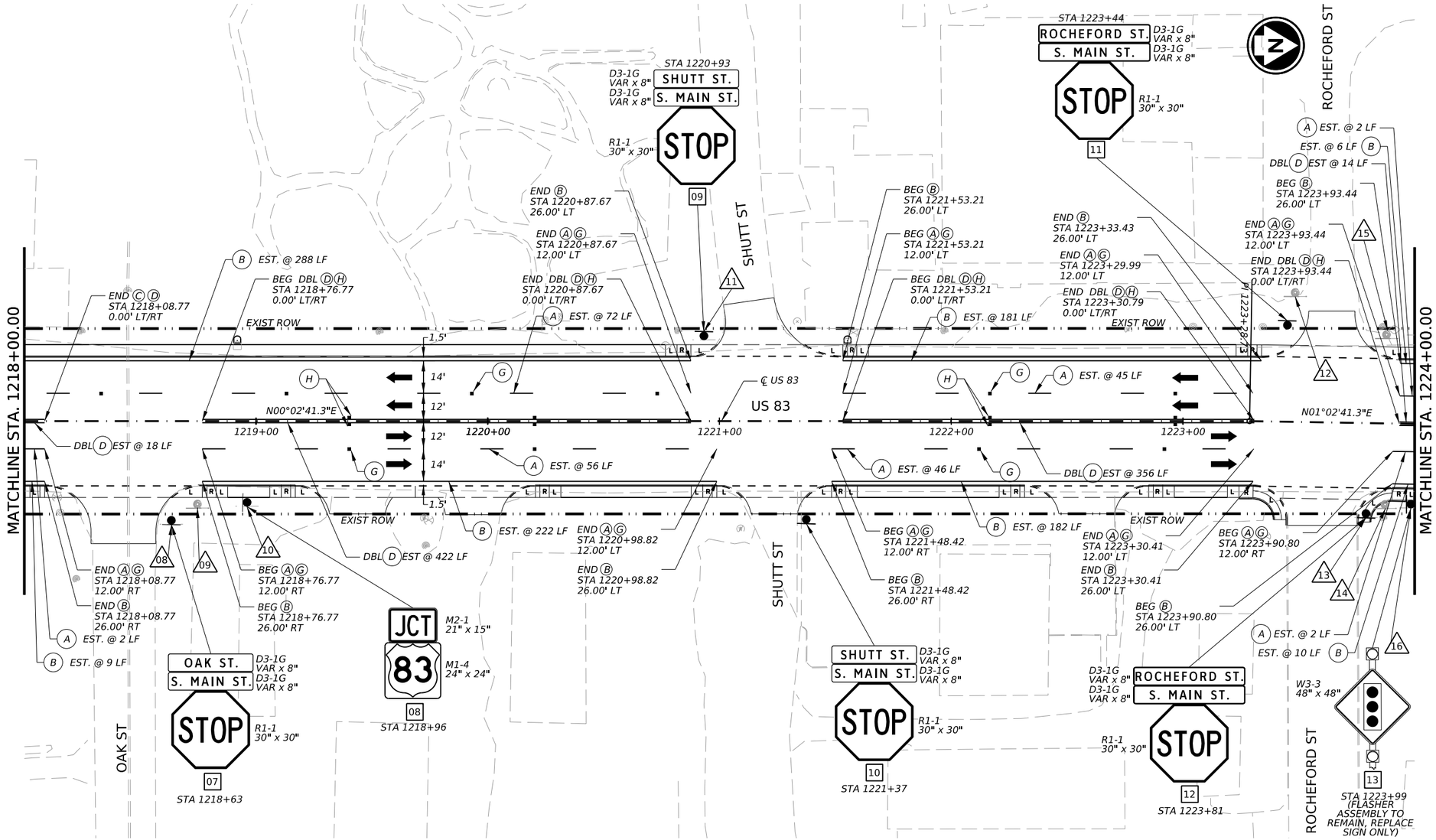

LEGEND

- A 6" WHITE BRK
- B 6" WHITE SLD
- C 6" YELLOW BRK
- D 6" YELLOW SLD
- E 24" WHITE SLD
- F ARROW
- G REFL PAV MRKR TY I-C
- H REFL PAV MRKR TY II-A-A
- I CENTERLINE RUMBLE STRIPS
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE
- PROPOSED SMALL SIGN & NUMBER
- EXISTING SMALL SIGN TO BE REMOVED

HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED PROFESSIONAL ENGINEER
5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS
PLANNERS | ENGINEERS | MANAGERS
IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

US 83
SIGNING AND PAVEMENT MARKING
PLAN LAYOUT
STA 1218+00.00 TO STA 1224+00.00

SHEET 4 OF 7

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		167

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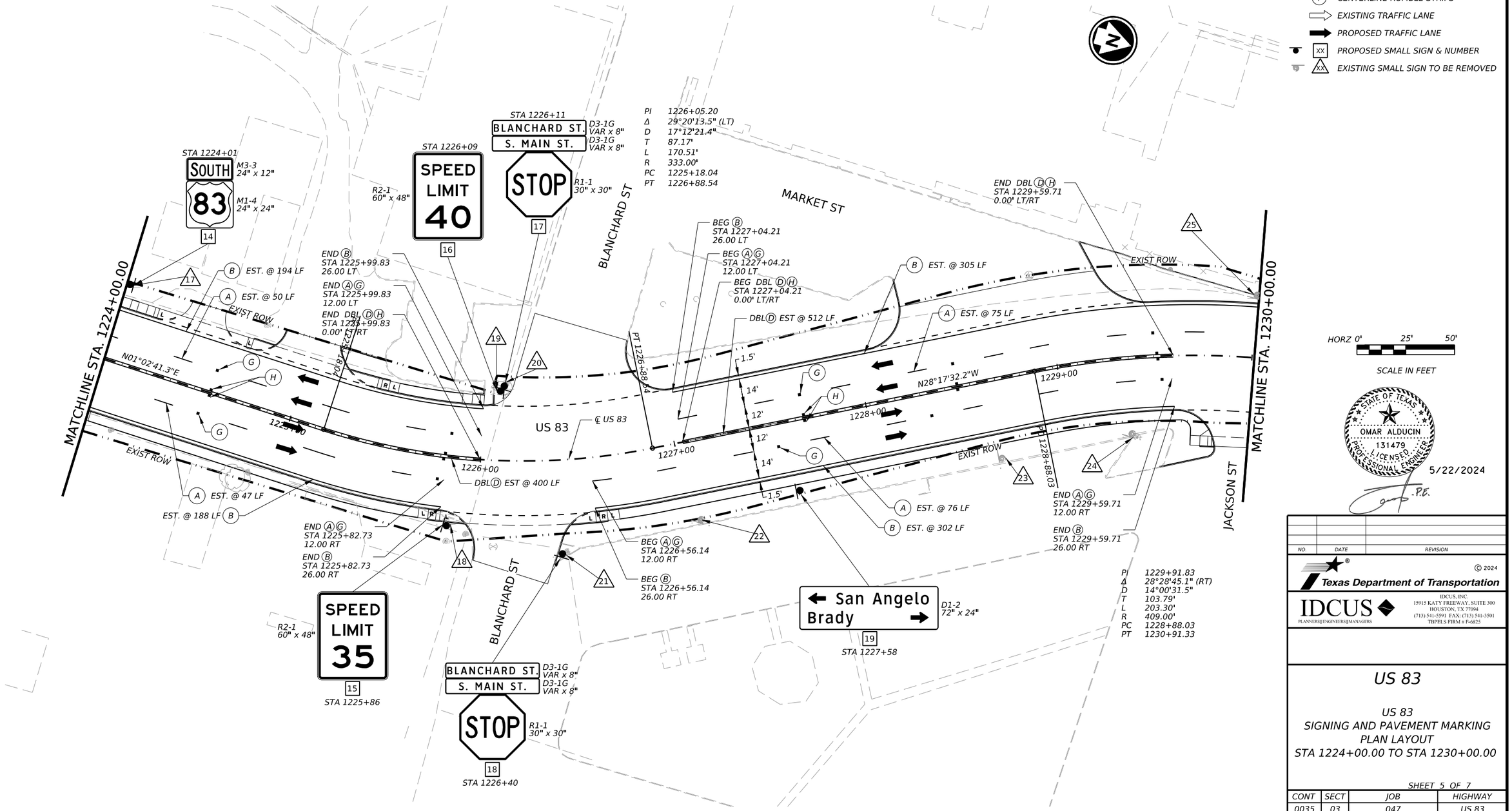
LEGEND
A 6" WHITE BRK
B 6" WHITE SLD
C 6" YELLOW BRK
D 6" YELLOW SLD
E 24" WHITE SLD
F ARROW
G REFL PAV MRKR TY I-C
H REFL PAV MRKR TY II-A-A
I CENTERLINE RUMBLE STRIPS
EXISTING TRAFFIC LANE
PROPOSED TRAFFIC LANE
XX PROPOSED SMALL SIGN & NUMBER
XX EXISTING SMALL SIGN TO BE REMOVED
MATCHLINE STA. 1224+00.00
MATCHLINE STA. 1230+00.00
US 83
℄ US 83
MARKET ST
BLANCHARD ST
JACKSON ST
EXIST ROW
N01°02'41.3"E
N28°17'32.2"W
STA 1224+01
SOUTH
83
M3-3 24" x 12"
M1-4 24" x 24"
R2-1 60" x 48"
STA 1226+09
SPEED LIMIT 40
STA 1226+11
BLANCHARD ST. D3-1G VAR x 8"
S. MAIN ST. D3-1G VAR x 8"
STOP R1-1 30" x 30"
PI 1226+05.20
Δ 29°20'13.5" (LT)
D 17°12'21.4"
T 87.17'
L 170.51'
R 333.00'
PC 1225+18.04
PT 1226+88.54
PT 1226+88.54
END B STA 1225+99.83 26.00 LT
END A G STA 1225+99.83 12.00 LT
END DBL D H STA 1225+99.83 0.00' LT/RT
BEG B STA 1227+04.21 26.00 LT
BEG A G STA 1227+04.21 12.00 LT
BEG DBL D H STA 1227+04.21 0.00' LT/RT
END DBL D H STA 1229+59.71 0.00' LT/RT
END A G STA 1229+59.71 12.00 RT
END B STA 1229+59.71 26.00 RT
BEG A G STA 1226+56.14 12.00 RT
BEG B STA 1226+56.14 26.00 RT
END A G STA 1225+82.73 12.00 RT
END B STA 1225+82.73 26.00 RT
EST. @ 194 LF
EST. @ 50 LF
EST. @ 47 LF
EST. @ 188 LF
DBL D EST @ 400 LF
DBL D EST @ 512 LF
EST. @ 305 LF
EST. @ 75 LF
EST. @ 76 LF
EST. @ 302 LF
1224+00
1225+00
1226+00
1227+00
1228+00
1229+00
1228+88.03
14'
12'
1.5'
SPEED LIMIT 35
STA 1225+86
R2-1 60" x 48"
BLANCHARD ST. D3-1G VAR x 8"
S. MAIN ST. D3-1G VAR x 8"
STOP R1-1 30" x 30"
STA 1226+40
San Angelo
Brady
D1-2 72" x 24"
STA 1227+58
PI 1229+91.83
Δ 28°28'45.1" (RT)
D 14°00'31.5"
T 103.79'
L 203.30'
R 409.00'
PC 1228+88.03
PT 1230+91.33
HORZ 0' 25' 50'
SCALE IN FEET
STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER
5/22/2024
P.E.
NO. DATE REVISION
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IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825
US 83
US 83
SIGNING AND PAVEMENT MARKING
PLAN LAYOUT
STA 1224+00.00 TO STA 1230+00.00
SHEET 5 OF 7
CONT SECT JOB HIGHWAY
0035 03 047 US 83
DIST COUNTY SHEET NO.
SJT CONCHO 168
DATE: 5/22/2024 7:17:03 PM
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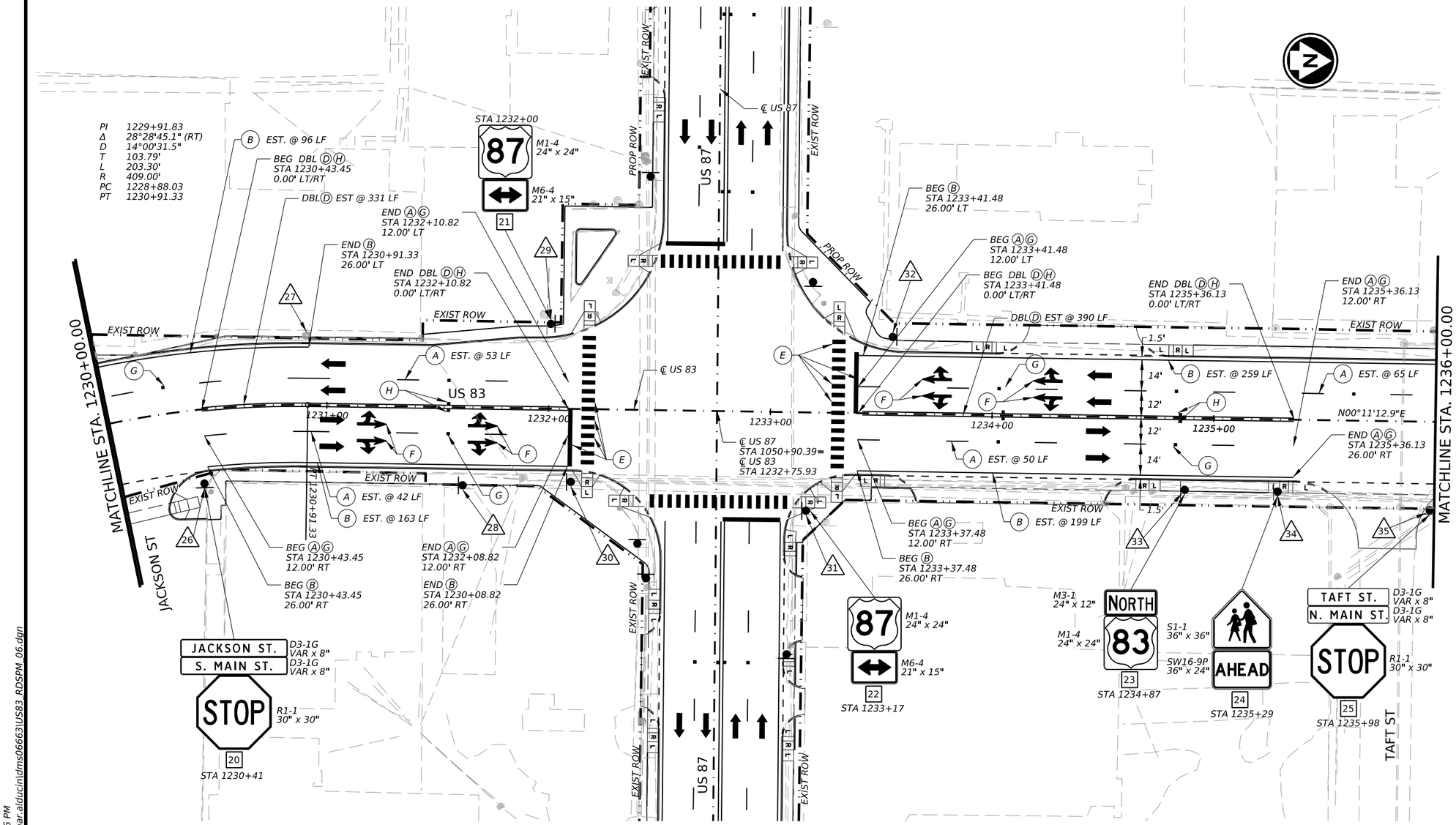

STATE OF TEXAS
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PLANNERS | ENGINEERS | MANAGERS

US 83

US 83
SIGNING AND PAVEMENT MARKING
PLAN LAYOUT
STA 1230+00.00 TO STA 1236+00.00

SHEET 6 OF 7

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		169

DATE: 5/22/2024 7:17:36 PM
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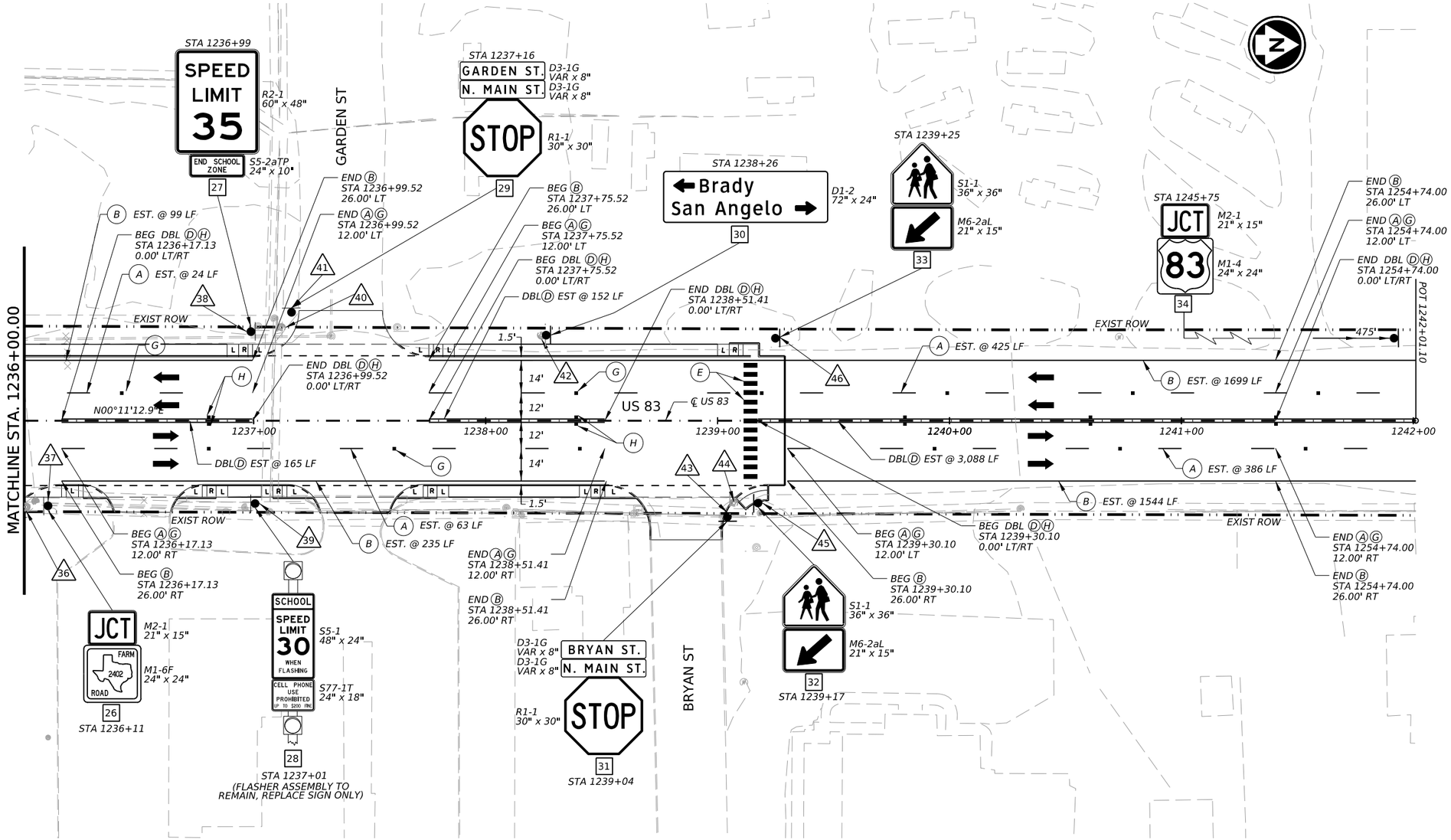

LEGEND

- A 6" WHITE BRK
- B 6" WHITE SLD
- C 6" YELLOW BRK
- D 6" YELLOW SLD
- E 24" WHITE SLD
- F ARROW
- G REFL PAV MRKR TY I-C
- H REFL PAV MRKR TY II-A-A
- I CENTERLINE RUMBLE STRIPS
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE
- PROPOSED SMALL SIGN & NUMBER
- EXISTING SMALL SIGN TO BE REMOVED

HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED
PROFESSIONAL ENGINEER
5/22/2024
P.E.

NO.	DATE	REVISION

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TBPELS FIRM # F-6825

US 83

US 83
SIGNING AND PAVEMENT MARKING
PLAN LAYOUT
STA 1236+00.00 TO END

SHEET 7 OF 7

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		170

DATE: 5/22/2024 7:18:09 PM
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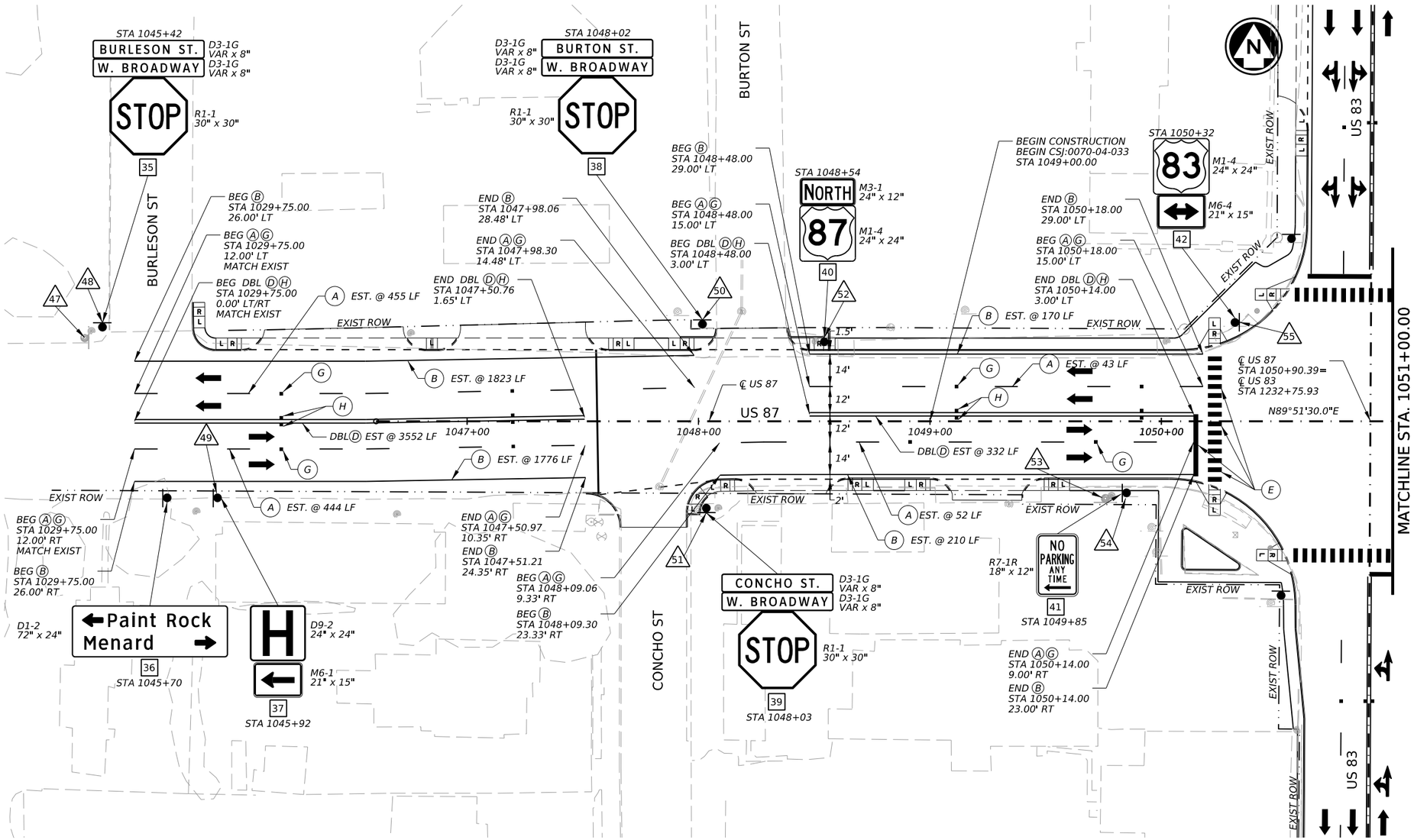

LEGEND

- (A) 6" WHITE BRK
- (B) 6" WHITE SLD
- (C) 6" YELLOW BRK
- (D) 6" YELLOW SLD
- (E) 24" WHITE SLD
- (F) ARROW
- (G) REFL PAV MRKR TY I-C
- (H) REFL PAV MRKR TY II-A-A
- (I) CENTERLINE RUMBLE STRIPS
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE
- PROPOSED SMALL SIGN & NUMBER
- EXISTING SMALL SIGN TO BE REMOVED

HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
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US 83

