INDEX OF SHEETS

SEE SHEET 2

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

PROJECT NO. STP 2023(793)HES

DESIGN SPEED = N/A
CURRENT A.D.T. = VA
PROJECTED A.D.T. = VA
FUNCTIONAL CLASS = PRINCIPAL ARTERIAL
EXISTING NBI# = N/A
PROPOSED NBI# = N/A

FHWA TEXAS DIVISION	PROJECT NO.		SHEET NO.
	STP 2023(793)HES		1
STATE	DISTRICT	COUNTY	
TEXAS	ABL	SCURRY, ETC	
CONTROL	SECTION	JOB	HIGHWAY NO.
0053	07	043,ETC	US 84, ETC

CSJ 0053-07-043
NET LENGTH OF ROADWAY=71,575.68 FT =13.556 MI
NET LENGTH OF BRIDGE=0.00 FT = 0.00 MI
NET LENGTH OF PROJECT=71,575.68 FT =13.556 MI
LIMITS: FROM GARZA COUNTY LINE TO 0.75 MI SOUTH OF FM 1142

CSJ 0053-08-075
NET LENGTH OF ROADWAY=24,525.60 FT =4.645 MI
NET LENGTH OF BRIDGE=0.00 FT = 0.00 MI
NET LENGTH OF PROJECT=24,525.60 FT =4.645 MI
LIMITS: FROM 0.75 MI SOUTH OF FM 1142 TO 1.1 MI WEST OF SH 208

CSJ 0053-08-074
NET LENGTH OF ROADWAY=8,184.00 FT =1.550 MI
NET LENGTH OF BRIDGE=0.00 FT = 0.00 MI
NET LENGTH OF PROJECT=8,184.00 FT =1.550 MI
LIMITS: FROM 0.30 MI WEST OF SH 208 TO FM 1673

CSJ 0053-09-077
NET LENGTH OF ROADWAY=23,295.36 FT =4.412 MI
NET LENGTH OF BRIDGE=0.00 FT = 0.00 MI
NET LENGTH OF PROJECT=23,295.36 FT =4.412 MI
LIMITS: FROM FM 1673 TO BUS 84-G INTERCHANGE

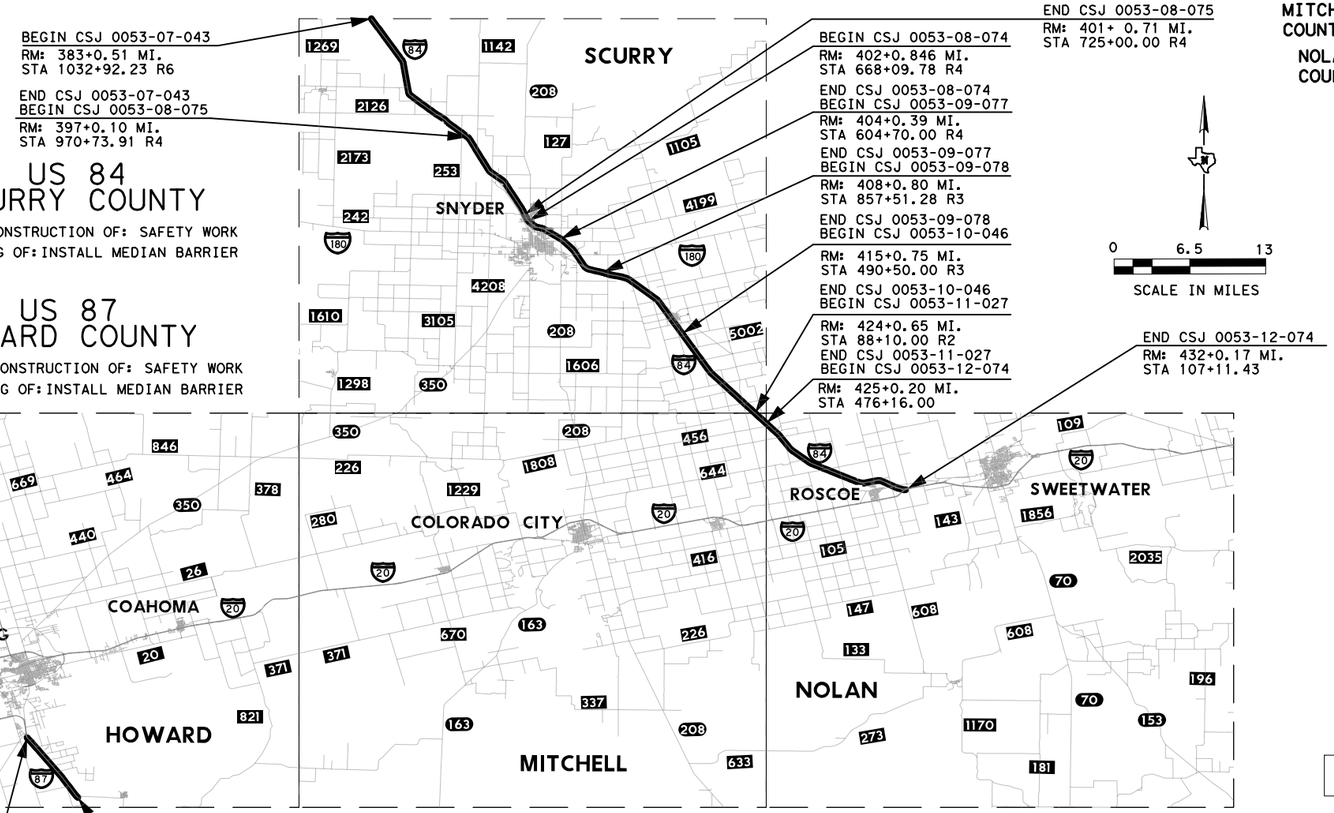
CSJ 0053-09-078
NET LENGTH OF ROADWAY=36,701.28 FT =6.951 MI
NET LENGTH OF BRIDGE=0.00 FT = 0.00 MI
NET LENGTH OF PROJECT=36,701.28 FT =6.951 MI
LIMITS: FROM BUS 84-G INTERCHANGE TO CR 4126

CSJ 0053-10-046
NET LENGTH OF ROADWAY=46,997.28 FT =8.901 MI
NET LENGTH OF BRIDGE=0.00 FT = 0.00 MI
NET LENGTH OF PROJECT=46,997.28 FT =8.901 MI
LIMITS: FROM CR 4126 TO MITCHELL COUNTY LINE

CSJ 0053-11-027
NET LENGTH OF ROADWAY=29,04.00 FT =0.550 MI
NET LENGTH OF BRIDGE=0.00 FT = 0.00 MI
NET LENGTH OF PROJECT=29,04.00 FT =0.550 MI
LIMITS: FROM SCURRY COUNTY LINE TO NOLAN COUNTY LINE

CSJ 0053-12-074
NET LENGTH OF ROADWAY=36,764.64 FT =6.963 MI
NET LENGTH OF BRIDGE=0.00 FT = 0.00 MI
NET LENGTH OF PROJECT=36,764.64 FT =6.963 MI
LIMITS: FROM MITCHELL COUNTY LINE TO 3.84 MI WEST OF IH 20

CSJ 0069-01-065
NET LENGTH OF ROADWAY=28,533.12 FT =5.404 MI
NET LENGTH OF BRIDGE=0.00 FT = 0.00 MI
NET LENGTH OF PROJECT=28,533.12 FT =5.404 MI
LIMITS: FROM RM 33 TO FM 461



US 84
SCURRY COUNTY
FOR THE CONSTRUCTION OF: SAFETY WORK
CONSISTING OF: INSTALL MEDIAN BARRIER

US 87
HOWARD COUNTY
FOR THE CONSTRUCTION OF: SAFETY WORK
CONSISTING OF: INSTALL MEDIAN BARRIER

US 84
MITCHELL COUNTY
FOR THE CONSTRUCTION OF: SAFETY WORK
CONSISTING OF: INSTALL MEDIAN BARRIER

US 84
NOLAN COUNTY
FOR THE CONSTRUCTION OF: SAFETY WORK
CONSISTING OF: INSTALL MEDIAN BARRIER

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, JULY 5, 2022).

EQUATIONS: N/A
EXCEPTIONS: N/A
RAILROAD CROSSINGS: N/A

PENTABLE:
DATE: 2/13/2023
FILE: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\01 General\ABL*HSIP*COVER*PK1.dgn

FINAL PLANS

LETTING DATE: 05/04/23

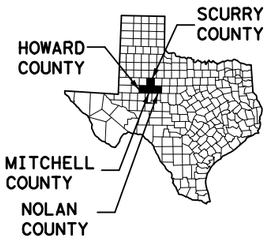
DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS COMPLETED: _____

DATE WORK WAS ACCEPTED: _____

FINAL CONTRACT COST: $ _____

CONTRACTOR : _____



CERTIFICATION FOR FINAL PLANS

THIS PROJECT WAS BUILT ACCORDING TO THE PLANS AND SPECIFICATIONS. THESE FINAL PLANS REFLECT THE WORK DONE AND THE QUANTITIES SHOWN THEREON AND ON THE FINAL ESTIMATE ARE FINAL QUANTITIES.

AREA ENGINEER DATE

THE DISTRICT TRAFFIC SAFETY COMMITTEE HAS REVIEWED THE TRAFFIC CONTROL PLAN FOR THIS PROJECT AND IT IS IN COMPLIENCE WITH CURRENT TRAFFIC CONTROL STANDARDS.

DocuSigned by: Casey McGee 2/24/2023
2377E2887A804A6... COMMITTEE CHAIRMAN DATE

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER
2/13/2023
CONSULTANT PROJECT MANAGER

Texas Department of Transportation

SUBMITTED FOR LETTING: 2/13/2023
M.N. M
NIKO MOZAFFAR
CONSULTANT PROJECT MANAGER

RECOMMENDED FOR LETTING: 2/26/2023
DocuSigned by: Stewart J. Chapman, P.E.
4087B8B7B0B04A9... STEWART J. CHAPMAN
AREA ENGINEER

RECOMMENDED FOR LETTING: 2/27/2023
DocuSigned by: Michael Haithcock
575FE2B87B8B4FD... MICHAEL A. HAITHCOCK, P.E.
DIRECTOR OF T P & D

RECOMMENDED FOR LETTING: 2/26/2023
DocuSigned by: Paul N Norman, P.E.
25EC8E1A4A3644... PAUL N. NORMAN
TxDOT PROJECT MANAGER

APPROVED FOR LETTING: 2/27/2023
DocuSigned by: Thomas D. Allbritton, P.E.
0F6F7E0A4A5D430... THOMAS D. ALLBRITTON, P.E.
DISTRICT ENGINEER

SHEET NO. DESCRIPTION

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

M. N. M , P.E. 3/3/2023

NIKO MOZAFFAR DATE

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER
3/3/2023

M. N. M

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

INDEX OF SHEETS

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	2
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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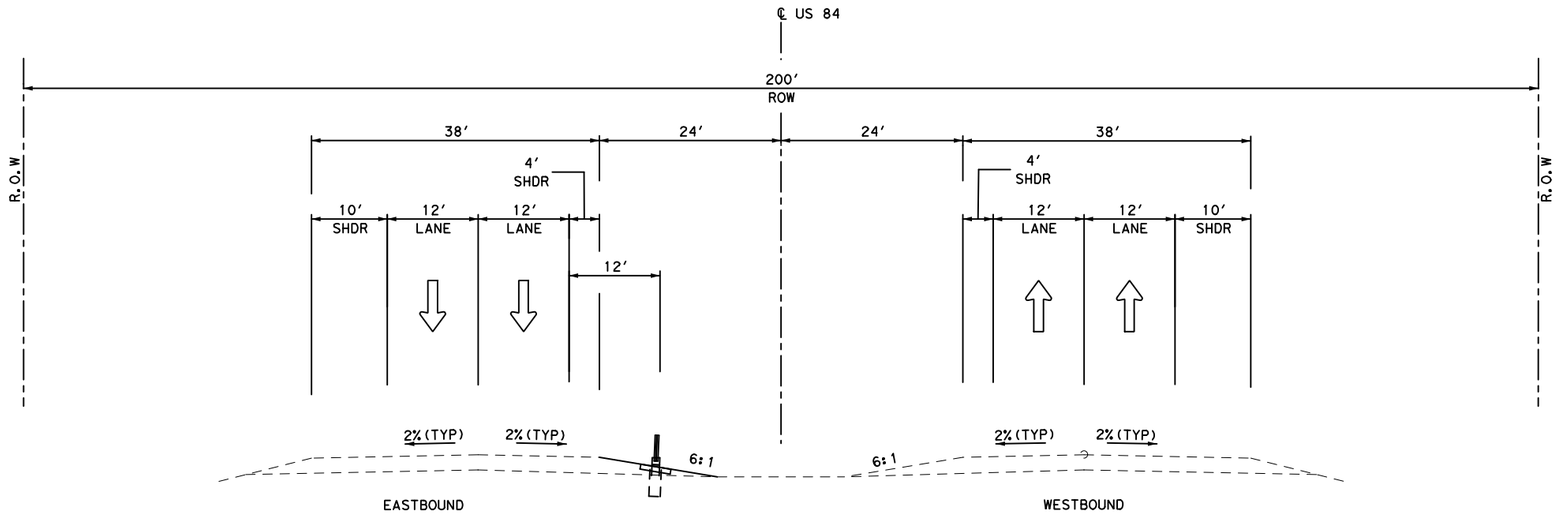
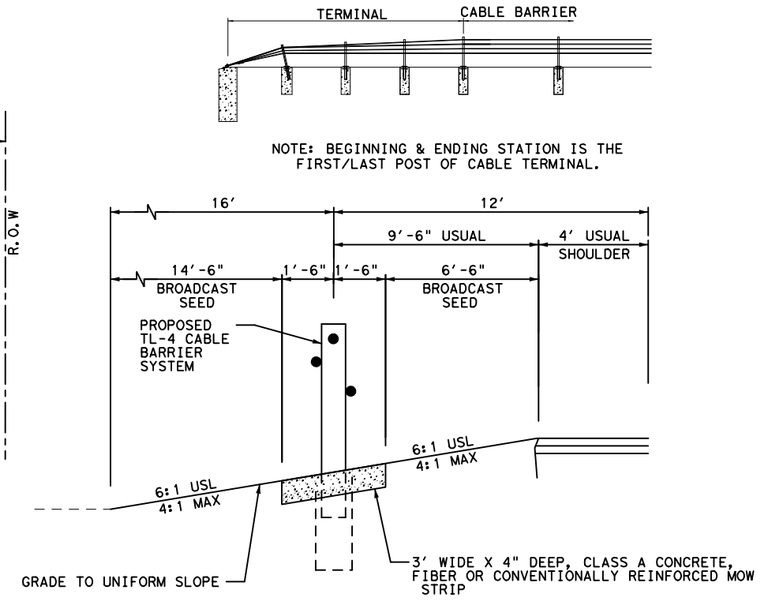
DRAWING DATE: 3/3/2023



US 84

STA BEGIN TO STA 134+49.55
STA 186+33.23 TO STA 190+73.26
STA 204+63.90 TO STA 394+50.30
STA 105+39.01 R3 TO STA 320+19.27 R3



NOTE: BEGINNING & ENDING STATION IS THE FIRST/LAST POST OF CABLE TERMINAL.

DETAIL "A"

NOTES:

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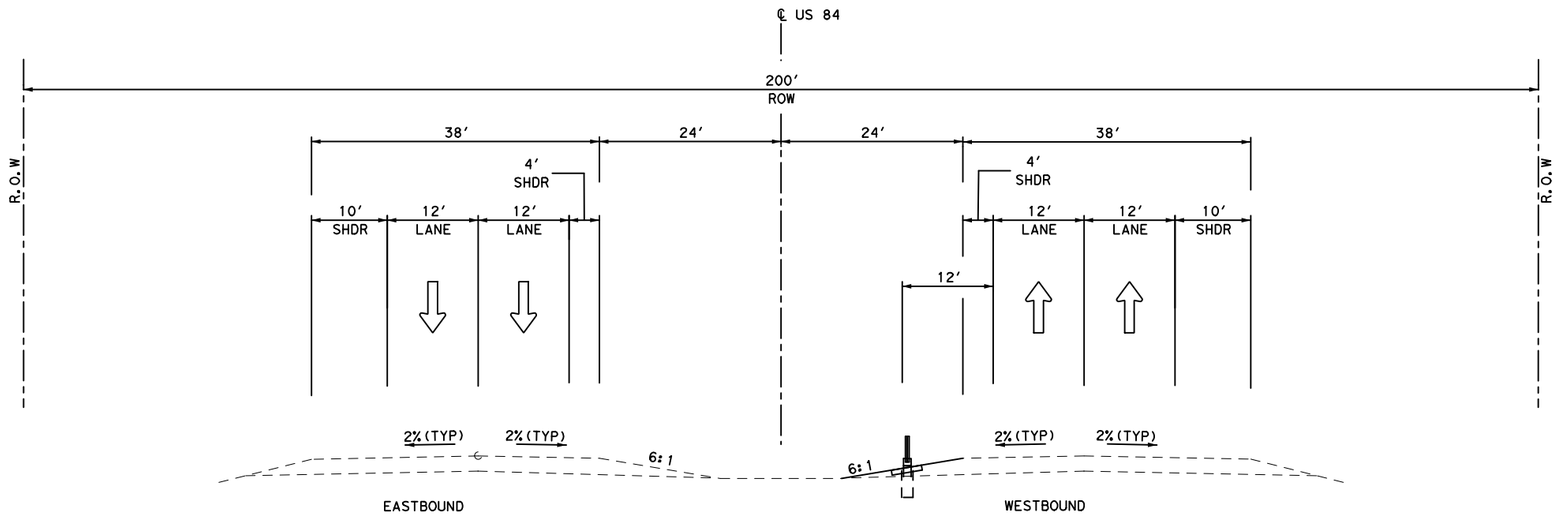
3. EXCAVATE AND PLACE CLASS A CONCRETE TO A MINIMUM DEPTH OF 4".



US 84

STA 136+73.00 TO STA 184+69.78
STA 192+18.52 TO STA 203+35.21
STA 395+70.25 R1 TO STA 104+48.02 R3
STA 321+74.13 R3 TO STA 490+13.55 R3

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER
3/3/2023

m.n. m

Texas Department of Transportation

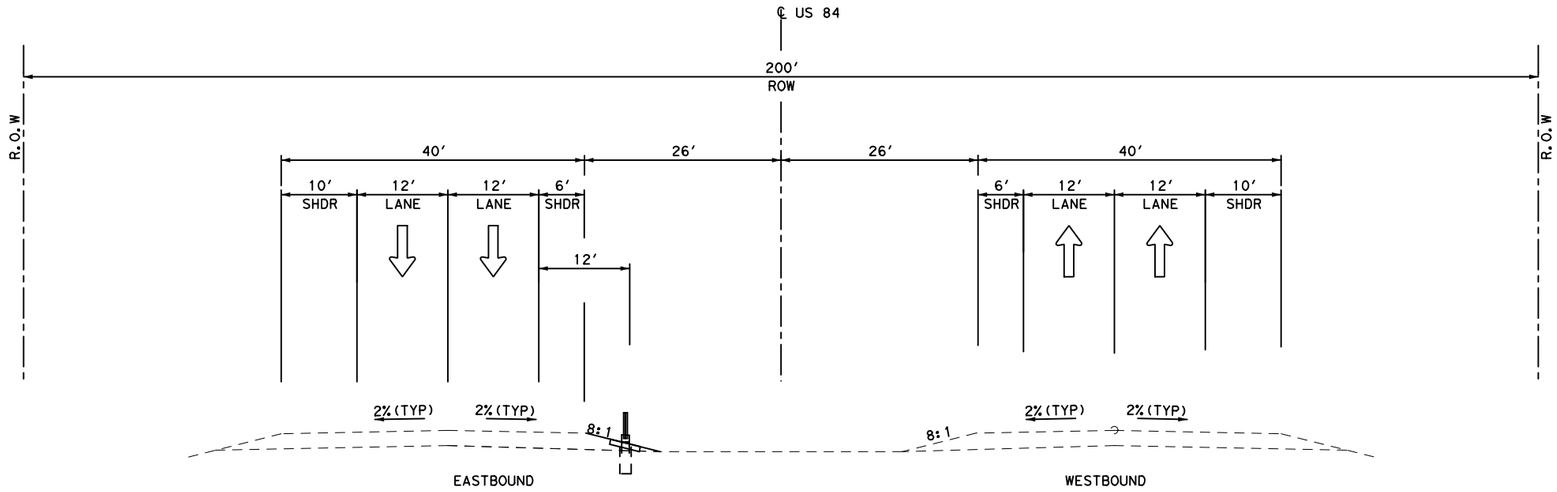
I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

TYPICAL SECTIONS

SCALE: N.T.S. SHEET 1 OF 6

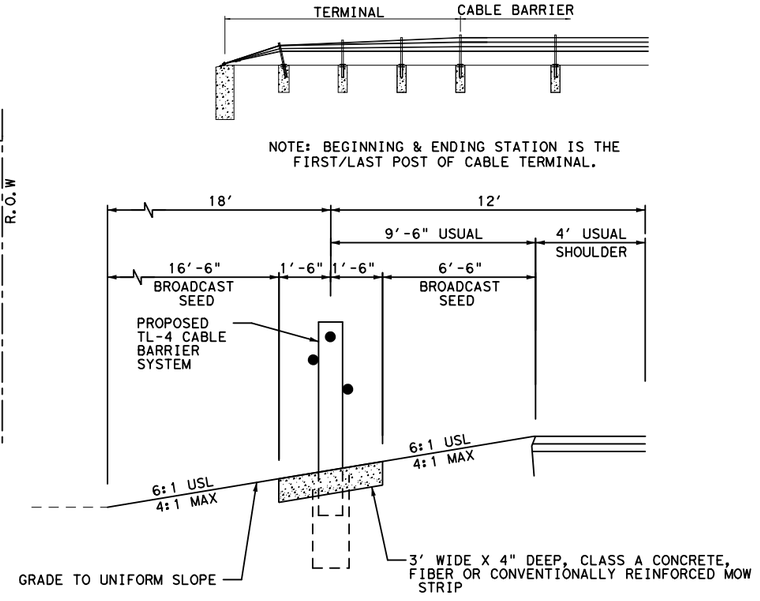
FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	3
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

DRAWING DATE: 3/3/2023 FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\02 Typical Sections\$US84*TYP1$.dgn



US 84

STA 694+79.97 R3 TO STA 717+76.57 R3
STA 784+26.95 R3 TO STA 805+25.37 R3



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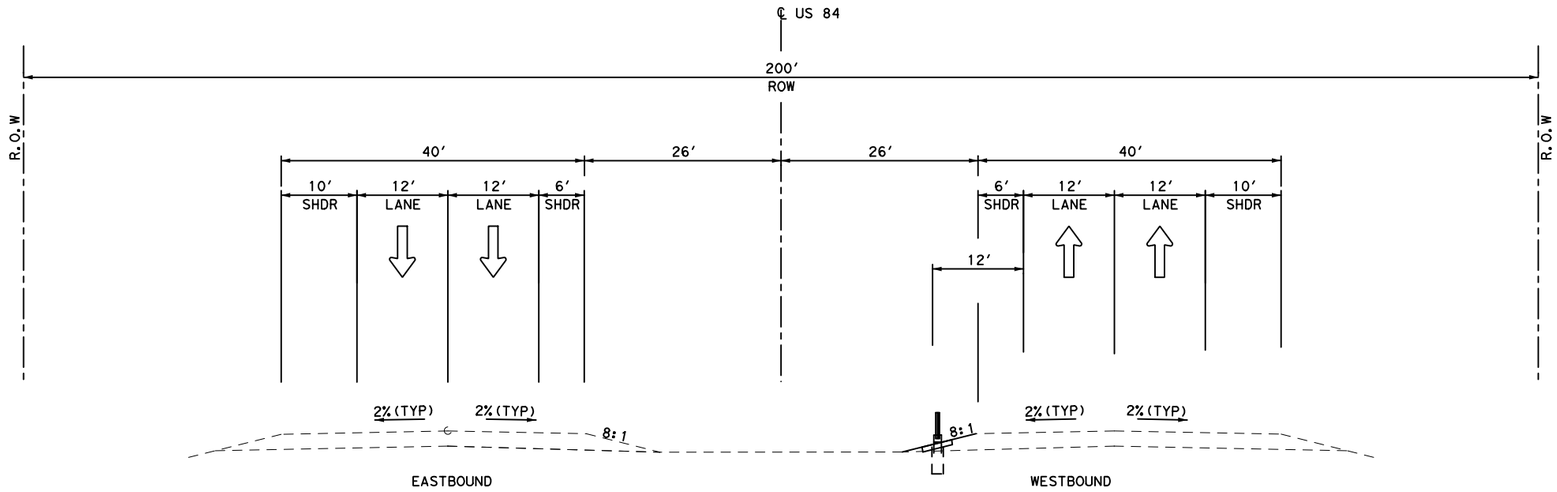

US 84

STA 718+75.59 R3 TO STA 783+64.38 R3
STA 806+50.49 R3 TO STA 857+63.98 R3
STA 493+68.51 R4 TO STA 578+00.27 R4

STATE OF TEXAS
M. N. MOZAFFAR
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LICENSED
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3/3/2023

I. S. ENGINEERS, LLC
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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

TYPICAL SECTIONS

SCALE: N.T.S. SHEET 2 OF 6

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	
CONTROL	SECTION	JOB	4
0053	07	043, ETC.	

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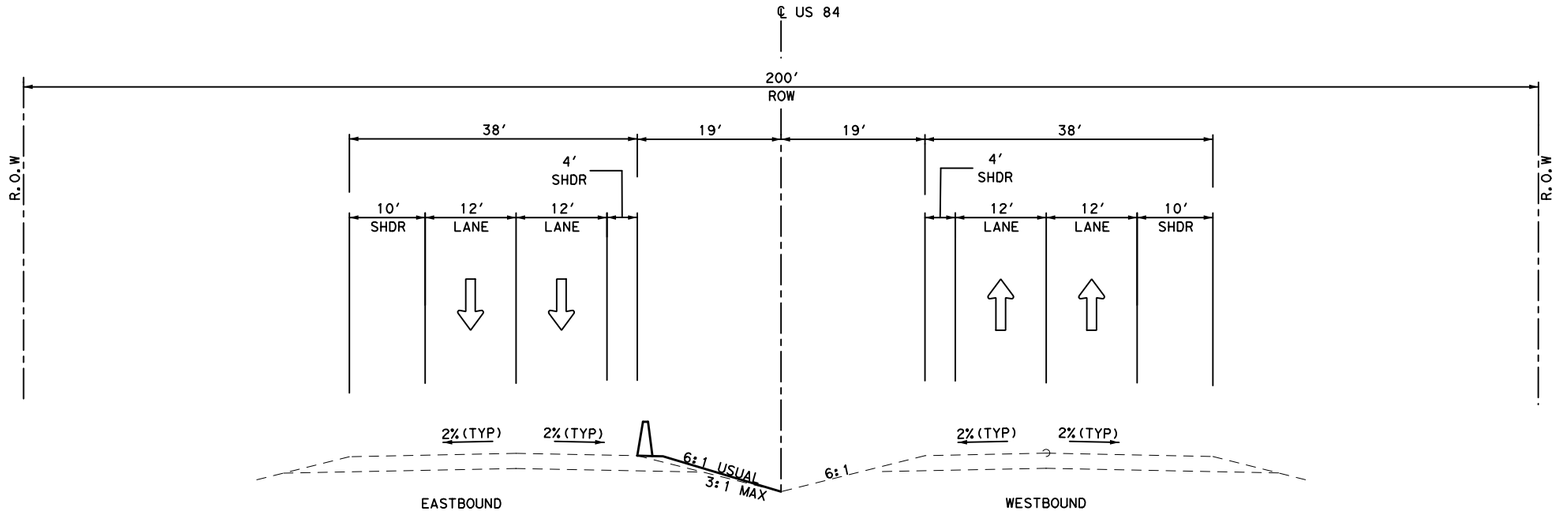
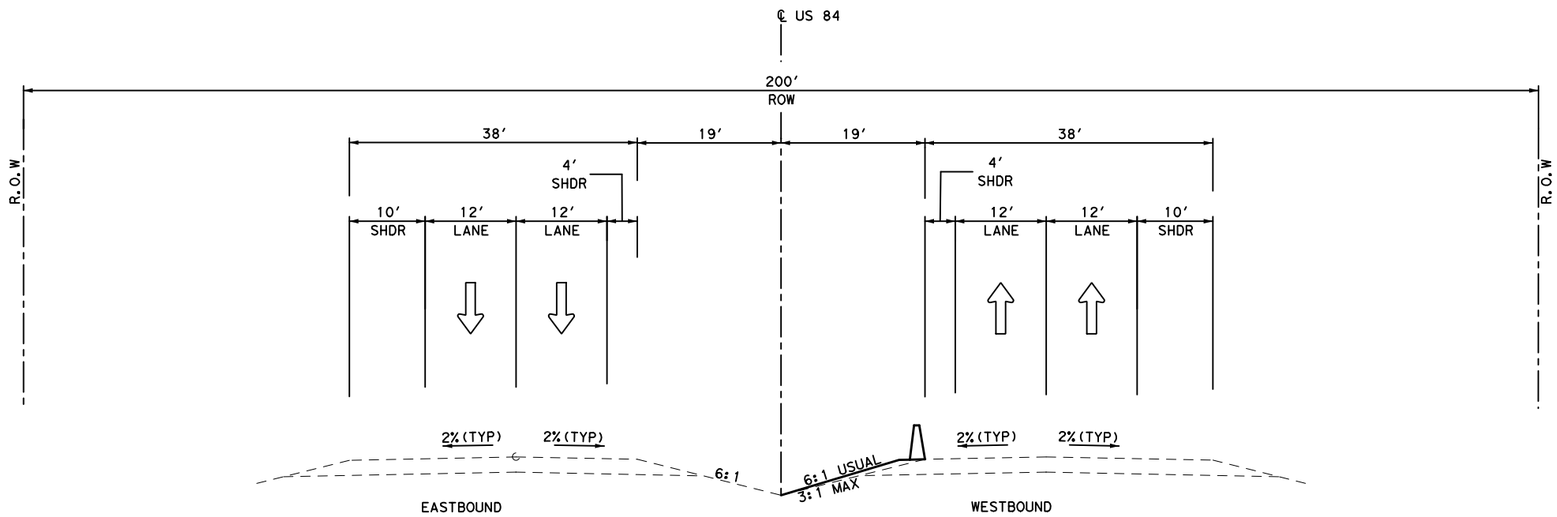
DRAWING DATE: 3/3/2023



US 84

STA 373+09.90 R4 TO STA 415+17.26 R4
STA 439+80.33 R4 TO STA 492+97.49 R4
STA 669+36.40 R4 TO STA 687+59.60 R4



US 84

STA 416+39.03 R4 TO STA 433+99.50 R4
STA 579+25.53 R4 TO STA 664+22.20 R4

NOTE:

1. REFER TO BARRIER TRANSITION AND MISCELLANEOUS DETAIL SHEETS FOR MORE INFORMATION.

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER
3/3/2023

Texas Department of Transportation

I. S. ENGINEERS, LLC
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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

TYPICAL SECTIONS

SCALE: N.T.S. SHEET 3 OF 6

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	5
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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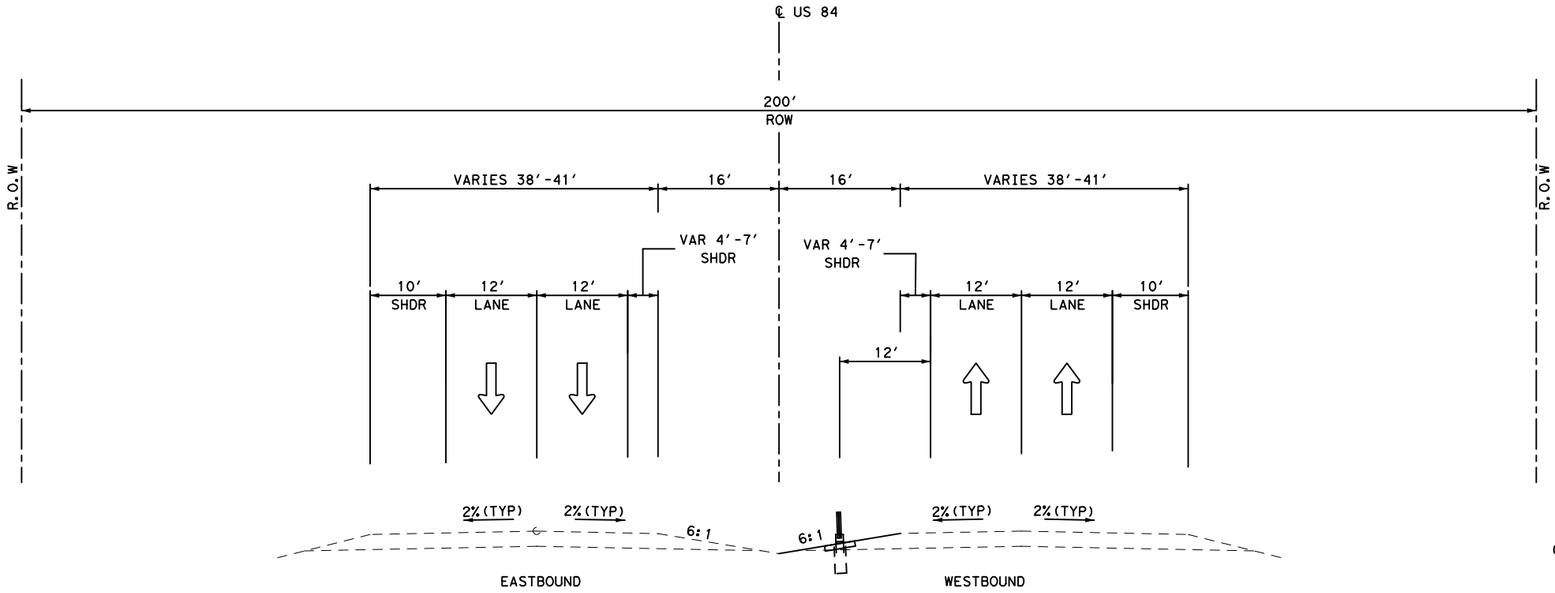
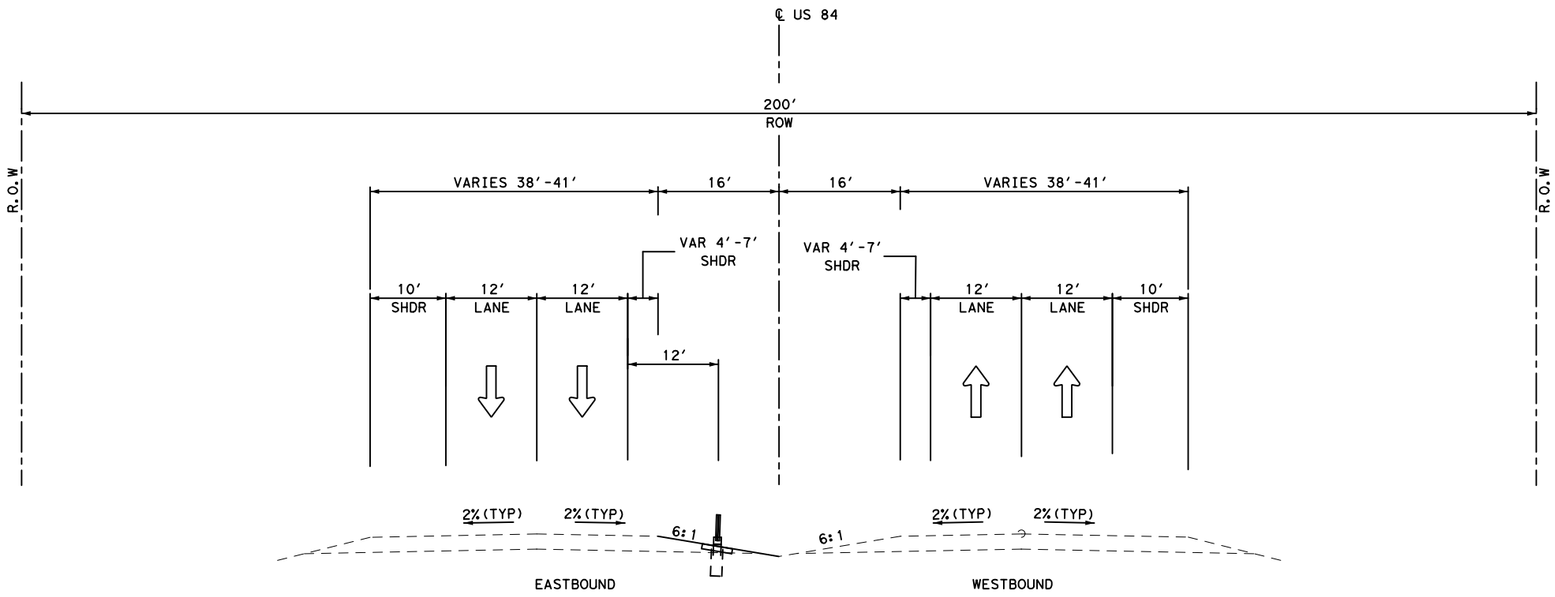


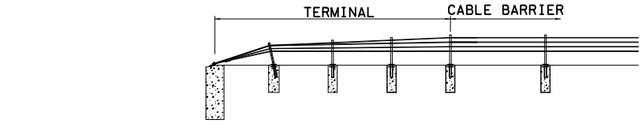
US 84

STA 725+07.59 R4 TO STA 760+98.80 R4
STA 838+31.39 R4 TO STA 901+35.50 R4
STA 953+26.50 R4 TO STA 499+54.66 R5



US 84

STA 764+94.73 R4 TO STA 837+42.87 R4
STA 905+62.85 R4 TO STA 952+43.42 R4



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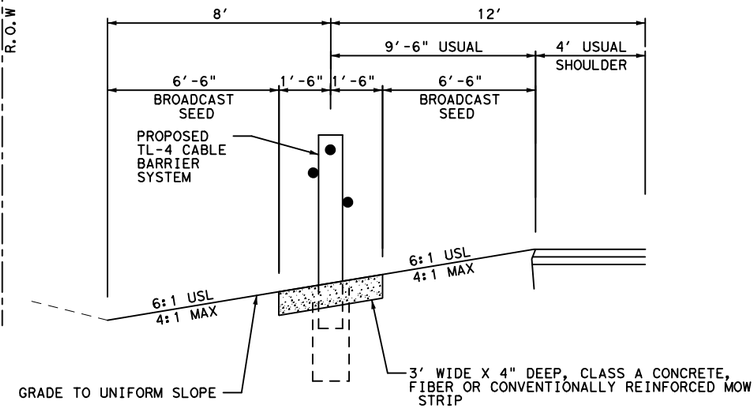

DETAIL "A"

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3. EXCAVATE AND PLACE CLASS A CONCRETE TO A MINIMUM DEPTH OF 4".

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER
3/3/2023

Texas Department of Transportation

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

TYPICAL SECTIONS

SCALE: N.T.S.

SHEET 4 OF 6

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	6
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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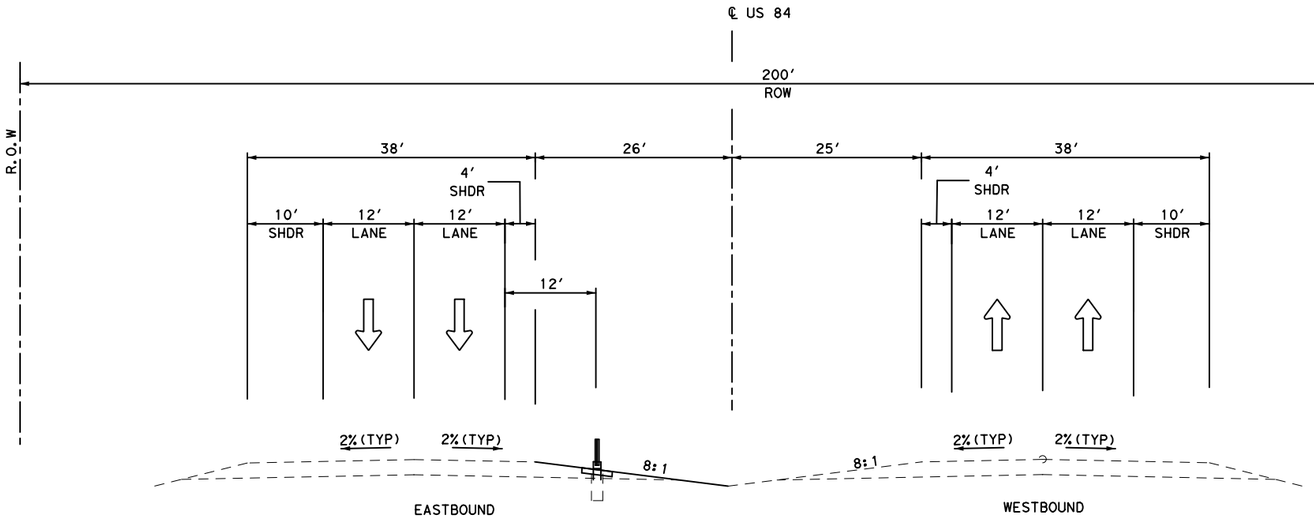
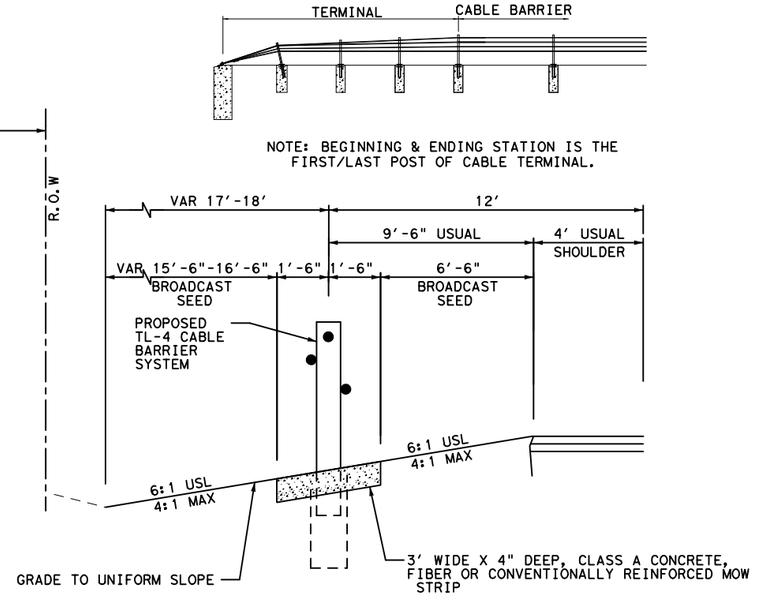


US 84

STA 500+28.70 R5 TO STA 515+54.97 R5
STA 557+08.51 R5 TO STA 640+83.28 R5
STA 668+05.08 R5 TO STA 712+23.18 R6



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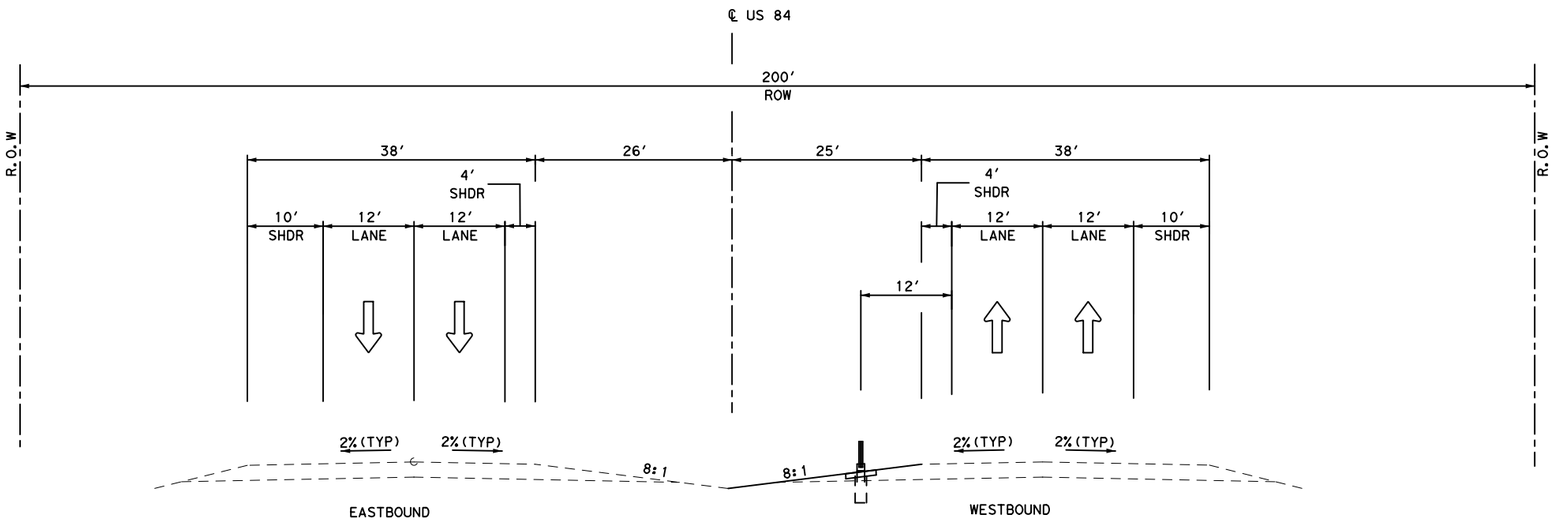
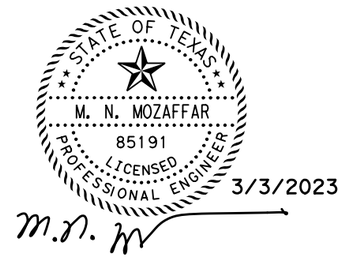


US 84

STA 516+84.62 R5 TO STA 556+34.23 R5
STA 641+64.85 R5 TO STA 667+32.49 R5
STA 713+37.07 R6 TO STA 1033+45.12 R6



I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

TYPICAL SECTIONS

SCALE: N.T.S. SHEET 5 OF 6

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	7
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

DRAWING DATE: 3/3/2023
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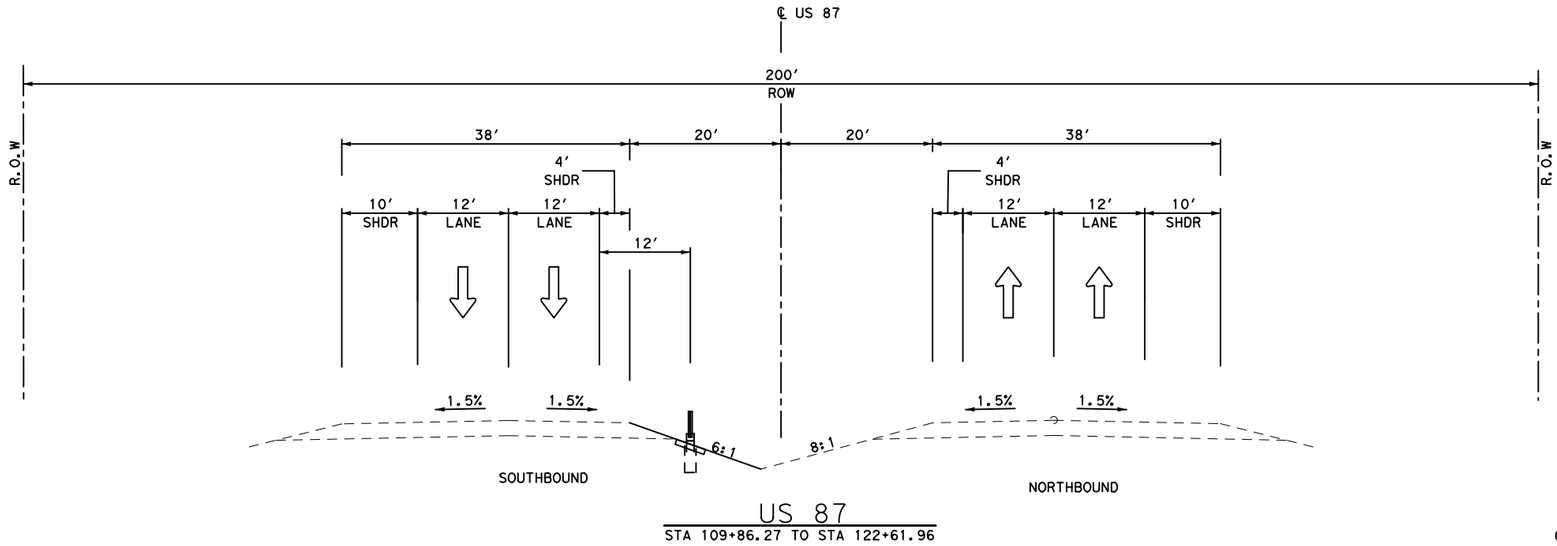
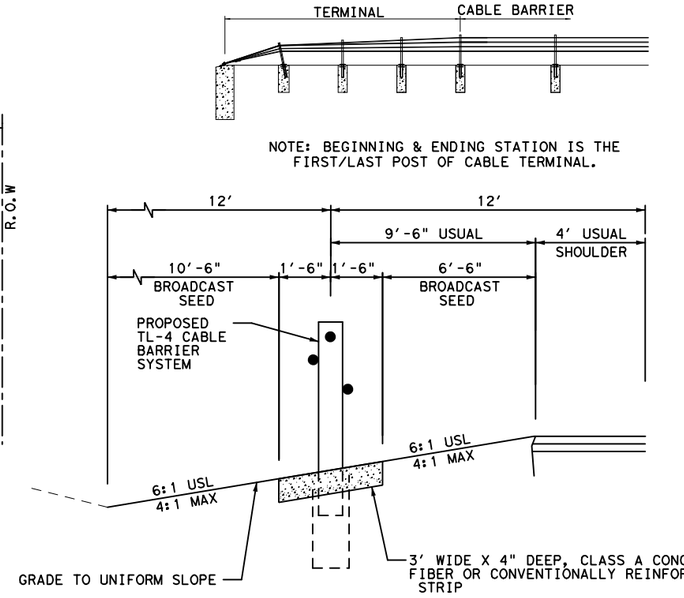


US 87

STA 109+86.27 TO STA 122+61.96



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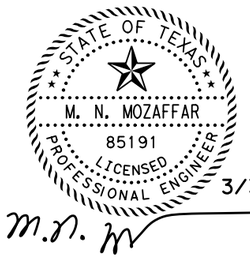

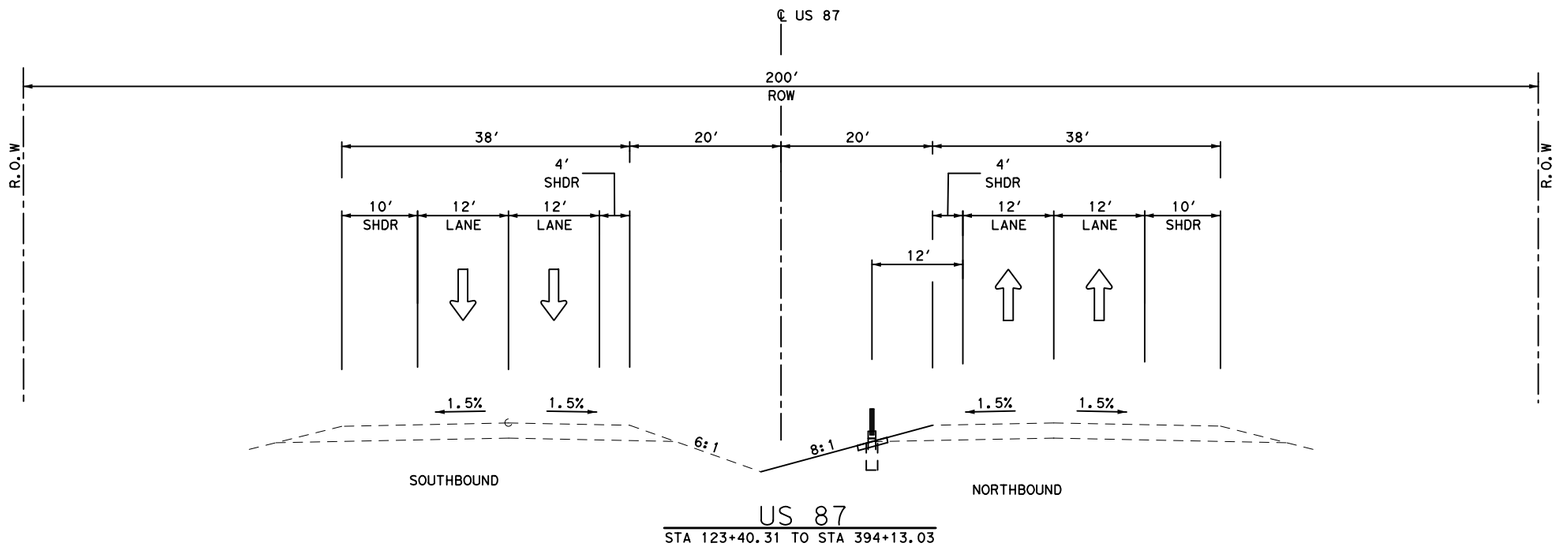

US 87

STA 123+40.31 TO STA 394+13.03

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

TYPICAL SECTIONS

SCALE: N.T.S. SHEET 6 OF 6

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	8
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\02 Typical Sections\$US84*TYP1$.dgn
DRAWING DATE: 3/3/2023

ABILENE DISTRICT GENERAL NOTES
2014 SPECIFICATIONS

General

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

Stewart Chapman, P.E. / Phone: 325-573-0143 / Stewart.Chapman@txdot.gov
Maxie Allen, P.E. / Phone: 325-573-0142 / Maxie.Allen@txdot.gov
Jose Cabrera, E.I.T. / Phone: 325-573-0143 / Jose.Cabrera@txdot.gov
(Snyder Area Office)

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

For Q&A's on Proposals navigate to
https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors
Use 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.

All relevant project documentation including contract time, cross sections,etc will be posted on the districts FTP website. https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/

Failure to make necessary corrections to SW3P based on SW3P inspections will be cause for withholding the monthly estimate until such corrections have been made

Item 5, "Control of Work"
Use Method C for construction surveying.

All known utilities are identified in the plans, including the crossing of power lines. Use this information to identify potential issues with power poles and power lines prior to bidding.

Make necessary arrangements with utility owners regarding temporary protections such as bracing power poles, and de-energizing power lines. The Department will not reimburse the cost of such temporary protections to the Contractor, unless the Engineer determines that inadequate information was available at the time the project was bid. **"Call Before You Dig" "Call 811"**

Provide notification to the District Traffic Engineering Section by telephone at 325-676-6991 and by email at ABL_TrafficFix@txdot.gov when planning drilling or excavation work in areas where existing TxDOT underground utilities exist. Visual evidence of TxDOT underground utilities in the area include illumination poles, ground boxes, flashing beacons, traffic signals, etc. This notification must be provided 72 hours in advance of performing the work.

CCSJ: 0053-07-043,etc
County: Scurry,etc
Highway: US 84,etc

Drilled shaft locations or excavation areas must be staked prior to the notification so that the underground utilities can be located in relationship to the proposed work. Preserve and document the marked utility locations to prevent unnecessary secondary notifications. Notify the Engineer of conflicts between proposed work and underground utilities.

Item 6, "Control of Materials"
To comply with the latest provisions of Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law, the contractor must submit a notarized original of the TxDOT Construction Material Buy America Certification Form for all items classified as construction materials. This form is not required for materials classified as a manufactured product.

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

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

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

Item 7, "Legal Relations and Responsibilities"
Do not initiate activities in a project specific location (PSL), associated with a U.S. Army Corps of Engineers (USACE) permit area that has not been previously evaluated by the USACE as part of the permit review of this project. Such activities include, but are not limited to, haul roads, equipment staging areas, borrow and disposal sites. Associated defined here means materials are delivered to or from the PSL. The permit area includes all waters of the U.S. or associated wetlands affected by activities associated with this project. Special restrictions may be required for such work. Be responsible for any and all consultations with the USACE regarding activities, including project specific locations (PSLs) that have not been previously evaluated by the USACE. Provide the department with a copy of all consultation(s) or approval(s) from the USACE prior to initiating activities.
The contractor may proceed with activities in PSLs that do not affect a USACE permit area if a self determination has been made that the PSL is non-jurisdictional or proper USACE clearances have been obtained in jurisdictional areas or have been previously evaluated by the USACE as part of the permit review of this project. The contractor is solely responsible for documenting any determination(s) that their activities do not affect a USACE permit area. Maintain copies of their determination(s) for review by the department or any regulatory agency.

Document and coordinate with the USACE, if required, prior to any excavation hauled from or embankment hauled into a USACE permit area by either **(1)** or **(2)** below.

(1) Restricted Use of Materials for the Previously Evaluated Permit Areas.
Document both the project specific location (PSL) and their authorization. Maintain copies for review by the department or any regulatory agency. When an area within the project limits has been evaluated by the USACE as part of the permit process for this project:

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

GENERAL NOTES

SHEET 1 OF 4

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	9
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

a. Suitable excavation of required material in the areas shown on the plans and cross sections as specified in Item 110 is used for permanent or temporary fill (Item 132, Embankment) within a USACE permit area;
b. Suitable embankment (Item 132) from within the USACE permit area is used as fill within a USACE evaluated area; and,
c. Unsuitable excavation or excess excavation ["Waste"] (Item 110) that is disposed of at a location approved by the Engineer within a USACE evaluated area.

(2) Contractor Materials from Areas Other than Previously Evaluated Areas. Provide the department with a copy of all USACE coordination or approval(s) prior to initiating any activities for an area within the project limits that has not been evaluated by the USACE or for any off right of way locations used for the following, but not limited to, haul roads, equipment staging areas, borrow and disposal sites:
a. Item 132, Embankment, used for temporary or permanent fill within a USACE permit area; and,
b. Unsuitable excavation or excess excavation ["Waste"] (Item 110, Excavation) that is disposed of outside a USACE evaluated area.

The total area disturbed for this project is **119** acres. The disturbed area in this project, all project locations in the Contract, and the Contractor project specific locations (PSLs), within 1 mile of the project limits, for the Contract will further establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain required authorization from the TCEQ for Contractor PSLs for construction support activities on or off the ROW. When the total area disturbed in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, provide a copy of the Contractor NOI for PSLs on the ROW to the Engineer and to the government that operates a separate storm sewer system.

Provide one SW3P Notification Board for this project. Notification Boards are to be placed at locations within the right-of-way but outside the clear zone as directed by the Engineer. Consider this work to be subsidiary to the various bid items of the contract.

No significant traffic generator events identified.

Hard hats are required at all times during construction when construction personnel are in TxDOT Right-of-Way.

Patrol vehicles must be clearly marked to correspond with the officer's agency and equipped with appropriate lights to identify them as law enforcement. For patrol vehicles not owned by a law enforcement agency, markings will be retroreflective and legible from 100 ft. from both sides and the rear of the vehicle. Lights will be high intensity and visible from all angles.

CCSJ: 0053-07-043,etc
County: Scurry,etc
Highway: US 84,etc

LIGHTING STANDARDS FOR HIGHWAY MAINTENANCE OR CONSTRUCTION VEHICLES AND SERVICE VEHICLES

VEHICLE LIGHTING SUMMARY
Vehicle Color of Flashing Lights Transportation Code
Police Vehicles Red/Blue/White/Amber 547.305 & 547.702
Fire/EMS Vehicles Red/Blue/White/Amber 547.305 & 547.702
Volunteer Fire/EMS Red/Blue/White/Amber 547.305 & 547.702
School Bus Red/White (rooftop)/Amber 547.305 & 547.701
Highway Maintenance or Construction Vehicles1 and Service Vehicles2 Amber/Blue 547.105 & TxDOT

Item 8 "Prosecution and Progress"
Each contract awarded by the Department stands on its own and as such, is separate from other contracts. A Contractor awarded multiple contracts must be capable and sufficiently staffed to concurrently process and/or execute all contracts at the same time.

The Contractor is hereby authorized to begin work prior to the expiration of the number of calendar days provided in the Special Provision to Item 8, Article 8.1. Notify the Engineer in writing of the date to begin work. Time charges will commence when work begins or on the expiration of the number of calendar days provided, whichever occurs first.

Coordinate and update the work schedule with the project inspector daily. Give a minimum of 24 hours of notice to project inspector if work requiring inspection or testing is to be performed. Failure to do so may cause that work to be delayed or postponed if TxDOT personnel are not available. Work performed without suitable inspection, as determined by the Engineer, may be ordered removed and replaced at Contractor's expense.

Item 9, "Measurement and Payment"
The progress payment period shall end on the 25th of each month, unless directed by the Area Office Engineer. Material on Hand (MOH) is due two business days before estimate cut off.

Item 164, "Seeding for Erosion Control"
Quantities shown are approximate; limits of the temporary and permanent seeding will be determined during construction.

Temporary seeding will be required in several small areas as work progresses to comply with the storm water pollution prevention plan and may require multiple mobilizations of seeding crew.

Item 432, "Riprap"
Provide tooled contraction joints at a maximum spacing of 25 feet and ½" fiber board every 150 feet when constructing cable median barrier mow strips. The depth for tooled joints shall be sufficient to ensure cracking at the joints. The depth for fiber board joints shall be the full depth of the mow strip.

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US 84

GENERAL NOTES

SHEET 2 OF 4

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	10
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

Provide structural fiber reinforced concrete for slip formed cable median barrier concrete mow strip.

Provide structural fiber reinforced or conventionally reinforced concrete for formed cable median barrier concrete mow strip.

Meet the following requirements when using structural fiber reinforcement:

- Use Class A Concrete.
- If slip forming, use an approved method that ensures adequate concrete consolidation. Sprinkle and consolidate the subgrade before the concrete is placed. Finish the surface with a wood float or broom finish as approved. Immediately after finishing operation, cure the riprap according to Item 420, "Concrete Structures".

When using conventional reinforcement, meet all requirements in accordance with Article 432.3.1. Concrete Riprap with exception that Class A Concrete is required.

Item 502, "Barricades, Signs and Traffic Handling"
Mobile traffic control in accordance with TPC 3 series will be required for placement of short duration, short term, intermediate term, and long-term traffic control.

Provide the Engineer with written notification seven (7) days in advance of major traffic changes. A major traffic change is defined as the temporary (greater than one day) or permanent relocation of traffic lanes typically in an urban setting. The notice will, at a minimum, include the expected date, time and scope of the traffic change. The Department will utilize the information provided to inform the traveling public of the changes. Failure to provide advance notice, or to provide accurate information, will result in delaying the work until such time that the public has been notified.

Additional signs, barricades and traffic handling may be necessary to complete the work shown herein and will be provided by the contractor as required and will be considered subsidiary to this item.

Provide separate attenuators for each work area within a common lane closure as approved or directed by the Engineer.
In sections where traffic is restricted to one lane, two-way traffic, flaggers will be stationed at each end of that section with two-way communication devices and a pilot car will control operations.

Relocate existing roadside signs to temporary supports as approved by the engineer.

All safety appurtenances such as signs, delineators, object markers and route markers will be in place prior to opening each phase of the construction to traffic, unless otherwise directed.

CCSJ: 0053-07-043,etc
County: Scurry,etc
Highway: US 84,etc

During construction on all underpass structures erect and maintain accurate clearance signs in accordance with the "Texas Manual on Uniform Traffic Control Device for Streets and Highways". The mounting method for the temporary clearance sign is subject to approval of the Engineer. Temporary clearance signs are considered subsidiary to the various bid items.
Movement of construction equipment and haul trucks will be prohibited from crossing the median unless specifically authorized by the Engineer. Ingress and egress to main lanes will be at entrance and exit ramps.

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.

The Contractor's person responsible for TCP compliance must be available by local telephone and have a response time within 45 minutes.

Work will not be allowed on both sides of the roadbed at the same time.

Equip all work vehicles within 30 feet of the traveled way with a functioning amber strobe light or rotating beacon visible from all directions.

Repair barricades within the timeline shown on the barricade inspection report. Failure to comply will cease all work until barricades are repaired to the satisfaction of the Department. Replace all damaged traffic control devices immediately. Remove any damaged traffic control devices from the project within 24 hours.

Conflicting guide signs shall be covered as approved by the Engineer. This work shall be subsidiary to Item 502.

Item 658, "Delineator and Object Marker Assemblies"
Delineators and object marker assemblies will use winged channel posts. The winged channel posts will be 1.12 lb/ft and 6.5 ft in length.

All MBGF delineation shall be GF2 mounted on posts.
Use a minimum 2 inch long lag screws with washers to attach flexible GF2 barrier reflectors to wooden post. For steel posts, use an approved adhesive, or other method approved by Engineer.

Concrete Barrier Reflectors shall be equivalent to Shure-tite CTB "Cup Mount" Delineator (8"). Attach delineators to concrete rail with concrete anchors as approved by the Engineer.

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GENERAL NOTES

SHEET 3 OF 4

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	11
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

CCSJ: 0053-07-043,etc
County: Scurry,etc
Highway: US 84,etc

Item 662, "Work Zone Pavement Markings"
Place work zone pavement markings (flexible tabs) prior to the seal coat operation.

Dispose of tabs and paper in an approved trash receptacle. (Reference Standard **SW3P**, waste material)

Item 666, "Retro reflectorized Pavement Markings"
All longitudinal pavement markings (including profile pavement markings) must meet minimum retro reflectivity requirements.

Establish a true and correct alignment with a method approved by the Engineer. This work will be considered subsidiary.

Contractor is responsible for re-establishing location and alignment for new pavement markings matching pavement marking alignment prior to construction activities. This work will be considered subsidiary.

Item 672, "Raised Pavement Markers"
Provide a complete system of raised pavement markers at locations indicated on the plans and as directed by the engineer. The plans are intended to show typical conditions, which can be extended to similar conditions throughout this project as approved or directed.

Bituminous adhesive shall be used on this project.

Item 677, "Eliminating Existing Pavement Markings and Markers"
Remove the existing raised pavement markings (RPMs) and profile pavement markings as the work progresses, or as directed by the Engineer. Removal methods shall be approved by the Engineer. Properly dispose of materials removed. Removal of existing profile pavement markings will be paid for directly. Removal of RPMs will not be paid for directly but will be subsidiary to the pertinent bid items.

Item 685, "Roadside Flashing Beacon Assemblies"
One-Pole Solar Powered Roadside Flashing Beacon shall consist of an installation with one foundation, pole and transformer base and the use of a ground box/battery vault as shown on the standard sheet(s).

Item 6185, "Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA)"
Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA) will not be considered a major item of work on this project.

TMA,s will only be paid while workers are present or to protect a blunt object.

CCSJ: 0053-07-043,etc
County: Scurry,etc
Highway: US 84,etc

The contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMAs needed for the project. The Contractor must get approval from the Engineer for any changes in the number of TMA as shown in the plans.

If a TMA is used for both mobile and stationary traffic control on the same day, it will be paid for as stationary for that day.

BASIS OF ESTIMATE FOR STATIONARY TMAs				
		TMA (Stationary)		
Phase	Standard	Required	Additional	TOTAL
	TCP(2-6)-18	1		1
	TCP(5-1)-18	1		1
	TCP(6-1)-12	1		1

Basis of Estimate for Mobile TMAs				
		TMA (Mobile)		
Phase	Standard	Required	Additional	TOTAL
	TCP(3-2)-13	2		2

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GENERAL NOTES

SHEET 4 OF 4

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	12
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0053-07-043 **DISTRICT** Abilene **COUNTY** Howard, Mitchell, Nolan, Scurry
HIGHWAY US 84, US 87

			CONTROL SECTION JOB	**0053-07-043**		**0053-08-074**		**0053-08-075**		**0053-09-077**		**0053-09-078**		**0053-10-046**	
			PROJECT ID	**A00188461**		**A00188451**		**A00188463**		**A00188453**		**A00188464**		**A00188465**	
			COUNTY	**Scurry**		**Scurry**		**Scurry**		**Scurry**		**Scurry**		**Scurry**	
			HIGHWAY	**US 84**		**US 84**		**US 84**		**US 84**		**US 84**		**US 84**	
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
	104-6054	REMOVING CONCRETE(MOW STRIP)	LF							480.000					
	110-6001	EXCAVATION (ROADWAY)	CY	2,558.000		3.000		870.000		329.000		1,295.000		1,685.000	
	132-6019	EMBANKMENT (VEHICLE)(ORD COMP)(TY B)	CY	708.000				241.000		82.000		358.000		465.000	
	164-6001	BROADCAST SEED (PERM) (RURAL) (SANDY)	SY	151,293.000		16,947.000		33,948.000		50,483.000		84,087.000		106,077.000	
	432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	2,558.000		3.000		870.000		329.000		1,295.000		1,685.000	
	500-6001	MOBILIZATION	LS	1.000											
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	18.000											
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	1,200.000		100.000		495.000		370.000		380.000		610.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	1,200.000		100.000		495.000		370.000		380.000		610.000	
	514-6009	PERM CTB (SGL SLOPE) (TY 1) (54)	LF			8,027.000				13,912.000					
	542-6001	REMOVE METAL BEAM GUARD FENCE	LF			150.000				800.000					
	542-6002	REMOVE TERMINAL ANCHOR SECTION	EA			1.000				3.000					
	542-6004	RM MTL BM GD FENCE TRANS (THRIE-BEAM)	EA							2.000					
	543-6002	CABLE BARRIER SYSTEM (TL-4)	LF	69,171.000				23,501.000		7,981.000		34,962.000		45,461.000	
	543-6020	CABLE BARRIER TERMINAL SECTION (TL-4)	EA	53.000				17.000		10.000		30.000		23.000	
	544-6003	GUARDRAIL END TREATMENT (REMOVE)	EA			1.000				3.000					
	545-6025	CRASH CUSHION ATTEN (INSTALL)(REACT)(N)	EA							4.000					
	658-6026	INSTL DEL ASSM (D-SY)SZ (BRF)CTB	EA			101.000				175.000					
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF			8,027.000				13,912.000					
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF			2,007.000				3,478.000					
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF			8,027.000				13,912.000					
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF			8,027.000				13,912.000					
	672-6010	REFL PAV MRKR TY II-C-R	EA			100.000				174.000					
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF			2,007.000				3,478.000					
	685-6002	RELOCATE RDSD FLASH BEACON ASSEMBLY	EA	1.000											
	685-6004	INSTL RDSD FLSH BCN ASSM (SOLAR PWRD)	EA	1.000						1.000					
	685-6006	REMOV RDSD FLSH BCN AM (SOLAR PWRD)	EA							1.000					
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000											
	6185-6002	TMA (STATIONARY)	DAY	90.000		13.000		30.000		34.000		45.000		58.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY			5.000				9.000					
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000											
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000											

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0053-07-043 **DISTRICT** Abilene **COUNTY** Howard, Mitchell, Nolan, Scurry
HIGHWAY US 84, US 87

			CONTROL SECTION JOB	**0053-11-027**		**0053-12-074**		**0069-01-065**		TOTAL EST.	TOTAL FINAL
			PROJECT ID	**A00188468**		**A00188469**		**A00188454**			
			COUNTY	**Mitchell**		**Nolan**		**Howard**			
			HIGHWAY	**US 84**		**US 84**		**US 87**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	104-6054	REMOVING CONCRETE(MOW STRIP)	LF							480.000	
	110-6001	EXCAVATION (ROADWAY)	CY	90.000		1,275.000		974.000		9,079.000	
	132-6019	EMBANKMENT (VEHICLE)(ORD COMP)(TY B)	CY	24.000		353.000		269.000		2,500.000	
	164-6001	BROADCAST SEED (PERM) (RURAL) (SANDY)	SY	5,651.000		80,430.000		49,643.000		578,559.000	
	432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	90.000		1,275.000		974.000		9,079.000	
	500-6001	MOBILIZATION	LS							1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO							18.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF			310.000		1,190.000		4,655.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF			310.000		1,190.000		4,655.000	
	514-6009	PERM CTB (SGL SLOPE) (TY 1) (54)	LF							21,939.000	
	542-6001	REMOVE METAL BEAM GUARD FENCE	LF							950.000	
	542-6002	REMOVE TERMINAL ANCHOR SECTION	EA							4.000	
	542-6004	RM MTL BM GD FENCE TRANS (THRIE-BEAM)	EA							2.000	
	543-6002	CABLE BARRIER SYSTEM (TL-4)	LF	2,422.000		34,470.000		26,282.000		244,250.000	
	543-6020	CABLE BARRIER TERMINAL SECTION (TL-4)	EA	2.000		25.000		30.000		190.000	
	544-6003	GUARDRAIL END TREATMENT (REMOVE)	EA							4.000	
	545-6025	CRASH CUSHION ATTEN (INSTALL)(REACT)(N)	EA							4.000	
	658-6026	INSTL DEL ASSM (D-SY)SZ (BRF)CTB	EA							276.000	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF							21,939.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF							5,485.000	
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF							21,939.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF							21,939.000	
	672-6010	REFL PAV MRKR TY II-C-R	EA							274.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF							5,485.000	
	685-6002	RELOCATE RDSD FLASH BEACON ASSEMBLY	EA							1.000	
	685-6004	INSTL RDSD FLSH BCN ASSM (SOLAR PWRD)	EA							2.000	
	685-6006	REMOV RDSD FLSH BCN AM (SOLAR PWRD)	EA							1.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA							2.000	
	6185-6002	TMA (STATIONARY)	DAY	3.000		44.000		34.000		351.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY							14.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS							1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS							1.000	

SUMMARY OF TRAFFIC CONTROL ITEMS

LOCATION	662 6095	677 6001	6001 6002	6185 6002	6185 6005
	WK ZN PAV MRK REMOV (Y)4"(SLD)	ELIM EXT PAV MRK & MRKS (4")	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)
US 84	LF	LF	EA	DAY	DAY
NOLAN COUNTY					
CSJ 0053-12-074 TOTAL				**44**	
MITCHELL COUNTY					
CSJ 0053-11-027 TOTAL				**3**	
SCURRY COUNTY					
CSJ 0053-10-046 TOTAL				**58**	
CSJ 0053-09-078 TOTAL				**45**	
CSJ 0053-09-077 TOTAL	**13,912**	**3,478**		**34**	**9**
CSJ 0053-08-074 TOTAL	**8,027**	**2,007**		**13**	**5**
CSJ 0053-08-075 TOTAL				**30**	
CSJ 0053-07-043 TOTAL				**90**	
US 84 TOTAL	21,939	5,485		317	14
US 87					
HOWARD COUNTY					
CSJ 0069-01-065 TOTAL				**34**	
US 87 TOTAL				34	
PROJECT TOTALS	**21,939**	**5,485**	**2**	**351**	**14**

SUMMARY OF PROPOSED PAVEMENT MARKING ITEMS

LOCATION (STA TO STA)	666 6306	666 6309	666 6321	672 6010
	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REFL PAV MRKR TY II-C-R
US 84	LF	LF	LF	EA
SCURRY COUNTY				
857+51.28 TO 383+00.00	248	992	992	12
383+00.00 TO 407+00.00	600	2,400	2,400	30
407+00.00 TO 431+00.00	570	2,280	2,280	29
431+00.00 TO 455+00.00	473	1,890	1,890	24
455+00.00 TO 479+00.00	600	2,400	2,400	30
479+00.00 TO 503+00.00	350	1,400	1,400	18
503+00.00 TO 527+00.00				
527+00.00 TO 551+00.00				
551+00.00 TO 575+00.00				
575+00.00 TO 599+00.00	495	1,980	1,980	25
599+00.00 TO 604+70.00	143	570	570	7
CSJ 0053-09-077 TOTAL	**3,478**	**13,912**	**13,912**	**174**
604+70.00 TO 623+00.00	463	1,850	1,850	23
623+00.00 TO 647+00.00	600	2,400	2,400	30
647+00.00 TO 671+00.00	473	1,890	1,890	24
671+00.00 TO 688+09.78	472	1,887	1,887	24
CSJ 0053-08-074 TOTAL	**2,007**	**8,027**	**8,027**	**100**
US 84 TOTAL	5,485	21,939	21,939	274
PROJECT TOTALS	**5,485**	**21,939**	**21,939**	**274**

SUMMARY OF REMOVAL ITEMS (CONTINUED)

LOCATION (STA TO STA)	104 6054	542 6001	542 6002	542 6004	544 6003	685 6006
	REMOVING CONCRETE (MOW STRIP)	REMOVE METAL BEAM GUARD FENCE	REMOVE TERMINAL ANCHOR SECTION	RM MTL BM GD FENCE TRANS (THRIE-BEAM)	GUARDRAIL END TREATMENT (REMOVE)	REMOV RDSD FLSH BCN AM (SOLAR PWRD)
US 84	LF	LF	EA	EA	EA	EA
SCURRY COUNTY						
857+51.28 TO 383+00.00						
383+00.00 TO 407+00.00		100	1		1	
407+00.00 TO 431+00.00						
431+00.00 TO 455+00.00	480	400	1	2	1	
455+00.00 TO 479+00.00		300	1		1	
479+00.00 TO 503+00.00						
503+00.00 TO 527+00.00						
527+00.00 TO 551+00.00						1
551+00.00 TO 575+00.00						
575+00.00 TO 599+00.00						
599+00.00 TO 604+70.00						
CSJ 0053-09-077 TOTAL	**480**	**800**	**3**	**2**	**3**	**1**
604+70.00 TO 623+00.00		150	1		1	
623+00.00 TO 647+00.00						
647+00.00 TO 671+00.00						
671+00.00 TO 686+54.45						
CSJ 0053-08-074 TOTAL		**150**	**1**		**1**	
970+73.91 TO 983+00.00						
983+00.00 TO 340+00.00						
340+00.00 TO 364+00.00						
364+00.00 TO 388+00.00						
388+00.00 TO 412+00.00						
412+00.00 TO 436+00.00						
436+00.00 TO 460+00.00						
460+00.00 TO 484+00.00						
484+00.00 TO 508+00.00						
508+00.00 TO 532+00.00						
532+00.00 TO 556+00.00						
556+00.00 TO 580+00.00						
580+00.00 TO 604+00.00						
604+00.00 TO 628+00.00						
628+00.00 TO 652+00.00						
652+00.00 TO 676+00.00						
676+00.00 TO 701+00.00						1
701+00.00 TO 725+00.00						
725+00.00 TO 749+00.00						
749+00.00 TO 773+00.00						
773+00.00 TO 797+00.00						
797+00.00 TO 821+00.00						
821+00.00 TO 845+00.00						
845+00.00 TO 869+00.00						
869+00.00 TO 893+00.00						
893+00.00 TO 917+00.00						
917+00.00 TO 941+00.00						
941+00.00 TO 965+00.00						
965+00.00 TO 989+00.00						
989+00.00 TO 1013+00.00						
1013+00.00 TO END						
CSJ 0053-07-043 TOTAL						1
US 84 TOTAL	**480**	**950**	**4**	**2**	**4**	**2**
PROJECT TOTALS	**480**	**950**	**4**	**2**	**4**	**2**

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US • 84
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QUANTITY • SUMMARY
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FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	15
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\03 Quantity Summaries*US84*TCP-QUANT.dgn
DRAWING DATE: 2/27/2023

SUMMARY OF ROADWAY ITEMS

LOCATION (STA TO STA)	110 6001 EXCAVATION (ROADWAY)	132 6019 EMBANKMENT (VEHICLE) (ORD COMP) (TY B)	432 6045 RIPRAP (MOW STRIP) (4 IN)	514 6009 PERM CTB (SGL SLOPE) (TY 1) (54)	543 6002 CABLE BARRIER SYSTEM (TL-4)	543 6020 CABLE BARRIER TERMINAL SECTION (TL-4)	545 6025 CRASH CUSHION ATTEN (INSTALL) (REACT) (N)	658 6026 INSTL DEL ASSM (D-SY) SZ (BR) CTB	685 6004 INSTL RDSD FLSH BCN ASSM (SOLAR PWRD)
US 84	CY	CY	CY	LF	LF	EA	EA	EA	EA
NOLAN COUNTY									
BEGIN TO 126+00.00	67		67		1,820	1			
126+00.00 TO 150+00.00	79		79		2,140	2			
150+00.00 TO 174+00.00	89		89		2,400				
174+00.00 TO 198+00.00	69		69		1,860	6			
198+00.00 TO 222+00.00	83		83		2,240	2			
222+00.00 TO 246+00.00	89		89		2,401				
246+00.00 TO 270+00.00	83		83		2,250	2			
270+00.00 TO 294+00.00	73		73		1,960	3			
294+00.00 TO 318+00.00	76		76		2,063	1			
318+00.00 TO 342+00.00	86		86		2,337	1			
342+00.00 TO 366+00.00	86		86		2,331	1			
366+00.00 TO 390+00.00	84		84		2,260	2			
390+00.00 TO 414+00.00	82		82		2,210	3			
414+00.00 TO 438+00.00	88		88		2,382	1			
438+00.00 TO 462+00.00	89		89		2,400				
462+00.00 TO 476+16.00	52		52		1,416				
CSJ 0053-12-074 TOTAL	**1,275**	**353**	**1,275**		**34,470**	**25**			
MITCHELL COUNTY									
476+16.00 TO 486+00.00	33		33		880	1			
486+00.00 TO 88+10.00	57		57		1,542	1			
CSJ 0053-11-027 TOTAL	**90**	**24**	**90**		**2,422**	**2**			
SCURRY COUNTY									
88+10.00 TO 90+00.00	7		7		200				
90+00.00 TO 41+00.00	78		78		2,102				
41+00.00 TO 65+00.00	89		89		2,400				
65+00.00 TO 89+00.00	89		89		2,400				
89+00.00 TO 113+00.00	79		79		2,126	4			
113+00.00 TO 137+00.00	89		89		2,400				
137+00.00 TO 161+00.00	89		89		2,400				
161+00.00 TO 185+00.00	83		83		2,248	2			
185+00.00 TO 209+00.00	81		81		2,198	2			
209+00.00 TO 233+00.00	89		89		2,400				
233+00.00 TO 257+00.00	89		89		2,400				
257+00.00 TO 281+00.00	82		82		2,210	2			
281+00.00 TO 305+00.00	89		89		2,400				
305+00.00 TO 329+00.00	79		79		2,141	4			
329+00.00 TO 353+00.00	89		89		2,400				
353+00.00 TO 377+00.00	86		86		2,312	1			
377+00.00 TO 401+00.00	86		86		2,320	1			
401+00.00 TO 425+00.00	89		89		2,400				
425+00.00 TO 449+00.00	77		77		2,079	4			
449+00.00 TO 473+00.00	83		83		2,230	2			
473+00.00 TO 490+50.00	63		63		1,695	1			
CSJ 0053-10-046 TOTAL	**1,685**	**465**	**1,685**		**45,461**	**23**			
490+50.00 TO 497+00.00	21		21		555	1			
497+00.00 TO 521+00.00	83		83		2,243	2			
521+00.00 TO 545+00.00	84		84		2,277	2			
545+00.00 TO 569+00.00	89		89		2,400				
569+00.00 TO 593+00.00	89		89		2,400				
593+00.00 TO 617+00.00	84		84		2,271	2			
617+00.00 TO 641+00.00	84		84		2,266	2			
641+00.00 TO 665+00.00	89		89		2,400				
665+00.00 TO 689+00.00	89		89		2,400				
689+00.00 TO 713+00.00	85		85		2,286	2			
713+00.00 TO 737+00.00	80		80		2,161	4			
737+00.00 TO 761+00.00	89		89		2,400				
761+00.00 TO 785+00.00	85		85		2,302	2			
785+00.00 TO 809+00.00	79		79		2,136	6			
809+00.00 TO 833+00.00	81		81		2,195	4			
833+00.00 TO 857+00.00	84		84		2,270	3			
857+00.00 TO 857+51.28									
CSJ 0053-09-078 TOTAL	**1,295**	**358**	**1,295**		**34,962**	**30**			
857+51.28 TO 383+00.00	3		3	992				12	
383+00.00 TO 407+00.00	8		8	2,400				30	

SUMMARY OF ROADWAY ITEMS

LOCATION (STA TO STA)	110 6001 EXCAVATION (ROADWAY)	132 6019 EMBANKMENT (VEHICLE) (ORD COMP) (TY B)	432 6045 RIPRAP (MOW STRIP) (4 IN)	514 6009 PERM CTB (SGL SLOPE) (TY 1) (54)	543 6002 CABLE BARRIER SYSTEM (TL-4)	543 6020 CABLE BARRIER TERMINAL SECTION (TL-4)	545 6025 CRASH CUSHION ATTEN (INSTALL) (REACT) (N)	658 6026 INSTL DEL ASSM (D-SY) SZ (BR) CTB	685 6004 INSTL RDSD FLSH BCN ASSM (SOLAR PWRD)
US 84	CY	CY	CY	LF	LF	EA	EA	EA	EA
407+00.00 TO 431+00.00	3		3	2,280			2	29	
431+00.00 TO 455+00.00	7		7	1,890				24	
455+00.00 TO 479+00.00				2,400				30	
479+00.00 TO 503+00.00	37		37	1,400	920	1	1	18	
503+00.00 TO 527+00.00	82		82		2,206	4			
527+00.00 TO 551+00.00	80		80		2,170	4			1
551+00.00 TO 575+00.00	89		89		2,400				
575+00.00 TO 599+00.00	20		20	1,980	285	1	1	25	
599+00.00 TO 604+70.00				570				7	
CSJ 0053-09-077 TOTAL	**329**	**82**	**329**	**13,912**	**7,981**	**10**	**4**	**175**	**1**
604+70.00 TO 623+00.00				1,850				23	
623+00.00 TO 647+00.00	3		3	2,400				30	
647+00.00 TO 671+00.00				1,890				24	
671+00.00 TO 688+09.78				1,887				24	
CSJ 0053-08-074 TOTAL	**3**		3	**8,027**				**101**	
688+09.78 TO 695+00.00									
695+00.00 TO 719+00.00									
719+00.00 TO 743+00.00	62		62		1,674	3			
743+00.00 TO 767+00.00	81		81		2,183	3			
767+00.00 TO 791+00.00	87		87		2,357	1			
791+00.00 TO 815+00.00	89		89		2,400				
815+00.00 TO 839+00.00	84		84		2,274	2			
839+00.00 TO 863+00.00	89		89		2,403				
863+00.00 TO 887+00.00	86		86		2,315	2			
887+00.00 TO 911+00.00	84		84		2,265	2			
911+00.00 TO 935+00.00	89		89		2,402				
935+00.00 TO 959+00.00	84		84		2,279	2			
959+00.00 TO 970+73.91	35		35		949	2			
CSJ 0053-08-075 TOTAL	**870**	**241**	**870**		**23,501**	**17**			

I.S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US • 84
•
QUANTITY • SUMMARY
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FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	16
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

SUMMARY OF ROADWAY ITEMS

LOCATION (STA TO STA)	110 6001 EXCAVATION (ROADWAY)	132 6019 EMBANKMENT (VEHICLE) (ORD COMP) (TY B)	432 6045 RIPRAP (MOW STRIP) (4 IN)	514 6009 PERM CTB (SGL SLOPE) (TY 1) (54)	543 6002 CABLE BARRIER SYSTEM (TL-4)	543 6020 CABLE BARRIER TERMINAL SECTION (TL-4)	545 6025 CRASH CUSHION ATTEN (INSTALL) (REACT) (N)	658 6026 INSTL DEL ASSM (D-SY) SZ (BR) CTB	685 6004 INSTL RDSD FLSH BCN ASSM (SOLAR PWRD)
US 84	CY	CY	CY	LF	LF	EA	EA	EA	EA
970+73.91 TO 983+00.00	44		44		1,195	2			
983+00.00 TO 340+00.00	41		41		1,098	2			
340+00.00 TO 364+00.00	84		84		2,281	2			
364+00.00 TO 388+00.00	86		86		2,331	2			
388+00.00 TO 412+00.00	86		86		2,317	2			
412+00.00 TO 436+00.00	89		89		2,400				
436+00.00 TO 460+00.00	83		83		2,244	2			
460+00.00 TO 484+00.00	86		86		2,332	2			
484+00.00 TO 508+00.00	85		85		2,295	2			
508+00.00 TO 532+00.00	78		78		2,121	4			
532+00.00 TO 556+00.00	89		89		2,400				
556+00.00 TO 580+00.00	84		84		2,278	2			
580+00.00 TO 604+00.00	85		85		2,293	2			
604+00.00 TO 628+00.00	87		87		2,358	2			
628+00.00 TO 652+00.00	82		82		2,215	4			
652+00.00 TO 676+00.00	85		85		2,290	2			
676+00.00 TO 701+00.00	93		93		2,500				1
701+00.00 TO 725+00.00	83		83		2,249	2			
725+00.00 TO 749+00.00	89		89		2,400				
749+00.00 TO 773+00.00	86		86		2,330	2			
773+00.00 TO 797+00.00	89		89		2,400				
797+00.00 TO 821+00.00	85		85		2,306	2			
821+00.00 TO 845+00.00	83		83		2,250	4			
845+00.00 TO 869+00.00	85		85		2,300	2			
869+00.00 TO 893+00.00	86		86		2,337	2			
893+00.00 TO 917+00.00	86		86		2,327	2			
917+00.00 TO 941+00.00	89		89		2,400				
941+00.00 TO 965+00.00	85		85		2,308	2			
965+00.00 TO 989+00.00	89		89		2,400				
989+00.00 TO 1013+00.00	89		89		2,400				
1013+00.00 TO END	67		67		1,816	3			
CSJ 0053-07-043 TOTAL	**2,558**	**708**	**2,558**		**69,171**	**53**			**1**
US 84 TOTAL	**8,105**		**8,105**	**21,939**	**217,968**	**160**	**4**	**276**	**2**
US 87									
HOWARD COUNTY									
BEGIN TO 125+00.00	49		49		1,320	5			
125+00.00 TO 149+00.00	89		89		2,400				
149+00.00 TO 173+00.00	83		83		2,230	2			
173+00.00 TO 197+00.00	89		89		2,400				
197+00.00 TO 221+00.00	83		83		2,240	2			
221+00.00 TO 245+00.00	81		81		2,190	2			
245+00.00 TO 269+00.00	83		83		2,255	2			
269+00.00 TO 293+00.00	83		83		2,230	2			
293+00.00 TO 317+00.00	83		83		2,235	2			
317+00.00 TO 341+00.00	72		72		1,950	4			
341+00.00 TO 365+00.00	78		78		2,100	4			
365+00.00 TO 389+00.00	81		81		2,200	4			
389+00.00 TO END	20		20		532	1			
CSJ 0069-01-065 TOTAL	**974**	**269**	**974**		**26,282**	**30**			
US 87 TOTAL	**974**	**2,500**	**974**		**26,282**	**30**			
PROJECT TOTALS	**9,079**	**2,500**	**9,079**	**21,939**	**244,250**	**190**	**4**	**276**	**2**

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

QUANTITY SUMMARY

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	17
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

SUMMARY OF SW3P ITEMS (CONTINUED)

LOCATION (STA TO STA)	164 6001 BROADCAST SEED (PERM) (RURAL) (SANDY)	506 6041 BIODEG EROSN CONT LOGS (INSTL) (12")	506 6043 BIODEG EROSN CONT LOGS (REMOVE)
US 84	SY	LF	LF
NOLAN COUNTY			
BEGIN TO 126+00.00	4,247		
126+00.00 TO 150+00.00	4,993		
150+00.00 TO 174+00.00	5,600		
174+00.00 TO 198+00.00	4,340	60	60
198+00.00 TO 222+00.00	5,227	70	70
222+00.00 TO 246+00.00	5,602		
246+00.00 TO 270+00.00	5,250		
270+00.00 TO 294+00.00	4,573	180	180
294+00.00 TO 318+00.00	4,814		
318+00.00 TO 342+00.00	5,453		
342+00.00 TO 366+00.00	5,439		
366+00.00 TO 390+00.00	5,273		
390+00.00 TO 414+00.00	5,157		
414+00.00 TO 438+00.00	5,558		
438+00.00 TO 462+00.00	5,600		
462+00.00 TO 476+16.00	3,304		
CSJ 0053-12-074 TOTAL	**80,430**	**310**	**310**
MITCHELL COUNTY			
476+16.00 TO 486+00.00	2,053		
486+00.00 TO 88+10.00	3,598		
CSJ 0053-11-027 TOTAL	**5,651**		
SCURRY COUNTY			
88+10.00 TO 90+00.00	467		
90+00.00 TO 41+00.00	4,905		
41+00.00 TO 65+00.00	5,600		
65+00.00 TO 89+00.00	5,600		
89+00.00 TO 113+00.00	4,961	100	100
113+00.00 TO 137+00.00	5,600		
137+00.00 TO 161+00.00	5,600		
161+00.00 TO 185+00.00	5,245		
185+00.00 TO 209+00.00	5,129	40	40
209+00.00 TO 233+00.00	5,600	90	90
233+00.00 TO 257+00.00	5,600		
257+00.00 TO 281+00.00	5,157	50	50
281+00.00 TO 305+00.00	5,600		
305+00.00 TO 329+00.00	4,996	110	110
329+00.00 TO 353+00.00	5,600		
353+00.00 TO 377+00.00	5,395	25	25
377+00.00 TO 401+00.00	5,413	25	25
401+00.00 TO 425+00.00	5,600		
425+00.00 TO 449+00.00	4,851	100	100
449+00.00 TO 473+00.00	5,203		
473+00.00 TO 490+50.00	3,955	70	70
CSJ 0053-10-046 TOTAL	**106,077**	**610**	**610**
490+50.00 TO 497+00.00	1,295	50	50
497+00.00 TO 521+00.00	5,234		
521+00.00 TO 545+00.00	5,313		
545+00.00 TO 569+00.00	5,600		
569+00.00 TO 593+00.00	5,600	60	60
593+00.00 TO 617+00.00	5,299	90	90
617+00.00 TO 641+00.00	5,287		
641+00.00 TO 665+00.00	5,600	60	60
665+00.00 TO 689+00.00	5,600		
689+00.00 TO 713+00.00	5,842		
713+00.00 TO 737+00.00	5,523		
737+00.00 TO 761+00.00	6,133		
761+00.00 TO 785+00.00	5,883	70	70
785+00.00 TO 809+00.00	5,459	50	50
809+00.00 TO 833+00.00	5,122		
833+00.00 TO 857+00.00	5,297		
857+00.00 TO 857+51.28			
CSJ 0053-09-078 TOTAL	**84,087**	**380**	**380**
857+51.28 TO 383+00.00	2,315		
383+00.00 TO 407+00.00	5,067		

SUMMARY OF SW3P ITEMS (CONTINUED)

LOCATION (STA TO STA)	164 6001 BROADCAST SEED (PERM) (RURAL) (SANDY)	506 6041 BIODEG EROSN CONT LOGS (INSTL) (12")	506 6043 BIODEG EROSN CONT LOGS (REMOVE)
US 84	SY	LF	LF
407+00.00 TO 431+00.00	4,813		
431+00.00 TO 455+00.00	3,990	120	120
455+00.00 TO 479+00.00	5,067		
479+00.00 TO 503+00.00	5,929		
503+00.00 TO 527+00.00	5,638	60	60
527+00.00 TO 551+00.00	5,546	90	90
551+00.00 TO 575+00.00	6,133		
575+00.00 TO 599+00.00	4,782	100	100
599+00.00 TO 604+70.00	1,203		
CSJ 0053-09-077 TOTAL	**50,483**	**370**	**370**
604+70.00 TO 623+00.00	3,906		
623+00.00 TO 647+00.00	5,067	40	40
647+00.00 TO 671+00.00	3,990	60	60
671+00.00 TO 686+54.45	3,984		
CSJ 0053-08-074 TOTAL	**16,947**	**100**	**100**
686+54.45 TO 695+00.00		25	25
695+00.00 TO 719+00.00			
719+00.00 TO 743+00.00	2,418	50	50
743+00.00 TO 767+00.00	3,153	85	85
767+00.00 TO 791+00.00	3,405	25	25
791+00.00 TO 815+00.00	3,467	100	100
815+00.00 TO 839+00.00	3,285		
839+00.00 TO 863+00.00	3,471		
863+00.00 TO 887+00.00	3,344	100	100
887+00.00 TO 911+00.00	3,272		
911+00.00 TO 935+00.00	3,470	50	50
935+00.00 TO 959+00.00	3,292		
959+00.00 TO 970+73.91	1,371	60	60
CSJ 0053-08-075 TOTAL	**33,948**	**495**	**495**
970+73.91 TO 983+00.00	1,726	50	50
983+00.00 TO 340+00.00	1,586		
340+00.00 TO 364+00.00	3,295	100	100
364+00.00 TO 388+00.00	3,367		
388+00.00 TO 412+00.00	3,347	100	100
412+00.00 TO 436+00.00	3,467		
436+00.00 TO 460+00.00	3,241		
460+00.00 TO 484+00.00	3,368		
484+00.00 TO 508+00.00	5,738		
508+00.00 TO 532+00.00	5,303	280	280
532+00.00 TO 556+00.00	6,000	175	175
556+00.00 TO 580+00.00	5,695	25	25
580+00.00 TO 604+00.00	5,733		
604+00.00 TO 628+00.00	5,895	50	50
628+00.00 TO 652+00.00	5,538		
652+00.00 TO 676+00.00	5,725		
676+00.00 TO 701+00.00	6,250	25	25
701+00.00 TO 725+00.00	5,623		
725+00.00 TO 749+00.00	6,000		
749+00.00 TO 773+00.00	5,825	25	25
773+00.00 TO 797+00.00	6,000	25	25
797+00.00 TO 821+00.00	5,765	50	50
821+00.00 TO 845+00.00	5,625	50	50
845+00.00 TO 869+00.00	5,750	50	50
869+00.00 TO 893+00.00	5,843		
893+00.00 TO 917+00.00	5,818		
917+00.00 TO 941+00.00	6,000		
941+00.00 TO 965+00.00	5,770		
965+00.00 TO 989+00.00	6,000	25	25
989+00.00 TO 1013+00.00	6,000	75	75
1013+00.00 TO END		95	95
CSJ 0053-07-043 TOTAL	**151,293**	**1,200**	**1,200**
US 84 TOTAL	**528,916**	**3,465**	**3,465**

SUMMARY OF SW3P ITEMS (CONTINUED)

LOCATION (STA TO STA)	164 6001 BROADCAST SEED (PERM) (RURAL) (SANDY)	506 6041 BIODEG EROSN CONT LOGS (INSTL) (12")	506 6043 BIODEG EROSN CONT LOGS (REMOVE)
US 84	SY	LF	LF
CSJ 0053-07-043 TOTAL	**151,293**	**1,200**	**1,200**
US 84 TOTAL	**528,916**	**3,465**	**3,465**
US 87			
HOWARD COUNTY			
BEGIN TO 125+00.00	2,493		
125+00.00 TO 149+00.00	4,533	70	70
149+00.00 TO 173+00.00	4,212	50	50
173+00.00 TO 197+00.00	4,533	100	100
197+00.00 TO 221+00.00	4,231	120	120
221+00.00 TO 245+00.00	4,137	120	120
245+00.00 TO 269+00.00	4,259	50	50
269+00.00 TO 293+00.00	4,212	190	190
293+00.00 TO 317+00.00	4,222	55	55
317+00.00 TO 341+00.00	3,683	180	180
341+00.00 TO 365+00.00	3,967	155	155
365+00.00 TO 389+00.00	4,156	100	100
389+00.00 TO END	1,005		
CSJ 0069-01-065 TOTAL	**49,643**	**1,190**	**1,190**
US 87 TOTAL	**49,643**	**1,190**	**1,190**
PROJECT TOTALS	**578,559**	**4,655**	**4,655**

I.S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US • 84
QUANTITY • SUMMARY

SHEET 4 OF 4

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	16
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

DRAWING DATE: 2/27/2023 FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\03 Quantity Summaries\@US84*SW3P-QUANT.dgn

GENERAL NOTES

1. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM WITH THE TEXAS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" (TXMUTCD), AND SHALL BE MAINTAINED AS DIRECTED BY THE ENGINEER. WORK SITES SHOULD BE CAREFULLY MONITORED TO ENSURE THAT TRAFFIC CONTROL MEASURES ARE OPERATING EFFECTIVELY AND THAT ALL DEVICES USED ARE CLEARLY VISIBLE, CLEAN AND IN GOOD REPAIR.

2. THE ROADWAY MUST BE REOPENED TO TRAFFIC AT THE END OF EACH WORKING DAY IN THE AREAS OF CABLE BARRIER INSTALLATION.

3. LANE CLOSURES FOR SSCB WILL BE IN EFFECT UNTIL AFTER THE CONCRETE BARRIER HAS REACHED REQUIRED STRENGTH.

4. ANY LOOSE MATERIAL, DEBRIS, EQUIPMENT LEFT OVER NIGHT, AND/OR ANY OBSTRUCTION WIHTIN 30 FT. OF A TRAVELWAY RESULTING FROM CONSTRUCTION OPERATIONS MUST BE REMOVED AT THE END OF EACH WORK DAY.

5. MAINTAIN DRIVEWAY AND CROSS STREET ACCESS AT ALL TIMES.

SEQUENCE OF WORK FOR CABLE BARRIER

1. PLACE BARRICADES, ADVANCE WARNING SIGNS AND OTHER TRAFFIC CONTROL DEVICES AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH BC, WZ, AND TCP STANDARDS.

2. INSTALL SW3P BMP'S.

3. WHEN HAUL TRUCKS, CONCRETE TRUCKS OR OTHER HEAVY EQUIPMENT ARE ENTERING OR EXITING THE WORK AREA:

   A. SET UP LANE CLOSURE ON THE ENTRY/EXIT SIDE OF WORK AREA IN ACCORDANCE WITH TCP (6-1)-12. UTILIZE TCP(3-2)-13 TO SET UP TRAFFIC CONTROL.

