

DATE: 9/14/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 09306-00-224) COUNTY, ETC. PROJ. NO. LETTING DATE VARIOUS LETTING DATE ACCEPTED

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SEE SHEET 2

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT NO: STP 2021(172), ETC.

VARIOUS HIGHWAYS
ECTOR COUNTY, ETC.

LOOP 338 @ SH 191
FM 307 @ FM 1379
FM 1787 @ FM 1788

PROJECT LENGTH

LP 338 AND SH 191 LENGTH (CSJ: 0887-01-039, ETC.) = 3879.48 FT = 0.735 MILES
FM 307 AND FM 1379 LENGTH (CSJ: 0887-01-039, ETC.) = 3554.92 FT = 0.673 MILES
FM 1787 AND FM 1788 LENGTH (CSJ: 0887-01-039, ETC.) = 8676.20 FT = 1.643 MILES
NET LENGTH OF PROJECT = 16110.60 FT = 3.051 MILES

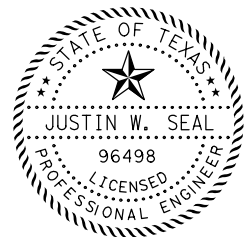
FOR THE CONSTRUCTION OF INTERSECTION AND OPERATIONAL IMPROVEMENTS
CONSISTING OF WIDENING, GRADING, BASE, PAVEMENT, TRAFFIC SIGNALS,
ILLUMINATION, SIGNING, AND PAVEMENT MARKINGS

INTERSECTION	FUNCTIONAL CLASS	HIGHWAY TYPE	DESIGN SPEED	TERRAIN	ADT (2018)	ADT (2038)
LOOP 338 @ SH 191	PRINCIPAL ARTERIAL	URBAN STREET	55 MPH	LEVEL	14,340	20,080
FM 307 @ FM 1379	MINOR ARTERIAL	SUBURBAN ROADWAY	45 MPH	LEVEL	8,340	11,342
FM 1787 @ FM 1788	MAJOR COLLECTOR	RURAL TWO-LANE	75 MPH	LEVEL	5,375	7,525

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2021(172), ETC.	1
STATE	STATE DIST.	COUNTY
TEXAS	ODA	ECTOR, ETC.
CONT.	SECT.	JOB HIGHWAY NO.
0887	01	039, ETC. VARIOUS



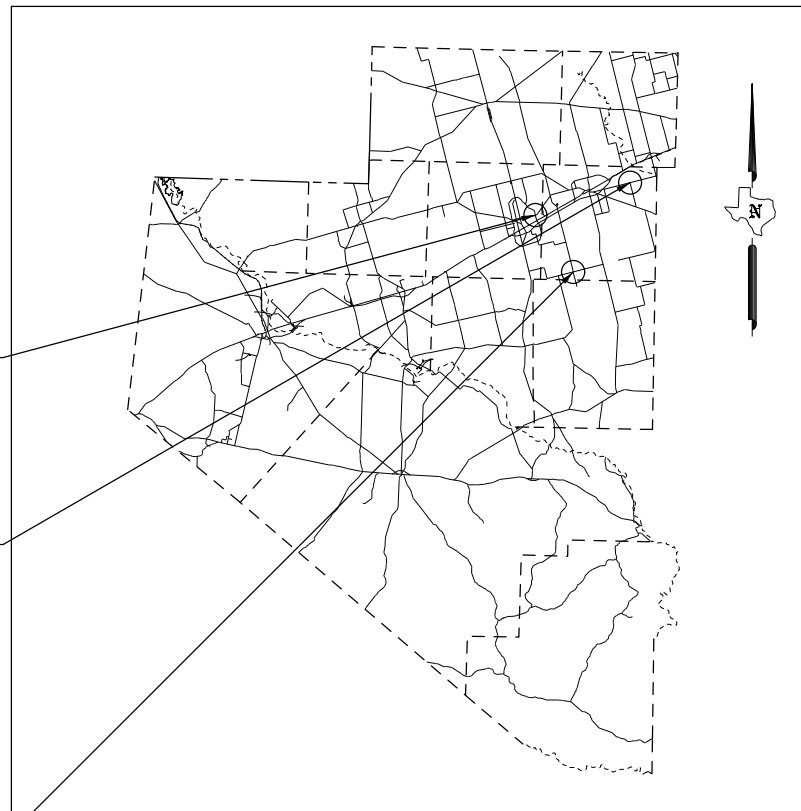
SUBMITTED BY: 09/14/2020
Justin W. Seal
PROJECT MANAGER



LP 338 AT SH 191
CSJ: 0887-01-039, ETC.

FM 307 AT FM 1379
CSJ: 0887-01-039, ETC.

FM 1787 AT FM 1788
CSJ: 0887-01-039, ETC.



SCALE: NOT TO SCALE

REGISTERED ACCESSIBILITY SPECIALIST (RAS) INSPECTION REQUIRED

TDLR PROJECT NO. TABS2021000647

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOV. 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, MAY 2012).

LP 338 AT SH 191
CSJ: 0887-01-039, ETC.
EXCEPTIONS: NONE
RR CROSSINGS: NONE
EQUATIONS: NONE

FM 307 AT FM 1379
CSJ: 0887-01-039, ETC.
EXCEPTIONS: NONE
RR CROSSINGS: NONE
EQUATIONS: NONE

FM 1787 AT FM 1788
CSJ: 0887-01-039, ETC.
EXCEPTIONS: NONE
RR CROSSINGS: NONE
EQUATIONS: FM 1788

900+93.00 BK = 7+87.30 AH

FINAL PLANS

CONTRACTOR:

LETTING DATE:

DATE CONTRACTOR BEGAN WORK:

DATE WORK WAS COMPLETED:

DATE WORK WAS ACCEPTED:

FINAL CONTRACT COST: \$

TEXAS DEPARTMENT OF TRANSPORTATION

SUBMITTED CONCURRENCE: 9/14 20__
Shel Hester
AREA ENGINEER, P.E.

RECOMMENDED FOR LETTING: 9/14/2020 20__
DocuSigned by: *[Signature]*
DIRECTOR OF TRANSPORTATION PLANNING AND DEVELOPMENT, P.E.

APPROVED FOR LETTING: 9/15/2020 20__
DocuSigned by: *[Signature]*
DISTRICT ENGINEER, P.E.

DATE: 9/2/2020
 FILENAME: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\Des\gnData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\1. General\ODA*INDEX

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SHEET NO.

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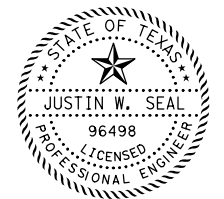
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* THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

Justin W. Seal, P.E. , 09/02/20
 JUSTIN W. SEAL, P.E. DATE

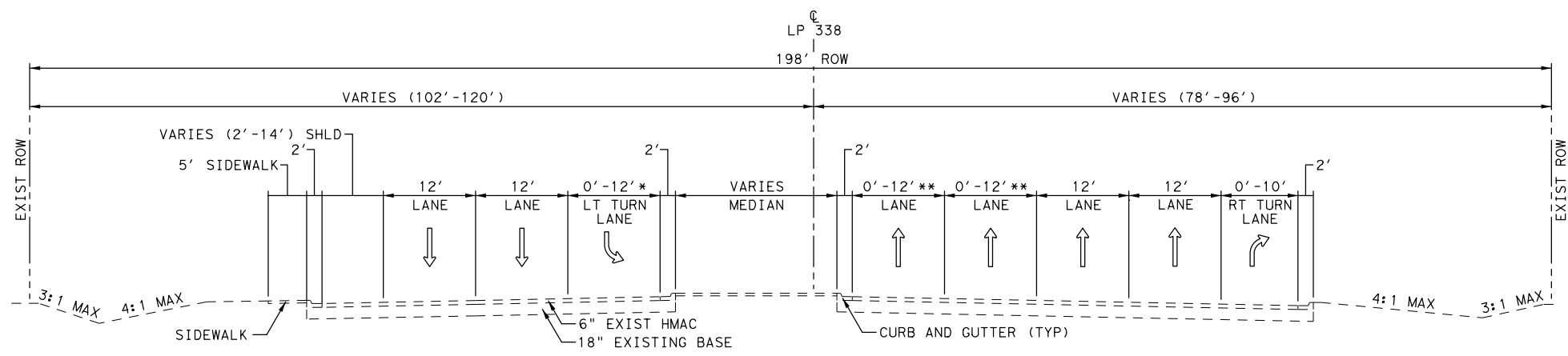
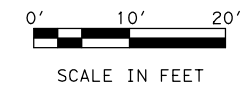


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

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GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

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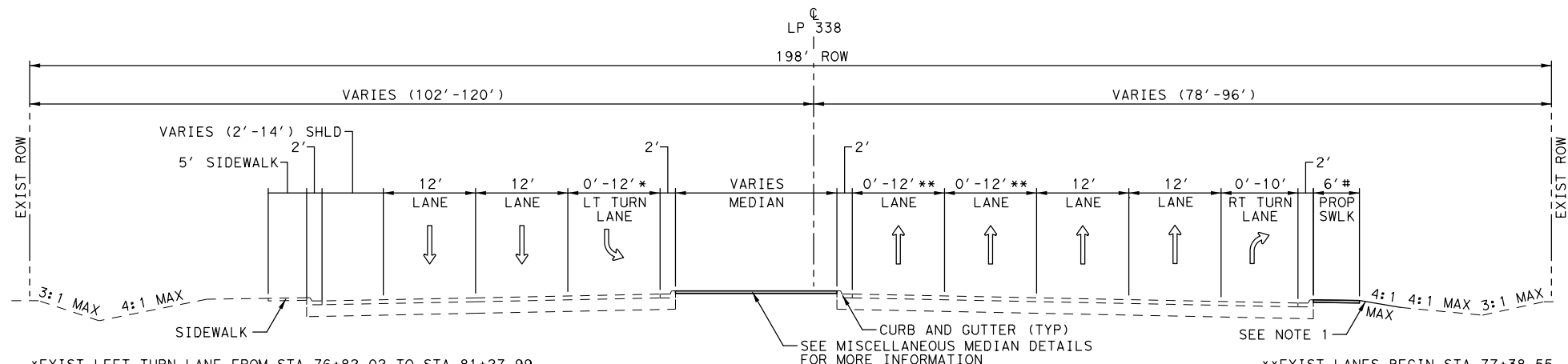
*EXIST LEFT TURN LANE FROM STA 76+82.02 TO STA 81+27.99

EXIST TYPICAL SECTION
 STA 73+88.38 TO STA 82+25.10

**EXIST LANES BEGIN STA 77+38.55

NOTES:

1. EMBANKMENT FOR SIDEWALK CONSTRUCTION IS CONTROLLED BY EMBANKMENT CLASS B (ORD COMPACTION). THIS WORK WILL NOT BE PAID FOR SEPARATELY BUT WILL BE SUBSIDIARY TO ITEM 531 SIDEWALKS.



*EXIST LEFT TURN LANE FROM STA 76+82.02 TO STA 81+27.99

PROP TYPICAL SECTION
 STA 73+88.38 TO STA 82+25.10

**EXIST LANES BEGIN STA 77+38.55
 #PROP SIDEWALK FROM STA 77+25.38 TO STA 81+66.65



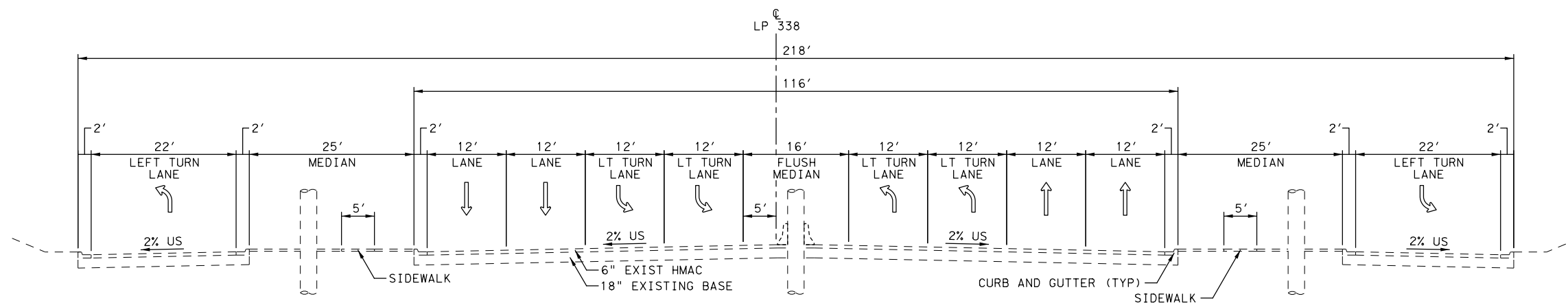
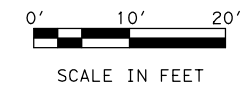
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**LP 338
 TYPICAL SECTIONS
 AT SH 191**

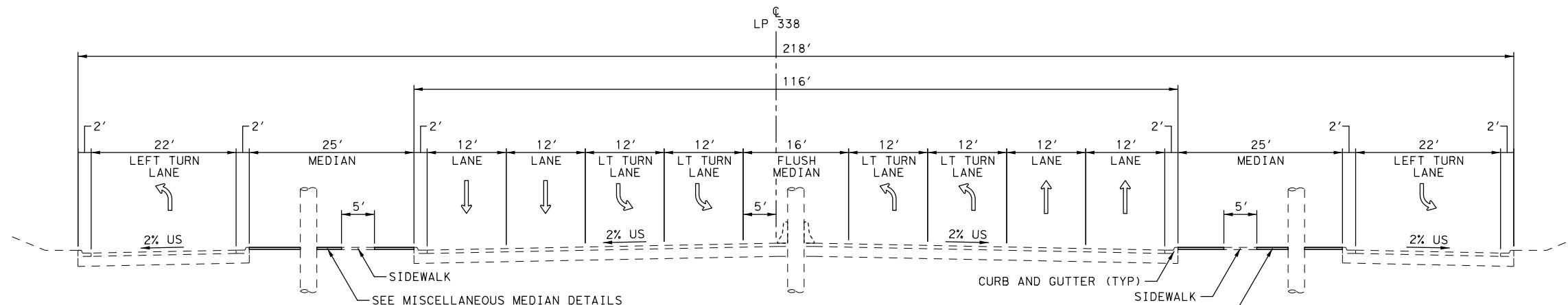
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GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.	
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.	
							SHEET NO.	3

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EXIST TYPICAL SECTION
 STA 82+25.10 TO STA 85+74.74



PROP TYPICAL SECTION
 STA 82+25.10 TO STA 85+74.74



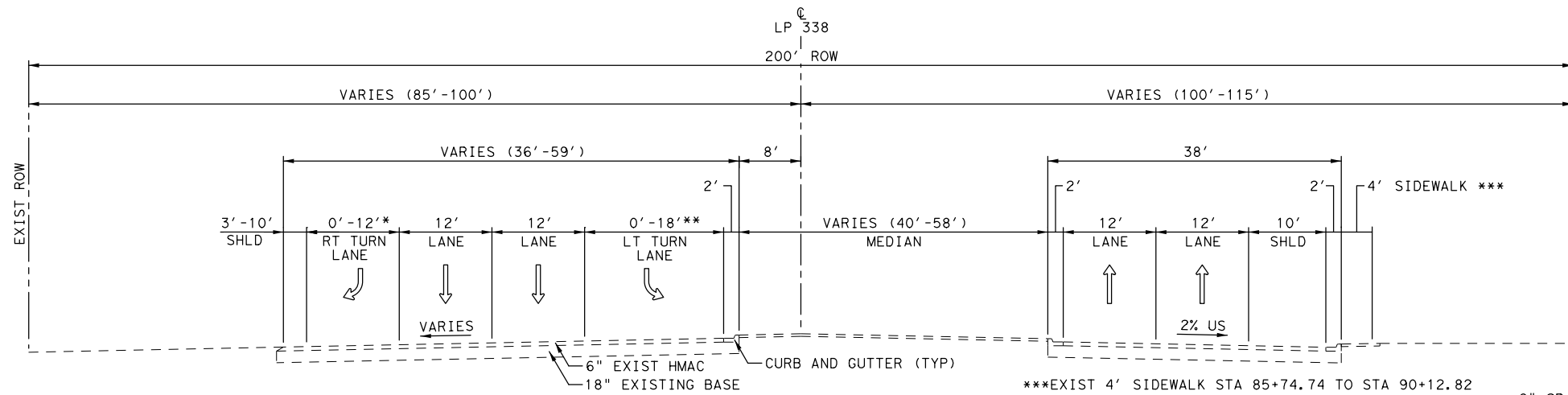
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**LP 338
 TYPICAL SECTIONS
 AT SH 191**

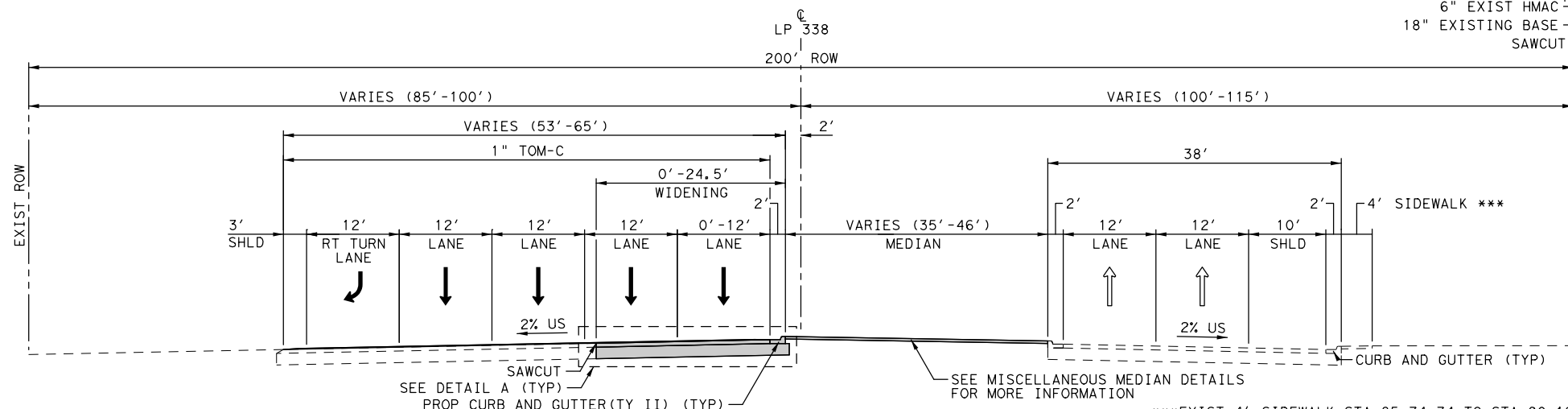
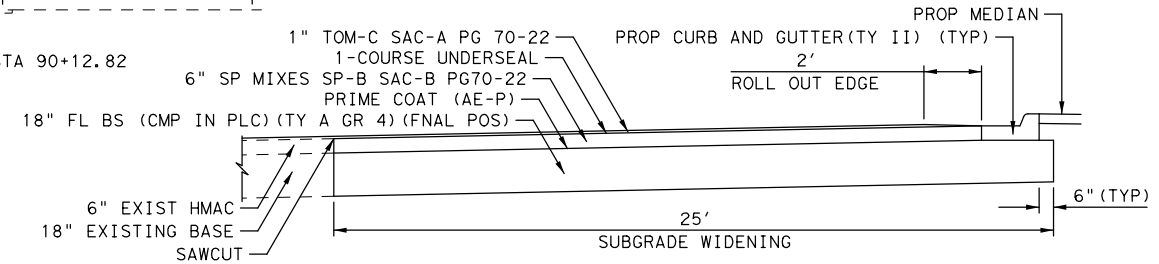
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*RIGHT TURN LANE FROM STA 85+74.74 TO STA 90+99.05
 **LEFT TURN LANE FROM STA 88+42.67 TO STA 92+70.26

EXIST TYPICAL SECTION
 STA 85+74.74 TO STA 97+13.00

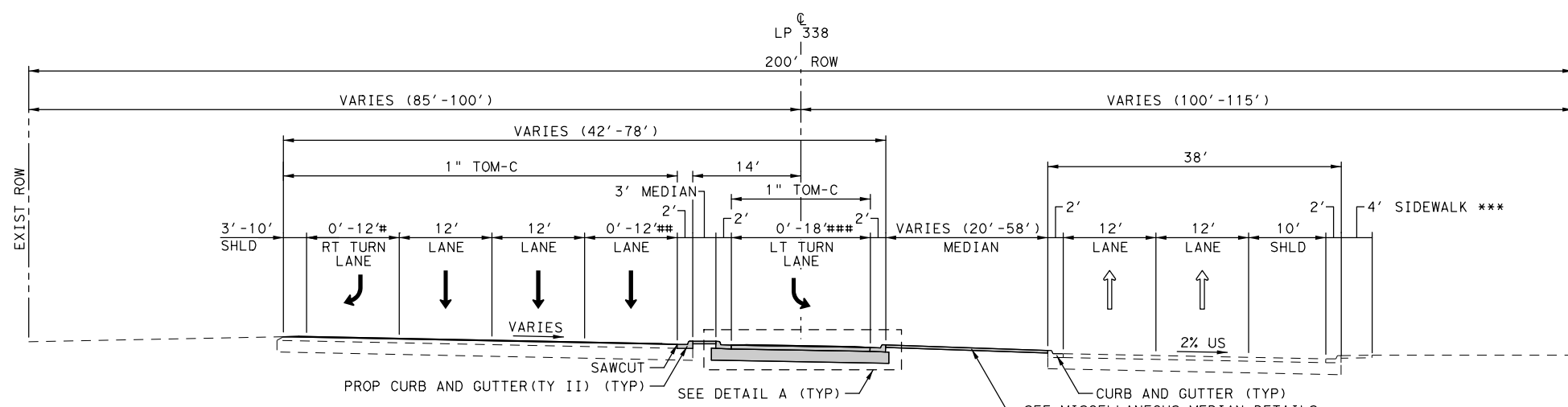


SEE DETAIL A (TYP)
 PROP CURB AND GUTTER (TY II) (TYP)

SEE MISCELLANEOUS MEDIAN DETAILS
 FOR MORE INFORMATION

PROP TYPICAL SECTION
 STA 85+74.74 TO STA 88+28.24

***EXIST 4' SIDEWALK STA 85+74.74 TO STA 90+12.82



PROP CURB AND GUTTER (TY II) (TYP)

SEE DETAIL A (TYP)

SEE MISCELLANEOUS MEDIAN DETAILS
 FOR MORE INFORMATION

PROP TYPICAL SECTION
 STA 88+28.24 TO STA 97+13.00

***EXIST 4' SIDEWALK STA 85+74.74 TO STA 90+12.82

#PROP RIGHT TURN LANE ENDS AT STA 88+99.24
 ##PROP THRU LANE FROM STA 88+28.24 TO STA 92+70.26
 ###PROP LEFT TURN LANE FROM STA 88+42.67 TO STA 93+00.01



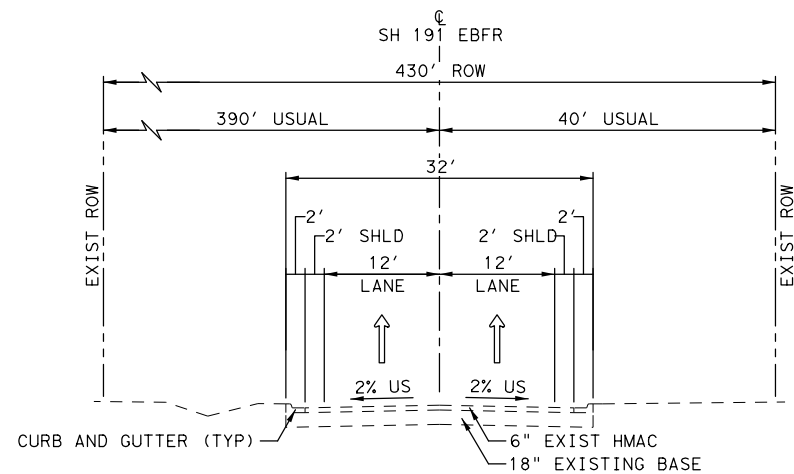
JMT TBPE REGISTRATION NO. F-16341
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Texas Department of Transportation
 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**LP 338
 TYPICAL SECTIONS
 AT SH 191**

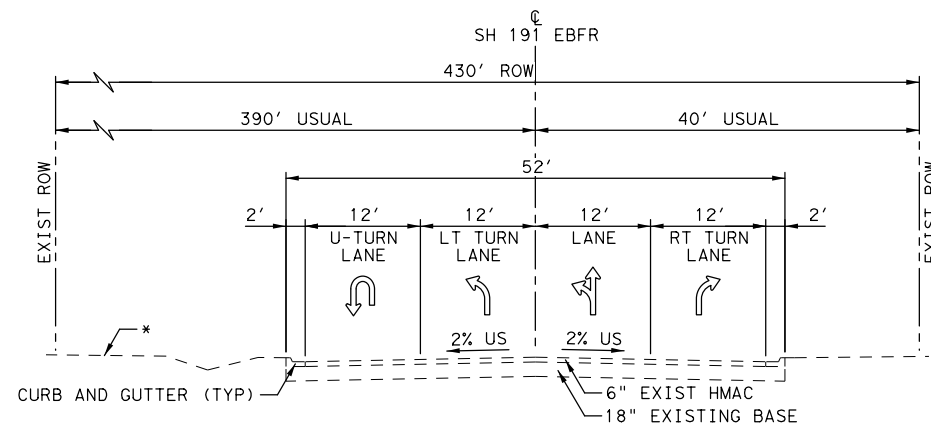
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JMT	6	(SEE TITLE SHEET)	VARIOUS
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CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

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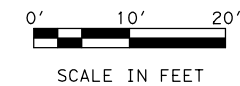
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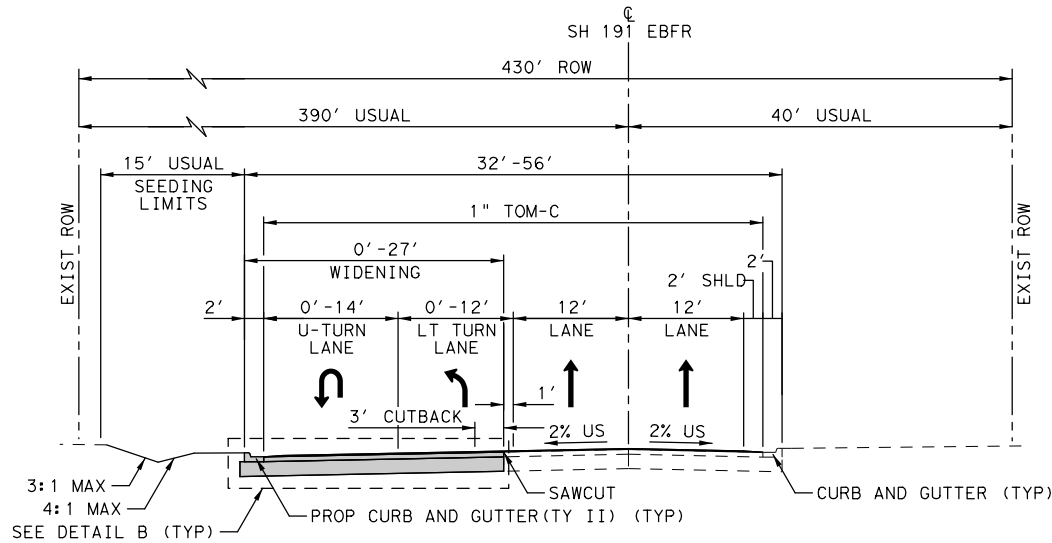
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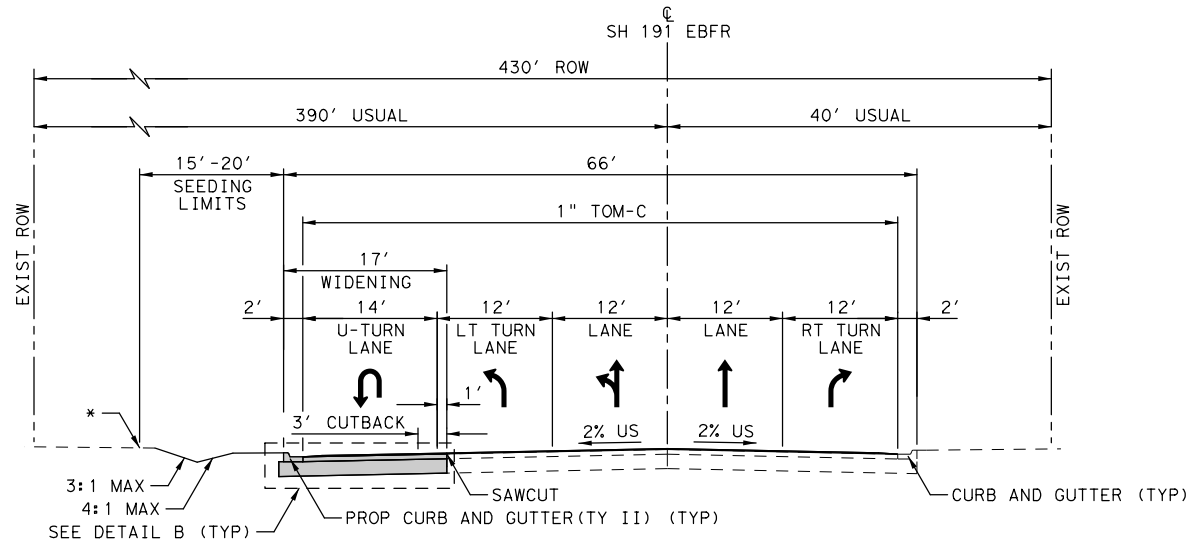
EXIST TYPICAL SECTION
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*EXIST RET WALL FROM C SH 191 EBFR STA 317+45.27 TO STA 318+94.85
 OFFSET FROM 54.91' LT TO 74.40' LT

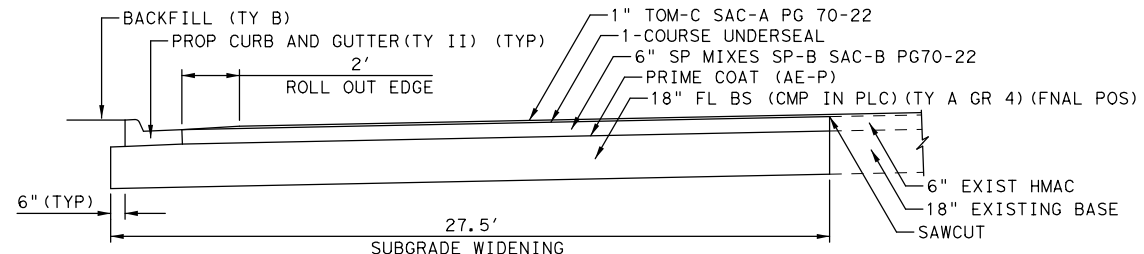


PROP TYPICAL SECTION
 STA 313+72.02 TO STA 315+10.35



PROP TYPICAL SECTION
 STA 315+10.35 TO STA 321+17.22

*EXIST RET WALL FROM C SH 191 EBFR STA 317+45.27 TO STA 318+94.85
 OFFSET FROM 54.91' LT TO 74.40' LT



DETAIL B
 NOT TO SCALE

JMT TBPE REGISTRATION NO. F-16341

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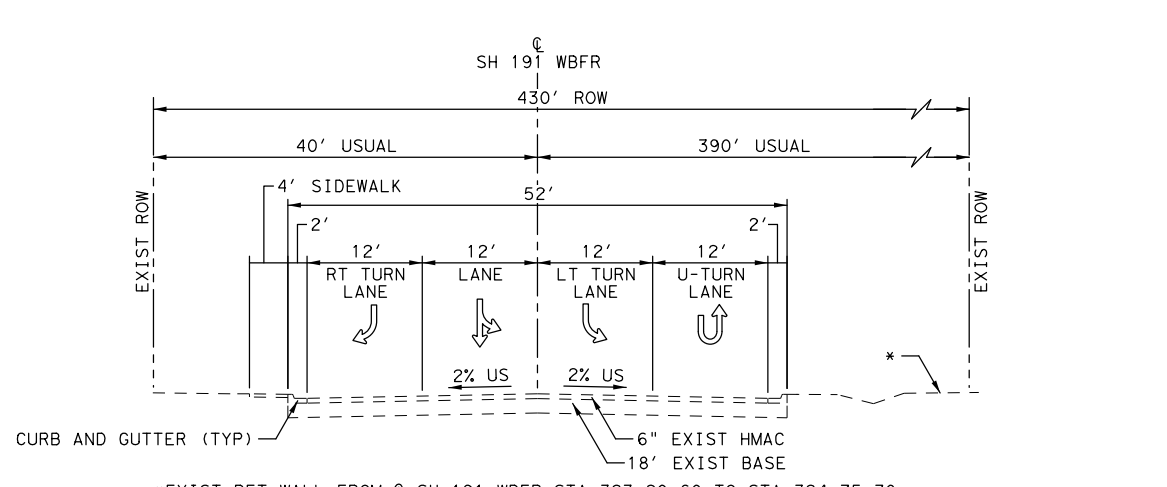
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SH 191 EBFR
 TYPICAL SECTIONS
 AT LP 338**

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
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CHECK	JMT						6

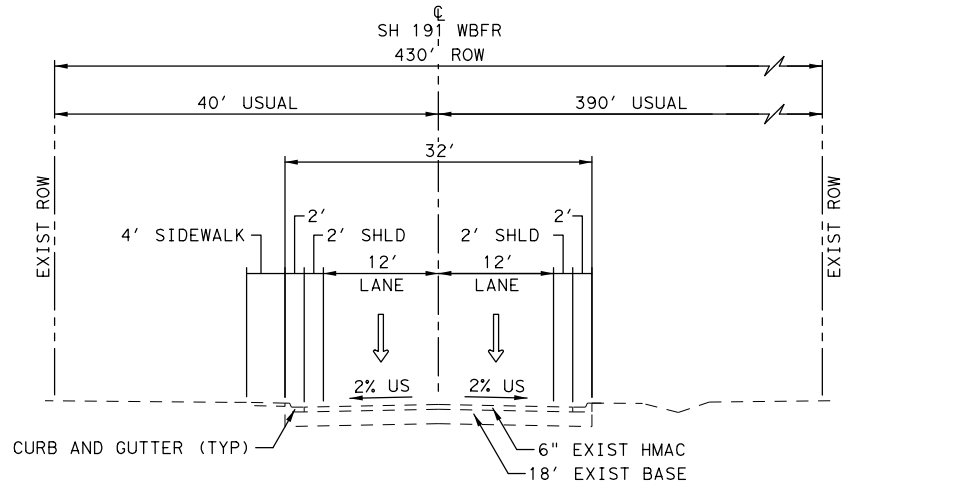
SHEET 4 OF 5

DATE: 8/20/2020
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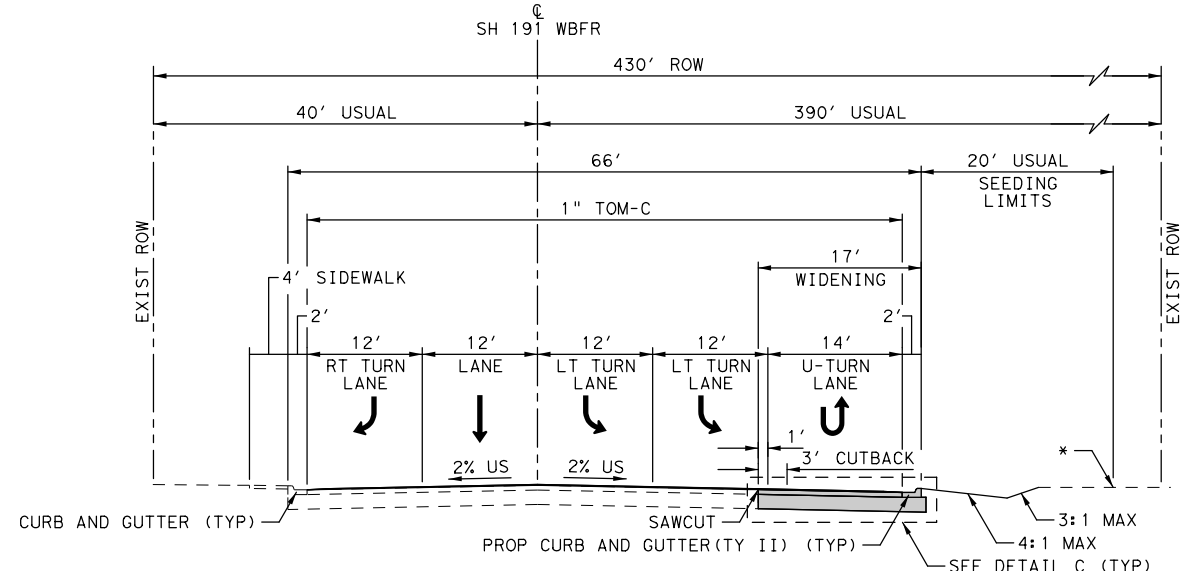


*EXIST RET WALL FROM @ SH 191 WBFR STA 323+20.60 TO STA 324+75.70
 OFFSET FROM 51.31' RT TO 70.68' RT

EXIST TYPICAL SECTION
 STA 320+93.16 TO STA 326+50.57

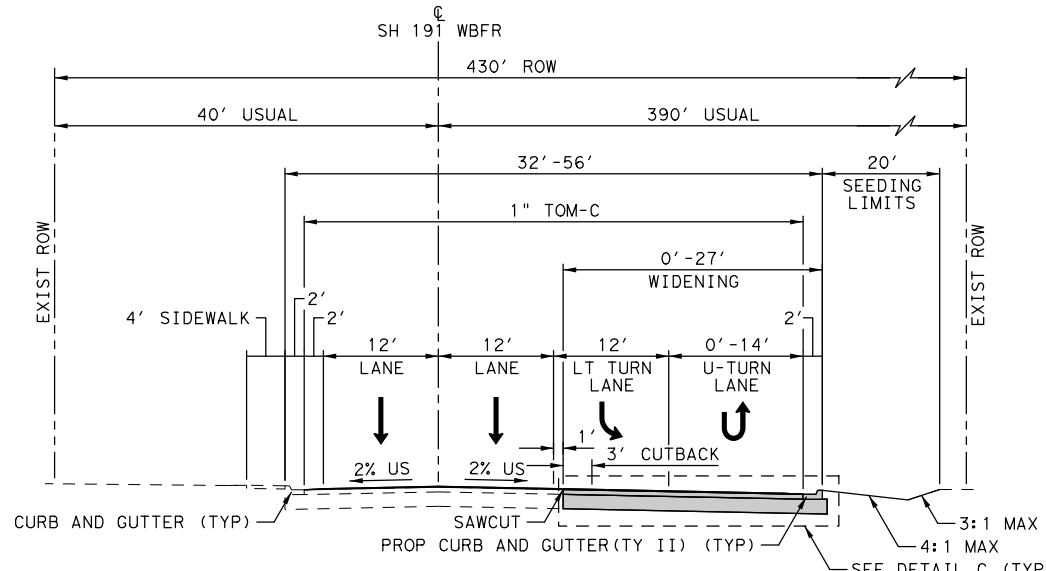


EXIST TYPICAL SECTION
 STA 326+50.57 TO STA 329+02.82

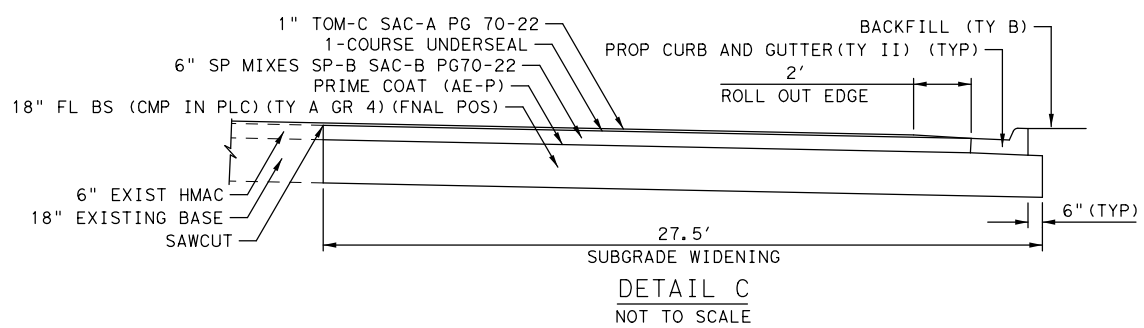


*EXIST RET WALL FROM @ SH 191 WBFR STA 323+20.60 TO STA 324+75.70
 OFFSET FROM 51.31' RT TO 70.68' RT

PROP TYPICAL SECTION
 STA 320+93.16 TO STA 326+50.57



PROP TYPICAL SECTION
 STA 326+50.57 TO STA 329+02.82



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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

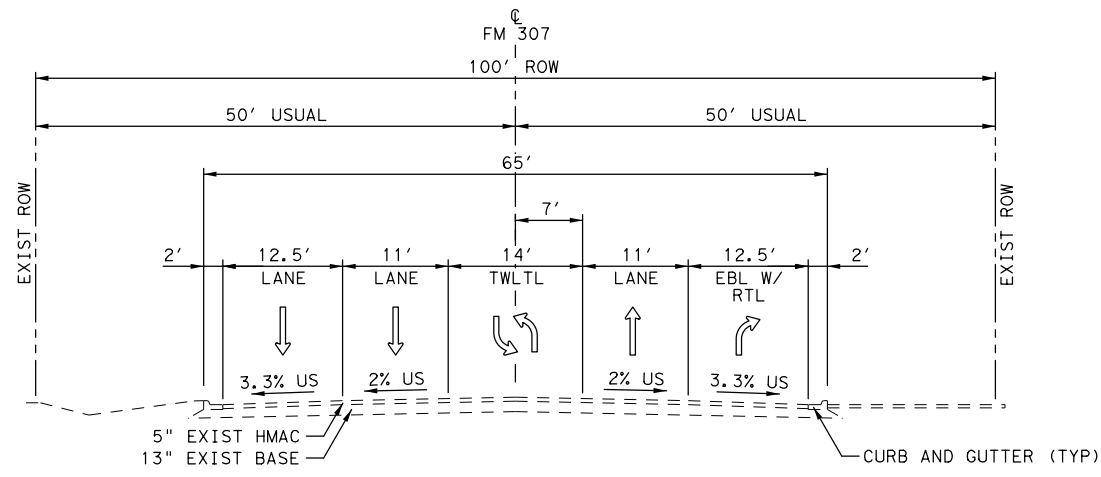
**SH 191 WBFR
 TYPICAL SECTIONS
 AT LP 338**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

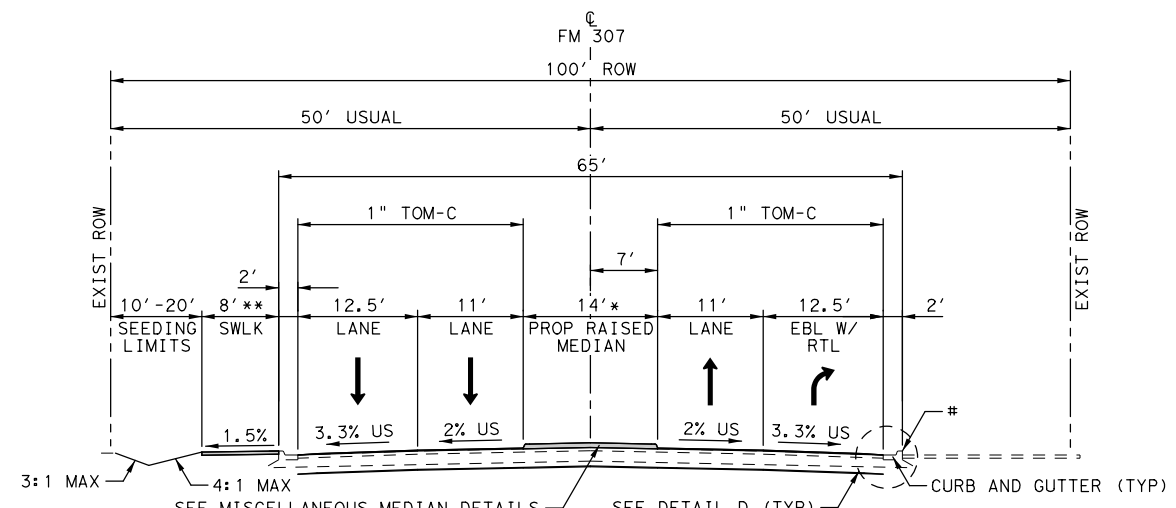
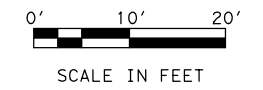
SHEET 5 OF 5

7

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\1. General\Plan Set\1. General\ODA#TYPO1

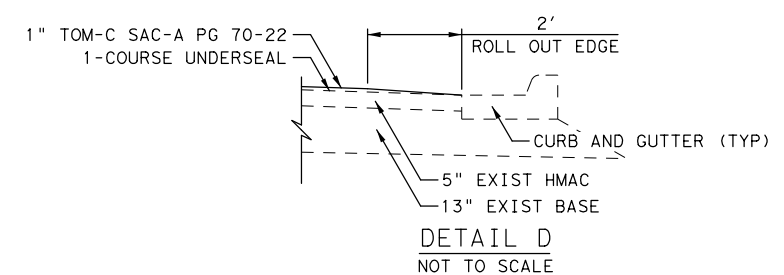


EXIST TYPICAL SECTION
 STA 517+61.08 TO STA 534+08.74



PROP TYPICAL SECTION
 STA 517+61.08 TO STA 534+08.74

*0'-12' WESTBOUND LEFT TURN LANE FROM STA 522+69.00 TO STA 525+75.00 AND 14' TWO-WAY LEFT TURN LANE FROM STA 519+84.75 TO 521+43.00
 **PROP SIDEWALK FROM STA 517+61.08 TO STA 533+49.56
 #PROP 8' SIDEWALK BEGINS AT STA 531+31.00



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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

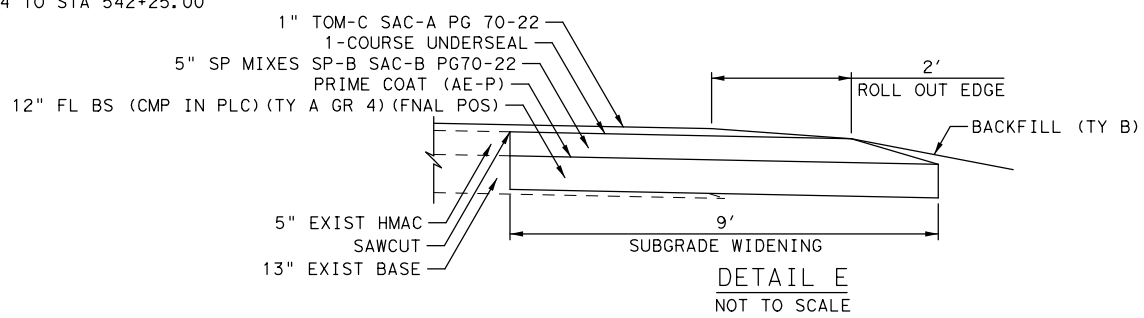
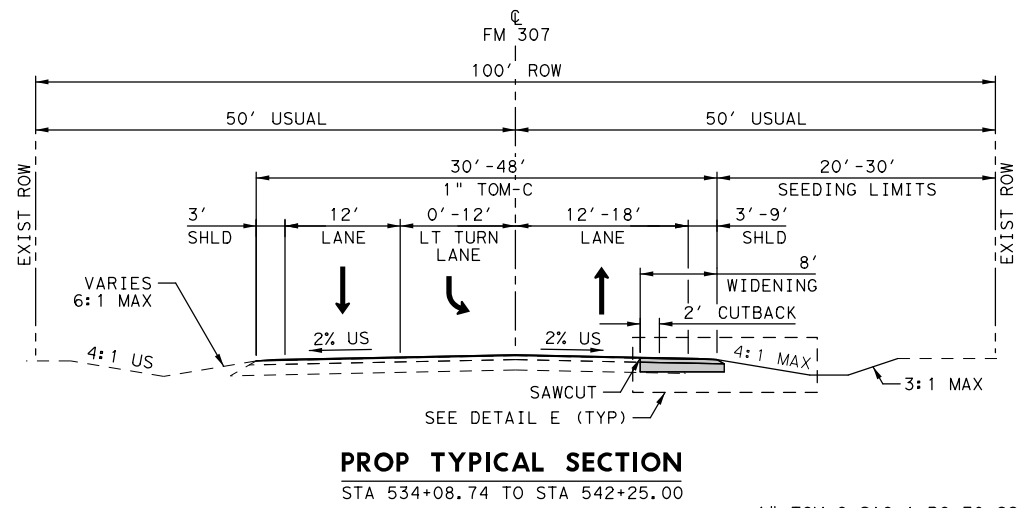
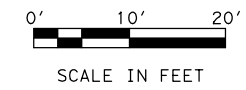
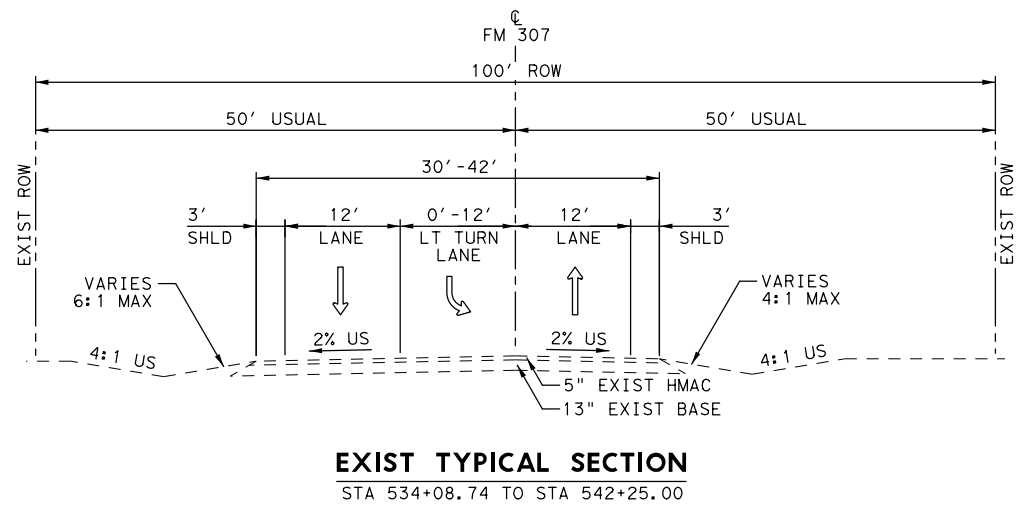
**FM 307
 TYPICAL SECTIONS
 AT FM 1379**

SHEET 1 OF 4

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

8

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\1. General\ODA#TYPO1



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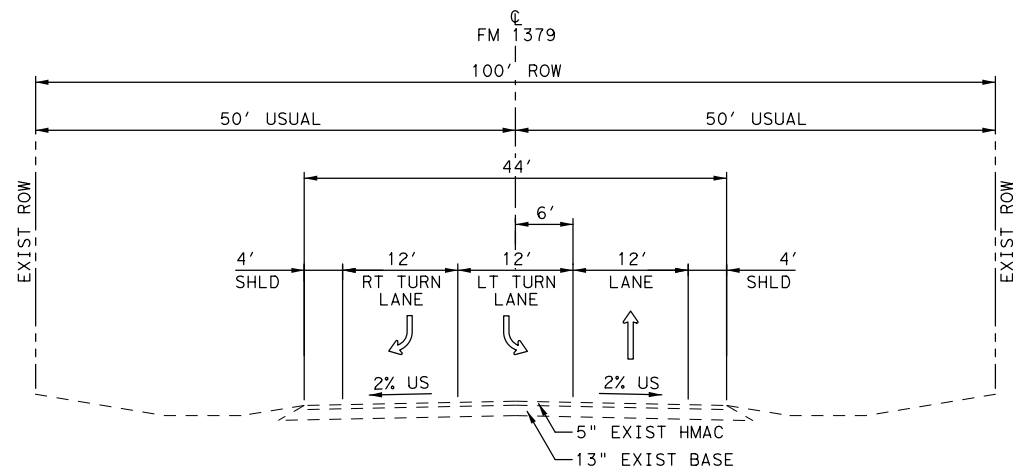
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
 TYPICAL SECTIONS
 AT FM 1379**

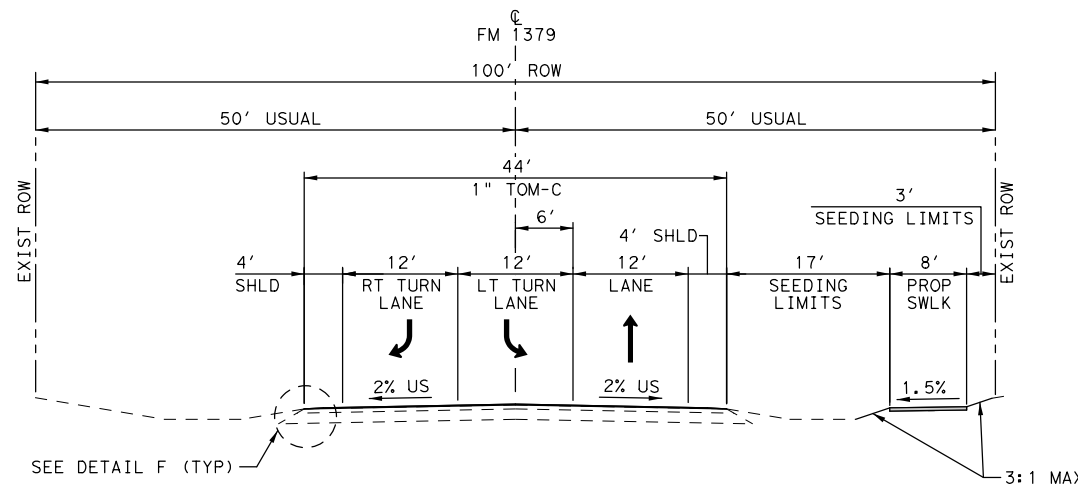
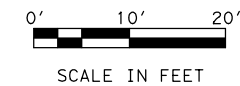
SHEET 2 OF 4

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						9

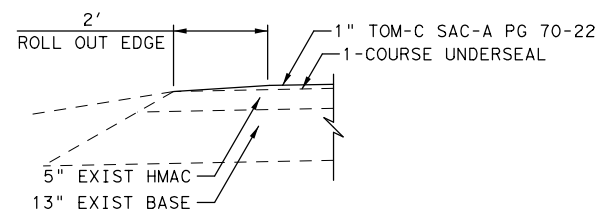
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EXIST TYPICAL SECTION
 STA 0+0.00 TO STA 1+94.00



PROP TYPICAL SECTION
 STA 0+00.00 TO STA 5+12.00



DETAIL F
 NOT TO SCALE



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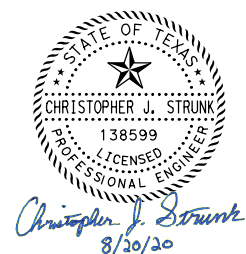
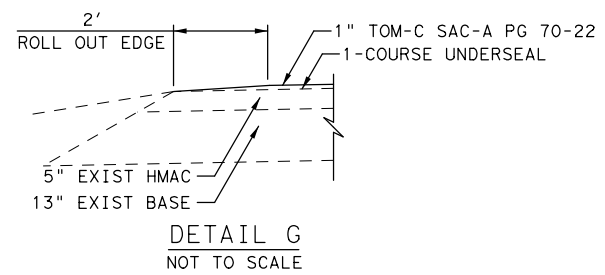
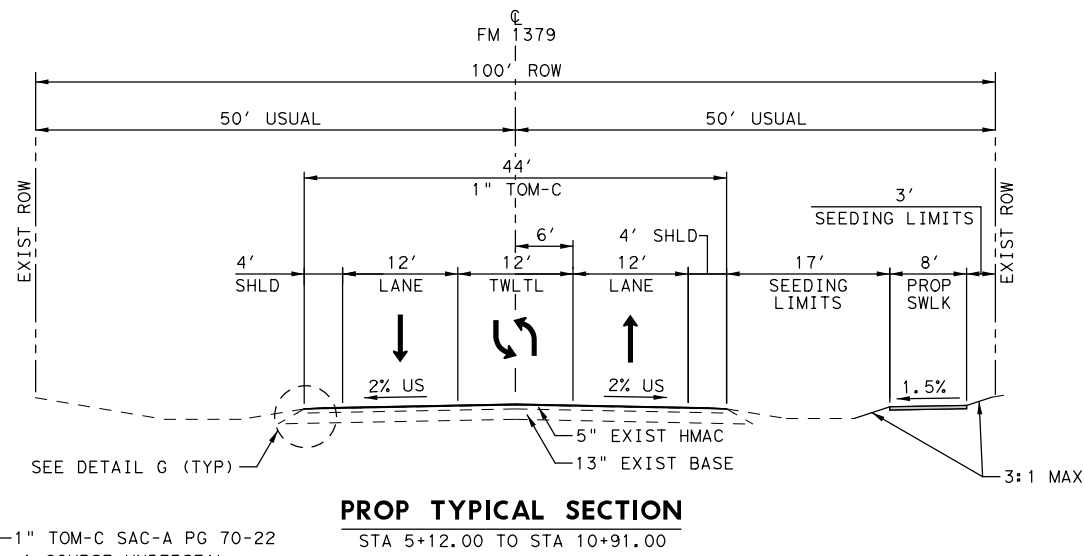
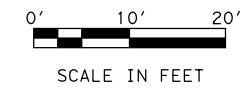
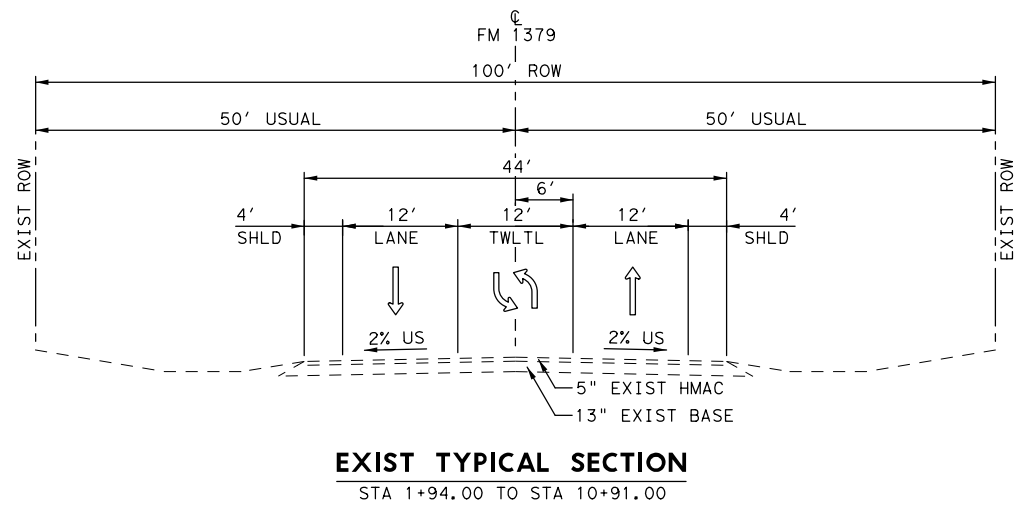
ODESSA DISTRICT INTERSECTION IMPROVEMENTS


**FM 1379
 TYPICAL SECTIONS
 AT FM 307**

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						10

SHEET 3 OF 4

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\1. General\Plan Set\1. General\ODA#TYPO1





JMT TBPE REGISTRATION NO. F-16341

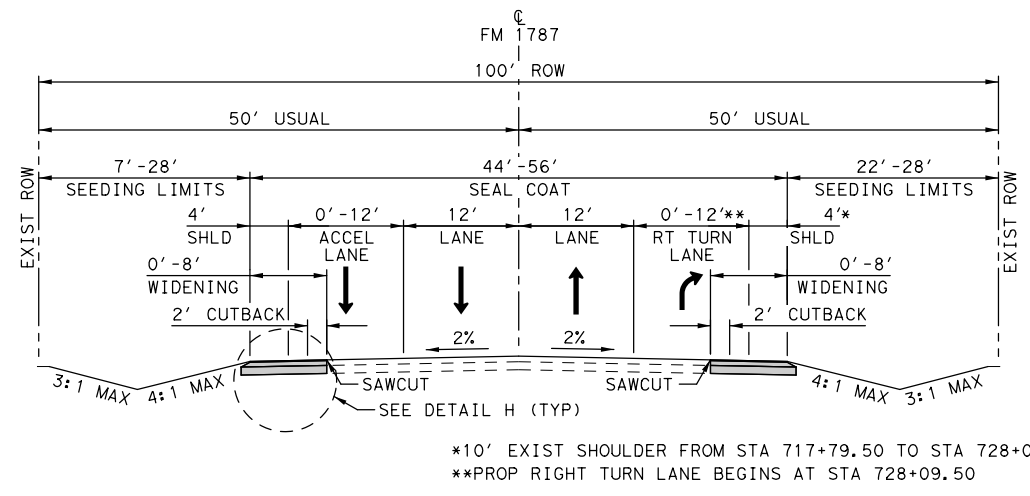
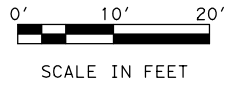
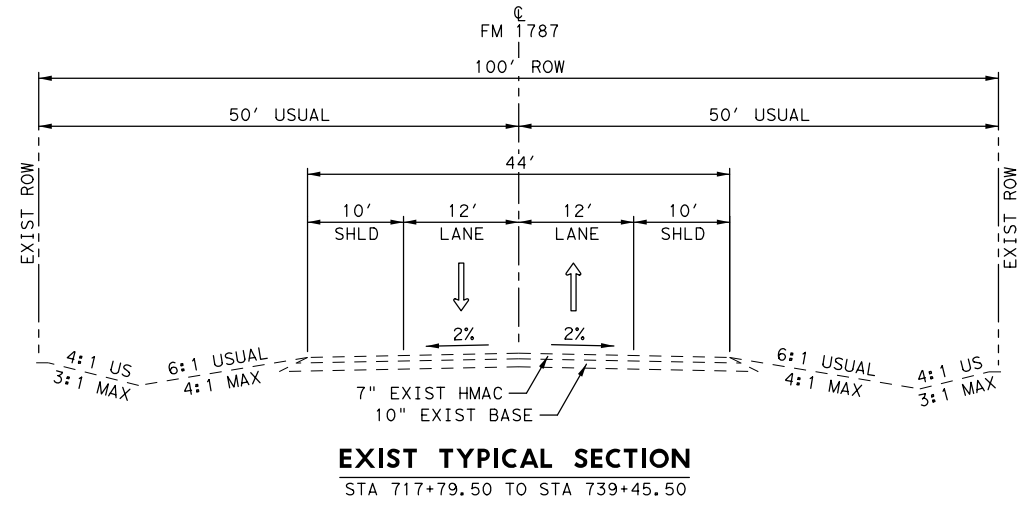
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

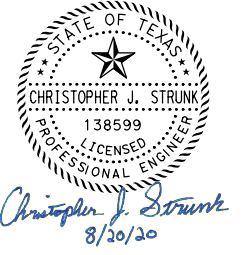
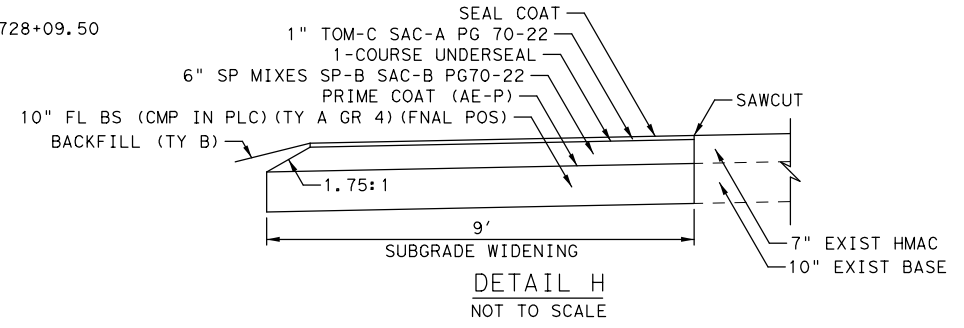
FM 1379
TYPICAL SECTIONS
AT FM 307

SHEET 4 OF 4			
DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
			SHEET NO. 11

DATE: 8/20/2020
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*10' EXIST SHOULDER FROM STA 717+79.50 TO STA 728+09.50
 **PROP RIGHT TURN LANE BEGINS AT STA 728+09.50



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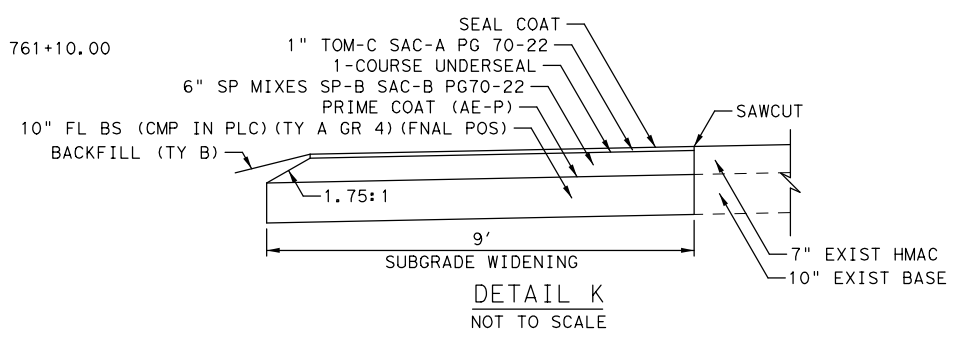
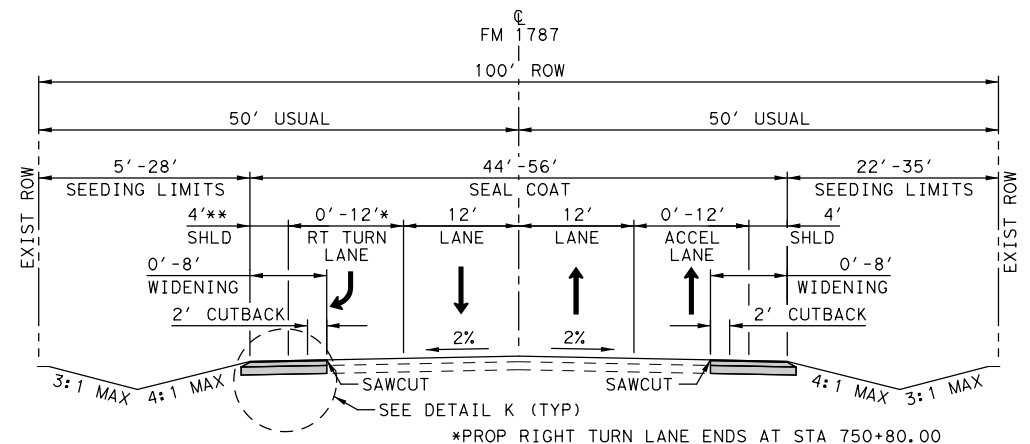
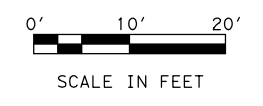
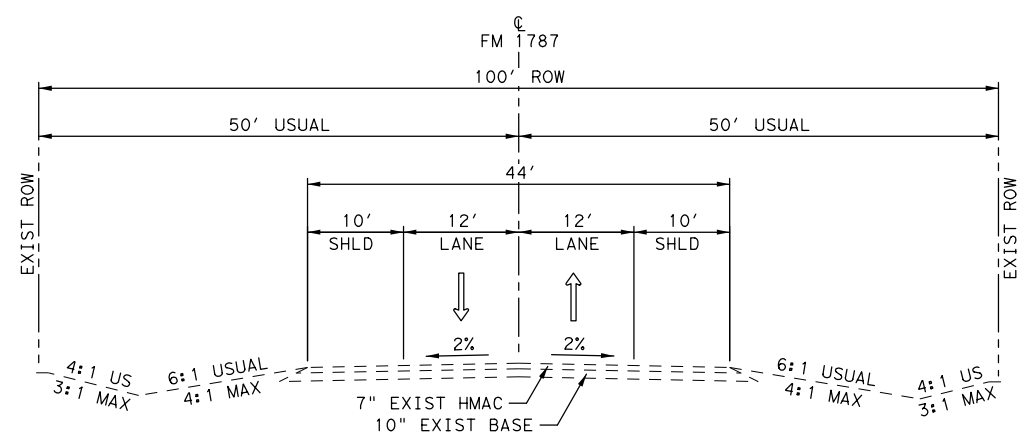
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 1787
TYPICAL SECTIONS
AT FM 1788

SHEET 1 OF 3

DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK JMT			SHEET NO. 12

DATE: 8/20/2020
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JMT TBPE REGISTRATION NO. F-16341

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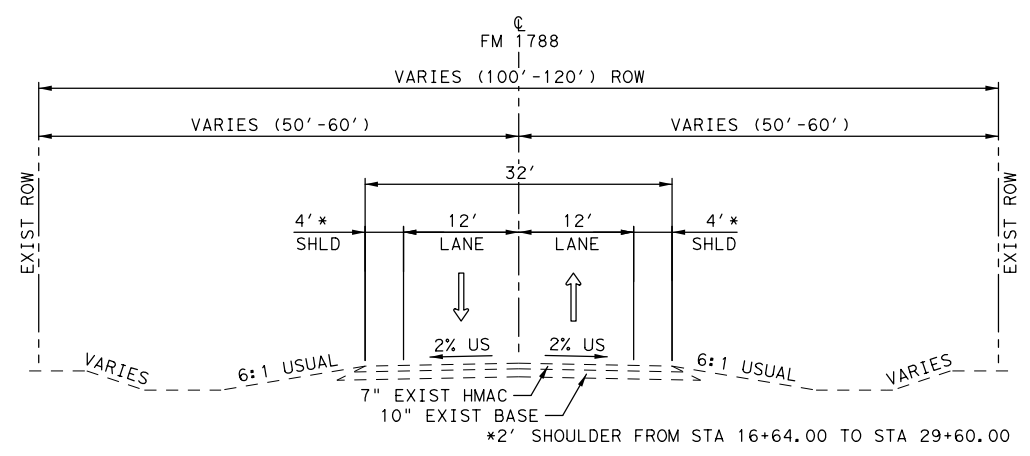
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 TYPICAL SECTIONS
 AT FM 1788**

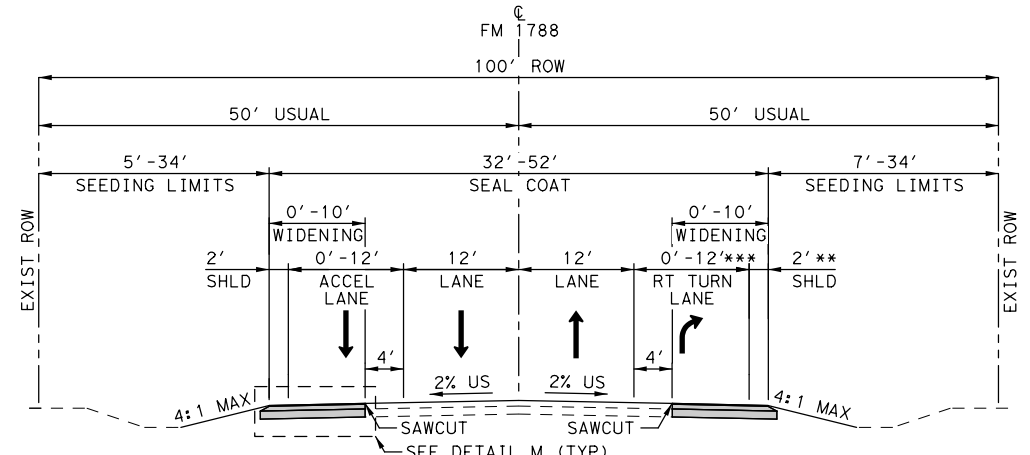
SHEET 2 OF 3

DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
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CHECK JMT			SHEET NO. 13

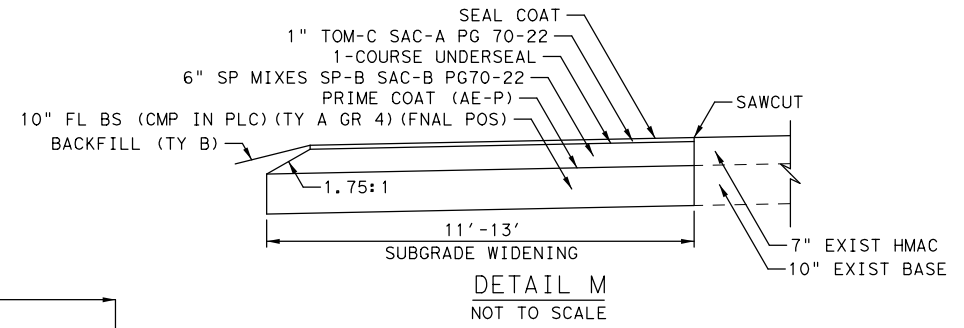
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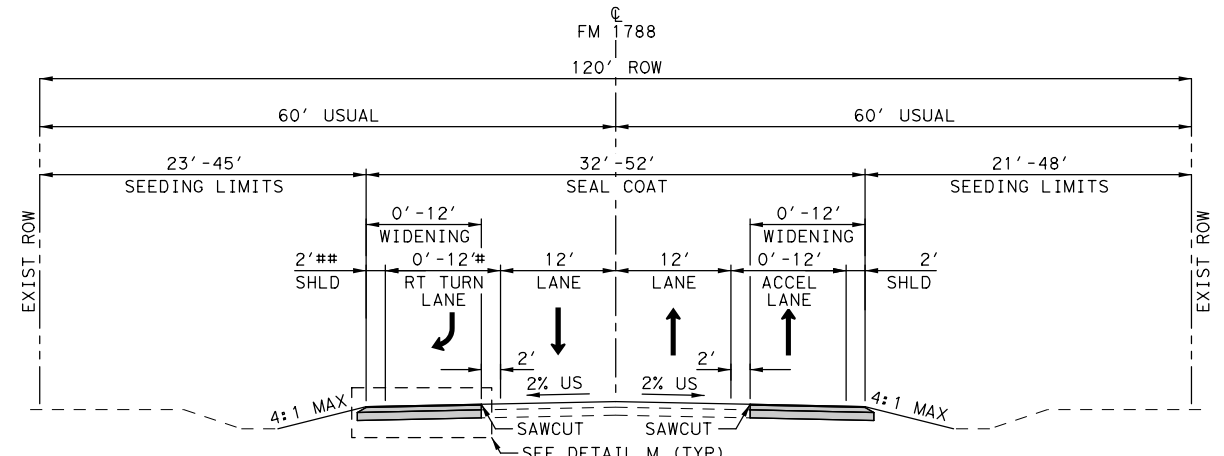
EXIST TYPICAL SECTION
 STA 879+20.00 TO STA 900+93.00 BACK= (SEE NOTE 1)
 STA 7+87.30 AHEAD TO STA 29+60.00



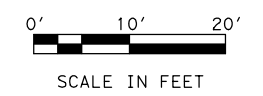
PROP TYPICAL SECTION (SEE NOTE 1)
 STA 879+20.00 TO STA 900+93.00
 **4' EXIST SHOULDER FROM STA 879+20.00 TO STA 889+50.00
 ***PROP RIGHT TURN LANE BEGINS AT STA 889+50.00



DETAIL M
 NOT TO SCALE



PROP TYPICAL SECTION (SEE NOTE 1)
 STA 7+87.30 TO STA 29+60.00
 #PROP RIGHT TURN LANE ENDS AT STA 19+30.00
 ##4' EXIST SHOULDER FROM STA 19+30.00 TO STA 29+60.00



NOTES:

- STATION EQUATION:
 900+93.00 BACK=7+87.30 AHEAD



JMT TBPE REGISTRATION NO. F-16341

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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 1788
TYPICAL SECTIONS
AT FM 1787

SHEET 3 OF 3

DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK JMT			SHEET NO. 14

Material Specification Information

Grading Requirements

Item	Description	Grading Requirements				Soil		Wet
		Percent Retained - Sieves				Constants	Ball	
		1-3/4"	7/8"	3/8"	#40	L.L.	P.I.	Mill
						Max.	Max.	Max.
247	Type A GR 4	0-3	10-35	20-55	65-85	40	12	40

The maximum increase in material passing the number 40 sieve resulting from the wet ball mill test shall not exceed 20%.

Clean proposed and existing structures of all silt and debris from upstream end to downstream end by the completion of the project.

Contractor questions on this project will be accepted through email and are to be addressed to the following individual(s):

- Kelly Daniel Kelly.Daniel@txdot.gov
- Robert Martinez Robert.Martinez@txdot.gov

All contractor questions will be reviewed by the Engineer. All questions and/or responses will be posted to TxDOT's Public FTP at the following Address:

<https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/>

The site is organized by District, Project Type (Construction or Maintenance), Letting Date, CCSJ/Project Name.

Item 5: Control of the Work

Prior to contract letting, international roughness index (IRI) data will be available at the Area Engineer's office.

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

Use Method C for construction surveying.

In the event the finished surface does not conform to the typical sections or does not ride to the satisfaction of the Engineer, rework the unsatisfactory area to the limits necessary and place construction stakes at closer intervals as directed. Provide the staking, personnel and equipment necessary to attain a satisfactory riding surface.

In curves and superelevation sections, place construction stakes at intervals of 50 feet along the centerline and at the crownline and quarter points of the typical sections. In the event that a satisfactory riding surface cannot be constructed, place additional staking as directed.

Upon completion of the work, remove litter, debris, objectionable material, temporary structures, excess materials, and equipment from the work locations. Clean and restore property damaged by the Contractor's operations during the prosecution of the work. Leave the work locations in a neat and presentable condition.

Item 6: Control of Materials

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

Properly dispose of any waste generated from servicing equipment on the project.

Item 7: Legal Relations and Responsibilities

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

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

No significant traffic generator events identified.

Manage construction to minimize disruption to traffic. Maintain the roadway in a good and passable condition, including proper drainage and provide for ingress and egress to adjacent property.

Item 8: Prosecution and Progress

The following portions of the plans may affect the Contractor's planned construction sequencing. Direct attention to the appropriate plan sheet or standard sheet.

- Traffic Control Plan
- Storm Water Pollution Prevention Plan
- Environmental Permit, Issues And Commitments (EPIC)

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

Initiate the installation of Item 628 "Electrical Services" as part of the initial work sequence to allow TxDOT the lead-time necessary for coordination with utility companies to establish and provide for electrical service(s) proposed for this project.

Working days will be computed and charged in accordance with article 8. 3.1.4. "Standard Workweek."

At pavement drop off, a "wedge" of material shall be placed longitudinally between lanes, at intersections and at driveways. Material will be as approved by the Engineer. This work will not be paid for directly but will be subsidiary to various bid items.

County: Midland, Etc.
Highway: Various

Sheet: 15A
Control: 0887-01-039, Etc.

A 90-day lead time has been added to this project for procurement of various materials needed from different suppliers for several locations that are not in close proximity to each other.

Item 100: Preparing Right Of Way

It is the intent on the plans to prepare only that portion of the right-of-way necessary for construction. Do not disturb natural vegetation and trees wherever possible.

Item 105: Removing Treated and Untreated Base And Asphalt Pavement

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

Item 150: Blading

When directed, fill and grade low areas outside the embankment areas to drain.

Preserve the top 4" of topsoil outside of the work area. Preserve this material in windrows until topsoil can be replaced and seeded to stabilize all exposed terrain.

Item 164 Seeding for Erosion Control

Unless otherwise approved, planting dates for permanent seeding is from February 1 until May 15.

Provide a permanent rural seed mix in accordance with the species and rates shown for sandy soils in Table 1 for the Odessa District. Provide a permanent urban seed mix in accordance with the species and rates shown for sandy soils in Table 1 for the Odessa District.

Use Table 3 for dates, seed mix, and rates for Temporary Cool Season seeding for the Odessa District.

Use Table 4 for dates, seed mix, and rates for Temporary Warm Season seeding for the Odessa District.

The Engineer shall be notified in writing of the unavailability of any plant species, and of any proposed change(s) to the seed mix as a result of an unavailable species.

Any change(s) to a seed mix shall be approved by the Engineer.

Item 216: Proof Rolling

Proof rolling will be required on rock embankments where density tests are not practical and at other locations as directed.

Item 247: Flexible Base

The estimated quantity of flexible base is for the roadways as well as intersecting streets and driveways. The measured area for payment will be the crown width only. The side slope tapers are not included in the measurements for the flexible base but are considered subsidiary to this item.

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

County: Midland, Etc.
Highway: Various

Sheet: 15A
Control: 0887-01-039, Etc.

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

Item 302: Aggregates for Surface Treatments

Flakiness index for aggregates will not be required on this project.

Coat aggregate with 1.0 percent by weight of residual bitumen.

Use an unmodified asphalt with a minimum performance grade of 64-16 (PG 64-16) or better for aggregate pre-coating.

Item 310: Prime Coat

Each application of the emulsified asphalt mixture will contain approximately 5% of emulsified asphalt and 95% water.

Item 316: Seal Coat

Apply 1 surface treatment.

Furnish class "A" aggregate for the surface course.

Do not apply asphalt cement between August 31st and May 1st unless authorized in writing.

Place a string line or other suitable marking where needed to assure smooth neat lines, or as directed.

Surface treat the existing surfaced intersections, auxiliary lanes, curve widenings and widened dip sections plus any additional areas encountered during construction to conform to the existing surface. The limits are the end of the curb returns, the right-of-way line, or the adjacent traffic lane, as directed.

Rates are shown in the plans.

Item 347: Thin Overlay Mixtures

Binder:

Provide a binder that has a performance grade of 70 -22 (PG 70 -22) for the "TOM-C" mix.

No RAP or RAS will be allowed.

Aggregate quality:

Furnish only class "A" aggregate. Blending of class "A" and class "B" material will not be allowed for the coarse aggregate.

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

Mineral filler will not be allowed.

County: Midland, Etc.
Highway: Various

Sheet: 15B
Control: 0887-01-039, Etc.

Lime as anti-stripping agent is not allowed.

Item 416: Drilled Shaft Foundations

For drilled shaft foundations for roadway illumination assemblies, provide class “C” concrete with 6-1/2” slump for dry type placements in accordance with Table 2, Slump Requirements.

Item 420: Concrete Structures

Mass concrete will be a plans quantity item.

Item 421: Hydraulic Cement Concrete

Furnish a job site curing tank equipped with a recording thermometer with the capability to chart temperatures for 24 hours, 7 days or 30 days. Furnish the Engineer with copies of the temperature records.

Furnish disposable 4” or 6” cylinder molds and caps that meet testing tolerances.

The Engineer will provide strength testing equipment for acceptance testing.

Within seven (7) days after concrete has been placed for foundations for traffic signals, roadway illumination assemblies, or high mast illumination assemblies, provide a rub finish for exposed surfaces in accordance with Item 427, Surface Finishes for Concrete, Article 4.3.3.

Furnish type II or IP cement.

Furnish type II or IP cement for cast in place concrete.

All plants and trucks may be inspected and approved by the Engineer in lieu of the NRMCA or non-department Engineer sealed certifications. The criteria and frequency of the Engineer approval of plants and trucks is the same used for NRMCA certification.

Item 432: Riprap

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

Reinforce all riprap on this project with no. 3 bars spaced 12 inches O.C.B.W. or no. 4 bars spaced at 18 inches O.C.B.W.

Broom finish all riprap on this project unless otherwise directed.

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

In addition to reinforcing steel, polypropylene fiber is required at a rate of 1.5 lbs. /cy.

County: Midland, Etc.
Highway: Various

Sheet: 15B
Control: 0887-01-039, Etc.

Item 449: Anchor Bolts

Prior to installation of nuts for traffic signal poles, roadway illumination poles, high mast illumination poles, or overhead sign support structures, coat the entire length of exposed anchor bolt threads with Crouse-Hinds Tl-2, O-Z Gedney Stl, Or Thomas & Betts Kopr-Shield compound electrically conducting protective thread lubricant.

Item 502: Barricades, Signs, and Traffic Handling

Furnish flaggers to warn equipment operators of approaching traffic.

Relocate or remove temporary signs as necessary. This work is considered subsidiary to various bid items.

Provide an advanced warning flashing arrow panel as a standby unit on the job site; the standby unit shall be in good working condition and ready for immediate use.

Maintain "No Center Line", "Do Not Pass" and "Pass With Care" signs until the permanent lane markings have been placed in accordance with plans.

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

Use Shoulder Drop-Off (CW8-9A) signs during construction when shoulder drop-off conditions are 3 inches or greater or as directed. Placement shall be in accordance with the “Texas Manual on Uniform Traffic Control Devices”.

This project has an advisory work zone speed plaque of 45 mph to be placed on the CW1-4L and CW1-4R warning signs. This advisory plaque will be used to supplement the warning sign and to indicate speed for the condition indicated. The warning sign and advisory speed plaque will be removed by the State once the condition or need for the sign no longer exists.

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

Vertical panels shall be self-righting.

The Contractor Force Account “Safety Contingency” that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor’s Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

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

Item 504: Field Office and Laboratory

Provide a Type D structure (asphalt mix control laboratory) for the asphalt mix control laboratory for the Engineer's exclusive use. In addition to the requirements of Item 504, this structure will have a minimum height of 8 feet and

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provide a minimum of 400 square feet of gross floor area for permanently located asphalt plants, or 200 square feet for temporary located plants serving one project. The floor area will be partitioned into a minimum of two interconnected rooms, each room furnished with an exterior door and a minimum of two windows. The floor will have sufficient strength to support the testing equipment and have an impervious covering.

Provide a Type D structure (asphalt mix control laboratory) adequately air conditioned and furnished with a minimum of one desk, three chairs, and one file cabinet. The structure will be provided with a 240 volt electrical service entrance. The service shall consist of a minimum of four 120 volt circuits with 20 amp breakers and no more than two grounded convenience outlets per circuit and provisions for a minimum of two 220 volt ovens with vents to the outside. The structure will have a minimum of two (2) convenience outlets per wall, and a utility sink with an adequate clean potable water supply for testing. Space heaters for heating the structure are unacceptable. Portable structures will be support blocked for stability and be tied down.

Only one field office servicing all project locations is required. The field office must be located within the TxDOT Odessa district.

Item 506: Temporary Erosion, Sedimentation, and Environmental Controls

In accordance with the Construction General Permit (CGP), erosion control and stabilization measures should be initiated as soon as practicable to include rock filter dams, biodegradable erosion control logs, and seeding.

The total disturbed area for this project is 12.85 Acres. The disturbed area in this project, all project locations in the contract, and Contractor Project Specific Locations (PSLS), within 1 mile of the project limits, for the contract will further establish the authorization requirements for storm water discharges. The department will obtain an authorization to discharge storm water from the Texas Commission On Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain any required authorization from the TCEQ for any Contractor PSLS for construction support activities on or off the right of way. When the total area disturbed for all projects in the contract and PSLS within 1 mile of the project limits exceeds 5 acres, provide a copy of the Contractor NOI for PSLS on the right of way, to the Engineer (or to the appropriate MS4 operator when on an off-state system route).

Upon acceptance of the project, all SWP3 devices will become property of the State and maintenance responsibility is transferred to the State until final stabilization is attained.

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

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

Use polypropylene fiber reinforcing when required at a rate of 1.5 lbs./cy in lieu of wire reinforcing.

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

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

Item 530: Intersections, Driveways, and Turnouts

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

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Polypropylene fiber may not be used in lieu of reinforcing steel. In addition to reinforcing steel, polypropylene fiber is required at a rate of 1.5 lbs./cy.

Item 531: Sidewalks

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

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

Item 585: Ride Quality for Pavement Surfaces

Use surface test type "A" to evaluate ride quality of travel lanes in accordance with Item585, "Ride Quality for Pavement Surfaces."

Item 610: Roadway Illumination Assemblies

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

Limitations On Use Of The RIP-11 Standard

Luminaire structural support requirements. Lighting poles, arms, and anchor bolt assemblies shall have a 25 year design life to safely resist dead loads, ice loads and the required basic wind speeds at the location of installation in accordance with the current edition of the AASHTO design specifications. For transformer base poles, the fabricator shall include transformer base and connecting hardware in calculations and shop drawing submittals. All transformer bases shall have been structurally tested to resist the theoretical plastic moment capacity of the pole. Certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished shall be submitted with the shop drawings. Shop drawings shall show breakaway base model number, and manufacturer's name and logo. Manufacturer's shop drawings shall include the ASTM designations for all materials to be used.

Item 618: Conduit

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

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

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

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

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

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

Item 620: Electrical Conductors

In accordance with ED(3), Electrical Details-Conductors, identify the conductors of each branch circuit on this project with permanent non-metallic tags at every accessible location. Fasten each tag to the conductors with two plastic straps. Match tag numbers for branch circuits with circuit numbers as shown on the plans.

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

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

Item 628: Electrical Services

Contractor to complete electric service coordination and identify service location with utility provider prior to starting any work on the project. Before construction or installation of any electrical service(s) on this project, contact TxDOT Odessa Traffic Operations shop at 432-498-4690 to facilitate coordination with the appropriate energy company or companies. Contractor to complete the construction of all electrical services at the earliest possible time to establish power for the proposed electrical service(s).

Physically identify the location for each proposed electrical service on the project, and request the physical address for each proposed electrical service identified; the Engineer will provide the physical address for each respective location. Permanently mark the physical address of any proposed electrical service on the respective meter base lid. Use one of two methods for permanent marking. For the preferred method of marking, use an approved die-stamp, with a minimum ½" height of alpha-numeric characters and stamp physical address on meter base lid. After stamping, apply coating of zinc-rich paint to the stamped area. Do not damage meter base. Replace meter base if determined by the Engineer as damaged or unacceptable. No additional compensation will be made for replacement of meter bases in the event that an unacceptable determination is made. When approved, use an alternate method of marking by providing a brass or aluminum plate tag with the physical address embossed by a machine-stamp process. Affix this tag to the meter base by a method approved by the Engineer. Provide a sample of a stamped plate tag for approval of this alternate method. The permanent physical address is required to be marked on the meter base prior to initiation of electrical service. Materials, labor, tools, equipment and incidentals necessary to complete this work will be considered as subsidiary to Item628, electrical services.

Use materials from the prequalified material producer lists as shown on the Texas Department of Transportation (TxDOT) – Construction Division's (CST) Material Producer List. See TxDOT website (www.TxDOT.gov) - business > resources > material producer list - for list of prequalified manufacturers. Category is "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials found on this list."

For incidental material and parts necessary for construction of electrical services, including the service entrance weather-head, rigid metal conduit (RMC) and PVC conduit, conduit fittings, service conductors, circuit breakers, ground rods and clamps, grounding bushing (s), and mounting hardware including straps and channel brackets for conduit support, furnish products and/or materials that comply with the plans and specifications. Prior to

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construction of any electrical service, submit to the Engineer respective catalog cut sheets for incidental materials and parts. Electrical services constructed of materials or parts which do not comply with the plans and specifications will be cause for rejection of a portion or all of the work.

Install photocell(s) facing north when practical.

Item 644: Small Roadside Sign Assemblies

All new sign supports for stop and yield signs will have a 12" red strip of Type C high specific intensity reflective tape. Place the top of the tape 4' above the edge of the roadway. This work will not be paid for directly and will be subsidiary to the pertinent bid item.

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

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

Item 656: Foundations for Traffic Control Devices

Install a 5/8" x 8' copper clad ground rod in all signal poles and signal controller foundations, and make a system ground connection at the ground rod in addition to the ground connection required by the standard sheet, "Traffic Signal Controller Slab And Base". Maintain two inches (2") of ground rod extension above the finish surface of the foundation. Material, labor, tools, and incidentals necessary to provide and install this ground rod are considered subsidiary to the various bid items.

Item 658: Delineator and Object Marker Assemblies

Delineator and object marker assembly posts shall be composed of post-consumer recycled materials. Embedded stub shall be perforated square tubing.

Item 662: Work Zone Pavement Markings

After permanent pavement markings are placed, pull tabs from hot mix surface and/or cut off tabs flush with the pavement on seal coat surface. Remove tabs from the project and dispose of properly.

Materials used for non-removable work zone pavement markings will be paint and beads or other approved materials.

Item 666 Reflectorized Pavement Markings

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

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

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Item 672: Raised Pavement Markers

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

Item 677: Eliminating Existing Pavement Markings and Markers

Remove pavement markers by a method which causes the least damage to the pavement surface.

Remove pavement markers from the project and dispose of properly.

Repair excessive damage to the pavement with an approved material at the Contractor's expense.

Remove additional pavement markers from previous sealcoats as directed.

Item 680: Highway Traffic Signals

Wire signal installations to operate in accordance with the phase diagrams shown in the plans. Set time intervals as directed.

Use aluminum signal heads and components for this project.

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

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

Remove existing foundations which are to be abandoned a minimum of one foot (1') below subgrade or two feet (2') below natural ground. This work is considered subsidiary to Item680, "Highway Traffic Signals".

When D3-1 signs are required, provide one piece 0.080" (80 mil) thick aluminum alloy sheet sign blank with Type C (high specific intensity) green sign background and Type C (high specific intensity) white letters, border, and/or symbols in accordance with the details shown on the plans.

Initially operate traffic signals at new locations in flash mode until such time as is approved so that phase sequencing may be initiated.

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

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

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

Supply a TS-2 Type 1 traffic signal controller assembly. Verify the controller has Ethernet capability, an internal embedded web page (web server), along with internal Power over Ethernet (POE), and 4 port harden internal Ethernet switch. The web browser and controller must have the capability to have separate passwords and both are I.P. addressable. Provide the controller with the latest firmware release. Provide the software and all necessary components for an intelligent detection control system. Provide Cabinet Option 4as defined by DMS-11170.

Item 682: Vehicle and Pedestrian Signal Heads

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

Use aluminum signal heads and components for this project.

Item 684: Traffic Signal Cables

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

Item 690: Maintenance of Traffic Signals

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

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

Item 3077: Superpave Mixtures

Binder:

Provide a binder that has a performance grade of 70-22 (PG 70-22) for the "SP" mix.

Aggregate quality:

Furnish class "B" aggregate for the type "SP" mix.

Furnish aggregates that meet sac requirements for the shoulders and/or ramps.

Magnesium sulfate soundness loss will not be greater than 20 percent when class "A" aggregate is required.

Mixture design:

Design a mixture with a gradation that has stone on stone contact and passes below the reference zone.

Test method Tex-530-C (Boil Test) will not be required.

Placement:

Semi-trailer type vehicles are specifically prohibited from dumping directly into the finishing machine for the finished surface. This type of haul truck will be allowed to unload into the finishing machine if the trailer is equipped with an auger slatted chain or another approved conveyor.

No RAP will be allowed in the surface course.

No more than 10% RAP will be allowed in the non-surface course.

No RAS will be allowed.

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

Mineral filler will not be allowed.

Item 6001: Portable Changeable Message Sign

Location(s) and duration for PCMS shall be as directed by the Engineer; PCMS shall be placed in operation a minimum of one (1) week prior to construction.

Item 6083: Video Imaging and Radar Vehicle Detection System

Supply Iteris Video Imaging and Radar Vehicle Detection (VIRVDS) cameras, edge connect module, color monitor, BNC to RCA cable for color monitor, as well as any component needed to make the system functional.

The Video Imaging and Radar Vehicle Detection System (VIRVDS) is being paid for as one unit in accordance with Item 6083 and includes but not limited to:

- 3-Cameras
- 1-Processor
- 1-Color Monitor
- *Coaxial Cable
- System Set-up

*See plan sheets for coaxial quantity.

VIRVDS cameras shall be installed directly to the mast arm in accordance with the details shown in the plans and shall be capable of monitoring all approach lanes of oncoming traffic utilizing detection zones that accommodate the initial 200 feet of approaching traffic. Detection zone sizes will simulate the operation of a 6' x 6' and a 6' x 40' inductive loop.

The VIRVDS will be tested in a typical intersection application.

The contractor shall provide ample personnel, equipment and any necessary incidentals to perform testing for detection accuracy, count and flow rate accuracy, speed accuracy, occupancy accuracy and classification accuracy of the VIRVDS in accordance with this item and as directed by the Engineer.

Disconnecting and reconnecting of video output cable from one output port to another as a method of switching video monitoring will not be allowed. A toggle switch or multiple monitors shall be required to provide an acceptable method of switching video outputs.

Item 6185: Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA)

General Note 5 of TCP (2-1)-18 provides for additional shadow vehicle(s) with truck mounted attenuator (TMA); one (1) additional shadow vehicle with TMA is included in the basis of estimate for this operation. The shadow vehicle(s) with TMA specified on the traffic control plan as "required" plus the 'additional shadow vehicle' is the quantity that has been estimated for this operation.

General Note 8 of TCP (2-3)-18 provides for additional shadow vehicle(s) with truck mounted attenuator (TMA); one (1) additional shadow vehicle with TMA is included in the basis of estimate for this operation. The shadow vehicle(s) with TMA specified on the traffic control plan as "required" plus the 'additional shadow vehicle' is the quantity that has been estimated for this operation.

General Note 4 of TCP (2-5)-18 provides for additional shadow vehicle(s) with truck mounted attenuator (TMA); one (1) additional shadow vehicle with TMA is included in the basis of estimate for this operation. The shadow vehicle(s) with TMA specified on the traffic control plan as "required" plus the 'additional shadow vehicle' is the quantity that has been estimated for this operation.

Basis of Estimate for Stationary TMAs			
Standard	Required	Optional	Total
TCP (2 – 1) -18	1	1	2
TCP (2 – 3) -18	1	1	2
TCP (2 – 5) -18	1	1	2

There are no General Notes for additional shadow vehicle(s) with truck mounted attenuator (TMA) on TCP (3-1)-13; the shadow vehicle(s) with TMA specified on the traffic control plan as "required" is the quantity that has been estimated for this operation.

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There are no General Notes for additional shadow vehicle(s) with truck mounted attenuator (TMA) on TCP (3-3)-14; the shadow vehicle(s) with TMA specified on the traffic control plan as “required” is the quantity that has been estimated for this operation.

Basis of Estimate for Mobile TMAs			
Standard	Required	Optional	Total
TCP (3-1)-13	2	0	2
TCP (3-3)-14	2	0	2

The Contractor will be responsible for determining if one or more operations will be ongoing at the same time to determine the total number of TMAs needed for the project.



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COUNTY Ector, Midland

QUANTITY SHEET

CONTROL SECTION JOB				0887-01-039		0906-00-226		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00128071		A00129075			
COUNTY				Midland		Ector			
HIGHWAY				FM 307		Various			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	104-6017	REMOVING CONC (DRIVEWAYS)	SY			688.000		688.000	
	104-6022	REMOVING CONC (CURB AND GUTTER)	LF			2,742.000		2,742.000	
	104-6028	REMOVING CONC (MISC)	SY			19.000		19.000	
	104-6036	REMOVING CONC (SIDEWALK OR RAMP)	SY			169.000		169.000	
	105-6023	REMOVING STAB BASE AND ASPH PAV (5")	SY			273.000		273.000	
	105-6074	REMOVING STAB BASE AND ASPH PAV (4")	SY			9,078.000		9,078.000	
	105-6094	REMOVING STAB BASE & ASPH PAV(12"-27")	SY			2,679.000		2,679.000	
	112-6004	SUBGRADE WIDENING (ORD COMP)	SY			20,507.000		20,507.000	
	134-6010	BACKFILL (TY B)	LF			15,296.000		15,296.000	
	150-6002	BLADING	HR			24.000		24.000	
	164-6033	DRILL SEEDING (PERM) (RURAL) (SANDY)	SY			37,196.000		37,196.000	
	164-6037	DRILL SEEDING (PERM) (URBAN) (SANDY)	SY			9,784.000		9,784.000	
	164-6041	DRILL SEEDING (TEMP) (WARM)	SY			23,497.000		23,497.000	
	164-6043	DRILL SEEDING (TEMP) (COOL)	SY			23,497.000		23,497.000	
	216-6001	PROOF ROLLING	HR			24.000		24.000	
	247-6044	FL BS (CMP IN PLC)(TY A GR 4)(FNAL POS)	CY			6,885.000		6,885.000	
	310-6005	PRIME COAT (AE-P)	GAL			4,100.000		4,100.000	
	316-6017	ASPH (AC-20-5TR)	GAL			18,153.000		18,153.000	
	316-6126	AGGR(TY-PB GR-4 SAC-A)	CY			407.000		407.000	
	347-6002	TOM-C (AGGREGATE) SAC-A	TON			2,403.000		2,403.000	
	347-6003	TOM (ASPHALT) PG 70-22	TON			208.000		208.000	
	416-6002	DRILL SHAFT (24 IN)	LF			96.000		96.000	
	416-6003	DRILL SHAFT (30 IN)	LF			12.000		12.000	
	416-6004	DRILL SHAFT (36 IN)	LF			34.000		34.000	
	416-6006	DRILL SHAFT (48 IN)	LF			66.000		66.000	
	416-6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	80.000		136.000		216.000	
	420-6002	CL A CONC (MISC)	CY			342.000		342.000	
	420-6128	CL K CONC (MISC)	CY			56.000		56.000	
	432-6001	RIPRAP (CONC)(4 IN)	CY			4.000		4.000	
	432-6044	RIPRAP (CONC)(FLUME)	CY			14.000		14.000	
	496-6072	REMOVING ROCK RIPRAP	LF			185.000		185.000	
	500-6001	MOBILIZATION	LS	100.00%				100.00%	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO			14.000		14.000	
	506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF			20.000		20.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF			20.000		20.000	
	506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF			1,195.000		1,195.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF			1,195.000		1,195.000	



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DISTRICT Odessa
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QUANTITY SHEET

CONTROL SECTION JOB				0887-01-039		0906-00-226		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00128071		A00129075			
COUNTY				Midland		Ector			
HIGHWAY				FM 307		Various			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	528-6004	LANDSCAPE PAVERS	SY			4,459.000		4,459.000	
	529-6005	CONC CURB (MONO) (TY II)	LF			66.000		66.000	
	529-6007	CONC CURB & GUTTER (TY I)	LF			58.000		58.000	
	529-6008	CONC CURB & GUTTER (TY II)	LF			2,946.000		2,946.000	
	530-6004	DRIVEWAYS (CONC)	SY			1,201.000		1,201.000	
	530-6005	DRIVEWAYS (ACP)	SY			334.000		334.000	
	531-6001	CONC SIDEWALKS (4")	SY			2,261.000		2,261.000	
	531-6004	CURB RAMPS (TY 1)	EA			7.000		7.000	
	531-6005	CURB RAMPS (TY 2)	EA			4.000		4.000	
	531-6013	CURB RAMPS (TY 10)	EA			1.000		1.000	
	531-6016	CURB RAMPS (TY 21)	EA			1.000		1.000	
	536-6002	CONC MEDIAN	SY			396.000		396.000	
	552-6003	WIRE FENCE (TY C)	LF			162.000		162.000	
	560-6011	MAILBOX INSTALL-S (TWW-POST) TY 4	EA			2.000		2.000	
	610-6004	RELOCATE RD IL ASM (TRANS-BASE)	EA			5.000		5.000	
	610-6009	REMOVE RD IL ASM (TRANS-BASE)	EA			1.000		1.000	
	610-6214	IN RD IL (TY SA) 40T-8 (250W EQ) LED	EA			11.000		11.000	
	610-6215	IN RD IL (TY SA) 40T-8-8 (250W EQ) LED	EA			1.000		1.000	
	610-6288	IN RD IL (TY SA) 50T-10 (400W EQ) LED	EA	5.000				5.000	
	610-6312	IN RD IL (TY ST) 50S-10 (400W EQ) LED	EA	3.000				3.000	
	618-6023	CONDT (PVC) (SCH 40) (2")	LF	1,790.000		2,740.000		4,530.000	
	618-6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	135.000		910.000		1,045.000	
	618-6046	CONDT (PVC) (SCH 80) (2")	LF			610.000		610.000	
	618-6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF			500.000		500.000	
	618-6053	CONDT (PVC) (SCH 80) (3")	LF			450.000		450.000	
	618-6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF			410.000		410.000	
	620-6009	ELEC CONDR (NO.6) BARE	LF	1,980.000		5,800.000		7,780.000	
	620-6010	ELEC CONDR (NO.6) INSULATED	LF	3,960.000		7,950.000		11,910.000	
	621-6004	TRAY CABLE (3 CONDR) (8 AWG)	LF			163.000		163.000	
	624-6001	GROUND BOX TY A (122311)	EA			1.000		1.000	
	624-6002	GROUND BOX TY A (122311)W/APRON	EA	3.000		9.000		12.000	
	624-6009	GROUND BOX TY D (162922)	EA			2.000		2.000	
	624-6010	GROUND BOX TY D (162922)W/APRON	EA			4.000		4.000	
	625-6003	ZINC-COAT STL WIRE STRAND (3/8")	LF			265.000		265.000	
	627-6002	TIMBER POLE (CL 2) 40 FT	EA			5.000		5.000	
	628-6045	ELC SRV TY A 240/480 060(NS)SS(E)SP(O)	EA	1.000				1.000	
	628-6145	ELC SRV TY D 120/240 060(NS)SS(E)SP(O)	EA			1.000		1.000	



DISTRICT	COUNTY	CCSJ	SHEET
Odessa	Midland	0887-01-039	16A



CONTROLLING PROJECT ID 0887-01-039

DISTRICT Odessa
HIGHWAY FM 307, Various

COUNTY Ector, Midland

QUANTITY SHEET

CONTROL SECTION JOB				0887-01-039		0906-00-226		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00128071		A00129075			
COUNTY				Midland		Ector			
HIGHWAY				FM 307		Various			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA			65.000		65.000	
	644-6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA			21.000		21.000	
	644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA			2.000		2.000	
	644-6030	IN SM RD SN SUP&AM TYS80(1)SA(T)	EA			10.000		10.000	
	644-6033	IN SM RD SN SUP&AM TYS80(1)SA(U)	EA			12.000		12.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA			77.000		77.000	
	658-6080	INSTL DEL ASSM (D-SW)SZ 1(WFLX)GND	EA			12.000		12.000	
	662-6048	WK ZN PAV MRK REMOV (REFL) TY I-C	EA			40.000		40.000	
	662-6050	WK ZN PAV MRK REMOV (REFL) TY II-A-A	EA			252.000		252.000	
	662-6060	WK ZN PAV MRK REMOV (W)4"(BRK)	LF			780.000		780.000	
	662-6061	WK ZN PAV MRK REMOV (W)4"(DOT)	LF			115.000		115.000	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF			12,825.000		12,825.000	
	662-6071	WK ZN PAV MRK REMOV (W)8"(SLD)	LF			3,340.000		3,340.000	
	662-6075	WK ZN PAV MRK REMOV (W)24"(SLD)	LF			111.000		111.000	
	662-6093	WK ZN PAV MRK REMOV (Y)4"(BRK)	LF			270.000		270.000	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF			13,915.000		13,915.000	
	666-6030	REFL PAV MRK TY I (W)8"(DOT)(100MIL)	LF			264.000		264.000	
	666-6033	REFL PAV MRK TY I (W)8"(LNDP)(100MIL)	LF			146.000		146.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF			10,066.000		10,066.000	
	666-6141	REFL PAV MRK TY I (Y)12"(SLD)(100MIL)	LF			286.000		286.000	
	666-6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF			3,570.000		3,570.000	
	666-6303	RE PM W/RET REQ TY I (W)4"(SLD)(100MIL)	LF			20,922.000		20,922.000	
	666-6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	LF			1,278.000		1,278.000	
	666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF			28,403.000		28,403.000	
	668-6076	PREFAB PAV MRK TY C (W) (24") (SLD)	LF			705.000		705.000	
	668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA			50.000		50.000	
	668-6078	PREFAB PAV MRK TY C (W) (DBL ARROW)	EA			2.000		2.000	
	668-6080	PREFAB PAV MRK TY C (W) (UTURN ARROW)	EA			4.000		4.000	
	668-6083	PREFAB PAV MRK TY C (W) (LNDP ARROW)	EA			8.000		8.000	
	668-6085	PREFAB PAV MRK TY C (W) (WORD)	EA			41.000		41.000	
	668-6092	PREFAB PAV MRK TY C (W) (36")(YLD TRI)	EA			28.000		28.000	
	672-6007	REFL PAV MRKR TY I-C	EA			554.000		554.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA			128.000		128.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF			8,950.000		8,950.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF			26.000		26.000	
	680-6003	INSTALL HWY TRF SIG (SYSTEM)	EA			2.000		2.000	
	680-6004	REMOVING TRAFFIC SIGNALS	EA			1.000		1.000	

DISTRICT	COUNTY	CCSJ	SHEET
Odessa	Midland	0887-01-039	16B



CONTROLLING PROJECT ID 0887-01-039

DISTRICT Odessa
HIGHWAY FM 307, Various

COUNTY Ector, Midland

QUANTITY SHEET

CONTROL SECTION JOB				0887-01-039		0906-00-226		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00128071		A00129075			
COUNTY				Midland		Ector			
HIGHWAY				FM 307		Various			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	682-6001	VEH SIG SEC (12")LED(GRN)	EA			18.000		18.000	
	682-6002	VEH SIG SEC (12")LED(GRN ARW)	EA			10.000		10.000	
	682-6003	VEH SIG SEC (12")LED(YEL)	EA			17.000		17.000	
	682-6004	VEH SIG SEC (12")LED(YEL ARW)	EA			10.000		10.000	
	682-6005	VEH SIG SEC (12")LED(RED)	EA			17.000		17.000	
	682-6006	VEH SIG SEC (12")LED(RED ARW)	EA			8.000		8.000	
	682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA			18.000		18.000	
	682-6051	BACKPLATE W/REFL BRDR(3 SEC)ALUM	EA			21.000		21.000	
	682-6052	BACKPLATE W/REFL BRDR(4 SEC)ALUM	EA			3.000		3.000	
	682-6053	BACKPLATE W/REFL BRDR(5 SEC)ALUM	EA			1.000		1.000	
	684-6003	TRF SIG CBL (TY A)(10 AWG)(4 CONDR)	LF			5,692.000		5,692.000	
	684-6031	TRF SIG CBL (TY A)(14 AWG)(5 CONDR)	LF			5,800.000		5,800.000	
	684-6033	TRF SIG CBL (TY A)(14 AWG)(7 CONDR)	LF			2,307.000		2,307.000	
	684-6038	TRF SIG CBL (TY A)(14 AWG)(12 CONDR)	LF			2,295.000		2,295.000	
	685-6003	REMOVE RDSB FLASH BEACON ASSEMBLY	EA			1.000		1.000	
	685-6004	INSTL RDSB FLSH BCN ASSM (SOLAR PWRD)	EA			4.000		4.000	
	685-6006	REMOV RDSB FLSH BCN AM (SOLAR PWRD)	EA			1.000		1.000	
	686-6033	INS TRF SIG PL AM(S)1 ARM(32')	EA			1.000		1.000	
	686-6039	INS TRF SIG PL AM(S)1 ARM(36')LUM	EA			1.000		1.000	
	686-6041	INS TRF SIG PL AM(S)1 ARM(40')	EA			1.000		1.000	
	686-6061	INS TRF SIG PL AM(S)1 ARM(60')	EA			1.000		1.000	
	686-6065	INS TRF SIG PL AM(S)1 ARM(65')	EA			1.000		1.000	
	686-6189	INS TRF SIG PL AM(S)2 ARM(50-40')	EA			1.000		1.000	
	687-6001	PED POLE ASSEMBLY	EA			16.000		16.000	
	688-6001	PED DETECT PUSH BUTTON (APS)	EA			18.000		18.000	
	690-6081	INSTL DOWN GUY AND ANCHOR W/GUARD	EA			8.000		8.000	
	752-6006	TREE REMOVAL (12" - 18" DIA)	EA			19.000		19.000	
	760-6001	DITCH CLEANING AND RESHAPING (FOOT)	LF			17,582.000		17,582.000	
	3077-6007	SP MIXESSP-BSAC-B PG70-22	TON			6,331.000		6,331.000	
	3085-6001	UNDERSEAL COURSE	GAL			8,962.000		8,962.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA			2.000		2.000	
	6054-6005	ANTENNA (UNI-DIRECTIONAL)	EA			1.000		1.000	
	6058-6001	BBU SYSTEM (EXTERNAL BATT CABINET)	EA			1.000		1.000	
	6083-6001	VIDEO IMAGING AND RAD VEH DETECTION SYS	EA			1.000		1.000	
	6093-6019	RELOC EXIST WIRELESS ETHRNET RADIO LNK	EA			1.000		1.000	
	6185-6002	TMA (STATIONARY)	DAY			95.000		95.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY			4.000		4.000	



DISTRICT	COUNTY	CCSJ	SHEET
Odessa	Midland	0887-01-039	16C



QUANTITY SHEET

CONTROLLING PROJECT ID 0887-01-039

DISTRICT Odessa
HIGHWAY FM 307, Various


COUNTY Ector, Midland

CONTROL SECTION JOB				0887-01-039		0906-00-226		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00128071		A00129075			
COUNTY				Midland		Ector			
HIGHWAY				FM 307		Various			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	6306-6007	VIVDS CABLING	LF			730.000		730.000	
	6306-6013	VIVDS PROSR SYS (RELOCATE)	EA			1.000		1.000	
	6306-6014	VIVDS CAM ASSY (RELOCATE)	EA			4.000		4.000	
	6306-6016	VIVDS CABLING (RELOCATE)	LF			2,310.000		2,310.000	
	18	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	
		ELECTRICAL: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000				1.000	


SUMMARY OF TRAFFIC CONTROL ITEMS

LOCATION	662 6048	662 6050	662 6060	662 6061	662 6063	662 6071	662 6075	662 6093	662 6095	677 6001	677 6007	6001 6002	6185 6002	6185 6005
	WK ZN PAV MRK REMOV (REFL) TY I-C	WK ZN PAV MRK REMOV (REFL) TY II-A-A	WK ZN PAV MRK REMOV (W) 4" (BRK)	WK ZN PAV MRK REMOV (W) 4" (DOT)	WK ZN PAV MRK REMOV (W) 4" (SLD)	WK ZN PAV MRK REMOV (W) 8" (SLD)	WK ZN PAV MRK REMOV (W) 24" (SLD)	WK ZN PAV MRK REMOV (Y) 4" (BRK)	WK ZN PAV MRK REMOV (Y) 4" (SLD)	ELIM EXT PAV MRK & MRKS (4")	ELIM EXT PAV MRK & MRKS (24")	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	DAY	DAY
CSJ 0887-01-039, ETC.														
LP 338 AT SH 191														
STEP 1	25		490	115	410	1570			3,145			2	34	1
STEP 2					415				930	715				
LP 338 AT SH 191 TOTAL	25	0	490	115	825	1570	0	0	4075	715	0	2	34	1
FM 307 AT FM 1379														
STEP 1		90			5,060	850	11		5,140				15	1
STEP 2		56			1,370		15		530	3,910	11			
STEP 3	15	106	290		2,620	920	30	270	4,170	4,325	15			
FM 307 AT FM 1379 TOTAL	15	252	290	0	9050	1770	56	270	9840	8235	26	0	15	1
FM 1787 AT FM 1788														
					2,950		55						46	2
FM 1787 AT FM 1788 TOTAL	0	0	0	0	2950	0	55	0	0	0	0	0	46	2
PROJECT TOTAL	40	252	780	115	12,825	3,340	111	270	13,915	8,950	26	2	95	4

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infraTECH
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368



Texas Department of Transportation

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

QUANTITY SUMMARY

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

SHEET 1 OF 11

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DATE: 9/4/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. Tr

SUMMARY OF TEMP SIGNAL ITEMS									
LOCATION	618 6046	618 6053	620 6009	620 6010	625 6003	627 6002	684 6033	690 6081	6306 6007
	CONDT (PVC) (SCH 80) (2")	CONDT (PVC) (SCH 80) (3")	ELEC CONDR (NO. 6) BARE	ELEC CONDR (NO. 6) INSULATED	ZINC-COAT STL WIRE STRAND (3/8")	TIMBER POLE (CL 2) 40 FT	TRF SIG CBL (TY A) (14 AWG) (7 CONDR)	INSTL DOWN GUY AND ANCHOR W/GUARD	VIVDS CABLING
	LF	LF	LF	LF	LF	EA	LF	EA	LF
CSJ 0906-00-226									
LP 338 AT SH 191 TOTAL	20	40	165	330	265	5	730	8	730
PROJECT TOTAL	20	40	165	330	265	5	730	8	730



WSP USA Inc.
2777 N. Stemmons Freeway, Ste. 1600
Dallas, Texas 75207
TBPE # F-2263



ODESSA DISTRICT INTERSECTION IMPROVEMENTS


QUANTITY SUMMARY

SHEET 2 OF 11

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.
			18


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SUMMARY OF REMOVAL ITEMS											
LOCATION	104 6017	104 6022	104 6028	104 6036	105 6023	105 6074	105 6094	496 6072	644 6076	685 6003	752 6006
	REMOVING CONC (DRIVEWAYS)	REMOVING CONC (CURB AND GUTTER)	REMOVING CONC (MISC)	REMOVING CONC (SIDEWALK OR RAMP)	REMOVING STAB BASE AND ASPH PAV (5")	REMOVING STAB BASE AND ASPH PAV (4")	REMOVING STAB BASE & ASPH PAV (12"-27")	REMOVING ROCK RIPRAP	REMOVE SM RD SN SUP&AM	REMOVE RDS FLASH BEACON ASSEMBLY	TREE REMOVAL (12"-18" DIA)
	SY	LF	SY	SY	SY	SY	SY	LF	EA	EA	EA
CSJ 0906-00-226											
LP 338 AT SH 191											
SHEET 1 OF 7	61			13		1,016					
SHEET 2 OF 7		321	2	58		1,685	54	92	15		3
SHEET 3 OF 7		899	15	37		2,870	240	93	5		2
SHEET 4 OF 7		276				2,619	61		3		
SHEET 5 OF 7						888				1	
SHEET 6 OF 7		478				84			12		5
SHEET 7 OF 7		554				83			7		9
LP 338 AT SH 191 TOTAL	61	2,528	17	108		9,078	522	185	42	1	19
FM 307 AT FM 1379											
SHEET 1 OF 7	17	37									
SHEET 2 OF 7	43			29					5		
SHEET 3 OF 7	81	43		32	18				7		
SHEET 4 OF 7	82	134	1		255		210		4		
SHEET 5 OF 7	97						109		1		
SHEET 6 OF 7									3		
SHEET 7 OF 7	307								3		
FM 307 AT FM 1379 TOTAL	627	214		61	273		319		23		
FM 1787 AT FM 1788											
SHEET 1 OF 16							106				
SHEET 2 OF 16							143		1		
SHEET 3 OF 16							333				
SHEET 4 OF 16			2				350		6		
SHEET 5 OF 16							399				
SHEET 6 OF 16							326				
SHEET 7 OF 16							134				
SHEET 8 OF 16							47				
SHEET 9 OF 16											
SHEET 10 OF 16											
SHEET 11 OF 16									1		
SHEET 12 OF 16									1		
SHEET 13 OF 16									1		
SHEET 14 OF 16									1		
SHEET 15 OF 16									1		
SHEET 16 OF 16											
FM 1787 AT FM 1788 TOTAL			2				1,838		12		
PROJECT TOTAL	688	2,742	19	169	273	9,078	2,679	185	77	1	19



JMT TBPE REGISTRATION NO. F-16341

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Texas Department of Transportation

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

QUANTITY SUMMARY


SHEET 3 OF 11

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						19


DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\1. General\ODA*SJM01

SUMMARY OF PAVING ITEMS

LOCATION		LT/RT	LENGTH	PROPOSED PAVEMENT AVERAGE WIDTH	PROPOSED PAVEMENT AREA	PROPOSED BASE AREA	DESCRIPTION	112 6004	247 6044	310 6005	316 6017	316 6126
BEGIN	END							SUBGRADE WIDENING (ORD COMP)	FL BS (CMP IN PLC) (TY A GR 4) (FNAL POS)	PRIME COAT (AE-P) (0.20 GAL/SY)	ASPH (AC-20-5TR) (0.38 GAL/SY)	AGGR (TY-PB GR-4 SAC-A) (120 SY/CY)
LF	LF	SY	SY	SY	SY	SY	CY	GAL	GAL	CY		
CSJ 0906-00-226												
LP 338												
85+85.69	88+47.34	LT	262		618	691	WIDENING	691	346	139		
88+47.34	93+00.01	LT/RT	453		938	1,113	WIDENING	1,113	557	223		
SH 191 EBFR												
313+72.02	315+22.02	LT	150	13	217	259	WIDENING	259	130	52		
315+22.02	315+54.24	LT	33	25	90	99	WIDENING	99	50	20		
315+54.24	317+04.28	LT	151	20	334	375	WIDENING	375	188	75		
317+04.28	319+46.67	LT	243	15	404	471	WIDENING	471	236	95		
319+46.67	321+17.22	LT	171		219	260	WIDENING	260	130	52		
SH 191 WBFR												
320+93.16	322+82.84	RT	190		294	341	WIDENING	341	171	69		
322+82.84	325+09.98	RT	228	15	379	442	WIDENING	442	221	89		
325+09.98	326+59.98	RT	150	20	334	375	WIDENING	375	188	75		
326+59.98	327+52.82	RT	93	25	258	284	WIDENING	284	142	57		
327+52.82	329+02.82	RT	150	13	217	259	WIDENING	259	130	52		
LP 338 AT SH 191 TOTAL								4,969	2,489	998		
FM 307												
521+43.00	534+40.67	LT/RT	1,298	61	8,376		SURFACE TREATMENT					
534+40.67	534+75.13	RT	35		40	40	WIDENING	40	14	8		
534+75.13	535+00.00	RT	25	15	42	42	WIDENING	42	14	9		
535+00.00	536+08.13	RT	109		136	148	WIDENING	148	50	30		
536+08.13	541+75.00	RT	567	7	490	553	WIDENING	553	185	111		
541+75.00	542+25.00	RT	50	3.5	20	26	WIDENING	26	9	6		
FM 1379												
0+28.00	0+52.00	LT/RT	24		332	106	CONCRETE	106	36			
0+52.00	1+17.11	LT	66		55	63	WIDENING	63	21	13		
0+52.00	2+43.67	RT	140		155	177	WIDENING	177	59	36		
0+52.00	10+91.00	LT/RT	1,039	44	5,123		SURFACE TREATMENT					
FM 307 AT FM 1379 TOTAL								1,155	388	213		
FM 1787												
717+79.50	721+09.50	LT	330	5	184	221	WIDENING	221	62	45		
721+09.50	737+76.81	LT	1,668	8	1,483	1,668	WIDENING	1,668	464	334		
737+76.81	739+37.13	LT	161		268	289	WIDENING	289	81	58		
739+37.13	740+44.70	LT	73		251	272	WIDENING	272	76	55		
740+44.70	749+30.00	LT	886	8	787	886	WIDENING	886	247	178		
749+30.00	750+80.00	LT	150	5	84	101	WIDENING	101	29	21		
728+09.50	729+59.50	RT	150	5	84	101	WIDENING	101	29	21		
729+59.50	738+22.07	RT	863	8	767	863	WIDENING	863	240	173		
738+22.07	739+29.31	RT	108		483	509	WIDENING	509	142	102		
739+29.31	741+49.63	RT	189		462	488	WIDENING	488	136	98		
741+49.63	757+80.00	RT	1,631	8	1,450	1,631	WIDENING	1,631	454	327		
757+80.00	761+10.00	RT	330	5	184	221	WIDENING	221	62	45		
717+79.50	721+09.50	LT/RT	330	47	1,736		SURFACE TREATMENT				660	15
721+09.50	728+09.50	LT/RT	700	50	3,929		SURFACE TREATMENT				1494	33
728+09.50	729+59.50	LT/RT	150	53	884		SURFACE TREATMENT				336	8
729+59.50	737+76.81	LT/RT	818	56	5,086		SURFACE TREATMENT				1933	43
737+76.81	741+49.63	LT/RT	373		4,964		SURFACE TREATMENT				1887	42
741+49.63	749+30.00	LT/RT	781	56	4,856		SURFACE TREATMENT				1846	41
749+30.00	750+80.00	LT/RT	150	53	884		SURFACE TREATMENT				336	8
750+80.00	757+80.00	LT/RT	700	50	3,889		SURFACE TREATMENT				1478	33
757+80.00	761+10.00	LT/RT	330	47	1,724		SURFACE TREATMENT				656	15
FM 1788												
879+20.00	882+50.00	LT	330	5	184	221	WIDENING	221	62	45		
882+50.00	899+17.16	LT	1,668	10	1,855	2,041	WIDENING	2,041	567	409		
9+12.13	16+64.00	LT	752	10	836	919	WIDENING	919	256	184		
16+64.00	17+80.00	LT	116	12	155	168	WIDENING	168	47	34		
17+80.00	19+30.00	LT	150	6	100	117	WIDENING	117	33	24		
889+50.00	891+00.00	RT	150	5	84	101	WIDENING	101	29	21		
891+00.00	899+95.64	RT	896	10	994	1,094	WIDENING	1,094	304	219		
9+94.02	16+64.00	RT	670	10	745	819	WIDENING	819	228	164		
16+64.00	26+30.00	RT	966	12	1,289	1,396	WIDENING	1,396	388	280		
26+30.00	29+60.00	RT	330	6	220	257	WIDENING	257	72	52		
879+20.00	882+50.00	LT/RT	330	37	1,357		SURFACE TREATMENT				516	12
882+50.00	889+50.00	LT/RT	700	42	3,270		SURFACE TREATMENT				1243	28
889+50.00	891+00.00	LT/RT	150	47	783		SURFACE TREATMENT				298	7
891+00.00	899+17.16	LT/RT	818	52	4,722		SURFACE TREATMENT				1795	40
9+94.02	17+80.00	LT/RT	786	52	4,542		SURFACE TREATMENT				1726	38
17+80.00	19+30.00	LT/RT	150	46	767		SURFACE TREATMENT				292	7
19+30.00	26+30.00	LT/RT	700	42	3,112		SURFACE TREATMENT				1183	26
26+30.00	29+60.00	LT/RT	330	36	1,247		SURFACE TREATMENT				474	11
FM 1787 AT FM 1788 TOTAL								14,383	4,008	2,889	18,153	407
PROJECT TOTAL								20,507	6,885	4,100	18,153	407



JMT TXBPE REGISTRATION NO. F-16341



Texas Department of Transportation

ODESSA DISTRICT INTERSECTION IMPROVEMENTS


QUANTITY SUMMARY

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.	SHEET 4 OF 11
JMT	6	(SEE TITLE SHEET)	VARIOUS	
GRAPHICS	STATE	DISTRICT	COUNTY	
JMT	TEXAS	ODA	ECTOR, ETC.	
CHECK	CONTROL	SECTION	JOB	
JMT	0887	01	039, ETC.	20


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 FILENAME: pw:\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\1. General\ODA*SUM01

SUMMARY OF PAVING ITEMS CONT'D

LOCATION	BEGIN	END	LT/RT	LENGTH LF	PROPOSED PAVEMENT AVERAGE WIDTH LF	PROPOSED PAVEMENT AREA SY	PROPOSED BASE AREA SY	DESCRIPTION	347 6002	347 6003	420 6128	3077 6007	3077 6007	3085 6001
									TOM-C (AGGREGATE) SAC-A (115 LBS/SY) (92.7%) TON	TOM (ASPHALT) PG 70-22 (115 LBS/SY) (7.3%) TON	CL K CONG (MISC) CY	SP MIXES SP-B SAC-B PG70-22 (550 LBS/SY) 5" DEPTH TON	SP MIXES SP-B SAC-B PG70-22 (660 LBS/SY) 6" DEPTH TON	UNDERSEAL COURSE (0.20 GAL/SY) GAL
CSJ 0906-00-226														
LP 338														
85+85.69	88+47.34		LT	262		618	691	WIDENING	105	9			216	393
88+47.34	93+00.01		LT/RT	453		938	1,113	WIDENING	174	14			339	653
SH 191 EBFR														
313+72.02	315+22.02		LT	150	13	217	259	WIDENING	36	3			79	132
315+22.02	315+54.24		LT	33	25	90	99	WIDENING	11	1			32	39
315+54.24	317+04.28		LT	151	20	334	375	WIDENING	53	5			117	198
317+04.28	319+46.67		LT	243	15	404	471	WIDENING	89	7			145	333
319+46.67	321+17.22		LT	171		219	260	WIDENING	43	4			80	162
SH 191 WBFR														
320+93.16	322+82.84		RT	190		294	341	WIDENING	56	5			105	207
322+82.84	325+09.98		RT	228	15	379	442	WIDENING	84	7			136	313
325+09.98	326+59.98		RT	150	20	334	375	WIDENING	51	4			117	190
326+59.98	327+52.82		RT	93	25	258	284	WIDENING	29	3			90	107
327+52.82	329+02.82		RT	150	13	217	259	WIDENING	35	3			79	131
LP 338 AT SH 191 TOTAL									766	65			1,535	2,858
FM 307														
521+43.00	534+40.67		LT/RT	1,298	61	8,376		SURFACE TREATMENT	447	36				1676
534+40.67	534+75.13		RT	35		40	40	WIDENING	12	1		11		44
534+75.13	535+00.00		RT	25	15	42	42	WIDENING	9	1		12		32
535+00.00	536+08.13		RT	109		136	148	WIDENING	34	3		40		125
536+08.13	541+75.00		RT	567	7	490	553	WIDENING	152	12		144		568
541+75.00	542+25.00		RT	50	3.5	20	26	WIDENING	10	1		7		38
FM 1379														
0+28.00	0+52.00		LT/RT	24		332	106	CONCRETE			56			
0+52.00	1+17.11		LT	66		55	63	WIDENING				17		
0+52.00	2+43.67		RT	140		155	177	WIDENING				46		
0+52.00	10+91.00		LT/RT	1,039	44	5,123		SURFACE TREATMENT	274	22				1025
FM 307 AT FM 1379 TOTAL									938	76	56	277		3,508
FM 1787														
717+79.50	721+09.50		LT	330	5	184	221	WIDENING	10	1			67	37
721+09.50	737+76.81		LT	1,668	8	1,483	1,668	WIDENING	80	7			520	297
737+76.81	739+37.13		LT	161		268	289	WIDENING	15	2			92	54
739+37.13	740+44.70		LT	73		251	272	WIDENING	14	2			87	51
740+44.70	749+30.00		LT	886	8	787	886	WIDENING	42	4			277	158
749+30.00	750+80.00		LT	150	5	84	101	WIDENING	5	1			31	17
728+09.50	729+59.50		RT	150	5	84	101	WIDENING	5	1			31	17
729+59.50	738+22.07		RT	863	8	767	863	WIDENING	41	4			269	154
738+22.07	739+29.31		RT	108		483	509	WIDENING	26	3			164	97
739+29.31	741+49.63		RT	189		462	488	WIDENING	25	2			157	93
741+49.63	757+80.00		RT	1,631	8	1,450	1,631	WIDENING	78	7			509	290
757+80.00	761+10.00		RT	330	5	184	221	WIDENING	10	1			67	37
717+79.50	721+09.50		LT/RT	330	47	1,736		SURFACE TREATMENT						
721+09.50	728+09.50		LT/RT	700	50	3,929		SURFACE TREATMENT						
728+09.50	729+59.50		LT/RT	150	53	884		SURFACE TREATMENT						
729+59.50	737+76.81		LT/RT	818	56	5,086		SURFACE TREATMENT						
737+76.81	741+49.63		LT/RT	373		4,964		SURFACE TREATMENT						
741+49.63	749+30.00		LT/RT	781	56	4,856		SURFACE TREATMENT						
749+30.00	750+80.00		LT/RT	150	53	884		SURFACE TREATMENT						
750+80.00	757+80.00		LT/RT	700	50	3,889		SURFACE TREATMENT						
757+80.00	761+10.00		LT/RT	330	47	1,724		SURFACE TREATMENT						
FM 1788														
879+20.00	882+50.00		LT	330	5	184	221	WIDENING	10	1			67	37
882+50.00	899+17.16		LT	1,668	10	1,855	2,041	WIDENING	99	8			643	371
9+12.13	16+64.00		LT	752	10	836	919	WIDENING	45	4			290	168
16+64.00	17+80.00		LT	116	12	155	168	WIDENING	9	1			54	31
17+80.00	19+30.00		LT	150	6	100	117	WIDENING	6	1			36	20
889+50.00	891+00.00		RT	150	5	84	101	WIDENING	5	1			31	17
891+00.00	899+95.64		RT	896	10	994	1,094	WIDENING	53	5			345	199
9+94.02	16+64.00		RT	670	10	745	819	WIDENING	40	4			259	149
16+64.00	26+30.00		RT	966	12	1,289	1,396	WIDENING	69	6			444	258
26+30.00	29+60.00		RT	330	6	220	257	WIDENING	12	1			79	44
879+20.00	882+50.00		LT/RT	330	37	1,357		SURFACE TREATMENT						
882+50.00	889+50.00		LT/RT	700	42	3,270		SURFACE TREATMENT						
889+50.00	891+00.00		LT/RT	150	47	783		SURFACE TREATMENT						
891+00.00	899+17.16		LT/RT	818	52	4,722		SURFACE TREATMENT						
9+94.02	17+80.00		LT/RT	786	52	4,542		SURFACE TREATMENT						
17+80.00	19+30.00		LT/RT	150	46	767		SURFACE TREATMENT						
19+30.00	26+30.00		LT/RT	700	42	3,112		SURFACE TREATMENT						
26+30.00	29+60.00		LT/RT	330	36	1,247		SURFACE TREATMENT						
FM 1787 AT FM 1788 TOTAL									699	67			4,519	2,596
PROJECT TOTAL									2,403	208	56	277	6,054	8,962



JMT
TBPE REGISTRATION NO. F-16341



Texas Department of Transportation

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

QUANTITY SUMMARY


DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

SHEET 5 OF 11

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SUMMARY OF ROADWAY ITEMS												
LOCATION	134 6010	420 6002	432 6001	432 6044	528 6004	529 6005	529 6007	529 6008	530 6004	530 6005	531 6001	531 6004
	BACKFILL (TY B)	CL A CONC (MISC)	RIPRAP (CONC) (4 IN)	RIPRAP (CONC) (FLUME)	LANDSCAPE PAVERS	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY I)	CONC CURB & GUTTER (TY II)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 1)
	LF	CY	CY	CY	SY	LF	LF	LF	SY	SY	SY	EA
CSJ 0906-00-226												
LP 338 AT SH 191												
SHEET 1 OF 7		44			623				159		87	
SHEET 2 OF 7	183	106			671			239	3		154	3
SHEET 3 OF 7	137	86		7	1,149			1,100			8	2
SHEET 4 OF 7		74		7	1,415			358				
SHEET 5 OF 7		32			601							
SHEET 6 OF 7	480							480				
SHEET 7 OF 7	555							555				
LP 338 AT SH 191 TOTAL	1,355	342		14	4,459			2,732	162		249	5
FM 307 AT FM 1379												
SHEET 1 OF 7									24		79	
SHEET 2 OF 7						22	21	22	226	10	396	
SHEET 3 OF 7						21	22	21	176	11	428	1
SHEET 4 OF 7	601		4			23	15	171	201	74	506	1
SHEET 5 OF 7	452								113			
SHEET 6 OF 7										239	491	
SHEET 7 OF 7									299		112	
FM 307 AT FM 1379 TOTAL	1,053		4			66	58	214	1,039	334	2,012	2
FM 1787 AT FM 1788												
SHEET 1 OF 16	521											
SHEET 2 OF 16	692											
SHEET 3 OF 16	1,199											
SHEET 4 OF 16	1,656											
SHEET 5 OF 16	1,201											
SHEET 6 OF 16	981											
SHEET 7 OF 16	600											
SHEET 8 OF 16	211											
SHEET 9 OF 16	282											
SHEET 10 OF 16	601											
SHEET 11 OF 16	851											
SHEET 12 OF 16	1,200											
SHEET 13 OF 16	1,200											
SHEET 14 OF 16	931											
SHEET 15 OF 16	601											
SHEET 16 OF 16	161											
FM 1787 AT FM 1788 TOTAL	12,888											
PROJECT TOTAL	15,296	342	4	14	4,459	66	58	2,946	1,201	334	2,261	7



TBPE REGISTRATION NO. F-16341

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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

QUANTITY SUMMARY

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						22


SHEET 6 OF 11

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SUMMARY OF ROADWAY ITEMS CONT'D							
LOCATION	531 6005	531 6013	531 6016	536 6002	552 6003	560 6011*	760 6001
	CURB RAMPS (TY 2)	CURB RAMPS (TY 10)	CURB RAMPS (TY 21)	CONC MEDIAN	WIRE FENCE (TY C)	MAILBOX INSTALL-S (TWW-POST) TY 4	DITCH CLEANING AND RESHAPING (FOOT)
	EA	EA	EA	SY	LF	EA	LF
CSJ 0906-00-226							
LP 338 AT SH 191							
SHEET 1 OF 7	1						197
SHEET 2 OF 7	1						252
SHEET 3 OF 7							68
SHEET 4 OF 7							
SHEET 5 OF 7							
SHEET 6 OF 7							488
SHEET 7 OF 7							554
LP 338 AT SH 191 TOTAL	2						1,559
FM 307 AT FM 1379							
SHEET 1 OF 7		1					144
SHEET 2 OF 7				147			524
SHEET 3 OF 7	1		1	249		1	553
SHEET 4 OF 7	1					1	851
SHEET 5 OF 7							488
SHEET 6 OF 7							524
SHEET 7 OF 7							110
FM 307 AT FM 1379 TOTAL	2	1	1	396		2	3,194
FM 1787 AT FM 1788							
SHEET 1 OF 16							520
SHEET 2 OF 16							691
SHEET 3 OF 16							1,200
SHEET 4 OF 16					158		1,601
SHEET 5 OF 16					4		1,201
SHEET 6 OF 16							982
SHEET 7 OF 16							601
SHEET 8 OF 16							211
SHEET 9 OF 16							279
SHEET 10 OF 16							603
SHEET 11 OF 16							849
SHEET 12 OF 16							1,201
SHEET 13 OF 16							1,200
SHEET 14 OF 16							931
SHEET 15 OF 16							597
SHEET 16 OF 16							162
FM 1787 AT FM 1788 TOTAL					162		12,829
PROJECT TOTAL	4	1	1	396	162	2	17,582

*CONTRACTOR TO COORDINATE MAILBOX REPLACEMENT WITH PROPERTY OWNER AND POSTAL SERVICE

SUMMARY OF BLADING AND ROLLING ITEMS		
LOCATION	150 6002	216 6001
	BLADING	PROOF ROLLING
	HR	HR
CSJ 0906-00-226		
LP 338 AT SH 191 TOTAL		
	8	8
FM 307 AT FM 1379 TOTAL		
	8	8
FM 1787 AT FM 1788 TOTAL		
	8	8
PROJECT TOTAL	24	24



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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS


QUANTITY SUMMARY

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.	23
JMT	6	(SEE TITLE SHEET)	VARIOUS	
GRAPHICS	STATE	DISTRICT	COUNTY	
JMT	TEXAS	ODA	ECTOR, ETC.	
CHECK	CONTROL	SECTION	JOB	
JMT	0887	01	039, ETC.	

SHEET 7 OF 11


DATE: 8/20/2020
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SUMMARY OF ECP ITEMS								
LOCATION	164 6033	164 6037	164 6041	164 6043	506 6002	506 6011	506 6040	506 6043
	DRILL SEEDING (PERM) (RURAL) (SANDY)	DRILL SEEDING (PERM) (URBAN) (SANDY)	DRILL SEEDING (TEMP) (WARM)	DRILL SEEDING (TEMP) (COOL)	ROCK FILTER DAMS (INSTALL) (TY 2)	ROCK FILTER DAMS (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (8")	BIODEG EROSN CONT LOGS (REMOVE)
	SY	SY	SY	SY	LF	LF	LF	LF
CSJ 0906-00-226								
LP 338 AT SH 191								
SHEET 1 OF 7		498	249	249			80	80
SHEET 2 OF 7		754	377	377	20	20	70	70
SHEET 3 OF 7		32	16	16			100	100
SHEET 4 OF 7							40	40
SHEET 5 OF 7							45	45
SHEET 6 OF 7		799	400	400			40	40
SHEET 7 OF 7		1,202	601	601			40	40
LP 338 AT SH 191 TOTAL		3,285	1,643	1,643	20	20	415	415
FM 307 AT FM 1379								
SHEET 1 OF 7		147	74	74			10	10
SHEET 2 OF 7		577	289	289			10	10
SHEET 3 OF 7		584	292	292			10	10
SHEET 4 OF 7		2,180	1,090	1,090			70	70
SHEET 5 OF 7		1,603	802	802			20	20
SHEET 6 OF 7		1,185	593	593			15	15
SHEET 7 OF 7		223	112	112			15	15
FM 307 AT FM 1379 TOTAL		6,499	3,252	3,252			150	150
FM 1787 AT FM 1788								
SHEET 1 OF 16	1,404		702	702			40	40
SHEET 2 OF 16	1,735		868	868			40	40
SHEET 3 OF 16	2,942		1,471	1,471			40	40
SHEET 4 OF 16	4,140		2,070	2,070			150	150
SHEET 5 OF 16	2,932		1,466	1,466			40	40
SHEET 6 OF 16	2,457		1,229	1,229			40	40
SHEET 7 OF 16	1,506		753	753			20	20
SHEET 8 OF 16	616		308	308			20	20
SHEET 9 OF 16	881		441	441			20	20
SHEET 10 OF 16	1,613		807	807			20	20
SHEET 11 OF 16	2,349		1,175	1,175			40	40
SHEET 12 OF 16	3,201		1,601	1,601			40	40
SHEET 13 OF 16	4,524		2,262	2,262			40	40
SHEET 14 OF 16	3,664		1,832	1,832			40	40
SHEET 15 OF 16	2,437		1,219	1,219			20	20
SHEET 16 OF 16	795		398	398			20	20
FM 1787 AT FM 1788 TOTAL	37,196		18,602	18,602			630	630
PROJECT TOTAL	37,196	9,784	23,497	23,497	20	20	1,195	1,195



JMT TBPE REGISTRATION NO. F-16341

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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

QUANTITY SUMMARY

SHEET 8 OF 11

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

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SUMMARY OF SIGNAL ITEMS

LOCATION	416 6002 DRILL SHAFT (24 IN) *	416 6003 DRILL SHAFT (30 IN)	416 6004 DRILL SHAFT (36 IN)	416 6006 DRILL SHAFT (48 IN)	618 6046 CONDT (PVC) (SCH 80) (2")	618 6047 CONDT (PVC) (SCH 80) (2") (BORE)	618 6053 CONDT (PVC) (SCH 80) (3")	618 6054 CONDT (PVC) (SCH 80) (3") (BORE)	620 6009 ELEC CONDR (NO. 6) BARE	620 6010 ELEC CONDR (NO. 6) INSULATED	621 6004 TRAY CABLE (3 CONDR) (8 AWG)	624 6009 GROUND BOX TY D (162922)	624 6010 GROUND BOX TY D (162922) W /APRON	628 6145 ELC SRV TY D 120/240 060 (NS)SS (E) SP (O)	680 6003 INSTALL HWY TRF SIG (SYSTEM)	680 6004 REMOVING TRAFFIC SIGNALS	682 6001 VEH SIG SEC (12") LED (G RN)	682 6002 VEH SIG SEC (12") LED (G RN ARW)	
	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA
CSJ 0906-00-226																			
LP 338 AT SH 191	90			66	385	90	180	90	745			2			1	1	12	7	
FM 307 AT FM 1379	6	12	34		205	410	230	320	1,095	30	163		4	1	1		6	3	
PROJECT TOTAL	96	12	34	66	590	500	410	410	1,840	30	163	2	4	1	2	1	18	10	

* Foundation is incidental to Item 687

SUMMARY OF SIGNAL ITEMS

LOCATION	682 6003 VEH SIG SEC (12") LED (Y EL)	682 6004 VEH SIG SEC (12") LED (Y EL ARW)	682 6005 VEH SIG SEC (12") LED (R ED)	682 6006 VEH SIG SEC (12") LED (R ED ARW)	682 6018 PED SIG SEC (LED) (COUN T DOWN)	682 6035 BACK PLATE (12") (3 SEC) (VENT ED) ALUM	682 6036 BACK PLATE (12") (4 SEC) (VENT ED) ALUM	682 6037 BACK PLATE (12") (5 SEC) (VENT ED) ALUM	684 6003 TRF SIG CBL (TY A) (10 AWG) (4 CONDR)	684 6031 TRF SIG CBL (TY A) (14 AWG) (5 CONDR)	684 6033 TRF SIG CBL (TY A) (14 AWG) (7 CONDR)	684 6038 TRF SIG CBL (TY A) (14 AWG) (12 CONDR)	686 6033 INS TRF SIG PL AM(S) 1 ARM(32')	686 6039 INS TRF SIG PL AM(S) 1 ARM(36') LUM	686 6041 INS TRF SIG PL AM(S) 1 ARM(40')	686 6061 INS TRF SIG PL AM(S) 1 ARM(60')	686 6065 INS TRF SIG PL AM(S) 1 ARM(65')	686 6189 INS TRF SIG PL AM(S) 2 ARM(50-40')	
	EA	EA	EA	EA	EA	EA	EA	EA	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA
CSJ 0906-00-226																			
LP 338 AT SH 191	11	7	11	7	16	17	1		5319	5415	1271	1975				1	1	1	
FM 307 AT FM 1379	6	3	6	1	2	4	2	1	373	385	306	320	1	1	1				
PROJECT TOTAL	17	10	17	8	18	21	3	1	5,692	5,800	1,577	2,295	1	1	1	1	1	1	1

SUMMARY OF SIGNAL ITEMS

LOCATION	687 6001 PED POLE ASSEMBLY	688 6001 PED DETECT PUSH BUTTON (APS)	6054 6005 ANTENNA (UNI-DIREC TIONAL)	6058 6001 BBU SYSTEM (EXTERNAL BATT CABINET)	6083 6001 VIDEO IMAGING AND RAD VEH DETECTION	6093 6019 RELOC EXIST WIRELESS ETHERNET RADIO LNK	6306 6013 VIVDS PROSR SYS (RELOCATE)	6306 6014 VIVDS CAM ASSY (RELOCATE)	6306 6016 VIVDS CABLING (RELOCATE)	+	++
	EA	EA	EA	EA	EA	EA	EA	EA	EA	LF	LF
CSJ 0906-00-226											
LP 338 AT SH 191	15	16				1	1	4	2310		190
FM 307 AT FM 1379	1	2	1	1	1					444	45
PROJECT TOTAL	16	18	1	1	1	1	1	4	2,310	444	235

+ / ++ : CABLE IS SUBSIDAIARY TO ITEM 6083 6001

WSP USA Inc.
2777 N. Stemmons Freeway, Ste. 1600
Dallas, Texas 75207
TBPE # F-2263

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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

QUANTITY SUMMARY

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.

SHEET 9 OF 11

25

DATE: 8/19/2020 FILENAME: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. Tr

SUMMARY OF ILLUMINATION ITEMS

LOCATION	416 6029 DRILL SHAFT (RDWY ILL POLE) (30 IN)	610 6004 RELOCATE RD IL ASM (TRANS-BASE)	610 6009 REMOVE RD IL ASM (TRANS-BASE)	610 6214 IN RD IL (TY SA) 40T-8 (250W EQ) LED	610 6215 IN RD IL (TY SA) 40T-8-8 (250W EQ) LED	610 6288 IN RD IL (TY SA) 50T-10 (400W EQ) LED	610 6312 IN RD IL (TY SA) 50S-10 (400W EQ) LED	618 6023 CONDT (PVC) (SCH 40) (2")	618 6024 CONDT (PVC) (SCH 40) (2") (BORE)	620 6009 ELEC CONDR (NO.6) BARE	620 6010 ELEC CONDR (NO.6) INSULATED	624 6001 GROUND BOX TY A (122311)	624 6002 GROUND BOX TY A (122311)W/ APRON	628 6045 ELC SRV TY A 240/480 060(NS)SS(E)SP(O)
	LF	EA	EA	EA	EA	EA	EA	LF	LF	LF	LF	EA	EA	EA
CSJ 0906-00-226														
LP 338 AT SH 191 TOTAL	40	1	1	3	1			650	445	1155	2310	1	5	
FM 1787 AT FM 1788 TOTAL	96	4		8				2090	465	2640	5280		4	
CSJ 0906-00-226 TOTAL	136	5	1	11	1			2,740	910	3,795	7,590	1	9	
CSJ 0887-01-039														
FM 307 AT FM 1379 TOTAL	80					5	3	1,790	135	1,980	3,960		3	1
CSJ 0887-01-039 TOTAL	80					5	3	1,790	135	1,980	3,960		3	1



WSP USA Inc.
2777 N. Stemmons Freeway, Ste. 1600
Dallas, Texas 75207
TBPE # F-2263



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

QUANTITY SUMMARY


DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.	SHEET 10 OF 11
WSP	6	(SEE TITLE SHEET)	VARIOUS	
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
WSP	TEXAS	ODA	ECTOR, ETC.	26
CHECK	CONTROL	SECTION	JOB	
WSP	0887	01	039, ETC.	

DATE: 3/22/2021 FILENAME: pw:\jmt-pw-bentley.com\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design


SUMMARY OF SIGN ASSEMBLIES							
LOCATION	644 6001	644 6004	644 6027	644 6030	644 6033	685 6004	685 6006
	IN SM RD SN SUP&AM TY10BWG (1) SA (P)	IN SM RD SN SUP&AM TY10BWG (1) SA (T)	IN SM RD SN SUP&AM TYS80 (1) SA (P)	IN SM RD SN SUP&AM TYS80 (1) SA (T)	IN SM RD SN SUP&AM TYS80 (1) SA (U)	IN STL RSD FL SH BCN ASSM (SOLAR PWRD)	REMOV RSD FL SH BCN AM (SOLAR PWRD)
	EA	EA	EA	EA	EA	EA	EA
CSJ 0887-01-039, ETC.							
LP 338 AT SH 191 TOTAL	25	18	1	7	5		
FM 307 AT FM 1379 TOTAL	13	1	1	3	3	4	1
FM 1787 AT FM 1788 TOTAL	27	2			4		
PROJECT TOTAL	65	21	2	10	12	4	1

SUMMARY OF STRIPING ITEMS									
LOCATION	658 6080	666 6030	666 6033	666 6036	666 6141	666 6300	666 6303	666 6312	666 6315
	IN STL DEL ASSM (D-SW) SZ 1 (WFLX) GND	REFL PAV MRK TY I (W) 8" (DOT) (100 MIL)	REFL PAV MRK TY I (W) 8" (LNDP) (10 OMIL)	REFL PAV MRK TY I (W) 8" (SLD) (100 MIL)	REFL PAV MRK TY I (Y) 12" (SLD) (100 MIL)	RE PM W/RET REQ TY I (W) 4" (BRK) (100 MIL)	RE PM W/RET REQ TY I (W) 4" (SLD) (100 MIL)	RE PM W/RET REQ TY I (Y) 4" (BRK) (100 MIL)	RE PM W/RET REQ TY I (Y) 4" (SLD) (100 MIL)
	EA	LF	LF	LF		LF	LF	LF	LF
CSJ 0887-01-039, ETC.									
LP 338 AT SH 191 TOTAL		264		4825		635	114		806
FM 307 AT FM 1379 TOTAL			146	1484	286	421	3696	1278	5965
FM 1787 AT FM 1788 TOTAL	12			3757		2514	17112		21632
PROJECT TOTAL	12	264	146	10066	286	3570	20922	1278	28403

SUMMARY OF STRIPING ITEMS									
LOCATION	668 6076	668 6077	668 6078	668 6080	668 6083	668 6085	668 6092	672 6007	672 6009
	PREFAB PAV MRK TY C (W) (24") (SLD)	PREFAB PAV MRK TY C (W) (ARROW)	PREFAB PAV MRK TY C (W) (DBL ARROW)	PREFAB PAV MRK TY C (W) (UTURN ARROW)	PREFAB PAV MRK TY C (W) (LNDP ARROW)	PREFAB PAV MRK TY C (W) (WORD)	PREFAB PAV MRK TY C (W) (36") (YLD TRI)	REFL PAV MRKR TY I-C	REFL PAV MRKR TY II-A-A
	LF	EA	EA	EA	EA	EA	EA	EA	EA
CSJ 0887-01-039, ETC.									
LP 338 AT SH 191 TOTAL	245	32	2	4		19	12	249	
FM 307 AT FM 1379 TOTAL	307	10				14	16	81	128
FM 1787 AT FM 1788 TOTAL	153	8			8	8		224	
PROJECT TOTAL	705	50	2	4	8	41	28	554	128



Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368



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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

QUANTITY SUMMARY

SHEET 11 OF 11

DESIGN AH	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS AH	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK SU	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK ZS			27

FILENAME: pw:\jmt-pw-bentley.com: jmt-pw-01\Documents\Projects\2017\17-11524-004\Des\jgndat\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design
 DATE: 8/20/2020

GENERAL NOTES:

1. PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) PER TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) MUST BE PLACED 72 HOURS IN ADVANCE OF THE BEGINNING OF THE CONSTRUCTION.
2. PLACE AND MAINTAIN ADVANCE WARNING SIGNS, TRAFFIC CONTROL DEVICES, WORK ZONE PAVEMENT MARKINGS AND SIGNS IN ACCORDANCE WITH TRAFFIC CONTROL PLAN, TRAFFIC CONTROL STANDARDS, TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND GENERAL NOTES. THE SIGNS, TRAFFIC CONTROL AND WARNING DEVICES SHOWN ARE CONSIDERED MINIMUM AND ADDITIONAL SIGNS, TRAFFIC CONTROL OR WARNING DEVICES DEEMED NECESSARY BY THE ENGINEER OR DICTATED BY FIELD CONDITIONS SHALL BE PROVIDED ACCORDING TO ALL APPLICABLE STANDARDS AND TMUTCD. ADDITIONAL SIGNS OR TRAFFIC CONTROL DEVICES WILL NOT BE PAID DIRECTLY BUT WILL BE SUBSIDIARY TO THE BID ITEM, "BARRICADES, SIGNS AND TRAFFIC HANDLING."
3. THE SEQUENCE OF CONSTRUCTION PROVIDED IS NOT TO BE CONSIDERED RESTRICTIVE. THE CONTRACTOR WITH WRITTEN APPROVAL OF THE ENGINEER, MAY ALTER THE SEQUENCE OF CONSTRUCTION PROVIDED THE TRAFFIC IS MAINTAINED AND THE CRITERIA ESTABLISHED HEREIN IS FOLLOWED.
4. MAINTAIN ACCESS TO ALL SIDE STREETS AND ADJOINING PROPERTIES AT ALL TIMES. THIS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.
5. THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE THROUGHOUT THE CONSTRUCTION OF THE PROJECT. THE CONTRACTOR SHALL CORRECT DRAINAGE DEFICIENCIES THAT PRESENT A HAZARD TO THE TRAVELING PUBLIC OR PROPERTY. THIS WORK WILL NOT BE PAID DIRECTLY BUT WILL BE SUBSIDIARY TO ITEM 502-6001 "BARRICADES, SIGNS AND TRAFFIC HANDLING".
6. THE CONTRACTOR SHALL REMOVE ALL EXISTING SIGNS AND STRIPING WHICH CONFLICT WITH THE CONSTRUCTION SIGNS AND STRIPING. EXISTING STRIPING SHALL BE REMOVED IN AREAS WHERE TRAFFIC IS DIRECTED TO CROSS THEM. THE SIGNS SHALL BE PROPERLY STORED IN A SAFE PLACE UNTIL THE CONSTRUCTION HAS BEEN COMPLETED.
7. NO WORK SHALL BE PERFORMED IN THE TRAVELED WAY INCLUDING LOADING AND UNLOADING OF TRUCKS.
8. THE CONTRACTOR SHALL ENSURE THAT ALL BARRICADES, SIGNS, CHANNELIZING DEVICES, WARNING LIGHTS AND TRAFFIC HANDLING DEVICES ARE MAINTAINED IN A CLEAN FUNCTIONAL CONDITION AT ALL TIMES.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE TEMPORARY AND EXISTING PAVEMENT MARKINGS IN A GOOD AND VISIBLE CONDITION THROUGHOUT THE LENGTH OF THE PROJECT.
10. THE CONTRACTOR SHALL MAINTAIN BARRICADES AND SAFETY FENCES AT EACH SITE WHERE PEDESTRIAN TRAFFIC IS EVIDENT.
11. CONTRACTOR SHALL COVER OPEN EXCAVATIONS WITH STEEL PLATES ANCHORED PROPERLY DURING NON-WORKING HOURS, AND OPEN LANES FOR NORMAL TRAFFIC FLOW AS APPLICABLE.
12. NOTIFY THE ENGINEER IN WRITING TWO WEEKS PRIOR TO SHIFTING OF TRAFFIC WITHIN EACH PHASE OF THE TRAFFIC CONTROL PLAN.
13. BARRICADES, SIGNS, CHANNELIZING DEVICES AS SHOWN SHALL BE ADJUSTED TO FIT FIELD CONDITIONS, AS DIRECTED BY THE ENGINEER.
14. REMOVE SIGNS, BARRICADES, AND CONES NOT IN USE FOR 3 WORKING DAYS FROM THE RIGHT-OF-WAY.
15. STORM WATER POLLUTION PREVENTION PLAN (SW3P) DEVICES SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION. ALL SW3P DEVICES SHALL BE INSTALLED, UPDATED, AND MAINTAINED DURING CONSTRUCTION AS REQUIRED BY THE PLANS AND/OR AS DIRECTED BY THE ENGINEER.
16. THE CONTRACTOR SHALL PLACE A 3:1 SLOPE BETWEEN THE CONSTRUCTION ZONE AND TRAVELED PAVEMENT AS THE END OF EACH DAY IF DROP-OFF EXCEEDS 2 INCHES.

SEQUENCE OF CONSTRUCTION:

THE FOLLOWING NARRATIVE IS A SUPPLEMENT TO THE TRAFFIC CONTROL PLAN SHEETS.

LP 338 AND SH 191 INTERSECTION:

STEP 1:

1. INSTALL TRAFFIC CONTROL DEVICES INCLUDING ADVANCED WARNING SIGNAGE IN ACCORDANCE WITH TXDOT STANDARDS AND THE LATEST EDITION OF THE TMUTCD.
2. PRIOR TO ANY CONSTRUCTION INSTALL SEDIMENT LOGS AND ANY OTHER REQUIRED EROSION/SEDIMENTATION CONTROL DEVICES AS SHOWN ON THE SW3P LAYOUTS AND STANDARDS AS THEY PERTAIN TO THE CONSTRUCTION PRIOR TO ROADWAY CONSTRUCTION. ALL OUTFALL DRAINAGE CHANNEL WORK MUST BE COMPLETED.
3. PLACE TRAFFIC CONTROL DEVICES ACCORDING TO APPROPRIATE TCP STANDARDS.
4. PLACE TEMPORARY PAVEMENT MARKINGS AND REMOVE EXISTING CONFLICTING MARKINGS.
5. SHIFT TRAFFIC ONTO THE NEW TRAVEL LANES.
6. CONSTRUCT NEW PAVEMENTS ALONG THE SH 191 EBFR AND WBFR AND LP 338 MEDIAN AND LEFT TURN FROM STA 85+86 TO STA 97+15. KEEP THE MEDIAN OPEN BETWEEN STA 88+48 TO STA 89+22 TO MAINTAIN LEFT TURN FOR SHOPPING CENTER.

STEP 2:

1. INSTALL TRAFFIC CONTROL DEVICES INCLUDING ADVANCED WARNING SIGNAGE IN ACCORDANCE WITH TXDOT STANDARDS AND THE LATEST EDITION OF THE TEXAS MUTCD.
2. PLACE EROSION CONTROL MEASURES IN ACCORDANCE WITH SW3P SITE PLAN.
3. PLACE TRAFFIC CONTROL DEVICES ACCORDING TO APPROPRIATE TCP STANDARDS.
4. PLACE TEMPORARY PAVEMENT MARKINGS AND REMOVE EXISTING CONFLICTING MARKINGS.
5. SHIFT TRAFFIC ONTO THE NEW TRAVEL LANES.
6. CONSTRUCT THE NEW MEDIAN BETWEEN STA 88+48 TO STA 89+22, MODIFY THE EXISTING MEDIAN BETWEEN STA 73+88 TO 85+60 AND SIDEWALK AND DRIVEWAY AT THE SOUTH EAST QUADRANT OF THE INTERSECTION.
7. INSTALL PROPOSED SIGNING AND MARKINGS.
8. MODIFY EXISTING SIGNAL.

FM 307 AND SH 1379 INTERSECTION:

STEP 1A:

1. INSTALL TRAFFIC CONTROL DEVICES INCLUDING ADVANCED WARNING SIGNAGE IN ACCORDANCE WITH TXDOT STANDARDS AND THE LATEST EDITION OF THE TEXAS MUTCD.
2. PRIOR TO ANY CONSTRUCTION INSTALL SEDIMENT LOGS AND ANY OTHER REQUIRED EROSION/SEDIMENTATION CONTROL DEVICES AS SHOWN ON THE SW3P LAYOUTS AND STANDARDS AS THEY PERTAIN TO THE CONSTRUCTION PRIOR TO ROADWAY CONSTRUCTION. ALL OUTFALL DRAINAGE CHANNEL WORK MUST BE COMPLETED.
3. PLACE TRAFFIC CONTROL DEVICES ACCORDING TO APPROPRIATE TCP STANDARDS.
4. WIDEN PAVEMENT ALONG THE WEST SIDE OF FM 1379 BETWEEN STA 0+52 AND STA 2+44 USING STEP 1A TYPICAL SECTION & TCP STANDARD: TCP(2-1)-18.

STEP 1B:

1. INSTALL TRAFFIC CONTROL DEVICES INCLUDING ADVANCED WARNING SIGNAGE IN ACCORDANCE WITH TXDOT STANDARDS AND THE LATEST EDITION OF THE TEXAS MUTCD.
2. PRIOR TO ANY CONSTRUCTION INSTALL SEDIMENT LOGS AND ANY OTHER REQUIRED EROSION/SEDIMENTATION CONTROL DEVICES AS SHOWN ON THE SW3P LAYOUTS AND STANDARDS AS THEY PERTAIN TO THE CONSTRUCTION PRIOR TO ROADWAY CONSTRUCTION. ALL OUTFALL DRAINAGE CHANNEL WORK MUST BE COMPLETED.
3. PLACE TEMPORARY PAVEMENT MARKINGS AND REMOVE EXISTING CONFLICTING MARKINGS.
4. SHIFT TRAFFIC ONTO THE NEW TRAVEL LANES.
5. CONSTRUCT NEW PAVEMENTS AT THE SOUTHEAST CORNER OF THE INTERSECTION.

STEP 2:

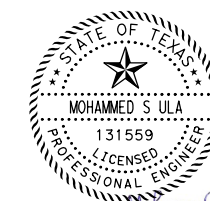
1. INSTALL TRAFFIC CONTROL DEVICES INCLUDING ADVANCED WARNING SIGNAGE IN ACCORDANCE WITH TXDOT STANDARDS AND THE LATEST EDITION OF THE TEXAS MUTCD.
2. PRIOR TO ANY CONSTRUCTION INSTALL SEDIMENT LOGS AND ANY OTHER REQUIRED EROSION/SEDIMENTATION CONTROL DEVICES AS SHOWN ON THE SW3P LAYOUTS AND STANDARDS AS THEY PERTAIN TO THE CONSTRUCTION PRIOR TO ROADWAY CONSTRUCTION. ALL OUTFALL DRAINAGE CHANNEL WORK MUST BE COMPLETED.
3. PLACE TRAFFIC CONTROL DEVICES ACCORDING TO APPROPRIATE TCP STANDARDS.
4. PLACE TEMPORARY PAVEMENT MARKINGS AND REMOVE EXISTING CONFLICTING MARKINGS.
5. SHIFT TRAFFIC ONTO THE NEW TRAVEL LANES.
6. CONSTRUCT REMAINING PAVEMENTS AT THE SOUTHWEST CORNER OF THE INTERSECTION.
7. CONSTRUCT SIDEWALK AND DRIVEWAYS AS PER THE PLAN.

STEP 3:

1. INSTALL TRAFFIC CONTROL DEVICES INCLUDING ADVANCED WARNING SIGNAGE IN ACCORDANCE WITH TXDOT STANDARDS AND THE LATEST EDITION OF THE TEXAS MUTCD.
2. PRIOR TO ANY CONSTRUCTION INSTALL SEDIMENT LOGS AND ANY OTHER REQUIRED EROSION/SEDIMENTATION CONTROL DEVICES AS SHOWN ON THE SW3P LAYOUTS AND STANDARDS AS THEY PERTAIN TO THE CONSTRUCTION PRIOR TO ROADWAY CONSTRUCTION. ALL OUTFALL DRAINAGE CHANNEL WORK MUST BE COMPLETED.
3. PLACE TRAFFIC CONTROL DEVICES ACCORDING TO APPROPRIATE TCP STANDARDS.
4. PLACE TEMPORARY PAVEMENT MARKINGS AND REMOVE EXISTING CONFLICTING MARKINGS.
5. SHIFT TRAFFIC ONTO THE NEW TRAVEL LANES.
6. CONSTRUCT NEW MEDIAN ALONG THE FM307 BETWEEN STA 520+48 AND STA 529+87.
7. PLACE FINAL PAVEMENT MARKINGS AND MARKINGS.
8. INSTALL NEW TRAFFIC SIGNAL.

FM 1787 AND FM 1788 INTERSECTION:

1. INSTALL TRAFFIC CONTROL DEVICES INCLUDING ADVANCED WARNING SIGNAGE IN ACCORDANCE WITH TXDOT STANDARDS AND THE LATEST EDITION OF THE TEXAS MUTCD.
2. PRIOR TO ANY CONSTRUCTION INSTALL SEDIMENT LOGS AND ANY OTHER REQUIRED EROSION/SEDIMENTATION CONTROL DEVICES AS SHOWN ON THE SW3P LAYOUTS AND STANDARDS AS THEY PERTAIN TO THE CONSTRUCTION PRIOR TO ROADWAY CONSTRUCTION. ALL OUTFALL DRAINAGE CHANNEL WORK MUST BE COMPLETED.
3. REMOVE OR COVER SIGNS AND PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH THE PROPOSED TRAFFIC CONTROL PLANS AND INSTALL WORK ZONE STRIPING AS DESCRIBED IN THE PLANS.
4. CUT BACK EXISTING PAVEMENT AND REMOVE ASPHALT PAVEMENT TO THE LIMIT SHOWN IN THE PLANS.
5. PERFORM EXCAVATION, EMBANKMENT AND GRADING AS SHOWN IN THE PLANS.
6. CONSTRUCT NEW PAVEMENT TO EXTENT SHOWN IN THE PLANS.
7. INSTALL PROPOSED SIGNING AND MARKINGS.
8. PLACE TOPSOIL AND INSTALL SEEDING.



Mohammed S. Ula
08/20/2020



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**TRAFFIC CONTROL PLAN
GENERAL NOTES AND
SEQUENCE OF CONSTRUCTION**

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			SHEET NO. 28

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

1
OBEY WARNING SIGNS STATE LAW
R20-3T
48" x 42"

2
STAY ALERT
TALK OR TEXT LATER
G20-10T
60" x 48"

3
BEGIN WORK ZONE
TRAFFIC FINES DOUBLE
WHEN WORKERS ARE PRESENT
G20-9TP 24" x 24"
R20-5T 24" x 30"
R20-5aTP 24" x 12"

4
SPEED LIMIT 55
R2-1
30" x 36"

8
END ROAD WORK
G20-2
36" x 18"

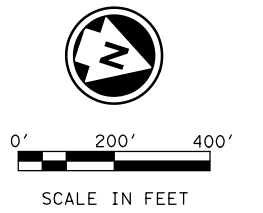
9
SPEED LIMIT 55
R2-1
30" x 36"

10
END WORK ZONE
G20-2bT
36" x 18"

5
ROAD WORK AHEAD
CW20-1D
48" x 48"

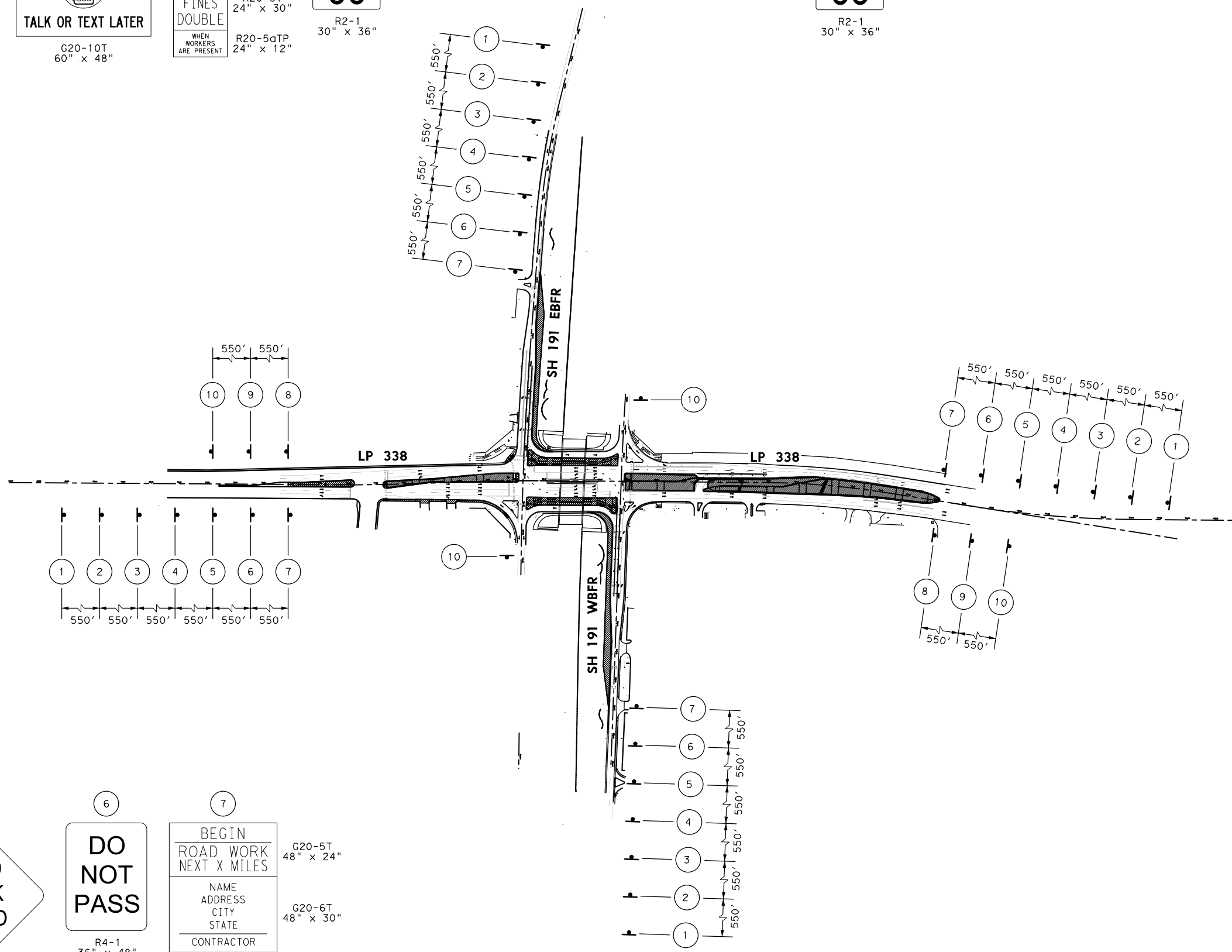
6
DO NOT PASS
R4-1
36" x 48"

7
BEGIN ROAD WORK NEXT X MILES
NAME ADDRESS CITY STATE CONTRACTOR
G20-5T 48" x 24"
G20-6T 48" x 30"



- LEGEND**
- CONSTRUCTION
 - TRAFFIC DIRECTION
 - TRAFFIC SIGN

- NOTES:**
1. REFER TO STANDARDS BC (1) THRU (12) AND TCP STANDARDS FOR LENGTHS, SIGN SPACING AND MORE INFORMATION.



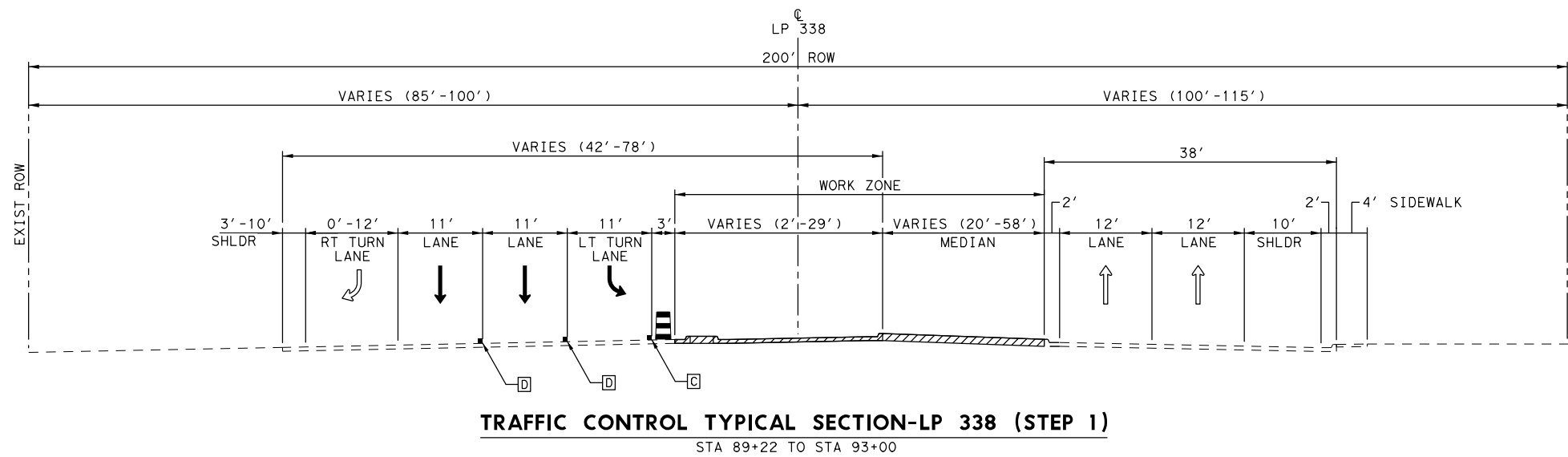
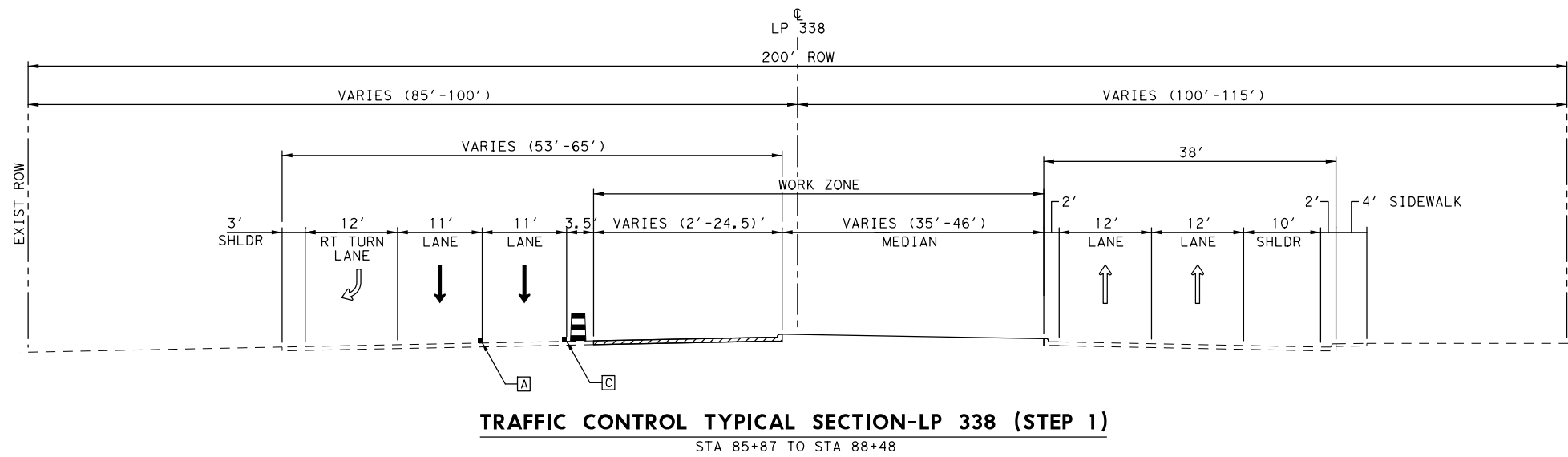
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TBPE REGISTRATION NO. F-18368

Texas Department of Transportation
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**LP 338
ADVANCED WARNING SIGNS
AT SH 191**

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			SHEET NO. 29

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 1787 (CSJ 0906-00-226)\4 - Design



LEGEND

- ← EXISTING DIRECTION OF TRAFFIC
- PROPOSED DIRECTION OF TRAFFIC
- ▬ DRUM
- ▨ CONSTRUCT THIS PHASE/STEP
- ▩ CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- A WK ZN PAV MRK REMOV (W) 4" (BRK)
- B WK ZN PAV MRK REMOV (W) 4" (SLD)
- C WK ZN PAV MRK REMOV (Y) 4" (SLD)
- D WK ZN PAV MRK REMOV (W) 8" (SLD)
- CC WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

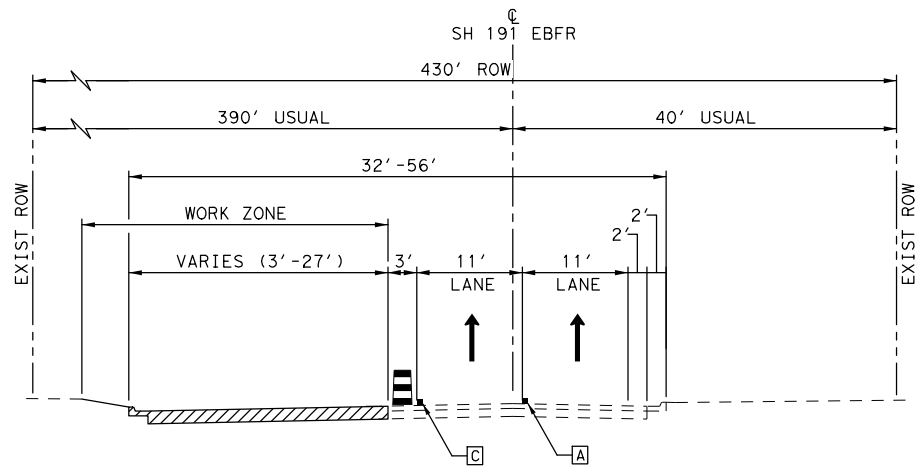
LP 338

TCP TYPICAL SECTIONS

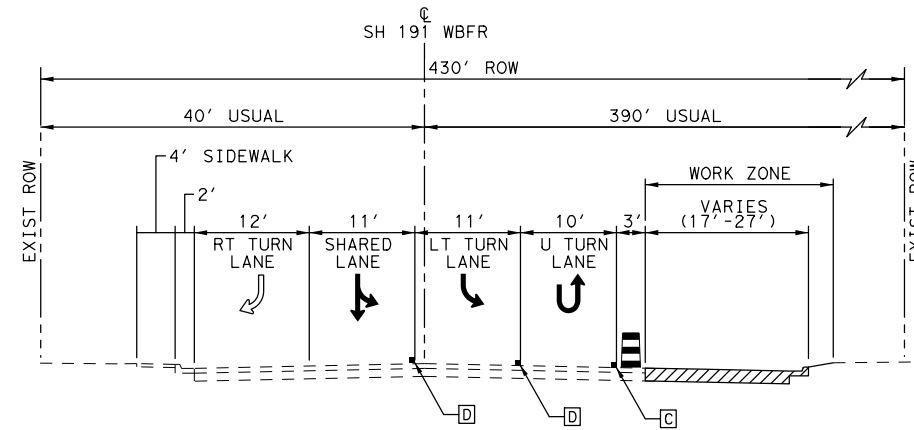
AT SH 191

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.
			SHEET 1 OF 4
			30

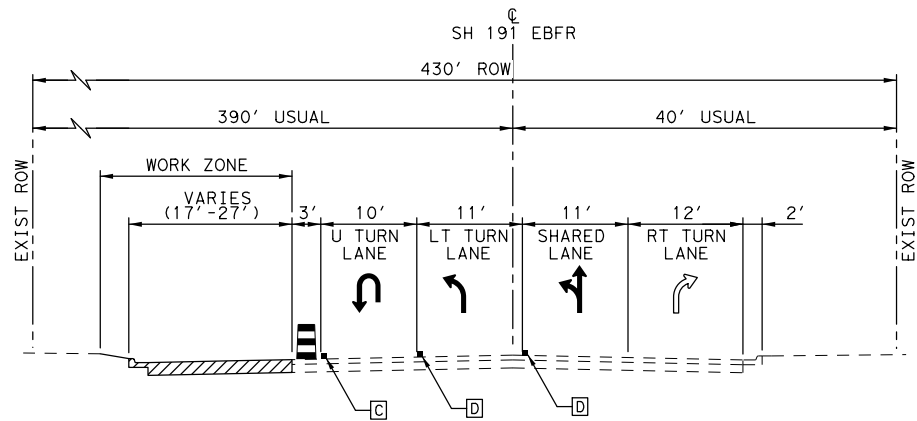
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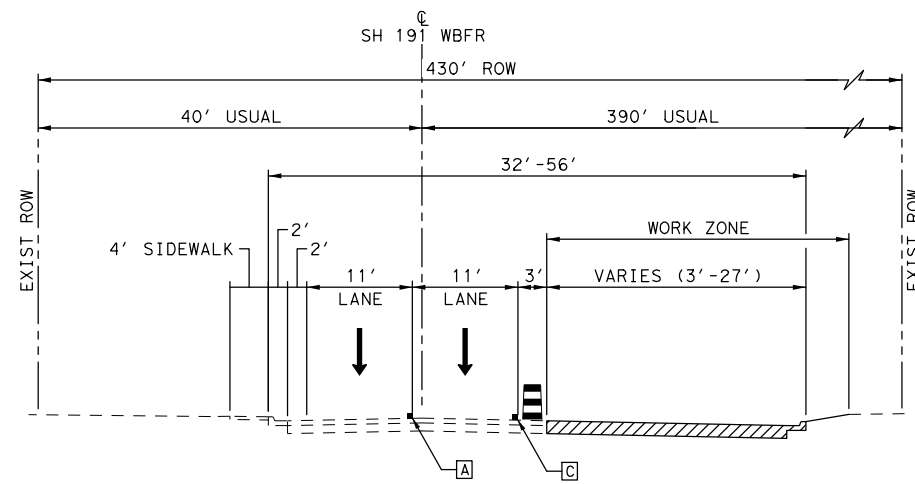
TRAFFIC CONTROL TYPICAL SECTION-SH 191 EBFR (STEP 1)
STA 313+72 TO STA 315+10



TRAFFIC CONTROL TYPICAL SECTION-SH 191 WBFR (STEP 1)
STA 321+90 TO STA 326+50



TRAFFIC CONTROL TYPICAL SECTION-SH 191 EBFR (STEP 1)
STA 315+10 TO STA 320+30



TRAFFIC CONTROL TYPICAL SECTION-SH 191 WBFR (STEP 1)
STA 326+50 TO STA 329+03

LEGEND

- ← EXISTING DIRECTION OF TRAFFIC
- PROPOSED DIRECTION OF TRAFFIC
- ▬ DRUM
- ▨ CONSTRUCT THIS PHASE/STEP
- ▩ CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- A WK ZN PAV MRK REMOV (W) 4" (BRK)
- B WK ZN PAV MRK REMOV (W) 4" (SLD)
- C WK ZN PAV MRK REMOV (Y) 4" (SLD)
- D WK ZN PAV MRK REMOV (W) 8" (SLD)
- CC WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

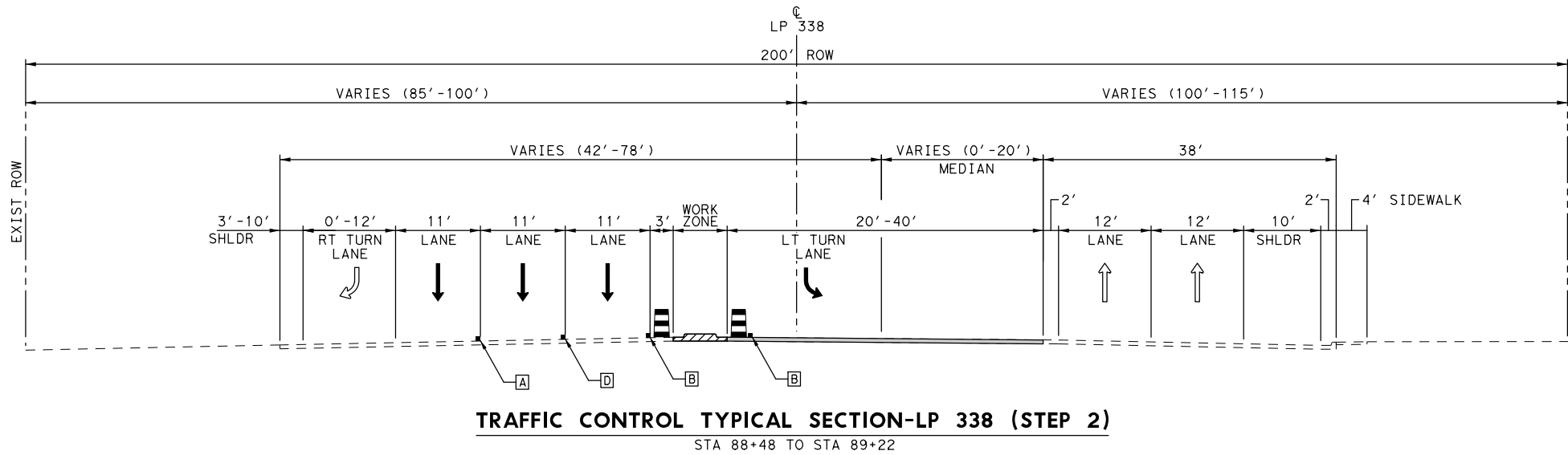
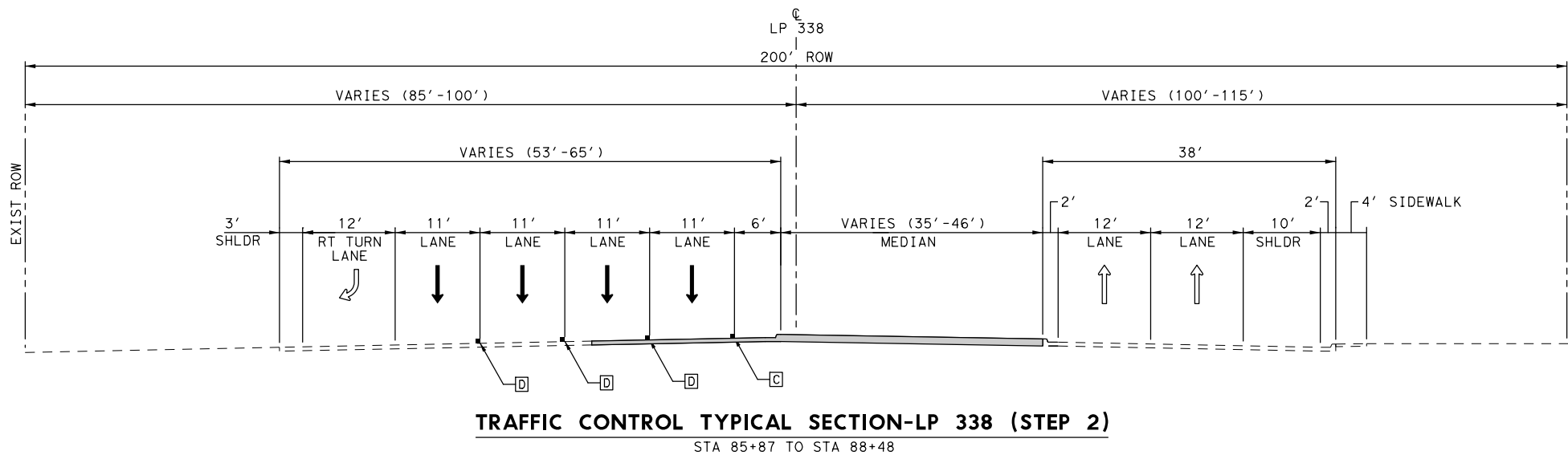
LP 338
TCP TYPICAL SECTIONS
AT SH 191

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

SHEET 2 OF 4

31


DATE: 8/20/2020 FILENAME: pw:\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 1787 (CSJ 0906-00-226)\4 - Design




LEGEND

- ← EXISTING DIRECTION OF TRAFFIC
- PROPOSED DIRECTION OF TRAFFIC
- ▬ DRUM
- ▨ CONSTRUCT THIS PHASE/STEP
- ▩ CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- A WK ZN PAV MRK REMOV (W) 4" (BRK)
- B WK ZN PAV MRK REMOV (W) 4" (SLD)
- C WK ZN PAV MRK REMOV (Y) 4" (SLD)
- D WK ZN PAV MRK REMOV (W) 8" (SLD)
- CC WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)





Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

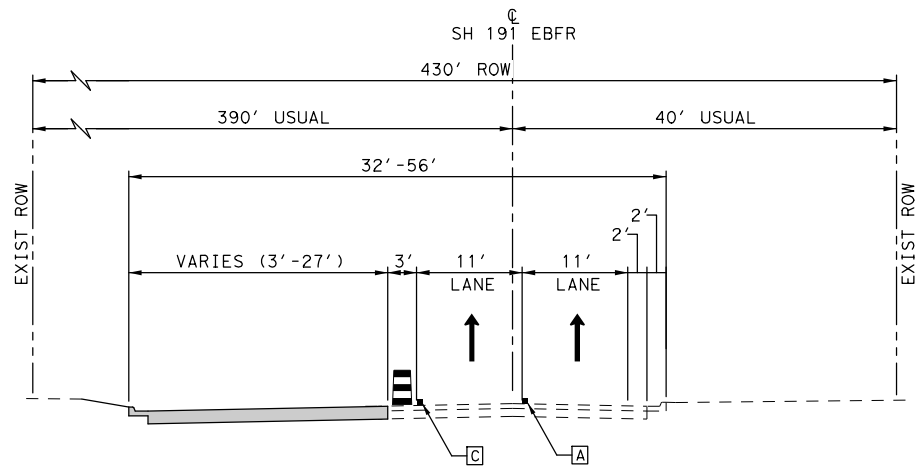


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

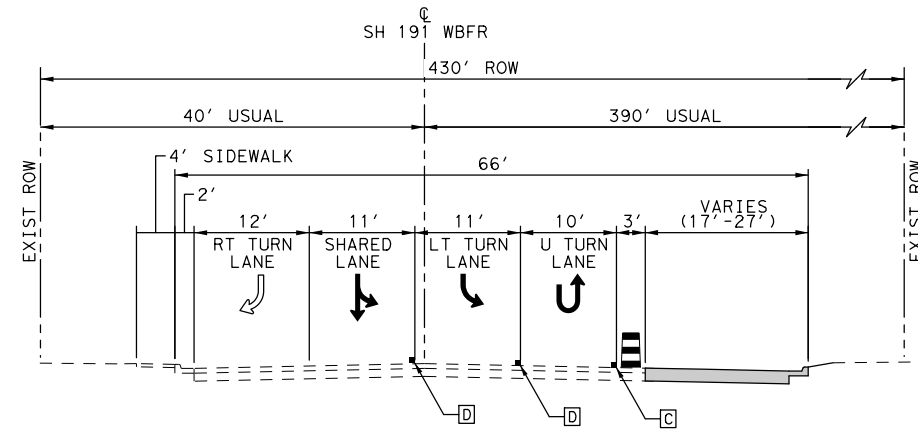
SH 191
TCP TYPICAL SECTIONS
AT LP 338

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
			SHEET 3 OF 4 32

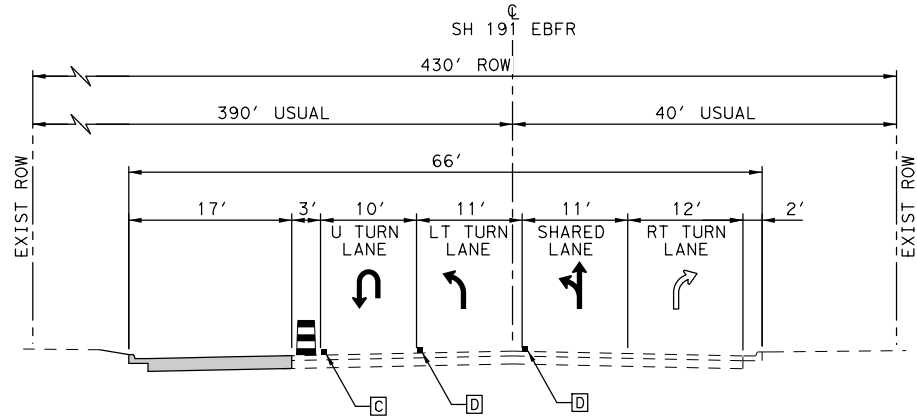
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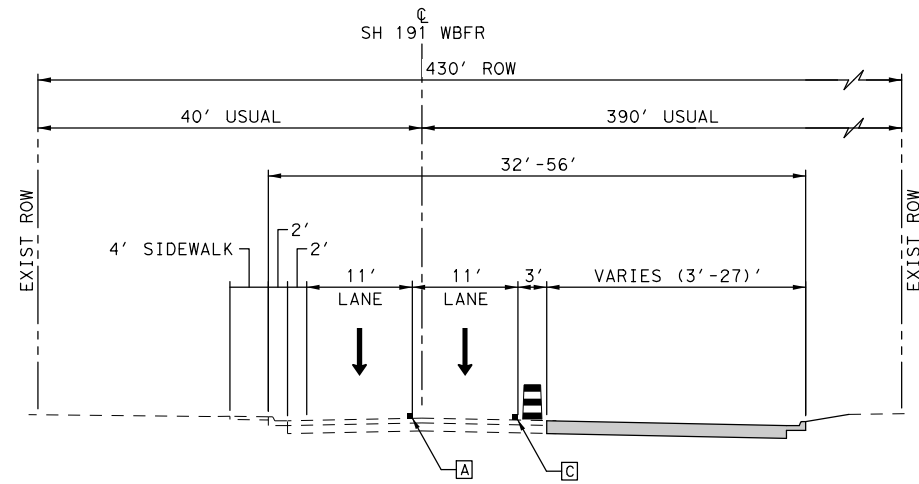
TRAFFIC CONTROL TYPICAL SECTION-SH 191 EBFR (STEP 2)
STA 313+72 TO STA 315+10



TRAFFIC CONTROL TYPICAL SECTION-SH 191 WBFR (STEP 2)
STA 321+90 TO STA 326+50



TRAFFIC CONTROL TYPICAL SECTION-SH 191 EBFR (STEP 2)
STA 315+10 TO STA 320+30



TRAFFIC CONTROL TYPICAL SECTION-SH 191 WBFR (STEP 2)
STA 326+50 TO STA 329+03

LEGEND

- ← EXISTING DIRECTION OF TRAFFIC
- PROPOSED DIRECTION OF TRAFFIC
- ▬ DRUM
- ▨ CONSTRUCT THIS PHASE/STEP
- ▩ CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- A WK ZN PAV MRK REMOV (W) 4" (BRK)
- B WK ZN PAV MRK REMOV (W) 4" (SLD)
- C WK ZN PAV MRK REMOV (Y) 4" (SLD)
- D WK ZN PAV MRK REMOV (W) 8" (SLD)
- CC WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

LP 338
TCP TYPICAL SECTIONS
AT SH 191

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

SHEET 4 OF 4

33

DATE: 8/20/2020 FILENAME: pw:\jmt-pw-bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

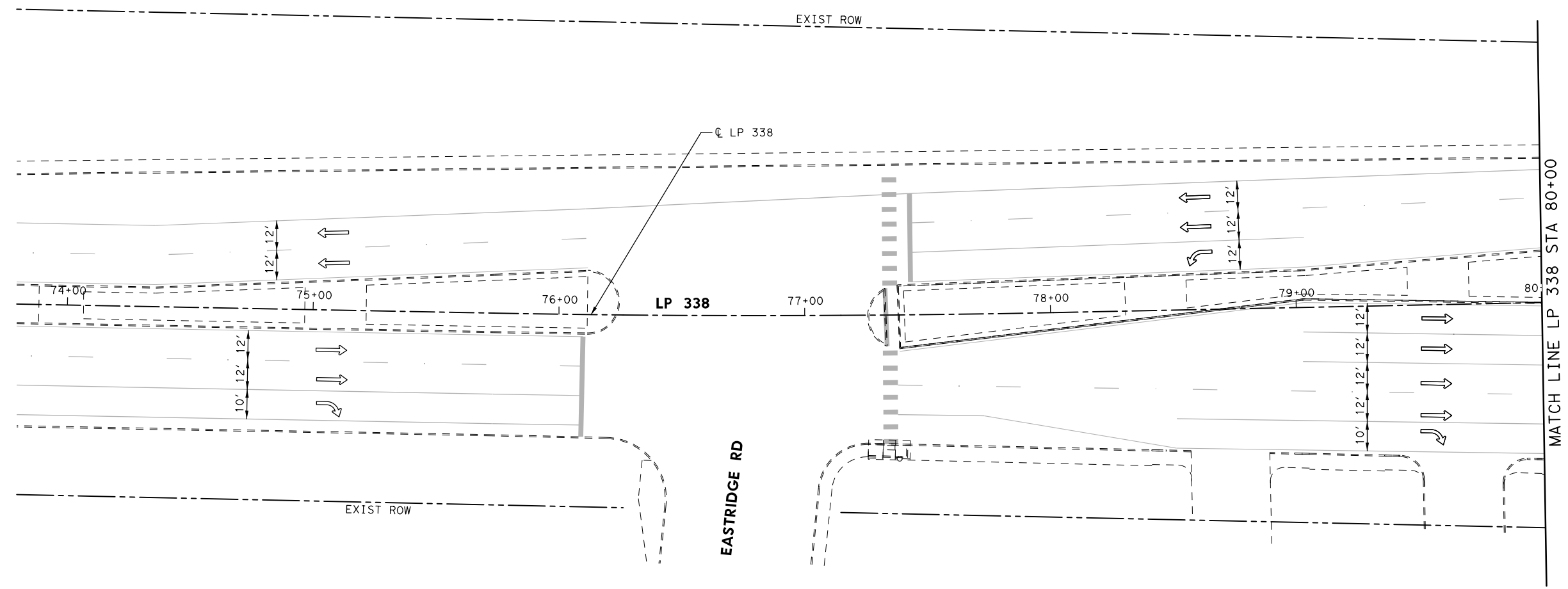



LEGEND

- CONSTRUCT THIS PHASE/STEP
- CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- EXIST TRAFFIC DIRECTION
- PROP TRAFFIC DIRECTION
- DRUM
- REFLECTIVE PAVEMENT MARKER
- TRAFFIC SIGN
- TYPE III BARRICADE
- TRAILER MOUNTED FLASHING ARROW BOARD
- WK ZN PAV MRK REMOV (W) 4" (BRK)
- WK ZN PAV MRK REMOV (W) 4" (SLD)
- WK ZN PAV MRK REMOV (Y) 4" (SLD)
- WK ZN PAV MRK REMOV (W) 8" (SLD)
- WK ZN PAV MRK REMOV (W) 24" (SLD)
- WK ZN PAV MRK REMOV DOTTED (W) 4" (BRK)
- WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)


NOTES:

1. REFER TO STANDARDS BC (1) THRU (12) AND TCP STANDARDS FOR LENGTHS, SIGN SPACING AND MORE INFORMATION.
2. ELIMINATE ALL PAVEMENT MARKING AND SIGNS THAT ARE IN CONFLICT WITH TRAFFIC MOVEMENTS.
3. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS WITHIN THE CONSTRUCTION ZONE.
4. REFER TO TYPICAL SECTION FOR LATERAL PLACEMENT OF CHANNELIZING DEVICES.
5. FIELD LOCATIONS MAY DICTATE ADJUSTMENT OF SIGN LOCATIONS. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO ADJUSTMENT OF ANY SIGN.





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Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368



Texas Department of Transportation

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

LP 338

TRAFFIC CONTROL PLAN

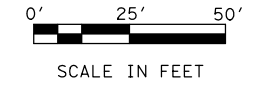
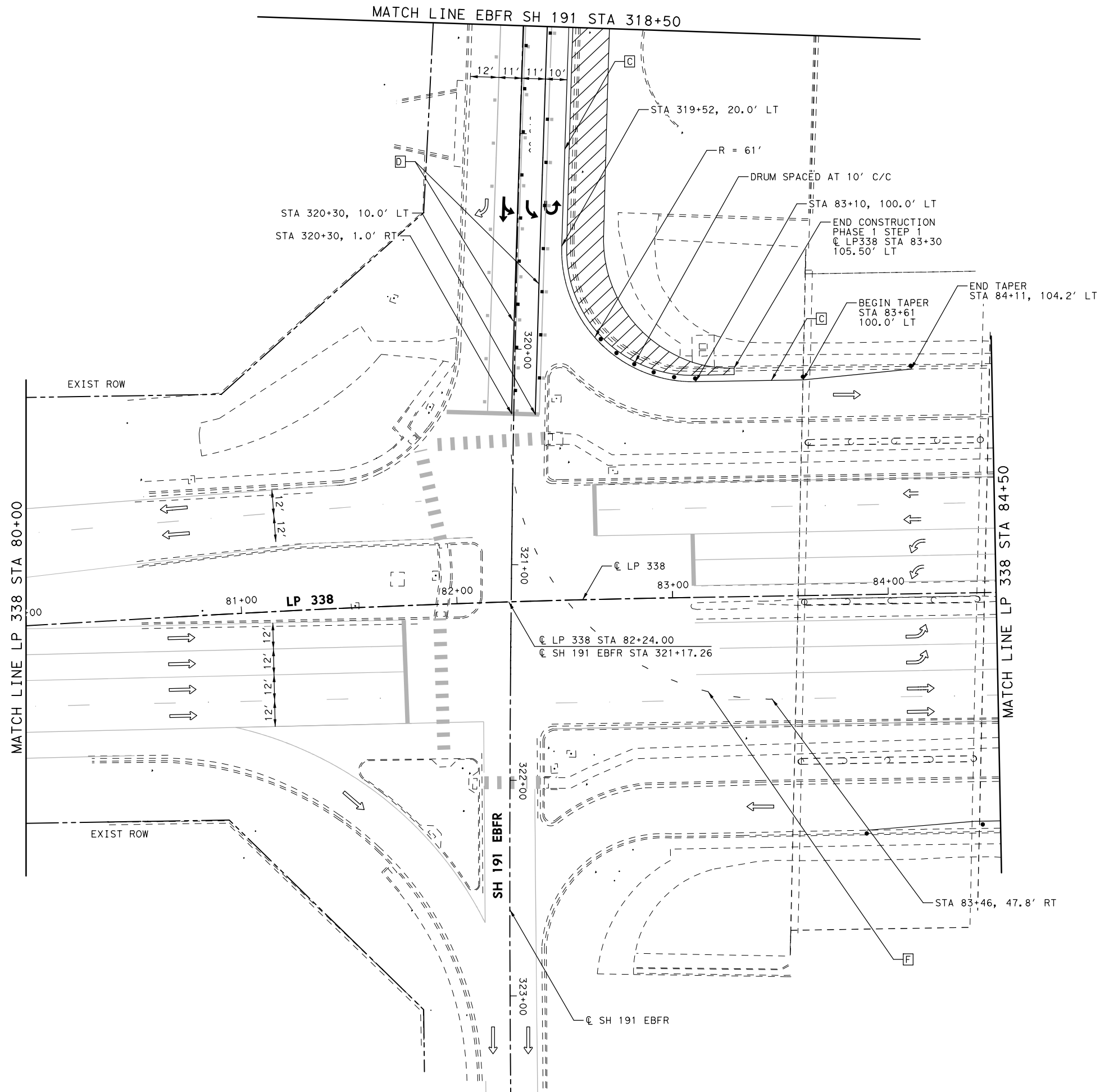
PHASE 1 STEP 1

AT SH 191

SHEET 1 OF 6

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			34

DATE: 8/20/2020 FILENAME: pw:\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 1787 (CSJ 0906-00-226)\4 - Design




LEGEND

- CONSTRUCT THIS PHASE/STEP
- CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- EXIST TRAFFIC DIRECTION
- PROP TRAFFIC DIRECTION
- DRUM
- REFLECTIVE PAVEMENT MARKER
- TRAFFIC SIGN
- TYPE III BARRICADE
- TRAILER MOUNTED FLASHING ARROW BOARD
- WK ZN PAV MRK REMOV (W) 4" (BRK)
- WK ZN PAV MRK REMOV (W) 4" (SLD)
- WK ZN PAV MRK REMOV (Y) 4" (SLD)
- WK ZN PAV MRK REMOV (W) 8" (SLD)
- WK ZN PAV MRK REMOV (W) 24" (SLD)
- WK ZN PAV MRK REMOV DOTTED (W) 4" (BRK)
- WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)


NOTES:

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6. RELOCATE ALL EXISTING SIGNS THAT ARE WITHIN THE CONSTRUCTION AREA.





Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

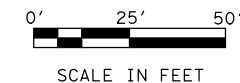


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

LP 338
TRAFFIC CONTROL PLAN
PHASE 1 STEP 1
AT SH 191 EBFR SHEET 2 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.
CHECK			
IEI			35

DATE: 8/20/2020 FILENAME: pw:\jmt-pw-bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

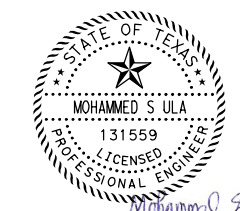


LEGEND

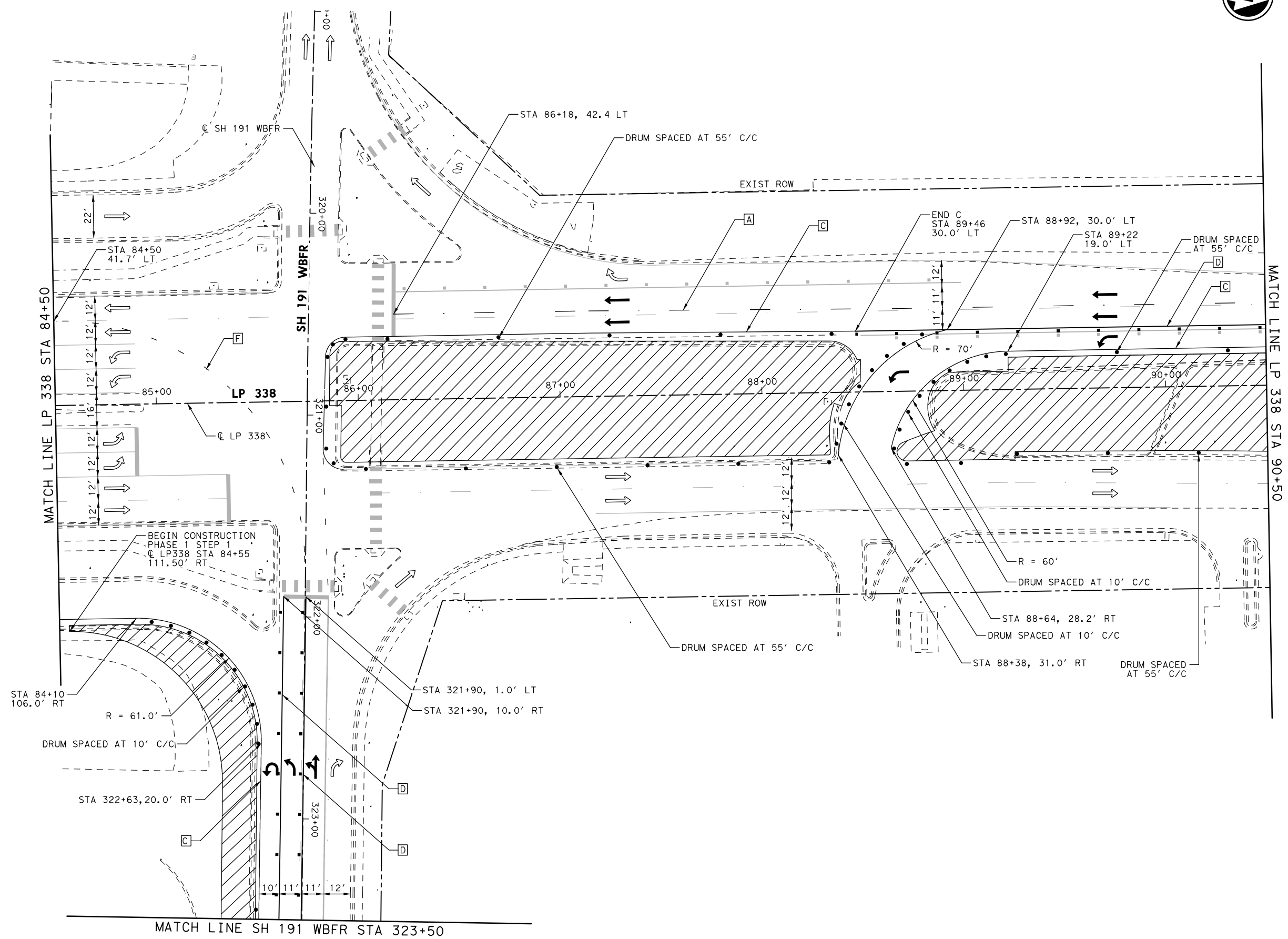
- CONSTRUCT THIS PHASE/STEP
- CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- EXIST TRAFFIC DIRECTION
- PROP TRAFFIC DIRECTION
- DRUM
- REFLECTIVE PAVEMENT MARKER
- TRAFFIC SIGN
- TYPE III BARRICADE
- TRAILER MOUNTED FLASHING ARROW BOARD
- WK ZN PAV MRK REMOV (W) 4" (BRK)
- WK ZN PAV MRK REMOV (W) 4" (SLD)
- WK ZN PAV MRK REMOV (Y) 4" (SLD)
- WK ZN PAV MRK REMOV (W) 8" (SLD)
- WK ZN PAV MRK REMOV (W) 24" (SLD)
- WK ZN PAV MRK REMOV DOTTED (W) 4" (BRK)
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NOTES:

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5. FIELD LOCATIONS MAY DICTATE ADJUSTMENT OF SIGN LOCATIONS. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO ADJUSTMENT OF ANY SIGN.



Mohammed S. Ula
08/20/2020



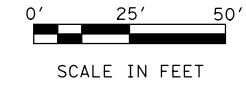
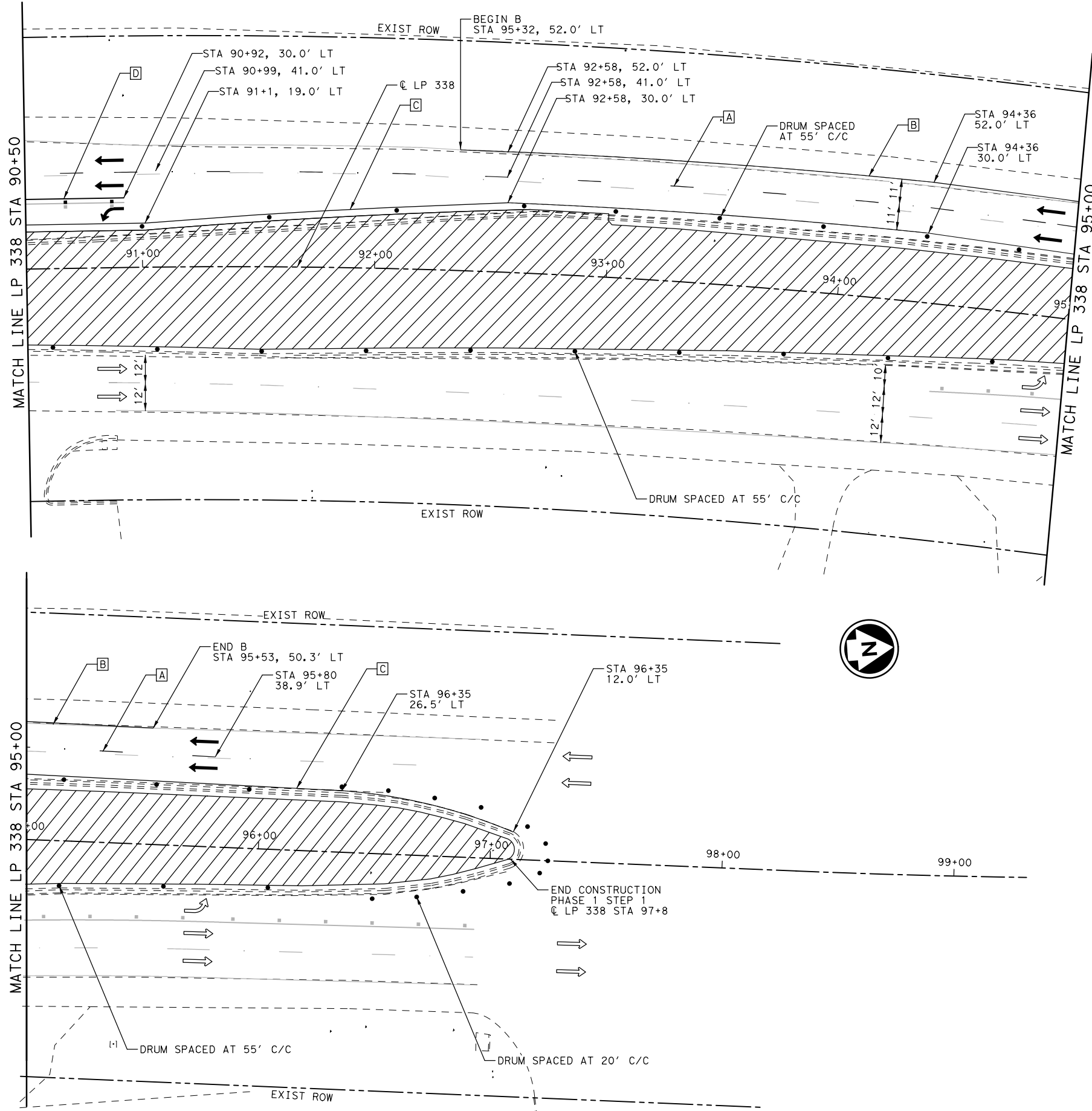
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

LP 338
TRAFFIC CONTROL PLAN
PHASE 1 STEP 1
AT SH 191 WBFR SHEET 3 OF 6

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
			36

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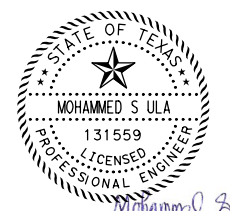


LEGEND

- CONSTRUCT THIS PHASE/STEP
- CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- EXIST TRAFFIC DIRECTION
- PROP TRAFFIC DIRECTION
- DRUM
- REFLECTIVE PAVEMENT MARKER
- TRAFFIC SIGN
- TYPE III BARRICADE
- TRAILER MOUNTED FLASHING ARROW BOARD
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- WK ZN PAV MRK REMOV (W) 8" (SLD)
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- WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)

NOTES:

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Mohammed S. Ula
08/20/2020

Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

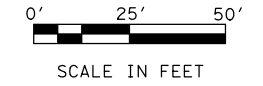
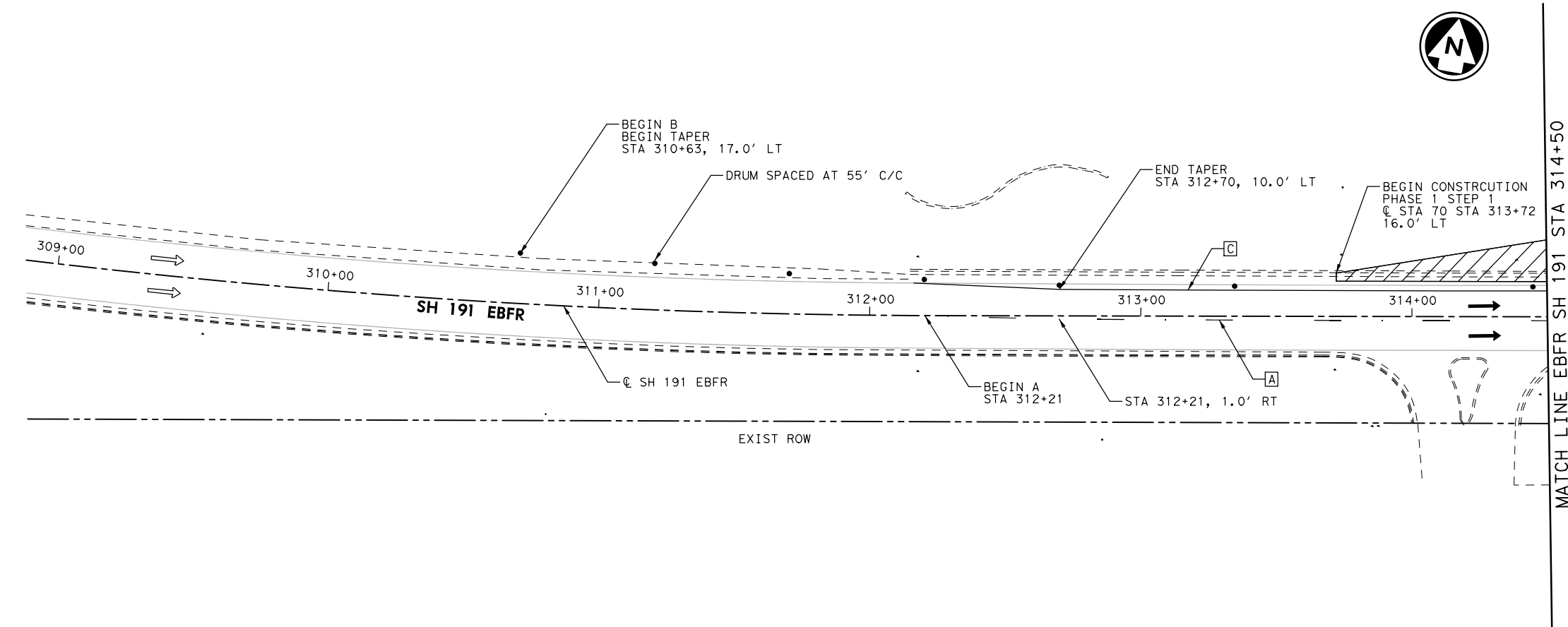
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

LP 338
TRAFFIC CONTROL PLAN
PHASE 1 STEP 1
AT SH 191

















SHEET 4 OF 6

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
			37

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

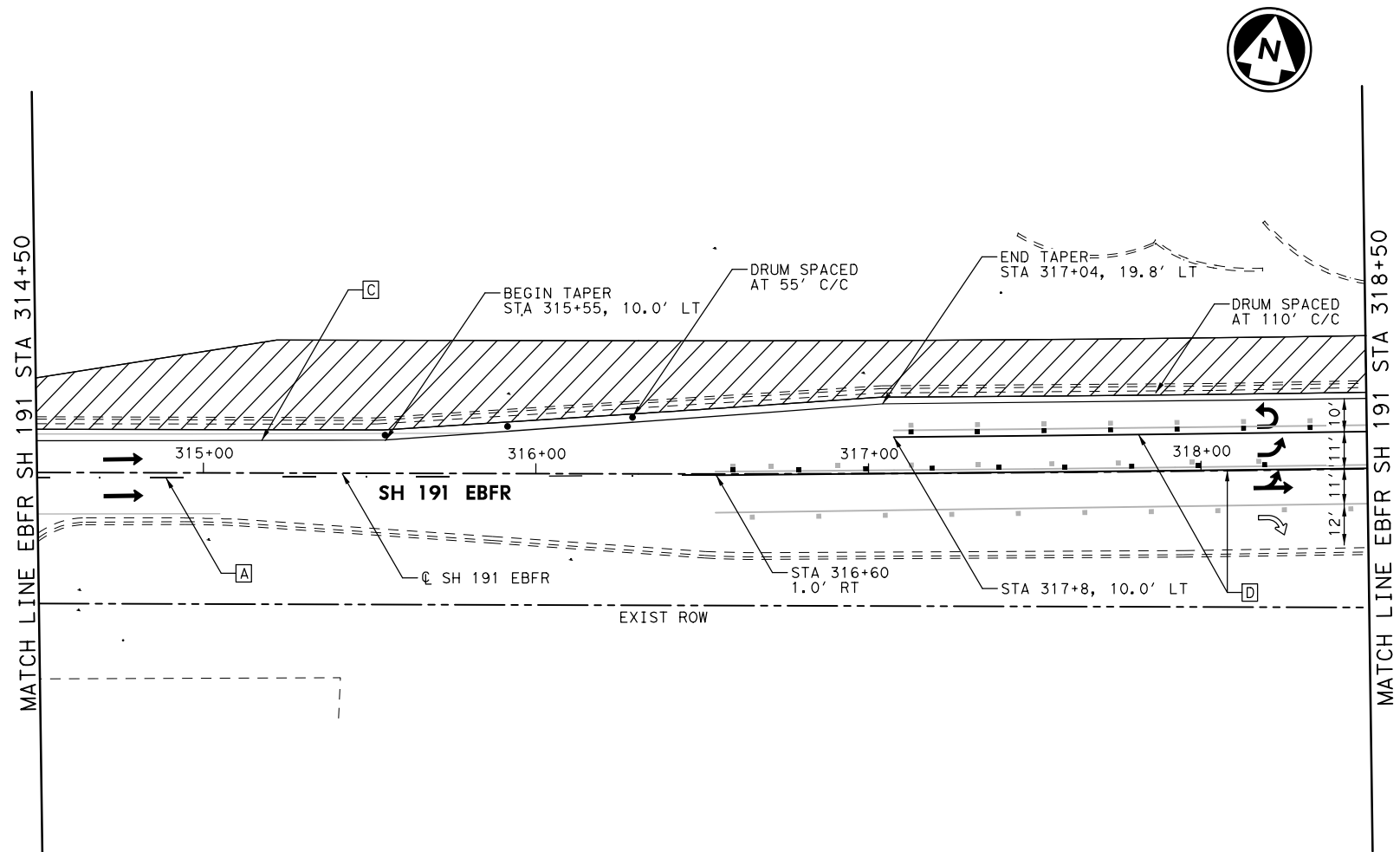


LEGEND

-  CONSTRUCT THIS PHASE/STEP
-  CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
-  EXIST TRAFFIC DIRECTION
-  PROP TRAFFIC DIRECTION
-  DRUM
-  REFLECTIVE PAVEMENT MARKER
-  TRAFFIC SIGN
-  TYPE III BARRICADE
-  TRAILER MOUNTED FLASHING ARROW BOARD
-  WK ZN PAV MRK REMOV (W) 4" (BRK)
-  WK ZN PAV MRK REMOV (W) 4" (SLD)
-  WK ZN PAV MRK REMOV (Y) 4" (SLD)
-  WK ZN PAV MRK REMOV (W) 8" (SLD)
-  WK ZN PAV MRK REMOV (W) 24" (SLD)
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NOTES:

1. REFER TO STANDARDS BC (1) THRU (12) AND TCP STANDARDS FOR LENGTHS, SIGN SPACING AND MORE INFORMATION.
2. ELIMINATE ALL PAVEMENT MARKING AND SIGNS THAT ARE IN CONFLICT WITH TRAFFIC MOVEMENTS.
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Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

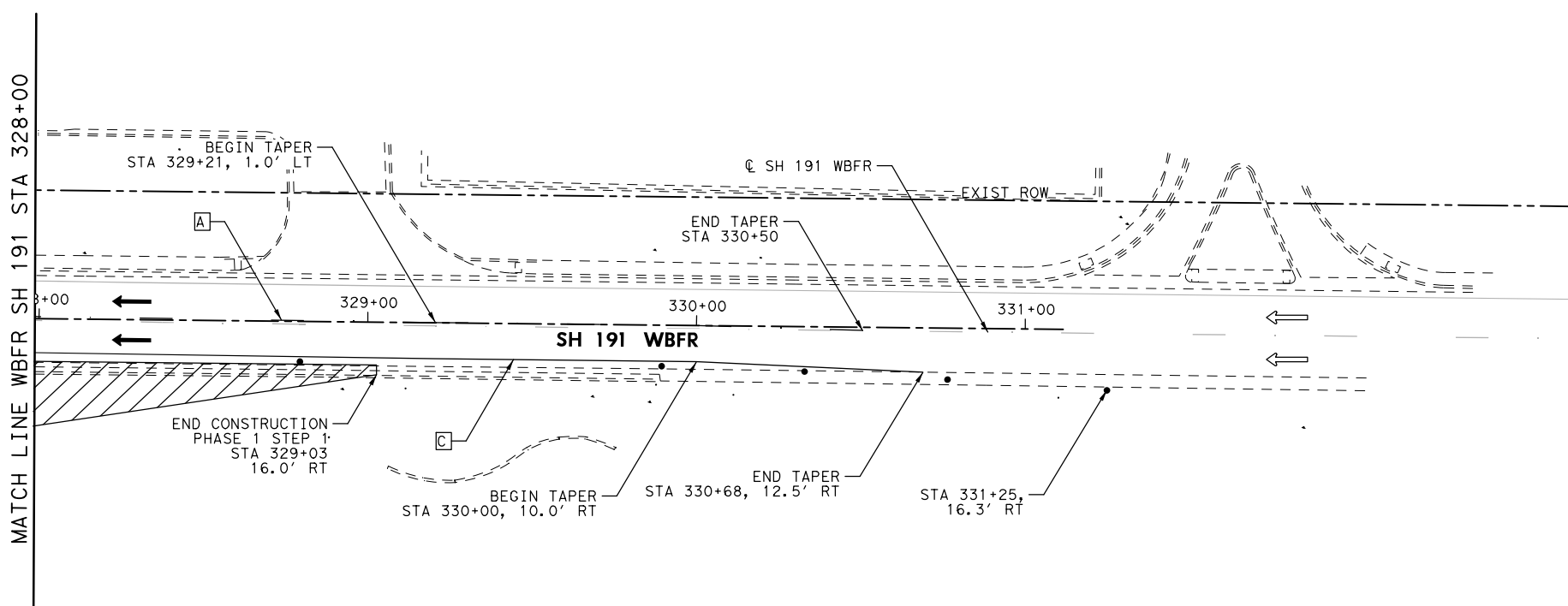
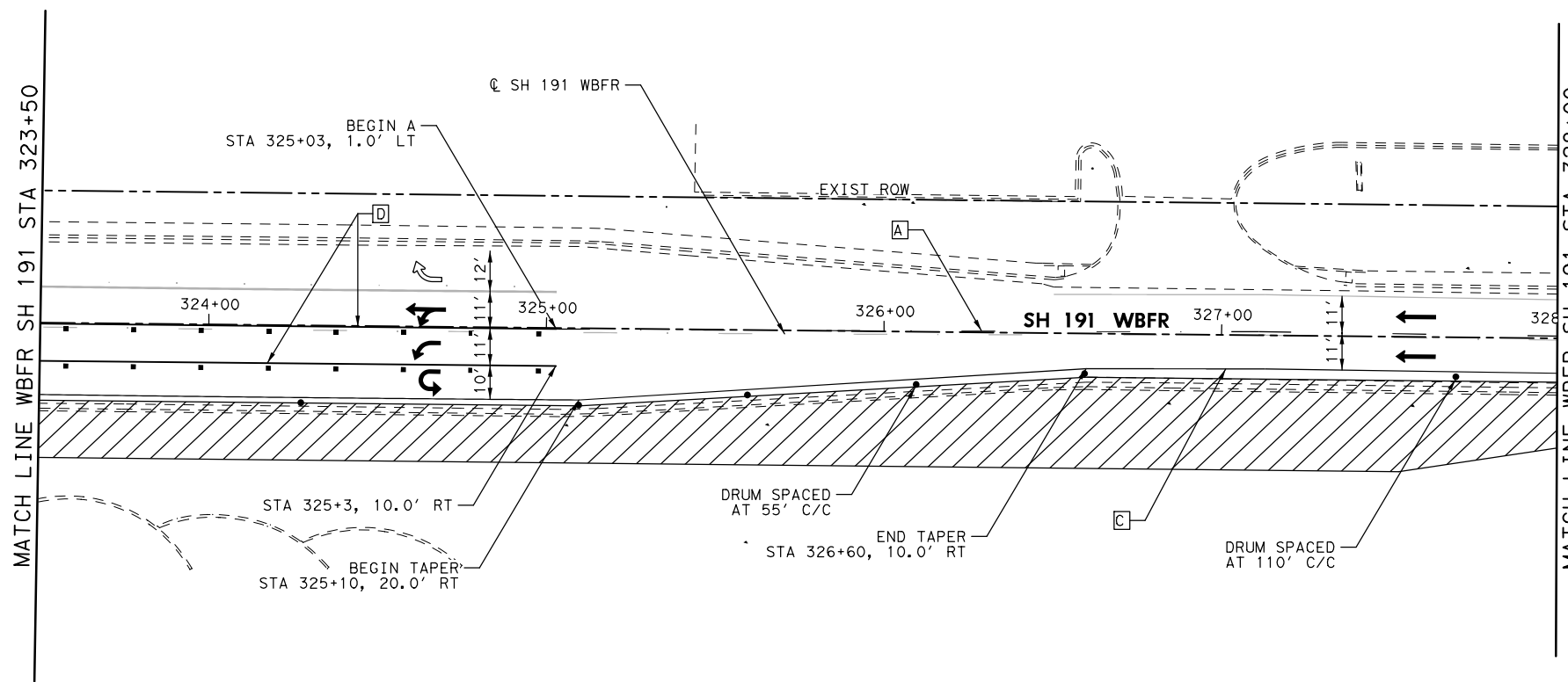
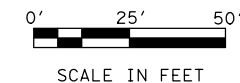
SH 191 EBFR
TRAFFIC CONTROL PLAN
PHASE 1 STEP 1
AT LP 338

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

SHEET 5 OF 6

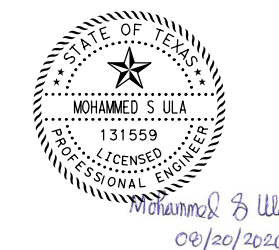
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DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design



- LEGEND**
- CONSTRUCT THIS PHASE/STEP
 - CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
 - EXIST TRAFFIC DIRECTION
 - PROP TRAFFIC DIRECTION
 - DRUM
 - REFLECTIVE PAVEMENT MARKER
 - TRAFFIC SIGN
 - TYPE III BARRICADE
 - TRAILER MOUNTED FLASHING ARROW BOARD
 - WK ZN PAV MRK REMOV (W) 4" (BRK)
 - WK ZN PAV MRK REMOV (W) 4" (SLD)
 - WK ZN PAV MRK REMOV (Y) 4" (SLD)
 - WK ZN PAV MRK REMOV (W) 8" (SLD)
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- NOTES:**
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 4. REFER TO TYPICAL SECTION FOR LATERAL PLACEMENT OF CHANNELIZING DEVICES.
 5. FIELD LOCATIONS MAY DICTATE ADJUSTMENT OF SIGN LOCATIONS. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO ADJUSTMENT OF ANY SIGN.



Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

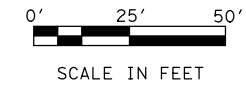
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SH 191 WBFR
TRAFFIC CONTROL PLAN
PHASE 1 STEP 1
AT LP 338**

SHEET 6 OF 6

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			39

DATE: 8/20/2020 FILENAME: pw: \\jmt-pw-bentley.com: jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

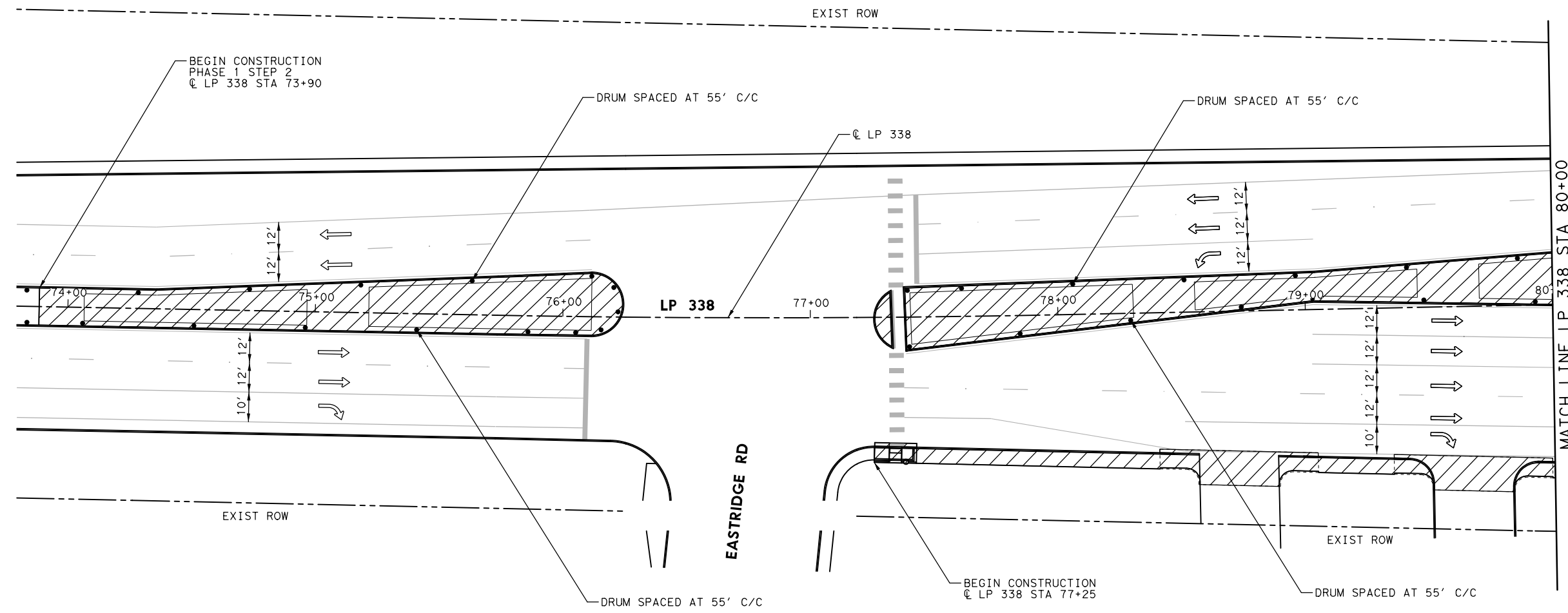


LEGEND

- CONSTRUCT THIS PHASE/STEP
- CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- EXIST TRAFFIC DIRECTION
- PROP TRAFFIC DIRECTION
- DRUM
- REFLECTIVE PAVEMENT MARKER
- TRAFFIC SIGN
- TYPE III BARRICADE
- TRAILER MOUNTED FLASHING ARROW BOARD
- WK ZN PAV MRK REMOV (W) 4" (BRK)
- WK ZN PAV MRK REMOV (W) 4" (SLD)
- WK ZN PAV MRK REMOV (Y) 4" (SLD)
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

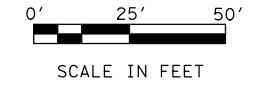
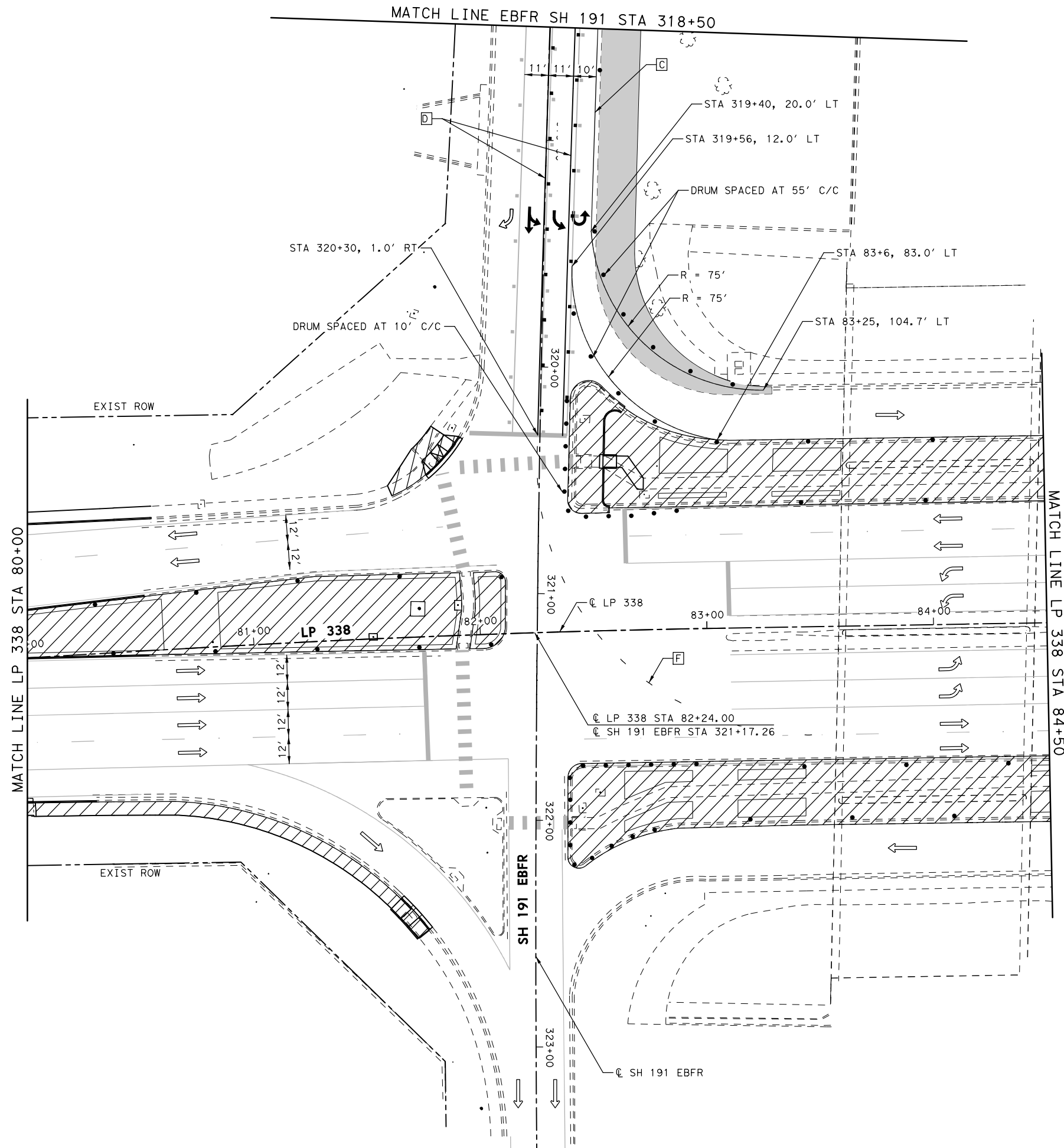
LP 338
TRAFFIC CONTROL PLAN
PHASE 1 STEP 2
AT SH 191 EBR

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

SHEET 1 OF 6

40

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 1787 (CSJ 0906-00-226)\4 - Design



LEGEND

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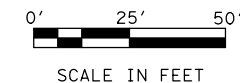
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

LP 338
TRAFFIC CONTROL PLAN
PHASE 1 STEP 2
AT SH 191 EBFR SHEET 2 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.	
IEI	6	(SEE TITLE SHEET)	VARIOUS	
GRAPHICS	STATE	DISTRICT	COUNTY	
IEI	TEXAS	ODA	ECTOR, ETC.	
CHECK	CONTROL	SECTION	JOB	
IEI	0887	01	039, ETC.	
CHECK				41
IEI				

FILENAME: pw:\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design
 DATE: 8/20/2020

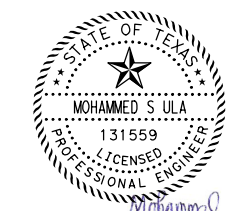


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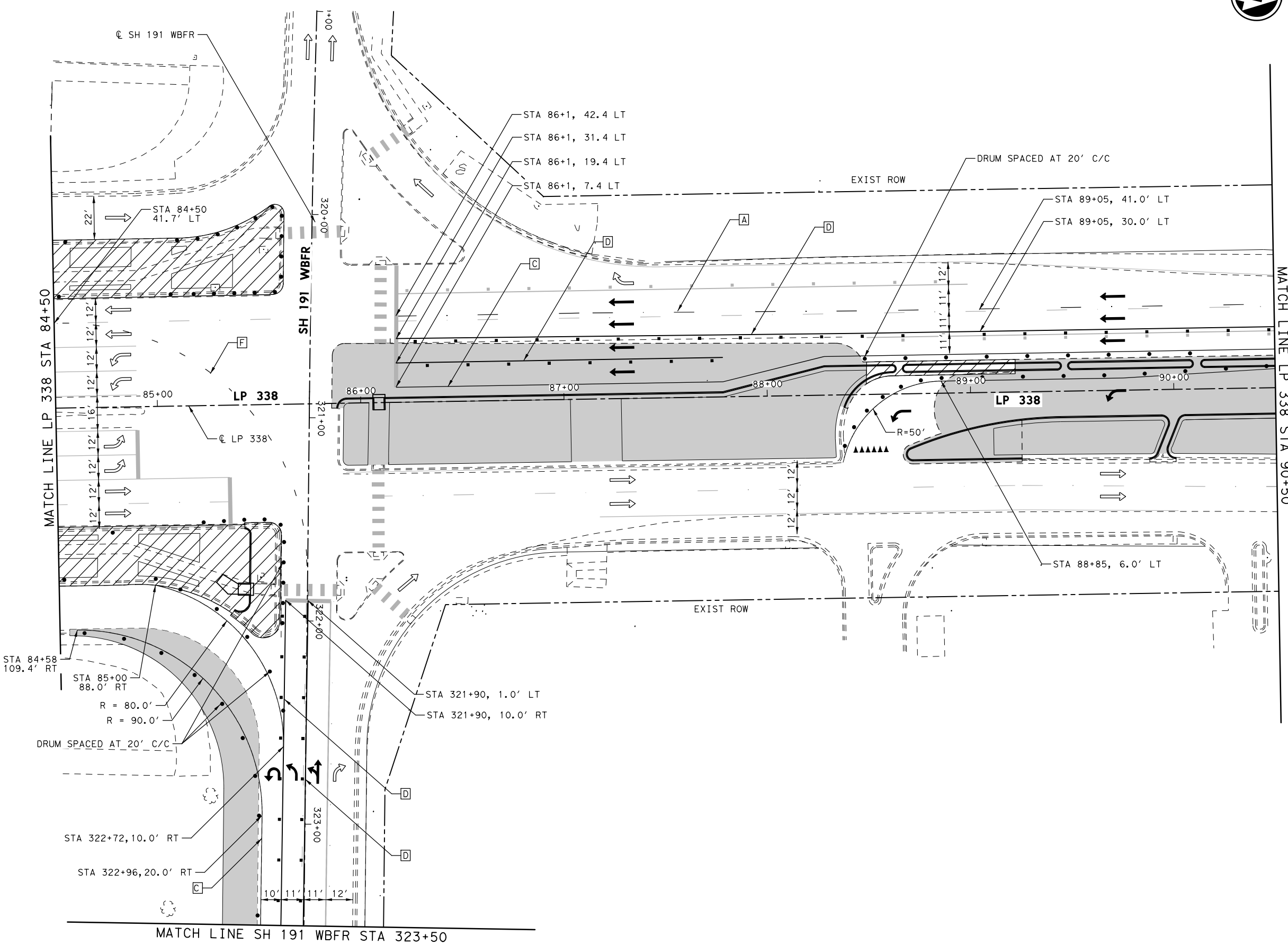
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Mohammed S. Ula
 08/20/2020



Engineers & Innovators, LLC
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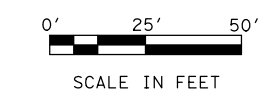
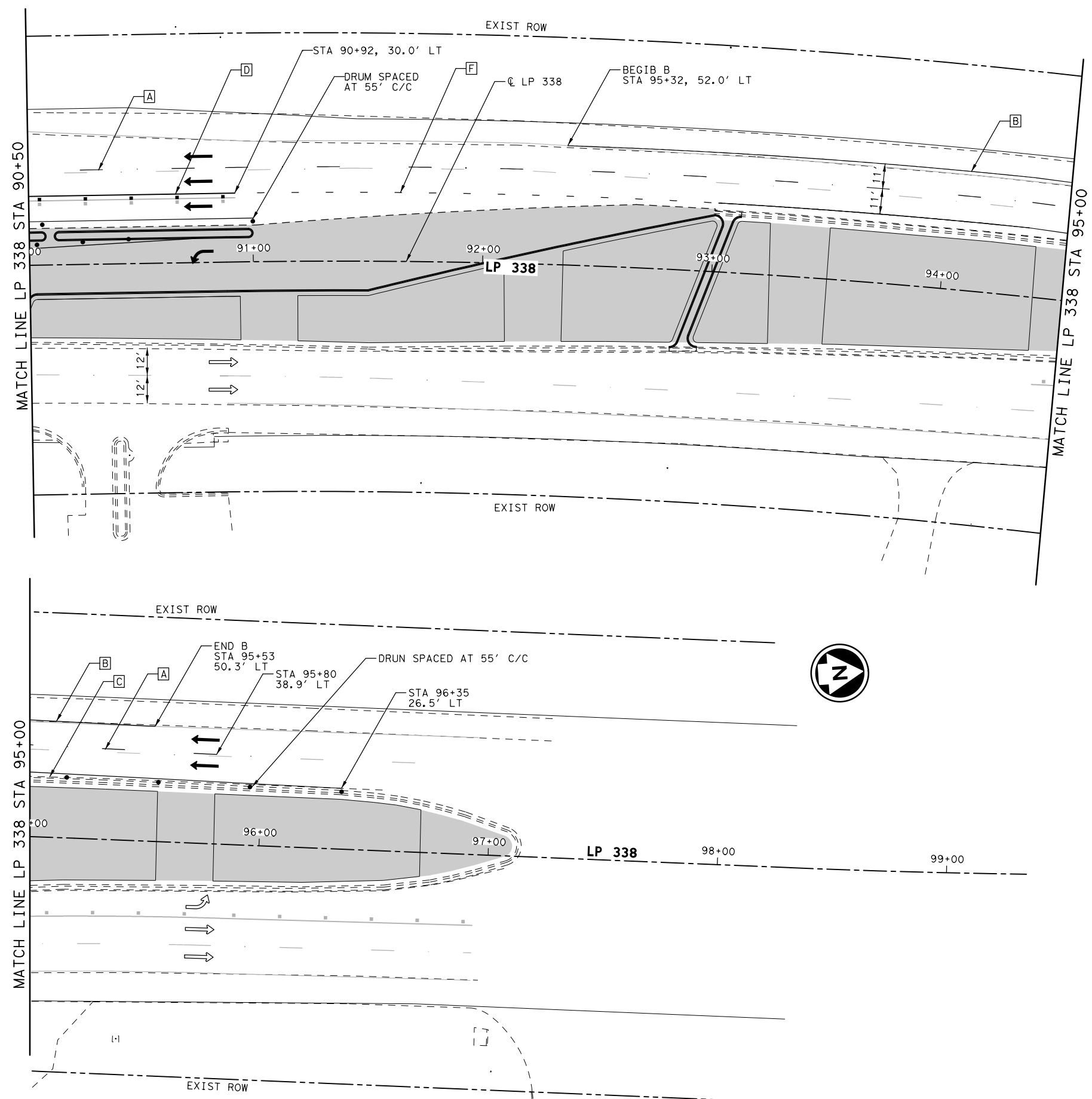
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

LP 338
TRAFFIC CONTROL PLAN
PHASE 1 STEP 2
AT SH 191 WBFR SHEET 3 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

42

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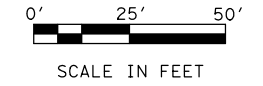
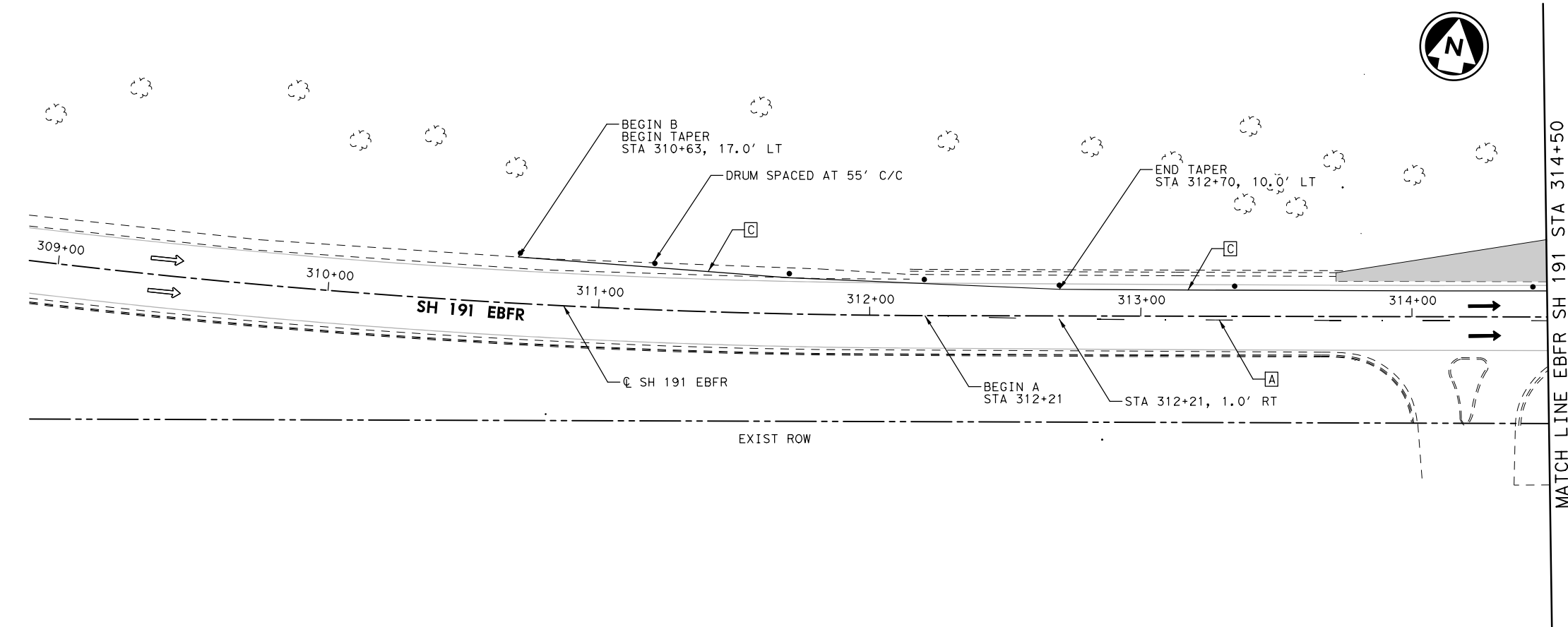


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

LP 338
TRAFFIC CONTROL PLAN
PHASE 1 STEP 2
AT SH 191

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
			43

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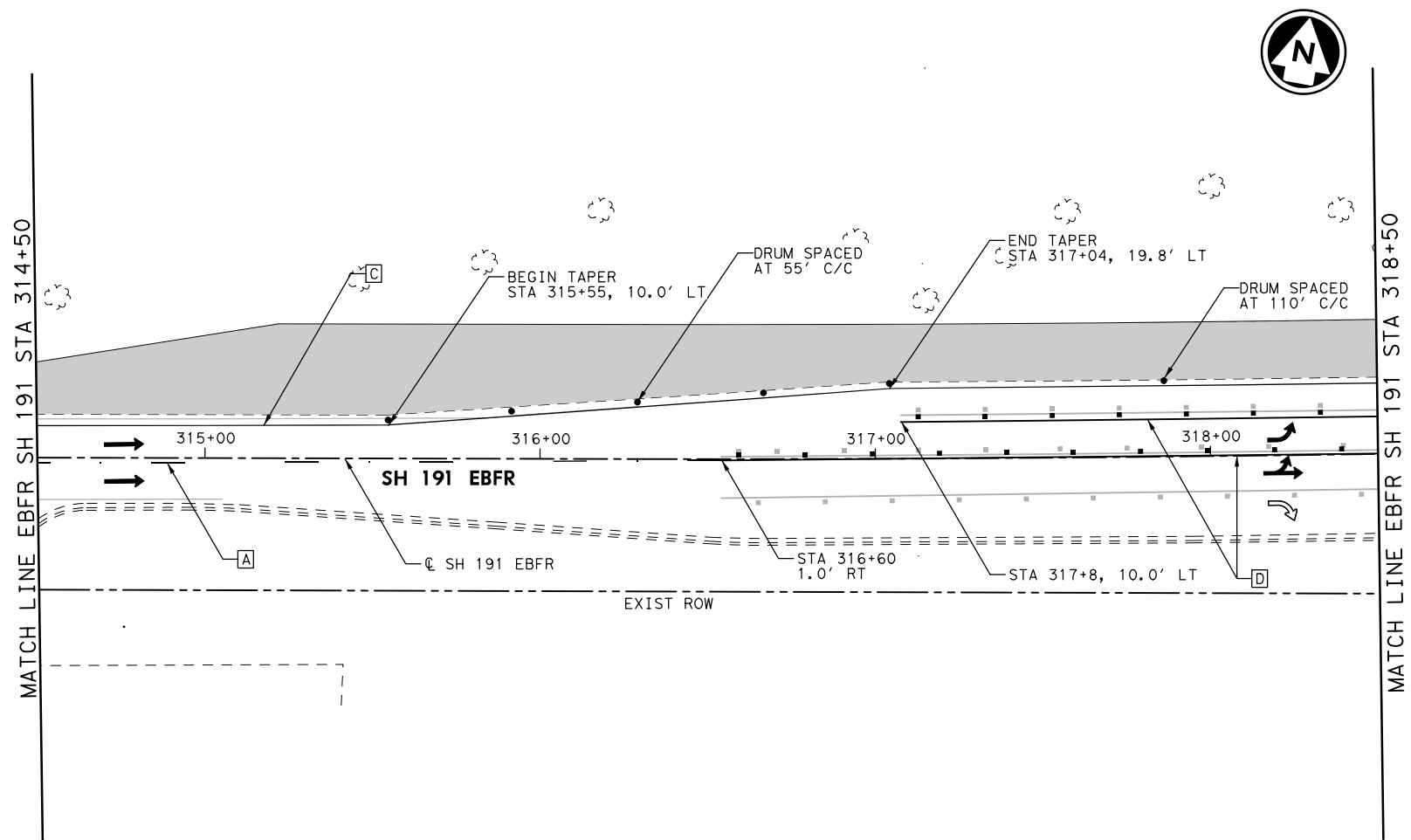
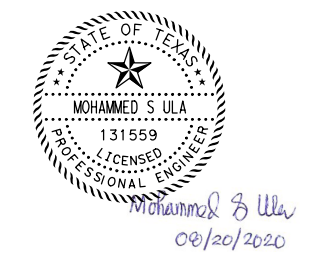


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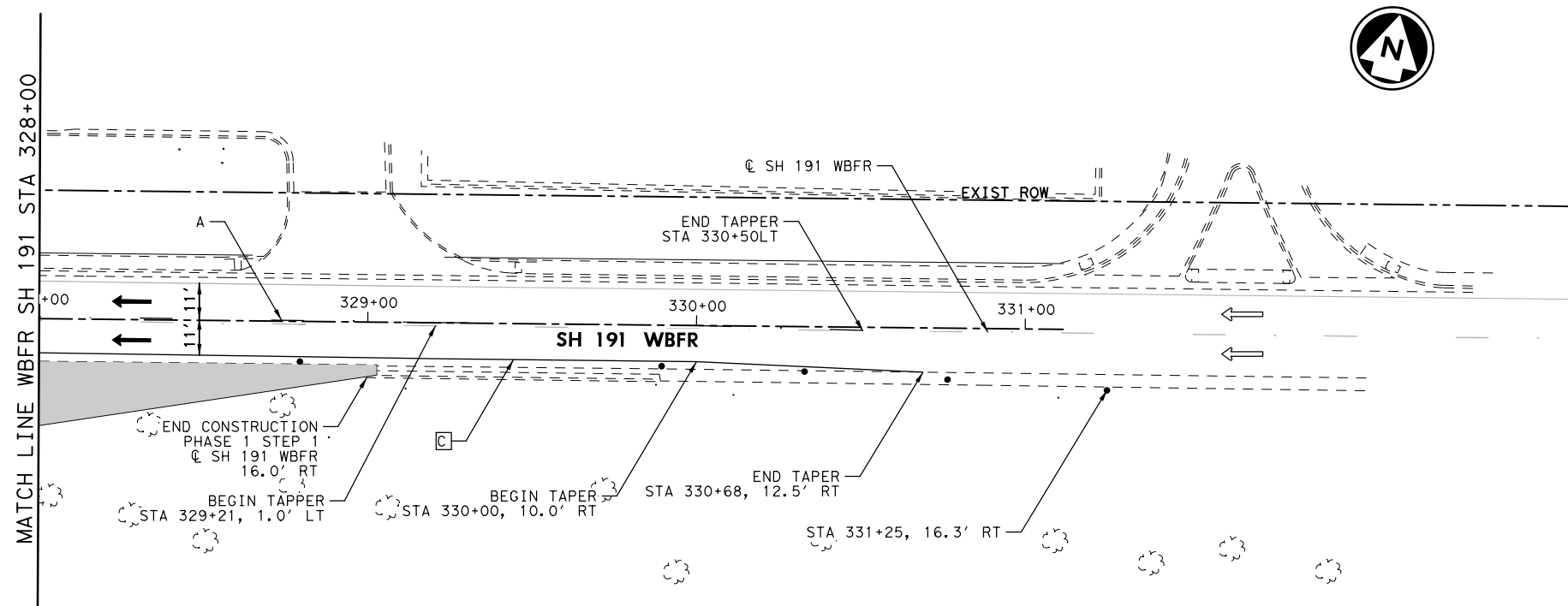
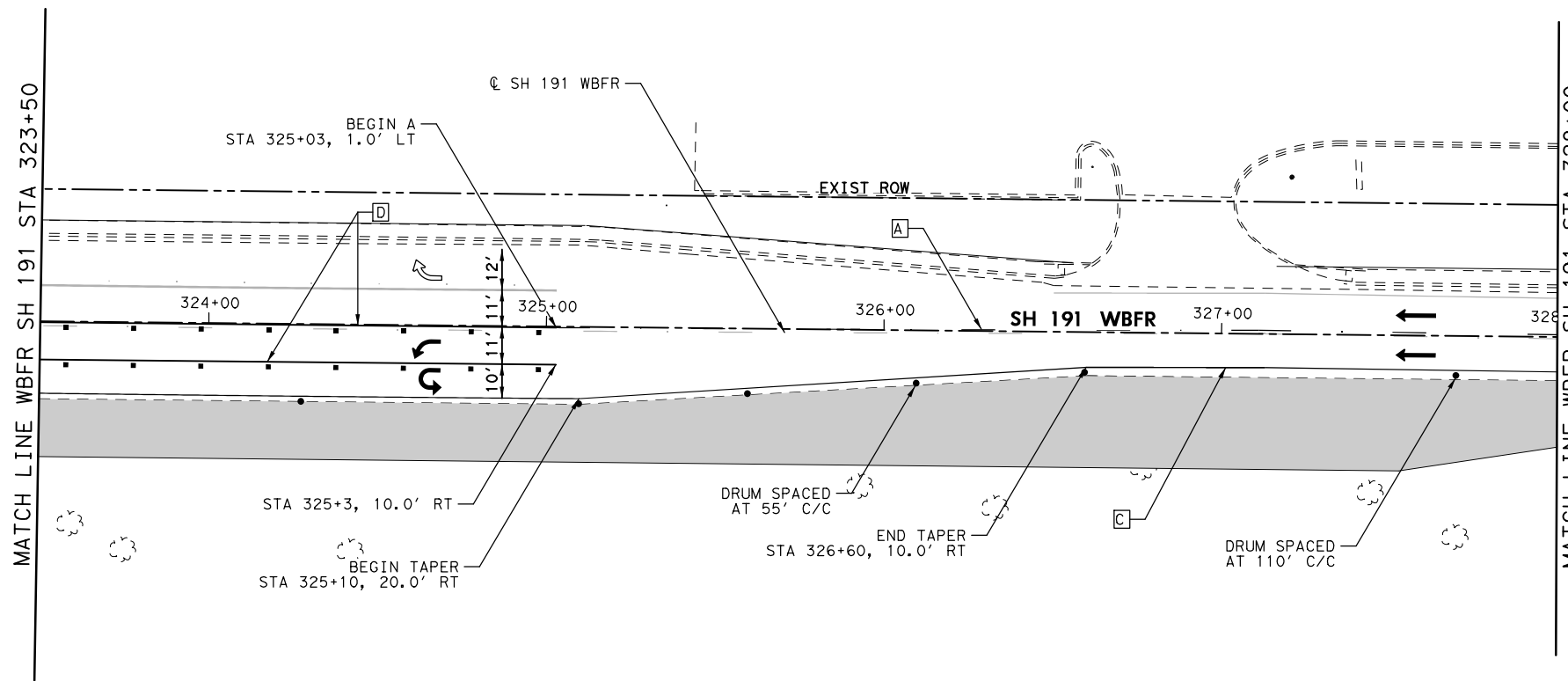
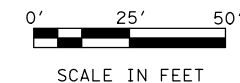
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

SH 191 EBFR
TRAFFIC CONTROL PLAN
PHASE 1 STEP 2
LP 338 SHEET 5 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

44

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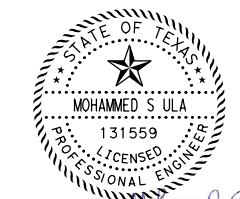


LEGEND

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Mohammed S. Ula
08/20/2020



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SH 191 WBFR
TRAFFIC CONTROL PLAN
PHASE 1 STEP 2**

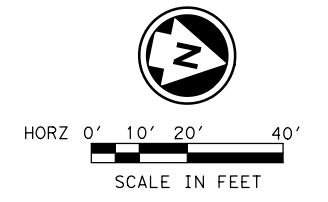
LP 338

SHEET 6 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.
			45

DATE: 8/19/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. T

- NOTES:**
1. CONTRACTOR TO COORDINATE WITH CITY TRAFFIC ENGINEER TO VERIFY TIMBER POLE LOCATIONS.
 2. INSTALL TEMPORARY TIMBER POLES ALONG WITH SPAN WIRES, SWAY CABLES AND DOWN GUY WITH ANCHORS. TO FACILITATE REROUTING OF EXISTING CONDUCTORS AND EXISTING SIGNAL REMAIN FUNCTIONAL WITH MINIMUM DOWN TIME. IN LIEU OF THIS APPROACH CONTRACTOR CAN CONSTRUCT AND USE PROPOSED CONDUITS TO REROUTE CONDUCTORS. CONTRACTOR TO VERIFY WITH TXDOT ENGINEER ON PREFERRED OPTION PRIOR TO START OF CONSTRUCTION.
 3. MAINTAIN EXISTING VEHICLE SIGNAL HEADS AS SHOWN.
 4. SIGNAL TIMING, PHASING, AND PROGRAMMING SHALL BE COMPLETE BY CONTRACTOR AND SUBMITTED FOR TXDOT APPROVAL.
 5. TEMPORARY SIGNAL DESIGN IS BASED ON MOT SEQUENCING AND CONTRACTOR TO COORDINATE WITH TXDOT AND OBTAIN APPROVAL PRIOR FOR TRAFFIC SIGNAL MODIFICATION.
 6. CONTRACTOR TO COORDINATE WITH TXDOT ON USING EXISTING SIGNAL CONTROLLER AND OTHER CABINET EQUIPMENT.
 7. USE ESTABLISHED INDUSTRY AND UTILITY SAFETY PRACTICES TO ERECT POLES NEAR ANY OVERHEAD OR UNDERGROUND UTILITY. CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO BEGINNING SUCH WORK.
 8. REFER TO MOT SHEETS FOR SEQUENCE OF WORK.
 9. CONTRACTOR TO INSTALL SIDEWALK GUY IF VERTICAL CLEARANCE IS NOT MET FOR PEDESTRIANS. REFER TO SPAN WIRE MOUNTING DETAIL SHEET FROM TXDOT DALLAS DISTRICT STANDARD.



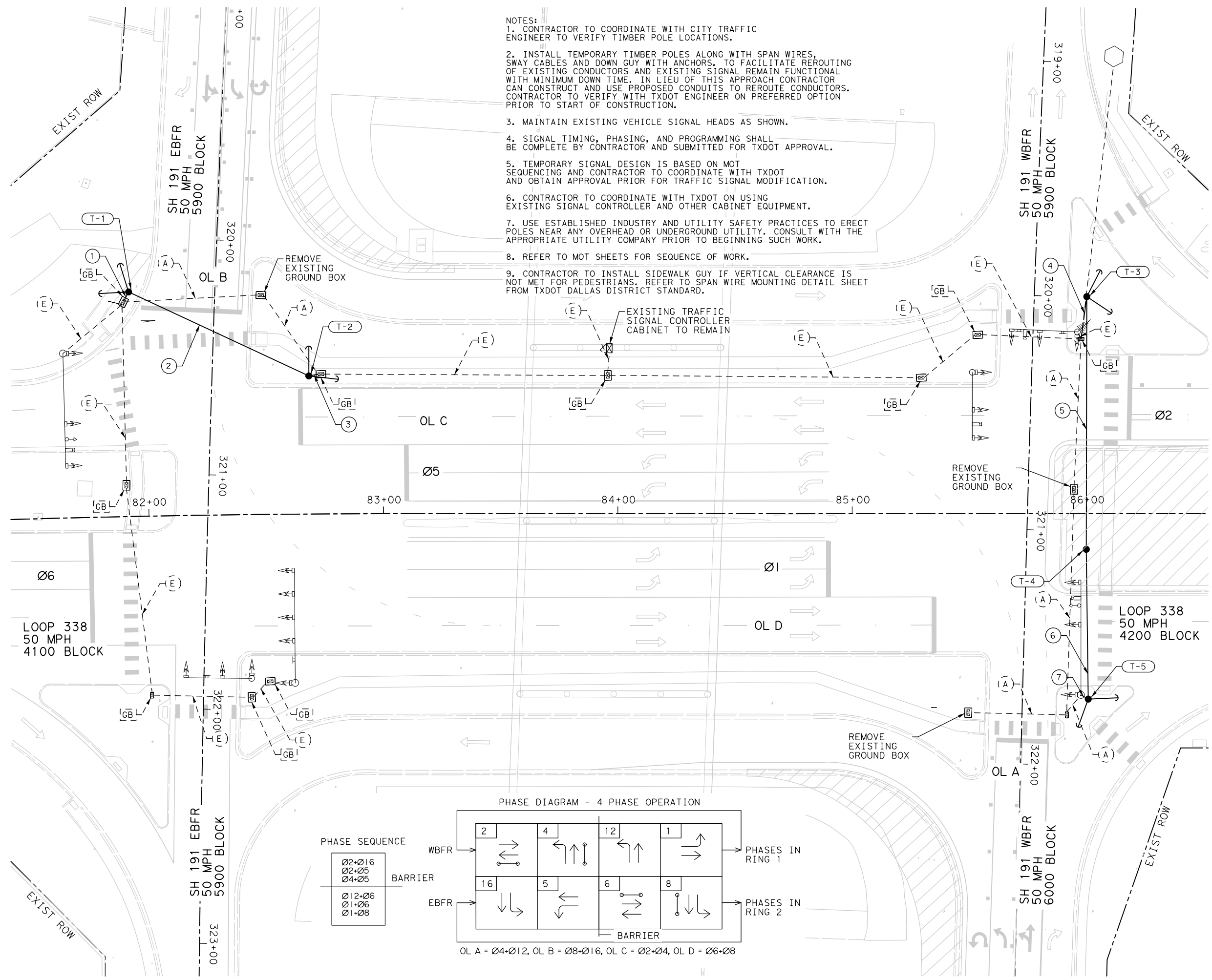
SIGNAL LEGEND

PROPOSED EQUIPMENT

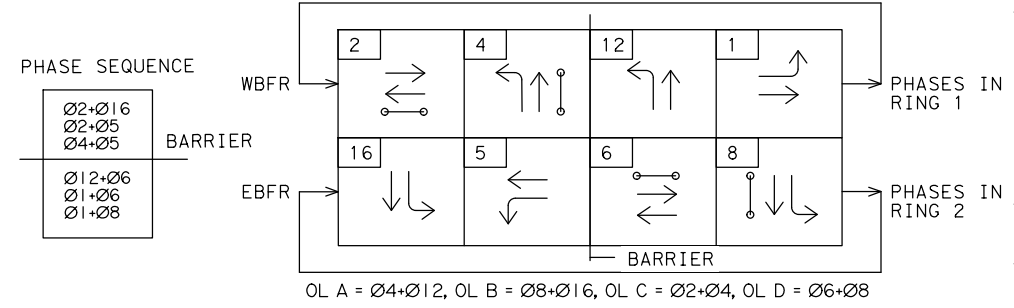
- TEMP. WOOD POLE AND SPAN WIRE COMBINATION WITH TWO DOWN GUYS
- 8' ARM WITH LED LUMINAIRE LED PEDESTRIAN SIGNAL HEAD
- 12" LED SIGNAL HEAD (HOR)
- VIDEO PRESENCE DETECTOR
- ANTENNA/ETHERNET SYSTEM
- POLE MOUNTED SIGN
- MAST ARM MOUNTED SIGN
- TEMP. SERVICE METER
- TYPE D GROUND BOX W/APRON
- TYPE D GROUND BOX
- TYPE A GROUND BOX
- CONDUIT
- CONTROLLER AND CABINET
- CONDUIT RUN NUMBER
- PHASE NUMBER

EXISTING EQUIPMENT

- POLE AND MAST ARM
- LED PEDESTRIAN SIGNAL HEAD
- 12" LED SIGNAL HEAD (HOR)
- 12" LED SIGNAL HEAD (VER)
- VIDEO PRESENCE DETECTOR
- POLE MOUNTED SIGN
- MAST ARM MOUNTED SIGN
- SERVICE METER
- GROUND BOX
- GROUND BOX W/APRON
- CONDUIT
- CONTROLLER AND CABINET
- CONSTRUCTION PHASE
- COMPLETED CONSTRUCTION PHASE
- EXISTING CONDUIT TO REMAIN
- ABANDON CONDUIT



PHASE DIAGRAM - 4 PHASE OPERATION



WSP USA Inc. TBPE #F-2263

Hyomin Kim 08-20-20

WSP

WSP USA Inc.
2777 N. Stemmons Freeway, Ste. 1600
Dallas, Texas 75207
TBPE # F-2263

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Texas Department of Transportation

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

TEMPORARY SIGNAL PLAN
PHASE 1 STEP 1
LOOP 338 AT SH 191

SCALE: 1" = 40' SHEET 1 OF 3

DESIGN	FED. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.

46

DATE: 8/19/2020 FILENAME: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. Tr

ELECTRIC SCHEDULE (SCH 80)									
RUN NO.	CONDUIT / CABLE	LENGTH	VIDEO	7C #14	5C #14	5C #14	LUMINAIRE 2C #8 XHHN	1C #6 POWER	#6 BARE
			CABLE	TY A	TY A	TY A			
1	1 - 2" PVC	10						2	1
	1 - 3" PVC	10	3	3					
	RMC (POLE)	30	3	3					
2	RMC (POLE)	30						2	1
	OVERHEAD	85	3	3				2	1
3	RMC (POLE)	30	3	3					
	RMC (POLE)	30						2	1
	1 - 2" PVC	10						2	1
	1 - 3" PVC	10	3	3					
4	1 - 3" PVC	20	1	1					
	RMC (POLE)	30	1	1					
5	OVERHEAD	110	1	1					
6	OVERHEAD	65	1	1					
7	OVERHEAD	10	1	1					
TOTAL (LF)			730	730				330	165

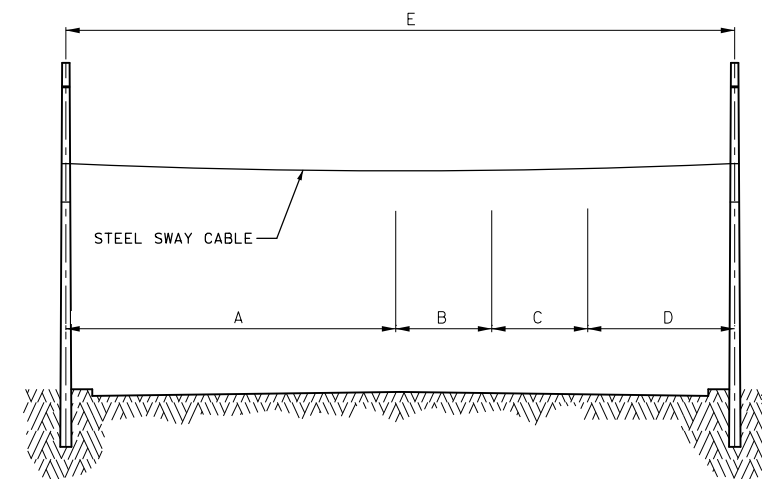
SIGNAL POLE CHART					
POLE NO.	BASELINE	STATION	OFFSET	LUMINAIRES	COMMENTS
T-1	SH 191 EBFR	320+23.17	36.71' RT	No	40' WOOD POLE
T-2	SH 191 EBFR	320+56.46	41.30' LT	No	40' WOOD POLE
T-3	SH 191 WBFR	319+99.66	22.37' LT	No	40' WOOD POLE
T-4	SH 191 WBFR	321+07.65	25.49' LT	No	40' WOOD POLE
T-5	SH 191 WBFR	321+71.55	28.08' LT	No	40' WOOD POLE

NOTES:

1. TRAFFIC SIGNAL CHARTS ON THIS SHEET ARE FOR INFORMATION PURPOSES ONLY.
2. THESE CHARTS PRESENT TEMPORARY SIGNAL ITEMS AND THEY WILL REMAIN UNTIL MOT CONSTRUCTION IS COMPLETE.
3. REFER NOTES ON TEMPORARY SIGNAL LAYOUT AND MOT SEQUENCE SHEETS.

ITEM 625 - STEEL CABLE SUMMARY		
DESCRIPTION	UNIT	QTY
ZINC-COAT STL WIRE STRAND (3/8")	LF	265

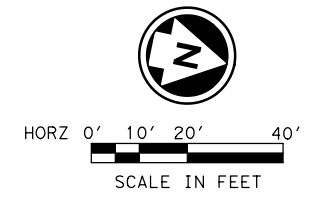
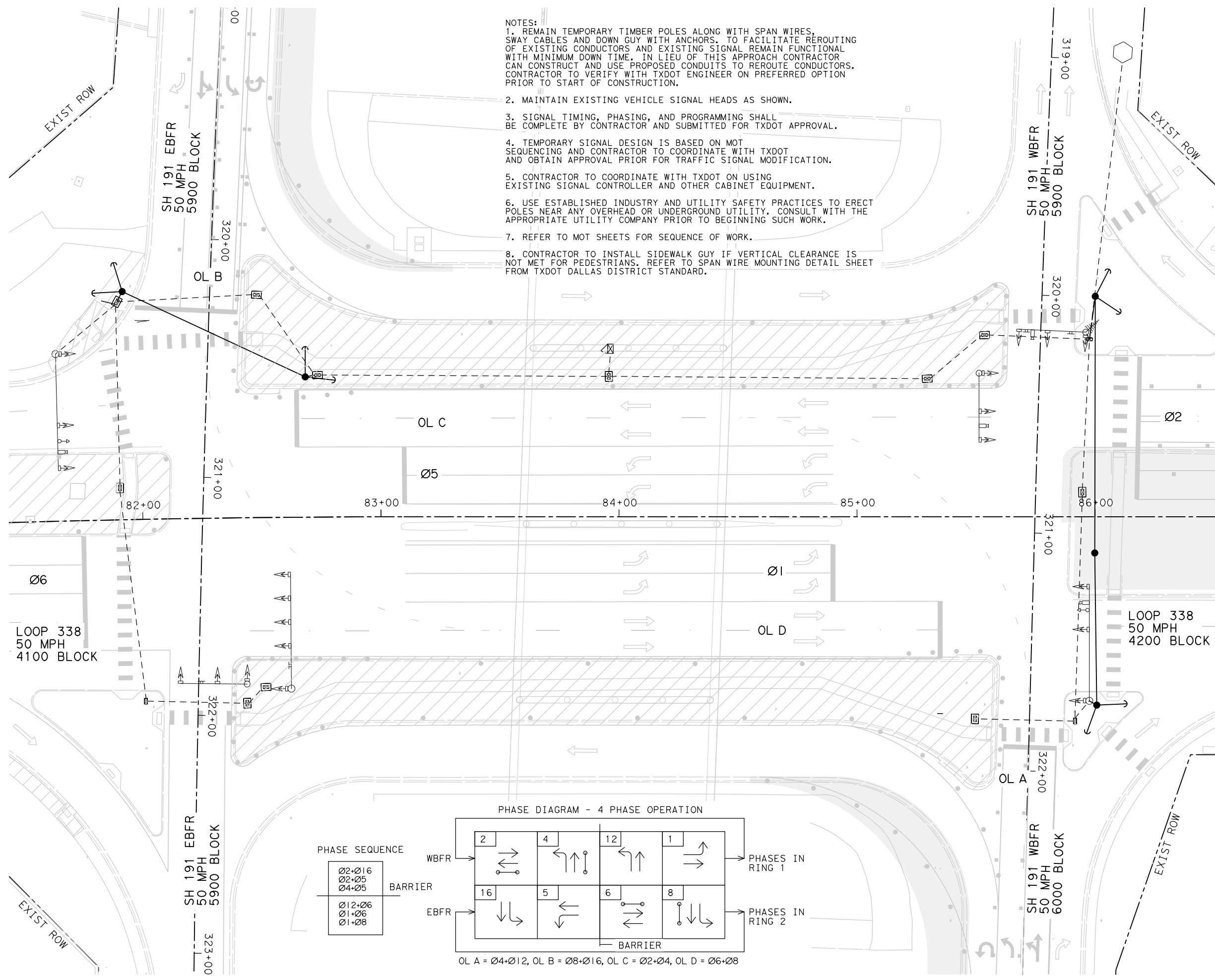
SIGNAL HEAD AND POLE PLACEMENT (FT)						
SPAN	A	B	C	D	E	NO. OF HEADS
T-1 TO T-2					90	-
T-3 TO T-4					110	-
T-4 TO T-5					65	-



WSP USA Inc		TBPE #F-2263	
		WSP USA Inc. 2777 N. Stemmons Freeway, Ste. 1600 Dallas, Texas 75207 TBPE # F-2263	
ODESSA DISTRICT INTERSECTION IMPROVEMENTS TEMPORARY SIGNAL PLAN PHASE 1 STEP 1 LOOP 338 AT SH 191			
SHEET 2 OF 3			
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.
CHECK			SHEET NO.
WSP			47

DATE: 8/19/2020 FILENAME: pw:\jmt-pw.bent ley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. T

- NOTES:**
1. REMAIN TEMPORARY TIMBER POLES ALONG WITH SPAN WIRES, SWAY CABLES AND DOWN GUY WITH ANCHORS. TO FACILITATE REROUTING OF EXISTING CONDUCTORS AND EXISTING SIGNAL REMAIN FUNCTIONAL WITH MINIMUM DOWN TIME. IN LIEU OF THIS APPROACH CONTRACTOR CAN CONSTRUCT AND USE PROPOSED CONDUITS TO REROUTE CONDUCTORS. CONTRACTOR TO VERIFY WITH TXDOT ENGINEER ON PREFERRED OPTION PRIOR TO START OF CONSTRUCTION.
 2. MAINTAIN EXISTING VEHICLE SIGNAL HEADS AS SHOWN.
 3. SIGNAL TIMING, PHASING, AND PROGRAMMING SHALL BE COMPLETE BY CONTRACTOR AND SUBMITTED FOR TXDOT APPROVAL.
 4. TEMPORARY SIGNAL DESIGN IS BASED ON MOT SEQUENCING AND CONTRACTOR TO COORDINATE WITH TXDOT AND OBTAIN APPROVAL PRIOR FOR TRAFFIC SIGNAL MODIFICATION.
 5. CONTRACTOR TO COORDINATE WITH TXDOT ON USING EXISTING SIGNAL CONTROLLER AND OTHER CABINET EQUIPMENT.
 6. USE ESTABLISHED INDUSTRY AND UTILITY SAFETY PRACTICES TO ERECT POLES NEAR ANY OVERHEAD OR UNDERGROUND UTILITY. CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO BEGINNING SUCH WORK.
 7. REFER TO MOT SHEETS FOR SEQUENCE OF WORK.
 8. CONTRACTOR TO INSTALL SIDEWALK GUY IF VERTICAL CLEARANCE IS NOT MET FOR PEDESTRIANS. REFER TO SPAN WIRE MOUNTING DETAIL SHEET FROM TXDOT DALLAS DISTRICT STANDARD.



SIGNAL LEGEND

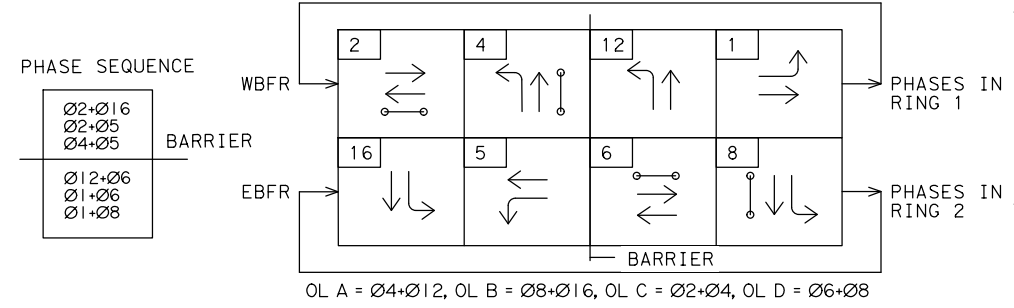
PROPOSED EQUIPMENT

- TEMP. WOOD POLE AND SPAN WIRE COMBINATION WITH TWO DOWN GUYS
- 8' ARM WITH LED LUMINAIRE
- LED PEDESTRIAN SIGNAL HEAD
- 12" LED SIGNAL HEAD (HOR)
- VIDEO PRESENCE DETECTOR
- ANTENNA/ETHERNET SYSTEM
- POLE MOUNTED SIGN
- MAST ARM MOUNTED SIGN
- TEMP. SERVICE METER
- TYPE D GROUND BOX W/APRON
- TYPE D GROUND BOX
- TYPE A GROUND BOX
- CONDUIT
- CONTROLLER AND CABINET
- CONDUIT RUN NUMBER
- PHASE NUMBER

EXISTING EQUIPMENT

- POLE AND MAST ARM
- LED PEDESTRIAN SIGNAL HEAD
- 12" LED SIGNAL HEAD (HOR)
- 12" LED SIGNAL HEAD (VER)
- VIDEO PRESENCE DETECTOR
- POLE MOUNTED SIGN
- MAST ARM MOUNTED SIGN
- SERVICE METER
- GROUND BOX
- GROUND BOX W/APRON
- CONDUIT
- CONTROLLER AND CABINET
- CONSTRUCTION PHASE
- COMPLETED CONSTRUCTION PHASE
- EXISTING CONDUIT TO REMAIN
- ABANDON CONDUIT

PHASE DIAGRAM - 4 PHASE OPERATION



WSP USA Inc. TBPE #F-2263

WSP

WSP USA Inc.
2777 N. Stemmons Freeway, Ste. 1600
Dallas, Texas 75207
TBPE # F-2263

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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

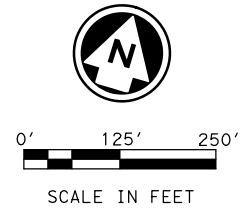
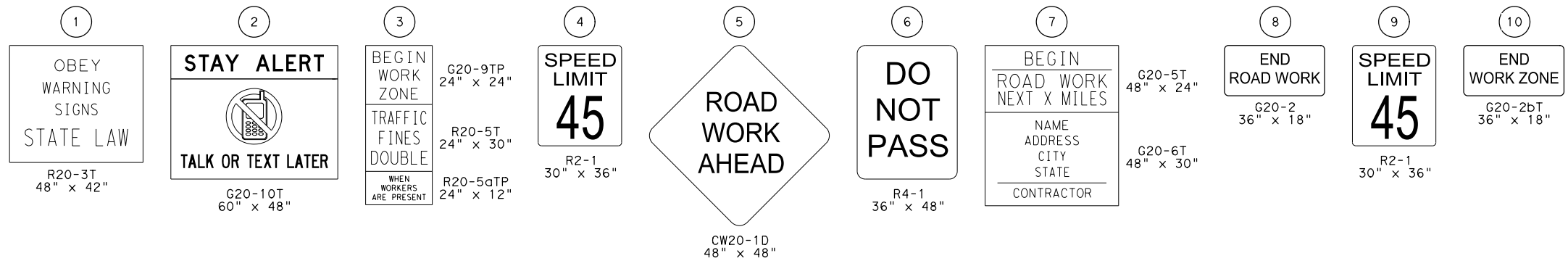
TEMPORARY SIGNAL PLAN
PHASE 1 STEP 2
LOOP 338 AT SH 191

SCALE: 1" = 40' SHEET 3 OF 3

DESIGN	FED. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.

48

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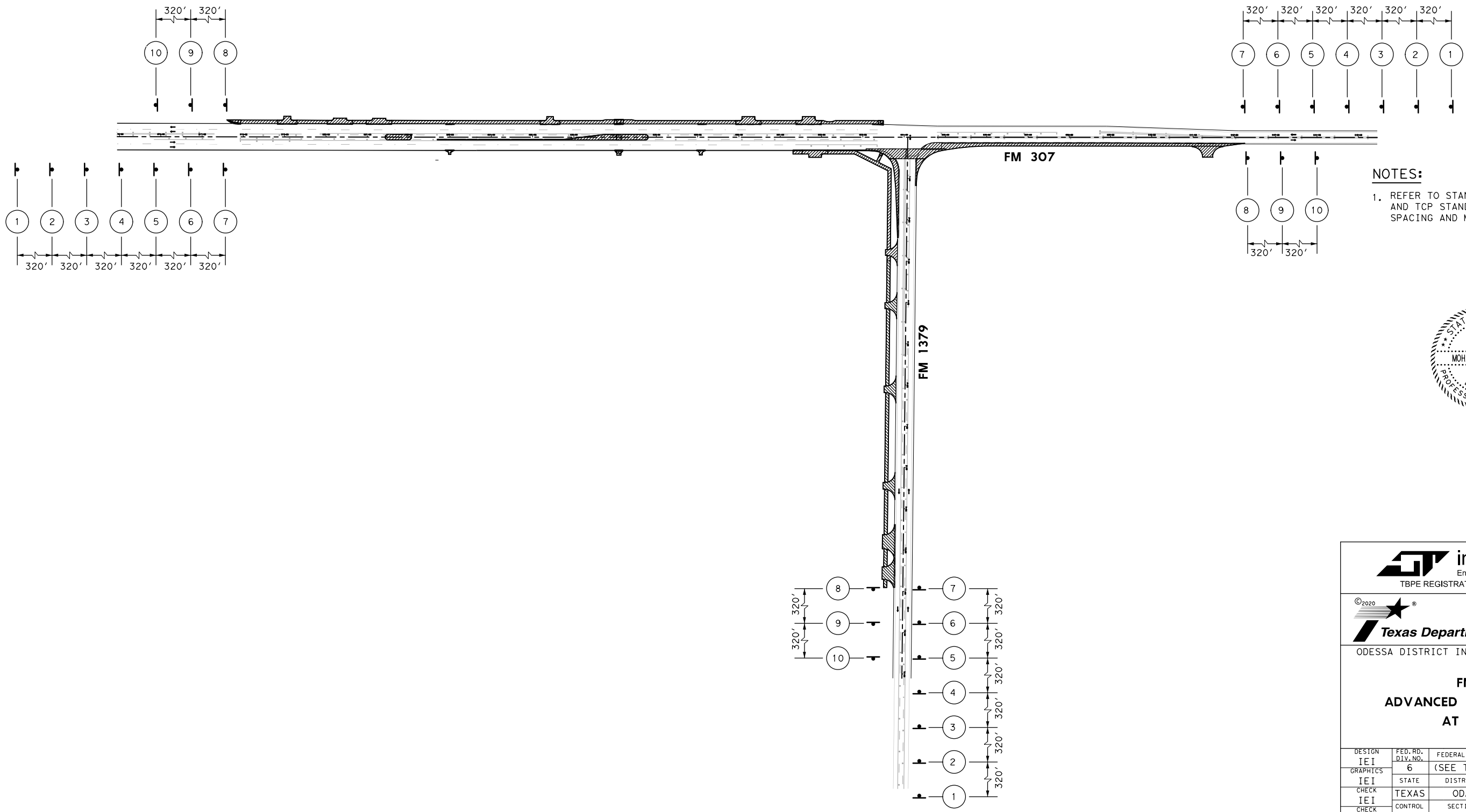


LEGEND

CONSTRUCTION

TRAFFIC DIRECTION

TRAFFIC SIGN



NOTES:

1. REFER TO STANDARDS BC (1) THRU (12) AND TCP STANDARDS FOR LENGTHS, SIGN SPACING AND MORE INFORMATION.



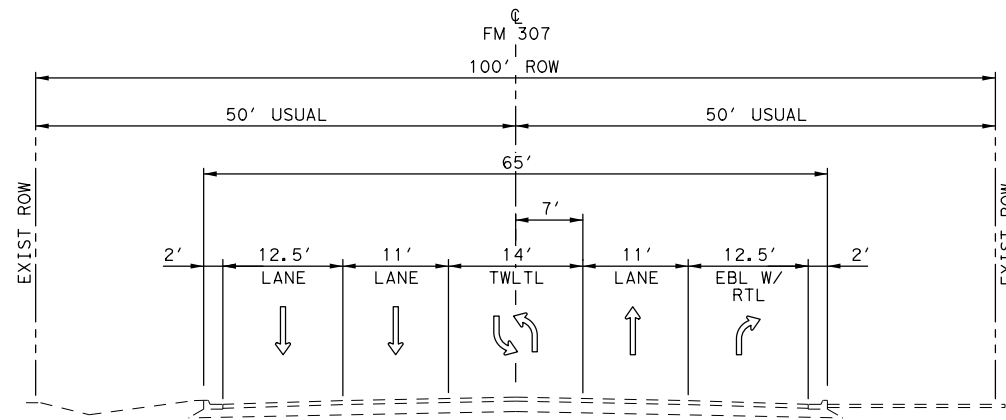
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

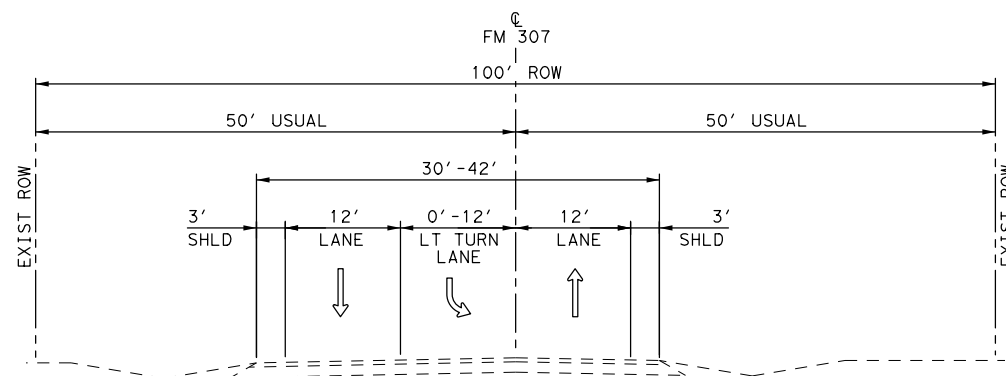
**FM 307
ADVANCED WARNING SIGNS
AT FM 1379**

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
			SHEET NO. 49

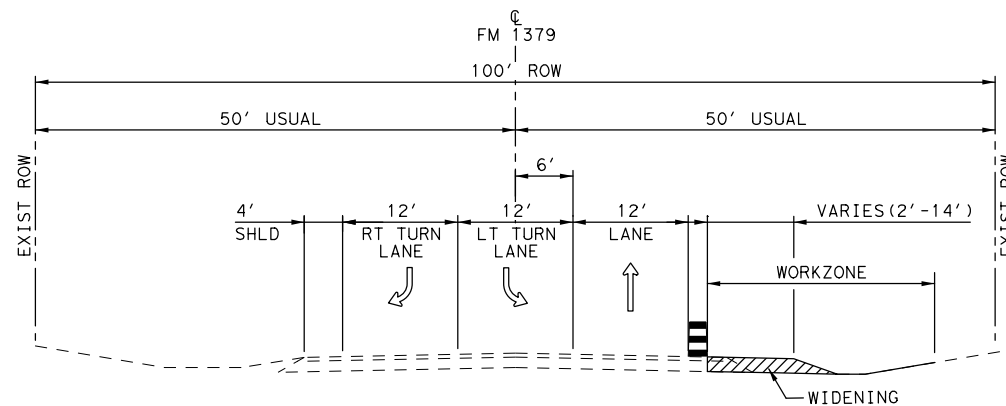
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TRAFFIC CONTROL TYPICAL SECTION-FM 307 (STEP 1A)
STA 517+61 TO STA 534+08



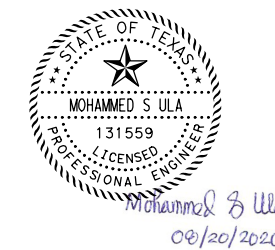
TRAFFIC CONTROL TYPICAL SECTION-FM 307 (STEP 1A)
STA 534+08 TO STA 542+25



TRAFFIC CONTROL TYPICAL SECTION- FM 1379 (STEP 1A)
STA 0+52 TO STA 2+44

LEGEND

- ← EXISTING DIRECTION OF TRAFFIC
- PROPOSED DIRECTION OF TRAFFIC
- ▬ DRUM
- ▨ CONSTRUCT THIS PHASE/STEP
- ▩ CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- A WK ZN PAV MRK REMOV (W) 4" (BRK)
- B WK ZN PAV MRK REMOV (W) 4" (SLD)
- C WK ZN PAV MRK REMOV (Y) 4" (SLD)
- D WK ZN PAV MRK REMOV (W) 8" (SLD)
- CC WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)





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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 307

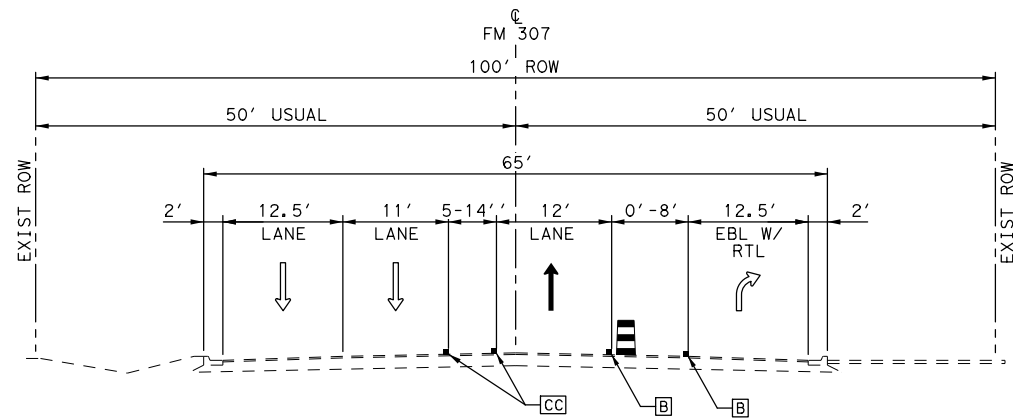
TCP TYPICAL SECTIONS

AT FM 1379

SHEET 1 OF 4

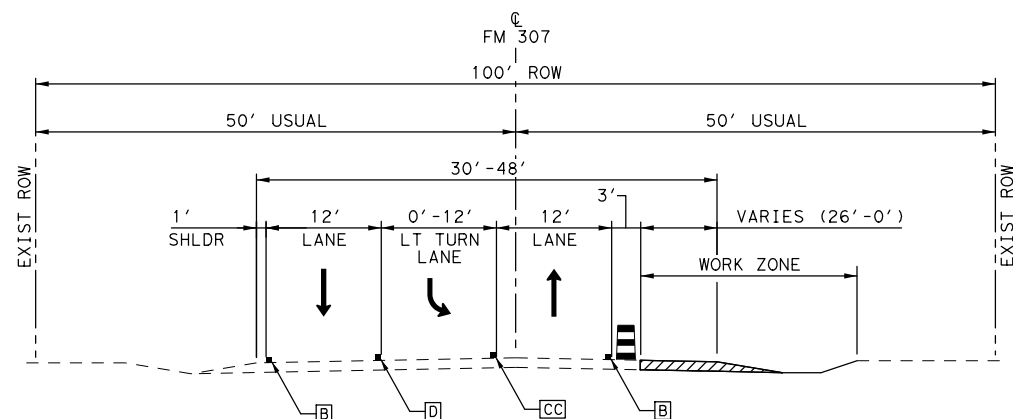
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GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			50

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design



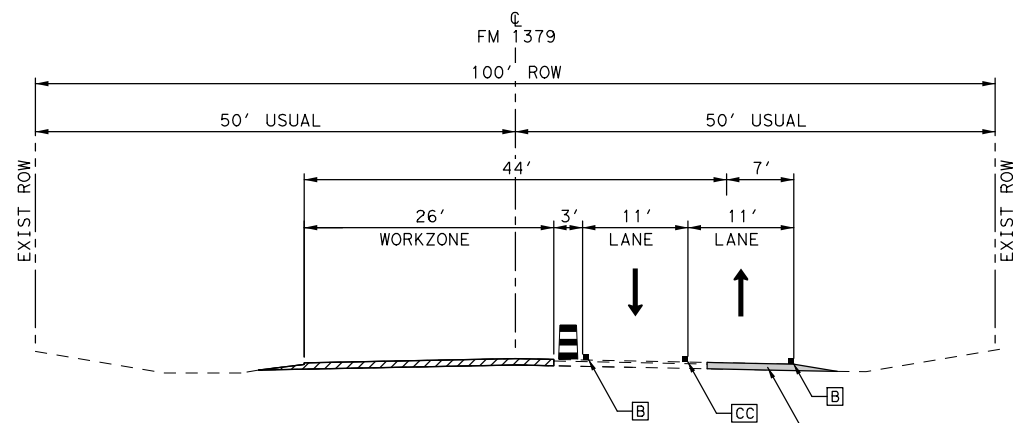
TRAFFIC CONTROL TYPICAL SECTION-FM 307 (STEP 1B)

STA 527+56 TO STA 534+09



TRAFFIC CONTROL TYPICAL SECTION-FM 307 (STEP 1B)

STA 534+09 TO STA 542+25



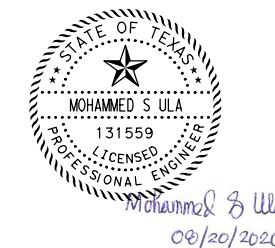
TRAFFIC CONTROL TYPICAL SECTION- FM 1379 (STEP 1B)

STA 0+00 TO STA 10+91

* LEFT SIDE PAVEMENT CONSTRUCTION LIMIT: STA 0+00 TO STA 01+17

LEGEND

- ← EXISTING DIRECTION OF TRAFFIC
- PROPOSED DIRECTION OF TRAFFIC
- DRUM
- ▨ CONSTRUCT THIS PHASE/STEP
- ▩ CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- A WK ZN PAV MRK REMOV (W) 4" (BRK)
- B WK ZN PAV MRK REMOV (W) 4" (SLD)
- C WK ZN PAV MRK REMOV (Y) 4" (SLD)
- D WK ZN PAV MRK REMOV (W) 8" (SLD)
- CC WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)



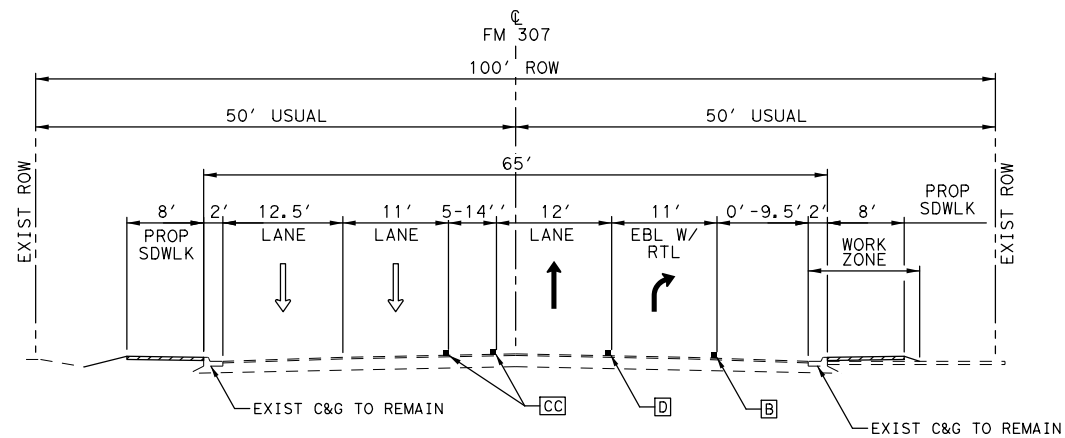
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
TCP TYPICAL SECTIONS
AT FM 1379**

SHEET 2 OF 4

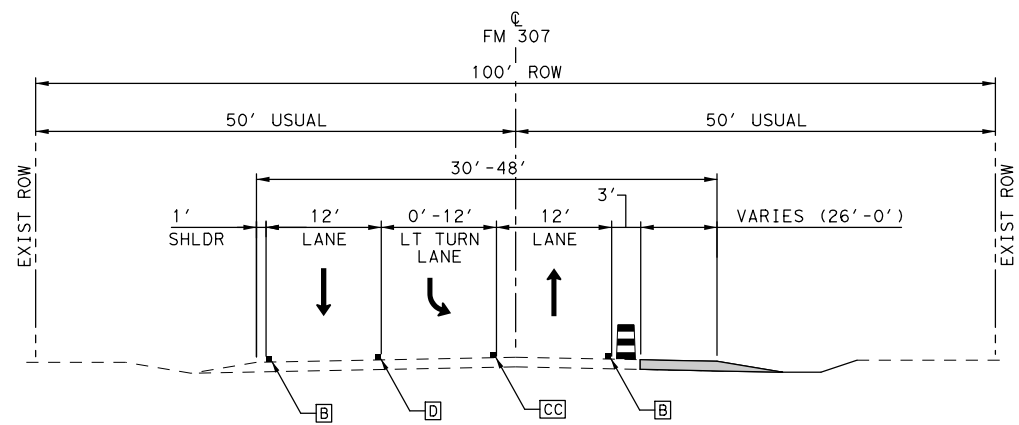
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GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			51

FILENAME: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design DATE: 8/20/2020



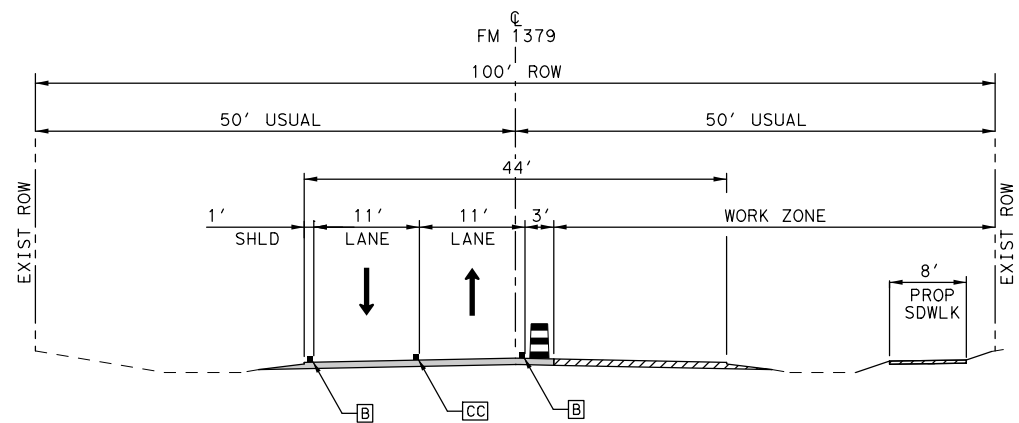
TRAFFIC CONTROL TYPICAL SECTION-FM 307 (STEP 2)

STA 527+56 TO STA 534+09
 * LEFT SIDEWALK CONSTRUCTION STARTS FROM STA 517+61
 AND RIGHT SIDEWALK CONSTRUCTION FROM STA 531+31



TRAFFIC CONTROL TYPICAL SECTION-FM 307 (STEP 2)

STA 534+09 TO STA 542+25

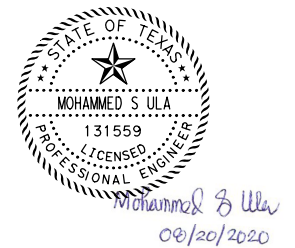


TRAFFIC CONTROL TYPICAL SECTION- FM 1379 (STEP 2)

STA 0+00 TO STA 10+91
 * RIGHT SIDE PAVEMENT CONSTRUCTION LIMIT: STA 0+00 TO STA 00+52

LEGEND

- ← EXISTING DIRECTION OF TRAFFIC
- PROPOSED DIRECTION OF TRAFFIC
- ▬ DRUM
- ▨ CONSTRUCT THIS PHASE/STEP
- ▩ CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- A WK ZN PAV MRK REMOV (W) 4" (BRK)
- B WK ZN PAV MRK REMOV (W) 4" (SLD)
- C WK ZN PAV MRK REMOV (Y) 4" (SLD)
- D WK ZN PAV MRK REMOV (W) 8" (SLD)
- CC WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)



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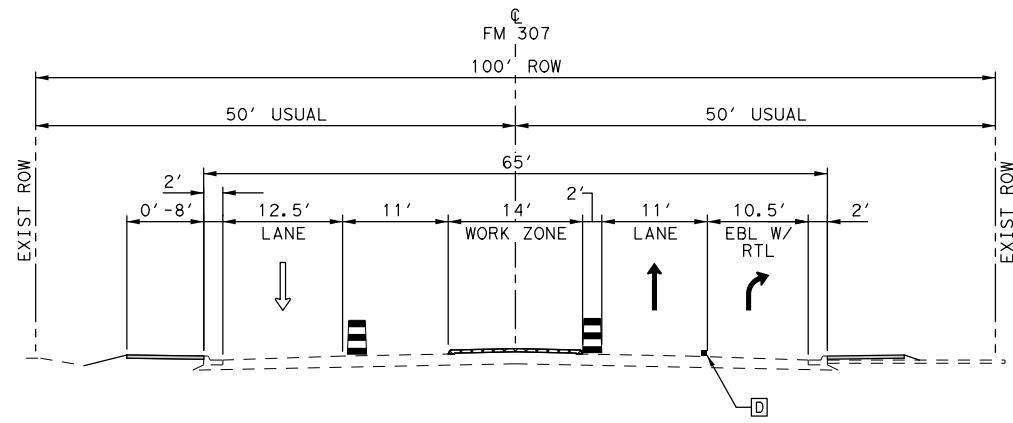
Texas Department of Transportation
 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 307
TCP TYPICAL SECTIONS
AT FM 1379

SHEET 3 OF 4

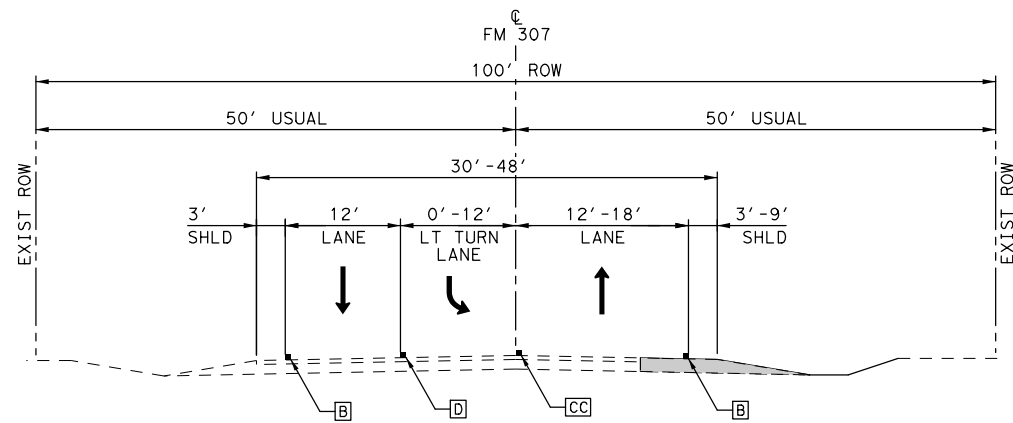
DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
			52

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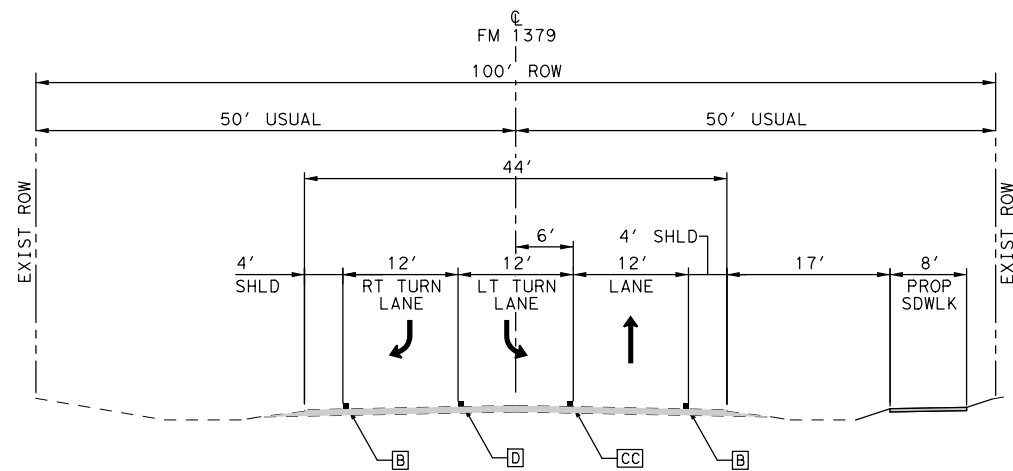
TRAFFIC CONTROL TYPICAL SECTION-FM 307 (STEP 3)

STA 521+43 TO STA 534+09



TRAFFIC CONTROL TYPICAL SECTION-FM 307 (STEP 3)

STA 534+09 TO STA 542+25



TRAFFIC CONTROL TYPICAL SECTION-FM 1379 (STEP 3)

STA 0+00 TO STA 10+91

LEGEND

- ← EXISTING DIRECTION OF TRAFFIC
- PROPOSED DIRECTION OF TRAFFIC
- DRUM
- ▨ CONSTRUCT THIS PHASE/STEP
- ▩ CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- A WK ZN PAV MRK REMOV (W) 4" (BRK)
- B WK ZN PAV MRK REMOV (W) 4" (SLD)
- C WK ZN PAV MRK REMOV (Y) 4" (SLD)
- D WK ZN PAV MRK REMOV (W) 8" (SLD)
- CC WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)



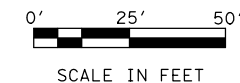
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
TCP TYPICAL SECTIONS
AT FM 1379**

SHEET 4 OF 4

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			SHEET NO. 53

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design



LEGEND

- CONSTRUCT THIS PHASE/STEP
- CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- EXIST TRAFFIC DIRECTION
- PROP TRAFFIC DIRECTION
- DRUM
- REFLECTIVE PAVEMENT MARKER
- TRAFFIC SIGN
- TYPE III BARRICADE
- TRAILER MOUNTED FLASHING ARROW BOARD
- WK ZN PAV MRK REMOV (W) 4" (BRK)
- WK ZN PAV MRK REMOV (W) 4" (SLD)
- WK ZN PAV MRK REMOV (Y) 4" (SLD)
- WK ZN PAV MRK REMOV (W) 8" (SLD)
- WK ZN PAV MRK REMOV (W) 24" (SLD)
- WK ZN PAV MRK REMOV DOTTED (W) 4" (BRK)
- WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)

NOTES:

1. REFER TO STANDARDS BC (1) THRU (12) AND TCP STANDARDS FOR LENGTHS, SIGN SPACING AND MORE INFORMATION.
2. ELIMINATE ALL PAVEMENT MARKING AND SIGNS THAT ARE IN CONFLICT WITH TRAFFIC MOVEMENTS.
3. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS WITHIN THE CONSTRUCTION ZONE.
4. REFER TO TYPICAL SECTION FOR LATERAL PLACEMENT OF CHANNELIZING DEVICES.
5. FIELD LOCATIONS MAY DICTATE ADJUSTMENT OF SIGN LOCATIONS. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO ADJUSTMENT OF ANY SIGN.

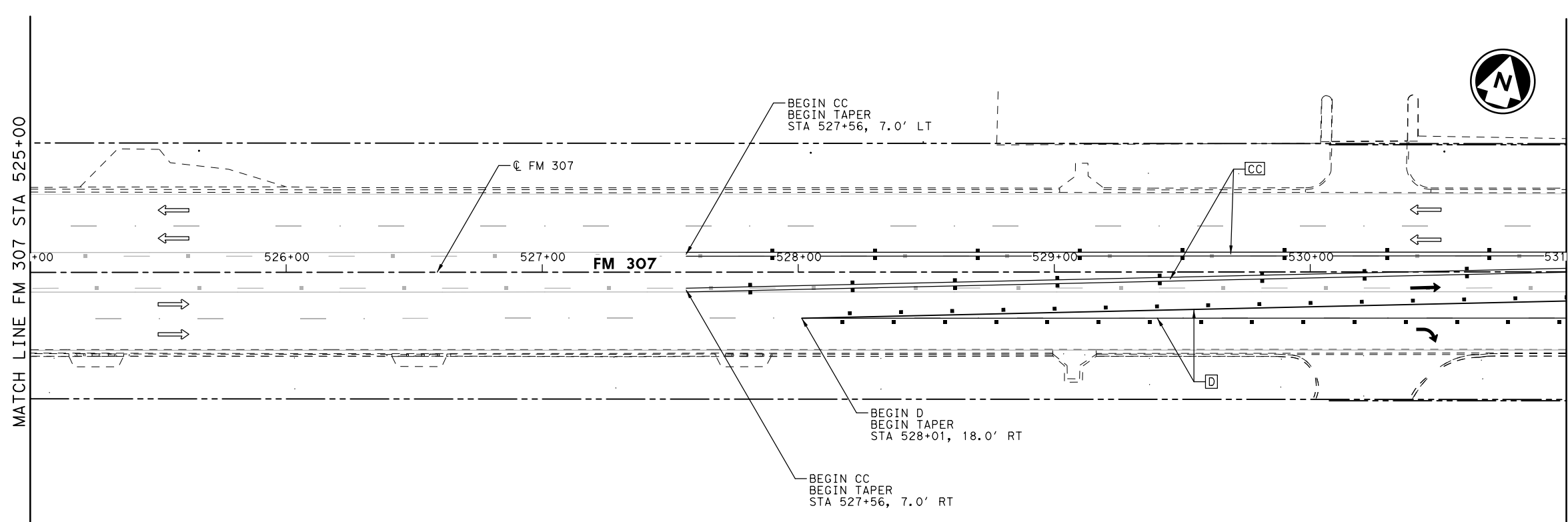
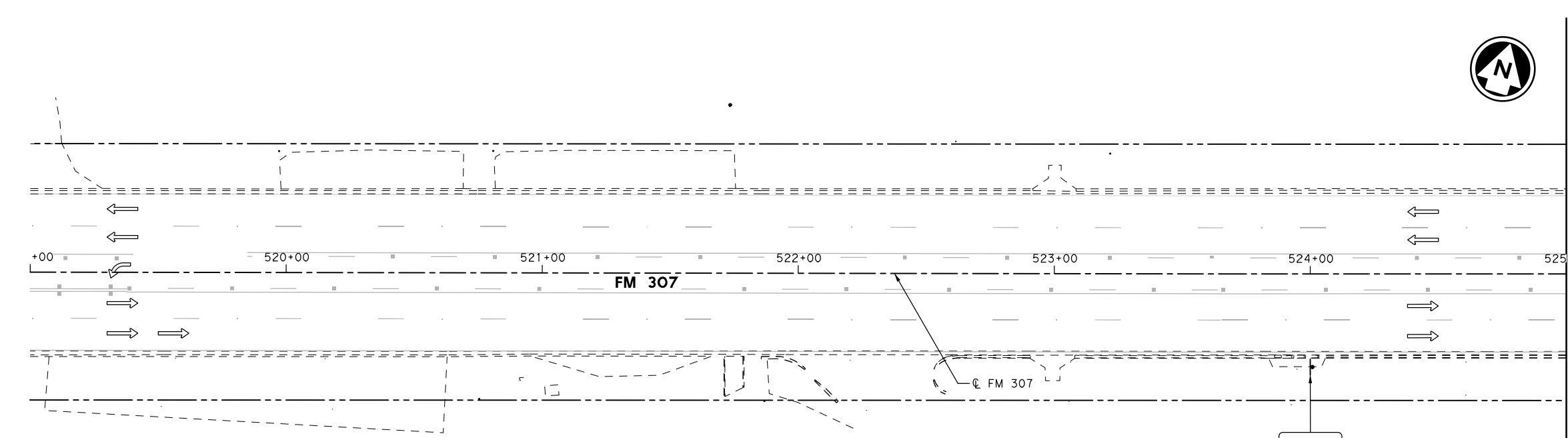


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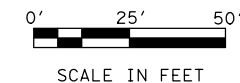
Texas Department of Transportation
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 307
TRAFFIC CONTROL PLAN
PHASE 1 STEP 1B
AT FM 1379 SHEET 1 OF 4

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
			SHEET NO. 54



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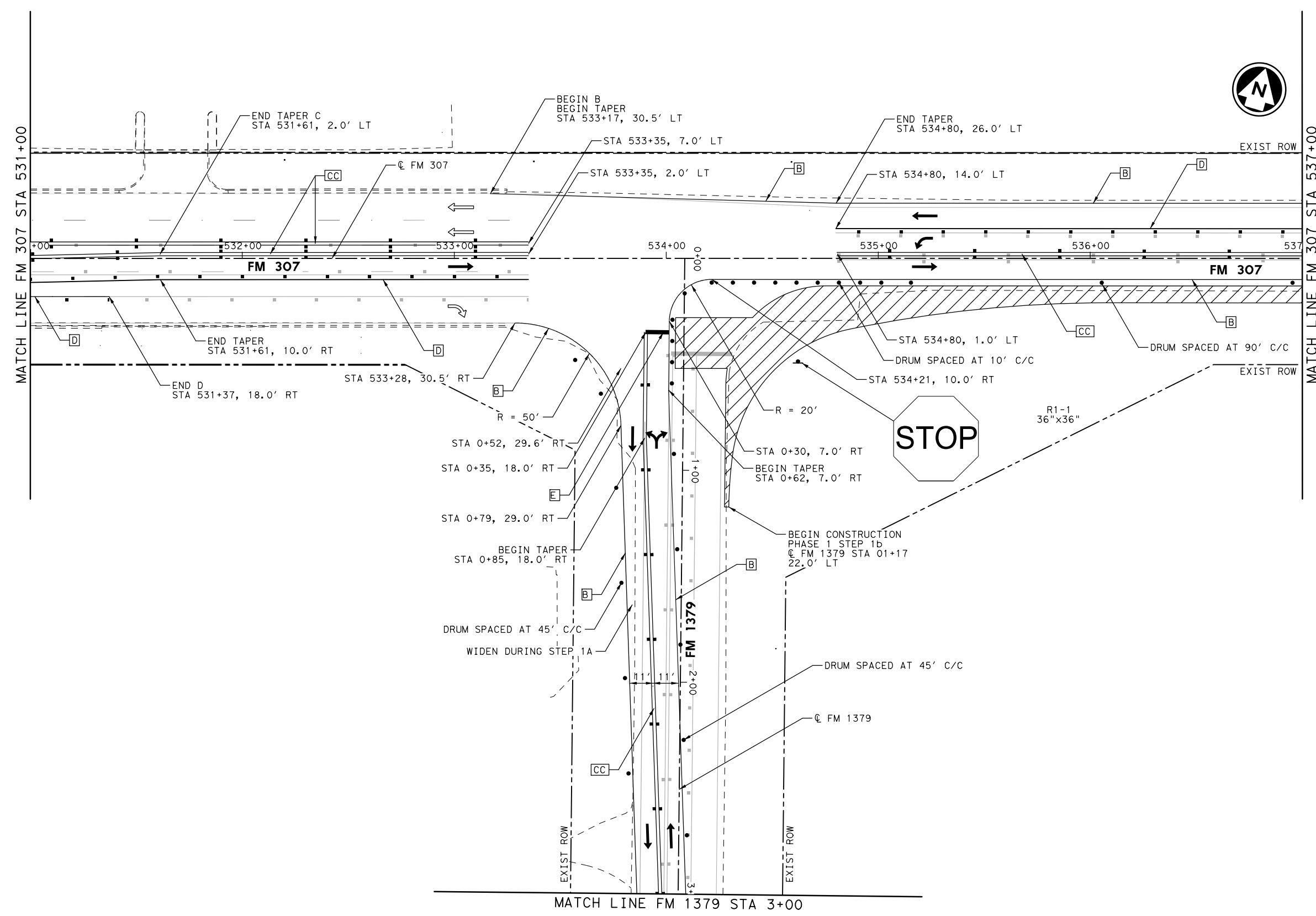


LEGEND

- CONSTRUCT THIS PHASE/STEP
- CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- EXIST TRAFFIC DIRECTION
- PROP TRAFFIC DIRECTION
- DRUM
- REFLECTIVE PAVEMENT MARKER
- TRAFFIC SIGN
- TYPE III BARRICADE
- TRAILER MOUNTED FLASHING ARROW BOARD
- WK ZN PAV MRK REMOV (W) 4" (BRK)
- WK ZN PAV MRK REMOV (W) 4" (SLD)
- WK ZN PAV MRK REMOV (Y) 4" (SLD)
- WK ZN PAV MRK REMOV (W) 8" (SLD)
- WK ZN PAV MRK REMOV (W) 24" (SLD)
- WK ZN PAV MRK REMOV DOTTED (W) 4" (BRK)
- WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)

NOTES:

1. REFER TO STANDARDS BC (1) THRU (12) AND TCP STANDARDS FOR LENGTHS, SIGN SPACING AND MORE INFORMATION.
2. ELIMINATE ALL PAVEMENT MARKING AND SIGNS THAT ARE IN CONFLICT WITH TRAFFIC MOVEMENTS.
3. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS WITHIN THE CONSTRUCTION ZONE.
4. REFER TO TYPICAL SECTION FOR LATERAL PLACEMENT OF CHANNELIZING DEVICES.
5. FIELD LOCATIONS MAY DICTATE ADJUSTMENT OF SIGN LOCATIONS. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO ADJUSTMENT OF ANY SIGN.



Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

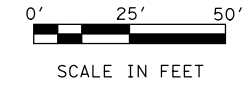
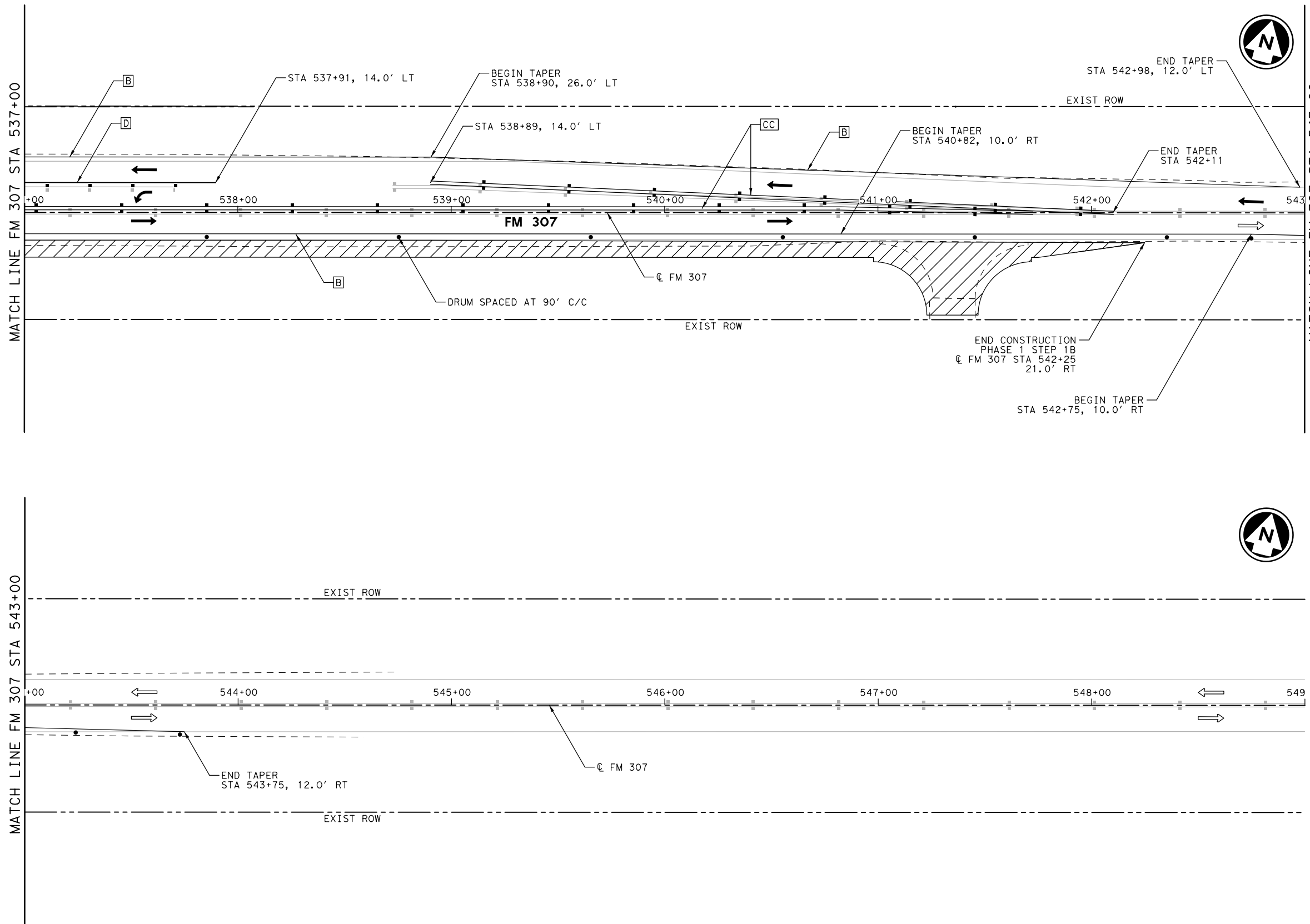
FM 307
TRAFFIC CONTROL PLAN
PHASE 1 STEP 1B
AT FM 1379

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

SHEET 2 OF 4

55

DATE: 8/20/2020 FILENAME: pw:\jmt-pw-bentley.com: jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design




LEGEND

- CONSTRUCT THIS PHASE/STEP
- CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- EXIST TRAFFIC DIRECTION
- PROP TRAFFIC DIRECTION
- DRUM
- REFLECTIVE PAVEMENT MARKER
- TRAFFIC SIGN
- TYPE III BARRICADE
- TRAILER MOUNTED FLASHING ARROW BOARD
- WK ZN PAV MRK REMOV (W) 4" (BRK)
- WK ZN PAV MRK REMOV (W) 4" (SLD)
- WK ZN PAV MRK REMOV (Y) 4" (SLD)
- WK ZN PAV MRK REMOV (W) 8" (SLD)
- WK ZN PAV MRK REMOV (W) 24" (SLD)
- WK ZN PAV MRK REMOV DOTTED (W) 4" (BRK)
- WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)

NOTES:

1. REFER TO STANDARDS BC (1) THRU (12) AND TCP STANDARDS FOR LENGTHS, SIGN SPACING AND MORE INFORMATION.
2. ELIMINATE ALL PAVEMENT MARKING AND SIGNS THAT ARE IN CONFLICT WITH TRAFFIC MOVEMENTS.
3. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS WITHIN THE CONSTRUCTION ZONE.
4. REFER TO TYPICAL SECTION FOR LATERAL PLACEMENT OF CHANNELIZING DEVICES.
5. FIELD LOCATIONS MAY DICTATE ADJUSTMENT OF SIGN LOCATIONS. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO ADJUSTMENT OF ANY SIGN.





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TBPE REGISTRATION NO. F-18368



Texas Department of Transportation

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 307

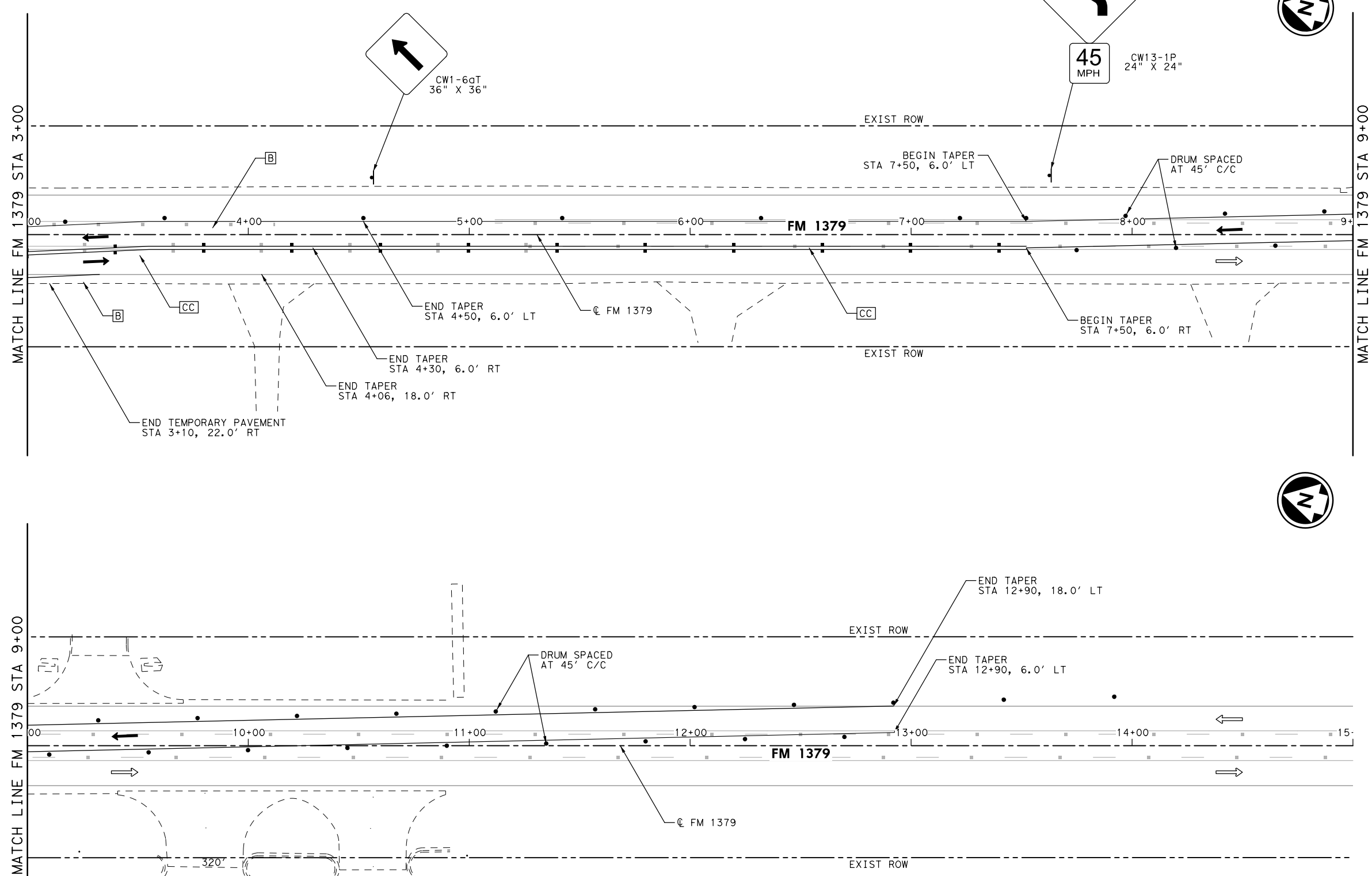
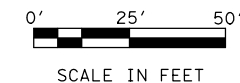
TRAFFIC CONTROL PLAN

PHASE 1 STEP 1B

AT FM 1379 SHEET 3 OF 4

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			56

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design



LEGEND

- CONSTRUCT THIS PHASE/STEP
- CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- EXIST TRAFFIC DIRECTION
- PROP TRAFFIC DIRECTION
- DRUM
- REFLECTIVE PAVEMENT MARKER
- TRAFFIC SIGN
- TYPE III BARRICADE
- TRAILER MOUNTED FLASHING ARROW BOARD
- WK ZN PAV MRK REMOV (W) 4" (BRK)
- WK ZN PAV MRK REMOV (W) 4" (SLD)
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 1379

TRAFFIC CONTROL PLAN

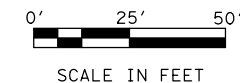
PHASE 1 STEP 1B

AT FM 307

SHEET 4 OF 4

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			57

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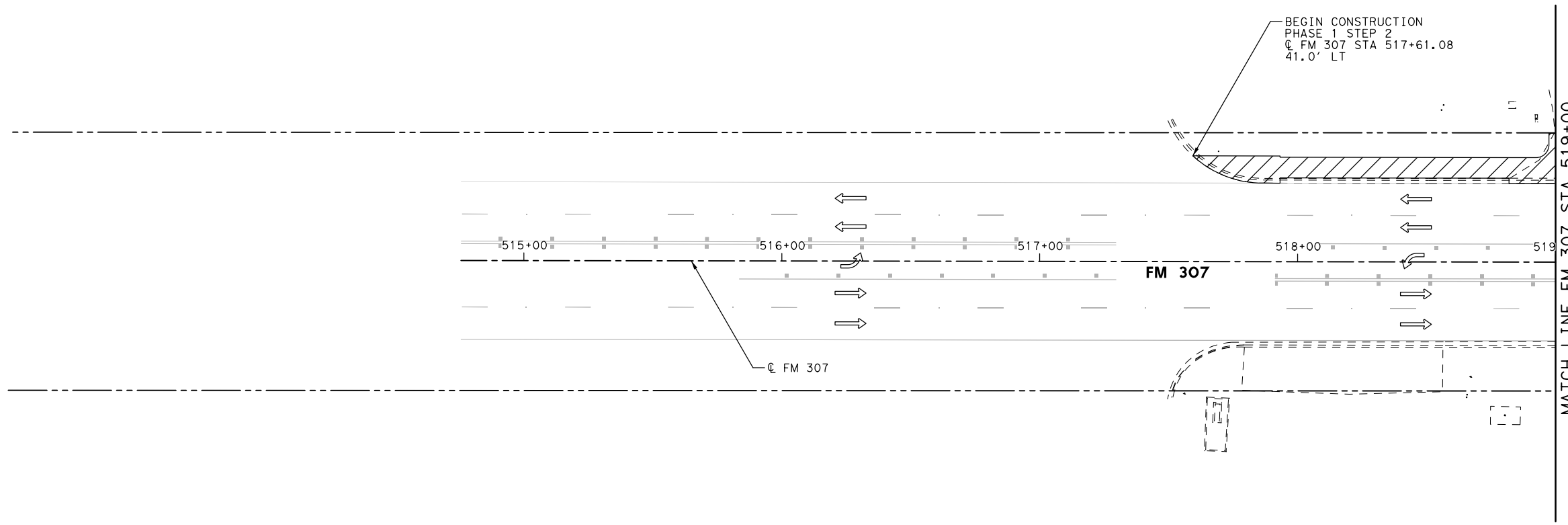


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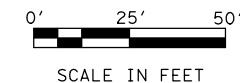
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
TRAFFIC CONTROL PLAN
PHASE 1 STEP 2
AT FM 1379**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.
			58

SHEET 1 OF 5

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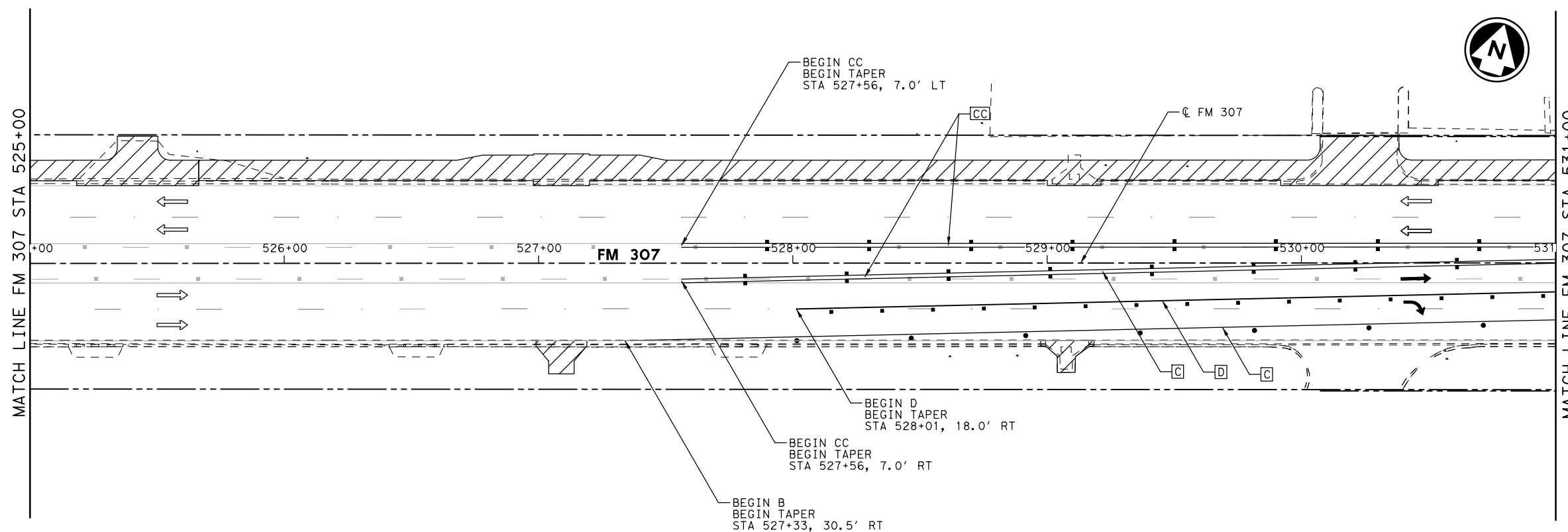
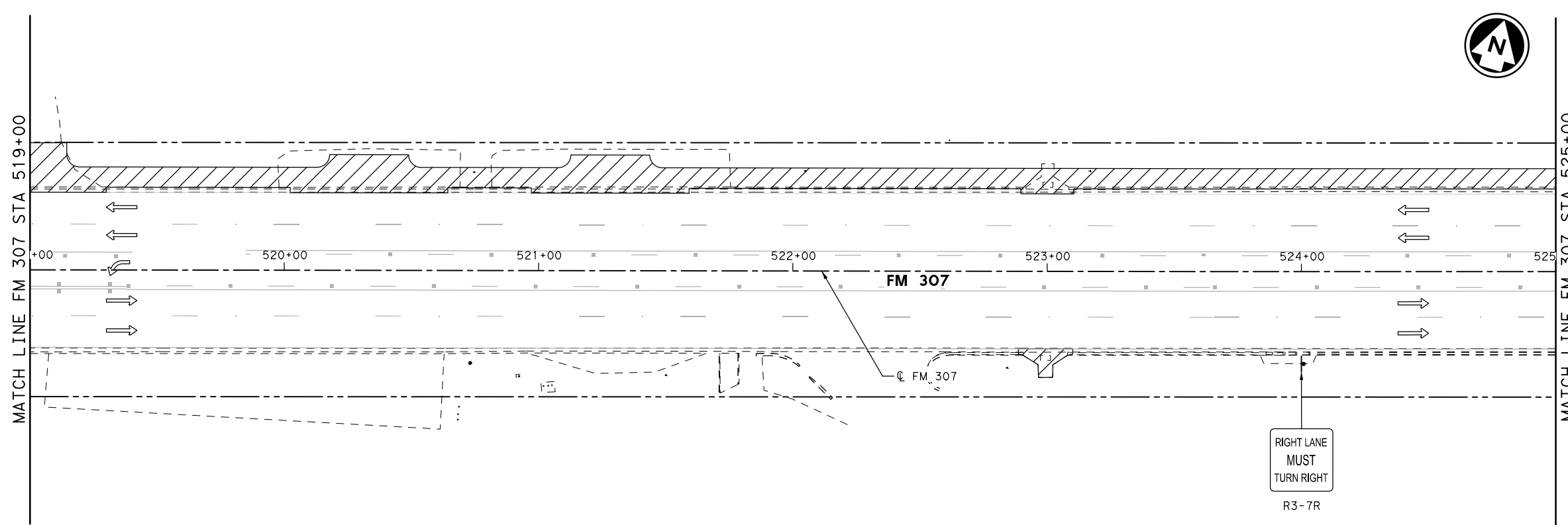


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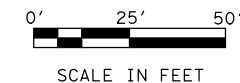
Texas Department of Transportation
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 307
TRAFFIC CONTROL PLAN
PHASE 1 STEP 2
AT FM 1379 SHEET 2 OF 5

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

59

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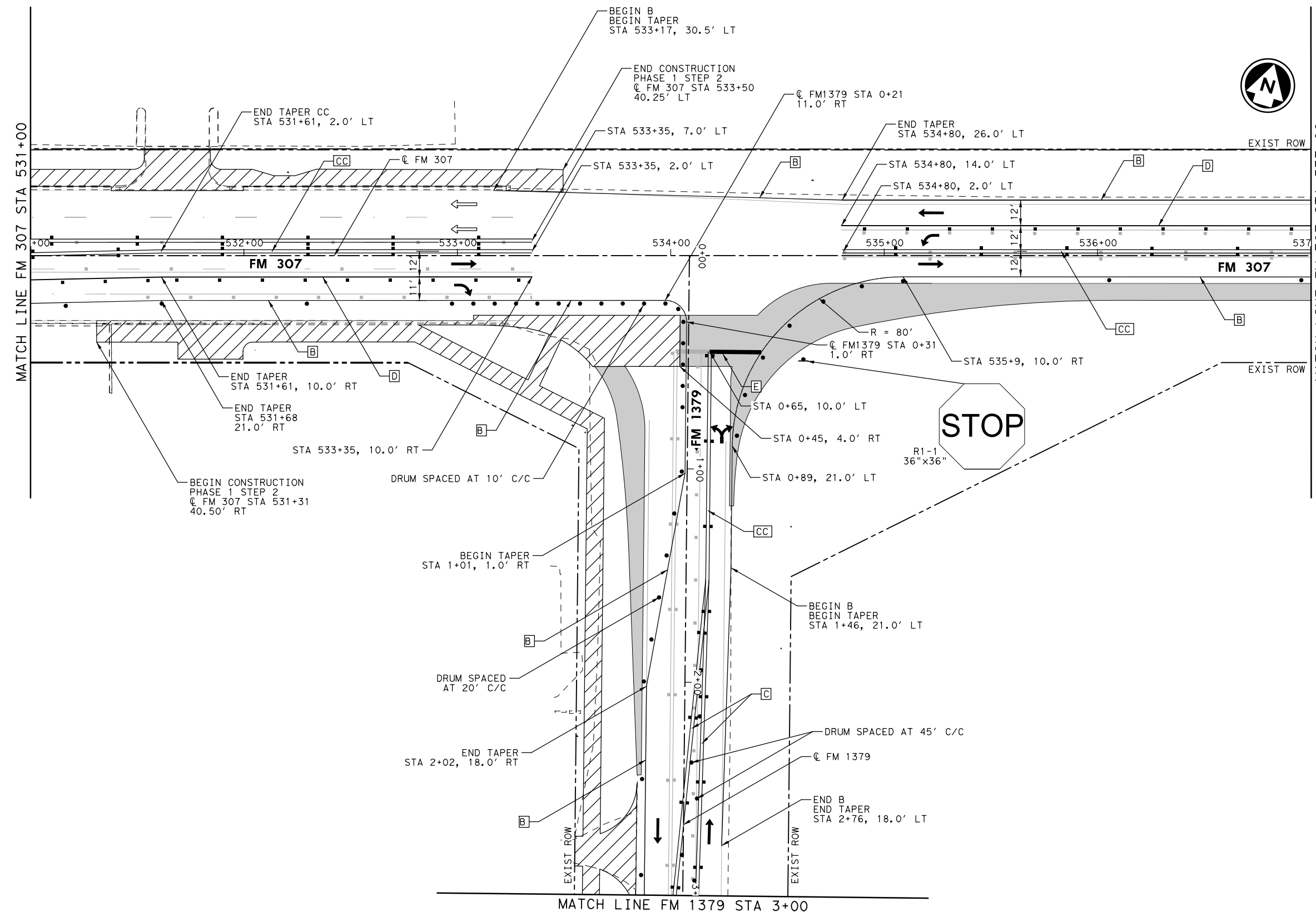
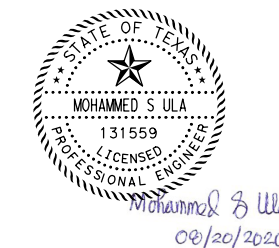


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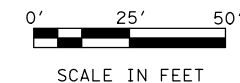
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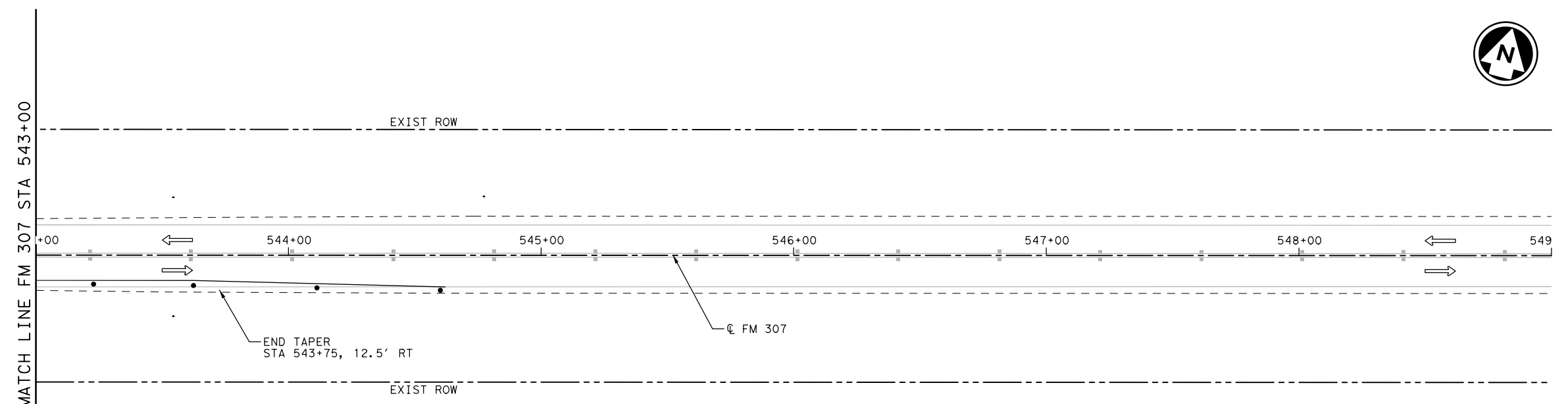
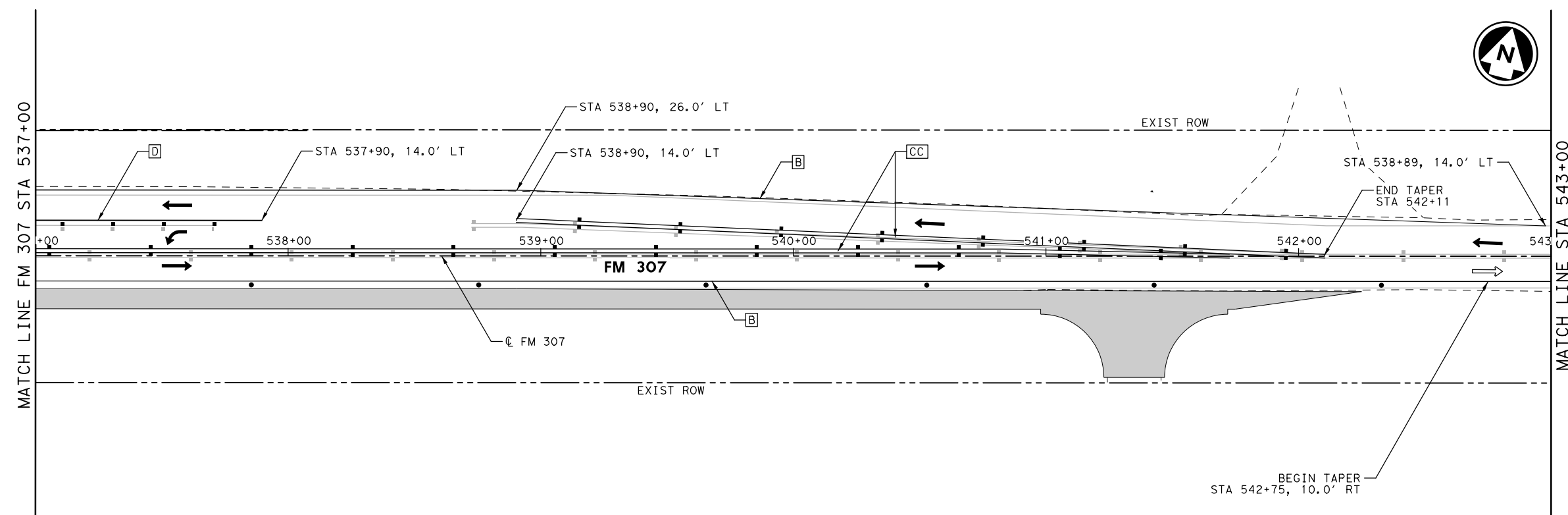


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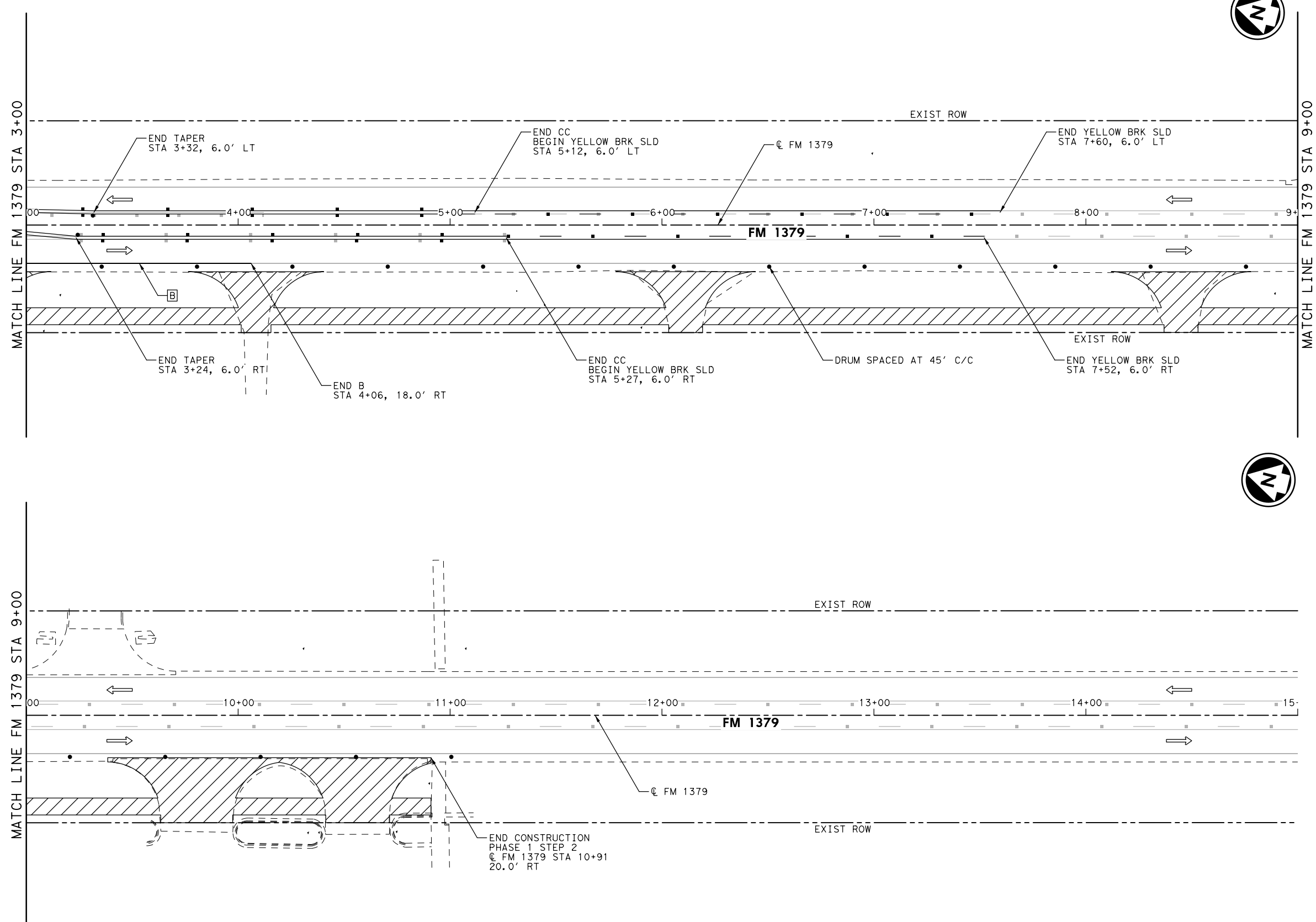
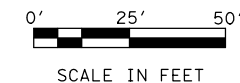
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
TRAFFIC CONTROL PLAN
PHASE 1 STEP 2
AT FM 1379**

SHEET 4 OF 5

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			61

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FM 1379

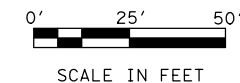
TRAFFIC CONTROL PLAN

PHASE 1 STEP 2

















AT FM 307 SHEET 5 OF 5

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			62

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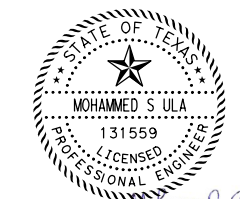


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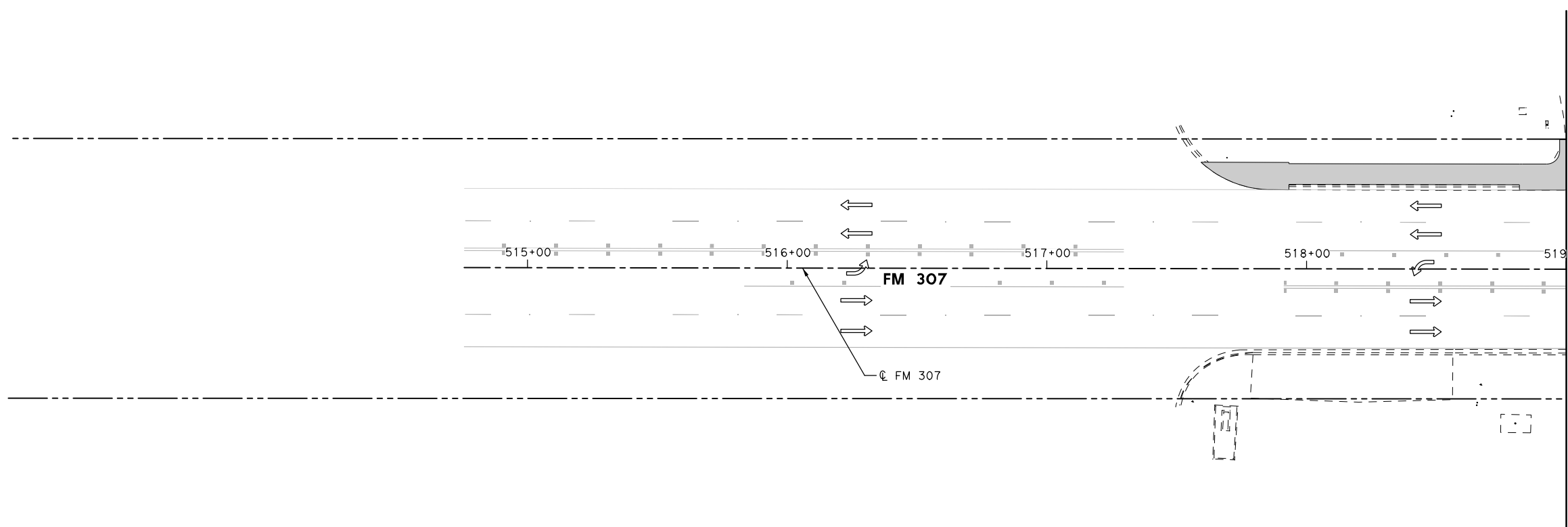
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Mohammed S. Ula
08/20/2020

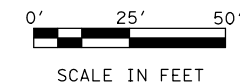


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
TRAFFIC CONTROL PLAN
PHASE 1 STEP 3
AT FM 1379**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
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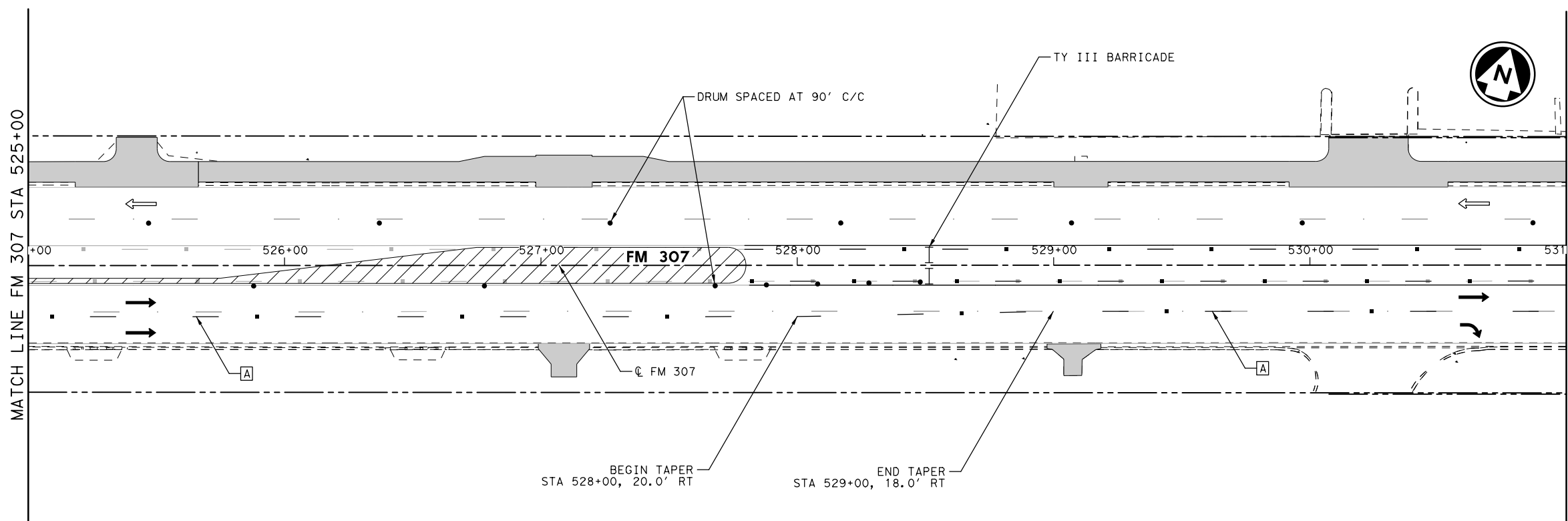
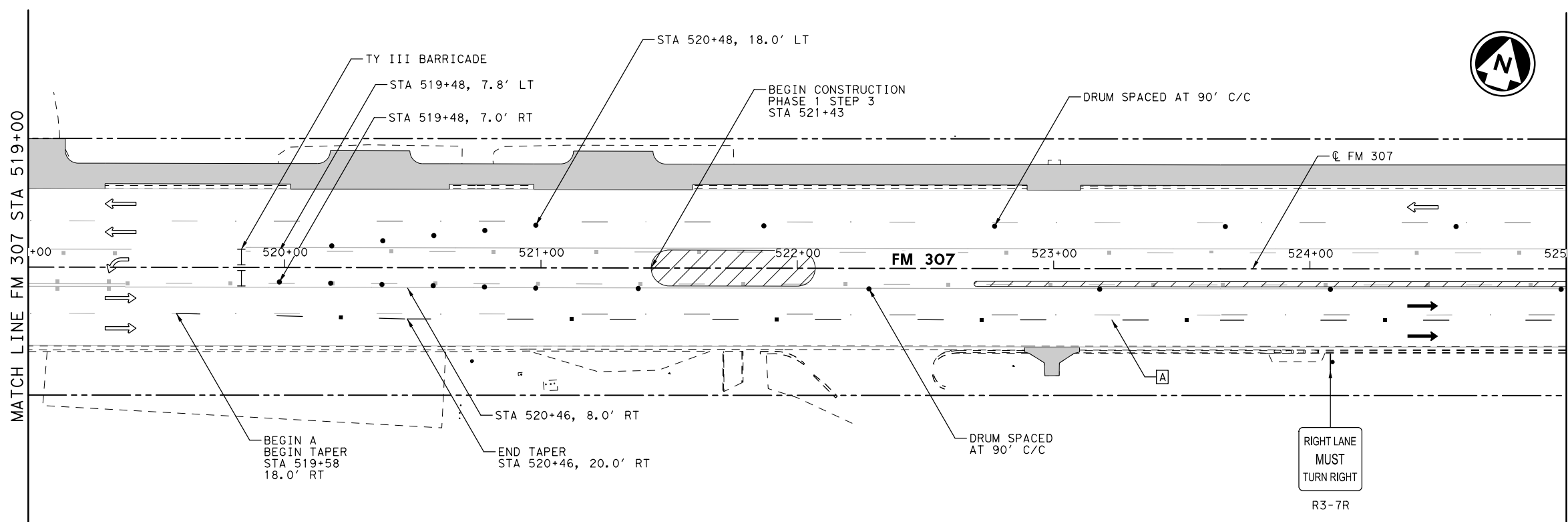


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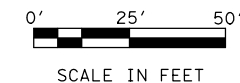
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FM 307
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PHASE 1 STEP 3
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64

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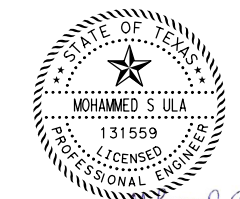


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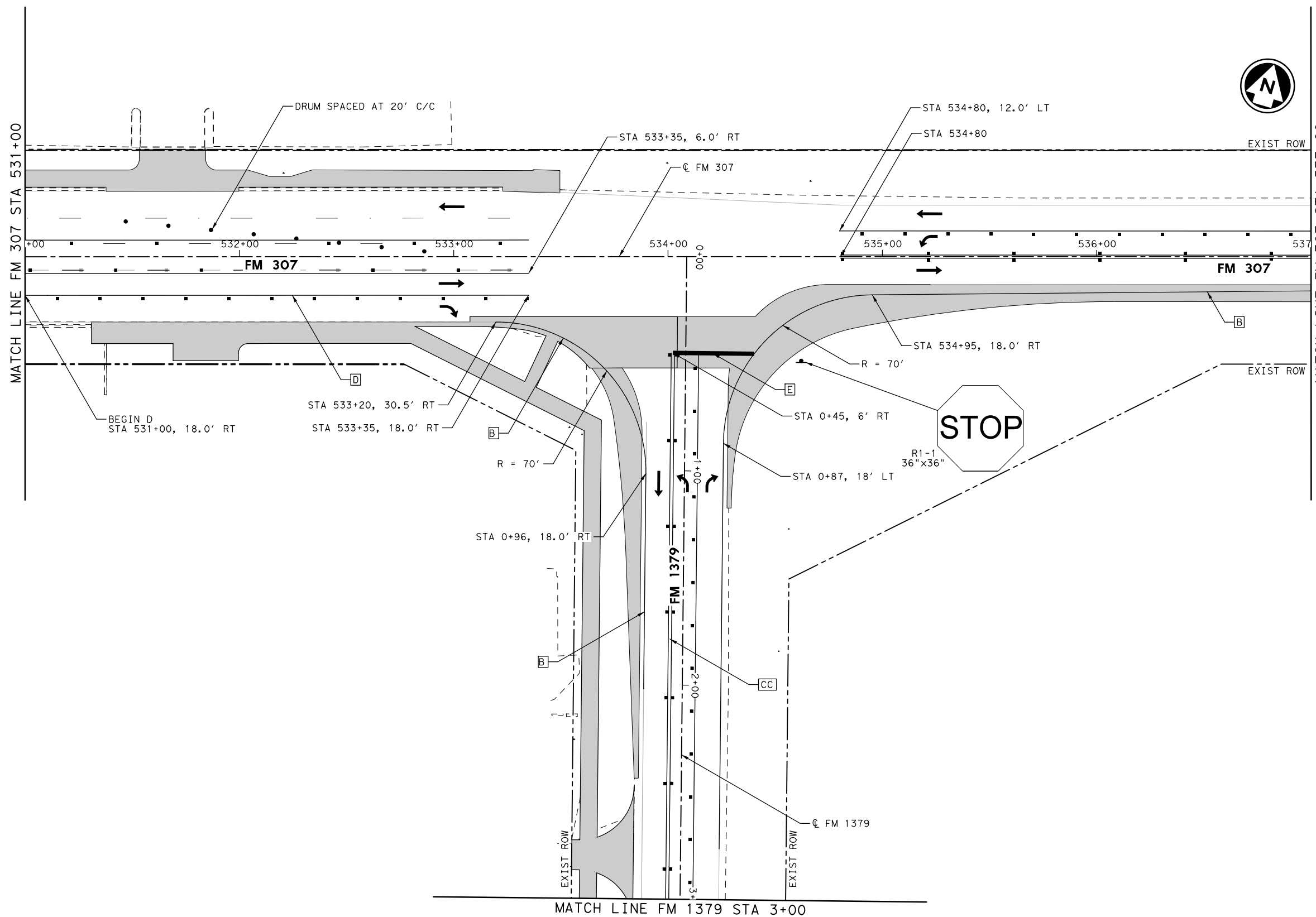
- CONSTRUCT THIS PHASE/STEP
- CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- EXIST TRAFFIC DIRECTION
- PROP TRAFFIC DIRECTION
- DRUM
- REFLECTIVE PAVEMENT MARKER
- TRAFFIC SIGN
- TYPE III BARRICADE
- TRAILER MOUNTED FLASHING ARROW BOARD
- WK ZN PAV MRK REMOV (W) 4" (BRK)
- WK ZN PAV MRK REMOV (W) 4" (SLD)
- WK ZN PAV MRK REMOV (Y) 4" (SLD)
- WK ZN PAV MRK REMOV (W) 8" (SLD)
- WK ZN PAV MRK REMOV (W) 24" (SLD)
- WK ZN PAV MRK REMOV DOTTED (W) 4" (BRK)
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NOTES:

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Mohammed S. Ula
08/20/2020



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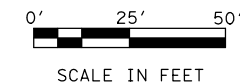
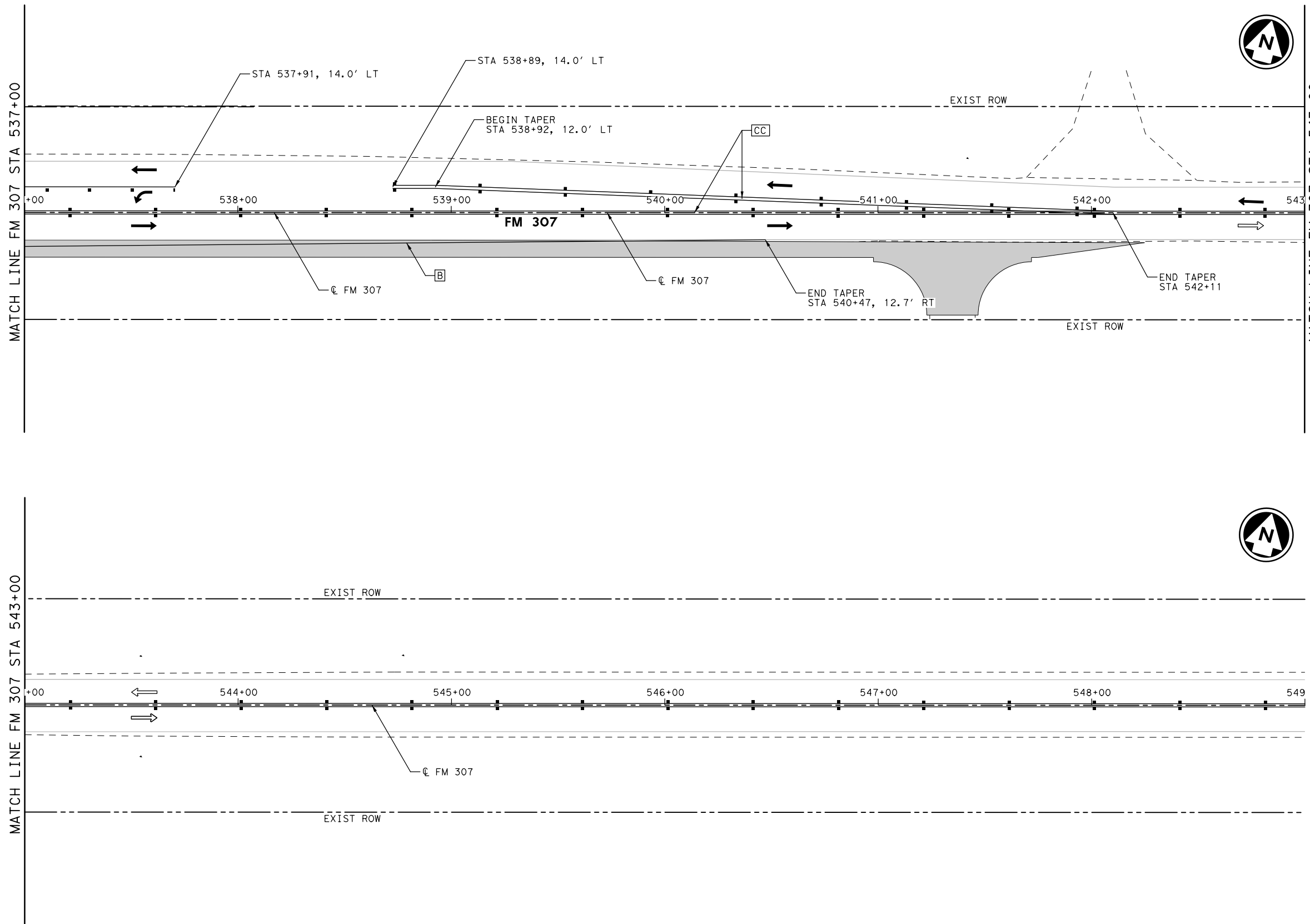
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 307
TRAFFIC CONTROL PLAN
PHASE 1 STEP 3
AT FM 1379

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

SHEET 3 OF 5
65

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LEGEND

- CONSTRUCT THIS PHASE/STEP
- CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
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- PROP TRAFFIC DIRECTION
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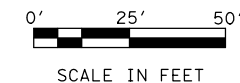
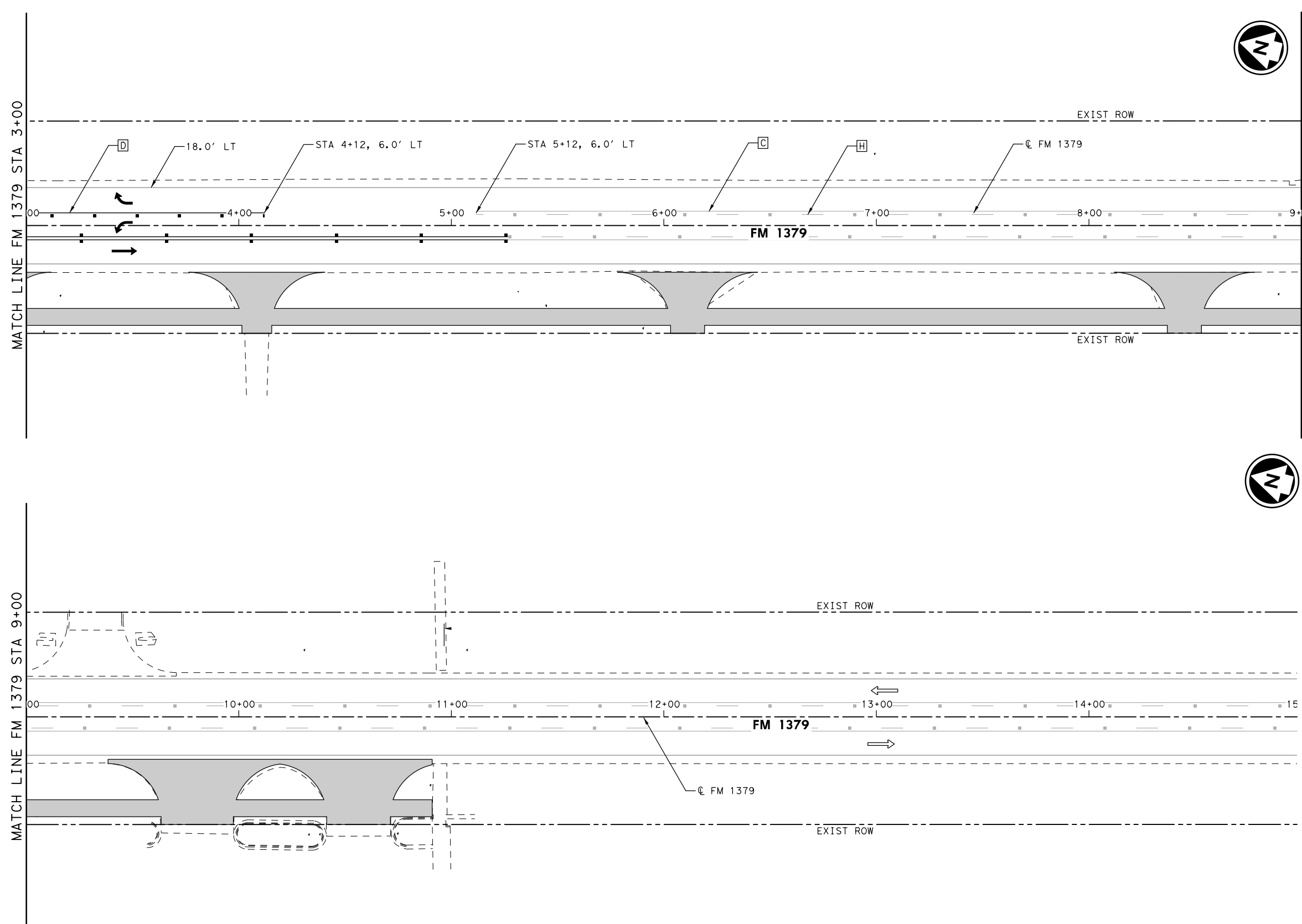
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
TRAFFIC CONTROL PLAN
PHASE 1 STEP 3
AT FM 1379** SHEET 4 OF 5


















DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.

66

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LEGEND

-  CONSTRUCT THIS PHASE/STEP
-  CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
-  EXIST TRAFFIC DIRECTION
-  PROP TRAFFIC DIRECTION
-  DRUM
-  REFLECTIVE PAVEMENT MARKER
-  TRAFFIC SIGN
-  TYPE III BARRICADE
-  TRAILER MOUNTED FLASHING ARROW BOARD
-  WK ZN PAV MRK REMOV (W) 4" (BRK)
-  WK ZN PAV MRK REMOV (W) 4" (SLD)
-  WK ZN PAV MRK REMOV (Y) 4" (SLD)
-  WK ZN PAV MRK REMOV (W) 8" (SLD)
-  WK ZN PAV MRK REMOV (W) 24" (SLD)
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 1379

TRAFFIC CONTROL PLAN

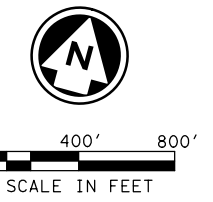
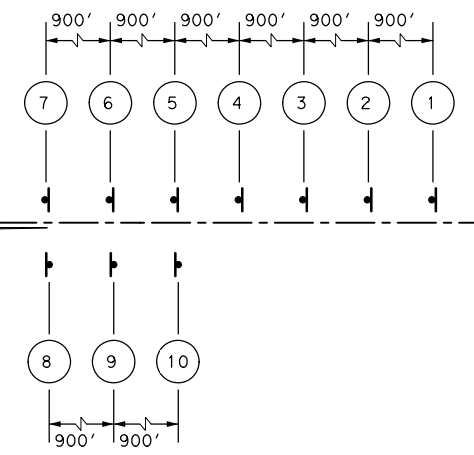
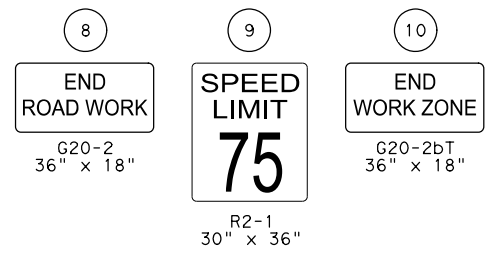
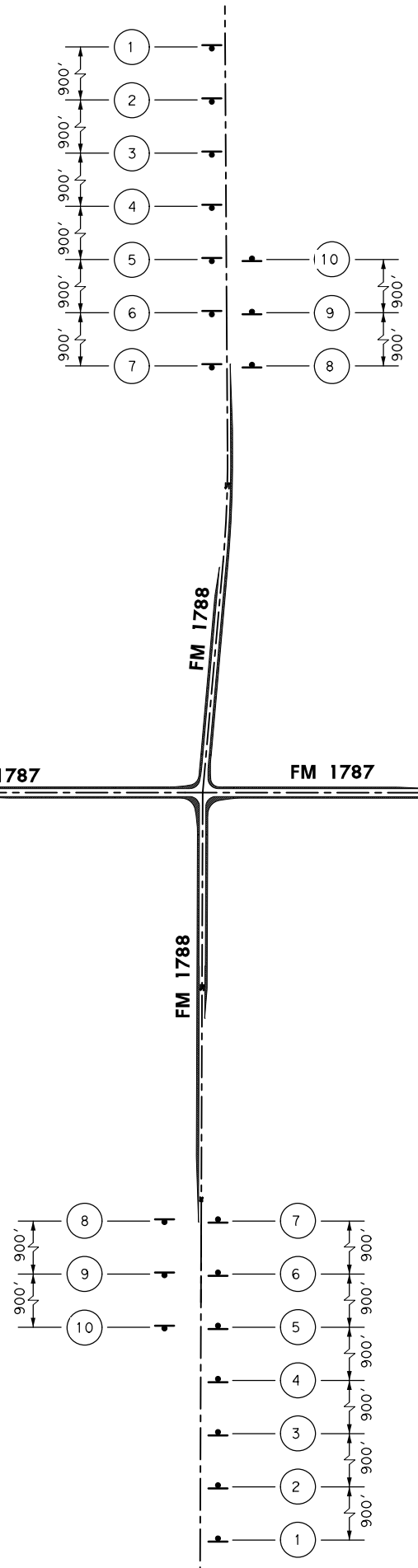
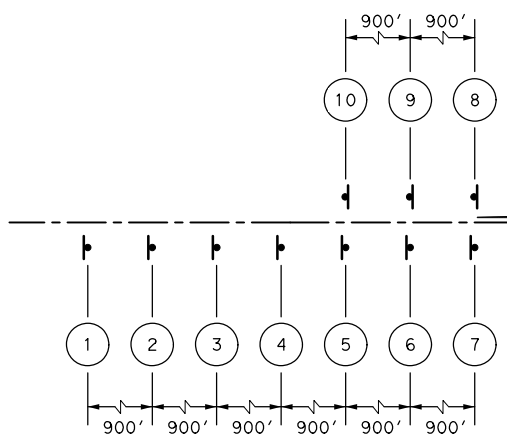
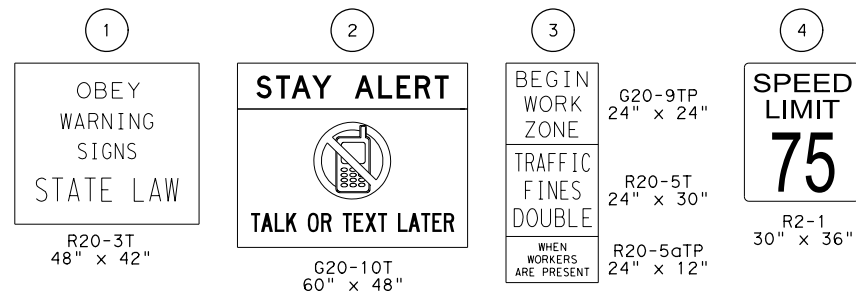
PHASE 1 STEP 3

AT FM 307

SHEET 5 OF 5

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
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CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			67

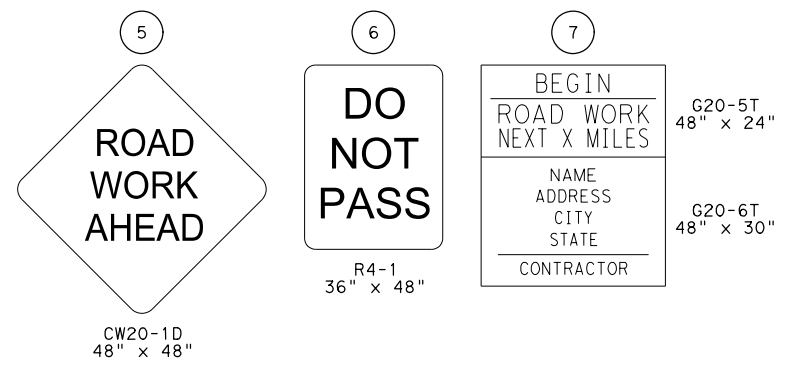
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LEGEND
 CONSTRUCTION
 TRAFFIC DIRECTION
 TRAFFIC SIGN

NOTES:
 1. REFER TO STANDARDS BC (1) THRU (12) AND TCP STANDARDS FOR LENGTHS, SIGN SPACING AND MORE INFORMATION.

STATE OF TEXAS
 MOHAMMED S. ULA
 131559
 LICENSED PROFESSIONAL ENGINEER
 Mohammed S. Ula
 08/20/2020



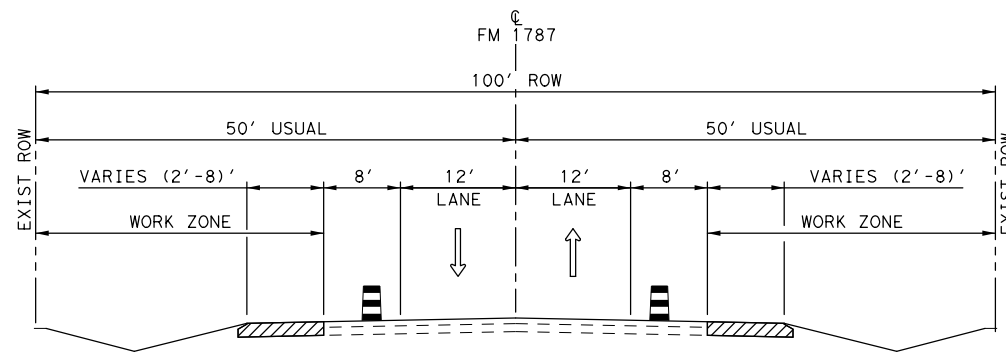
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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 ADVANCED WARNING SIGNS
 AT FM 1788**

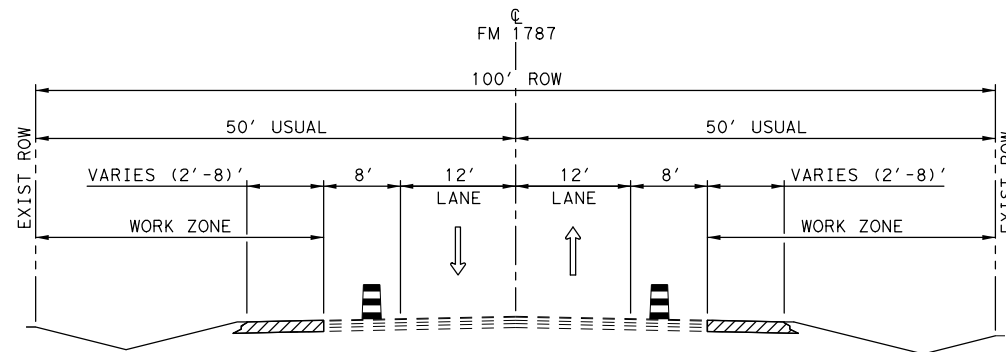
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GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			SHEET NO. 68

DATE: 8/20/2020 FILENAME: pw: \\jmt-pw-bentley.com: jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design



TRAFFIC CONTROL TYPICAL SECTION-FM 1787

LT: STA 717+79 TO STA 739+45
RT: STA 728+09 TO STA 739+45



TRAFFIC CONTROL TYPICAL SECTION-FM 1787

LT: STA 739+45 TO STA 750+81
RT: STA 739+45 TO STA 761+11

LEGEND

- ← EXISTING DIRECTION OF TRAFFIC
- PROPOSED DIRECTION OF TRAFFIC
- DRUM
- ▨ CONSTRUCT THIS PHASE/STEP
- ▩ CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- A WK ZN PAV MRK REMOV (W) 4" (BRK)
- B WK ZN PAV MRK REMOV (W) 4" (SLD)
- C WK ZN PAV MRK REMOV (Y) 4" (SLD)
- D WK ZN PAV MRK REMOV (W) 8" (SLD)
- CC WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)



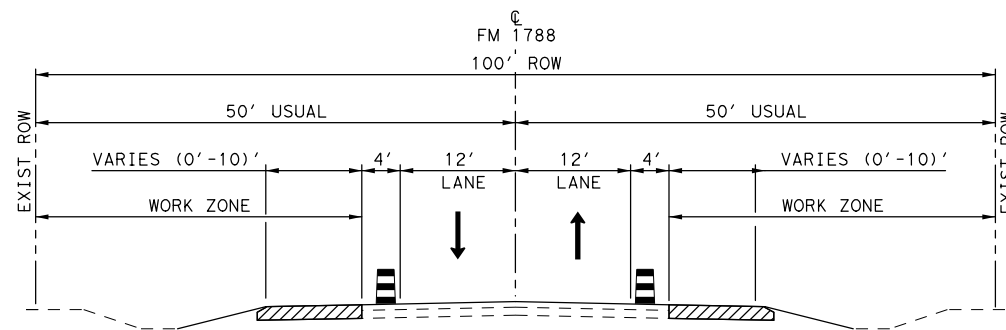
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
TCP TYPICAL SECTIONS
AT FM 1788**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

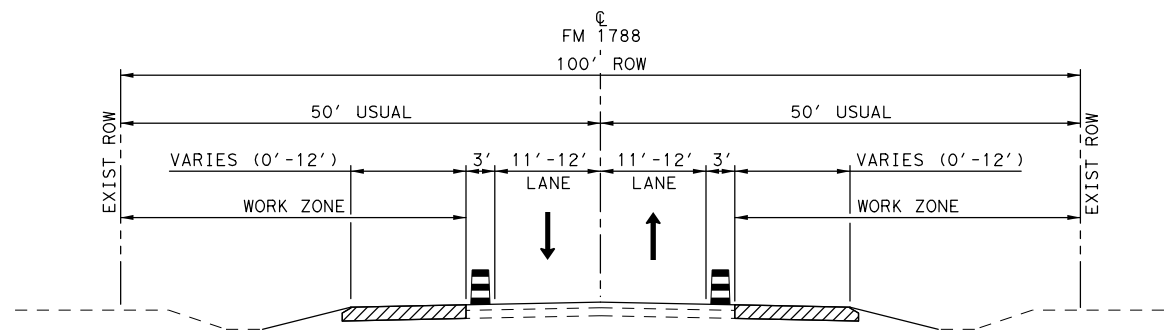
SHEET 1 OF 2
69

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TRAFFIC CONTROL TYPICAL SECTION-FM 1788

LT: STA 879+21 TO STA 900+93
RT: STA 889+51 TO STA 900+93

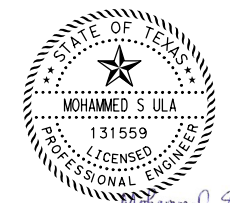


TRAFFIC CONTROL TYPICAL SECTION-FM 1788

LT: STA 7+87 TO STA 19+29
RT: STA 7+87 TO STA 29+59

LEGEND

- ← EXISTING DIRECTION OF TRAFFIC
- PROPOSED DIRECTION OF TRAFFIC
- DRUM
- ▨ CONSTRUCT THIS PHASE/STEP
- ▩ CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- [A] WK ZN PAV MRK REMOV (W) 4" (BRK)
- [B] WK ZN PAV MRK REMOV (W) 4" (SLD)
- [C] WK ZN PAV MRK REMOV (Y) 4" (SLD)
- [D] WK ZN PAV MRK REMOV (W) 8" (SLD)
- [CC] WK ZN PAV MRK REMOV DBL (Y) 4" (SLD)



Mohammed S. Ula
08/20/2020



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 1788

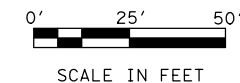
TCP TYPICAL SECTIONS

AT FM 1787

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.
			70

SHEET 2 OF 2

DATE: 8/20/2020 FILENAME: pw:\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

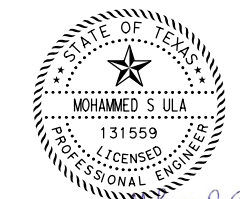


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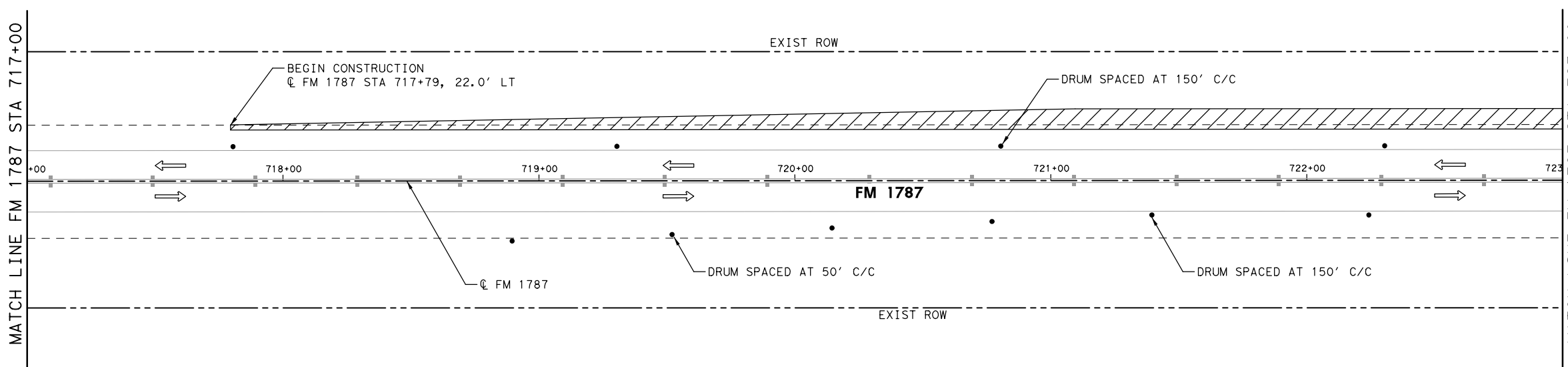
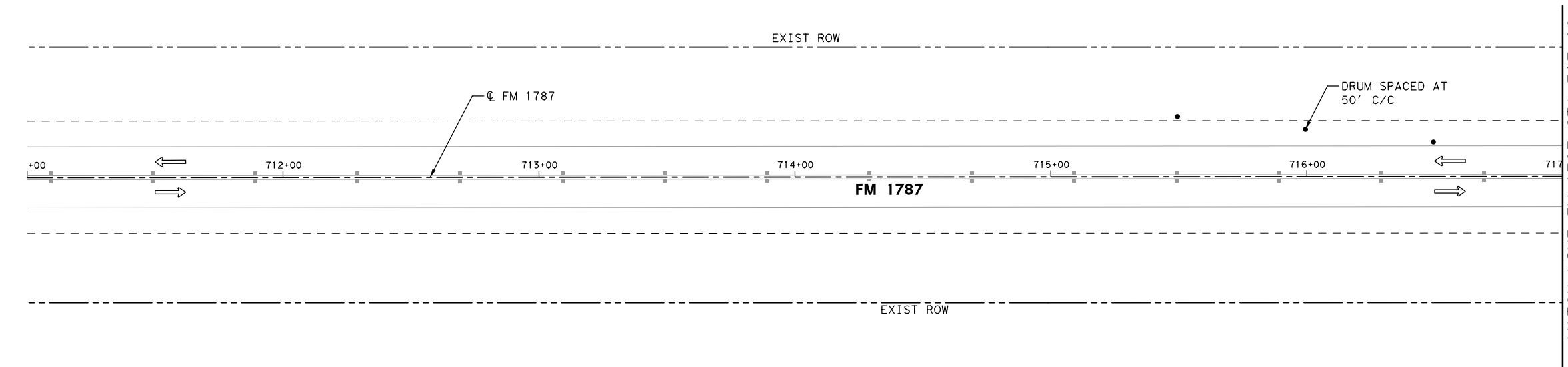
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

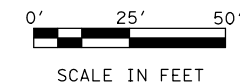
FM 1787

TRAFFIC CONTROL PLAN

AT FM 1788

SHEET 1 OF 9			
DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			71

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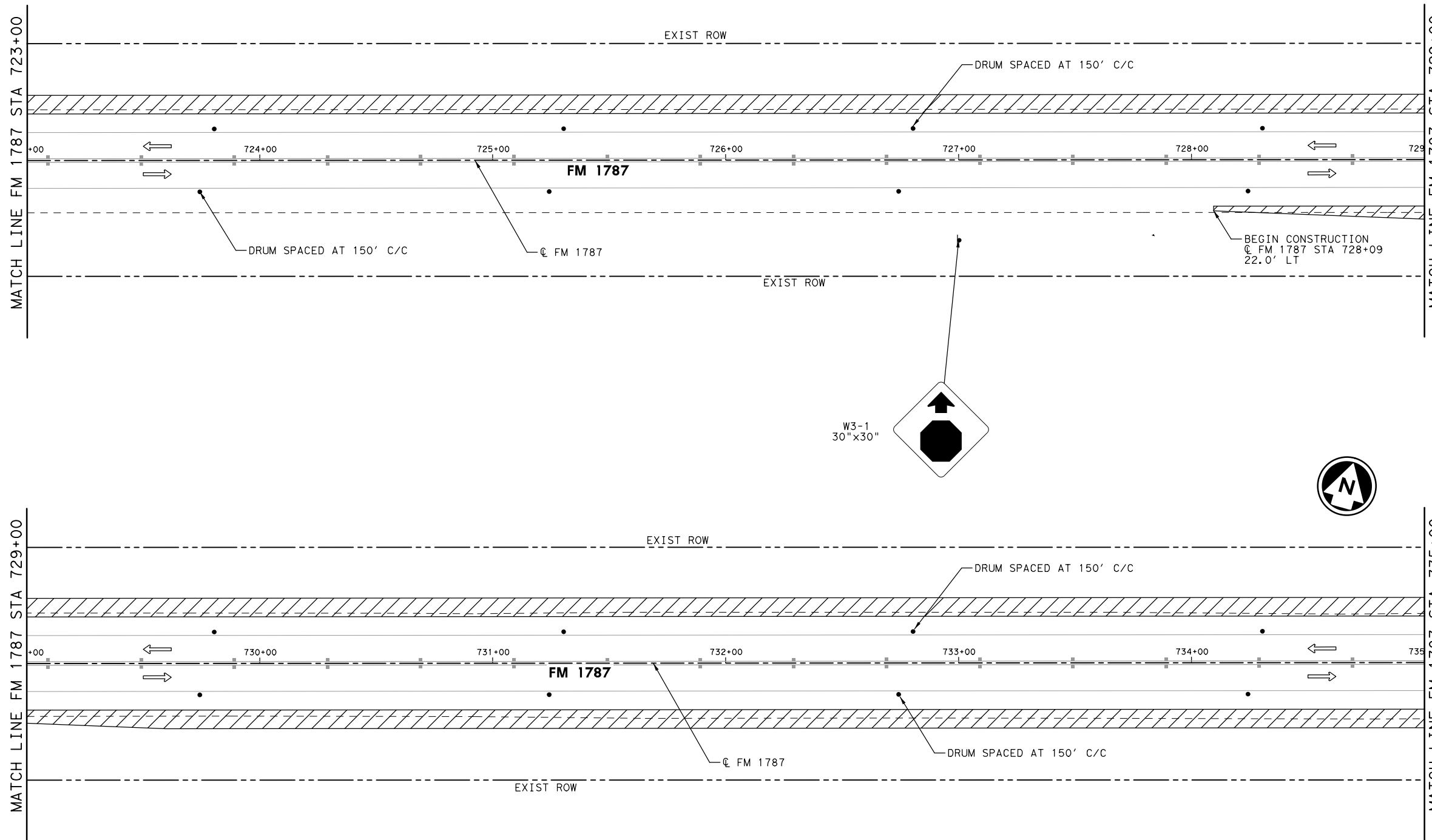
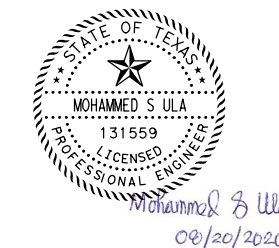


LEGEND

- CONSTRUCT THIS PHASE/STEP
- CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
- EXIST TRAFFIC DIRECTION
- PROP TRAFFIC DIRECTION
- DRUM
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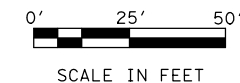
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
TRAFFIC CONTROL PLAN
AT FM 1788**

SHEET 2 OF 9			
DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
CHECK IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
			72

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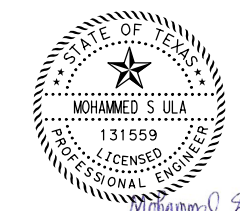


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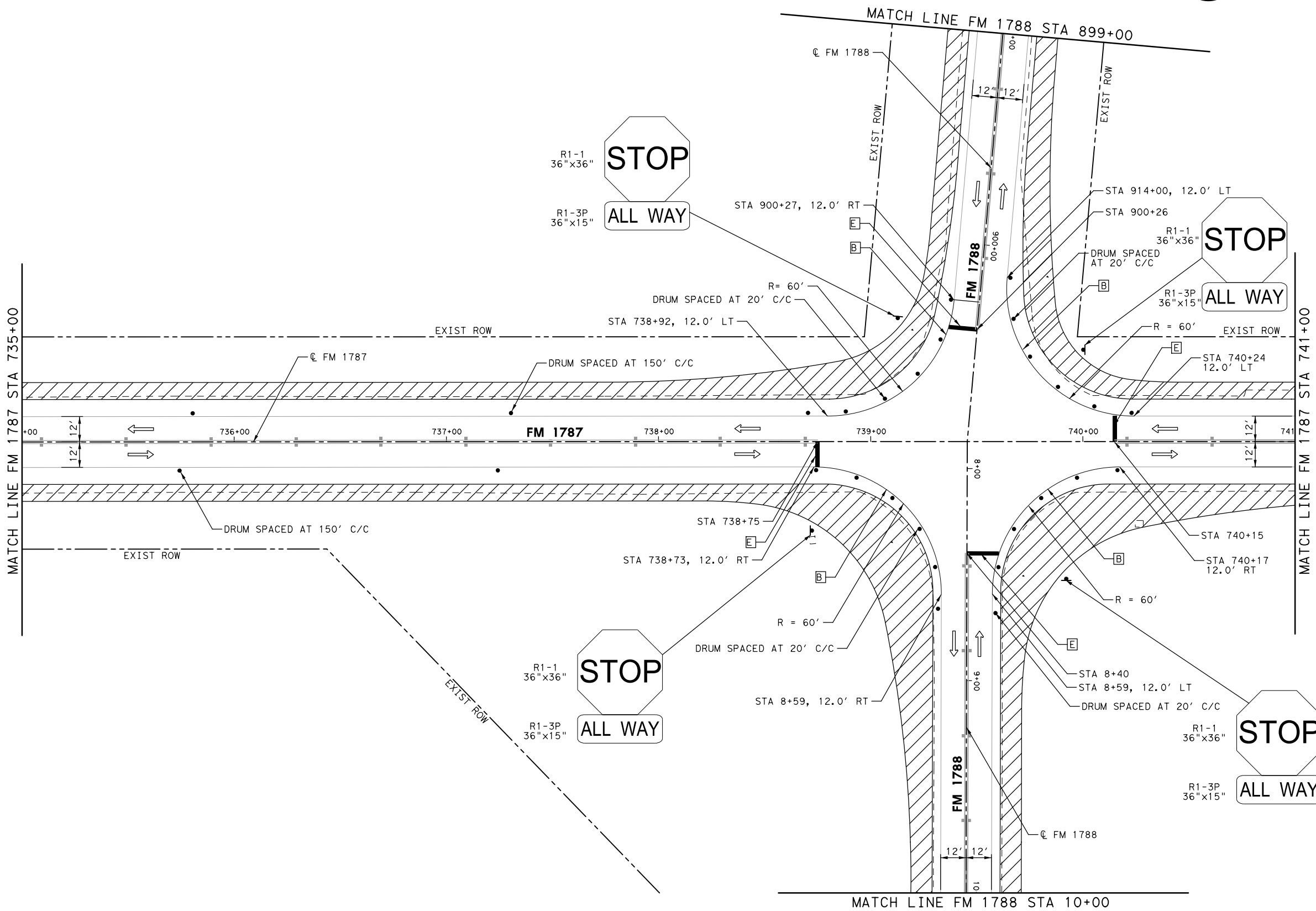
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08/20/2020



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TBP REGISTRATION NO. F-18368

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

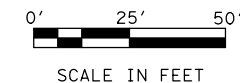
**FM 1787
TRAFFIC CONTROL PLAN
AT FM 1788**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

SHEET 3 OF 9

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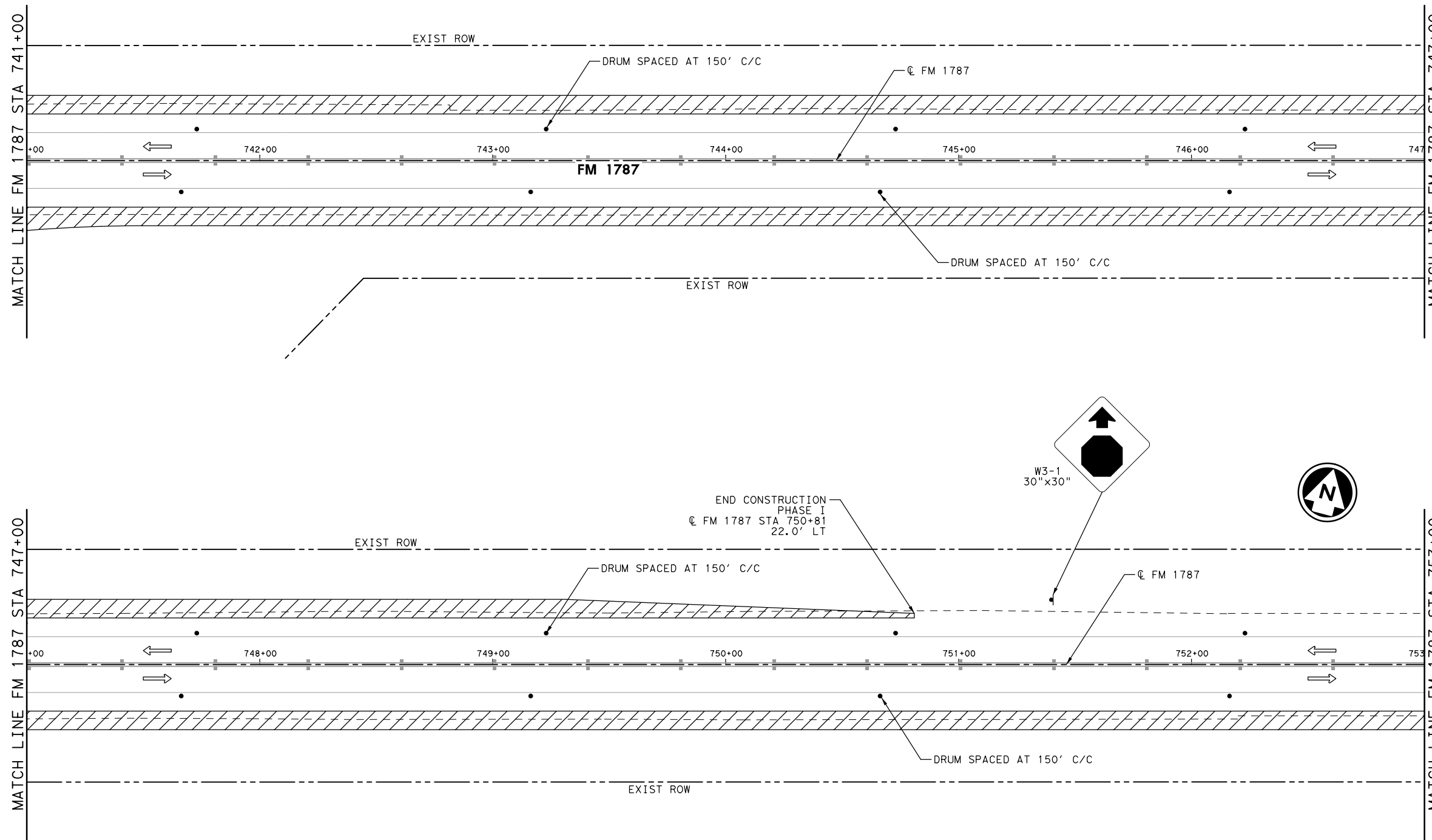
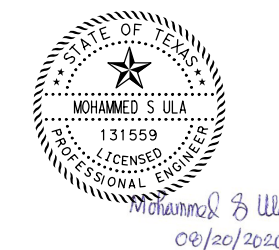


LEGEND

- CONSTRUCT THIS PHASE/STEP
- CONSTRUCTED PREVIOUS PHASE(S)/STEP(S)
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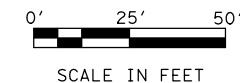
FM 1787
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IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

SHEET 4 OF 9

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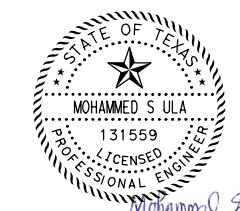


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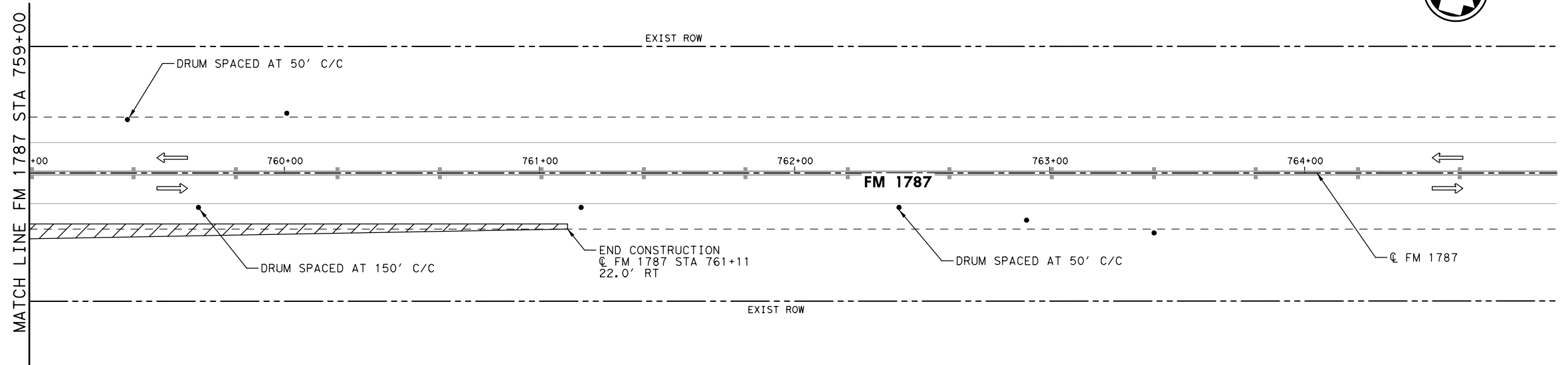
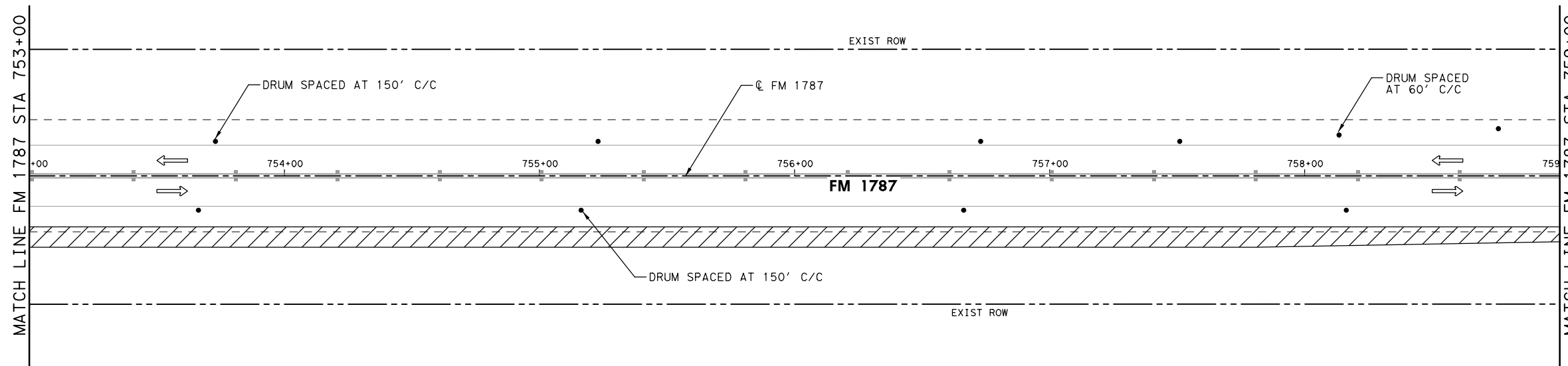
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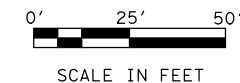


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
TRAFFIC CONTROL PLAN
AT FM 1788**

			SHEET 5 OF 9
DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			75

DATE: 8/20/2020 FILENAME: pw:\jmt-pw-bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

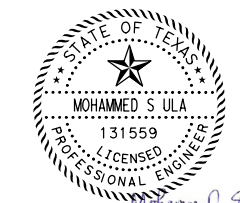


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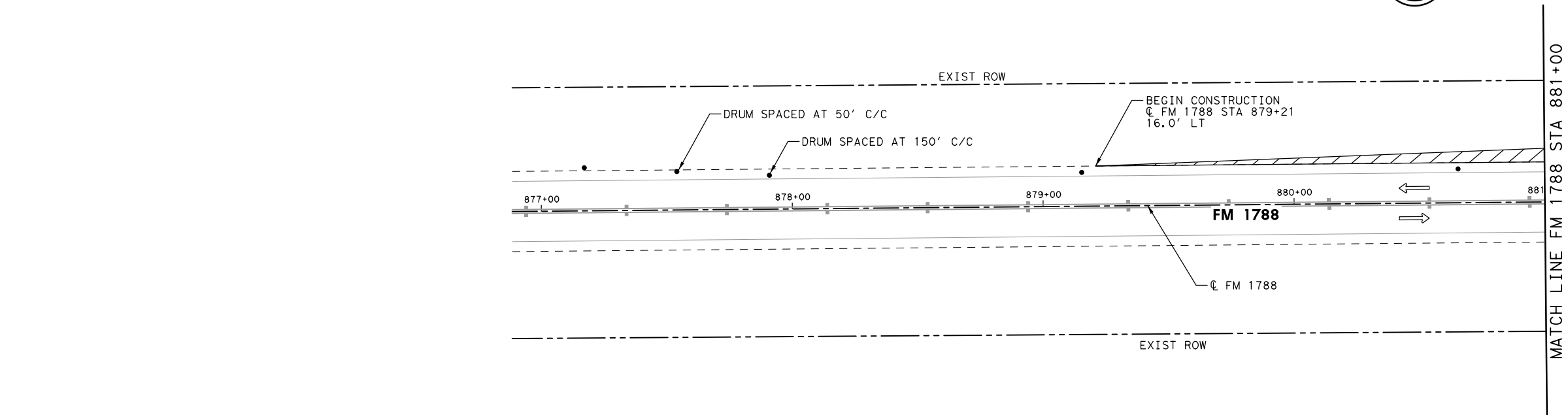
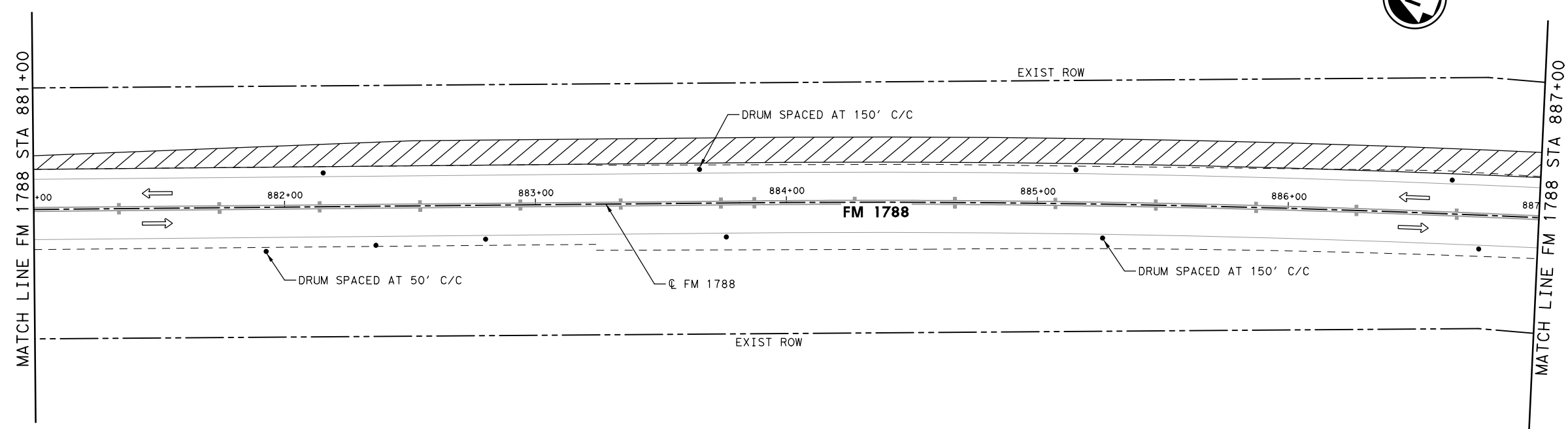
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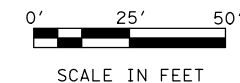
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 1788
TRAFFIC CONTROL PLAN
AT FM 1787

			SHEET 6 OF 9
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.
			76

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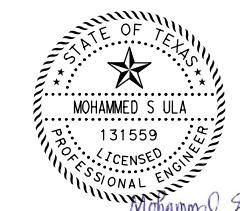


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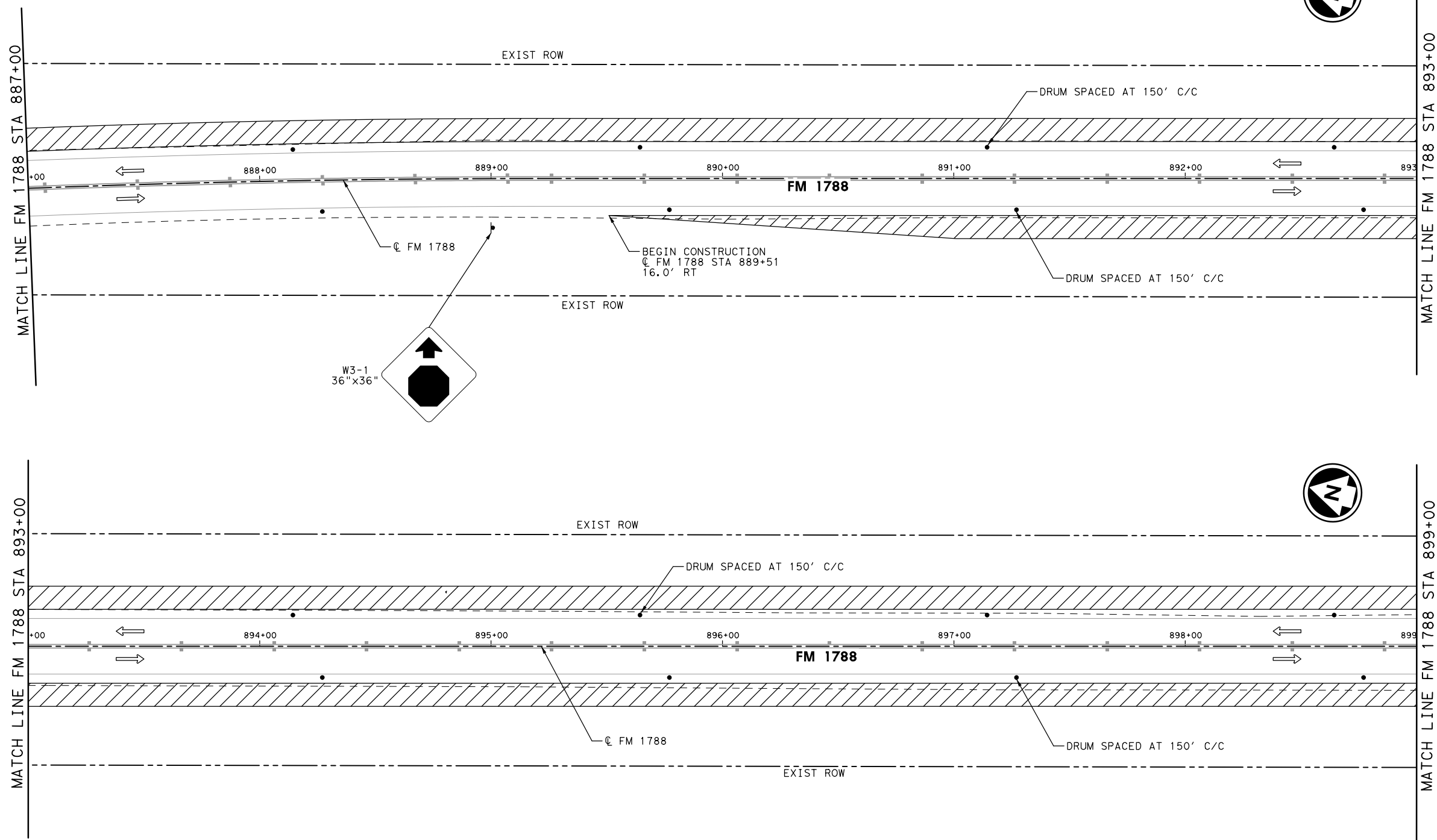
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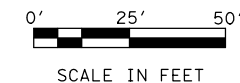
FM 1788
TRAFFIC CONTROL PLAN
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GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

SHEET 7 OF 9

77

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design



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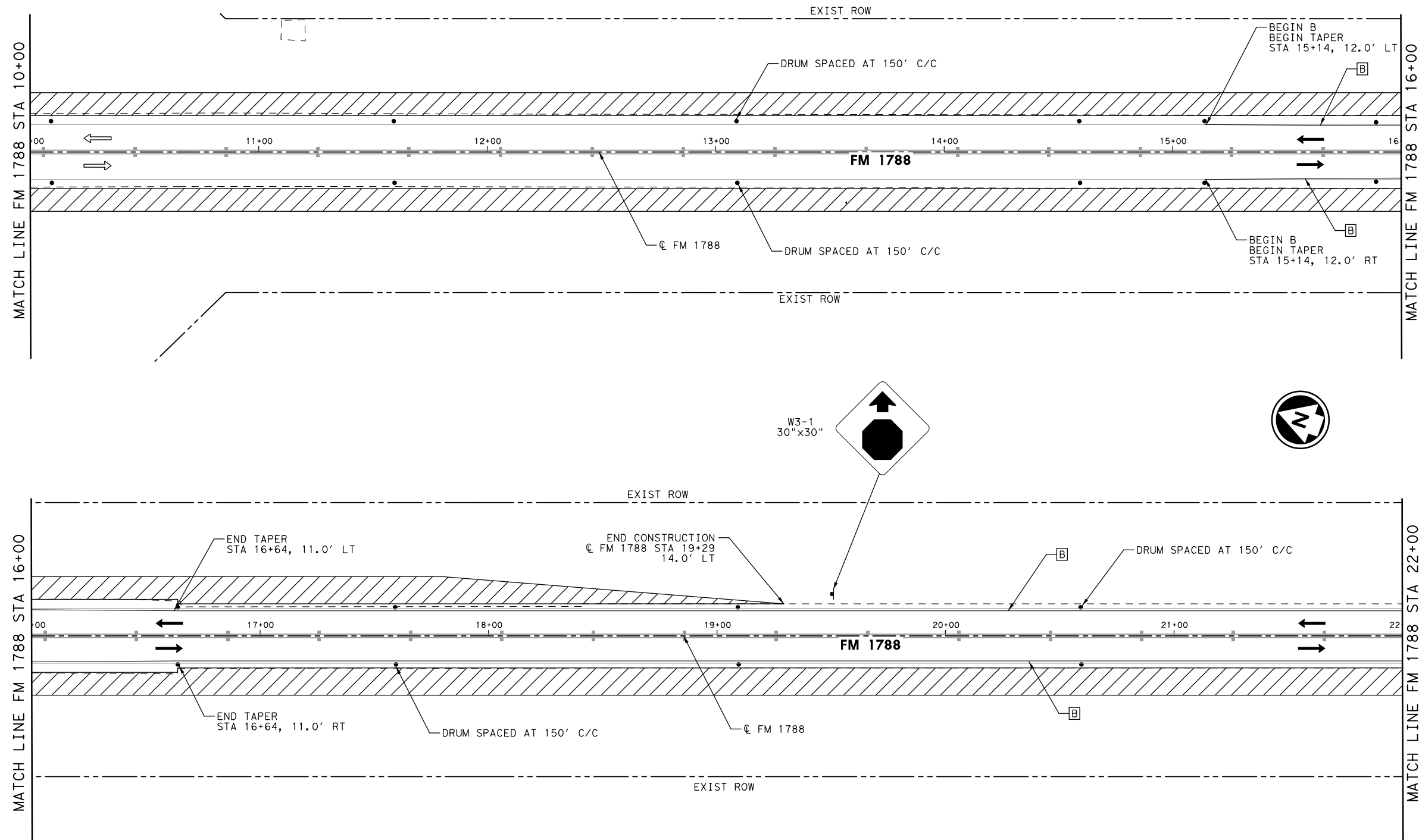
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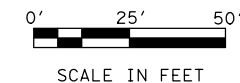
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 1788
TRAFFIC CONTROL PLAN
AT FM 1787

SHEET 8 OF 9			
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GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
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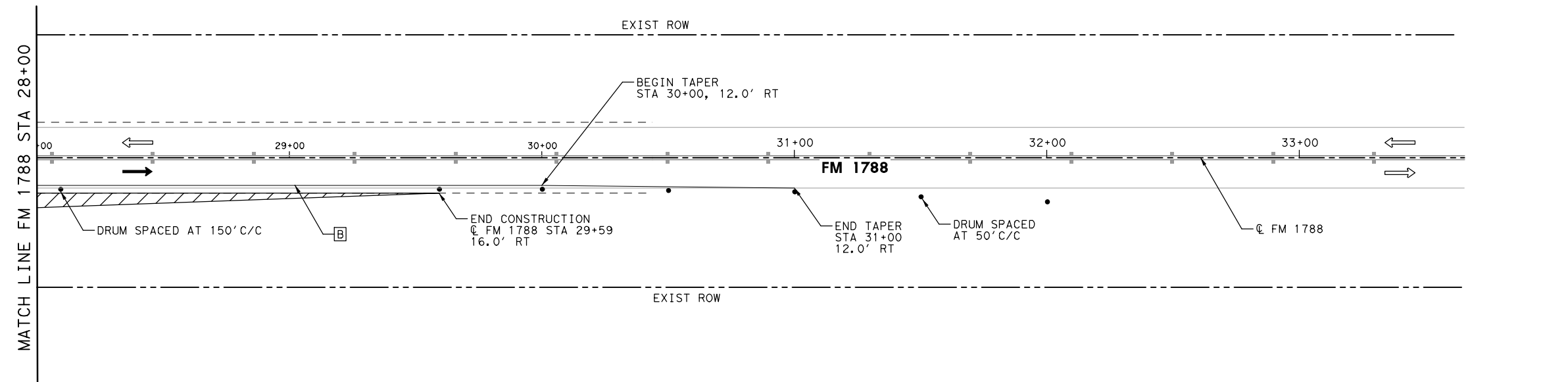
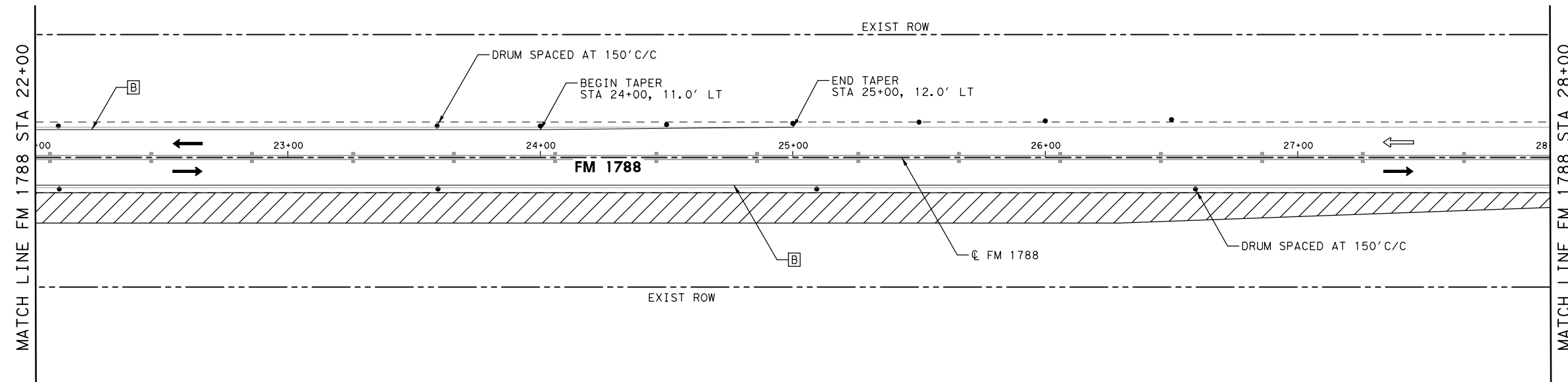


LEGEND

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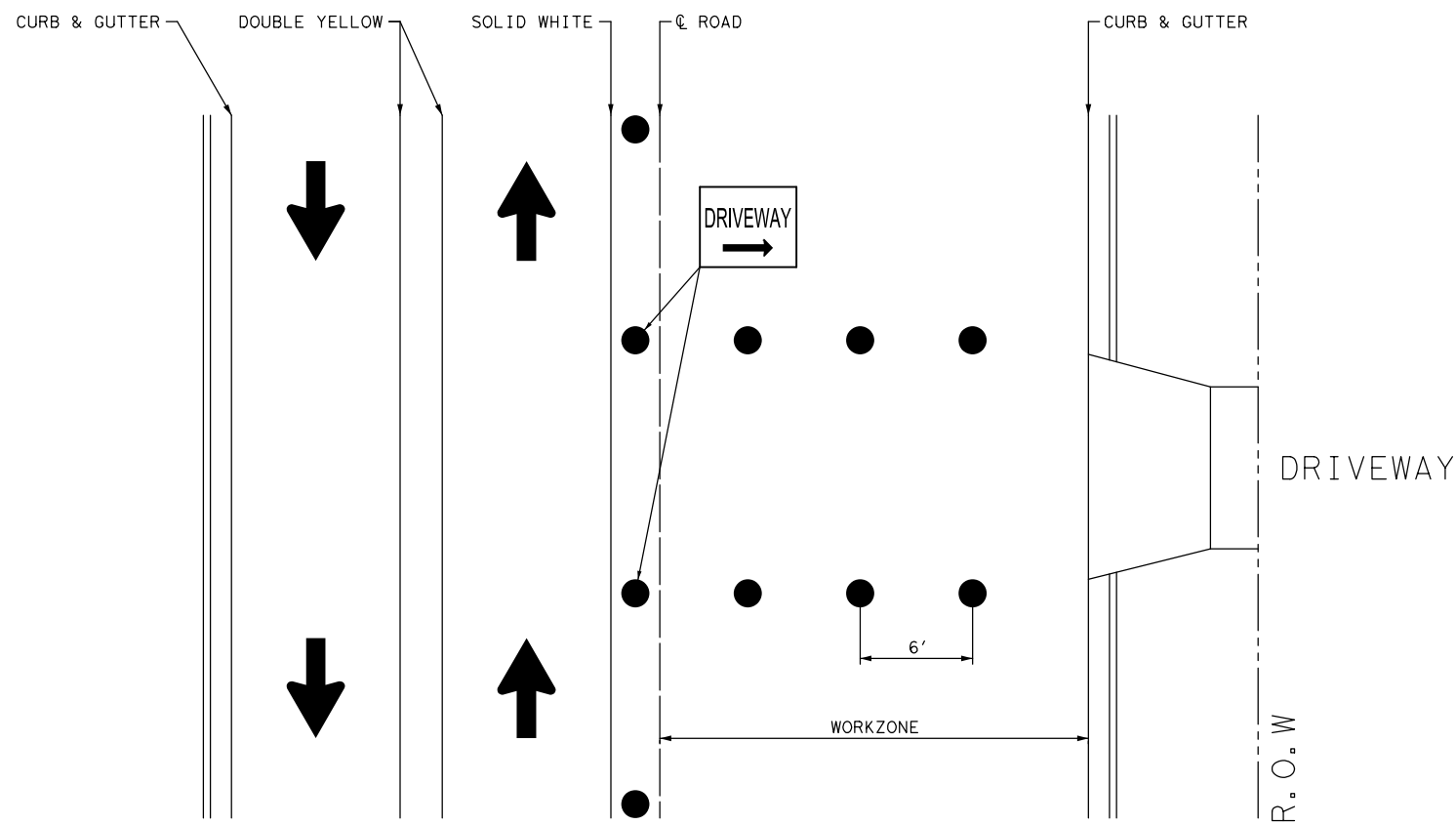
FM 1788
TRAFFIC CONTROL PLAN
AT FM 1787

SHEET 9 OF 9

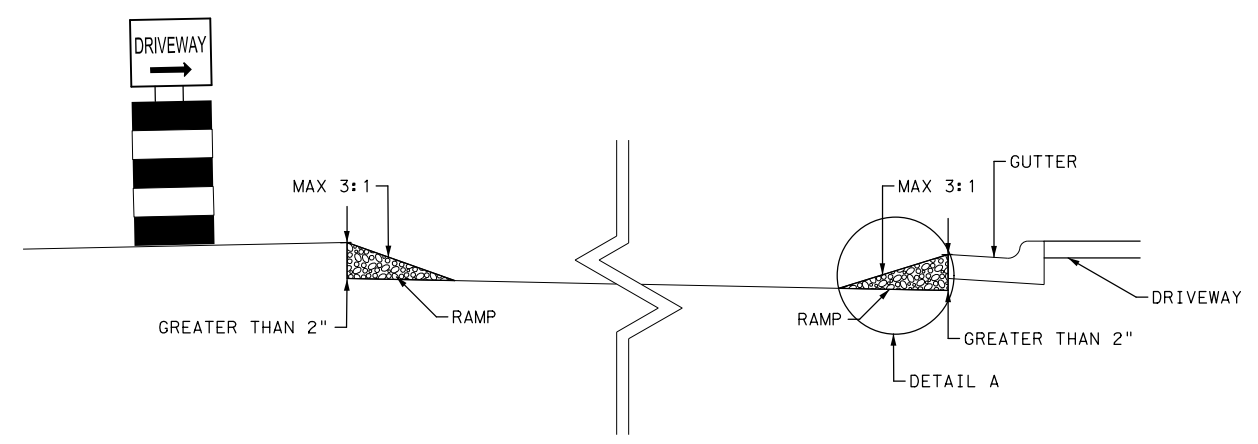
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GRAPHICS	STATE	DISTRICT	COUNTY
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CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

79

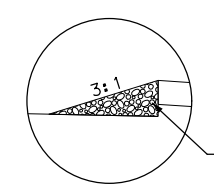
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 DATE: 8/20/2020



PLAN VIEW



CROSS-SECTION VIEW



DETAIL A

BACKFILL EDGE WITH RAP AFTER PLANING, REMOVE RAP PRIOR TO HOTMIX PLACEMENT. THIS WORK WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SUBSIDIARY TO ITEM 502-6001 "BARRICADES, SIGNS AND TRAFFIC HANDLING."

LEGEND

● PLASTIC DRUMS - SEE STANDARD BC (8) - 14



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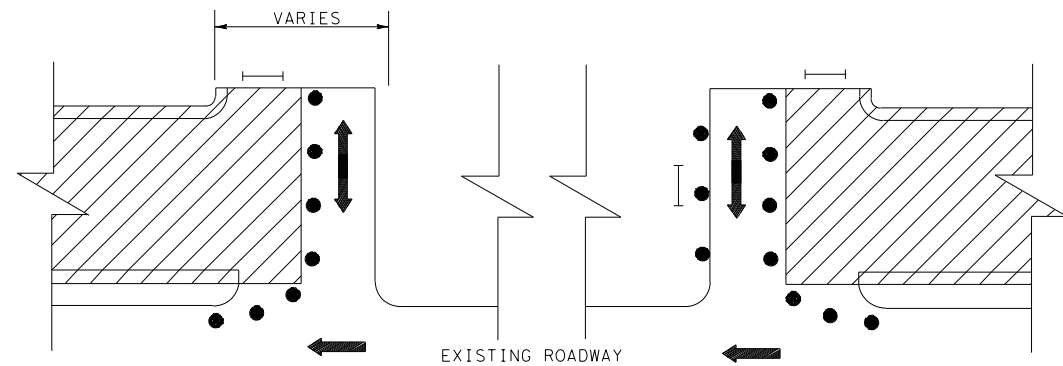
TRAFFIC CONTROL PLAN
DRIVEWAY CONSTRUCTION DETAIL

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IEI	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
IEI	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
IEI	0887	01	039, ETC.

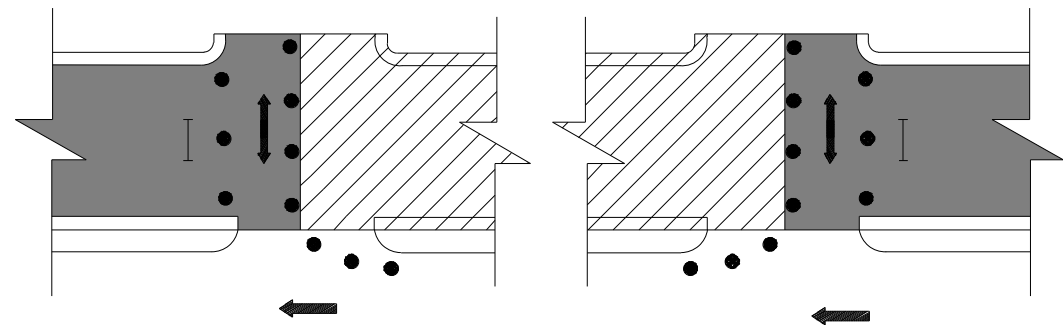
SHEET 1 OF 3

80

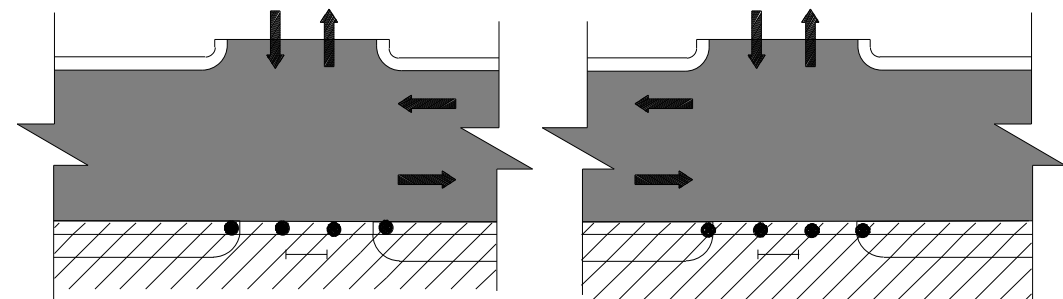
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1. WITH TRAFFIC ON EXISTING
BUILD ONE-HALF OF DRIVEWAY.



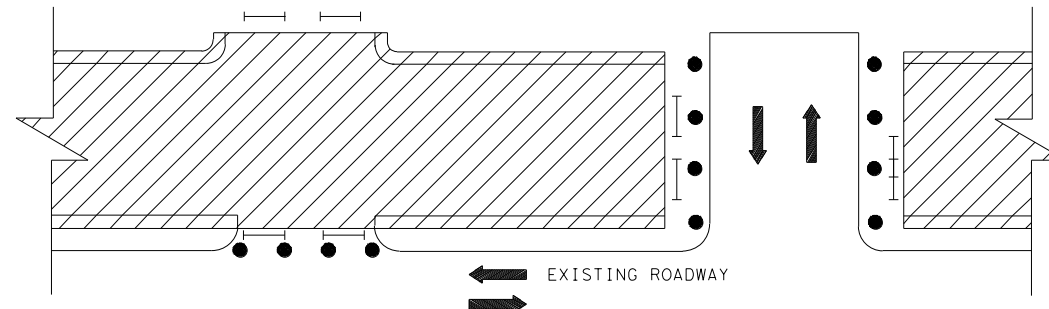
2. BUILD OTHER HALF OF DRIVEWAY.



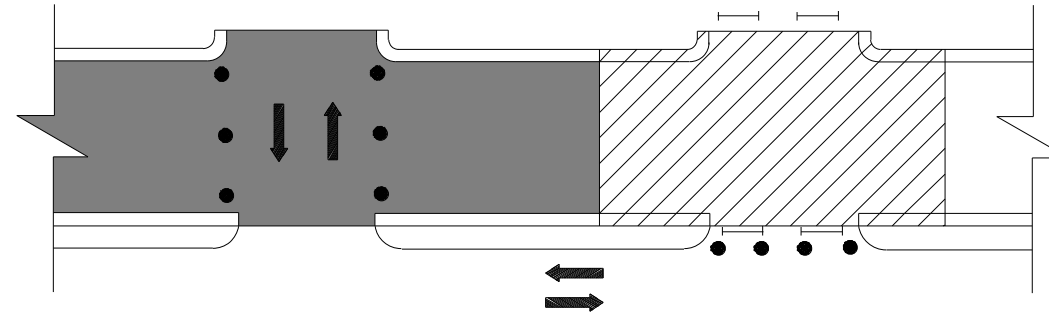
3. OPEN DRIVEWAY.

4. AFTER TRAFFIC MOVES TO NEW ROADWAY,
BUILD REMAINING CURB.

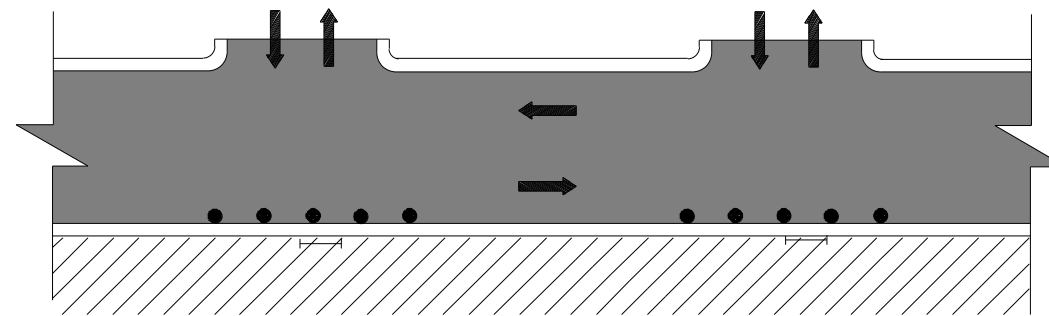
SINGLE ACCESS DRIVEWAY



1. WITH TRAFFIC ON EXISTING, BUILD ONE DRIVE.



2. OPEN COMPLETED DRIVEWAY AND BUILD NEXT DRIVEWAY.








3. AFTER TRAFFIC MOVES TO NEW ROADWAY
BUILD REMAINING CURBS.

MULTIPLE ACCESS DRIVES

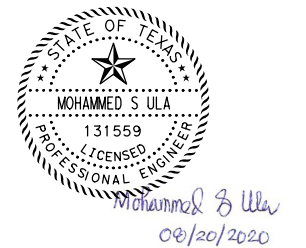
CONSTRUCTION SEQUENCE OF
MISCELLANEOUS DRIVEWAYS

LEGEND

-  CONSTRUCTION PHASE
-  COMPLETED PHASE
-  DIRECTION OF TRAFFIC
-  CHANNELIZING DEVICE
-  TYPE III BARRICADE

NOTES

1. CONTRACTOR TO MAINTAIN ACCESS TO RESIDENTS AND BUSINESSES AT ALL TIMES. CONSTRUCT PAVEMENT ALONG DRIVEWAYS IN CONJUNCTION WITH WORK PROGRESS.

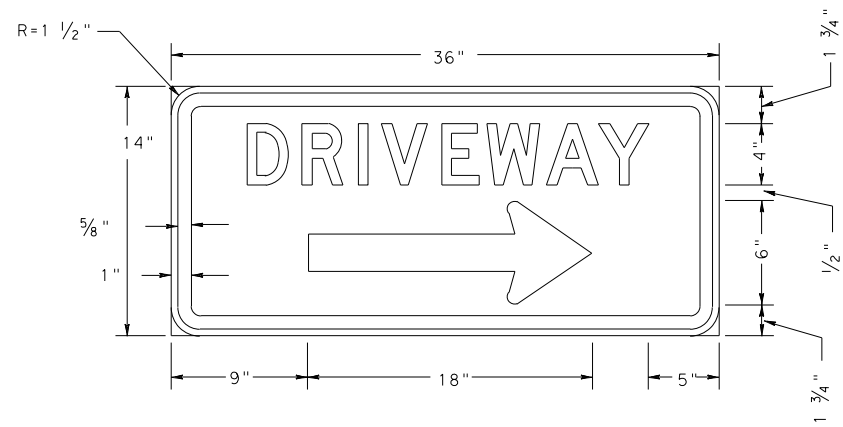


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

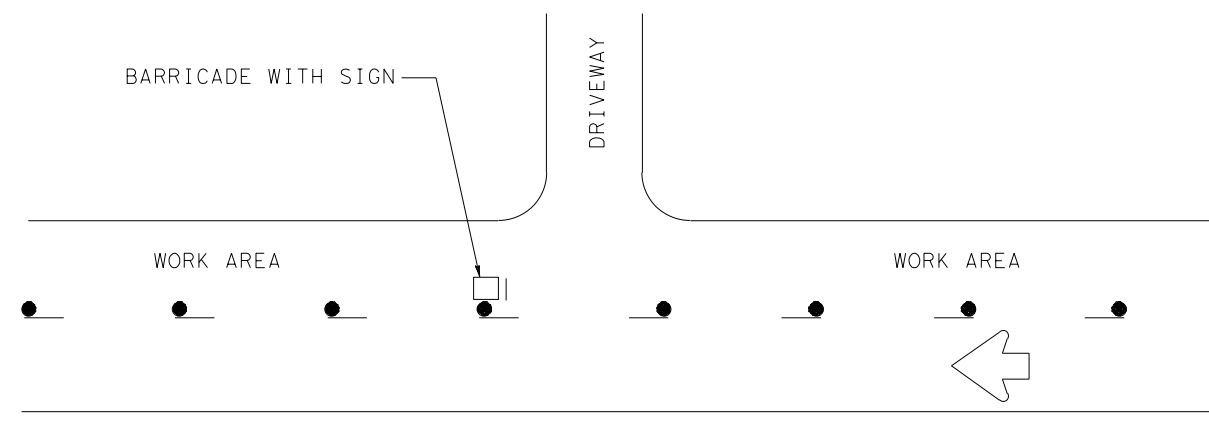
**TRAFFIC CONTROL PLAN
DRIVEWAYS CONSTRUCTION SEQUENCE**

				SHEET 2 OF 3
DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS	
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.	SHEET NO. 81
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.	

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LETTERS: WHITE
 BORDER: WHITE
 BACKGROUND: BLUE



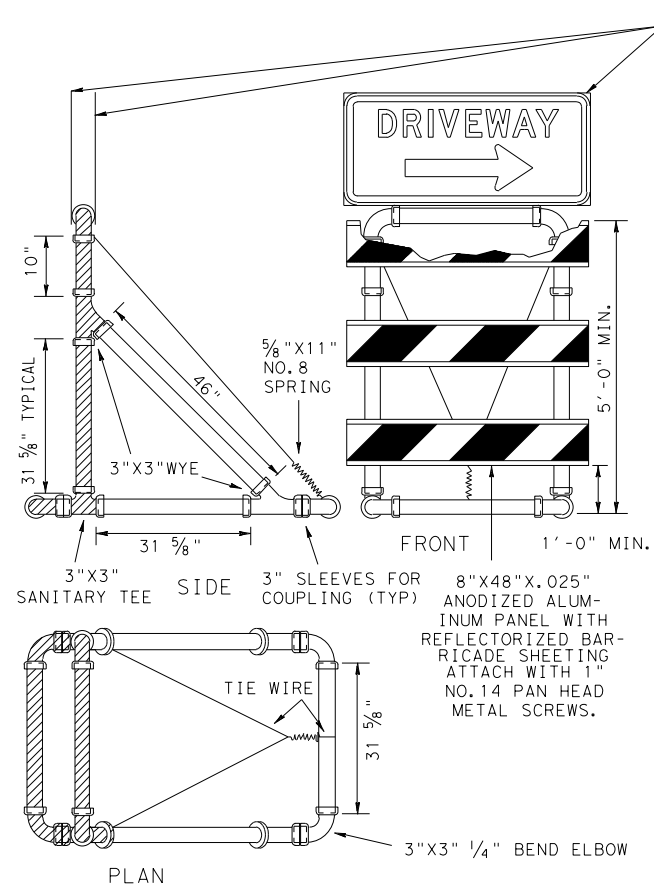
TYPICAL LOCATION OF DRIVEWAY SIGN

**TYPE III PVC BARRICADES
 TYPICAL DESIGN DETAILS**

MAY BE USED AT THE OPTION OF THE CONTRACTOR.

NOTES:

1. ALL PIPE SHALL BE POLYVINYL CHLORIDE (PVC) PRESSURE RATED PIPE SDR 21 OR SDR 26 ASTM D2241.
2. JOINT FITTINGS MAY BE PVC-ASTM D2665 OR ACRYLONITRILE BUTADLENE STYRENE (ABS) ASTM D2661 (DRAINAGE WASTE AND VENT).
3. ALL PIPE AND FITTINGS SHALL BE WHITE.
4. ALL JOINTS SHALL BE FREE TO SEPARATE UPON VEHICLE IMPACT.
5. CROSS HATCHED CONDUIT TO BE TIED TOGETHER WITH ROPE THREADED INTO PIPE INTERIOR. USE 3/16" NO. 6 SOLID BRAIDED NYLON OR EQUIVALENT.
6. A FIXED FRANGIBLE PAVEMENT CONNECTION IS PREFERRED. SAND BAGS MAY BE SUBSTITUTED.



NOTE: ON 2-WAY ROADWAYS, TWO SIGNS MAY BE MOUNTED BACK TO BACK.

CONSTRUCTION SIGN NOTES

MATERIALS

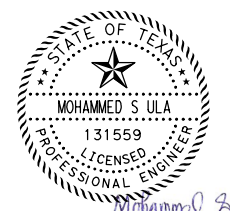
CONSTRUCTION SIGNS SHALL BE MADE FROM APPROVED FIBERGLASS OR HIGH IMPACT PLASTIC AS PRIMARY MATERIALS.
SIGN SHEETING

REFLECTORIZED SIGN SHALL BE CONSTRUCTED OF RETRO REFLECTIVE SHEETING MEETING THE COLOR AND REFLECTIVITY REQUIREMENTS OF MATERIAL SPECIFICATIONS, D-9-8300.

TYPE C SHEETING SHALL BE USED FOR THIS APPLICATION.

SIGN LETTERS

ALL SIGNS LETTERING SHALL BE CLEAR, OPEN ROUNDED TYPE CAPITAL LETTERS AS APPROVED BY AND AS PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION. SIGNS AND LETTERING SHALL BE OF FIRST CLASS WORKMANSHIP EQUIVALENT TO THAT OF THE DEPARTMENT'S STANDARD SIGNS.



Mohammed S. Ula
 08/20/2020

infraTECH
 Engineers & Innovators, LLC
 TBPE REGISTRATION NO. F-18368

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Texas Department of Transportation

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**TRAFFIC CONTROL PLAN
 DRIVEWAY SIGNING**

SHEET 3 OF 3

DESIGN IEI	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS IEI	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK IEI	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK IEI			82

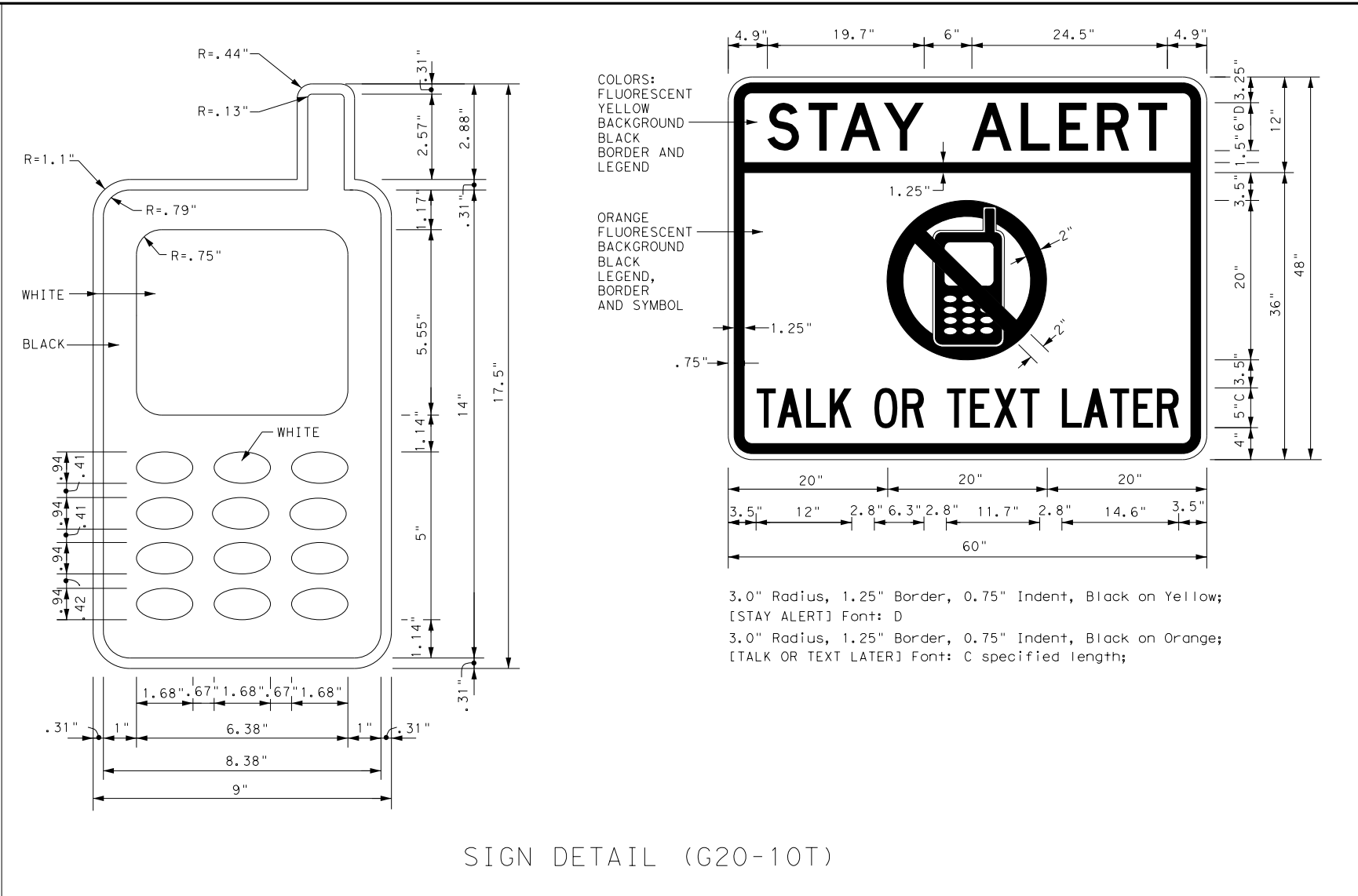
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 DATE: 8/20/2020
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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

- 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).
- The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER (see Sign Detail G20-10T) and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.
- Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.
- The Engineer has the final decision on the location of all traffic control devices.
- 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 APPAREL NOTES:

- 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.



Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found on-line at the web address given below or by contacting:

Texas Department of Transportation
 Traffic Operations Division - TE
 Phone (512) 416-3118

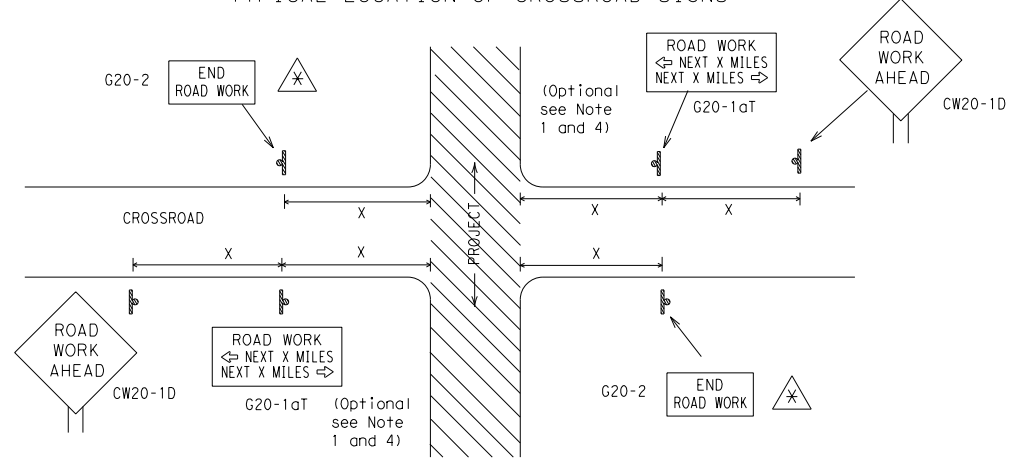
THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS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

SHEET 1 OF 12

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS			
BC (1) - 14			
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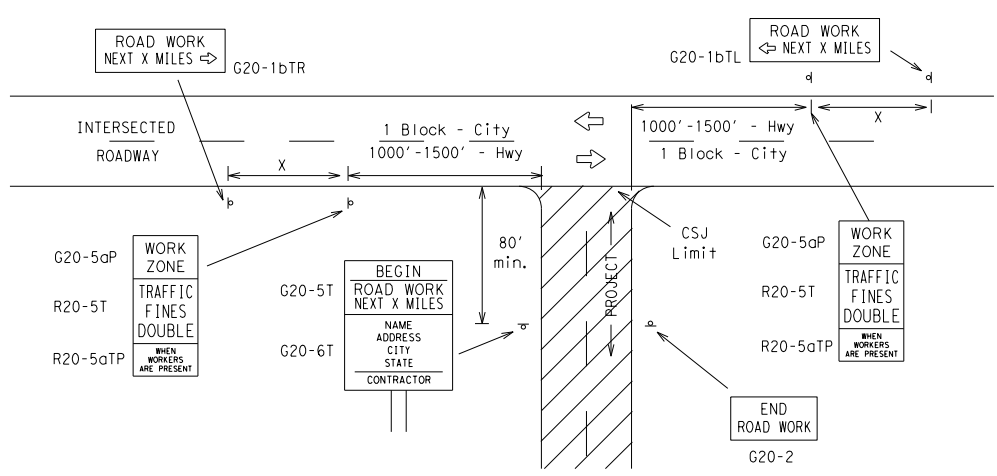
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TYPICAL LOCATION OF CROSSROAD SIGNS



- ⚠ May be mounted on back of "ROAD WORK AHEAD" (CW20-1D) sign with approval of Engineer. (See note 2 below)
- 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.
 - 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. This information shall be shown in the plans.
 - 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.
 - 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.
 - Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
 - 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

- 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.
- 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}

Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed MPH	Sign Spacing "X" Feet (Apprx.)
CW20 ⁴	48" x 48"	48" x 48"	30	120
CW21			35	160
CW22			40	240
CW23			45	320
CW25	36" x 36"	48" x 48"	50	400
CW1, CW2, CW7, CW8, CW9, CW11, CW14			55	500 ²
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12			60	600 ²
			65	700 ²
			70	800 ²
			75	900 ²
			80	1000 ²
			*	* ³

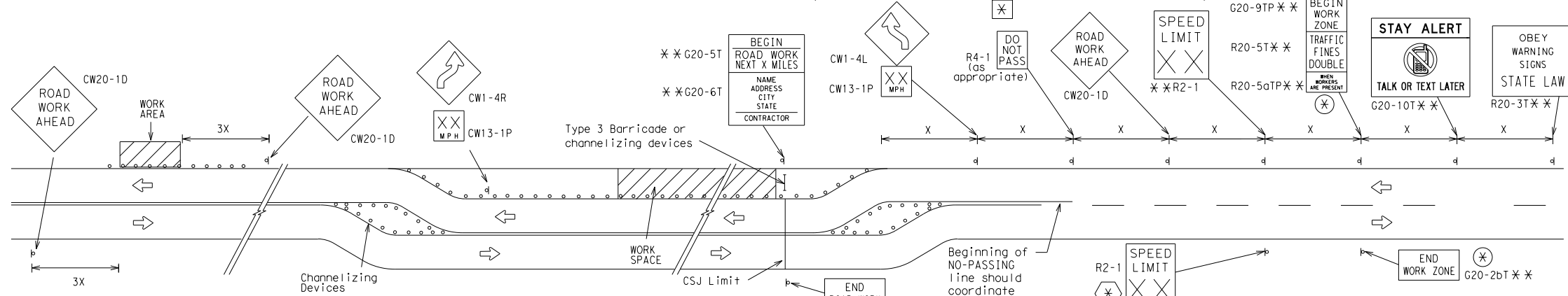
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

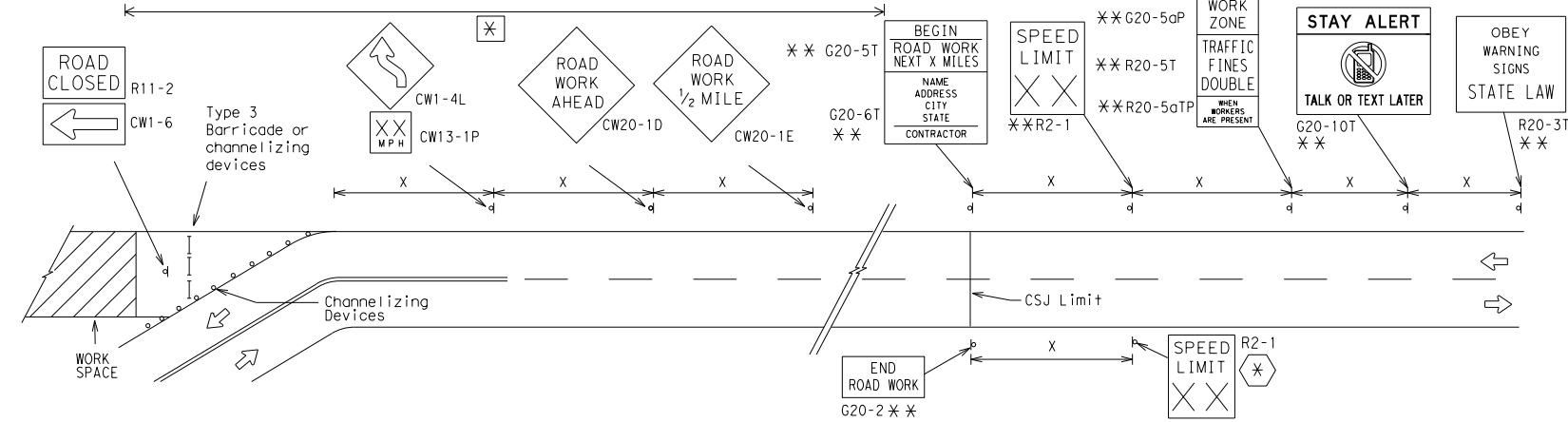
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be used on low volume crossroads at the discretion of the Engineer. See Note 2 under "Typical Location of Crossroad Signs".
- Only diamond shaped warning sign sizes are indicated.
- 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

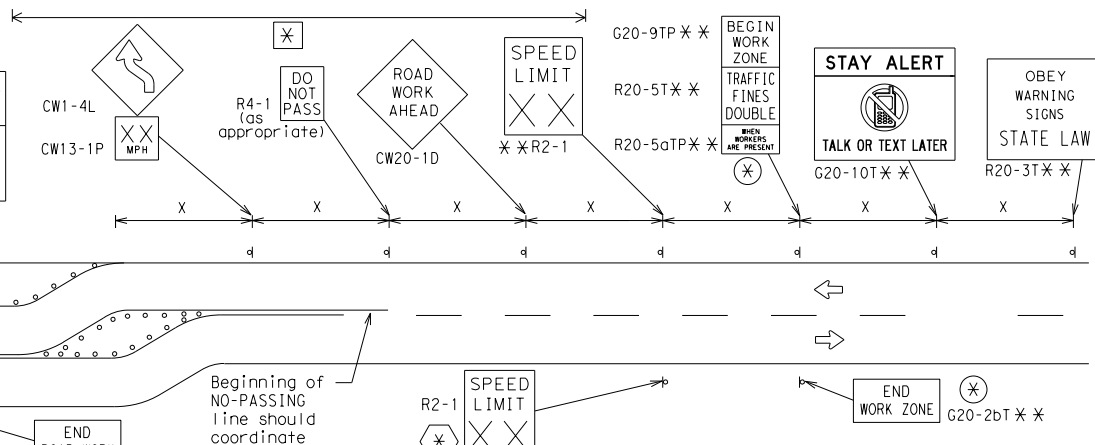


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

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



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT 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.
- ** Required CSJ Limit signing. See Note 10 on BC(1). TRAFFIC FINES DOUBLE signs will not be required on projects consisting solely of mobile operations work.
- ⊗ Area for placement of "ROAD WORK AHEAD" (CW20-1D) sign and other signs or devices as called for on the Traffic Control Plan.
- ⊗ Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

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

SHEET 2 OF 12



BARRICADE AND CONSTRUCTION PROJECT LIMIT

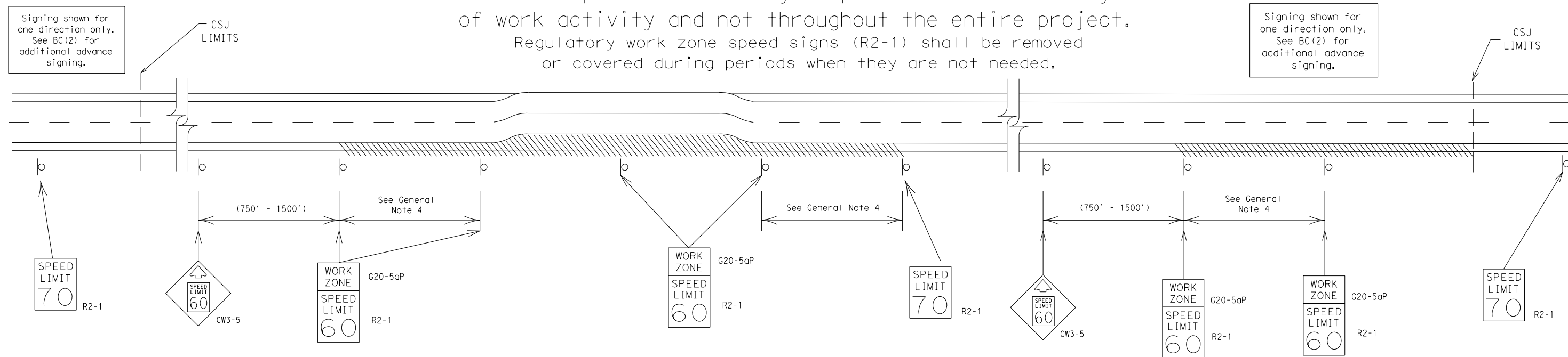
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9-07	8-14	DIST	COUNTY	SHEET NO.
7-13		ODA	ECTOR, ETC.	84

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:

- rough road or damaged pavement surface
- substantial alteration of roadway geometrics (diversions)
- construction detours
- grade
- width
- 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 travelled 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

- Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
- Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
- Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
- 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
- Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
- 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.
- Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
- Techniques that may help reduce traffic speeds include but are not limited to:
 - Law enforcement.
 - Flagger stationed next to sign.
 - Portable changeable message sign (PCMS).
 - Low-power (drone) radar transmitter.
 - Speed monitor trailers or signs.
- Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
- 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.

SHEET 3 OF 12



BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC (3) - 14

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9-07	8-14	DIST	COUNTY	SHEET NO.	
7-13		ODA	ECTOR, ETC.	85	

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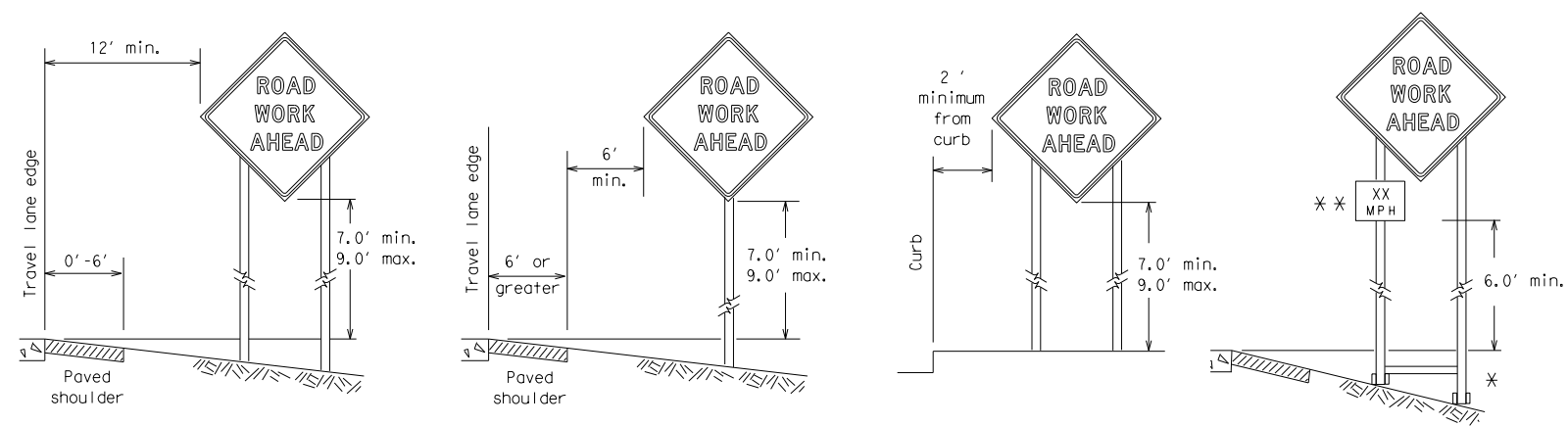
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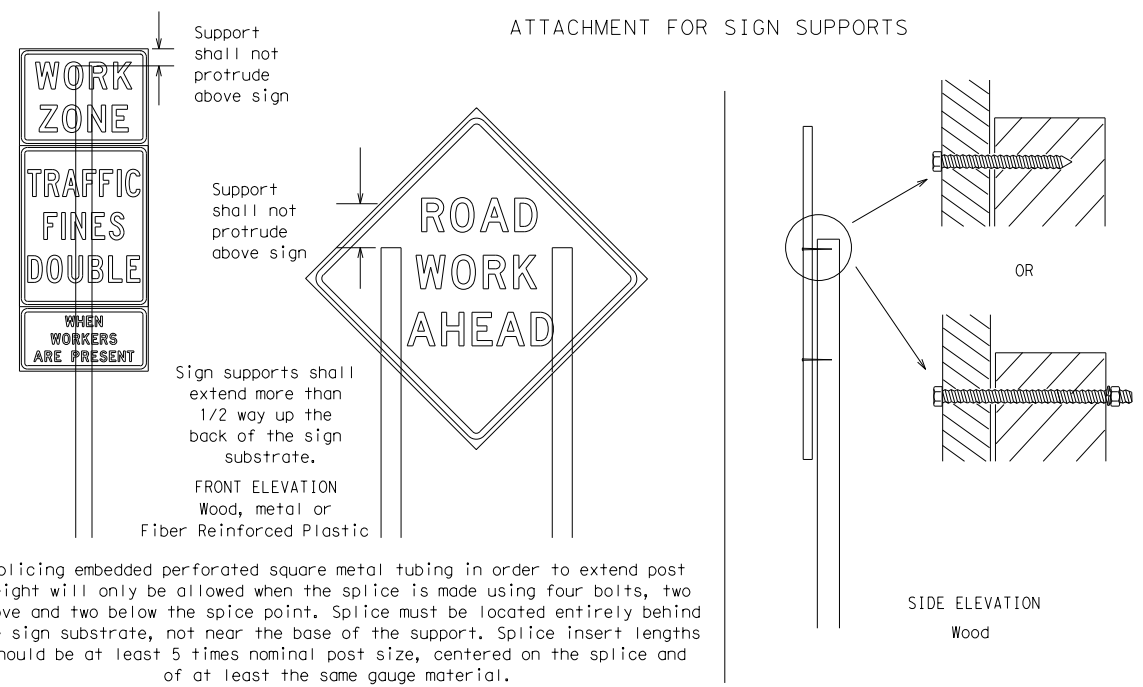
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



* 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



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 splice 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.

GENERAL NOTES FOR WORK ZONE SIGNS

- Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
 - Wooden sign posts shall be painted white.
 - Barricades shall NOT be used as sign supports.
 - 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.
 - 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.
 - The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD). 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.
 - 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.
 - 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.
 - 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)
- 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.
 - Long-term stationary - work that occupies a location more than 3 days.
 - 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.
 - Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
 - Short, duration - work that occupies a location up to 1 hour.
 - Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

- 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.
- 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.
- Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
- 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.
- 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

- 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

- 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.
- "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
- All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleats, 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

- 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).
- White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
- 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

- 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

- When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
- 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.
- 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.
- When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
- Burlap shall NOT be used to cover signs.
- Duct tape or other adhesive material shall NOT be affixed to a sign face.
- Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

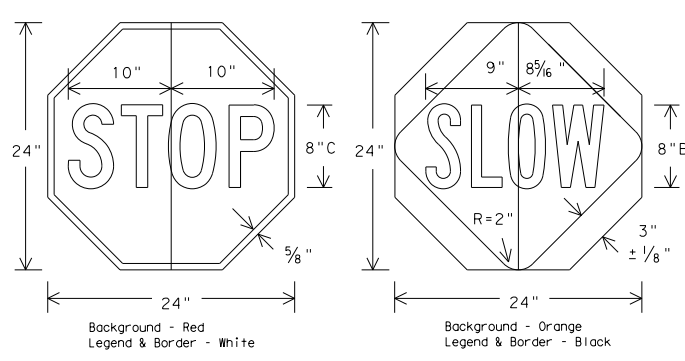
- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
- 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.
- 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.
- 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.
- Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

- 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.

STOP/SLOW PADDLES

- STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24" as detailed below.
- When used at night, the STOP/SLOW paddle shall be retroreflectORIZED.
- STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
- 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.



CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

- 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, 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.
- 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.
- When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
- 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.
- If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC sheets or the CWZTCD. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
- 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.



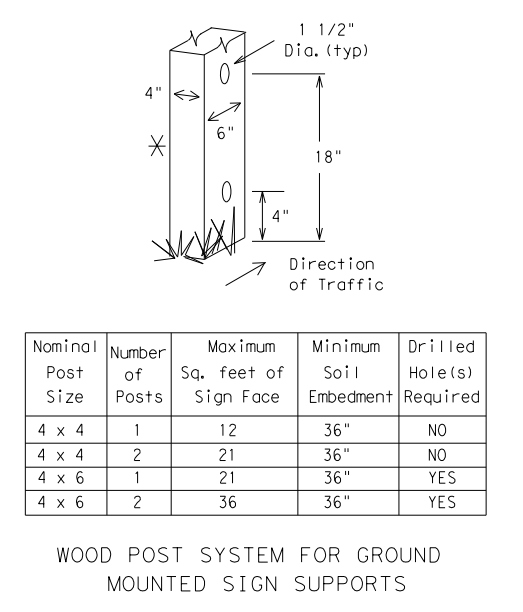
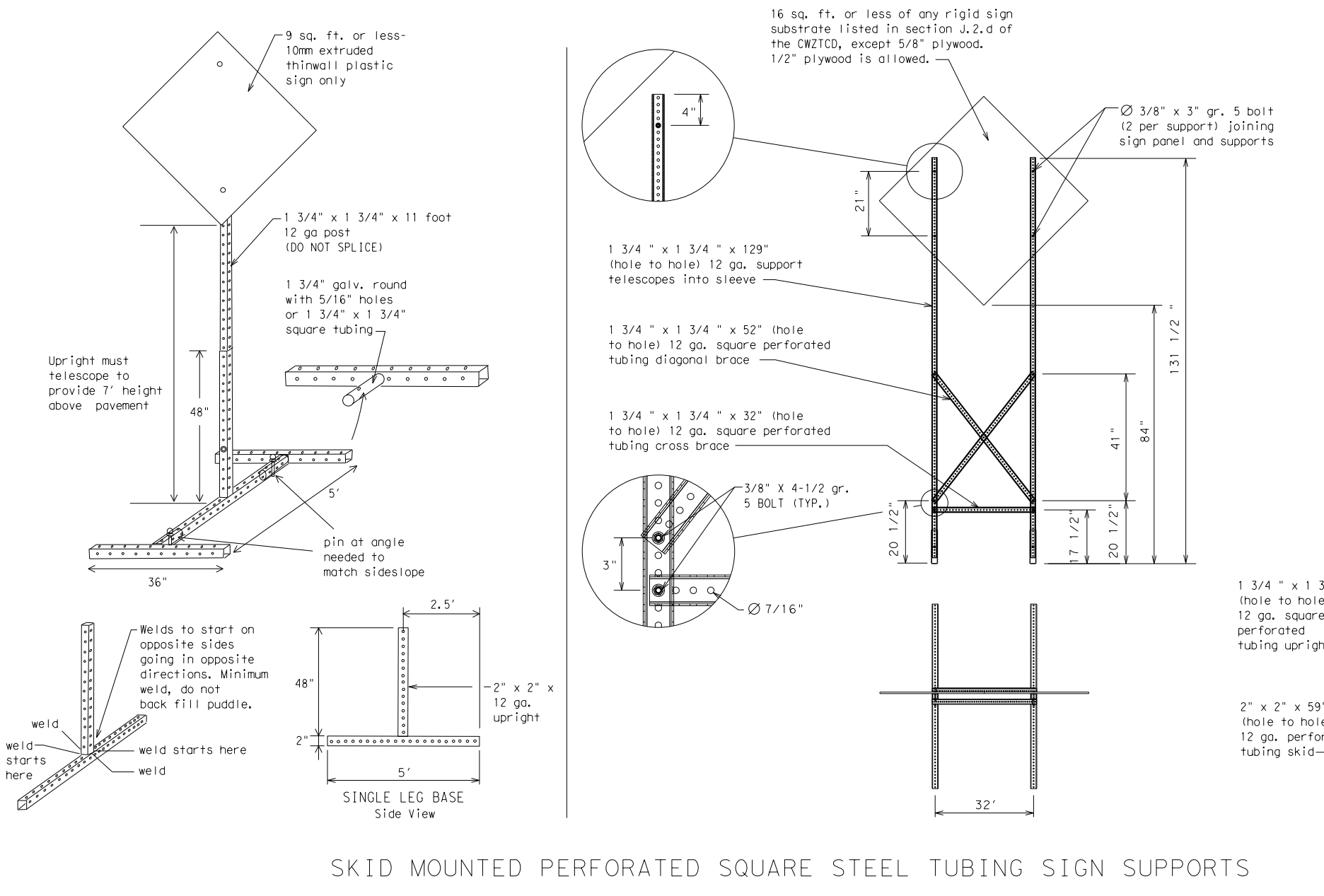
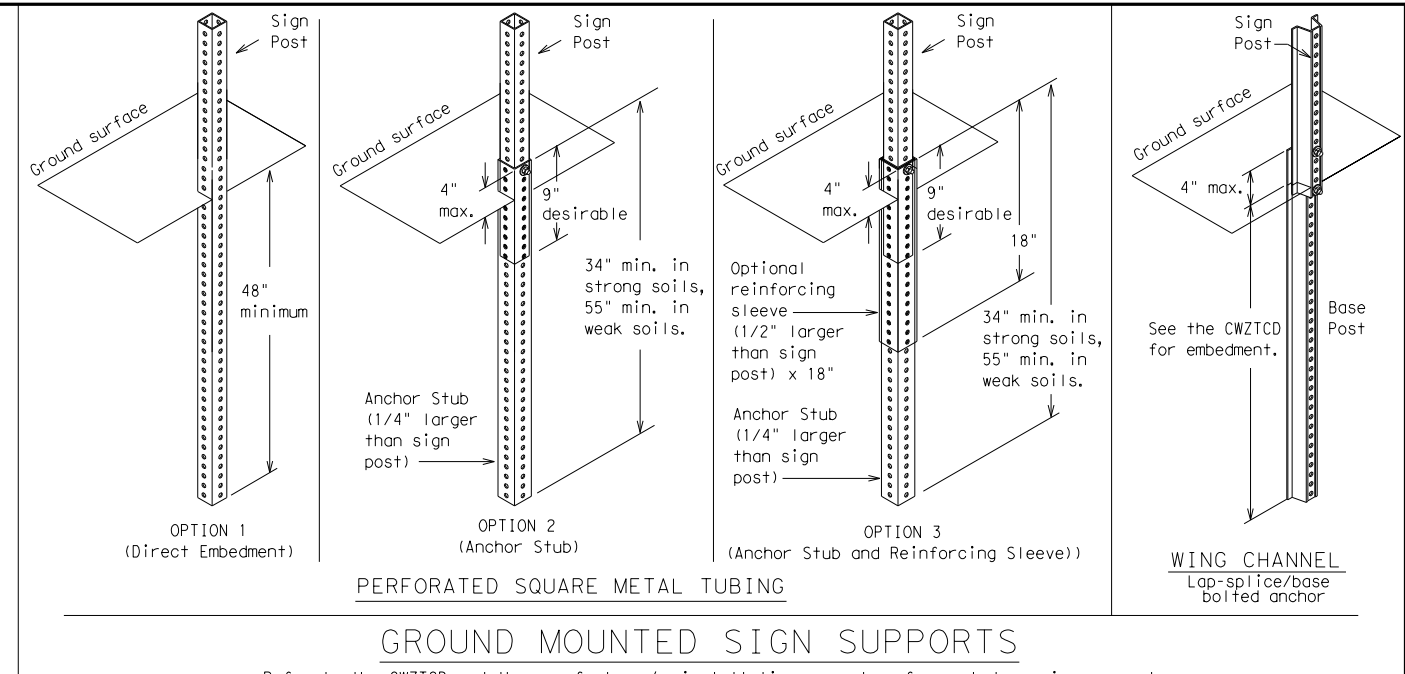
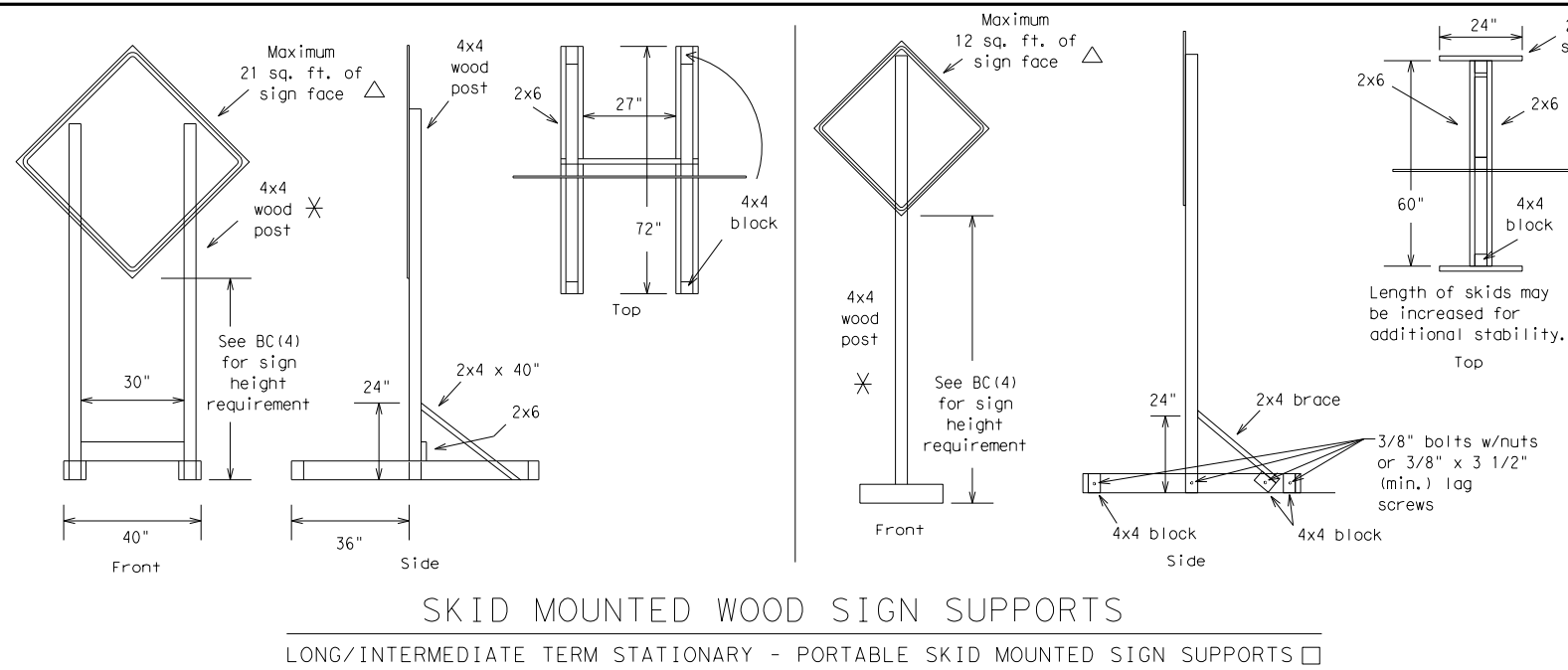
BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC (4) - 14

FILE:	bc-14.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
©TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0887	01	039, ETC.	VARIOUS				
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13		ODA	ECTOR, ETC.	86					

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 FILE: \\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\2 - TCP\TxDOT_Standards\B



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**
- 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.
 - No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
 - 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.

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5) - 14

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©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13	ODA	ECTOR, ETC.	87	

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

PORTABLE CHANGEABLE MESSAGE SIGNS

- The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
- 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.
- 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.
- Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
- Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
- When in use the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
- 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.
- 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.
- Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
- 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.
- Do not use the word "Danger" in message.
- Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
- Do not display messages that scroll horizontally or vertically across the face of the sign.
- 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.
- 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.
- Each line of text should be centered on the message board rather than left or right justified.
- 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	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Cannot	CANT	North	N
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking	PKING
CROSSING	XING	Road	RD
Detour Route	DETOUR RTE	Right Lane	RT LN
Do Not	DONT	Saturday	SAT
East	E	Service Road	SERV RD
Eastbound	(route) E	Shoulder	SHLDR
Emergency	EMER	Slippery	SLIP
Emergency Vehicle	EMER VEH	South	S
Entrance, Enter	ENT	Southbound	(route) S
Express Lane	EXP LN	Speed	SPD
Expressway	EXPWY	Street	ST
XXXX Feet	XXXX FT	Sunday	SUN
Fog Ahead	FOG AHD	Telephone	PHONE
Freeway	FRWY, FWY	Temporary	TEMP
Freeway Blocked	FWY BLKD	Thursday	THURS
Friday	FRI	To Downtown	TO DWNTN
Hazardous Driving	HAZ DRIVING	Traffic	TRAF
Hazardous Material	HAZMAT	Travelers	TRVLR
High-Occupancy Vehicle	HOV	Tuesday	TUES
Highway	HWY	Time Minutes	TIME MIN
Hour(s)	HR, HRS	Upper Level	UPR LEVEL
Information	INFO	Vehicles (s)	VEH, VEHS
It Is	ITS	Warning	WARN
Junction	JCT	Wednesday	WED
Left	LFT	Weight Limit	WT LIMIT
Left Lane	LFT LN	West	W
Lane Closed	LN CLOSED	Westbound	(route) W
Lower Level	LWR LEVEL	Wet Pavement	WET PVMT
Maintenance	MAINT	Will Not	WONT

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

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

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

Phase 2: Possible Component Lists

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

- Only 1 or 2 phases are to be used on a PCMS.
- The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
- A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
- A Location Phase is necessary only if a distance or location is not included in the first phase selected.
- 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.
- 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

- The words RIGHT, LEFT and ALL can be interchanged as appropriate.
- Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
- EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
- Highway names and numbers replaced as appropriate.
- ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
- AHEAD may be used instead of distances if necessary.
- FT and MI, MILE and MILES interchanged as appropriate.
- AT, BEFORE and PAST interchanged as needed.
- 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

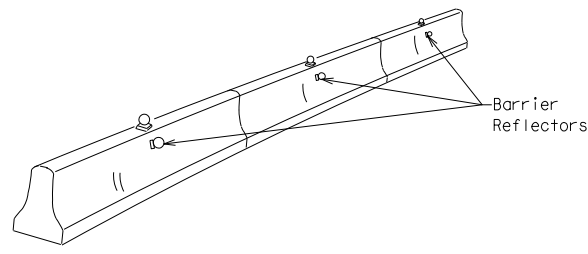
- When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
- When symbol signs, such as the "Flagger Symbol" (CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
- 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.
- 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.

		Traffic Operations Division Standard	
BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)			
BC (6) - 14			
FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
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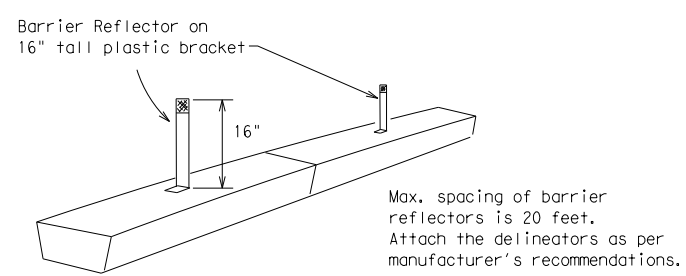
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.

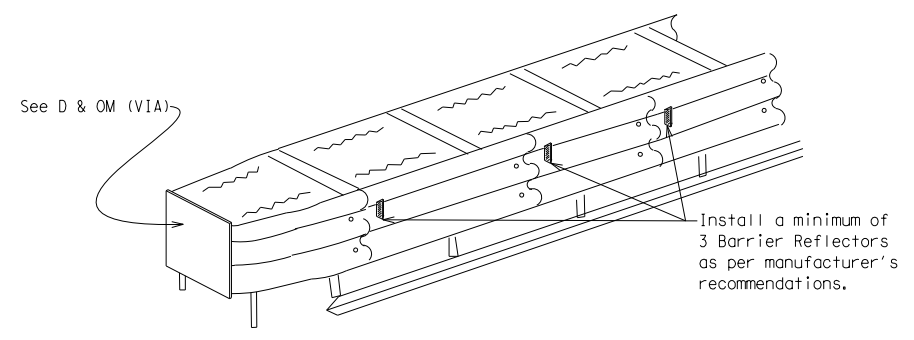


CONCRETE TRAFFIC BARRIER (CTB)



LOW PROFILE CONCRETE BARRIER (LPCB)

- 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.
- 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.
- When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
- Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
- Maximum spacing of Barrier Reflectors is forty (40) feet.
- Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
- Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
- Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
- Single slope barriers shall be delineated as shown on the above detail.



DELINEATION OF END TREATMENTS

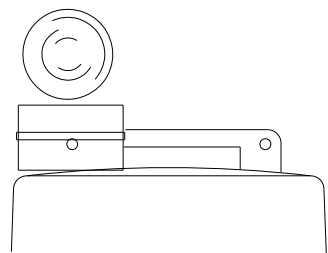
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

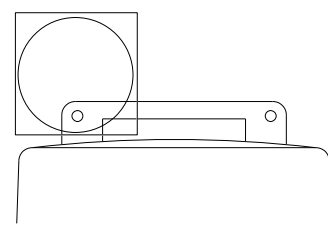
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet 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.
- 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".
- The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
- 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.
- 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.
- The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.



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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- 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.
- 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.
- Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
- Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
- The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.



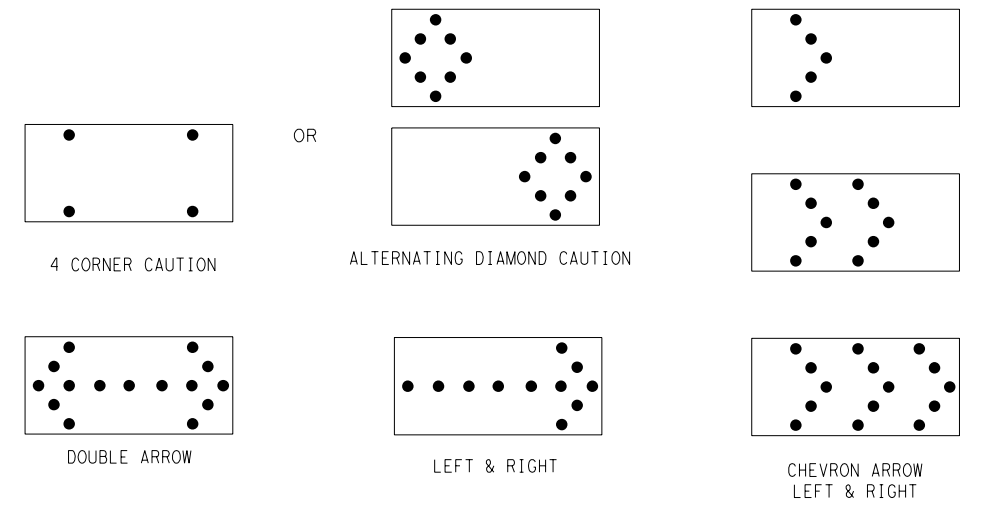
Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

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

- 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.
- 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.
- The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
- Round reflectors shall be fully reflectorized, including the area where attached to the drum.
- 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.
- 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.
- When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
- The warning reflector should be mounted on the side of the handle nearest approaching traffic.
- 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.

- 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.
- 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.
- 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.
- The Flashing Arrow Board should be able to display the following symbols:



- The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
- The straight line caution display is NOT ALLOWED.
- 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.
- 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.
- The sequential arrow display is NOT ALLOWED.
- The flashing arrow display is the TxDOT standard; however, the sequential Chevron display may be used during daylight operations.
- The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
- A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
- 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.
- Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

SHEET 7 OF 12

TRUCK-MOUNTED ATTENUATORS

- Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350) or the Manual for Assessing Safety Hardware (MASH).
- Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
- Refer to the CWZTCD for a list of approved TMAs.
- TMAs are required on freeways unless otherwise noted in the plans.
- 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.
- 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.



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

BC(7)-14

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GENERAL NOTES

- For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
- 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.
- 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.
- 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).
- 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.
- 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:

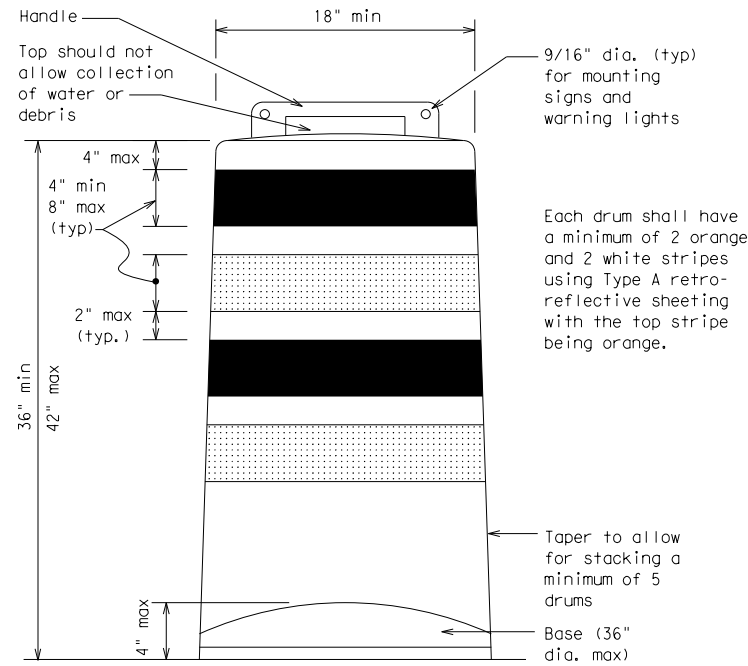
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
- 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.
- 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.
- 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.
- 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.
- 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.
- Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
- Drum body shall have a maximum unballasted weight of 11 lbs.
- Drum and base shall be marked with manufacturer's name and model number.

RETROREFLECTIVE SHEETING

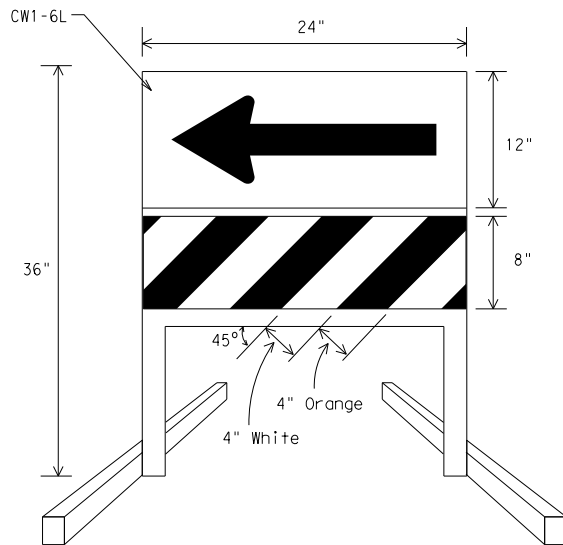
- The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A reflective sheeting shall be supplied unless otherwise specified in the plans.
- The sheeting shall be suitable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

- 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.
- 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.
- Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
- 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.
- 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.
- Ballast shall not be placed on top of drums.
- Adhesives may be used to secure base of drums to pavement.

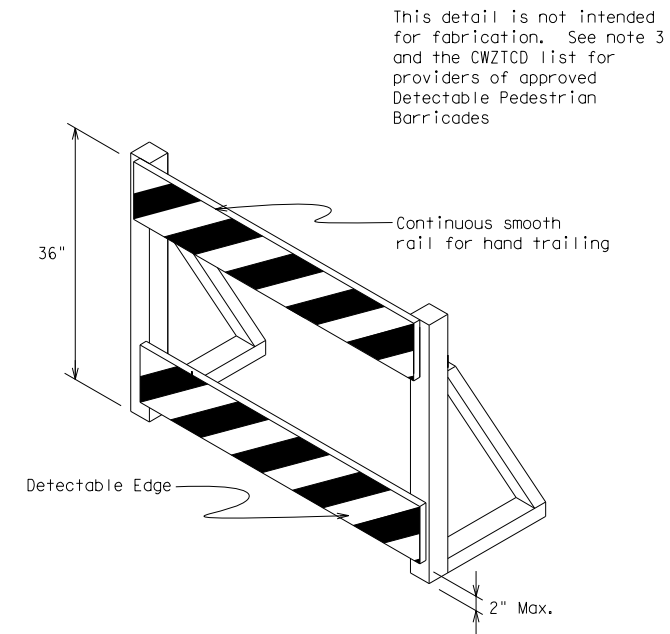


Each drum shall have a minimum of 2 orange and 2 white stripes using Type A retro-reflective sheeting with the top stripe being orange.



DIRECTION INDICATOR BARRICADE

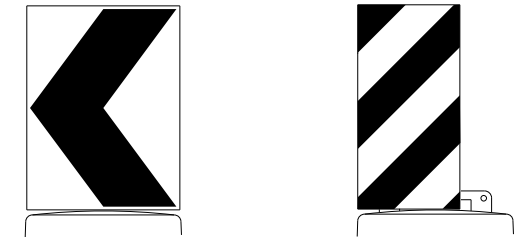
- The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
- If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
- The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CWI-6) sign in the size shown with a black arrow on a background of Type B_{FL} or Type C_{FL} Orange retroreflective sheeting above a rail with Type A retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheetting types shall be as per DMS 8300.
- Double arrows on the Direction Indicator Barricade will not be allowed.
- Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.



DETECTABLE PEDESTRIAN BARRICADES

- 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.
- Where pedestrians with visual disabilities normally use the closed sidewalk, a device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
- 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.
- 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 for Buildings and Facilities (ADAAG)" and should not be used as a control for pedestrian movements.
- Warning lights shall not be attached to detectable pedestrian barricades.
- Detectable pedestrian barricades may 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.

This detail is not intended for fabrication. See note 3 and the CWZTCD list for providers of approved Detectable Pedestrian Barricades



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

- Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
- 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.
- Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
- 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.
- Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
- Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
- 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.
- 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.

SHEET 8 OF 12



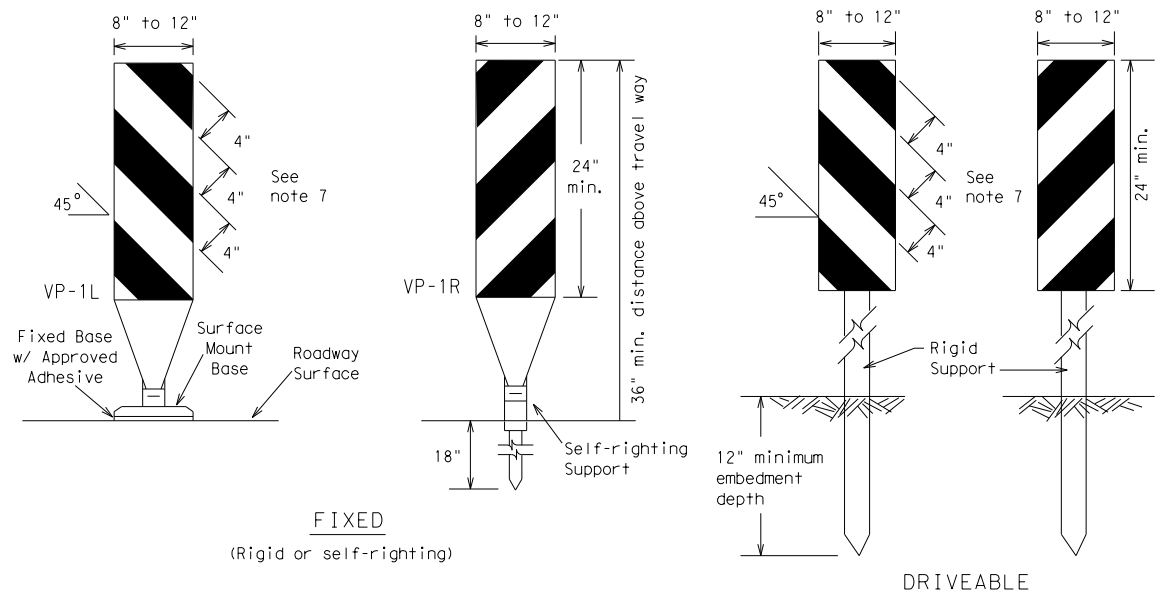
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (8) - 14

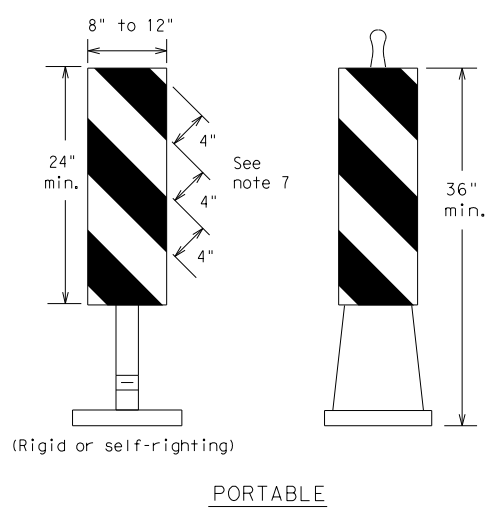
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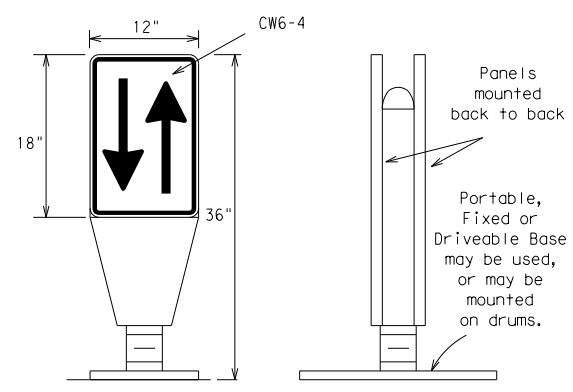


- Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
- VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of VP's for drop-offs.
- 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.
- VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
- Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Sheeting for the VP's shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
- Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

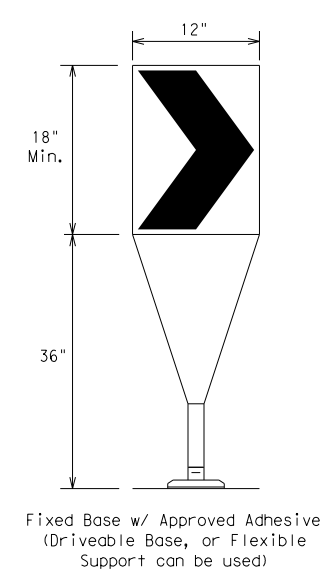


VERTICAL PANELS (VPs)

- 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.
- The OTLD may be used in combination with 42" cones or VPs.
- Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
- 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.

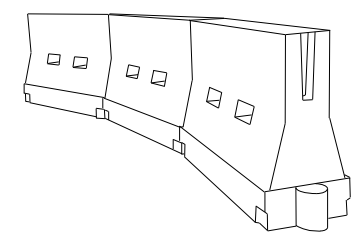


OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



- The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
- 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.
- 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.
- To be effective, the chevron should be visible for at least 500 feet.
- 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.
- 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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

- 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.
- LCDs may be used instead of a line of cones or drums.
- LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
- LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
- 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) placed near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

- 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 NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
- 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.
- 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.
- 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.
- 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

GENERAL NOTES

- 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).
- 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.
- 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).
- 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.
- Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
- 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.
- 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.

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 = 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



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (9) - 14

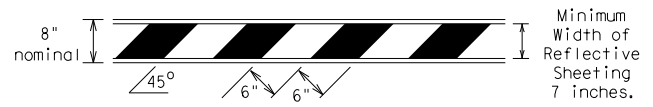
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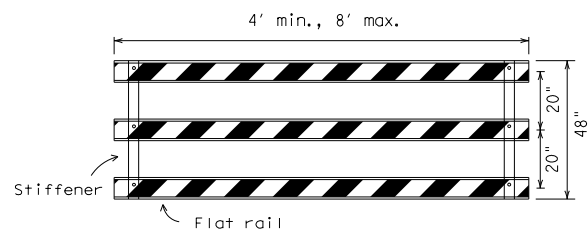
TYPE 3 BARRICADES

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 conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.

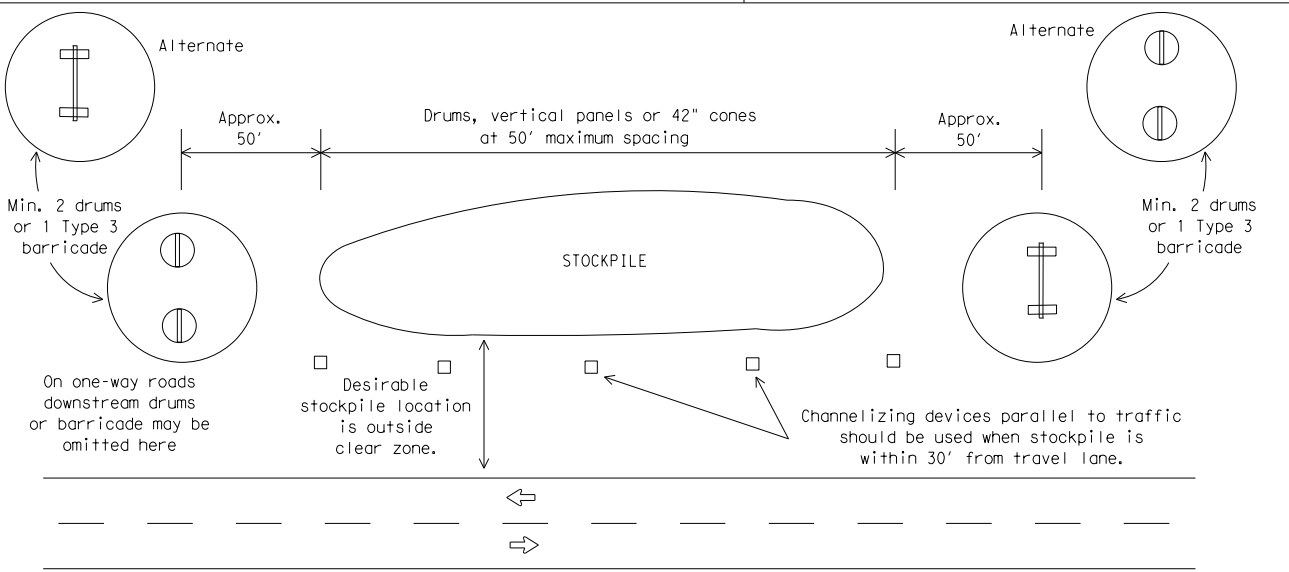


TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



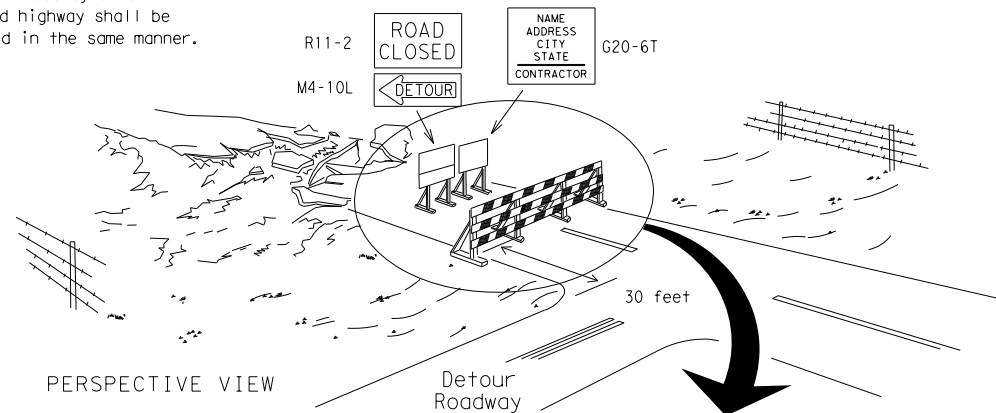
Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



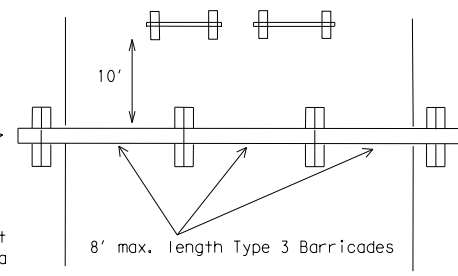
TRAFFIC CONTROL FOR MATERIAL STOCKPILES

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



PERSPECTIVE VIEW

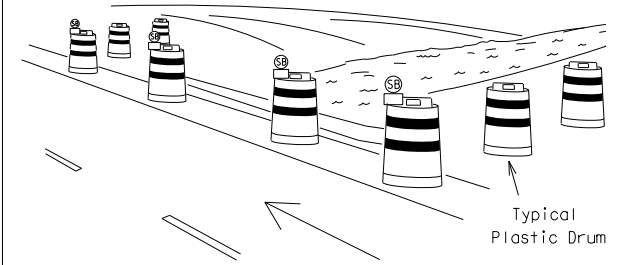
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



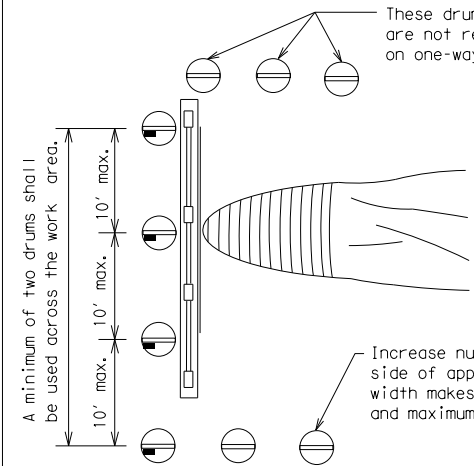
PLAN VIEW

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



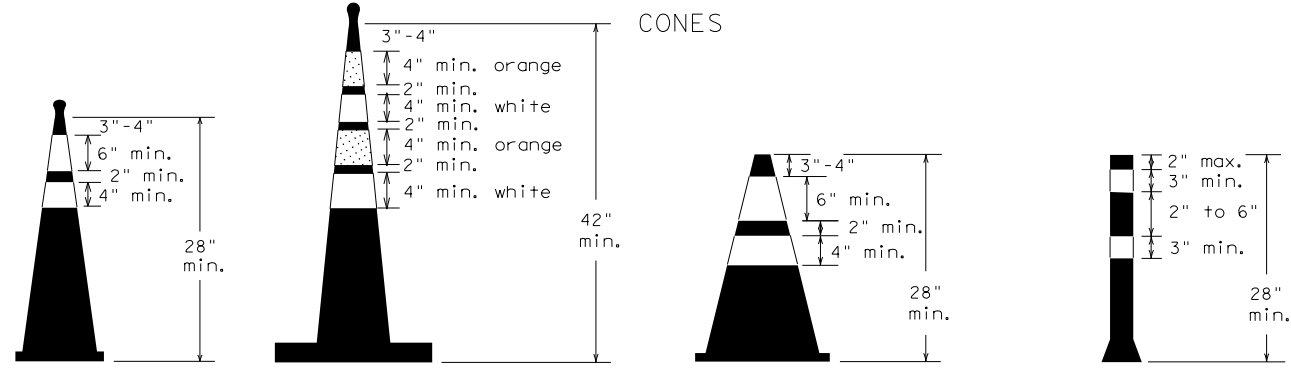
PLAN VIEW

Increase number of plastic drums on the side of approaching traffic if the crown width makes it necessary. (minimum of 2 and maximum of 4 drums)

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

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

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



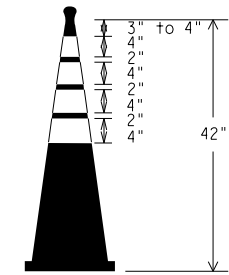
Two-Piece cones

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.

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.



EDGE LINE CHANNELIZER

1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

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WORK ZONE PAVEMENT MARKINGS

GENERAL

- 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.
- Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Additional supplemental pavement marking details may be found in the plans or specifications.
- Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
- 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).
- 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.
- All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

- Raised pavement markers are to be placed according to the patterns on BC(12).
- 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

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

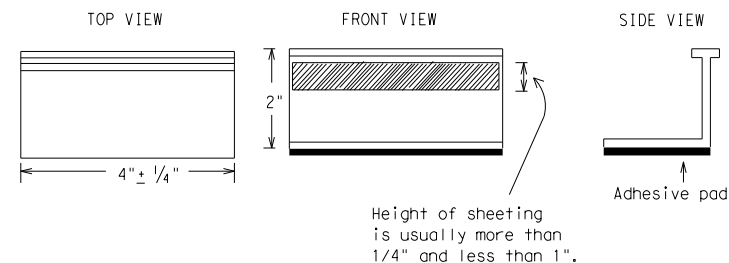
MAINTAINING WORK ZONE PAVEMENT MARKINGS

- The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
- 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.
- 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.
- 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

- 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.
- 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.
- 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".
- The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
- Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
- Blast cleaning may be used but will not be required unless specifically shown in the plans.
- Over-painting of the markings SHALL NOT BE permitted.
- Removal of raised pavement markers shall be as directed by the Engineer.
- 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.
- 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

- Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
- 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.
 - 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.
 - 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.
- Small design variances may be noted between tab manufacturers.
- 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

- Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
- All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
- 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).

SHEET 11 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11) - 14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS		0887	01	039, ETC.
2-98	9-07	DIST	COUNTY	SHEET NO.
1-02	7-13	ODA	ECTOR, ETC.	93
11-02	8-14			

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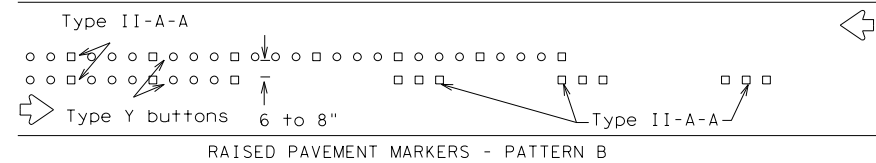
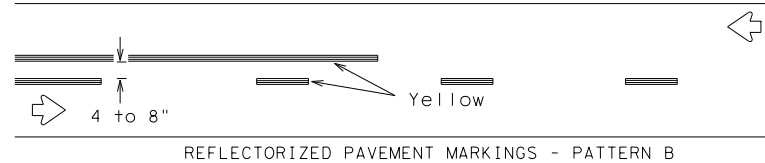
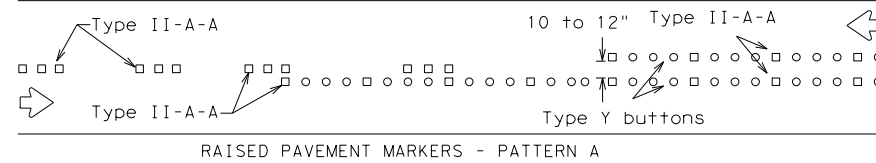
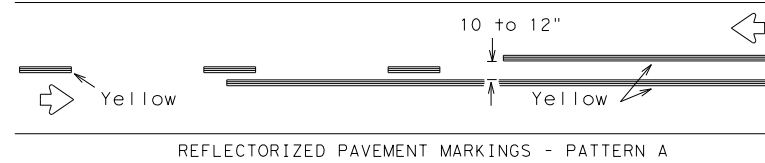
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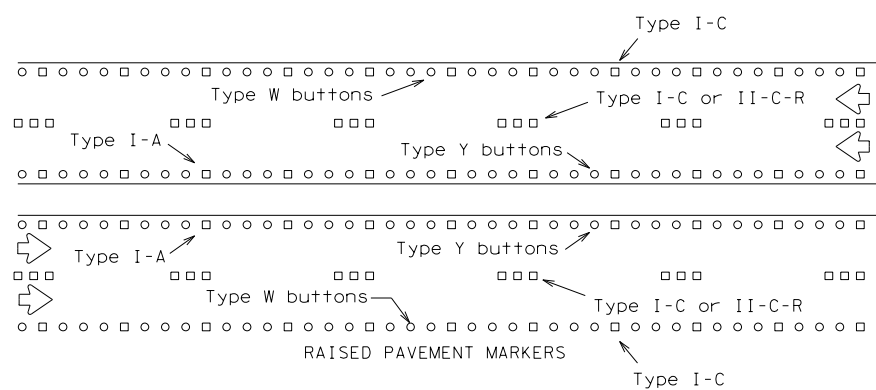
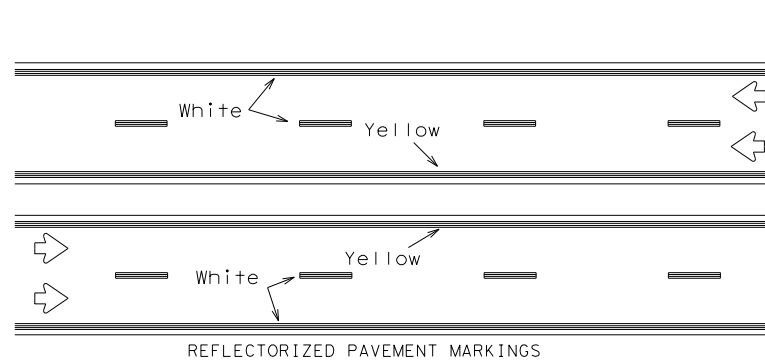
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PAVEMENT MARKING PATTERNS



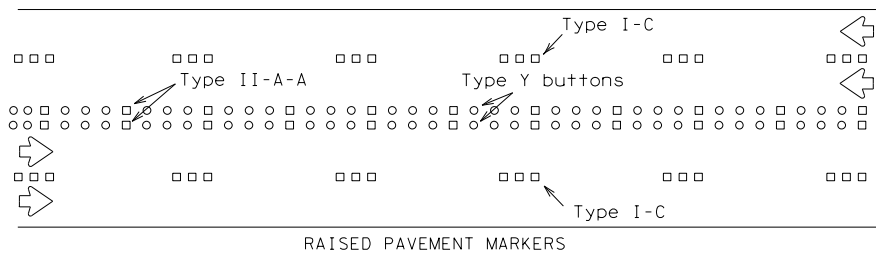
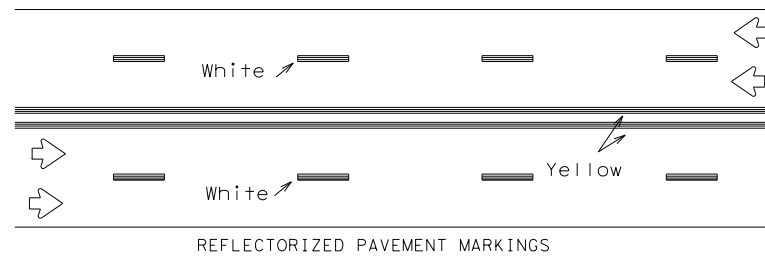
Pattern A is the TxDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectORIZED pavement markings.

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



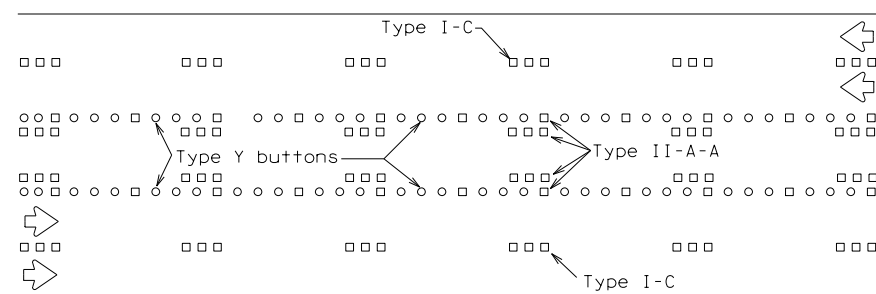
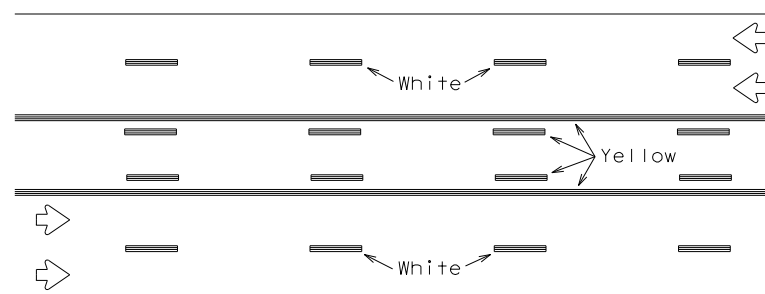
Prefabricated markings may be substituted for reflectORIZED pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



Prefabricated markings may be substituted for reflectORIZED pavement markings.

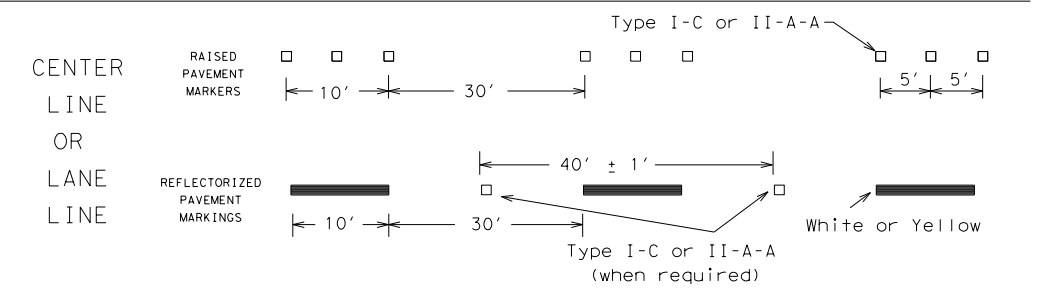
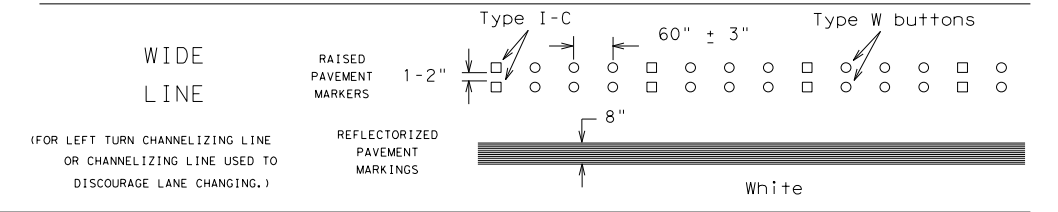
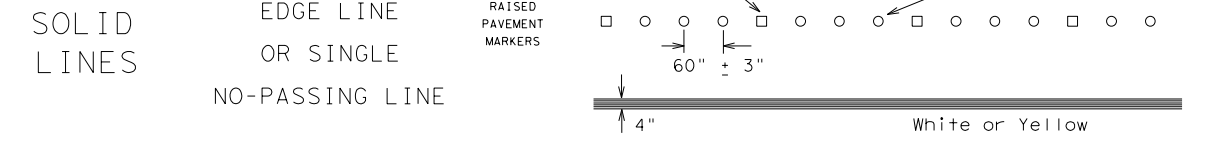
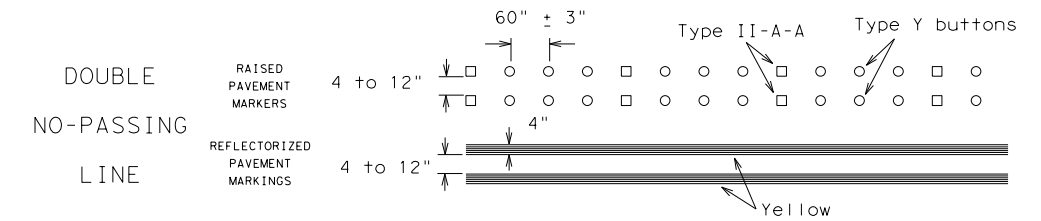
LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



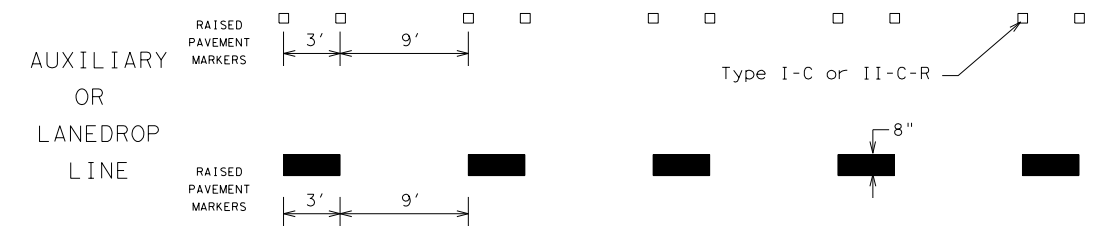
Prefabricated markings may be substituted for reflectORIZED pavement markings.

TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

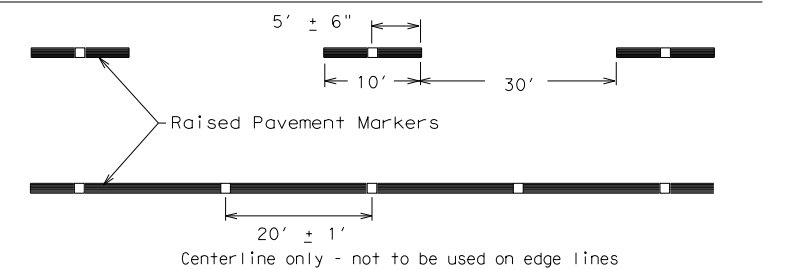


BROKEN LINES



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



SHEET 12 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

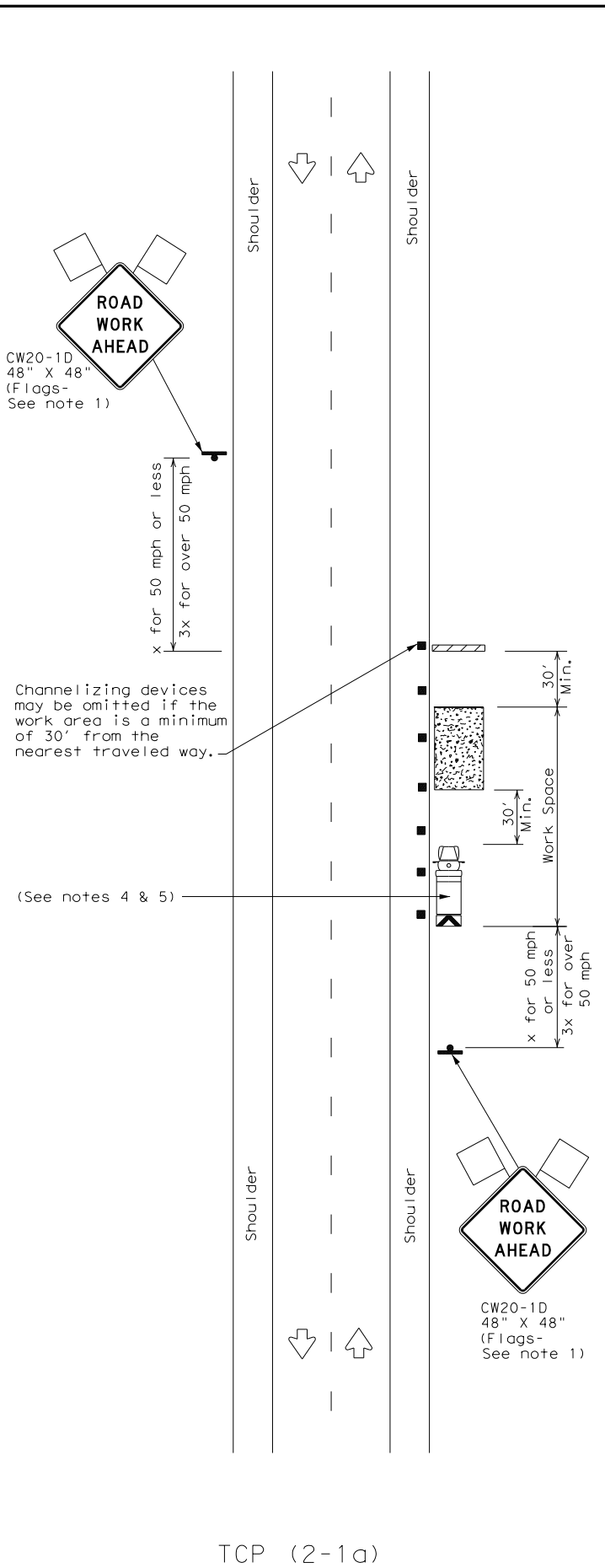
BC(12)-14

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."

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS				
1-97 9-07	0887	01	039, ETC.	VARIOUS
2-98 7-13	DIST	COUNTY	SHEET NO.	
11-02 8-14	ODA	ECTOR, ETC.	94	

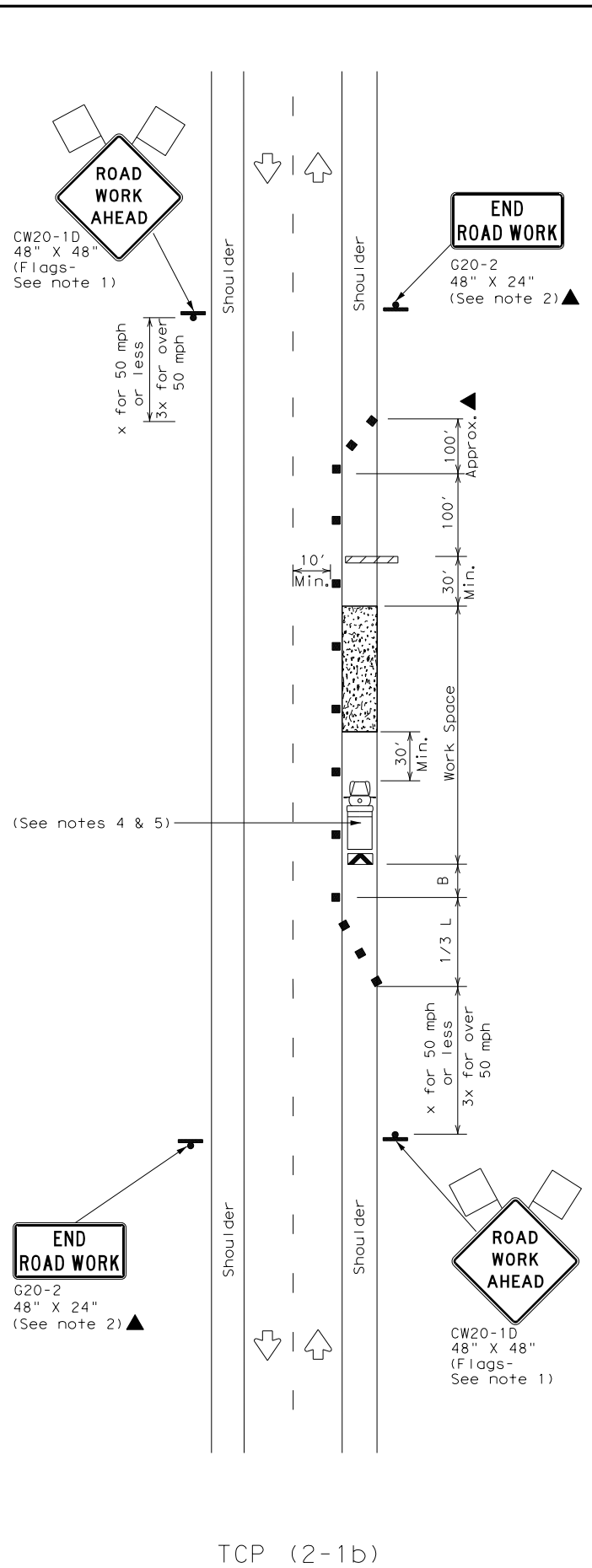
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 FILE: pw:\jmt-pw_bentley.com:jmt-pw_01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP_338, FM_307, FM_1787 (CSJ_0906-00-226)\4 - Design\Plan Set\2 - TCP\TxDOT_Standards\T



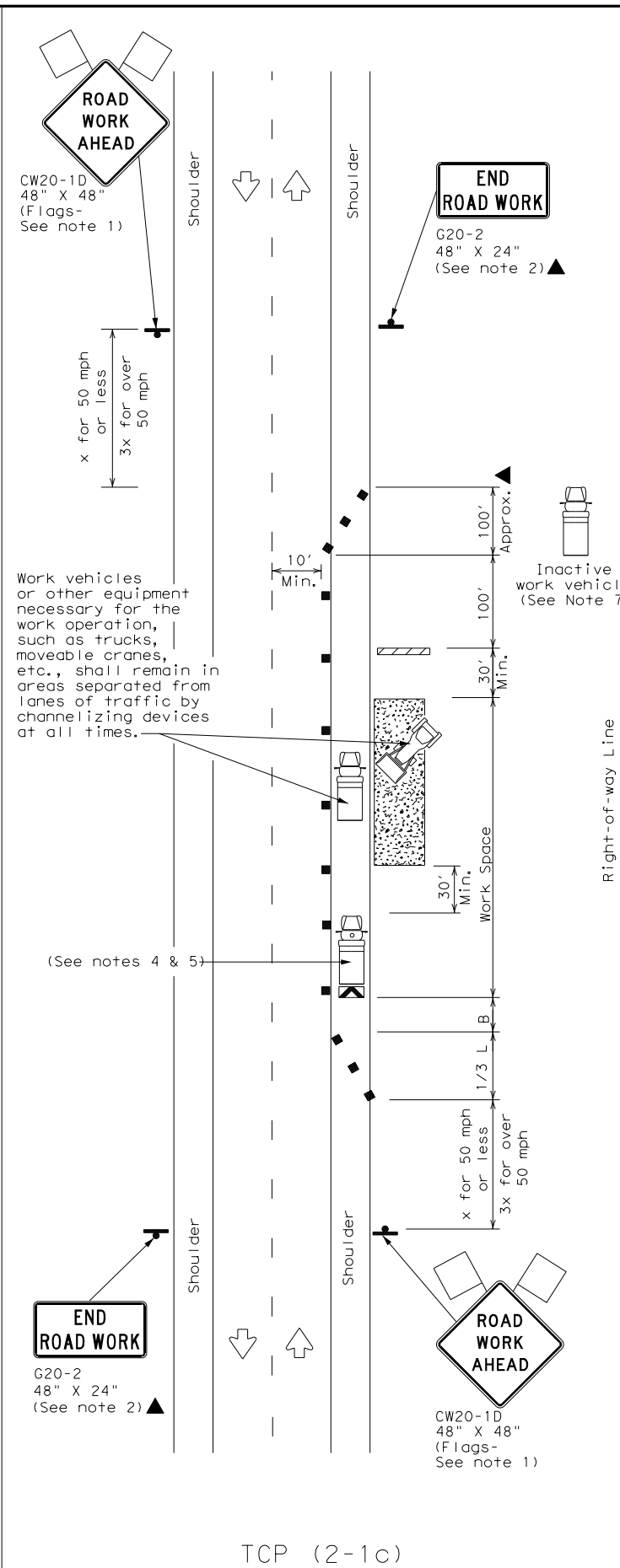
TCP (2-1a)

WORK SPACE NEAR SHOULDER
 Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
 Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
 Conventional Roads

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

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

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

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

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



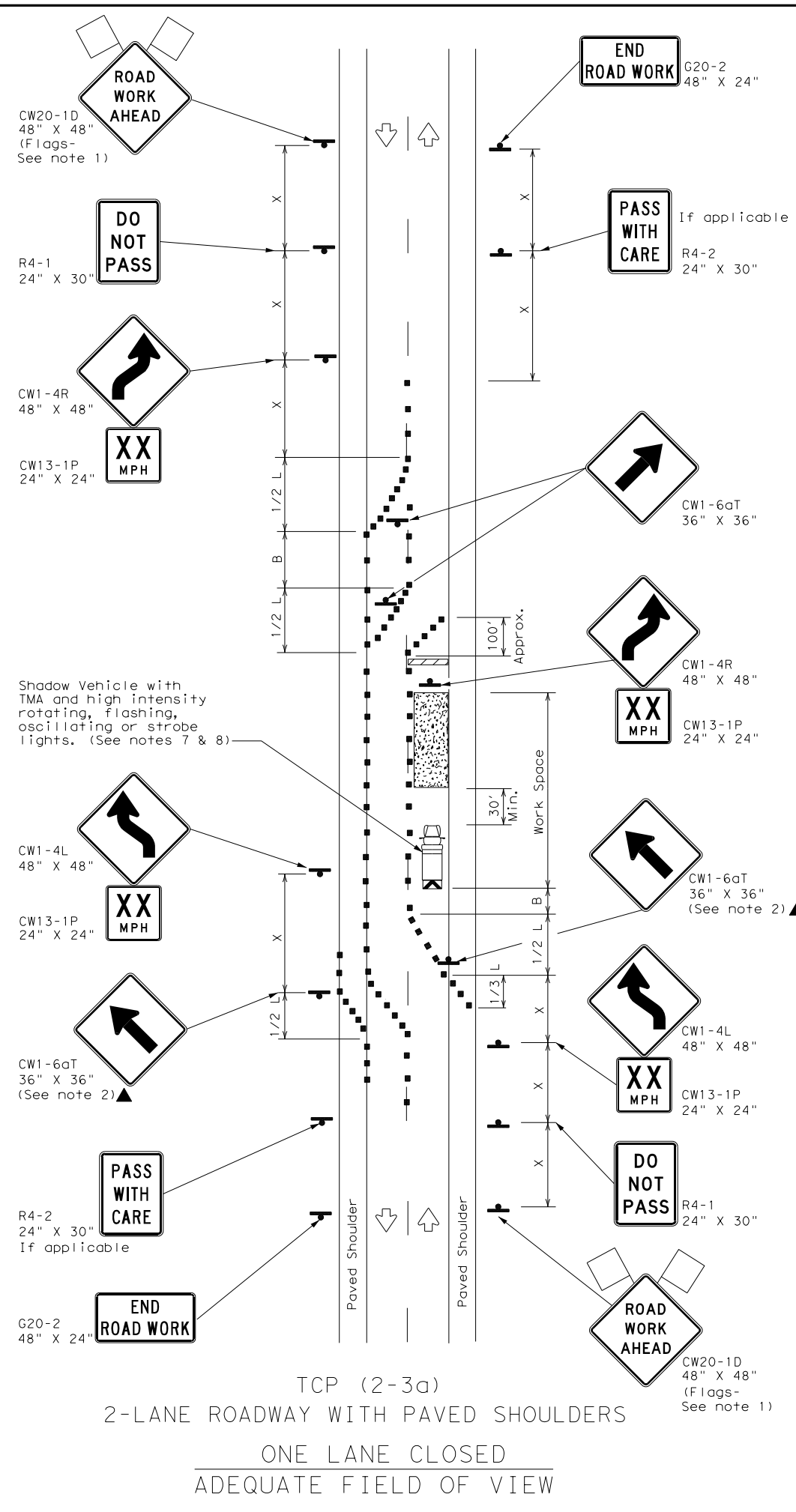
TRAFFIC CONTROL PLAN
 CONVENTIONAL ROAD
 SHOULDER WORK

TCP (2-1) - 18

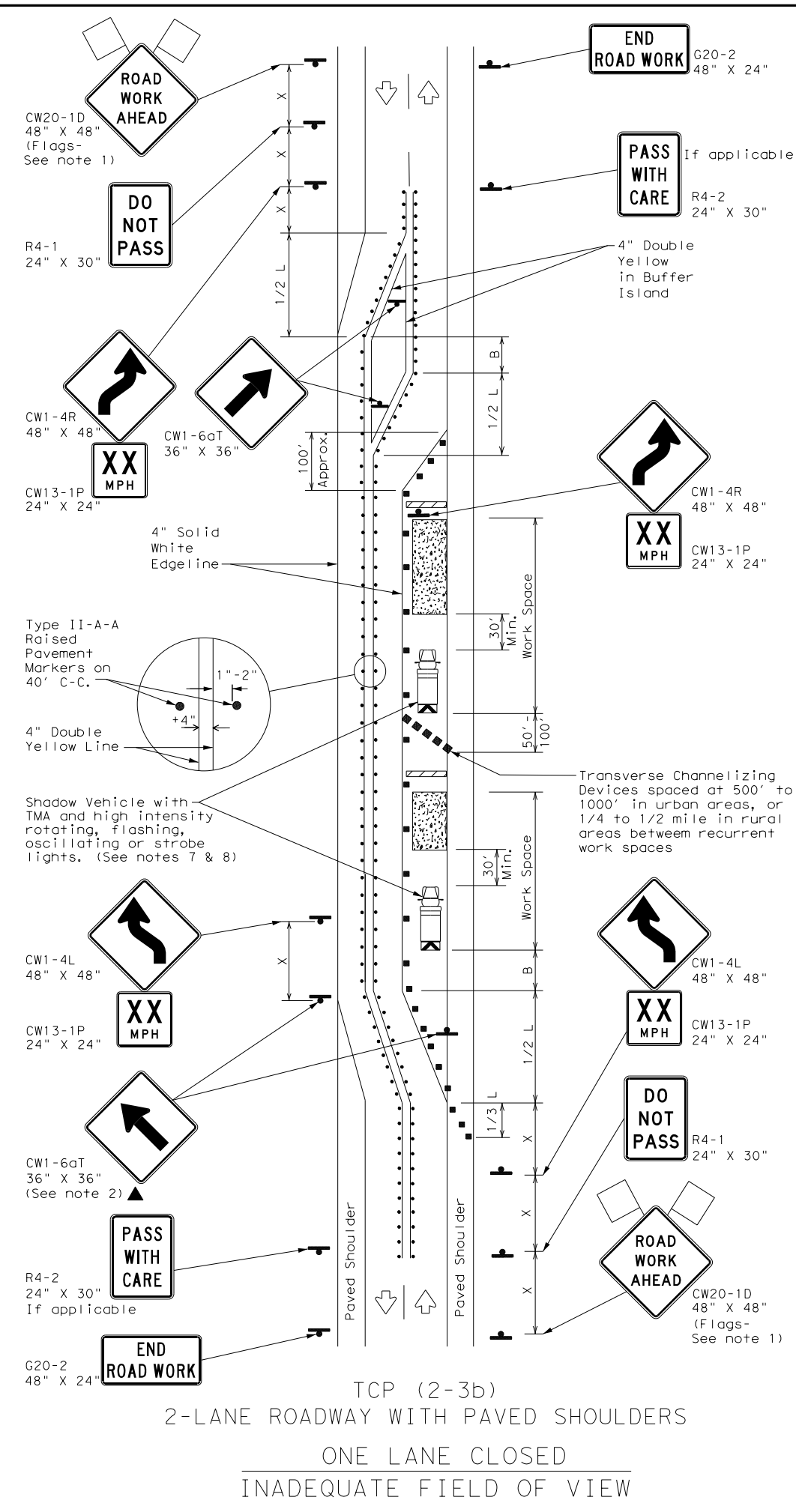
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© TxDOT December 1985	CON:	SECT:	JOB:	HIGHWAY:
REVISIONS	0887	01	039, ETC.	VARIOUS
2-94 4-98	DIST:	COUNTY:	SHEET NO.:	
8-95 2-12	ODA	ECTOR, ETC.	95	
1-97 2-18				

DATE: 8/20/2020
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TCP (2-3a)
 2-LANE ROADWAY WITH PAVED SHOULDERS
 ONE LANE CLOSED
 ADEQUATE FIELD OF VIEW



TCP (2-3b)
 2-LANE ROADWAY WITH PAVED SHOULDERS
 ONE LANE CLOSED
 INADEQUATE FIELD OF VIEW

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Raised Pavement Markers Ty II-AA
	Sign		Traffic Flow
	Flag		Flagger

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

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
			✓	✓
				TCP (2-3b) ONLY

- GENERAL NOTES
- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
 - Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
 - The R4-1 "DO NOT PASS," R4-2 "PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
 - Conflicting pavement marking shall be removed for long term projects.
 - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted.
 - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
- TCP (2-3a)
- Conflicting pavement markings shall be removed for long-term projects. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter device spacing is intended for the area of the conflicting markings, not the entire work zone.

Texas Department of Transportation
 Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
TRAFFIC SHIFTS ON
TWO-LANE ROADS

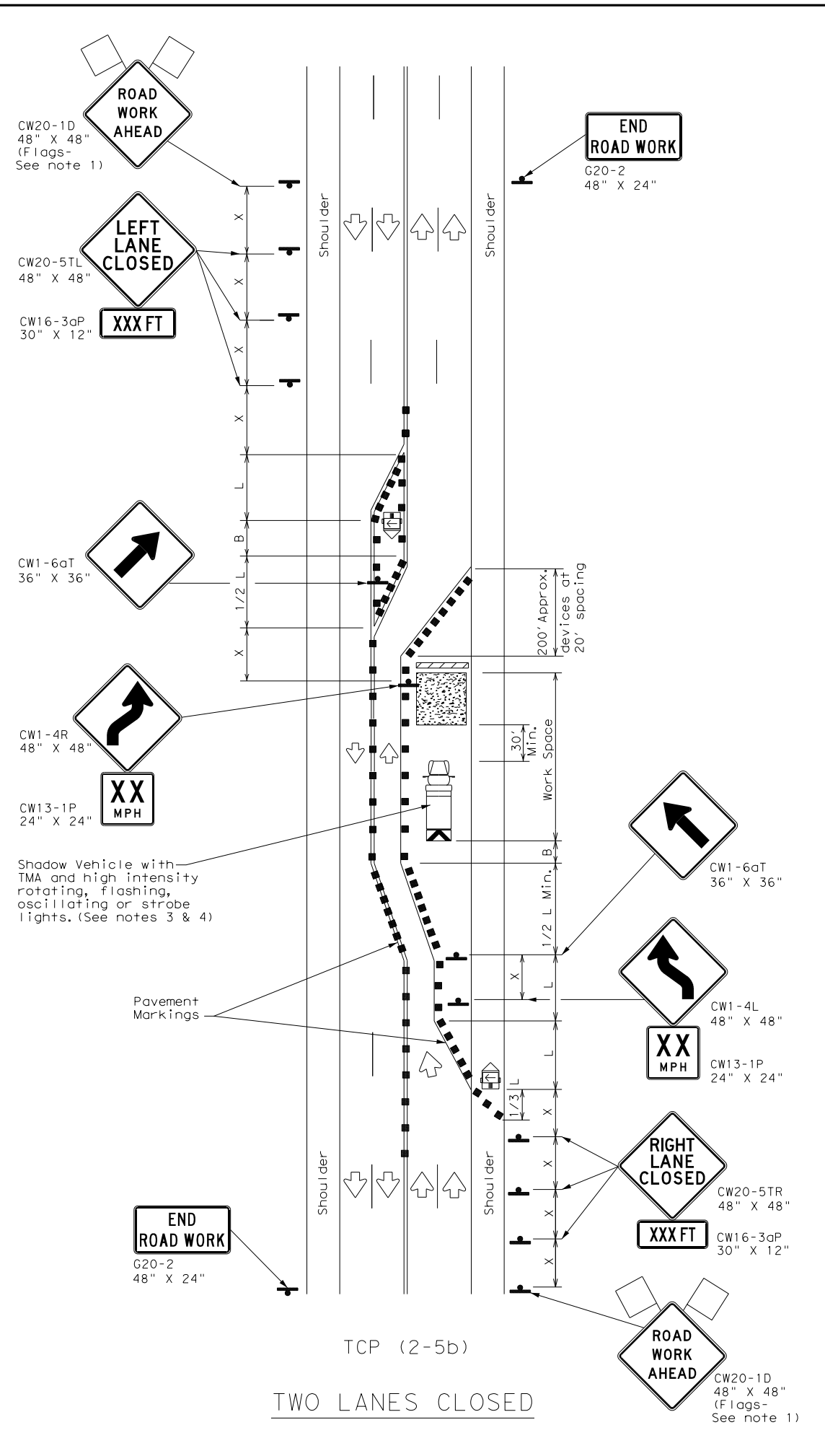
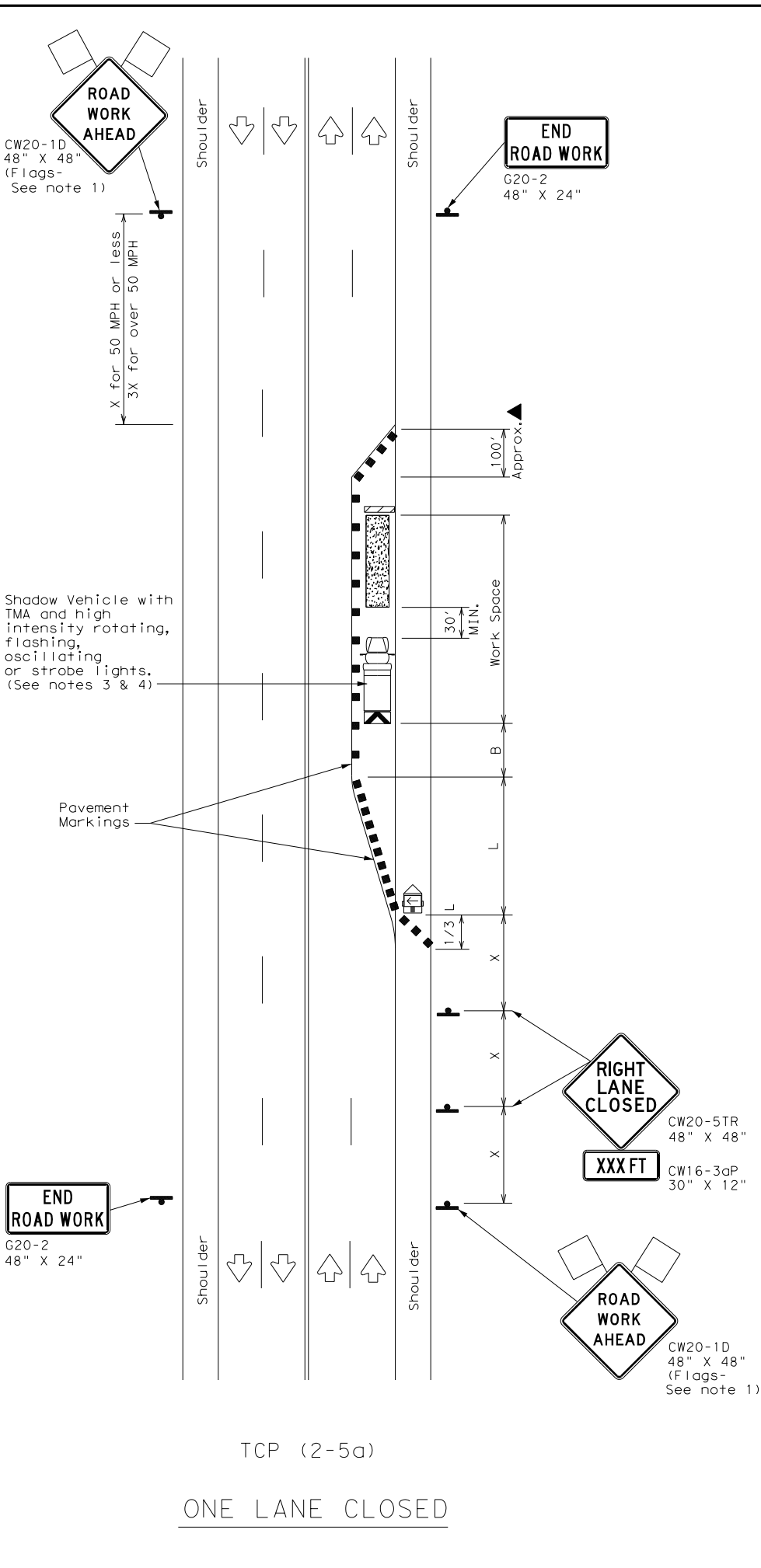
TCP (2-3) - 18

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8-95	3-03	DIST:	COUNTY:	SHEET NO.:	
1-97	2-12	ODA	ECTOR, ETC.	96	
4-98	2-18				

163

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

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

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

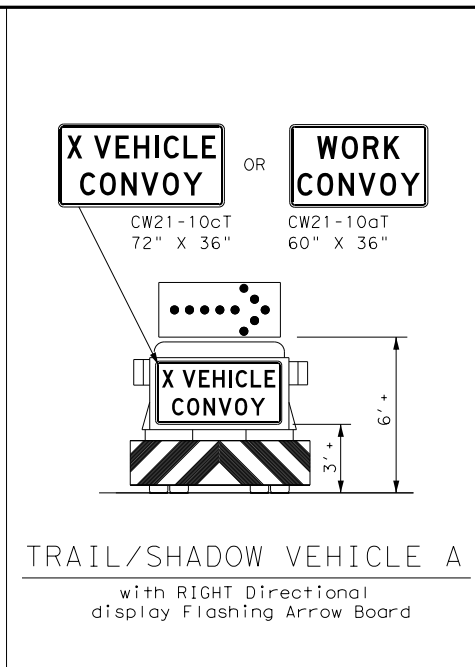
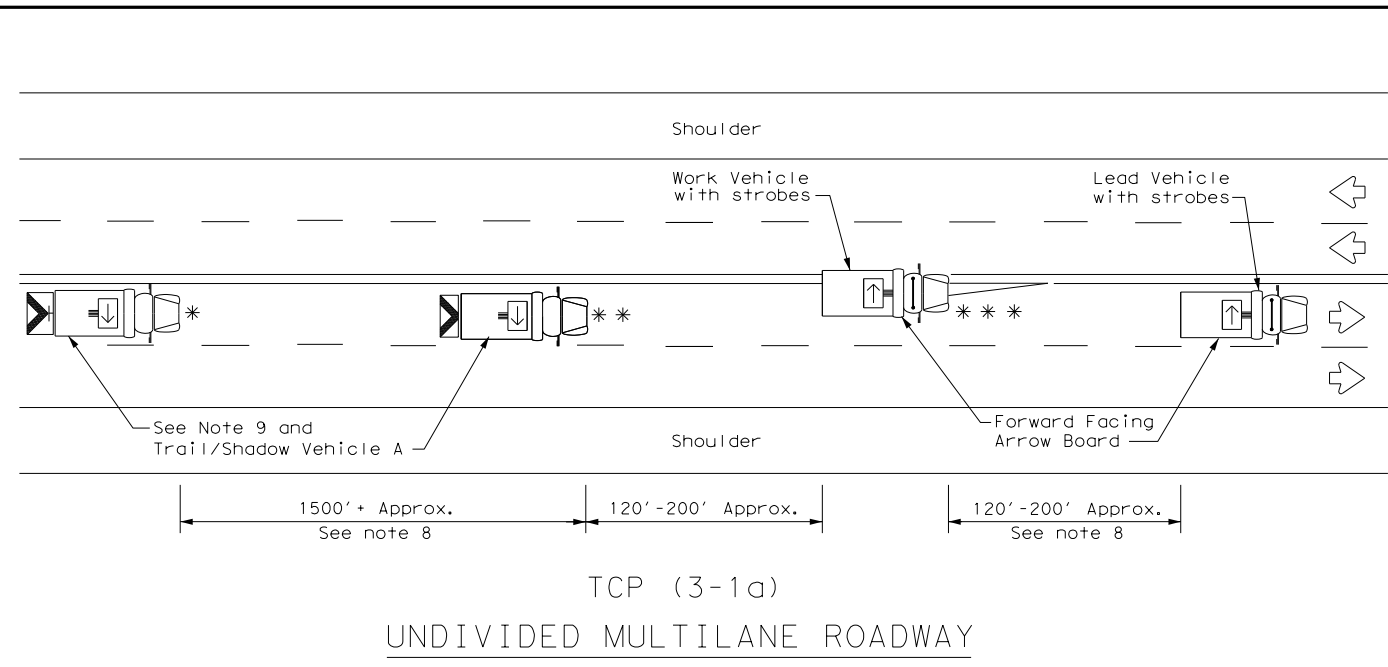
TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
			✓	✓

- GENERAL NOTES
- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
 - Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
 - The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.
- TCP (2-5a)
- If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic, with the arrow board placed in the closed lane near the end of the merging taper.
- TCP (2-5b)
- Conflicting pavement markings shall be removed for long-term projects.

		Traffic Operations Division Standard	
TRAFFIC CONTROL PLAN LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL RDS.			
TCP (2-5) - 18			
FILE: tcp2-5-18.dgn	DN:	CK:	DW:
© TxDOT December 1985	CON:	SECT:	JOB:
8-95 2-12	0887	01	039, ETC.
1-97 3-03	DIST:	COUNTY:	SHEET NO.
4-98 2-18	ODA	ECTOR, ETC.	97

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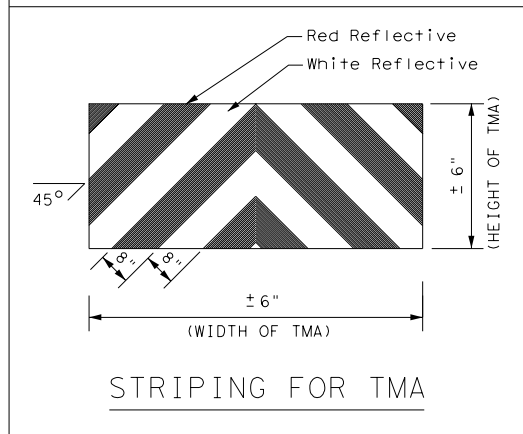
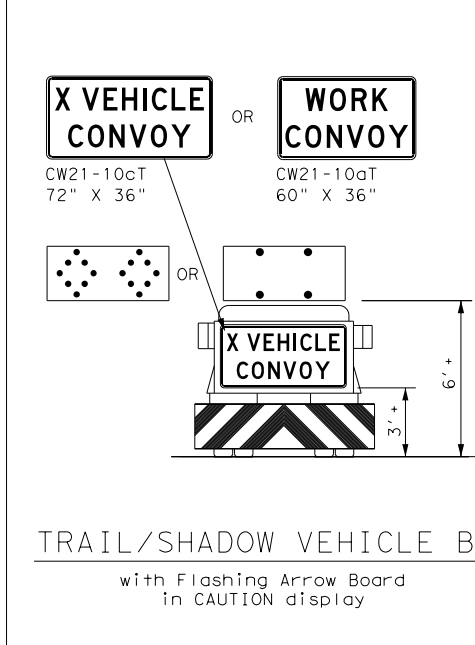
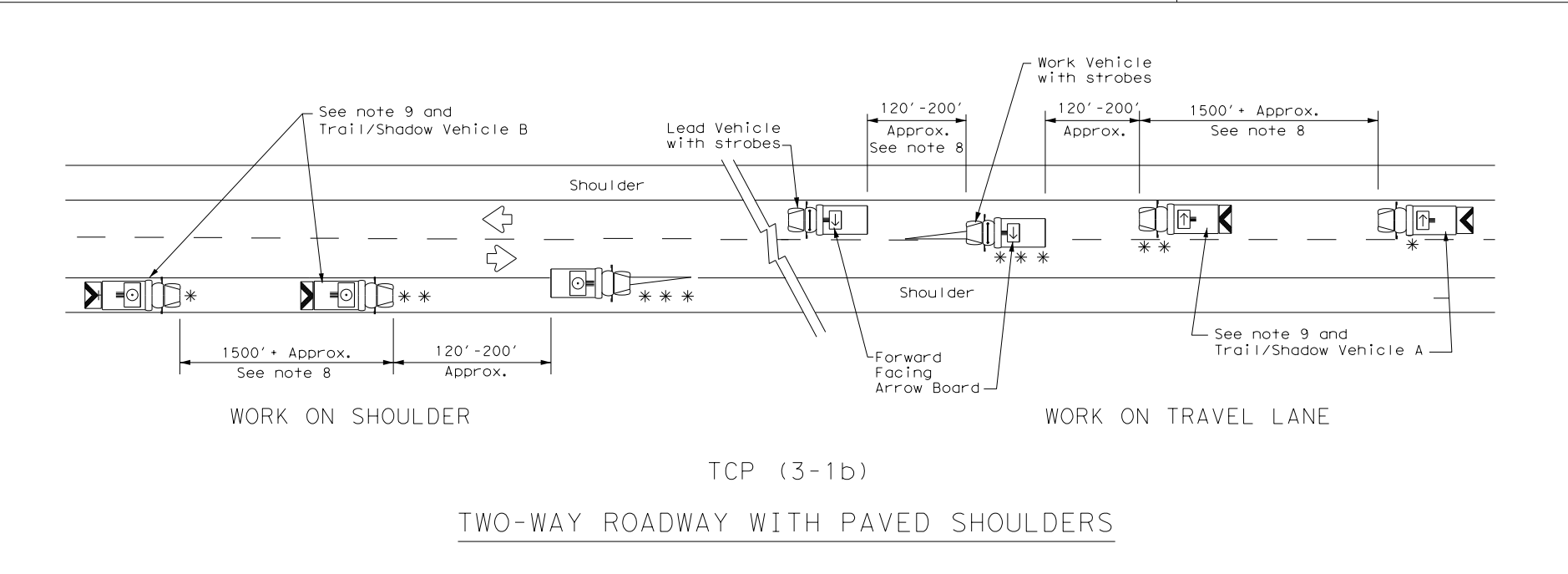
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LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

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

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



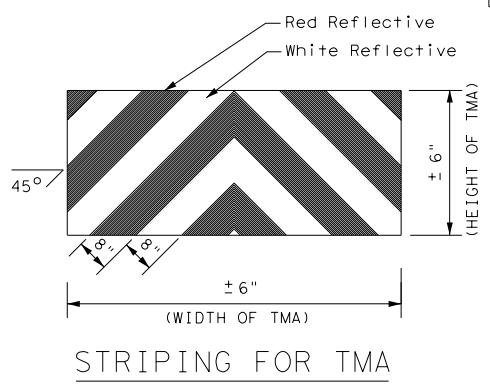
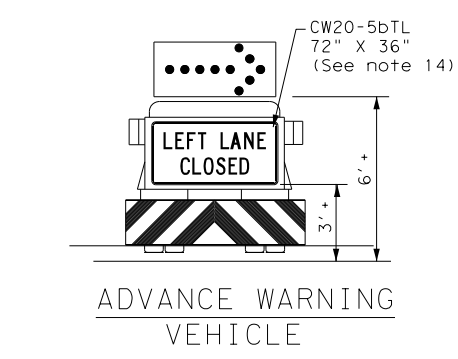
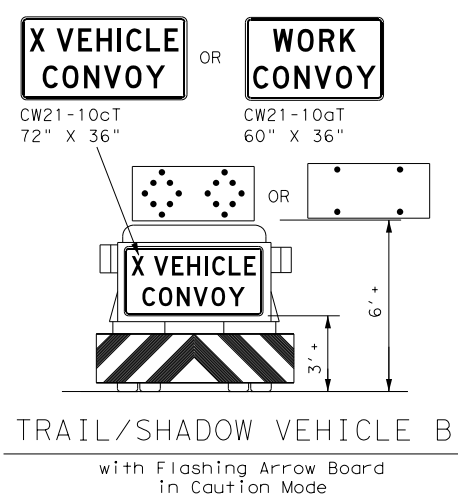
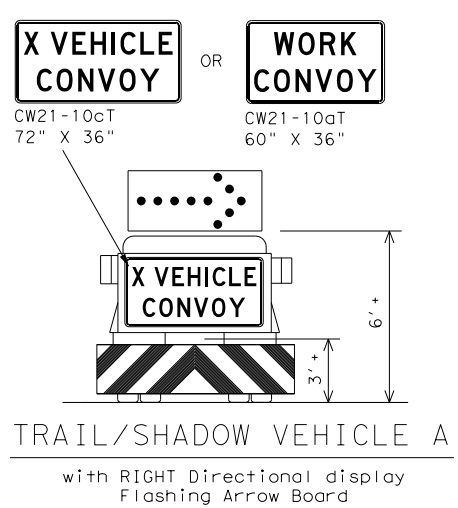
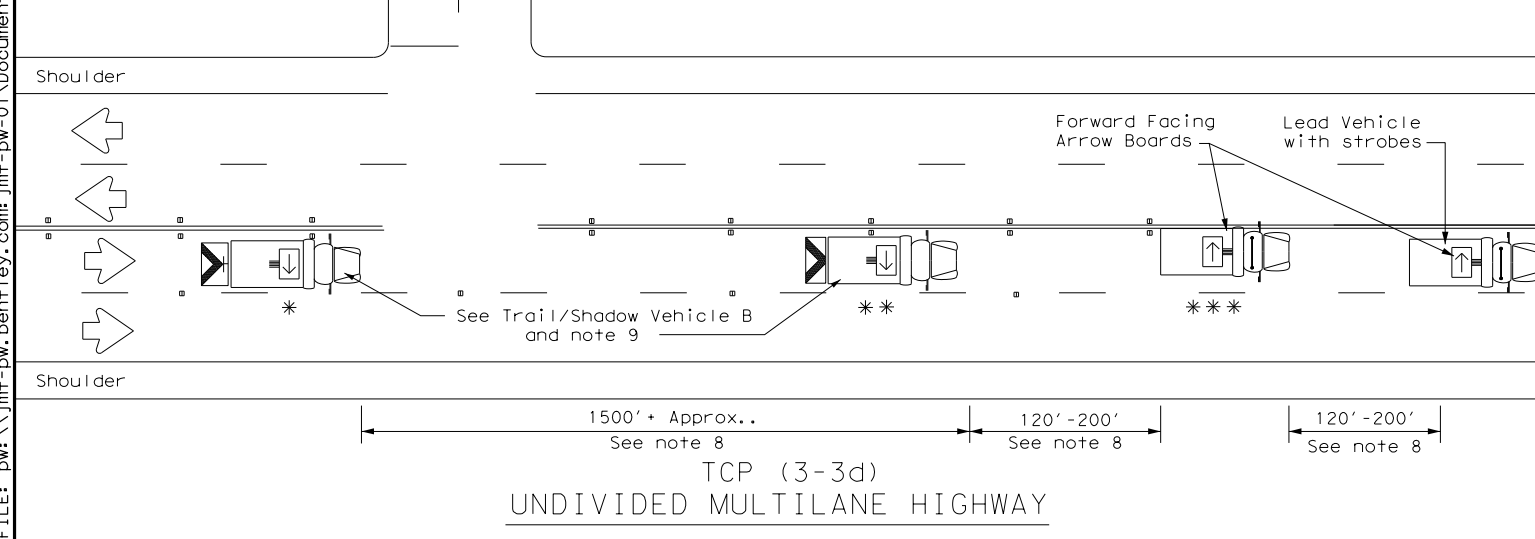
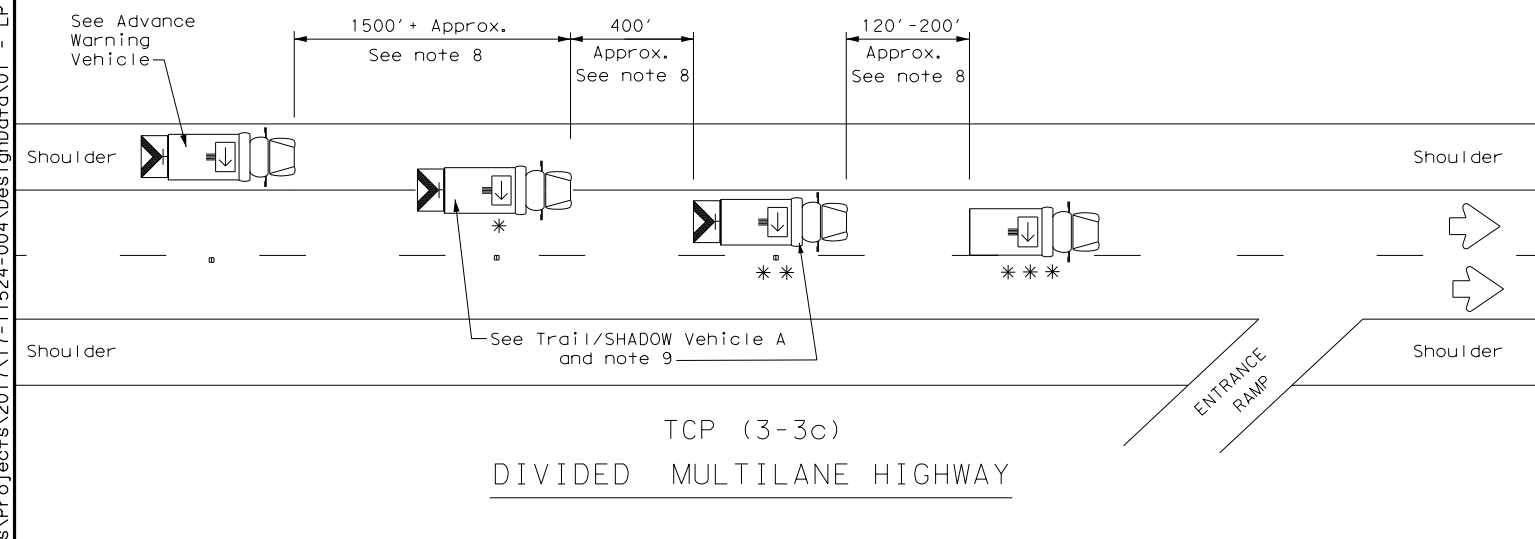
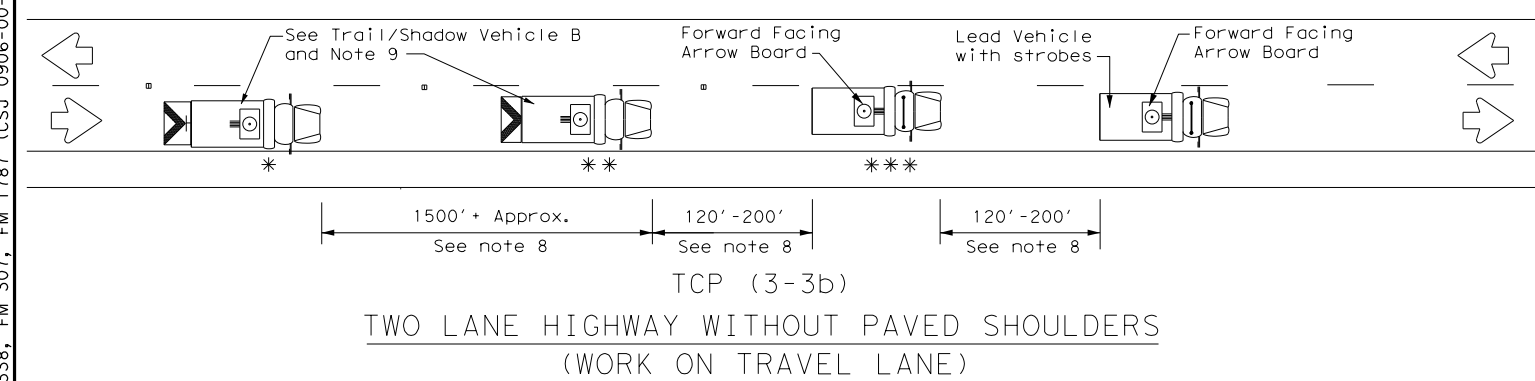
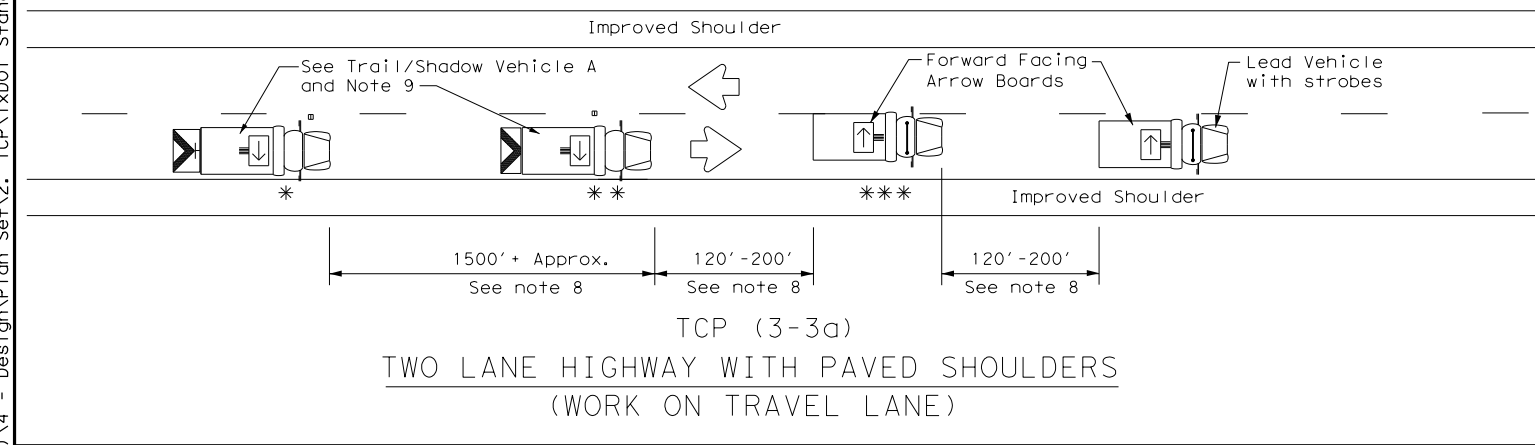
Texas Department of Transportation
 Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN
 MOBILE OPERATIONS
 UNDIVIDED HIGHWAYS**

TCP (3-1) - 13

FILE:	tcp3-1.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	December 1985	CONT	SECT	JOB	HIGHWAY				
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2-94	4-98	DIST	COUNTY	SHEET NO.					
8-95	7-13	ODA	ECTOR, ETC.	98					
1-97									

DATE: 8/20/2020
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LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle	→	RIGHT Directional
☐	Heavy Work Vehicle	←	LEFT Directional
▲	Truck Mounted Attenuator (TMA)	↔	Double Arrow
⬇	Traffic Flow	⊠	CAUTION (Alternating Diamond or 4 Corner Flash)

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

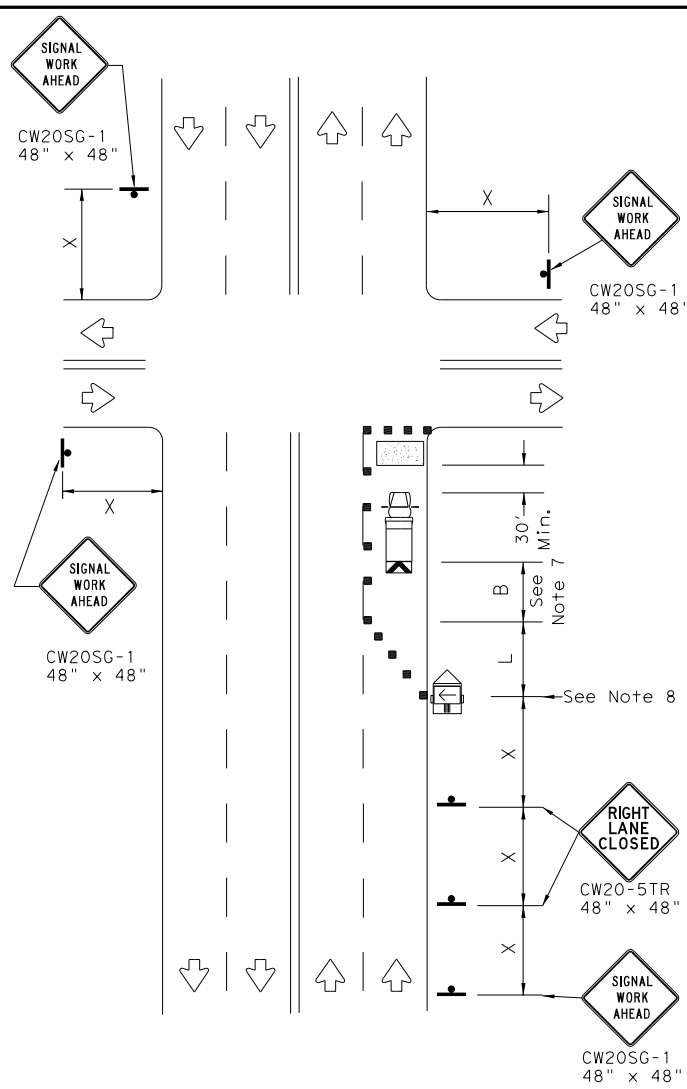
GENERAL NOTES

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

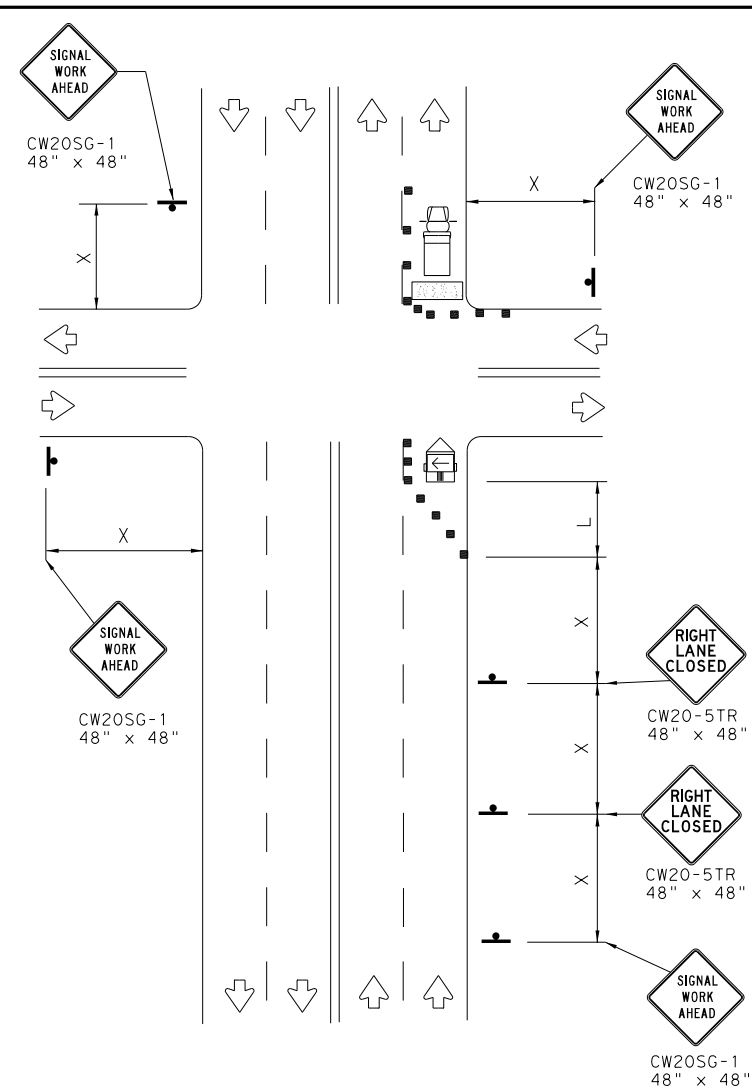
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TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/ REMOVAL TCP (3-3) - 14			
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© TxDOT September 1987	CONT	SECT	JOB
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2-94 4-98			
8-95 7-13			
1-97 7-14			
	DIST	COUNTY	SHEET NO.
	ODA	ECTOR, ETC.	99

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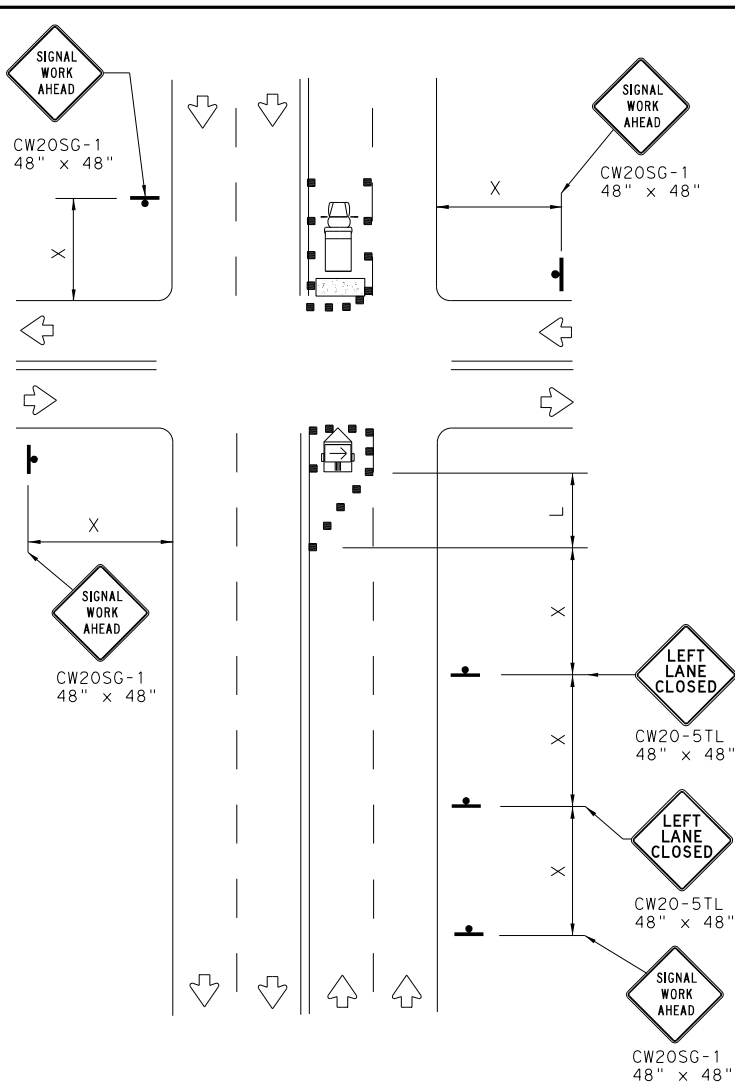
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NEAR SIDE LANE CLOSURE
 SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE RIGHT LANE CLOSURE
 SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE
 SHORT DURATION OR SHORT TERM STATIONARY

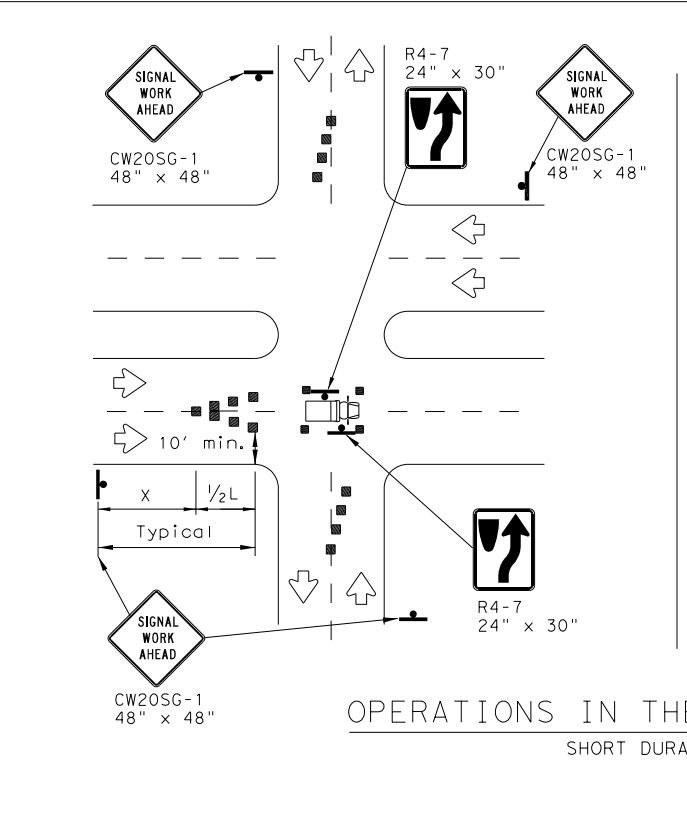
LEGEND

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

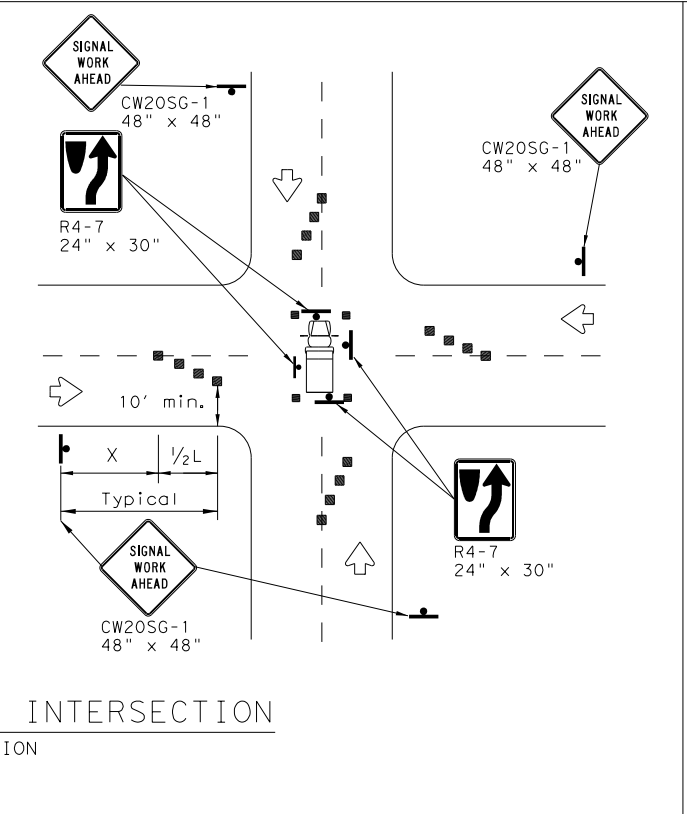
Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'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

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

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



OPERATIONS IN THE INTERSECTION
 SHORT DURATION



GENERAL NOTES

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

Texas Department of Transportation
 Traffic Operations Division Standard

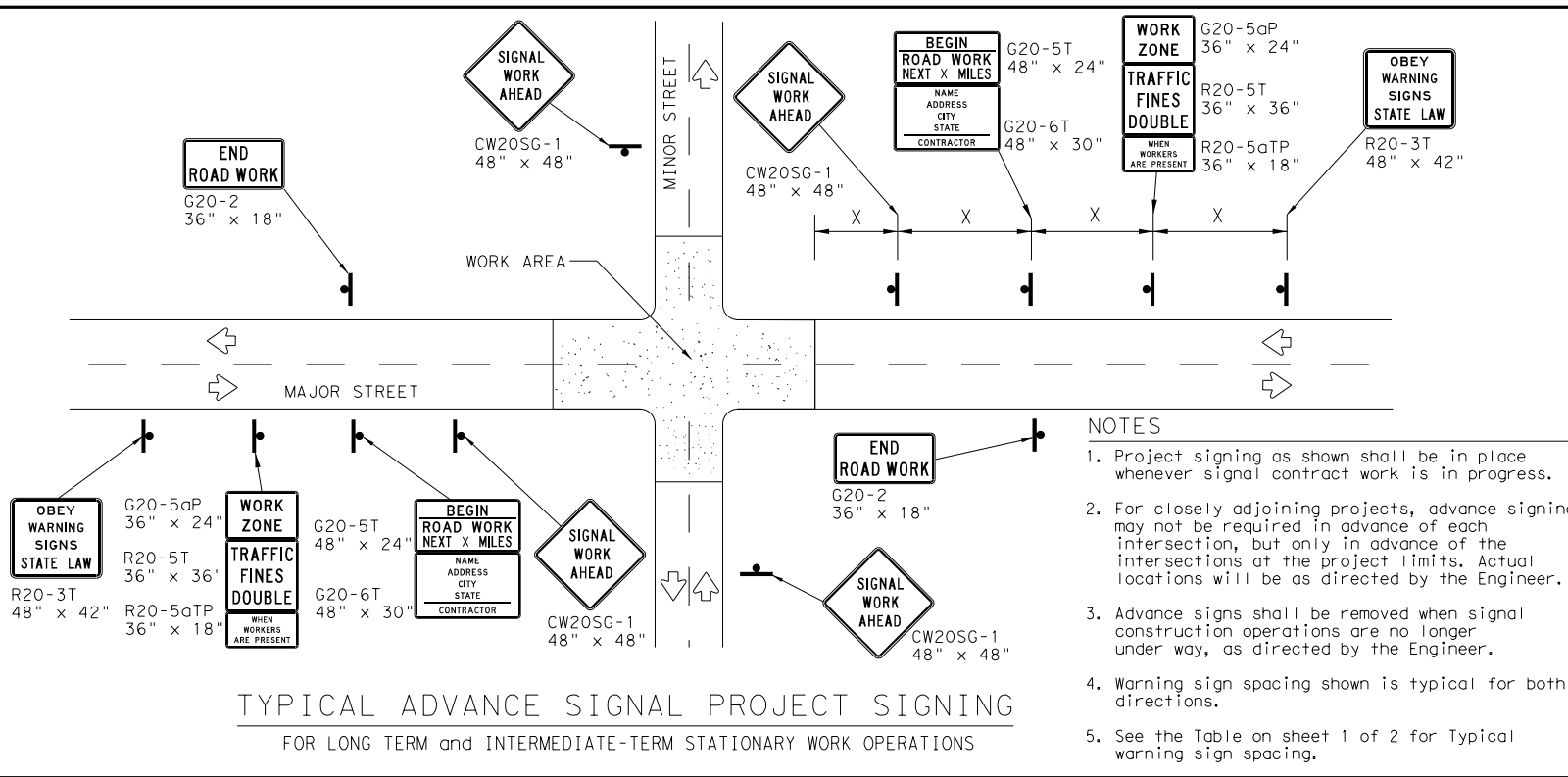
TRAFFIC SIGNAL WORK
 TYPICAL DETAILS

WZ(BTS-1)-13

FILE: wzbtts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0887	01	039, ETC.	VARIOUS
2-98 10-99 7-13	DIST	COUNTY	SHEET NO.	
4-98 3-03	ODA	ECTOR, ETC.	100	

DATE: 8/20/2020
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TYPICAL ADVANCE SIGNAL PROJECT SIGNING
FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

DURATION OF WORK

1. Work zone durations are defined in Part 6, Section 66.02 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

SIGN MOUNTING HEIGHT

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

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered, unless otherwise approved by the Engineer.
2. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night without damaging the sign sheeting. Burlap, or heavy materials such as plywood or aluminum shall not be used to cover signs.
3. Duct tape or other adhesive material shall NOT be affixed to a sign face.
4. Signs and anchor stubs shall be removed and holes back filled upon completion of the work.

REFLECTIVE SHEETING

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

SIGN SUPPORT WEIGHTS

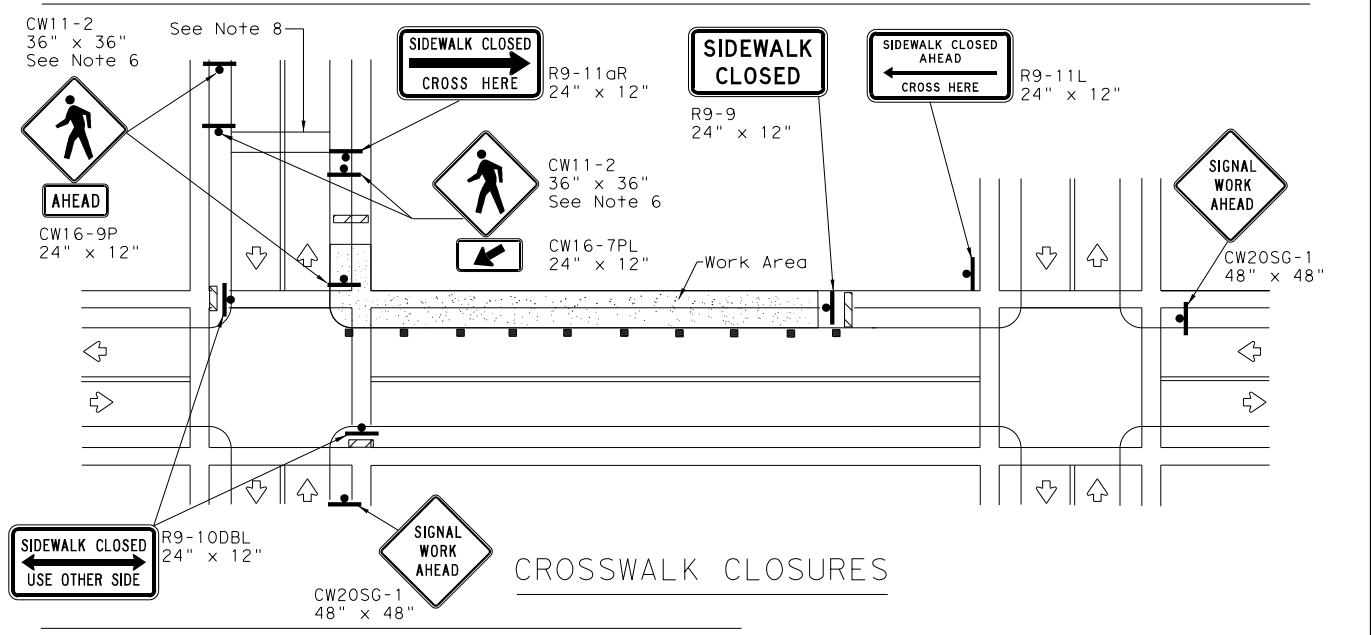
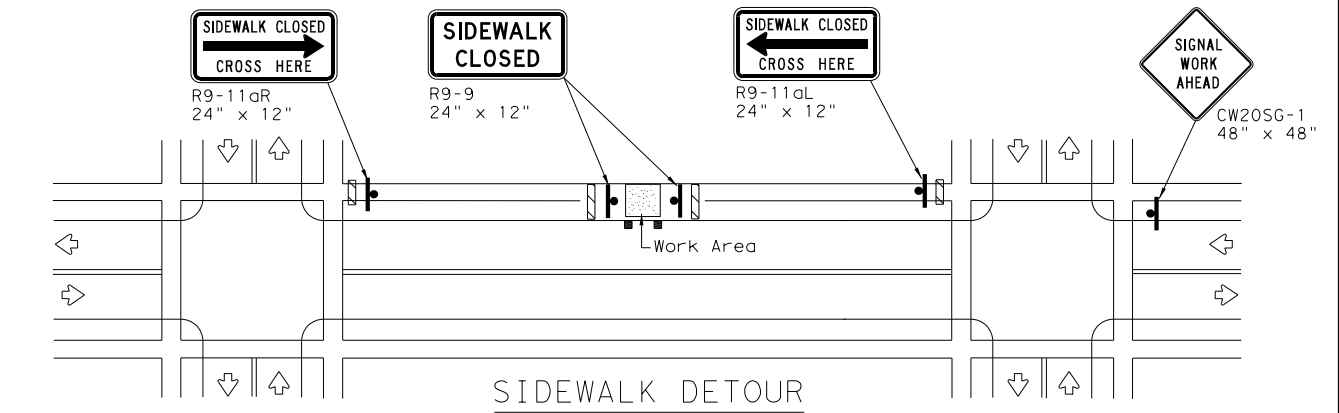
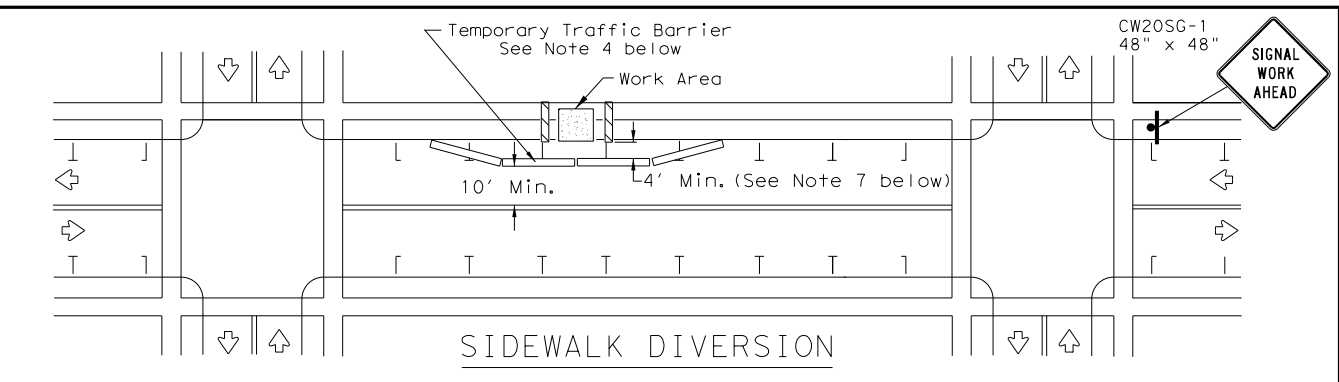
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support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

LEGEND	
	Sign
	Channelizing Devices
	Type 3 Barricade

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

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

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



PEDESTRIAN CONTROL

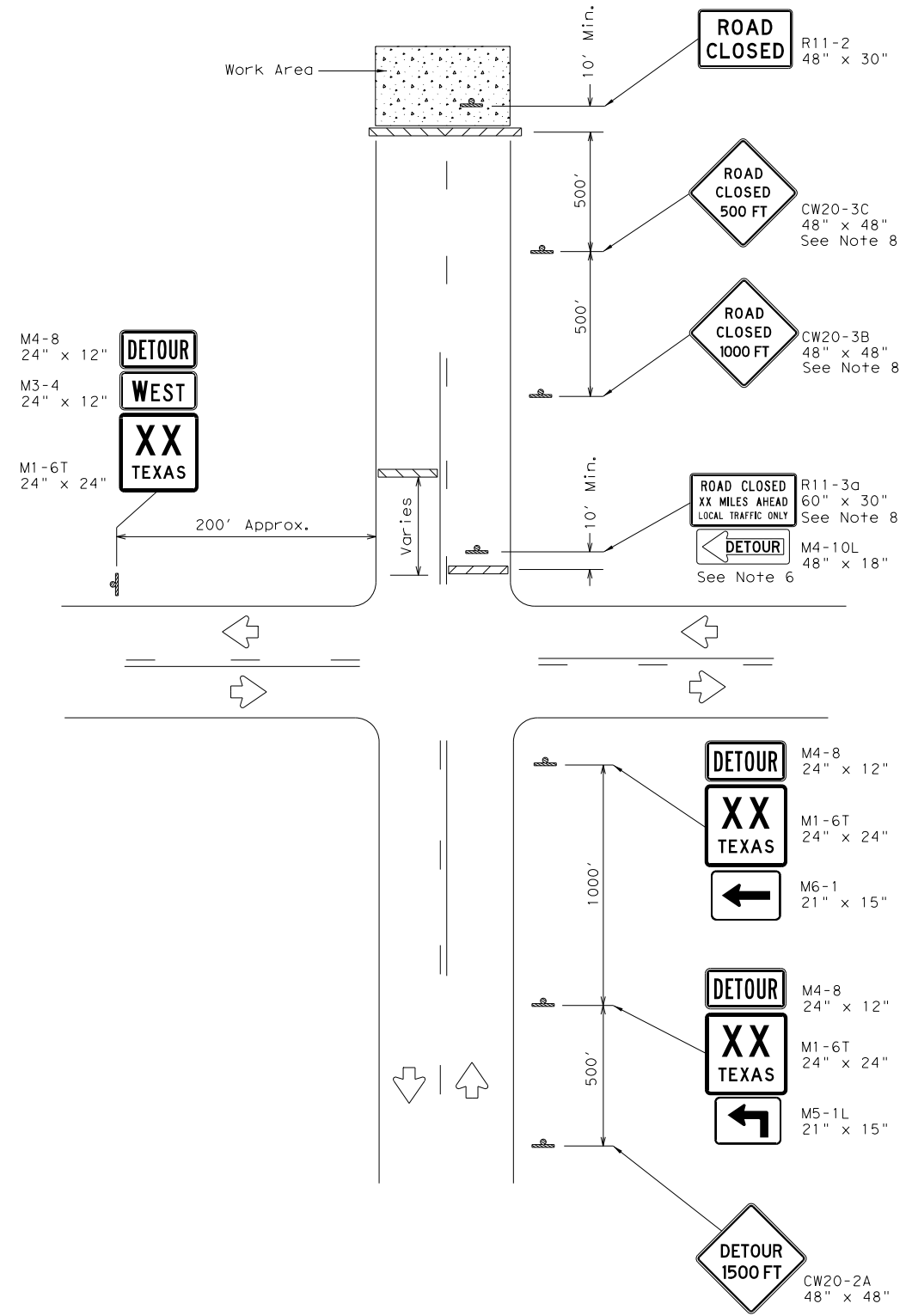
1. Holes, trenches or other hazards shall be adequately protected by covering, delineating or surrounding the hazard with orange plastic pedestrian fencing or longitudinal channelizing devices, or as directed by the Engineer.
2. "CROSSWALK CLOSURES" as detailed above will require the Engineer's approval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

SHEET 2 OF 2

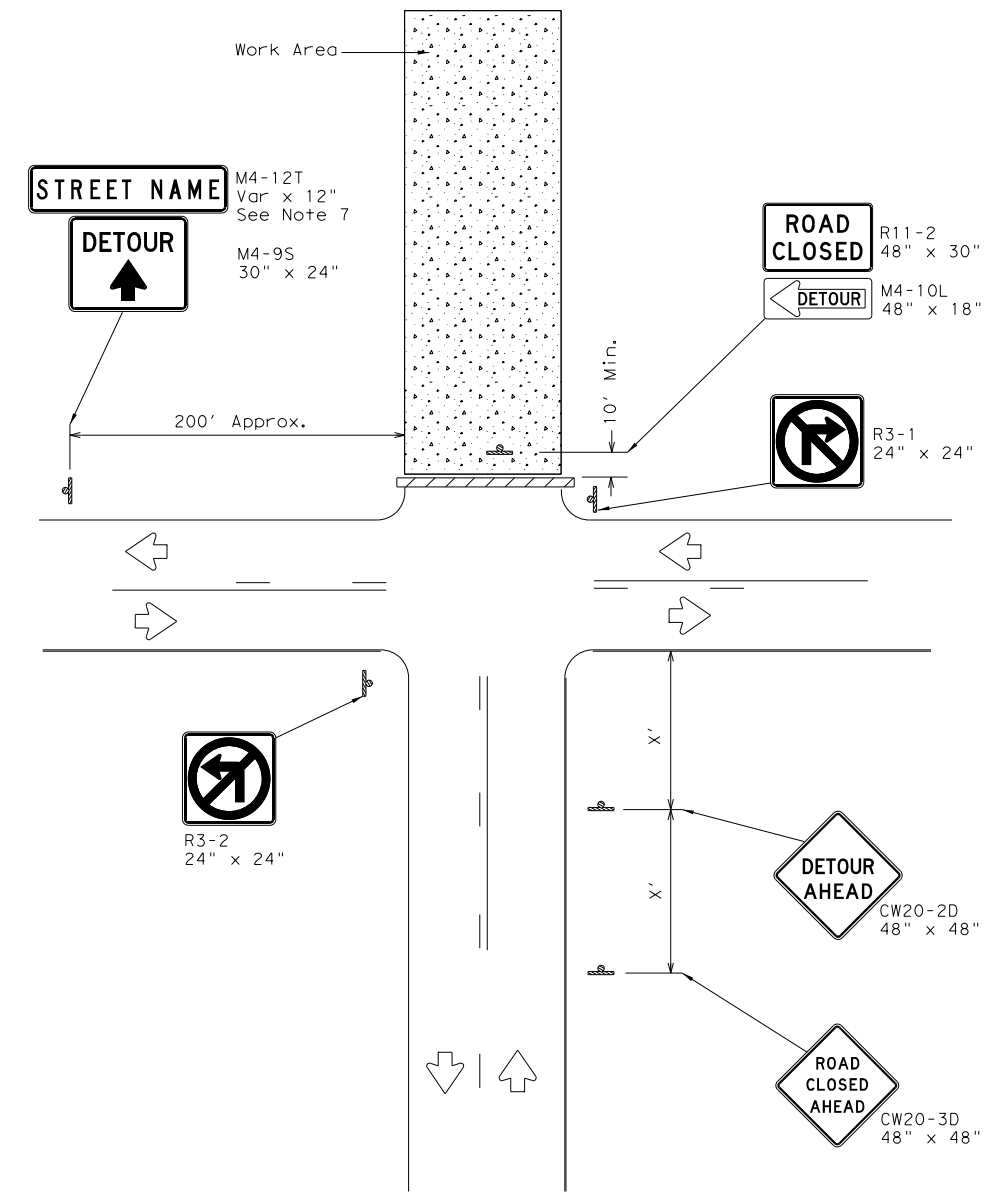
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© TxDOT	April 1992	CK:	TxDOT
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		SECT:	SECT
		JOB:	JOB
		HIGHWAY:	HIGHWAY
2-98	10-99	7-13	
4-98	3-03		
		DIST:	COUNTY
		ODA:	ECTOR, ETC.
			SHEET NO. 101

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ROAD CLOSURE BEYOND THE INTERSECTION
 Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION
 Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

Posted Speed *	Minimum Sign Spacing "X" Distance
30	120'
35	160'
40	240'
45	320'
50	400'
55	500'
60	600'
65	700'
70	800'
75	900'

* Conventional Roads Only

GENERAL NOTES

- This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
- Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices List (CWZTCD).
- Stockpiled materials shall not be placed on the traffic side of barricades.
- Barricades at the road closure should extend from pavement edge to pavement edge.
- Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be signed as shown elsewhere in the plans.
- If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.
- The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.
- For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (R11-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (R11-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3B) and ROAD CLOSED 500 FT (CW20-3C) signs.
- Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.



WORK ZONE ROAD CLOSURE DETAILS

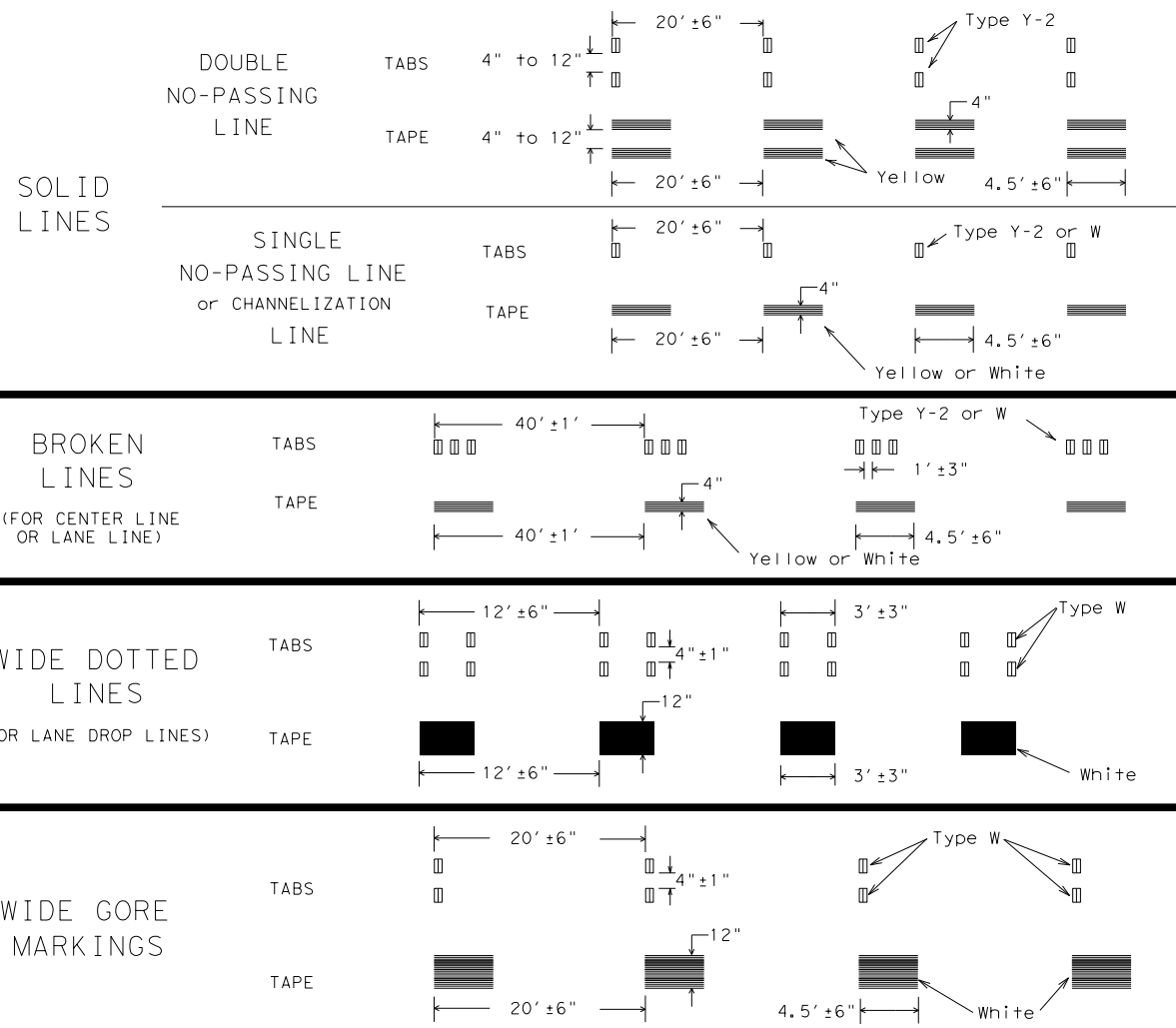
WZ (RCD) - 13

FILE: w2rcd-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	0887	01	039, ETC.	VARIOUS
1-97 4-98 7-13	DIST	COUNTY	SHEET NO.	
2-98 3-03	ODA	ECTOR, ETC.	102	

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 8/20/2020
 FILE: pw:\jmt-pw_bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\2 - TCP\TxDOT_Standards\WZ

WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



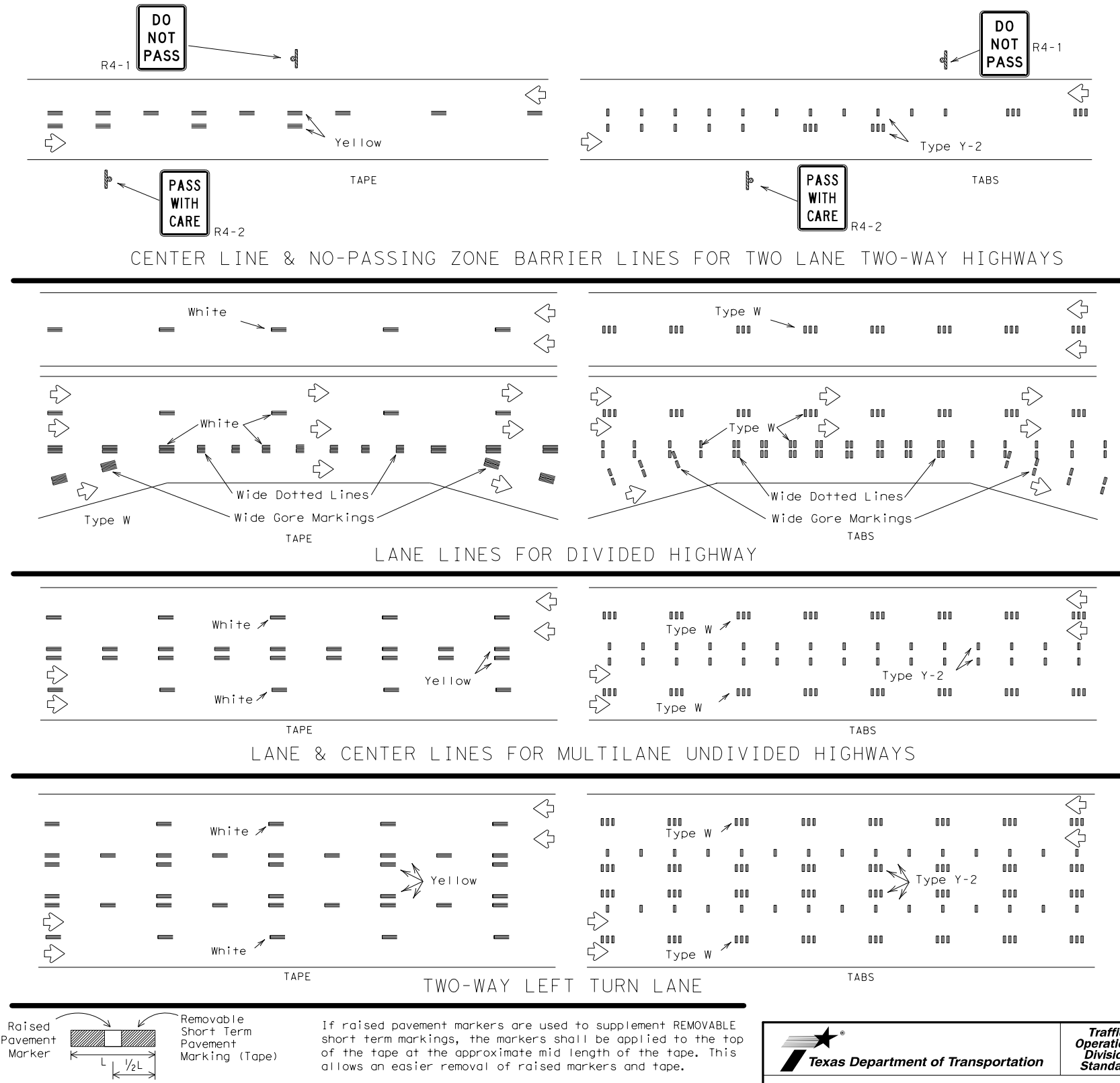
NOTES:

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

TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

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

WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



PREFABRICATED PAVEMENT MARKINGS

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

RAISED PAVEMENT MARKERS

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

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

- DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:
http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

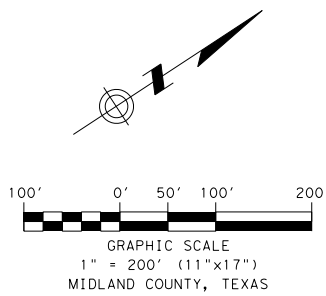


WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ (STPM) - 13

FILE:	wzstpm-13.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	April 1992	CONT:	0887	SECT:	01	JOB:	039, ETC.	VARIOUS	
1-97	3-03	7-13	DIST:	ODA	COUNTY:	ECTOR, ETC.	SHEET NO.:	103	
									111

CONTROL POINTS (SURFACE COORDINATES)							
POINT	NORTH	EAST	ELEVATION	(BASELINE) STATION	OFFSET	LT/RT	DESCRIPTION
CP7	10,660,681.541	1,682,098.619	2,898.717'	N/A	N/A	N/A	CHISELED "X" CUT IN CONCRETE SET
CP8	10,659,686.529	1,681,039.965	2,902.341'	(LP338) 78+59.84	64.68'	LT	CHISELED "X" CUT IN CONCRETE SET
CP9	10,661,887.378	1,680,742.966	2,904.546'	(LP338) 100+78.57	89.80'	RT	CHISELED "X" CUT IN CONCRETE SET



CURVE 1 (SH 191 EBFR)
 PI STATION = 309+86.98
 DELTA = 9° 33' 48.16" (LT)
 DEGREE OF CURVE = 2° 00' 00.00"
 TANGENT = 239.64
 LENGTH = 478.17
 RADIUS = 2,864.79
 PC STATION = 307+47.34
 PT STATION = 312+25.51

SH 191 EAST
 BOUND FRONTAGE
 ROAD BASELINE

CURVE 2 (SH 191 EBFR)
 PI STATION = 320+21.15
 DELTA = 3° 39' 00.80" (LT)
 DEGREE OF CURVE = 0° 28' 03.79"
 TANGENT = 390.35
 LENGTH = 780.43
 RADIUS = 12,250.00
 PC STATION = 316+30.80
 PT STATION = 324+11.23

CURVE 1 (SH 191 WBFR)
 PI STATION = 318+68.48
 DELTA = 2° 16' 09.30" (LT)
 DEGREE OF CURVE = 0° 30' 00.00"
 TANGENT = 226.95
 LENGTH = 453.85
 RADIUS = 11,459.16
 PC STATION = 316+41.52
 PT STATION = 320+95.37

CURVE 3 (LP 338)
 PI STATION = 93+04.29
 DELTA = 8° 30' 00.28" (RT)
 DEGREE OF CURVE = 1° 58' 20.00"
 TANGENT = 215.89
 LENGTH = 430.99
 RADIUS = 2,905.14
 PC STATION = 90+88.39
 PT STATION = 95+19.38

CURVE 4 (LP 338)
 PI STATION = 101+12.71
 DELTA = 8° 30' 00.00" (LT)
 DEGREE OF CURVE = 1° 30' 58.00"
 TANGENT = 280.84
 LENGTH = 560.65
 RADIUS = 3,778.13
 PC STATION = 98+31.87
 PT STATION = 103+92.52

CURVE 2 (LP 338)
 PI STATION = 81+89.84
 DELTA = 2° 23' 49.44" (RT)
 DEGREE OF CURVE = 1° 00' 00.00"
 TANGENT = 119.87
 LENGTH = 239.71
 RADIUS = 5,729.58
 PC STATION = 80+69.97
 PT STATION = 83+09.68

CURVE 1 (LP 338)
 PI STATION = 76+87.39
 DELTA = 2° 16' 33.41" (LT)
 DEGREE OF CURVE = 1° 00' 00.00"
 TANGENT = 113.81
 LENGTH = 227.59
 RADIUS = 5,729.58
 PC STATION = 75+73.58
 PT STATION = 78+01.17

I HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL DATA SHOWN HEREON WAS DETERMINED BY A FIELD SURVEY ON MARCH, 2020 UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM RTK NETWORK AND IS CORRECTLY SHOWN HEREON.



EAK 09/01/2020
 Eric A. Kreiner Date
 RPLS No. 5320

CONTROL POINT LEGEND

DENOTES PRIMARY CONTROL POINT AS NOTED (3 1/2" ALUMINUM DISK IN CONCRETE)

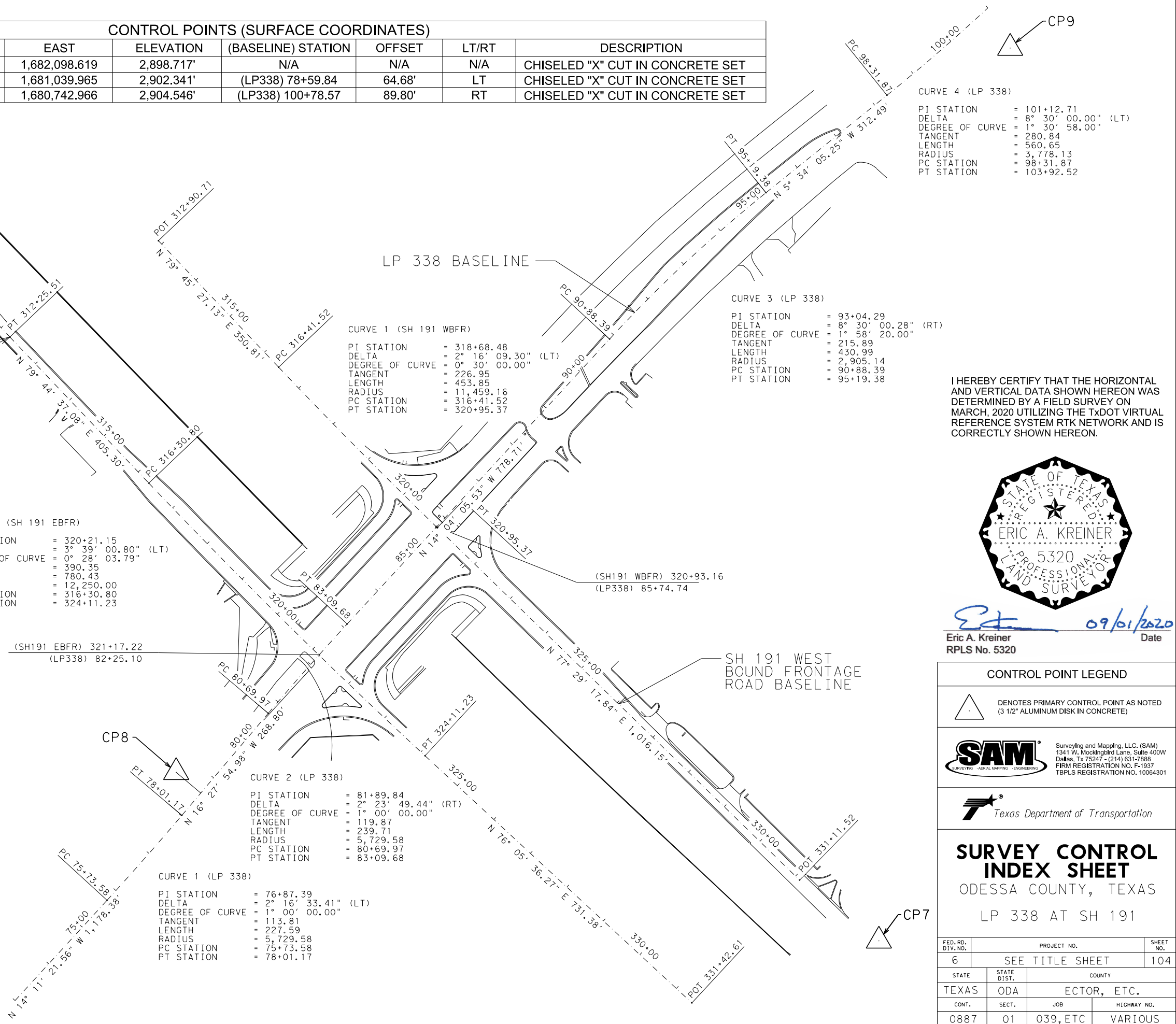
SAM Surveying and Mapping, LLC (SAM)
 1341 W. Mockingbird Lane, Suite 400W
 Dallas, TX 75247 - (214) 631-7888
 FIRM REGISTRATION NO. F-1937
 TBPLS REGISTRATION NO. 10064301

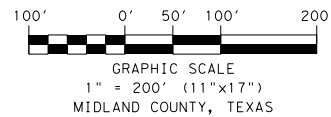
Texas Department of Transportation

SURVEY CONTROL INDEX SHEET
 ODESSA COUNTY, TEXAS
 LP 338 AT SH 191

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.	
6	SEE TITLE SHEET	104	
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	ECTOR, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0887	01	039, ETC	VARIOUS

- NOTES:**
1. THE SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E WHICH IS SIGNED, SEALED AND DATED BY A TEXAS PROFESSIONAL ENGINEER.
 2. ALL COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE (4203), NORTH AMERICAN DATUM OF 1983 (2011 ADJ: EPOCH 2010.00)
 3. THE VERTICAL DATUM FOR THIS PROJECT IS THE NAVD 1988 (CORS 2011), U.S. SURVEY FEET.
 4. ALL COORDINATE VALUES ARE BASED UPON AN AVERAGE OF FOUR 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VRS NETWORK.
 5. COORDINATES AND DISTANCES ARE U.S. SURVEY FEET. DISPLAYED IN SURFACE VALUES USING THE SURFACE ADJUSTMENT FACTOR 1.00012 (0.99988001440)





CONTROL POINTS (SURFACE COORDINATES)							
POINT	NORTH	EAST	ELEVATION	(BASELINE) STATION	OFFSET	LT/RT	DESCRIPTION
CP4	10,705,456.781	1,810,820.444	2,697.337'	(FM307) 515+74.77	45.78'	RT	5/8-INCH IRON ROD SET
CP5	10,706,365.183	1,813,978.954	2,706.053'	(FM307) 548+60.15	39.80'	LT	5/8-INCH IRON ROD SET
CP6	10,704,905.615	1,812,882.708	2,711.677'	(FM1379) 10+96.98	34.62'	LT	CHISELED "X" CUT IN CONCRETE SET

NOTES:

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2. ALL COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE (4203), NORTH AMERICAN DATUM OF 1983 (2011 ADJ: EPOCH 2010.00)
3. THE VERTICAL DATUM FOR THIS PROJECT IS THE NAVD 1988 (CORS 2011), U.S. SURVEY FEET.
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CP5

I HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL DATA SHOWN HEREON WAS DETERMINED BY A FIELD SURVEY ON MARCH, 2020 UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM RTK NETWORK AND IS CORRECTLY SHOWN HEREON.



EAK 09/01/2020
 Eric A. Kreiner Date
 RPLS No. 5320

CONTROL POINT LEGEND

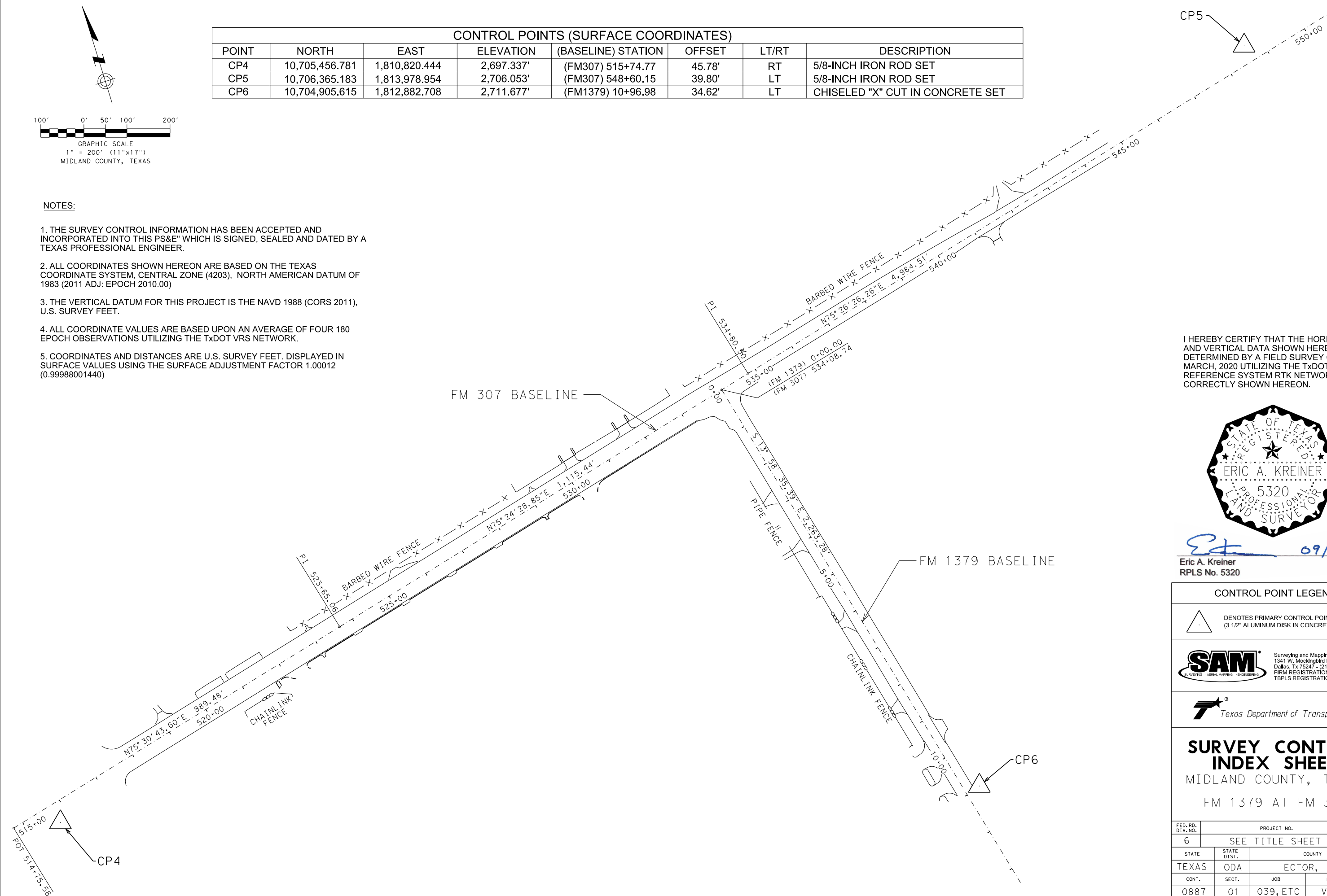
DENOTES PRIMARY CONTROL POINT AS NOTED (3 1/2" ALUMINUM DISK IN CONCRETE)

SAM Surveying and Mapping, LLC (SAM)
 1341 W. Mockingbird Lane, Suite 400W
 Dallas, TX 75247 - (214) 631-7888
 FIRM REGISTRATION NO. F-1937
 TBPLS REGISTRATION NO. 10064301

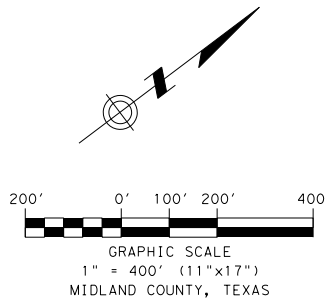


SURVEY CONTROL INDEX SHEET
 MIDLAND COUNTY, TEXAS
 FM 1379 AT FM 307

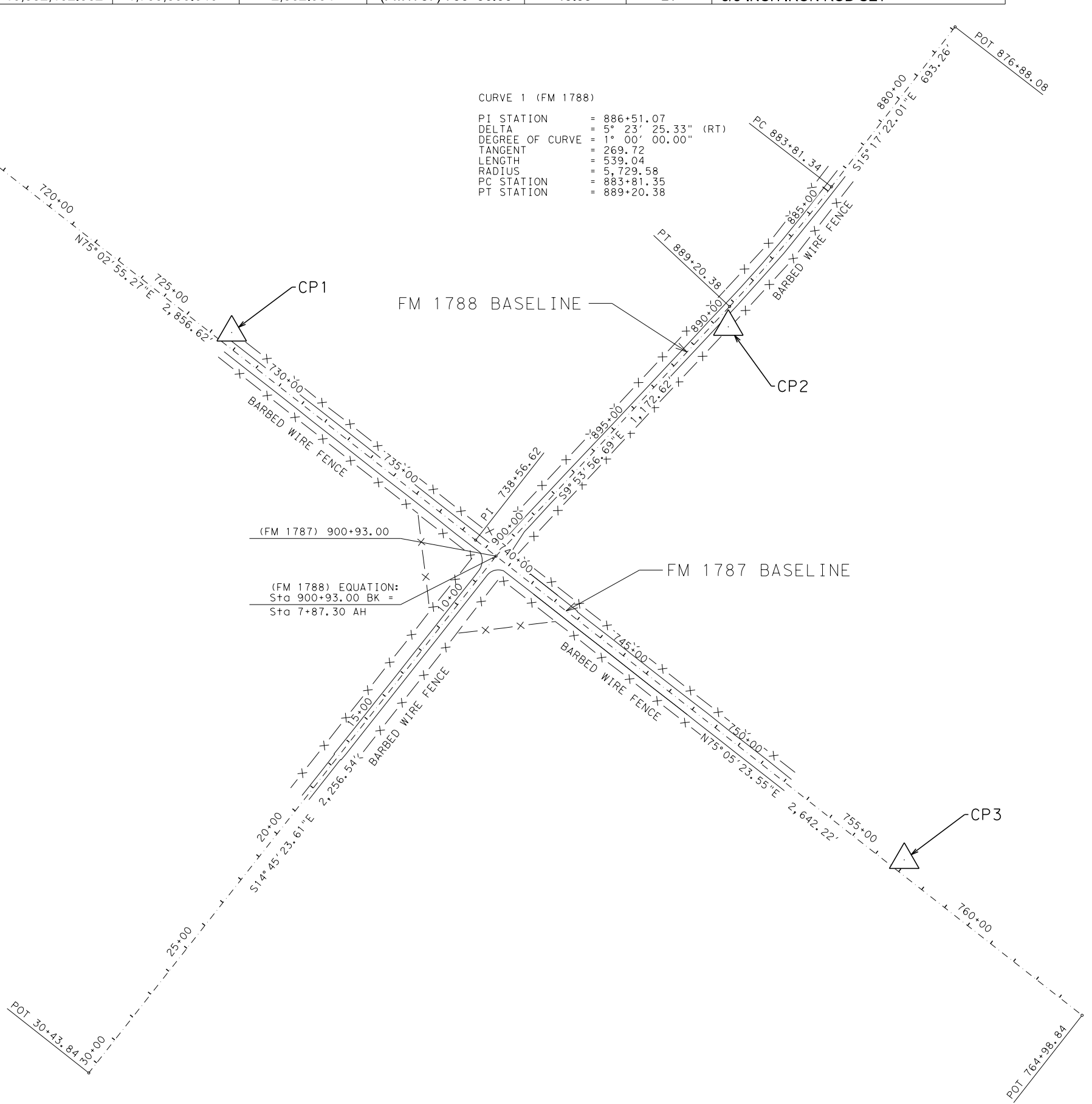
FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.	
6	SEE TITLE SHEET	105	
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	ECTOR, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0887	01	039, ETC	VARIOUS



CONTROL POINTS (SURFACE COORDINATES)							
POINT	NORTH	EAST	ELEVATION	(BASELINE) STATION	OFFSET	LT/RT	DESCRIPTION
CP1	10,581,379.811	1,733,003.322	2,880.907	(FM1787) 727+58.99	45.35'	LT	5/8-INCH IRON ROD SET
CP2	10,582,751.639	1,734,012.757	2,876.086	(FM1788) 889+74.38	44.34'	LT	5/8-INCH IRON ROD SET
CP3	10,582,132.862	1,735,836.040	2,862.994	(FM1787) 756+90.06	43.39'	LT	5/8-INCH IRON ROD SET



CURVE 1 (FM 1788)
 PI STATION = 886+51.07
 DELTA = 5° 23' 25.33" (RT)
 DEGREE OF CURVE = 1° 00' 00.00"
 TANGENT = 269.72
 LENGTH = 539.04
 RADIUS = 5,729.58
 PC STATION = 883+81.35
 PT STATION = 889+20.38



I HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL DATA SHOWN HEREON WAS DETERMINED BY A FIELD SURVEY ON MARCH, 2020 UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM RTK NETWORK AND IS CORRECTLY SHOWN HEREON.



EAK 09/01/2020
 Eric A. Kreiner Date
 RPLS No. 5320

- NOTES:
1. THE SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E WHICH IS SIGNED, SEALED AND DATED BY A TEXAS PROFESSIONAL ENGINEER.
 2. ALL COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE (4203), NORTH AMERICAN DATUM OF 1983 (2011 ADJ: EPOCH 2010.00)
 3. THE VERTICAL DATUM FOR THIS PROJECT IS THE NAVD 1988 (CORS 2011), U.S. SURVEY FEET.
 4. ALL COORDINATE VALUES ARE BASED UPON AN AVERAGE OF FOUR 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VRS NETWORK.
 5. COORDINATES AND DISTANCES ARE U.S. SURVEY FEET. DISPLAYED IN SURFACE VALUES USING THE SURFACE ADJUSTMENT FACTOR 1.00012 (0.99988001440)

CONTROL POINT LEGEND

DENOTES PRIMARY CONTROL POINT AS NOTED (3 1/2" ALUMINUM DISK IN CONCRETE)

SAM Surveying and Mapping, LLC (SAM)
 1341 W. Mockingbird Lane, Suite 400W
 Dallas, TX 75247 - (214) 631-7888
 FIRM REGISTRATION NO. F-1937
 TBPLS REGISTRATION NO. 10064301



SURVEY CONTROL INDEX SHEET
 MIDLAND COUNTY, TEXAS
 FM 1787 AT FM 1788

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.	
6	SEE TITLE SHEET	106	
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	ECTOR, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0887	01	039, ETC	VARIOUS

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\ODA*AL1.TG

LP 338

Chain LP338_STA contains:
 LP338001 CUR LP338_STA_1 CUR LP338_STA_2 CUR LP338_STA_3 CUR LP338_STA_4 LP338-002

Beginning chain LP338_STA description
 Feature: Geom_Secondary

Point LP338001 N 10,658,286.6901 E 1,681,467.6246 Sta 63+95.20
 Course from LP338001 to PC LP338_STA_1 N 14° 11' 21.56" W Dist 1,178.3817

Curve Data

 Curve LP338_STA_1
 P.I. Station = 76+87.39 N 10,659,539.4607 E 1,681,150.8733
 Delta = 2° 16' 33.41" (LT)
 Degree = 1° 00' 00.00"
 Tangent = 113.8124
 Length = 227.5949
 Radius = 5,729.5800
 External = 1.1303
 Long Chord = 227.5800
 Mid. Ord. = 1.1301
 P.C. Station = 75+73.58 N 10,659,429.1206 E 1,681,178.7718
 P.T. Station = 78+01.17 N 10,659,648.6059 E 1,681,118.6150
 C.C. = N 10,658,024.6474 E 1,675,623.9953
 Back = N 14° 11' 21.56" W
 Ahead = N 16° 27' 54.98" W
 Chord Bear = N 15° 19' 38.27" W

Course from PT LP338_STA_1 to PC LP338_STA_2 N 16° 27' 54.98" W Dist 268.8008

Curve Data

 Curve LP338_STA_2
 P.I. Station = 81+89.84 N 10,660,021.3389 E 1,681,008.4522
 Delta = 2° 23' 49.44" (RT)
 Degree = 1° 00' 00.00"
 Tangent = 119.8709
 Length = 239.7068
 Radius = 5,729.5800
 External = 1.2538
 Long Chord = 239.6894
 Mid. Ord. = 1.2535
 P.C. Station = 80+69.97 N 10,659,906.3837 E 1,681,042.4277
 P.T. Station = 83+09.68 N 10,660,137.6145 E 1,680,979.3143
 C.C. = N 10,661,530.3421 E 1,686,537.0474
 Back = N 16° 27' 54.98" W
 Ahead = N 14° 04' 05.53" W
 Chord Bear = N 15° 16' 00.25" W

Course from PT LP338_STA_2 to PC LP338_STA_3 N 14° 04' 05.53" W Dist 778.7133

Curve Data

 Curve LP338_STA_3
 P.I. Station = 93+04.29 N 10,661,102.3878 E 1,680,737.5491
 Delta = 8° 30' 00.28" (RT)
 Degree = 1° 58' 20.00"
 Tangent = 215.8911
 Length = 430.9900
 Radius = 2,905.1392
 External = 8.0108
 Long Chord = 430.5949
 Mid. Ord. = 7.9887
 P.C. Station = 90+88.39 N 10,660,892.9719 E 1,680,790.0272
 P.T. Station = 95+19.38 N 10,661,317.2603 E 1,680,716.6014
 C.C. = N 10,661,599.1437 E 1,683,608.0328
 Back = N 14° 04' 05.53" W
 Ahead = N 5° 34' 05.25" W
 Chord Bear = N 9° 49' 05.39" W

Course from PT LP338_STA_3 to PC LP338_STA_4 N 5° 34' 05.25" W Dist 312.4883

Curve Data

 Curve LP338_STA_4
 P.I. Station = 101+12.71 N 10,661,907.7868 E 1,680,659.0314
 Delta = 8° 30' 00.00" (LT)
 Degree = 1° 30' 58.00"
 Tangent = 280.8378
 Length = 560.6452
 Radius = 3,779.1296
 External = 10.4206
 Long Chord = 560.1312
 Mid. Ord. = 10.3919
 P.C. Station = 98+31.87 N 10,661,628.2741 E 1,680,686.2809
 P.T. Station = 103+92.52 N 10,662,180.2016 E 1,680,590.7666
 C.C. = N 10,661,261.5880 E 1,676,924.9830
 Back = N 5° 34' 05.25" W
 Ahead = N 14° 04' 05.25" W
 Chord Bear = N 9° 49' 05.25" W

Course from PT LP338_STA_4 to LP338002 N 14° 04' 05.25" W Dist 367.0182

Point LP338002 N 10,662,536.2120 E 1,680,501.5535 Sta 107+59.54

Ending chain LP338_STA description

SH 191 EBFR

Chain SH191EBFR_STA contains:
 EBFRSH191001 CUR SH191EBFR_STA_1 CUR SH191EBFR_STA_2 EBFRSH191002

Beginning chain SH191EBFR_STA description
 Feature: Geom_Secondary

Point EBFRSH191001 N 10,659,837.9212 E 1,679,319.6387 Sta 304+17.53
 Course from EBFRSH191001 to PC SH191EBFR_STA_1 N 89° 18' 25.23" E Dist 329.8103

Curve Data

 Curve SH191EBFR_STA_1
 P.I. Station = 309+86.98 N 10,659,844.8085 E 1,679,889.0485
 Delta = 9° 33' 48.16" (LT)
 Degree = 2° 00' 00.00"
 Tangent = 239.6411
 Length = 478.1690
 Radius = 2,864.7900
 External = 10.0056
 Long Chord = 477.6141
 Mid. Ord. = 9.9708
 P.C. Station = 307+47.34 N 10,659,841.9101 E 1,679,649.4249
 P.T. Station = 312+25.51 N 10,659,887.4773 E 1,680,124.8603
 C.C. = N 10,662,706.4906 E 1,679,614.7762
 Back = N 89° 18' 25.23" E
 Ahead = N 79° 44' 37.08" E
 Chord Bear = N 84° 31' 31.15" E

Course from PT SH191EBFR_STA_1 to PC SH191EBFR_STA_2 N 79° 44' 37.08" E Dist 405.2953

Curve Data

 Curve SH191EBFR_STA_2
 P.I. Station = 320+21.15 N 10,660,029.1436 E 1,680,907.7881
 Delta = 3° 39' 00.80" (LT)
 Degree = 0° 28' 03.79"
 Tangent = 390.3461
 Length = 780.4281
 Radius = 12,250.0000
 External = 6.2176
 Long Chord = 780.2961
 Mid. Ord. = 6.2145
 P.C. Station = 316+30.80 N 10,659,959.6413 E 1,680,523.6794
 P.T. Station = 324+11.23 N 10,660,122.9592 E 1,681,286.6927
 C.C. = N 10,672,013.8975 E 1,678,342.5313
 Back = N 79° 44' 37.08" E
 Ahead = N 76° 05' 36.27" E
 Chord Bear = N 77° 55' 06.67" E

Course from PT SH191EBFR_STA_2 to EBFRSH191002 N 76° 05' 36.27" E Dist 731.3832

Point EBFRSH191002 N 10,660,298.7396 E 1,681,996.6382 Sta 331+42.61

Ending chain SH191EBFR_STA description

SH 191 WBFR

Chain SH191WBFR_STA contains:
 WBFRSH191001 CUR SH191WBFR_STA_1 WBFRSH191002

Beginning chain SH191WBFR_STA description
 Feature: Geom_Secondary

Point WBFRSH191001 N 10,660,243.3052 E 1,680,126.9185 Sta 312+90.71
 Course from WBFRSH191001 to PC SH191WBFR_STA_1 N 79° 45' 27.13" E Dist 350.8135

Curve Data

 Curve SH191WBFR_STA_1
 P.I. Station = 318+68.48 N 10,660,346.0405 E 1,680,695.4793
 Delta = 2° 16' 09.30" (LT)
 Degree = 0° 30' 00.00"
 Tangent = 226.9547
 Length = 453.8500
 Radius = 11,459.1600
 External = 2.2473
 Long Chord = 453.8203
 Mid. Ord. = 2.2468
 P.C. Station = 316+41.52 N 10,660,305.6848 E 1,680,472.1414
 P.T. Station = 320+95.37 N 10,660,395.2078 E 1,680,917.0442
 C.C. = N 10,671,582.2327 E 1,678,434.5412
 Back = N 79° 45' 27.13" E
 Ahead = N 77° 29' 17.84" E
 Chord Bear = N 78° 37' 22.48" E

Course from PT SH191WBFR_STA_1 to WBFRSH191002 N 77° 29' 17.84" E Dist 1,016.1511

Point WBFRSH191002 N 10,660,615.3460 E 1,681,909.0635 Sta 331+11.52

Ending chain SH191WBFR_STA description

NOTES:

- ALIGNMENTS WERE RECREATED FROM SURVEY DATA AND ARE BEST FIT TO EXISTING ROADWAYS FOR PROJECT REFERENCE.



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

HORIZONTAL ALIGNMENT DATA

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.	SHEET 1 OF 2
JMT	6	(SEE TITLE SHEET)	VARIOUS	
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JMT	TEXAS	ODA	ECTOR, ETC.	
CHECK	CONTROL	SECTION	JOB	107
JMT	0887	01	039, ETC.	

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\ODA*AL1.T

FM 307

Chain FM307 contains:
 FM307001 FM307002 FM307003 FM307004

Beginning chain FM307 description
 Feature: Geom_Centerline

```

Point FM307001      N  10,705,476.2916 E   1,810,712.9538 Sta   514+75.58
Course from FM307001 to FM307002 N 75° 30' 43.60" E Dist 889.4800
Point FM307002      N  10,705,698.8176 E   1,811,574.1489 Sta   523+65.06
Course from FM307002 to FM307003 N 75° 24' 28.85" E Dist 1,115.4400
Point FM307003      N  10,705,979.8349 E   1,812,653.6097 Sta   534+80.50
Course from FM307003 to FM307004 N 75° 26' 26.26" E Dist 4,984.5100
Point FM307004      N  10,707,232.8565 E   1,817,478.0554 Sta   584+65.01
  
```

Ending chain FM307 description

FM 1379

Chain FM1379 contains:
 FM1379001 FM1379002

Beginning chain FM1379 description
 Feature: Geom_Centerline

```

Point FM1379001     N  10,705,961.7561 E   1,812,584.1643 Sta    0+00.00
Course from FM1379001 to FM1379002 S 13° 58' 35.39" E Dist 2,263.2804
Point FM1379002     N  10,703,765.4804 E   1,813,130.8006 Sta    22+63.28
  
```

Ending chain FM1379 description

FM 1787

Chain FM1787 contains:
 FM1787001 FM1787002 FM1787003

Beginning chain FM1787 description
 Feature: Geom_Centerline

```

Point FM1787001     N  10,580,882.1831 E   1,731,315.5841 Sta   710+00.00
Course from FM1787001 to FM1787002 N 75° 02' 55.27" E Dist 2,856.6200
Point FM1787002     N  10,581,619.1858 E   1,734,075.4944 Sta   738+56.62
Course from FM1787002 to FM1787003 N 75° 05' 23.55" E Dist 2,642.2200
Point FM1787003     N  10,582,299.0384 E   1,736,628.7525 Sta   764+98.84
  
```

Ending chain FM1787 description

FM 1788

Chain FM1788 contains:
 FM1788001 CUR FM1788_1 STAEQU1 FM1788002

Beginning chain FM1788 description
 Feature: Geom_Centerline

```

Point FM1788001     N  10,583,991.8110 E   1,733,659.4922 Sta   876+88.08
Course from FM1788001 to PC FM1788_1 S 15° 17' 22.01" E Dist 693.2630
  
```

Curve Data

```

*-----*
Curve FM1788_1
P.I. Station      886+51.07 N   10,583,062.9142 E   1,733,913.4258
Delta             = 5° 23' 25.33" (RT)
Degree            = 1° 00' 00.00"
Tangent           = 269.7175
Length            = 539.0370
Radius            = 5,729.5800
External          = 6.3449
Long Chord        = 538.8382
Mid. Ord.         = 6.3379
P.C. Station      883+81.35 N   10,583,323.0853 E   1,733,842.3025
P.T. Station      889+20.38 N   10,582,797.2123 E   1,733,959.7938
C.C.              = S 15° 17' 22.01" E
Back              = S 9° 53' 56.69" E
Ahead             = S 12° 35' 39.35" E
Chord Bear        = S 12° 35' 39.35" E
  
```

Course from PT FM1788_1 to STAEQU1 S 9° 53' 56.69" E Dist 1,172.6151

Equation: Sta 900+93.00 (BK) = Sta 7+87.30 (AH) End Region 1

Begin Region 2

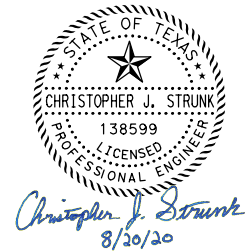
```

Point STAEQU1       N  10,581,642.0550 E   1,734,161.3819 Sta    7+87.30
Course from STAEQU1 to FM1788002 S 14° 45' 23.61" E Dist 2,256.5401
Point FM1788002     N  10,579,459.9428 E   1,734,736.1512 Sta   30+43.84
  
```

Ending chain FM1788 description

NOTES:

- ALIGNMENTS WERE RECREATED FROM SURVEY DATA AND ARE BEST FIT TO EXISTING ROADWAYS FOR PROJECT REFERENCE.

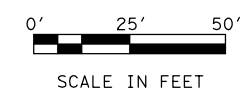


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

HORIZONTAL ALIGNMENT DATA

			SHEET 2 OF 2	
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.	
JMT	6	(SEE TITLE SHEET)	VARIOUS	
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JMT	TEXAS	ODA	ECTOR, ETC.	108
CHECK	CONTROL	SECTION	JOB	
JMT	0887	01	039, ETC.	

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\LP338*RE

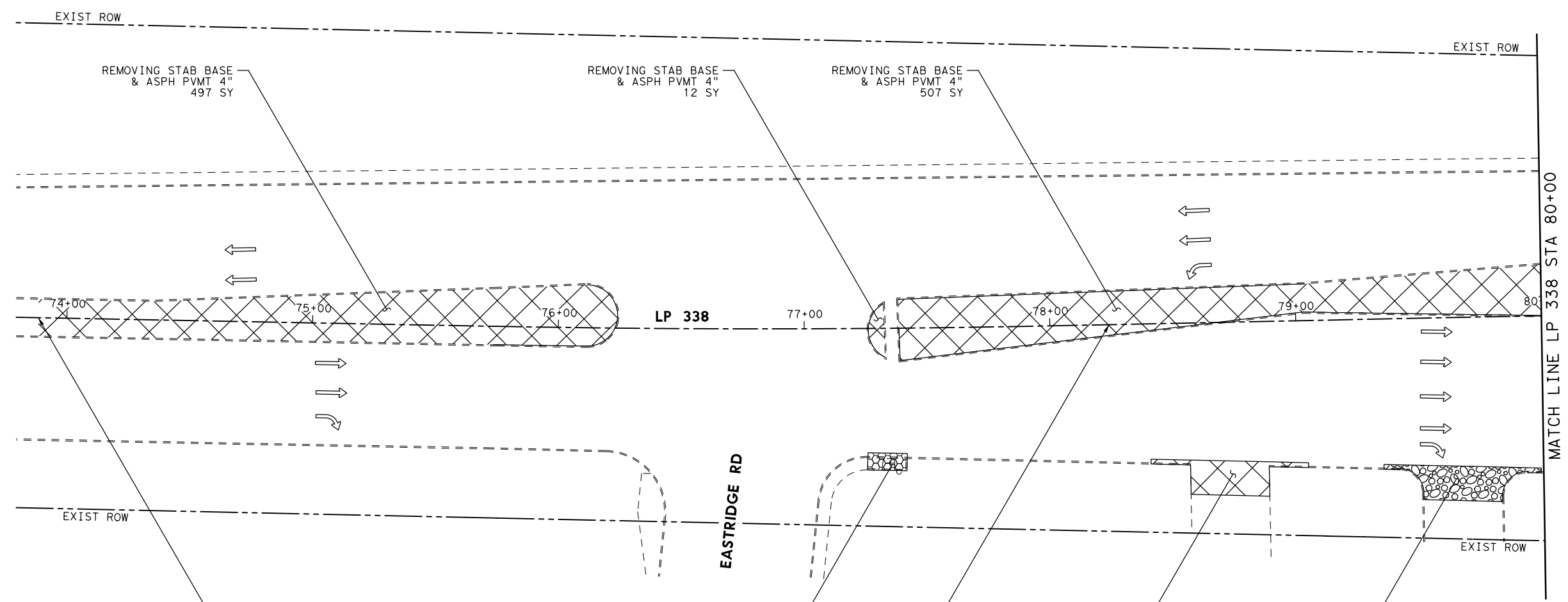


LEGEND

- EXIST DIRECTIONAL ARROW
- STAB BASE AND ASPH PVMT REMOVAL
- CURB AND GUTTER REMOVAL
- CONC REMOVAL
- SIDEWALK REMOVAL
- RIPRAP REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



BEGIN PROJECT
 BEGIN CONSTRUCTION
 BEGIN CSJ 0887-01-039, ETC.
 CL LP 338 STA 73+88.38

REMOVE CONC SIDEWALK OR RAMP
 13 SY

CL LP 338

REMOVE ACP DRIVEWAY
 57 SY

REMOVE CONC DRIVEWAY
 61 SY



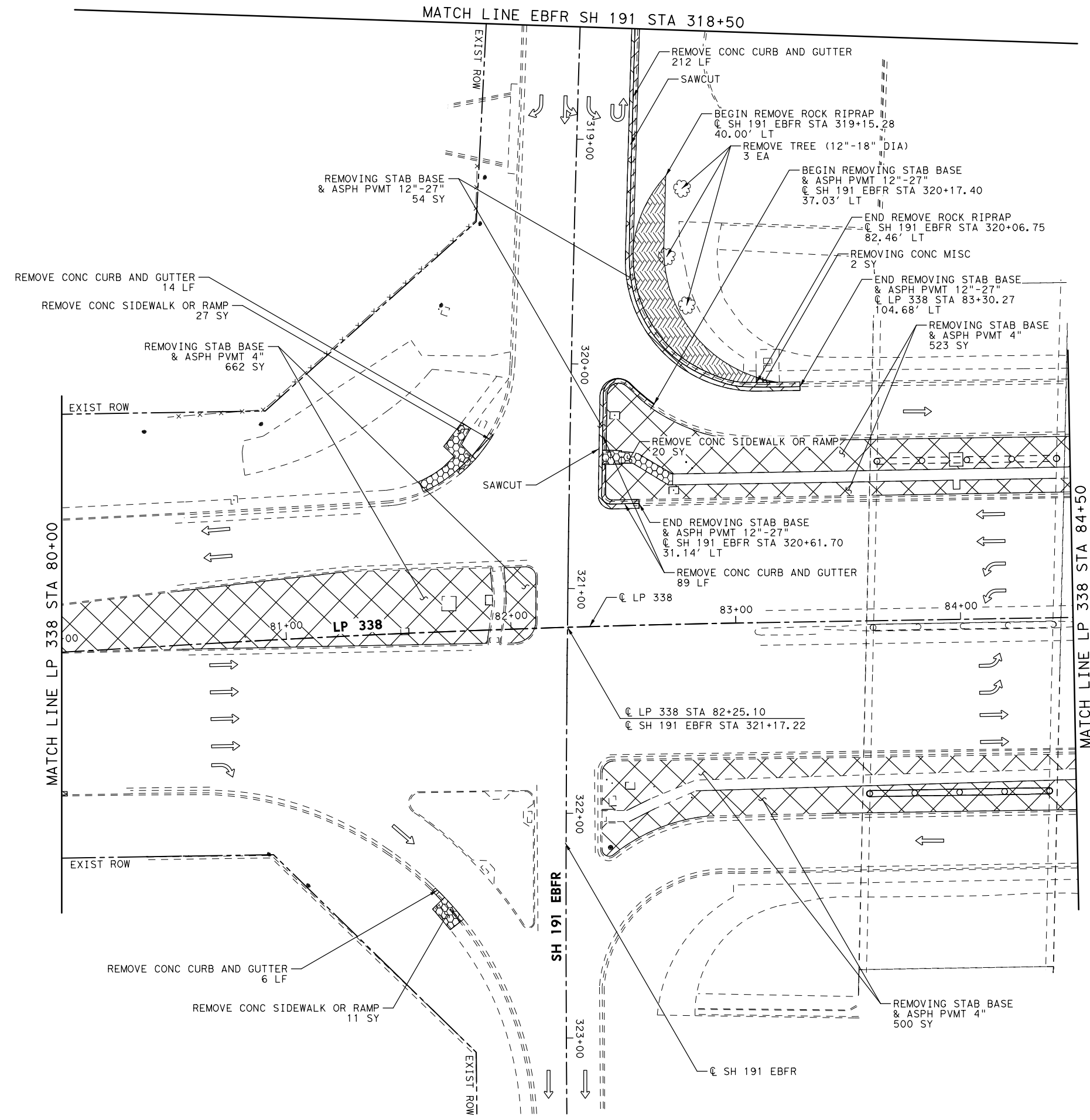
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**LP 338
 REMOVAL PLAN
 AT SH 191**

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						109

SHEET 1 OF 7

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\LP338*RE



- LEGEND**
- EXIST DIRECTIONAL ARROW
 - STAB BASE AND ASPH PVMT REMOVAL
 - CURB AND GUTTER REMOVAL
 - CONC REMOVAL
 - SIDEWALK REMOVAL
 - RIPRAP REMOVAL

- NOTES:**
- REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

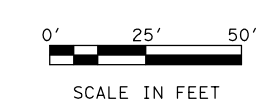
**LP 338
 REMOVAL PLAN
 AT SH 191 EBFR**

SHEET 2 OF 7

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

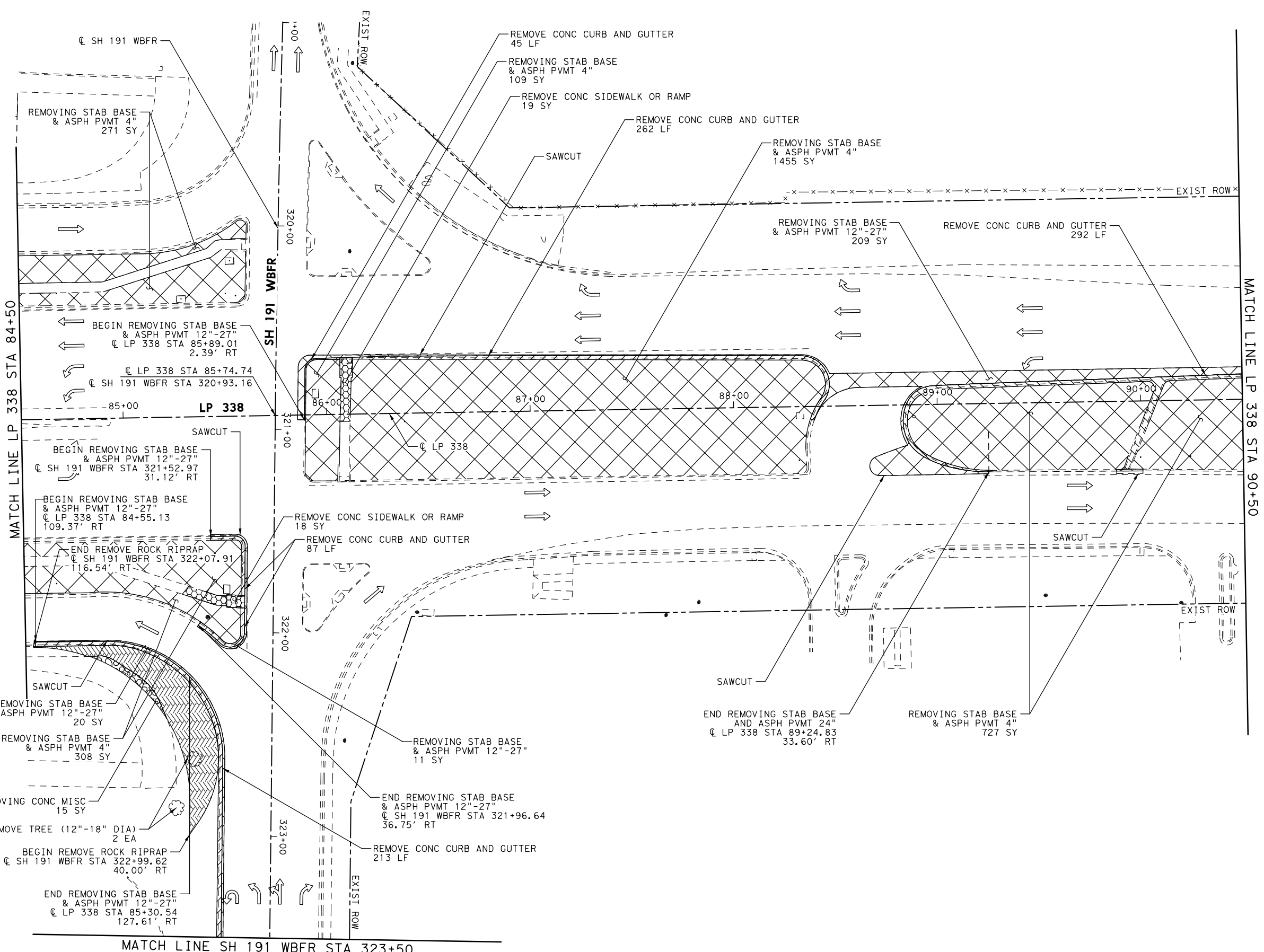
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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - STAB BASE AND ASPH PVMT REMOVAL
 - CURB AND GUTTER REMOVAL
 - CONC REMOVAL
 - SIDEWALK REMOVAL
 - RIPRAP REMOVAL

- NOTES:**
- REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



JMT TBPE REGISTRATION NO. F-16341

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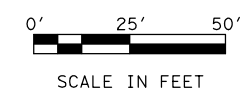
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**LP 338
 REMOVAL PLAN
 AT SH 191 WBFR**

SHEET 3 OF 7

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						111

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\LP338*REM

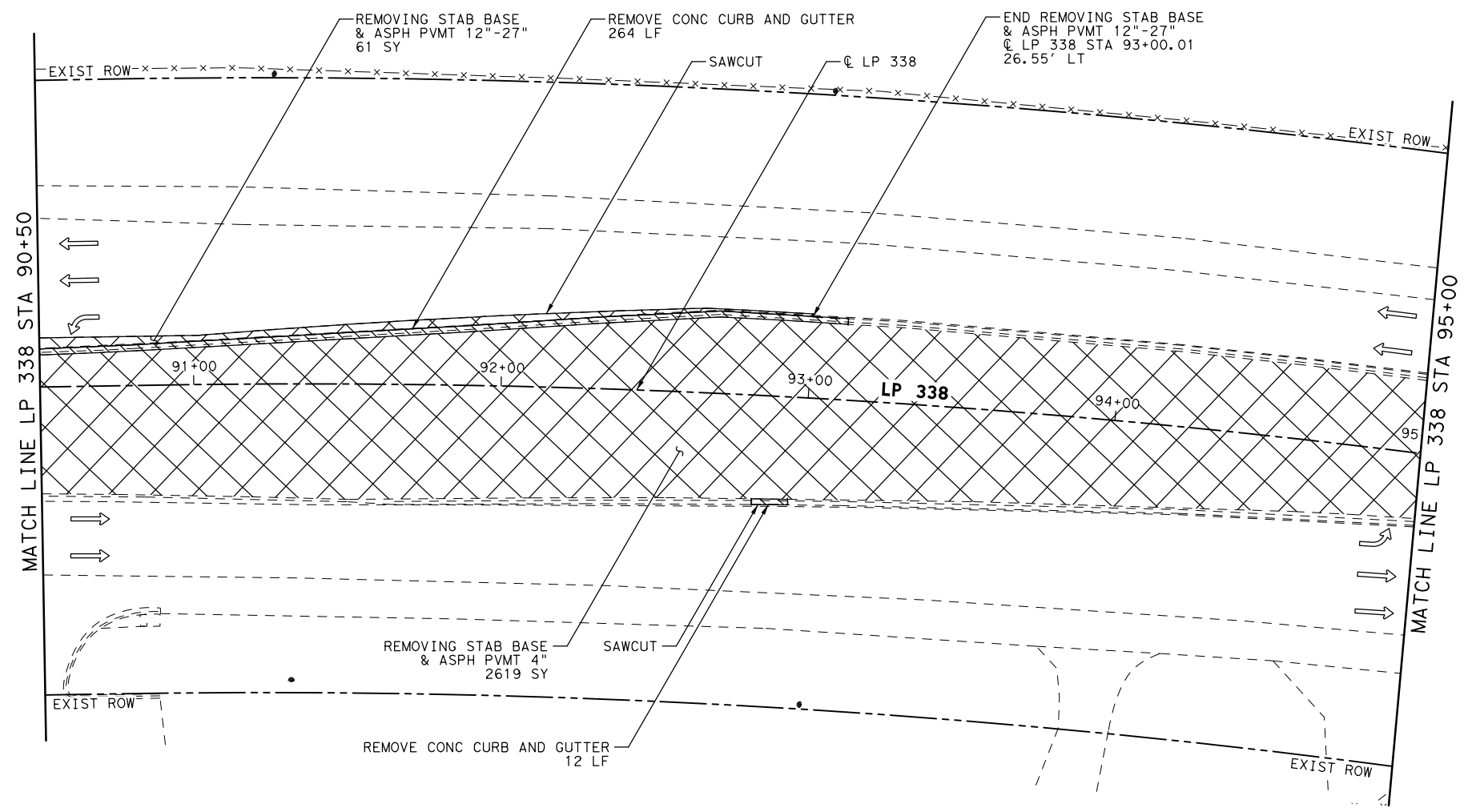


LEGEND

- EXIST DIRECTIONAL ARROW
- STAB BASE AND ASPH PVMT REMOVAL
- CURB AND GUTTER REMOVAL
- CONC REMOVAL
- SIDEWALK REMOVAL
- RIPRAP REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



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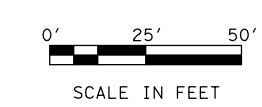
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**LP 338
 REMOVAL PLAN
 AT SH 191**

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						112

SHEET 4 OF 7

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\LP338*REM

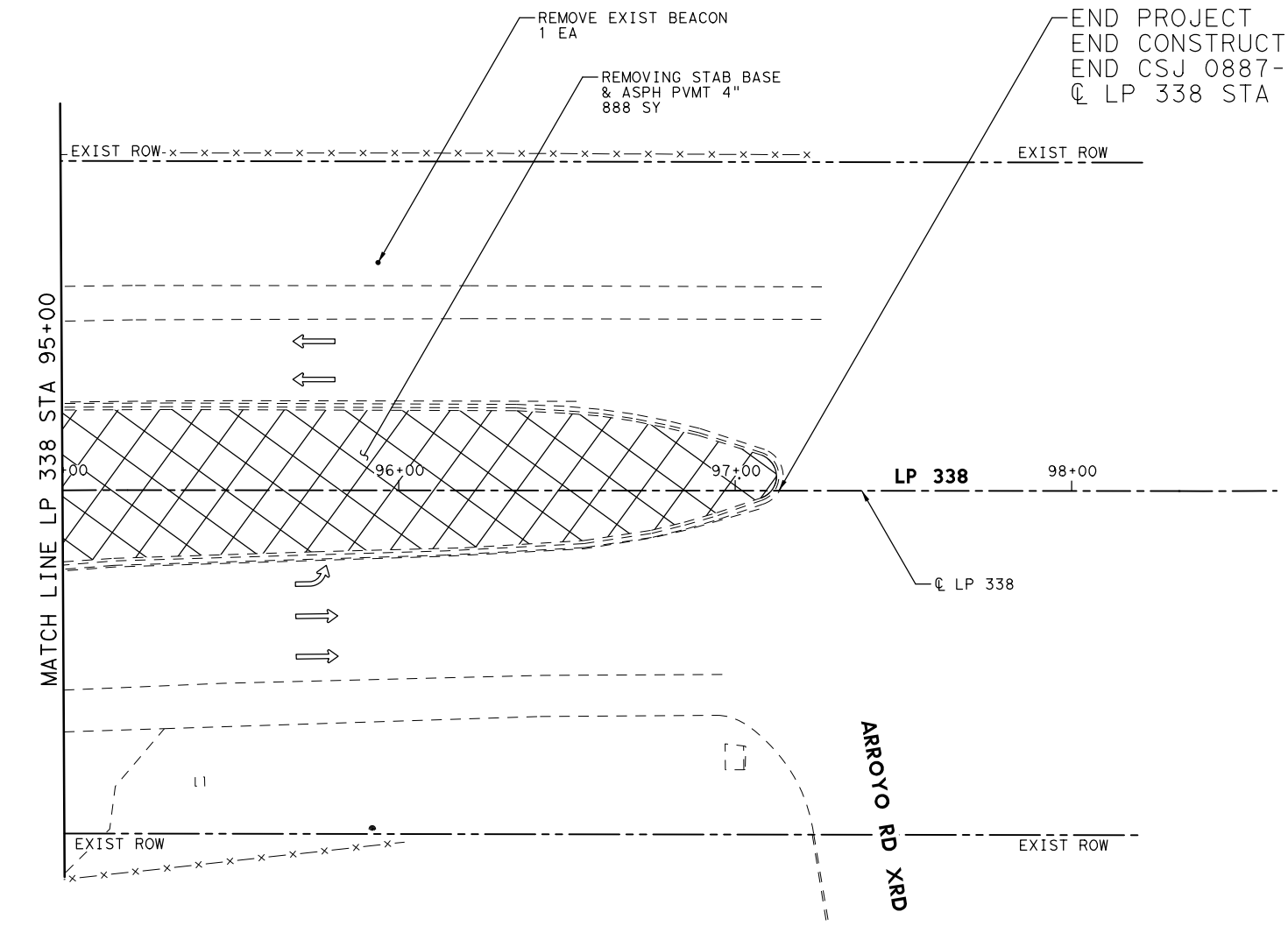


LEGEND

- EXIST DIRECTIONAL ARROW
- STAB BASE AND ASPH PVMT REMOVAL
- CURB AND GUTTER REMOVAL
- CONC REMOVAL
- SIDEWALK REMOVAL
- RIPRAP REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



END PROJECT
 END CONSTRUCTION
 END CSJ 0887-01-039, ETC.
 @ LP 338 STA 97+13.00



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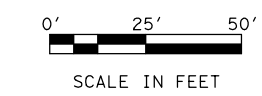
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**LP 338
 REMOVAL PLAN
 AT SH 191**

SHEET 5 OF 7

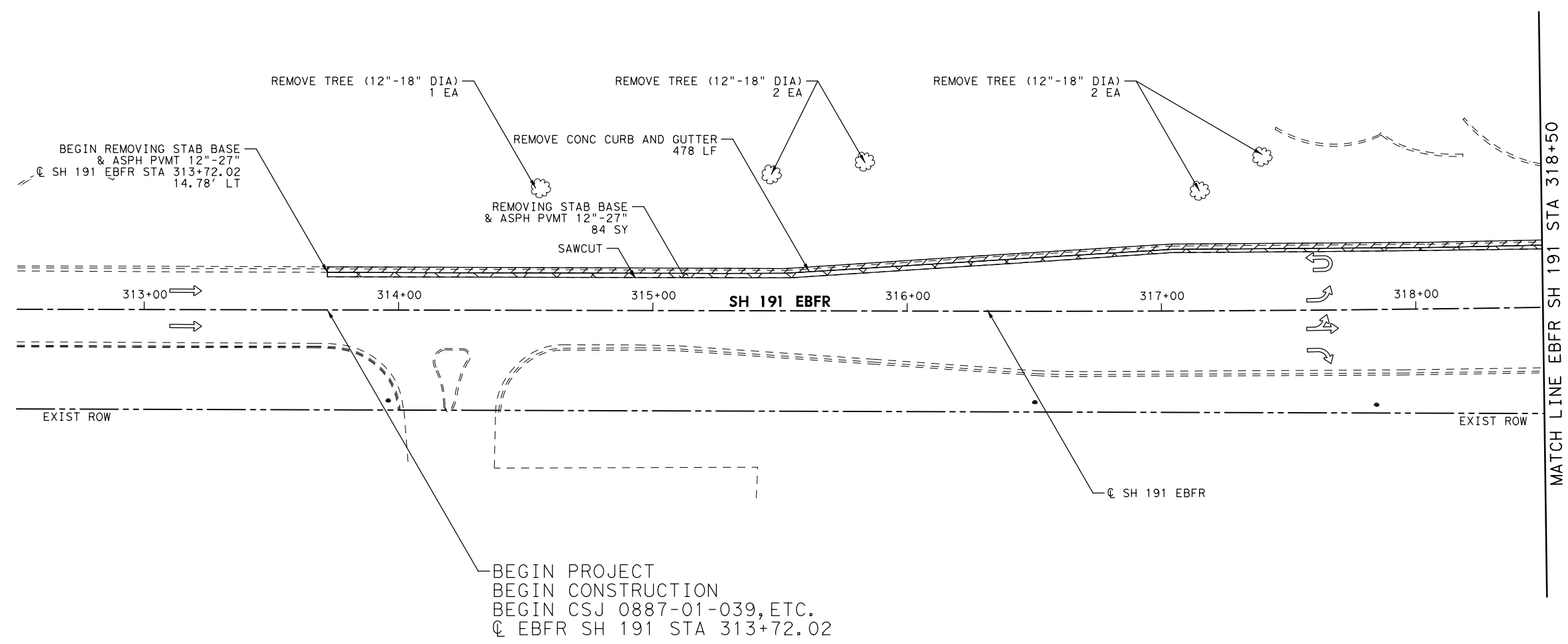
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GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						113

DATE: 8/20/2020
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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - STAB BASE AND ASPH PVMT REMOVAL
 - CURB AND GUTTER REMOVAL
 - CONC REMOVAL
 - SIDEWALK REMOVAL
 - RIPRAP REMOVAL

- NOTES:**
1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



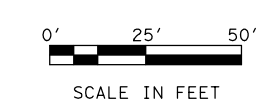
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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SH 191 EBFR
 REMOVAL PLAN
 AT LP 338**

SHEET 6 OF 7

DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK JMT			114

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\LP338*RE



LEGEND

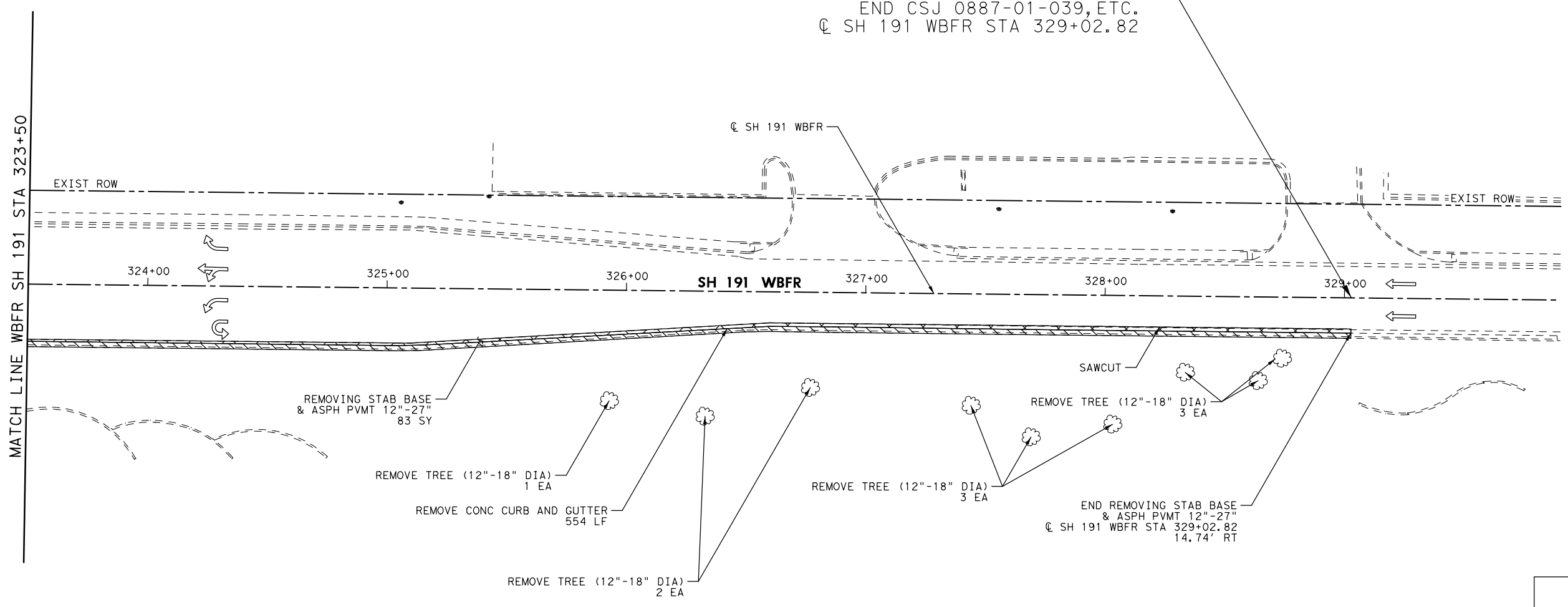
- EXIST DIRECTIONAL ARROW
- STAB BASE AND ASPH PVMT REMOVAL
- CURB AND GUTTER REMOVAL
- CONC REMOVAL
- SIDEWALK REMOVAL
- RIPRAP REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



END PROJECT
 END CONSTRUCTION
 END CSJ 0887-01-039, ETC.
 @ SH 191 WBFR STA 329+02.82



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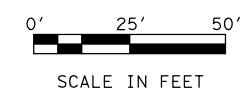
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SH 191 WBFR
 REMOVAL PLAN
 AT LP 338**

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						115

SHEET 7 OF 7

DATE: 8/20/2020
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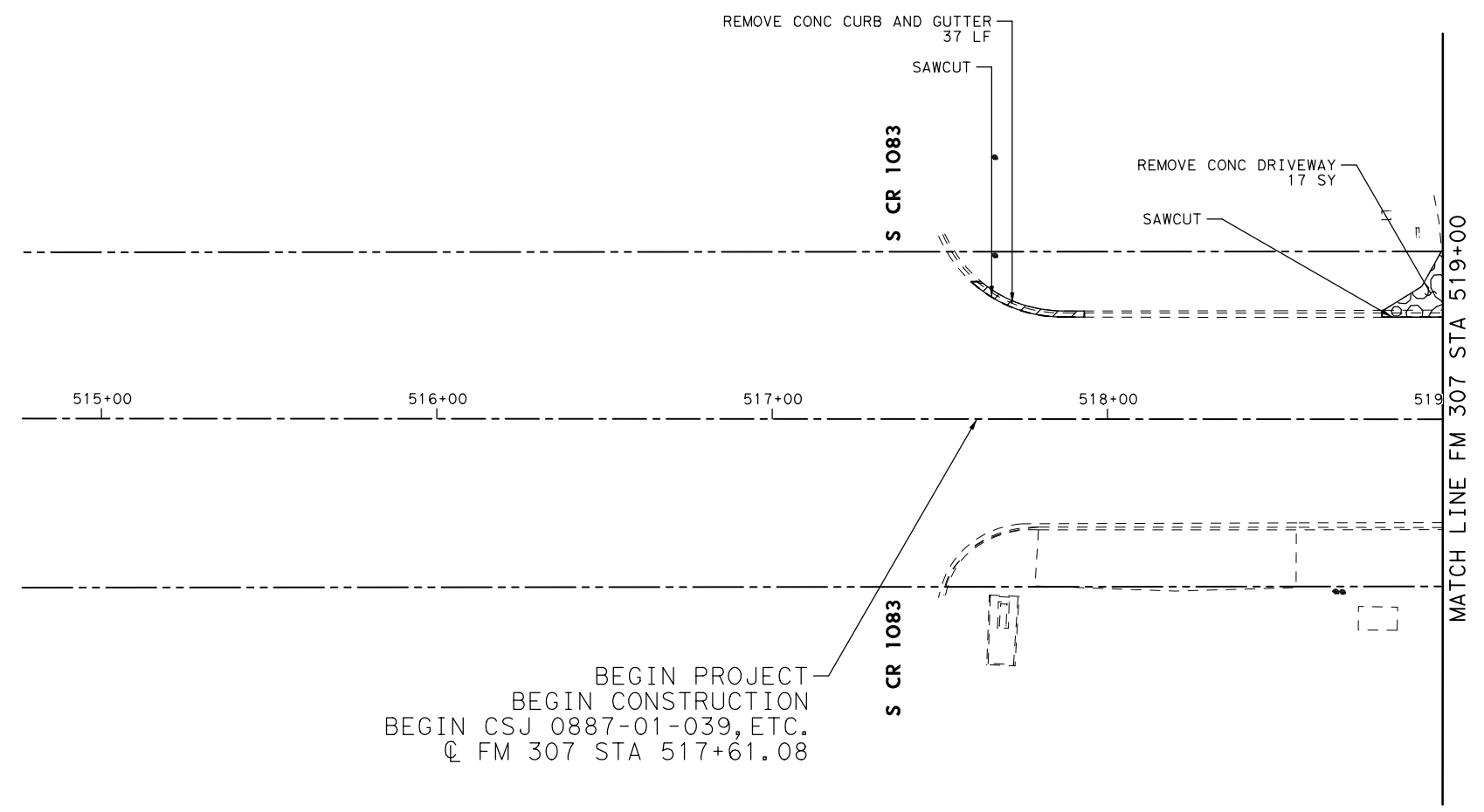


LEGEND

- EXIST DIRECTIONAL ARROW
- STAB BASE AND ASPH PVMT REMOVAL
- CURB AND GUTTER REMOVAL
- CONC REMOVAL
- SIDEWALK REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



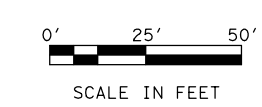
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
 REMOVAL PLAN
 AT FM 1379**

SHEET 1 OF 7

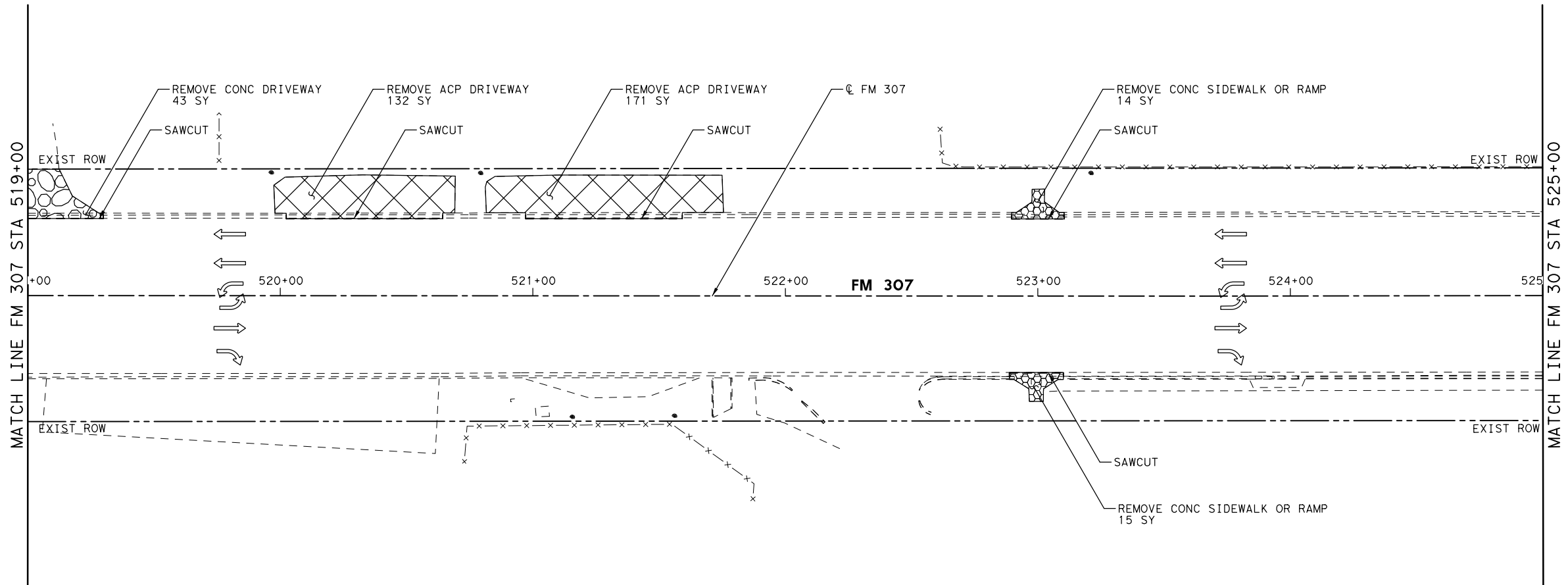
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GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK JMT			SHEET NO. 116

DATE: 8/20/2020
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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - STAB BASE AND ASPH PVMT REMOVAL
 - CURB AND GUTTER REMOVAL
 - CONC REMOVAL
 - SIDEWALK REMOVAL

- NOTES:**
- REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



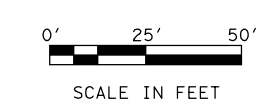
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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
 REMOVAL PLAN
 AT FM 1379**

SHEET 2 OF 7

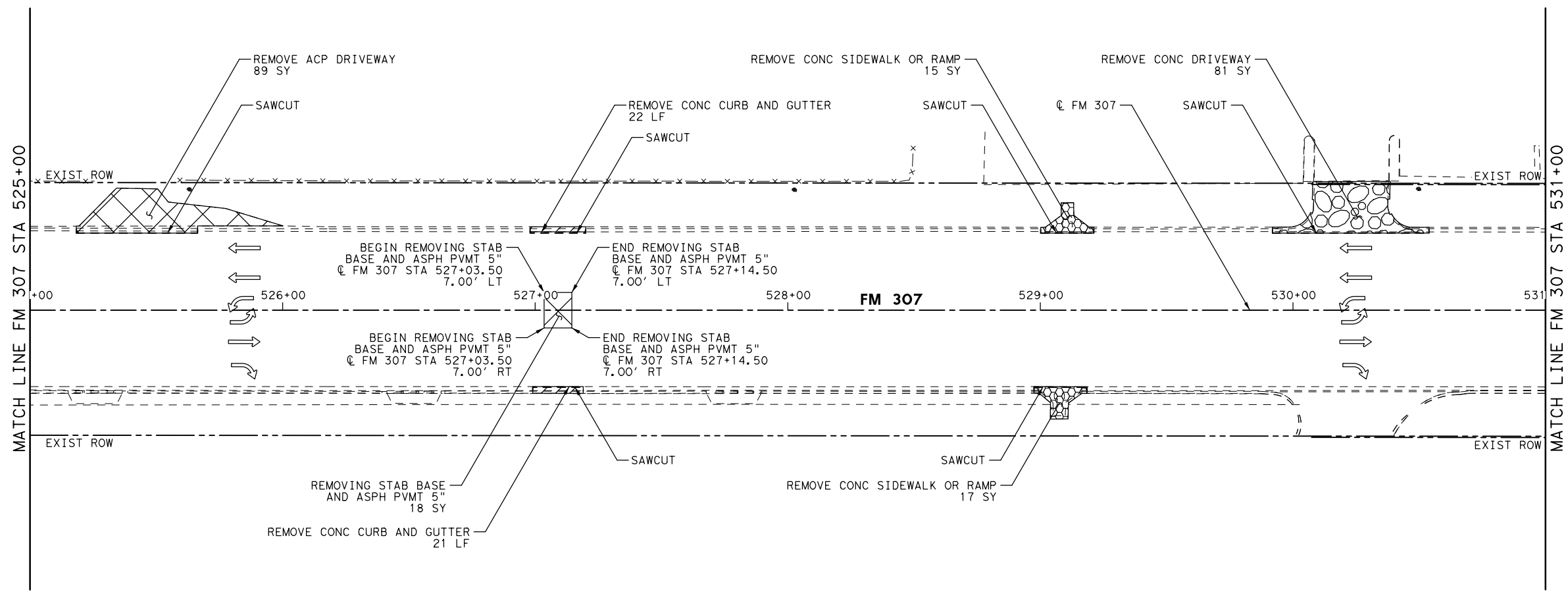
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GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK JMT			117

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM307*RE



- LEGEND**
- EXIST DIRECTIONAL ARROW
 - STAB BASE AND ASPH PVMT REMOVAL
 - CURB AND GUTTER REMOVAL
 - CONC REMOVAL
 - SIDEWALK REMOVAL

- NOTES:**
- REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



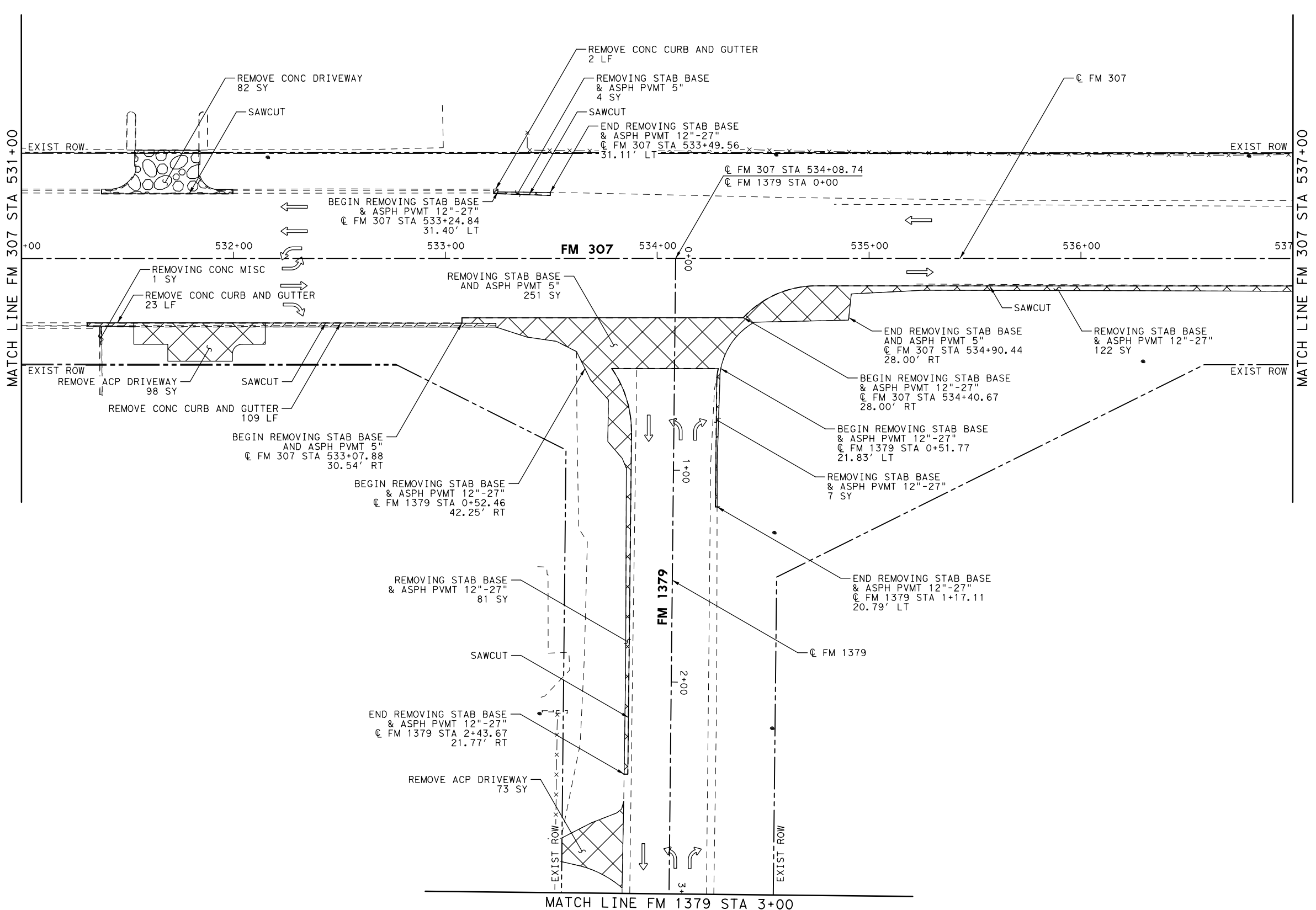
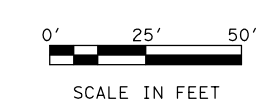
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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
 REMOVAL PLAN
 AT FM 1379**

SHEET 3 OF 7

DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
			118

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM307*REM



- LEGEND**
- EXIST DIRECTIONAL ARROW
 - STAB BASE AND ASPH PVMT REMOVAL
 - CURB AND GUTTER REMOVAL
 - CONC REMOVAL
 - SIDEWALK REMOVAL

- NOTES:**
1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



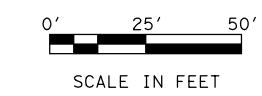
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
 REMOVAL PLAN
 AT FM 1379**

SHEET 4 OF 7

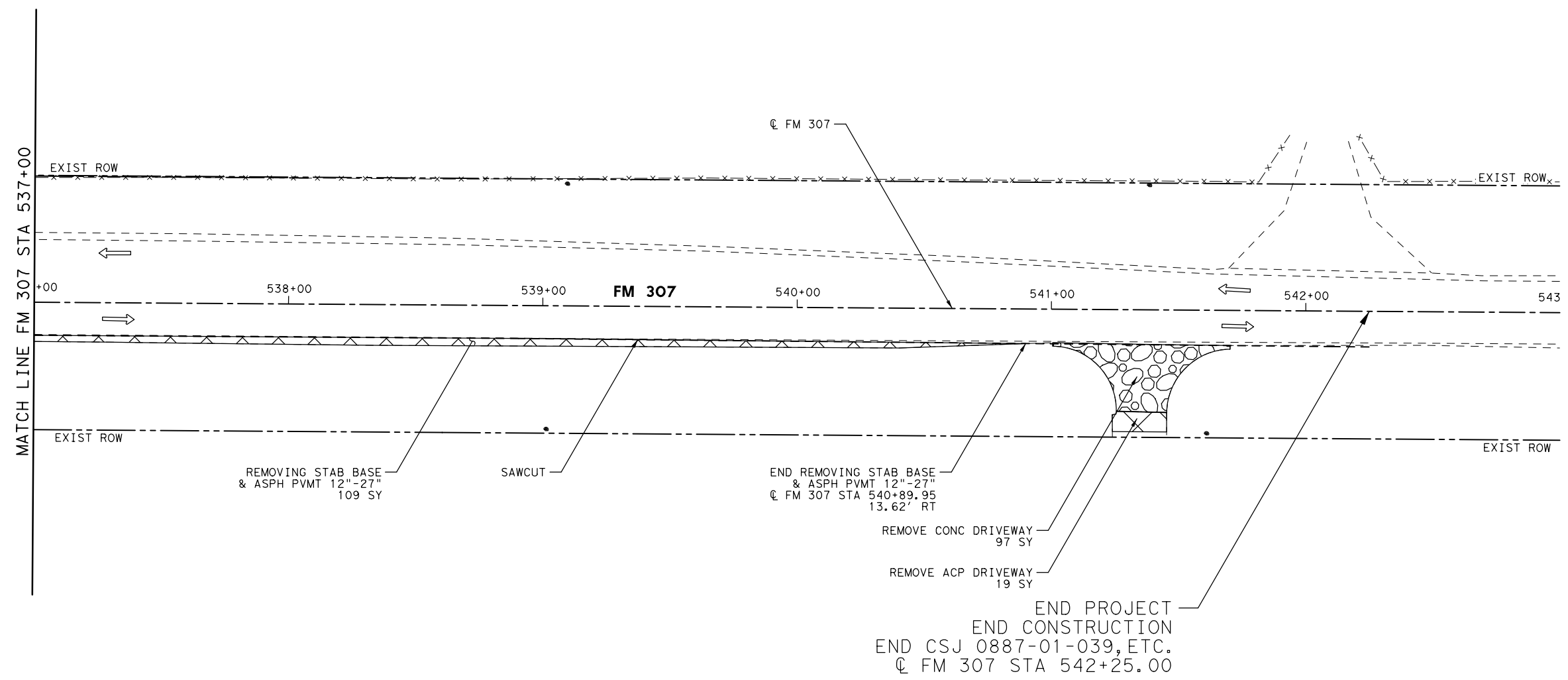
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GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						119


DATE: 8/20/2020
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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - STAB BASE AND ASPH PVMT REMOVAL
 - CURB AND GUTTER REMOVAL
 - CONC REMOVAL
 - SIDEWALK REMOVAL

- NOTES:**
- REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.