US 87
SIGNING AND PAVEMENT MARKING
PLAN LAYOUT
BEGIN TO STA 1051+00.00

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		171

DATE: 5/22/2024 7:18:50 PM
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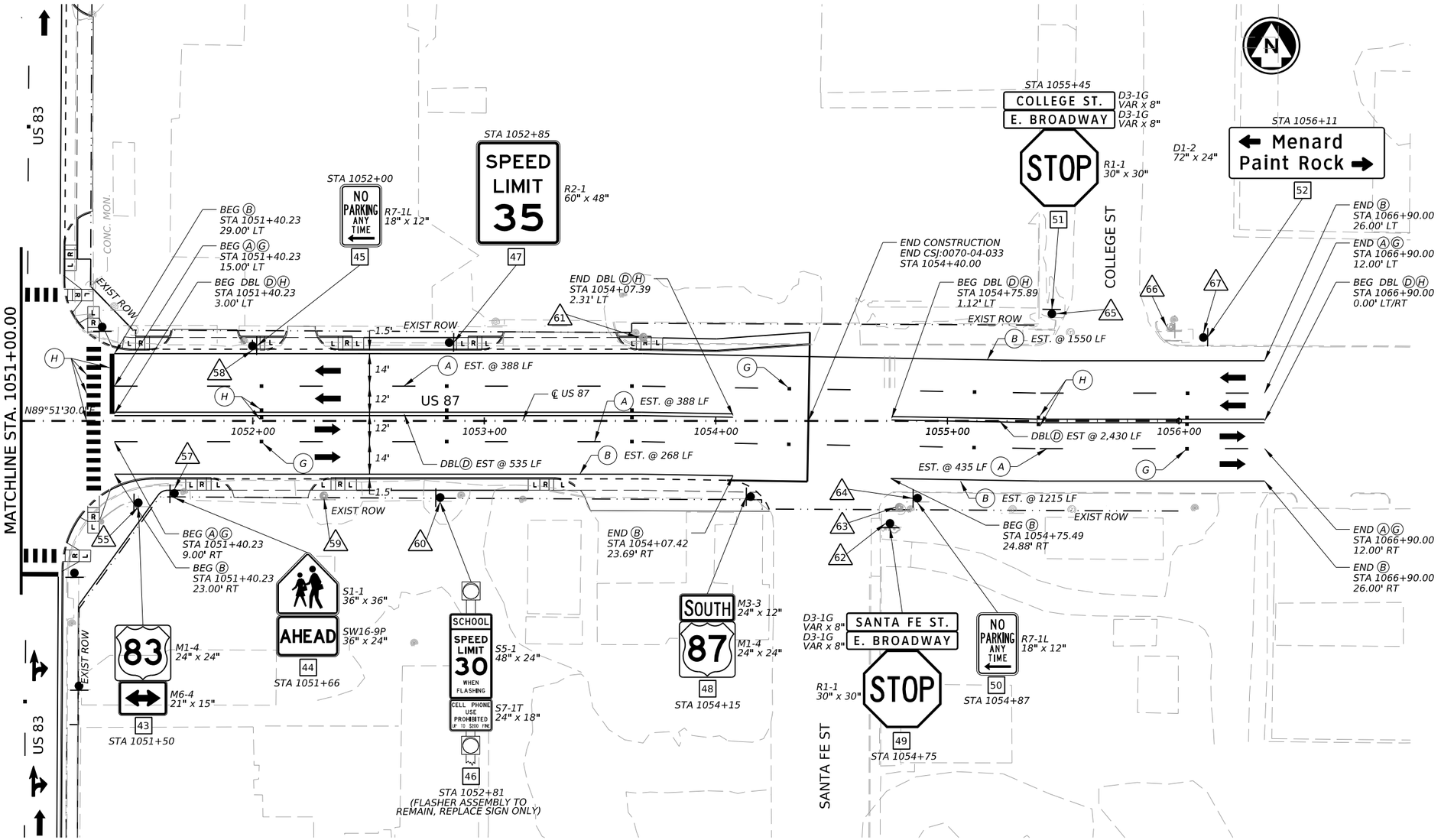

LEGEND

- (A) 6" WHITE BRK
- (B) 6" WHITE SLD
- (C) 6" YELLOW BRK
- (D) 6" YELLOW SLD
- (E) 24" WHITE SLD
- (F) ARROW
- (G) REFL PAV MRKR TY I-C
- (H) REFL PAV MRKR TY II-A-A
- (I) CENTERLINE RUMBLE STRIPS
- EXISTING TRAFFIC LANE
- PROPOSED TRAFFIC LANE
- PROPOSED SMALL SIGN & NUMBER
- EXISTING SMALL SIGN TO BE REMOVED

HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
OMAR ALDUCIN
131479
LICENSED PROFESSIONAL ENGINEER
5/22/2024
P.E.

NO.	DATE	REVISION

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(713) 541-1591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

US 87
SIGNING AND PAVEMENT MARKING
PLAN LAYOUT
STA 1051+00.00 TO END

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		172

DATE: 5/22/2024 7:19:28 PM
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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)

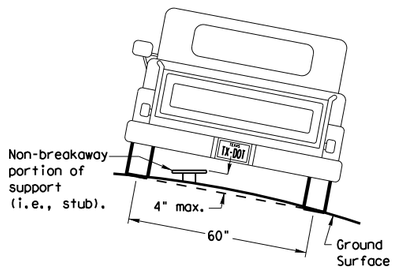
Anchor Type

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))

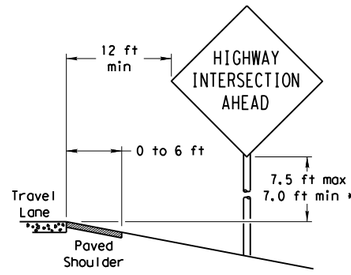
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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).

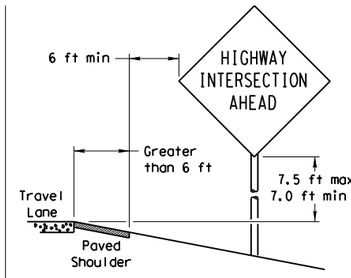
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

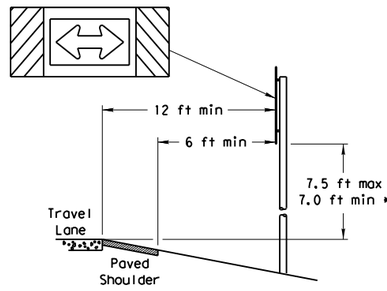
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



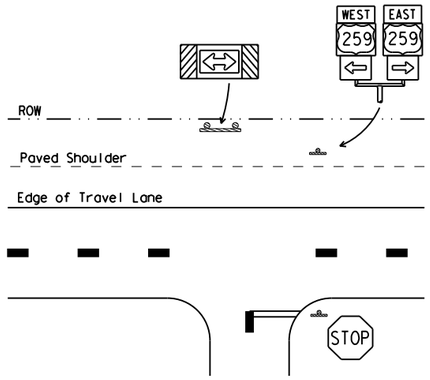
GREATER THAN 6 FT. WIDE

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.

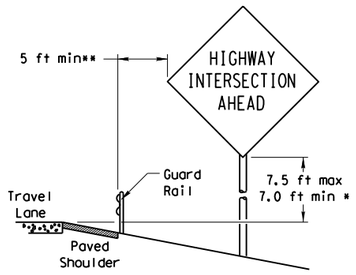
T-INTERSECTION



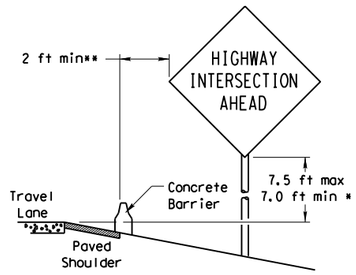
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER

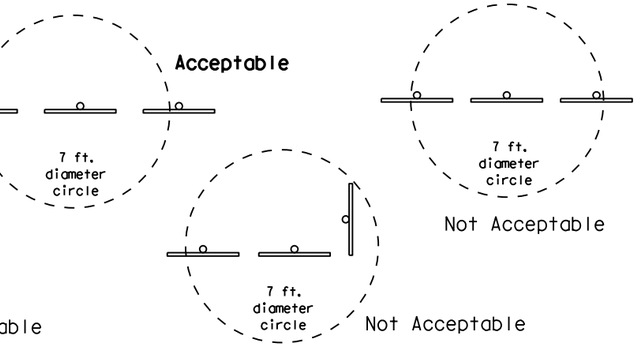


BEHIND GUARDRAIL



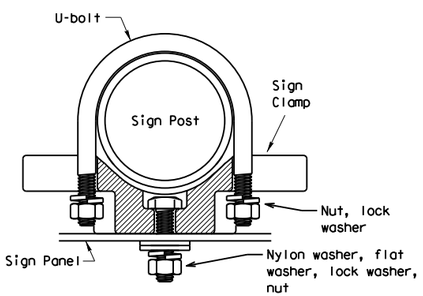
BEHIND CONCRETE BARRIER

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



TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

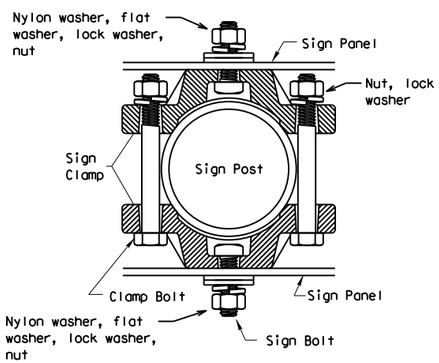


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

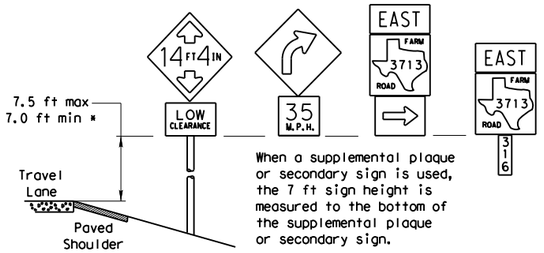
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



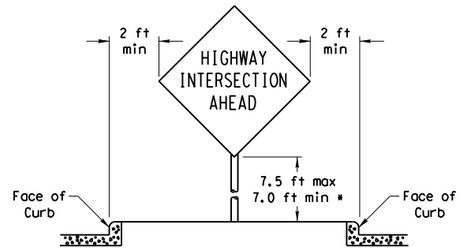
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



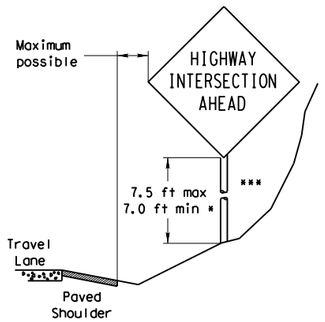
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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.

* 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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

REVISIONS
9-08

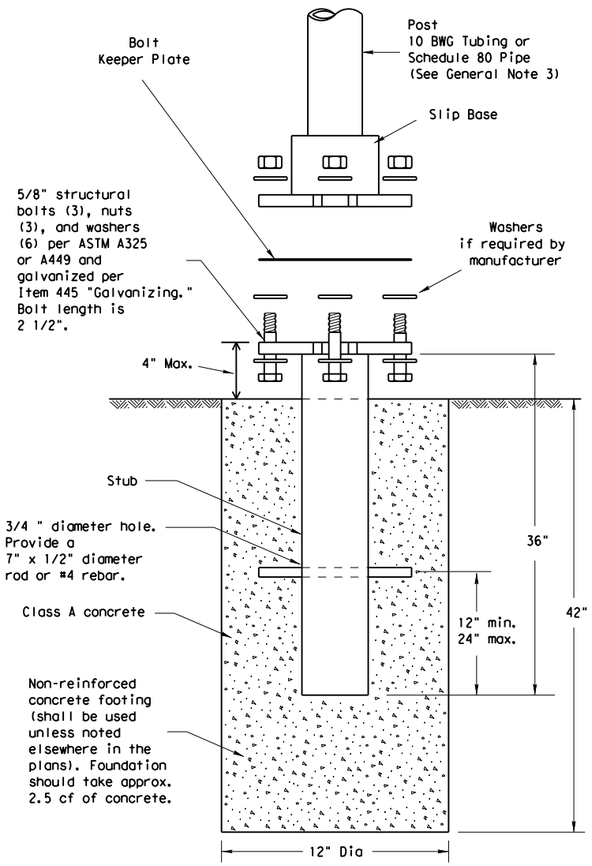
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83

DIST	COUNTY	SHEET NO.
SJT	CONCHO	173

DATE: 5/22/2024 7:23:31 PM
FILE: c:\bmsidgus-pw-01\omar.alducin\dms06719\(1)smdgen.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.

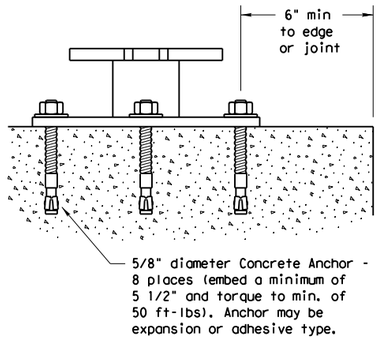
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum 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

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

REVISIONS
9-08

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83

DIST	COUNTY	SHEET NO.
SJT	CONCHO	174

DATE: 5/22/2024 7:24:01 PM
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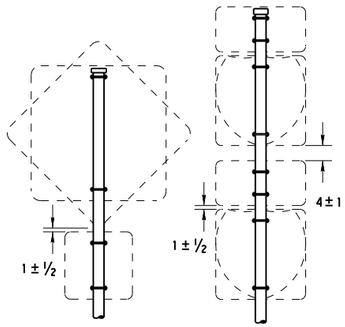
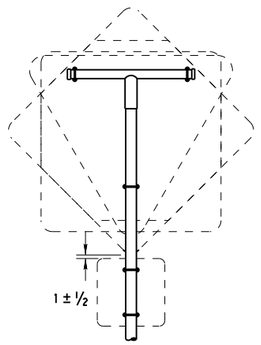
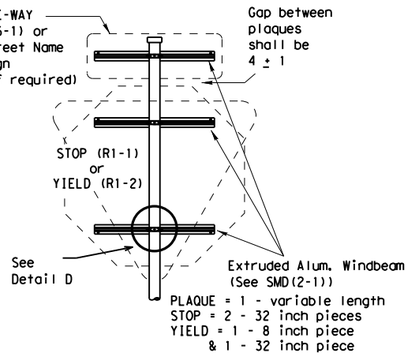


SM RD SGN ASSM TY XXXXX(1)XX(P)

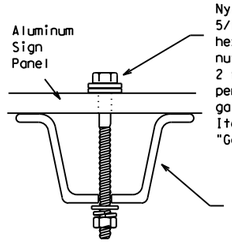


SM RD SGN ASSM TY XXXXX(1)XX(T)



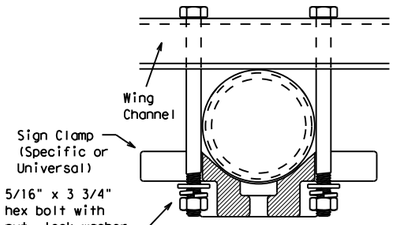
PLAQUE = 1 - variable length
STOP = 2 - 32 inch pieces
YIELD = 1 - 8 inch piece
& 1 - 32 inch piece

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



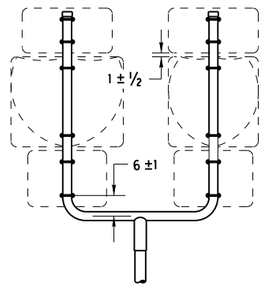
Top View

Detail A

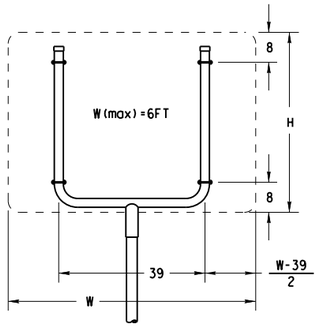


Top View

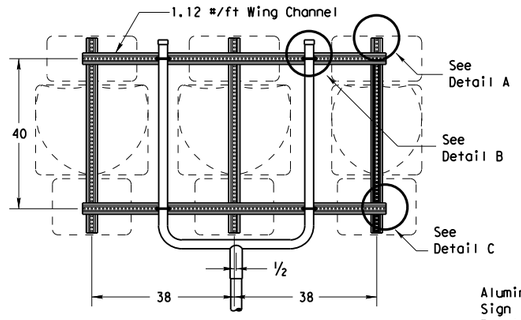
Detail B



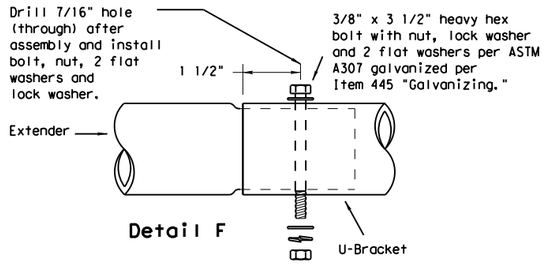
SM RD SGN ASSM TY XXXXX(1)XX(U)



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

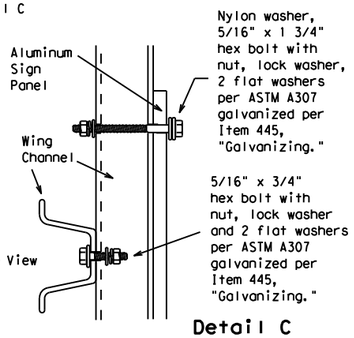


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

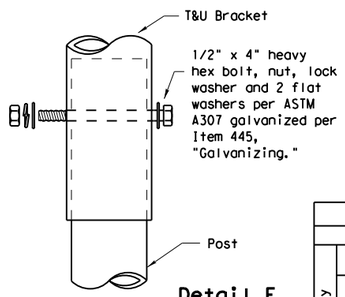


Detail F

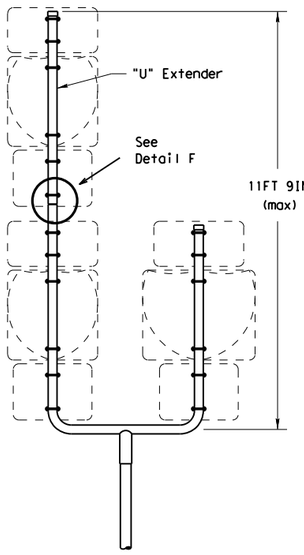
Splices shall only be allowed behind the sign substrate.



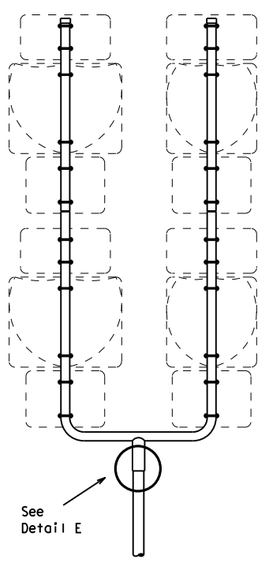
Detail C



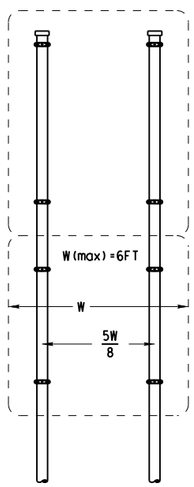
Detail E



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

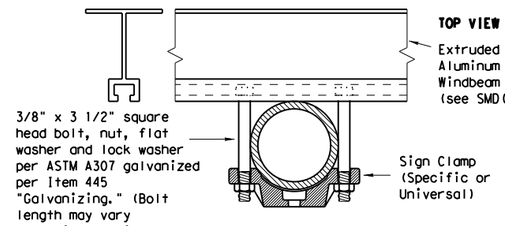


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

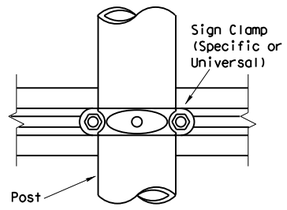


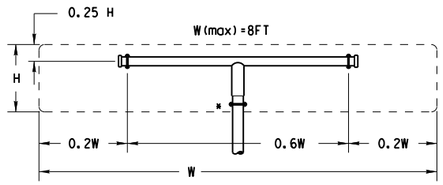
SM RD SGN ASSYM TY XXXXX(2)XX(P)

SIDE VIEW



Detail D

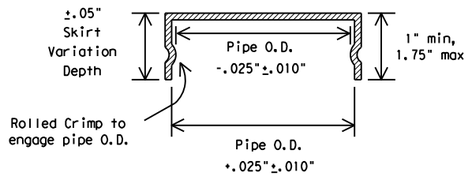




SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

All dimensions are in english unless detailed otherwise.

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.

GENERAL NOTES:

1.

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

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.

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-2)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		175

9-08 REVISIONS

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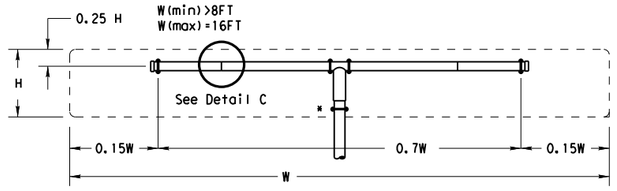
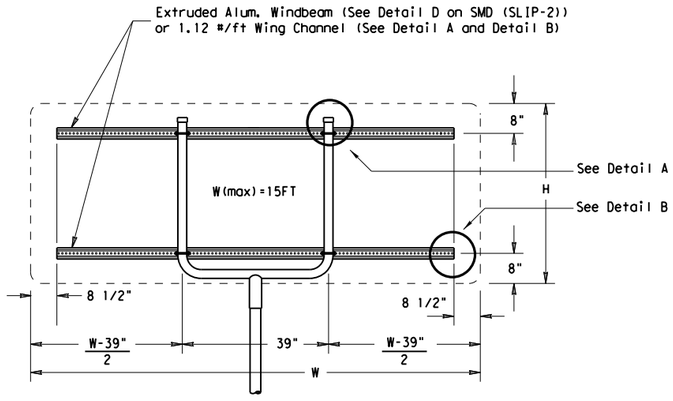
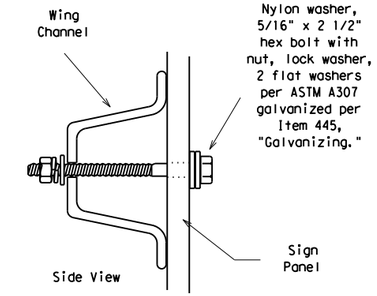


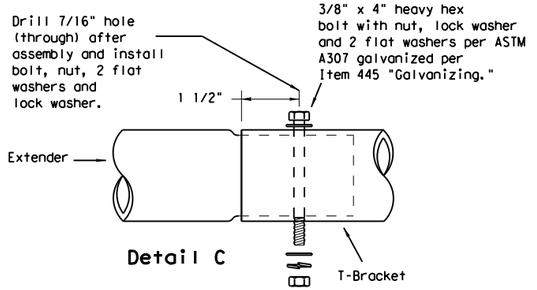
SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



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



Detail B



Detail C

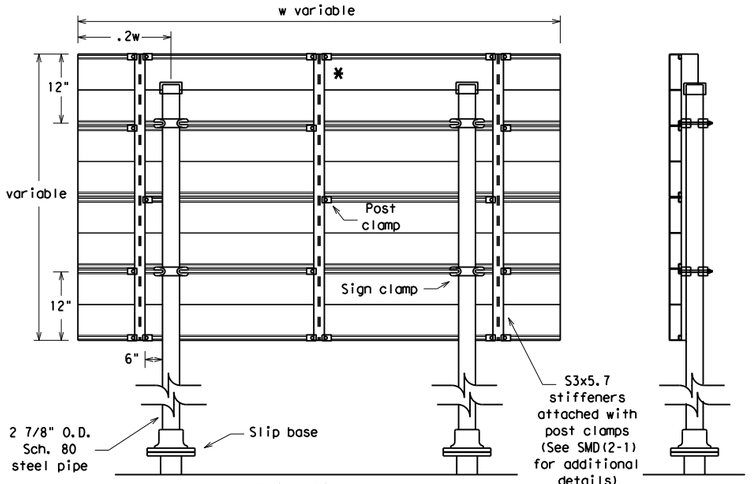
Splices shall only be allowed behind the sign substrate.

GENERAL NOTES:

1.

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

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. Sign blanks shall be the sizes and shapes shown on the plans.
11. 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.
12. Post open ends shall be fitted with Friction Caps.