   B. SET UP SHOULDER CLOSURE ON THE NON-ENTRY/EXIT SIDE OF WORK AREA IN ACCORDANCE WITH TCP (5-1)-18.

   C. FOR ANY WORK WITHOUT TRUCKS ENTERING/EXITING THE WORK AREA SET UP A SHOULDER CLOSURE ON BOTH SIDES OF THE WORK AREA IN ACCORDANCE WITH TCP (5-1)-18.

4. CONSTRUCT CABLE BARRIER, MOW STRIP, PERFORM GRADING, AND EARTHWORK.

5. MAINTAIN CROSS-OVER ACCESS AS DIRECTED BY THE ENGINEER.

6. REMOVE SW3P BMP'S AND PERFORM FINAL SITE CLEAN UP AS DIRECTED BY THE ENGINEER.

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

m.n. m

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US • 84

TRAFFIC CONTROL PLAN
SEQUENCE OF CONSTRUCTION

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	19
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

DRAWING DATE: 3/3/2023 FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\04 Traffic Control Plan\US84*SEQ01.dgn

DATE: 2/27/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\04 Traffic Control Plan\TxDOT Standards\bc-21.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

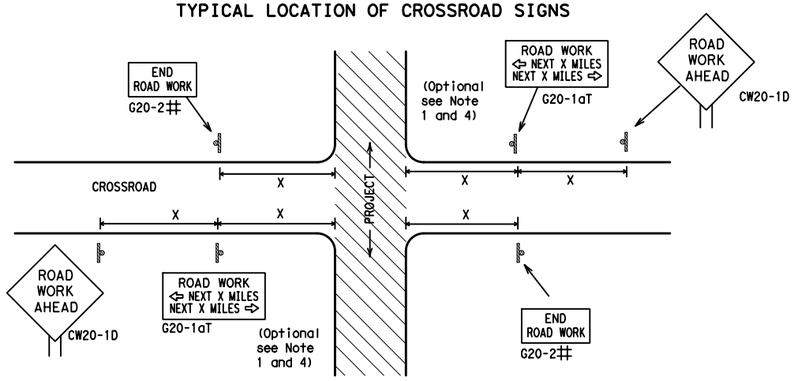
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	ABL	SCURRY, ETC.		20
5-10 5-21				

DATE: 2/27/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\04 Traffic Control Plan\TxDOT Standards\bc-21.dgn

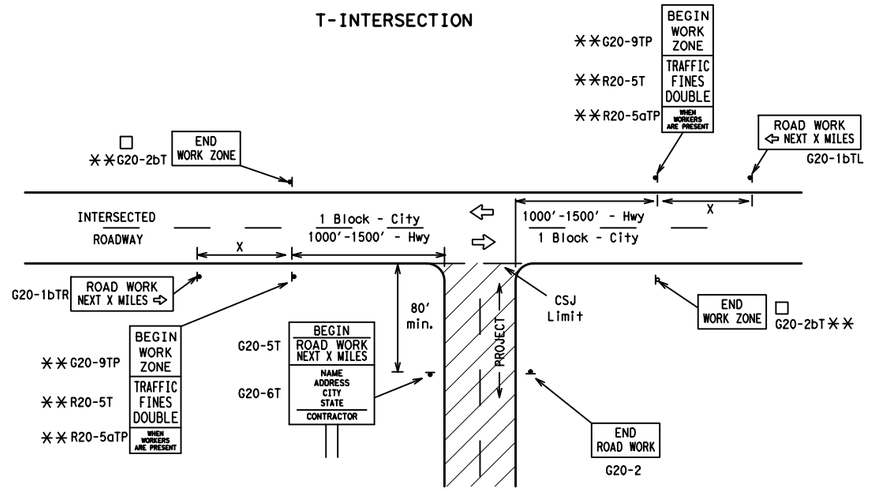
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

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

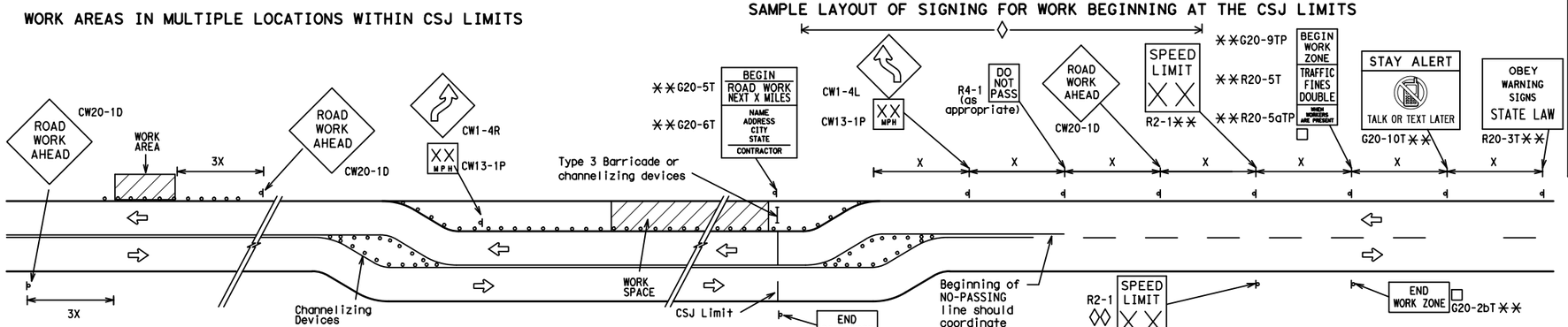
△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

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

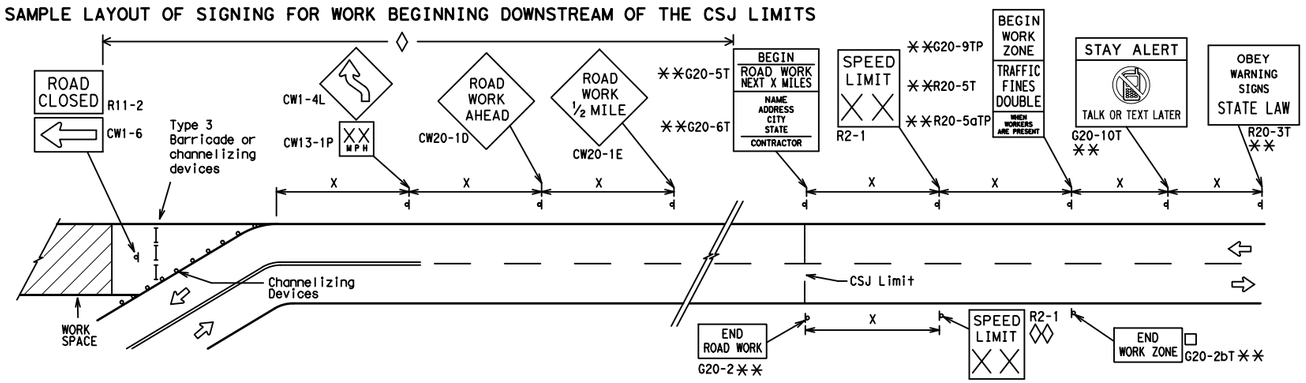
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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

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



NOTES

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

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

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ABL	SCURRY, ETC.		21

DATE: 2/27/2023 $TIME$
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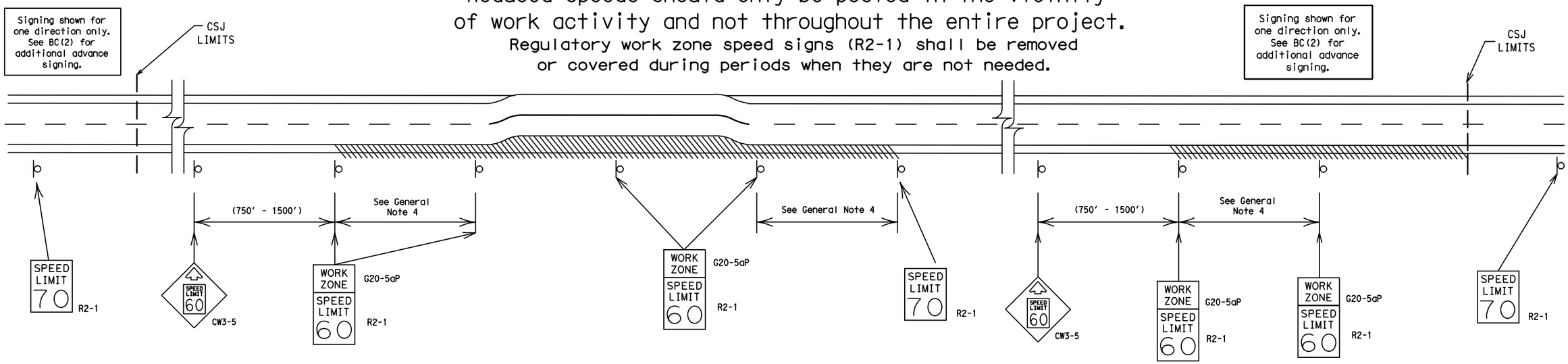
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation | Traffic Safety Division Standard

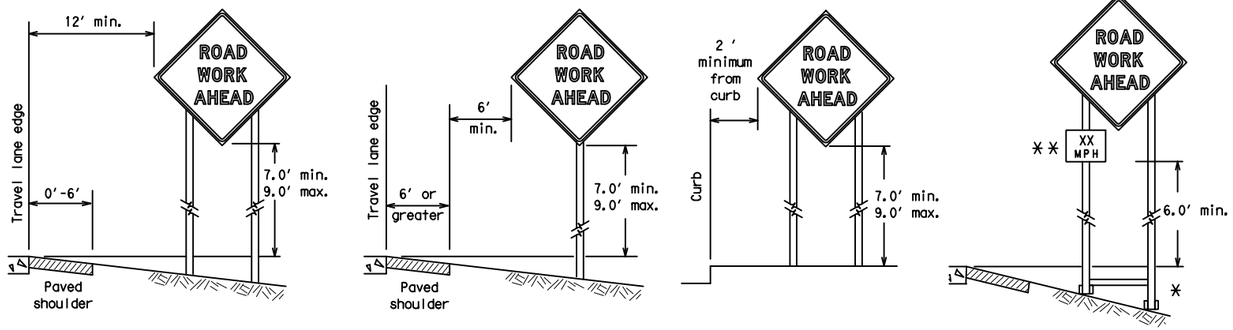
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 8-14 7-13 5-21	0053	07	043, ETC.	US84, ETC.
	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		22

DATE: 2/27/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\04 Traffic Control Plan\TxDOT Standards\bc-21.dgn

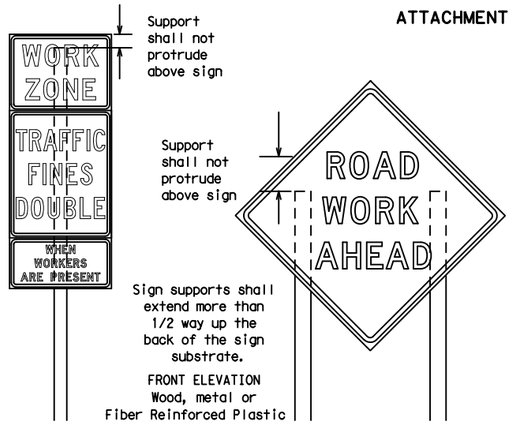
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



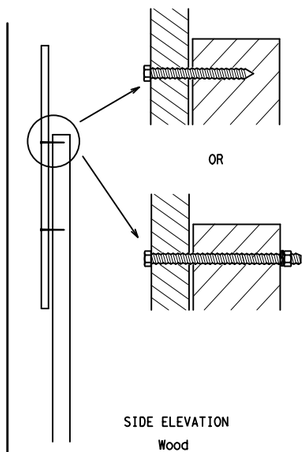
⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS



FRONT ELEVATION
Wood, metal or
Fiber Reinforced Plastic



SIDE ELEVATION
Wood

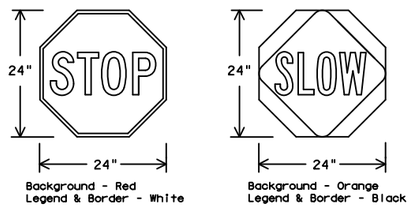
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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.



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ABL	SCURRY, ETC.		23

DATE: 2/27/2023 $TIME$
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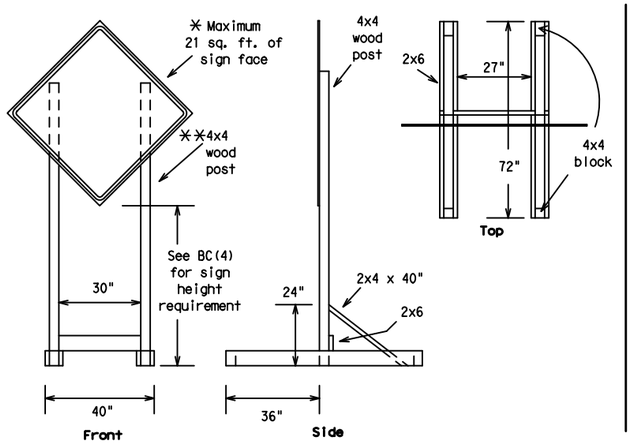
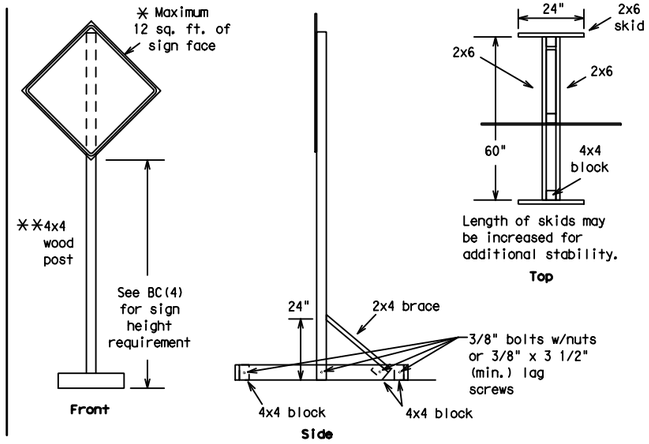
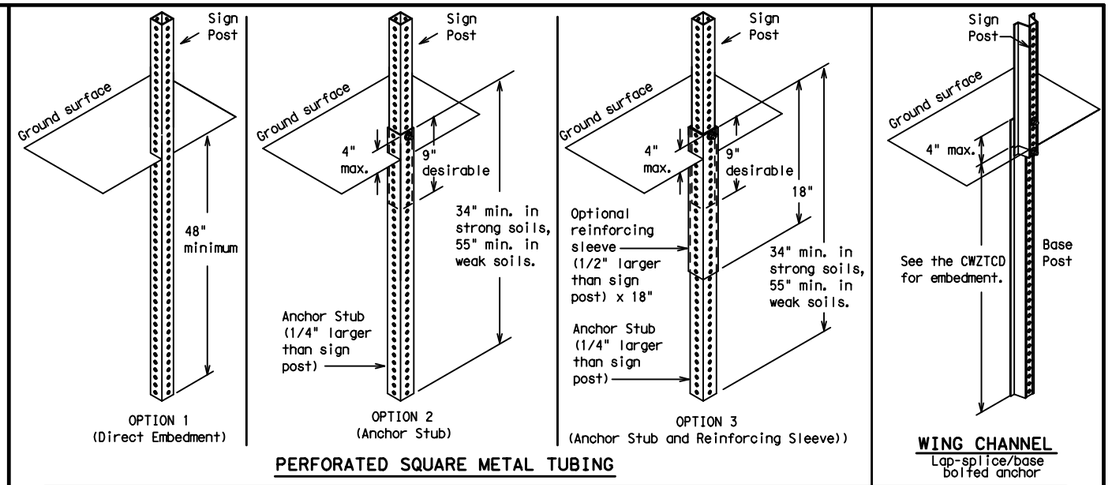




SKID MOUNTED WOOD SIGN SUPPORTS

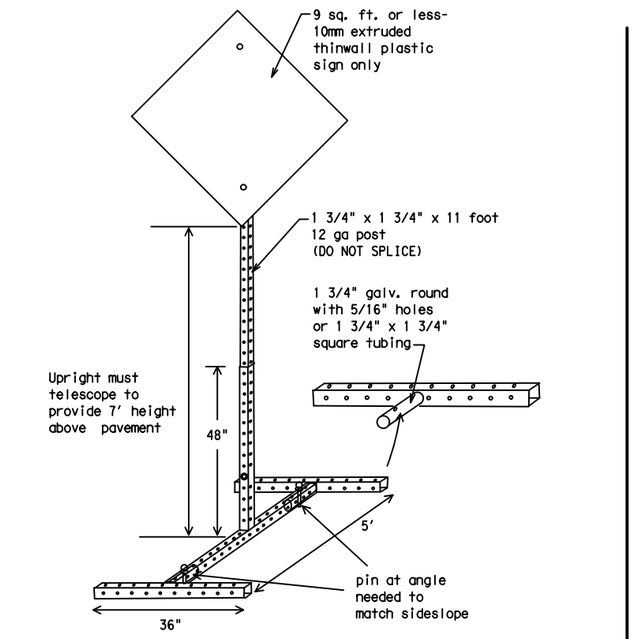
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

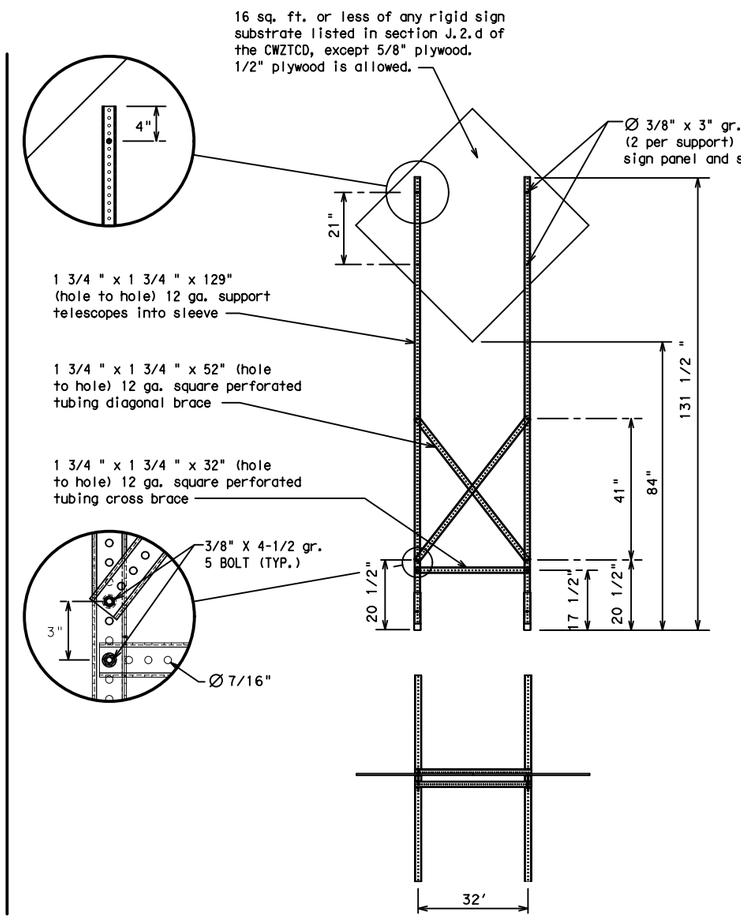


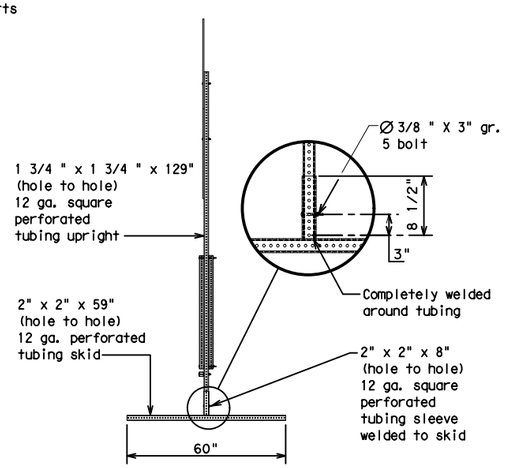
PERFORATED SQUARE METAL TUBING

GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ABL	SCURRY, ETC.		24

DATE: 2/27/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\04 Traffic Control Plan\TxDOT Standards\bc-21.dgn

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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 *	

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

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
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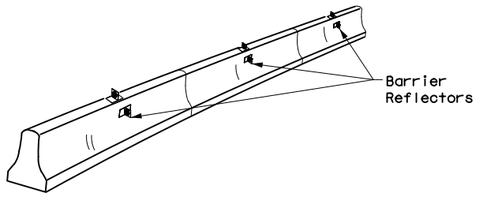
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ABL	SCURRY, ETC.		25

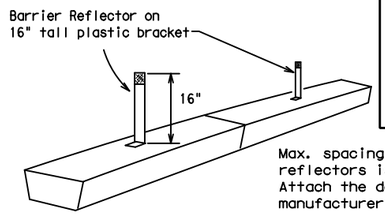
DATE: 2/27/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\04 Traffic Control Plan\TxDOT Standards\bc-21.dgn

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



CONCRETE TRAFFIC BARRIER (CTB)

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

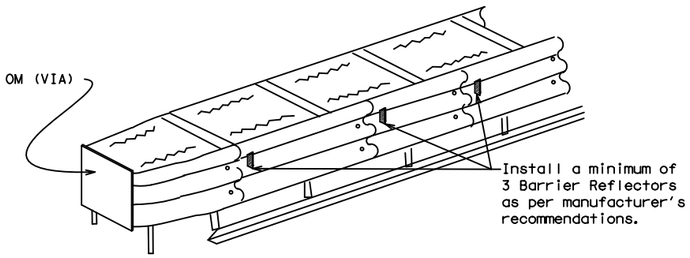


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

LOW PROFILE CONCRETE BARRIER (LPCB)

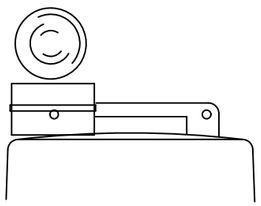


DELINEATION OF END TREATMENTS

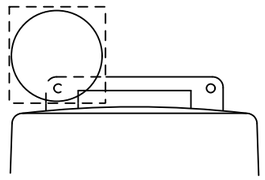
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

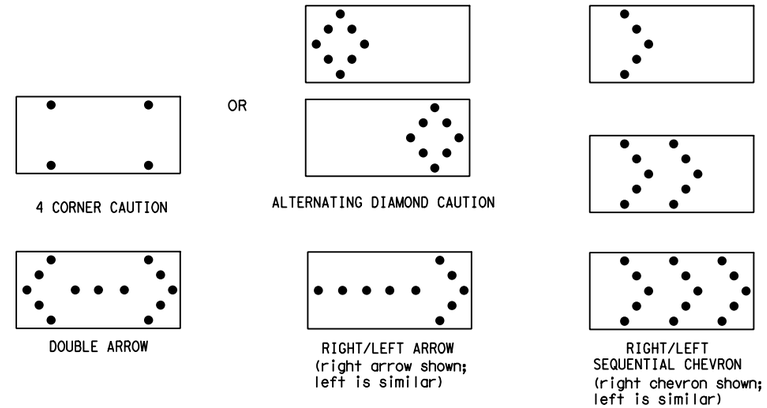
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ABL	SCURRY, ETC.		26

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DATE: 2/27/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\04 Traffic Control Plan\TxDOT Standards\bc-21.dgn

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:

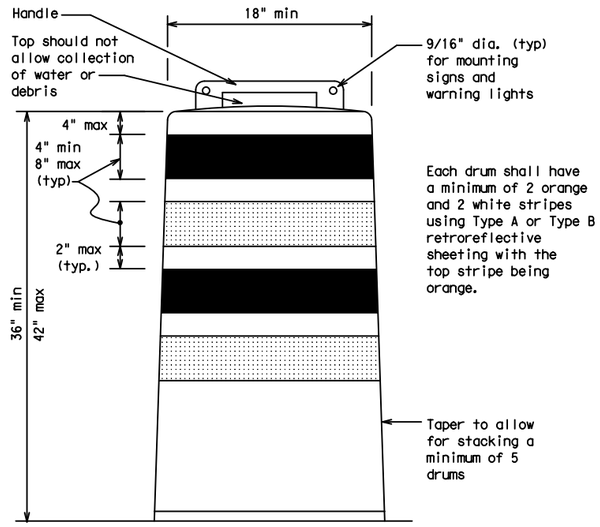
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

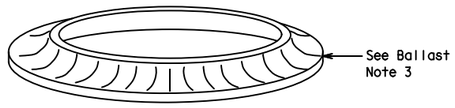
RETROREFLECTIVE SHEETING

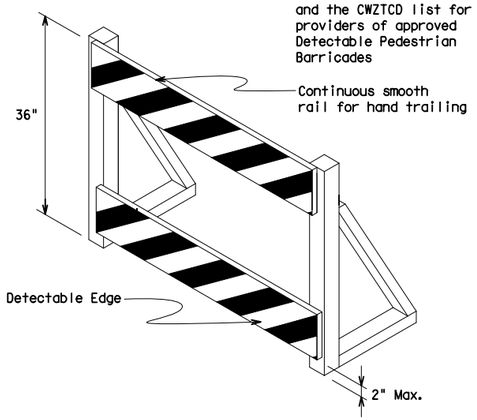
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

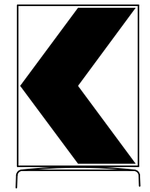




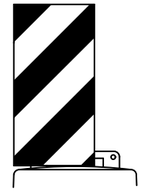


DETECTABLE PEDESTRIAN BARRICADES

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	0053	07	043, ETC.	US84, ETC.
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	ABL	SCURRY, ETC.		27
7-13				

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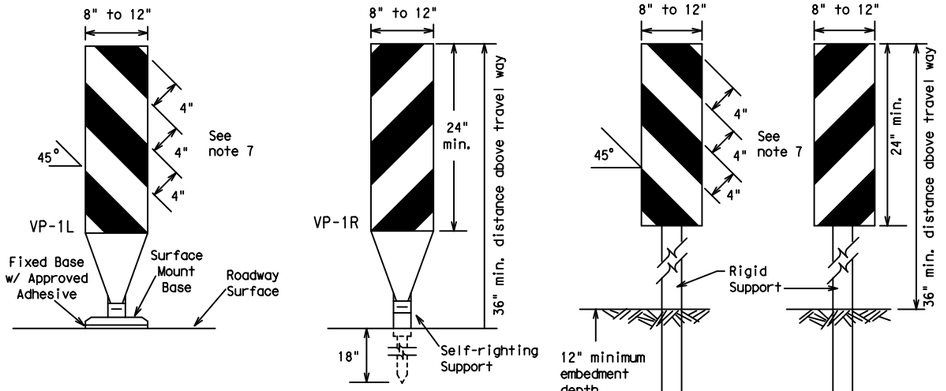


FIXED
(Rigid or self-righting)

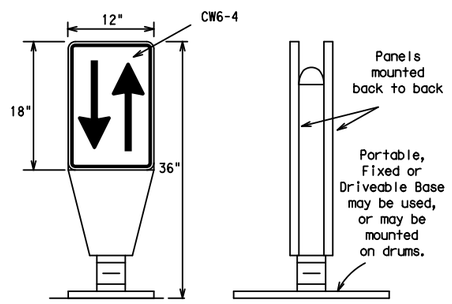
DRIVEABLE

(Rigid or self-righting)

PORTABLE

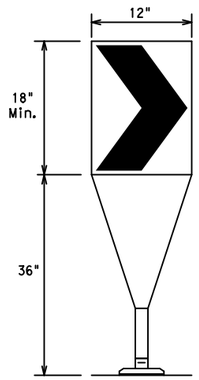
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



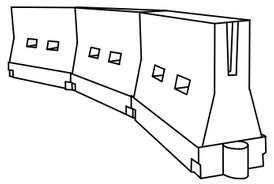
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

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	0053	07	043, ETC.	US84, ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ABL	SCURRY, ETC.		28

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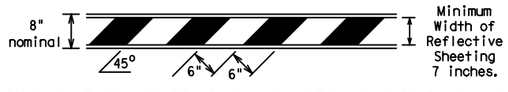
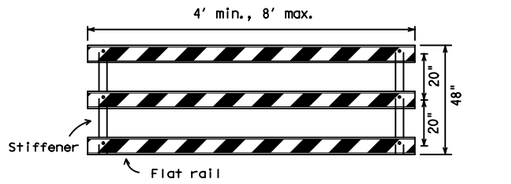
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



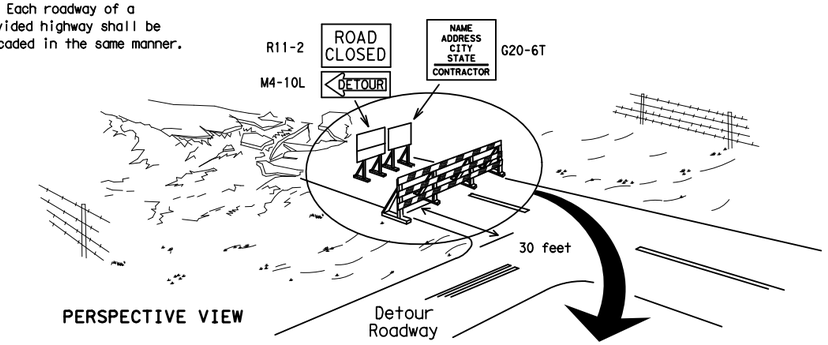
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

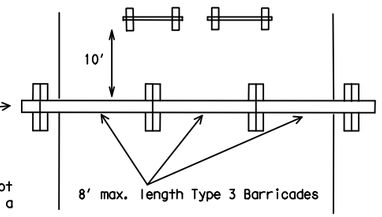
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

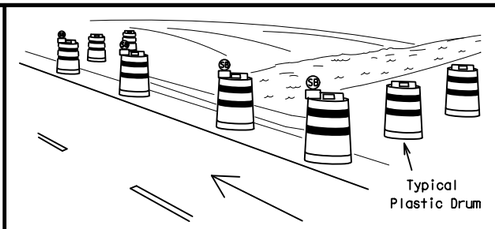
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

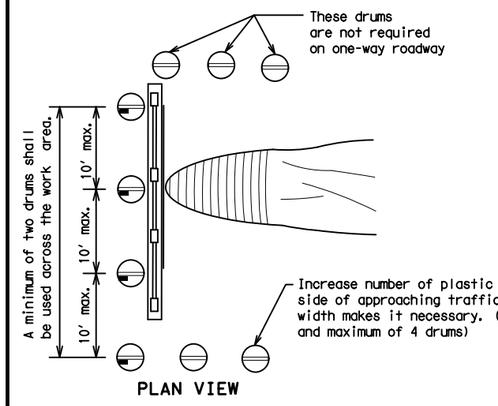
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

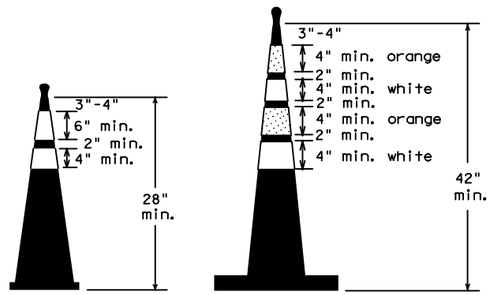
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



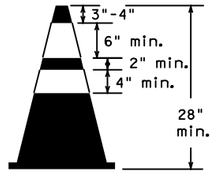
PLAN VIEW

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

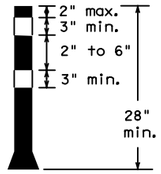
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

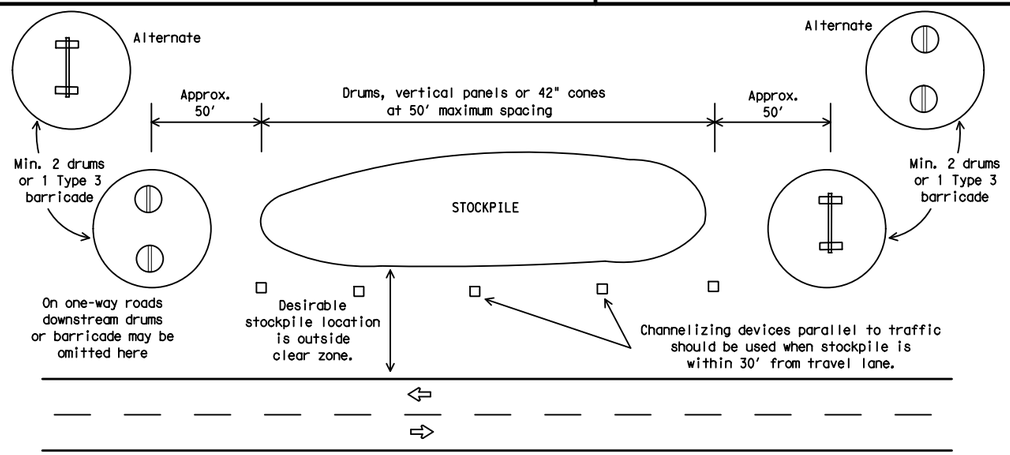


Tubular Marker

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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

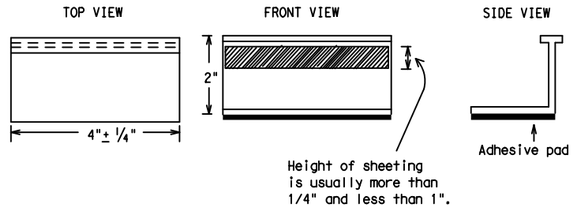
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

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REVISIONS 2-98 9-07 5-21	0053	07	043, ETC.	US84, ETC.
1-02 7-13	DIST	COUNTY		SHEET NO.
11-02 8-14	ABL	SCURRY, ETC.		30

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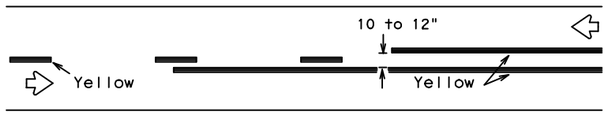
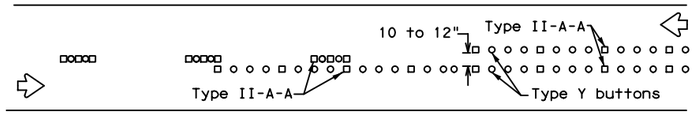
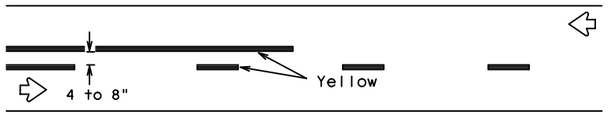
PAVEMENT MARKING PATTERNS



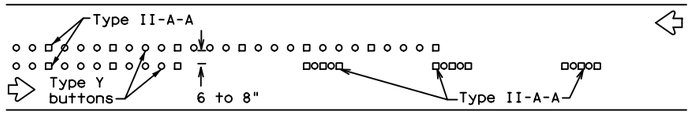
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



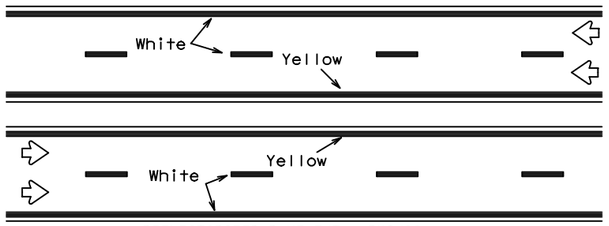
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



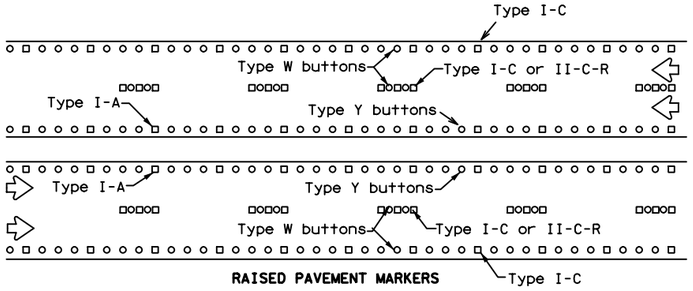
RAISED PAVEMENT MARKERS - PATTERN B

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

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



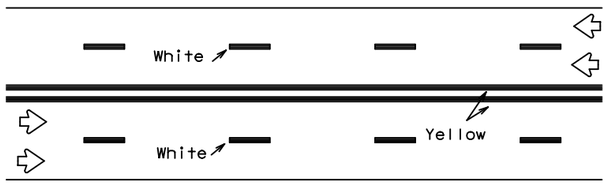
REFLECTORIZED PAVEMENT MARKINGS



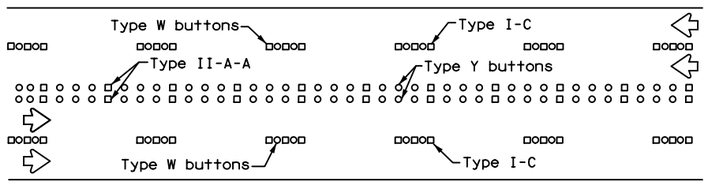
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



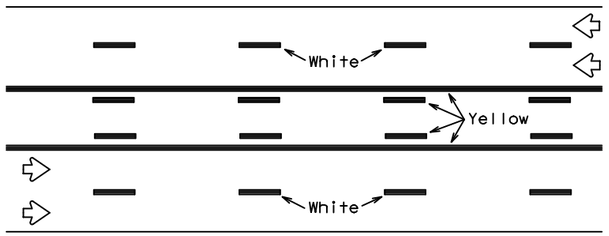
REFLECTORIZED PAVEMENT MARKINGS



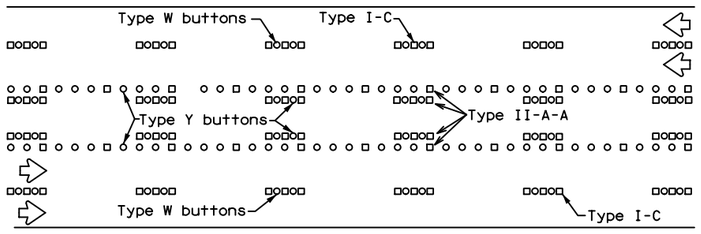
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



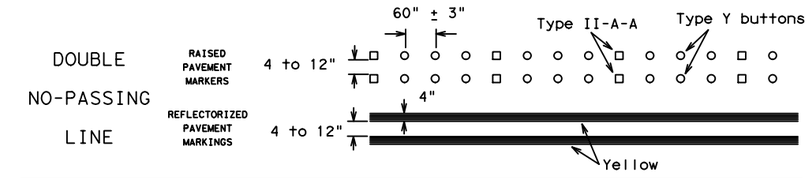
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

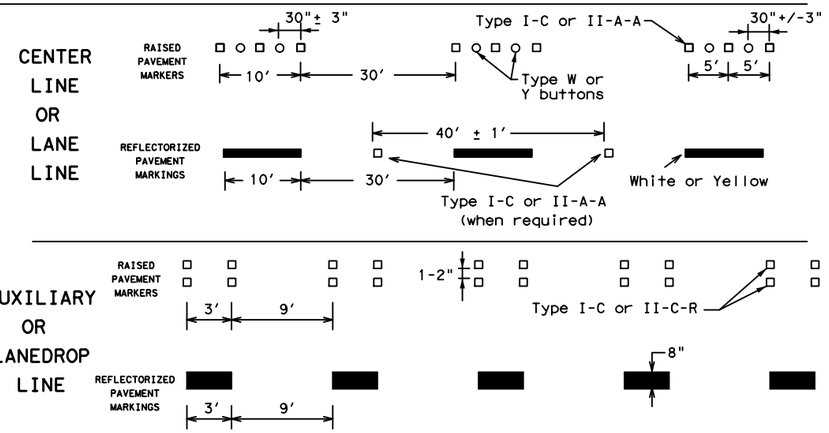
TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

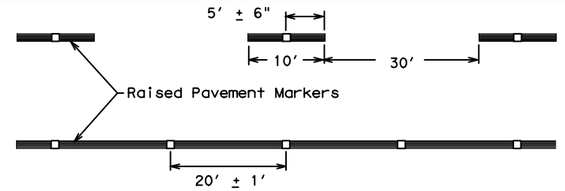


BROKEN LINES



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

SHEET 12 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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	ABL	SCURRY, ETC.		31

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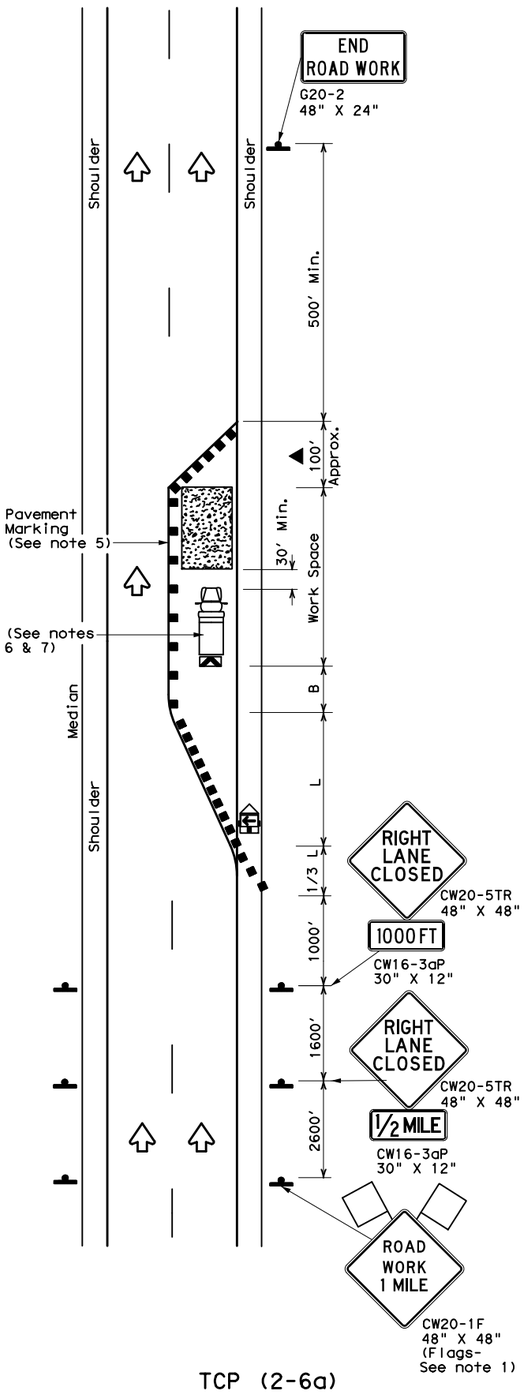
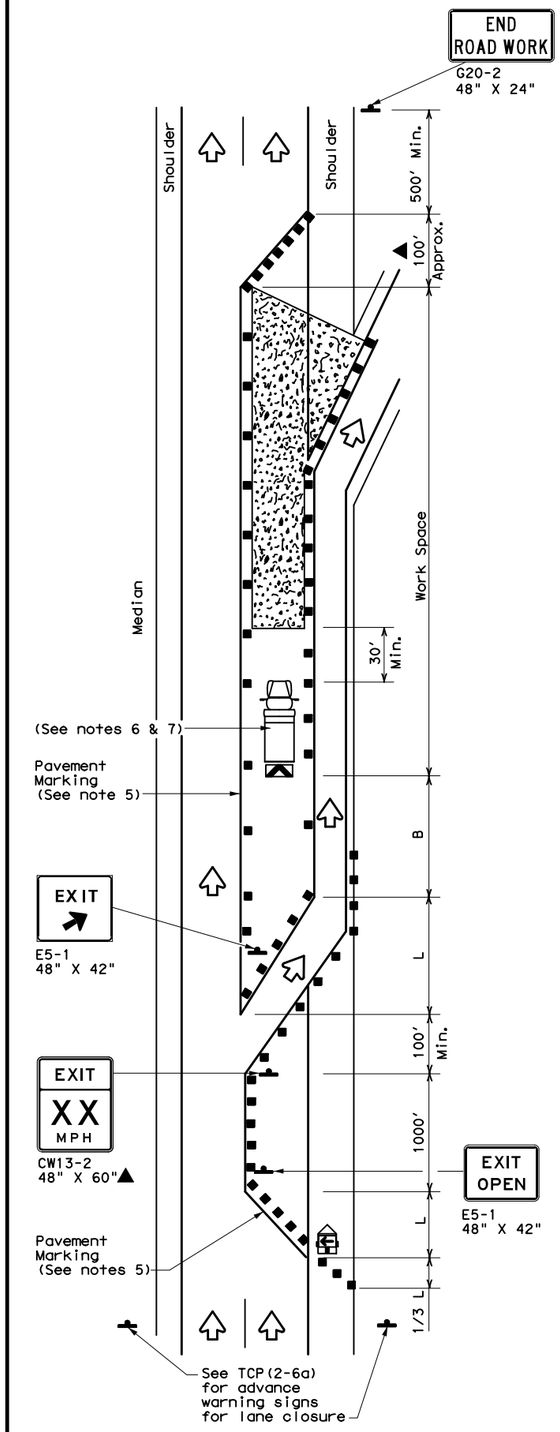


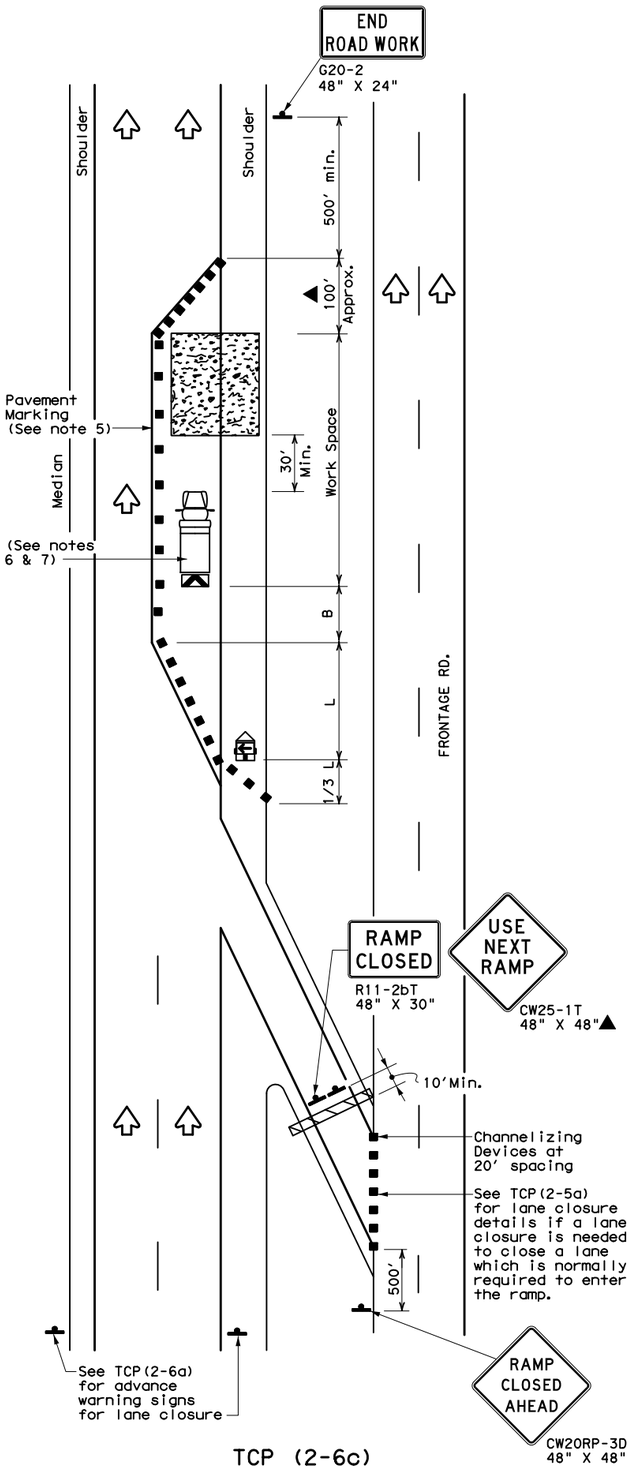
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-6c)

LANE CLOSURE NEAR ENTRANCE RAMPS

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

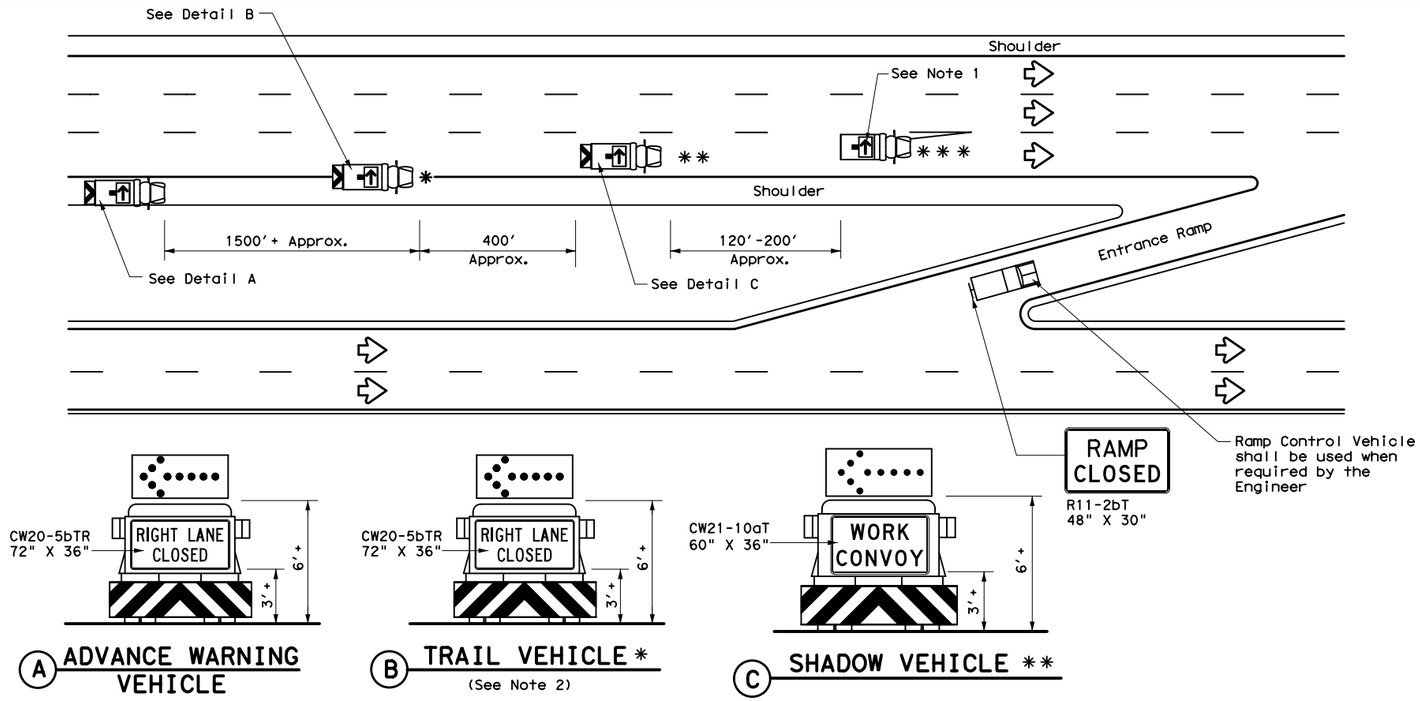
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

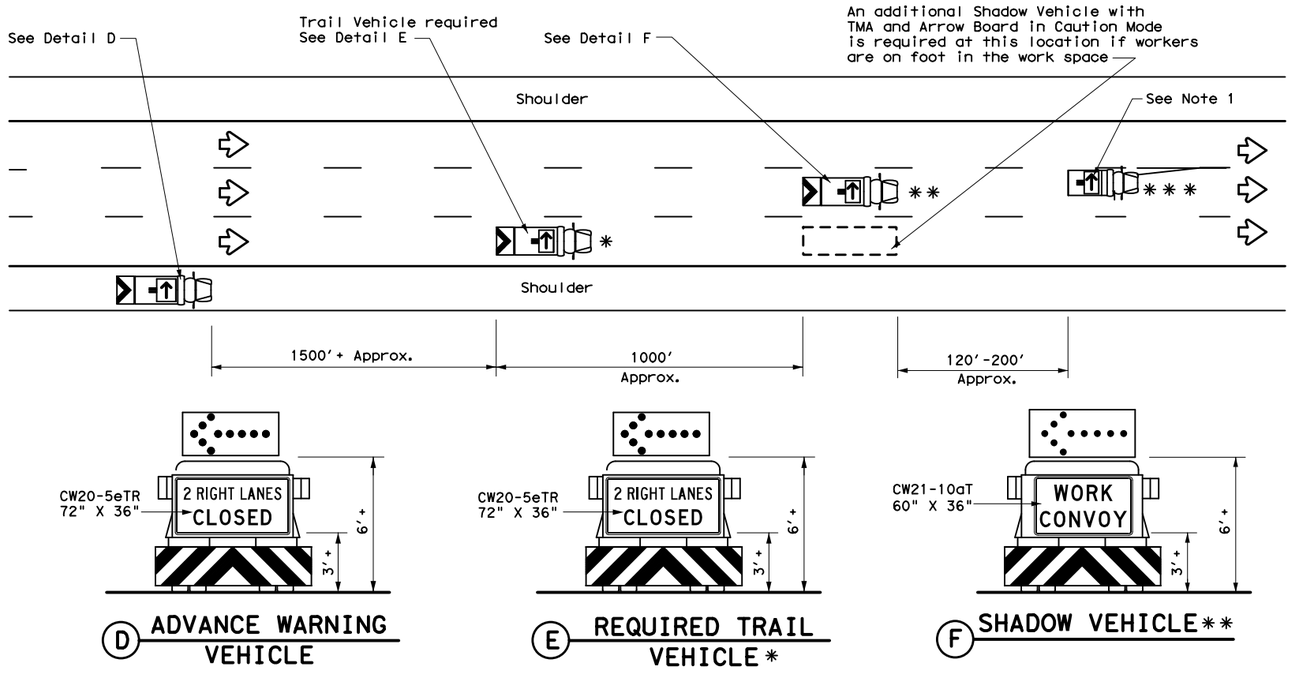
TCP(2-6)-18

FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	0053	07	043, ETC.	US84, ETC.
	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		32

DATE: 2/27/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\04 of 04 TCP(3-2)-13.dgn



RIGHT LANE CLOSURE ON DIVIDED HIGHWAY - TCP(3-2a)



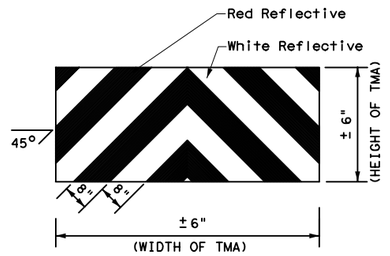
INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP(3-2b)

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. ADVANCE WARNING, TRAIL and SHADOW vehicles shall be equipped with Type B or Type C flashing arrow boards as per the Barricade and Construction (BC) standards. Arrow boards on WORK vehicles will be optional based on the type of work being performed. The arrow boards shall be operated from inside the vehicle.
2. For TCP(3-2a) the Engineer will determine if the TRAIL VEHICLE is required based on prevailing roadway conditions, traffic volume, and sight distance restrictions. All other vehicles shown for both TCP(3-2a) and TCP(3-2b) are required.
3. 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.
4. The use of truck mounted attenuators (TMA) on the ADVANCE WARNING, SHADOW, and TRAIL vehicles are required.
5. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DMS 8300, Type A.
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 may vary according to terrain, work activity and other factors.
9. Standard 48" X 48" diamond shaped warning signs with the same message as those shown may be used where adequate mounting space exists.
10. The signs shown should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or a 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, must 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. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
12. The principles on this sheet may be used to close lanes from the left side of the roadway considering the number of lanes, shoulder width, sight distance, and ramp frequency.
13. Signs and flashing arrow board modes shall be appropriately altered when implementing left lane closures or interior closures which close the left lanes.
14. The Advance Warning Vehicle may straddle the edgeline when shoulder width makes it necessary.



STRIPING FOR TMA

Texas Department of Transportation

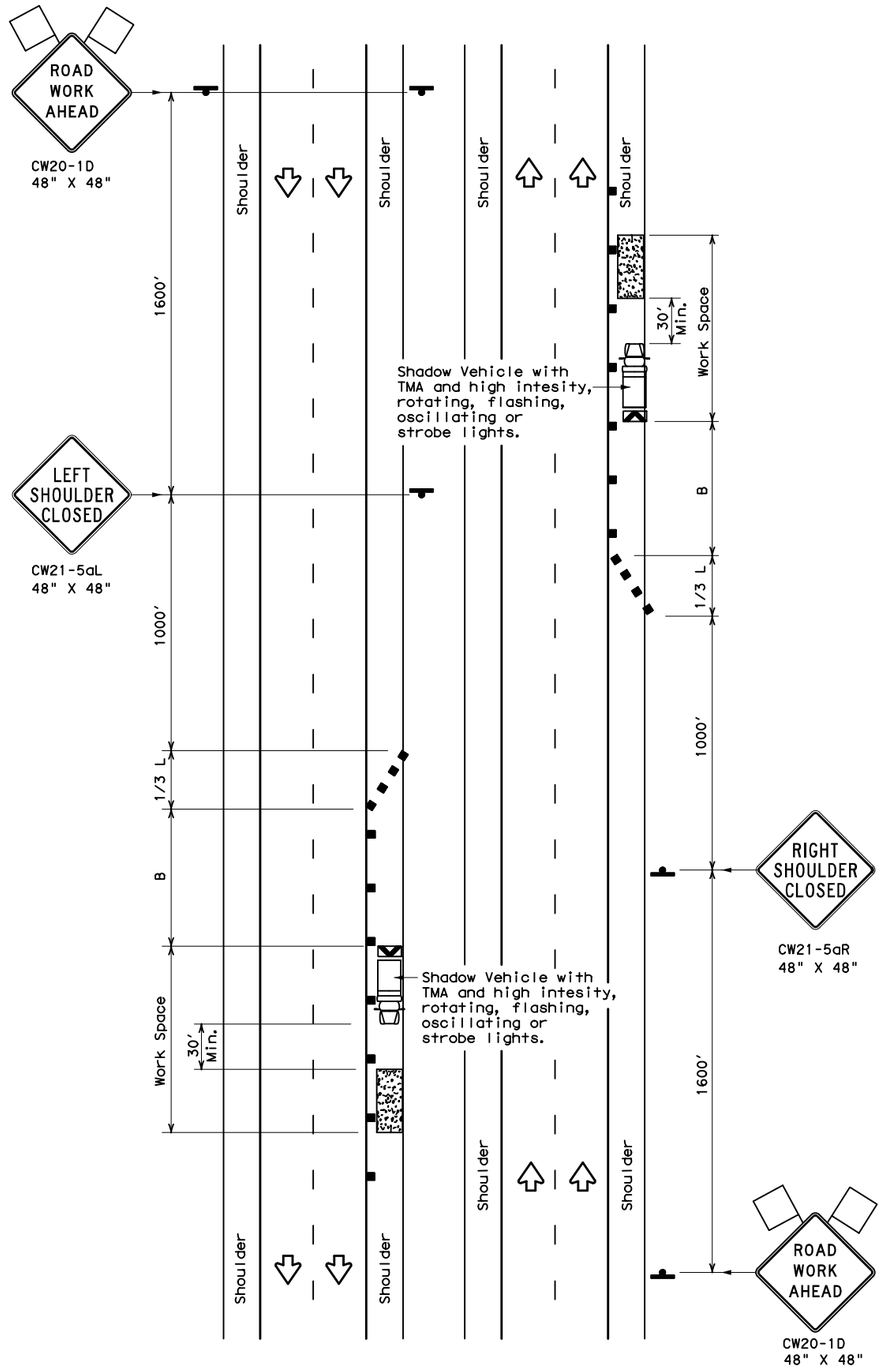
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS

TCP(3-2)-13

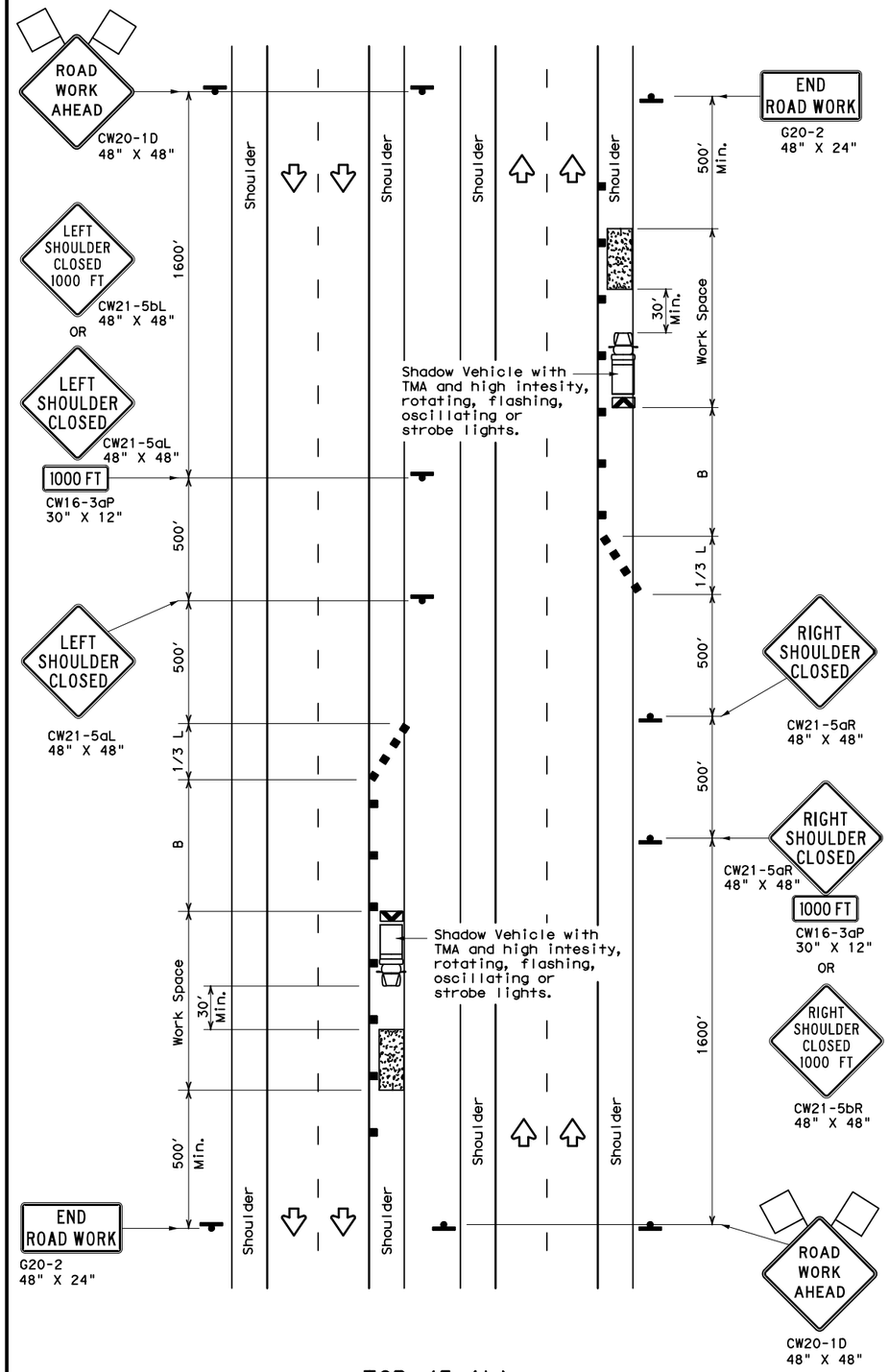
FILE: tcp3-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13	ABL	SCURRY, ETC.		33
1-97				

DATE: 2/27/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\04 tcp5-1-18.dgn



TCP (5-1a)

WORK AREA ON SHOULDER



TCP (5-1b)

WORK AREA ON SHOULDER

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	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	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	90'
35		205'	225'	245'	35'	70'	120'
40		265'	295'	320'	40'	80'	155'
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

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

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

GENERAL NOTES

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

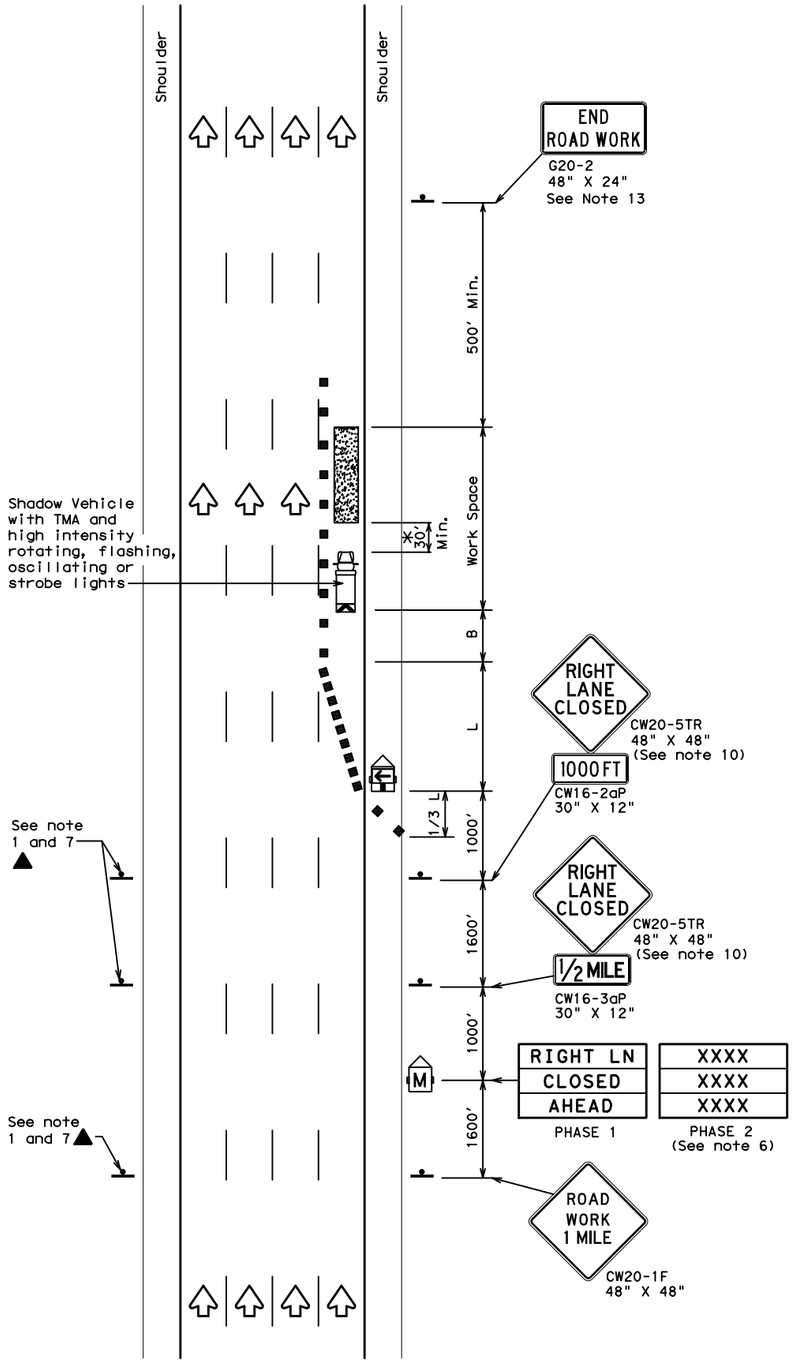
Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN SHOULDER WORK FOR FREEWAYS / EXPRESSWAYS

TCP(5-1)-18

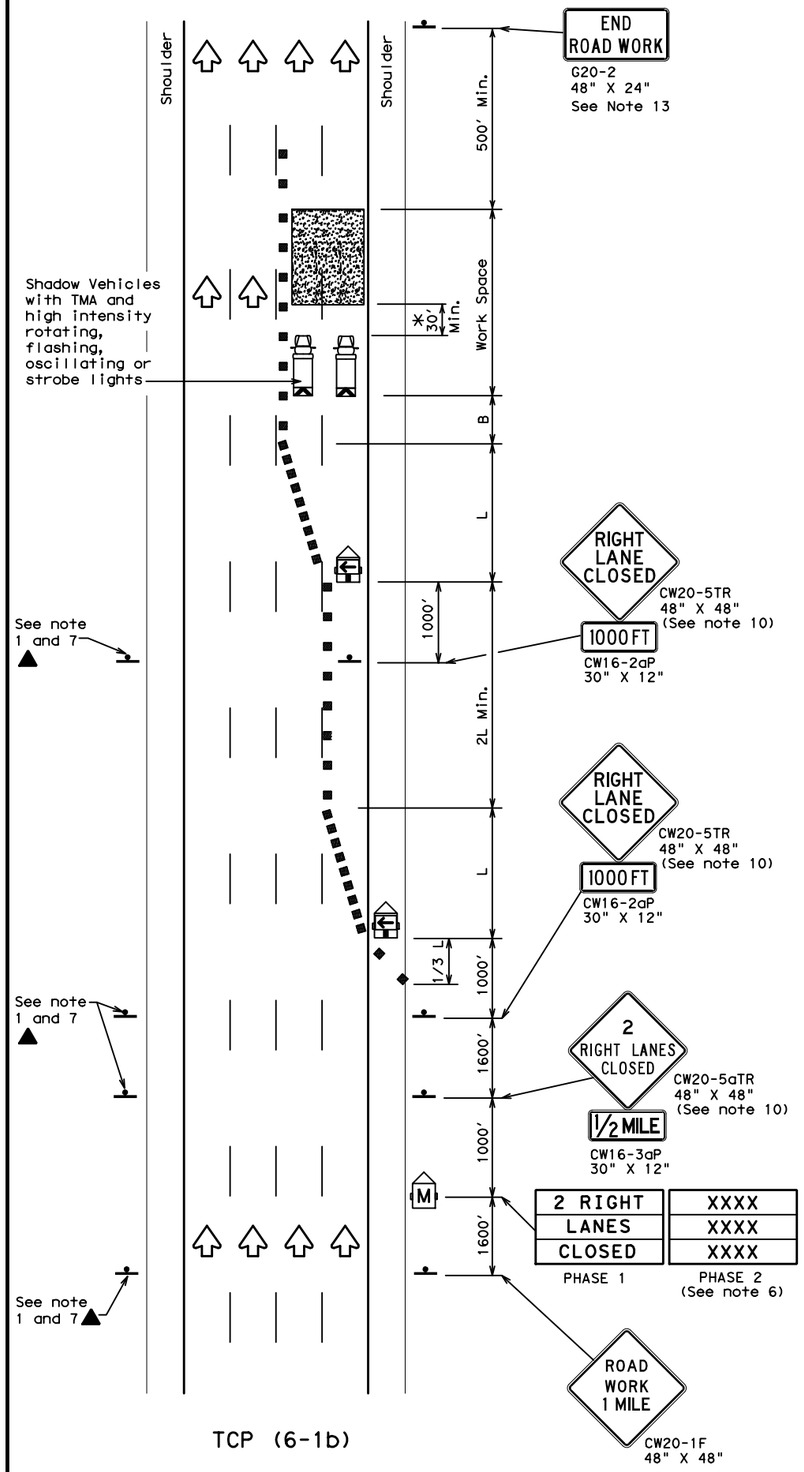
FILE: tcp5-1-18.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-18	0053	07	043, ETC.	US84, ETC.
	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		34

DATE: 2/27/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\04 tcp6-1.dgn



TCP (6-1a)

TYPICAL FREEWAY ONE LANE CLOSURE



TCP (6-1b)

TYPICAL FREEWAY TWO LANE CLOSURE

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

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

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

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

GENERAL NOTES

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

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

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN FREEWAY LANE CLOSURES

TCP(6-1)-12

FILE: tcp6-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-12	0053	07	043, ETC.	US84, ETC.
	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		35

201

US 84 ALIGNMENT

Beginning chain US84 description

Point US84 N 6,857,435.3884 E 1,330,725.8797 Sta 107+11.43

Course from US84 to PC US841 N 63° 36′ 00.57" W Dist 13,629.9122

Curve Data					
Curve US841					
P.I. Station	250+36.63	N	6,863,804.8403	E	1,317,894.6127
Delta =	13° 59′ 45.69"	(RT)			
Degree =	1° 00′ 41.50"				
Tangent =	695.2869				
Length =	1,383.6521				
Radius =	5,664.2822				
External =	42.5135				
Long Chord =	1,380.2145				
Mid. Ord. =	42.1968				
P.C. Station	243+41.34	N	6,863,495.6930	E	1,318,517.3902
P.T. Station	257+24.99	N	6,864,255.4313	E	1,317,365.0926
C.C.		N	6,868,569.2642	E	1,321,035.9153
Back = N	63° 36′ 00.57" W				
Ahead = N	49° 36′ 14.89" W				
Chord Bear = N	56° 36′ 07.73" W				

Course from PT US841 to PC US842 N 49° 36′ 14.89" W Dist 6,993.2445

Curve Data					
Curve US842					
P.I. Station	335+16.27	N	6,869,304.6809	E	1,311,431.3768
Delta =	16° 02′ 20.23"	(RT)			
Degree =	1° 00′ 41.50"				
Tangent =	798.0266				
Length =	1,585.6170				
Radius =	5,664.2822				
External =	55.9398				
Long Chord =	1,580.4449				
Mid. Ord. =	55.3927				
P.C. Station	327+18.24	N	6,868,787.5079	E	1,312,039.1419
P.T. Station	343+03.86	N	6,869,969.6424	E	1,310,990.1596
C.C.		N	6,873,101.3407	E	1,315,709.9646
Back = N	49° 36′ 14.89" W				
Ahead = N	33° 33′ 54.65" W				
Chord Bear = N	41° 35′ 04.77" W				

Course from PT US842 to PC US843 N 33° 33′ 54.65" W Dist 5,977.1250

Curve Data					
Curve US843					
P.I. Station	406+86.02	N	6,875,287.6309	E	1,307,461.5530
Delta =	8° 05′ 14.63"	(LT)			
Degree =	1° 00′ 00.00"				
Tangent =	405.0428				
Length =	808.7401				
Radius =	5,729.5800				
External =	14.2991				
Long Chord =	808.0689				
Mid. Ord. =	14.2635				
P.C. Station	402+80.98	N	6,874,950.1260	E	1,307,685.4952
P.T. Station	410+89.72	N	6,875,590.2742	E	1,307,192.3567
C.C.		N	6,871,782.3256	E	1,302,911.2804
Back = N	33° 33′ 54.65" W				
Ahead = N	41° 39′ 09.29" W				
Chord Bear = N	37° 36′ 31.97" W				

Course from PT US843 to US85 N 41° 39′ 09.29" W Dist 7,359.1437

Point US85 N 6,881,088.9417 E 1,302,301.3802 Sta 484+48.86

Course from US85 to EQUS841 N 41° 39′ 09.29" W Dist 519.3654

Equation: Sta 489+68.23 (BK) = Sta 76+00.00 (AH) — End Region 1 / Begin Region 2

Point EQUS841 N 6,881,477.0056 E 1,301,956.2036 Sta 76+00.00

Course from EQUS841 to EQUS842 N 41° 39′ 09.29" W Dist 1,564.8100

Equation: Sta 91+64.81 (BK) = Sta 21+64.80 (AH) — End Region 2 / Begin Region 3

Point EQUS842 N 6,882,646.2136 E 1,300,916.2118 Sta 21+64.80

Point US86 N 6,882,646.2170 E 1,300,916.2088 Sta 21+64.80

Course from US86 to PC US844 N 41° 39′ 09.29" W Dist 23,665.7214

US 84 ALIGNMENT

Curve Data					
Curve US844					
P.I. Station	263+86.80	N	6,900,744.6159	E	1,284,817.9737
Delta =	11° 05′ 26.82"	(RT)			
Degree =	1° 00′ 00.00"				
Tangent =	556.2772				
Length =	1,109.0784				
Radius =	5,729.5780				
External =	26.9408				
Long Chord =	1,107.3476				
Mid. Ord. =	26.8147				
P.C. Station	258+30.53	N	6,900,328.9720	E	1,285,187.6823
P.T. Station	269+39.60	N	6,901,223.6158	E	1,284,535.1249
C.C.		N	6,904,136.9192	E	1,289,468.7571
Back = N	41° 39′ 09.29" W				
Ahead = N	30° 33′ 42.47" W				
Chord Bear = N	36° 06′ 25.88" W				

Course from PT US844 to PC US845 N 30° 33′ 42.47" W Dist 33,110.1980

Curve Data					
Curve US845					
P.I. Station	604+93.61	N	6,930,116.3374	E	1,267,474.0101
Delta =	17° 36′ 43.67"	(LT)			
Degree =	2° 00′ 00.00"				
Tangent =	443.8033				
Length =	880.6065				
Radius =	2,864.7890				
External =	34.1724				
Long Chord =	877.1436				
Mid. Ord. =	33.7696				
P.C. Station	600+49.80	N	6,929,734.1867	E	1,267,699.6696
P.T. Station	609+30.41	N	6,930,412.2972	E	1,267,143.3001
C.C.		N	6,928,277.5350	E	1,265,232.8535
Back = N	30° 33′ 42.47" W				
Ahead = N	48° 10′ 26.13" W				
Chord Bear = N	39° 22′ 04.30" W				

Course from PT US845 to PC US846 N 48° 10′ 26.13" W Dist 12,110.4614

Curve Data					
Curve US846					
P.I. Station	735+92.95	N	6,938,856.5870	E	1,257,707.5217
Delta =	21° 48′ 51.03"	(LT)			
Degree =	1° 59′ 59.47"				
Tangent =	552.0796				
Length =	1,090.7891				
Radius =	2,865.0000				
External =	52.7075				
Long Chord =	1,084.2129				
Mid. Ord. =	51.7553				
P.C. Station	730+40.87	N	6,938,488.4207	E	1,258,118.9162
P.T. Station	741+31.66	N	6,939,045.5170	E	1,257,188.7758
C.C.		N	6,936,353.5013	E	1,256,208.3289
Back = N	48° 10′ 26.13" W				
Ahead = N	69° 59′ 17.16" W				
Chord Bear = N	59° 04′ 51.65" W				

Course from PT US846 to PC US847 N 69° 59′ 17.16" W Dist 1,601.6322

Curve Data					
Curve US847					
P.I. Station	760+70.83	N	6,939,709.1294	E	1,255,366.6933
Delta =	6° 44′ 34.40"	(LT)			
Degree =	1° 00′ 00.00"				
Tangent =	337.5341				
Length =	674.2888				
Radius =	5,729.5780				
External =	9.9336				
Long Chord =	673.8998				
Mid. Ord. =	9.9164				
P.C. Station	757+33.29	N	6,939,593.6201	E	1,255,683.8476
P.T. Station	764+07.58	N	6,939,786.6014	E	1,255,038.1703
C.C.		N	6,934,209.9851	E	1,253,723.0983
Back = N	69° 59′ 17.16" W				
Ahead = N	76° 43′ 51.56" W				
Chord Bear = N	73° 21′ 34.36" W				

Course from PT US847 to PC US848 N 76° 43′ 51.56" W Dist 3,088.5888

Curve Data					
Curve US848					
P.I. Station	799+12.59	N	6,940,591.0837	E	1,251,626.7303
Delta =	8° 18′ 49.91"	(RT)			
Degree =	1° 00′ 00.00"				
Tangent =	416.4241				
Length =	831.3863				
Radius =	5,729.5780				
External =	15.1129				
Long Chord =	830.6572				
Mid. Ord. =	15.0731				
P.C. Station	794+96.17	N	6,940,495.5047	E	1,252,032.0372
P.T. Station	803+27.56	N	6,940,744.2639	E	1,251,239.5032
C.C.		N	6,946,072.1210	E	1,253,347.1092
Back = N	76° 43′ 51.56" W				
Ahead = N	68° 25′ 01.65" W				
Chord Bear = N	72° 34′ 26.60" W				

Course from PT US848 to PC US849 N 68° 25′ 01.65" W Dist 1,901.1044

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3/3/2023

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

HORIZONTAL ALIGNMENT DATA

SHEET 1 OF 4

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	36
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\05 Roadway Details\HAD\US84*HAD*01.dgn
DRAWING DATE: 3/3/2023

US 84 ALIGNMENT

Curve Data

Curve US849
P.I. Station 824+80.39 N 6,941,536.1769 E 1,249,237.6114
Delta = 5° 01′ 52.93" (LT)
Degree = 1° 00′ 00.00"
Tangent = 251.7302
Length = 503.1368
Radius = 5,729.5780
External = 5.5272
Long Chord = 502.9752
Mid. Ord. = 5.5219
P.C. Station 822+28.66 N 6,941,443.5788 E 1,249,471.6919
P.T. Station 827+31.80 N 6,941,607.8891 E 1,248,996.3118
C.C. N 6,936,115.7217 E 1,247,364.0859
Back = N 68° 25′ 01.65" W
Ahead = N 73° 26′ 54.58" W
Chord Bear = N 70° 55′ 58.11" W

Course from PT US849 to EQUS843 N 73° 26′ 54.58" W Dist 3,154.0334

Equation: Sta 858+85.83 (BK) = Sta 373+09.64 (AH) — End Region 3 / Begin Region 4

Point EQUS843 N 6,942,506.4012 E 1,245,972.9689 Sta 373+09.64

Point US87 N 6,942,506.4025 E 1,245,972.9645 Sta 373+09.64

Course from US87 to PC US8410 N 73° 26′ 54.58" W Dist 1,392.6472

Curve Data

Curve US8410
P.I. Station 398+90.56 N 6,943,241.6458 E 1,243,498.9939
Delta = 45° 03′ 20.50" (RT)
Degree = 2° 00′ 00.00"
Tangent = 1,188.2660
Length = 2,252.7847
Radius = 2,864.7890
External = 236.6610
Long Chord = 2,195.1871
Mid. Ord. = 218.6022
P.C. Station 387+02.29 N 6,942,903.1359 E 1,244,638.0230
P.T. Station 409+55.08 N 6,944,286.9733 E 1,242,933.9572
C.C. N 6,945,649.2196 E 1,245,454.1360
Back = N 73° 26′ 54.58" W
Ahead = N 28° 23′ 34.08" W
Chord Bear = N 50° 55′ 14.33" W

Course from PT US8410 to PC US8411 N 28° 23′ 34.08" W Dist 7,149.4391

Curve Data

Curve US8411
P.I. Station 484+44.49 N 6,950,875.4769 E 1,239,372.6366
Delta = 13° 32′ 09.08" (LT)
Degree = 2° 00′ 00.00"
Tangent = 339.9791
Length = 676.7927
Radius = 2,864.7890
External = 20.1030
Long Chord = 675.2200
Mid. Ord. = 19.9629
P.C. Station 481+04.52 N 6,950,576.3945 E 1,239,534.3013
P.T. Station 487+81.31 N 6,951,128.4137 E 1,239,145.4610
C.C. N 6,949,214.1482 E 1,237,014.1225
Back = N 28° 23′ 34.08" W
Ahead = N 41° 55′ 43.15" W
Chord Bear = N 35° 09′ 38.61" W

Course from PT US8411 to PC US8412 N 41° 55′ 43.15" W Dist 4,721.5555

Curve Data

Curve US8412
P.I. Station 541+32.95 N 6,955,109.9138 E 1,235,569.4696
Delta = 12° 33′ 04.57" (LT)
Degree = 1° 00′ 00.00"
Tangent = 630.0852
Length = 1,255.1269
Radius = 5,729.5780
External = 34.5413
Long Chord = 1,252.6188
Mid. Ord. = 34.3343
P.C. Station 535+02.86 N 6,954,641.1447 E 1,235,990.4954
P.T. Station 547+57.99 N 6,955,475.9859 E 1,235,056.6357
C.C. N 6,950,812.6137 E 1,231,727.8185
Back = N 41° 55′ 43.15" W
Ahead = N 54° 28′ 47.72" W
Chord Bear = N 48° 12′ 15.44" W

Course from PT US8412 to PC US8413 N 54° 28′ 47.72" W Dist 6,735.8357

US 84 ALIGNMENT

Curve Data

Curve US8413
P.I. Station 621+27.72 N 6,959,757.7104 E 1,229,058.3266
Delta = 24° 57′ 12.95" (LT)
Degree = 2° 00′ 00.00"
Tangent = 633.8914
Length = 1,247.6798
Radius = 2,864.7890
External = 69.2925
Long Chord = 1,237.8424
Mid. Ord. = 67.6561
P.C. Station 614+93.83 N 6,959,389.4270 E 1,229,574.2584
P.T. Station 627+41.51 N 6,959,873.9511 E 1,228,435.1842
C.C. N 6,957,057.7409 E 1,227,909.8498
Back = N 54° 28′ 47.72" W
Ahead = N 79° 26′ 00.67" W
Chord Bear = N 66° 57′ 24.19" W

Course from PT US8413 to PC US8414 N 79° 26′ 00.67" W Dist 490.8906

Curve Data

Curve US8414
P.I. Station 640+73.84 N 6,960,118.2692 E 1,227,125.4449
Delta = 32° 44′ 13.10" (RT)
Degree = 2° 00′ 00.00"
Tangent = 841.4413
Length = 1,636.8486
Radius = 2,864.7890
External = 121.0173
Long Chord = 1,614.6739
Mid. Ord. = 116.1124
P.C. Station 632+32.40 N 6,959,963.9688 E 1,227,952.6177
P.T. Station 648+69.25 N 6,960,695.3820 E 1,226,513.1016
C.C. N 6,962,780.1790 E 1,228,477.9521
Back = N 79° 26′ 00.67" W
Ahead = N 46° 41′ 47.57" W
Chord Bear = N 63° 03′ 54.12" W

Course from PT US8414 to PC US8415 N 46° 41′ 47.57" W Dist 2,422.4141

Curve Data

Curve US8415
P.I. Station 679+60.83 N 6,962,815.7807 E 1,224,263.2608
Delta = 26° 17′ 42.79" (RT)
Degree = 2° 00′ 00.00"
Tangent = 669.1671
Length = 1,314.7609
Radius = 2,864.7890
External = 77.1153
Long Chord = 1,303.2529
Mid. Ord. = 75.0939
P.C. Station 672+91.66 N 6,962,356.8242 E 1,224,750.2348
P.T. Station 686+06.42 N 6,963,442.9736 E 1,224,029.9933
C.C. N 6,964,441.6212 E 1,226,715.0853
Back = N 46° 41′ 47.57" W
Ahead = N 20° 24′ 04.78" W
Chord Bear = N 33° 32′ 56.18" W

Course from PT US8415 to PC US8416 N 20° 24′ 04.78" W Dist 3,984.5854

Curve Data

Curve US8416
P.I. Station 729+54.14 N 6,967,517.9756 E 1,222,514.4060
Delta = 7° 15′ 10.58" (LT)
Degree = 1° 00′ 00.00"
Tangent = 363.1320
Length = 725.2939
Radius = 5,729.5780
External = 11.4958
Long Chord = 724.8098
Mid. Ord. = 11.4728
P.C. Station 725+91.01 N 6,967,177.6215 E 1,222,640.9916
P.T. Station 733+16.30 N 6,967,839.6250 E 1,222,345.8637
C.C. N 6,965,180.3261 E 1,217,270.8077
Back = N 20° 24′ 04.78" W
Ahead = N 27° 39′ 15.37" W
Chord Bear = N 24° 01′ 40.08" W

Course from PT US8416 to PC US8417 N 27° 39′ 15.37" W Dist 11,724.9981

Curve Data

Curve US8417
P.I. Station 855+82.16 N 6,978,704.2880 E 1,216,652.8456
Delta = 21° 22′ 58.25" (LT)
Degree = 2° 00′ 00.00"
Tangent = 540.8634
Length = 1,069.1423
Radius = 2,864.7890
External = 50.6096
Long Chord = 1,062.9486
Mid. Ord. = 49.7311
P.C. Station 850+41.30 N 6,978,225.2105 E 1,216,903.8793
P.T. Station 861+10.44 N 6,979,058.8618 E 1,216,244.4210
C.C. N 6,976,895.5611 E 1,214,366.3513
Back = N 27° 39′ 15.37" W
Ahead = N 49° 02′ 13.61" W
Chord Bear = N 38° 20′ 44.49" W

Course from PT US8417 to PC US8418 N 49° 02′ 13.61" W Dist 5,381.4779

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US 84

HORIZONTAL ALIGNMENT DATA

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	37
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

DRAWING DATE: 3/3/2023
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US 84 ALIGNMENT

Curve Data

Curve US8418
P.I. Station 920+69.10 N 6,982,965.1804 E 1,211,744.8321
Delta = 22° 46′ 56.19" (RT)
Degree = 2° 00′ 00.00"
Tangent = 577.1818
Length = 1,139.1141
Radius = 2,864.7900
External = 57.5653
Long Chord = 1,131.6247
Mid. Ord. = 56.4314
P.C. Station 914+91.92 N 6,982,586.7973 E 1,212,180.6820
P.T. Station 926+31.03 N 6,983,482.8175 E 1,211,489.5073
C.C. N 6,984,750.0988 E 1,214,058.7524
Back = N 49° 02′ 13.61" W
Ahead = N 26° 15′ 17.43" W
Chord Bear = N 37° 38′ 45.52" W

Course from PT US8418 to US88 N 26° 15′ 17.43" W Dist 3,255.2725

Point US88 N 6,986,402.2610 E 1,210,049.4905 Sta 958+86.30

Course from US88 to US89 N 26° 15′ 17.43" W Dist 2,642.1803

Point US89 N 6,988,771.8617 E 1,208,880.6839 Sta 985+28.48

Course from US89 to EQUS844 N 26° 15′ 17.43" W Dist 57.8151

Equation: Sta 985+86.30 (BK) = Sta 331+13.30 (AH)

End Region 4
Begin Region 5

Point EQUS844 N 6,988,823.7124 E 1,208,855.1085 Sta 331+13.30

Point US90 N 6,988,823.7165 E 1,208,855.1065 Sta 331+13.30

Course from US90 to PC US8419 N 26° 15′ 17.43" W Dist 7,822.5309

Curve Data

Curve US8419
P.I. Station 416+68.72 N 6,996,496.5155 E 1,205,070.4948
Delta = 21° 27′ 05.18" (LT)
Degree = 1° 28′ 51.00"
Tangent = 732.8844
Length = 1,448.6068
Radius = 3,869.1601
External = 68.7987
Long Chord = 1,440.1609
Mid. Ord. = 67.5967
P.C. Station 409+35.84 N 6,995,839.2389 E 1,205,394.6969
P.T. Station 423+84.44 N 6,996,989.6965 E 1,204,528.3767
C.C. N 6,994,127.6599 E 1,201,924.6972
Back = N 26° 15′ 17.43" W
Ahead = N 47° 42′ 22.61" W
Chord Bear = N 36° 58′ 50.02" W

Course from PT US8419 to PC US8420 N 47° 50′ 46.75" W Dist 7,682.4027

Curve Data

Curve US8420
P.I. Station 504+81.50 N 7,002,423.8063 E 1,198,525.6434
Delta = 8° 16′ 43.24" (RT)
Degree = 1° 00′ 00.00"
Tangent = 414.6557
Length = 827.8681
Radius = 5,729.5800
External = 14.9849
Long Chord = 827.1482
Mid. Ord. = 14.9459
P.C. Station 500+66.84 N 7,002,145.5219 E 1,198,833.0474
P.T. Station 508+94.71 N 7,002,743.4533 E 1,198,261.5124
C.C. N 7,006,393.1312 E 1,202,678.2916
Back = N 47° 50′ 46.75" W
Ahead = N 39° 34′ 03.51" W
Chord Bear = N 43° 42′ 25.13" W

Course from PT US8420 to PC US8421 N 39° 34′ 03.51" W Dist 1,095.5632

Curve Data

Curve US8421
P.I. Station 522+73.24 N 7,003,806.1264 E 1,197,383.4032
Delta = 11° 16′ 55.73" (LT)
Degree = 2° 00′ 00.00"
Tangent = 282.9686
Length = 564.1074
Radius = 2,864.7890
External = 13.9411
Long Chord = 563.1965
Mid. Ord. = 13.8736
P.C. Station 519+90.28 N 7,003,587.9935 E 1,197,563.6510
P.T. Station 525+54.38 N 7,003,984.7802 E 1,197,163.9629
C.C. N 7,001,763.1552 E 1,195,355.2622
Back = N 39° 34′ 03.51" W
Ahead = N 50° 50′ 59.24" W
Chord Bear = N 45° 12′ 31.38" W

Course from PT US8421 to PC US8422 N 50° 50′ 59.24" W Dist 5,012.9642

US 84 ALIGNMENT

Curve Data

Curve US8422
P.I. Station 577+16.59 N 7,007,243.9688 E 1,193,160.7052
Delta = 2° 59′ 03.06" (RT)
Degree = 1° 00′ 00.00"
Tangent = 149.2429
Length = 298.4184
Radius = 5,729.5800
External = 1.9434
Long Chord = 298.3847
Mid. Ord. = 1.9427
P.C. Station 575+67.35 N 7,007,149.7434 E 1,193,276.4421
P.T. Station 578+65.77 N 7,007,344.0917 E 1,193,050.0306
C.C. N 7,011,592.9951 E 1,196,893.8448
Back = N 50° 50′ 59.24" W
Ahead = N 47° 51′ 56.18" W
Chord Bear = N 49° 21′ 27.71" W

Course from PT US8422 to US91 N 47° 51′ 56.18" W Dist 6,868.4108

Point US91 N 7,011,951.9154 E 1,187,956.6008 Sta 647+34.18

Course from US91 to PC US84231 N 46° 42′ 58.73" W Dist 2,836.9824

Curve Data

Curve US84231
P.I. Station 683+93.05 N 7,014,460.4806 E 1,185,293.0571
Delta = 39° 27′ 27.05" (RT)
Degree = 2° 30′ 00.00"
Tangent = 821.8923
Length = 1,578.3005
Radius = 2,291.8310
External = 142.9167
Long Chord = 1,547.2965
Mid. Ord. = 134.5277
P.C. Station 675+71.16 N 7,013,896.9821 E 1,185,891.3684
P.T. Station 691+49.46 N 7,015,275.7859 E 1,185,189.2099
C.C. N 7,015,565.3617 E 1,187,462.6731
Back = N 46° 42′ 58.73" W
Ahead = N 7° 15′ 31.68" W
Chord Bear = N 26° 59′ 15.20" W

Equation: Sta 691+49.46 (BK) = Sta 692+65.10 (AH)

End Region 5
Begin Region 6

Curve Data

Curve US84232
P.I. Station 692+65.10 N 7,015,275.7882 E 1,185,189.2096
Delta = 0° 00′ 00.42" (RT)
Degree = 2° 30′ 00.00"
Tangent = 0.0023
Length = 0.0047
Radius = 2,291.8310
External = 0.0000
Long Chord = 0.0047
Mid. Ord. = 0.0000
P.C. Station 692+65.10 N 7,015,275.7859 E 1,185,189.2099
P.T. Station 692+65.10 N 7,015,275.7905 E 1,185,189.2093
C.C. N 7,015,565.3617 E 1,187,462.6731
Back = N 7° 15′ 31.68" W
Ahead = N 7° 15′ 31.25" W
Chord Bear = N 7° 15′ 31.47" W

Course from PT US84232 to PC US8424 N 7° 15′ 31.25" W Dist 11,795.4217

Curve Data

Curve US8424
P.I. Station 815+94.24 N 7,027,506.1185 E 1,183,631.4319
Delta = 23° 13′ 51.62" (LT)
Degree = 2° 12′ 24.00"
Tangent = 533.7142
Length = 1,052.7648
Radius = 2,596.4860
External = 54.2857
Long Chord = 1,045.5684
Mid. Ord. = 53.1739
P.C. Station 810+60.53 N 7,026,976.6815 E 1,183,698.8663
P.T. Station 821+13.29 N 7,027,966.0310 E 1,183,360.6342
C.C. N 7,026,648.6174 E 1,181,123.1890
Back = N 7° 15′ 31.25" W
Ahead = N 30° 29′ 22.88" W
Chord Bear = N 18° 52′ 27.06" W

Course from PT US8424 to US92 N 30° 29′ 22.88" W Dist 21,231.8267

Point US92 N 7,046,261.9311 E 1,172,587.9604 Sta 1033+45.12

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Texas Department of Transportation

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TBPE REG. # F-11657

US 84

HORIZONTAL ALIGNMENT DATA

SHEET 3 OF 4

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	38
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

DRAWING DATE: 3/3/2023 FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\HAD\US84*HAD*01.dgn

US 87 ALIGNMENT

Beginning chain US87 description

			Curve Data			

Curve US871						
P.I. Station		109+86.92	N	6,735,700.2462	E	1,065,207.4889
Delta	=	11° 26′ 44.42"	(RT)			
Degree	=	2° 00′ 00.00"				
Tangent	=	287.0973				
Length	=	572.2838				
Radius	=	2,864.7900				
External	=	14.3499				
Long Chord	=	571.3327				
Mid. Ord.	=	14.2784				
P.C. Station		106+99.82	N	6,735,489.7921	E	1,065,402.7679
P.T. Station		112+72.10	N	6,735,945.2660	E	1,065,057.8555
C.C.			N	6,737,438.3771	E	1,067,502.7770
Back	= N 42° 51′ 28.95" W					
Ahead	= N 31° 24′ 44.53" W					
Chord Bear	= N 37° 08′ 06.74" W					

Course from PT US871 to PC US872 N 31° 24′ 44.53" W Dist 8,826.6330

			Curve Data			

Curve US872						
P.I. Station		202+81.11	N	6,743,633.8945	E	1,060,362.4178
Delta	=	3° 38′ 46.24"	(LT)			
Degree	=	1° 00′ 00.00"				
Tangent	=	182.3705				
Length	=	364.6178				
Radius	=	5,729.5800				
External	=	2.9017				
Long Chord	=	364.5563				
Mid. Ord.	=	2.9002				
P.C. Station		200+98.74	N	6,743,478.2526	E	1,060,457.4682
P.T. Station		204+63.35	N	6,743,783.1767	E	1,060,257.6618
C.C.			N	6,740,492.0304	E	1,055,567.6252
Back	= N 31° 24′ 44.53" W					
Ahead	= N 35° 03′ 30.77" W					
Chord Bear	= N 33° 14′ 07.65" W					

Course from PT US872 to PC US873 N 35° 03′ 30.77" W Dist 17,723.1046

			Curve Data			

Curve US873						
P.I. Station		383+03.60	N	6,758,386.5892	E	1,050,009.9878
Delta	=	4° 40′ 59.38"	(LT)			
Degree	=	2° 00′ 00.00"				
Tangent	=	117.1443				
Length	=	234.1581				
Radius	=	2,864.7890				
External	=	2.3941				
Long Chord	=	234.0929				
Mid. Ord.	=	2.3921				
P.C. Station		381+86.46	N	6,758,290.6989	E	1,050,077.2770
P.T. Station		384+20.62	N	6,758,476.6654	E	1,049,935.0942
C.C.			N	6,756,645.1263	E	1,047,732.2595
Back	= N 35° 03′ 30.77" W					
Ahead	= N 39° 44′ 30.15" W					
Chord Bear	= N 37° 24′ 00.46" W					

Course from PT US873 to US872 N 39° 44′ 30.15" W Dist 716.5443

Point US872 N 6,759,027.6410 E 1,049,476.9875 Sta 391+37.16

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Texas Department of Transportation

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

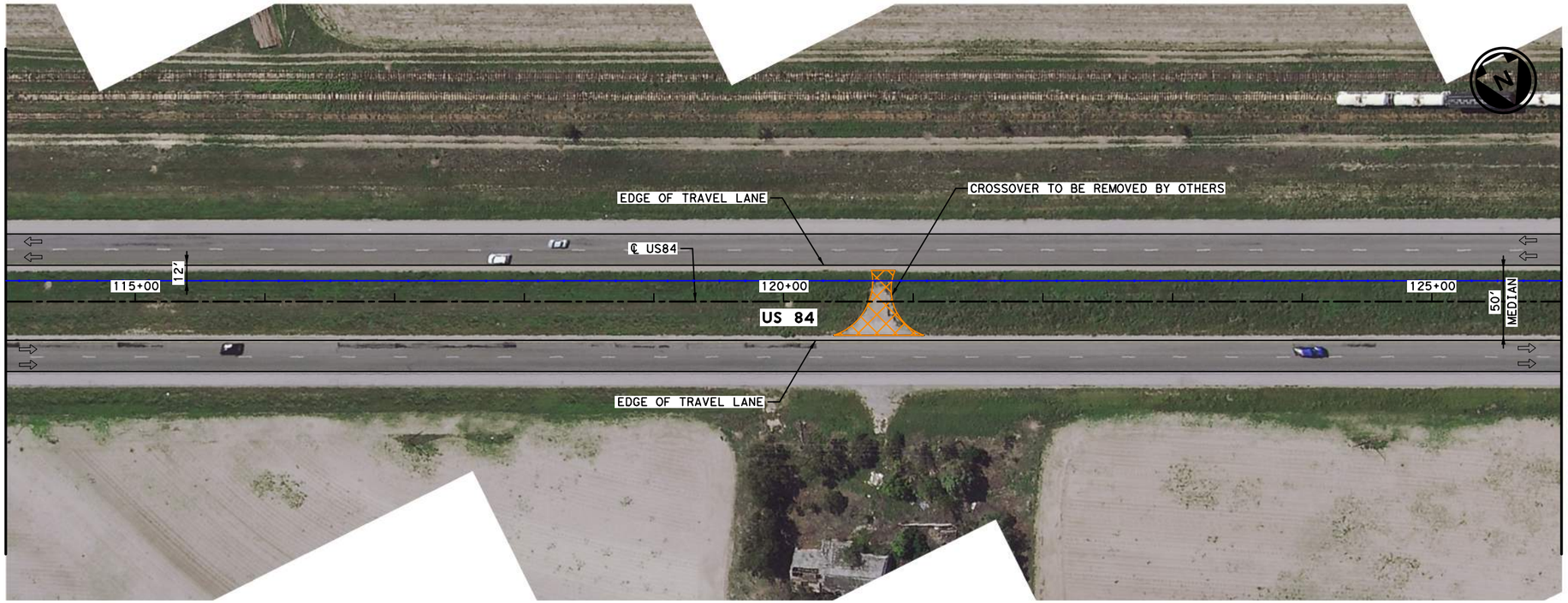
US 84

HORIZONTAL ALIGNMENT DATA

SHEET 4 OF 4

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	39
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

MATCH LINE STA 114+00



MATCH LINE STA 114+00

MATCH LINE STA 126+00

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

1. HORIZONTAL ALIGNMENT IS ESTABLISHED BASED ON THE AVAILABLE AS-BUILTS AND IS FOR INFORMATION ONLY.
2. CONTRACTOR SHALL FIELD VERIFY ANY EXISTING UNDERGROUND STRUCTURES, UTILITIES, AND THEIR EXISTING DEPTHS BEFORE COMMENCING WORK.
3. REFER TO BARRIER TRANSITION SHEETS AND MISCELLANEOUS DETAIL FOR MORE INFORMATION.

LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
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3/3/2023

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-12-074 SHEET 1 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	40
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

DRAWING DATE: 3/3/2023 FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN1$.dgn

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

1. HORIZONTAL ALIGNMENT IS ESTABLISHED BASED ON THE AVAILABLE AS-BUILTS AND IS FOR INFORMATION ONLY.
2. CONTRACTOR SHALL FIELD VERIFY ANY EXISTING UNDERGROUND STRUCTURES, UTILITIES, AND THEIR EXISTING DEPTHS BEFORE COMMENCING WORK.
3. REFER TO BARRIER TRANSITION SHEETS AND MISCELLANEOUS DETAIL FOR MORE INFORMATION.

LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

m.n. m

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

SHEET 1

CSJ 0053-12-074

US 84

PLAN LAYOUT

CSJ 0053-12-074 SHEET 2 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	41
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN2$.dgn

DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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3. REFER TO BARRIER TRANSITION SHEETS AND MISCELLANEOUS DETAIL FOR MORE INFORMATION.

LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

m.n. m

Texas Department of Transportation

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-12-074 SHEET 3 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	42
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\@US84*PLAN3@.dgn
DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-12-074 SHEET 4 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	43
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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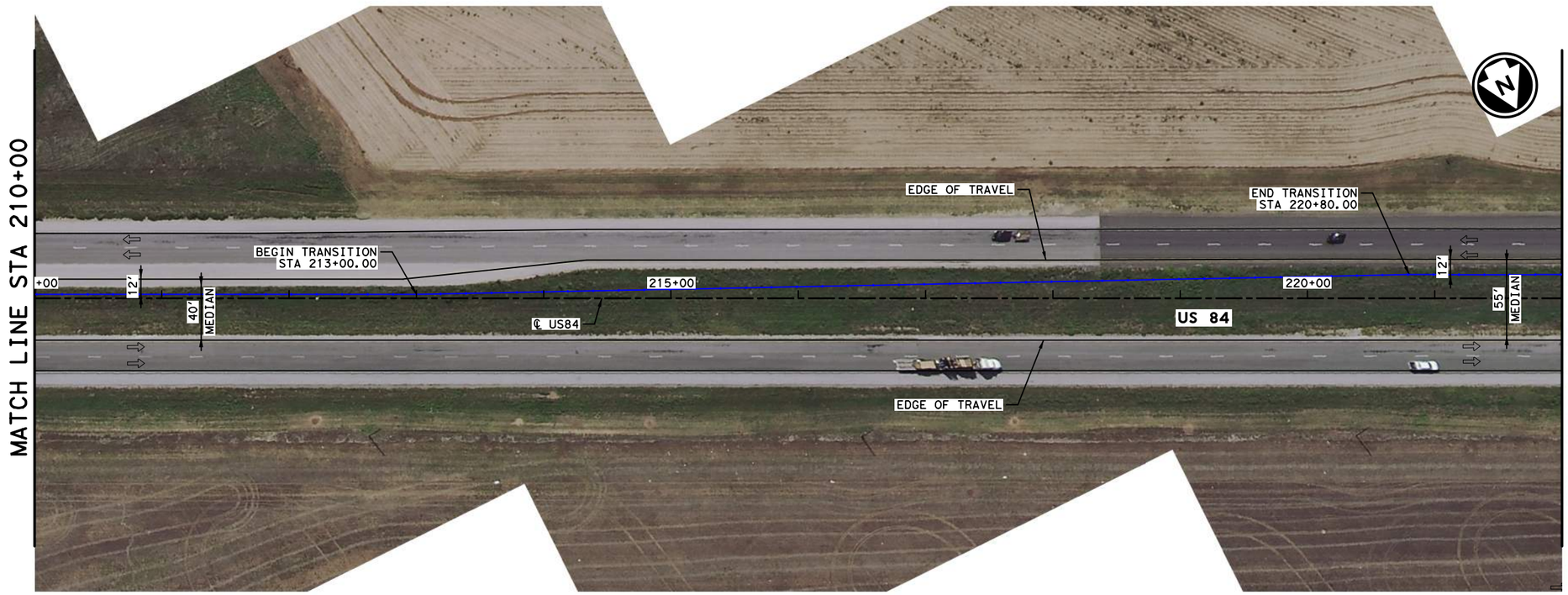

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-12-074 SHEET 5 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	44
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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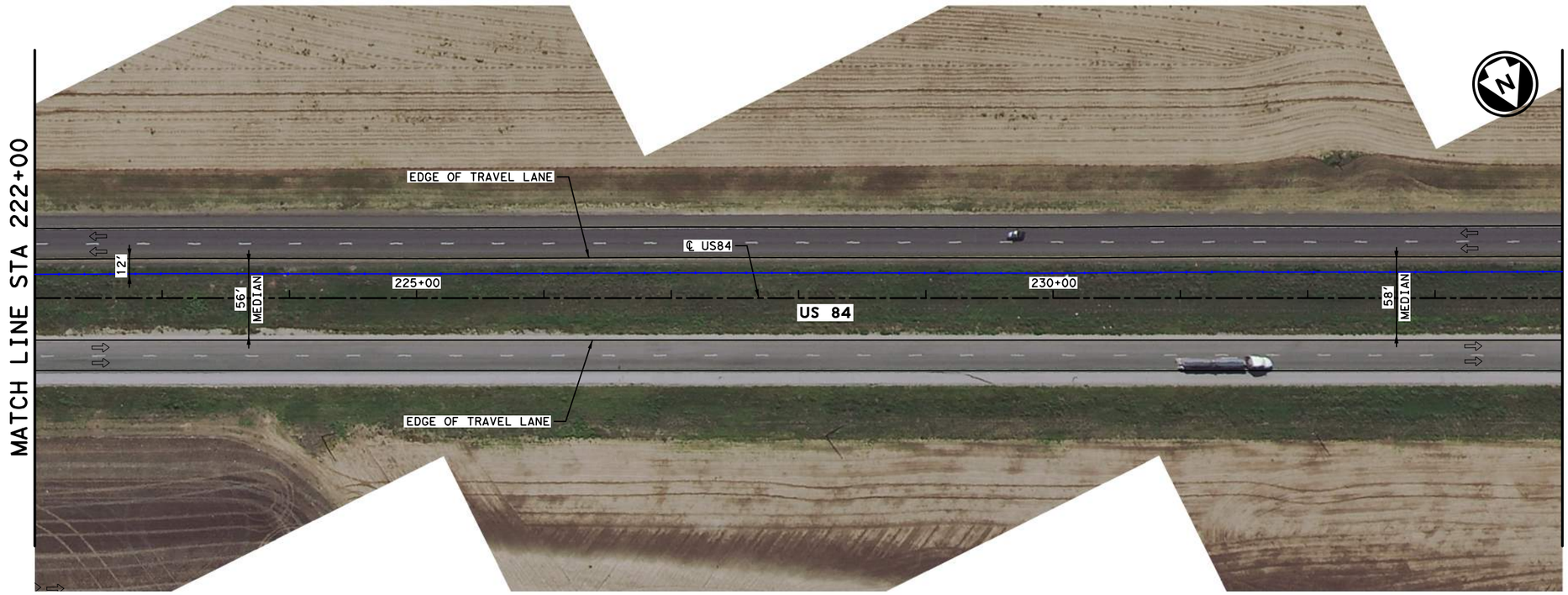
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
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- PROPOSED ATTENUATOR

STATE OF TEXAS
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PROFESSIONAL ENGINEER

3/3/2023

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-12-074 SHEET 6 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	45
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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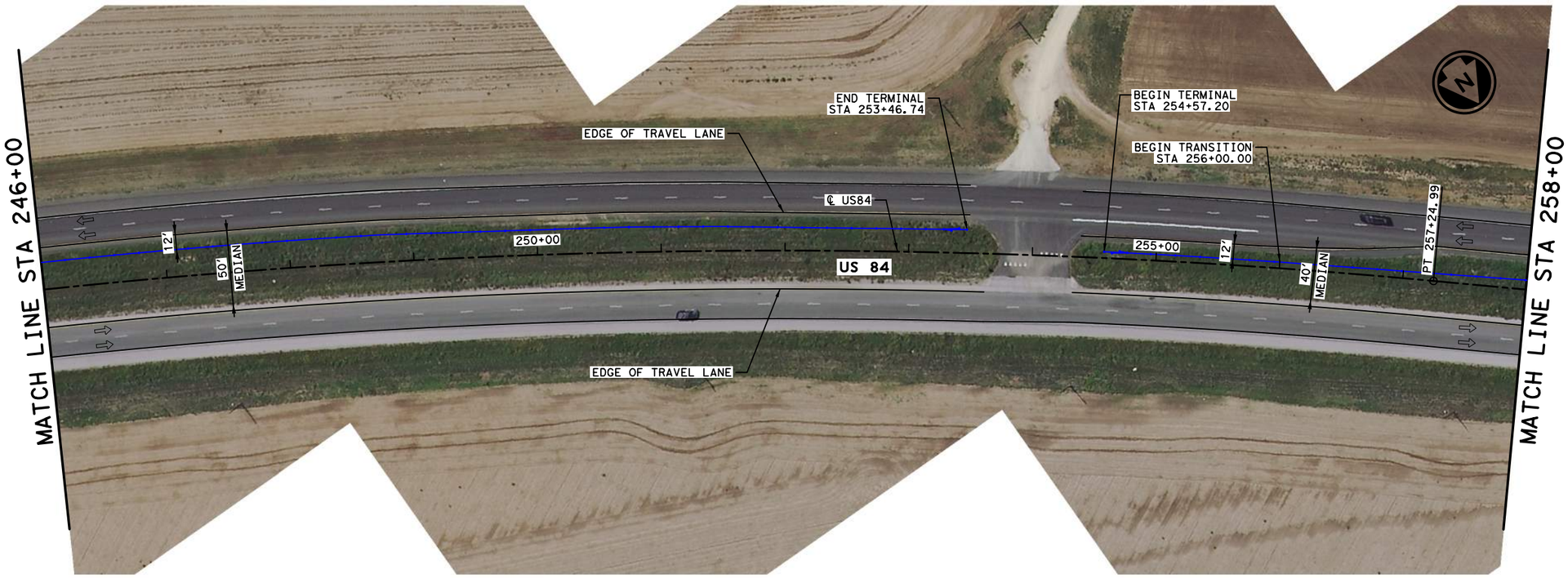
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

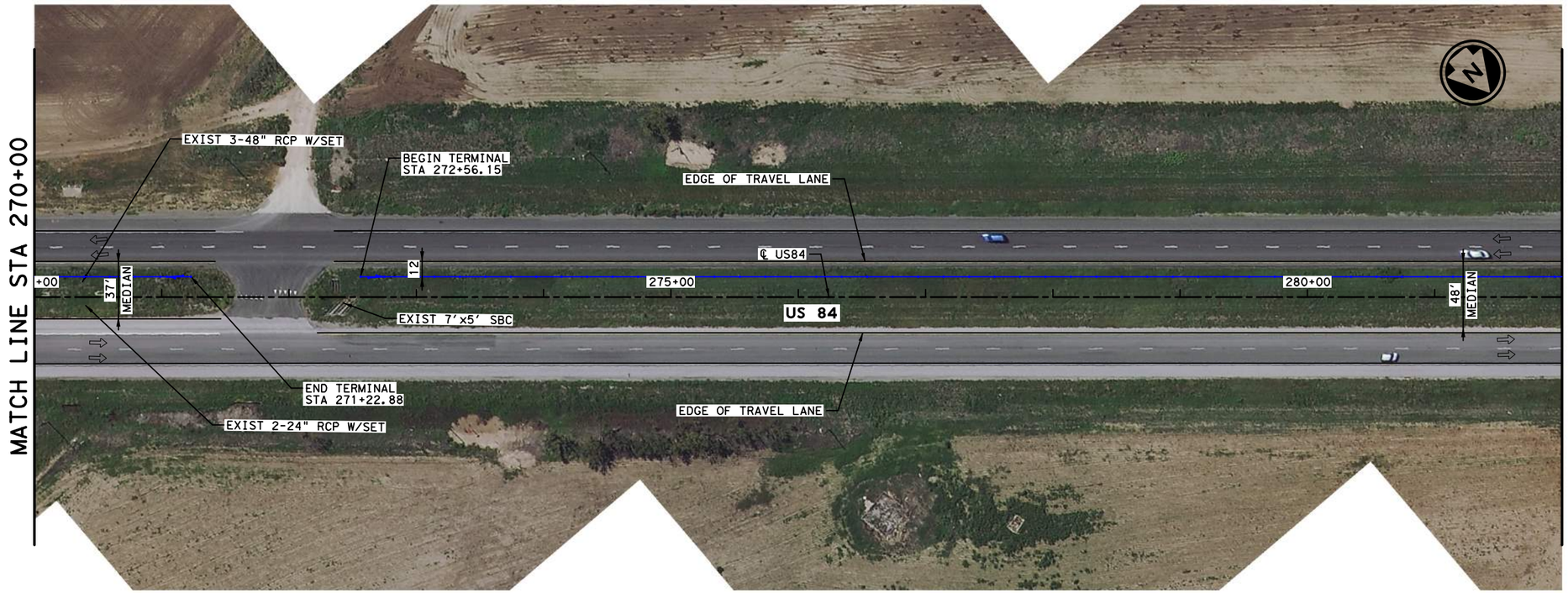
US 84

PLAN LAYOUT

CSJ 0053-12-074 SHEET 7 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	46
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

DRAWING DATE: 3/3/2023 FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\05 Roadway Details\US 84*US84*PLAN7*.dgn



0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
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3/3/2023

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-12-074 SHEET 8 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	47
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN8$.dgn
DRAWING DATE: 3/3/2023

0' 50' 100'

SCALE: 1"=100'

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
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PROFESSIONAL ENGINEER

3/3/2023

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Texas Department of Transportation

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-12-074 SHEET 9 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	48
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

DRAWING DATE: 3/3/2023 FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN9$.dgn

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
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3/3/2023

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7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

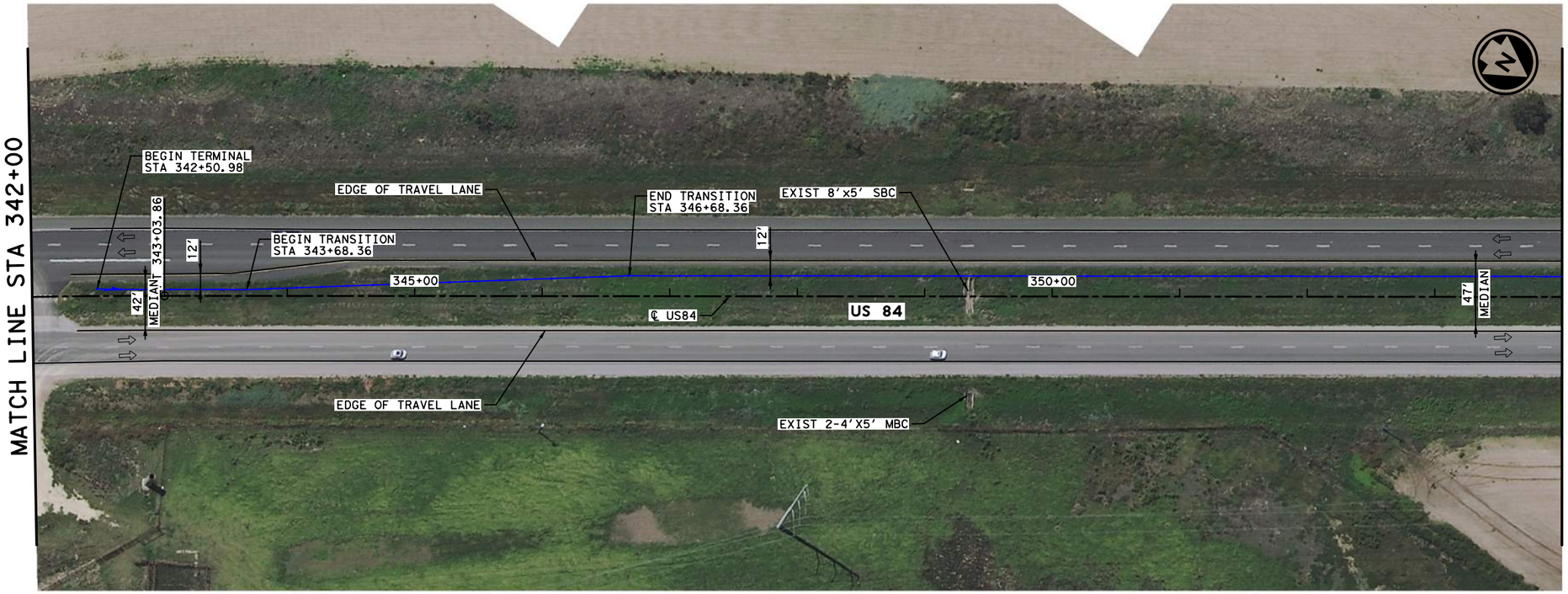
US 84

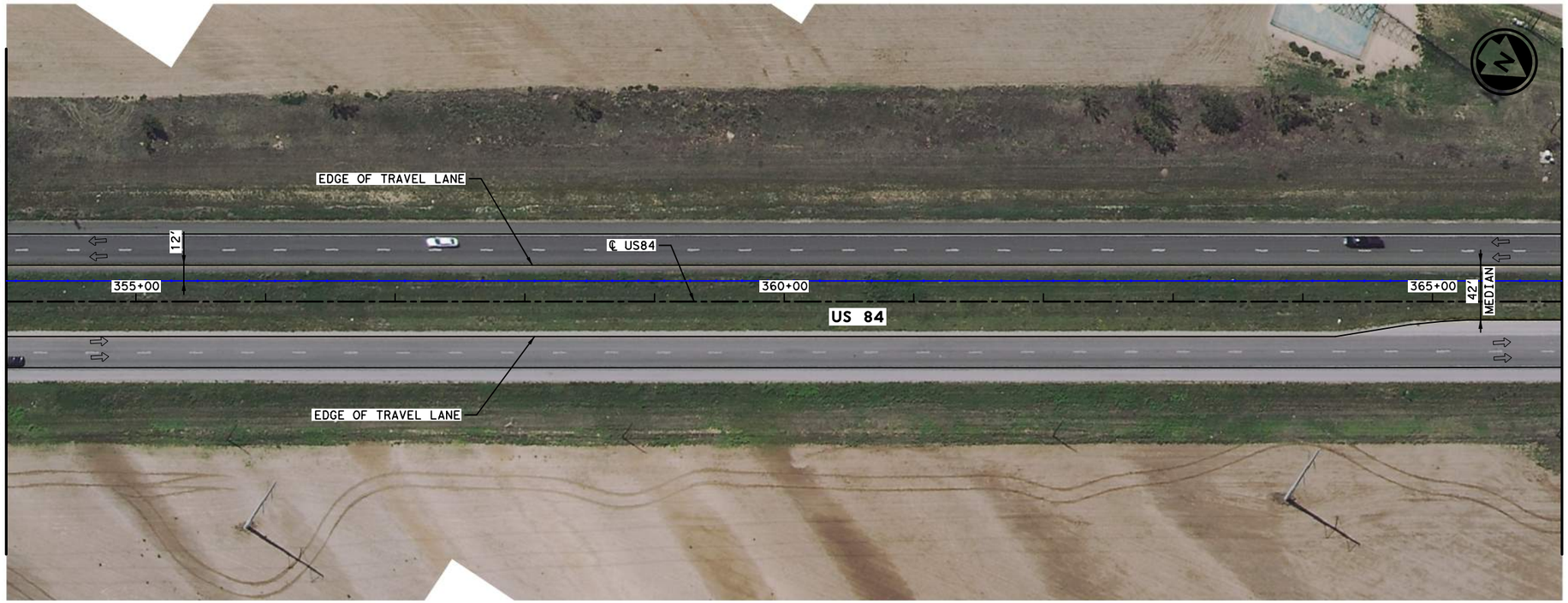
PLAN LAYOUT

CSJ 0053-12-074 SHEET 10 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	49
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN10&.dgn
DRAWING DATE: 3/3/2023





0' 50' 100'

SCALE: 1"=100'

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
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85191
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3/3/2023

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7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

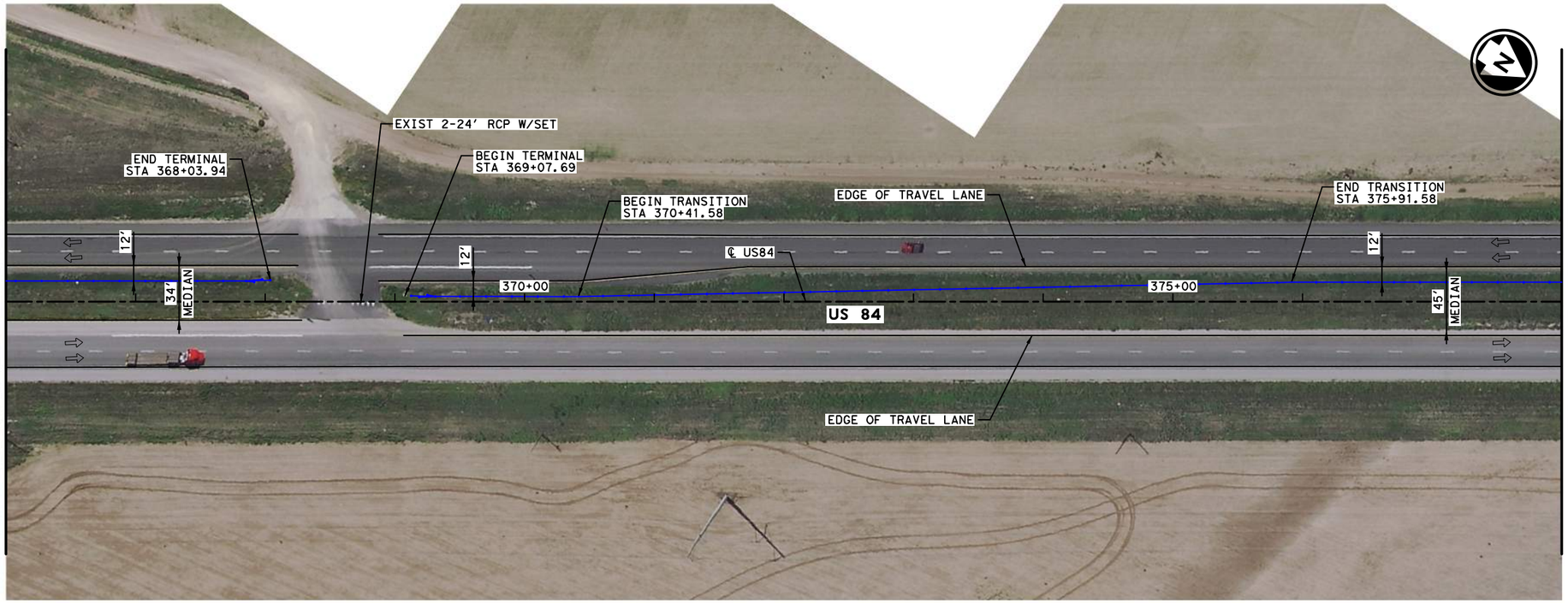
US 84

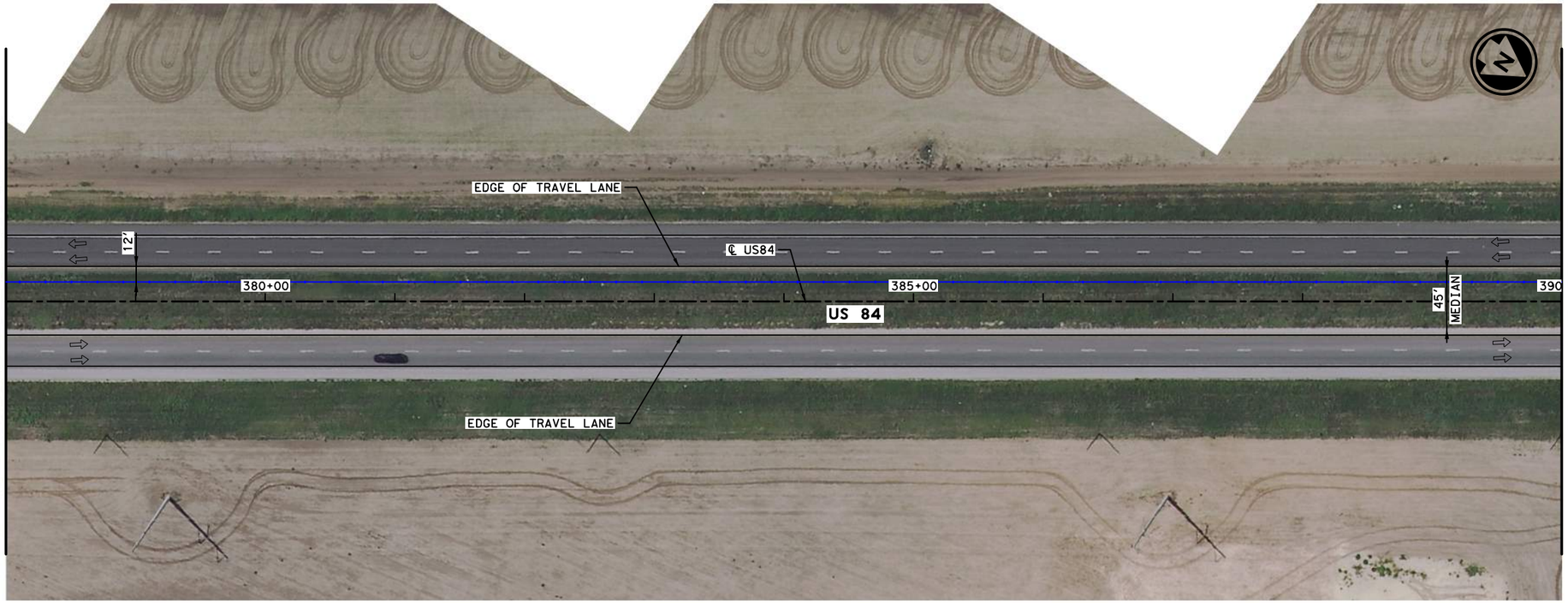
PLAN LAYOUT

CSJ 0053-12-074 SHEET 11 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	50
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

DRAWING DATE: 3/3/2023 FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\@US84*PLAN11$.dgn





0′ 50′ 100′

SCALE: 1"=100′

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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3/3/2023

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7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-12-074 SHEET 12 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	51
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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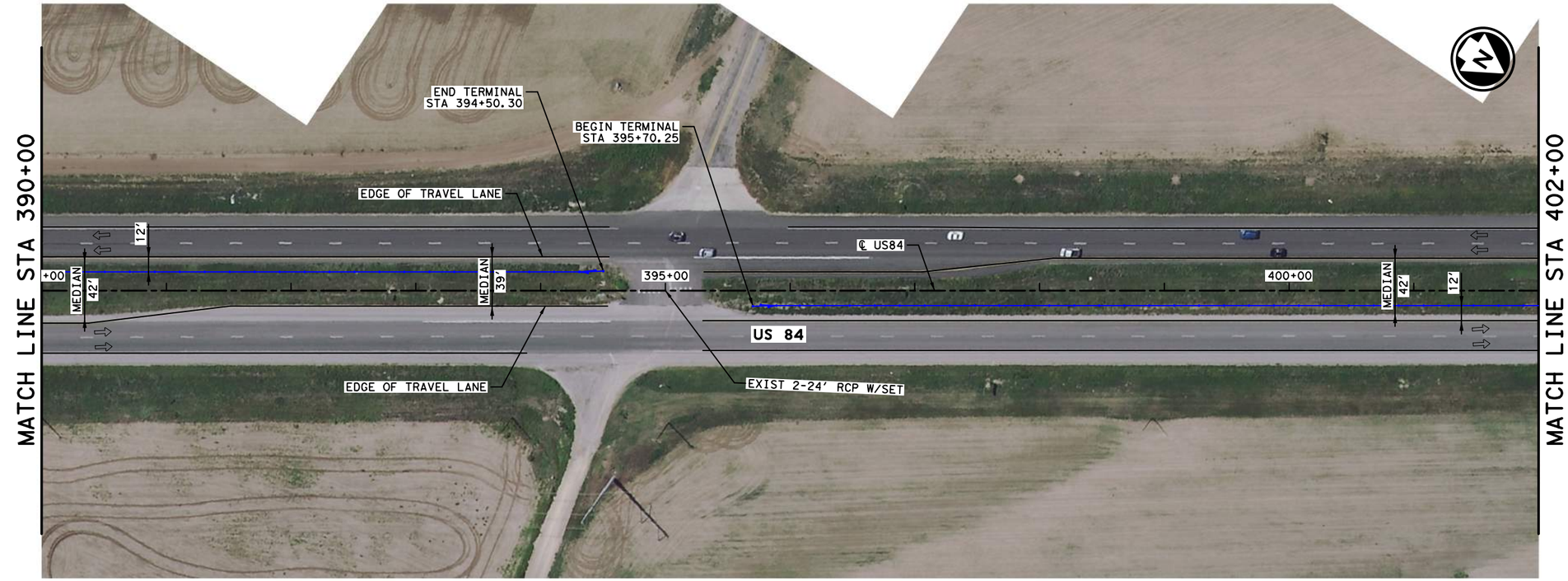
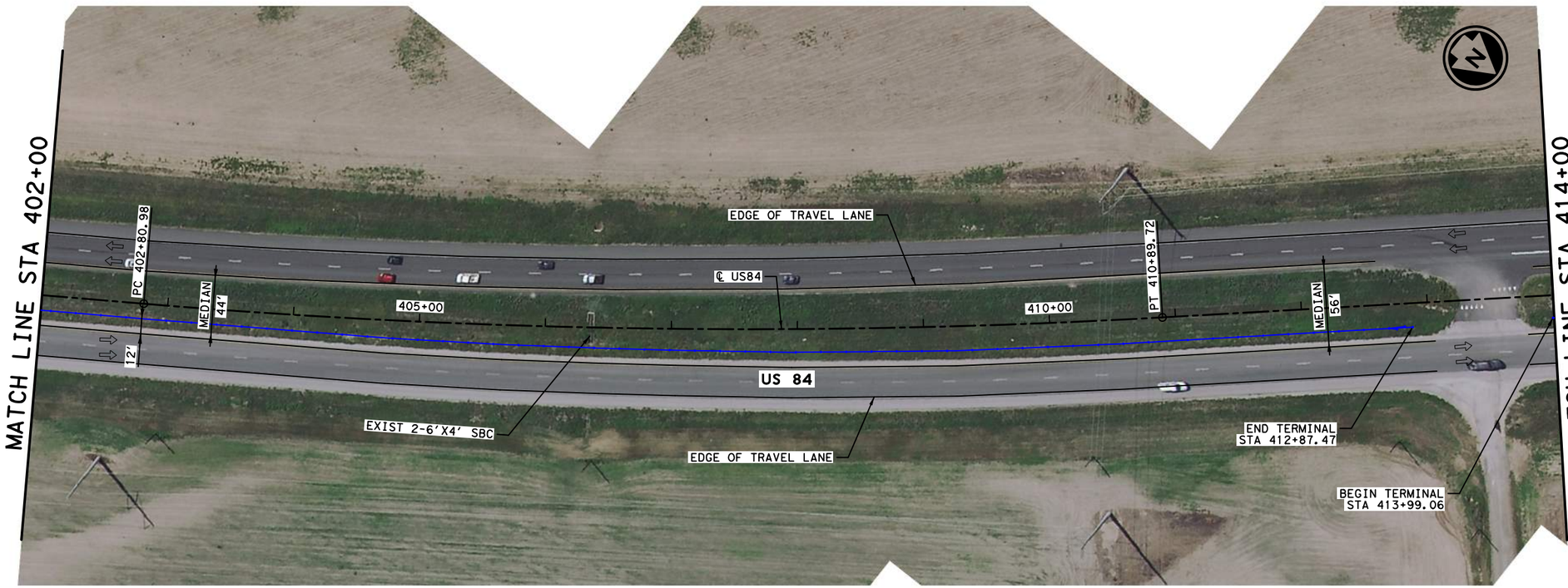
DRAWING DATE: 3/3/2023





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LEGEND:

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- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
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85191
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3/3/2023

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7670 WOODWAY DRIVE, SUITE 320
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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-12-074 SHEET 13 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	52
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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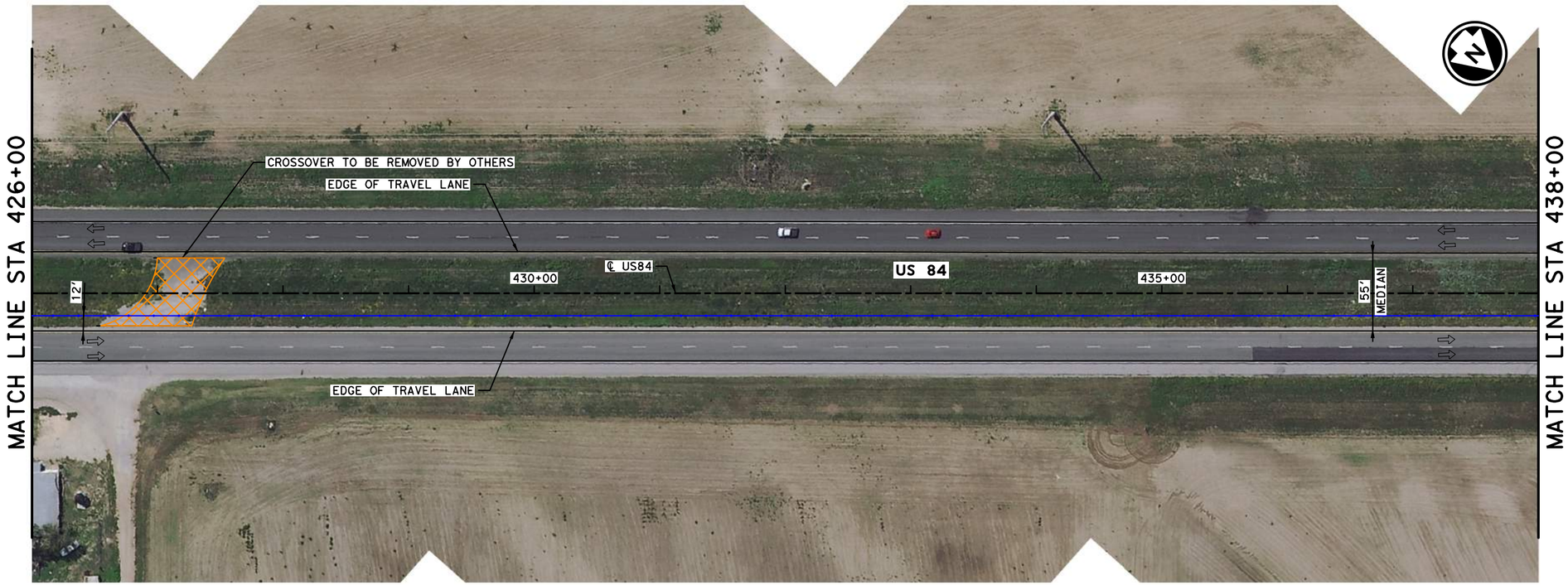
DRAWING DATE: 3/3/2023



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- PROPOSED ATTENUATOR

STATE OF TEXAS
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LICENSED
PROFESSIONAL ENGINEER

3/3/2023

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-12-074 SHEET 14 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	53
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\@US84*PLAN14@.dgn
DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

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LEGEND:

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- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
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3/3/2023

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-12-074 SHEET 15 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	54
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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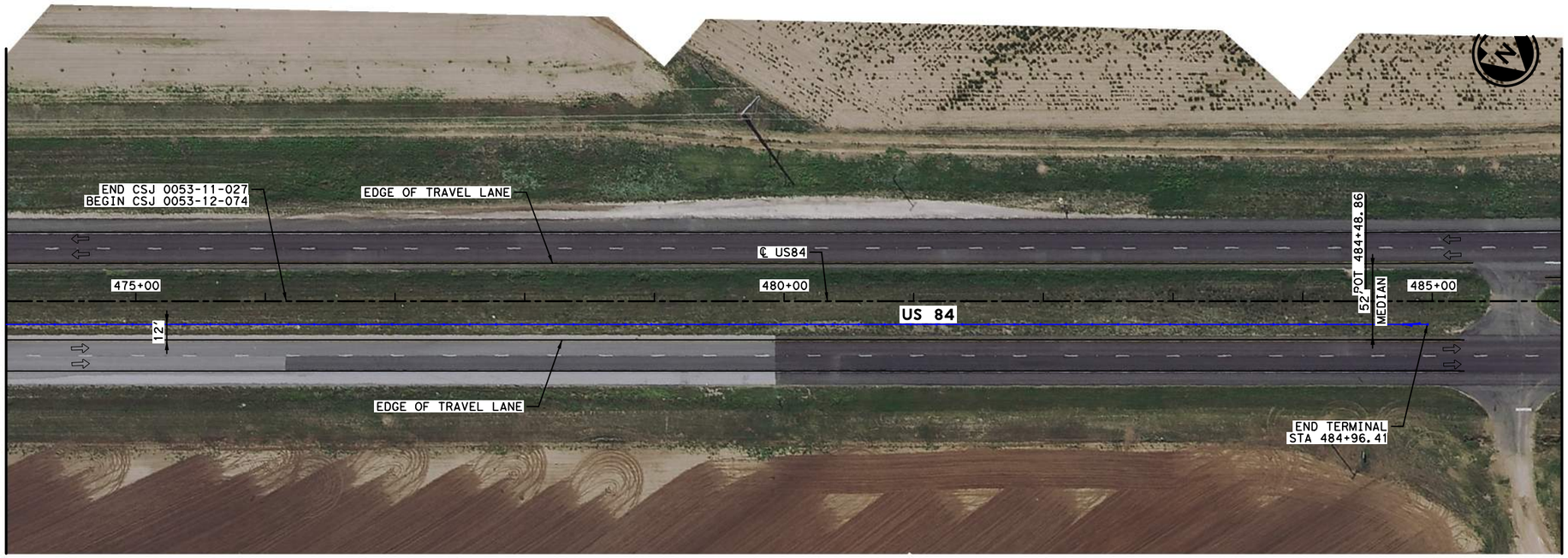
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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3. REFER TO BARRIER TRANSITION SHEETS AND MISCELLANEOUS DETAIL FOR MORE INFORMATION.

LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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85191
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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-12-074 SHEET 16 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	55
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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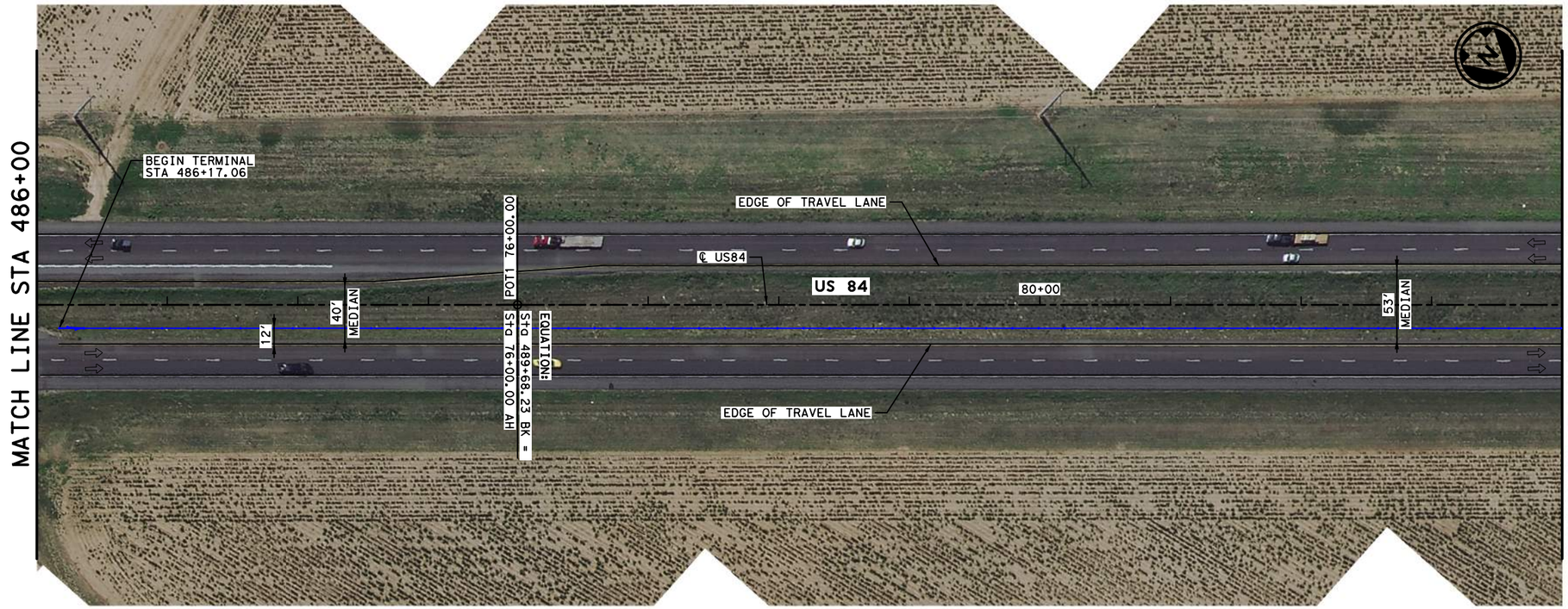
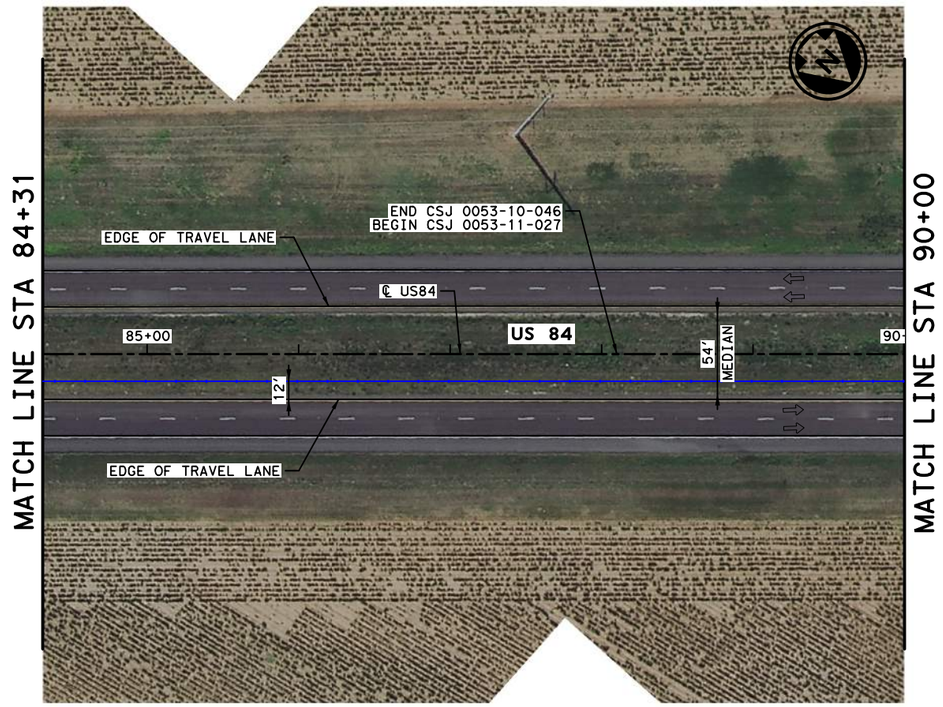
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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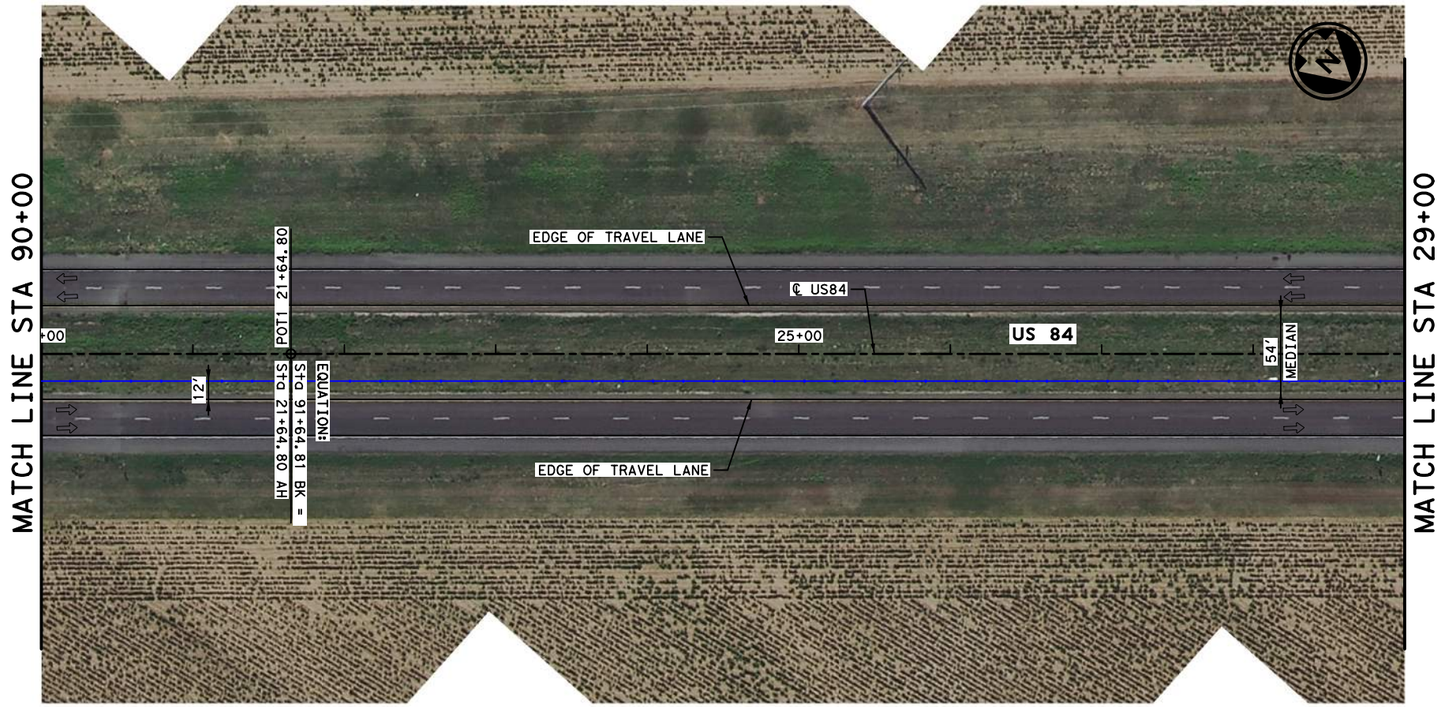
PLAN LAYOUT

CSJ 0053-11-027 SHEET 17 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	56
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN17$.dgn

DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-10-046 SHEET 18 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	57
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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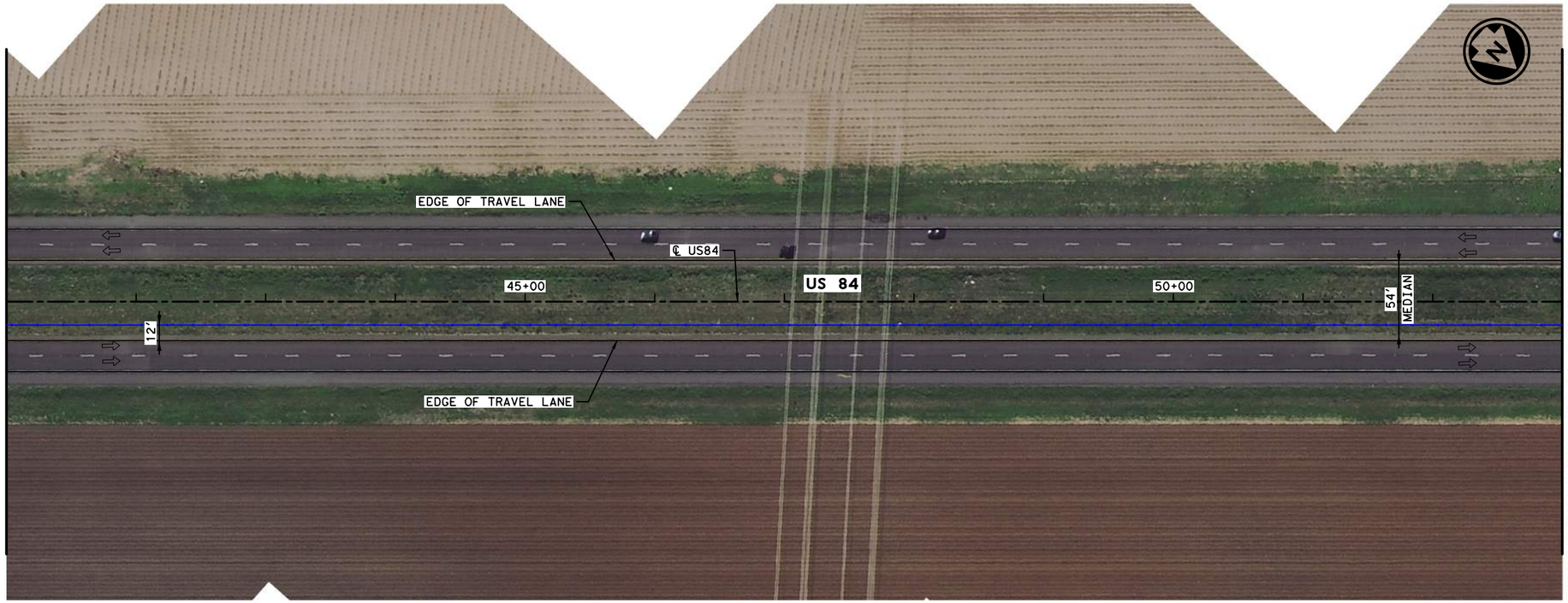
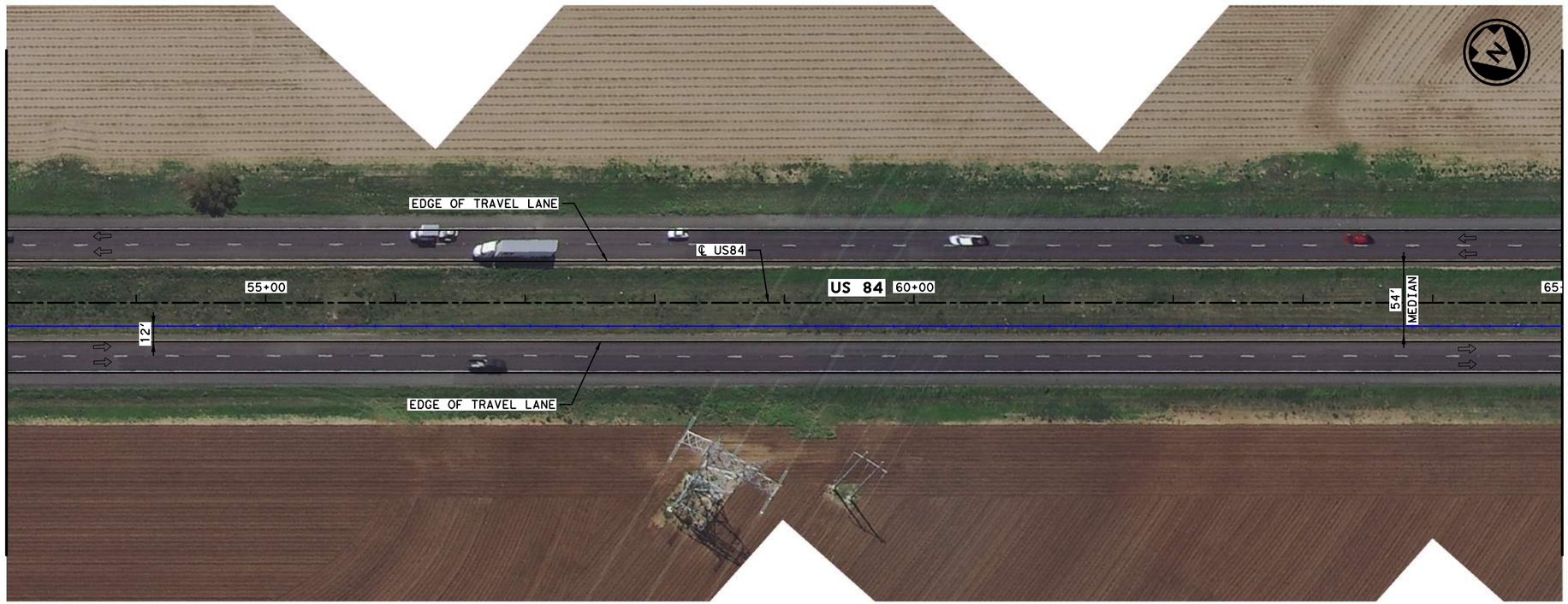
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

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LEGEND:

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- CABLE BARRIER
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- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

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PLAN LAYOUT

CSJ 0053-10-046 SHEET 19 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	58
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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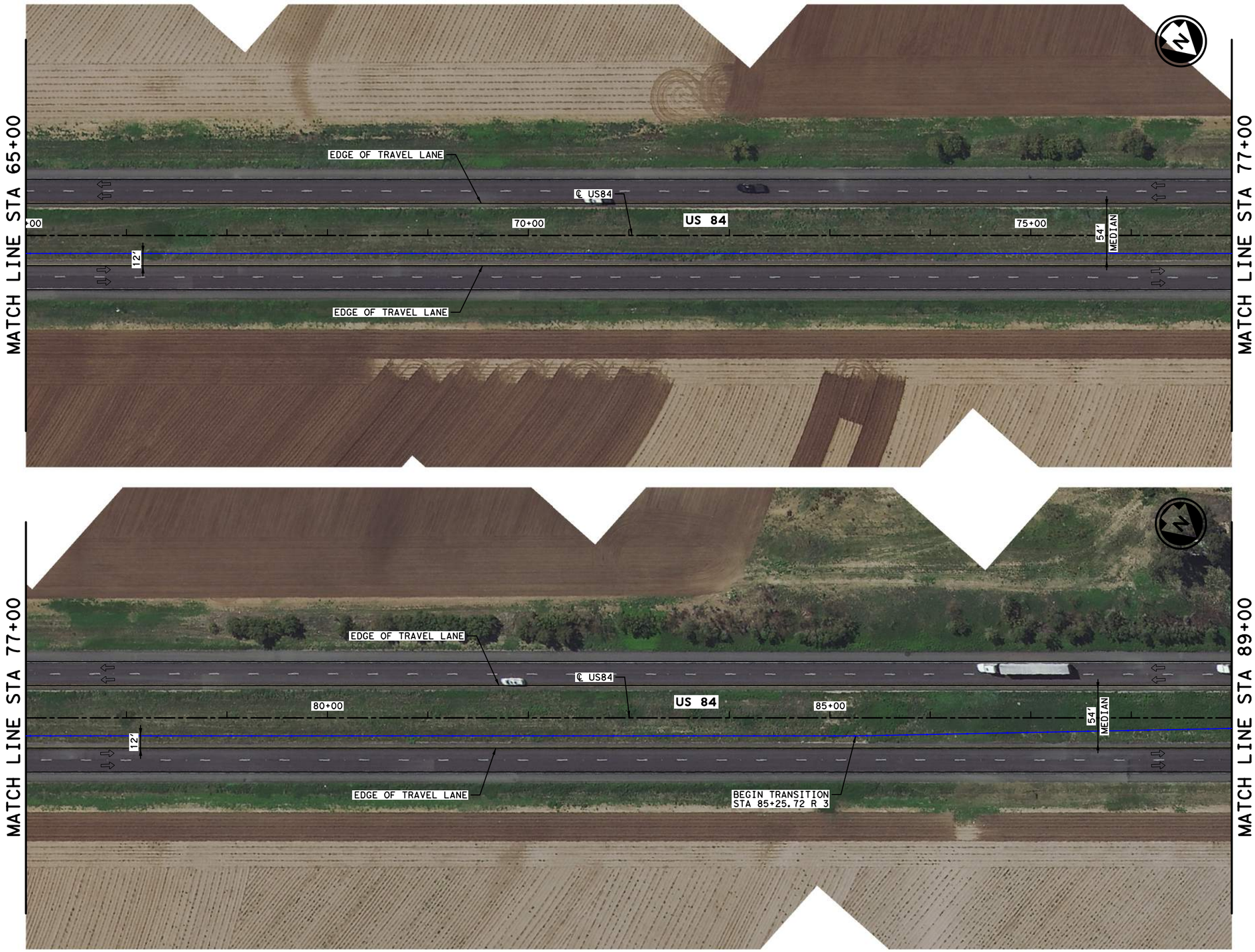
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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PLAN LAYOUT

CSJ 0053-10-046 SHEET 20 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	59
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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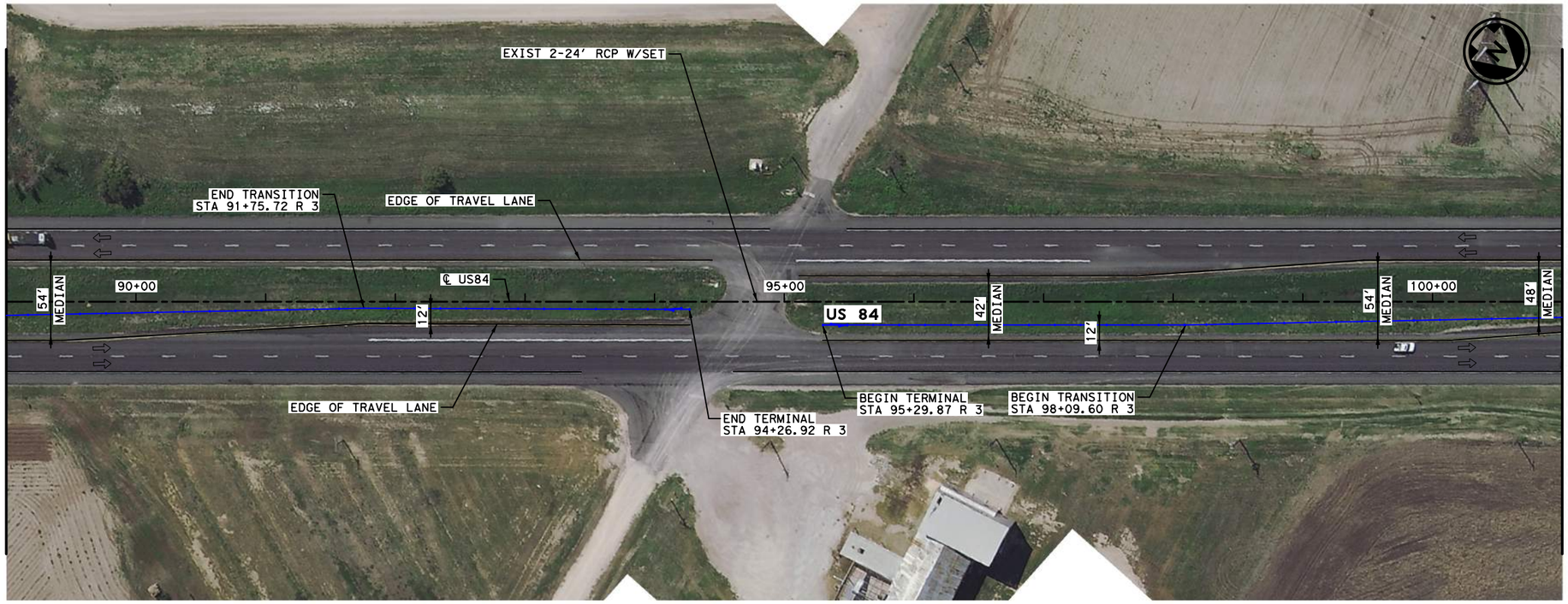
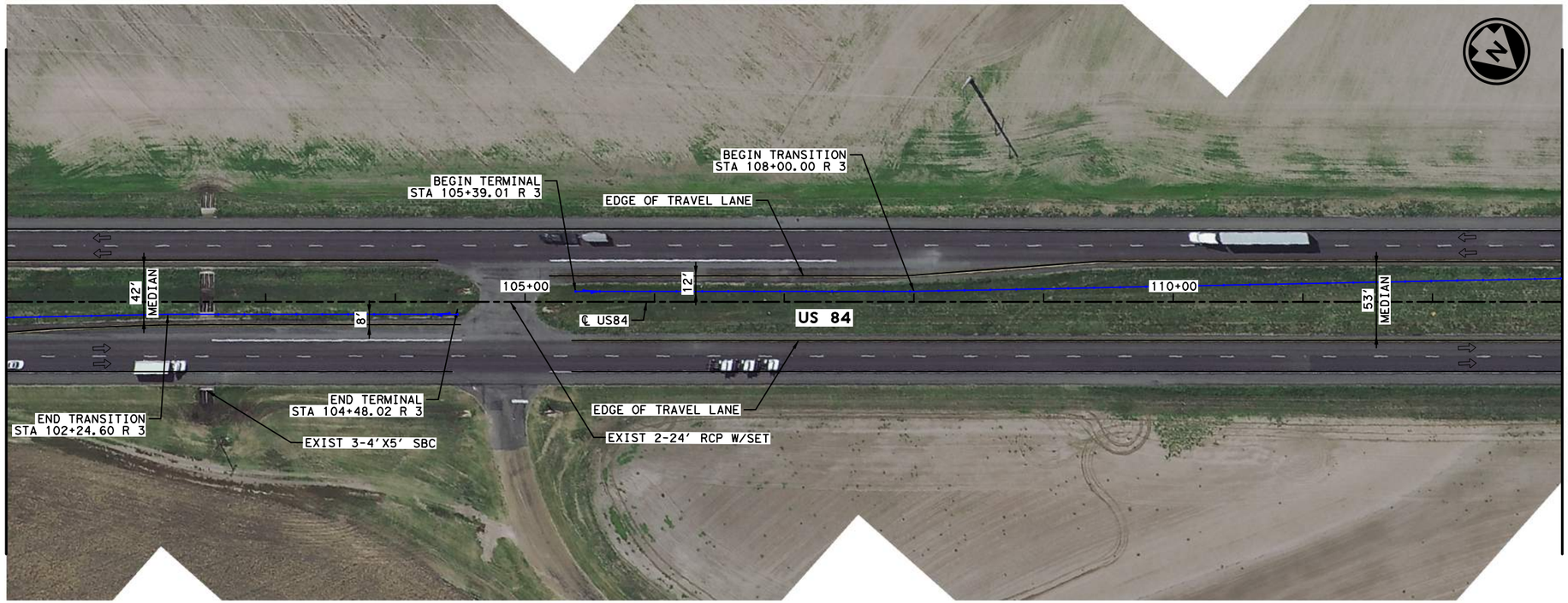
DRAWING DATE: 3/3/2023





0' 50' 100'

SCALE: 1"=100'

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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PLAN LAYOUT

CSJ 0053-10-046 SHEET 21 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	60
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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PLAN LAYOUT

CSJ 0053-10-046 SHEET 22 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	61
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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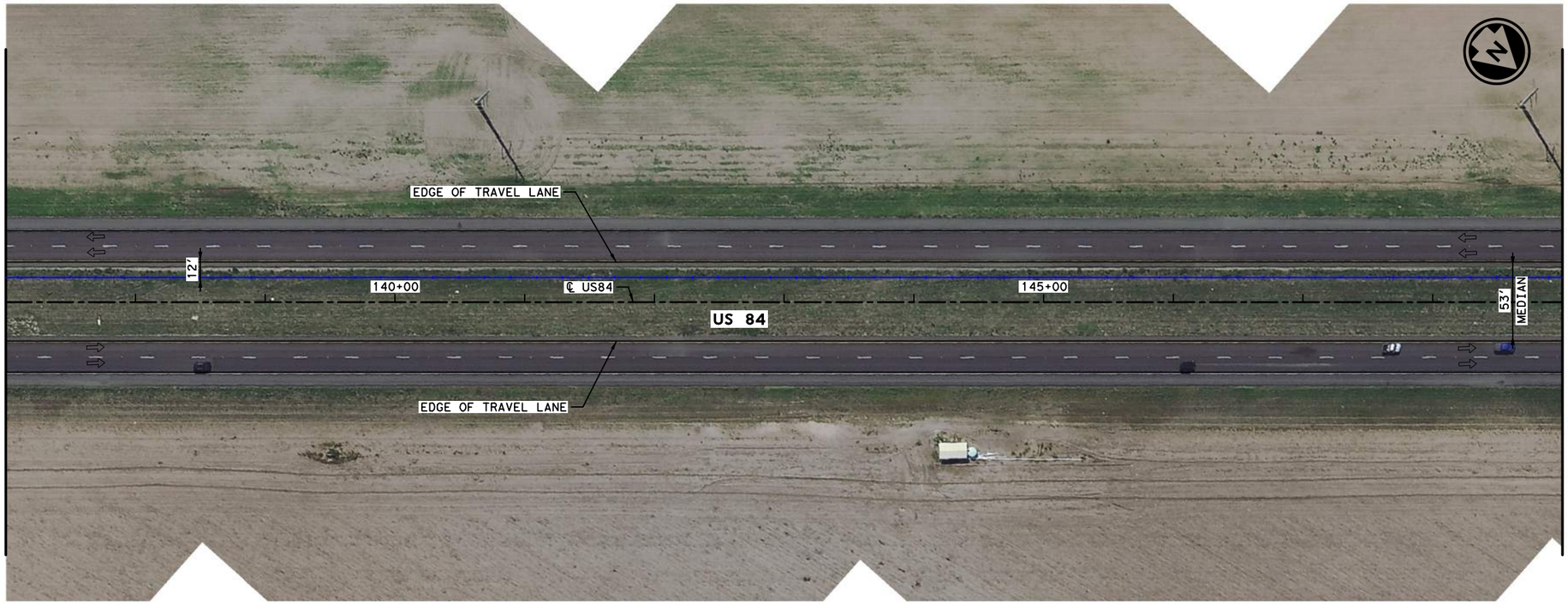
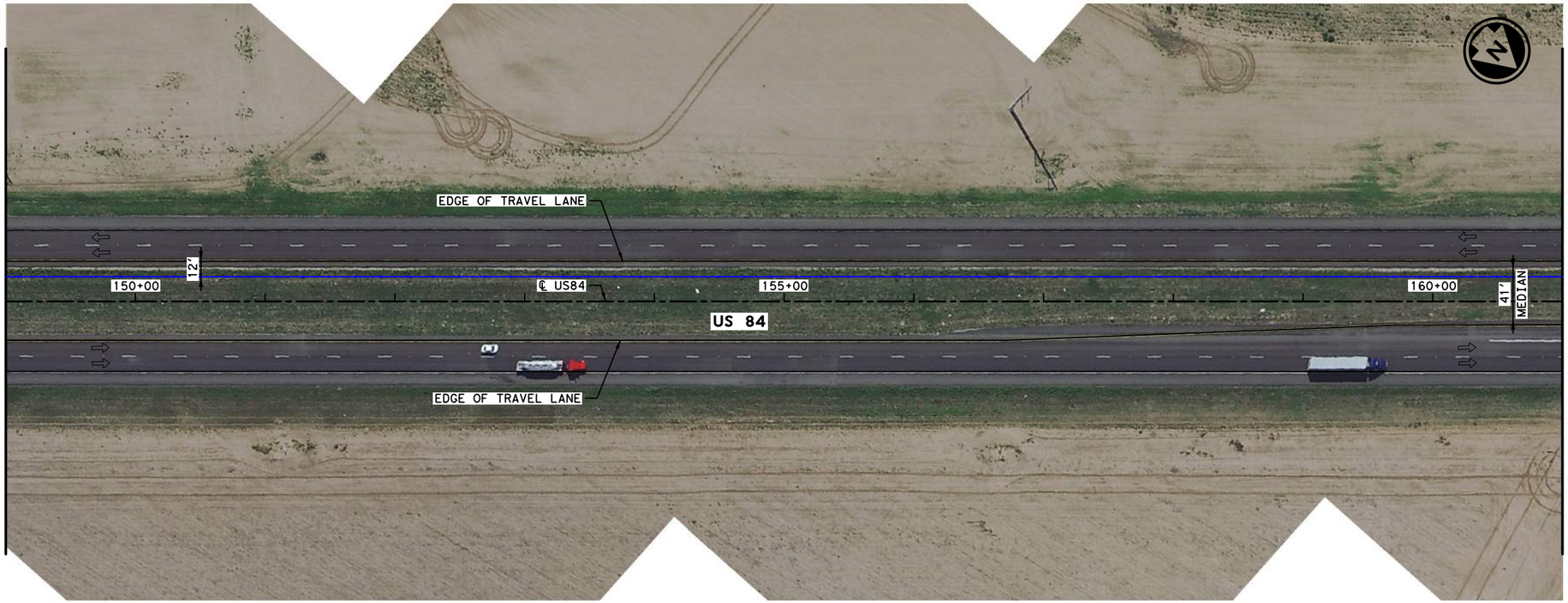
DRAWING DATE: 3/3/2023





0′ 50′ 100′

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- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

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PLAN LAYOUT

CSJ 0053-10-046 SHEET 23 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	62
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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DRAWING DATE: 3/3/2023

0′ 50′ 100′

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- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-10-046 SHEET 24 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	63
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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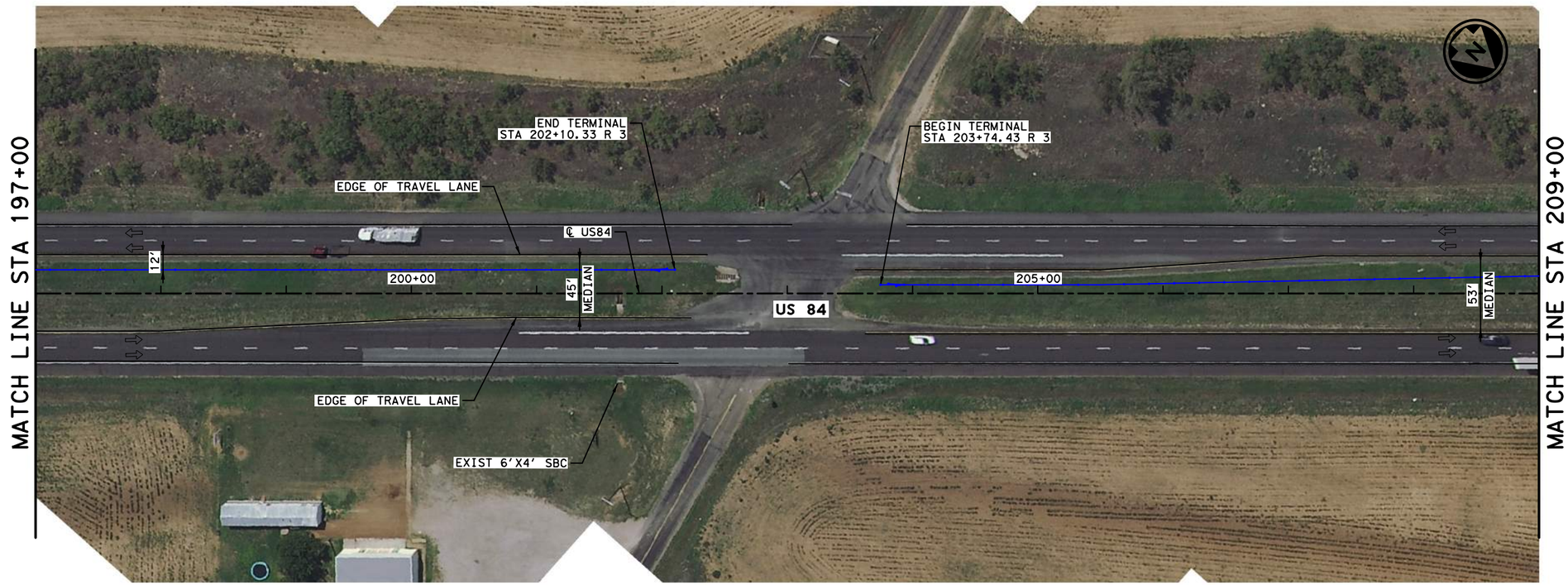
DRAWING DATE: 3/3/2023



0′ 50′ 100′

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LEGEND:

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- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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US 84

PLAN LAYOUT

CSJ 0053-10-046 SHEET 25 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	64
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

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- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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3/3/2023

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-10-046 SHEET 26 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	65
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN26&.dgn
DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

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- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-10-046 SHEET 27 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	66
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\05 Roadway Details\US 84\@US84*PLAN27$.dgn
DRAWING DATE: 3/3/2023

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SCALE: 1"=100′

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- PROPOSED ATTENUATOR

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3/3/2023

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-10-046 SHEET 28 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	67
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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DRAWING DATE: 3/3/2023

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SCALE: 1"=100′

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PLAN LAYOUT

CSJ 0053-10-046 SHEET 29 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	68
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN29$.dgn
DRAWING DATE: 3/3/2023

0' 50' 100'

SCALE: 1"=100'

NOTES:

1. HORIZONTAL ALIGNMENT IS ESTABLISHED BASED ON THE AVAILABLE AS-BUILTS AND IS FOR INFORMATION ONLY.
2. CONTRACTOR SHALL FIELD VERIFY ANY EXISTING UNDERGROUND STRUCTURES, UTILITIES, AND THEIR EXISTING DEPTHS BEFORE COMMENCING WORK.
3. REFER TO BARRIER TRANSITION SHEETS AND MISCELLANEOUS DETAIL FOR MORE INFORMATION.

LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-10-046 SHEET 30 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	69
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\@US84*PLAN30@.dgn
DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

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I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-10-046 SHEET 31 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	70
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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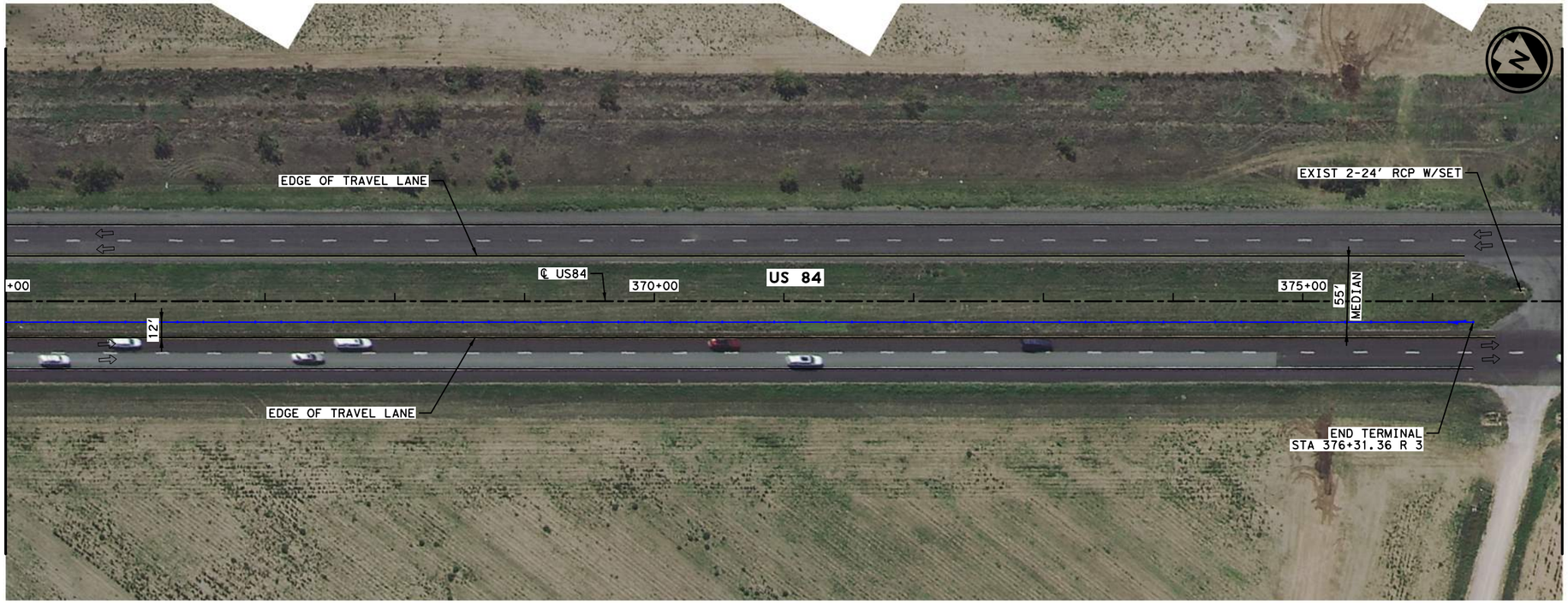
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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PLAN LAYOUT

CSJ 0053-10-046 SHEET 32 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	71
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN32&.dgn
DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-10-046 SHEET 33 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	72
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\@US84*PLAN33$.dgn

DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
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3/3/2023

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-10-046 SHEET 34 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	73
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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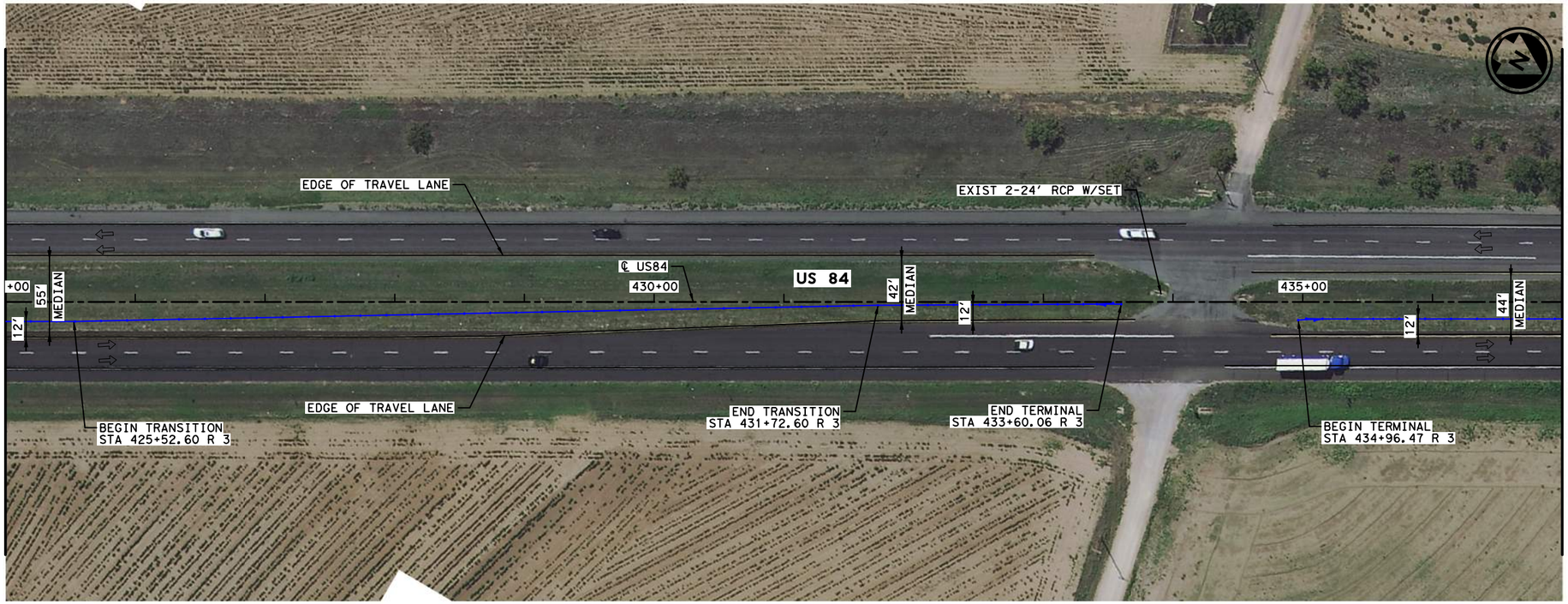
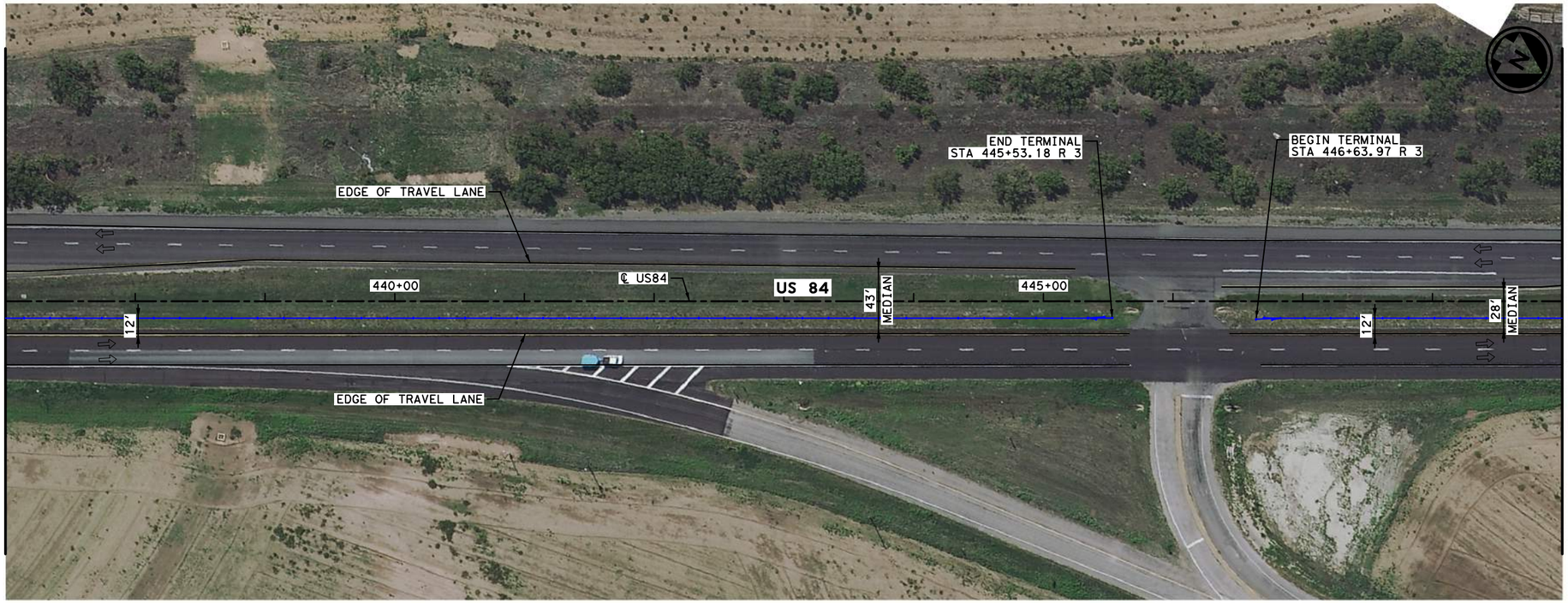
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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PLAN LAYOUT

CSJ 0053-10-046 SHEET 35 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	74
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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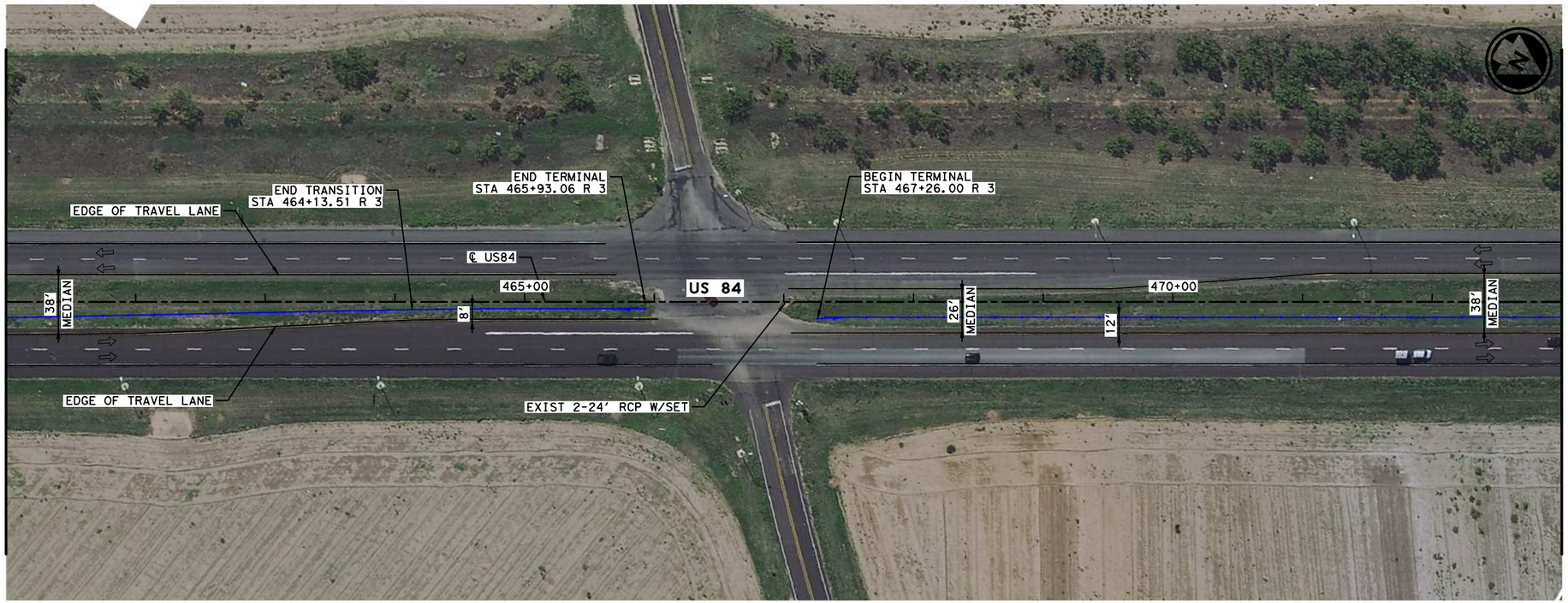
DRAWING DATE: 3/3/2023



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SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

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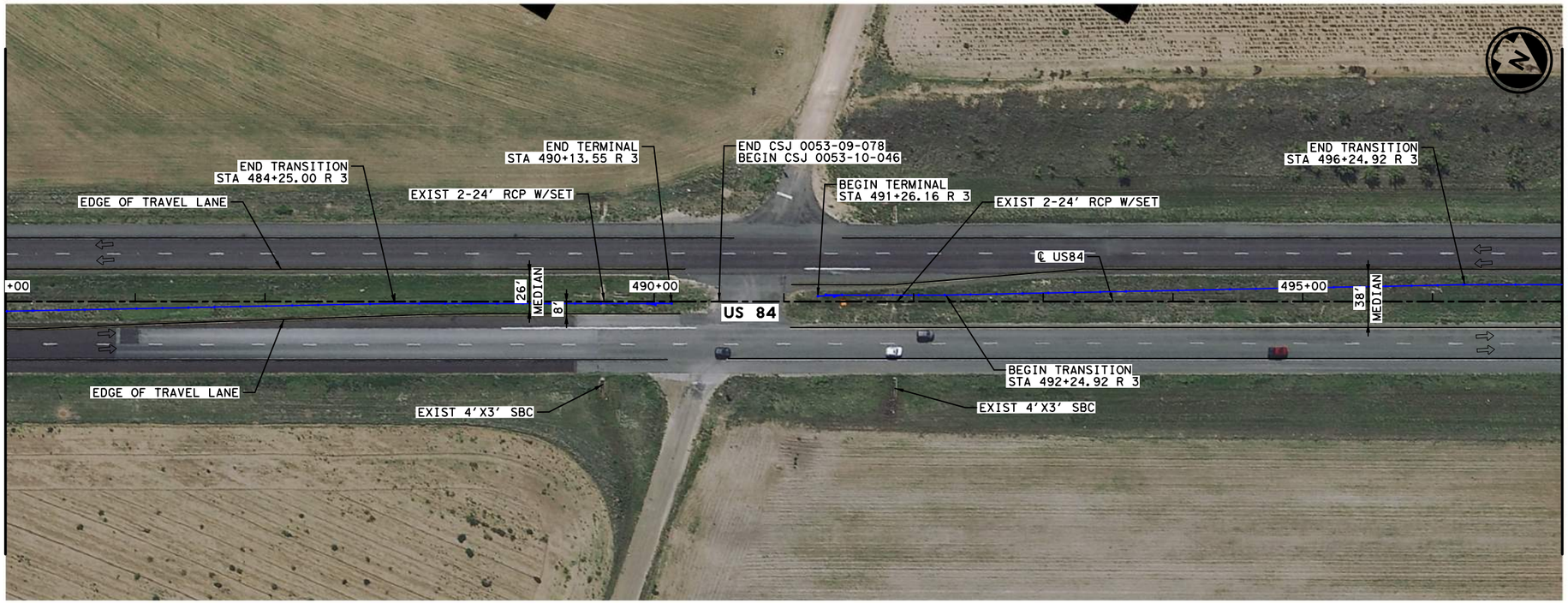
PLAN LAYOUT

CSJ 0053-10-046 SHEET 36 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	75
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN36&.dgn
DRAWING DATE: 3/3/2023



0' 50' 100'

SCALE: 1"=100'

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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US 84

PLAN LAYOUT

CSJ 0053-10-046 SHEET 37 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	76
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

DRAWING DATE: 3/3/2023 FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN37$.dgn

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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3/3/2023

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-09-078 SHEET 38 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	77
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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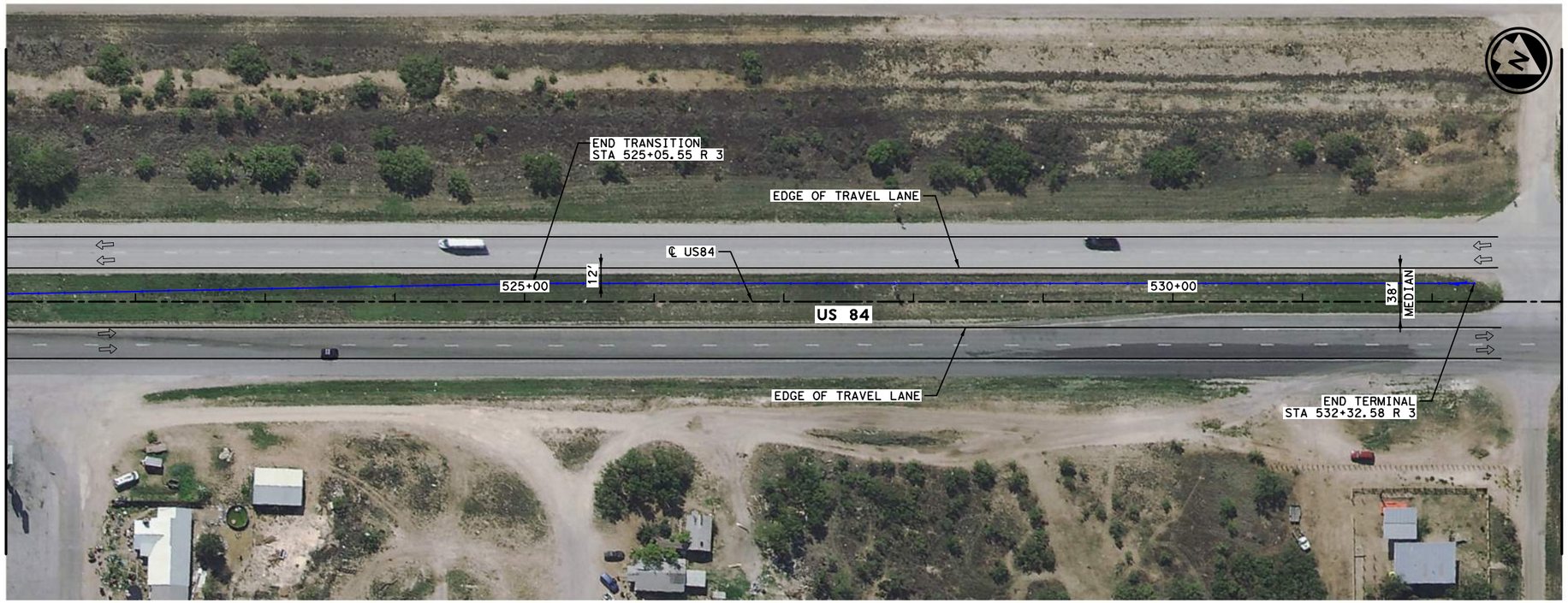
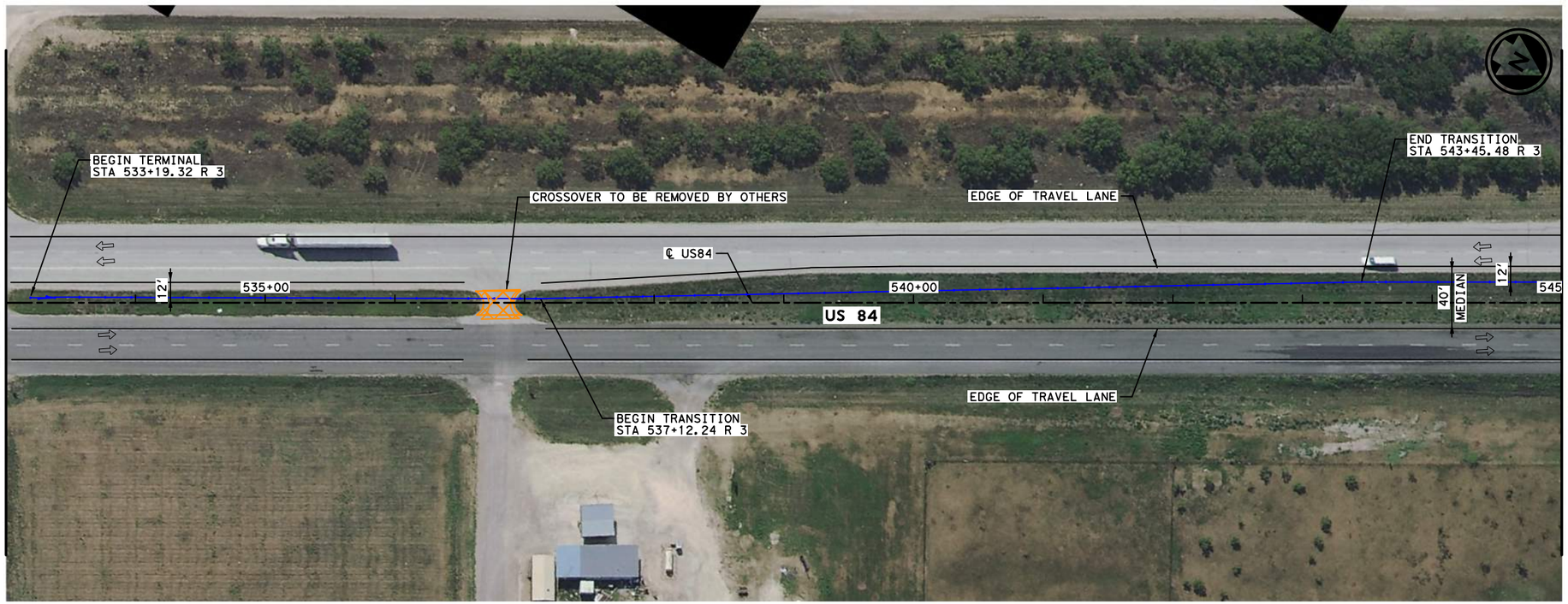
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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US 84

PLAN LAYOUT

CSJ 0053-09-078 SHEET 39 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	78
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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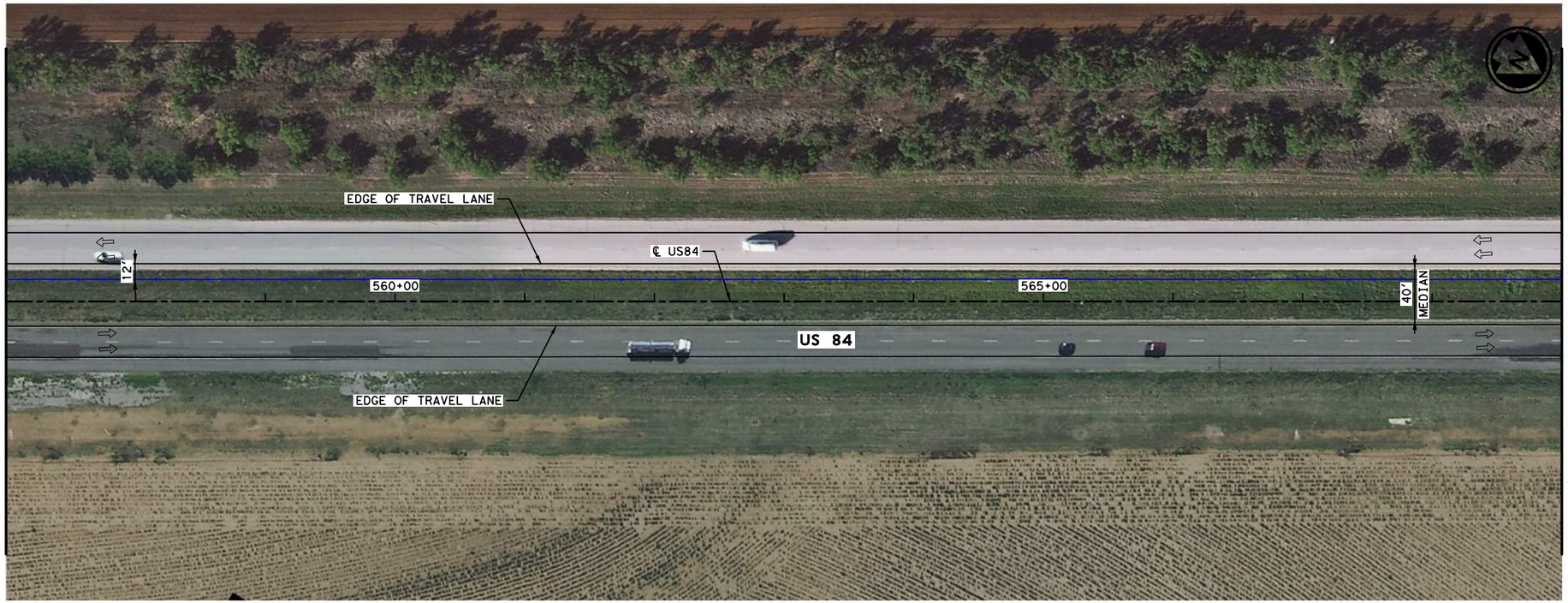
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

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PLAN LAYOUT

CSJ 0053-09-078 SHEET 40 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	79
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\05 Roadway Details\US 84\@US84*PLAN40$.dgn

DRAWING DATE: 3/3/2023

0' 50' 100'

SCALE: 1"=100'

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

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PLAN LAYOUT

CSJ 0053-09-078 SHEET 40 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	80
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN41$.dgn

DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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PLAN LAYOUT

CSJ 0053-09-078 SHEET 42 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	81
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\05 Roadway Details\US 84\@US84*PLAN42@.dgn

DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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3/3/2023

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TBPE REG. # F-11657

US 84

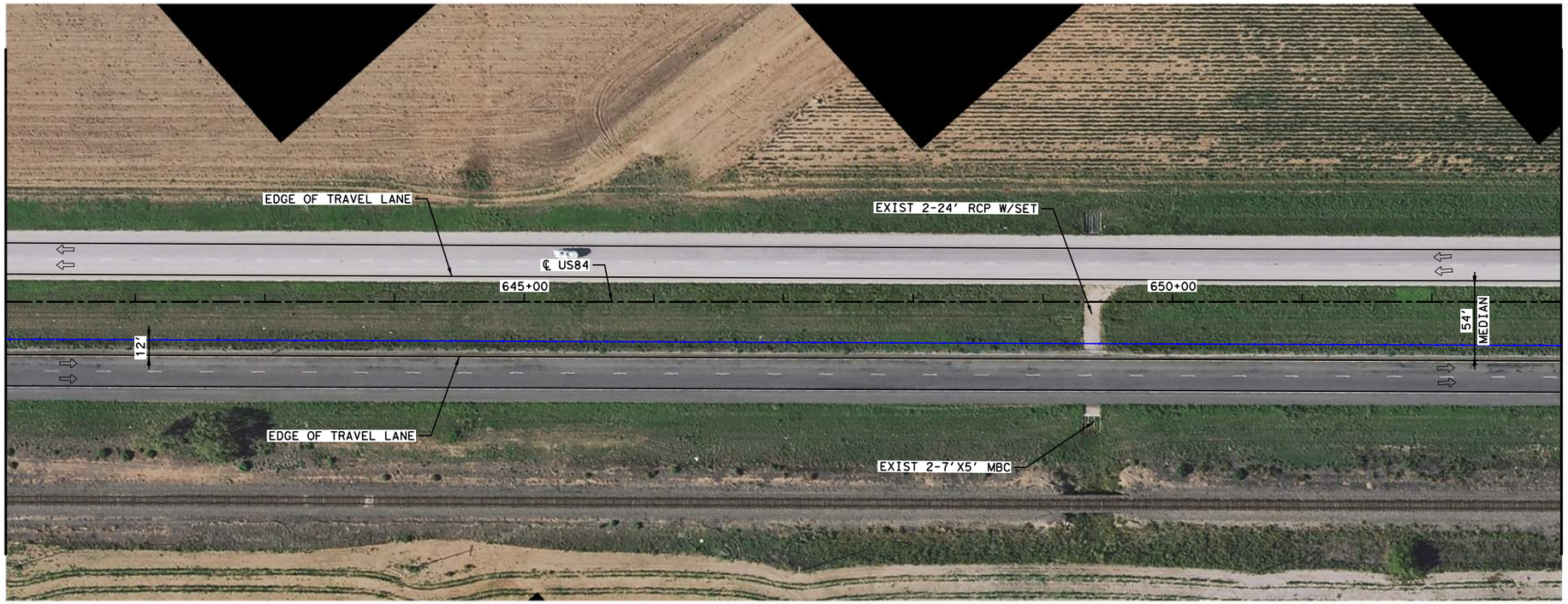
PLAN LAYOUT

CSJ 0053-09-078 SHEET 43 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	82
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN43$.dgn

DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

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PLAN LAYOUT

CSJ 0053-09-078 SHEET 44 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	83
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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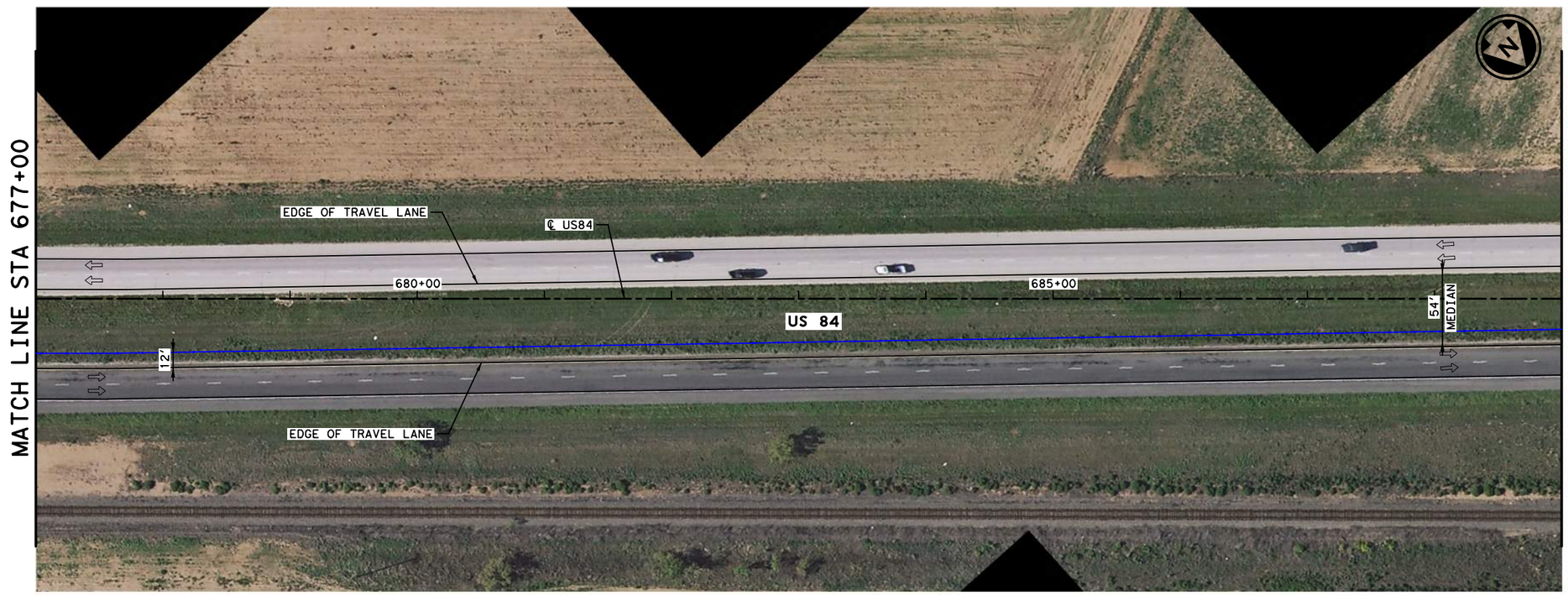
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

NOTES:

1. HORIZONTAL ALIGNMENT IS ESTABLISHED BASED ON THE AVAILABLE AS-BUILTS AND IS FOR INFORMATION ONLY.
2. CONTRACTOR SHALL FIELD VERIFY ANY EXISTING UNDERGROUND STRUCTURES, UTILITIES, AND THEIR EXISTING DEPTHS BEFORE COMMENCING WORK.
3. REFER TO BARRIER TRANSITION SHEETS AND MISCELLANEOUS DETAIL FOR MORE INFORMATION.

LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

m.n. m

Texas Department of Transportation

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-09-078 SHEET 45 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	84
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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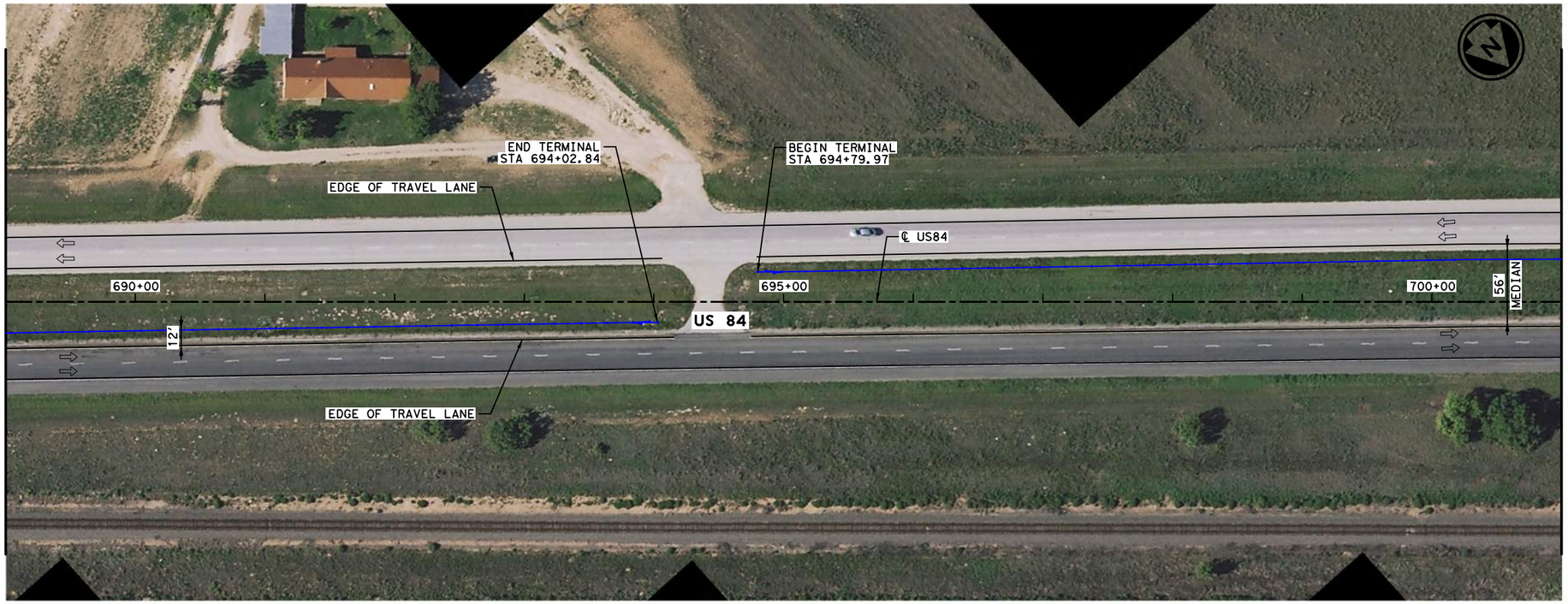
DRAWING DATE: 3/3/2023



0' 50' 100'

SCALE: 1"=100'

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-09-078 SHEET 46 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	85
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN46&.dgn

DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

m.n. m

Texas Department of Transportation

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-09-078 SHEET 47 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	86
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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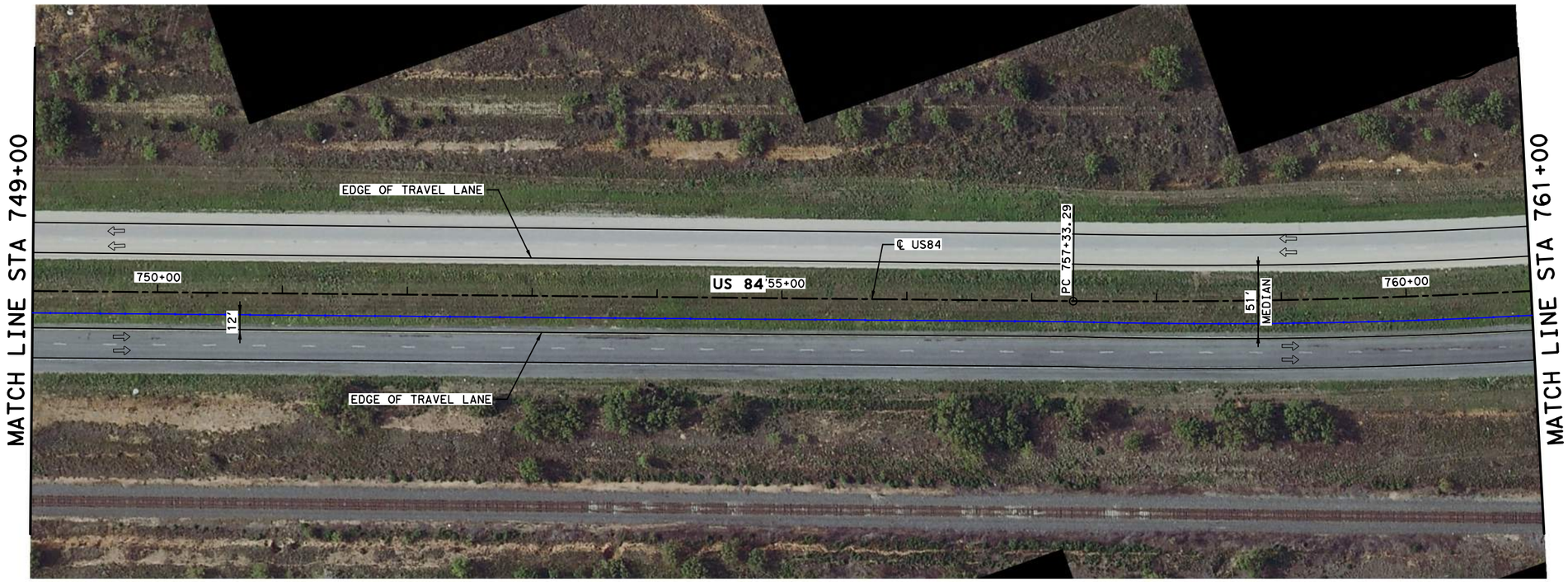
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

m.n. m

Texas Department of Transportation

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-09-078 SHEET 48 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	87
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-09-078 SHEET 49 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	88
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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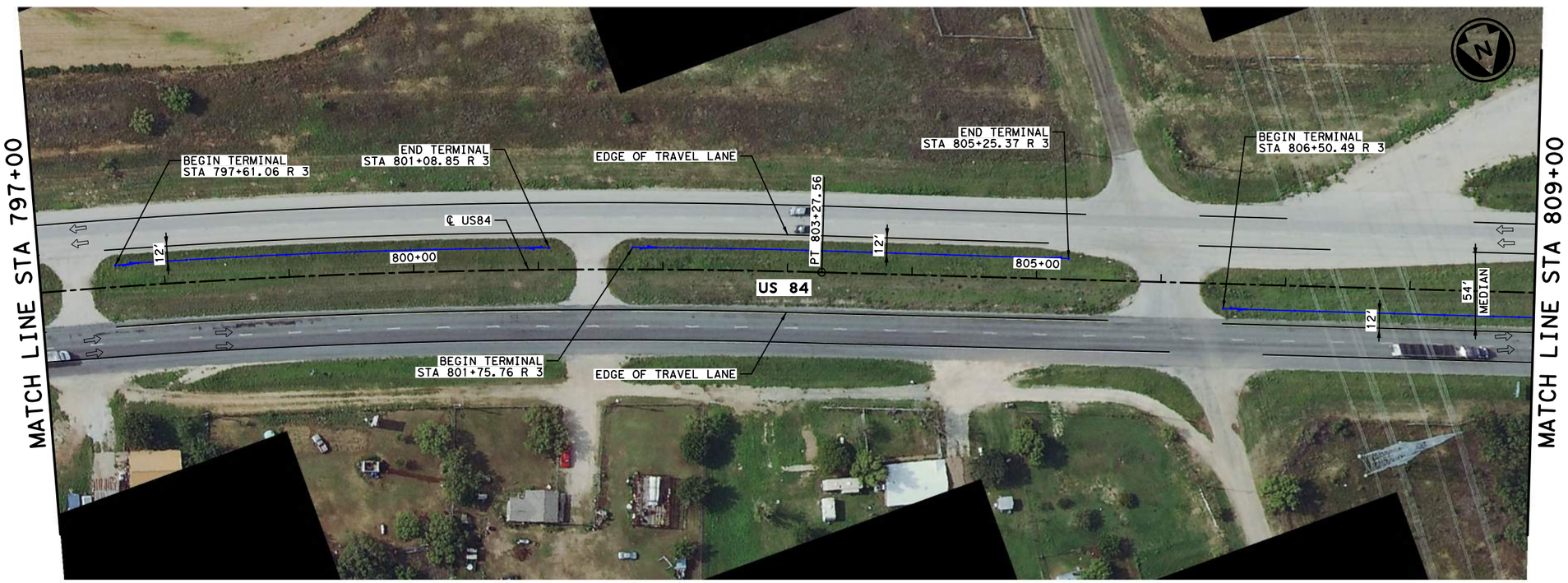
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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3/3/2023

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-09-078 SHEET 50 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	89
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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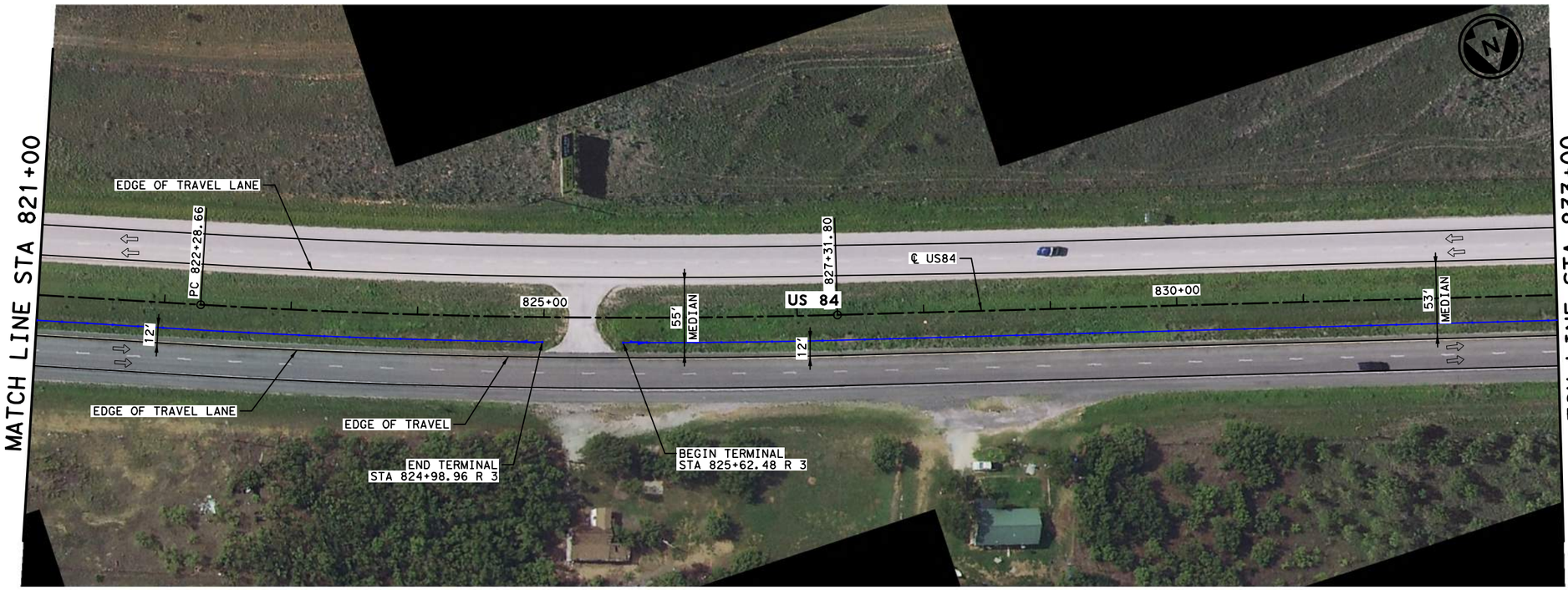
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
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3/3/2023

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7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-09-078 SHEET 51 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	90
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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DRAWING DATE: 3/3/2023

0' 50' 100'

SCALE: 1"=100'

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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3/3/2023

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US 84

PLAN LAYOUT

CSJ 0053-09-078 SHEET 52 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	91
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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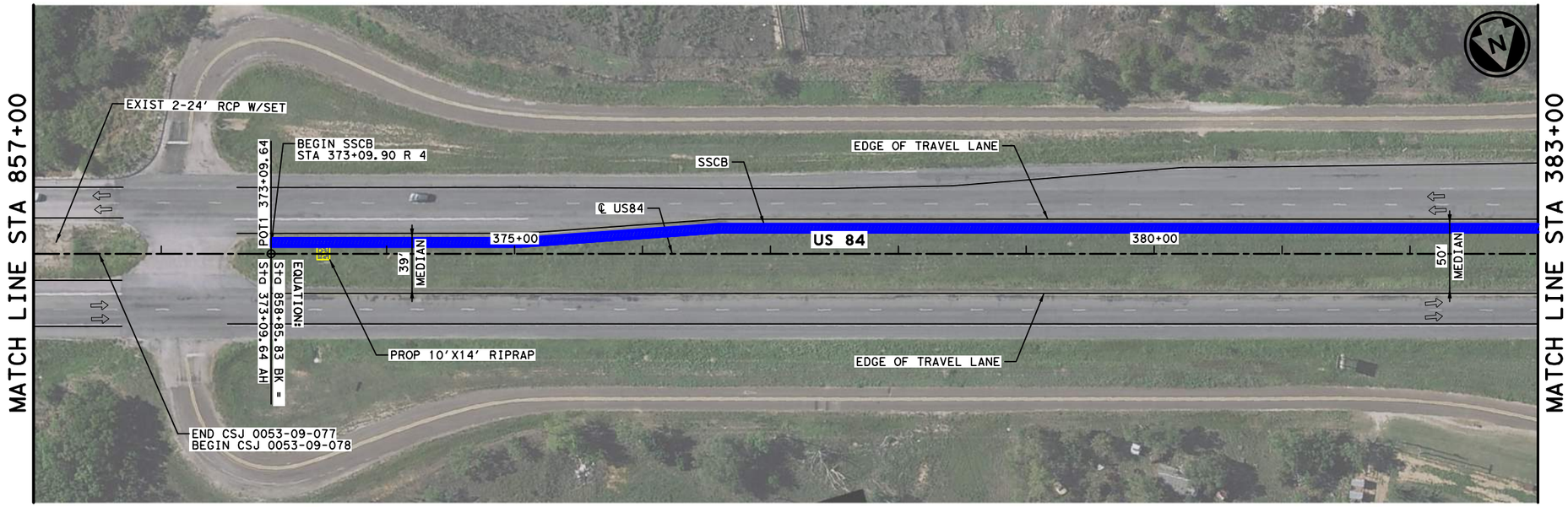

0' 50' 100'

SCALE: 1"=100'

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

m.n. m

Texas Department of Transportation

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-09-077 SHEET 53 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	92
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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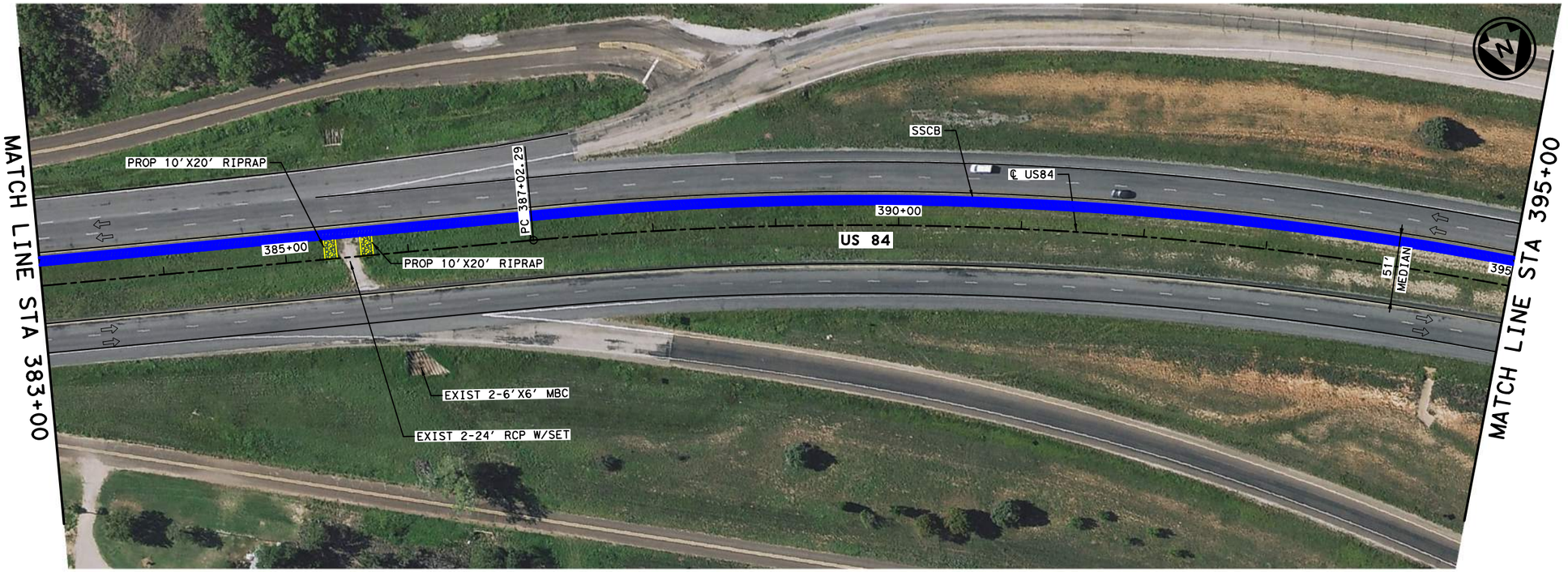

0' 50' 100'

SCALE: 1"=100'

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LEGEND:

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- CABLE BARRIER
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- PROPOSED ATTENUATOR

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3/3/2023

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-09-077 SHEET 54 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	93
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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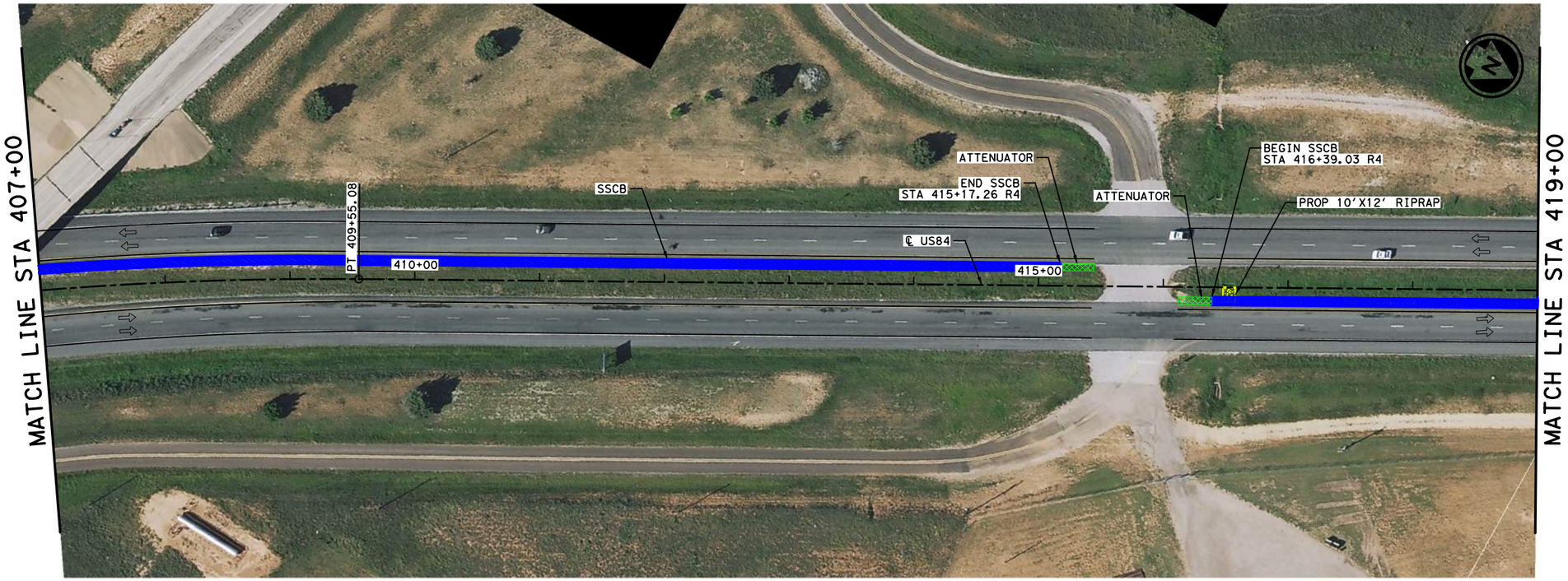
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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3/3/2023

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-09-077 SHEET 55 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	94
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
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3/3/2023

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-09-077 SHEET 56 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	95
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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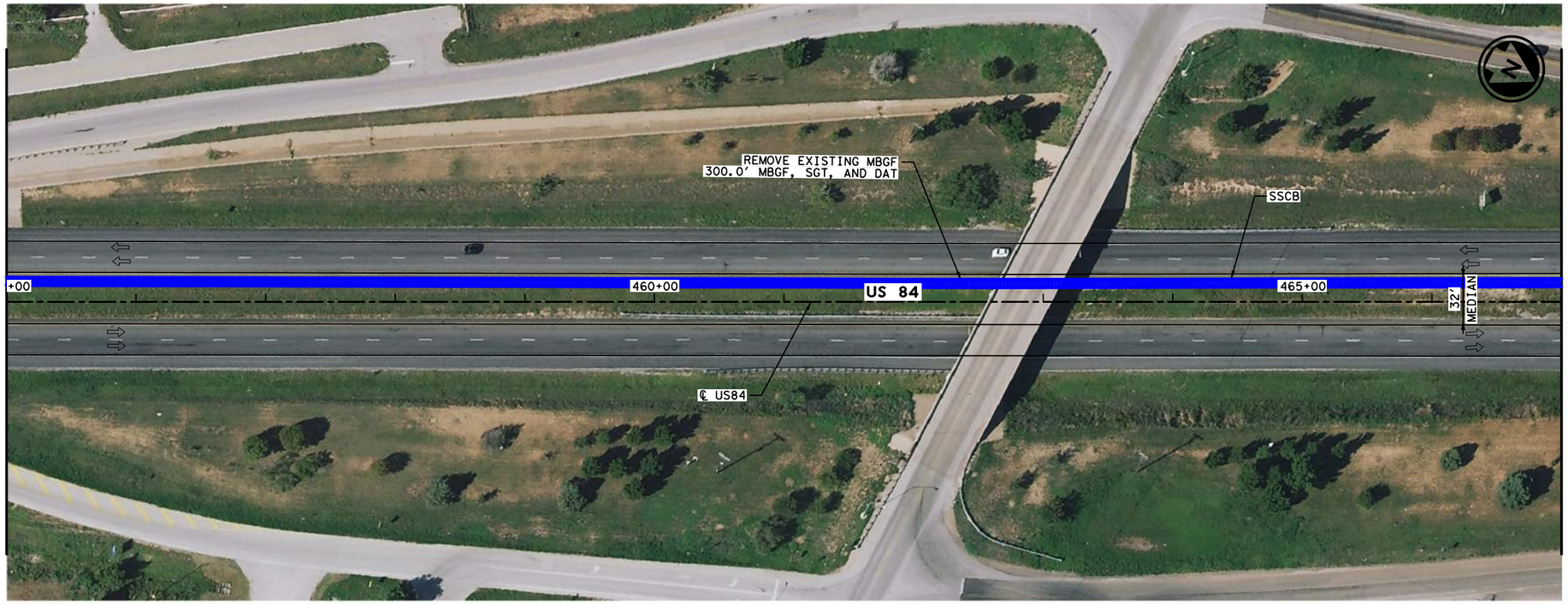

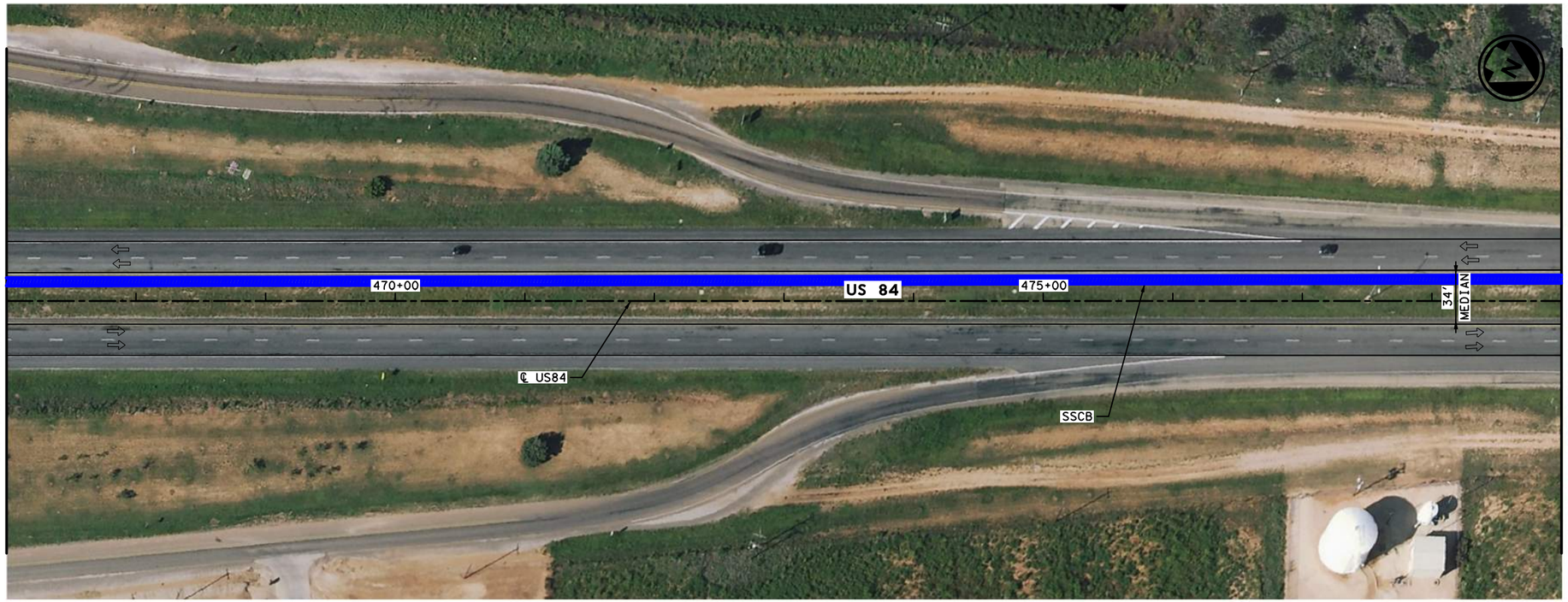

0' 50' 100'

SCALE: 1"=100'

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LEGEND:

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- CABLE BARRIER
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- PROPOSED ATTENUATOR

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PROFESSIONAL ENGINEER

3/3/2023

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

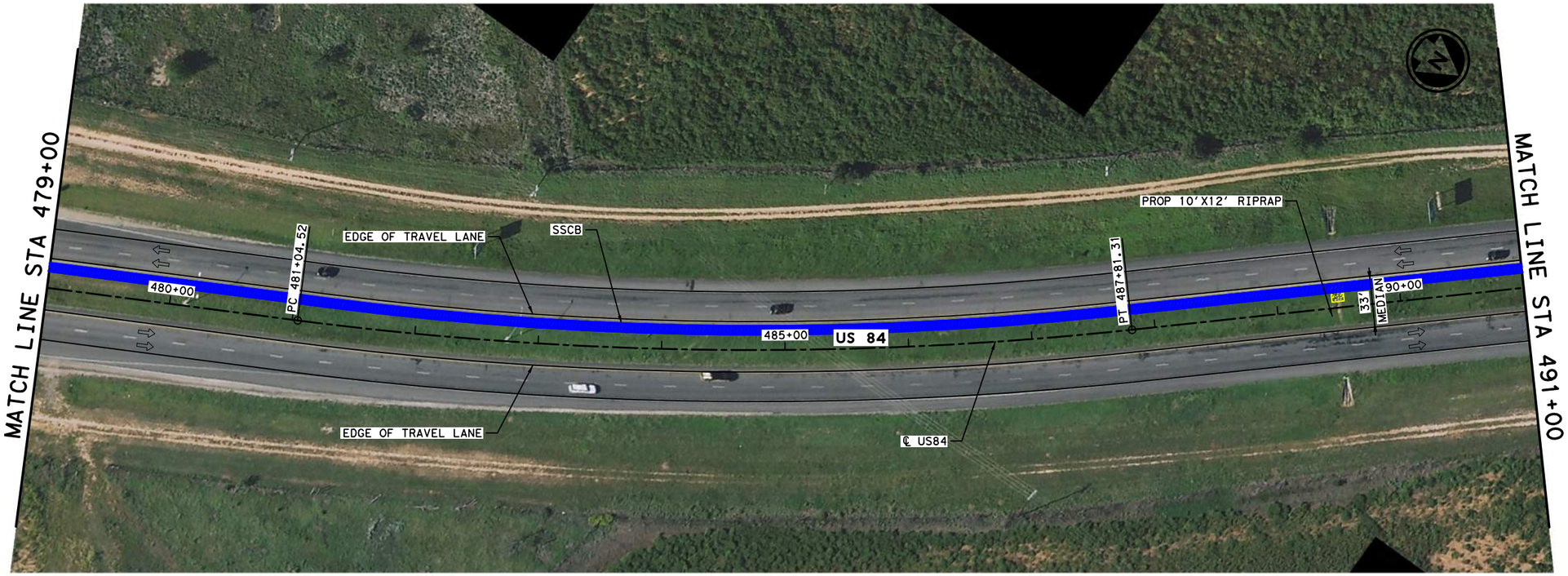
PLAN LAYOUT

CSJ 0053-09-077 SHEET 57 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	96
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\05 Roadway Details\US 84\@US84*PLAN56@.dgn

DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
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TBPE REG. # F-11657

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PLAN LAYOUT

CSJ 0053-09-077 SHEET 58 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	97
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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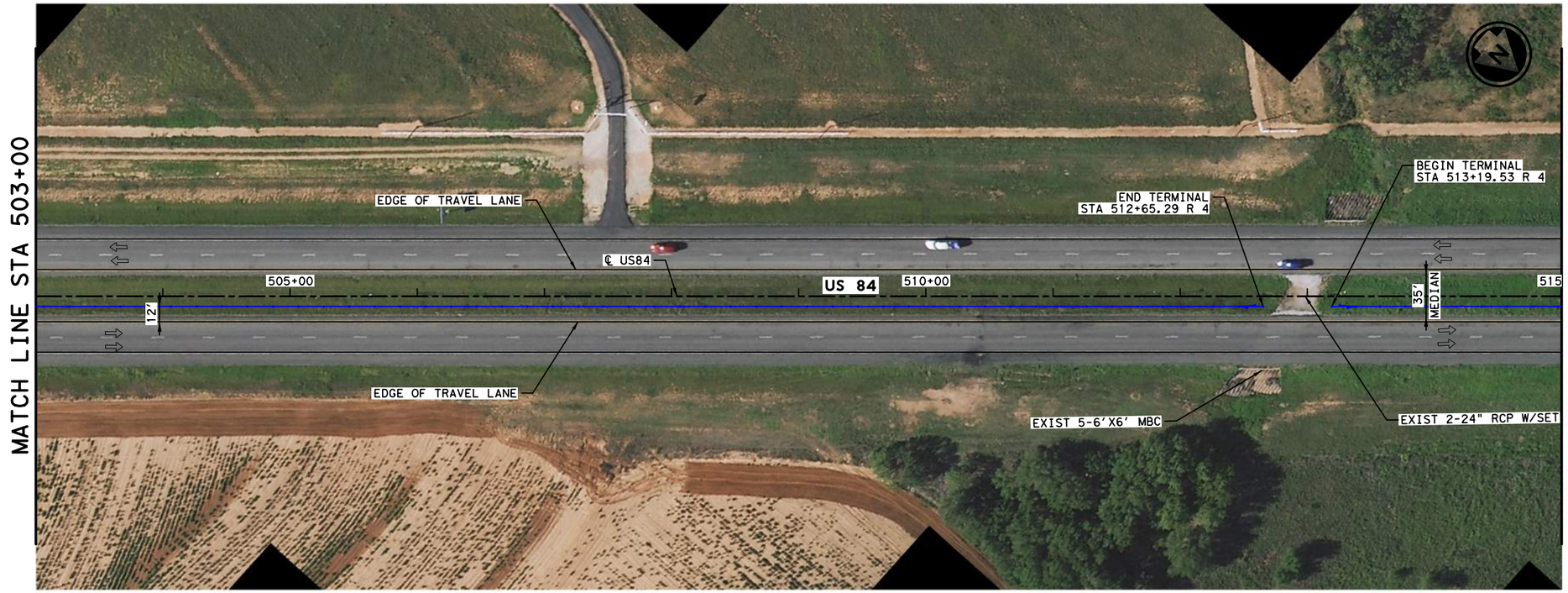
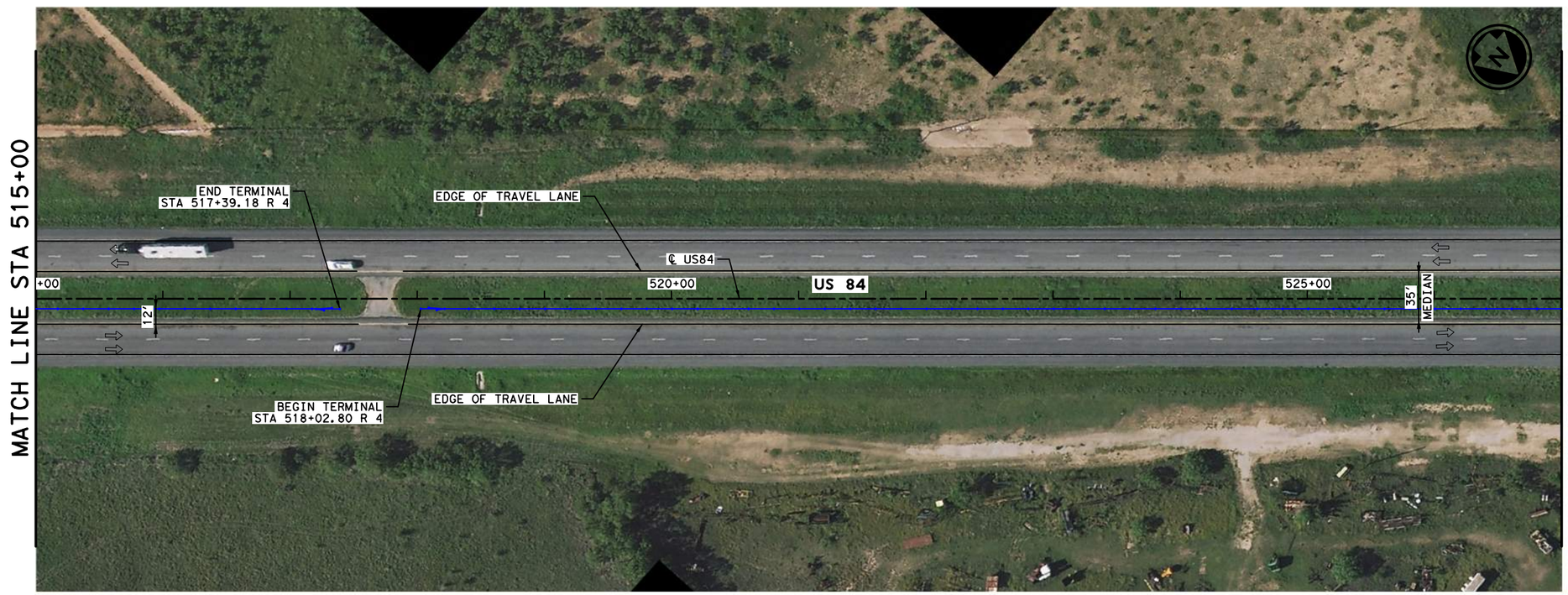
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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3. REFER TO BARRIER TRANSITION SHEETS AND MISCELLANEOUS DETAIL FOR MORE INFORMATION.

LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-09-077 SHEET 59 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	98
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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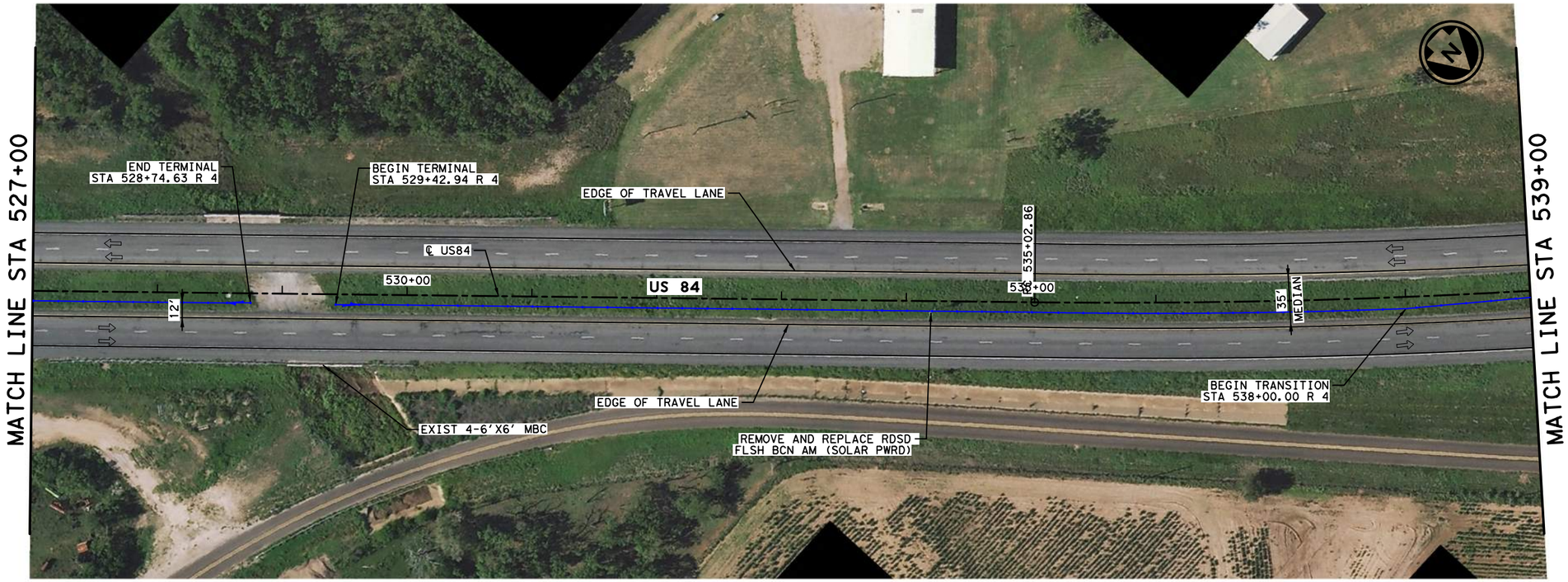
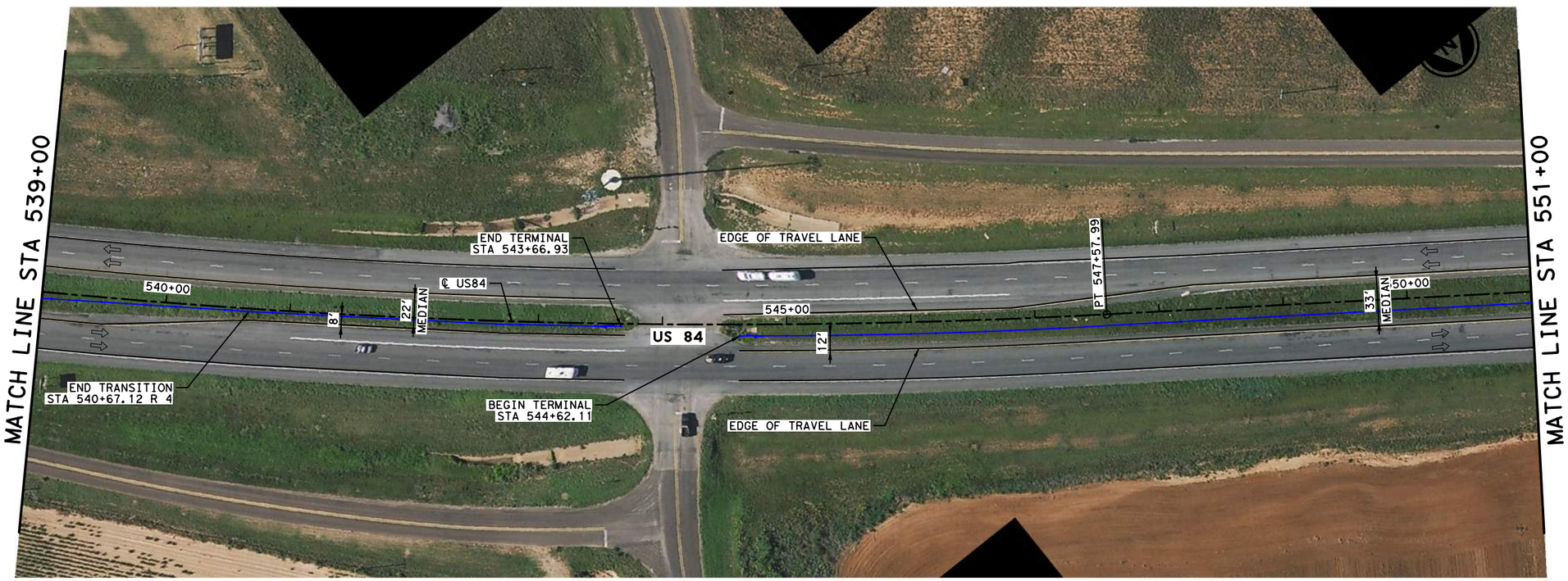
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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US 84

PLAN LAYOUT

CSJ 0053-09-077 SHEET 60 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	99
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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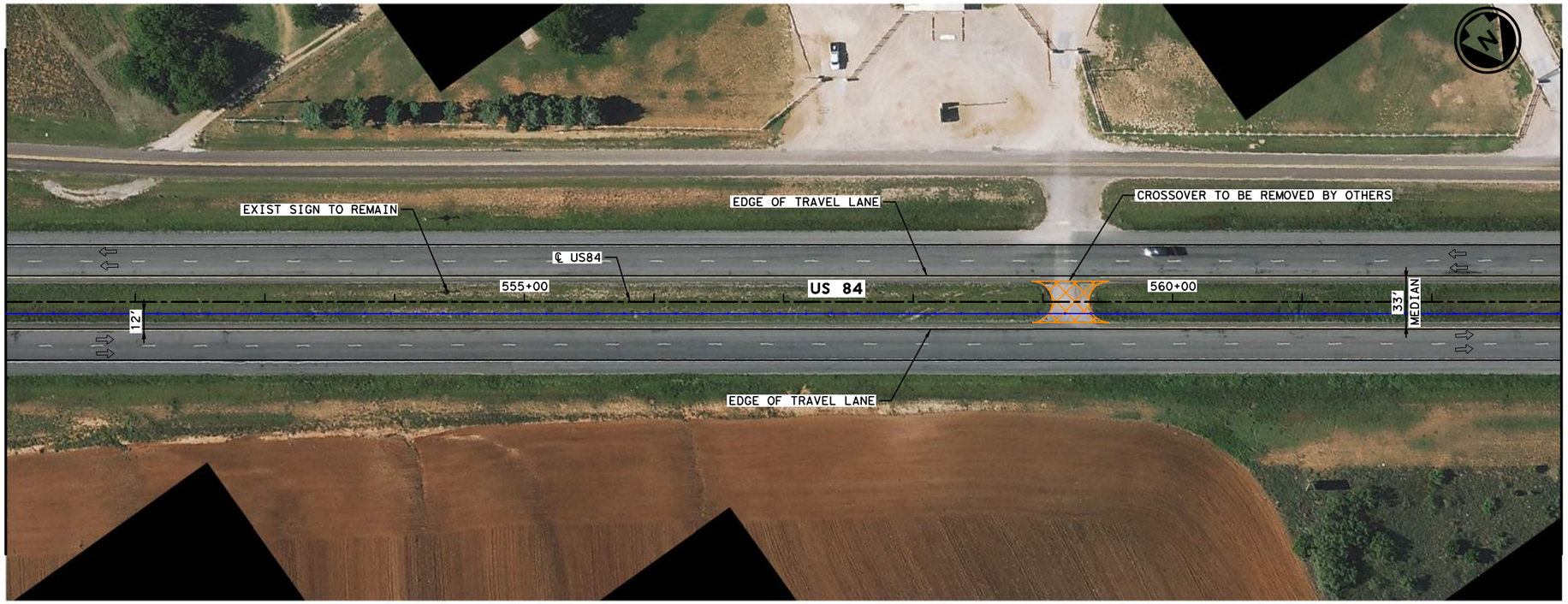
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

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- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-09-077 SHEET 61 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	100
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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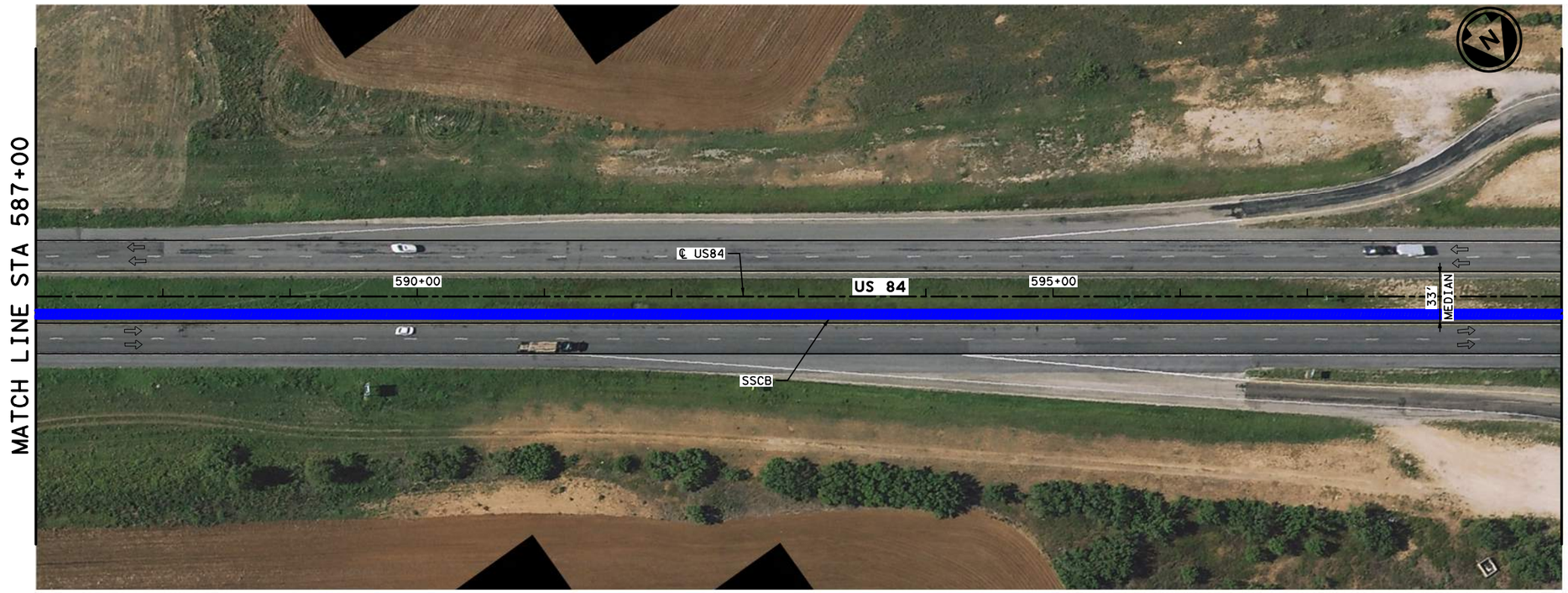
DRAWING DATE: 3/3/2023



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US 84

PLAN LAYOUT

CSJ 0053-09-077 SHEET 62 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	101
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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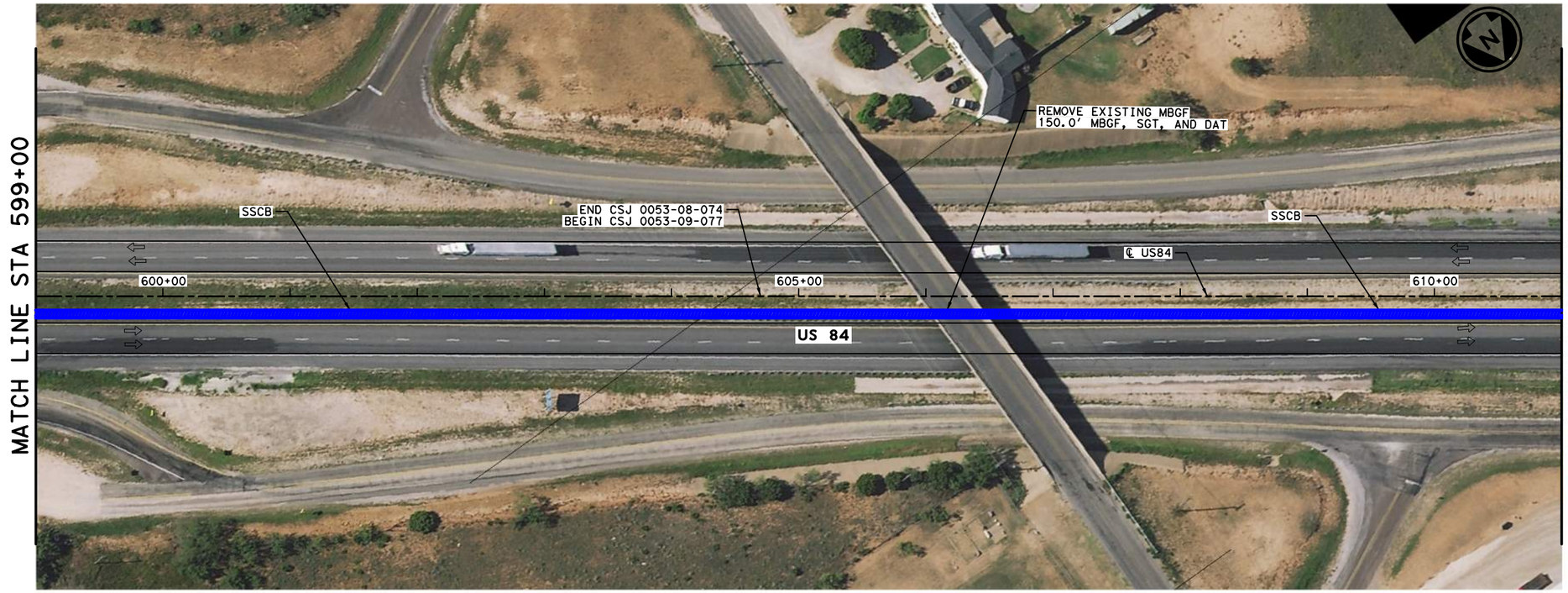
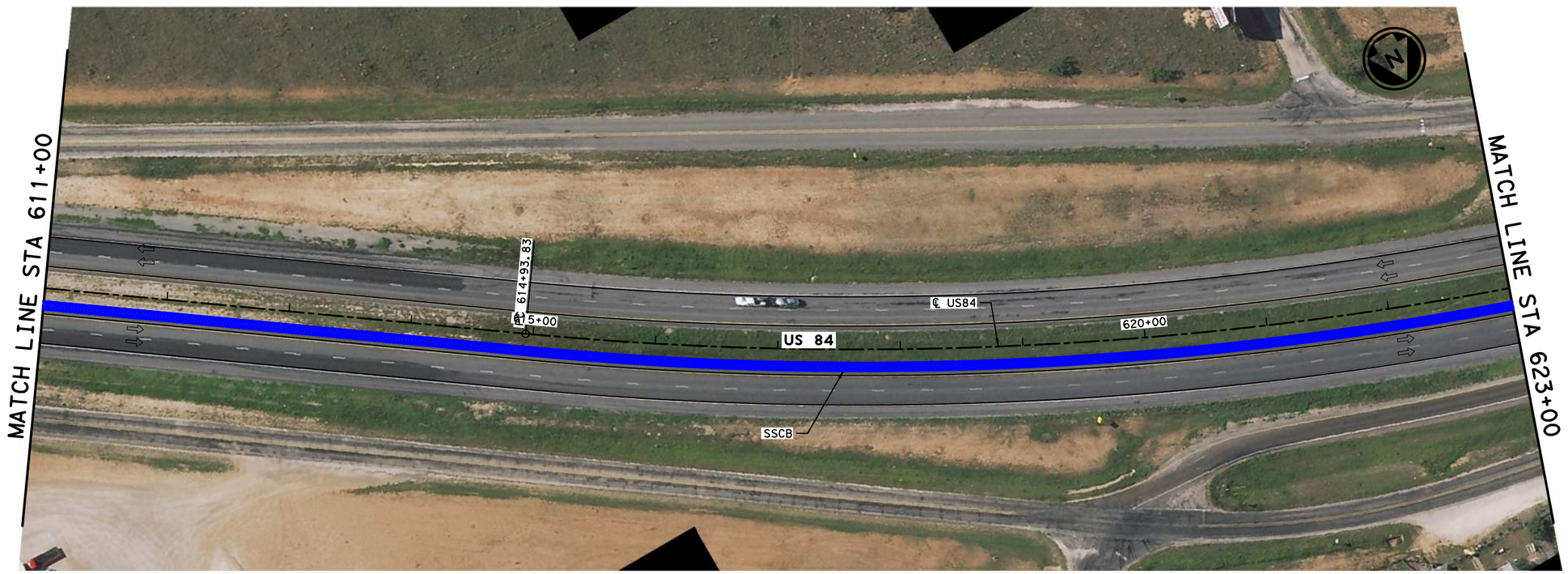
DRAWING DATE: 3/3/2023





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- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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PLAN LAYOUT

CSJ 0053-08-074 SHEET 63 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	102
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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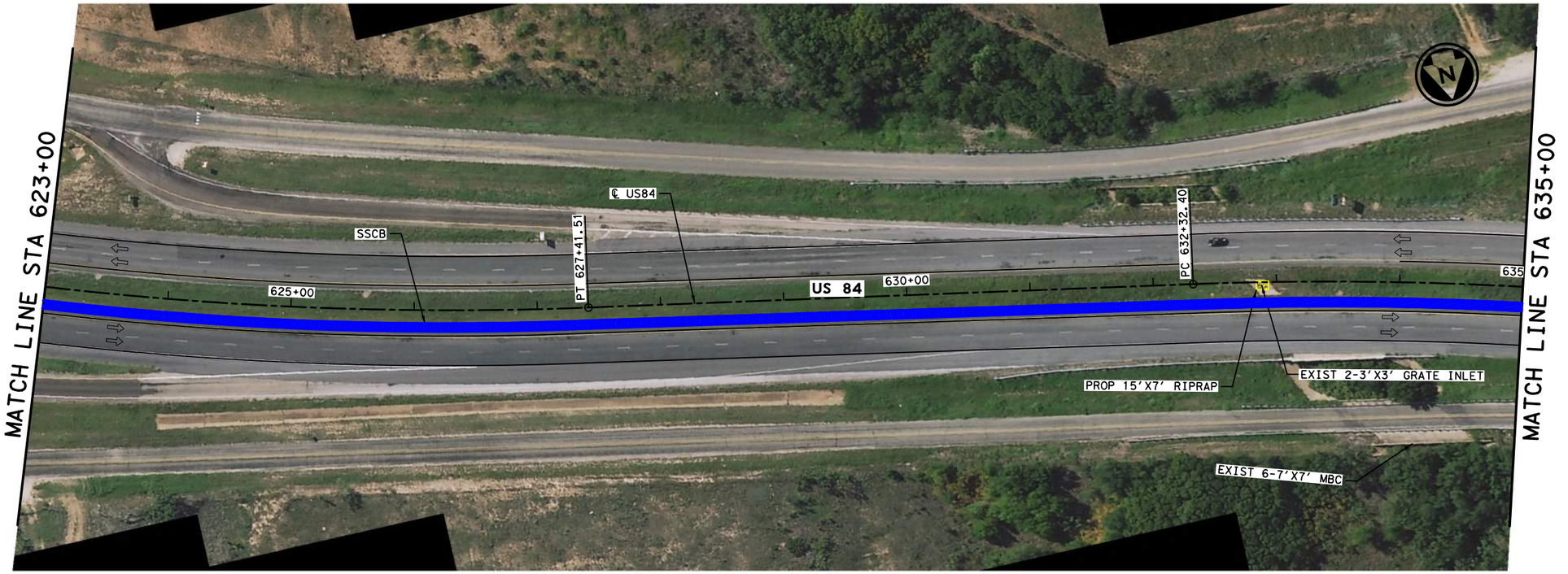
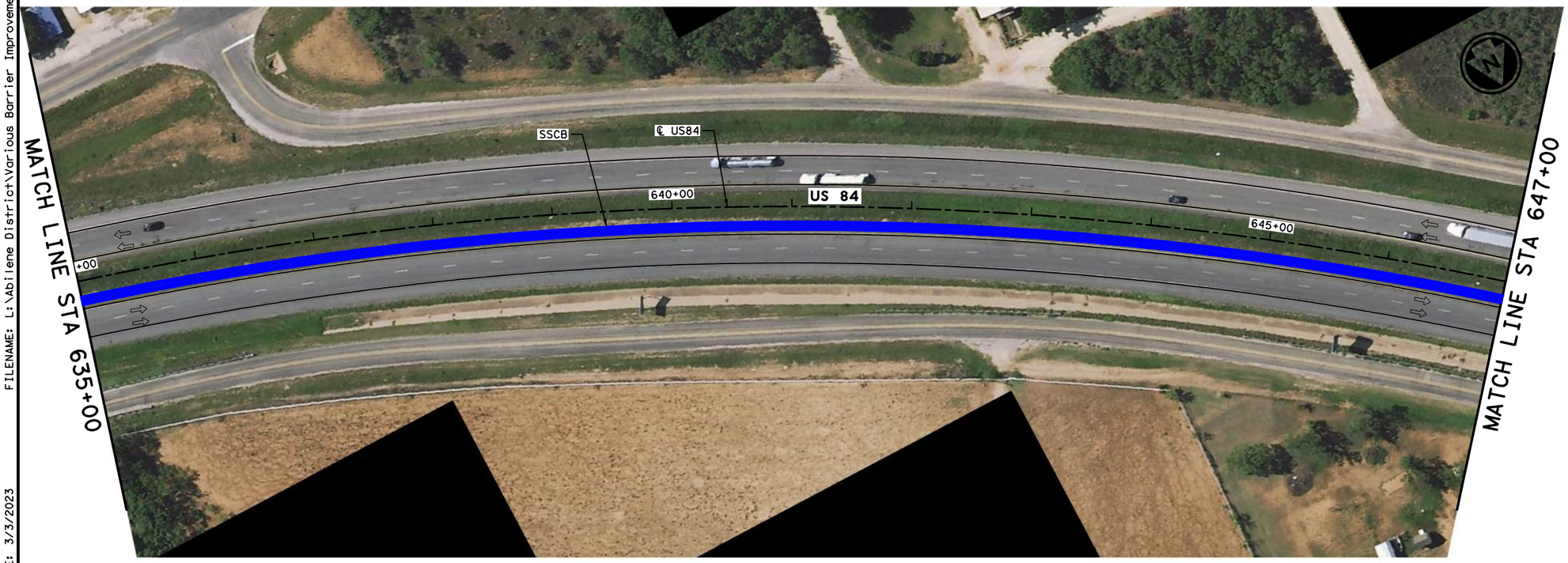
DRAWING DATE: 3/3/2023





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- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-08-074 SHEET 64 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	103
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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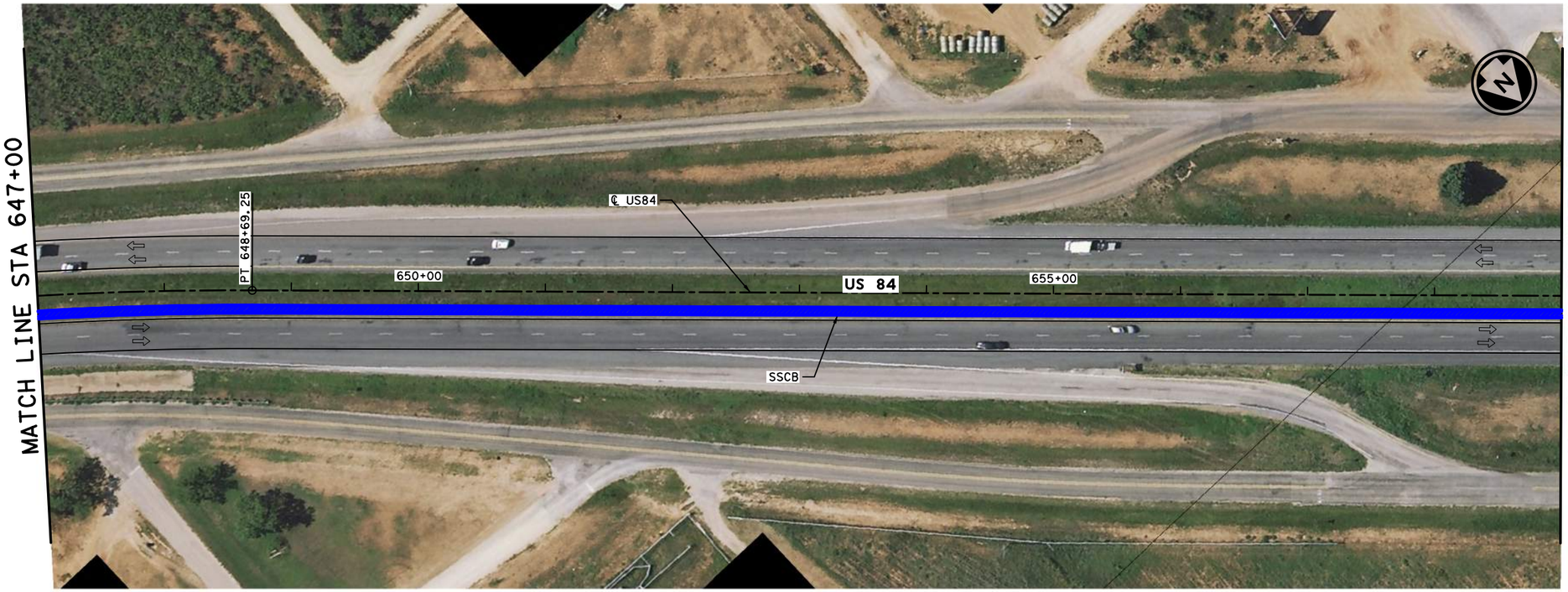

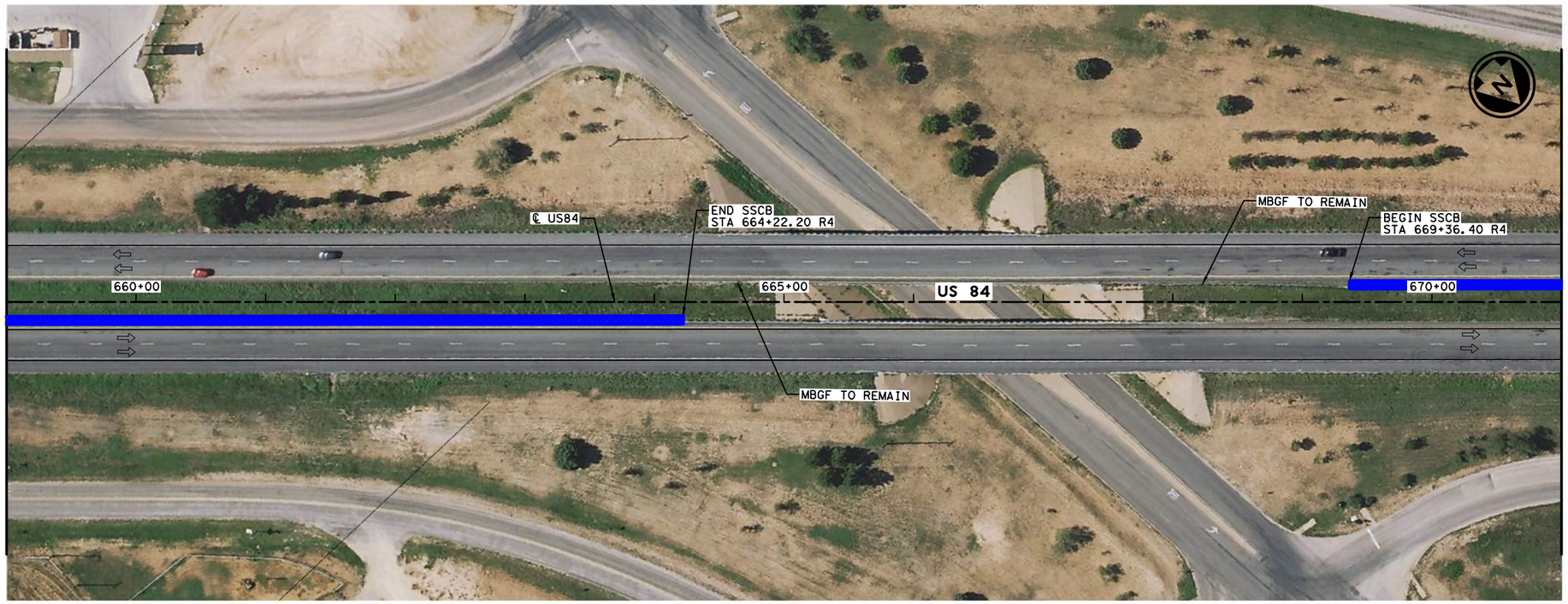

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- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

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PLAN LAYOUT

CSJ 0053-08-074 SHEET 65 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	104
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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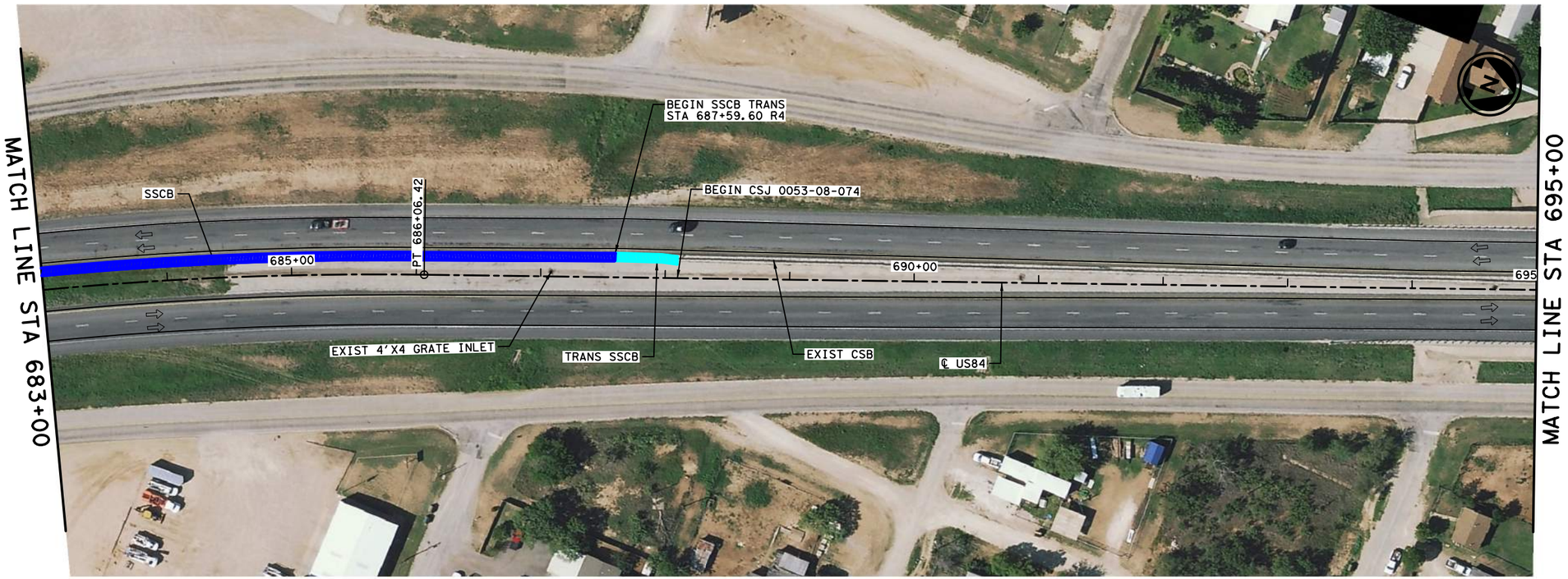
DRAWING DATE: 3/3/2023



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- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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3/3/2023

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-08-074 SHEET 66 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	105
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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DRAWING DATE: 3/3/2023

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3/3/2023

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7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-08-075 SHEET 67 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	106
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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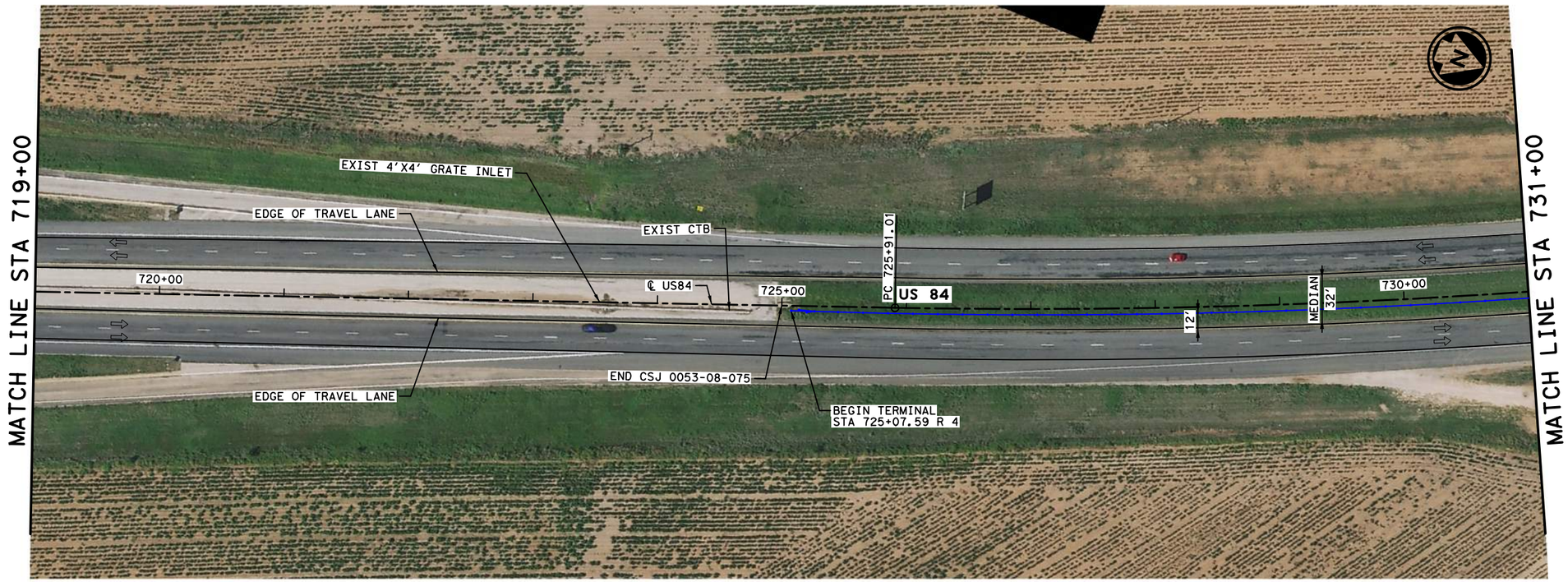

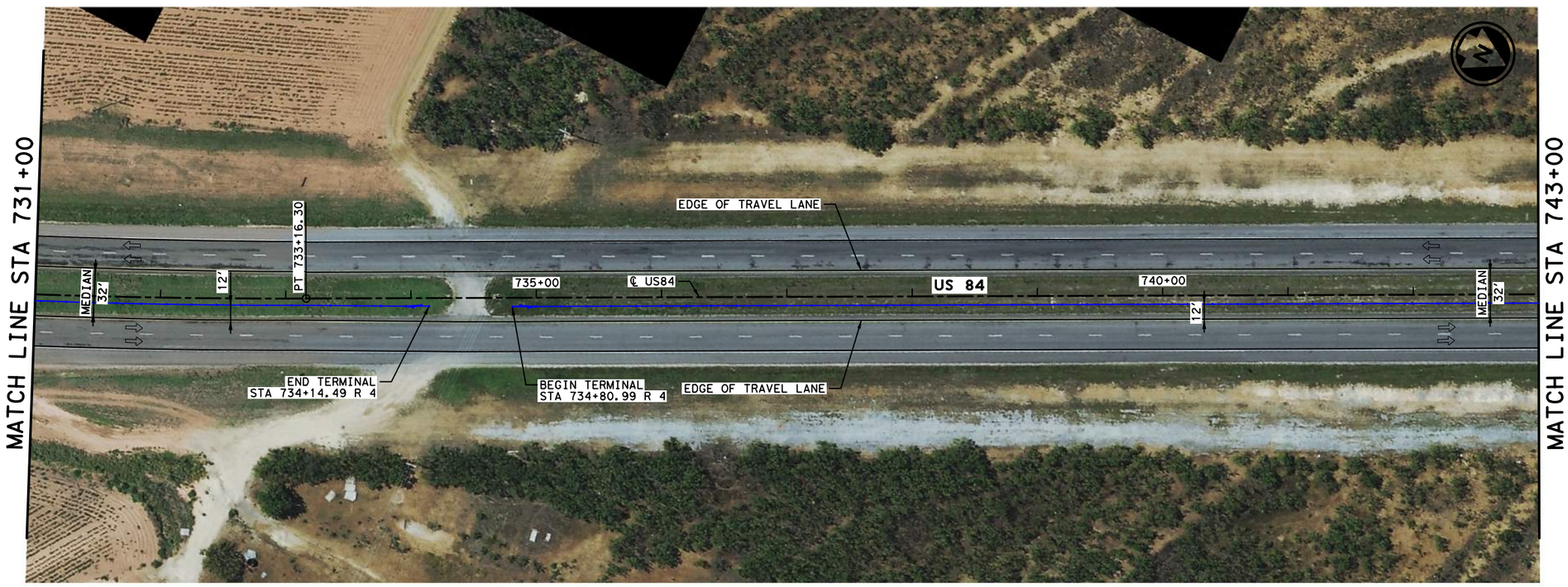

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US 84

PLAN LAYOUT

CSJ 0053-08-075 SHEET 68 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	107
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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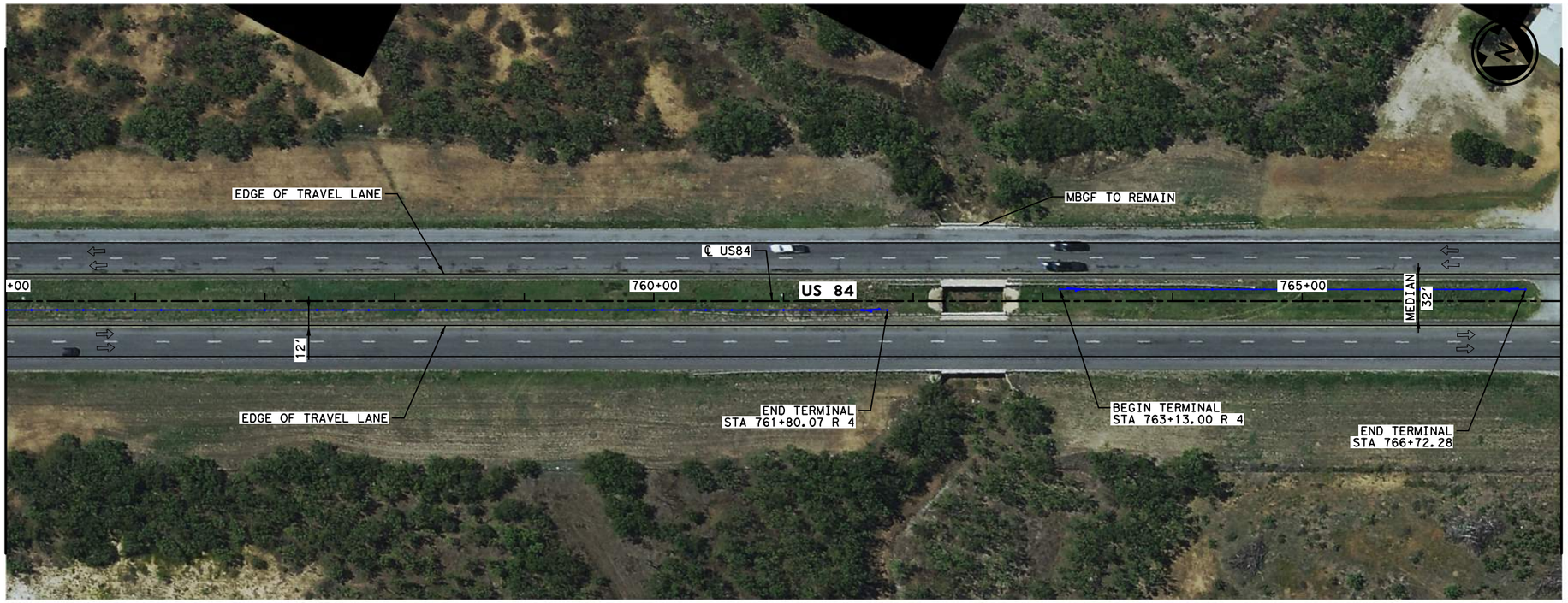
DRAWING DATE: 3/3/2023



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3/3/2023

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-08-075 SHEET 69 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	108
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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DRAWING DATE: 3/3/2023

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US 84

PLAN LAYOUT

CSJ 0053-08-075 SHEET 70 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	109
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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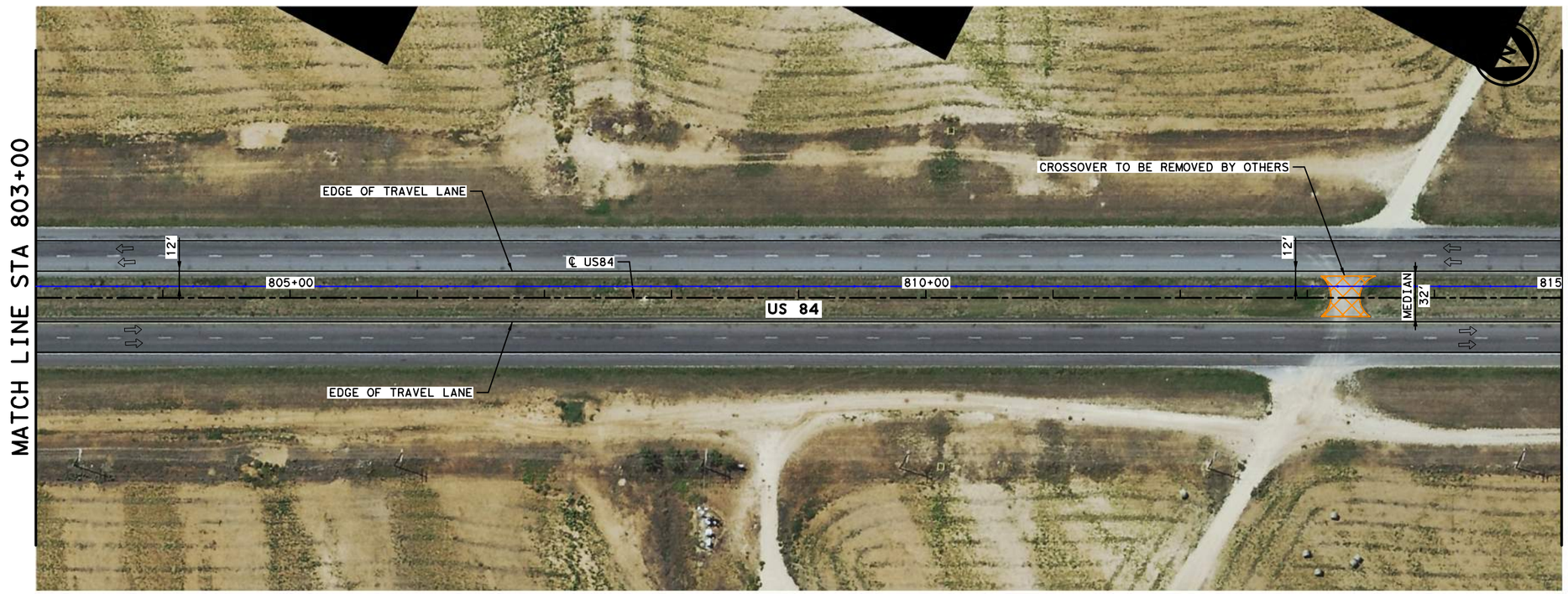
DRAWING DATE: 3/3/2023



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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-08-075 SHEET 71 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	110
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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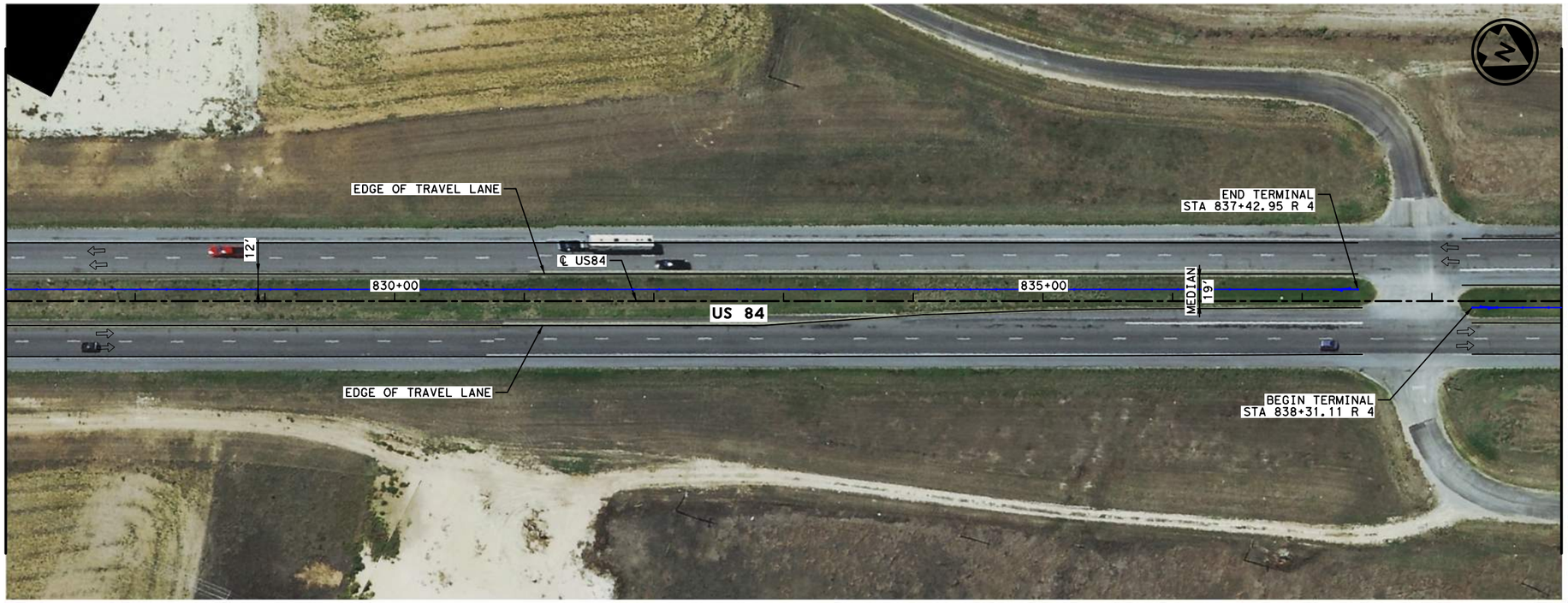
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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3. REFER TO BARRIER TRANSITION SHEETS AND MISCELLANEOUS DETAIL FOR MORE INFORMATION.

LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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85191
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3/3/2023

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TBPE REG. # F-11657

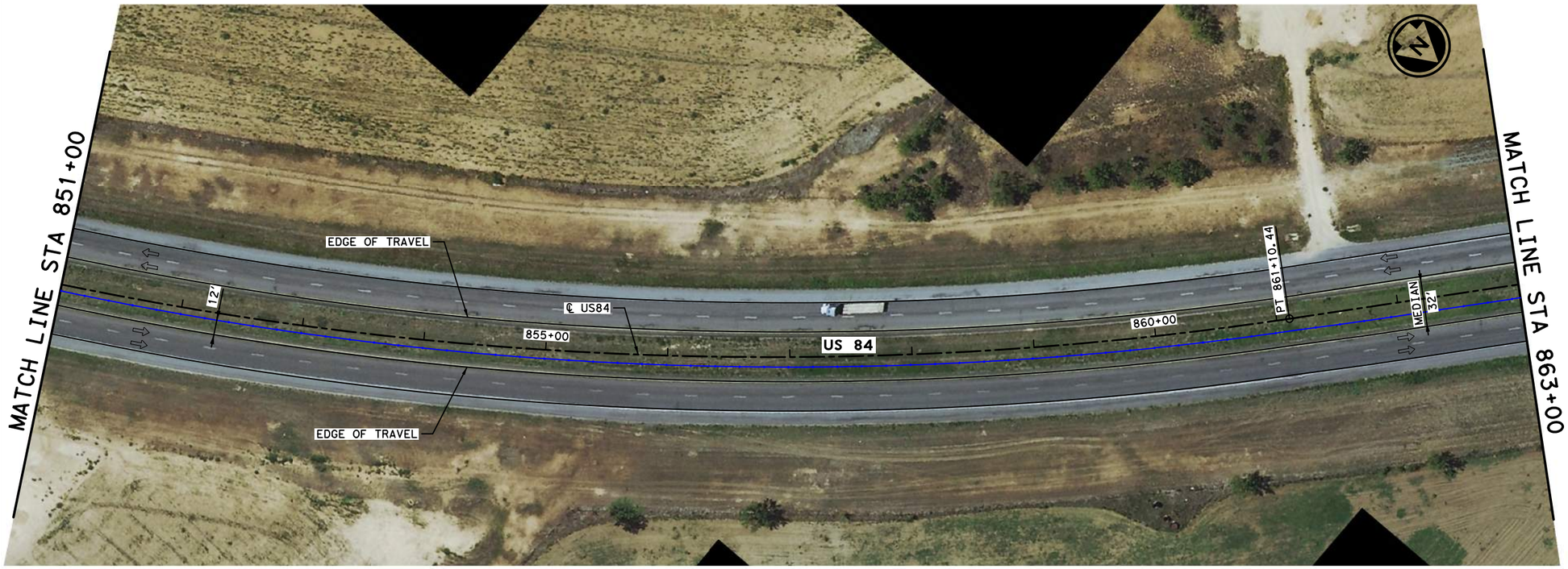
US 84

PLAN LAYOUT

CSJ 0053-08-075 SHEET 72 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	111
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

DRAWING DATE: 3/3/2023 FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN71$.dgn



0′ 50′ 100′

SCALE: 1"=100′

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- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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Texas Department of Transportation

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-08-075 SHEET 73 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	112
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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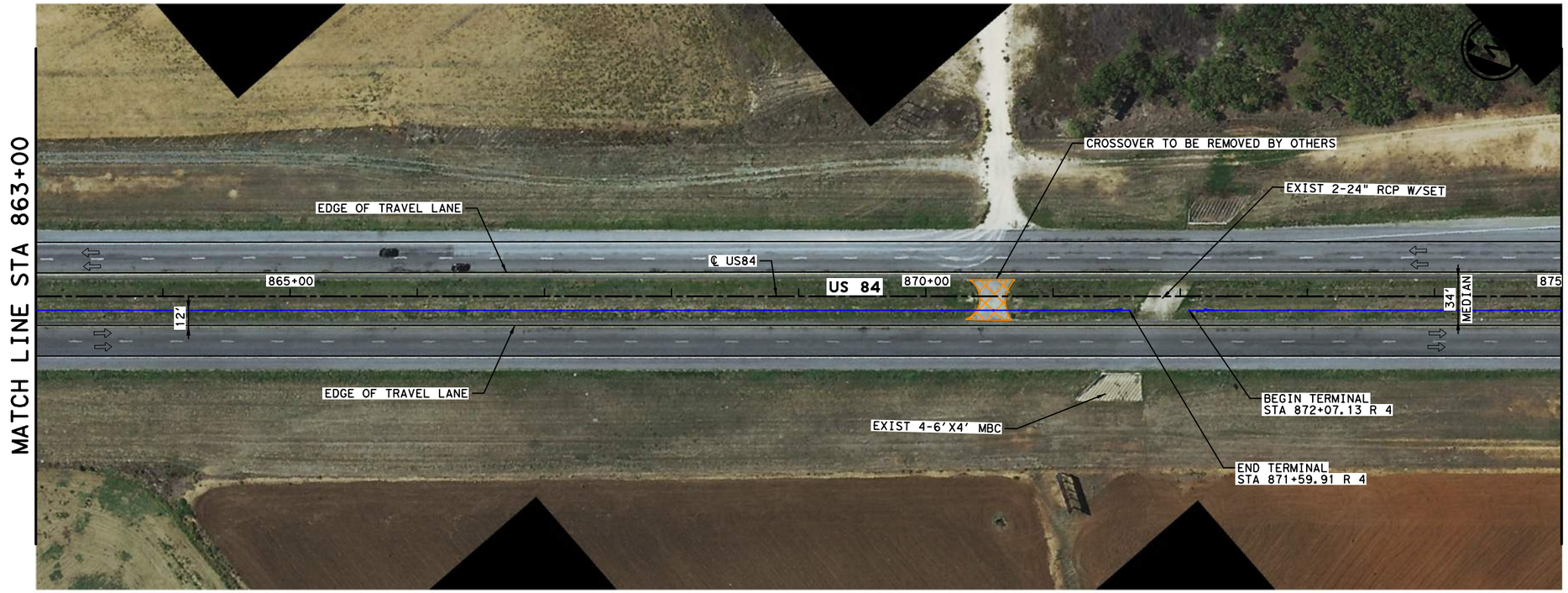
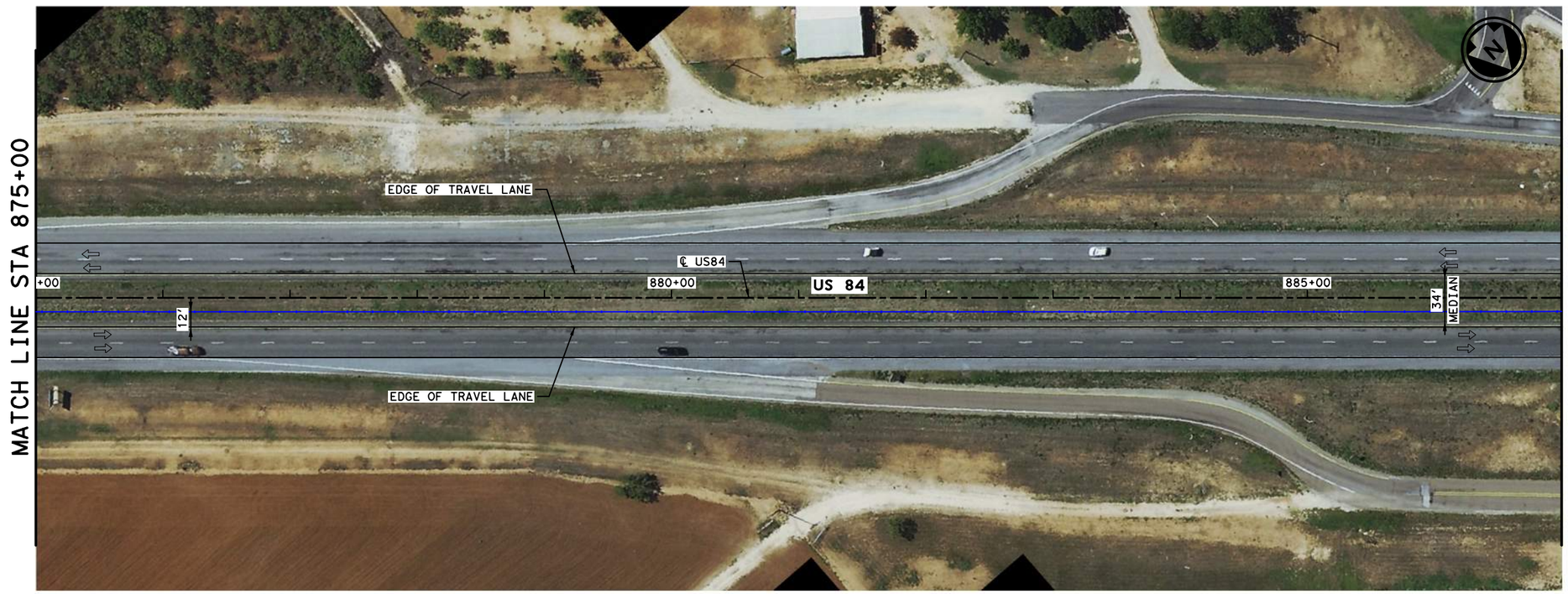
DRAWING DATE: 3/3/2023





0′ 50′ 100′

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- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

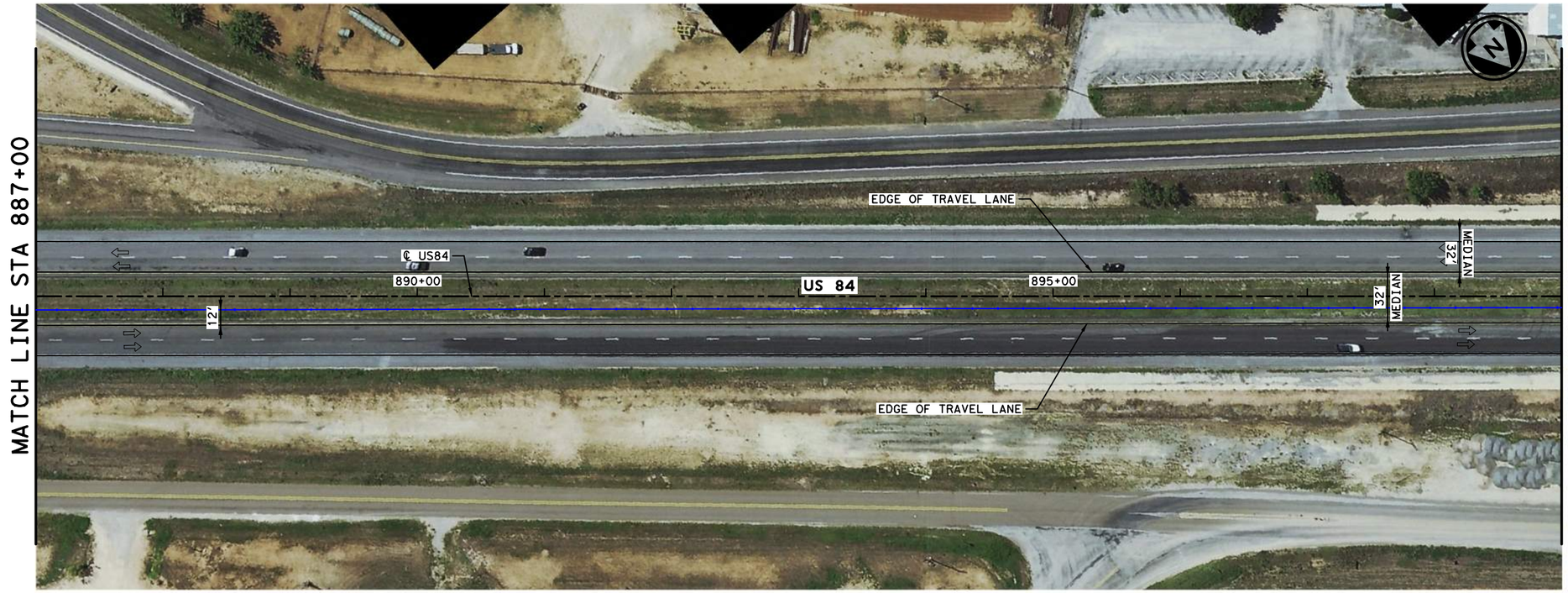
US 84

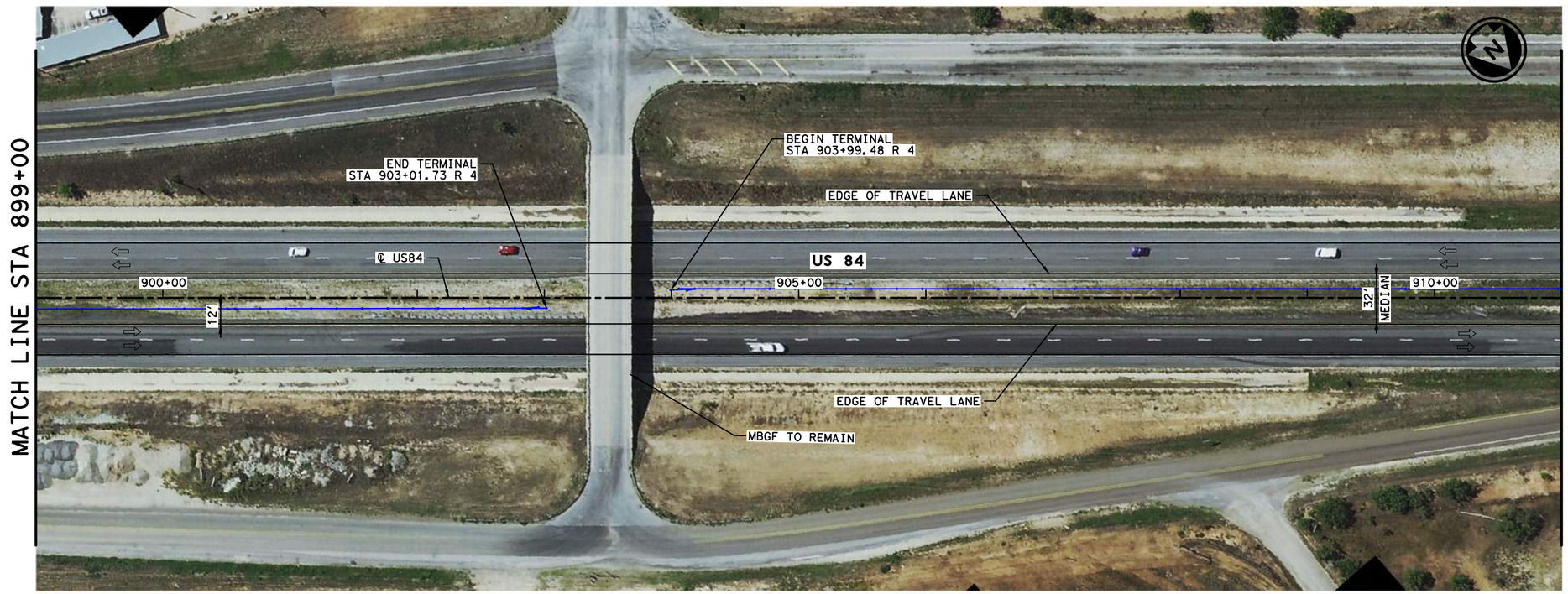
PLAN LAYOUT

CSJ 0053-08-075 SHEET 74 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	113
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

DRAWING DATE: 3/3/2023 FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN73$.dgn





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- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-08-075 SHEET 75 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	114
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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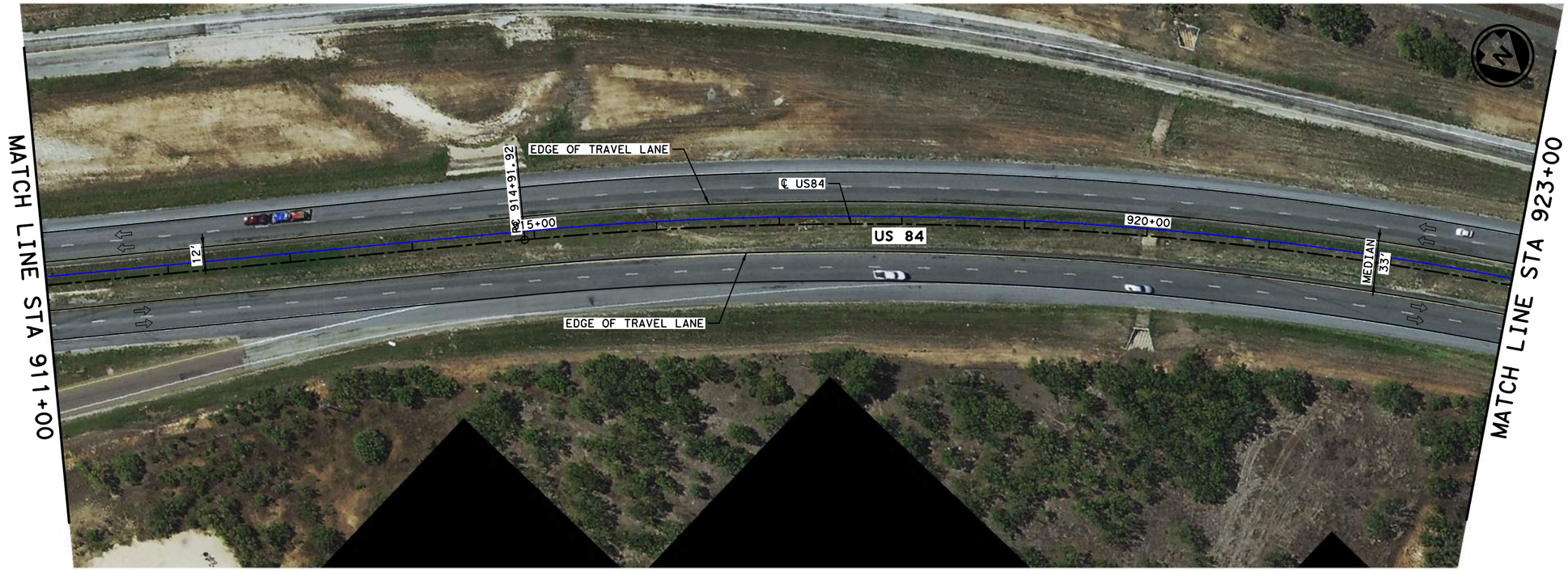
DRAWING DATE: 3/3/2023



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PLAN LAYOUT

CSJ 0053-08-075 SHEET 76 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	115
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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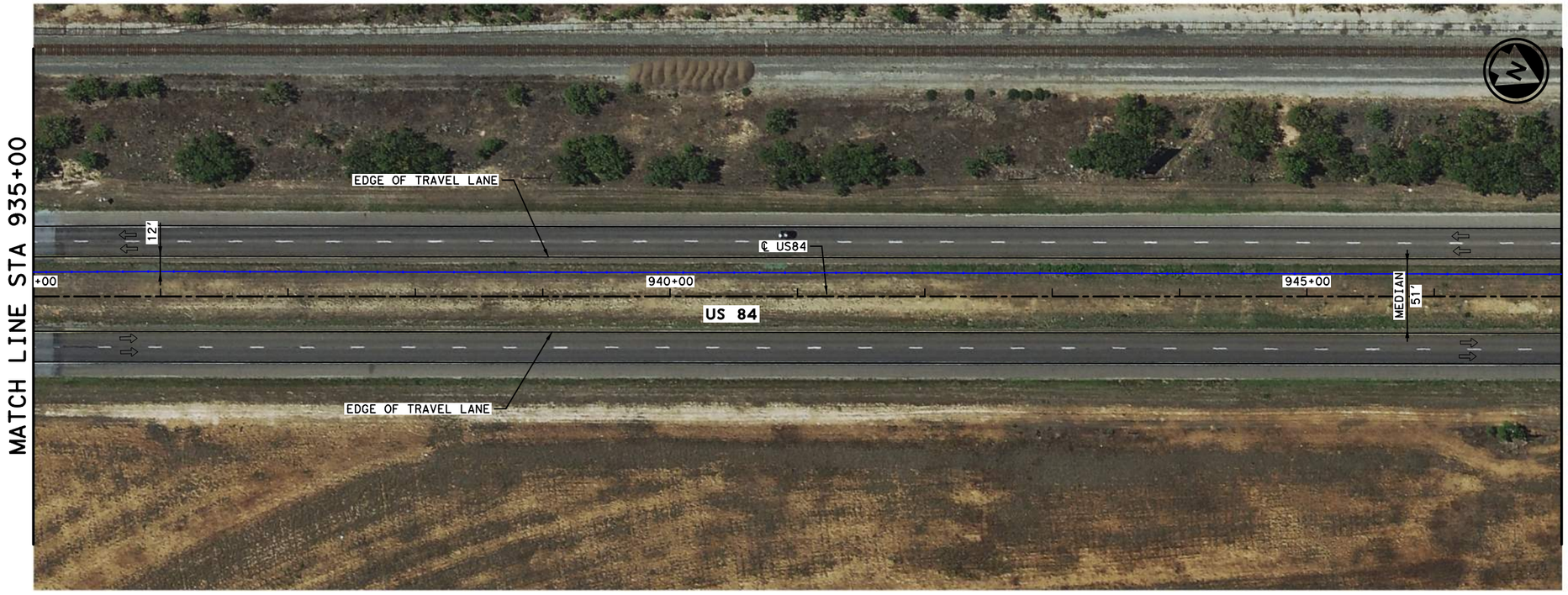
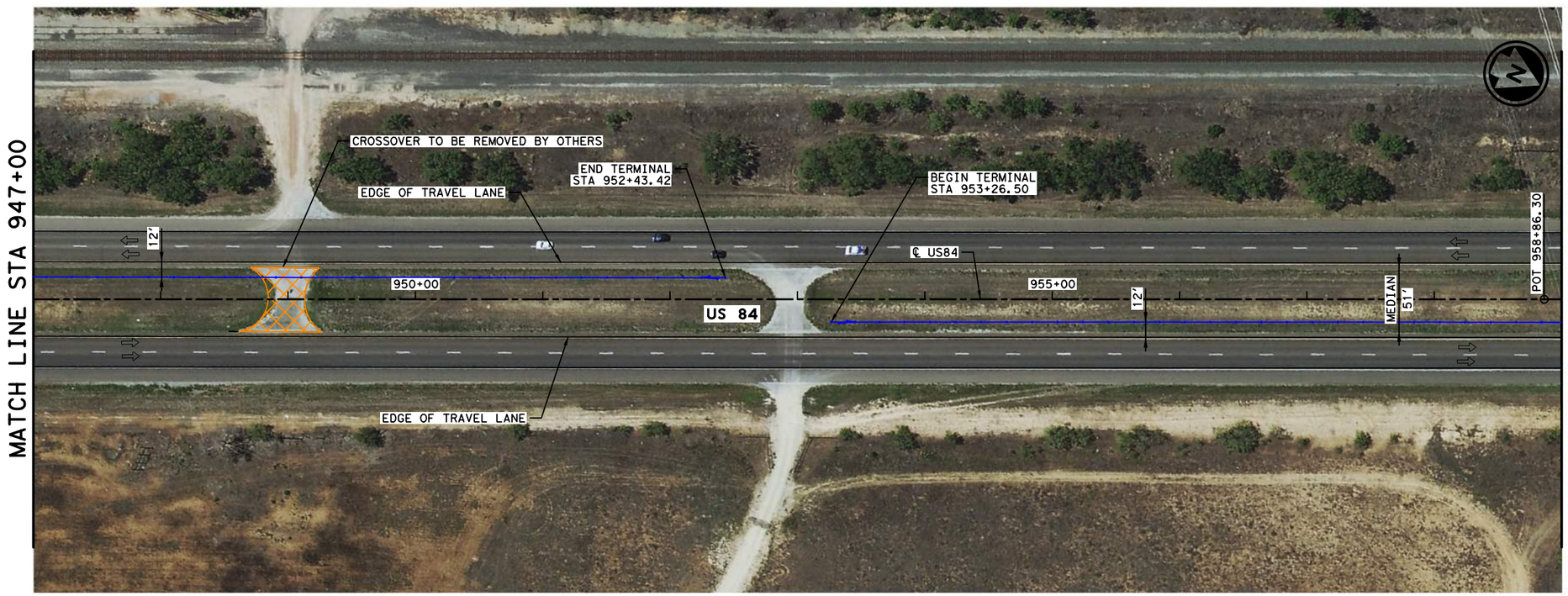
DRAWING DATE: 3/3/2023





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- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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PLAN LAYOUT

CSJ 0053-08-075 SHEET 77 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	116
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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DRAWING DATE: 3/3/2023

0' 50' 100'

SCALE: 1"=100'

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- PROPOSED ATTENUATOR

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3/3/2023

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7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 78 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	117
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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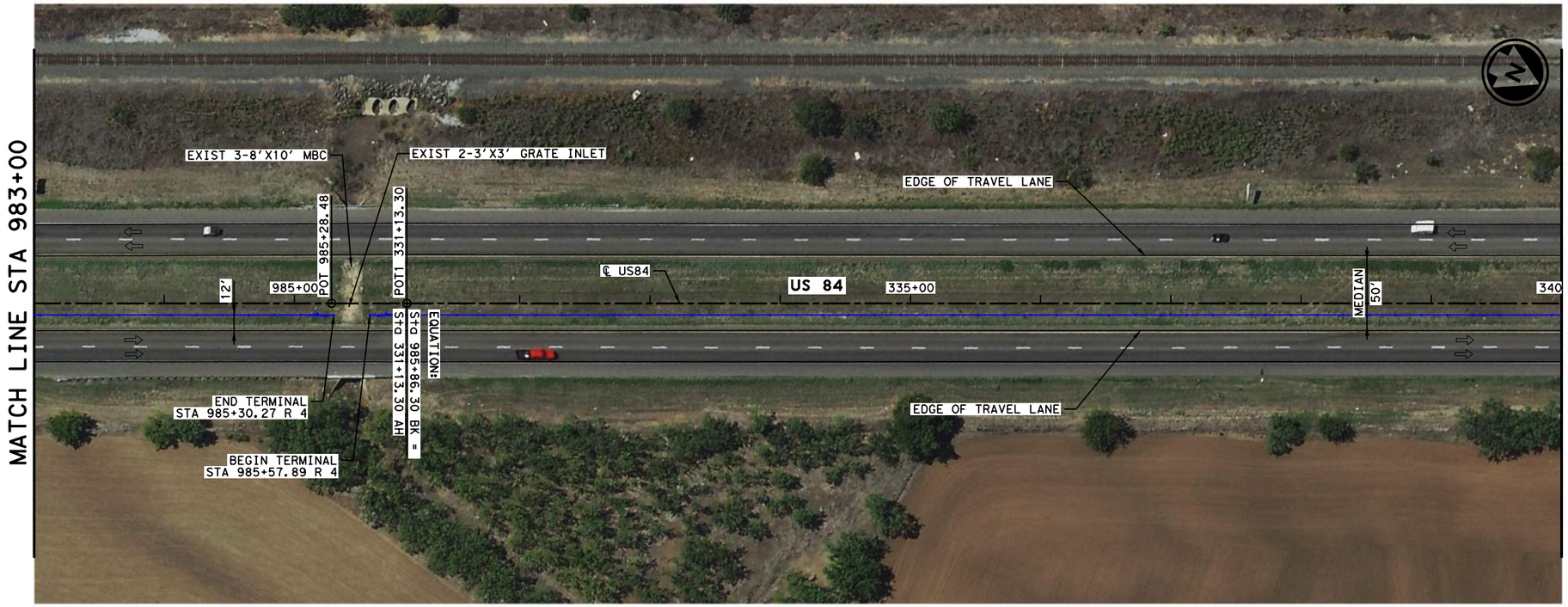
DRAWING DATE: 3/3/2023



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- PROPOSED ATTENUATOR

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3/3/2023

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7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 79 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	118
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN78*.dgn

DRAWING DATE: 3/3/2023

0′ 50′ 100′

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3/3/2023

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 80 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	119
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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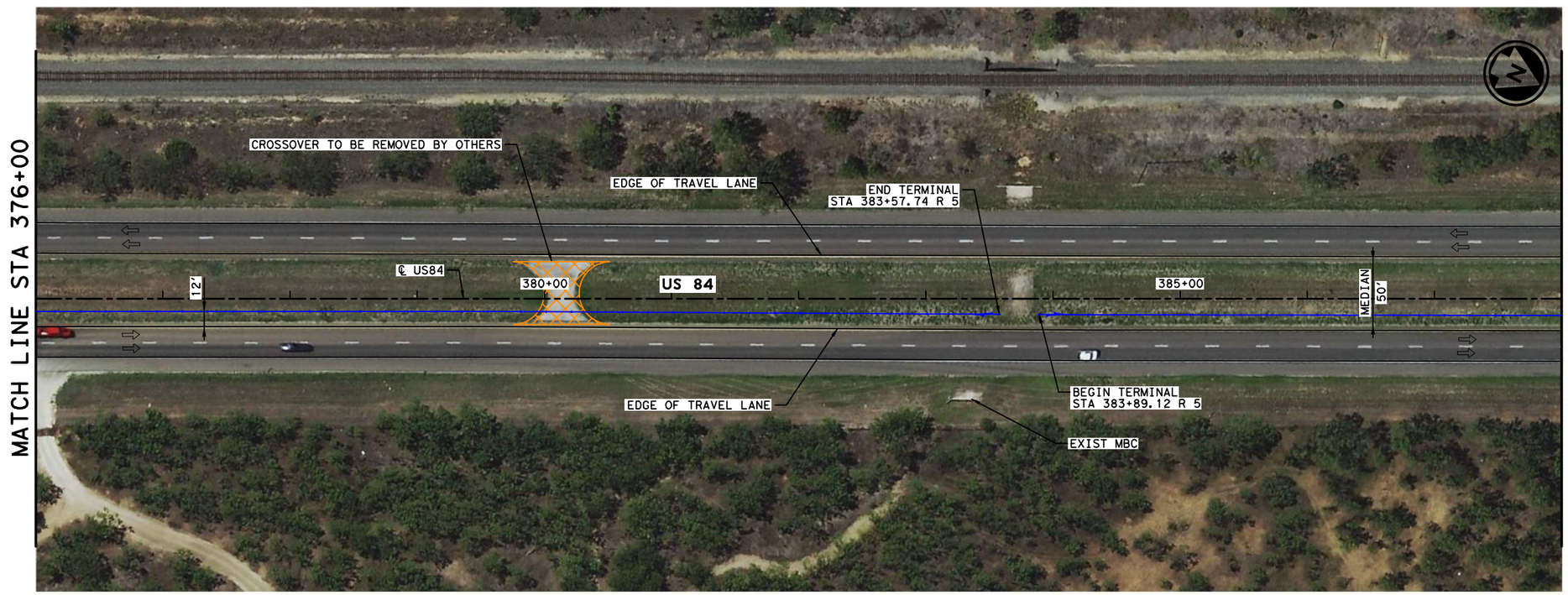

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3/3/2023

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 81 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	120
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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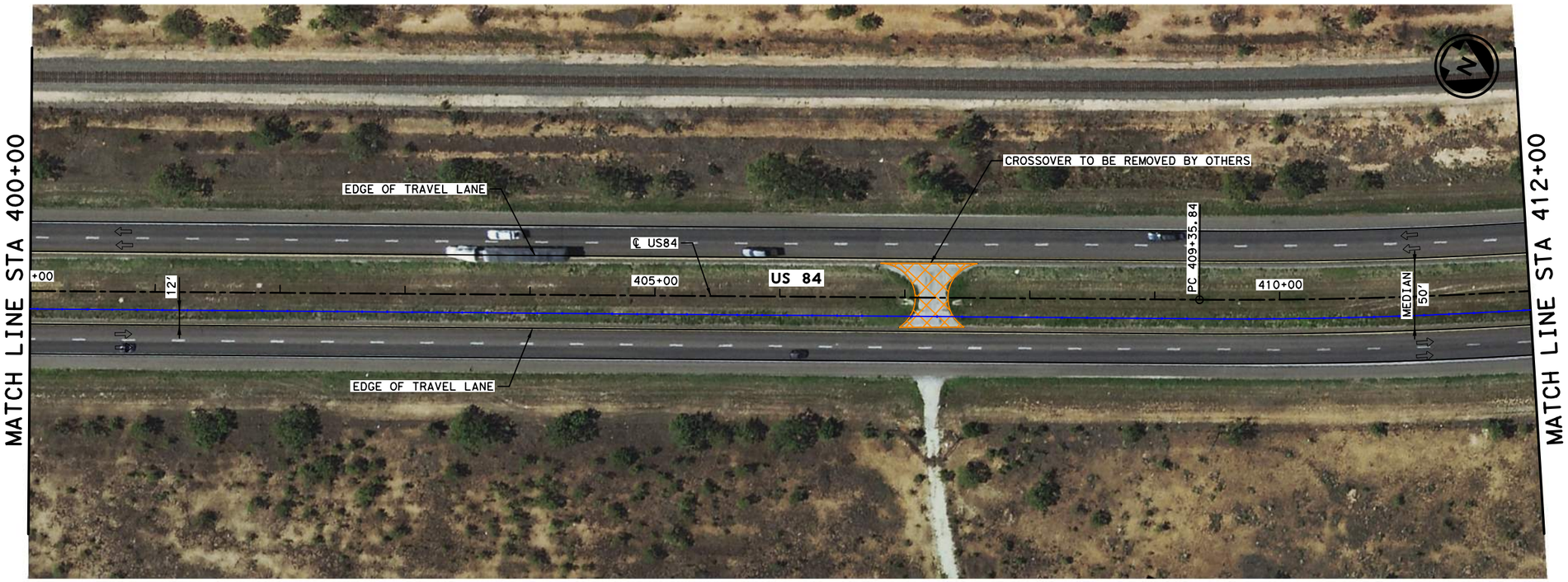

0' 50' 100'

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3/3/2023

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US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 82 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	121
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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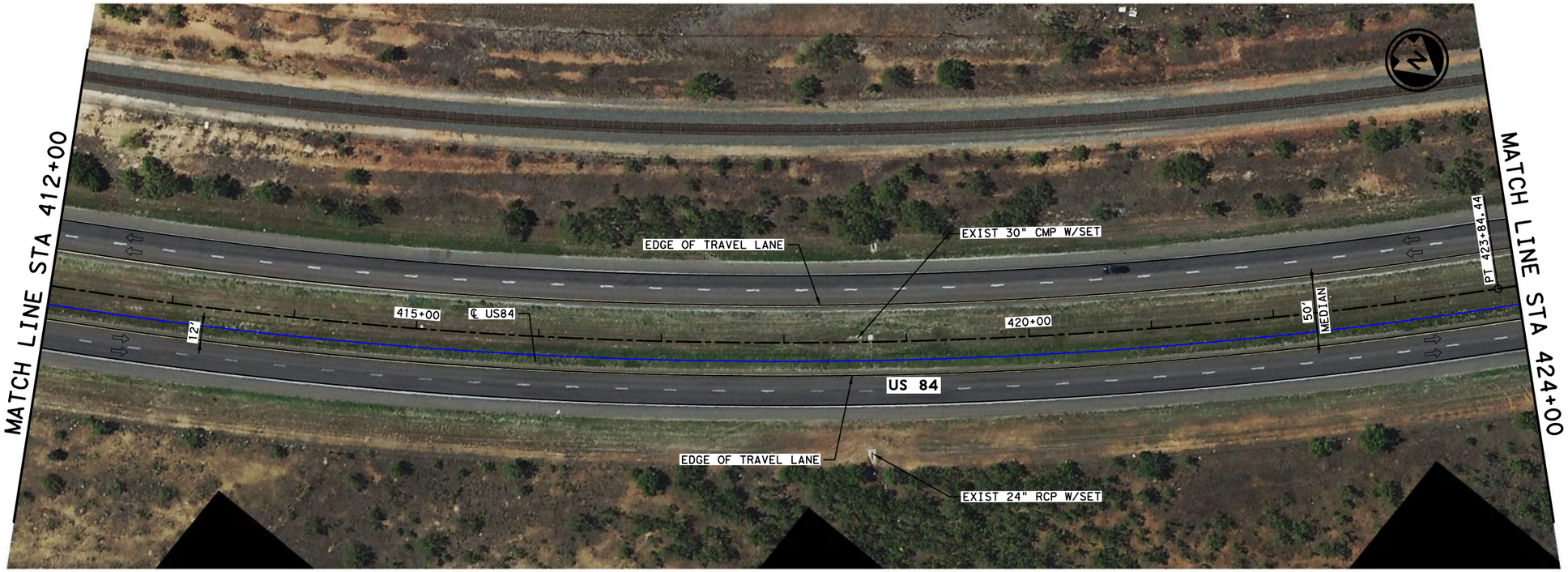
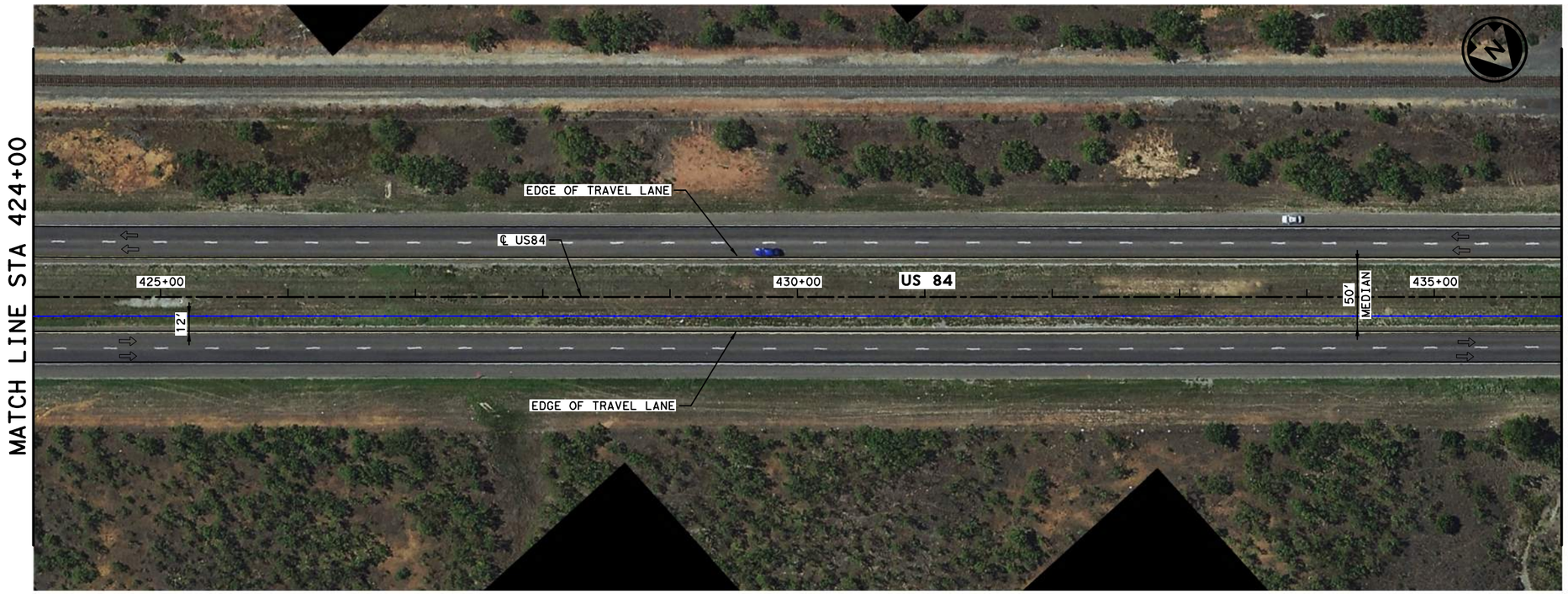
DRAWING DATE: 3/3/2023





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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 83 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	122
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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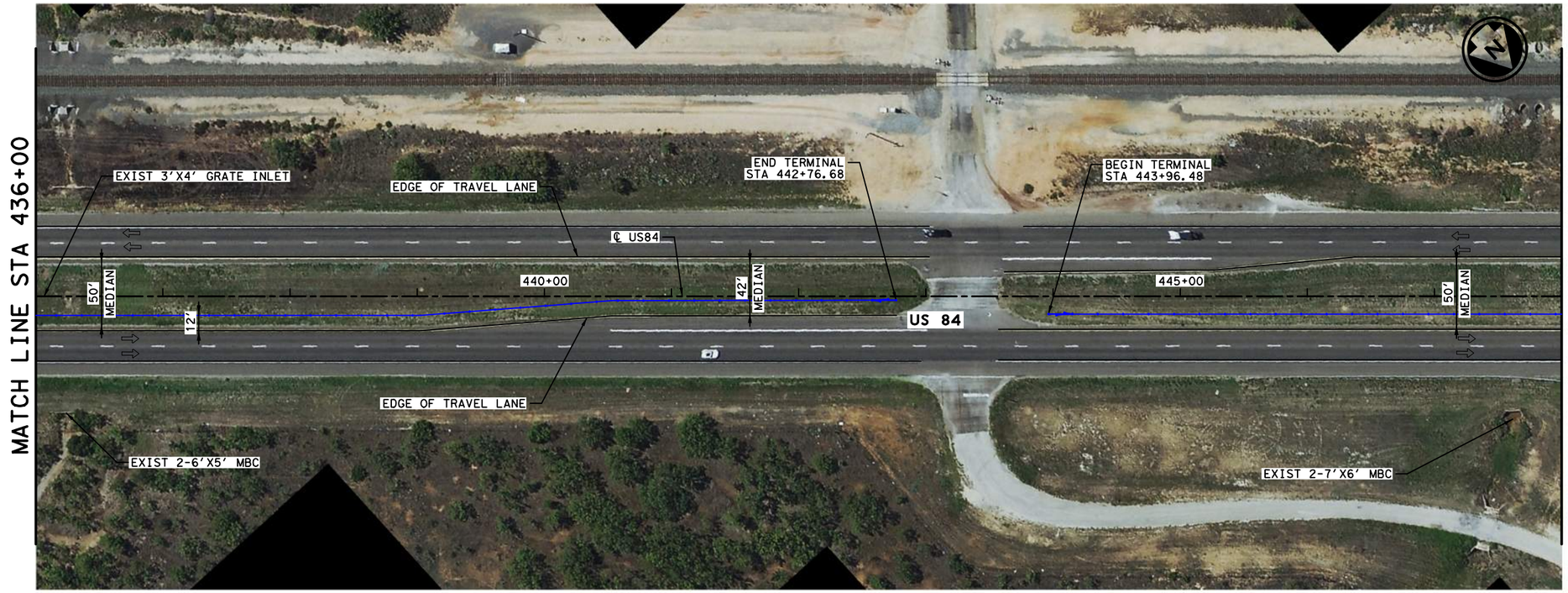
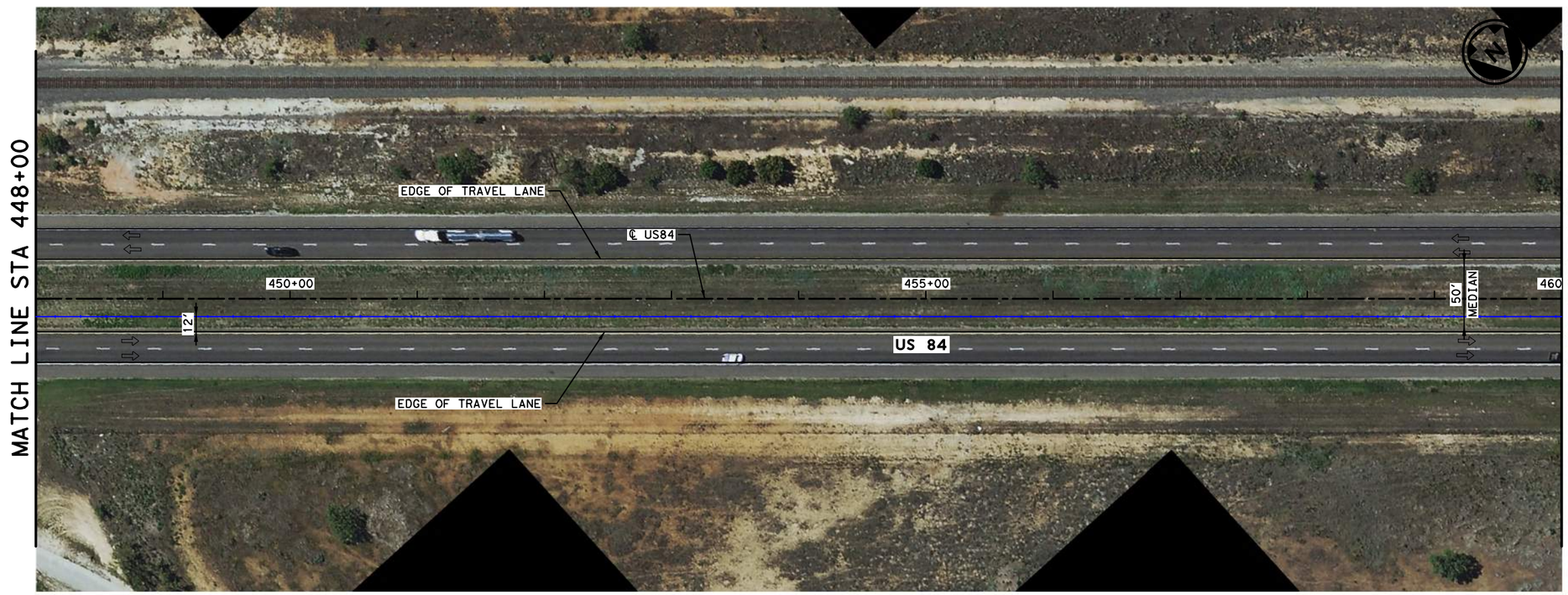
DRAWING DATE: 3/3/2023





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- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 84 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	123
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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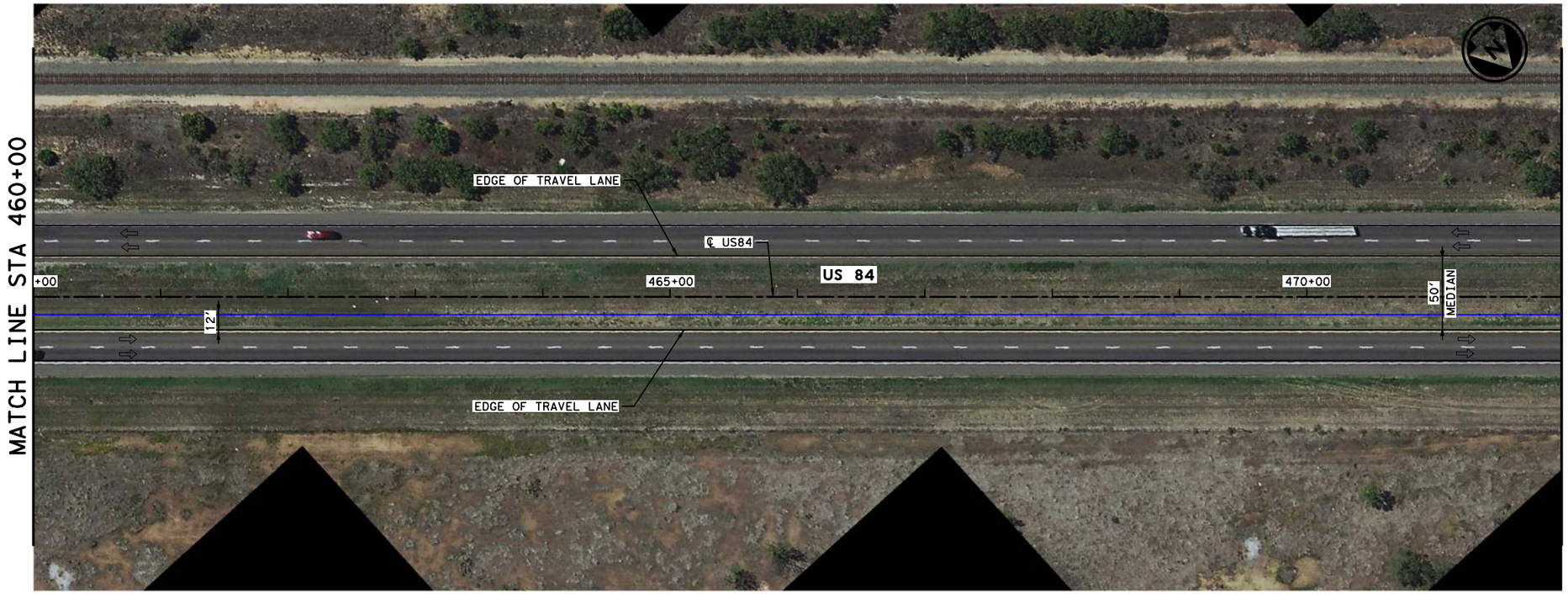
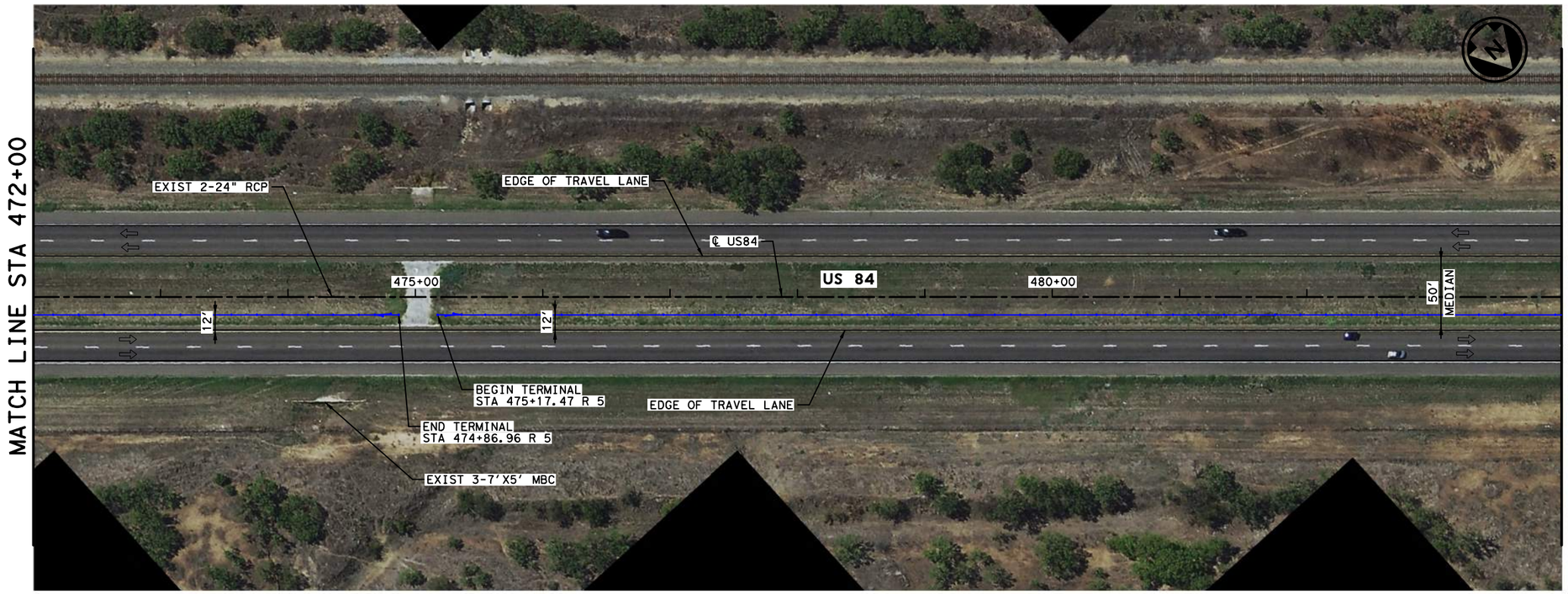
DRAWING DATE: 3/3/2023





0' 50' 100'

SCALE: 1"=100'

NOTES:

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2. CONTRACTOR SHALL FIELD VERIFY ANY EXISTING UNDERGROUND STRUCTURES, UTILITIES, AND THEIR EXISTING DEPTHS BEFORE COMMENCING WORK.
3. REFER TO BARRIER TRANSITION SHEETS AND MISCELLANEOUS DETAIL FOR MORE INFORMATION.

LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

m.n. m

Texas Department of Transportation

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

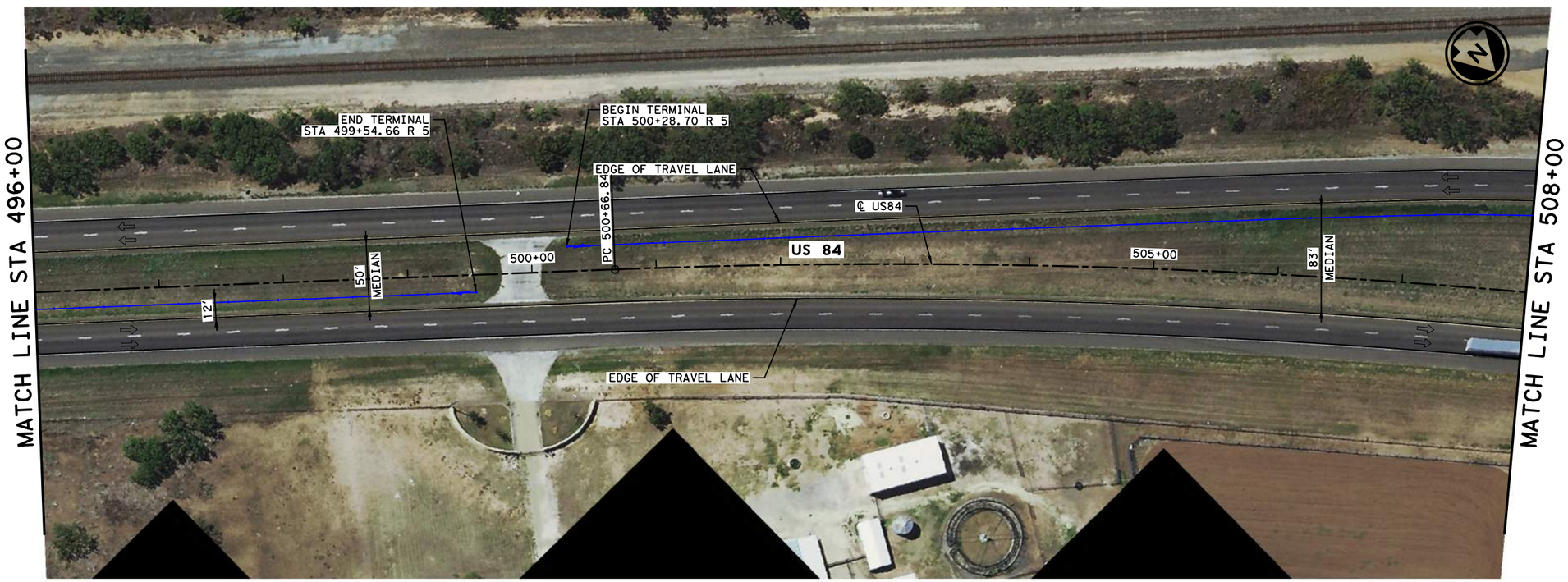
US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 85 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	124
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN84$.dgn
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

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- PROPOSED ATTENUATOR

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 86 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	125
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\05 Roadway Details\US 84\@US84*PLAN85$.dgn

DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

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LEGEND:

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- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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3/3/2023

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 87 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	126
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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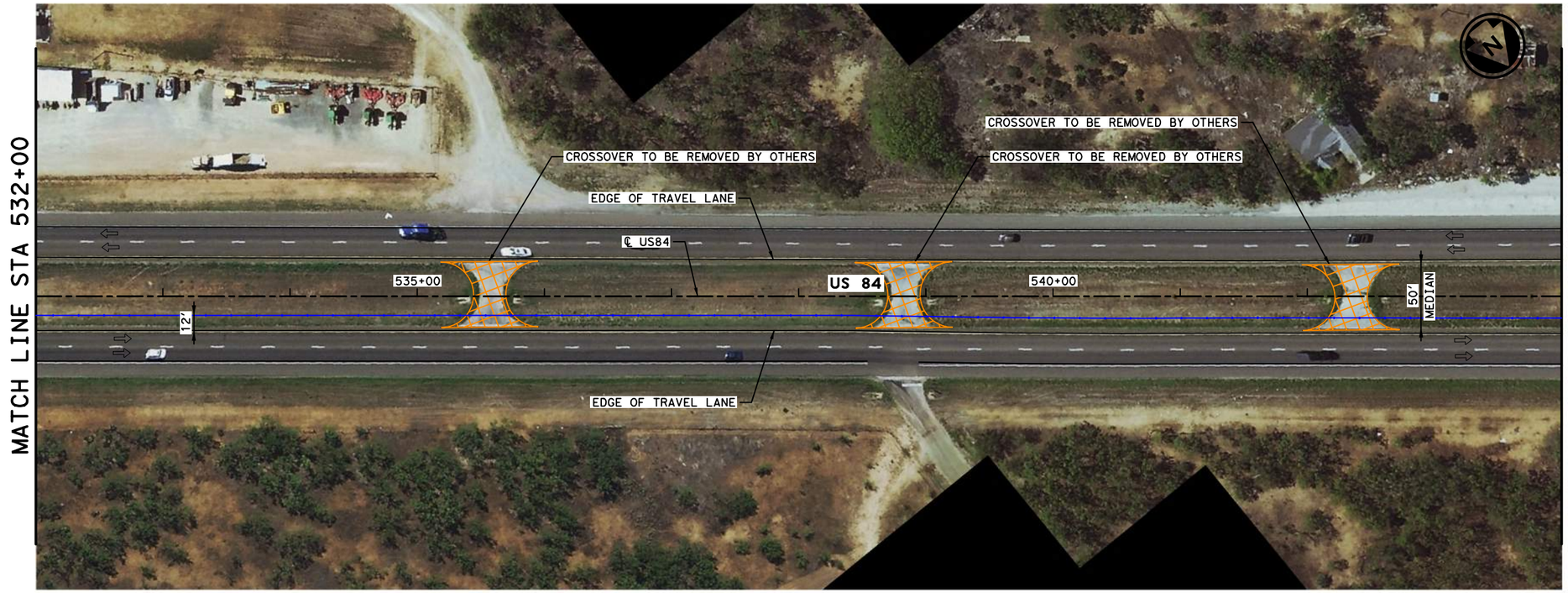
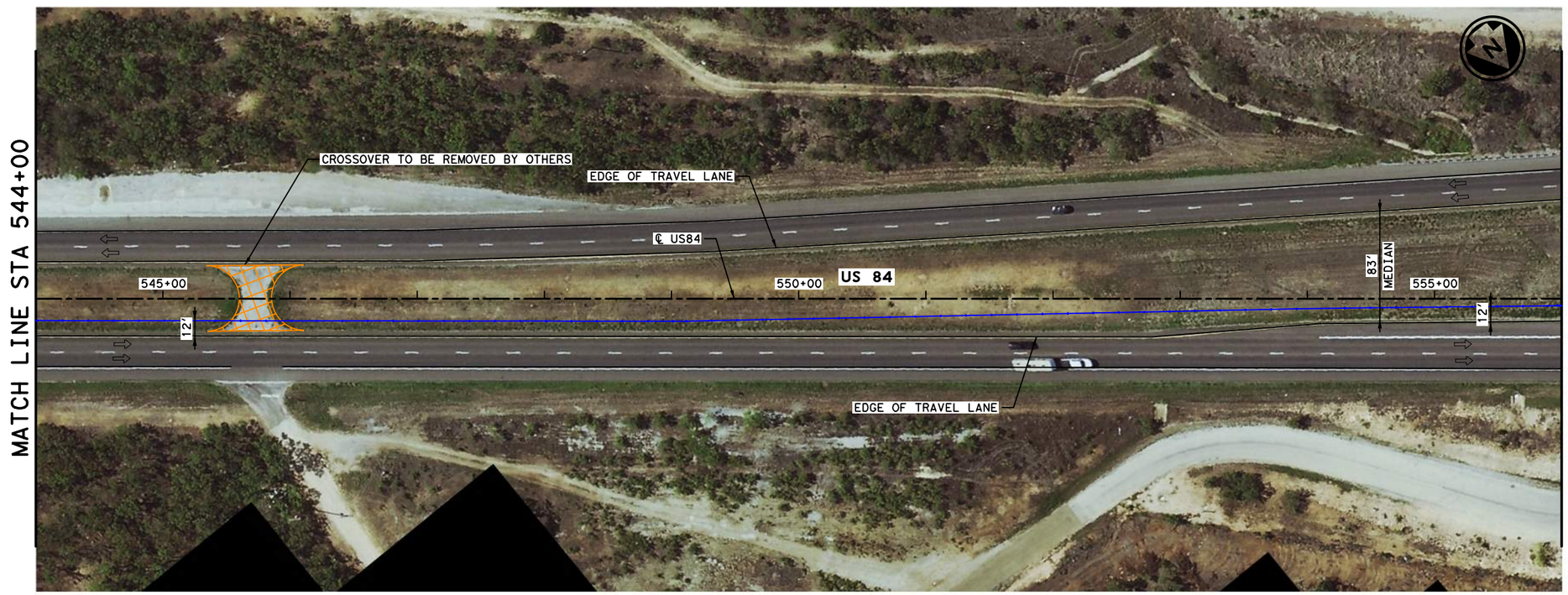
DRAWING DATE: 3/3/2023





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LEGEND:

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- CABLE BARRIER
- PROPOSED SSCB
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3/3/2023

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 88 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	127
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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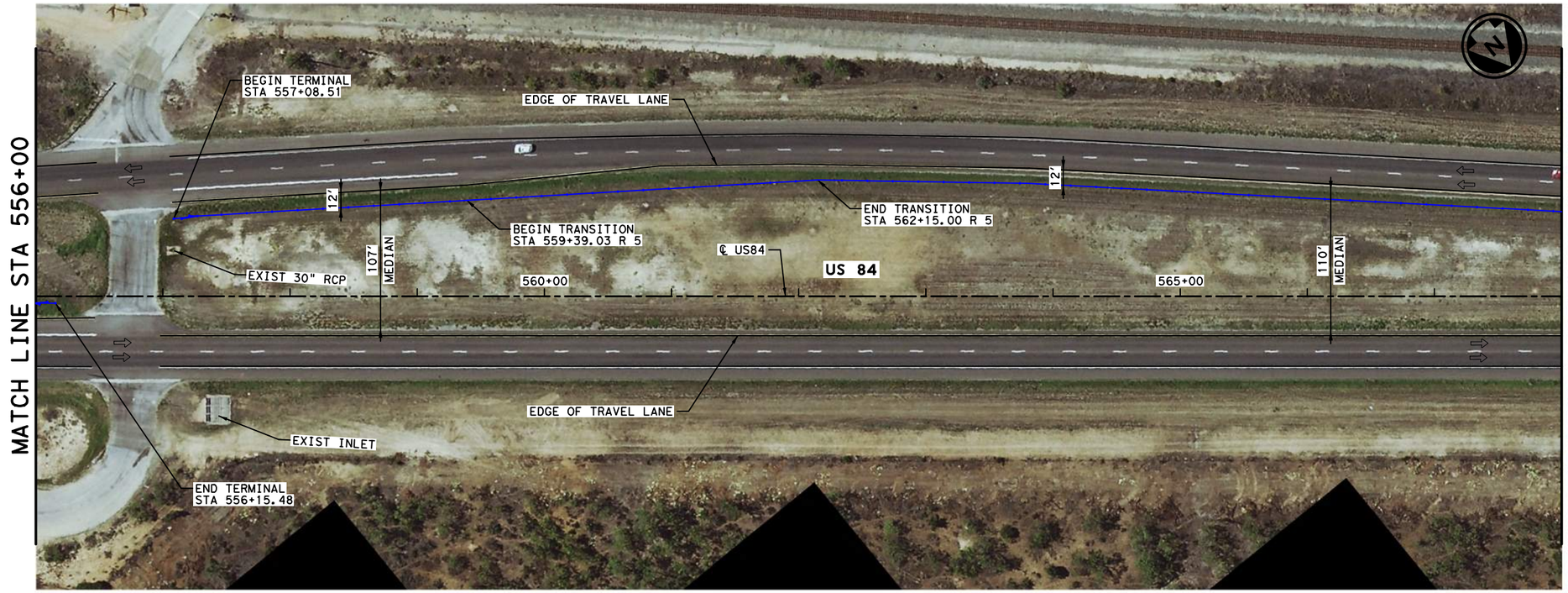
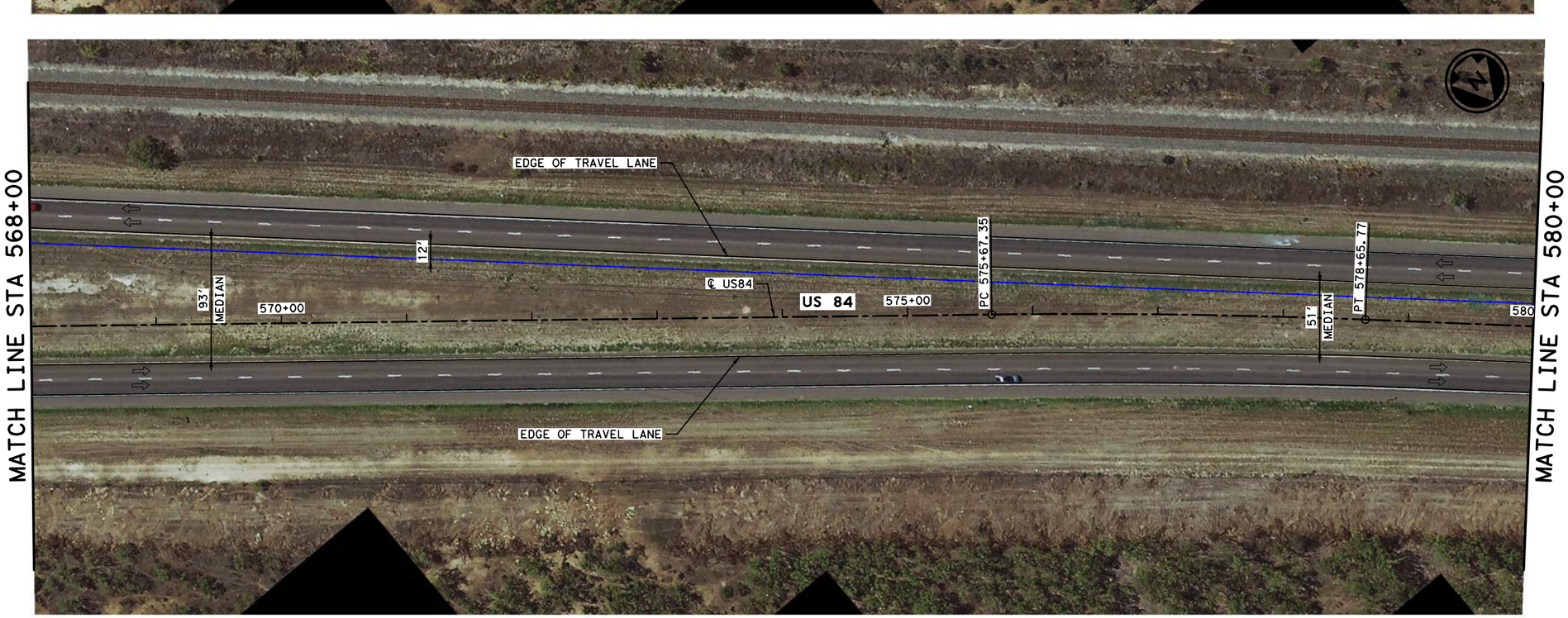
DRAWING DATE: 3/3/2023





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LEGEND:

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 89 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	128
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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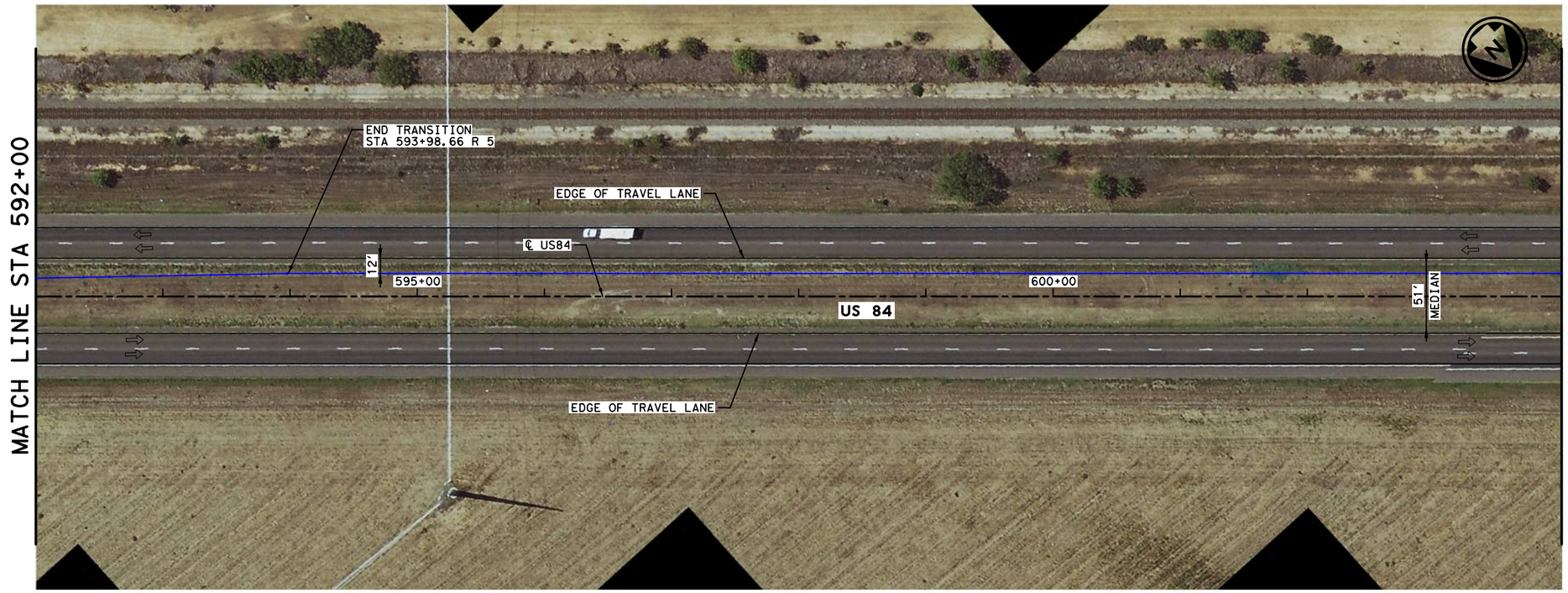
DRAWING DATE: 3/3/2023



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STATE OF TEXAS
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3/3/2023

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7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 90 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	129
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
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- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 91 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	130
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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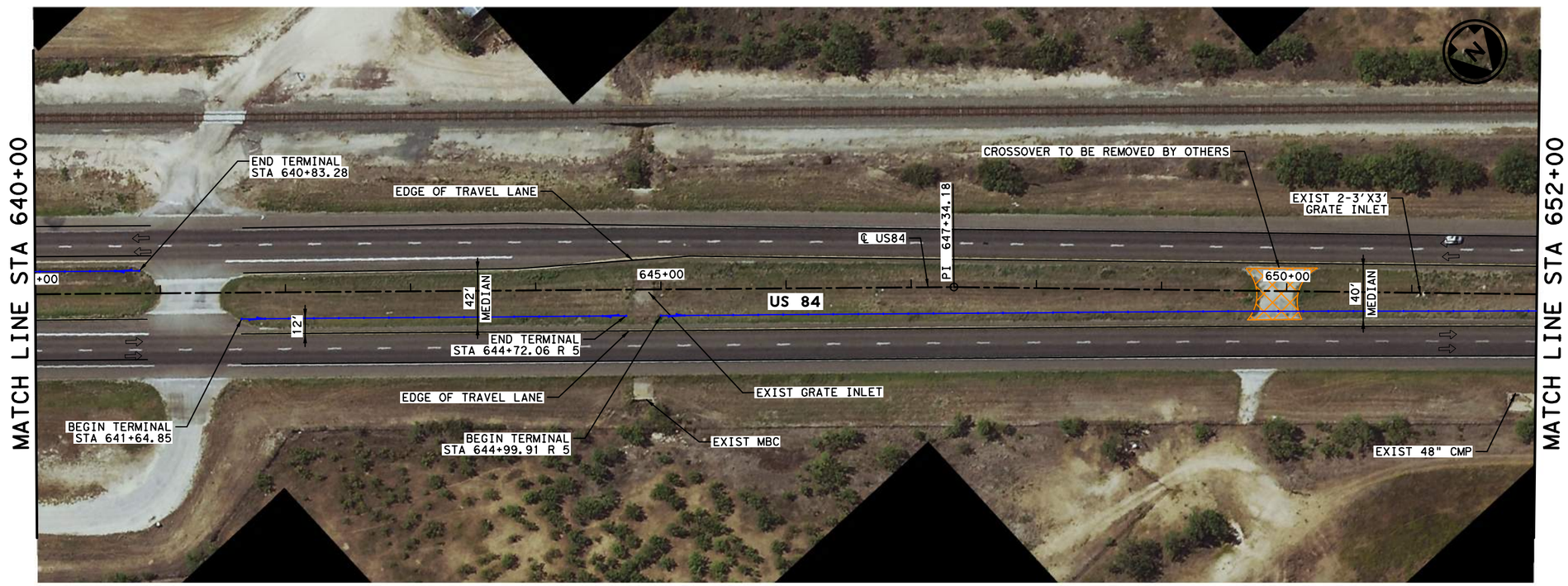
DRAWING DATE: 3/3/2023



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- PROPOSED SSCB
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- PROPOSED ATTENUATOR

STATE OF TEXAS
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3/3/2023

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 92 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	131
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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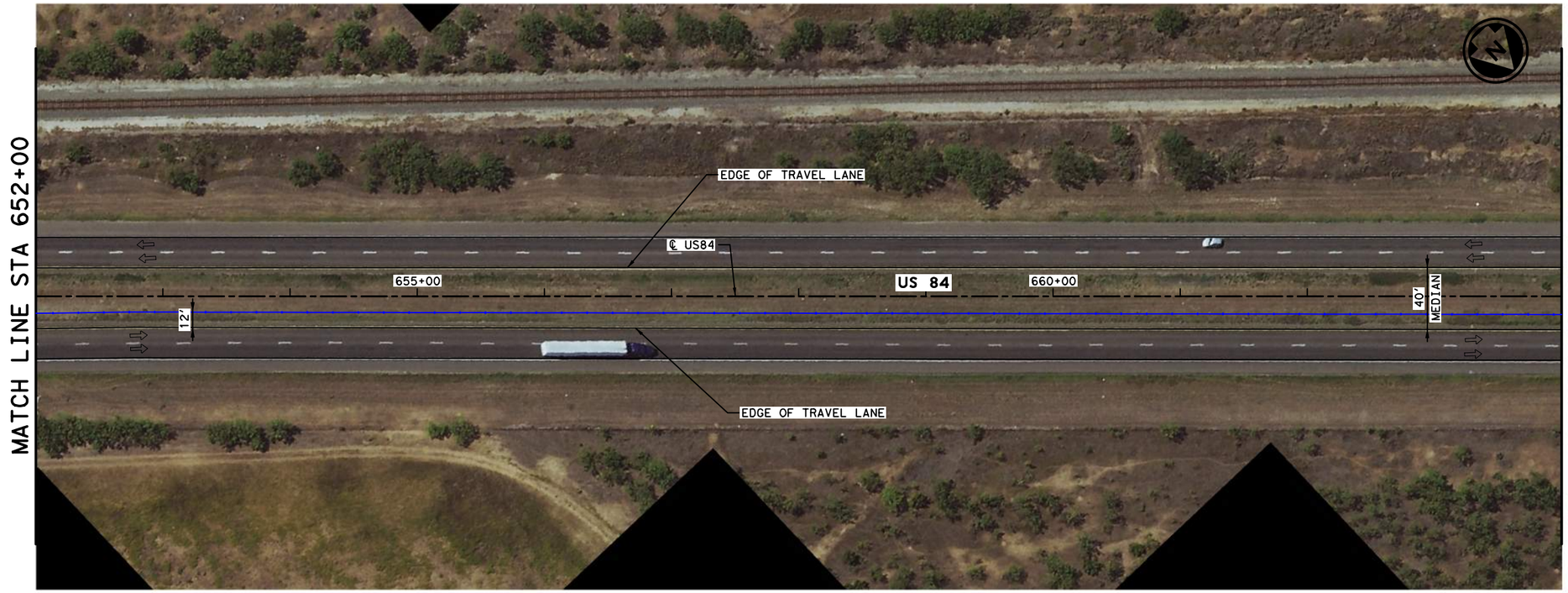
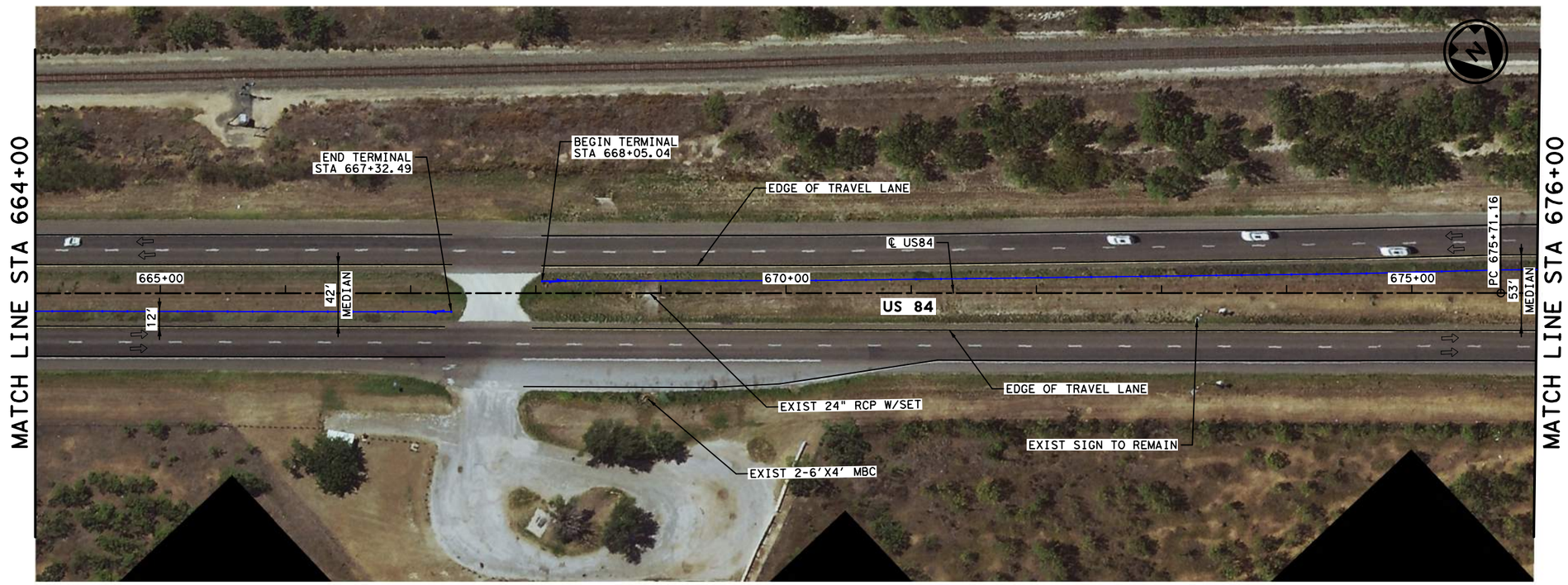
DRAWING DATE: 3/3/2023





0′ 50′ 100′

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- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
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3/3/2023

m.n. m

Texas Department of Transportation

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7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 93 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	132
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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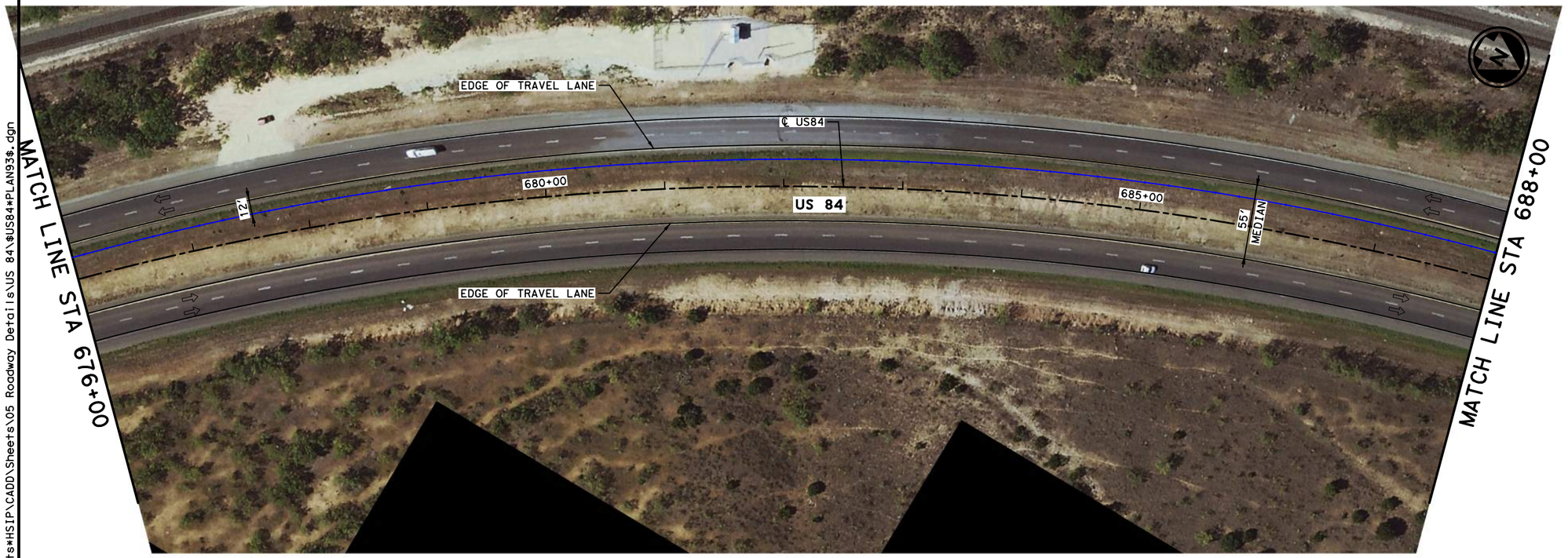
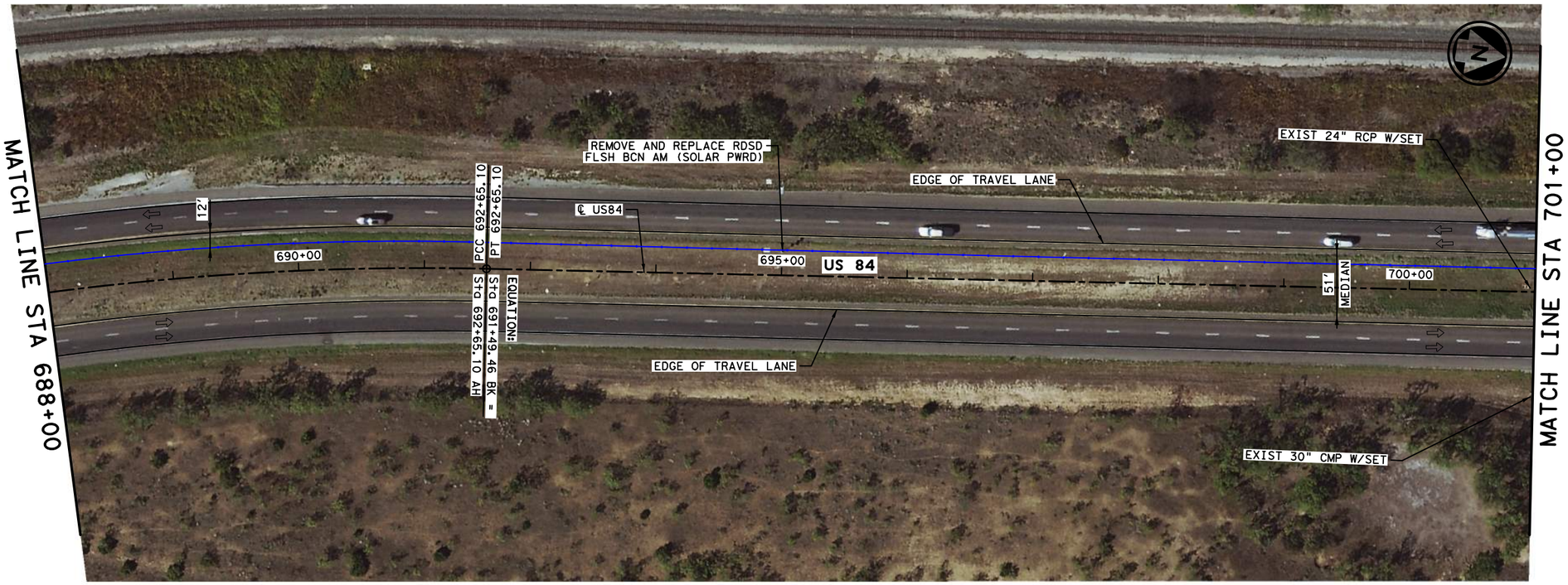
DRAWING DATE: 3/3/2023





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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 94 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	133
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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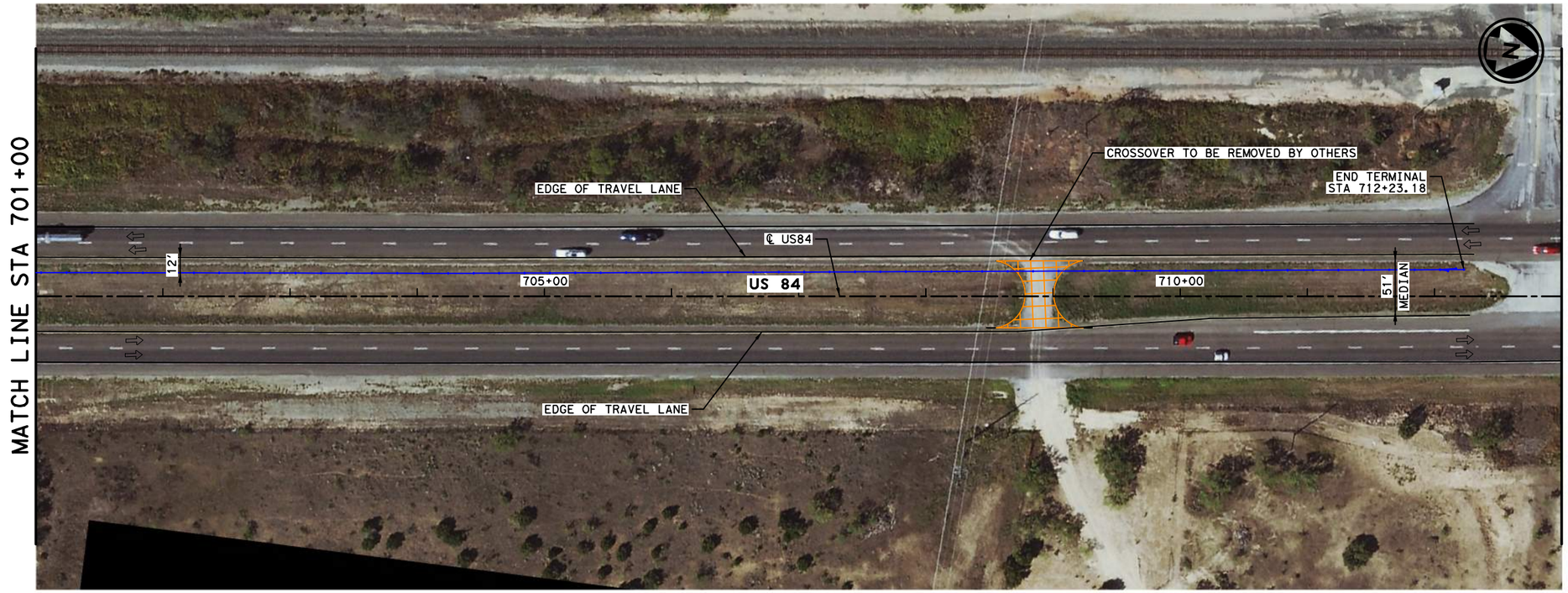
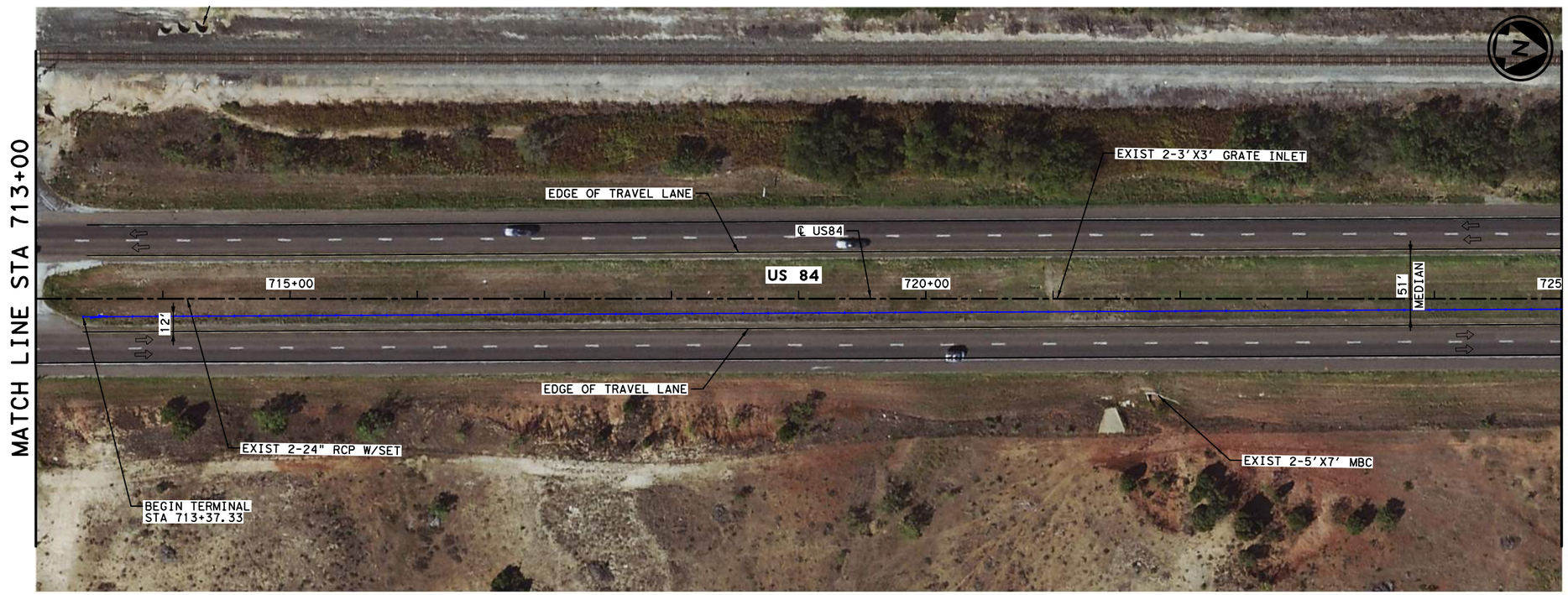
DRAWING DATE: 3/3/2023





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US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 95 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	134
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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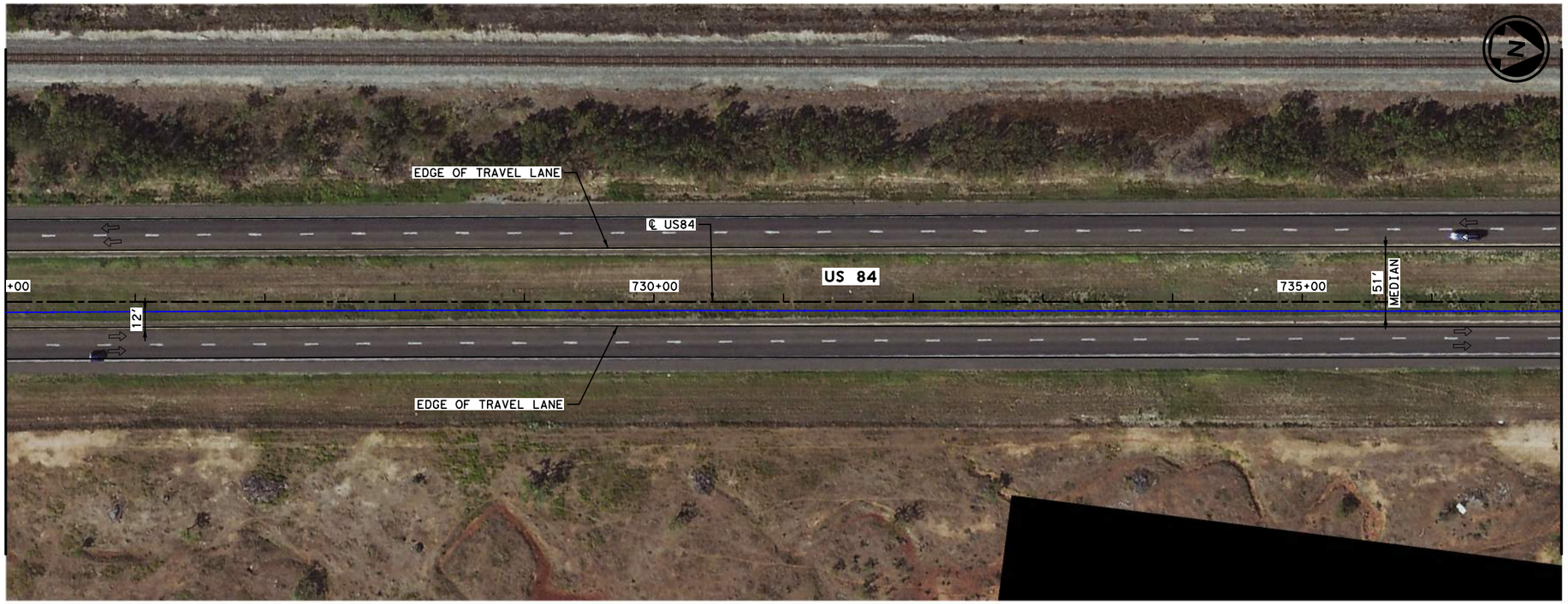
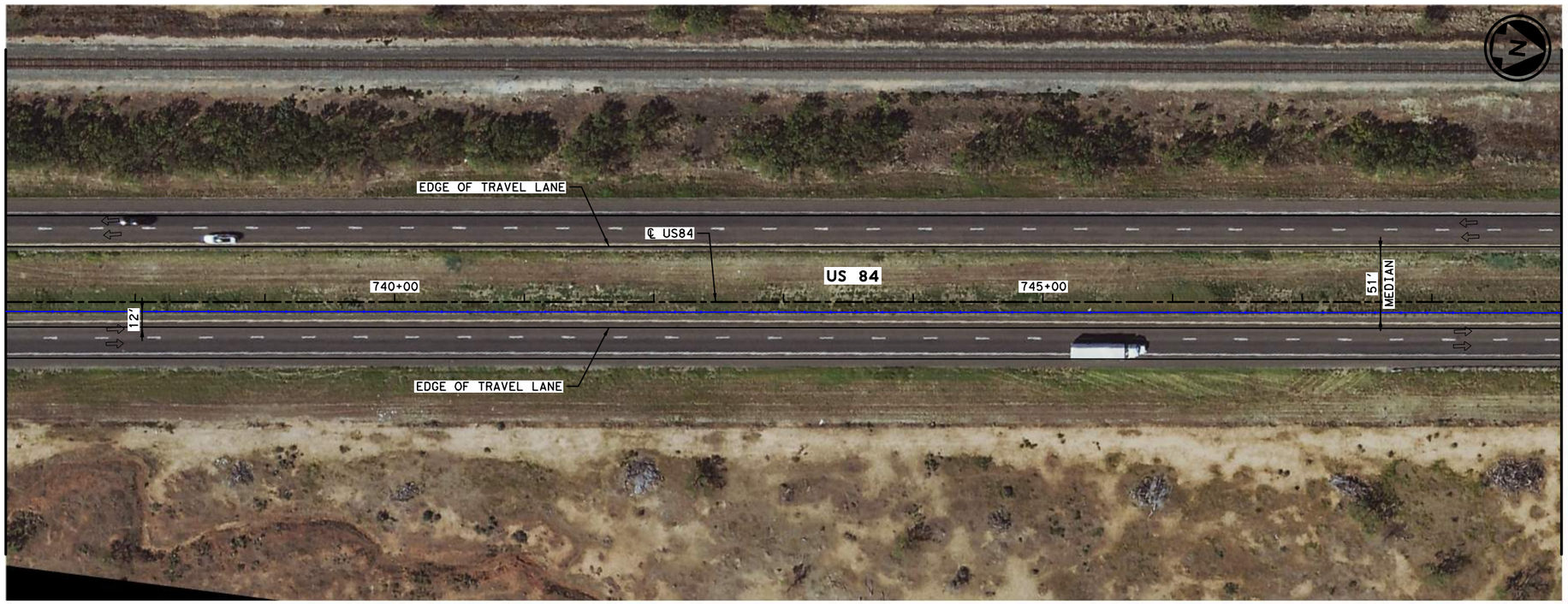
DRAWING DATE: 3/3/2023





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US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 96 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	135
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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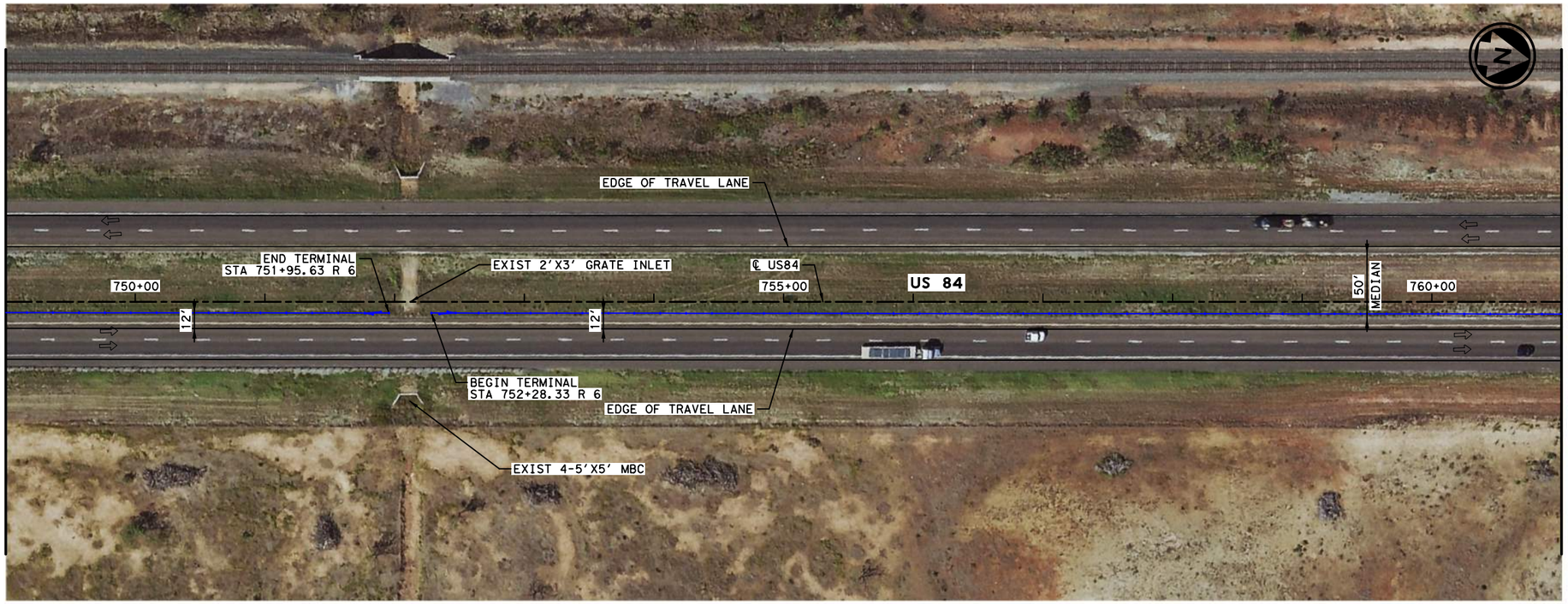
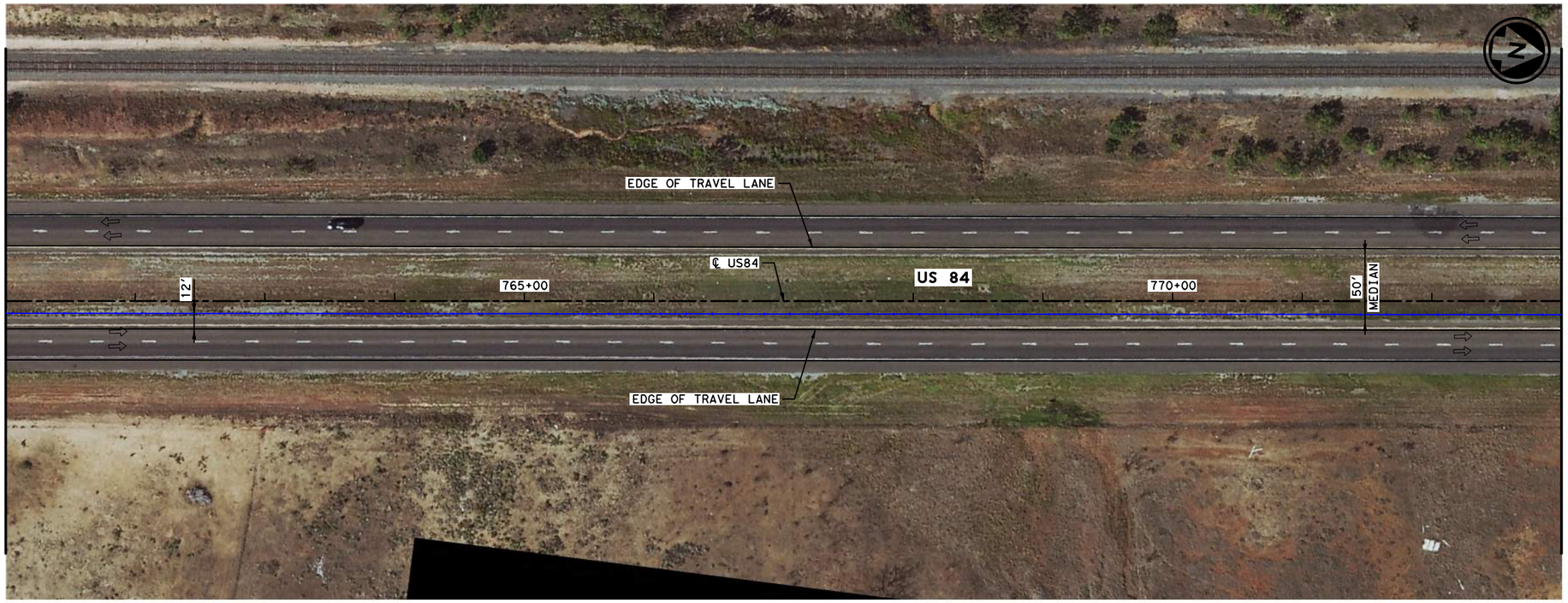
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

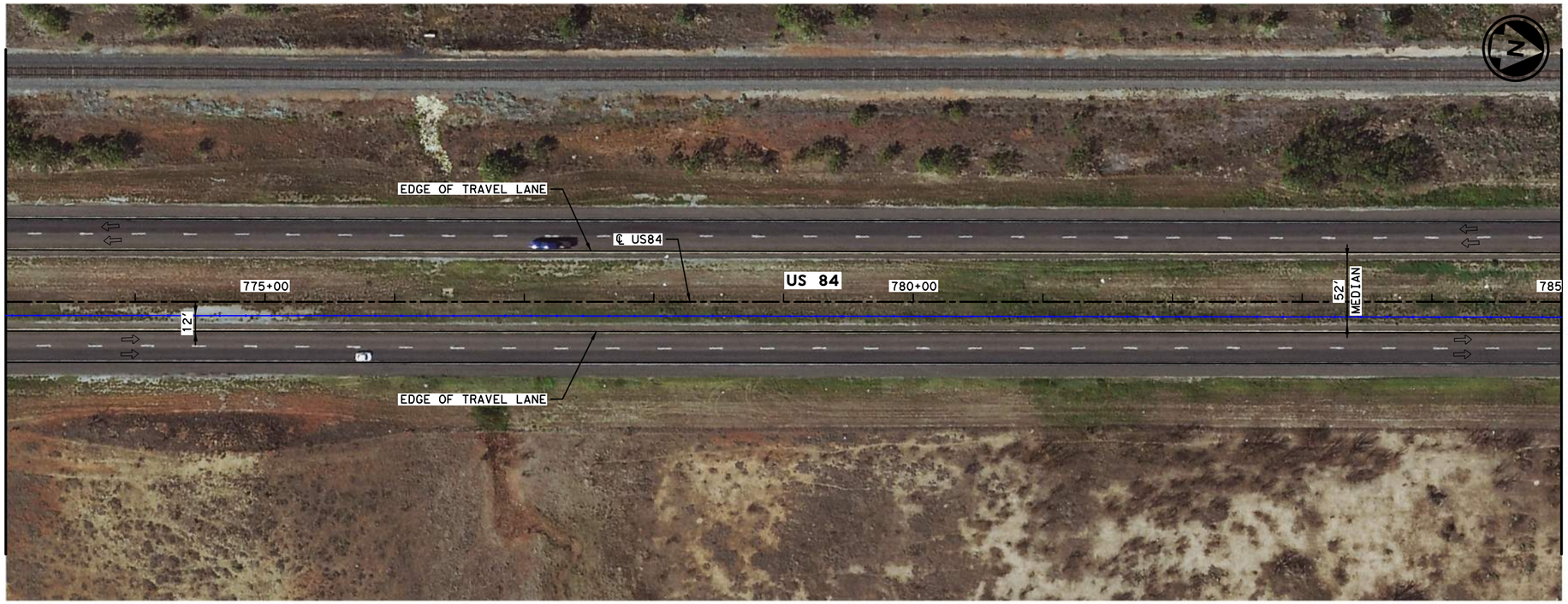
US 84

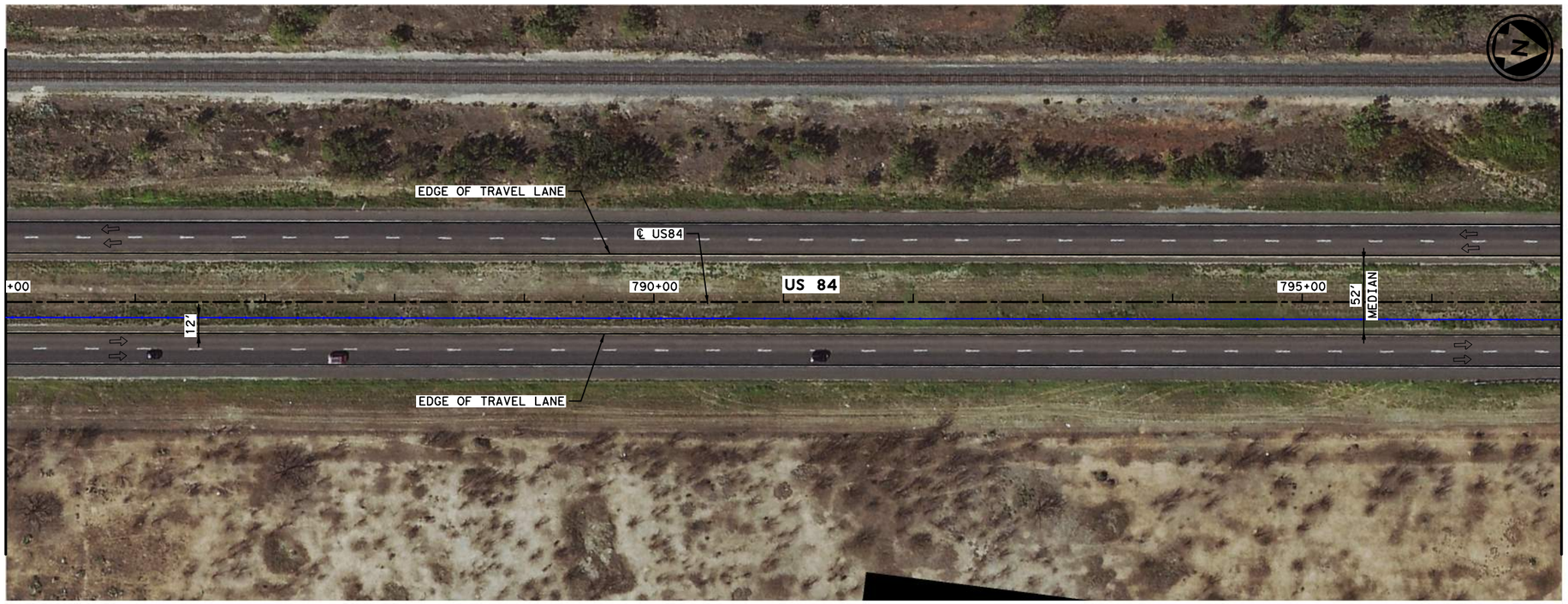
PLAN LAYOUT

CSJ 0053-07-043 SHEET 97 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	136
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 84\&US84*PLAN96&.dgn
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

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- CABLE BARRIER
- PROPOSED SSCB
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US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 98 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	137
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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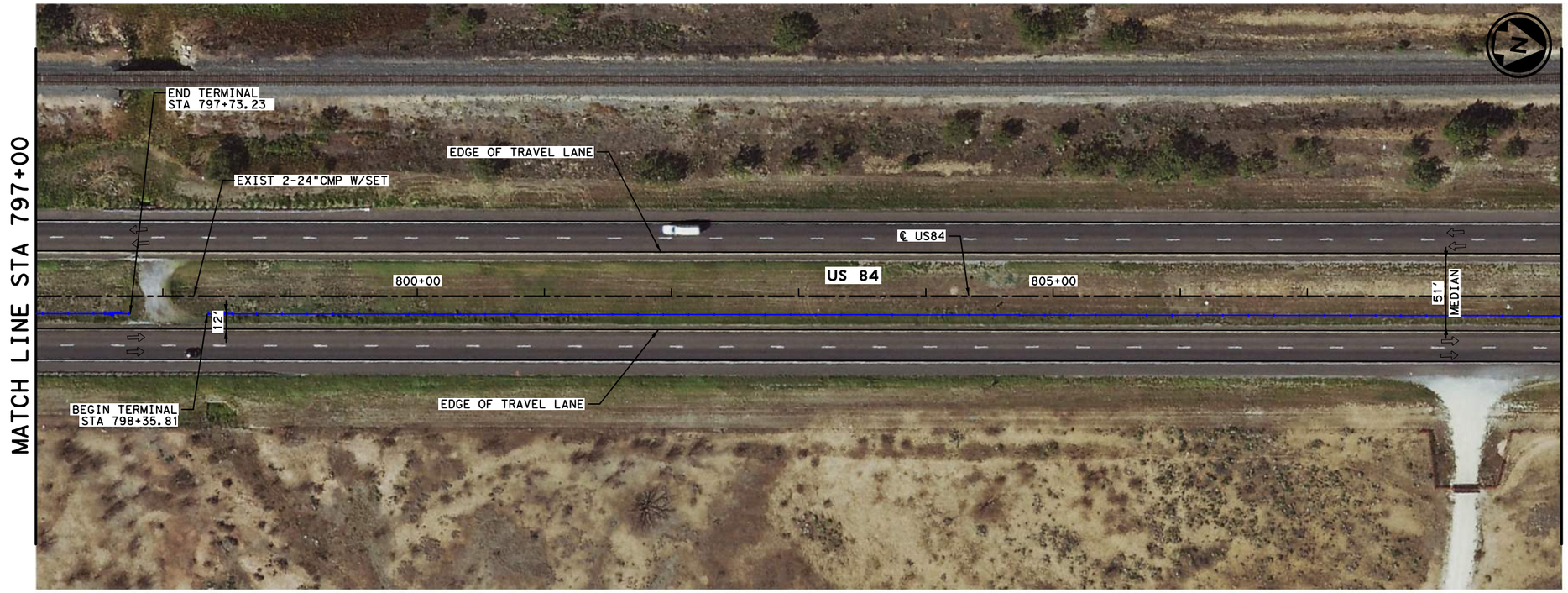
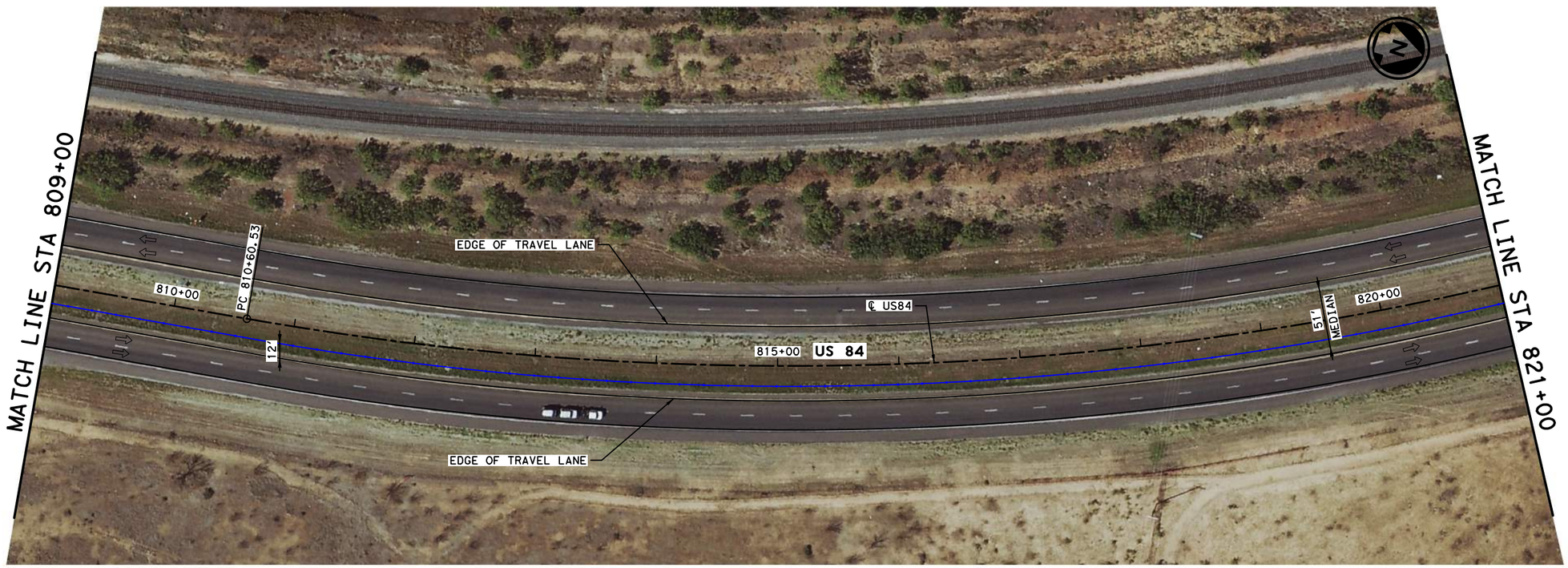
DRAWING DATE: 3/3/2023





