FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	STP 2023(673)HES		1
STATE	STATE DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT
PROJECT NO. STP 2023(673)HES
CSJ: 0072-05-096, ETC.

KENDALL, ETC
IH 10, ETC

LIMITS FROM: 1.6 MI WEST OF US 87
TO: 0.3 MI EAST OF US 87

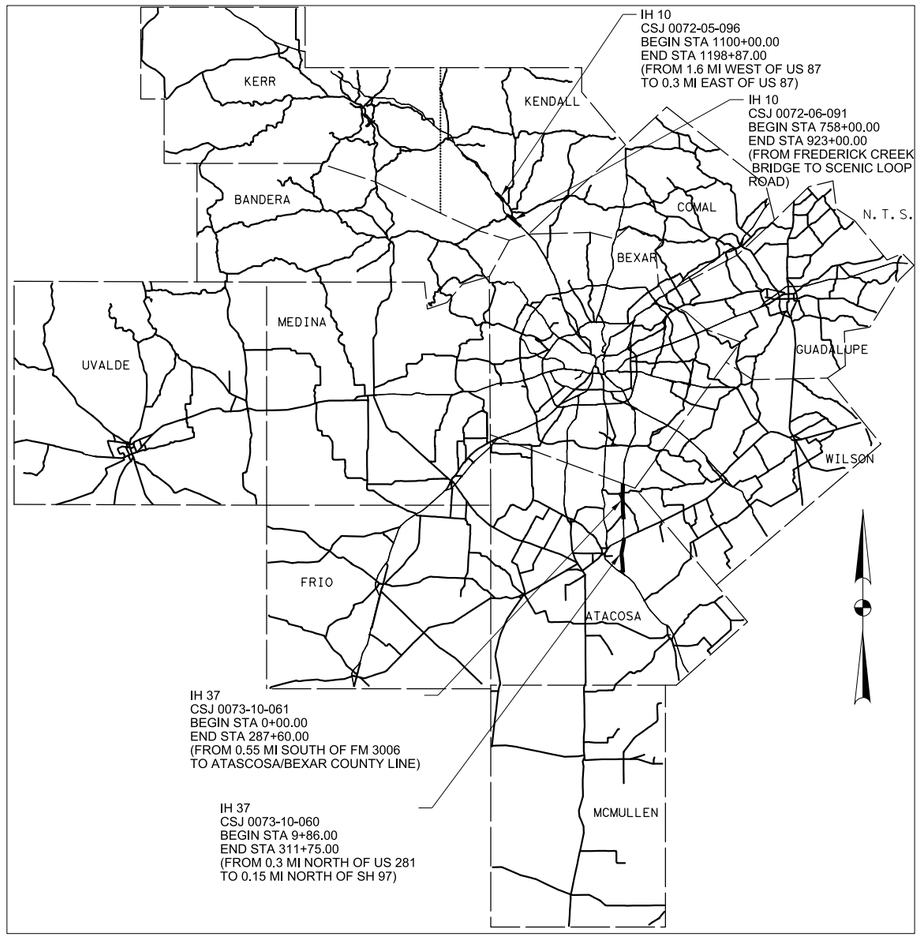
NET LENGTH OF ROADWAY = 9810.24 FT = 1.858 MI
NET LENGTH OF BRIDGE = 0.00 FT = 0.000 MI
NET LENGTH OF PROJECT = 9810.24 FT = 1.858 MI

FOR WORK CONSISTING OF CABLE BARRIER INSTALL

DESIGN SPEED = N/A
AREA OF DISTURBED SOIL = 14.75 ACRES
ADT: N/A

INDEX OF SHEETS

SEE SHEET 2 FOR INDEX OF SHEETS



FINAL PLANS

LETTING DATE: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS ACCEPTED: _____

FINAL CONTRACT COST: $ _____

CONTRACTOR: _____

FINAL PLANS STATEMENT:

THE CONSTRUCTION WORK WAS PERFORMED
IN ACCORDANCE WITH THE PLANS.

P.E. _____
AREA ENGINEER DATE

TEXAS DEPARTMENT OF TRANSPORTATION

COUNTY_____ PROJ. NO._____
HWY. NO._____ LETTING DATE_____
DATE ACCEPTED_____

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 05, 2022)

EXCEPTIONS: NONE
EQUATIONS: NONE
R.R. CROSSINGS: NONE

SUBMITTED FOR LETTING 4/10/2023
DocuSigned by: Orlando Gallegos
TRANSPORTATION ENGINEER SUPERVISOR

RECOMMENDED FOR LETTING 4/10/2023
DocuSigned by: Clayton Kipps, P.E.
DIRECTOR OF TRANSPORTATION PLANNING & DEVELOPMENT

REVIEWED FOR LETTING 4/10/2023
DocuSigned by: J.E. Rogers, P.E.
TRANSPORTATION ENGINEER SUPERVISOR

APPROVED FOR LETTING 4/10/2023
DocuSigned by: Gina E. Gallegos, P.E.
DISTRICT ENGINEER

SHEET NO.		DESCRIPTION
		GENERAL
1		TITLE SHEET
2		INDEX OF SHEETS
3		LOCATION MAP
4-5		PROPOSED TYPICAL SECTIONS
6		ESTIMATE & QUANTITY
7,7A-7D		GENERAL NOTES
8		IH 10 - SUMMARY OF QUANTITIES (CSJ 0072-05-096 & CSJ 0072-06-091)
9		IH 37 - SUMMARY OF QUANTITIES (CSJ 0073-10-060)
10		IH 37 - SUMMARY OF QUANTITIES (CSJ 0073-10-061)
11		IH 37 - SUMMARY OF SMALL SIGNS (CSJ 0073-10-061)
		TRAFFIC CONTROL PLAN LAYOUTS
12-13		SEQUENCE OF WORK/ TCP NARRATIVE
14		SCHEDULE OF TRAFFIC CONTROL DEVICES
15		TMA AND TA SUMMARY SHEET
16-17		TYPICAL TCP
		TCP STANDARDS
18	*	TCP (5-1) - 18
19	*	TCP (6-1) - 12
20-31	*	BC (1) - 21 - BC (12) - 21
		ROADWAY DETAILS
32-41		IH 10 PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT (CSJ 0072-05-096)
42-48		IH 10 PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT (CSJ 0072-06-091)
49-74		IH 37 PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT (CSJ 0073-10-060)
75-100		IH 37 PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT (CSJ 0073-10-061)
101		MISCELLANEOUS DETAILS
		ROADWAY STANDARDS
102	*	GBRLTR (TL4) - 14
103	*	CASS (TL4) - 14
104-105	*	NU-CABLE (TL4) - 14
		TRAFFIC STANDARDS
106	*	SMD (GEN) - 08
107-109	*	SMD (SLIP-1) - 08 - SMD (SLIP-2) - 08
110	*	TSR (4) - 13
		ENVIRONMENTAL DETAILS
111		SW3P (CSJ 0072-05-096)
112		SW3P (CSJ 0072-06-091)
113		SW3P (CSJ 0073-10-060)
114		SW3P (CSJ 0073-10-061)
115		EPIC
		ENVIRONMENTAL STANDARDS
116	*	EC (1) - 16
117-119	*	EC (9) - 16 (3 SHEETS)

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

STATE OF TEXAS
M. R. NEELAPU
107595
LICENSED
PROFESSIONAL ENGINEER

M. R. NEELAPU, P. E.

1/23/2023
DATE

Texas Department of Transportation®

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
738 Hwy 6 South, Suite 430
Houston, Texas 77079
(832) 619-1000
TEDSI
TBPE F-1640

INDEX OF SHEETS

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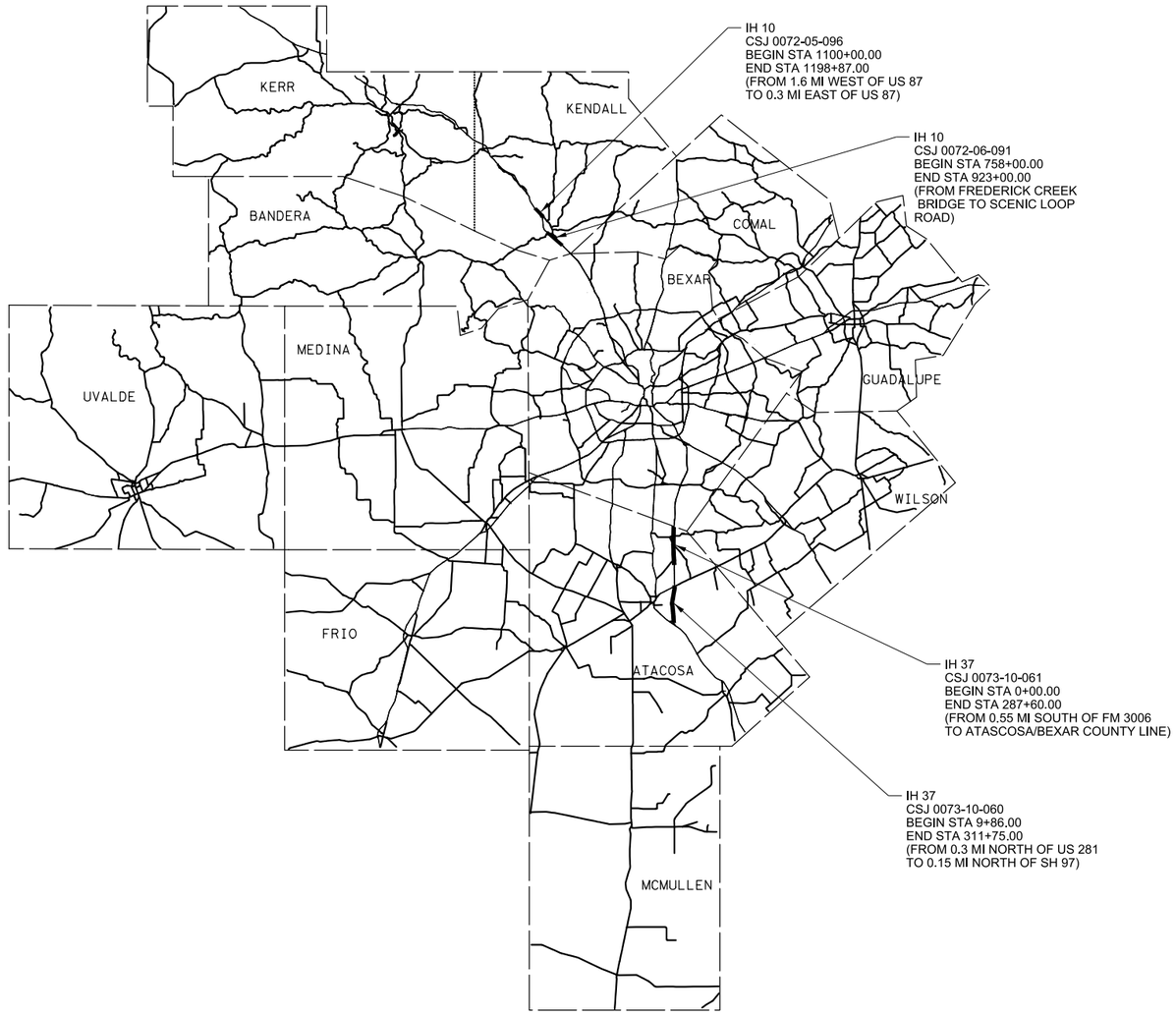
	SEE TITLE SHEET		2
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.



STATE OF TEXAS
M. R. NEELAPU
107595
LICENSED PROFESSIONAL ENGINEER

M. R. NEELAPU, P. E.

3/17/2023
DATE

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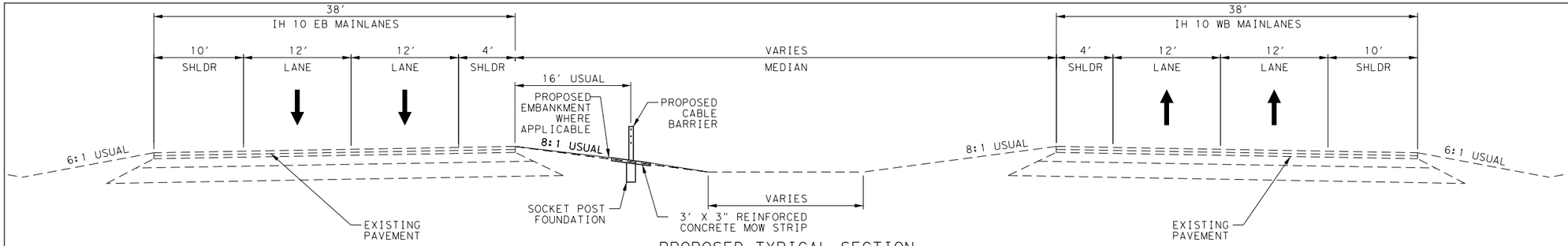
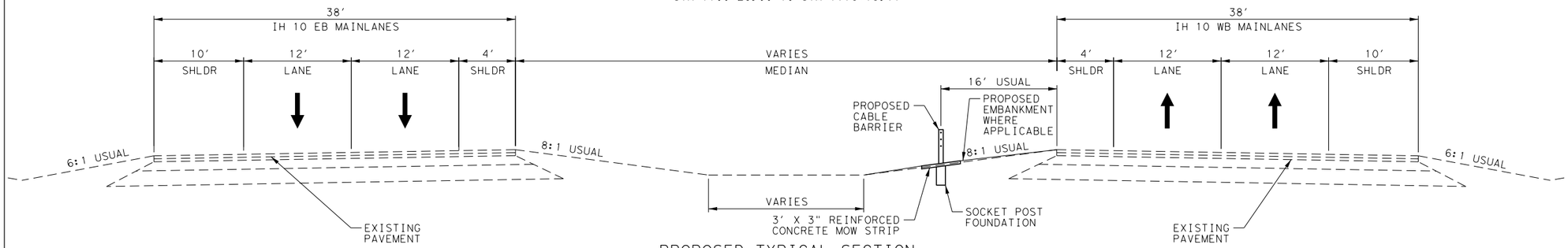
TEDSI
TBPE F-1640

LOCATION MAP

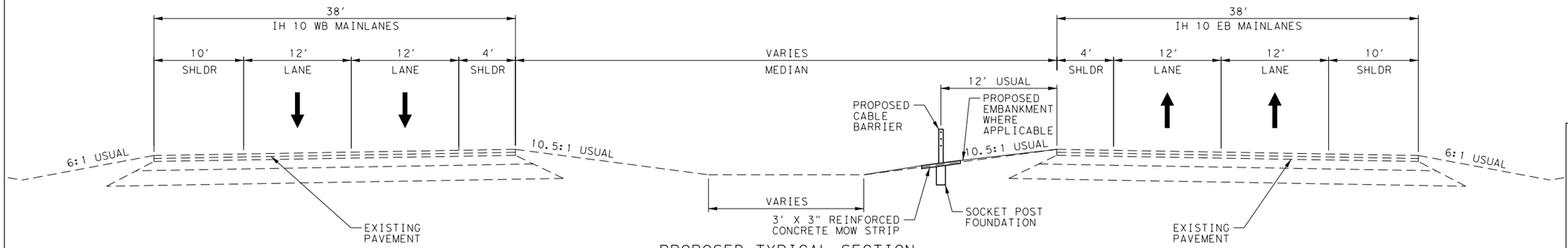
FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		3
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.



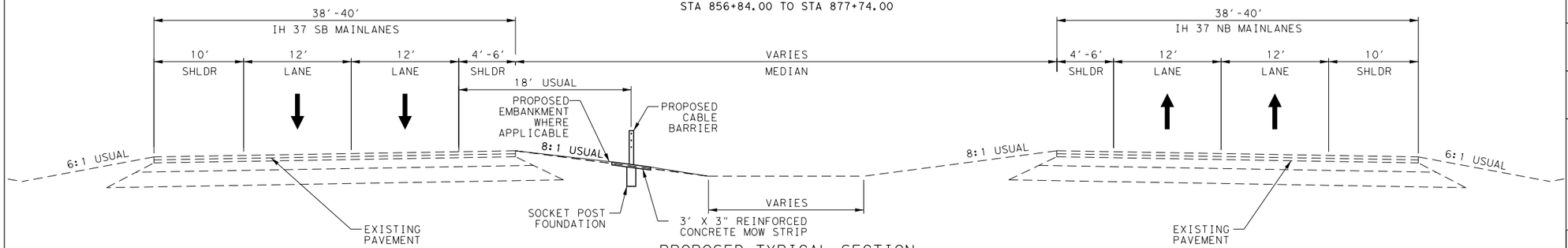
PROPOSED TYPICAL SECTION
IH 10 KENDALL COUNTY
CSJ 0072-05-096
STA 1100+28.00 TO STA 1116+13.77



PROPOSED TYPICAL SECTION
IH 10 KENDALL COUNTY
CSJ 0072-05-096
STA 1112+43.68 TO STA 1183+97.05 STA 1187+17.74 TO STA 1198+59.18



PROPOSED TYPICAL SECTION
IH 10 KENDALL COUNTY
CSJ 0072-06-091
STA 758+00.00 TO STA 779+44.00 STA 781+83.00 TO STA 854+56.00
STA 856+84.00 TO STA 877+74.00



PROPOSED TYPICAL SECTION
IH 37 ATASCOSA COUNTY
CSJ 0073-10-060
STA 22+60.00 TO STA 26+00.00 STA 115+50.00 TO STA 130+40.00
STA 210+05.00 TO STA 240+00.00 STA 301+50.00 TO STA 311+45.00

M. R. NEELAPU, P. E.

1/22/2023
DATE

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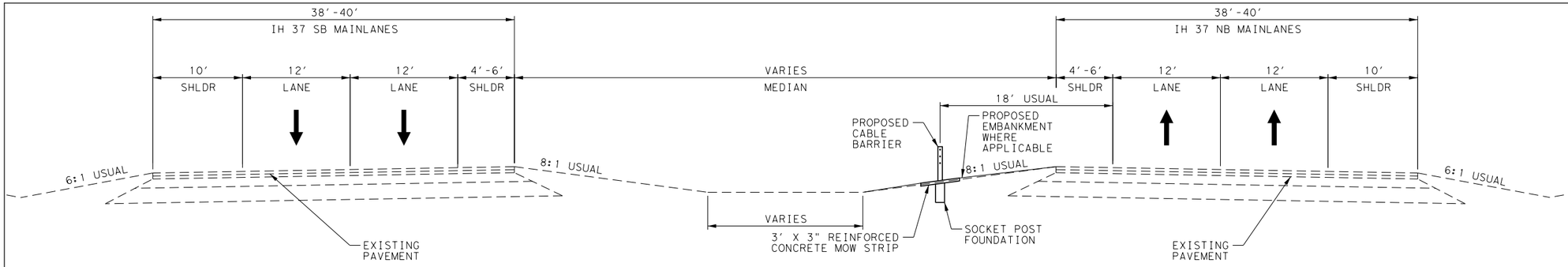
PROPOSED TYPICAL SECTIONS

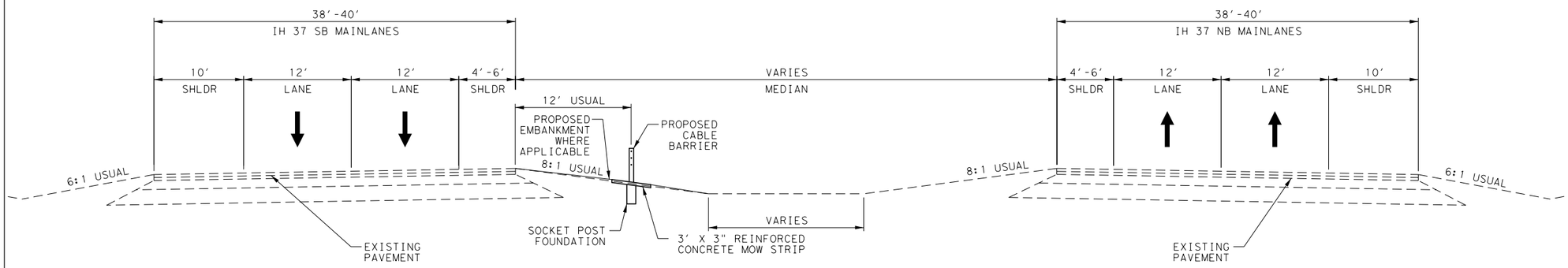
SHEET 1 OF 2

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		4
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.



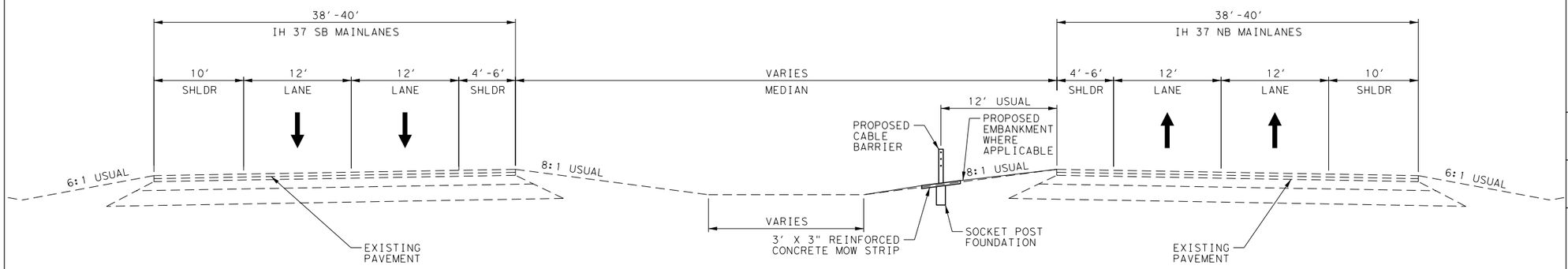
PROPOSED TYPICAL SECTION
IH 37 ATASCOSA COUNTY
CSJ 0073-10-060

STA 10+16.00 TO STA 21+25.00
STA 22+60.00 TO STA 36+55.00
STA 104+50.00 TO STA 114+15.00
STA 126+70.00 TO STA 183+70.00
STA 194+50.00 TO STA 208+65.00
STA 235+75.00 TO STA 306+90.00



PROPOSED TYPICAL SECTION
IH 37 ATASCOSA COUNTY
CSJ 0073-10-061

STA 0+40.00 TO STA 31+00.00
STA 39+00.00 TO STA 97+50.00
STA 214+00.00 TO STA 229+00.00



PROPOSED TYPICAL SECTION
IH 37 ATASCOSA COUNTY
CSJ 0073-10-061

STA 26+60.00 TO STA 37+70.00
STA 96+50.00 TO STA 154+00.00
STA 159+00.00 TO STA 196+00.00
STA 197+40.00 TO STA 215+00.00
STA 224+80.00 TO STA 243+00.00
STA 266+40.00 TO STA 287+20.00

STATE OF TEXAS
M. R. NEELAPU
107595
LICENSED PROFESSIONAL ENGINEER

M. R. NEELAPU, P. E.

1/22/2023
DATE

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PROPOSED TYPICAL SECTIONS

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		5
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0072-05-096 **DISTRICT** San Antonio **COUNTY** Atascosa, Kendall
HIGHWAY IH 10, IH 37

			CONTROL SECTION JOB	**0072-05-096**		**0072-06-091**		**0073-10-060**		**0073-10-061**		TOTAL EST.	TOTAL FINAL
			PROJECT ID	**A00188328**		**A00194000**		**A00188326**		**A00188327**			
			COUNTY	**Kendall**		**Kendall**		**Atascosa**		**Atascosa**			
			HIGHWAY	**IH 10**		**IH 10**		**IH 37**		**IH 37**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	132-6021	EMBANKMENT (VEHICLE)(ORD COMP)(TY C)	CY	142.000						24.800		166.800	
	150-6002	BLADING	HR	115.000						20.000		135.000	
	164-6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	6,682.000		7,672.000		15,685.000		18,144.000		48,183.000	
	164-6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	6,682.000		7,672.000		15,685.000		18,144.000		48,183.000	
	168-6001	VEGETATIVE WATERING	MG	107.000		121.000		255.000		288.000		771.000	
	169-6001	SOIL RETENTION BLANKETS (CL 1) (TY A)	SY	6,682.000		7,672.000		15,685.000		18,144.000		48,183.000	
	432-6066	RIPRAP (CL A) (MOW STRIP) (3 IN)	CY	284.000		327.000		709.000		767.000		2,087.000	
	500-6001	MOBILIZATION	LS			0.200		0.400		0.400		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	2.000		2.000		3.000		3.000		10.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	450.000		670.000		660.000		1,264.000		3,044.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	450.000		670.000		660.000		1,264.000		3,044.000	
	543-6002	CABLE BARRIER SYSTEM (TL-4)	LF	10,022.000		11,507.000		23,519.000		26,630.000		71,678.000	
	543-6020	CABLE BARRIER TERMINAL SECTION (TL-4)	EA	6.000		6.000		20.000		18.000		50.000	
	644-6030	IN SM RD SN SUP&AM TYS80(1)SA(T)	EA							2.000		2.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA							3.000		3.000	
	752-6022	TREE TRIMMING AND BRUSH REMOVAL	LF					270.000				270.000	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	22.000		26.000		35.000		36.000		119.000	
	6185-6002	TMA (STATIONARY)	DAY	50.000		64.000		98.000		104.000		316.000	
	18	LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000								1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000								1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000								1.000	

**********GENERAL NOTES**********
2014 Specification Book

--General--
Contact the Engineer or the City when construction operations are within 400 feet of a signalized intersection to determine/verify the location of loop detectors, conduit, ground-boxes, etc. Repair or replace any signal equipment damaged by construction operations. The method of repair or replacement shall be pre-approved and inspected. Depending on the type and extent of the damage, the Engineer reserves the right to perform the repair or replacement work and the Contractor will be billed for this work.

Any materials removed and not reused and determined to be salvageable shall be stored within the project limits at an approved location or delivered undamaged to the storage yard as directed. Deface traffic signs so that they will not reappear in public as signs.

Any sign panels that are adjusted or removed and replaced, shall be done the same workday unless otherwise approved. This work shall be considered subsidiary to Item 502.

Notify the Engineer at least two weeks prior to a proposed traffic pattern change(s) that will require a revision to traffic signals.

Hurricane Evacuation

Hurricane Season is from June 1 thru November 30. As the closest metropolitan city inland from the Texas Coast, the City of San Antonio is a major shelter destination during mandatory hurricane evacuations. As such, planned work zone lane or road closures may be restricted and/or suspended during mandatory hurricane evacuation operations. The District will coordinate these restrictions at a minimum H-120 from any projected impact to the Texas Coast.

No time charges will be made if the Engineer determines that work on the project was impacted by the hurricane.

The Engineer may order changes in the Traffic Control Plan to accommodate evacuation traffic, and may suspend the work, all or in part, to ensure timely completion of this work. All work to implement changes in the Traffic Control Plan will be paid through existing bid prices or through Item 9.5, Force Account. However, the Department will not entertain any request for delay damages, loss of efficiency that may be attributed to the restriction or suspension of road or lane closures, or to changes in the Traffic Control Plan.

Submit locate request for SAWS water and sewer to TXDOTlocates@saws.org.

In accordance with the Underground Facility Damage Prevention Act (One Call Bill) the phone number for a utility locator is 811. It is the Contractor's responsibility to plan for utility locators as needed.

Underground utilities owned by the Texas Department of Transportation may be present within the Right-Of-Way. Call or email the TxDOT offices listed below for locates a minimum of 48 hours in advance of excavation. If city or town owned irrigation facilities are present, call the appropriate department of the local city or town a minimum of 48 hours in advance of excavation. The Contractor is liable for all damages incurred to the above-mentioned utilities when working without having the utilities located prior to excavation.

For signal and ITS locates call TransGuide at 210-731-5136 or email sat_its_locates@txdot.gov for ITS locates and signal.request@txdot.gov for signal locates.

Contractor questions on this project are to be addressed to the following individual(s):
Eduardo Villalon, PE, CFM, Eduardo.Villalon@TxDOT.gov
Armando Rodriguez, P.E., Armando.Rodriguez3@ TxDOT.gov

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

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

The Letting Pre-Bid Q&A web page for each project can be accessed by using the dashboard to navigate to the project you are interested in by scrolling or filtering the dashboard using the controls on the left. Hover over the blue hyperlink for the project you want to view the Q&A for and click on the link in the window that pops up.

--Item 5--

A horizontal boom or equivalent equipment is required for construction in the vicinity of the CPS Energy electric lines to provide vertical clearance of equipment during construction. Contact CPS Energy Utility Coordination Group sixteen (16) week in anticipation of pole bracing. The estimated duration for pole bracing is 6 to 10 weeks (or longer if temporary construction easements are required) after invoice is paid. For de-energizing or sleeving of the overhead electrical lines depicted on the plans, please contact CPS Energy Utility Coordination Group sixteen (16) week in anticipation of needed de-energization. The estimated duration for de-energizing is approximately 4 to 6 weeks (after invoice is paid) but could vary on system scenario and back feed requirements. De-energizing may not be possible in all instances or may be restricted during specific periods of time due to load demand. Contractor will be reimbursed for the invoice cost for pole bracing and/or de-energizing or sleeving through force account.
Prevention of Migratory Bird Nesting

It is anticipated that migratory birds, a protected group of species, may try to nest on bridges, culverts, vegetation, or gravel substrate, at any time of the year. The preferred nesting season for migratory birds is from February 15 through October 1. When practicable, schedule construction

operations outside of the preferred nesting season. Otherwise, nests containing migratory birds must be avoided and no work will be performed in the nesting areas until the young birds have fledged.

Structures

Bridge and culvert construction operations cannot begin until swallow nesting prevention is implemented, until after October 1 if it's determined that swallow nesting is actively occurring, or until it's determined swallow nests have been abandoned. If the State installed nesting deterrent on the bridges and culverts, maintain the existing nesting deterrent to prevent swallow nesting until October 1 or completion of the bridge and culvert work, whichever occurs earlier. If new nests are built and occupied after the beginning of the work, do not perform work that can interfere with or discourage swallows from returning to their nests. Prevention of swallow nesting can be performed by one of the following methods:

1. By February 15 begin the removal of any existing mud nests and all other mud placed by swallows for the construction of nests on any portion of the bridge and culverts. The Engineer will inspect the bridges and culverts for nest building activity. If swallows begin nest building, scrape, or wash down all nest sites. Perform these activities daily unless the Engineer determines the need to do this work more frequently. Remove nests and mud through October 1 or until bridge and culvert construction operations are completed.

2. By February 15 place a nesting deterrent (which prevents access to the bridge and culvert by swallows) on the entire bridge (except deck and railing) and culverts. This work is subsidiary to the various bid items.

No extension of time or compensation payment will be granted for a delay or suspension of work caused by nesting swallows.

Provide a non-intrusive back-up alarm system on all heavy equipment used in close proximity to residential areas. This item is subsidiary to various bid items.

When a precast or cast-in-place concrete element is included in the plans, a precast concrete alternate may be submitted in accordance with "Standard Operating Procedure for Alternate Precast Proposal Submission" found online at https://www.txdot.gov/inside-txdot/forms-publications/consultants-contractors/publications/bridge.html#design. Acceptance or denial of an alternate is at the sole discretion of the Engineer. Impacts to the project schedule and any additional costs resulting from the use of alternates are the sole responsibility of the Contractor. Excavation within 5 feet of an existing CPS Energy pole will require pole bracing. Contact CPS Energy utility coordination to request pole bracing (Customer Engineering 210-353-4050). The estimated duration for the pole bracing process is approximately 10 to 15 weeks.

--Item 6--
Show the stockpile lot and/or sub lot numbers on all tickets for all materials.
Steel Wrapped or Asbestos Utility Lines:

Existing steel wrapped natural gas and/or asbestos cement (AC) water lines that will no longer be in service are usually abandoned in place (AIP). However, if any of these lines have to be removed for whatever reason (in the way of other construction, to make tie-ins, etc.), comply with Item 6.

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--
The project's total disturbed area is 14.75 ACRES. The disturbed area in all project locations and Contractor project specific locations (PSL's), within 1/4 mile of the project limits, 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. Obtain any required authorization from the TCEQ for any PSL's on or off the ROW. When the total area disturbed on the project and PSL's within 1/4 mile of the project exceeds 5 acres, provide a copy of the Contractor NOI for PSL's to the Engineer (to the appropriate MS4 operator when the project is on an off-state system route).

Notify the Engineer of the disturbed acreage within one (1) mile of the project limits. Obtain authorization from the TCEQ for Contractor PSL's for construction support activities on or off ROW.

No significant traffic generators events identified.
--Item 8--
Working days will be computed and charged in accordance with Article 8.3.1. 4.: Standard work week.
A Special Provision to Item 8 for a delayed authorized date to begin work has been included in the contract. The reason for including the Special Provision is for material processing or contractor mobilization.
Create and maintain a bar chart schedule.

The CPM schedule shall be created and maintained using software fully compatible with Primavera Project Planner version P6 Professional R15.2.
The road-user cost liquidated damages shall be $4,800.00 per day.

--Item 9--
When approved, provide uniformed, off-duty law enforcement officers with marked vehicles during work that requires a lane closure. The officer in marked vehicles shall be located as approved to monitor or direct traffic during the closure. The method used to direct traffic at signalized intersections shall be as approved. Additional officers and vehicles may be provided when approved or directed.

Complete the daily tracking form provided by the department and submit invoices that agree with the tracking form for payment at the end of each month approved services were provided.

Show proof of certification by the Texas Commission on Law Enforcement Standards.

All law enforcement personnel used in Work Zone Traffic Control shall be trained for performing duties in work zones and are required to take “Safe and Effective Use of Law Enforcement Personnel in Work Zones” (Course #133119) which can be found online at the following site: www.nhi.fhwa.dot.gov

Certificates of completion should be available to all who finish the course. These should be kept by the officers to substantiate completion when reporting to the work site.

Minimums, scheduling fees, etc. will not be paid; TxDOT will consider paying cancellation fees on a case-by-case basis.

--Item 132--
TY C embankment material shall meet the following specifications:

Item	Description	Percent Retained-Sieve				LL Max	PI Max	PI Min
		3"	3/8"	#4	#40			
132	Embankment (ORD COMP)(TY C)	0	-	30-75	50-85	50	20	6

--Item 164--
Drill seeding of permanent grasses requires the use of approved grass seeding equipment capable of properly storing and metering the release of small seeds (such as Bermuda grass) separately from fluffy type seeds (such as bluestems). Equipment manufactured for planting grain crops is acceptable for planting temporary cool season seeds, but not for planting permanent seed mix.

If performing a permanent seeding in an area with established temporary grass cover and mowing is performed instead of tilling, seed and fertilizer may be distributed simultaneously during “Broadcast Seeding” operations, provided each component is applied at the specified rate.

Control: 0072-05-096, etc.

County: Kendall

Highway: IH 10

--Item 168--
Apply vegetative watering as needed to supplement natural rainfall during the vegetation establishment period. Plan quantity of irrigation water is based on the application of a total of 1.3 gal of water each week for each sq. yd. of area that is sodded or seeded. Establishment time is estimated to be 12 weeks for both sod and permanent seed mixes. Temporary seeding will require less time for establishment. Provide a schedule and coordinate watering cycles and rates per cycle with the Engineer. Obtain approval if the quantity of water to be applied is expected to exceed the plan quantity. Adjust the amount of water applied with each cycle and the number of cycles each wk. according to actual site conditions. Drought or other conditions, as determined by the Engineer, may require the application of supplemental irrigation during hours other than normal working hours.

--Item 500--
"Materials on Hand" payments will not be considered in determining percentages for mobilization payments.

--Item 502--
General

In addition to providing a Contractor's Responsible Person and a phone number for emergency contact, have an employee available to respond on the project for emergencies and for taking corrective measures within 2 hours or within a reasonable time frame as specified by Engineer.

Avoid placing stockpiles, equipment, and other construction materials within the roadway’s horizontal clear zone or at any location that will constitute a hazard and will endanger traffic. If a stockpile is placed within the clear zone, address in accordance with the TMUTCD.

If Nighttime work is required and work is not behind positive barrier then full Class 3 reflective gear is required to be worn by all workers, hard hat halos are required to be worn by the flaggers at flagging stations, TY III barricades are required to be spaced at 500 ft, and a mandatory night work meeting is required.

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. Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

Access to adjoining property must be maintained at all times.

Barricades, Signs, and Traffic Control Devices

When advanced warning flashing arrow panels and/or changeable message sign is specified, have one standby unit in good condition at the job site. Standby time shall be considered subsidiary to the bid item.
After written notification, the time frame is provided on the Form 599 to provide properly maintained signs and barricades before considered in non-compliance with this item.
Moving an existing sign to a temporary location is subsidiary to Item 502. Installations with permanent supports at permanent locations will be paid for under the applicable bid item(s).

Cover permanent signs if not used. This is subsidiary to Item 502.

Lane and Ramp Closures and Detours

Notify the Engineer in writing 10 business days in advance of any temporary or permanent lane, ramp, connector, etc. closures/detours, restrictions to lane widths, alterations to vertical clearances, or modifications to radii. Any other modifications to the roadway that may adversely affect the mobility of oversized/overweight trucks also require 10 business days advance written notice to the Engineer. At least one lane must always remain open.

For closures not listed in the TCP; the lane closures are limited to between the hours of 9AM-3PM, and at least one lane must remain open at all times.

At no time shall two consecutive intersecting roadways be closed at one time during construction.

At no time shall two consecutive ramps be closed at one time during construction or overlay operations.

Unless otherwise noted in the plans and/or as directed by the Engineer, daily lane closures shall be limited according to the following restrictions:

Nighttime: Ask the Area Engineer for the days and hours for nighttime work if the Area Engineer agrees to nighttime work (With uniformed off duty law enforcement officers)

Weekend closures when approved by the Engineer: Ask the Area Engineer for the days and hours for weekend closures if the Area Engineer agrees to weekend closures.

No lane closures will be permitted for the following dates and/or special events:
Between December 15 and January 1
Fiesta Week and Sales Tax Holidays (Bexar County Only)
Wednesday before Thanksgiving thru the Sunday after Thanksgiving
Saturday and Sunday before Memorial Day and Labor Day
Saturday or Sunday when July 4 falls on a Friday or Monday
Election days (Bexar County Only)

During major events at the AT&T Center (Spurs home games, Rodeo, concerts, etc.)
Alamodome, and/or Convention Center (Bexar County Only)
Saturday before and Monday after Easter

Hauling
The use of rubber-tired equipment will be required for moving dirt or other materials along or across pavement surfaces. Where the contractor desires to move any equipment not licensed for operation on public highways, on or across pavement, they shall protect the pavement from damage as directed/approved by the Engineer.

Throughout construction operations, the Contractor will be required to conduct their hauling operations in a manner such that vehicles will not haul over previously recompacted subgrade or compacted base material, except in short sections for dumping manipulations.

The Contractor shall keep the roadway clean and free of dirt or other materials during hauling operations. If the Contractor does not maintain a clean roadway, they shall cease all construction operations, when directed by the Engineer, to clean the roadway to the satisfaction of the Engineer.

--Item 506--
An Inspector will perform a regularly scheduled SWP3 inspection every 7 calendar days.

Failure to address items noted on the SW3P inspection report within two report cycles may result in the Department stopping all construction operations, exclusive of time charges, or withholding that month's estimate until the SW3P deficiencies are corrected unless the Engineer determines that the area is too wet to correct SW3P deficiencies.

Failure to correctly maintain daily monitoring reports and submitting to TxDOT on a daily/weekly basis may result in the monthly estimate being withheld.

--Item 543--
Within 15 days of notice to proceed, contractor shall provide correspondence from post and cable supplier on expected delivery date of material. Contractor shall execute the work to complete all work except the post and cable installation. Time will be suspended when this work is complete. Time will resume when installation of post and cable begins, within 20 days upon receipt of post and cable material, or within 20 days upon expected delivery date of material, whichever comes first.

--Item 644--
The wedge anchor system shown on State Standard Sheet SMD (TWT) is not allowed.
Triangular Slipbase Systems with set screws are not allowed.

--Item 6185--
2 shadow vehicles with TMA will be required for this project. The TMA's will be measured and paid for by the DAY for each TMA/TA set up and operational on the worksite. 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 TMA's needed for the project. See TMA and TA Summary sheet in the plans.

SUMMARY OF QUANTITIES (CABLE BARRIER)

LAYOUT SHEET	FROM	TO	132-6021 EMBANKMENT (VEHICLE) (ORD COMP) (TY C)	150-6002 BLADING	164-6035 DRILL SEEDING(PERM) (RURAL) (CLAY)	164-6051 DRILL SEED (TEMP) (WARM OR COOL)	168-6001 VEGETATIVE WATERING	169-6001 SOIL RETENTION BLANKETS (CL 1)(TY A)	432-6066 RIPRAP (CL A) (MOW STRIP) (3 IN)	506-6038 TEMP SEDMT CONT FENCE (INSTALL)	506-6039 TEMP SEDMT CONT FENCE (REMOVE)	543-6002 CABLE BARRIER SYSTEM (TL-4)	543-6020 CABLE BARRIER TERMINAL SECTION (TL-4)	6001-6001 PORTABLE CHANGEABLE MESSAGE SIGN	6185-6002 TMA (STATIONARY)
	STA	STA	CY	HR	SY	SY	MG	SY	CY	LF	LF	LF	EA	DAY	DAY
CSJ:0072-05-096 (IH 10)															
1 OF 10	BEGIN	1112+00	50	40	800	800	13	800	34	50	50	1200	1	-	-
2 OF 10	1112+00	1124+00	43	35	1084	1084	17	1084	45	50	50	1625	2	-	-
3 OF 10	1124+00	1136+00	-	-	800	800	13	800	34	50	50	1200	-	-	-
4 OF 10	1136+00	1148+00	-	-	800	800	13	800	34	50	50	1200	-	-	-
5 OF 10	1148+00	1160+00	19	15	800	800	13	800	34	50	50	1200	-	-	-
6 OF 10	1160+00	1172+00	12	10	800	800	13	800	34	50	50	1200	-	-	-
7 OF 10	1172+00	1184+00	12	10	800	800	13	800	34	50	50	1200	-	-	-
8 OF 10	1184+00	1196+00	6	5	607	607	9	607	27	50	50	910	2	-	-
9 OF 10	1196+00	END	-	-	191	191	3	191	8	50	50	287	1	-	-
		TOTAL	142	115	6682	6682	107	6682	284	450	450	10022	6	22	50

SUMMARY OF QUANTITIES (CABLE BARRIER)

LAYOUT SHEET	FROM	TO	164-6035 DRILL SEEDING(PERM) (RURAL) (CLAY)	164-6051 DRILL SEED (TEMP) (WARM OR COOL)	168-6001 VEGETATIVE WATERING	169-6001 SOIL RETENTION BLANKETS (CL 1)(TY A)	432-6066 RIPRAP (CL A) (MOW STRIP) (3 IN)	506-6038 TEMP SEDMT CONT FENCE (INSTALL)	506-6039 TEMP SEDMT CONT FENCE (REMOVE)	543-6002 CABLE BARRIER SYSTEM (TL-4)	543-6020 CABLE BARRIER TERMINAL SECTION (TL-4)	6001-6001 PORTABLE CHANGEABLE MESSAGE SIGN	6185-6002 TMA (STATIONARY)
	STA	STA	SY	SY	MG	SY	CY	LF	LF	LF	EA	DAY	DAY
CSJ:0072-06-091 (IH 10)													
1 OF 7	BEGIN	779+00	1400	1400	22	1400	59	90	90	2100	1	-	-
2 OF 7	779+00	803+00	1441	1441	23	1441	62	290	290	2161	2	-	-
3 OF 7	803+00	827+00	1600	1600	25	1600	68	170	170	2400	-	-	-
4 OF 7	827+00	851+00	1600	1600	25	1600	68	60	60	2400	-	-	-
5 OF 7	851+00	875+00	1448	1448	23	1448	62	60	60	2172	2	-	-
6 OF 7	875+00	899+00	183	183	3	183	8	-	-	274	1	-	-
7 OF 7	899+00	END	-	-	-	-	-	-	-	-	-	-	-
		TOTAL	7672	7672	121	7672	327	670	670	11507	6	26	64

STATE OF TEXAS
M. R. NEELAPU
107595
LICENSED PROFESSIONAL ENGINEER

M. R. NEELAPU, P. E.

1/22/2023
DATE

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IH 10

SUMMARY OF QUANTITIES

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		8
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

SUMMARY OF QUANTITIES (CABLE BARRIER)

LAYOUT SHEET	FROM	TO	164-6035 DRILL SEEDING(PERM) (RURAL) (CLAY)	164-6051 DRILL SEED (TEMP) (WARM OR COOL)	168-6001 VEGETATIVE WATERING	169-6001 SOIL RETENTION BLANKETS (CL 1)(TY A)	432-6066 RIPRAP (CL A) (MOW STRIP) (3 IN)	506-6038 TEMP SEDMT CONT FENCE (INSTALL)	506-6039 TEMP SEDMT CONT FENCE (REMOVE)	543-6002 CABLE BARRIER SYSTEM (TL-4)	543-6020 CABLE BARRIER TERMINAL SECTION (TL-4)	752-6022 TREE TRIMMING AND BRUSH REMOVAL	6001-6001 PORTABLE CHANGEABLE MESSAGE SIGN	6185-6002 TMA (STATIONARY)
	STA	STA	SY	SY	MG	SY	CY	LF	LF	LF	EA	LF	DAY	DAY
CSJ:0073-10-060 (IH 37)														
1 OF 26	BEGIN	20+50	690	690	11	690	31	-	-	1034	1	-	-	-
2 OF 26	20+50	32+00	904	904	15	904	47	-	-	1355	4	-	-	-
3 OF 26	32+00	44+00	304	304	5	304	15	120	120	455	1	-	-	-
4 OF 26	44+00	56+00	-	-	-	-	-	-	-	-	-	-	-	-
5 OF 26	56+00	68+00	-	-	-	-	-	-	-	-	-	-	-	-
6 OF 26	68+00	80+00	-	-	-	-	-	-	-	-	-	-	-	-
7 OF 26	80+00	92+00	-	-	-	-	-	-	-	-	-	-	-	-
8 OF 26	92+00	104+00	-	-	-	-	-	-	-	-	-	-	-	-
9 OF 26	104+00	116+00	677	677	11	677	34	60	60	1015	3	-	-	-
10 OF 26	116+00	128+00	887	887	14	887	40	60	60	1330	1	-	-	-
11 OF 26	128+00	140+00	960	960	15	960	43	-	-	1440	1	-	-	-
12 OF 26	140+00	152+00	800	800	13	800	34	60	60	1200	-	-	-	-
13 OF 26	152+00	164+00	800	800	13	800	34	-	-	1200	-	-	-	-
14 OF 26	164+00	176+00	800	800	13	800	34	60	60	1200	-	-	-	-
15 OF 26	176+00	188+00	514	514	9	514	24	-	-	770	1	-	-	-
16 OF 26	188+00	200+00	367	367	6	367	18	-	-	550	1	-	-	-
17 OF 26	200+00	212+00	707	707	12	707	35	60	60	1060	2	192	-	-
18 OF 26	212+00	224+00	800	800	13	800	34	60	60	1200	-	78	-	-
19 OF 26	224+00	236+00	817	817	13	817	37	-	-	1225	1	-	-	-
20 OF 26	236+00	248+00	1067	1067	17	1067	48	-	-	1600	1	-	-	-
21 OF 26	248+00	260+00	800	800	13	800	34	60	60	1200	-	-	-	-
22 OF 26	260+00	272+00	800	800	13	800	34	-	-	1200	-	-	-	-
23 OF 26	272+00	284+00	800	800	13	800	34	60	60	1200	-	-	-	-
24 OF 26	284+00	296+00	800	800	13	800	34	-	-	1200	-	-	-	-
25 OF 26	296+00	305+00	834	834	14	834	37	-	-	1250	1	-	-	-
26 OF 26	305+00	END	557	557	9	557	28	60	60	835	2	-	-	-
		TOTAL	15685	15685	255	15685	709	660	660	23519	20	270	35	98

STATE OF TEXAS
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IH 37

SUMMARY OF QUANTITIES

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		9
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

SUMMARY OF QUANTITIES (CABLE BARRIER)

LAYOUT SHEET	FROM	TO	132-6021 EMBANKMENT (VEHICLE) (ORD COMP) (TY C)	150-6002 BLADING	164-6035 DRILL SEEDING(PERM) (RURAL) (CLAY)	164-6051 DRILL SEED (TEMP) (WARM OR COOL)	168-6001 VEGETATIVE WATERING	169-6001 SOIL RETENTION BLANKETS (CL 1)(TY A)	432-6066 RIPRAP (CL A) (MOW STRIP) (3 IN)	506-6038 TEMP SEDMT CONT FENCE (INSTALL)	506-6039 TEMP SEDMT CONT FENCE (REMOVE)	543-6002 CABLE BARRIER SYSTEM (TL-4)	543-6020 CABLE BARRIER TERMINAL SECTION (TL-4)	644-6030 IN SM RD SN SUP&AM TYS80(1)SA(T)	644-6076 REMOVE SM RD SN SUP&AM	6001-6001 PORTABLE CHANGEABLE MESSAGE SIGN	6185-6002 TMA (STATIONARY)
	STA	STA	CY	HR	SY	SY	MG	SY	CY	LF	LF	LF	EA	EA	EA	DAY	DAY
CSJ:0073-10-061 (IH 37)																	
1 OF 26	BEGIN	12+00	-	-	795	795	12	795	34	-	-	1160	1	-	-	-	-
2 OF 26	12+00	24+00	-	-	800	800	13	800	33	-	-	1200	-	-	-	-	-
3 OF 26	24+00	36+00	-	-	1137	1137	18	1137	49	54	54	1640	2	-	-	-	-
4 OF 26	36+00	48+00	-	-	757	757	12	757	34	54	54	1070	2	1	1	-	-
5 OF 26	48+00	60+00	-	-	800	800	13	800	33	-	-	1200	-	-	-	-	-
6 OF 26	60+00	72+00	-	-	800	800	13	800	33	-	-	1200	-	-	-	-	-
7 OF 26	72+00	84+00	-	-	800	800	13	800	33	-	-	1200	-	-	-	-	-
8 OF 26	84+00	96+00	12.4	10	800	800	13	800	33	277	277	1200	-	-	-	-	-
9 OF 26	96+00	108+00	-	-	910	910	14	910	39	-	-	1300	2	-	-	-	-
10 OF 26	108+00	120+00	-	-	800	800	13	800	33	-	-	1200	-	-	-	-	-
11 OF 26	120+00	132+00	6.2	5	800	800	13	800	33	130	130	1200	-	-	-	-	-
12 OF 26	132+00	144+00	-	-	800	800	13	800	33	60	60	1200	-	-	-	-	-
13 OF 26	144+00	156+00	-	-	688	688	11	688	29	160	160	1000	1	-	1	-	-
14 OF 26	156+00	168+00	6.2	5	622	622	10	622	27	320	320	900	1	-	-	-	-
15 OF 26	168+00	180+00	-	-	800	800	13	800	33	-	-	1200	-	-	-	-	-
16 OF 26	180+00	192+00	-	-	800	800	13	800	33	54	54	1200	-	-	-	-	-
17 OF 26	192+00	204+00	-	-	750	750	12	750	33	-	-	1060	2	-	-	-	-
18 OF 26	204+00	216+00	-	-	910	910	14	910	39	-	-	1300	2	-	-	-	-
19 OF 26	216+00	228+00	-	-	1035	1035	16	1035	44	-	-	1520	1	-	-	-	-
20 OF 26	228+00	240+00	-	-	888	888	14	888	38	80	80	1300	1	-	-	-	-
21 OF 26	240+00	252+00	-	-	222	222	3	222	10	-	-	300	1	-	-	-	-
22 OF 26	252+00	264+00	-	-	-	-	-	-	-	75	75	-	-	-	-	-	-
23 OF 26	264+00	276+00	-	-	662	662	10	662	28	-	-	960	1	1	1	-	-
24 OF 26	276+00	END	-	-	768	768	12	768	33	-	-	1120	1	-	-	-	-
		TOTAL	24.8	20	18144	18144	288	18144	767	1264	1264	26630	18	2	3	36	104

STATE OF TEXAS
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IH 37

SUMMARY OF QUANTITIES

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		10
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE: FRP = Fiberglass, TWT = Thin-Wall, 10BWG = 10 BWG, S80 = Sch 80	POSTS: 1 or 2	ANCHOR TYPE: UA=Universal Conc, UB=Universal Bolt, SA=Slipbase-Conc, SB=Slipbase-Bolt, WS=Wedge Steel, WP=Wedge Plastic	MOUNTING DESIGNATION: PREFABRICATED: P = "Plain", T = "T", U = "U"	MOUNTING DESIGNATION: 1EXT or 2EXT = # of Ext, BM = Extruded Wind Beam, WC = 1.12 #/ft Wing Channel, EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE: TY N, TY S
4 OF 26												
	1	R5-11T	FOR OFFICIAL OR EMERGENCY VEHICLE USE ONLY	48X48	✓		S80	1	SA	T		
							MOUNTED BACK-TO-BACK					
4 OF 26												
	2	R5-11T	FOR OFFICIAL OR EMERGENCY VEHICLE USE ONLY	48X48	✓							
23 OF 26												
	3	R4-2aT	LEFT LANE FOR PASSING ONLY	48X72	✓		S80	1	SA	T		

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

The Standard Highway Sign Designs for Texas (SHSD) can be faund at the fallowing website.

http://www.txdot.gov/

NOTE:

1. Sign supparts shall be located as shown an the plans, except that the Engineer may shift the sign supparts, within design guidelines, where necessary to secure a mare desirable lacatian or to avaid canflict with utilities. Unless atherwise shawn an the plans, the Cantractar shall stake and the Engineer will verify all sign suppart lacations.

2. Far installatian of bridge maunt clearance signs, see Bridge Maunted Clearance Sign Assembly (BMCS)Standard Sheet.

3. Far Sign Suppart Descriptive Cades, see Sign Maunting Details Small Raadside Signs General Nates & Details SMD(GEN).

Texas Department of Transportation

Traffic Operations Division Standard

IH 37
SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0072	05	096,ETC.	IH 10,ETC.
4-16	DIST	COUNTY		SHEET NO.
8-16	SAT	KENDALL,ETC.		11

18

DATE:
FILE:

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

1. GENERAL

(1) TRAFFIC MUST BE HANDLED THROUGHOUT THE PROJECT DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SAFE AND COMFORTABLE PASSAGE FOR VEHICULAR AND PEDESTRIAN TRAFFIC WITH MINIMAL INCONVENIENCE TO THE PUBLIC, AS SHOWN IN THE PLANS OR AS DIRECTED/APPROVED BY THE ENGINEER.

(2) THE CONTRACTOR MAY PROPOSE/RECOMMEND MODIFICATIONS TO THE SEQUENCE OF WORK FOR CONSIDERATION BY THE ENGINEER. ANY MAJOR RECOMMENDED MODIFICATION BY THE CONTRACTOR SHALL INCLUDE ANY CHANGES TO THE VARIOUS BID ITEMS, IMPACT TO TRAFFIC, EFFECT OF OVERALL PROJECT IN TIME AND COST, ETC. IF THIS PROPOSAL IS IMPLEMENTED, THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING DETAILED PLAN SHEETS TO BE SEALED BY A LICENSED PROFESSIONAL ENGINEER FOR INCLUSION WITH THE CHANGE ORDER. THE CONTRACTOR CANNOT PROCEED WITH ANY CONSTRUCTION OPERATIONS BASED ON A REVISED PHASE/SEQUENCE UNTIL WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER. IF AT ANY TIME DURING CONSTRUCTION THE CONTRACTOR'S PROPOSED PLAN OF OPERATION FOR HANDLING TRAFFIC DOES NOT PROVIDE FOR SAFE AND COMFORTABLE MOVEMENT, THE CONTRACTOR WILL IMMEDIATELY CHANGE THEIR OPERATION TO CORRECT THE UNSATISFACTORY CONDITION.

(3) DO NOT STORE ANY CONSTRUCTION MATERIAL OR EQUIPMENT AT ANY LOCATION THAT WILL CONSTITUTE A HAZARD AND WILL ENDANGER TRAFFIC. DO NOT PLACE SPOILS, EQUIPMENT, ETC. WITHIN THE CENTER MEDIAN. POSITIVE FLOW MUST BE MAINTAINED AT ALL TIMES.

(4) TEMPORARY DRAINAGE IS THE RESPONSIBILITY OF THE CONTRACTOR.

(5) COORDINATE WITH ADJACENT PROJECTS.

SEQUENCE OF WORK:

1. THE PROJECT WILL BE CONSTRUCTED IN ONE PHASE (2 STEPS). BEFORE THE COMMENCEMENT OF EACH PHASE, INSTALL ADVANCE WARNING SIGNS, TEMPORARY SIGNS AND BARRICADES AS SHOWN ON THE PLANS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER. DAILY LANE CLOSURES WILL BE USED IN ACCORDANCE WITH STATE TCP STANDARDS. DROP OFF CONDITIONS GREATER THAN 2" MUST HAVE A 3:1 SLOPE AT THE END OF EACH DAY, AS WELL AS THROUGHOUT THE PROJECT WHERE ACCESS TO ADJACENT PROPERTIES IS ALLOWED TO DRIVEWAYS AND SIDE STREETS. PLACE PCMS 10 DAYS IN ADVANCE OF STARTING WORK AT EACH LOCATION

2. PREPARING ROW / REMOVAL OF EXISTING ITEMS TO BE DONE ONLY IN AREAS WHERE WORK IS OCCURING, AS PER THE PHASES NOTED BELOW.

3. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE REQUIREMENTS OF ITEM 7, "LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC" AND ITEM 502, "BARRICADES, SIGNS, AND TRAFFIC HANDLING", OF THE STANDARD SPECIFICATIONS, AND TO THE GENERAL NOTES.

4. A SEGMENT MUST BE COMPLETED PRIOR TO BEGINNING WORK ON ANOTHER SEGMENT. PRIOR TO BEGINNING WORK ON ANOTHER SEGMENT, THE TRAFFIC MUST BE BROUGHT TO FULL OPERATION. ALL BID ITEM WORK FOR EACH SEGMENT MUST BE COMPLETED BEFORE MOVING TO THE SUBSEQUEST LOCATION. THIS INCLUDES COMPLETING VEGETATION ITEMS, PUNCHLIST AND CLEAN-UP ITEMS.

5. A BRIEF DESCRIPTION OF THESE PHASES/STEPS ARE AS FOLLOWS:

IH 10/ IH 37 CABLE BARRIER:

PHASE 1 STEP 1:

1. MOBILIZATION.

2. INSTALL ADVANCE WARNING SIGNS, TEMPORARY SIGNS, CONSTRUCTION SIGNS, BARRICADES, CHANNELIZING DEVICES AS SHOWN ON THE TYPICAL TRAFFIC CONTROL PLAN.

3. CLOSE THE INSIDE LANE IN ONE DIRECTION (NEAR THE PROPOSED CABLE BARRIER) AND THE SHOULDER IN THE OTHER DIRECTION AS SHOWN IN THE TCP TYPICAL SECTIONS.

4. INSTALL MOW STRIP AND CABLE BARRIER POST FOUNDATIONS.

4. OPEN ALL LANES AND SHOULDERS DURING NON-WORKING HOURS.

PHASE 1 STEP 2:

1. INSTALL ADVANCE WARNING SIGNS, TEMPORARY SIGNS, CONSTRUCTION SIGNS, BARRICADES, CHANNELIZING DEVICES AS SHOWN ON THE TYPICAL TRAFFIC CONTROL PLAN.

2. CLOSE THE INSIDE SHOULDERS IN BOTH DIRECTIONS AS SHOWN IN THE TCP TYPICAL SECTIONS.

3. INSTALL CABLE BARRIER POSTS AND CABLES.

4. OPEN ALL LANES AND SHOULDERS DURING NON-WORKING HOURS.

5. PERFORM FINAL CLEANUP.

STATE OF TEXAS
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M. R. NEELAPU, P. E.

3/15/2023
DATE

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SEQUENCE OF WORK/ TCP NARRATIVE

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		12
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

SAFETY:

THE CONTRACTOR WILL PROVIDE, CONSTRUCT AND MAINTAIN BARRICADES AND SIGNS IN ACCORDANCE WITH STATE STANDARDS BC (1 - 12)-21. ANY SIGNS REQUIRED THAT ARE NOT DETAILED IN THE STANDARD SHEETS SHALL BE IN CONFORMANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND THE "STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS."

BARRICADES AND WARNING SIGNS SHALL BE PLACED AS INDICATED ON THE PLANS. THIS SHALL BE CONSIDERED THE MINIMUM REQUIRED TO PROVIDE FOR THE SAFETY OF TRAFFIC DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN OTHER SUCH BARRICADES AND SIGNS DEEMED NECESSARY BY THE ENGINEER OR AS DIRECTED BY FIELD CONDITIONS, TO PROVIDE FOR THE PASSAGE OF TRAFFIC IN SAFETY AT ALL TIMES.

THE CONTRACTOR SHALL PROVIDE AND MAINTAIN FLAGGERS AS DIRECTED/APPROVED BY THE ENGINEER, AT SUCH POINTS, AND FOR SUCH PERIODS OF TIME AS MAY BE REQUIRED, TO PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC AND THE CONTRACTOR'S PERSONNEL.

THE CONTRACTOR SHALL KEEP THE ROADWAY CLEAN AND FREE OF DIRT OR OTHER MATERIALS DURING HAULING OPERATIONS. IF THE CONTRACTOR DOES NOT MAINTAIN A CLEAN ROADWAY, THEY SHALL CEASE ALL CONSTRUCTION OPERATIONS, WHEN DIRECTED BY THE ENGINEER, TO CLEAN THE ROADWAY TO THE SATISFACTION OF THE ENGINEER.

HAULING EQUIPMENT:

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

THROUGHOUT CONSTRUCTION OPERATIONS, THE CONTRACTOR WILL BE REQUIRED TO CONDUCT THEIR HAULING OPERATIONS IN A MANNER SUCH THAT VEHICLES WILL NOT HAUL OVER PREVIOUSLY RECOMPACTED SUBGRADE OR COMPACTED BASE MATERIAL, EXCEPT IN SHORT SECTIONS FOR DUMPING MANIPULATIONS.

FINAL CLEAN UP:

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

PAYMENT:

ALL BARRICADES, SIGNS, AND FLAGGERS SHALL BE SUBSIDIARY TO ITEM 502 BARRICADES, SIGNS AND TRAFFIC HANDLING. ALL EROSION AND SEDIMENT CONTROL DEVICES WILL BE PAID FOR UNDER ITEM 506 TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS. ALL WORK ZONE PAVEMENT MARKINGS WILL BE PAID FOR UNDER ITEM 662 WORK ZONE PAVEMENT MARKINGS. ALL OTHER WORK AND MATERIALS SHALL BE SUBSIDIARY TO THE VARIOUS BID ITEMS UNLESS OTHERWISE INDICATED IN THE PLANS.

STATE OF TEXAS
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1/22/2023
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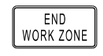
SEQUENCE OF WORK/ TCP NARRATIVE

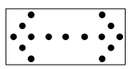
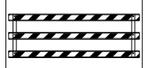
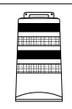
FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		13
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

TRAFFIC CONTROL PLAN ITEMS

PROJECT LIMIT SIGNING

LOCATION	 CW20-1D (36"x36")	 G20-2bT (36"x18")	 G2-2 (36"x18")	 G20-6T (48"x30")	 G20-9TP (24"x24")	 CW21-1T (36"x36")	 R20-3T (48"x42")	 R20-5aTP (24"x12")	 R20-5T (24"x30")	 CW20-4C (36"x36")	 CW20-8T (36"x36")	 G20-10T (60"x48")	 R4-1 (24"x30")	 CW8-12 (36"x36")	 CW3-4 (36"x36")	 CW20-7 (36"x36")
1	X			X	X		X	X	X	X		X				
2		X	X													
3	X					X					X		X	X	X	X

PROJECT LIMIT SIGNING

LOCATION	 CW5-1 (36"x36")	 CW6-3 (36"x36")	 CW8-1 (36"x36")	 CW8-11 (36"x36")	 R2-1 (24"x30")	 CW13-1P (24"x24")	 G20-1bTL (72"x24")	 G20-1bTR (72"x24")	 R11-2 (48"x30")	 P.C.M.B.	 ARROW BOARD	 TY 3 BARRICADE	 CW6-4	 VERTICAL PANEL	 PLASTIC BARRELS
1						X	X	X							
2															
3	X	X	X	X		X			X	X	X	X	X	X	X

GENERAL NOTES:

1. LOCATION 1 TO BE PLACED AT BEGINNING OF PROJECT AND ENTERING SIDE STREETS.
2. LOCATION 2 TO BE USED AT THE END OF PROJECT AND ENTERING SIDE STREETS.
3. LOCATION 3 TO BE USED THROUGHOUT THE COURSE OF THE PROJECT AS DIRECTED BY THE ENGINEER.

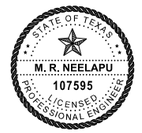
NOTES:

1. CERTAIN SIGNS MUST BE USED IN CONJUNCTION WITH OTHER SIGNS. EXAMPLE: "FLAGGER AHEAD" MUST HAVE A "BE PREPARED TO STOP".

2. BARRICADES AND WARNING SIGNS ON THIS SHEET ARE THE MINIMUM CONSTRUCTION ZONE SIGNING. ADDTIONAL BARRICADES, WARNING SIGNS, ARROW PANELS, CONES, ETC. REQUIRED IN ACCORDANCE WITH CURRENT BC STANDARDS AND THE TEXAS MUTCD MAY BE REQUIRED IN AREAS OF ACTUAL CONSTRUCTION.

3. A DISTANCE PLAQUE IN FEET OR MILES MAY BE REQUIRED FOR USE IN CONJUNCTION WITH WARNING SIGNS.

4. IMPLEMENT DETOURS IN ACCORDANCE WITH THE TEXAS MUTCD. USE CHANGABLE MESSAGE BOARDS TO GUIDE MOTORISTS THROUGH THE DETOUR.