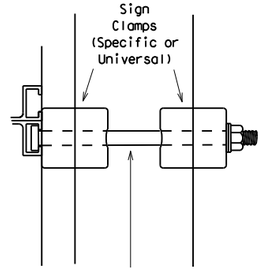


Typical Sign Mount

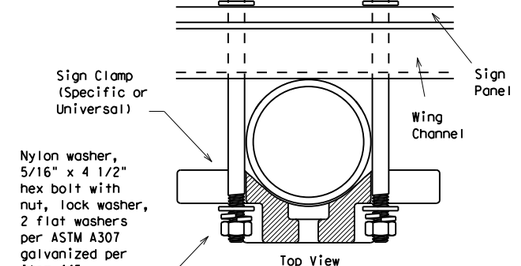
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

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

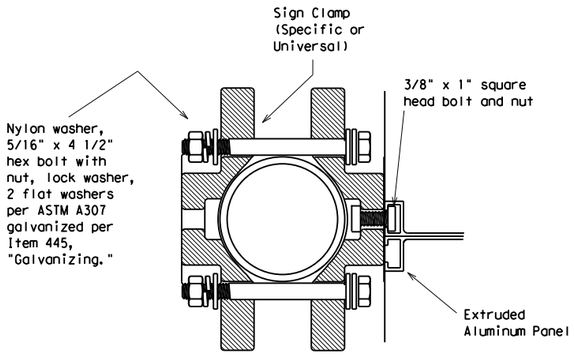
See Detail E
for clamp installation



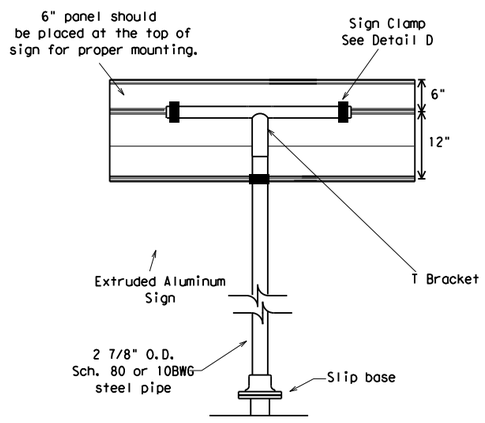
Detail E



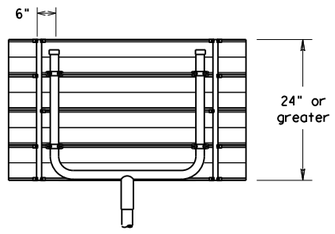
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET



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

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
	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		176

DATE: 5/22/2024 7:25:04 PM
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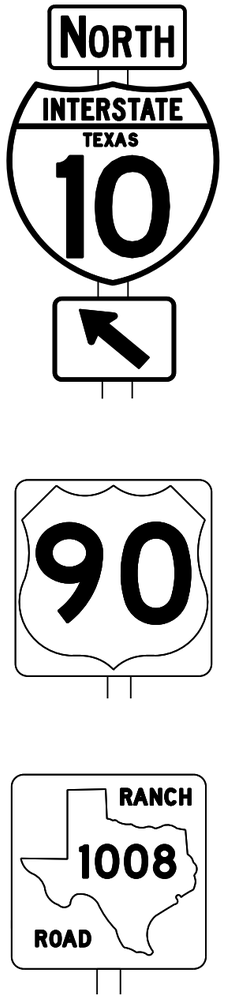
DATE: 5/22/2024 7:25:33 PM
FILE: c:\pw\ideus-pw-01\omar.alducin\dms06719\(5)tsr3-13.dgn

REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

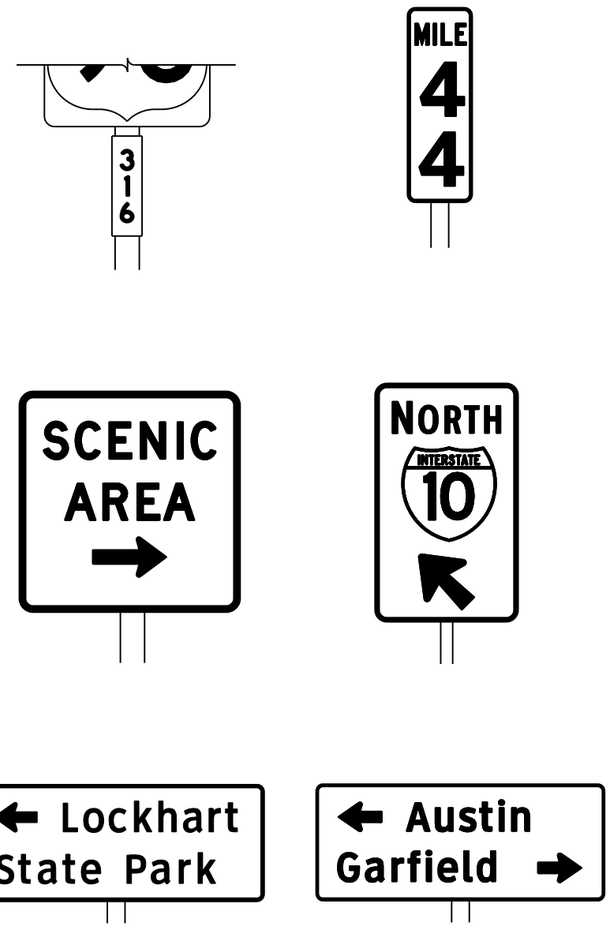
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).

2. White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).

4. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.

5. Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.

6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.

7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.

8. Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

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

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(3)-13

FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	SJT	CONCHO		177

DATE: 5/22/2024 7:26:05 PM
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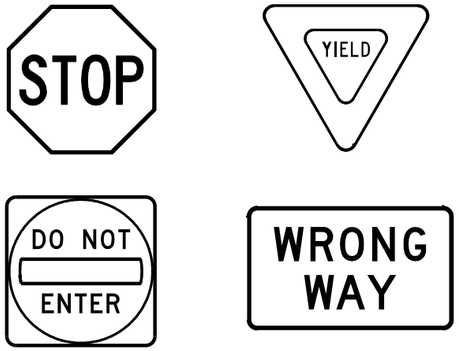
REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

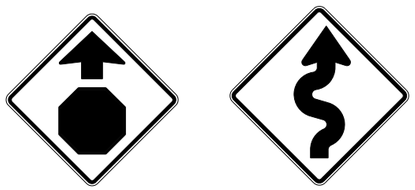
ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
12-03 7-13 9-08	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		178

DATE: 5/22/2024 7:26:38 PM
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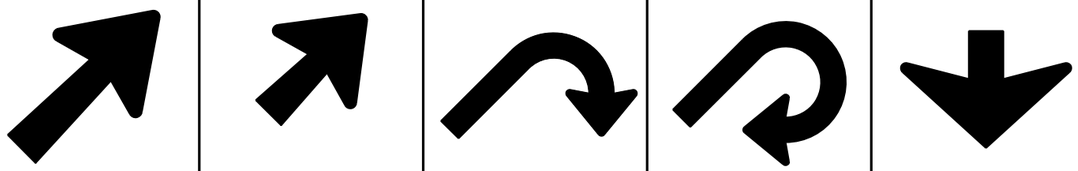
ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

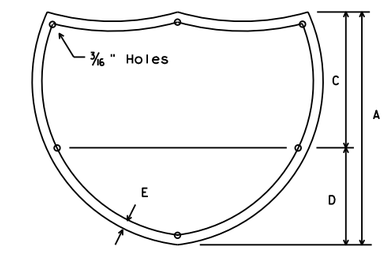
NOTE

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

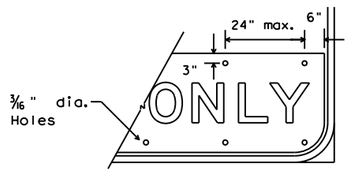
http://www.txdot.gov/

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)

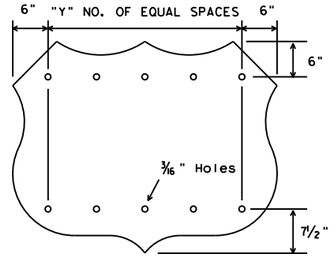


INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4

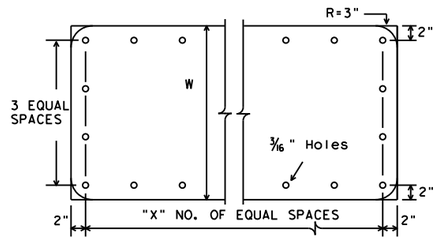


EXIT ONLY PANEL



U.S. ROUTE MARKERS

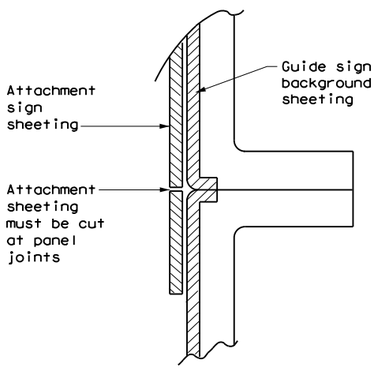
Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5

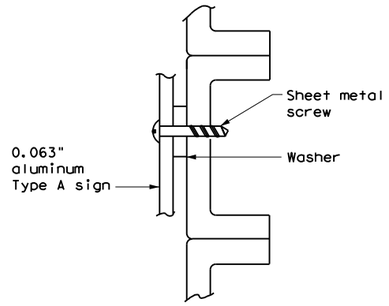
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



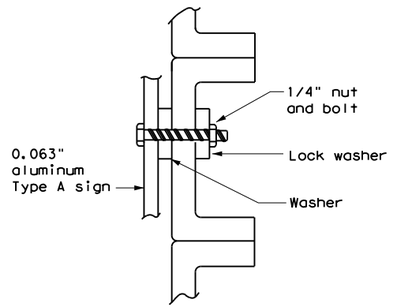
DIRECT APPLIED ATTACHMENT

NOTE:

1. Sheeting for legend, symbols, and borders must be cut at panel joints.
2. Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".



SCREW ATTACHMENT



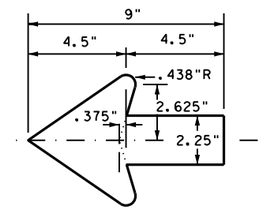
NUT/BOLT ATTACHMENT

NOTE:

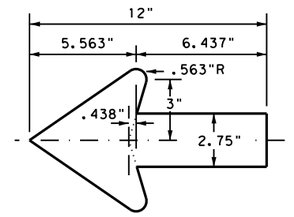
Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

ARROW DETAILS

for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(5)-13

FILE: tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	SJT	CONCHO		179

GENERAL NOTES:

1. Details show a typical warning sign with two flashing beacon heads, other arrangements are possible. When only one beacon is required, install the upper beacon.

2. See Item 685, "Roadside Flashing Beacon Assemblies" for further requirements.

3. See SMD standard sheets for lateral and vertical clearances and sign mounting details. Install signs as shown on the sign layout sheets.

4. Use either a Screw-In Type Anchor Foundation or a Drilled Shaft Foundation as shown elsewhere in the plans. When plans require a Drilled Shaft Foundation, see standard sheet TS-FD. Install the Screw-In Type Anchor Foundation as per manufacturer's recommendations. On a slope, install one edge at ground level. Screw-In/Drilled Shaft Foundation is subsidiary to Item 685. Installation of a ground rod is not required for solar powered flashing beacon assemblies.

5. When used, provide Screw-In Type Anchor Foundations as shown on TxDOT's Material Producer List (MPL) in the file "Highway Traffic Signals".

6. Install beacon heads as shown here, as shown elsewhere on the plans, or as directed. Use hardware specifically designed for mounting beacon heads on poles.

7. Conduit in foundation and within 6 in. of foundation is subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies."

8. Unless otherwise shown on the plans, pole shaft shall be one piece, Schedule 40 Aluminum pipe, ASTM B429 or B221 (Alloy 6061-T6 only). Aluminum conduit will not develop the necessary strength and will not be allowed.

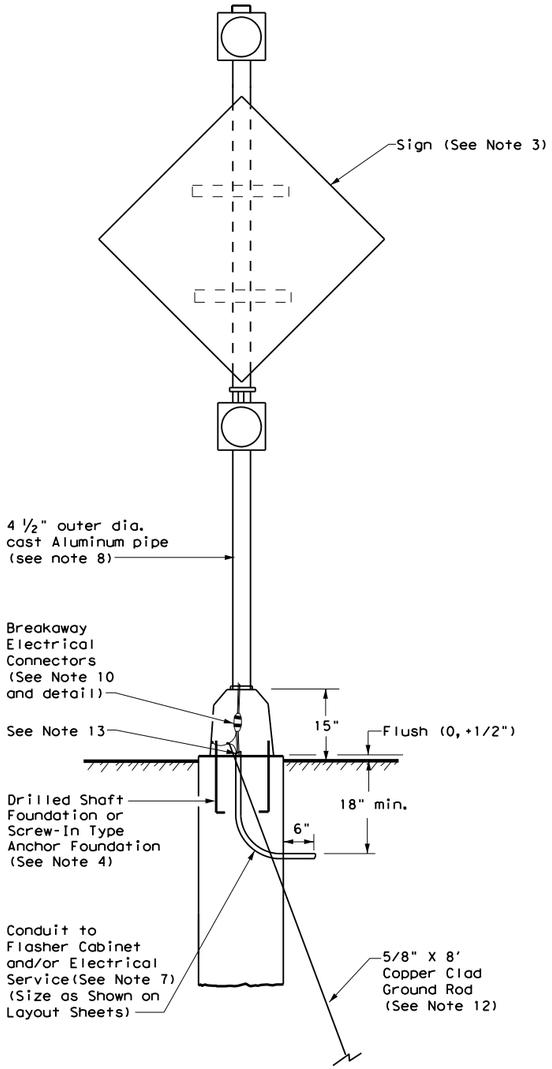
9. Per manufacturer's recommendations, engage all threads on the pedestal pole base and pipe unless the pipe is fully seated into base. In high winds, use a pole and base collar assembly to add strength and prevent loosening of connection.

10. Provide single pole non-fused watertight breakaway electrical connectors for frangible pedestal pole bases, as shown on TxDOT's MPL in the file "Roadway Illumination and Electrical Supplies." Approved models are listed under Item 685. For ungrounded (hot) conductors, install a breakaway connector with a dummy fuse slug). For grounded (neutral) conductors, install a breakaway connector with a white colored marking and a permanently installed dummy fuse (slug).

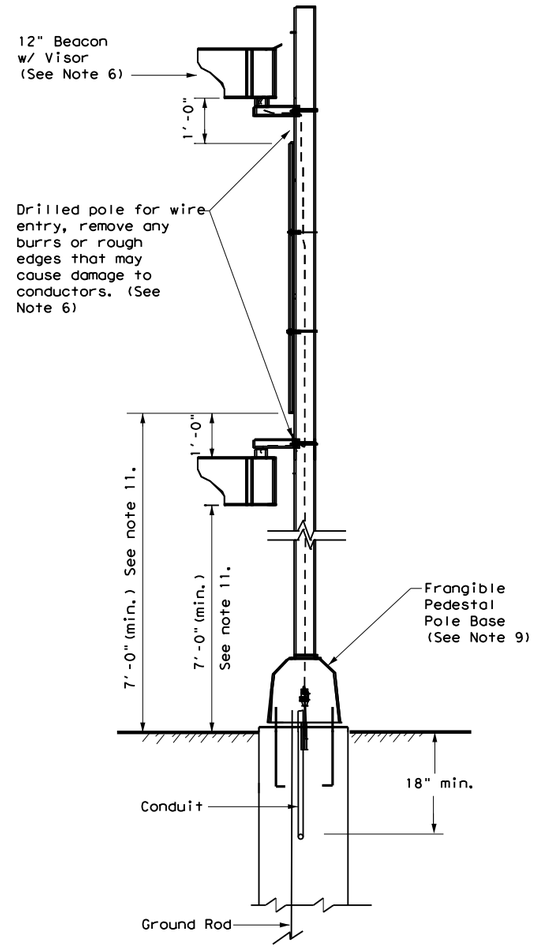
11. Provide clearance as shown above the sidewalk or pavement grade at the edge of the road. When a bottom beacon is not used, mount the bottom of the sign at least 7 ft. above the sidewalk or pavement grade at the edge of the road.

12. Make connections to ground rods according to NEC. Ground rod clamps shall be listed for their intended purpose.

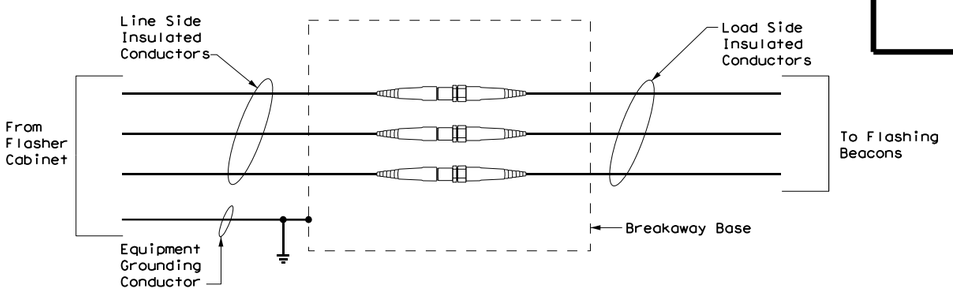
13. Ensure height of conduit and ground rod is below top of anchor bolts.



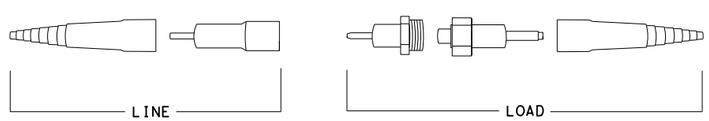
FRONT



SIDE



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS
EXPLODED VIEW

Texas Department of Transportation

Traffic Operations Division Standard

ROADSIDE FLASHING BEACON ASSEMBLY

RFBA-13

FILE: rfba-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS 5-93 12-04 10-93 3-13 4-98	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		180

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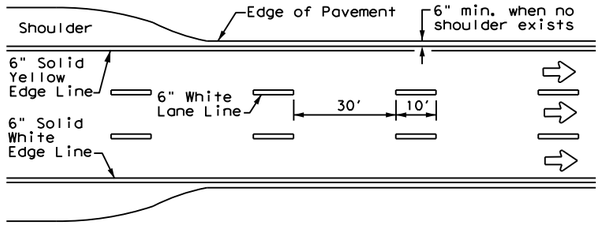
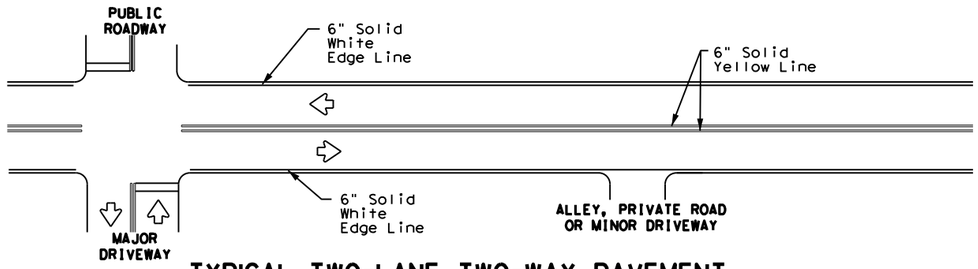
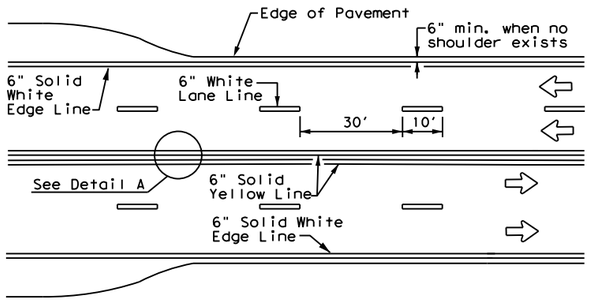
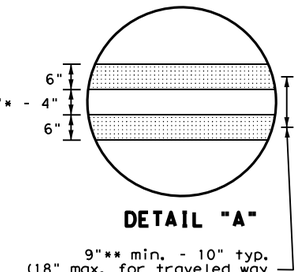


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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

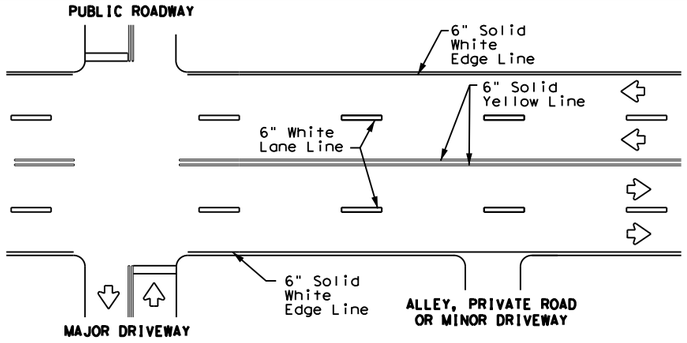




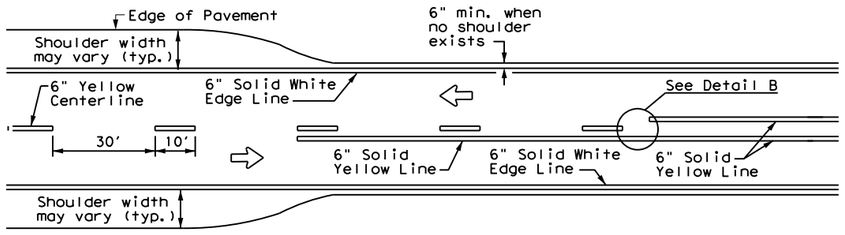
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

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

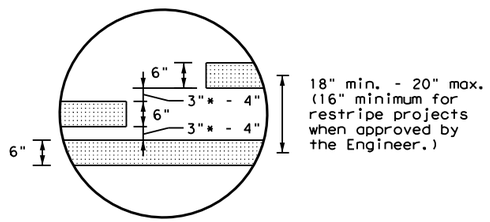
** 8" minimum for restripe projects when approved by the Engineer.



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

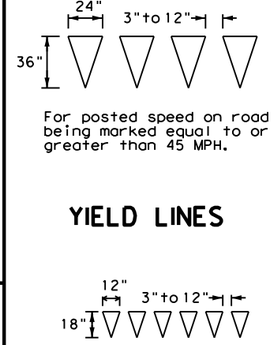


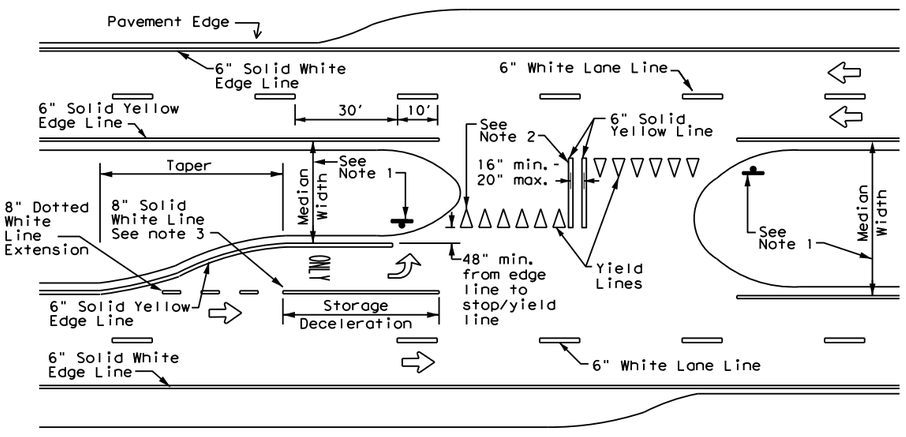
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



DETAIL "B"

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





FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

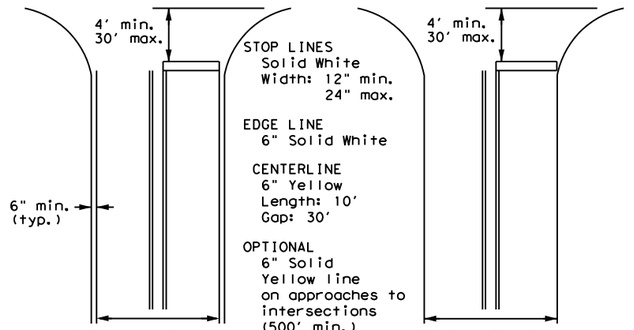
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling 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
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5-00 2-12				

22A

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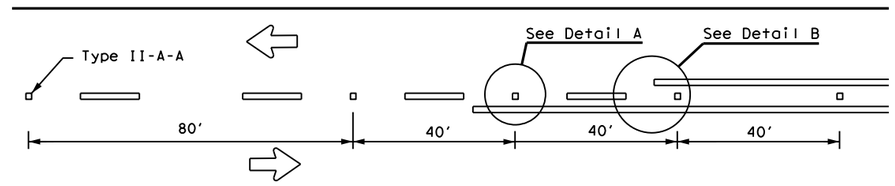
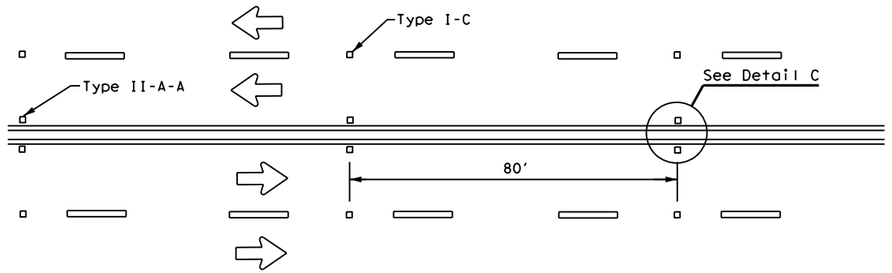
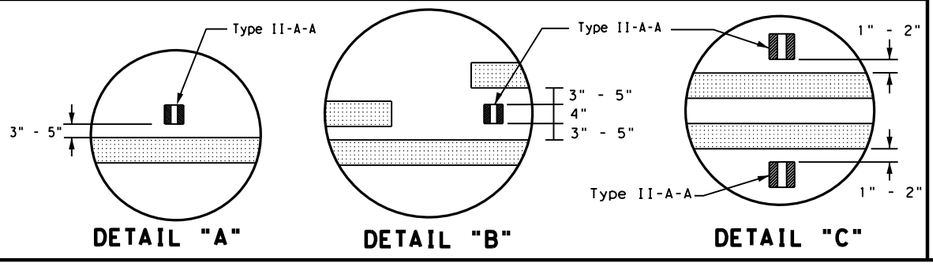
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



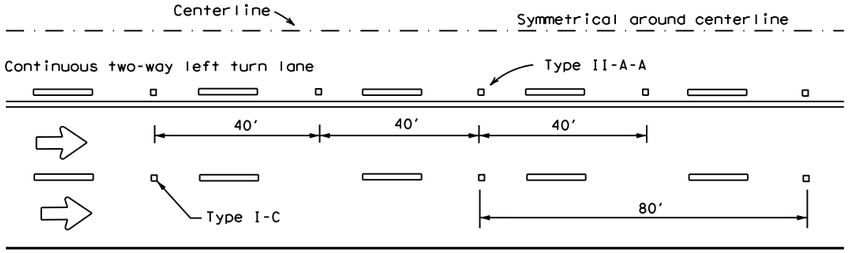
CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



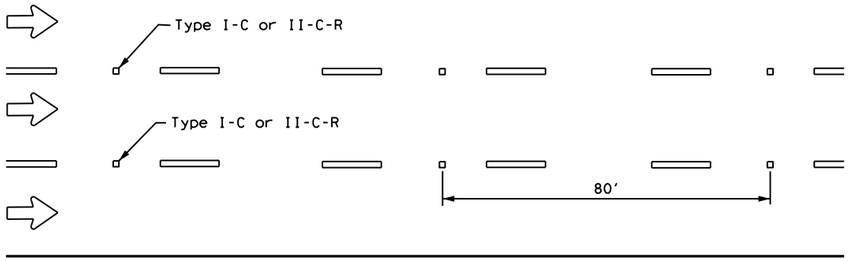
CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS



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



CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



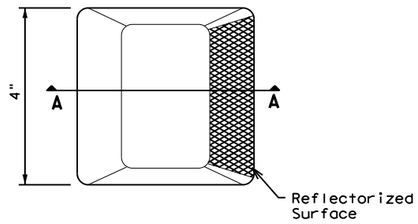
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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

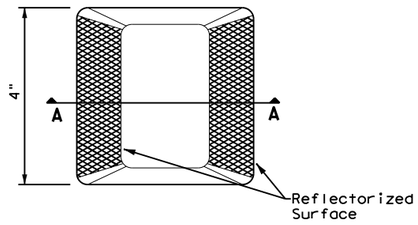
See Note 3.