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US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 99 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	138
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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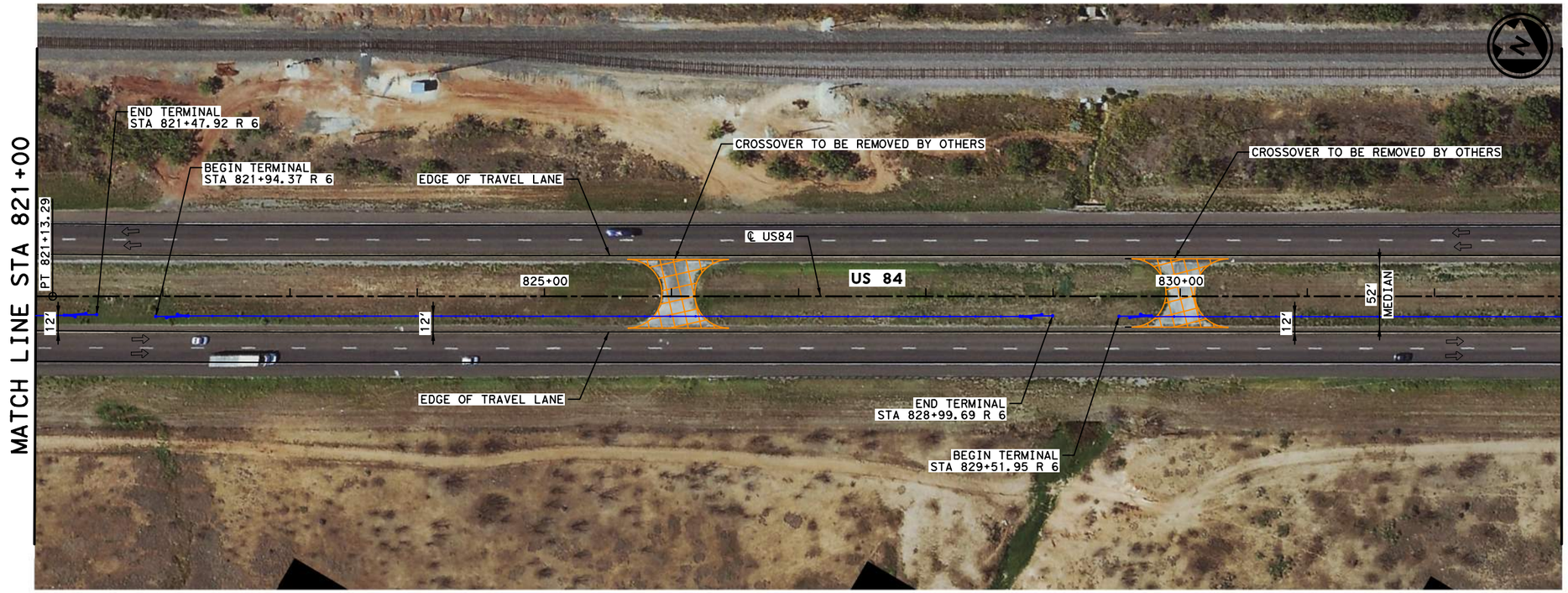
DRAWING DATE: 3/3/2023



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US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 100 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	139
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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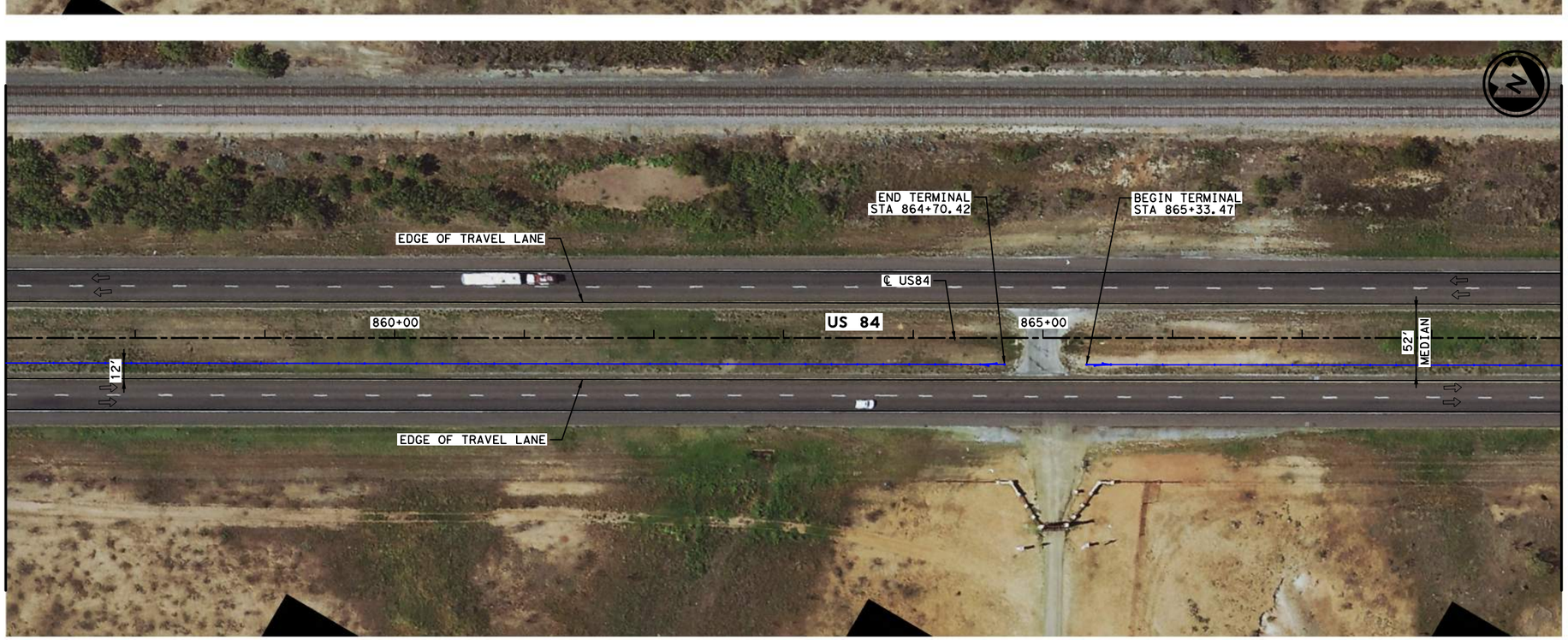
DRAWING DATE: 3/3/2023



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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 101 OF 108

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	140
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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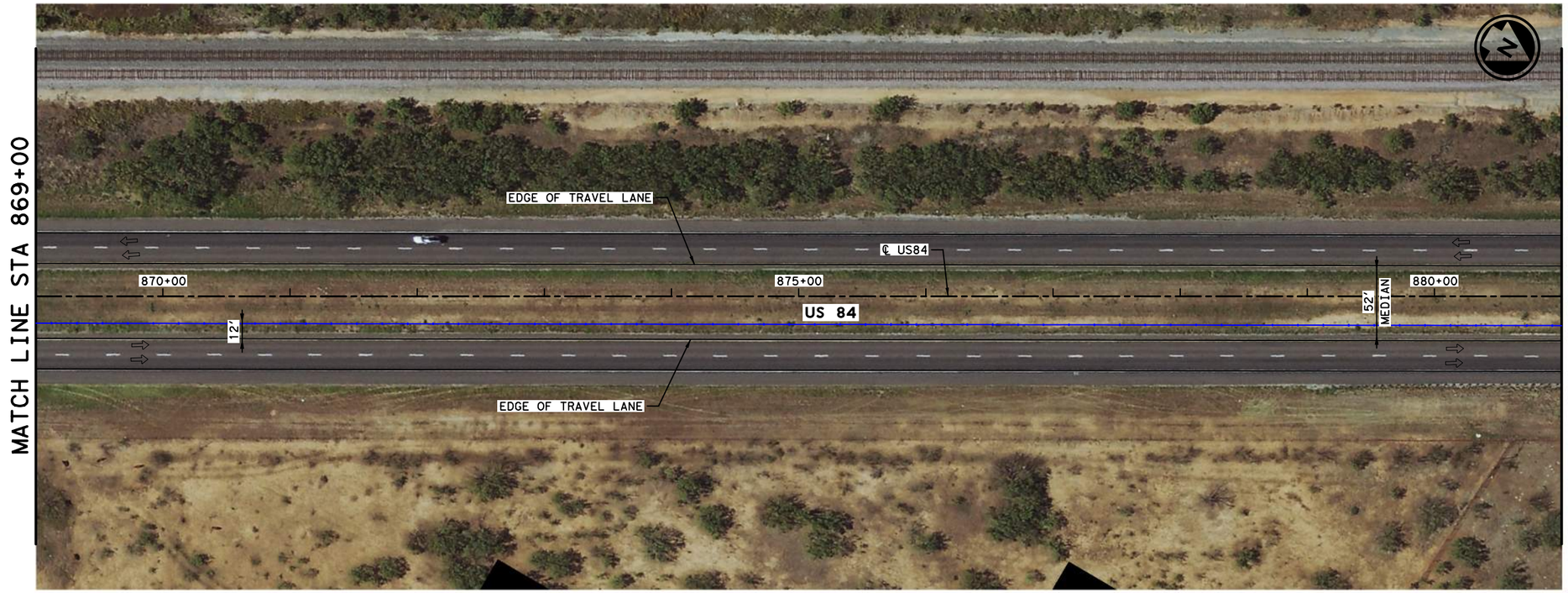
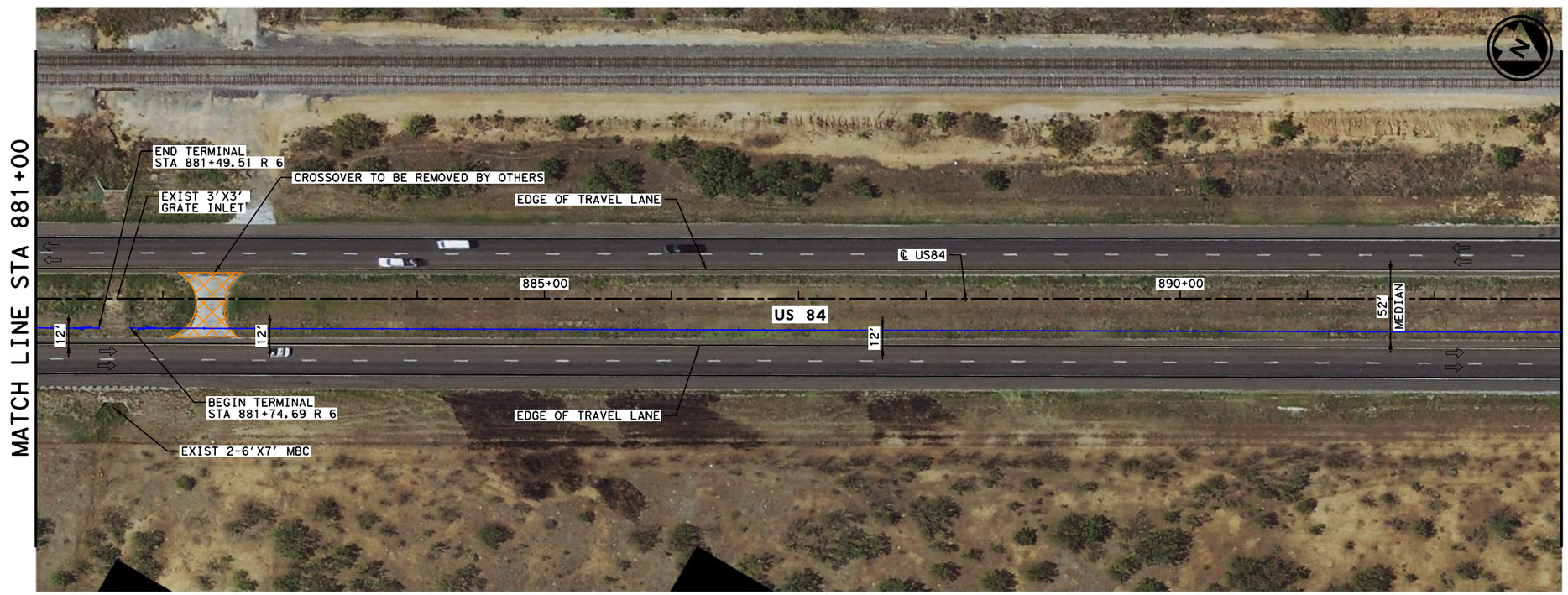
DRAWING DATE: 3/3/2023





0' 50' 100'

SCALE: 1"=100'

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TBPE REG. # F-11657

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PLAN LAYOUT

CSJ 0053-07-043 SHEET 102 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	141
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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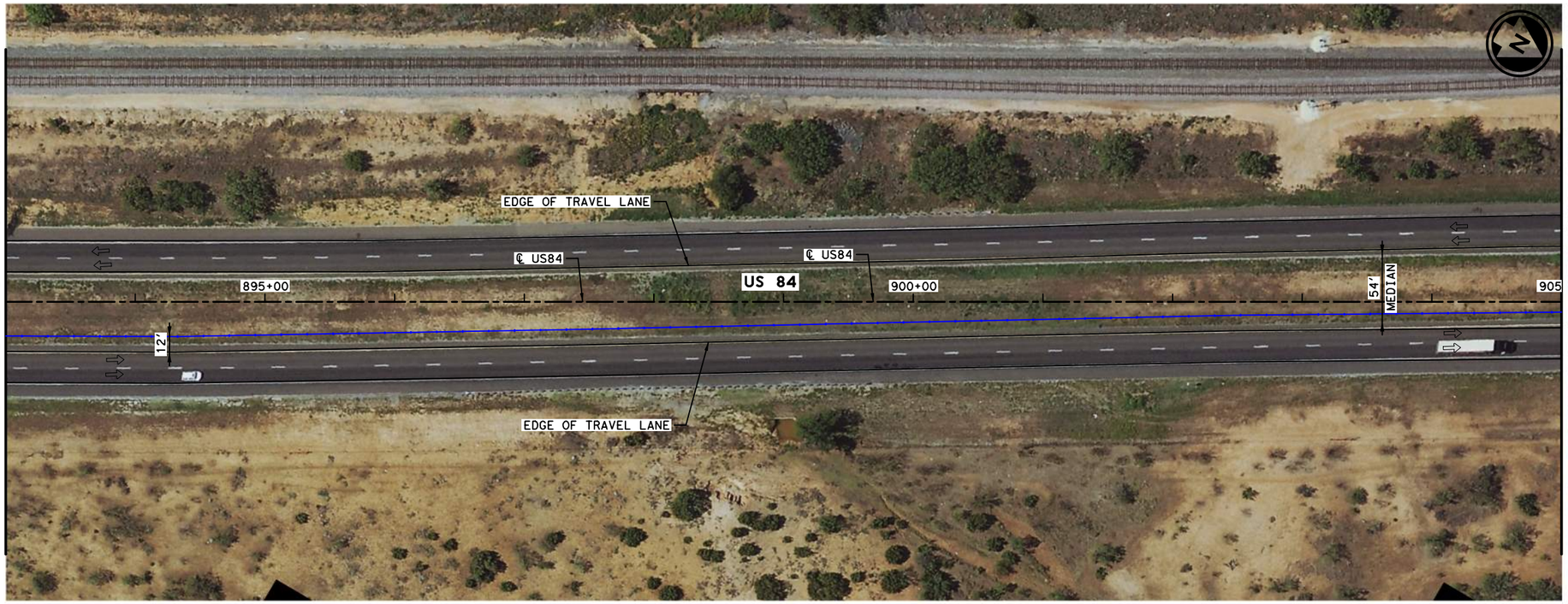
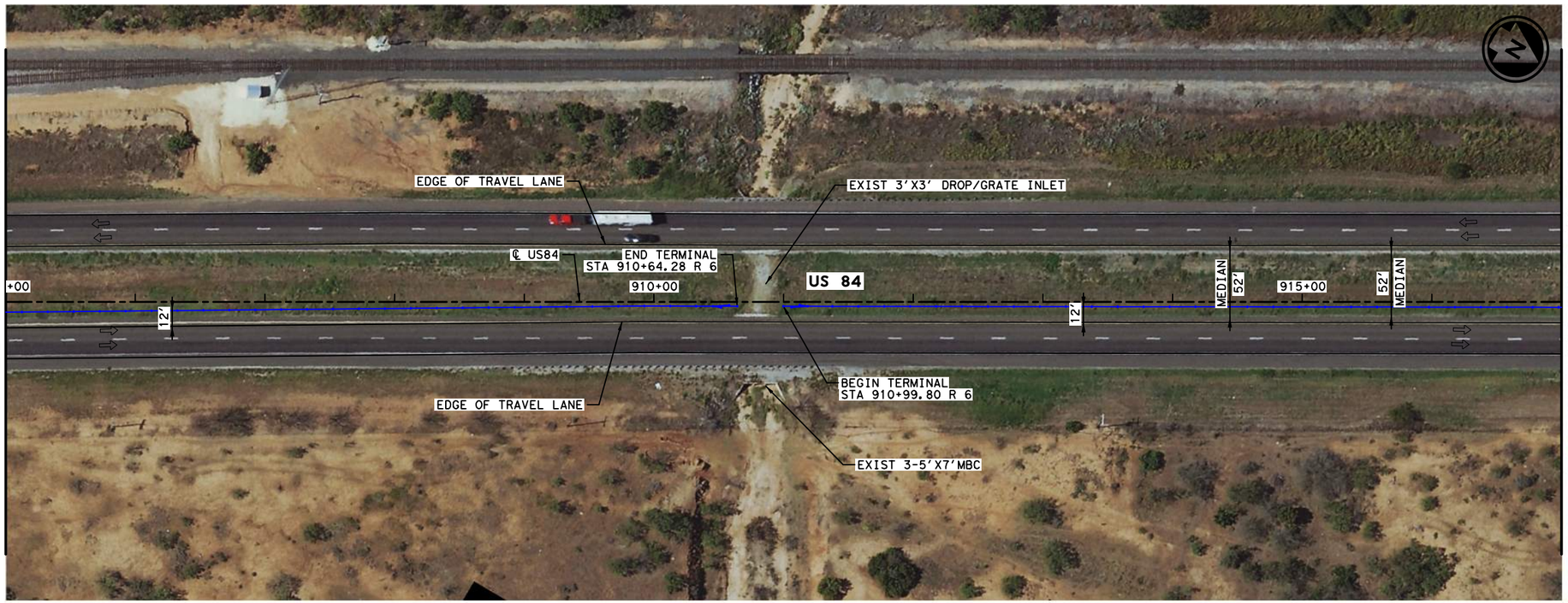
DRAWING DATE: 3/3/2023





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- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
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3/3/2023

m.n. m

Texas Department of Transportation

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7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 103 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	142
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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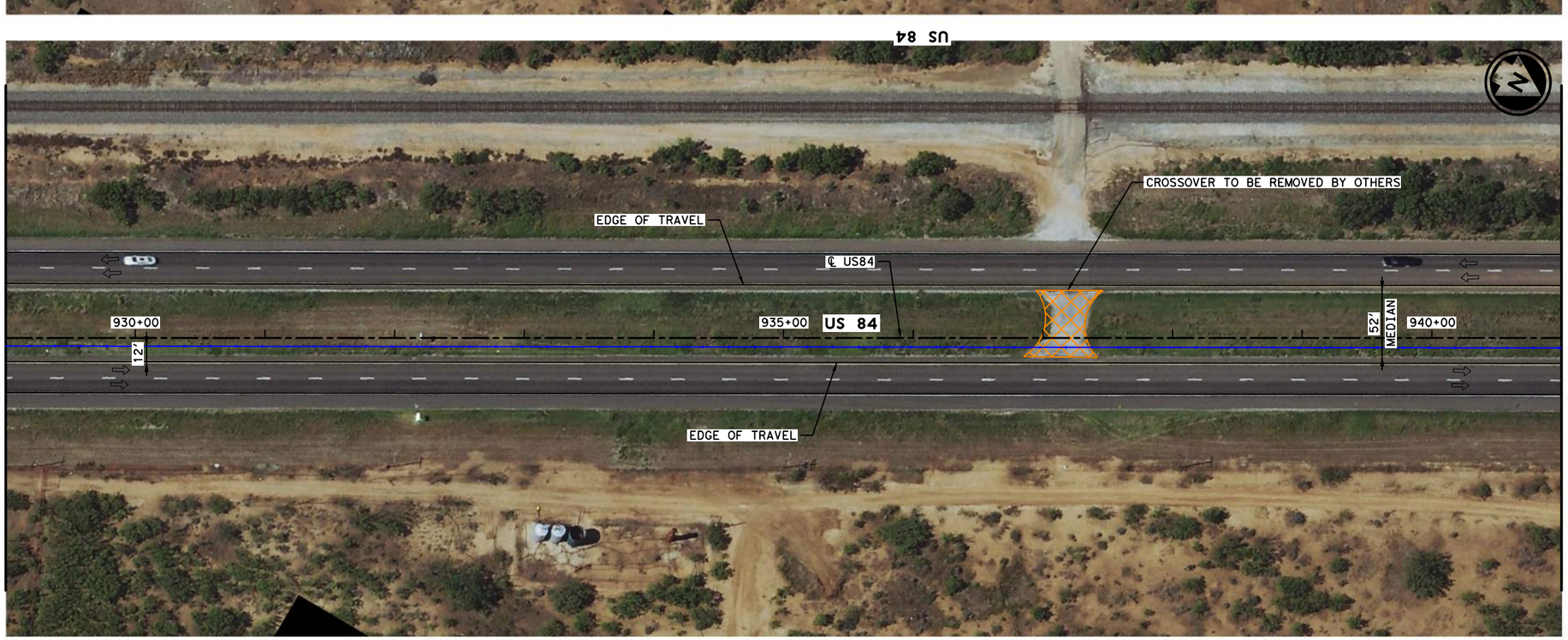
DRAWING DATE: 3/3/2023



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3/3/2023

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US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 104 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	143
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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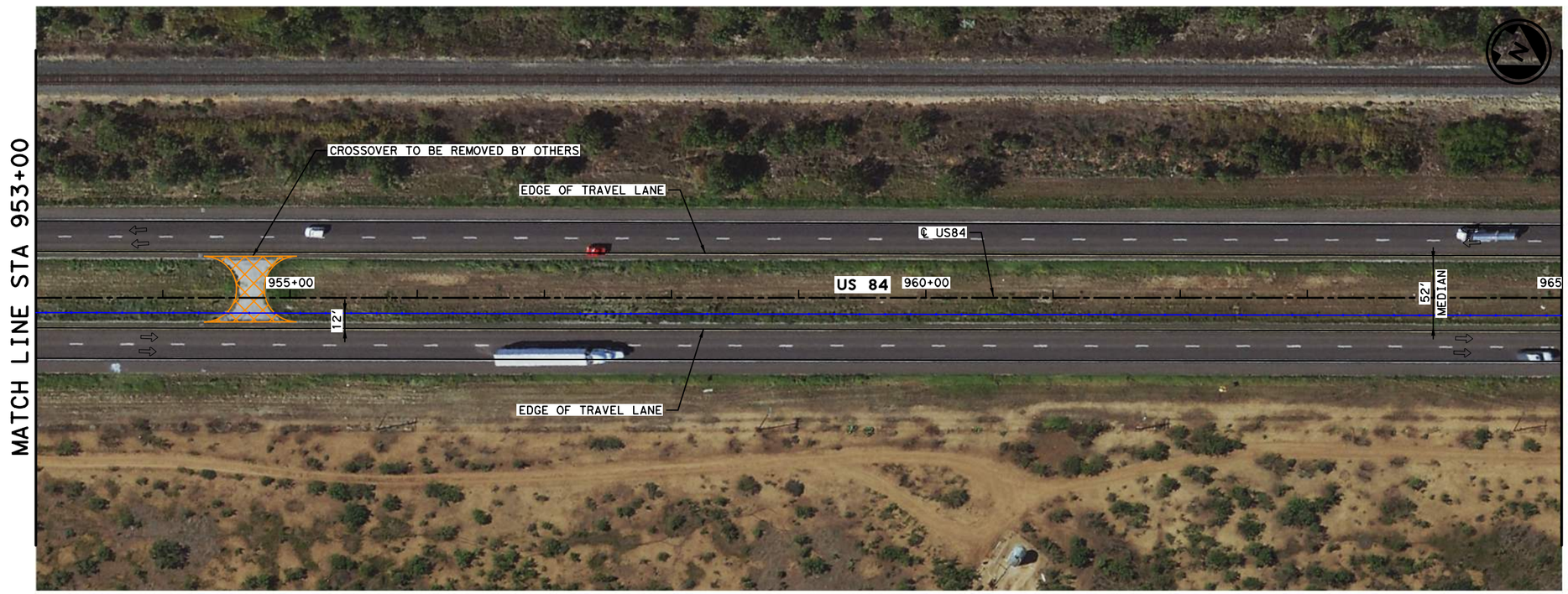

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 105 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	144
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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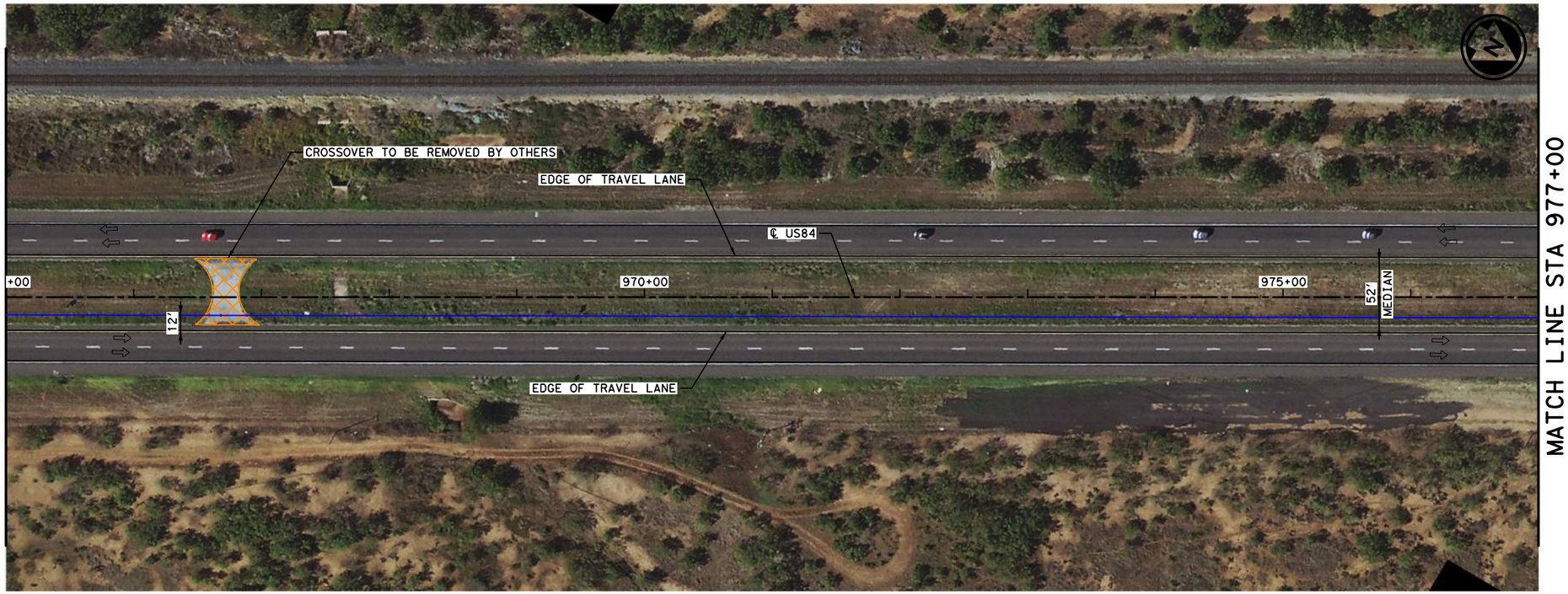

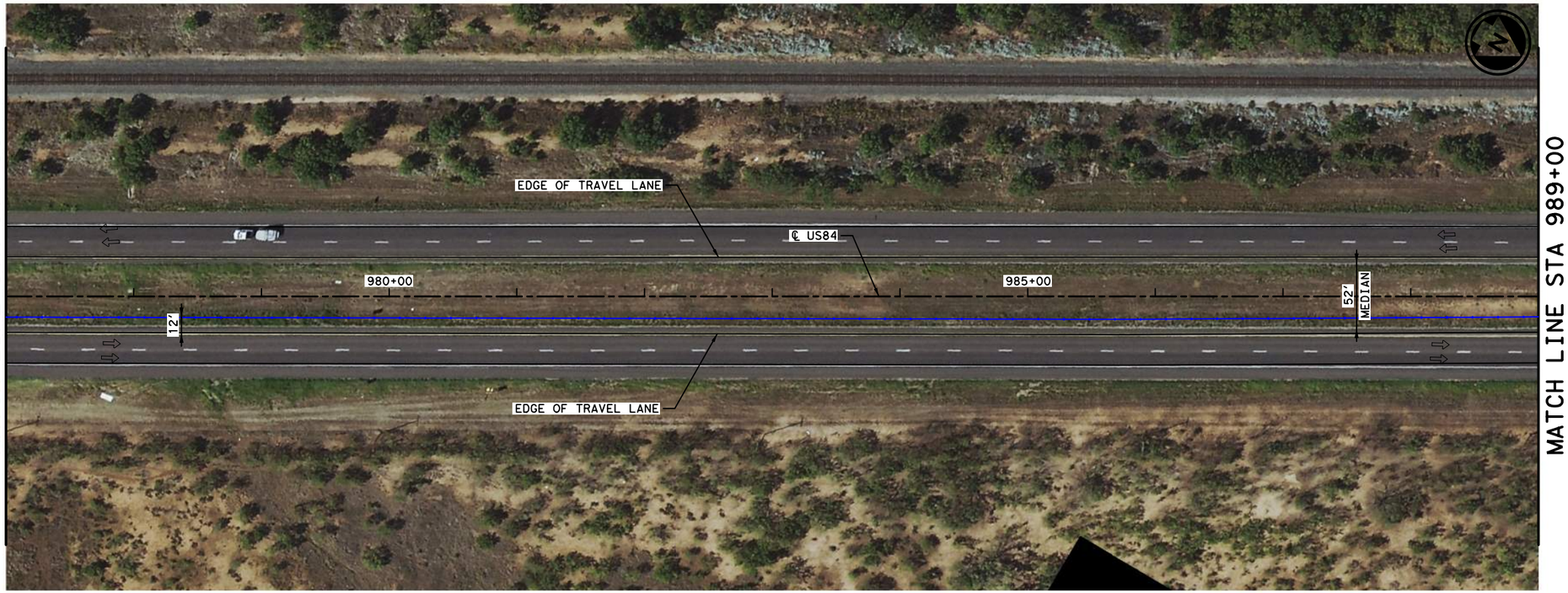

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TBPE REG. # F-11657

US 84

PLAN LAYOUT

CSJ 0053-07-043 SHEET 106 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	145
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

DRAWING DATE: 3/3/2023
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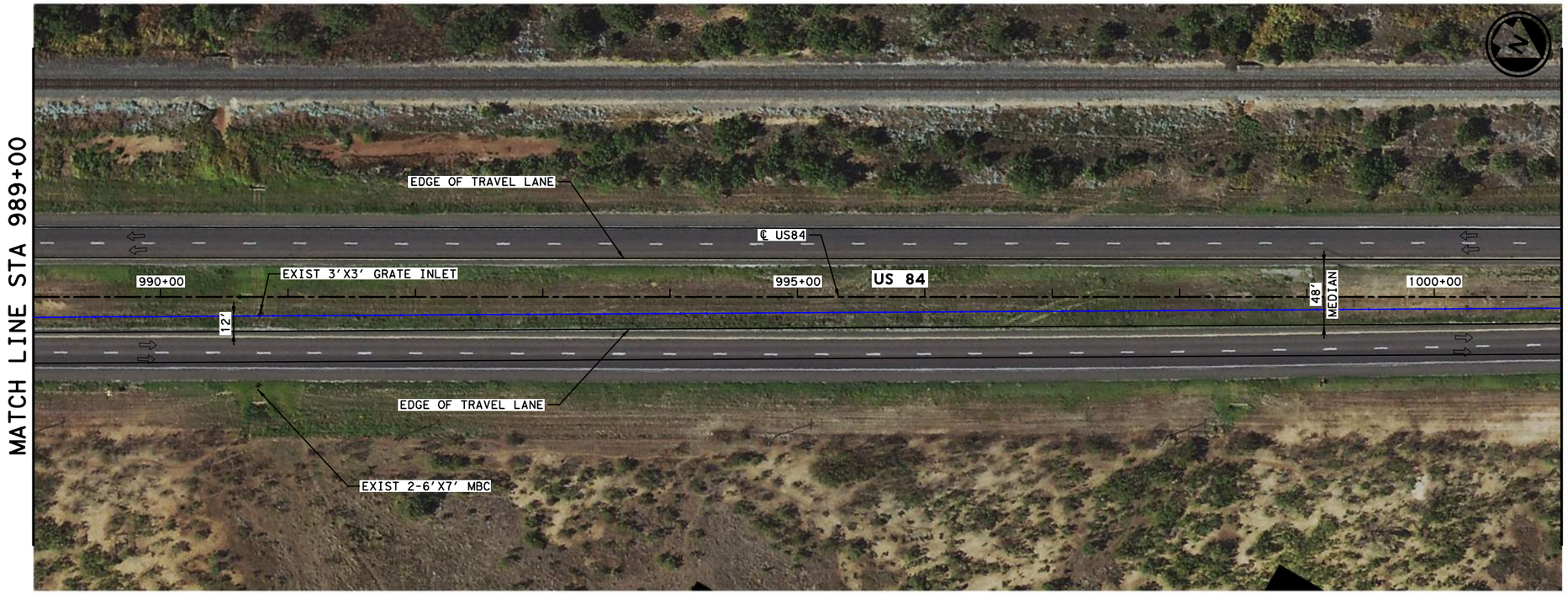

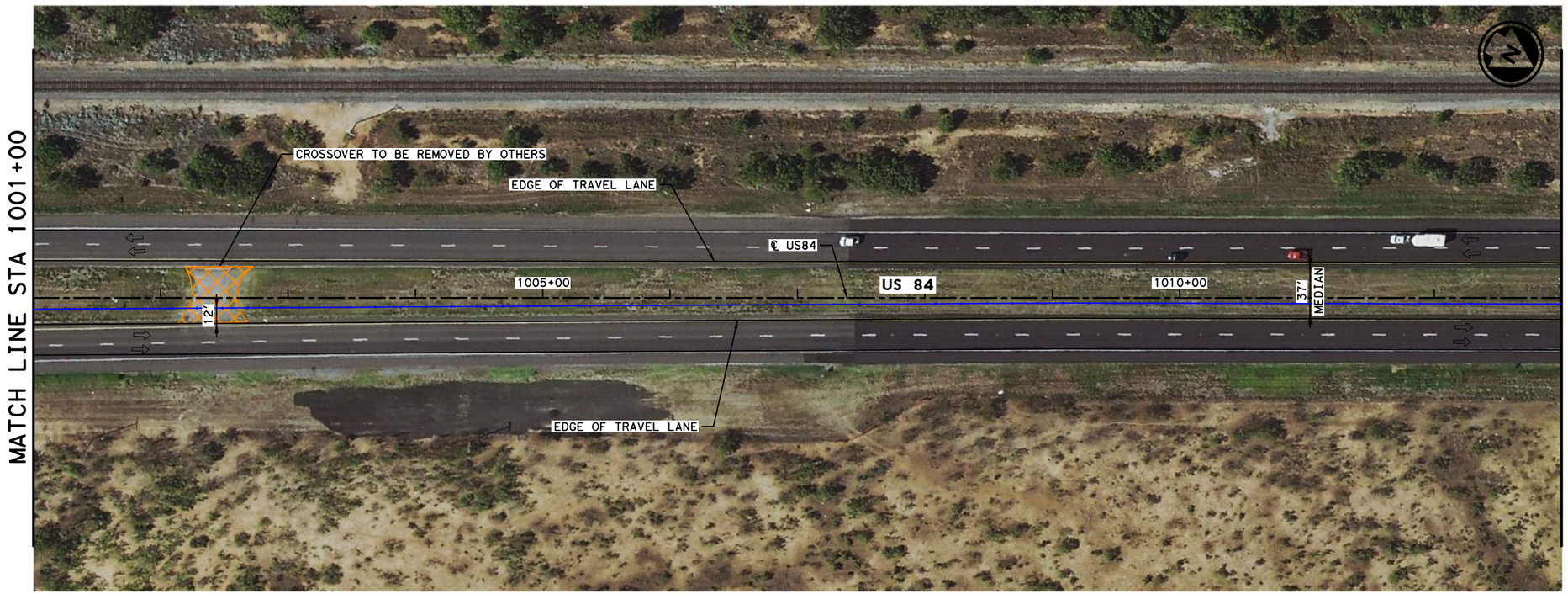

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PLAN LAYOUT

CSJ 0053-07-043 SHEET 107 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	146
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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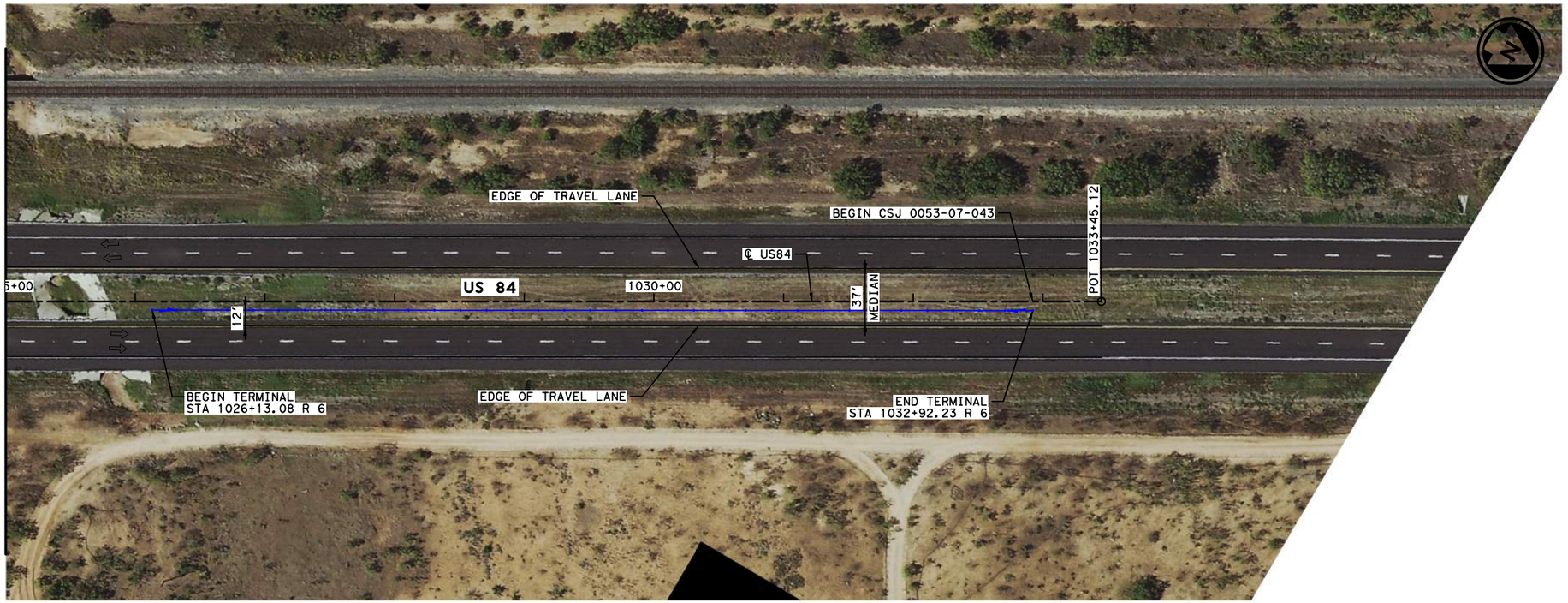
DRAWING DATE: 3/3/2023



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PLAN LAYOUT

CSJ 0053-07-043 SHEET 108 OF 108

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	147
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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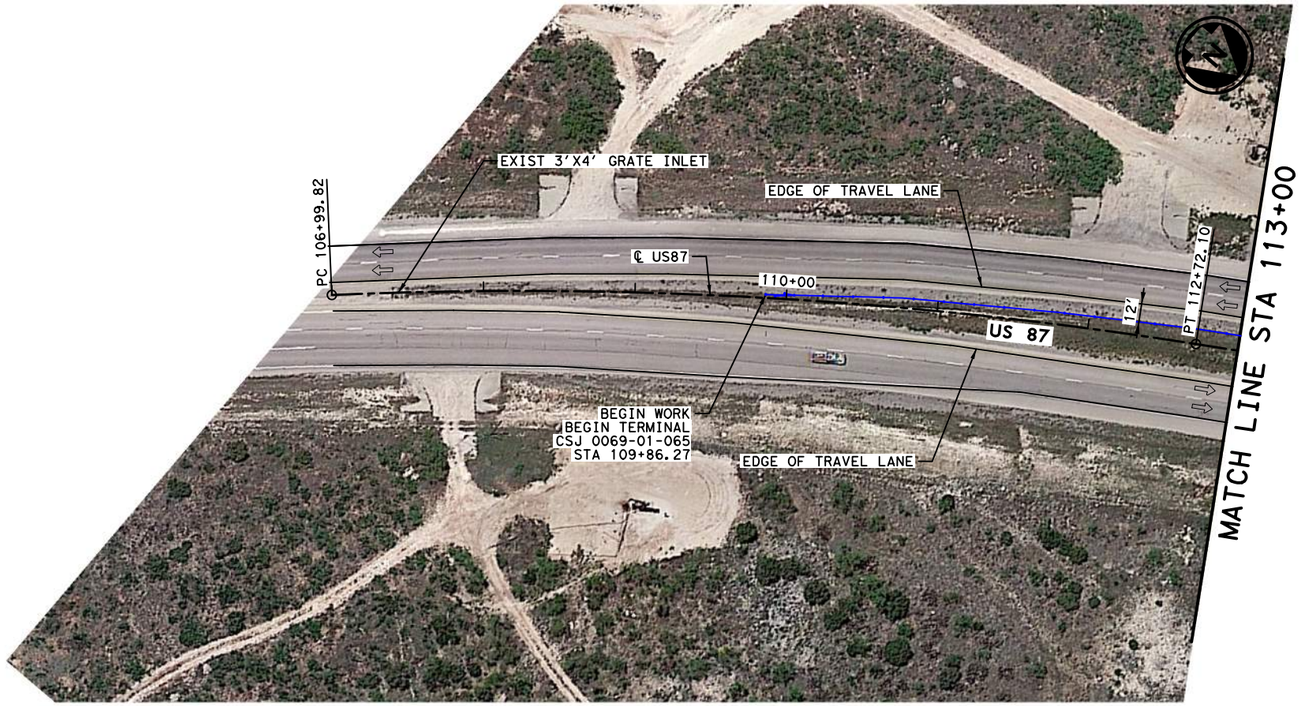
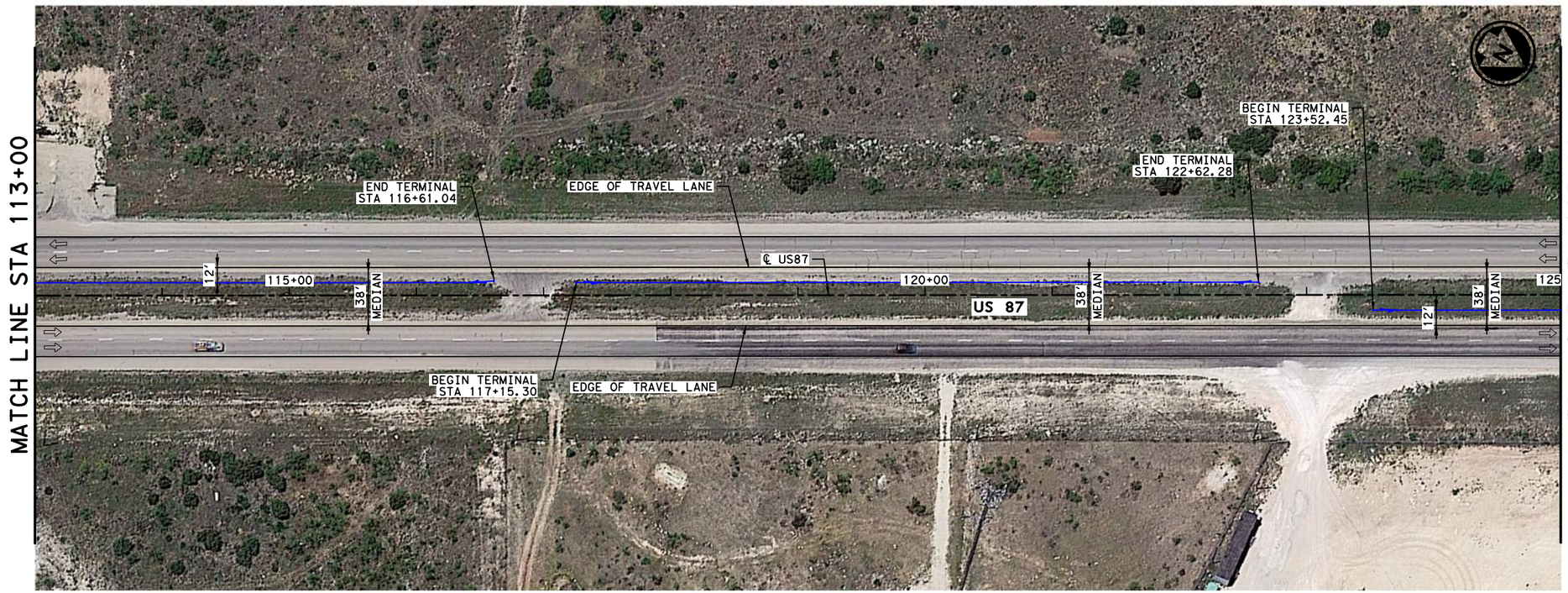
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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2. CONTRACTOR SHALL FIELD VERIFY ANY EXISTING UNDERGROUND STRUCTURES, UTILITIES, AND THEIR EXISTING DEPTHS BEFORE COMMENCING WORK.
3. REFER TO BARRIER TRANSITION SHEETS AND MISCELLANEOUS DETAIL FOR MORE INFORMATION.

LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

m.n. m

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 87

PLAN LAYOUT

CSJ 0069-01-065 SHEET 1 OF 13

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	148
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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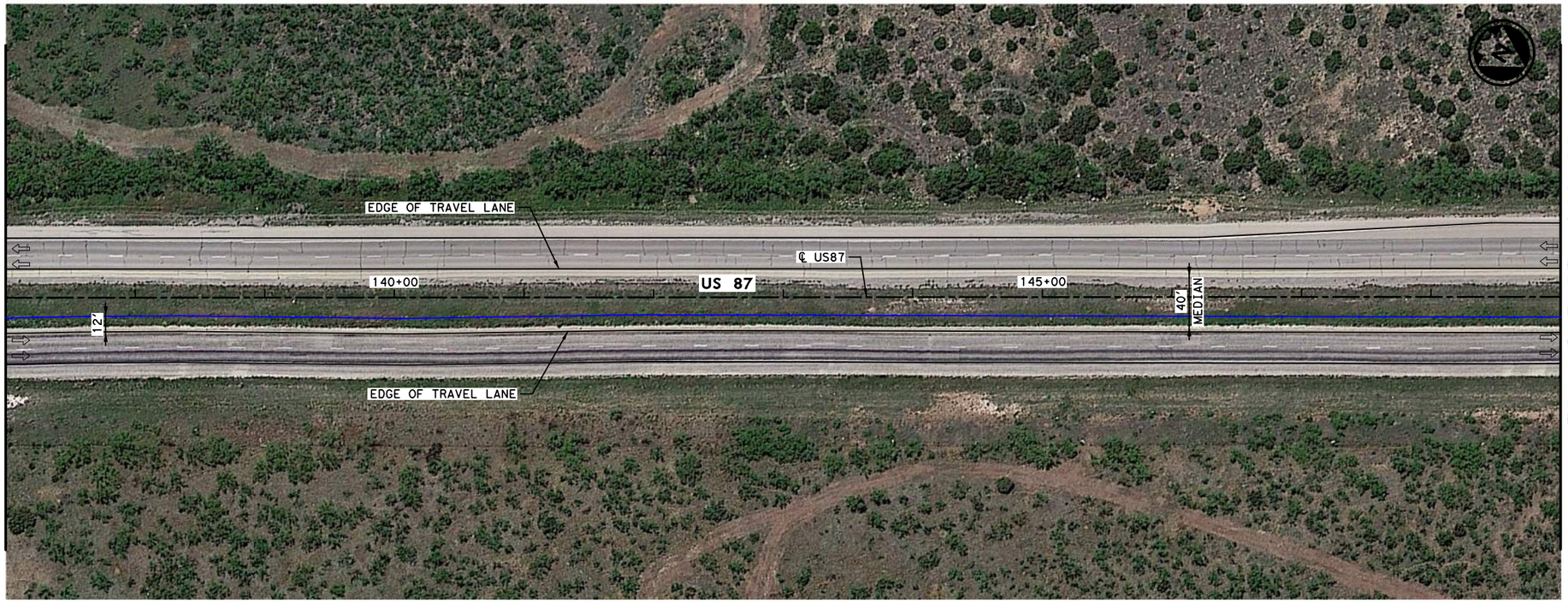
DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

m.n. m

Texas Department of Transportation

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

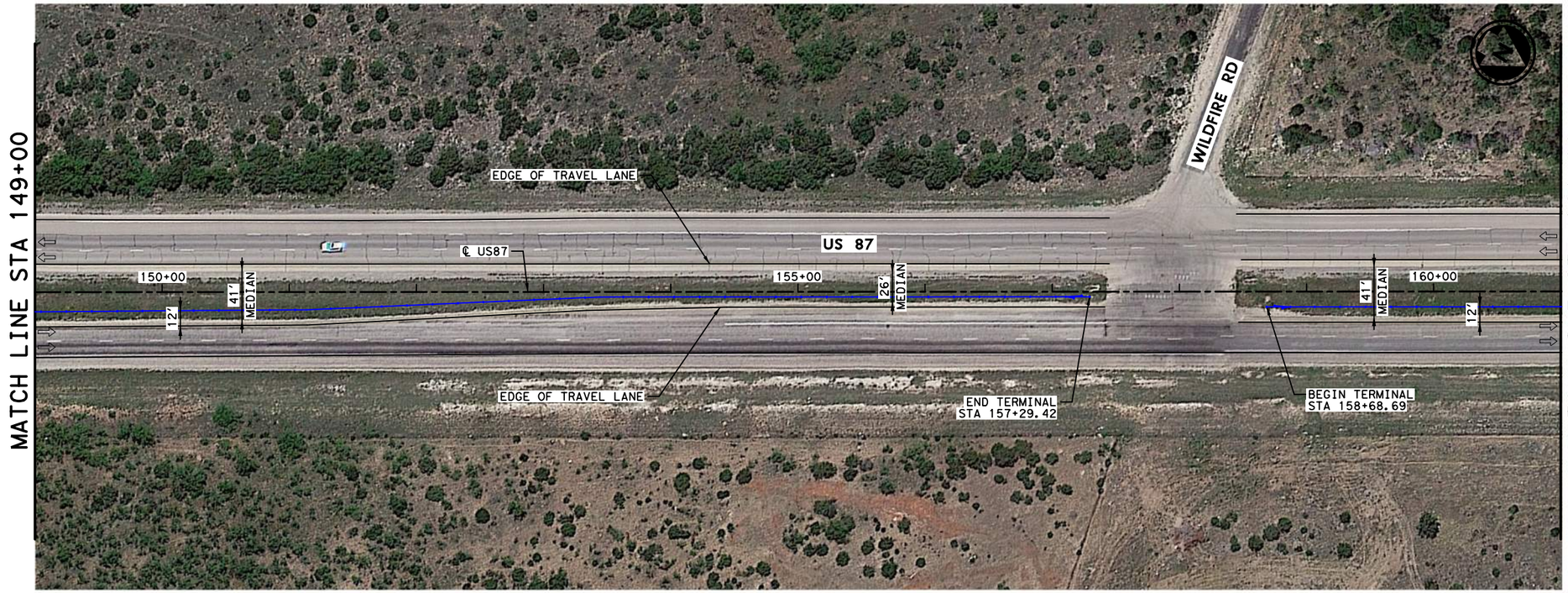
US 87

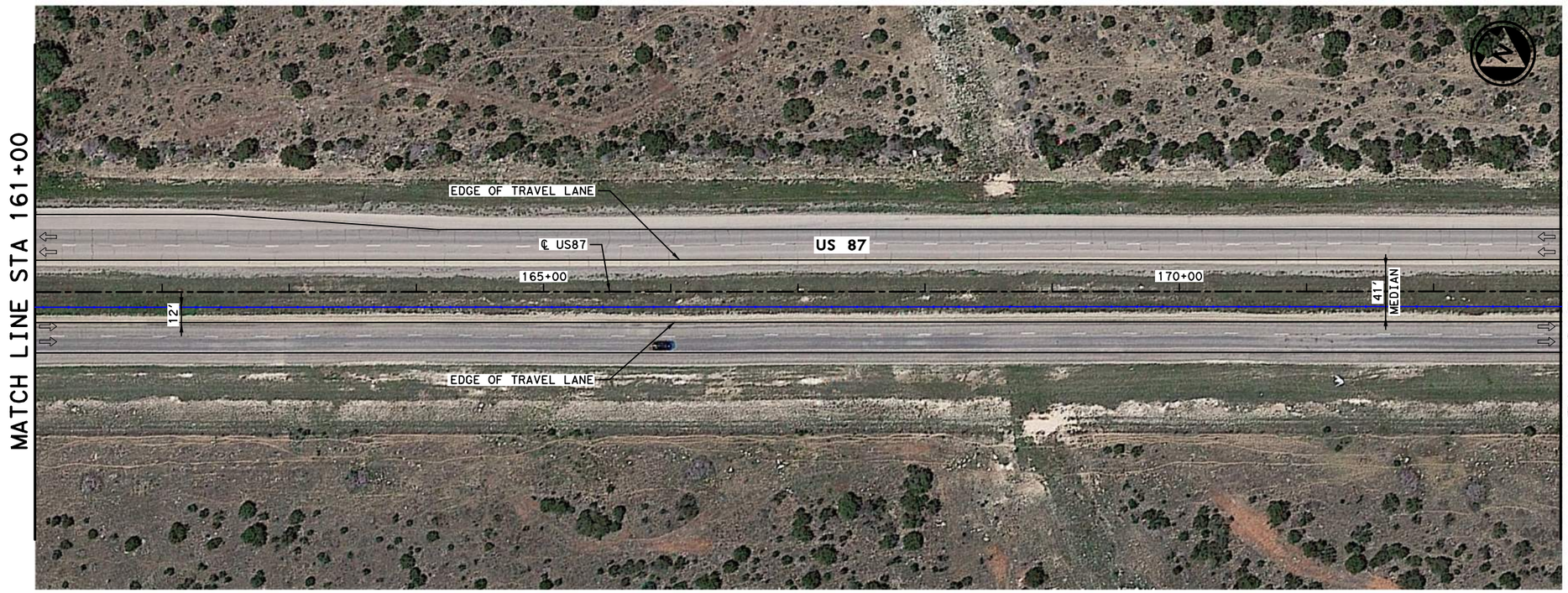
PLAN LAYOUT

CSJ 0069-01-065 SHEET 2 OF 13

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	149
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 87\&US87*PLAN2$.dgn
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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3. REFER TO BARRIER TRANSITION SHEETS AND MISCELLANEOUS DETAIL FOR MORE INFORMATION.

LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

m.n. m

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I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

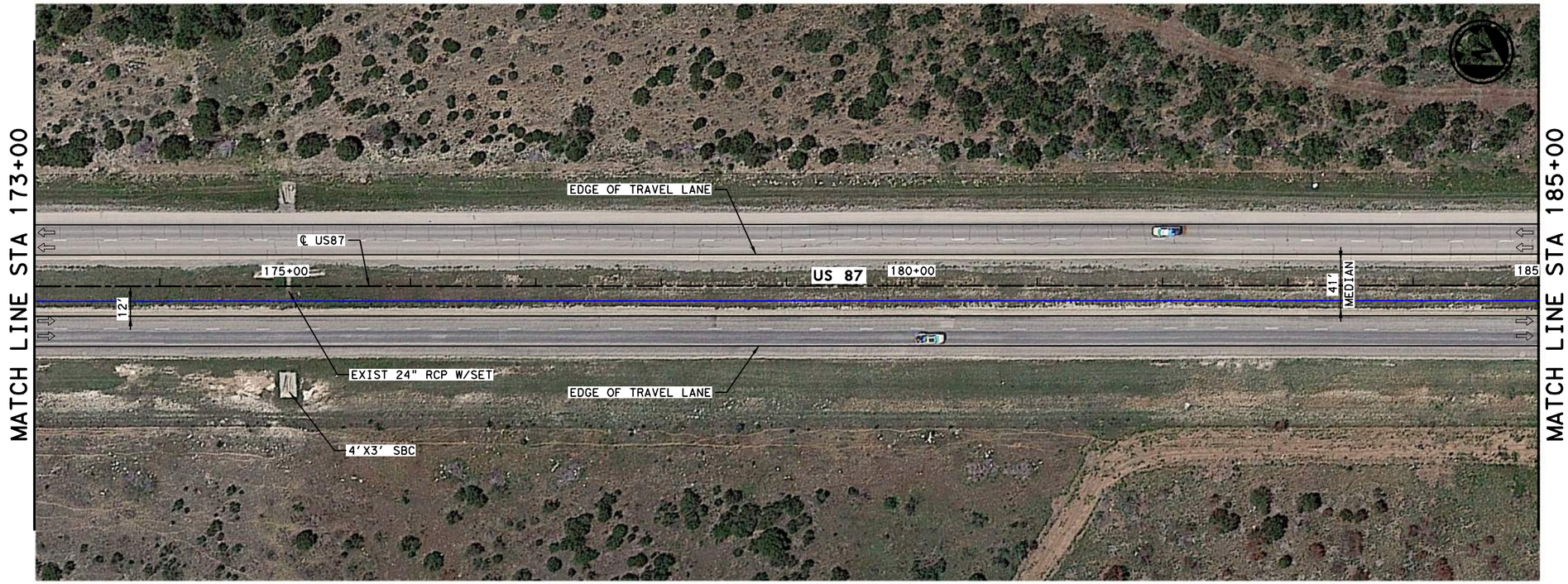
US 87

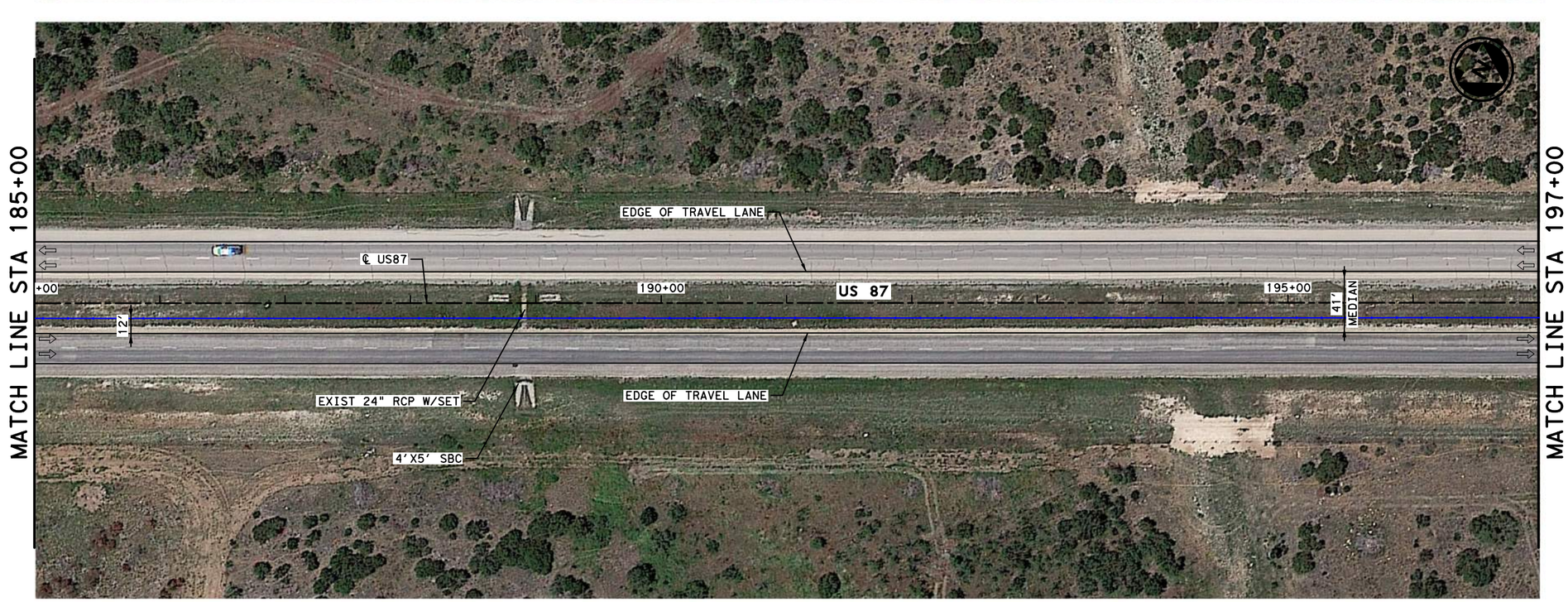
PLAN LAYOUT

CSJ 0069-01-065 SHEET 3 OF 13

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	150
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 87\&US87*PLAN3$.dgn
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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3. REFER TO BARRIER TRANSITION SHEETS AND MISCELLANEOUS DETAIL FOR MORE INFORMATION.

LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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US 87

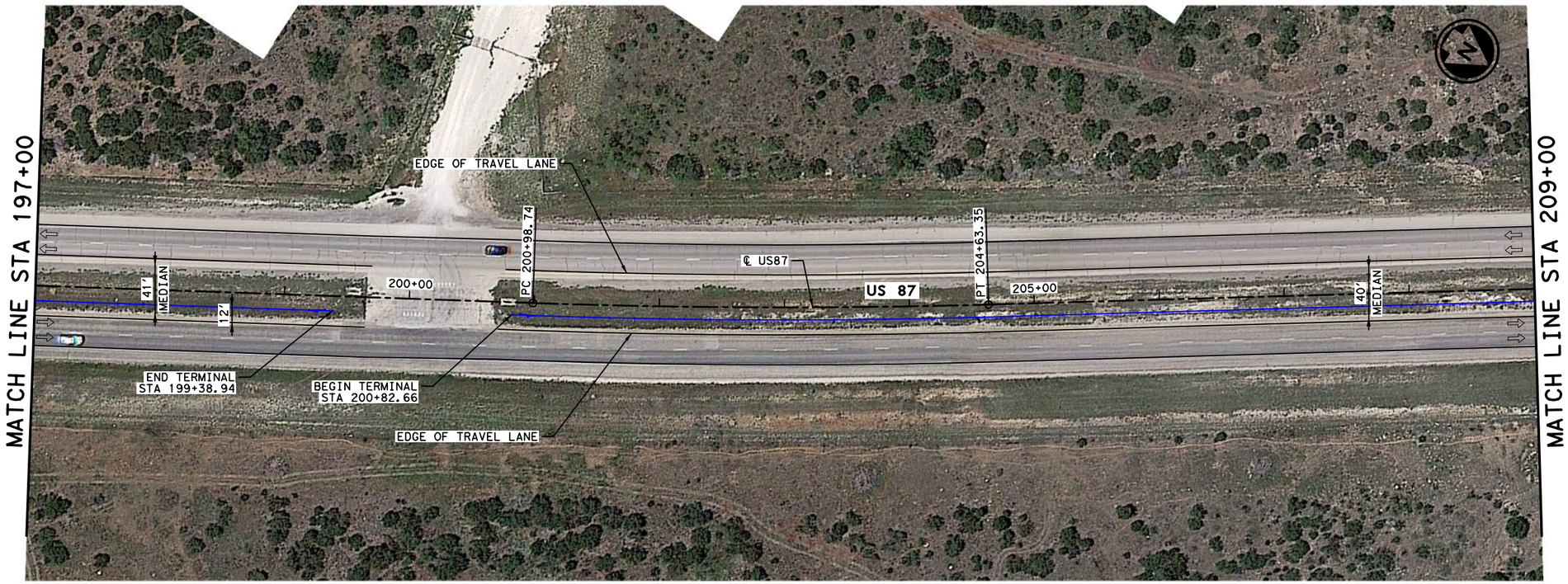
PLAN LAYOUT

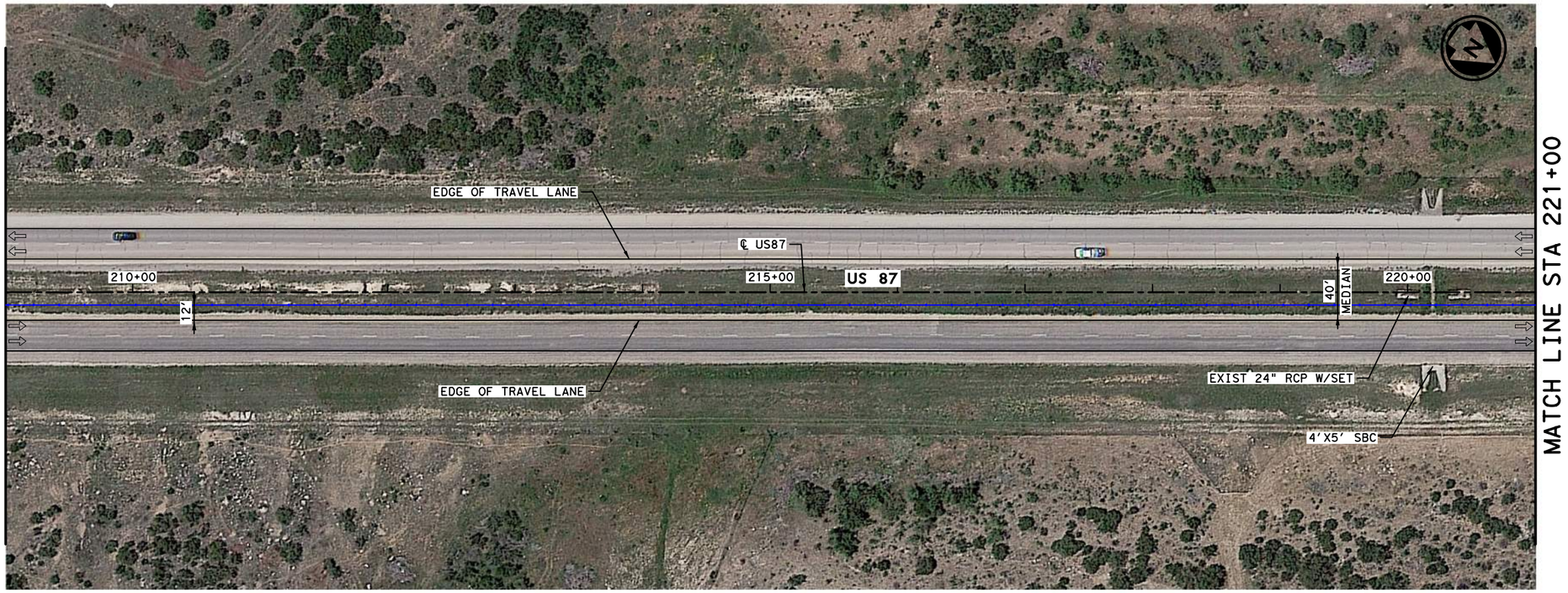
CSJ 0069-01-065 SHEET 4 OF 13

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	151
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 87\&US87*PLAN4$.dgn

DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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85191
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3/3/2023

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TBPE REG. #. F-11657

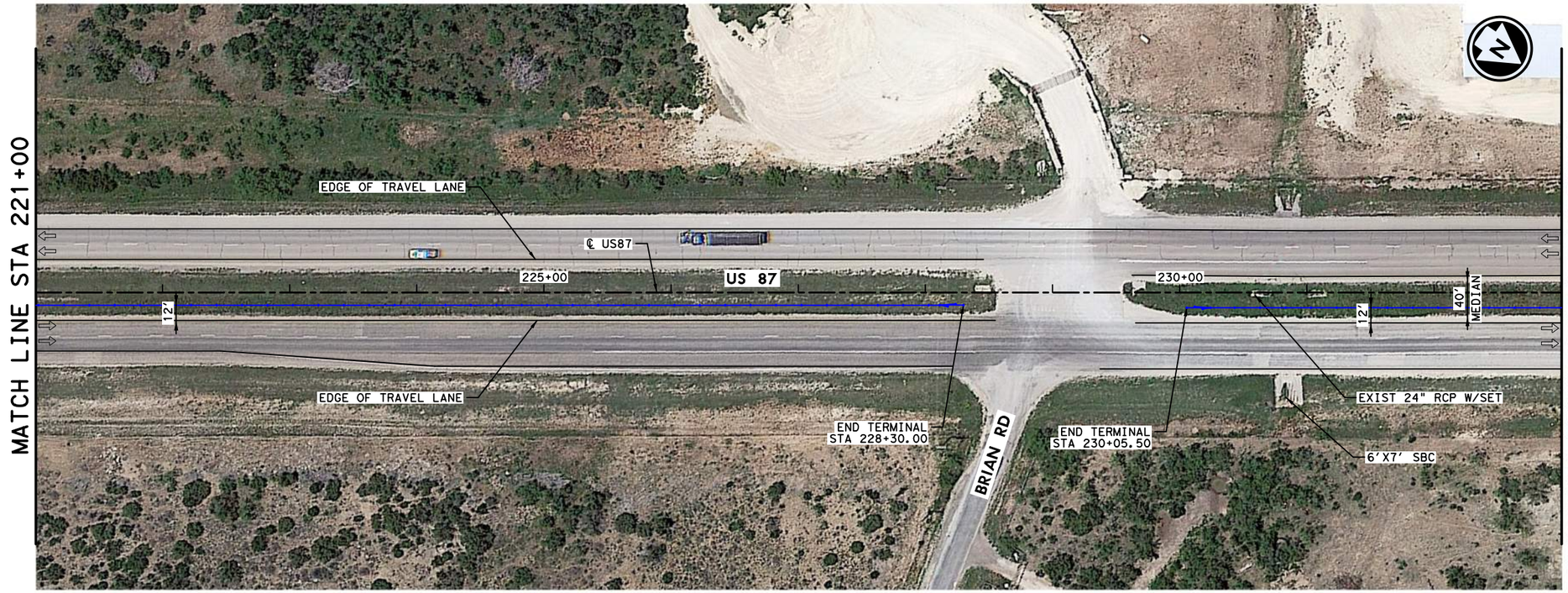
US 87

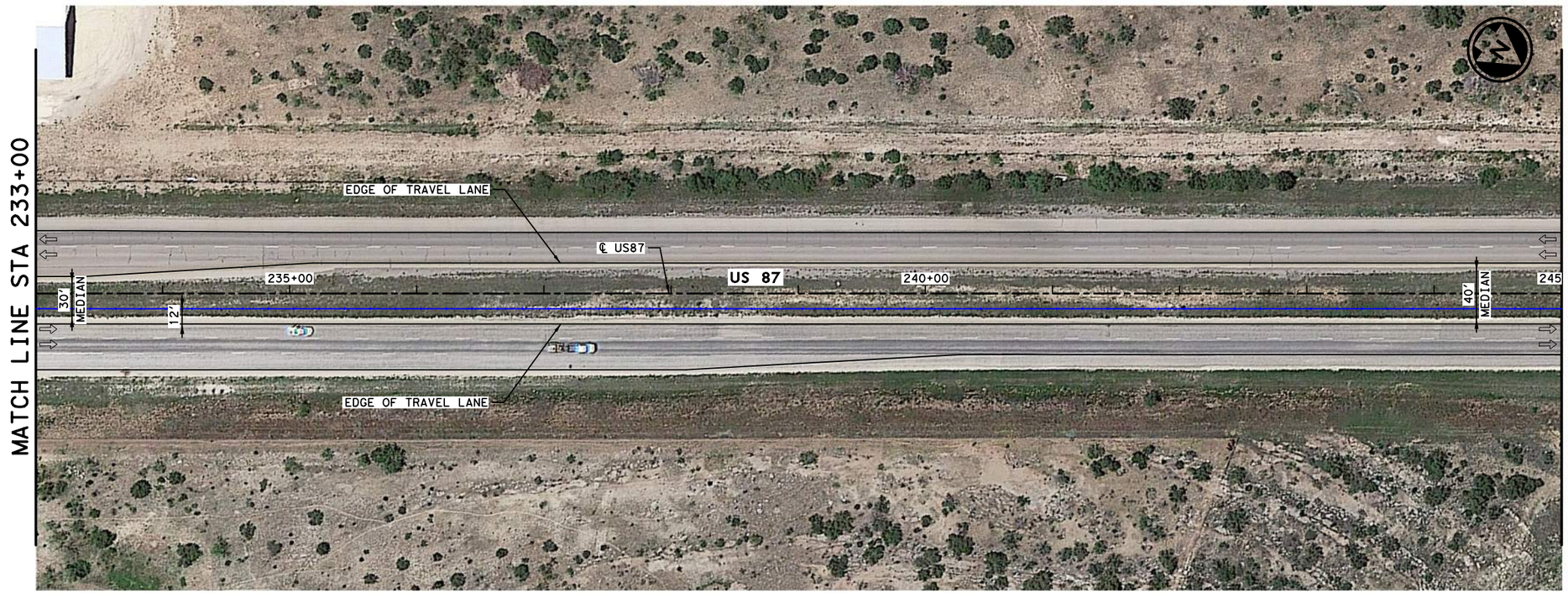
PLAN LAYOUT

CSJ 0069-01-065 SHEET 5 OF 13

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	152
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 87\&US87*PLAN5$.dgn
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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85191
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3/3/2023

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TBPE REG. # F-11657

US 87

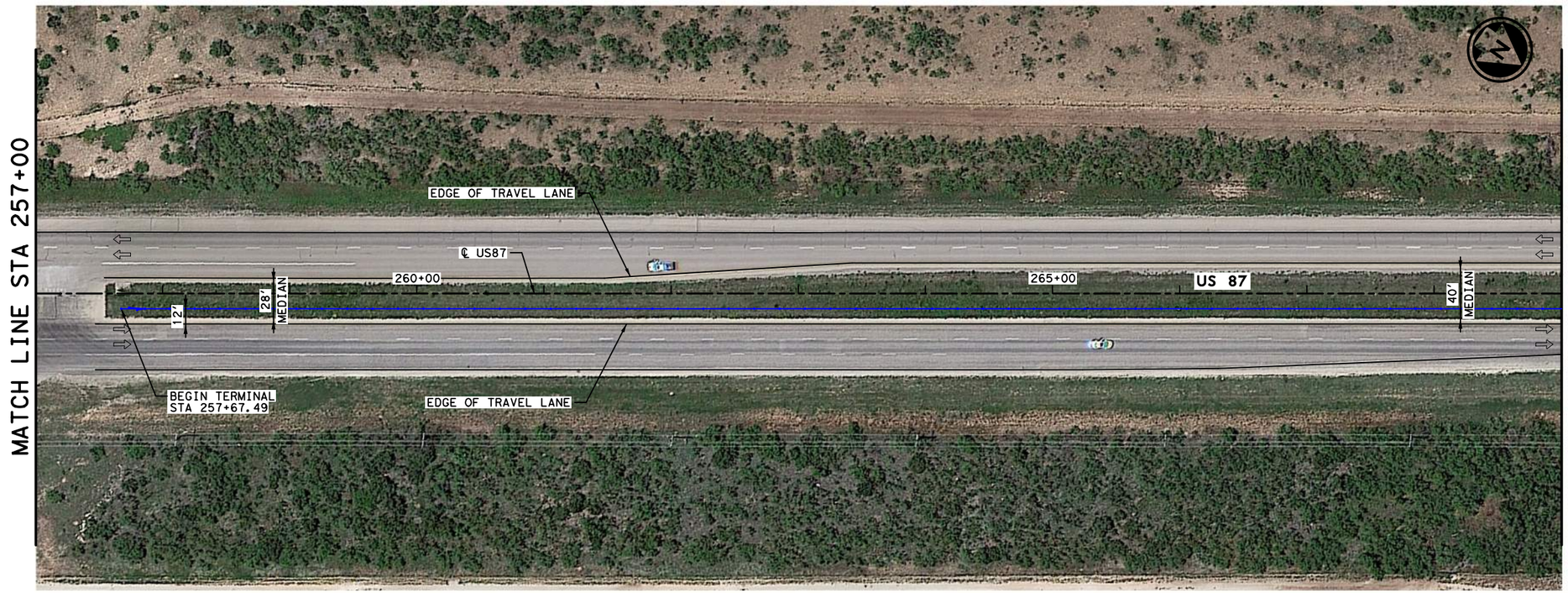
PLAN LAYOUT

CSJ 0069-01-065 SHEET 6 OF 13

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	153
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 87\&US87*PLAN6&.dgn

DRAWING DATE: 3/3/2023



0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

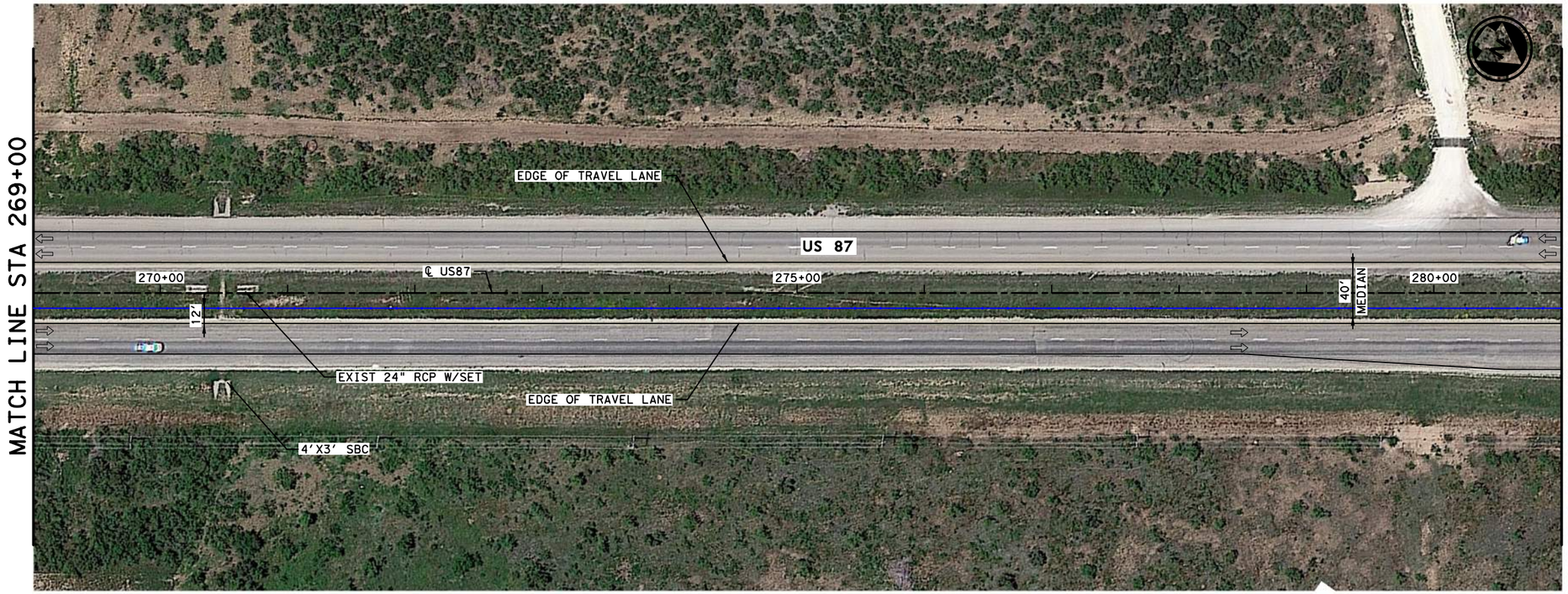
US 87

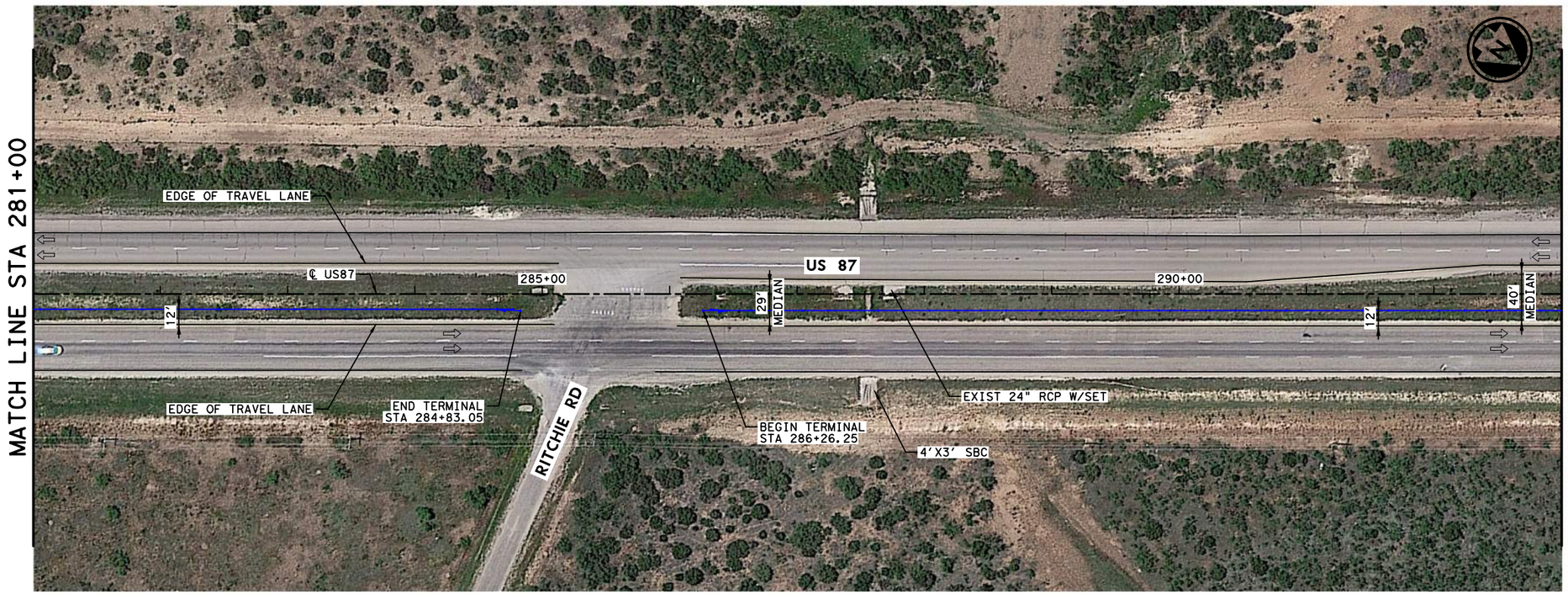
PLAN LAYOUT

CSJ 0069-01-065 SHEET 7 OF 13

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	154
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 87\&US87*PLAN7&.dgn
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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3/3/2023

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 87

PLAN LAYOUT

CSJ 0069-01-065 SHEET 8 OF 13

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	155
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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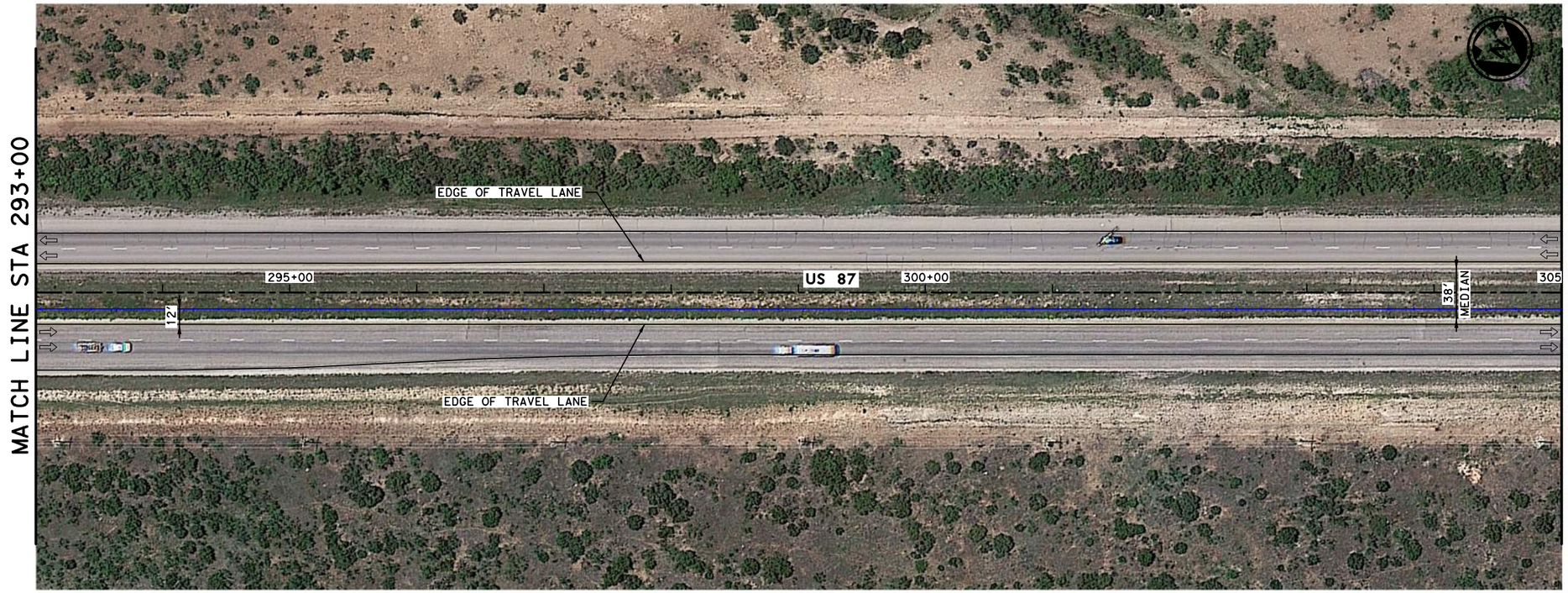
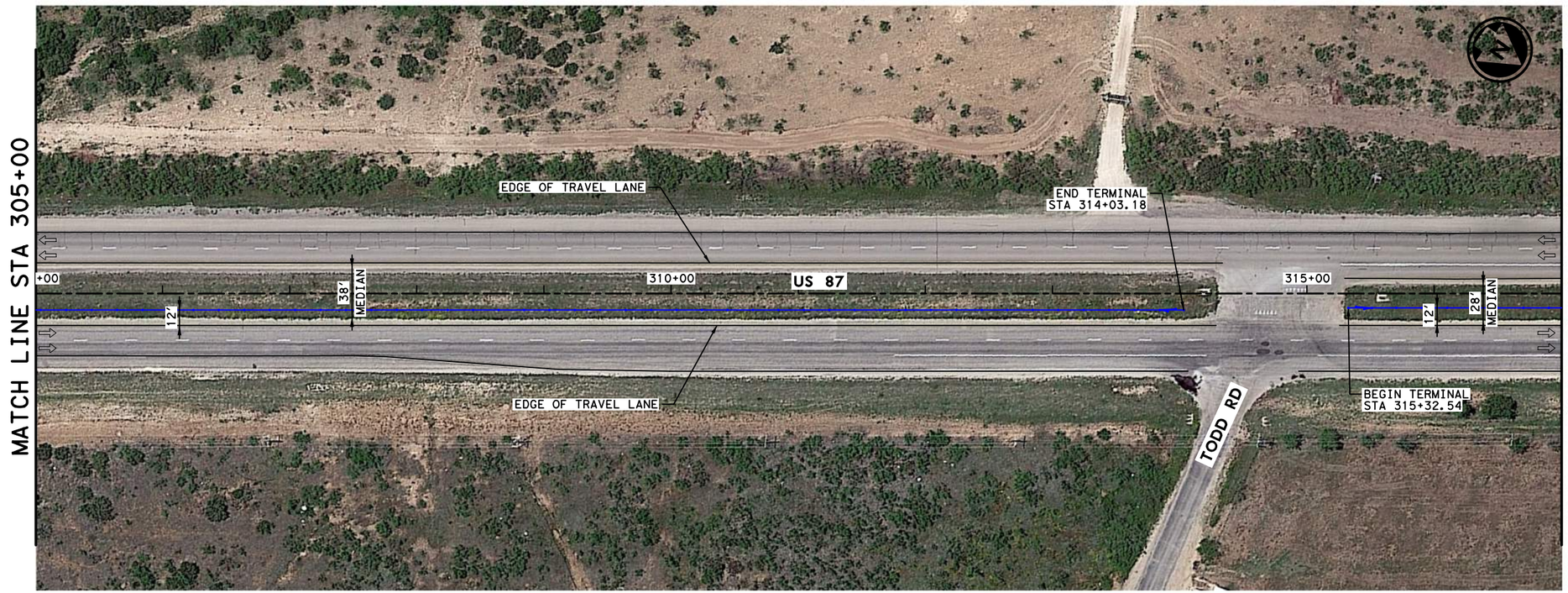
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
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85191
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3/3/2023

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 87

PLAN LAYOUT

CSJ 0069-01-065 SHEET 9 OF 13

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	156
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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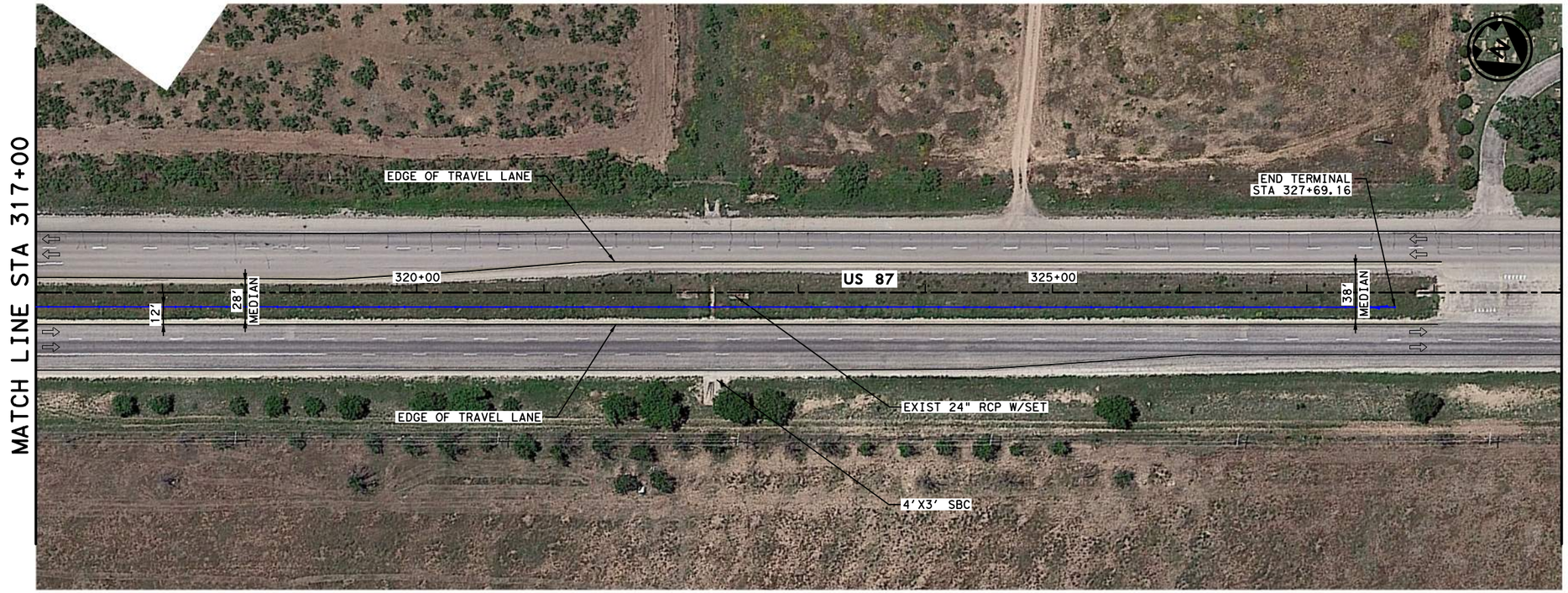
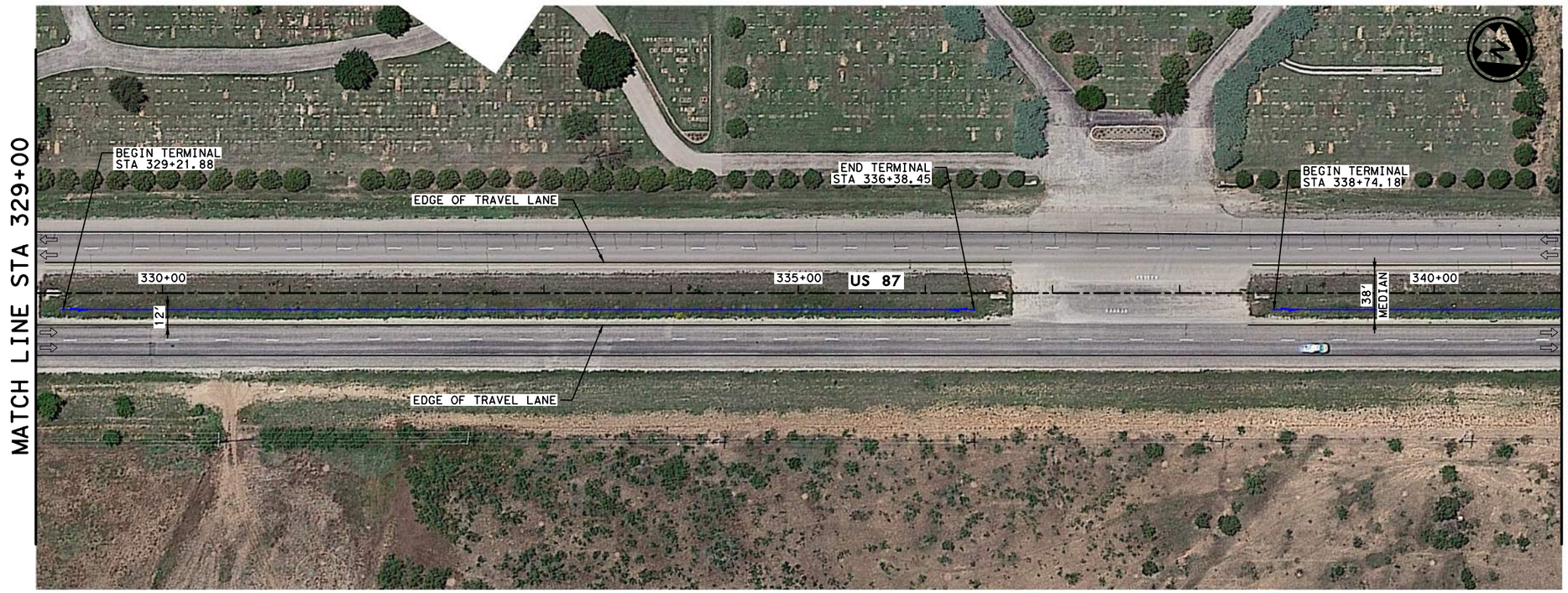
DRAWING DATE: 3/3/2023





0′ 50′ 100′

SCALE: 1"=100′

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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7670 WOODWAY DRIVE, SUITE 320
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TBPE REG. # F-11657

US 87

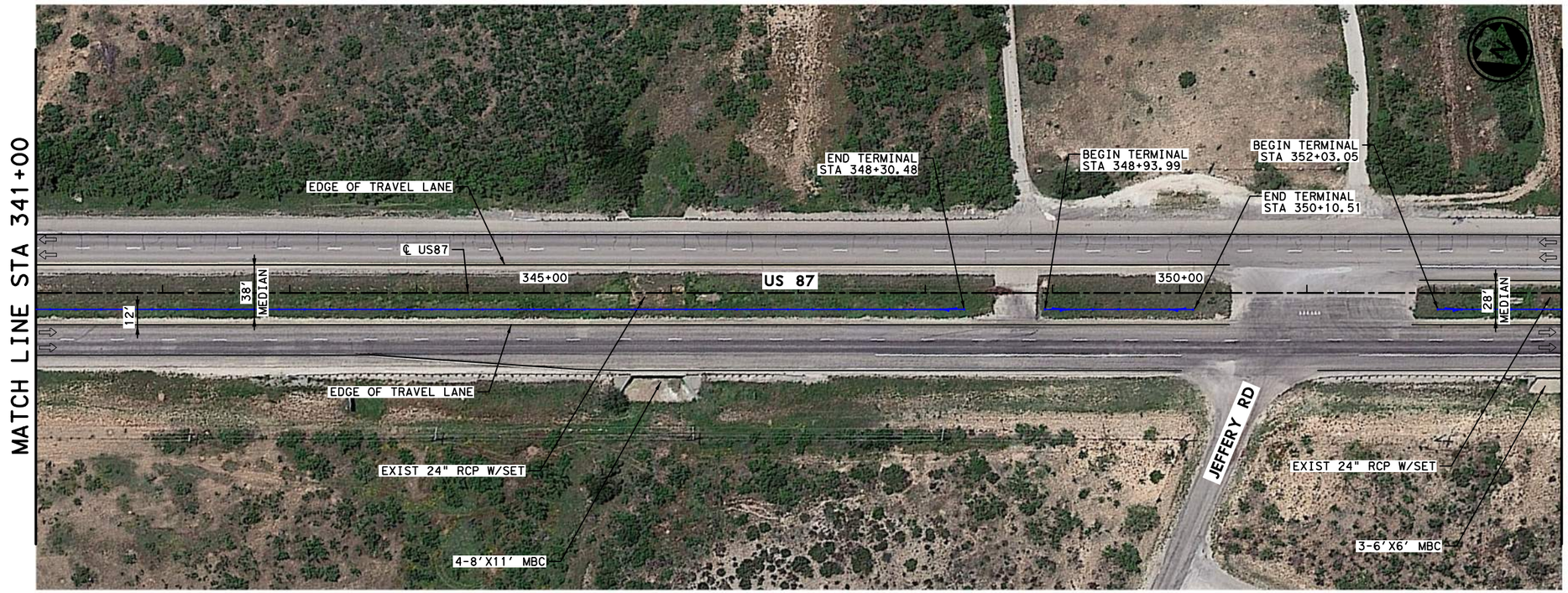
PLAN LAYOUT

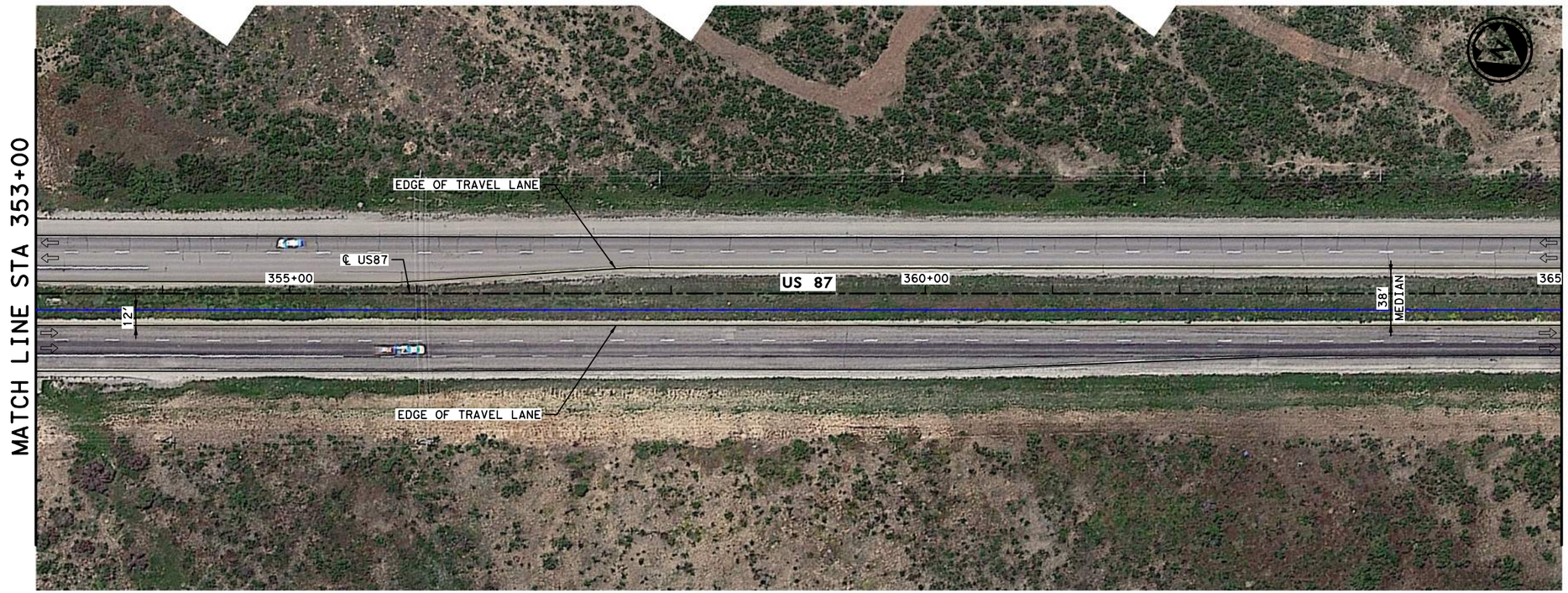
CSJ 0069-01-065 SHEET 10 OF 13

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	157
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 87\@US87*PLAN10@.dgn

DRAWING DATE: 3/3/2023





0' 50' 100'

SCALE: 1"=100'

NOTES:

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LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

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3/3/2023

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

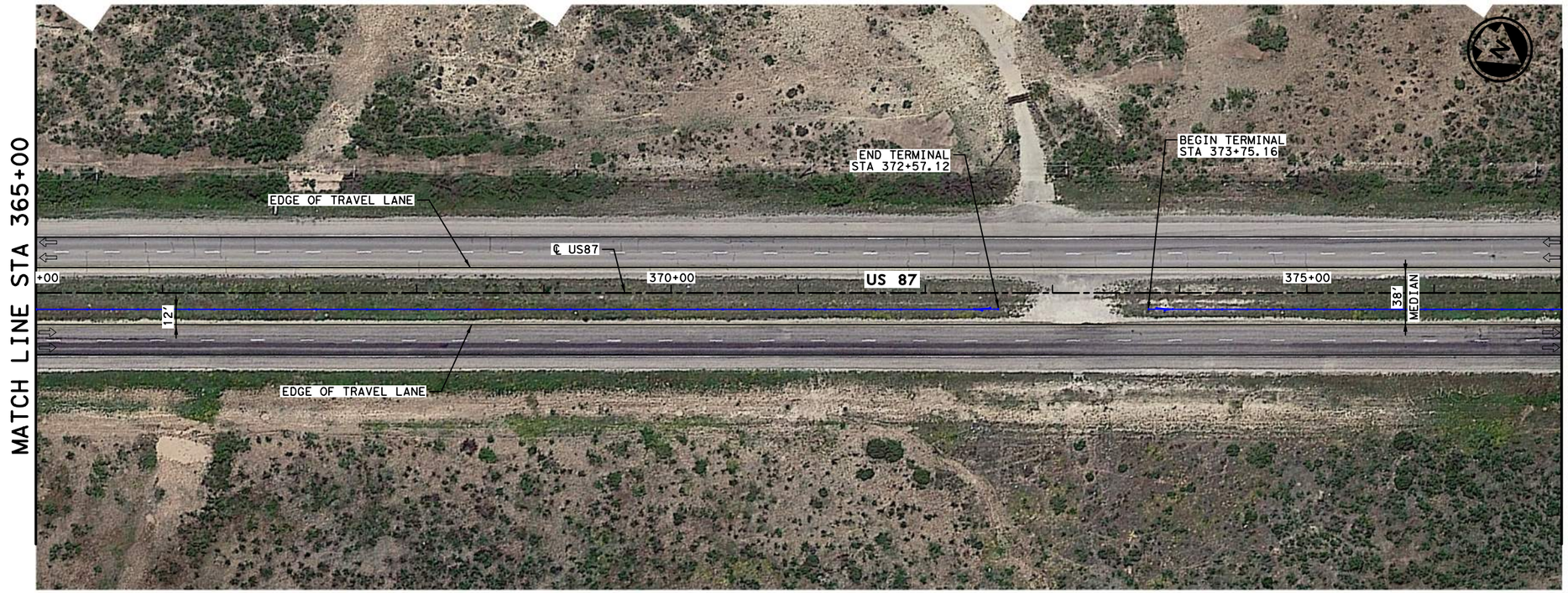
US 87

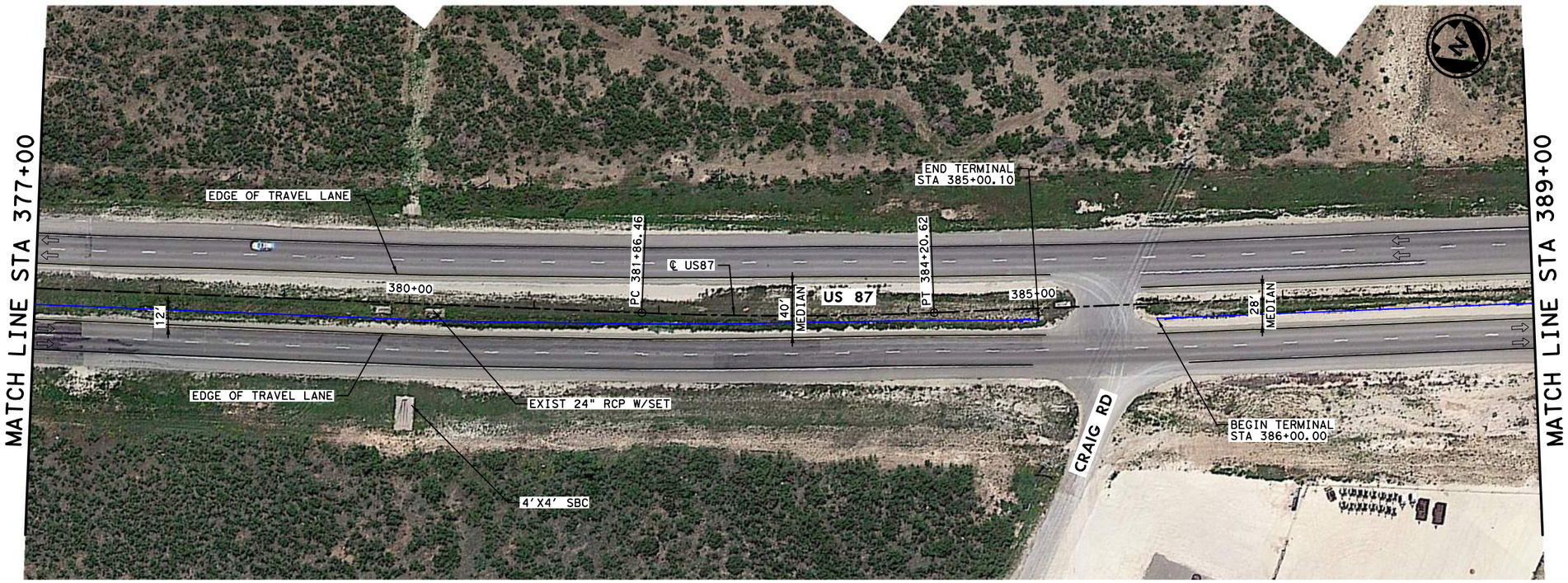
PLAN LAYOUT

CSJ 0069-01-065 SHEET 11 OF 13

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	158
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 87\#US87#PLAN11$.dgn
DRAWING DATE: 3/3/2023





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SCALE: 1"=100′

NOTES:

1. HORIZONTAL ALIGNMENT IS ESTABLISHED BASED ON THE AVAILABLE AS-BUILTS AND IS FOR INFORMATION ONLY.
2. CONTRACTOR SHALL FIELD VERIFY ANY EXISTING UNDERGROUND STRUCTURES, UTILITIES, AND THEIR EXISTING DEPTHS BEFORE COMMENCING WORK.
3. REFER TO BARRIER TRANSITION SHEETS AND MISCELLANEOUS DETAIL FOR MORE INFORMATION.