M. R. NEELAPU, P. E.

1/22/2023
DATE

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SCHEDULE OF TRAFFIC CONTROL DEVICES

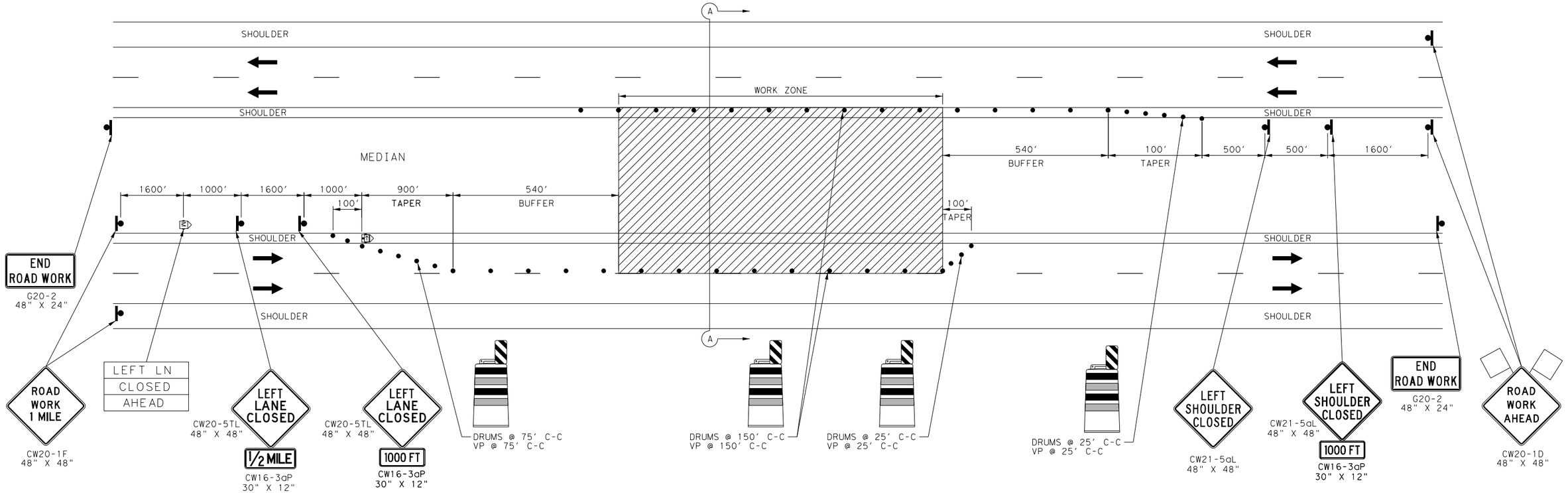
FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		14
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

LOC NO.	CSJ NO.	TCP PHASE	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	FURNISH TMA/TA	RELOCATE/REUSE TMA/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	6185 6002 TMA (STATIONARY)	6185 6005 TMA (MOBILE OPERATION)
			SHEET NUMBER	EA	EA	EA	DAYS PER TMA/TA USE	DAY	DAY
1	0072-05-096	PHASE 1	IH 10 - MEDIAN CABLE BARRIER	2	0	2	25	50	0
2	0072-06-091	PHASE 1	IH 10 - MEDIAN CABLE BARRIER	0	2	2	32	64	0
2	0073-10-060	PHASE 1	IH 37 - MEDIAN CABLE BARRIER	0	2	2	49	98	0
3	0073-10-061	PHASE 1	IH 37 - MEDIAN CABLE BARRIER	0	2	2	52	104	0
			TOTALS					316	0

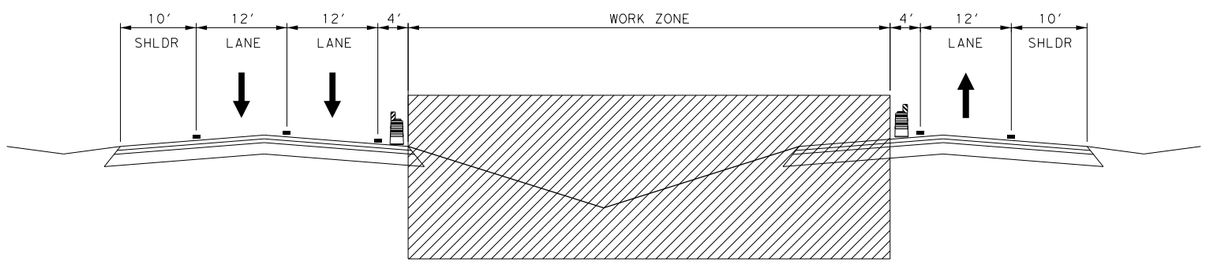
NOTE.
FURNISH TMA/TA - THE NUMBER OF ATTENUATORS BEING FURNISHED FOR THE SPECIFIC TCP.
RELOCATE/REUSE TMA/TA - THE NUMBER OF ATTENUATORS BEING REUSED FROM A PREVIOUS TCP FOR THE SPECIFIC TCP.
TOTAL TMA/TA PER SET UP = (FURNISH TMA/TA) + (RELOCATE/REUSE TMA/TA)
DURATION OF TMA/TA SET UP - THE NUMBER OF DAYS THE ATTENTUATORS WILL BE USED FOR THE SPECIFIC TCP.
TMA/TA (STATIONARY) = (TOTAL TMA/TA PER SET UP) X (THE DURATION OF TMA/TA SET UP)
TMA/TA (MOBILE OPERATION) = (TOTAL TMA/TA PER SET UP) X (THE DURATION OF TMA/TA SET UP)

TRUCK MOUNTED ATTENUATOR (TMA) AND TRAILER ATTENUATOR (TA) SUMMARY SHEET

FILE: tma.dgn	DN: TxDOT	CK:	CK:
© TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS 3/2018	0072	05	096, ETC.	IH 10, ETC.
	DIST	COUNTY	
	SAT	KENDALL, ETC.	
	FEDERAL AID PROJECT	SHEET NO.
	SEE TITLE SHEET	15



TYPICAL TCP FOR CABLE BARRIER ALONG IH 10/IH 37 (PHASE 1 STEP 1)



TCP TYPICAL SECTION (A-A)

LEGEND:

- WORK ZONE
- CHANNELZING DEVICES
- TRAILER MOUNTED FLASHING ARROW BOARD
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)
- SIGN
- DIRECTION OF TRAVEL

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1/22/2023
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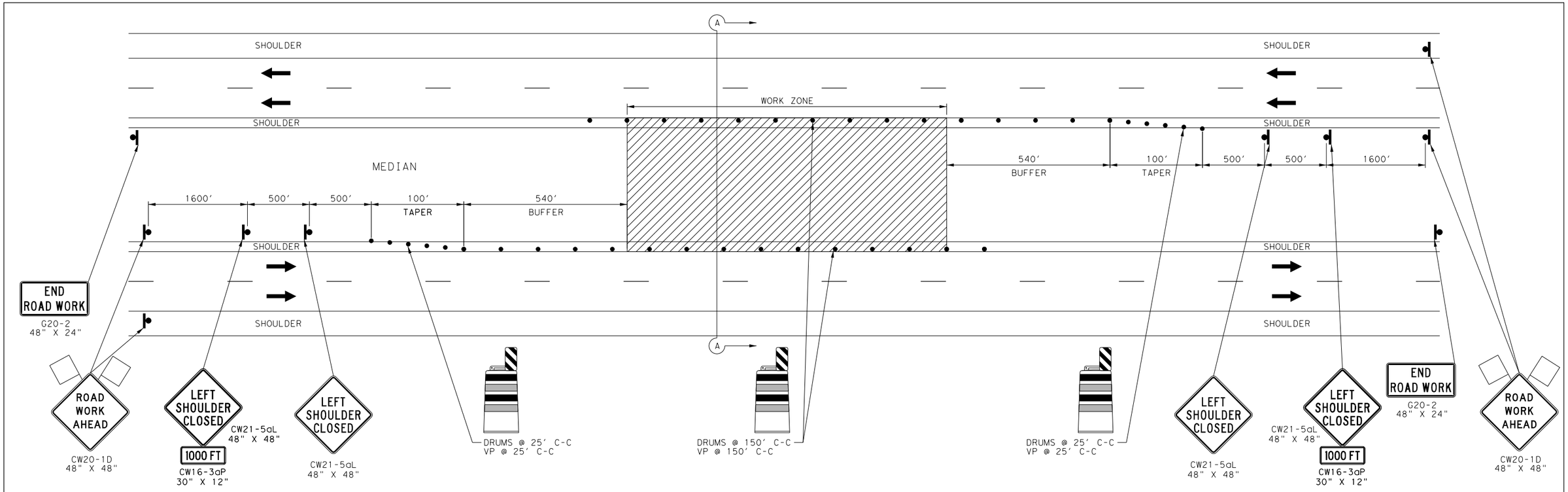
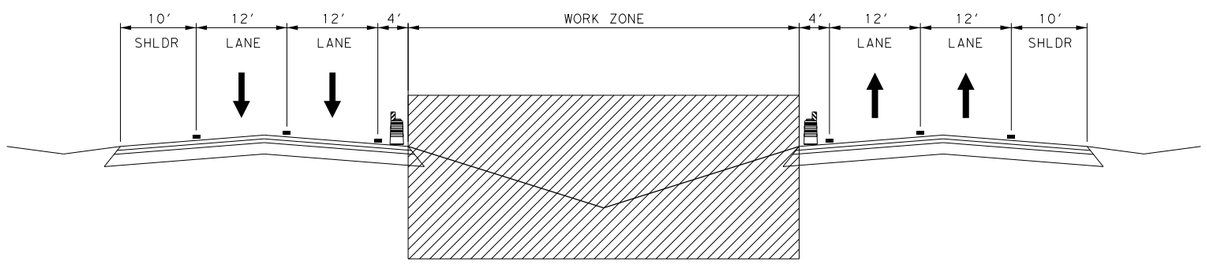
TYPICAL TCP

SHEET 1 OF 2

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		16
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.



TYPICAL TCP FOR CABLE BARRIER ALONG IH 10/IH 37 (PHASE 1 STEP 2)



TCP TYPICAL SECTION (A-A)

LEGEND:
- WORK ZONE
- CHANNELZING DEVICES
- SIGN
- DIRECTION OF TRAVEL

STATE OF TEXAS
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TYPICAL TCP

SHEET 2 OF 2

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		17
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

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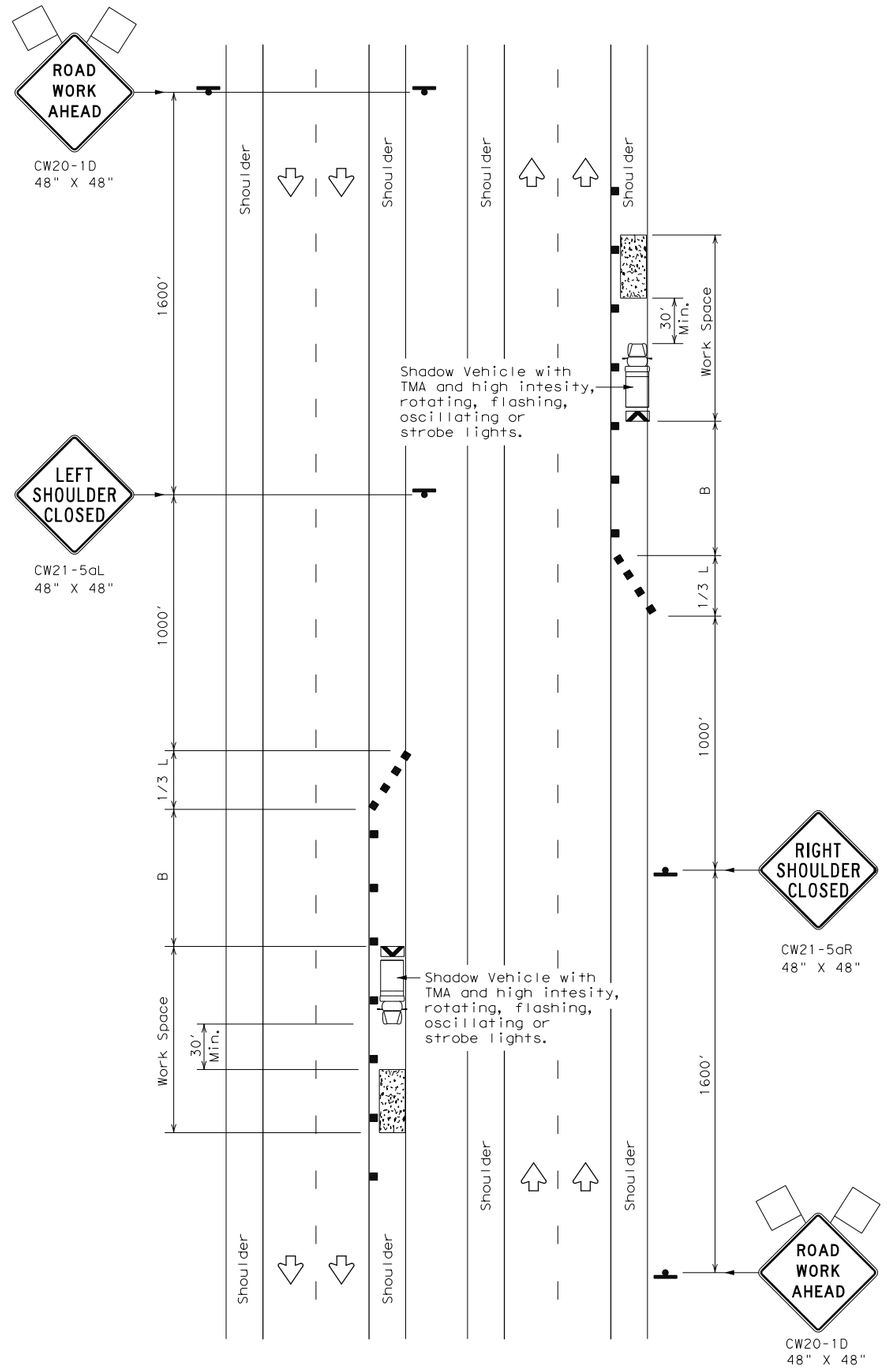
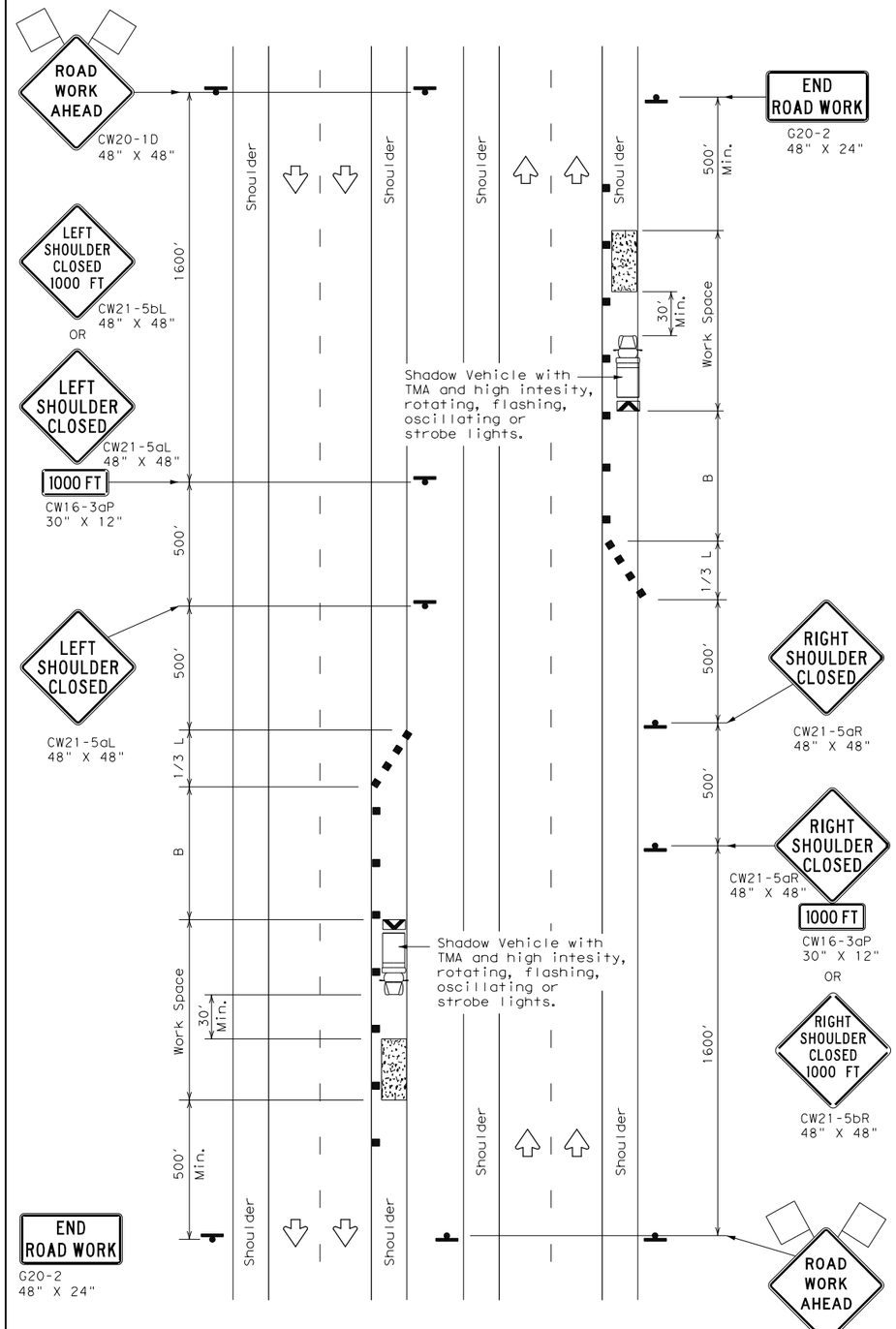
DATE:
FILE:



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

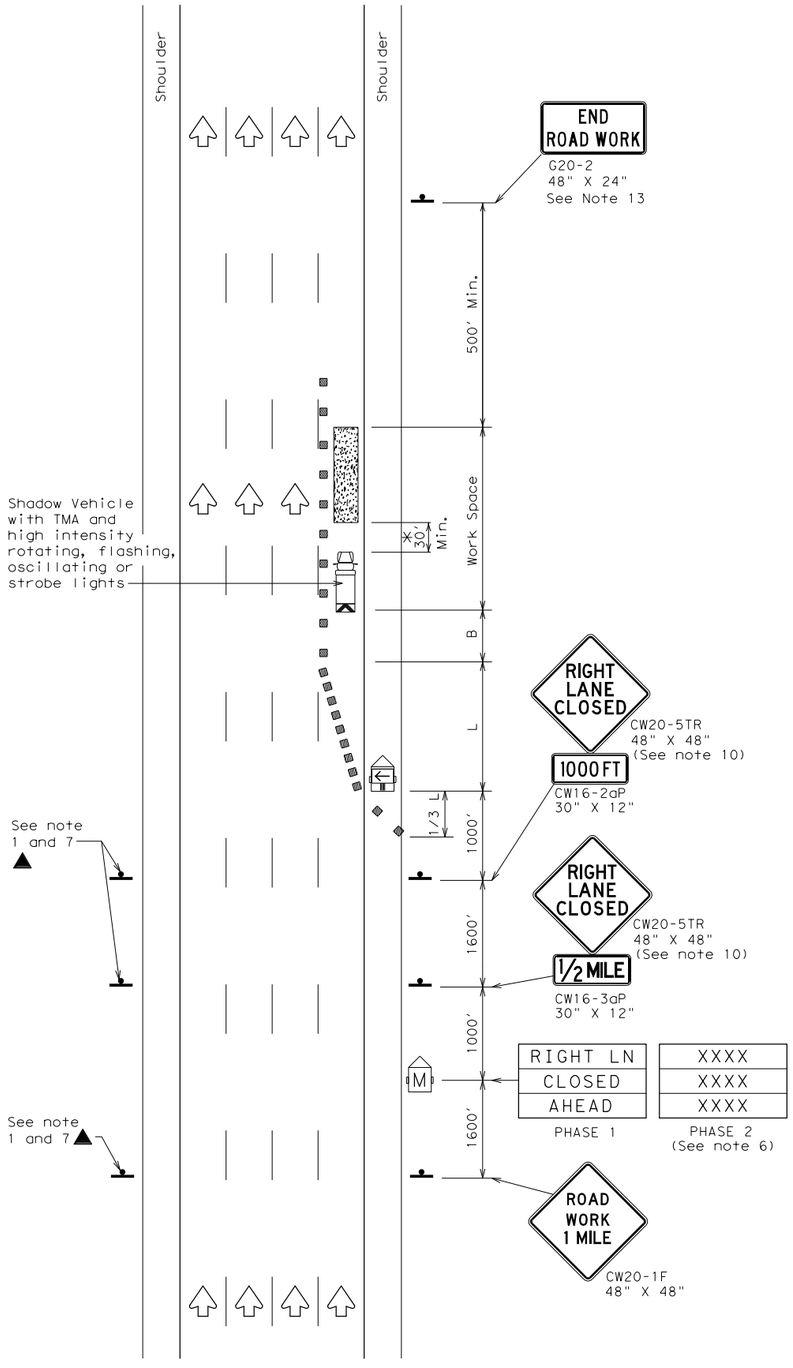
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN SHOULDER WORK FOR FREEWAYS / EXPRESSWAYS

TCP(5-1)-18

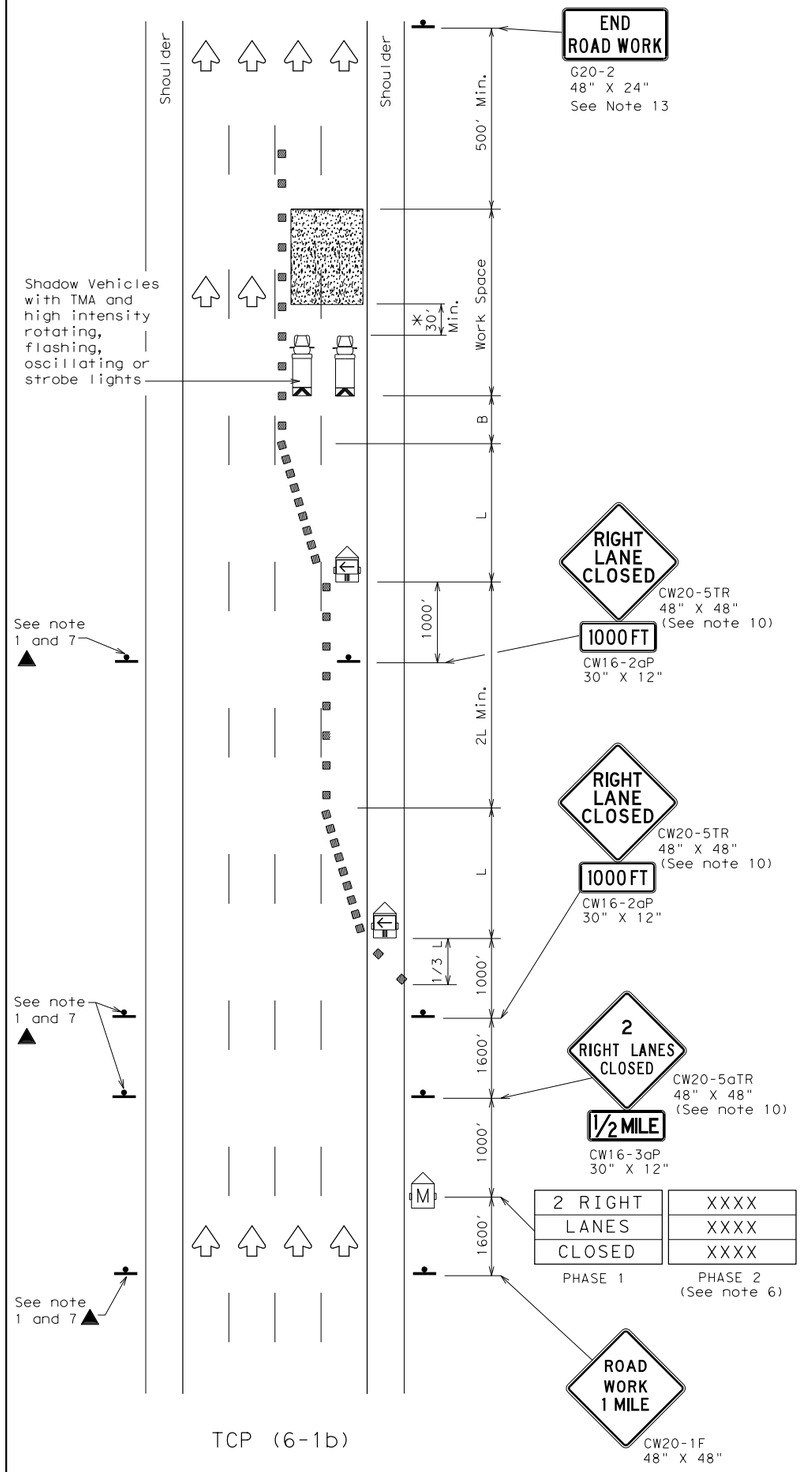
FILE: tcp5-1-18.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-18	0072	05	096, ETC.	IH 10, ETC.
	DIST	COUNTY		SHEET NO.
	SAT	KENDALL, ETC.		18

DATE:
FILE:



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	0072	05	096, ETC.	IH 10, ETC.
	DIST	COUNTY		SHEET NO.
	SAT	KENDALL, ETC.		19

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

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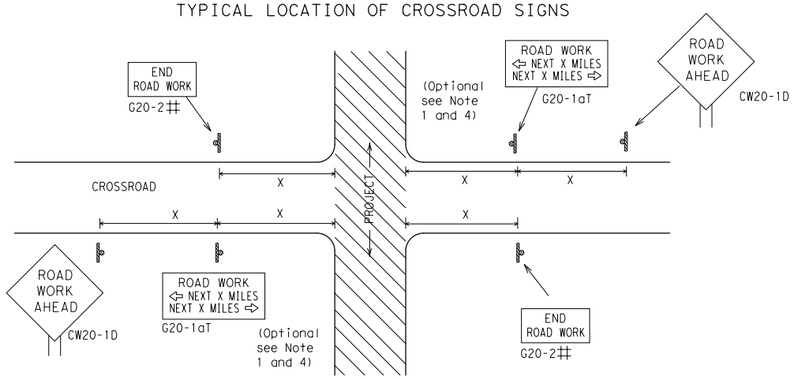
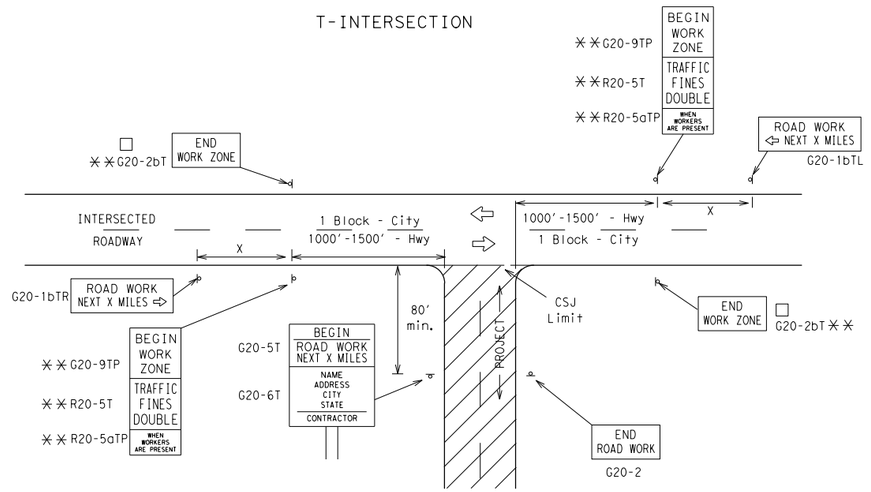
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

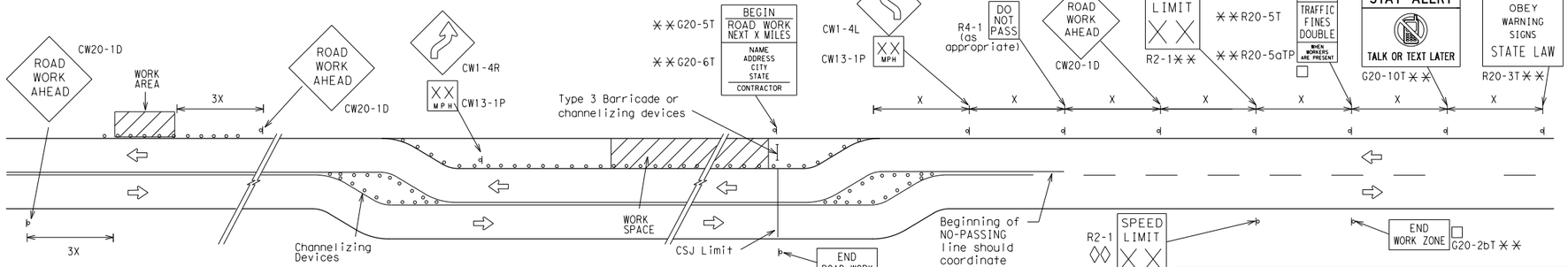
✳ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

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

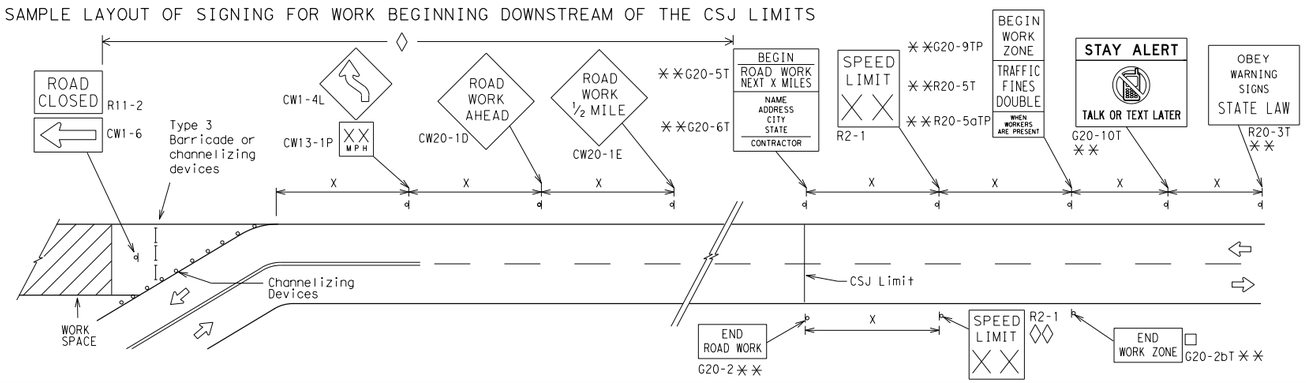
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

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



NOTES

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

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

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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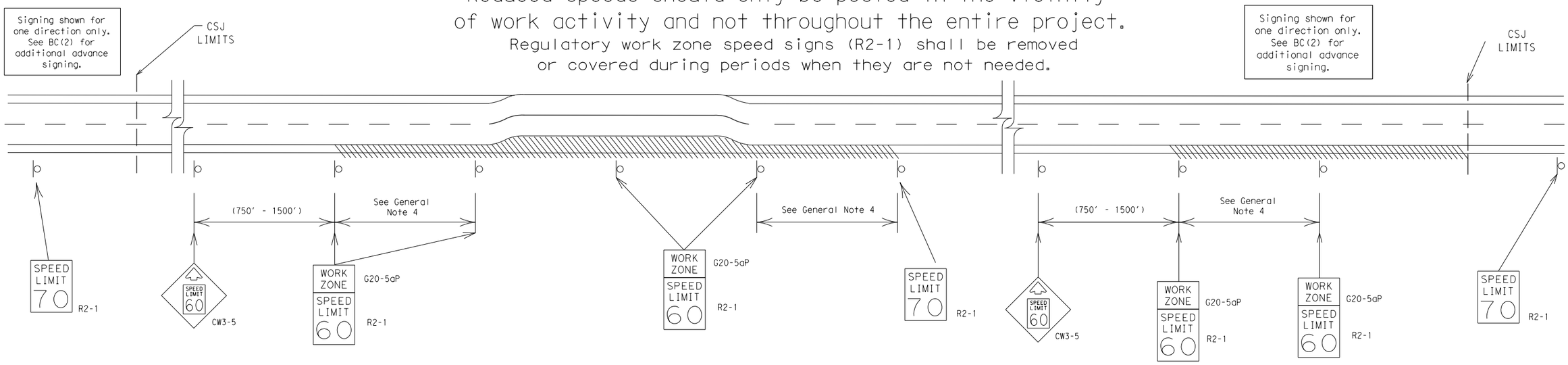
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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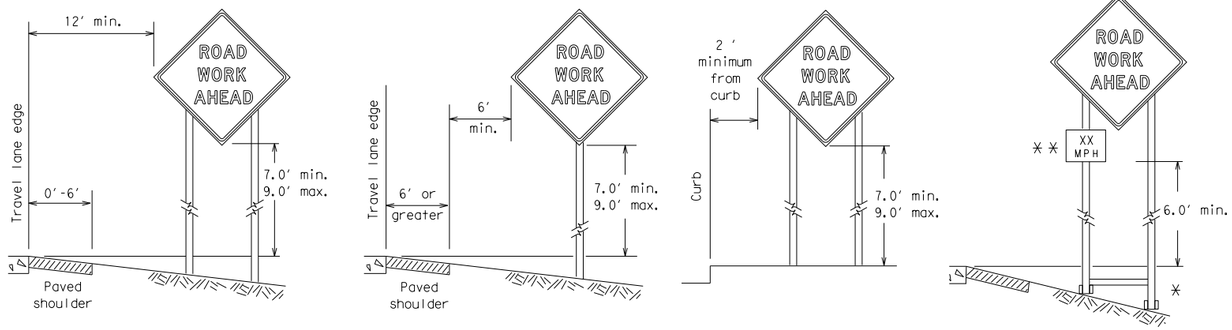
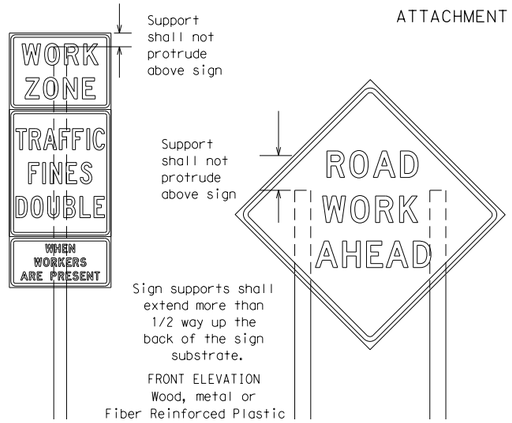
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

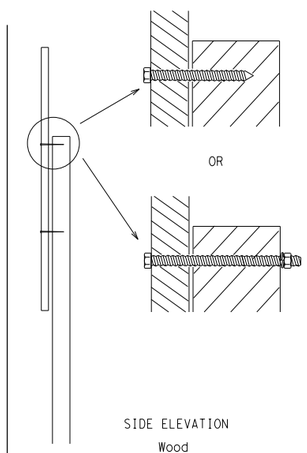


⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





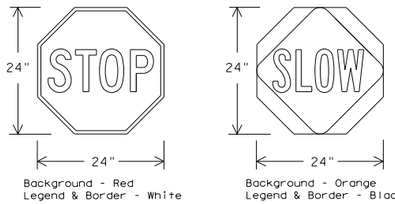
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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REVISIONS	0072	05	096, ETC.	IH 10, ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	KENDALL, ETC.		23

DATE:
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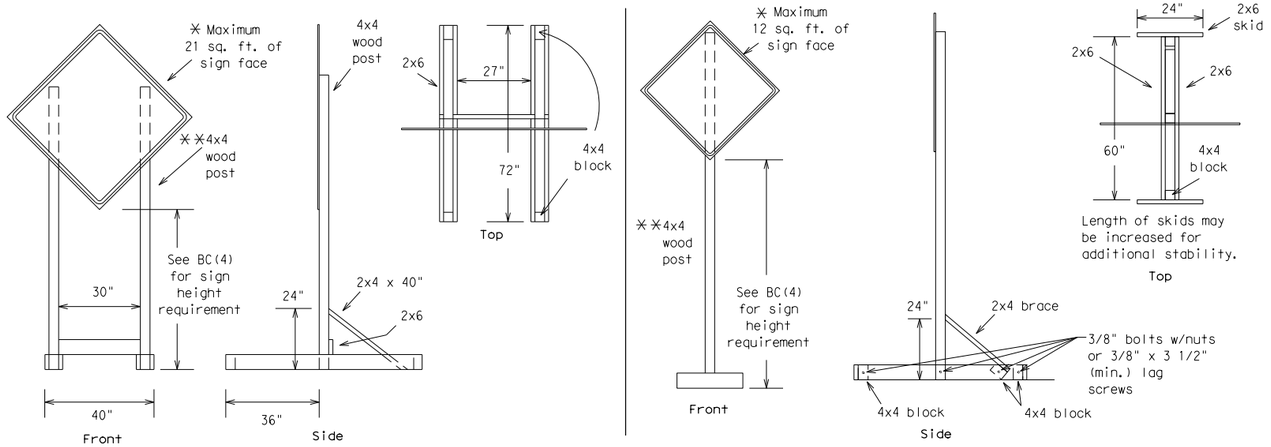
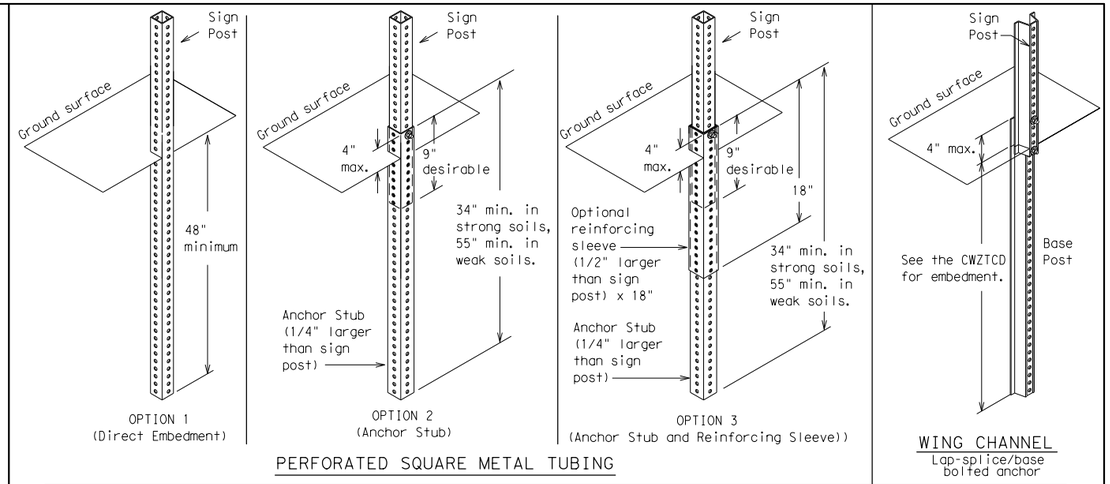


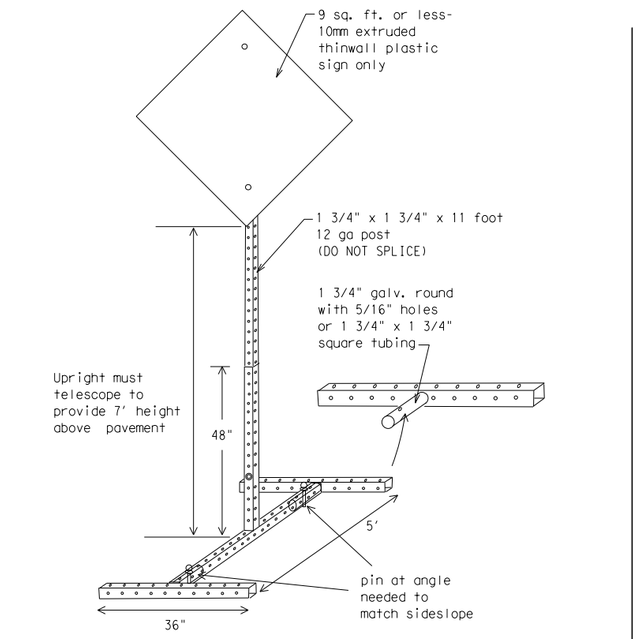
SKID MOUNTED WOOD SIGN SUPPORTS

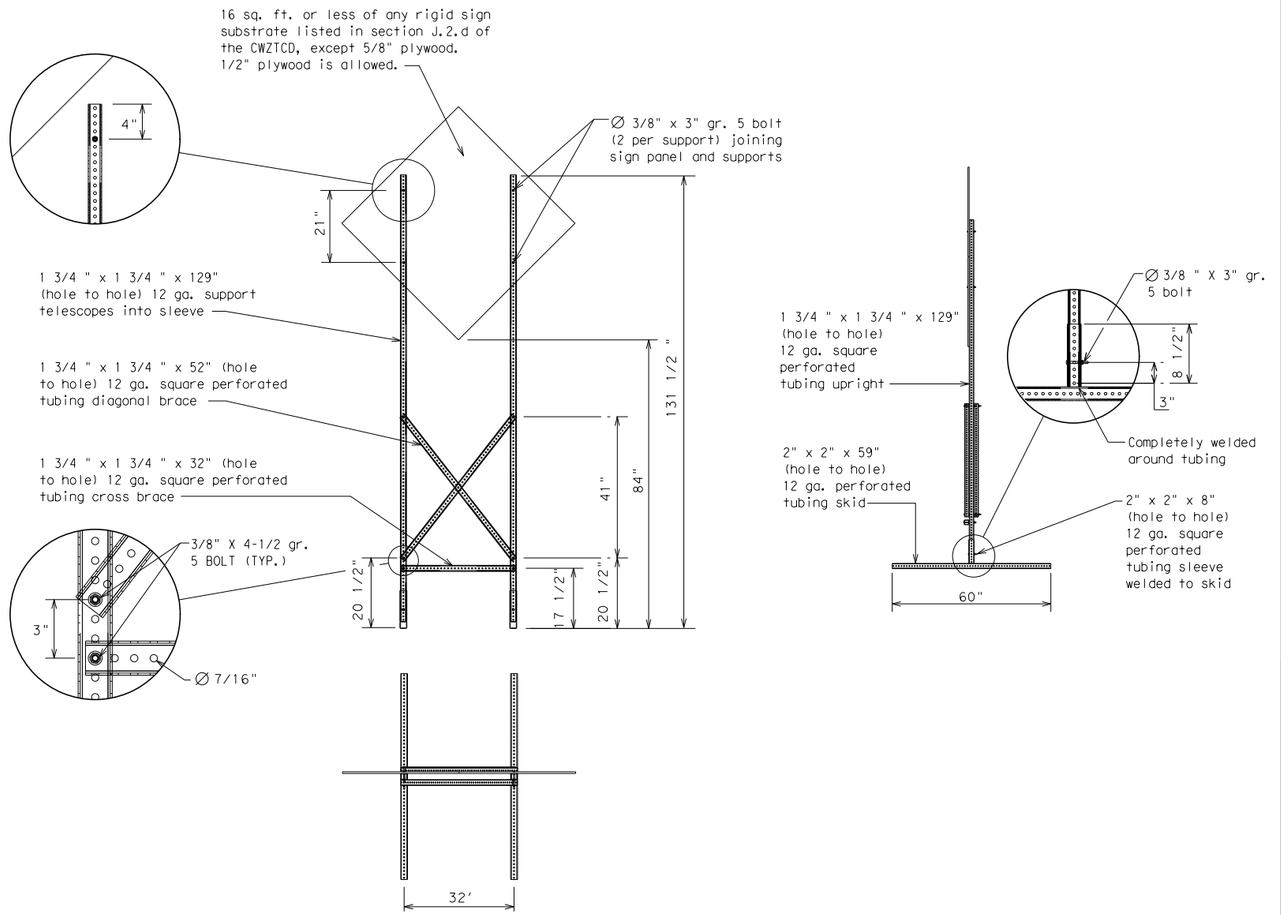
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



GROUND MOUNTED SIGN SUPPORTS

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





SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0072	05	096, ETC.	IH 10, ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	KENDALL, ETC.		24

DATE:
FILE:

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 *

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

Location List

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

Warning List

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

** Advance Notice List

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0072	05	096, ETC.	IH 10, ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	KENDALL, ETC.		25

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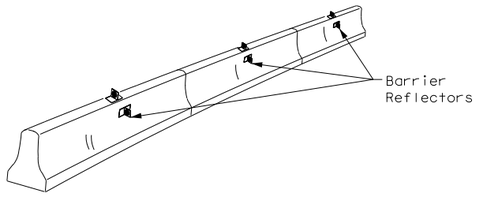
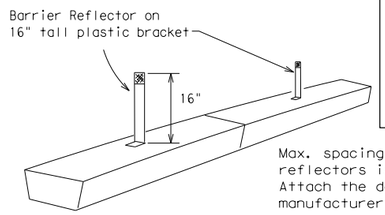
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



CONCRETE TRAFFIC BARRIER (CTB)

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

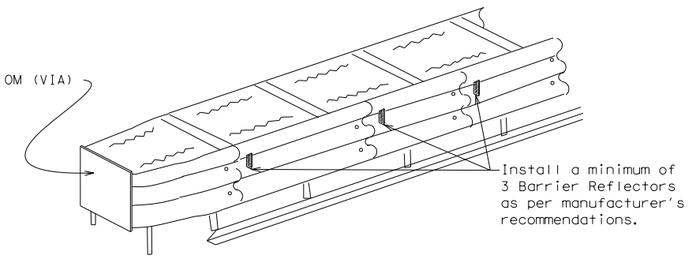


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

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.

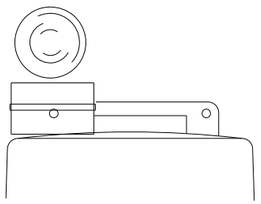


DELINEATION OF END TREATMENTS

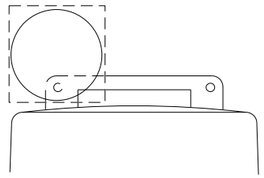
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

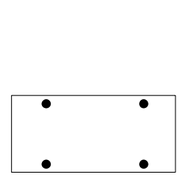
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

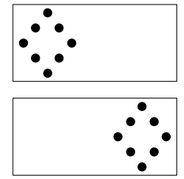
Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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:

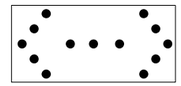


4 CORNER CAUTION

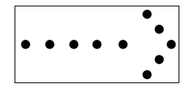
OR



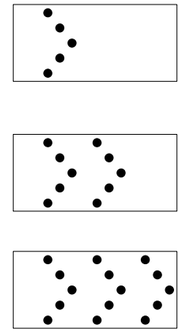
ALTERNATING DIAMOND CAUTION



DOUBLE ARROW



RIGHT/LEFT ARROW
(right arrow shown; left is similar)



RIGHT/LEFT SEQUENTIAL CHEVRON
(right chevron shown; left is similar)

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	0072	05	096, ETC.	IH 10, ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	KENDALL, ETC.		26

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

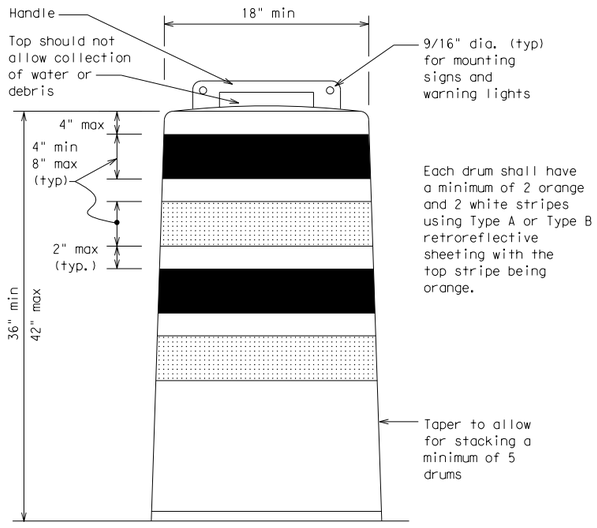
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

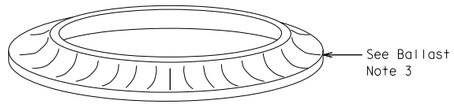
RETROREFLECTIVE SHEETING

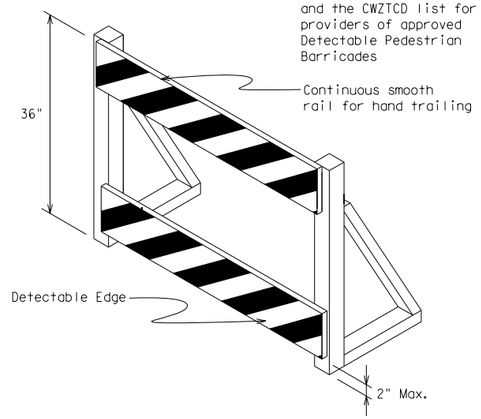
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

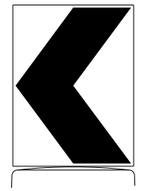




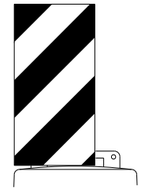


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0072	05	096, ETC.	IH 10, ETC.
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	SAT	KENDALL, ETC.		27
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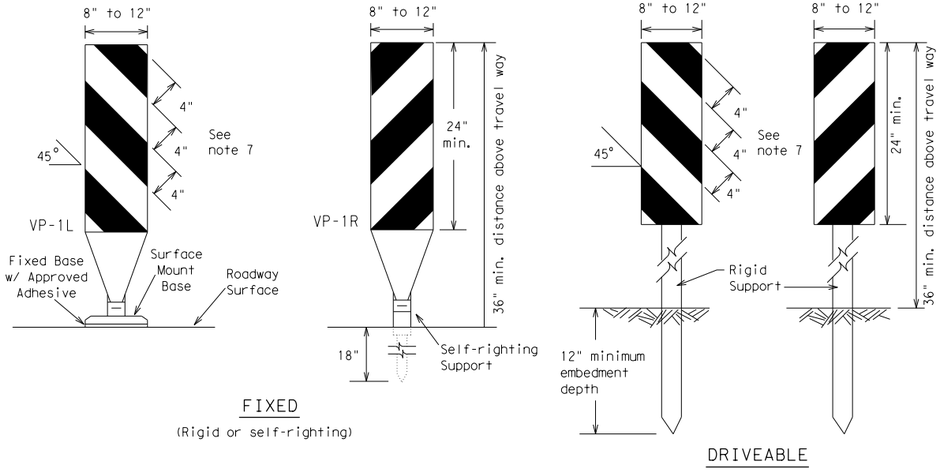


FIXED

(Rigid or self-righting)

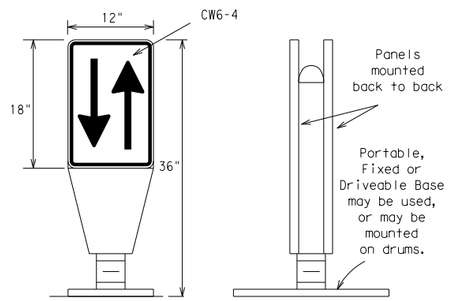
DRIVEABLE

(Rigid or self-righting)

PORTABLE

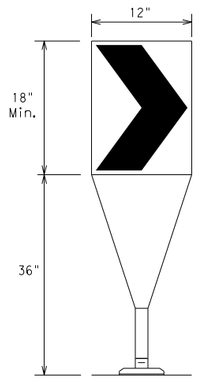
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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



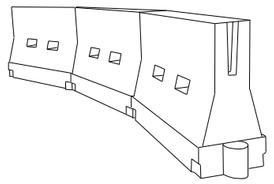
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0072	05	096, ETC.	IH 10, ETC.
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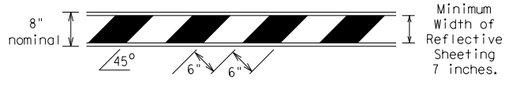
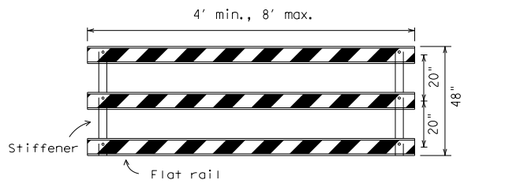
TYPE 3 BARRICADES

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.



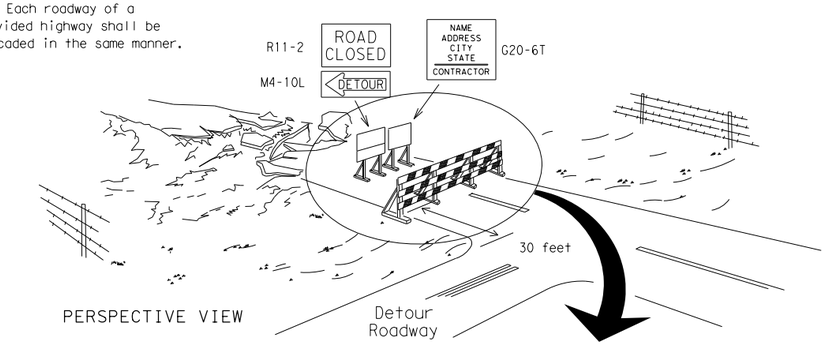
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

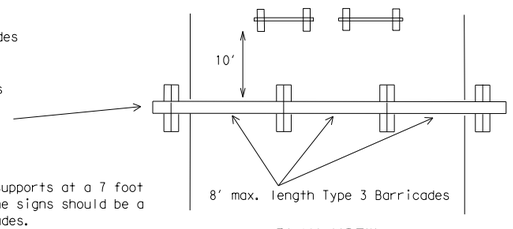
Each roadway of a divided highway shall be barricaded in the same manner.



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.

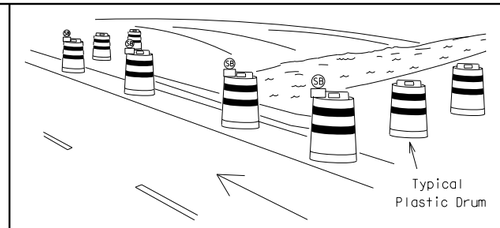
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

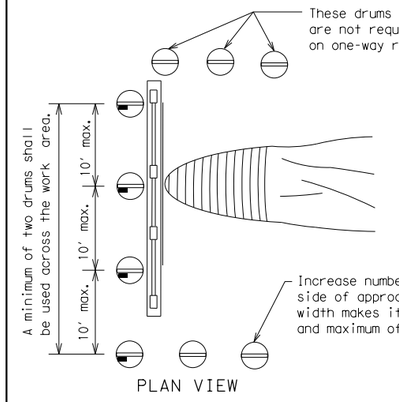
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

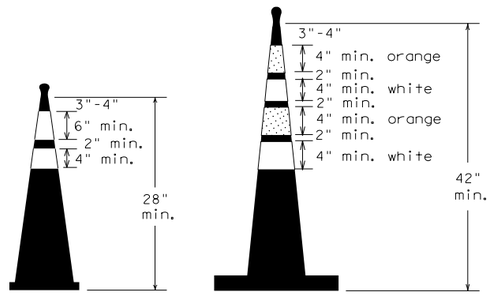
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder 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.



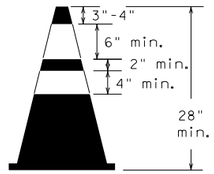
PLAN VIEW

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

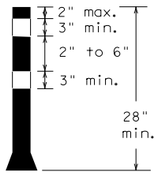
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

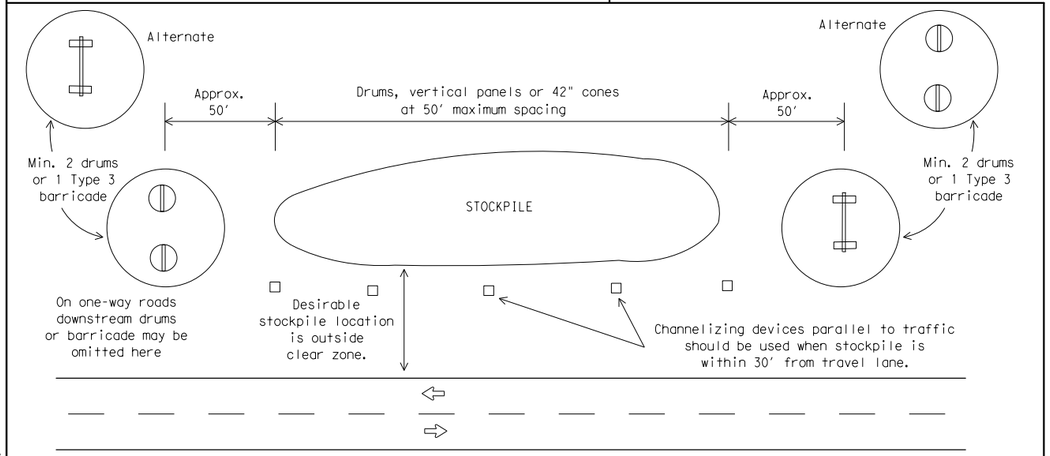


Tubular Marker

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

DATE:
FILE:

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0072	05	096, ETC.	IH 10, ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	KENDALL, ETC.		29

DATE:
FILE:

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

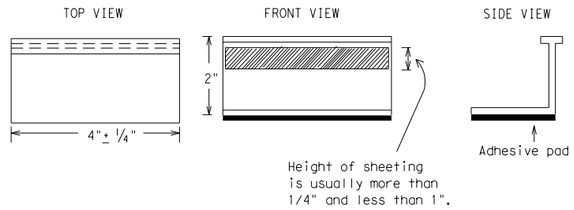
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

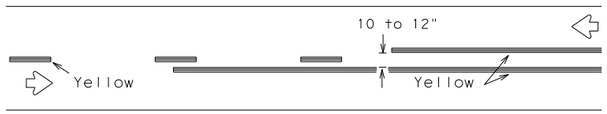
BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-98 9-07 5-21	0072	05	096, ETC.	IH 10, ETC.
1-02 7-13	DIST	COUNTY		SHEET NO.
11-02 8-14	SAT	KENDALL, ETC.		30

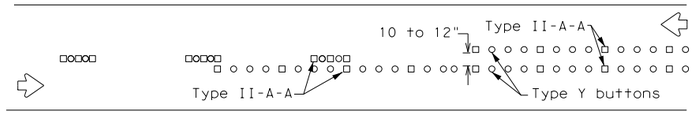
105

DATE:
FILE:

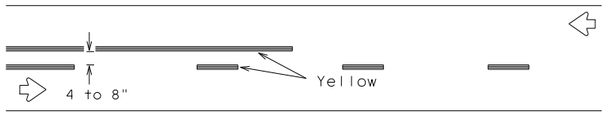
PAVEMENT MARKING PATTERNS



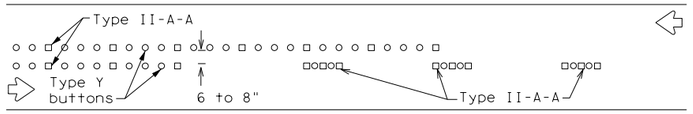
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



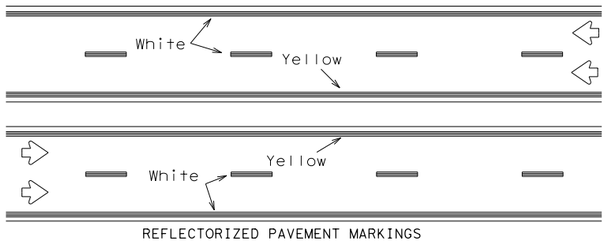
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



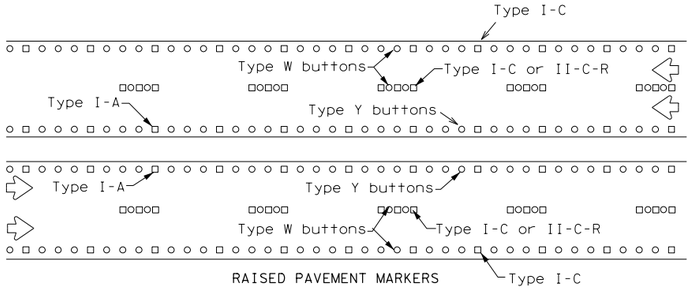
RAISED PAVEMENT MARKERS - PATTERN B

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

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



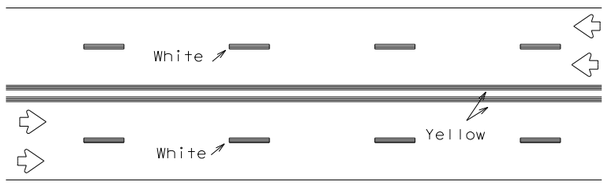
REFLECTORIZED PAVEMENT MARKINGS



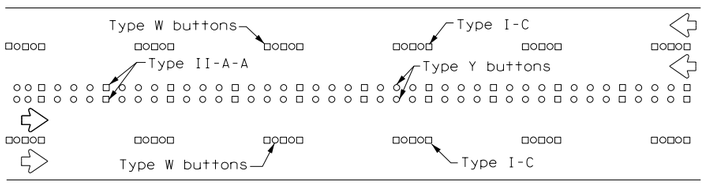
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



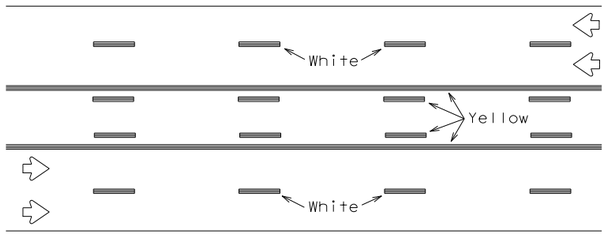
REFLECTORIZED PAVEMENT MARKINGS



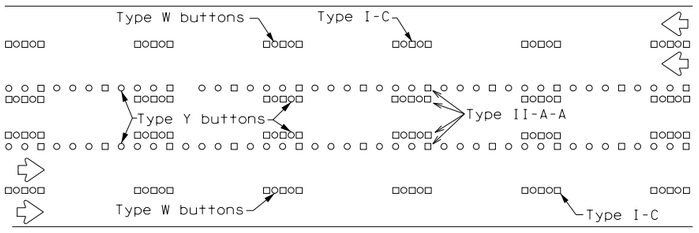
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

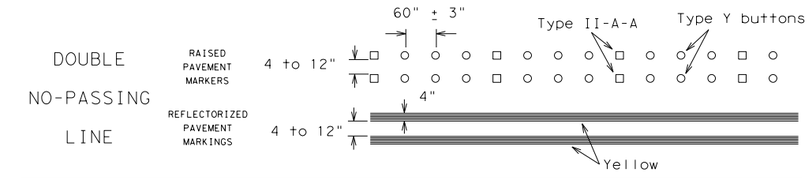
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

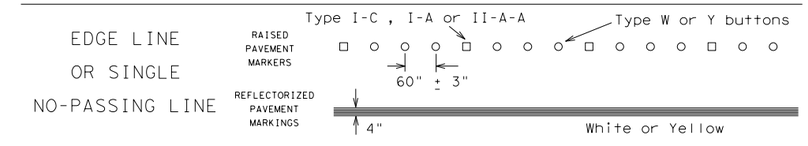
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

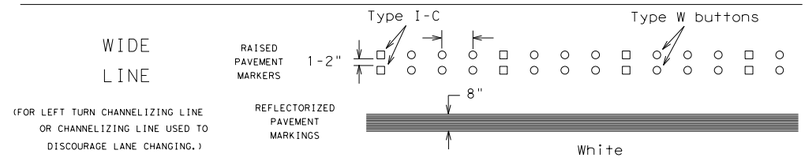


EDGE LINE OR SINGLE NO-PASSING LINE



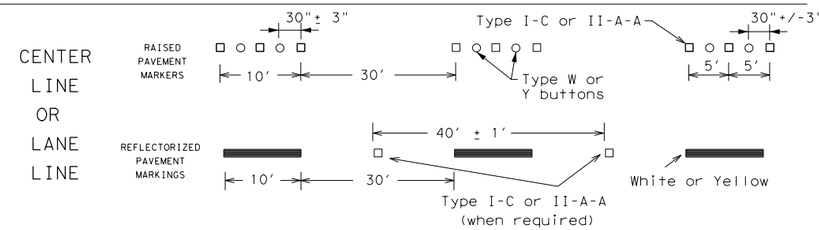
WIDE LINE

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

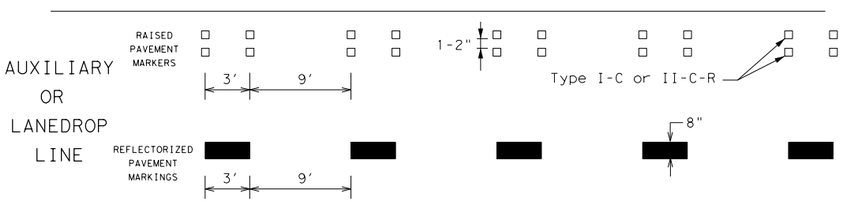


BROKEN LINES

CENTER LINE OR LANE LINE

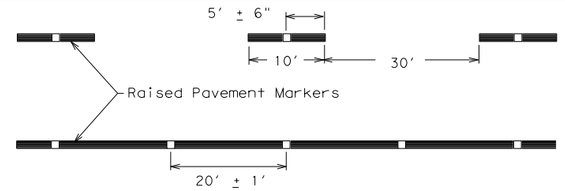


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

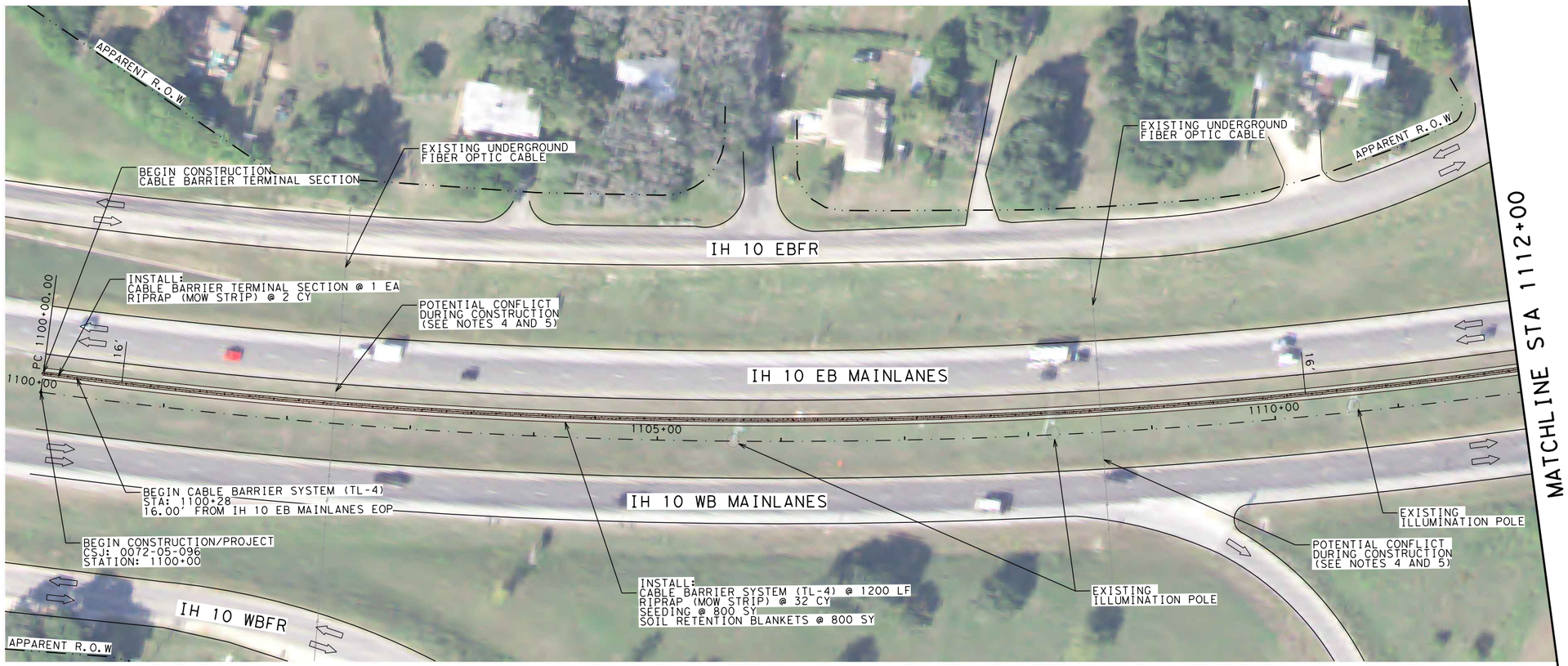
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0072	05	096, ETC.	IH 10, ETC.
	DIST	COUNTY		SHEET NO.
	SAT	KENDALL, ETC.		31

106



LEGEND

- PROPOSED CABLE BARRIER
- PROPOSED CONCRETE MOWSTRIP
- PROPSED SEEDING
- EXISTING CONCRETE BARRIER
- EXISTING METAL BARRIER
- DIRECTION OF TRAFFIC
- APPARENT RIGHT OF WAY (R.O.W.)