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

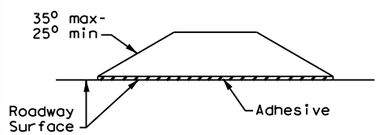
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

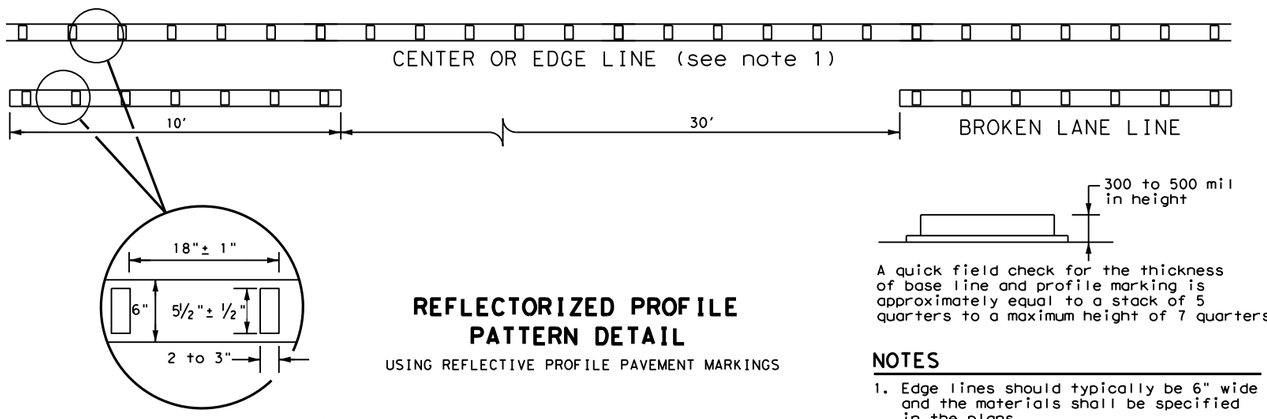


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



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

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

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

NOTES

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

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

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-77 8-00 6-20 4-92 2-10 12-22 5-00 2-12	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		182

22B

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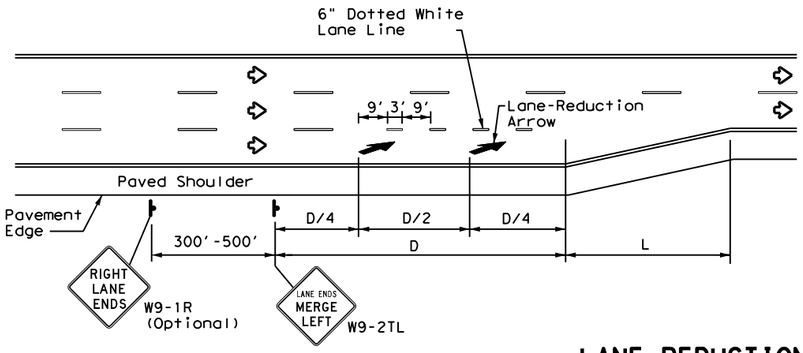


LANE REDUCTION

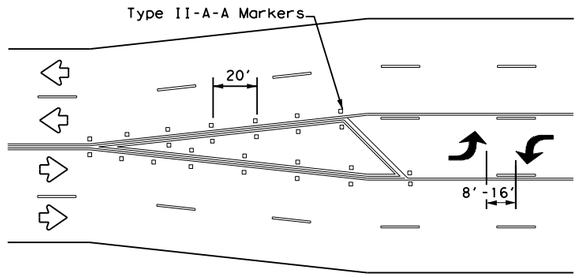
NOTES

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

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

GENERAL NOTES

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

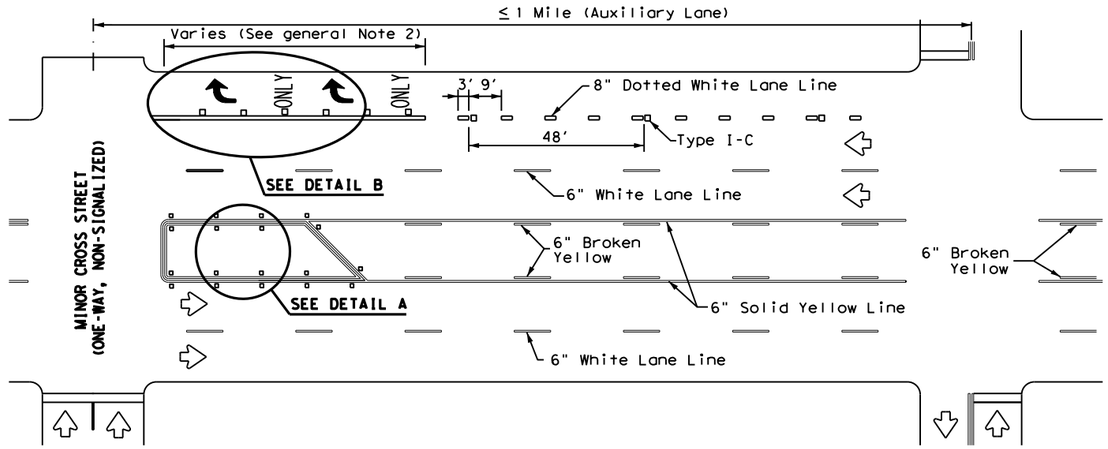


A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

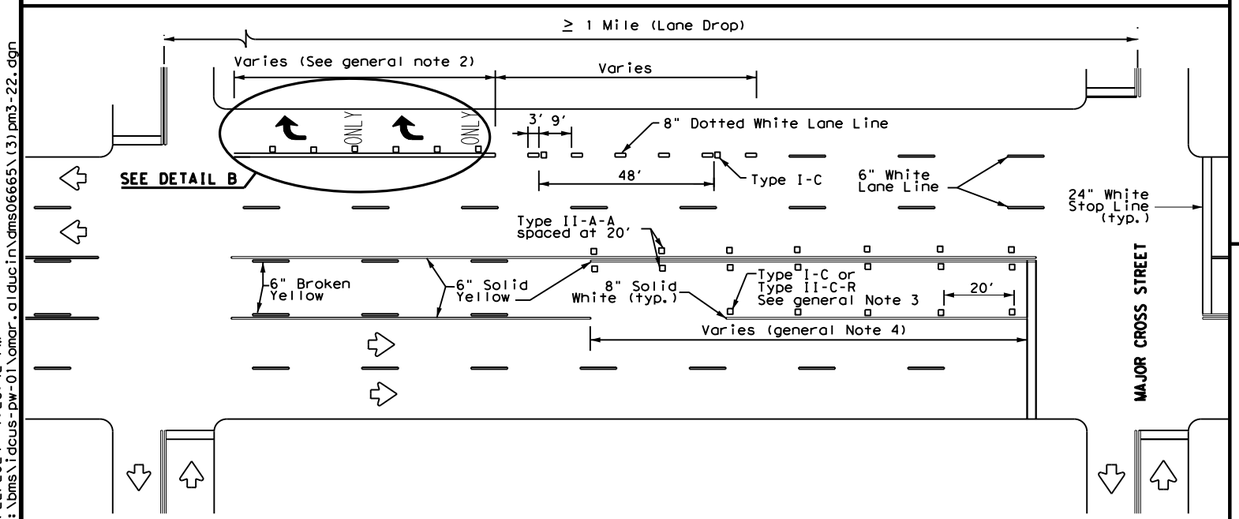
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

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

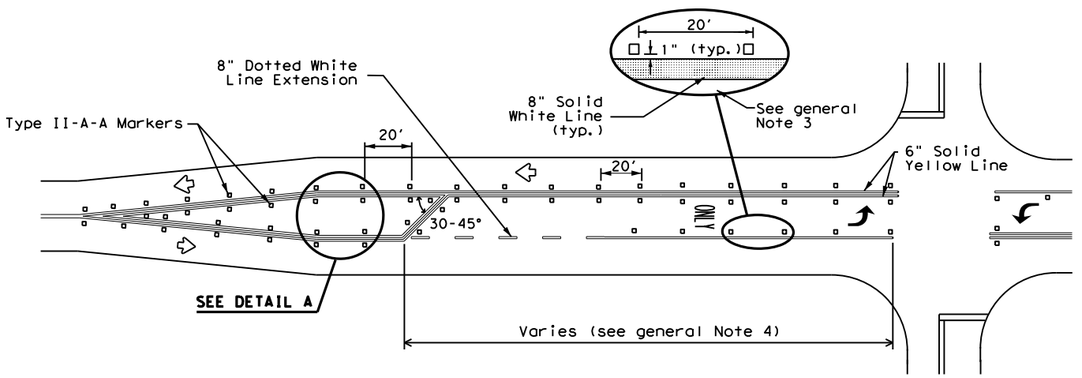
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



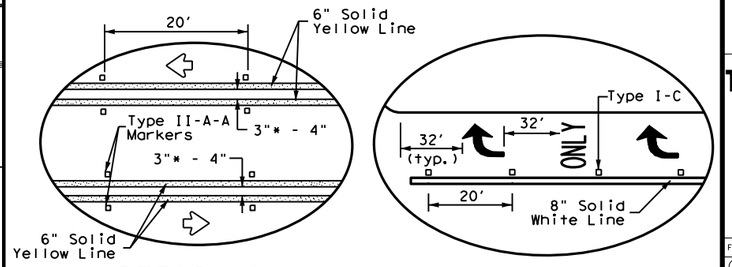
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



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



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



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

Texas Department of Transportation

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS

PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 3-03 6-20 5-00 2-10 12-22 8-00 2-12	0035	03	047	US 83
	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		183

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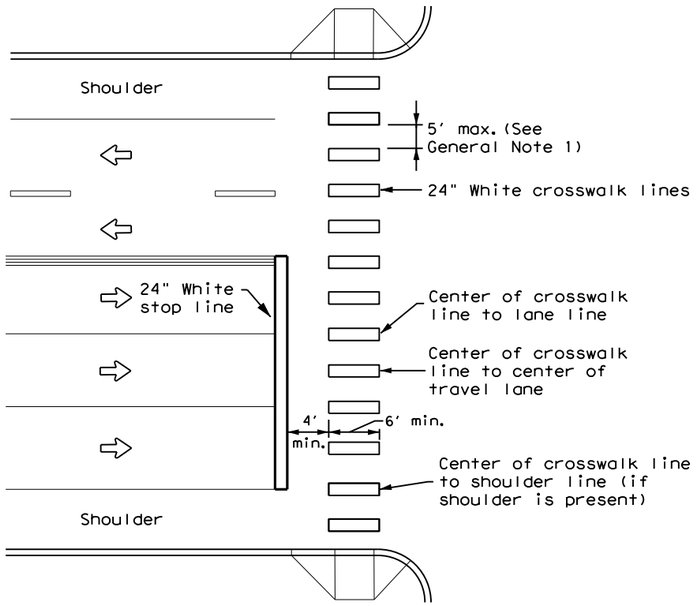


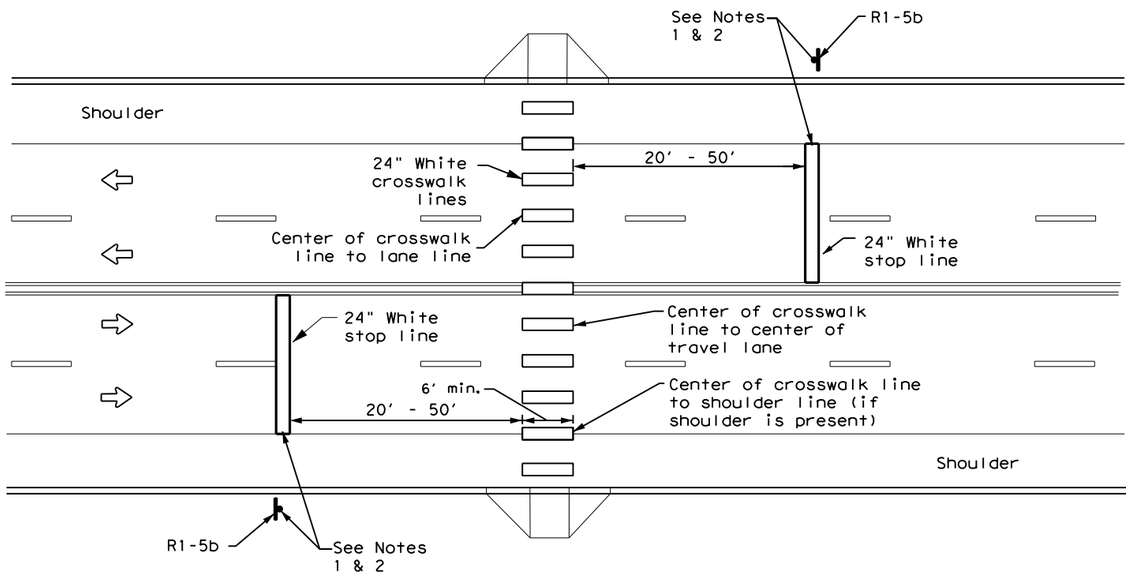
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

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

FILE: pm4-22a.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
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6-20	DIST	COUNTY		SHEET NO.
6-22	SJT	CONCHO		184
12-22				

22D

DATE: 5/22/2024 7:29:21 PM
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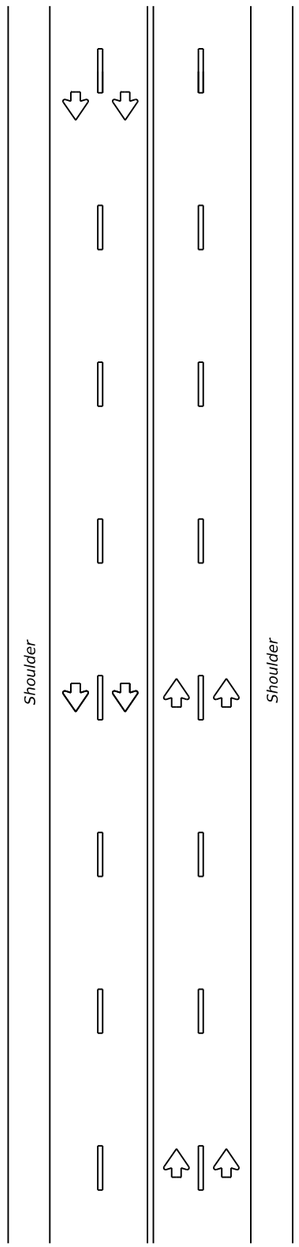
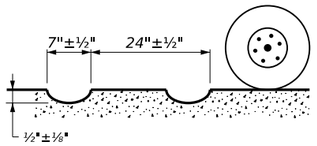
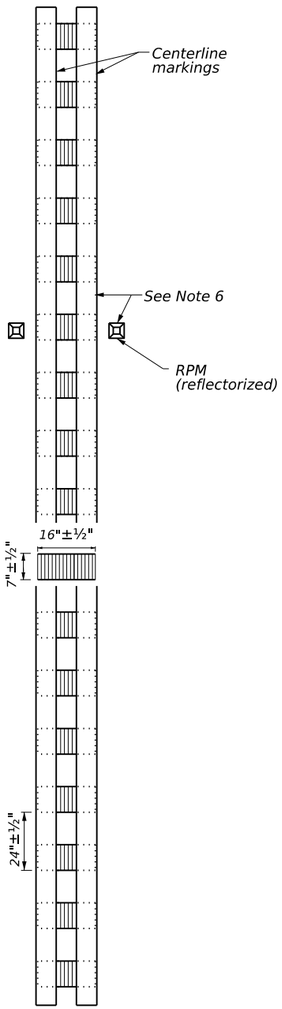
CENTERLINE RUMBLE STRIPS



MULTILANE UNDIVIDED HIGHWAY WITH SHOULDER

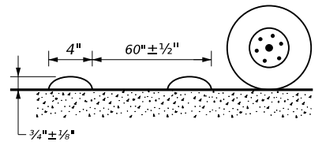


PROFILE VIEW

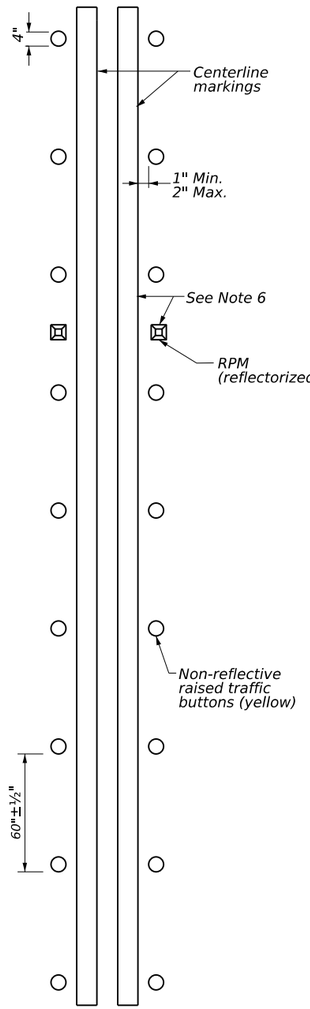


PLAN VIEW
OPTION 1

MILLED CENTERLINE RUMBLE STRIPS

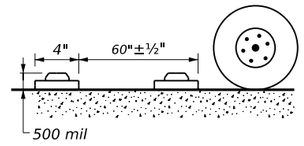


PROFILE VIEW

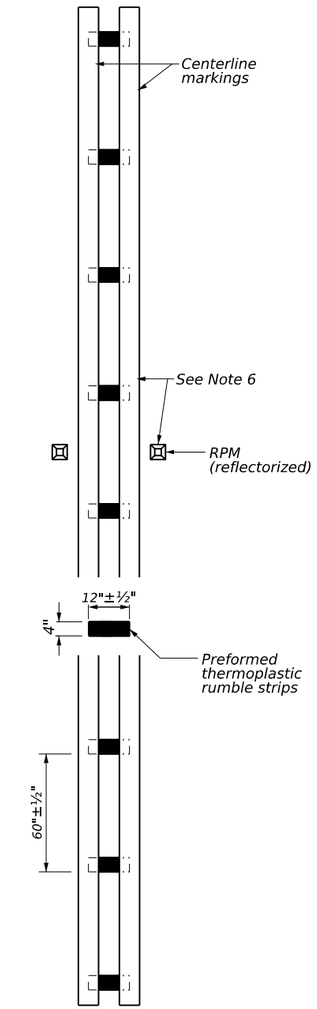


PLAN VIEW
OPTION 2

RAISED CENTERLINE RUMBLE STRIPS

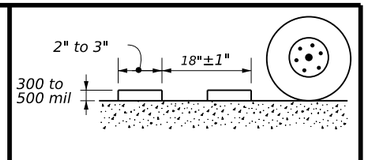


PROFILE VIEW

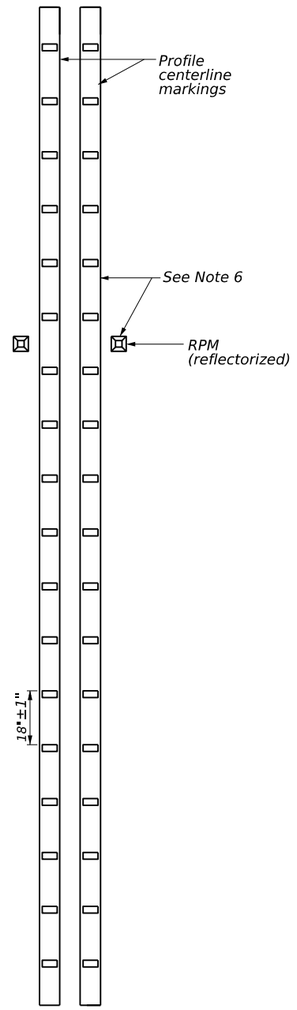


PLAN VIEW
OPTION 3

PREFORMED THERMOPLASTIC RUMBLE STRIPS



PROFILE VIEW



PLAN VIEW
OPTION 4

PROFILE CENTERLINE MARKINGS

GENERAL NOTES

1. *This standard sheet provides guidelines for installing centerline rumble strips on multilane undivided highways.*
2. *Centerline and edge line rumble strips or profile markings shall not be placedon roadways with a posted speed limit of 45 MPH or less.*
3. *Milled rumble strips are preferred when adequate pavement depth is available. If pavement thickness is less than 2 inches, milled rumble strips shall not be used. Rumble strips shall not be milled or depressed into bridge decks.*
4. *See dimensions for milled rumble strips. Other shapes and dimensions may beused if approved by the Traffic Safety Division.*
5. *Breaks in milled centerline rumble strips shall occur at least 50 feet and nomore than 150 feet in advance of bridges, railroad crossing, intersections ordriveways with high usage of large trucks.*
6. *Use standard sheet PM(2) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings and profile markings.*
7. *Consideration should be given to noise levels when centerline rumble strips are to be installed near residential areas, schools, churches, etc. A 3/8 inch deep (minimum) milled rumble strip may be considered in these areas.*
8. *Pavement markings must be applied over milled centerline rumble strips for normal centerline spacing. For wider medians, specify in the plans the exact placement of the rumble strips. Place the rumble strips under each centerline marking or centered in the middle of the median.*

WHEN INSTALLING CENTERLINE RUMBLE STRIPS:

9. *Raised rumble strips consisting of non-reflective raised traffic buttons may be used. Non-reflective raised traffic buttons can be affixed to asphalt or concrete with bitumen or adhesives, as per manufacturer's recommendations.*
10. *When using non-reflective raised traffic buttons as a centerline rumble strip, the button shall be placed adjacent to the pavement marking delineating the centerline. The color of the button should be yellow for a continuous no passing roadway. The button will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.*
11. *Consideration shall be given to bicyclists. See RS(6).*

WHEN INSTALLING EDGE LINE RUMBLE STRIPS WITH OR WITHOUT CENTERLINE RUMBLE STRIPS ON UNDIVIDED HIGHWAYS:

12. *See standard sheet RS(2).*

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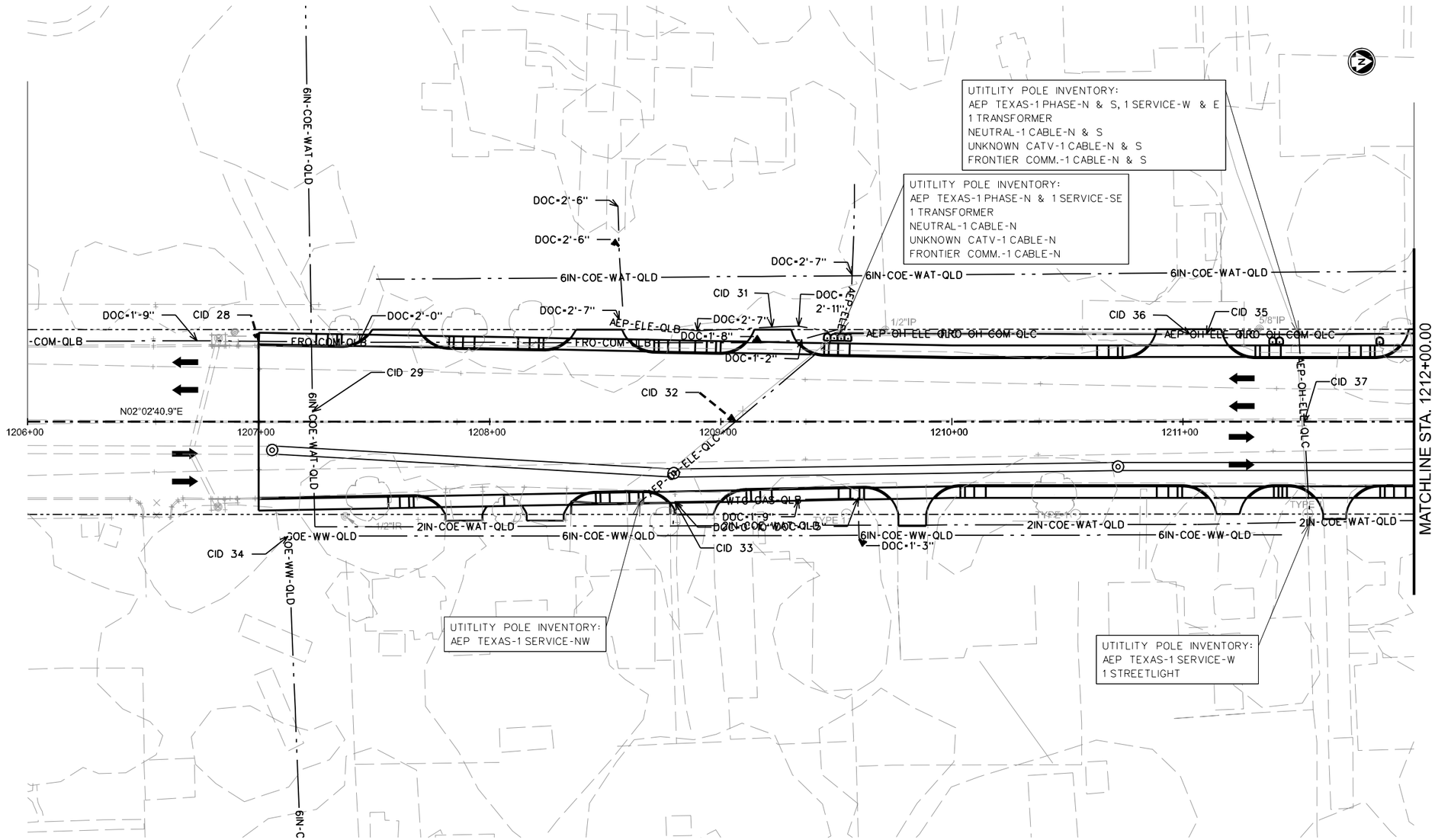
Texas Department of Transportation

Traffic Safety Division Standard

CENTERLINE RUMBLE STRIPS ON MULTILANE UNDIVIDED HIGHWAYS RS(3)-23

FILE: rs(3)-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
10-13 1-23	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		185



SUE LEVEL	LINESTYLES	COMMUNICATION
B	CTT-COM-QLB	CTTC
D	CTT-COM-QLD	CTTC
B	FRO-COM-QLB	FRONTIER
D	FRO-COM-QLD	FRONTIER
C	FRO-OH-COM-QLC	FRONTIER OVHD
D	FRO-OH-COM-QLD	FRONTIER OVHD
		ELECTRIC
B	AEP-ELE-QLB	AEP TEXAS
D	AEP-OH-ELE-QLD	AEP TEXAS OVHD
C	AEP-OH-ELE-QLC	AEP TEXAS OVHD
B	TXDOT-TS ELE-QLB	TXDOT TRAFFIC SIGNAL
		GAS
B	WTG-GAS-QLB	WEST TEXAS GAS
D	WTG-GAS-QLD	WEST TEXAS GAS
		WATER & WASTEWATER
D	COE-WAT-QLD	CITY OF EDEN
C	COE-WW-QLC	CITY OF EDEN
D	COE-WW-QLD	CITY OF EDEN

DOC (DEPTH OF COVER)
CID (CONFLICT IDENTIFICATION)

UTILITY NOTES:
1. THE UTILITIES SHOWN ARE DEPICTED IN ACCORDANCE WITH ASCE/CI 38-22 AS SUBSURFACE UTILITY ENGINEERING QUALITY LEVELS A, B, C & D.
2. THE QUALITY LEVEL C & D UTILITIES ARE TAKEN FROM RECORDS RESEARCH AND VISIBLE SURFACE FEATURE INFORMATION THAT WAS PROVIDED BY OTHERS WITH VARYING ACCURACY.
3. THE QUALITY LEVEL B UTILITIES ARE DESIGNATED WITH NONDESTRUCTIVE GEOPHYSICAL TECHNIQUES AND ARE LIMITED BY SIGNAL BLEED OVER DUE TO CONGESTED UTILITES AND CANNOT NORMALLY DETECT UTILITIES MADE OF NON-CONDUCTIVE MATERIALS SUCH AS PVC OR CONCRETE. THE DEPTHS OF COVER SHOWN ARE GENERATED FROM THE GEOPHYSICAL INSTRUMENTATION AND ARE NOT TO BE CONSIDERED ACCURATE FOR DESIGN PURPOSES.
4. THE QUALITY LEVEL A TESTHOLE INFORMATION IDENTIFIES THE SIZE, DIRECTION & DEPTH OF THE GIVEN UTILITY AT A SINGLE EXPOSED LOCATION AND CANNOT BE ASSUMED FOR THE LENGTH OF THE UTILITY.
5. THE UTILITY INFORMATION CONTAINED IN THESE DOCUMENTS DOES NOT RELIEVE THE CONTRACTORS FROM THEIR RESPONSIBILITIES TO COMPLY WITH THE STATE OF TEXAS UTILITY DAMAGE PREVENTION LAWS AND REGULATIONS.

HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
GABRIELLE MARTINEZ
135609
LICENSED PROFESSIONAL ENGINEER
5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPE/LS FIRM # F-6825

RODS SUE
6810 LEE RD. STE.300
SPRING, TEXAS 77379
TEL. 281-257-5248
TBPE NO. F-10055

US 83

US 83
EXISTING UTILITY LAYOUT
BEGIN TO STA 1212+00.00

SHEET 1 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		186

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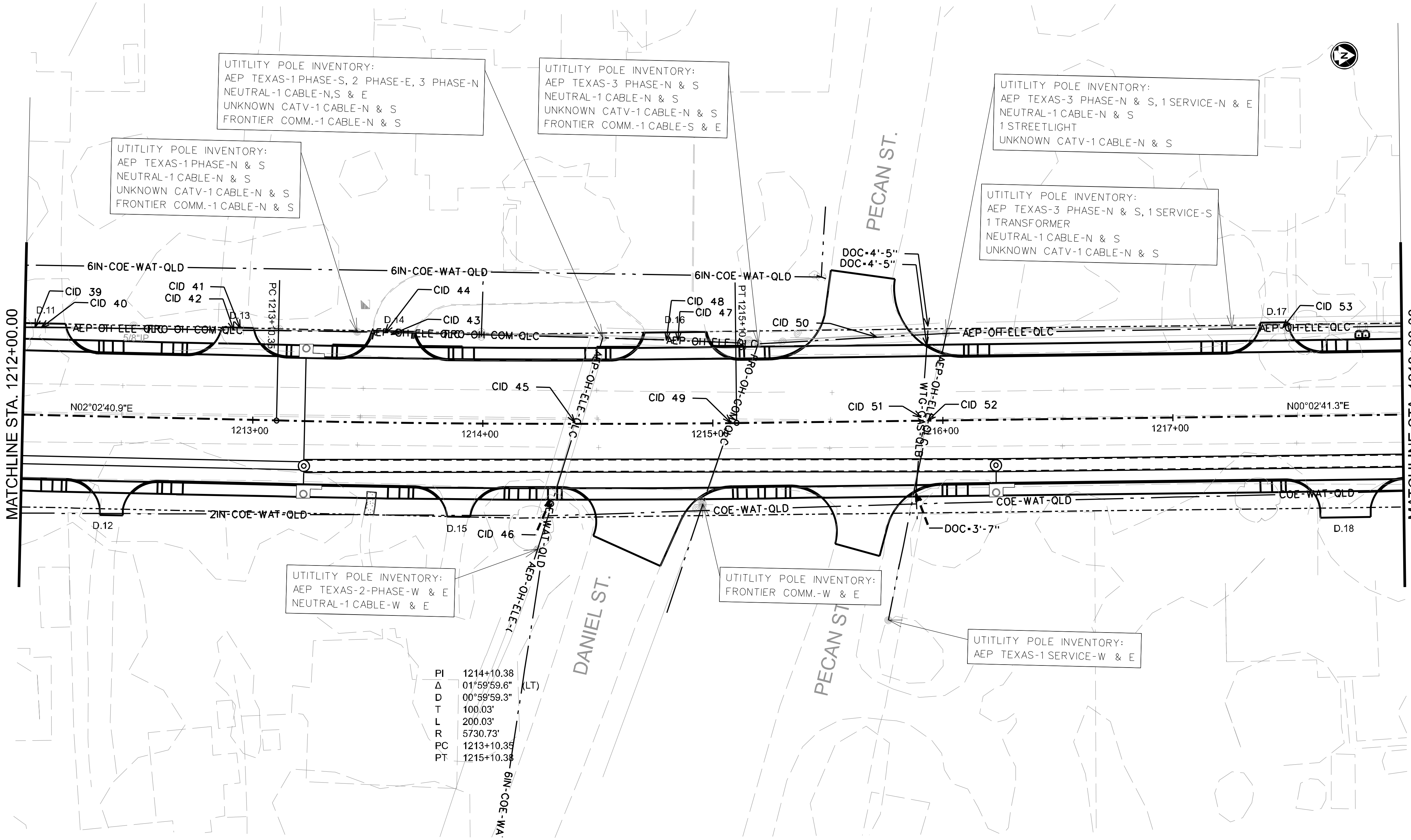

SUE LEVEL	LINESTYLES	COMMUNICATION
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D	CTT-COM-QLD	CTTC
B	FRO-COM-QLB	FRONTIER
D	FRO-COM-QLD	FRONTIER
C	FRO-OH-COM-QLC	FRONTIER OVHD
D	FRO-OH-COM-QLD	FRONTIER OVHD
		ELECTRIC
B	AEP-ELE-QLB	AEP TEXAS
D	AEP-OH-ELE-QLD	AEP TEXAS OVHD
C	AEP-OH-ELE-QLC	AEP TEXAS OVHD
B	TXDOT-TS ELE-QLB	TXDOT TRAFFIC SIGNAL
		GAS
B	WTG-GAS-QLB	WEST TEXAS GAS
D	WTG-GAS-QLD	WEST TEXAS GAS
		WATER & WASTEWATER
D	COE-WAT-QLD	CITY OF EDEN
C	COE-WW-QLC	CITY OF EDEN
D	COE-WW-QLD	CITY OF EDEN

DOC (DEPTH OF COVER)
CID (CONFLICT IDENTIFICATION)

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HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
GABRIELLE MARTINEZ
135609
LICENSED
PROFESSIONAL ENGINEER
5/22/2024

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS
PLANNERS | ENGINEERS | MANAGERS
IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

RODS SUE
6810 LEE RD. STE.300
SPRING, TEXAS 77379
TEL. 281-257-5248
TBPE NO. F-10055

US 83

US 83
EXISTING UTILITY LAYOUT
STA 1212+00.00 TO STA 1218+00.00

SHEET 2 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST		COUNTY	SHEET NO.
SJT		CONCHO	187

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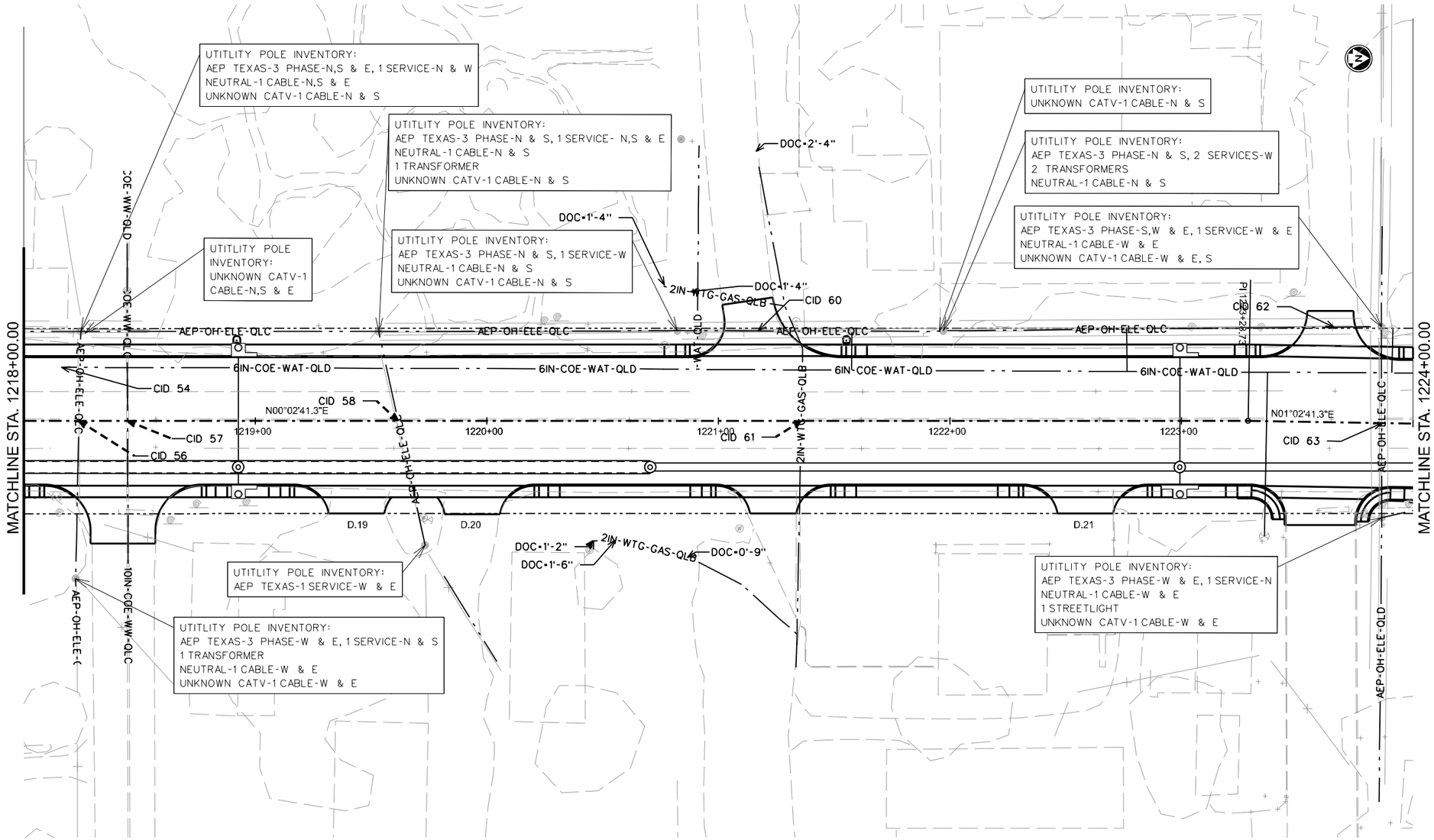

SUE LEVEL	LINESTYLES	COMMUNICATION
B	CTT-COM-QLB	CTTC
D	CTT-COM-QLD	CTTC
B	FRO-COM-QLB	FRONTIER
D	FRO-COM-QLD	FRONTIER
C	FRO-OH-COM-QLC	FRONTIER OVHD
D	FRO-OH-COM-QLD	FRONTIER OVHD
		ELECTRIC
B	AEP-ELE-QLB	AEP TEXAS
D	AEP-OH-ELE-QLD	AEP TEXAS OVHD
C	AEP-OH-ELE-QLC	AEP TEXAS OVHD
B	TXDOT-TS ELE-QLB	TXDOT TRAFFIC SIGNAL
		GAS
B	WTG-GAS-QLB	WEST TEXAS GAS
D	WTG-GAS-QLD	WEST TEXAS GAS
		WATER & WASTEWATER
D	COE-WAT-QLD	CITY OF EDEN
C	COE-WW-QLC	CITY OF EDEN
D	COE-WW-QLD	CITY OF EDEN

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HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
GABRIELLE MARTINEZ
135609
LICENSED PROFESSIONAL ENGINEER
5/22/2024

NO.	DATE	REVISION

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RODS SUE
6810 LEE RD. STE.300
SPRING, TEXAS 77379
TEL 281-257-5248
TBPE NO. F-10055

US 83

US 83
EXISITNG UTILITY LAYOUT
STA 1218+00.00 TO STA 1224+00.00

SHEET 3 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		188

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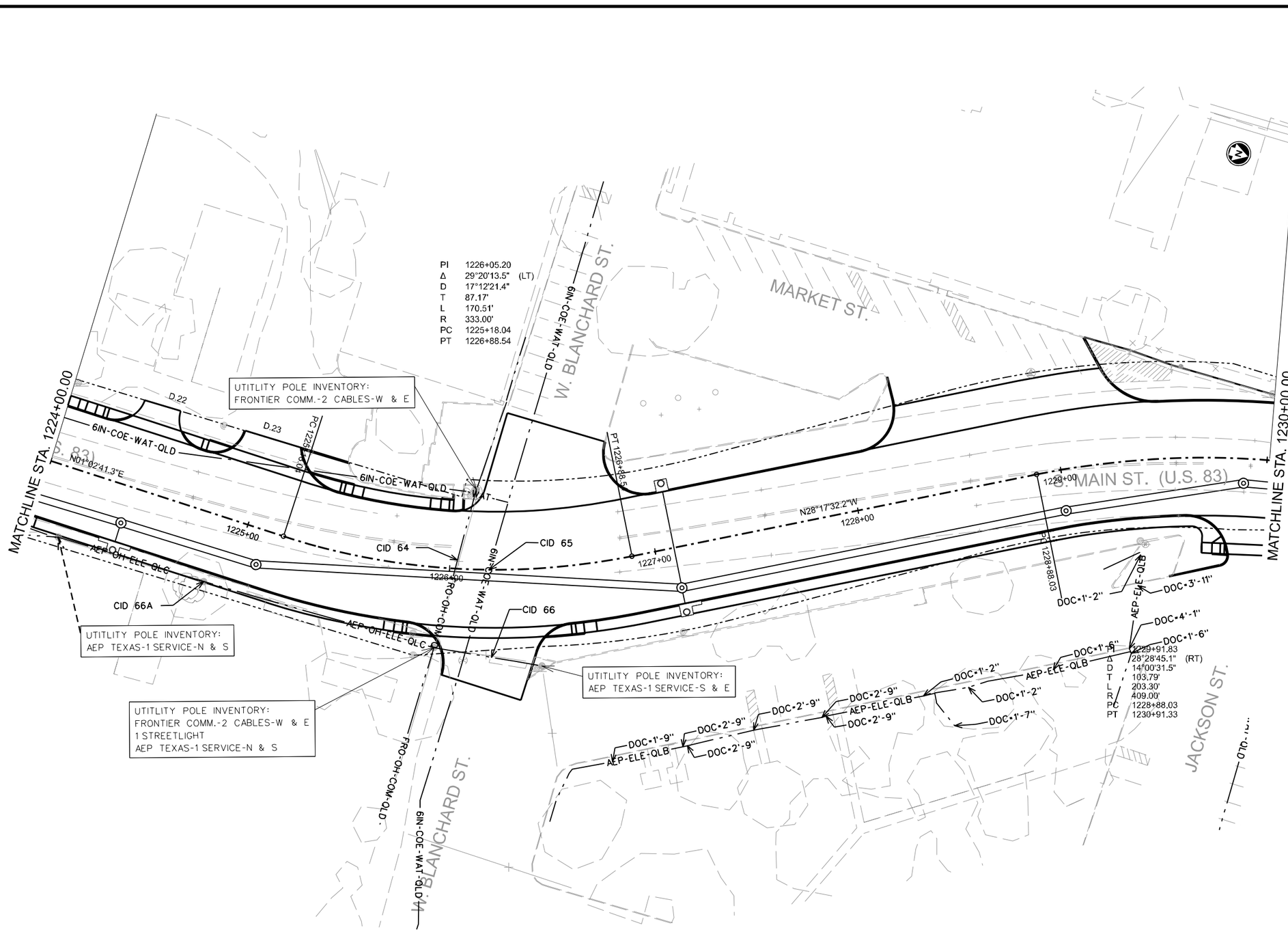

SUE LEVEL — LINESTYLES — COMMUNICATION

B	CTT-COM-QLB	CTTC
D	CTT-COM-QLD	CTTC
B	FRO-COM-QLB	FRONTIER
D	FRO-COM-QLD	FRONTIER
C	FRO-OH-COM-QLC	FRONTIER OVHD
D	FRO-OH-COM-QLD	FRONTIER OVHD

ELECTRIC

B	AEP-ELE-QLB	AEP TEXAS
D	AEP-OH-ELE-QLD	AEP TEXAS OVHD
C	AEP-OH-ELE-QLC	AEP TEXAS OVHD
B	TXDOT-TS ELE-QLB	TXDOT TRAFFIC SIGNAL

GAS

B	WTG-GAS-QLB	WEST TEXAS GAS
D	WTG-GAS-QLD	WEST TEXAS GAS

WATER & WASTEWATER

D	COE-WAT-QLD	CITY OF EDEN
C	COE-WW-QLC	CITY OF EDEN
D	COE-WW-QLD	CITY OF EDEN

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CID (CONFLICT IDENTIFICATION)

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TBPE NO. F-10055

US 83

US 83
EXISTING UTILITY LAYOUT
STA 1224+00.00 TO STA 1230+00.00

SHEET 4 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		189

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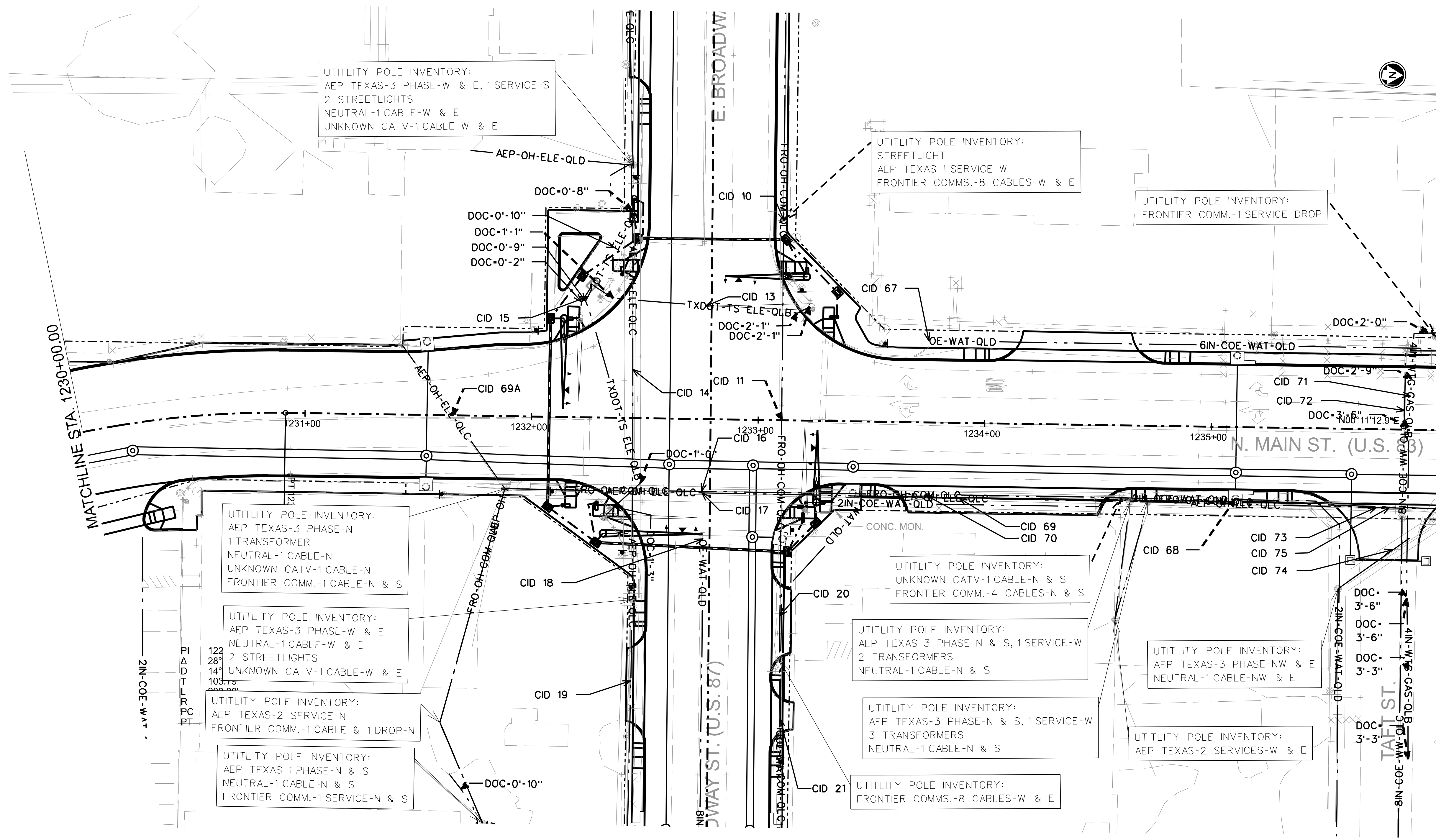

SUE LEVEL	LINESTYLES	
		COMMUNICATION
B	CTT-COM-QLB	CTTC
D	CTT-COM-QLD	CTTC
B	FRO-COM-QLB	FRONTIER
D	FRO-COM-QLD	FRONTIER
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D	FRO-OH-COM-QLD	FRONTIER OVHD
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B	AEP-ELE-QLB	AEP TEXAS
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B	TXDOT-TS ELE-QLB	TXDOT TRAFFIC SIGNAL
		GAS
B	WTG-GAS-QLB	WEST TEXAS GAS
D	WTG-GAS-QLD	WEST TEXAS GAS
		WATER & WASTEWATER
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US 83