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**FM 307
 REMOVAL PLAN
 AT FM 1379**

SHEET 5 OF 7






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GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
			120

DATE: 8/20/2020
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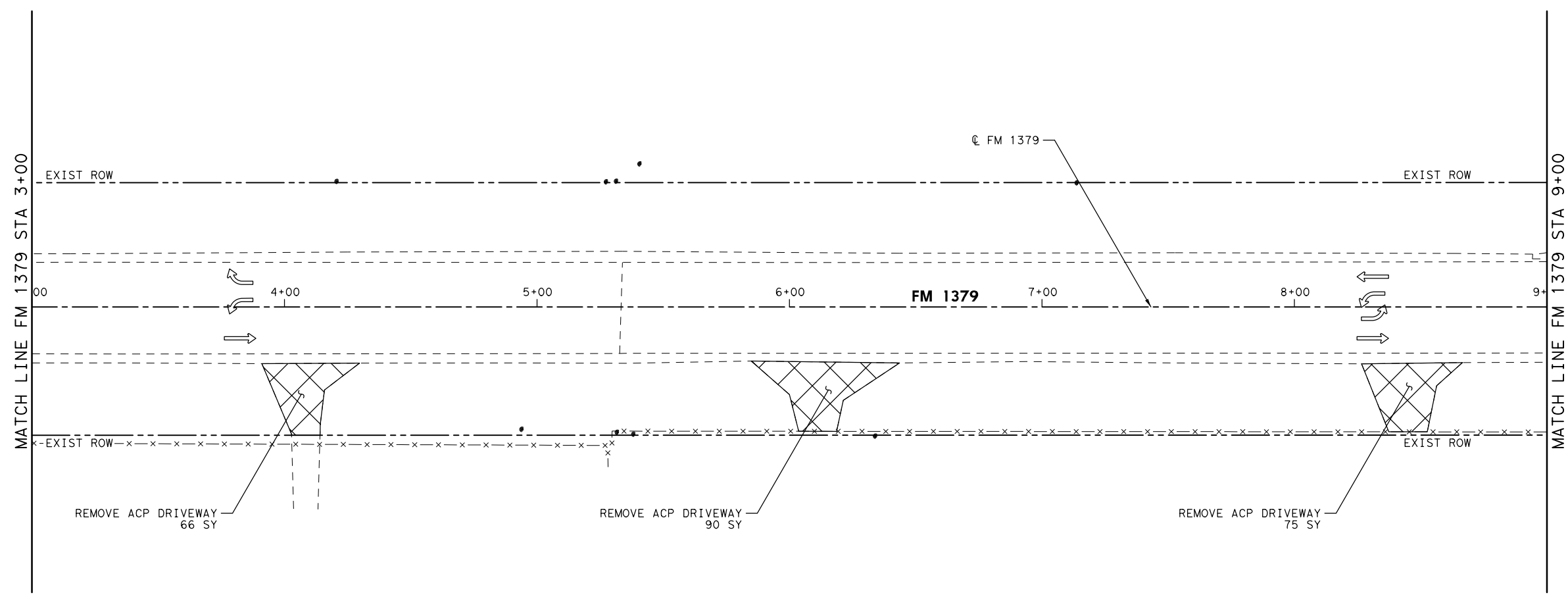
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 SCALE IN FEET

LEGEND

-  EXIST DIRECTIONAL ARROW
-  STAB BASE AND ASPH PVMT REMOVAL
-  CURB AND GUTTER REMOVAL
-  CONC REMOVAL
-  SIDEWALK REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1379
 REMOVAL PLAN
 AT FM 307**

SHEET 6 OF 7






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JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.
			121

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM307*RE



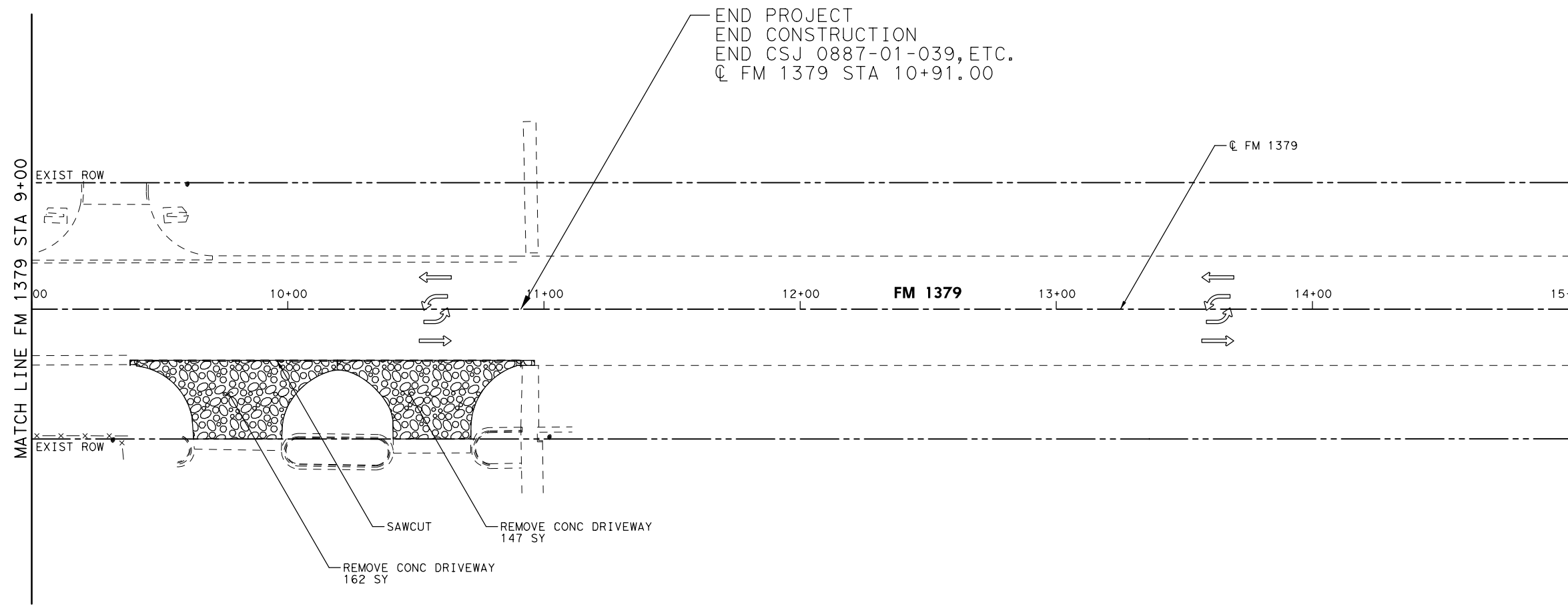
0' 25' 50'
 SCALE IN FEET

LEGEND

-  EXIST DIRECTIONAL ARROW
-  STAB BASE AND ASPH PVMT REMOVAL
-  CURB AND GUTTER REMOVAL
-  CONC REMOVAL
-  SIDEWALK REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



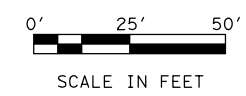
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1379
 REMOVAL PLAN
 AT FM 307**

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						122

SHEET 7 OF 7

DATE: 8/20/2020
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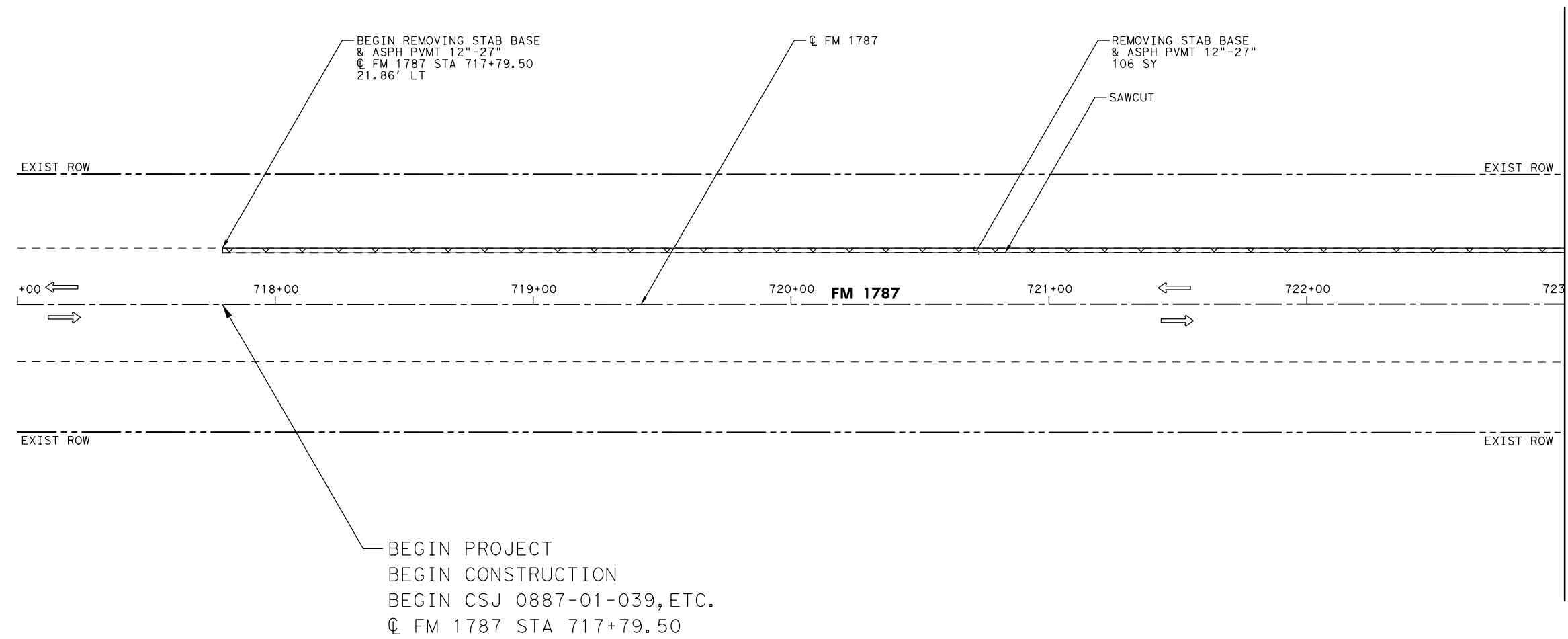


LEGEND

- EXIST DIRECTIONAL ARROW
- STAB BASE AND ASPH PVMT REMOVAL
- CURB AND GUTTER REMOVAL
- CONC REMOVAL
- SIDEWALK REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



MATCH LINE FM 1787 STA 723+00



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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 REMOVAL PLAN
 AT FM 1788**






				SHEET 1 OF 16			
DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						123

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*REF



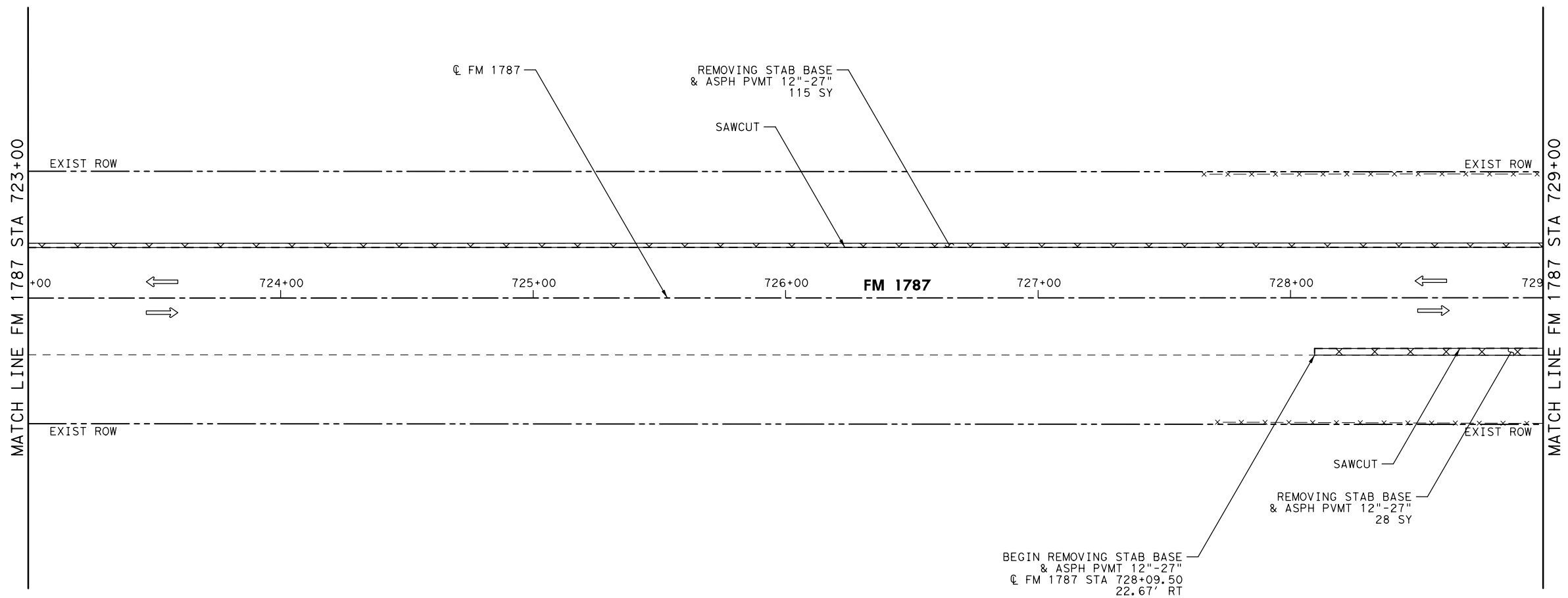
0' 25' 50'
 SCALE IN FEET


LEGEND

-  EXIST DIRECTIONAL ARROW
-  STAB BASE AND ASPH PVMT REMOVAL
-  CURB AND GUTTER REMOVAL
-  CONC REMOVAL
-  SIDEWALK REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.





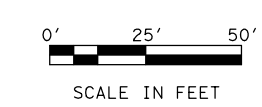
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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 REMOVAL PLAN
 AT FM 1788**

SHEET 2 OF 16

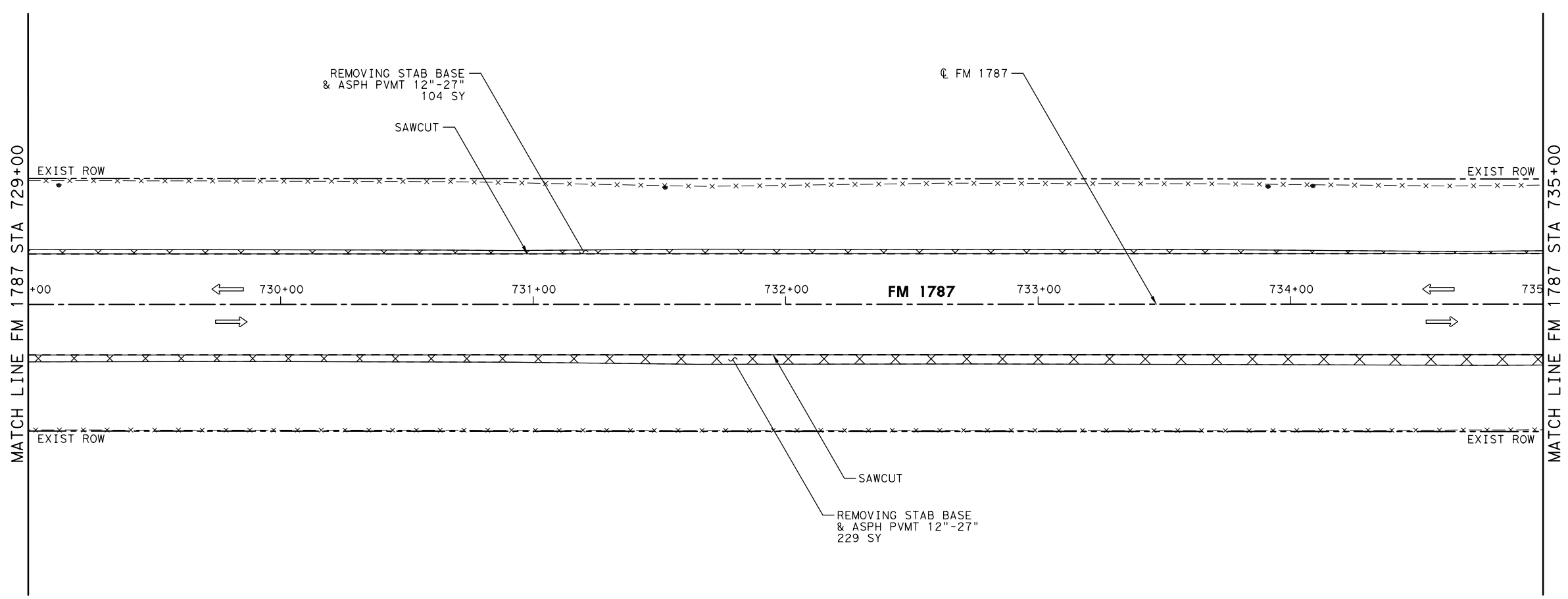
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GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
			124


DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*RE



- LEGEND**
- EXIST DIRECTIONAL ARROW
 - STAB BASE AND ASPH PVMT REMOVAL
 - CURB AND GUTTER REMOVAL
 - CONC REMOVAL
 - SIDEWALK REMOVAL

- NOTES:**
1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.





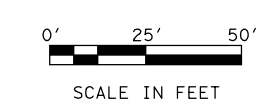
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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 REMOVAL PLAN
 AT FM 1788**

SHEET 3 OF 16

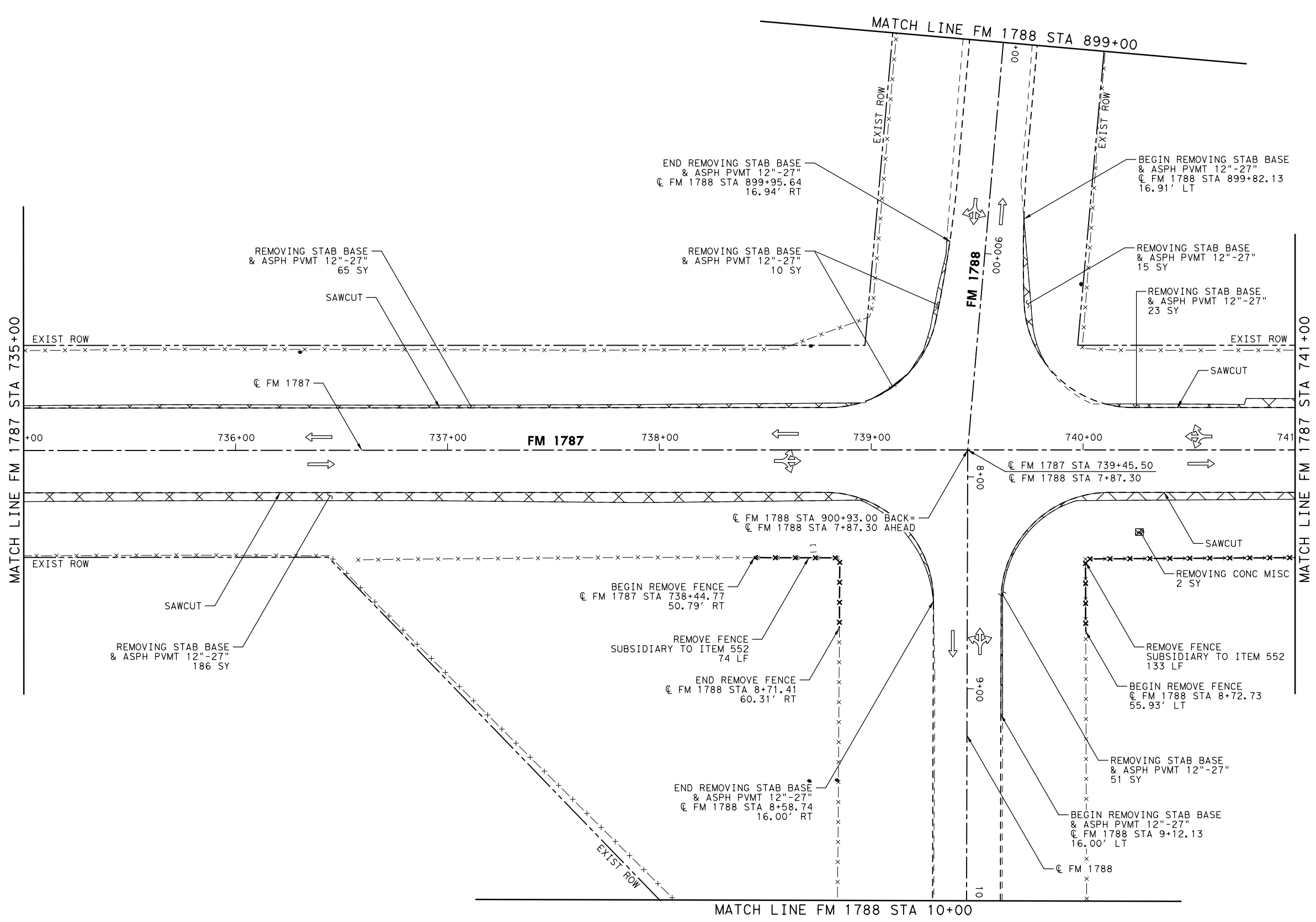
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GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK JMT			125

DATE: 8/20/2020
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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - STAB BASE AND ASPH PVMT REMOVAL
 - CURB AND GUTTER REMOVAL
 - CONC REMOVAL
 - SIDEWALK REMOVAL

- NOTES:**
- REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

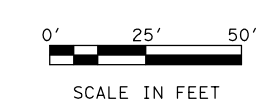
**FM 1787
 REMOVAL PLAN
 AT FM 1788**

SHEET 4 OF 16

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

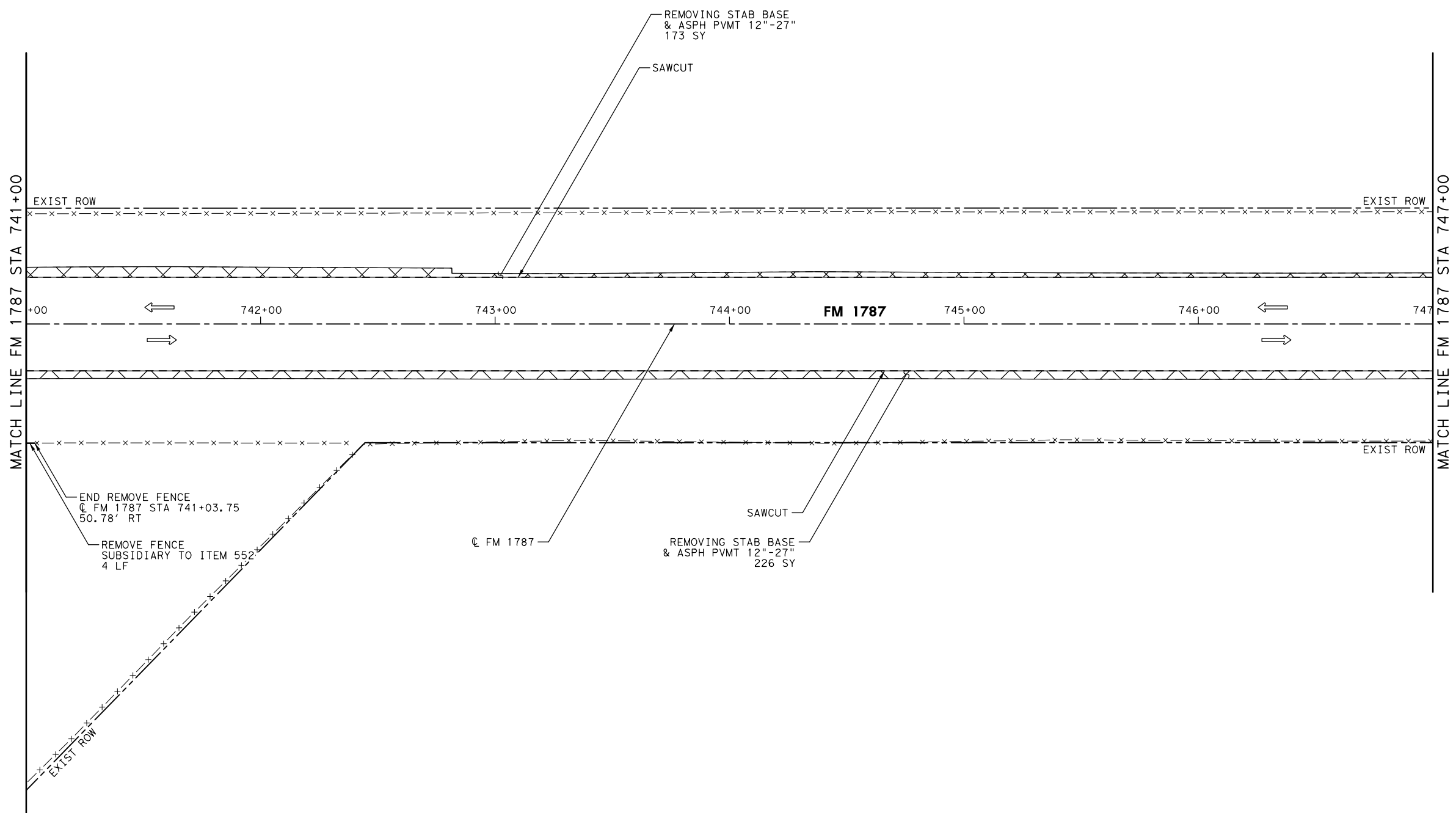
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DATE: 8/20/2020
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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - STAB BASE AND ASPH PVMT REMOVAL
 - CURB AND GUTTER REMOVAL
 - CONC REMOVAL
 - SIDEWALK REMOVAL

- NOTES:**
- REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



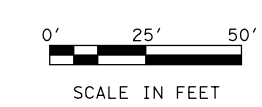
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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 REMOVAL PLAN
 AT FM 1788**

SHEET 5 OF 16

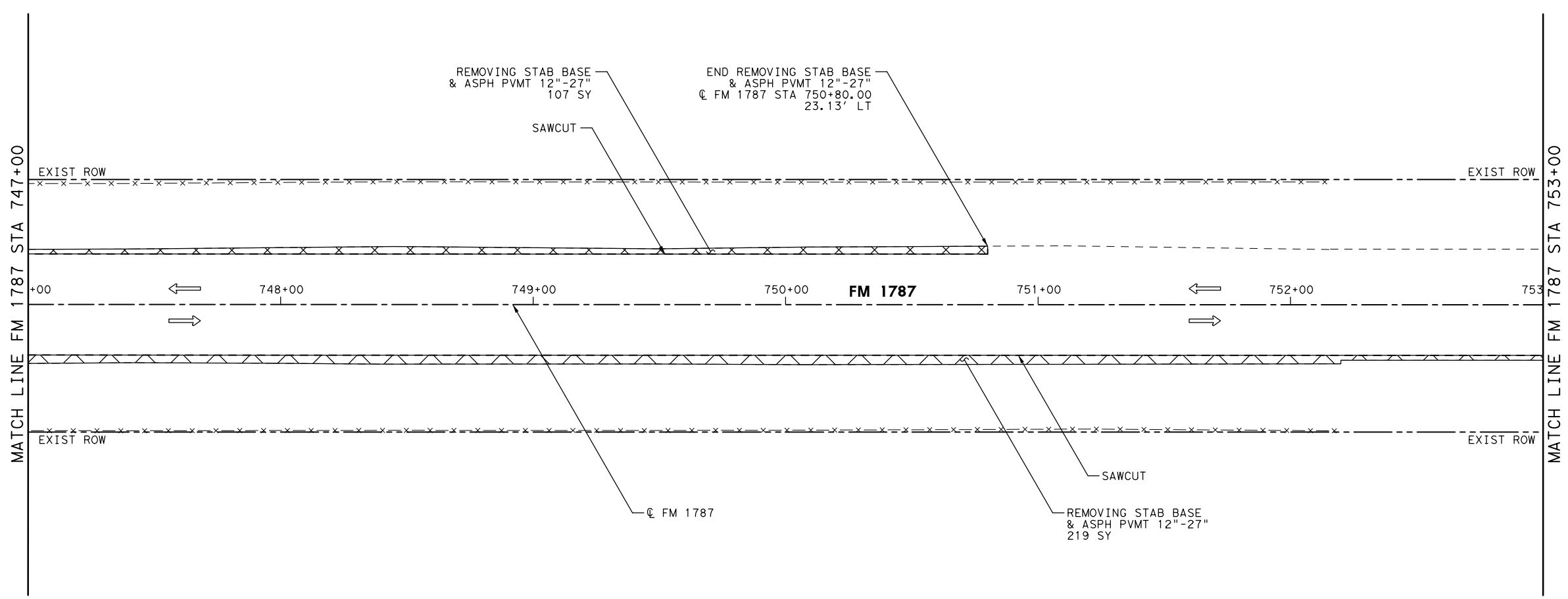
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GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						127

DATE: 8/20/2020
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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - STAB BASE AND ASPH PVMT REMOVAL
 - CURB AND GUTTER REMOVAL
 - CONC REMOVAL
 - SIDEWALK REMOVAL

- NOTES:**
- REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



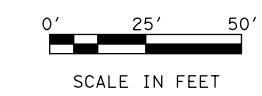
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 REMOVAL PLAN
 AT FM 1788**

SHEET 6 OF 16

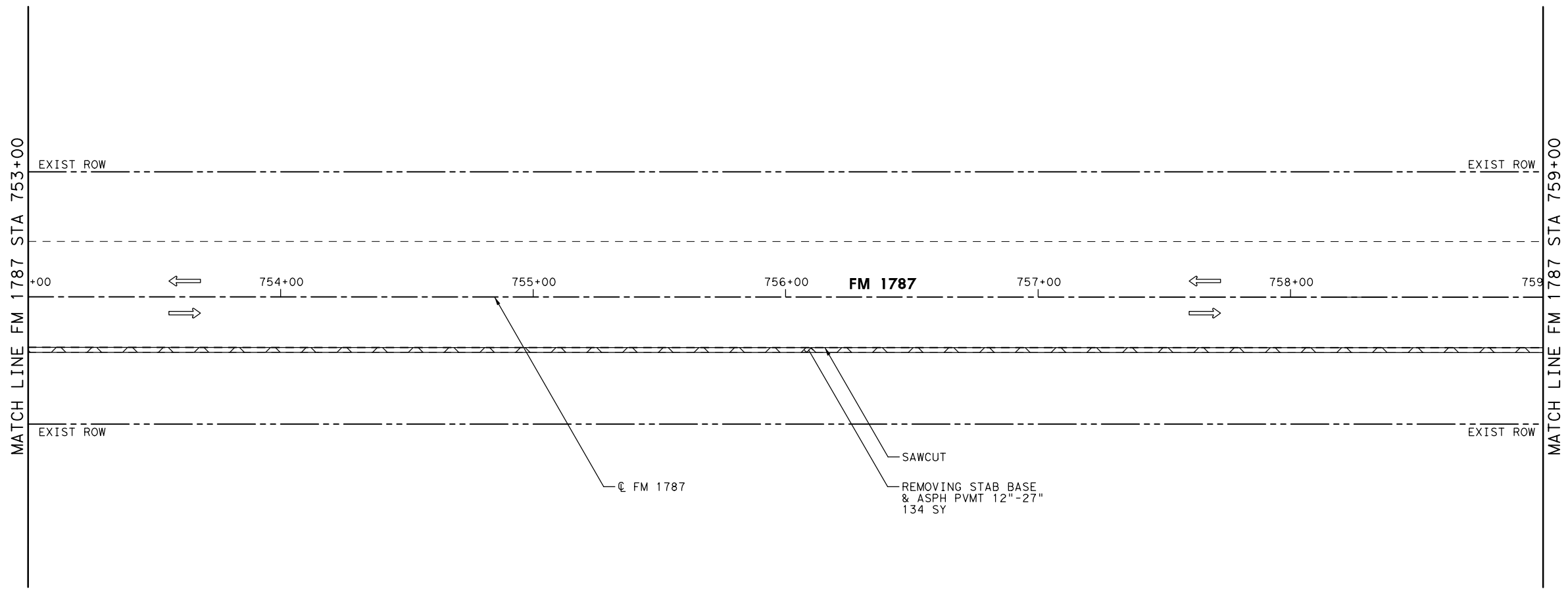
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GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK JMT			SHEET NO. 128

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*REF



- LEGEND**
- EXIST DIRECTIONAL ARROW
 - STAB BASE AND ASPH PVMT REMOVAL
 - CURB AND GUTTER REMOVAL
 - CONC REMOVAL
 - SIDEWALK REMOVAL

- NOTES:**
- REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.

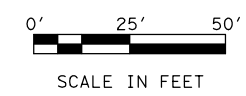


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 REMOVAL PLAN
 AT FM 1788**

SHEET 7 OF 16			
DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK JMT			129

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*REF

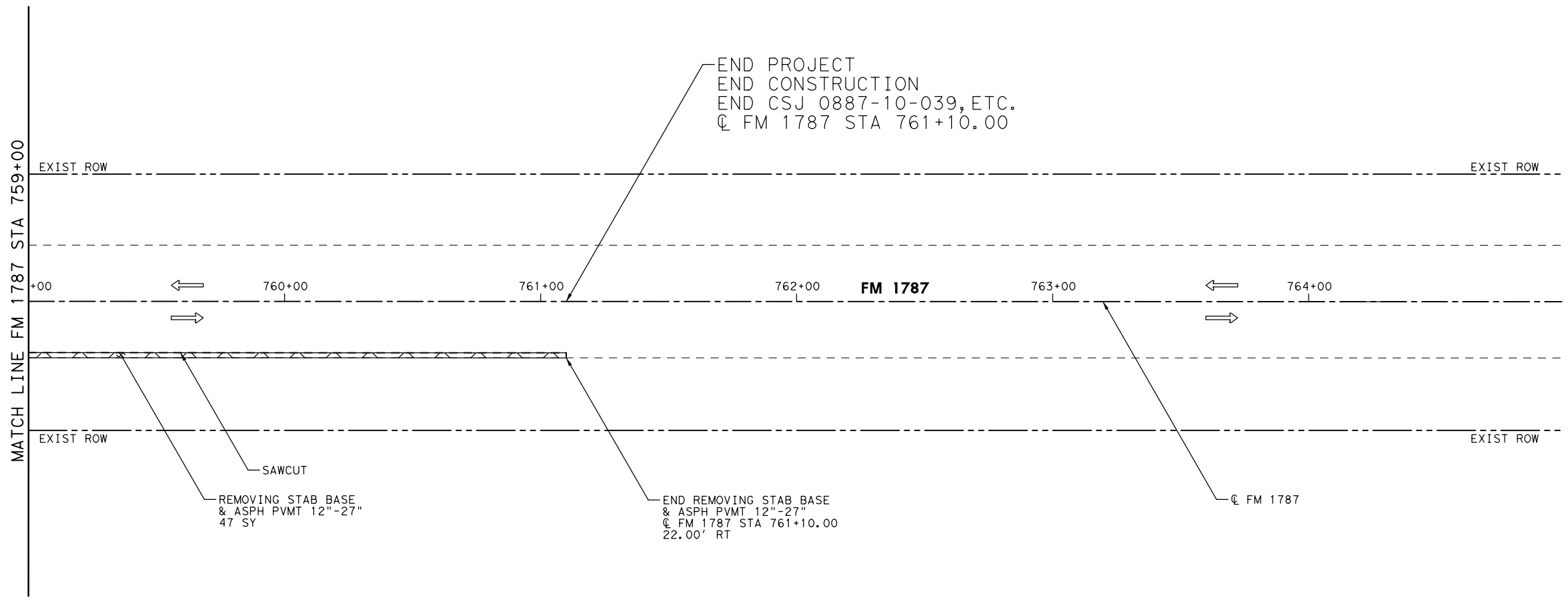


LEGEND

- EXIST DIRECTIONAL ARROW
- STAB BASE AND ASPH PVMT REMOVAL
- CURB AND GUTTER REMOVAL
- CONC REMOVAL
- SIDEWALK REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



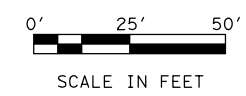
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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 REMOVAL PLAN
 AT FM 1788**

SHEET 8 OF 16

DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK JMT			130

DATE: 8/20/2020
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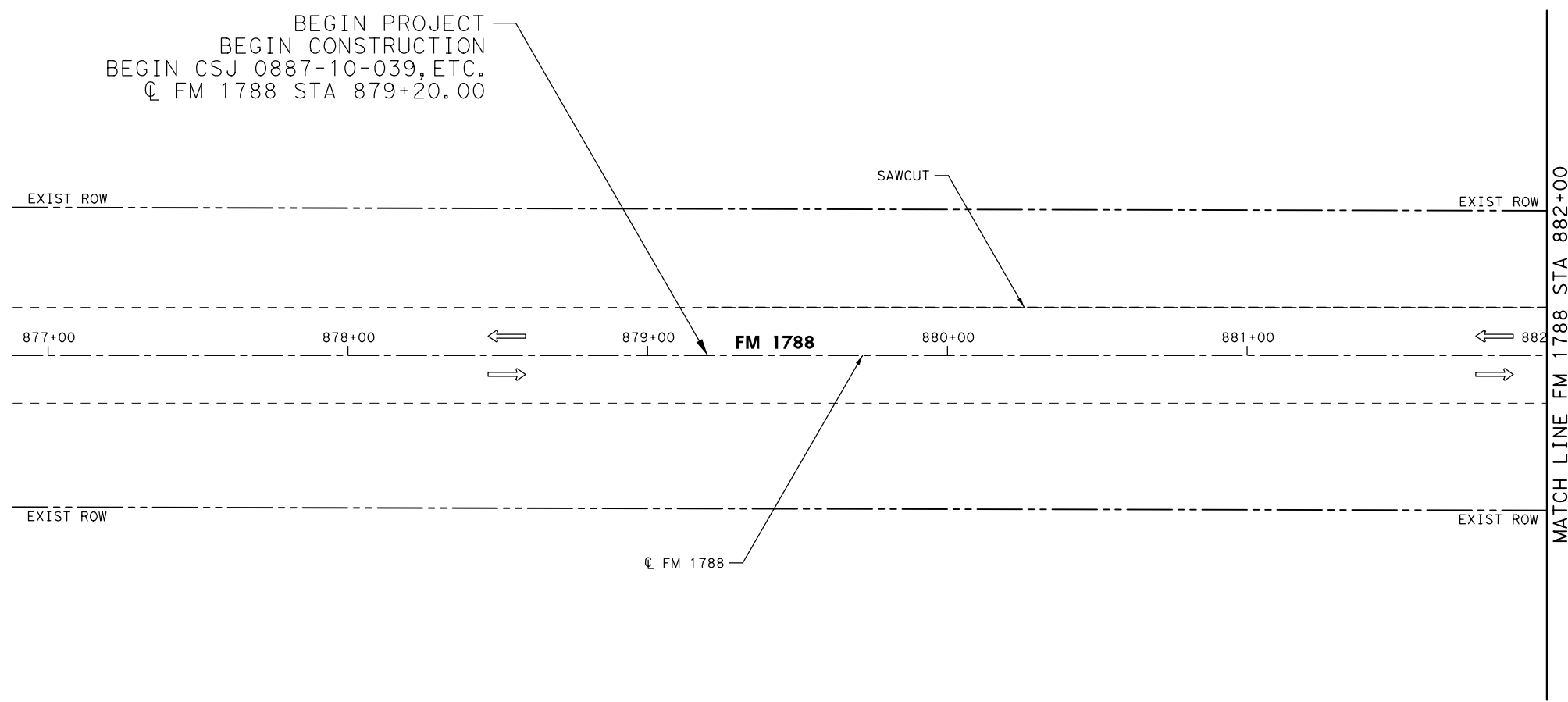


LEGEND

- EXIST DIRECTIONAL ARROW
- STAB BASE AND ASPH PVMT REMOVAL
- CURB AND GUTTER REMOVAL
- CONC REMOVAL
- SIDEWALK REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



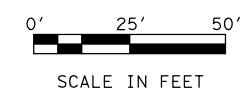
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 REMOVAL PLAN
 AT FM 1787**

SHEET 9 OF 16

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						131

DATE: 8/20/2020
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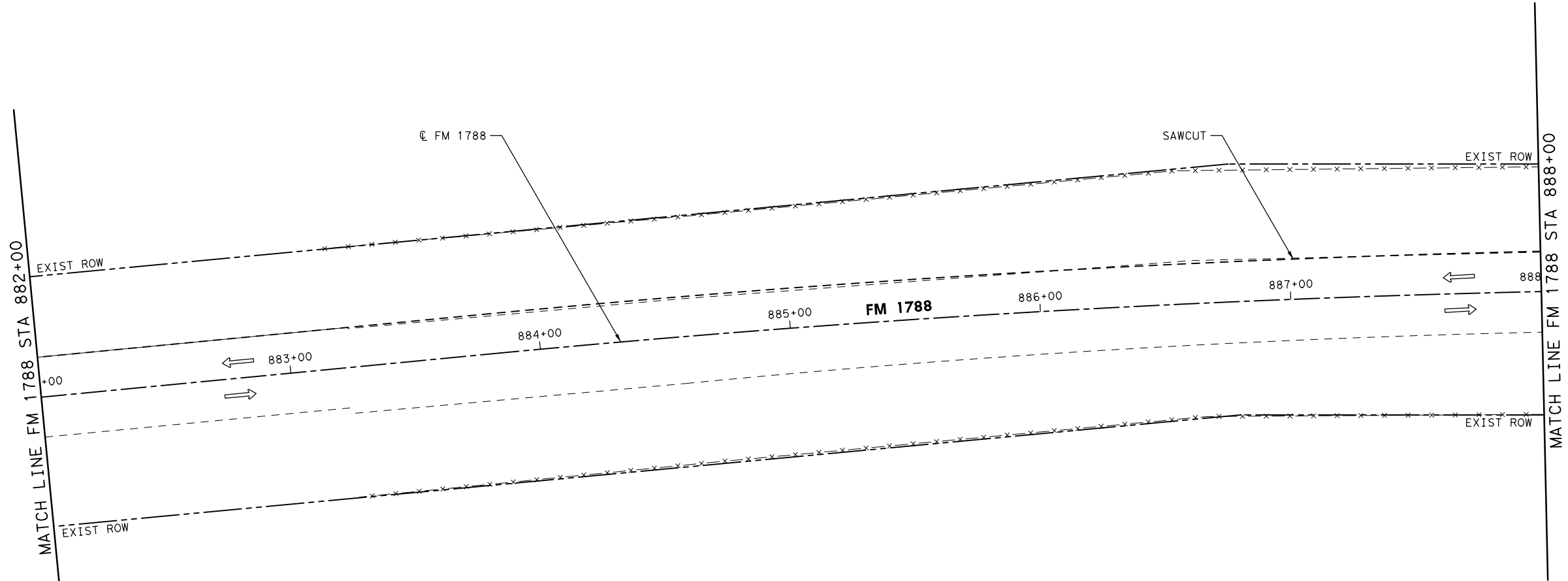



LEGEND

- EXIST DIRECTIONAL ARROW
- STAB BASE AND ASPH PVMT REMOVAL
- CURB AND GUTTER REMOVAL
- CONC REMOVAL
- SIDEWALK REMOVAL

NOTES:

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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 REMOVAL PLAN
 AT FM 1788**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

SHEET 10 OF 16






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DATE: 8/20/2020
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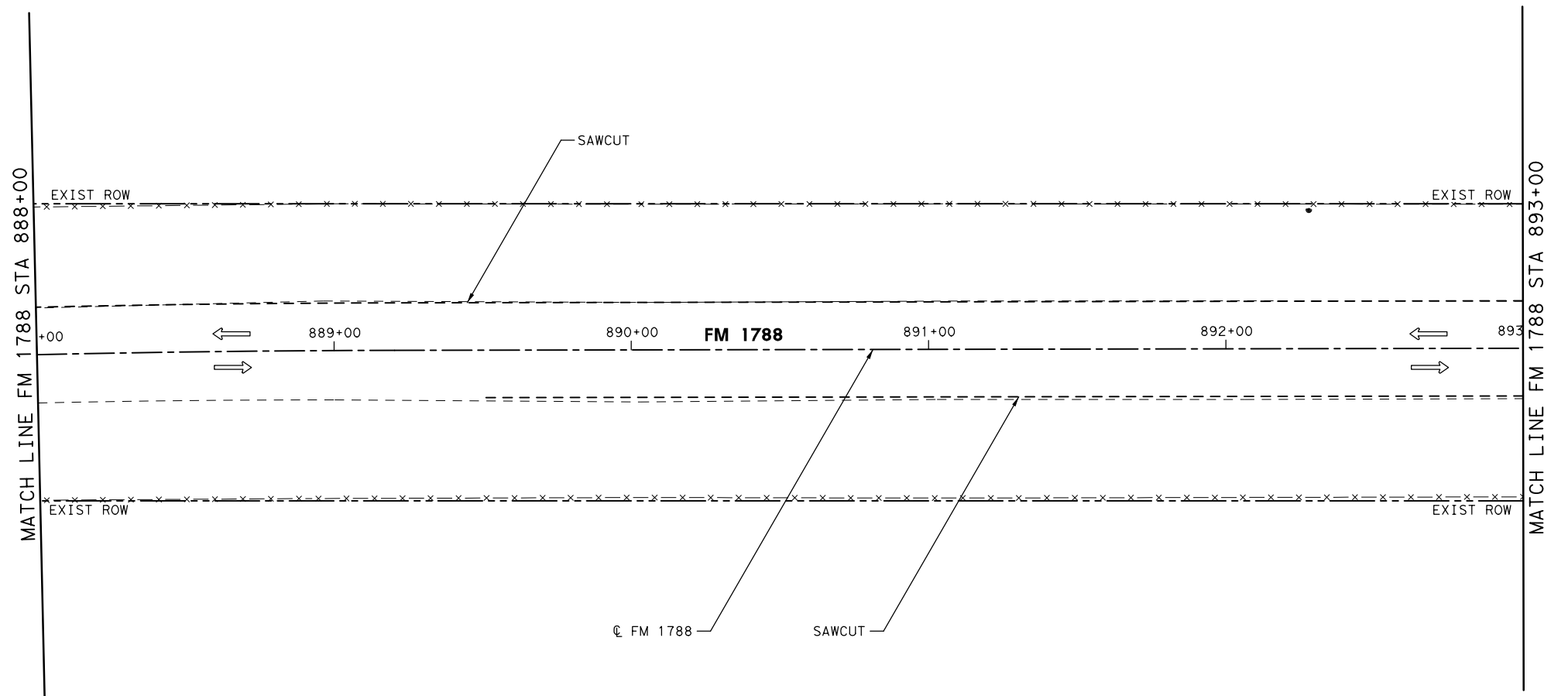
0' 25' 50'
 SCALE IN FEET

LEGEND

-  EXIST DIRECTIONAL ARROW
-  STAB BASE AND ASPH PVMT REMOVAL
-  CURB AND GUTTER REMOVAL
-  CONC REMOVAL
-  SIDEWALK REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



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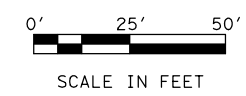
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 REMOVAL PLAN
 AT FM 1787**






SHEET 11 OF 16

DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK JMT			SHEET NO. 133

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*REF

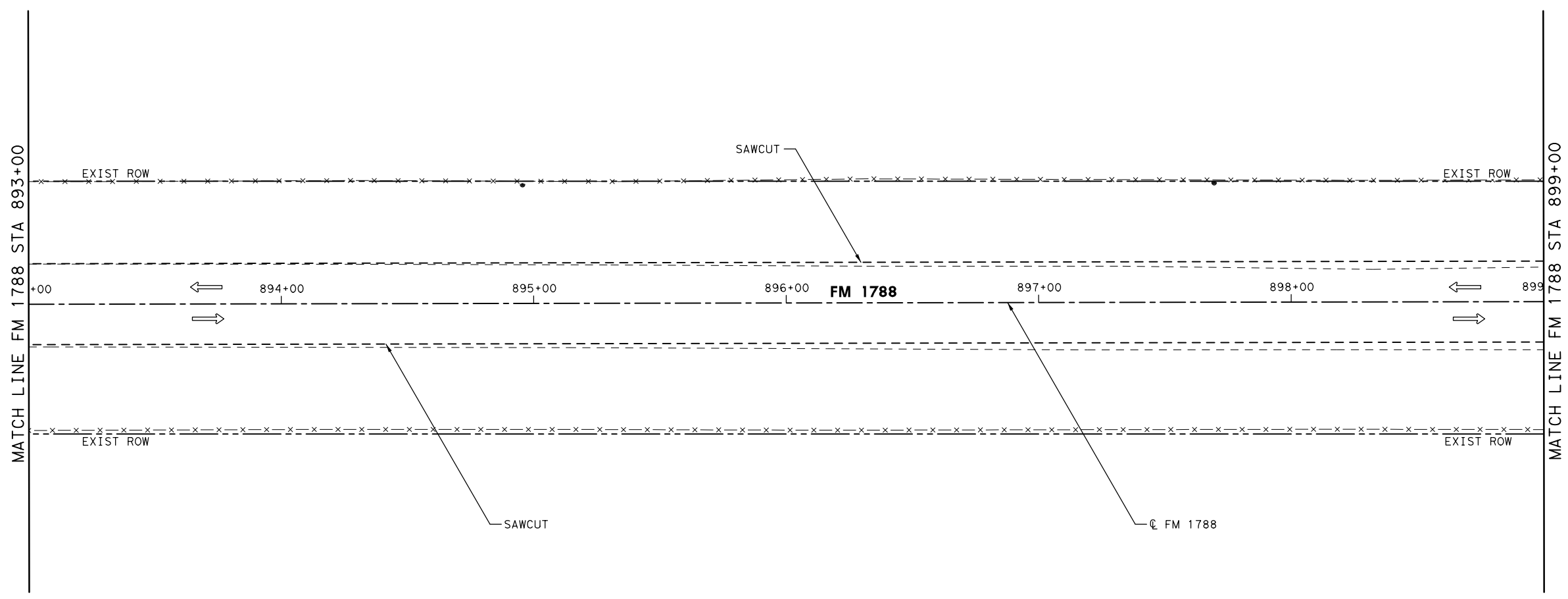


LEGEND

-  EXIST DIRECTIONAL ARROW
-  STAB BASE AND ASPH PVMT REMOVAL
-  CURB AND GUTTER REMOVAL
-  CONC REMOVAL
-  SIDEWALK REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



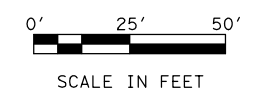
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 REMOVAL PLAN
 AT FM 1787**

SHEET 12 OF 16

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						134

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*RE

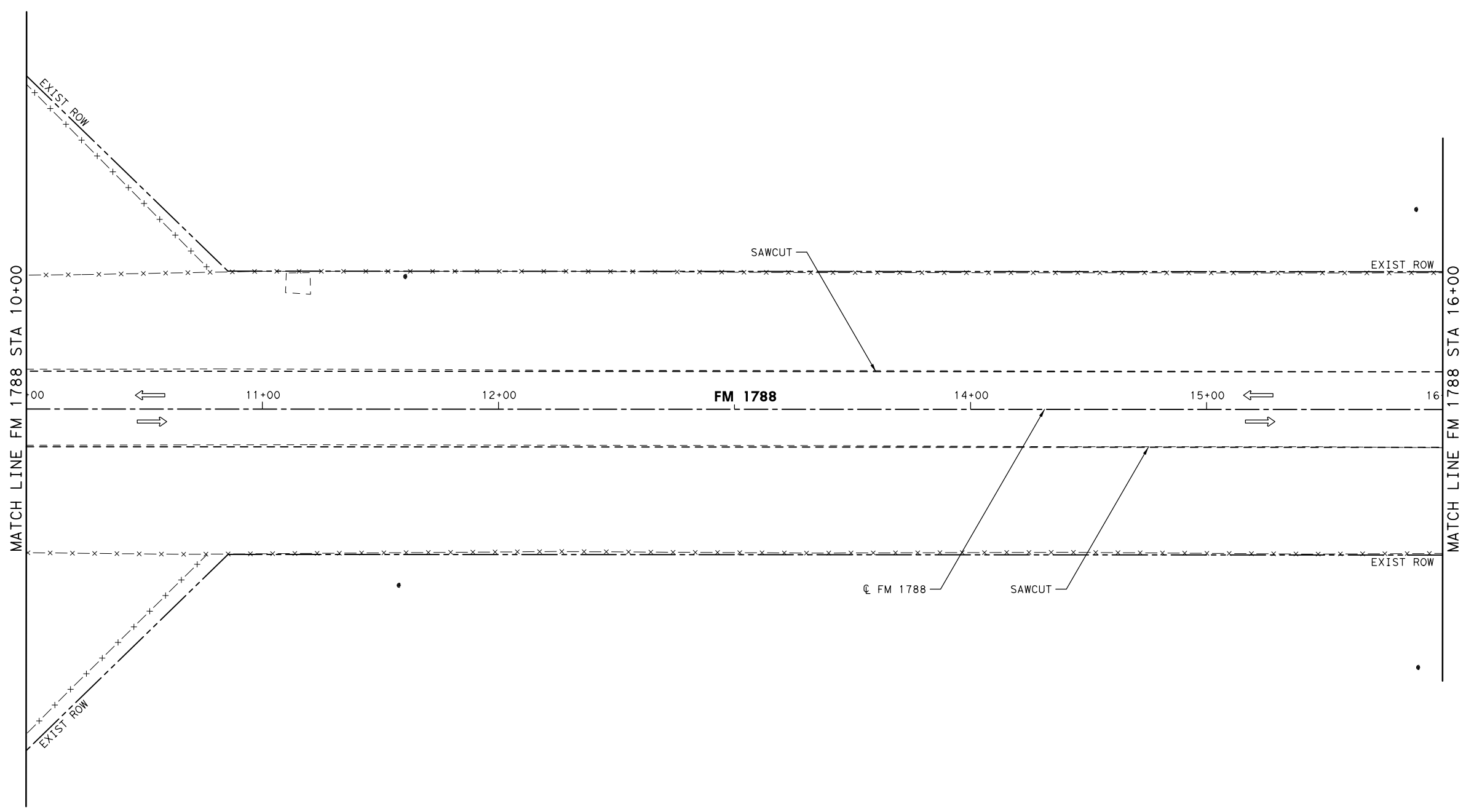



LEGEND

- EXIST DIRECTIONAL ARROW
- STAB BASE AND ASPH PVMT REMOVAL
- CURB AND GUTTER REMOVAL
- CONC REMOVAL
- SIDEWALK REMOVAL


NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.





TBPE REGISTRATION NO. F-16341



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

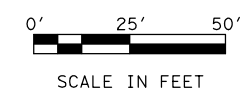
**FM 1788
 REMOVAL PLAN
 AT FM 1787**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.






SHEET 13 OF 16

135

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*RE

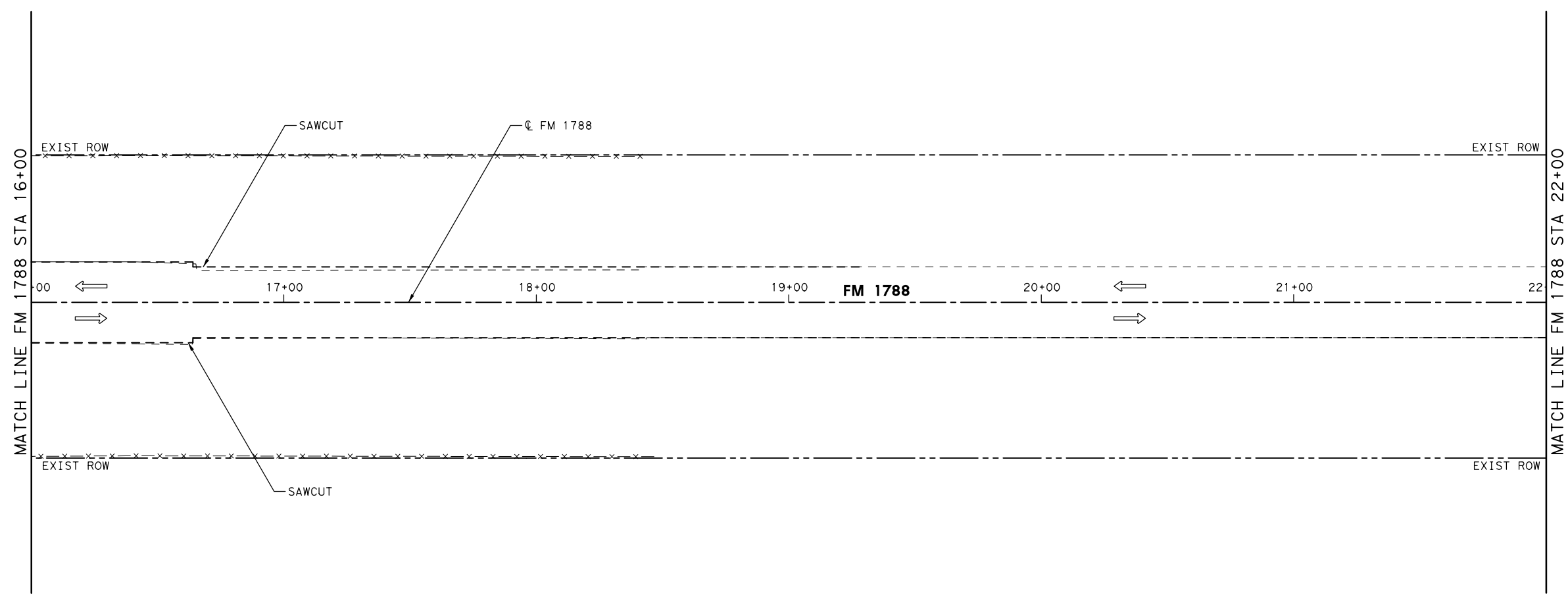


LEGEND

-  EXIST DIRECTIONAL ARROW
-  STAB BASE AND ASPH PVMT REMOVAL
-  CURB AND GUTTER REMOVAL
-  CONC REMOVAL
-  SIDEWALK REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



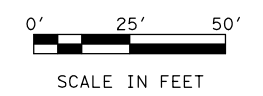
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 REMOVAL PLAN
 AT FM 1787**






SHEET 14 OF 16

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						136

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*REF

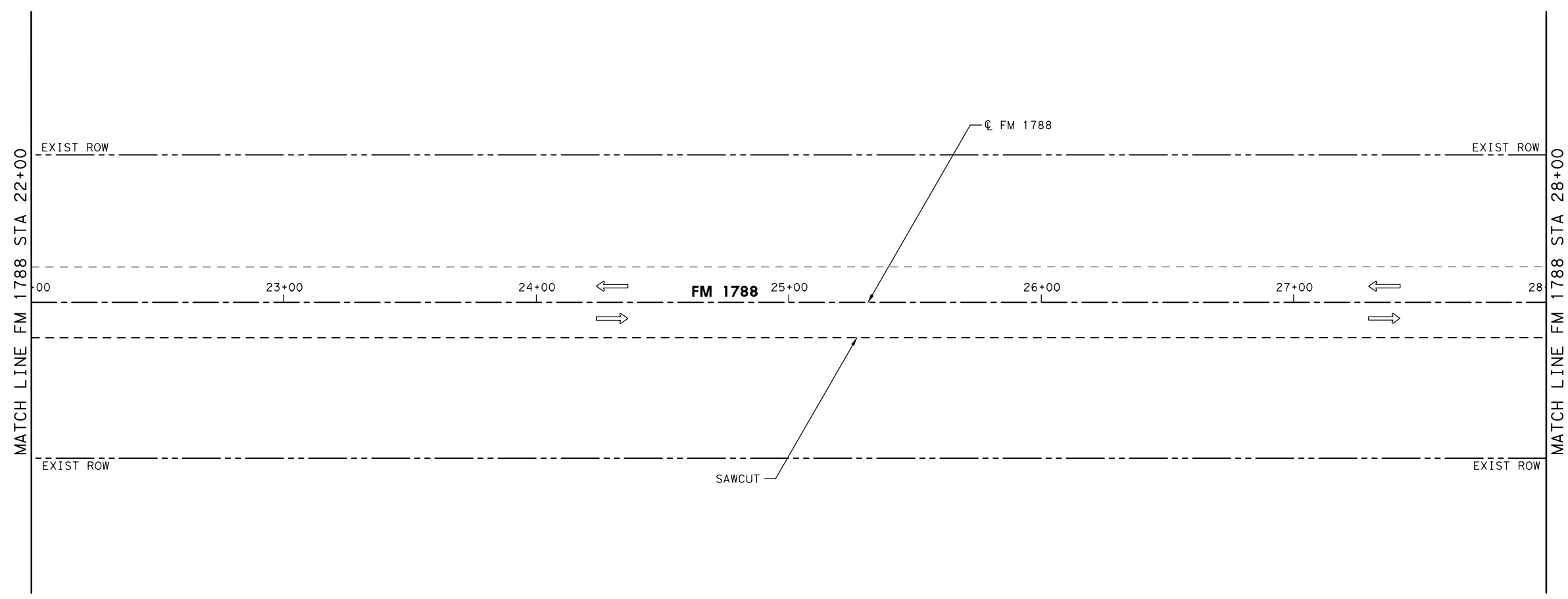


LEGEND

-  EXIST DIRECTIONAL ARROW
-  STAB BASE AND ASPH PVMT REMOVAL
-  CURB AND GUTTER REMOVAL
-  CONC REMOVAL
-  SIDEWALK REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



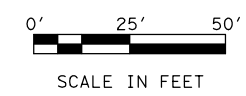
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 REMOVAL PLAN
 AT FM 1787**

SHEET 15 OF 16

DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK JMT			SHEET NO. 137

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*RE

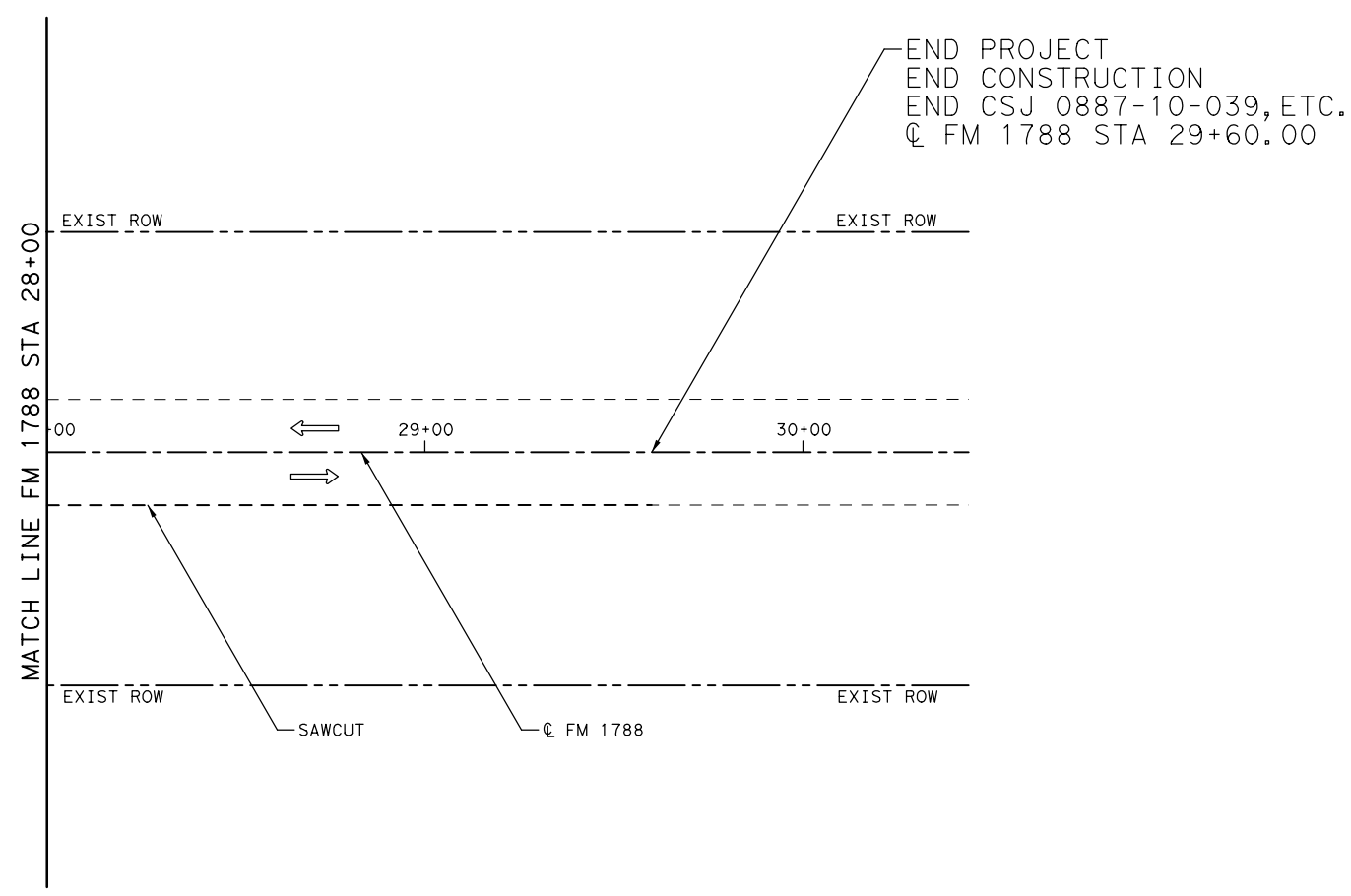


LEGEND

- EXIST DIRECTIONAL ARROW
- STAB BASE AND ASPH PVMT REMOVAL
- CURB AND GUTTER REMOVAL
- CONC REMOVAL
- SIDEWALK REMOVAL

NOTES:

1. REFER TO THE TRAFFIC SIGNAL LAYOUT SHEETS AND ILLUMINATION PLAN SHEETS FOR SIGNAL AND ILLUMINATION REMOVAL ITEMS.



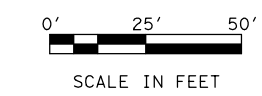
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 REMOVAL PLAN
 AT FM 1787**

SHEET 16 OF 16

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						138

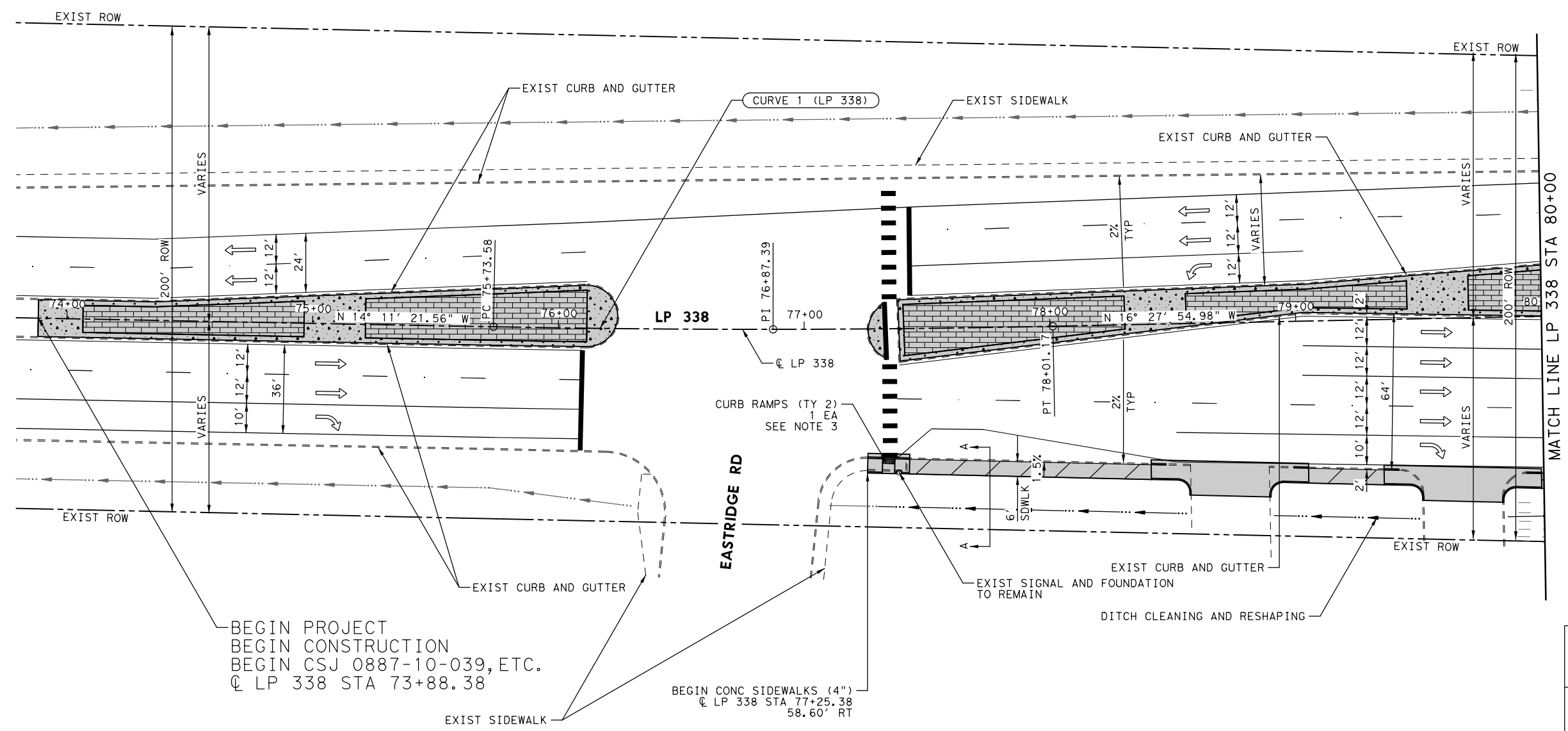
DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\Design\Plan Set\3. Roadway\LP338*PLA



CURVE 1 (LP 338)
 PI STATION = 76+87.39
 DELTA = 2° 16' 33.41" (LT)
 DEGREE OF CURVE = 1° 00' 00.00"
 TANGENT = 113.81
 LENGTH = 227.59
 RADIUS = 5,729.58
 PC STATION = 75+73.58
 PT STATION = 78+01.17

- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP PAVEMENT/DRIVEWAYS/ CURB & GUTTER
 - CONC SIDEWALKS (4")
 - LANDSCAPE PAVERS
 - CL A CONC (MISC)
 - EXIST FLOW LINE
 - PROP FLOW LINE
 - EXIST GAS LINE
 - EXIST PIPELINE
 - EXIST WATER LINE
 - EXIST WASTEWATER LINE
 - EXIST TELECOMMUNICATIONS LINE
 - EXIST OVERHEAD ELECTRIC LINE

- NOTES:**
1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
 2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.
 3. OMIT CURB BEHIND LANDING AREA TO FACILITATE DRAINAGE.



BEGIN PROJECT
 BEGIN CONSTRUCTION
 BEGIN CSJ 0887-10-039, ETC.
 @ LP 338 STA 73+88.38

BEGIN CONC SIDEWALKS (4")
 @ LP 338 STA 77+25.38
 58.60' RT

JMT TBPE REGISTRATION NO. F-16341

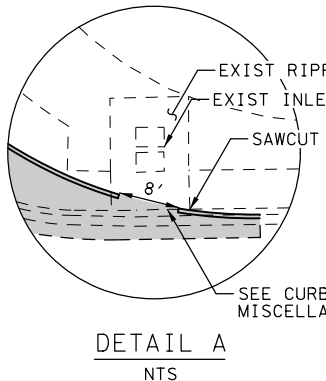
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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**LP 338
 ROADWAY PLAN
 AT SH 191**

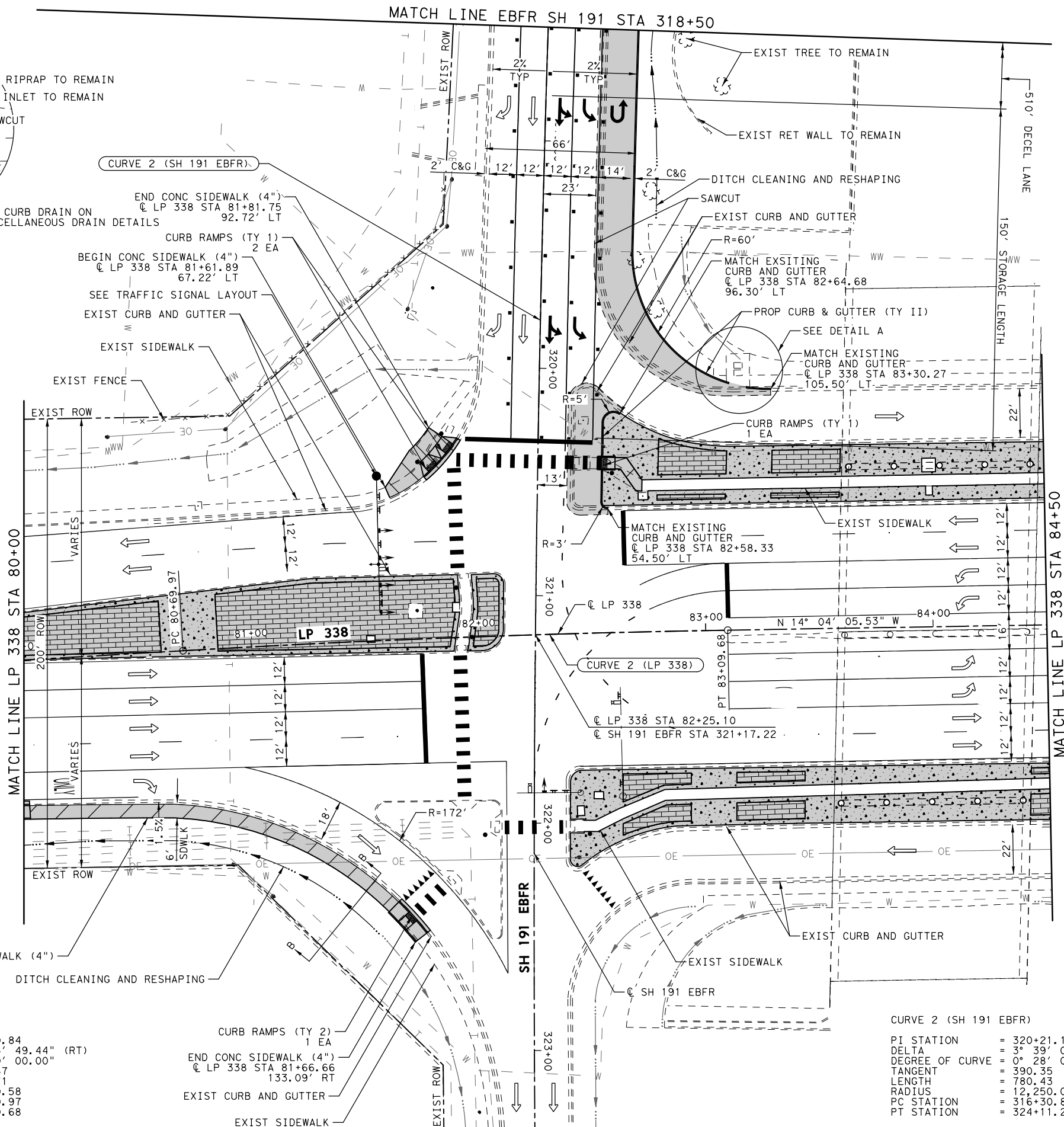
SHEET 1 OF 7

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						139

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\LP338*PLA



DETAIL A
NTS



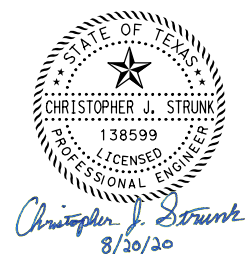
0' 25' 50'
SCALE IN FEET

LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT/DRIVEWAYS/CURB & GUTTER
- CONC SIDEWALKS (4")
- LANDSCAPE PAVERS
- CL A CONC (MISC)
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATIONS LINE
- EXIST OVERHEAD ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



CURVE 2 (LP 338)
 PI STATION = 81+89.84
 DELTA = 2° 23' 49.44" (RT)
 DEGREE OF CURVE = 1° 00' 00.00"
 TANGENT = 119.87
 LENGTH = 239.71
 RADIUS = 5,729.58
 PC STATION = 80+69.97
 PT STATION = 83+09.68

CURB RAMPS (TY 2)
1 EA
 END CONC SIDEWALK (4")
 @ LP 338 STA 81+66.66
 133.09' RT
 EXIST CURB AND GUTTER
 EXIST SIDEWALK

CURVE 2 (SH 191 EBFR)
 PI STATION = 320+21.15
 DELTA = 3° 39' 00.80" (LT)
 DEGREE OF CURVE = 0° 28' 03.79"
 TANGENT = 390.35
 LENGTH = 780.43
 RADIUS = 12,250.00
 PC STATION = 316+30.80
 PT STATION = 324+11.23

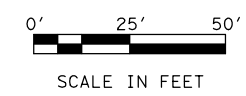
Texas Department of Transportation
 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**LP 338
 ROADWAY PLAN
 AT SH 191 EBFR**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

SHEET 2 OF 7
140

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\LP338*PLA



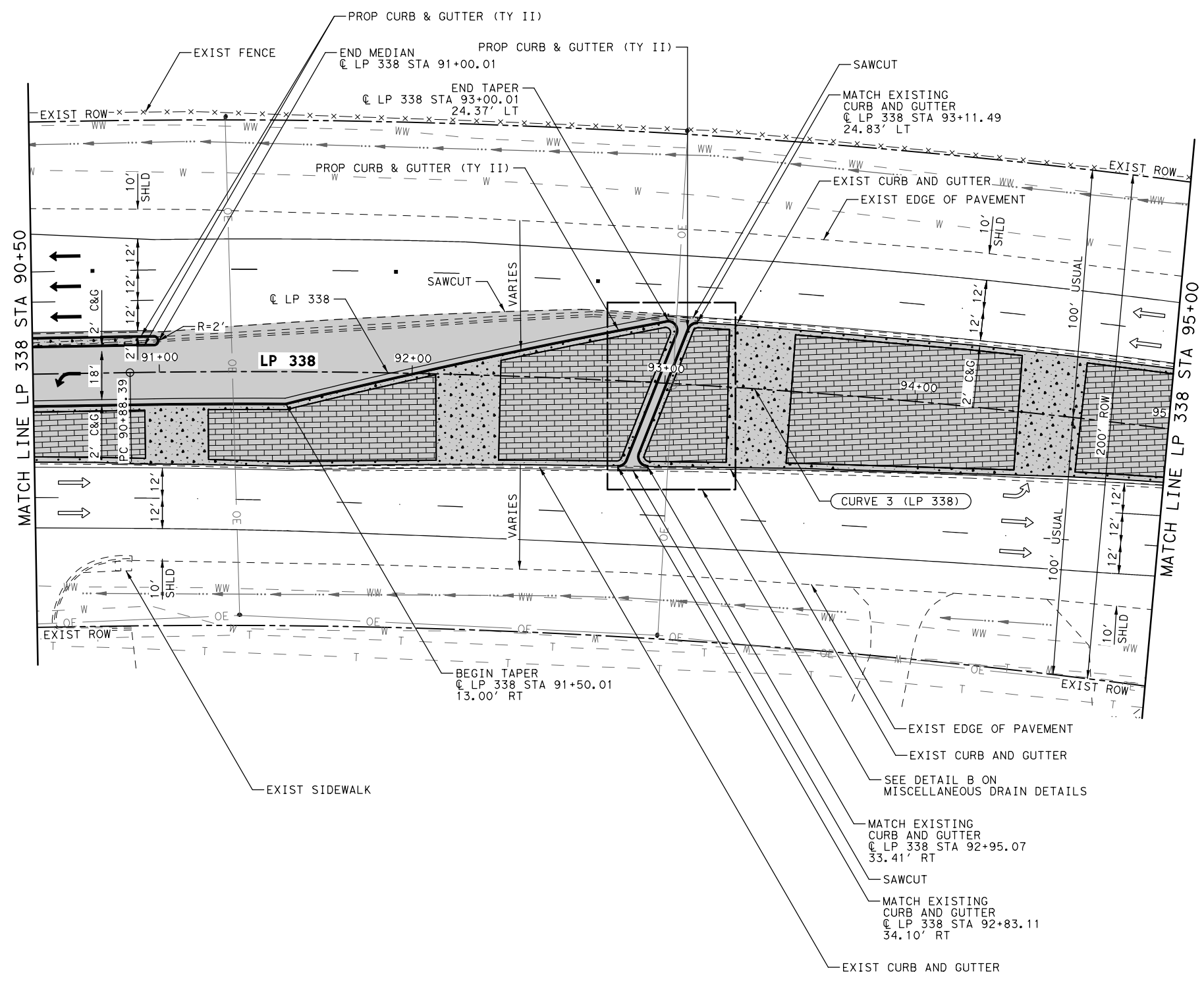
CURVE 3 (LP 338)
 PI STATION = 93+04.29
 DELTA = 8° 30' 00.28" (RT)
 DEGREE OF CURVE = 1° 58' 20.00"
 TANGENT = 215.89
 LENGTH = 430.99
 RADIUS = 2,905.14
 PC STATION = 90+88.39
 PT STATION = 95+19.38

LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT/DRIVEWAYS/CURB & GUTTER
- CONC SIDEWALKS (4")
- LANDSCAPE PAVERS
- CL A CONC (MISC)
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATIONS LINE
- EXIST OVERHEAD ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



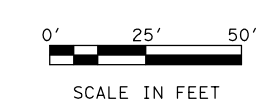
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Texas Department of Transportation
 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

LP 338
ROADWAY PLAN
AT SH 191

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

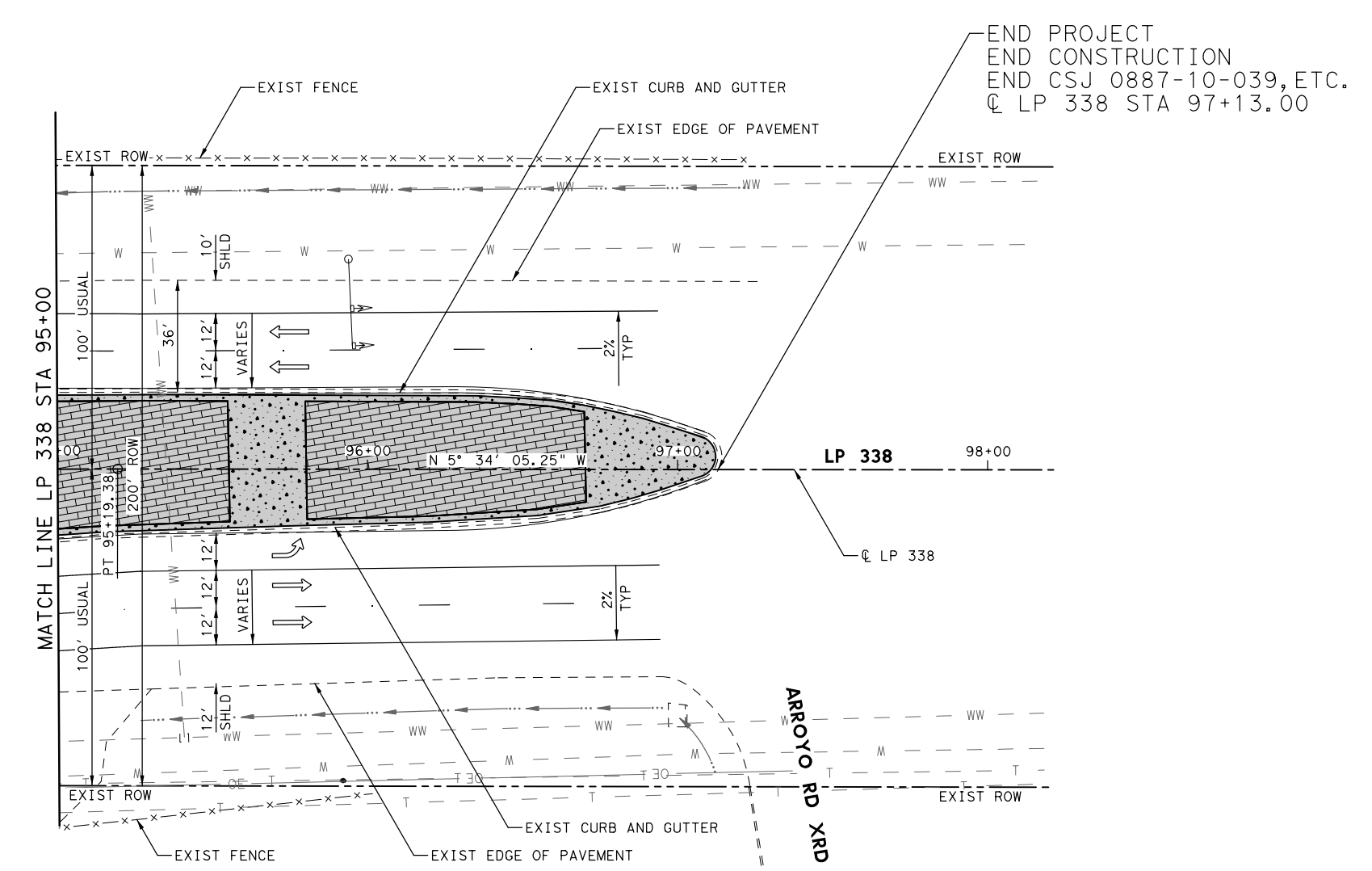
SHEET 4 OF 7

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\LP338*PLA



- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP PAVEMENT/DRIVEWAYS/ CURB & GUTTER
 - CONC SIDEWALKS (4")
 - LANDSCAPE PAVERS
 - CL A CONC (MISC)
 - EXIST FLOW LINE
 - PROP FLOW LINE
 - EXIST GAS LINE
 - EXIST PIPELINE
 - EXIST WATER LINE
 - EXIST WASTEWATER LINE
 - EXIST TELECOMMUNICATIONS LINE
 - EXIST OVERHEAD ELECTRIC LINE

- NOTES:**
1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
 2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



JMT TBPE REGISTRATION NO. F-16341

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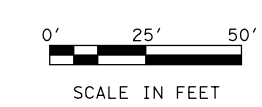
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

LP 338
ROADWAY PLAN
AT SH 191

SHEET 5 OF 7

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						143

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\LP338*PLA

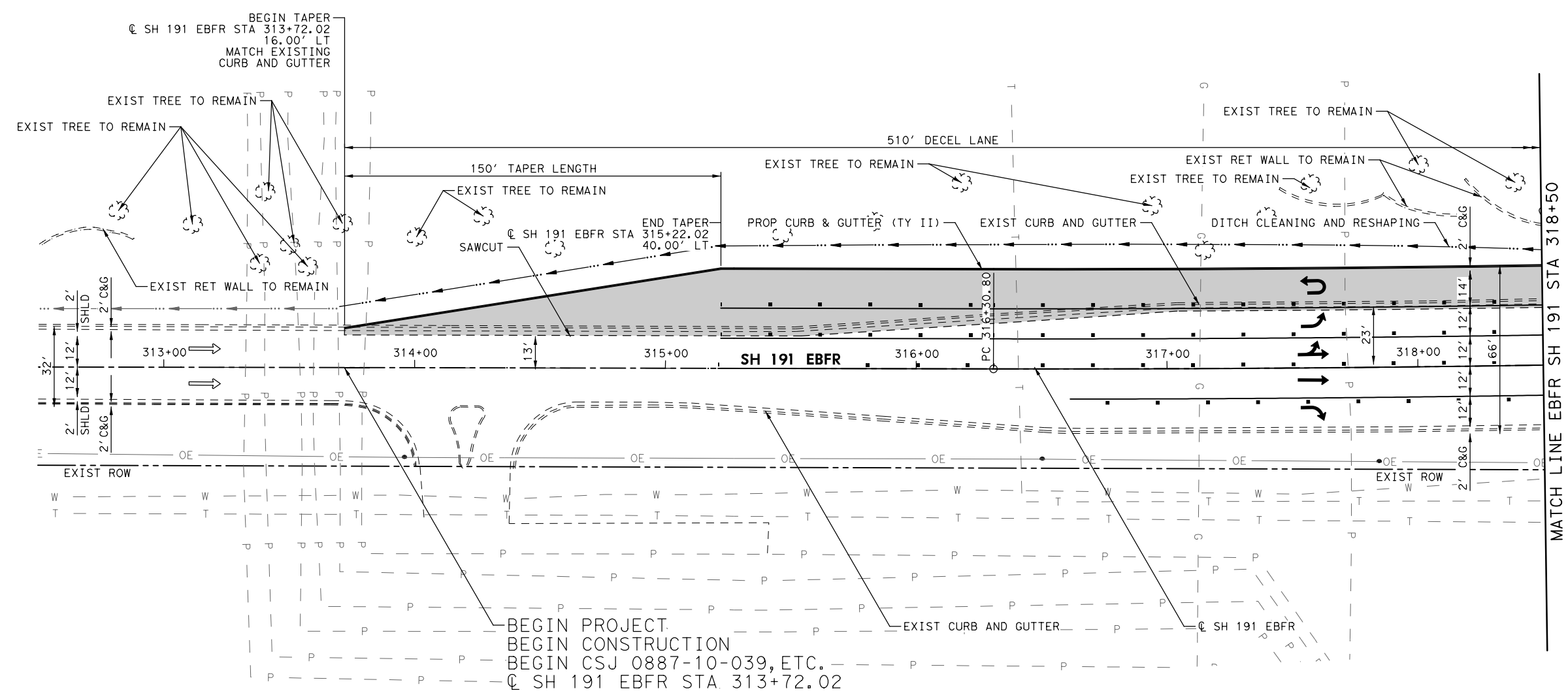


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT/DRIVEWAYS/
CURB & GUTTER
- CONC SIDEWALKS (4")
- LANDSCAPE PAVERS
- CL A CONC (MISC)
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATIONS LINE
- EXIST OVERHEAD ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



BEGIN PROJECT.
 BEGIN CONSTRUCTION
 BEGIN CSJ 0887-10-039, ETC.
 @ SH 191 EBFR STA 313+72.02

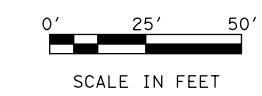


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SH 191 EBFR
 ROADWAY PLAN
 AT LP 338**

			SHEET 6 OF 7
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.
			144

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\LP338*PLA

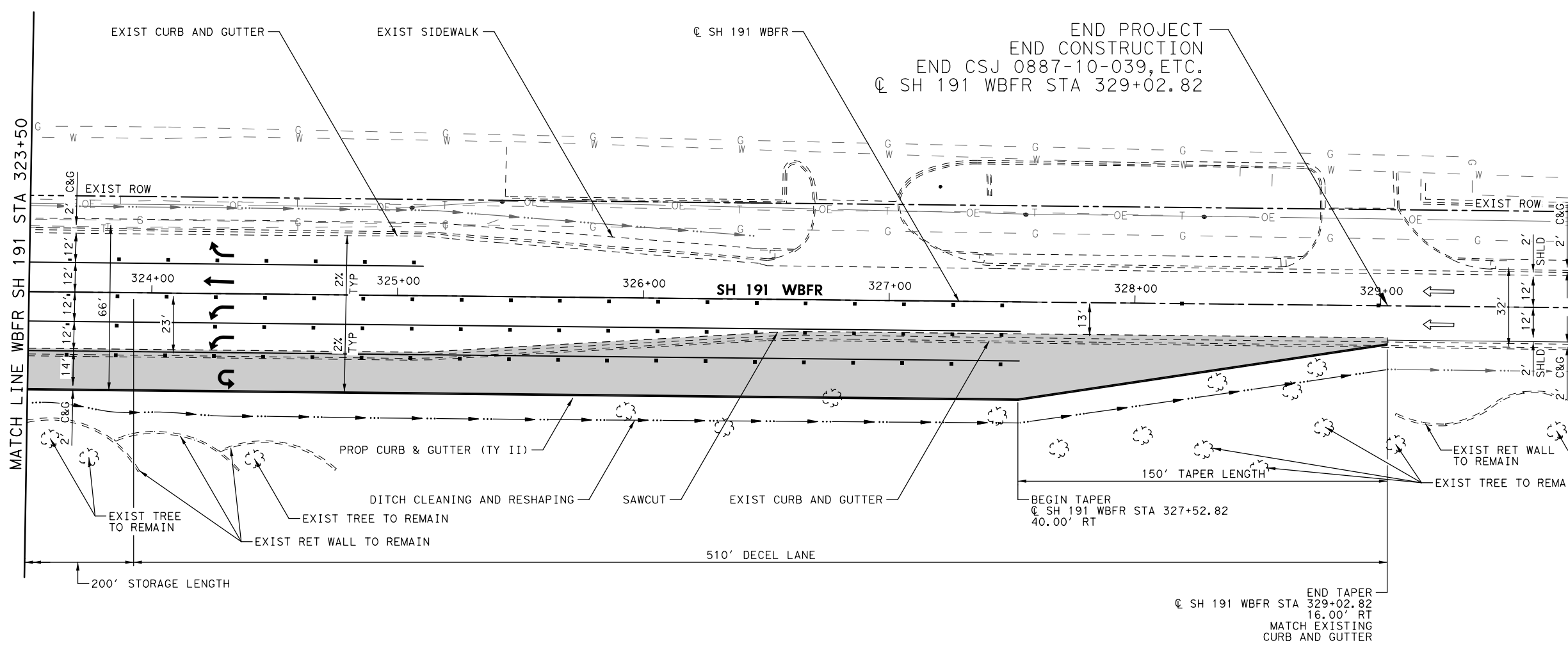


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT/DRIVEWAYS/
CURB & GUTTER
- CONC SIDEWALKS (4")
- LANDSCAPE PAVERS
- CL A CONC (MISC)
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATIONS LINE
- EXIST OVERHEAD ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

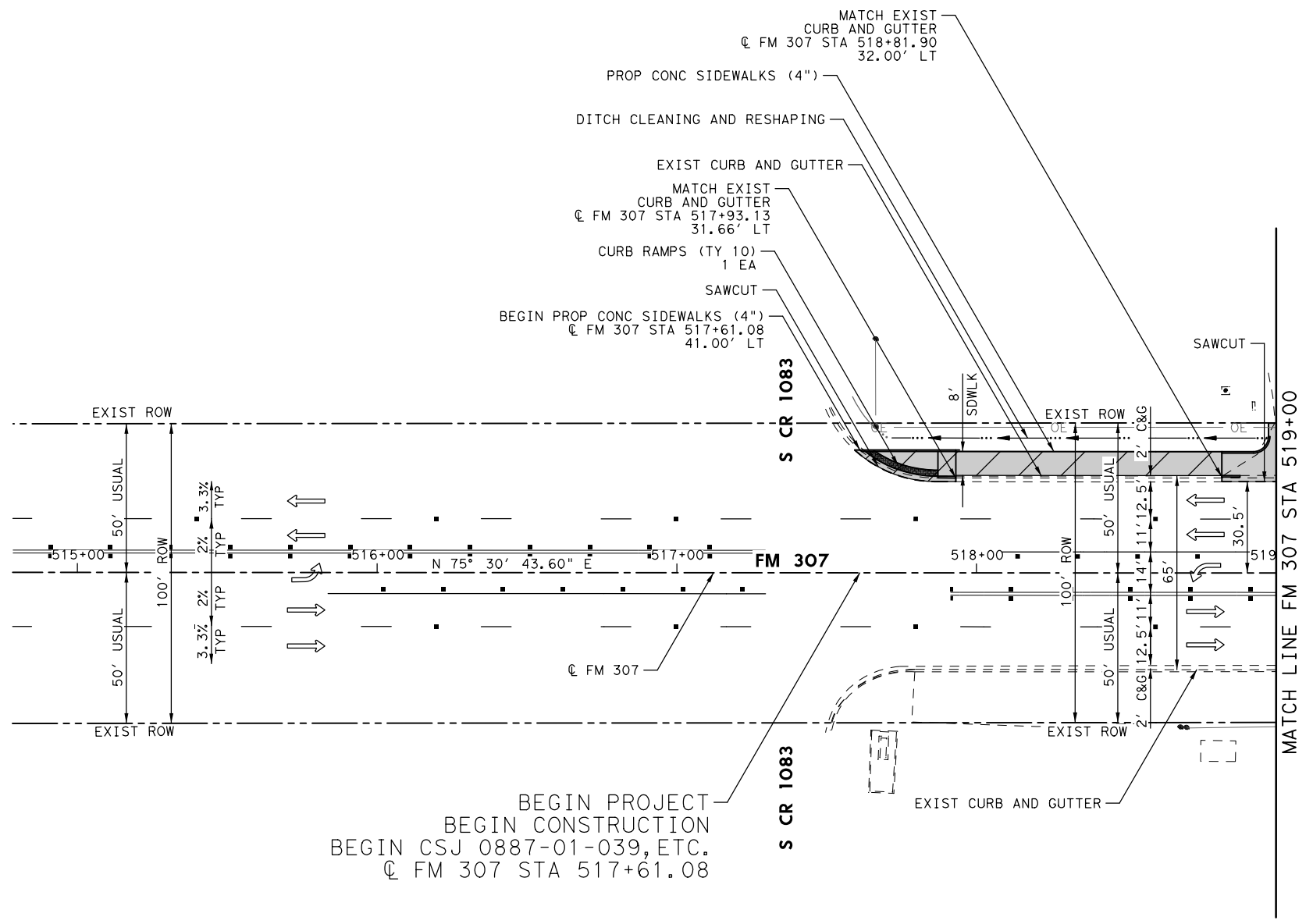
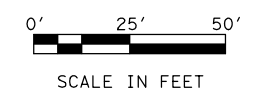
**SH 191 WBFR
 ROADWAY PLAN
 AT LP 338**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

SHEET 7 OF 7

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DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\FM307*PLA



LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP DRIVEWAYS/
CURB & GUTTER
- CONC SIDEWALKS (4")
- LANDSCAPE PAVERS
- CL A CONC (MISC)
- PROP CONC VALLEY GUTTER
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATION LINE
- EXIST OVERHEAD ELECTRIC LINE
- EXIST UNDERGROUND ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.

BEGIN PROJECT
 BEGIN CONSTRUCTION
 BEGIN CSJ 0887-01-039, ETC.
 @ FM 307 STA 517+61.08

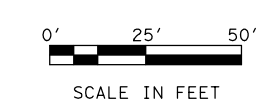


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
 ROADWAY PLAN
 AT FM 1379**

			SHEET 1 OF 7	
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.	
JMT	6	(SEE TITLE SHEET)	VARIOUS	
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JMT	TEXAS	ODA	ECTOR, ETC.	146
CHECK	CONTROL	SECTION	JOB	
JMT	0887	01	039, ETC.	

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw-bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\FM307*PLA

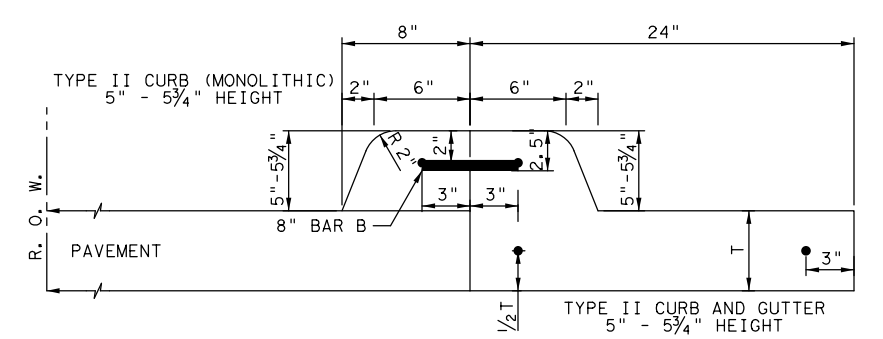
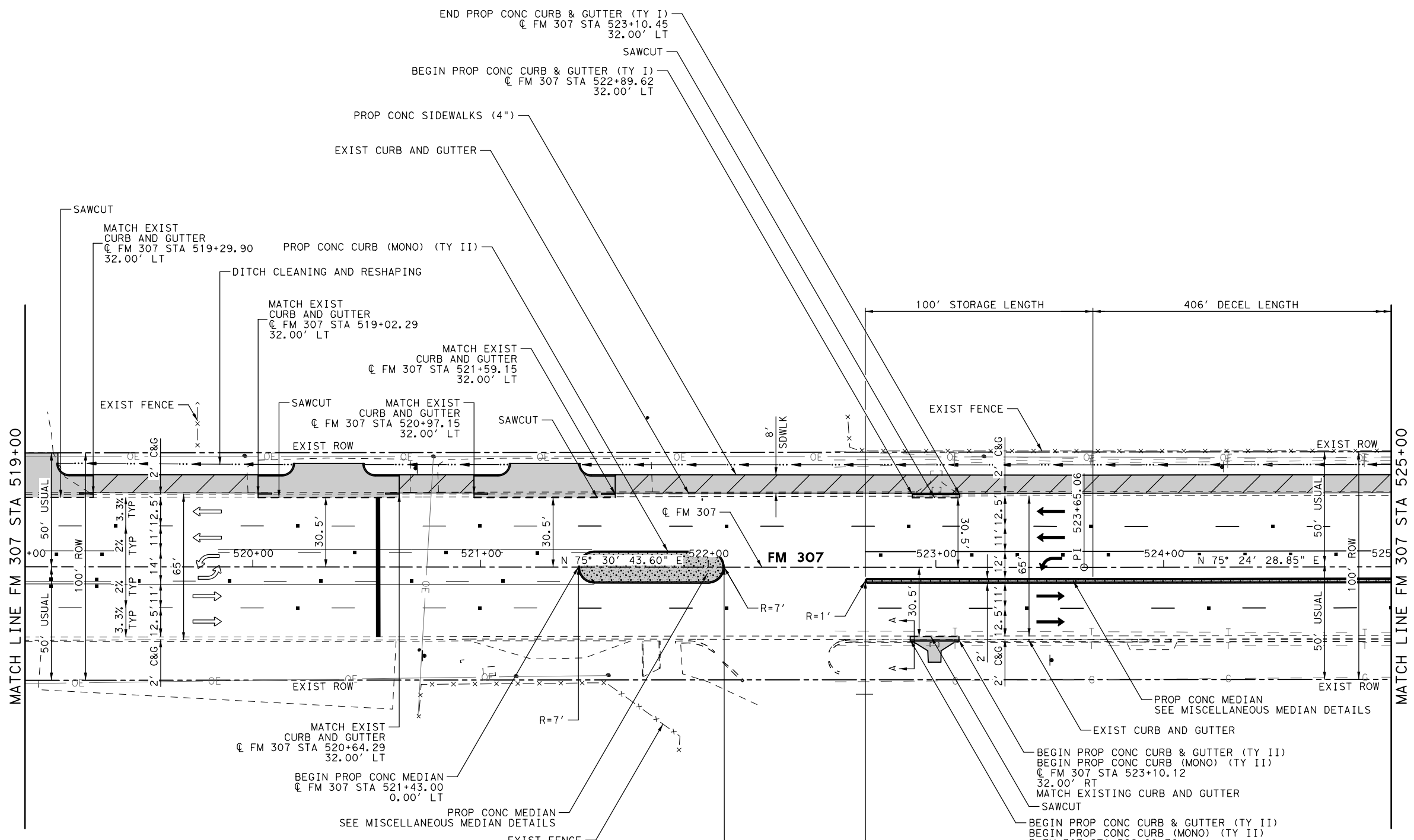


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP DRIVEWAYS/
CURB & GUTTER
- CONC SIDEWALKS (4")
- LANDSCAPE PAVERS
- CL A CONC (MISC)
- PROP CONC VALLEY GUTTER
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATION LINE
- EXIST OVERHEAD ELECTRIC LINE
- EXIST UNDERGROUND ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



SECTION A-A
 NTS

STATE OF TEXAS
 CHRISTOPHER J. STRUNK
 138599
 LICENSED PROFESSIONAL ENGINEER
 Christopher J. Strunk
 8/20/20

TEXAS DEPARTMENT OF TRANSPORTATION
 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

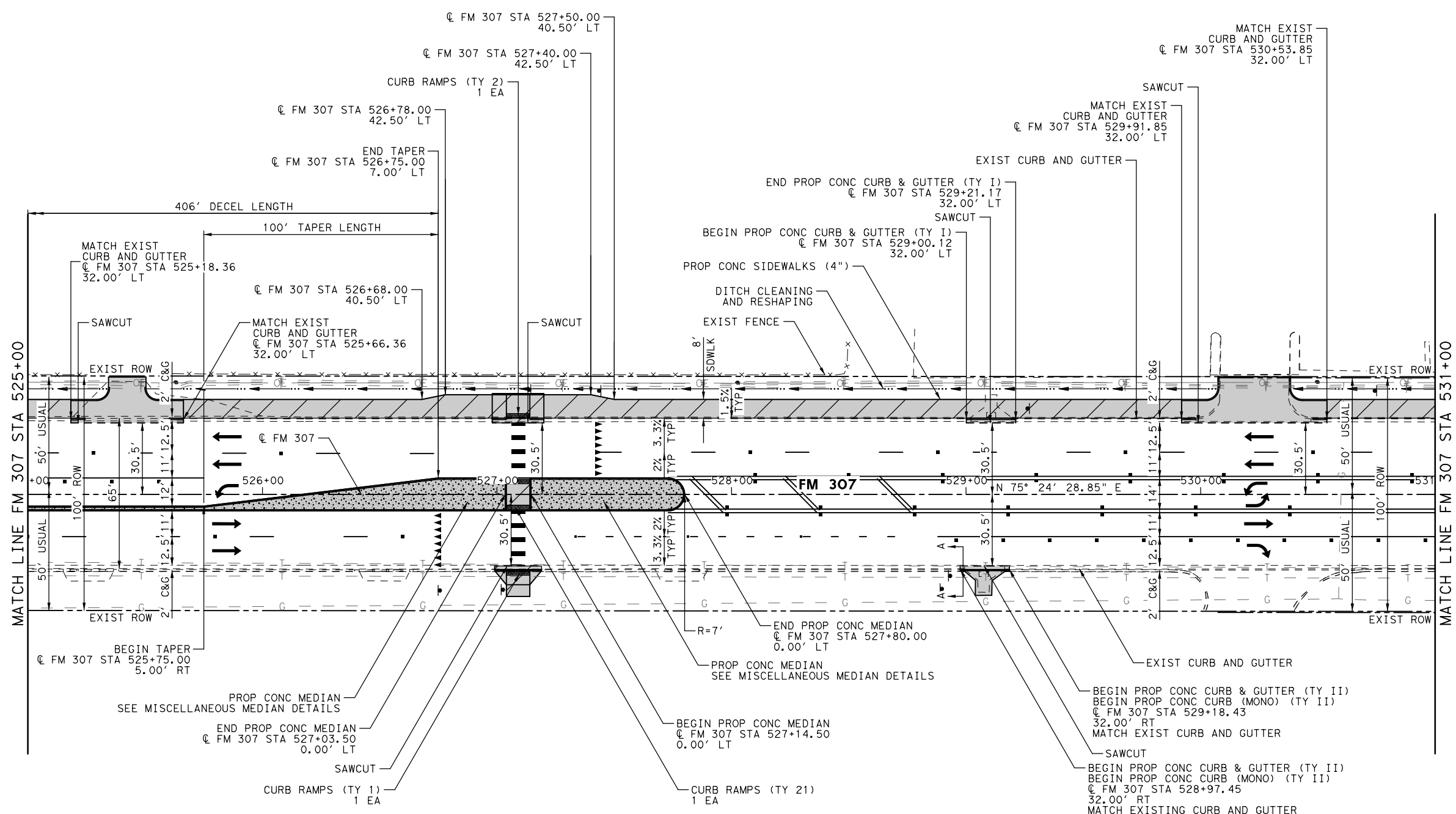
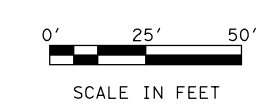
**FM 307
 ROADWAY PLAN
 AT FM 1379**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

SHEET 2 OF 7

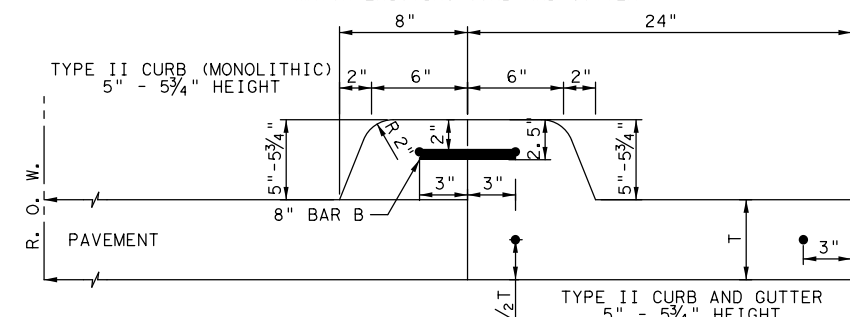
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DATE: 8/20/2020
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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP DRIVEWAYS/ CURB & GUTTER
 - CONC SIDEWALKS (4")
 - LANDSCAPE PAVERS
 - CL A CONC (MISC)
 - PROP CONC VALLEY GUTTER
 - EXIST FLOW LINE
 - PROP FLOW LINE
 - EXIST GAS LINE
 - EXIST PIPELINE
 - EXIST WATER LINE
 - EXIST WASTEWATER LINE
 - EXIST TELECOMMUNICATION LINE
 - EXIST OVERHEAD ELECTRIC LINE
 - EXIST UNDERGROUND ELECTRIC LINE

- NOTES:**
1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
 2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



SECTION A-A
 NTS

JMT TBPE REGISTRATION NO. F-16341

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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

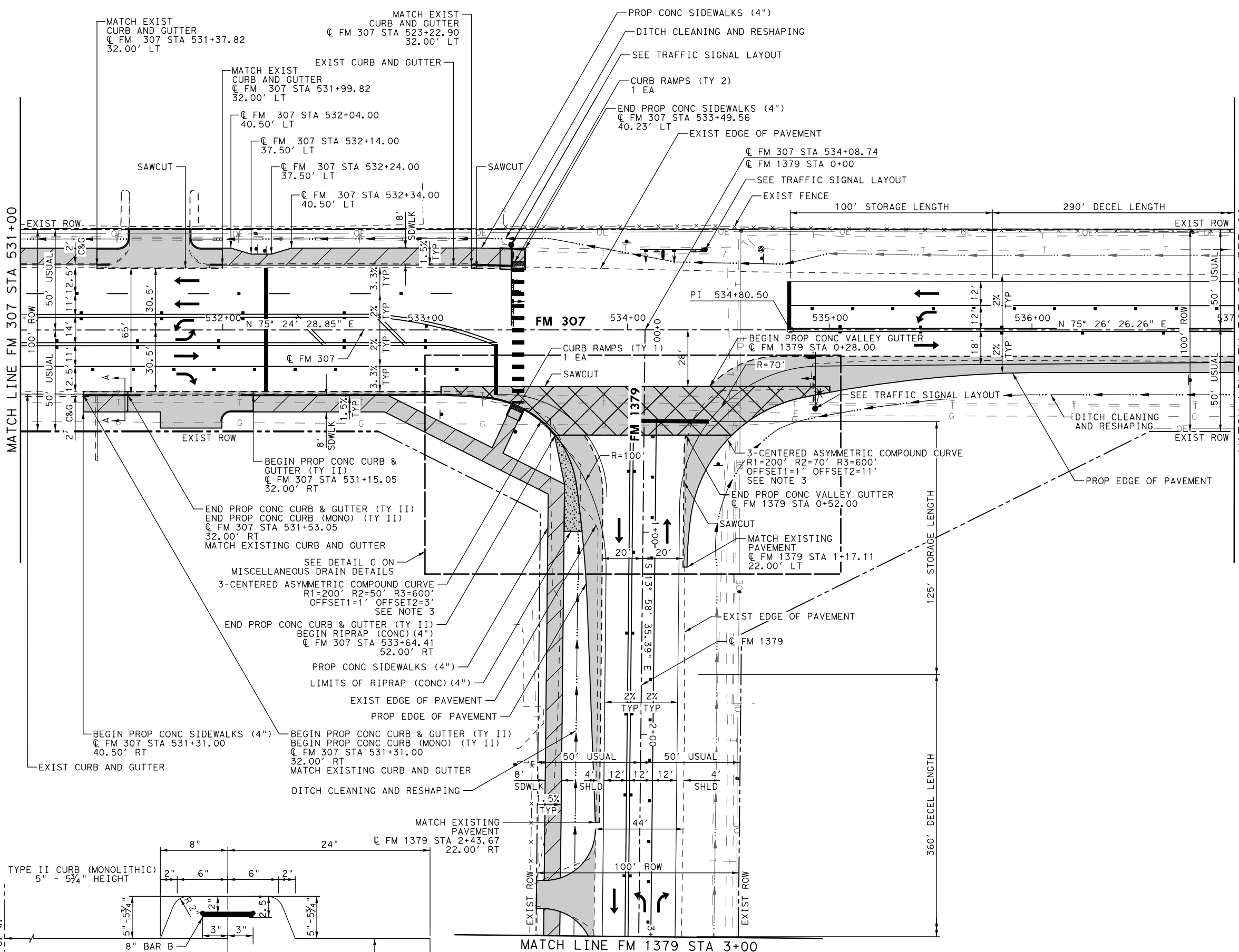
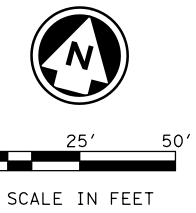
**FM 307
 ROADWAY PLAN
 AT FM 1379**

SHEET 3 OF 7

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

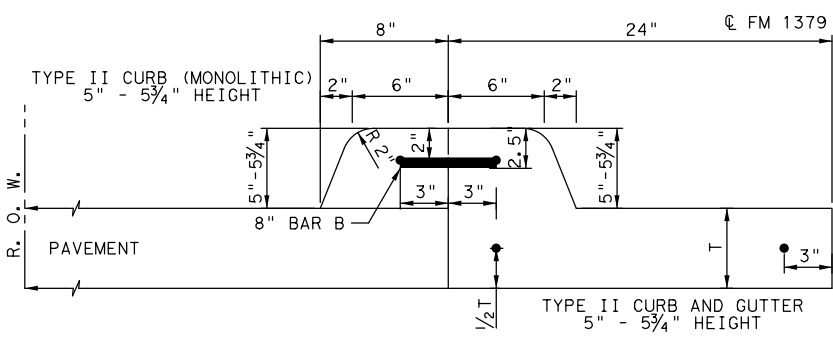
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DATE: 8/20/2020
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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP DRIVEWAYS/ CURB & GUTTER
 - CONC SIDEWALKS (4")
 - LANDSCAPE PAVERS
 - CL A CONC (MISC)
 - PROP CONC VALLEY GUTTER
 - EXIST FLOW LINE
 - PROP FLOW LINE
 - EXIST GAS LINE
 - EXIST PIPELINE
 - EXIST WATER LINE
 - EXIST WASTEWATER LINE
 - EXIST TELECOMMUNICATION LINE
 - EXIST OVERHEAD ELECTRIC LINE
 - EXIST UNDERGROUND ELECTRIC LINE

- NOTES:**
1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
 2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.
 3. SEE INTERSECTION DETAILS FOR MORE INFORMATION.



SECTION A-A
NTS

JMT TBPE REGISTRATION NO. F-16341

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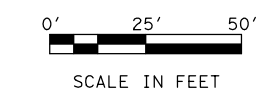
**FM 307
 ROADWAY PLAN
 AT FM 1379**

SHEET 4 OF 7

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

149

DATE: 8/20/2020
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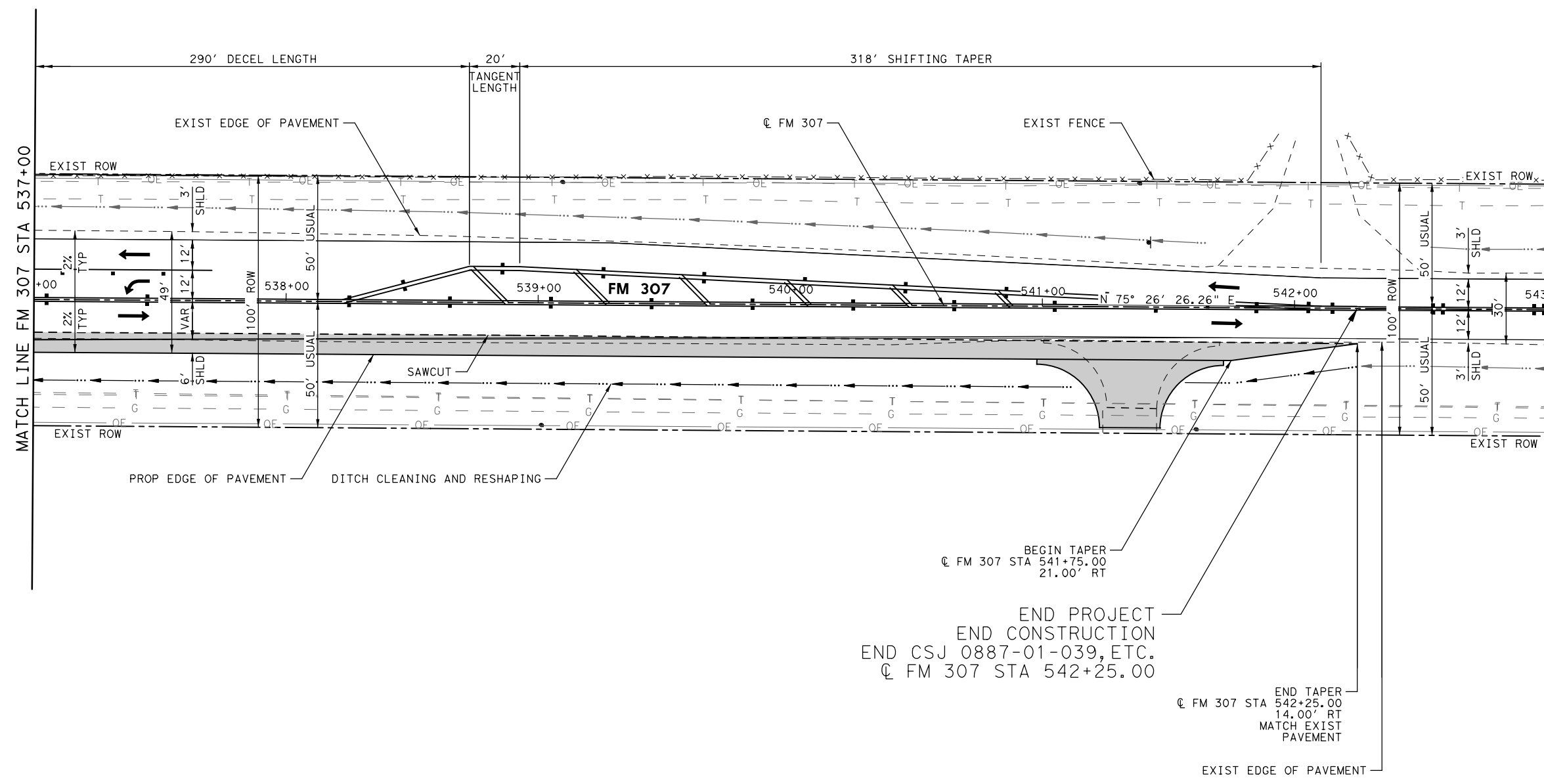


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP DRIVEWAYS/ CURB & GUTTER
- CONC SIDEWALKS (4")
- LANDSCAPE PAVERS
- CL A CONC (MISC)
- PROP CONC VALLEY GUTTER
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATION LINE
- EXIST OVERHEAD ELECTRIC LINE
- EXIST UNDERGROUND ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



BEGIN TAPER
 @ FM 307 STA 541+75.00
 21.00' RT

END PROJECT
 END CONSTRUCTION
 END CSJ 0887-01-039, ETC.
 @ FM 307 STA 542+25.00

END TAPER
 @ FM 307 STA 542+25.00
 14.00' RT
 MATCH EXIST
 PAVEMENT

EXIST EDGE OF PAVEMENT



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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

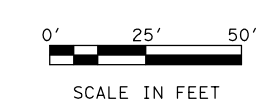
**FM 307
 ROADWAY PLAN
 AT FM 1379**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

SHEET 5 OF 7

150

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\FM307*PLA

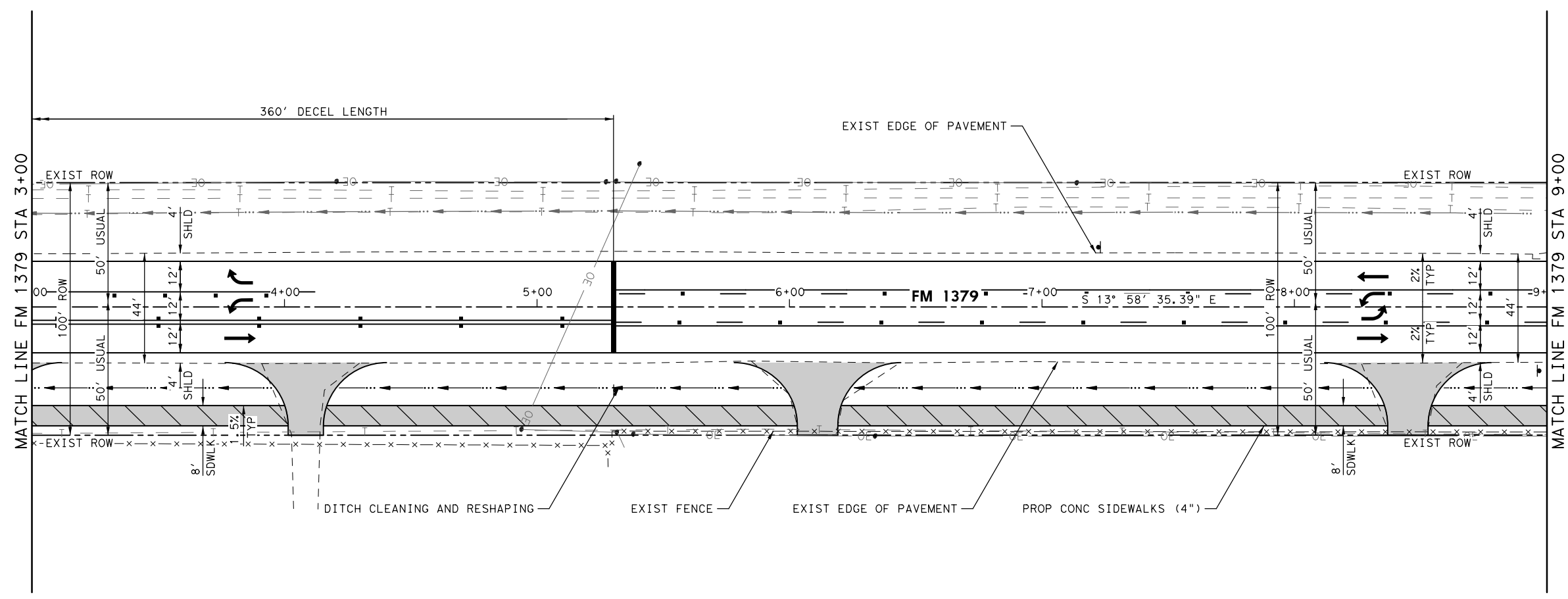


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP DRIVEWAYS/
CURB & GUTTER
- CONC SIDEWALKS (4")
- LANDSCAPE PAVERS
- CL A CONC (MISC)
- PROP CONC VALLEY GUTTER
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
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- EXIST TELECOMMUNICATION LINE
- EXIST OVERHEAD ELECTRIC LINE
- EXIST UNDERGROUND ELECTRIC LINE

NOTES:

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2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



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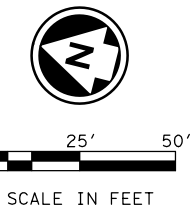
**FM 1379
 ROADWAY PLAN
 AT FM 307**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

SHEET 6 OF 7

151

DATE: 8/20/2020
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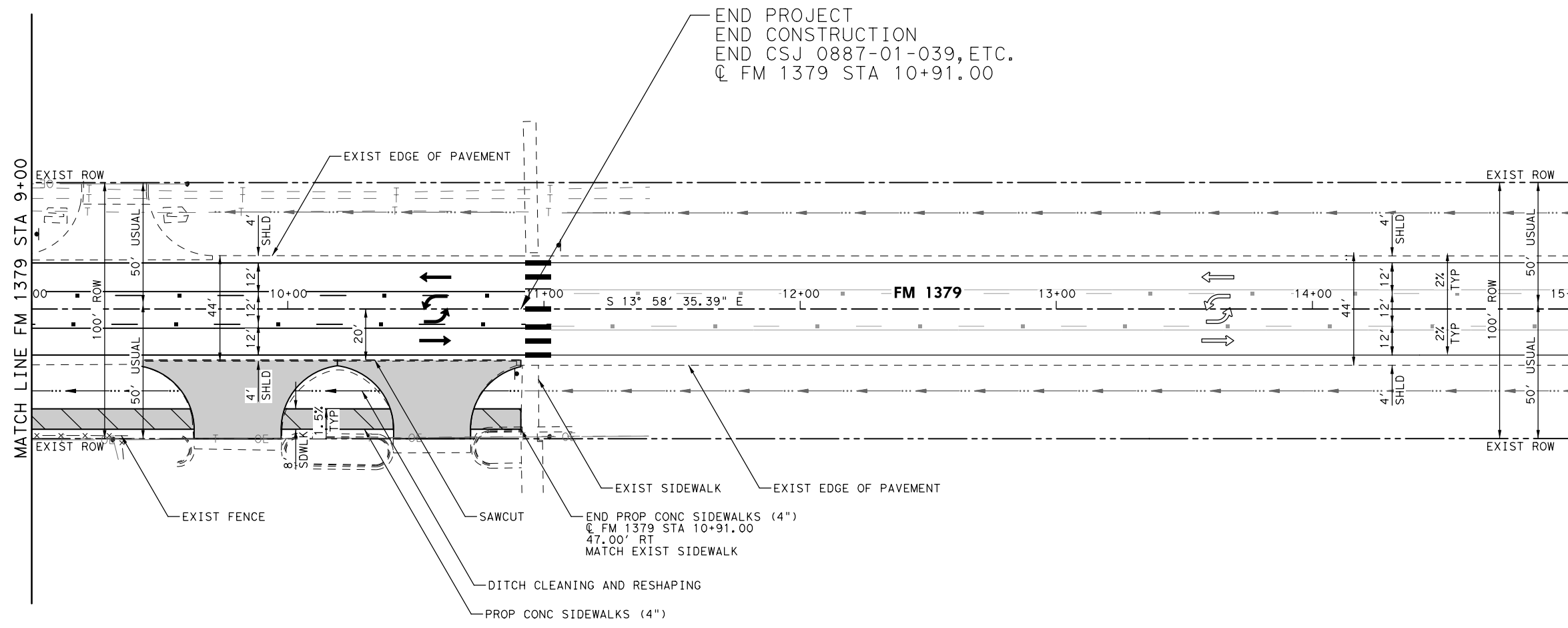


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP DRIVEWAYS/ CURB & GUTTER
- CONC SIDEWALKS (4")
- LANDSCAPE PAVERS
- CL A CONC (MISC)
- PROP CONC VALLEY GUTTER
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATION LINE
- EXIST OVERHEAD ELECTRIC LINE
- EXIST UNDERGROUND ELECTRIC LINE

NOTES:

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2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



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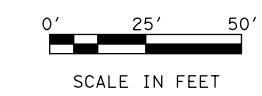
**FM 1379
 ROADWAY PLAN
 AT FM 307**

SHEET 7 OF 7

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

152

DATE: 8/20/2020
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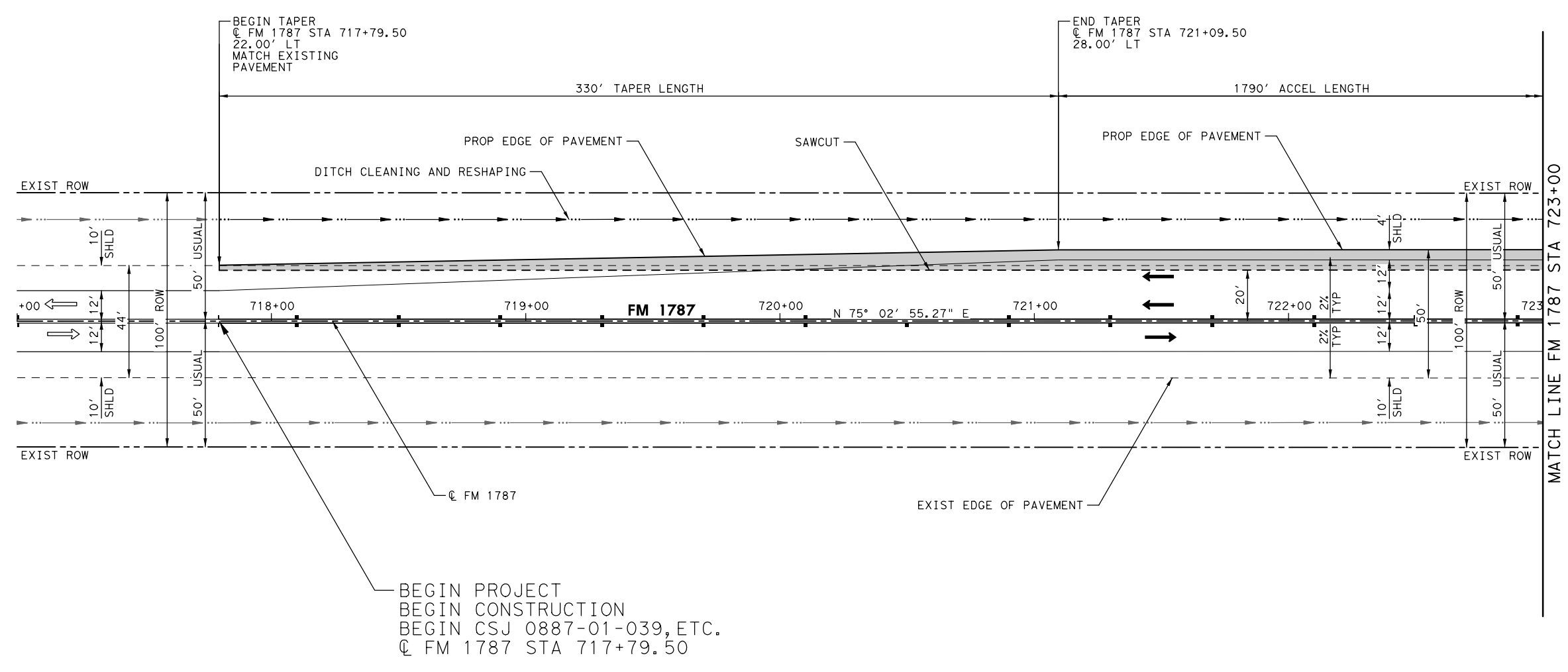


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT
- PROP FENCE
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATION LINE
- EXIST OVERHEAD ELECTRIC LINE

NOTES:

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**FM 1787
 ROADWAY PLAN
 AT FM 1788**

SHEET 1 OF 16

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

153

DATE: 8/20/2020
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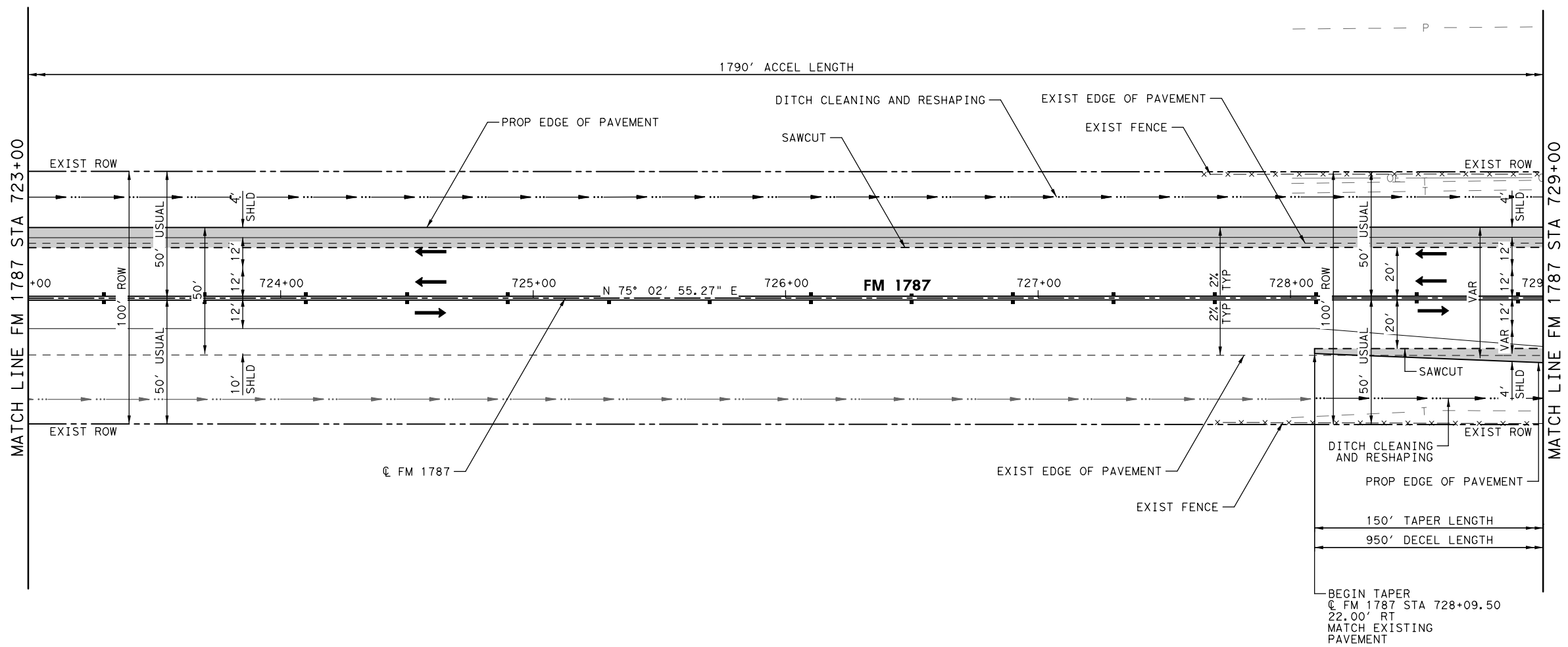
0' 25' 50'
 SCALE IN FEET

LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT
- PROP FENCE
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
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NOTES:

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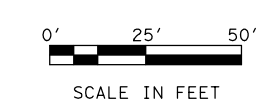
**FM 1787
 ROADWAY PLAN
 AT FM 1788**

SHEET 2 OF 16

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

154

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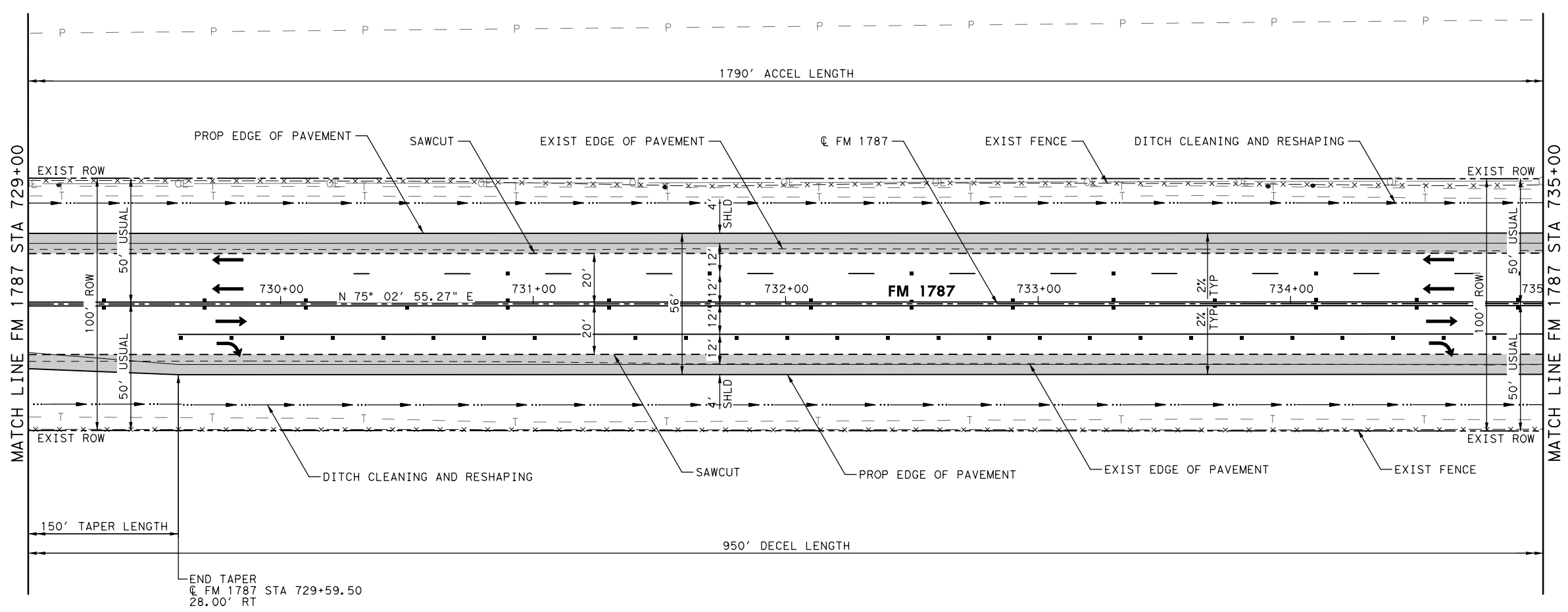


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT
- PROP FENCE
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
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NOTES:

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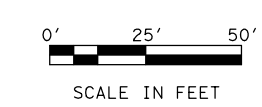
**FM 1787
 ROADWAY PLAN
 AT FM 1788**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

SHEET 3 OF 16

155

DATE: 8/20/2020
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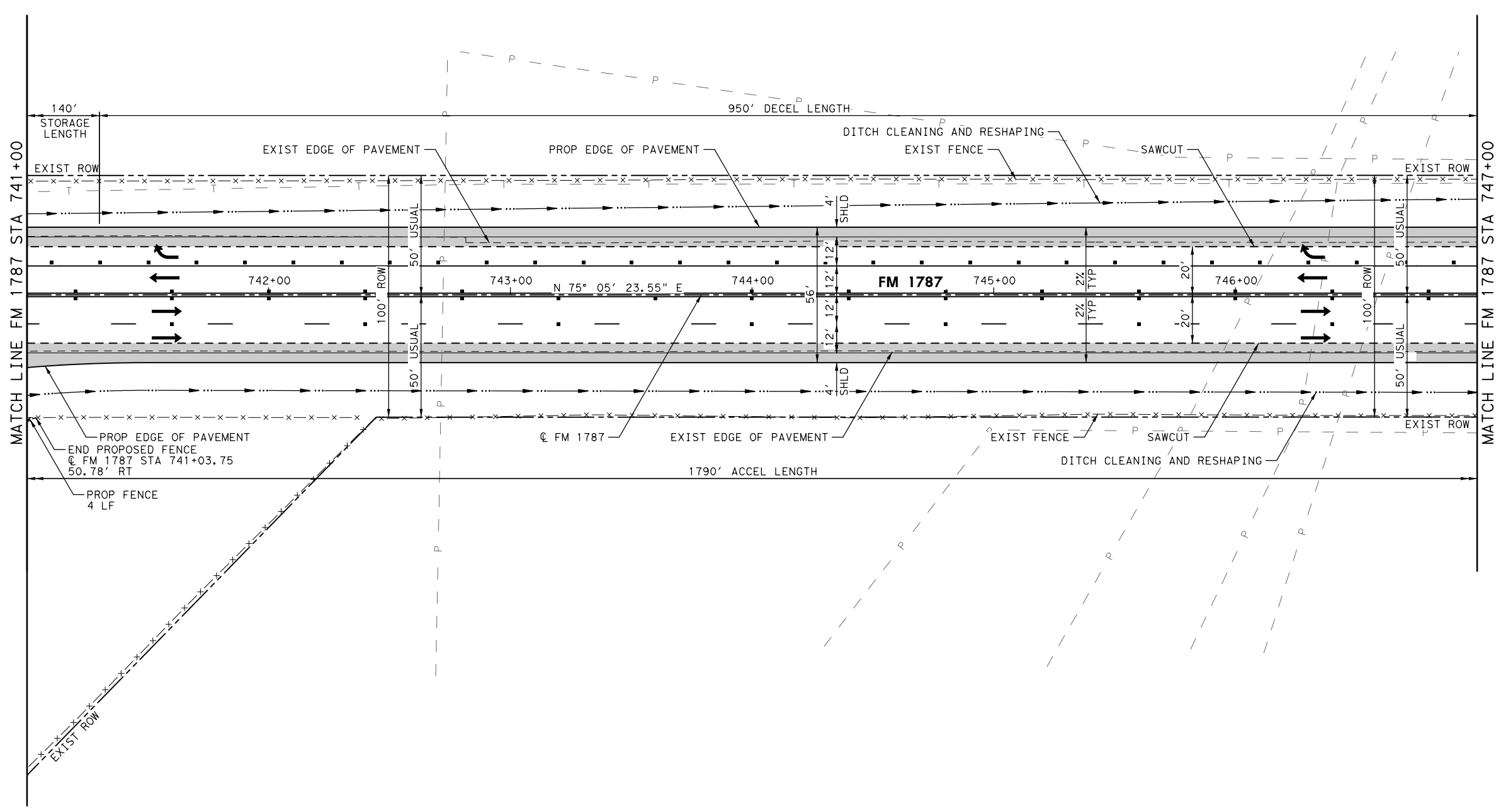


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT
- PROP FENCE
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
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NOTES:

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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

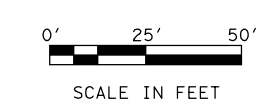
**FM 1787
 ROADWAY PLAN
 AT FM 1788**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

SHEET 5 OF 16

157

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*PL

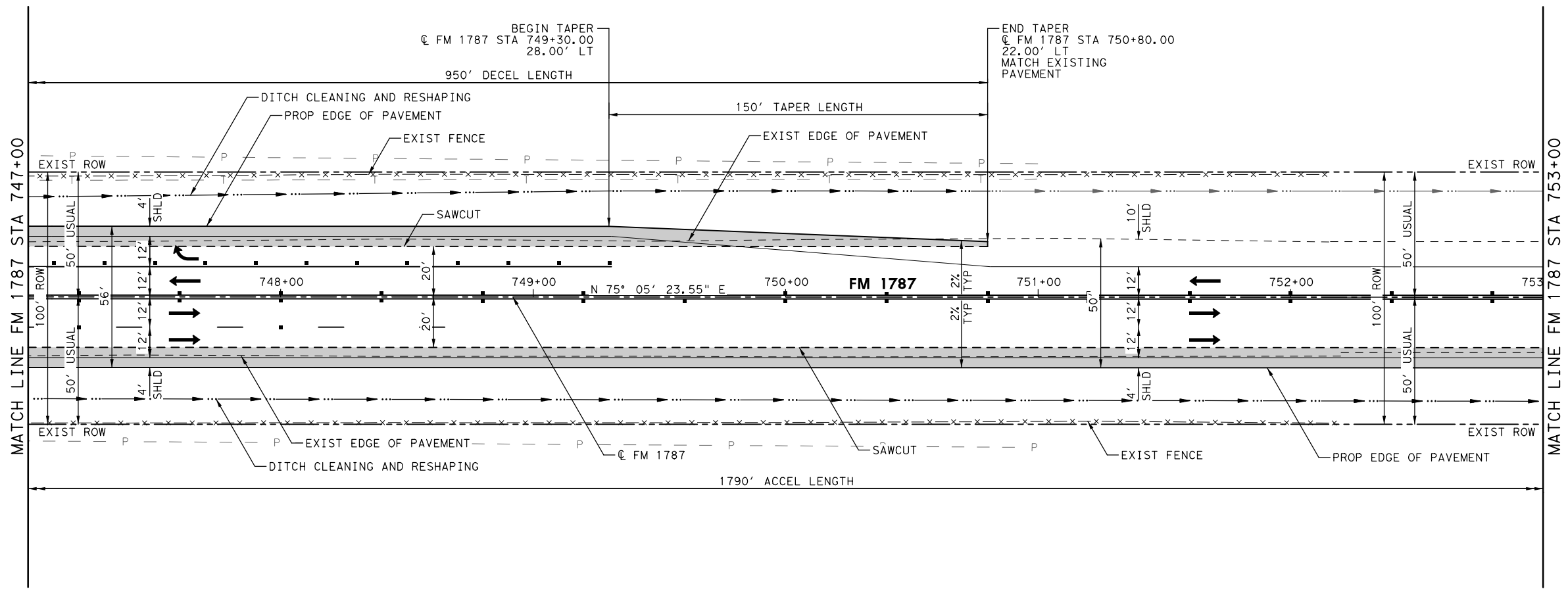


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT
- PROP FENCE
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
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NOTES:

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2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

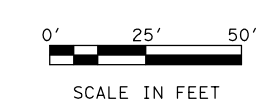
**FM 1787
 ROADWAY PLAN
 AT FM 1788**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

SHEET 6 OF 16

158

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*PL

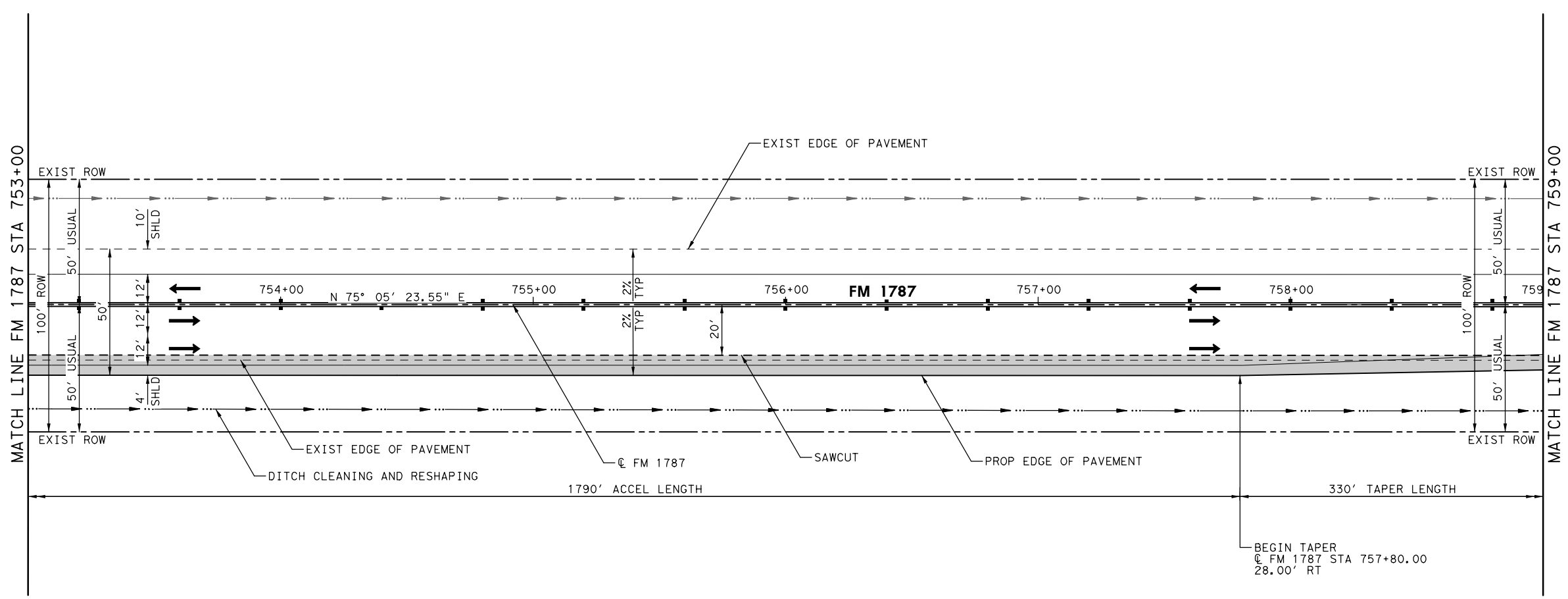


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT
- PROP FENCE
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATION LINE
- EXIST OVERHEAD ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
ROADWAY PLAN
AT FM 1788**

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						159

SHEET 7 OF 16

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*PL



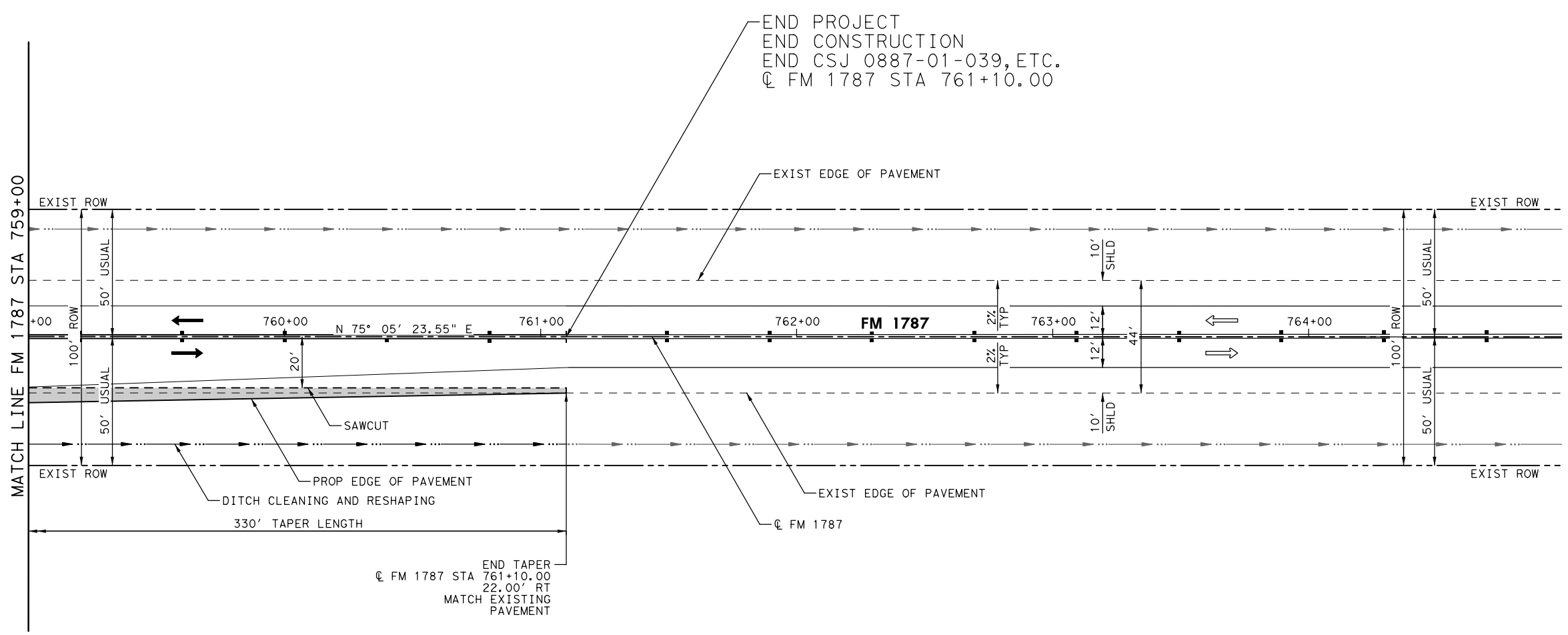
0' 25' 50'
 SCALE IN FEET

LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT
- PROP FENCE
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATION LINE
- EXIST OVERHEAD ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



END PROJECT
 END CONSTRUCTION
 END CSJ 0887-01-039, ETC.
 @ FM 1787 STA 761+10.00

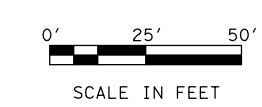
END TAPER
 @ FM 1787 STA 761+10.00
 22.00' RT
 MATCH EXISTING
 PAVEMENT

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Texas Department of Transportation
 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 ROADWAY PLAN
 AT FM 1788**

SHEET 8 OF 16			
DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
			160

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\Design\Plan Set\3. Roadway\FM1787*PL

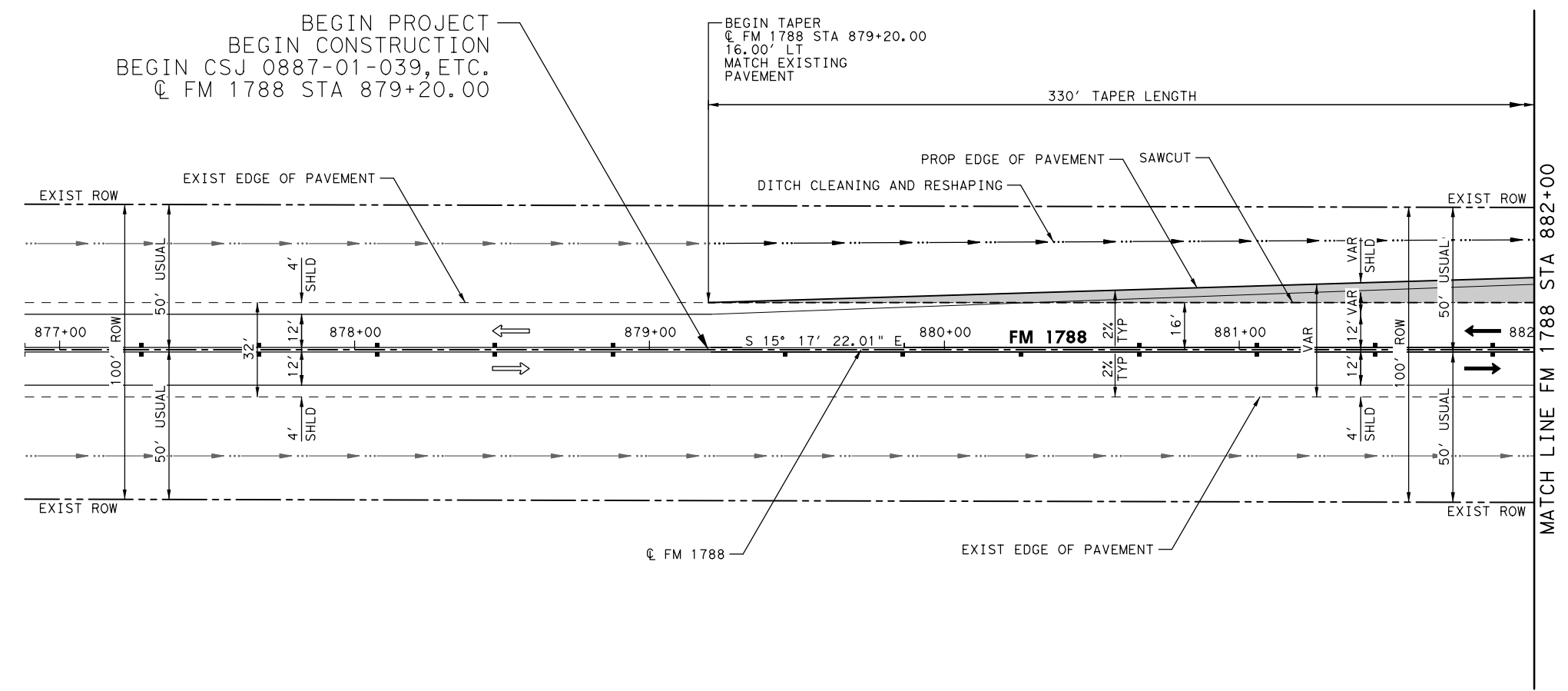


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT
- PROP FENCE
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATION LINE
- EXIST OVERHEAD ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



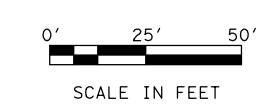
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 ROADWAY PLAN
 AT FM 1787**

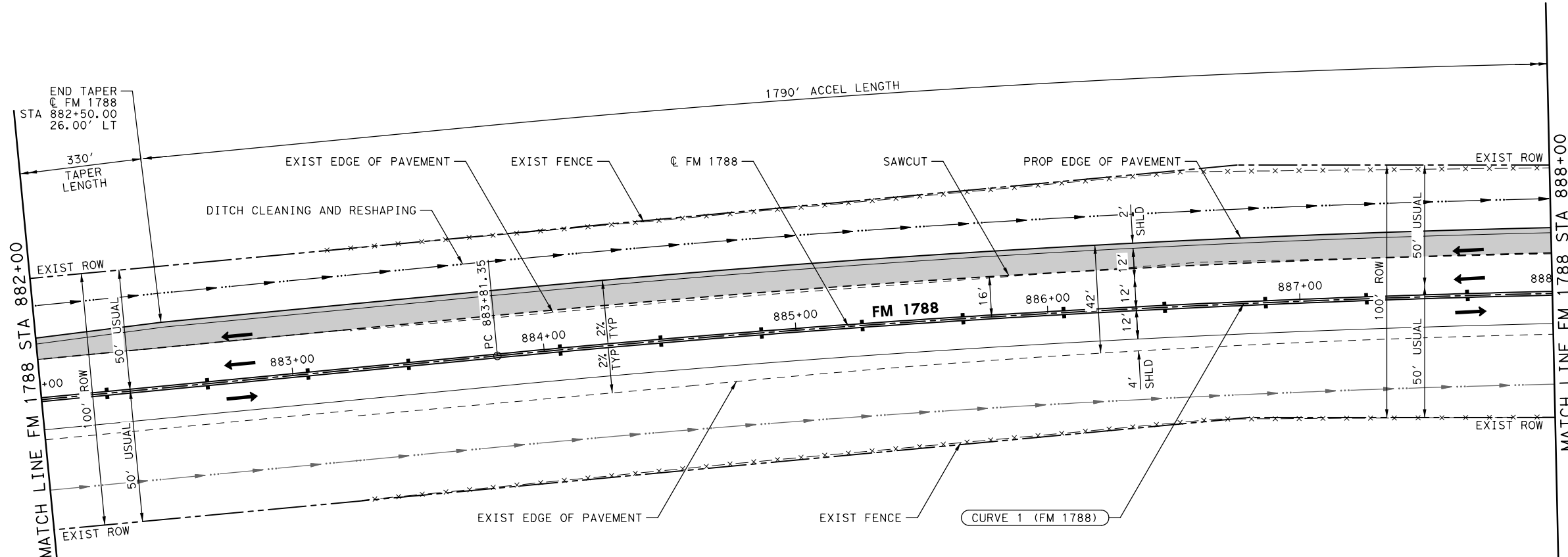
SHEET 9 OF 16

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						161

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*PL




CURVE 1 (FM 1788)
 PI STATION = 886+51.07
 DELTA = 5° 23' 25.33" (RT)
 DEGREE OF CURVE = 1° 00' 00.00"
 TANGENT = 269.72
 LENGTH = 539.04
 RADIUS = 5,729.58
 PC STATION = 883+81.35
 PT STATION = 889+20.38



- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP PAVEMENT
 - PROP FENCE
 - EXIST FLOW LINE
 - PROP FLOW LINE
 - EXIST GAS LINE
 - EXIST PIPELINE
 - EXIST WATER LINE
 - EXIST WASTEWATER LINE
 - EXIST TELECOMMUNICATION LINE
 - EXIST OVERHEAD ELECTRIC LINE

- NOTES:**
1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
 2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.





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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

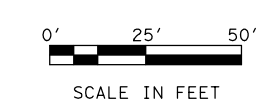
**FM 1788
 ROADWAY PLAN
 AT FM 1788**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

SHEET 10 OF 16

162

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*PL

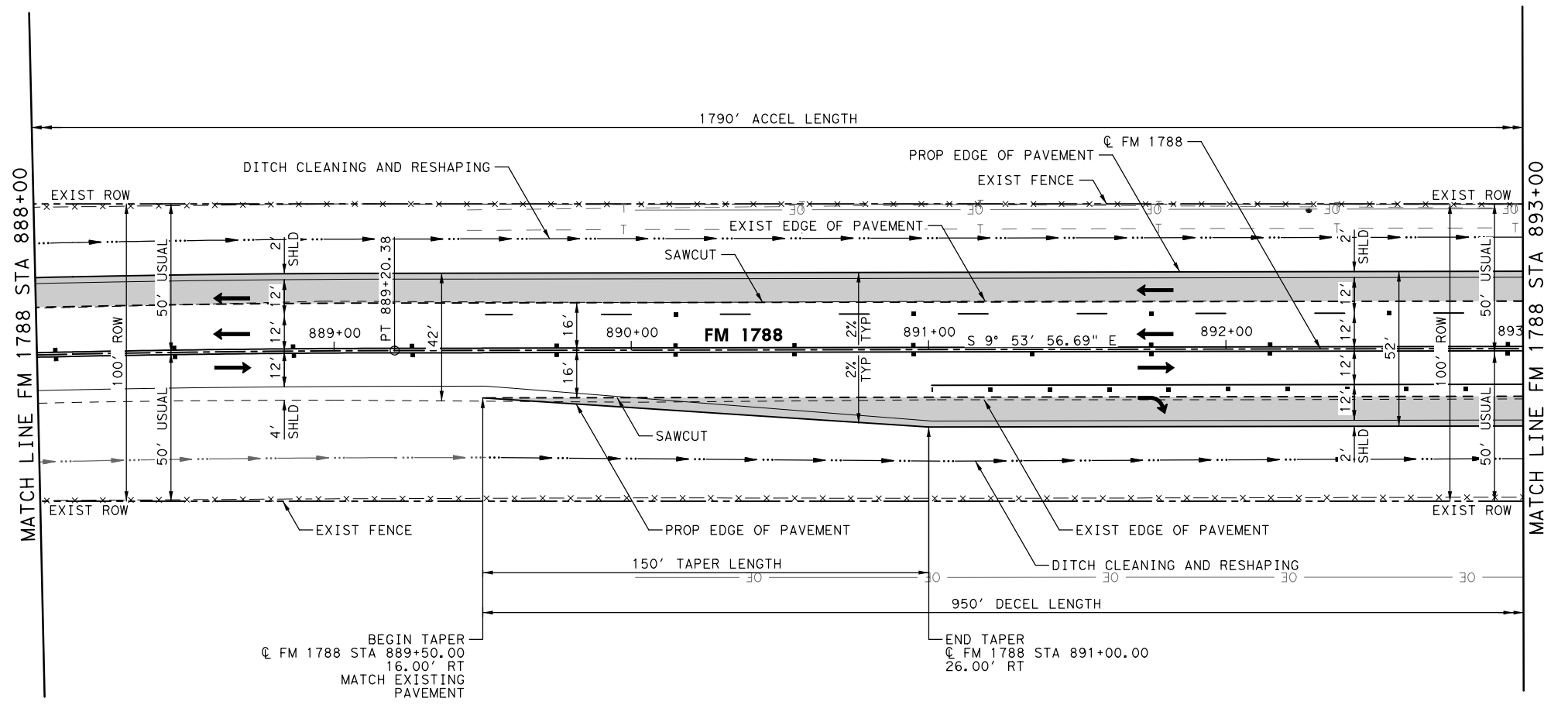


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT
- PROP FENCE
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATION LINE
- EXIST OVERHEAD ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

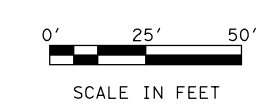
**FM 1788
 ROADWAY PLAN
 AT FM 1787**

SHEET 11 OF 16

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

163

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*PL

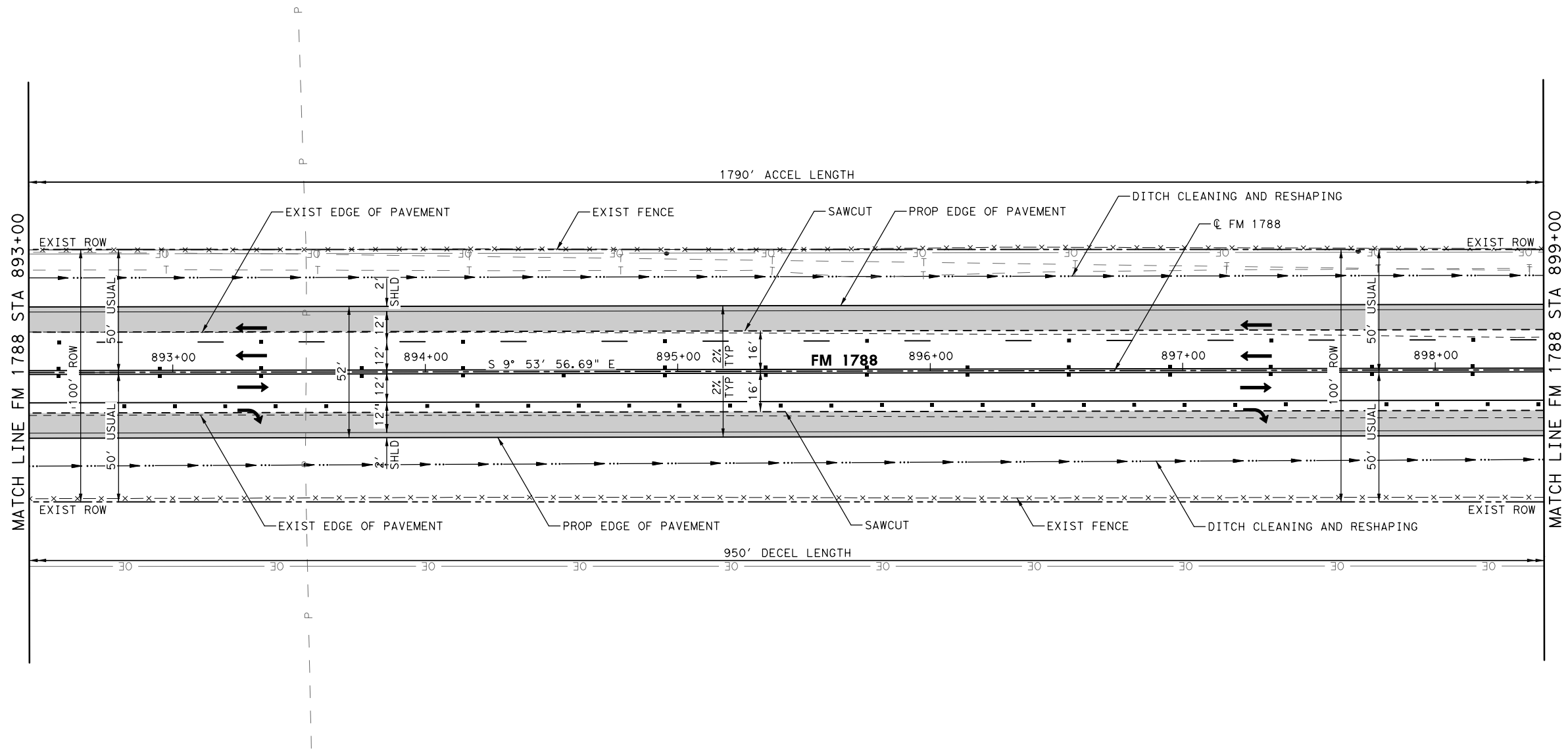



LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT
- PROP FENCE
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATION LINE
- EXIST OVERHEAD ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.





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 TBPE REGISTRATION NO. F-16341

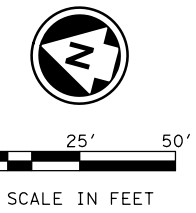
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 ROADWAY PLAN
 AT FM 1787**

SHEET 12 OF 16

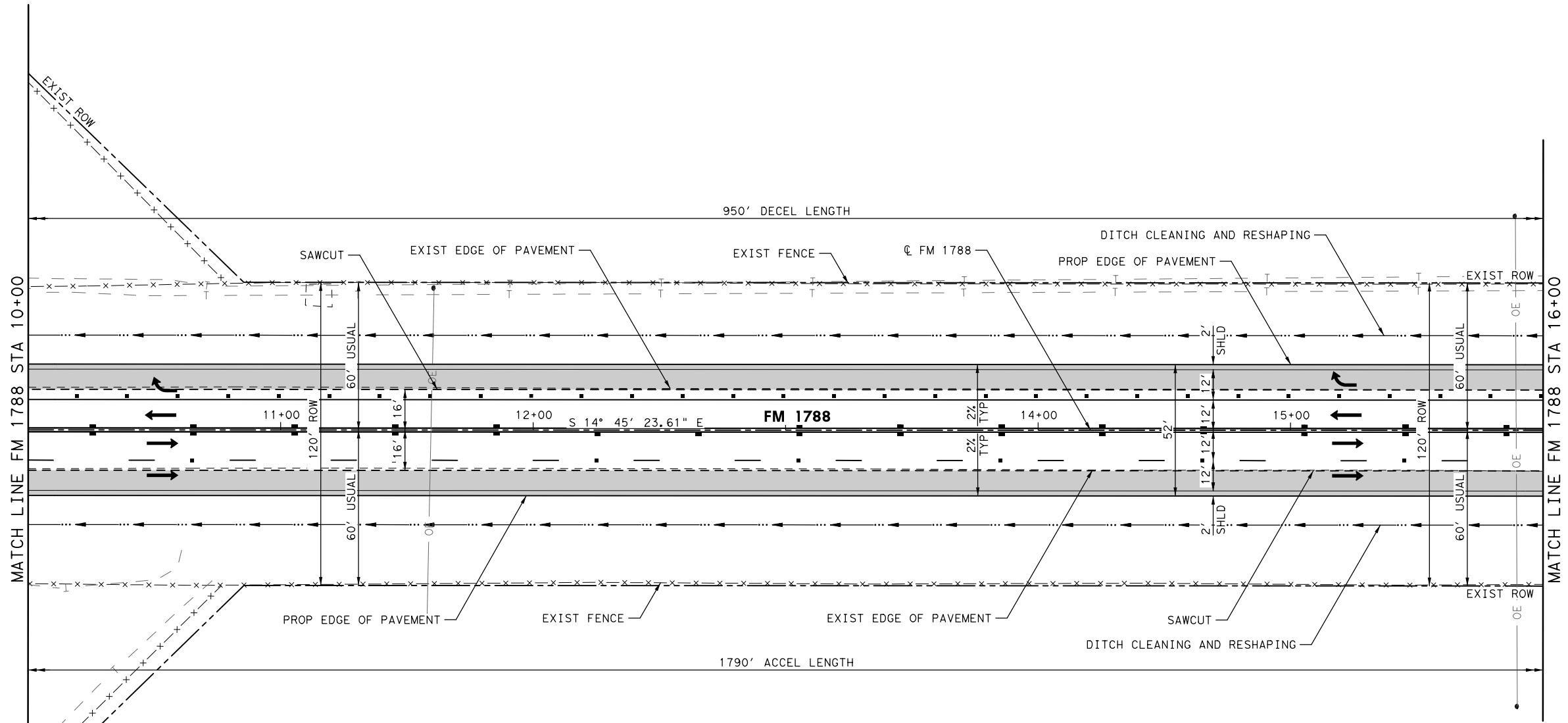
DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						164

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*PL



- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP PAVEMENT
 - PROP FENCE
 - EXIST FLOW LINE
 - PROP FLOW LINE
 - EXIST GAS LINE
 - EXIST PIPELINE
 - EXIST WATER LINE
 - EXIST WASTEWATER LINE
 - EXIST TELECOMMUNICATION LINE
 - EXIST OVERHEAD ELECTRIC LINE

- NOTES:**
1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
 2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.

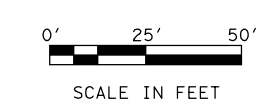


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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 ROADWAY PLAN
 AT FM 1787**

SHEET 13 OF 16			
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*P1

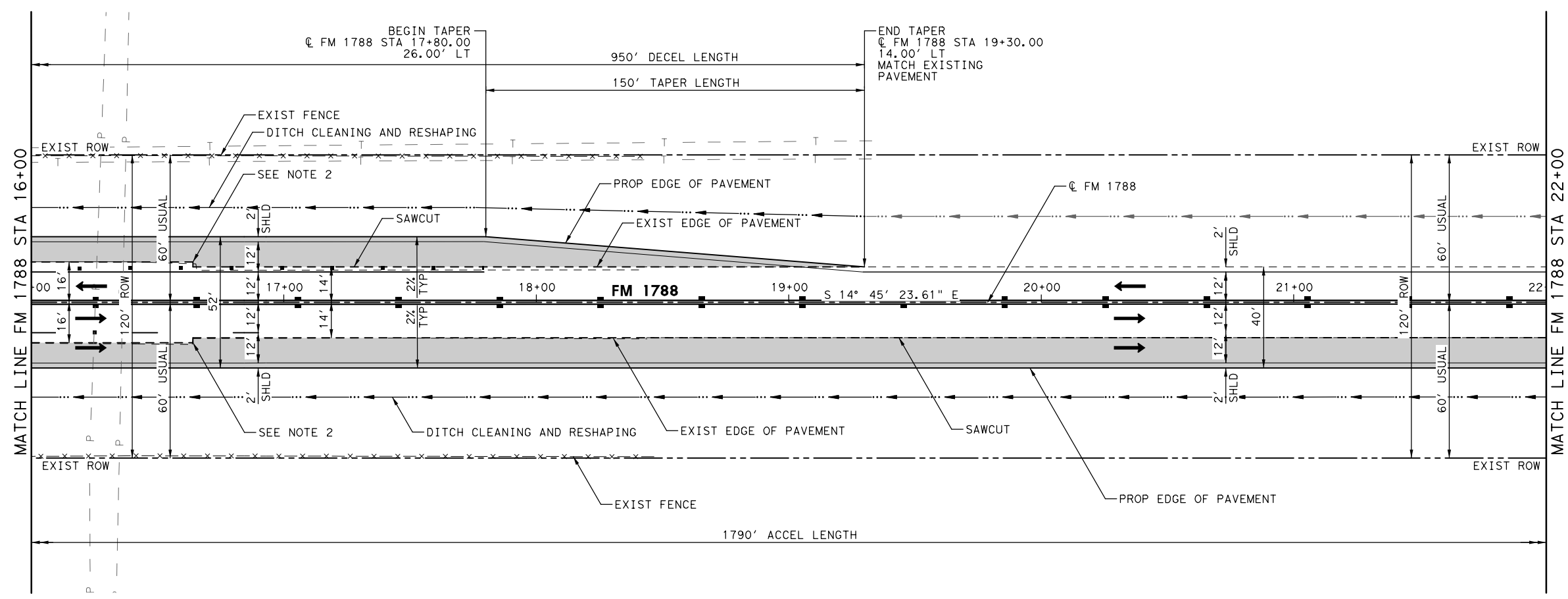


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT
- PROP FENCE
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATION LINE
- EXIST OVERHEAD ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.
3. EXIST SHOULDER TRANS FROM 4' TO 2' STA 16+64.00



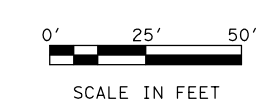
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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 ROADWAY PLAN
 AT FM 1787**

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						166

SHEET 14 OF 16

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*PL

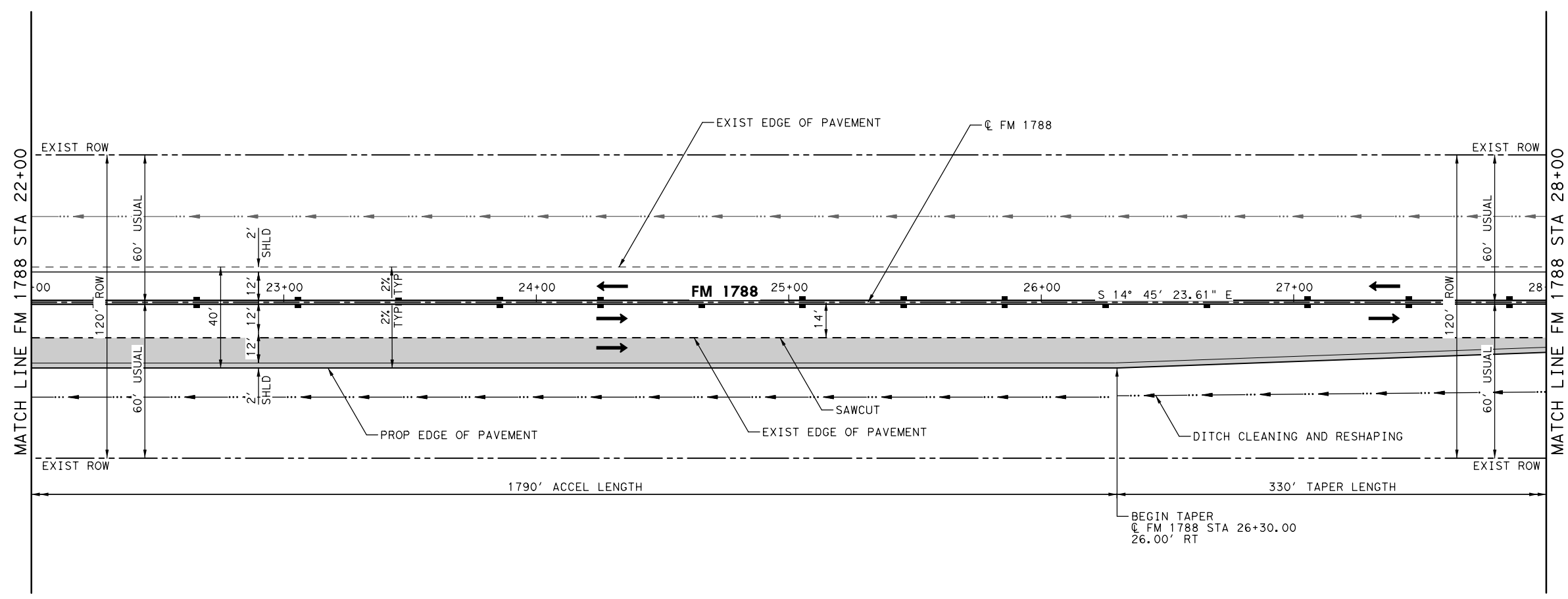


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT
- PROP FENCE
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATION LINE
- EXIST OVERHEAD ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



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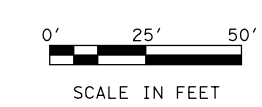
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 ROADWAY PLAN
 AT FM 1787**

SHEET 15 OF 16

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						167

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\FM1787*PL

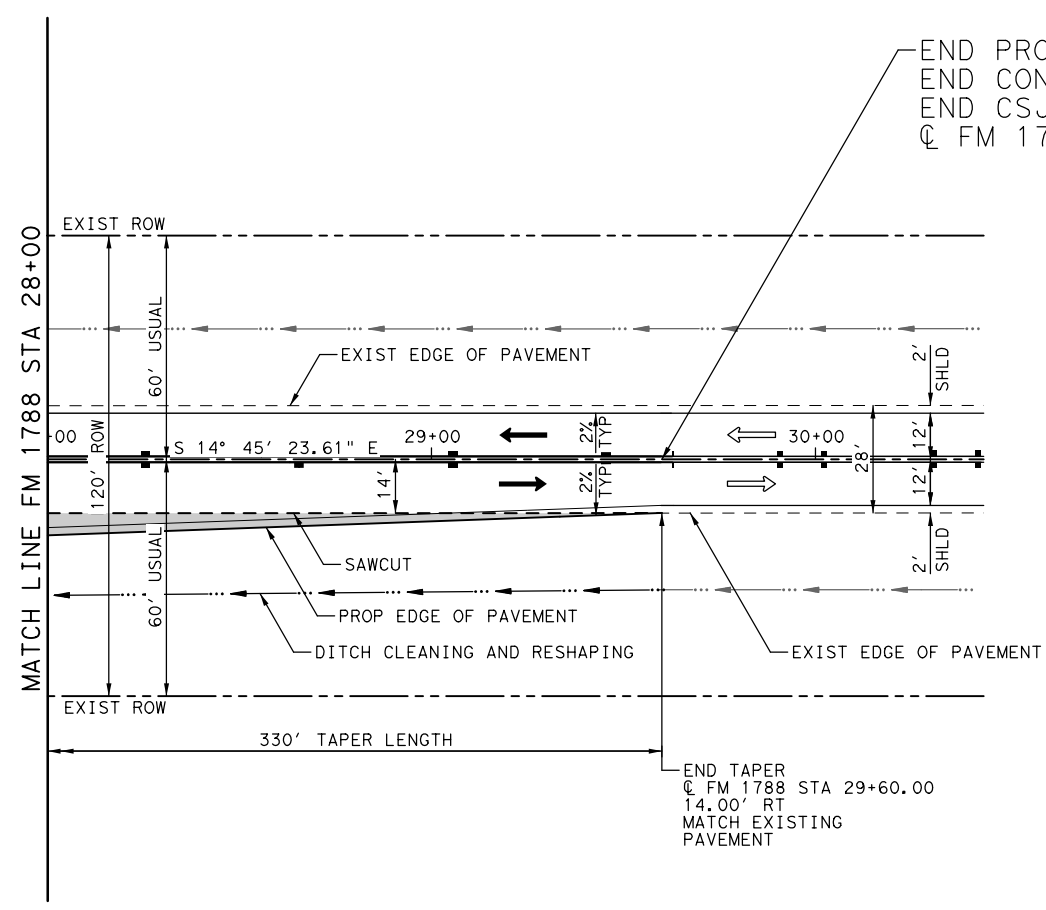



LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT
- PROP FENCE
- EXIST FLOW LINE
- PROP FLOW LINE
- EXIST GAS LINE
- EXIST PIPELINE
- EXIST WATER LINE
- EXIST WASTEWATER LINE
- EXIST TELECOMMUNICATION LINE
- EXIST OVERHEAD ELECTRIC LINE

NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
2. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.





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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 ROADWAY PLAN
 AT FM 1787**

SHEET 16 OF 16

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						168

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\LP338*INT

CURVE 2 (SH 191 EBFR)
 PI STATION = 320+21.15
 DELTA = 3° 39' 00.80" (LT)
 DEGREE OF CURVE = 0° 28' 03.79"
 TANGENT = 390.35
 LENGTH = 780.43
 RADIUS = 12,250.00
 PC STATION = 316+30.80
 PT STATION = 324+11.23

CURVE 2 (LP 338)
 PI STATION = 81+89.84
 DELTA = 2° 23' 49.44" (RT)
 DEGREE OF CURVE = 1° 00' 00.00"
 TANGENT = 119.87
 LENGTH = 239.71
 RADIUS = 5,729.58
 PC STATION = 80+69.97
 PT STATION = 83+09.68



0' 10' 20' 40'
 SCALE IN FEET

LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT/DRIVEWAYS/
CURB & GUTTER
- CONC SIDEWALKS (4")
- LANDSCAPE PAVERS
- CL A CONC (MISC)

NOTES:

1. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.

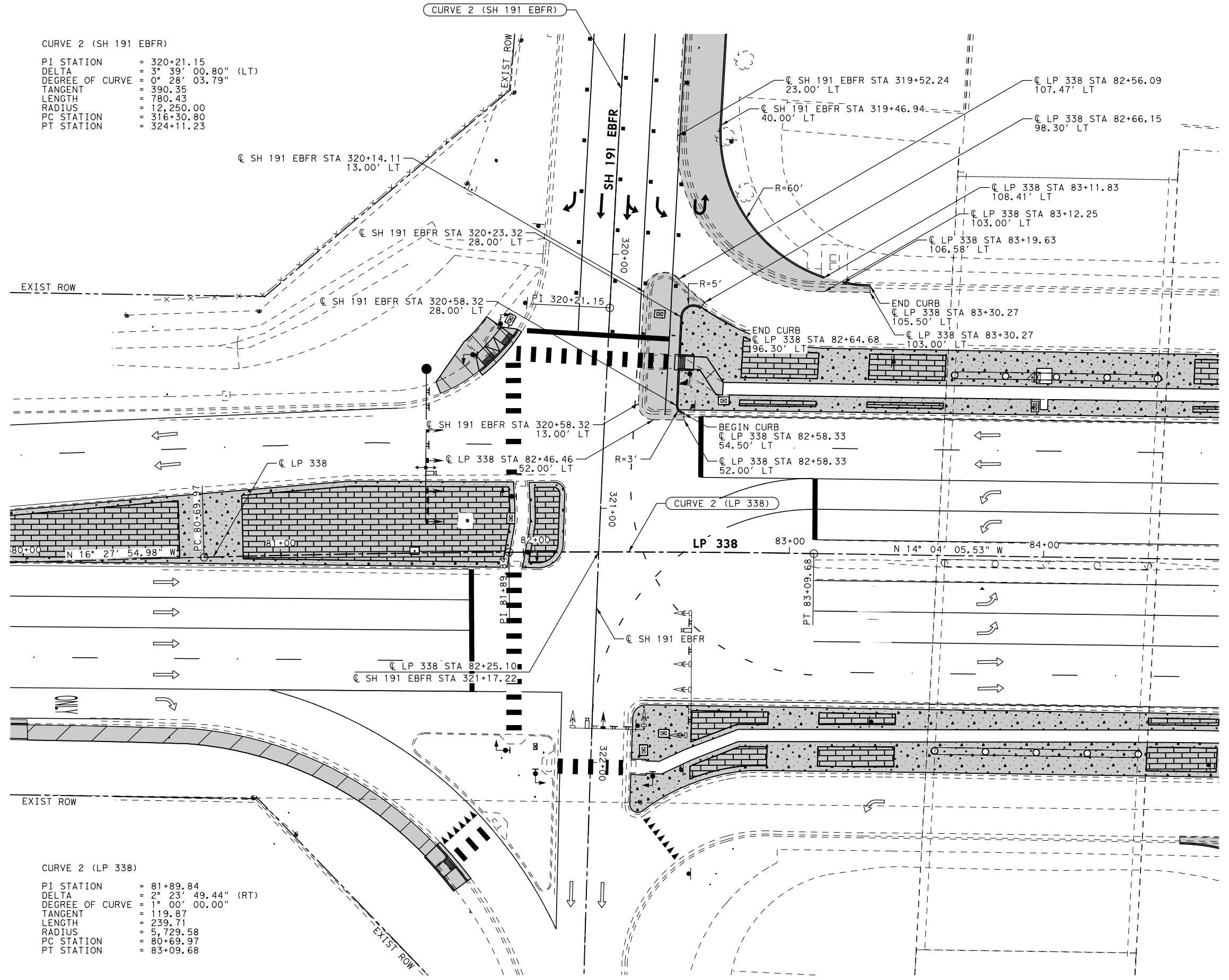


Texas Department of Transportation
 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

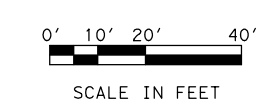
**LP 338
 INTERSECTION DETAILS
 AT SH 191 EBFR**

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS	
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.	
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.	
CHECK	JMT						SHEET NO.	169

SHEET 1 OF 2



DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\LP338*INT



CURVE 1 (SH 191 WBFR)
 PI STATION = 318+68.48
 DELTA = 2° 16' 09.30" (LT)
 DEGREE OF CURVE = 0° 30' 00.00"
 TANGENT = 226.95
 LENGTH = 453.85
 RADIUS = 11,459.16
 PC STATION = 316+41.52
 PT STATION = 320+95.37

LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT/DRIVEWAYS/
CURB & GUTTER
- CONC SIDEWALKS (4")
- LANDSCAPE PAVERS
- CL A CONC (MISC)

NOTES:

1. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.

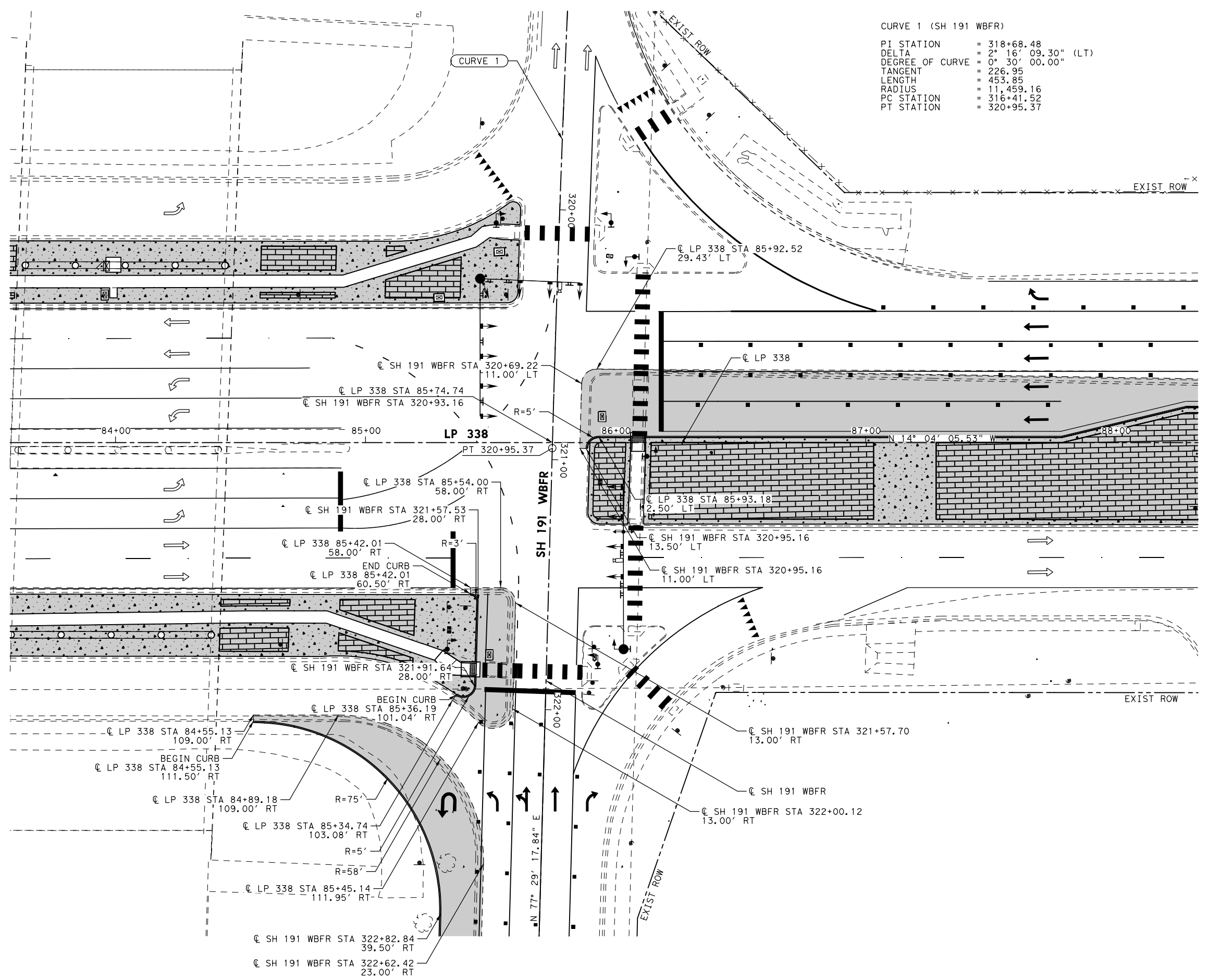


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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**LP 338
 INTERSECTION DETAILS
 AT SH 191 WBFR**

SHEET 2 OF 2

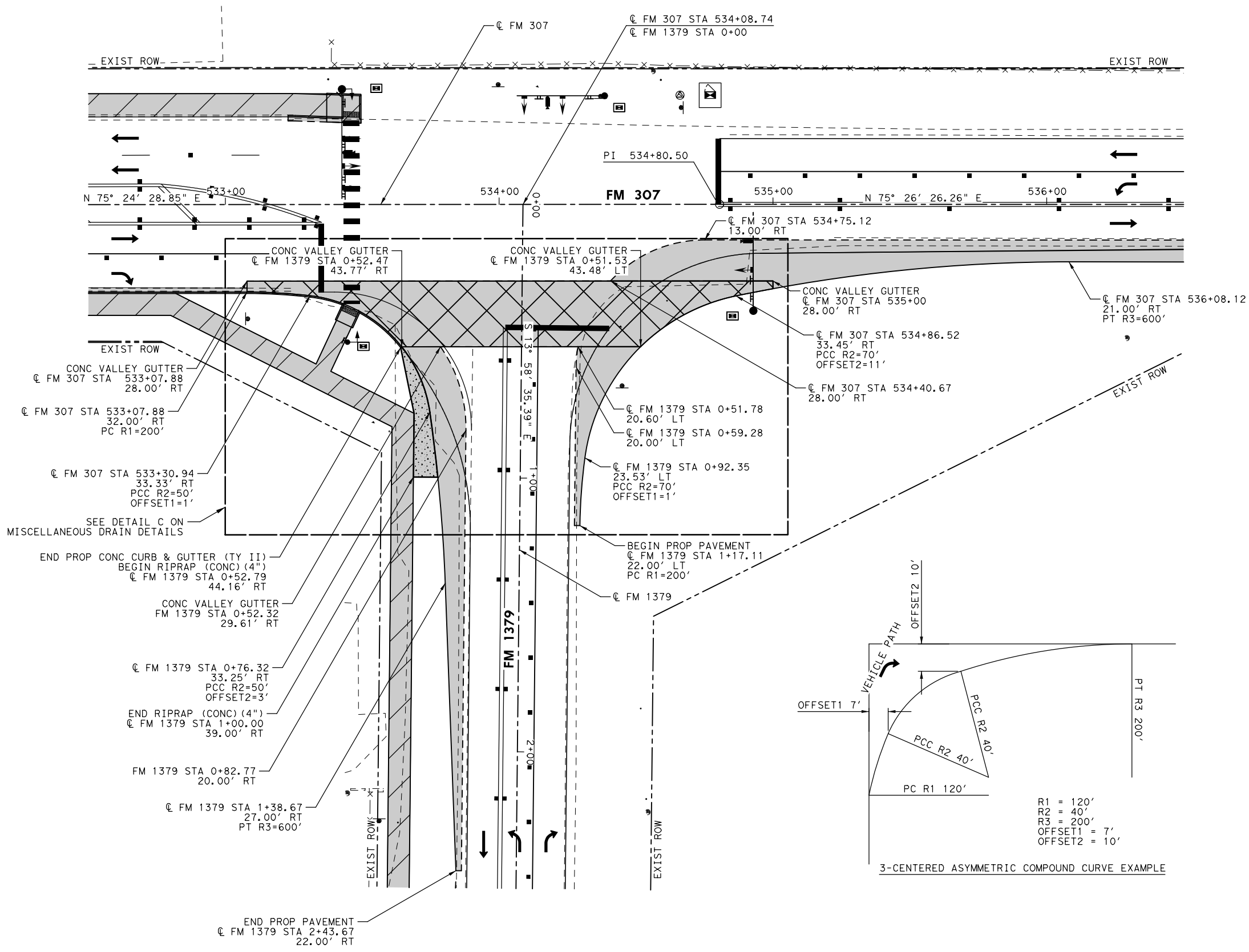
DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						170



DATE: 8/20/2020
 FILENAME: pw:\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\FM307\INT



0' 10' 20' 40'
 SCALE IN FEET

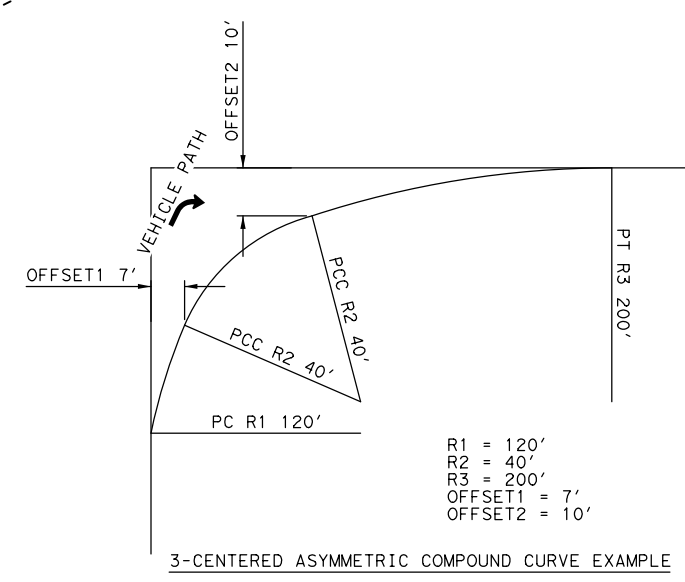


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP DRIVEWAYS/ CURB & GUTTER
- CONC SIDEWALKS (4")
- CONC RIPRAP
- PROP VALLEY GUTTER

NOTES:

1. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.

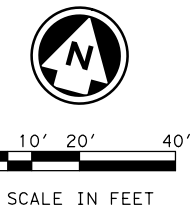
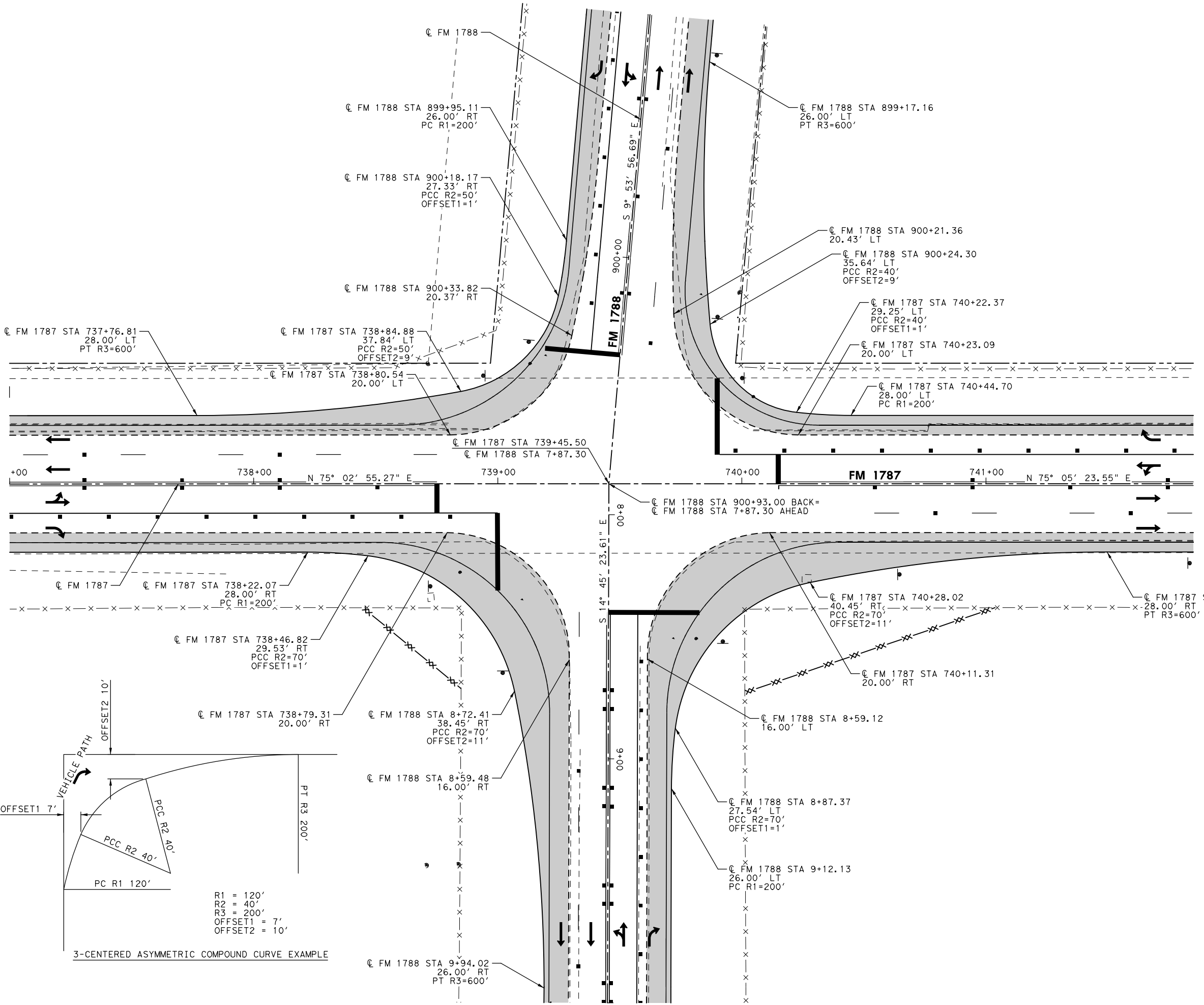


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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
 INTERSECTION DETAILS
 AT FM 1379**

DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
			SHEET NO. 171

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\FM1787*1



LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP PAVEMENT/DRIVEWAYS/ CURB & GUTTER

NOTES:

1. PROPOSED PAVEMENT TO MATCH EXISTING PROFILE AND CROSS-SLOPES.



JMT TBPE REGISTRATION NO. F-16341

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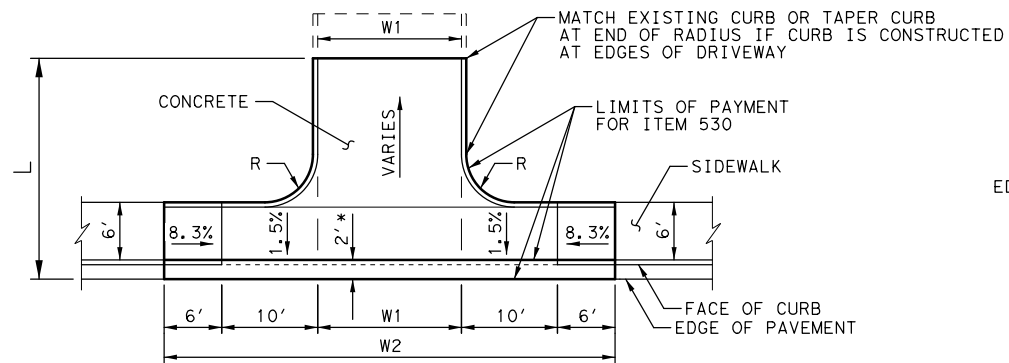
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 1787 INTERSECTION DETAILS AT FM 1788

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

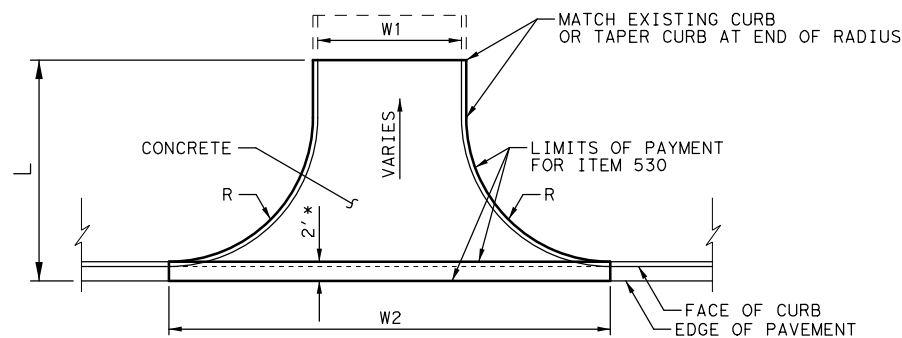
SHEET NO. **172**

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\ODA*DRWY



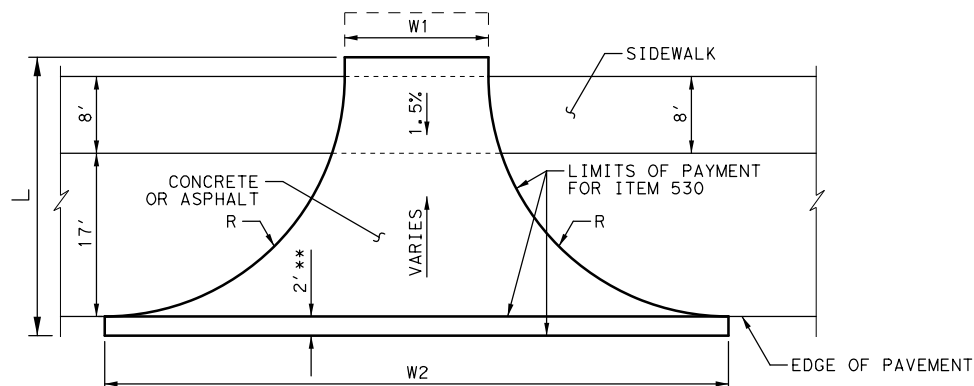
* 2' BLOCKOUT ONLY WITH ADJACENT ACP PAVEMENT

TYPICAL DRIVEWAY DETAIL "A"
WITH CURB AND GUTTER AND SIDEWALK
NTS



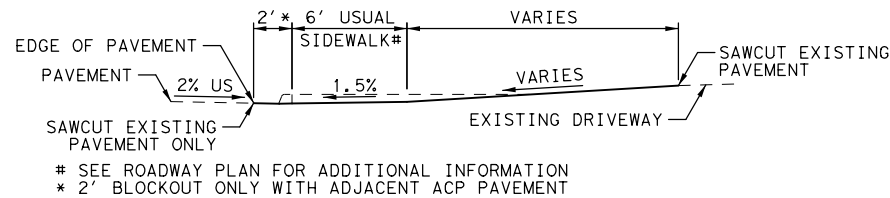
* 2' BLOCKOUT ONLY WITH ADJACENT ACP PAVEMENT

TYPICAL DRIVEWAY DETAIL "B"
WITH CURB AND GUTTER
NTS

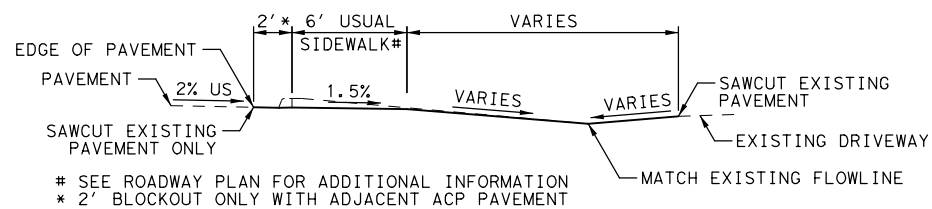


** 2' BLOCKOUT FOR CONCRETE DRIVEWAYS ONLY

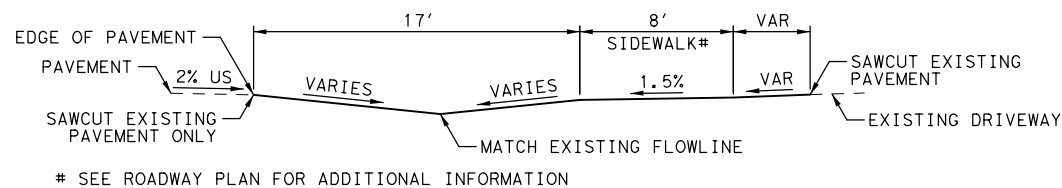
TYPICAL DRIVEWAY DETAIL "C"
WITH OFFSET SIDEWALK
NTS



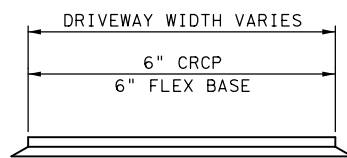
TYPICAL DRIVEWAY PROFILE DETAIL "AA"
WITH CURB AND GUTTER
NTS



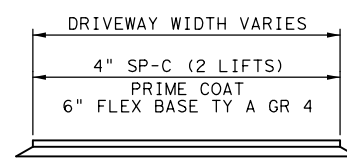
TYPICAL DRIVEWAY PROFILE DETAIL "BB"
WITH DITCH SECTION AND CURB AND GUTTER
NTS



TYPICAL DRIVEWAY PROFILE DETAIL "CC"
WITH DITCH SECTION
NTS



CONCRETE DRIVEWAY TYPICAL SECTION
NTS



ACP DRIVEWAY TYPICAL SECTION
NTS

DRIVEWAY GENERAL NOTES:

- ALL DRIVEWAYS CONSTRUCTED ON THIS PROJECT SHALL BE IN CONFORMANCE WITH EXISTING GOVERNING REGULATIONS AS SET FORTH BY THE TEXAS DEPARTMENT OF TRANSPORTATION.
- THE CONTRACTOR SHALL OBTAIN PERMISSION FROM THE RESPECTIVE PROPERTY OWNERS PRIOR TO CONSTRUCTING PROPOSED DRIVEWAYS BEYOND EXISTING ROW LIMITS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF HE ENCOUNTERS DIFFICULTY IN OBTAINING PERMISSION FROM ANY PROPERTY OWNERS.
- DRIVEWAYS (ACP): 6" FLEX BASE TY A GR 4, PRIME COAT, AND 4" SP-C PG 70-22 SAC-B, MAX 10% RAP AND NO RAS (TWO LIFTS OF 2.0" EACH) FOR ACP DRIVEWAYS. IF EXISTING ACP DRIVEWAY HAS A GREATER THICKNESS, MATCH EXISTING CONDITION OR AS DIRECTED.
- DRIVEWAYS (CONC): 6" FLEX BASE TY A GR 4 AND 6" CLASS C CRCP FOR CONCRETE DRIVEWAYS. IF EXISTING CONCRETE DRIVEWAY HAS A GREATER THICKNESS, MATCH EXISTING CONDITION OR AS DIRECTED. MATCH EXISTING CONCRETE REINFORCEMENT OR USE W2.9 X W2.9 WELDED WIRE REINFORCING. THIS WORK WILL BE CONSIDERED SUBSIDIARY TO ITEM 530.
- ON CONCRETE DRIVEWAYS, SAW CONTRACTION JOINTS AT APPROVED LOCATIONS.
- REMOVE PORTIONS OF EXISTING CONCRETE OR ACP DRIVEWAY BY SAW CUTTING TO NEAT LINES UNLESS OTHERWISE DIRECTED.
- REMOVAL AND DISPOSAL OF EXISTING DRIVEWAY MATERIALS OTHER THAN CONCRETE AND ALL OTHER WORK AND MATERIALS NECESSARY TO CONSTRUCT DRIVEWAY WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE CONSIDERED SUBSIDIARY TO ITEM 530. CONSTRUCT AND TIE DRIVEWAY TO THE EXISTING OR PROPOSED EDGE OF PAVEMENT AND EXISTING DRIVEWAY AS APPROVED.
- MAX DRIVEWAY GRADES NOT TO EXCEED:
8% SLOPE FOR COMMERCIAL DRIVEWAYS
12% SLOPE FOR RESIDENTIAL DRIVEWAYS
2% SLOPE ACROSS PROPOSED SIDEWALKS
- OMIT PAYMENT FOR CURB WITHIN LIMITS OF DRIVEWAY. CURBS ON DRIVEWAYS SHALL BE CONSIDERED SUBSIDIARY TO THE PRICE BID PER SQUARE YARD FOR DRIVEWAYS AND WILL NOT BE PAID FOR DIRECTLY.
- PROVIDE CURB CUTS AS DIRECTED ALONG CURBED DRIVEWAYS THROUGH DITCH SECTIONS TO MAINTAIN EXISTING DRAINAGE PATTERN.
- SEE DRIVEWAY SUMMARY SHEET FOR ADDITIONAL INFORMATION.