N

0 50 100

SCALE: 1"=100'

SHEET SUMMARY OF ESTIMATED QUANTITIES
CSJ: 0072-05-096

ITEM NO.	DESC NO.	DESCRIPTION	UNIT	QTY
132	6021	EMBANKMENT (VEHICLE)(ORD COMP)(TY C)	CY	50
150	6002	BLADING	HR	40
164	6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	800
164	6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	800
168	6001	VEGETATIVE WATERING	MG	13
169	6001	SOIL RETENTION BLANKETS (CL 1) (TY A)	SY	800
432	6066	RIPRAP (CL A)(MOW STRIP)(3 IN)	CY	34
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	50
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	50
543	6002	CABLE BARRIER SYSTEM (TL-4)	LF	1,200
543	6020	CABLE BARRIER TERMINAL SECTION (TL-4)	EA	1

NOTES:

1. ALL RIGHT-OF-WAY LINES ARE APPROXIMATE. VERIFY LOCATIONS AS NECESSARY.
2. CABLE BARRIERS ARE DESIGNED TO BE PLACED ON 6:1 (16.67%) OR FLATTER SIDE SLOPES. TOPOGRAPHICAL SURVEYING WAS NOT PERFORMED ON THIS PROJECT. BASELINE COINCIDENCES WITH THE FLOWLINE OF DITCH. CABLE BARRIER LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
3. CABLE BARRIERS SHALL BE PLACED WITH ATLEAST 12 FEET OFFSET FROM EDGE OF THE ROADWAY PAVEMENT. CABLE BARRIERS SHALL BE PLACED ATLEAST 8 FEET FROM THE BOTTOM OF DITCHLINE. OFFSET OF AT LEAST 5 FEET FROM THE EDGE OF ILLUMINATION POLE IS RECOMMENDED.
4. UTILITY LOCATIONS ARE APPROXIMATE. ALL UTILITITES ARE SHOWN BASED ON AVAILABLE AS-BUILT DRAWINGS AND 811 UTILITY LOCATE. CONTRACTOR MUST FIELD VERIFY THE EXACT LOCATION OF EXISTING ROW, POLES, ELECTRICAL SERVICES, GROUND BOXES, AND OTHER PERTINENT ITEMS BEFORE COMMENCING WORK.
5. THE CONTRACTOR MUST COORDINATE WITH THE UTILITY COMPANIES TO VERIFY THE LOCATION OF EXISTING OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION TO AVOID CONFLICTS WITH, OR DAMAGE TO, THESE UTILITIES.
6. STATIONING IS NOT A TRUE INDICATION OF THE ROADWAY ALIGNMENT. NO TOPOGRAPHIC FILE WAS USED AS A BASIS FOR STATIONING.
7. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS NEEDED (NOT SHOWN ON PLANS).
8. MOW STRIP SHALL BE 36 INCHES WIDE UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. THE LENGTH OF TERMINAL SECTION VARIES BASED ON THE CABLE BARRIER MANUFACTURER. SEE TXDOT STANDARDS FOR DETAILS.

STATE OF TEXAS
MEGHAVARDHAN R. GOVINDU
105465
LICENSED PROFESSIONAL ENGINEER
Digitally signed by M. Govindu
Date: 2023.01.19 14:34:51 -06'00'

Texas Department of Transportation®

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TBPE F-1640
Consulting Engineers
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GUNDA CORPORATION
Engineers, Planners & Managers
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Houston, Texas 77079
713.541.3030 www.gundacorp.com
TBPE Registration Number: F-3531

IH 10

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 1 OF 10

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		32
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC	IH 10, ETC

1/19/2023
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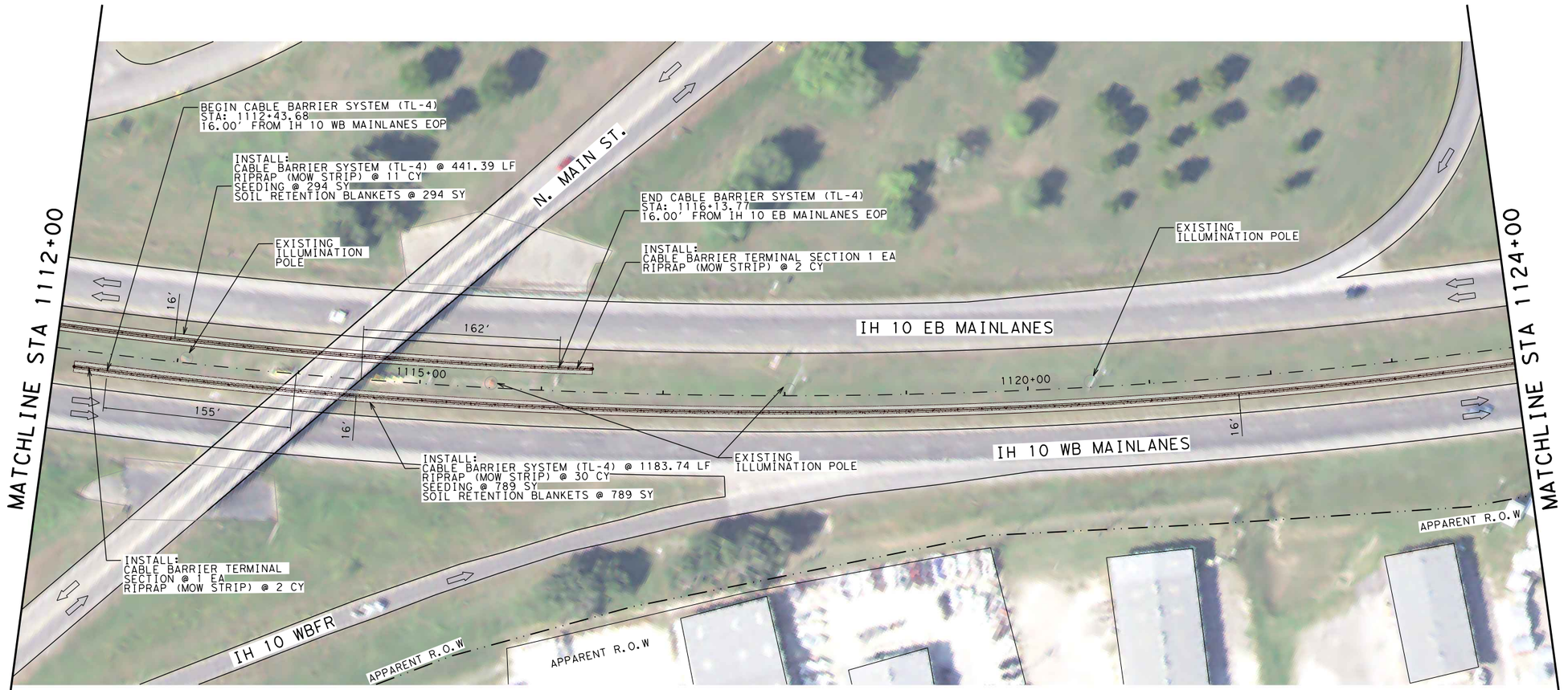

LEGEND

- PROPOSED CABLE BARRIER
- PROPOSED CONCRETE MOWSTRIP
- PROPSED SEEDING
- EXISTING CONCRETE BARRIER
- EXISTING METAL BARRIER
- DIRECTION OF TRAFFIC
- APPARENT RIGHT OF WAY (R.O.W.)

N

0 50 100

SCALE: 1"=100'

SHEET SUMMARY OF ESTIMATED QUANTITIES
CSJ: 0072-05-096

ITEM NO.	DESC NO.	DESCRIPTION	UNIT	QTY
132	6021	EMBANKMENT (VEHICLE)(ORD COMP)(TY C)	CY	43
150	6002	BLADING	HR	35
164	6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	1,084
164	6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	1,084
168	6001	VEGETATIVE WATERING	MG	17
169	6001	SOIL RETENTION BLANKETS (CL 1) (TY A)	SY	1,084
432	6066	RIPRAP (CL A)(MOW STRIP)(3 IN)	CY	45
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	50
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	50
543	6002	CABLE BARRIER SYSTEM (TL-4)	LF	1,625
543	6020	CABLE BARRIER TERMINAL SECTION (TL-4)	EA	2

NOTES:

1. ALL RIGHT-OF-WAY LINES ARE APPROXIMATE. VERIFY LOCATIONS AS NECESSARY.
2. CABLE BARRIERS ARE DESIGNED TO BE PLACED ON 6:1 (16.67%) OR FLATTER SIDE SLOPES. TOPOGRAPHICAL SURVEYING WAS NOT PERFORMED ON THIS PROJECT. BASELINE COINCIDENCES WITH THE FLOWLINE OF DITCH. CABLE BARRIER LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
3. CABLE BARRIERS SHALL BE PLACED WITH ATLEAST 12 FEET OFFSET FROM EDGE OF THE ROADWAY PAVEMENT. CABLE BARRIERS SHALL BE PLACED ATLEAST 8 FEET FROM THE BOTTOM OF DITCHLINE. OFFSET OF AT LEAST 5 FEET FROM THE EDGE OF ILLUMINATION POLE IS RECOMMENDED.
4. UTILITY LOCATIONS ARE APPROXIMATE. ALL UTILITITES ARE SHOWN BASED ON AVAILABLE AS-BUILT DRAWINGS AND 811 UTILITY LOCATE. CONTRACTOR MUST FIELD VERIFY THE EXACT LOCATION OF EXISTING ROW, POLES, ELECTRICAL SERVICES, GROUND BOXES, AND OTHER PERTINENT ITEMS BEFORE COMMENCING WORK.
5. THE CONTRACTOR MUST COORDINATE WITH THE UTILITY COMPANIES TO VERIFY THE LOCATION OF EXISTING OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION TO AVOID CONFLICTS WITH, OR DAMAGE TO, THESE UTILITIES.
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7. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS NEEDED (NOT SHOWN ON PLANS).
8. MOW STRIP SHALL BE 36 INCHES WIDE UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. THE LENGTH OF TERMINAL SECTION VARIES BASED ON THE CABLE BARRIER MANUFACTURER. SEE TXDOT STANDARDS FOR DETAILS.

STATE OF TEXAS
MEGHAVARDHAN R. GOVINDU
105465
LICENSED PROFESSIONAL ENGINEER
Digitally signed by M. Govindu
Date: 2023.01.19 14:34:51-06'00'

Texas Department of Transportation®

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TEDSI • Consulting Engineers
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GUNDA CORPORATION
Engineers, Planners & Managers
11700 Katy Freeway, Suite 300
Houston, Texas 77079
713.541.3030 www.gundacorp.com
TBPE Registration Number: F-3531

IH 10

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 2 OF 10

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		33
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC	IH 10, ETC

1/19/2023
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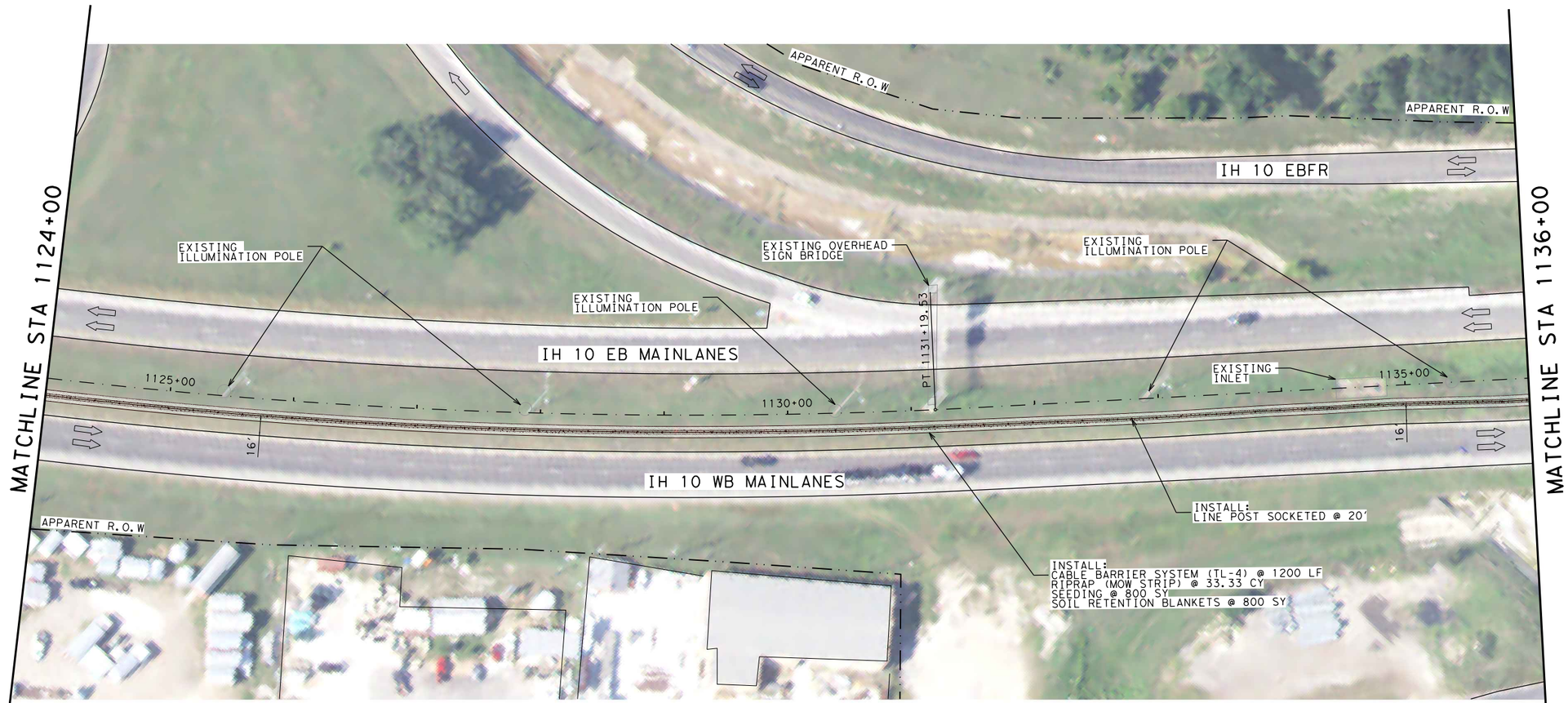

LEGEND

- PROPOSED CABLE BARRIER
- PROPOSED CONCRETE MOWSTRIP
- PROPSED SEEDING
- EXISTING CONCRETE BARRIER
- EXISTING METAL BARRIER
- DIRECTION OF TRAFFIC
- APPARENT RIGHT OF WAY (R.O.W.)

N

0 50 100

SCALE: 1"=100'

SHEET SUMMARY OF ESTIMATED QUANTITIES
CSJ: 0072-05-096

ITEM NO.	DESC NO.	DESCRIPTION	UNIT	QTY
132	6021	EMBANKMENT (VEHICLE)(ORD COMP)(TY C)	CY	0
150	6002	BLADING	HR	0
164	6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	800
164	6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	800
168	6001	VEGETATIVE WATERING	MG	13
169	6001	SOIL RETENTION BLANKETS (CL 1) (TY A)	SY	800
432	6066	RIPRAP (CL A)(MOW STRIP)(3 IN)	CY	34
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	50
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	50
543	6002	CABLE BARRIER SYSTEM (TL-4)	LF	1,200
543	6020	CABLE BARRIER TERMINAL SECTION (TL-4)	EA	0

NOTES:

1. ALL RIGHT-OF-WAY LINES ARE APPROXIMATE. VERIFY LOCATIONS AS NECESSARY.
2. CABLE BARRIERS ARE DESIGNED TO BE PLACED ON 6:1 (16.67%) OR FLATTER SIDE SLOPES. TOPOGRAPHICAL SURVEYING WAS NOT PERFORMED ON THIS PROJECT. BASELINE COINCIDENCES WITH THE FLOWLINE OF DITCH. CABLE BARRIER LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
3. CABLE BARRIERS SHALL BE PLACED WITH ATLEAST 12 FEET OFFSET FROM EDGE OF THE ROADWAY PAVEMENT. CABLE BARRIERS SHALL BE PLACED ATLEAST 8 FEET FROM THE BOTTOM OF DITCHLINE. OFFSET OF AT LEAST 5 FEET FROM THE EDGE OF ILLUMINATION POLE IS RECOMMENDED.
4. UTILITY LOCATIONS ARE APPROXIMATE. ALL UTILITITES ARE SHOWN BASED ON AVAILABLE AS-BUILT DRAWINGS AND 811 UTILITY LOCATE. CONTRACTOR MUST FIELD VERIFY THE EXACT LOCATION OF EXISTING ROW, POLES, ELECTRICAL SERVICES, GROUND BOXES, AND OTHER PERTINENT ITEMS BEFORE COMMENCING WORK.
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7. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS NEEDED (NOT SHOWN ON PLANS).
8. MOW STRIP SHALL BE 36 INCHES WIDE UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.

STATE OF TEXAS
MEGHAVARDHAN R. GOVINDU
105465
LICENSED PROFESSIONAL ENGINEER
Digitally signed by M. Govindu
Date: 2023.01.19 14:34:51-06'00'

Texas Department of Transportation®

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713.541.3030 www.gundacorp.com
TBPE Registration Number: F-3531

IH 10

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 3 OF 10

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		34
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC	IH 10, ETC

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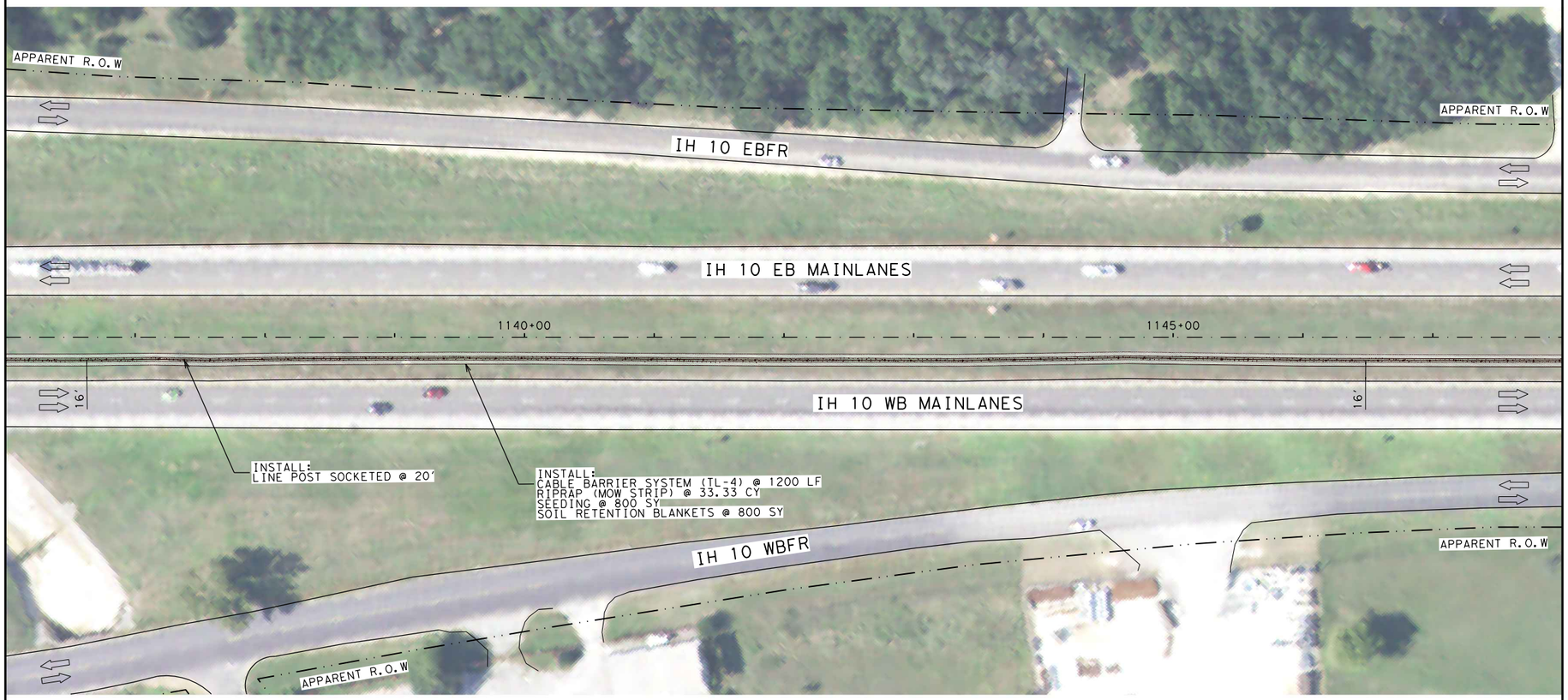

LEGEND

- PROPOSED CABLE BARRIER
- PROPOSED CONCRETE MOWSTRIP
- PROPSED SEEDING
- EXISTING CONCRETE BARRIER
- EXISTING METAL BARRIER
- DIRECTION OF TRAFFIC
- APPARENT RIGHT OF WAY (R.O.W.)

N

0 50 100

SCALE: 1"=100'

SHEET SUMMARY OF ESTIMATED QUANTITIES CSJ: 0072-05-096				
ITEM NO.	DESC NO.	DESCRIPTION	UNIT	QTY
132	6021	EMBANKMENT (VEHICLE)(ORD COMP)(TY C)	CY	0
150	6002	BLADING	HR	0
164	6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	800
164	6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	800
168	6001	VEGETATIVE WATERING	MG	13
169	6001	SOIL RETENTION BLANKETS (CL 1) (TY A)	SY	800
432	6066	RIPRAP (CL A)(MOW STRIP)(3 IN)	CY	34
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	50
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	50
543	6002	CABLE BARRIER SYSTEM (TL-4)	LF	1,200
543	6020	CABLE BARRIER TERMINAL SECTION (TL-4)	EA	0

NOTES:

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TBPE Registration Number F-3531

IH 10

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 4 OF 10

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		35
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC	IH 10, ETC

1/19/2023
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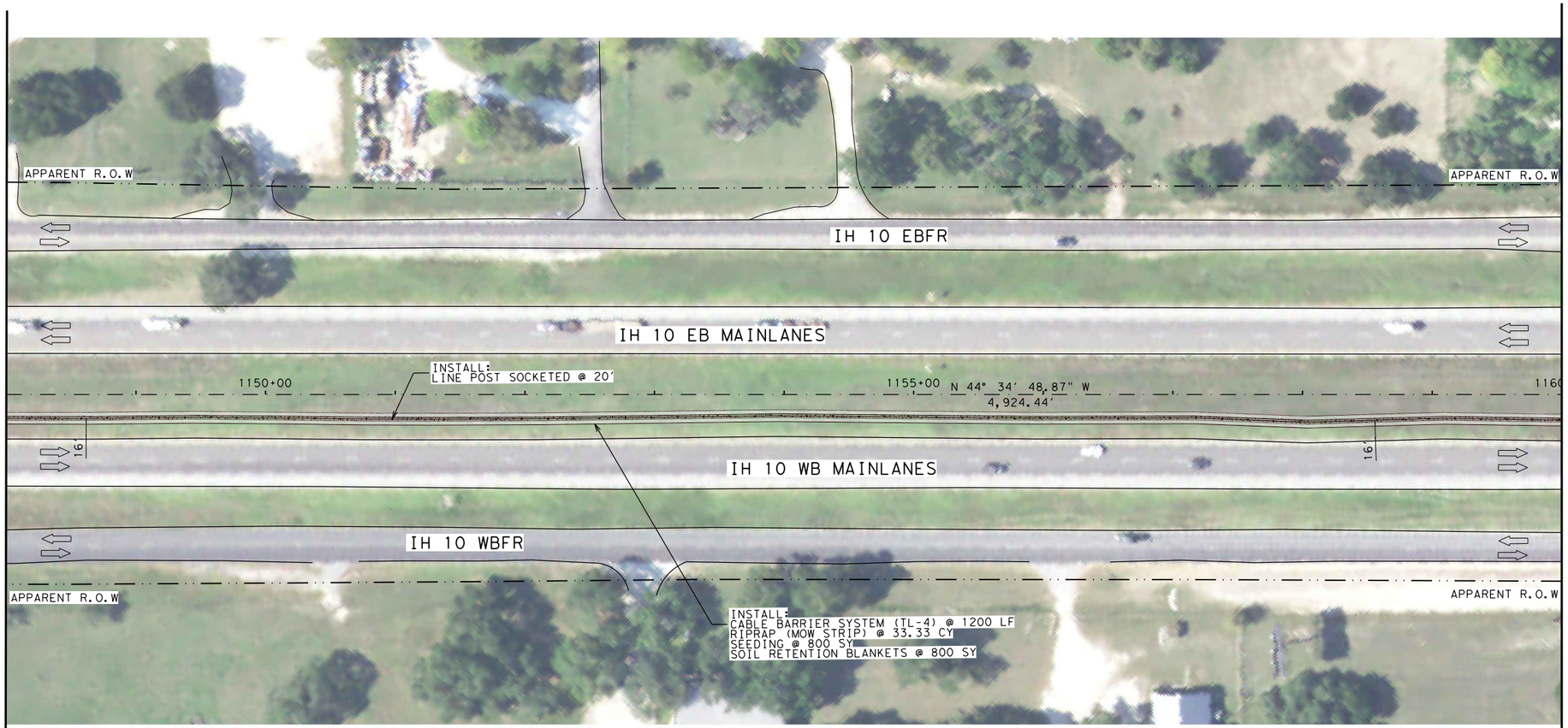

LEGEND

- PROPOSED CABLE BARRIER
- PROPOSED CONCRETE MOWSTRIP
- PROPSED SEEDING
- EXISTING CONCRETE BARRIER
- EXISTING METAL BARRIER
- DIRECTION OF TRAFFIC
- APPARENT RIGHT OF WAY (R.O.W.)

N

0 50 100

SCALE: 1"=100'

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SHEET SUMMARY OF ESTIMATED QUANTITIES
CSJ: 0072-05-096

ITEM NO.	DESC NO.	DESCRIPTION	UNIT	QTY
132	6021	EMBANKMENT (VEHICLE)(ORD COMP)(TY C)	CY	19
150	6002	BLADING	HR	15
164	6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	800
164	6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	800
168	6001	VEGETATIVE WATERING	MG	13
169	6001	SOIL RETENTION BLANKETS (CL 1) (TY A)	SY	800
432	6066	RIPRAP (CL A)(MOW STRIP)(3 IN)	CY	34
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	50
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	50
543	6002	CABLE BARRIER SYSTEM (TL-4)	LF	1,200
543	6020	CABLE BARRIER TERMINAL SECTION (TL-4)	EA	0

STATE OF TEXAS
MEGHAVARDHAN R. GOVINDU
105465
LICENSED PROFESSIONAL ENGINEER
Digitally signed by M. Govindu
Date: 2023.01.19 14:34:51-06'00'

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IH 10

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 5 OF 10

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		36
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC	IH 10, ETC

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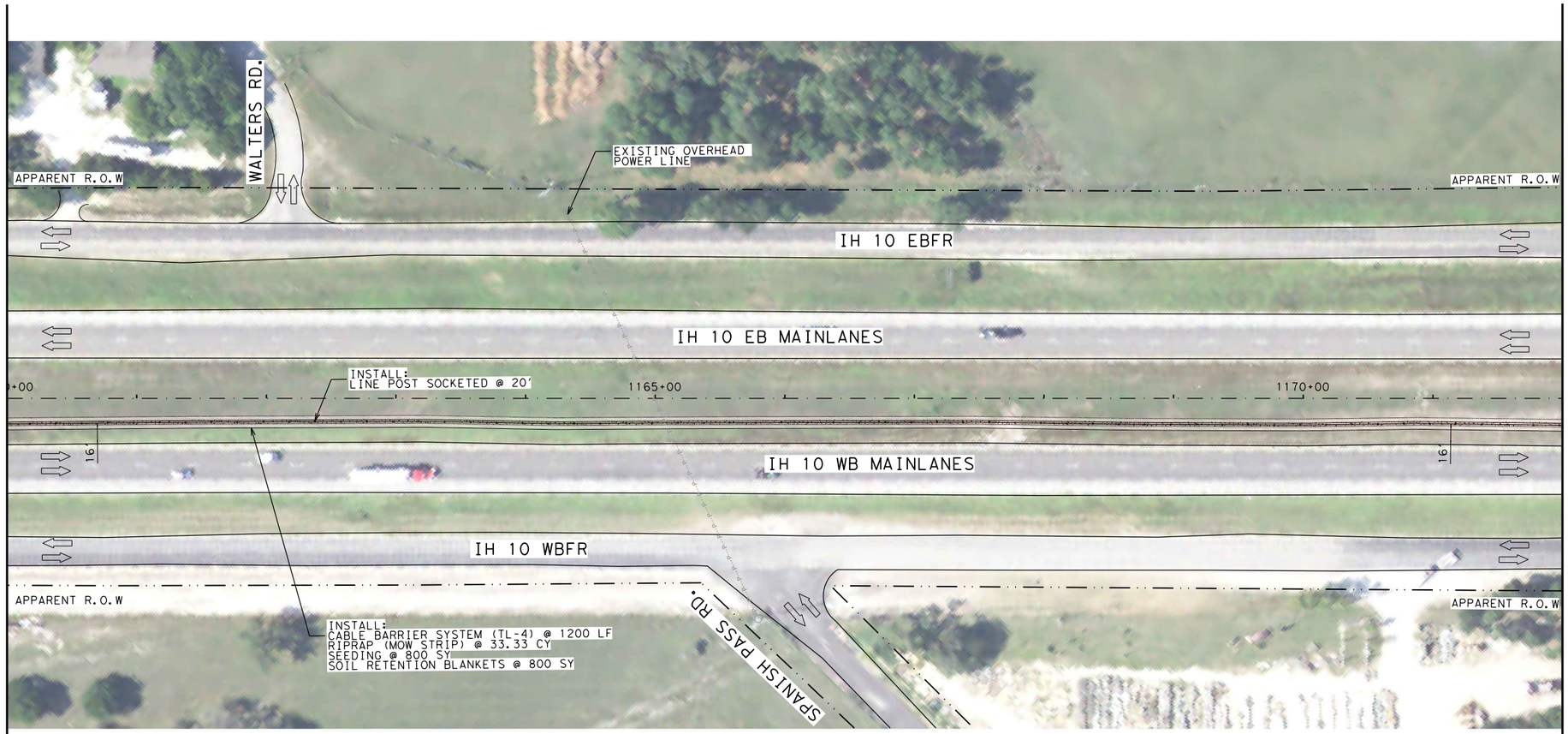

LEGEND

- PROPOSED CABLE BARRIER
- PROPOSED CONCRETE MOWSTRIP
- PROPSED SEEDING
- EXISTING CONCRETE BARRIER
- EXISTING METAL BARRIER
- DIRECTION OF TRAFFIC
- APPARENT RIGHT OF WAY (R.O.W.)

N

0 50 100

SCALE: 1"=100'

SHEET SUMMARY OF ESTIMATED QUANTITIES
CSJ: 0072-05-096

ITEM NO.	DESC NO.	DESCRIPTION	UNIT	QTY
132	6021	EMBANKMENT (VEHICLE)(ORD COMP)(TY C)	CY	12
150	6002	BLADING	HR	10
164	6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	800
164	6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	800
168	6001	VEGETATIVE WATERING	MG	13
169	6001	SOIL RETENTION BLANKETS (CL 1) (TY A)	SY	800
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506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	50
543	6002	CABLE BARRIER SYSTEM (TL-4)	LF	1,200
543	6020	CABLE BARRIER TERMINAL SECTION (TL-4)	EA	0

NOTES:

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STATE OF TEXAS
MEGHAVARDHAN R. GOVINDU
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LICENSED PROFESSIONAL ENGINEER
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Date: 2023.01.19 14:34:51-06'00'

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TBPE Registration Number: F-3531

IH 10

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 6 OF 10

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		37
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC	IH 10, ETC

1/19/2023
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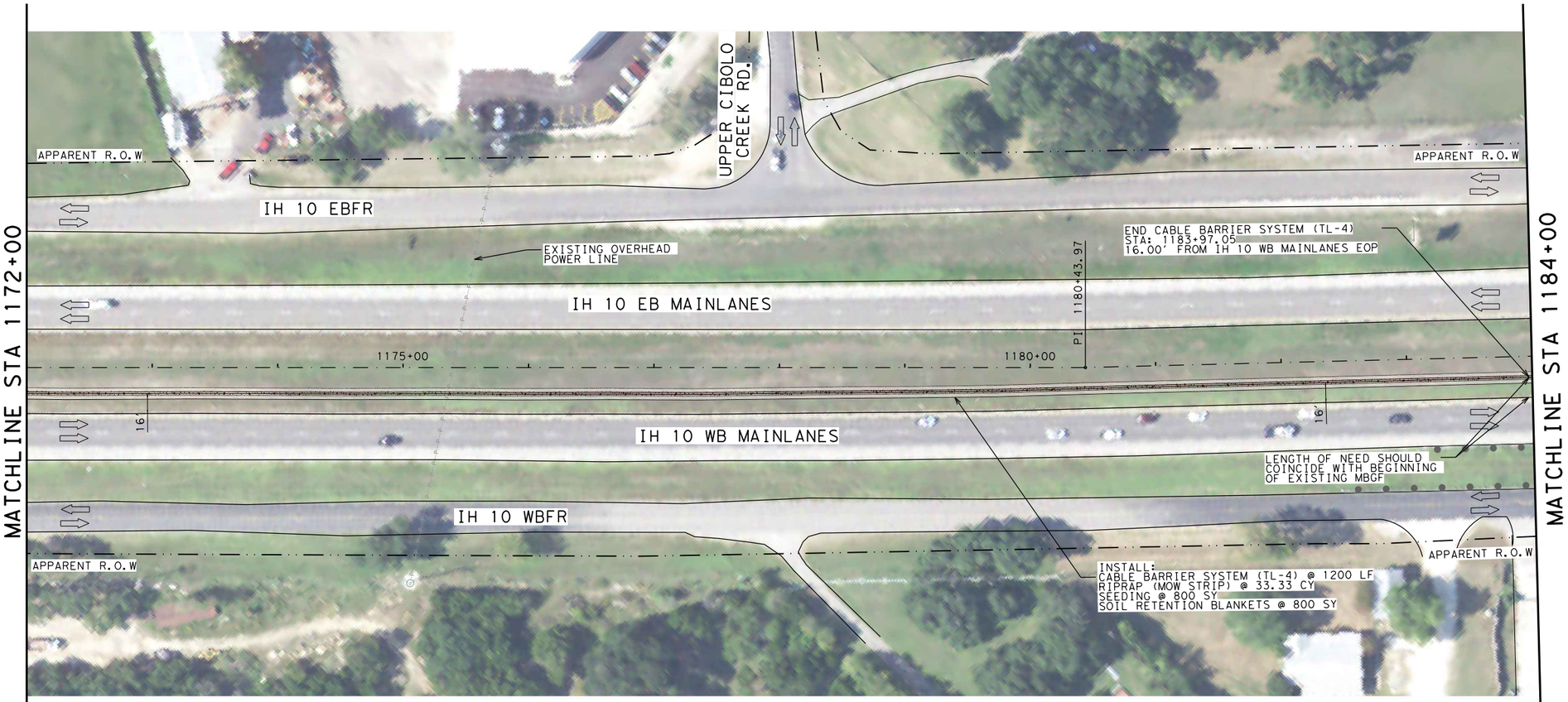

LEGEND

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- PROPOSED CONCRETE MOWSTRIP
- PROPSED SEEDING
- EXISTING CONCRETE BARRIER
- EXISTING METAL BARRIER
- DIRECTION OF TRAFFIC
- APPARENT RIGHT OF WAY (R.O.W.)

0 50 100

SCALE: 1"=100'

SHEET SUMMARY OF ESTIMATED QUANTITIES
CSJ: 0072-05-096

ITEM NO.	DESC NO.	DESCRIPTION	UNIT	QTY
132	6021	EMBANKMENT (VEHICLE)(ORD COMP)(TY C)	CY	12
150	6002	BLADING	HR	10
164	6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	800
164	6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	800
168	6001	VEGETATIVE WATERING	MG	13
169	6001	SOIL RETENTION BLANKETS (CL 1) (TY A)	SY	800
432	6066	RIPRAP (CL A)(MOW STRIP)(3 IN)	CY	34
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	50
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	50
543	6002	CABLE BARRIER SYSTEM (TL-4)	LF	1,200
543	6020	CABLE BARRIER TERMINAL SECTION (TL-4)	EA	0

NOTES:

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TBPE Registration Number: F-3551

IH 10

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 7 OF 10

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		38
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC	IH 10, ETC

1/19/2023
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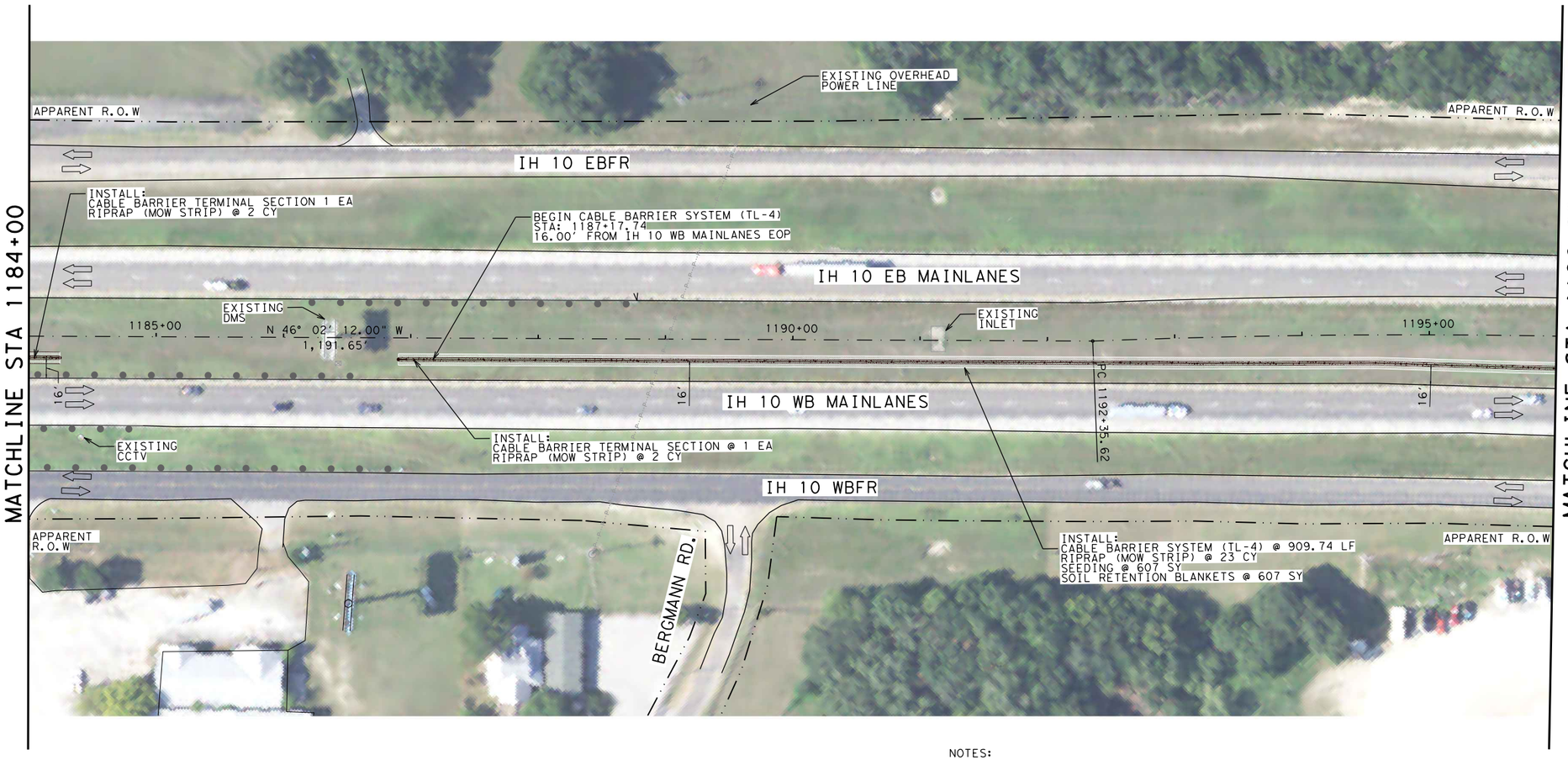

LEGEND

- PROPOSED CABLE BARRIER
- PROPOSED CONCRETE MOWSTRIP
- PROPSED SEEDING
- EXISTING CONCRETE BARRIER
- EXISTING METAL BARRIER
- DIRECTION OF TRAFFIC
- APPARENT RIGHT OF WAY (R.O.W.)

N

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SCALE: 1"=100'

SHEET SUMMARY OF ESTIMATED QUANTITIES
CSJ: 0072-05-096

ITEM NO.	DESC NO.	DESCRIPTION	UNIT	QTY
132	6021	EMBANKMENT (VEHICLE)(ORD COMP)(TY C)	CY	6
150	6002	BLADING	HR	5
164	6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	607
164	6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	607
168	6001	VEGETATIVE WATERING	MG	9
169	6001	SOIL RETENTION BLANKETS (CL 1) (TY A)	SY	607
432	6066	RIPRAP (CL A)(MOW STRIP)(3 IN)	CY	27
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	50
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	50
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3. CABLE BARRIERS SHALL BE PLACED WITH ATLEAST 12 FEET OFFSET FROM EDGE OF THE ROADWAY PAVEMENT. CABLE BARRIERS SHALL BE PLACED ATLEAST 8 FEET FROM THE BOTTOM OF DITCHLINE. OFFSET OF AT LEAST 5 FEET FROM THE EDGE OF ILLUMINATION POLE IS RECOMMENDED.
4. UTILITY LOCATIONS ARE APPROXIMATE. ALL UTILITITES ARE SHOWN BASED ON AVAILABLE AS-BUILT DRAWINGS AND 811 UTILITY LOCATE. CONTRACTOR MUST FIELD VERIFY THE EXACT LOCATION OF EXISTING ROW, POLES, ELECTRICAL SERVICES, GROUND BOXES, AND OTHER PERTINENT ITEMS BEFORE COMMENCING WORK.
5. THE CONTRACTOR MUST COORDINATE WITH THE UTILITY COMPANIES TO VERIFY THE LOCATION OF EXISTING OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION TO AVOID CONFLICTS WITH, OR DAMAGE TO, THESE UTILITIES.
6. STATIONING IS NOT A TRUE INDICATION OF THE ROADWAY ALIGNMENT. NO TOPOGRAPHIC FILE WAS USED AS A BASIS FOR STATIONING.
7. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS NEEDED (NOT SHOWN ON PLANS).
8. MOW STRIP SHALL BE 36 INCHES WIDE UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. THE LENGTH OF TERMINAL SECTION VARIES BASED ON THE CABLE BARRIER MANUFACTURER. SEE TXDOT STANDARDS FOR DETAILS.

STATE OF TEXAS
MEGHAVARDHAN R. GOVINDU
105465
LICENSED PROFESSIONAL ENGINEER
Digitally signed by M. Govindu
Date: 2023.01.19 14:34:51-06'00'

Texas Department of Transportation®

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TBPE Registration Number: F-3531

IH 10

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 8 OF 10

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		39
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC	IH 10, ETC

1/19/2023
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LEGEND

- PROPOSED CABLE BARRIER
- PROPOSED CONCRETE MOWSTRIP
- PROPSED SEEDING
- EXISTING CONCRETE BARRIER
- EXISTING METAL BARRIER
- DIRECTION OF TRAFFIC
- APPARENT RIGHT OF WAY (R.O.W.)

N

0 50 100

SCALE: 1"=100'

SHEET SUMMARY OF ESTIMATED QUANTITIES CSJ: 0072-05-096				
ITEM NO.	DESC NO.	DESCRIPTION	UNIT	QTY
132	6021	EMBANKMENT (VEHICLE)(ORD COMP)(TY C)	CY	0
150	6002	BLADING	HR	0
164	6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	191
164	6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	191
168	6001	VEGETATIVE WATERING	MG	3
169	6001	SOIL RETENTION BLANKETS (CL 1) (TY A)	SY	191
432	6066	RIPRAP (CL A)(MOW STRIP)(3 IN)	CY	8
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	50
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	50
543	6002	CABLE BARRIER SYSTEM (TL-4)	LF	287
543	6020	CABLE BARRIER TERMINAL SECTION (TL-4)	EA	1

NOTES:

1. ALL RIGHT-OF-WAY LINES ARE APPROXIMATE. VERIFY LOCATIONS AS NECESSARY.
2. CABLE BARRIERS ARE DESIGNED TO BE PLACED ON 6:1 (16.67%) OR FLATTER SIDE SLOPES. TOPOGRAPHICAL SURVEYING WAS NOT PERFORMED ON THIS PROJECT. BASELINE COINCIDENCES WITH THE FLOWLINE OF DITCH. CABLE BARRIER LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
3. CABLE BARRIERS SHALL BE PLACED WITH ATLEAST 12 FEET OFFSET FROM EDGE OF THE ROADWAY PAVEMENT. CABLE BARRIERS SHALL BE PLACED ATLEAST 8 FEET FROM THE BOTTOM OF DITCHLINE. OFFSET OF AT LEAST 5 FEET FROM THE EDGE OF ILLUMINATION POLE IS RECOMMENDED.
4. UTILITY LOCATIONS ARE APPROXIMATE. ALL UTILITITES ARE SHOWN BASED ON AVAILABLE AS-BUILT DRAWINGS AND 811 UTILITY LOCATE. CONTRACTOR MUST FIELD VERIFY THE EXACT LOCATION OF EXISTING ROW, POLES, ELECTRICAL SERVICES, GROUND BOXES, AND OTHER PERTINENT ITEMS BEFORE COMMENCING WORK.
5. THE CONTRACTOR MUST COORDINATE WITH THE UTILITY COMPANIES TO VERIFY THE LOCATION OF EXISTING OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION TO AVOID CONFLICTS WITH, OR DAMAGE TO, THESE UTILITIES.
6. STATIONING IS NOT A TRUE INDICATION OF THE ROADWAY ALIGNMENT. NO TOPOGRAPHIC FILE WAS USED AS A BASIS FOR STATIONING.
7. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS NEEDED (NOT SHOWN ON PLANS).
8. MOW STRIP SHALL BE 36 INCHES WIDE UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. THE LENGTH OF TERMINAL SECTION VARIES BASED ON THE CABLE BARRIER MANUFACTURER. SEE TXDOT STANDARDS FOR DETAILS.

STATE OF TEXAS
MEGHAVARDHAN R. GOVINDU
105465
LICENSED PROFESSIONAL ENGINEER
Digitally signed by M. Govindu
Date: 2023.01.19 14:34:51-06'00'

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IH 10

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 9 OF 10

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		40
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC	IH 10, ETC

1/19/2023
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CABLE BARRIER SUMMARY

CABLE BARRIER LIMITS (TERMINAL SECTION NOT INCLUDED) CSJ: 0072-05-096		CABLE BARRIER SYSTEM (TL-4) LENGTH	CABLE BARRIER OFFSET FROM EDGE OF TRAVELLED WAY **	RT/LT OF MEDIAN CL	MEDIAN X-SLOPE	ITEM 132 EMBANK (VEHICLE) (ORD COMP) (TY-C) (CF-1.4) EST *	ITEM 150 BLADING EST
FROM STA	TO STA	FT	FT	FT	%	CY	HR
1100+00	1101+00	100	16'	LT	16.7	6.2	5
1101+00	1102+00	100	16'	LT	14.3		
1102+00	1103+00	100	16'	LT	16.7	6.2	5
1103+00	1104+00	100	16'	LT	20.0	6.2	5
1104+00	1105+00	100	16'	LT	14.3		
1105+00	1106+00	100	16'	LT	12.5		
1106+00	1107+00	100	16'	LT	16.7	6.2	5
1107+00	1108+00	100	16'	LT	16.7	6.2	5
1108+00	1109+00	100	16'	LT	16.7	6.2	5
1109+00	1110+00	100	16'	LT	14.3		
1110+00	1111+00	100	16'	LT	16.7	6.2	5
1111+00	1112+00	100	16'	LT	16.7	6.2	5
1112+00	1113+00	100	16'	LT	16.7	6.2	5
1113+00	1114+00	100	16'	LT	20.0	6.2	5
1114+00	1115+00	100	16'	LT	16.7	6.2	5
1115+00	1116+00	100	16'	LT	20.0	6.2	5
1116+00	1117+00	41.34	16'	LT	20.0	6.2	5
1112+00	1113+00	83.74	16'	RT	11.1		
1113+00	1114+00	100	16'	RT	11.1		
1114+00	1115+00	100	16'	RT	11.1		
1115+00	1116+00	100	16'	RT	16.7	6.2	5
1116+00	1117+00	100	16'	RT	16.7	6.2	5
1117+00	1118+00	100	16'	RT	12.5		
1118+00	1119+00	100	16'	RT	14.3		
1119+00	1120+00	100	16'	RT	14.3		
1120+00	1121+00	100	16'	RT	14.3		
1121+00	1122+00	100	16'	RT	14.3		
1122+00	1123+00	100	16'	RT	14.3		
1123+00	1124+00	100	16'	RT	14.3		
1124+00	1125+00	100	16'	RT	14.3		
1125+00	1126+00	100	16'	RT	12.5		
1126+00	1127+00	100	16'	RT	11.1		
1127+00	1128+00	100	16'	RT	12.5		
1128+00	1129+00	100	16'	RT	14.3		
1129+00	1130+00	100	16'	RT	12.5		
1130+00	1131+00	100	16'	RT	14.3		
1131+00	1132+00	100	16'	RT	14.3		
1132+00	1133+00	100	16'	RT	12.5		
1133+00	1134+00	100	16'	RT	14.3		
1134+00	1135+00	100	16'	RT	10.0		
1135+00	1136+00	100	16'	RT	12.5		
1136+00	1137+00	100	16'	RT	10.0		
1137+00	1138+00	100	16'	RT	10.0		
1138+00	1139+00	100	16'	RT	14.3		
1139+00	1140+00	100	16'	RT	14.3		
1140+00	1141+00	100	16'	RT	14.3		
1141+00	1142+00	100	16'	RT	12.5		
1142+00	1143+00	100	16'	RT	10.0		
1143+00	1144+00	100	16'	RT	11.1		
1144+00	1145+00	100	16'	RT	14.3		
1145+00	1146+00	100	16'	RT	11.1		
1146+00	1147+00	100	16'	RT	10.0		
1147+00	1148+00	100	16'	RT	12.5		
1148+00	1149+00	100	16'	RT	12.5		
1149+00	1150+00	100	16'	RT	12.5		
1150+00	1151+00	100	16'	RT	12.5		
1151+00	1152+00	100	16'	RT	11.1		
1152+00	1153+00	100	16'	RT	12.5		
1153+00	1154+00	100	16'	RT	11.1		
1154+00	1155+00	100	16'	RT	16.7	6.2	5
1155+00	1156+00	100	16'	RT	16.7	6.2	5
					TOTAL	105.4	85

CABLE BARRIER SUMMARY

CABLE BARRIER LIMITS (TERMINAL SECTION NOT INCLUDED) CSJ: 0072-05-096		CABLE BARRIER SYSTEM (TL-4) LENGTH	CABLE BARRIER OFFSET FROM EDGE OF TRAVELLED WAY **	RT/LT OF MEDIAN CL	MEDIAN X-SLOPE	ITEM 132 EMBANK (VEHICLE) (ORD COMP) (TY-C) (CF-1.4) EST *	ITEM 150 BLADING EST
FROM STA	TO STA	FT	FT	FT	%	CY	HR
1156+00	1157+00	100	16'	RT	7.0		
1157+00	1158+00	100	16'	RT	12.5		
1158+00	1159+00	100	16'	RT	14.3		
1159+00	1160+00	100	16'	RT	16.7	6.2	5
1160+00	1161+00	100	16'	RT	14.3		
1161+00	1162+00	100	16'	RT	14.3		
1162+00	1163+00	100	16'	RT	16.7	6.2	5
1163+00	1164+00	100	16'	RT	16.7	6.2	5
1164+00	1165+00	100	16'	RT	14.3		
1165+00	1166+00	100	16'	RT	11.1		
1166+00	1167+00	100	16'	RT	12.5		
1167+00	1168+00	100	16'	RT	9.0		
1168+00	1169+00	100	16'	RT	12.5		
1169+00	1170+00	100	16'	RT	12.5		
1170+00	1171+00	100	16'	RT	6.0		
1171+00	1172+00	100	16'	RT	12.5		
1172+00	1173+00	100	16'	RT	14.3		
1173+00	1174+00	100	16'	RT	16.7	6.2	5
1174+00	1175+00	100	16'	RT	14.3		
1175+00	1176+00	100	16'	RT	11.1		
1176+00	1177+00	100	16'	RT	12.5		
1177+00	1178+00	100	16'	RT	14.3		
1178+00	1179+00	100	16'	RT	12.5		
1179+00	1180+00	100	16'	RT	11.1		
1180+00	1181+00	100	16'	RT	12.5		
1181+00	1182+00	100	16'	RT	14.3		
1182+00	1183+00	100	16'	RT	12.5		
1183+00	1184+00	100	16'	RT	10.0		
1184+00	1185+00	24	16'	RT	16.7	6.2	5
1185+00	1186+00	N/A	N/A	RT	N/A		
1186+00	1187+00	9.7	16'	RT	11.1		
1187+00	1188+00	100	16'	RT	11.1		
1188+00	1189+00	100	16'	RT	11.1		
1189+00	1190+00	100	16'	RT	11.1		
1190+00	1191+00	100	16'	RT	11.1		
1191+00	1192+00	100	16'	RT	12.5		
1192+00	1193+00	100	16'	RT	12.5		
1193+00	1194+00	100	16'	RT	16.7	6.2	5
1194+00	1195+00	100	16'	RT	14.3		
1195+00	1196+00	100	16'	RT	14.3		
1196+00	1197+00	100	16'	RT	14.3		
1197+00	1198+00	100	16'	RT	14.3		
1198+00	1199+00	86.70	16'	RT	14.3		
					TOTAL	37.2	30

** OFFSETS MAYBE ADJUSTED AS DIRECTED BY THE ENGINEER.
* EMBANKMENT QUANTITY TO ACHIEVE DESIRED 6:1 (16.67%) SLOPE BETWEEN THE STATIONING.

NOTES:

1. SLOPES WERE OBTAINED THROUGH DATA COLLECTED FROM TNRIS. CONTRACTOR SHALL VERIFY ACTUAL SLOPES IN THE FIELD BEFORE CONSTRUCTION. TXDOT ROADWAY DESIGN MANUAL SLOPE CRITERIA OF 6H:1V (16.67%) FOR MEDIAN BARRIER WAS CONSIDERED FOR EVALUATION OF ACCEPTABLE SLOPE AND DETERMINING EMBANKMENT QUANTITIES.
2. CABLE BARRIER STATION LIMITS ARE APPROXIMATE AND MAY VARY TO MEET FIELD CONDITION. FIELD VERIFY BEFORE ALL MATERIALS ARE ORDERED.
3. THIS SHEET IS FOR CONTRACTOR INFORMATION ONLY.
4. EMBANKMENT QUANTITIES ARE ESTIMATES ONLY TO ACHIEVE NECESSARY SLOPE OF 6H:1V (16.67%).
5. ESTIMATES OF SEEDING AND VEGETATIVE WATERING HAVE BEEN PROVIDED FOR IN THE QUANTITIES. CONTRACTOR SHOULD PERFORM SEEDING AND WATERING ACTIVITIES AT THE DIRECTION OF TXDOT.

STATE OF TEXAS
MEGHAVARDHAN R. GOVINDU
105465
LICENSED PROFESSIONAL ENGINEER
Digitally signed by M. Govindu
Date: 2023.01.19 14:34:51-06'00'

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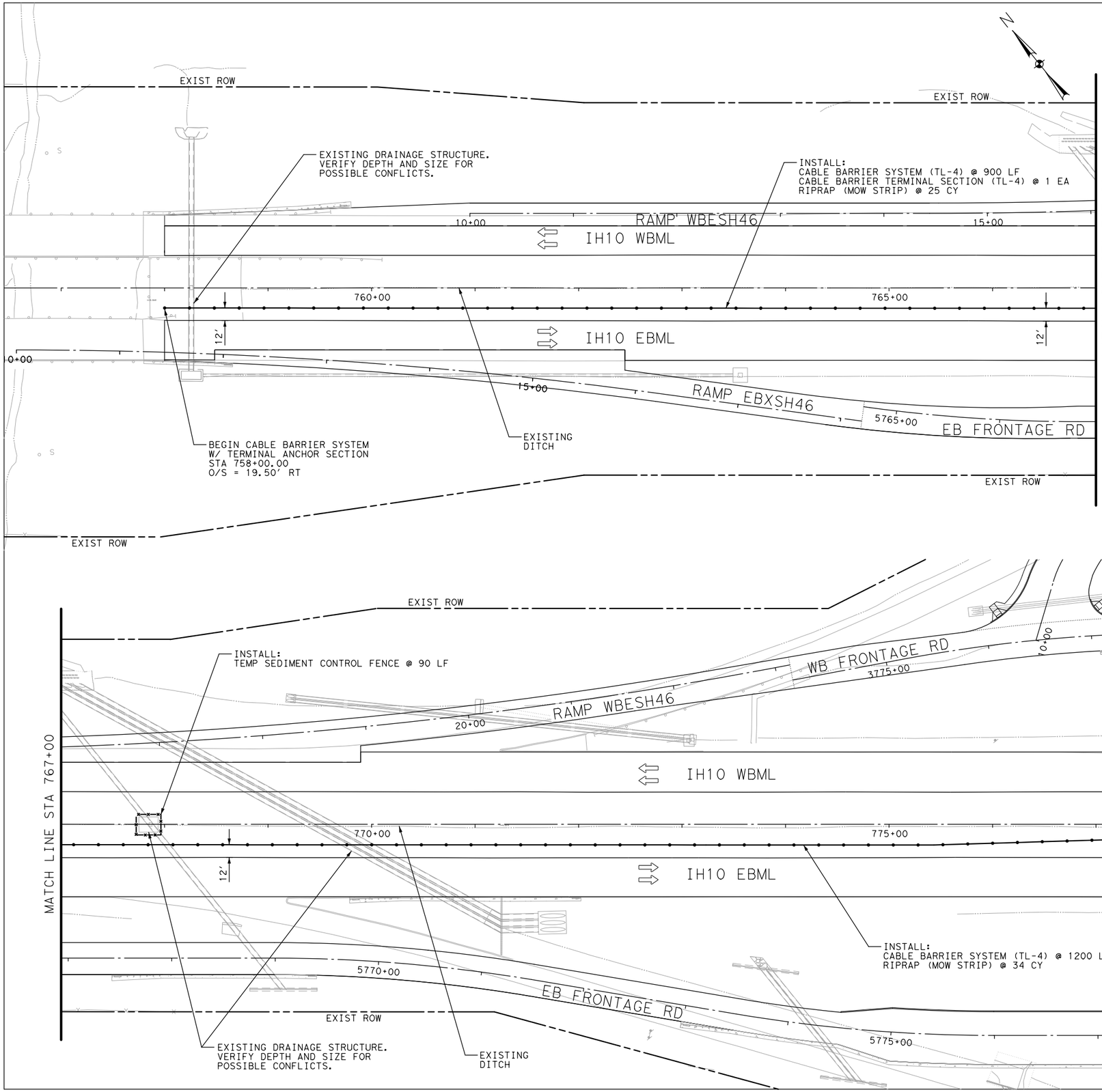
IH 10

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 10 OF 10

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		41
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC	IH 10, ETC

1/19/2023
P:\2019 Projects\19005-03 TEDSI TxDOT Central Traffic WA 6\CAD\Plan Set\3. Roadway\IH10PLN10.dgn



SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ:0072-06-091				
DESCRIPTION	ITEM	DESC	UNIT	QTY
DRILL SEEDING (PERM) (RURAL) (CLAY)	164	6035	SY	1400
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	1400
VEGETATIVE WATERING	168	6001	MG	22
SOIL RETENTION BLANKETS (CL 1) (TY A)	169	6001	SY	1400
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	59
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	90
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	90
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	2100
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1

LEGEND:

- PROPOSED CABLE BARRIER SYSTEM (TL-4)
- PROPOSED SEDIMENT CONTROL FENCE
- EXISTING TRAFFIC FLOW

NOTES:

1. CABLE BARRIERS ARE DESIGNED TO BE PLACED ON 6:1 OR FLATTER SIDE SLOPES. CABLE BARRIER LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
2. CABLE BARRIERS SHALL BE OFFSET AT LEAST 12 FEET FROM THE EDGE OF THE TRAVEL WAY. CABLE BARRIERS SHALL BE OFFSET AT LEAST 8 FEET FROM THE BOTTOM OF THE DITCH LINE. CABLE BARRIERS SHALL BE OFFSET AT LEAST 5 FEET FROM THE EDGE OF ILLUMINATION POLE.
3. CONTRACTOR MUST VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. EXISTING DITCH FLOWLINE APPROXIMATELY COINCIDES WITH THE BASELINE OF THE MAINLANES.
4. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS SHOWN.
5. CONTRACTOR SHALL INSTALL 3 FEET WIDE AND 3 INCH DEEP MOW STRIP AT THE CABLE BARRIER AS PER THE DETAILS SHOWN IN THE "MISCELLANEOUS DETAILS" LAYOUT.
6. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
7. THE LENGTH OF THE TERMINAL SECTION VARIES BASED ON THE CABLE BARRIER MANUFACTURER. SEE TXDOT STANDARD FOR DETAILS.

0 50 100
SCALE: 1"=100'

STATE OF TEXAS
M. R. NEELAPU
107595
LICENSED
PROFESSIONAL ENGINEER

M. R. NEELAPU, P. E.

1/22/2023
DATE

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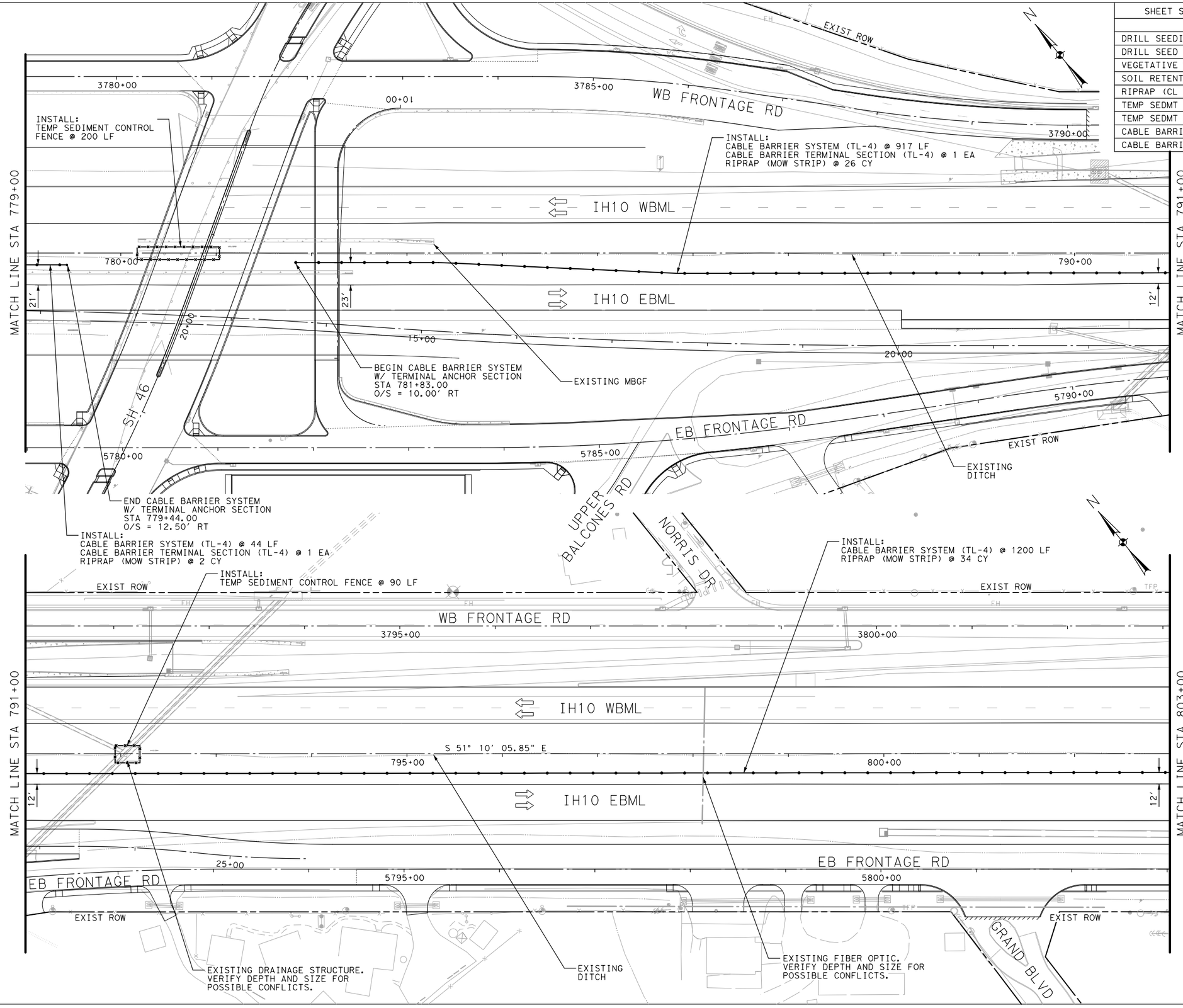
IH 10

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 1 OF 7

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		42
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.



SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ:0072-06-091				
DESCRIPTION	ITEM	DESC	UNIT	QTY
DRILL SEEDING (PERM) (RURAL) (CLAY)	164	6035	SY	1441
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	1441
VEGETATIVE WATERING	168	6001	MG	23
SOIL RETENTION BLANKETS (CL 1) (TY A)	169	6001	SY	1441
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	62
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	290
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	290
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	2161
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	2

LEGEND:

- PROPOSED CABLE BARRIER SYSTEM (TL-4)
- PROPOSED SEDIMENT CONTROL FENCE
- EXISTING TRAFFIC FLOW

0 50 100
SCALE: 1"=100'

STATE OF TEXAS
M. R. NEELAPU
107595
LICENSED
PROFESSIONAL ENGINEER

M. R. NEELAPU, P.E.

1/22/2023
DATE

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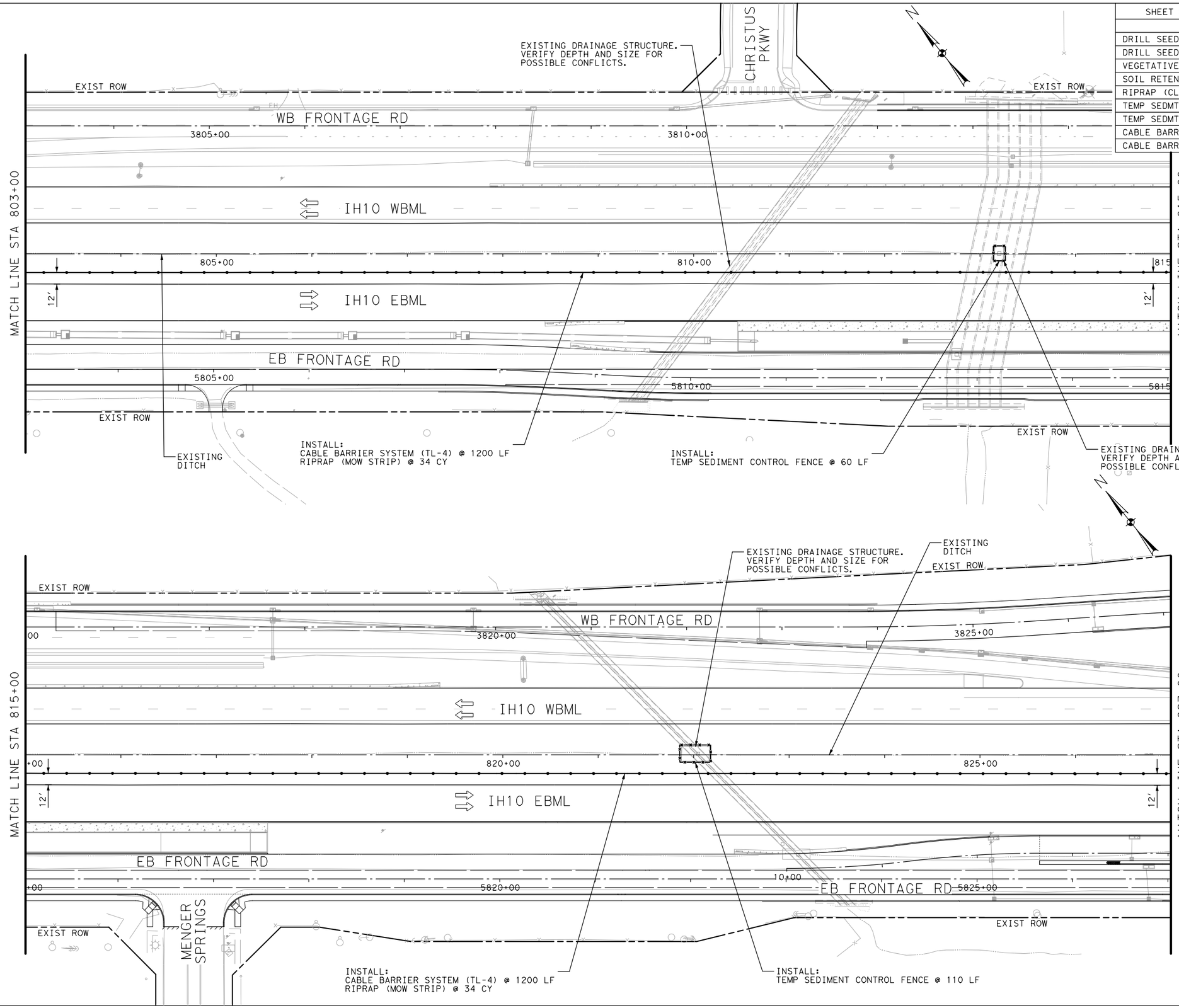
IH 10

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 2 OF 7

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		43
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.



SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ:0072-06-091				
DESCRIPTION	ITEM	DESC	UNIT	QTY
DRILL SEEDING (PERM) (RURAL) (CLAY)	164	6035	SY	1600
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	1600
VEGETATIVE WATERING	168	6001	MG	25
SOIL RETENTION BLANKETS (CL 1) (TY A)	169	6001	SY	1600
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	68
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	170
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	170
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	2400
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0

LEGEND:

- PROPOSED CABLE BARRIER SYSTEM (TL-4)
- PROPOSED SEDIMENT CONTROL FENCE
- EXISTING TRAFFIC FLOW

0 50 100
SCALE: 1"=100'

STATE OF TEXAS
M. R. NEELAPU
107595
LICENSED PROFESSIONAL ENGINEER

M. R. NEELAPU, P.E.

1/22/2023
DATE

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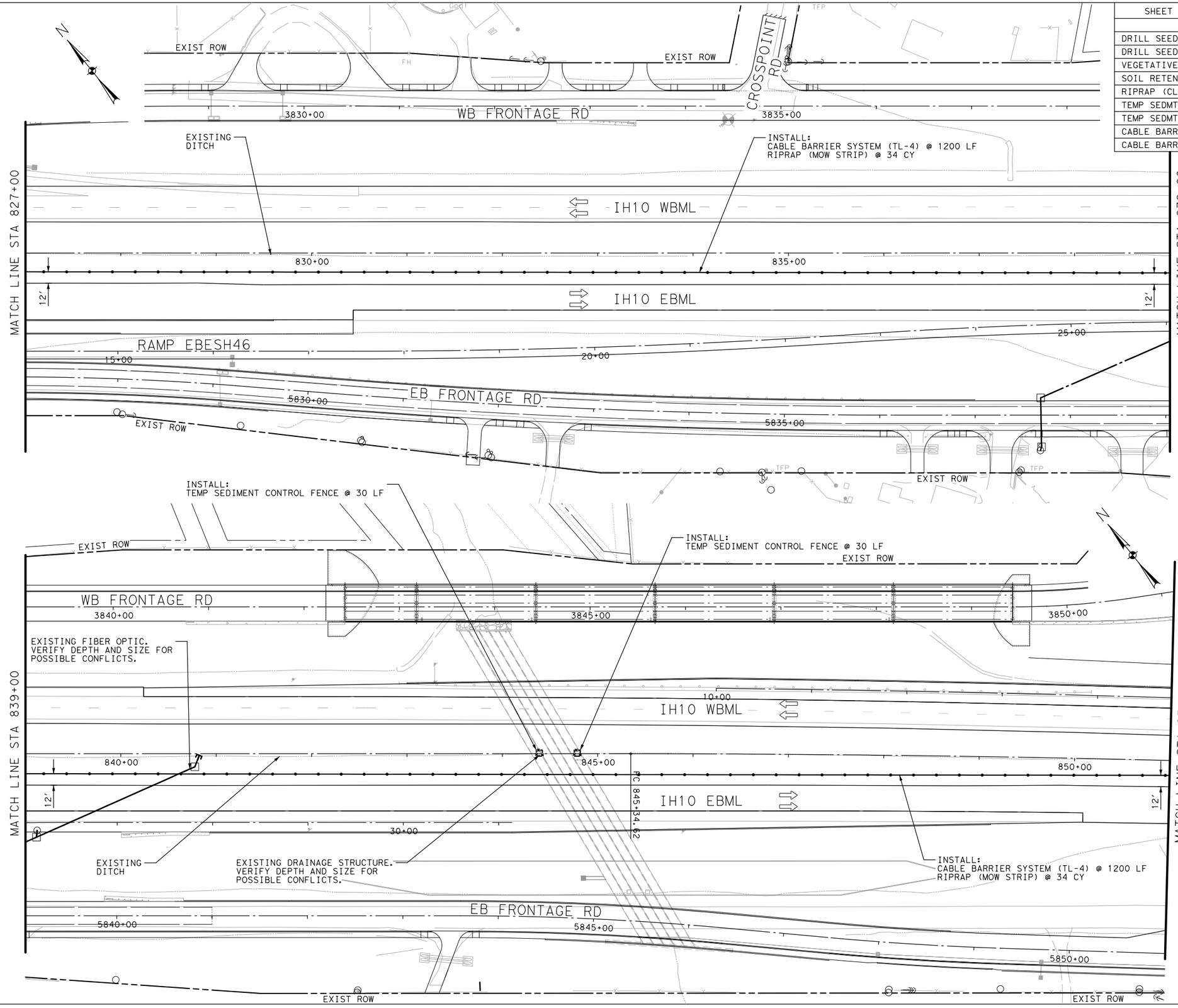
IH 10

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 3 OF 7

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		44
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0072-06-091				
DESCRIPTION	ITEM	DESC	UNIT	QTY
DRILL SEEDING (PERM) (RURAL) (CLAY)	164	6035	SY	1600
DRILL SEED (TEMP) (WARM OR COOL)	164	6051	SY	1600
VEGETATIVE WATERING	168	6001	MG	25
SOIL RETENTION BLANKETS (CL 1) (TY A)	169	6001	SY	1600
RIPRAP (CL A) (MOW STRIP) (3 IN)	432	6066	CY	68
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	60
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	60
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	2400
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0



LEGEND:

- PROPOSED CABLE BARRIER SYSTEM (TL-4)
- PROPOSED SEDIMENT CONTROL FENCE
- EXISTING TRAFFIC FLOW

0 50 100
SCALE: 1"=100'

STATE OF TEXAS
M. R. NEELAPU
107595
LICENSED PROFESSIONAL ENGINEER

M. R. NEELAPU, P. E.

1/22/2023
DATE

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Houston, Texas 77079
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TBPE F-1640

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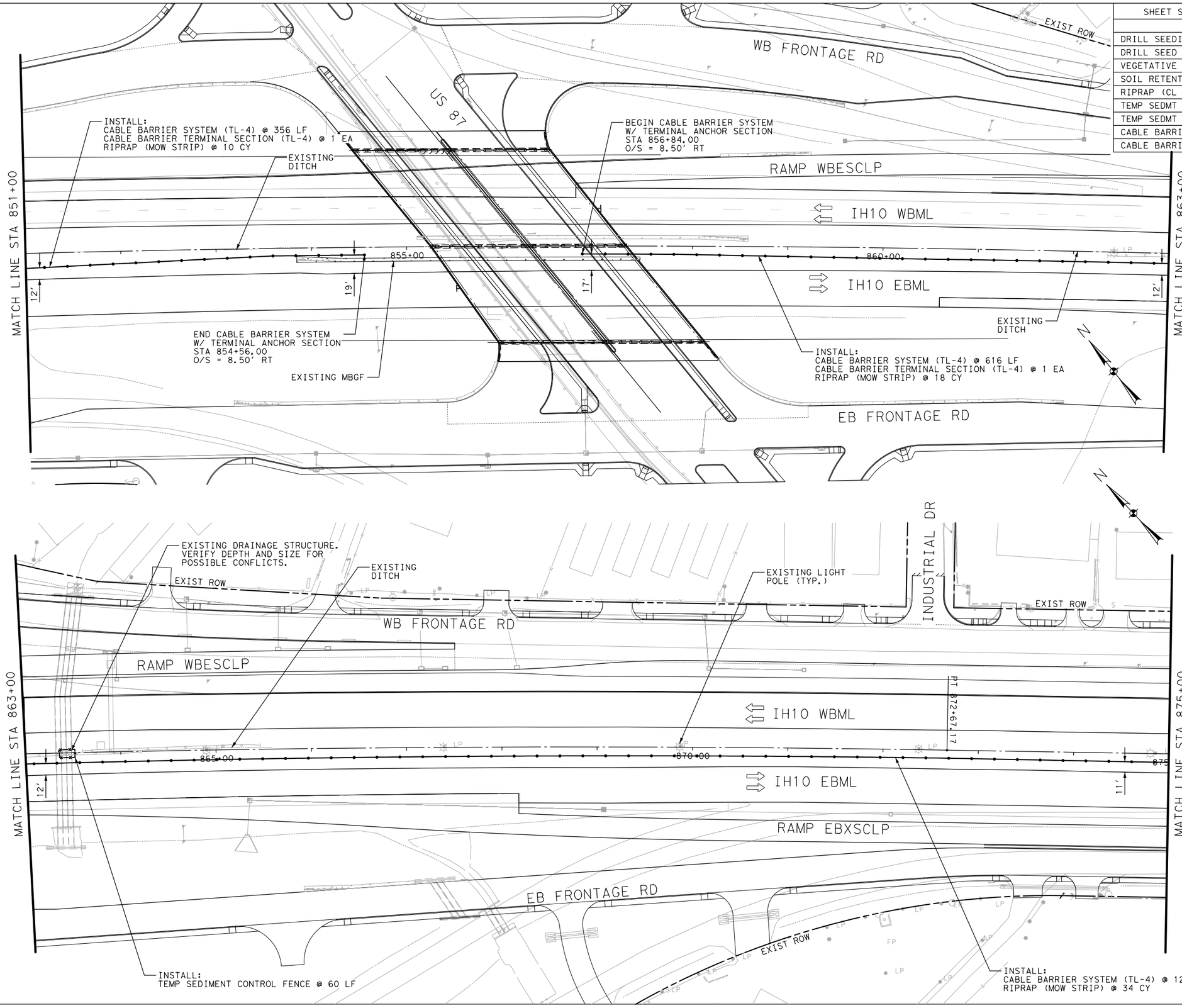
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 4 OF 7

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		45
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.



SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ:0072-06-091				
DESCRIPTION	ITEM	DESC	UNIT	QTY
DRILL SEEDING (PERM) (RURAL) (CLAY)	164	6035	SY	1448
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	1448
VEGETATIVE WATERING	168	6001	MG	23
SOIL RETENTION BLANKETS (CL 1) (TY A)	169	6001	SY	1448
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	62
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	60
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	60
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	2172
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	2

LEGEND:

- PROPOSED CABLE BARRIER SYSTEM (TL-4)
- PROPOSED SEDIMENT CONTROL FENCE
- EXISTING TRAFFIC FLOW

0 50 100
SCALE: 1"=100'

STATE OF TEXAS
M. R. NEELAPU
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PROFESSIONAL ENGINEER

M. R. NEELAPU, P. E.

1/22/2023
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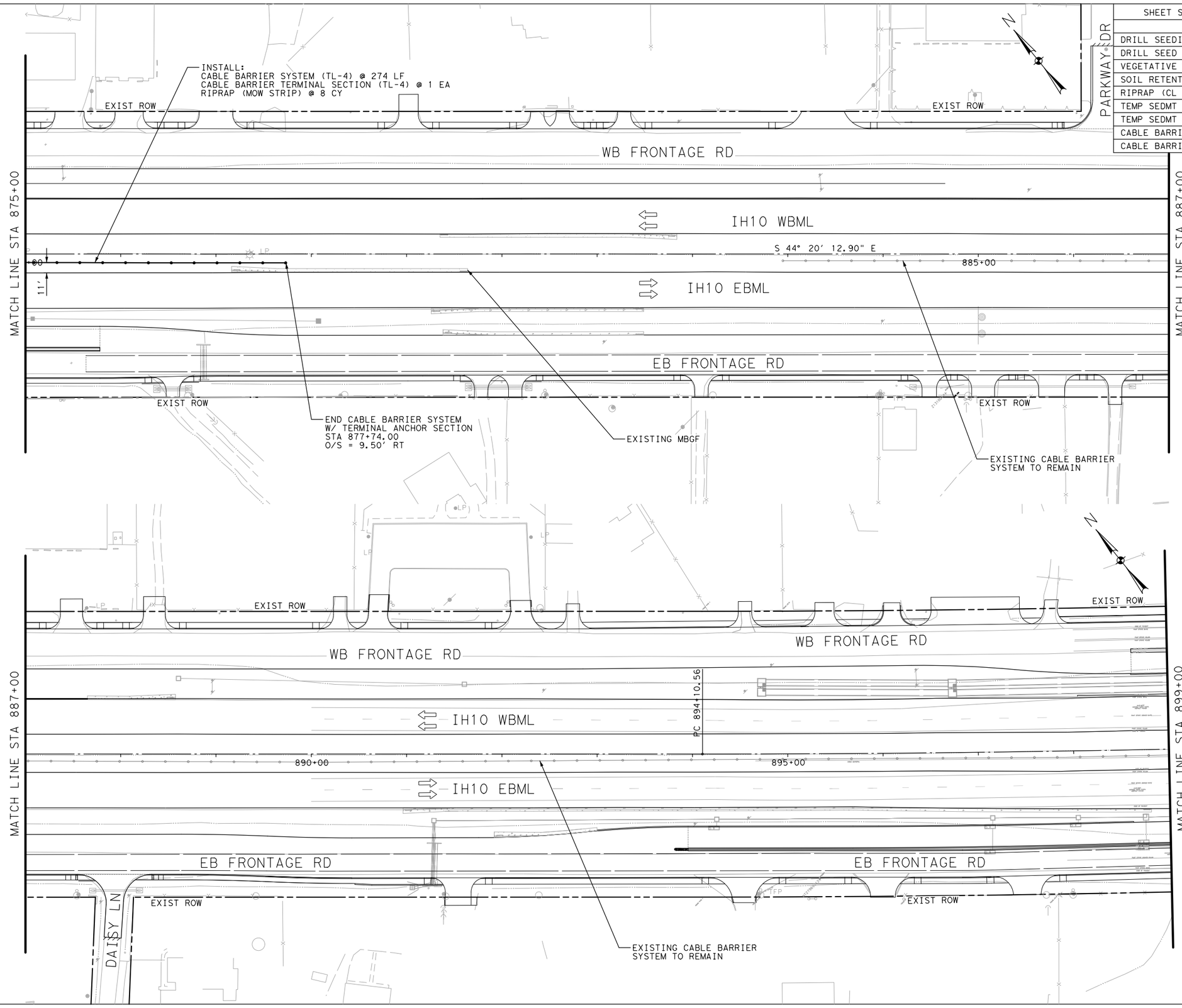
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 5 OF 7

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		46
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.



SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0072-06-091

DESCRIPTION	ITEM	DESC	UNIT	QTY
DRILL SEEDING (PERM) (RURAL) (CLAY)	164	6035	SY	183
DRILL SEED (TEMP) (WARM OR COOL)	164	6051	SY	183
VEGETATIVE WATERING	168	6001	MG	3
SOIL RETENTION BLANKETS (CL 1) (TY A)	169	6001	SY	183
RIPRAP (CL A) (MOW STRIP) (3 IN)	432	6066	CY	8
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	274
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1

LEGEND:

- PROPOSED CABLE BARRIER SYSTEM (TL-4)
- PROPOSED SEDIMENT CONTROL FENCE
- EXISTING TRAFFIC FLOW

0 50 100
SCALE: 1"=100'

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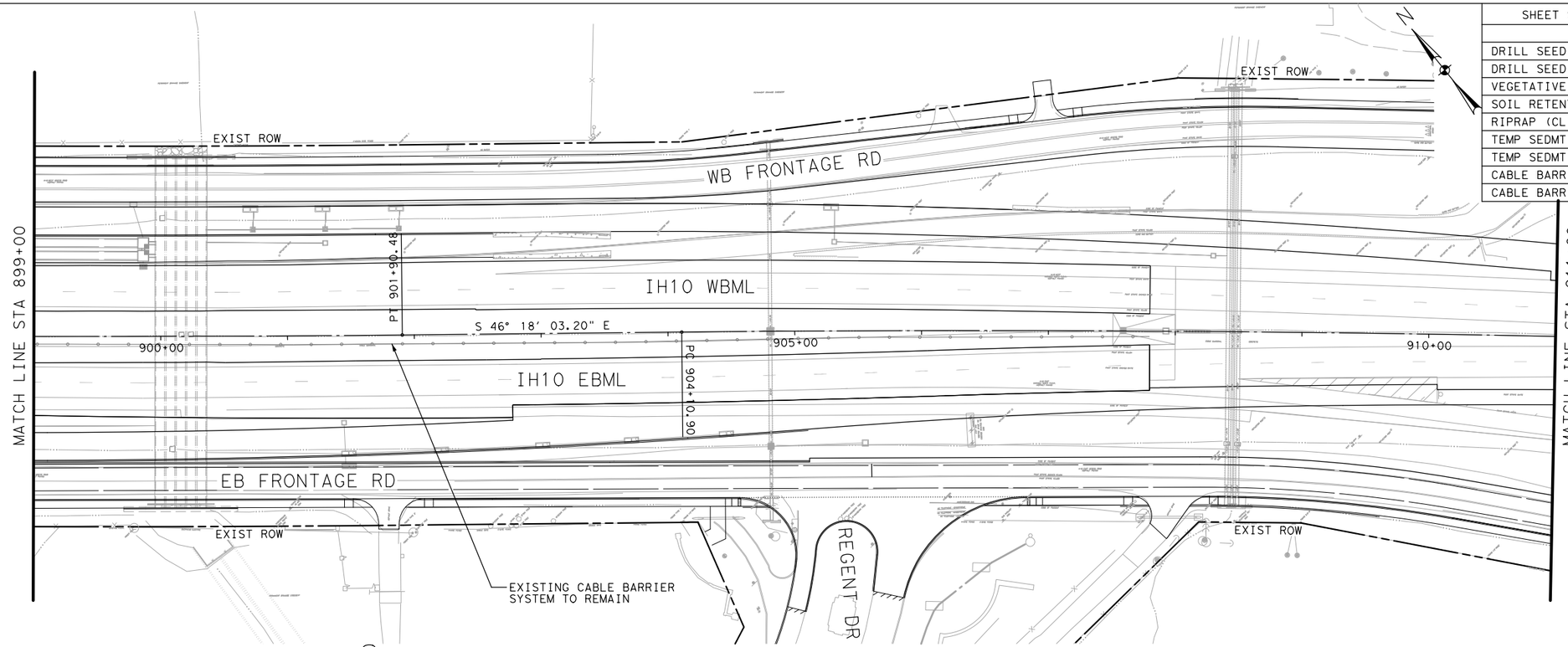
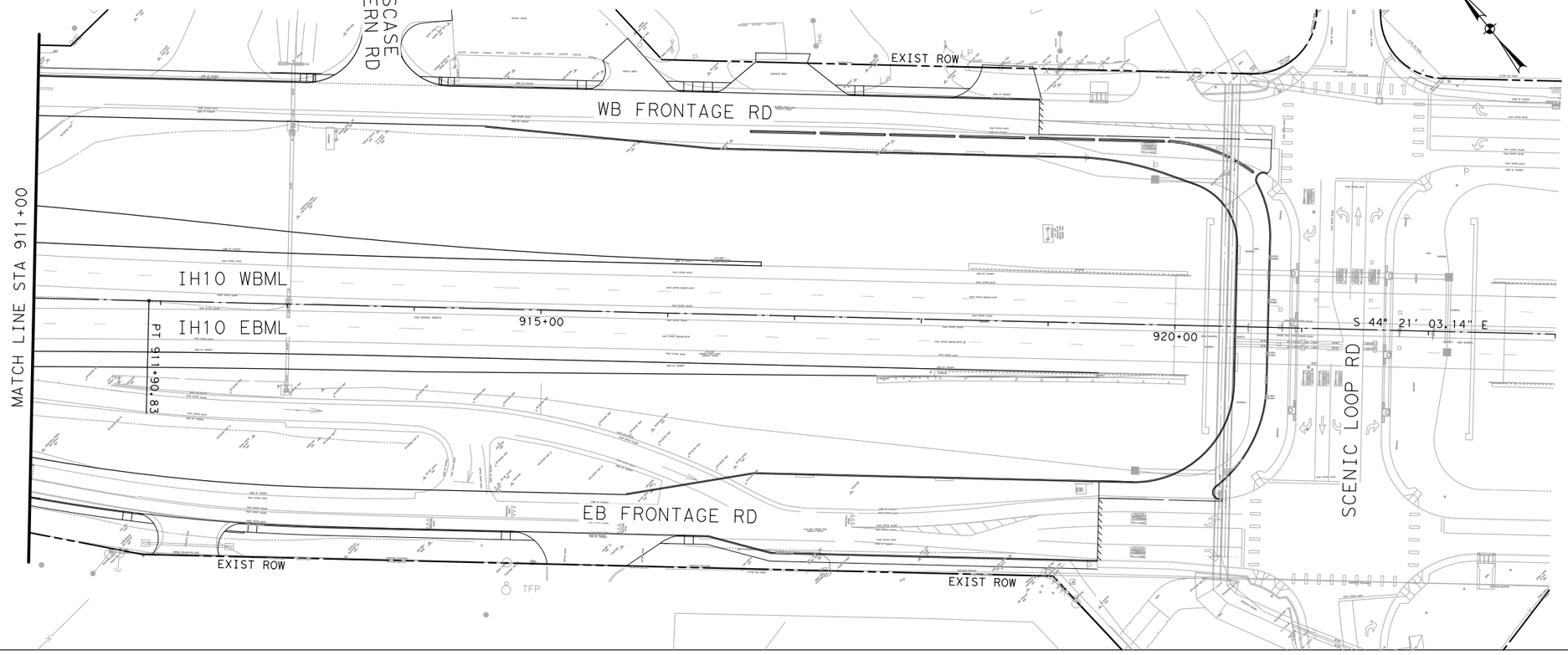
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 6 OF 7

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		47
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ:0072-06-091				
DESCRIPTION	ITEM	DESC	UNIT	QTY
DRILL SEEDING (PERM) (RURAL) (CLAY)	164	6035	SY	0
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	0
VEGETATIVE WATERING	168	6001	MG	0
SOIL RETENTION BLANKETS (CL 1) (TY A)	169	6001	SY	0
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	0
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	0
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0





LEGEND:

- PROPOSED CABLE BARRIER SYSTEM (TL-4)
- PROPOSED SEDIMENT CONTROL FENCE
- EXISTING TRAFFIC FLOW

0 50 100
SCALE: 1"=100'

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M. R. NEELAPU, P. E.

1/22/2023
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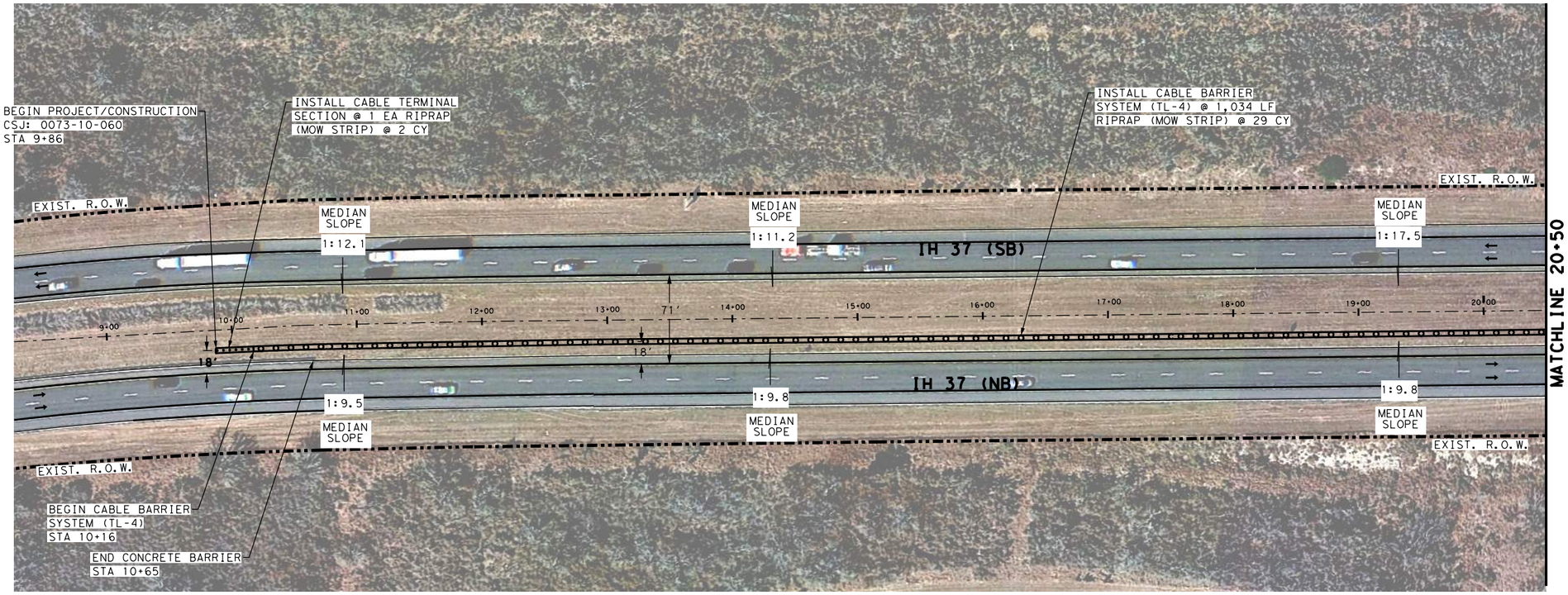
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 7 OF 7

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		48
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.



LEGEND

- CABLE BARRIER
- MOW STRIP
- DITCH LINE
- R.O.W.

N

0 50 100

SCALE: 1"=100'

NOTES:

CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:

1. DESIGNED TO BE PLACED ON 6:1 OR FLATTER SIDE SLOPES.
2. SURVEYING WAS NOT PERFORMED ON THIS PROJECT.
3. LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
4. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS NEEDED (NOT SHOWN ON PLANS).
5. ALL UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR MUST VERIFY ALL EXISTING UTILITIES FOR CLEARANCES.
6. ALL RIGHT OF WAY LINES ARE APPROXIMATE
7. CENTERLINE ALIGNMENT IS APPROXIMATE. NO TOPOGRAPHIC FILE WAS USED AS A BASIS FOR CENTER LINE.
8. CABLE BARRIERS SHALL BE PLACED AT LEAST 12 FEET FROM THE EDGE OF TRAVEL WAY. CABLE BARRIERS SHALL BE PLACED AT LEAST 8 FEET FROM THE BOTTOM OF THE DITCH LINE.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	31
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1034
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	690
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	690
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	690
VEGETATIVE WATERING	168	6001	MG	11

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Katy, TX 77494

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 1 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		49
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

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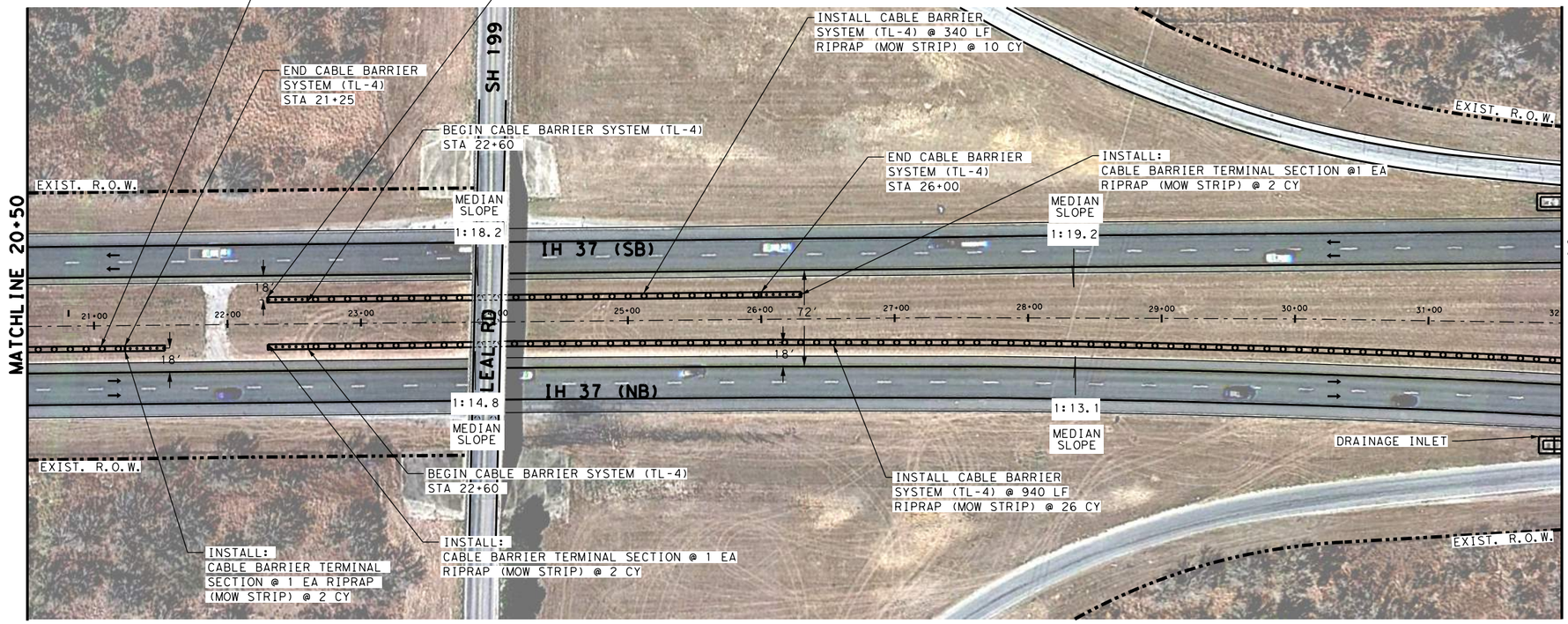
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100

SCALE: 1"=100'

NOTES:

CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:

1. DESIGNED TO BE PLACED ON 6:1 OR FLATTER SIDE SLOPES.
2. SURVEYING WAS NOT PERFORMED ON THIS PROJECT.
3. LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
4. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS NEEDED (NOT SHOWN ON PLANS).
5. ALL UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR MUST VERIFY ALL EXISTING UTILITIES FOR CLEARANCES.
6. ALL RIGHT OF WAY LINES ARE APPROXIMATE
7. CENTERLINE ALIGNMENT IS APPROXIMATE. NO TOPOGRAPHIC FILE WAS USED AS A BASIS FOR CENTER LINE.
8. CABLE BARRIERS SHALL BE PLACED AT LEAST 12 FEET FROM THE EDGE OF TRAVEL WAY. CABLE BARRIERS SHALL BE PLACED AT LEAST 8 FEET FROM THE BOTTOM OF THE DITCH LINE.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	47
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1355
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	4
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	904
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	904
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	904
VEGETATIVE WATERING	168	6001	MG	15

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

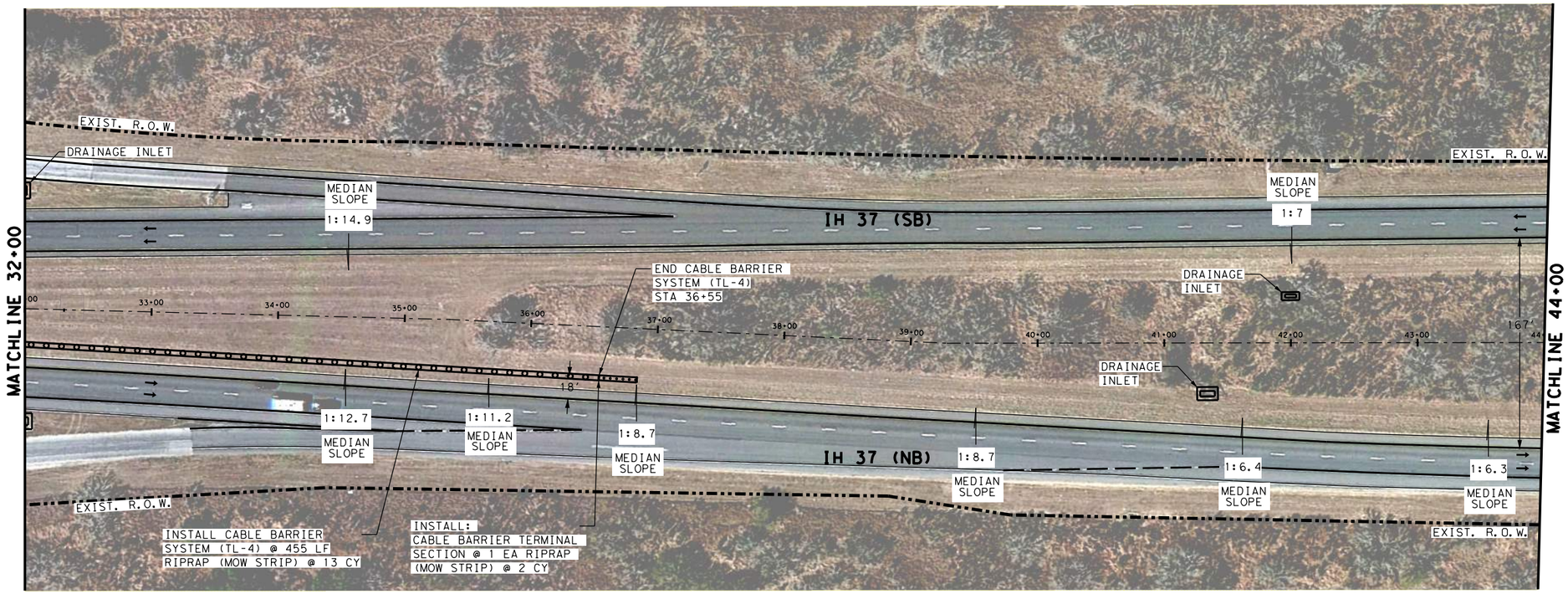
SHEET 2 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		50
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
...\CADD\IH-37*SHT02.DGN

LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100

SCALE: 1"=100'

NOTES:

CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:

1. DESIGNED TO BE PLACED ON 6:1 OR FLATTER SIDE SLOPES.
2. SURVEYING WAS NOT PERFORMED ON THIS PROJECT.
3. LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
4. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS NEEDED (NOT SHOWN ON PLANS).
5. ALL UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR MUST VERIFY ALL EXISTING UTILITIES FOR CLEARANCES.
6. ALL RIGHT OF WAY LINES ARE APPROXIMATE
7. CENTERLINE ALIGNMENT IS APPROXIMATE. NO TOPOGRAPHIC FILE WAS USED AS A BASIS FOR CENTER LINE.
8. CABLE BARRIERS SHALL BE PLACED AT LEAST 12 FEET FROM THE EDGE OF TRAVEL WAY. CABLE BARRIERS SHALL BE PLACED AT LEAST 8 FEET FROM THE BOTTOM OF THE DITCH LINE.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	15
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	120
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	120
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	455
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	304
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	304
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	304
VEGETATIVE WATERING	168	6001	MG	5

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		51
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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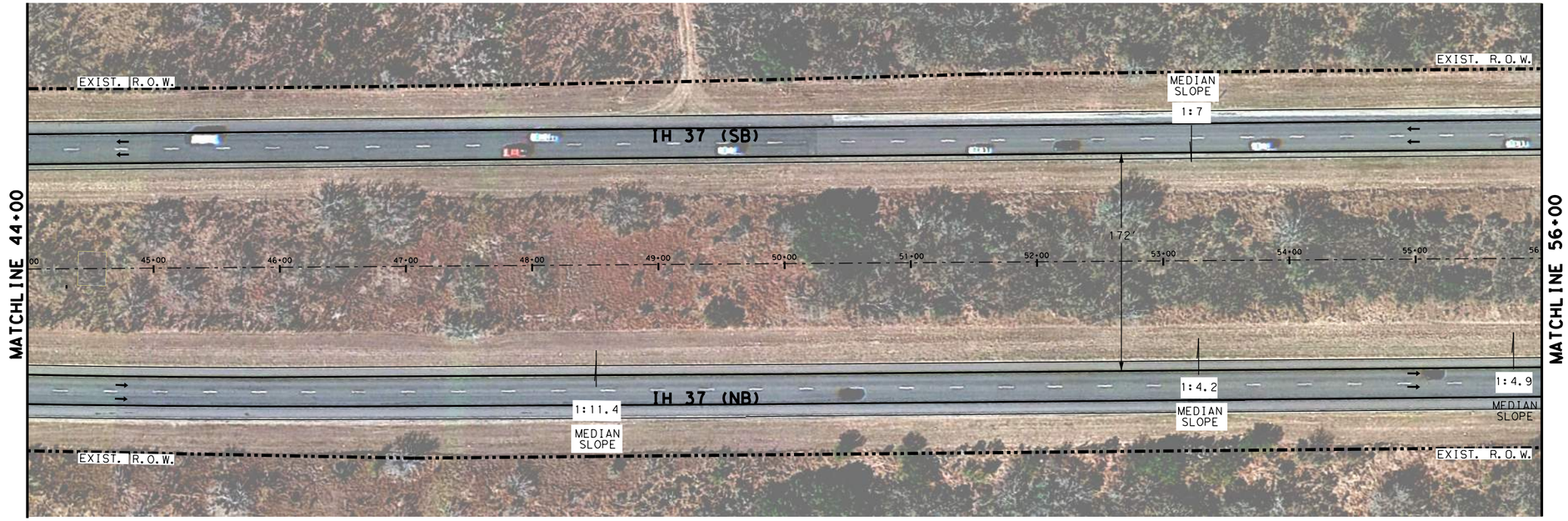
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100

SCALE: 1"=100'

NOTES:

CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:

1. DESIGNED TO BE PLACED ON 6:1 OR FLATTER SIDE SLOPES.
2. SURVEYING WAS NOT PERFORMED ON THIS PROJECT.
3. LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
4. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS NEEDED (NOT SHOWN ON PLANS).
5. ALL UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR MUST VERIFY ALL EXISTING UTILITIES FOR CLEARANCES.
6. ALL RIGHT OF WAY LINES ARE APPROXIMATE
7. CENTERLINE ALIGNMENT IS APPROXIMATE. NO TOPOGRAPHIC FILE WAS USED AS A BASIS FOR CENTER LINE.
8. CABLE BARRIERS SHALL BE PLACED AT LEAST 12 FEET FROM THE EDGE OF TRAVEL WAY. CABLE BARRIERS SHALL BE PLACED AT LEAST 8 FEET FROM THE BOTTOM OF THE DITCH LINE.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	0
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	0
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	0
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	0
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	0
VEGETATIVE WATERING	168	6001	MG	0

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 4 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		52
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
...\CADD\IH-37*SHT04.DGN

LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.

N

0 50 100

SCALE: 1"=100'

NOTES:

CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:

1. DESIGNED TO BE PLACED ON 6:1 OR FLATTER SIDE SLOPES.
2. SURVEYING WAS NOT PERFORMED ON THIS PROJECT.
3. LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
4. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS NEEDED (NOT SHOWN ON PLANS).
5. ALL UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR MUST VERIFY ALL EXISTING UTILITIES FOR CLEARANCES.
6. ALL RIGHT OF WAY LINES ARE APPROXIMATE
7. CENTERLINE ALIGNMENT IS APPROXIMATE. NO TOPOGRAPHIC FILE WAS USED AS A BASIS FOR CENTER LINE.
8. CABLE BARRIERS SHALL BE PLACED AT LEAST 12 FEET FROM THE EDGE OF TRAVEL WAY. CABLE BARRIERS SHALL BE PLACED AT LEAST 8 FEET FROM THE BOTTOM OF THE DITCH LINE.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	0
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	0
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	0
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	0
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	0
VEGETATIVE WATERING	168	6001	MG	0

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 5 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		53
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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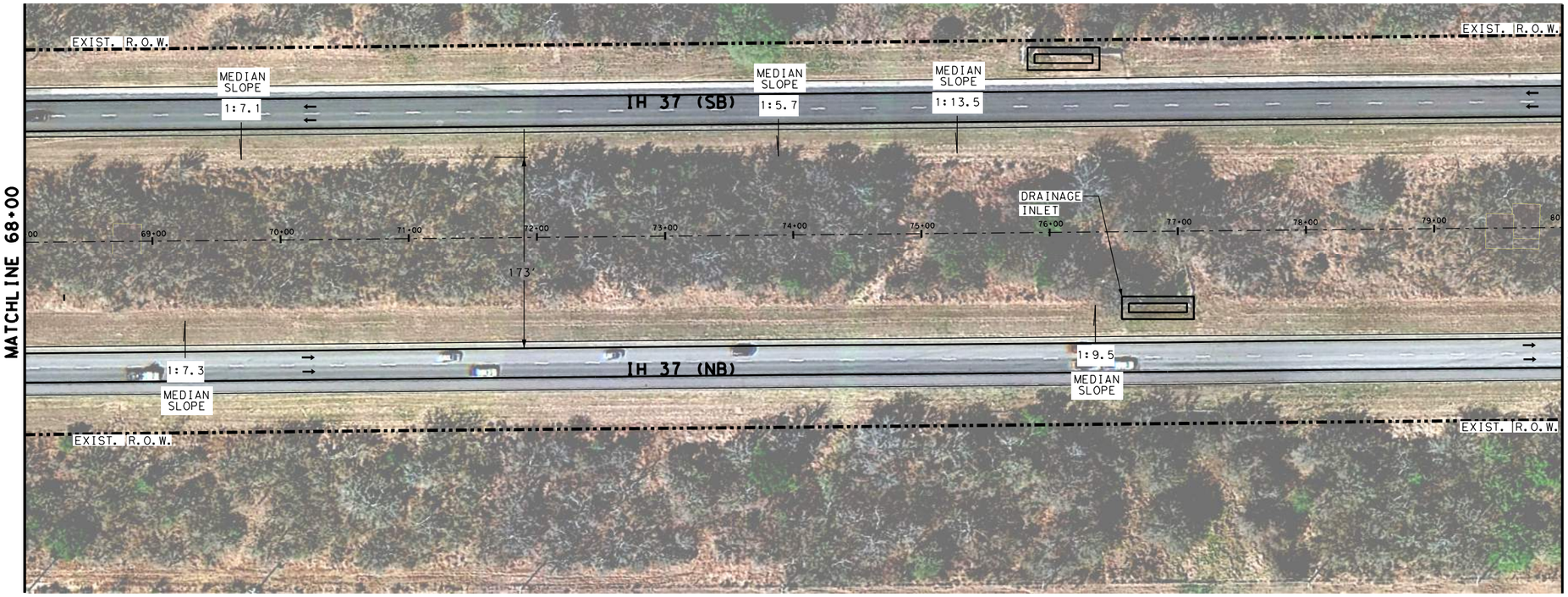
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100

SCALE: 1"=100'

NOTES:

CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:

1. DESIGNED TO BE PLACED ON 6:1 OR FLATTER SIDE SLOPES.
2. SURVEYING WAS NOT PERFORMED ON THIS PROJECT.
3. LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
4. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS NEEDED (NOT SHOWN ON PLANS).
5. ALL UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR MUST VERIFY ALL EXISTING UTILITIES FOR CLEARANCES.
6. ALL RIGHT OF WAY LINES ARE APPROXIMATE
7. CENTERLINE ALIGNMENT IS APPROXIMATE. NO TOPOGRAPHIC FILE WAS USED AS A BASIS FOR CENTER LINE.
8. CABLE BARRIERS SHALL BE PLACED AT LEAST 12 FEET FROM THE EDGE OF TRAVEL WAY. CABLE BARRIERS SHALL BE PLACED AT LEAST 8 FEET FROM THE BOTTOM OF THE DITCH LINE.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	0
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	0
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	0
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	0
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	0
VEGETATIVE WATERING	168	6001	MG	0

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IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 6 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		54
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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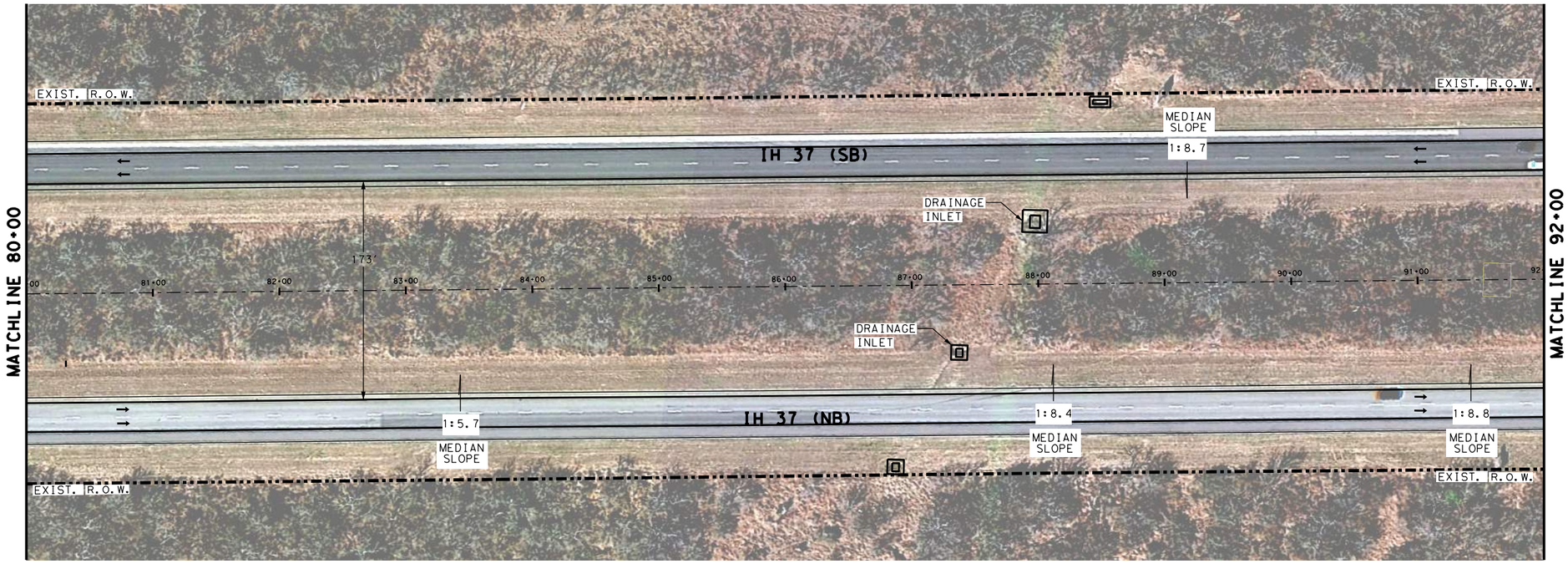

LEGEND

- CABLE BARRIER
- MOW STRIP
- DITCH LINE
- R.O.W.

N

0 50 100

SCALE: 1"=100'

NOTES:

CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:

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SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	0
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	0
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	0
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	0
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	0
VEGETATIVE WATERING	168	6001	MG	0

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		55
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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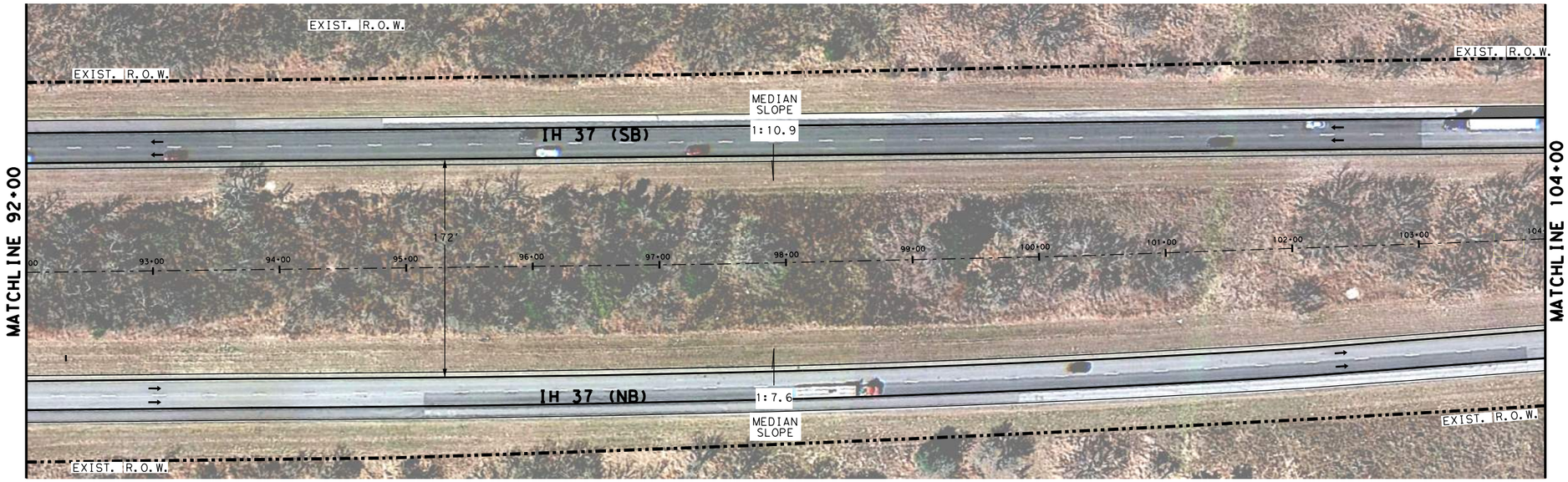
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100

SCALE: 1"=100'

NOTES:

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CABLE BARRIER:

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DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	0
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	0
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	0
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	0
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	0
VEGETATIVE WATERING	168	6001	MG	0

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		56
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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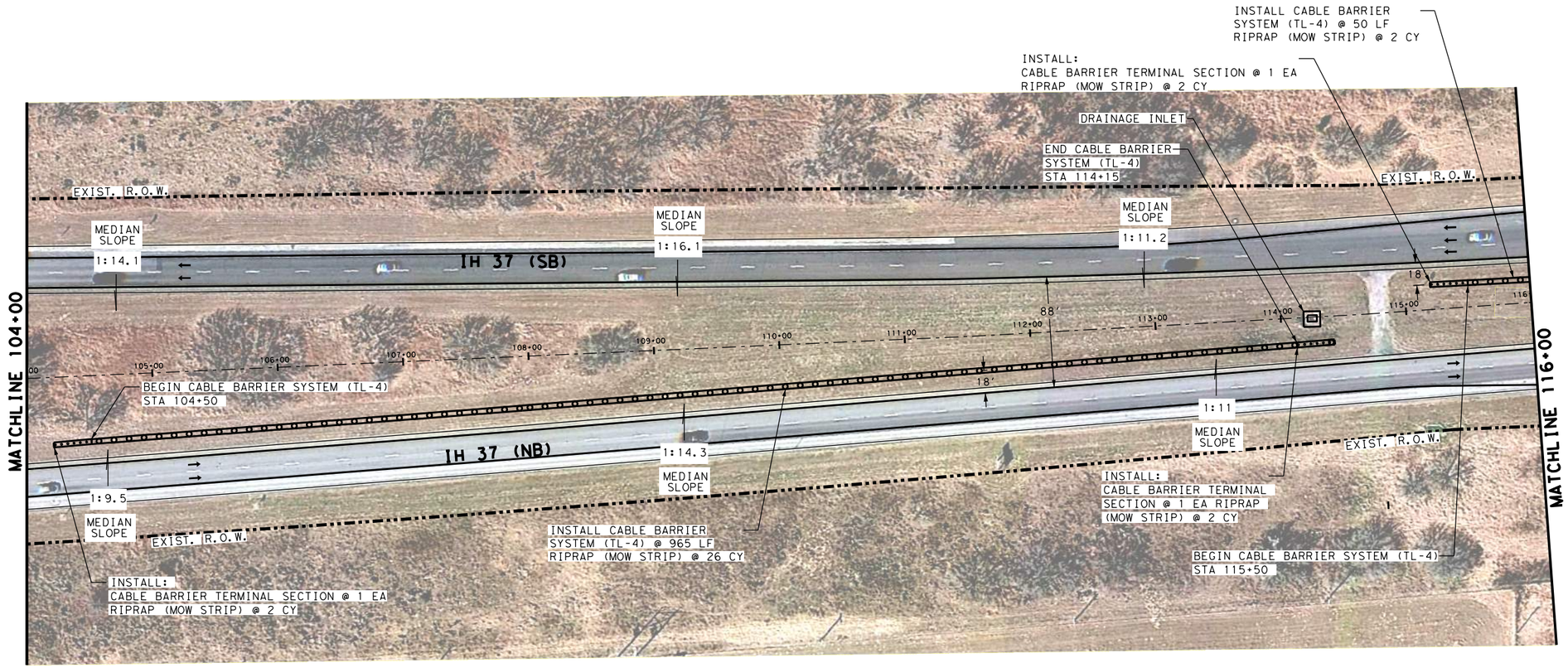

LEGEND

- CABLE BARRIER
- MOW STRIP
- DITCH LINE
- R.O.W.

N

0 50 100

SCALE: 1"=100'

NOTES:

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SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	34
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	60
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	60
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1015
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	3
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	677
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	677
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	677
VEGETATIVE WATERING	168	6001	MG	11

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 9 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		57
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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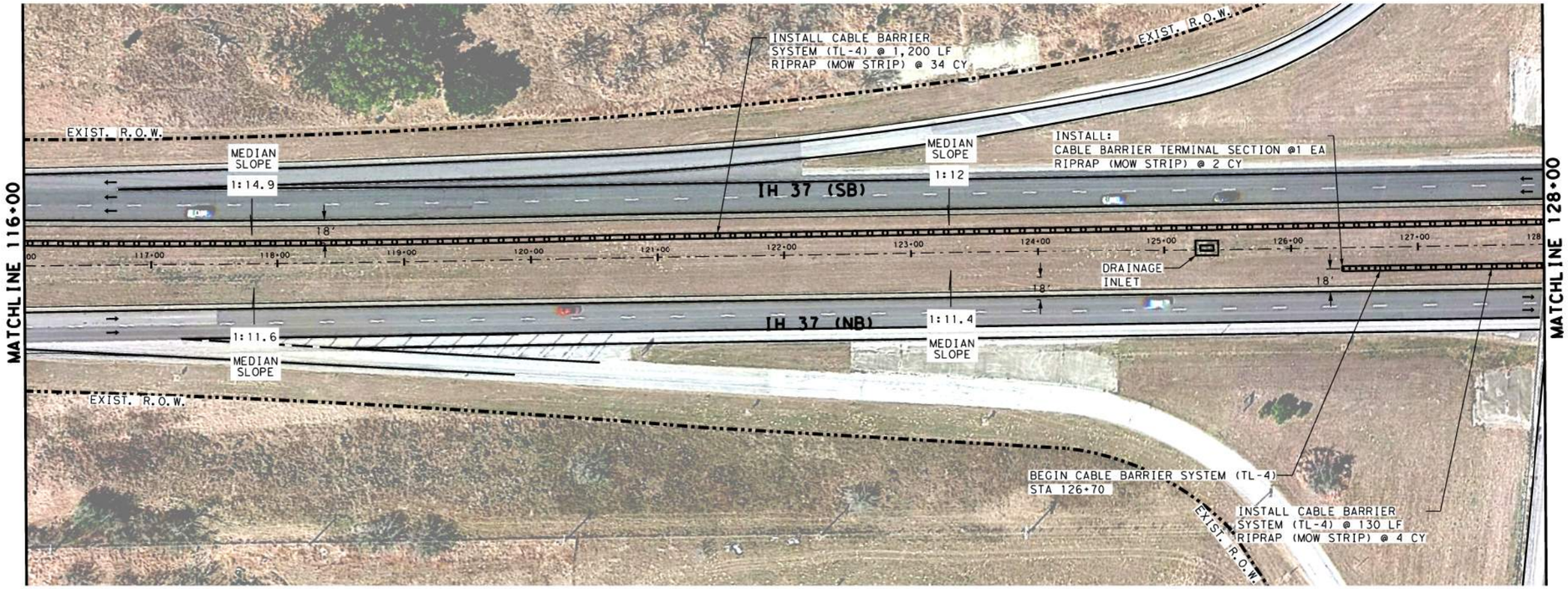
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100

SCALE: 1"=100'

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SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	40
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	60
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	60
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1330
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	887
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	887
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	887
VEGETATIVE WATERING	168	6001	MG	14

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IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 10 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		58
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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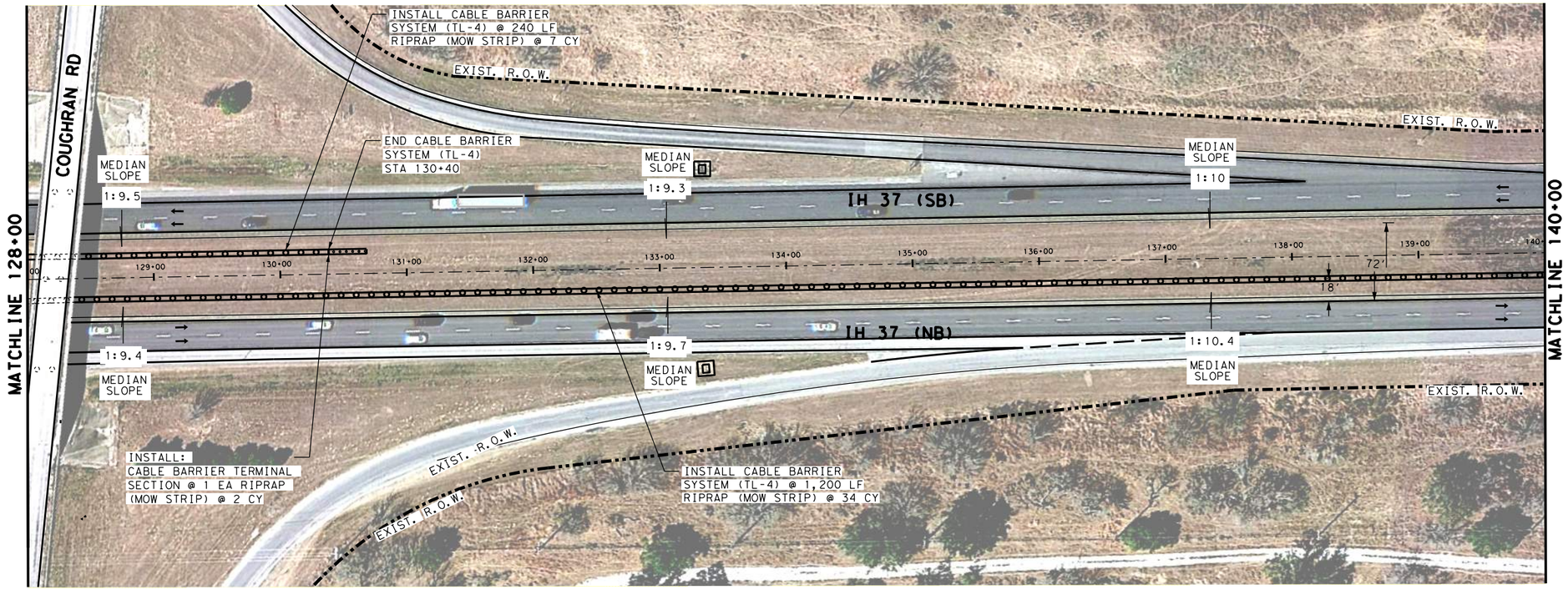
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100

SCALE: 1"=100'

NOTES:

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CABLE BARRIER:

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SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	43
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1440
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	960
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	960
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	960
VEGETATIVE WATERING	168	6001	MG	15

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 11 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		59
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

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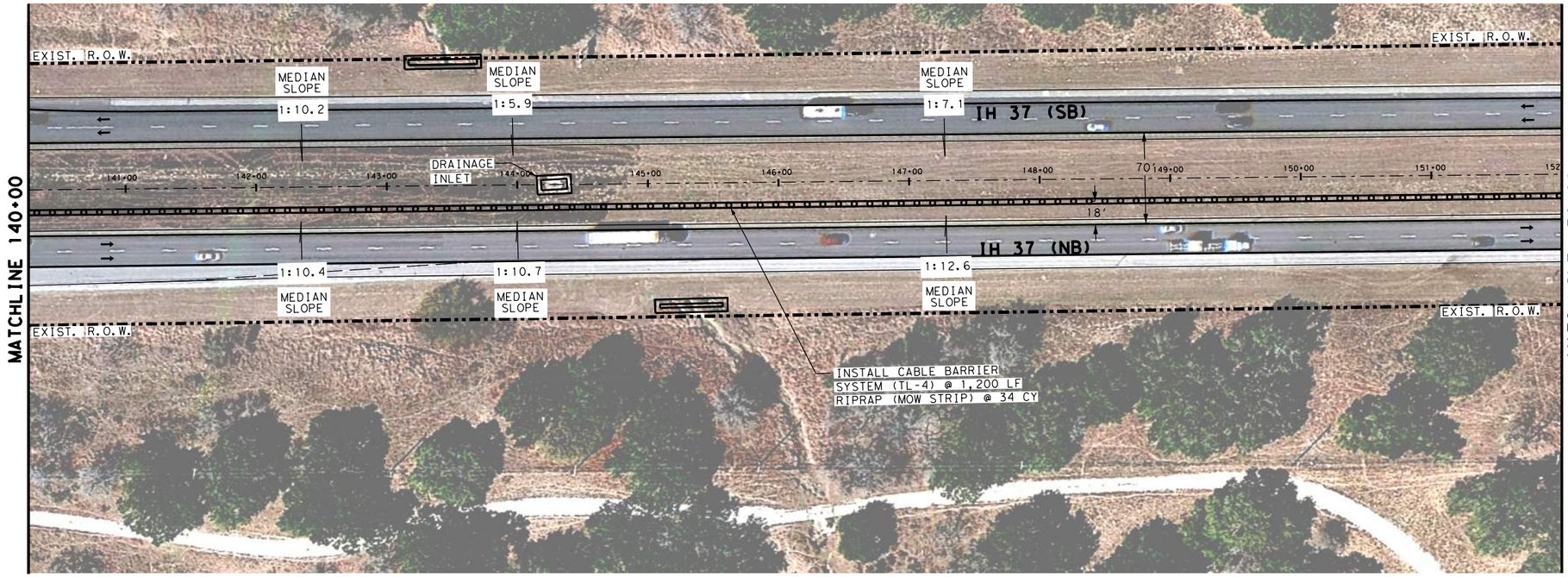

LEGEND

- CABLE BARRIER
- MOW STRIP
- DITCH LINE
- R.O.W.