US 83
EXISTING UTILITY LAYOUT
STA 1230+00.00 TO STA 1236+00.00

SHEET 5 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST		COUNTY	SHEET NO.
SJT		CONCHO	190

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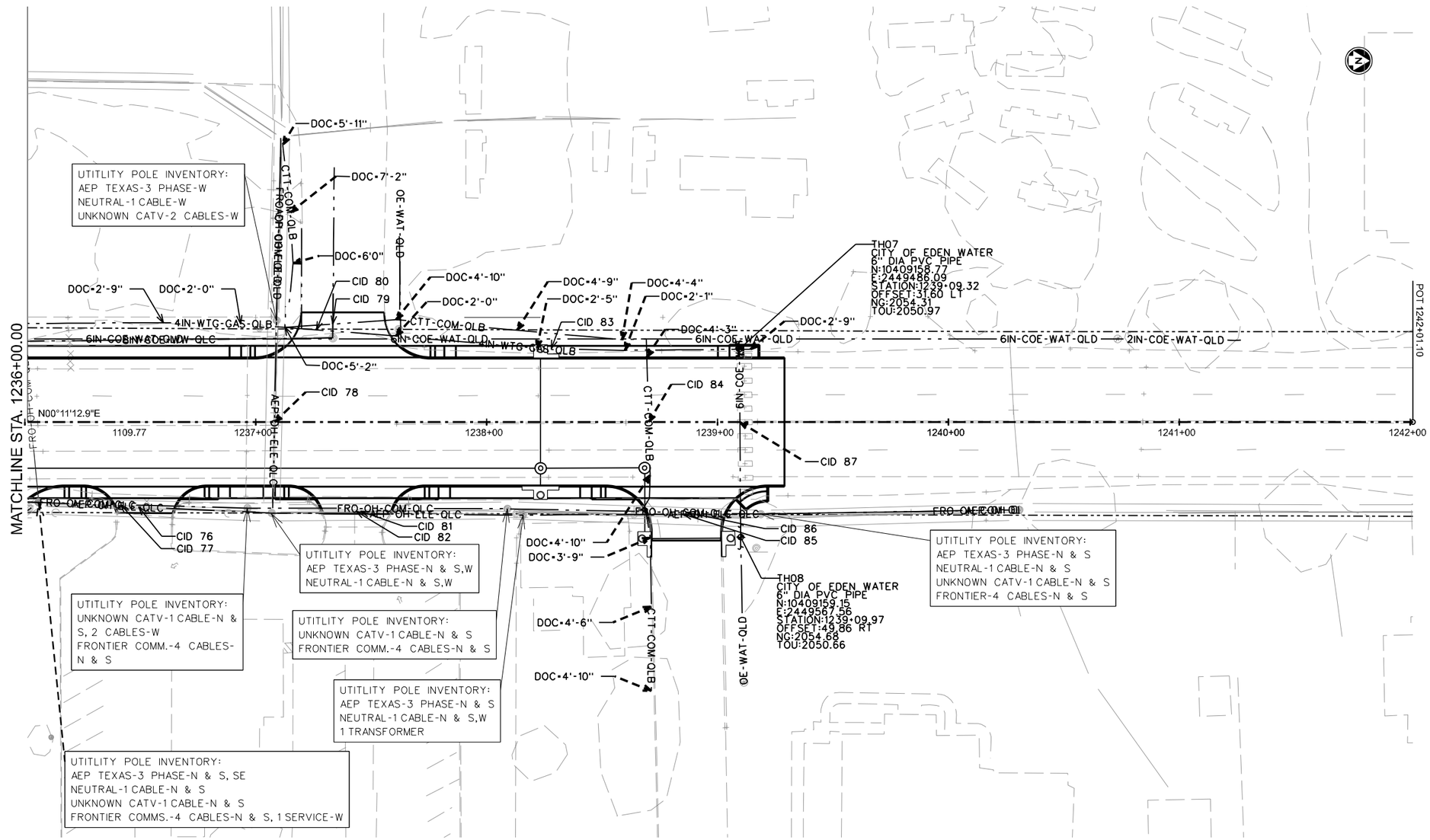

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TBPE/LS FIRM # F-6825

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TEL. 281-257-5248
TBPE NO. F-10055

US 83

US 83
EXISTING UTILITY LAYOUT
STA 1236+00.00 TO END

SHEET 6 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		191

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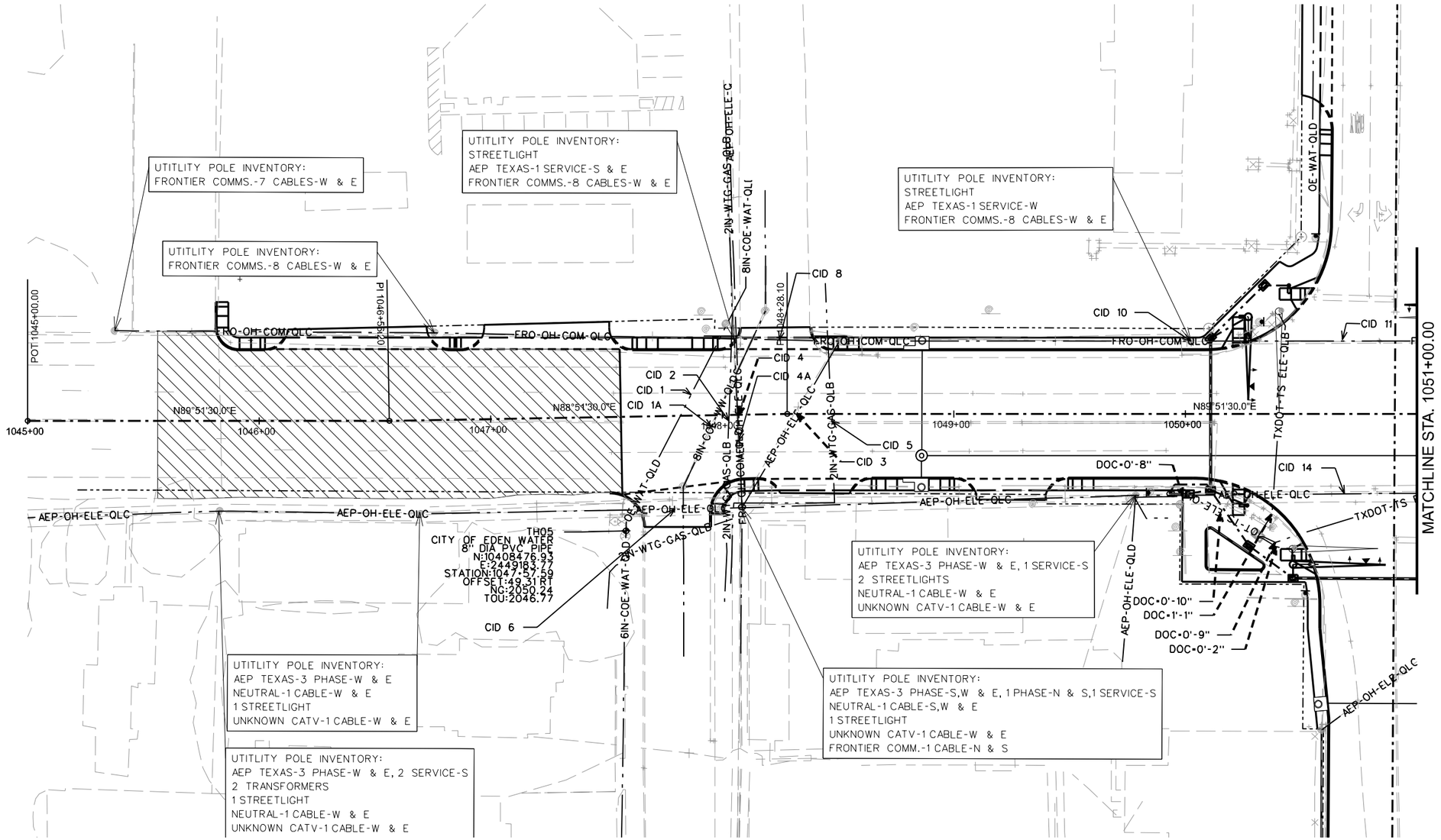

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B	TXDOT-TS ELE-QLB	TXDOT TRAFFIC SIGNAL
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TEL. 281-257-5248
TBPE NO. F-10055

US 83

US 87
EXISTING UTILITY LAYOUT
BEGIN TO STA 1051+00.00

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		192

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SUE LEVEL | LINESTYLES | COMMUNICATION

SUE LEVEL	LINESTYLES	
		COMMUNICATION
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D	CTT-COM-QLD	CTTC
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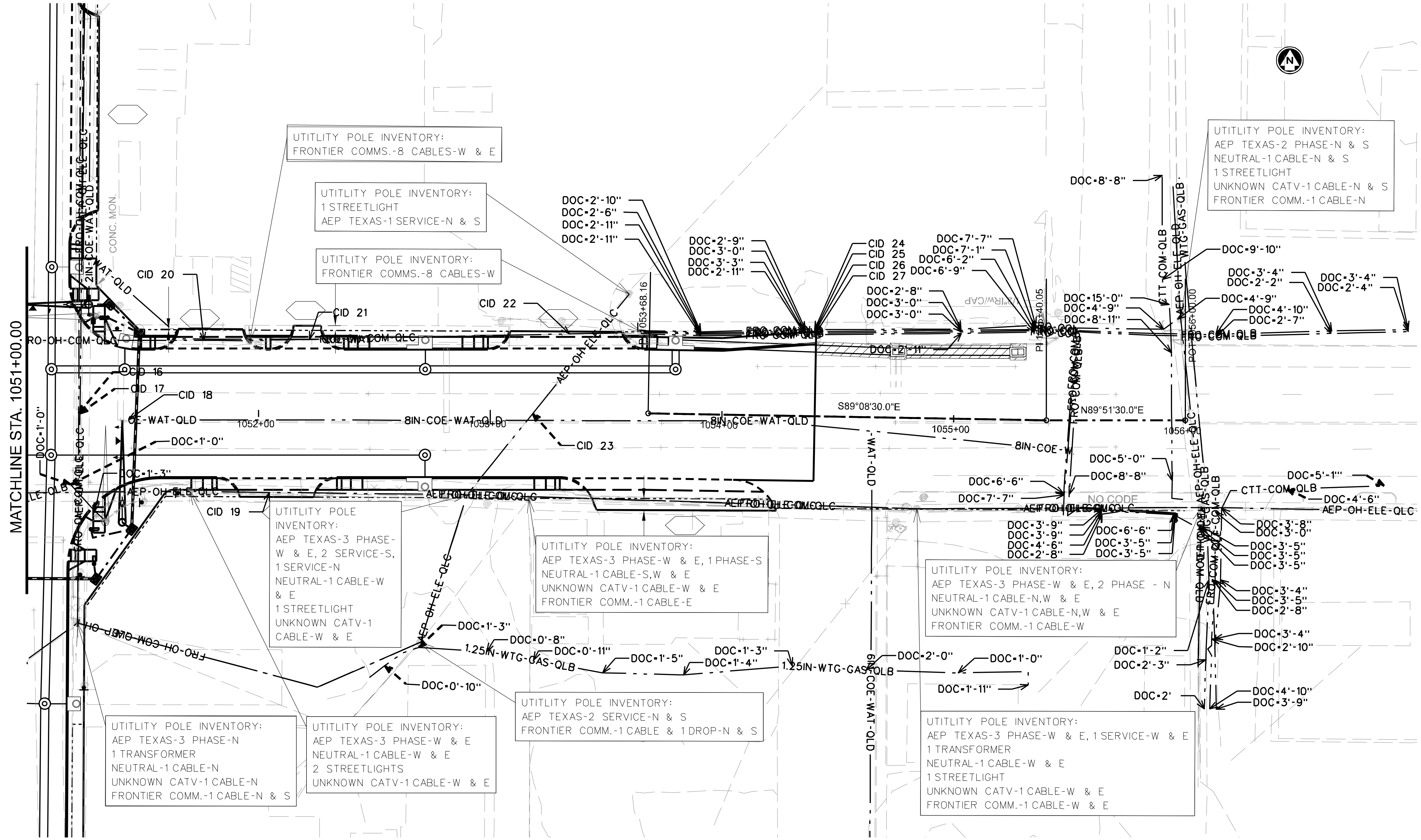

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US 83

US 87
EXISTING UTILITY LAYOUT
STA 1051+00.00 TO END

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST		COUNTY	SHEET NO.
SJT		CONCHO	193

DATE: 5/22/2024 11:03:58 PM
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STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with soil disturbing activity and for projects that have Environmental, Permits, Issues, and Commitments (EPICs) dependent on stormwater controls and water quality measures TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office, Area Office, or electronically.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0035-03-047, ETC.

1.2 PROJECT LIMITS:

From: 0.5 MILES SOUTH FROM US 87

To: BRYAN ST.

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 31.210220 ,(Long) -99.845190

END: (Lat) 31.217962 ,(Long) -99.845665

1.4 TOTAL PROJECT AREA (Acres): 6.96

1.5 TOTAL AREA TO BE DISTURBED (Acres): 6.96

1.6 NATURE OF CONSTRUCTION ACTIVITY:

RECONSTRUCTION AND WIDEN NON-FREEWAY CONSISTING OF GRADING, HMA, CONCRETE PAVING STRUCTURES, SIGNALS, PAV MARKINGS AND SIGNS

1.7 MAJOR SOIL TYPES:

Soil Type	Description
KAVETT-CHO-OPLIN	UNDULATING
MERETA CLAY LOAM	1 TO 3 PERCENT SLOPES
NUVALDE SILTY CLAY LOAM	1 TO 3 PERCENT SLOPES

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

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

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

Type	Sheet #s

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

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

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

1.10 POTENTIAL POLLUTANTS AND SOURCES:

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

1.11 RECEIVING WATERS:

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

Tributaries	Classified Waterbody
BRANDY CREEK SEGMENT 1416C	UNCLASSIFIED

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

☒ Development of plans and specifications
☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
☒ Post Construction Site Notice
☒ Submit NOI/CSN to local MS4
☒ Perform SWP3 inspections
☒ Maintain SWP3 records and update to reflect daily operations
☒ Complete and submit Notice of Termination to TCEQ
☒ Maintain SWP3 records for 3 years
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

☒ Day To Day Operational Control
☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
☒ Post Construction Site Notice
☒ Submit NOI/CSN to local MS4
☒ Maintain schedule of major construction activities
☒ Install, maintain and modify BMPs
☒ Complete and submit Notice of Termination to TCEQ
☒ Maintain SWP3 records for 3 years
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

 July 2023 Sheet 1 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			194
STATE	STATE DIST.	COUNTY	
TEXAS	SJT	CONCHO	
CONT.	SECT.	JOB	HIGHWAY NO.
0035	03	047	US 83

DATE 5/22/2024
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STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

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

2.2 SEDIMENT CONTROL BMPs:

T / P

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

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

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- ☐ ☐ Sediment Trap
  - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - ☐ 3,600 cubic feet of storage per acre drained
- ☐ ☐ Sedimentation Basin
  - X Not required (<10 acres disturbed)
  - ☐ Required (>10 acres) and implemented.
    - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - ☐ 3,600 cubic feet of storage per acre drained
  - ☐ Required (>10 acres), but not feasible due to:
    - ☐ Available area/Site geometry
    - ☐ Site slope/Drainage patterns
    - ☐ Site soils/Geotechnical factors
    - ☐ Public safety
    - ☐ Other: _____

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To
PERMANENT SEEDING	STA 1207+00	STA 1239+29
PERMANENT SEEDING	STA 1047+56	STA 1054+40

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

2.5 POLLUTION PREVENTION MEASURES:

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

2.6 VEGETATED BUFFER ZONES:

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

Type	Stationing	
	From	To

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

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

2.8 DEWATERING:

Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment and other pollutants.

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

When dewatering activities are present, a daily inspection will be conducted once per day during those activities and documented in accordance with CGP and TxDOT requirements.

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

DATE 5/22/2024
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STORMWATER POLLUTION PREVENTION PLAN (SWP3)

 July 2023 Sheet 2 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			195
STATE	STATE DIST.	COUNTY	
TEXAS	SJT	CONCHO	
CONT.	SECT.	JOB	HIGHWAY NO.
0035	03	047	US 83

DATE: 5/22/2024
FILE: c:\bms\vidcus-pw-01\omar.alducin\dms06614\epic.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.

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. ONLY REMOVE WOODY VEGETATION BETWEEN OCTOBER 1 AND FEBRUARY 14.

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. The Migratory Bird Treaty Act of 1918 states that it is unlawful to kill, capture, collect, possess, buy, sell, trade or transport, any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit issued in accordance with the Act's policies and regulations. Migration patterns would not be affected by the proposed project. Remove non-active migratory bird nests from structures where work would be performed from September 1 through the end of February. Prevent migratory birds from building nests from March 1 to August 31. In the event that migratory birds are encountered on site during a project construction, avoid adverse impacts on protected birds, active nests, eggs, and/or young.

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.

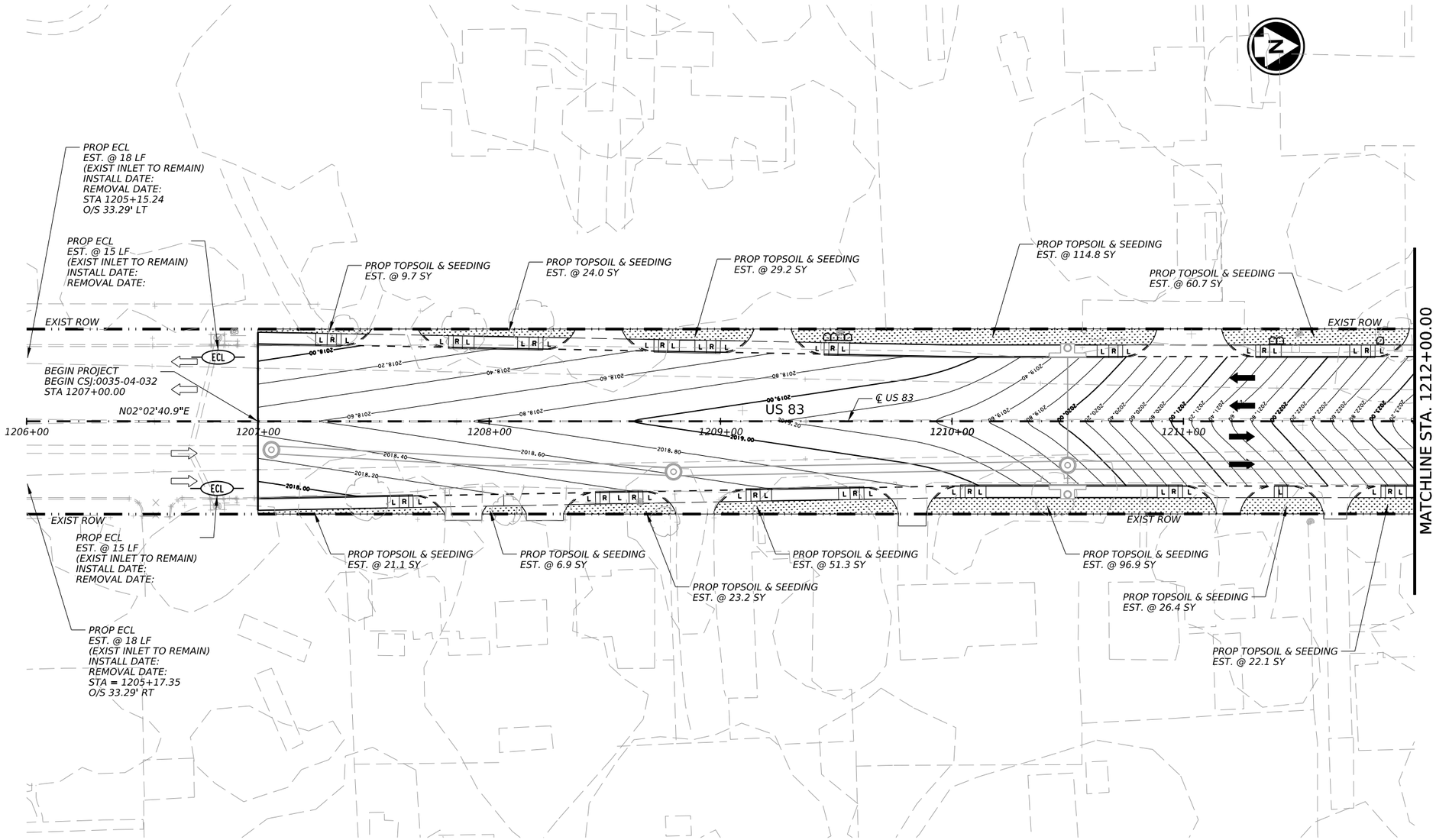
3.

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)	0035	03	047	US 83
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY		SHEET NO.
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	SJT	CONCHO		196



LEGEND

- ECL — *EROSION CONTROL LOG*
- SCF — *SEDIMENT CONTROL FENCE*
- *TOP SOIL AND SEEDING*

NOTES:

1. *CONSTRUCTION EXITS TO BE INSTALLED PER TRAFFIC CONTROL PAHSE AND MAY BE LOCATED AS DIRECTED BY THE ENGINEER.*

HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
CHARLES M. SHINE
62999
LICENSED
PROFESSIONAL ENGINEER

5/22/2024

Charles M. Shine P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

IDCUS
PLANNERS | ENGINEERS | MANAGERS

US 83

US 83
SW3P LAYOUT
BEGIN TO STA 1212+00.00

SHEET 1 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		197

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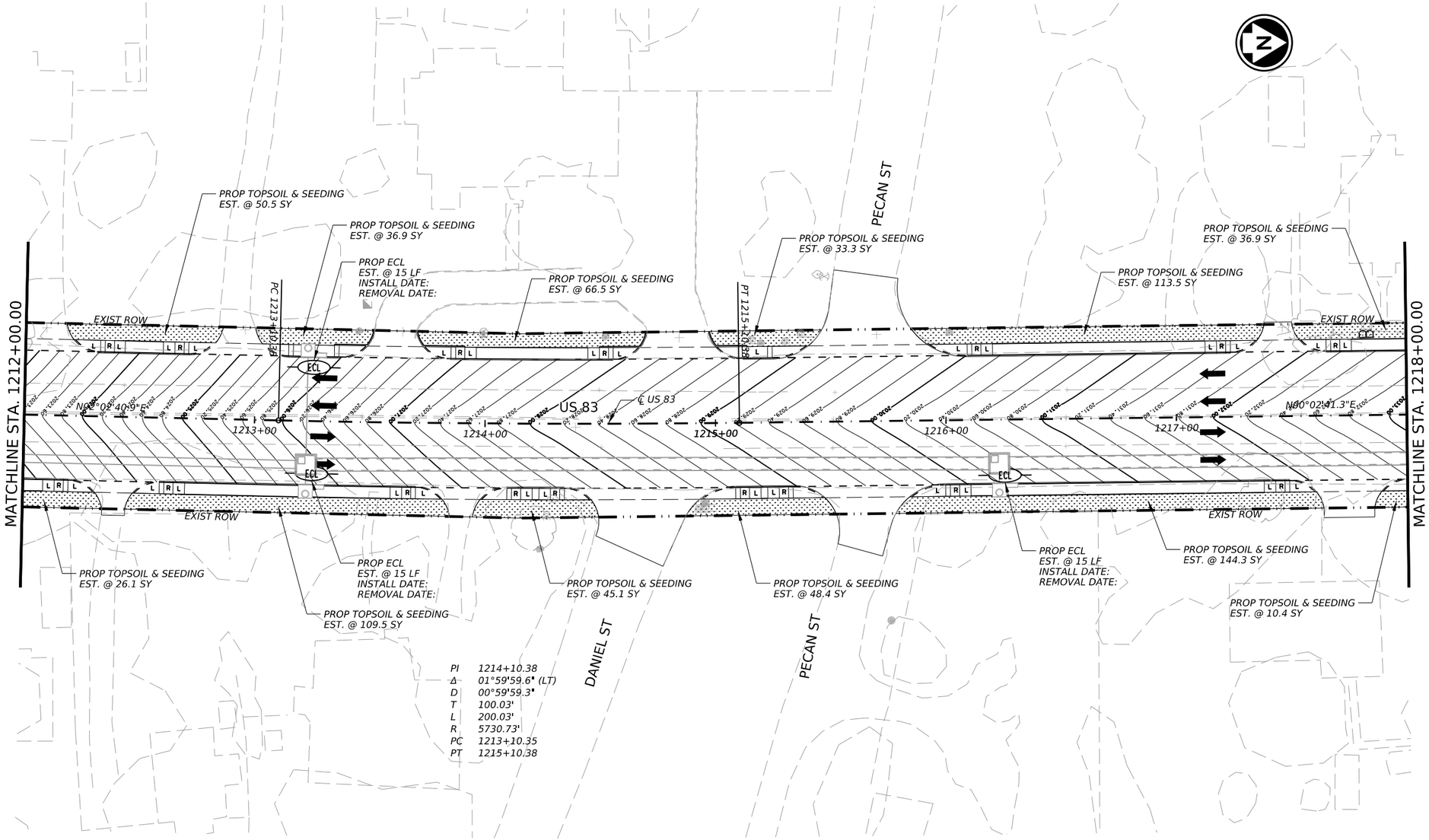