LEGEND:

- EXISTING TRAFFIC
- CABLE BARRIER
- PROPOSED SSCB
- PROPOSED TRANS SSCB
- PROPOSED ATTENUATOR

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

m.n. m

Texas Department of Transportation

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 87

PLAN LAYOUT

CSJ 0069-01-065 SHEET 12 OF 13

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	159
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\05 Roadway Details\US 87\&US87*PLAN12&.dgn
DRAWING DATE: 3/3/2023

0′ 50′ 100′

SCALE: 1"=100′

NOTES:

1. HORIZONTAL ALIGNMENT IS ESTABLISHED BASED ON THE AVAILABLE AS-BUILTS AND IS FOR INFORMATION ONLY.
2. CONTRACTOR SHALL FIELD VERIFY ANY EXISTING UNDERGROUND STRUCTURES, UTILITIES, AND THEIR EXISTING DEPTHS BEFORE COMMENCING WORK.
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LEGEND:

- EXISTING TRAFFIC
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7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 87

PLAN LAYOUT

CSJ 0069-01-065 SHEET 13 OF 13

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	160
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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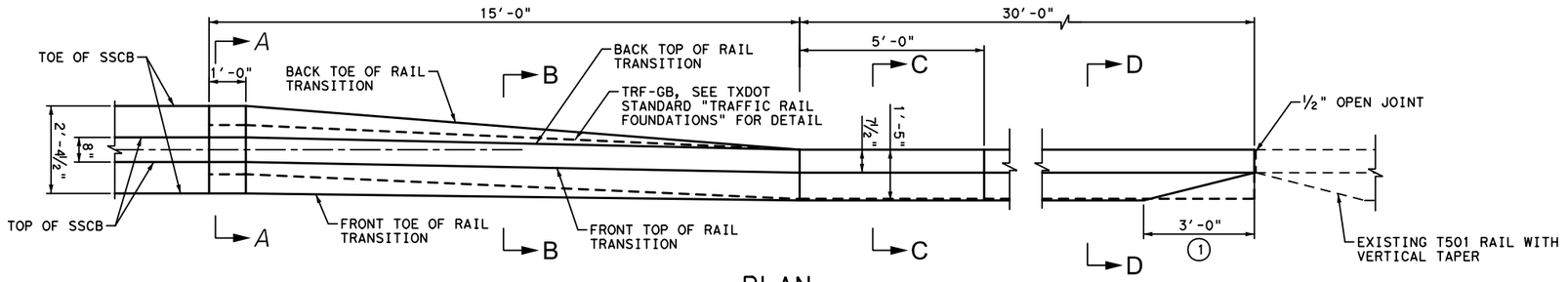
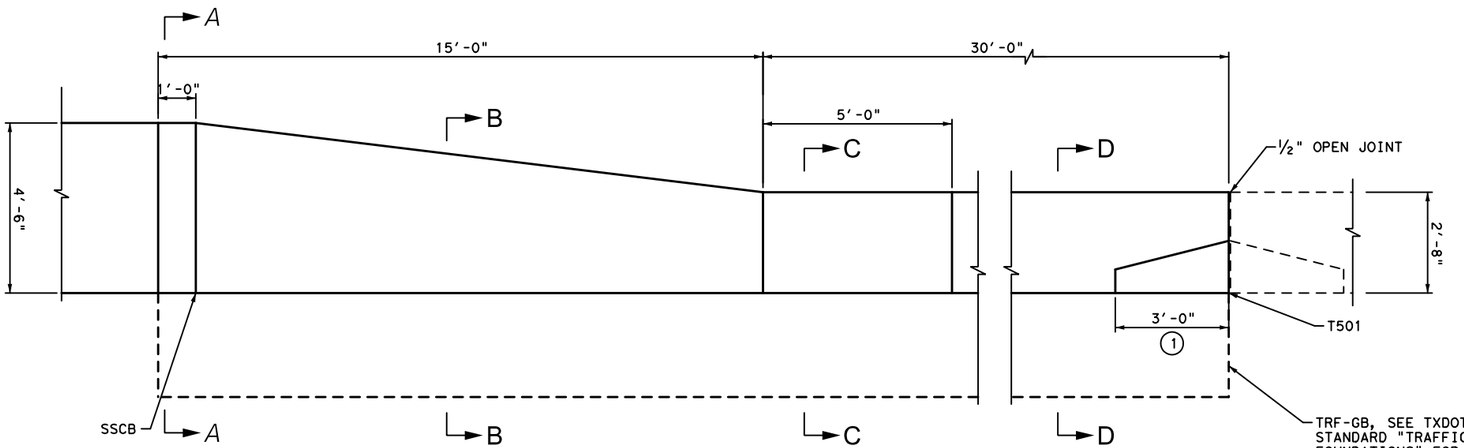
DRAWING DATE: 3/3/2023



PLAN
SCALE: NTS



ELEVATION
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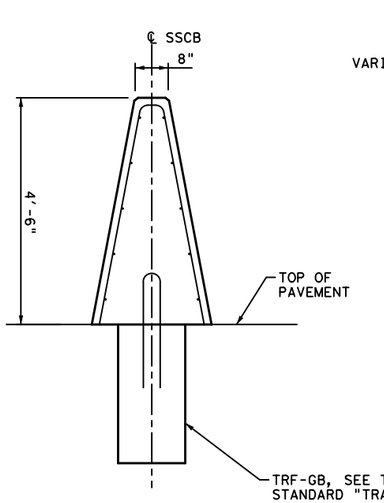

SECTION A-A
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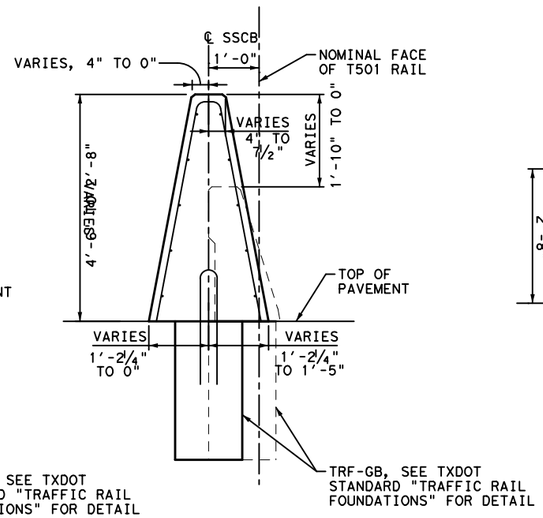
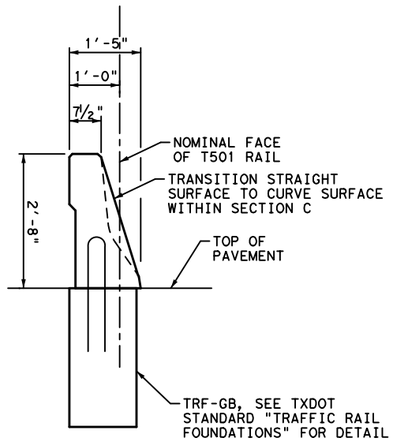
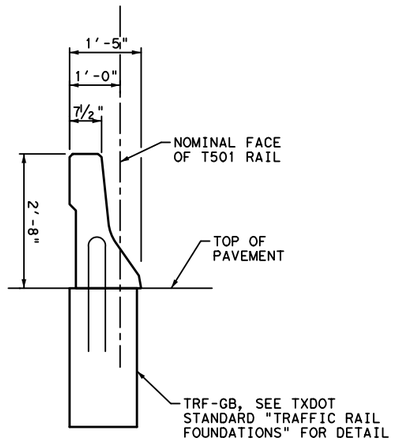


SECTION B-B
SCALE: NTS



SECTION C-C
SCALE: NTS

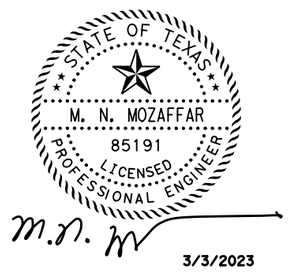


SECTION D-D
SCALE: NTS

GENERAL NOTES:

1. CONCRETE SHALL BE CLASS C UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2. WHERE USED, REBAR REINFORCEMENT SHALL BE GRADE 60 AND CONFORM TO ASTM A615.
3. THESE DETAILS COVER BARRIER PER ITEM 514, "PERMANENT CONCRETE TRAFFIC BARRIER".
4. THE ANCHORAGE SHOWN IS CONSIDERED SUBSIDIARY TO THE BID ITEM.
5. TOP EDGES OF CIP BARRIER SHALL HAVE A ¾" CHAMFER OR TOOLED RADIUS.
6. CAST-IN-PLACE BARRIER MAY BE SLIP FORMED. BRACING MAY BE TIED OR TACK WELDED TO THE REINFORCEMENT CAGE TO PROVIDE CAGE STABILITY. DO NOT WELD TO ANCHORAGE.

(1) 3′-0" VERTICAL TAPER IS ONLY NEEDED WHEN EXISTING T501 RAIL HAS THE VERTICAL TAPER. SEE AS-BUILT STANDARD "TRAFFIC RAIL TYPE T501" FOR VERTICAL TAPER DETAIL.



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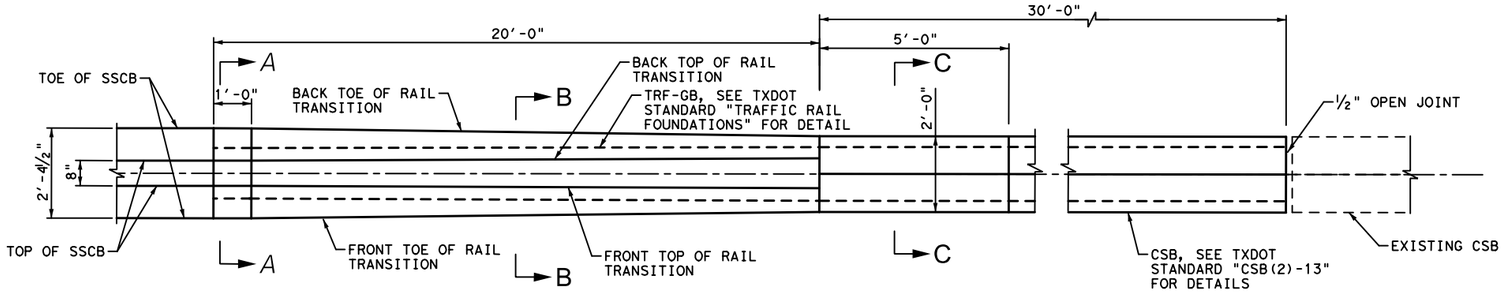
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

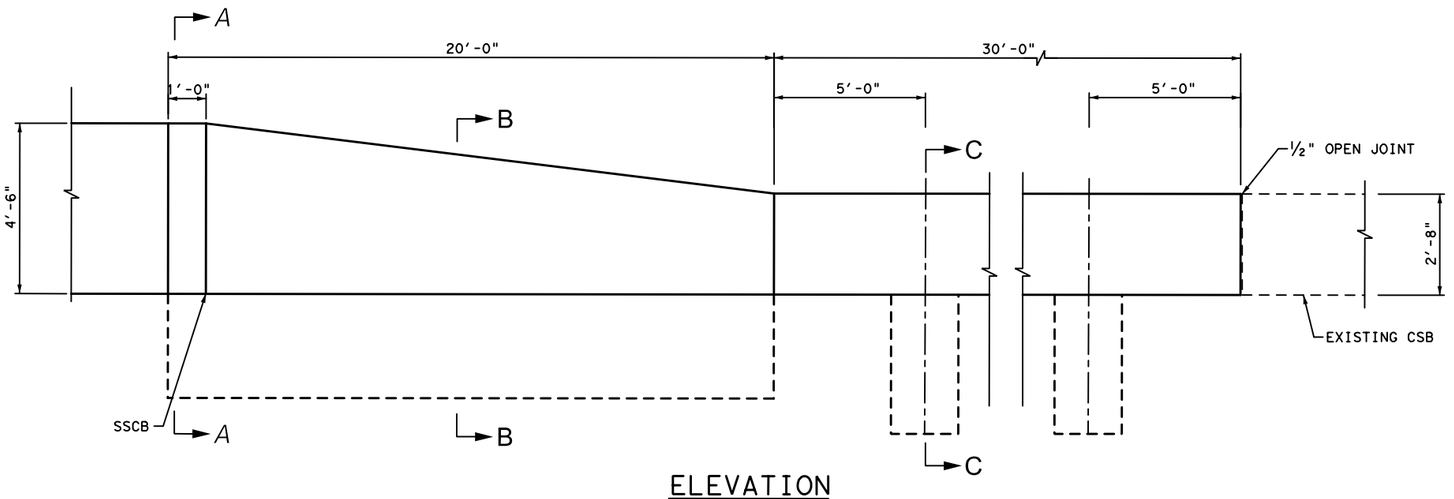
BARRIER TRANSITION EXISTING T501 RAIL TO SSCB DETAIL

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US 84
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY	161
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\BARRIER TRANSITION\$US84*BARTRANS1$.dgn
DRAWING DATE: 3/3/2023



PLAN
SCALE: NTS

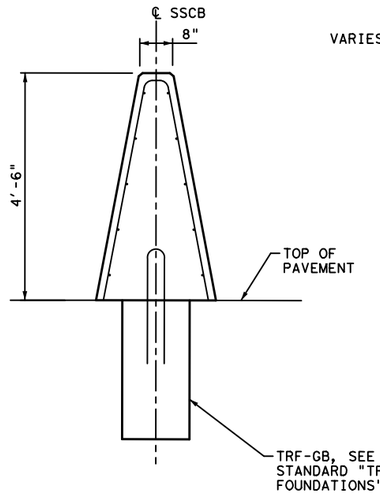


ELEVATION
SCALE: NTS

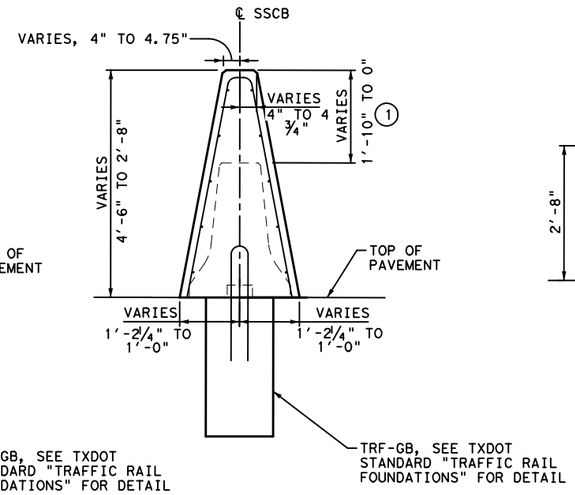
GENERAL NOTES:

1. CONCRETE SHALL BE CLASS C UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2. WHERE USED, REBAR REINFORCEMENT SHALL BE GRADE 60 AND CONFORM TO ASTM A615.
3. THESE DETAILS COVER BARRIER PER ITEM 514, "PERMANENT CONCRETE TRAFFIC BARRIER".
4. THE ANCHORAGE SHOWN IS CONSIDERED SUBSIDIARY TO THE BID ITEM.
5. TOP EDGES OF CIP BARRIER SHALL HAVE A ¾" CHAMFER OR TOOLED RADIUS.
6. CAST-IN-PLACE BARRIER MAY BE SLIP FORMED. BRACING MAY BE TIED OR TACK WELDED TO THE REINFORCEMENT CAGE TO PROVIDE CAGE STABILITY. DO NOT WELD TO ANCHORAGE.

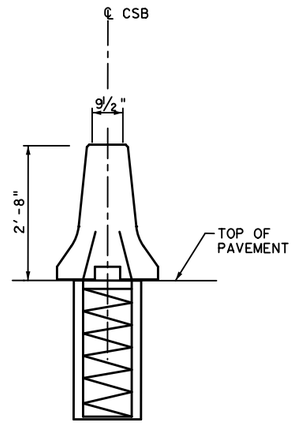
(1) THE HEIGHT AT END OF SECTION B-B TO MATCH RAIL SECTION C-C.



SECTION A-A
SCALE: NTS



SECTION B-B
SCALE: NTS



SECTION C-C
SCALE: NTS

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3/3/2023

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US 84
BARRIER TRANSITION
EXISTING CSB
TO SSCB DETAIL

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	162
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

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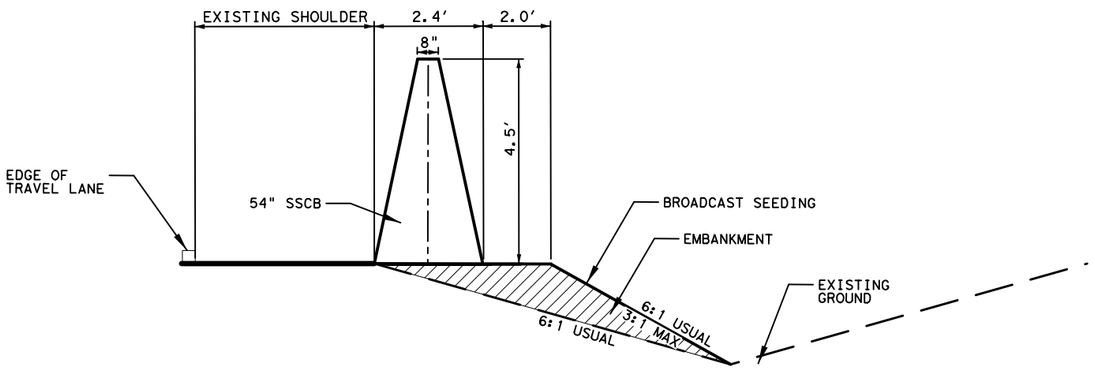
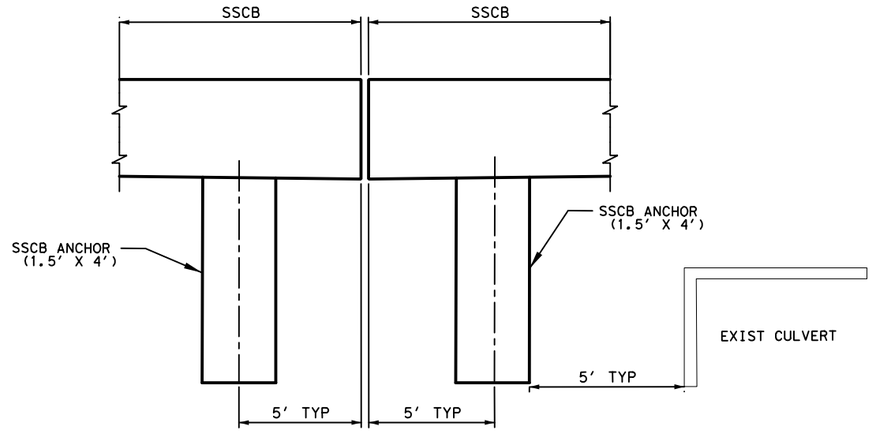
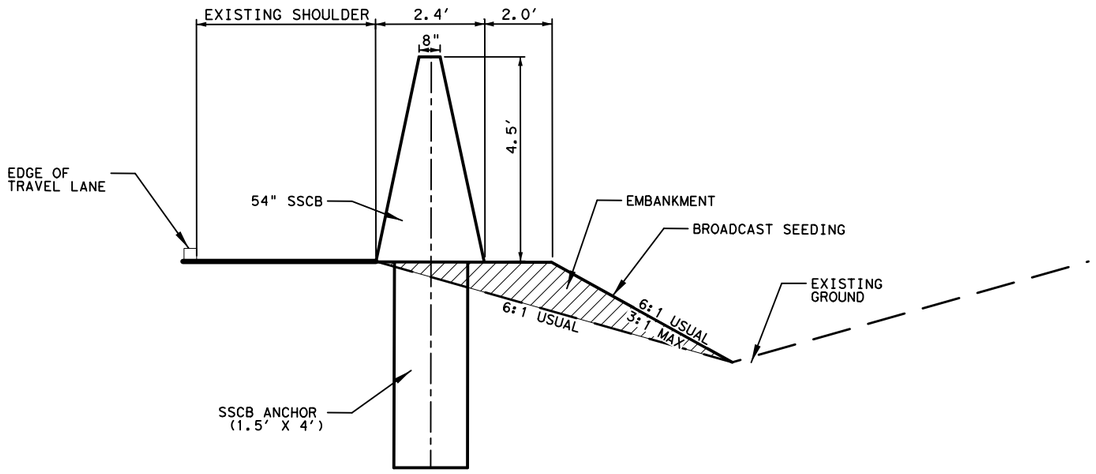
DRAWING DATE: 3/3/2023



PROPOSED SSCB DETAIL



CULVERT CROSSING DETAIL



PROPOSED SSCB W/ ANCHOR DETAIL

STATE OF TEXAS
M. N. MOZAFFAR
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PROFESSIONAL ENGINEER

3/3/2023

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7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

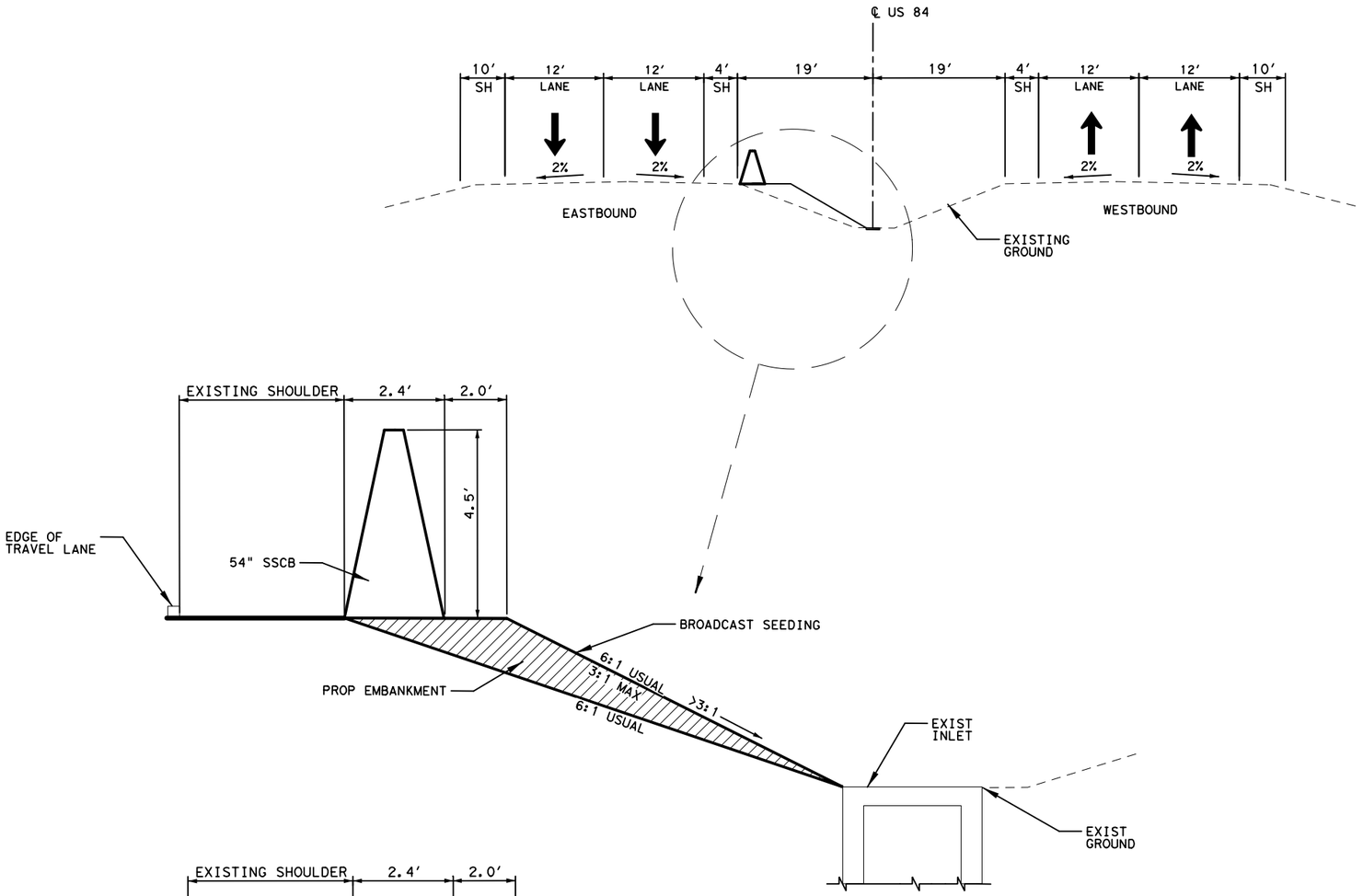
MISCELLANEOUS DETAIL

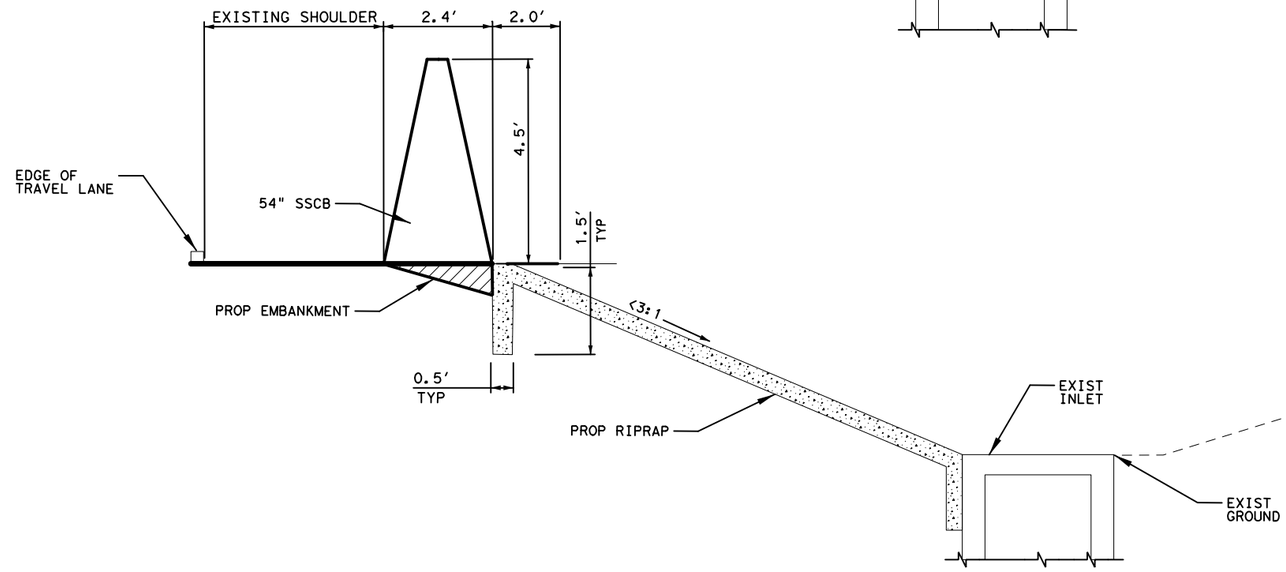
SHEET 1 OF 2

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	163
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements\HSIP\CADD\Sheets\RIPRAP DETAILS\MISC#DET.dgn

DRAWING DATE: 3/3/2023





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7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

MISCELLANEOUS DETAIL

SHEET 2 OF 2

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84, ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	164
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\RIPRAP DETAILS\MISC*DET.dgn

DRAWING DATE: 3/3/2023

LOC NO.	TCP PHASE	PLAN SHEET NUMBER	LOCATION	STA	TEST LEVEL	DIRECTION OF TRAFFIC (UNI/BI)	FOUNDATION PAD		BACKUP SUPPORT			AVAILABLE SITE LENGTH	CRASH CUSHION									
															MOVE / RESET		L	L	R	R	S	S
							PROPOSED MATERIAL	PROPOSED THICKNESS	DESCRIPTION	WIDTH	HEIGHT		INSTALL	REMOVE	MOVE/ RESET	FROM LOC.#	N	W	N	W	N	W
1		94	EASTBOUND US 84	415+17.26 R4	TL-3	UNI	CONC	8"	STEEL BACKUP	36"	34"	27′	X				X					
2		94	WESTBOUND US 84	416+39.03 R4	TL-3	UNI	CONC	8"	STEEL BACKUP	36"	34"	27′	X				X					
3		97	EASTBOUND US 84	492+97.49 R4	TL-3	UNI	CONC	8"	STEEL BACKUP	36"	34"	27′	X				X					
4		101	WESTBOUND US 84	579+25.53 R4	TL-3	UNI	CONC	8"	STEEL BACKUP	36"	34"	27′	X				X					
												TOTALS	4									

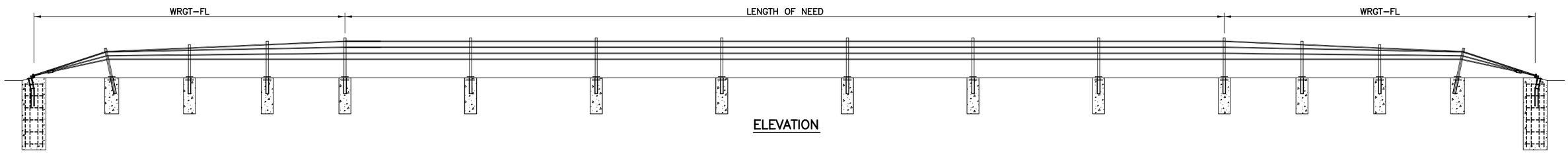
LEGEND:
L=LOW MAINTENANCE
R=REUSABLE
S=SACRIFICIAL
N=NARROW
W=WIDE

FOR DEFINITIONS SEE THE "CRASH CUSHION CATEGORIZATION CHART.PDF" AT THE DESIGN DIVISION (ROADWAY STANDARDS) WEBSITE. USE QUICK LINKS TO ACCESS ATTENUATORS / CRASH CUSHIONS SECTION.
http://www.dot.state.tx.us/insdtdot/orgchart/cmd/cserve/standard/rdwylse.htm

CRASH CUSHION SUMMARY SHEET

FILE: ccss.dgn	DN: TxDOT	CK:	CK:
© TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07043, ETC.	US84, ETC.
	DIST	COUNTY	
	ABL	SCURRY, ETC.	
	FEDERAL AID PROJECT		SHEET NO.
			165

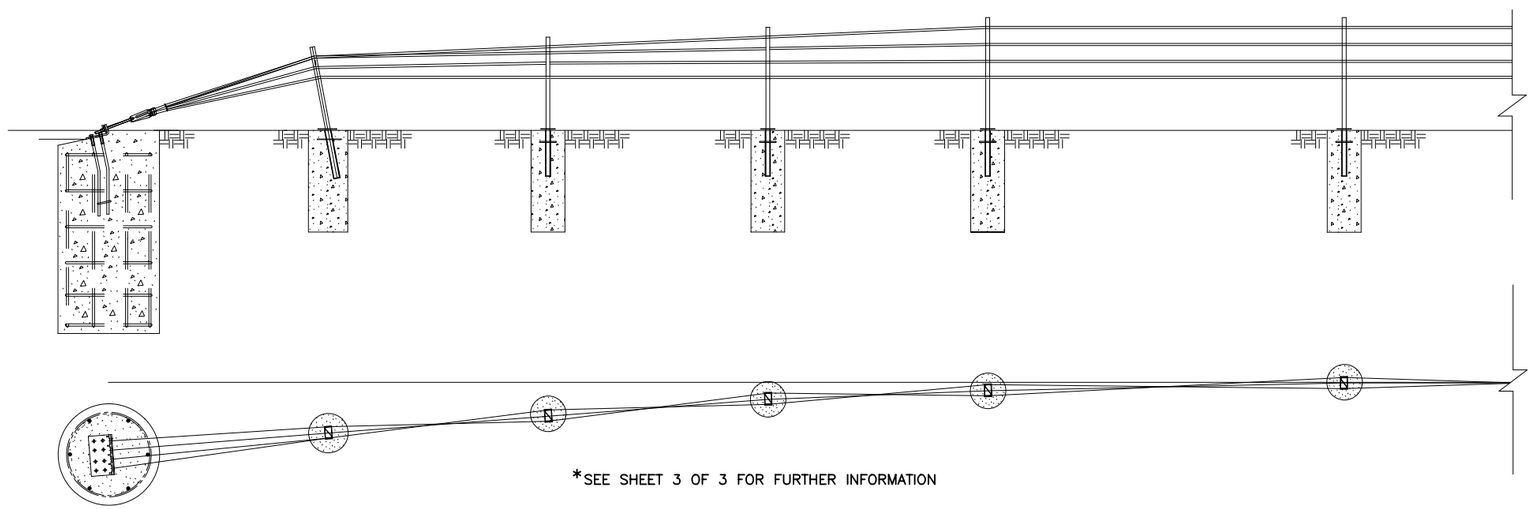
DATE: 2/28/2023
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\05 Roadway Details\00_TxDOT Standards\brifent1414.dgn



ELEVATION

PLAN

WRGT–FL END ANCHOR



*SEE SHEET 3 OF 3 FOR FURTHER INFORMATION

ROPE TENSION TABLE		
ROPE TEMP (°F)	TENSION (LBS)	TENSION (kN)
0	5700	25.4
5	5550	24.7
10	5400	24.0
15	5250	23.4
20	5100	22.7
25	4950	22.0
30	4800	21.4
35	4650	20.74
40	4500	20.0
45	4350	19.3
50	4200	18.7
55	4050	18.0
60	3900	17.3
65	3750	16.7
70	3600	16.0
75	3450	15.3
80	3300	14.7
85	3150	14.0
90	3000	13.3
95	2850	12.7
100	2700	12.0
105	2550	11.3
110	2400	10.7
115	2250	10.0
120	2100	9.3
125	1950	8.7
130	1800	8.0
135	1650	7.3
140	1500	6.7

*ROPE TENSION: ± 20% AFTER 2–WEEK INTERVAL

GENERAL NOTES:

1. BRIFEN DRAWINGS, SPECIFICATIONS, AND PRODUCT MANUAL SHOULD BE REVIEWED PRIOR TO STARTING AN INSTALLATION. FOR ADDITIONAL INFORMATION OR QUESTIONS, CONTACT BRIFEN USA, INC. AT 1–866–427–4336.

2. THE BRIFEN WRSF HAS BEEN SUCCESSFULLY TESTED TO NCHRP 350 TL–4 CONDITIONS ON SLOPES 6:1 OR FLATTER AND NCHRP 350 TL–3 CONDITIONS ON SLOPES 4:1 TO 6:1.

3. THE POST SPACING SHALL BE DETERMINED BY THE SPECIFYING AGENCY. POST SPACING MAY BE DECREASED TO AVOID OBSTRUCTIONS OR UTILITIES. IN NO EVENT SHALL THE POST SPACING EXCEED 21'–0".

4. BRIFEN WRSF SHALL BE PLACED ON A SMOOTH SURFACE, WITHOUT HUMPS, DROP–OFFS, HOLES, ETC THAT WOULD INTERFERE WITH THE STABILITY OF THE ERRANT VEHICLE. GRADING, FILL AND COMPACT MAY BE REQUIRED TO ASSURE THAT ROPES ARE INSTALLED AT THE DESIGN HEIGHT.

5. THE WRGT–FL END ANCHOR HAS BEEN SUCCESSFULLY TESTED TO NCHRP 350 TL–3 CONDITIONS. THE LENGTH OF NEED BEGINS 31'–0" FROM THE END ANCHOR. POSTS A THROUGH POST B3, SPACED 6'–6" APART, HAVE WEAKENED CUTS AT THE GROUND THAT SHALL FACE THE ANCHOR.

6. ANCHOR AND LINE POST DIMENSIONS AND STEEL REINFORCEMENT WILL BE DETERMINED ON PROJECT SPECIFIC SOIL CLASSIFICATION, PROPERTIES AND TEMPERATURE EXTREMES. CONTACT BRIFEN USA, INC. FOR ADDITIONAL INFORMATION.

7. ALL REINFORCEMENT AND CONCRETE FOR THE ANCHORS AND LINE POSTS PROVIDED BY OTHERS.

8. REINFORCEMENT AND CONCRETE PROPERTIES SHALL MEET AGENCY SPECIFICATIONS.

9. FOR PLACEMENT NEAR GUARDRAIL OR OTHER OBSTACLES CONTACT BRIFEN USA, INC. FOR ADDITIONAL DRAWINGS AND SUPPORT.

10. TAPER RATES FOR THE BRIFEN WRSF ARE AS FOLLOWS:
    HORIZONTAL: 25:1 MAXIMUM, 50:1 PREFERABLE
    VERTICAL: 25:1 MAXIMUM, 50:1 PREFERABLE

Texas Department of Transportation

Design Division Standard

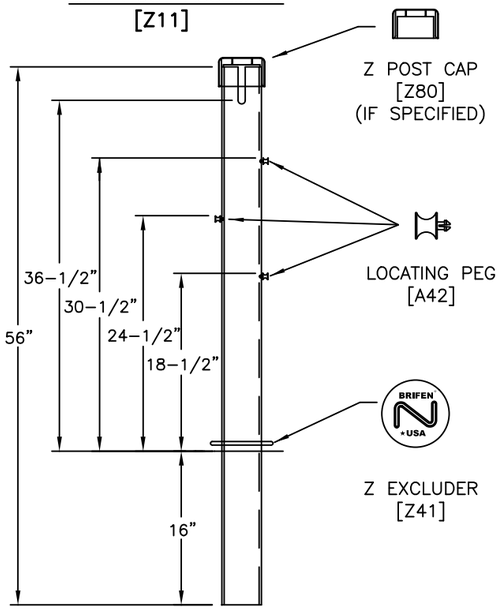
BRIFEN
WIRE ROPE SAFETY FENCE
(TL-4)

BRIFEN(TL4)-14

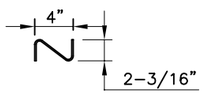
FILE: brifent1414.dgn	DN: TxDOT	CK: RM	DW: VP	CK:
©TxDOT: MARCH 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		166

DATE: 2/28/2023
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\05 Roadway Details\00_TxDOT Standards\brifent1414.dgn

LINE POST ASSEMBLY
[Z11]



ELEVATION

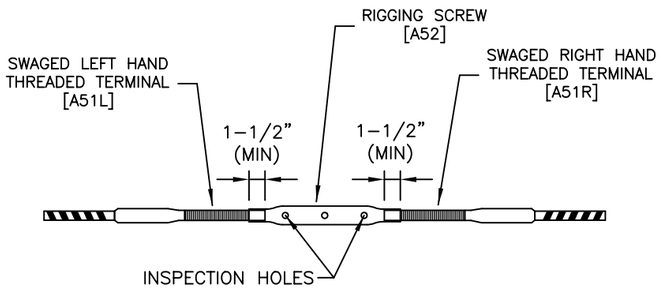


PLAN

NOTES SPECIFIC TO LINE POST ASSEMBLY

1. ROPE HEIGHTS SHALL BE ±1" TO GROUND LINE.
2. POST SHALL BE ±4" FROM VERTICAL PLUMB.
3. POST CAPS SHALL BE USED IF SPECIFIED.
4. REFLECTORS SHALL BE SPACED ACCORDING TO AGENCY SPECIFICATIONS.
5. REFLECTORS CAN BE PLACED ON THE POST CAP OR POST.

ROPE CONNECTION DETAIL

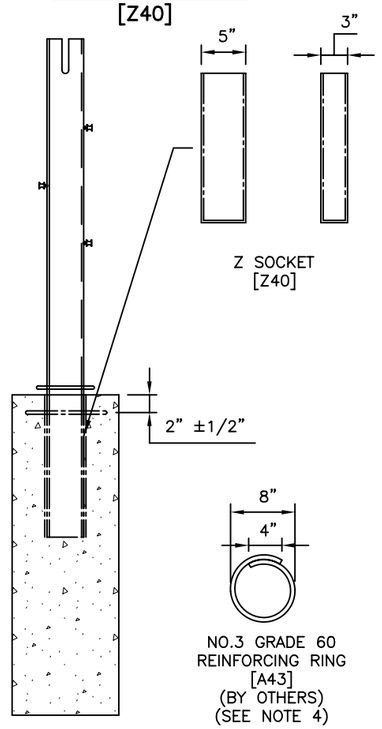


NOTES SPECIFIC TO ROPE CONNECTION DETAIL

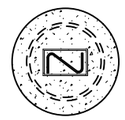
1. THE WIRE ROPE TERMINALS SHALL BE THREADED A MINIMUM OF 1-1/2" INTO RIGGING SCREW.
2. AFTER FINAL TENSIONING, THE TERMINALS SHALL BE VISIBLE IN THE INSPECTION HOLES.

SOCKET ASSEMBLY

CONCRETE FOOTING
[Z40]



ELEVATION

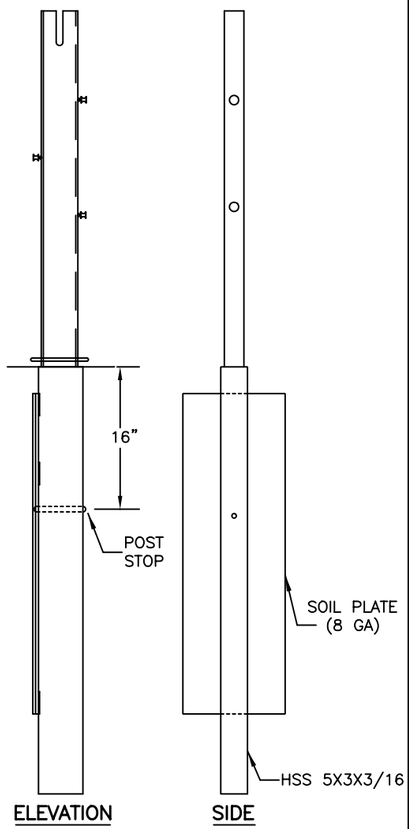


PLAN

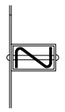
NOTES SPECIFIC TO CONCRETE FOOTING

1. SIZE OF FOOTING WILL BE DETERMINED BY SOIL CONDITIONS, FOUNDATION TYPE AND PROJECT CONDITIONS.
2. CONCRETE BASED ON AGENCY SPECIFICATIONS.
3. CONCRETE BY OTHERS.
4. REINFORCING RING (BY OTHERS) WILL BE USED ACCORDING TO FOUNDATION SIZE AND TYPE. THE REINFORCEING RING MAY BE OMITTED IF THE FOOTING IS PLACED IN A CONTINOUS CONCRETE MOW STRIP.
5. FOOTING SHALL BE FLUSH WITH THE GROUND LINE, TO A MAXIMUM OF 1 INCH BELOW OR ABOVE GROUND LINE.
6. SOCKET SHALL BE ±2° OF VERTICAL PLUMB.

DRIVE SOCKET
[Z44]



ELEVATION SIDE



PLAN

NOTES SPECIFIC TO DRIVE SOCKETS

1. SIZE OF SOIL PLATE WILL BE DETERMINED BY SOIL CONDITIONS AND PROJECT CONDITIONS.
2. THE SOIL PLATE SHALL BE PARALLEL TO ROADWAY AND CAN FACE TOWARD OR AWAY FROM THE TRAVEL LANE.
3. FOOTING SHALL BE FLUSH WITH THE GROUND LINE, TO A MAXIMUM OF 1 INCH BELOW OR ABOVE GROUND LINE.
4. SOCKET SHALL BE ±2° OF VERTICAL PLUM.
5. SOCKETS SHALL BE DRIVEN IN A MANNER TO NOT DISTORT OR DESTROY THE TOP OF SOCKET TO A DEGREE THAT PLACES THE SOCKET OR LINE POST OUT OF CONSTRUCTION TOLERANCES.

GENERAL NOTES:

1. BRIFEN DRAWINGS, SPECIFICATIONS, AND PRODUCT MANUAL SHOULD BE REVIEWED PRIOR TO STARTING AN INSTALLATION. FOR ADDITIONAL INFORMATION OR QUESTIONS, CONTACT BRIFEN USA, INC. 1-866-427-4336.
2. THE BRIFEN WRSF HAS BEEN SUCCESSFULLY TESTED TO NCHRP 350 TL-4 CONDITIONS ON SLOPES 6:1 OR FLATTER AND NCHRP 350 TL-3 CONDITIONS ON SLOPES 4:1 TO 6:1.
3. THE POST SPACING SHALL BE DETERMINED BY THE SPECIFYING AGENCY. POST SPACING MAY BE DECREASED TO AVOID OBSTRUCTIONS OR UTILITIES. IN NO EVENT SHALL THE POST SPACING EXCEED 21'-0".
4. BRIFEN WRSF SHALL BE PLACED ON A SMOOTH SURFACE, WITHOUT HUMPS, DROP-OFFS, HOLES, ETC THAT WOULD INTERFERE WITH THE STABILITY OF THE ERRANT VEHICLE. GRADING, FILL AND COMPACTION MAY BE REQUIRED TO ASSURE THAT ROPES ARE INSTALLED AT THE DESIGN HEIGHT.

Texas Department of Transportation

Design Division Standard

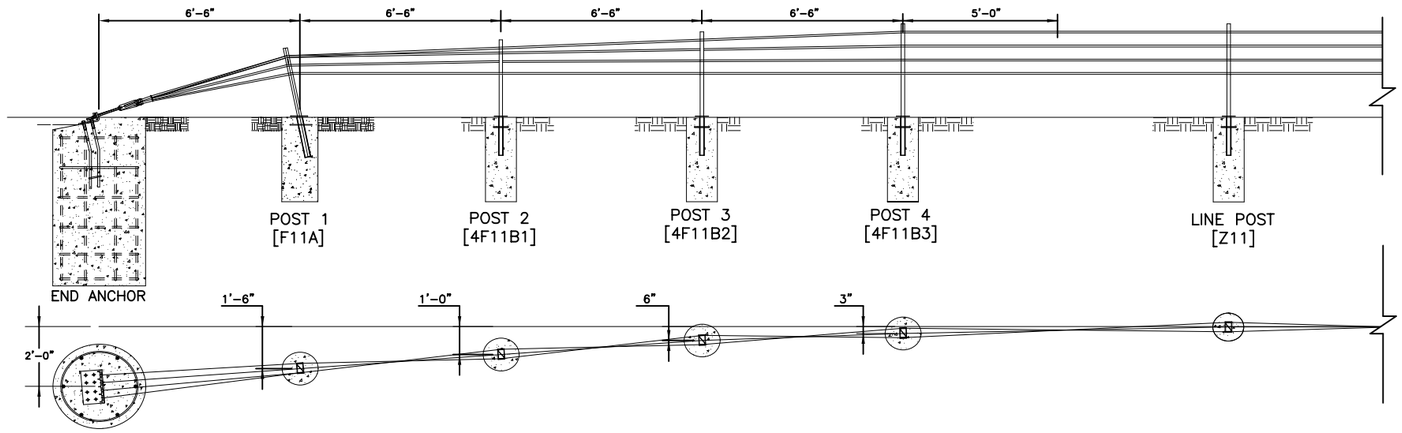
BRIFEN
WIRE ROPE SAFETY FENCE
(TL-4)

BRIFEN(TL4)-14

FILE: brifent1414.dgn	DN: TxDOT	CK: RM	DW: VP	CK:
©TxDOT: MARCH 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		167

DATE: 2/28/2023
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\05 Roadway Details\00_TxDOT Standards\brifent1414.dgn

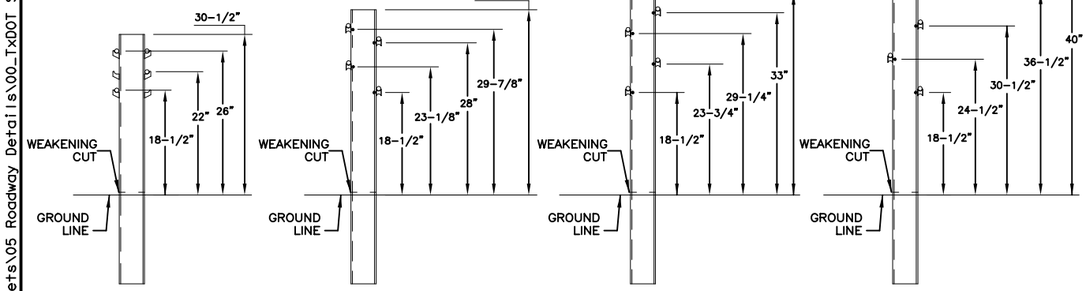
WRGT-FL END ANCHOR LAYOUT



GENERAL NOTES:

1. BRIFEN DRAWINGS, SPECIFICATIONS, AND PRODUCT MANUAL SHOULD BE REVIEWED PRIOR TO STARTING AN INSTALLATION. FOR ADDITIONAL INFORMATION OR QUESTIONS, CONTACT BRIFEN USA, INC. AT 1-866-427-4336.
2. THE WRGT-FL END ANCHOR HAS BEEN SUCCESSFULLY TESTED TO NCHRP 350 TL-3 CONDITIONS. THE LENGTH OF NEED BEGINS 31'-0" FROM THE END ANCHOR. POSTS A THROUGH POST B3, SPACED 6'-6" APART, HAVE WEAKENED CUTS AT THE GROUND THAT SHALL FACE THE ANCHOR.
3. ANCHOR AND LINE POST DIMENSIONS AND STEEL REINFORCEMENT WILL BE DETERMINED ON PROJECT SPECIFIC SOIL CLASSIFICATION, PROPERTIES AND TEMPERATURE EXTREMES. CONTACT BRIFEN USA, INC. FOR ADDITIONAL INFORMATION.
4. ALL REINFORCEMENT AND CONCRETE FOR THE ANCHORS AND LINE POSTS PROVIDED BY OTHERS.
5. REINFORCEMENT AND CONCRETE PROPERTIES SHALL MEET AGENCY SPECIFICATIONS.
6. FOR PLACEMENT NEAR GUARDRAIL OR OTHER OBSTACLES CONTACT BRIFEN USA, INC. FOR ADDITIONAL DRAWINGS AND SUPPORT.

WRGT-FL POST DETAILS

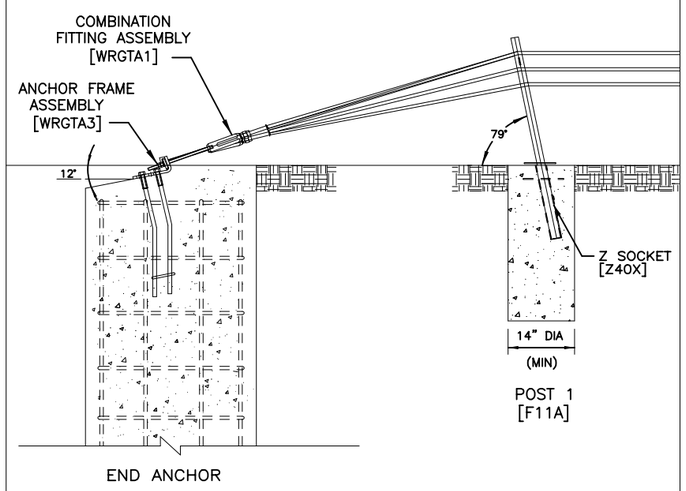


POST 1 [F11AL] | POST 2 [4F11B1L] | POST 3 [4F11B2L] | POST 4 [4F11B3L]

NOTES SPECIFIC TO WRGT-FL POST DETAIL

1. ROPE HEIGHTS SHALL BE ±1" TO GROUND LINE.
2. POST SHALL BE ±4" FROM VERTICAL PLUMB.
3. POST CAPS SHALL BE USED IF SPECIFIED.
4. REFLECTORS SHALL BE SPACED ACCORDING TO AGENCY SPECIFICATIONS.
5. REFLECTORS CAN BE PLACED ON THE POST CAP OR POST.
6. Z EXCLUDER (Z41) SHALL BE USED.
7. POST A & SOCKET SHALL BE PLACED 79° (±4°) TOWARD END ANCHOR FROM THE HORIZONTAL PLANE.
8. POST A SOCKET SHALL BE PLACED IN 14" (MIN) CONCRETE FOUNDATION. DEPTH TO BE DETERMINED FROM SOIL CONDITIONS AND PROJECT CONDITIONS.
9. FOUNDATIONS FOR POST 2 THRU 4 SHALL BE THE SAME AS THE LINE POST ASSEMBLY'S FOR THE PROJECT.
10. WEAKENED CUTS SHALL FACE END ANCHOR.

END ANCHOR DETAILS

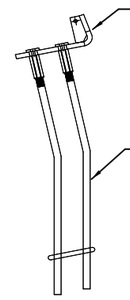


NOTES SPECIFIC TO END ANCHOR DETAIL

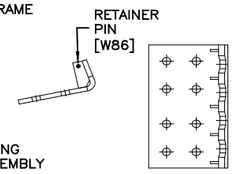
1. THE END ANCHOR ASSEMBLY SHALL BE PLACED 12° (+3°, -1°) BELOW HORIZONTAL PLANE.
2. POST 1 & SOCKET SHALL BE PLACED 79° (±4°) TOWARD END ANCHOR FROM THE HORIZONTAL PLANE.
3. POST 1 SOCKET SHALL BE PLACED IN 14" (MIN) CONCRETE FOUNDATION. DEPTH TO BE DETERMINED FROM SOIL CONDITIONS AND PROJECT CONDITIONS.

END ANCHOR COMPONENTS

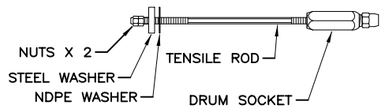
ANCHOR FRAME ASSEMBLY



ANCHOR FRAME [A70]



COMBINATION FITTING [WRGTA1]



SHEET 3 OF 3

Texas Department of Transportation | Design Division Standard

BRIFEN
WIRE ROPE SAFETY FENCE
(TL-4)

BRIFEN(TL4)-14

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	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		168

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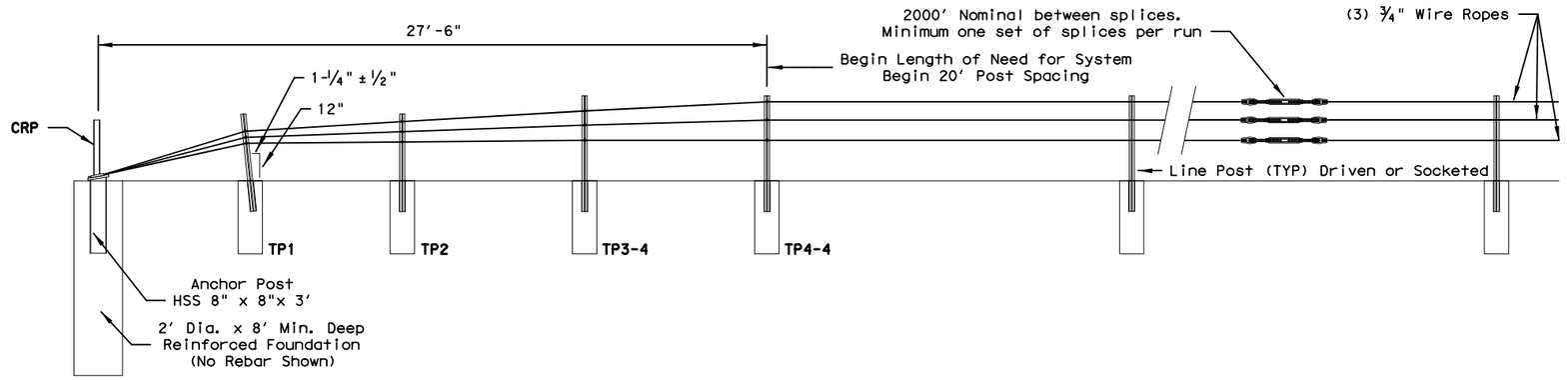
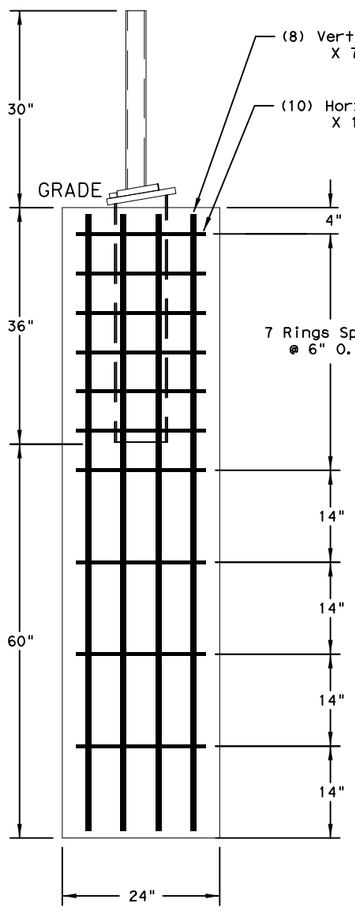
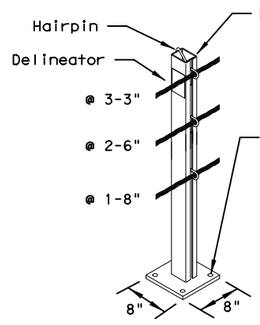
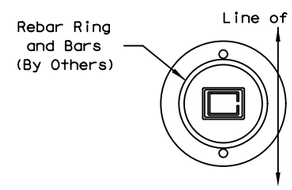




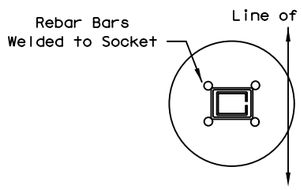
CABLE RELEASE AND ANCHOR POST



LINE POST
(BASE-PLATED OPTION)
Low-Fill Box Culvert Less than 15" Fill



SECTION A



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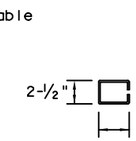
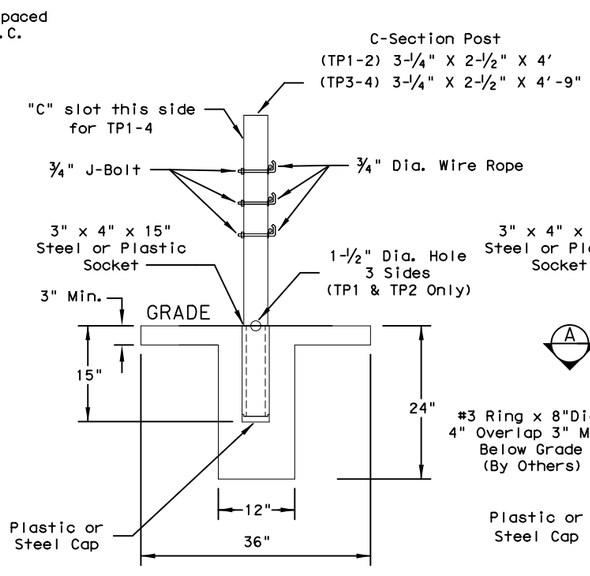
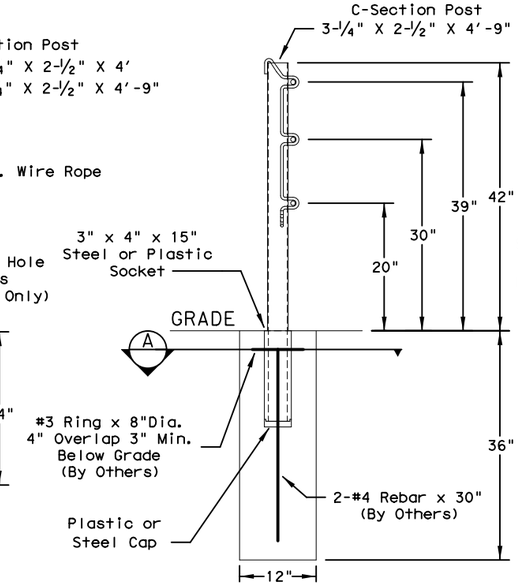


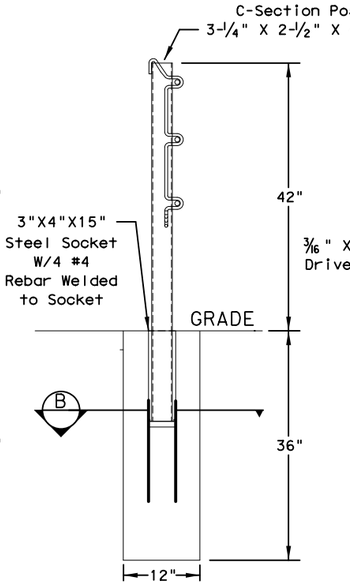
C-SECTION POST



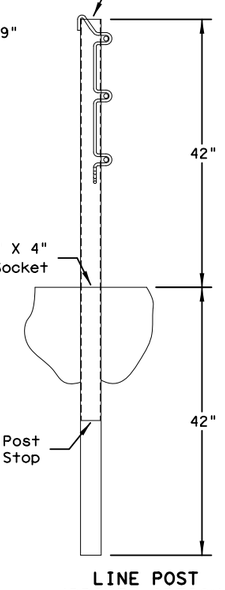
TERMINAL POST
(SHOWN WITH CONCRETE MOWSTRIP)
(Shown with Tube Plate Option)
(See Note 10)



LINE POST SOCKETED
(Shown with Rebar Ring/Bars Socket Option)
(See Note 9)



LINE POST SOCKETED
(Shown with Welded Rebar Socket Option)
(See Note 9)



LINE POST
(DRIVEN OPTION)
(Shown with Driven
Socket Option)
(See Note 9)

GENERAL NOTES

1. For additional information contact Gibraltar, Inc. at 1-800-495-8957, 830-798-5444, or see the manufacturer's product manual.
2. All concrete shall be CLASS A.
3. The Cable Barrier System shall be installed on shoulders or on medians with slopes of 6:1 or flatter. If installed on slopes steeper than 6:1 up to 4:1 the TL-4 system performs as a TL-3 and Gibraltar must be contacted for various guidelines related to placement.
4. The Cable Barrier System is accepted by the FHWA Test Level - 4.
5. See the Texas MUTCD for proper "Barrier" delineation.
6. Rock Clause: Where solid rock is encountered:
   A. For socketed post, continue digging 12" diameter, 15" deep into rock or the required plan depth, whichever comes first.
   B. For driven post, core drill a 4" diameter hole 18" deep into rock or the required plan depth, whichever comes first.
   C. For Anchor post, continue digging 24" diameter, 30" deep into rock or the required plan depth, whichever comes first.
7. Tolerances:
   * LP = 3" out of plumb, at top
   * Cable height = 1"
   * Anchor Post = 5" off of Cable Reference Line
8. The Gibraltar cable barrier system shall be installed in NCHRP Report 350 standard compacted soil. Soil must be well drained.
9. All non-welded rebar by others.
10. Minimum recommended line post foundation.
    A. Without mowstrip, 36" Deep x 12" diameter foundations with #3 rebar ring x 8" diameter with two #4 rebar vertical bars 30" long
    B. With 4" minimum depth hot mix asphalt, 30" deep x 12" diameter foundations with #3 rebar ring x 8" diameter with two #4 rebar vertical bars 30" long.
    C. With 3" minimum depth concrete mowstrip, 24" deep x 12" diameter foundations. (No rebar required)
    D. Direct drive post 42" deep.

CABLE TENSION CHART*	
-10 °F	8000
0 °F	7600
10 °F	7200
20 °F	6800
30 °F	6400
40 °F	6000
50 °F	5600
60 °F	5200
70 °F	4800
80 °F	4400
90 °F	4000
100 °F	3600
110 °F	3200

DEFLECTION	
Deflection	Post Spacing
8'-0"	20 FT
7'-0"	12 FT
6'-8"	10 FT

* Allowable Deviation from Chart +/- 10%

Texas Department of Transportation — Design Division Standard

GIBRALTAR CABLE BARRIER SYSTEM (TL-4)

GBRLTR(TL4)-14

FILE: gbrltrtl414.dgn	DN: TxDOT	CK: RM	DW: VP	CK:
©TxDOT: March 2014	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		169

DATE:
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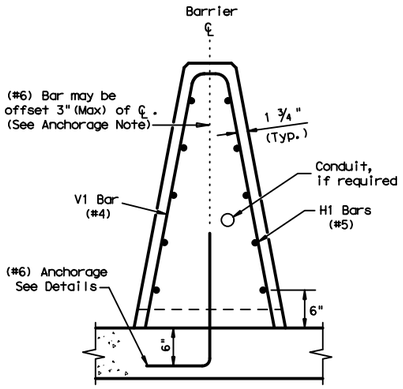
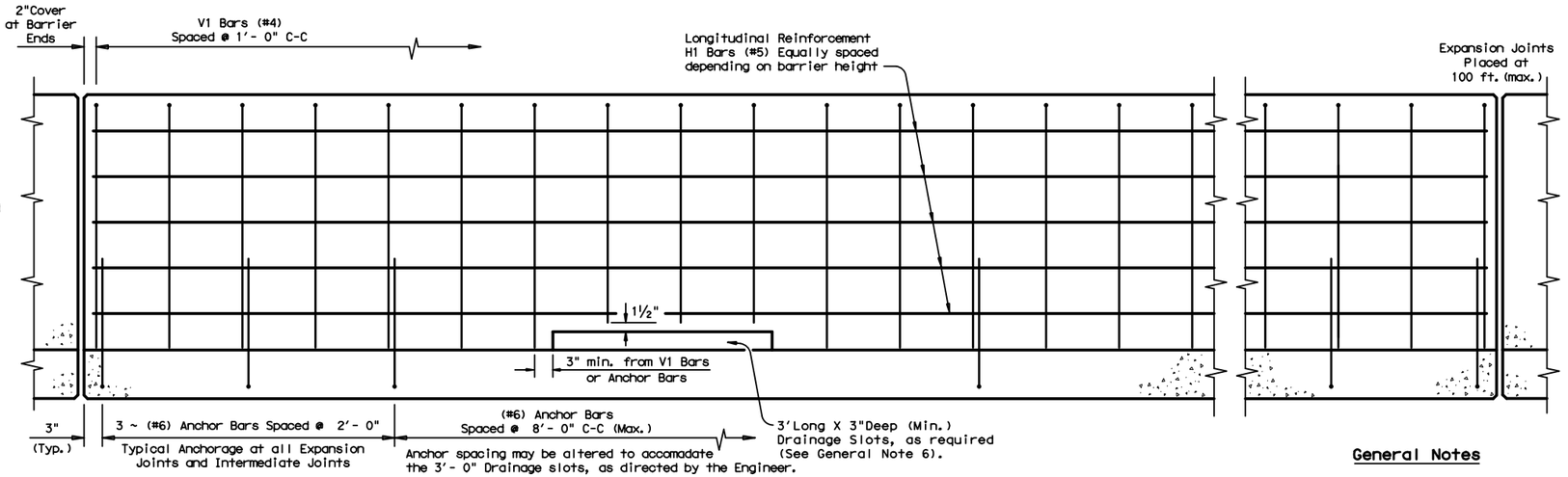


END VIEW

CAST-IN-PLACE (CIP) BARRIER

Barrier is Symmetrical About the Center Line

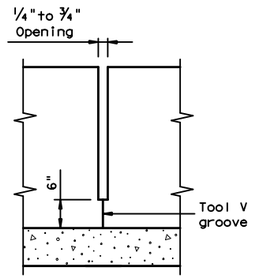


ELEVATION VIEW

Cast-in-Place (SSCB) on Bridge Decks or Continuously Reinforced Concrete Pavement (CRCP) (Showing Reinforcement and Anchor Placement)

Note:
Reinforcement around the drainage slots may be cut or bent to accommodate the edge and top clearances.

The bottom of the reinforcement cage may rest on the top of the Concrete Bridge Deck or CRCP.



INTERMEDIATE JOINT DETAIL

Place at all Bent ℄'s, without expansion joints and spaced at 33 ft. (max), 10 ft. (min).

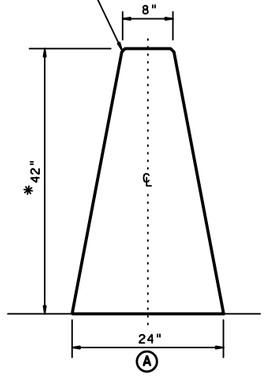
EXPANSION JOINT PLACEMENT

Place at all transverse joints or 100 ft. (max.), 10 ft. (min).

General Notes

1. Concrete shall be Class C. Unless otherwise specified in the plans.
2. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
   If the bridge slab requires epoxy "coated" reinforcement, the barrier and/or anchorage may require the same, if shown elsewhere in the plans.
3. These details cover barrier per Item 514, "Permanent Concrete Traffic Barrier".
4. Anchorage: The "Optional" Anchor system shall be embedded 6" into fresh concrete or using a Type III, Class C Epoxy anchorage system. Follow the manufacturer's directions for installing the expoxied anchor bars. All anchorage shown is the minimum required, and considered subsidiary to the bid item.
5. Top edges of CIP barrier shall have a ¾" chamfer or tooled radius.
6. Drainage slot locations (12'- 0", C-C Min. Spacing) are shown elsewhere, or as directed by the Engineer. Drainage slot heights on the SSCB may be increased to a maximum of 5 inches, without geometric changes to the barrier face.
7. Cast-in-place barrier may be slip formed. Bracing may be tied or tack welded to the reinforcement cage to provide cage stability. Do not weld to anchor bars. The reinforcement cage may rest on the top of the finished grade.
8. For locations where lighting is required, see the SSCB(4) sheet for the proper reinforcement and anchorage.

Top edges of CIP barrier shall have a ¾" chamfer or tooled radius.



* Barrier height (IN.)	Dimensions (IN.)		
	Ⓐ	Ⓑ	Ⓒ
42	24	40 ¼	20 ½
48	26 ¼	46 ¼	22 ¾
54	28 ½	52 ¼	25 1/16

*(SSCB)(42") Barrier height may be increased to 48" or 54".
This would increase the barrier and reinforcement dimensions accordingly.

SINGLE SLOPE CONCRETE BARRIER

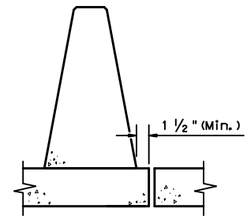
(SSCB)(42")

BARRIER PLACEMENT OVER (CRCP) JOINTS

Barrier may be cast over a "Longitudinal" CRCP Joint.

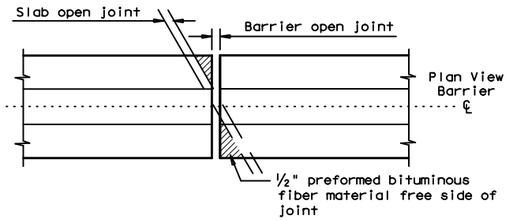
CRCP Joints (with or without tiebars): Two layers of 30 lb roofing felt or ½" preformed bituminous fiber material.

Barrier Anchorage Note: Anchorage must be located at least 3" from a longitudinal joint.

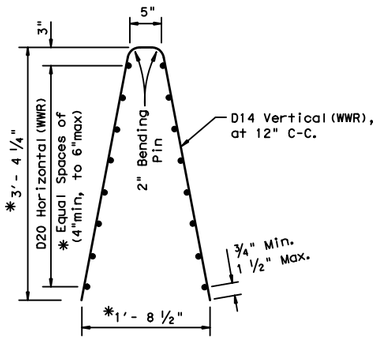


MINIMUM EDGE DISTANCE FROM LONGITUDINAL JOINT

Barrier placement over a longitudinal bridge joint is not recommended.



BARRIER OVER TRANSVERSE OPEN JOINT



Welded Wire Reinforcement (WWR) Option for Bars V1 and H1

(WWR) General Notes

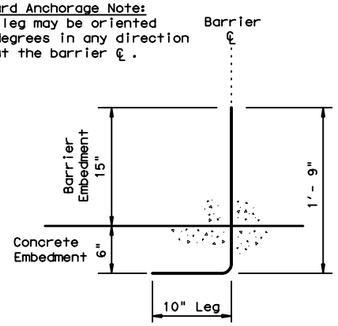
1. Deformed Welded Wire Reinforcement (WWR) shall conform to ASTM A497.
2. Welded wire cage may be cut and bent to accommodate the drainage slots, as directed by the Engineer.
3. Welded wire splice locations shall have a "minimum" splice lap length of 12".
4. Combinations of reinforcing steel and WWR will be permitted, as directed by the Engineer. The dimension from the end of the barrier section to the first wire shall not exceed 3".

Cast-In-Place (CIP) or Slip-Formed (SSCB)

Cast-in-Place barrier may be connected to precast SSCB. Joint connection "Types" may be used in Cast-in-Place barrier, to match the precast barrier connection. (See required connection "Type" elsewhere in the plans)

The weight of Cast-in-Place (SSCB)42" is approx. 717 lbs per ft.

Standard Anchorage Note:
10" leg may be oriented 90 degrees in any direction about the barrier ℄.

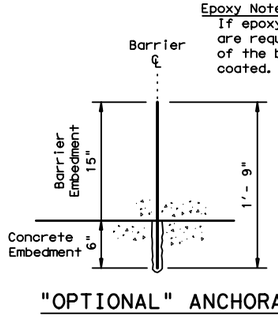


STANDARD ANCHORAGE

(#6) Bar

Concrete Pavement / Bridge Deck Anchorage:
Cast-in-Place or Slip-Formed Barrier
(See General Notes 2)

Epoxy Note:
If epoxy coated anchor bars are required, the lower 6" of the bars must not be epoxy coated.

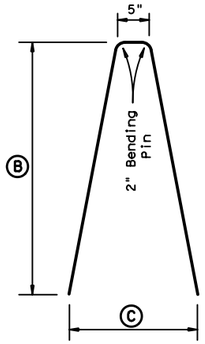


"OPTIONAL" ANCHORAGE

(#6) Bar

Fresh insertion method or Type III, Class C Epoxy Method

Concrete Pavement / Bridge Deck Anchorage:
Cast-in-Place or Slip-Formed Barrier
(See General Notes 2 & 4)



V1 Bar

(#4) Bar

Texas Department of Transportation — Design Division Standard

SINGLE SLOPE CONCRETE BARRIER

CAST-IN-PLACE
(TYPE 1)
(BRIDGE DECK OR CRCP)

SSCB(1)-16

FILE: sscb116.dgn	DN: TxDOT	CK: HC/AN	DW: BD/VP	CK: KM
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REVISIONS				
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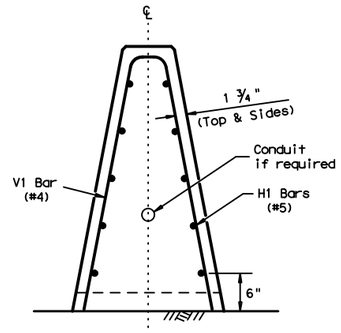
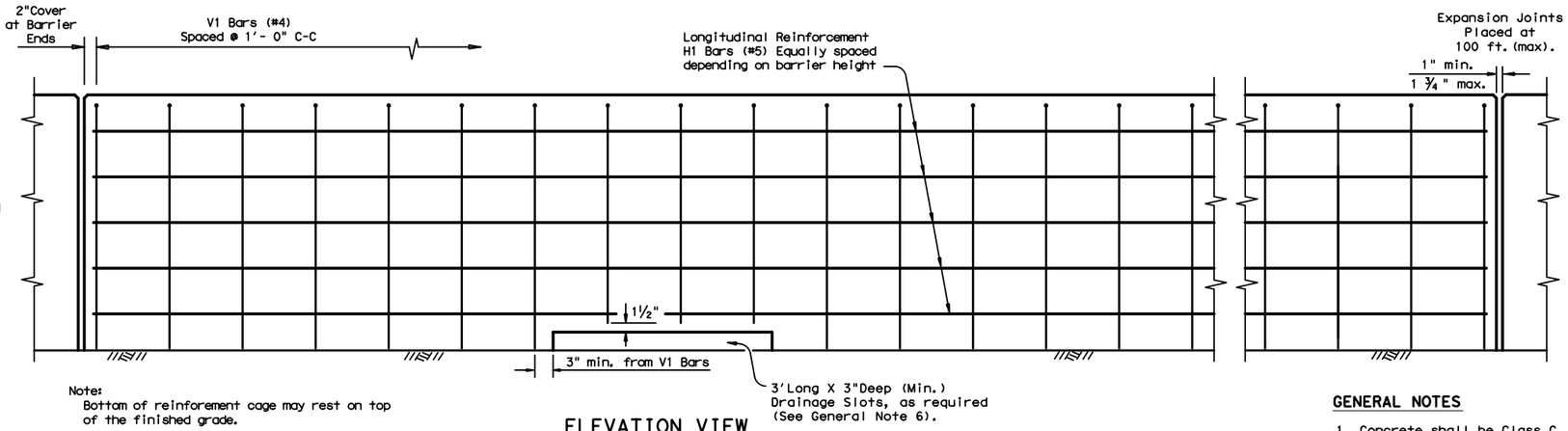


END VIEW

CAST-IN-PLACE (CIP) BARRIER

Barrier is Symmetrical About the Center Line



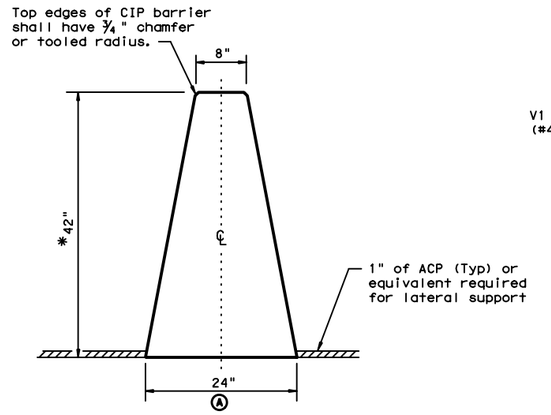
Note:
Bottom of reinforcement cage may rest on top of the finished grade.
Reinforcement around the drainage slots may be cut or bent to accommodate the edge and top clearances.

ELEVATION VIEW

Cast-in-Place (SSCB)(Type 2)on Roadway

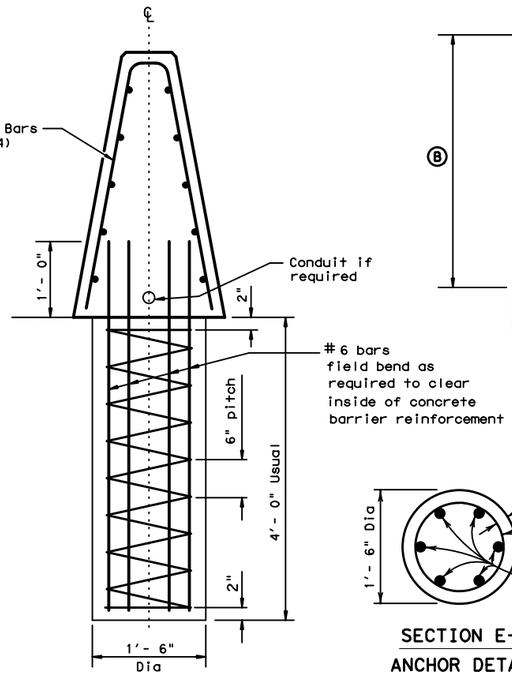
GENERAL NOTES

1. Concrete shall be Class C. Unless otherwise specified in the plans.
2. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
3. These details cover barrier per Item 514, "Permanent Concrete Traffic Barrier".
4. The Anchorage shown is considered subsidiary to the bid item.
5. Top edges of CIP barrier shall have a ¾" chamfer or tooled radius.
6. Drainage slot locations (12'- 0", C-C Min. Spacing) are shown elsewhere, or as directed by the Engineer. Drainage slot heights on the SSCB may be increased to a maximum of 5 inches, without geometric changes to the barrier face.
7. Cast-in-place barrier may be slip formed. Bracing may be tied or tack welded to the reinforcement cage to provide cage stability. Do not weld to anchorage.
8. For locations where lighting is required, see the SSCB(4) sheet for the proper reinforcement and anchorage.



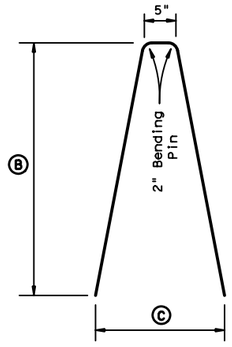
SINGLE SLOPE CONCRETE BARRIER

(SSCB)(42")



SECTION D-D

ANCHOR DETAIL

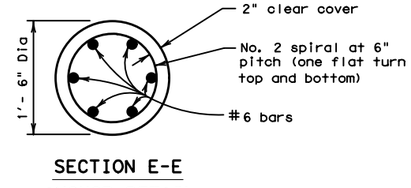


V1 Bar

#4 Rebar

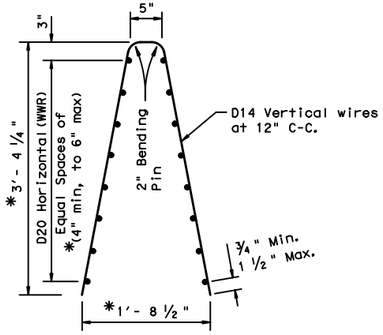
BARRIER HEIGHT (IN.)	* DIMENSIONS (IN.)		
	Ⓐ	Ⓑ	Ⓒ
42	24	40 ¼	20 ½
48	26 ¼	46 ¼	22 ¾
54	28 ½	52 ¼	25 ⁹⁄₁₆

*(SSCB)(42") Barrier height may be increased to 48" or 54". This would increase the barrier and reinforcement dimensions accordingly.



SECTION E-E

ANCHOR DETAIL



Welded Wire Reinforcement (WWR) Option for Bars V1 and H1

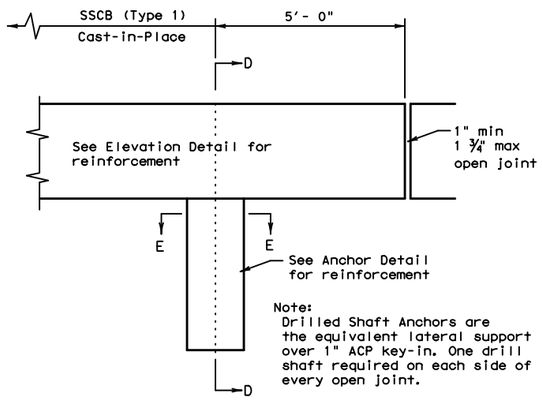
(WWR) General Notes

1. Deformed Welded Wire Reinforcement (WWR) shall conform to ASTM A497.
2. Welded wire cage may be cut and bent to accommodate the drainage slots, as directed by the Engineer.
3. Weled wire splice locations shall have a "minimum" splice lap length of 12".
4. Combinations of reinforcing steel and WWR will be permitted, as directed by the Engineer. The dimension from the end of the barrier section to the first wire shall not exceed 3".

Cast-In-Place (CIP) or Slip-Formed (SSCB)

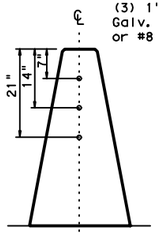
Cast-in-Place barrier may be connected to precast SSCB. Joint connection "Types" may be used in Cast-in-Place barrier, to match the precast barrier connection. (See required connection "Type" elsewhere in the plans)

The weight of Cast-in-Place (SSCB)42" is approx. 717 lbs per ft.



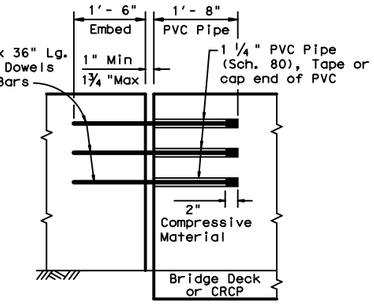
ELEVATION

ANCHOR LOCATION



END VIEW

Dowel locations



EXPANSION JOINT (Dowel Connection)

Dowels may be used, as directed by the Engineer, in locations where the barrier could be laterally displaced.

Texas Department of Transportation

Design Division Standard

SINGLE SLOPE CONCRETE BARRIER

CAST-IN-PLACE
(TYPE 1)
(FLEXIBLE PAVEMENT)

SSCB(1F)-10

FILE: sscb1f10.dgn	DN: TxDOT	CK: AM	DW: BD	CK:
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		171

DATE: 2/28/2023 $TIME$
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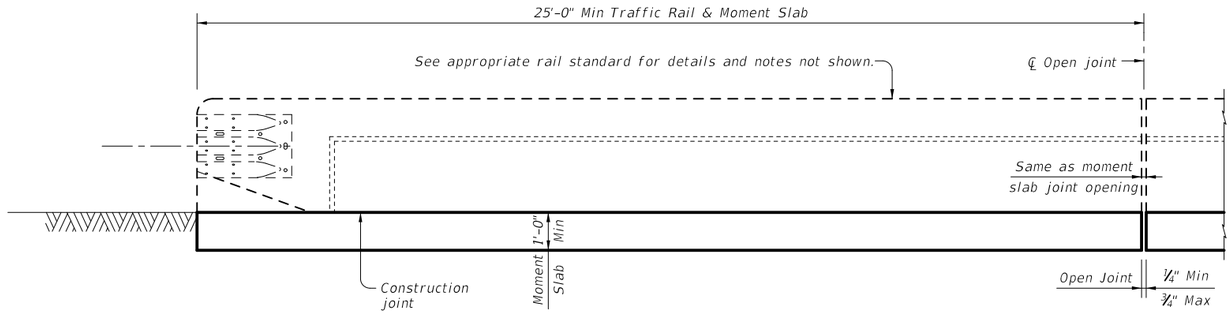
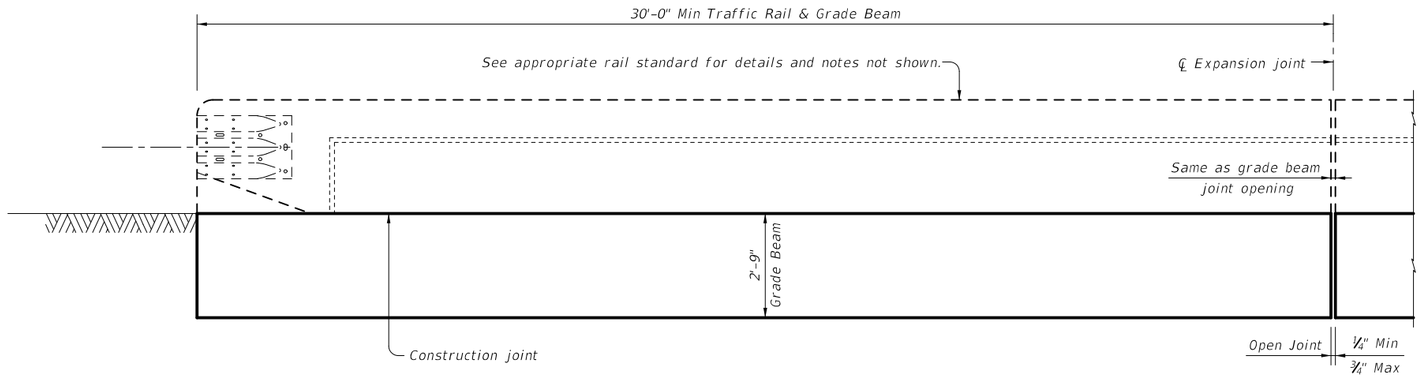


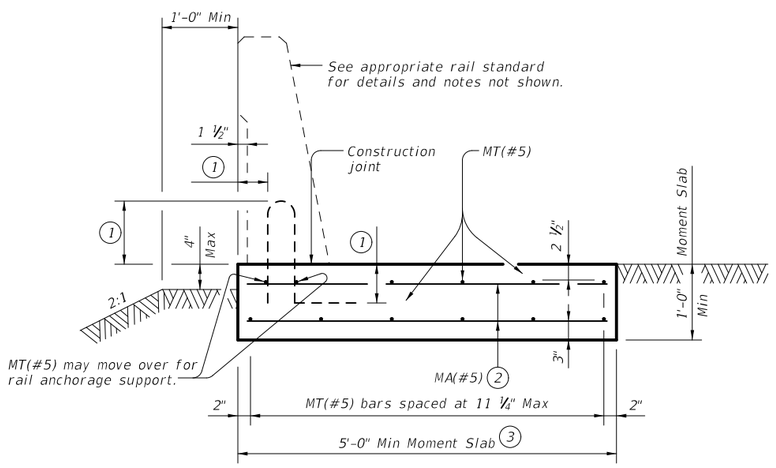
ROADWAY ELEVATION OF TRAFFIC RAIL ON MOMENT SLAB (TRF-MS)

(Showing SSTR rail other rails are similar. Reinforcing not shown for clarity.)



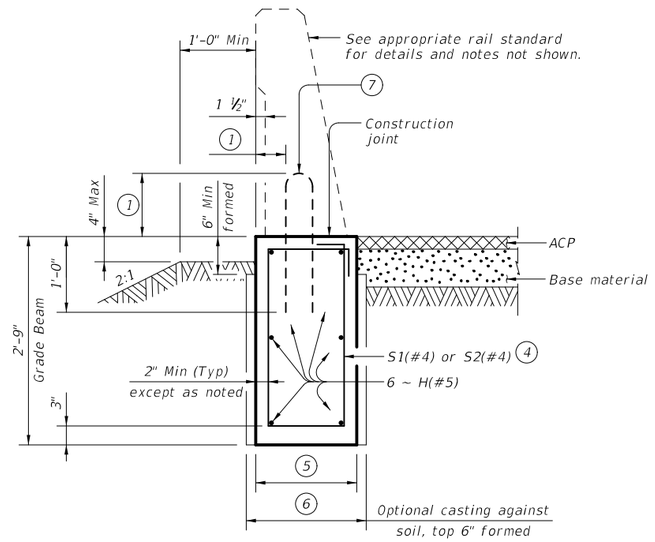
ROADWAY ELEVATION OF TRAFFIC RAIL ON GRADE BEAM (TRF-GB)

(Showing SSTR rail other rails are similar. Reinforcing not shown for clarity.)



SECTION OF TRAFFIC RAIL ON MOMENT SLAB (TRF-MS)

(Showing SSTR rail other rails are similar.)



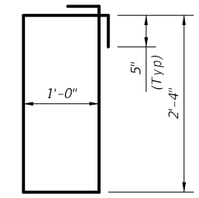
SECTION OF TRAFFIC RAIL ON GRADE BEAM (TRF-GB)

(Showing SSTR rail other rails are similar.)

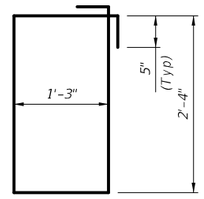
1. See applicable bridge rail standard.
2. MA(#5) space longitudinally along moment slab at 12" Max. (Spaced 2 ½" longitudinally from outside edge of moment slab).
3. Approximate moment slab concrete = 0.19 CY/LF and reinforcement = 22.4 LB/LF.
4. S1(#4) or S2(#4) spaced longitudinally along grade beam at 8" Max. (Spaced 2 ½" longitudinally from outside edge of grade beam).
5. Use bar S1(#4) with 1'-4" grade beam width and bridge rail types: All rails except for T224, C412, T66, C66, T80HT and T80SS. Approximate grade beam concrete = 0.14 CY/LF and reinforcement = 13.8 LB/LF.

   Use bar S2(#4) with 1'-7" grade beam width and bridge rail types: T66 and C66. Approximate grade beam concrete = 0.16 CY/LF and reinforcement = 14.2 LB/LF.
6. 1'-6" for bridge rail types: All rails except for T224, C412, T66, C66, T80HT and T80SS.

   1'-9" bridge rail types: T66 and C66.
7. Modify reinforcing on standard bridge rail anchorage if necessary by extending rail anchorage 12" Min, vertically into traffic rail



BARS S1(#4)



BARS S2(#4)

CONSTRUCTION NOTES:

Align moment slab (TRF-MS) or grade beam (TRF-GB) open joints with rail open joints maintaining no less than minimum rail length. Provide moment slab (TRF-MS) or grade beam (TRF-GB) with open joints at no greater than 100' spacing unless otherwise shown on the plans or approved by the Engineer.

MATERIAL NOTES:

Provide Class "C" concrete. Provide Class "C" (HPC) if required elsewhere.

Provide Grade 60 reinforcing steel.

Epoxy coat or galvanize all reinforcing steel if required elsewhere.

Deformed Welded Wire Reinforcement (WWR) (ASTM A1064) of equal size and spacing may be substituted for bars S1(#4), S2(#4) and H(#5) unless noted otherwise. Provide the same laps as required for reinforcing bars.

Provide bar laps, where required, as follows:

Uncoated or galvanized ~ #5 = 2'-4"
Epoxy coated ~ #5 = 3'-6"

GENERAL NOTES:

Use of these details will result in a moment slab (TRF-MS) or grade beam (TRF-GB) foundation that is acceptable for traffic rails which are MASH TL-2, TL-3, or TL-4 compliant.

See elsewhere in the plans for selected options between moment slab (TRF-MS) and/or grade beam (TRF-GB).