JMT TBPE REGISTRATION NO. F-16341

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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

DRIVEWAY DETAILS


SCALE: NTS

DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK JMT			SHEET NO. 173

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\ODA*DRWY

SUMMARY OF DRIVEWAYS AND MAILBOX ITEMS														
LOCATION	LT/RT	EXISTING SURFACE	PLAN DETAIL	PROFILE DETAIL	(FT)				DRIVEWAYS			MAILBOXES	REMARKS	
					W1	W2	L	R	104 6017	530 6004	530 6005	560 6011*		
									REMOVING CONC (DRIVEWAYS)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	MAILBOX INSTALL-S (TWW-POST) TY 4		
								SY	SY	SY	EA			
LP 338														
CSJ 0906-00-226														
78+72	RT	ACP	A	BB	32	64	14	5						COMMERCIAL
79+67	RT	CONC	A	BB	32	64	14	5	61	81				COMMERCIAL
FM 307														
CSJ 0906-00-226														
519+06	LT	CONC	A	BB	16	48	20	5	60	74				COMMERCIAL
520+33	LT	ACP	A	BB	30	62	15	5		88				COMMERCIAL
521+28	LT	ACP	A	BB	30	62	15	5		88				COMMERCIAL
522+99	RT	CONC			6	17	11				10			RAMP REPLACEMENT
525+42	LT	ACP	A	BB	16	48	20	5		72		1		RESIDENTIAL
529+07	RT	CONC			7	17	11				11			RAMP REPLACEMENT
530+23	LT	CONC	A	BB	30	62	20	5	81	104				COMMERCIAL
531+69	LT	CONC	A	BB	30	62	20	5	82	104				COMMERCIAL
532+23	RT	ACP	A	AA	30	62	18			97				COMMERCIAL
541+35	RT	CONC	C	CC	24	56	27	25	97	113				COMMERCIAL
FM 1379														
CSJ 0906-00-226														
0+83	RT											1		MAILBOX
2+80	RT	ACP	C	CC	14	64	29	25			76			COMMERCIAL
4+08	RT	ACP	C	CC	14	64	29	25			73			COMMERCIAL
6+11	RT	GRAVEL	C	CC	16	66	29	25			84			COMMERCIAL
8+45	RT	GRAVEL	C	CC	16	66	29	25			80			COMMERCIAL
9+80	RT	CONC	B	CC	33	81	31	25	162	157				COMMERCIAL
10+56	RT	CONC	B	CC	29	77	31	25	145	142				COMMERCIAL
					TOTAL				688	1,201	334	2		

*CONTRACTOR TO COORDINATE MAILBOX REPLACEMENT WITH PROPERTY OWNER AND POSTAL SERVICE



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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

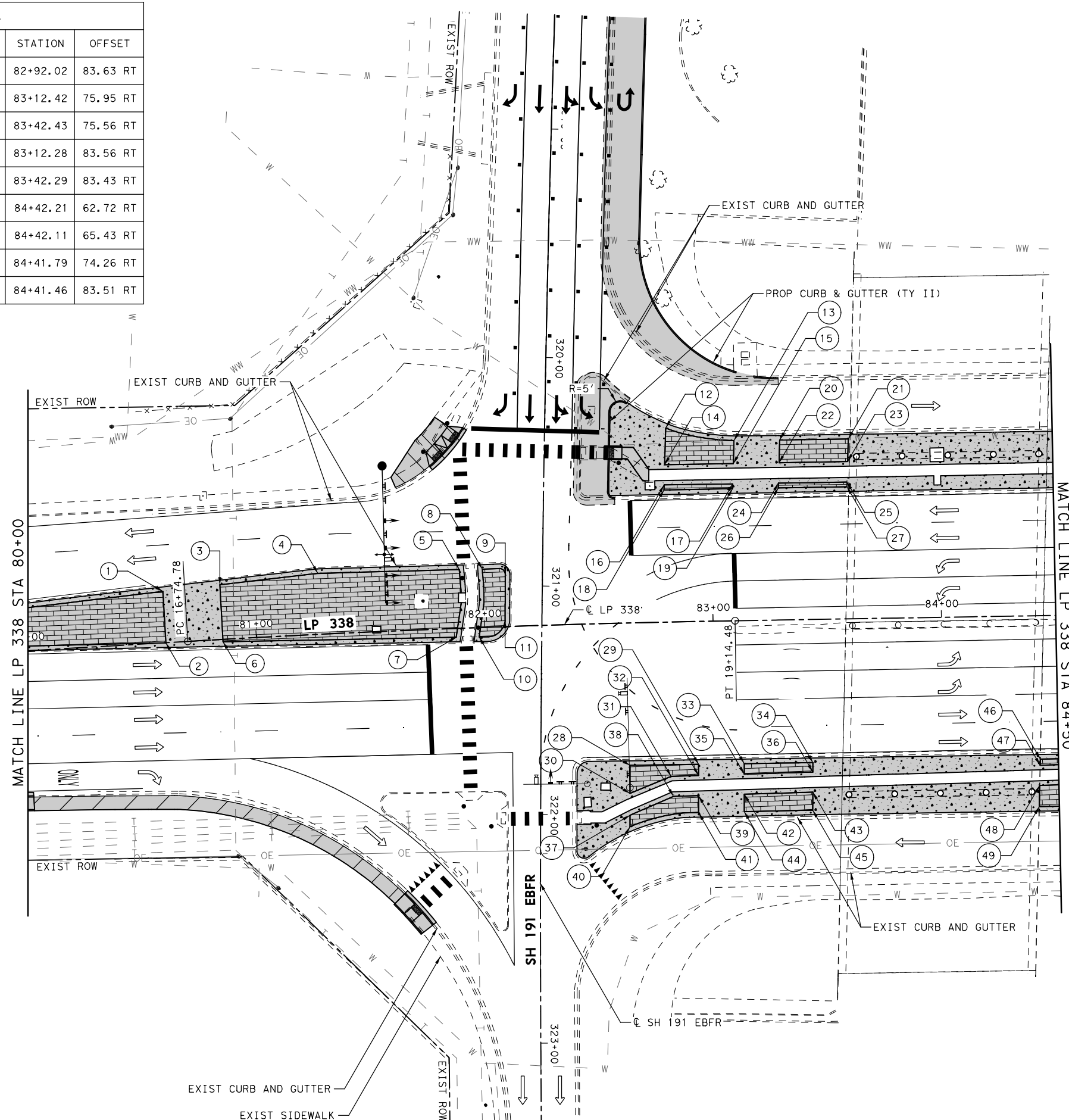
DRIVEWAY SUMMARY

DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK JMT			SHEET NO. 174

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\ODA\MEMO1

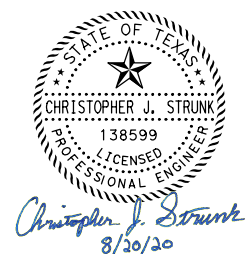
PAVER LOCATION DATA					
POINT	STATION	OFFSET	POINT	STATION	OFFSET
1	80+60.38	22.46 LT	41	82+92.02	83.63 RT
2	80+60.38	0.09 RT	42	83+12.42	75.95 RT
3	80+85.34	23.92 LT	43	83+42.43	75.56 RT
4	81+28.26	26.68 LT	44	83+12.28	83.56 RT
5	81+89.87	25.67 LT	45	83+42.29	83.43 RT
6	80+85.34	1.05 RT	46	84+42.21	62.72 RT
7	81+87.41	3.88 RT	47	84+42.11	65.43 RT
8	81+99.94	25.44 LT	48	84+41.79	74.26 RT
9	82+09.86	22.83 LT	49	84+41.46	83.51 RT

10	81+97.55	4.11 RT
11	82+09.09	2.63 LT
12	82+81.14	84.87 LT
13	83+10.48	78.84 LT
14	82+80.36	68.83 LT
15	83+10.04	68.78 LT
16	82+79.93	60.01 LT
17	83+09.65	59.89 LT
18	82+79.82	57.81 LT
19	83+09.55	57.76 LT
20	83+30.50	78.75 LT
21	83+60.53	78.70 LT
22	83+30.06	68.79 LT
23	83+60.09	68.83 LT
24	83+29.67	59.87 LT
25	83+59.69	59.88 LT
26	83+29.57	57.78 LT
27	83+59.60	57.80 LT
28	82+62.13	62.28 RT
29	82+92.47	62.51 RT
30	82+61.81	74.54 RT
31	82+80.17	67.52 RT
32	82+92.36	67.40 RT
33	83+12.66	62.57 RT
34	83+42.66	62.62 RT
35	83+12.58	67.16 RT
36	83+42.59	66.76 RT
37	82+61.55	84.16 RT
38	82+81.08	76.28 RT
39	82+92.18	76.18 RT
40	82+61.42	89.12 RT



- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP DRIVEWAYS/ CURB & GUTTER
 - CONC SIDEWALKS (4")
 - LANDSCAPE PAVERS
 - CL A CONC (MISC)
 - PROP CONC PAVEMENT

- NOTES:**
1. OFFSET LANDSCAPE PAVERS 2' FROM BACK OF CURB
 2. SEE MISCELLANEOUS MEDIAN DETAILS SHEET 6 OF 6 FOR MORE INFORMATION



JMT TXBPE REGISTRATION NO. F-16341

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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

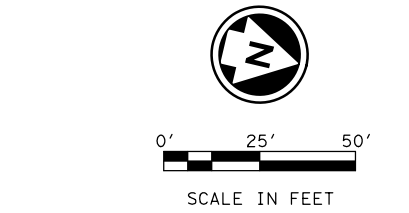
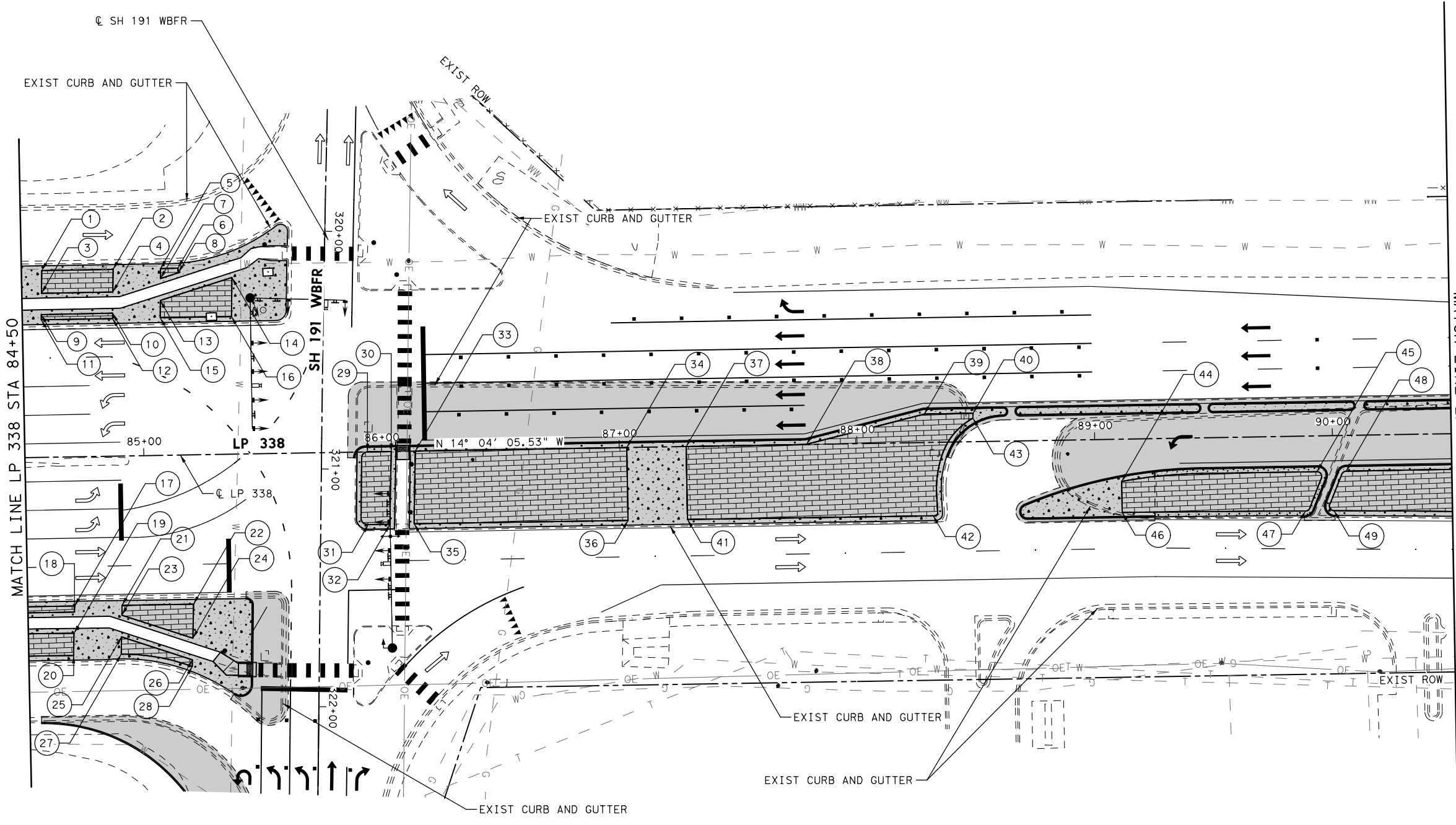
MISCELLANEOUS MEDIAN DETAILS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

SHEET 2 OF 6

176

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\ODA\MEMO1



- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP DRIVEWAYS/ CURB & GUTTER
 - CONC SIDEWALKS (4")
 - LANDSCAPE PAVERS
 - CL A CONC (MISC)
 - PROP CONC PAVEMENT

- NOTES:**
1. OFFSET LANDSCAPE PAVERS 2' FROM BACK OF CURB
 2. SEE MISCELLANEOUS MEDIAN DETAILS SHEET 6 OF 6 FOR MORE INFORMATION



PAVER LOCATION DATA														
POINT	STATION	OFFSET	POINT	STATION	OFFSET	POINT	STATION	OFFSET	POINT	STATION	OFFSET	POINT	STATION	OFFSET
1	84+58.35	78.55 LT	11	84+57.80	57.83 LT	21	84+89.81	62.77 RT	31	85+93.91	30.55 RT	41	87+28.18	30.69 RT
2	84+88.36	78.54 LT	12	84+87.81	57.84 LT	22	85+19.83	62.79 RT	32	86+02.99	30.61 RT	42	88+31.58	30.88 RT
3	84+58.10	68.97 LT	13	85+08.01	65.11 LT	23	84+89.66	66.94 RT	33	86+14.24	0.00	43	88+48.96	9.89 LT
4	84+88.11	69.03 LT	14	85+38.26	74.28 LT	24	85+19.31	77.12 RT	34	87+03.18	0.00	44	89+11.06	17.77 RT
5	85+08.37	78.56 LT	15	85+07.82	57.85 LT	25	84+89.33	76.07 RT	35	86+13.23	30.58 RT	45	89+93.22	15.00 RT
6	85+15.66	78.65 LT	16	85+37.83	57.87 LT	26	85+18.99	86.21 RT	36	87+03.18	30.66 RT	46	89+11.06	30.84 RT
7	85+08.26	74.38 LT	17	84+69.80	62.75 RT	27	84+89.07	83.32 RT	37	87+28.18	0.00	47	89+88.15	31.49 RT
8	85+15.77	76.65 LT	18	84+69.71	65.30 RT	28	85+18.88	89.06 RT	38	87+78.54	0.00	48	90+05.54	15.00 RT
9	84+57.86	60.00 LT	19	84+69.39	74.19 RT	29	85+94.10	0.00	39	88+28.54	12.00 LT	49	90+00.21	31.56 RT
10	84+87.87	60.12 LT	20	84+69.05	83.54 RT	30	86+04.09	0.00	40	88+49.03	12.00 LT			

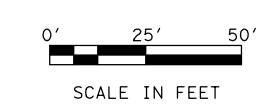
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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

MISCELLANEOUS MEDIAN DETAILS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

SHEET 3 OF 6
177

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\ODA\MEDIAN

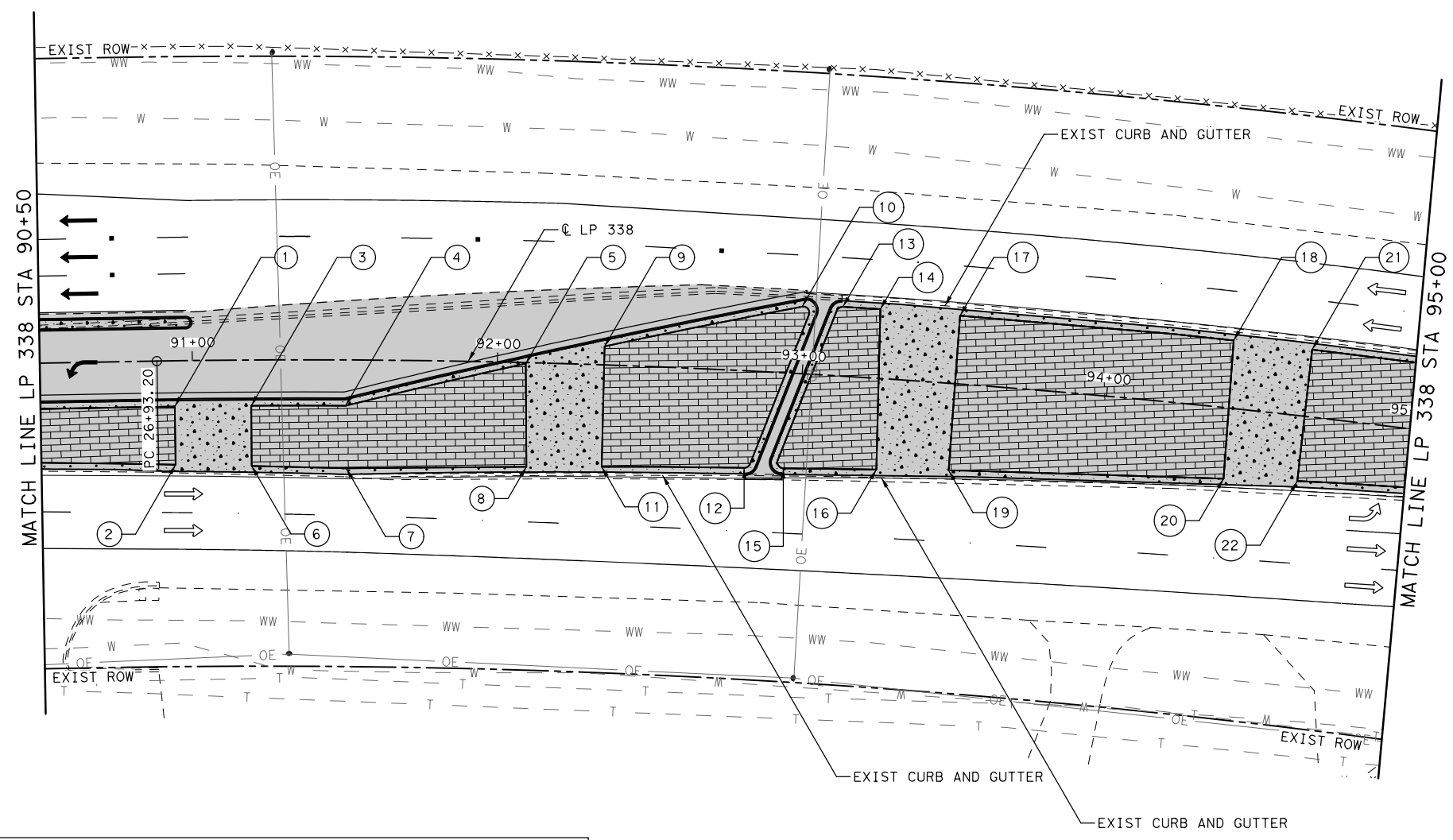


LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP DRIVEWAYS/ CURB & GUTTER
- CONC SIDEWALKS (4")
- LANDSCAPE PAVERS
- CL A CONC (MISC)
- PROP CONC PAVEMENT

NOTES:

1. OFFSET LANDSCAPE PAVERS 2' FROM BACK OF CURB
2. SEE MISCELLANEOUS MEDIAN DETAILS SHEET 6 OF 6 FOR MORE INFORMATION



PAVER LOCATION DATA								
POINT	STATION	OFFSET	POINT	STATION	OFFSET	POINT	STATION	OFFSET
1	90+94.07	15.00 RT	11	92+35.31	33.40 RT	21	94+65.25	22.06 LT
2	90+94.07	34.00 RT	12	92+82.53	31.78 RT	22	94+65.25	21.35 RT
3	91+19.28	15.00 RT	13	93+11.96	22.67 LT			
4	91+50.32	15.00 RT	14	93+24.15	22.68 LT			
5	92+09.30	0.31 RT	15	92+95.50	31.27 RT			
6	91+19.28	34.72 RT	16	93+26.24	29.83 RT			
7	91+50.60	35.53 RT	17	93+50.19	22.39 LT			
8	92+10.37	34.14 RT	18	94+39.52	22.18 LT			
9	92+34.96	6.09 LT	19	93+50.19	28.49 RT			
10	92+98.72	21.97 LT	20	94+40.93	23.16 RT			

SHEET 4 OF 6

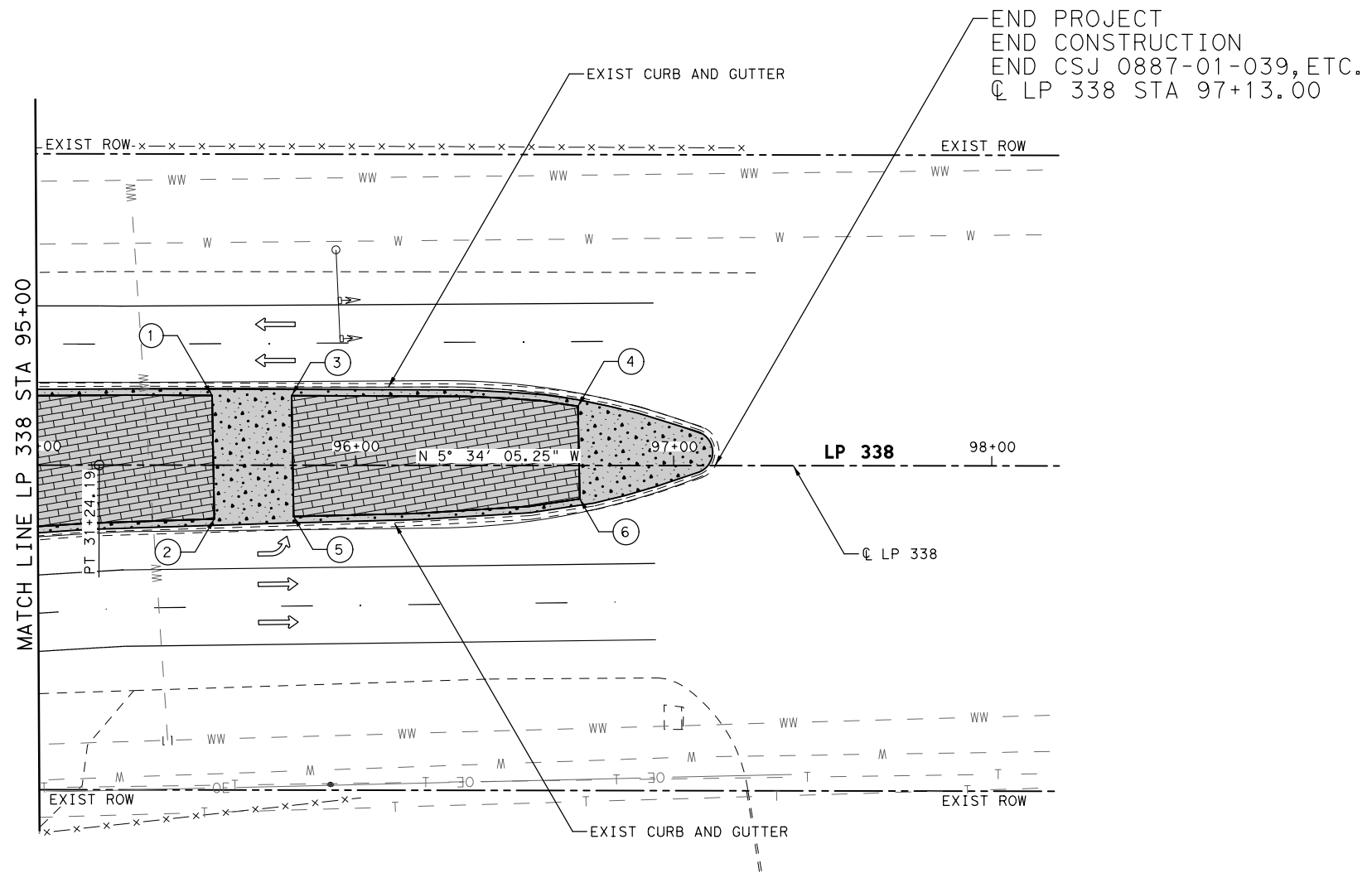
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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

MISCELLANEOUS MEDIAN DETAILS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

178

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\ODA\MEDM1



0' 25' 50'

SCALE IN FEET

LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP DRIVEWAYS/ CURB & GUTTER
- CONC SIDEWALKS (4")
- LANDSCAPE PAVERS
- CL A CONC (MISC)
- PROP CONC PAVEMENT

NOTES:

1. OFFSET LANDSCAPE PAVERS 2' FROM BACK OF CURB
2. SEE MISCELLANEOUS MEDIAN DETAILS SHEET 6 OF 6 FOR MORE INFORMATION



PAVER LOCATION DATA		
POINT	STATION	OFFSET
1	95+54.85	21.94 LT
2	95+55.57	16.94 RT
3	95+79.86	21.87 LT
4	96+69.93	18.60 LT
5	95+80.56	16.12 RT
6	96+70.47	10.47 RT



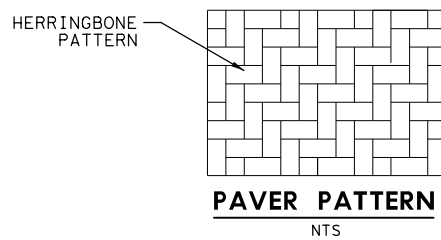
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

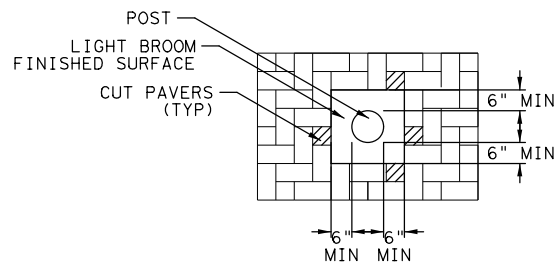
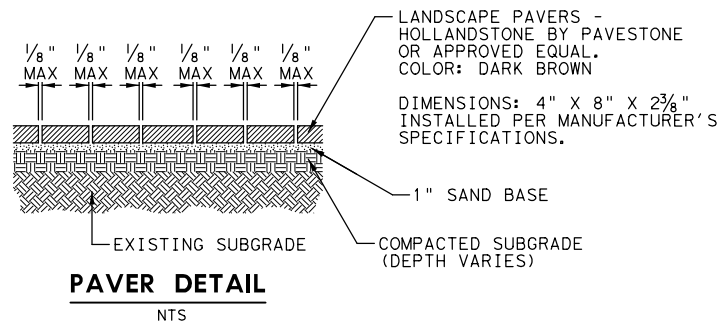
MISCELLANEOUS MEDIAN DETAILS

				SHEET 5 OF 6
DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS	
GRAPHICS JMT	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.	SHEET NO. 179
CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.	

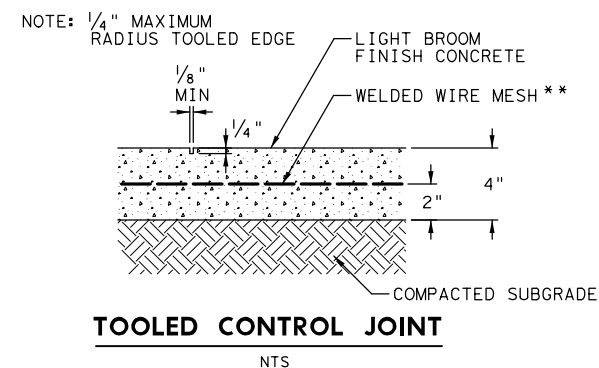
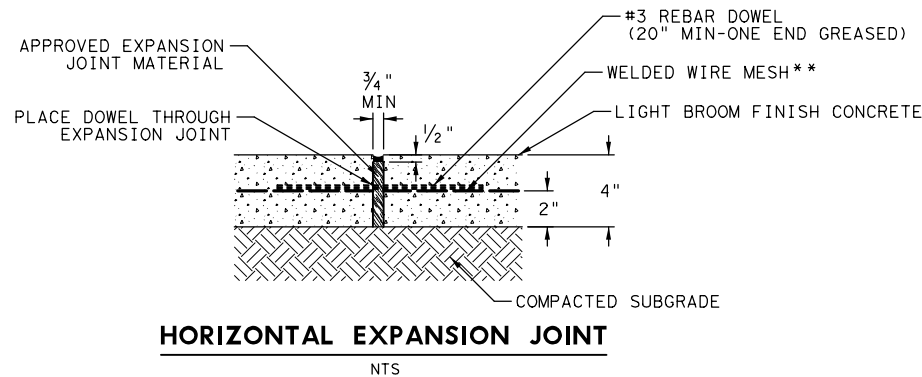
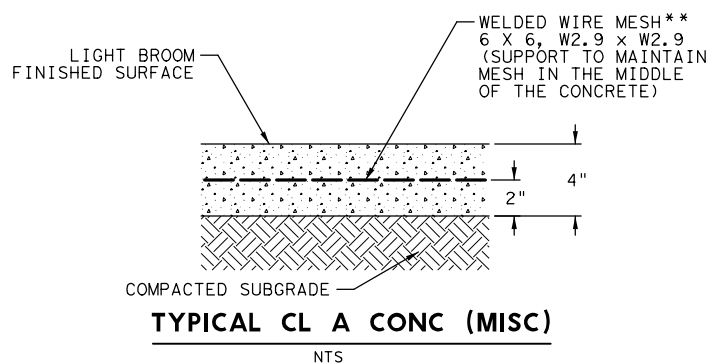
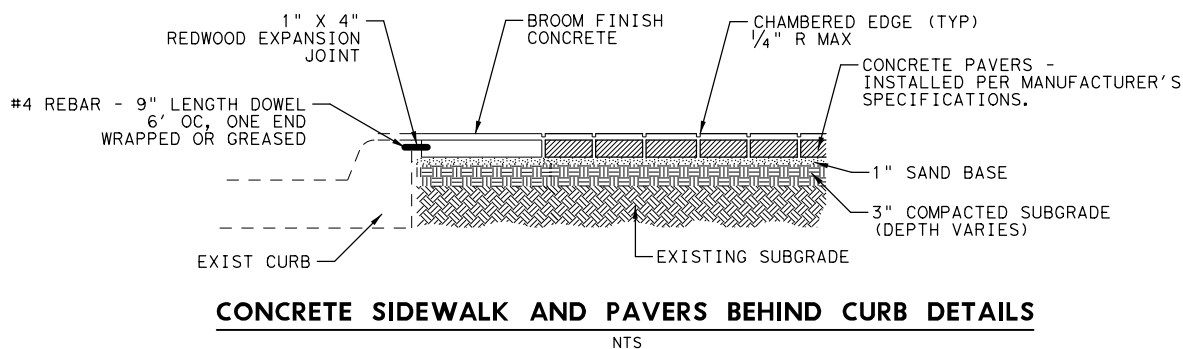
DATE: 8/20/2020
 FILENAME: pw:\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\3. Roadway\ODA\MEDM1



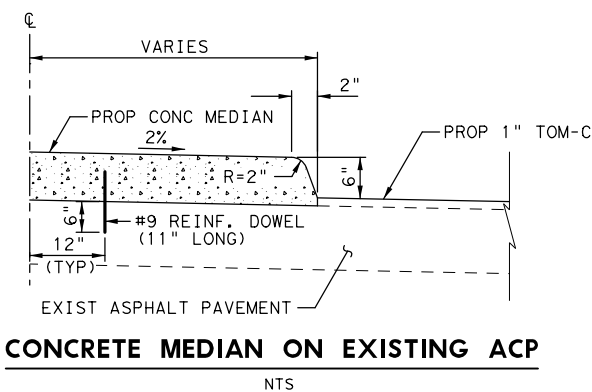
- NOTES:
1. INSTALL THE PAVERS IN THE "HERRINGBONE" PATTERN
 2. INSTALL "HOLLANDSTONE" LANDSCAPE PAVERS BY PAVESTONE OR APPROVED EQUAL. DIMENSIONS ARE APPROX. 4" X 8" X 2 3/8".
 3. PAVER COLOR IS DARK BROWN OR APPROVED EQUAL.
 4. INSTALL PAVERS IN STRICT ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.



- NOTES:
- PLACE A CONCRETE PAD (4" DEPTH) AROUND ALL UTILITY POLES, BOXES, AND POSTS ON THE SITE. A MINIMUM OF 6" OF CONCRETE MUST EXTEND BEYOND THE EDGE OF ANY POLE OR POST. SET THE PAD TO COINCIDE WITH THE PATTERN OF THE PAVERS. KEEP THE AMOUNT OF CUT BRICKS TO A MINIMUM.



- NOTES:
- **POLYPROPYLENE FIBER REINFORCING AT A RATE OF 1.5 LBS/CY MAY BE USED IN LIEU OF WIRE REINFORCING.



- NOTES:
1. EXISTING ASPHALT SURFACE COARSE AND BINDER COURSE, IF ANY, TO BE REMOVED UNDER MEDIAN STRIP.
 2. DOWEL SPACING LONGITUDINALLY AT 2'-0" C-C FROM NOSE TO FIRST JOINT.
 3. WHERE CONCRETE MEDIAN IS PLACED ON EXISTING ASPHALT PAVEMENT, THE PAVEMENT SHALL BE DRILLED AND THE REINFORCING BARS GROUTED IN PLACE.



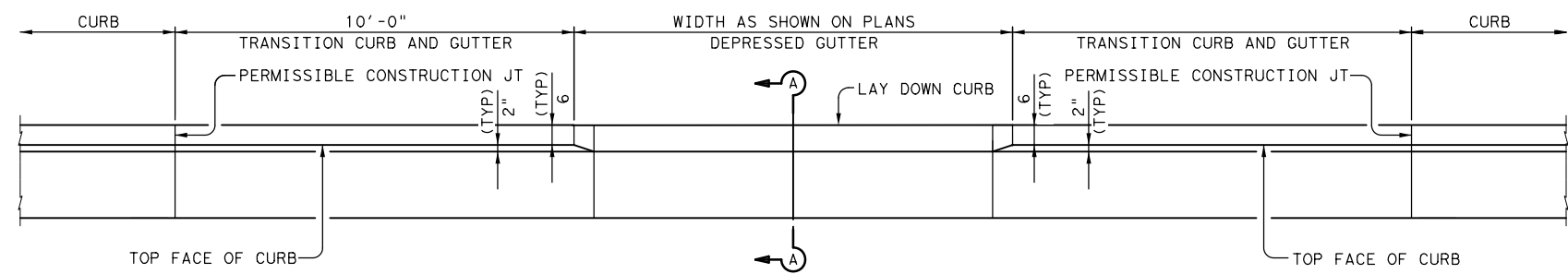
©2020
Texas Department of Transportation

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

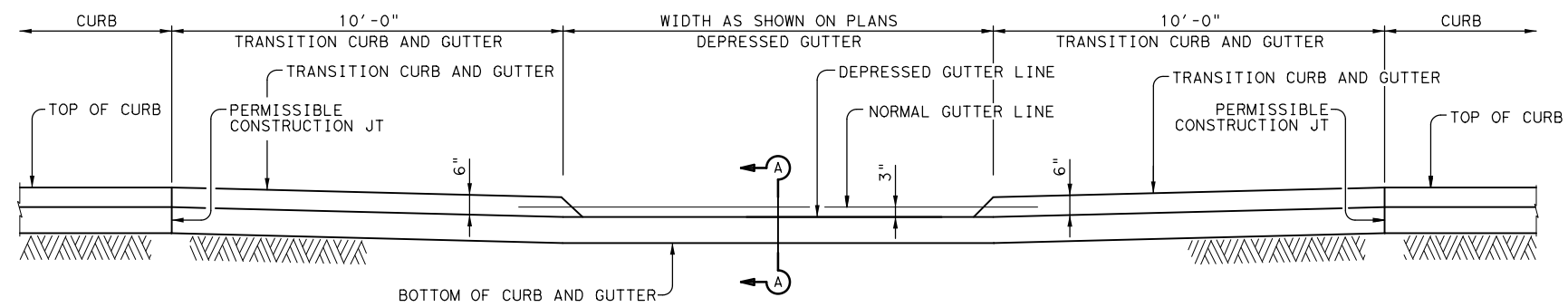
MISCELLANEOUS MEDIAN DETAILS

SCALE: NTS			SHEET 6 OF 6	
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.	
JMT	6	(SEE TITLE SHEET)	VARIOUS	
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JMT	TEXAS	ODA	ECTOR, ETC.	180
CHECK	CONTROL	SECTION	JOB	
JMT	0887	01	039, ETC.	

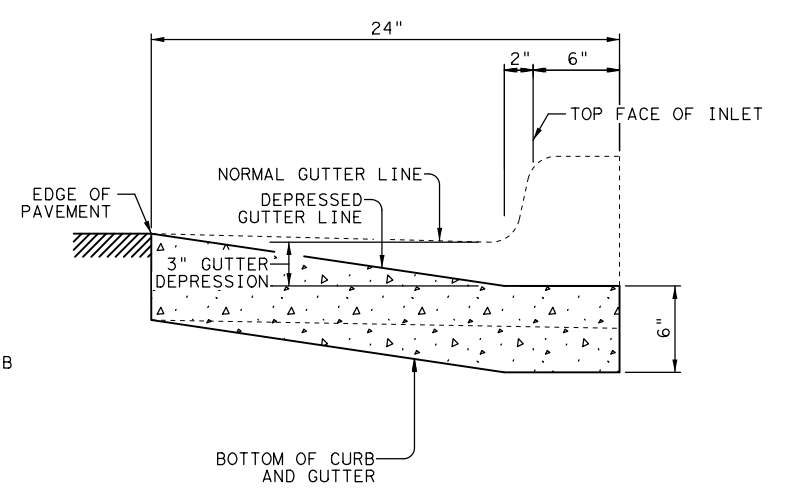
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CURB DRAIN
PLAN VIEW



CURB DRAIN
ELEVATION VIEW



SECTION A-A CURB DRAIN
REINFORCING STEEL NOT SHOWN FOR CLARITY

STATE OF TEXAS
 CHRISTOPHER J. STRUNK
 138599
 LICENSED PROFESSIONAL ENGINEER
Christopher J. Strunk
 8/20/20



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 Texas Department of Transportation

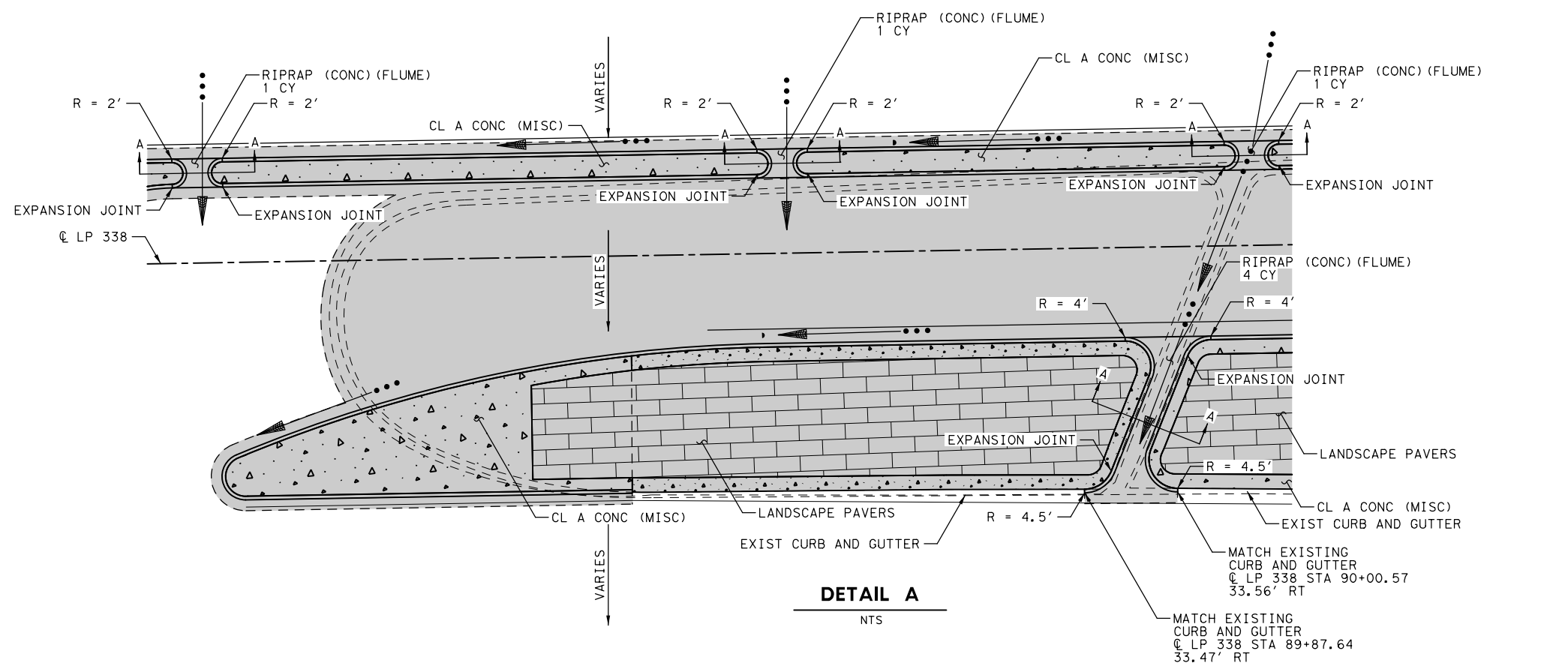
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**MISCELLANEOUS
DRAIN DETAILS**

SCALE: NTS SHEET 1 OF 3

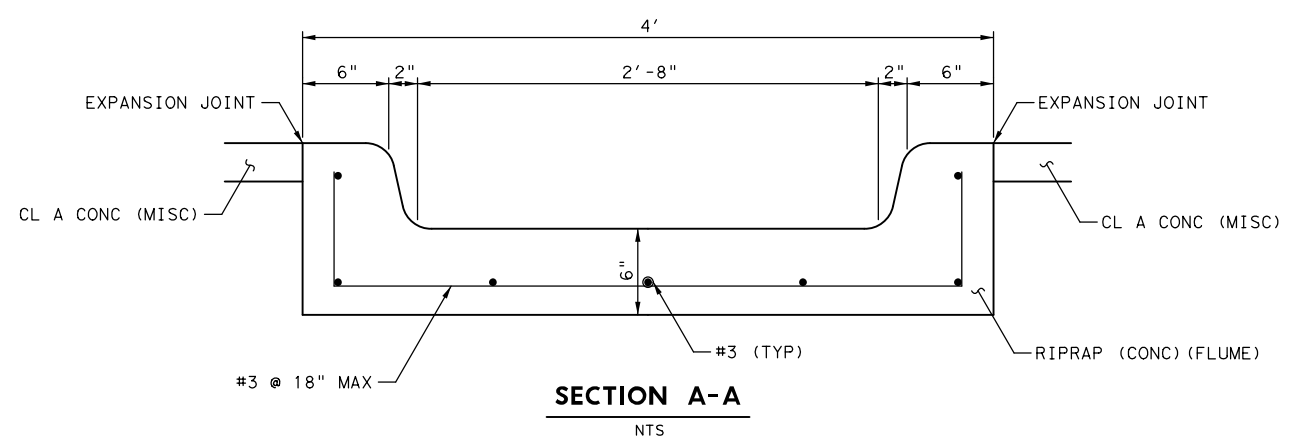
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

DATE: 8/20/2020
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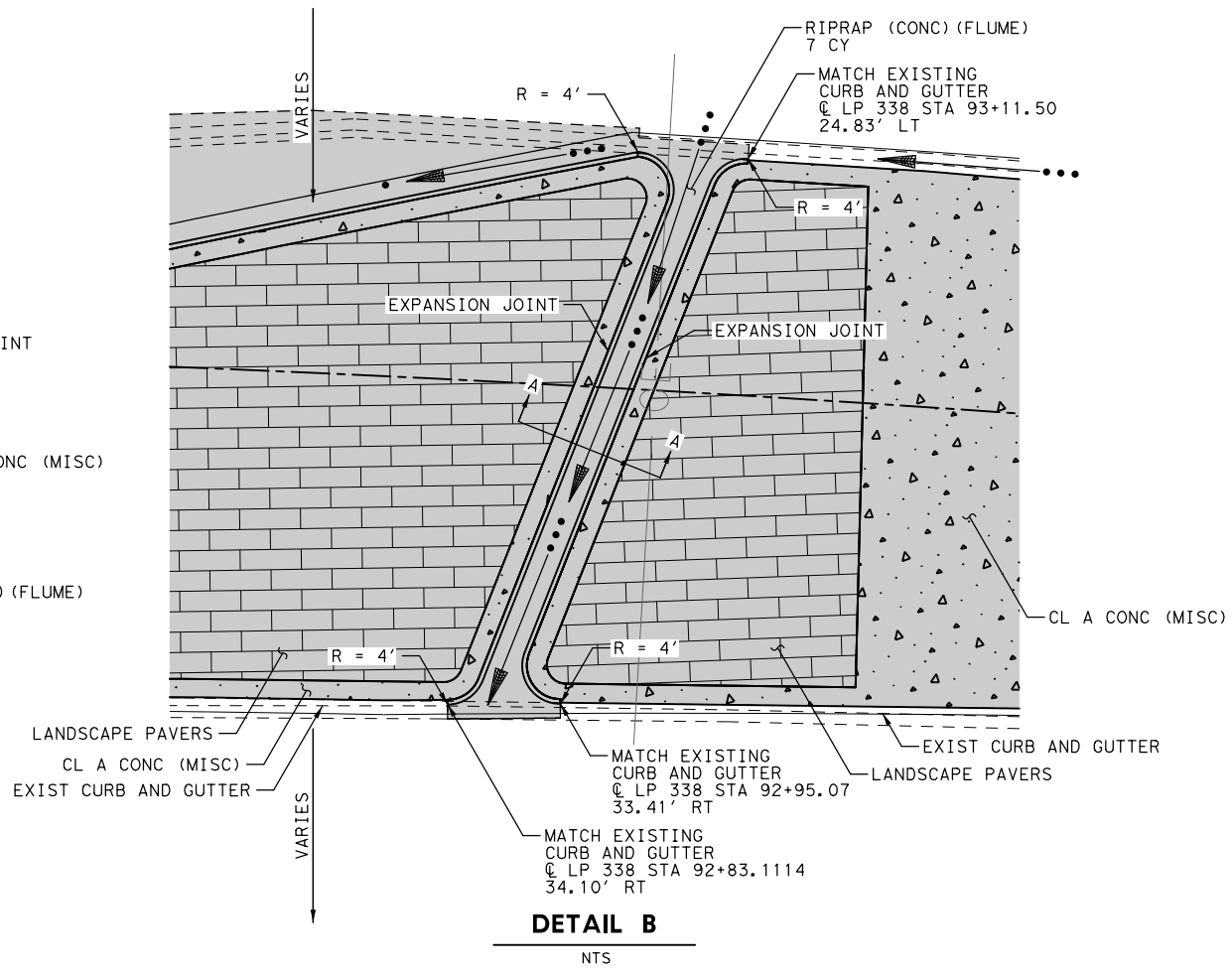


DETAIL A
NTS

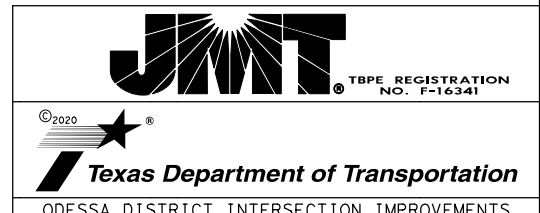
NOTES:
 1. CONTRACTOR MAY ALTER LOCATION OF CONCRETE FLUMES BASED ON FIELD CONDITIONS AS APPROVED TO FACILITATE ROADWAY DRAINAGE.



SECTION A-A
NTS



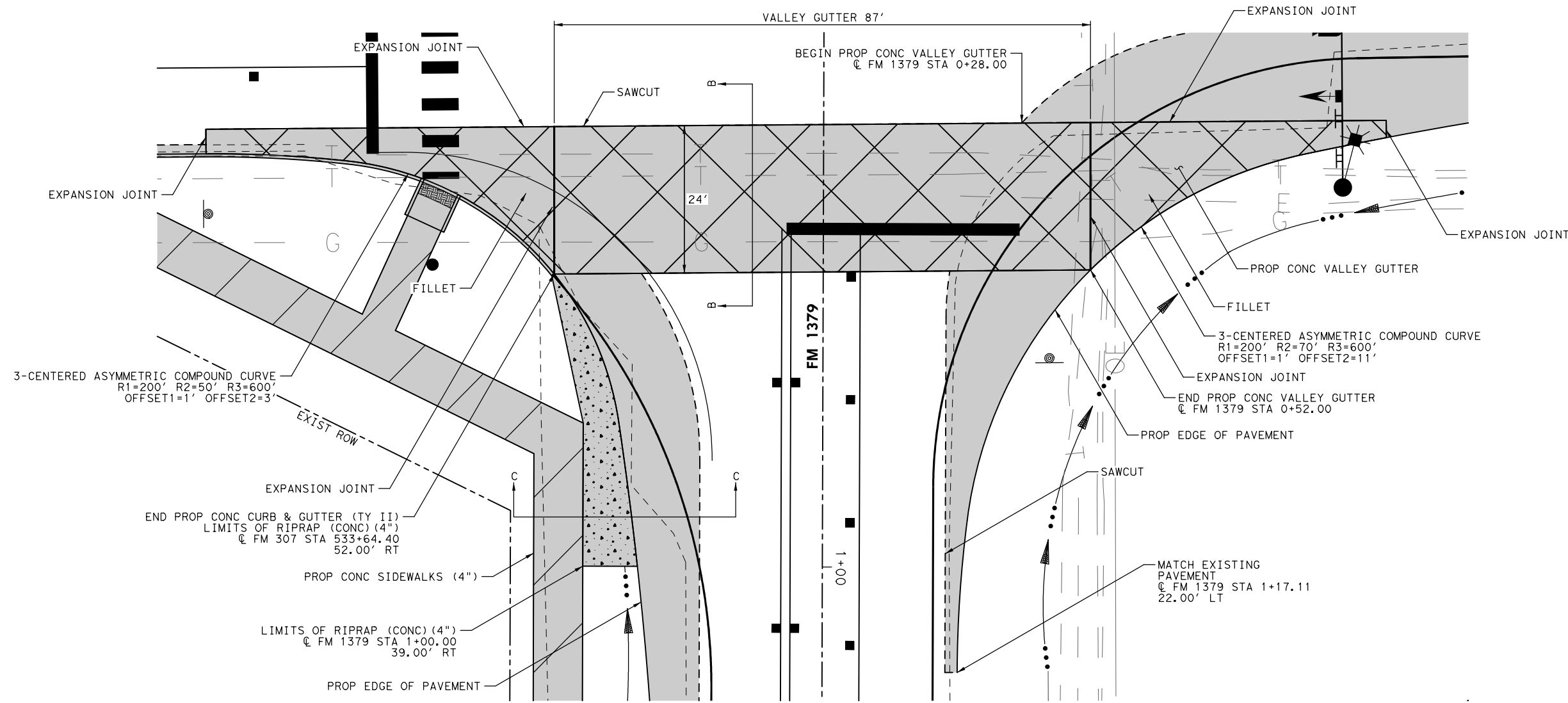
DETAIL B
NTS



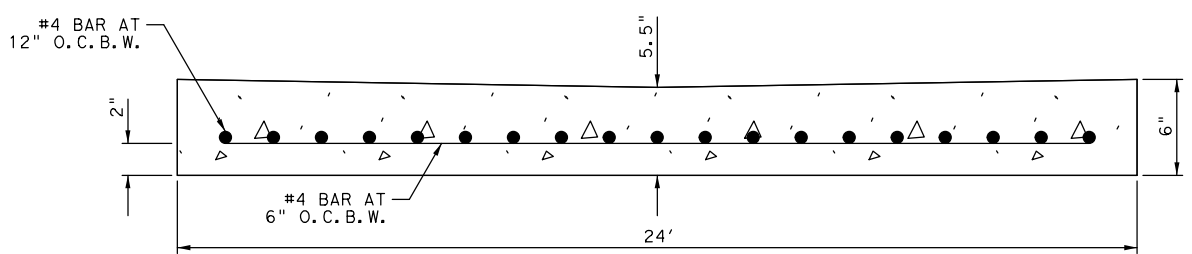
MISCELLANEOUS DRAIN DETAILS

SCALE: NTS			SHEET 2 OF 3	
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.	
JMT	6	(SEE TITLE SHEET)	VARIOUS	
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JMT	TEXAS	ODA	ECTOR, ETC.	182
CHECK	CONTROL	SECTION	JOB	
JMT	0887	01	039, ETC.	

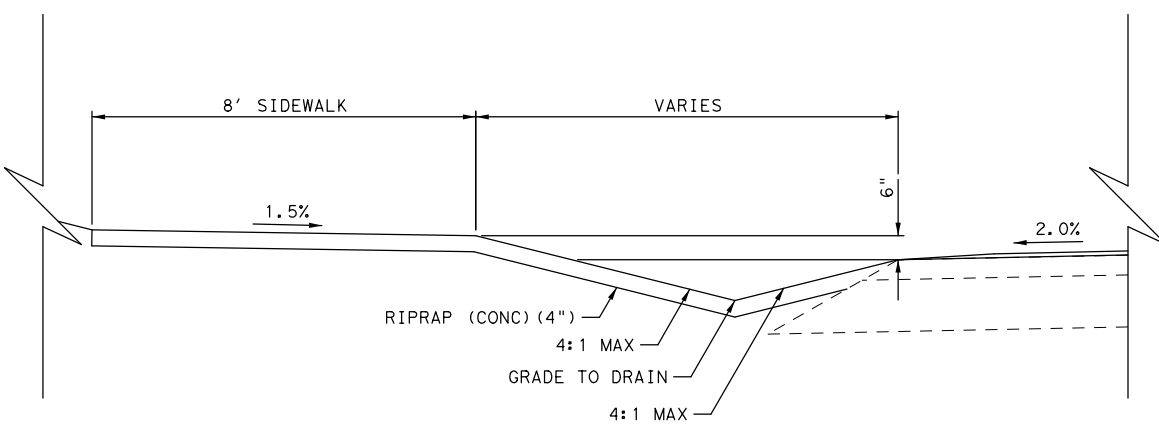
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DETAIL C
 NTS



SECTION B-B
 NTS



SECTION C-C
 NTS

CONC VALLEY GUTTER NOTES:

1. UTILIZE CLASS "HES" CONCRETE. CONCRETE SHALL HAVE A MINIMUM 24 COMPRESSIVE STRENGTH OF 3,000 PSI. USE COURSE AGGREGATE GRADE 4.
2. POLYPROPYLENE FIBERS PLACED AT 3 LBS OF POLYPROPYLENE FIBERS PER CY OF CONCRETE SHALL BE ADDED TO THE CONCRETE.
3. SAWCUT TRANSVERSE CONTRACTION JOINTS AT ONE-FOURTH POINTS WITHIN 24 HOURS OF PLACEMENT
4. IF CONCRETE FAILS TO MEET THE REQUIRED 24 HOUR STRENGTH, THE ENGINEER MAY DIRECT THAT THE CONCRETE BE RE-DESIGNED TO MEET THESE STANDARDS AND REMOVED.
5. THE FINAL FINISH SHALL BE A BROOM FINISH APPLIED LONGITUDINALLY ALONG THE PAVEMENT. THE ACTUAL CONTACT SURFACE SHALL BE SUCH THAT A UNIFORM COURSE TEXTURE SATISFACTORY TO THE ENGINEER IS OBTAINED.
6. CONSTRUCT AND SEAL ALL JOINTS.

CONC FILLET NOTES:

1. UTILIZE CLASS "HES" CONCRETE. CONCRETE SHALL HAVE A MINIMUM 24 COMPRESSIVE STRENGTH OF 3,000 PSI. USE COURSE AGGREGATE GRADE 4.
2. POLYPROPYLENE FIBERS PLACED AT 3 LBS OF POLYPROPYLENE FIBERS PER CY OF CONCRETE SHALL BE ADDED TO THE CONCRETE.
3. ALL REINFORCING STEEL SHALL BE PLACED AT THE UPPER 1/3 POINT OF SLAB CONCRETE ON GRADE AND SHALL HAVE A MINIMUM COVER OF 2".
4. FILLETS SHALL BE PAID FOR UNDER ITEM 420 "CL HES CONC (MISC)".
5. IF CONCRETE FAILS TO MEET THE REQUIRED 24-HOUR STRENGTH, THE ENGINEER MAY DIRECT THAT THE CONCRETE BE RE-DESIGNED TO MEET THESE STANDARDS AND REMOVED.
6. CONSTRUCT AND SEAL ALL JOINTS.



JMT TBPE REGISTRATION NO. F-16341

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Texas Department of Transportation
 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

MISCELLANEOUS DRAIN DETAILS

SCALE: NTS SHEET 3 OF 3

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						183

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DATE:
FILE:

SEAL COAT MATERIAL SELECTION TABLE		
TIER I: HEAVY USE - USE ONLY THE SELECTED MATERIALS.		
TYPE	ASPHALT RUBBER (A-R) <input type="checkbox"/> A-R ONLY	ASPHALT CEMENT (AC) <input checked="" type="checkbox"/> AC ONLY
ASPHALT	<input type="checkbox"/> A-R TY II <input type="checkbox"/> A-R TY III <input type="checkbox"/> SP 300-	<input checked="" type="checkbox"/> AC-20-5TR <input type="checkbox"/> AC-20XP <input type="checkbox"/> AC-15P <input type="checkbox"/> SP 300-
TIER II: MODERATE USE - USE THESE MATERIALS OR ANY SELECTED TIER I MATERIAL COMBINATIONS OF THE ALLOWED TYPES.		
TYPE	ASPHALT CEMENT (AC) <input type="checkbox"/> AC ONLY	ASPHALT EMULSION <input type="checkbox"/> EMULSION ONLY
ASPHALT	<input type="checkbox"/> AC-10-2TR <input type="checkbox"/> AC-15P <input type="checkbox"/> AC-20XP <input type="checkbox"/> AC-10 W/2%SBR <input type="checkbox"/> AC-5 W/2%SBR <input type="checkbox"/> SP 300-	<input type="checkbox"/> CHFRS-2P <input type="checkbox"/> HFRS-2P <input type="checkbox"/> CRS-2P <input type="checkbox"/> SP 300-
TIER III: LIGHT USE - USE THESE MATERIALS OR ANY SELECTED TIER I OR TIER II MATERIAL COMBINATIONS OF THE ALLOWED TYPES.		
TYPE	ASPHALT CEMENT (AC) <input type="checkbox"/> AC ONLY	ASPHALT EMULSION <input type="checkbox"/> EMULSION ONLY
ASPHALT	<input type="checkbox"/> AC-10 <input type="checkbox"/> AC-5 <input type="checkbox"/> SP 300-	<input type="checkbox"/> CRS-2 <input type="checkbox"/> CRS-2H <input type="checkbox"/> HFRS-2 <input type="checkbox"/> SP 300-
DISTRICTWIDE SEAL COAT PROJECT SEASONS: REFER TO ITEM 316 FOR TEMPERATURE AND WEATHER RESTRICTIONS.		
SEASON 1:	AMA, CHS, LBB	MAY 15 TO AUG 31
SEASON 2:	ABL, ATL, BWD, DAL, FTW, LFK, ODA, PAR, SGT, TYL, WAC, WFS	MAY 1 TO AUG 31
SEASON 3:	AUS, BMT, BRY, ELP, HOU, SAT, YKM	MAY 1 TO SEP 15
SEASON 4:	CRP, LRD, PHR	APR 1 TO SEPT 30
NOTE: SEAL COATS ON ROUTINE MAINTENANCE CONTRACTS MUST BE COMPLETED BY AUGUST 31 UNLESS OTHERWISE SHOWN ON THE PLANS.		

INSTRUCTIONS TO THE CONTRACTOR:

1. PROVIDE MATERIALS ACCORDING TO THE ALTERNATES SELECTED FOR THE ROADWAY TIER DESIGNATIONS SPECIFIED AT VARIOUS ROADWAY LOCATIONS SHOWN ON THE PLANS;
2. ALTERNATELY, SUPPLY SELECTED BINDERS FROM A HIGHER TIER, BUT ONLY IF THE TYPE OF MATERIAL IS ALLOWED FOR THE DESIGNATED TIER; PAYMENT WILL ONLY BE MADE FOR THE TIER DESIGNATED FOR THE PAVEMENT;
3. SUPPLY THE AGGREGATE TYPE, GRADE AND SURFACE AGGREGATE CLASS SHOWN ON THE PLANS; AND
4. ADHERE TO THE APPLICATION SEASON SELECTED.

THERE ARE 105 WORKING DAYS ALLOWED FOR THIS PROJECT.
THE LATEST ROADWAY START WORK DATE IS 05/24/2021.

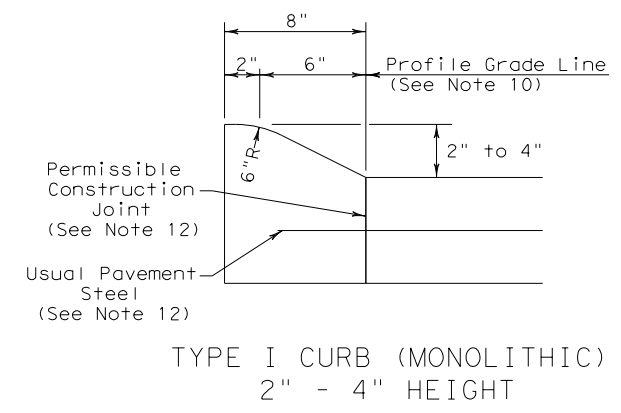


SEAL COAT MATERIAL SELECTION TABLE

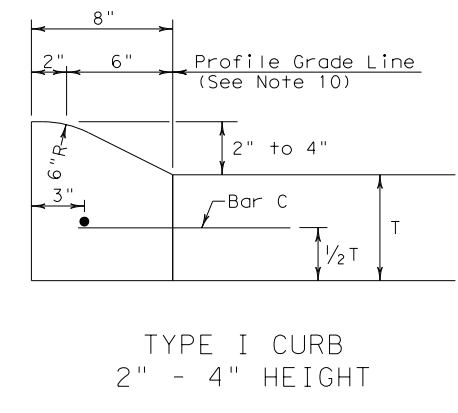
SCTABLE

FILE: sctable.dgn	DN: TxDOT	CK:	DW:	CK:
© TxDOT: March 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0887	01	039, ETC.	VARIOUS
	DIST	COUNTY		SHEET NO.
	ODA	ECTOR, ETC.		184

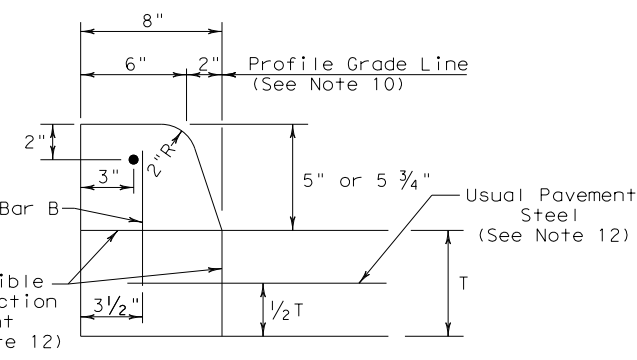
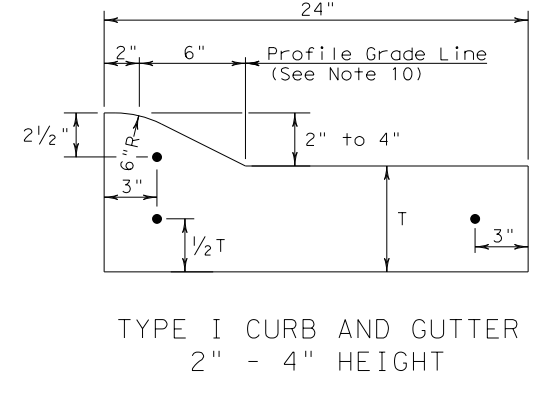
DATE: 8/20/2020
 FILE: pw:\jmt-pw_bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP_338, FM_307, FM_1787 (CSJ_0906-00-226)\4 - Design\Plan Set\3. Roadway\TXDOT_Standard
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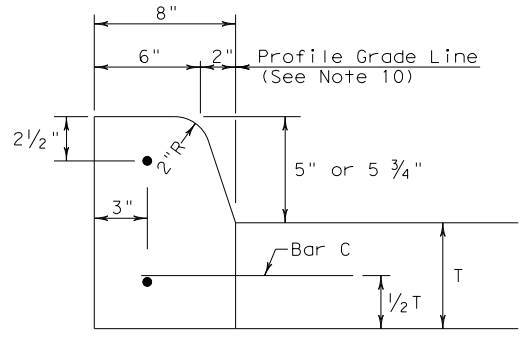
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



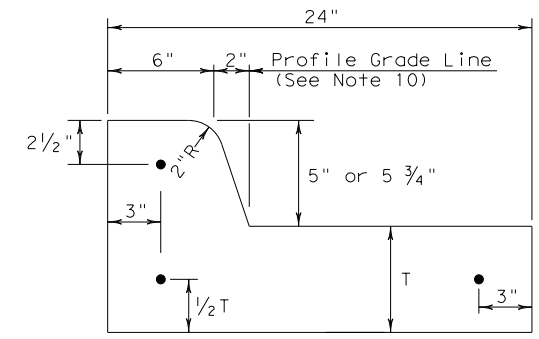
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



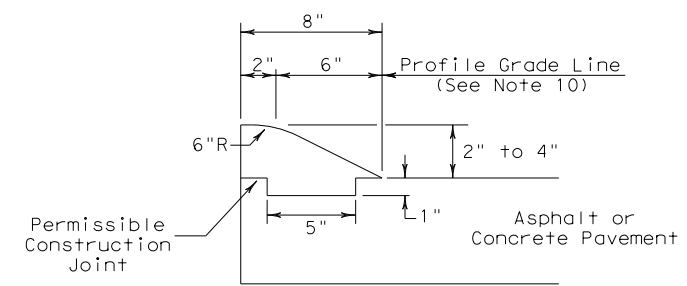
TYPE II CURB (MONOLITHIC)
5" - 5 3/4" HEIGHT



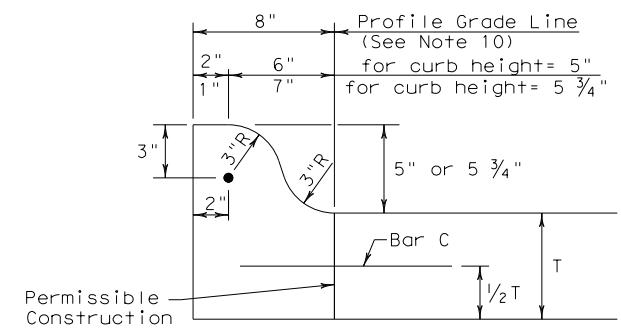
TYPE II CURB AND GUTTER
5" - 5 3/4" HEIGHT



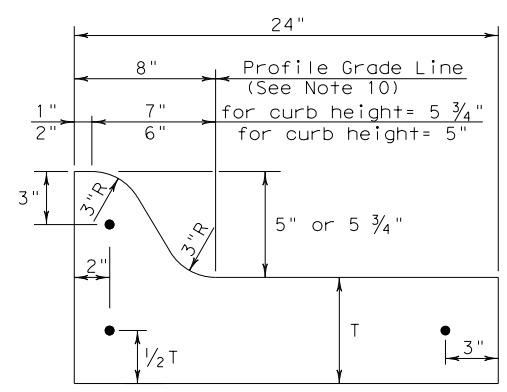
TYPE II CURB AND GUTTER
5" - 5 3/4" HEIGHT



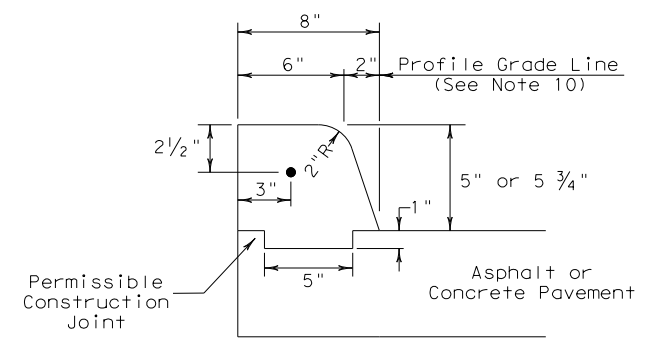
TYPE III CURB (KEYED)
2" - 4" HEIGHT



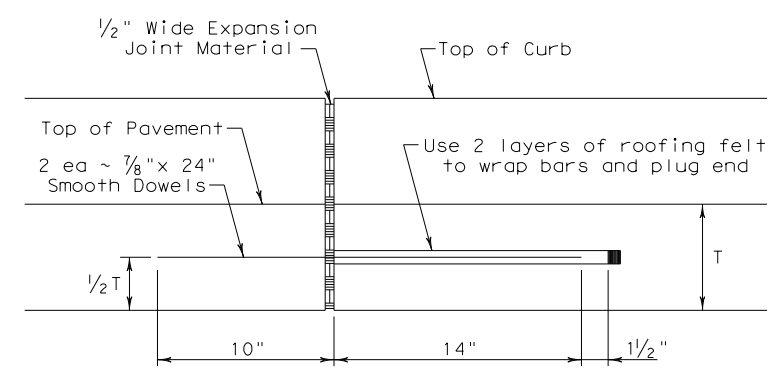
TYPE IIa CURB
5" - 5 3/4" HEIGHT



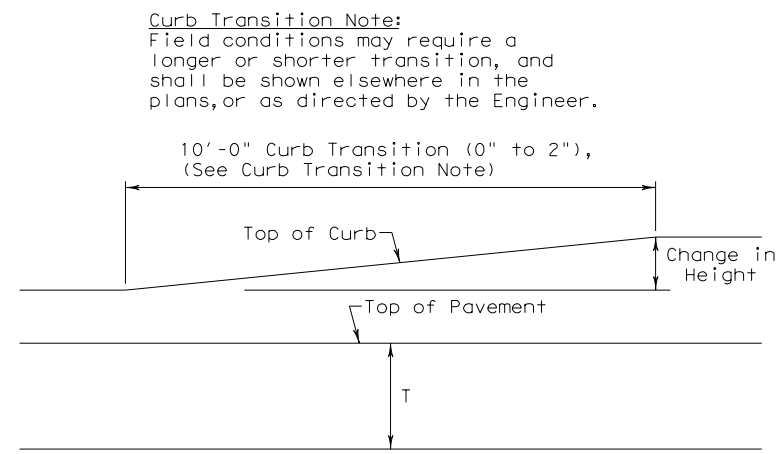
TYPE IIa CURB AND GUTTER
5" - 5 3/4" HEIGHT



TYPE IV CURB (KEYED)
5" - 5 3/4" HEIGHT



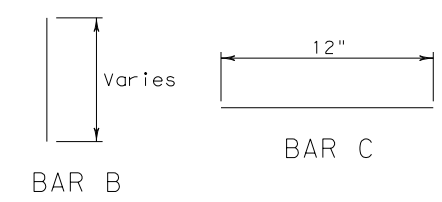
EXPANSION JOINT DETAIL



CURB TRANSITION
Note: To be paid for as Highest Curb

General Notes

- All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
- Concrete shall be Class A.
- When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Producer List (MPL), maintained by TxDOT, Construction Division.
- Round exposed sharp edges with a rounding tool, to a minimum radius of 1/4 inch.
- All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
- Where concrete curb is placed on existing concrete pavement, the pavement shall be drilled and the reinforcing bars grouted in place.
- Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
- Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C-C.
- Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
- Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
- One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
- When vertical permissible construction joints are used, resulting in a longitudinal construction joint in the pavement, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans for longitudinal construction joints. Reinforcing steel for curb section shall then conform to that required for concrete curb.

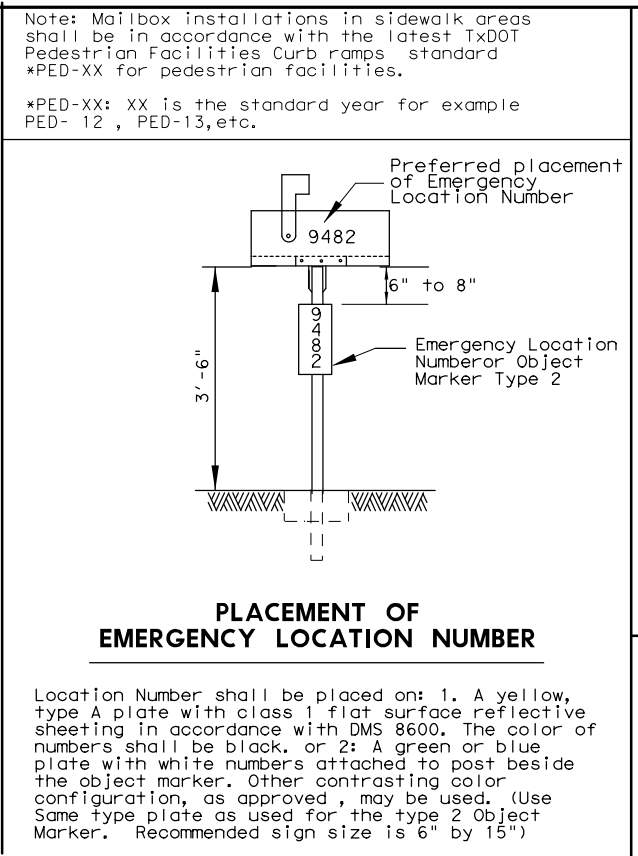
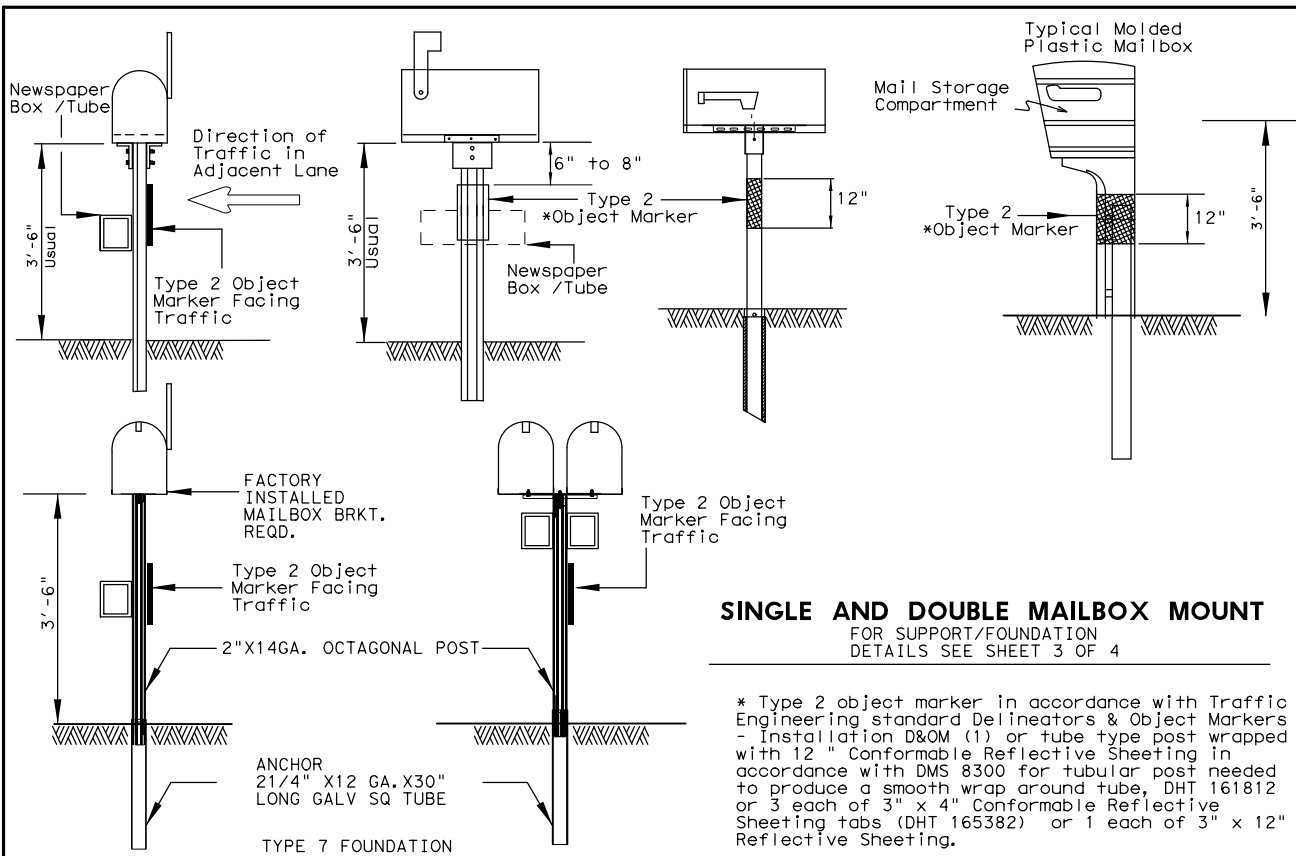


Curb Transition Note:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.

				Design Division Standard	
<h2 style="margin: 0;">CURB AND GUTTER</h2> <h3 style="margin: 0;">CCCG-12</h3>					
FILE: cccg12.dgn	DN: TxDOT	CK: AM	DW: VP	CK: VP	
© TxDOT: 1995	CONT	SECT	JOB	HIGHWAY	
UPDATED 2012 - VP	REVISIONS	0887	01	039, ETC.	VARIOUS
	DIST	COUNTY		SHEET NO.	
	ODA	ECTOR, ETC.			185

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DATE: 8/20/2020 FILE: \\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\TxDOT Standards



TYPICAL MAILBOX SIZE

SIZE	INCHES			POUNDS	
	LENGTH	WIDTH	HEIGHT	MAXIMUM WEIGHT	
SMALL	19 1/2	6	7	5	5
MEDIUM	22 1/2	8	11 1/2	7	7
LARGE	23 1/2*	11 1/2*	13 1/2*	10	10

* Maximum allowed dimensions for mailbox
** Excluding Molded Plastic on 4 X 4 Post

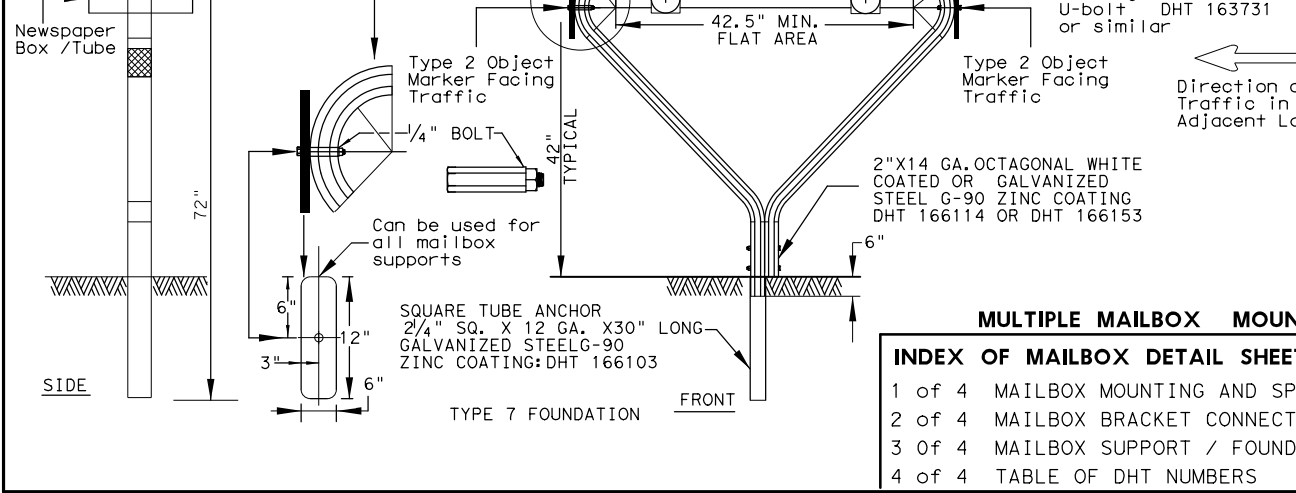
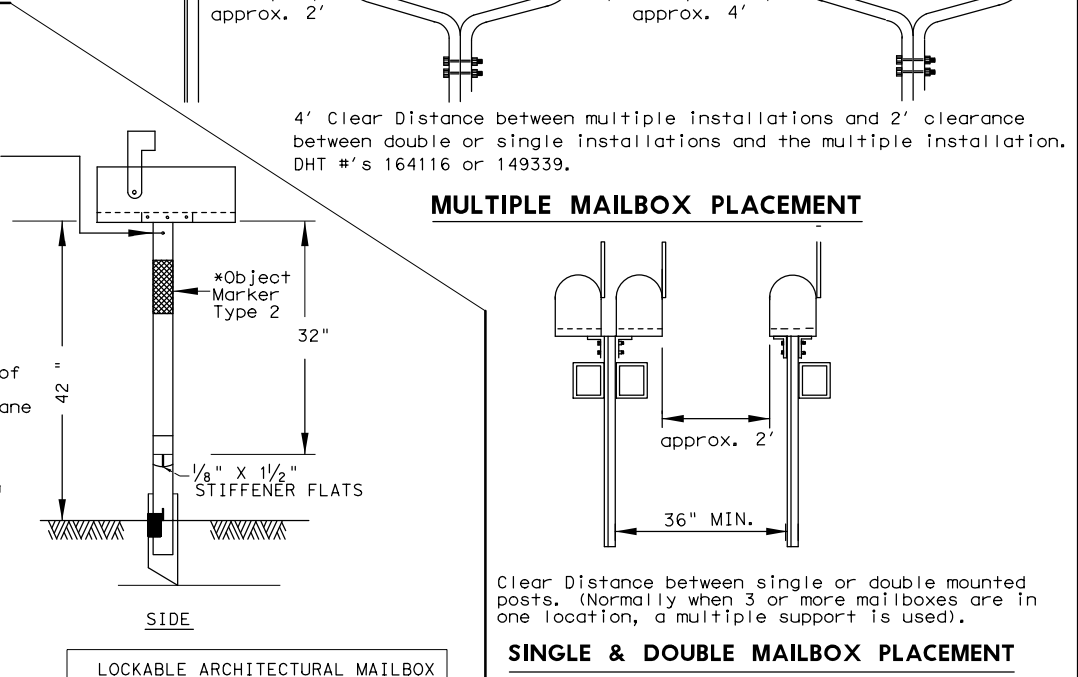
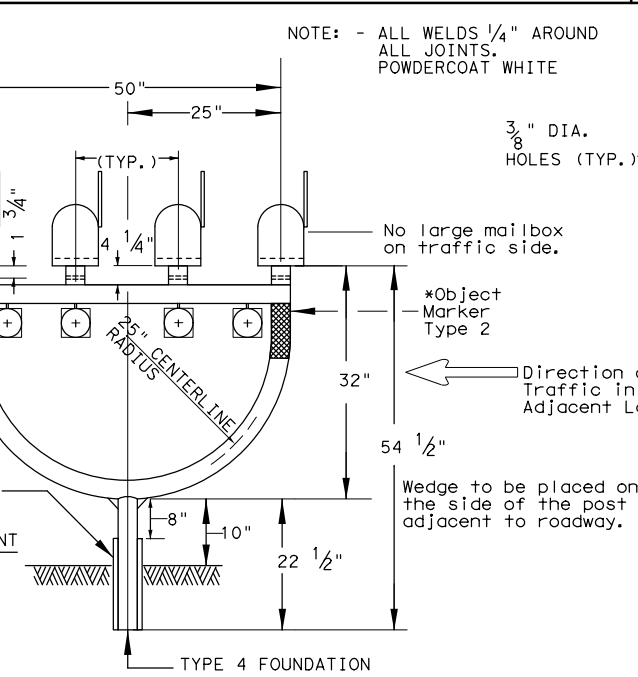
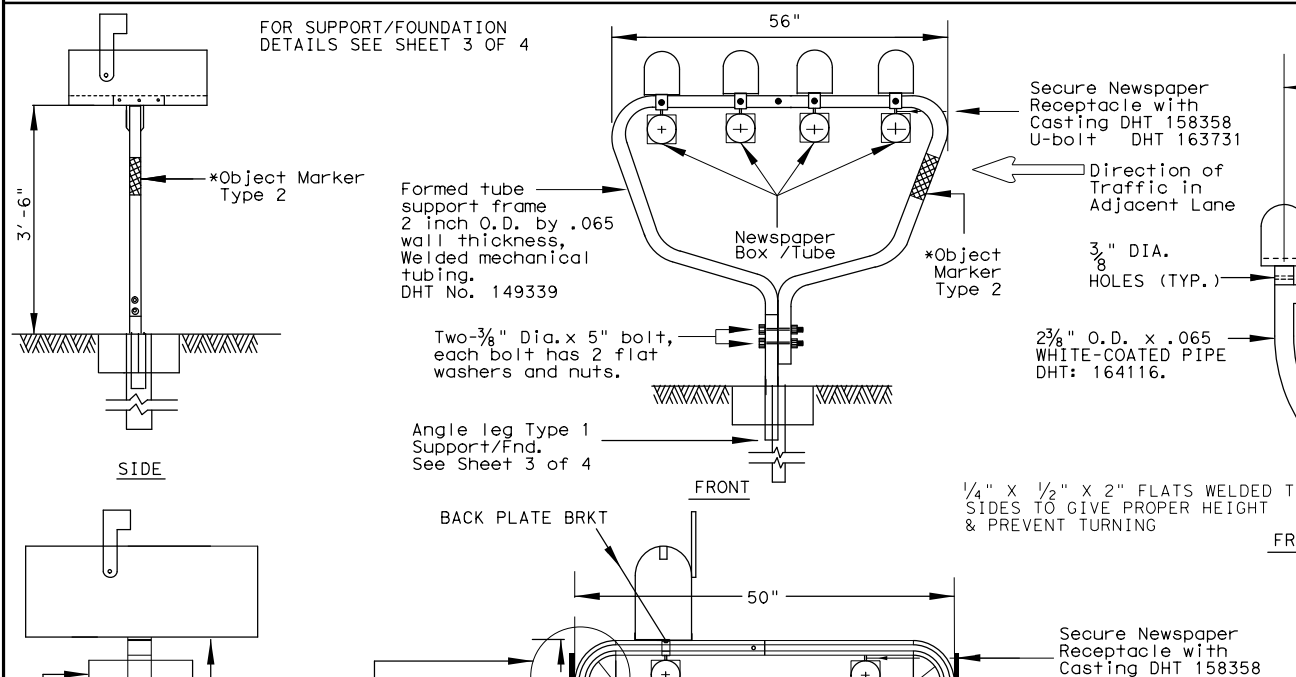
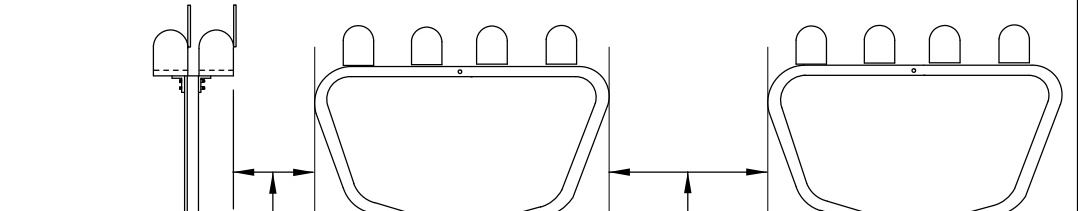
LOCKABLE ARCHITECTURAL MAILBOX SIZE (INCHES)

VIEW	TOP	BOTTOM	FRONT SIDE	BACK SIDE	WEIGHT (POUNDS)
SIDE	18	15	18.3	15	
BACK	11 1/2	11 1/2		15	22.4

Mailboxes shall be made of light weight sheet metal or light weight plastic. Lockable architectural mailboxes shall meet the requirements of the above table.

Heavy steel, cast iron or decorative mailboxes shall not be used on the state highway system.

SEE TOP RIGHT CORNER OF SHEET 2 OF 4



INDEX OF MAILBOX DETAIL SHEETS

1 of 4	MAILBOX MOUNTING AND SPACING
2 of 4	MAILBOX BRACKET CONNECTING DETAILS
3 of 4	MAILBOX SUPPORT / FOUNDATION
4 of 4	TABLE OF DHT NUMBERS

SHEET 1 OF 4

Texas Department of Transportation

Maintenance Division Standard

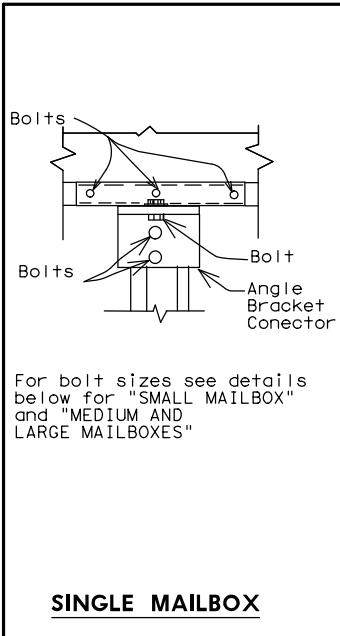
MAILBOX MOUNTING AND SPACING

MB-15(1)

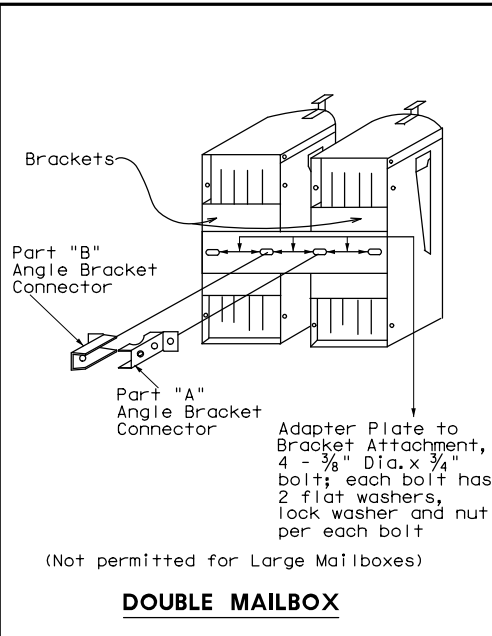
FILE: MB15(1).DGN	DWG: JEO	CHK: JEO	DWG:	CK:
© TxDOT APRIL 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS:	0887	01	039, ETC.	VARIOUS
Added additional newspaper receptacle for double mailbox support	DIST	COUNTY	SHEET NO.	
	ODA	ECTOR, ETC.	186	

DATE: 8/20/2020
 FILE: \\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\TXDOT Standards\

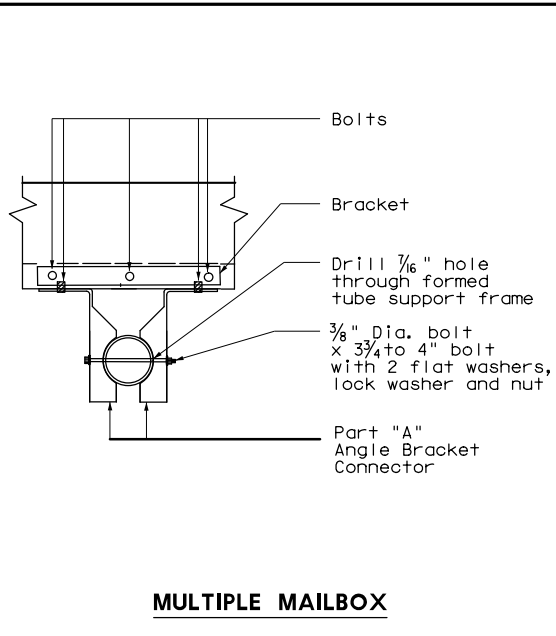
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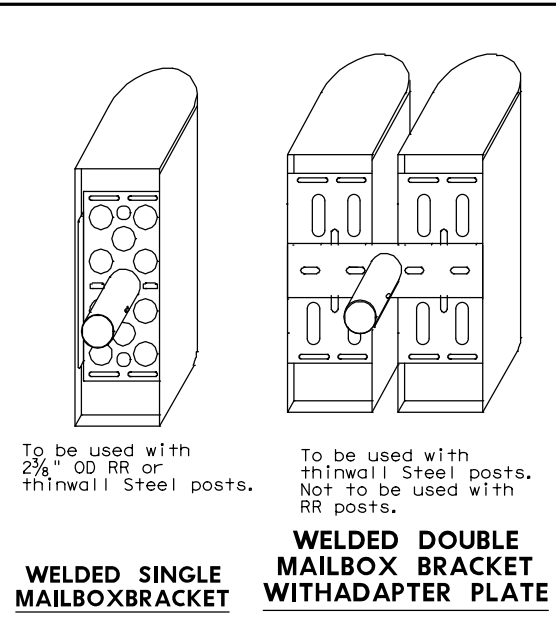
SINGLE MAILBOX



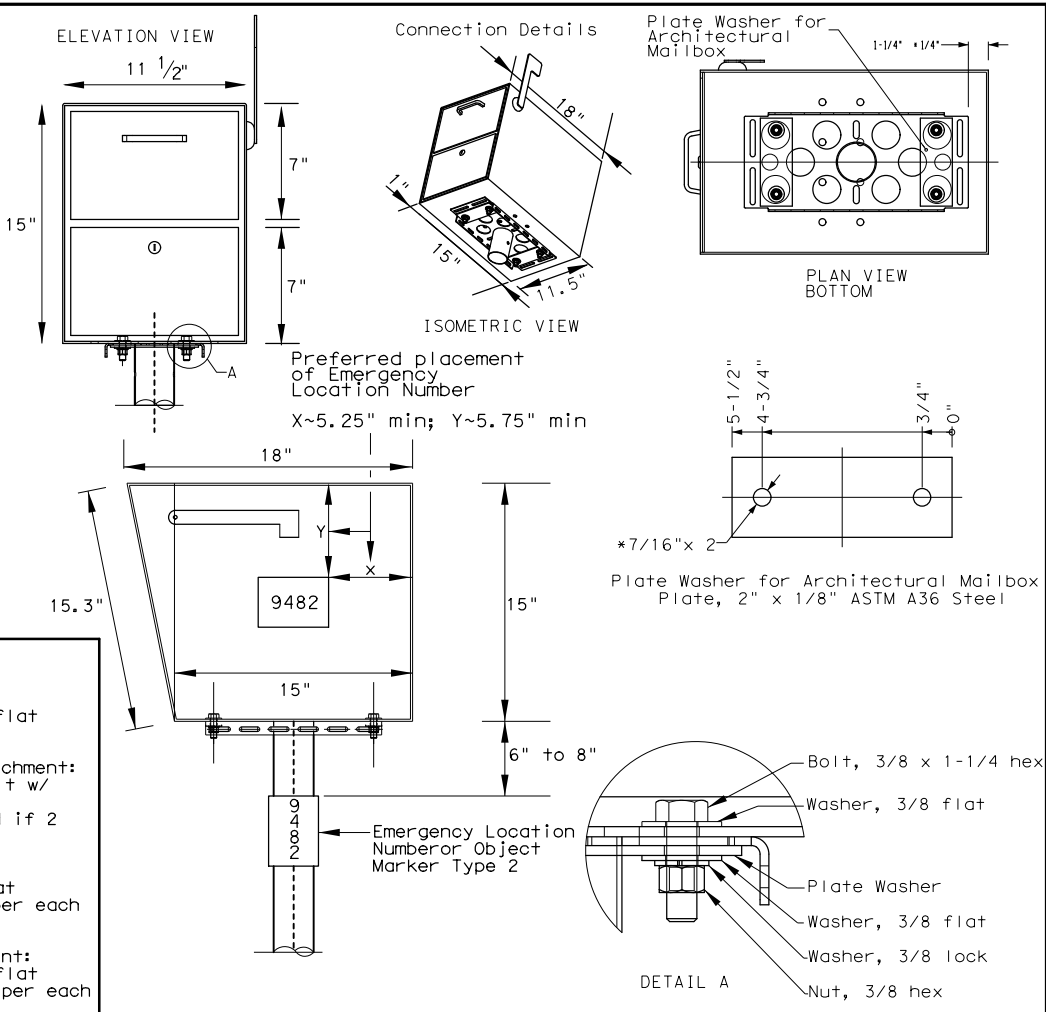
DOUBLE MAILBOX



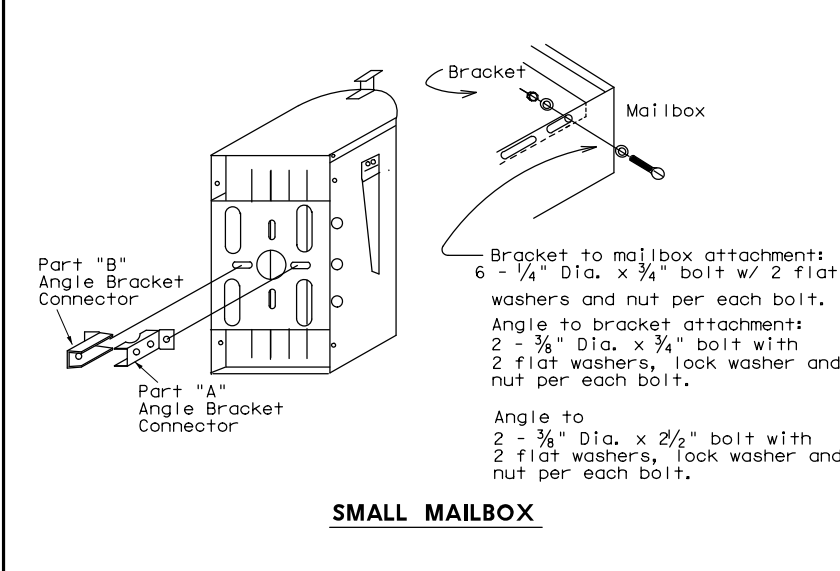
MULTIPLE MAILBOX



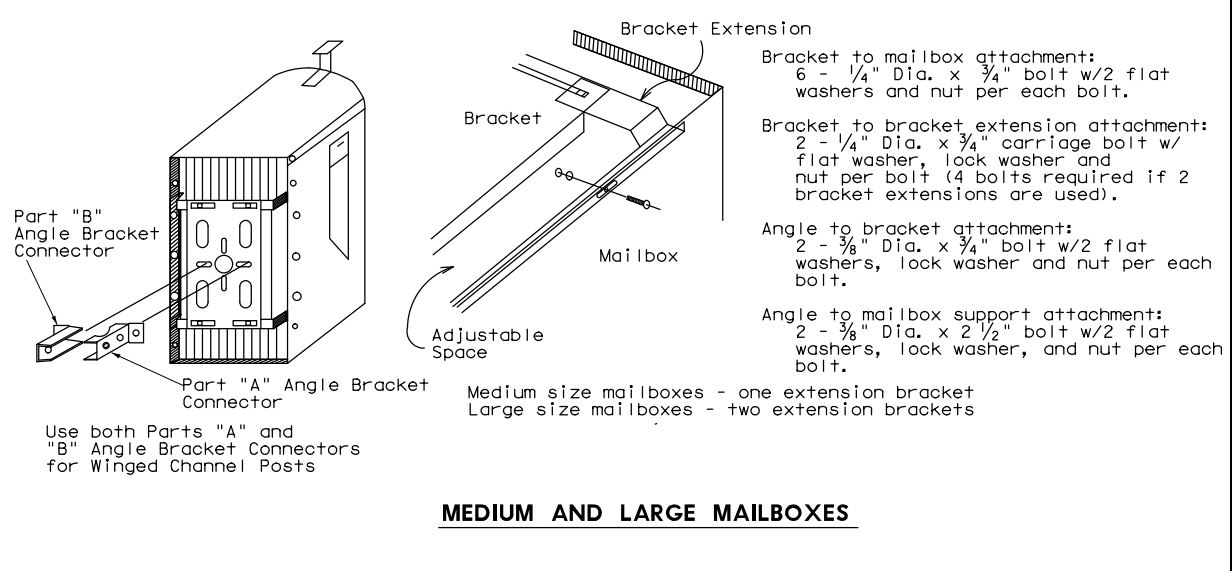
WELDED SINGLE MAILBOX BRACKET
WELDED DOUBLE MAILBOX BRACKET WITH ADAPTER PLATE



LOCKABLE ARCHITECTURAL MAILBOX CONNECTION DETAILS



SMALL MAILBOX

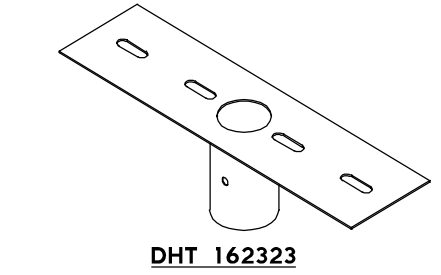


MEDIUM AND LARGE MAILBOXES

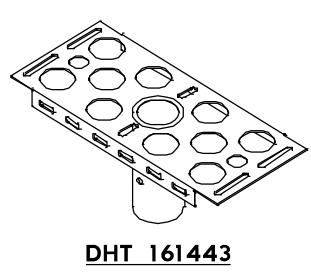
GENERAL NOTES

- Connecting hardware detailed on this sheet is for the hardware that the Department stocks at the Regional Warehouses. This hardware is available to the contractor only when so stated elsewhere in the plans or specification.
- Hardware for mounting mailboxes to the support/foundation furnished by industry should be used when shown on the Maintenance Divisions "Approved Products List." Only mailbox hardware that have been crash tested in accordance with NCHRP Report 350, will be on the approved list.
- Hardware furnished by industry shall be erected in accordance with the manufacturer's recommendation.
- Bracket and bracket extension shall be constructed of 14 gauge galvanized steel sheet metal.
- The angles, brackets and adapter plates shall be constructed of 12 gauge galvanized steel sheet metal.
- Items with evidence of damage to the galvanized coating or wet storage stains (white rust) will not be accepted.

SHEET 2 OF 4



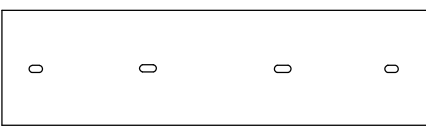
DHT 162323



DHT 161443

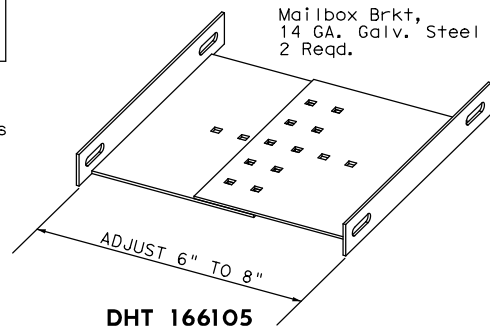
For use with galvanized thinwall steel posts DHT # 143426 or powder-coated thinwall steel post DHT # 162911.

For use with RCR post DHT # 161442 or galvanized thinwall steel post DHT # 143426 or powder-coated thinwall steel post. DHT # 162911.

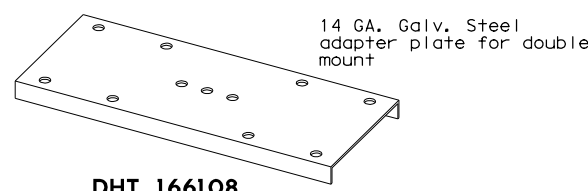


DHT #3789

Used for mounting two Mailboxes on the same post.

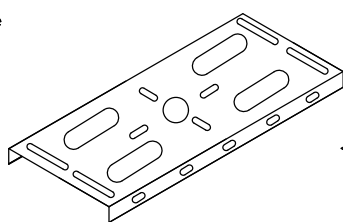


DHT 166105



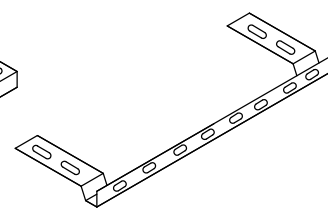
DHT 166108

14 GA. Galv. Steel adapter plate for double mount



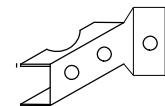
DHT 148939

Mailbox Bracket



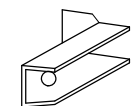
DHT 148938

Used for extending 6" wide bracket to attach larger mailboxes.
 Bracket Extension



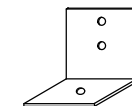
DHT 159489

Part "A" Angle Bracket Connector



DHT 159490

Part "B" Angle Bracket Connector



DHT 2917

Angle Bracket For Temporary Mailbox

HARDWARE AT TXDOT REGIONAL WAREHOUSES

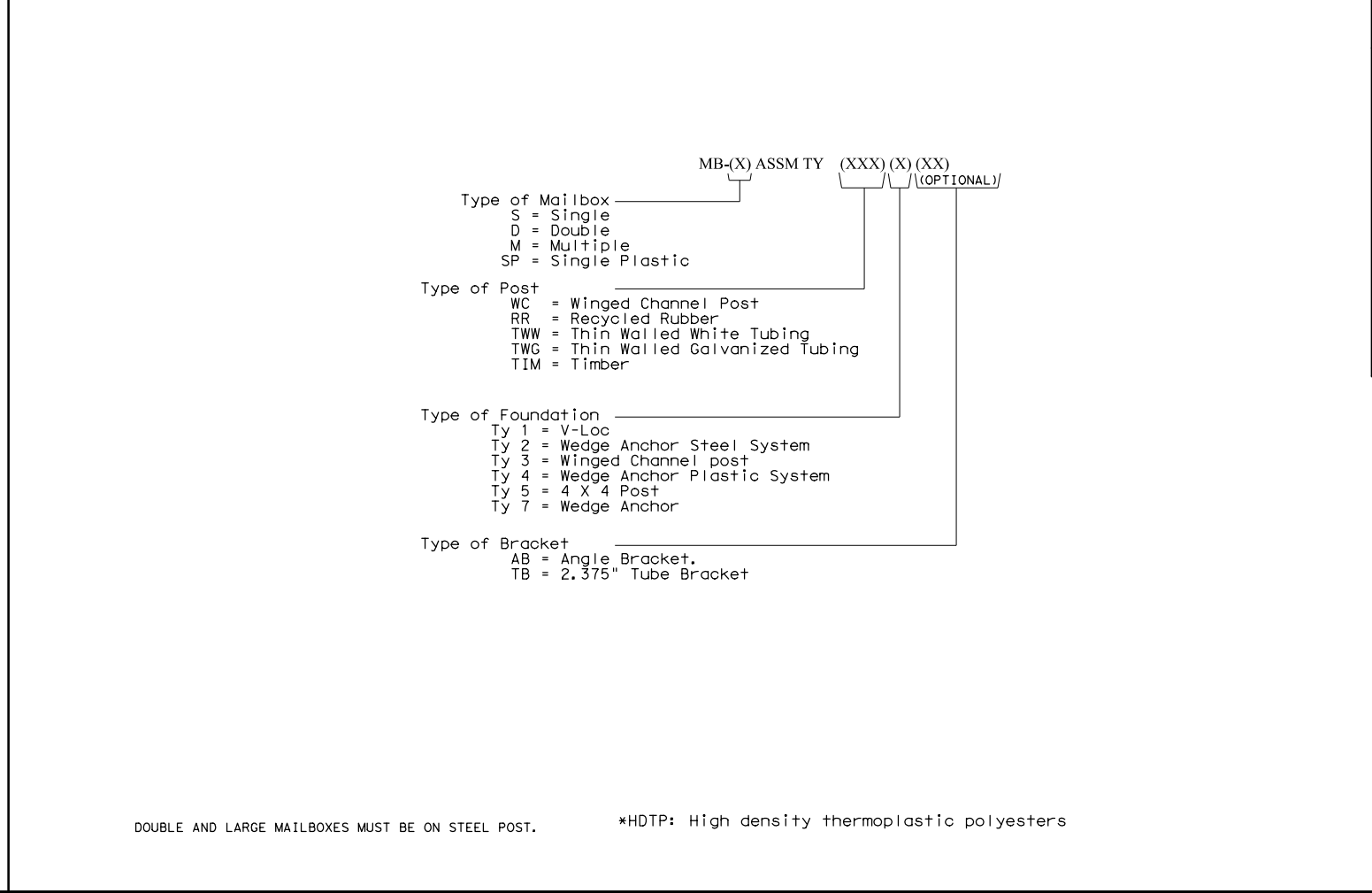
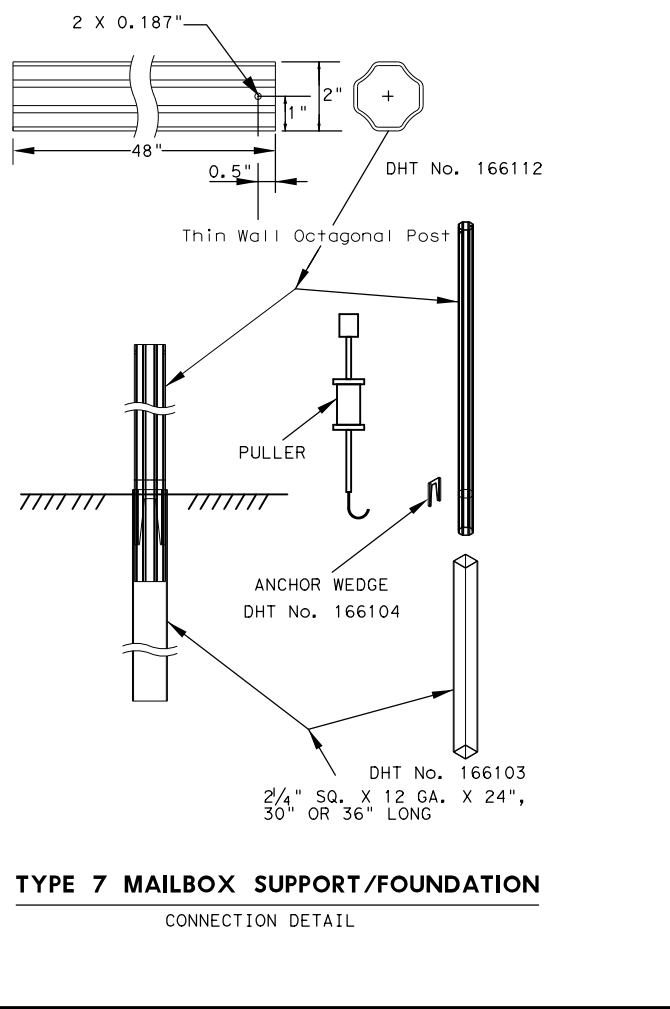
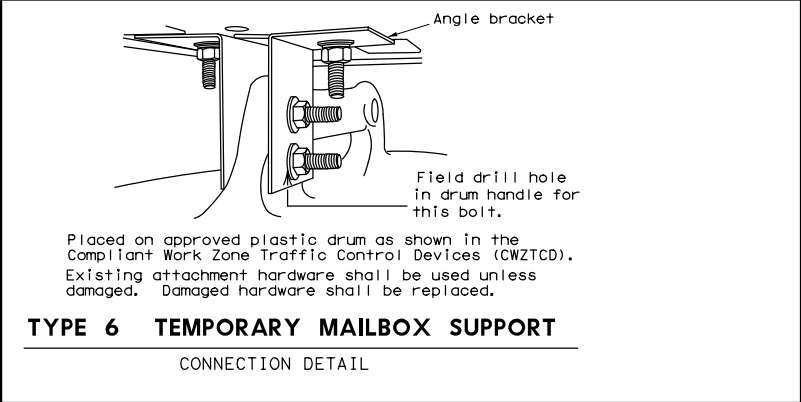
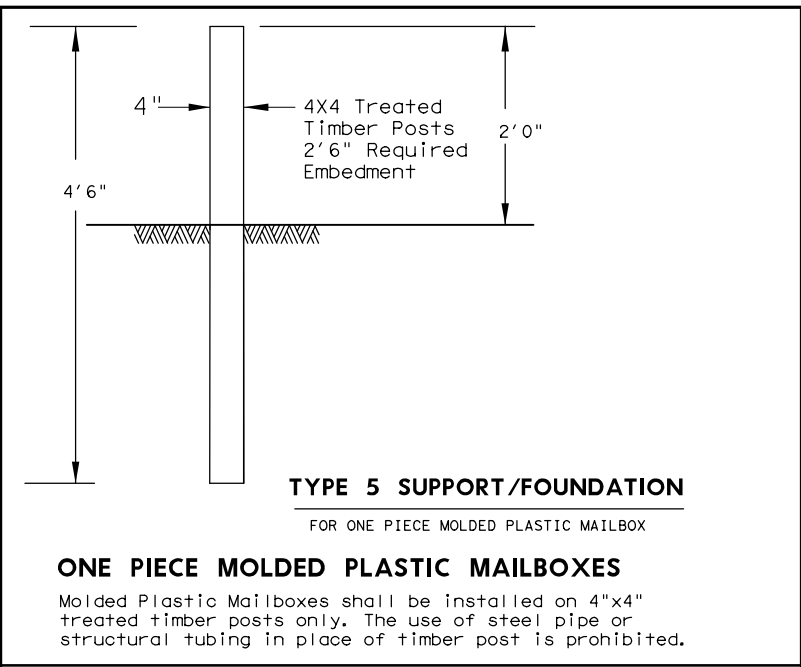
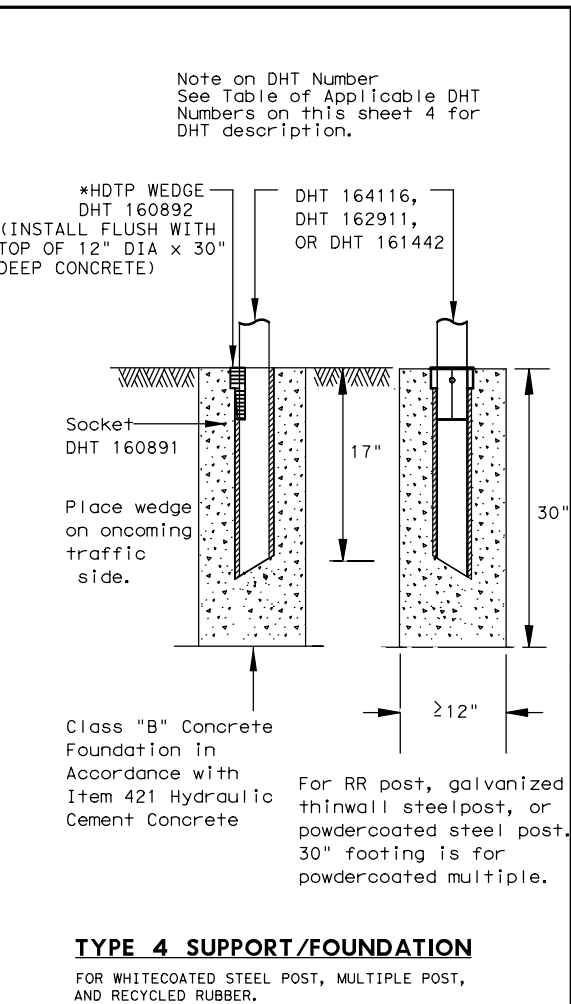
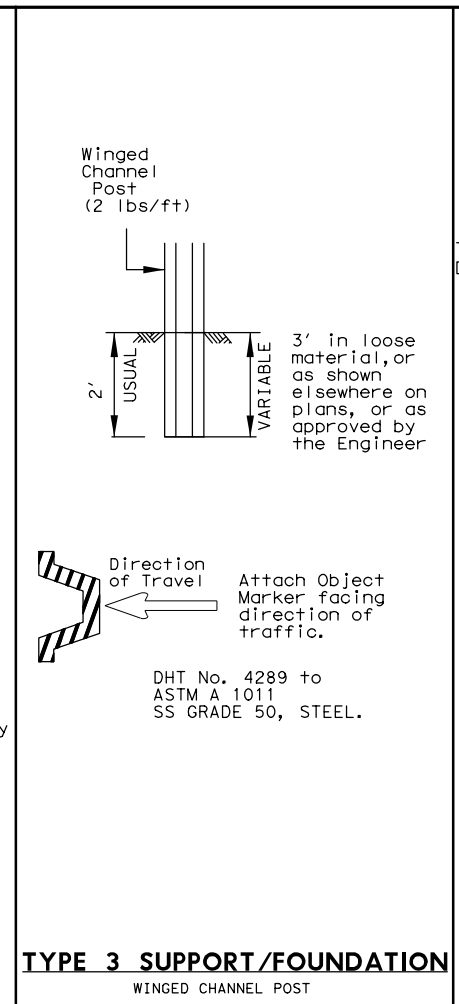
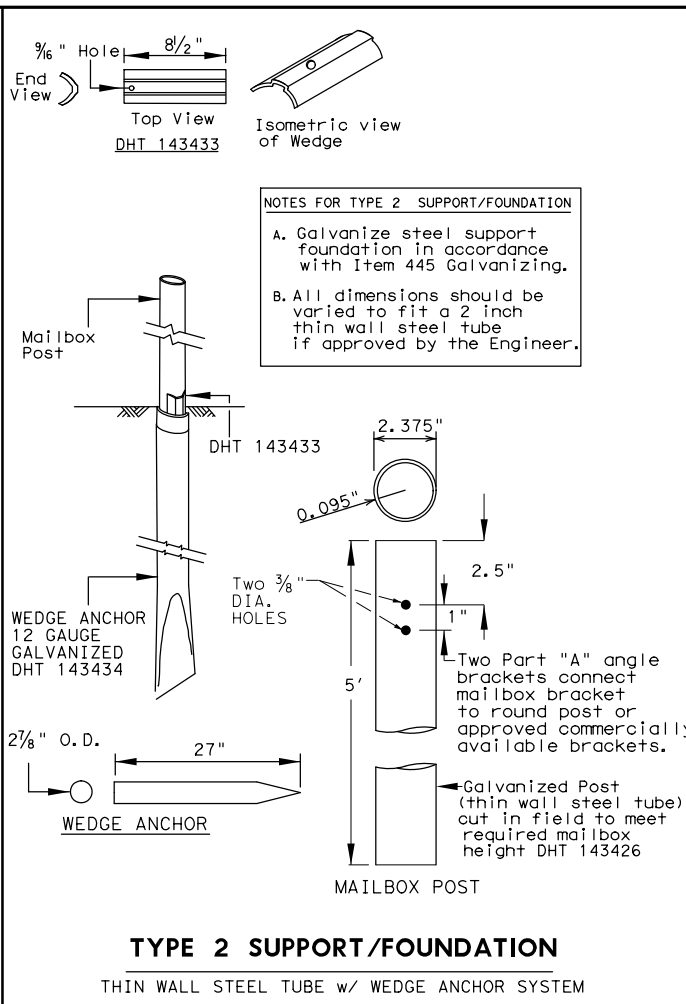
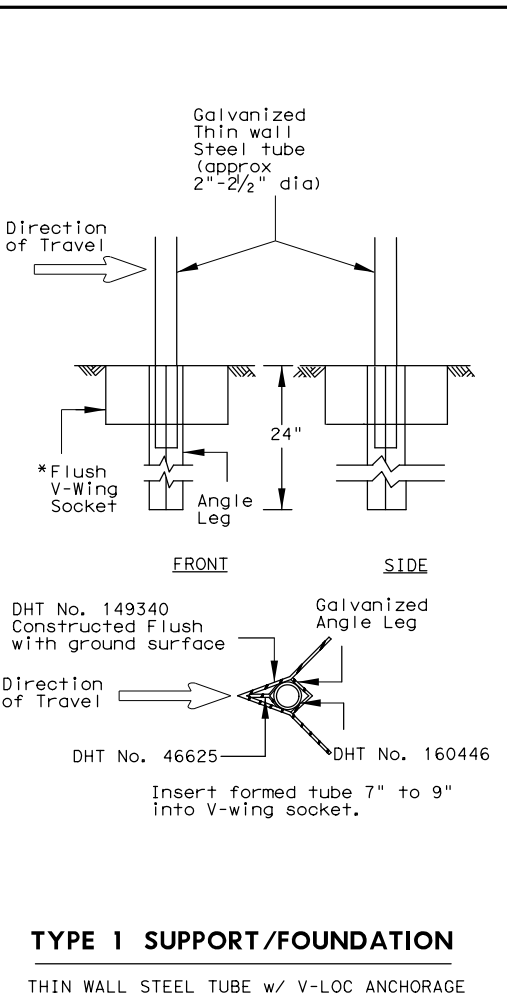
Brackets and adapter plate shown in this section should be available to the Contractor when stated elsewhere in plans or specifications.

See Table of Applicable DHT Numbers on sheet 4 of 4 for DHT description and unit of measure.

		Maintenance Division Standard	
MAILBOX BRACKET CONNECTING DETAILS MB-15(1)			
FILE: MB14(1).DGN	DWG: JEO	CHK: JEO	CK: JEO
© TXDOT APRIL 2015	CONT: 0887	SECT: 01	JOB: 039, ETC.
ADDED DHT 163730	REVISIONS		HIGHWAY: VARIOUS
DIST: ODA	COUNTY: ECTOR, ETC.	SHEET NO.: 187	

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DATE: 8/20/2020
 FILE: \\jmt-pw-bentley.com: jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\TxDOT Standards



- GENERAL NOTES**
- Erect post plumb or vertical.
 - When galvanized part is required galvanize in accordance with Item 445.
 - type 1, 2, 3, 4 or 7 supports or foundation can be used for single or double mailbox installations. The RCR post should be used only for a single installation with a small mailbox. The Type 5 support/foundation is used for the single molded plastic mailbox. The Type 4 support/foundation is used for the 2.375" O.D. RR post, thin wall steel post, and white multiple mailbox post.
 - The Type 1 or type 7 support/foundation can be used for a multiple mailbox mount.
 - The Type 4 support should be used with thin wall steel pipe for the medium, large and double mailbox installations.
 - Use a concrete footing as shown or when directed. Concrete footing will be required when soils do not hold the support/foundations in a stable condition.

SHEET 3 OF 4

Maintenance Division Standard

MAILBOX SUPPORT AND FOUNDATION

MB-15(1)

FILE: MB14(1).DGN	DN: JEO	CK:	DW: JEO	CK:
© TxDOT APRIL 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0887	01	039, ETC.	VARIOUS
	DIST	COUNTY	SHEET NO.	
	ODA	ECTOR, ETC.	188	

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DATE: 8/20/2020
 FILE: \\jmt-pw-bentley.com: jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\3. Roadway\TxDOT Standards

LOCKABLE ARCHITECTURAL MAILBOX

SINGLE-MOUNT INSTALLATION PARTS			
#	PART NAME	PART/DHT #	QTY
1	SOCKET, TYPE 4 FOUNDATION	160891	1
2	WEDGE FOR TYPE 4 FOUNDATION	160892	1
3	THIN-WALL WHITE STEEL TUBE 2.375 OD	162911	1
4	BRACKET FOR ATTACHING MAILBOX	161443	1
5	ARCHITECTURAL MAILBOX	SEE NOTE	1
6	NUT, 5/16" HEX	NUT, 5/16" HEX	1
7	BOLT, 5/16 X 3 HEX	GRADE 5	1
8	PLATE WASHER FOR ARCHITECTURAL MAILBOX	SEE SEE SHEET 2	2
9	WASHER, 3/8 FLAT		8
10	WASHER, 3/8 LOCK		4
11	NUT, 3/8 HEX		4
12	BOLT, 3/8 X 1-1/4 HEX	GRADE 5	4
13	CONCRETE, CLASS B (2000 PSI)		1

LOCKABLE ARCHITECTURAL MAILBOX DETAILS

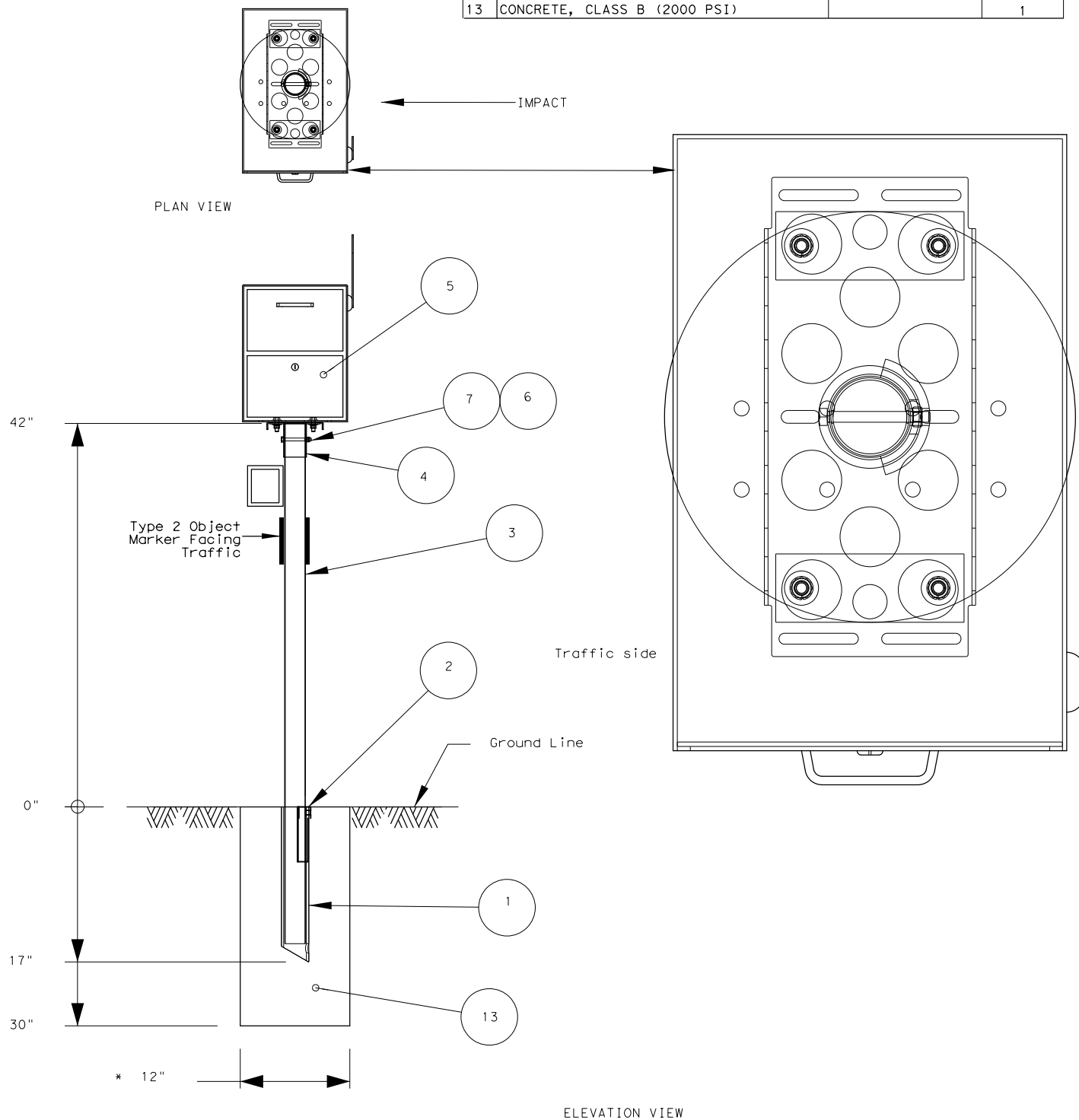


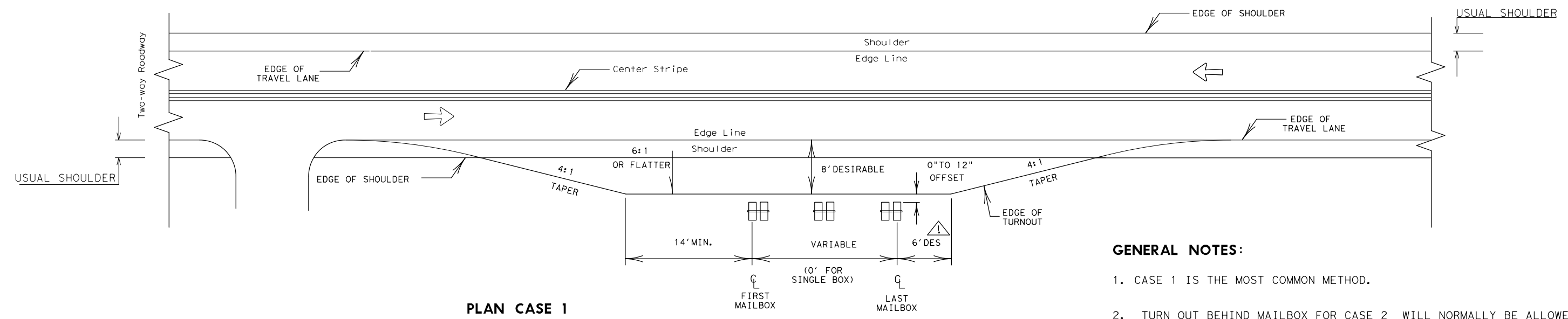
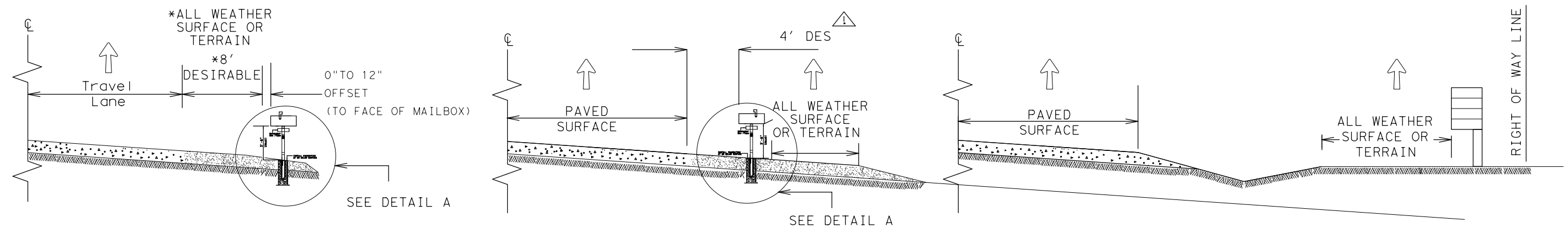
TABLE OF APPLICABLE DHT NUMBERS	
DHT NUMBER	DESCRIPTION
FOUNDATIONS	
46625	WEDGE FOR V-WING SOCKET FOR TYPE 1 FOUNDATION
149340	V-WING SOCKET FOR TYPE 1 FOUNDATION
143433	WEDGE FOR TYPE 2 FOUNDATION
143434	ANCHOR FOR TYPE 2 FOUNDATION
166103	ANCHOR FOR TYPE 7 FOUNDATION
160891	SOCKET FOR TYPE 4 FOUNDATION
160892	WEDGE FOR TYPE 4 FOUNDATION
166104	WEDGE FOR TYPE 7 FOUNDATION
POSTS	
4289	WINGED CHANNEL MAILBOX POST
149339	MULTIPLE MAILBOX POST (GALVANIZED TUBING)
164116	MULTIPLE MAILBOX POST (WHITE COATED)
166114	MULTIPLE MAILBOX POST (WHITE COATED OCTAGONAL)
166153	MULTIPLE MAILBOX POST (GALVANIZED OCTAGONAL)
161442	RECYCLED RUBBER POST. FOR SMALL MAILBOX ONLY
143426	THIN-WALL GALVANIZED STEEL TUBE 2.375" OUTER DIAMETER
162911	THINWALL WHITE STEEL TUBE 2.375" OUTER DIAMETER
	SINGLE OR DOUBLE THIN-WALL MAILBOX POST GALVANIZED
166152	2" OCTAGONAL
	SINGLE OR DOUBLE THIN-WALL MAILBOX POST WHITECOATED
166112	2" OCTAGONAL
REFLECTIVE SHEETING	
161812	REFLECTIVE SHEETING FOR EMERGENCY LOCATION NUMBER PANEL
CONNECTING HARDWARE	
2917	ANGLE BRACKET USED FOR TEMPORARY MAILBOX SUPPORT
166105	BRACKET FOR SINGLE MOUNTING OF MAILBOXES (MOUNTING KIT)
3789	PLATE FOR DOUBLE MOUNTING OF MAILBOXES
166108	BRACKET FOR DOUBLE MOUNTING OF MAILBOXES (MOUNTING KIT)
166111	BRACKET FOR MULTIPLE MOUNTING OF MAILBOXES (MOUNTING KIT)
148939	BRACKET FOR ATTACHING SMALL OR MEDIUM SIZE MAIL BOX
148938	EXTENDER TO BRACKET FOR ATTACHING LARGE MAILBOX
159489	ANGLE BRACKET PART A
159490	ANGLE BRACKET PART B
	BRACKET FOR DOUBLE MOUNTING OF MAILBOXES ON THINWALL
162323	STEEL POST, GALVANIZED OR POWDERCOATED.
	BRACKET FOR ATTACHING MAILBOX TO RECYCLED RUBBER POST
161443	AND TO MULTIPLE WHITE MAILBOX POST
158358	CASTING (NEWSPAPER RECEPTACLE BRACKET)
163731	U-BOLT (NEWSPAPER RECEPTACLE BRACKET)
160698	BOLT; HEX HEAD, GALV; 3/8"DIA X 3/4"L HD, W/2-FLAT WASHERS
163750	BOLT; HEX HEAD, GALV; 3/8" X 1-1/2, 16 NC, W/WASHERS
160701	BOLT; HEX HEAD, GALV; 3/8"DIA X 2-1/2"L, HD, W/2-FLAT WASHERS
163730	BOLT; HEX HEAD, GALV; 3/8" X 3-1/2", NC, W/NUT, 2 FLAT WASHERS
160699	BOLT; HEX HEAD, GALV; 3/8"DIA X 3-3/4"L HD, W/2-FLAT WASHERS
160700	BOLT; HEX HEAD, GALV; 3/8"DIA X 4"L HD, W/2-FLAT WASHERS



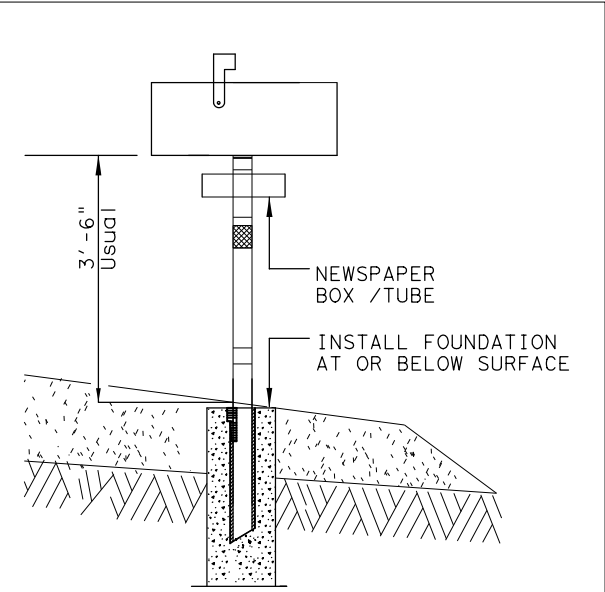
**DHT NUMBERS TABLE
MB-15(1)**

FILE: MB14(1).DGN	DN:	CK:	DW:	CK:
© TxDOT APRIL 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0887	01	039, ETC.	VARIOUS
	DIST	COUNTY	SHEET NO.	
	ODA	ECTOR, ETC.	189	

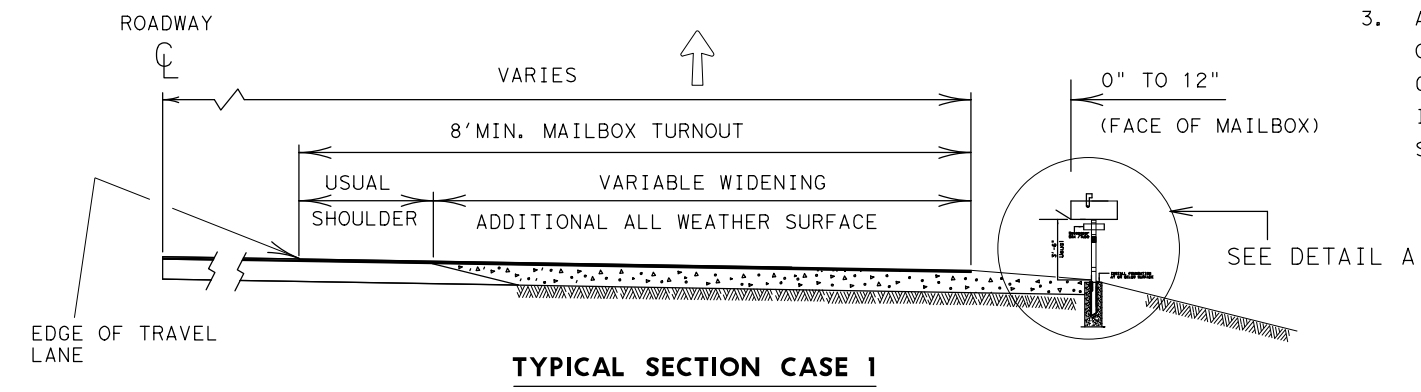
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- GENERAL NOTES:**
- CASE 1 IS THE MOST COMMON METHOD.
 - TURN OUT BEHIND MAILBOX FOR CASE 2 WILL NORMALLY BE ALLOWED FOR NATURAL TERRAIN THAT WILL SERVE AS AN ALL WEATHER SURFACE.
 - ALL WEATHER DRIVEWAYS FOR CASE 3 MAILBOXES LOCATED AT THE RIGHT OF WAY LINE SHOULD NORMALLY BE PLACED IN CONJUNCTION WITH COUNTY ROADS OR OTHER CONNECTING COMMUNITY ROADS OR STREETS. IF THE NUMBER OF MAILBOXES EXCEEDS FOUR, A COMMUNITY MAIL BOX SHOULD BE ENCOURAGED AT THESE LOCATIONS.



DETAIL A

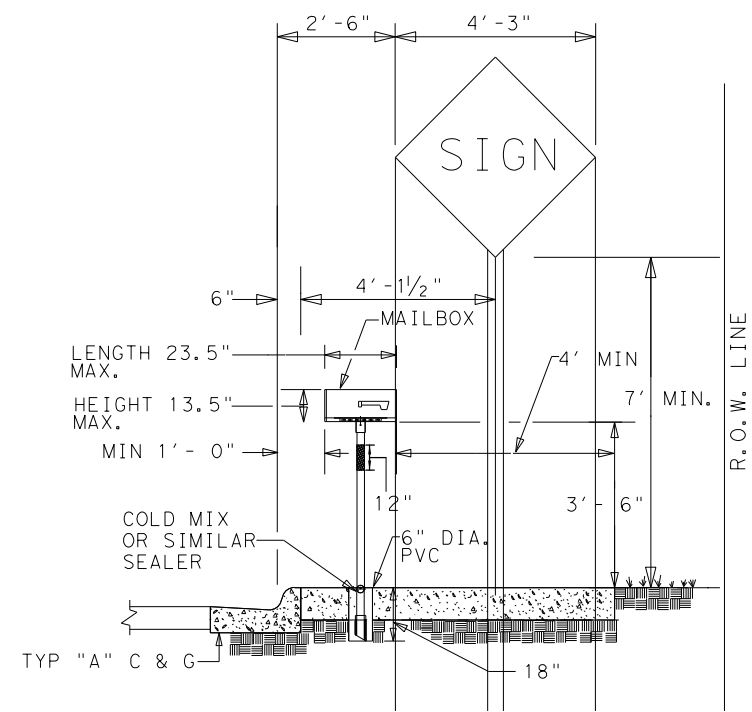


↑ MAIL DELIVERY VEHICLE TRAVEL DIRECTION

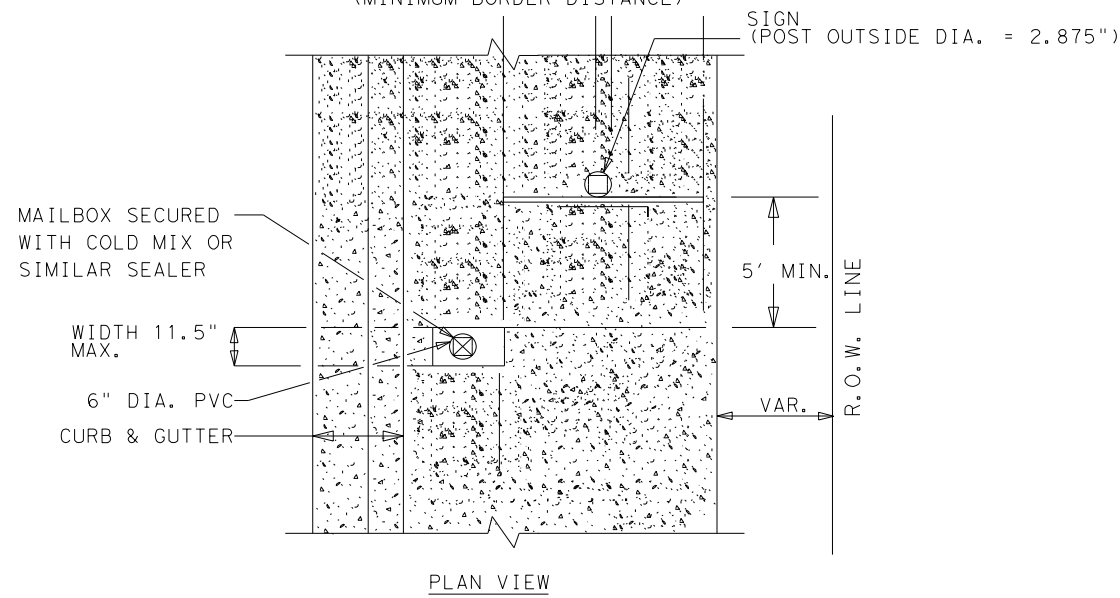
		Maintenance Division Standard	
<i>Guideline</i> MAILBOX SIDE ROAD PLACEMENT AND TURNOUTS MB-14(2)			
FILE: MB14(2).DGN	DN: JEO	CK:	DW: JEO
© TxDOT MAY 2014	CON: 0887	SECT: 01	JOB: 039, ETC.
REVISIONS	DIST: ODA		COUNTY: ECTOR, ETC.
DECEMBER 2012-NEW TxDOT TITLE BLOCK	SHEET NO. 190		HIGHWAY: VARIOUS

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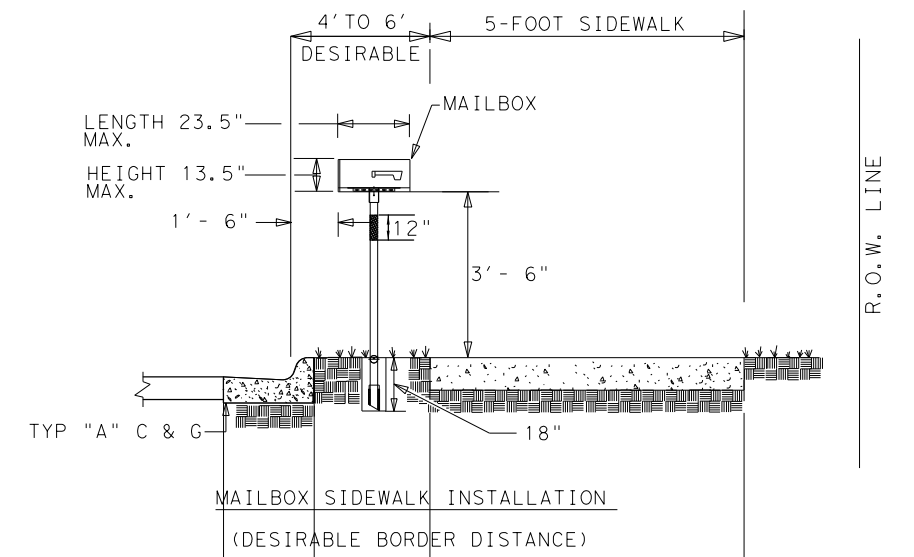
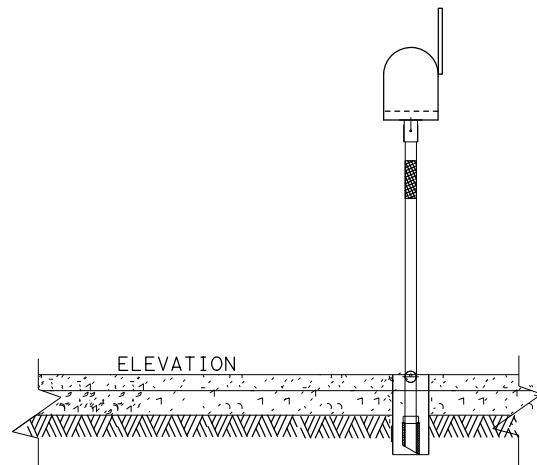
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MAILBOX SIDEWALK INSTALLATION RELATIVE TO ANY OTHER OBSTRUCTION SUCH AS A SIGN (MINIMUM BORDER DISTANCE)



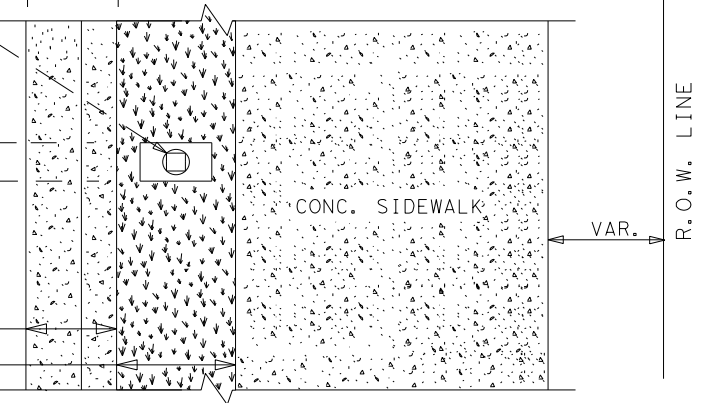
PLAN VIEW



SEE MB-15(1) SHEET 3 OF 4

WIDTH 11.5" MAX.

CURB & GUTTER BUFFER AREA BETWEEN CURB AND SIDEWALK (GRASS)



PLAN VIEW

SHEET 2 OF 3

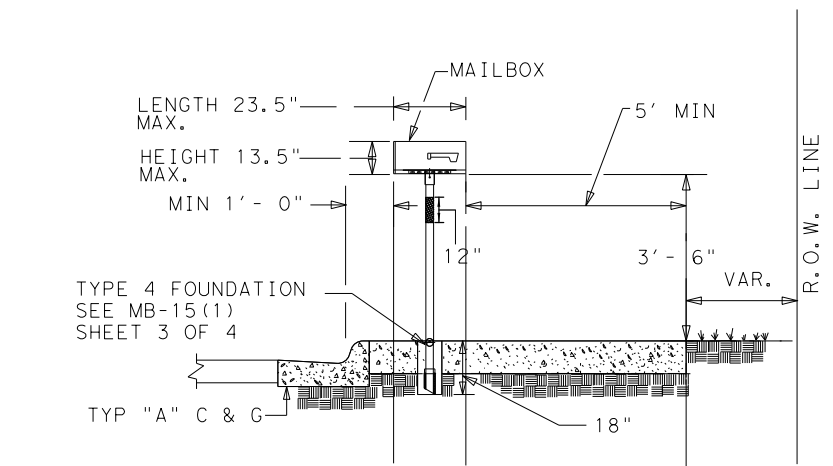


SINGLE MAILBOX PLACEMENT BEHIND CURBS WITH OR WITHOUT SIDEWALKS
MB-14(2A)

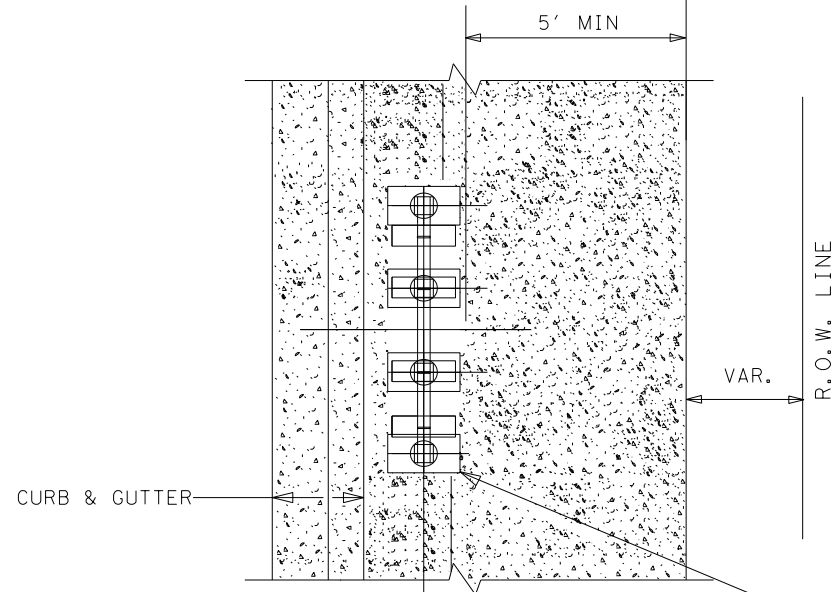
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© TxDOT MAY 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0887	01	039, ETC.	VARIOUS
	DIST	COUNTY	SHEET NO.	
	ODA	ECTOR, ETC.	191	

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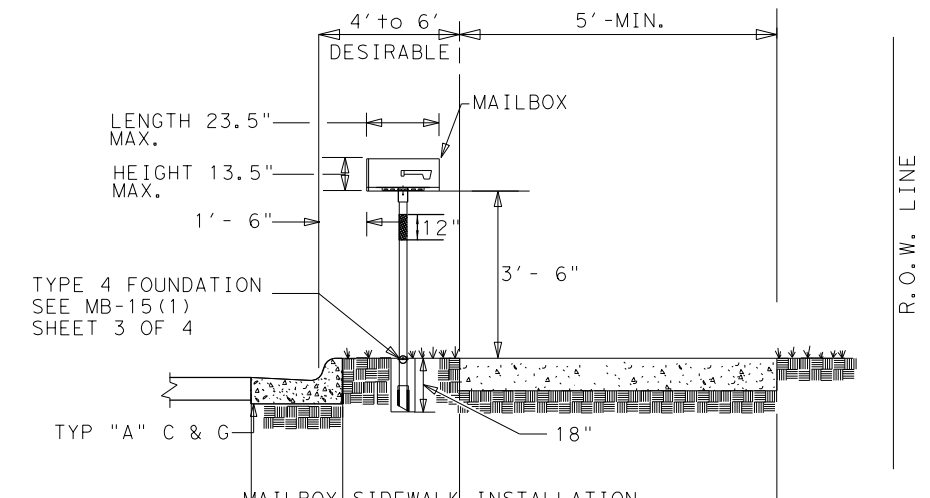
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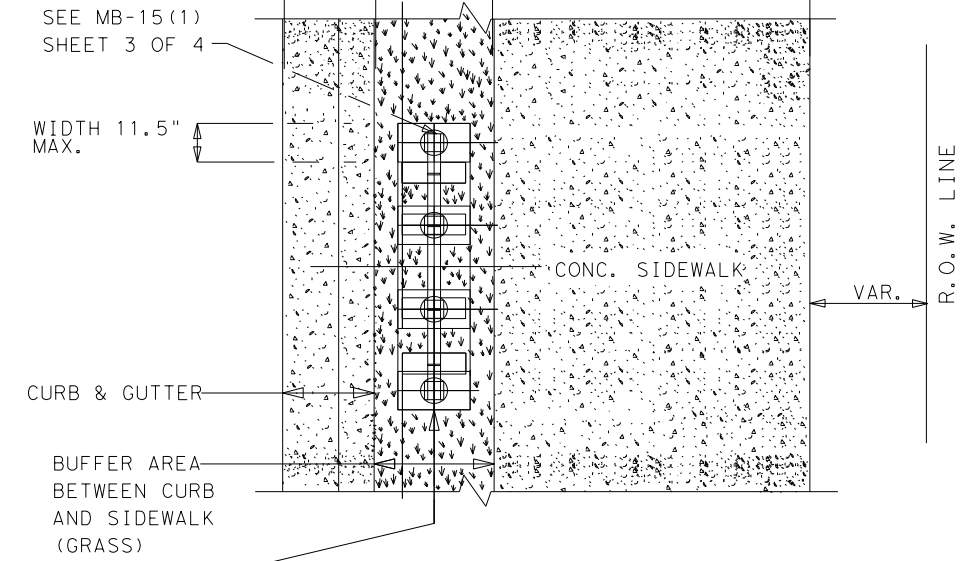
MAILBOX SIDEWALK INSTALLATION RELATIVE TO ANY OTHER OBSTRUCTION SUCH AS A SIGN (MINIMUM BORDER DISTANCE)



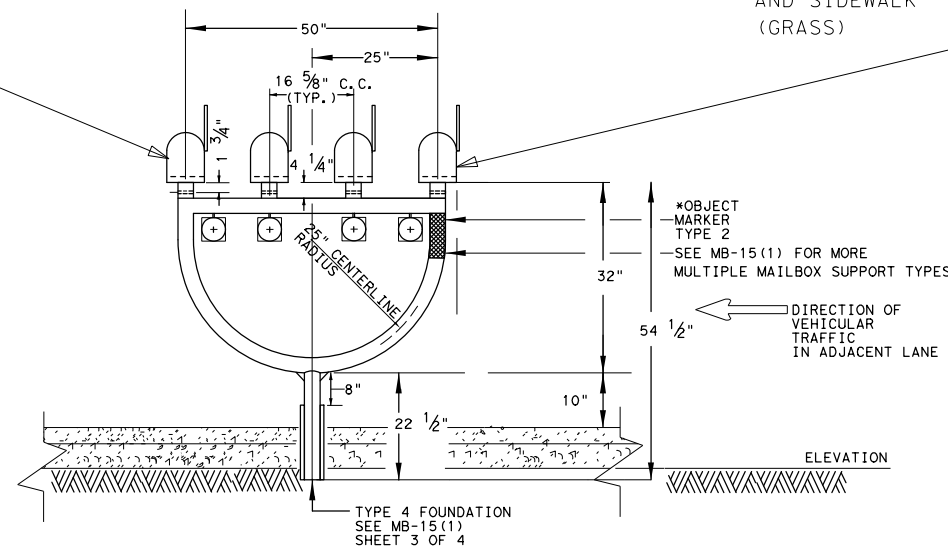
PLAN VIEW



MAILBOX SIDEWALK INSTALLATION (DESIRABLE BORDER DISTANCE)



PLAN VIEW



TYPE 4 FOUNDATION SEE MB-15(1) SHEET 3 OF 4

*OBJECT MARKER TYPE 2
 SEE MB-15(1) FOR MORE MULTIPLE MAILBOX SUPPORT TYPES
 DIRECTION OF VEHICULAR TRAFFIC IN ADJACENT LANE

SHEET 3 OF 3

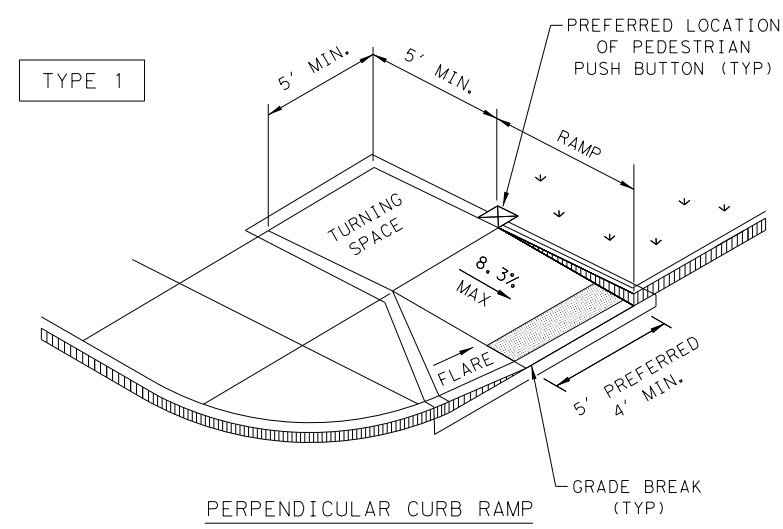


MULTIPLE MAILBOX PLACEMENT BEHIND CURBS WITH OR WITHOUT SIDEWALKS

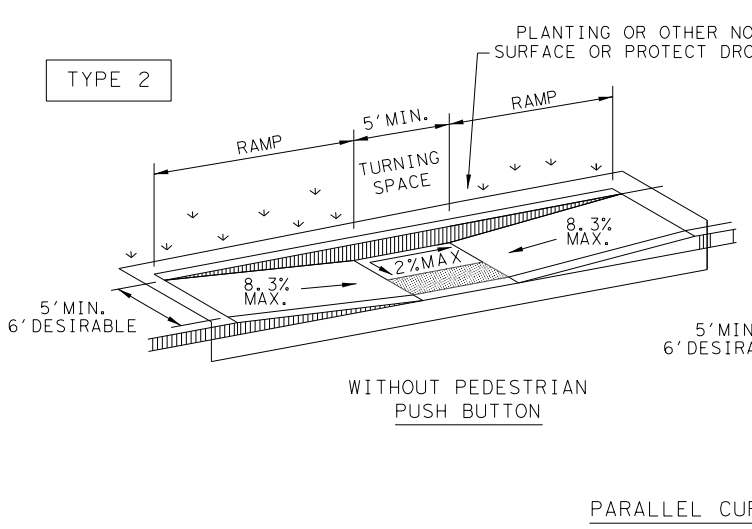
MB-14(2B)

FILE: MB-14(2A)	DN:	CK:	DW:	CK:
© TxDOT MAY 2014	CONT	SECT	JOB	HIGHWAY
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	ODA	ECTOR, ETC.	192	

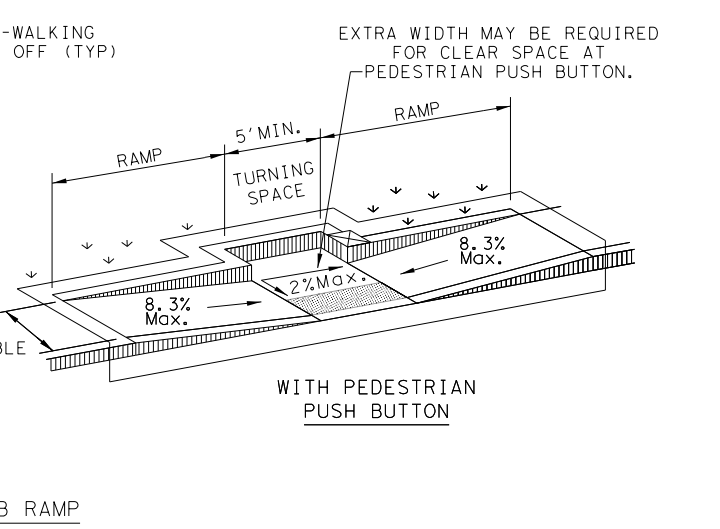
DATE: 8/20/2020
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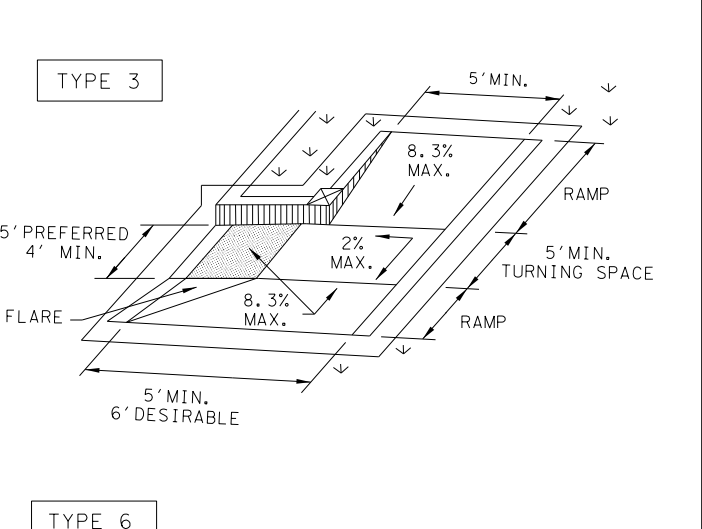
PERPENDICULAR CURB RAMP



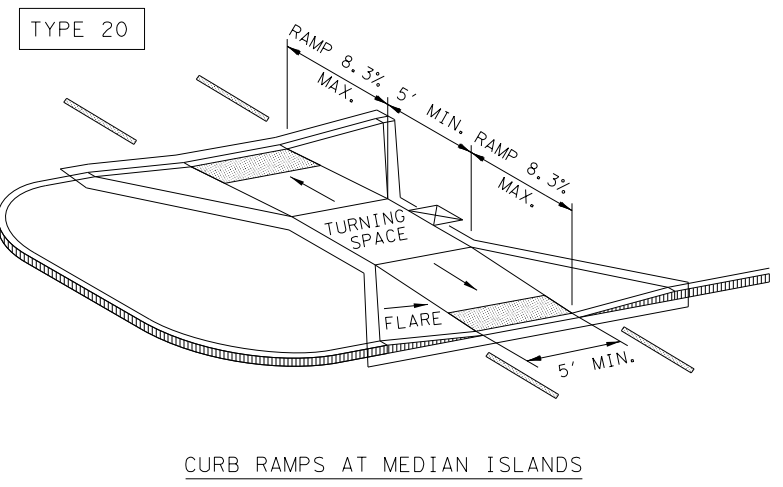
WITHOUT PEDESTRIAN PUSH BUTTON



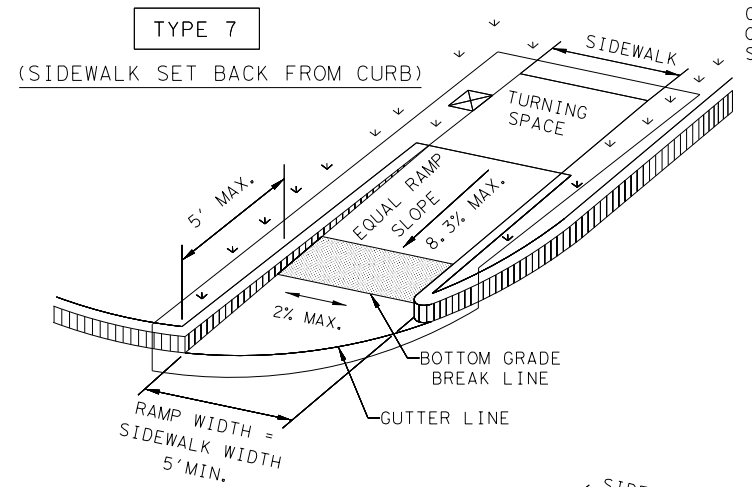
WITH PEDESTRIAN PUSH BUTTON



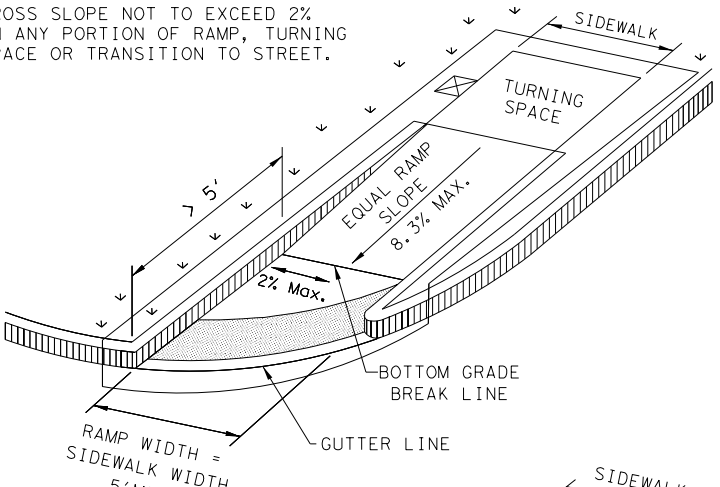
COMBINATION CURB RAMPS



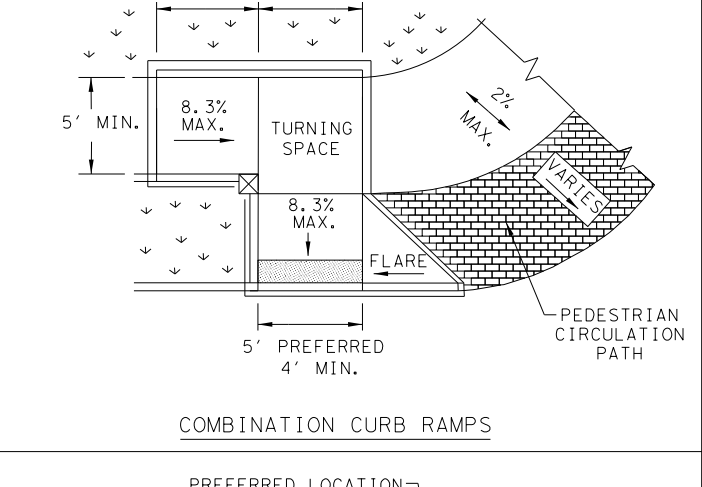
CURB RAMPS AT MEDIAN ISLANDS



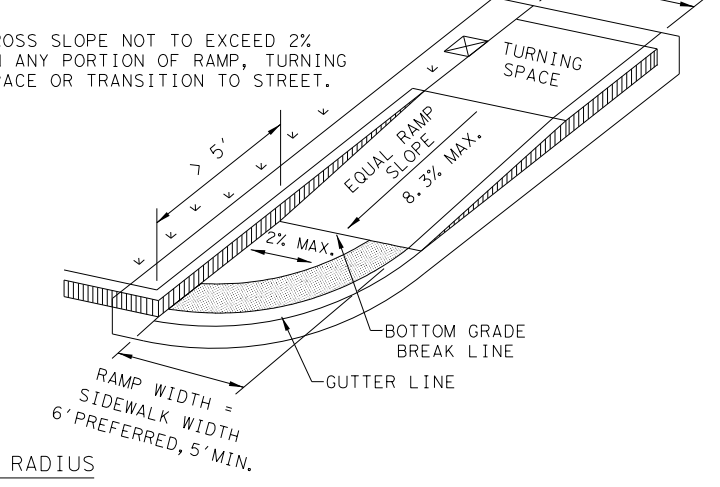
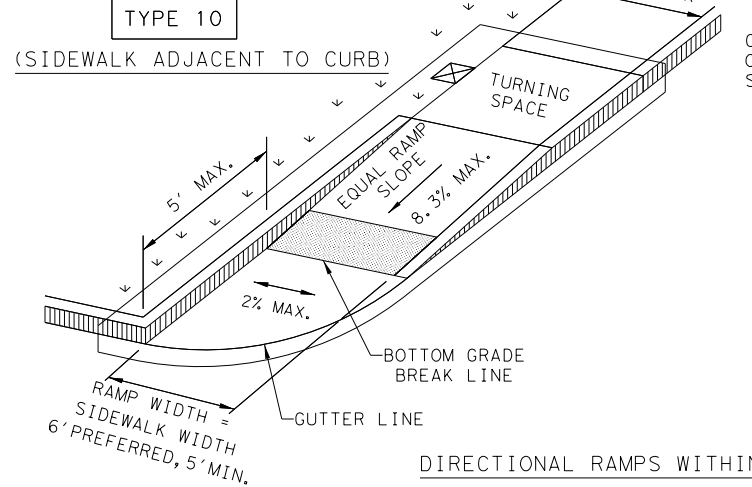
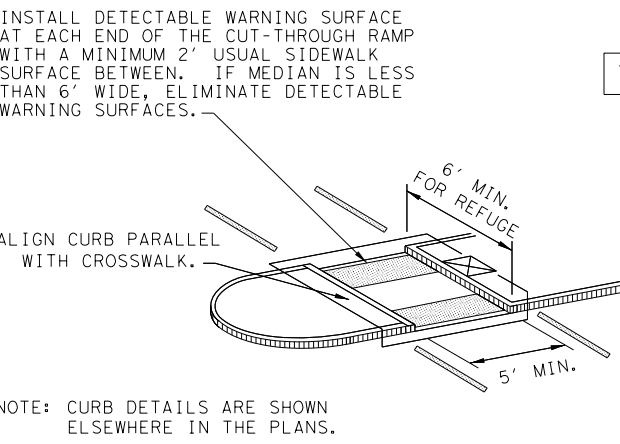
DIRECTIONAL RAMPS WITHIN RADIUS



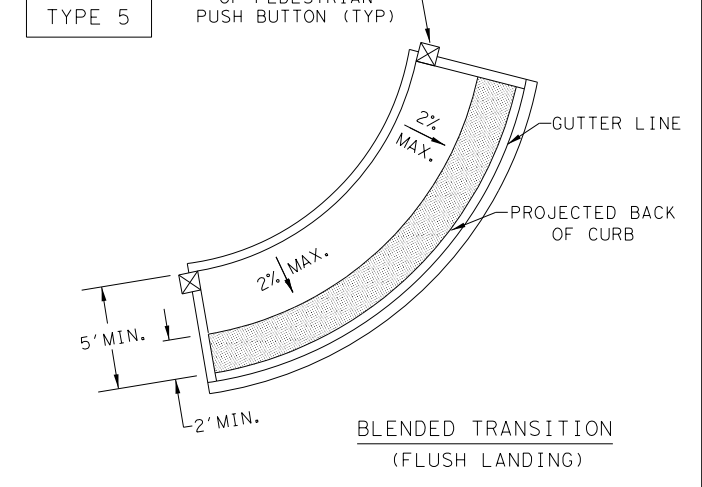
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



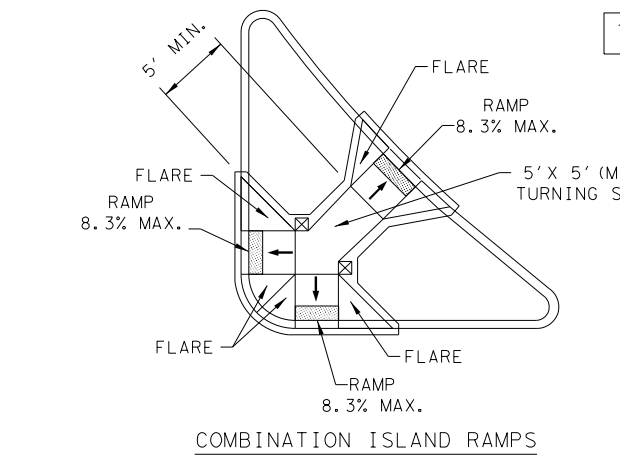
BLENDED TRANSITION (FLUSH LANDING)



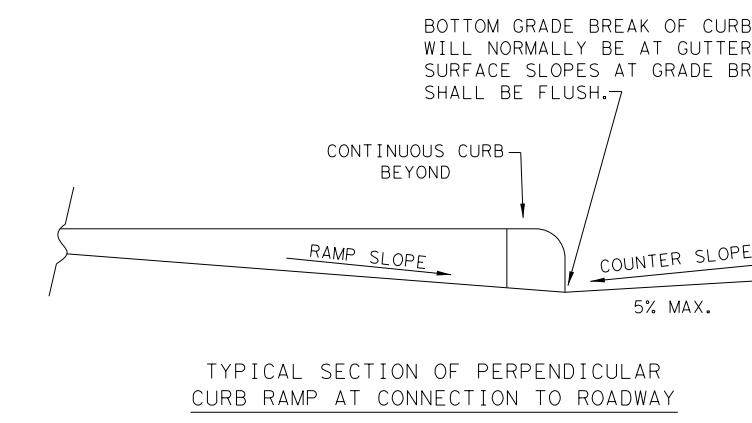
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



COMBINATION CURB RAMPS



COMBINATION ISLAND RAMPS



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:
 SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.
 DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH. (Symbol: three downward arrows)
 DETECTABLE WARNING SURFACE (Symbol: square with diagonal lines)
 DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE. (Symbol: square with 'X')
 GUTTER LINE (Symbol: dashed line)
 GRADE BREAK (Symbol: solid line)
 RAMP LIMITS OF PAYMENT (Symbol: solid line)

SHEET 1 OF 4

Texas Department of Transportation
Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0887	01	039, ETC.	VARIOUS
REVISED 08, 2005	DIST	COUNTY		SHEET NO.
REVISED 06, 2012	ODA	ECTOR, ETC.		193
REVISED 01, 2018				

DATE: 8/20/2020
 FILE: pw:\jmt-pw_bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP_338, FM_307, FM_1787 (CSJ_0906-00-226)\4 - Design\Plan Set\3. Roadway\TXDOT_Standard
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GENERAL NOTES

CURB RAMPS

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

DETECTABLE WARNING MATERIAL

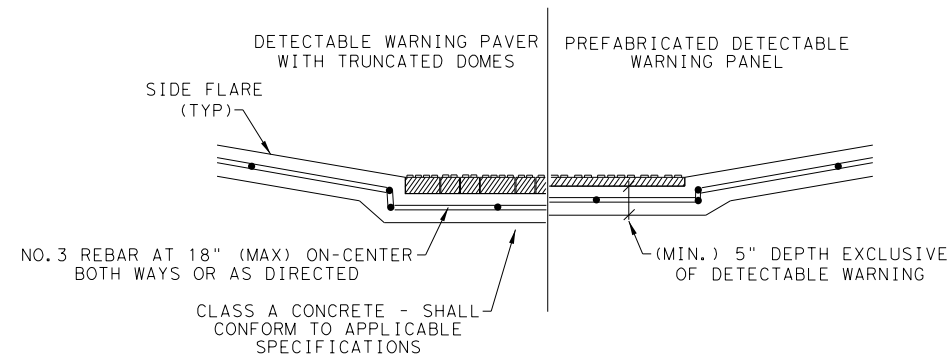
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material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

DETECTABLE WARNING PAVERS (IF USED)

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

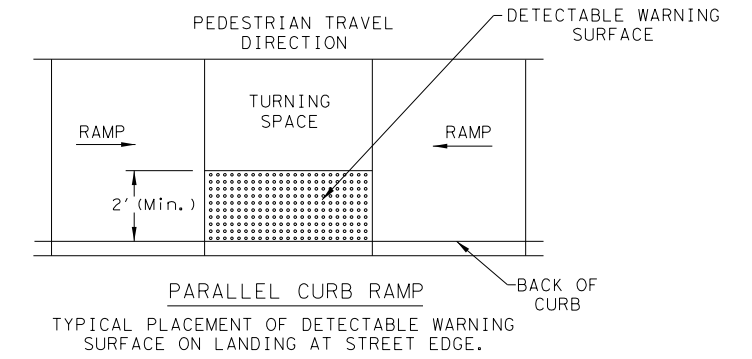
SIDEWALKS

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

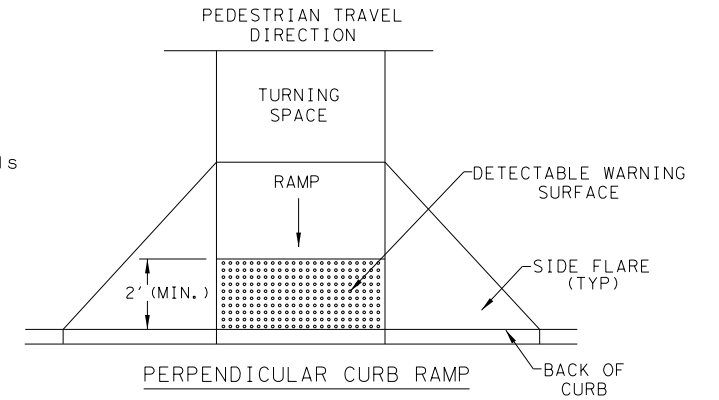


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

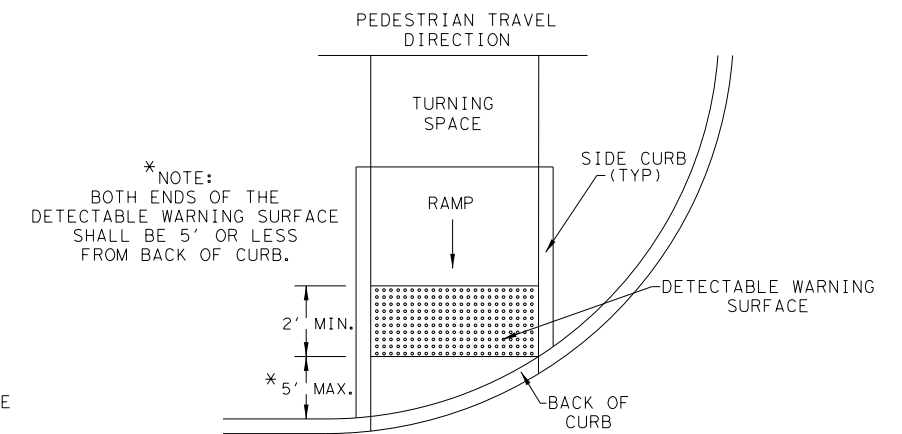
DETECTABLE WARNING SURFACE DETAILS



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



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



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

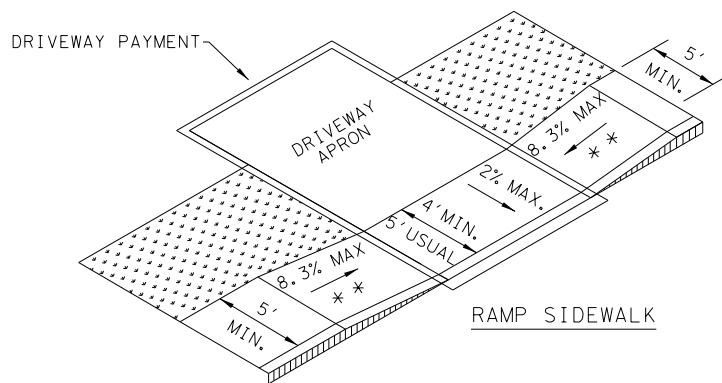
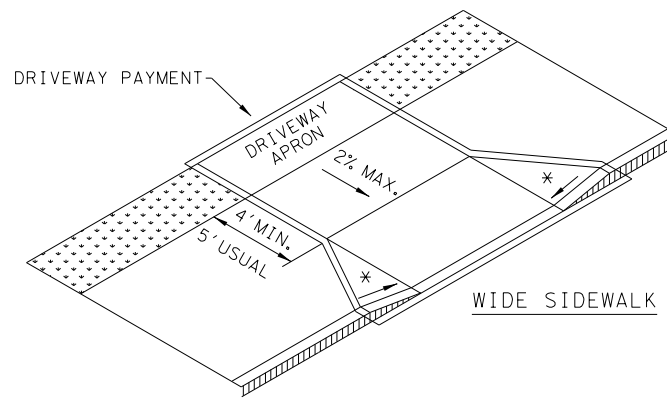
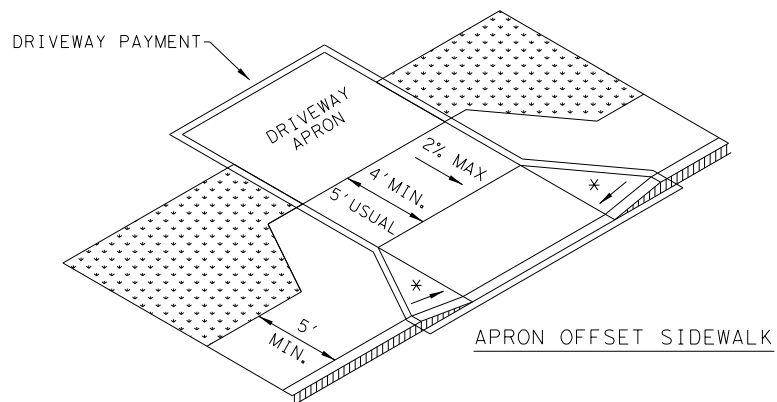
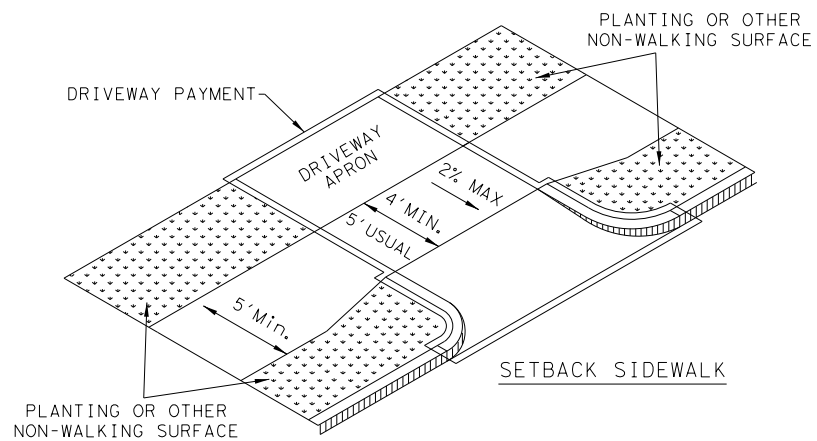
* NOTE:
BOTH ENDS OF THE
DETECTABLE WARNING SURFACE
SHALL BE 5' OR LESS
FROM BACK OF CURB.

SHEET 2 OF 4

		Design Division Standard	
<h1>PEDESTRIAN FACILITIES</h1> <h2>CURB RAMPS</h2> <h3>PED-18</h3>			
FILE: ped18	DN: TxDOT	DW: VP	CK: KM
© TxDOT: MARCH, 2002	CONT	SECT	JOB
REVISIONS	0887	01	039, ETC.
REVISOR	DIST	COUNTY	SHEET NO.
REVISOR	ODA	ECTOR, ETC.	194

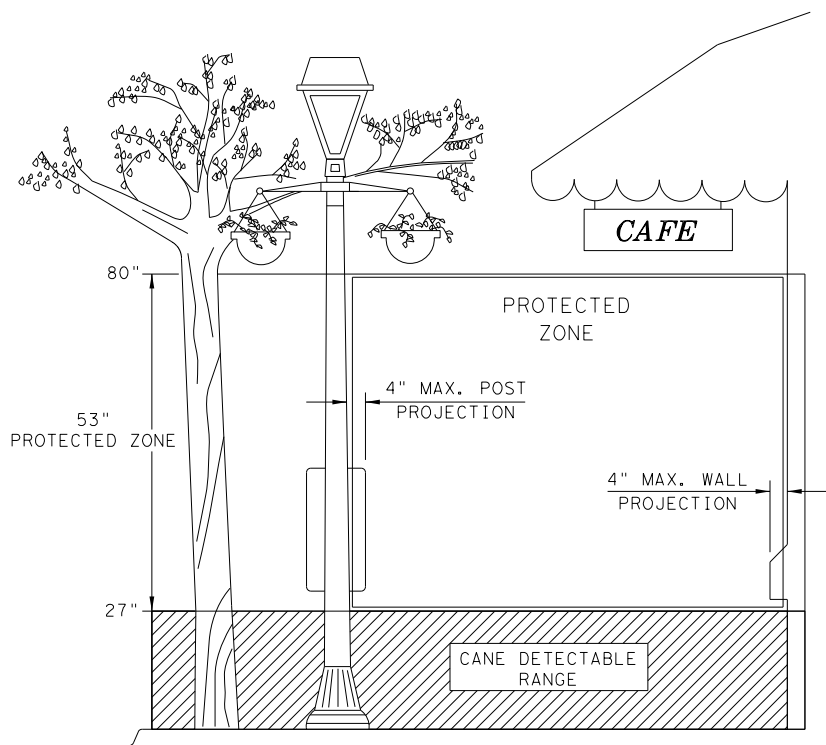
DATE: 8/20/2020
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SIDEWALK TREATMENT AT DRIVEWAYS



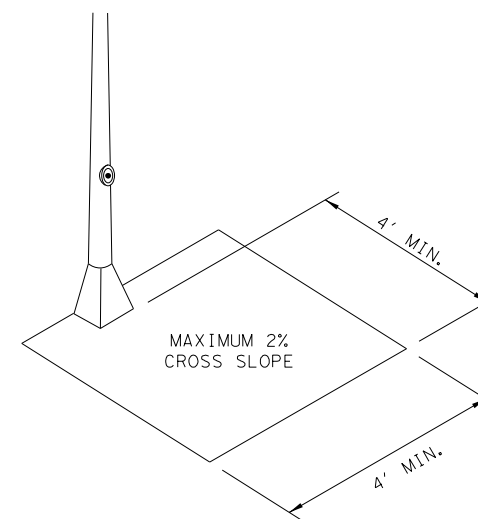
NOTES:

- * WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.
- * * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

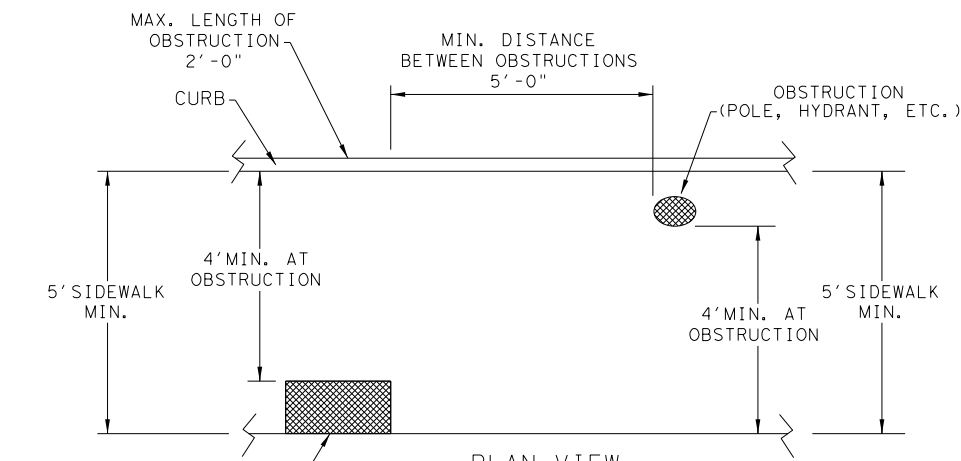


PROTECTED ZONE

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

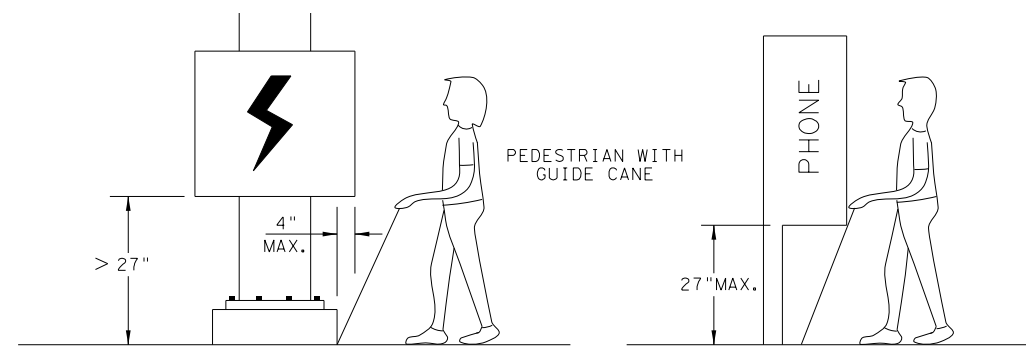


CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



PLAN VIEW
PLACEMENT OF STREET FIXTURES

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



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

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

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

SHEET 3 OF 4



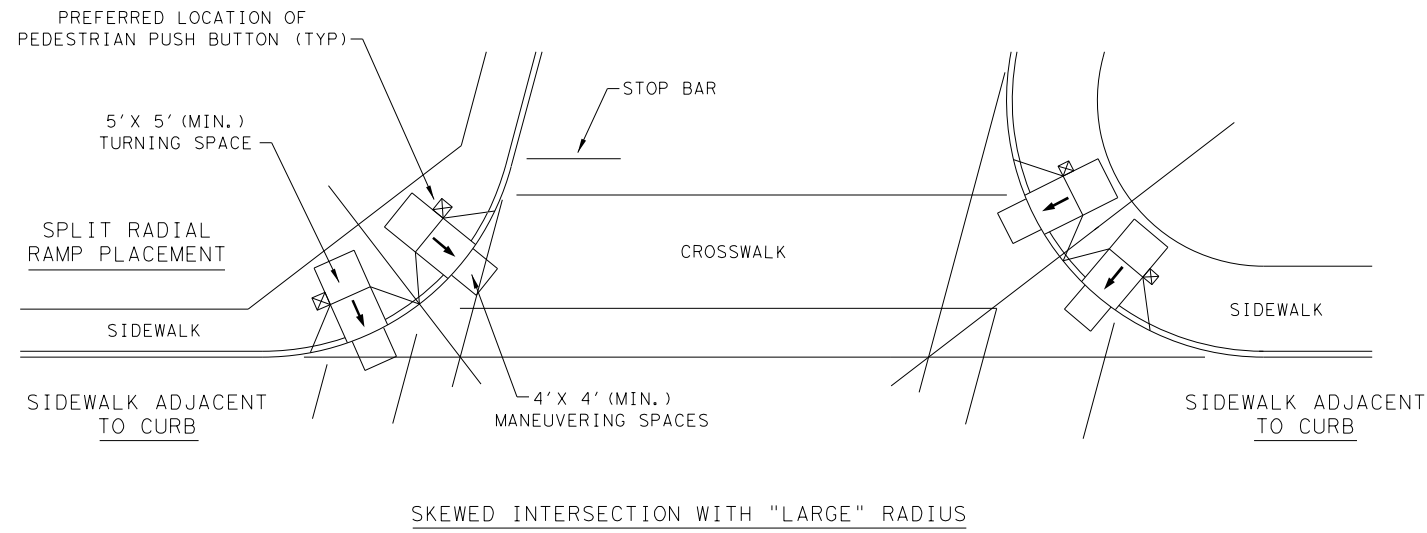
PEDESTRIAN FACILITIES
CURB RAMPS

PED-18

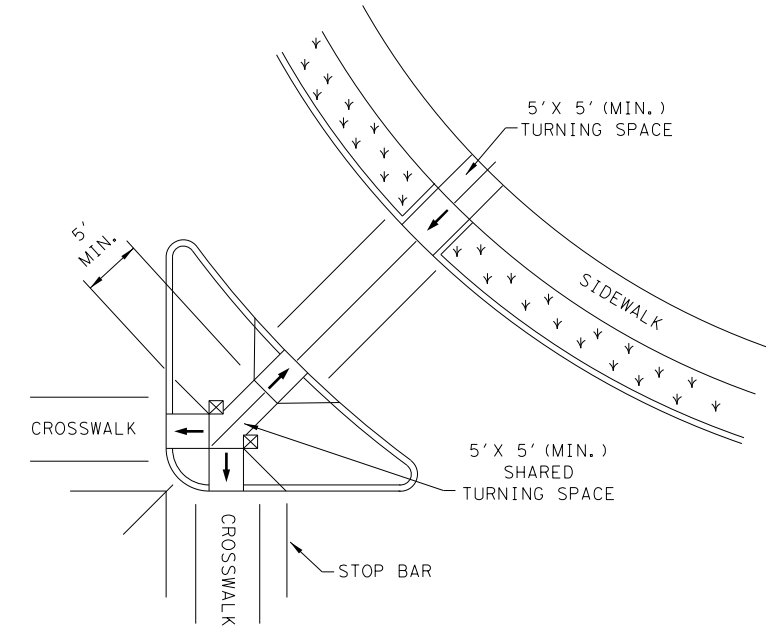
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© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0887	01	039, ETC.	VARIOUS
REVISED 08, 2005	DIST	COUNTY	SHEET NO.	
REVISED 06, 2012	ODA	ECTOR, ETC.	195	
REVISED 01, 2018				

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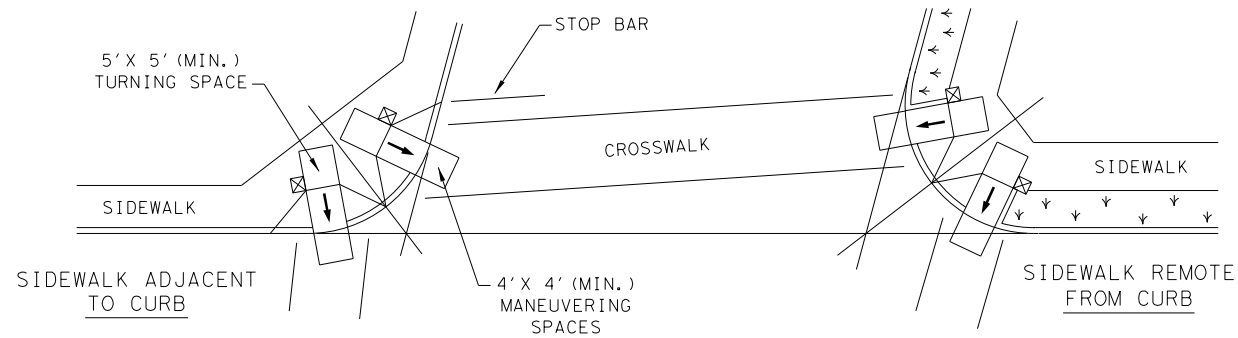
TYPICAL CROSSING LAYOUTS
 SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



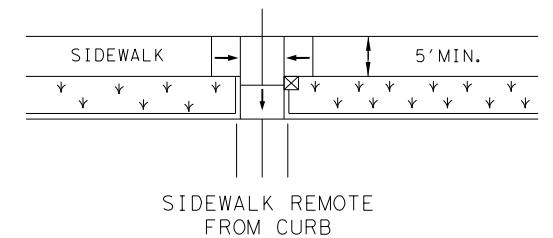
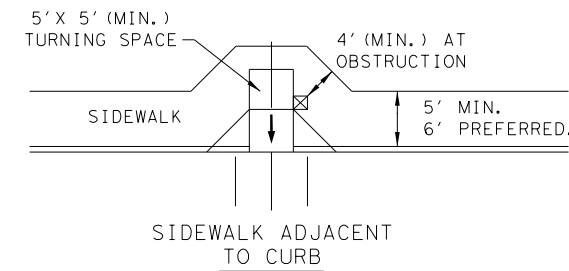
SKewed INTERSECTION WITH "LARGE" RADIUS



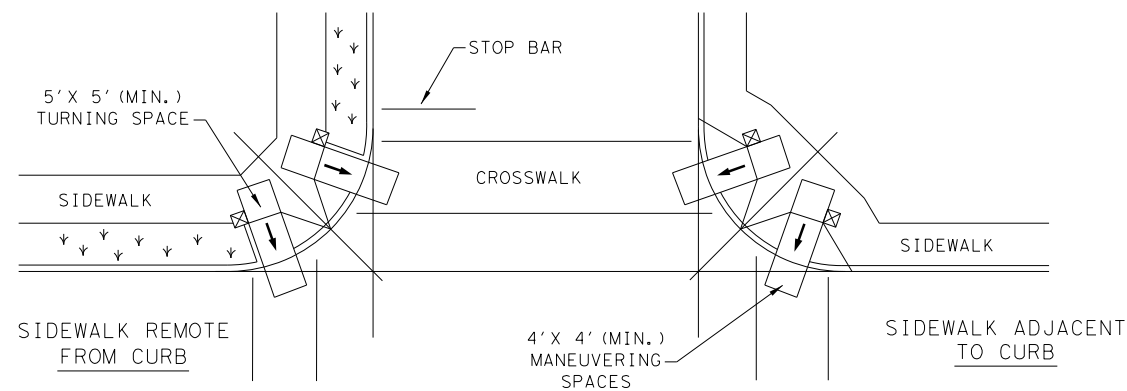
AT INTERSECTION
 W/FREE RIGHT TURN & ISLAND



SKewed INTERSECTION WITH "SMALL" RADIUS



MID-BLOCK PLACEMENT
 PERPENDICULAR RAMPS



NORMAL INTERSECTION WITH "SMALL" RADIUS

LEGEND:

SHOWS DOWNWARD SLOPE. →

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

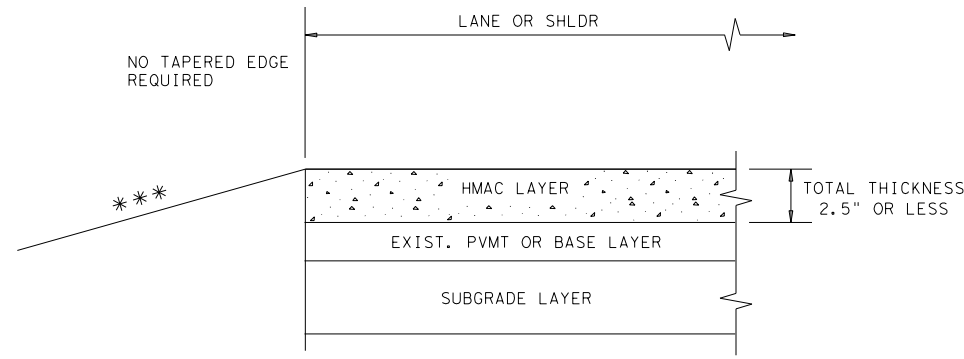
DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH. ↙ ↘ ↙ ↘ ↙ ↘

SHEET 4 OF 4

		Design Division Standard	
<h2>PEDESTRIAN FACILITIES</h2> <h3>CURB RAMPS</h3> <h1>PED-18</h1>			
FILE: ped18	DN: TxDOT	DW: VP	CK: KM
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REVISIONS	0887	01	039, ETC.
REVISOR	DIST	COUNTY	SHEET NO.
REVISOR	ODA	ECTOR, ETC.	196

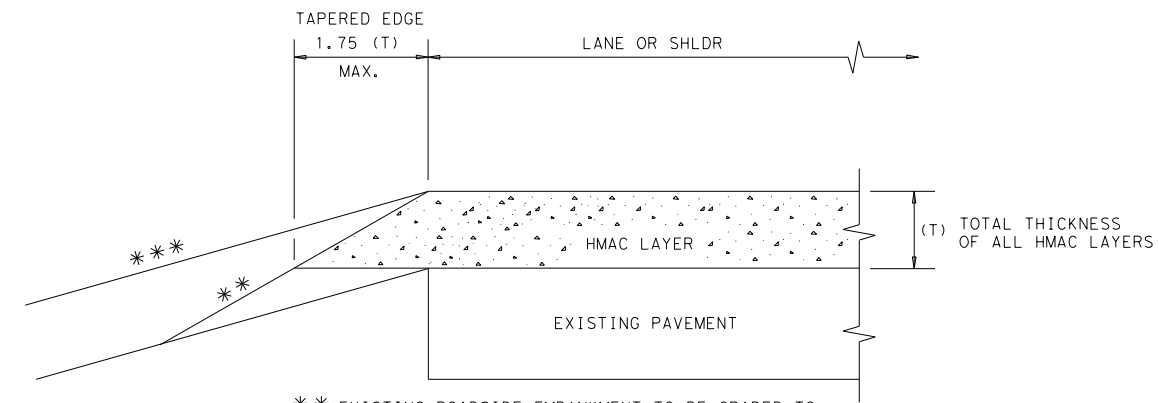
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*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

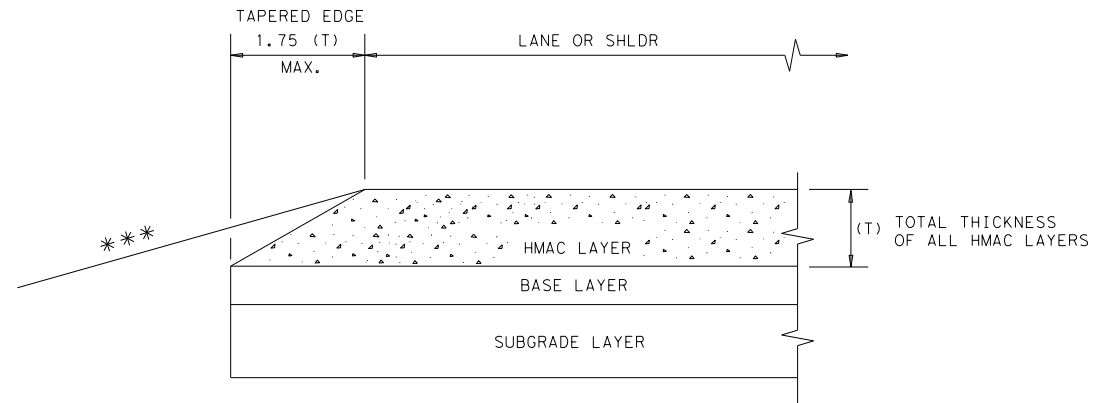
CONDITION - 1
 THIN HMAC SURFACES OR HMAC OVERLAY
 WITH THICKNESS OF 2.5" OR LESS



** EXISTING ROADSIDE EMBANKMENT TO BE GRADED TO PRODUCE A SMOOTH LEVEL SURFACE FOR PLACEMENT OF TAPERED EDGE. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS.

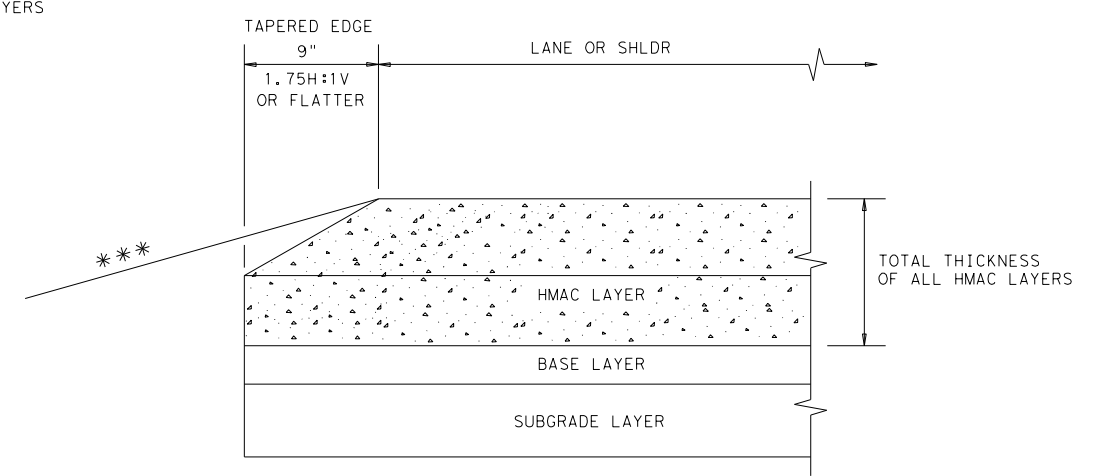
*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 2
 OVERLAY OF EXISTING PAVEMENT
 HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 3
 NEW OR RECONSTRUCTED PAVEMENT
 HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 4
 NEW OR RECONSTRUCTED PAVEMENT
 HMAC THICKNESS 5" OR GREATER

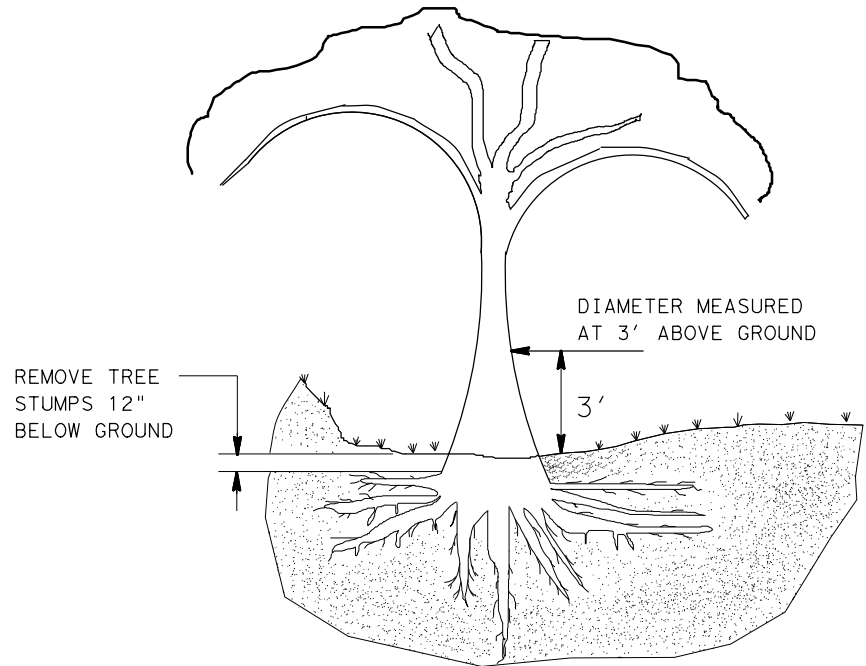
GENERAL NOTES

1. UNLESS OTHERWISE SHOWN IN THE PLANS, A VERTICAL EDGE IS PERMISSIBLE FOR HMAC PLACED GREATER THAN 5" BELOW THE EDGE OF PAVEMENT AND FOR THICKNESS OF HMAC LESS THAN 2.5".
2. FOR FURTHER INFORMATION REGARDING THE ROADSIDE AND PAVEMENT DETAILS, SEE TYPICAL SECTIONS.
3. PAYMENT FOR TAPERED EDGE WILL BE IN ACCORDANCE WITH APPLICABLE ITEMS IN THE CONTRACT.
4. THE SLOPE OF THE TAPERED EDGE SHALL BE 1.75H:1V OR FLATTER.
5. THE TAPERED EDGE SHALL BE PRODUCED BY USE OF A SCREED ATTACHMENT CAPABLE OF PRODUCING A SMOOTH COMPACTED SURFACE. ADDITIONAL COMPACTING EFFORT BEHIND THE SCREED IS NOT REQUIRED.

(NOT TO SCALE)

					Design Division Standard	
<p>TAPERED EDGE DETAILS HMAC PAVEMENT TE (HMAC) - 11</p>						
FILE: tehmac11.dgn	DN: TxDOT	CK: RL	DW: KB	CK:		
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	DIST	COUNTY		SHEET NO.		
	ODA	ECTOR, ETC.		197		

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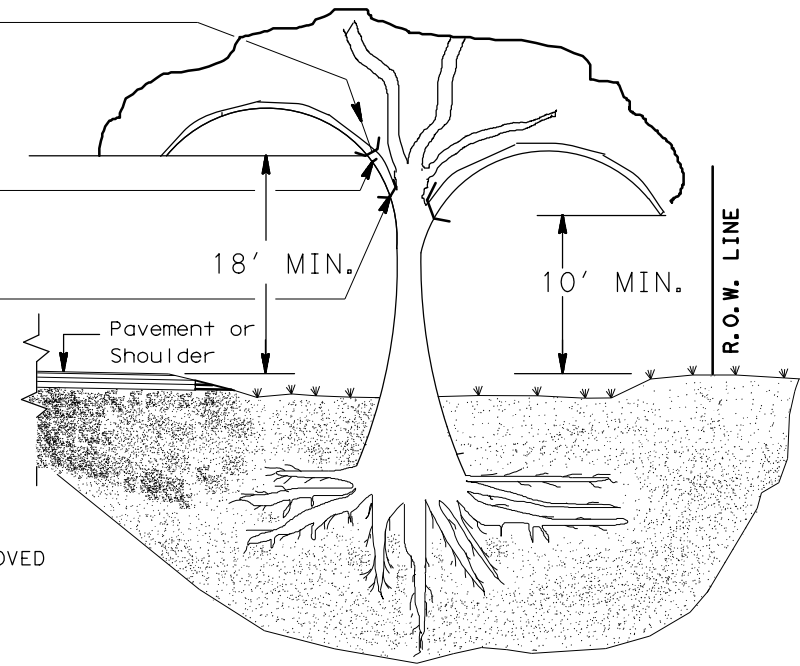
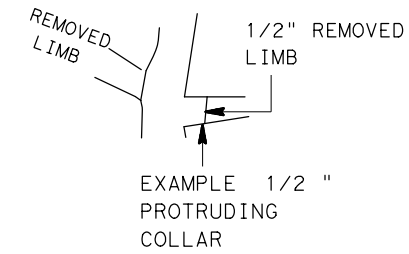


TREE REMOVAL

STEP 1:
 CUT 1/3 WAY THROUGH BOTTOM OF LIMB 8" TO 12" ABOVE MAIN STEM (OR TRUNK).

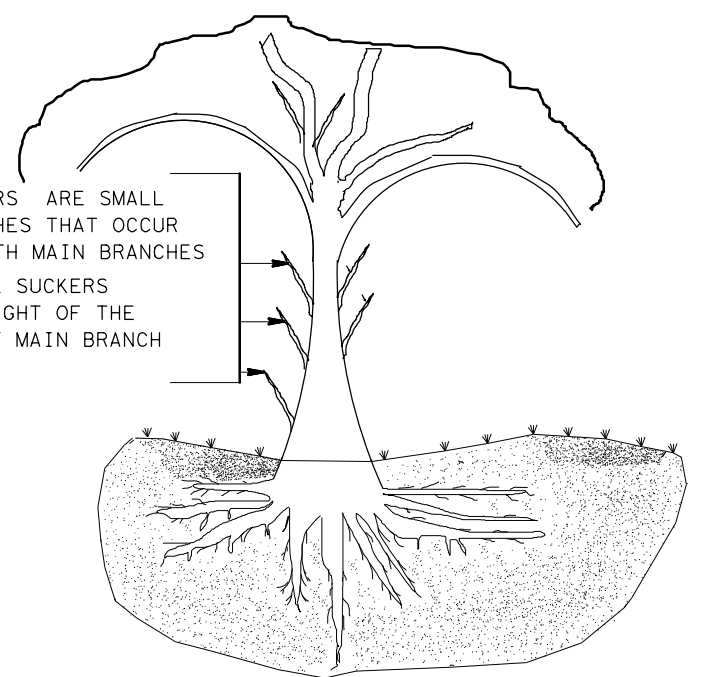
STEP 2:
 REMOVE LIMB 4" TO 6" BEYOND THE FIRST CUT

STEP 3:
 REMOVE STUB WITH A SMOOTH CUT SO THAT TRACE COLLAR OF THE REMOVED LIMB PROTRUDES APPROXIMATELY 1/2" FROM THE MAIN STEM

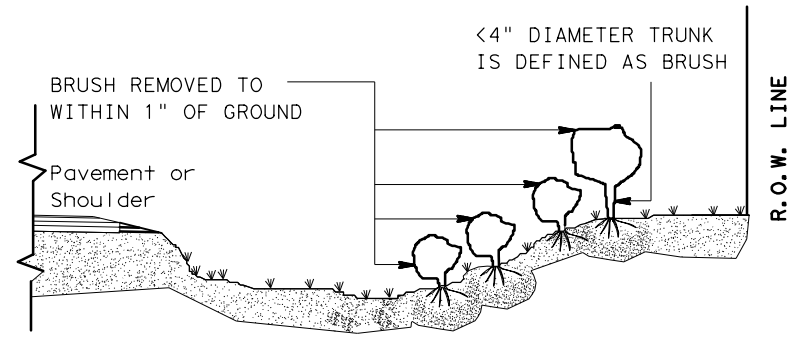


TREE TRIMMING

SUCKERS ARE SMALL BRANCHES THAT OCCUR BENEATH MAIN BRANCHES. REMOVE SUCKERS TO HEIGHT OF THE LOWEST MAIN BRANCH



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



BRUSH REMOVAL

GENERAL NOTES:

TREE TRIMMING

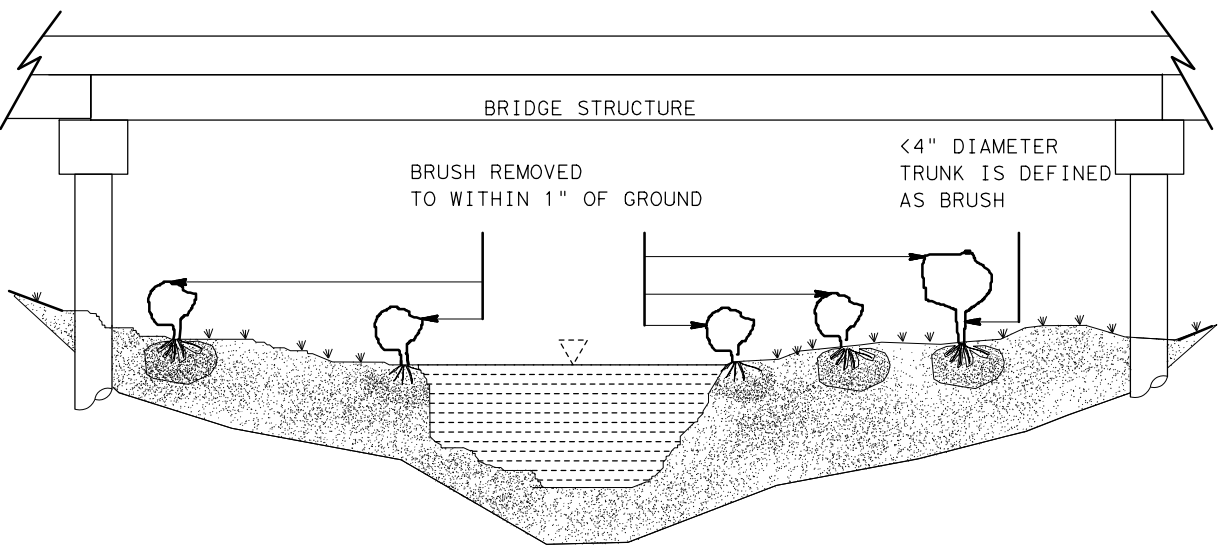
1. TRIM AND REMOVE ALL TREE LIMBS ON THE PAVEMENT SIDE OF THE TRUNK 18' ABOVE THE PAVEMENT OR BRIDGE DECK ELEVATION, UNLESS OTHERWISE SHOWN ON THE PLANS.
2. TRIM AND REMOVE ALL TREE LIMBS BETWEEN THE TRUNK AND R.O.W. LINE 10' ABOVE NATURAL GROUND, TERRAIN OR OTHER STRUCTURE ELEVATION, UNLESS OTHERWISE SHOWN ON THE PLANS.

TREE REMOVAL

3. FOR TREES MARKED FOR REMOVAL, THE DIAMETER OF TREES ARE DETERMINED BY MEASUREMENT OF THE TRUNK CIRCUMFERENCE 3' ABOVE THE GROUND. TREES WITH TRUNKS OF LESS THAN 4" DIAMETER ARE CONSIDERED TO BE BRUSH. TREES WITH MULTIPLE TRUNKS AT THE POINT OF MEASUREMENT ARE MEASURED AND PAID FOR SEPARATELY.
4. MEASUREMENTS FOR PAYMENT OF TREE DIAMETERS ARE DIVIDED INTO THE RANGES SHOWN IN TABLE 1.

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

*SEE GENERAL NOTE #3.



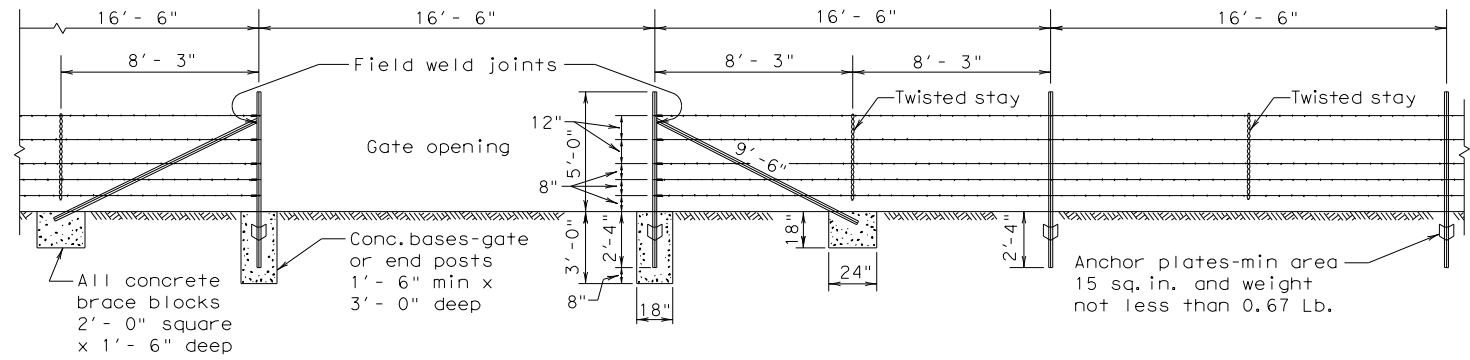
BRUSH REMOVAL UNDER BRIDGE AND IN CHANNEL



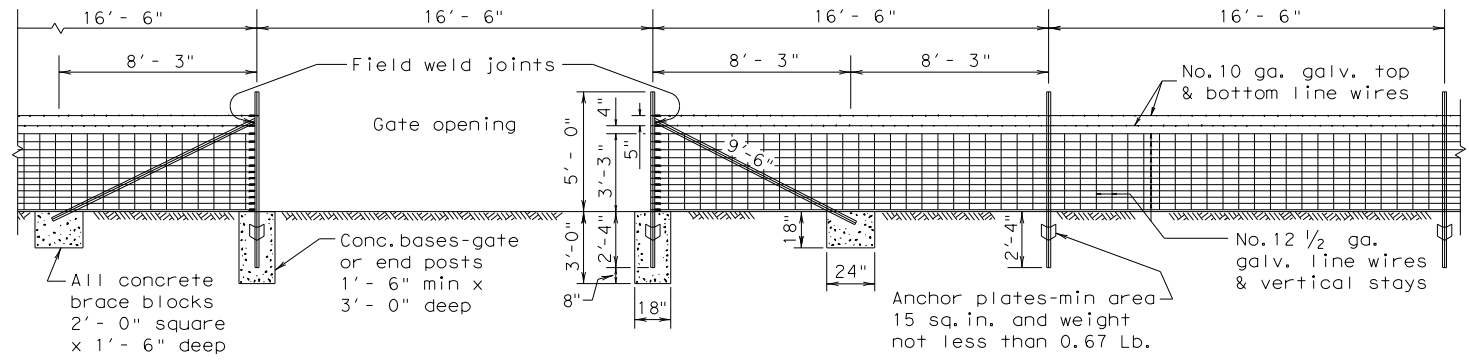
TREE AND BRUSH REMOVAL
 TRB-15(1)

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REVISIONS	0887	01	039, ETC.	VARIOUS
Revised table 1 to 2014 Specification	DIST	COUNTY	SHEET NO.	
	ODA	ECTOR, ETC.	198	

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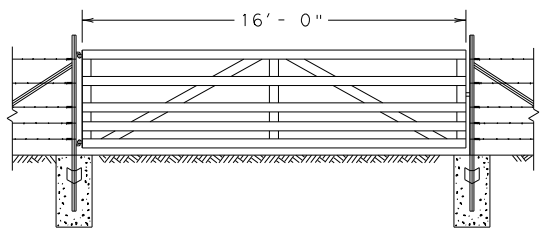
SECTION GALVANIZED BARBED WIRE FENCE WITH METAL POSTS
 BRACING DETAIL USED AT ENDS AND GATES
 TYPE "C" FENCE
 (See General Note 8)



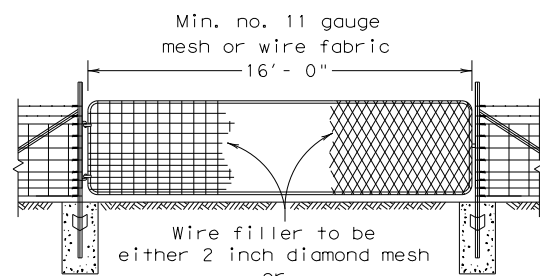
SECTION GALVANIZED WOVEN WIRE FENCE WITH METAL POSTS
 BRACING DETAIL USED AT ENDS AND GATES
 TYPE "D" FENCE
 (See General Note 8)

Note:
 For Steel pipe and
 T-Post requirements.
 (See General Notes 6 & 7)

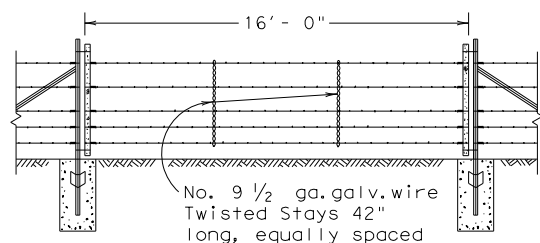
Metal gate shall consist of 5 panels
 not less than 4'-4" high and shall
 be aluminum or galvanized metal and of
 good quality. Gate and hardware shall
 meet the approval of the engineer.



DETAIL TYPE 1 GATE



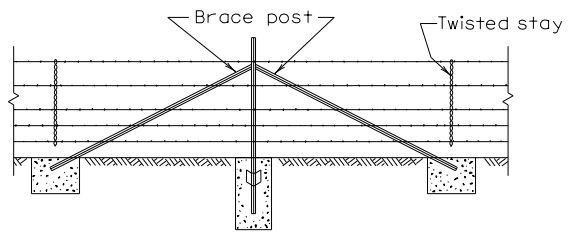
DETAIL TYPE 2 GATE



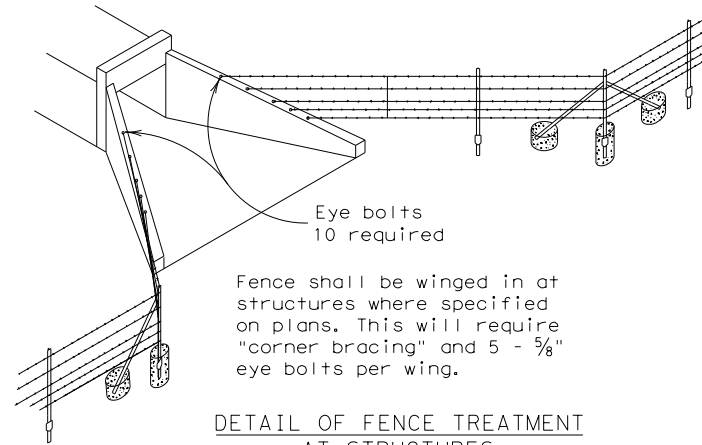
DETAIL TYPE 3 GATE

GENERAL NOTES

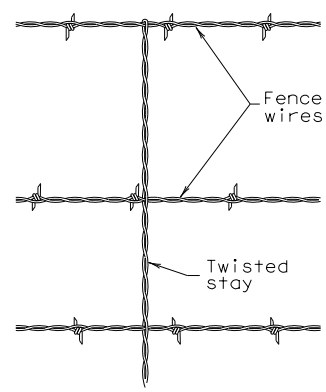
- Any high point which interferes with the placing of wire mesh shall be excavated to provide a 2 inch clearance.
 - Latches for Type 1 and Type 2 gates shall be good commercial quality and design latch of the spring, fork or chain type. All latches shall be suitable to the gate and shall be approved by the Engineer.
 - Hinges for Type 2 gates shall be a commercial design approved by the Engineer suitable for post and gate.
 - Concrete shall be of the design and consistency approved by the Engineer and shall contain not less than 4 sacks of cement per cubic yard. Concrete footings are to be crowned at the top to shed water.
 - Steel anchor plates shall be of a design and thickness sufficient to prevent turning of the post in firm soil.
 - Steel pipe end posts, corner and pull posts shall be a minimum of 2" Std. pipe (2.375" O.D., 0.154" wall thickness) with a 1/4" Std. pipe brace (1.660" O.D., 0.140" wall thickness), with a 2"x2"x1/4" angle, or other as approved by the Engineer. Fasteners for securing barbed wire or woven wire fence to metal posts shall be a minimum of 11 gauge galvanized steel wire. Tubular posts shall be fitted with water malleable iron caps.
 - If Steel pipe is used for posts and braces, use standard pipe in accordance with ASTM A 53, Class B or A 501. For T-Posts use steel that meets ASTM A 702. Metal line posts shall be not less than 6'-6" in length and shall weigh not less than (1.33 lbs./lin.ft.). These items shall be in accordance with Item 552, "Wire Fence."
 - Barbed Wire shall be in accordance with ASTM A 121, Class 1 Design designation 12-2-4-1 4R or 12-2-5-1 4R, or as approved by the Engineer.
- Woven Wire Fence (Type D) shall be in accordance with ASTM A 116, Class 1 No. 12-1/2 Grade 60 (See Table 1 ASTM A 116) to the height and design shown on the plans, or as approved by the Engineer.
- The location of gates and corner posts will be as indicated elsewhere in these plans.