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US 83

US 83
SW3P LAYOUT
STA 1212+00.00 TO STA 1218+00.00

SHEET 2 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		198

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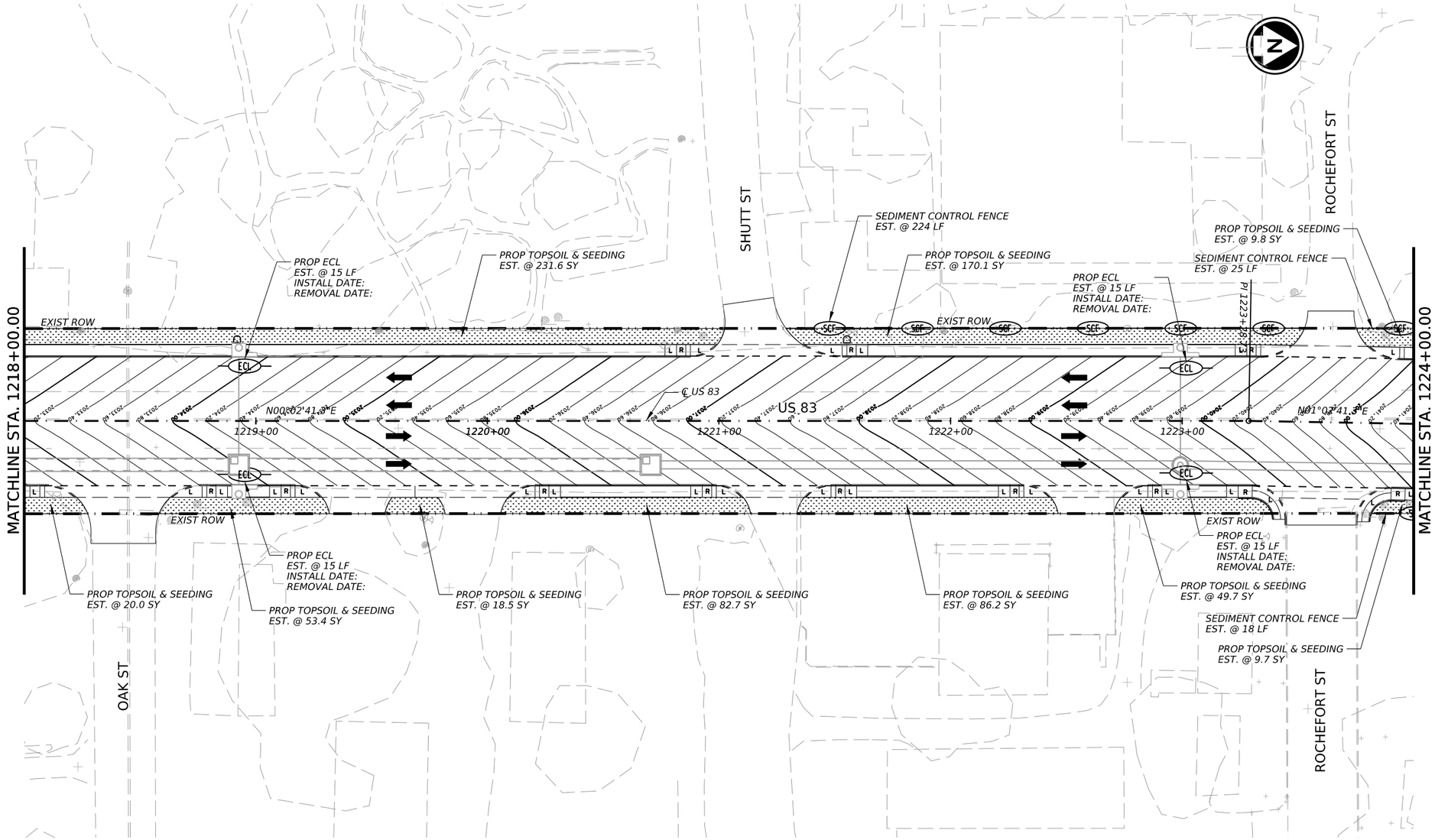

LEGEND

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15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
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US 83

US 83
SW3P LAYOUT
STA 1218+00.00 TO STA 1224+00.00

SHEET 3 OF 6

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0035	03	047	US 83
DIST	COUNTY		SHEET NO.
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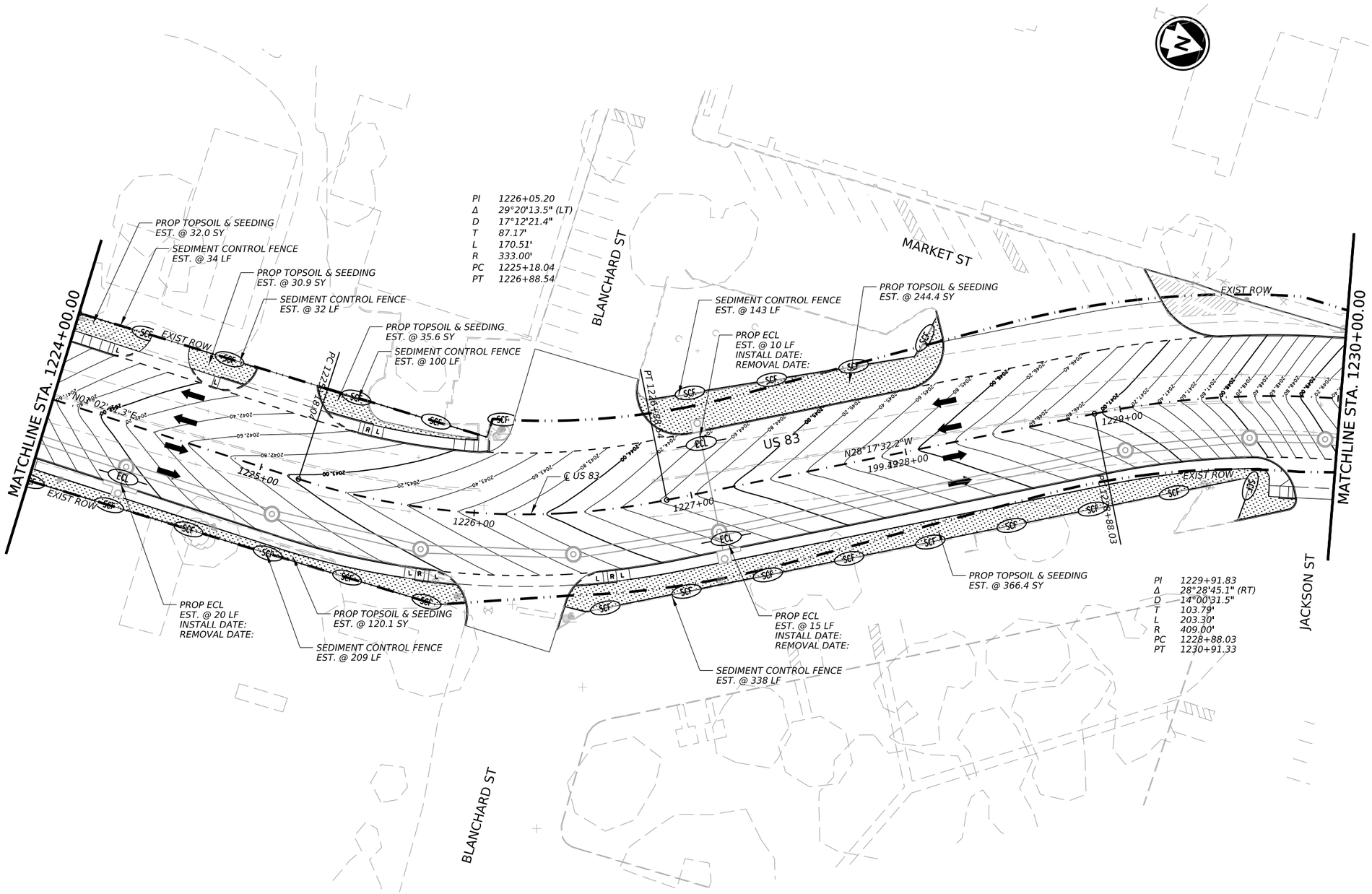

LEGEND

ECL — EROSION CONTROL LOG

SCF — SEDIMENT CONTROL FENCE

TOP SOIL AND SEEDING

NOTES:

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HORZ 0' 25' 50'

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US 83

US 83
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STA 1224+00.00 TO STA 1230+00.00

SHEET 4 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
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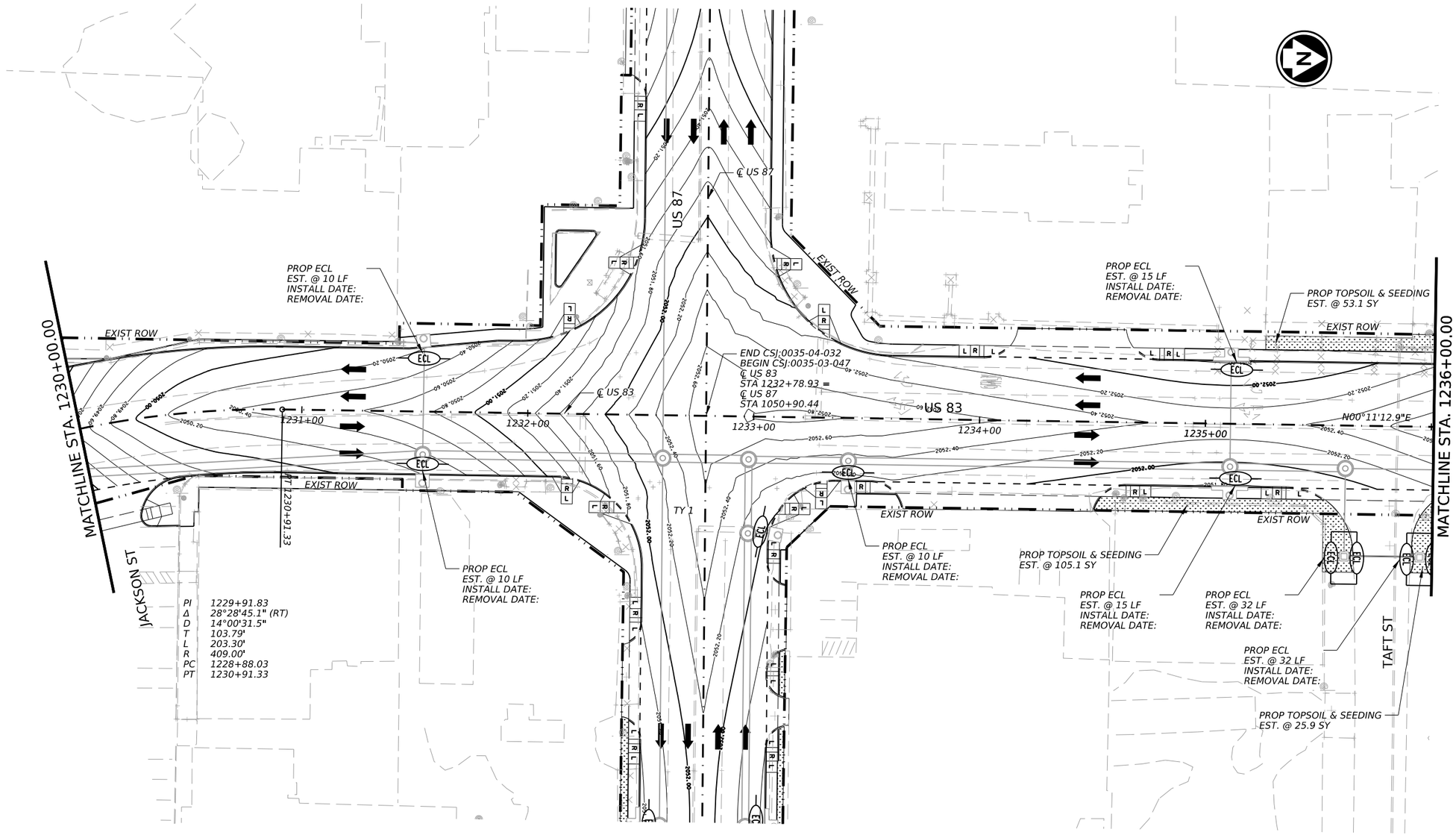

LEGEND

- ECL — *EROSION CONTROL LOG*
- SCF — *SEDIMENT CONTROL FENCE*
- *TOP SOIL AND SEEDING*

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US 83

US 83
SW3P LAYOUT
STA 1230+00.00 TO STA 1236+00.00

SHEET 5 OF 6

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		201

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CK
DW
CK
DW

LEGEND

ECL — EROSION CONTROL LOG

SCF — SEDIMENT CONTROL FENCE

TOP SOIL AND SEEDING

NOTES:

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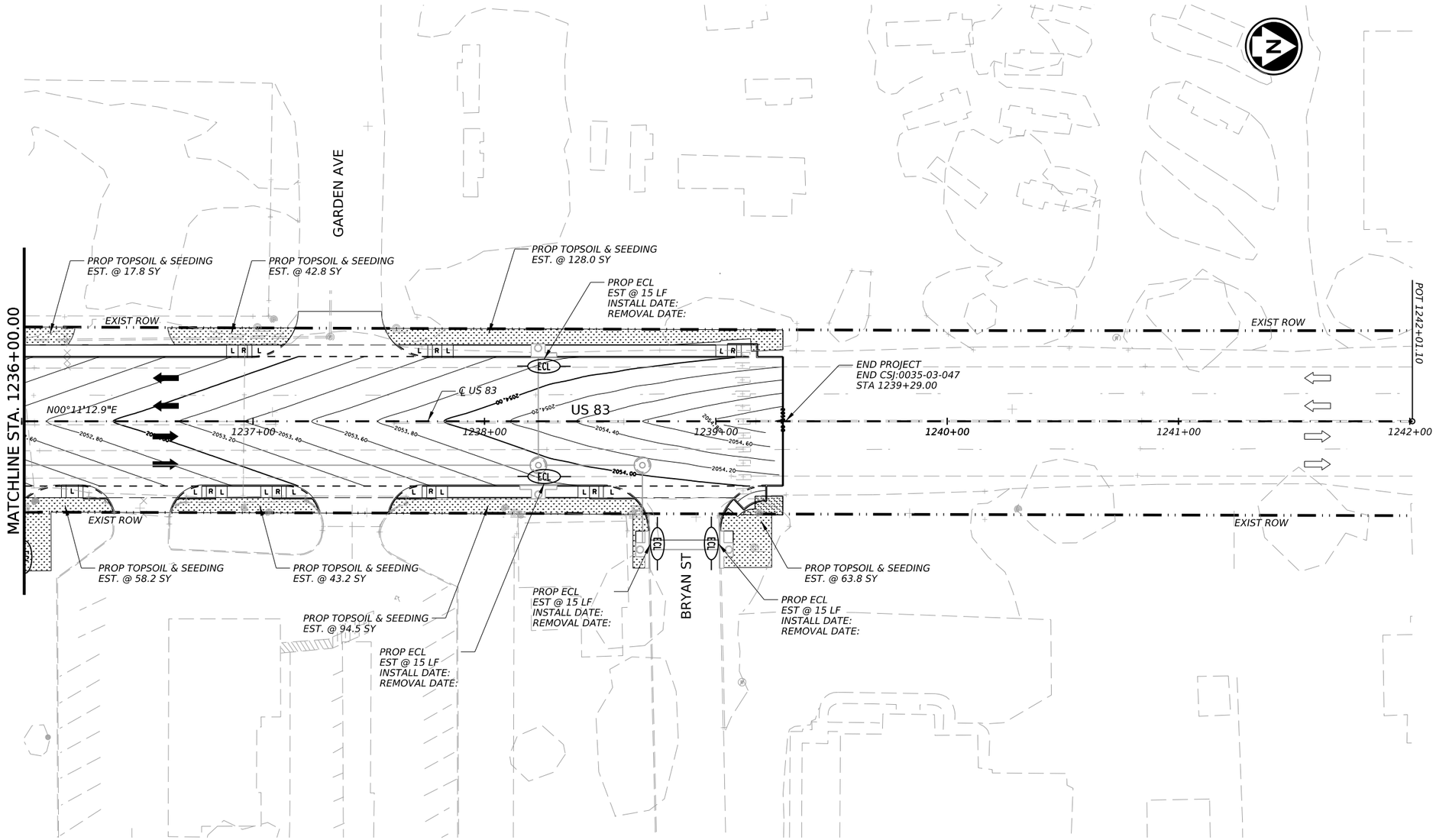

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US 83

US 83
SW3P LAYOUT
STA 1236+00.00 TO END

SHEET 6 OF 6

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0035	03	047	US 83
DIST	COUNTY		SHEET NO.
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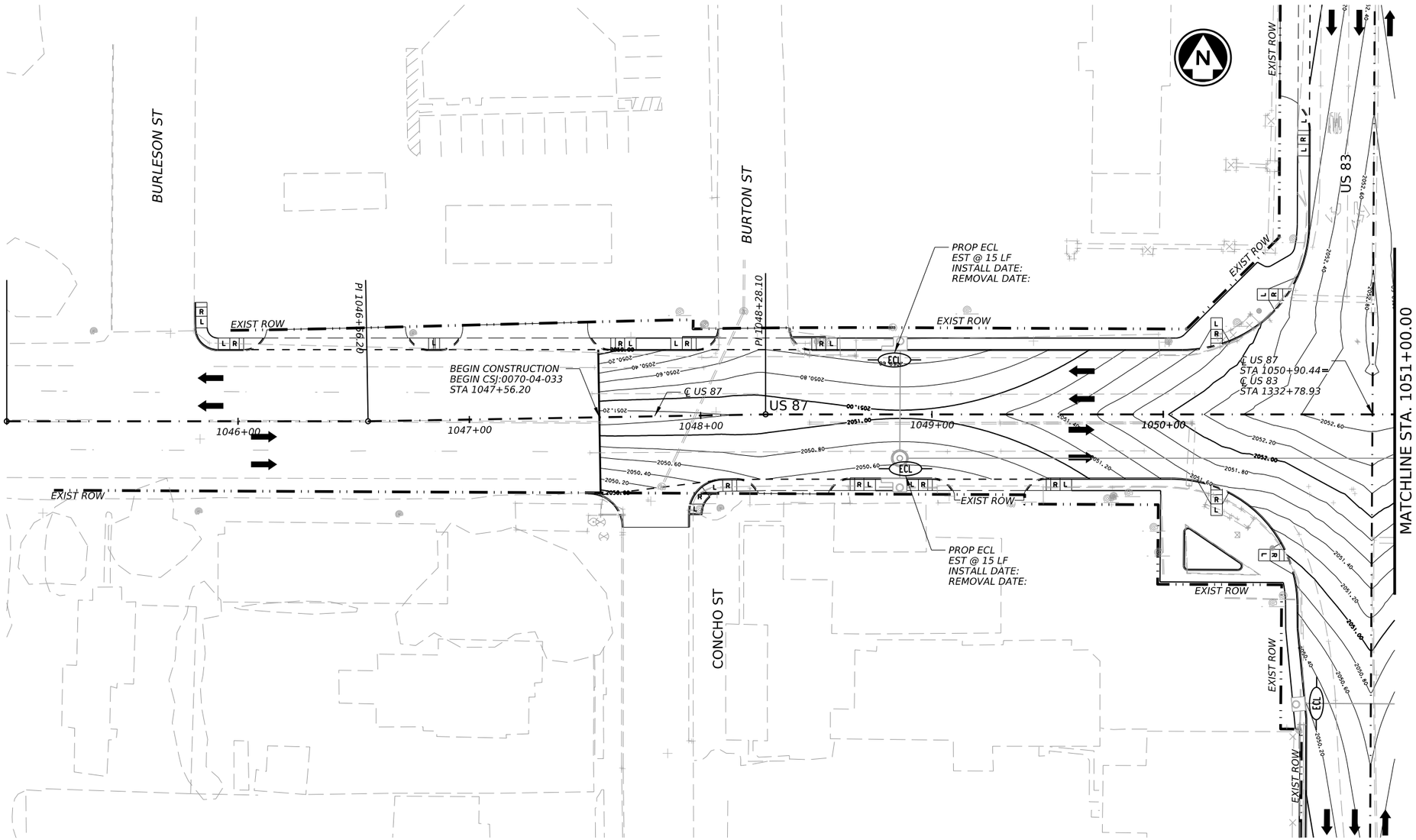

LEGEND

- ECL — *EROSION CONTROL LOG*
- SCF — *SEDIMENT CONTROL FENCE*
- *TOP SOIL AND SEEDING*

NOTES:

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HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
CHARLES M. SHINE
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(713) 541-5591 FAX: (713) 541-3501
TBPELS FIRM # F-6825

US 83

US 87
SW3P LAYOUT
BEGIN TO STA 1051+00.00

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		203

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CK
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LEGEND

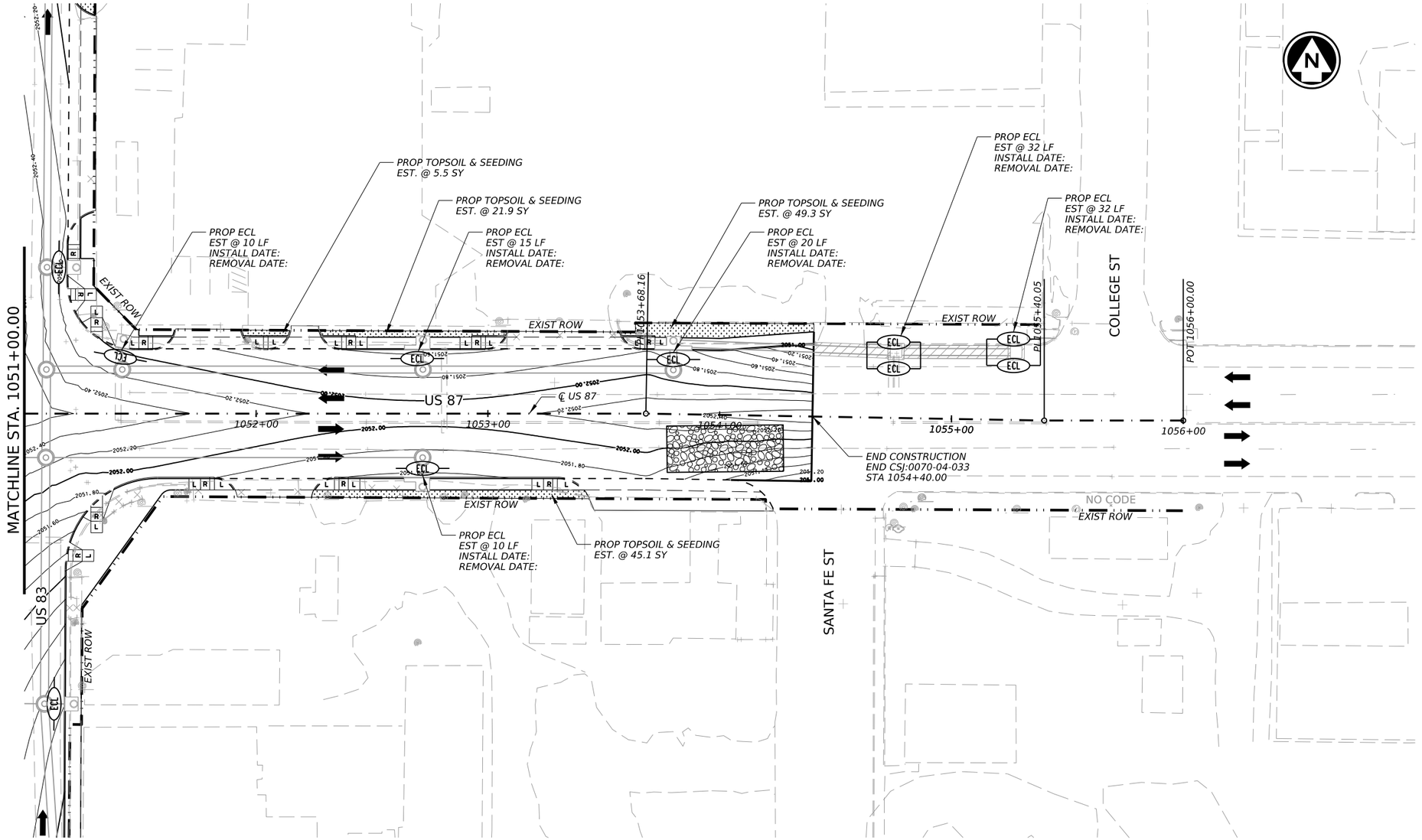
ECL — EROSION CONTROL LOG

SCF — SEDIMENT CONTROL FENCE

TOP SOIL AND SEEDING

NOTES:

1. CONSTRUCTION EXITS TO BE INSTALLED PER TRAFFIC CONTROL PAHSE AND MAY BE LOCATED AS DIRECTED BY THE ENGINEER.



HORZ 0' 25' 50'

SCALE IN FEET

STATE OF TEXAS
CHARLES M. SHINE
62999
LICENSED
PROFESSIONAL ENGINEER

5/22/2024

Charles M. Shine P.E.