N

0 50 100

SCALE: 1"=100'

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SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	34
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	60
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	60
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	800
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
VEGETATIVE WATERING	168	6001	MG	13

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IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 12 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		60
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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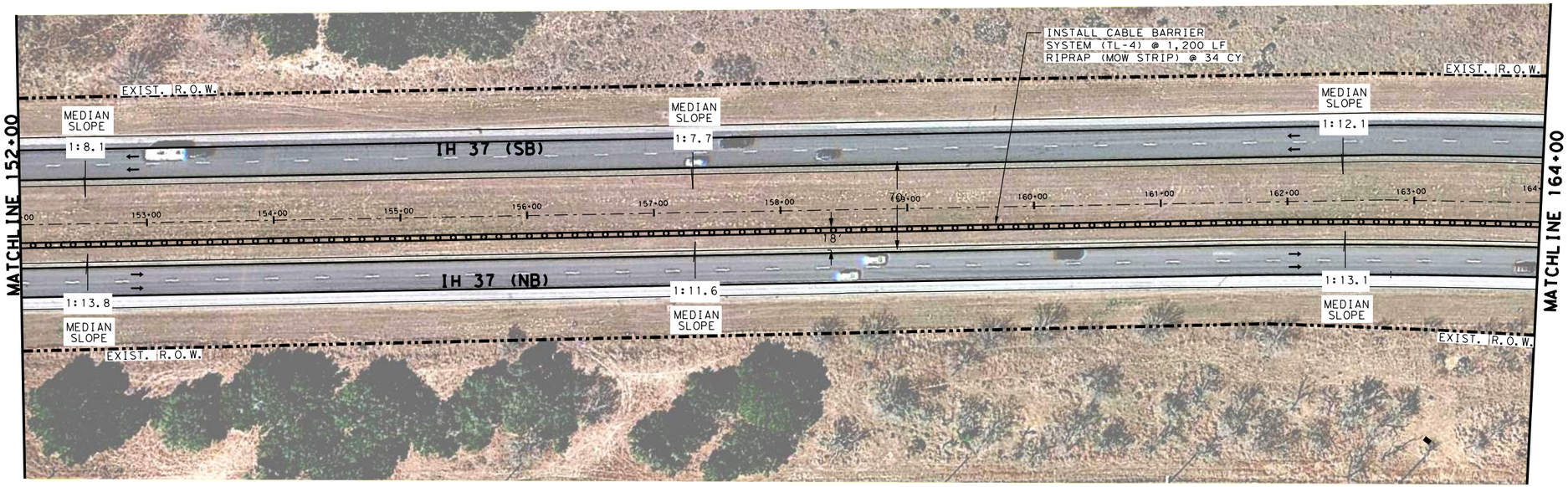
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100

SCALE: 1"=100'

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DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	34
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	800
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
VEGETATIVE WATERING	168	6001	MG	13

STATE OF TEXAS
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140078
LICENSED PROFESSIONAL ENGINEER

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IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 13 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		61
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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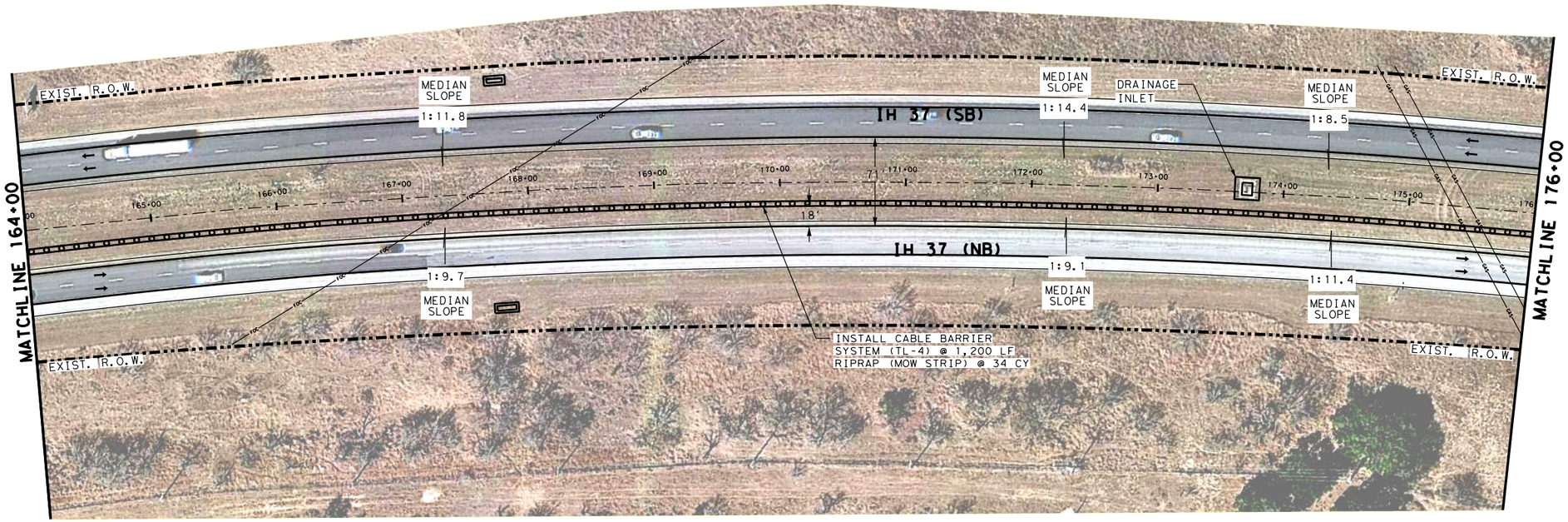
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100
SCALE: 1"=100'

NOTES:

CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:

1. DESIGNED TO BE PLACED ON 6:1 OR FLATTER SIDE SLOPES.
2. SURVEYING WAS NOT PERFORMED ON THIS PROJECT.
3. LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
4. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS NEEDED (NOT SHOWN ON PLANS).
5. ALL UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR MUST VERIFY ALL EXISTING UTILITIES FOR CLEARANCES.
6. ALL RIGHT OF WAY LINES ARE APPROXIMATE
7. CENTERLINE ALIGNMENT IS APPROXIMATE. NO TOPOGRAPHIC FILE WAS USED AS A BASIS FOR CENTER LINE.
8. CABLE BARRIERS SHALL BE PLACED AT LEAST 12 FEET FROM THE EDGE OF TRAVEL WAY. CABLE BARRIERS SHALL BE PLACED AT LEAST 8 FEET FROM THE BOTTOM OF THE DITCH LINE.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	34
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	60
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	60
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	800
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
VEGETATIVE WATERING	168	6001	MG	13

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

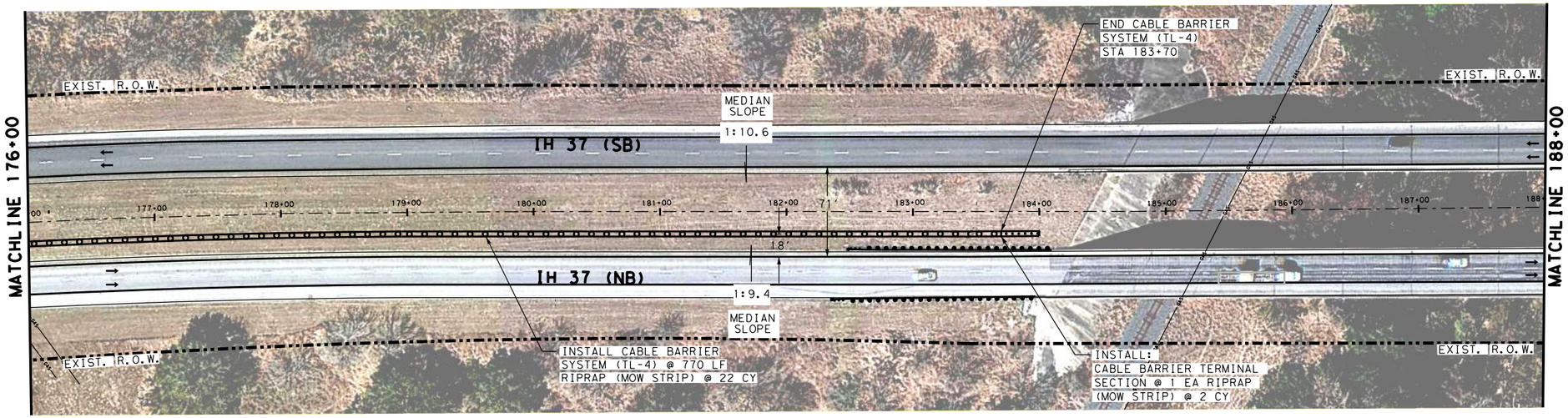
SHEET 14 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		62
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
...\CADD\IH-37*SHT014.DGN

LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100

SCALE: 1"=100'

NOTES:

CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:

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9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	24
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	770
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	514
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	514
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	514
VEGETATIVE WATERING	168	6001	MG	9

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 15 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		63
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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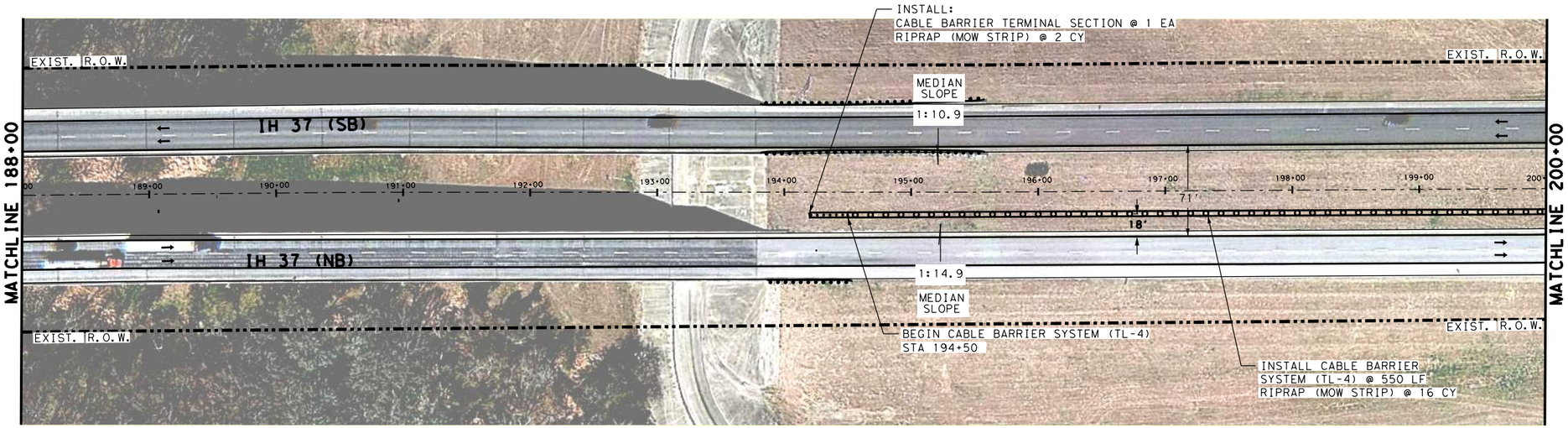
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100
SCALE: 1"=100'

NOTES:
CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:
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9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	18
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	550
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	367
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	367
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	367
VEGETATIVE WATERING	168	6001	MG	6

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 16 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		64
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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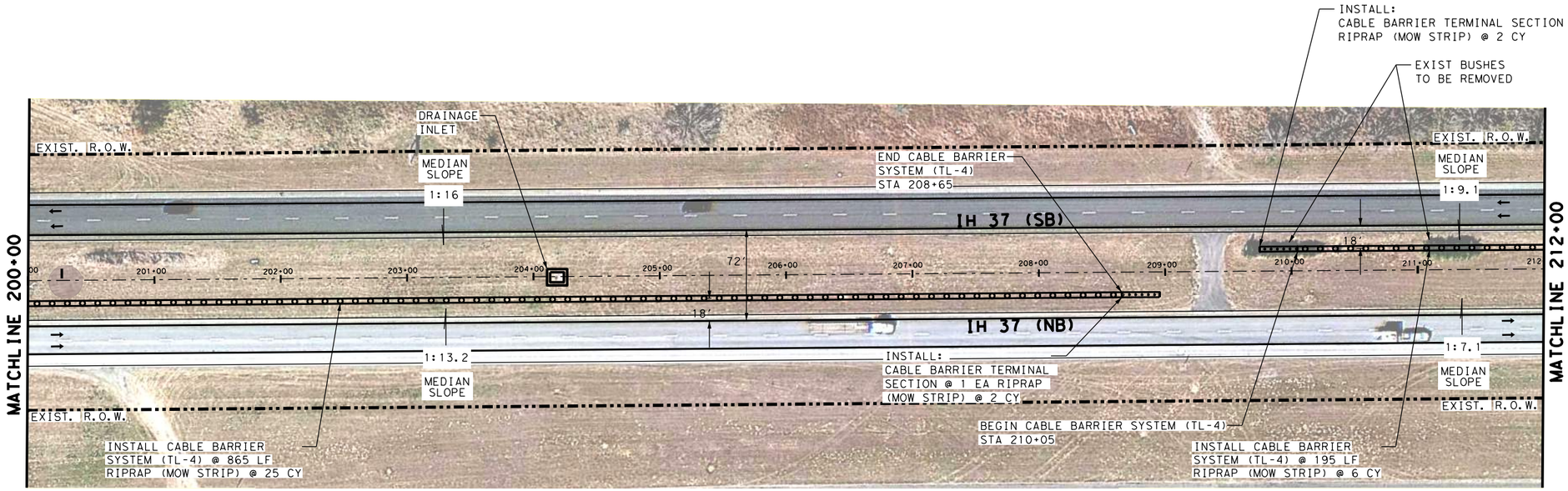
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100

SCALE: 1"=100'

NOTES:

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10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	35
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	60
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	60
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1060
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	2
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	707
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	707
SOIL RETENTION BLANKETS(CL 1)(TY A)	169	6001	SY	707
VEGETATIVE WATERING	168	6001	MG	12
TREE AND BRUSH REMOVAL	752	6022	LF	192

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IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 17 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		65
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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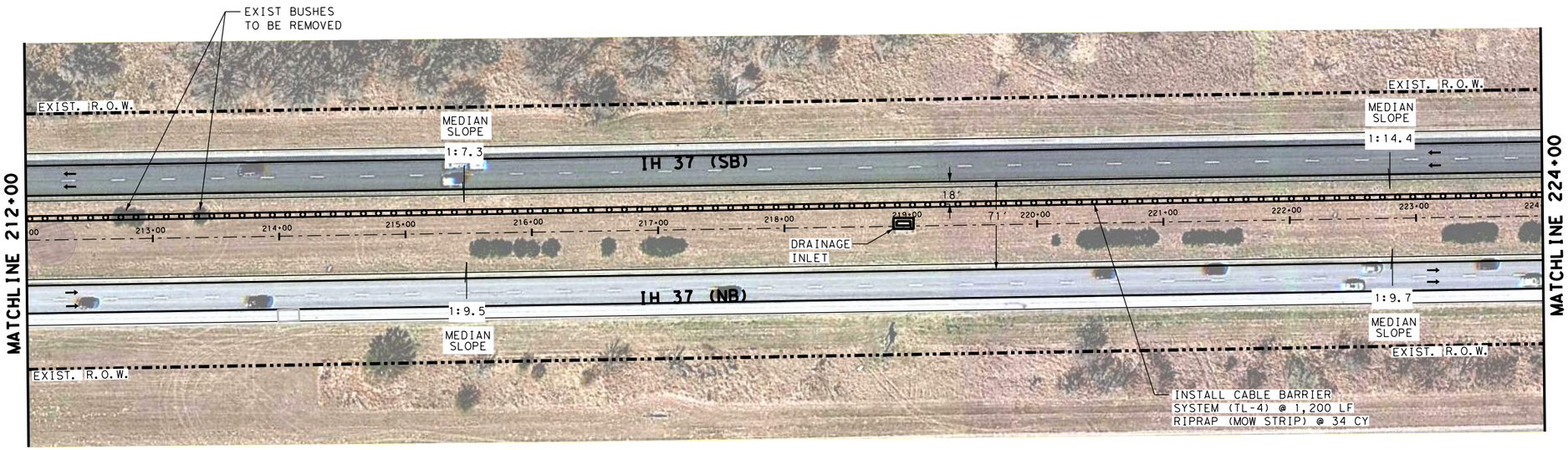
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100
SCALE: 1"=100'

NOTES:

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CABLE BARRIER:

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SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	34
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	60
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	60
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	800
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
VEGETATIVE WATERING	168	6001	MG	13
TREE AND BRUSH REMOVAL	752	6022	LF	78

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 18 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		66
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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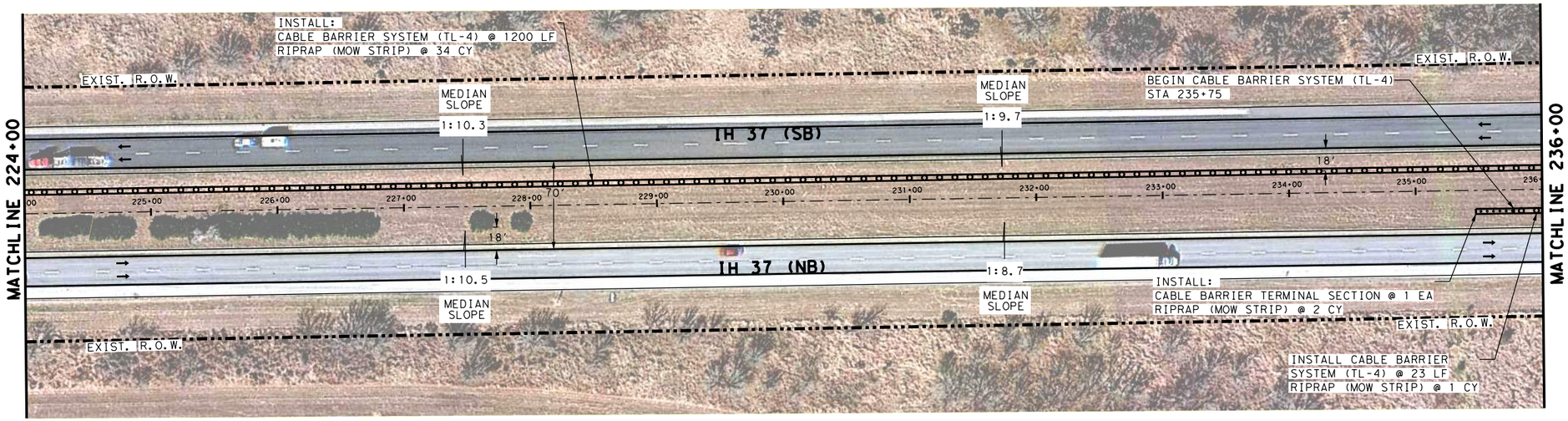
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100
SCALE: 1"=100'

NOTES:

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SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	37
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1225
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	817
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	817
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	817
VEGETATIVE WATERING	168	6001	MG	13

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 19 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		67
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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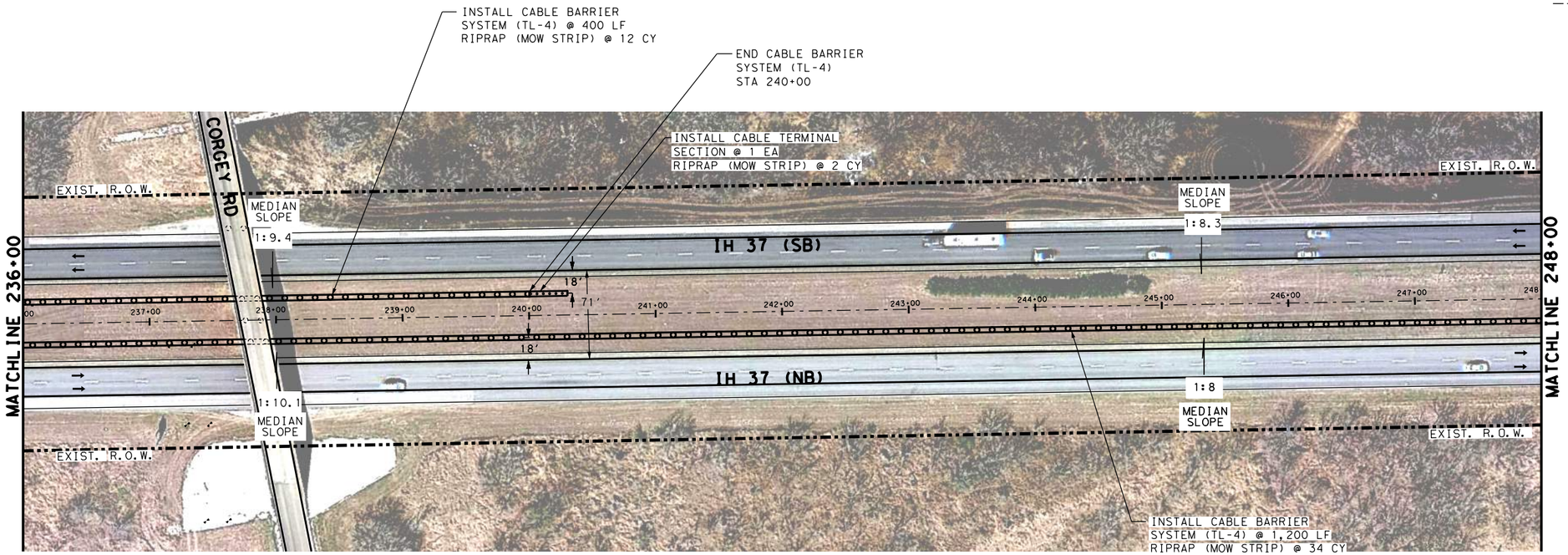
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100

SCALE: 1"=100'

NOTES:

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SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	48
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1600
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	1067
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	1067
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	1067
VEGETATIVE WATERING	168	6001	MG	17

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 20 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		68
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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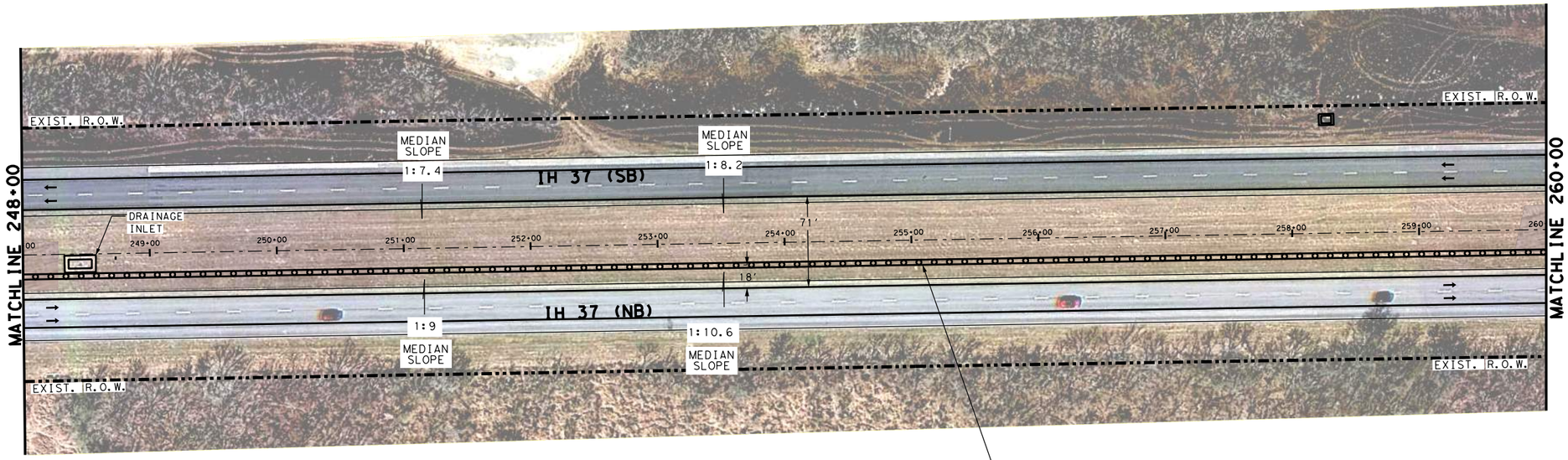
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



INSTALL CABLE BARRIER
SYSTEM (TL-4) @ 1,200 LF
RIPRAP (MOW STRIP) @ 34 CY

N

0 50 100
SCALE: 1"=100'

NOTES:

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7. CENTERLINE ALIGNMENT IS APPROXIMATE. NO TOPOGRAPHIC FILE WAS USED AS A BASIS FOR CENTER LINE.
8. CABLE BARRIERS SHALL BE PLACED AT LEAST 12 FEET FROM THE EDGE OF TRAVEL WAY. CABLE BARRIERS SHALL BE PLACED AT LEAST 8 FEET FROM THE BOTTOM OF THE DITCH LINE.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	34
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	60
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	60
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	800
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
VEGETATIVE WATERING	168	6001	MG	13

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IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 21 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		69
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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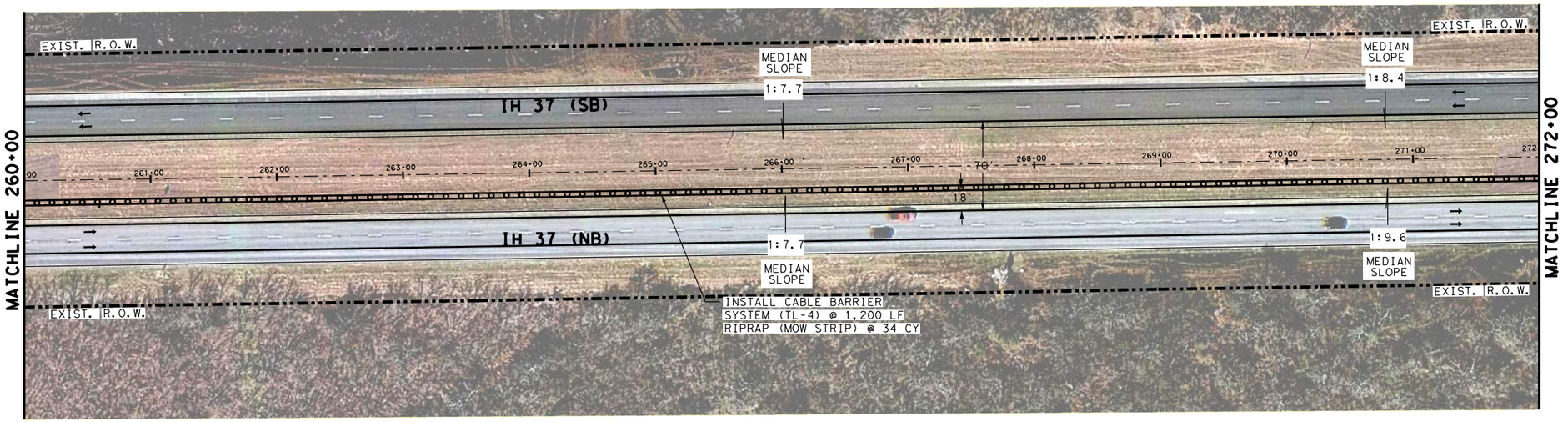
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100
SCALE: 1"=100'

NOTES:

CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:

1. DESIGNED TO BE PLACED ON 6:1 OR FLATTER SIDE SLOPES.
2. SURVEYING WAS NOT PERFORMED ON THIS PROJECT.
3. LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
4. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS NEEDED (NOT SHOWN ON PLANS).
5. ALL UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR MUST VERIFY ALL EXISTING UTILITIES FOR CLEARANCES.
6. ALL RIGHT OF WAY LINES ARE APPROXIMATE
7. CENTERLINE ALIGNMENT IS APPROXIMATE. NO TOPOGRAPHIC FILE WAS USED AS A BASIS FOR CENTER LINE.
8. CABLE BARRIERS SHALL BE PLACED AT LEAST 12 FEET FROM THE EDGE OF TRAVEL WAY. CABLE BARRIERS SHALL BE PLACED AT LEAST 8 FEET FROM THE BOTTOM OF THE DITCH LINE.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	34
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	800
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
VEGETATIVE WATERING	168	6001	MG	13

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IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 22 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		70
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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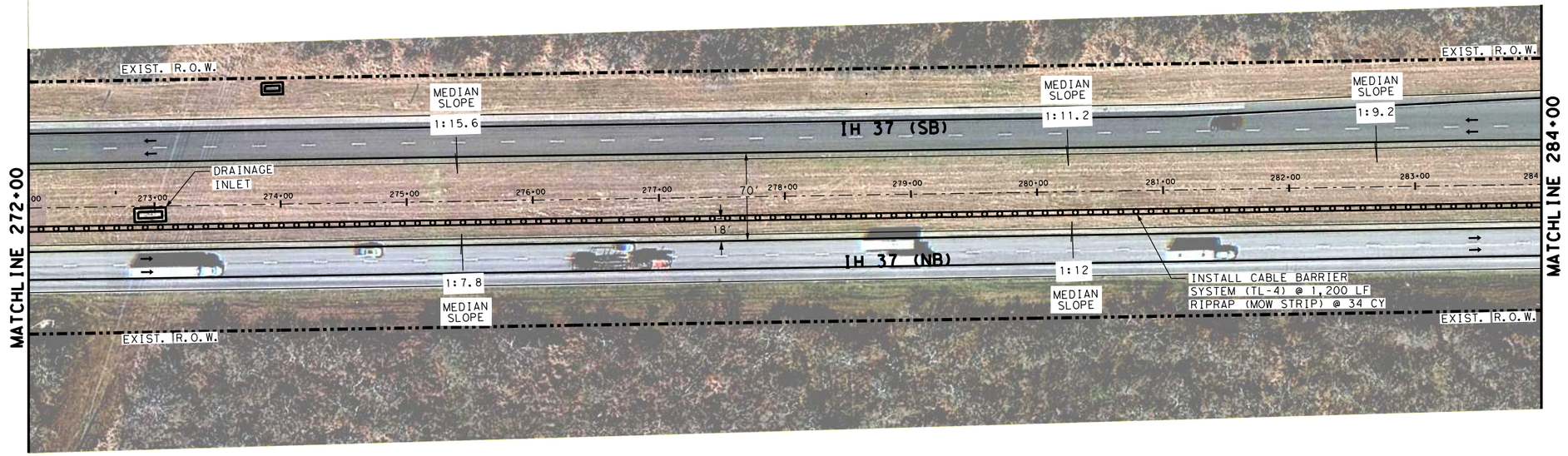
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100
SCALE: 1"=100'

NOTES:

CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:

1. DESIGNED TO BE PLACED ON 6:1 OR FLATTER SIDE SLOPES.
2. SURVEYING WAS NOT PERFORMED ON THIS PROJECT.
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8. CABLE BARRIERS SHALL BE PLACED AT LEAST 12 FEET FROM THE EDGE OF TRAVEL WAY. CABLE BARRIERS SHALL BE PLACED AT LEAST 8 FEET FROM THE BOTTOM OF THE DITCH LINE.
9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	34
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	60
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	60
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	800
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
VEGETATIVE WATERING	168	6001	MG	13

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IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 23 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT	SHEET NO.
	SEE TITLE SHEET	71

STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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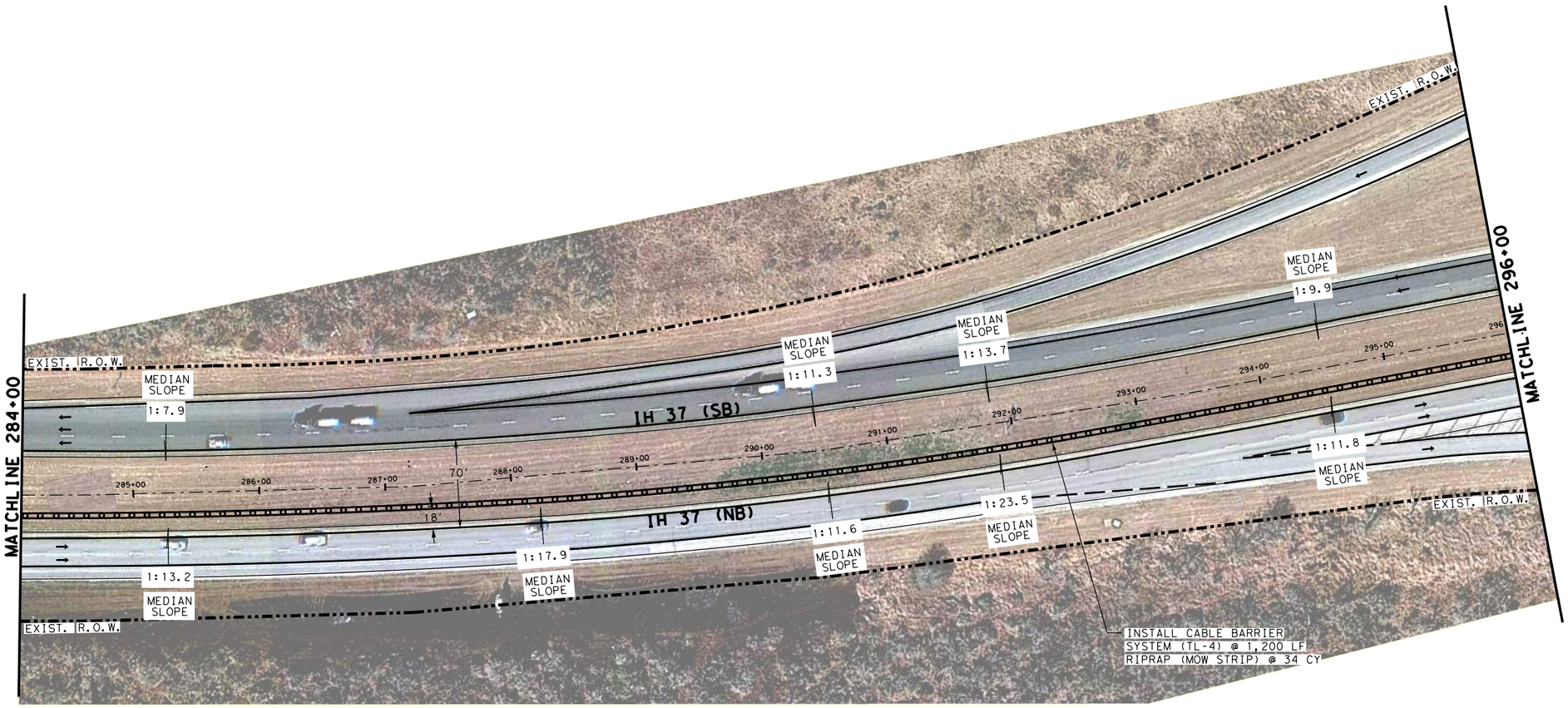

LEGEND

- CABLE BARRIER
- MOW STRIP
- DITCH LINE
- R.O.W.

N

0 50 100

SCALE: 1"=100'

NOTES:

CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:

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10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	34
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	800
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
VEGETATIVE WATERING	168	6001	MG	13

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PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 24 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		72
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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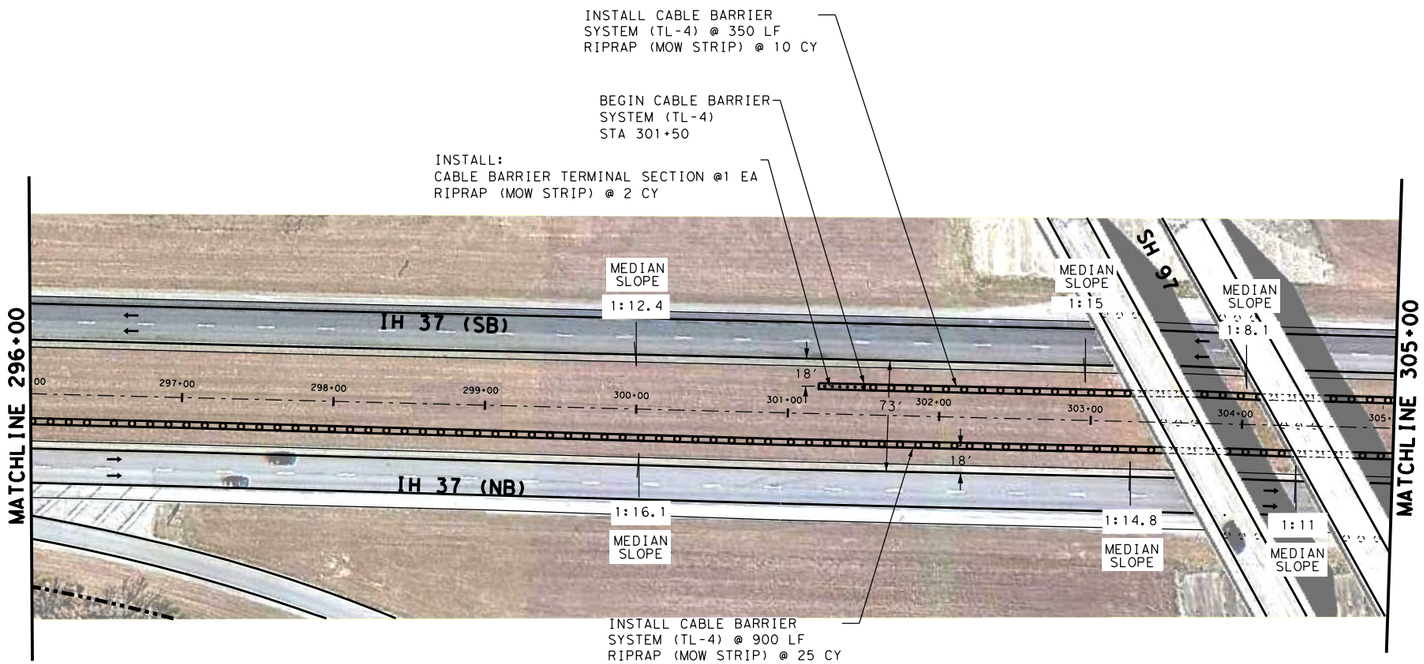
LEGEND

CABLE BARRIER
MOW STRIP
DITCH LINE
R.O.W.



N

0 50 100
SCALE: 1"=100'

NOTES:

CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:

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10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	37
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1250
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	834
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	834
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	834
VEGETATIVE WATERING	168	6001	MG	14

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IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 25 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		73
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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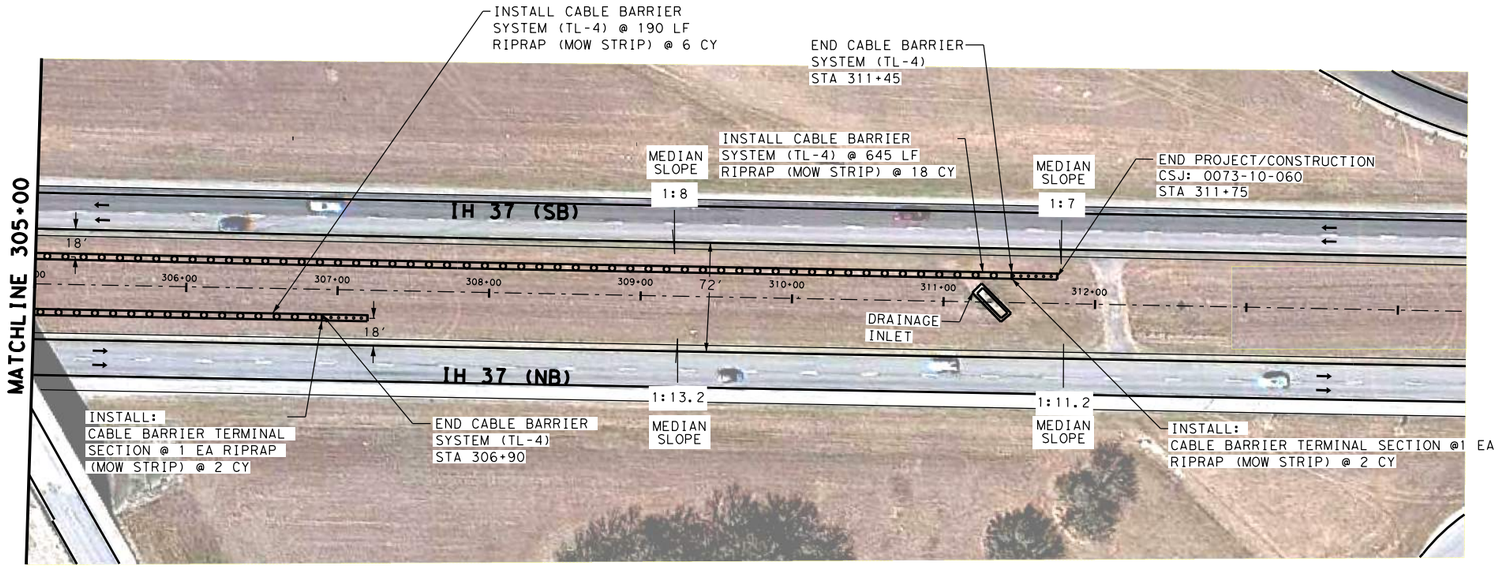
LEGEND

CABLE BARRIER

MOW STRIP

DITCH LINE

R.O.W.



N

0 50 100

SCALE: 1"=100'

NOTES:

CROSSOVER LOCATIONS MAY BE ADJUSTED AS NECESSARY TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

CABLE BARRIER:

1. DESIGNED TO BE PLACED ON 6:1 OR FLATTER SIDE SLOPES.
2. SURVEYING WAS NOT PERFORMED ON THIS PROJECT.
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9. DRILL SEEDING AND SOIL RETENTION BLANKETS SHALL BE APPLIED AT A MINIMUM OF 3 FEET ON EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6 FEET.
10. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

SHEET SUMMARY OF ESTIMATED QUANTITIES (CSJ: 0073-10-060)

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	28
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	60
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	60
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	835
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	2
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	557
DRILL SEEDING (TEMP)(WARM OR COOL)	164	6051	SY	557
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	557
VEGETATIVE WATERING	168	6001	MG	9

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IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 26 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		74
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/19/2023
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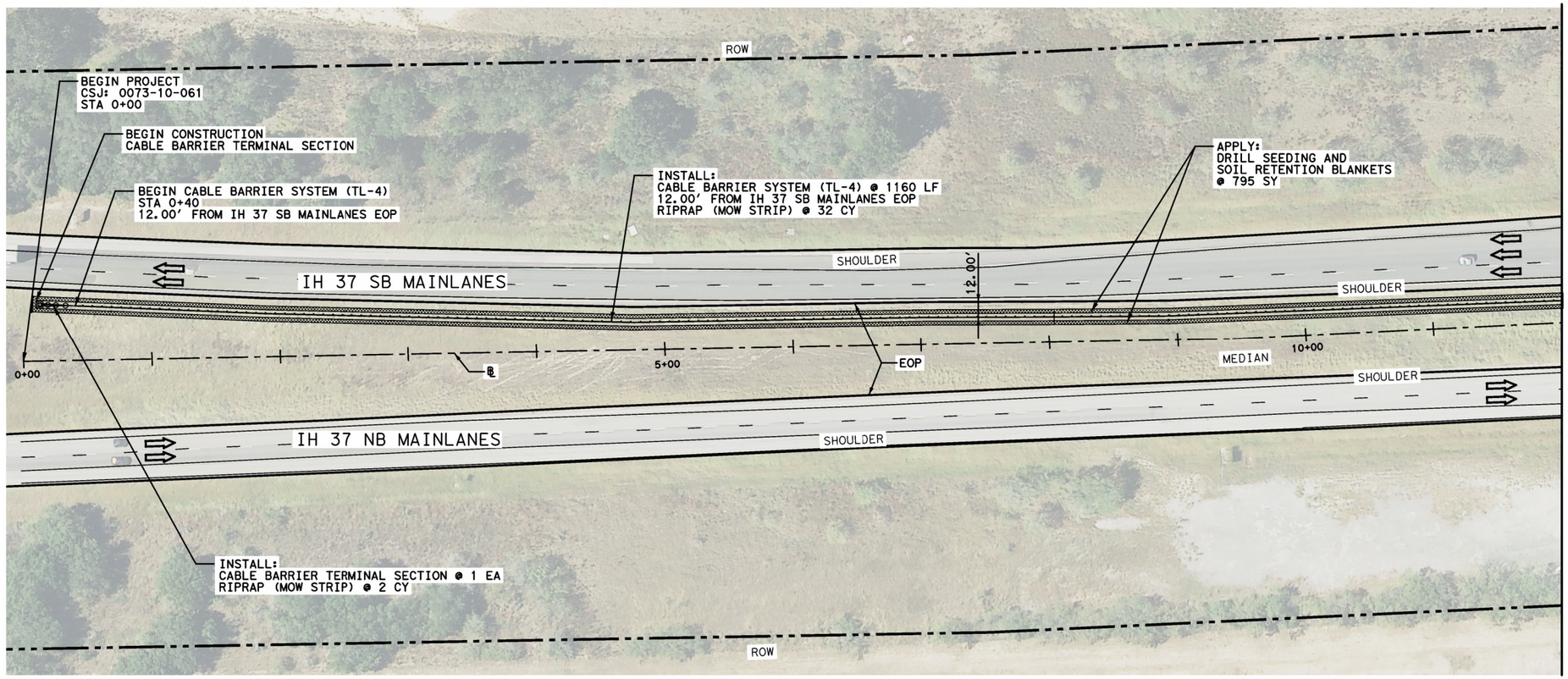

LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- ---P---P---P--- EXISTING OVERHEAD ELECTRICAL
- —— WL —— EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

NOTES:

1. CABLE BARRIERS ARE DESIGNED TO BE PLACED ON 6:1 OR FLATTER SIDE SLOPES. TOPOGRAPHICAL SURVEYING WAS NOT PERFORMED ON THIS PROJECT. CABLE BARRIER LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
2. CABLE BARRIERS SHALL BE OFFSET AT LEAST 12 FEET FROM EDGE OF PAVEMENT AS SHOWN.
3. ALL UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR MUST VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
4. STATIONING IS FOR REFERENCE ONLY, NOT TRUE INDICATION OF ROADWAY ALIGNMENT.
5. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS SHOWN.
6. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
7. DRILL SEEDING SHALL BE APPLIED AT A MINIMUM OF 3.00 FEET EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6.00 FEET.

SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	795
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	795
VEGETATIVE WATERING	168	6001	MG	12
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	795
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	34
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1160
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1

STATE OF TEXAS
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101286
PROFESSIONAL LICENSED ENGINEER

CHARLES R. STEVENS, JR., P.E. — 1/18/2023 DATE

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TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160 PHONE: (713) 828-4742
Houston, TX. 77095

IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 1 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		75
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
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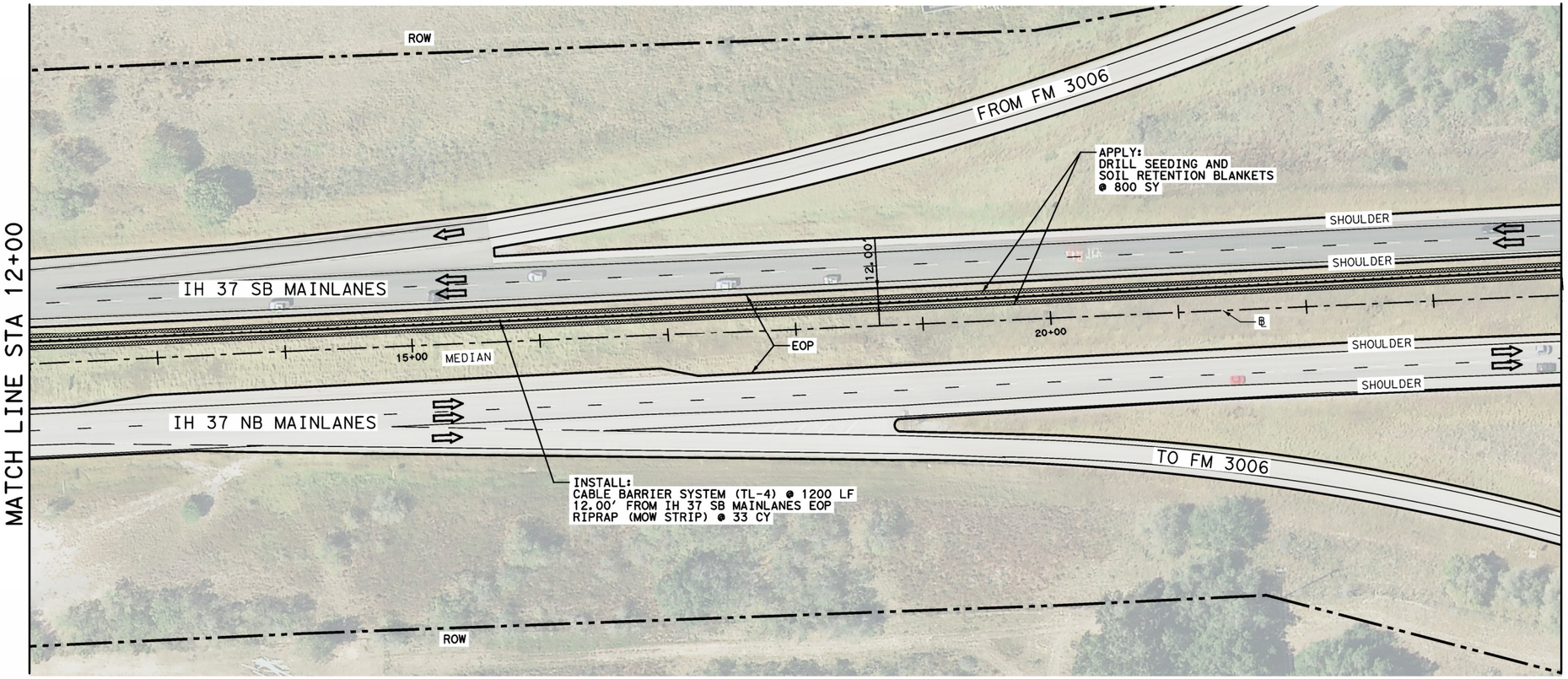

LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- WL — EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

NOTES:

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7. DRILL SEEDING SHALL BE APPLIED AT A MINIMUM OF 3.00 FEET EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6.00 FEET.

SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	800
VEGETATIVE WATERING	168	6001	MG	13
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	33
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0

STATE OF TEXAS
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CHARLES R. STEVENS, JR., P.E. — 1/18/2023 DATE

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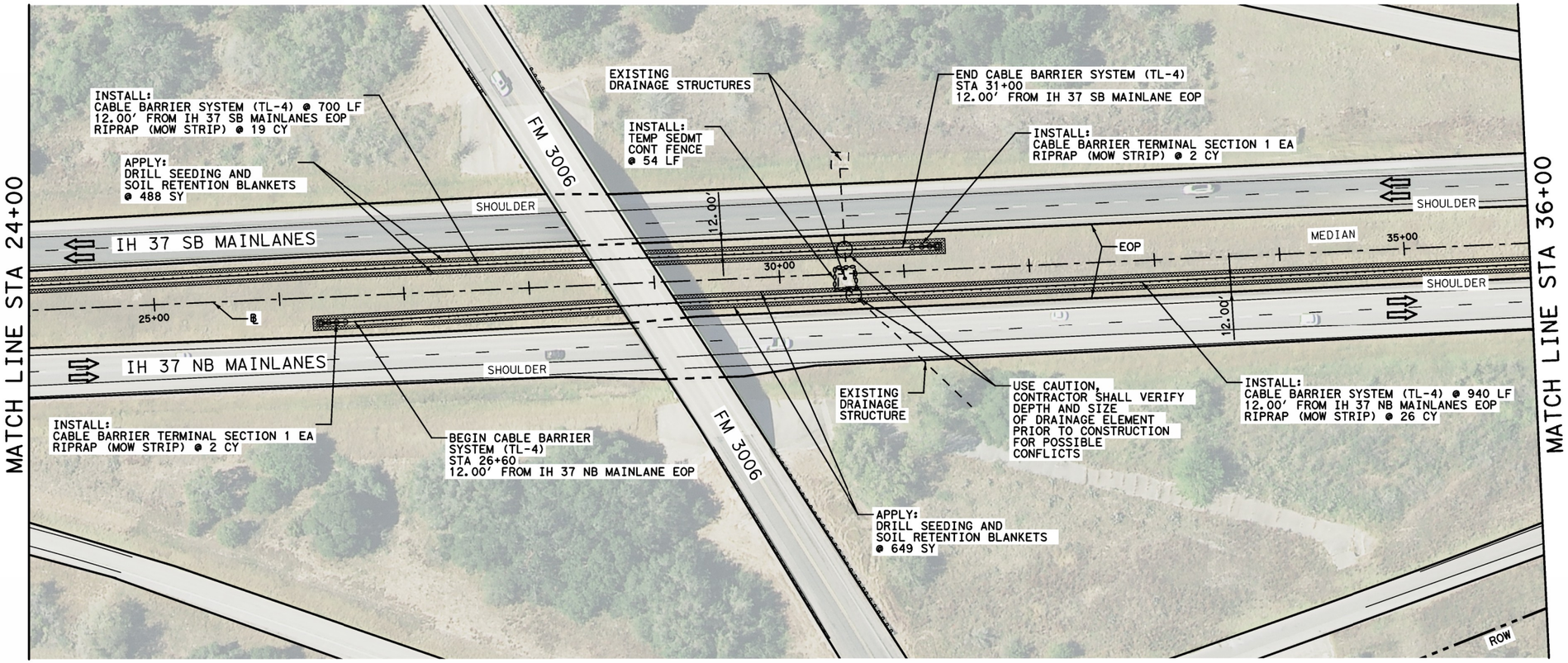
Houston, TX. 77095

IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 2 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		76
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
...\PROP*CABLE BARRIER1*Sheet2a.dgn



LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

NOTES:

1. CABLE BARRIERS ARE DESIGNED TO BE PLACED ON 6:1 OR FLATTER SIDE SLOPES. TOPOGRAPHICAL SURVEYING WAS NOT PERFORMED ON THIS PROJECT. CABLE BARRIER LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
2. CABLE BARRIERS SHALL BE OFFSET AT LEAST 12 FEET FROM EDGE OF PAVEMENT AS SHOWN.
3. ALL UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR MUST VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
4. STATIONING IS FOR REFERENCE ONLY, NOT TRUE INDICATION OF ROADWAY ALIGNMENT.
5. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS SHOWN.
6. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
7. DRILL SEEDING SHALL BE APPLIED AT A MINIMUM OF 3.00 FEET EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6.00 FEET.

SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	1137
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	1137
VEGETATIVE WATERING	168	6001	MG	18
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	1137
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	49
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	54
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	54
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1640
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	2

STATE OF TEXAS
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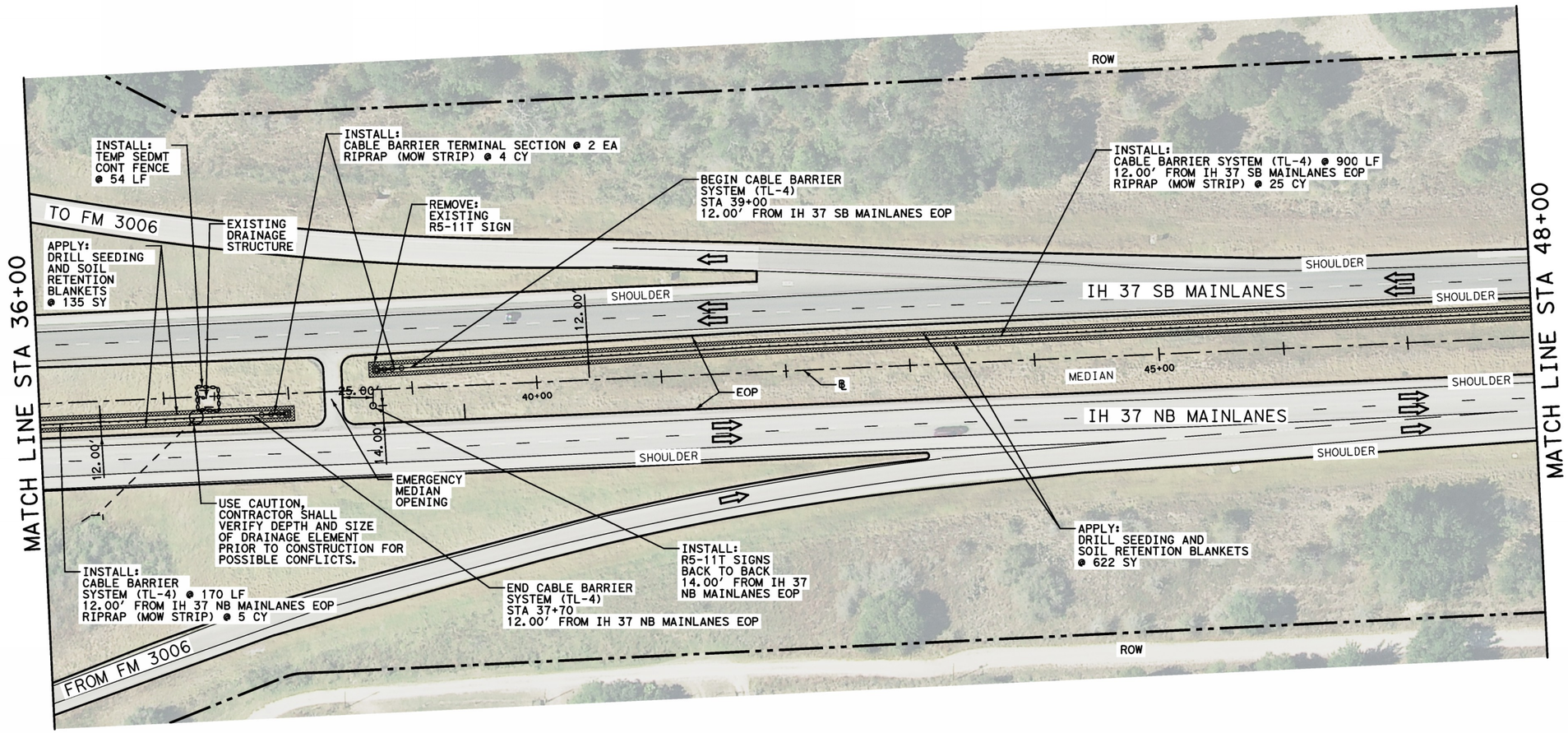
Houston, TX. 77095

IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 3 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		77
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
...\PROP*CABLE BARRIER1*Sheet3a.dgn



LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- WL — EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

NOTES:

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7. DRILL SEEDING SHALL BE APPLIED AT A MINIMUM OF 3.00 FEET EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6.00 FEET.

SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	757
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	757
VEGETATIVE WATERING	168	6001	MG	12
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	757
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	34
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	54
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	54
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1070
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	2
IN SM RD SN SUP&AM TYS80(1)SA(T)	644	6030	EA	1
REMOVE SM RD SN SUP&AM	644	6076	EA	1

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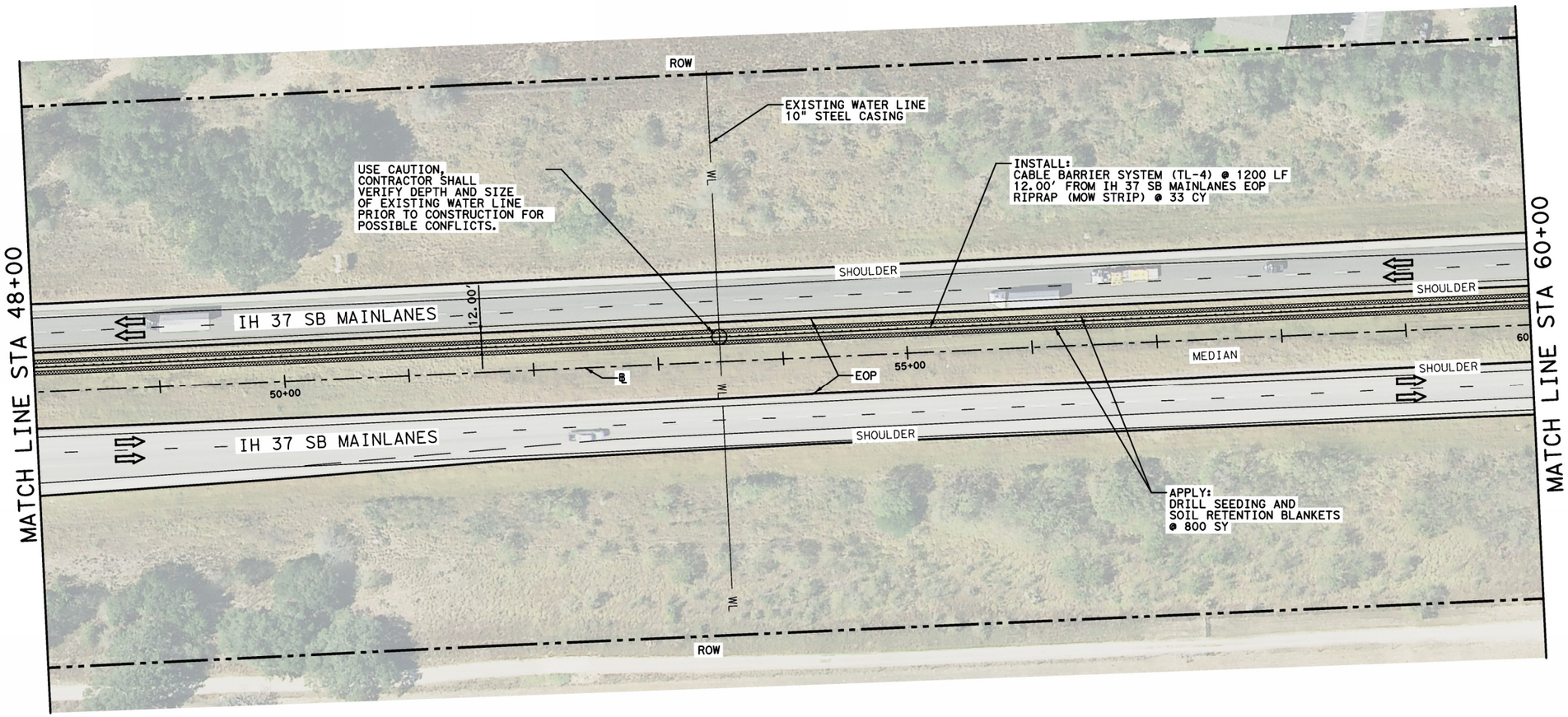
IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 4 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		78
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
...\PROP*CABLE BARRIER1*Sheet4a.dgn



LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- ---P---P--- EXISTING OVERHEAD ELECTRICAL
- WL EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	800
VEGETATIVE WATERING	168	6001	MG	13
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	33
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0

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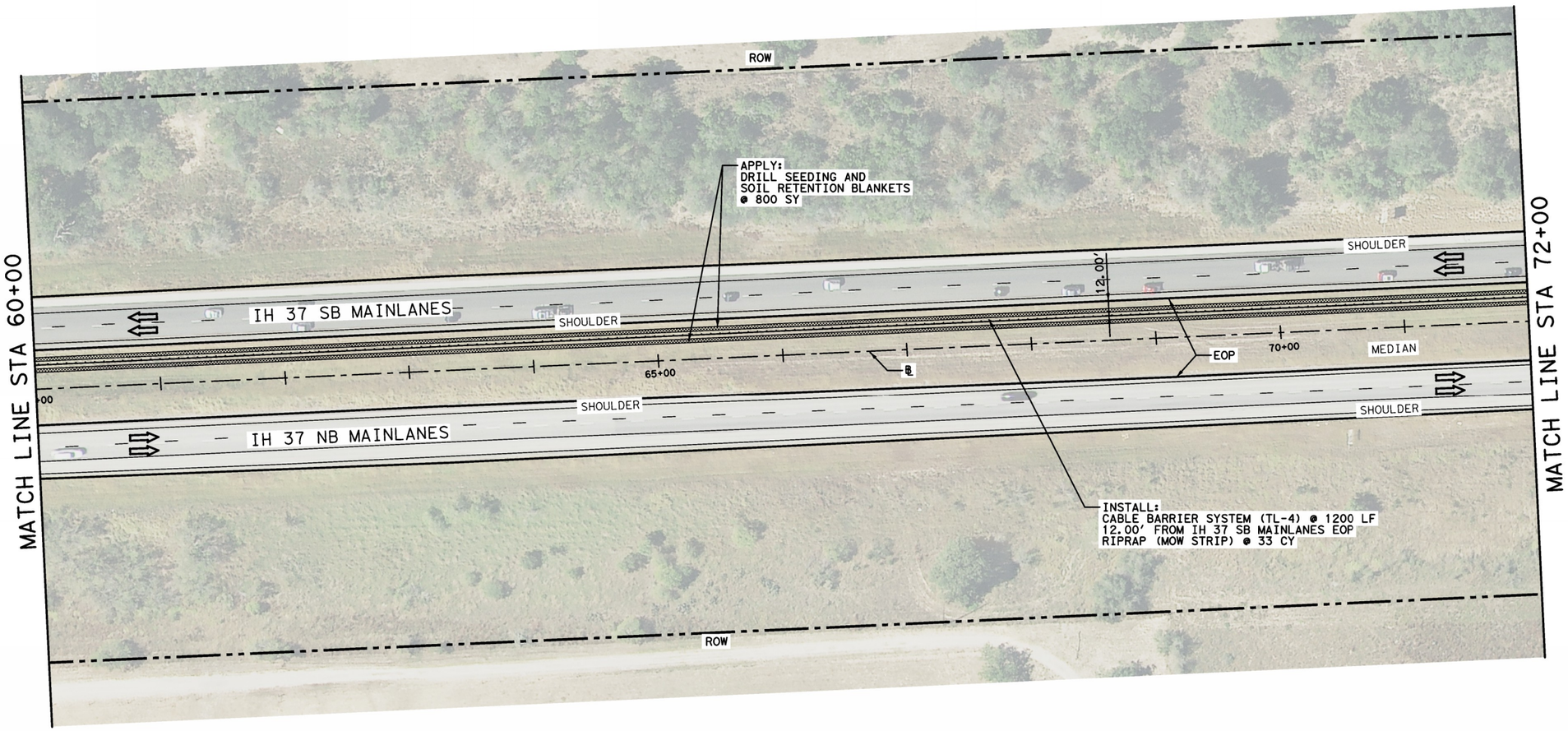
IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 5 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		79
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
...\PROP*CABLE BARRIER1*Sheet5a.dgn



LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	800
VEGETATIVE WATERING	168	6001	MG	13
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	33
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0

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CHARLES R. STEVENS, JR., P.E. — 1/18/2023 DATE

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IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 6 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		80
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
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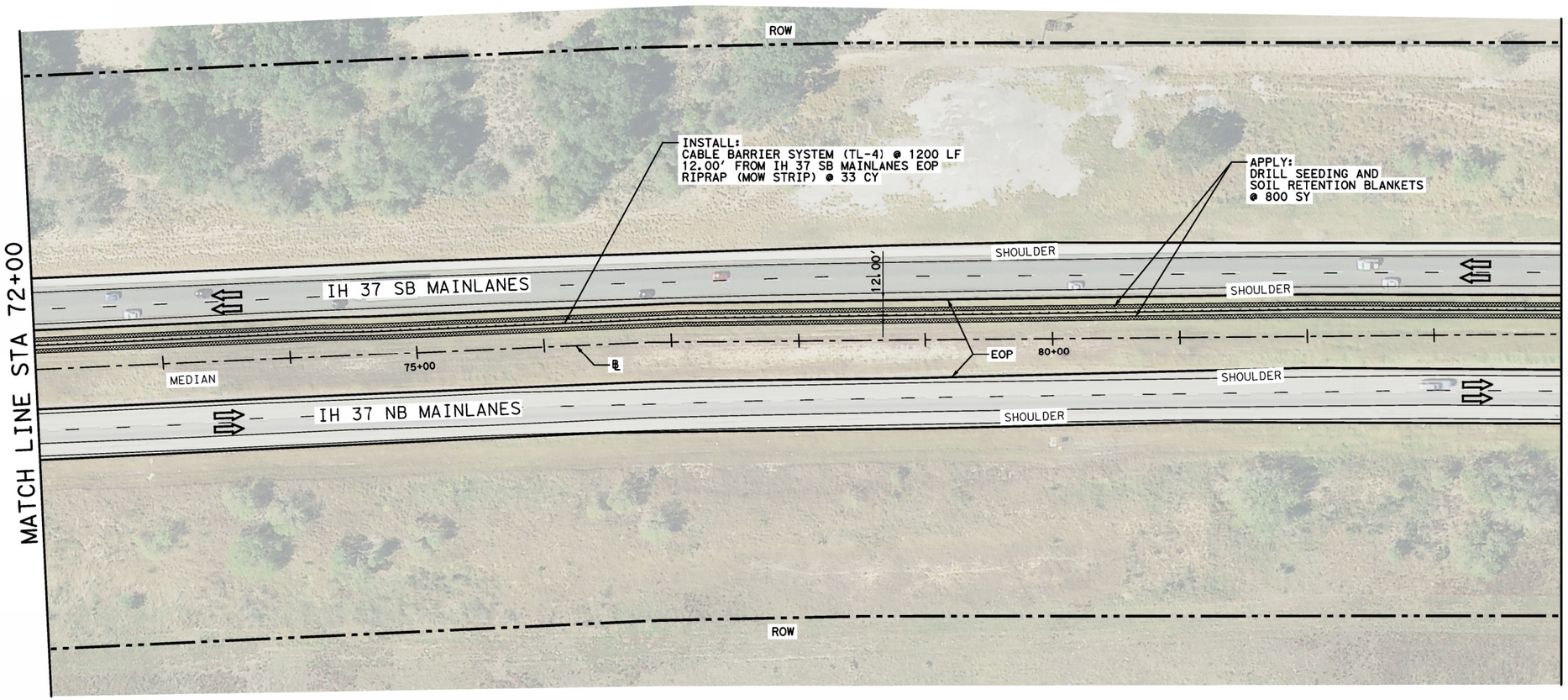

LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	800
VEGETATIVE WATERING	168	6001	MG	13
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	33
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0

STATE OF TEXAS
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IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 7 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		81
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
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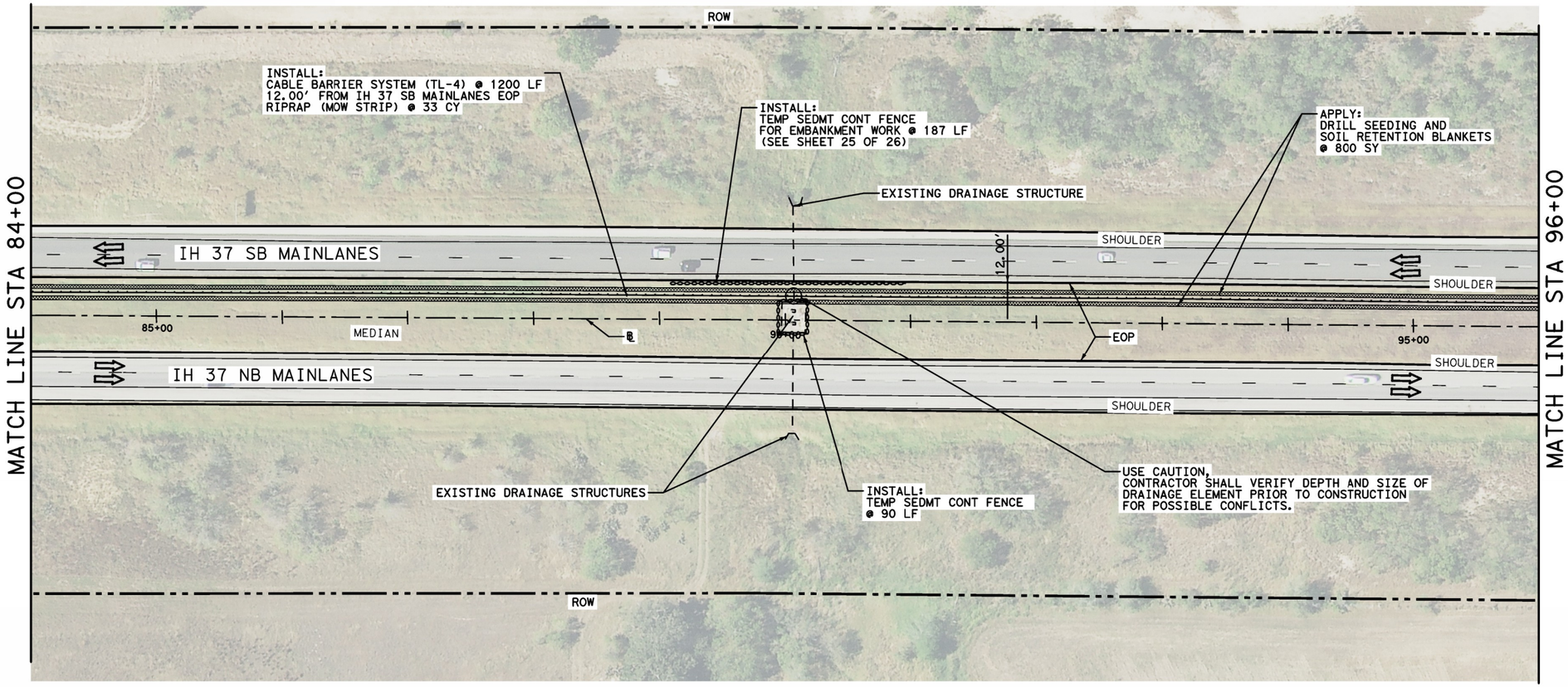

LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	800
VEGETATIVE WATERING	168	6001	MG	13
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	33
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	277
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	277
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0

STATE OF TEXAS
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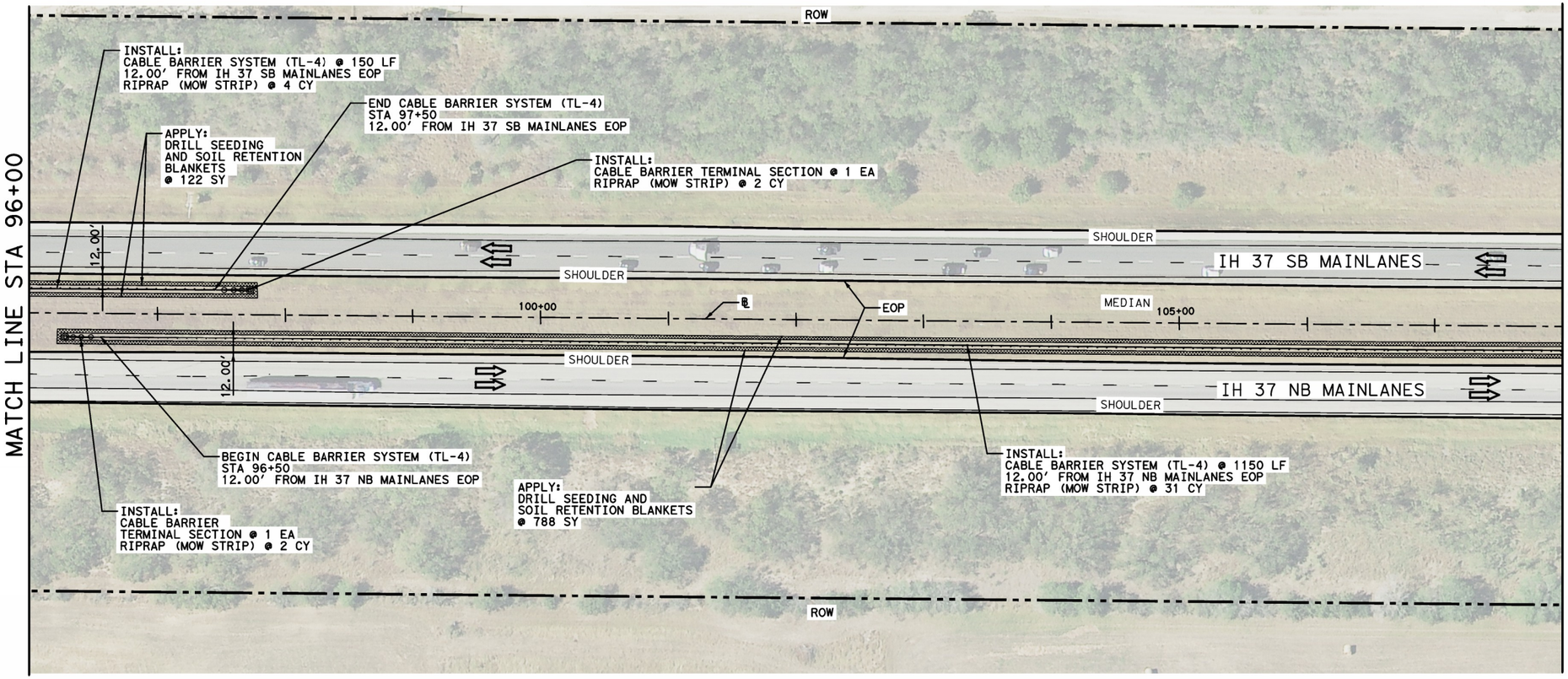
IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 8 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		82
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
...\PROP*CABLE BARRIER1*Sheet8a.dgn



LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- WL — EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM) (RURAL) (CLAY)	164	6035	SY	910
DRILL SEED (TEMP) (WARM OR COOL)	164	6051	SY	910
VEGETATIVE WATERING	168	6001	MG	14
SOIL RETENTION BLANKETS (CL 1) (TY A)	169	6001	SY	910
RIPRAP (CL A) (MOW STRIP) (3 IN)	432	6066	CY	39
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1300
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	2

STATE OF TEXAS
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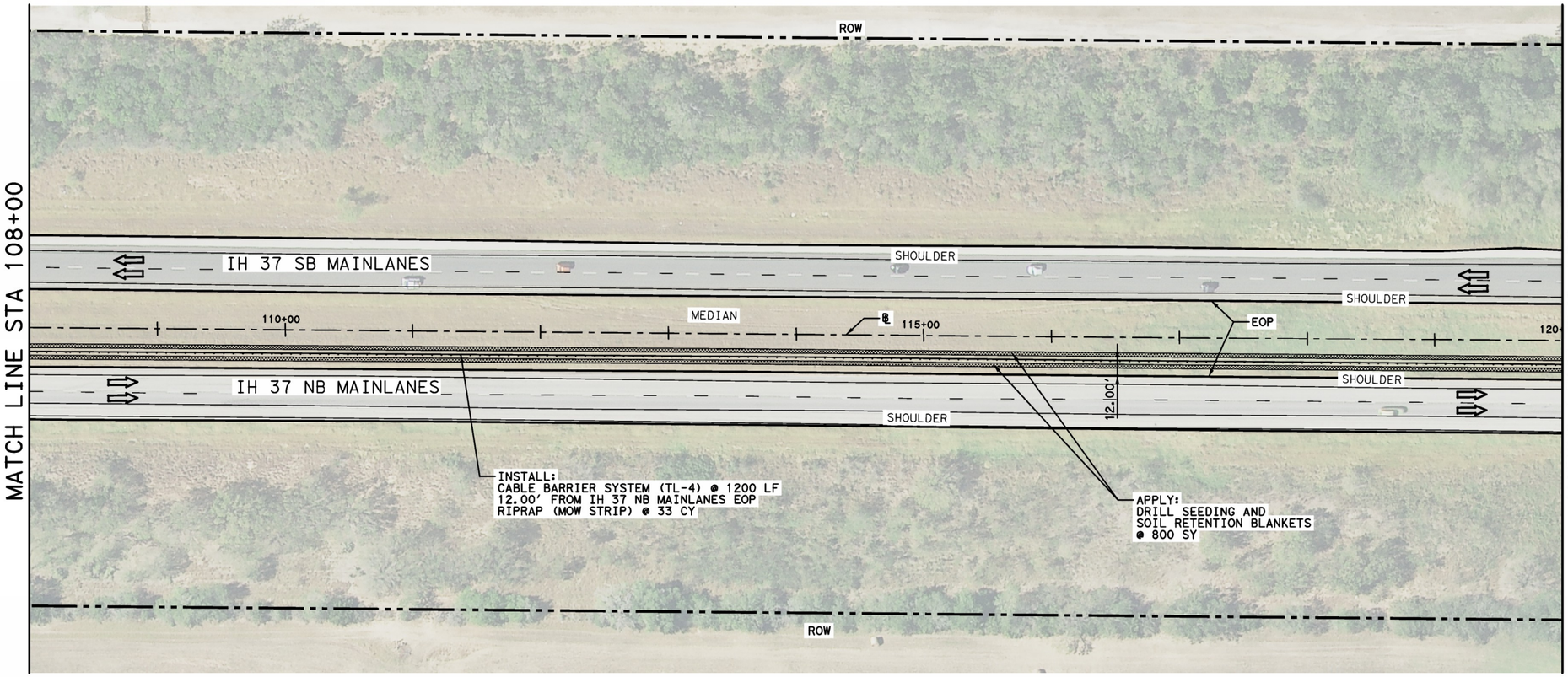
Houston, TX. 77095

IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 9 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		83
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
...\PROP*CABLE BARRIER1*Sheet9a.dgn



MATCH LINE STA 108+00

MATCH LINE STA 120+00

LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

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6. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
7. DRILL SEEDING SHALL BE APPLIED AT A MINIMUM OF 3.00 FEET EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6.00 FEET.

SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	800
VEGETATIVE WATERING	168	6001	MG	13
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	33
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0

STATE OF TEXAS
CHARLES R. STEVENS, JR.
101286
LICENSED PROFESSIONAL ENGINEER

CHARLES R. STEVENS, JR., P.E. — 1/18/2023 DATE

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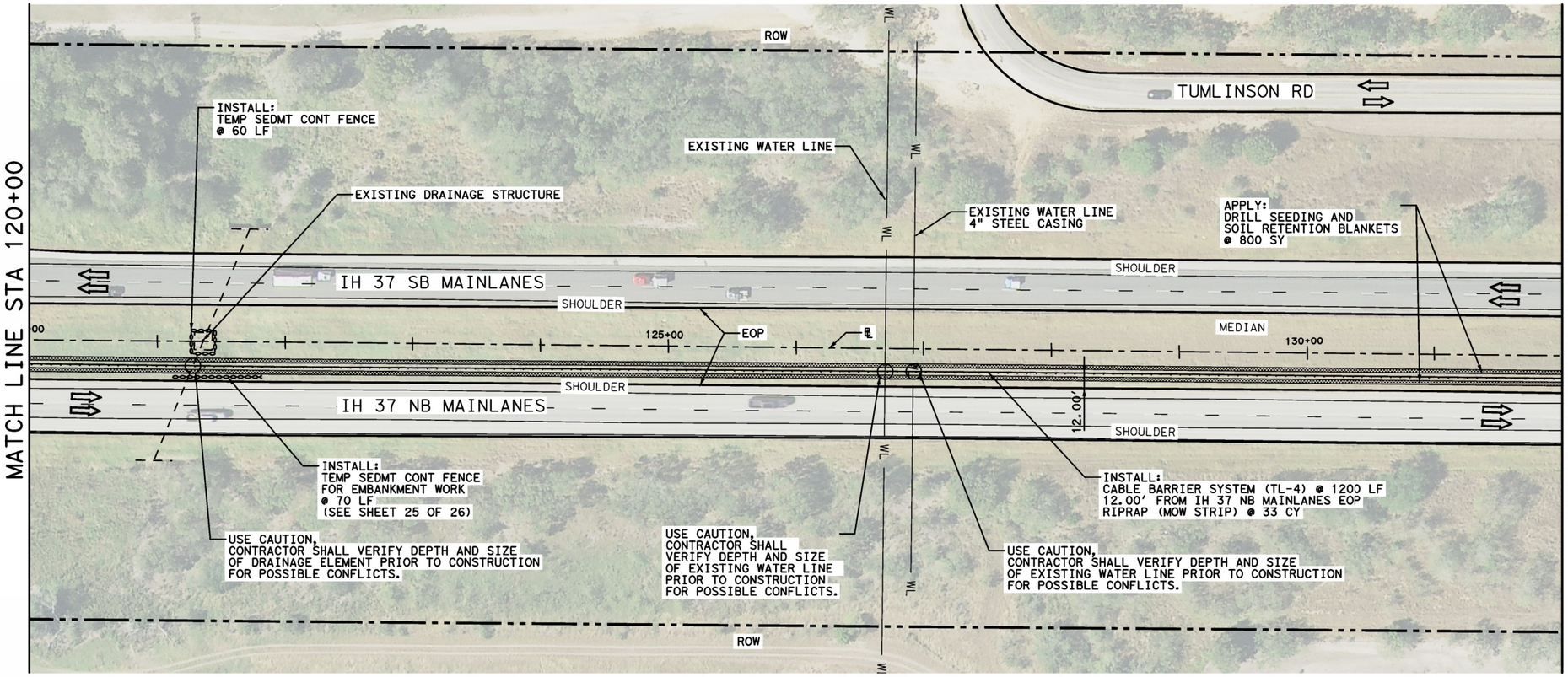
Houston, TX. 77095

IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 10 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		84
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
...\PROP*CABLE BARRIER1*Sheet10a.dgn



LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

NOTES:

1. CABLE BARRIERS ARE DESIGNED TO BE PLACED ON 6:1 OR FLATTER SIDE SLOPES. TOPOGRAPHICAL SURVEYING WAS NOT PERFORMED ON THIS PROJECT. CABLE BARRIER LOCATIONS MAY BE ADJUSTED AS NEEDED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
2. CABLE BARRIERS SHALL BE OFFSET AT LEAST 12 FEET FROM EDGE OF PAVEMENT AS SHOWN.
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7. DRILL SEEDING SHALL BE APPLIED AT A MINIMUM OF 3.00 FEET EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6.00 FEET.

SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	800
VEGETATIVE WATERING	168	6001	MG	13
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	33
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	130
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	130
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0

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IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 11 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		85
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
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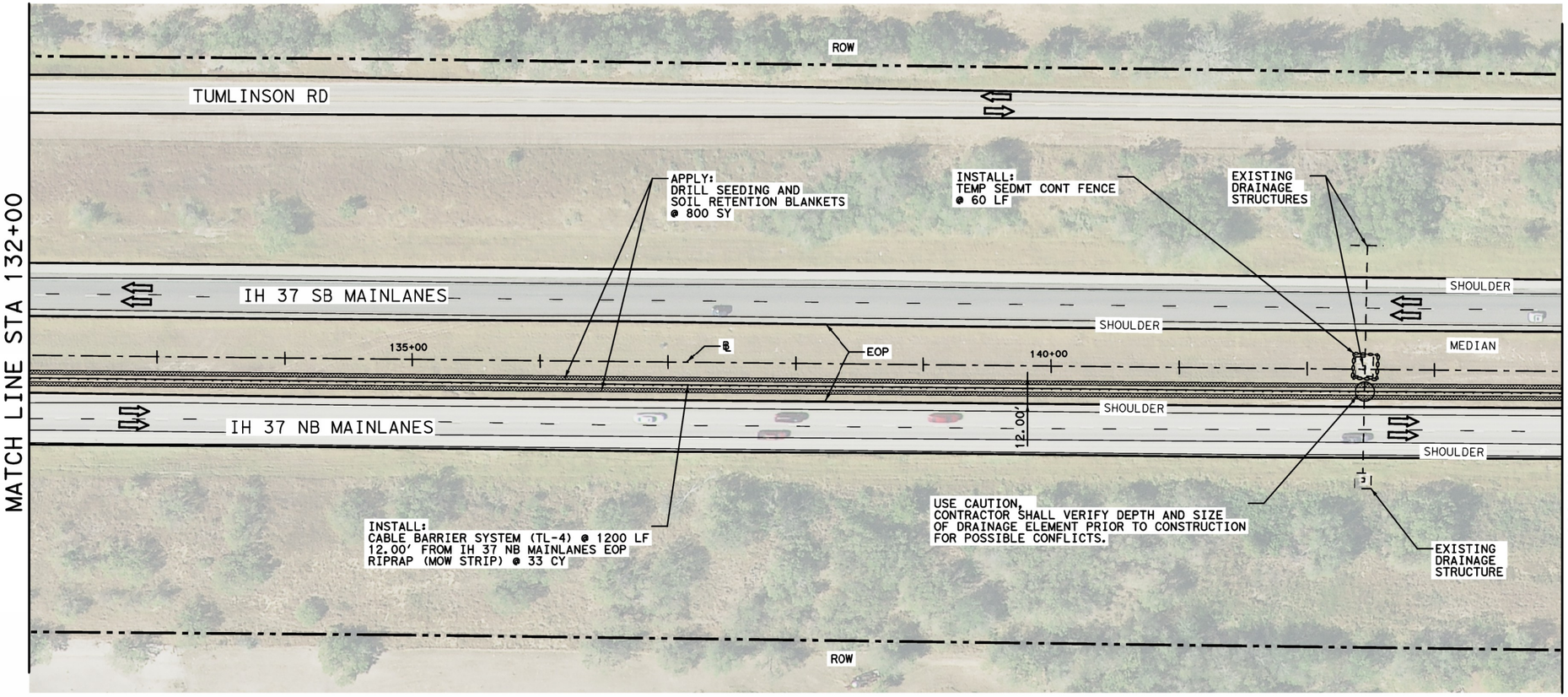

LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

NOTES:

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	800
VEGETATIVE WATERING	168	6001	MG	13
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	33
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	60
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	60
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0

STATE OF TEXAS
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IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 12 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		86
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
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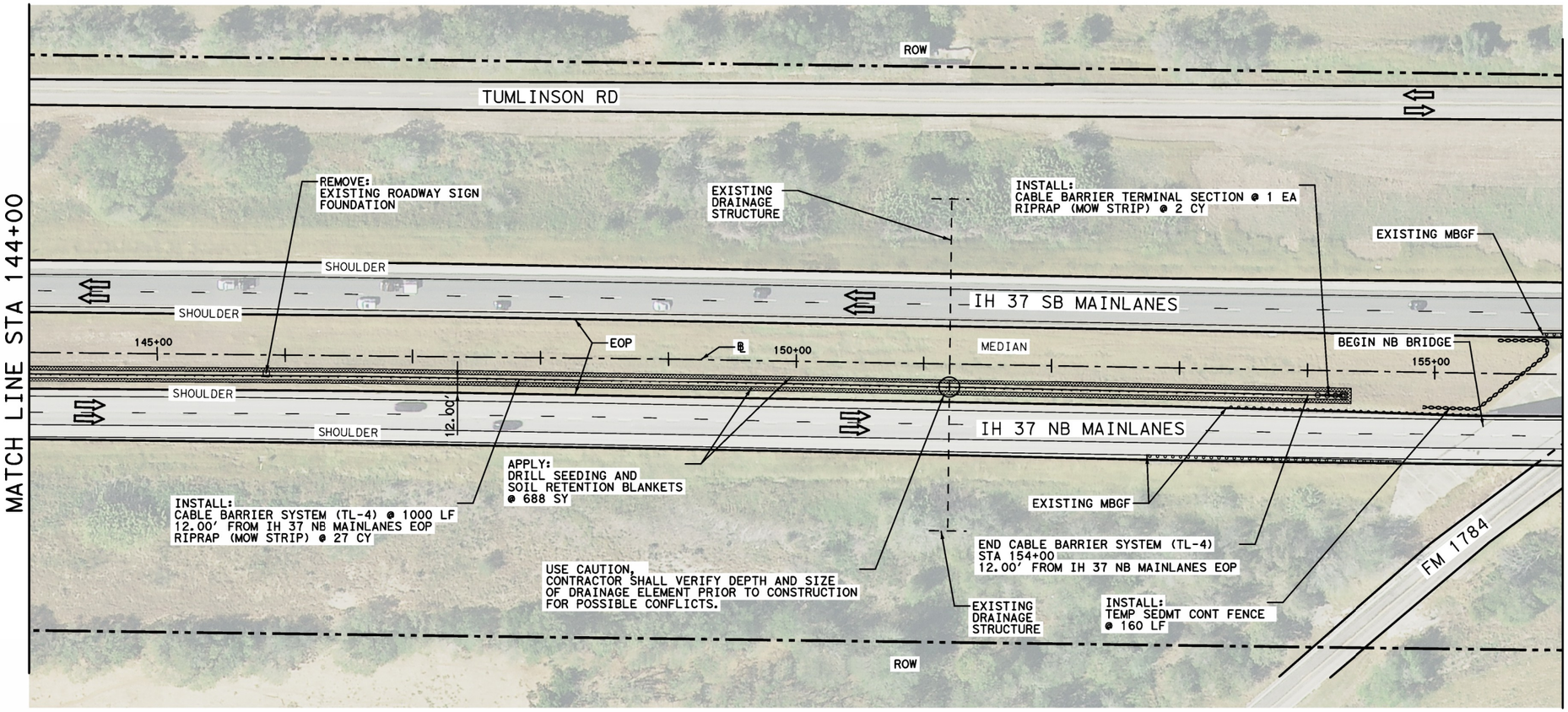

LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- WL — EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

NOTES:

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	688
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	688
VEGETATIVE WATERING	168	6001	MG	11
SOIL RETENTION BLANKETS (CL 1)(TY A)	164	6001	SY	688
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	29
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	160
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	160
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1000
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1
REMOVE SM RD SN SUP&AM	644	6076	EA	1

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IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 13 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		87
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
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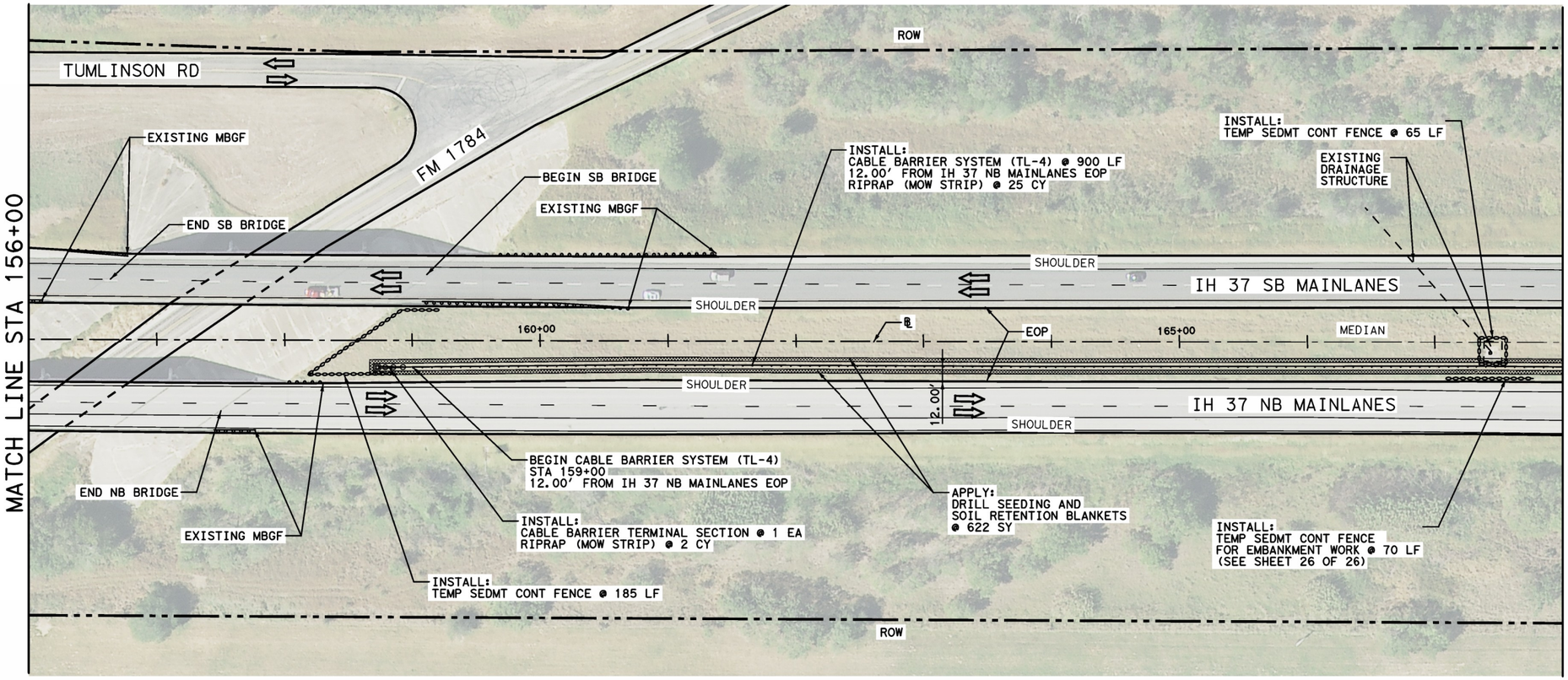

LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

NOTES:

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	622
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	622
VEGETATIVE WATERING	168	6001	MG	10
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	622
RIPRAP (CL A)(MOW STRIP) (3 IN)	432	6066	CY	27
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	320
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	320
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	900
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1

STATE OF TEXAS
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IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 14 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		88
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
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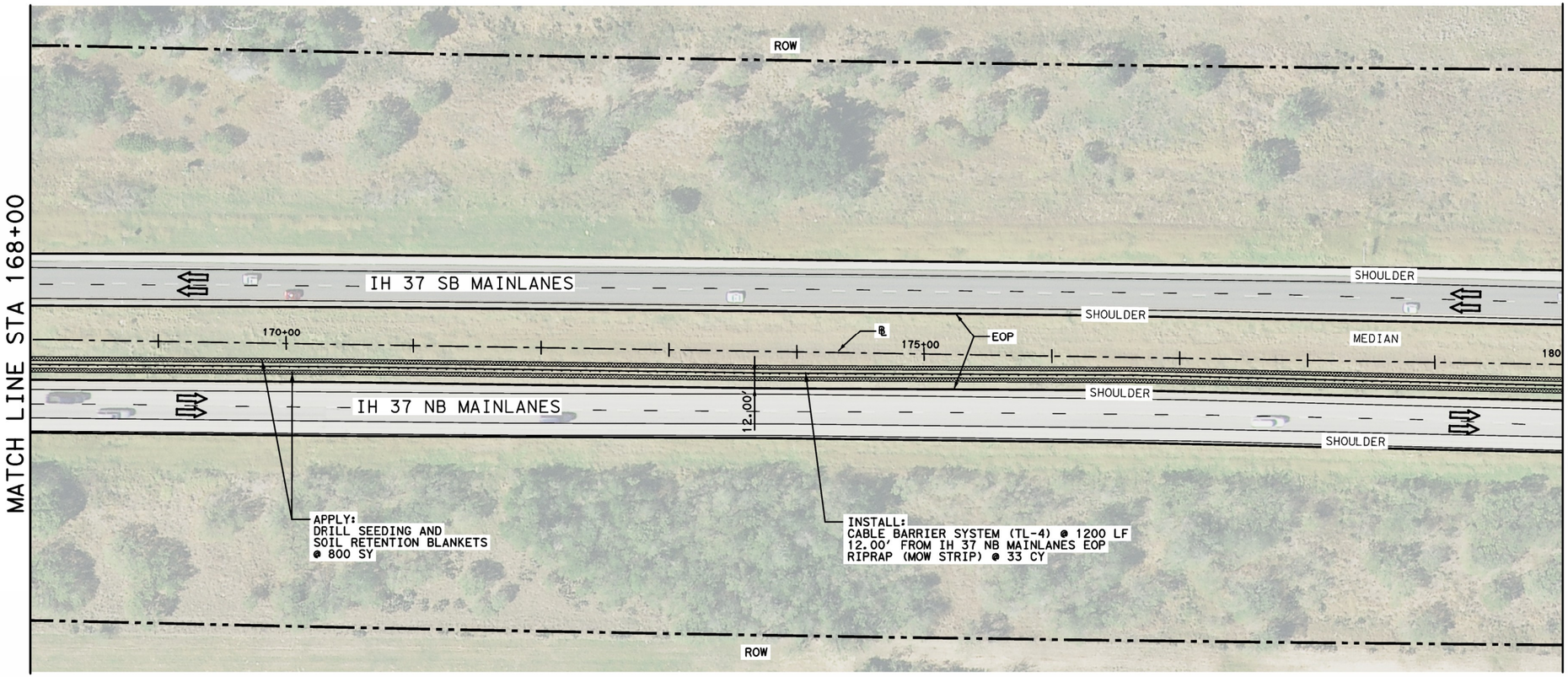

LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

NOTES:

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	800
VEGETATIVE WATERING	168	6001	MG	13
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	33
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0

STATE OF TEXAS
CHARLES R. STEVENS, JR.
101286
FOR THE LICENSED PROFESSIONAL ENGINEER

CHARLES R. STEVENS, JR., P.E. — 1/18/2023 DATE

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IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 15 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		89
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
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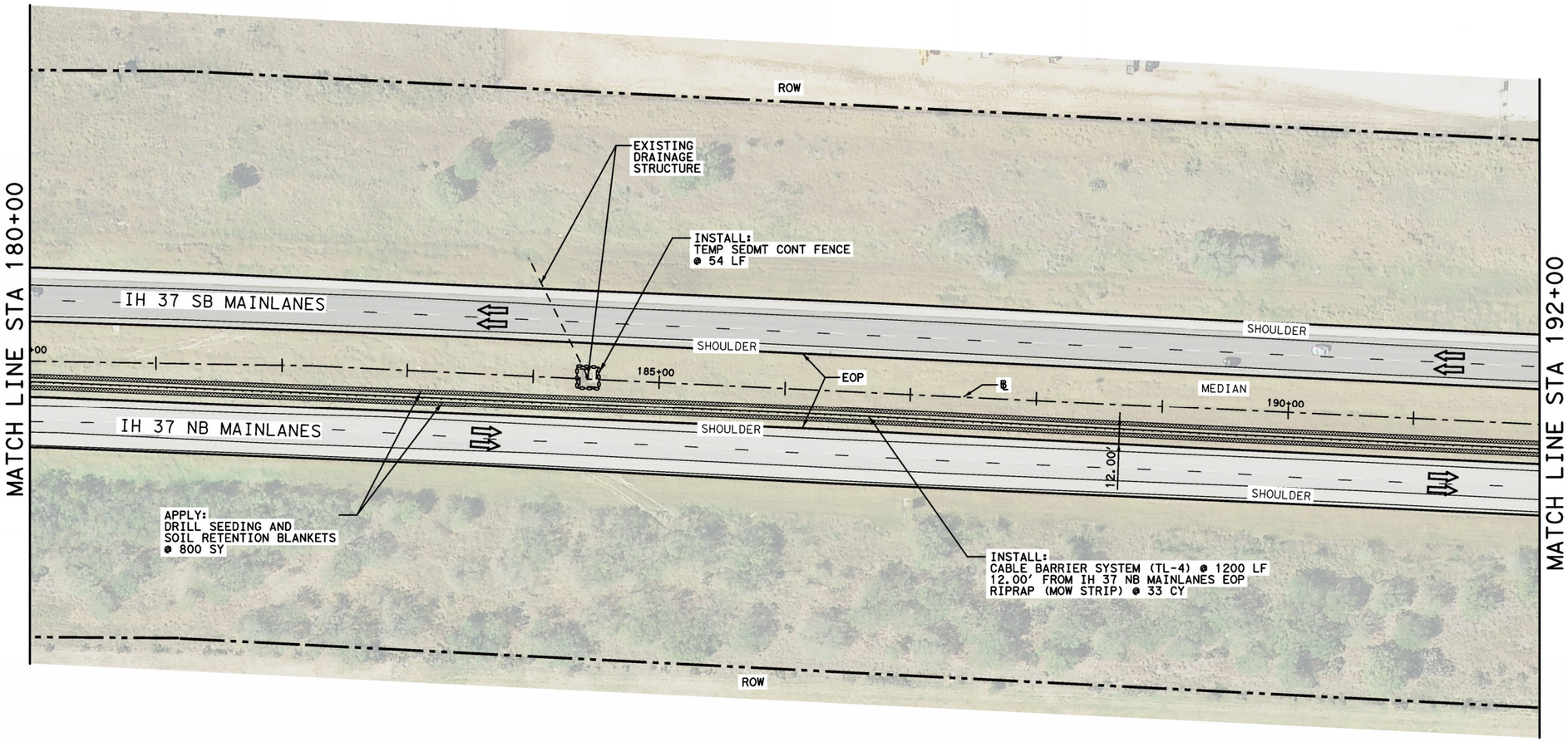

LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

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DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	800
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	800
VEGETATIVE WATERING	168	6001	MG	13
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	800
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	33
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	54
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	54
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1200
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0

STATE OF TEXAS
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CHARLES R. STEVENS, JR., P.E. — 1/18/2023 DATE

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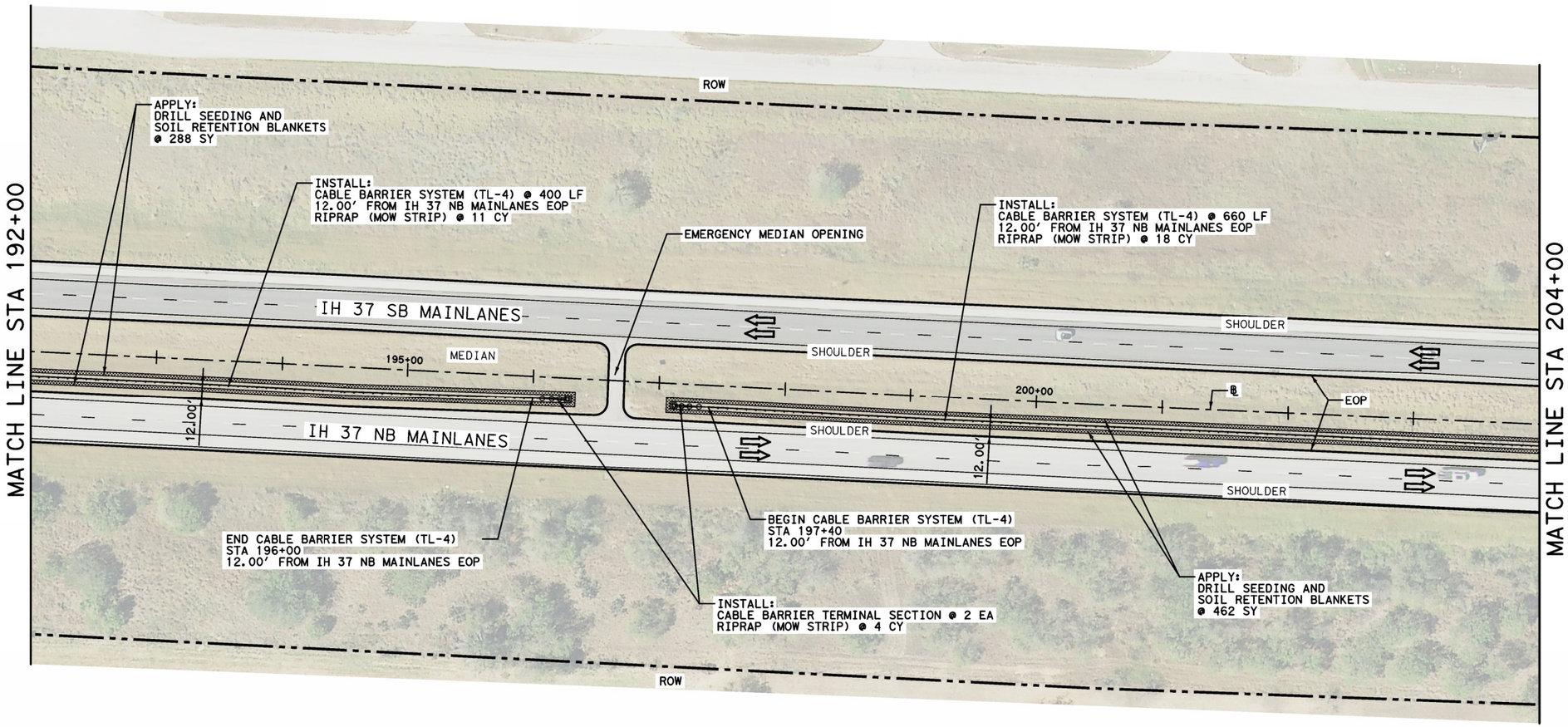
IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 16 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		90
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
...\PROP*CABLE BARRIER1*Sheet16a.dgn



LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- WL — EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	750
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	750
VEGETATIVE WATERING	168	6001	MG	12
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	750
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	33
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1060
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	2

STATE OF TEXAS
CHARLES R. STEVENS, JR.
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CHARLES R. STEVENS, JR., P.E. — 1/18/2023 DATE

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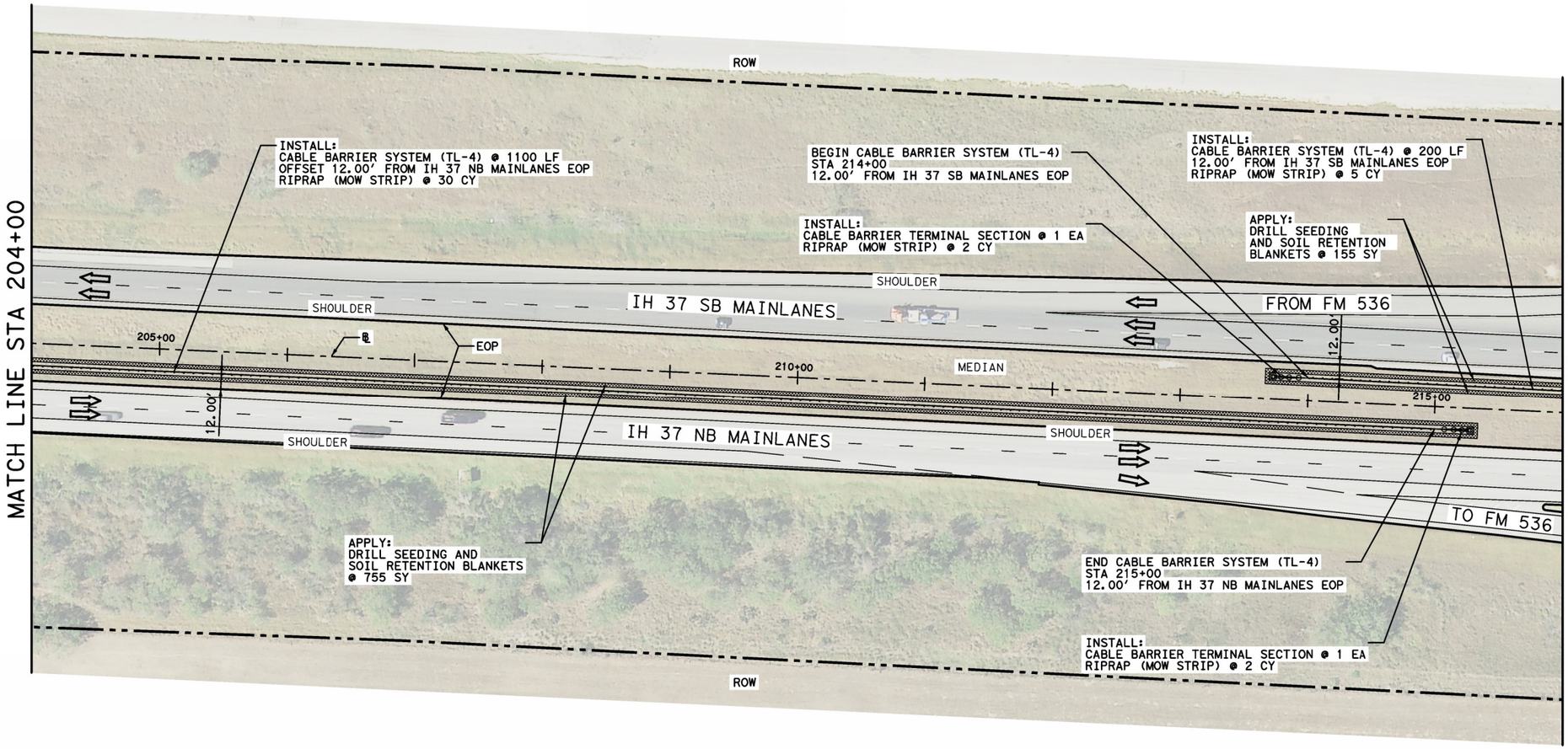
Houston, TX. 77095

IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 17 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		91
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
...\PROP*CABLE BARRIER1*Sheet17a.dgn



LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

NOTES:

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5. CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT CONTROL FENCE AS SHOWN.
6. MOW STRIP SHALL BE 36 INCHES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
7. DRILL SEEDING SHALL BE APPLIED AT A MINIMUM OF 3.00 FEET EITHER SIDE OF CABLE BARRIER MOW STRIP FOR A TOTAL WIDTH OF 6.00 FEET.

SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM) (RURAL) (CLAY)	164	6035	SY	910
DRILL SEED (TEMP) (WARM OR COOL)	164	6051	SY	910
VEGETATIVE WATERING	168	6001	MG	14
SOIL RETENTION BLANKETS (CL 1) (TY A)	169	6001	SY	910
RIPRAP (CL A) (MOW STRIP) (3 IN)	432	6066	CY	39
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1300
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	2

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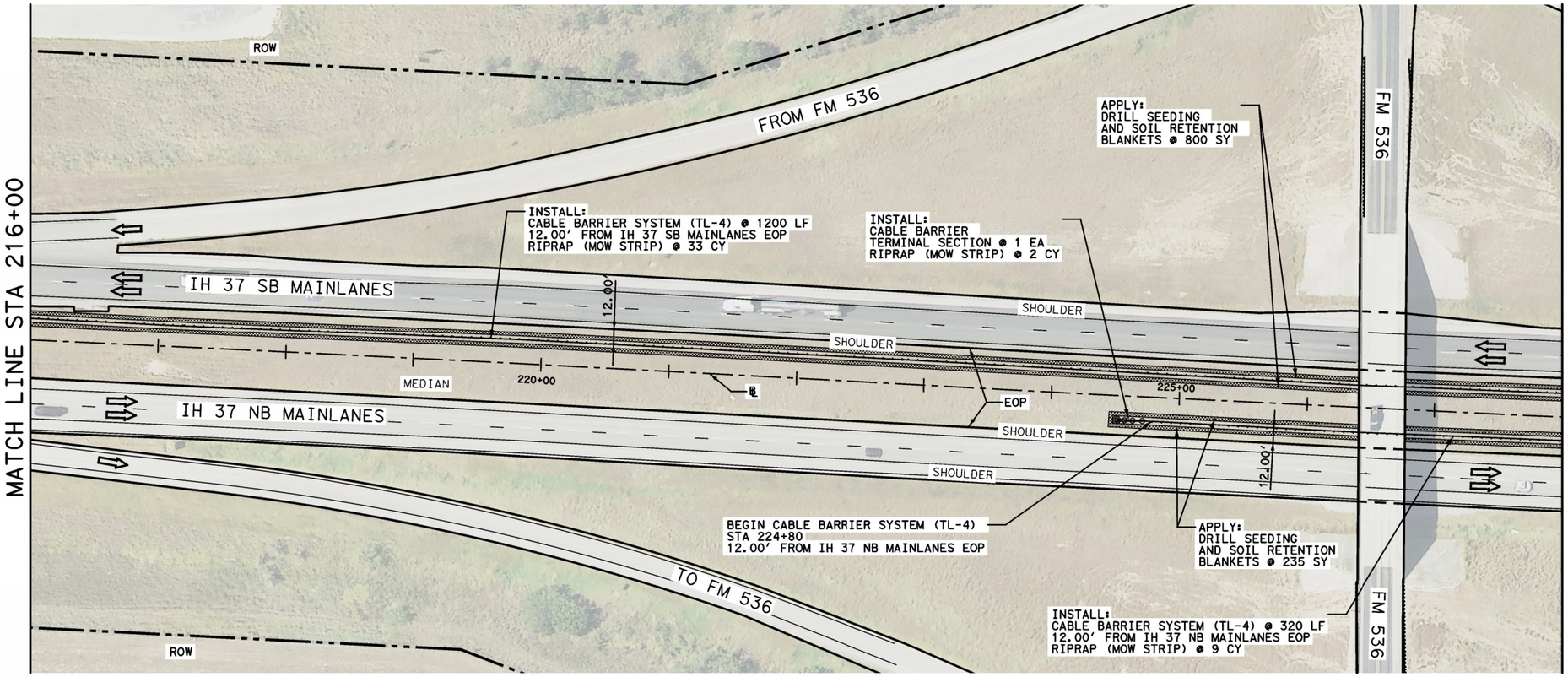
Houston, TX. 77095

IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 18 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		92
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
...\PROP*CABLE BARRIER1*Sheet18a.dgn



LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

NOTES:

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	1035
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	1035
VEGETATIVE WATERING	168	6001	MG	16
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	1035
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	44
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1520
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1

STATE OF TEXAS
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IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 19 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		93
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
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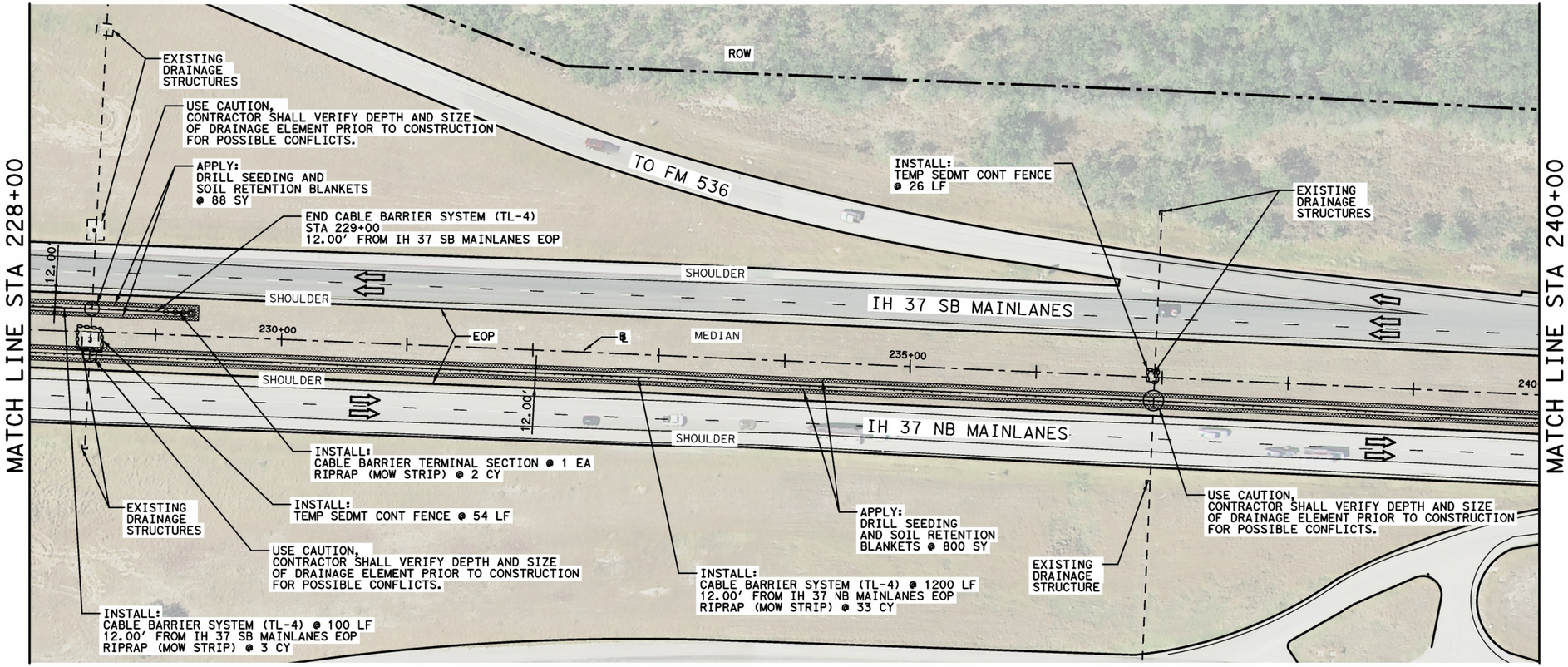

LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- WL — EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	888
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	888
VEGETATIVE WATERING	168	6001	MG	14
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	888
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	38
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	80
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	80
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1300
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1

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IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 20 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		94
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
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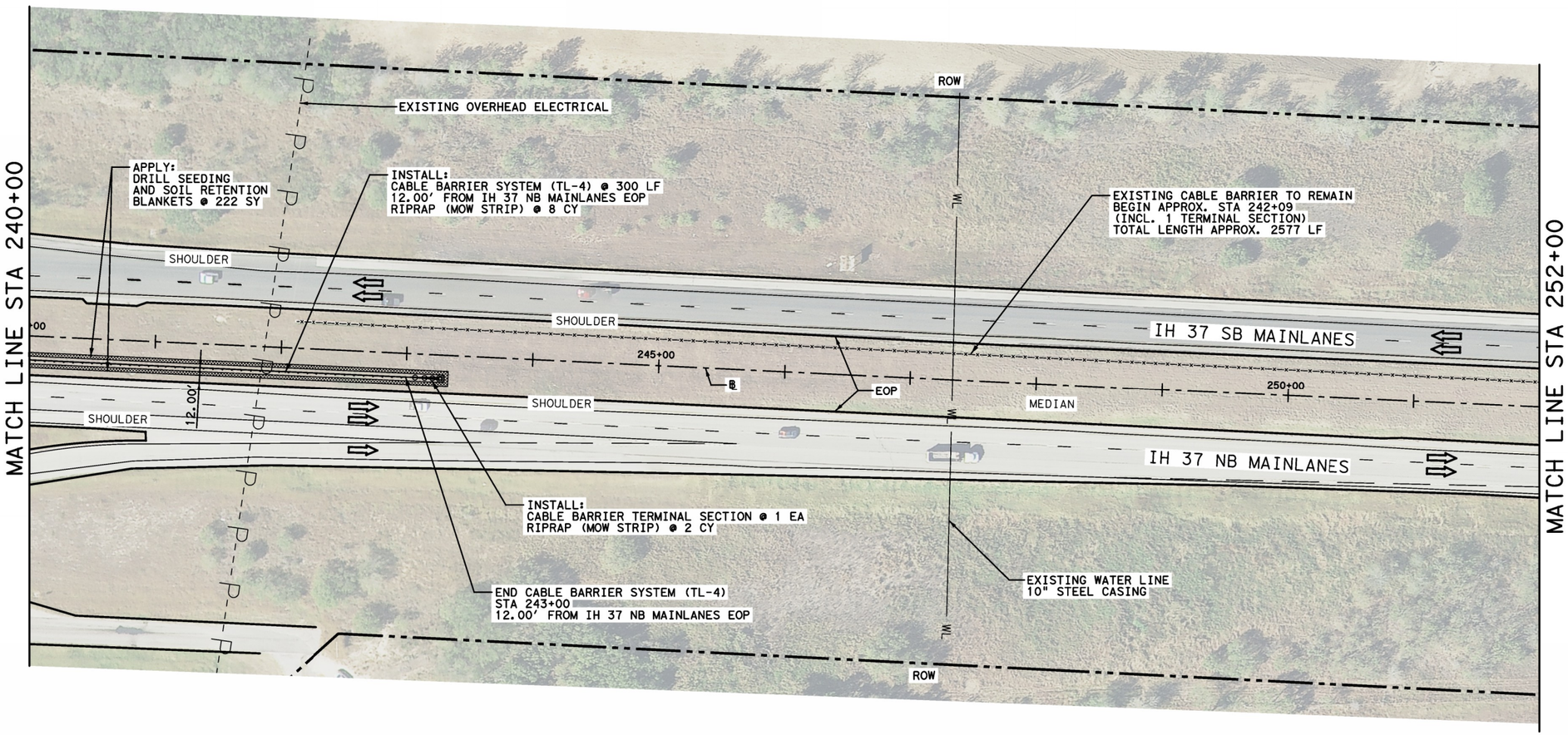

LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM) (RURAL) (CLAY)	164	6035	SY	222
DRILL SEED (TEMP) (WARM OR COOL)	164	6051	SY	222
VEGETATIVE WATERING	168	6001	MG	3
SOIL RETENTION BLANKETS (CL 1) (TY A)	169	6001	SY	222
RIPRAP (CL A) (MOW STRIP) (3 IN)	432	6066	CY	10
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	300
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1

STATE OF TEXAS
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Houston, TX. 77095

IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 21 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		95
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
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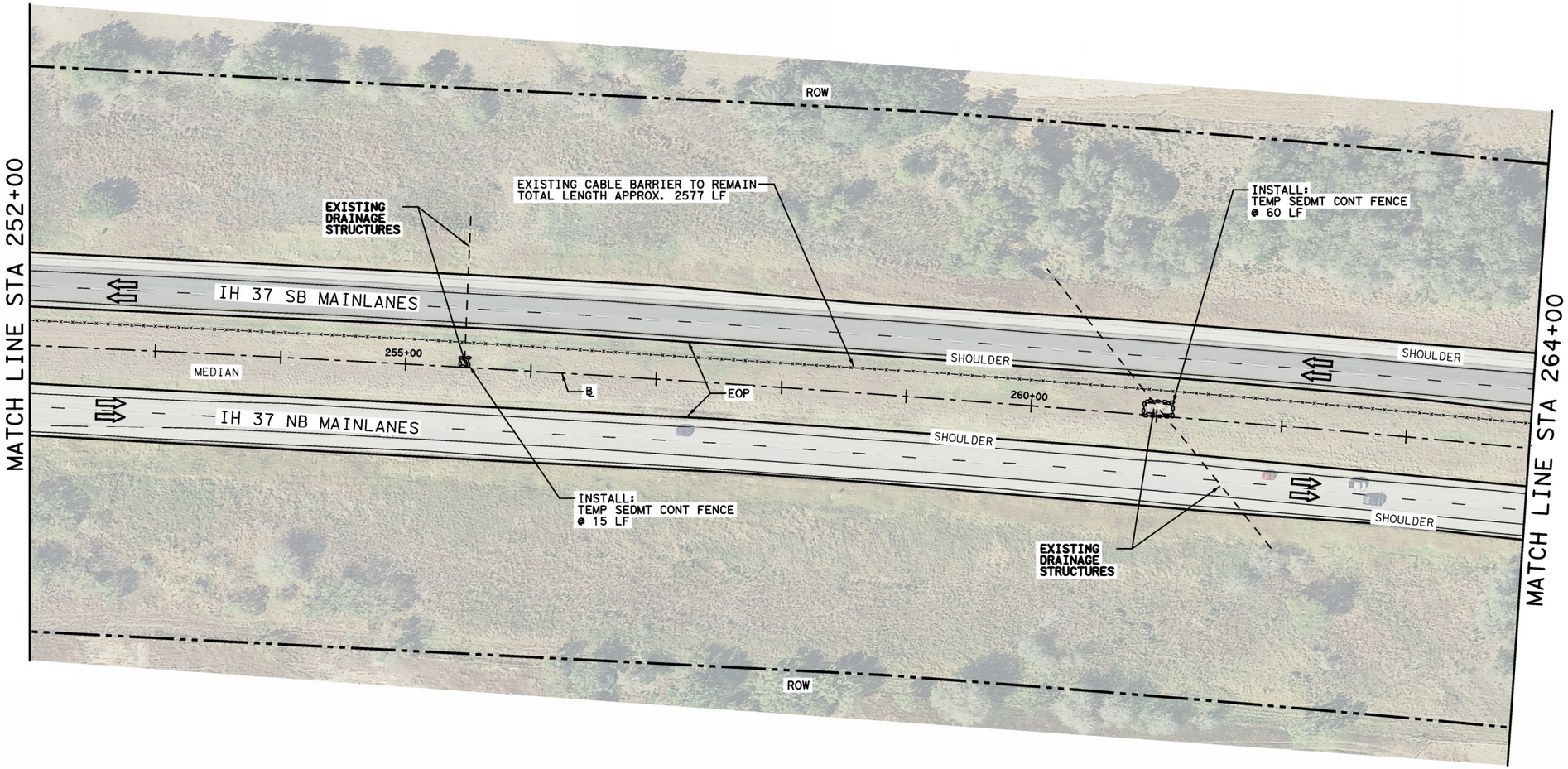

LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- WL — EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	0
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	0
VEGETATIVE WATERING	168	6001	MG	0
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	0
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	0
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	75
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	75
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	0
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	0

STATE OF TEXAS
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IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 22 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		96
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
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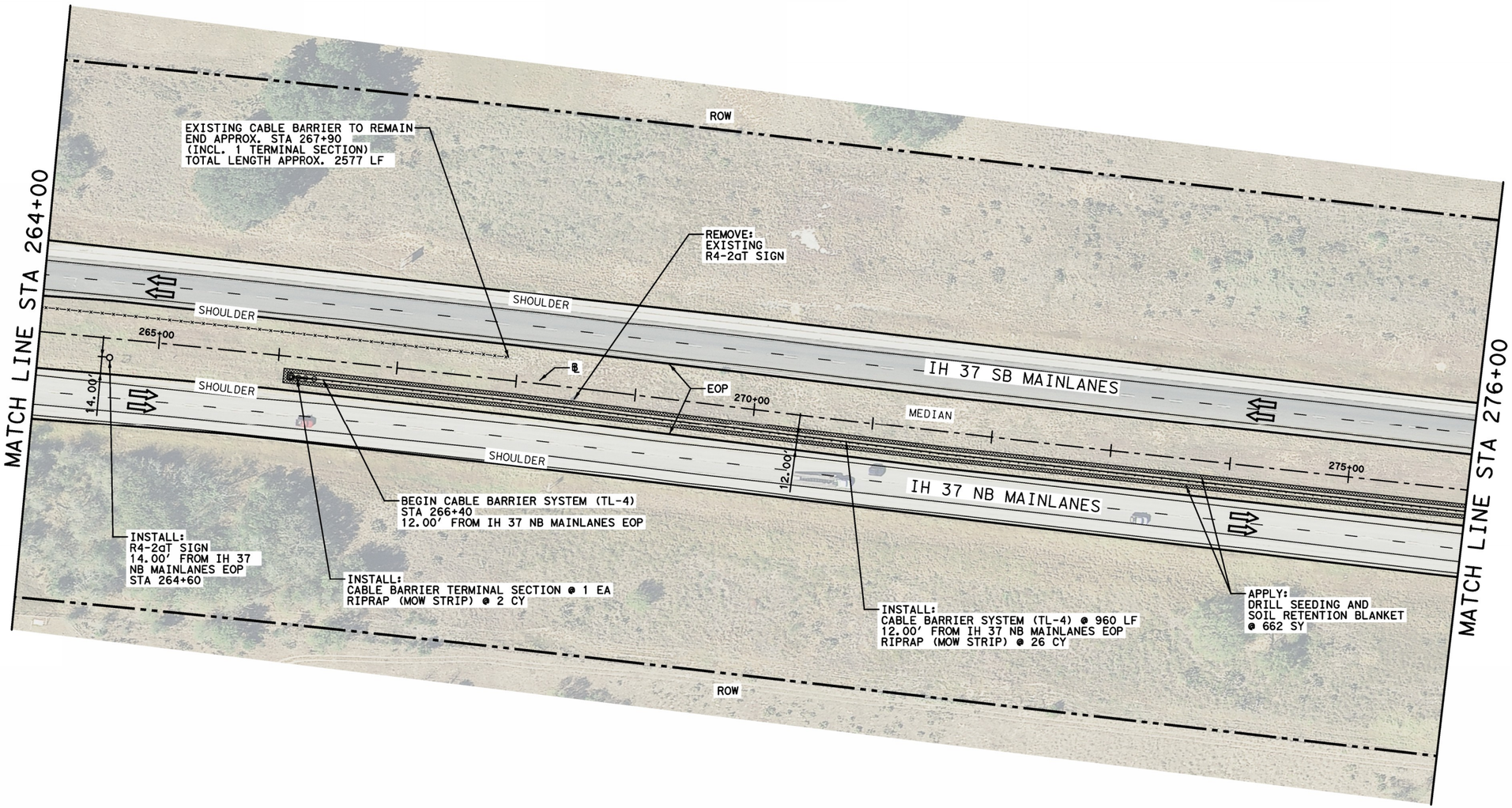

LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	662
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	662
VEGETATIVE WATERING	168	6001	MG	10
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	662
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	28
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	960
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1
IN SM RD SN SUP&AM TYS80(1)SA(T)	644	6030	EA	1
REMOVE SM RD SN SUP&AM	644	6076	EA	1

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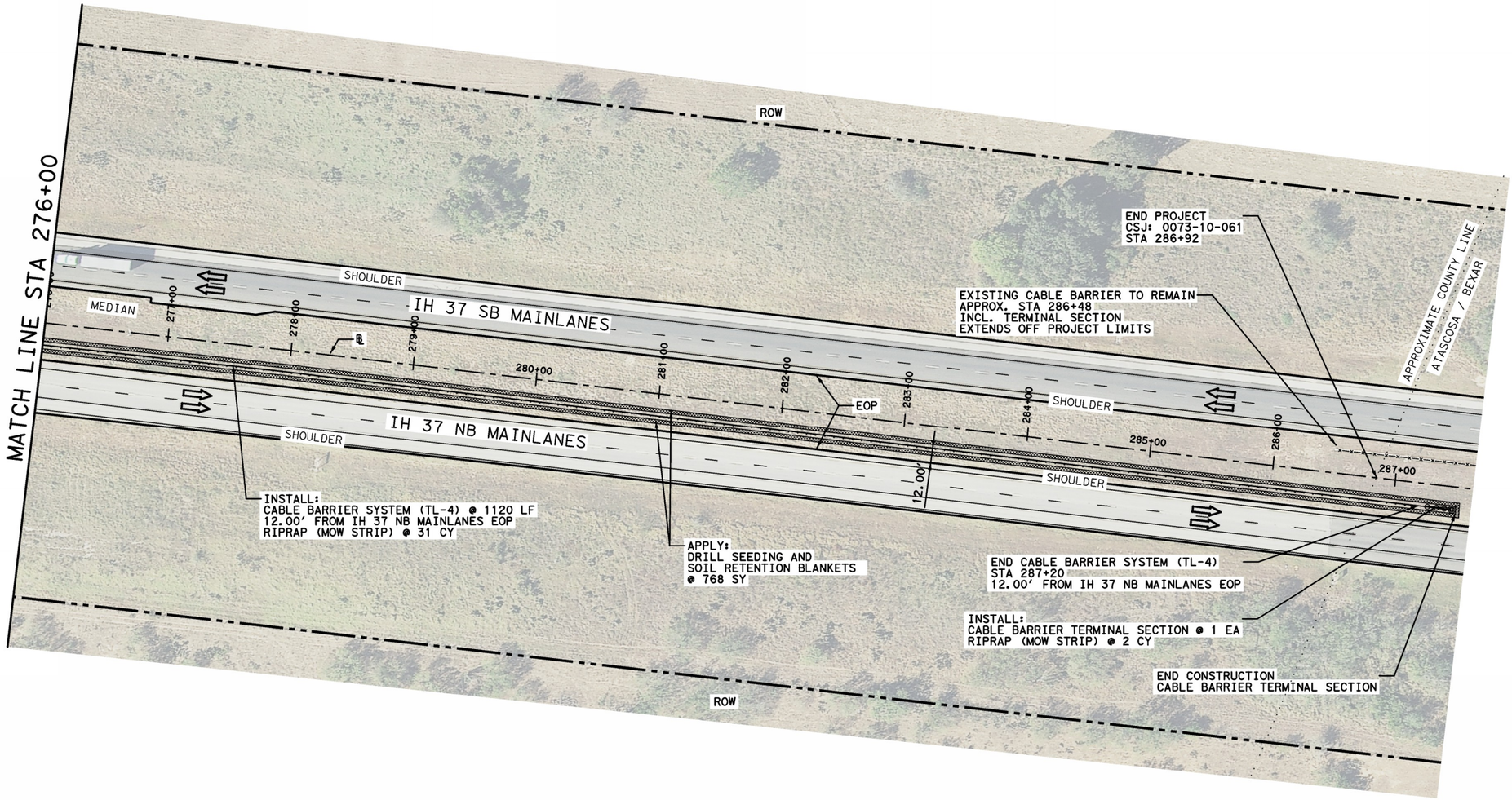
IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 23 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		97
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
...\PROP*CABLE BARRIER1*Sheet23a.dgn



LEGEND

- CABLE BARRIER SYSTEM (TL-4)
- CABLE BARRIER TERMINAL SECTION
- TEMP SEDMT CONT FENCE
- DIRECTION OF TRAVEL
- RIGHT OF WAY (ROW)
- EXISTING CABLE BARRIER
- EXISTING OVERHEAD ELECTRICAL
- EXISTING WATER LINE
- EXISTING MBGF
- DRAINAGE ℄ FROM AS-BUILTS
- SEEDING

N

0 50 100

SCALE: 1"=100'

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SHEET SUMMARY OF ESTIMATED QUANTITIES - CSJ: 0073-10-061

DESCRIPTION	ITEM	DESC NO	UNIT	QUANTITY
DRILL SEEDING (PERM)(RURAL)(CLAY)	164	6035	SY	768
DRILL SEED (TEMP)(WARM OR COOL)	164	6051	SY	768
VEGETATIVE WATERING	168	6001	MG	12
SOIL RETENTION BLANKETS (CL 1)(TY A)	169	6001	SY	768
RIPRAP (CL A)(MOW STRIP)(3 IN)	432	6066	CY	33
TEMP SEDMT CONT FENCE (INSTALL)	506	6038	LF	0
TEMP SEDMT CONT FENCE (REMOVE)	506	6039	LF	0
CABLE BARRIER SYSTEM (TL-4)	543	6002	LF	1120
CABLE BARRIER TERMINAL SECTION (TL-4)	543	6020	EA	1

STATE OF TEXAS
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IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 24 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		98
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
...\PROP*CABLE BARRIER1*Sheet24a.dgn

CABLE BARRIER SUMMARY

CABLE BARRIER LIMITS (TERMINAL SECTIONS NOT INCLUDED)		CABLE BARRIER SYSTEM (TL-4) LENGTH	CABLE BARRIER OFFSET FROM EDGE OF PAVEMENT **	RT / LT OF MEDIAN BL	MEDIAN CROSS - SLOPE	ITEM 132 EMBANK (VEHICLE) (ORD COMP) (TY-C) (CF-1.4) EST	ITEM 150 BLADING EST
FROM STA	TO STA	FT	FT		%	CY	HR
0+00	0+40	0	12	LT	11.5		
0+40	1+00	60	12	LT	12.3		
1+00	2+00	100	12	LT	12.1		
2+00	3+00	100	12	LT	9.4		
3+00	4+00	100	12	LT	9.0		
4+00	5+00	100	12	LT	6.0		
5+00	6+00	100	12	LT	6.5		
6+00	7+00	100	12	LT	5.1		
7+00	8+00	100	12	LT	3.6		
8+00	9+00	100	12	LT	5.8		
9+00	10+00	100	12	LT	4.7		
10+00	11+00	100	12	LT	4.3		
11+00	12+00	100	12	LT	3.3		
12+00	13+00	100	12	LT	3.5		
13+00	14+00	100	12	LT	6.0		
14+00	15+00	100	12	LT	4.0		
15+00	16+00	100	12	LT	4.5		
16+00	17+00	100	12	LT	3.6		
17+00	18+00	100	12	LT	3.9		
18+00	19+00	100	12	LT	3.4		
19+00	20+00	100	12	LT	4.6		
20+00	21+00	100	12	LT	5.2		
21+00	22+00	100	12	LT	4.1		
22+00	23+00	100	12	LT	5.5		
23+00	24+00	100	12	LT	7.4		
24+00	25+00	100	12	LT	7.9		
25+00	26+00	100	12	LT	7.6		
26+00	27+00	100	12	LT	6.1		
27+00	28+00	100	12	LT	6.4		
28+00	29+00	100	12	LT	4.9		
29+00	30+00	100	12	LT	5.6		
30+00	30+50[I]	50	12	LT	6.5		
30+50[I]	31+00	50	12	LT	9.3		
31+00	31+50	0	12	LT	6.1		
END/BEGIN CABLE BARRIER SECTION							
26+00	26+60	0	12	RT	4.5		
26+60	27+00	40	12	RT	3.9		
27+00	28+00	100	12	RT	3.7		
28+00	29+00	100	12	RT	5.8		
29+00	30+00	100	12	RT	7.4		
30+00	30+50[I]	50	12	RT	12.2		
30+50[I]	31+00	50	12	RT	13.2		
31+00	32+00	100	12	RT	12.4		
32+00	33+00	100	12	RT	10.1		
33+00	34+00	100	12	RT	12.0		
34+00	35+00	100	12	RT	7.1		
35+00	36+00	100	12	RT	8.6		
36+00	37+00	100	12	RT	9.0		
37+00	37+70	70	12	RT	5.2		
37+70	38+00	0	12	RT	7.5		
TOTAL						0	0

CABLE BARRIER SUMMARY

CABLE BARRIER LIMITS (TERMINAL SECTIONS NOT INCLUDED)		CABLE BARRIER SYSTEM (TL-4) LENGTH	CABLE BARRIER OFFSET FROM EDGE OF PAVEMENT **	RT / LT OF MEDIAN BL	MEDIAN X-SLOPE	ITEM 132 EMBANK (VEHICLE) (ORD COMP) (TY-C) (CF-1.4) EST	ITEM 150 BLADING EST
FROM STA	TO STA	FT	FT		%	CY	HR
END/BEGIN CABLE BARRIER SECTION							
39+00	40+00	100	12	LT	8.5		
40+00	41+00	100	12	LT	8.6		
41+00	42+00	100	12	LT	8.9		
42+00	43+00	100	12	LT	7.4		
43+00	44+00	100	12	LT	10.7		
44+00	45+00	100	12	LT	10.1		
45+00	46+00	100	12	LT	9.9		
46+00	47+00	100	12	LT	12.0		
47+00	48+00	100	12	LT	9.8		
48+00	49+00	100	12	LT	8.6		
49+00	50+00	100	12	LT	8.8		
50+00	51+00	100	12	LT	7.6		
51+00	52+00	100	12	LT	7.7		
52+00	53+00	100	12	LT	5.3		
53+00	54+00	100	12	LT	8.1		
54+00	55+00	100	12	LT	7.5		
55+00	56+00	100	12	LT	8.0		
56+00	57+00	100	12	LT	8.9		
57+00	58+00	100	12	LT	8.1		
58+00	59+00	100	12	LT	7.0		
59+00	60+00	100	12	LT	9.2		
60+00	61+00	100	12	LT	7.9		
61+00	62+00	100	12	LT	9.6		
62+00	63+00	100	12	LT	9.5		
63+00	64+00	100	12	LT	8.8		
64+00	65+00	100	12	LT	10.1		
65+00	66+00	100	12	LT	10.7		
66+00	67+00	100	12	LT	11.8		
67+00	68+00	100	12	LT	12.6		
68+00	69+00	100	12	LT	8.6		
69+00	70+00	100	12	LT	7.9		
70+00	71+00	100	12	LT	7.7		
71+00	72+00	100	12	LT	9.2		
72+00	73+00	100	12	LT	10.2		
73+00	74+00	100	12	LT	8.3		
74+00	75+00	100	12	LT	8.7		
75+00	76+00	100	12	LT	9.2		
76+00	77+00	100	12	LT	9.2		
77+00	78+00	100	12	LT	9.7		
78+00	79+00	100	12	LT	9.3		
79+00	80+00	100	12	LT	9.5		
80+00	81+00	100	12	LT	9.9		
81+00	82+00	100	12	LT	9.0		
82+00	83+00	100	12	LT	8.5		
83+00	84+00	100	12	LT	9.8		
84+00	85+00	100	12	LT	11.4		
85+00	86+00	100	12	LT	12.3		
86+00	87+00	100	12	LT	15.5		
87+00	88+00	100	12	LT	14.8		
88+00	89+00	100	12	LT	14.3		
TOTAL						0	0

CABLE BARRIER SUMMARY

CABLE BARRIER LIMITS (TERMINAL SECTIONS NOT INCLUDED)		CABLE BARRIER SYSTEM (TL-4) LENGTH	CABLE BARRIER OFFSET FROM EDGE OF PAVEMENT **	RT / LT OF MEDIAN BL	MEDIAN X-SLOPE	ITEM 132 EMBANK (VEHICLE) (ORD COMP) (TY-C) (CF-1.4) EST	ITEM 150 BLADING EST
FROM STA	TO STA	FT	FT		%	CY	HR
89+00	90+00[I]	100	12	LT	15.1	6.2*	5
90+00[I]	91+00	100	12	LT	20.2	6.2*	5
91+00	92+00	100	12	LT	11.8		
92+00	93+00	100	12	LT	10.7		
93+00	94+00	100	12	LT	9.3		
94+00	95+00	100	12	LT	8.2		
95+00	96+00	100	12	LT	11.2		
96+00	97+00	100	12	LT	9.1		
97+00	97+50	50	12	LT	10.3		
97+50	98+00	0	12	LT	9.5		
END/BEGIN CABLE BARRIER SECTION							
96+00	96+50	0	12	RT	12.4		
96+50	97+00	50	12	RT	3.5		
97+00	98+00	100	12	RT	10.7		
98+00	99+00	100	12	RT	11.5		
99+00	100+00	100	12	RT	10.5		
100+00	101+00	100	12	RT	10.0		
101+00	102+00	100	12	RT	10.5		
102+00	103+00	100	12	RT	11.0		
103+00	104+00	100	12	RT	10.6		
104+00	105+00	100	12	RT	10.4		
105+00	106+00	100	12	RT	8.5		
106+00	107+00	100	12	RT	7.9		
107+00	108+00	100	12	RT	8.9		
108+00	109+00	100	12	RT	9.7		
109+00	110+00	100	12	RT	7.5		
110+00	111+00	100	12	RT	8.4		
111+00	112+00	100	12	RT	9.7		
112+00	113+00	100	12	RT	10.1		
113+00	114+00	100	12	RT	10.5		
114+00	115+00	100	12	RT	12.7		
115+00	116+00	100	12	RT	11.9		
116+00	117+00	100	12	RT	10.0		
117+00	118+00	100	12	RT	9.2		
118+00	119+00	100	12	RT	10.0		
119+00	120+00	100	12	RT	12.9		
120+00	121+00	100	12	RT	13.3		
121+00	121+40[I]	40	12	RT	13.1	6.2*	5
121+40[I]	122+00	60	12	RT	17.2		
122+00	123+00	100	12	RT	15.5		
123+00	124+00	100	12	RT	15.4		
124+00	125+00	100	12	RT	13.5		
125+00	126+00	100	12	RT	13.3		
126+00	127+00	100	12	RT	15.0		
127+00	128+00	100	12	RT	14.3		
128+00	129+00	100	12	RT	15.0		
129+00	130+00	100	12	RT	14.5		
130+00	131+00	100	12	RT	12.8		
131+00	132+00	100	12	RT	13.5		
132+00	133+00	100	12	RT	12.7		
133+00	134+00	100	12	RT	13.1		
TOTAL						18.6	15

** OFFSETS MAY BE ADJUSTED AS DIRECTED.

* EMBANKMENT QUANTITY TO ACHIEVE DESIRED (6:1) SLOPE BETWEEN THE STATIONING.