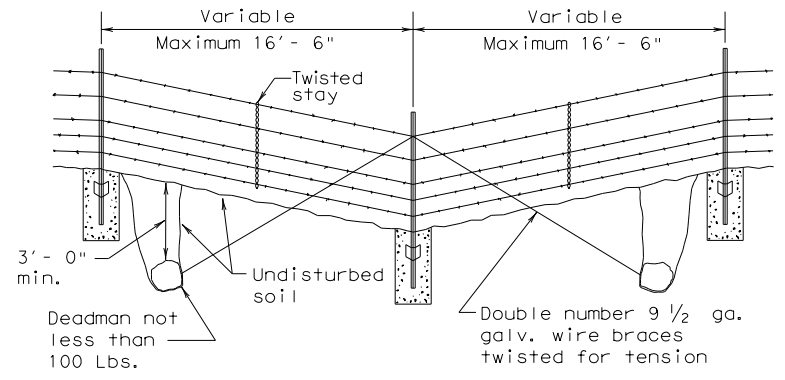
CORNER OR PULL POST ASSEMBLY



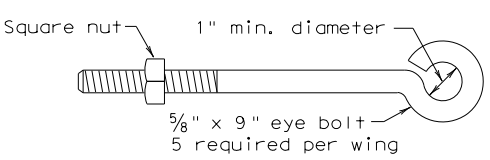
DETAIL OF FENCE TREATMENT AT STRUCTURES



DETAIL OF STAY (Barbed Wire Fence)



DETAIL OF FENCE SAG






DETAIL OF EYE BOLT

				Design Division Standard	
BARBED WIRE AND WOVEN WIRE FENCE (STEEL POSTS) WF (2) - 10					
FILE:	wf210.dgn	DN:	TxDOT	CK:	AM
		DW:	VP	CK:	
© TxDOT 1996	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0887	01	039, ETC.	VARIOUS	
	DIST	COUNTY	SHEET NO.		
	ODA	ECTOR, ETC.	200		

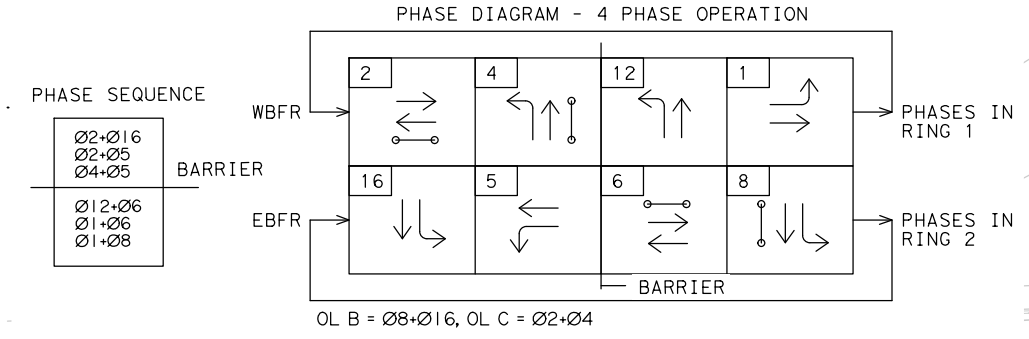
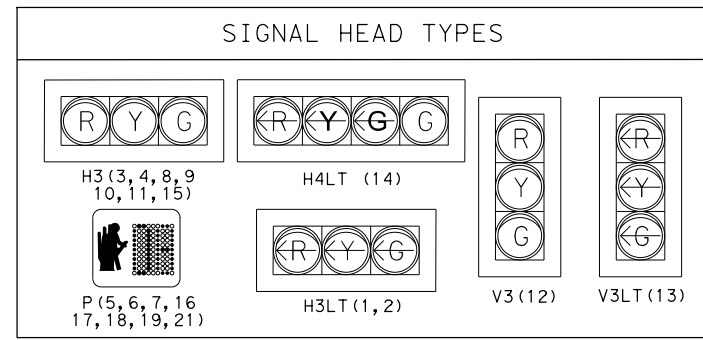
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NOTES:

1. TRAFFIC SIGNALS SHALL BE DESIGNED ACCORDING TO CURRENT TXDOT STATEWIDE STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR SHALL ENSURE CONTINUOUS COMMUNICATION OF PERMANENT TRAFFIC SIGNALS USING EXISTING WIRELESS RADIO TO THE APPLICABLE TXDOT/CITY TRAFFIC MANAGEMENT CENTER.
3. CONTRACTOR SHALL CALL TEXAS 811 21 BUSINESS DAYS BEFORE CONSTRUCTION WORK TO LOCATE UNDERGROUND UTILITY LINES. THE CONTRACTOR SHALL COORDINATE UP FRONT WITH ELECTRIC SERVICE PROVIDER FOR POWER SOURCE LOCATION BEFORE STARTING ANY PROJECT WORK. THE CONTRACTOR WILL MAKE ALL ARRANGEMENTS FOR ELECTRICAL SERVICE. NOTIFY THE ELECTRICAL PROVIDER, IN WRITING, ONCE PROJECT NTP IS RECEIVED OF THE NEED FOR ELECTRICAL SERVICE. DESIGNATED UTILITY COMPANY WILL INSTALL THE METER IN THE SERVICE PEDESTAL CABINET. CONTRACTOR TO OBTAIN ALL METERING EQUIPMENT REQUIREMENTS FROM UTILITY COMPANY PRIOR TO STARTING ELECTRIC SERVICE WORK.
4. ALL HEIGHTS AND LOCATIONS OF SIGNAL RELATED ITEMS ARE DIAGRAMMATIC ONLY AND MAY BE ADJUSTED IN THE FIELD TO ACCOMMODATE ACTUAL FIELD CONDITIONS AND TO AVOID UTILITY CONFLICTS AS DIRECTED BY THE TXDOT'S DESIGNATED ENGINEER. CONTRACTOR TO VERIFY SIGNAL POLE LOCATIONS WITH THE DESIGNATED TXDOT ENGINEER BEFORE DRILLING FOR SIGNAL FOUNDATIONS.
5. SALVAGE THE EXISTING TRAFFIC SIGNALS AS SHOWN IN THE PLANS. SALVAGE POLES, CABINETS, SERVICE POLES AND EQUIPMENT, EXPOSED CONDUIT, AND ANY OTHER EQUIPMENT AS DIRECTED. EQUIPMENT REQUESTED BY TXDOT IS TO BE STOCKPILED AT THE TXDOT YARD AT 3901 EAST HIGHWAY 90, ODESSA, TEXAS 79761. ALL OTHER MATERIAL NOT REQUESTED BY TXDOT BECOMES THE PROPERTY OF THE CONTRACTOR. DISPOSE OF MATERIAL OFF THE RIGHT OF WAY IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS. MAINTAIN THE OPERATION OF THE EXISTING TRAFFIC SIGNAL UNTIL DIRECTED TO REMOVE IT.
6. INSTALLATION AND/OR REMOVAL OF ANY STRUCTURE, FOUNDATION, OR UNDERGROUND CABLE/CONDUIT LOCATED NEAR ANY OVERHEAD OR UNDERGROUND ELECTRICAL LINES SHALL BE ACCOMPLISHED USING ESTABLISHED INDUSTRY AND UTILITY SAFETY PRACTICES. THE CONTRACTOR SHALL CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO BEGINNING SUCH WORK.
7. ALL LUMINAIRE'S INSTALLED ON SIGNAL POLES SHALL BE 250 WATT EQ. LED LUMINAIRE'S. LUMINAIRE'S ARE SHOWN GRAPHICALLY AT 15 DEGREES TO THE SIGNAL POLE FOR CLARITY ONLY. THE LUMINAIRE IS TO BE PLACED PERPENDICULAR TO THE ROADWAY IT IS INTENDED TO LIGHT.
8. PERMANENT SIGNAL HEADS MOUNTED ON THE SIGNAL ARM SHALL BE HORIZONTAL.
9. THE TRAFFIC SIGNAL AND PEDESTRIAN HEAD SHALL BE ALUMINUM. THE TRAFFIC SIGNAL SHALL HAVE ALUMINUM VENTED BACK PLATES WITH REFLECTIVE BORDER TAPE PER TXDOT STD DRAWING TS-BP-20.
10. TRAFFIC SIGNAL POLE SHALL BE PLACED A MINIMUM OF FOUR (4) FEET CLEAR FROM THE FACE OF CURB.
11. THE PRESENCE DETECTION EQUIPMENT SHALL MEET THE TXDOT ODESSA DISTRICT STANDARDS FOR VIDEO IMAGING AND RADAR VEHICLE DETECTION SYSTEM (VIRVDS).
12. PROJECT TRAFFIC SIGNAL COORDINATION CONTACT INFORMATION
TXDOT SIGNAL OFFICE: KELLI WILLIAMS, 432-498-4752
13. AT FM 307/ FM 1379 INTERSECTION, CONTRACTOR TO PROVIDE INTELIGHT X3 CONTROLLER WITH SUPPORTING EQUIPMENT. INSTALL NEW ITERIS VANTAGE VECTOR CAMERAS WITH EDGE 2 SOFTWARE AND PROVIDE BATTERY BACKUP EQUIPMENT. INSTALL ENCOM SPREAD SPECTRUM RADIO, ANTENNA AND CABLE AND CONTACT TXDOT TRAFFIC, SIGNAL SHOP PRIOR TO AIMING THE ANTENNA. CONTRACTOR TO GET TXDOT TRAFFIC ENGINEER APPROVAL BEFORE ORDERING AND PURCHASING SPECIFIED TRAFFIC SIGNAL EQUIPMENT.
14. CONTRACTOR TO INSTALL SIGNAL FOUNDATION APPROXIMATELY 2.5 FEET ABOVE GROUND TO MEET 20 FEET CLEAR TO THE BOTTOM OF SIGNAL EQUIPMENT AT FM 307/ FM 1379 INTERSECTION. REFER TO CROSS SECTIONS FOR ADDITIONAL DETAILS.
15. POSITION THE BACK OF THE CONTROLLER CABINET TOWARDS THE INTERSECTION, SO THAT THE SIGNAL TECHNICIAN CAN SEE THE INTERSECTION WHILE WORKING WITHIN THE CABINET.

			
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS			
TRAFFIC SIGNAL GENERAL NOTES			
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.
			SHEET NO.
			201

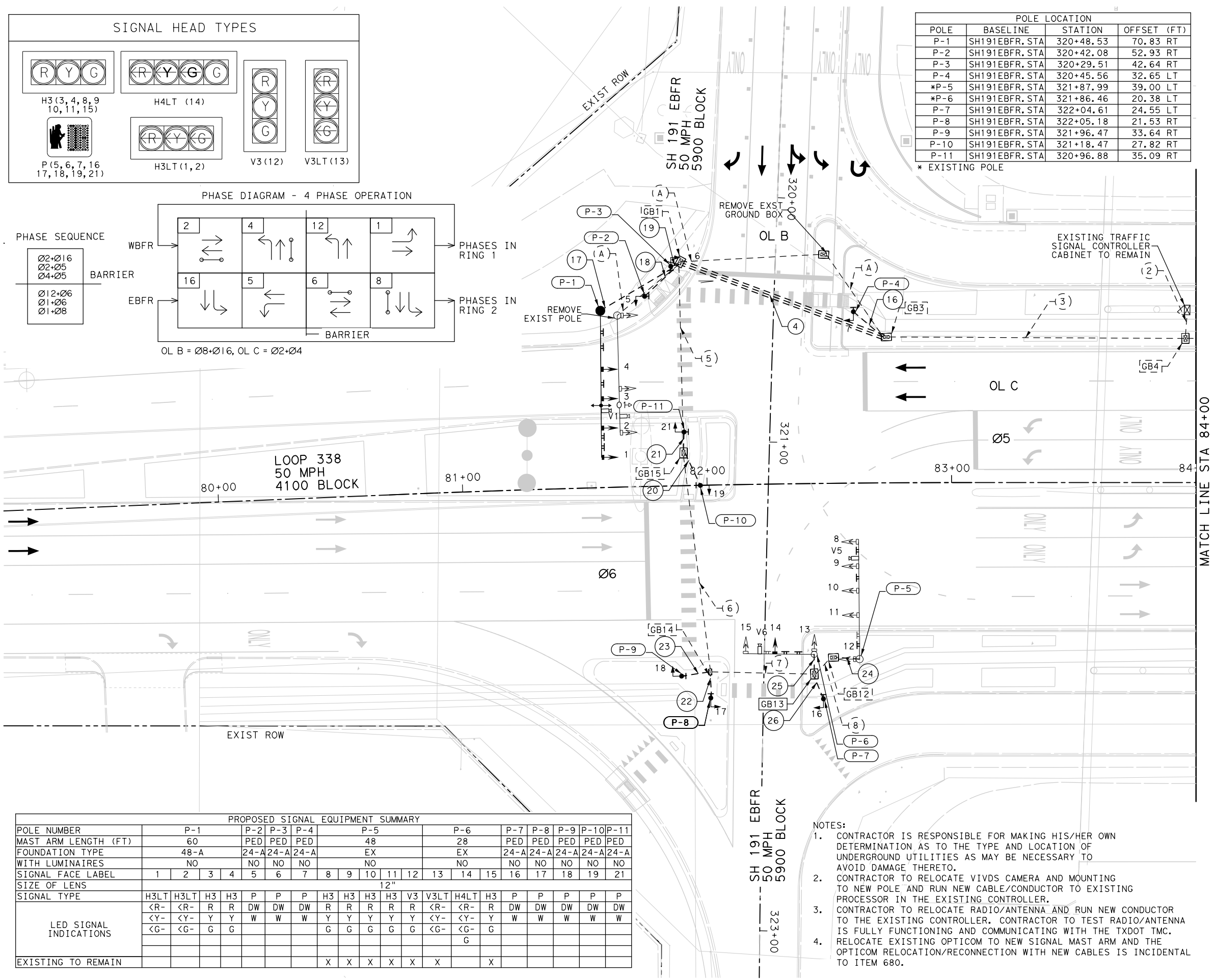
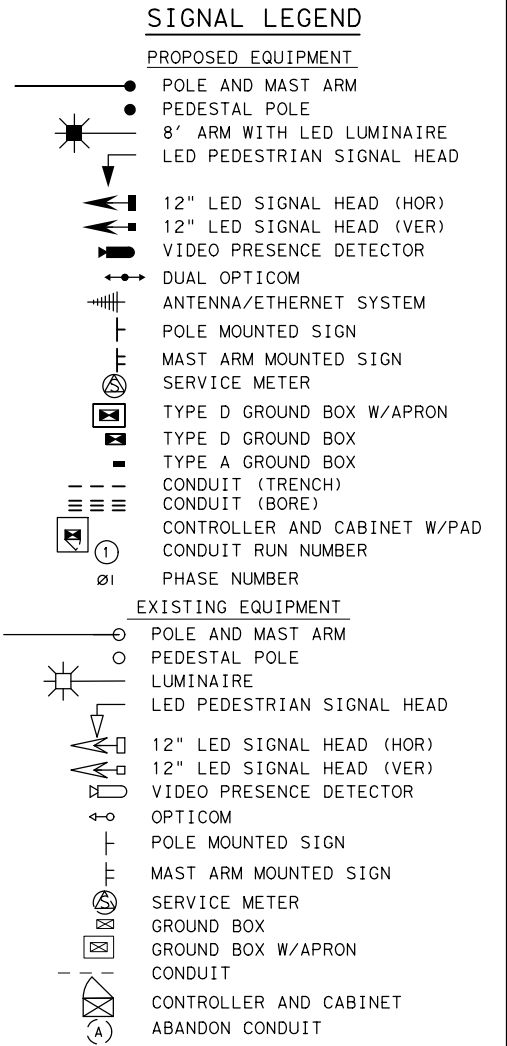
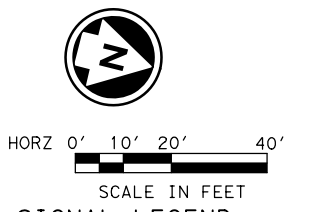
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POLE LOCATION

POLE	BASELINE	STATION	OFFSET (FT)
P-1	SH191EBFR, STA	320+48.53	70.83 RT
P-2	SH191EBFR, STA	320+42.08	52.93 RT
P-3	SH191EBFR, STA	320+29.51	42.64 RT
P-4	SH191EBFR, STA	320+45.56	32.65 LT
*P-5	SH191EBFR, STA	321+87.99	39.00 LT
*P-6	SH191EBFR, STA	321+86.46	20.38 LT
P-7	SH191EBFR, STA	322+04.61	24.55 LT
P-8	SH191EBFR, STA	322+05.18	21.53 RT
P-9	SH191EBFR, STA	321+96.47	33.64 RT
P-10	SH191EBFR, STA	321+18.47	27.82 RT
P-11	SH191EBFR, STA	320+96.88	35.09 RT

* EXISTING POLE



PROPOSED SIGNAL EQUIPMENT SUMMARY

POLE NUMBER	P-1	P-2	P-3	P-4	P-5	P-6	P-7	P-8	P-9	P-10	P-11
MAST ARM LENGTH (FT)	60	PED	PED	PED	48	28	PED	PED	PED	PED	PED
FOUNDATION TYPE	48-A	24-A	24-A	24-A	EX	EX	24-A	24-A	24-A	24-A	24-A
WITH LUMINAIRES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
SIGNAL FACE LABEL	1	2	3	4	5	6	7	8	9	10	11
SIZE OF LENS	12"										
SIGNAL TYPE	H3LT	H3LT	H3	H3	P	P	P	H3	H3	H3	H3
LED SIGNAL INDICATIONS	<R-	<R-	R	R	DW	DW	DW	R	R	R	R
	<Y-	<Y-	Y	Y	W	W	W	Y	Y	Y	Y
	<G-	<G-	G	G				G	G	G	G
EXISTING TO REMAIN								X	X	X	X

- ### NOTES:
- CONTRACTOR IS RESPONSIBLE FOR MAKING HIS/HER OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.
 - CONTRACTOR TO RELOCATE VIVDS CAMERA AND MOUNTING TO NEW POLE AND RUN NEW CABLE/CONDUCTOR TO EXISTING PROCESSOR IN THE EXISTING CONTROLLER.
 - CONTRACTOR TO RELOCATE RADIO/ANTENNA AND RUN NEW CONDUCTOR TO THE EXISTING CONTROLLER. CONTRACTOR TO TEST RADIO/ANTENNA IS FULLY FUNCTIONING AND COMMUNICATING WITH THE TXDOT TMC.
 - RELOCATE EXISTING OPTICOM TO NEW SIGNAL MAST ARM AND THE OPTICOM RELOCATION/RECONNECTION WITH NEW CABLES IS INCIDENTAL TO ITEM 680.

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Prashant Pachore
08-20-2020

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Dallas, Texas 75207
TBPE # F-2263

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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

TRAFFIC SIGNAL PLAN

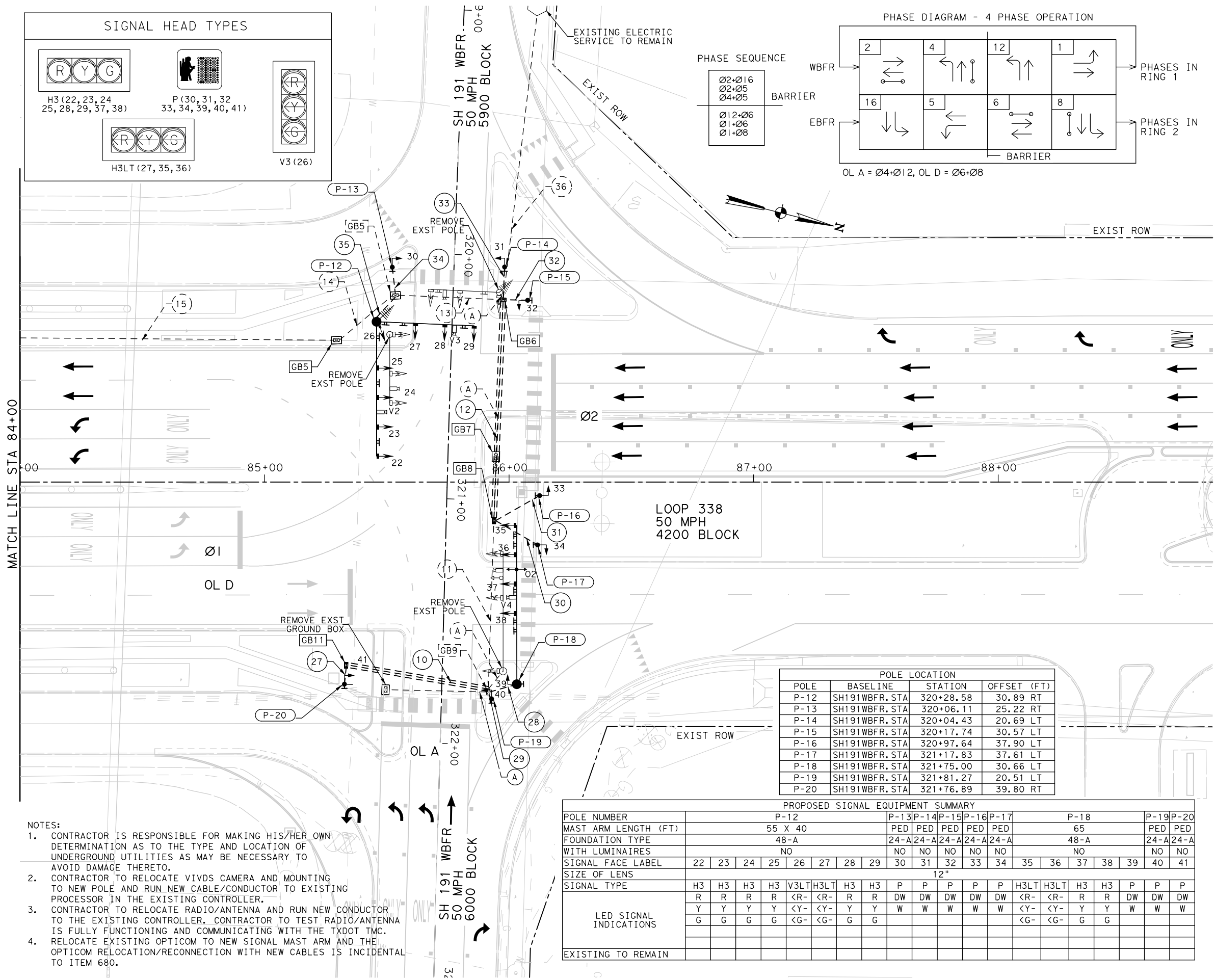
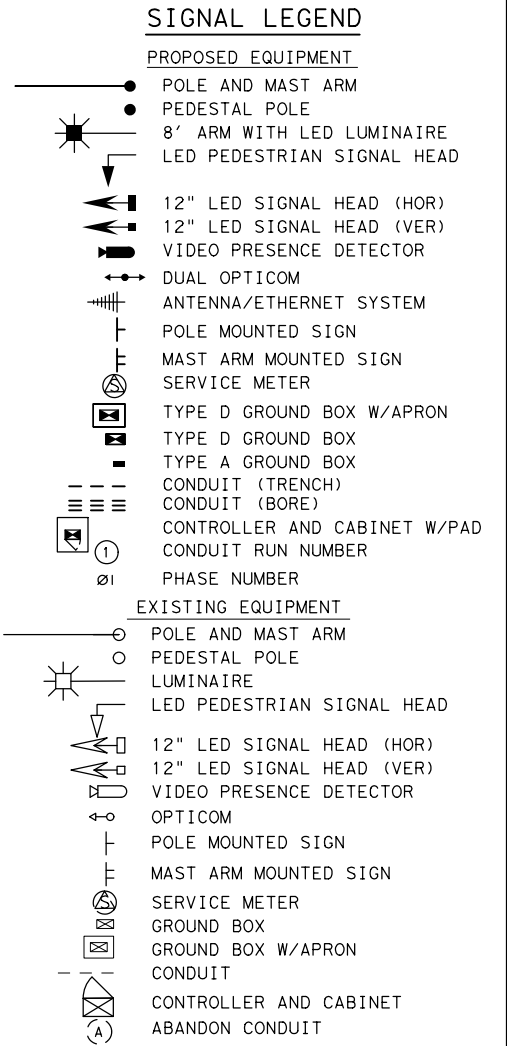
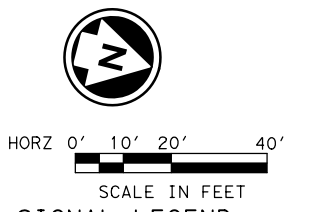
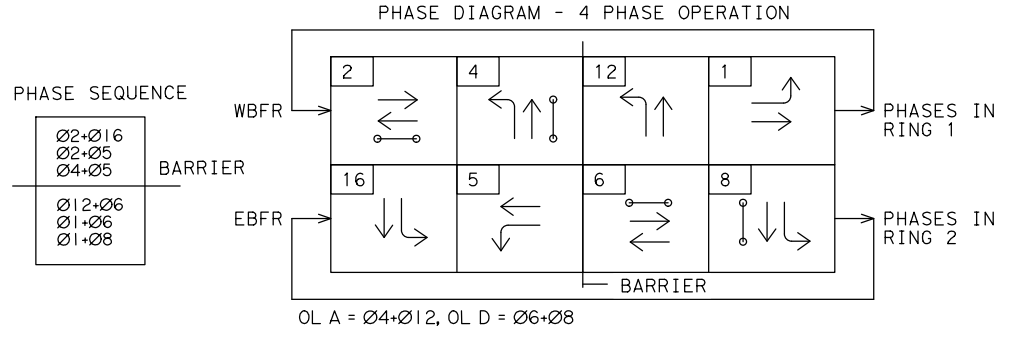
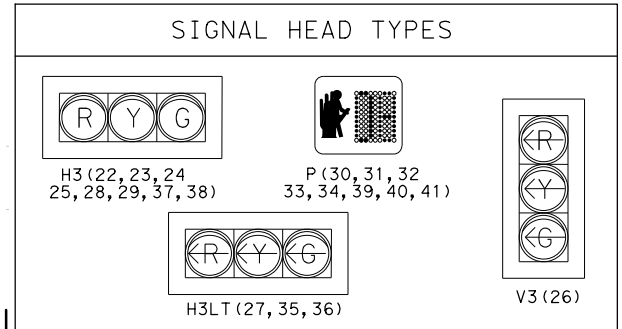
LOOP 338 AT SH 191 EBFR

SCALE: 1" = 40' SHEET 1 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.

202

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POLE LOCATION

POLE	BASELINE	STATION	OFFSET (FT)
P-12	SH191WBFR, STA	320+28.58	30.89 RT
P-13	SH191WBFR, STA	320+06.11	25.22 RT
P-14	SH191WBFR, STA	320+04.43	20.69 LT
P-15	SH191WBFR, STA	320+17.74	30.57 LT
P-16	SH191WBFR, STA	320+97.64	37.90 LT
P-17	SH191WBFR, STA	321+17.83	37.61 LT
P-18	SH191WBFR, STA	321+75.00	30.66 LT
P-19	SH191WBFR, STA	321+81.27	20.51 LT
P-20	SH191WBFR, STA	321+76.89	39.80 RT

PROPOSED SIGNAL EQUIPMENT SUMMARY

POLE NUMBER	P-12	P-13	P-14	P-15	P-16	P-17	P-18	P-19	P-20											
MAST ARM LENGTH (FT)	55 X 40						65													
FOUNDATION TYPE	48-A	24-A	24-A	24-A	24-A	24-A	48-A	24-A	24-A											
WITH LUMINAIRES	NO	NO	NO	NO	NO	NO	NO	NO	NO											
SIGNAL FACE LABEL	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
SIZE OF LENS	12"																			
SIGNAL TYPE	H3	H3	H3	H3	V3LT	H3LT	H3	H3	P	P	P	P	P	H3LT	H3LT	H3	H3	P	P	P
LED SIGNAL INDICATIONS	R	R	R	R	<R-	<R-	R	R	DW	DW	DW	DW	DW	<R-	<R-	R	R	DW	DW	DW
	Y	Y	Y	Y	<Y-	<Y-	Y	Y	W	W	W	W	W	<Y-	<Y-	Y	Y	W	W	W
	G	G	G	G	<G-	<G-	G	G						<G-	<G-	G	G			
EXISTING TO REMAIN																				

- NOTES:
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TRAFFIC SIGNAL PLAN

LOOP 338 AT SH 191 WBFR

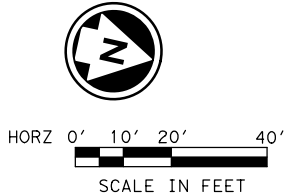
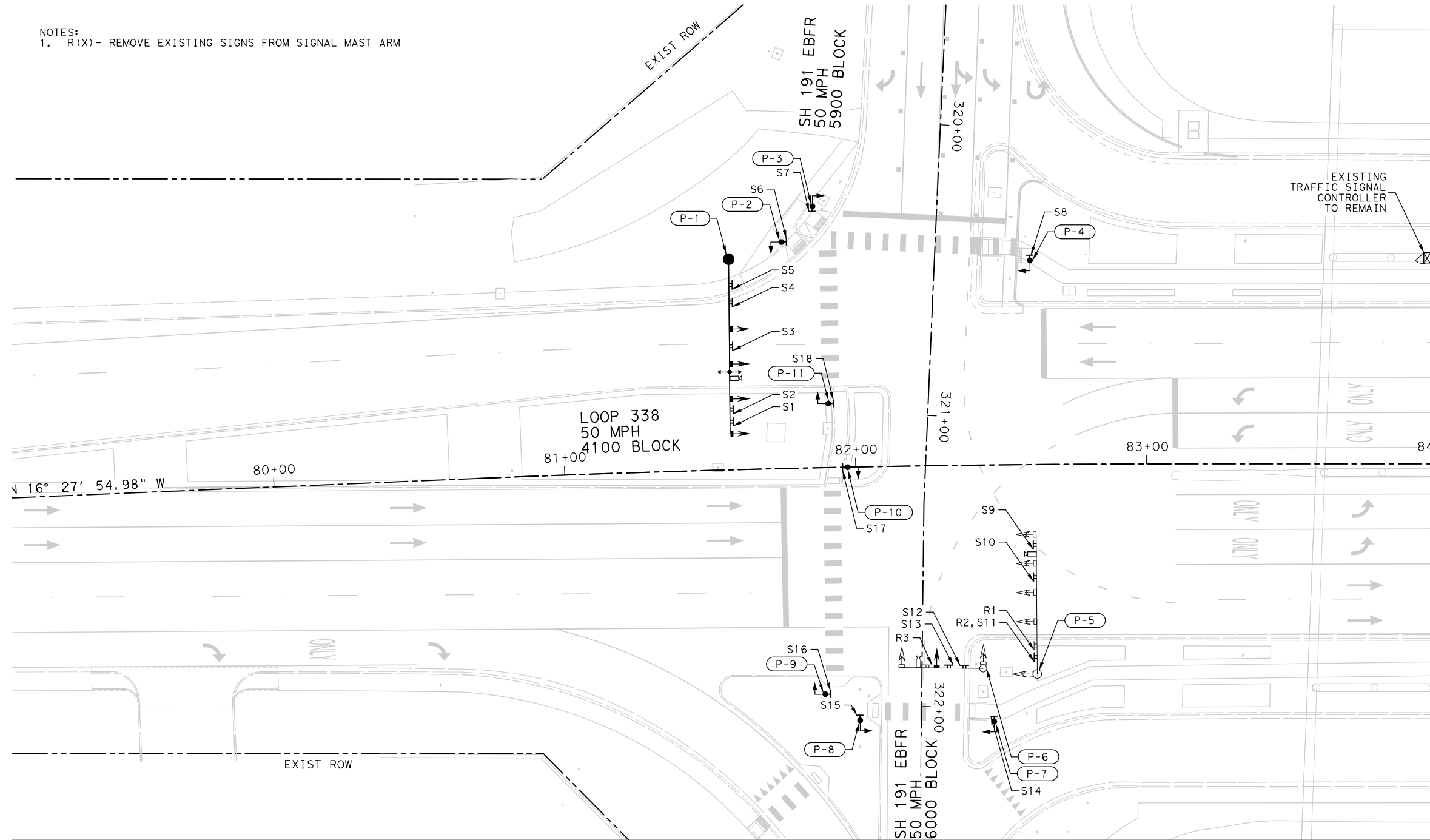
SCALE: 1" = 40' SHEET 2 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.

203

DATE: 8/19/2020 FILENAME: pw:\jmt-pw-bent\ey.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. T

NOTES:
1. R(X) - REMOVE EXISTING SIGNS FROM SIGNAL MAST ARM



SIGNAL LEGEND

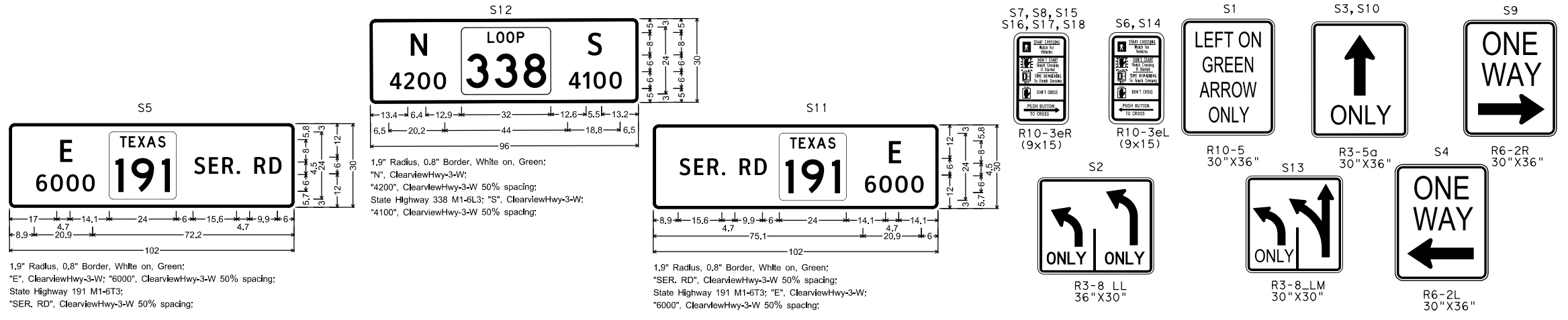
PROPOSED EQUIPMENT

- POLE AND MAST ARM
- PEDESTAL POLE
- 8' ARM WITH LED LUMINAIRE
- LED PEDESTRIAN SIGNAL HEAD
- 12" LED SIGNAL HEAD (HOR)
- 12" LED SIGNAL HEAD (VER)
- VIDEO PRESENCE DETECTOR
- DUAL OPTICOM
- ANTENNA/ETHERNET SYSTEM
- POLE MOUNTED SIGN
- MAST ARM MOUNTED SIGN
- SERVICE METER
- TYPE D GROUND BOX W/APRON
- TYPE D GROUND BOX
- TYPE A GROUND BOX
- CONDUIT (TRENCH)
- CONDUIT (BORE)
- CONTROLLER AND CABINET W/PAD
- CONDUIT RUN NUMBER
- PHASE NUMBER

EXISTING EQUIPMENT

- POLE AND MAST ARM
- PEDESTAL POLE
- LUMINAIRE
- LED PEDESTRIAN SIGNAL HEAD
- 12" LED SIGNAL HEAD (HOR)
- 12" LED SIGNAL HEAD (VER)
- VIDEO PRESENCE DETECTOR
- OPTICOM
- POLE MOUNTED SIGN
- MAST ARM MOUNTED SIGN
- SERVICE METER
- GROUND BOX
- GROUND BOX W/APRON
- CONDUIT
- CONTROLLER AND CABINET
- ABANDON CONDUIT

PROPOSED SMALL SIGNS (CONTRACTOR SUPPLIED)



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SIGNAL POLE/ MAST ARM SIGNS

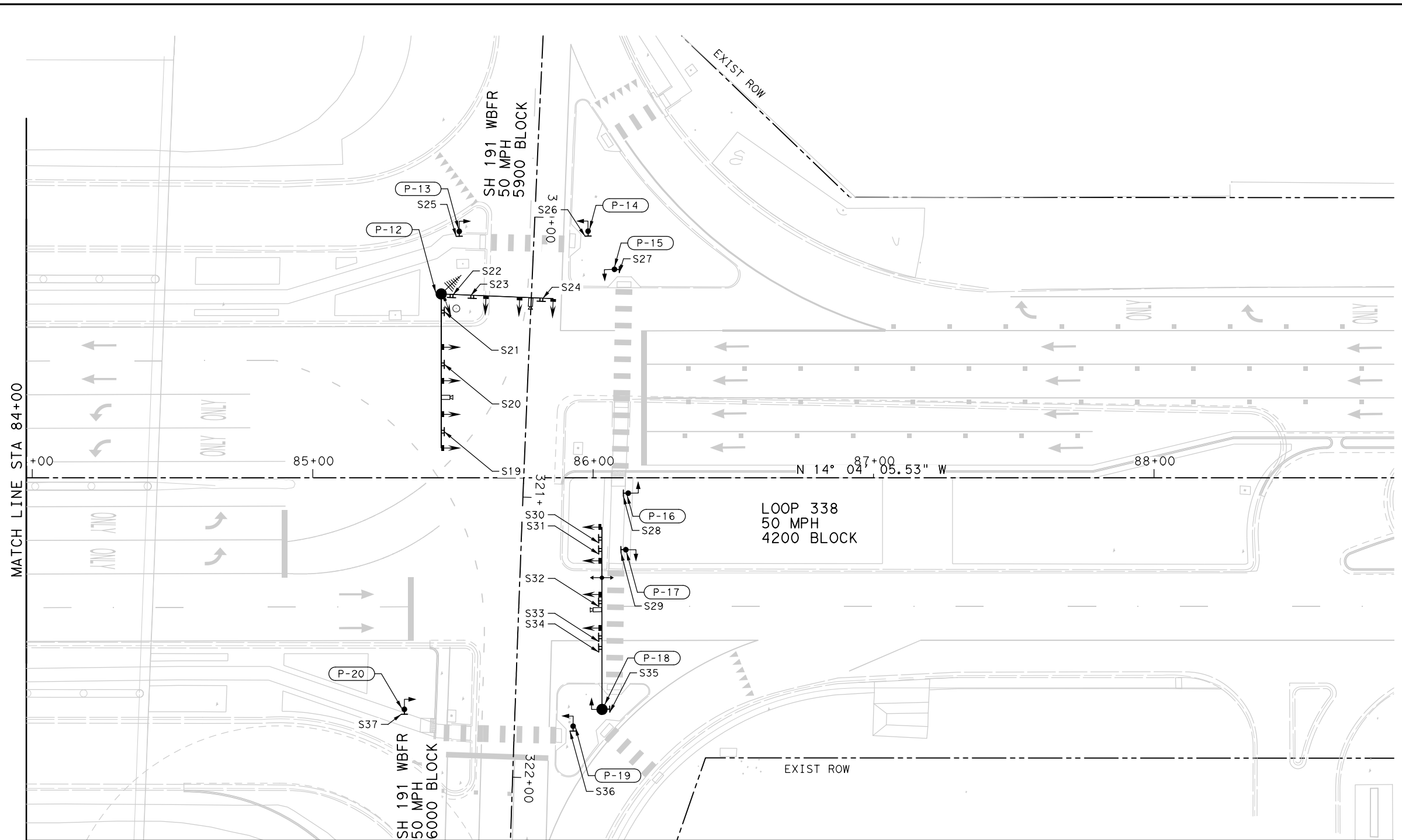
LOOP 338 AT SH 191 EBFR

SCALE: 1" = 40' SHEET 4 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.

205

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HORZ 0' 10' 20' 40'
SCALE IN FEET

SIGNAL LEGEND

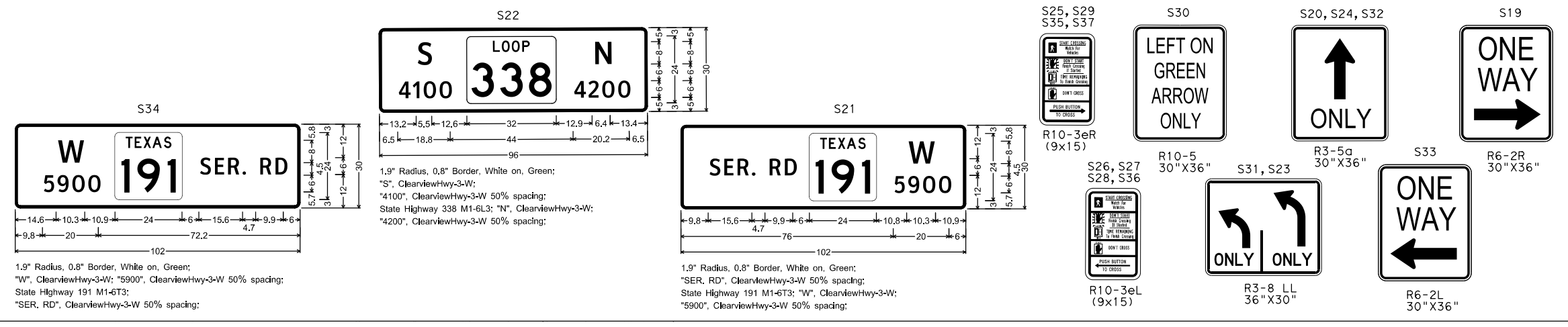
PROPOSED EQUIPMENT

- POLE AND MAST ARM
- PEDESTAL POLE
- ⬇ 8' ARM WITH LED LUMINAIRE
- ⬇ LED PEDESTRIAN SIGNAL HEAD
- ⬇ 12" LED SIGNAL HEAD (HOR)
- ⬇ 12" LED SIGNAL HEAD (VER)
- ⬇ VIDEO PRESENCE DETECTOR
- ⬇ DUAL OPTICOM
- ⬇ ANTENNA/ETHERNET SYSTEM
- ⬇ POLE MOUNTED SIGN
- ⬇ MAST ARM MOUNTED SIGN
- ⬇ SERVICE METER
- ⬇ TYPE D GROUND BOX W/APRON
- ⬇ TYPE D GROUND BOX
- ⬇ TYPE A GROUND BOX
- ⬇ CONDUIT (TRENCH)
- ⬇ CONDUIT (BORE)
- ⬇ CONTROLLER AND CABINET W/PAD
- ⬇ CONDUIT RUN NUMBER
- ⊙ PHASE NUMBER

EXISTING EQUIPMENT

- POLE AND MAST ARM
- PEDESTAL POLE
- LUMINAIRE
- LED PEDESTRIAN SIGNAL HEAD
- 12" LED SIGNAL HEAD (HOR)
- 12" LED SIGNAL HEAD (VER)
- VIDEO PRESENCE DETECTOR
- OPTICOM
- POLE MOUNTED SIGN
- MAST ARM MOUNTED SIGN
- SERVICE METER
- GROUND BOX
- GROUND BOX W/APRON
- CONDUIT
- CONTROLLER AND CABINET
- ABANDON CONDUIT

PROPOSED SMALL SIGNS (CONTRACTOR SUPPLIED)



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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

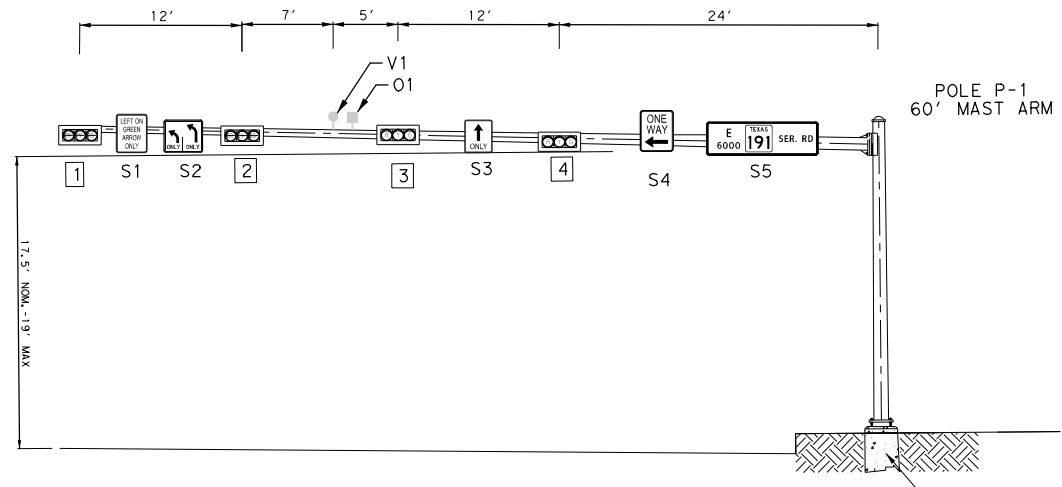
SIGNAL POLE/ MAST ARM SIGNS

LOOP 338 AT SH 191 WBFR

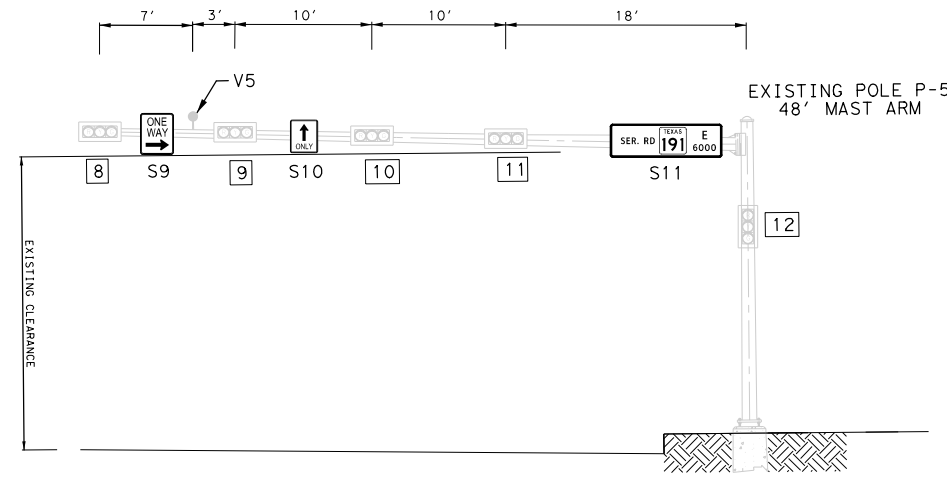
SCALE: 1" = 40' SHEET 5 OF 6

DESIGN	WSP	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	WSP	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	WSP	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	WSP						206

DATE: 8/19/2020 FILENAME: pw:\jmt-pw-bent ley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. Tr



SOUTHBOUND ON LOOP 338 AT SH 191 EBFR

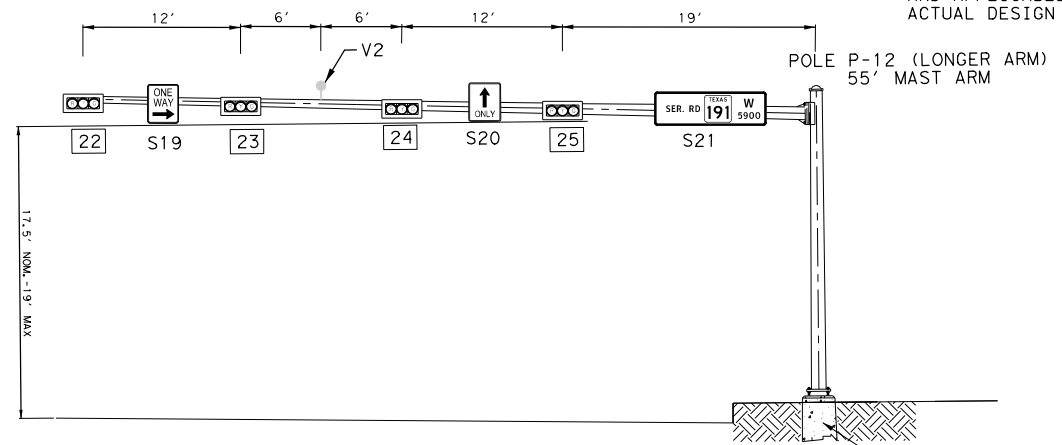


NORTHBOUND ON LOOP 338 AT SH 191 EBFR

FOUNDATION SEE SHEET LMA (3) -12 & LMA (5) -12

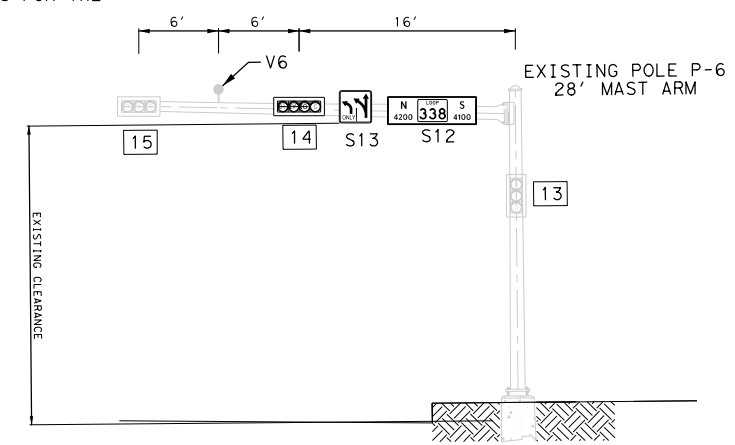
NOTES:

1. USE ASTRO BRACKET ASSEMBLY OR APPROVED EQUAL SHALL BE REQUIRED TO MOUNT SIGNS AND SIGNAL HEADS.
2. DETAILS OF POLES, SIGNAL HEADS AND MOUNTING BRACKETS SHOWN ON THIS SHEET ARE EXAMPLES ONLY. SEE SIGNAL LAYOUT SHEET(S) AND APPLICABLE SMA-80, LMA-80, MA-C OR MA-D STANDARDS FOR THE ACTUAL DESIGN AND CONSTRUCTION OF MAST ARM POLES.

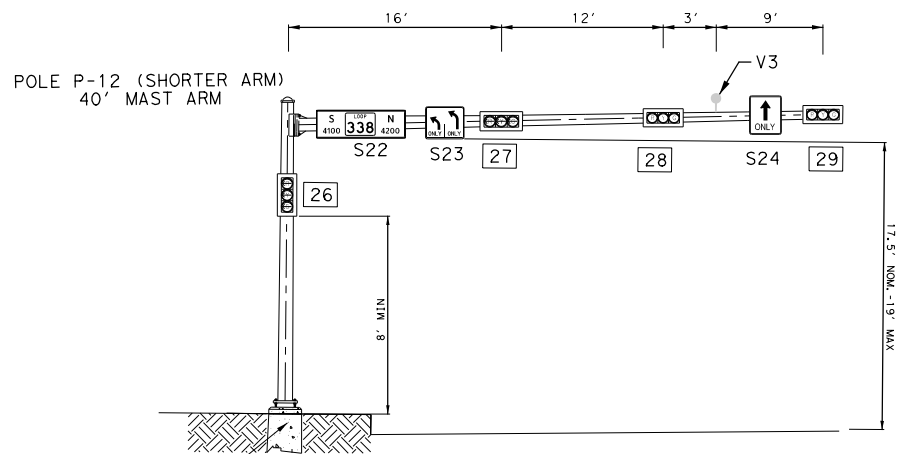


SOUTHBOUND ON LOOP 338 AT SH 191 WBFR

FOUNDATION SEE SHEET LMA (3) -12 & LMA (5) -12

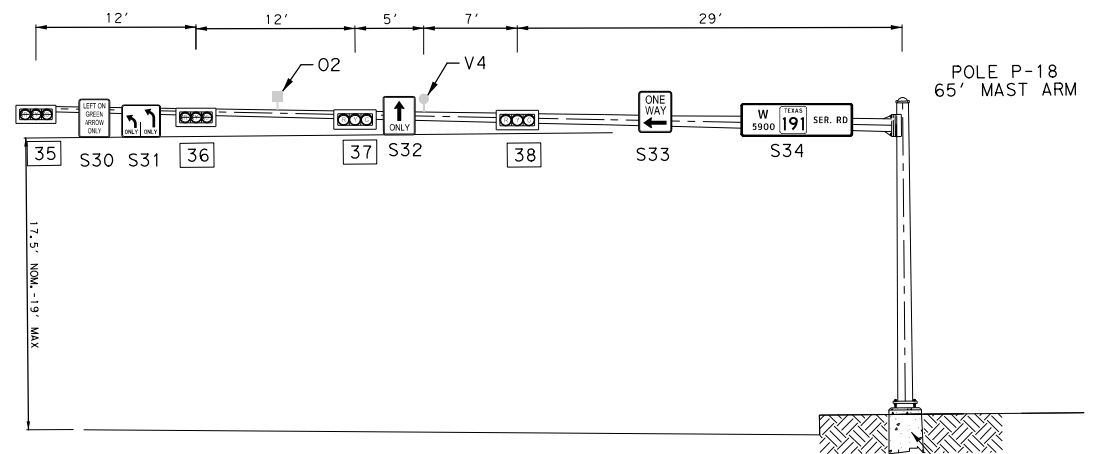


EASTBOUND ON SH 191 EBFR AT LOOP 338



WESTBOUND ON LOOP 338 AT SH 191 WBFR

FOUNDATION SEE SHEET LMA (3) -12 & LMA (5) -12



NORTHBOUND ON LOOP 338 AT SH 191 WBFR

FOUNDATION SEE SHEET LMA (3) -12 & LMA (5) -12

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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

SIGNAL POLE DETAIL
LOOP 338 AT SH 191

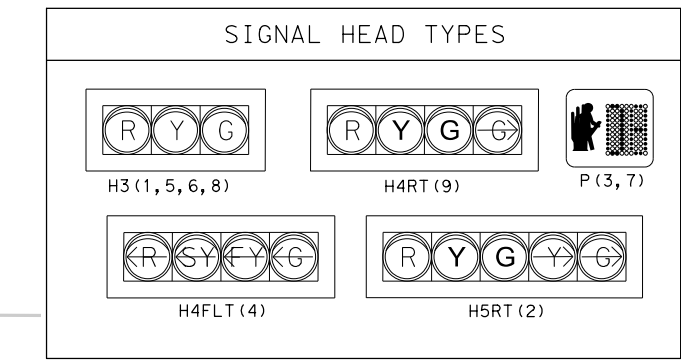
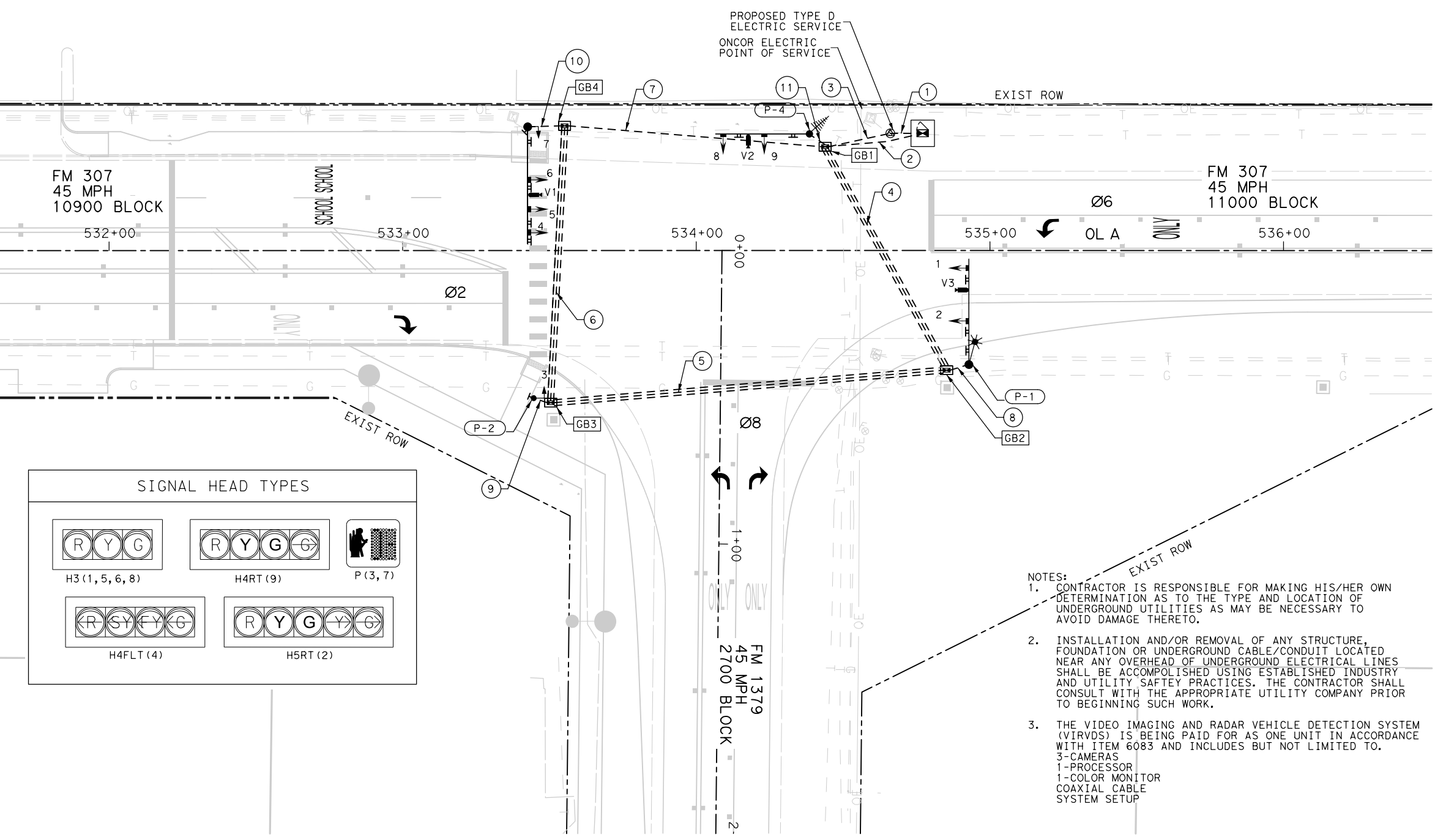
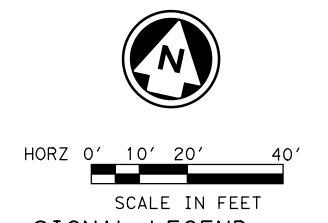
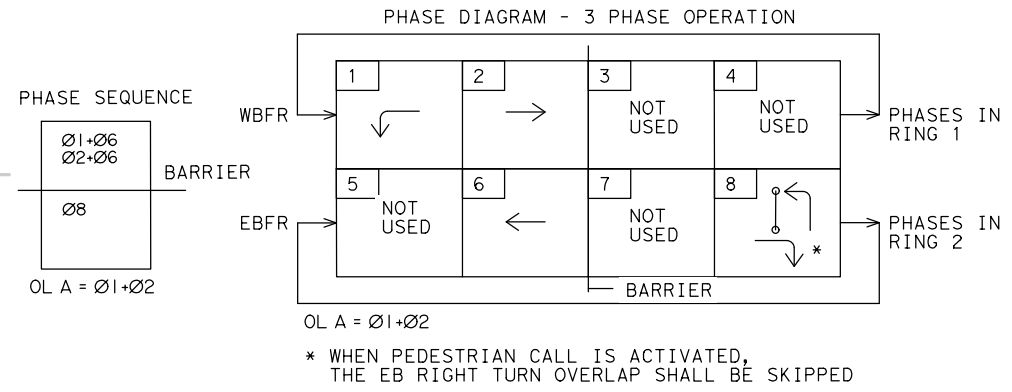
DESIGN	WSP	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	WSP	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	WSP	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	WSP						

SHEET 6 OF 6
207

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PROPOSED SIGNAL EQUIPMENT SUMMARY												
POLE NUMBER	P-1		P-2		P-3			P-4				
MAST ARM LENGTH (FT)	36		PED		40			32				
FOUNDATION TYPE	36-A		24-A		36-A			30-A				
WITH LUMINAIRES	YES		NO		NO			NO				
SIGNAL FACE LABEL	1	2	3	4	5	6	7	8	9			
SIZE OF LENS	12"											
SIGNAL TYPE	H3	H5RT	P	H4LT	H3	H3	P	H3	H4RT			
LED SIGNAL INDICATIONS	R	R	DW	<R-	R	R	DW	R	R			
	Y	Y	W	<SY-	Y	Y	W	Y	Y			
	G	G		<FY-	G	G		G	G			
	-Y>			<G-								
	-G>											

POLE LOCATION			
POLE	BASELINE	STATION	OFFSET (FT)
P-1	FM307	534.92.86	38.89 RT
P-2	FM307	533+44.61	50.31 RT
P-3	FM307	533+42.60	42.11 LT
P-4	FM307	534+38.53	39.69 LT



- SIGNAL LEGEND**
- PROPOSED EQUIPMENT**
- POLE AND MAST ARM
 - PEDESTAL POLE
 - ☀ 8' ARM WITH LED LUMINAIRE
 - ☀ LED PEDESTRIAN SIGNAL HEAD
 - ☀ 12" LED SIGNAL HEAD (HOR)
 - ☀ 12" LED SIGNAL HEAD (VER)
 - ☀ VIDEO PRESENCE DETECTOR
 - ☀ DUAL OPTICOM
 - ☀ ANTENNA/ETHERNET SYSTEM
 - ☀ POLE MOUNTED SIGN
 - ☀ MAST ARM MOUNTED SIGN
 - ☀ SERVICE METER
 - ☀ TYPE D GROUND BOX W/APRON
 - ☀ TYPE A GROUND BOX
 - ☀ CONDUIT (TRENCH)
 - ☀ CONDUIT (BORE)
 - ☀ CONTROLLER AND CABINET W/PAD
 - ☀ CONDUIT RUN NUMBER
 - Ø1 PHASE NUMBER
- EXISTING EQUIPMENT**
- POLE AND MAST ARM
 - PEDESTAL POLE
 - LUMINAIRE
 - LED PEDESTRIAN SIGNAL HEAD
 - 12" LED SIGNAL HEAD (HOR)
 - 12" LED SIGNAL HEAD (VER)
 - VIDEO PRESENCE DETECTOR
 - OPTICOM
 - POLE MOUNTED SIGN
 - MAST ARM MOUNTED SIGN
 - SERVICE METER
 - GROUND BOX
 - GROUND BOX W/APRON
 - CONDUIT
 - CONTROLLER AND CABINET
 - ABANDON CONDUIT

- NOTES:
- CONTRACTOR IS RESPONSIBLE FOR MAKING HIS/HER OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.
 - INSTALLATION AND/OR REMOVAL OF ANY STRUCTURE, FOUNDATION OR UNDERGROUND CABLE/CONDUIT LOCATED NEAR ANY OVERHEAD OR UNDERGROUND ELECTRICAL LINES SHALL BE ACCOMPLISHED USING ESTABLISHED INDUSTRY AND UTILITY SAFETY PRACTICES. THE CONTRACTOR SHALL CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO BEGINNING SUCH WORK.
 - THE VIDEO IMAGING AND RADAR VEHICLE DETECTION SYSTEM (VIRVDS) IS BEING PAID FOR AS ONE UNIT IN ACCORDANCE WITH ITEM 6083 AND INCLUDES BUT NOT LIMITED TO.
 - 3-CAMERAS
 - 1-PROCESSOR
 - 1-COLOR MONITOR
 - COAXIAL CABLE
 - SYSTEM SETUP

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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

TRAFFIC SIGNAL PLAN

FM 307 AT FM 1379

SCALE: 1" = 40' SHEET 1 OF 4

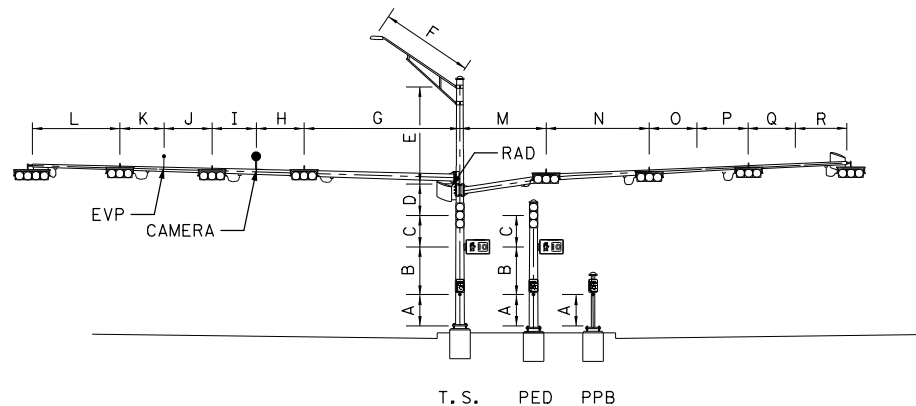
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.

208

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RUN NO.	CONDUIT (SCH 80)				LENGTH (FT)	GROUND	POWER	SIGNAL	PED SIGNAL	APS	ILL	DETECTION	ANTENNA	PULL STRING
	2"		3"			#6	1C#6	12C#14	5C#14	4C#10	3C#8 XHHW	VIRVDS	CABLE	
	T	B	T	B		BARE	AWG	AWG	AWG	AWG	TRAY			
1		1			15	1	2						1	
2*	1				35	1					3	1	1	
3			3		35	1		3	2	2			1	
4	1				25	1					1		1	
		1			90	1					1		1	
				1	90	1		1					1	
5				1	135	1							1	
		1			135	1							1	
6		1			95	1							1	
				1	95	1			1	1			1	
7			1		90	1		1	2	2			1	
	1				90	1						1	1	
8	1				10	1					1		1	
			1		10	1		1					1	
9	1				5	1			1	1			1	
10	1				15	1					1		1	
			1		15	1		1	1	1			1	
11	1				10	1					1	1	1	
				1	10	1		1					1	
TOTALS (LF)	205	410	230	320		1095	30	320	365	365	125	320	45	1095

- NOTES:
- "T" = TRENCHED; "B" = BORED
 - TOTALS DO NOT INCLUDE QUANTITIES INSIDE THE SIGNAL POLE.
 - FOR QUANTITIES INSIDE SIGNAL POLE, SEE SIGNAL POLE/ARM CONDUCTOR QUANTITIES TABLE.
 - TRAFFIC SIGNAL CABLES INSIDE SIGNAL HEADS AND CONTROLLERS OR COILS IN GROUND BOXES AND POLE BASES ARE NOT PAID FOR DIRECTLY, BUT ARE SUBSIDIARY TO PERTINENT ITEMS. THIS IS IN ACCORDANCE WITH ITEM 684 TRAFFIC SIGNAL CABLES, SECTION 684.5 PAYMENT.
 - * TWO ADDITIONAL 3" CONDUITS INSTALLED FOR FUTURE USE



POLE	TYPE	SIGNAL POLE/ARM CONDUCTOR QUANTITIES (LF)																		SIGNAL HEADS 7C#14	PED HEADS 5C#14	APS 4C#10	VIRVDS CABLE	ILL 3C#8 TRAY
		LENGTH (FT)																						
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R					
P-1	36L-80	4	6	4	4	12	8	15	10	11										87	10	4	43	38
P-2	PED	4	6																	136	10	4	41	
P-3	40-80	4	6	4	4			18	5	5	8								83			40		
P-4	32-80	4	6	4	4			16	6	9												20	38	
		TOTALS (LF)																		306	20	8	124	38

ELECTRICAL SERVICE DATA												
Elec. Service ID	Plan Sheet	Electrical Service Description	Service Conduit Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amp	Two-Pole Contactor Amps	Panel bd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
TS1 (FM 307)	1	ELC SRV TY D 120/240 060 (NS)SS(E)SP(O)	2"	3/#2	N/A	2P/60	2P/ 30	100	Signal Lighting	1P/50 2P/30	40 20	9.6

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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

TRAFFIC SIGNAL SUMMARY

FM 307 AT FM 1379

SHEET 2 OF 4

DESIGN WSP	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
CHECK WSP	STATE TEXAS	DISTRICT ODA	COUNTY ECTOR, ETC.
CHECK WSP	CONTROL 0887	SECTION 01	JOB 039, ETC.

209

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HORZ 0' 10' 20' 40'

SCALE IN FEET

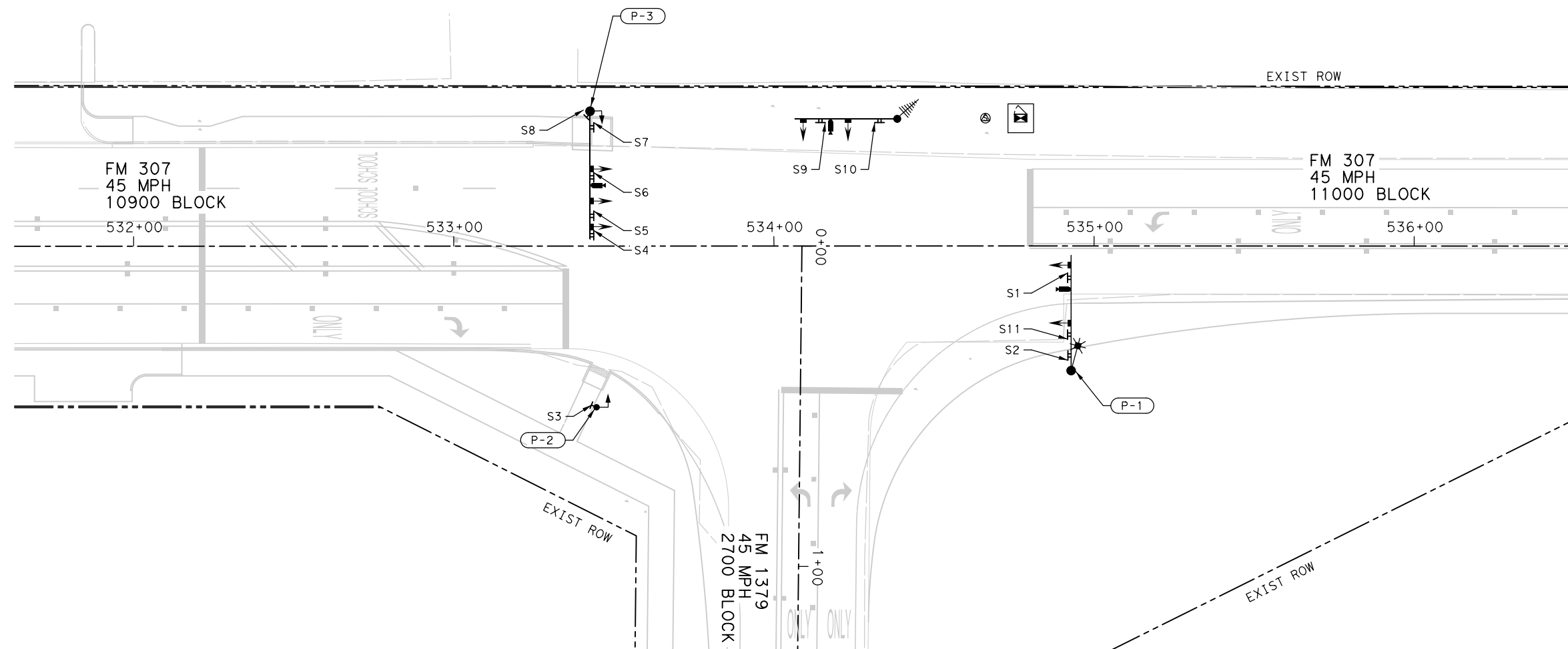
SIGNAL LEGEND

PROPOSED EQUIPMENT

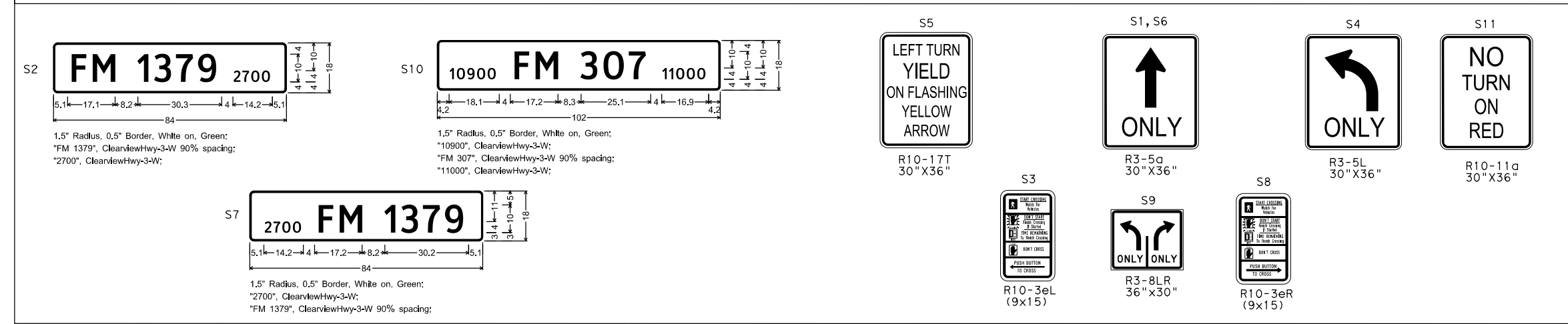
- POLE AND MAST ARM
- PEDESTAL POLE
- 8' ARM WITH LED LUMINAIRE
- LED PEDESTRIAN SIGNAL HEAD
- 12" LED SIGNAL HEAD (HOR)
- 12" LED SIGNAL HEAD (VER)
- VIDEO PRESENCE DETECTOR
- DUAL OPTICOM
- ANTENNA/ETHERNET SYSTEM
- POLE MOUNTED SIGN
- MAST ARM MOUNTED SIGN
- SERVICE METER
- TYPE D GROUND BOX W/APRON
- TYPE D GROUND BOX
- TYPE A GROUND BOX
- CONDUIT (TRENCH)
- CONDUIT (BORE)
- CONTROLLER AND CABINET W/PAD
- CONDUIT RUN NUMBER
- PHASE NUMBER

EXISTING EQUIPMENT

- POLE AND MAST ARM
- PEDESTAL POLE
- LUMINAIRE
- LED PEDESTRIAN SIGNAL HEAD
- 12" LED SIGNAL HEAD (HOR)
- 12" LED SIGNAL HEAD (VER)
- VIDEO PRESENCE DETECTOR
- OPTICOM
- POLE MOUNTED SIGN
- MAST ARM MOUNTED SIGN
- SERVICE METER
- GROUND BOX
- GROUND BOX W/APRON
- CONDUIT
- CONTROLLER AND CABINET
- ABANDON CONDUIT



PROPOSED SMALL SIGNS (CONTRACTOR SUPPLIED)



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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

SIGNAL POLE/ MAST ARM SIGNS

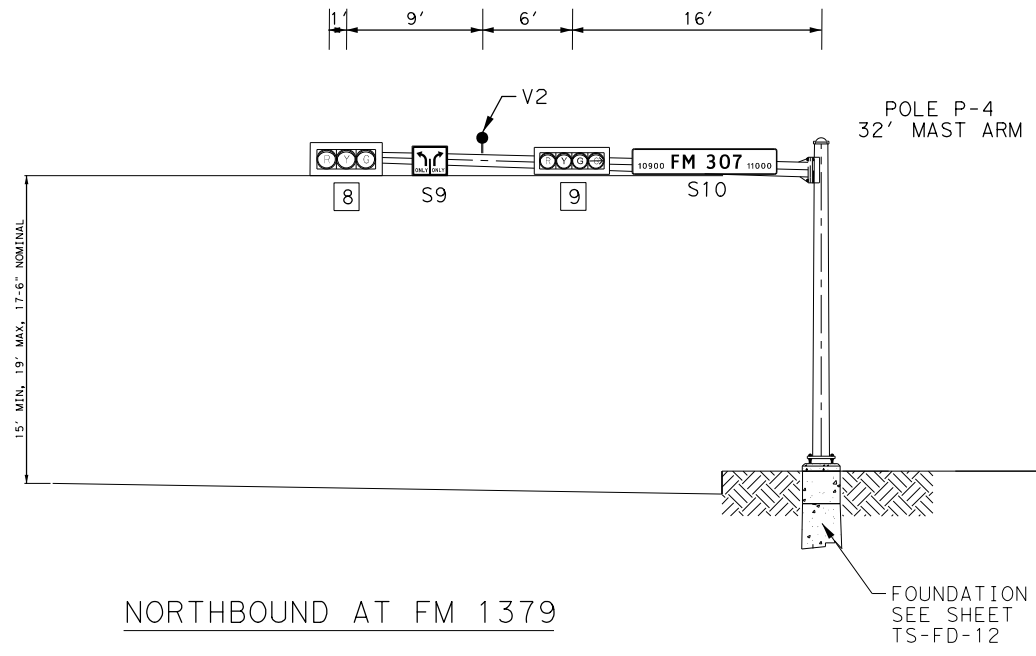
FM 307 AT FM 1379

SCALE: 1" = 40' SHEET 3 OF 4

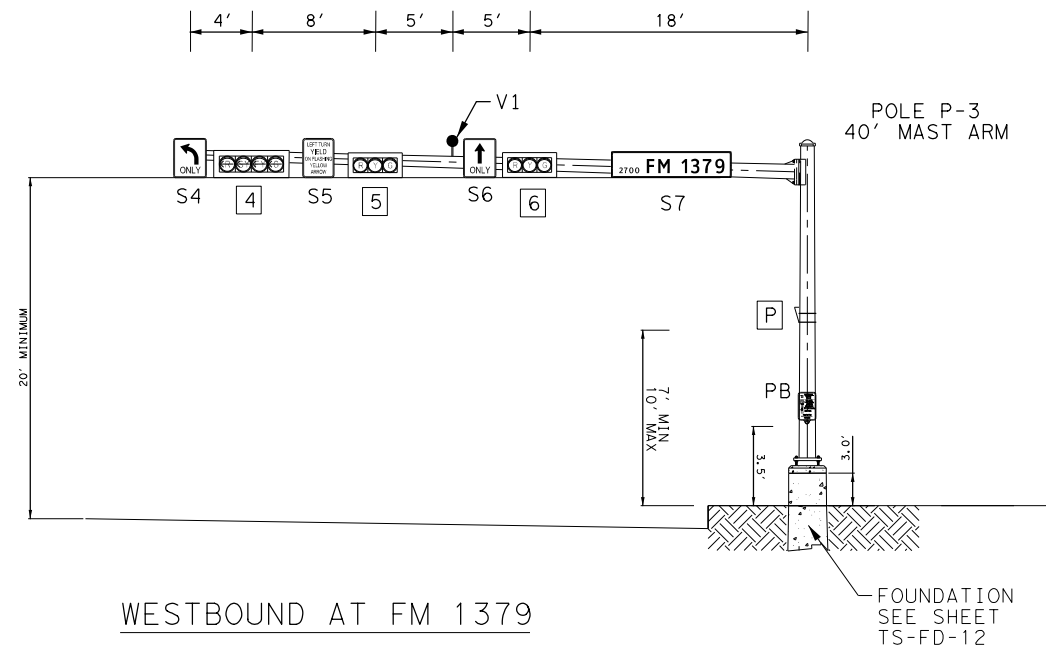
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.

210

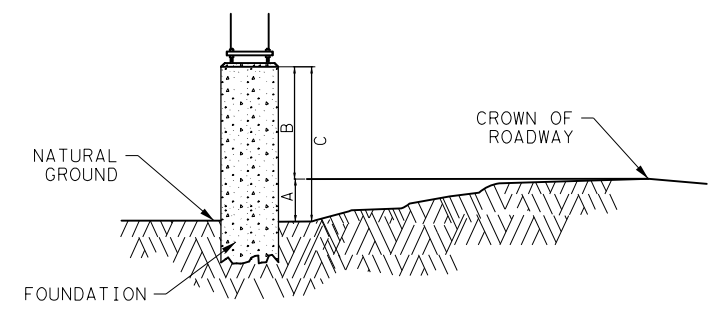
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NORTHBOUND AT FM 1379



WESTBOUND AT FM 1379



TRAFFIC SIGNAL POLE FOUNDATION DETAIL

	A	B	C (*)
POLE P-4 (**)	-	-	-
POLE P-3 (***)	0.5	2.5	3.0
POLE P-1 (***)	0.5	2.5	3.0

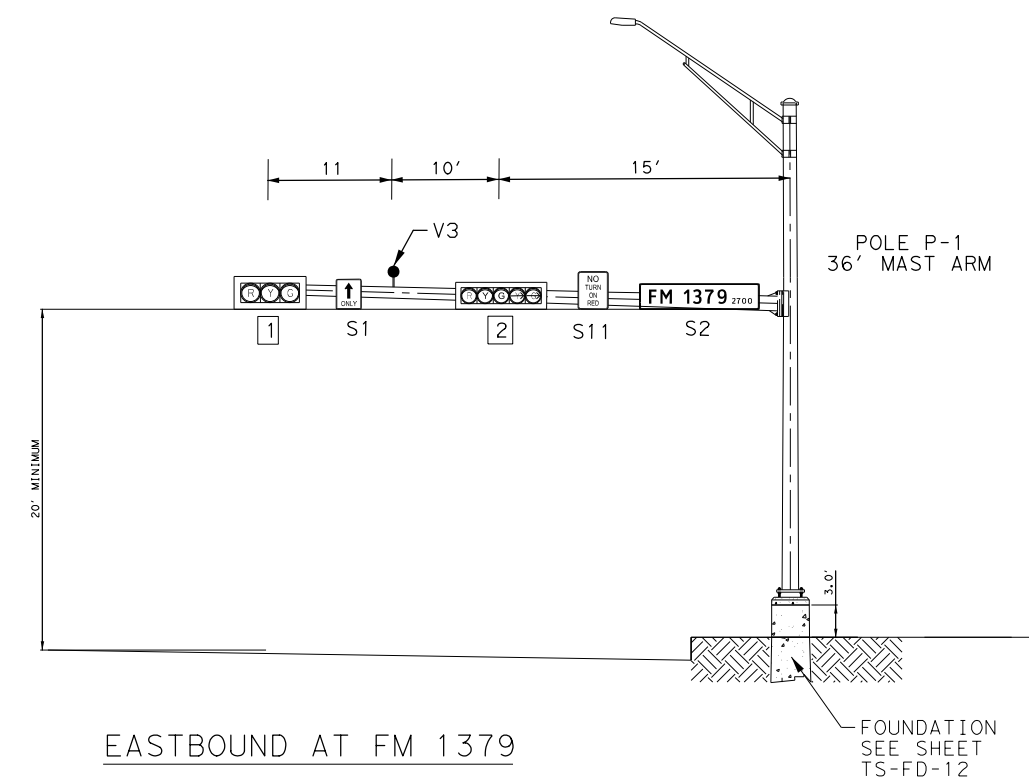
(*) - CONTRACTOR TO ADJUST FOUNDATION ABOVE GROUND BASED ON FIELD CONDITIONS TO MEET 20 FEET CLEARANCE REQUIREMENT

(**)- NO TRAFFIC UNDER POLE P-4 AND NO ADDITIONAL CLEARANCE REQUIRED

(***)- POLES P-1 AND P-3 REQUIRE 11 #9 VERTICAL REINFORCEMENT BARS. SEE TS-FD-12 (FM 307 AT FM 1379) FOR DEPTH DETAILS

NOTES:

1. USE ASTRO BRACKET ASSEMBLY OR APPROVED EQUIV. SHALL BE REQUIRED TO MOUNT SIGNS AND SIGNAL HEADS.
2. PROVIDE ADDITIONAL REQUIRED DRILLED SHAFT ABOVE THE HIGHEST POINT OF ROADWAY UNDERNEATH THE SIGNAL MAST ARM TO ACCOMMODATE 20 FEET OF VERTICAL CLEARANCE.
3. DETAILS OF POLES, SIGNAL HEADS AND MOUNTING BRACKETS SHOWN ON THIS SHEET ARE EXAMPLES ONLY. SEE SIGNAL LAYOUT SHEET(S) AND APPLICABLE SMA-80, MA-C OR MA-D STANDARDS FOR THE ACTUAL DESIGN AND CONSTRUCTION OF MAST ARM POLES.



EASTBOUND AT FM 1379

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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

SIGNAL POLE DETAIL

FM 307 AT FM 1379

SHEET 4 OF 4

DESIGN	WSP	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
CHECK	WSP	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	WSP	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	WSP						211

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GENERAL NOTES :

1. PERFORM ALL ELECTRICAL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, AND TEXAS DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.
2. THE LOCATION OF CONDUCTORS, CONDUITS AND GROUND BOXES ARE DIAGRAMMATIC ONLY AND MAY BE SHIFTED BY THE ENGINEER TO ACCOMMODATE FIELD CONDITIONS.
3. USE ESTABLISHED INDUSTRY AND UTILITY SAFETY PRACTICES TO ERECT POLES AND LUMINARIES NEAR ANY OVERHEAD OR UNDERGROUND UTILITY. CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO BEGINNING SUCH WORK.
4. LOCATE ALL UTILITIES, BOTH UNDERGROUND AND ABOVE GROUND, IN THE PROJECT AREA PRIOR TO BEGINNING WORK SO THAT CONFLICTS ARE AVOIDED. CONTACT UTILITY COMPANY REGARDING THEIR SPECIFIC REQUIRED WORKING CLEARANCE REQUIREMENTS. MEET UTILITY COMPANY CLEARANCE REQUIREMENTS AND DO NOT PLACE ANY LUMINAIRE POLE WITHIN 10 FEET OF UTILITY POWER LINES.
5. UNDERGROUND UTILITIES OWNED BY THE TEXAS DEPARTMENT OF TRANSPORTATION ARE PRESENT WITHIN THE RIGHT-OF-WAY ON THIS PROJECT. CONTRACTOR SHALL CALL TEXAS 811 21 DAYS BEFORE CONSTRUCTION WORK TO LOCATE UNDERGROUND UTILITIES. FOR ILLUMINATION AND COMMUNICATIONS & CONTROL MAINTAINED BY TXDOT, CALL THE TXDOT TRAFFIC SIGNAL OFFICE FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION. FOR CITY OWNED UTILITY FACILITIES, CALL THE APPROPRIATE DEPARTMENT A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION. THE CONTRACTOR IS LIABLE FOR ALL DAMAGES INCURRED TO THE UTILITIES WHEN WORKING WITHOUT HAVING THE UTILITIES LOCATED PRIOR TO EXCAVATION.
6. CONSULT WITH ELECTRIC COMPANY REPRESENTATIVE TO COORDINATE ELECTRICAL SERVICE INSTALLATIONS.
7. CONTRACTOR TO REMOVE AND SALVAGE FOR ALL EXISTING STREET LIGHTS SPECIFIED FOR REMOVAL.
8. REMOVE ALL OLD ILLUMINATION RELATED CABLE/CONDUCTORS FROM ABANDONED CONDUIT.
9. FOLLOW ALL MANUFACTURER INSTALLATION INSTRUCTIONS.
10. ALL SPLICES AND TAPS SHALL BE WATERPROOF.
11. CONTRACTOR SHALL DEMONSTRATE CLEANLINESS BY PULLING A TEMPLATE (MOUSE) THROUGH THE CONDUIT. CONTRACTOR SHALL CLEAN THE CONDUITS IF NECESSARY. ALL CONDUITS INSTALLED WITHOUT CONDUCTORS SHALL BE CAPPED IMMEDIATELY AFTER PLACEMENT.
12. ALL METAL ENCLOSURES AND BOXES SHALL BE SOLIDLY BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.
13. DE-BURR ALL CONDUIT ENDS PRIOR TO INSTALLING BUSHINGS, CONNECTORS, OR COUPLINGS.
14. INSTALL BELL ENDS OR CONNECTORS WITH BUSHINGS ON ALL PVC CONDUIT TERMINATIONS.



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Dallas, Texas 75207
TBPE # F-2263



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**ILLUMINATION
GENERAL NOTES**

WSP USA Inc. TBPE #F-2263

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.
			212

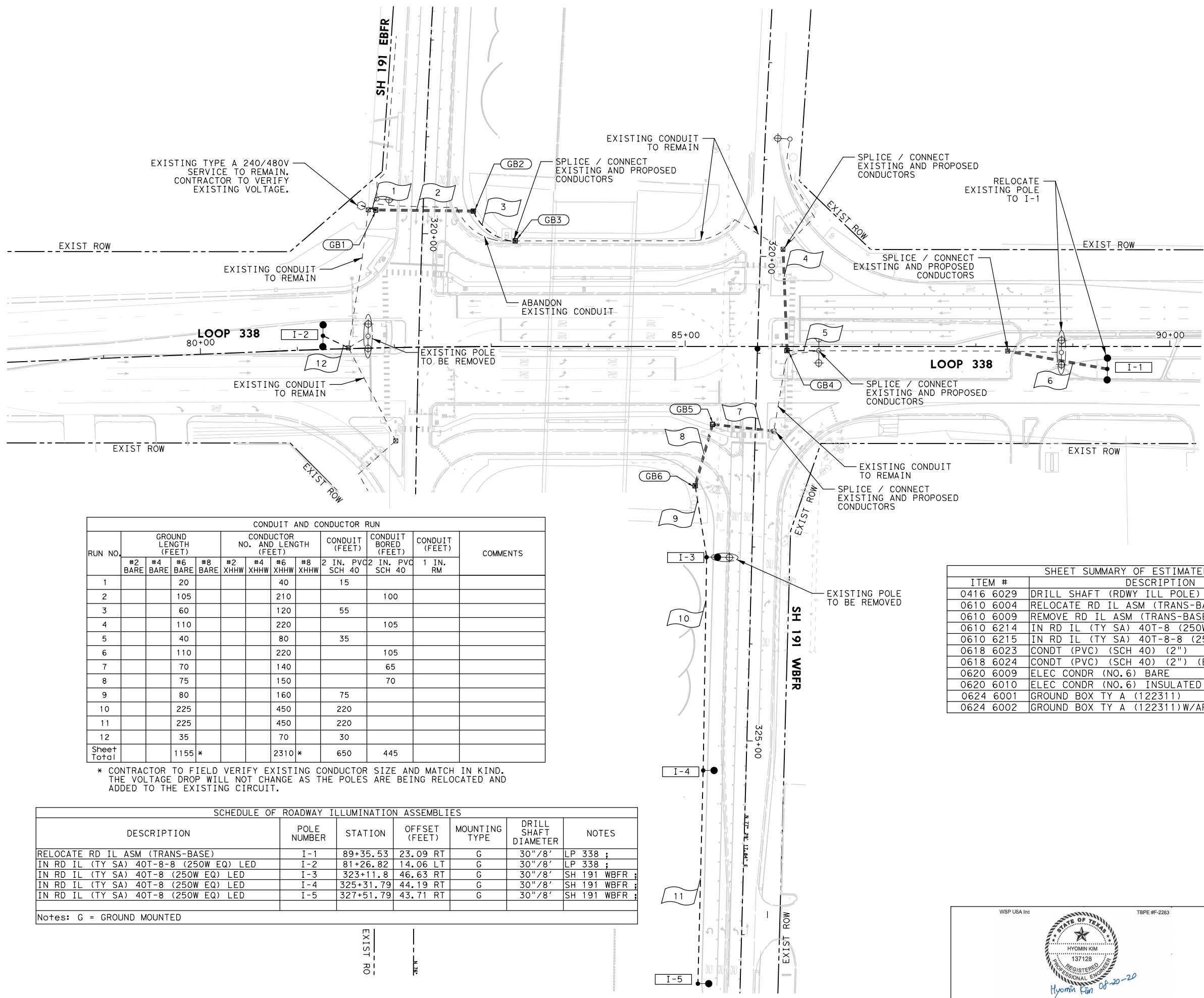
DATE: 8/19/2020 FILENAME: pw:\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. Tr



0' 25' 50' 100'
SCALE IN FEET

ILLUMINATION LEGEND

- PROP. ELECTRICAL SERVICE POINT
- EXIST. ELECTRICAL SERVICE POINT
- CONDUIT AND RUN NUMBER (IN TRENCH UNLESS OTHERWISE NOTED)
- CONDUIT (BORED)
- EXISTING CONDUIT
- POLE NO.
- RDWY ILLUMINATION ASSEMBLY (LED) (T-BASE)
- EXISTING LIGHT POLE TO REMOVE OR RELOCATE
- EXISTING LIGHT POLE TO REMAIN
- TYPE A GROUND BOX W/ APRON
- TYPE A GROUND BOX
- EXISTING GROUND BOX
- EXISTING NON LUMINAIRE POLE
- PROPOSED NON LUMINAIRE POLE



RUN NO.	GROUND LENGTH (FEET)				CONDUCTOR NO. AND LENGTH (FEET)				CONDUIT (FEET)	CONDUIT BORED (FEET)	CONDUIT (FEET)	COMMENTS
	#2 BARE	#4 BARE	#6 BARE	#8 BARE	#2 XHHW	#4 XHHW	#6 XHHW	#8 XHHW				
1			20				40		15			
2			105				210			100		
3			60				120		55			
4			110				220			105		
5			40				80		35			
6			110				220			105		
7			70				140			65		
8			75				150			70		
9			80				160		75			
10			225				450		220			
11			225				450		220			
12			35				70		30			
Sheet Total			1155 *				2310 *		650	445		

* CONTRACTOR TO FIELD VERIFY EXISTING CONDUCTOR SIZE AND MATCH IN KIND. THE VOLTAGE DROP WILL NOT CHANGE AS THE POLES ARE BEING RELOCATED AND ADDED TO THE EXISTING CIRCUIT.

SHEET SUMMARY OF ESTIMATED QUANTITIES			
ITEM #	DESCRIPTION	UNIT	QTY
0416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	40
0610 6004	RELOCATE RD IL ASM (TRANS-BASE)	EA	1
0610 6009	REMOVE RD IL ASM (TRANS-BASE)	EA	1
0610 6214	IN RD IL (TY SA) 40T-8 (250W EQ) LED	EA	3
0610 6215	IN RD IL (TY SA) 40T-8-8 (250W EQ) LED	EA	1
0618 6023	COND (PVC) (SCH 40) (2")	LF	650
0618 6024	COND (PVC) (SCH 40) (2") (BORE)	LF	445
0620 6009	ELEC CONDR (NO.6) BARE	LF	1155
0620 6010	ELEC CONDR (NO.6) INSULATED	LF	2310
0624 6001	GROUND BOX TY A (122311)	EA	1
0624 6002	GROUND BOX TY A (122311)W/APRON	EA	5

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES						
DESCRIPTION	POLE NUMBER	STATION	OFFSET (FEET)	MOUNTING TYPE	DRILL SHAFT DIAMETER	NOTES
RELOCATE RD IL ASM (TRANS-BASE)	I-1	89+35.53	23.09 RT	G	30"/8'	LP 338 ;
IN RD IL (TY SA) 40T-8-8 (250W EQ) LED	I-2	81+26.82	14.06 LT	G	30"/8'	LP 338 ;
IN RD IL (TY SA) 40T-8 (250W EQ) LED	I-3	323+11.8	46.63 RT	G	30"/8'	SH 191 WBFR ;
IN RD IL (TY SA) 40T-8 (250W EQ) LED	I-4	325+31.79	44.19 RT	G	30"/8'	SH 191 WBFR ;
IN RD IL (TY SA) 40T-8 (250W EQ) LED	I-5	327+51.79	43.71 RT	G	30"/8'	SH 191 WBFR ;

Notes: G = GROUND MOUNTED

WSP WSP USA Inc.
2777 N. Stemmons Freeway, Ste. 1600
Dallas, Texas 75207
TBPE # F-2263

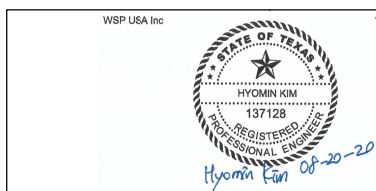
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

ILLUMINATION PLAN
LOOP 338 AT SH 191

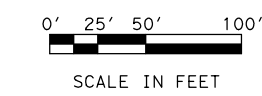
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DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.
CHECK			
WSP			

213



DATE: 9/2/2020 FILENAME: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. Tr



Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service *Conduit Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Lighting Contactor Amps	Panel/bd/Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
FM307 AT FM1379	N/A	ELC SRV TY A 240/480 060 (NS)SS(E)SP(O)	1 1/4"	3/#6	N/A	2P/60	2P/ 60	N/A	1	2P/20	8.32	4.0

* VERIFY SERVICE CONDUIT SIZE WITH UTILITY. SIZE MAY VARY DUE TO UTILITY COMPANY REQUIREMENTS.

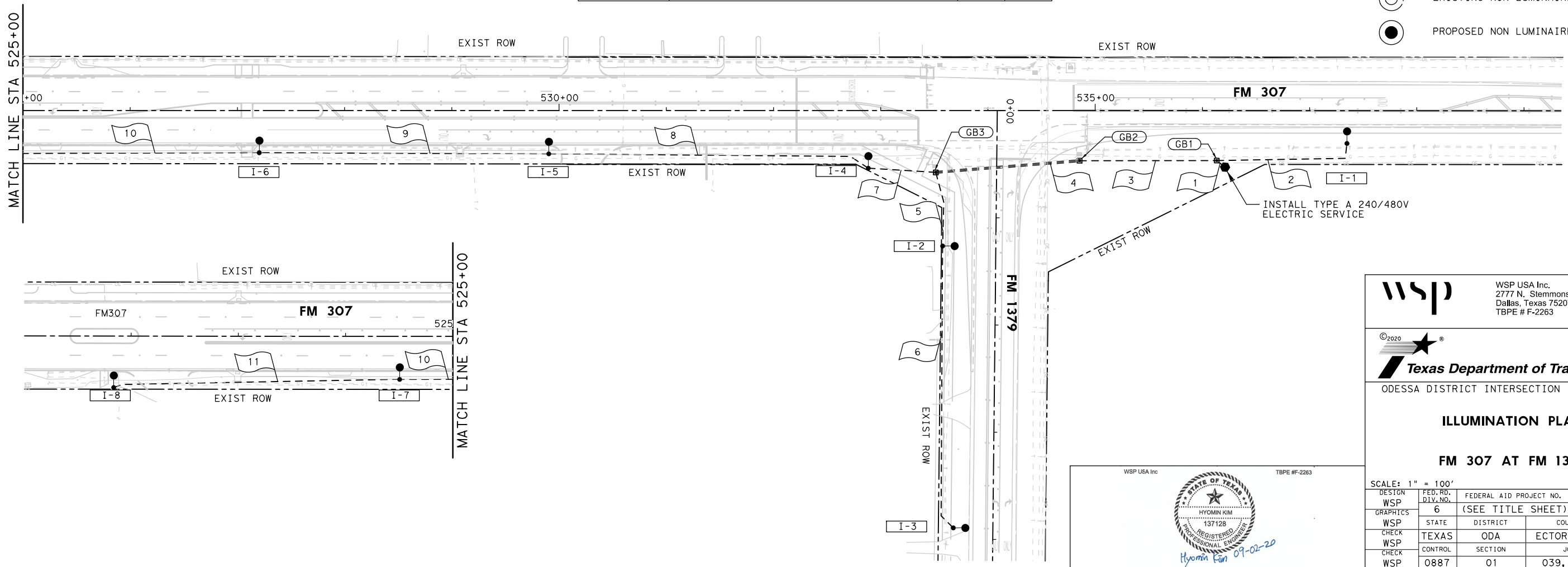
RUN NO.	GROUND LENGTH (FEET)				CONDUCTOR NO. AND LENGTH (FEET)				CONDUIT (FEET)	CONDUIT BORED (FEET)	CONDUIT (FEET)
	#2 BARE	#4 BARE	#6 BARE	#8 BARE	#2 XHHW	#4 XHHW	#6 XHHW	#8 XHHW	2 IN. PVC SCH 40	2 IN. PVC SCH 40	1 IN. RM
1			15				30		10		
2			140				280		135		
3			135				270		130		
4			140				280		135		
5			75				150		70		
6			275				550		270		
7			70				140		65		
8			310				620		305		
9			275				550		270		
10			275				550		270		
11			270				540		265		
Sheet Total			1980				3960		1790	135	

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES						
DESCRIPTION	POLE NUMBER	STATION	OFFSET (FEET)	MOUNTING TYPE	DRILL SHAFT DIAMETER	NOTES
IN RD IL (TY SA) 50T-10 (400W EQ) LED	I-1	537+34.86	30.54 RT	G	30"/10'	FM 307 ;
IN RD IL (TY SA) 50T-10 (400W EQ) LED	I-2	1+26.86	49.67 RT	G	30"/10'	FM 1379 ;
IN RD IL (TY SA) 50T-10 (400W EQ) LED	I-3	3+89.63	36.87 RT	G	30"/10'	FM 1379 ;
IN RD IL (TY SA) 50T-10 (400W EQ) LED	I-4	532+88.38	53.76 RT	G	30"/10'	FM 307 ;
IN RD IL (TY SA) 50S-10 (400W EQ) LED	I-5	529+90.41	40.39 RT	G	30"/10'	FM 307 ;
IN RD IL (TY SA) 50S-10 (400W EQ) LED	I-6	527+20.41	39.33 RT	G	30"/10'	FM 307 ;
IN RD IL (TY SA) 50S-10 (400W EQ) LED	I-7	524+50.41	40.11 RT	G	30"/10'	FM 307 ;
IN RD IL (TY SA) 50T-10 (400W EQ) LED	I-8	521+83.79	48.03 RT	G	30"/10'	FM 307 ;

Notes: G = GROUND MOUNTED

SHEET SUMMARY OF ESTIMATED QUANTITIES			
ITEM #	DESCRIPTION	UNIT	QTY
0416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	80
0610 6288	IN RD IL (TY SA) 50T-10 (400W EQ) LED	EA	5
0610 6312	IN RD IL (TY SA) 50S-10 (400W EQ) LED	EA	3
0618 6023	CONDT (PVC) (SCH 40) (2")	LF	1790
0618 6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	135
0620 6009	ELEC CONDR (NO.6) BARE	LF	1980
0620 6010	ELEC CONDR (NO.6) INSULATED	LF	3960
0624 6002	GROUND BOX TY A (122311)W/APRON	EA	3
0628 6045	ELC SRV TY A 240/480 060 (NS)SS(E)SP(O)	EA	1

- ILLUMINATION LEGEND**
- PROP. ELECTRICAL SERVICE POINT
 - EXIST. ELECTRICAL SERVICE POINT
 - CONDUIT AND RUN NUMBER (IN TRENCH UNLESS OTHERWISE NOTED)
 - CONDUIT (BORED)
 - EXISTING CONDUIT
 - POLE NO.
 - RDWY ILLUMINATION ASSEMBLY (LED) (T-BASE)
 - EXISTING LIGHT POLE TO REMOVE OR RELOCATE
 - EXISTING LIGHT POLE TO REMAIN
 - TYPE A GROUND BOX W/ APRON
 - TYPE A GROUND BOX
 - EXISTING GROUND BOX
 - EXISTING NON LUMINAIRE POLE
 - PROPOSED NON LUMINAIRE POLE



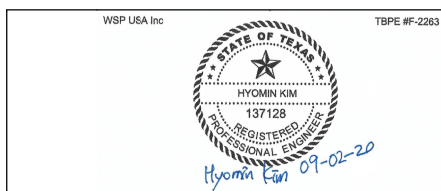
WSP WSP USA Inc.
2777 N. Stemmons Freeway, Ste. 1600
Dallas, Texas 75207
TBPE # F-2263

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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

ILLUMINATION PLAN
FM 307 AT FM 1379

SCALE: 1" = 100'

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.
CHECK			SHEET NO.
WSP			214



DATE: 8/19/2020 FILENAME: pw:\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. Tr

SHEET SUMMARY OF ESTIMATED QUANTITIES			
ITEM #	DESCRIPTION	UNIT	QTY
0416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	96
0610 6004	RELOCATE RD IL ASM (TRANS-BASE)	EA	4
0610 6214	IN RD IL (TY SA) 40T-8 (250W EQ) LED	EA	8
0618 6023	CONDT (PVC) (SCH 40) (2")	LF	2090
0618 6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	465
0620 6009	ELEC CONDR (NO.6) BARE	LF	2640
0620 6010	ELEC CONDR (NO.6) INSULATED	LF	5280
0624 6002	GROUND BOX TY A (122311)W/APRON	EA	4

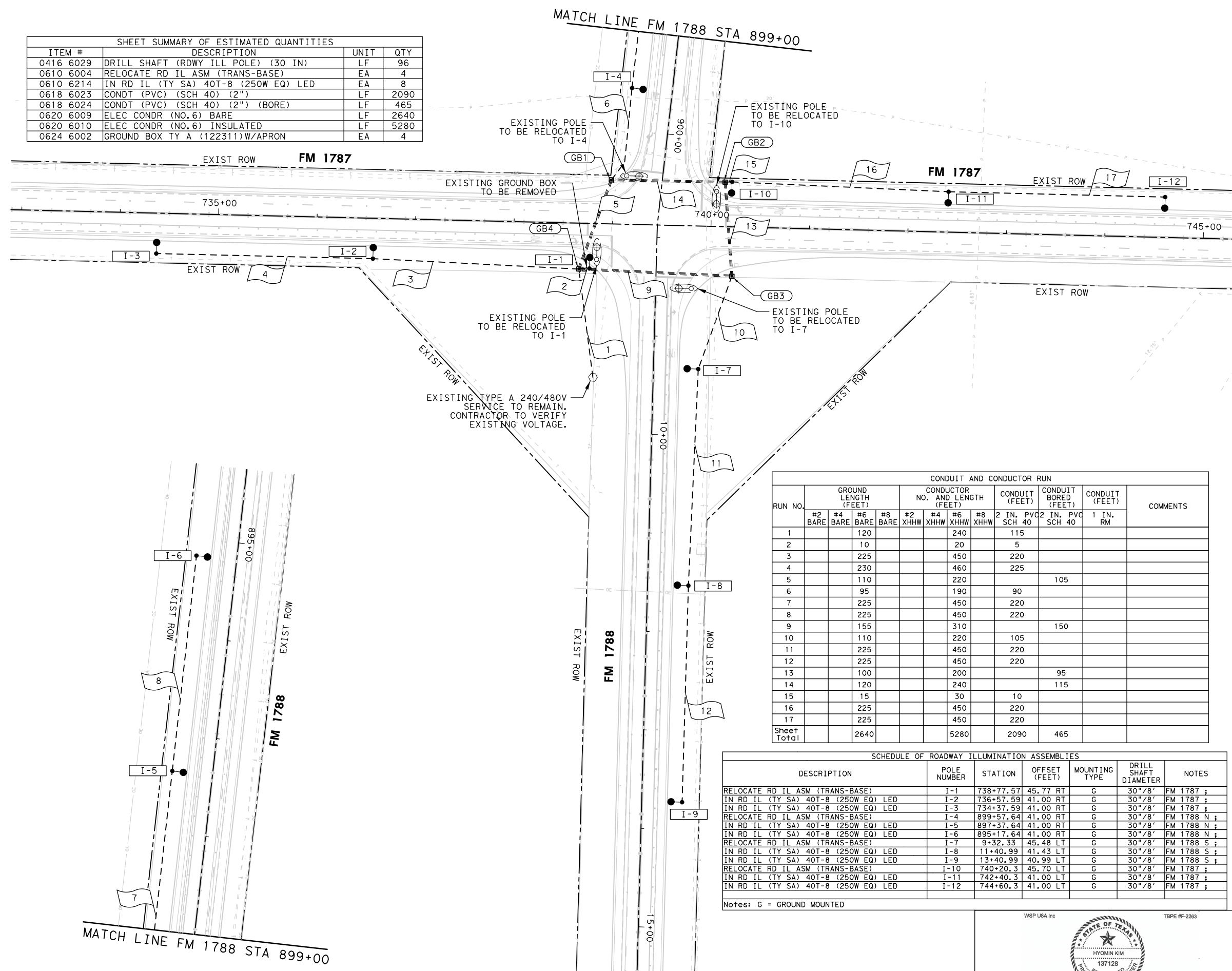


0' 25' 50' 100'

SCALE IN FEET

ILLUMINATION LEGEND

- PROP. ELECTRICAL SERVICE POINT
- EXIST. ELECTRICAL SERVICE POINT
- CONDUIT AND RUN NUMBER (IN TRENCH UNLESS OTHERWISE NOTED)
- CONDUIT (BORED)
- EXISTING CONDUIT
- POLE NO.
- RDWY ILLUMINATION ASSEMBLY (LED) (T-BASE)
- EXISTING LIGHT POLE TO REMOVE OR RELOCATE
- EXISTING LIGHT POLE TO REMAIN
- TYPE A GROUND BOX W/ APRON
- TYPE A GROUND BOX
- EXISTING GROUND BOX
- EXISTING NON LUMINAIRE POLE
- PROPOSED NON LUMINAIRE POLE



RUN NO.	GROUND LENGTH (FEET)				CONDUCTOR NO. AND LENGTH (FEET)				CONDUIT (FEET)	CONDUIT BORED (FEET)	CONDUIT (FEET)	COMMENTS
	#2 BARE	#4 BARE	#6 BARE	#8 BARE	#2 XHHW	#4 XHHW	#6 XHHW	#8 XHHW				
1			120				240		115			
2			10				20		5			
3			225				450		220			
4			230				460		225			
5			110				220			105		
6			95				190		90			
7			225				450		220			
8			225				450		220			
9			155				310			150		
10			110				220		105			
11			225				450		220			
12			225				450		220			
13			100				200			95		
14			120				240			115		
15			15				30		10			
16			225				450		220			
17			225				450		220			
Sheet Total			2640				5280		2090	465		

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES						
DESCRIPTION	POLE NUMBER	STATION	OFFSET (FEET)	MOUNTING TYPE	DRILL SHAFT DIAMETER	NOTES
RELOCATE RD IL ASM (TRANS-BASE)	I-1	738+77.57	45.77 RT	G	30"/8'	FM 1787 ;
IN RD IL (TY SA) 40T-8 (250W EQ) LED	I-2	736+57.59	41.00 RT	G	30"/8'	FM 1787 ;
IN RD IL (TY SA) 40T-8 (250W EQ) LED	I-3	734+37.59	41.00 RT	G	30"/8'	FM 1787 ;
RELOCATE RD IL ASM (TRANS-BASE)	I-4	899+57.64	41.00 RT	G	30"/8'	FM 1788 N ;
IN RD IL (TY SA) 40T-8 (250W EQ) LED	I-5	897+37.64	41.00 RT	G	30"/8'	FM 1788 N ;
IN RD IL (TY SA) 40T-8 (250W EQ) LED	I-6	895+17.64	41.00 RT	G	30"/8'	FM 1788 N ;
RELOCATE RD IL ASM (TRANS-BASE)	I-7	9+32.33	45.48 LT	G	30"/8'	FM 1788 S ;
IN RD IL (TY SA) 40T-8 (250W EQ) LED	I-8	11+40.99	41.43 LT	G	30"/8'	FM 1788 S ;
IN RD IL (TY SA) 40T-8 (250W EQ) LED	I-9	13+40.99	40.99 LT	G	30"/8'	FM 1788 S ;
RELOCATE RD IL ASM (TRANS-BASE)	I-10	740+20.3	45.70 LT	G	30"/8'	FM 1787 ;
IN RD IL (TY SA) 40T-8 (250W EQ) LED	I-11	742+40.3	41.00 LT	G	30"/8'	FM 1787 ;
IN RD IL (TY SA) 40T-8 (250W EQ) LED	I-12	744+60.3	41.00 LT	G	30"/8'	FM 1787 ;

Notes: G = GROUND MOUNTED

WSP WSP USA Inc.
2777 N. Stemmons Freeway, Ste. 1600
Dallas, Texas 75207
TBPE # F-2263

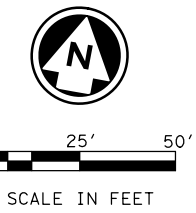
Texas Department of Transportation
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

ILLUMINATION PLAN
FM 1787 AT FM 1788

SCALE: 1" = 100'			
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
WSP	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
WSP	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
WSP	0887	01	039, ETC.
CHECK			215
WSP			

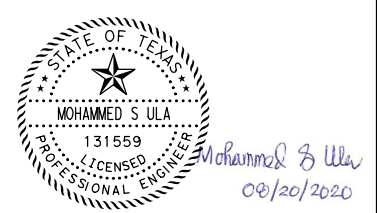


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- LEGEND**
- [A] RE PM W/RET REQ TY I (W)4" (SLD)
 - [B] RE PM W/RET REQ TY I (W)4" (BRK) W/TYPE I-C @ 80' C/C
 - [C] REFL PAV MRK TY I (W)8" (SLD)
 - [D] REFL PAV MRK TY I (W)8" (SLD) W/TYPE I-C @ 20' C/C
 - [E] REFL PAV MRK TY I (W)8" (DOT)
 - [F] PREFAB PAV MRK TY C (W)12" (SLD)
 - [G] PREFAB PAV MRK TY C (W)24" (SLD)
 - [H] RE PM W/RET REQ TY I (Y)4" (SLD)
 - [I] REFL PAV MRK TY I (Y)4" (BRK) W/TYPE II-A-A @ 40' C/C
 - [J] REFL PAV MRK TY I (Y)4" (DBL) W/TYPE II-A-A @ 40' C/C
 - [K] REFL PAV MRK TY I (W)36" (YLD TRI)
 - [L] PREFAB PAV MRK TY C (W) (ARROW)
 - [M] PREFAB PAV MRK TY C (W) (WORD)
 - [N] REFL PAV MRK TY I (W)8" (LNDRP)
 - [O] PREFAB PAV MRK TY C (W) (LNDRP ARROW)
 - [P] REFL PAV MRK TY I Y 4" (DBL) W/TYPE II-A-A @ 20' C/C
 - [Q] REFL PAV MRK TY I (Y)12" (SLD) DBL
 - [R] REFL PAV MRK TY I (Y)4" (SLD)
 - [S] DEL ASSM (D-SW) SZ1 (FLX) GND
 - [T] TRAFFIC DIRECTION
 - [U] PROP SIGN ASSEMBLY
 - [XXX] PROP SIGN NUMBER

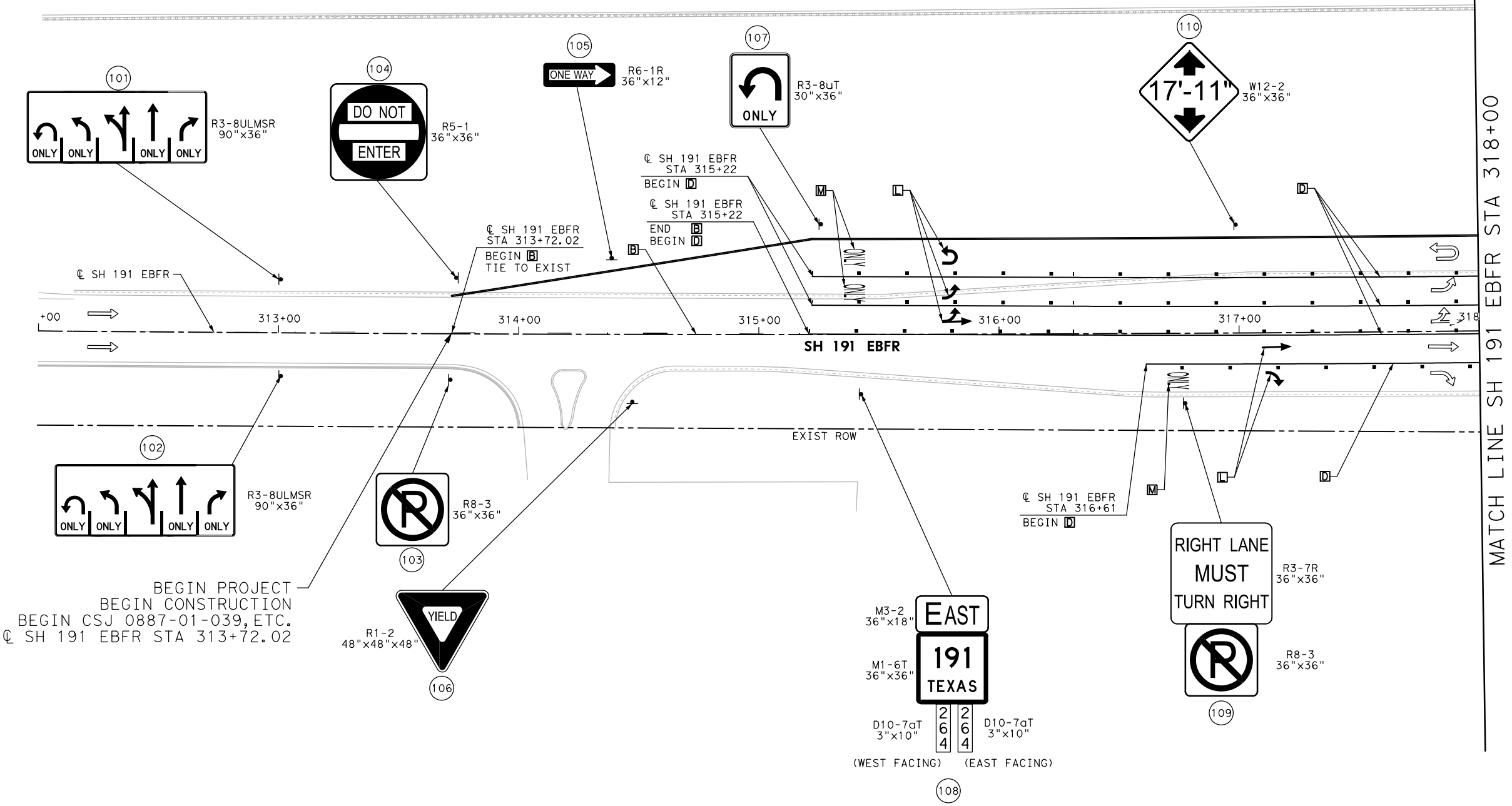
- NOTES:**
- REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE SPECIFIED.
 - ALL PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED, AS APPROVED.
 - NO SEPARATE PAYMENT WILL BE MADE FOR PAVEMENT MARKING REMOVAL. THIS COST WILL BE INCIDENTAL TO THE INSTALLATION OF PAVEMENT MARKINGS.



SIGNING & PAVEMENT MARKING
LP 338 - SH 191 INTERSECTION

SCALE: 1" = 50' SHEET 1 OF 5

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK SU	SU	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK ZS	ZS						216



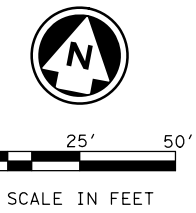
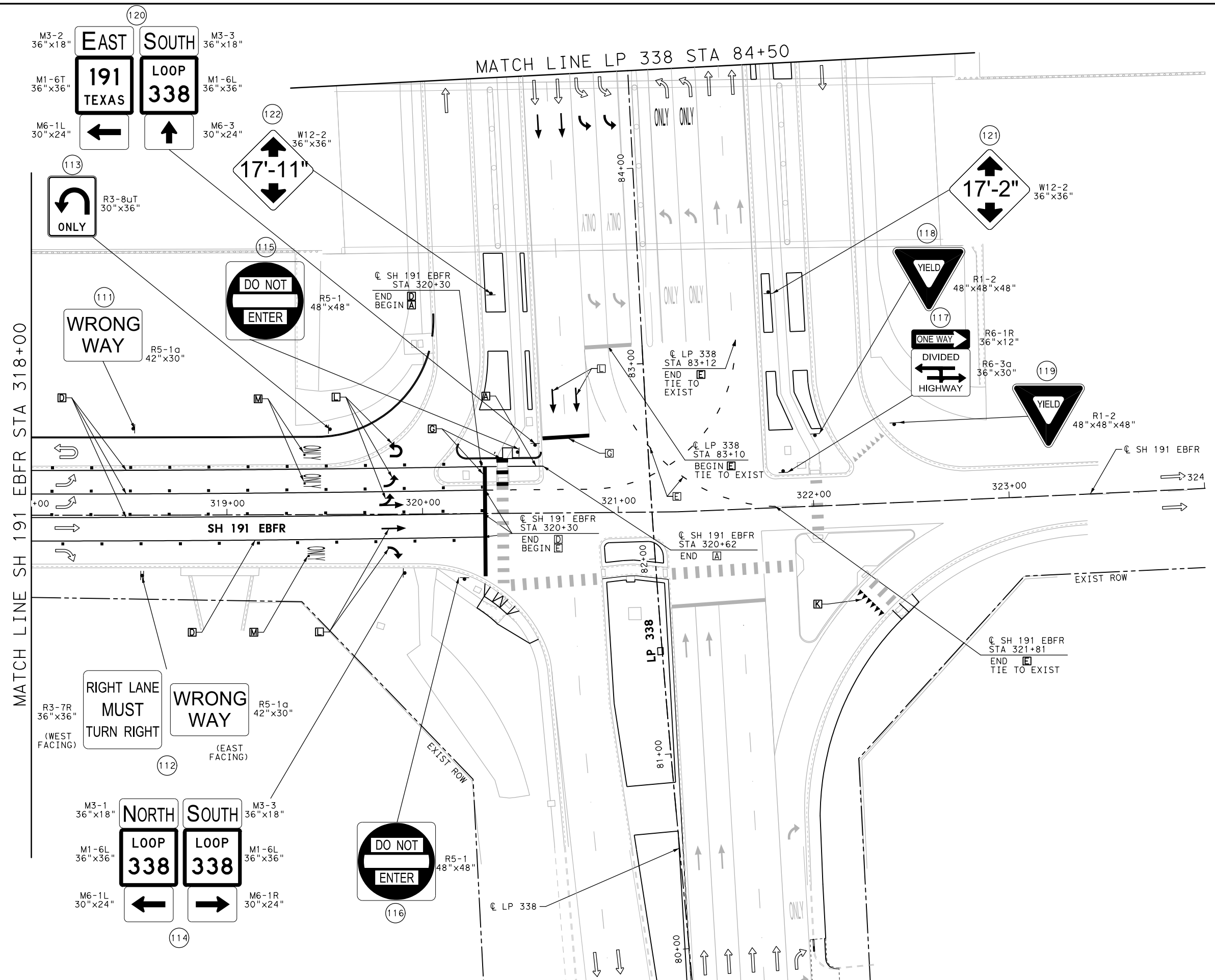
MATCH LINE SH 191 EBFR STA 318+00

BEGIN PROJECT
BEGIN CONSTRUCTION
BEGIN CSJ 0887-01-039, ETC.
☉ SH 191 EBFR STA 313+72.02

M3-2
36"x18"
EAST
191
TEXAS
D10-7aT
3"x10"
2
6
4
(WEST FACING)
D10-7aT
3"x10"
2
6
4
(EAST FACING)
108

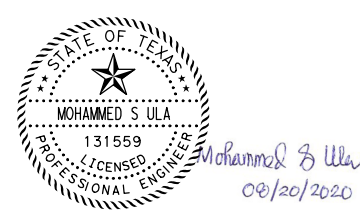
R3-7R
36"x36"
RIGHT LANE
MUST
TURN RIGHT
R8-3
36"x36"
109

FILENAME: pw:\jmt-pw-bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design DATE: 8/20/2020



- LEGEND**
- [A] RE PM W/RET REQ TY I (W)4" (SLD)
 - [B] RE PM W/RET REQ TY I (W)4" (BRK) W/TYPE I-C @ 80' C/C
 - [C] REFL PAV MRK TY I (W)8" (SLD)
 - [D] REFL PAV MRK TY I (W)8" (SLD) W/TYPE I-C @ 20' C/C
 - [E] REFL PAV MRK TY I (W)8" (DOT)
 - [F] PREFAB PAV MRK TY C (W)12" (SLD)
 - [G] PREFAB PAV MRK TY C (W)24" (SLD)
 - [H] RE PM W/RET REQ TY I (Y)4" (SLD)
 - [I] REFL PAV MRK TY I (Y)4" (BRK) W/TYPE II-A-A @ 40' C/C
 - [J] REFL PAV MRK TY I (Y)4" (DBL) W/TYPE II-A-A @ 40' C/C
 - [K] REFL PAV MRK TY I (W)36" (YLD TRI)
 - [L] PREFAB PAV MRK TY C (W) (ARROW)
 - [M] PREFAB PAV MRK TY C (W) (WORD)
 - [N] REFL PAV MRK TY I (W)8" (LNDP)
 - [O] PREFAB PAV MRK TY C (W) (LNDP ARROW)
 - [P] REFL PAV MRK TY I Y 4" (DBL) W/TYPE II-A-A @ 20' C/C
 - [Q] REFL PAV MRK TY I (Y)12" (SLD) DBL
 - [R] REFL PAV MRK TY I (Y)4" (SLD)
 - [S] DEL ASSM (D-SW) SZ1 (FLX) GND
 - [T] TRAFFIC DIRECTION
 - [U] PROP SIGN ASSEMBLY
 - [XXX] PROP SIGN NUMBER

- NOTES:**
1. REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE SPECIFIED.
 2. ALL PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED, AS APPROVED.
 3. NO SEPARATE PAYMENT WILL BE MADE FOR PAVEMENT MARKING REMOVAL. THIS COST WILL BE INCIDENTAL TO THE INSTALLATION OF PAVEMENT MARKINGS.



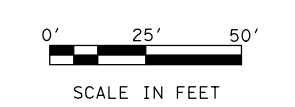
**SIGNING & PAVEMENT MARKING
LP 338 - SH 191 INTERSECTION**

SCALE: 1" = 50' SHEET 2 OF 5

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK SU	CONTROL	SECTION	JOB
CHECK ZS	0887	01	039, ETC.

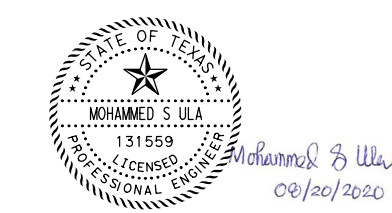
217

FILENAME: pw:\jmt-pw-bentley.com\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design



- LEGEND**
- [A] RE PM W/RET REQ TY I (W)4" (SLD)
 - [B] RE PM W/RET REQ TY I (W)4" (BRK) W/TYPE I-C @ 80' C/C
 - [C] REFL PAV MRK TY I (W)8" (SLD)
 - [D] REFL PAV MRK TY I (W)8" (SLD) W/TYPE I-C @ 20' C/C
 - [E] REFL PAV MRK TY I (W)8" (DOT)
 - [F] PREFAB PAV MRK TY C (W)12" (SLD)
 - [G] PREFAB PAV MRK TY C (W)24" (SLD)
 - [H] RE PM W/RET REQ TY I (Y)4" (SLD)
 - [I] REFL PAV MRK TY I (Y)4" (BRK) W/TYPE II-A-A @ 40' C/C
 - [J] REFL PAV MRK TY I (Y)4" (DBL) W/TYPE II-A-A @ 40' C/C
 - [K] REFL PAV MRK TY I (W)36" (YLD TRI)
 - [L] PREFAB PAV MRK TY C (W) (ARROW)
 - [M] PREFAB PAV MRK TY C (W) (WORD)
 - [N] REFL PAV MRK TY I (W)8" (LNDP)
 - [O] PREFAB PAV MRK TY C (W) (LNDP ARROW)
 - [P] REFL PAV MRK TY I Y 4" (DBL) W/TYPE II-A-A @ 20' C/C
 - [Q] REFL PAV MRK TY I (Y)12" (SLD) DBL
 - [R] REFL PAV MRK TY I (Y)4" (SLD)
 - [S] DEL ASSM (D-SW) S21 (FLX) GND
 - [T] TRAFFIC DIRECTION
 - [U] PROP SIGN ASSEMBLY
 - [XXX] PROP SIGN NUMBER

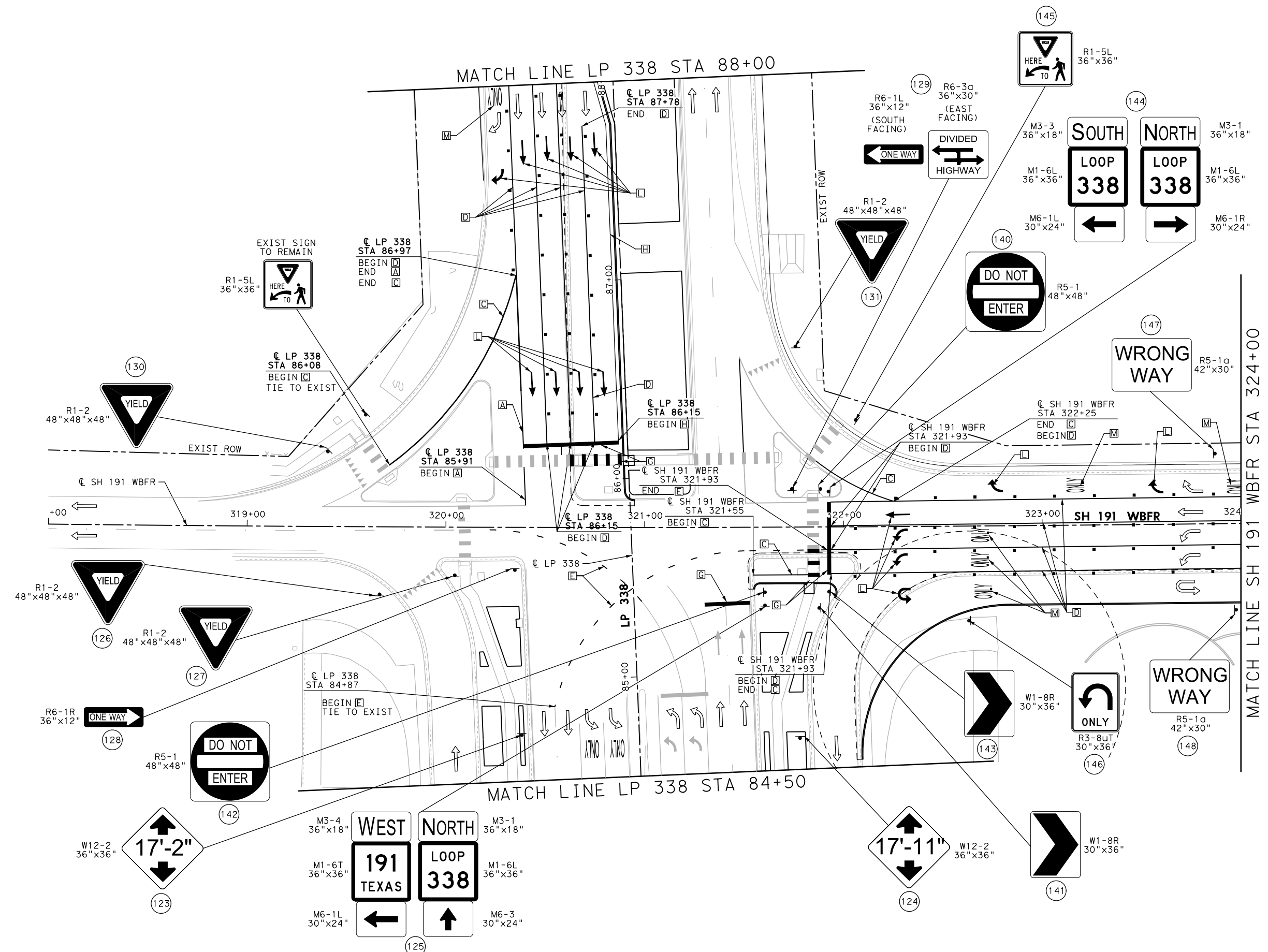
- NOTES:**
- REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE SPECIFIED.
 - ALL PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED, AS APPROVED.
 - NO SEPARATE PAYMENT WILL BE MADE FOR PAVEMENT MARKING REMOVAL. THIS COST WILL BE INCIDENTAL TO THE INSTALLATION OF PAVEMENT MARKINGS.



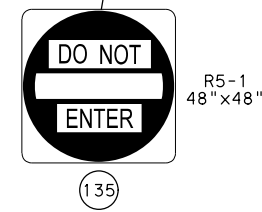
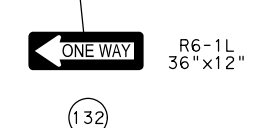
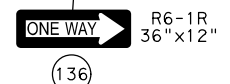
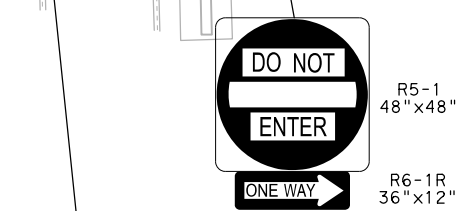
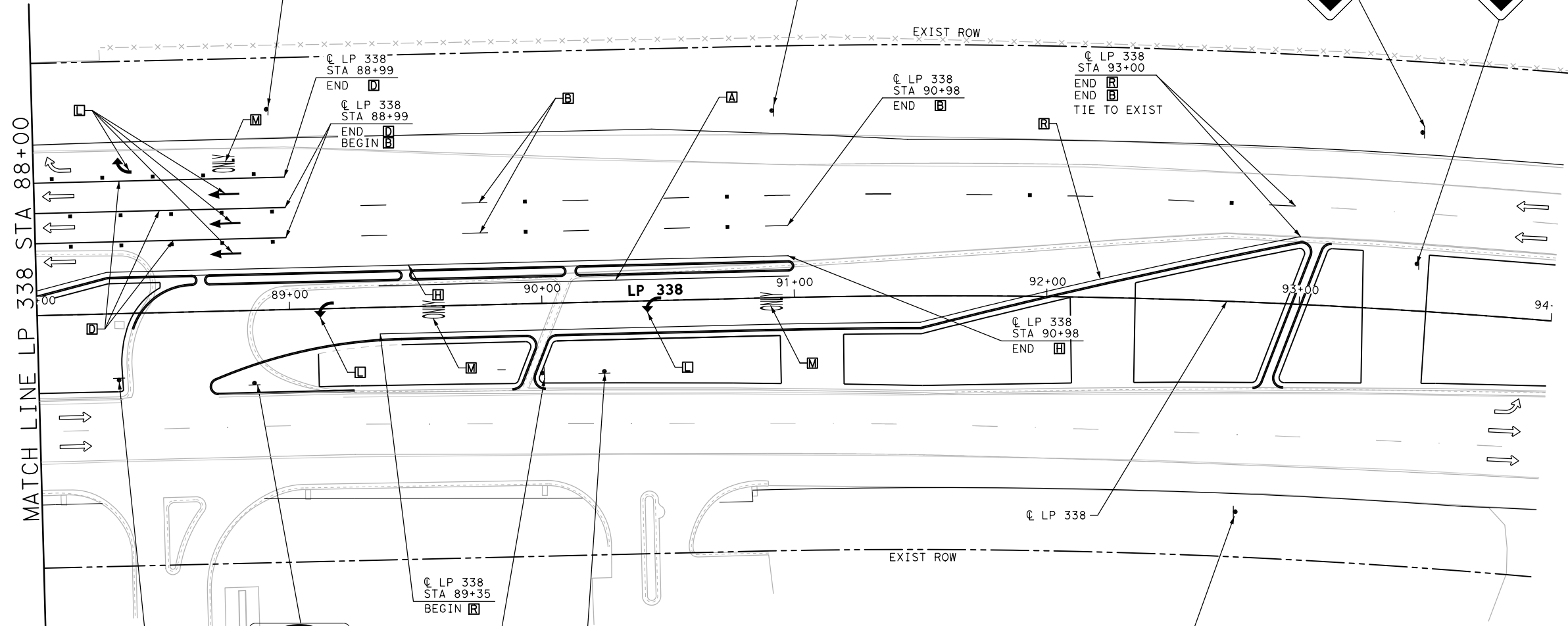
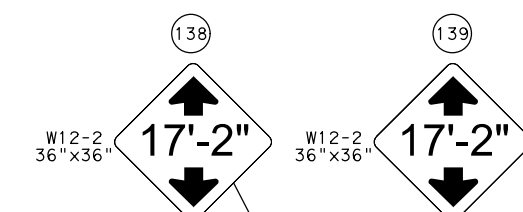
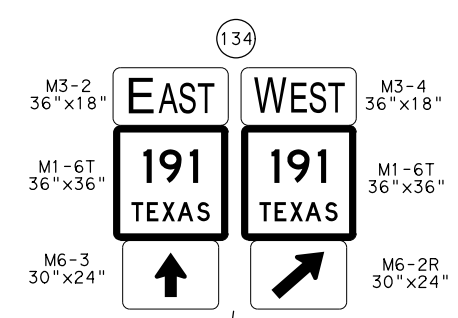
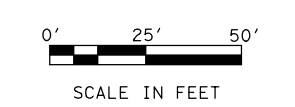
**SIGNING & PAVEMENT MARKING
LP 338 - SH 191 INTERSECTION**

SCALE: 1" = 50' SHEET 3 OF 5

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	SU	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	ZS						218

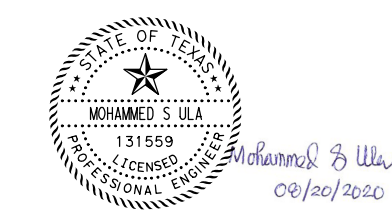


FILENAME: pw:\jmt-pw-bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design
 DATE: 8/20/2020



- LEGEND**
- [A] RE PM W/RET REQ TY I (W)4" (SLD)
 - [B] RE PM W/RET REQ TY I (W)4" (BRK) W/TYPE I-C @ 80' C/C
 - [C] REFL PAV MRK TY I (W)8" (SLD)
 - [D] REFL PAV MRK TY I (W)8" (SLD) W/TYPE I-C @ 20' C/C
 - [E] REFL PAV MRK TY I (W)8" (DOT)
 - [F] PREFAB PAV MRK TY C (W)12" (SLD)
 - [G] PREFAB PAV MRK TY C (W)24" (SLD)
 - [H] RE PM W/RET REQ TY I (Y)4" (SLD)
 - [I] REFL PAV MRK TY I (Y)4" (BRK) W/TYPE II-A-A @ 40' C/C
 - [J] REFL PAV MRK TY I (Y)4" (DBL) W/TYPE II-A-A @ 40' C/C
 - [K] REFL PAV MRK TY I (W)36" (YLD TRI)
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 - [T] TRAFFIC DIRECTION
 - [U] PROP SIGN ASSEMBLY
 - [XXX] PROP SIGN NUMBER

- NOTES:**
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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

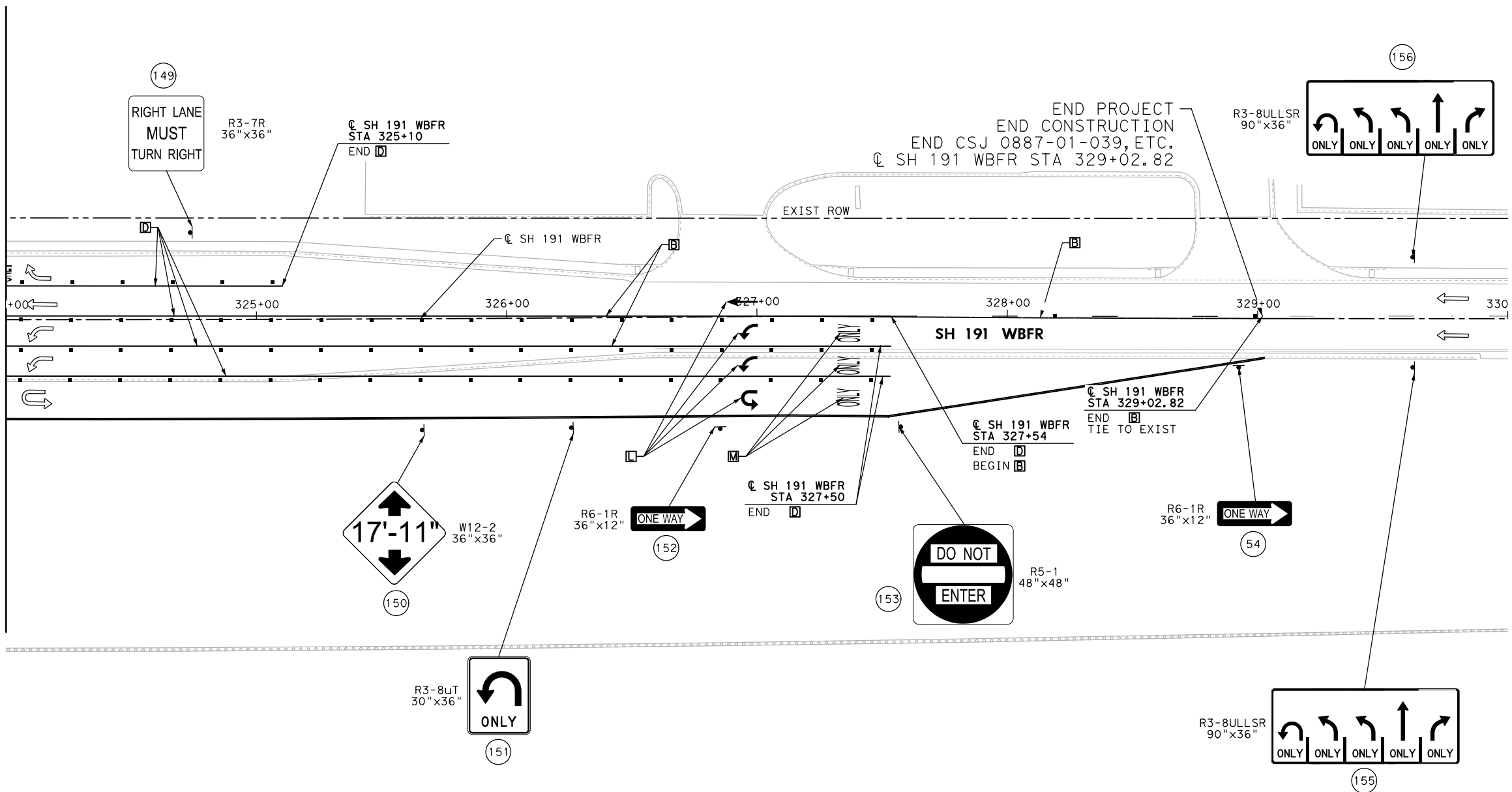
SIGNING & PAVEMENT MARKING
 LP 338 - SH 191 INTERSECTION

SCALE: 1" = 50' SHEET 4 OF 5

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	SU	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	ZS						219

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

MATCH LINE SH 191 WBFR STA 324+00

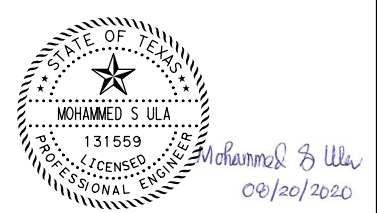


LEGEND

- [A] RE PM W/RET REQ TY I (W)4" (SLD)
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- [T] TRAFFIC DIRECTION
- [U] PROP SIGN ASSEMBLY
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NOTES:

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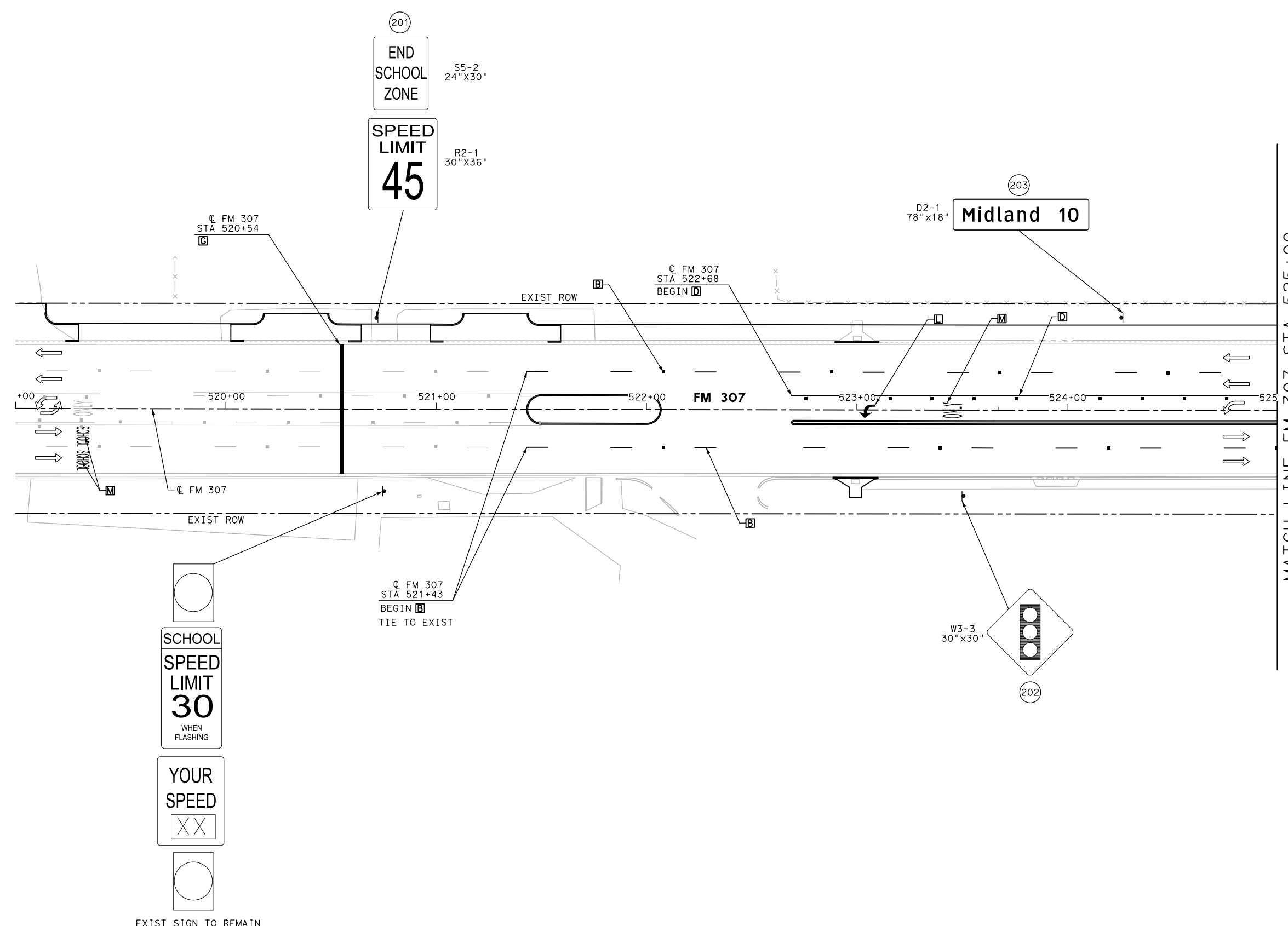
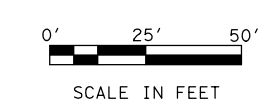
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TBPE REGISTRATION NO. F-18368

Texas Department of Transportation
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

SIGNING & PAVEMENT MARKING
LP 338 - SH 191 INTERSECTION

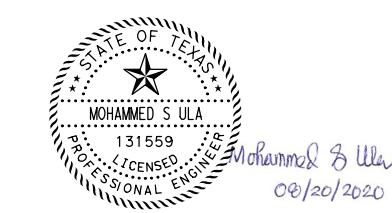
SCALE: 1" = 50'		SHEET 5 OF 5	
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK SU	CONTROL	SECTION	JOB
CHECK ZS	0887	01	039, ETC.
			220

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design



- LEGEND**
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

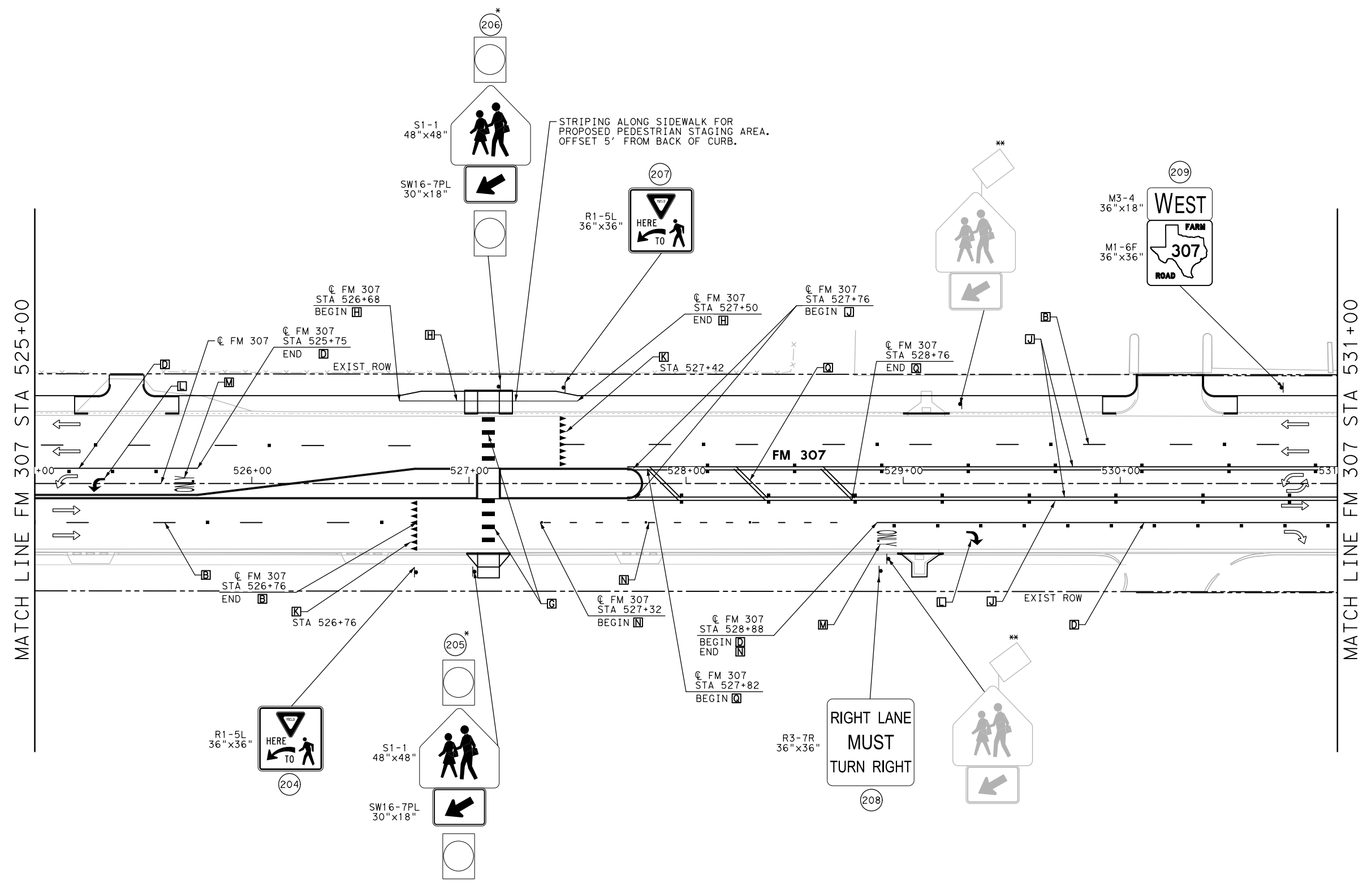
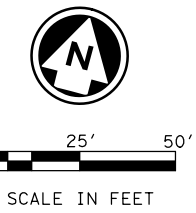
**SIGNING & PAVEMENT MARKING
FM 307 - FM 1379 INTERSECTION**

SCALE: 1" = 50' SHEET 1 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK SU	CONTROL	SECTION	JOB
CHECK ZS	0887	01	039, ETC.

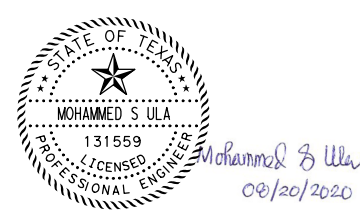
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- LEGEND**
- [A] RE PM W/RET REQ TY I (W)4" (SLD)
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 - [E] REFL PAV MRK TY I (W)8" (DOT)
 - [F] PREFAB PAV MRK TY C (W)12" (SLD)
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 - [U] PROP SIGN ASSEMBLY
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SIGNING & PAVEMENT MARKING
FM 307 - FM 1379 INTERSECTION**

SCALE: 1" = 50' SHEET 2 OF 6

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	SU	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	ZS						222

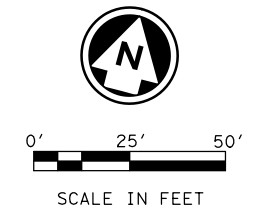
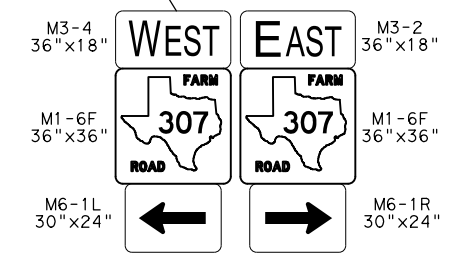
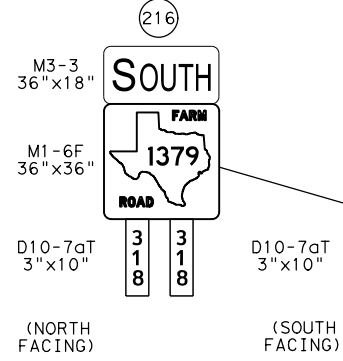
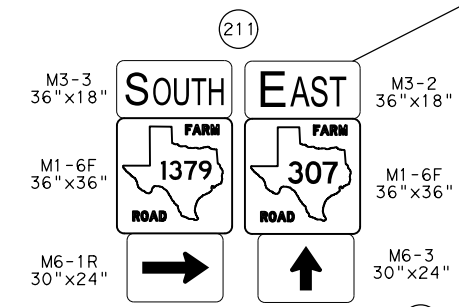
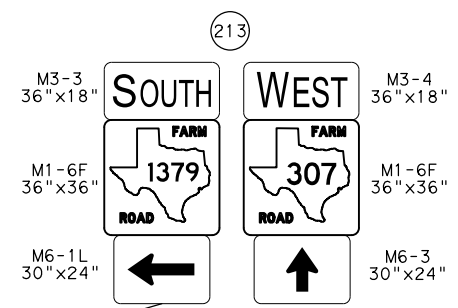
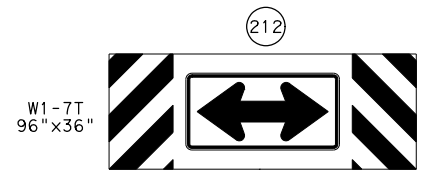
*ROADSIDE FLASHING BEACON ASSEMBLY WITH SOLAR POWER
**EXISTING SIGN WITH SOLAR PANEL TO BE SALVAGED AND RETURNED TO TXDOT

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\Des\gnData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

MATCH LINE FM 307 STA 531+00

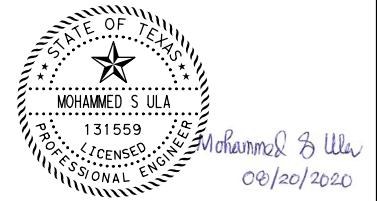
MATCH LINE FM 1379 STA 3+00

EXIST SIGN TO REMAIN



- LEGEND**
- [A] RE PM W/RET REQ TY I (W)4" (SLD)
 - [B] RE PM W/RET REQ TY I (W)4" (BRK) W/TYPE I-C @ 80' C/C
 - [C] REFL PAV MRK TY I (W)8" (SLD)
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 - [N] REFL PAV MRK TY I (W)8" (LNDRP)
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

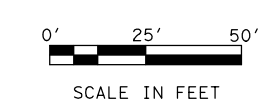
**SIGNING & PAVEMENT MARKING
FM 307 - FM 1379 INTERSECTION**

SCALE: 1" = 50' SHEET 3 OF 6

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK SU	ZS	CONTROL	0887	SECTION	01	JOB	039, ETC.
							223

*FLASHING BEACON (SOLAR POWERED) WITH RADAR SPEED FEEDBACK SIGN

FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

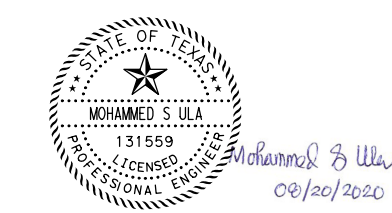


LEGEND

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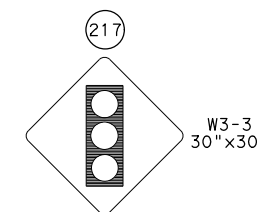
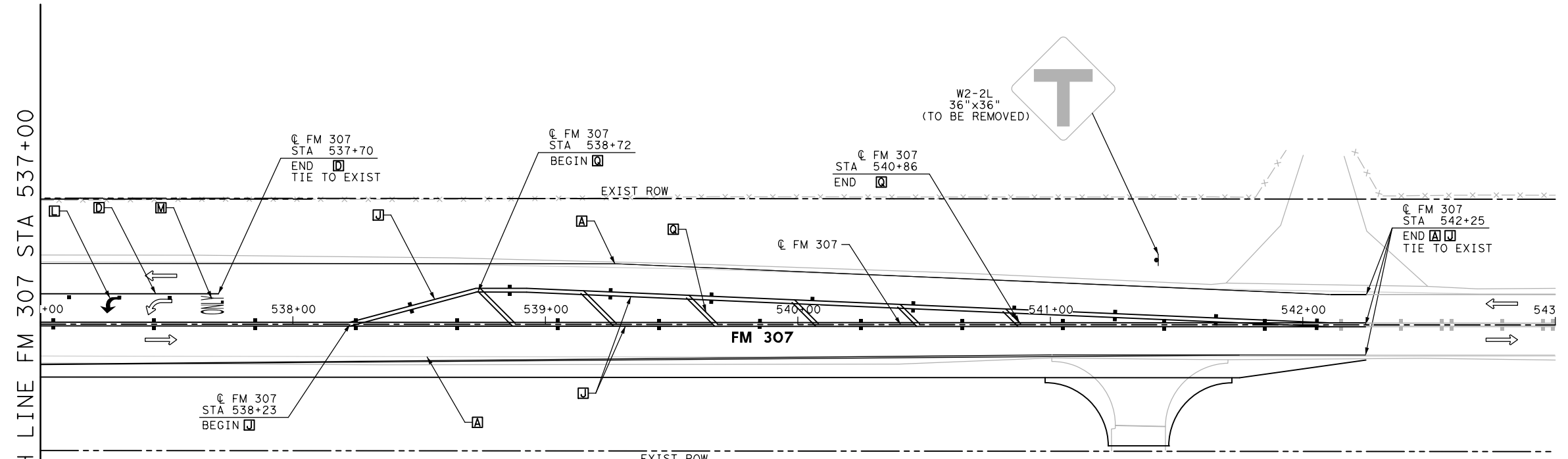


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SIGNING & PAVEMENT MARKING
FM 307 - FM 1379 INTERSECTION**

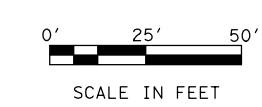
SCALE: 1" = 50' SHEET 4 OF 6

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	SU	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	ZS						224



PLACE SIGN W3-3 AT STA 546+00 ON LEFT SIDE OF FM 307.

DATE: 8/20/2020 FILENAME: pw: \\jmt-pw.bentley.com: jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

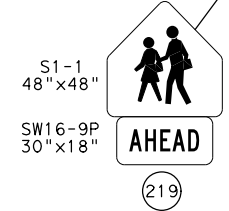
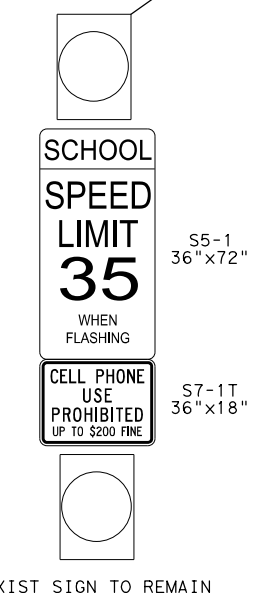
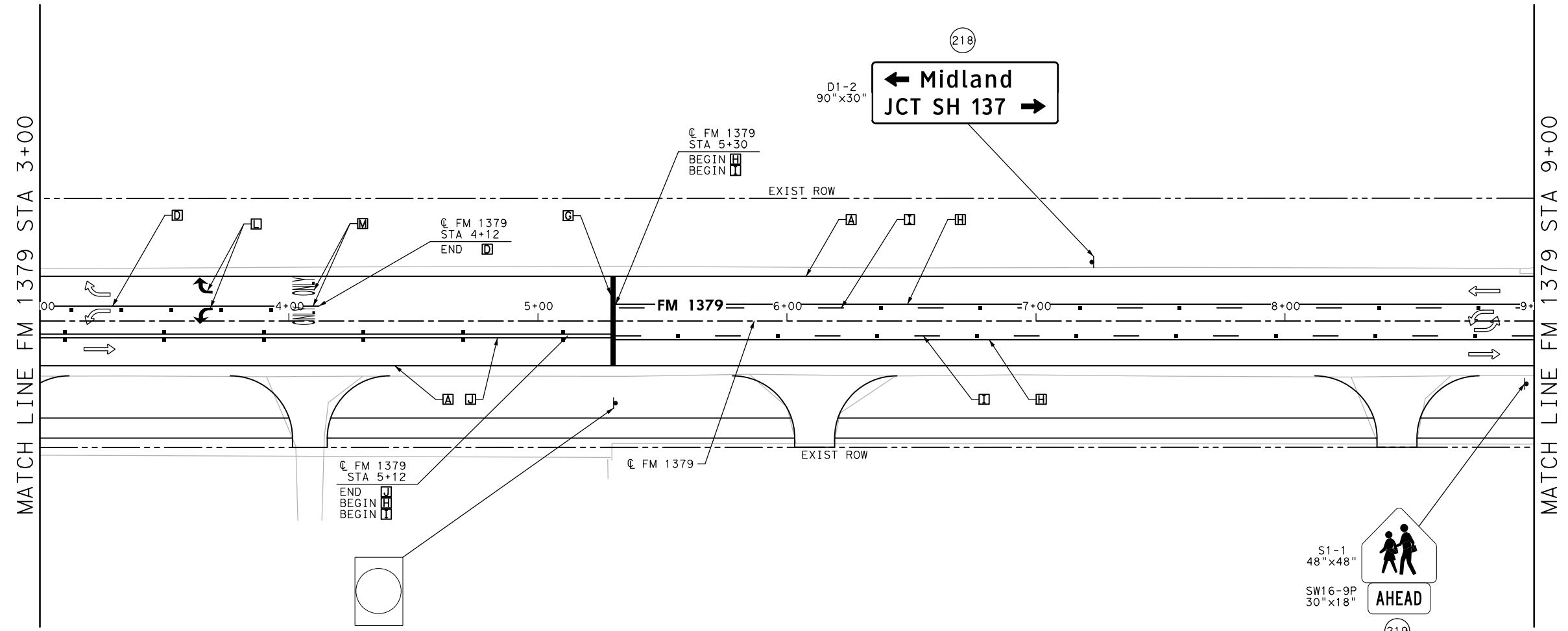
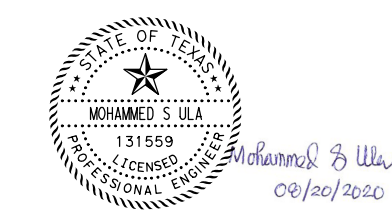


LEGEND

- [A] RE PM W/RET REQ TY I (W)4" (SLD)
- [B] RE PM W/RET REQ TY I (W)4" (BRK) W/TYPE I-C @ 80' C/C
- [C] REFL PAV MRK TY I (W)8" (SLD)
- [D] REFL PAV MRK TY I (W)8" (SLD) W/TYPE I-C @ 20' C/C
- [E] REFL PAV MRK TY I (W)8" (DOT)
- [F] PREFAB PAV MRK TY C (W)12" (SLD)
- [G] PREFAB PAV MRK TY C (W)24" (SLD)
- [H] RE PM W/RET REQ TY I (Y)4" (SLD)
- [I] REFL PAV MRK TY I (Y)4" (BRK) W/TYPE II-A-A @ 40' C/C
- [J] REFL PAV MRK TY I (Y)4" (DBL) W/TYPE II-A-A @ 40' C/C
- [K] REFL PAV MRK TY I (W)36" (YLD TRI)
- [L] PREFAB PAV MRK TY C (W) (ARROW)
- [M] PREFAB PAV MRK TY C (W) (WORD)
- [N] REFL PAV MRK TY I (W)8" (LNDP)
- [O] PREFAB PAV MRK TY C (W) (LNDP ARROW)
- [P] REFL PAV MRK TY I Y 4" (DBL) W/TYPE II-A-A @ 20' C/C
- [Q] REFL PAV MRK TY I (Y)12" (SLD) DBL
- [R] REFL PAV MRK TY I (Y)4" (SLD)
- [S] DEL ASSM (D-SW) SZ1 (FLX) GND
- [T] TRAFFIC DIRECTION
- [U] PROP SIGN ASSEMBLY
- [XXX] PROP SIGN NUMBER

NOTES:

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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SIGNING & PAVEMENT MARKING
FM 307 - FM 1379 INTERSECTION**

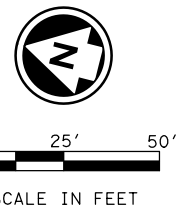
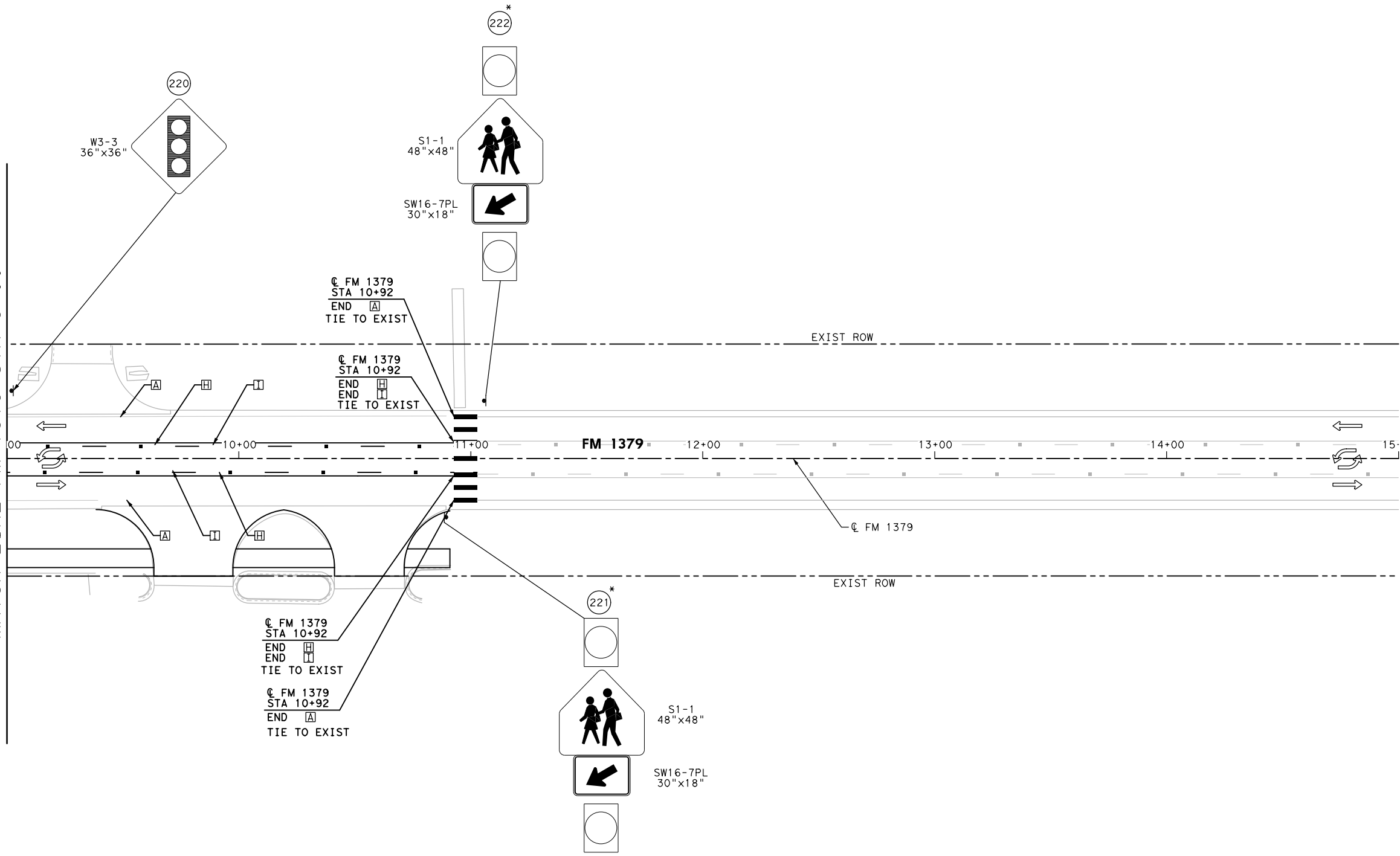
SCALE: 1" = 50' SHEET 5 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK SU	CONTROL	SECTION	JOB
CHECK ZS	0887	01	039, ETC.

225

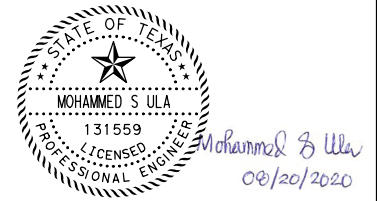
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MATCH LINE FM 1379 STA 9+00



- LEGEND**
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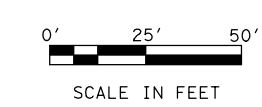
**SIGNING & PAVEMENT MARKING
FM 307 - FM 1379 INTERSECTION**

SCALE: 1" = 50' SHEET 6 OF 6

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	SU	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	ZS						226

*ROADSIDE FLASHING BEACON ASSEMBLY WITH SOLAR POWER

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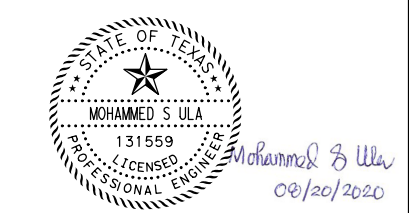


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- [U] PROP SIGN ASSEMBLY
- [XXX] PROP SIGN NUMBER

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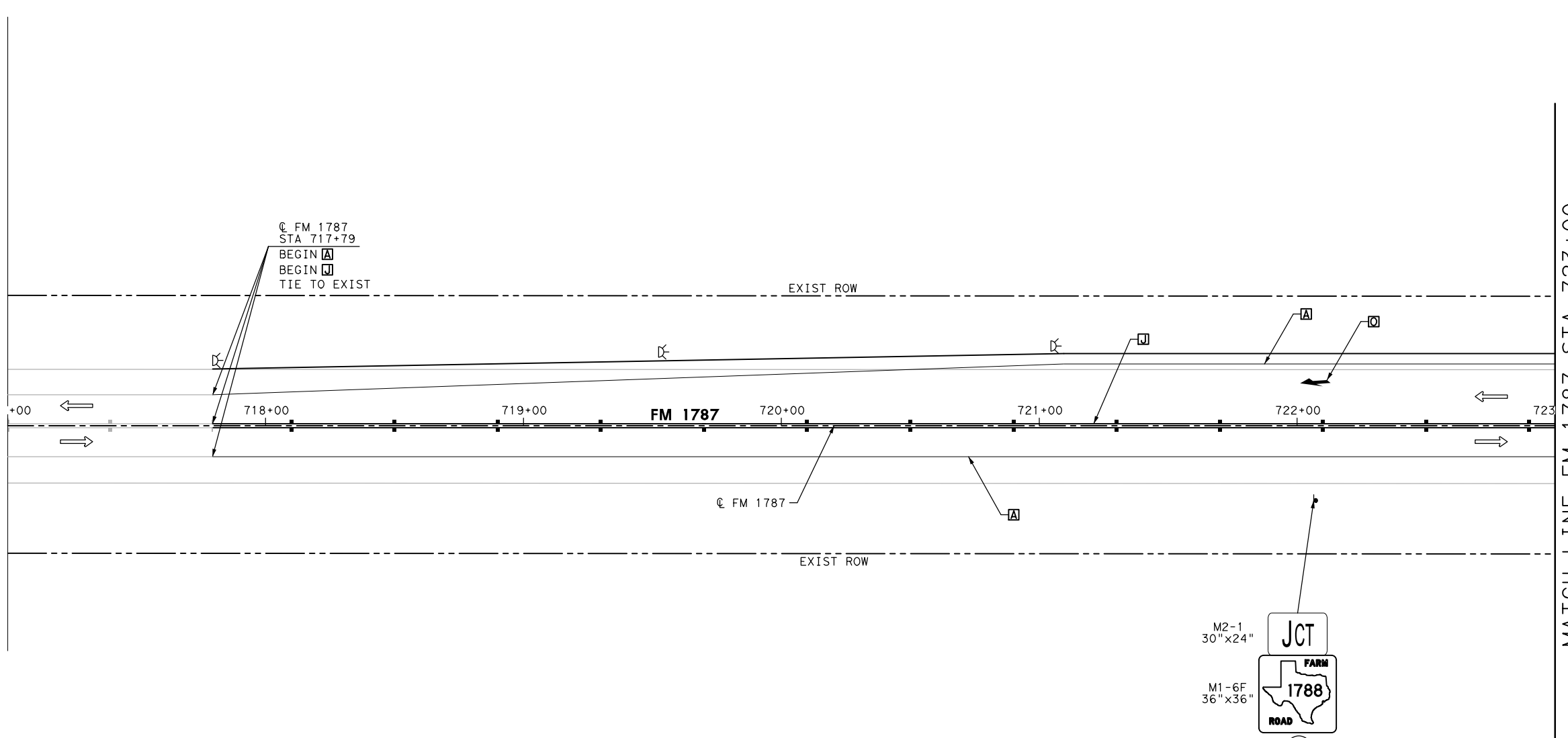


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

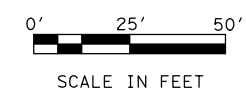
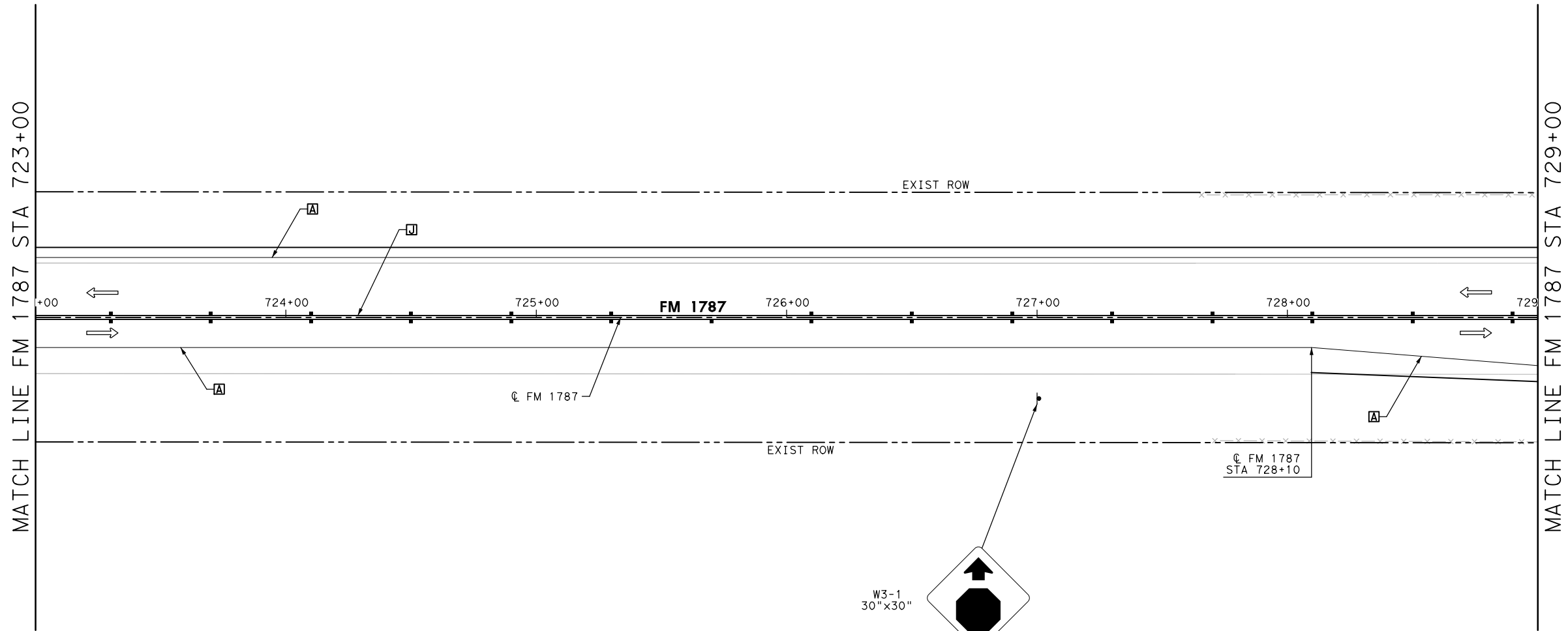
**SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION**

SCALE: 1" = 50' SHEET 1 OF 16

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	SU	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	ZS						227



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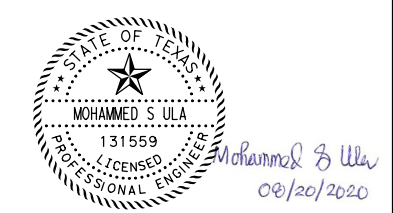


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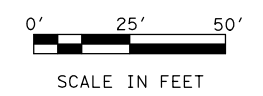
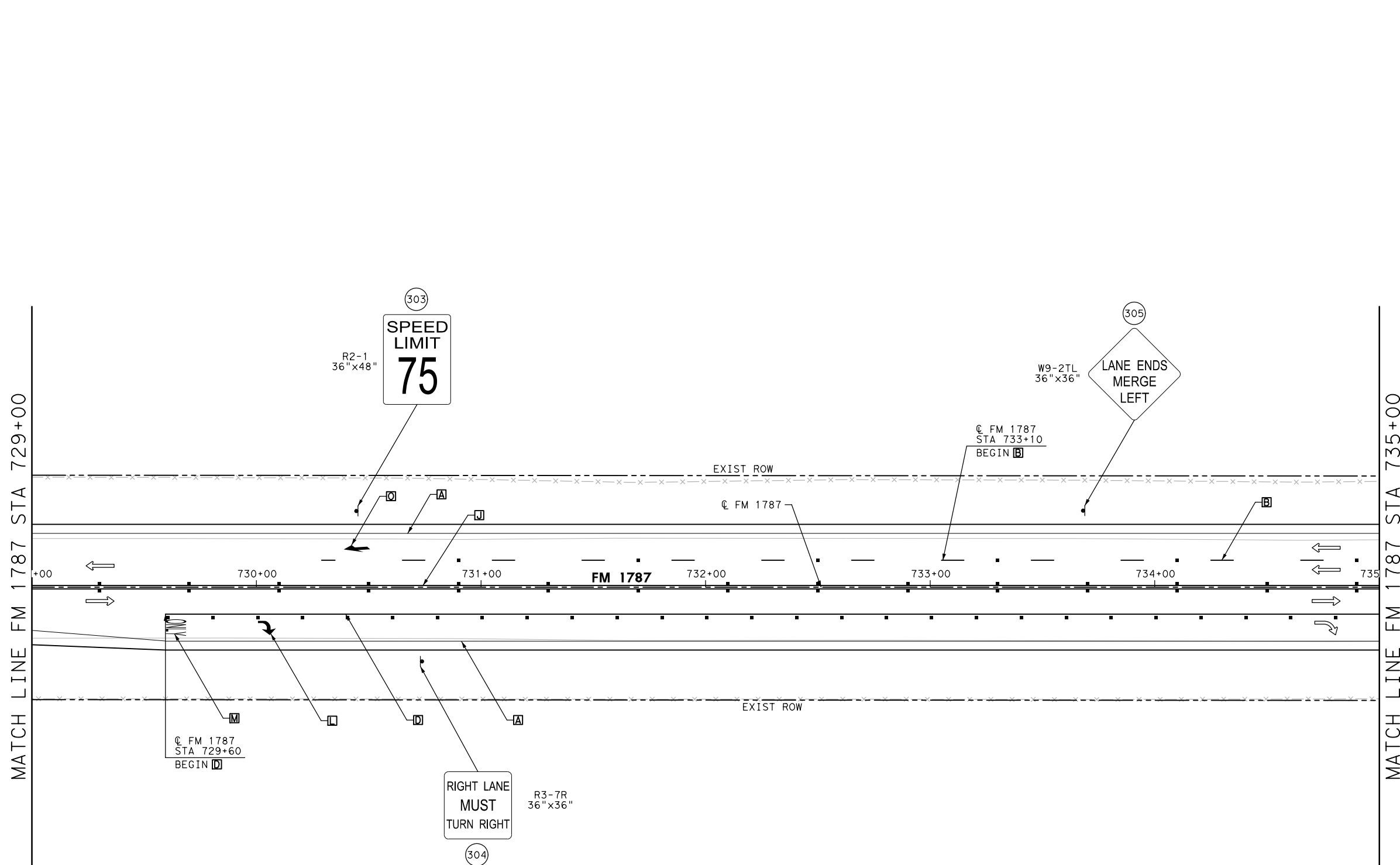
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION**

SCALE: 1" = 50' SHEET 2 OF 16

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	SU	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	ZS						228

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 1787, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

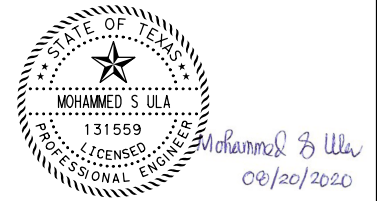


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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

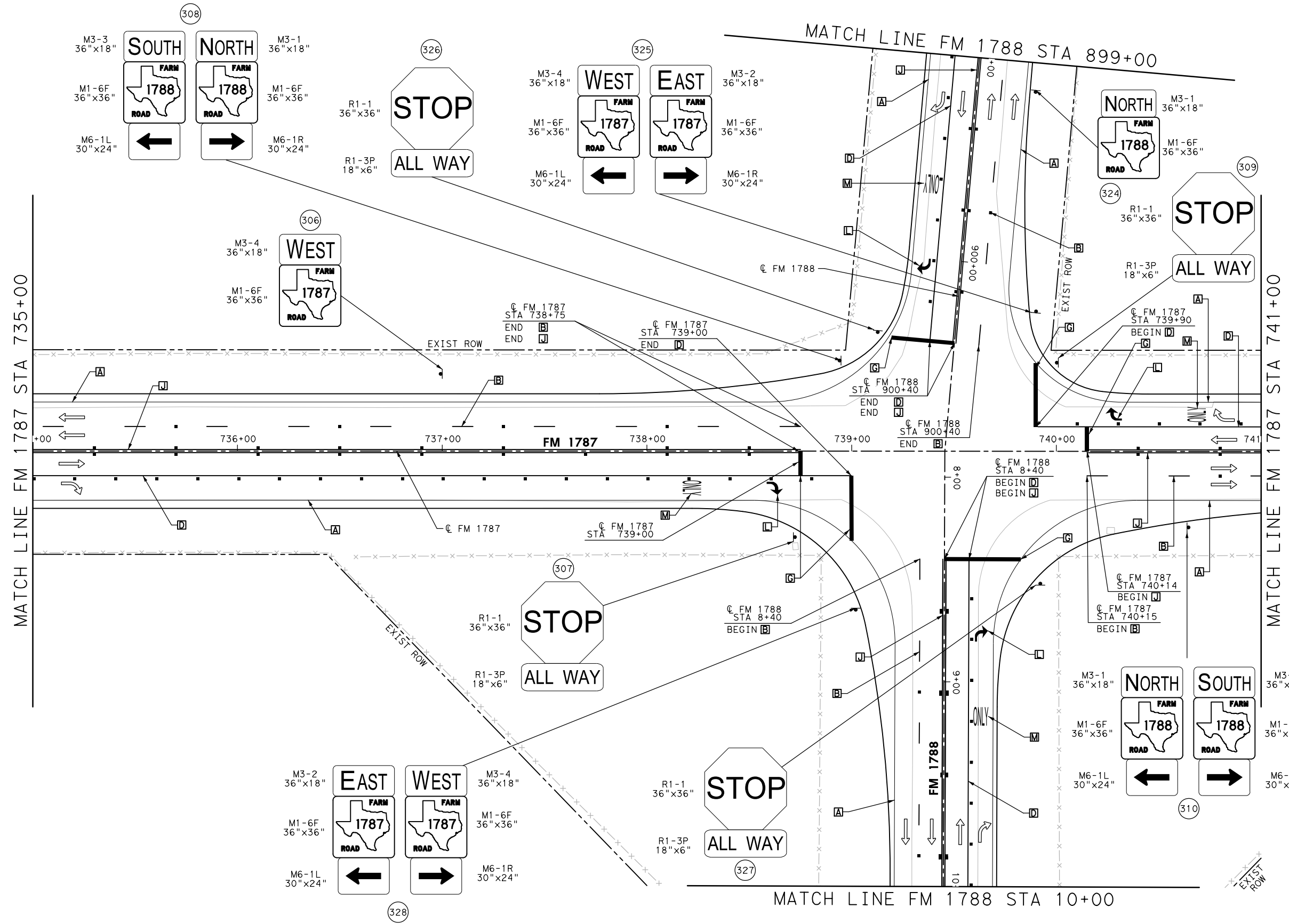
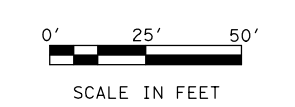
**SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION**

SCALE: 1" = 50' SHEET 3 OF 16

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
SU	0887	01	039, ETC.
CHECK	ZS		

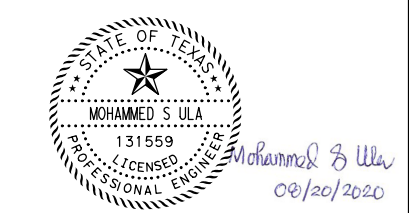
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infraTECH
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

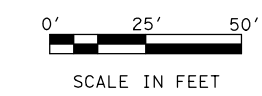
Texas Department of Transportation
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION**

SCALE: 1" = 50' SHEET 4 OF 16

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK	SU	CONTROL	SECTION
CHECK	ZS	0887	01 039, ETC.
			230

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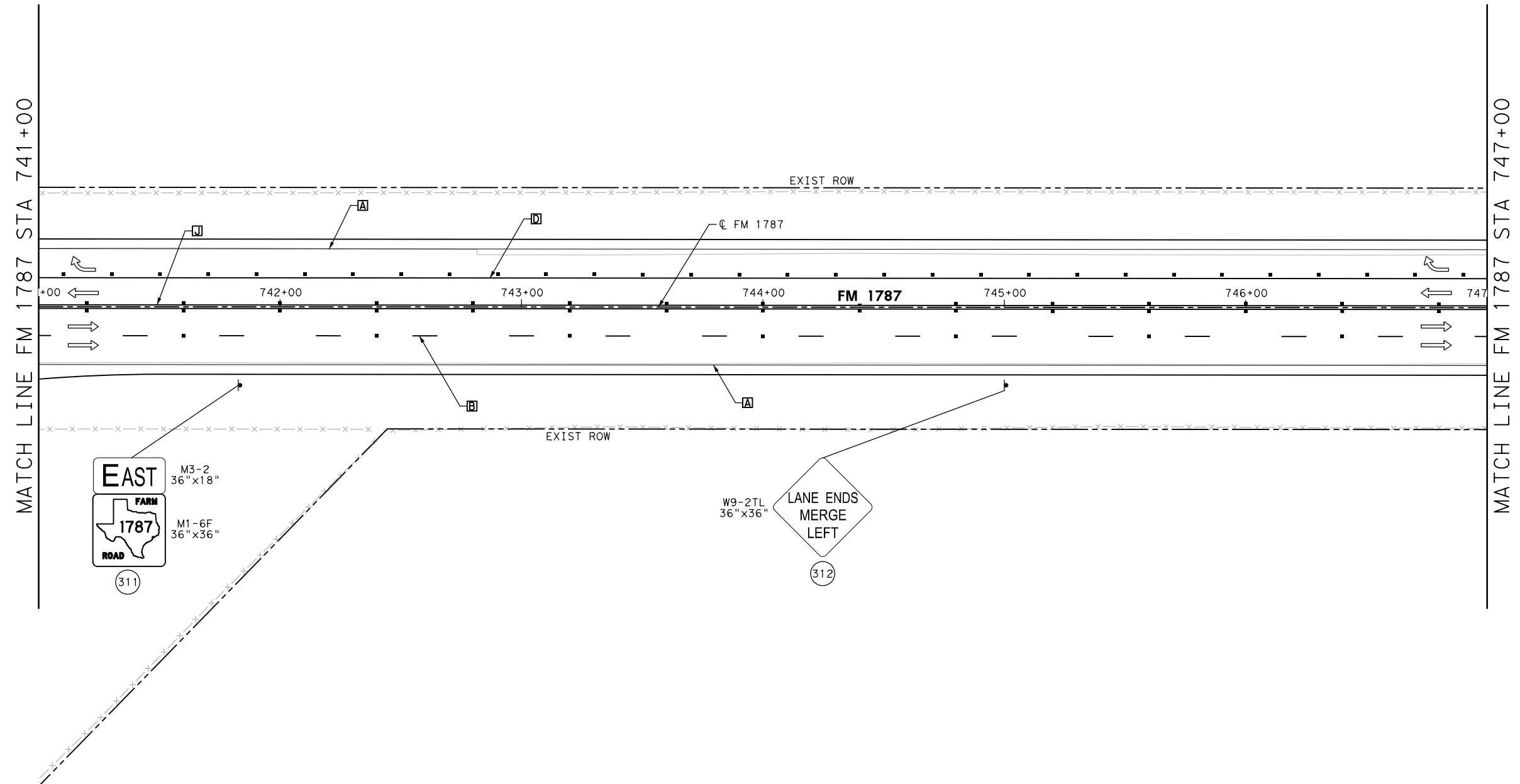
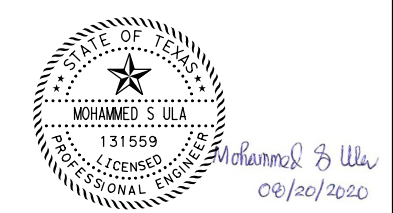


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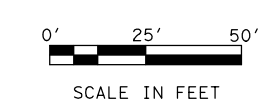


**SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION**

SCALE: 1" = 50' SHEET 5 OF 16

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	SU	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	ZS						231

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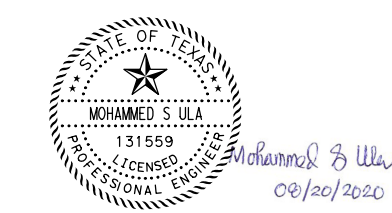


LEGEND

- [A] RE PM W/RET REQ TY I (W)4" (SLD)
- [B] RE PM W/RET REQ TY I (W)4" (BRK) W/TYPE I-C @ 80' C/C
- [C] REFL PAV MRK TY I (W)8" (SLD)
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- [E] REFL PAV MRK TY I (W)8" (DOT)
- [F] PREFAB PAV MRK TY C (W)12" (SLD)
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- [H] RE PM W/RET REQ TY I (Y)4" (SLD)
- [I] REFL PAV MRK TY I (Y)4" (BRK) W/TYPE II-A-A @ 40' C/C
- [J] REFL PAV MRK TY I (Y)4" (DBL) W/TYPE II-A-A @ 40' C/C
- [K] REFL PAV MRK TY I (W)36" (YLD TRI)
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- [R] REFL PAV MRK TY I (Y)4" (SLD)
- [S] DEL ASSM (D-SW) SZ1 (FLX) GND
- [T] TRAFFIC DIRECTION
- [U] PROP SIGN ASSEMBLY
- [XXX] PROP SIGN NUMBER

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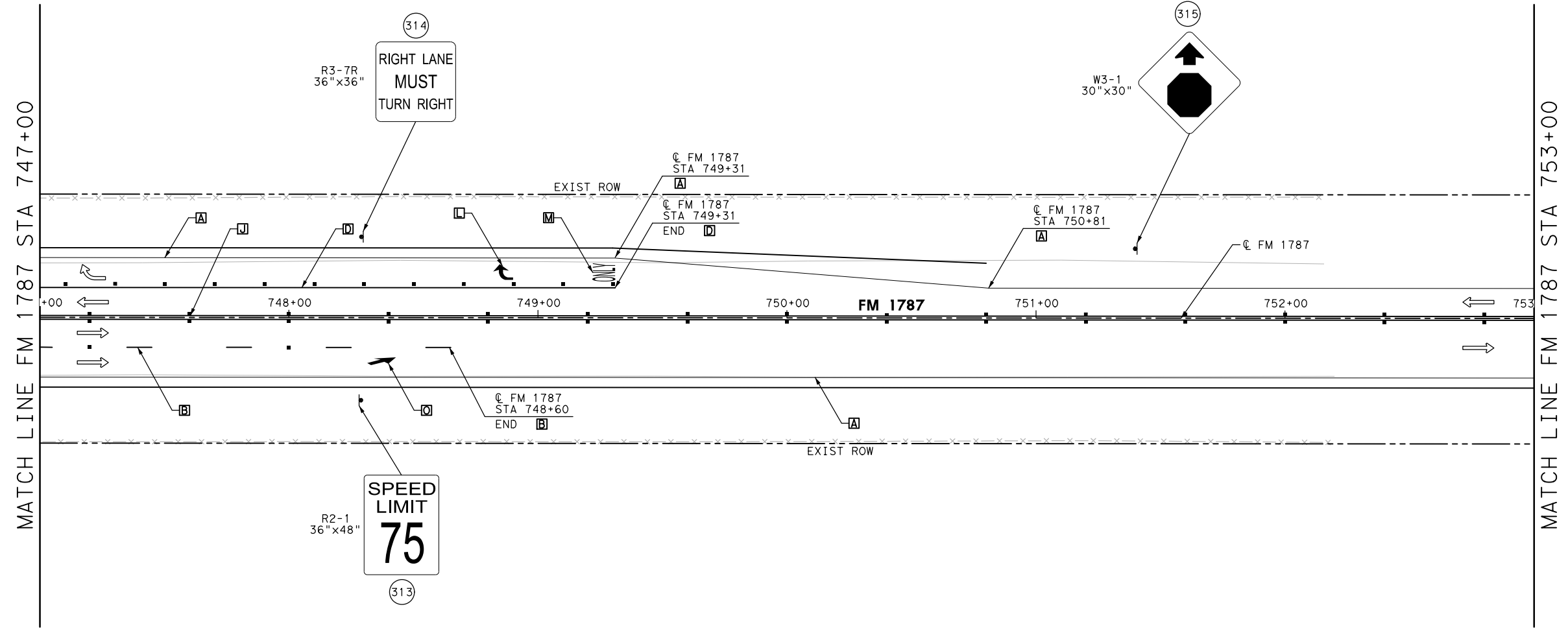


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

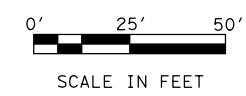
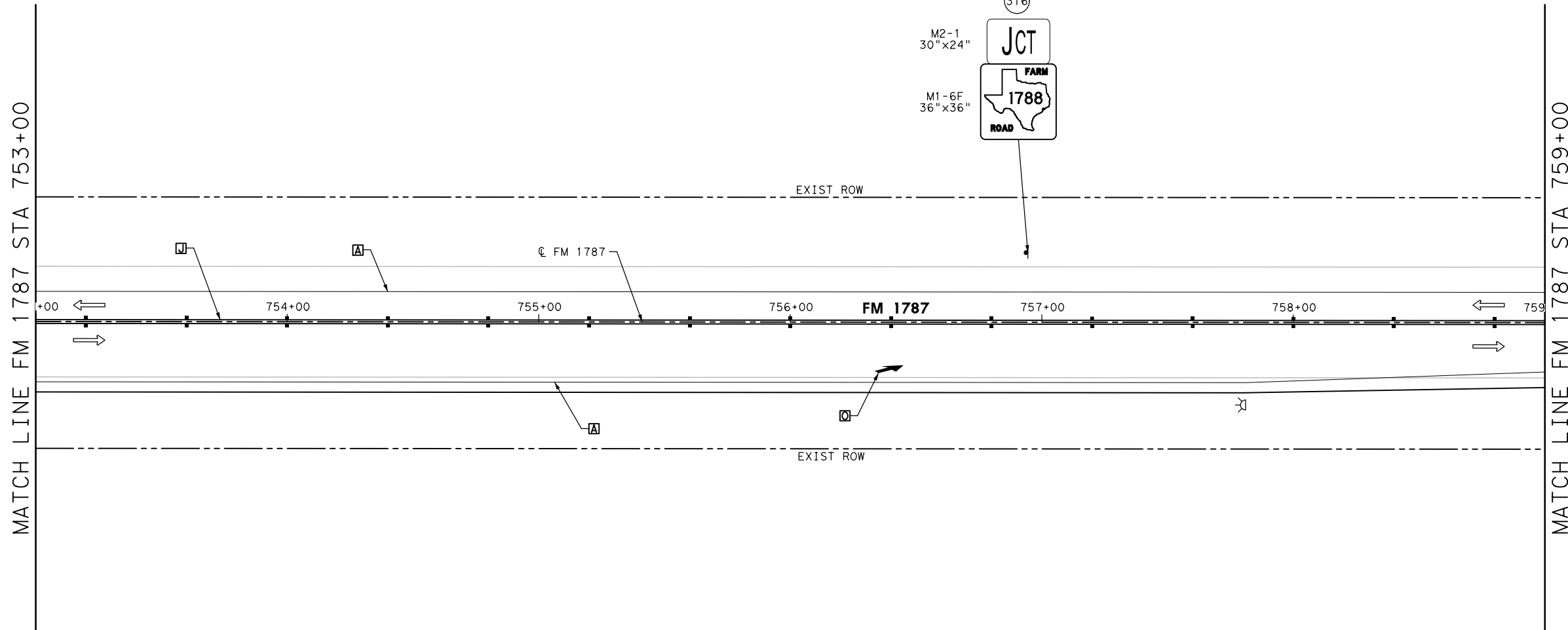
**SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION**

SCALE: 1" = 50' SHEET 6 OF 16

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK SU	ZS	CONTROL	0887	SECTION	01	JOB	039, ETC.
							232



DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 1787, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

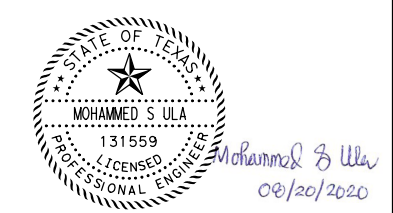


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Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

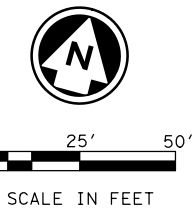
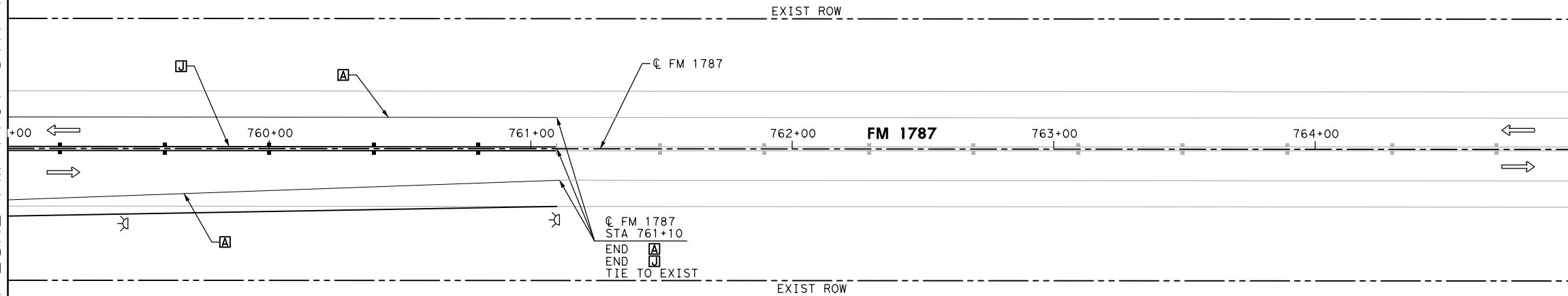
SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION

SCALE: 1" = 50'		SHEET 7 OF 16	
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK SU	CONTROL	SECTION	JOB
CHECK ZS	0887	01	039, ETC.

233

DATE: 8/20/2020 FILENAME: pw:\jmt-pw-bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

MATCH LINE FM 1787 STA 759+00

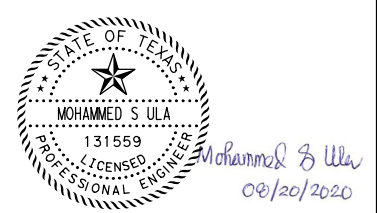


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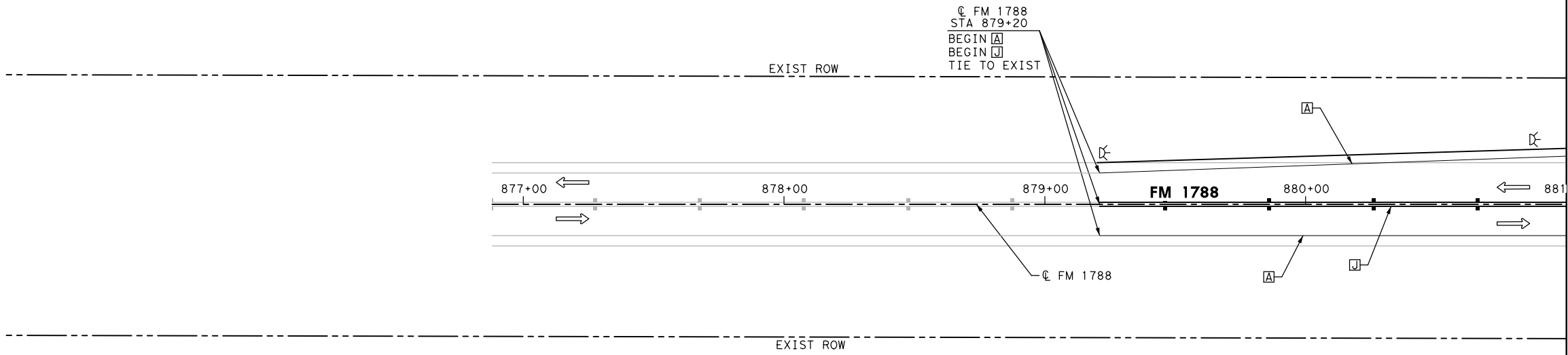


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

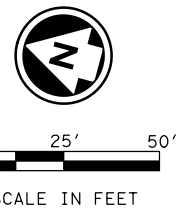
SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION

SCALE: 1" = 50'		SHEET 8 OF 16	
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
SU	0887	01	039, ETC.
CHECK	ZS		234

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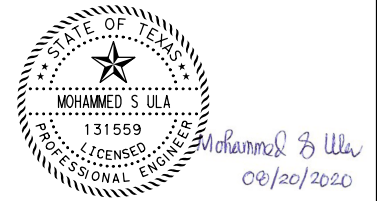


MATCH LINE FM 1788 STA 881+00



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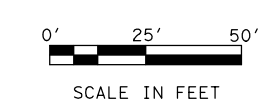
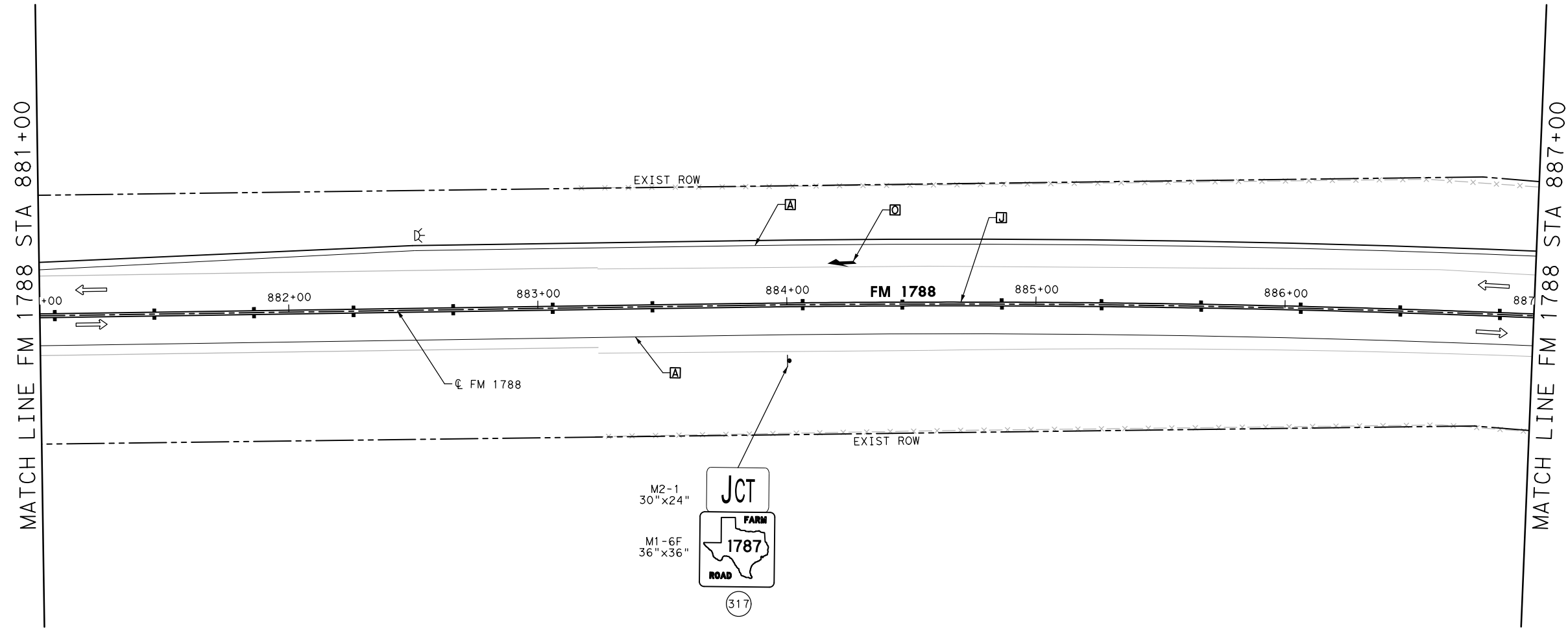
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION**

SCALE: 1" = 50' SHEET 9 OF 16

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	SU	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	ZS						235

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

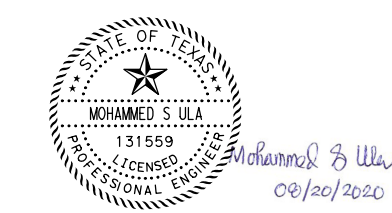


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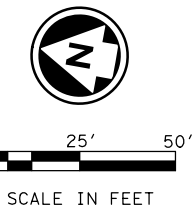
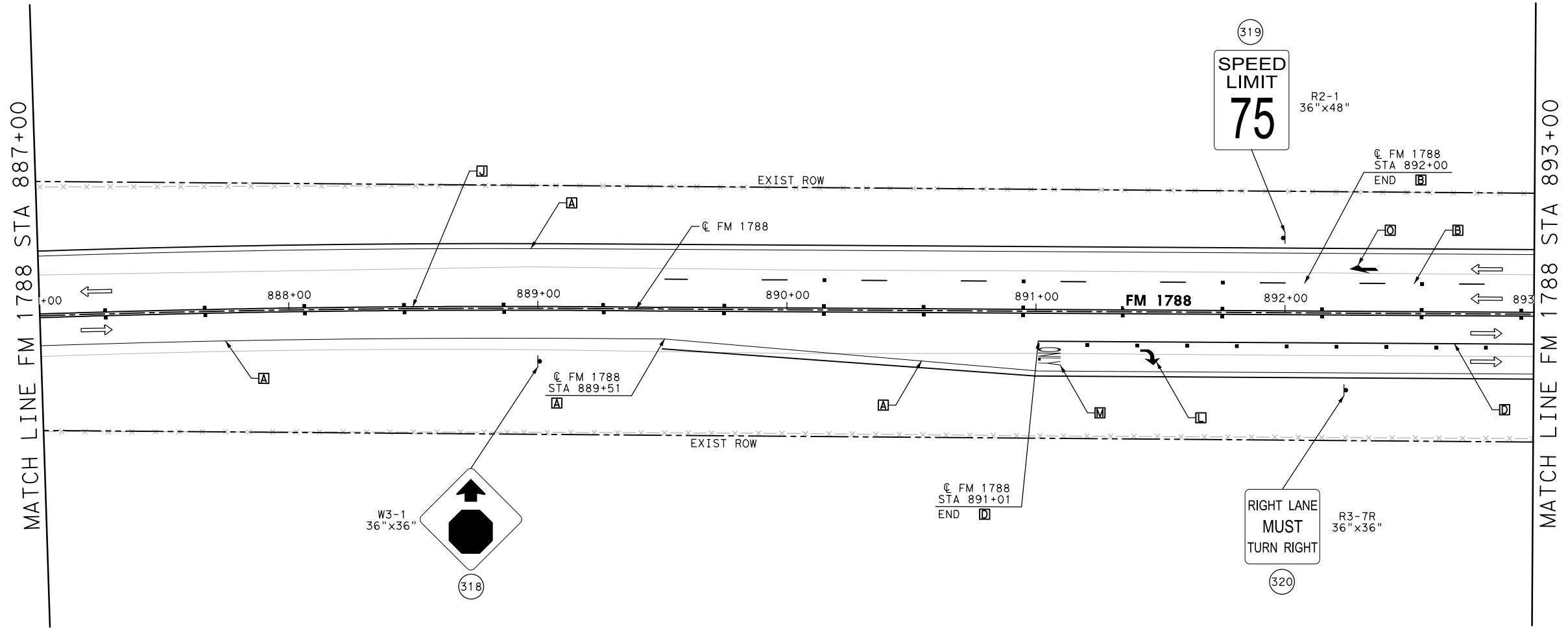
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION**

SCALE: 1" = 50' SHEET 10 OF 16

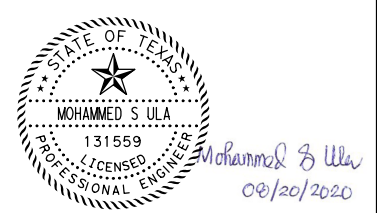
DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
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infraTECH
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

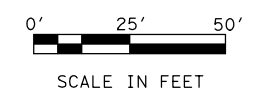
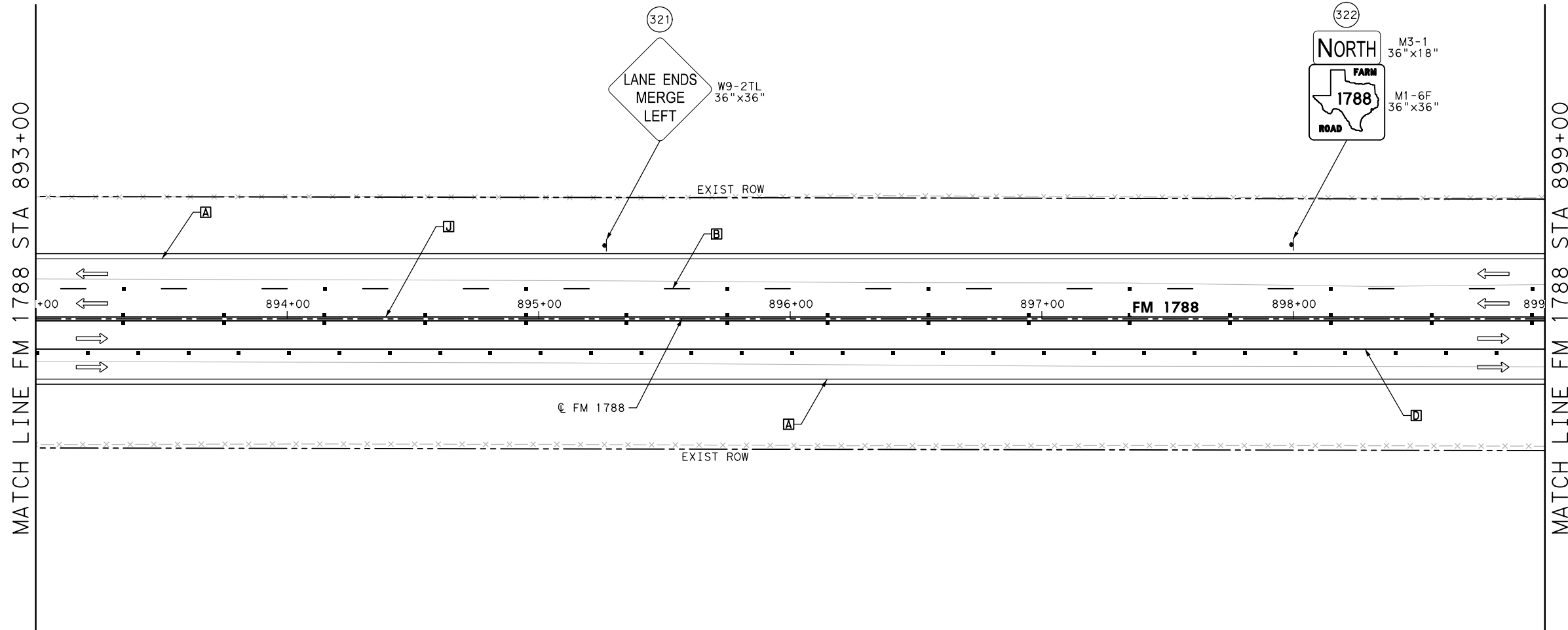


Texas Department of Transportation
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION

SCALE: 1" = 50'		SHEET 11 OF 16	
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
SU	0887	01	039, ETC.
CHECK	ZS		237

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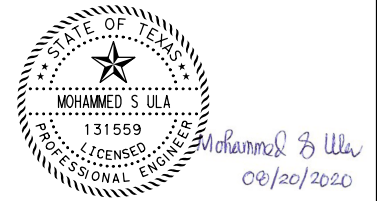


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- [T] TRAFFIC DIRECTION
- [U] PROP SIGN ASSEMBLY
- [XXX] PROP SIGN NUMBER

NOTES:

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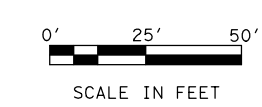


**SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION**

SCALE: 1" = 50' SHEET 12 OF 16

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	SU	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	ZS						238

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 1787, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

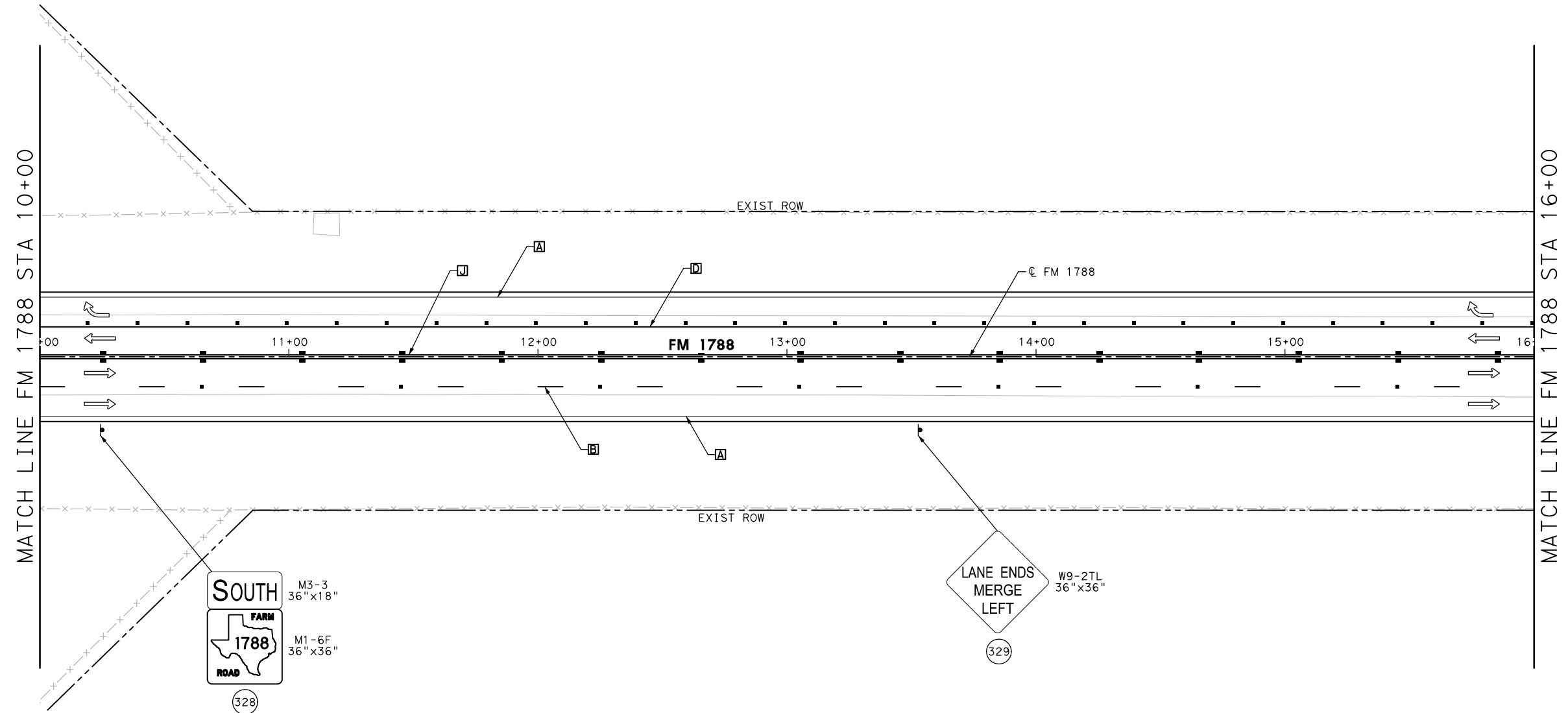
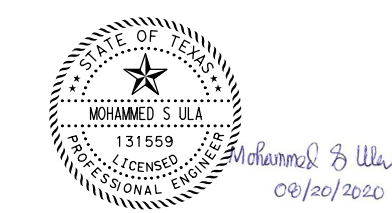


LEGEND

- [A] RE PM W/RET REQ TY I (W)4" (SLD)
- [B] RE PM W/RET REQ TY I (W)4" (BRK) W/TYPE I-C @ 80' C/C
- [C] REFL PAV MRK TY I (W)8" (SLD)
- [D] REFL PAV MRK TY I (W)8" (SLD) W/TYPE I-C @ 20' C/C
- [E] REFL PAV MRK TY I (W)8" (DOT)
- [F] PREFAB PAV MRK TY C (W)12" (SLD)
- [G] PREFAB PAV MRK TY C (W)24" (SLD)
- [H] RE PM W/RET REQ TY I (Y)4" (SLD)
- [I] REFL PAV MRK TY I (Y)4" (BRK) W/TYPE II-A-A @ 40' C/C
- [J] REFL PAV MRK TY I (Y)4" (DBL) W/TYPE II-A-A @ 40' C/C
- [K] REFL PAV MRK TY I (W)36" (YLD TRI)
- [L] PREFAB PAV MRK TY C (W) (ARROW)
- [M] PREFAB PAV MRK TY C (W) (WORD)
- [N] REFL PAV MRK TY I (W)8" (LNDP)
- [O] PREFAB PAV MRK TY C (W) (LNDP ARROW)
- [P] REFL PAV MRK TY I Y 4" (DBL) W/TYPE II-A-A @ 20' C/C
- [Q] REFL PAV MRK TY I (Y)12" (SLD) DBL
- [R] REFL PAV MRK TY I (Y)4" (SLD)
- [S] DEL ASSM (D-SW) SZ1 (FLX) GND
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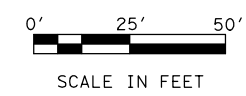
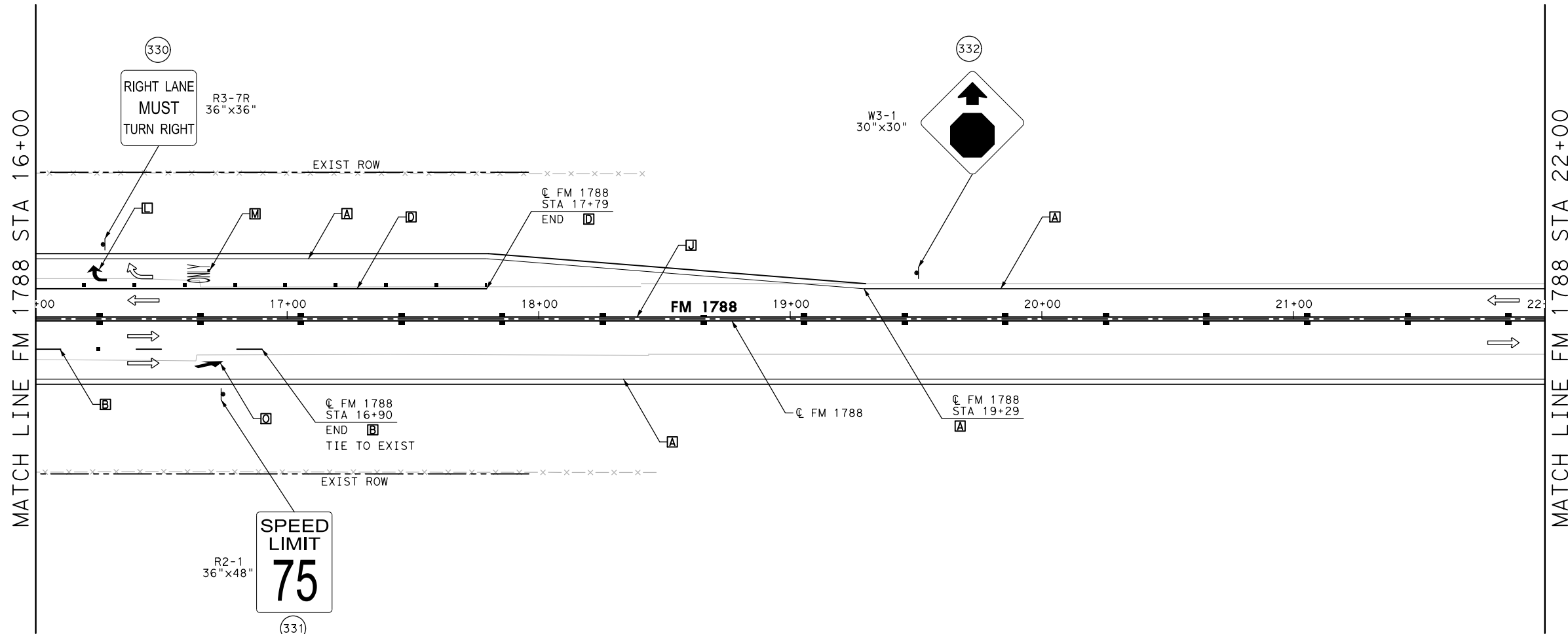
**SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION**

SCALE: 1" = 50' SHEET 13 OF 16

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK SU	CONTROL	SECTION	JOB
CHECK ZS	0887	01	039, ETC.