NO.	DATE	REVISION

Texas Department of Transportation

IDCUS
PLANNERS | ENGINEERS | MANAGERS
IDCUS, INC.
15915 KATY FREEWAY, SUITE 300
HOUSTON, TX 77094
(713) 541-5591 FAX: (713) 541-3501
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US 87
SW3P LAYOUT
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SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0035	03	047	US 83
DIST	COUNTY		SHEET NO.
SJT	CONCHO		204

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DATE 5/22/2024
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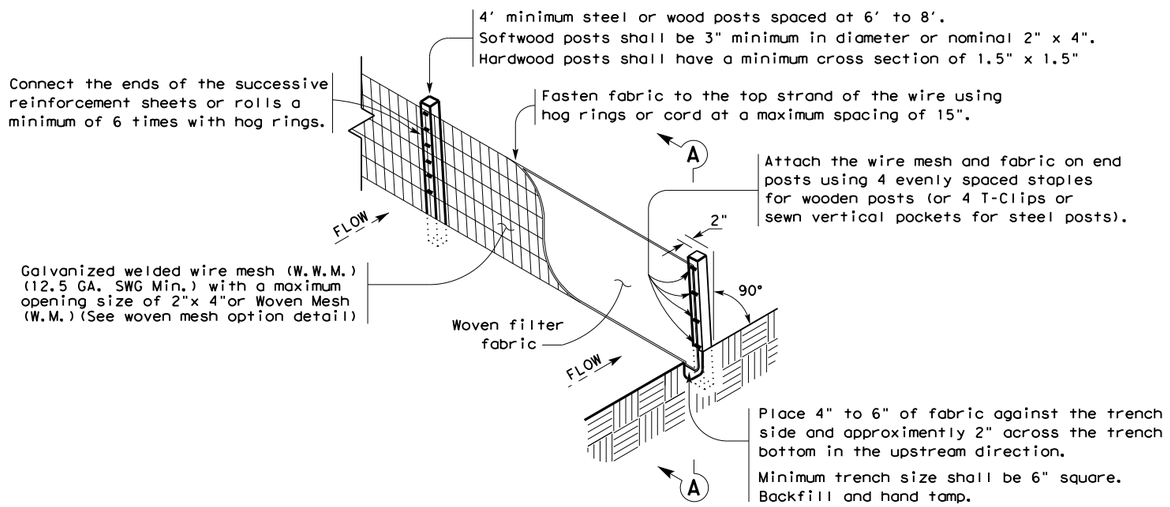
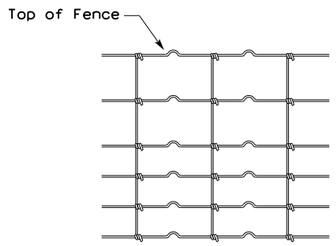
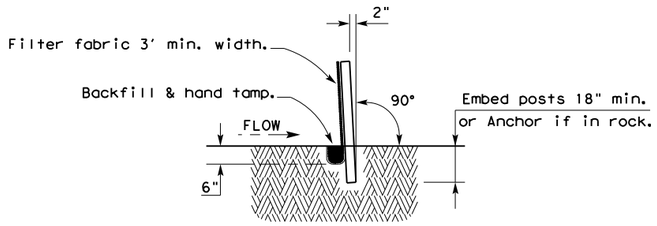


TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

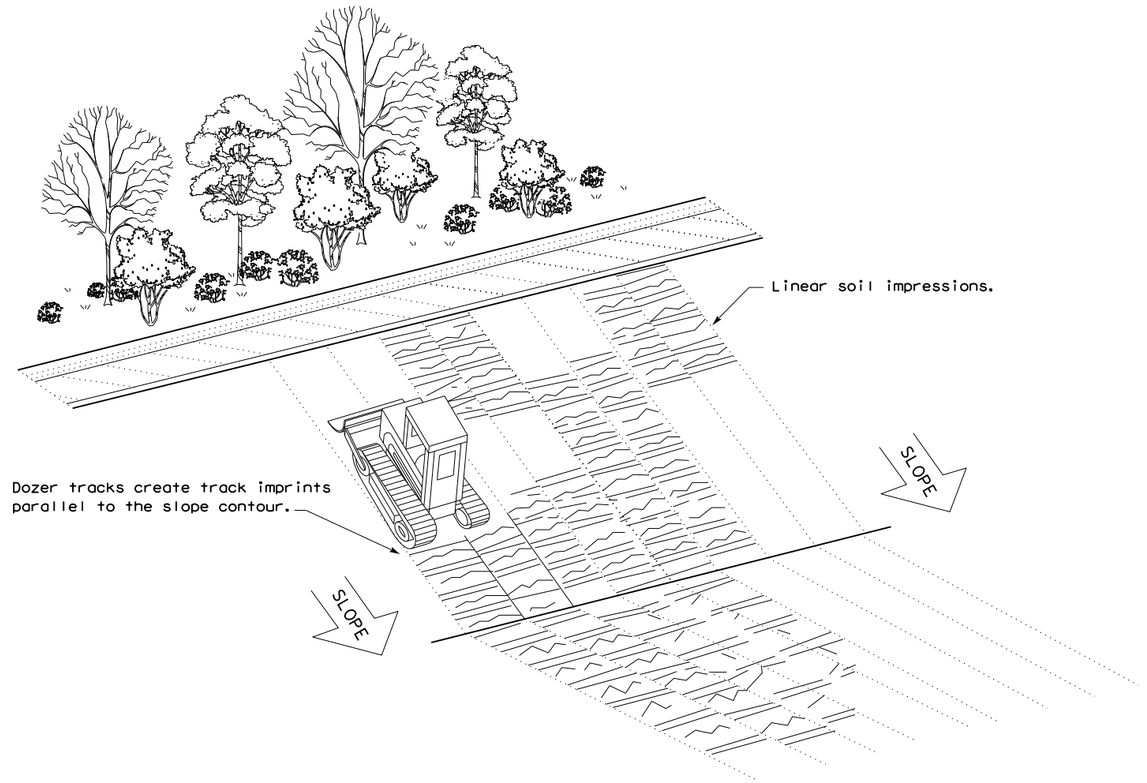
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0035	03	047	US 83
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	SJT	CONCHO		205

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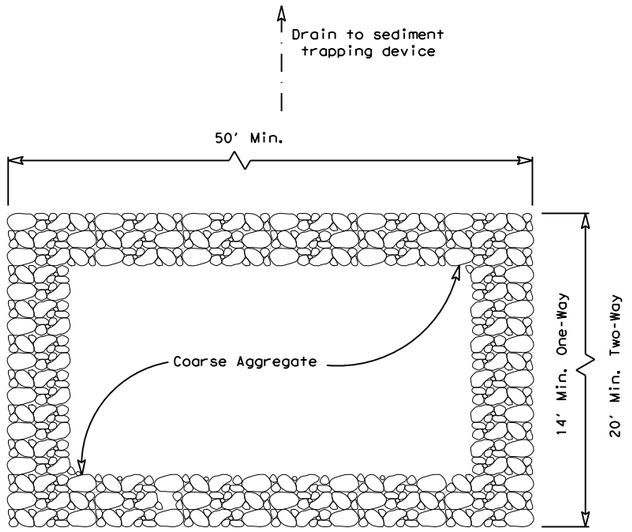
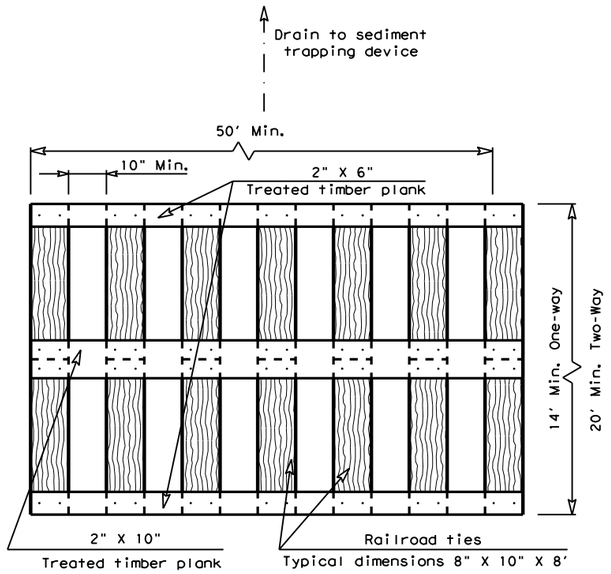


PLAN VIEW



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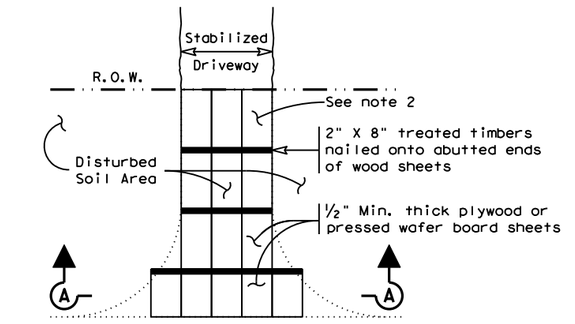
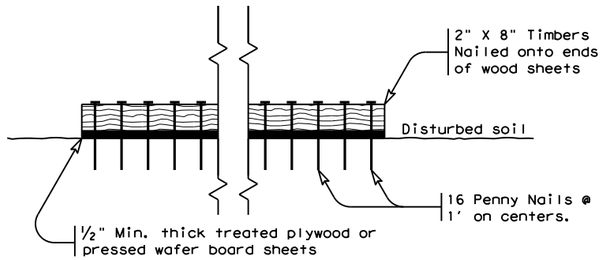


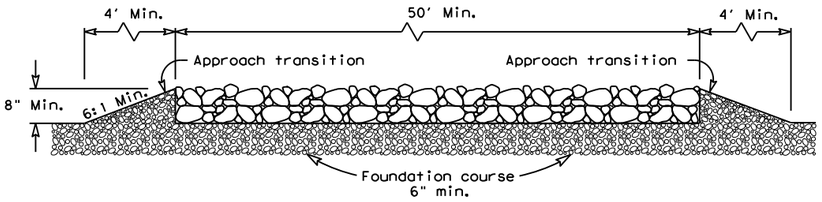
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

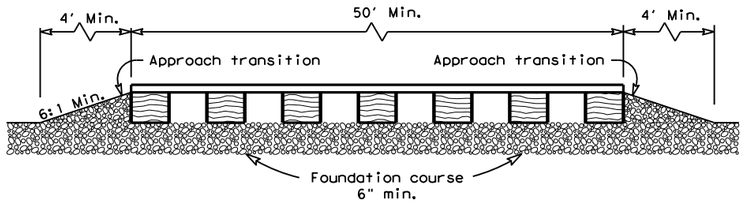
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
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	DIST	COUNTY		SHEET NO.
	SJT	CONCHO		206

DATE: 5/22/2024
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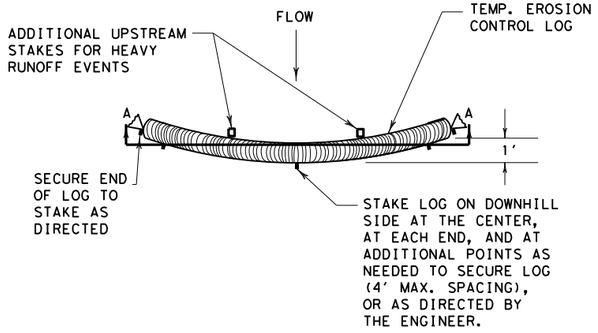
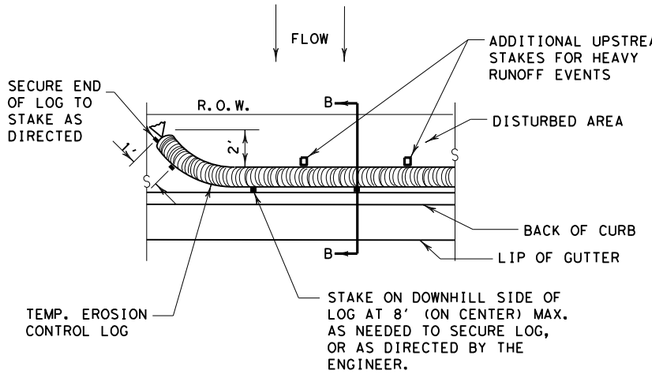


PLAN VIEW



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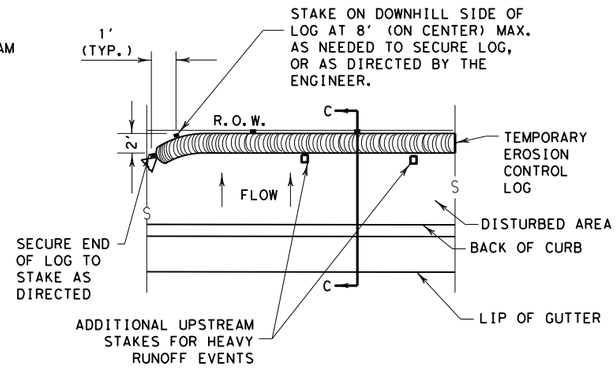

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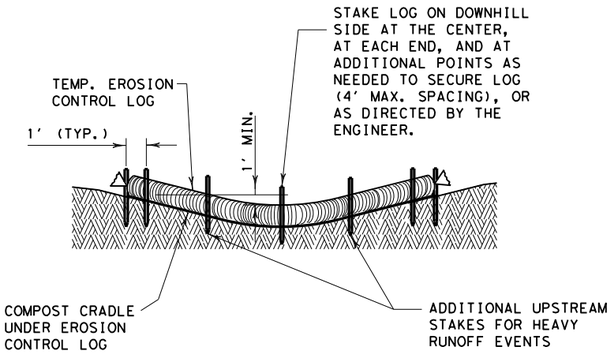
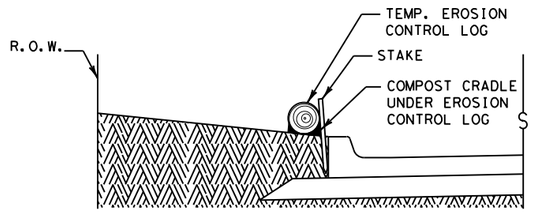


SECTION A-A

EROSION CONTROL LOG DAM

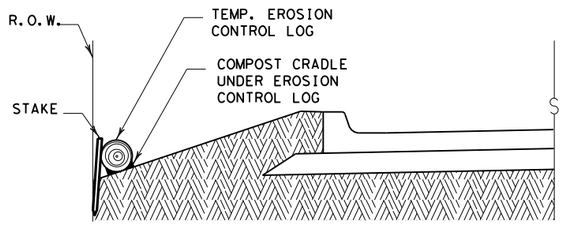
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

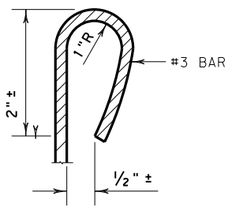
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



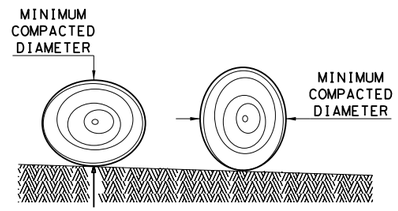
REBAR STAKE DETAIL

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

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© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
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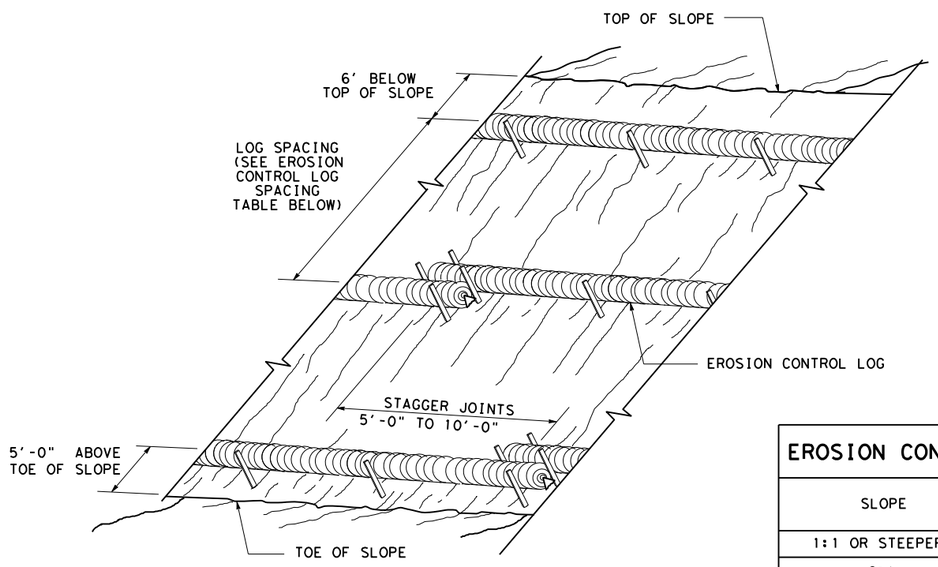
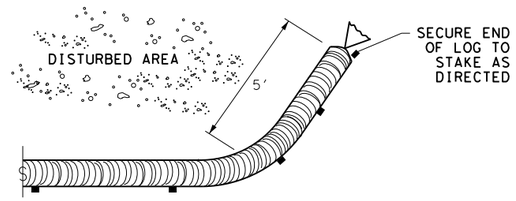


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

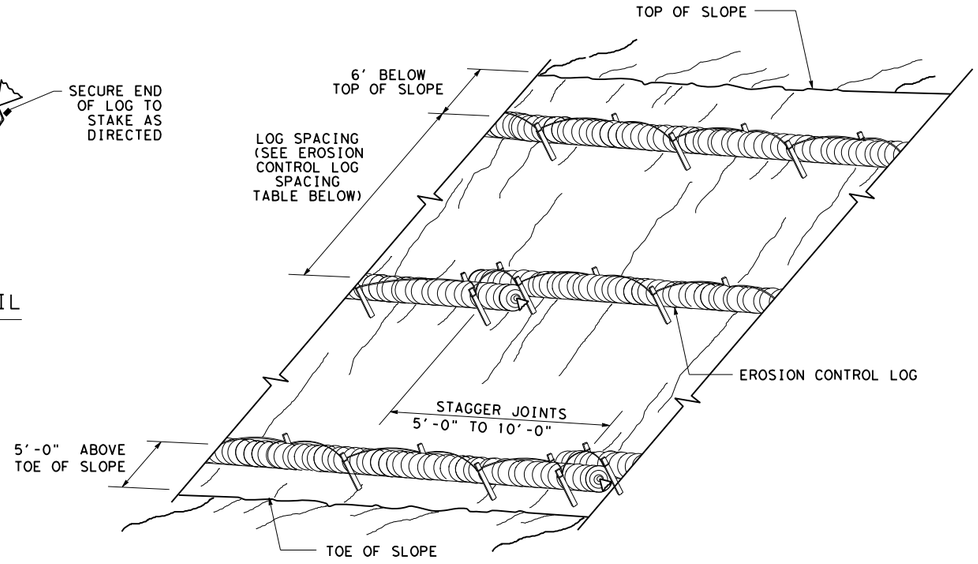
CL-SST



END SECTION RAP DETAIL

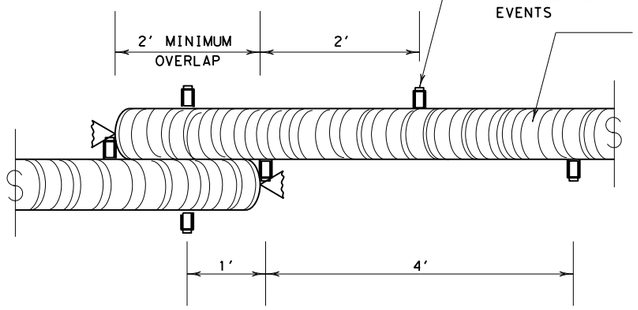
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

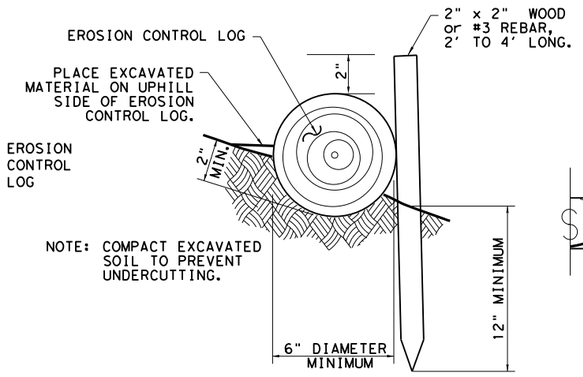
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

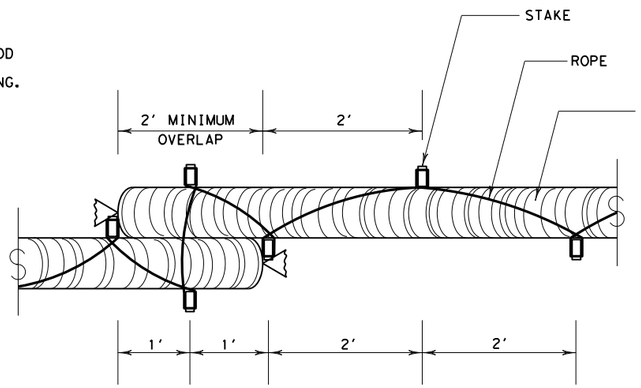


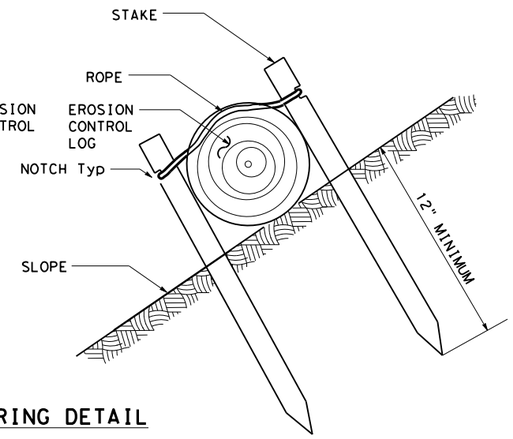


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

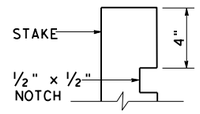
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

SHEET 2 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

FILE: ec116	DN: TxDOT		CK: KM		DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
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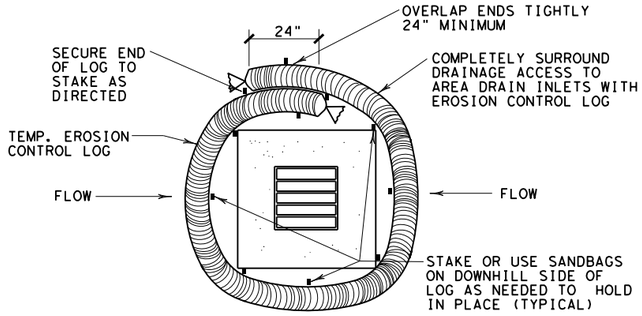
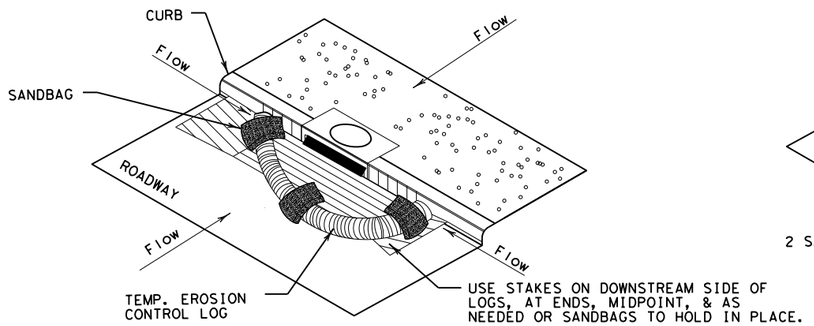


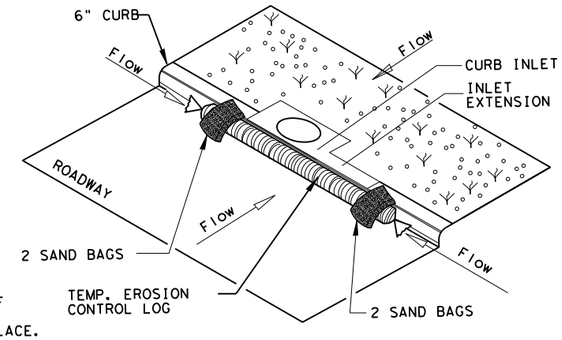
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

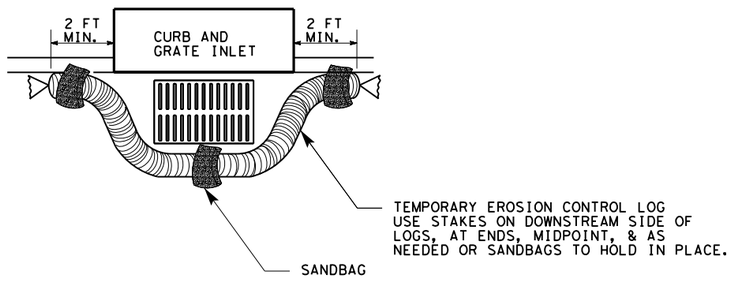
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

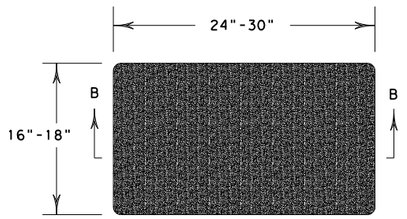
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI

SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT		CK: KM	DW: LS/PT		CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0035	03	047		US 83	
	DIST	COUNTY			SHEET NO.	
	SJT	CONCHO			209	