[I] LOCATION OF DRAINAGE GRATE.

NOTES:

1. SLOPES WERE OBTAINED WITH AN OFFSET OF 5 FEET AND 15 FEET FROM EDGE OF PAVEMENT USING LEICA 640 LASER LEVEL AND RECIEVER AND ARE SHOWN AS PERCENTAGE (%). TXDOT ROADWAY DESIGN MANUAL SLOPE CRITERIA OF 6H:1V(16.67%) FOR MEDIAN BARRIER WAS CONSIDERED FOR EVALUATION OF ACCEPTABLE SLOPE AND DETERMING EMBANKMENT QUANTITIES.
2. CABLE BARRIER STATION LIMITS ARE APPROXIMATE AND MAY VARY TO MEET FIELD CONDITION. FIELD VERIFY BEFORE ALL MATERIALS ARE ORDERED.
3. THIS SHEET IS FOR CONTRACTOR INFORMATION ONLY.
4. EMBANKMENT QUANTITIES ARE ESTIMATES ONLY TO ACHIEVE NECESSARY SLOPE OF 6H:1V.
5. ESTIMATES OF DRILL SEEDING (ITEM 164-6035 AND ITEM 164-6051) AND VEGETATIVE WATERING (ITEM 168-6001) HAVE BEEN PROVIDED FOR IN THE SHEET QUANTITIES. CONTRACTOR SHOULD PERFORM SEEDING AND WATERING ACTIVITIES AT THE DIRECTION OF TXDOT.

STATE OF TEXAS
CHARLES R. STEVENS, JR
101286
LICENSED PROFESSIONAL ENGINEER

CHARLES R. STEVENS, JR., P.E. — 1/18/2023 DATE

Texas Department of Transportation®

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160 Houston, TX. 77095 PHONE: (713) 828-4742

IH 37

PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT

SHEET 25 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		99
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

1/18/2023
...\IH 37 CB-QTY SHEET 1b.DGN

CABLE BARRIER SUMMARY							
CABLE BARRIER LIMITS (TERMINAL SECTIONS NOT INCLUDED)		CABLE BARRIER SYSTEM (TL-4) LENGTH	CABLE BARRIER OFFSET FROM EDGE OF PAVEMENT **	RT / LT OF MEDIAN BL	MEDIAN X-SLOPE	ITEM 132 EMBANK (VEHICLE) (ORD COMP) (TY-C) (CF-1.4) EST	ITEM 150 BLADING EST
FROM STA	TO STA	FT	FT		%	CY	HR
134+00	135+00	100	12	RT	13.3		
135+00	136+00	100	12	RT	14.4		
136+00	137+00	100	12	RT	15.7		
137+00	138+00	100	12	RT	16.1		
138+00	139+00	100	12	RT	13.1		
139+00	140+00	100	12	RT	10.3		
140+00	141+00	100	12	RT	11.0		
141+00	142+00	100	12	RT	9.0		
142+00	142+50[I]	50	12	RT	9.3		
142+50[I]	143+00	50	12	RT	13.7		
143+00	144+00	100	12	RT	9.4		
144+00	145+00	100	12	RT	10.0		
145+00	146+00	100	12	RT	10.7		
146+00	147+00	100	12	RT	7.9		
147+00	148+00	100	12	RT	7.2		
148+00	149+00	100	12	RT	9.6		
149+00	150+00	100	12	RT	10.9		
150+00	151+00	100	12	RT	11.8		
151+00	152+00	100	12	RT	9.6		
152+00	153+00	100	12	RT	11.0		
153+00	154+00	100	12	RT	10.2		
154+00	154+20	0	12	RT	13.2		
END/BEGIN CABLE BARRIER SECTION							
159+00	160+00	100	12	RT	5.2		
160+00	161+00	100	12	RT	7.5		
161+00	162+00	100	12	RT	8.2		
162+00	163+00	100	12	RT	7.5		
163+00	164+00	100	12	RT	7.5		
164+00	165+00	100	12	RT	13.4		
165+00	166+00	100	12	RT	6.1		
166+00	167+00	100	12	RT	3.0		
167+00	167+36[I]	36	12	RT	3.6	6.2*	5
167+36[I]	168+00	64	12	RT	20.4		
168+00	169+00	100	12	RT	6.1		
169+00	170+00	100	12	RT	3.0		
170+00	171+00	100	12	RT	3.6		
171+00	172+00	100	12	RT	6.2		
172+00	173+00	100	12	RT	8.5		
173+00	174+00	100	12	RT	9.3		
174+00	175+00	100	12	RT	9.9		
175+00	176+00	100	12	RT	9.7		
176+00	177+00	100	12	RT	8.4		
177+00	178+00	100	12	RT	9.6		
178+00	179+00	100	12	RT	9.7		
179+00	180+00	100	12	RT	8.5		
180+00	181+00	100	12	RT	9.6		
181+00	182+00	100	12	RT	10.2		
182+00	183+00	100	12	RT	10.3		
183+00	184+00	100	12	RT	9.1		
184+00	185+00	100	12	RT	5.4		
TOTAL						6.2	5

CABLE BARRIER SUMMARY							
CABLE BARRIER LIMITS (TERMINAL SECTIONS NOT INCLUDED)		CABLE BARRIER SYSTEM (TL-4) LENGTH	CABLE BARRIER OFFSET FROM EDGE OF PAVEMENT **	RT / LT OF MEDIAN BL	MEDIAN X-SLOPE	ITEM 132 EMBANK (VEHICLE) (ORD COMP) (TY-C) (CF-1.4) EST	ITEM 150 BLADING EST
FROM STA	TO STA	FT	FT		%	CY	HR
185+00	186+00	100	12	RT	7.9		
186+00	187+00	100	12	RT	10.2		
187+00	188+00	100	12	RT	12.1		
188+00	189+00	100	12	RT	11.4		
189+00	190+00	100	12	RT	10.7		
190+00	191+00	100	12	RT	10.2		
191+00	192+00	100	12	RT	10.3		
192+00	193+00	100	12	RT	9.2		
193+00	194+00	100	12	RT	10.2		
194+00	195+00	100	12	RT	10.1		
195+00	196+00	100	12	RT	9.7		
196+00	197+00	0	12	RT	9.2		
END/BEGIN CABLE BARRIER SECTION							
197+00	197+40	0	12	RT	8.2		
197+40	198+00	60	12	RT	10.4		
198+00	199+00	100	12	RT	9.7		
199+00	200+00	100	12	RT	10.1		
200+00	201+00	100	12	RT	11.5		
201+00	202+00	100	12	RT	10.4		
202+00	203+00	100	12	RT	10.2		
203+00	204+00	100	12	RT	9.9		
204+00	205+00	100	12	RT	10.4		
205+00	206+00	100	12	RT	10.6		
206+00	207+00	100	12	RT	10.6		
207+00	208+00	100	12	RT	10.4		
208+00	209+00	100	12	RT	8.3		
209+00	210+00	100	12	RT	6.9		
210+00	211+00	100	12	RT	7.7		
211+00	212+00	100	12	RT	9.6		
212+00	213+00	100	12	RT	8.4		
213+00	214+00	100	12	RT	8.0		
214+00	215+00	100	12	RT	8.3		
215+00	216+00	0	12	RT	6.3		
END/BEGIN CABLE BARRIER SECTION							
214+00	215+00	100	12	LT	9.0		
215+00	216+00	100	12	LT	4.5		
216+00	217+00	100	12	LT	3.5		
217+00	218+00	100	12	LT	4.6		
218+00	219+00	100	12	LT	4.3		
219+00	220+00	100	12	LT	1.6		
220+00	221+00	100	12	LT	4.7		
221+00	222+00	100	12	LT	0.1		
222+00	223+00	100	12	LT	0.0		
223+00	224+00	100	12	LT	3.1		
224+00	225+00	100	12	LT	2.0		
225+00	226+00	100	12	LT	3.2		
226+00	227+00	100	12	LT	3.4		
227+00	228+00	100	12	LT	3.0		
228+00	228+50[I]	50	12	LT	5.7		
228+50[I]	229+00	50	12	LT	2.1		
229+00	230+00	0	12	LT	5.6		
TOTAL						0	0

CABLE BARRIER SUMMARY							
CABLE BARRIER LIMITS (TERMINAL SECTIONS NOT INCLUDED)		CABLE BARRIER SYSTEM (TL-4) LENGTH	CABLE BARRIER OFFSET FROM EDGE OF PAVEMENT **	RT / LT OF MEDIAN BL	MEDIAN X-SLOPE	ITEM 132 EMBANK (VEHICLE) (ORD COMP) (TY-C) (CF-1.4) EST	ITEM 150 BLADING EST
FROM STA	TO STA	FT	FT		%	CY	HR
END/BEGIN CABLE BARRIER SECTION							
224+00	224+80	0	2	RT	5.4		
224+80	225+00	20	12	RT	6.8		
225+00	226+00	100	12	RT	4.8		
226+00	227+00	100	12	RT	5.6		
227+00	228+00	100	12	RT	6.3		
228+00	228+50[I]	50	12	RT	8.4		
228+50[I]	229+00	50	12	RT	11.4		
229+00	230+00	100	12	RT	7.2		
230+00	231+00	100	12	RT	7.1		
231+00	232+00	100	12	RT	8.5		
232+00	233+00	100	12	RT	10.2		
233+00	234+00	100	12	RT	11.7		
234+00	235+00	100	12	RT	11.7		
235+00	236+00	100	12	RT	12.1		
236+00	237+00	100	12	RT	11.3		
237+00	238+00	100	12	RT	13.6		
238+00	239+00	100	12	RT	12.3		
239+00	240+00	100	12	RT	12.7		
240+00	241+00	100	12	RT	9.0		
241+00	242+00	100	12	RT	10.7		
242+00	243+00	100	12	RT	9.7		
243+00	243+50	0	12	RT	12.7		
EXISTING CABLE BARRIER							
END/BEGIN CABLE BARRIER SECTION							
266+00	266+40	0	12	RT	6.6		
266+40	267+00	60	12	RT	6.5		
267+00	268+00	100	12	RT	7.4		
268+00	269+00	100	12	RT	9.5		
269+00	270+00	100	12	RT	8.2		
270+00	271+00	100	12	RT	8.0		
271+00	272+00	100	12	RT	6.3		
272+00	273+00	100	12	RT	6.5		
273+00	274+00	100	12	RT	6.8		
274+00	275+00	100	12	RT	7.6		
275+00	276+00	100	12	RT	8.8		
276+00	277+00	100	12	RT	6.1		
277+00	278+00	100	12	RT	8.7		
278+00	279+00	100	12	RT	8.9		
279+00	280+00	100	12	RT	7.0		
280+00	281+00	100	12	RT	7.3		
281+00	282+00	100	12	RT	4.1		
282+00	283+00	100	12	RT	2.2		
283+00	284+00	100	12	RT	4.1		
284+00	285+00	100	12	RT	6.2		
285+00	286+00	100	12	RT	5.0		
286+00	287+00	100	12	RT	6.3		
287+00	287+20	20	12	RT	9.2		
TOTAL						0	0

** OFFSETS MAY BE ADJUSTED AS DIRECTED.

* EMBANKMENT QUANTITY TO ACHIEVE DESIRED (6:1) SLOPE BETWEEN THE STATIONING.

[I] LOCATION OF DRAINAGE GRATE.

NOTES:

1. SLOPES WERE OBTAINED WITH AN OFFSET OF 5 FEET AND 15 FEET FROM EDGE OF PAVEMENT USING LEICA 640 LASER LEVEL AND RECIEVER AND ARE SHOWN AS PERCENTAGE (%). TXDOT ROADWAY DESIGN MANUAL SLOPE CRITERIA OF 6H:1V(16.67%) FOR MEDIAN BARRIER WAS CONSIDERED FOR EVALUATION OF ACCEPTABLE SLOPE AND DETERMING EMBANKMENT QUANTITIES.
2. CABLE BARRIER STATION LIMITS ARE APPROXIMATE AND MAY VARY TO MEET FIELD CONDITION. FIELD VERIFY BEFORE ALL MATERIALS ARE ORDERED.
3. THIS SHEET IS FOR CONTRACTOR INFORMATION ONLY.
4. EMBANKMENT QUANTITIES ARE ESTIMATES ONLY TO ACHIEVE NECESSARY SLOPE OF 6H:1V.
5. ESTIMATES OF DRILL SEEDING (ITEM 164-6035 AND ITEM 164-6051) AND VEGETATIVE WATERING (ITEM 168-6001) HAVE BEEN PROVIDED FOR IN THE SHEET QUANTITIES. CONTRACTOR SHOULD PERFORM SEEDING AND WATERING ACTIVITIES AT THE DIRECTION OF TXDOT.

STATE OF TEXAS
CHARLES R. STEVENS, JR.
101286
LICENSED PROFESSIONAL ENGINEER

CHARLES R. STEVENS, JR., P.E. — 1/18/2023 DATE

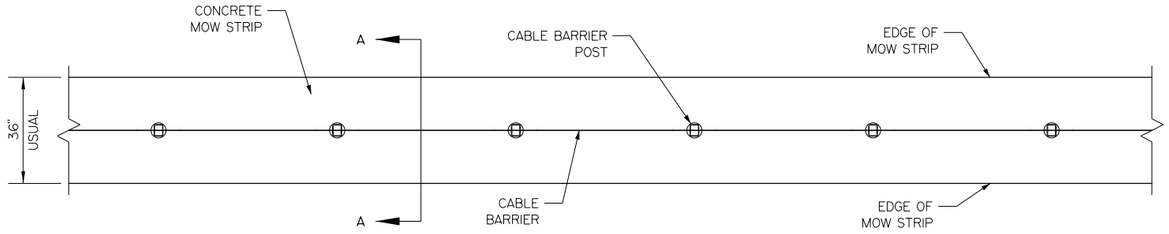
Texas Department of Transportation®

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160 PHONE: (713) 828-4742
Houston, TX. 77095

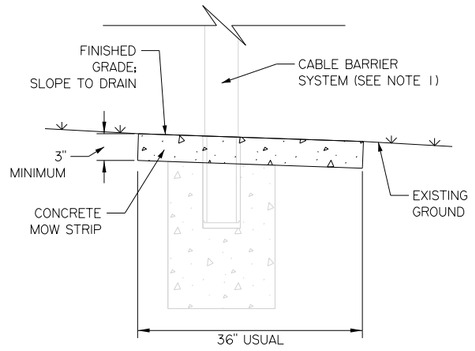
IH 37
PROPOSED CABLE BARRIER SYSTEM DETAILS & LAYOUT
SHEET 26 OF 26

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		100
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

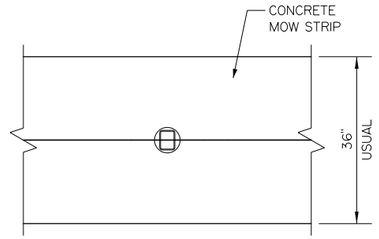
1/18/2023
...\IH 37 CB-QTY SHEET 2b.DGN



CABLE BARRIER MOW
STRIP PLAN VIEW



CABLE BARRIER MOW
STRIP - SECTION A-A



CABLE BARRIER MOW
STRIP PLAN VIEW - DETAIL

NOTES:

1. FOR ADDITIONAL INFORMATION ON CABLE BARRIER AND FOUNDATION DETAILS, SEE APPLICABLE STANDARDS.
2. MOW STRIPS SHALL BE REINFORCED CONCRETE WITH (WIRE MESH OR SYNTHETIC FIBER), AS SHOWN ON THE PLANS AND WILL BE PAID FOR UNDER THE PERTINENT BID ITEM. REINFORCED CONCRETE SHALL BE PLACED IN ACCORDANCE WITH ITEM 432, "RIPRAP". THE USE OF SYNTHETIC FIBER IN LIEU OF STEEL REINFORCING IS ACCEPTABLE, PROVIDED THE FIBER PRODUCER IS ON THE DEPARTMENT MATERIAL PRODUCER LIST (MPL), MAINTAINED BY TxDOT, CONSTRUCTION DIVISION.
3. THE CABLE BARRIER SYSTEM(S) SELECTED FOR EACH PROJECT SHALL BE INSTALLED BASED ON THE STANDARDS, GUIDELINES, AND RECOMMENDATIONS PROVIDED BY THE SELECTED MANUFACTURER(S) OF EACH INDIVIDUAL SYSTEM.
4. USE CLASS "A" CONCRETE IN ACCORDANCE WITH ITEM 421.

STATE OF TEXAS
M. R. NEELAPU
107595
LICENSED
PROFESSIONAL ENGINEER

M. R. NEELAPU, P. E.

1/22/2023
DATE

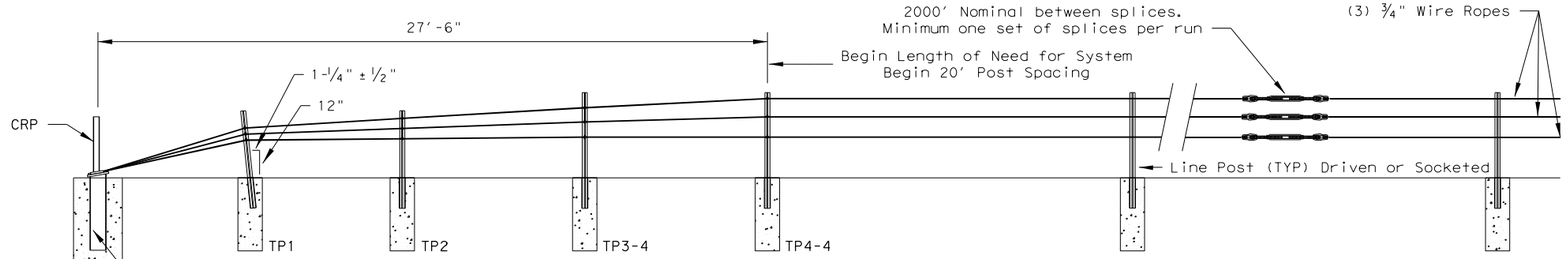
Texas Department of Transportation®

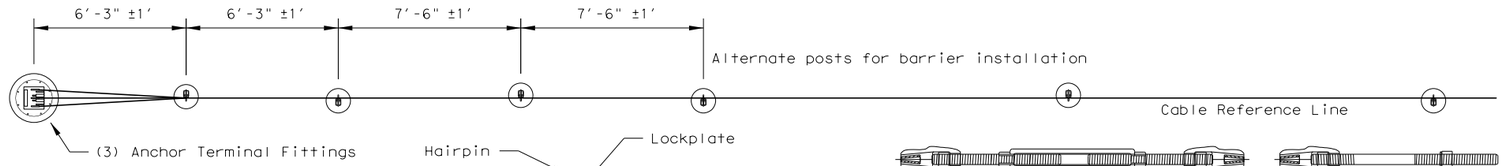
TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
738 Hwy 6 South, Suite 430
Houston, Texas 77079
(832) 619-1000
TEDSI
TBPE F-1640

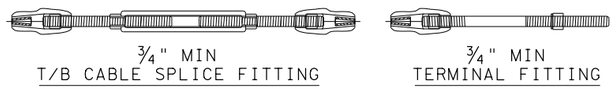
MISCELLANEOUS DETAILS

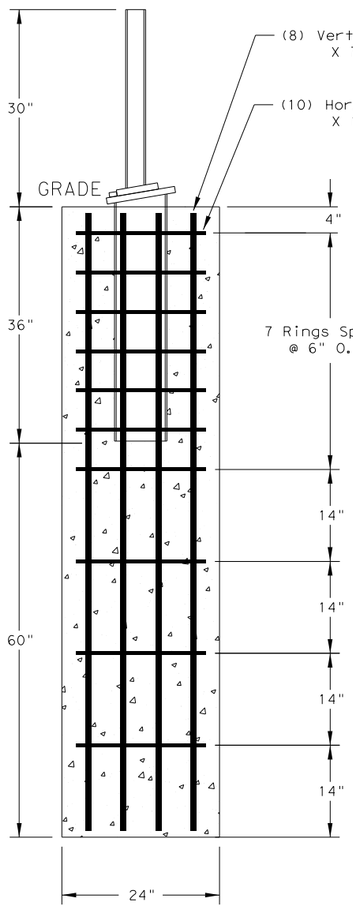
FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
	SEE TITLE SHEET		101
STATE	DIST.	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0072	05	096, ETC.	IH 10, ETC.

DATE:
FILE:

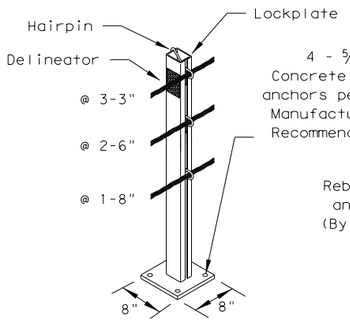




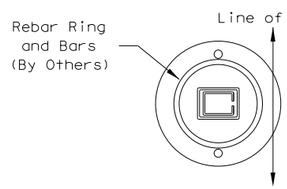




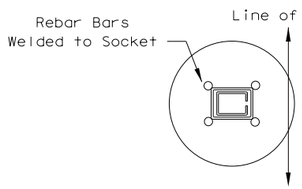
CABLE RELEASE AND ANCHOR POST



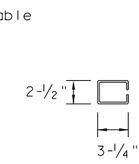
LINE POST
(BASE-PLATED OPTION)
Low-Fill Box Culvert Less than 15" Fill



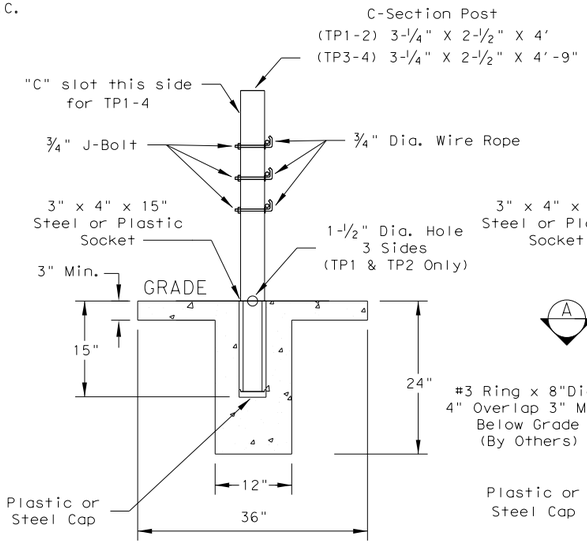
SECTION A



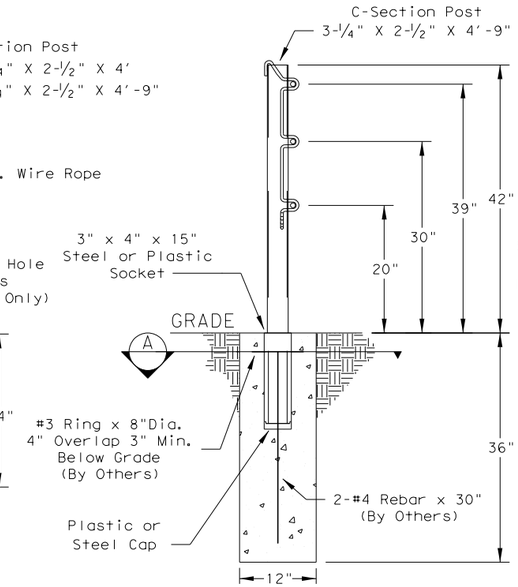
SECTION B



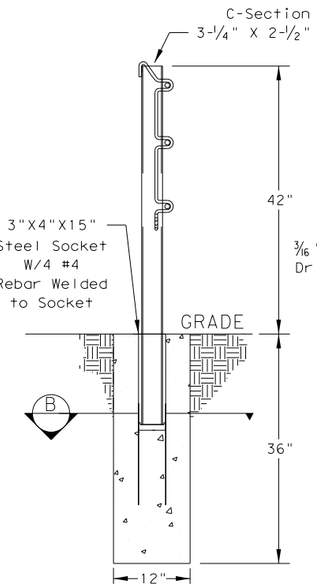
C-SECTION POST



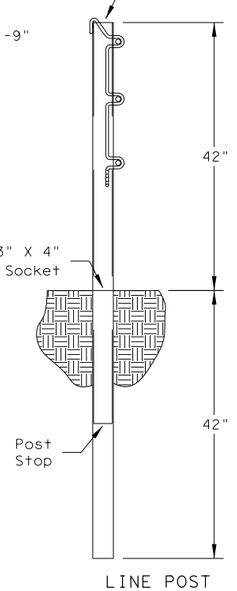
TERMINAL POST
(SHOWN WITH CONCRETE MOWSTRIP)
(Shown with Tube Plate Option)
(See Note 10)



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)

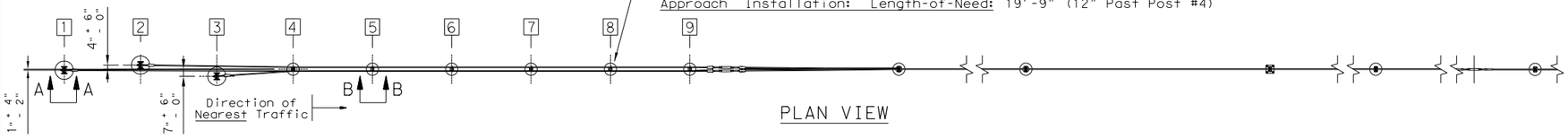
GBRLTR(TL4)-14

FILE: gbrltrtl414.dgn	DN: TxDOT	CK: RM	DW: VP	CK:
©TxDOT: March 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0072	05	096, ETC.	IH 10, ETC.
	DIST	COUNTY		SHEET NO.
	SAT	KENDALL, ETC.		102

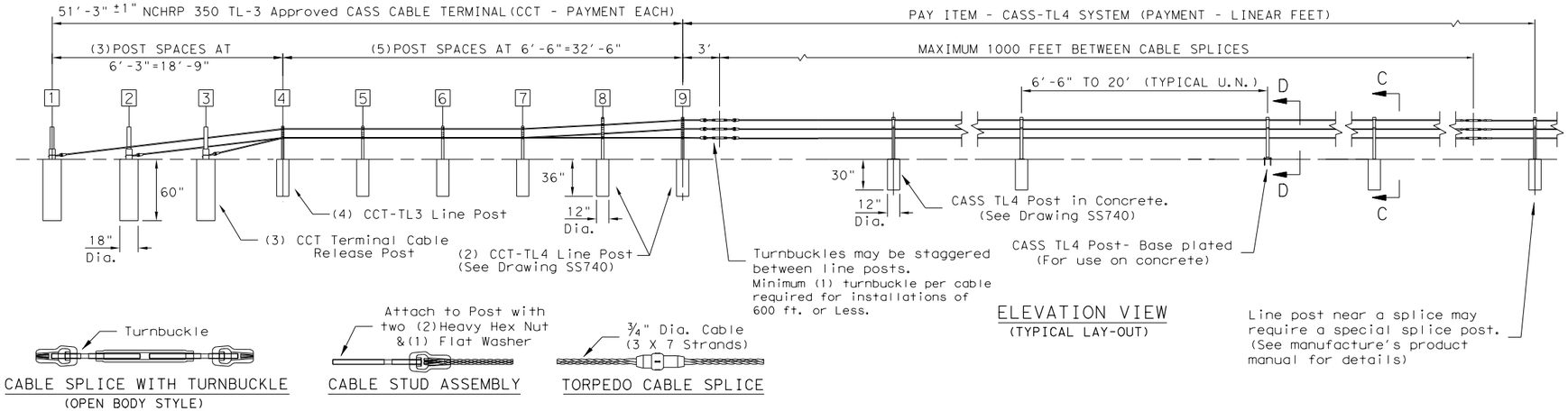
DATE:
FILE:

Preferred Installation: Locate post #2 away from nearest traffic.
System has been succesfully tested with opposite installation.

Length-of-Need Cass Cable Terminal (CCT):
Departure Installation: Length-of-Need: 44'-9" (At Post #8)
Approach Installation: Length-of-Need: 19'-9" (12" Past Post #4)



PLAN VIEW

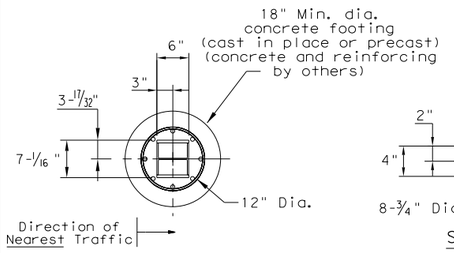


ELEVATION VIEW
(TYPICAL LAY-OUT)

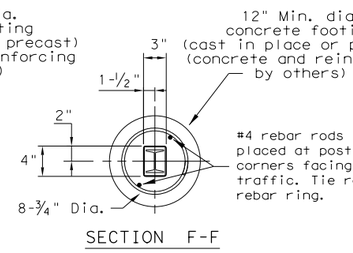
CABLE SPLICE WITH TURNBUCKLE
(OPEN BODY STYLE)

CABLE STUD ASSEMBLY

TORPEDO CABLE SPLICE



SECTION E-E



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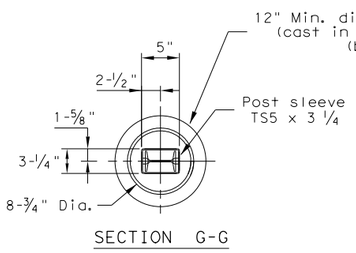
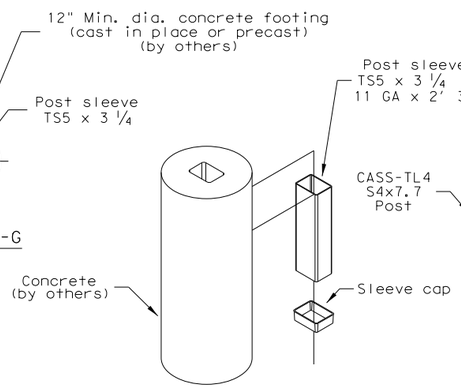
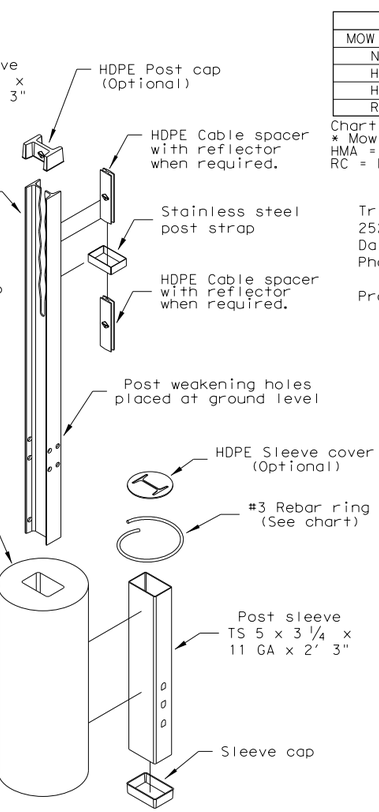


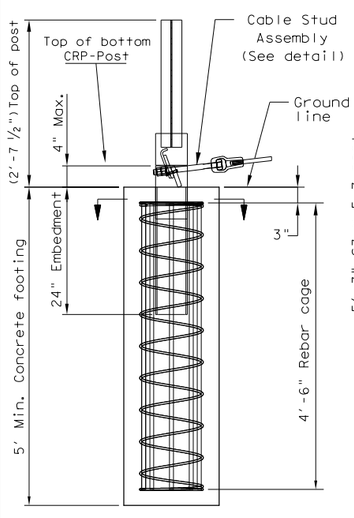
SECTION G-G



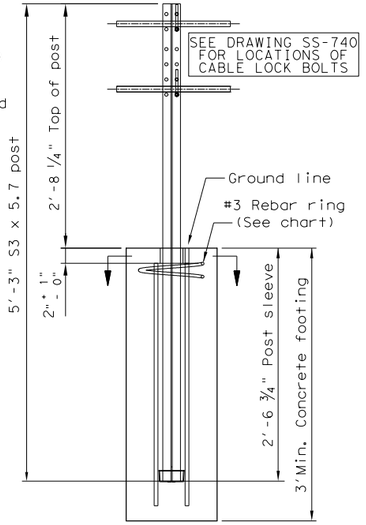
CONCRETE FOOTING
(IN QUALIFYING MOW STRIP SEE CHART)



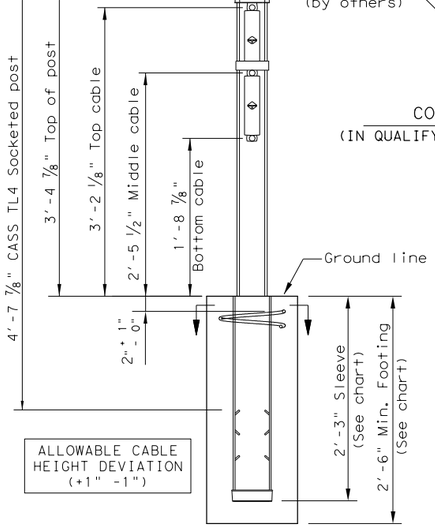
STANDARD POST & CONCRETE FOOTING
(SOCKETED POST)



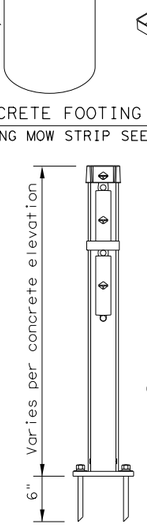
VIEW A-A
(CABLE RELEASE POST 1-3)



VIEW B-B
(TERMINAL LINE POST 4-7)



SECTION C-C
(SOCKETED POST)



SECTION D-D
(BASE PLATED POST)

GENERAL NOTES

1. This drawing is a generql overview of CASS TL-4 Barrier System. See SS-740 (latest version) for specific details of CASS cable terminal (CCT) and cable safety system (CASS) requirements, proper installation, options and specification.
2. CASS is designed for bi-directional traffic flows and can be installed on either side of the median. Contact Trinity (800-527-6050) or consult the design, installation, or repair manual(s) for additional information.
3. All concrete for CASS footings shall be TxDOT class A. If class A or stronger concrete is utilized for the mowstrip, please see chart below for allowable footing depth and sleeve deviations.
4. All posts shall be socketed unless otherwise specified. All cables shall be pre-stretched unless otherwise specified.
5. For payment see Special Specification "Cable Barrier System".
6. CASS-TL4 shall be installed on shoulders or medians with slopes of 6:1 or flatter without obstructions, depressions, etc. That may significantly affect the stability of an errant vehicle. Grading of site and/or appropriate fill materials may be required. The designer/installer shall "Flatten" or "Round" various topographical inconsistencies that could interfere with the ability of the installer to consistently maintain the design height (in relation to the terrain) of the cables. Please consult manual(s) and / or TxDOT Memo(s) for installations in "Ditch Sections".
7. CASS TL-4 post spacing may be modified to avoid obstacles that conflict with the installation of cass-tl4 line posts or to reduce deflection on radiuses. No post space can exceed the maximum post TxDOT space limit of 20'. Reducing or increasing post spacing affects deflection. CASS TL-4 may be laterally transferred at a rate not to exceed 30:1.
8. Post foundations may be drilled through existing pavement. Please see line post foundation chart for minimum footing requirements in various applications.
9. For aesthetic purposes Trinity recommends all sleeves, driven posts, and lower cable release posts to be installed reasonably plumb (approximately 1/8" per foot).
10. CASS TL-4 shall be installed in well-drained, compacted, NCHRP Report 350 Standard soil. If soil does not meet this classification, if solid rock/concrete is encountered below grade or if soil is susceptable to severe freeze/thaw cycles, please contact Trinity about alternate footing design(s). Trinity suggests the use of "Mow strips" for erosion prevention and ease of maintenance / installation.
11. See the Texas MUTCD for proper "Barrier" Delineation.

MOW STRIP DETAIL*			CONCRETE FOOTING CHART		
MOW STRIP	DEPTH	WIDTH	FOOTING	TUBE SLEEVE	REBAR RING
NONE			30" Min.	27" Min.	YES
HMA	6" Min.	3' Min.	27" Min.	15" Min.	NO
HMA	8" Min.	3' Min.	24" Min.	15" Min.	NO
RC	3" Min.	3' Min.	24" Min.	15" Min.	NO

Chart does not apply to Terminal Posts 1 thru 9.
* Mow strip or pavement.
HMA = Hot Mix Asphalt (Not Recycled Asphalt Pavement).
RC = Reinforced Concrete (TxDOT Class A Minimum).

CABLE TENSION CHART	
FAHRENHEIT	PRE-STRETCHED
DEGREES	LB / FORCE
-10	7300
0	7000
10	6600
20	6300
30	6000
40	5600
50	5300
60	5000
70	4600
80	4300
90	4000
100	3600
110	3300
120	3000
130	2700
140	2500
150	2300

Allowable deviation from chart in tangent sections: +800, -200 pounds/force. Cable tension readings are typically higher in curved cable sections.

Trinity Highway Products, LLC.
2525 Stemmons Freeway
Dallas, TX 75207
Phone: (800) 644-7976

Product.INFO@TRIN.NET

Texas Department of Transportation

Design Division Standard

TRINITY CABLE SAFETY SYSTEM (TL-4)

CASS(TL4)-14

FILE: casst1414.dgn	DN: TxDOT	CK: RM	DW: VP	CK:
©TxDOT: March 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0072	05	096, ETC.	IH 10, ETC.
	DIST	COUNTY		SHEET NO.
	SAT	KENDALL, ETC.		103

DATE:
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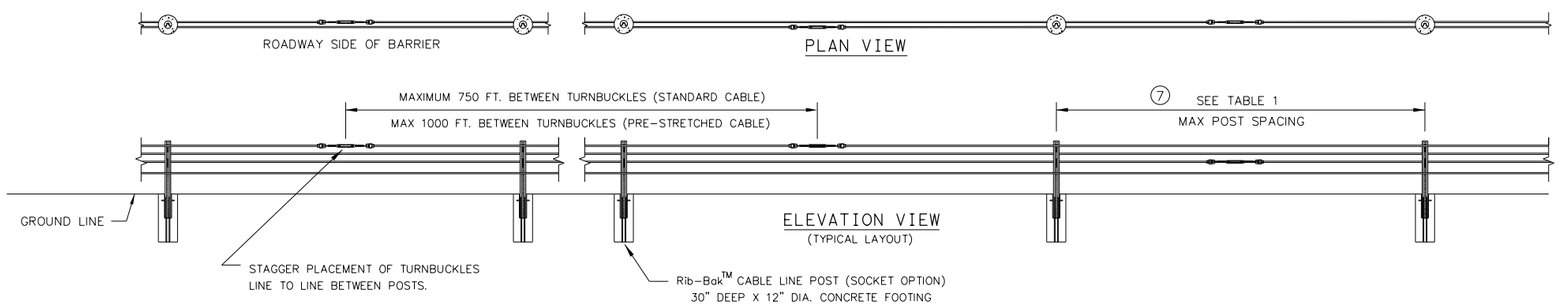
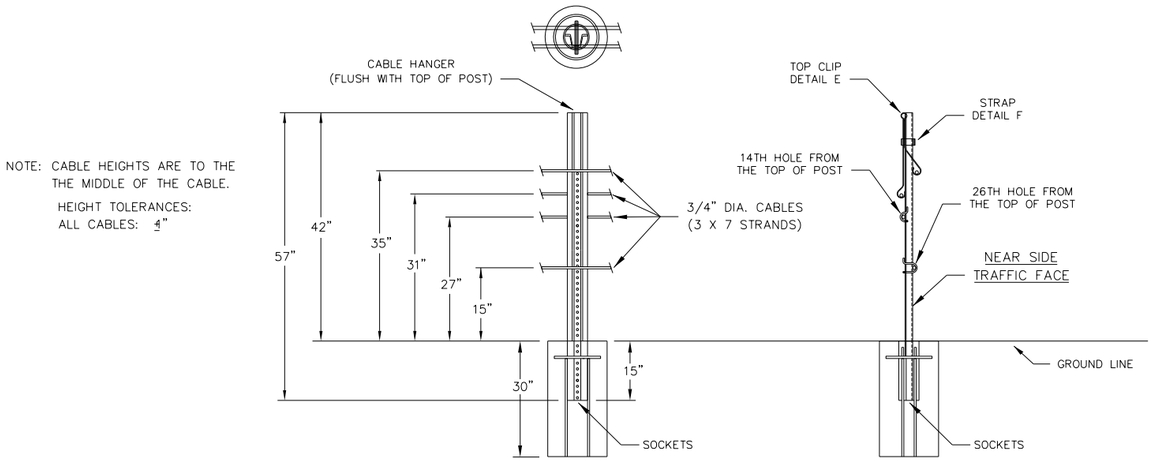
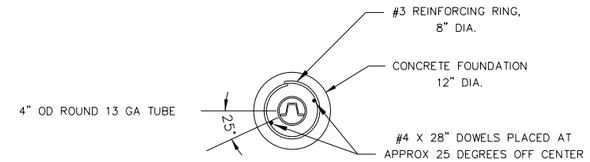
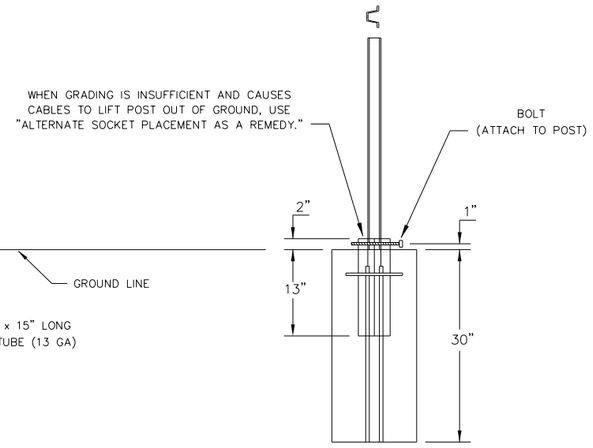




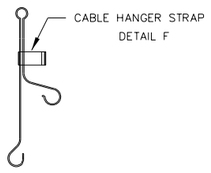
INSTALLATION DETAIL
4 CABLE 6:1



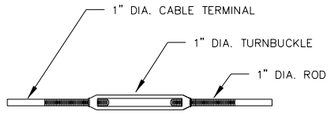
⑪ SOCKETED POST OPTION
(TYPE S POST)



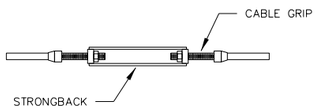
ALTERNATE SOCKET PLACEMENT
(TYPE S POST)



CABLE HANGER BRACKET
DETAIL E
(SUBJECT TO MANUFACTURER'S TOLERANCES)



WEDGED FITTING
TURNBUCKLE DETAIL
(TYPICAL)



STRONGBACK (SELF-SWAGING)
TURNBUCKLE DETAIL
(OPTIONAL)

GENERAL NOTES

1. FOR ADDITIONAL INFORMATION CONTACT YOUR DISTRIBUTOR OR NUCOR STEEL MARION, INC. AT (740) 383-4011.
2. FOR PAYMENT SEE SPECIAL SPECIFICATION "CABLE BARRIER SYSTEM".
3. FOR ADDITIONAL INFORMATION SEE THE MANUFACTURER'S PRODUCT MANUAL.
4. THE NU-CABLE SYSTEM IS DESIGNED FOR BI-DIRECTIONAL TRAFFIC FLOWS. SEE THE MANUFACTURER'S PRODUCT MANUAL FOR PLACEMENT ADJACENT TO GUARDRAIL END TREATMENTS.
5. THE NU-CABLE SYSTEM SHALL BE INSTALLED ON MEDIANS WITH SLOPES OF 6:1 OR FLATTER WITHOUT OBSTRUCTIONS, DEPRESSIONS, ETC; THAT MAY SIGNIFICANTLY AFFECT THE STABILITY OF AN ERRANT VEHICLE.
6. THE NU-CABLE SYSTEM MAY BE INSTALLED ON EITHER SIDE OF THE ROADWAY. Rib-Bak™ CABLE LINE POSTS MAY BE SOCKETED OR DRIVEN DESIGN.
7. THE TL-4 FOR 6:1 SLOPES CAN USE 4# / LF POST. SEE TABLE #1 FOR POST SIZE PER SPACING.
8. SEE (TABLE 2) FOR TENSION AMOUNT AT SPECIFIC CABLE TEMPERATURE FOR INITIAL INSTALLATION.
9. SEE (TABLE 3) FOR TENSION AMOUNT AT SPECIFIC CABLE TEMPERATURE FOR MAINTENANCE.
10. FOURTH (LOWEST) CABLE IS NOT OPTIONAL ON THE TL-4 SYSTEM.
11. CONSULT YOUR PROJECT PLAN SHEETS AND CABLE BARRIER SPECIFICATIONS FOR DESIRED SOCKET MATERIAL.
12. ALL FOUNDATION DESIGNS ARE BASED ON NCHRP 350 STRONG (S1) SOIL. CONSULT THE MANUFACTURER FOR SPECIFIC FOUNDATION DESIGN IF SOIL TYPES DIFFER.

⑦ TABLE 1

POST SIZE TABLE	
POST SPACING	POST SIZE
0' – 17'-6"	4# / LF X 4' OR 6' POST
17'-6" – 20'	5# / LF X 4' POST

POST SPACING IS PER 8 FOOT DEFLECTION REQUIRMENTS.
CONSULT PRODUCT MANUAL IF GREATER DEFLECTION IS PERMISSIBLE.

⑧ TABLE 2

CABLE TENSION CHART	
INITIAL INSTALL	
F	LBF
120	4624
110	4986
100	5350
90	5713
80	6077
70	6440
60	7167
50	7894
40	8619
30	9346
20	10073
10	10800
0	11525
-10	12252
-20	12979
-30	13706

⑨ TABLE 3

CABLE TENSION CHART	
MAINTENANCE	
F	LBF
120	4021
110	4336
100	4652
90	4968
80	5284
70	5600
60	6232
50	6864
40	7495
30	8127
20	8759
10	9391
0	10022
-10	10654
-20	11286
-30	11918

SHEET 1 OF 2

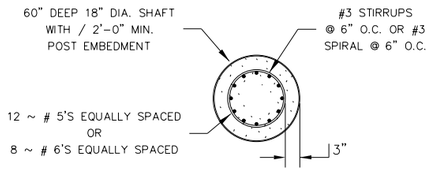
Texas Department of Transportation | Design Division Standard

NU-CABLE BARRIER SYSTEM (TL-4) (4 CABLE)

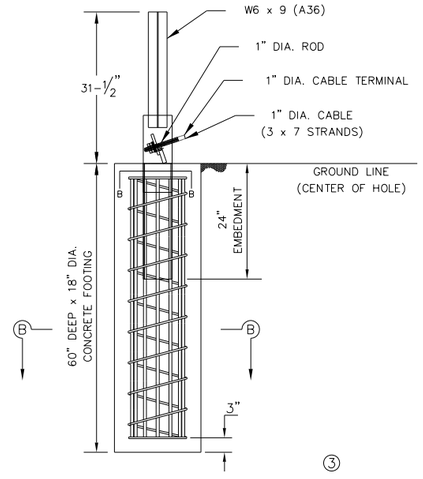
NU-CABLE(TL4)-14

FILE:	DN:	CK:	DW:	CK:
©TxDOT:	CONT	SECT	JOB	HIGHWAY
REVISIONS	0072	05	096, ETC.	IH 10, ETC.
	DIST	COUNTY		SHEET NO.
	SAT	KENDALL, ETC.		104

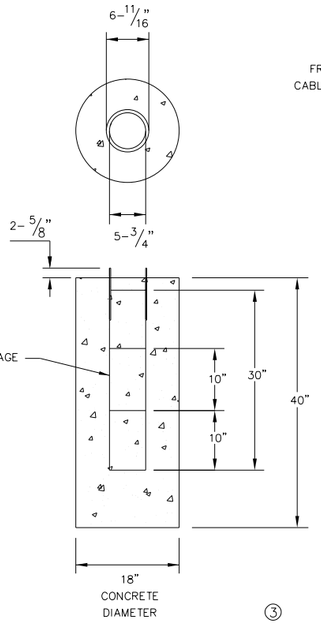
DATE:
FILE:



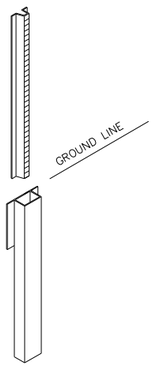
SECTION B-B
(CABLE RELEASE POST)



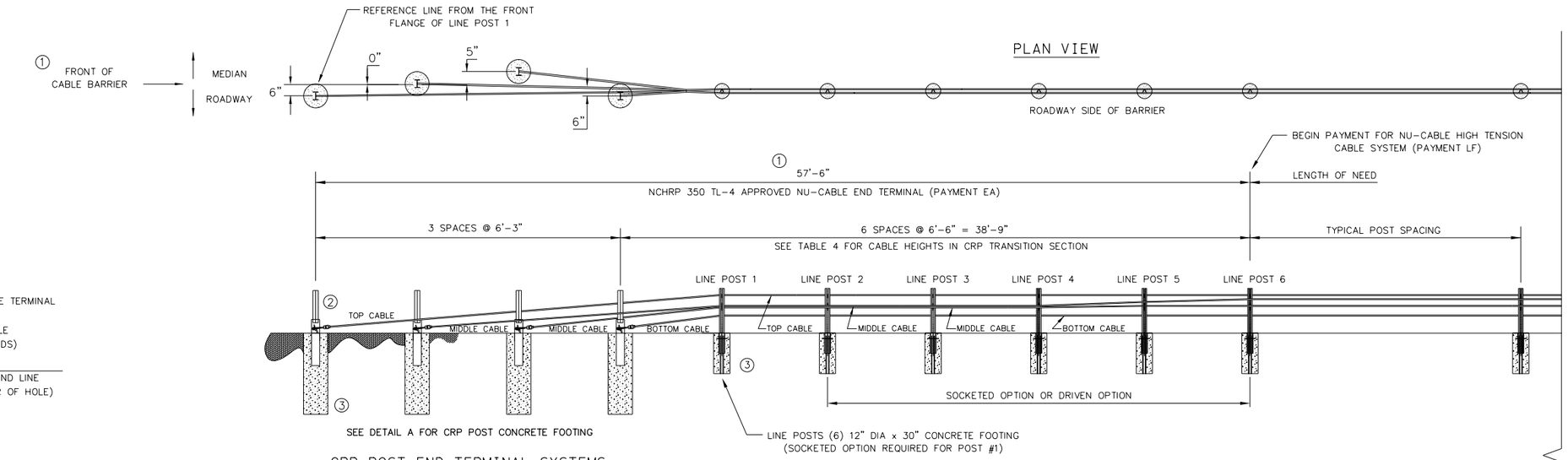
DETAIL A – CRP IN CONCRETE FOOTING
(3000 PSI MIN CONCRETE)



NU-TEN CONCRETE FOOTING DETAIL



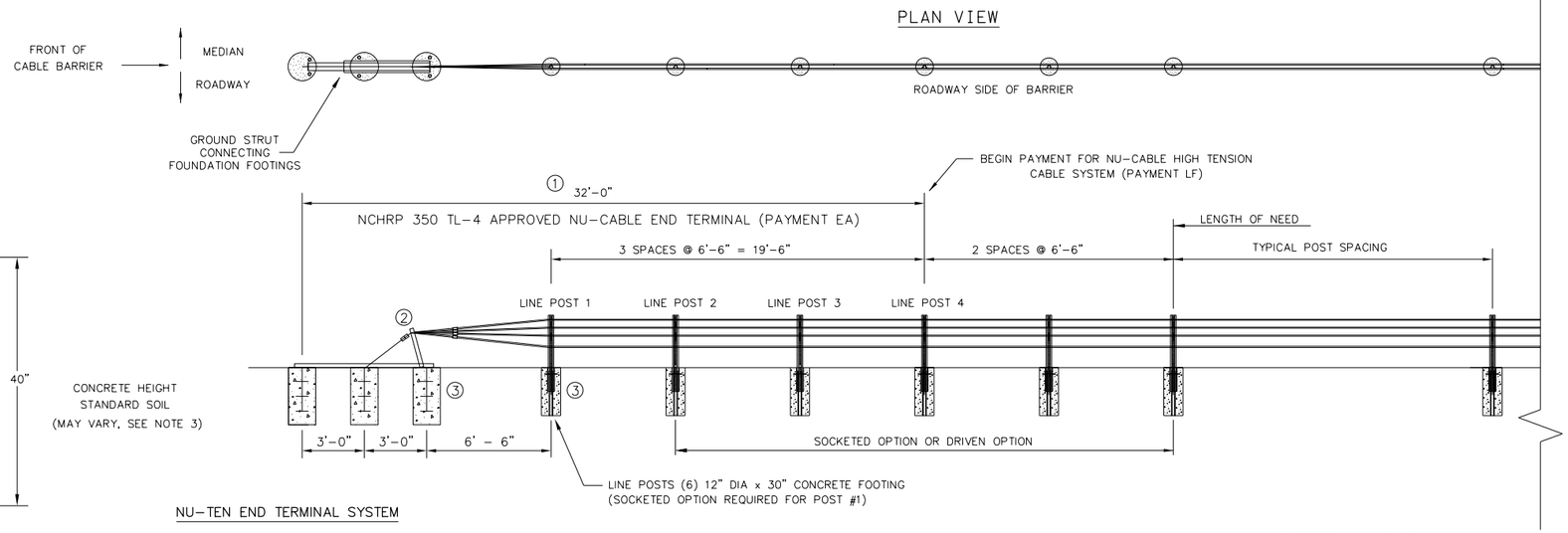
DRIVEN SOCKET OPTION



CRP POST END TERMINAL SYSTEMS

ELEVATION VIEW

① THE OPPOSING END TREATMENTS ON A PARTICULAR RUN ARE MIRRORED IN THEIR LAYOUT.



NU-TEN END TERMINAL SYSTEM

ELEVATION VIEW

④ TABLE 4

CRP END TERMINAL CABLE HEIGHTS - TL-4						
	LP 1	LP 2	LP 3	LP 4	LP 5	LP 6
TOP CABLE	34"	34"	34"	34"	34"	34"
UPPER-MIDDLE CABLE	27"	27"	27"	27"	28"	31"
BOTTOM-MIDDLE CABLE	24"	24"	24"	24"	24"	24"
BOTTOM CABLE	15"	15"	15"	15"	15"	15"

NOTES

1. THE OPPOSING END TREATMENTS ON A PARTICULAR RUN ARE MIRRORED IN THEIR LAYOUT. SYSTEM PAYMENT IS PER EACH (EA). REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL PAYMENT INFORMATION
2. REFER TO INSTALLATION MANUAL FOR CABLE END ASSEMBLY DETAIL.
3. ALL FOUNDATION DESIGNS ARE BASED ON NCHRP 350 STRONG (S1) SOIL. CONSULT THE MANUFACTURER FOR SPECIFIC FOUNDATION DESIGNS IF SOIL TYPES DIFFER.
4. SEE TABLE 4 CABLE HEIGHTS IN CRP TRANSITION SECTION.

Texas Department of Transportation

Design Division Standard

NU-CABLE BARRIER SYSTEM (TL-4) (4 CABLE)

NU-CABLE(TL4)-14

FILE:	DN:	CK:	DW:	CK:
©TxDOT:	CONT	SECT	JOB	HIGHWAY
REVISIONS	0072	05	096, ETC.	IH 10, ETC.
	DIST	COUNTY		SHEET NO.
	SAT	KENDALL, ETC.		105

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

Post Type

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

Number of Posts (1 or 2)

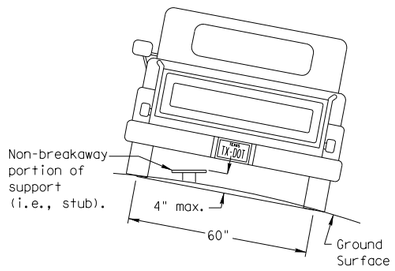
Anchor Type

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

Sign Mounting Designation

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

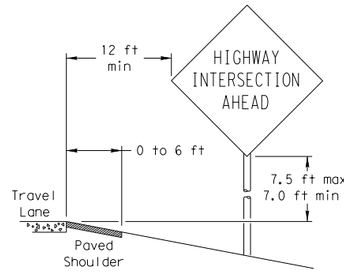
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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

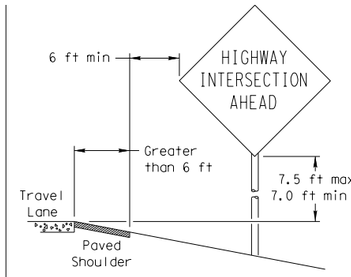
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

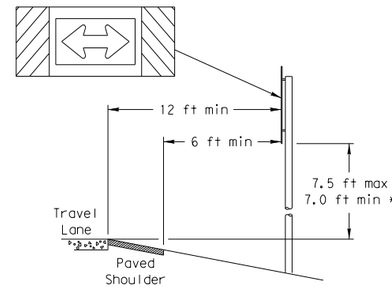
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



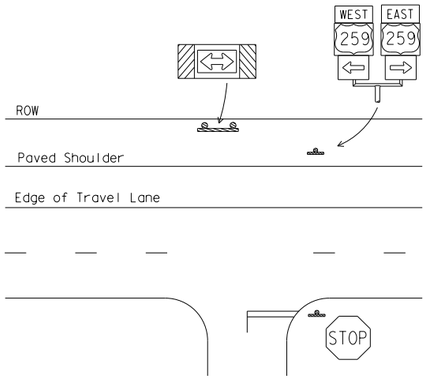
GREATER THAN 6 FT. WIDE

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

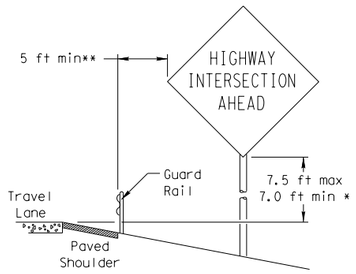
T-INTERSECTION



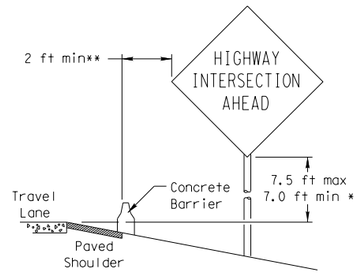
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

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

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

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

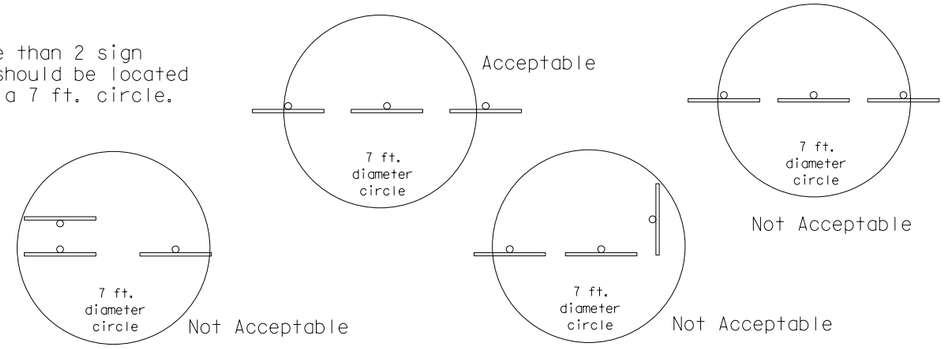
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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

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

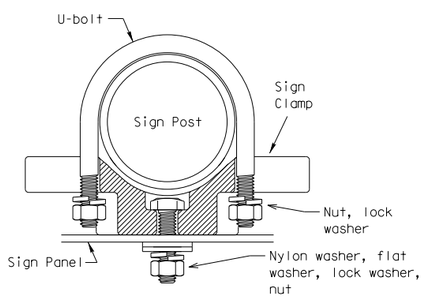
The website address is:
http://www.txdot.gov/publications/traffic.htm

No more than 2 sign posts should be located within a 7 ft. circle.



TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

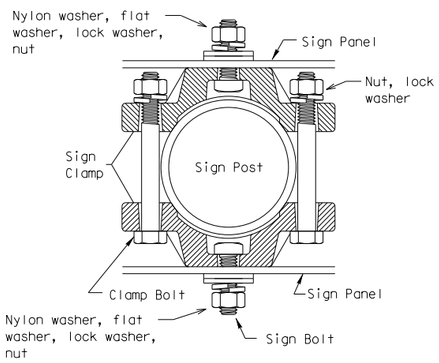


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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

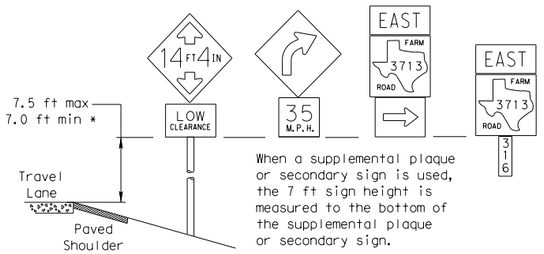
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



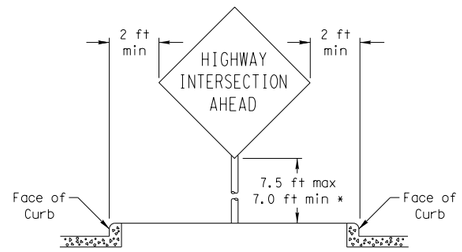
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



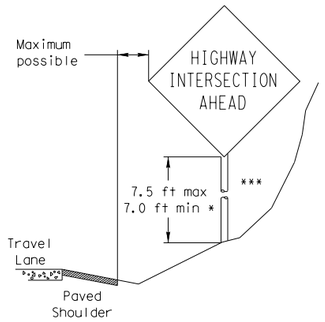
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



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

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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

REVISIONS
9-08

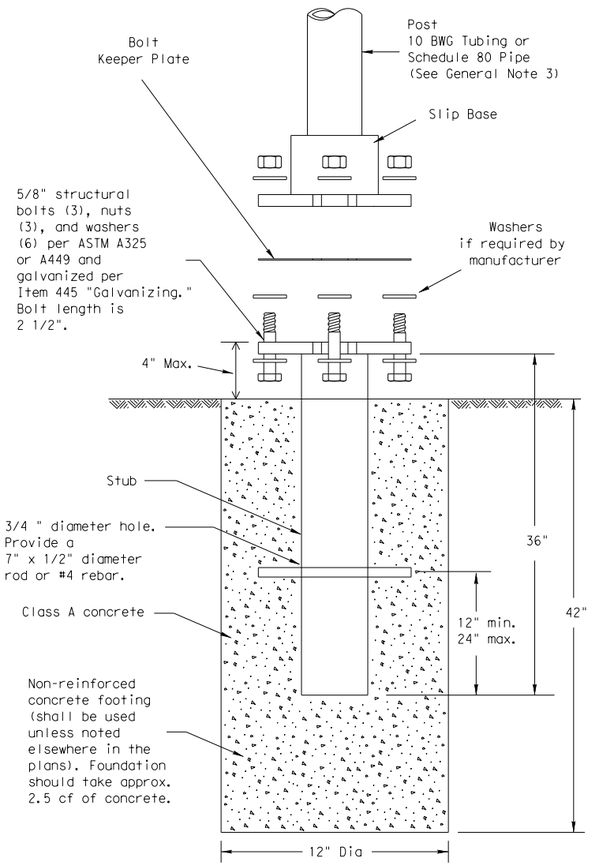
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0072	05	096, ETC.	IH 10, ETC.
DIST	COUNTY		SHEET NO.
SAT	KENDALL, ETC.		106

26A

DATE:
FILE:

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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

NOTE

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

GENERAL NOTES:

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

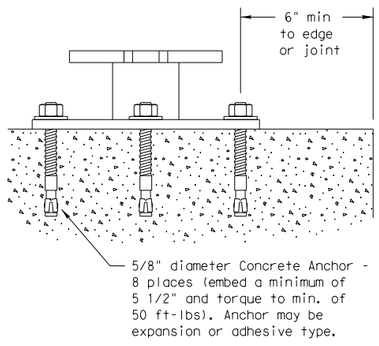
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum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

ASSEMBLY PROCEDURE

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

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

CONCRETE ANCHOR



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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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

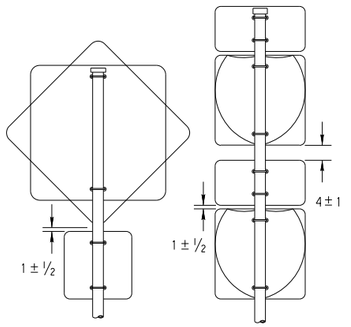
REVISIONS
9-08

CONT	SECT	JOB	HIGHWAY
0072	05	096, ETC.	IH 10, ETC.