239

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 1787, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

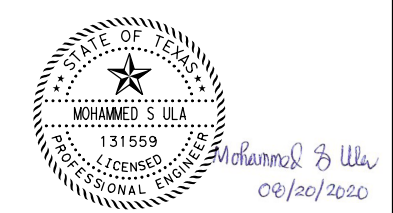


LEGEND

- [A] RE PM W/RET REQ TY I (W)4" (SLD)
- [B] RE PM W/RET REQ TY I (W)4" (BRK) W/TYPE I-C @ 80' C/C
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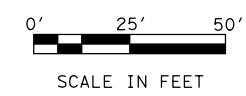
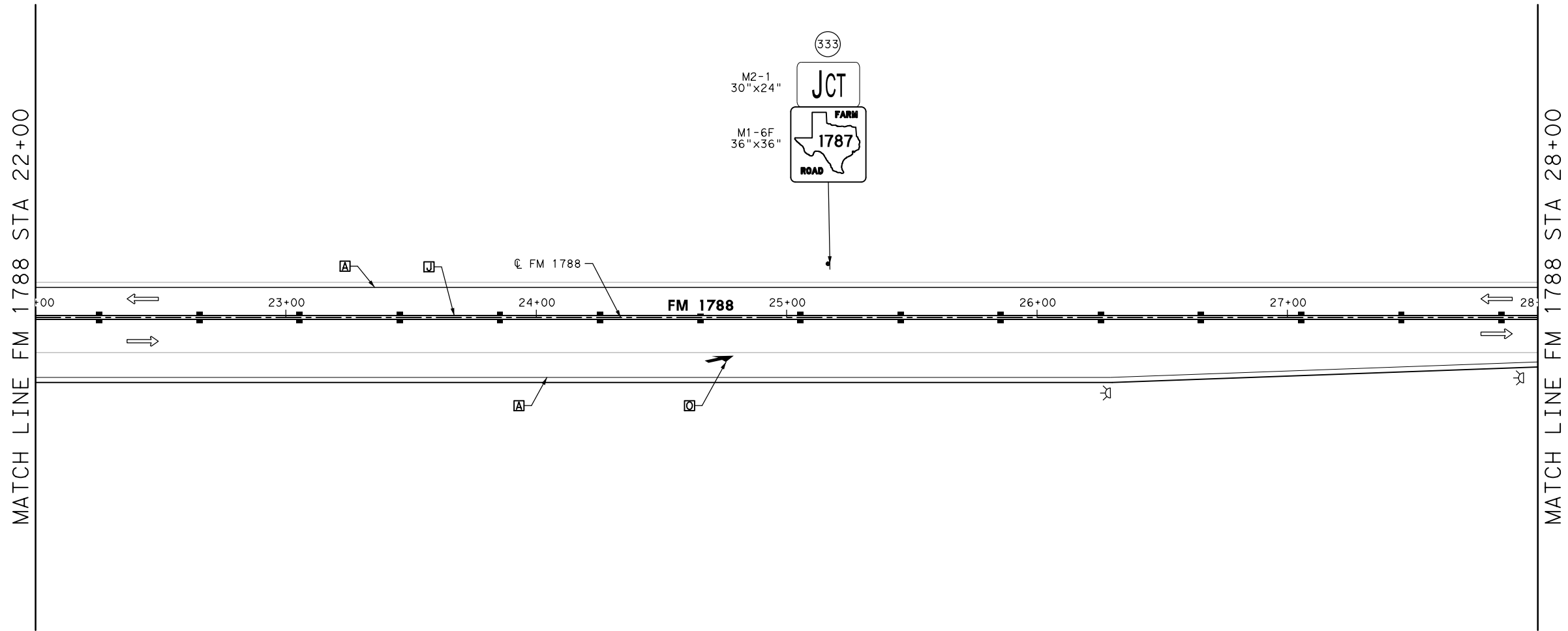
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION**

SCALE: 1" = 50' SHEET 14 OF 16

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	SU	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	ZS						240

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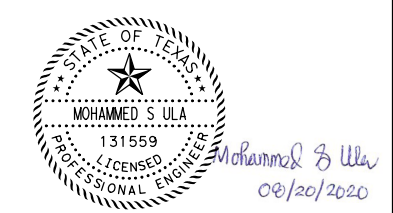


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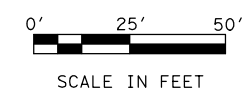
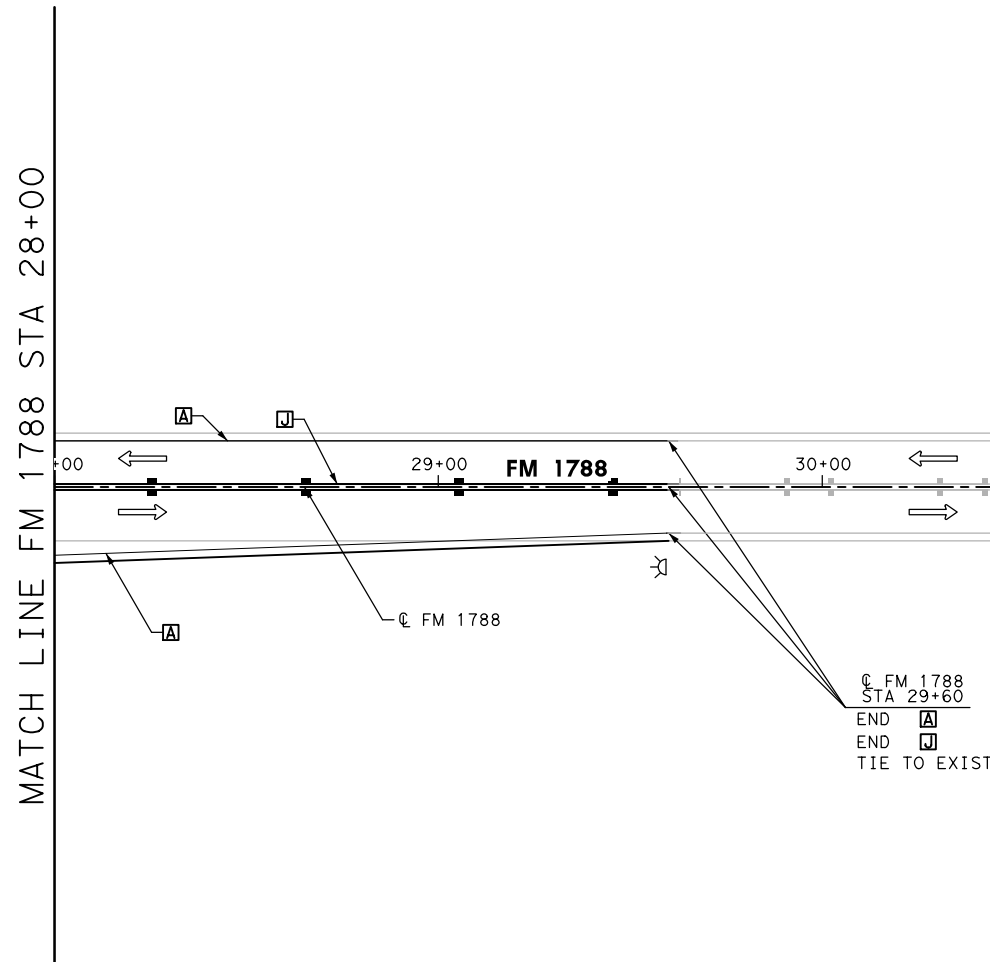
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION**

SCALE: 1" = 50' SHEET 15 OF 16

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	SU	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	ZS						241

DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design

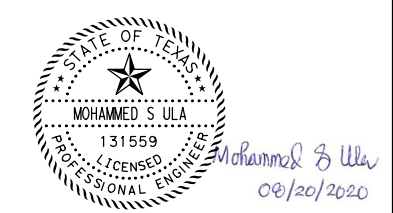


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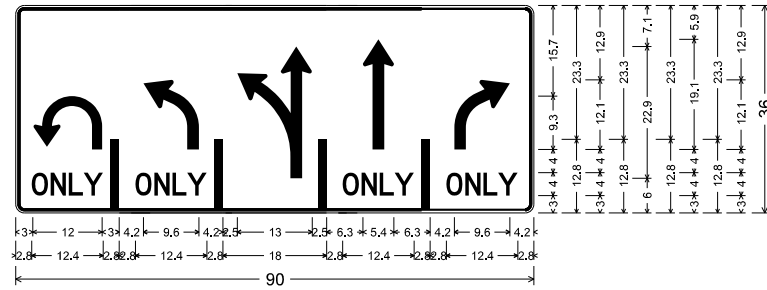


ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SIGNING & PAVEMENT MARKING
FM 1787 - FM 1788 INTERSECTION**

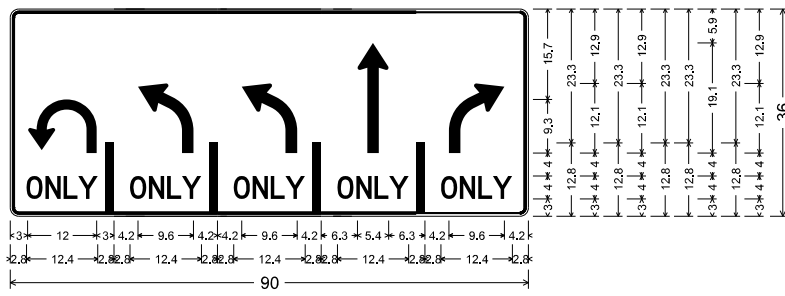
SCALE: 1" = 50' SHEET 16 OF 16

DESIGN	AH	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	AH	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	SU	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	ZS						242



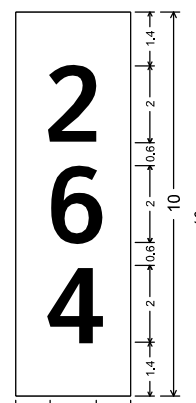
R3-8ULMSR;
 1.5" Radius, 0.4" Border, 0.4" Indent,
 LaneMarker height: 12.0 LaneMarker width: 1.5Black on, White;
 UL ir=3.5 s=2.5;
 "ONLY" D 50% spacing;
 1.5" Radius, 0.4" Border, 0.4" Indent,
 LaneMarker height: 12.0 LaneMarker width: 1.5Black on, White;
 A2L ir=4.5, s=2;
 "ONLY" D 50% spacing;
 1.5" Radius, 0.4" Border, 0.4" Indent,
 LaneMarker height: 12.0 LaneMarker width: 1.5Black on, White;
 B2L ir=13.25, s=2;
 1.5" Radius, 0.4" Border, 0.4" Indent,
 LaneMarker height: 12.0 LaneMarker width: 1.5Black on, White;
 C2 h=19.125, s=2;
 "ONLY" D 50% spacing;
 1.5" Radius, 0.4" Border, 0.4" Indent,
 LaneMarker height: 12.0 LaneMarker width: 1.5Black on, White;
 A2R ir=4.5, s=2;
 "ONLY" D 50% spacing;

SIGN NO. 101, 102



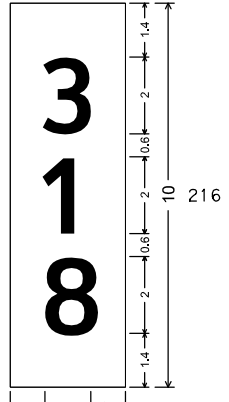
R3-8ULMSR;
 1.5" Radius, 0.4" Border, 0.4" Indent,
 LaneMarker height: 12.0 LaneMarker width: 1.5Black on, White;
 UL ir=3.5 s=2.5;
 "ONLY" D 50% spacing;
 1.5" Radius, 0.4" Border, 0.4" Indent,
 LaneMarker height: 12.0 LaneMarker width: 1.5Black on, White;
 A2L ir=4.5, s=2;
 "ONLY" D 50% spacing;
 1.5" Radius, 0.4" Border, 0.4" Indent,
 LaneMarker height: 12.0 LaneMarker width: 1.5Black on, White;
 B2L ir=13.25, s=2;
 1.5" Radius, 0.4" Border, 0.4" Indent,
 LaneMarker height: 12.0 LaneMarker width: 1.5Black on, White;
 C2 h=19.125, s=2;
 "ONLY" D 50% spacing;
 1.5" Radius, 0.4" Border, 0.4" Indent,
 LaneMarker height: 12.0 LaneMarker width: 1.5Black on, White;
 A2R ir=4.5, s=2;
 "ONLY" D 50% spacing;

SIGN NO. 155, 156

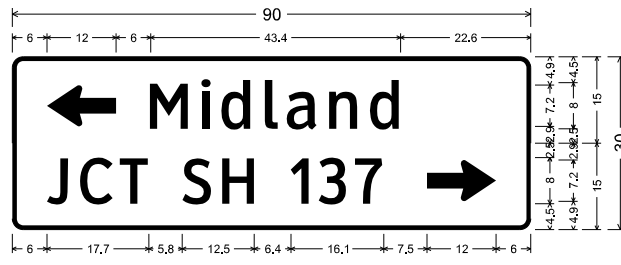


SIGN NO. 107

D10-7aT;
 No border, White on, Green;
 "2" ClearviewHwy-4-W;
 "6" ClearviewHwy-4-W;
 "4" ClearviewHwy-4-W;

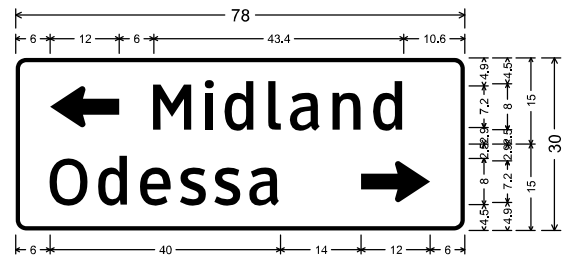


D10-7aT;
 No border, White on, Green;
 "3" ClearviewHwy-4-W;
 "1" ClearviewHwy-4-W;
 "8" ClearviewHwy-4-W;



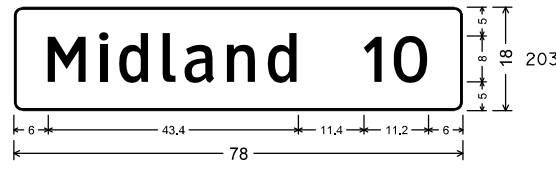
SIGN NO. 218

D1-2 8in LT-RT;
 1.9" Radius, 0.8" Border, White on, Green;
 Standard Arrow Custom 12.0" X 7.1" 180"; "Midland" ClearviewHwy-3-W;
 1.9" Radius, 0.8" Border, White on, Green;
 "JCT SH 137" ClearviewHwy-3-W; Standard Arrow Custom 12.0" X 7.1" 0°;



SIGN NO. 135

D1-2 8in LT-RT;
 1.9" Radius, 0.8" Border, White on, Green;
 Standard Arrow Custom 12.0" X 7.1" 180"; "Midland" ClearviewHwy-3-W;
 1.9" Radius, 0.8" Border, White on, Green;
 "Odessa" ClearviewHwy-3-W; Standard Arrow Custom 12.0" X 7.1" 0°;



D2-1 8in;
 1.5" Radius, 0.5" Border, White on, Green;
 "Midland" ClearviewHwy-3-W; "10" ClearviewHwy-3-W;



infraTECH
 Engineers & Innovators, LLC
 TBPE REGISTRATION NO. F-18368

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Texas Department of Transportation

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

SIGN DETAILS

SCALE: NTS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK SU	CONTROL	SECTION	JOB
CHECK ZS	0887	01	039, ETC.

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SUMMARY OF SMALL SIGNS

DATE: 8/20/2020 FILENAME: pw:\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\Des\gnData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design


LP 338 - SH 191
SHEET 1 OF 5

LP 338 - SH 191
SHEET 2 OF 5


LP 338 - SH 191
SHEET 3 OF 5

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				NOTE
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION	
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	
	101	R3-8ULMSR	LANE CONTROL	90"x36"	X		S80	1	SA	T	
	102	R3-8ULMSR	LANE CONTROL	90"x36"	X		S80	1	SA	T	
	103	R8-3	NO PARKING	36"x36"	X		10 BWG	1	SA	P	
	104	R5-1	DO NOT ENTER	36"x36"	X		10 BWG	1	SA	T	
	105	R6-1R	ONE WAY	36"x12"	X		10 BWG	1	SA	P	
	106	R1-2	YIELD	48"x48"x48"	X		10 BWG	1	SA	T	
	107	R3-8uT	U TURN	30"x36"	X		10 BWG	1	SA	P	
	108	M3-2	EAST	36"x18"	X		S80	1	SA	P	
		M1-6T	191 TEXAS	36"x36"	X						
		D10-7aT	264	3"x10"	X						
		D10-7aT	264	3"x10"	X						
	109	R3-7R	RIGHT LANE MUST TURN RIGHT	36"x36"	X		10 BWG	1	SA	T	
		R8-3	NO PARKING	36"x36"	X						
	110	W12-2	17'-11"	36"x36"	X		10 BWG	1	SA	P	
	111	R5-1a	WRONG WAY	42"x30"	X		10 BWG	1	SA	T	
	112	R3-7R	RIGHT LANE MUST TURN RIGHT	36"x36"	X		S80	1	SA	T	
		R5-1a	WRONG WAY	42"x30"	X						
	113	R3-8uT	U TURN	30"x36"	X		10 BWG	1	SA	P	
	114	M3-1	NORTH	36"x18"	X		S80	1	SA	U	
		M1-6L	LOOP 338	36"x36"	X						
		M6-1L	DIRECTIONAL ARROW (HORIZONTAL)	30"x24"	X						
		M3-3	SOUTH	36"x18"	X						
		M1-6L	LOOP 338	36"x36"	X						
		M6-1R	DIRECTIONAL ARROW (HORIZONTAL)	30"x24"	X						
	115	R5-1	DO NOT ENTER	48"x48"	X		10 BWG	1	SA	T	
	116	R5-1	DO NOT ENTER	48"x48"	X		10 BWG	1	SA	T	
	117	R6-1R	ONE WAY	36"x12"	X		10 BWG	1	SA	P	
		R6-3a	DIVIDED HIGHWAY	36"x30"	X						
	118	R1-2	YIELD	48"x48"x48"	X		10 BWG	1	SA	T	
	119	R1-2	YIELD	48"x48"x48"	X		10 BWG	1	SA	T	
	120	M3-2	EAST	36"x18"	X		S80	1	SA	U	
		M1-6T	191 TEXAS	36"x36"	X						
		M6-1L	DIRECTIONAL ARROW (HORIZONTAL)	30"x24"	X						
		M3-3	SOUTH	36"x18"	X						
		M1-6L	LOOP 338	36"x36"	X						
		M6-3	DIRECTIONAL ARROW (UP)	30"x24"	X						
	121	W12-2	17'-2"	36"x36"	X		10 BWG	1	SA	P	
	122	W12-2	17'-11"	36"x36"	X		10 BWG	1	SA	P	
	123	W12-2	17'-2"	36"x36"	X		10 BWG	1	SA	P	
	124	W12-2	17'-11"	36"x36"	X		10 BWG	1	SA	P	
	125	M3-4	WEST	36"x18"	X		S80	1	SA	U	
		M1-6T	191 TEXAS	36"x36"	X						
		M6-1L	DIRECTIONAL ARROW (HORIZONTAL)	30"x24"	X						
		M3-1	NORTH	36"x18"	X						
		M1-6L	LOOP 338	36"x36"	X						
		M6-3	DIRECTIONAL ARROW (UP)	30"x24"	X						
	126	R1-2	YIELD	48"x48"x48"	X		10 BWG	1	SA	T	
	127	R1-2	YIELD	48"x48"x48"	X		10 BWG	1	SA	T	
	128	R6-1R	ONE WAY	36"x12"	X		10 BWG	1	SA	P	





Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

SUMMARY OF SMALL SIGNS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK SU	CONTROL	SECTION	JOB
CHECK ZS	0887	01	039, ETC.

SHEET 1 OF 5

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SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				NOTE
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION	
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	
129	R6-1R		ONE WAY	36"x12"	X		10 BWG	1	SA	P	
	R6-3a		DIVIDED HIGHWAY	36"x30"	X						
130	R1-2		YIELD	48"x48"x48"	X		10 BWG	1	SA	T	
131	R1-2		YIELD	48"x48"x48"	X		10 BWG	1	SA	T	
140	R5-1		DO NOT ENTER	48"x48"	X		10 BWG	1	SA	T	
141	W1-8R		CHEVRON SYMBOL	30"x36"	X		10 BWG	1	SA	P	
142	R5-1		DO NOT ENTER	48"x48"	X		10 BWG	1	SA	T	
143	W1-8R		CHEVRON SYMBOL	30"x36"	X		10 BWG	1	SA	P	
144	M3-3		SOUTH	36"x18"	X		S80	1	SA	U	
	M1-6L		LOOP 338	36"x36"	X						
	M6-1L		DIRECTIONAL ARROW (HORIZONTAL)	30"x24"	X						
	M3-1		NORTH	36"x18"	X						
	M1-6L		LOOP 338	36"x36"	X						
	M6-1R		DIRECTIONAL ARROW (HORIZONTAL)	30"x24"	X						
145	R1-5L		YIELD HERE TO PEDESTRIAN	36"x36"	X		10 BWG	1	SA	P	
146	R3-8uT		U TURN	30"x36"	X		10 BWG	1	SA	P	
147	R5-1a		WRONG WAY	42"x30"	X		10 BWG	1	SA	T	
148	R5-1a		WRONG WAY	42"x30"	X		10 BWG	1	SA	T	
132	R6-1L		ONE WAY	36"x12"	X		10 BWG	1	SA	P	
133	R6-1R		ONE WAY	36"x12"	X		S80	1	SA	T	
	R5-1		DO NOT ENTER	48"x48"	X						
134	M3-2		EAST	36"x18"	X	S80	1	SA	U		
	M1-6T		191 TEXAS	36"x36"	X						
	M6-3		DIRECTIONAL ARROW (UP)	30"x24"	X						
	M3-4		WEST	36"x18"	X						
	M1-6T		191 TEXAS	36"x36"	X						
	M6-2R		DIRECTIONAL ARROW (ANGLED)	30"x24"	X						
135	R5-1		DO NOT ENTER	48"x48"	X		10 BWG	1	SA	T	
136	R6-1R		ONE WAY	36"x12"	X		10 BWG	1	SA	P	
137	D1-2		MIDLAND ODESSA	78"x30"	X		S80	1	SA	T	
138	W12-2		17' -2"	36"x36"	X		10 BWG	1	SA	P	
139	W12-2		17' -2"	36"x36"	X		10 BWG	1	SA	P	
149	R3-7R		RIGHT LANE MUST TURN RIGHT	36"x36"	X		10 BWG	1	SA	P	
150	W12-2		17' -11"	36"x36"	X		10 BWG	1	SA	P	
151	R3-8uT		U TURN	30"x36"	X		10 BWG	1	SA	P	
152	R6-1R		ONE WAY	36"x12"	X		10 BWG	1	SA	P	
153	R5-1		DO NOT ENTER	48"x48"	X		10 BWG	1	SA	T	
154	R6-1R		ONE WAY	36"x12"	X		10 BWG	1	SA	P	
155	R3-8ULLSR		LANE CONTROL	90"x36"	X		S80	1	SA	T	
156	R3-8ULLSR		LANE CONTROL	90"x36"	X		S80	1	SA	T	
201	S5-2		END SCHOOL ZONE	24"x30"	X		10 BWG	1	SA	P	
	R2-1		SPEED LIMIT	30"x36"	X						
202	W3-3		TRAFFIC LIGHT AHEAD	30"x30"	X		10 BWG	1	SA	P	
203	D2-1		MIDLAND 10	78"x18"	X		S80	1	SA	T	


LP 338 - SH 191
SHEET 3 OF 5

LP 338 - SH 191
SHEET 4 OF 5


LP 338 - SH 191
SHEET 5 OF 5

FM 307-
FM 1379
SHEET 1
OF 6





Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

SUMMARY OF SMALL SIGNS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK	SU	CONTROL	SECTION
CHECK	ZS	0887	01 039, ETC.

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SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				NOTE
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION	
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	
FM 307-FM 1379 SHEET 2 OF 6	204	R1-5L	YIELD HERE TO PED CROSSING	36"x36"	X		10 BWG	1	SA	P	
	205	S1-1	CROSSWALK	48"x48"	X		ROADSIDE FLASHING BEACON SOLAR POWERED				
		SW16-7PL	DIRECTIONAL ARROW (ANGLED)	30"x18"	X						
	206	S1-1	CROSSWALK	48"x48"	X		ROADSIDE FLASHING BEACON SOLAR POWERED				
		SW16-7PL	DIRECTIONAL ARROW (ANGLED)	30"x18"	X						
	207	R1-5L	YIELD HERE TO PED CROSSING	36"x36"	X		10 BWG	1	SA	P	
	208	R3-7R	RIGHT LANE MUST TURN RIGHT	36"x36"	X		10 BWG	1	SA	T	
	209	M3-4	WEST	36"x18"	X		10 BWG	1	SA	P	
M1-6F		FARM ROAD 307	36"x36"	X							
FM 307-FM 1379 SHEET 3 OF 6	210	S7-1T	CELL PHONE USE PROHIBITED UP TO \$200 FINE	36"x18"	X		10 BWG	1	SA	P	
	211	M3-3	SOUTH	36"x18"	X	S80	1	SA	U		
		M1-6F	FARM ROAD 1379	36"x36"	X						
		M6-1R	DIRECTIONAL ARROW (HORIZONTAL)	30"x24"	X						
		M3-2	EAST	36"x18"	X						
		M1-6F	FARM ROAD 307	36"x36"	X						
		M6-3	DIRECTONAL ARROW (VERTICAL)	30"x24"	X						
	212	W1-7T	LARGE ARROW, TWO HEADED	96"x36"	X	S80	1	SA	T		
	213	M3-3	SOUTH	36"x18"	X	S80	1	SA	U		
		M1-6F	FARM ROAD 1379	36"x36"	X						
		M6-1L	DIRECTIONAL ARROW (HORIZONTAL)	30"x24"	X						
		M3-4	WEST	36"x18"	X						
		M1-6F	FARM ROAD 307	36"x36"	X						
	214	M3-2	EAST	36"x18"	X	10 BWG	1	SA	P		
		M1-6F	FARM ROAD 307	36"x36"	X						
	215	M3-4	WEST	36"x18"	X	S80	1	SA	U		
		M1-6F	FARM ROAD 307	36"x36"	X						
		M6-1L	DIRECTIONAL ARROW (HORIZONTAL)	30"x24"	X						
M3-2		EAST	36"x18"	X							
M1-6F		FARM ROAD 307	36"x36"	X							
M6-1R		DIRECTIONAL ARROW (HORIZONTAL)	30"x24"	X							
216	M3-3	SOUTH	36"x18"	X	10 BWG	1	SA	P			
	M1-6F	FARM ROAD 1379	36"x36"	X							
	D10-7gT	318	3"x10"	X							
	D10-7gT	318	3"x10"	X							
SHEET 4 OF 6	217	W3-3	TRAFFIC LIGHT AHEAD	30"x30"	X		10 BWG	1	SA	P	
FM 307-FM 1379 SHEET 5 OF 6	218	D1-2	MIDLAND JCT SH 137	90"x30"	X		S80	1	SA	T	
	219	S1-1	CROSSWALK	48"x48"	X	S80	1	SA	P		
		SW16-9P	AHEAD	30"x18"	X						
220	W3-3	TRAFFIC LIGHT AHEAD	36"x36"	X	10 BWG	1	SA	P			
FM 307-FM 1379 SHEET 6 OF 6	221	S1-1	CROSSWALK	48"x48"	X	ROADSIDE FLASHING BEACON ASSEMBLY (SOLAR POWERED)					
		SW16-7PL	DIRECTIONAL ARROW (ANGLED)	30"x18"	X						
	222	S1-1	CROSSWALK	48"x48"	X	ROADSIDE FLASHING BEACON ASSEMBLY (SOLAR POWERED)					
		SW16-7PL	DIRECTIONAL ARROW (ANGLED)	30"x18"	X						





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Texas Department of Transportation

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

SUMMARY OF SMALL SIGNS

DESIGN	SHEET 3 OF 5		
AH	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)	VARIOUS
AH	STATE	DISTRICT	COUNTY
CHECK SU	TEXAS	ODA	ECTOR, ETC.
CHECK ZS	CONTROL	SECTION	JOB
	0887	01	039, ETC.


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SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				NOTE
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							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	
FM 1787- FM 1788 SHEET 1 OF 16	301	M2-1 M1-6F	JUNCTION FARM ROAD 1788	30"x24" 36"x36"	X X		10 BWG	1	SA	P	
	302	W3-1	STOP AHEAD	30"x30"	X		10 BWG	1	SA	P	
	303	R2-1	SPEED LIMIT 75	36"x48"	X		10 BWG	1	SA	T	
	304	R3-7R	RIGHT LANE MUST TURN RIGHT	36"x36"	X		10 BWG	1	SA	P	
	305	W9-2TL	LANE ENDS MERGE LEFT	36"x36"	X		10 BWG	1	SA	P	
	306	M3-4 M1-6F	WEST FARM ROAD 1787	36"x18" 36"x36"	X X		10 BWG	1	SA	P	
	307	R1-1 R1-3P	STOP ALL WAY	36"x36" 18"x6"	X X		10 BWG	1	SA	P	
	308	M3-1 M1-6F M6-1L M3-3 M1-6F M6-1R	SOUTH FARM ROAD 1788 DIRECTIONAL ARROW (HORIZONTAL) NORTH FARM ROAD 1788 DIRECTIONAL ARROW (HORIZONTAL)	36"x18" 36"x36" 30"x24" 36"x18" 36"x36" 30"x24"	X X X X X X		S80	1	SA	U	
	309	R1-1 R1-3P	STOP ALL WAY	36"x36" 18"x6"	X X		10 BWG	1	SA	P	
	310	M3-1 M1-6F M6-1L M3-3 M1-6F M6-1R	NORTH FARM ROAD 1788 DIRECTIONAL ARROW (HORIZONTAL) SOUTH FARM ROAD 1788 DIRECTIONAL ARROW (HORIZONTAL)	36"x18" 36"x36" 30"x24" 36"x18" 36"x36" 30"x24"	X X X X X X		S80	1	SA	U	
	323	M3-1 M1-6F	NORTH FARM ROAD 1788	36"x18" 36"x36"	X X		10 BWG	1	SA	P	
	324	M3-4 M1-6F M6-1L M3-3 M1-6F M6-1R	WEST FARM ROAD 1787 DIRECTIONAL ARROW (HORIZONTAL) SOUTH FARM ROAD 1787 DIRECTIONAL ARROW (HORIZONTAL)	36"x18" 36"x36" 30"x24" 36"x18" 36"x36" 30"x24"	X X X X X X		S80	1	SA	U	
	325	R1-1 R1-3P	STOP ALL WAY	36"x36" 18"x6"	X X		10 BWG	1	SA	P	
	326	R1-1 R1-3P	STOP ALL WAY	36"x36" 18"x6"	X X		10 BWG	1	SA	P	
	327	M3-2 M1-6F M6-1L M3-4 M1-6F M6-1R	EAST FARM ROAD 1787 DIRECTIONAL ARROW (HORIZONTAL) WEST FARM ROAD 1787 DIRECTIONAL ARROW (HORIZONTAL)	36"x18" 36"x36" 30"x24" 36"x18" 36"x36" 30"x24"	X X X X X X		S80	1	SA	U	
	311	M3-2 M1-6F	EAST FARM ROAD 1787	36"x18" 36"x36"	X X		10 BWG	1	SA	P	
312	W9-2TL	LANE ENDS MERGE LEFT	36"x36"	X		10 BWG	1	SA	P		





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Texas Department of Transportation
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

SUMMARY OF SMALL SIGNS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK	SU	CONTROL	SECTION
CHECK	ZS	0887	01 039, ETC.

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SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				NOTE
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION	
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	
FM 1787-FM 1788 SHEET 6 OF 16	313	R2-1	SPEED LIMIT 75	36"x48"	X		10 BWG	1	SA	P	
	314	R3-7R	RIGHT LANE MUST TURN RIGHT	36"x36"	X		10 BWG	1	SA	P	
	315	W3-1	STOP AHEAD	30"x30"	X		10 BWG	1	SA	P	
FM 1787-FM 1788 SHEET 7 OF 16	316	M2-1	JUNCTION	30"x24"	X		10 BWG	1	SA	P	
		M1-6F	FARM ROAD 1788	36"x36"	X						
SHEET 10 OF 16	317	M2-1	JUNCTION	30"x24"	X		10 BWG	1	SA	P	
		M1-6F	FARM ROAD 1787	36"x36"	X						
FM 1787-FM 1788 SHEET 11 OF 16	318	W3-1	STOP AHEAD	36"x36"	X		10 BWG	1	SA	P	
	319	R2-1	SPEED LIMIT 75	36"x48"	X		10 BWG	1	SA	P	
	320	R3-7R	RIGHT LANE MUST TURN RIGHT	36"x36"	X		10 BWG	1	SA	P	
SHEET 12 OF 16	321	W9-2TL	LANE ENDS MERGE LEFT	36"x36"	X		10 BWG	1	SA	P	
	322	M3-1	NORTH	36"x18"	X		10 BWG	1	SA	P	
		M1-6F	FARM ROAD 1788	36"x36"	X						
SHEET 13 OF 16	328	M3-3	SOUTH	36"x18"	X		10 BWG	1	SA	P	
		M1-6F	FARM ROAD 1788	36"x36"	X						
	329	W9-2TL	LANE ENDS MERGE LEFT	36"x36"	X		10 BWG	1	SA	P	
SHEET 14 OF 16	330	R3-7R	RIGHT LANE MUST TURN RIGHT	36"x36"	X		10 BWG	1	SA	P	
	331	R2-1	SPEED LIMIT 75	36"x48"	X		10 BWG	1	SA	P	
	332	W3-1	STOP AHEAD	30"x30"	X		10 BWG	1	SA	P	
SHEET 15 OF 16	333	M2-1	JUNCTION	30"x24"	X		10 BWG	1	SA	P	
		M1-6F	FARM ROAD 1787	36"x36"	X						





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TBPE REGISTRATION NO. F-18368



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

SUMMARY OF SMALL SIGNS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
SU	0887	01	039, ETC.
CHECK	ZS		

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REF. MRK	LOC.	SIGN TYPE	SIGN TEXT	SIGN DIMENSIONS	0644-6076 REMOVE SM RD SN SUP & AM
FM 307 - FM 1379 INTERSECTION					EA.
0+45	EAST	R1-1	STOP	30X30	1
3+17	WEST	M3-3	SOUTH	36X18	1
		M1-6F	FARM ROAD	36X36	
		D10-7aT	REFERENCE MARKER	3X10	
7+00	EAST	D1-2	←MIDLAND, JCT SH 137 →	90X30	1
8+90	WEST	S1-1	SCHOOL CROSSING	36X36	1
		SW16-9P	AHEAD	30X18	
10+32	EAST	W3-1	STOP SIGN AHEAD	36X36	1
10+91	WEST	S1-1	SCHOOL CROSSING	36X36	1
		SW16-7PL	✓	24X12	
11+08	EAST	S1-1	SCHOOL CROSSING	36X36	1
		SW16-7PL	✓	24X12	
520+74	NORTH	R2-1	SPEED LIMIT	30X36	1
521+50	SOUTH	R3-7R	RIGHT LANE MUST TURN RIGHT	48X48	1
522+04	NORTH	M3-4	WEST	36X18	1
		M1-6F	FARM ROAD	36X36	
522+84	SOUTH	S1-1	SCHOOL CROSSING	36X36	1
		SW16-7PL	✓	24X12	
523+16	NORTH	S1-1	SCHOOL CROSSING	36X36	1
		SW16-7PL	✓	24X12	
526+09	NORTH	D2-1	MIDLAND 10	78X18	1
528+61	SOUTH	R1-5L	YIELD HERE TO PEDESTRIAN	36X36	1
528+88	SOUTH	S1-1	SCHOOL CROSSING*	36X36	1
		SW16-7PL	✓	24X12	
529+23	NORTH	S1-1	SCHOOL CROSSING*	36X36	1
		SW16-7PL	✓	24X12	
529+56	NORTH	R1-5L	YIELD HERE TO PEDESTRIAN	36X36	1
530+00	NORTH	M3-4	WEST	36X18	1
		M1-6F	FARM ROAD	36X36	
530+57	SOUTH	R3-7R	RIGHT LANE MUST TURN RIGHT	48X48	1
532+21	NORTH	S5-1	FLASHING BEACON WITH RADAR SPEED FEEDBACK SIGN	36X72	1
		S7-1T	CELL PHONE USE PROHIBITED	36X18	
533+97	NORTH	M3-4	WEST	36x18	1
		M1-6F	FARM ROAD 307	36x36	
		M6-1L	DIRECTIONAL ARROW (HORIZONTAL)	30x24	
		M3-2	EAST	36x18	
		M1-6F	FARM ROAD 307	36x36	
		M6-1R	DIRECTIONAL ARROW (HORIZONTAL)	30x24	
534+11	NORTH	W1-7T	LARGE ARROW, TWO HEADED	96x36	
534+66	NORTH	M3-3	SOUTH	36"x18"	1
		M1-6F	FARM ROAD 1379	36"x36"	
		M6-1L	DIRECTIONAL ARROW (HORIZONTAL)	30"x24"	
541+42	NORTH	W2-2L	INTERSECTION	36"x36"	1
SUBTOTAL					23

REF. MRK	LOC.	SIGN TYPE	SIGN TEXT	SIGN DIMENSIONS	0644-6076 REMOVE SM RD SN SUP & AM
FM 1787 - FM 1788 INTERSECTION					EA.
8+34	WEST	M1-6F	FARM ROAD	36X36	1
		M6-3	DIRECTIONAL ARROW	30X24	
		M1-6F	FARM ROAD	36X36	
		M6-4	DIRECTIONAL ARROW	30X24	
8+50	EAST	R1-1	STOP	36X36	1
		R1-3P	ALL WAY	36X15	
10+00	WEST	M3-3	SOUTH	36X18	1
		M1-6F	FARM ROAD	36X36	
13+58	WEST	W9-2TL	LANE ENDS MERGE LEFT	36X36	1
19+50	EAST	W3-1	STOP AHEAD	36X36	1
25+20	EAST	M2-1	JCT	30X24	1
		M1-6F	FARM ROAD	36X36	
727+83	SOUTH	W3-1	STOP AHEAD	36X36	1
		M3-2	NORTH	36X18	
740+15	SOUTH	M1-6F	FARM ROAD	36X36	1
		M6-3	DIRECTIONAL ARROW	30X24	
		M3-1	WEST	36X18	
		M1-6F	FARM ROAD	36X36	
		M6-1	DIRECTIONAL ARROW	36X18	
		M3-3	EAST	36X18	
		M1-6F	FARM ROAD	36X36	
890+85	WEST	W3-1	STOP AHEAD	36X36	1
894+80	EAST	R2-1	SPEED LIMIT	36X48	1
900+12	EAST	M3-1	NORTH	36X18	1
		M1-6F	FARM ROAD	36X36	
		M6-3	DIRECTIONAL ARROW	36X18	
		M3-4	WEST	36X18	
		M1-6F	FARM ROAD	36X36	
		M6-1	DIRECTIONAL ARROW	36X18	
		M3-2	EAST	36X18	
900+42	WEST	M1-6F	FARM ROAD	36X36	1
		M6-1	DIRECTIONAL ARROW	36X18	
		R1-1	STOP	36X36	
		R1-3P	ALL WAY	36X15	
SUBTOTAL					12



SIGN ASSEMBLIES TO BE REMOVED AND NOT REPLACED

*EXISTING SIGN WITH SOLAR PANEL TO BE SALVAGED AND RETURNED TO TXDOT

infraTECH
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

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Texas Department of Transportation
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

SIGNING REMOVAL SUMMARY

SHEET 1 OF 2

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK SU	CONTROL	SECTION	JOB
CHECK ZS	0887	01	039, ETC.

249


DATE: 8/20/2020 FILENAME: pw:\jmt-pw.bentley.com: jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design


REF. MRK	LOC.	SIGN TYPE	SIGN TEXT	SIGN DIMENSIONS	0644-6076 REMOVE SM RD SN SUP & AM
SH 191 - LP 338 INTERSECTION					EA.
312+15	SOUTH	R3-8ULLSR	TURN LANES	72X36	1
312+19	NORTH	R3-8ULLSR	TURN LANES	72X36	1
313+69	SOUTH	R3-8ULLSR	NO PARKING	36X36	1
313+73	NORTH	R5-1	DO NOT ENTER	36X36	1
314+37	NORTH	R6-1R	ONE WAY	54X18	1
314+47	SOUTH	R1-2	YIELD	48X48X48	1
315+00	SOUTH	M3-1	NORTH	36X18	1
		M1-6L	LOOP 338	36X36	
		M6-3	DIRECTIONAL ARROW	30X24	
		M3-3	SOUTH	36X18	
		M1-6L	LOOP 338	36X36	
315+92	NORTH	W12-2	17'11"	36X36	1
316+10	SOUTH	M3-2	EAST	36X18	1
		M1-6T	191 TEXAS	36X36	
316+77	SOUTH	R3-7R	RIGHT LANE MUST TURN RIGHT	36X36	1
		R8-3	NO PARKING	36X36	
317+00	NORTH	R3-8uT	U TURN ONLY	30X36	1
318+21	NORTH	R5-1	DO NOT ENTER	48X48	1
318+50	NORTH	R5-1a	WRONG WAY	48X48	1
318+56	SOUTH	R3-7R	RIGHT LANE MUST TURN RIGHT	48X48	1
		R5-1a	WRONG WAY	48X48	
319+16	NORTH	R3-8uT	U TURN ONLY	30X36	1
319+41	NORTH	R1-2	YIELD	48X48X48	1
320+31	SOUTH	R10-6L	STOP HERE ON RED	36X48	1
320+44	NORTH	R5-1	DO NOT ENTER	48X48	1
320+51	NORTH	R6-1R	ONE WAY	36X12	1
		R6-3a	DIVIDED HIGHWAY	36X30	
320+51	SOUTH	M3-2	EAST	36X18	1
		M1-6T	191 TEXAS	36X36	
		M6-1L	DIRECTIONAL ARROW	30X24	
		M3-3	SOUTH	36X18	
		M1-6L	LOOP 338	36X36	
321+97	SOUTH	M6-3	DIRECTIONAL ARROW	30X24	1
		M3-1	NORTH	36X18	
		M1-6L	LOOP 338	36X36	
		M6-1	DIRECTIONAL ARROW	30X24	
		M3-2	EAST	36X18	
322+00	NORTH	M1-6T	LOOP 338	36X36	1
		M6-3	DIRECTIONAL ARROW	30X24	
322+40	NORTH	R1-2	YIELD	48X48X48	1
322+61	NORTH	R3-7R	RIGHT LANE MUST TURN RIGHT	48X48	1
		R5-1a	WRONG WAY	48X48	
322+63	SOUTH	R5-1a	WRONG WAY	48X48	1
		R3-8uT	U TURN ONLY	30X36	
325+00	SOUTH	R3-8uT	U TURN ONLY	30X36	1
325+65	SOUTH	W12-2	17'11"	36X36	1
326+84	SOUTH	R6-1R	ONE WAY	36X12	1
327+57	SOUTH	R5-1	DO NOT ENTER	48X48	1
327+73	NORTH	R14-1	TRUCK ROUTE	24X18	1
		M3-3	SOUTH	36X18	
		M1-6L	LOOP 338	36X36	
		M6-3	DIRECTIONAL ARROW	30X24	
		R14-1	TRUCK ROUTE	24X18	
		M3-1	NORTH	36X18	
328+92	SOUTH	M1-6L	LOOP 338	36X36	1
		M6-2R	DIRECTIONAL ARROW	30X24	
329+87	NORTH	R3-8ULLSR	TURN LANE	72X36	1

REF. MRK	LOC.	SIGN TYPE	SIGN TEXT	SIGN DIMENSIONS	0644-6076 REMOVE SM RD SN SUP & AM
SH 191 - LP 338 INTERSECTION					EA.
80+59	EAST	R3-7R	RIGHT LANE MUST TURN RIGHT	36X36	1
80+62	WEST	M3-3	SOUTH	36X18	1
		M1-6L	LOOP 338	36X36	
87+90	EAST	R3-2	NO LEFT TURN	48X48	1
		R5-1	DO NOT ENTER	48X48	
88+03	EAST	R6-1R	ONE WAY	54X18	1
		R1-2	YIELD	48X48X48	
88+09	WEST	M3-2	EAST	36X18	1
		M1-6T	191 TEXAS	36X36	
		M6-3	DIRECTIONAL ARROW	30X24	
		M3-4	WEST	36X18	
		M1-6T	191 TEXAS	36X36	
90+04	EAST	R5-1	DO NOT ENTER	48X48	1
90+28	EAST	R6-1R	ONE WAY	54X18	1
90+90	WEST	D1-2	← MIDLAND ODESSA →	78X30	1
93+40	WEST	W12-2	17'2"	36X36	1
90+50	WEST	W12-2	17'2"	36X36	1
SUBTOTAL					42

SIGN ASSEMBLIES TO BE REMOVED AND NOT REPLACED




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 TBPE REGISTRATION NO. F-18368


Texas Department of Transportation
 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

SIGNING REMOVAL SUMMARY

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AH	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
AH	TEXAS	ODA	ECTOR, ETC.
CHECK SU	CONTROL	SECTION	JOB
CHECK ZS	0887	01	039, ETC.

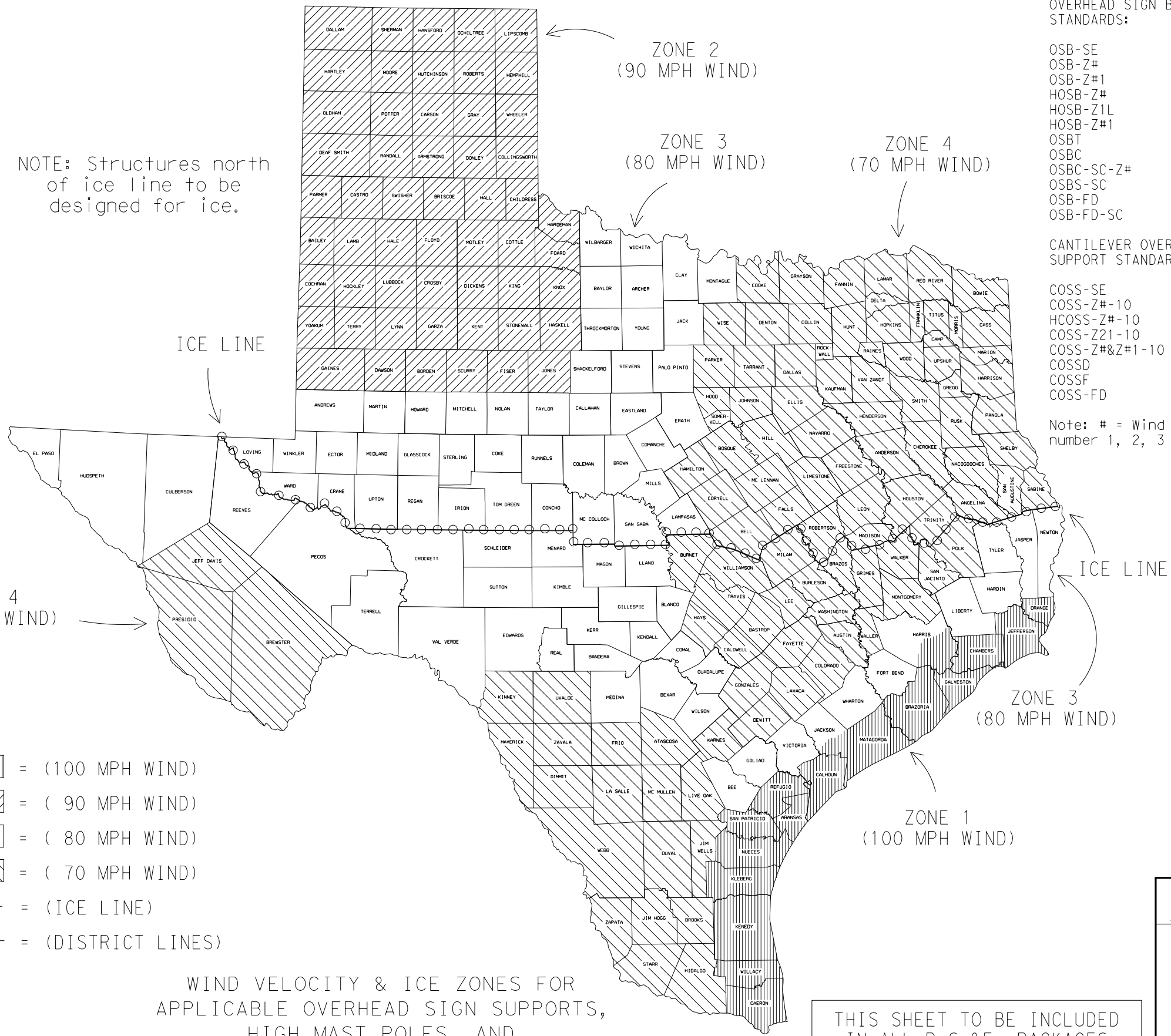
SHEET 2 OF 2
250

DATE: 8/19/2020
 FILE: pw:\jmt-pw_bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP_338, FM_307, FM_1787 (CSJ_0906-00-226)\4 - Design\Plan Set\8. Traffic\Signals\TXDOT

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APPLICABLE STANDARDS SHEETS

- OVERHEAD SIGN BRIDGE STANDARDS:
 OSB-SE
 OSB-Z#
 OSB-Z#1
 HOSB-Z#
 HOSB-Z1L
 HOSB-Z#1
 OSBT
 OSBC
 OSBC-SC-Z#
 OSBS-SC
 OSB-FD
 OSB-FD-SC
- HIGH MAST ILLUMINATION POLE STANDARDS:
 HMIP-98
 HMIF-98
- WALKWAYS AND BRACKETS STANDARDS:
 SWW
 SB(SWL-1)
- TRAFFIC SIGNAL POLE STANDARDS:
 SP-80
 SP-100
 SMA-80
 SMA-100
 DMA-80
 DMA-100
 MA-C
 MAC (ILSN)
 MAD-D
 TS-FD
 LUM-A
 CFA
 LMA
 TS-C
 MA-DPD
- CANTILEVER OVERHEAD SIGN SUPPORT STANDARDS:
 COSS-SE
 COSS-Z#-10
 HCOSS-Z#-10
 COSS-Z21-10
 COSS-Z#&Z#1-10
 COSSD
 COSSF
 COSS-FD
- Note: # = Wind Zone number 1, 2, 3 or 4



NOTE: Structures north of ice line to be designed for ice.

LEGEND

- ZONE 1 - [diagonal lines] = (100 MPH WIND)
- ZONE 2 - [diagonal lines] = (90 MPH WIND)
- ZONE 3 - [white box] = (80 MPH WIND)
- ZONE 4 - [diagonal lines] = (70 MPH WIND)
- ○ ○ ○ = (ICE LINE)
- = (DISTRICT LINES)

WIND VELOCITY & ICE ZONES FOR APPLICABLE OVERHEAD SIGN SUPPORTS, HIGH MAST POLES, AND TRAFFIC SIGNAL POLES
 Based on 50 Year Mean Recurrence Interval of Fastest Mile Wind Velocity at 33 feet height.

THIS SHEET TO BE INCLUDED IN ALL P.S.&E. PACKAGES CONTAINING ONE OR MORE OF THE APPLICABLE STANDARD SHEETS LISTED HEREON

FOR HARRIS CO. ONLY
 Zone line is just North of US 90, around on the North, West and South sides of IH 610 and down the West side of SH 288.

FOR JACKSON CO. ONLY
 Zone line is just North of SH 616.

		Traffic Operations Division Standard	
<h2>WIND VELOCITY AND ICE ZONES</h2> <h3>WV & IZ-14</h3>			
FILE: windice.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT April 1996	CONT	SECT	JOB
REVISIONS	0887	01	039, ETC.
8-14-Added list of applicable standards, restricting use to structures designed for Fastest Mile wind speeds.	DIST	COUNTY	SHEET NO.
	ODA	ECTOR, ETC.	251

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DISCLAIMER:

DATE: 8/19/2020

FILE: pw:\jmt-pw_bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP_338, FM_307, FM_1787 (CSJ_0906-00-226)\4 - Design\Plan Set\8 - Traffic\Signals\TXDOT

GENERAL NOTES FOR ALL ELECTRICAL WORK

- The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.
- Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.
- Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is 1/2 in. or less in diameter.
- Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.
- Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.
- When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

- Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.
- Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.
- Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.


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

- Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.
- Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.
- Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.
- Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

- Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.
- When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.
- Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

- Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.
- Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.
- Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.
- Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.
- When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."
- Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.
- During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.
- Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.
- Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.
- Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.
- At all electrical services, install a 6 AWG solid copper grounding electrode conductor.
- Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).
- Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.
- File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

		Traffic Operations Division Standard	
<h1>ELECTRICAL DETAILS CONDUITS & NOTES</h1>			
<h2>ED(1) - 14</h2>			
FILE:	ed1-14.dgn	DN:	CK:
© TxDOT	October 2014	CONT	SECT
REVISIONS		0887 01	039, ETC.
		DIST	COUNTY
		ODA	ECTOR, ETC.
		SHEET NO.	252

DATE: 8/19/2020
 FILE: pw:\jmt-pw_bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP_338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8 - Traffic\Signals\TXDOT\

ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.
2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.
3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.
4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.
2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.
3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.
4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.
5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.
6. Support conductors in illumination poles with a J-hook at the top of the pole.
7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.
8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.
9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.
10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.
11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

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

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.
2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.
3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.
4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.
5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

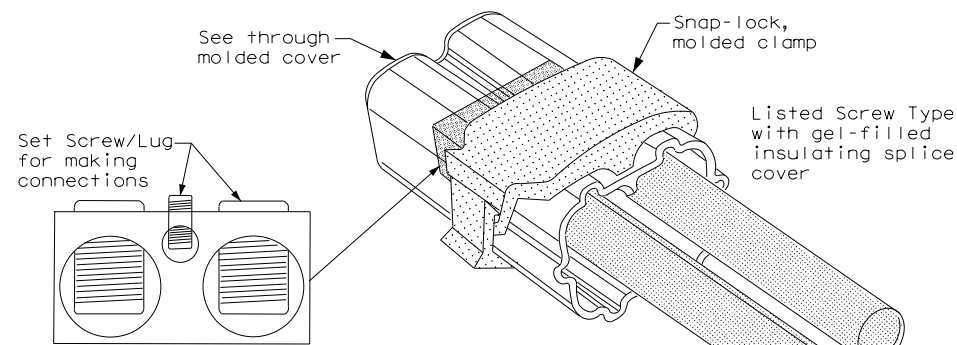
GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

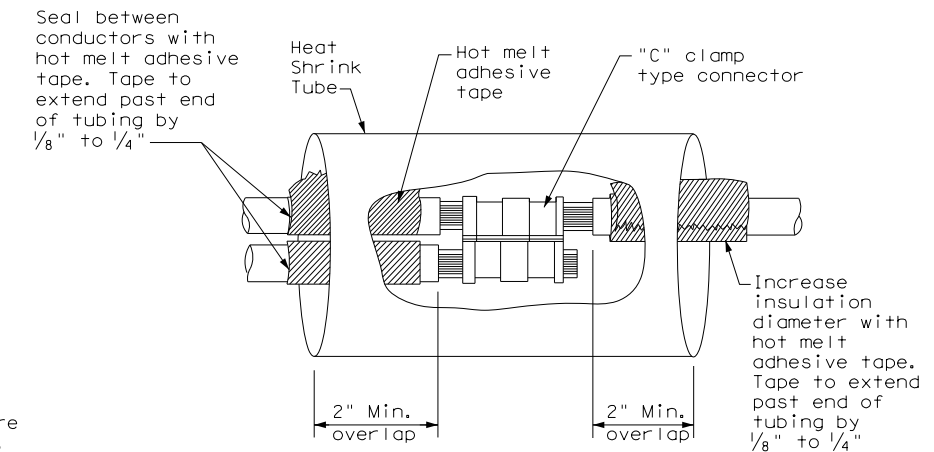
1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in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

B. CONSTRUCTION METHODS

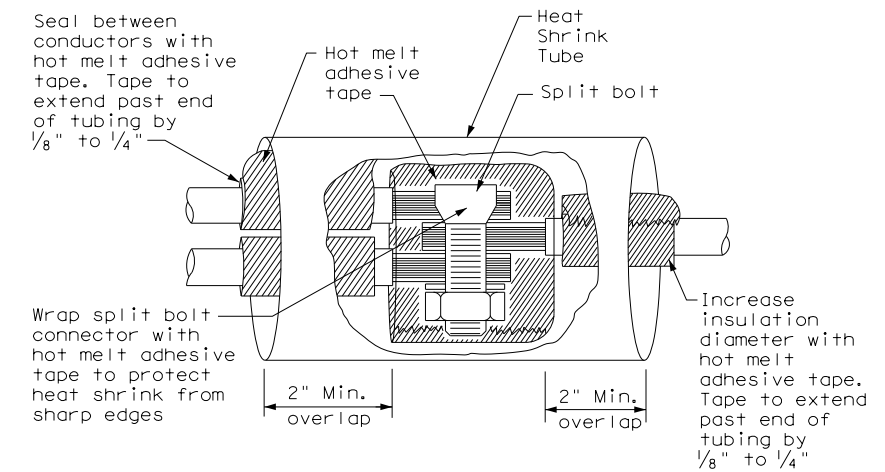
1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.
2. Do not place ground rods in the same drilled hole as a timber pole.
3. Install ground rods so the imprinted part number is at the upper end of the rod.
4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.
6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 3
Listed Screw Type



SPLICE OPTION 1
Compression Type



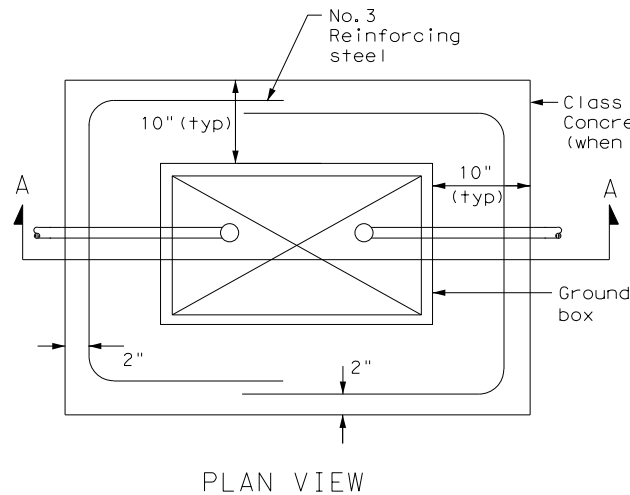
SPLICE OPTION 2
Split Bolt Type

		Traffic Operations Division Standard	
<h2>ELECTRICAL DETAILS CONDUCTORS</h2>			
<h3>ED(3)-14</h3>			
FILE: ed3-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
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		DIST	COUNTY
		ODA	ECTOR, ETC.
			SHEET NO. 253

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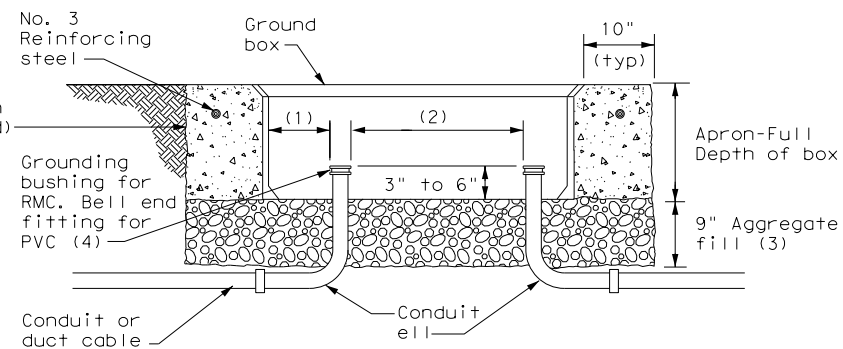
DATE: 8/19/2020

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PLAN VIEW

APRON FOR GROUND BOX

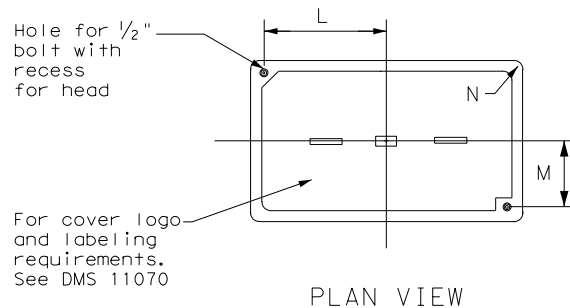


SECTION A - A

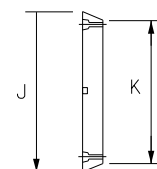
- (1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.
- (2) Maintain sufficient space between conduits to allow for proper installation of bushing.
- (3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.
- (4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

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

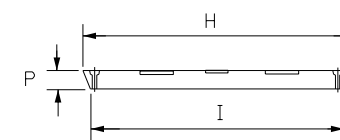
GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



END



SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

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

B. CONSTRUCTION METHODS

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

				Traffic Operations Division Standard	
<h1>ELECTRICAL DETAILS</h1> <h2>GROUND BOXES</h2> <h3>ED(4) - 14</h3>					
FILE:	ed4-14.dgn	DN:	TxDOT	CK:	TxDOT
© TxDOT	October 2014	CONT:	0887	SECT:	01
REVISIONS		JOB:	039, ETC.		HIGHWAY:
		DIST:	COUNTY		SHEET NO.
		ODA:	ECTOR, ETC.		254

DATE: 8/19/2020
 FILE: pw:\jmt-pw\benfley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP_338, FM_307, FM_1787 (CSJ_0906-00-226)\4 - Design\Plan Set\8 - Traffic\Signals\TXDOT\ELECTRICAL SERVICES NOTES

ELECTRICAL SERVICES NOTES

- Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.
- Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services," DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.
- Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.
- Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.
- The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.
- Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.
- When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.
- Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.
- All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.
- Provide rigid metal conduit (RMC) for all conduits on service, except for the 1/2 in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.
- Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.
- Ensure all mounting hardware and installation details of services conform to utility company specifications.
- For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 1/2 in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.
- When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 1/2 in. x 11 in. before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.
- Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

- Provide threaded hub for all conduit entries into the top of enclosure.
- Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photoceII or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.
- Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.
- Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

- Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.
- When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

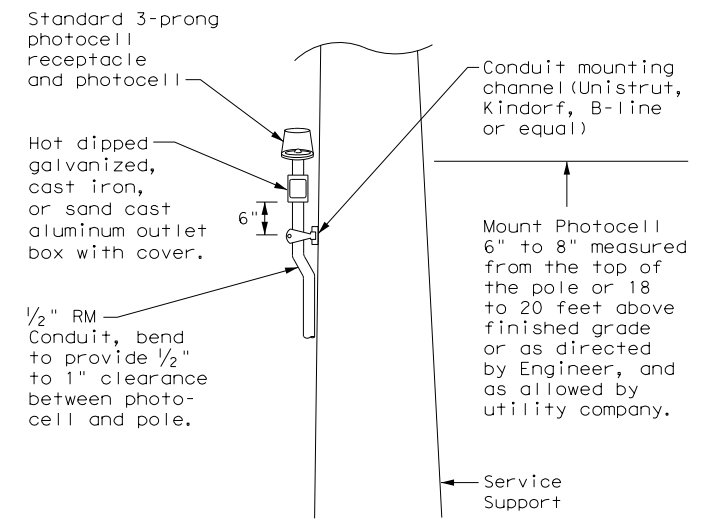
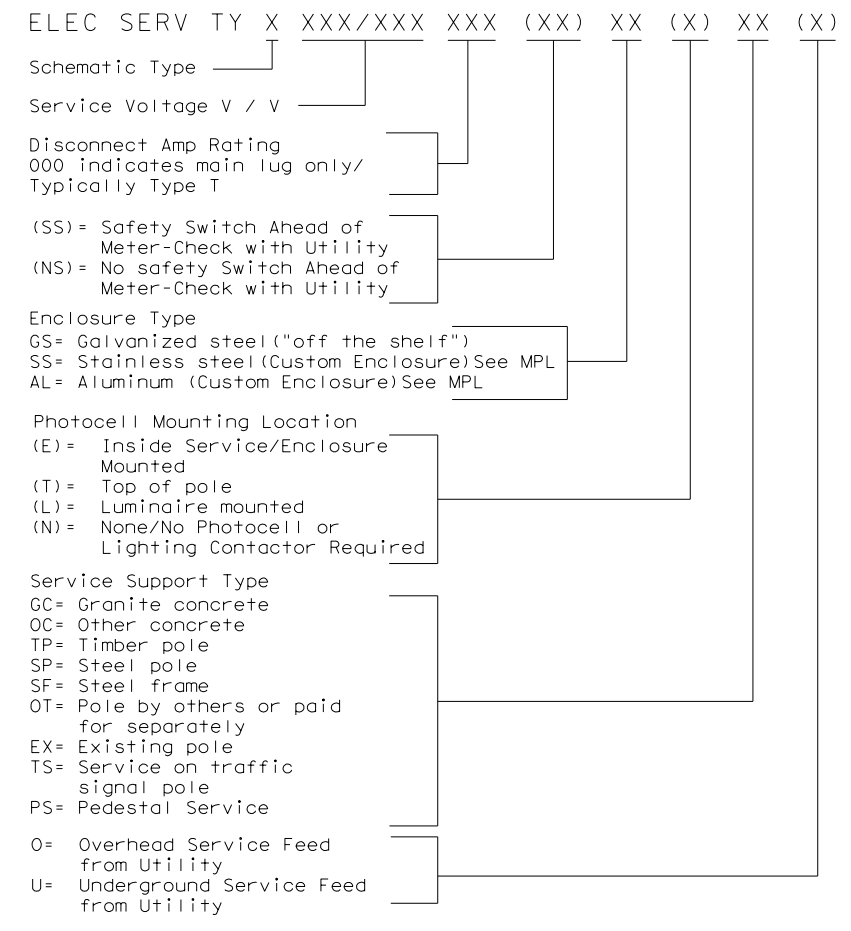
PHOTOELECTRIC CONTROL

- Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

* ELECTRICAL SERVICE DATA												
Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit *xS Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 1/4"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 1/4"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.
 ** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National Electrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE



TOP MOUNTED PHOTOCELL

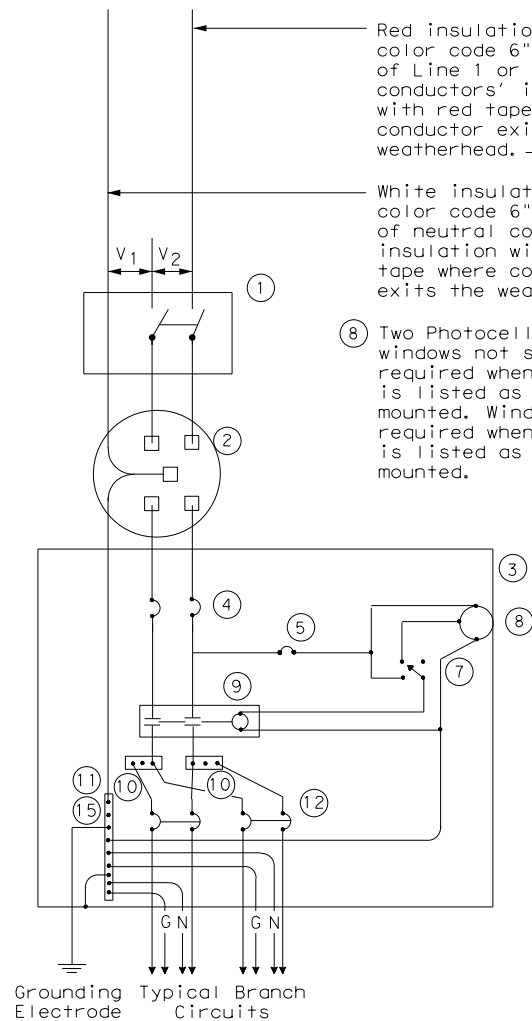
Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

ELECTRICAL DETAILS SERVICE NOTES & DATA			
ED(5) - 14			
FILE: ed5-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
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SCHEMATIC TYPE A
THREE WIRE

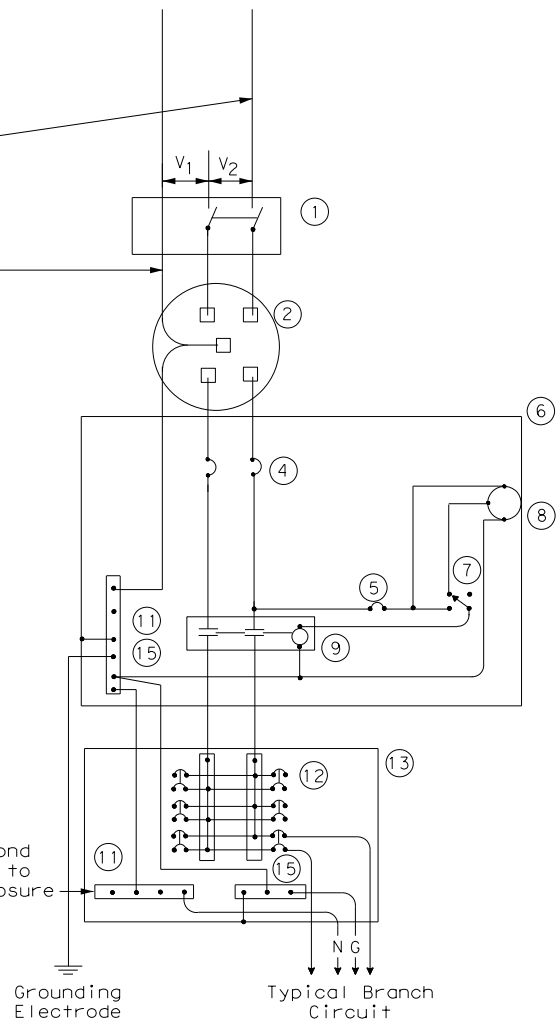
WIRING LEGEND	
—	Power Wiring
—	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

Red insulation or color code 6" length of Line 1 or Line 2 conductors' insulation with red tape where conductor exits the weatherhead.

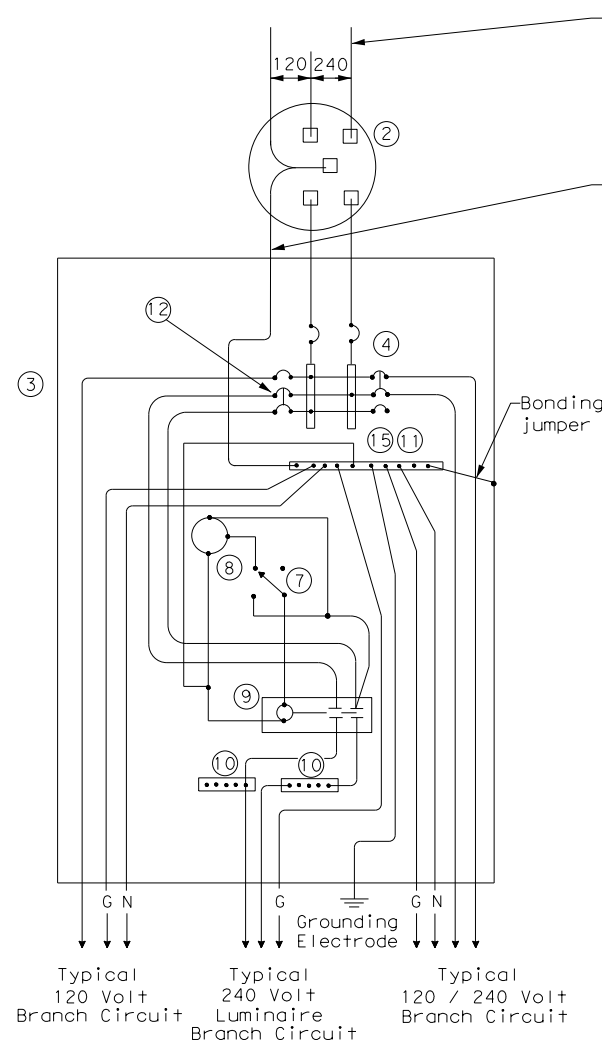
White insulation or color code 6" length of neutral conductors' insulation with white tape where conductor exits the weatherhead.

8 Two Photocell viewing windows not shown but required when photocell is listed as enclosure mounted. Windows not required when photocell is listed as pole top mounted.

Do not bond this bus to the enclosure



SCHEMATIC TYPE C
THREE WIRE

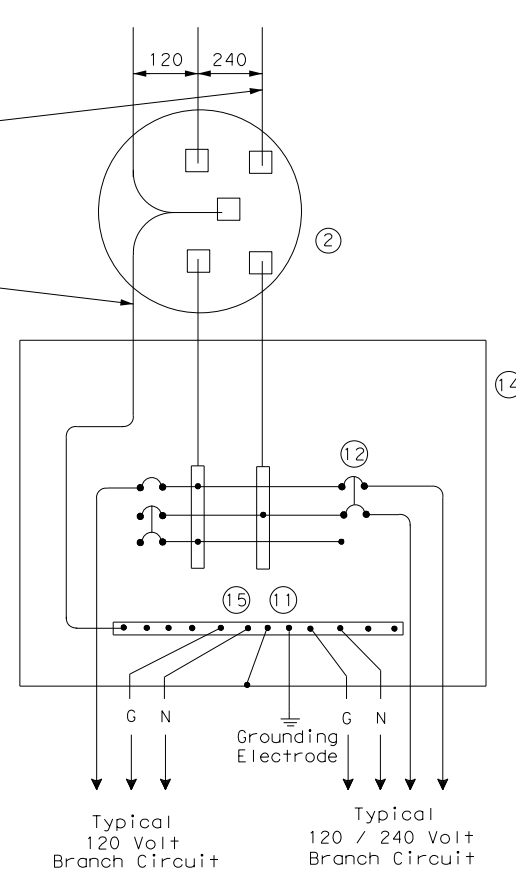


SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

Red insulation or color code 6" length of Line 1 or Line 2 conductors' insulation with red tape where conductor exits the weatherhead.

White insulation or color code 6" length of neutral conductors' insulation with white tape where conductor exits the weatherhead.



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE
Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

				Traffic Operations Division Standard	
ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES					
ED(6) - 14					
FILE:	ed6-14.dgn	DN:	TxDOT	CK:	TxDOT
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		DIST:	COUNTY	SHEET NO.	
		ODA	ECTOR, ETC.	256	

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 FILE: \\jmt-pw_bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP_338, FM_307, FM_1787 (CSJ_0906-00-226)\4 - Design\Plan Set\8 - Traffic\Signals\TXDOT

SUPPORT TYPE STEEL POLE (SP) AND STEEL FRAME (SF)

1. Provide steel pole and steel frame supports as per TxDOT Departmental Material Specification (DMS)11080 "Electrical Services." Mount all equipment and conduit on 12 gauge galvanized steel or stainless steel channel strut, 1 1/2 in. or 1 3/8 in. wide by 1 in. up to 3 3/4 in. deep Unistrut, Kindorf, B-line or equal. Bolt or weld all channel and hardware to vertical members as approved. Do not stack channel. File smooth and paint field cut ends of all channel with zinc-rich paint before installing.
2. Provide poles for overhead service with an eyebolt or similar fitting for attachment of the service drop to the pole in conformance with the electric utility provider's specifications.
3. Provide and install galvanized 3/4 in. x 18 in. x 4 in. (dia. x length x hook length) anchor bolts for underground service supports. Provide and install galvanized 3/4 in. x 56 in. x 4 in. anchor bolts for overhead service supports. Ensure anchor bolts have 3 in of thread, with 3 1/4 in. to 3 1/2 in. of the exposed anchor bolt projecting above finished foundation. Provide and install leveling nuts for all anchor bolts.
4. Bond one of the anchor bolts to the rebar cage with 6 AWG bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. See Inset B.
5. Furnish and install rigid metallic ellis in all steel pole and steel frame foundations for all conduits entering the service from underground.
6. Use class C concrete for foundations. Ensure reinforcing steel is Grade 60 with 3" of unobstructed concrete cover.
7. Drill and tap steel poles and frames for 1/2 in. X 13 UNC tank ground fitting. For steel pole service supports, provide and install tank ground fitting 4 in. to 6 in. below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. For steel frame service supports, provide and install tank ground fitting on steel frame post. Install service grounding electrode conductor in a non-metallic conduit or tubing from the enclosure to the steel frame post. Connect electrical service grounding electrode conductor to the tank ground fitting. See steel frame and steel pole details and Inset A for more information. Size service entrance conduit and branch circuit conduit as shown in the plans. For underground conduit runs from the electrical service, extend RMC from the service enclosure to an RMC elbow, and then connect the schedule type and size of conduit shown in the plans. Provide and install grounding bushings where RMC terminates in the enclosure. Grounding bushings are not required when RMC is fitted into a sealing hub or threaded boss.
8. If Steel pole or frame is painted, bond each separate painted piece with a bonding jumper attached to a tapped hole.
9. Provide 1/4" - 20 machine screws for bonding. Do not use sheet metal screws. Remove all non-conductive material at contact points. Terminate bonding jumpers with listed devices. Install minimum size 6 AWG stranded copper bonding jumpers. Make up all threaded bonding connections wrench tight.
10. Avoid contact of the service drop and service entrance conductors with the metal pole to prevent abrasion of the insulated conductors.
11. Shop drawings are not required for service support structure unless specifically stated elsewhere or directed by the Engineer.

White insulation or color code 6" of neutral conductor's insulation with white tape where conductor exits weatherhead.

Red insulation or color code 6" length of Line 1 or Line 2 conductor's insulation with red tape where conductor exits the weatherhead. Conductor slack length, 12" min., 18" max.

2" to 6" 4" (typ.)

RMC

Service Enclosure

Inset A

Channel bracket or other arrangement approved by the Engineer. (Kindorf, Unistrut, B-line or equal.)

Meter

Safety Switch

Inset B

60" TYP.

2"

18" Min.

Class "C" concrete

RMC

PVC

24 Dia. x 60" depth foundation 4-#5 reinforcing bars and #2 spiral (typ.) at 6" pitch

WITH SAFETY SWITCH

20' measured from grade. Circumstances may require the electrical service support to be taller than the 20" shown, check with utility before installing.

Top of weatherhead to be 2" to 6", 4" typical below the top of pole.

White insulation or color code 6" of neutral conductor's insulation with white tape where conductor exits weatherhead.

Red insulation or color code 6" length of Line 1 or Line 2 conductor's insulation with red tape where conductor exits the weatherhead. Conductor slack length, 12" min., 18" max.

Point of attachment of service drop to be below weatherhead.

Conduit support spacing, 3' max from the ends, and 5' in between unless otherwise called for by the utility.

Service Enclosure

Inset A

Service Enclosure

Inset A

Meter

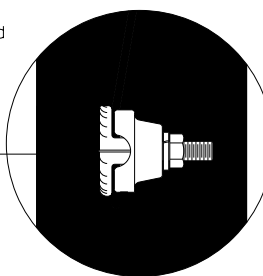
Inset B

24" dia. X 60" foundation 4-#5 reinforcing bars and #2 spiral (typ.)

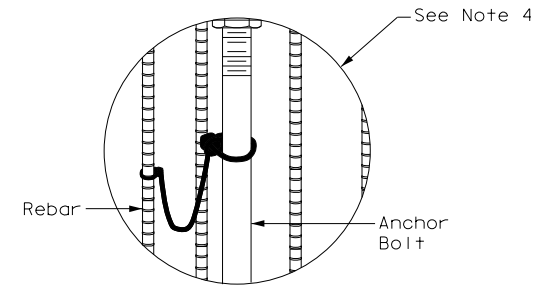
WITHOUT SAFETY SWITCH

SERVICE SUPPORT TYPE SP (O) - OVERHEAD SERVICE

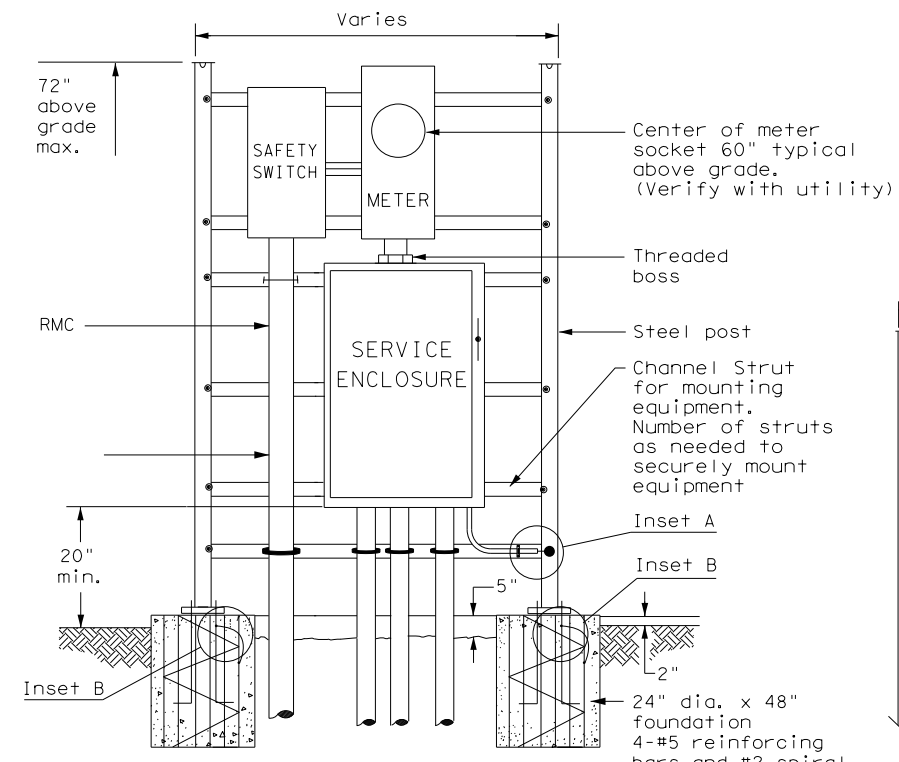
Drill, tap, and thread 1/2" X 13 UNC. Install tank ground fitting, connect electrical service grounding electrode conductor. See Note 7.



FRONT VIEW INSET A

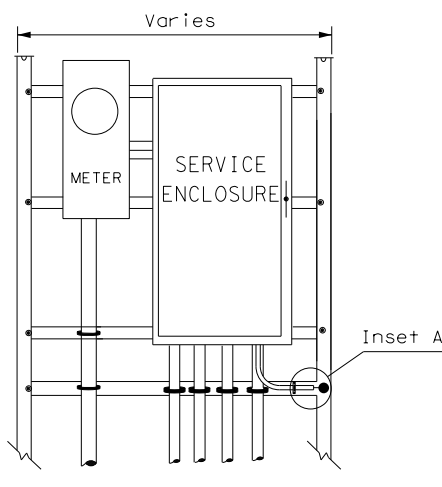


INSET B



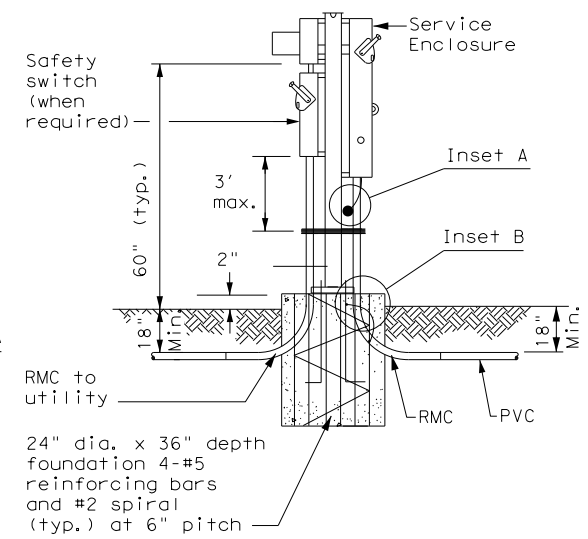
WITH SAFETY SWITCH FRONT VIEW

SERVICE SUPPORT TYPE SF (U) - UNDERGROUND SERVICE



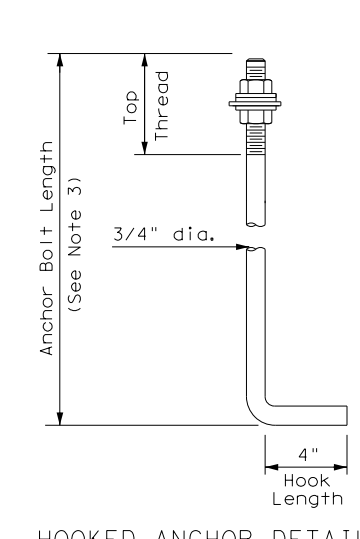
WITHOUT SAFETY SWITCH

SERVICE SUPPORT TYPE SF (U) - UNDERGROUND SERVICE

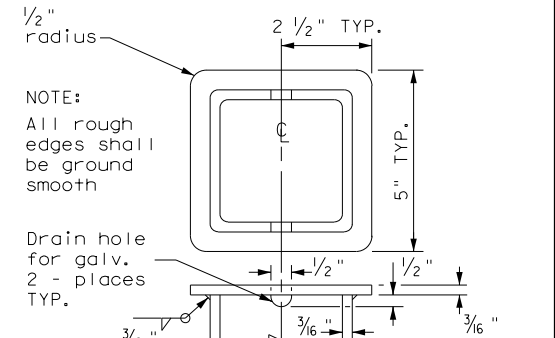


WITH SAFETY SWITCH

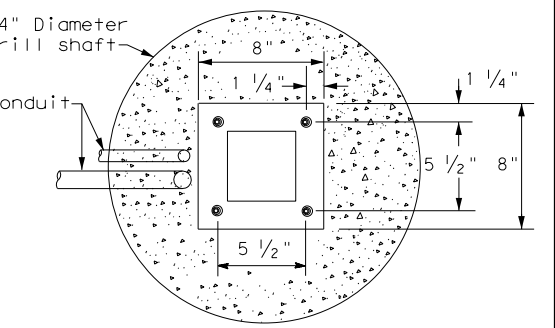
SERVICE SUPPORT TYPE SP (U) - UNDERGROUND SERVICE



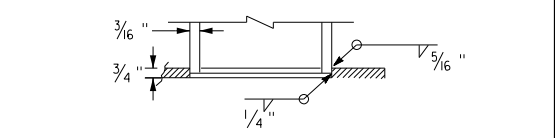
HOOKED ANCHOR DETAIL



POLE TOP PLATE

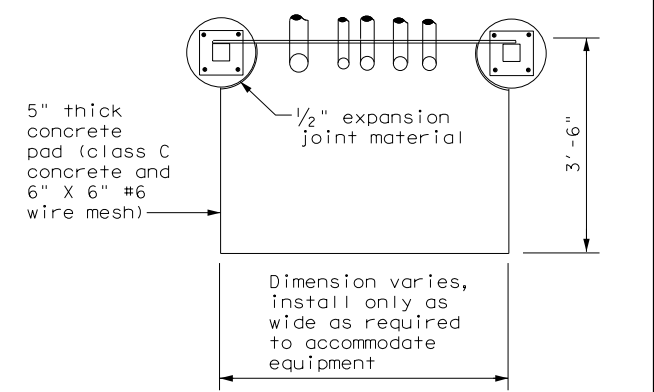


BASE PLATE DETAIL



BOTTOM OF POLE

SERVICE SUPPORT TYPE SF & SP



TOP VIEW

SERVICE SUPPORT TY SF (O) & SF (U)



**ELECTRICAL DETAILS
SERVICE SUPPORT
TYPES SF & SP
ED(7)-14**

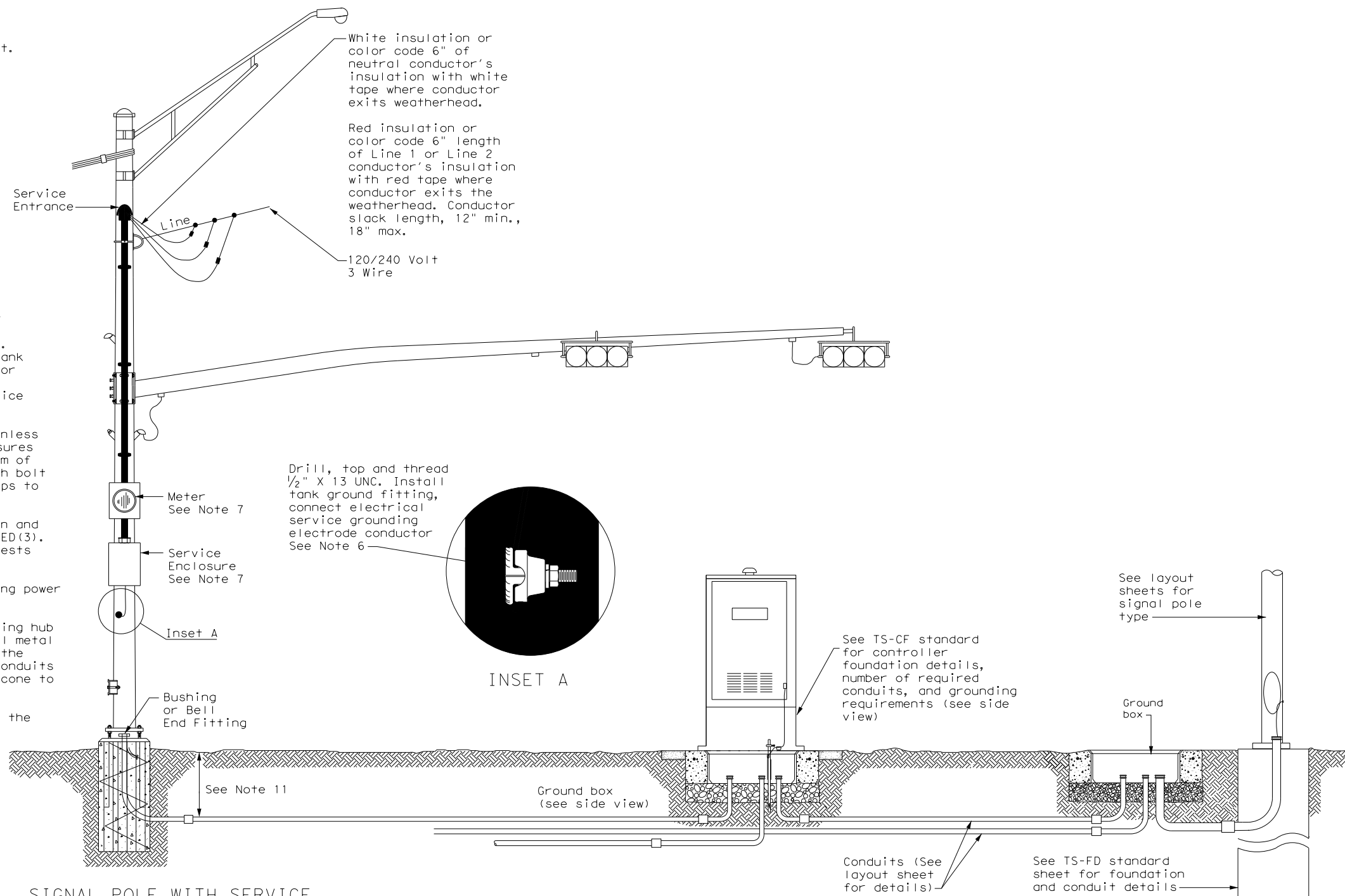
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REVISIONS		0887	01	039, ETC.		VARIOUS			
		DIST:	COUNTY		SHEET NO.				
		ODA	ECTOR, ETC.		257				

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DATE: 8/19/2020
 FILE: pw:\jmt-pw_bent\ey.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP_338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. Traffic\Signals\TXDOT

TRAFFIC SIGNAL NOTES

1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material and construction sections of Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.
4. If internally illuminated street name signs are approved for use, ground the fixture to the pole with a 12 AWG green XHHW conductor.
5. Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.
6. Drill and tap signal poles for 1/2 in. X 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of 3/4 in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.
8. Conduct pull tests and insulation resistance tests on all illumination and power conductors as required in Item 620 "Electrical Conductors" and ED(3). To prevent electronics damage, do not conduct insulation resistance tests on traffic signal cables after termination.
9. Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.
11. For all conduits, ensure the burial depth is a minimum of 18". Ensure the minimum burial depth for conduit placed under a roadway is 24".

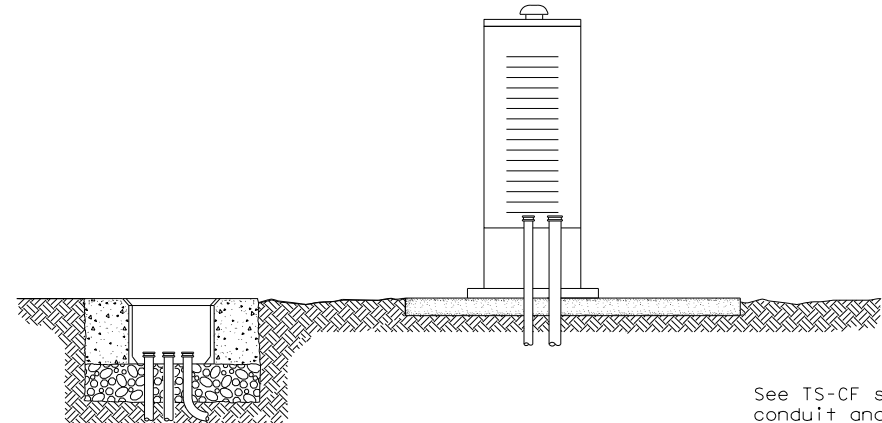


SIGNAL POLE WITH SERVICE

Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.

SIGNAL CONTROLLER FRONT VIEW

SIGNAL POLE



SIGNAL CONTROLLER SIDE VIEW

See TS-CF standard for conduit and grounding requirements. See layout sheets for ground box locations and any additional conduits that are required.



**ELECTRICAL DETAILS
 TYPICAL TRAFFIC SIGNAL
 SYSTEM DETAILS
 ED(8)-14**

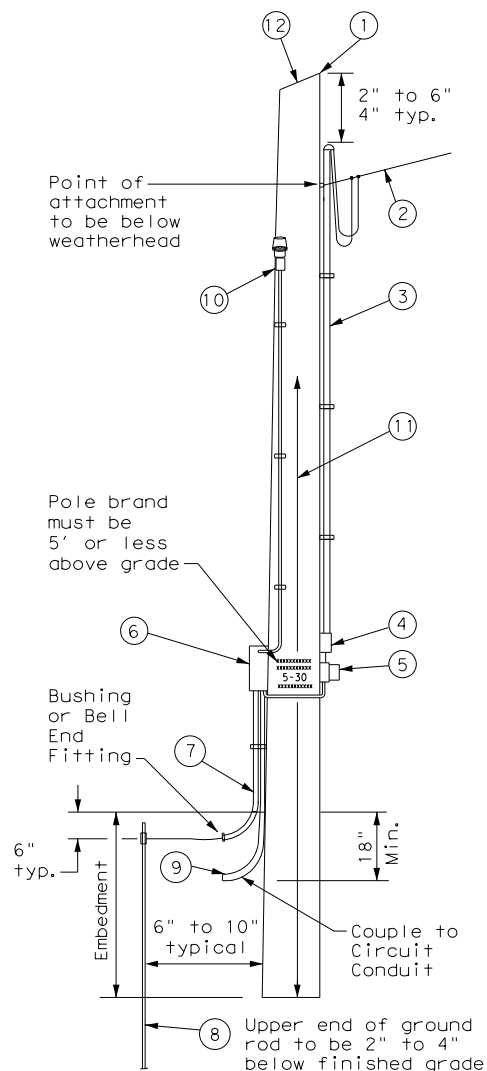
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© TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY	SHEET NO.	
	ODA	ECTOR, ETC.	258	

DATE: 8/19/2020
 FILE: pw:\jmt-pw\benley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP_338, FM_307, FM_1787 (CSJ_0906-00-226)\4 - Design\Plan Set\8. Traffic\Signals\TXDOT\

TIMBER POLE (TP) SERVICE SUPPORT NOTES

1. Ensure electrical service support is a class 5 treated timber pole as per Item 627 "Treated Timber Poles." Embed timber pole to depth required in Item 627.
2. Conduit and electrical conductors attached to the electrical service pole and underground within 12 in. of service pole are not paid for directly but are subsidiary to the electrical service.
3. Install pole-top mounted photocell (T) on north side of pole, or in service enclosure (E) as required. See Electrical Service Data chart in plan set.
4. Gain pole as required to provide flat surface for each channel. Gain timber pole to 3/8 in. max. depth and 1 7/8 in. max. height. Gain pole in a neat and workmanlike manner.
5. Mount meter and service equipment on stainless steel or galvanized channel (Unistrut, Kindorf, or equal). Provide channel sized 1 in. to 3 3/4 in. maximum depth, and 1 1/2 in. to 1 5/8 in. maximum width. File smooth the cut ends of galvanized channel and paint with zinc rich paint before installing on pole. Secure each channel section to timber pole with two galvanized or SS lag bolts, 1/4 in. minimum diameter by 1 1/2 in. minimum length. Use a galvanized or SS flat washer on each lag bolt. Do not stack channel.
6. When excess length must be trimmed from poles, trim from the top end only.

- 1 Class 5 pole, height as required
- 2 Service drop from utility company (attached below weatherhead)
- 3 Service conduit (RMC) and service entrance conductors - One Red, One Black, One White (See Electrical Service Data)
- 4 Safety switch (when required)
- 5 Meter (when required)
- 6 Service enclosure
- 7 6 AWG bare grounding electrode conductor in 1/2 in. PVC to ground rod - extend 1/2 in. PVC 6 in. underground.
- 8 5/8 in. x 8 ft. Copper clad ground rod - drive ground rod to a depth of 2 in. to 4 in. below grade.
- 9 RMC same size as branch circuit conduit.
- 10 See pole-top mounted photocell detail on ED(5).
- 11 When required by the serving utility provide bare 6 AWG copper conductor. Run wire from pole top to butt wrap or copper butt plate. Protect conductor with non-conductive material to a height of 8 ft. above finished grade.
- 12 When required by utility, cut top of pole at an angle to enhance rain run off.

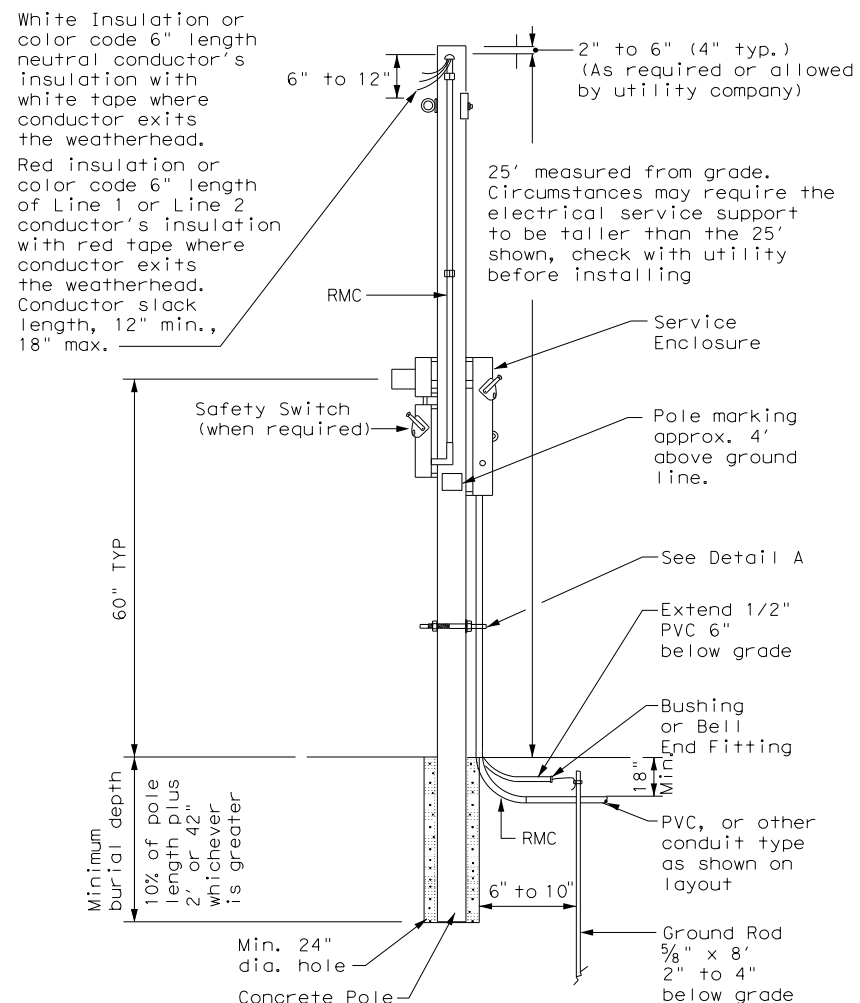


SERVICE SUPPORT TYPE TP (O)

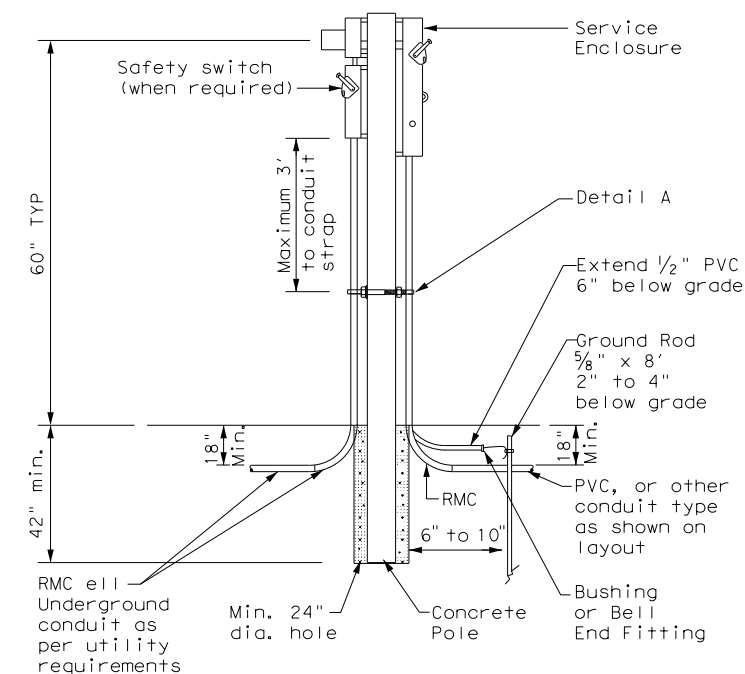
GRANITE CONCRETE (GC) & OTHER CONCRETE (OC) NOTES

Ensure electrical service support structures bid as type Granite Concrete (GC) or Other Concrete (OC) meet the following requirements.

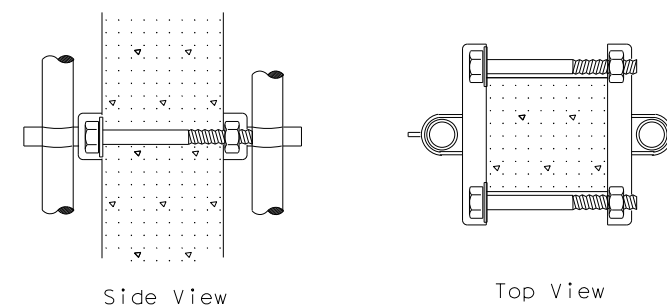
1. Provide GC and OC poles that meet the requirements of DMS 11080 "Electrical Services."
2. Provide prestressed concrete poles suitable for direct embedment into the ground without special foundations.
3. Verify poles are marked as required on DMS 11080. Location of marking should be approximately 4' above final grade. Use the two-point pickup locations when handling pole in horizontal position, and one-point pickup location for use in raising the pole to a vertical position. These marks are small but conspicuous.
4. Embed poles 42 in. or 10% of the length plus 2 ft., whichever is greater.
5. Ensure all installation details of services are in accordance with utility company specifications.
6. Install a one point rack or eye bolt bracket 6 inches to 12 inches below the weatherhead as an overhead service drop anchoring point for the electric utility.
7. Furnish and install galvanized or stainless steel channel strut 1 1/2 in. or 1 5/8 in. wide by 1 in. up to 3 3/4 in. deep (Unistrut, Kindorf, B-line or equal). Attach channel strut with stainless steel concrete anchors (max. 1" depth), square U-bolts or back to back channel strut with long bolts, or other secure mounting as approved by the Engineer. Ensure bolts are galvanized in accordance with ASTM A153. Do not stack channel struts.
8. Backfill the holes thoroughly by tamping in 6 in. lifts. After tamping to grade, place additional backfill material in a 6 inch high cone around the pole to allow for settling. Use material equal in composition and density to the surrounding area. Backfilling will not be paid for directly but is subsidiary to various bid items.



CONCRETE SERVICE SUPPORT Overhead (O)



CONCRETE SERVICE SUPPORT Underground (U)



DETAIL A

See Note 7. Before installing channel that has been cut, file sharp edges and paint with zinc-rich paint. Ensure there is no paint splatter on the pole.

		Traffic Operations Division Standard	
ELECTRICAL DETAILS SERVICE SUPPORT TYPES GC, OC, & TP			
ED(10)-14			
FILE: ed10-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
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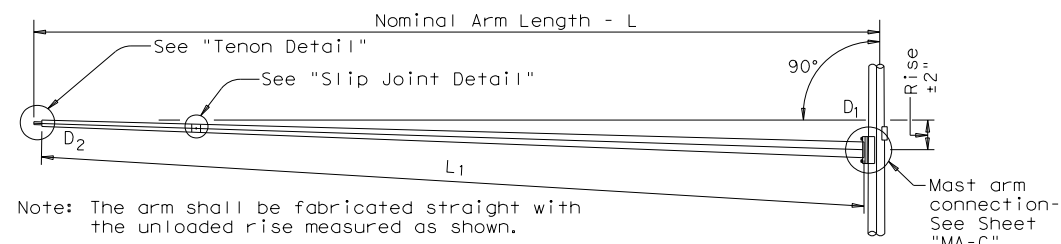
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Arm Length	ROUND POLES					POLYGONAL POLES					Foundation Type
	D _B	D ₁₉	D ₂₄	D ₃₀	① thk	D _B	D ₁₉	D ₂₄	D ₃₀	① thk	
ft.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
20	10.5	7.8	7.1	6.3	.179	11.5	8.5	7.7	6.8	.179	30-A
24	11.0	8.3	7.6	6.8	.179	12.0	9.0	8.2	7.3	.179	30-A
28	11.5	8.8	8.1	7.3	.179	12.5	9.5	8.7	7.8	.179	30-A
32	12.5	9.8	9.1	8.3	.179	12.0	9.0	8.2	7.3	.239	30-A
36	12.0	9.3	8.6	7.8	.239	12.5	9.5	8.7	7.8	.239	36-A
40	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
44	12.5	9.8	9.1	8.3	.239	14.0	11.0	10.2	9.3	.239	36-A
48	13.0	10.3	9.6	8.8	.239	15.0	12.0	11.2	10.3	.239	36-A

Arm Length	ROUND ARMS					POLYGONAL ARMS				
	L ₁	D ₁	D ₂	① thk	Rise	L ₁	D ₁	② D ₂	① thk	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	6.5	3.8	.179	1'-9"	19.1	7.0	3.5	.179	1'-8"
24	23.1	7.5	4.3	.179	1'-10"	23.1	7.5	3.5	.179	1'-9"
28	27.1	8.0	4.2	.179	1'-11"	27.1	8.0	3.5	.179	1'-10"
32	31.0	9.0	4.7	.179	2'-1"	31.0	9.0	3.5	.179	2'-0"
36	35.0	9.5	4.6	.179	2'-4"	35.0	10.0	3.5	.179	2'-1"
40	39.0	9.5	4.1	.239	2'-8"	39.0	9.5	3.5	.239	2'-3"
44	43.0	10.0	4.1	.239	2'-11"	43.0	10.0	3.5	.239	2'-6"
48	47.0	10.5	4.1	.239	3'-4"	47.0	11.0	3.5	.239	2'-9"

D_B = Pole Base O.D.
 D₁₉ = Pole Top O.D. with no Luminaire and no ILSN
 D₂₄ = Pole Top O.D. with ILSN w/out Luminaire
 D₃₀ = Pole Top O.D. with Luminaire
 D₁ = Arm Base O.D.
 D₂ = Arm End O.D.
 L₁ = Shaft Length
 L = Nominal Arm Length

- ① Thickness shown are minimums, thicker materials may be used.
- ② D₂ may be increased by up to 1" for polygonal arms.



TRAFFIC SIGNAL ARM (Fixed Mount)

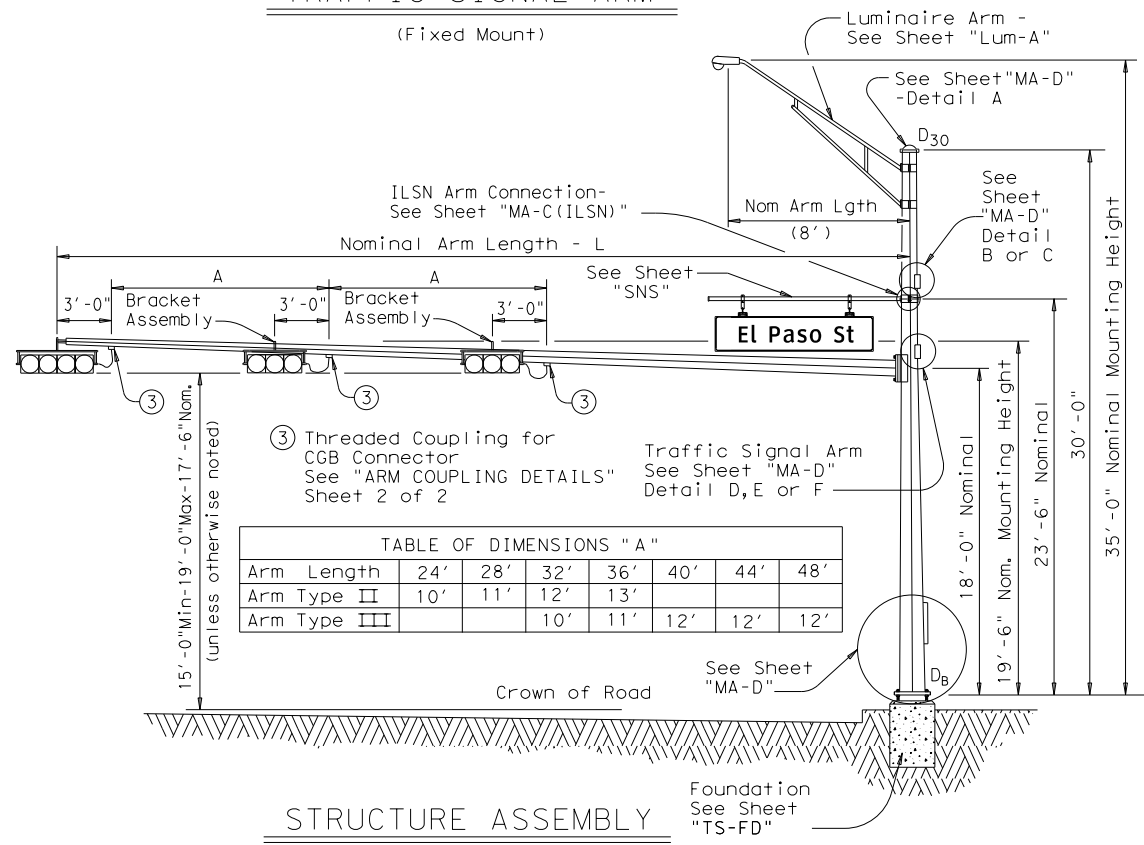


TABLE OF DIMENSIONS "A"

Arm Length	24'	28'	32'	36'	40'	44'	48'
Arm Type II	10'	11'	12'	13'			
Arm Type III			10'	11'	12'	12'	12'

SHIPPING PARTS LIST

Ship each pole with the following attached: enlarged hand hole, pole cap, fixed-arm connection bolts and washers and any additional hardware listed in the table.

Nominal Arm Length	30' Poles With Luminaire		24' Poles With ILSN		19' Poles With No Luminaire and No ILSN	
	Designation	Quantity	Designation	Quantity	Designation	Quantity
ft	Above hardware plus: One (or two if ILSN attached) small hand hole, clamp-on simplex		Above hardware plus one small hand hole		See note above	
20	20L-80		20S-80		20-80	
24	24L-80		24S-80		24-80	
28	28L-80		28S-80		28-80	
32	32L-80		32S-80		32-80	
36	36L-80		36S-80		36-80	
40	40L-80		40S-80		40-80	
44	44L-80		44S-80		44-80	
48	48L-80		48S-80		48-80	

Traffic Signal Arms (1 per Pole) Ship each arm with the listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal)		Type II Arm (2 Signals)		Type III Arm (3 Signals)	
	Designation	Quantity	Designation	Quantity	Designation	Quantity
ft	1 CGB connector		1 Bracket Assembly and 2 CGB Connectors		2 Bracket Assemblies and 3 CGB Connectors	
20	20I-80					
24	24I-80		24II-80			
28	28I-80		28II-80			
32			32II-80		32III-80	
36			36II-80		36III-80	
40					40III-80	
44					44III-80	
48					48III-80	

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	

ILSN Arm (Max. 2 per pole) Ship with clamps, bolts and washers

Nominal Arm Length	Quantity
7' Arm	
9' Arm	

Anchor Bolt Assemblies (1 per pole)

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
3/4"	1'-6"	15
1 1/2"	3'-4"	
1 3/4"	3'-10"	

Each anchor bolt assembly consists of the following: Top and Bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers, and 4 nut anchor devices (Type 2) per Standard Drawing "TS-FD".

Templates may be removed for shipment.

LOOP 338 AT SH 191 SHEET 1 OF 2

Texas Department of Transportation
 Traffic Operations Division
TRAFFIC SIGNAL SUPPORT STRUCTURES
 SINGLE MAST ARM ASSEMBLY
 (80 MPH WIND ZONE)
 SMA-80(1)-12

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REVISIONS		CONT	SECT	JOB	HIGHWAY
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11-99			DIST	COUNTY	SHEET NO.
11-12			ODA	ECTOR, ETC.	260

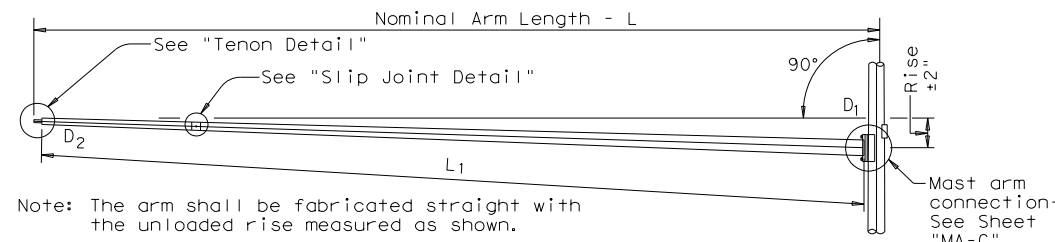
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Arm Length	ROUND POLES					POLYGONAL POLES					Foundation Type
	D _B	D ₁₉	D ₂₄	D ₃₀	① thk	D _B	D ₁₉	D ₂₄	D ₃₀	① thk	
ft.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
20	10.5	7.8	7.1	6.3	.179	11.5	8.5	7.7	6.8	.179	30-A
24	11.0	8.3	7.6	6.8	.179	12.0	9.0	8.2	7.3	.179	30-A
28	11.5	8.8	8.1	7.3	.179	12.5	9.5	8.7	7.8	.179	30-A
32	12.5	9.8	9.1	8.3	.179	12.0	9.0	8.2	7.3	.239	30-A
36	12.0	9.3	8.6	7.8	.239	12.5	9.5	8.7	7.8	.239	36-A
40	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
44	12.5	9.8	9.1	8.3	.239	14.0	11.0	10.2	9.3	.239	36-A
48	13.0	10.3	9.6	8.8	.239	15.0	12.0	11.2	10.3	.239	36-A

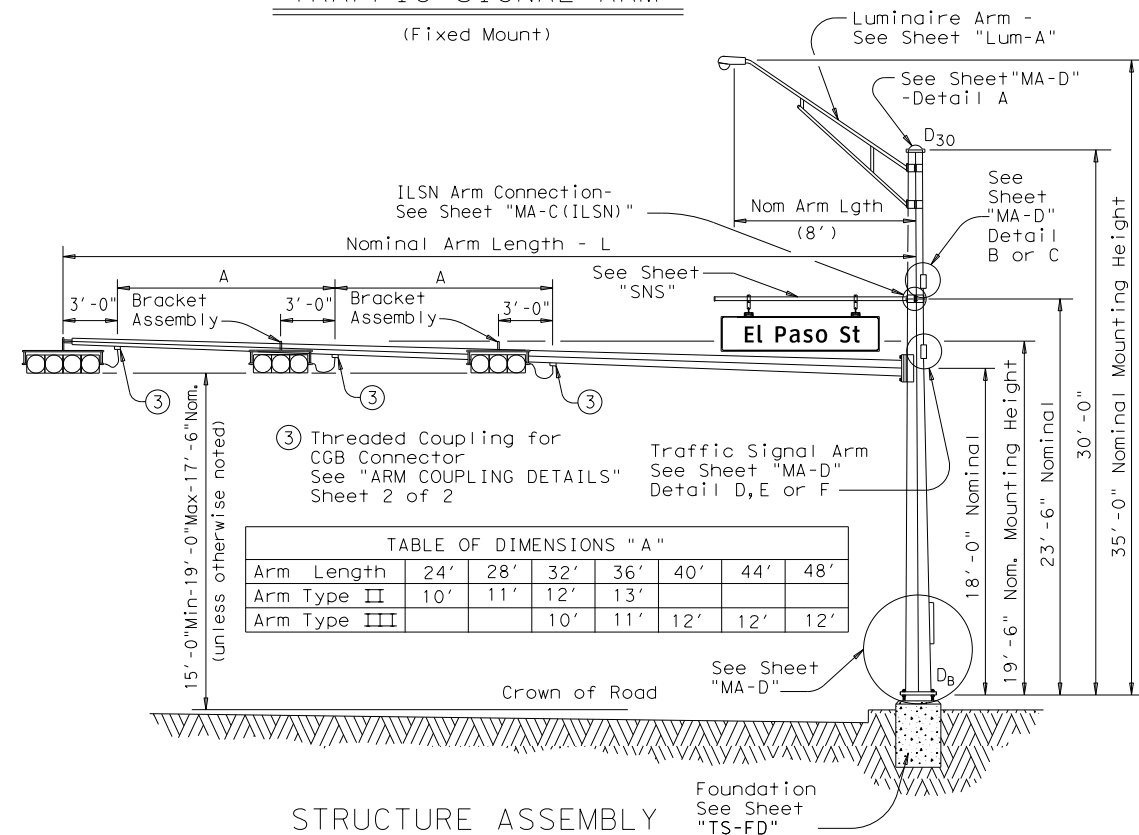
Arm Length	ROUND ARMS					POLYGONAL ARMS				
	L ₁	D ₁	D ₂	① thk	Rise	L ₁	D ₁	② D ₂	① thk	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	6.5	3.8	.179	1'-9"	19.1	7.0	3.5	.179	1'-8"
24	23.1	7.5	4.3	.179	1'-10"	23.1	7.5	3.5	.179	1'-9"
28	27.1	8.0	4.2	.179	1'-11"	27.1	8.0	3.5	.179	1'-10"
32	31.0	9.0	4.7	.179	2'-1"	31.0	9.0	3.5	.179	2'-0"
36	35.0	9.5	4.6	.179	2'-4"	35.0	10.0	3.5	.179	2'-1"
40	39.0	9.5	4.1	.239	2'-8"	39.0	9.5	3.5	.239	2'-3"
44	43.0	10.0	4.1	.239	2'-11"	43.0	10.0	3.5	.239	2'-6"
48	47.0	10.5	4.1	.239	3'-4"	47.0	11.0	3.5	.239	2'-9"

D_B = Pole Base O.D.
 D₁₉ = Pole Top O.D. with no Luminaire and no ILSN
 D₂₄ = Pole Top O.D. with ILSN w/out Luminaire
 D₃₀ = Pole Top O.D. with Luminaire
 D₁ = Arm Base O.D.
 D₂ = Arm End O.D.
 L₁ = Shaft Length
 L = Nominal Arm Length

- ① Thickness shown are minimums, thicker materials may be used.
- ② D₂ may be increased by up to 1" for polygonal arms.



TRAFFIC SIGNAL ARM
(Fixed Mount)



STRUCTURE ASSEMBLY

SHIPPING PARTS LIST

Ship each pole with the following attached: enlarged hand hole, pole cap, fixed-arm connection bolts and washers and any additional hardware listed in the table.

Nominal Arm Length	30' Poles With Luminaire		24' Poles With ILSN		19' Poles With No Luminaire and No ILSN	
	Designation	Quantity	Designation	Quantity	Designation	Quantity
ft	Above hardware plus: One (or two if ILSN attached) small hand hole, clamp-on simplex		Above hardware plus one small hand hole		See note above	
20	20L-80		20S-80		20-80	
24	24L-80		24S-80		24-80	
28	28L-80		28S-80		28-80	
32	32L-80		32S-80		32-80	1
36	36L-80	1	36S-80		36-80	
40	40L-80		40S-80		40-80	1
44	44L-80		44S-80		44-80	
48	48L-80		48S-80		48-80	

Traffic Signal Arms (1 per Pole) Ship each arm with the listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal)		Type II Arm (2 Signals)		Type III Arm (3 Signals)	
	Designation	Quantity	Designation	Quantity	Designation	Quantity
ft	1 CGB connector		1 Bracket Assembly and 2 CGB Connectors		2 Bracket Assemblies and 3 CGB Connectors	
20	20I-80					
24	24I-80		24II-80			
28	28I-80		28II-80			
32			32II-80	1	32III-80	
36			36II-80	1	36III-80	
40					40III-80	1
44					44III-80	
48					48III-80	

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	1

ILSN Arm (Max. 2 per pole) Ship with clamps, bolts and washers

Nominal Arm Length	Quantity
7' Arm	
9' Arm	

Anchor Bolt Assemblies (1 per pole)

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
3/4"	1'-6"	1
1 1/2"	3'-4"	1
1 3/4"	3'-10"	2

Each anchor bolt assembly consists of the following: Top and Bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers, and 4 nut anchor devices (Type 2) per Standard Drawing "TS-FD".

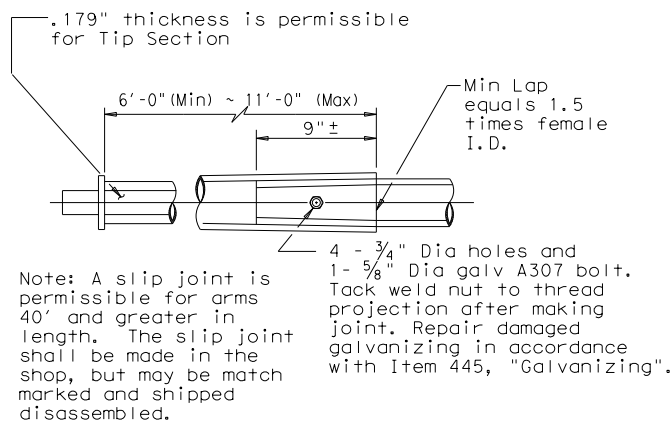
Templates may be removed for shipment.

FM 307 AT FM 1379 SHEET 1 OF 2

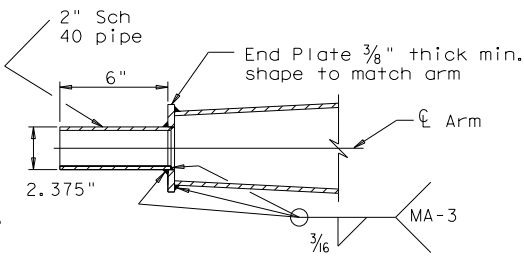
Texas Department of Transportation
 Traffic Operations Division
TRAFFIC SIGNAL SUPPORT STRUCTURES
 SINGLE MAST ARM ASSEMBLY
 (80 MPH WIND ZONE)
 SMA-80(1)-12

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5-96	0887	01	039, ETC.	VARIOUS	
11-99			COUNTY	SHEET NO.	
1-12			ODA	ECTOR, ETC.	261

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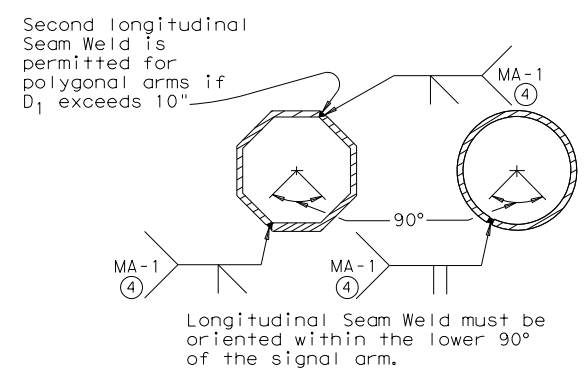
SLIP JOINT DETAIL



TENON DETAIL

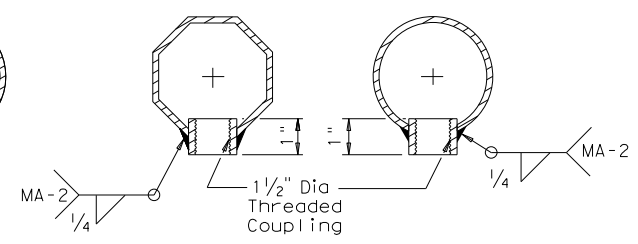
Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1 1/2" Dia Threaded Coupling.

BRACKET ASSEMBLY



ARM WELD DETAIL

④ 60% Min. penetration
 100% penetration within
 6" of circumferential
 base welds.



ARM COUPLING DETAILS

VIBRATION WARNING

Mast Arms of SMA and DMA structures and clamp-on Arms of LMA structures of approximately 40 ft or longer are subject to harmonic vertical vibrations in light wind conditions due to the aeroelastic characteristics of a few of the myriads of possible combinations of the following: signal numbers, weights and positions; existence/solidity of backplates; presence of additional attachments to the arm, such as signs and cameras; arm-wind orientation; and arm-pole stiffness.

Such vibrations may cause fatigue damage to the structure and may lead to galloping in moderate wind conditions which may further damage the structure and alarm the public. Tests have indicated that when wind is blowing toward the back side of signal heads having un-vented backplates attached the probability of unacceptable harmonic vibration and/or galloping is rather high.

If backplates are not required for improved visibility they should not be applied to the signal heads or, if they must be applied, they should be vented as a first and inexpensive measure to mitigate vibrations.

The traffic signal mast arms shall be visually inspected in 5 to 20 mph wind conditions after installation of signal heads and any attachments, including any required backplates. If vertical movements with a total excursion (maximum upward excursion to maximum downward excursion) of more than approximately 8" are observed at the arm tip, a damping plate shall be fitted to the arm. See "Damping Plate Mounting Details" on standard sheet, MA-DPD-10.

This visual inspection shall be repeated after each modification of the structure that could affect its aeroelastic response. Excessive vibrations shall not be allowed to continue for more than two days.

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor.

Poles are designed to support one 8'-0" luminaire arm, one 9'-0" internally lighted street name sign and one traffic signal arm with a length as tabulated. The specified luminaire load applied at the end of the luminaire arm equals 60 lbs vertical dead load plus the horizontal wind load on an effective projected area of 1.6 sq ft. The specified internally lighted street name sign load applied 4.5 ft from the centerline of the pole equals 85 lbs vertical dead load plus horizontal wind load on an effective projected area of 11.5 sq ft. The specified signal load applied at the end of the traffic signal arm equals 180 lbs vertical dead load plus the horizontal wind load on an effective projected area of 32.4 sq ft (actual area times drag coefficient).

See Standard Sheet "MA-D" for pole details, "MA-C" for traffic signal arm connection details, "MA-C (ILSN)" for internally lighted street name sign arm connection details, "LUM-A" for luminaire arm and connection details, "SNS" for internally lighted street name sign details, and "TS-FD" for anchor bolt and foundation details. See "MA-C" for material specifications.

Fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing", after fabrication.

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

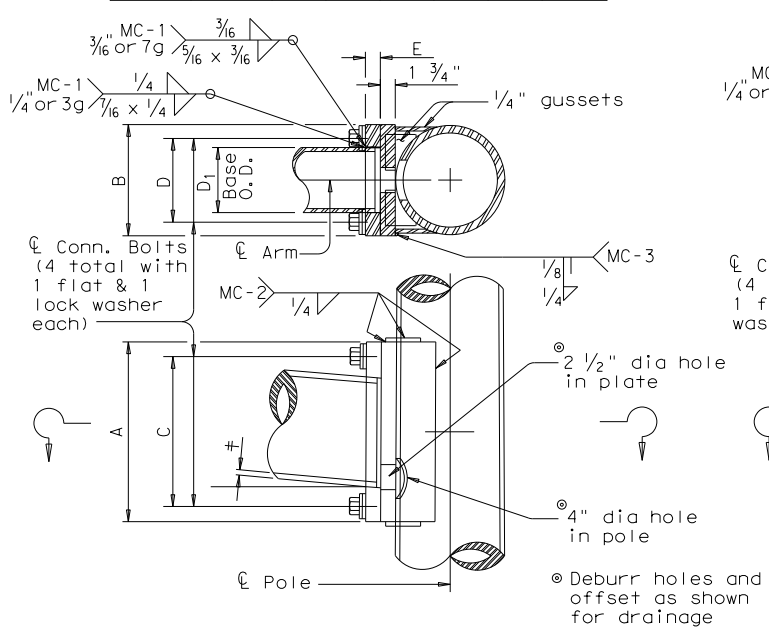


**TRAFFIC SIGNAL
 SUPPORT STRUCTURES
 SINGLE MAST ARM ASSEMBLY
 (80 MPH WIND ZONE)**
 SMA-80(2)-12

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5-96	0887 01	039, ETC.		VARIOUS	
1-12		DIST	COUNTY	SHEET NO.	
		ODA	ECTOR, ETC.	262	

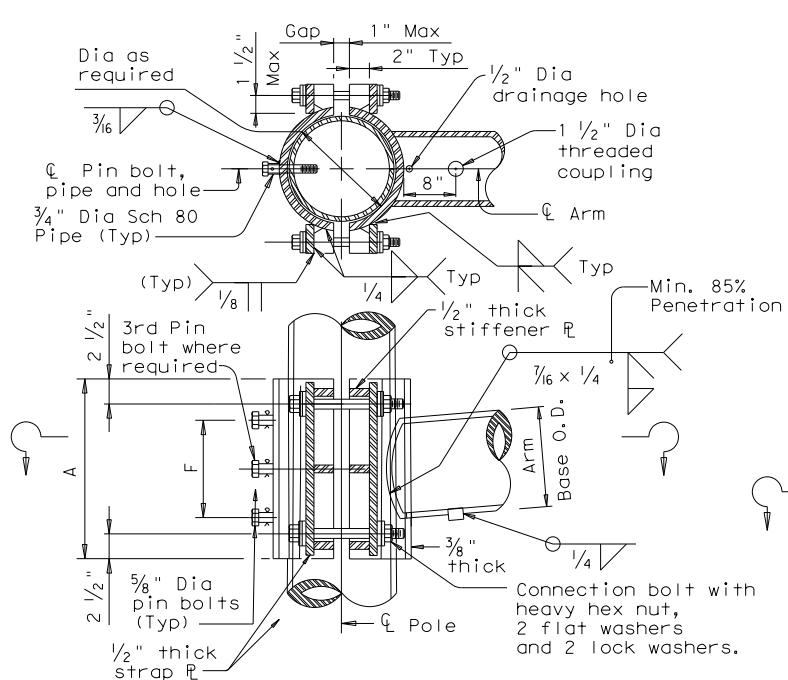
DATE: 8/19/2020
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ARM SIZE		A	B	C	D	E	CONN BOLT DIA
D ₁	ϕ	in.	in.	in.	in.	in.	in.
6.5	.179	12	9	9	6	1 3/4	1
7.5	.179	13	9	10	6	1 3/4	1
8.0	.179	14	10	11	7	2	1 1/4
9.0	.179	16	11	13	8	2	1 1/4
9.5	.179	17	12	14	9	2	1 1/4
9.5	.239	18	12	15	9	2	1 1/4
10.0	.239	18	12	15	9	2	1 1/4
10.5	.239	18	13	15	10	3	1 1/2
11.0	.239	18	13	15	10	3	1 1/2



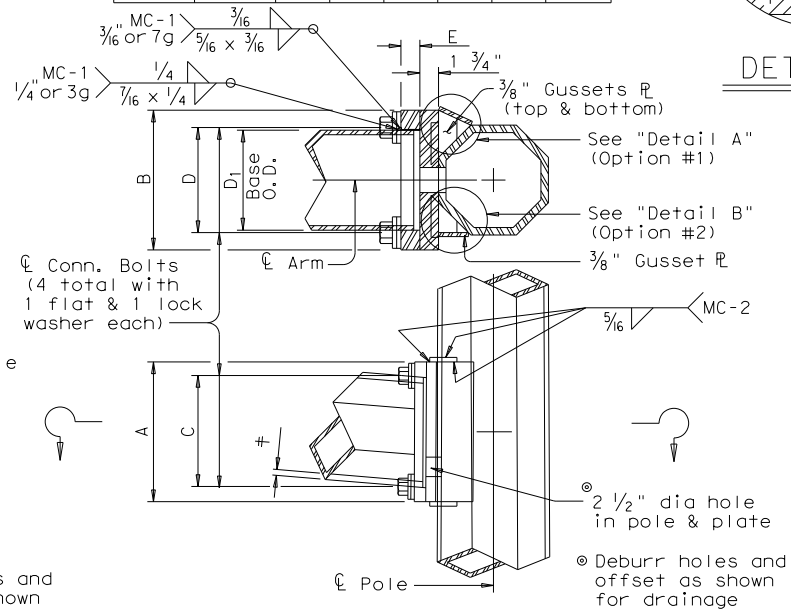
FIXED MOUNT DETAIL 1

ARM SIZE		A	F	CONN. BOLTS		PIN BOLTS	
D ₁	ϕ	in.	in.	No.	Dia	No.	Dia
6.5	.179	12	6	4	1	2	5/8
7.5	.179	14	8	4	1	2	5/8
8.0	.179	14	8	4	1	2	5/8
9.0	.179	16	10	4	1	2	5/8
9.5	.179	18	12	4	1 1/4	3	5/8
9.5	.239	18	12	4	1 1/4	3	5/8
10.0	.239	18	12	4	1 1/4	3	5/8



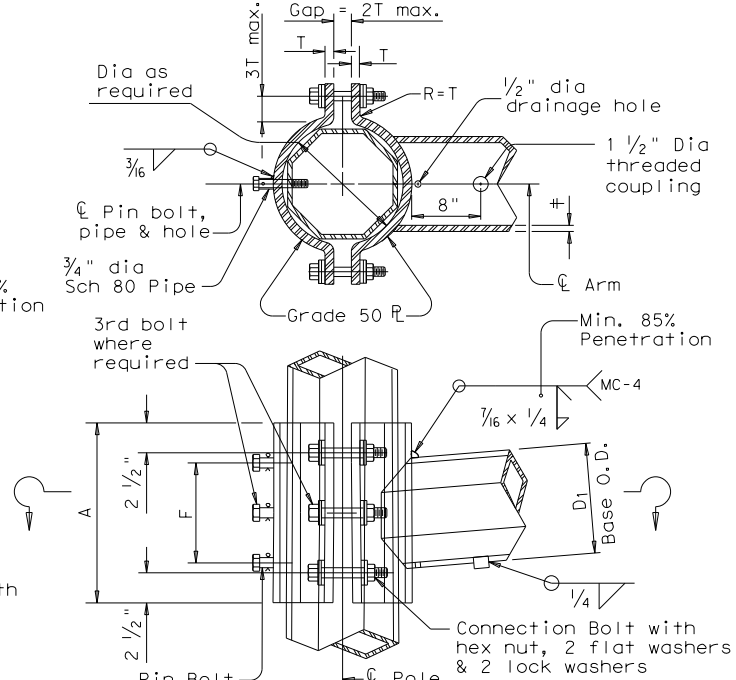
CLAMP-ON DETAIL 1

ARM SIZE		A	B	C	D	E	CONN BOLT DIA
D ₁	ϕ	in.	in.	in.	in.	in.	in.
7.0	.179	11	11	8	8	1 3/4	1 1/4
7.5	.179	11	11	8	8	1 3/4	1 1/4
8.0	.179	11	11	8	8	2	1 1/4
9.0	.179	13	13	10	10	2	1 1/4
10.0	.179	13	13	10	10	2	1 1/4
9.5	.239	13	13	10	10	2	1 1/4
10.0	.239	14	14	11	11	2	1 1/2
11.0	.239	14	14	11	11	3	1 1/2
11.5	.239	14	14	11	11	3	1 1/2

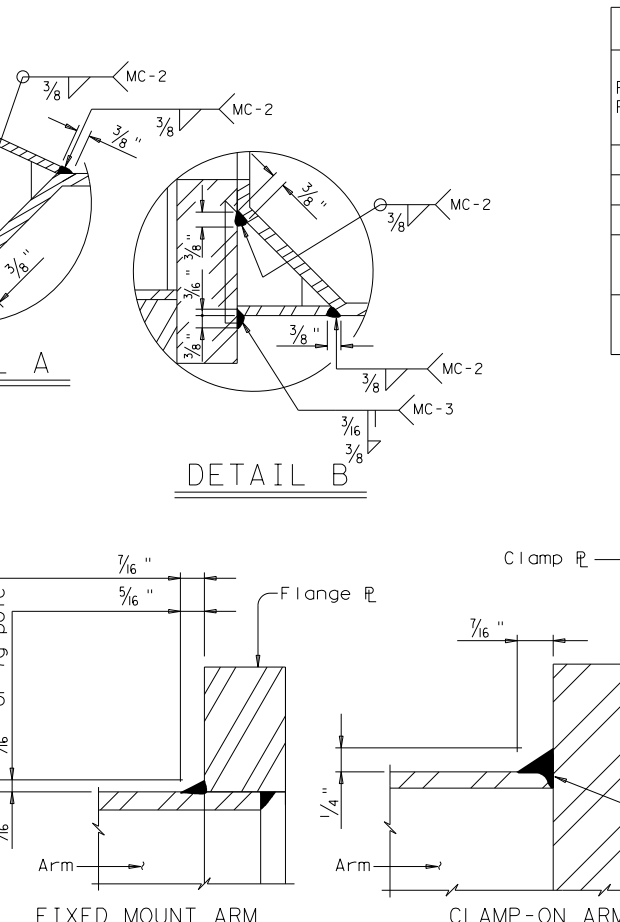


FIXED MOUNT DETAIL 2

ARM SIZE		A	F	T	CONN. BOLTS		PIN BOLTS	
D ₁	ϕ	in.	in.	in.	No.	Dia	No.	Dia
7.0	.179	12	6	3/4	4	3/4	2	5/8
7.5	.179	14	8	3/4	4	3/4	2	5/8
8.0	.179	14	8	3/4	4	3/4	2	5/8
9.0	.179	16	10	7/8	4	1	2	5/8
10.0	.179	18	10	7/8	4	1	2	5/8
9.5	.239	18	10	1	6	1	3	5/8
10.0	.239	18	10	1	6	1	3	5/8

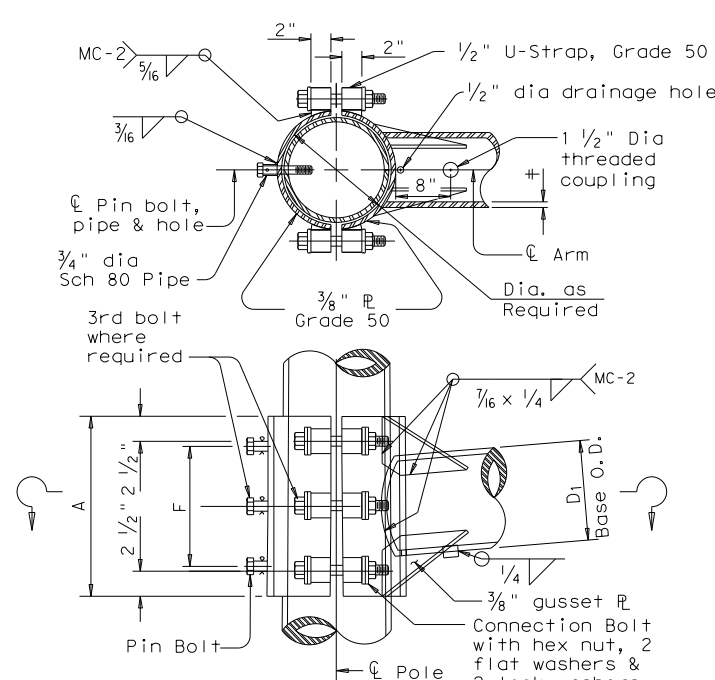


CLAMP-ON DETAIL 2



ARM BASE WELD DETAILS

ARM SIZE		A	F	CONN. BOLTS		PIN BOLTS	
D ₁	ϕ	in.	in.	No.	Dia	No.	Dia
6.5	.179	12	6	4	1	2	5/8
7.5	.179	14	8	4	1	2	5/8
8.0	.179	14	8	4	1	2	5/8
9.0	.179	16	10	4	1	2	5/8
9.5	.179	18	12	6	1	3	5/8
9.5	.239	18	12	6	1	3	5/8
10.0	.239	18	12	6	1	3	5/8



CLAMP-ON DETAIL 3

MATERIALS	
Round Shafts or Polygonal Shafts ^①	ASTM A595 Gr.A, A588, A1008 HSLAS Gr.50 Class 2, A1011 HSLAS Gr.50 Class 2, A572 Gr.50 or A1011 SS Gr.50 ^②
Plates ^①	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325 or A449, except where noted
Pin Bolts	ASTM A325
Pipe ^①	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50, A1011 HSLAS-F Gr.50
Misc. Hardware	Galvanized steel or stainless steel or as noted

- ① ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.
- ② ASTM A1011 SS Gr.50 material shall also have a minimum elongation of 18 percent in 8 inches or 23 percent in 2 inches. Material thickness in excess of those stipulated under A1011 SS will be acceptable providing the material meets all other A1011 SS requirements and the requirements of this item.

GENERAL NOTES:
 Clamp-on details are used for the second arm on dual mast arm assemblies. A Maximum 1 1/2" wide vertical slotted hole shall be cut in the front clamp plate to facilitate drainage during galvanizing. The slot shall be centered behind the arm and shall be no longer than the arm diameter minus 1"

Fixed mount details are used for single mast arm assemblies and for the first arm on dual mast arm assemblies.

Where duplicate parts occur on a detail, welds shown for one part shall apply to all similar parts on the detail.

Pin bolts are required to prevent rotation of clamp-on arms under design wind forces.

NOTE:
 Pin bolts shall be A325 with threads excluded from the shear plane. Pin bolt and 3/4" dia pipe shall have 3/16" dia holes for a 1/8" dia galvanized cotter pin. Back clamp plate shall be furnished with a 3/4" dia hole for each pin bolt. An 1/16" dia hole for each pin bolt shall be field drilled through the pole after arm orientations have been approved by the Engineer.

Texas Department of Transportation
 Traffic Operations Division

**STANDARD ASSEMBLY
 FOR TRAFFIC SIGNAL
 SUPPORT STRUCTURES
 MAST ARM CONNECTIONS**

MA-C-12

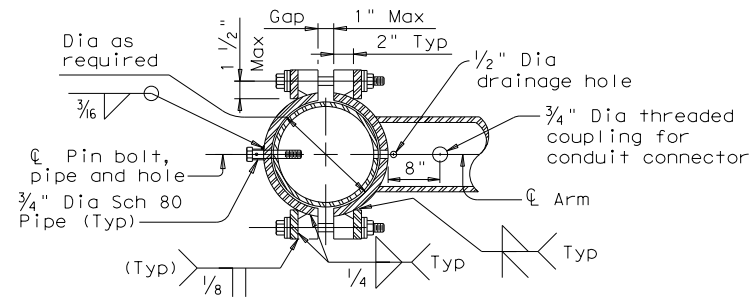
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126A

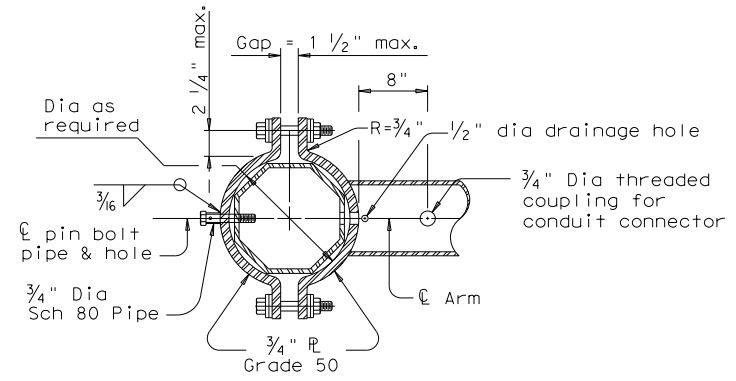
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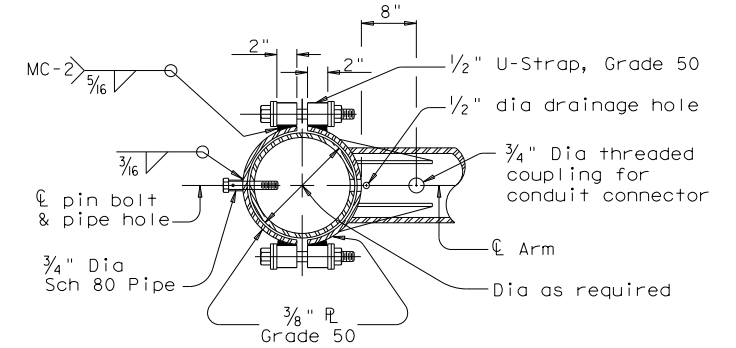
TABLE OF DIMENSIONS for ILSN Support Arm Clamp-on Details 1, 2 and 3						
ILSN ARM SIZE	A		CONN. BOLTS		PIN BOLTS	
	in.	in.	No. ea.	Dia in.	No. ea.	Dia in.
3 in. dia Schedule 40 Pipe	10	4	4	3/4	2	5/8



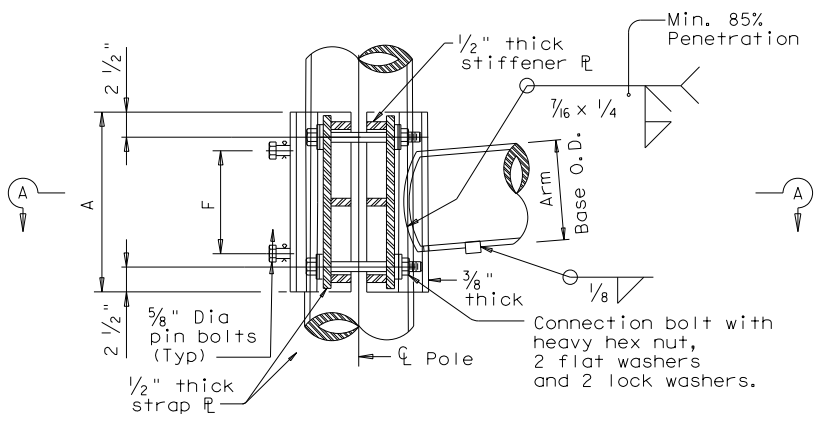
SECTION A-A



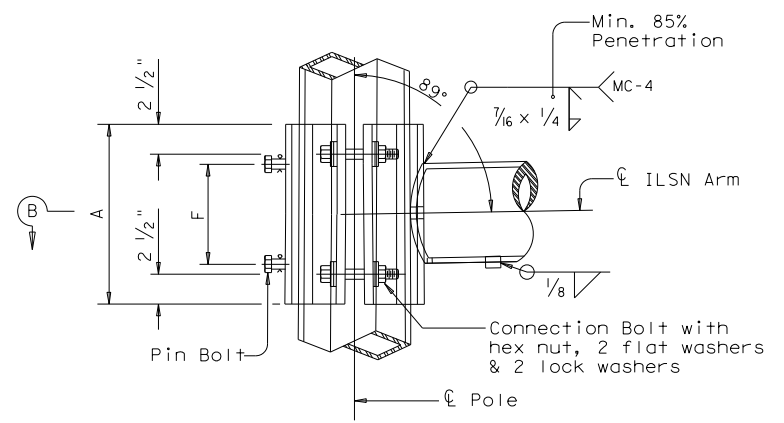
SECTION B-B



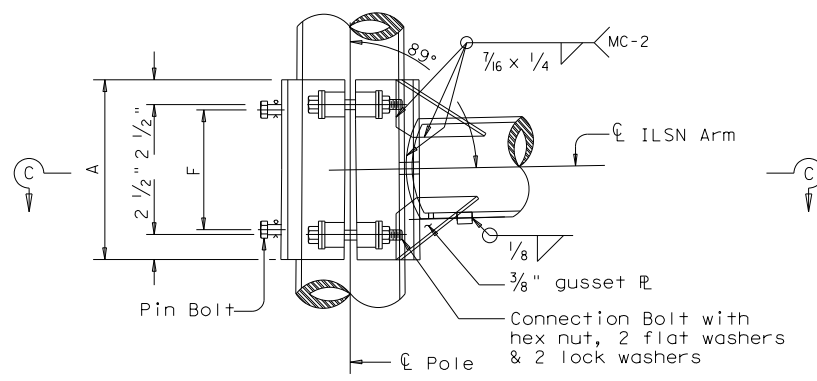
SECTION C-C



ILSN CLAMP-ON DETAIL 1



ILSN CLAMP-ON DETAIL 2



ILSN CLAMP-ON DETAIL 3

GENERAL NOTES:

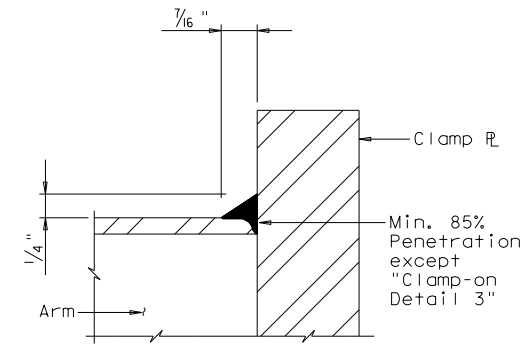
Clamp-on details shall be used for ILSN support arm assemblies. A 1 1/2 inch diameter hole shall be cut in the front clamp plate for wiring access. A matched hole shall be field drilled through the pole to provide wire access after arm is oriented. Deburr both holes.

Where duplicate parts occur on a detail, welds shown for one part shall apply to all similar parts on the details.

Pin bolts are required to prevent rotation of clamp-on arms under design wind forces.

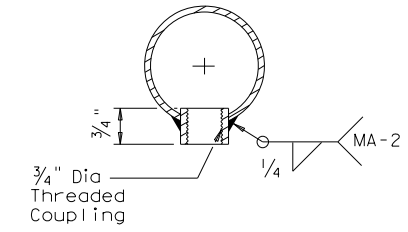
NOTE:

Pin bolts shall be A325 with threads excluded from the shear plane. Pin bolt and 3/4 inch diameter pipe shall have 3/16 inch diameter holes for a 1/8 inch diameter galvanized cotter pin. Back clamp plate shall be furnished with a 3/4 inch diameter hole for each pin bolt. An 1/16 inch diameter hole for each pin bolt shall be field drilled through the pole after arm orientations have been approved by the Engineer.



CLAMP-ON ARM

ARM BASE WELD DETAILS



ILSN ARM COUPLING DETAIL

Texas Department of Transportation
 Traffic Operations Division

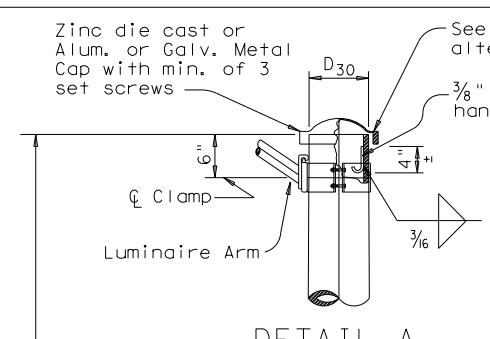
STANDARD ASSEMBLY
 FOR TRAFFIC SIGNAL
 SUPPORT STRUCTURES

MAST-ARM CONNECTIONS

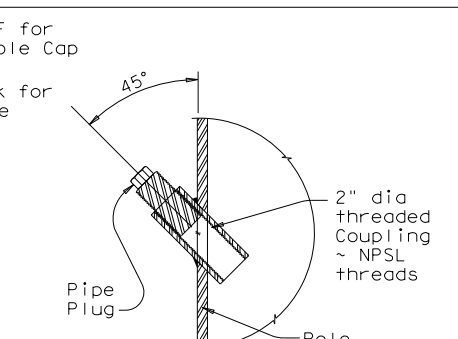
MA-C (ILSN) - 12

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1-12		DIST	COUNTY		SHEET NO.
		ODA	ECTOR, ETC.		264

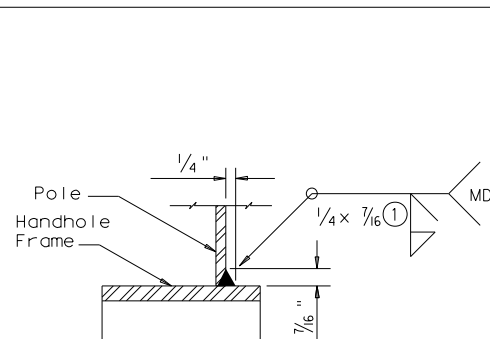
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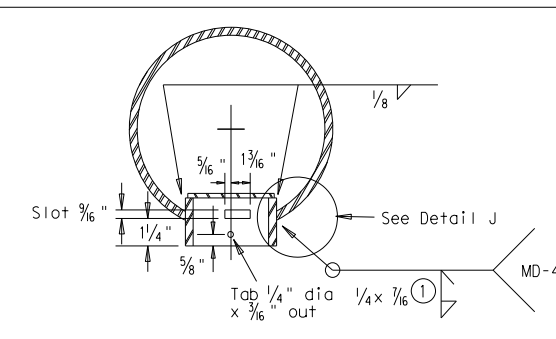
DETAIL A
 (for pole with luminaire)



POLE COUPLING DETAIL

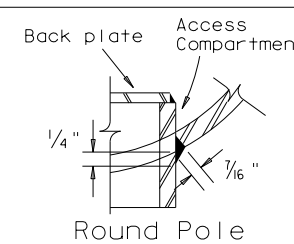


DETAIL G

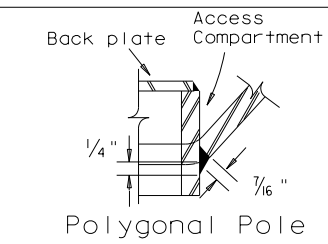


SECTION X-X

Opening for access compartment shall be no more than 1/16 inch wider than the access compartment itself.

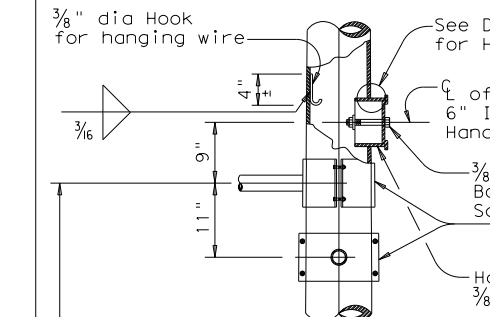


Round Pole

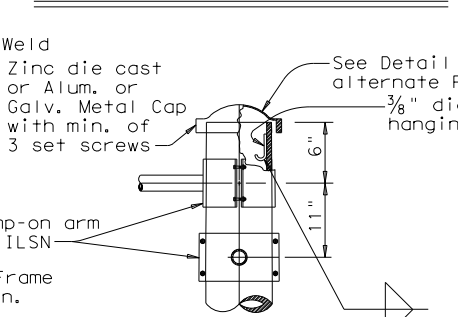


Polygonal Pole

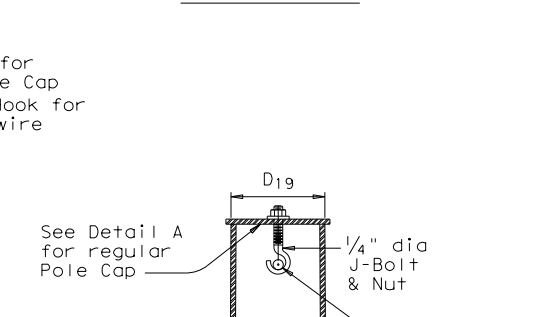
DETAIL J



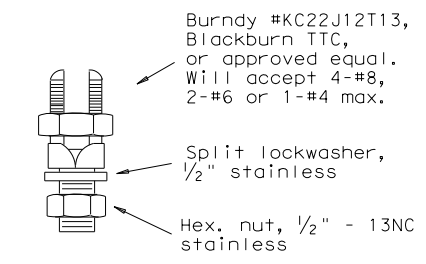
DETAIL B
 (If ILSN applied)



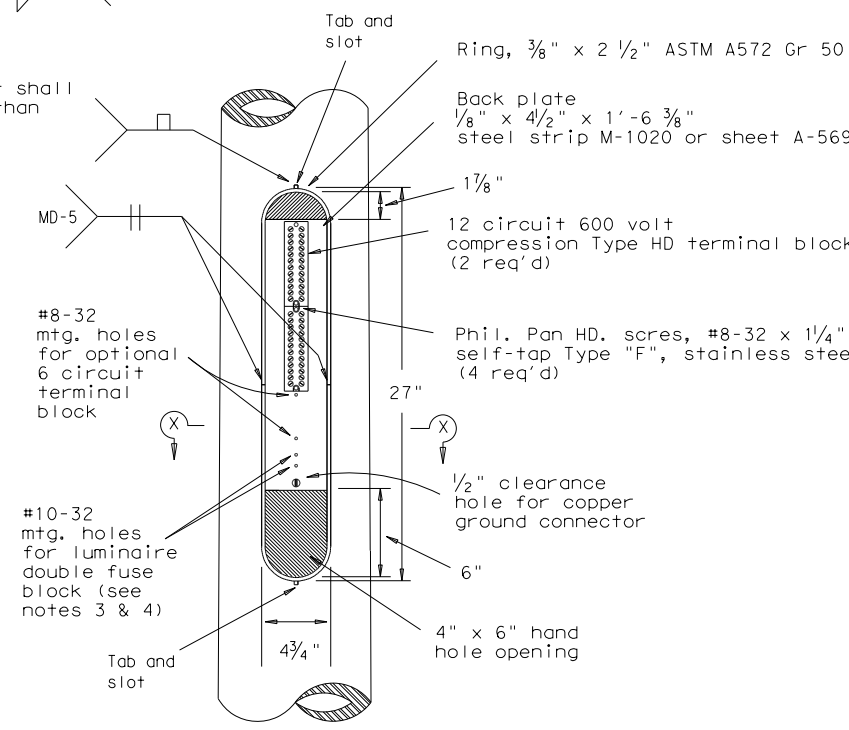
DETAIL C



SECTION Y-Y



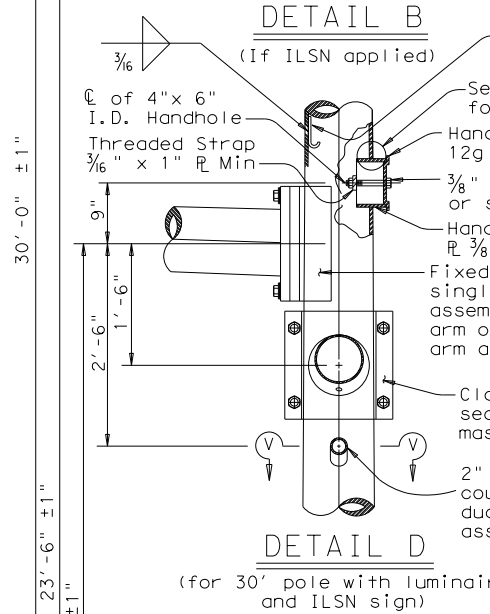
COPPER GROUND CONNECTOR



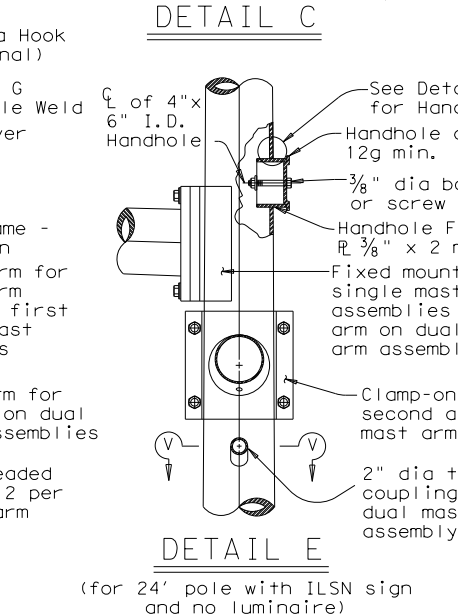
ACCESS COMPARTMENT

NOTES:

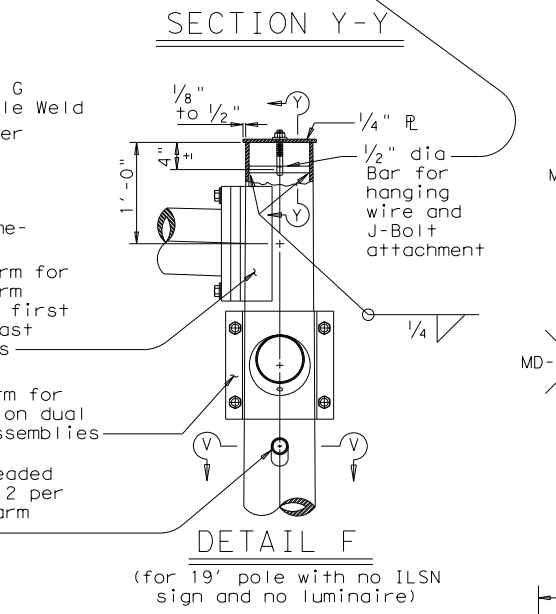
- The cover shall be one piece formed from ABS plastic, shall be a pearl gray color, and shall be suitable for exposure to harsh sunlight and extreme weather. Cover shall latch with two screw latches and shall fit tightly to the enclosure ring to create a rainproof seal. Latch screws shall be 1/4-20 stainless flat socket head screws with tamper proof feature.
- The pole manufacturer shall provide with each pole a separate kit consisting of: one cover with two latching assemblies, two terminal strips (Marathon #985GP12CU or approved equal), four #8-32 x 1 1/4 self tapping type 'F' stainless steel pan head screws, and one ground connector (Blackburn TTC, Burndy KC22J12T13, or IlSCO SSS-5). The traffic signal contractor shall install the kit items in the field.
- The screw hole spacing on the enclosure back plate shall be for two Marathon #985GP12 terminal strips, one Marathon #985GP06CU terminal strip, and one Bussmann #BM6032B fuse block.
- Install one Bussmann #BM6032B, Littelfuse #L60030M-2C, or Ferraz-Shawmut #30352 fuse block for poles where luminaires are to be installed.



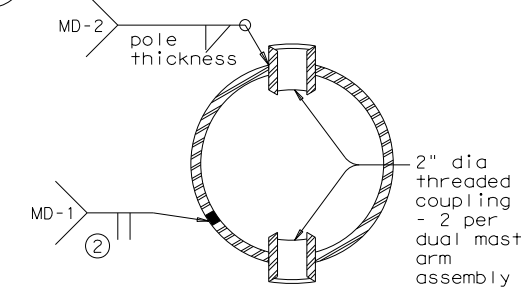
DETAIL D
 (for 30' pole with luminaire and ILSN sign)



DETAIL E
 (for 24' pole with ILSN sign and no luminaire)

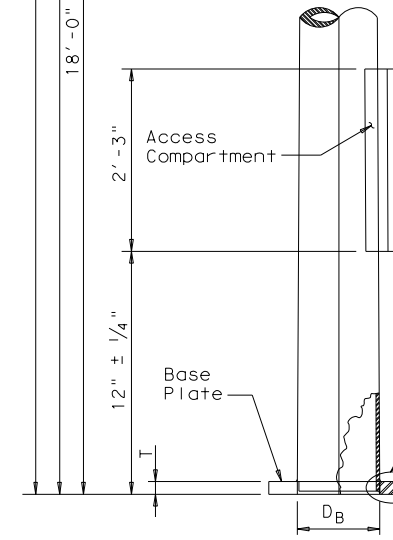


DETAIL F
 (for 19' pole with no ILSN sign and no luminaire)

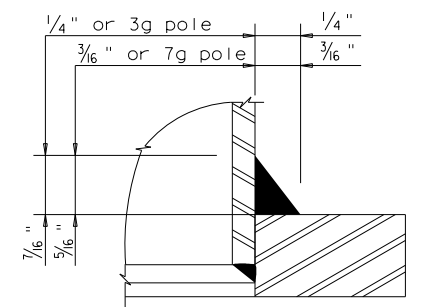


SECTION V-V

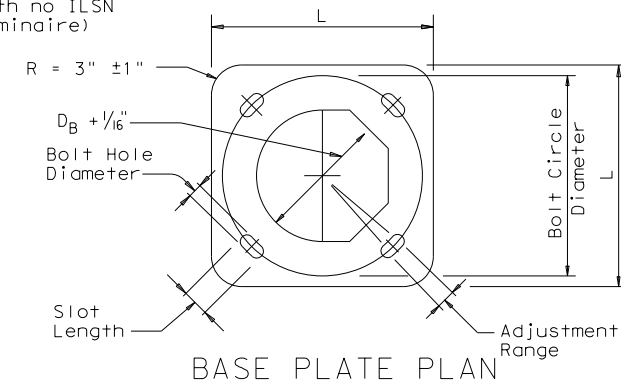
Anchor Bolt Diameter	Bolt Hole Diameter	Slot Length	Bolt Circle Diameter	Base R Dim. L x T	Adjust. Range
1 1/2"	1 3/4"	3 1/2"	17"	18" x 1 1/2"	13.4°
1 3/4"	2"	4"	19"	20" x 1 3/4"	13.5°
2"	2 1/4"	4 1/2"	21"	22" x 2"	13.6°
2 1/4"	2 1/2"	5"	23"	24" x 2 1/4"	13.7°



POLE ELEVATION



DETAIL H



BASE PLATE PLAN

- 85% Min. penetration
- 60% Min. penetration
100% penetration within 6" of circumferential base welds.

Texas Department of Transportation
 Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES MAST ARM POLE DETAILS

MA-D-12

© TxDOT August 1995	DN: MS	CK: JSY	DW: FDN	CK: CAL
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		0887	01	039, ETC.
		DIST	COUNTY	SHEET NO.
		ODA	ECTOR, ETC.	265

DATE: 8/19/2020
 FILE: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. Traffic\Signals\TXDOT\TXDOT

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FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft (4), (5), (6)			ANCHOR BOLT DESIGN (1)			FOUNDATION DESIGN LOAD (2)		TYPICAL APPLICATION	
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft		SHEAR Kips
				10	15	40							
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	3/4"	36	12 3/4"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 1/2"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 3/4"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 1/4"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

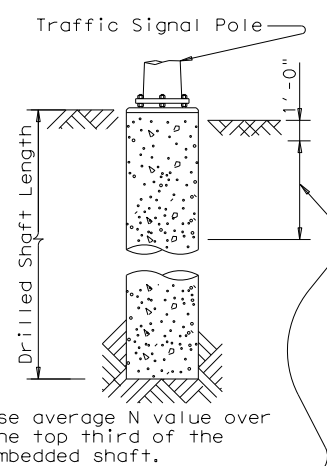
NOTES:

- Anchor bolt design develops the foundation capacity given under Foundation Design Loads.
- Foundation Design Loads are the allowable moments and shears at the base of the structure.
- Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.
- Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.
- If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.
- Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

FOUNDATION SUMMARY TABLE (3)

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH (6) (FEET)				
				24-A	30-A	36-A	36-B	42-A
P-2	10	24-A	1	6				
P-3	10	24-A	1	6				
P-4	10	24-A	1	6				
P-7	10	24-A	1	6				
P-8	10	24-A	1	6				
P-9	10	24-A	1	6				
P-10	10	24-A	1	6				
P-11	10	24-A	1	6				
P-13	10	24-A	1	6				
P-14	10	24-A	1	6				
P-15	10	24-A	1	6				
P-16	10	24-A	1	6				
P-17	10	24-A	1	6				
P-19	10	24-A	1	6				
P-20	10	24-A	1	6				
TOTAL DRILLED SHAFT LENGTHS				90				

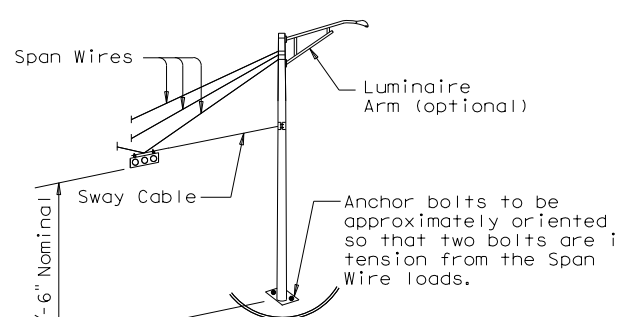
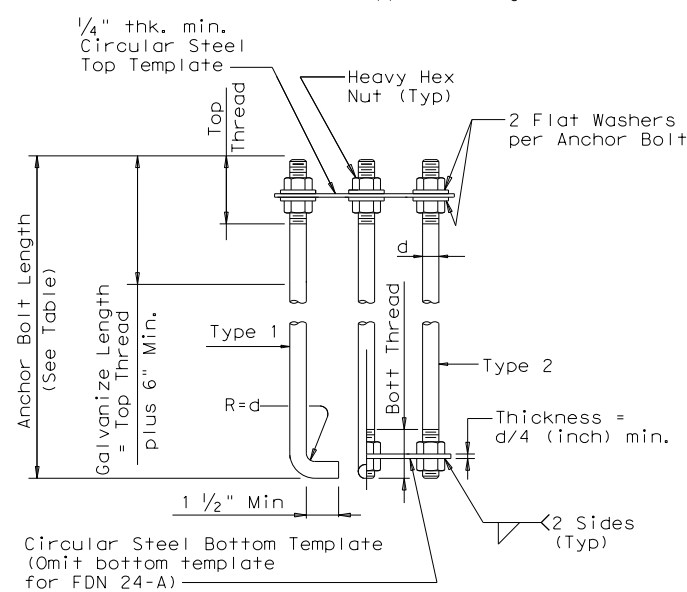
FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)					
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
28' X 28'					
32' X 28'					
36' X 36'					
40' X 36'					
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 24'			
		32' X 32'			
			32' X 32'		
			36' X 36'		
			40' X 24'	40' X 36'	
				44' X 36'	



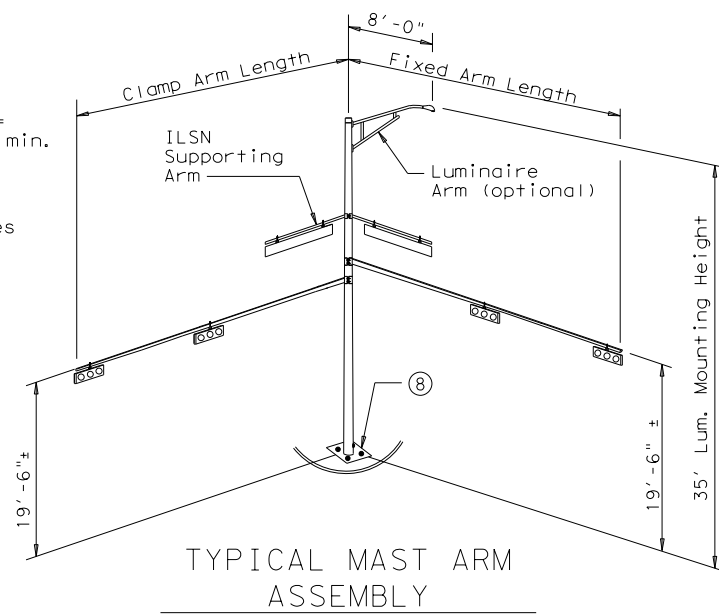
ANCHOR BOLT & TEMPLATE SIZES						
BOLT DIA IN.	(7) BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
3/4"	1'-6"	3"	—	12 3/4"	7 1/8"	5 5/8"
1 1/2"	3'-4"	6"	4"	17"	10"	7"
1 3/4"	3'-10"	7"	4 1/2"	19"	11 1/4"	7 3/4"
2"	4'-3"	8"	5"	21"	12 1/2"	8 1/2"
2 1/4"	4'-9"	9"	5 1/2"	23"	13 3/4"	9 1/4"

(7) Min dimensions given, longer bolts are acceptable.

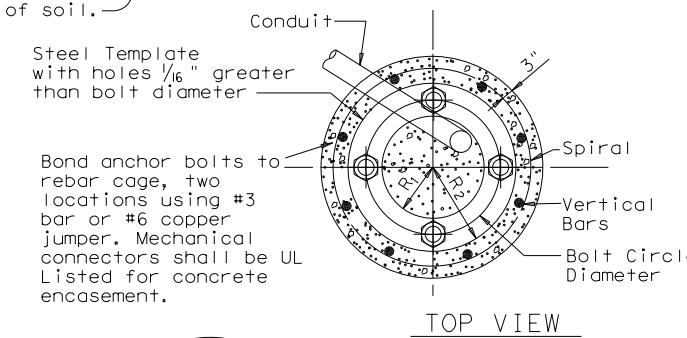
- EXAMPLE:**
- For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
 - For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.



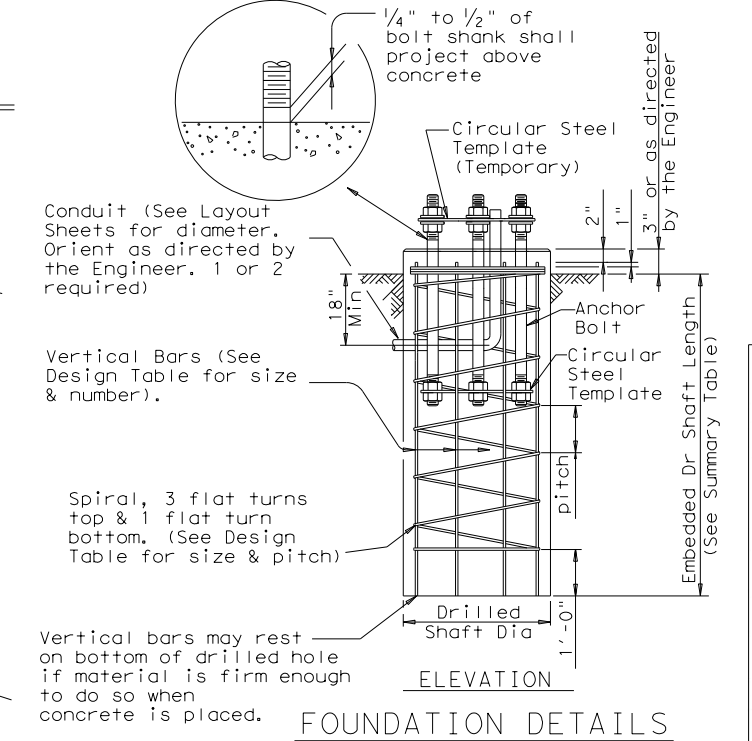
TYPICAL STRAIN POLE ASSEMBLY



TYPICAL MAST ARM ASSEMBLY



TOP VIEW

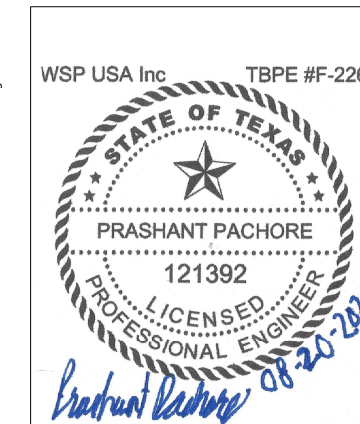


ELEVATION FOUNDATION DETAILS

GENERAL NOTES:

- Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.
- Reinforcing steel shall conform to Item 440, "Reinforcing Steel".
- Concrete shall be Class "C".
- Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.
- Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".
- Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".

LOOP 338 AT SH 191



Texas Department of Transportation
 Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

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5-96	0887	01	039, ETC.	VARIOUS	
11-99					
1-12					
DIST COUNTY				SHEET NO.	
ODA				ECTOR, ETC. 266	

DATE: 8/19/2020
 FILE: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. Traffic\Signals\TXDOT\



FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft (4), (5), (6)			ANCHOR BOLT DESIGN (1)			FOUNDATION DESIGN LOAD (2)		TYPICAL APPLICATION	
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft		SHEAR Kips
				10	15	40							
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	3/4"	36	12 3/4"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 1/2"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	11- #9	#3 at 6"	13.2	12.0	9.4	1 3/4"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
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- NOTES:**
- Anchor bolt design develops the foundation capacity given under Foundation Design Loads.
 - Foundation Design Loads are the allowable moments and shears at the base of the structure.
 - Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.
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 - If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.
 - Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

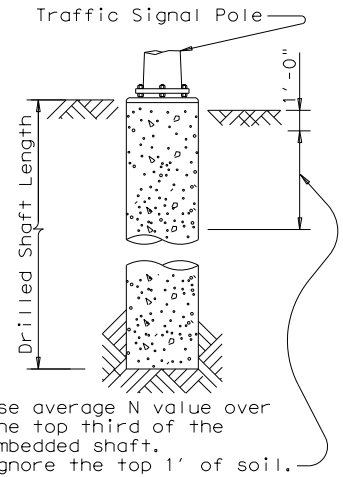
FOUNDATION SUMMARY TABLE (3)									
LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH (6) (FEET)					
				24-A	30-A	36-A	36-B	42-A	
P-1	10	36-A	1			17*			
P-2	10	24-A	1	6					
P-3	10	36-A	1			17*			
P-4	10	30-A	1		12				
TOTAL DRILLED SHAFT LENGTHS				6	12	34*			

* INCLUDES DRILLED SHAFT PER FOUNDATION DESIGN TABLE PLUS ADDITIONAL DRILLED SHAFT ABOVE GRADE TO ACCOMMODATE VERTICAL CLEARANCE. SEE SIGNAL POLE DETAIL FM307 AND FM1379 SHEET 4 OF 4 FOR MORE DETAILS.

MODIFICATIONS:

⚠ PER WINCORE AND LPILE ANALYSIS/CALCULATIONS

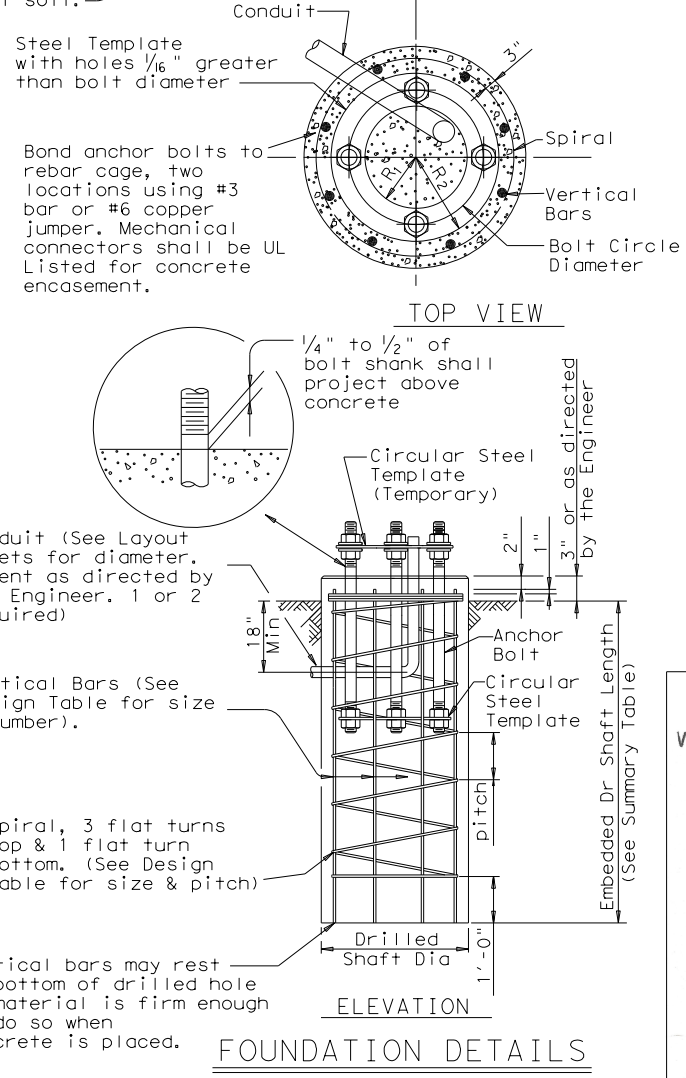
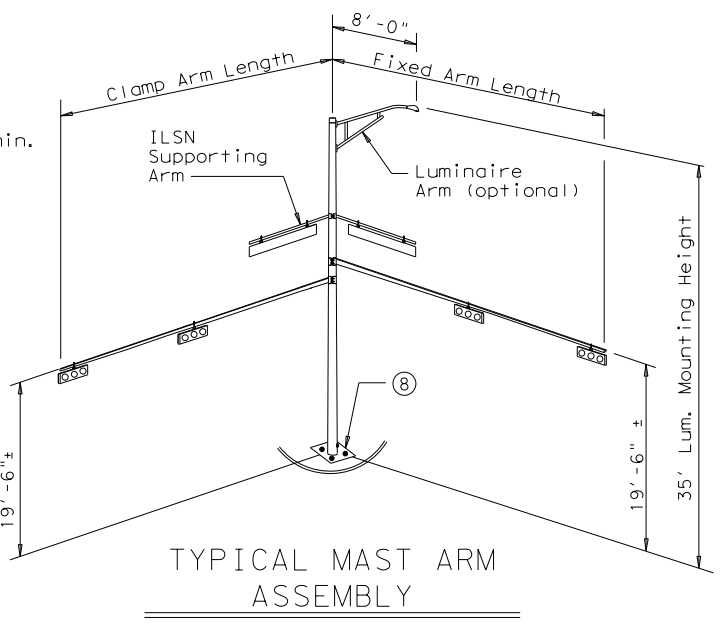
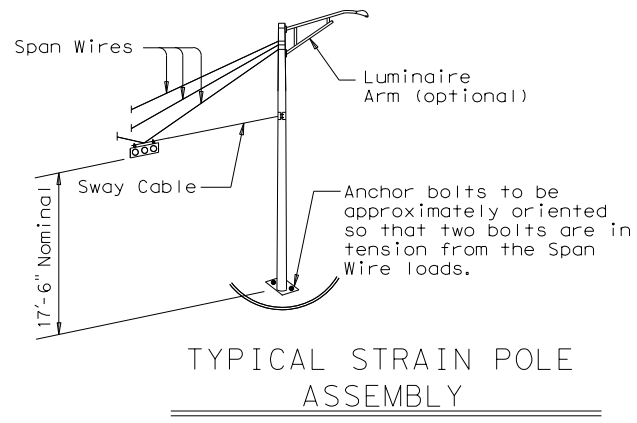
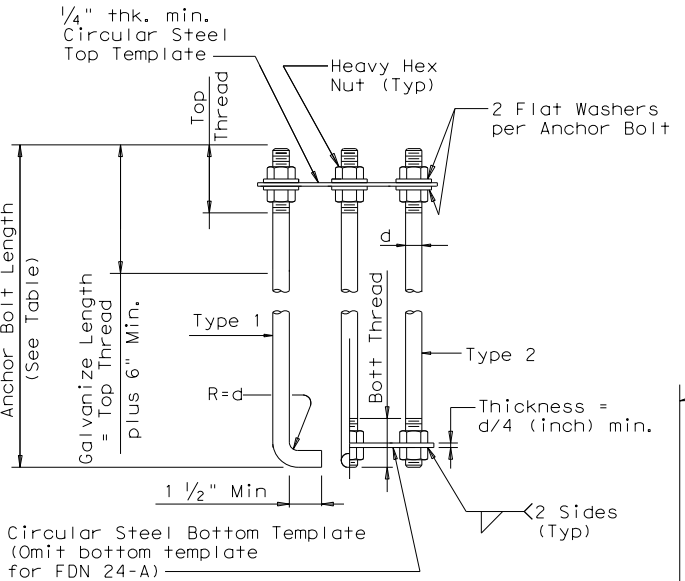
FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)					
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
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28' X 28'					
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100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 24'			
		32' X 24'		32' X 32'	
		36' X 36'			
		40' X 24'	40' X 36'		
			44' X 36'		



ANCHOR BOLT & TEMPLATE SIZES						
BOLT DIA IN.	(7) BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
3/4"	1'-6"	3"	—	12 3/4"	7 1/8"	5 5/8"
1 1/2"	3'-4"	6"	4"	17"	10"	7"
1 3/4"	3'-10"	7"	4 1/2"	19"	11 1/4"	7 3/4"
2"	4'-3"	8"	5"	21"	12 1/2"	8 1/2"
2 1/4"	4'-9"	9"	5 1/2"	23"	13 3/4"	9 1/4"

(7) Min dimensions given, longer bolts are acceptable.

- EXAMPLE:**
- For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
 - For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.



GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

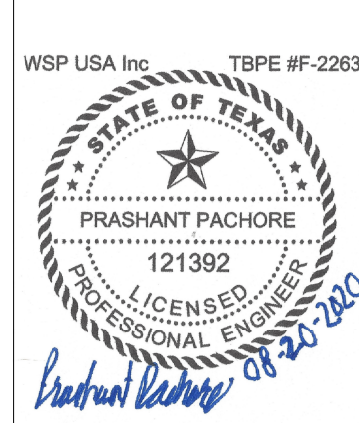
Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

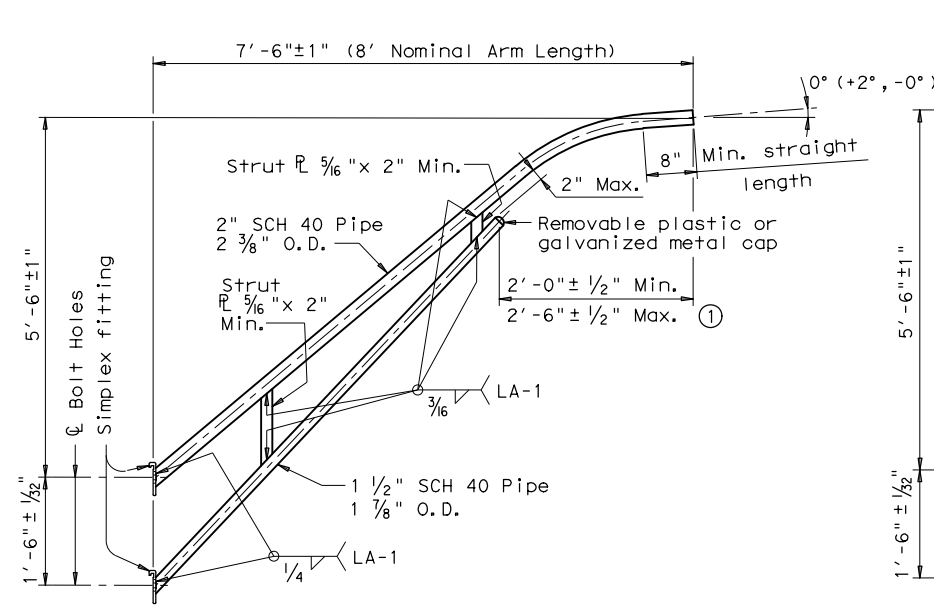
Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".

FM 307 AT FM 1379

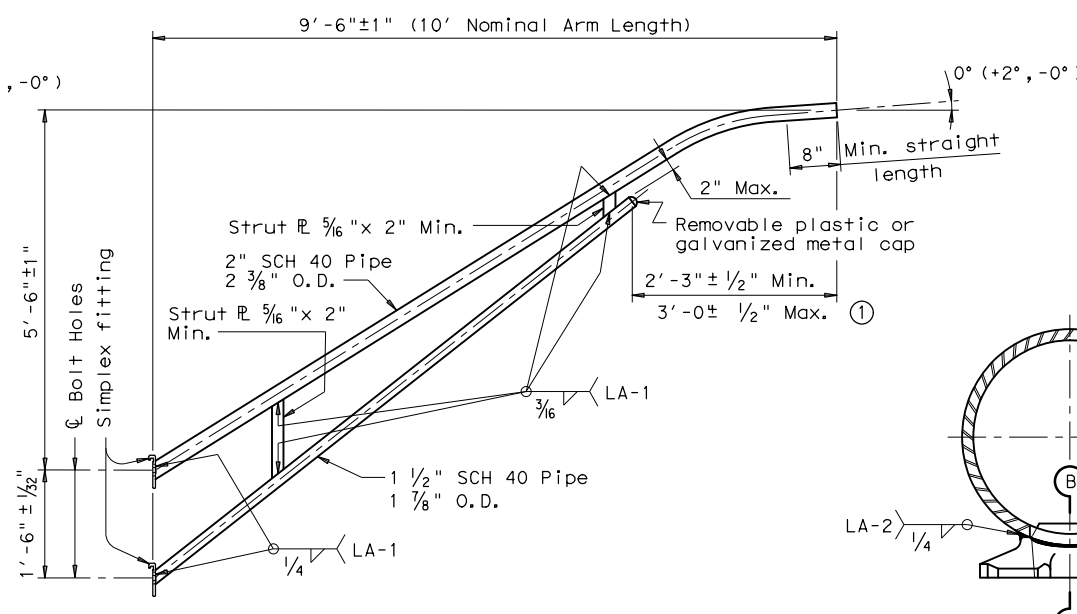


Texas Department of Transportation Traffic Operations Division		TRAFFIC SIGNAL POLE FOUNDATION		TS-FD-12	
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		0887	01	039, ETC.	VARIOUS
		DIST	COUNTY		SHEET NO.
		ODA	ECTOR, ETC.		267

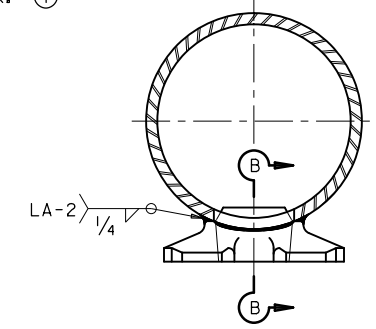
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 FILE: pw:\jmt-pw-bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP_338, FM_307, FM_1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. Traffic\Signals\TXDOT\



8-FOOT LUMINAIRE ARM



10-FOOT LUMINAIRE ARM



DIRECT ATTACHMENT DETAIL

MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr. 65-35 or A148 Gr. 80-50, A576 Gr. 1021 (3), or A36 (Arm only)
Arm Pipes	ASTM A53 Gr. B, A501, A1008 HSLAS-F Gr. 50 (4), or A1011 HSLAS-F Gr. 50 (4)
Arm Strut Plates (2)	ASTM A36, A572 Gr. 50 (4), or A588
Misc.	ASTM designations as noted

- (1) Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.
- (2) Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.
- (3) A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.
- (4) ASTM A572, A1008 HSLAS-F, and A1011 HSLAS-F may have higher yield strengths but shall not have less elongation than the grade indicated.

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. Design Wind Speed equals 90 mph plus a 1.3 gust factor. Arms are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq. ft.

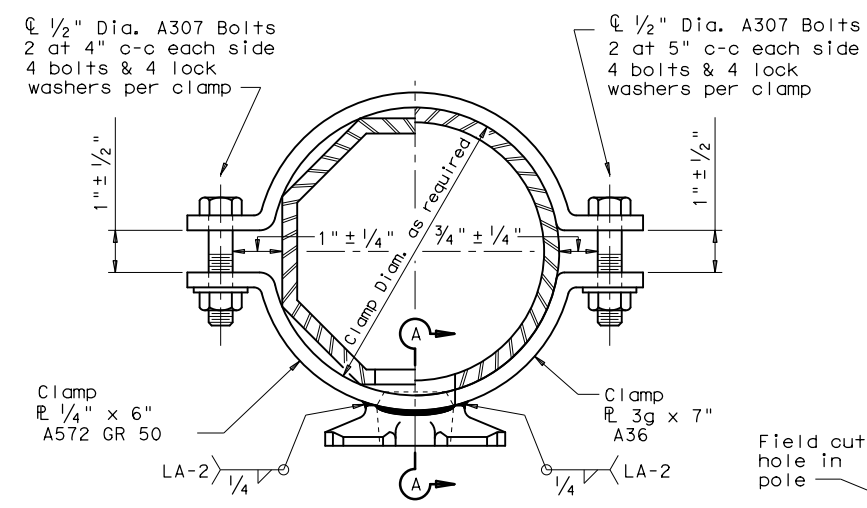
Materials and fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absence of specified Fabricator tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.

Unless otherwise noted, all parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing".

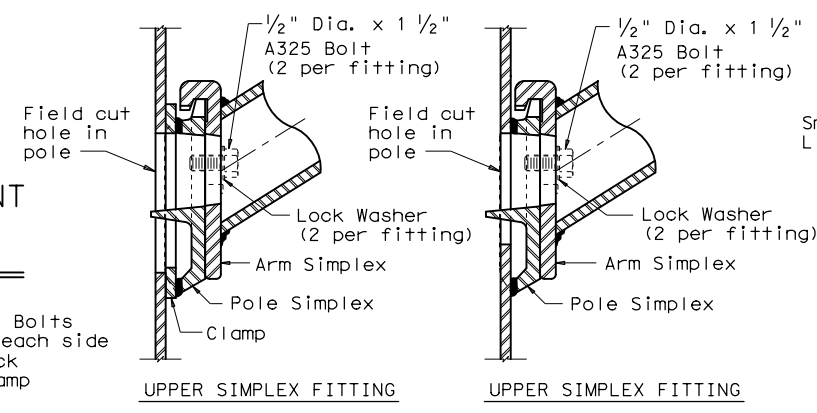
Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

Each pole simplex fitting shall be supplied with 2 ASTM A325 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans. When clamp attachment is specified, the Fabricator shall ship the clamp assembly securely attached to the pole at the location shown on the plans.

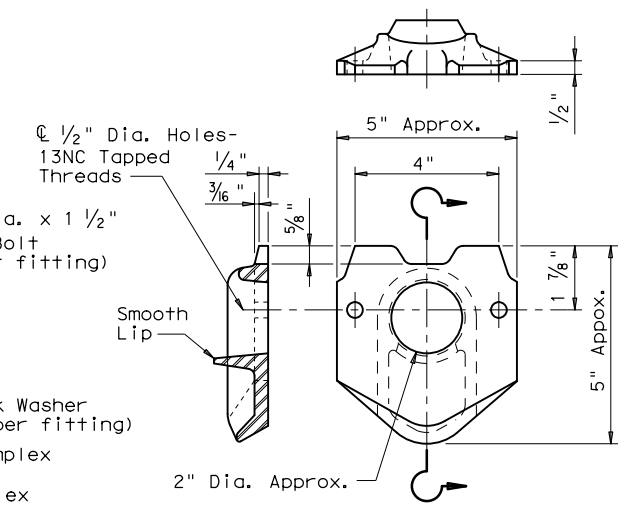
If clamp assemblies are ordered without poles, the Fabricator shall ship one upper and one lower clamp assembly together in a single package, including all nuts and washers required for the clamps and simplex fittings.



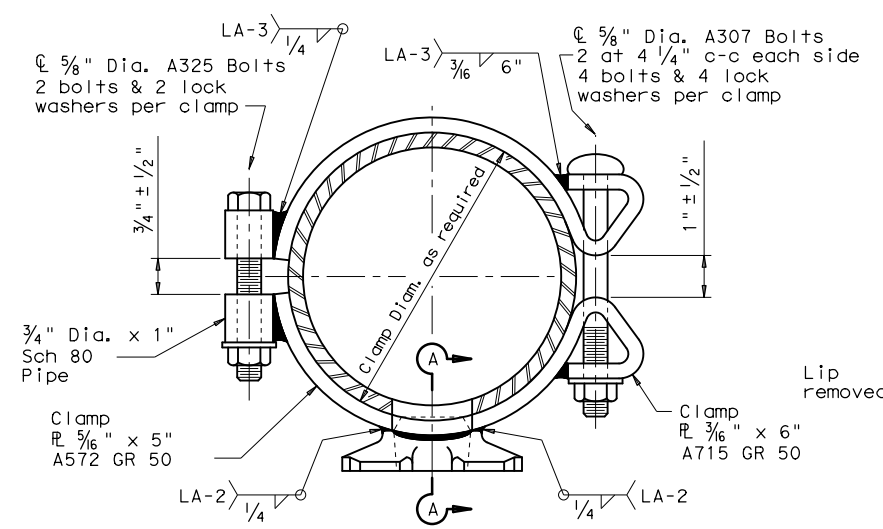
CLAMP ATTACHMENT DETAIL NO. 1 (HALF SECTION)
CLAMP ATTACHMENT DETAIL NO. 2 (HALF SECTION)



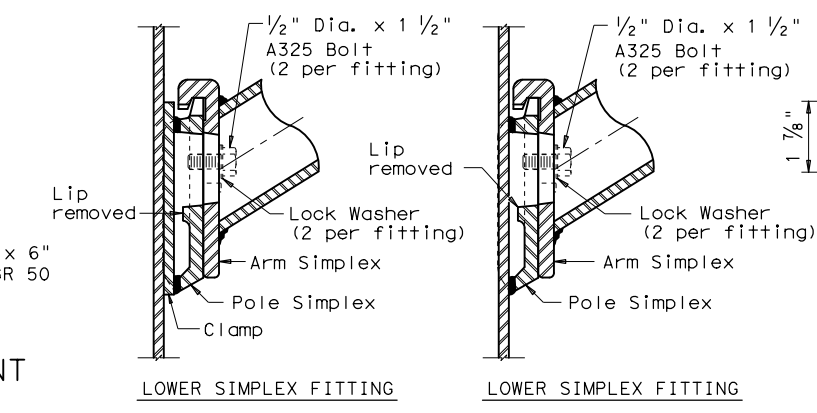
UPPER SIMPLEX FITTING
LOWER SIMPLEX FITTING



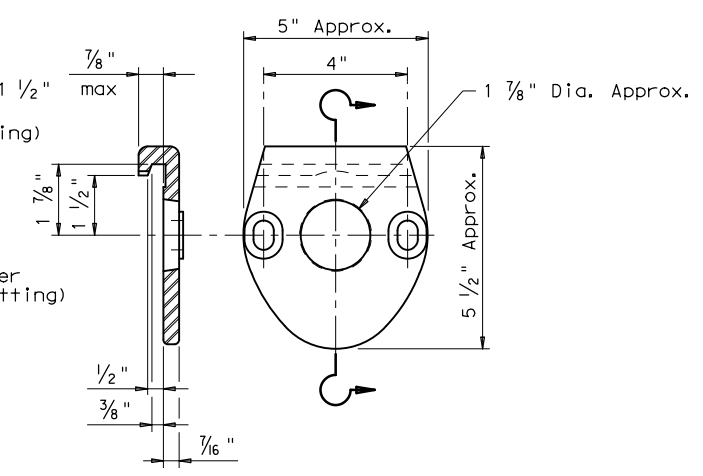
POLE SIMPLEX DETAIL



CLAMP ATTACHMENT DETAIL NO. 3 (HALF SECTION)
CLAMP ATTACHMENT DETAIL NO. 4 (HALF SECTION)



SECTION A-A
SECTION B-B



ARM SIMPLEX DETAIL

Texas Department of Transportation
 Traffic Operations Division

STANDARD ASSEMBLY DRAWINGS FOR LUMINAIRE SUPPORT STRUCTURES

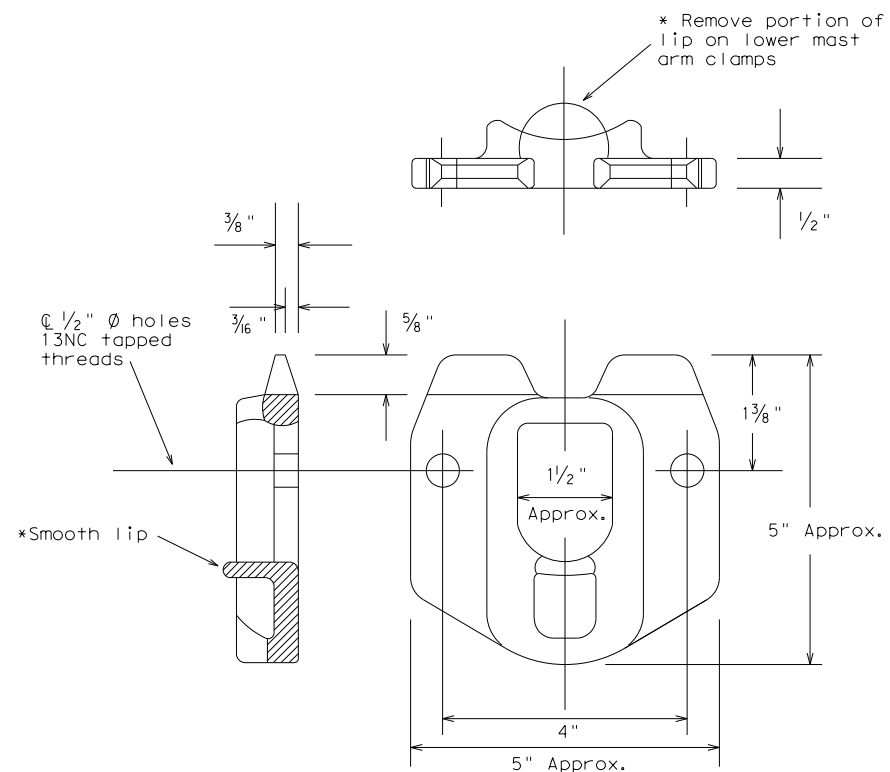
ARM DETAILS

LUM-A-12

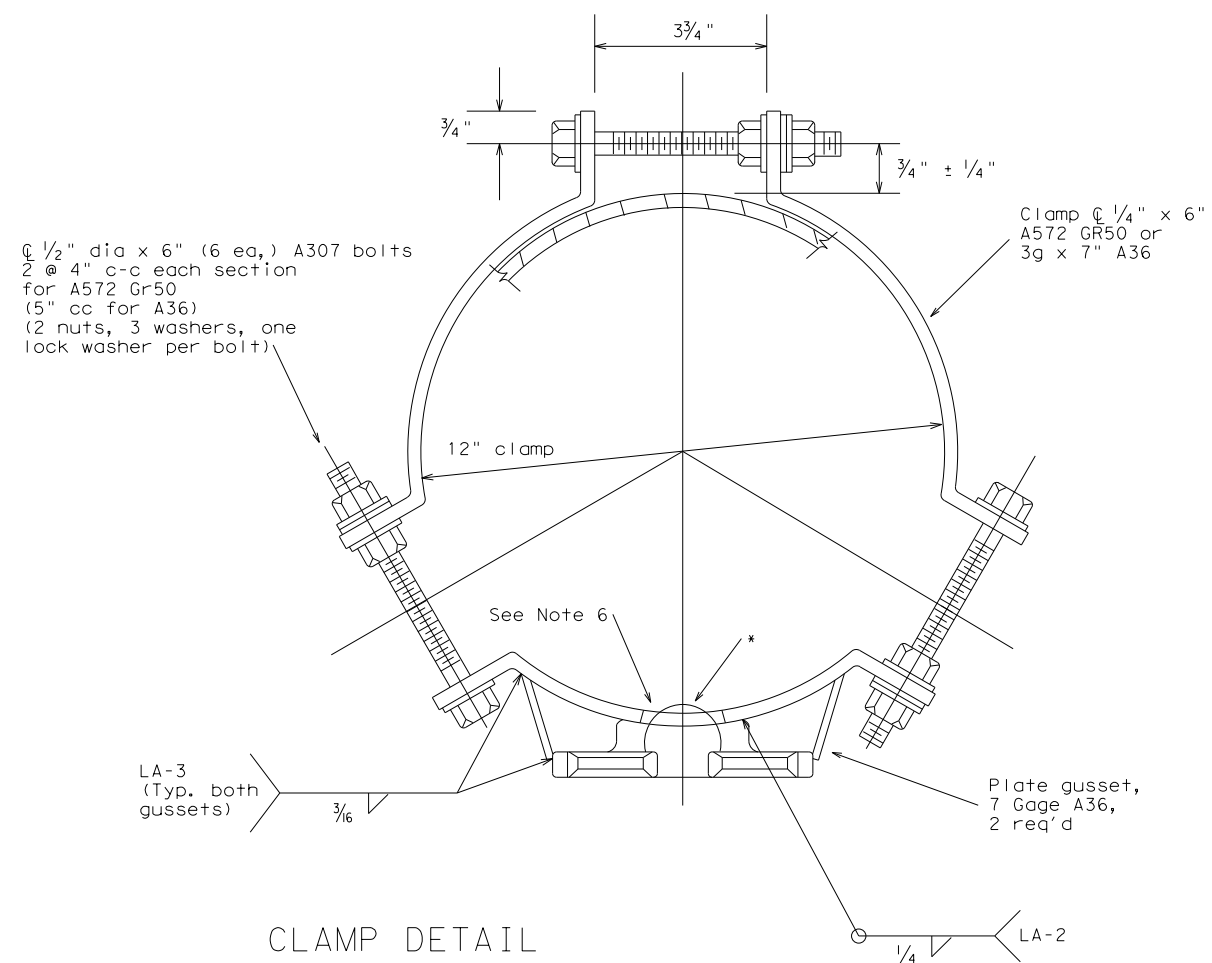
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1-99		0887	01	039, ETC.	VARIOUS
1-12		DIST	COUNTY		SHEET NO.
		ODA	ECTOR, ETC.		268

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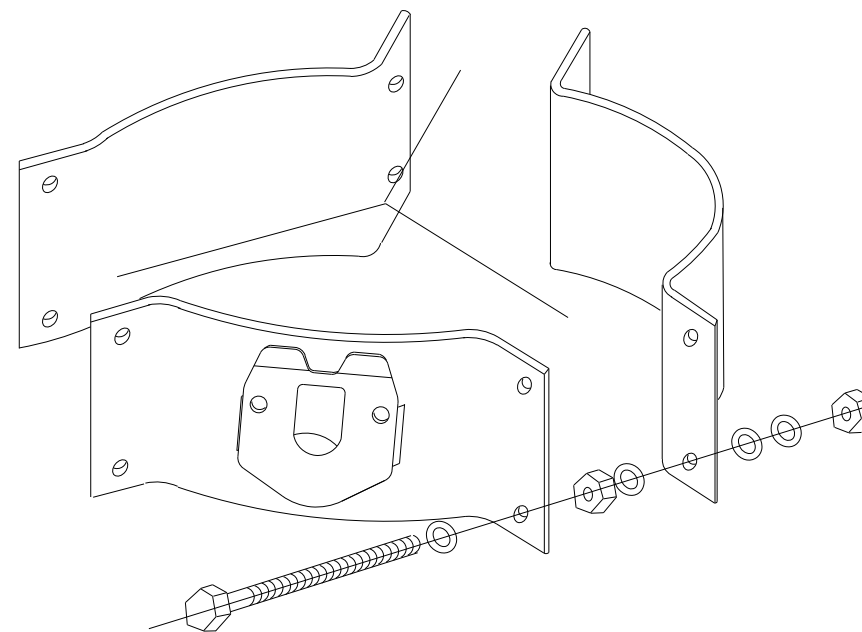
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POLE SIMPLEX DETAILS



CLAMP DETAIL



PROJECTION

For 8.9 - 12 inch diameter Signal Poles
 (Two req'd for each mast arm)

OTHER MATERIALS:

1. Pole simplex shall be ASTM A27 GR65-35 or A148 GR80-50 or A576 GR1021. ASTM A576 must be suitable for forging and also meet minimum tensile of 65ksi, minimum yield of 35ksi, and a minimum elongation of 22 percent in 2 inches.
2. Welded tabs and backplates shall be ASTM A-36 steel or better.
3. Nylon insert locknuts shall conform to ASTM A563.

GENERAL NOTES:

1. Materials and fabrication shall be in accordance with Standard Sheet "MA-C" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
2. All parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing". The throat of the Simplex shall be made free of all rough or sharp edges resulting from the galvanizing process.
3. Each simplex fitting shall be supplied with 2 ASTM A325 bolts, 1/2 in. X 1 1/2 in. and 2 lock washers. The bolts and lock washers shall be secured to the clamp with the other hardware items. The Fabricator shall ship clamp assembly together in a single package, including all bolts, nuts, and washers required for the clamp and simplex fitting.
4. Design conforms to 1994 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals" and interim revisions thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor. Clamps are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq.ft., 12 ft. maximum arm length.
5. Each assembly shall consist of one upper piece simplex fitting having a smooth lip and one lower piece simplex fitting with the lip removed.
6. Approximately 2 in. diameter hole in upper mast arm clamp.

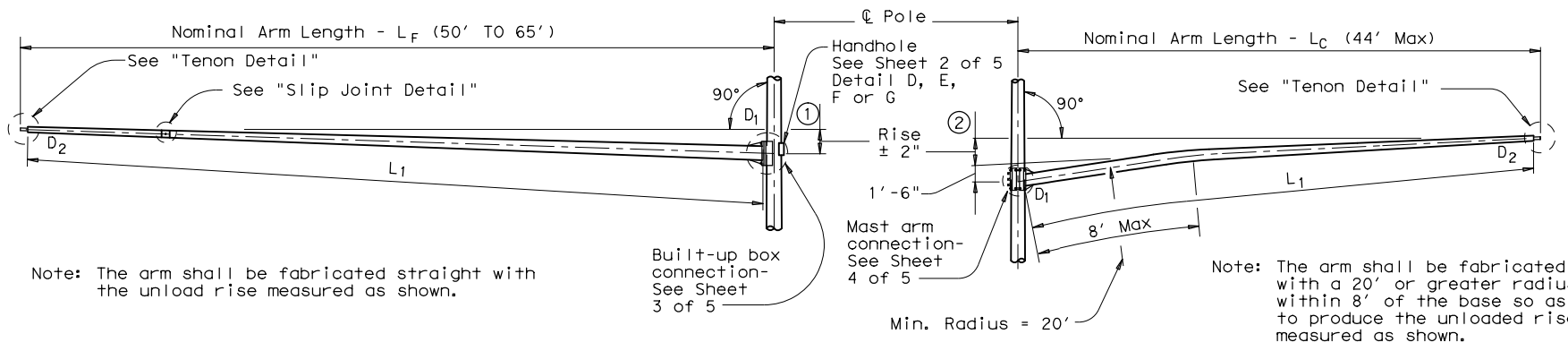
Texas Department of Transportation
 Traffic Operations Division

CLAMP ON
 FITTING ASSEMBLY FOR
 LUMINAIRE MAST ARM

CFA-12

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	ODA	ECTOR, ETC.	269	

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Note: The arm shall be fabricated straight with the unload rise measured as shown.

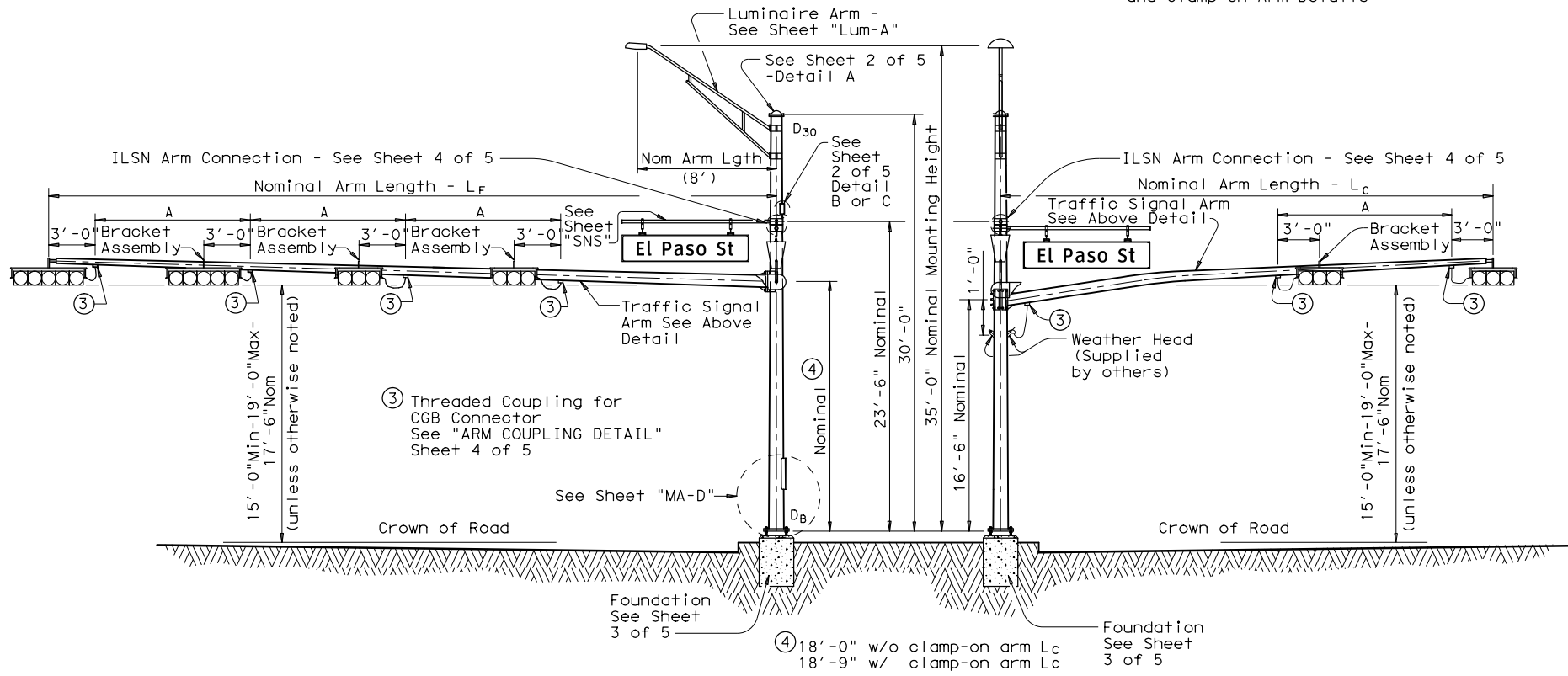
Note: The arm shall be fabricated with a 20' or greater radius within 8' of the base so as to produce the unloaded rise measured as shown.

FIXED MOUNT TRAFFIC SIGNAL ARM

① See Sheet 3 of 5 for Arm Rise

CLAMP-ON TRAFFIC SIGNAL ARM (IF REQUIRED)

② See Sheet 4 of 5 for Arm Rise and Clamp-on Arm Details



ELEVATION

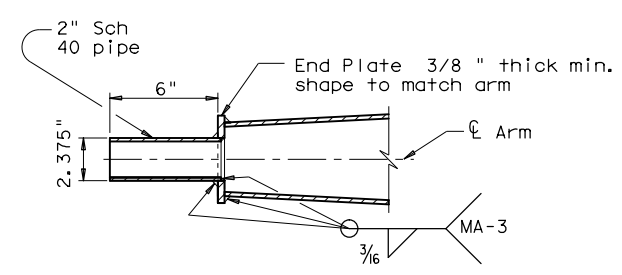
(Showing fixed mount arm)

STRUCTURE ASSEMBLY

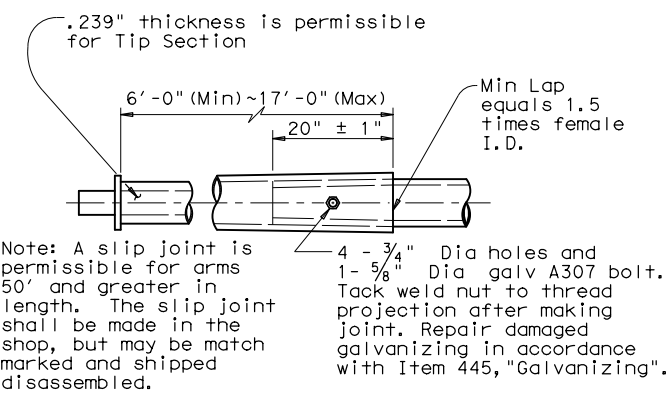
ELEVATION

(Showing clamp-on arm)

TABLE OF DIMENSIONS "A"										
Arm Length	24'	28'	32'	36'	40'	44'	50'	55'	60'	65'
Arm Type II	10'	11'	12'	13'						
Arm Type III			10'	11'	12'	12'				
Arm Type IV							12'	12'	12'	12'



TENON DETAIL



SLIP JOINT DETAIL (FIXED MOUNT ARM)

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed can be either 100 mph or 80 mph plus a 1.3 gust factor. If clamp-on traffic signal is required, designs are based on an arm included angle of 90 degrees or more. Angles of less than approximately 75 degrees will require a special design.

Poles are designed to support one 8'-0" luminaire arm, two 9'-0" internally lighted street name (ILSN) signs and two traffic signal arms with limited length combinations.

Each arm with its related attachment is shown below

Arm	Equivalent DL ⑤	WL EPA ⑤⑥
8' Luminaire Arm	Luminaire 60 lbs	1.6 sq ft
9' ILSN Arm	Sign 85 lbs	11.5 sq ft
50' to 65' Fixed Mount Arm	Signal Loads 310 lbs	52 sq ft
Up to 44' Clamp-on Arm	Signal Loads 180 lbs	32.4 sq ft

⑤ Equivalent dead load plus horizontal wind load applied at the end of arm except ILSN arm, which applied 4.5' from the centerline of the pole.

⑥ Effective projected area (actual area times drag coefficient) for the application of horizontal wind load.

Except as noted in Sheet 1 thru 5 of 5, other details not covered shall refer to Standard Sheet "MA-D" for pole details, "LUM-A" for luminaire arm and connection details, "SNS" for internally lighted street name sign details, and "TS-FD" for anchor bolt and foundation details.

Fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Material, fabrication tolerances, and shipping practices shall also meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing" after fabrication.

Deviations from the details and dimensions shown herein require submission of shop drawings in accordance with the Item 441, "Steel Structures". Alternate designs are not acceptable.

Installation of damping plate for the long mast arm is not recommended.

Provision of the bracket assembly used to support the traffic signal heads shall be under the direction of the Engineer for approval.

Design also conforms to NCHRP Report 412 for fatigue resistance except that there are no stiffeners at the base plate. TxDOT is conducting tests to determine if stiffeners at the base plate will or will not result in optimal performance; depending upon the results of the tests, poles may need a retrofit to ensure optimal fatigue performance.

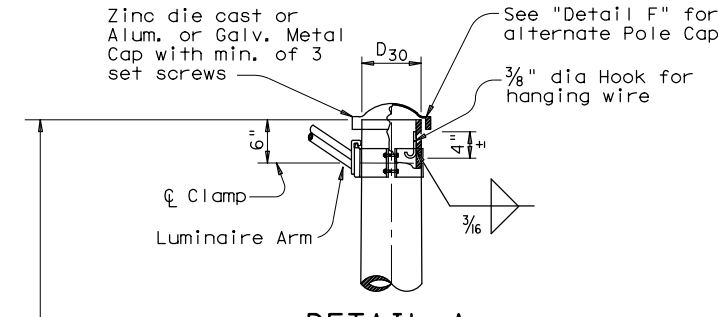


**TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY
(50 TO 65 FT)
(80 AND 100 MPH WIND ZONE)
LMA(1)-12**

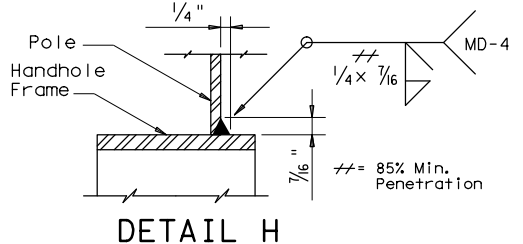
Sheet 1 of 5

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		0887	01039	ETC.	VARIOUS
DIST		COUNTY		SHEET NO.	
ODA		ECTOR, ETC.		270	

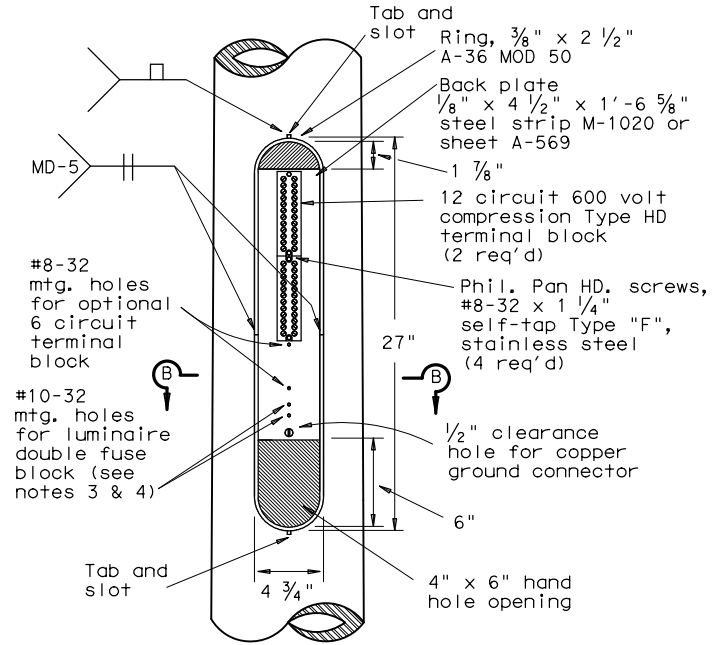
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DETAIL A
(for pole with luminaire)



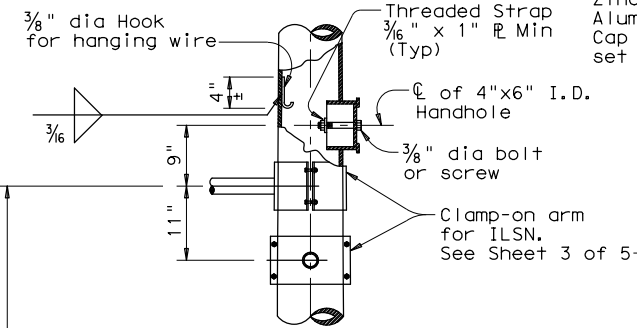
DETAIL H



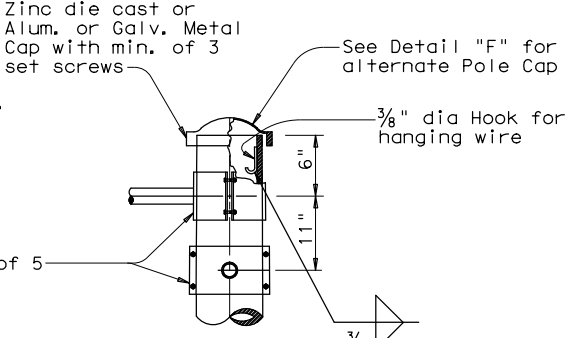
ACCESS COMPARTMENT

MATERIALS	
Round Shafts or Polygonal Shafts (7)	ASTM A595 Gr. A, A588, A1008 HSLAS Gr. 50 Class 2, A1011 HSLAS Gr. 50 Class 2, A572 Gr. 50 or A1011 SS Gr. 50 (8)
Plates (7)	ASTM A36, A588, or A572 Gr. 50
Connection Bolts	ASTM A325, or A449 except where noted
Pin Bolts	ASTM A325
Pipe (7)	ASTM A53 Gr. B, A501, A1008 HSLAS-F Gr. 50, A1011 HSLAS-F Gr. 50
Misc. Hardware	Galvanized steel or stainless steel or as noted

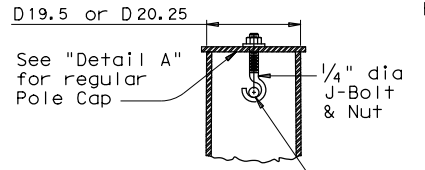
- (7) ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F, or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.
- (8) ASTM A1011 SS Gr. 50 shall also have a minimum elongation of 18 percent in 8 inches or 23 percent in 2 inches. Material thickness in excess of those stipulated under A1011 SS will be acceptable providing the material meets all other A1011 SS requirements and the requirements of this item.



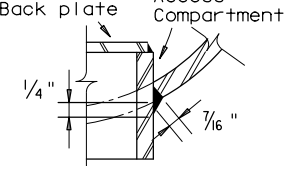
DETAIL B
(If ILSN applied)



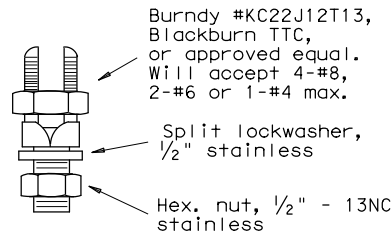
DETAIL C



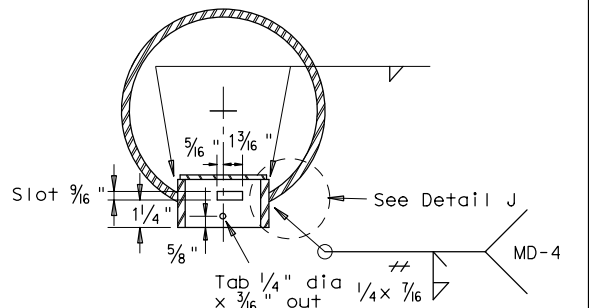
SECTION Y-Y



DETAIL J



COPPER GROUND CONNECTOR

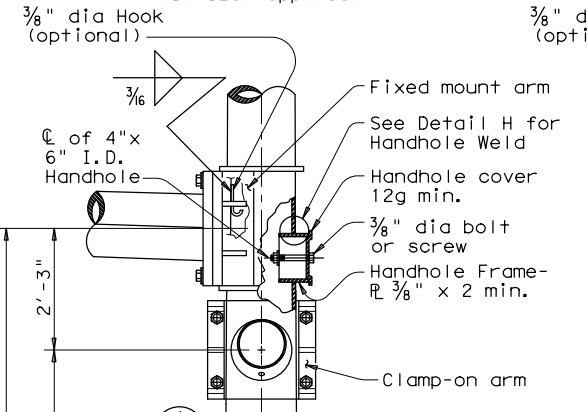


SECTION B-B

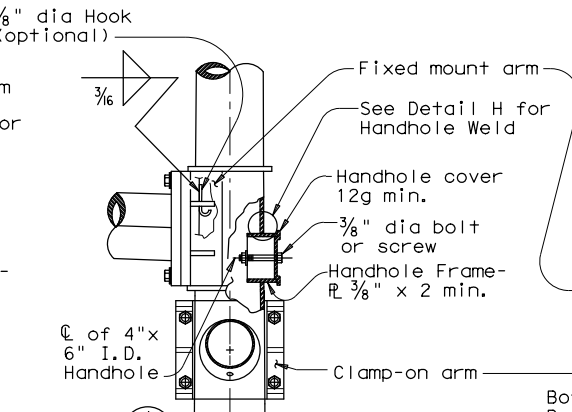
Opening for access compartment shall be no more than 1/16 inch wider than the access compartment itself.

ACCESS COMPARTMENT NOTES:

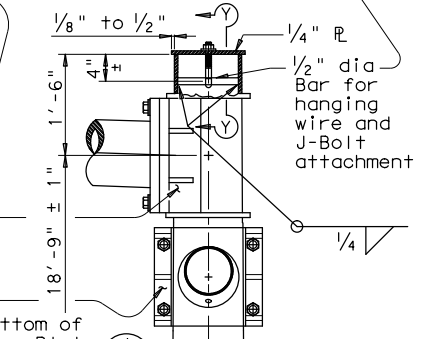
- The cover shall be one piece formed from ABS plastic, shall be a pearl gray color, and shall be suitable for exposure to harsh sunlight and extreme weather. Cover shall latch with two screw latches and shall fit tightly to the enclosure ring to create a rainproof seal. Latch screws shall be 1/4-20 stainless flat socket head screws with tamper proof feature.
- The pole manufacturer shall provide with each pole a separate kit consisting of: one cover with two latching assemblies, two terminal strips (Marathon #985GP12CU or approved equal), four #8-32 x 1 1/4" self tapping type "F" stainless steel pan head screws, and one ground connector (Blackburn TTC, Burndy KC22J12T13, or Ilco SSS-5). The traffic signal contractor shall install the kit items in the field.
- The screw hole spacing on the enclosure back plate shall be for two Marathon #985GP12 terminal strips, one Marathon #985GP6CU terminal strip, and one Bussmann #BM6032B fuse block.
- Install one Bussmann #BM6032B, Littelfuse #L60030M-2C, or Ferraz-Shawmut #30352 fuse block for poles where luminaires are to be installed.



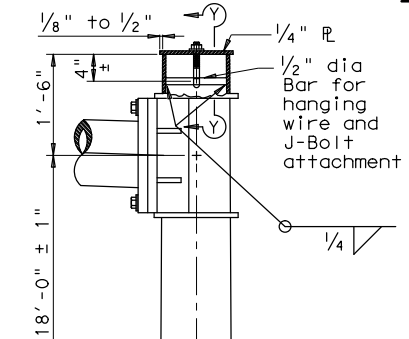
DETAIL D
(for 30' pole with luminaire and ILSN sign)



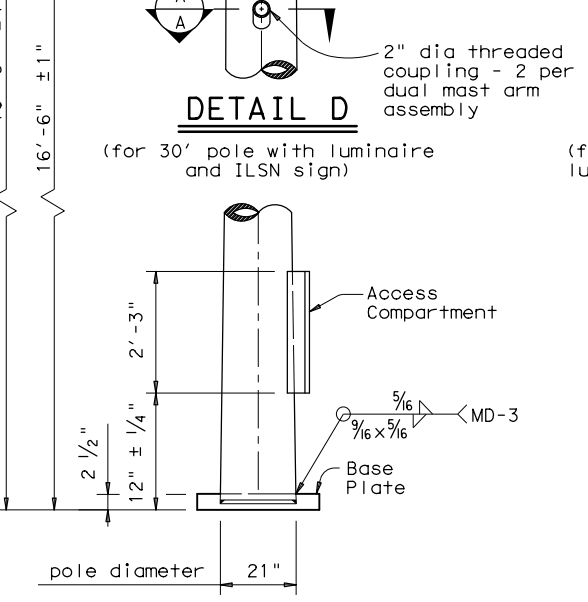
DETAIL E
(for 24' pole with ILSN sign and no luminaire, single or dual mast arm)



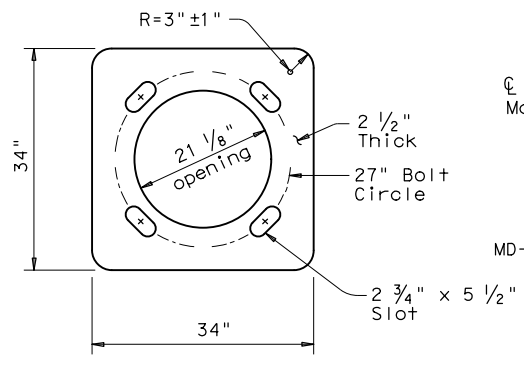
DETAIL F
(for 20.25' pole with no ILSN sign and no luminaire, dual mast arm)



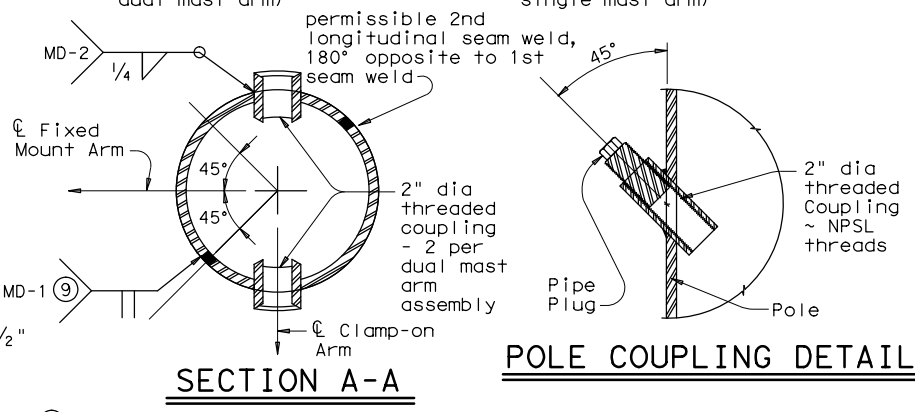
DETAIL G
(for 19.5' pole with no ILSN sign and no luminaire, single mast arm)



POLE ELEVATION



BASE PLATE



SECTION A-A

POLE COUPLING DETAIL

(9) Longitudinal seam weld must be oriented within 90° (45° rotation each side) along the fixed mount arm. 60% min penetration required, 100% penetration within 6" of circumferential base weld.