The foundation design resistance is based on the current AASHTO bridge railing requirements with the assumption of fair to good soil support conditions. Poor soil conditions will require suitably deeper and/or wider foundations.

See appropriate rail standard for details and notes not shown.

This detail is intended for use as a guide to unusual railing anchorage situations but may be included in the plans, modified as necessary to apply to specific installations required on the project.

Payment for moment slab (TRF-MS) and/or grade beam (TRF-GB) will be by Class "C" concrete or Class "C" (HPC) concrete for rail foundations.

The associated bridge railing will be paid for by the linear foot which includes the concrete and reinforcement.

Excavation will be subsidiary to other Items.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation

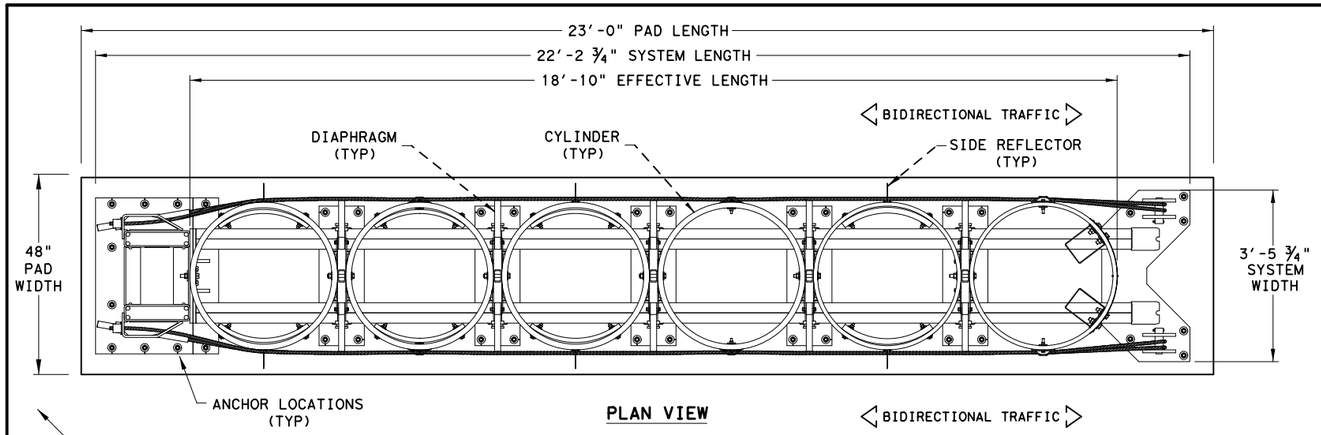
Bridge Division Standard

TRAFFIC RAIL FOUNDATIONS

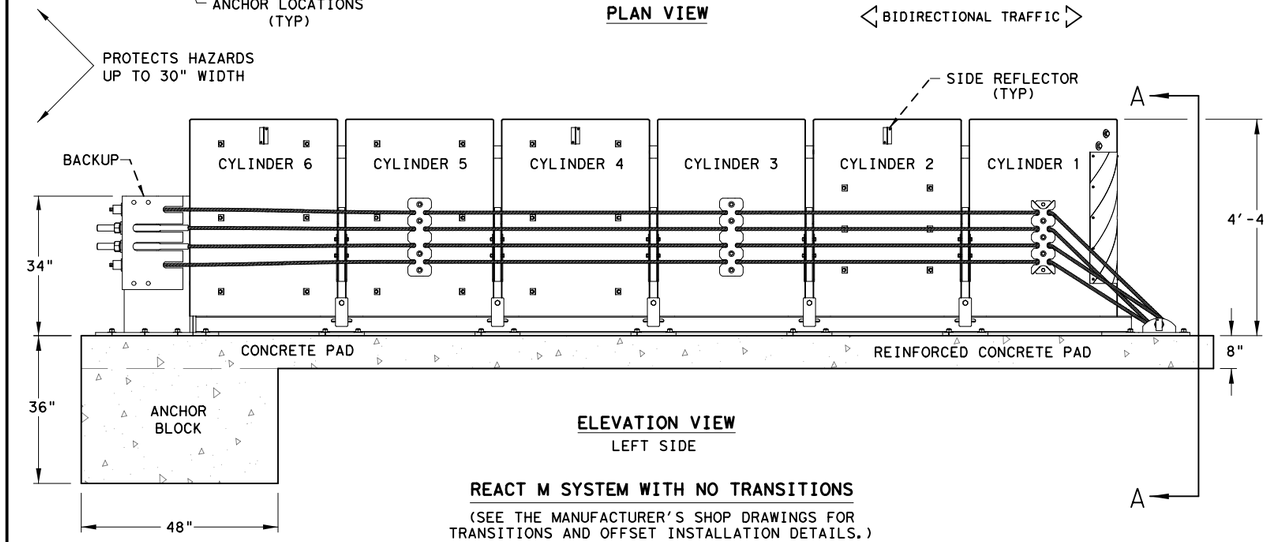
FOR MASH TL-2, TL-3 & TL-4 BRIDGE RAILS

TRF

FILE: rlstd027-20.dgn	DN: TxDOT	CK: TAR	DW: JTR	CK: TAR
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
07-20: Added moment slab with rail foundation lengths.	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		172



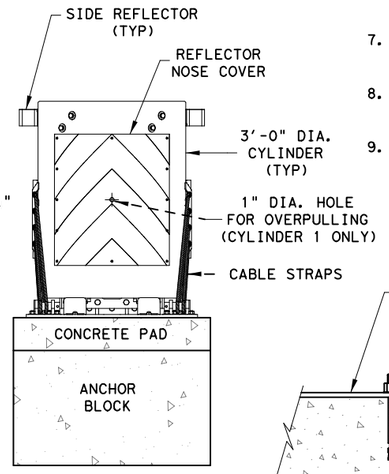
PLAN VIEW



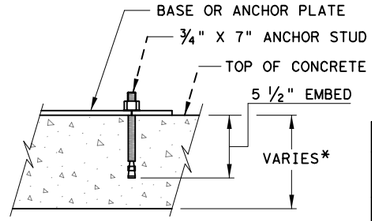
ELEVATION VIEW
LEFT SIDE

REACT M SYSTEM WITH NO TRANSITIONS

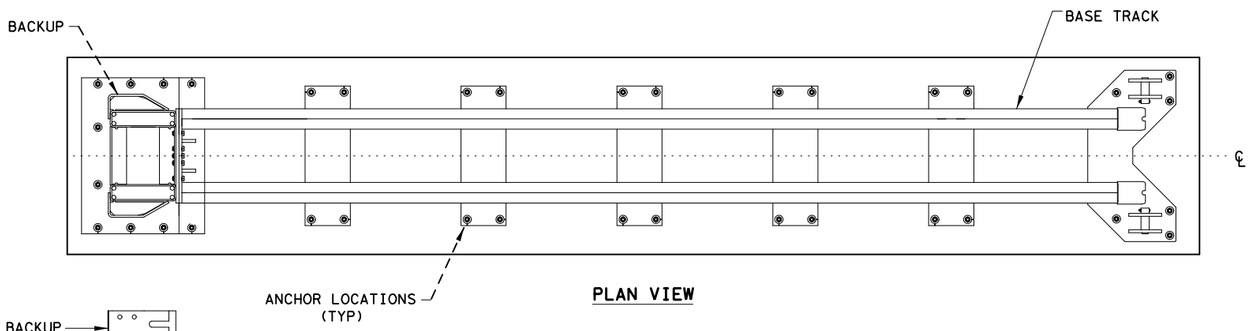
(SEE THE MANUFACTURER'S SHOP DRAWINGS FOR TRANSITIONS AND OFFSET INSTALLATION DETAILS.)



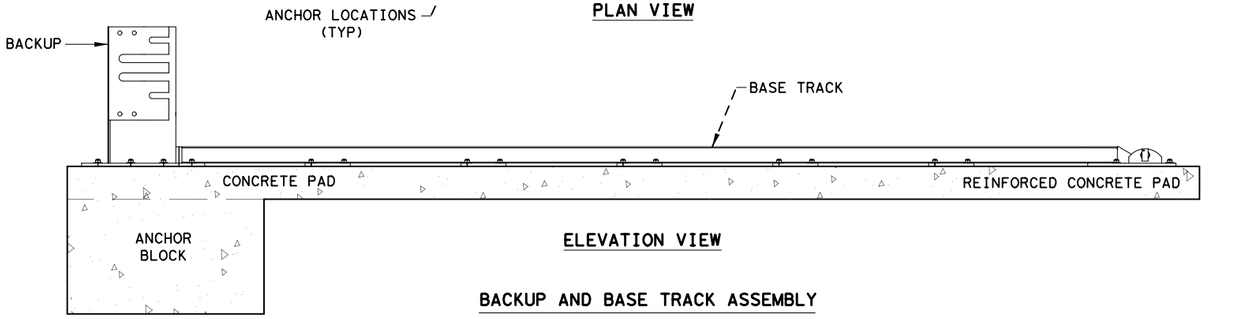
VIEW A-A



ANCHORING DETAIL
*SEE FOUNDATION TYPES TABLE



PLAN VIEW



ELEVATION VIEW

BACKUP AND BASE TRACK ASSEMBLY

(SEE THE MANUFACTURER'S SHOP DRAWINGS FOR TRANSITIONS, OFFSETS, BIDIRECTIONAL AND UNIDIRECTIONAL INSTALLATION DETAILS.)

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: TRINITY HIGHWAY - ENERGY ABSORPTION AT 1(888)323-6374 OR WEBSITE: www.trinityhighway.com.
2. THE NOSE OF THE REACT M SHALL BE CLAD WITH A PLASTIC WRAP WITH STANDARD DELINEATION ADHERED TO THE WRAP AND SHALL HAVE A SERIES OF SIDE MARKER REFLECTORS ON BOTH SIDES OF THE UNIT. SEE SITE PLAN VIEWS FOR MARKER AND PLASTIC WRAP COLOR ORIENTATION.
3. FOR BI-DIRECTIONAL TRAFFIC, APPROPRIATE TRANSITION DETAILS WILL BE AS SHOWN ON THE MANUFACTURER'S SHOP DRAWINGS.
4. DETAILS OF COMPONENTS FOR THE REACT M, BACKUPS AND REINFORCING DETAILS WILL BE SHOWN ON THE MANUFACTURER'S SHOP DRAWINGS FURNISHED TO THE ENGINEER.
5. IF THE CROSS-SLOPE VARIES MORE THAN 2% OVER THE LENGTH OF THE SYSTEM, THE CONCRETE PAD WILL REQUIRE LEVELING. MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%.
6. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
7. THE REACT M SYSTEM SHOULD BE APPROXIMATELY PARALLEL WITH THE BARRIER OR CENTERLINE OF MERGING BARRIERS.
8. ALL STEEL COMPONENTS TO BE HOT DIPPED GALVANIZED EXCEPT STAKES, DRIVE SPIKES, THREADED BOLTS IN BACKUP UNIT, AND WEDGE FITTINGS ON CABLES.
9. THIS DRAWING REPRESENTS THE REACT M TL-3 SYSTEM, RE-DIRECTIVE, NON-GATING CRASH CUSHION THAT CAN PROTECT HAZARDS UP TO 30-INCHES IN WIDTH.

DESIGN DATA TABLE FOR REACT M

TEST NUMBER	TEST LEVEL	OVERALL LENGTH	TRANSITION LENGTH	SYSTEM WIDTH
3-30 TO 3-36	TL-3	22′-2 ¾"	-	3′-5 ¾"
3-37A	TL-3	22′-2 ¾"	9′-10 ¾"	3′-5 ¾"
3-38	TL-3	22′-2 ¾"	-	3′-5 ¾"

ANCHOR SYSTEM TYPE

APPROVED ADHESIVE, 7" STUDS, 5.5" EMBEDMENT

FOUNDATION TYPES

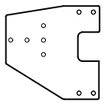
MINIMUM 8" REINFORCED PORTLAND CEMENT CONCRETE PAD (REQUIRED REINFORCING STEEL FOR CONCRETE PAD SHALL BE SHOWN ON THE MANUFACTURER'S SHOP DRAWINGS.

MINIMUM 8" NON-REINFORCED PORTLAND CEMENT CONCRETE ROADWAY MEASURING AT LEAST 12′ WIDE BY 50′ LONG)

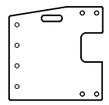
MINIMUM 7" CONCRETE DECK STRUCTURE, OR MINIMUM 6" REINFORCED CONCRETE ROADWAY

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE REACT M SYSTEM AND IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

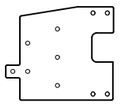
BACKUP ASSEMBLY TYPES FOR SYSTEM TRANSITIONS



SAFETY SHAPE BARRIER TRANSITION (ADAPTER)
TRANSITION PLATE(S) (OPTIONAL)
REQUIRED W/BI-DIRECTIONAL TRAFFIC FLOWS ONLY.



VERTICAL WALL BARRIER TRANSITION (ADAPTER)
TRANSITION PLATE(S) (OPTIONAL)
REQUIRED W/UNIDIRECTIONAL TRAFFIC FLOWS ONLY.



VERTICAL WALL BARRIER TRANSITION (ADAPTER)
TRANSITION PLATE(S) (OPTIONAL)
REQUIRED W/BI-DIRECTIONAL TRAFFIC FLOWS ONLY.

NOTES:
CONTACT THE MANUFACTURER WITH SITE SPECIFIC DATA (SSD) FOR THE CORRECT BACKUP ASSEMBLY AND TRANSITION PANELS OR SIDE PANELS USED FOR STANDARD AND BI-DIRECTIONAL INSTALLATIONS: AT DIVIDED-HIGHWAY MEDIANS OR UNDIVIDED ROADWAYS WHERE THE SYSTEM IS EXPOSED TO IMPACTS FROM ONE OR TWO DIFFERENT DIRECTIONS OF TRAFFIC FLOW.

LOW MAINTENANCE

Texas Department of Transportation — Design Division Standard

TRINITY HIGHWAY ENERGY ABSORPTION CRASH CUSHION REACT M (NARROW) (MASH TL-3)

REACT(M)-21

FILE: reactm21.dgn	DN: TXDOT	CK: KM	DW: SS	CK: CL
©TxDOT: JULY 2021	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		173

DATE: 2/28/2023
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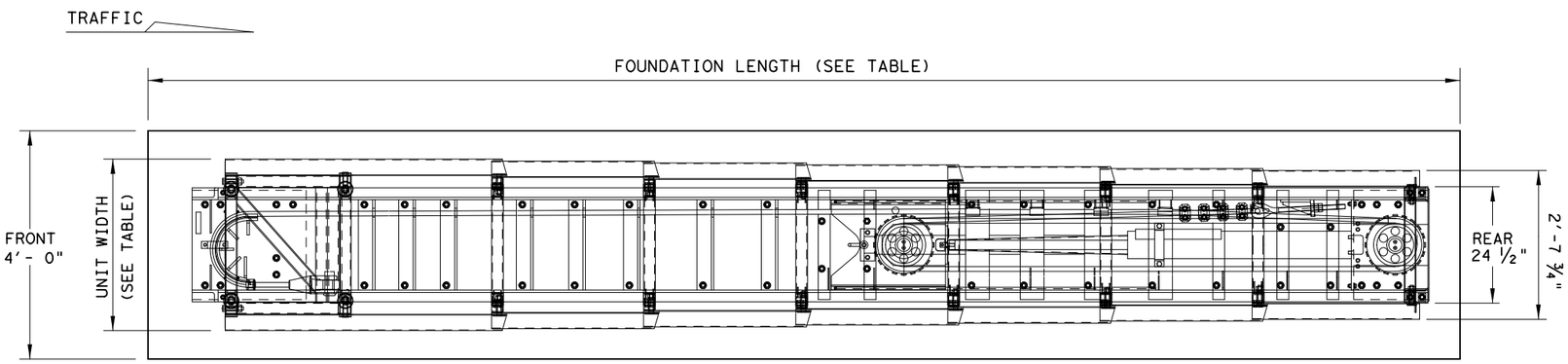
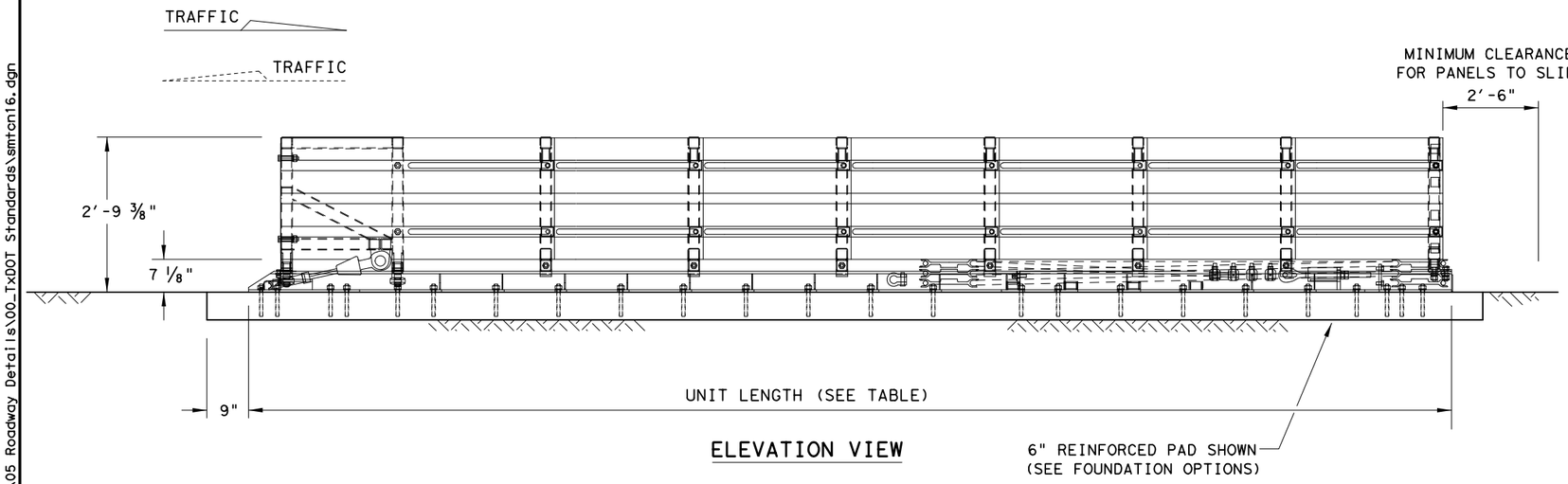


PLAN VIEW



ELEVATION VIEW

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: WORK AREA PROTECTION, CORP. AT (800) 327-4417, OR (630) 377-9100.
2. FOR BI-DIRECTIONAL TRAFFIC, APPROPRIATE TRANSITION PANELS WILL BE REQUIRED.
3. ADDITIONAL DETAILS FOR THE TRANSITION OPTION AND FOUNDATION OPTION WILL BE SHOWN ON THE MANUFACTURER'S SHOP DRAWINGS FURNISHED TO THE ENGINEER.
4. CONCRETE SHALL BE CLASS "S" WITH A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.
5. MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%.
6. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
7. THE SCI100GM & SCI70GM SYSTEMS SHOULD BE APPROXIMATELY PARALLEL WITH THE BARRIER OR CENTERLINE OF MERGING BARRIERS.

NOTE:
FOR ATTACHMENT AND TRANSITIONS TO OTHER SHAPES, BARRIERS, RAILINGS AND BI-DIRECTIONAL TRAFFIC FLOWS ARE AVAILABLE. (SEE MANUFACTURER'S PRODUCT MANUAL)

NOTE:
SIDE PANELS CAN TRAVEL 30" BEYOND THE LAST TERMINAL BRACE AT THE REAR OF THE CUSHION. ALL OBJECTS THAT MAY INTERFERE WITH THIS MOTION CAN AFFECT PERFORMANCE OF AND MAY CAUSE UNDUE DAMAGE TO THE CRASH CUSHION.

MODEL	TEST LEVEL	UNIT LENGTH (approx.)	UNIT WIDTH	FOUNDATION LENGTH	OBSTACLE WIDTH
SCI70GM	TL-2	13′-6"	2′-10 ⅝"	15′- 6 ¼"	24"to 36"
SCI100GM	TL-3	21′-6"	3′-1 ½"	23′- 0"	24"to 36"

SYSTEM AND PAD LENGTHS VARY DEPENDING ON BACKUP TYPE.

FOUNDATION OPTIONS
6" REINFORCED CONCRETE (5 ½" ANCHOR EMBEDMENT)
8" UNREINFORCED CONCRETE (5 ½" ANCHOR EMBEDMENT)
3" MIN. ASPHALT OVER 3" MIN. CONCRETE (16 ½" ANCHOR EMBED.)
6" ASPHALT OVER 6" COMPACT SUBBASE (16 ½" ANCHOR EMBED.)
8" MINIMUM ASPHALT (16 ½" ANCHOR EMBEDMENT)

FOR STEEL PLACEMENT IN CONCRETE FOUNDATIONS, SEE MANUFACTURER'S PRODUCT MANUAL.

TRANSITION OPTIONS
CONCRETE VERTICAL WALL
CONCRETE TRAFFIC BARRIERS
GUARDRAIL (W-BEAM)
GUARDRAIL (THRIE-BEAM)

TRANSITION TYPES ARE SHOWN ELSEWHERE ON THE PLANS (I.E. ATTENUATOR LOCATION DETAILS OR IN THE GENERAL NOTES).

FOR BI-DIRECTIONAL TRANSITION PANEL AND END SHOE DETAILS, SEE MANUFACTURER'S PRODUCT MANUAL.

LOW MAINTENANCE

Texas Department of Transportation

Design Division Standard

WORK AREA PROTECTION CORP (SMART-NARROW)

SMTC(N)-16

FILE: smtcn16.dgn	DN: TxDOT	CK: KM	DW: VP	CK: VP
©TxDOT: February 2006	CONT	SECT	JOB	HIGHWAY
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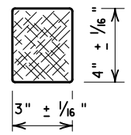
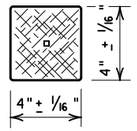
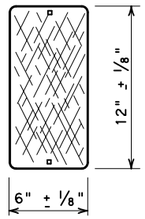
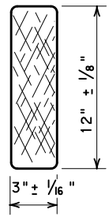
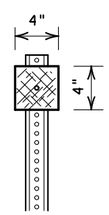
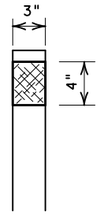
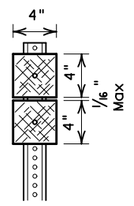
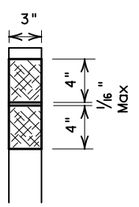
	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		174

DATE: 2/28/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\05 roadway\pvmt mrks\dom1-20.dgn

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX(XX)

NUMBER OF REFLECTORS
S = Single
D = Double

COLOR OF REFLECTORS
W = White
Y = Yellow
R = Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC = Wing Channel Post
YFLX = Yellow Flexible Post
WFLX = White Flexible Post
BRF = Barrier Reflector

TYPE OF MOUNT
GND = Embedded (drivable or set in concrete)
CTB = Concrete Barrier Mount
GF1 or GF2 = Guard Fence Attachment
SRF = Surface Mount

DIRECTION
If Required
BI = Bi-Directional
BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

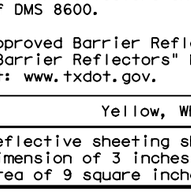
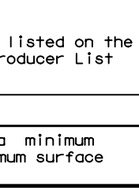
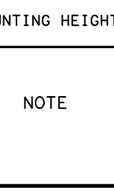
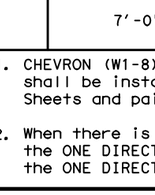
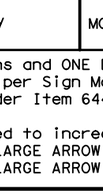
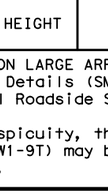
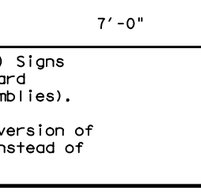
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s)(Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
WFLX = White Flexible Post
TWT = Thin Walled Tubing

TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

DIRECTION
If Required
BI = Bi-Directional

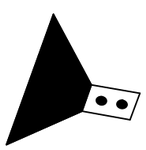
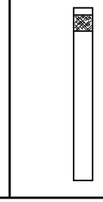
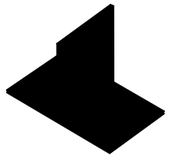
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

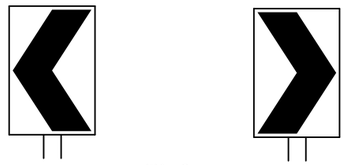
DEPARTMENTAL MATERIAL SPECIFICATIONS

FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

BARRIER REFLECTORS (BRF)

	GF1	GF2	CTB
DEVICE			
	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.		
SHEETING	Yellow, White, Red		
NOTE	1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.		

CHEVRONS

DEVICE	 W1-8			
SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	
NOTE	1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies). 2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).			

ONE DIRECTION LARGE ARROW

DEVICE	 W1-6	
SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

NOTE:

Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	ABL	SCURRY, ETC.		175

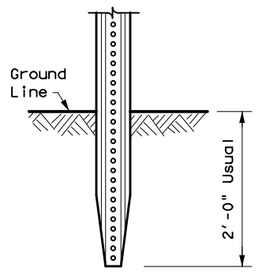
20A

DATE: 2/28/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\05 Roadway Typical\dom2-20.dgn

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

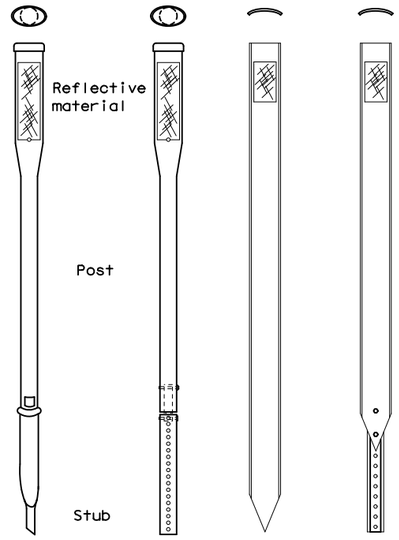


NOTES

1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

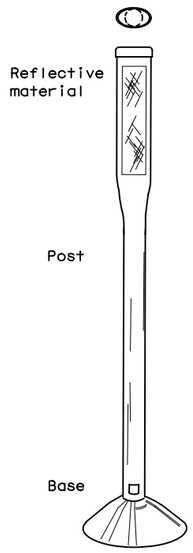
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



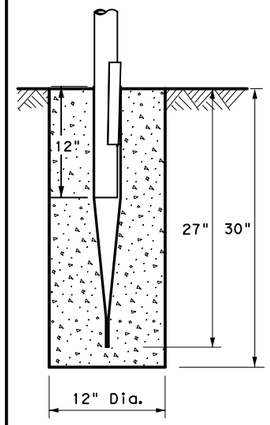
SURFACE MOUNT

NOTES

1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.

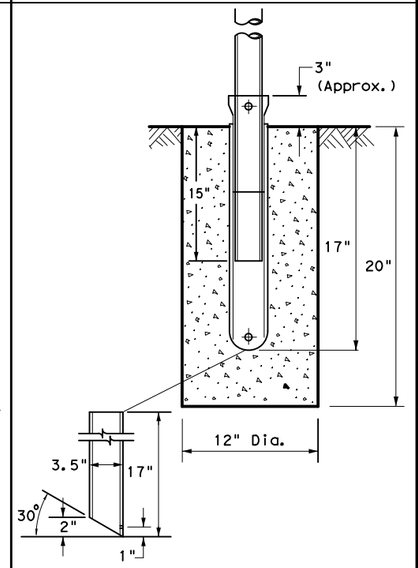
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

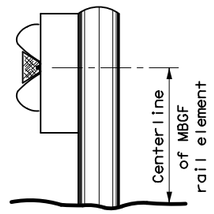
NOTE

1. Install per manufacturer's recommendations.

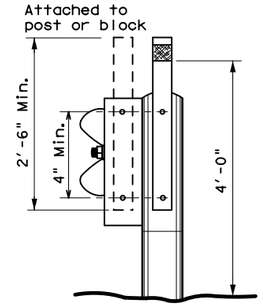
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

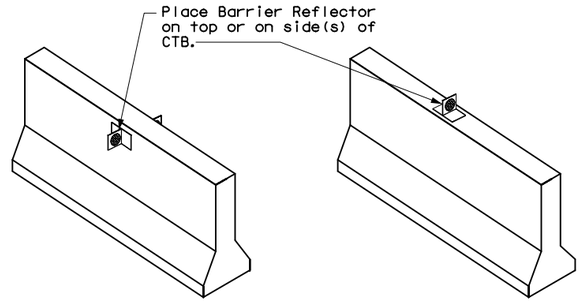
GF1



GF2



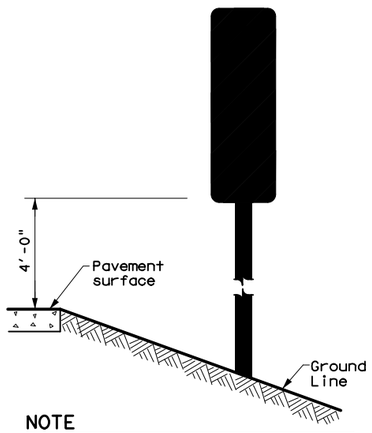
CONCRETE TRAFFIC BARRIER (CTB)



GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

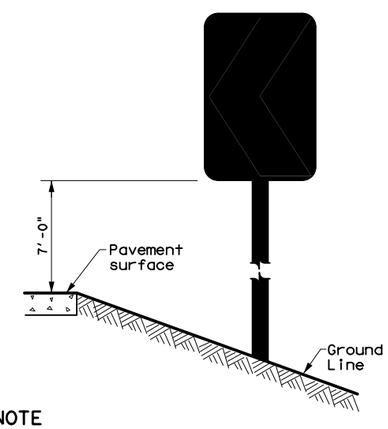
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

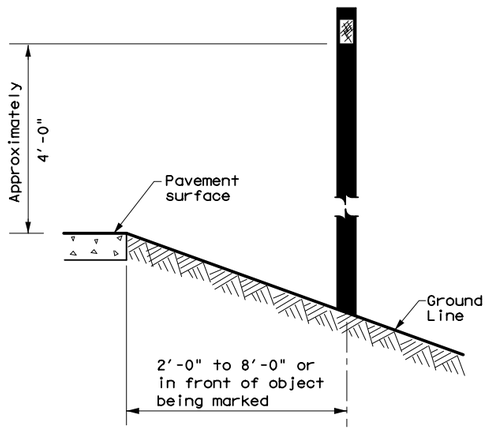
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

FILE: dom2-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	ABL	SCURRY, ETC.		176

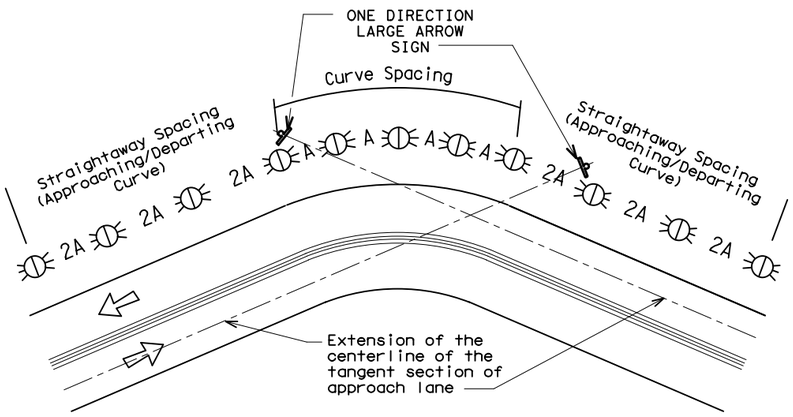
20B

DATE: 2/28/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\05 roadway\dom3-20.dgn

MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

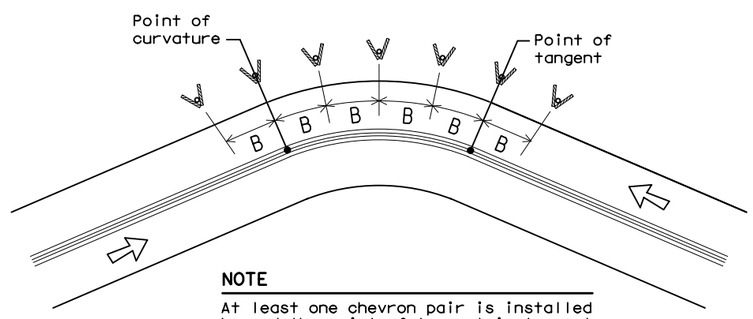
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	——
2	2865	160	320	——
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp.Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete)and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

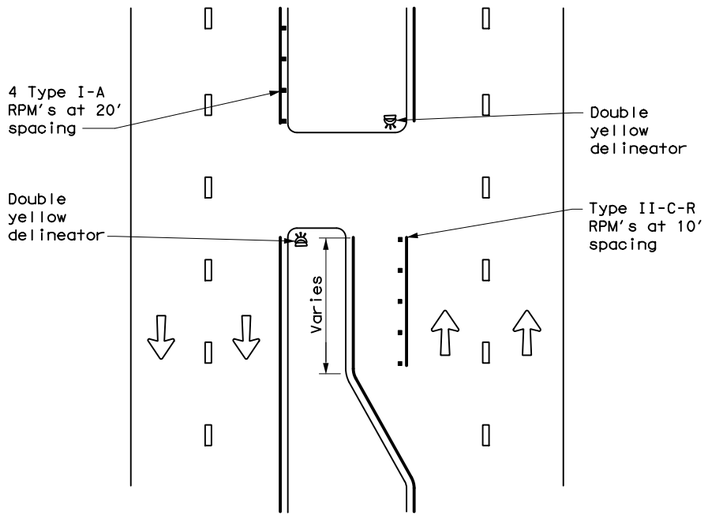
D & OM(3)-20

FILE: dom3-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84,ETC.
3-15 8-15	DIST	COUNTY		SHEET NO.
8-15 7-20	ABL	SCURRY, ETC.		177

20C

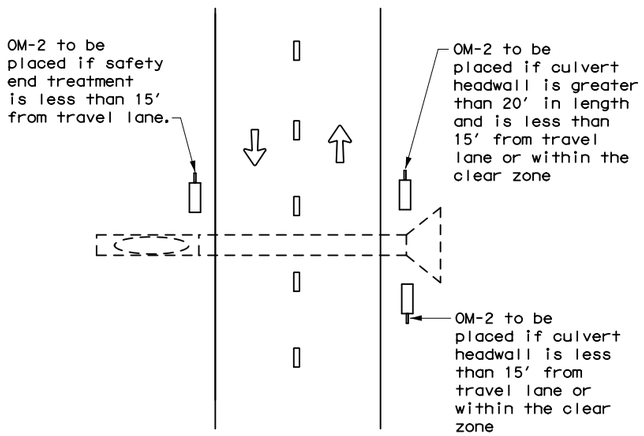
DATE: 2/28/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\05 roadway\dom4-20.dgn

CROSSOVERS



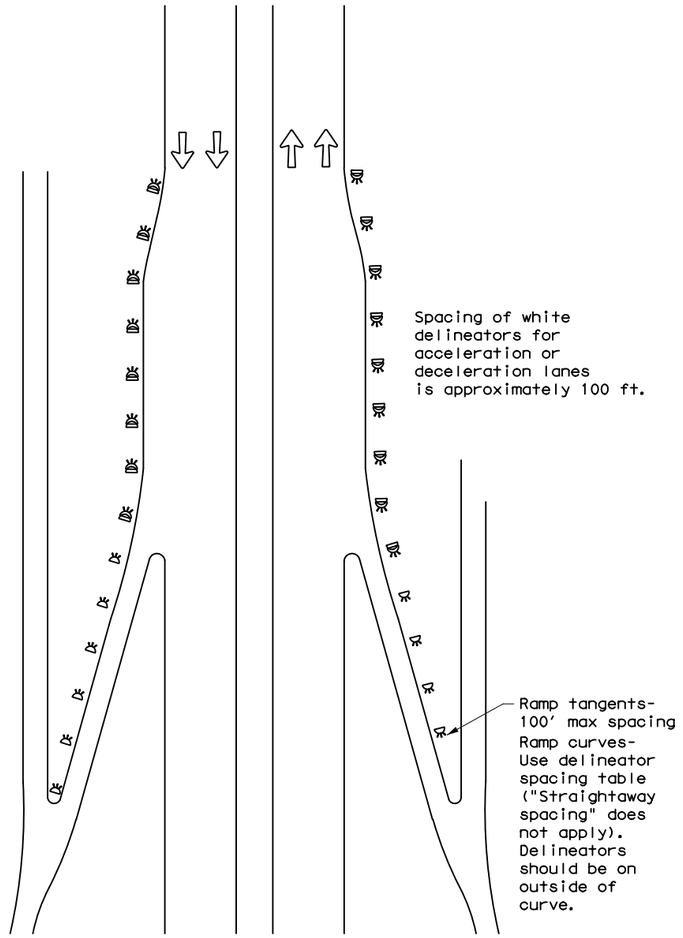
DETAIL 1

FOR CULVERTS WITHOUT MBGF



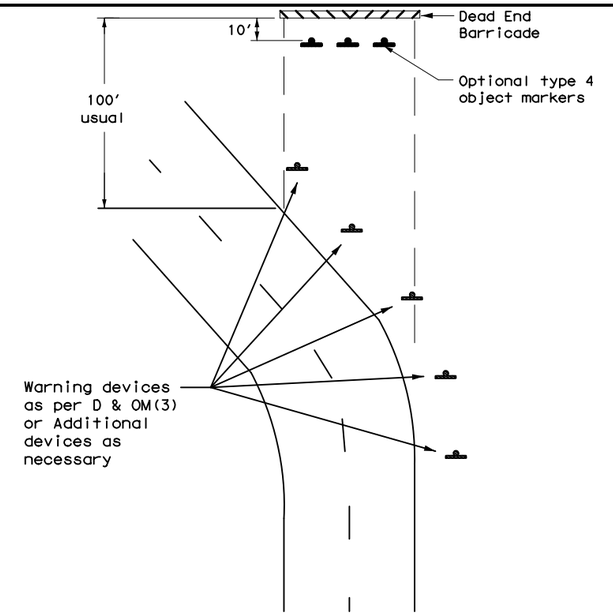
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



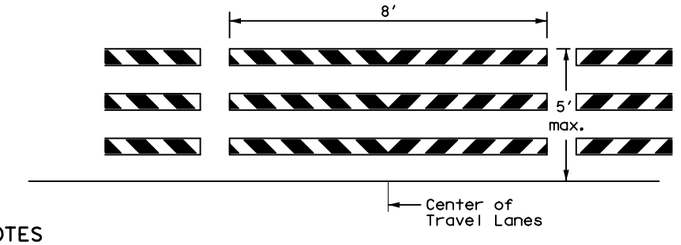
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

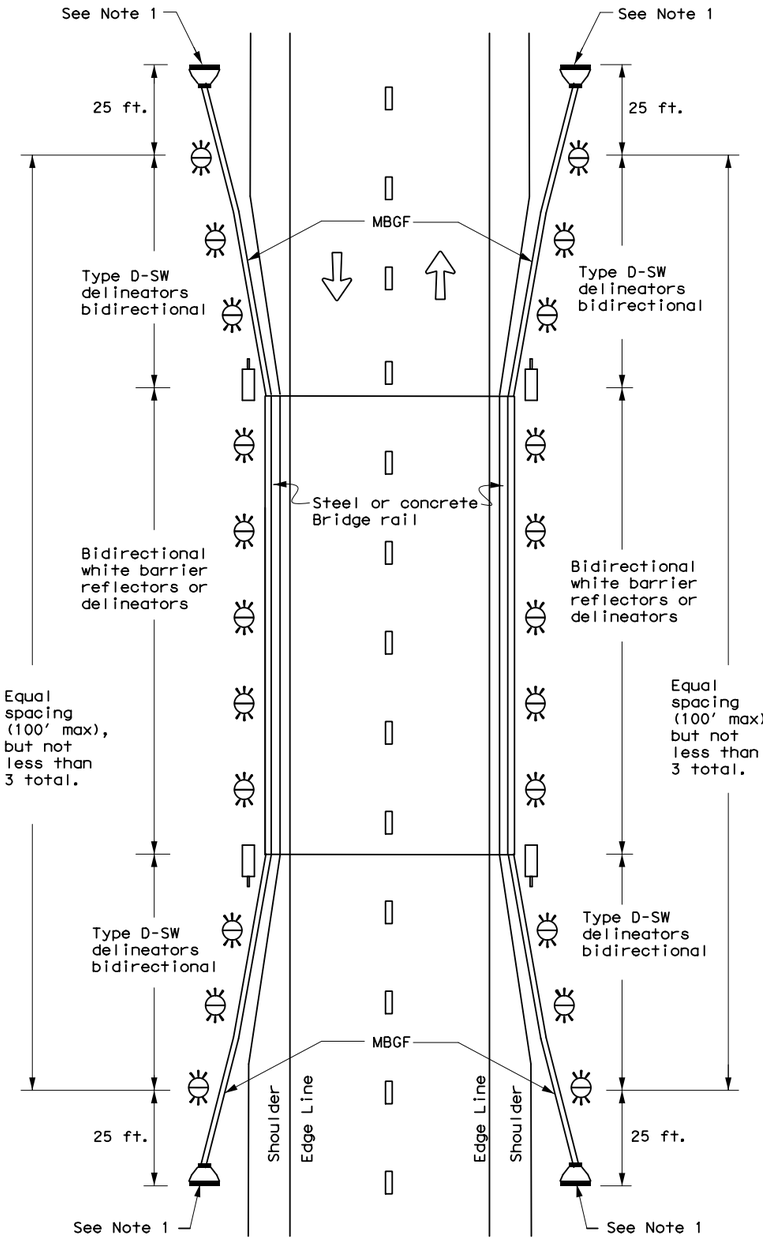
D & OM(4)-20

FILE: dom4-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
3-15	DIST	COUNTY		SHEET NO.
7-20	ABL	SCURRY, ETC.		178

20D

DATE: 2/28/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\05 dom5-20.dgn $USER$

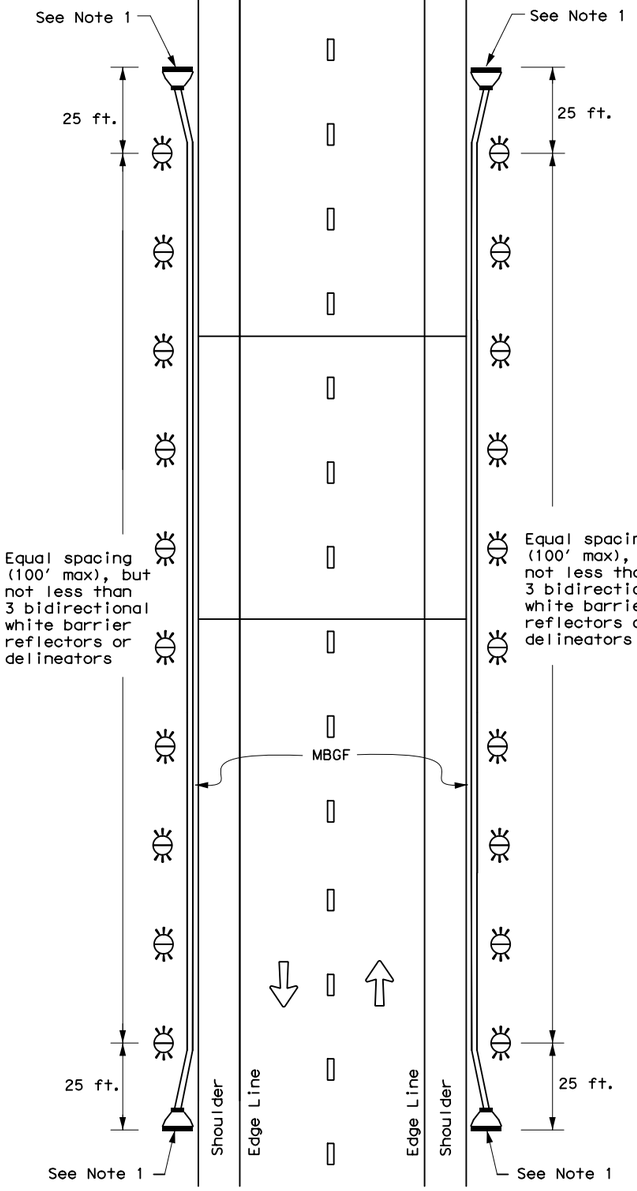
TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

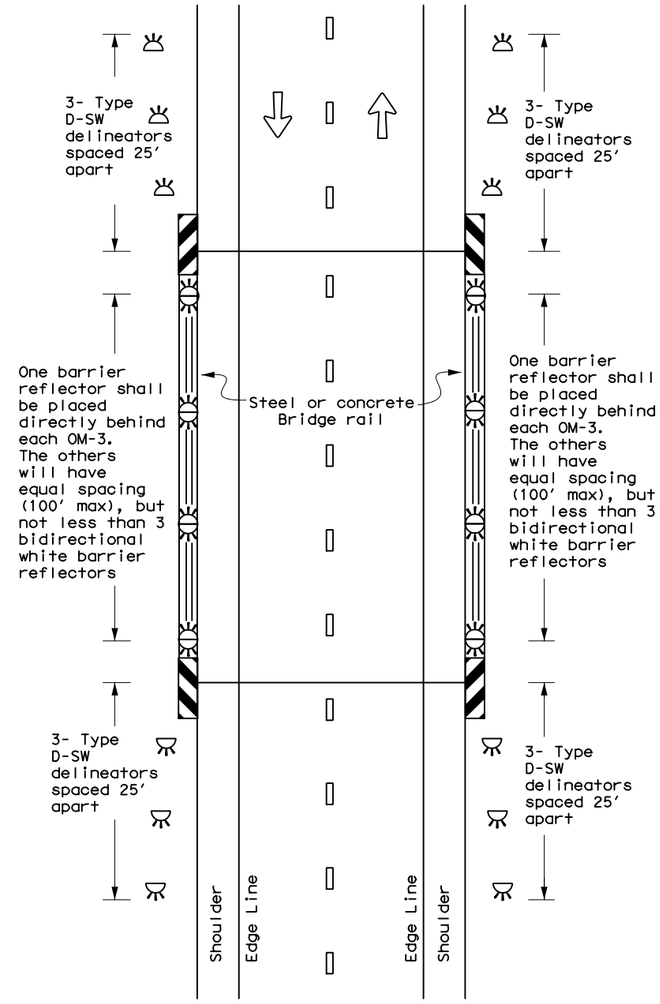
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

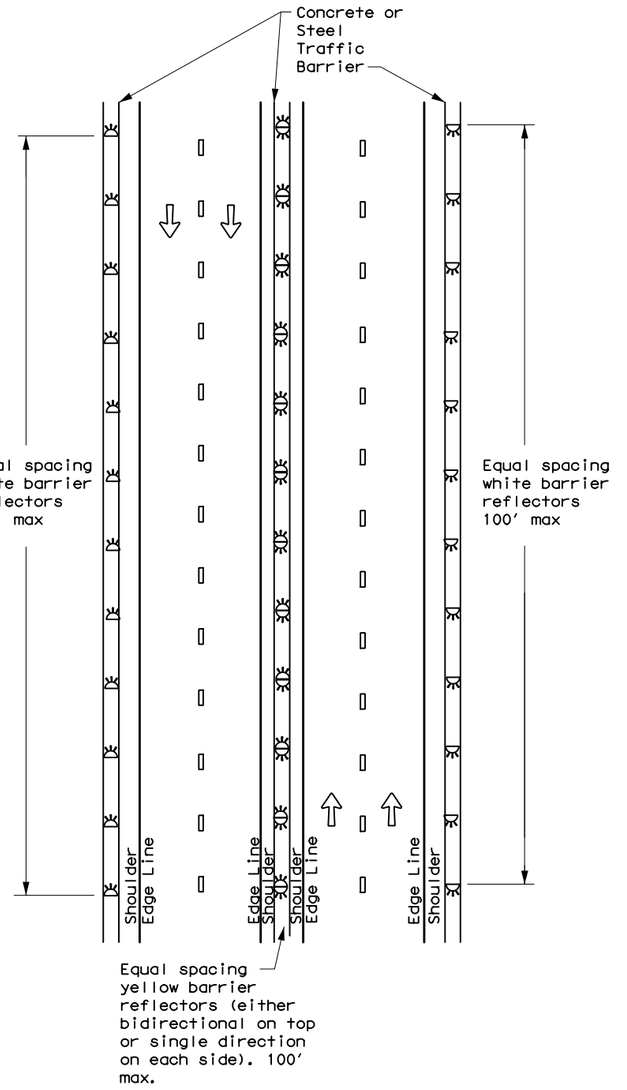
D & OM(5)-20

FILE: dom5-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
7-20	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		179

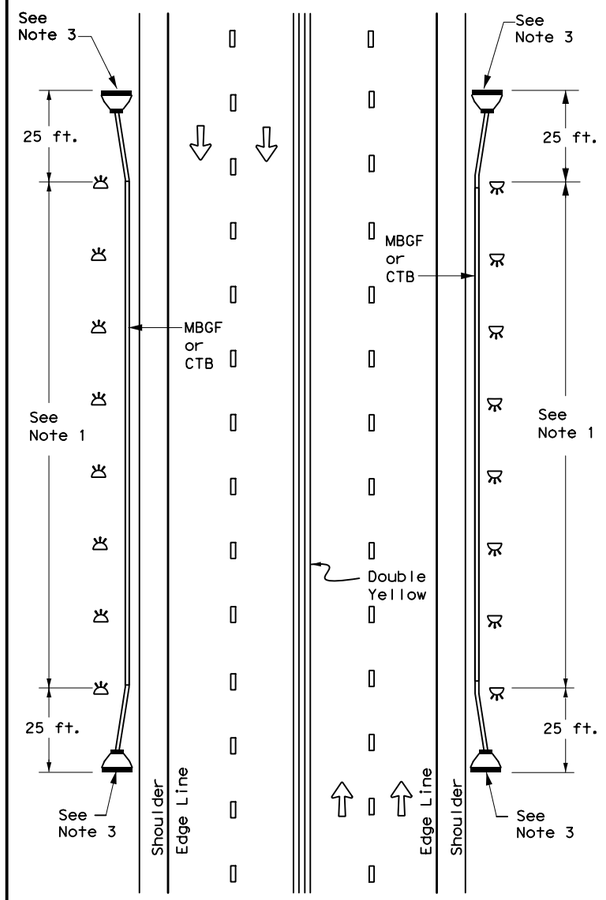
20E

DATE: 2/28/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\05 roadway\dom6-20.dgn

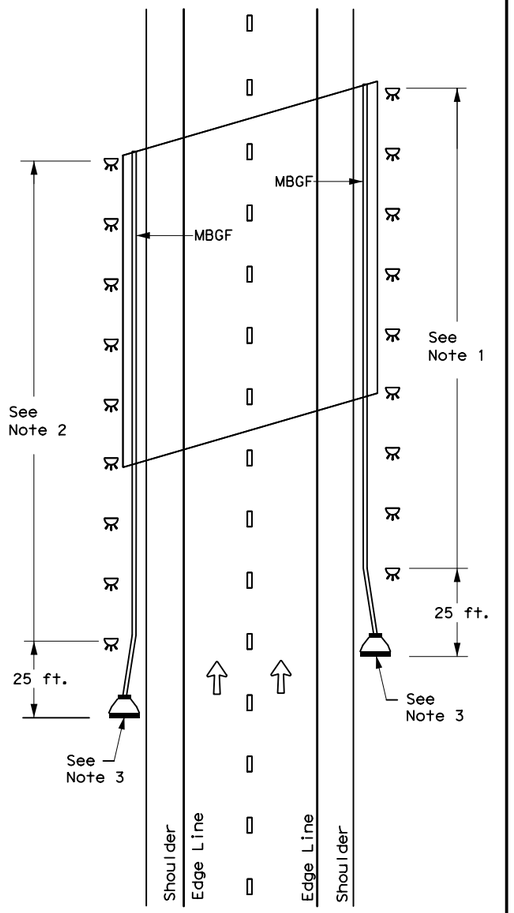
CONTINUOUS CONCRETE OR STEEL BARRIER



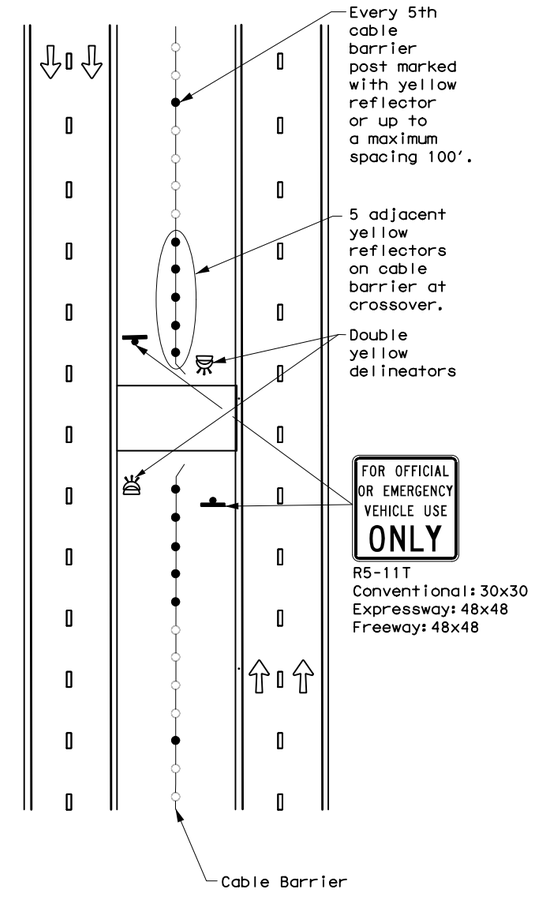
MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



DIVIDED ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



EMERGENCY CROSSOVER



NOTES

1. Equal spacing (100′ max), but not less than 3 single directional white barrier reflectors or delineators. On Continuos Barrier, equal spacing (100′ max.)
2. Equal spacing (100′ max), but not less than 3 single directional yellow barrier reflectors or delineators.
3. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

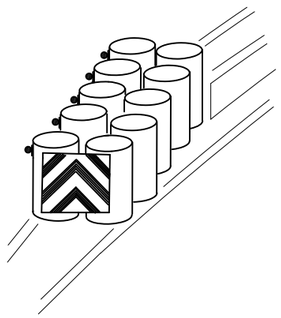
Traffic Safety Division Standard

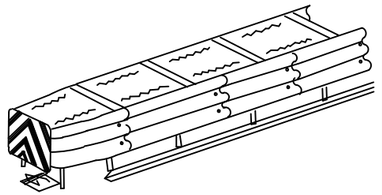
DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

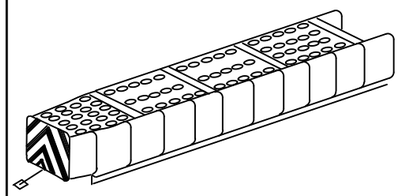
D & OM(6)-20

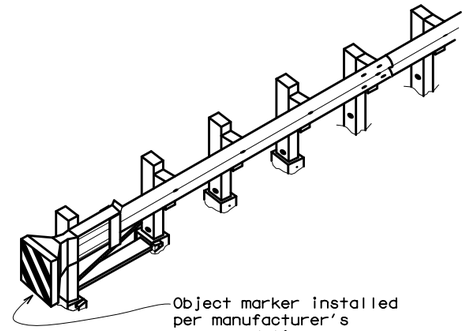
FILE: dom6-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
7-20	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		180

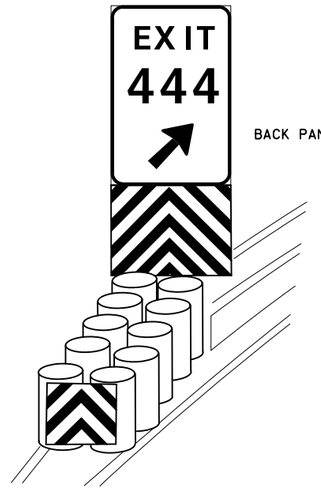
20F

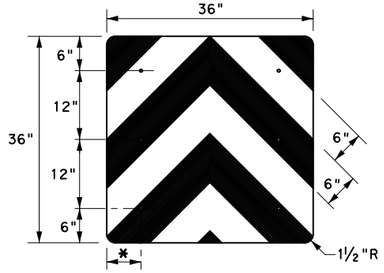


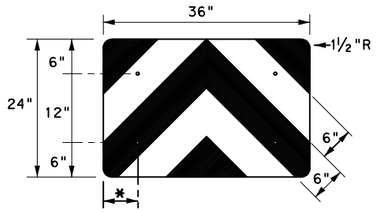




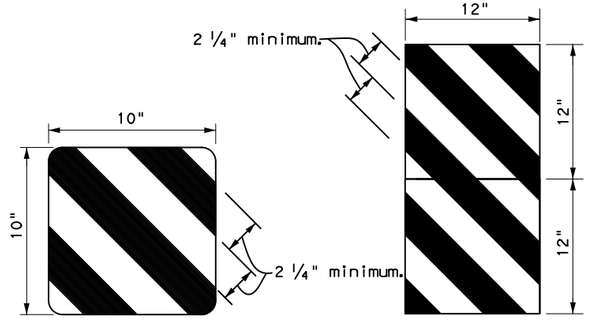




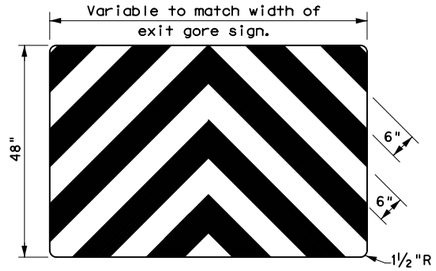


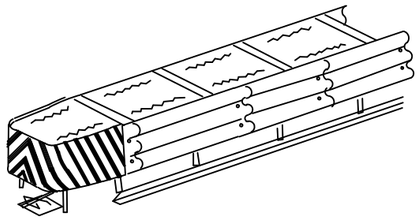


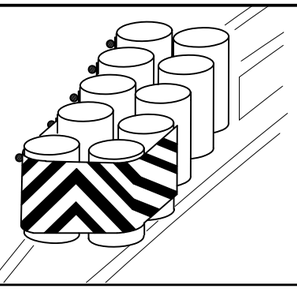
* Adjust to fit attenuator per manufacturer's recommendation, or as directed by the Engineer

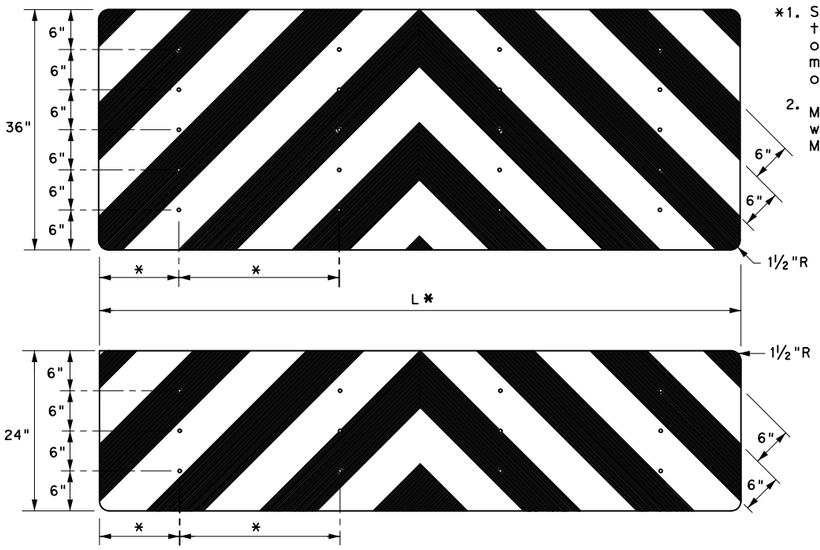


OBJECT MARKERS SMALLER THAN 3 FT^2









NOTES

*1. Spacing should be adjusted to attach through centerline of drum, per attenuator manufacturers recommendation, or as directed by the Engineer.

2. Mounting should be flush with top of attenuator. Minimum size 96" x 24".

NOTES

1. Object Markers shall conform to the Texas MUTCD and meet the color and reflectivity requirement of Department Material Specification DMS 8300. Background shall be yellow reflective sheeting (Type B or C) and Chevron shall be black.

2. Object Markers may be fabricated from adhesive backed reflective sheeting applied directly to guardrail end treatment, or applied directly to an "end cap" as per the manufacturer's recommendation. Direct applied sheeting shall provide a smooth surface and have no wrinkles, air bubbles, cuts or tears. A radius at the corners is not required for direct applied sheeting.

3. Object Marker size may be reduced to fit smaller devices. Width of alternating black and yellow stripes are typically 6". Object Markers smaller than 3ft may have reduced width stripes of a minimum of 2 ¼".

4. Pop rivets, screws, or nuts and bolts may be used to attach object markers and reflectors. Holes, slots or other openings may be cut or drilled through object markers to allow cable or other attachments.

5. Object Marker at nose of attenuator is subsidiary to the attenuator.

6. See D & OM (1-4) for required barrier reflectors.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER FOR VEHICLE IMPACT ATTENUATORS

D & OM(VIA)-20

FILE: domvia20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT December 1989	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
4-92 8-04	DIST	COUNTY		SHEET NO.
8-95 3-15	ABL	SCURRY, ETC.		181
4-98 7-20				

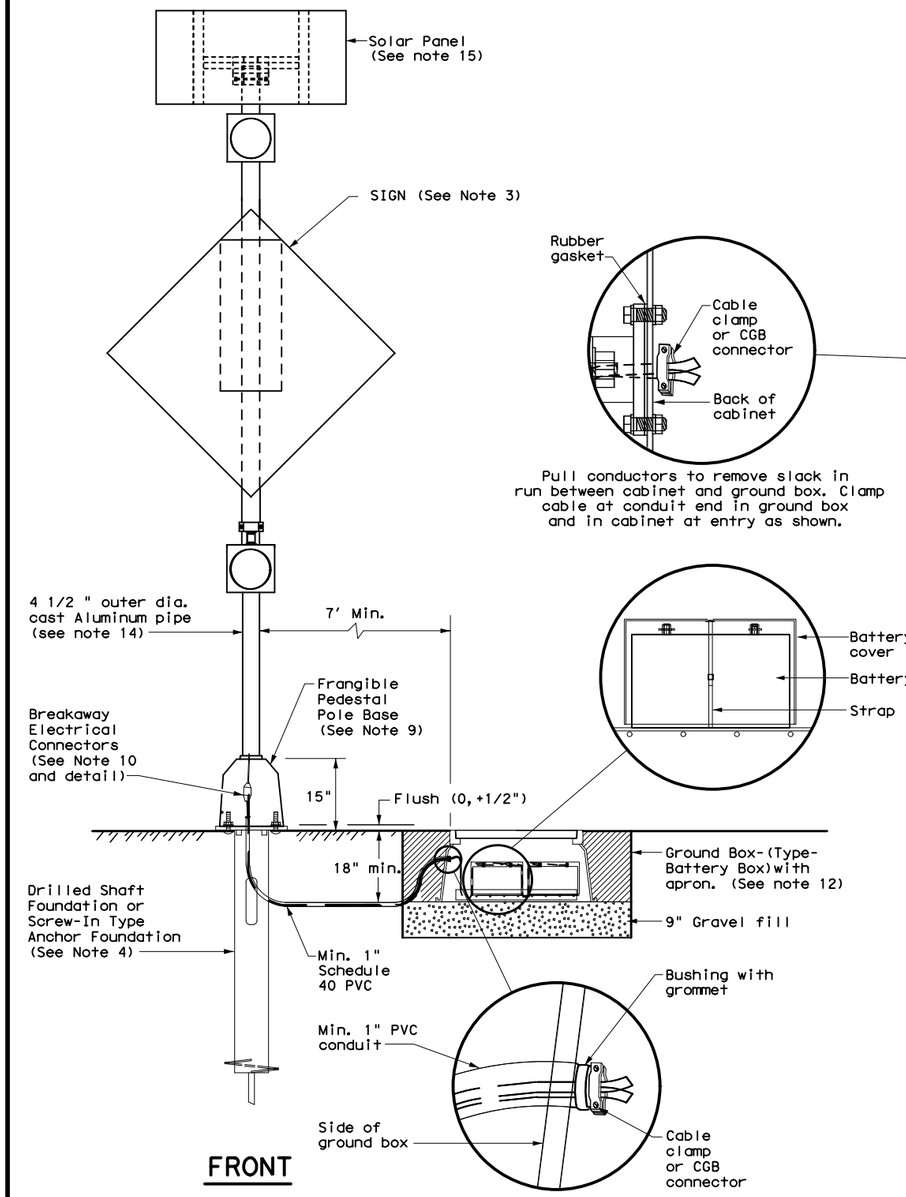
20G

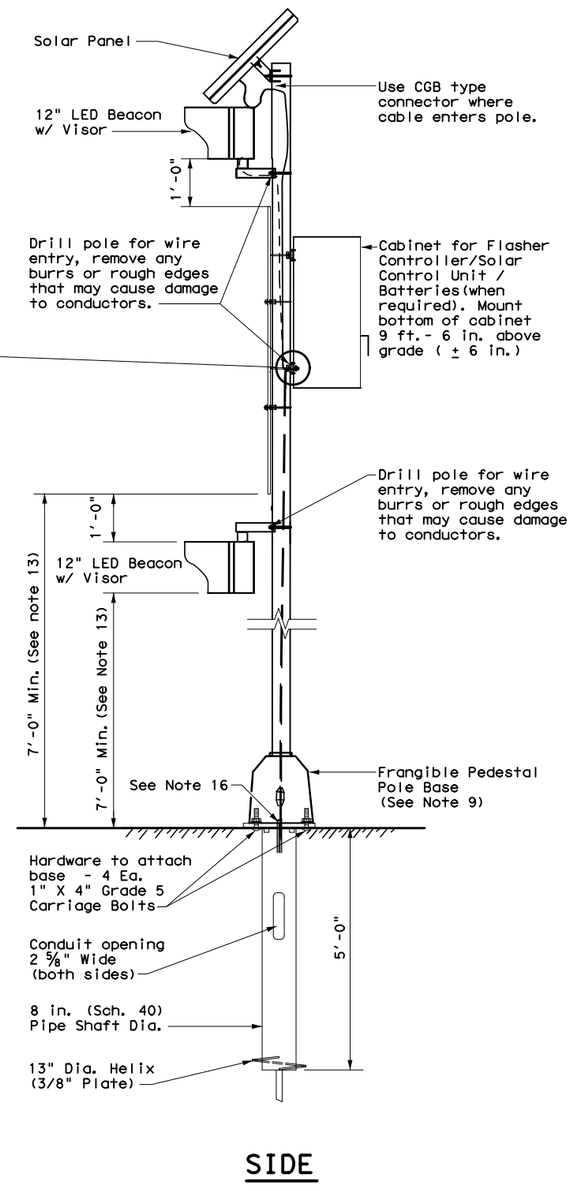
DATE: 2/28/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\05 Roadway Operations\domvia20.dgn

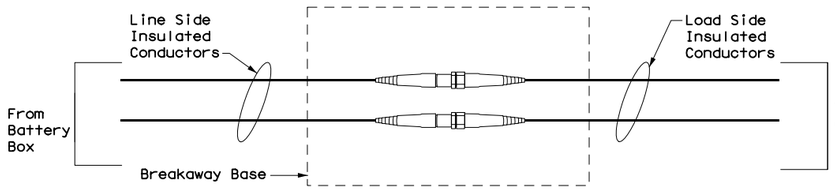
DATE: 2/28/2023 $TIME$
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\05 Roadway Details\spb1-13.dgn

GENERAL NOTES:

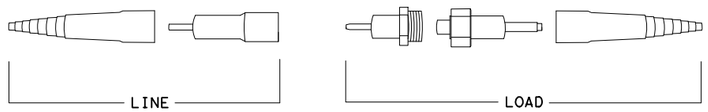
1. Details show a typical warning sign with two flashing beacon heads, other arrangements are possible. When only one beacon is required, install the upper beacon.
2. See Item 685, "Roadside Flashing Beacon Assemblies" for further requirements.
3. See SMD standard sheets for lateral and vertical clearances 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. Use materials specifically designed for attaching cabinets, beacon heads, solar panels, etc., to poles.
7. 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.
8. Conduit in foundation and within 6 in. of foundation is subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies."
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 on 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. Install the batteries in a battery box. Place the batteries on a 3/16" thick plastic sheet and connect together. Place a plastic cover (battery bell jar) over the top of each battery and secure the battery bell jar to the battery with a strap. The batteries, bell jars, straps and 3/16" plastic sheet are subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies." When required, install batteries in the flasher cabinet. Wire batteries according to manufacturers recommendations. Provide the number of batteries as required by the manufacturer.
12. See standard sheet Electrical Details (ED) for additional requirements regarding the installation of ground boxes/battery boxes, conduit, and cabinets.
13. 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.
14. 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.
15. Orient solar panel for optimum exposure to sunlight (face to the south). Prior to installation, check the location to ensure there is no overhead obstruction that would block the solar panel from receiving full sunlight. Unless specified elsewhere, mount a minimum of 14' above grade.
16. Ensure height of conduit is below top of anchor bolts.







NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS
EXPLODED VIEW

Texas Department of Transportation — Traffic Operations Division Standard

SOLAR POWERED ROADSIDE FLASHING BEACON ASSEMBLY DETAILS

SPRFBA(1)-13

FILE: spb1-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
12-04 3-13	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		182

75A

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

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):

0053-07-043

1.2 PROJECT LIMITS:

From: Garza County Line (US 84) & RM 33 (US 87)

To: 3.84 Mi West of IH 20 (US 84) & FM 461 (US 87)

1.3 PROJECT COORDINATES:

BEGIN: (Lat)_____,(Long)_____

END: (Lat)_____,(Long)_____

1.4 TOTAL PROJECT AREA (Acres): 238

1.5 TOTAL AREA TO BE DISTURBED (Acres): 119

1.6 NATURE OF CONSTRUCTION ACTIVITY:

Median Barrier Construction

1.7 MAJOR SOIL TYPES:

Soil Type	Description

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

* 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)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			183
STATE	STATE DIST.	COUNTY	
TEXAS	ABL	SCURRY, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0053	07	043, ETC.	US84, ETC.

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

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

2.2 SEDIMENT CONTROL BMPs:

T / P

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

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

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
  - ☐ 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

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

2.5 POLLUTION PREVENTION MEASURES:

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

2.6 VEGETATED BUFFER ZONES:

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

Type	Stationing	
	From	To

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

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

2.8 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3 .

2.9 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			184
STATE	STATE DIST.	COUNTY	
TEXAS	ABL	SCURRY, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0053	07	043, ETC.	US84, ETC.

PREPARED BY (NAME OF DESIGNER)
DATE: 2/28/2023
FILE: L:\Abilene District\Various Barrier Improvements*HSIP\CAD\Standards\ENVIRONMENTAL_PERMITS_ISSUES_AND_COMMITMENTS_EPIC.dgn

I. STORM WATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Storm water 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.

☐ No Action Required ☒ Required Action

Action No.

1. The project disturbs five or more acres of surface area: TxDOT must file a NOI and coordinate with TCEQ for CGP. The contractor is responsible for the PSL as defined in the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (2014 Edition, Section 7.6., Page 44). The total disturbed acreage is the combined acreage to be disturbed on the project and the contractors PSL. This includes, as required, posting a site notice and NOI for the PSL.
2. TxDOT must file a NOT for the project when final stabilization has been achieved.
3. Prevent storm water pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
4. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
5. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.

II. WORK IN OR NEAR STREAMS, WATER BODIES 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.

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	☐ Sedimentation Basin
☐ Sodding	☐ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw & Hay Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost & Mulch
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☐ Sand Filter Systems
☐ Temporary Erosion Control Logs (BIOLOGS)	☒ Temporary Erosion Control Logs (BIOLOGS)	☐ Temporary Erosion Control Logs (BIOLOGS)
☒ Preservation of Natural Resources	☐ Sediment Traps	☒ Permanent Vegetation (Planting, Sodding, or Seeding)
☐ Construction Exits	☐ 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. Comply with E.O. 13112 on the use of native vegetation.

2.

3.

4.

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

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.

☐ No Action Required ☒ Required Action

Action No.

1. Comply with the Migratory Bird Treaty Act (MGBTA) on the protection of Birds, their young, and nests.
2.
3.
4.

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 Storm water 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.

US 84
ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS EPIC

Texas Department of Transportation

NO SCALE SHEET 1 OF 1

FHWA DIVISION	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 84
STATE	COUNTY		SHEET NO.
TEXAS	SCURRY		185
DISTRICT	CONTROL	SECTION	JOB
ABL	0053	07	043, ETC.

REV. DATE: 02/2015

RD NAME	BMP	TYPE OF CL	LF	STATION	OFFSET	INSTALLED	REMOVED
US 84	1	CL-D	30	184+79.29	3.17 RT		
US 84	2	CL-D	30	186+10.97	3.80 RT		
US 84	3	CL-DI	35	203+62.08	4.39 RT		
US 84	4	CL-DI	35	204+35.27	6.80 RT		
US 84	5	CL-DI	30	270+08.38	2.36 LT		
US 84	6	CL-DI	30	270+51.86	3.50 LT		
US 84	7	CL-DI	45	272+35.96	10.49 LT		
US 84	8	CL-DI	75	272+42.93	7.16 RT		
CSJ 0053-12-074 TOTAL			310				
US 84	9	CL-DI	25	94+44.77 R 3	14.84 LT		
US 84	10	CL-DI	25	95+13.92 R 3	0.03 LT		
US 84	11	CL-DI	25	104+54.44 R 3	8.37 LT		
US 84	12	CL-DI	25	105+19.95 R 3	5.09 RT		
US 84	13	CL-DI	40	202+51.18 R 3	13.09 LT		
US 84	14	CL-DI	45	230+98.84 R 3	0.75 RT		
US 84	15	CL-DI	45	231+21.85 R 3	0.68 RT		
US 84	16	CL-DI	25	264+96.33 R 3	3.63 LT		
US 84	17	CL-DI	25	265+68.20 R 3	2.47 RT		
US 84	18	CL-DI	25	311+41.25 R 3	1.40 RT		
US 84	19	CL-DI	25	312+02.00 R 3	1.83 RT		
US 84	20	CL-DI	30	320+72.72 R 3	3.89 LT		
US 84	21	CL-DI	30	321+37.87 R 3	0.21 LT		
US 84	22	CL-DI	25	376+67.14 R 3	8.79 LT		
US 84	23	CL-DI	25	377+28.84 R 3	2.01 RT		
US 84	24	CL-DI	25	433+88.25 R 3	7.70 LT		
US 84	25	CL-DI	25	434+54.31 R 3	3.81 LT		
US 84	26	CL-DI	25	445+67.19 R 3	6.46 RT		
US 84	27	CL-DI	25	446+39.21 R 3	6.03 RT		
US 84	28	CL-DI	35	489+43.78 R 3	5.55 LT		
US 84	29	CL-DI	35	489+75.94 R 3	4.86 LT		
CSJ 0053-10-046 TOTAL			610				
US 84	30	CL-DI	25	491+76.37 R 3	0.62 RT		
US 84	31	CL-DI	25	491+94.40 R 3	1.22 RT		
US 84	32	CL-DI	30	573+35.44 R 3	6.38 LT		
US 84	33	CL-DI	30	573+67.40 R 3	6.45 LT		
US 84	34	CL-DI	45	614+19.75 R 3	1.73 LT		
US 84	35	CL-DI	45	614+55.61 R 3	2.09 LT		
US 84	36	CL-DI	30	649+17.29 R 3	12.77 RT		
US 84	37	CL-DI	30	649+55.62 R 3	13.36 RT		
US 84	38	CL-DI	35	783+66.92 R 3	1.71 RT		
US 84	39	CL-DI	35	784+22.89 R 3	1.48 RT		
US 84	40	CL-DI	25	805+72.42 R 3	5.62 LT		
US 84	41	CL-DI	25	806+41.77 R 3	4.67 RT		
CSJ 0053-09-078 TOTAL			380				
US 84	42	CL-D	30	434+41.13 R 4	7.61 LT		
US 84	43	CL-D	30	439+88.83 R 4	7.61 LT		
US 84	44	CL-DI	30	454+39.29 R 4	3.11 LT		
US 84	45	CL-DI	30	454+60.31 R 4	3.53 LT		
US 84	46	CL-DI	30	512+69.40 R 4	2.45 LT		
US 84	47	CL-DI	30	513+23.27 R 4	0.45 RT		
US 84	48	CL-D	30	529+47.19 R 4	4.65 LT		
US 84	49	CL-DI	30	543+69.08 R 4	4.20 LT		
US 84	50	CL-DI	30	544+71.04 R 4	4.32 RT		
US 84	51	CL-DI	25	578+07.52 R 4	2.52 LT		
US 84	52	CL-DI	25	578+91.38 R 4	5.25 RT		
US 84	53	CL-DI	25	586+32.78 R 4	1.61 RT		
US 84	54	CL-DI	25	586+66.24 R 4	1.08 RT		
CSJ 0053-09-077 TOTAL			370				
US 84	55	CL-DI	40	632+88.14 R 4	3.29 RT		
US 84	56	CL-D	30	664+87.80 R 4	1.64 LT		
US 84	57	CL-D	30	667+84.78 R 4	0.93 LT		
CSJ 0053-08-074 TOTAL			100				
US 84	58	CL-DI	25	687+08.41 R 4	57.13 LT		
US 84	59	CL-DI	25	734+28.58 R 4	0.82 LT		
US 84	60	CL-DI	25	734+67.39 R 4	1.09 LT		
US 84	61	CL-D	30	762+04.23 R 4	3.54 LT		
US 84	62	CL-D	30	762+87.96 R 4	3.68 LT		
US 84	63	CL-DI	25	766+75.25 R 4	0.21 RT		
US 84	64	CL-DI	25	767+15.76 R 4	0.64 LT		
US 84	65	CL-DI	25	799+21.99 R 4	0.59 LT		
US 84	66	CL-DI	25	799+64.54 R 4	1.42 LT		
US 84	67	CL-DI	25	813+08.89 R 4	1.25 LT		
US 84	68	CL-DI	25	813+50.37 R 4	1.09 LT		
US 84	69	CL-DI	25	870+33.95 R 4	0.65 RT		
US 84	70	CL-DI	25	870+72.28 R 4	1.71 RT		
US 84	71	CL-DI	25	871+63.14 R 4	1.48 RT		
US 84	72	CL-DI	25	872+13.27 R 4	2.18 RT		
US 84	73	CL-DI	25	919+88.97 R 4	4.22 RT		
US 84	74	CL-DI	25	920+19.74 R 4	3.71 RT		
US 84	75	CL-D	30	966+23.27 R 4	0.00 RT		
US 84	76	CL-D	30	967+67.33 R 4	2.79 LT		
CSJ 0053-08-075 TOTAL			495				

RD NAME	BMP	TYPE OF CL	LF	STATION	OFFSET	INSTALLED	REMOVED
US 84	77	CL-DI	25	975+53.78 R4	8.46 LT		
US 84	78	CL-DI	25	976+30.68 R4	8.79 LT		
US 84	79	CL-DI	25	347+04.94 R5	1.19 LT		
US 84	80	CL-DI	25	347+47.94 R5	1.18 LT		
US 84	81	CL-DI	25	356+49.42 R5	1.22 LT		
US 84	82	CL-DI	25	357+17.25 R5	0.94 LT		
US 84	83	CL-DI	25	392+04.54 R5	4.91 LT		
US 84	84	CL-DI	25	392+41.85 R5	3.98 LT		
US 84	85	CL-DI	25	407+00.53 R5	3.78 RT		
US 84	86	CL-DI	25	407+42.33 R5	3.45 RT		
US 84	87	CL-D	70	515+54.39 R5	15.49 LT		
US 84	88	CL-D	70	516+77.35 R5	21.37 LT		
US 84	89	CL-DI	35	523+35.69 R5	1.65 RT		
US 84	90	CL-DI	35	523+81.16 R5	1.52 RT		
US 84	91	CL-DI	35	530+58.00 R5	3.25 RT		
US 84	92	CL-DI	35	531+28.39 R5	3.44 RT		
US 84	93	CL-DI	25	535+35.58 R5	1.76 RT		
US 84	94	CL-DI	25	535+80.27 R5	3.19 RT		
US 84	95	CL-DI	25	538+61.28 R5	5.40 RT		
US 84	96	CL-DI	25	539+05.66 R5	4.11 RT		
US 84	97	CL-DI	25	542+11.68 R5	2.64 RT		
US 84	98	CL-DI	25	542+62.43 R5	2.93 RT		
US 84	99	CL-DI	25	556+01.28 R5	35.87 LT		
US 84	100	CL-DI	25	557+08.45 R5	36.88 LT		
US 84	101	CL-DI	25	619+65.66 R5	3.96 LT		
US 84	102	CL-DI	25	619+97.93 R5	2.25 LT		
US 84	103	CL-DI	25	700+91.93 R6	4.54 LT		
US 84	104	CL-DI	25	768+53.96 R6	10.16 LT		
US 84	105	CL-DI	25	776+40.83 R6	7.50 LT		
US 84	106	CL-DI	25	797+64.58 R6	7.64 LT		
US 84	107	CL-DI	25	798+15.90 R6	6.56 LT		
US 84	108	CL-DI	25	821+57.14 R6	1.41 RT		
US 84	109	CL-DI	25	829+32.51 R6	2.49 RT		
US 84	110	CL-DI	25	864+77.99 R6	3.21 RT		
US 84	111	CL-DI	25	865+25.64 R6	3.09 RT		
US 84	112	CL-DI	25	978+09.08 R6	5.74 LT		
US 84	113	CL-DI	25	990+67.08 R6	0.65 LT		
US 84	114	CL-DI	25	998+22.82 R6	0.43 LT		
US 84	115	CL-DI	25	998+74.10 R6	0.33 RT		
US 84	116	CL-DI	35	1015+72.91 R6	4.44 LT		
US 84	117	CL-D	30	1025+11.34 R6	5.73 LT		
US 84	118	CL-D	30	1025+89.13 R6	5.73 LT		
CSJ 0053-07-043 TOTAL			1200				

RD NAME	BMP	TYPE OF CL	LF	STATION	OFFSET	INSTALLED	REMOVED
US 87	1	CL-DI	35	136+18.03	2.17 RT		
US 87	2	CL-DI	35	136+57.07	3.73 RT		
US 87	3	CL-DI	25	157+32.16	0.97 LT		
US 87	4	CL-DI	25	158+57.35	6.53 LT		
US 87	5	CL-DI	25	174+80.43	10.63 LT		
US 87	6	CL-DI	25	175+23.18	11.26 LT		
US 87	7	CL-DI	25	188+69.84	4.14 LT		
US 87	8	CL-DI	25	189+11.95	4.61 LT		
US 87	9	CL-DI	25	199+54.96	4.98 LT		
US 87	10	CL-DI	25	200+79.59	0.80 LT		
US 87	11	CL-DI	35	220+00.52	1.16 RT		
US 87	12	CL-DI	35	220+38.47	1.56 RT		
US 87	13	CL-DI	25	228+44.96	5.54 LT		
US 87	14	CL-DI	25	229+68.76	1.97 LT		
US 87	15	CL-DI	35	230+63.68	0.07 RT		
US 87	16	CL-DI	35	231+08.19	0.54 RT		
US 87	17	CL-DI	25	256+44.56	6.18 LT		
US 87	18	CL-DI	25	257+68.50	2.86 LT		
US 87	19	CL-DI	35	270+29.79	4.00 LT		
US 87	20	CL-DI	35	270+68.45	3.81 LT		
US 87	21	CL-DI	25	284+98.24	2.83 LT		
US 87	22	CL-DI	25	286+42.22	1.73 RT		
US 87	23	CL-DI	35	287+36.05	2.12 RT		
US 87	24	CL-DI	35	287+78.01	0.58 RT		
US 87	25	CL-DI	25	314+18.31	1.68 LT		
US 87	26	CL-DI	30	315+59.95	3.55 RT		
US 87	27	CL-DI	40	322+13.01	1.54 RT		
US 87	28	CL-DI	40	322+52.98	1.75 RT		
US 87	29	CL-DI	25	327+91.71	0.13 RT		
US 87	30	CL-DI	25	329+13.77	0.12 RT		
US 87	31	CL-DI	25	336+57.19	0.93 RT		
US 87	32	CL-DI	25	338+65.69	1.31 RT		
US 87	33	CL-DI	40	345+50.32	2.18 RT		
US 87	34	CL-DI	40	346+31.17	3.10 RT		
US 87	35	CL-DI	40	352+61.27	5.87 RT		
US 87	36	CL-DI	35	353+15.32	5.80 RT		
US 87	37	CL-DI	25	379+80.90	5.43 RT		
US 87	38	CL-DI	25	380+20.44	7.01 RT		
US 87	39	CL-DI	25	385+21.87	4.50 LT		
US 87	40	CL-DI	25	385+86.88	1.46 LT		
CSJ 0069-01-06 TOTAL			1190				

STATE OF TEXAS
M. N. MOZAFFAR
85191
LICENSED
PROFESSIONAL ENGINEER

3/3/2023

m.n. m

Texas Department of Transportation
© 2023

I. S. ENGINEERS, LLC
7670 WOODWAY DRIVE, SUITE 320
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

US 84

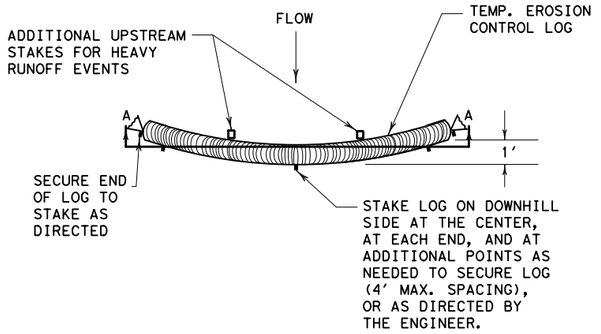
EROSION CONTROL TABLE

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	(SEE TITLE SHEET)		US84,ETC
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	ABL	SCURRY, ETC.	186
CONTROL	SECTION	JOB	
0053	07	043, ETC.	

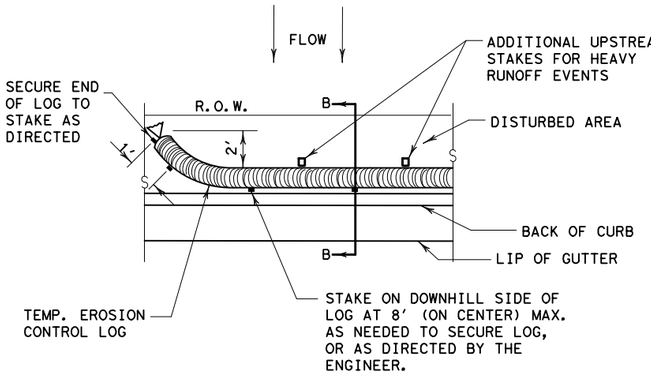
FILENAME: L:\Abilene District\Various Barrier Improvements*HSIP\CADD\Sheets\11 Erosion Control Plan\US 87\SW3P*DET01.dgn

DRAWING DATE: 3/3/2023

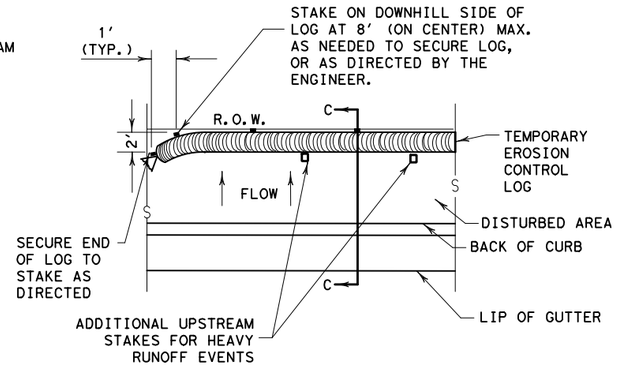
DATE: 2/28/2023
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\11 Erosion Control Plan\TxDOT Standards\VEC(9)-16.dgn



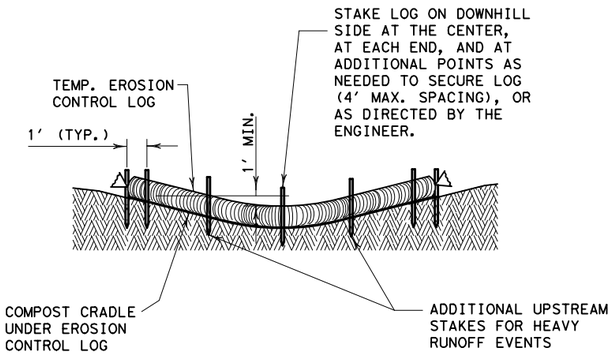
PLAN VIEW



PLAN VIEW



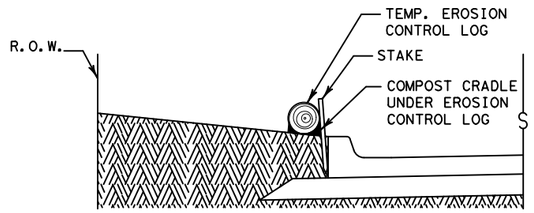
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

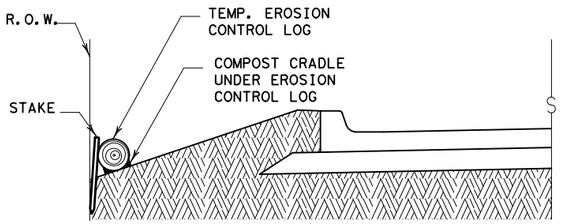
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

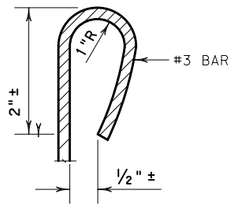
CL-BOC



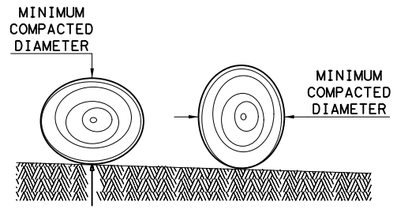
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

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.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

Texas Department of Transportation — Design Division Standard

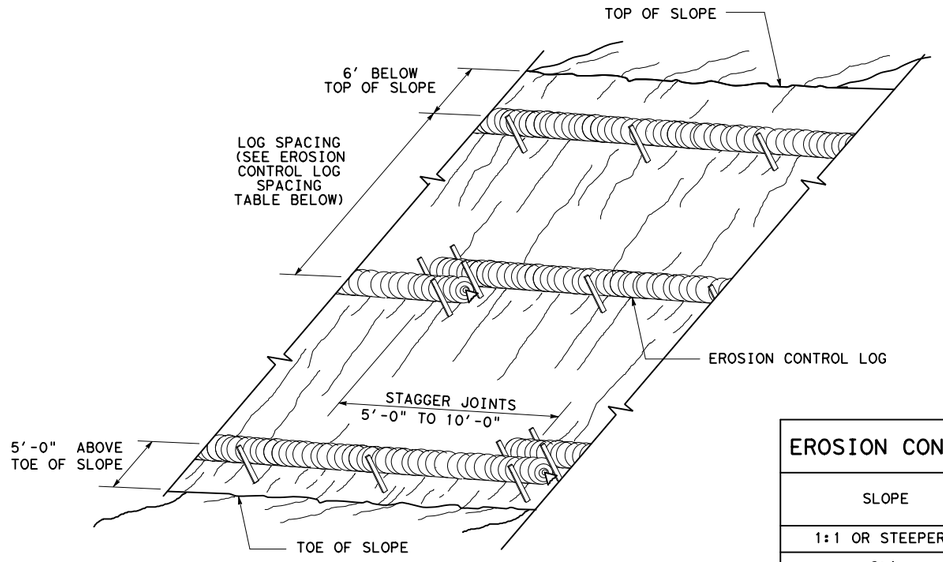
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

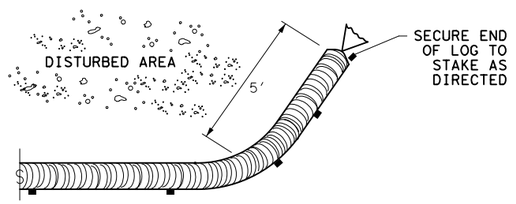
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0053	07	043, ETC.	US84, ETC.
	DIST	COUNTY		SHEET NO.
	ABL	SCURRY, ETC.		187

DATE: 2/28/2023
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\11 Erosion Control Plan\TxDOT Standards\VEC(9)-16.dgn



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

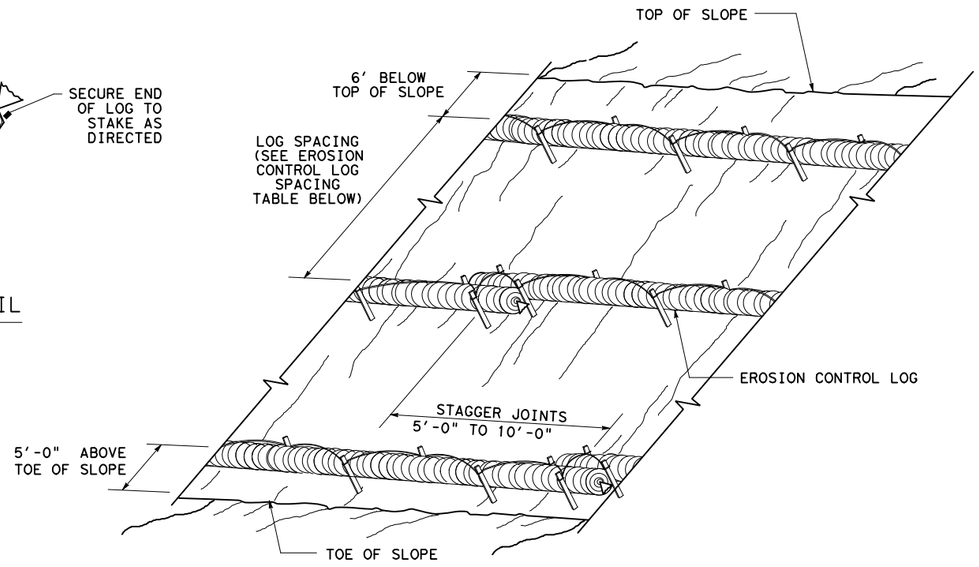
CL-SST



END SECTION RAP DETAIL

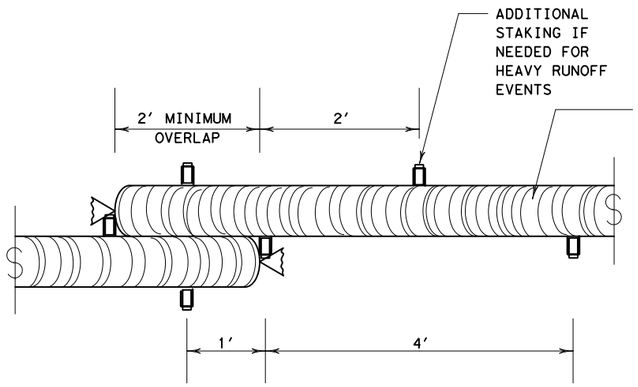
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

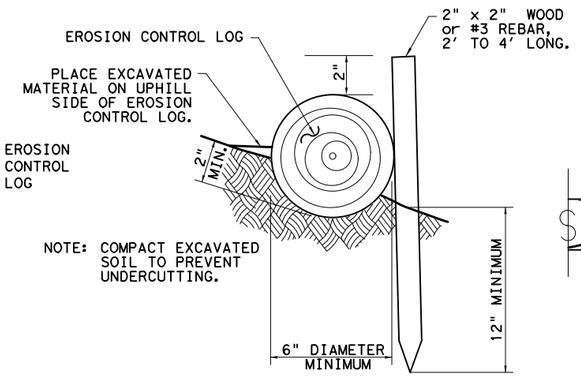
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

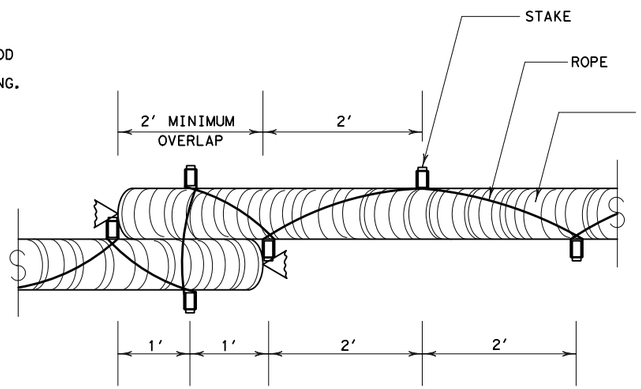


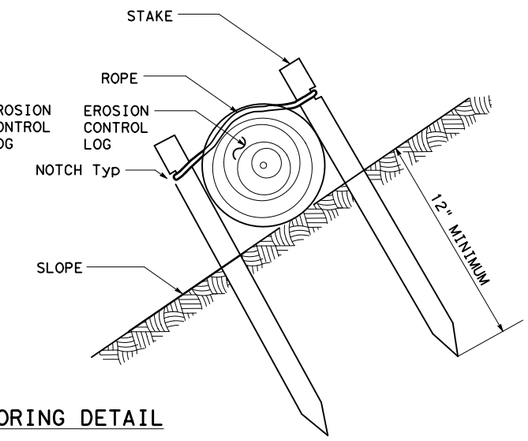


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

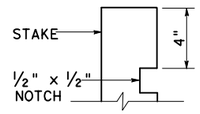
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

SHEET 2 OF 3

Texas Department of Transportation

Design Division Standard

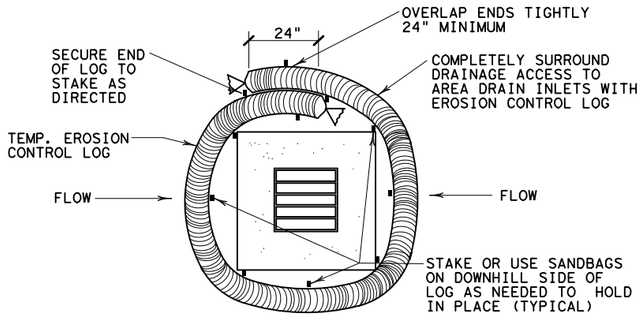
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

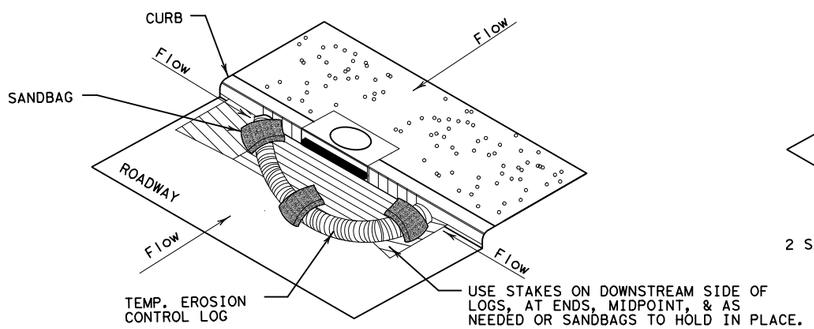
FILE: ec116	DN: TxDOT		CK: KM		DW: LS/PT	CK: LS
	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0053	07	043, ETC.		US84, ETC.	
	DIST	COUNTY			SHEET NO.	
	ABL	SCURRY, ETC.			188	

DATE: 2/28/2023
FILE: L:\Abilene District\Various Barrier Improvements_HSIP\CADD\Sheets\11 Erosion Control Plan\TxDOT Standards\EC(9)-16.dgn



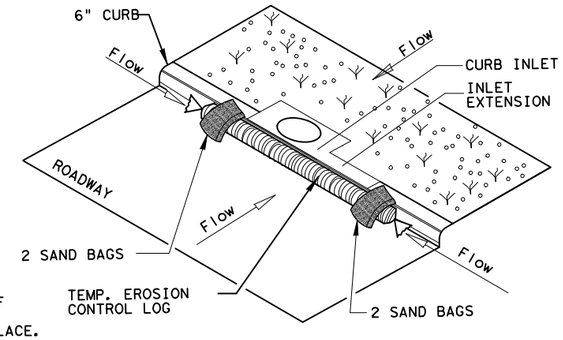
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

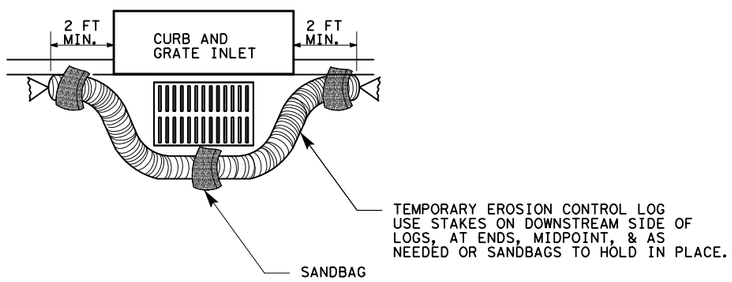
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

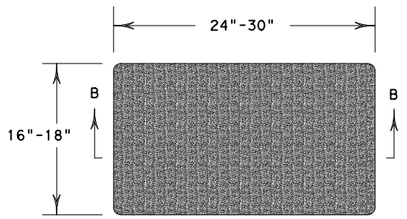
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI

SECTION B-B



SANDBAG DETAIL

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	0053	07	043, ETC.		US84, ETC.	
	DIST	COUNTY			SHEET NO.	
	ABL	SCURRY, ETC.			189	