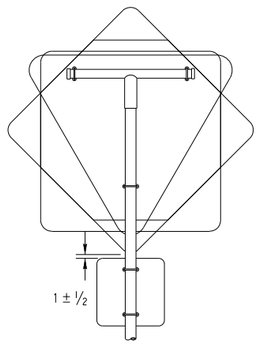
DIST	COUNTY	SHEET NO.
SAT	KENDALL, ETC.	107

26B

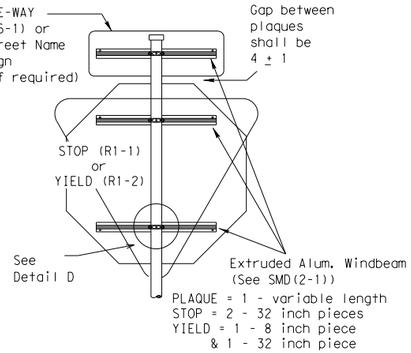
DATE:
FILE:



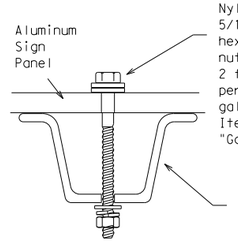
SM RD SGN ASSM TY XXXXX(1)XX(P)



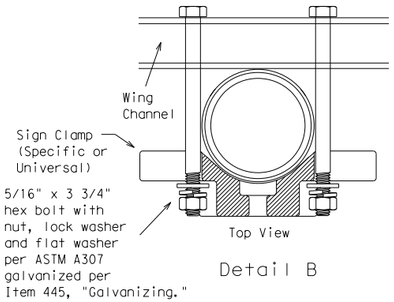
SM RD SGN ASSM TY XXXXX(1)XX(T)



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



Detail A



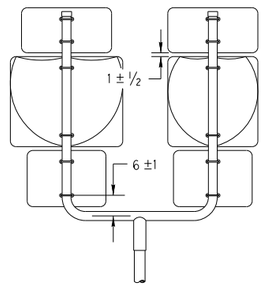
Detail B

GENERAL NOTES:

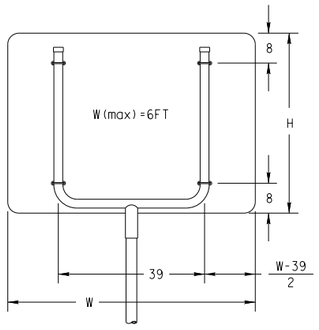
1.

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

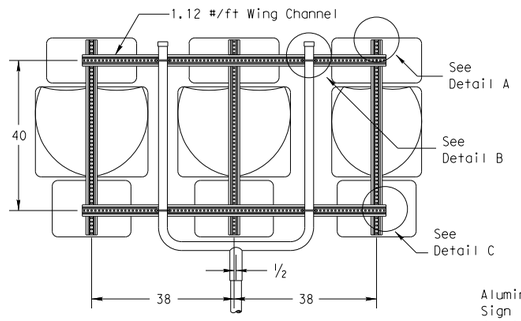
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material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



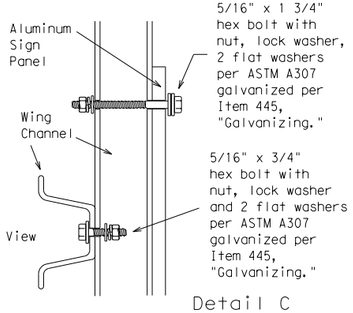
SM RD SGN ASSM TY XXXXX(1)XX(U)



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

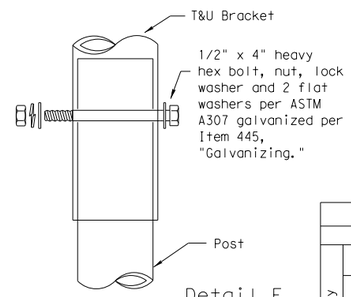


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

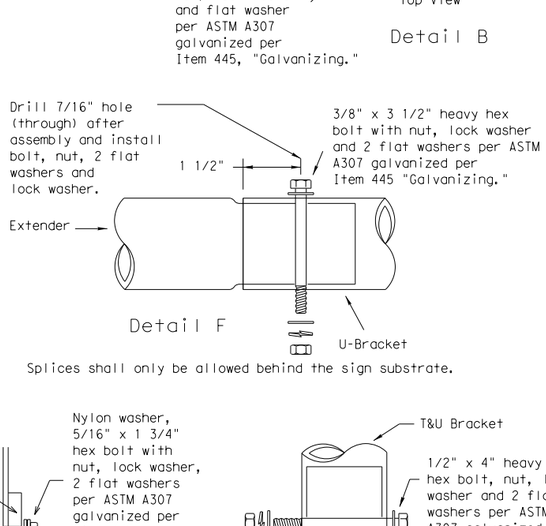


SIDE VIEW

Detail C



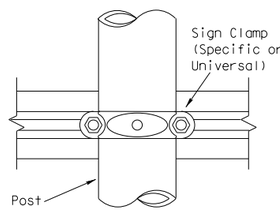
Detail E



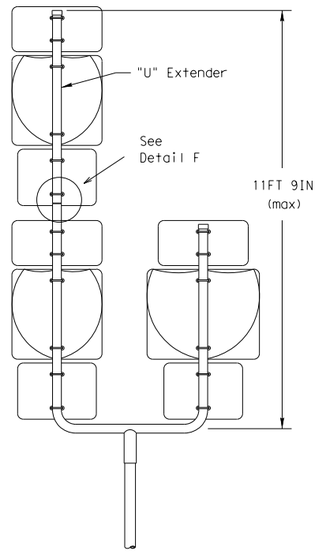
Detail D

Detail F

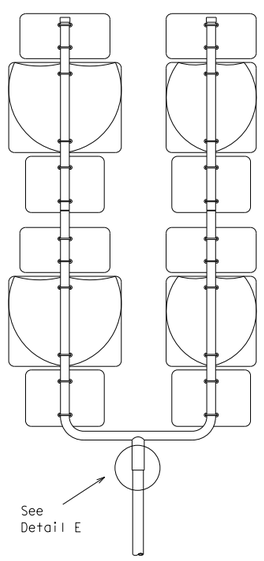
Splices shall only be allowed behind the sign substrate.



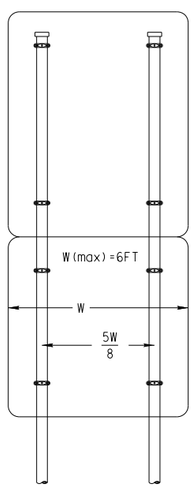
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)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



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



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



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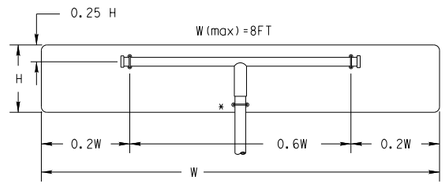
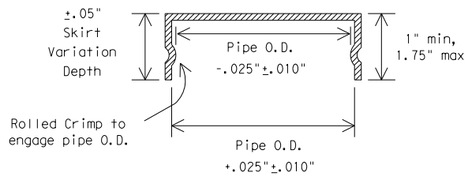


All dimensions are in english unless detailed otherwise.

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

FRICTION CAP DETAIL



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

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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

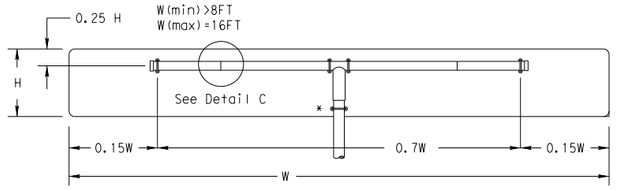
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0072	05	096, ETC.	IH 10, ETC.
DIST	COUNTY		SHEET NO.
SAT	KENDALL, ETC.		108

9-08 REVISIONS

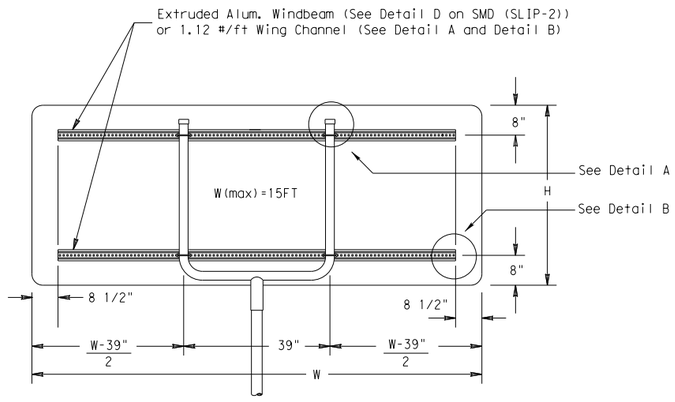
DATE:
FILE:

26C

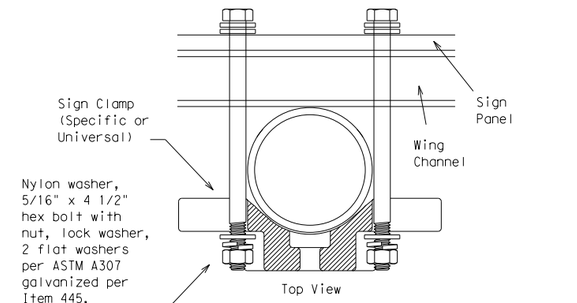


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)

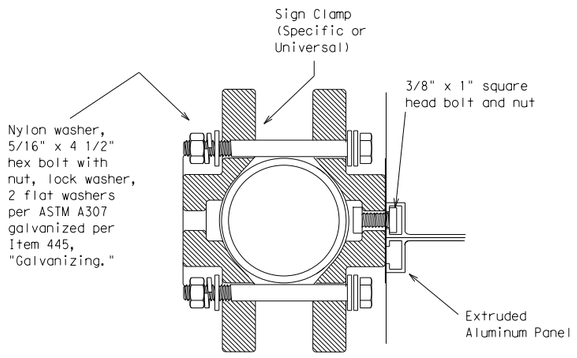
(* - See Note 12)



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

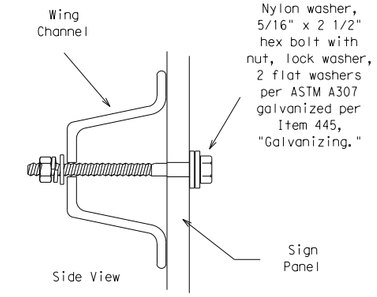


Detail A

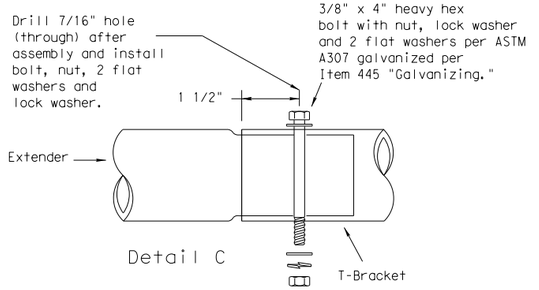


Detail D

EXTRUDED ALUMINUM SIGN WITH T BRACKET

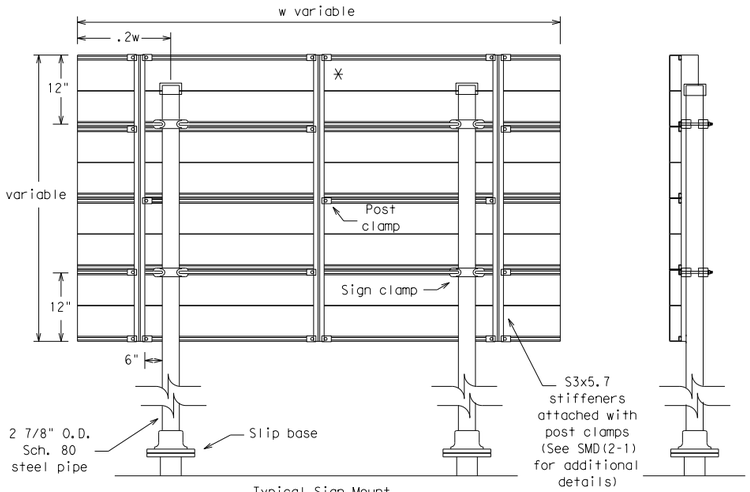


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

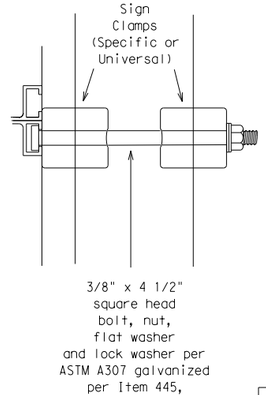


Typical Sign Mount

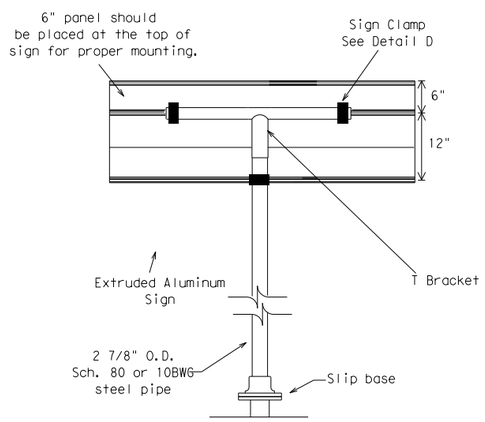
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

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

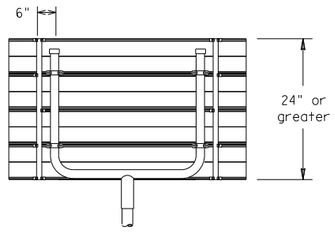
See Detail E
for clamp installation



Detail E



Extruded Aluminum Sign
With T Bracket



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

See Detail E
for clamp installation

GENERAL NOTES:

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

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

REQUIRED SUPPORT

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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

REVISIONS

9-08

CONT	SECT	JOB	HIGHWAY
0072	05	096, ETC.	IH 10, ETC.

DIST	COUNTY	SHEET NO.
SAT	KENDALL, ETC.	109

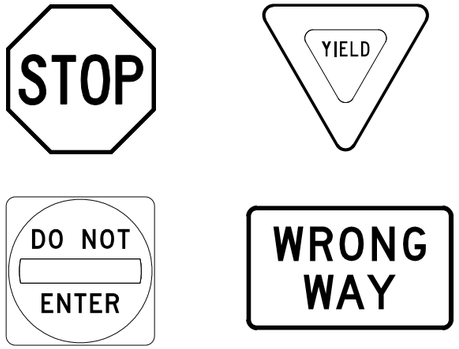
26D

DATE:
FILE:

DATE:
FILE:

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

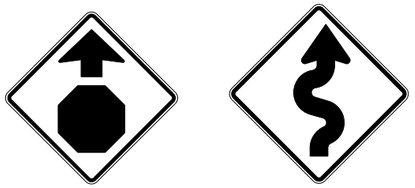
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

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

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0072	05	096, ETC.	IH 10, ETC.
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	SAT	KENDALL, ETC.		110

Note To Designer:
1. Do not alter Sheet Design or Font style, size or weight - match text attributes.
2. If additional space is needed for a numbered section, fence and adjust sections up or down as needed for proportioning and readability but do not relocate from it's relative position.

A. GENERAL SITE DATA

1. PROJECT LIMITS: IH 10 FROM 1.6 MI WEST OF US 87 TO 0.3 MI EAST OF US 87

2. PROJECT SITE MAPS:
- Project Latitude _____ Project Longitude _____
- Project Location Map: Shown on Title Sheet
- Drainage Patterns: Shown on Drainage Area Maps (N/A)
- Approx. Slopes Anticipated After Major Gradings and Areas of Soil Disturbance: Shown on Typical Sections (N/A)
- Major Controls and Locations of Stabilization Practices: Shown on SW3P Sheets (N/A)
- Project Specific Locations: Off-site waste, borrow, or storage areas are not part of this SW3P.
- Surface Waters and Discharge Locations: Shown on Drainage and Culvert Layout Sheets (N/A)

3. PROJECT DESCRIPTION: FOR THE WORK CONSISTING OF CABLE BARRIER INSTALL

- Joint-bid utilities are covered by this SW3P (N/A)
  Non-Joint Bid Utilities are not part of this SW3P.

4. FOR MAJOR SOIL DISTURBING ACTIVITIES SEQUENCE OF EVENTS:

1. Install controls down-slope of work area and initiate inspection and maintenance activities.
2. Begin phased construction with interim stabilization practices. Adjust erosion and sedimentation controls during construction to meet requirements and changing conditions and as directed/approved by the Engineer.
3. Major soil disturbing activities may include but are not limited to: right-of-way preparation, cut and/or fill to improve roadway profile, final grading and placement of topsoil and the following (if marked):

___ Placement of road base
___ Exstensive ditch grading
___ Upgrading or replacing culverts or bridges
___ Temporary detour road(s)
_X_ Other: INSTALLING CABLE BARRIER

5. EXISTING AND PROPOSED CONDITIONS:

Description of existing vegetative cover: UNIFORMLY ESTABLISHED
Percentage of existing vegetative cover: 80%
Existing vegetative cover: (mark one)
_X_ Thick or uniformly established
___ Thin and Patchy
___ None or minimal cover
Description of soils:
Site Acreage: 14.97 ACRES Acreage disturbed: 1.99 ACRES
Site runoff coefficient (pre-construction): Site runoff coefficient (post-construction):

6. RECEIVING WATERS: (Mark all that apply)

_X_ A classified stream does not pass through project.
___ A classified stream passes through project. Name _____ Segment Number _____
Name of receiving waters that will receive discharges from disturbed areas of the project: _____

Site is in a Municipal Separate Storm Sewer System (MS4).
MS4 Operator (name): TXDOT

B. BEST MANAGEMENT PRACTICES

General timing or sequence for implementation of BMPs shall be as required and/or as directed/approved by the Engineer to provide adequate controls. BMPs shown on plan sheets are to be considered "proposed" unless/until install date is shown. BMPs are to reduce sediments from road construction activities.

1. SOIL STABILIZATION PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

_P_ SEEDING
___ MULCHING (Hay or Straw)
___ BUFFER ZONES
___ PLANTING
___ COMPOST/MULCH FILTER BERM
___ SODDING
_X_ PRESERVATION OF NATURAL RESOURCES
___ FLEXIBLE CHANNEL LINER
___ RIGID CHANNEL LINER
_X_ SOIL RETENTION BLANKET
___ COMPOST MANUFACTURED TOPSOIL
___ OTHER: (Specify Practice)

2. STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

___ SILT FENCES
___ HAY BALES
___ ROCK FILTER DAMS
___ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
___ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
___ DIVERSION DIKE AND SWALE COMBINATIONS
___ PIPE SLOPE DRAINS
___ PAVED FLUMES
___ ROCK BEDDING AT CONSTRUCTION EXIT
___ TIMBER MATTING AT CONSTRUCTION EXIT
___ CHANNEL LINERS
___ SEDIMENT TRAPS
___ SEDIMENT BASINS
___ STORM INLET SEDIMENT TRAP
___ STONE OUTLET STRUCTURES
___ CURBS AND GUTTERS
___ STORM SEWERS
___ VELOCITY CONTROL DEVICES
_T_ OTHER: : TEMPORARY SEDIMENT CONTROL FENCE

3. STORM WATER MANAGEMENT:

The proposed facility was designed in consideration of hydraulic design standards to convey stormwater in a manner that is protective of public safety and property. The control of erosion from the facility is inherent to the design. Additional factors affecting post-construction stormwater at the project location include: (mark all that apply)

___ Existing or new vegetation provides natural filtration.
_X_ The design includes provisions for permanent erosion controls provided by strategically placed pervious and impervious surfaces.
___ Project includes permanent sedimentation controls (other than grass).
_X_ Velocities do not require dissipation devices.
___ Velocity-dissipation devices included in the design.
___ Other : _____

4. NON-STORM WATER DISCHARGES:

Off-site discharges are prohibited except as follows:

1. Discharges from fire fighting activities and/or fire hydrant flushings.
2. Vehicle, external building, and pavement wash water where detergents and soaps are not used and where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed).
3. Plain water used to control dust.
4. Plain water originating from potable water sources.
5. Uncontaminated groundwater, spring water or accumulated stormwater.
6. Foundation or footing drains where flows are not contaminated with process materials such as solvents.
7. Other: _____

Concrete truck wash water discharges on the site should be prohibited or minimized. If allowed by the Engineer, they must be managed in a manner so as not to contaminate surface water. They must not be located in areas of concentrated flow. Concrete truck wash-out locations must be shown on the SW3P Layout and included in the inspections.

Hazardous material spill/leak shall be prevented or minimized. At a minimum, this includes asphalt products, fuels, oils, lubricants, solvents, paints, acids, concrete curing compounds and chemical additives for soil stabilization. BMPs shall be implemented to the storage areas of these products. All spills must be cleaned and disposed properly and reported to the Engineer. Report any release at or above the reportable quantity during a 24 hour period to the National Response Center at 1-800-424-8802.

C. OTHER REQUIREMENTS & PRACTICES

1. MAINTENANCE:

All erosion and sediment controls shall be maintained in good working order. If a repair is necessary, it shall be performed before the next anticipated storm event but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from equipment. If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable. Disturbed areas on which construction activities have ceased, temporarily or permanently, shall be stabilized within 14 calendar days unless they are scheduled to and do resume within 21 calendar days. The areas adjacent to creeks and drainageways shall have priority followed by protecting storm sewer inlets.

2. INSPECTION:

For areas of the construction site that have not been finally stabilized, areas used for storage of materials, structural control measures, and locations where vehicles enter or exit the site, personnel provided by the permittee and familiar with the SW3P must inspect disturbed areas at least once every seven (7) calendar days. An Inspection and Maintenance Report shall be prepared for each inspection and the controls shall be revised on the SW3P within seven (7) calendar days following the inspection.

3. WASTE MATERIALS:

All non-hazardous municipal waste materials such as litter, rubbish, trash and garbage located on or originating from the project shall be collected and stored in a securely lidded metal dumpster, provided by the Contractor. The dumpster shall be emptied as necessary or as required by local regulation and the trash shall be hauled to a permitted disposal facility. The burying of non-hazardous municipal waste on the project shall not be permitted. Construction material waste sites, stockpiles and haul roads shall be constructed to minimize and control the amount of sediment that may enter receiving waters. Construction material waste sites shall not be located in any wetland, water body or stream bed. Construction staging areas and vehicle maintenance areas shall be constructed in a manner to minimize the runoff of pollutants.

4. OFFSITE VEHICLE TRACKING:

Off-site vehicle tracking of sediments and the generation of dust must be minimized. Excess sediments on road shall be removed on a regular basis as directed/approved by the Engineer.

5. OTHER:

See the EPIC sheet for additional environmental information.

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Consulting Engineers
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Houston, Texas 77079
(832) 619-1000

 Texas Department of Transportation

STATE OF TEXAS
M. R. NEELAPU
107595
LICENSED PROFESSIONAL ENGINEER

M. R. NEELAPU, P. E.

1/22/2023
DATE

STORM WATER POLLUTION PREVENTION PLAN (SW3P)
(CSJ 0072-05-096)

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		IH 10, ETC.
STATE	DISTRICT	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONTROL	SECTION	JOB	SHEET NO.
0072	05	096, ETC.	111

Note To Designer:
1. Do not alter Sheet Design or Font style, size or weight - match text attributes.
2. If additional space is needed for a numbered section, fence and adjust sections up or down as needed for proportioning and readability but do not relocate from it's relative position.

A. GENERAL SITE DATA

1. PROJECT LIMITS: *IH 10 FROM FREDERICK CREEK BRIDGE TO SCENIC LOOP ROAD*

2. PROJECT SITE MAPS:
   - * *Project Latitude* _____ *Project Longitude* _____
   - * *Project Location Map: Shown on Title Sheet*
   - * *Drainage Patterns: Shown on Drainage Area Maps (N/A)*
   - * *Approx. Slopes Anticipated After Major Gradings and Areas of Soil Disturbance: Shown on Typical Sections (N/A)*
   - * *Major Controls and Locations of Stabilization Practices: Shown on SW3P Sheets (N/A)*
   - * *Project Specific Locations: Off-site waste, borrow, or storage areas are not part of this SW3P.*
   - * *Surface Waters and Discharge Locations: Shown on Drainage and Culvert Layout Sheets (N/A)*

3. PROJECT DESCRIPTION: *FOR THE WORK CONSISTING OF CABLE BARRIER INSTALL*

   * *Joint-bid utilities are covered by this SW3P (N/A)*
   Non-Joint Bid Utilities are not part of this SW3P.

4. FOR MAJOR SOIL DISTURBING ACTIVITIES SEQUENCE OF EVENTS:

   1. *Install controls down-slope of work area and initiate inspection and maintenance activities.*
   2. *Begin phased construction with interim stabilization practices. Adjust erosion and sedimentation controls during construction to meet requirements and changing conditions and as directed/approved by the Engineer.*
   3. *Major soil disturbing activities may include but are not limited to: right-of-way preparation, cut and/or fill to improve roadway profile, final grading and placement of topsoil and the following (if marked):*

      ____ *Placement of road base*
      ____ *Exstensive ditch grading*
      ____ *Upgrading or replacing culverts or bridges*
      ____ *Temporary detour road(s)*
      _X_ *Other: INSTALLING CABLE BARRIER*

5. EXISTING AND PROPOSED CONDITIONS:

   Description of existing vegetative cover: UNIFORMLY ESTABLISHED
   Percentage of existing vegetative cover: 80%
   Existing vegetative cover:(mark one)
   _X_ *Thick or uniformly established*
   ____ *Thin and Patchy*
   ____ *None or minimal cover*
   Description of soils:
   Site Acreage: 18.29 ACRES *Acreage disturbed: 2.43 ACRES*
   Site runoff coefficient (pre-construction): *Site runoff coefficient (post-construction):*

6. RECEIVING WATERS: *(Mark all that apply)*

   _X_ *A classified stream does not pass through project.*
   ____ *A classified stream passes through project. Name* _____ *Segment Number* _____
   Name of receiving waters that will receive discharges from disturbed areas of the project: _____

   Site is in a Municipal Separate Storm Sewer System (MS4).
   MS4 Operator (name): TXDOT

B. BEST MANAGEMENT PRACTICES

General timing or sequence for implementation of BMPs shall be as required and/or as directed/approved by the Engineer to provide adequate controls. BMPs shown on plan sheets are to be considered "proposed" unless/until install date is shown. BMPs are to reduce sediments from road construction activities.

1. SOIL STABILIZATION PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

   _P_ SEEDING
   ____ MULCHING (Hay or Straw)
   ____ BUFFER ZONES
   ____ PLANTING
   ____ COMPOST/MULCH FILTER BERM
   ____ SODDING
   _X_ PRESERVATION OF NATURAL RESOURCES
   ____ FLEXIBLE CHANNEL LINER
   ____ RIGID CHANNEL LINER
   _X_ SOIL RETENTION BLANKET
   ____ COMPOST MANUFACTURED TOPSOIL
   ____ OTHER: (Specify Practice)

2. STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

   ____ SILT FENCES
   ____ HAY BALES
   ____ ROCK FILTER DAMS
   ____ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
   ____ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
   ____ DIVERSION DIKE AND SWALE COMBINATIONS
   ____ PIPE SLOPE DRAINS
   ____ PAVED FLUMES
   ____ ROCK BEDDING AT CONSTRUCTION EXIT
   ____ TIMBER MATTING AT CONSTRUCTION EXIT
   ____ CHANNEL LINERS
   ____ SEDIMENT TRAPS
   ____ SEDIMENT BASINS
   ____ STORM INLET SEDIMENT TRAP
   ____ STONE OUTLET STRUCTURES
   ____ CURBS AND GUTTERS
   ____ STORM SEWERS
   ____ VELOCITY CONTROL DEVICES
   _T_ OTHER: *:TEMPORARY SEDIMENT CONTROL FENCE*

3. STORM WATER MANAGEMENT:

   The proposed facility was designed in consideration of hydraulic design standards to convey stormwater in a manner that is protective of public safety and property. The control of erosion from the facility is inherent to the design. Additional factors affecting post-construction stormwater at the project location include:(mark all that apply)

   ____ *Existing or new vegetation provides natural filtration.*
   _X_ *The design includes provisions for permanent erosion controls provided by strategically placed pervious and impervious surfaces.*
   ____ *Project includes permanent sedimentation controls (other than grass).*
   _X_ *Velocities do not require dissipation devices.*
   ____ *Velocity-dissipation devices included in the design.*
   ____ *Other :* _____
   _____

4. NON-STORM WATER DISCHARGES:

   Off-site discharges are prohibited except as follows:

   1. *Discharges from fire fighting activities and/or fire hydrant flushings.*
   2. *Vehicle, external building, and pavement wash water where detergents and soaps are not used and where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed).*
   3. *Plain water used to control dust.*
   4. *Plain water originating from potable water sources.*
   5. *Uncontaminated groundwater, spring water or accumulated stormwater.*
   6. *Foundation or footing drains where flows are not contaminated with process materials such as solvents.*
   7. *Other:* _____

Concrete truck wash water discharges on the site should be prohibited or minimized. If allowed by the Engineer, they must be managed in a manner so as not to contaminate surface water. They must not be located in areas of concentrated flow. Concrete truck wash-out locations must be shown on the SW3P Layout and included in the inspections.

Hazardous material spill/leak shall be prevented or minimized. At a minimum, this includes asphalt products, fuels, oils, lubricants, solvents, paints, acids, concrete curing compounds and chemical additives for soil stabilization. BMPs shall be implemented to the storage areas of these products. All spills must be cleaned and disposed properly and reported to the Engineer. Report any release at or above the reportable quantity during a 24 hour period to the National Response Center at 1-800-424-8802.

C. OTHER REQUIREMENTS & PRACTICES

1. MAINTENANCE:

   All erosion and sediment controls shall be maintained in good working order. If a repair is necessary, it shall be performed before the next anticipated storm event but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from equipment. If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable. Disturbed areas on which construction activities have ceased, temporarily or permanently, shall be stabilized within 14 calendar days unless they are scheduled to and do resume within 21 calendar days. The areas adjacent to creeks and drainageways shall have priority followed by protecting storm sewer inlets.

2. INSPECTION:

   For areas of the construction site that have not been finally stabilized, areas used for storage of materials, structural control measures, and locations where vehicles enter or exit the site, personnel provided by the permittee and familiar with the SW3P must inspect disturbed areas at least once every seven (7) calendar days. An Inspection and Maintenance Report shall be prepared for each inspection and the controls shall be revised on the SW3P within seven (7) calendar days following the inspection.

3. WASTE MATERIALS:

   All non-hazardous municipal waste materials such as litter, rubbish, trash and garbage located on or originating from the project shall be collected and stored in a securely lidded metal dumpster, provided by the Contractor. The dumpster shall be emptied as necessary or as required by local regulation and the trash shall be hauled to a permitted disposal facility. The burying of non-hazardous municipal waste on the project shall not be permitted. Construction material waste sites, stockpiles and haul roads shall be constructed to minimize and control the amount of sediment that may enter receiving waters. Construction material waste sites shall not be located in any wetland, water body or stream bed. Construction staging areas and vehicle maintenance areas shall be constructed in a manner to minimize the runoff of pollutants.

4. OFFSITE VEHICLE TRACKING:

   Off-site vehicle tracking of sediments and the generation of dust must be minimized. Excess sediments on road shall be removed on a regular basis as directed/approved by the Engineer.

5. OTHER:

   See the EPIC sheet for additional environmental information.

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 Texas Department of Transportation

STATE OF TEXAS
M. R. NEELAPU
107595
LICENSED PROFESSIONAL ENGINEER

M. R. NEELAPU, P. E.

1/22/2023
DATE

STORM WATER POLLUTION PREVENTION PLAN (SW3P)

(CSJ 0072-06-091)

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		IH 10, ETC.
STATE	DISTRICT	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONTROL	SECTION	JOB	SHEET NO.
0072	05	096, ETC.	112

Note To Designer:
1. Do not alter Sheet Design or Font style, size or weight - match text attributes.
2. If additional space is needed for a numbered section, fence and adjust sections up or down as needed for proportioning and readability but do not relocate from it's relative position.

A. GENERAL SITE DATA

1. PROJECT LIMITS: *IH 37 FROM 0.3 MI NORTH OF US 281 TO 0.15 MI NORTH OF SH 97*

2. PROJECT SITE MAPS:
   - * *Project Latitude* _____ *Project Longitude* _____
   - * *Project Location Map: Shown on Title Sheet*
   - * *Drainage Patterns: Shown on Drainage Area Maps (N/A)*
   - * *Approx. Slopes Anticipated After Major Gradings and Areas of Soil Disturbance: Shown on Typical Sections (N/A)*
   - * *Major Controls and Locations of Stabilization Practices: Shown on SW3P Sheets (N/A)*
   - * *Project Specific Locations: Off-site waste, borrow, or storage areas are not part of this SW3P.*
   - * *Surface Waters and Discharge Locations: Shown on Drainage and Culvert Layout Sheets (N/A)*

3. PROJECT DESCRIPTION: *FOR THE WORK CONSISTING OF CABLE BARRIER INSTALL*

   * *Joint-bid utilities are covered by this SW3P (N/A)*
   Non-Joint Bid Utilities are not part of this SW3P.

4. FOR MAJOR SOIL DISTURBING ACTIVITIES SEQUENCE OF EVENTS:

   1. *Install controls down-slope of work area and initiate inspection and maintenance activities.*
   2. *Begin phased construction with interim stabilization practices. Adjust erosion and sedimentation controls during construction to meet requirements and changing conditions and as directed/approved by the Engineer.*
   3. *Major soil disturbing activities may include but are not limited to: right-of-way preparation, cut and/or fill to improve roadway profile, final grading and placement of topsoil and the following (if marked):*

      ____ *Placement of road base*
      ____ *Exstensive ditch grading*
      ____ *Upgrading or replacing culverts or bridges*
      ____ *Temporary detour road(s)*
      _X_ *Other: INSTALLING CABLE BARRIER*

5. EXISTING AND PROPOSED CONDITIONS:

   Description of existing vegetative cover: UNIFORMLY ESTABLISHED
   Percentage of existing vegetative cover: 80%
   Existing vegetative cover: (mark one)
   _X_ *Thick or uniformly established*
   ____ *Thin and Patchy*
   ____ *None or minimal cover*
   Description of soils:
   Site Acreage: 42.27 ACRES *Acreage disturbed: 4.67 ACRES*
   Site runoff coefficient (pre-construction): *Site runoff coefficient (post-construction):*

6. RECEIVING WATERS: *(Mark all that apply)*

   _X_ *A classified stream does not pass through project.*
   ____ *A classified stream passes through project. Name* _____ *Segment Number* _____
   Name of receiving waters that will receive discharges from disturbed areas of the project: _____

   Site is in a Municipal Separate Storm Sewer System (MS4).
   MS4 Operator (name): TXDOT

B. BEST MANAGEMENT PRACTICES

General timing or sequence for implementation of BMPs shall be as required and/or as directed/approved by the Engineer to provide adequate controls. BMPs shown on plan sheets are to be considered "proposed" unless/until install date is shown. BMPs are to reduce sediments from road construction activities.

1. SOIL STABILIZATION PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

_P_	SEEDING	_X_	PRESERVATION OF NATURAL RESOURCES
____	MULCHING (Hay or Straw)	____	FLEXIBLE CHANNEL LINER
____	BUFFER ZONES	____	RIGID CHANNEL LINER
____	PLANTING	_X_	SOIL RETENTION BLANKET
____	COMPOST/MULCH FILTER BERM	____	COMPOST MANUFACTURED TOPSOIL
____	SODDING	____	OTHER: (Specify Practice)

2. STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

____ SILT FENCES
____ HAY BALES
____ ROCK FILTER DAMS
____ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
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____ DIVERSION DIKE AND SWALE COMBINATIONS
____ PIPE SLOPE DRAINS
____ PAVED FLUMES
____ ROCK BEDDING AT CONSTRUCTION EXIT
____ TIMBER MATTING AT CONSTRUCTION EXIT
____ CHANNEL LINERS
____ SEDIMENT TRAPS
____ SEDIMENT BASINS
____ STORM INLET SEDIMENT TRAP
____ STONE OUTLET STRUCTURES
____ CURBS AND GUTTERS
____ STORM SEWERS
____ VELOCITY CONTROL DEVICES
_T_ OTHER: *:TEMPORARY SEDIMENT CONTROL FENCE*

3. STORM WATER MANAGEMENT:

The proposed facility was designed in consideration of hydraulic design standards to convey stormwater in a manner that is protective of public safety and property. The control of erosion from the facility is inherent to the design. Additional factors affecting post-construction stormwater at the project location include: (mark all that apply)

____ *Existing or new vegetation provides natural filtration.*
_X_ *The design includes provisions for permanent erosion controls provided by strategically placed pervious and impervious surfaces.*
____ *Project includes permanent sedimentation controls (other than grass).*
_X_ *Velocities do not require dissipation devices.*
____ *Velocity-dissipation devices included in the design.*
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4. NON-STORM WATER DISCHARGES:

Off-site discharges are prohibited except as follows:

1. *Discharges from fire fighting activities and/or fire hydrant flushings.*
2. *Vehicle, external building, and pavement wash water where detergents and soaps are not used and where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed).*
3. *Plain water used to control dust.*
4. *Plain water originating from potable water sources.*
5. *Uncontaminated groundwater, spring water or accumulated stormwater.*
6. *Foundation or footing drains where flows are not contaminated with process materials such as solvents.*
7. *Other:* _____

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C. OTHER REQUIREMENTS & PRACTICES

1. MAINTENANCE:

All erosion and sediment controls shall be maintained in good working order. If a repair is necessary, it shall be performed before the next anticipated storm event but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from equipment. If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable. Disturbed areas on which construction activities have ceased, temporarily or permanently, shall be stabilized within 14 calendar days unless they are scheduled to and do resume within 21 calendar days. The areas adjacent to creeks and drainageways shall have priority followed by protecting storm sewer inlets.

2. INSPECTION:

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3. WASTE MATERIALS:

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4. OFFSITE VEHICLE TRACKING:

Off-site vehicle tracking of sediments and the generation of dust must be minimized. Excess sediments on road shall be removed on a regular basis as directed/approved by the Engineer.

5. OTHER:

See the EPIC sheet for additional environmental information.

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 Texas Department of Transportation

STATE OF TEXAS
M. R. NEELAPU
107595
LICENSED
PROFESSIONAL ENGINEER

M. R. NEELAPU, P. E.

1/22/2023
DATE

STORM WATER POLLUTION PREVENTION PLAN (SW3P)
(CSJ 0073-10-060)

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		IH 10, ETC.
STATE	DISTRICT	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONTROL	SECTION	JOB	SHEET NO.
0072	05	096, ETC.	113

Note To Designer:
1. Do not alter Sheet Design or Font style, size or weight - match text attributes.
2. If additional space is needed for a numbered section, fence and adjust sections up or down as needed for proportioning and readability but do not relocate from it's relative position.

A. GENERAL SITE DATA

1. PROJECT LIMITS: *IH 37 FROM 0.55 MI SOUTH OF FM 3006 TO ATASCOSA/BEXAR COUNTY LINE*

2. PROJECT SITE MAPS:
- * *Project Latitude* _____ *Project Longitude* _____
- * *Project Location Map: Shown on Title Sheet*
- * *Drainage Patterns: Shown on Drainage Area Maps (N/A)*
- * *Approx. Slopes Anticipated After Major Gradings and Areas of Soil Disturbance: Shown on Typical Sections (N/A)*
- * *Major Controls and Locations of Stabilization Practices: Shown on SW3P Sheets (N/A)*
- * *Project Specific Locations: Off-site waste, borrow, or storage areas are not part of this SW3P.*
- * *Surface Waters and Discharge Locations: Shown on Drainage and Culvert Layout Sheets (N/A)*

3. PROJECT DESCRIPTION: *FOR THE WORK CONSISTING OF CABLE BARRIER INSTALL*

* *Joint-bid utilities are covered by this SW3P (N/A)*
Non-Joint Bid Utilities are not part of this SW3P.

4. FOR MAJOR SOIL DISTURBING ACTIVITIES SEQUENCE OF EVENTS:

1. Install controls down-slope of work area and initiate inspection and maintenance activities.

2. Begin phased construction with interim stabilization practices. Adjust erosion and sedimentation controls during construction to meet requirements and changing conditions and as directed/approved by the Engineer.

3. Major soil disturbing activities may include but are not limited to: right-of-way preparation, cut and/or fill to improve roadway profile, final grading and placement of topsoil and the following (if marked):

- ____ *Placement of road base*
- ____ *Exstensive ditch grading*
- ____ *Upgrading or replacing culverts or bridges*
- ____ *Temporary detour road(s)*
- _X_ *Other: INSTALLING CABLE BARRIER*

5. EXISTING AND PROPOSED CONDITIONS:

Description of existing vegetative cover: UNIFORMLY ESTABLISHED
Percentage of existing vegetative cover: 80%
Existing vegetative cover: (mark one)
- _X_ *Thick or uniformly established*
- ____ *Thin and Patchy*
- ____ *None or minimal cover*

Description of soils:
Site Acreage: 39.45 ACRES *Acreage disturbed: 5.66 ACRES*
Site runoff coefficient (pre-construction): *Site runoff coefficient (post-construction):*

6. RECEIVING WATERS: *(Mark all that apply)*

_X_ *A classified stream does not pass through project.*

____ *A classified stream passes through project. Name* _____ *Segment Number* _____

Name of receiving waters that will receive discharges from disturbed areas of the project: _____

Site is in a Municipal Separate Storm Sewer System (MS4).
MS4 Operator (name): TXDOT

B. BEST MANAGEMENT PRACTICES

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1. SOIL STABILIZATION PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- _P_ SEEDING
- ____ MULCHING (Hay or Straw)
- ____ BUFFER ZONES
- ____ PLANTING
- ____ COMPOST/MULCH FILTER BERM
- ____ SODDING
- _X_ PRESERVATION OF NATURAL RESOURCES
- ____ FLEXIBLE CHANNEL LINER
- ____ RIGID CHANNEL LINER
- _X_ SOIL RETENTION BLANKET
- ____ COMPOST MANUFACTURED TOPSOIL
- ____ OTHER: (Specify Practice)

2. STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- ____ SILT FENCES
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- ____ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
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- ____ STONE OUTLET STRUCTURES
- ____ CURBS AND GUTTERS
- ____ STORM SEWERS
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- _T_ OTHER: *:TEMPORARY SEDIMENT CONTROL FENCE*

3. STORM WATER MANAGEMENT:

The proposed facility was designed in consideration of hydraulic design standards to convey stormwater in a manner that is protective of public safety and property. The control of erosion from the facility is inherent to the design. Additional factors affecting post-construction stormwater at the project location include: (mark all that apply)

- ____ *Existing or new vegetation provides natural filtration.*
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C. OTHER REQUIREMENTS & PRACTICES

1. MAINTENANCE:

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2. INSPECTION:

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3. WASTE MATERIALS:

All non-hazardous municipal waste materials such as litter, rubbish, trash and garbage located on or originating from the project shall be collected and stored in a securely lidded metal dumpster, provided by the Contractor. The dumpster shall be emptied as necessary or as required by local regulation and the trash shall be hauled to a permitted disposal facility. The burying of non-hazardous municipal waste on the project shall not be permitted. Construction material waste sites, stockpiles and haul roads shall be constructed to minimize and control the amount of sediment that may enter receiving waters. Construction material waste sites shall not be located in any wetland, water body or stream bed. Construction staging areas and vehicle maintenance areas shall be constructed in a manner to minimize the runoff of pollutants.

4. OFFSITE VEHICLE TRACKING:

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5. OTHER:

See the EPIC sheet for additional environmental information.

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 Texas Department of Transportation

STATE OF TEXAS
M. R. NEELAPU
107595
LICENSED PROFESSIONAL ENGINEER

M. R. NEELAPU, P. E.

1/22/2023
DATE

STORM WATER POLLUTION PREVENTION PLAN (SW3P)
(CSJ 0073-10-061)

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		IH 10, ETC.
STATE	DISTRICT	COUNTY	
TEXAS	SAT	KENDALL, ETC.	
CONTROL	SECTION	JOB	SHEET NO.
0072	05	096, ETC.	114

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

Texas Pollutant Discharge Elimination System (TPDES) TXR 150000: Stormwater Discharge Permit or Construction General Permit (CGP) required for projects with 1 or more acres distrubed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

☐ No Action Required ☒ Required Action

Action No.

(1.) Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000.
2. Comply with the Storm Water Pollution Prevention Plan (SW3P) and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and Texas Commission on Environmental Quality (TCEQ), Environmental Protection Agency (EPA) or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, Contractor shall submit Notice of Intent (NOI) to TCEQ and the Engineer.
5. NOI required: ☒Yes ☐No

Note: If amount of soil disturbance changes, permit requirements may change.

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

US Army Corps of Engineers (USACE) Permit required for filling, dredging, excavating or other work in any potential USACE jurisdictional water, such as, rivers, creeks, streams, or wetlands.

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

☒ No Permit Required
☐ Nationwide Permit (NWP) 14 - Pre-construction Notice (PCN) not Required
☐ Nationwide Permit 14 - PCN Required
☐ 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 (BMPs) planned to control erosion, sedimentation and post-project total suspended solids (TSS).

1.

2.

3.

4.

401 Best Management Practices: (Not applicable if no USACE permit)

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

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

IV. VEGETATION RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

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

☐ No Action Required ☒ Required Action

Action No.

1. MIGRATORY BIRD NESTS: Schedule construction activities as needed to meet the following requirements:

   A. Do not remove or destroy any active migratory bird nests (nests containing eggs and/or flightless birds) at any time of year. If there are any active nests, they shall not be removed until the nests become inactive.

   B. On/in structures, if there are any active nests, they shall not be removed until all nests become inactive. After inactive nests are removed and/or before nest activity begins, deterrent materials may be applied to the structures to prevent future nest building.

2. See Item 5 in General Notes.
3.
4.

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

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 follwing 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

Hazardous Materials or Contamination Issues Specific to this Project:

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Does the project involve the demolition of a span bridge?

☐ Yes ☒ No (No further action required)

If "Yes", a pre- demolition notification must be submitted to the Texas Department of State Health Services. The contractor shall contact TxDOT's Project Engineer 25 calendar days prior to the demolition of the bridges(s) on the project to assist with the notification.

VII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

STATE OF TEXAS
M. R. NEELAPU
107595
LICENSED PROFESSIONAL ENGINEER

M.R. NEELAPU, P.E.

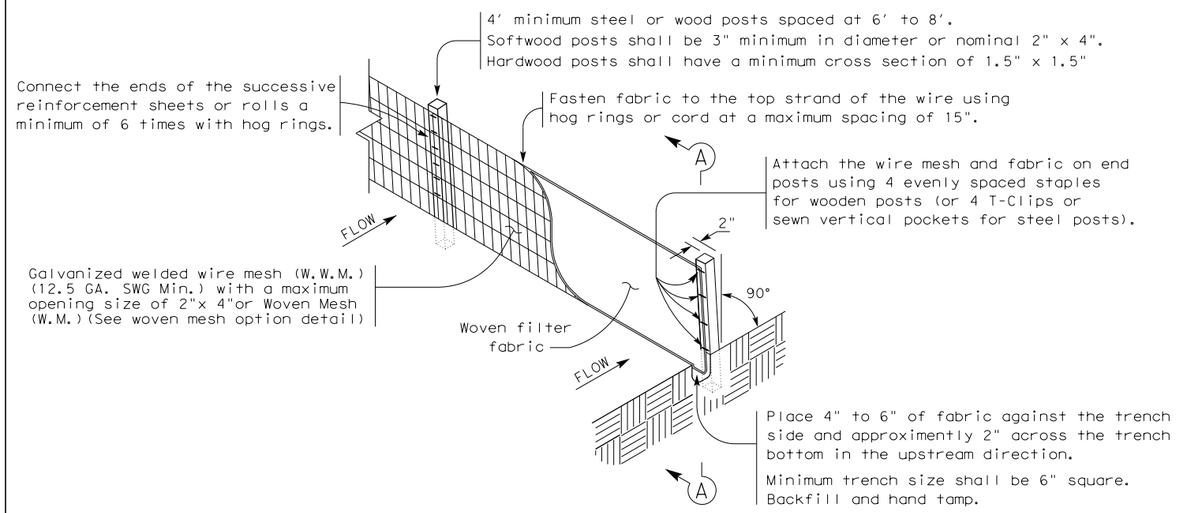
1/22/2023
DATE

Texas Department of Transportation
San Antonio District Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

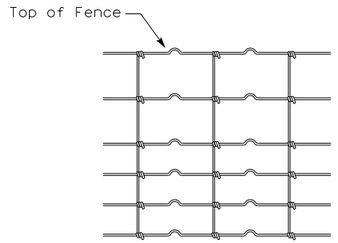
EPIC

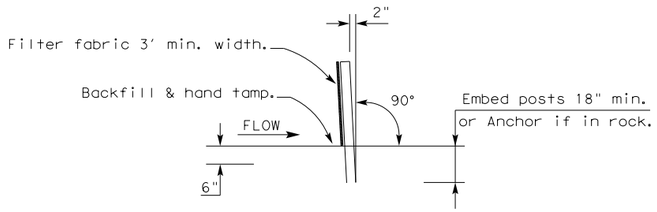
FILE: epic 2015-10-09 SAT.dgn	DN: TxDOT	CK: TxDOT	DW: BW	CK: GAG
©TxDOT OCTOBER 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0072	05	096, ETC.	IH 10, ETC.
	DIST	COUNTY		SHEET NO.
	SAT	KENDALL, ETC.		115



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

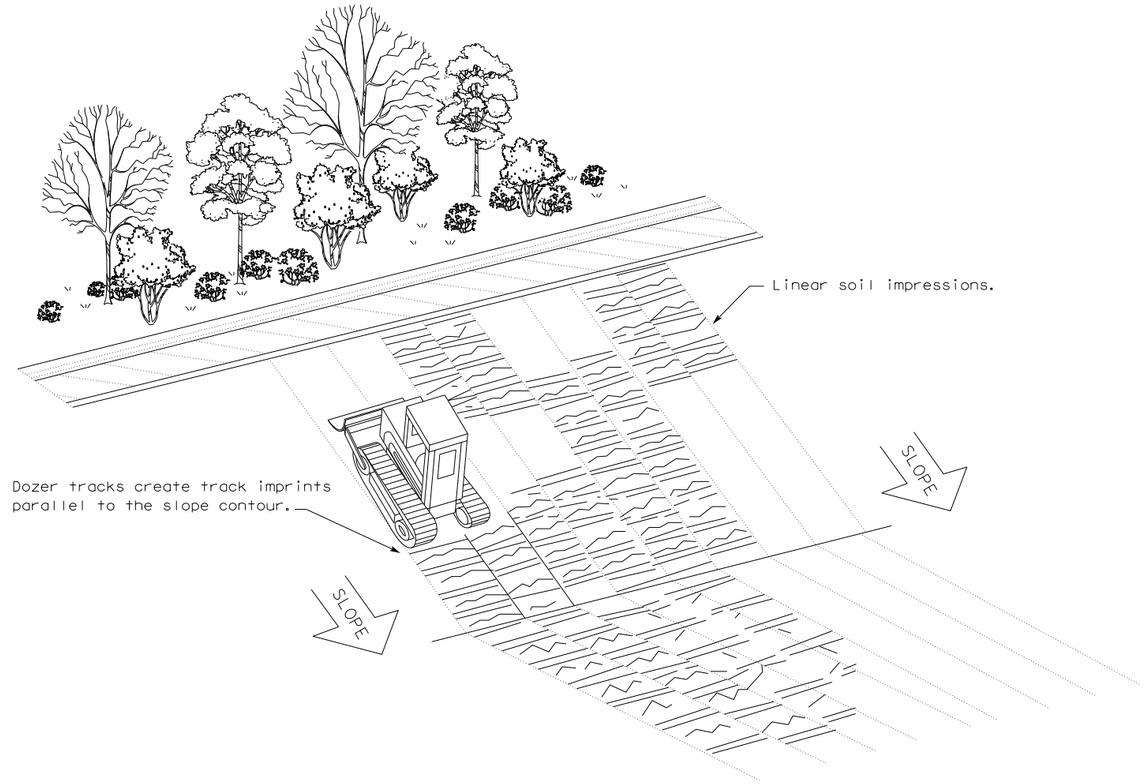
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT		CK: KM		DW: VP		DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0072	05	096, ETC.		IH 10, ETC.		
	DIST	COUNTY					SHEET NO.
	SAT	KENDALL, ETC.					116

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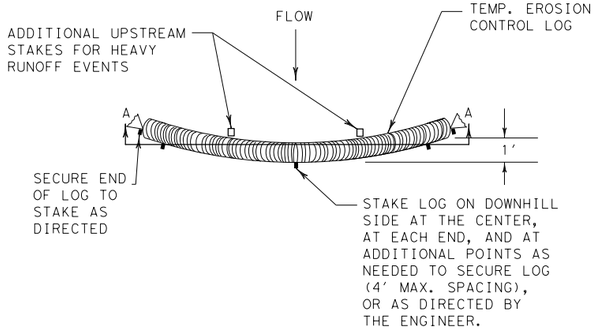
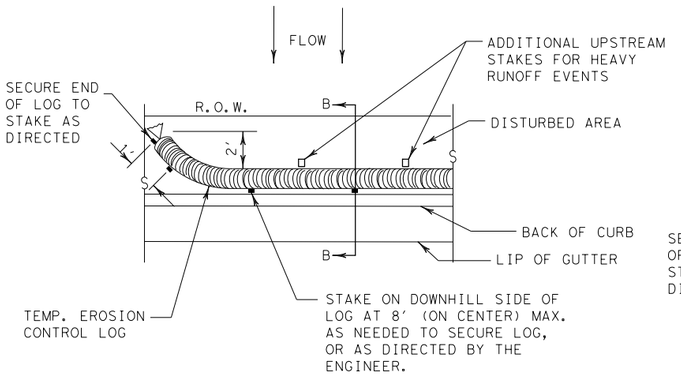


PLAN VIEW



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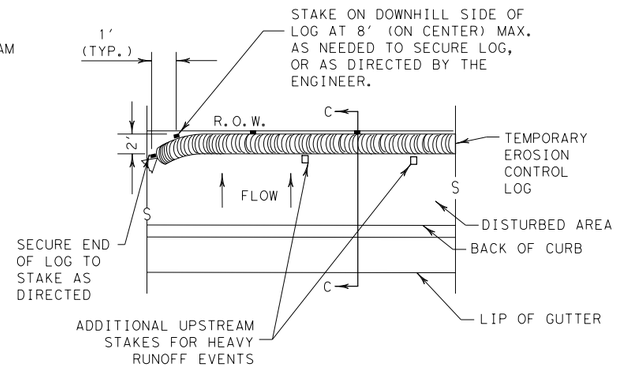
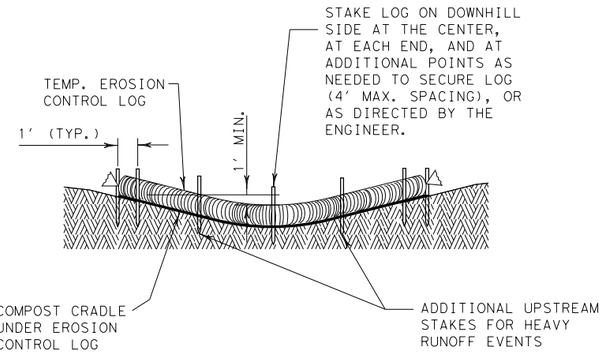


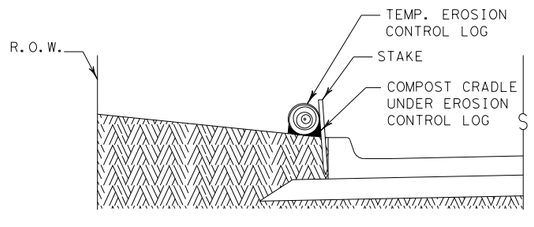
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

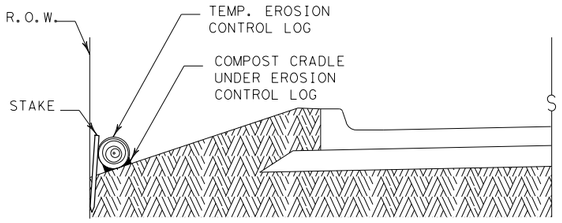
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

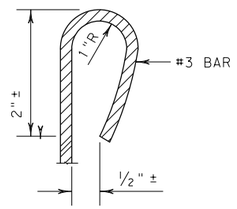
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL

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.

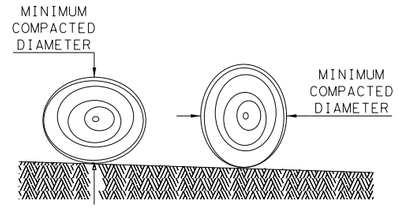
Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

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.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

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	
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	SAT	KENDALL, ETC.			117	

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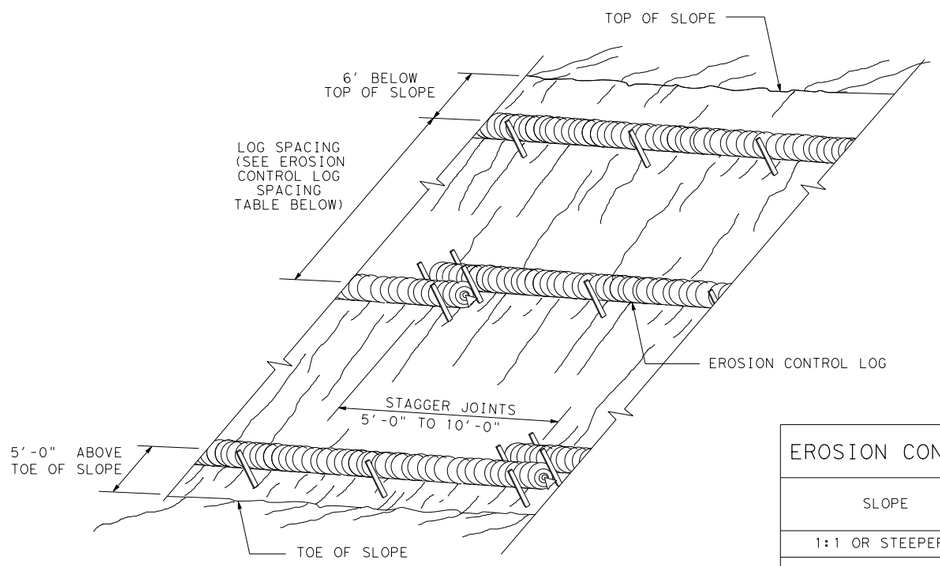
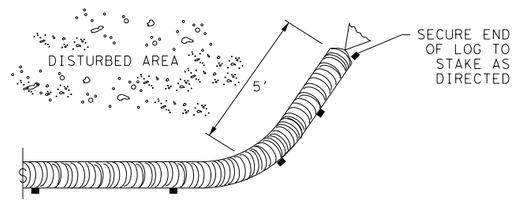


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

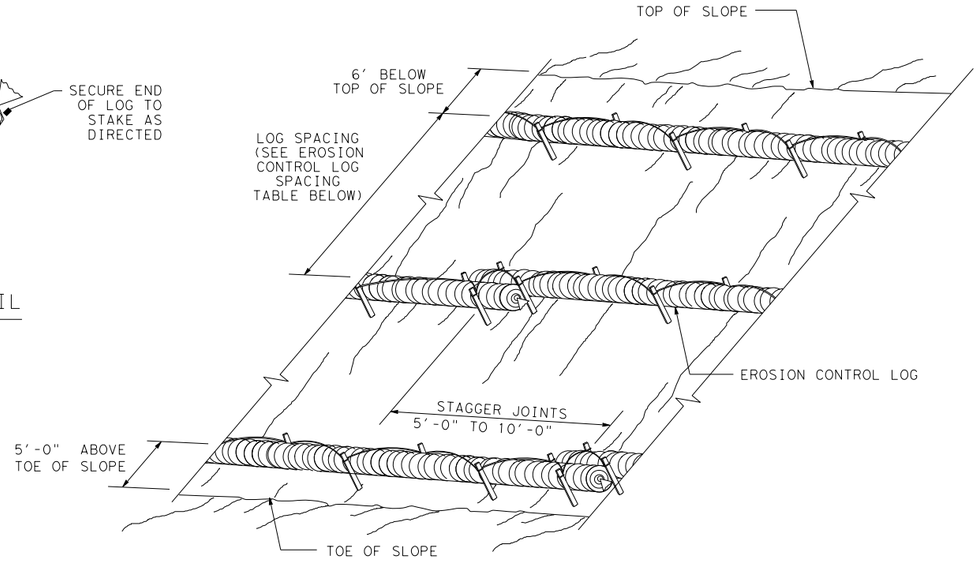
CL-SST



END SECTION RAP DETAIL

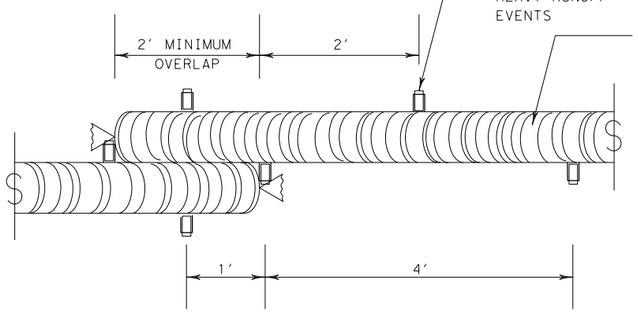
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5′	10′	15′	20′
2:1	10′	20′	30′	40′
3:1	15′	30′	45′	60′
4:1 OR FLATTER	20′	40′	60′	80′

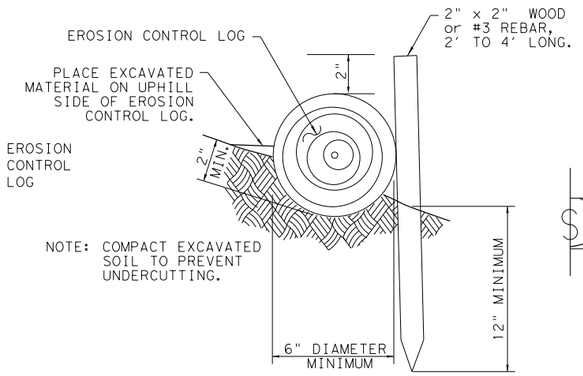
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

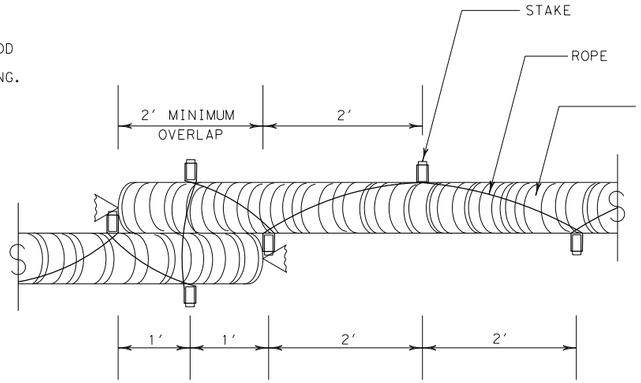
CL-SSL

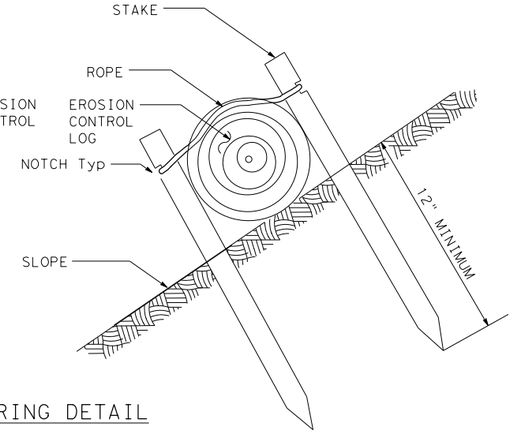




STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

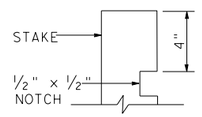




STAKE AND LASHING ANCHORING DETAIL

CL-SSL

TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"



STAKE NOTCH DETAIL

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
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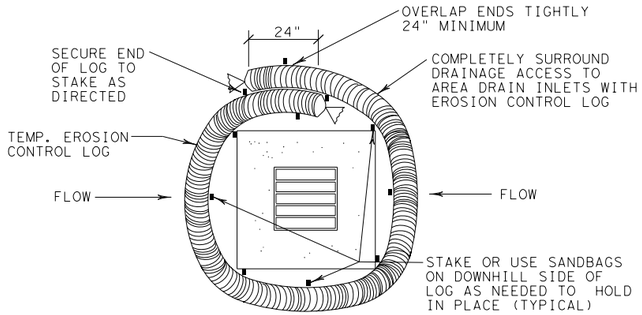
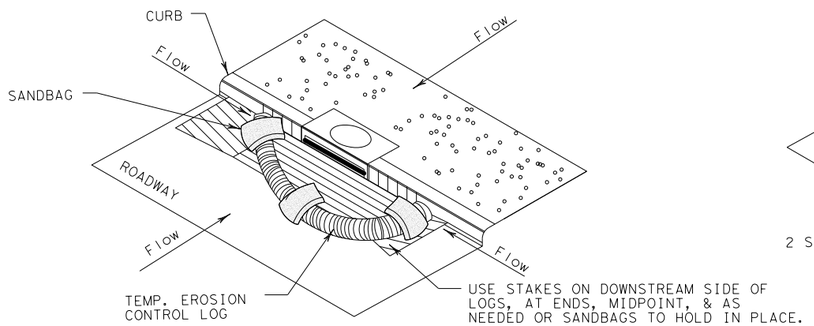


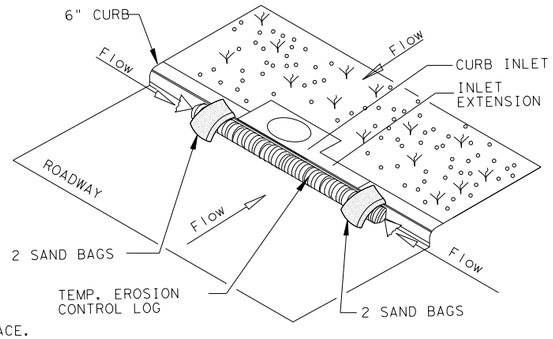
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

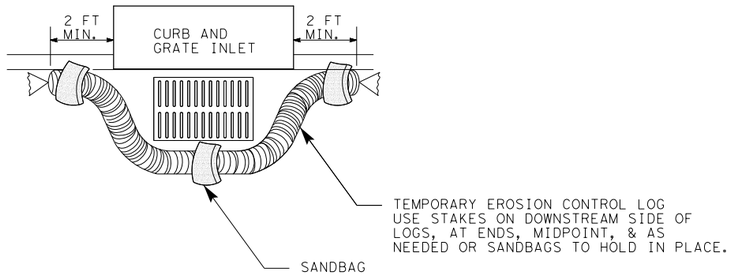
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

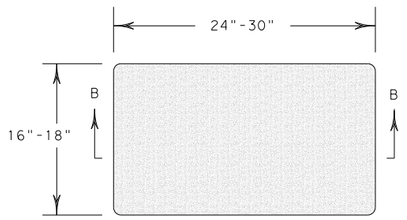
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI

SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
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	SAT	KENDALL, ETC.		119