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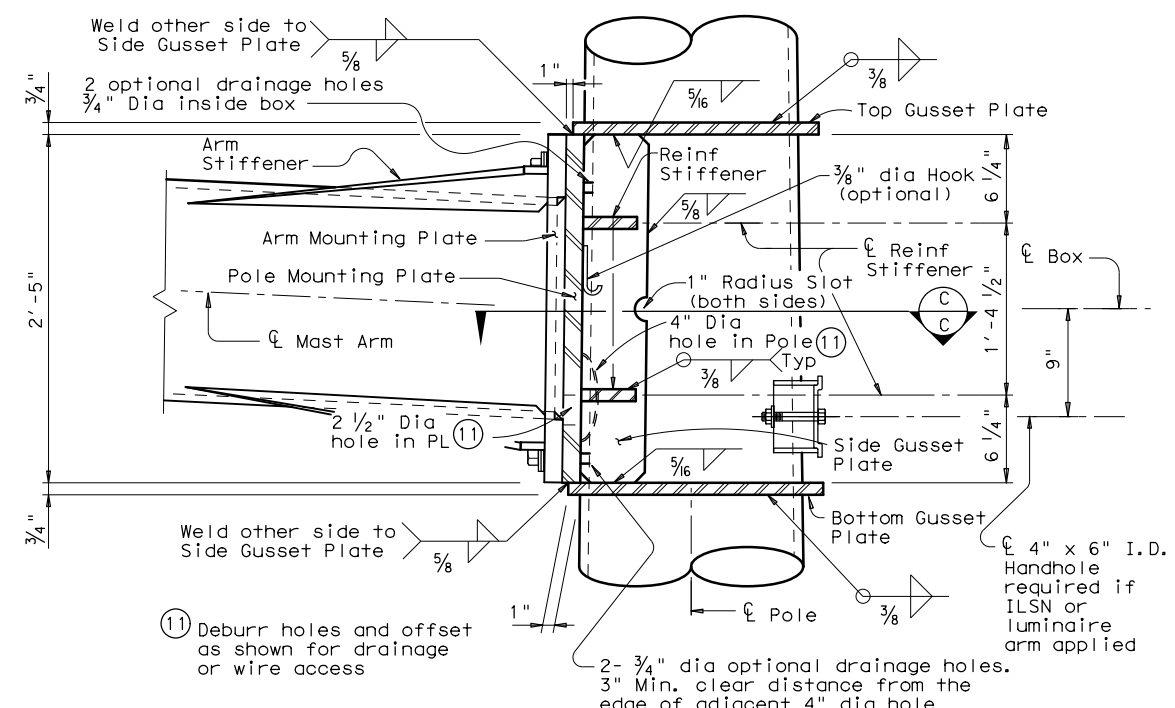
**TRAFFIC SIGNAL SUPPORT STRUCTURES
 LONG MAST ARM ASSEMBLY
 (50 TO 65 FT)
 (80 AND 100 MPH WIND ZONE)
 LMA (2) -12**

Sheet 2 of 5

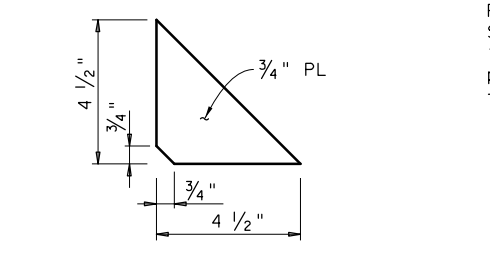
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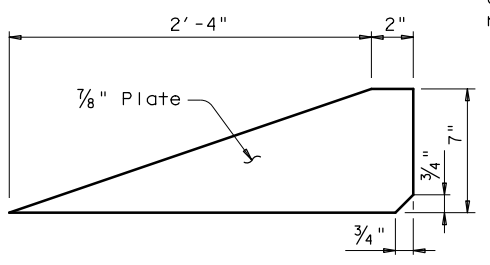
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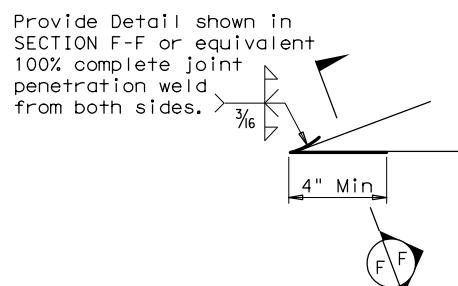
BUILT-UP BOX CONNECTION



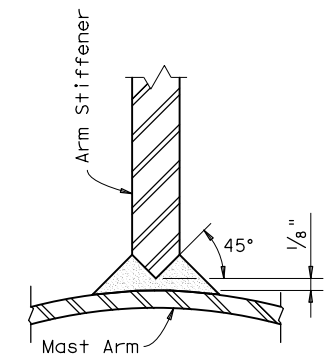
REINFORCING STIFFENER



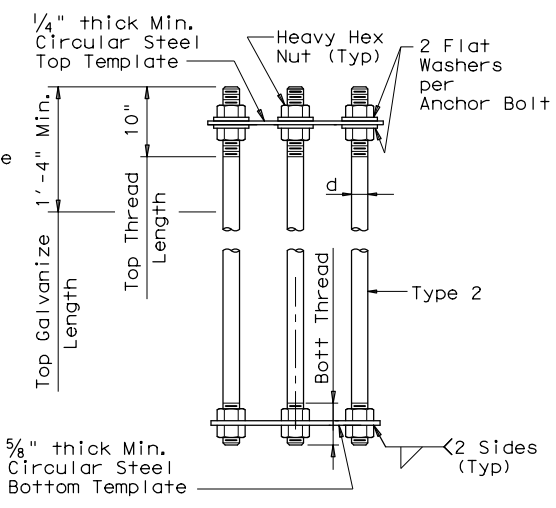
ARM STIFFENER
(Cut to match arm inclination and taper)



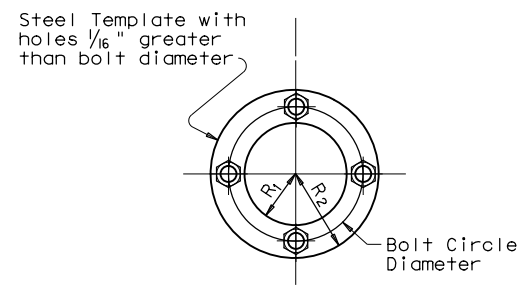
DETAIL "K"



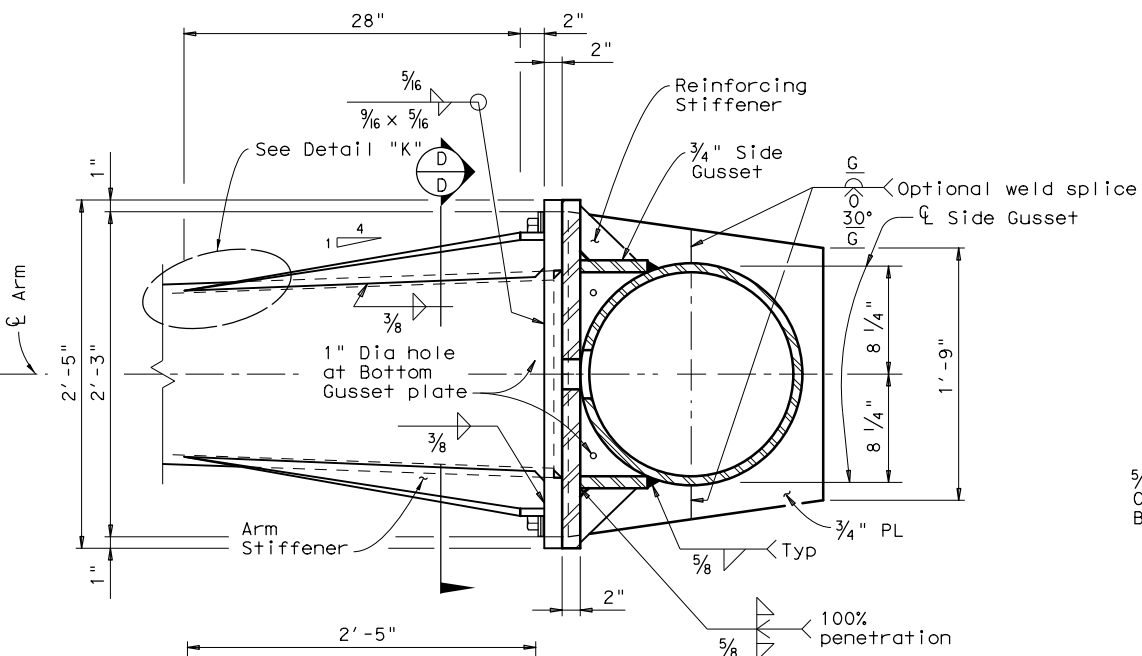
SECTION F-F



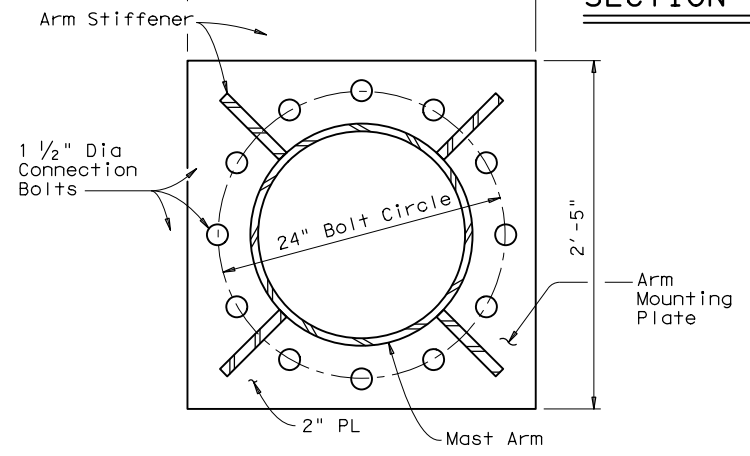
ANCHOR BOLT ASSEMBLY



TEMPLATE DETAIL



SECTION C-C



SECTION D-D

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		DRILLED SHAFT LENGTH-ft			ANCHOR BOLT DESIGN			FOUNDATION DESIGN LOAD		TYPICAL APPLICATION	
		VERT BARS	SPIRAL & PITCH	(16), (17), (18)			ANCHOR BOLT DIA	Fy (Ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft		SHEAR Kips
				TEXAS CONE PENETROMETER N blows/ft	10	15							
48-A	48"	20 #9	#4 at 6"	21.9	19.5	14.7	2 1/2"	55	27"	2	490	10	50' to 65' Mast arm assembly.

SEE SHEET "TS-FD" FOR ADDITIONAL DETAILS.

- (14) Anchor bolt design develops the foundation capacity given under Foundation Design Loads.
- (15) Foundation Design Loads are the allowable moments and shears at the base of the structure.
- (16) Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.
- (17) If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.
- (18) Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

Fixed Mount Arm L _F	ROUND POLES (13)					Foundation Type
	D _B	D _{19.5} or D _{20.25}	D ₂₄	D ₃₀	(12)thk	
ft.	in.	in.	in.	in.	in.	
50', 55', 60', 65'	21.0	18.2	17.6	16.8	.3125	48-A

Fixed Mount Arm L _F	ROUND ARMS (13)				
	L ₁	D ₁	D ₂	(12)thk	Rise
ft.	ft.	in.	in.	in.	
50	49	18.5	11.7	.3125	3'- 3"
55	54	18.5	11.0	.3125	3'- 7"
60	59	18.5	10.3	.3125	3'-11"
65	64	18.5	9.6	.3125	4'- 4"

D_B = Pole Base O.D.
 D_{19.5} = Pole Top O.D. with no Luminaire and no ILSN (single mast arm)
 D_{20.25} = Pole Top O.D. with no Luminaire and no ILSN (dual mast arm)
 D₂₄ = Pole Top O.D. with ILSN w/out Luminaire
 D₃₀ = Pole Top O.D. with Luminaire
 D₁ = Arm Base O.D.
 D₂ = Arm End O.D.
 L₁ = Shaft Length
 L_F = Fixed Arm Length

- (12) Thickness shown is minimum, thicker materials may be used.
- (13) Shaft profile 16-sided or 18-sided is considered to be equivalent to round section.

GENERAL NOTES:
 Built-up Box Connection: For the welded arm-to-pole connection as a built-up box configuration illustrated here is an example only, fabricators are required to submit a shop drawing of box connection for approval. The drawing shall specify the details of each box element, welds of arm-to-pole connection, arm-to-plate socket connection, and arm rise creation. Specify the proper location of drain holes along the pole. 2 1/2" dia hole in the pole mounting plate and 4" dia hole in the pole need to be aligned for wiring access or drainage. Arm stiffeners cut to match arm inclination and taper shall also be included.

The deviation from flat for either arm or pole mounting plate shall not exceed 3/32 in., which is measured along the center of mounting plate to a radial distance of 13.5 in. The deformed-from-flat connection between arm and pole mounting plates shall not be allowed if the center of both mounting plates cannot contact directly.

Fixed mount details are used for single mast arm assemblies and for the first arm on dual mast arm assemblies.

ANCHOR BOLT & TEMPLATE SIZE						
Bolt Dia in.	Length #	Top Thread	Bottom Thread	Bolt Circle	R ₂	R ₁
2 1/2"	5'-2"	10"	6 1/2"	27"	16"	11"

‡Min dimension given, longer bolts are acceptable.

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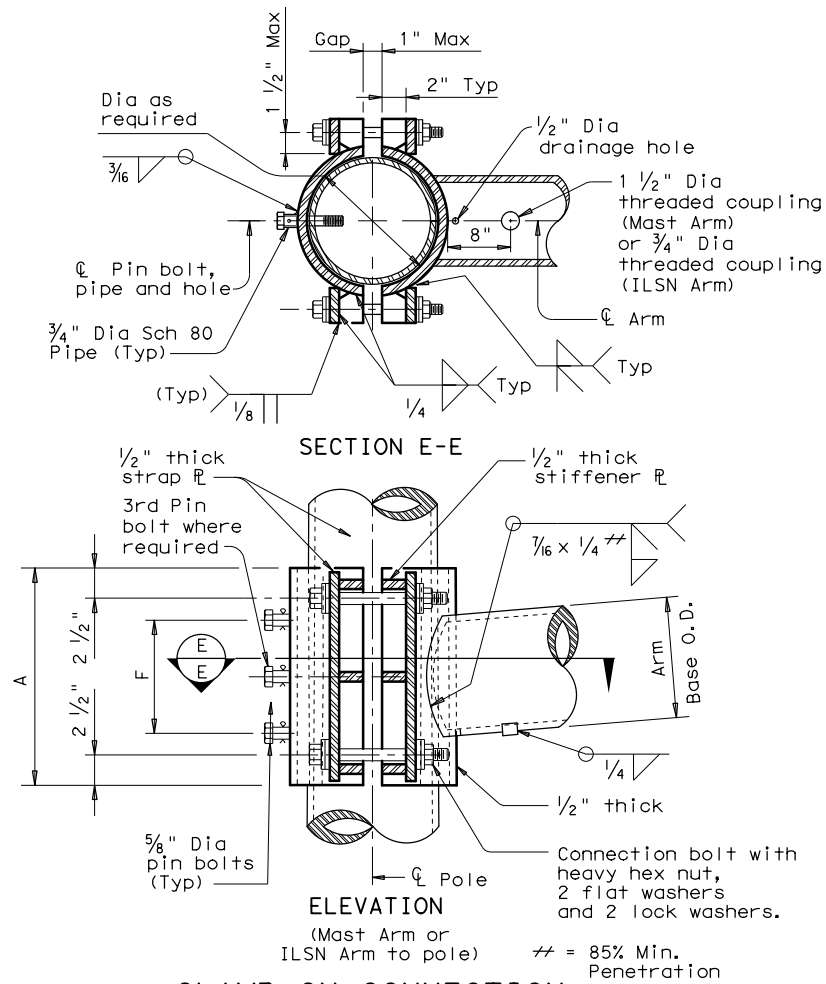
TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY
 (50 TO 65 FT)
 (80 AND 100 MPH WIND ZONE)

Sheet 3 of 5 **LMA (3) -12**

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CLAMP-ON CONNECTION

80 MPH WIND										
Clamp-on Arm Lc	ROUND ARMS					POLYGONAL ARMS				
	L ₁	D ₁	D ₂	thk (12)	Rise	L ₁	D ₁	D ₂	thk (12)	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	6.5	3.8	.179	1'-9"	19.1	7.0	3.5	.179	1'-8"
24	23.1	7.5	4.3	.179	1'-10"	23.1	7.5	3.5	.179	1'-9"
28	27.1	8.0	4.2	.179	1'-11"	27.1	8.0	3.5	.179	1'-10"
32	31.0	9.0	4.7	.179	2'-0"	31.0	9.0	3.5	.179	2'-0"
36	35.0	9.5	4.6	.179	2'-4"	35.0	10.0	3.5	.179	2'-1"
40	39.0	9.5	4.1	.239	2'-8"	39.0	9.5	3.5	.239	2'-3"
44	43.0	10.0	4.1	.239	2'-11"	43.0	10.0	3.5	.239	2'-6"

100 MPH WIND										
Clamp-on Arm Lc	ROUND ARMS					POLYGONAL ARMS				
	L ₁	D ₁	D ₂	thk (12)	Rise	L ₁	D ₁	D ₂	thk (12)	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	8.0	5.3	.179	1'-8"	19.1	8.0	3.5	.179	1'-7"
24	23.1	9.0	5.8	.179	1'-9"	23.1	9.0	3.5	.179	1'-8"
28	27.1	9.5	5.7	.179	1'-10"	27.1	10.0	3.5	.179	1'-9"
32	31.0	9.5	5.2	.239	1'-11"	31.0	9.5	3.5	.239	1'-10"
36	35.0	10.0	5.1	.239	2'-0"	35.0	10.0	3.5	.239	1'-11"
40	39.0	10.5	5.1	.239	2'-3"	39.0	11.0	3.5	.239	2'-1"
44	43.0	11.0	5.1	.239	2'-8"	43.0	11.5	4.0	.239	2'-3"

D₁ = Arm Base O.D.
 D₂ = Arm End O.D.
 L₁ = Shaft Length
 Lc = Clamp-on Arm Length

(12) Thickness shown is minimum, thicker materials may be used.

CLAMP-ON ARM CONNECTION					
ILSN Arm Size		A	F	4 Conn. Bolts	5/8" Dia. Pin Bolts
Sch 40 pipe Dia	Thick				
in.	in.	in.	in.	in.	ea
3	.216	10	4	3/4	2

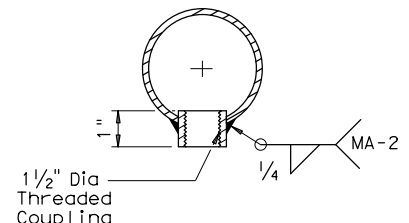
Mast Arm Size					
Mast Arm Size		A	F	4 Conn. Bolts	5/8" Dia. Pin Bolts
Base Dia	Thick				
in.	in.	in.	in.	in.	ea
6.5	.179	12	6	1	2
7.5	.179	14	8	1	2
8.0	.179	14	8	1	2
9.0	.179	16	10	1	2
9.5	.179	18	12	1 1/4	3
9.5	.239	18	12	1 1/4	3
10.0	.239	18	12	1 1/4	3
10.5	.239	18	12	1 1/4	3
11.0	.239	18	12	1 1/4	3
11.5	.239	18	12	1 1/4	3

GENERAL NOTES:

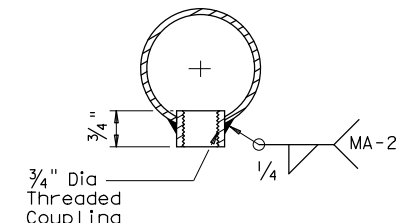
Clamp-on details are used for the second arm on dual mast arm assemblies or ILSN arm support. For a clamp-on mast arm, a maximum 1 1/2" wide vertical slotted hole may be cut in the front clamp plate to facilitate drainage during galvanizing. The slot shall be centered behind the arm and shall be no longer than the arm diameter minus 1". For an ILSN arm, a 1 1/2" diameter hole shall be cut in the front clamp plate for wire access. A matched hole shall be field drilled through the pole to provide wire access after arm is oriented. Deburr both holes.

Where duplicate parts occur on a detail, welds shown for part shall apply to all similar parts on the detail.

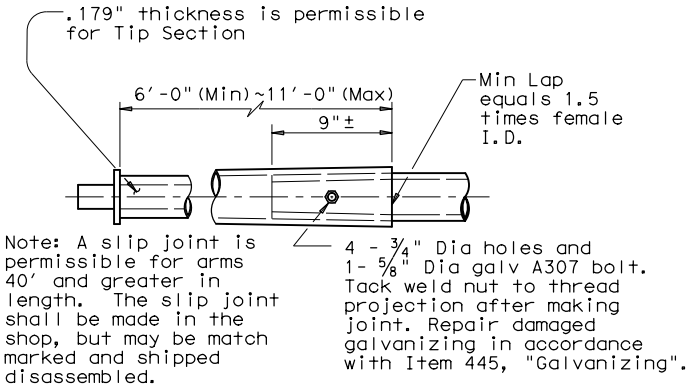
Pin bolts are required to prevent rotation of clamp-on arms under design wind forces. Pin bolts shall be ASTM A325 with threads excluded from the shear plane. Pin bolt and 3/4" diameter pipe shall have 3/16" diameter holes for a 1/8" diameter galvanized cotter pin. Back clamp plate shall be furnished with a 3/4" diameter hole for each pin bolt. An 1/16" diameter hole for each pin bolt shall be field drilled through the pole after arm orientations have been approved by the Engineer.



ARM COUPLING DETAIL



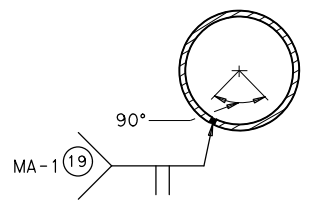
ILSN ARM COUPLING DETAIL



SLIP JOINT DETAIL (CLAMP-ON ARM)

Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1 1/2" Dia Threaded Coupling.

BRACKET ASSEMBLY



ARM WELD DETAIL

(19) Longitudinal Seam Weld must be oriented within the lower 90° of the signal arm. 60% Min penetration 100% penetration within 6" of circumferential base welds.



TRAFFIC SIGNAL SUPPORT STRUCTURES LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE)

Sheet 4 of 5 LMA(4)-12

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REVISIONS		CONT	SECT	JOB	HIGHWAY
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DIST		COUNTY		SHEET NO.	
ODA		ECTOR, ETC.		273	

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Shipping Parts List							
Ship each pole with the following attached: enlarged hand hole, pole cap, fixed arm connection bolts and washers, and any additional hardware listed in the table.							
Nominal Arm Length	30' Poles with Luminaire		24' Poles with ILSN		19.50' (Single Mast Arm) 20.25' (Dual Mast Arm) Poles with no Luminaire and no ILSN		
	See note above plus: one (or two if ILSN attached) small hand hole, clamp-on simplex		See note above plus one small hand hole		See note above		
Single Mast Arm							
Lf ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity	
50	50L		50S		50		
55	55L		55S		55		
60	60L		60S		60		1
65	65L		65S		65		1
Dual Mast Arm							
Lf ft.	Lc ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
50	20	5020L		5020S		5020	
	24	5024L		5024S		5024	
	28	5028L		5028S		5028	
	32	5032L		5032S		5032	
	36	5036L		5036S		5036	
	40	5040L		5040S		5040	
	44	5044L		5044S		5044	
55	20	5520L		5520S		5520	
	24	5524L		5524S		5524	
	28	5528L		5528S		5528	
	32	5532L		5532S		5532	
	36	5536L		5536S		5536	
60	20	6020L		6020S		6020	
	24	6024L		6024S		6024	
	28	6028L		6028S		6028	
	32	6032L		6032S		6032	
	36	6036L		6036S		6036	
65	20	6520L		6520S		6520	
	24	6524L		6524S		6524	
	28	6528L		6528S		6528	
	32	6532L		6532S		6532	
	36	6536L		6536S		6536	
60	40	6540L		6540S		6540	1
	44	6544L		6544S		6544	

Foundation Summary Table **

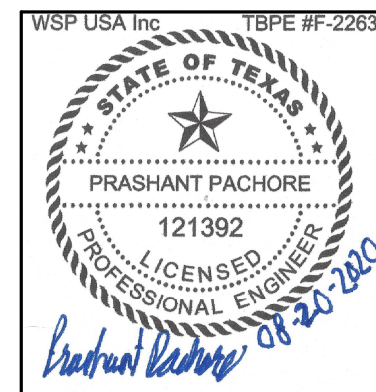
Location Ident.	Avg. N Blow/ft.	No. Each	Drill Shaft *** Length (feet)
			48-A
P-1	10	1	22
P-12	10	1	22
P-18	10	1	22
Total Drill Shaft Length			66

Notes

- ** Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.
- *** Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

Abbreviations
 Lf= Fixed Arm Length
 Lc= Clamp-on Arm Length (44' Max.)

Shipping Parts List							
Traffic Signal Arms (Fixed Mount) (1 per pole)				Luminaire Arms (1 per 30' pole)			
Ship each arm with listed equipment attached							
Nominal Arm Length	Type IV Arm (4 Signals)			Nominal Arm Length	Quantity		
	3 Bracket Assembly and 4 CGB Connectors			8' Arm			
ft.	Designation	Quantity			ILSN Arm (Max. 2 per pole) Ship with clamps, bolts and washers		
50	50IV				Nominal Arm Length	Quantity	
55	55IV	1			7' Arm		
60	60IV	1			9' Arm		
65	65IV	1					
Traffic Signal Arms (80 MPH Clamp-On Mount) (1 per pole) Ship each arm with listed equipment attached							
Nominal Arm Length	Type I Arm (1 Signal)	Type II Arm (2 Signals)		Type III Arm (3 Signals)			
	2 CGB connector and 1 clamp w/bolts and washers	1 Bracket Assembly and 3 CGB connectors, and 1 clamp w/bolts and washers		2 Bracket Assembly and 4 CGB connectors, and 1 clamp w/bolts and washers			
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity	
20	20I-80						
24	24I-80		24II-80				
28	28I-80		28II-80				
32			32II-80		32III-80		
36			36II-80		36III-80		
40					40III-80	1	
44					44III-80		
Traffic Signal Arms (100 MPH Clamp-On Mount) (1 per pole) Ship each arm with listed equipment attached							
Nominal Arm Length	Type I Arm (1 Signal)	Type II Arm (2 Signals)		Type III Arm (3 Signals)			
	2 CGB connector and 1 clamp w/bolts and washers	1 Bracket Assembly and 3 CGB connectors, and 1 clamp		2 Bracket Assembly and 4 CGB connectors, and 1 clamp			
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity	
20	20I-100						
24	24I-100		24II-100				
28	28I-100		28II-100				
32			32II-100		32III-100		
36			36II-100		36III-100		
40					40III-100		
44					44III-100		
Anchor Bolt Assemblies (1 per pole)							
Anchor Bolt Diameter	Anchor Bolt Length			Each anchor bolt assembly consists of the following: Top and bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers and 4 nut anchor devices (type 2) per Standard Drawing "TS-FD". Templates may be removed for shipment.			
2 1/2 "	5' - 3"	3					



LOOP 338 AT SH 191

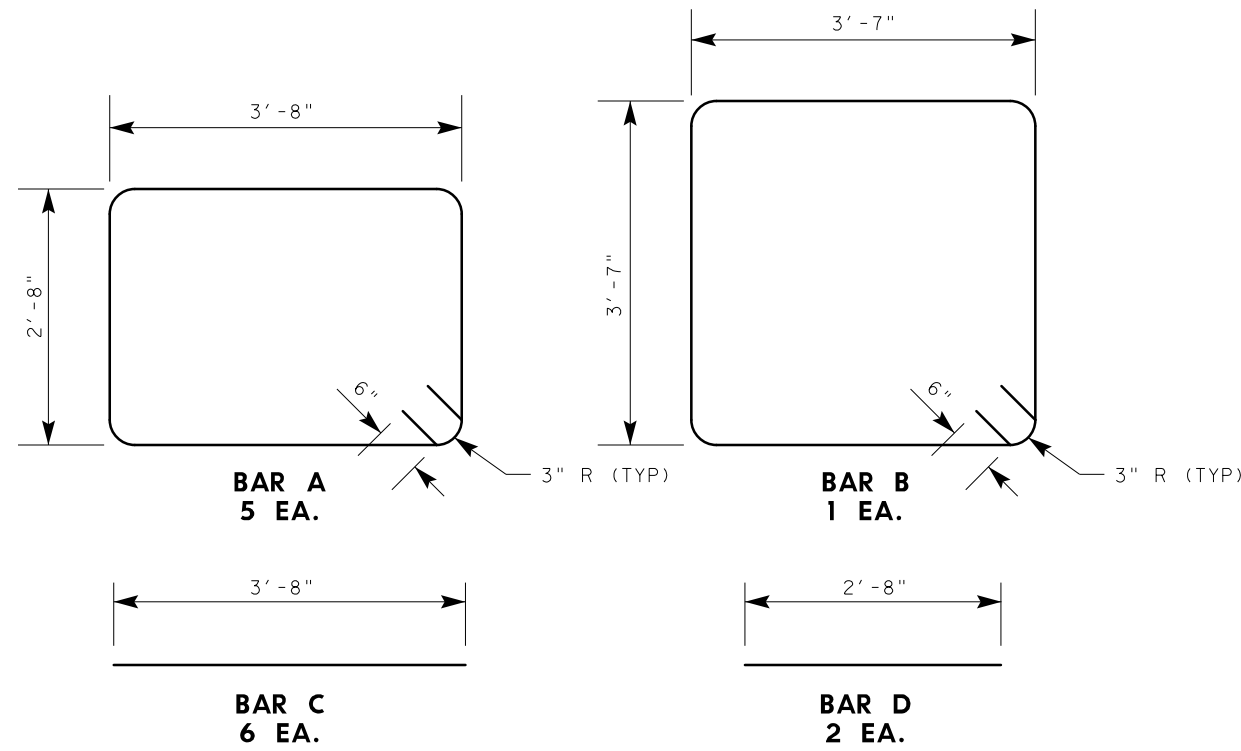
Texas Department of Transportation
 Traffic Operations Division

**LONG MAST
 ARM ASSEMBLY
 PARTS LIST**

LMA (5) - 12

Sheet 5 of 5

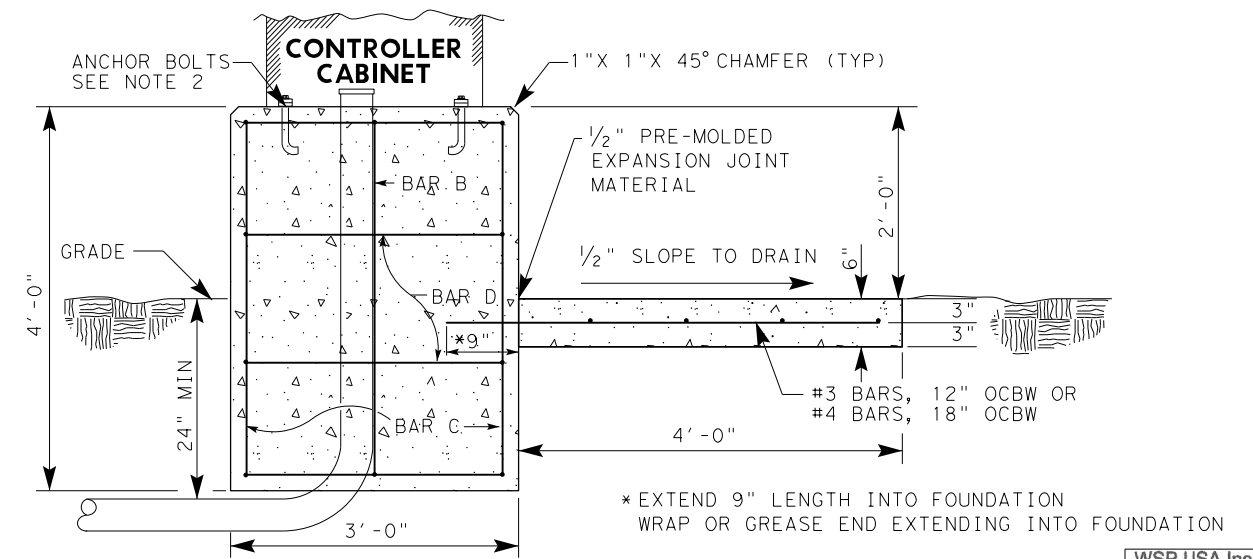
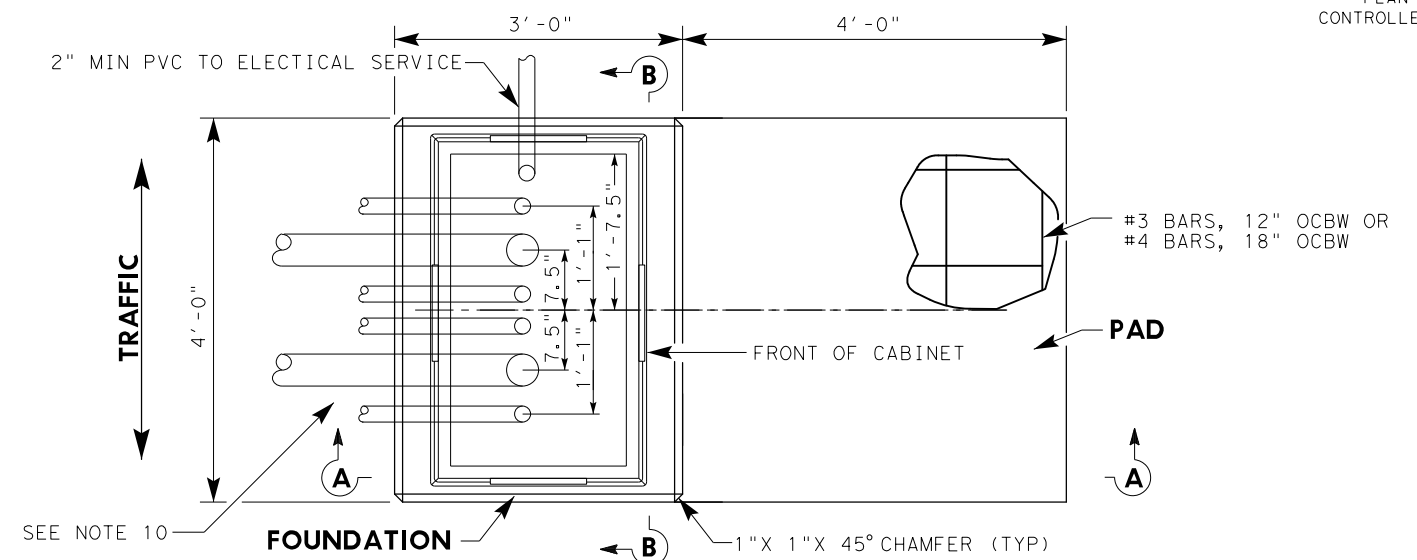
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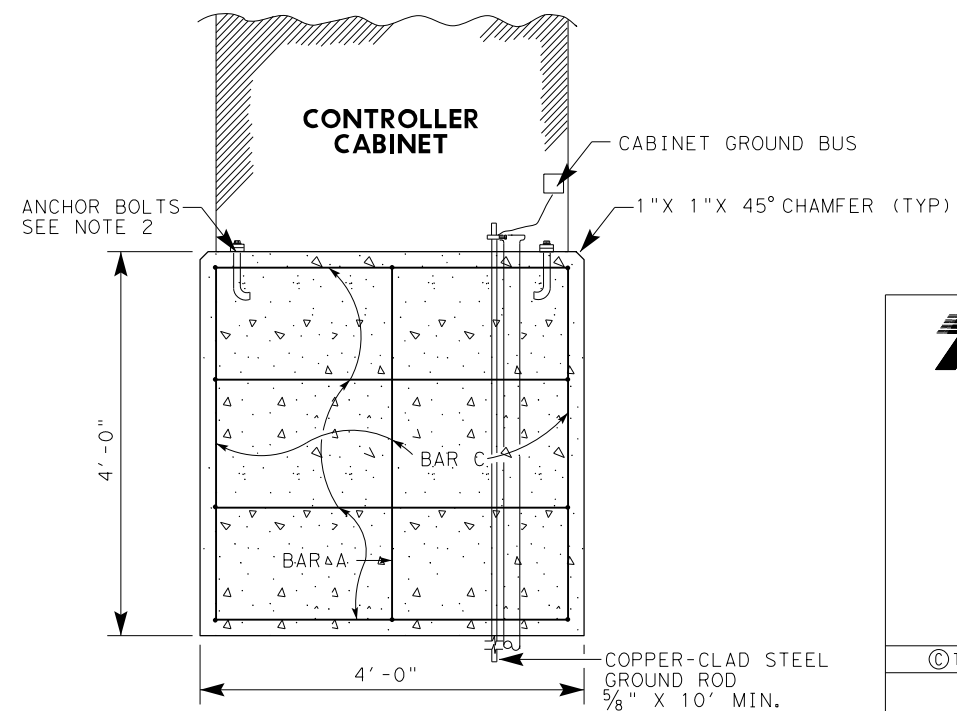
**CONTROLLER CABINET FOUNDATION
1/2" DIA. REINF. BARS**

NOTES:

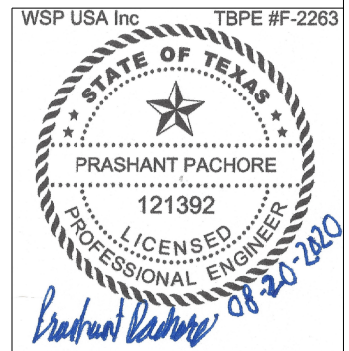
- SPECIFICATION FOR CONTROLLER CABINET SHOWN IN THE SPECIFICATION AND ELSEWHERE IN THE PLANS.
- FURNISH AND INSTALL 1/2" X 12" GALVANIZED BOLTS WITH THE TOP 4" THREADED. FURNISH AND INSTALL GALVANIZED HEXAGON NUTS AND WASHERS. CABINET MANUFACTURER TO PROVIDE DETAILS OF ANCHOR BOLT LOCATIONS.
- MODIFY DIMENSIONS FOR CONCRETE BASE TO FIT EQUIPMENT FURNISHED, IF NECESSARY.
- FURNISH CLASS "C" CONCRETE IN ACCORDANCE WITH ITEM 421. CONSTRUCT THE PAD IN ACCORDANCE WITH ITEM 531.
- SET CONTROLLER FOUNDATION LEVEL WITH THE PAVEMENT SURFACE OR AS APPROVED BY THE ENGINEER.
- FURNISH, AT NO COST TO THE DEPARTMENT, ANY ADDITIONAL CONCRETE WHICH MAY BE NECESSARY TO STABILIZE THE FOUNDATION AT UNUSUAL LOCATIONS.
- PLACE REINFORCING BARS AS SHOWN AND IN ACCORDANCE WITH ITEM 440.
- BOND AN #8 AWG COPPER GROUND WIRE AND A 10' GROUND ROD BONDED TO THE REINFORCING BARS BY A SUITABLE UL LISTED CLAMP AND TERMINATED TO THE CABINET GROUNDING BUS FOR THE PURPOSE OF PROVIDING A LOCAL GROUND FOR THE ELECTRICAL GROUNDING CONDUCTOR. THE ELECTRICAL GROUNDING CONDUCTOR SPECIFIED IN ITEM 680-3.1.1.4 IS REQUIRED AND MUST BE TERMINATED TO THE CABINET GROUND BUS.
- INSTALL A PVC SLEEVE TO PREVENT THE GROUND ROD FROM DIRECT EMBEDMENT IN THE CONCRETE.
- STUB UP AND RUN 2 INCH AND 4 INCH CONDUITS THROUGH THE FOUNDATION TO THE VARIOUS TRAFFIC SIGNAL POLES AND GROUND BOXES AS SHOWN ON THE LAYOUTS. INSTALL THE NUMBER OF CONDUITS AS SHOWN ON LAYOUTS, PLUS TWO ADDITIONAL 2 INCH CONDUITS FOR FUTURE USE. TERMINATE THE CONDUITS WITH A BUSHING BETWEEN 2 AND 4 INCHES ABOVE THE FOUNDATION.
- EXTEND CONDUITS FOR FUTURE USE AT LEAST 18-INCHES FROM THE EDGE OF THE PAD, TERMINATE UNDERGROUND WITH A COUPLING, AND CAP AND SEAL SO THAT THE SEAL CAN BE REMOVED WITHOUT DAMAGING THE COUPLING. THIS MUST ALSO APPLY TO UNUSED TELEPHONE CONDUIT.
- STUB UP A SEPARATE CONDUIT THROUGH THE FOUNDATION FROM THE ELECTRICAL SERVICE. RUN THE CONDUIT FOR THE ELECTRICAL FEED DIRECTLY TO THE ELECTRICAL SERVICE ENCLOSURE. TERMINATE ELECTRICAL CONDUIT ABOVE THE FOUNDATION WITH A COUPLING.
- FASTEN THE CABINET TO THE CONCRETE FOUNDATION PER MANUFACTURER'S INSTRUCTIONS AND SEAL WITH A SILICONE CAULK BEAD.
- THE SILICONE CAULK BEAD SPECIFIED IN ITEM 680-3.1.2 MUST BE RTV 133.
- ALL WORK AND MATERIALS NECESSARY TO CONSTRUCT TRAFFIC SIGNAL CONTROLLER CABINET FOUNDATION AND PAD SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 680. (APPROX. 2.1 CY CONCRETE FOR CONTRACTOR'S INFORMATION ONLY)



SECTION A-A



SECTION B-B



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Traffic Operations Division

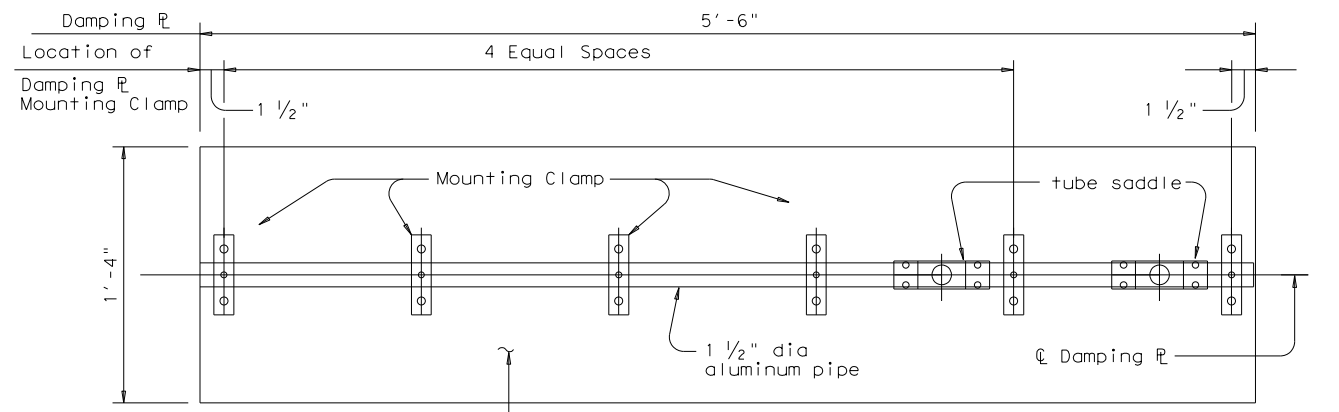
CONTROLLER FOUNDATION DETAILS

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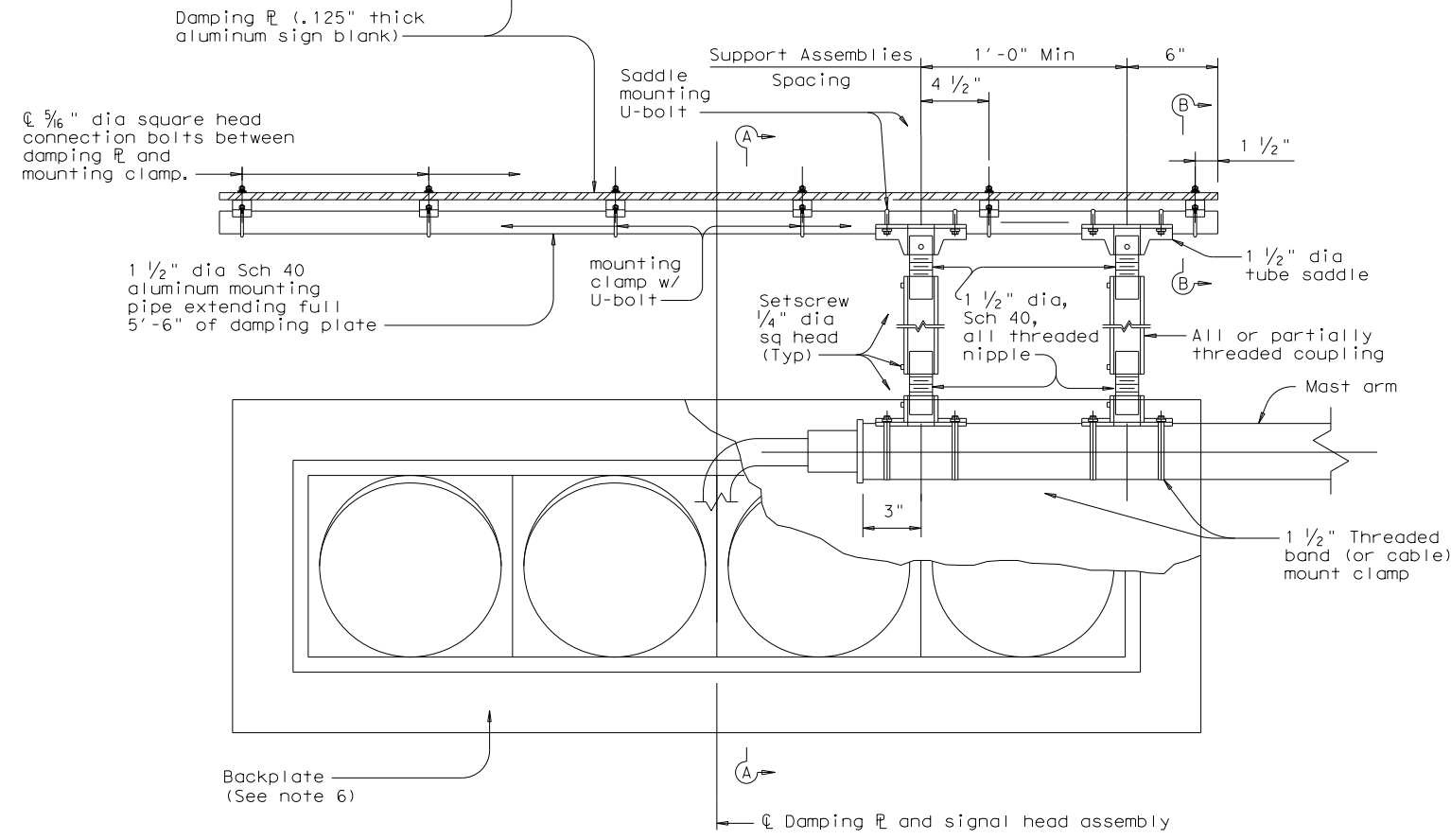
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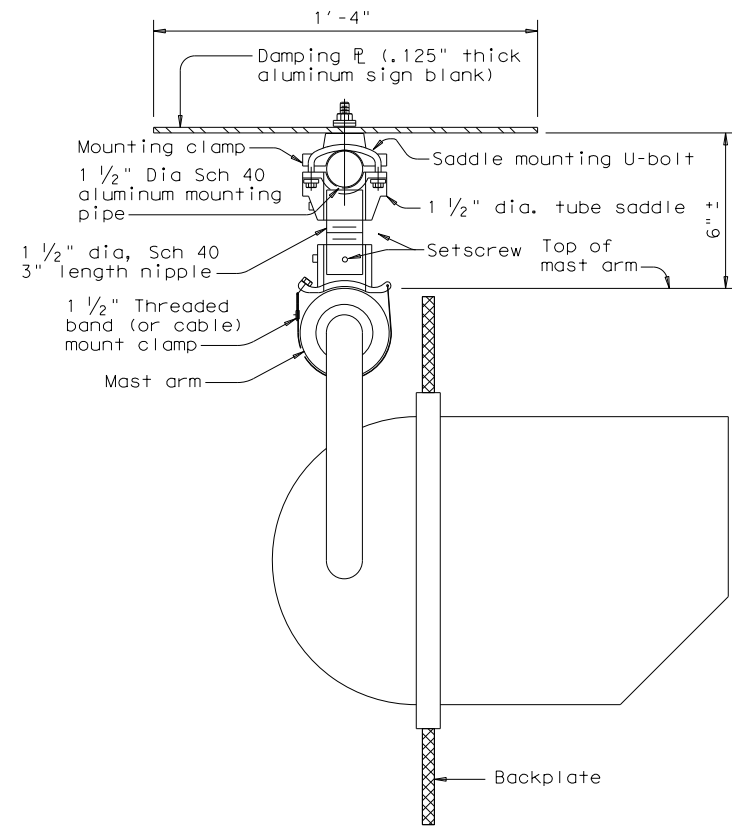


PLAN

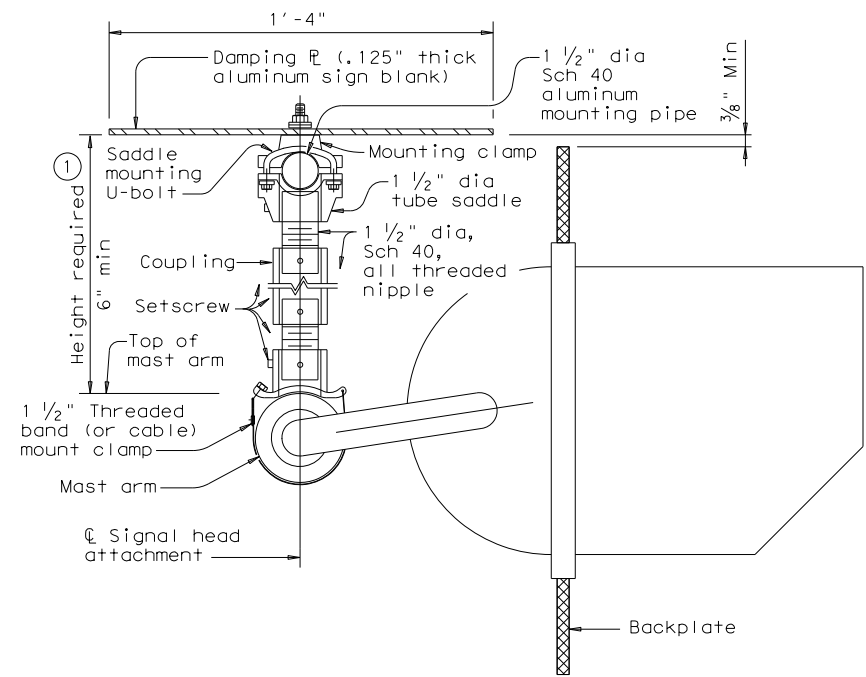


ELEVATION

DAMPING PLATE MOUNTING DETAILS
 (Showing alternate placement of signal head)



SECTION A-A
 (Showing standard placement of signal head)
 (Mounting clamp U-bolt is not shown for clarity)



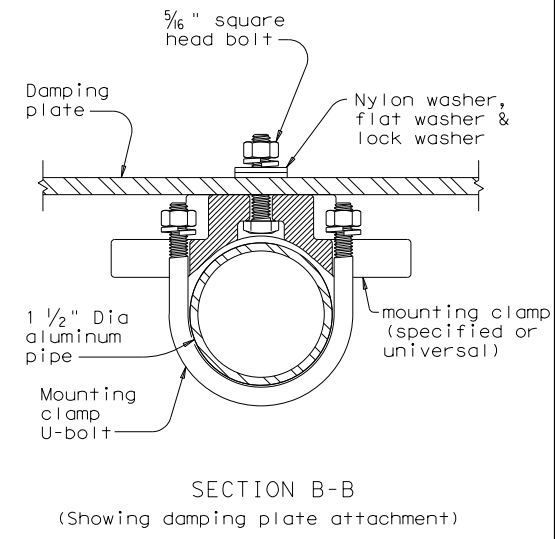
SECTION A-A
 (Showing alternate placement of signal head)
 (Mounting clamp U-bolt is not shown for clarity)

① Recommended supporting assemblies to achieve required height for horizontal section heads

Height required	One nipple each length	Two nipples each length plus One coupling each length	
6"-6 3/4"	3"	-	-
7"-8 1/2"	4"	-	-
9"-10 1/2"	6"	-	-
11"-15 1/2"	-	4"	5"
16"-24"	-	6"	10"

GENERAL NOTES:

- In accordance with the findings of TxDOT sponsored research, the installation of a damping plate in accordance with the details shown here at the end of signal mast arms of SMA and DMA standard structures reduces excessive harmonic vertical vibration, and thus fatigue damage. Any deviation from these details may reduce the effectiveness of this damping device.
- Aluminum sign blank for damping plate will conform to Departmental Material Specifications DMS-7110. Materials for mast arm mounting clamp and tube saddle will be aluminum castings or aluminum alloys as in accordance with manufacturers' stipulations. Mounting pipe, pipe nipple and coupling will be aluminum alloy 6061-T6 or 6063-T6. Damping plate mounting clamp and U-bolt assemblies will conform to Standard sheet SMD(GEN). U-bolts for saddle mounting will have a minimum yield strength of 36 ksi.
- Damping plate will be mounted horizontally. Position centerline of damping plate to align with centerline of mast arm or horizontal signal head assembly. Vertical clearance between signal head (with or without backing plate) and bottom of damping plate will be maintained as shown. The attachments shown here are examples only, other supporting details which meet both alignment and vertical clearance requirements are also acceptable.
- Unless stipulated by the manufacturers, all steel parts will be galvanized finish in accordance with Standard Specification Item 445, "Galvanizing".
- Contractor will verify applicable field dimensions before the installation.
- Backplates are optional for traffic signals. When backplates are used, Backplates will have a 2-inch fluorescent yellow AASHTO Type BFL or CFL retroreflective border conforming to TxDOT DMS-8300 "Sign Face Materials." See Sheet TS-BP-20 for backplate details.



SECTION B-B
 (Showing damping plate attachment)

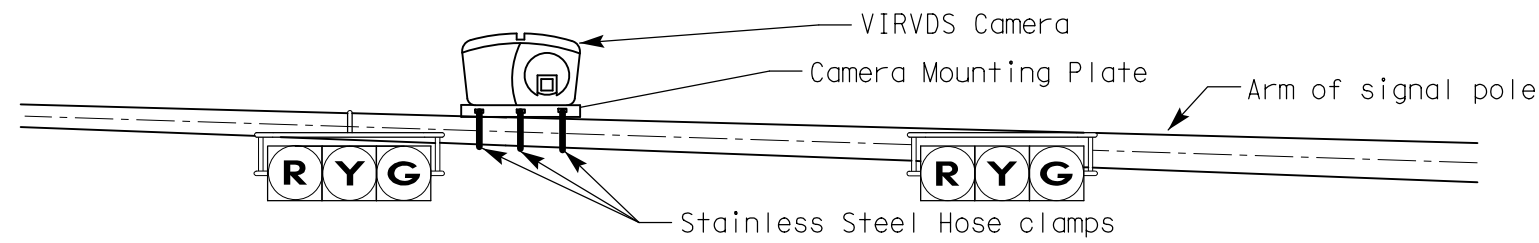
Texas Department of Transportation Traffic Safety Division Standard

MAST ARM DAMPING PLATE DETAILS

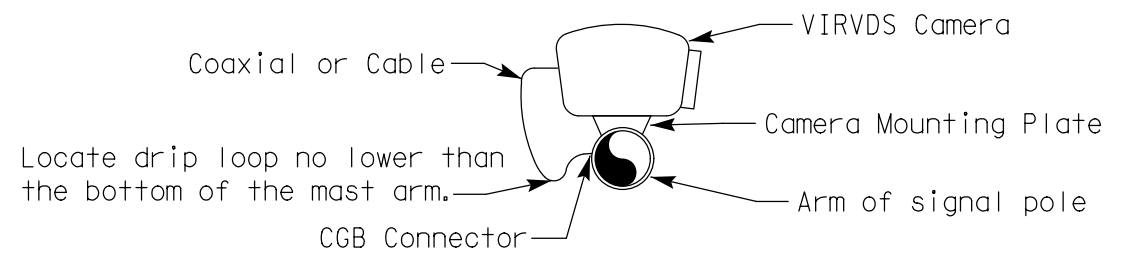
MA-DPD-20

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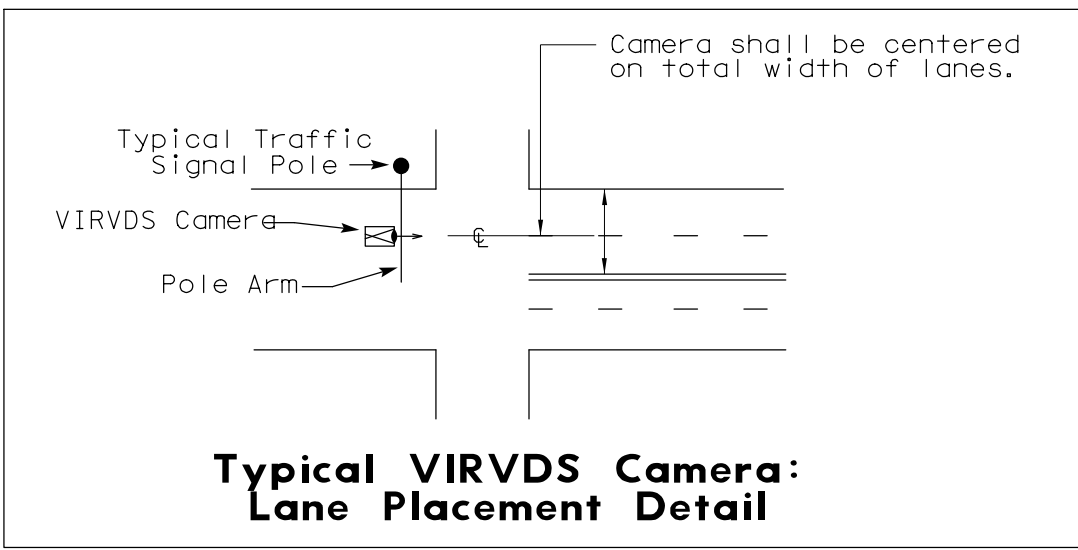
Elevation View



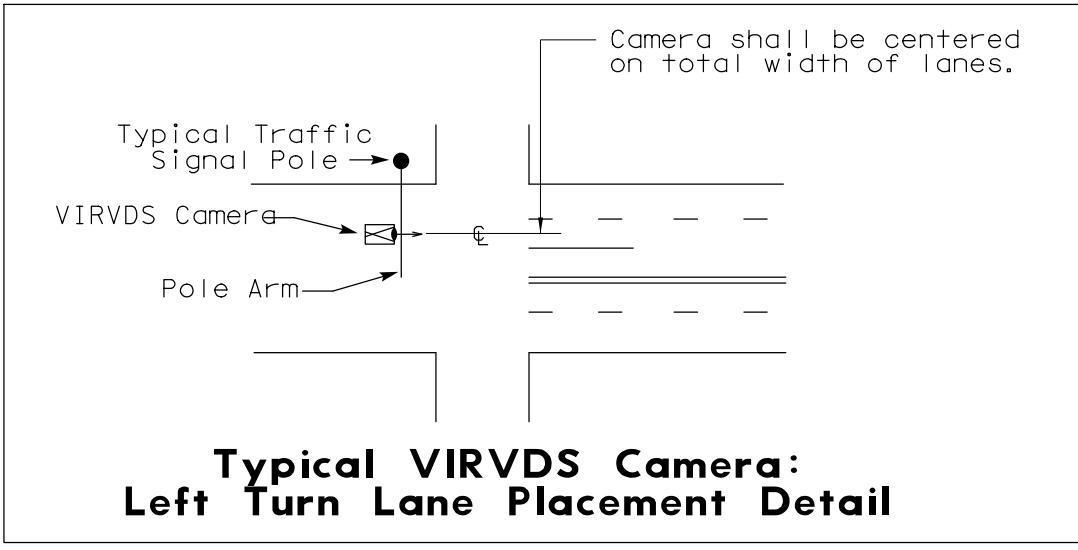
Side View

Notes:

1. INSTALL VIDEO DETECTION PROCESSOR UNIT(S) INSIDE THE CONTROLLER CABINET.
2. USE STAINLESS STEEL HOSE CLAMPS TO INSTALL CAMERA MOUNTS OR METHOD APPROVED BY ENGINEER.
3. AIM THE CAMERA SO THAT THE HORIZON IS NOT VISIBLE IN THE FIELD OF VIEW.
4. INSURE WATER TIGHT CABLE ENTRY AND EXIT POINTS ARE IN THE MAST ARM.
5. FOR THE VIRVDS CAMERAS, A 10 AMP SINGLE POLE (1P) BREAKER (BLADE TYPE FUSES WILL NOT BE ALLOWED) SHALL BE MOUNTED ON A PANEL AND INSTALLED INSIDE THE CONTROLLER CABINET. FABRICATION OF PANEL AND IT'S INSTALLATION SHALL BE AS APPROVED BY THE ENGINEER AND SHALL BE SUBSIDIARY TO PERTINENT BID ITEMS.



Typical VIRVDS Camera: Lane Placement Detail



Typical VIRVDS Camera: Left Turn Lane Placement Detail

VIDEO IMAGING AND RADAR VEHICLE DETECTION SYSTEM (VIRVDS)



Texas Department of Transportation
 Traffic Operations Division

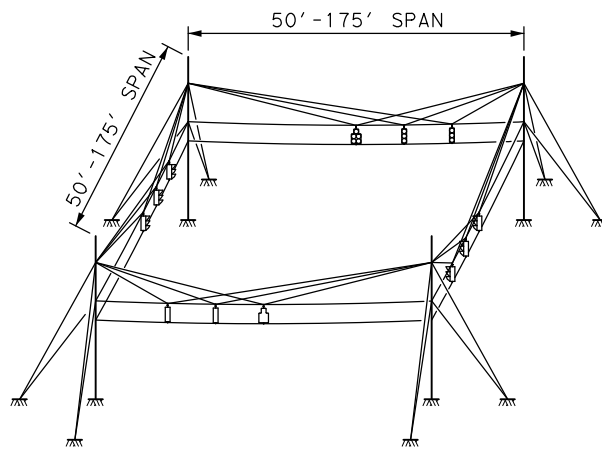
TYPICAL VIRVDS CAMERA MOUNTING DETAILS

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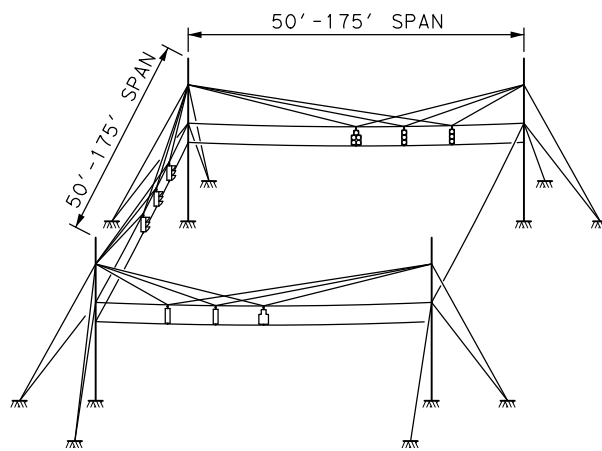
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LEVELS DISPLAYED	
1	
2	

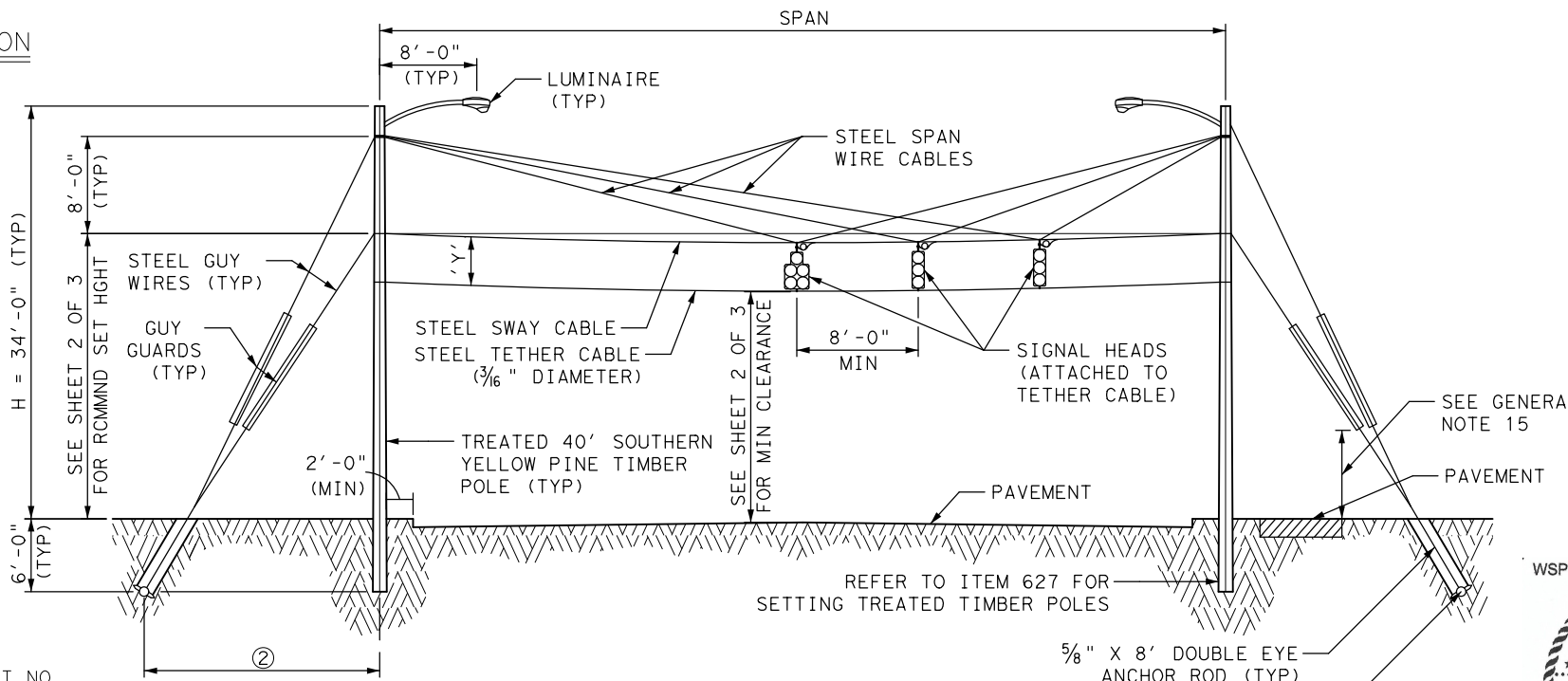


RECTANGULAR BOX CONFIGURATION



C-BOX CONFIGURATION

SIGNAL HEAD TYPE	'Y'
HORIZONTAL	1'-8" ±
VERTICAL	4'-0" ±



TYPICAL ELEVATION
 (VERTICAL SIGNALS SHOWN,
 HORIZONTAL SIGNALS SIMILAR)

DESIGN CRITERIA:

1. SIGNAL HEAD DESIGN DEAD LOADS AND WIND AREAS SHOWN IN TABLE BELOW. VALUES INCLUDE BACKPLATES.
2. DESIGN IS BASED ON ONE 5 OR 4-SECTION HEAD AND ONE OR MORE ADDITIONAL 3-SECTION HEAD(S).
3. WEIGHT OF INDIVIDUAL 3/8" CABLE IS 0.273 LB/FT AND 3/16" CABLE IS 0.080 LB/FT.
4. WEIGHT OF SWAY CABLE IS ASSUMED TO BE 0.65 LB/FT, WHICH INCLUDES AN ALLOWANCE FOR CONDUCTOR CABLE AND MISCELLANEOUS HARDWARE.
5. DESIGN WIND SPEED EQUALS 80 MPH PLUS A 1.3 GUST FACTOR (CURRENT AASHTO SPECIFICATIONS FOR SIGNS, LUMINAIRES AND TRAFFIC SIGNALS USE EQUIVALENT 90 MPH WITH A 1.14 GUST FACTOR).
6. IMPORTANCE FACTOR = 0.71 (10-YEAR DESIGN LIFE)
7. DESIGN WIND PRESSURE ON CABLES ARE ASSUMED AS 1.0 LB/FT.
8. DESIGN CONTAINS ALLOWANCE FOR A MAXIMUM 30 SQ. FT. OF 0.100 IN. THICK ALUMINUM SIGNS PER SPAN.
9. DESIGN CONTAINS ALLOWANCE FOR A 60 LB. LUMINAIRE HAVING AN EFFECTIVE PROJECTED AREA (ACTUAL AREA TIMES DRAG COEFFICIENT) OF 1.6 SQ. FT.
10. DESIGN ICE LOAD OF 3 PSF IS CONSIDERED AROUND SURFACES OF SUPPORTS, WIRES, SIGNALS AND ONE FACE OF SIGN PANELS ONLY.

SIGNAL HEAD DESIGN VALUES		
SIGNAL HEAD TYPE	WT. PER HEAD	WIND AREA ♦
5-SECTION, 12" LENS	125 LBS	9.6 SQ. FT.
4-SECTION, 12" LENS	100 LBS	7.6 SQ. FT.
3-SECTION, 12" LENS	75 LBS	5.6 SQ. FT.

♦ EFFECTIVE PROJECTED DESIGN WIND AREA (ACTUAL AREA TIMES DRAG COEFFICIENT)

MATERIALS	
TIMBER POLE	ANSI CLASS 2 TREATED TIMBER POLE
STEEL CABLE	ASTM A475, 7 WIRE, UTILITIES GRADE, GALVANIZED, 3/8" DIAMETER EXCEPT AS NOTED
SIGNAL HEADS	POLYCARBONATE HOUSING & LENS, LED LAMP WITH 12" LENS

SHIPPING PARTS LIST		
DESCRIPTION	QUANTITY	UNIT
40' TIMBER POLE ①		EA
3/8" STEEL CABLE		FT
3/16" STEEL CABLE		FT
8' LUMINAIRE ARM		EA

① SHIP EACH POLE WITH THE FOLLOWING: A BARE #6 AWG (AMERICAN WIRE GAUGE) COPPER ELECTRICAL CONDUCTOR FROM THE TOP OF THE POLE TO THE BUTT WRAP OR COPPER BUTT PLATE, PROTECTIVE ELECTRICAL CONDUCTOR TO A HEIGHT OF 8 FT. ABOVE FINISHED GRADE, BRANDING OF SUPPLIER, PLANT, SPECIES, PRESERVATIVE CODE & CLASS LENGTH 2 CLAMP-ON SIMPLEX. FOR A PROJECT REQUIRING 10 POLES OR LESS, THE CONTRACTOR MAY PURCHASE POLES LOCALLY IF SOURCE AND TREATMENT ARE DOCUMENTED.

GENERAL NOTES:

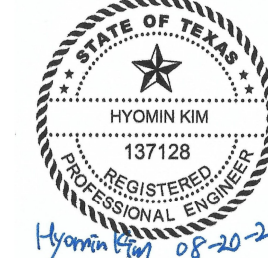
1. DESIGN CONFORMS TO AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 5TH EDITION.
2. THIS STANDARD IS ONLY APPLICABLE FOR RECTANGULAR OR C-BOX CONFIGURATIONS (AS SHOWN) WITH SPAN LENGTHS RANGING FROM 50' TO 175' IN EITHER DIRECTION.
3. FOR CONSTRUCTION REQUIREMENTS AND SEQUENCING, SEE SHEET 2 OF 3.
4. FOR ELECTRICAL AND MISCELLANEOUS DETAILS, SEE SHEET 3 OF 3.
5. SEE LAYOUT FOR LOCATIONS OF SIGNALS, SIGNS AND LUMINAIRES.
6. MINIMUM ALLOWABLE SOIL STRENGTH IS 20 BLOWS/12" PER THE TEXAS CONE PENETRATION TEST (TCP).
7. SEE SHEET 3 OF 3 FOR LUMINAIRE ARM AND CONNECTION DETAILS.
8. TEMPORARY TRAFFIC SIGNALS SHALL BE PAID FOR AND IN ACCORDANCE WITH ITEM 681.
9. ZINC-COATED STEEL WIRE STRAND SHALL BE IN ACCORDANCE WITH ITEM 625.
10. TREATED TIMBER POLES SHALL BE IN ACCORDANCE WITH ITEM 627. FOR A PROJECT REQUIRING 10 POLES OR LESS, CONTRACTOR MAY PURCHASE LOCAL POLES IF SOURCE AND TREATMENT ARE DOCUMENTED.
11. VEHICLE AND PEDESTRIAN SIGNAL HEADS SHALL BE IN ACCORDANCE WITH ITEM 682.
12. TRAFFIC SIGNAL CABLES SHALL BE IN ACCORDANCE WITH ITEM 684.
13. CONTRACTOR SHALL NOT INSTALL ANY SPAN WIRE, SWAY, OR GUY WIRE CABLES AROUND EXISTING AERIAL UTILITIES. CLEARANCE SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF THE NATIONAL ELECTRIC CODE (NEC).
14. IF PEDESTRIAN ACCOMMODATIONS ARE TO BE INSTALLED, PEDESTRIAN SIGNAL HEADS AND PUSH BUTTONS SHOULD BE INSTALLED ON SEPARATE PEDESTAL POLES.
15. A MINIMUM 8' VERTICAL CLEARANCE SHALL BE PROVIDED BETWEEN SIDEWALK AND GUY WIRE. THE CLOSEST GUY WIRE TO THE SIDEWALK SHALL HAVE YELLOW PLASTIC TUBING.
16. DRILLED HOLE DIAMETER SHALL BE 18" MINIMUM OR A MINIMUM HOLE SIZE EQUAL TO THE POLE BUTT DIAMETER PLUS 8".
17. FILL MATERIAL SHALL BE TAMPED IN 6" LIFTS. A GRADE 7 OR 8 CONCRETE AGGREGATE OR DRILL CUTTINGS (IF GRANULAR AND NOT LARGER THAN 3/4") MAY BE USED AS FILL.

EXPANDING ANCHOR NOTES:

1. HOLE SHALL BE DRILLED AT AN ANGLE INLINE WITH THE GUY (45° TO 60° TYPICAL).
2. OTHER ANCHOR TYPES (DISC OR SCREW TYPE) MAY BE USED WITH ENGINEER'S APPROVAL.
3. HOLE SIZE SHALL BE SLIGHTLY LARGER THAN THE UNEXPANDED ANCHOR, PER MANUFACTURER'S SPECIFICATIONS.
4. ALL ANCHORS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL BLADES SHALL BE WEDGED INTO UNDISTURBED SOIL.
5. FOLLOWING INSTALLATION OF THE ANCHOR AND ANCHOR ROD, BACKFILL HOLE AND THOROUGHLY TAMP.

SHEET 1 OF 3

WSP USA Inc TBPE #F-2263



Texas Department of Transportation
 Fort Worth District

TRAFFIC SIGNAL
 SUPPORT STRUCTURES
 TIMBER POLE ASSEMBLIES
 (80 MPH WIND ZONE)
 TP-80(1)-12 (FTW)

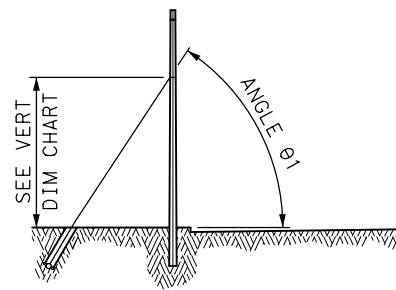
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© TxDOT	SEPTEMBER 2012	CONT	SECT	JOB	HIGHWAY				
REVISIONS	0887	01	Q39, ETC.	VARIOUS					
	DIST	COUNTY	SHEET NO.						
	ODA	ECTOR, ETC.	278						

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 FILE: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\A

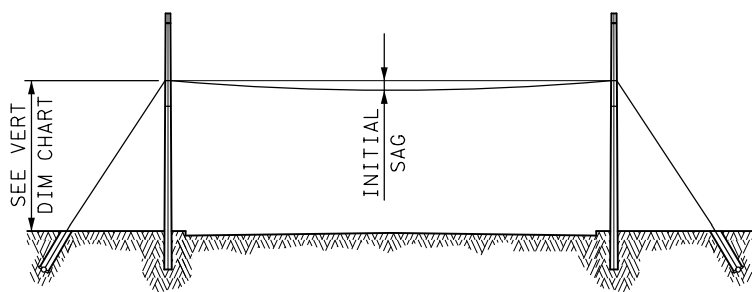
LEVELS DISPLAYED
1
2

CONSTRUCTION REQUIREMENTS AND SEQUENCING



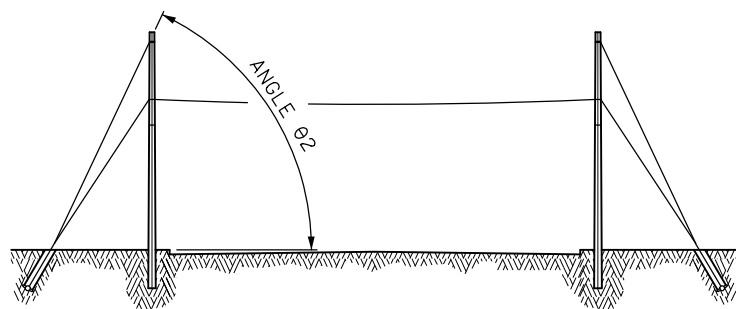
STEP 1 - SET POLE & STRESS LOWER GUY WIRE

- STEP 1 NOTES:
1. CONSTRUCTION MAY PROCEED IN ONLY ONE DIRECTION AT A TIME.
 2. SET THE POLES PLUMB AND THE EXPANDING ANCHORS PER MANUFACTURER'S RECOMMENDATIONS.
 3. BACKFILL HOLES FOR ANCHOR, ANCHOR ROD & POLES PER ITEM 627.
 4. STRESS LOWER GUY WIRE TO:
 INITIAL TENSION = 500 LB / COS θ_1 ②



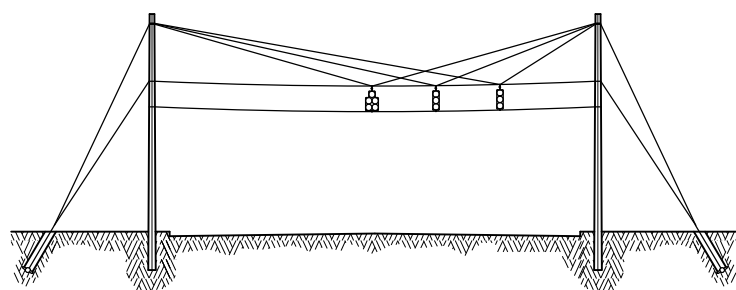
STEP 2 - STRESS SWAY CABLE

- STEP 2 NOTES:
1. INSTALL AND STRESS THE STEEL SWAY CABLE PER THE INITIAL SWAY CABLE PROFILE CHART.
 2. INITIAL SAG IS THE MAXIMUM DISTANCE BETWEEN THE SWAY CABLE AND A STRAIGHT LINE BETWEEN THE SUPPORT POINTS ON THE TIMBER POLES.
 3. INITIAL SAG REQUIREMENTS DO NOT ACCOUNT FOR WEIGHT OF CONDUCTOR CABLE. CONDUCTOR CABLE IS TO BE ATTACHED IN STEP 4.
 4. THIS IS THE FINAL STEP FOR THE OPEN END (SPAN WITHOUT SIGNALS) IN THE C-BOX CONFIGURATION.



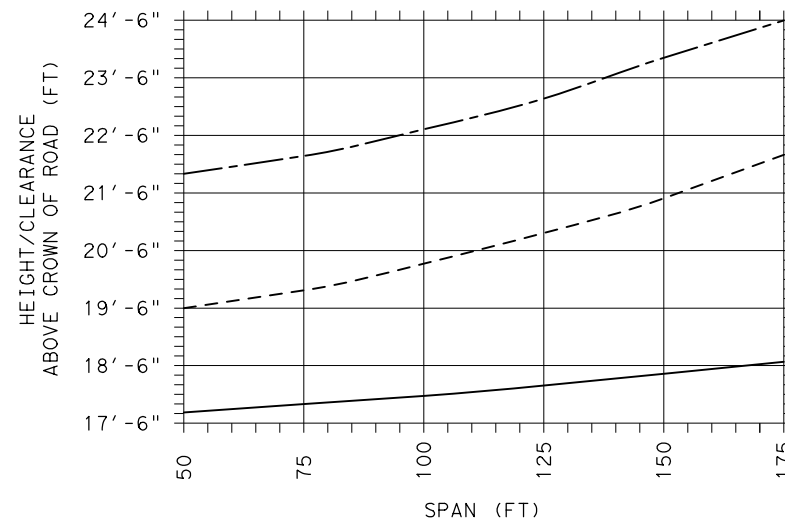
STEP 3 - STRESS UPPER GUY WIRE

- STEP 3 NOTES:
1. INSTALL THE UPPER STEEL GUY WIRE. CONNECT TO ANCHOR ROD FROM STEP 1.
 2. DETERMINE HORIZONTAL COMPONENT OF STRESSING FORCE BASED ON THE SPAN LENGTH AND THE NUMBER OF SIGNAL HEADS FROM UPPER GUY WIRE INITIAL TENSION CHART.
 3. STRESS UPPER GUY WIRE TO:
 INITIAL TENSION = HORIZ COMPONENT / COS θ_2 ③



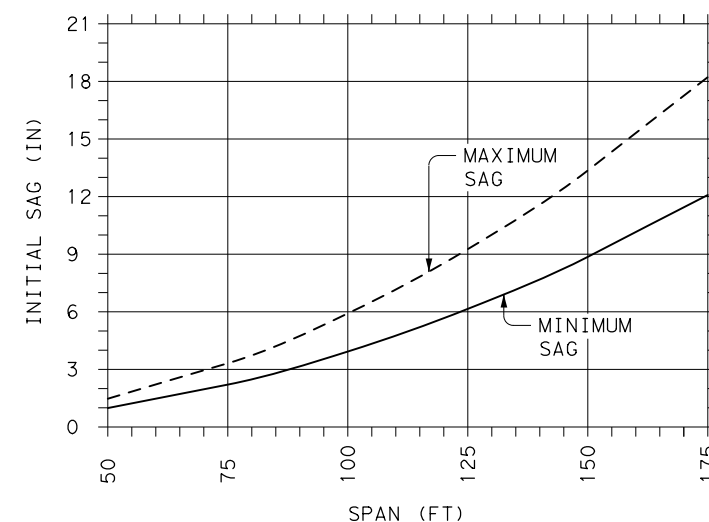
STEP 4 - INSTALL SIGNAL HEADS & ATTACHMENTS

- STEP 4 NOTES:
1. ATTACH SIGNAL HEADS TO STEEL SWAY CABLE.
 2. INSTALL STEEL SPAN WIRE CABLES AND SIGNALS. STRESS SPAN WIRE CABLES UNTIL THE SIGNALS CAN BE ATTACHED TO SWAY CABLE AND NOT CAUSE DEFLECTION IN THE SWAY CABLE FROM THE WEIGHT OF THE SIGNAL HEADS.
 3. FOLLOWING THE STRESSING OF ALL SPAN WIRE CABLES, CONSTRUCTION MAY PROCEED IN THE PERPENDICULAR DIRECTION OR PROCEED WITH THE INSTALLATION OF THE TETHER CABLE, CONDUCTOR CABLE AND ALL OTHER ATTACHMENTS.
 4. VERIFY MINIMUM FINAL CLEARANCE AFTER ALL ATTACHMENTS.



VERTICAL DIMENSIONS

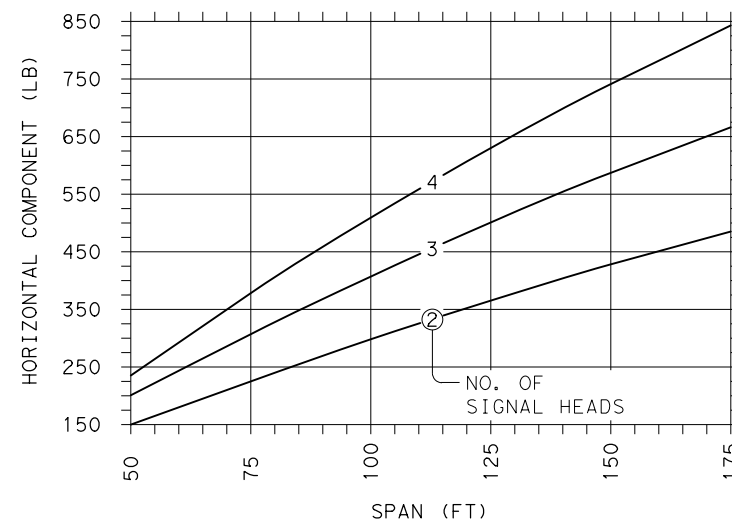
- RECOMMENDED HEIGHT OF SWAY CABLE SUPPORT W/ VERTICAL SIGNALS ①
 - - - RECOMMENDED HEIGHT OF SWAY CABLE SUPPORT W/ HORIZONTAL SIGNALS ①
 - MINIMUM FINAL CLEARANCE AFTER ALL ATTACHMENTS ②
- ① RECOMMENDED HEIGHT DOES NOT ACCOUNT FOR INTERSECTION OR SITE GRADING AND ADJUSTMENTS MAY BE NECESSARY. CONTRACTOR MUST VERIFY THAT THE MINIMUM FINAL CLEARANCE BETWEEN THE PAVEMENT AND SIGNAL HEAD OR TETHER CABLE IS SATISFIED.
- ② FINAL CLEARANCE ALLOWS DEFLECTION DUE TO ICE LOADING.



SWAY CABLE PROFILE

- - - TENSION = 700 LB ③
 - TENSION = 1,050 LB
- ③ TENSIONS SHOWN ARE CABLE FORCES AND DO NOT ACCOUNT FOR FRICTION IN EQUIPMENT DURING STRESSING OPERATIONS.

- NOTES:
1. SEE SHEET 1 OF 3 FOR GENERAL NOTES.
 2. MINIMUM ALLOWABLE SOIL STRENGTH IS 20 BLOWS/12" PER THE TEXAS CONE PENETRATION TEST (TCP).



UPPER GUY WIRE INITIAL TENSION



SHEET 2 OF 3

Texas Department of Transportation
 Fort Worth District

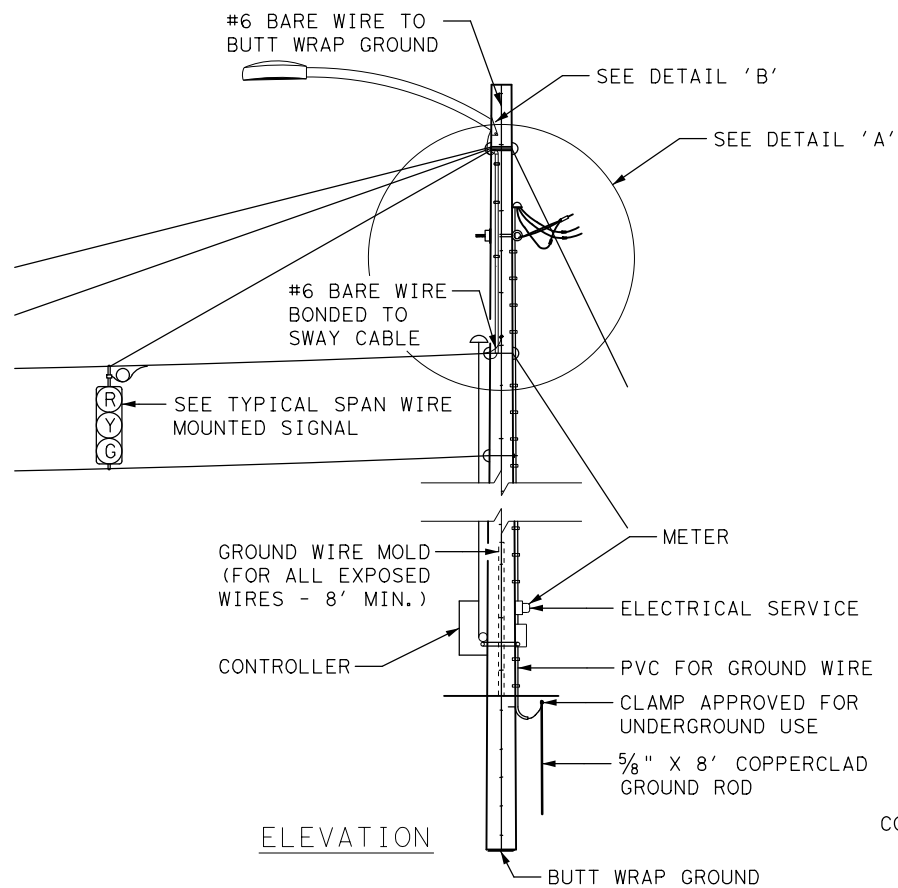
TRAFFIC SIGNAL
 SUPPORT STRUCTURES
 TIMBER POLE ASSEMBLIES
 (80 MPH WIND ZONE)
 TP-80(2)-12 (FTW)

FILE#	TP80.DGN	DN#	JDS	CK#	RSW	DW#	JDS	CK#	RSW
© TxDOT	SEPTEMBER 2012	CONT	SECT	JOB	HIGHWAY				
REVISIONS	0887	01	Q39, ETC.	VARIOUS					
	DIST	COUNTY	SHEET NO.						
	ODA	ECTOR, ETC.	279						

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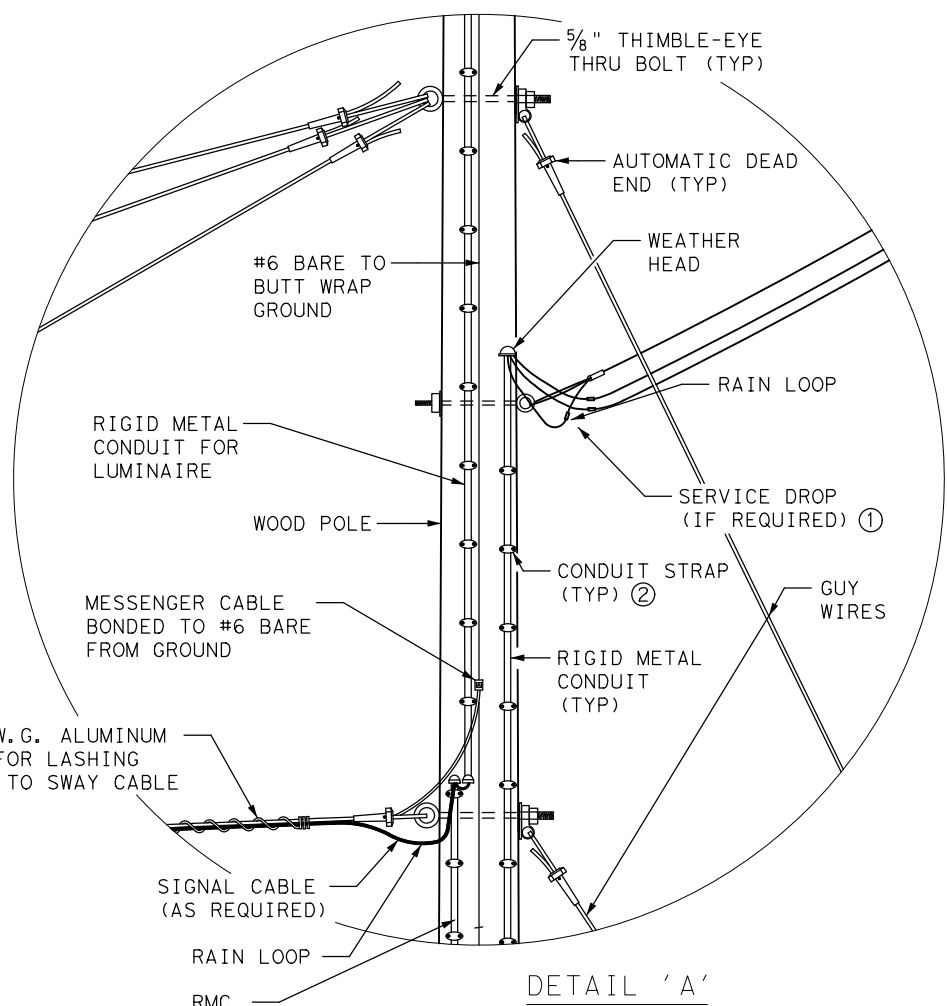
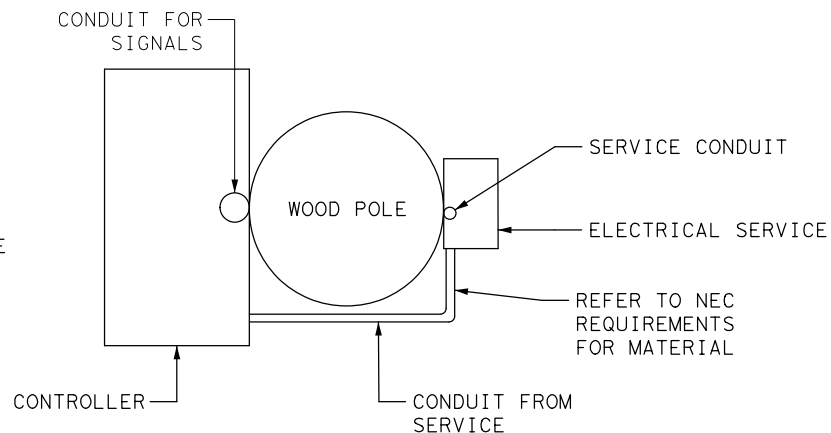
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LEVELS DISPLAYED
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2

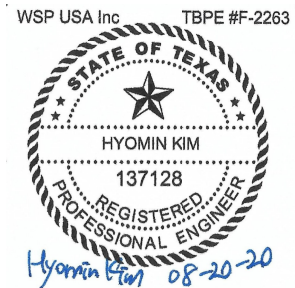


ELECTRICAL NOTES:

1. ALL CONDUITS SHOWN ARE TYPICAL. CONDUIT SIZES MAY VARY. REFER TO THE LAYOUT FOR ACTUAL SIZES.
2. SEE LAYOUT FOR CONDUCTOR SIZE.
3. ALL UNDERGROUND CONDUIT SHALL BE A MINIMUM OF 2' BELOW GROUND LEVEL.
4. ALL CONDUITS SHALL BE SEALED.
5. SERVICE WIRING SHALL BE XHHW. GROUNDING TYPE INSULATED BUSHINGS SHALL BE INSTALLED ON EVERY CONDUIT ENTERING SERVICE ENCLOSURE.
6. ALL CONDUIT ATTACHED TO THE WOOD POLE SHALL BE RIGID METAL CONDUIT (RMC).
7. CONDUIT SHALL NOT ENTER CABINET FROM THE TOP.



- ① SERVICE DROP POINT MIN. 6" BELOW WEATHER HEAD
- ② CONDUIT STRAPS SPACED MAX. 5' ON CENTER
- ③ ALL SPAN WIRE AND SWAY CABLES SHALL BE BONDED TOGETHER AT EACH POLE AND TO THE #6 BARE WIRE (BUTT WRAP) AT EACH POLE



SHEET 3 OF 3

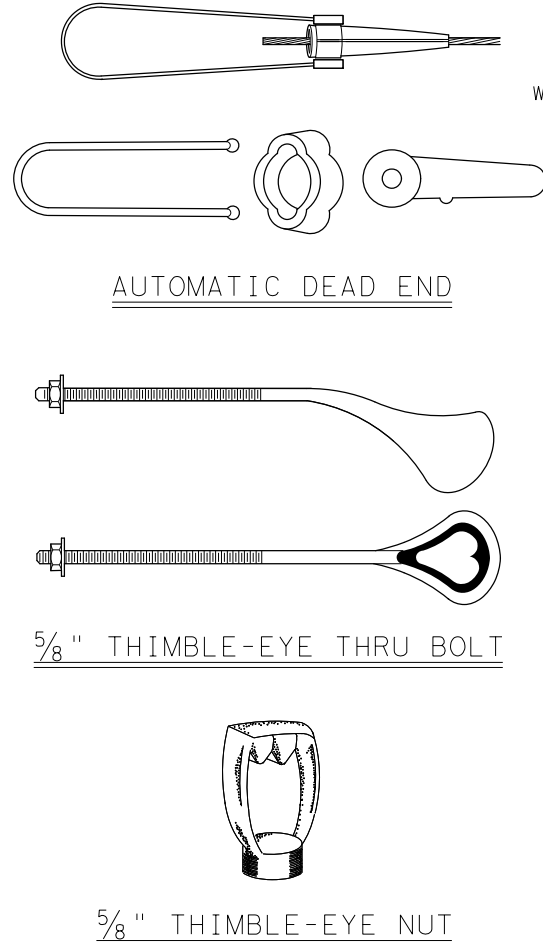
Texas Department of Transportation
 Fort Worth District

**TRAFFIC SIGNAL SUPPORT STRUCTURES
 TIMBER POLE ASSEMBLIES**
 (80 MPH WIND ZONE)
 TP-80(3)-12 (FTW)

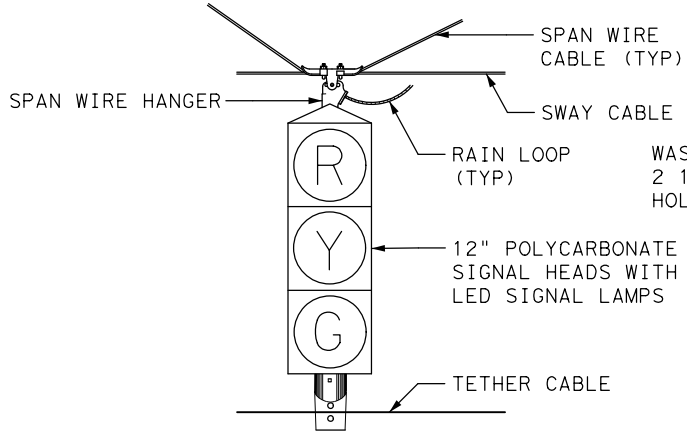
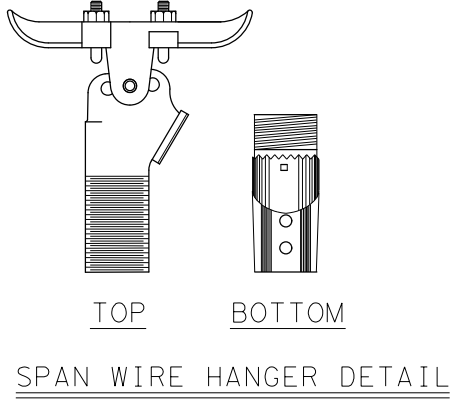
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REVISONS		0887	01	Q39, ETC.	VARIOUS				
		DIST	COUNTY		SHEET NO.				
		ODA	ECTOR, ETC.		280				

NOTES:

1. SEE SHEET 1 OF 3 FOR GENERAL NOTES.



POLE MOUNTED SERVICE
 (CONTRACTOR SHALL ATTACH SERVICE ENCLOSURE WITH GALVANIZED CHANNEL. GAIN POLE IN TWO PLACES TO PROVIDE FLAT SURFACES. REFER TO ED(4)-03)



BOLT, MACHINE
 5/8 X 10 IN.
 GALVANIZED STEEL

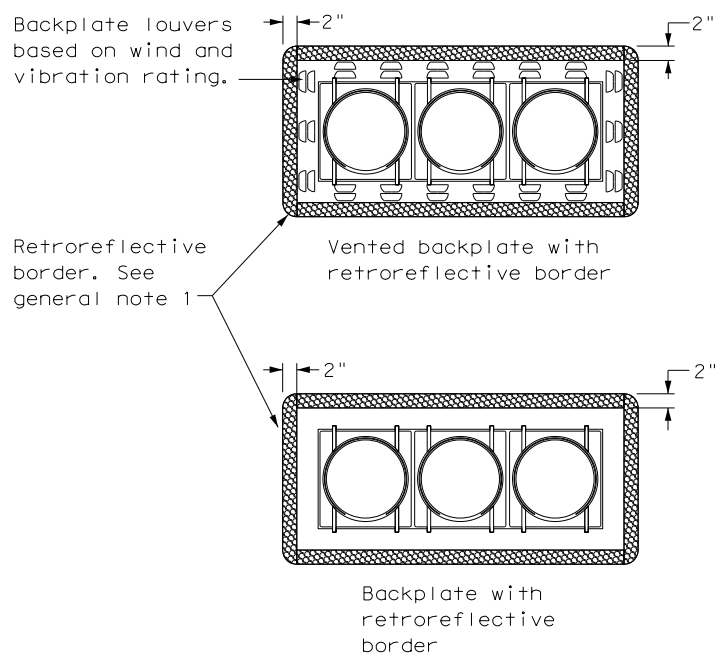
WASHER, DOUBLE COIL
 5/8 IN.
 GALVANIZED STEEL

WASHER, SQUARE
 2 1/4 X 13/16 IN.
 HOLE

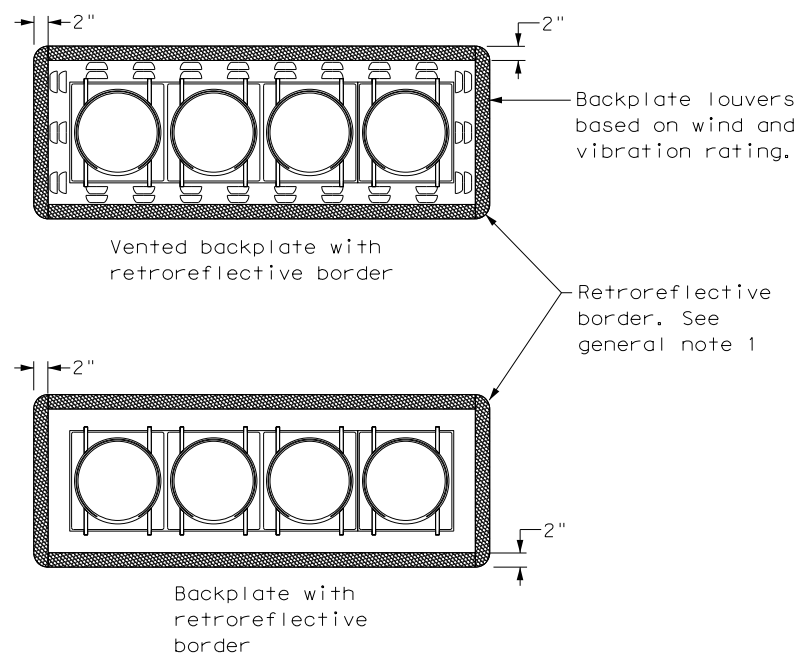
- ① 4 - 1/2" x 1 1/4" BRACKET MOUNTING BOLTS SUPPLIED WITH POLE (2 BOLTS PER POSITION).
- ② ARM HAS HOLE WITH 1/2" RUBBER GROMMET FOR CONDUCTOR ENTRY WHEN SERVED OVERHEAD.
- ③ ARM WILL ACCOMMODATE OVERHEAD OR UNDERGROUND FEEDS

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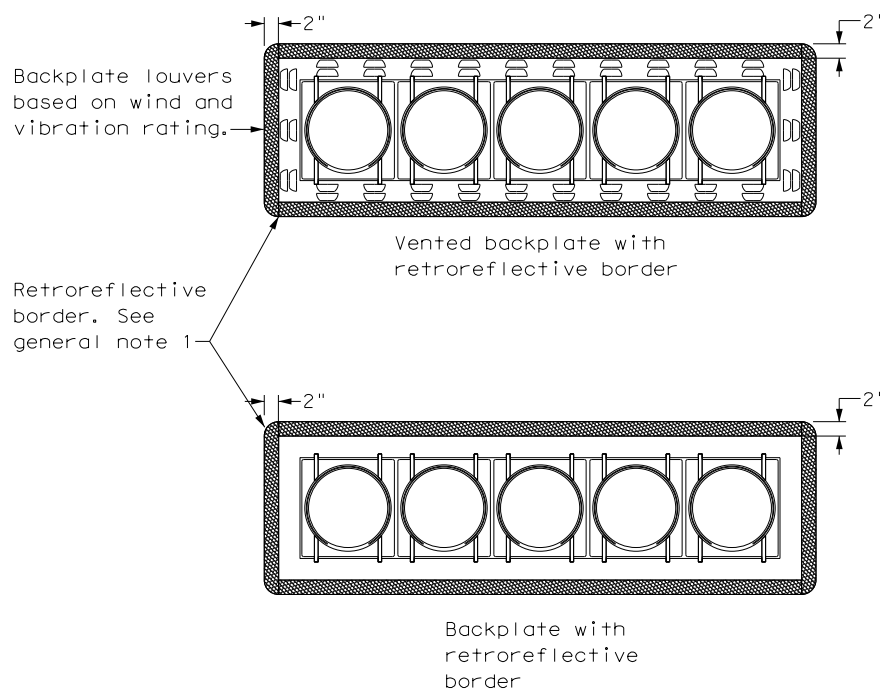
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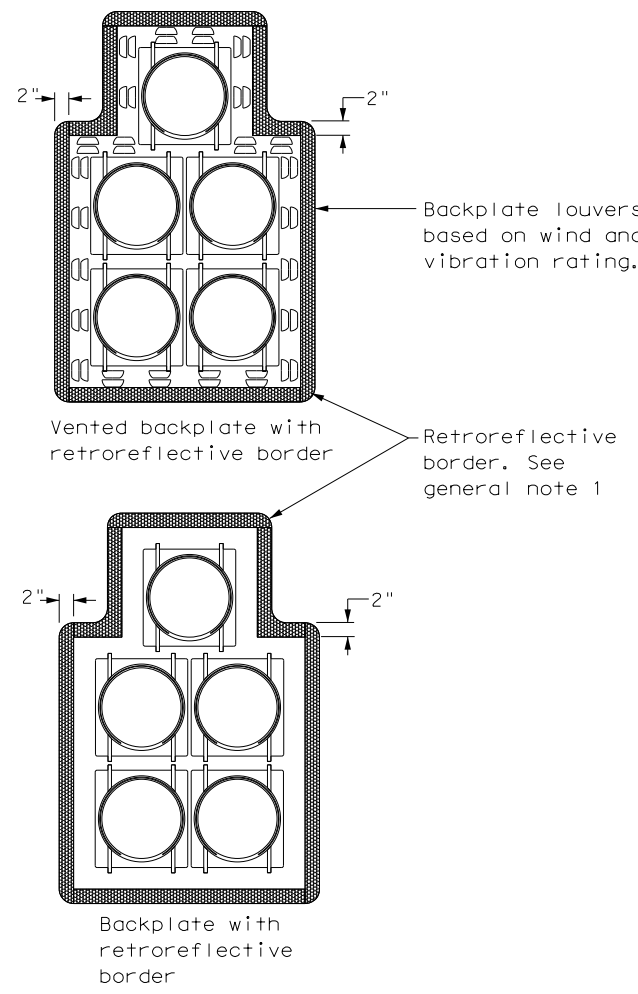
THREE-SECTION HEAD
 HORIZONTAL OR VERTICAL



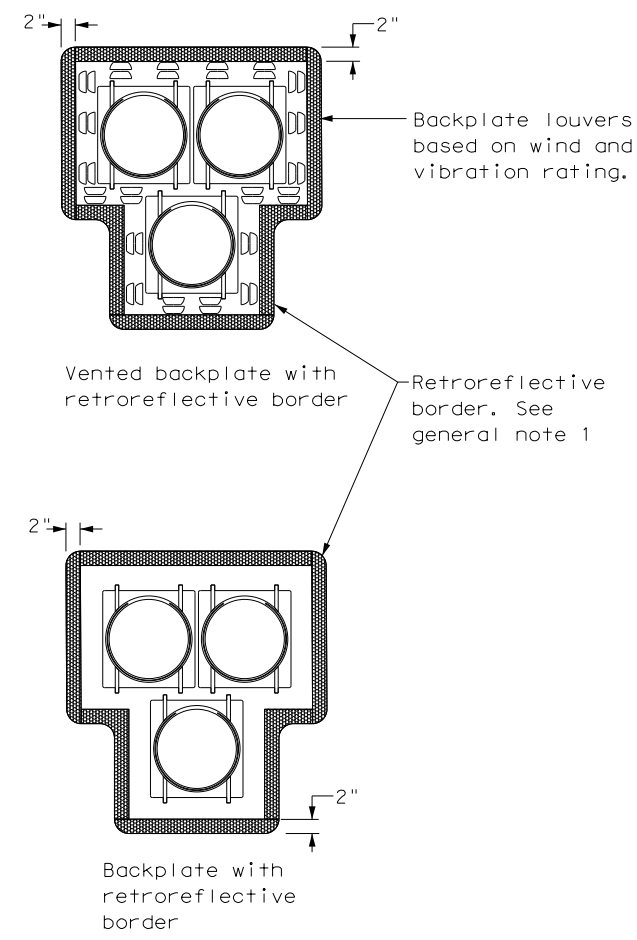
FOUR-SECTION HEAD
 HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
 HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
 CLUSTER



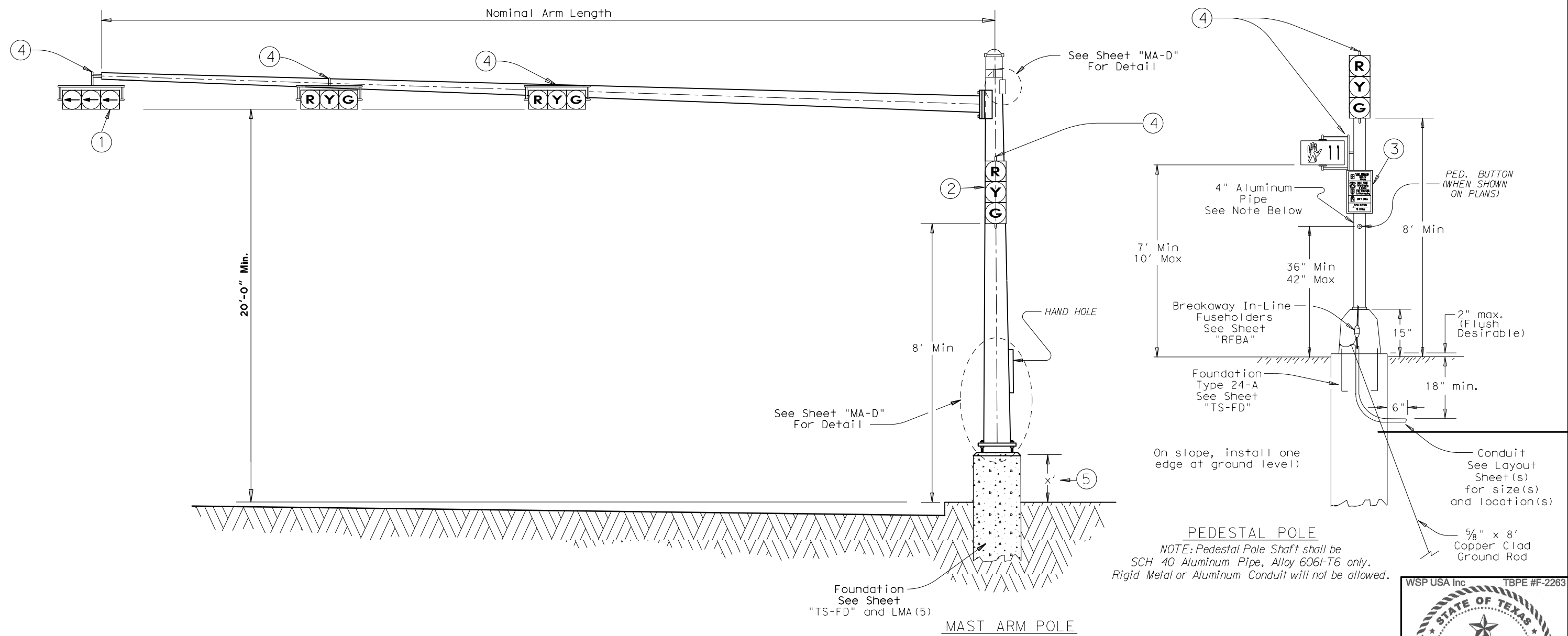
PEDESTRIAN HYBRID
 BEACON

GENERAL NOTES:

1. Backplates are optional for traffic signals and pedestrian hybrid beacons. When backplates are used, a 2-inch wide fluorescent yellow AASHTO Type B_{FL} or C_{FL} retroreflective border conforming to TxDOT DMS-8300 is required. Place on all approaches when used.
2. Signal head and backplate compatibility must be verified by the contractor prior to installation.
3. When using backplates on signal heads, venting is preferred to reduce cyclic vibration stress.
4. When a vented backplate is used, the retroreflective border must not be placed over the louvers.
5. This standard sheet applies to all signal heads with backplates, including but not limited to:
 - Pole mounted
 - Overhead mounted
 - Span wire mounted
 - Mast arm mounted
 - Vertical signal heads
 - Horizontal signal heads
 - Clustered signal heads
 - Pedestrian hybrid beacons

		Texas Department of Transportation		Traffic Safety Division Standard	
<h2>TRAFFIC SIGNAL HEAD WITH BACKPLATE</h2> <h3>TS-BP-20</h3>					
FILE: ts-bp-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
© TxDOT June 2020	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0887	01	039, ETC.	VARIOUS	
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	ODA	ECTOR, ETC.		281	

DATE: 8/19/2020
 FILE: pw:\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan_Sets\8. Traffic\Signal\Signal\TXDOT



PEDESTAL POLE
 NOTE: Pedestal Pole Shaft shall be SCH 40 Aluminum Pipe, Alloy 6061-T6 only. Rigid Metal or Aluminum Conduit will not be allowed.



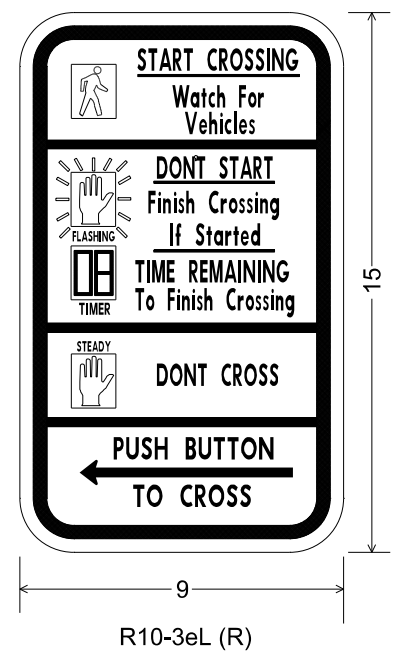
- NOTES :**
- ① RED, RED, YELLOW, AND GREEN ARROW INDICATIONS TO BE USED AS SHOWN ON PROPOSED SIGNAL LAYOUT SHEET.
 - ② VERTICALLY MOUNTED HEADS (TYPE V3) WILL BE REQUIRED WHEN SHOWN ON PLANS.
 - ③ SIGN R10-3eR or R10-3eL SIGNS REQUIRED WHEN PED. BUTTONS ARE USED. 0.080" (MIN) AL SIGN BLANK:
- R10-3eL (R)
- ④ ASTRO BRACKET ASSEMBLY OR APPROVED EQUAL SHALL BE REQUIRED.
 - ⑤ PROVIDE ADDITIONAL DRILLED SHAFT ABOVE GRADE TO ACCOMMODATE VERTICAL CLEARANCE. SEE TSFD AND LMA (5) FOR QUANTITIES FOR EACH POLE.

GENERAL NOTES :

DETAILS OF POLES, HEADS, AND MOUNTING BRACKETS SHOWN ON THIS SHEET ARE EXAMPLES ONLY. SEE SIGNAL LAYOUT SHEET(S) AND APPLICABLE SMA-80, DMA-80, MA-C, OR MA-D STANDARDS FOR THE ACTUAL DESIGN AND CONSTRUCTION OF MAST ARM POLES.

FACES WITH TUNNEL VISORS ON SIGNAL SECTIONS, AND FURNISH PEDESTRIAN SIGNAL SECTIONS WITH A THREE SIDED VISOR SHIELDING THE TOP AND SIDES.

FURNISH PEDESTRIAN COUNTDOWN SIGNALS WITH A SOLID HAND AND A SOLID MAN SYMBOL INDICATIONS IN ONE SECTION AND THE COUNTDOWN IN THE OTHER SECTION. BOTH SECTIONS SHALL BE HOUSED IN ONE UNIT.



Texas Department of Transportation
 Traffic Operations Division

SIGNAL HEAD & SIGNAL POLE DETAIL SHEET

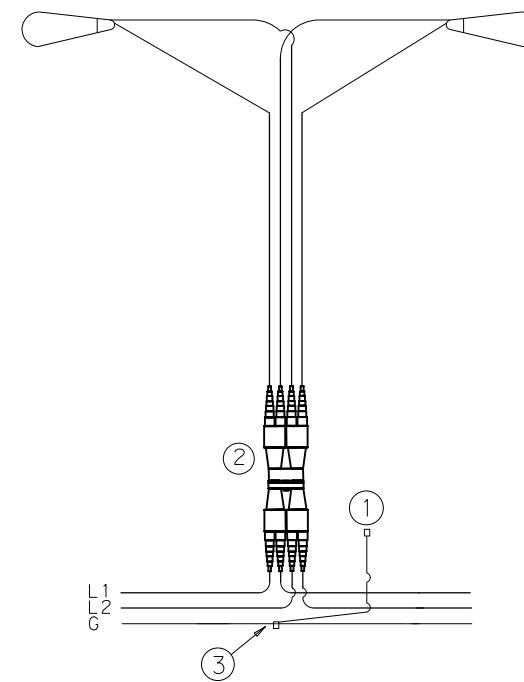
© TXDOT		DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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ROADWAY ILLUMINATION ASSEMBLY NOTES

1. Details apply to roadway lighting installations bid or referenced under Item 610, "Roadway Illumination Assemblies." Provide, furnish, and install all other materials not shown on the plans which may be necessary for complete and proper construction. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the State such warranties or guarantees.
2. The locations of poles and fixtures may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.
3. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association, Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection.
4. Provide Roadway Illumination Light Fixtures as per TxDOT Departmental Material Specification (DMS) 11010, Item 610, and as shown on the Material Producers List (MPL) for Roadway Illumination and Electrical Supplies.
5. Fabricate steel roadway illumination poles in accordance with Roadway Illumination Poles (RIP) standards and Item 610. Poles fabricated according to RIP standards do not require shop drawing submittals.
 - a. Alternate designs to RIP standards or the use of aluminum to fabricate poles will require the submission of shop drawings electronically. For instructions on submitting shop drawings electronically see "Guide to Electronic Shop Drawing Submittal" on the TxDOT web site.
 - b. Limitations on use of the RIP standard: The RIP standard details were developed for installations in locations where the 3-second gust basic maximum wind speed is 110 mph, and where the elevation of the base of the pole is less than (i.e. not more than) 25' above the elevation of the surrounding terrain, in accordance with the "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," 4th Edition (2001) (AASHTO Design Specifications). For poles to be installed in regions where the maximum basic wind speed exceeds 110 mph or to be mounted more than 25' above the surrounding terrain, provide poles meeting the following requirements:
 - i. Submittals. Following the electronic shop drawing submittal process (see Guide to Electronic Shop Drawing Submittal on the TxDOT web site), submit to the Engineer for approval fabrication drawings and calculations for the poles, sealed by a Texas licensed professional engineer (P.E.).
 - ii. Luminaire Structural Support Requirements. Provide light poles, arms, and anchor bolt assemblies with a 25 year design life to safely resist dead loads, ice loads and the required basic wind speeds at the location of installation in accordance with the 6th edition (2013) of the AASHTO Design Specifications. For transformer base poles, include transformer base and connecting hardware in calculations and shop drawing submittals. Structurally test all transformer bases to resist the theoretical plastic moment capacity of the pole. Submit certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished with the shop drawings. Show breakaway base model number, manufacturer's name, and logo on shop drawings. Include on manufacturer's shop drawings the ASTM designations for all materials to be used.
6. For both transformer and shoe-base type illumination poles, provide and install double-pole breakaway fuse holders as specified by DMS-11040. Breakaway fuse holders are listed on the MPL for Roadway Illumination and Electrical Supplies under Items 610 & 620. Provide 10 amp time delay fuses for breakaway connectors in light poles, or inside the light fixture for underpass luminaires. In each pole, connect luminaires to the breakaway connector with continuous stranded 12 AWG copper conductors as listed on the MPL. Bond all equipment grounding conductors together and to the ground lug in the transformer base or hand hole.
7. Tighten anchor bolts for shoe base, concrete traffic barrier base, and bridge mount roadway illumination poles, in accordance with Item 449.
8. Install T-Base with following procedure:
 - a. Anchor Bolt Tightening.
 - i. Coat the threads of the anchor bolts with electrically conductive lubricant.
 - ii. Place the T-base over the anchor bolts. Foundation must be level and flat. The maximum permissible gap under any one corner of the T-base is 1/8" before nuts are tightened.
 - iii. Coat the bearing surfaces of the nuts and washers with electrically conductive lubricant. Install (1) 1/2" hold down washer, (1) lock washer, and (1) nut on each anchor bolt. Turn the nuts onto the bolts so that each is hand-tight against the washer.
 - iv. Using a torque wrench, tighten each nut to 150 ft-lb. Uniform contact is required between the foundation and the T-base in the corner regions of the T-base, and all corner gaps must be closed after applying torque. If a gap still exists after torquing to 150 ft-lbs, continue torquing each bolt incrementally until gap is closed or maximum allowable torque of 250 ft. pound is reached, whichever comes first. If 250 ft-lbs is not enough to close the gap the foundation must be leveled. Gaps along the straight sides of the T-bases and the foundation are permissible. Ensure that no high point of contact occurs between the straight sides of the T-base and the foundation.
 - v. Check top of T-base for level. If not level then foundation must be leveled.
 - b. Top Bolt Procedure
 - i. Erect pole over T-base with crane. Coat bolts, nuts, washers, and lock washers with electrically conductive lubricant.

- ii. Install bolts and 1/2" connecting washers from the inside of the T-base, thread up through the pole base. Install flat washers, lock washers and nuts snug tight according to Item 447, "Structural Bolting."
- iii. Tighten each nut to 150 ft-lb. using a torque wrench.
- c. Level and Plumb
 - i. Ensure pole is plumb and mast arm is perpendicular to the roadway according to plans to within 5 degrees.
9. Construct luminaire pole foundations in accordance with Item 416, "Drilled Shaft Foundations," and TxDOT standard sheet RID(2).
10. Provide and install underpass luminaires in accordance with Item 610, DMS-11010, and TxDOT standard sheet RID(3). Typical luminaire size for underpass luminaires is 150W HPS or 150W EQ LED.
11. Mount luminaires on arms level as shown by the luminaire level indicator.
12. Orient luminaires perpendicular to the roadway intended to be lit unless otherwise shown on the plans.



L1, L2 = Hot Conductors
G = Grounding Conductor

TYPICAL WIRING DIAGRAM

LUMINAIRES SERVED AT 480V ON 240/480 VOLT SERVICE OR LUMINAIRES SERVED AT 240V FOR 120/240 VOLT SERVICE.

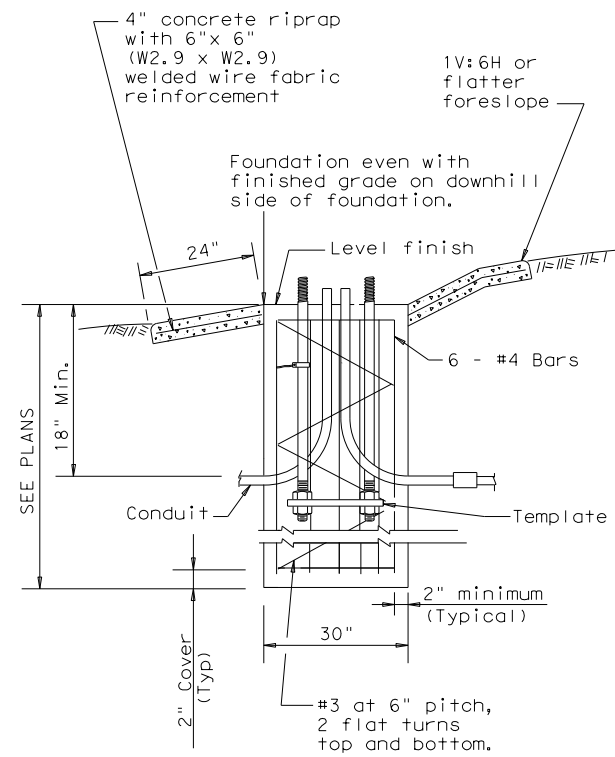
NOTES:

- ① Use 1/2 in.-13 UNC threaded, copper or tin-plated copper, pole bonding connector, sized appropriately for conductors, bonded to T-base, or use ground lug in handhole as available.
- ② Use pre-qualified two-pole breakaway connectors for all luminaire pole installations. For luminaires fed by a circuit with a neutral conductor, use double pole breakaway connectors with the neutral side unfused and marked white.
- ③ Split Bolt or other connector.

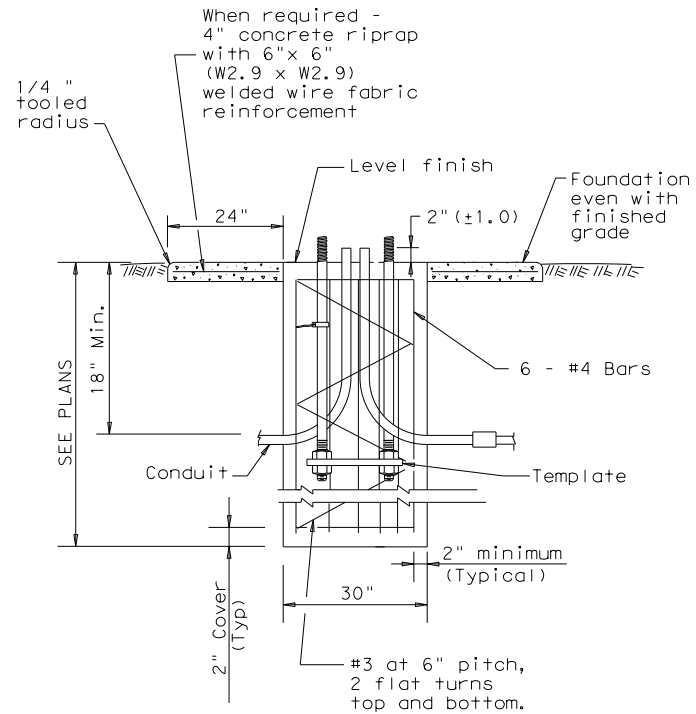
Texas Department of Transportation				Traffic Operations Division Standard	
<h1 style="margin: 0;">ROADWAY ILLUMINATION DETAILS</h1> <h2 style="margin: 0;">RID(1)-17</h2>					
FILE:	rid1-17.dgn	DN:	CK:	DW:	CK:
© TxDOT January 2007		CONT	SECT	JOB	HIGHWAY
7-17		0887	01	039, ETC.	VARIOUS
REVISIONS		DIST	COUNTY		SHEET NO.
ODA		ECTOR, ETC.		283	

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SECTION A-A
 SHOWING SLOPED GRADE



SECTION A-A
 SHOWING CONSTANT GRADE

TABLE 1			
ANCHOR BOLTS			
POLE MOUNTING HEIGHT	BOLT CIRCLE		ANCHOR BOLT SIZE
	Shoe Base	T-Base	
<40 ft.	13 in.	14 in.	1 in. x 30 in.
40-50 ft.	15 in.	17 1/4 in.	1 1/4 in. x 30 in.

TABLE 2			
RECOMMENDED FOUNDATION LENGTHS (See note 1)			
MOUNTING HEIGHT	TEXAS CONE PENETROMETER N Blows/ft		
	10	15	40
<20 ft.	6'	6'	6'
>20 ft. to 30 ft.	8'	6'	6'
>30 ft. to 40 ft.	8'	8'	6'
>40 ft. to 50 ft.	10'	8'	6'

TABLE 3		
PAY QUANTITY OF RIPRAP PER FOUNDATION (Install only when shown on the plans)		
Foundation Diameter	RIPRAP DIAMETER	RIPRAP (CONC) (CL B)
30 in.	78 in.	0.35 CY

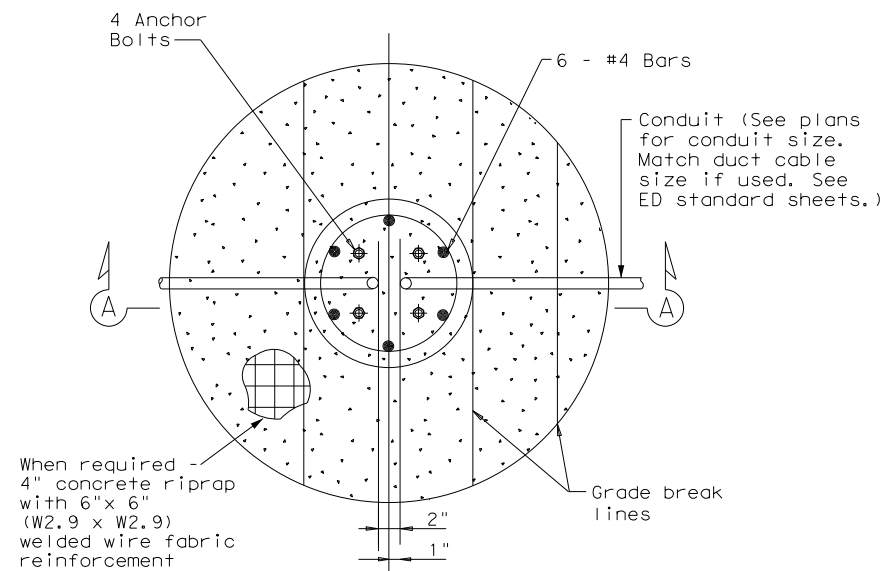
GENERAL NOTES:

- "Recommended Foundation Lengths" table is for information purposes only. Foundation lengths shall be as shown on the plans, or as directed by the Engineer. Foundations will be paid for under Item 416, "Drilled Shaft Foundations," unless otherwise shown on the plans.
- Erect roadway illumination assembly poles plumb and true. Form and level the top 6" of the foundation so the pole will be plumb. Use leveling nuts to plumb shoe base poles. Do not use shims or leveling nuts under transformer bases. Do not grout between baseplate and the foundation.
- Ensure Class 2A and 2B fit for anchor bolts and nuts. Tap and chase nuts after galvanizing. Anchor bolt body with rolled threads need not be full size.
- Use appropriate class of concrete as specified in Items 416 and 432. Concrete for riprap may be upgraded to Class C at no extra cost to the Department.
- Place riprap around the foundation when called for elsewhere in the plans. Riprap will be paid for under Item 432.
- Locate breakaway roadway illumination assemblies as shown in the placement table, unless otherwise dimensioned on the plans. Protect non-breakaway illumination assemblies from vehicular impact (i.e. 2.5 ft. behind guard rail or mounted on traffic barrier), or located outside the clear zone, except that 2.5 ft. from curb face is minimum desired for light poles on city streets, 45 mph or less. See Roadway Design Manual for further information.
- Use 4 hold down and 4 connecting washers on transformer base poles as recommended by the manufacturer and supplied with base.
- Install a minimum of 2 conduits in each foundation. See lighting layout sheets for locations of foundations with more than 2 conduits. Cap unused conduits in foundations on both ends.
- Conduit location in foundations is critical for breakaway devices. Place conduits 2 in. apart on centerline as shown.
- Bond anchor bolt to rebar cage with #6 bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. The bonded steel in the foundation creates a concrete encased grounding electrode which replaces the ground rod.
- Use riprap on T-base foundations that are located on sloped grades.

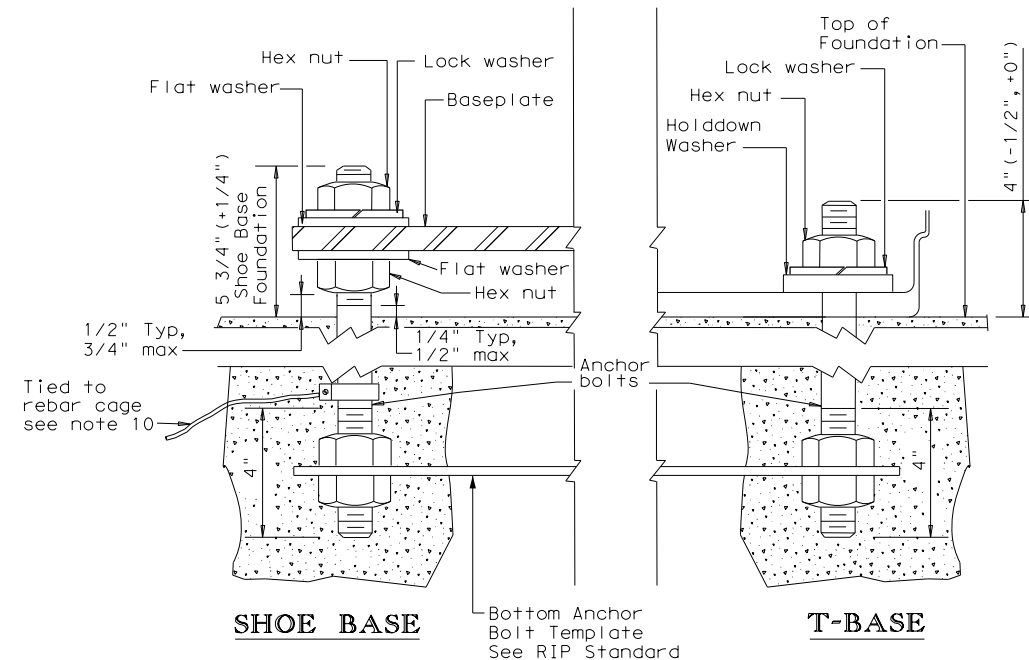
TABLE 4	
BREAKAWAY POLE PLACEMENT (See note 6)	
ROADWAY FUNCTIONAL CLASSIFICATION	** POLE OFFSET (DISTANCE TO FACE OF TRANSFORMER BASE)
Freeway Mainlanes (roadway with full control of access)	15 ft. (minimum and typical) from lane edge
All curbed, 45 mph or less design speed	2.5 ft. minimum (15 ft. desirable) from curb face
All others	10 ft. minimum*(15 ft. desirable) from lane edge

* or as close to ROW line as is practical

** provide 2/5 of the luminaire mounting height behind the pole for "falling area" to prevent encroachment on the other travel lanes. See design guidelines.



FOUNDATION DETAIL



ANCHOR BOLT DETAIL



ROADWAY ILLUMINATION DETAILS (RDWY ILLUM FOUNDATIONS) RID(2)-17

FILE: rid2-17.dgn	DN:	CK:	DW:	CK:
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7-17	DIST	COUNTY	SHEET NO.	
	ODA	ECTOR, ETC.	284	

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SHIPPING PARTS LIST - POLES AND LUMINAIRE ARMS

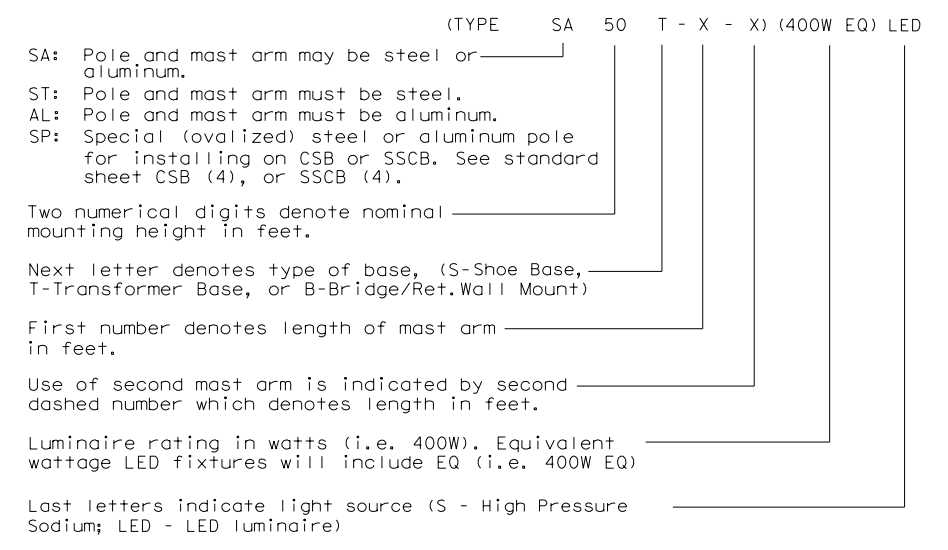
Nominal Mounting Ht. (ft)	Shoe Base					T-Base					CSB/SSCB Mounted						
	Designation				Quantity	Designation				Quantity	Designation				Quantity		
	Pole	A1	A2	Luminaire		Pole	A1	A2	Luminaire		Pole	A1	A2	Luminaire			
20	(Type SA 20 S - 4)			(150W EQ) LED		(Type SA 20 T - 4)			(150W EQ) LED								
	(Type SA 20 S - 4 - 4)			(150W EQ) LED		(Type SA 20 T - 4 - 4)			(150W EQ) LED								
30	(Type SA 30 S - 4)			(250W EQ) LED		(Type SA 30 T - 4)			(250W EQ) LED			(Type SP 28 S - 4)			(250W EQ) LED		
	(Type SA 30 S - 4 - 4)			(250W EQ) LED		(Type SA 30 T - 4 - 4)			(250W EQ) LED			(Type SP 28 S - 4 - 4)			(250W EQ) LED		
	(Type SA 30 S - 8)			(250W EQ) LED		(Type SA 30 T - 8)			(250W EQ) LED			(Type SP 28 S - 8)			(250W EQ) LED		
	(Type SA 30 S - 8 - 8)			(250W EQ) LED		(Type SA 30 T - 8 - 8)			(250W EQ) LED			(Type SP 28 S - 8 - 8)			(250W EQ) LED		
40	(Type SA 40 S - 4)			(250W EQ) LED		(Type SA 40 T - 4)			(250W EQ) LED			(Type SP 38 S - 4)			(250W EQ) LED		
	(Type SA 40 S - 4 - 4)			(250W EQ) LED		(Type SA 40 T - 4 - 4)			(250W EQ) LED			(Type SP 38 S - 4 - 4)			(250W EQ) LED		
	(Type SA 40 S - 8)			(250W EQ) LED		(Type SA 40 T - 8)			(250W EQ) LED	11		(Type SP 38 S - 8)			(250W EQ) LED		
	(Type SA 40 S - 8 - 8)			(250W EQ) LED		(Type SA 40 T - 8 - 8)			(250W EQ) LED	1		(Type SP 38 S - 8 - 8)			(250W EQ) LED		
	(Type SA 40 S - 10)			(250W EQ) LED		(Type SA 40 T - 10)			(250W EQ) LED			(Type SP 38 S - 10)			(250W EQ) LED		
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	(Type SA 50 S - 8)			(400W EQ) LED		(Type SA 50 T - 8)			(400W EQ) LED			(Type SP 48 S - 8)			(400W EQ) LED		
	(Type SA 50 S - 8 - 8)			(400W EQ) LED		(Type SA 50 T - 8 - 8)			(400W EQ) LED			(Type SP 48 S - 8 - 8)			(400W EQ) LED		
	(Type SA 50 S - 10)			(400W EQ) LED		(Type SA 50 T - 10)			(400W EQ) LED	8		(Type SP 48 S - 10)			(400W EQ) LED		
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	(Type SA 50 S - 12 - 12)			(400W EQ) LED		(Type SA 50 T - 12 - 12)			(400W EQ) LED			(Type SP 48 S - 12 - 12)			(400W EQ) LED		

OTHER				
Designation				Quantity
Pole	A1	A2	Luminaire	

GENERAL NOTES:

1. All work, materials and services not shown on the plans which may be necessary for complete and proper construction shall be performed, furnished and installed by the Contractor. Faulty fabrication or poor workmanship in any material, equipment or installation will be considered justification for rejection. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the Department such warranties or guarantees.
2. The location of poles and fixtures are diagrammatic only and may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.
3. Standard Steel Pole Designs. Steel poles fabricated in accordance with the details and dimensions shown herein, shall be considered standard designs. Submission of shop drawings and design calculations for standard designs is not required.
4. Optional Steel Pole Designs. Multi-sided steel poles may be allowed as optional designs, if steel poles are permitted or required, pending approval by the Department as outlined below.
 - a. Shop Drawings. Optional designs require submission of shop drawings and design calculations bearing the seal of an engineer licensed in the State of Texas, in accordance with Item 441, "Steel Structures." The Department may elect to pre-approve some shop drawings for optionally designed poles. Submission of shop drawings and design calculations is not required for structures fabricated in accordance with the details of shop drawings on the pre-approved list maintained by the TxDOT Traffic Operations Division. Any deviation from the pre-approved shop drawings will require submission of shop drawings of the complete assembly and design calculations as described above.
 - b. Structural Support Design for Luminaires. Lighting support structures shall be designed for a 25 year design life in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto. All poles shall be designed for 110 mph 3-second gust wind speeds. The Gust Factor, G, and Wind Importance Factor, Ir, shall be applied as per the AASHTO Specifications assuming a 25-year design life. The design wind pressure for hurricane wind velocities greater than 100 mph shall not be less than the design wind pressure using 100 mph with the non-hurricane Wind Importance Factor, Ir, value. For transformer base poles, fabricator shall include transformer base and connecting hardware in design calculations and shop drawing submittals. All transformer bases shall have been structurally tested to resist the theoretical plastic moment capacity of the pole. Certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished shall be submitted with the shop drawings. Shop drawings shall show breakaway base model number, and manufacturer's name and logo. Manufacturer's shop drawings shall include the ASTM designations for all materials to be used.
 - c. Mast Arm Attachments. All poles and attachments shall be structurally designed to support two 12-foot mast arms and luminaires. Poles shall be supplied with mast arm combinations as shown in the plans. All mast arms shall be designed for a 60-pound luminaire having an effective projected area of 1.6 square feet.
 - d. Anchor Bolt Assembly. Anchor bolt assemblies for optionally designed poles shall be the same as those shown herein.
5. Aluminum Pole Designs. Aluminum pole designs may be allowed, if aluminum poles are permitted or required, pending approval by the Department as outlined below.
 - a. Meet all of the requirements stated above for optional steel pole designs and the following:
 1. Aluminum poles shall be fabricated in accordance with "Structural Welding Code-Aluminum" AWS D1.2.
 2. Aluminum pole designs shall use the same anchor bolt assembly and be subject to the same geometric restraints and other requirements for steel poles specified herein.
 3. Aluminum poles shall be equipped with vibration mitigation devices, as approved by the engineer.
 4. Pole components shall be constructed using the following material:
 - Shaft: ASTM B221 or B241 Alloy 6063-T6, ASTM B209 Alloy 5086-H34, ASTM B221 Alloy 6005-T5.
 - Base Flange: ASTM B26 Alloy 356.0-T6 or ASTM B108 Alloy 356.0-T6 (Yield strength test required).
 - Mast Arm Fitting: ASTM B209 Alloy 6061-T6 or ASTM B221 Alloy 6005-T5.
 - Mast Arms: ASTM B241 Alloy 6061-T6 or Alloy 6063-T6.
 - Pole Cap: ASTM B209 Alloy 5086-H32 or ASTM B108 or B26 Alloy 356.0-T6.
 - Bolts: Stainless Steel AISI 300 series. Bolts threading into aluminum threads shall be treated with anti-seize compound, Never-Seez Compound, Permatex 133K or equal.
6. Special Designs. Poles with architectural treatments shall meet the requirements shown elsewhere in the plans.
7. Luminaire Mounting Height. Actual luminaire mounting height shall be the nominal mounting height given on RIP(2) for all pole-arm combinations except for poles with 4 ft. luminaire arms, which shall be 3'-0" lower than the nominal height, unless otherwise shown or directed.

EXPLANATION OF ROADWAY ILLUMINATION ASSEMBLY DESIGNATIONS

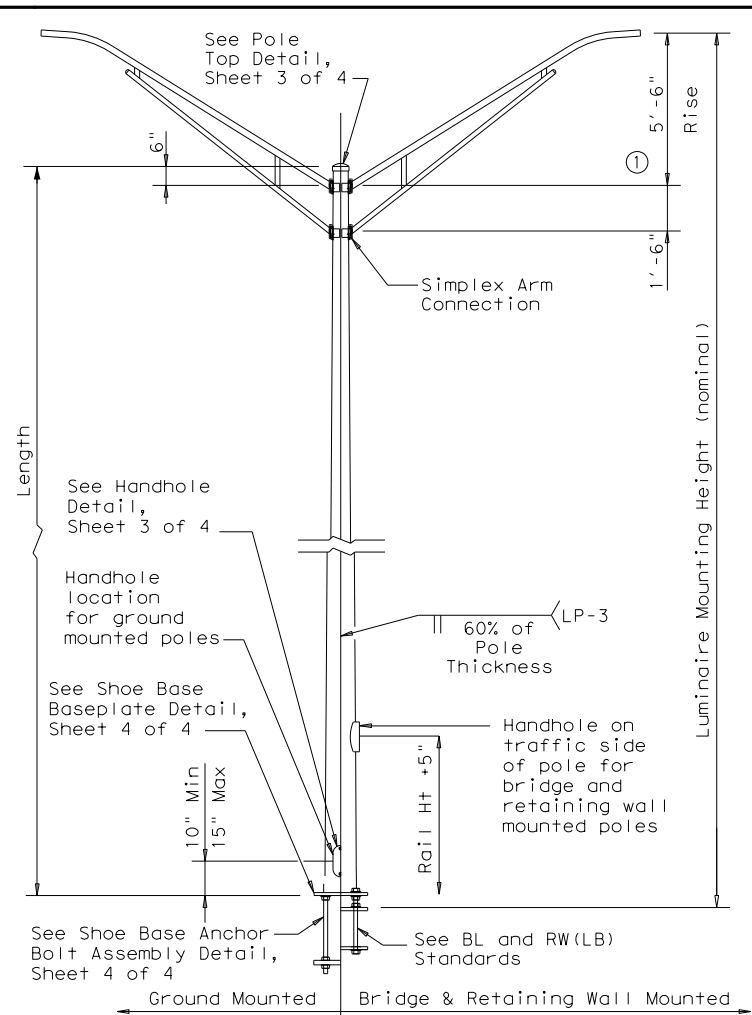


AT LOOP 338 AND SH 191
 AT FM 307 AND FM 1379
 AT FM 1787 AND FM 1788

	Texas Department of Transportation	Traffic Safety Division Standard
<h2>ROADWAY ILLUMINATION POLES</h2>		
<h3>RIP(1)-19</h3>		
FILE: rip-19.dgn	DN:	CK: DW: CK:
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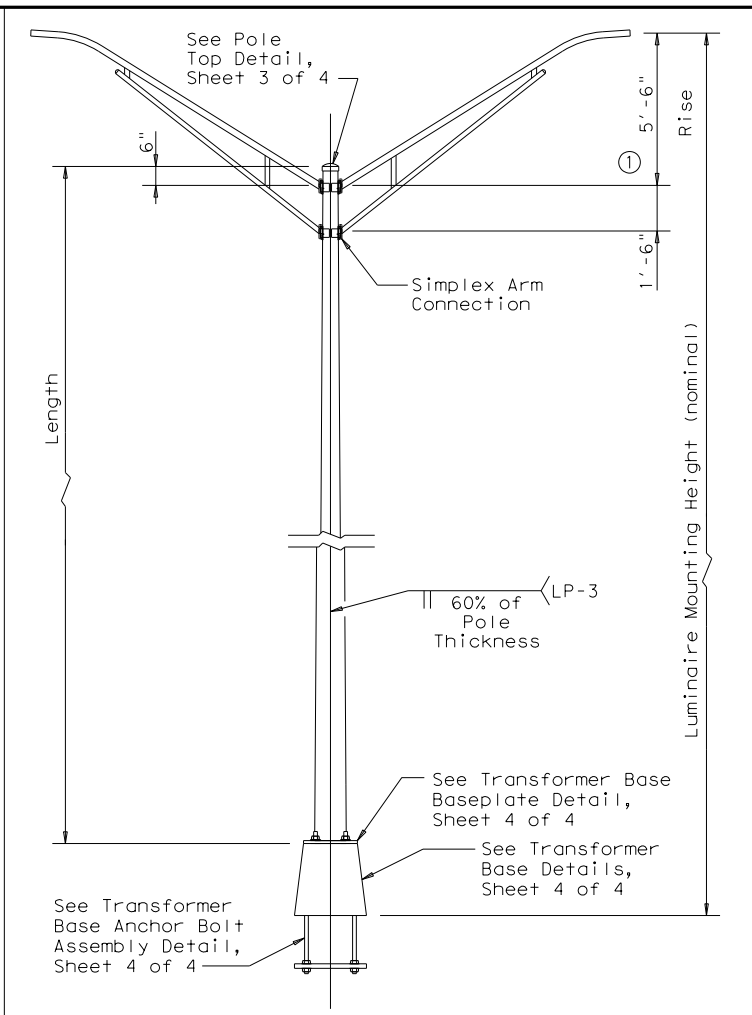
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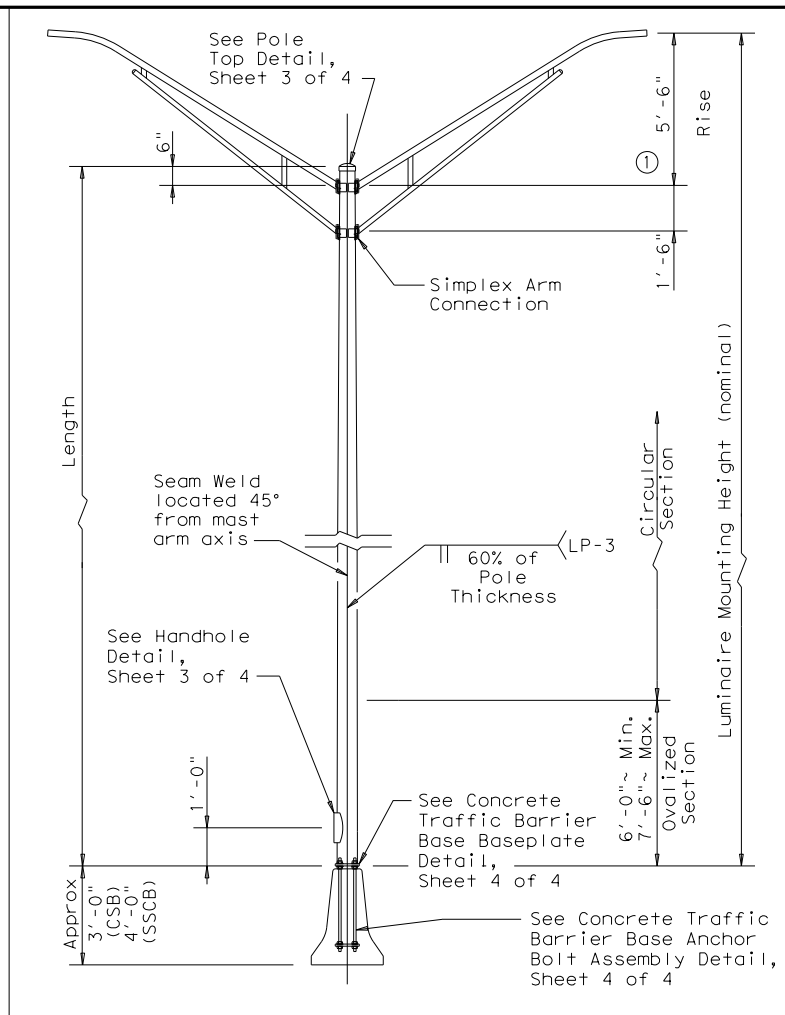
SHOE BASE POLE

SHOE BASE POLE					
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	4.90	15.00	0.1196	7.1
30.00	7.50	4.00	25.00	0.1196	13.2
31.00-39.00	8.00	4.36-3.24	26.00-34.00	0.1196	20.7
40.00	8.50	3.60	35.00	0.1196	20.7
50.00	10.50	4.20	45.00	0.1196	30.3



TRANSFORMER BASE POLE

TRANSFORMER BASE POLE					
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	5.11	13.50	0.1196	7.1
30.00	7.50	4.21	23.50	0.1196	13.2
31.00-39.00	8.00	4.57-3.45	24.50-32.50	0.1196	20.7
40.00	8.50	3.81	33.50	0.1196	20.7
50.00	10.00	3.91	43.50	0.1196	30.3



CONCRETE TRAFFIC BARRIER BASE POLE

CONCRETE TRAFFIC BARRIER BASE POLE (CSB/SSCB)						
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)	
					About of Rail	Perp. to Rail
28.00	9.00	5.78	23.00	0.1196	10.3	13.2
38.00	9.00	4.38	33.00	0.1196	16.6	20.8
48.00	10.50	4.48	43.00	0.1345	25.1	30.5

GENERAL NOTES:

- Designs conform to AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto. Design 3-Second Gust Wind Speed equals 110 mph with a 1.14 gust factor. A wind importance factor of 0.80 is applied to adjust the wind speed to a 25 year recurrence interval. Design moments listed in tables assume base of pole is 25' above natural ground level.
- Structures are designed to support two 12' luminaire mast arms and luminaires. Mast arms are designed to support a 60-pound luminaire having an effective projected area of 1.6 square feet.
- Fabrication shall be in accordance with the Specifications and with the details, dimensions, and weld procedures shown herein. Do not submit shop drawings for roadway illumination pole assemblies fabricated in accordance with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of these sheets and the Specifications. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
- For mounting heights between values shown in the tables, use base diameter and thickness values for the larger height.
- Unless otherwise noted, all steel parts shall be galvanized in accordance with Item 445, "Galvanizing."
- Steel poles shall be fabricated in accordance with Item 441, "Steel Structures." Longitudinal seam welds for pole sections shall have 60% minimum penetration. All welding shall be in accordance with AWS D1.1, Structural Welding Code-Steel.
- Two-section poles joined by circumferential welds will not be permitted, unless otherwise shown on the plans. Poles may be fabricated in two sections and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint.
- Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.
- Lubricate and tighten anchor bolts, when erecting shoe base poles and concrete traffic barrier base poles, in accordance with Item 449, "Anchor Bolts."
- All poles, except Transformer Base Poles, shall have hand holes with reinforcing frames and covers. For ground mounted shoe base poles, hand holes shall be placed 90 degrees to mast arm unless otherwise noted on the plans. For poles mounted on a concrete traffic barrier with one luminaire arm, hand holes shall be located 180 degrees from luminaire arm. For poles mounted on a concrete traffic barrier with two luminaire arms, all hand holes shall be on the same side of the barrier. For poles mounted on a bridge lighting bracket or a retaining wall lighting bracket, hand hole shall be on traffic side of the pole, at a height that will clear the barrier.
- The finished pole shall have a smooth, uniform finish free of pits, blisters, or other defects. Scratched, chipped, and other damaged galvanized areas on poles and mast arms shall be repaired in accordance with Item 445, "Galvanizing."
- Pole length is based on a 5'-6" luminaire arm rise. 4 ft. luminaire arms have a 2'-6" rise. A pole with 4 ft. luminaire arms will have an actual mounting height 3'-0" less than the nominal mounting height. Increasing the pole length to meet the nominal mounting height is allowed, but unnecessary unless otherwise directed by the engineer.
- Erect transformer base poles in accordance with sheet RID(1).

MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (ksi)
Pole Shaft (0.14"/ft. Taper)	A572 Gr 50, A595 Gr A, A1011 HSLAS Gr 50 Cl 2 ③, or A1008 HSLAS Gr 50 Cl 2	50
Base Plate and Handhole Frame	A572 Gr.50, or A36	36
T-Base Connecting Bolts	F3125 Gr A325	92
Anchor Bolts	F1554 Gr 55, A193-B7 or A321	55 105
Anchor Bolt Templates	A36	36
Heavy Hex (H.H.) Nuts	A194 Gr 2H, or A563 Gr DH	
Flat Washers	F436	

NOTES:

- 2'-6" rise for 4 ft. luminaire arms.
- Before ovalized as shown on Concrete Traffic Barrier Base Baseplate details, Sheet 4 of 4.
- A1011 SS Gr 50 may be used instead of HSLAS, provided the material meets the elongation requirements for HSLAS.

POLE ASSEMBLY FABRICATION TOLERANCES TABLE

DIMENSION	TOLERANCE
Shaft length	+1"
I.D. of outside piece of slip fitting pieces	+1/8", -1/16"
O.D. of inside piece of slip fitting pieces	+1/32", -1/8"
Shaft diameter: other	+3/16"
Out of "round"	1/4"
Straightness of shaft	±1/4" in 10 ft
Twist in multi-sided shaft	4° in 50 ft
Perpendicular to baseplate	1/8" in 24"
Pole centered on baseplate	±1/4"
Location of Attachments	±1/4"
Bolt hole spacing	±1/16"

SHEET 2 OF 4



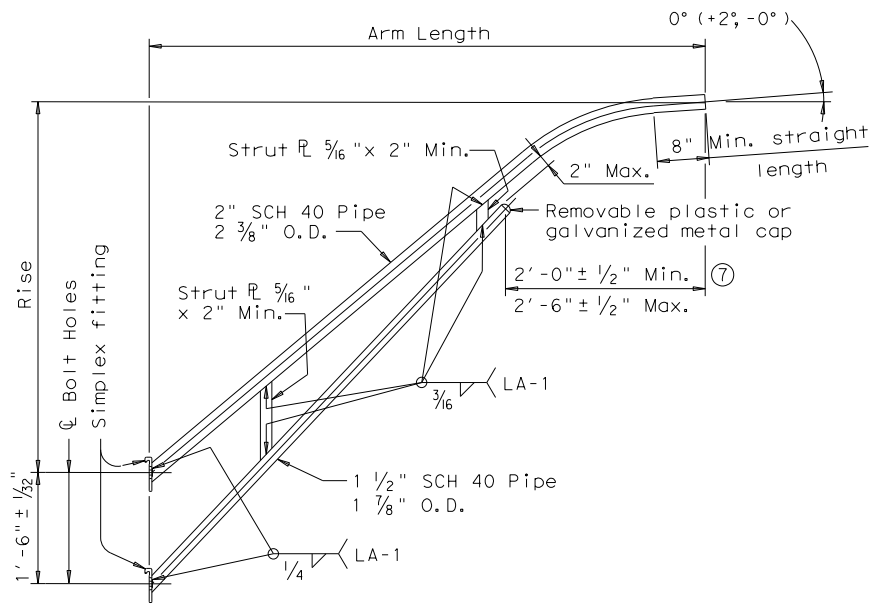
**ROADWAY ILLUMINATION POLES
 RIP(2)-19**

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12-19	DIST:	COUNTY:	SHEET NO.:	
	ODA	ECTOR, ETC.	286	

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DATE: 8/19/2020

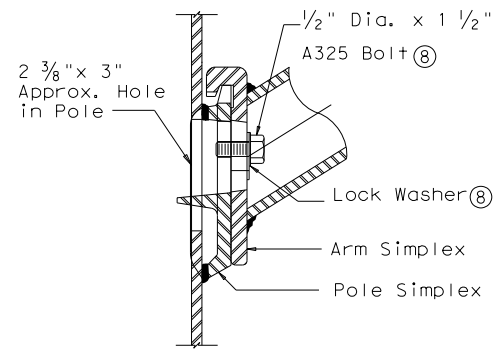
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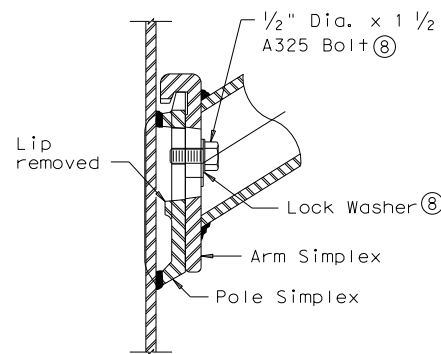
LUMINAIRE ARM

LUMINAIRE ARM DIMENSIONS		
Nominal Arm Length	Arm Length	Rise
4'-0"	3'-6"	2'-6"
6'-0"	5'-6"	5'-6"
8'-0"	7'-6"	5'-6"
10'-0"	9'-6"	5'-6"
12'-0"	11'-6"	5'-6"

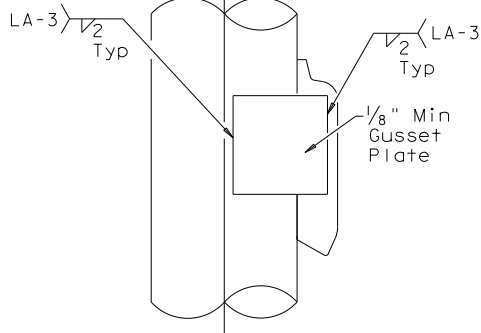
ARM ASSEMBLY FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Arm Length	±1"
Arm Rise	±1"
Deviation from flat	1/8" in 12"
Spacing between holes	±1/32"



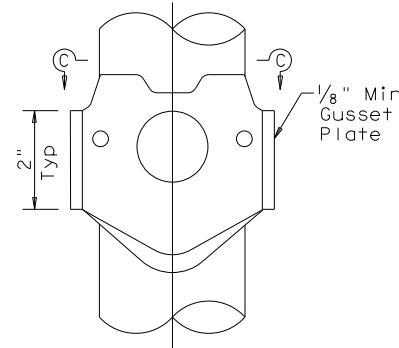
UPPER SIMPLEX FITTING
(Gusset not shown for clarity)



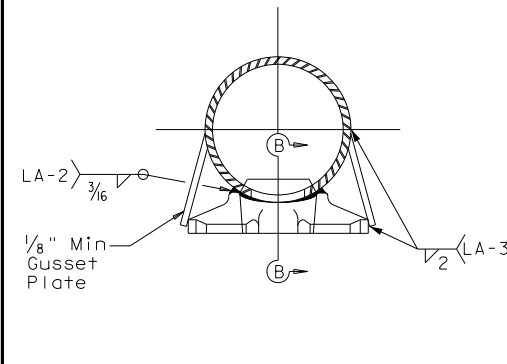
LOWER SIMPLEX FITTING
(Gusset not shown for clarity)



SIDE

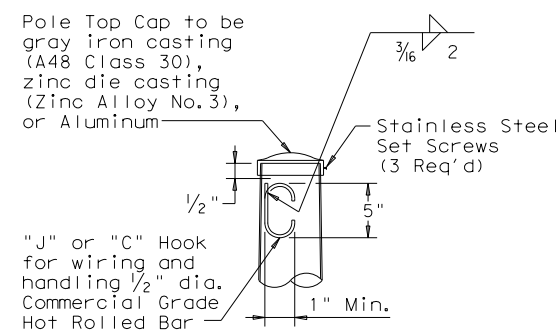


ELEVATION

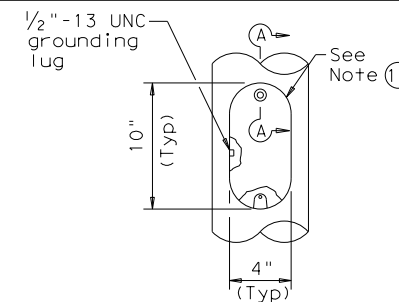


SECTION C-C

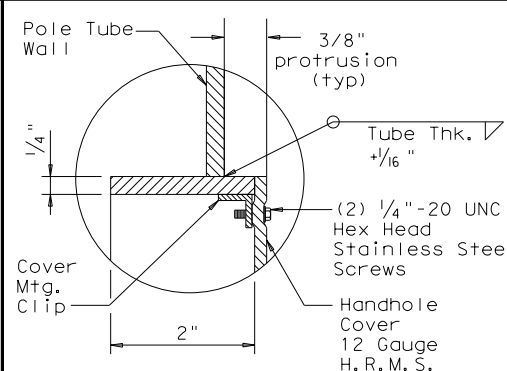
SIMPLEX ATTACHMENT DETAIL



POLE TOP

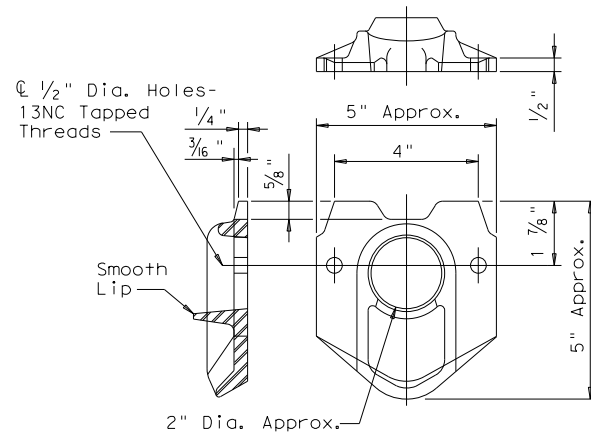


ELEVATION

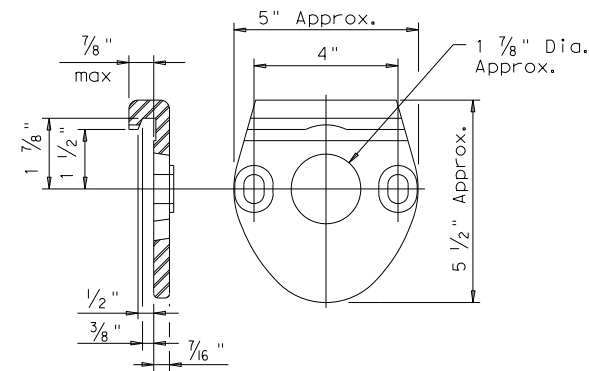


SECTION A-A

HANDHOLE



POLE SIMPLEX DETAIL



ARM SIMPLEX DETAIL

NOTES:

- ④ Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.
- ⑤ A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.
- ⑥ A572, A1008 HSLAS-F, and A1011 HSLAS-F materials may have higher yield strengths but shall not have less elongation than the grade indicated.
- ⑦ Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.
- ⑧ Each pole simplex fitting shall be supplied with 2 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans.
- ⑨ Proposed deviations in arm simplex dimensions or materials must be submitted to the Department for approval.
- ⑩ A welded handhole frame is permissible. Maximum of two (2) CJP weld splices is allowed.

MATERIALS

Pole or Arm Simplex	ASTM A27 Gr 65-35 or Gr 70-36, A148 Gr 80-50, A576 Gr 1021 ⑤, or A36 (Arm only)
Arm Pipes	ASTM A53 Gr A or B, A500 Gr B, A501, A 1008 HSLAS-F Gr 50 ⑥, or A1011 HSLAS-F Gr 50 ⑥
Arm Struts and Gusset Plates ④	ASTM A36, A572 Gr 50 ⑥, or A588
Misc.	ASTM designations as noted

SHEET 3 OF 4

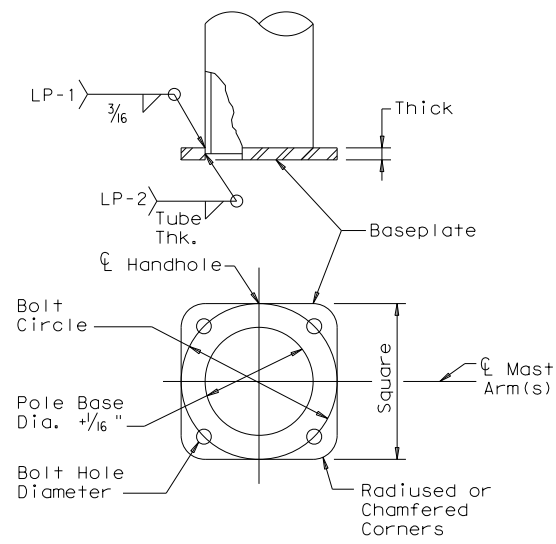


ROADWAY ILLUMINATION POLES

RIP (3) - 19

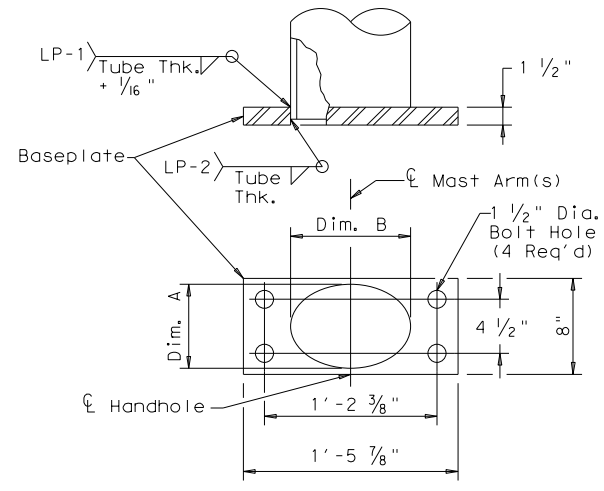
FILE: rip-19.dgn	DN:	CK:	DW:	CK:
© TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0887	01	039, ETC.	VARIOUS
7-17	DIST	COUNTY	SHEET NO.	
12-19	ODA	ECTOR, ETC.	287	

DATE: 8/19/2020
 FILE: pw:\jmt-pw_bentley.com\jmt-pw_01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP_338, FM_307, FM_1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8 - Traffic\Signals\TXDOT



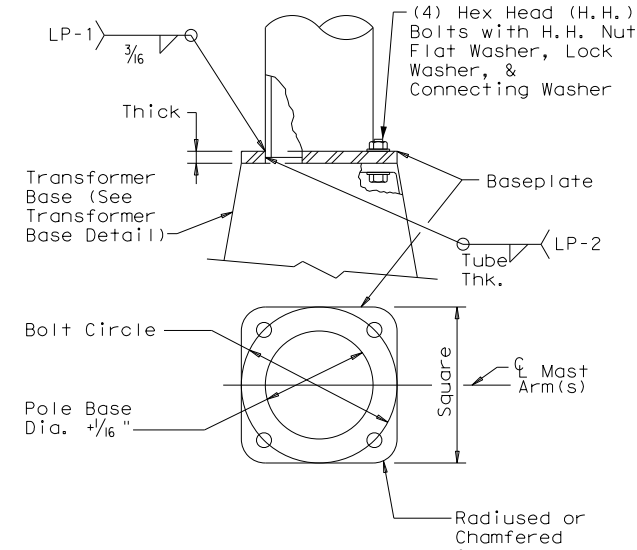
**SHOE BASE
BASEPLATE**

SHOE BASE BASEPLATE TABLE				
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	BOLT HOLE DIAMETER
20' - 39'	13"	13"	1 1/4"	1 1/4"
40'	15"	15"	1 1/4"	1 1/2"
50'	15"	15"	1 1/2"	1 1/2"



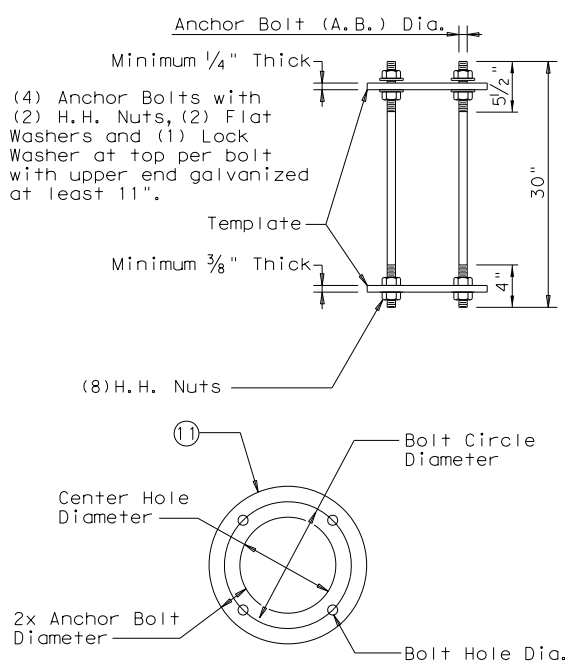
**CONCRETE TRAFFIC
BARRIER BASE BASEPLATE**

CONCRETE TRAFFIC BARRIER BASE BASEPLATE TABLE			
MOUNTING HEIGHTS (nominal)	POLE DIA. (12)	DIM. A	DIM. B
28' - 38'	9"	7" ± 1/4"	10" ± 1/4"
48'	10 1/2"	7" ± 1/4"	13" ± 1/4"



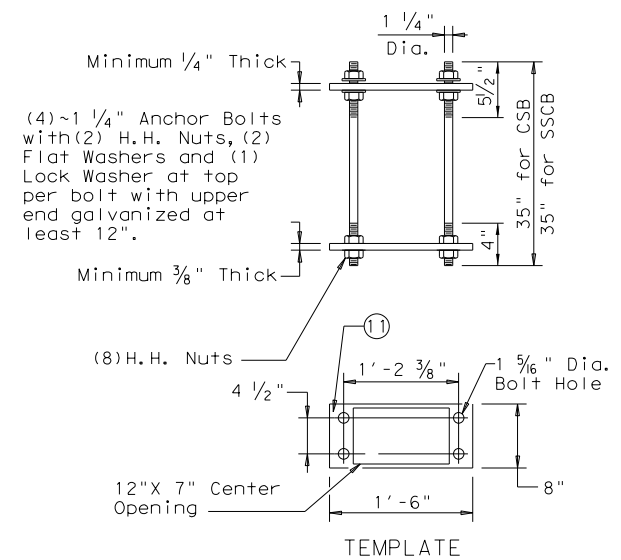
**TRANSFORMER
BASE BASEPLATE**

TRANSFORMER BASE BASEPLATE TABLE						
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	CONNECTING BOLT DIA.	BOLT HOLE DIAMETER	TRANSFORMER BASE TYPE
20' - 39'	13"	13"	1 1/4"	1"	1 1/4"	A
40'	15"	15"	1 1/4"	1 1/4"	1 1/2"	B
50'	15"	15"	1 1/2"	1 1/4"	1 1/2"	B



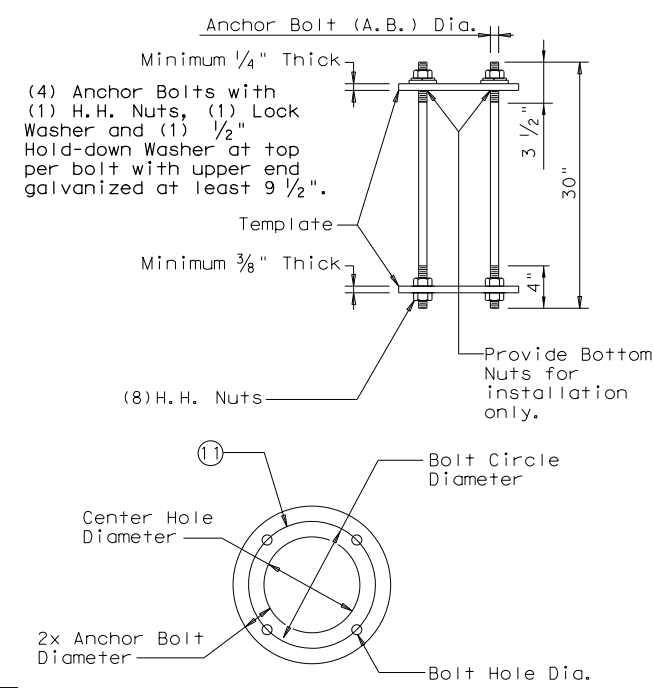
**SHOE BASE
ANCHOR BOLT ASSEMBLY**

SHOE BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20' - 39'	1"	13"	11"	1 1/16"
40' - 50'	1 1/4"	15"	12 1/2"	1 5/16"



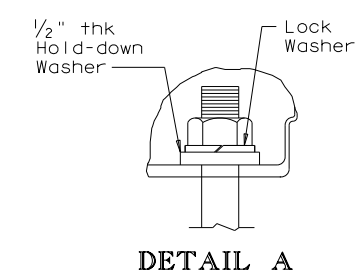
**CONCRETE TRAFFIC BARRIER
BASE ANCHOR BOLT ASSEMBLY**

TRANSFORMER BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20' - 39'	1"	14"	12"	1 1/16"
40' - 50'	1 1/4"	17 1/4"	14 3/4"	1 5/16"

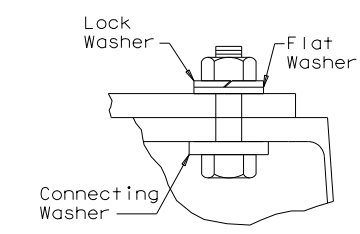


**TRANSFORMER BASE
ANCHOR BOLT ASSEMBLY**

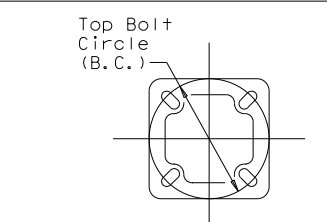
TRANSFORMER BASE TABLE		
TYPE	TOP B.C.	BTM. B.C.
A	13"	14"
B	15"	17 1/4"



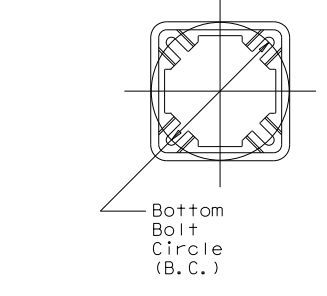
DETAIL A



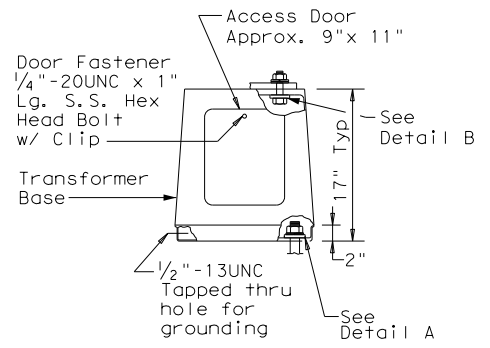
DETAIL B



TOP PLAN



BOTTOM PLAN



ELEVATION

**TRANSFORMER BASE
DETAILS**

GENERAL NOTES:

- For mounting heights between those shown in the table, use the values in the table for the larger mounting height.
- All breakaway bases shall meet the breakaway requirements of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto, and shall have been tested by FHWA-approved methods. All bases shall have been structurally tested to resist 150% of the design moment.
- Transformer bases shall be cast from aluminum, ASTM B108 or B26 Alloy 356.0-T6, or other material approved by the Engineer. Four Hex Head (H.H.) bolts with four H.H. nuts, four lock washers, four flat washers, and connecting and hold-down washers as recommended by the manufacturer, galvanized to ASTM A153 Class C or D, or B695 Class 50, shall be provided with each transformer base for connecting the pole. Bolts shall be ASTM A325 or approved equal. Nuts shall be ASTM A563 grade DH galvanized.
- Bases shall be stamped, incised or by other approved permanent means, marked to show fabricator's name or logo, and model number. Such information shall be placed in a readily seen location, inside or outside the base, but shall not be placed on the door.
- Doors for transformer bases shall be made of plastic, fiberglass or other non-metallic material approved by the Engineer and shall be attached with stainless steel screws or bolts. Transformer bases shall be cleaned by grit blast cleaning after heat treatment. Certification by the manufacturer of heat treatment shall be furnished with transformer bases. The certification shall show the metal alloy and temper and that the base meets those requirements, chemical and physical. The certification shall also show the material ASTM specification. Transformer bases shall be cast with a removable tab bar for material testing. Some bars may have been removed by the manufacturer for testing.

NOTES:

- Anchor Bolt Templates do not need to be galvanized.
- Pole diameter before ovalized.

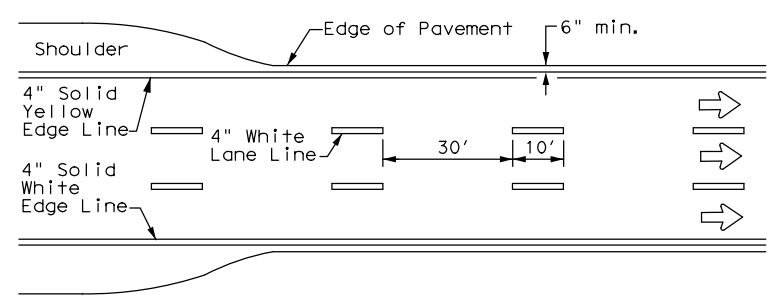
ANCHOR BOLT FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Length	± 1/2"
Threaded length	± 1/2"
Galvanized length (if required)	- 1/4"



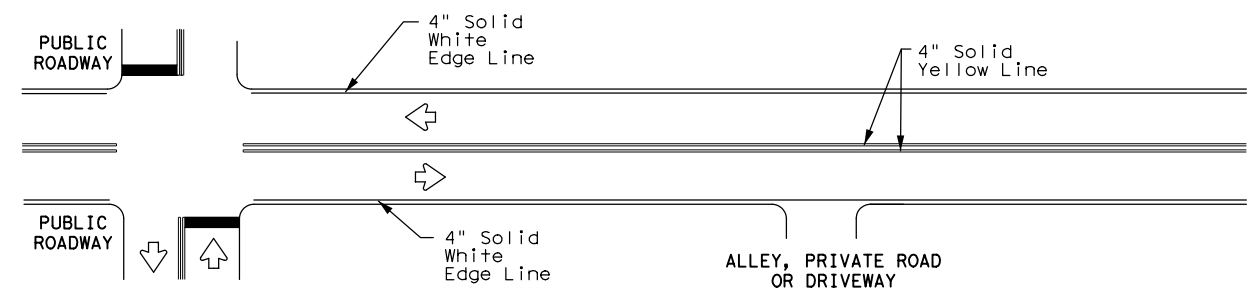
**ROADWAY
ILLUMINATION
POLES
RIP(4)-19**

FILE: rip-19.dgn	DN:	CK:	DW:	CK:
©TXDOT January 2007	CON:	SECT:	JOB:	HIGHWAY:
REVISIONS	0887	01	039, ETC.	VARIOUS
7-17	DIST:	COUNTY:	SHEET NO.:	
12-19	ODA	ECTOR, ETC.	288	

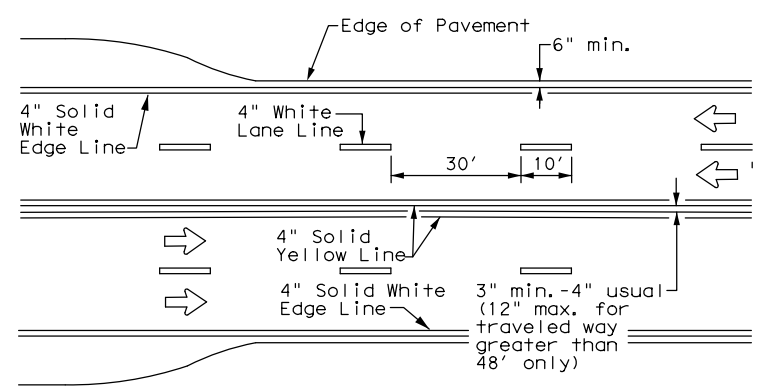
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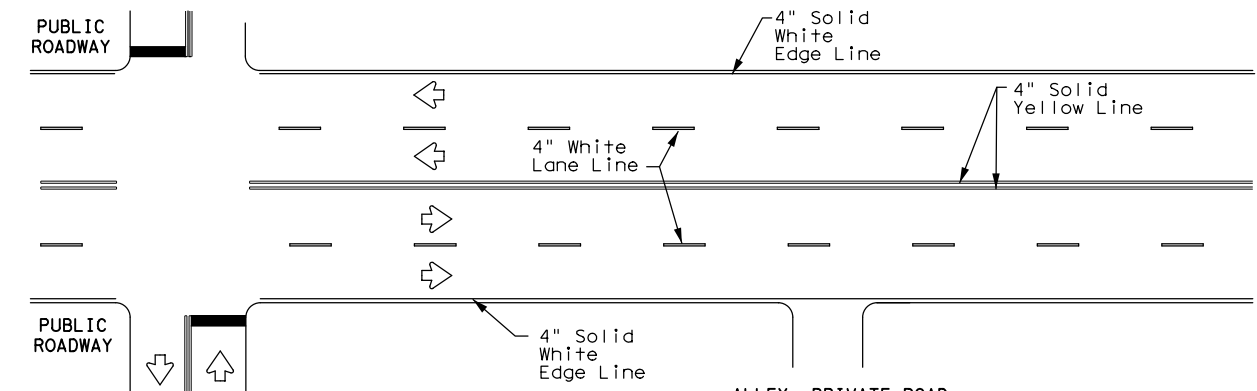
**EDGE LINE AND LANE LINES
ONE-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**



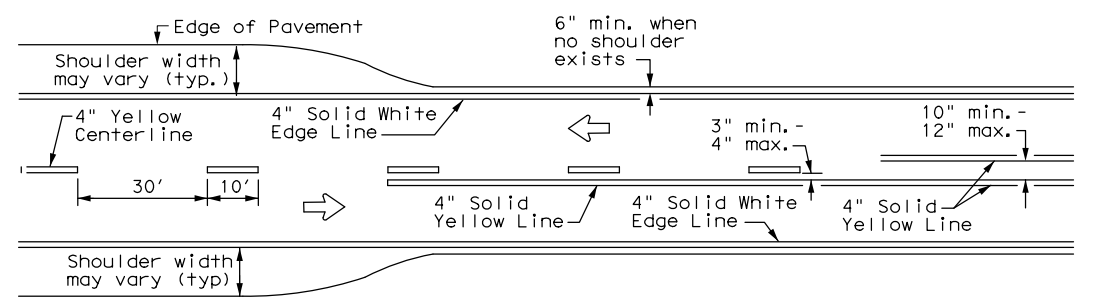
**TYPICAL TWO-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS**



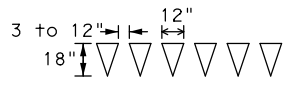
**CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**



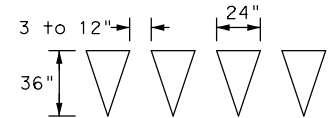
**TYPICAL MULTI-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS**



**TWO LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**

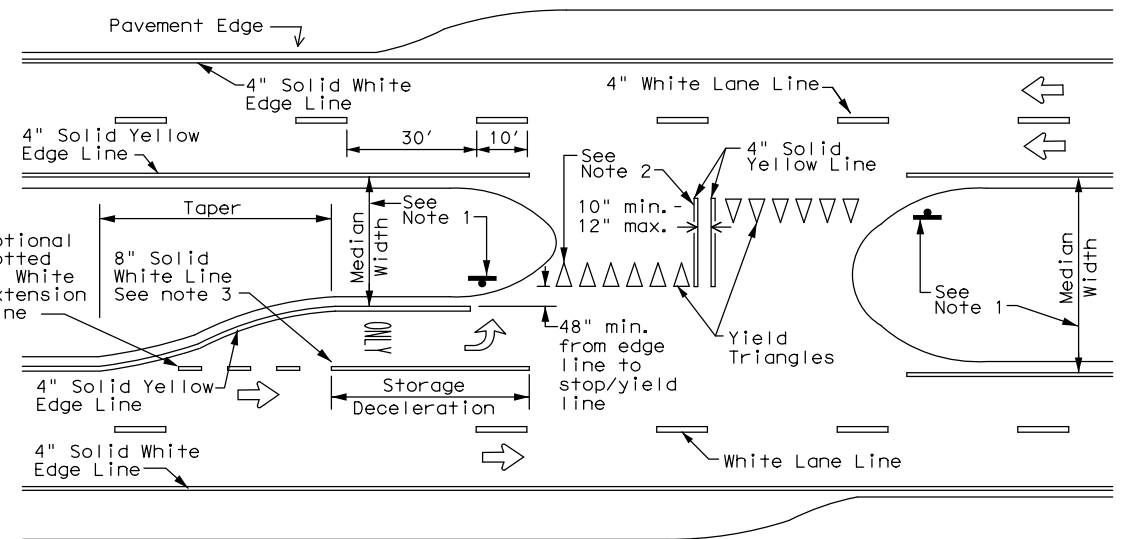


For posted speed on road being marked equal to or less than 40 MPH.



For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

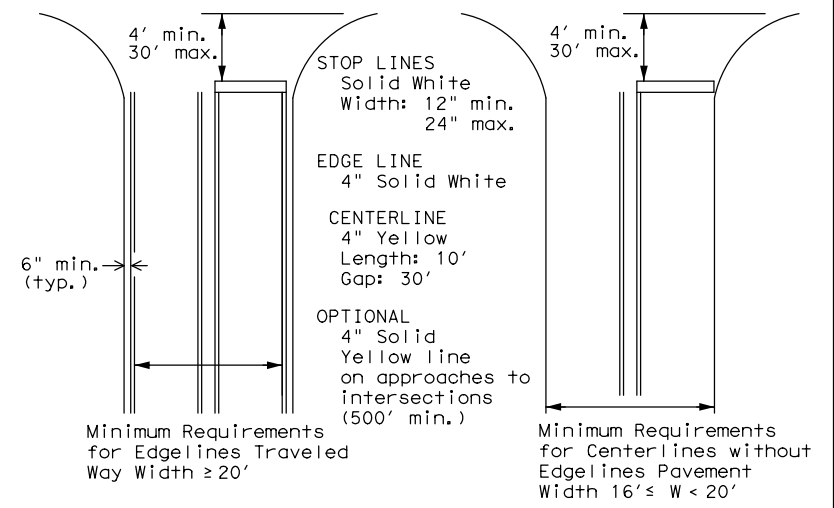
- Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling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

GENERAL NOTES

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

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

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



**GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE**

Based on Traveled Way and Pavement Widths for Undivided Highways

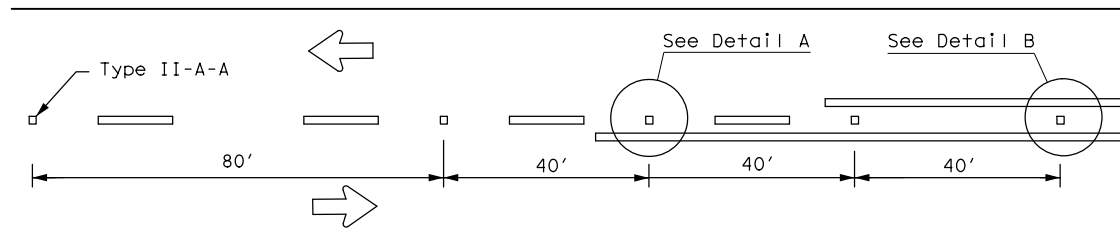


**TYPICAL STANDARD
PAVEMENT MARKINGS**

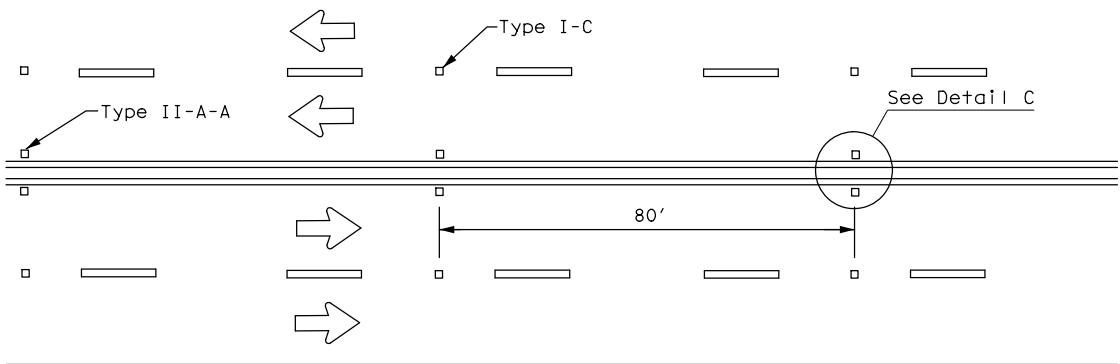
PM(1)-20

FILE: pml-20.dgn	DN:	CK:	DW:	CK:
© TXDOT November 1978	CON:	SECT:	JOB:	HIGHWAY:
8-95 3-03 REVISIONS	0887	01	039, ETC.	VARIOUS
5-00 2-12	DIST:	COUNTY:	SHEET NO.	
8-00 6-20	ODA	ECTOR, ETC.	289	

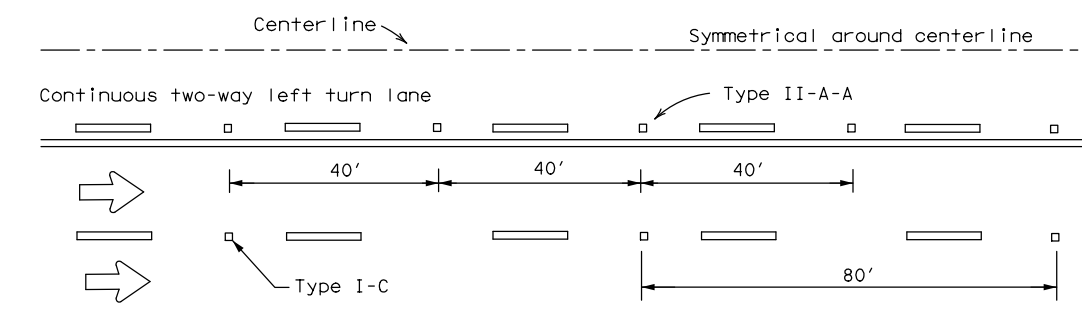
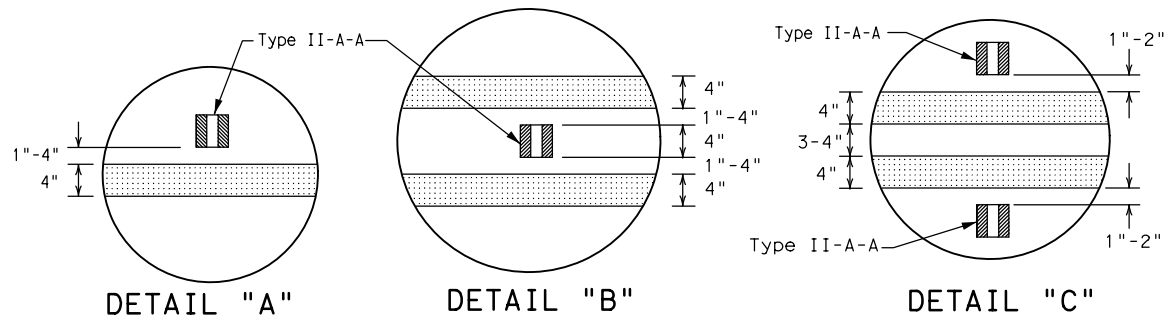
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



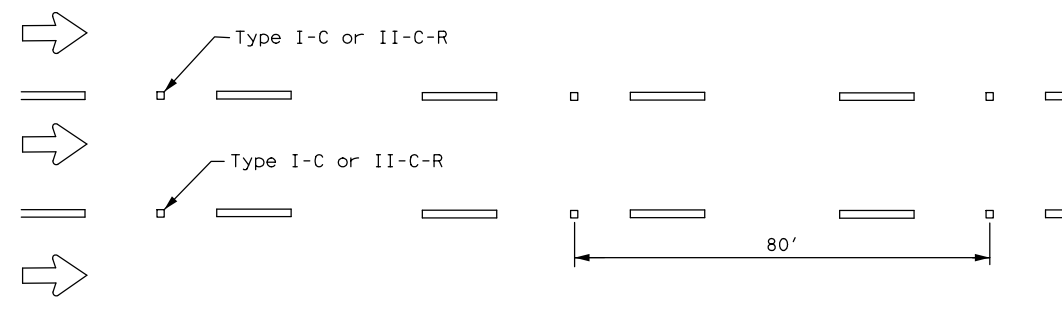
CENTERLINE FOR ALL TWO LANE ROADWAYS



CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY HIGHWAYS

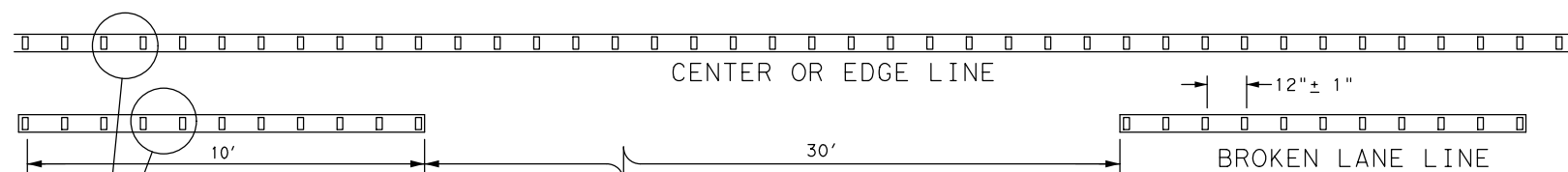


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



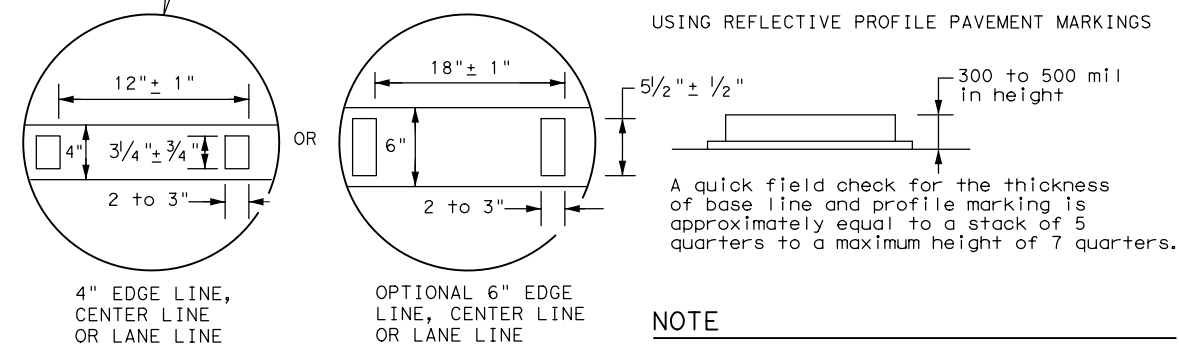
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

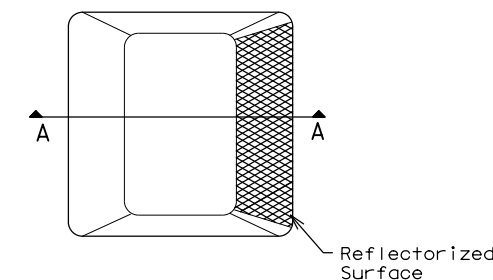


NOTE

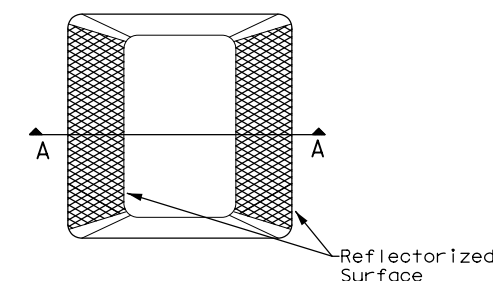
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

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

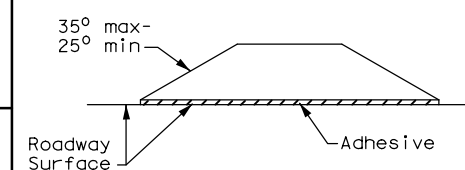
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

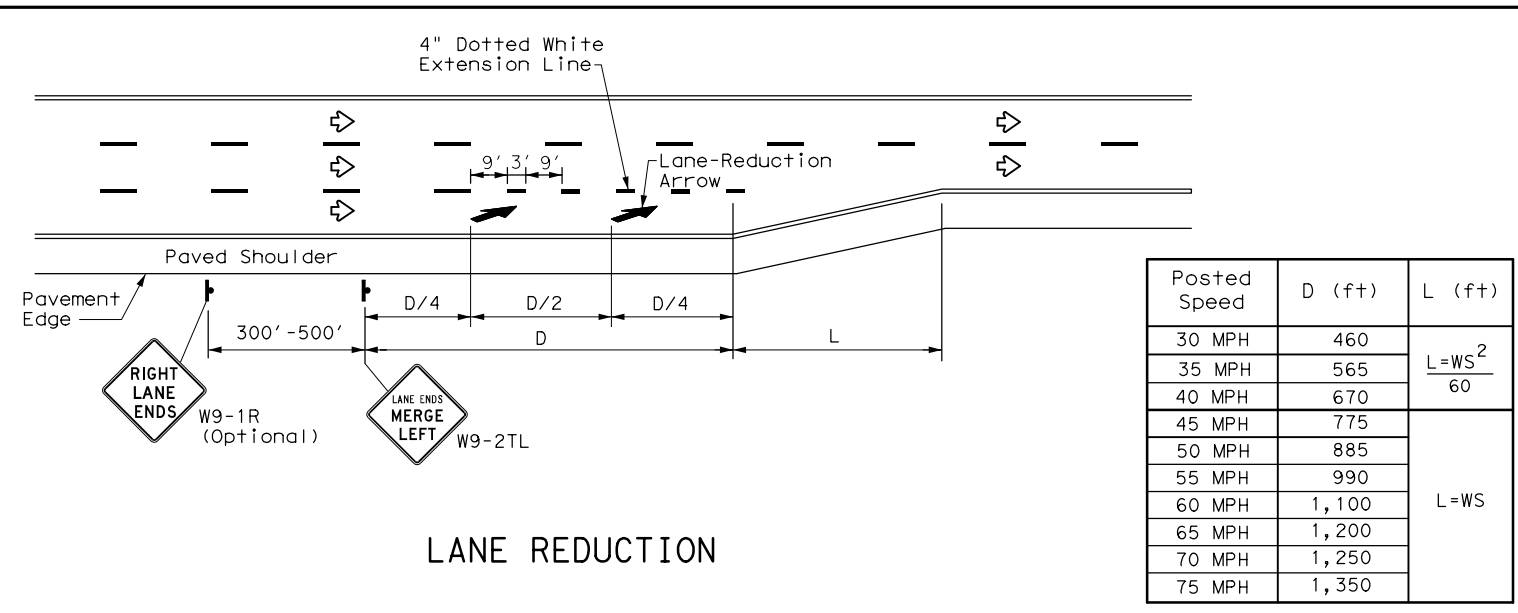


POSITION GUIDANCE USING RAISED MARKERS REFLECTORIZED PROFILE MARKINGS PM(2) - 20

FILE: pm2-20.dgn	DN:	CK:	DW:	CK:
© TxDOT April 1977	CONT	SECT	JOB	HIGHWAY
4-92 2-10	0887	01	039, ETC.	VARIOUS
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00 6-20	ODA	ECTOR, ETC.		290

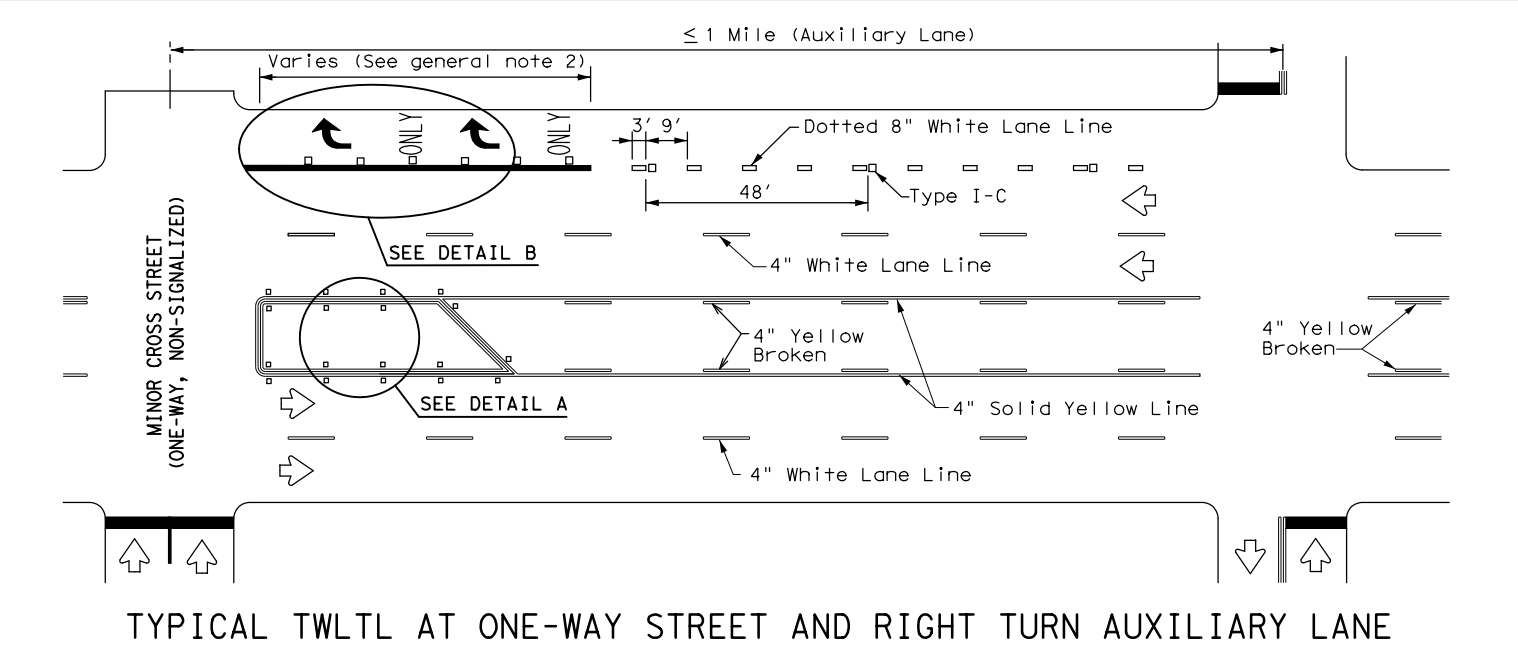
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 DATE: 8/20/2020
 FILE: pw:\jmt-pw_bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8 - Traffic\Signing & Pavement

DATE: 8/20/2020
 FILE: pm3-20.dgn
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 PROJECT: 0887 01 039, ETC., VARIOUS
 COUNTY: ODA
 SHEET NO.: 291

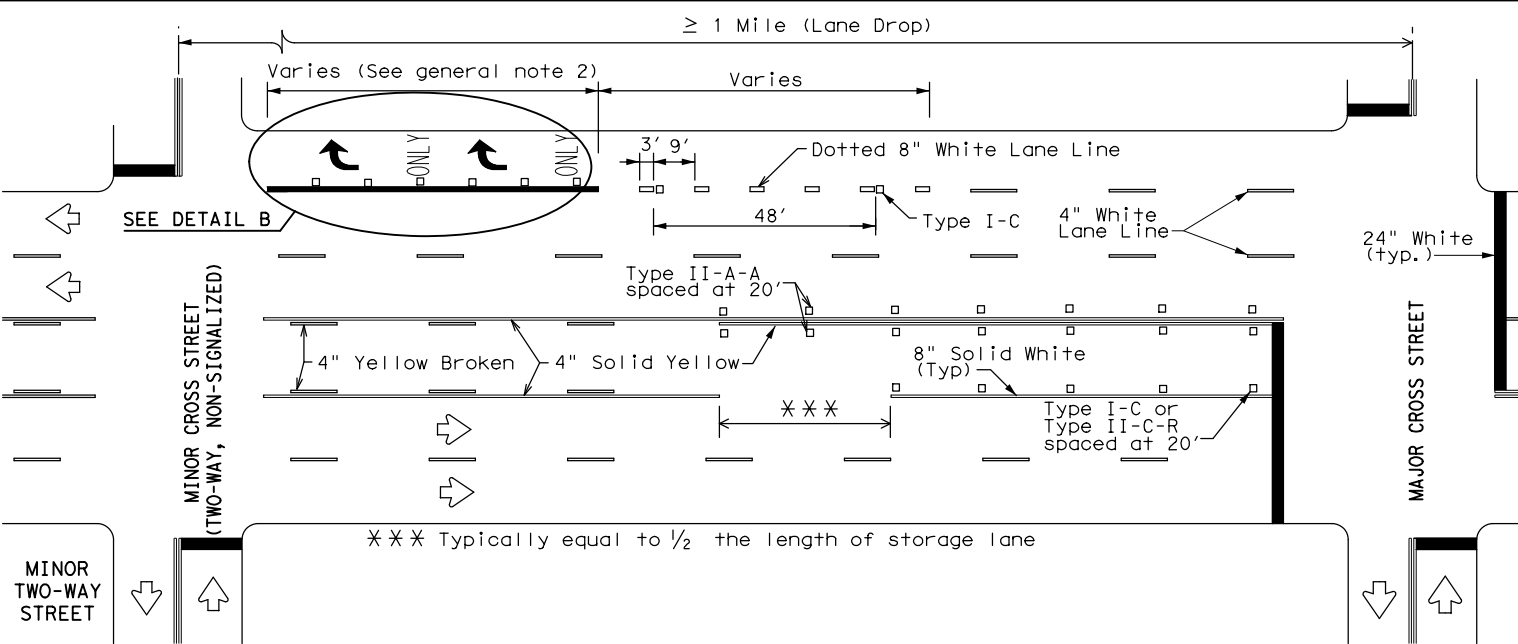


Posted Speed	D (ft+)	L (ft+)
30 MPH	460	$L = \frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	L=WS
45 MPH	775	
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

LANE REDUCTION



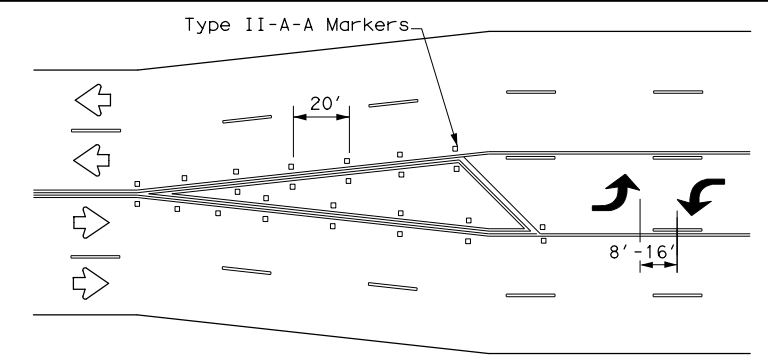
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



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

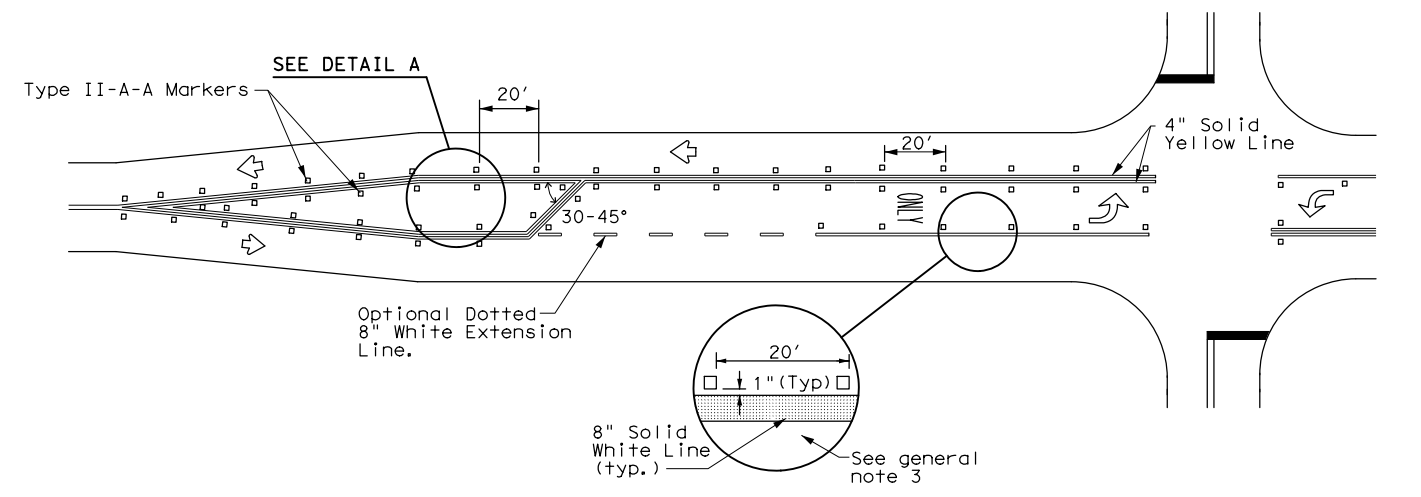
NOTES

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

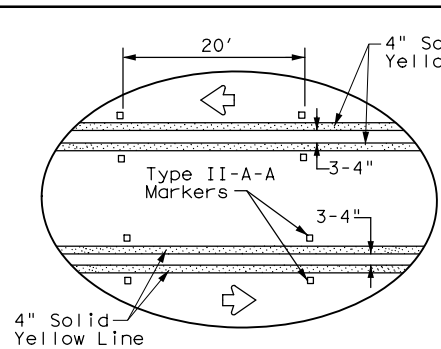


A two-way left-turn (TWLTL) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

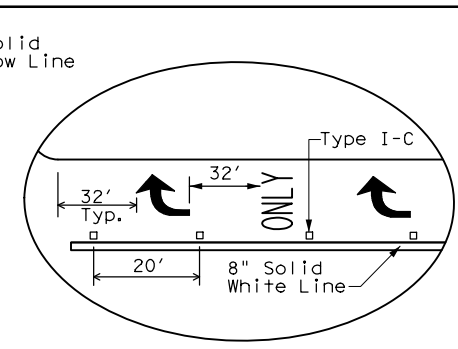
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A



DETAIL B

GENERAL NOTES

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

MATERIAL SPECIFICATIONS

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

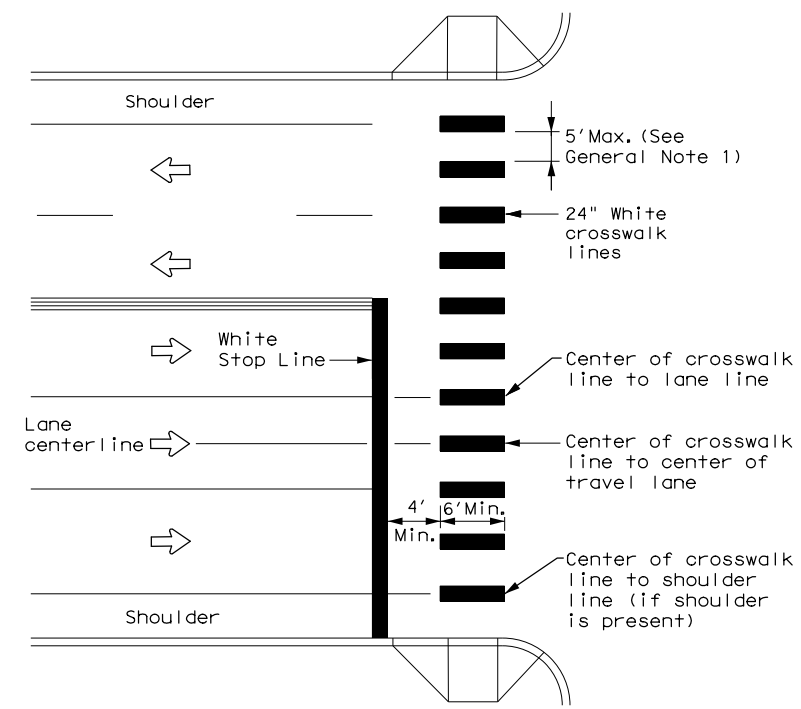
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

Texas Department of Transportation
 Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS
PM(3)-20

FILE: pm3-20.dgn	DN:	CK:	DW:	CK:
© TxDOT April 1998	CON:	SECT:	JOB:	HIGHWAY:
REVISIONS	0887	01	039, ETC.	VARIOUS
5-00 2-10	DIST:	COUNTY:	SHEET NO.:	
8-00 2-12	ODA	ECTOR, ETC.	291	
3-03 6-20				

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 PROJECT: 0887 01 039, ETC., VARIOUS
 COUNTY: ODA
 SHEET NO.: 292



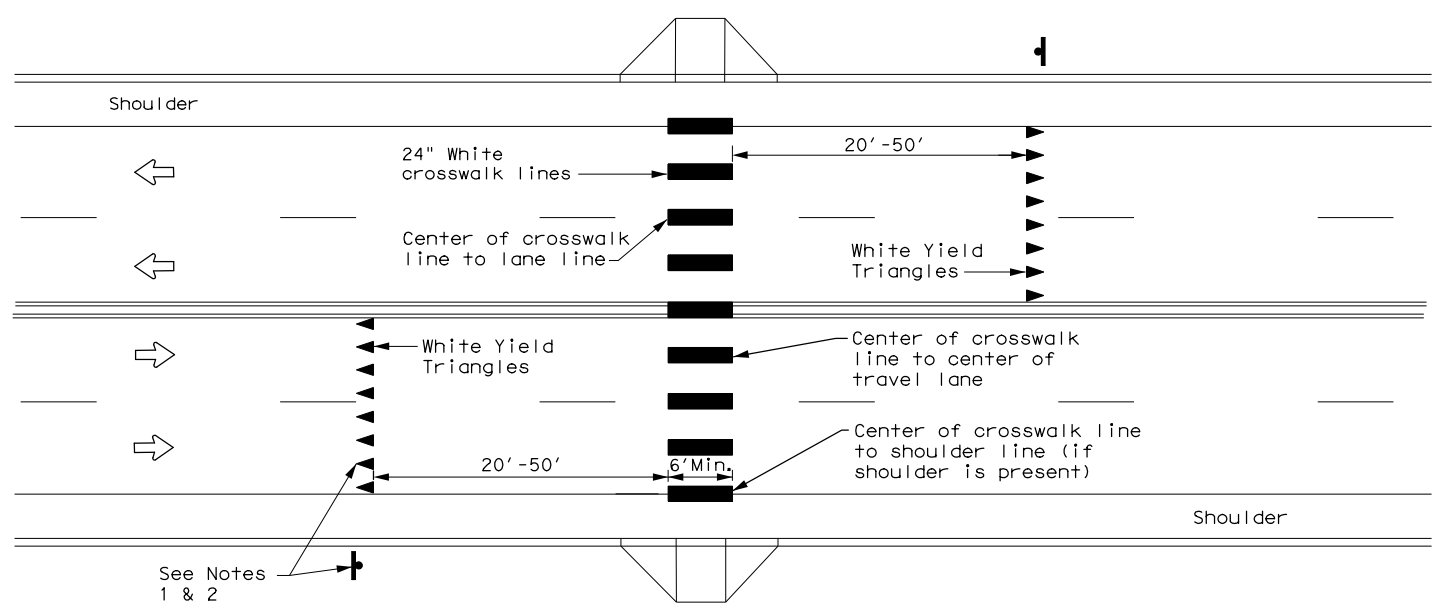
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

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

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

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



UNSIGNALIZED MID BLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES

1. Use yield triangles with "Yield Here to Pedestrians" signs at unsignalized mid block crosswalks.
2. Use stop bars with "Stop Here on Red" signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4) - 20

FILE: pm4-20.dgn	DN:	CK:	DW:	CK:
© TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0887	01	039, ETC.	VARIOUS
	DIST	COUNTY	SHEET NO.	
	ODA	ECTOR, ETC.	292	

DATE: 8/20/2020
 FILE: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. Traffic\Signing & Pavement\

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

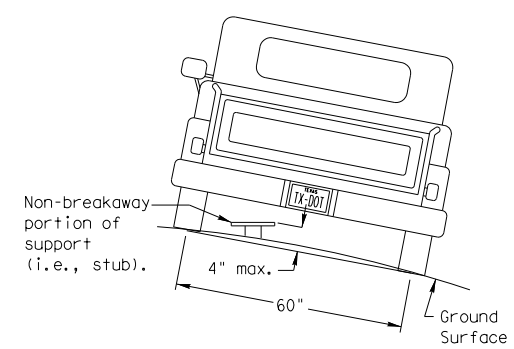
Post Type _____
 FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
 TWT = Thin-Walled Tubing (see SMD(TWT))
 10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
 S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

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))

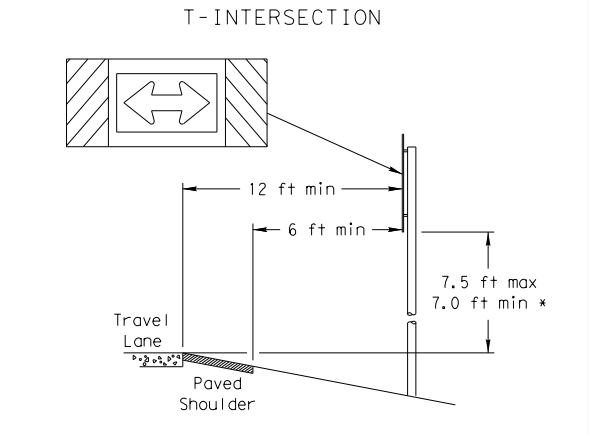
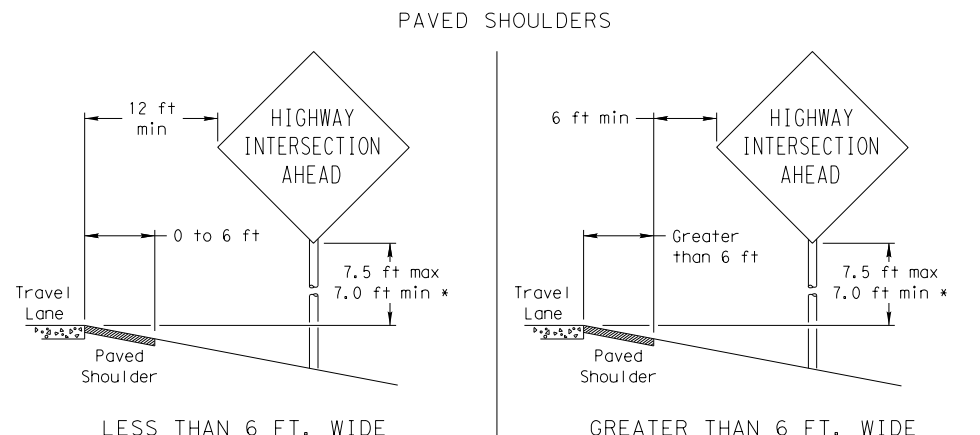
Sign Mounting Designation
 P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
 T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
 U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
 IF REQUIRED
 1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
 BM = Extruded Wind Beam (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-3))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



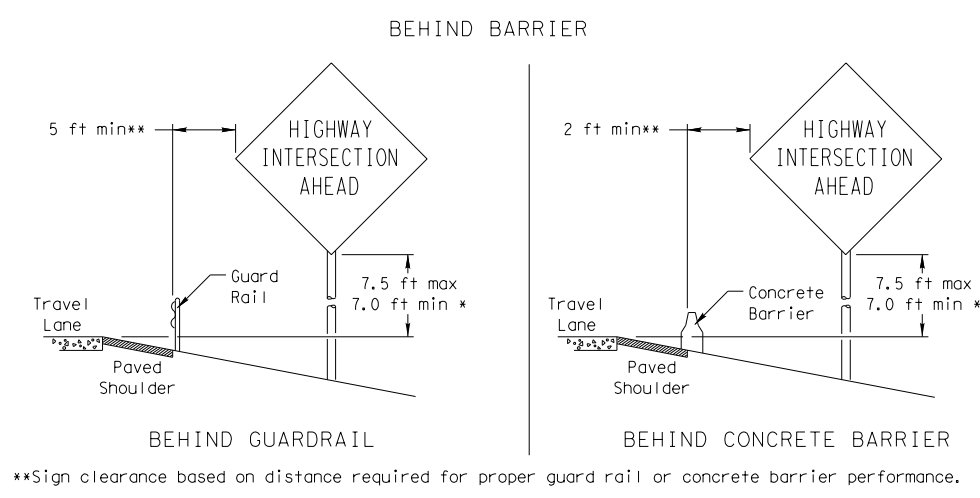
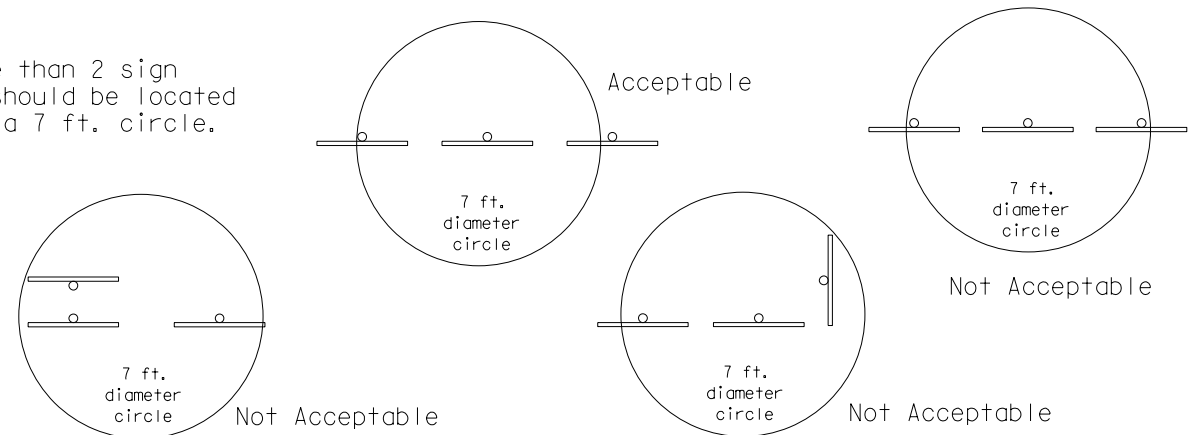
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

SIGN LOCATION

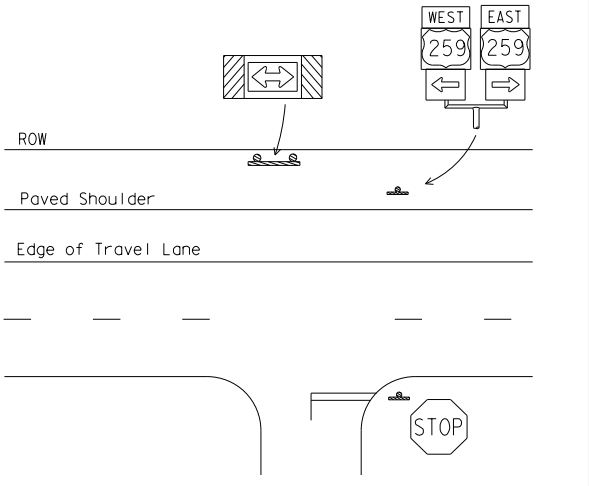


When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

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

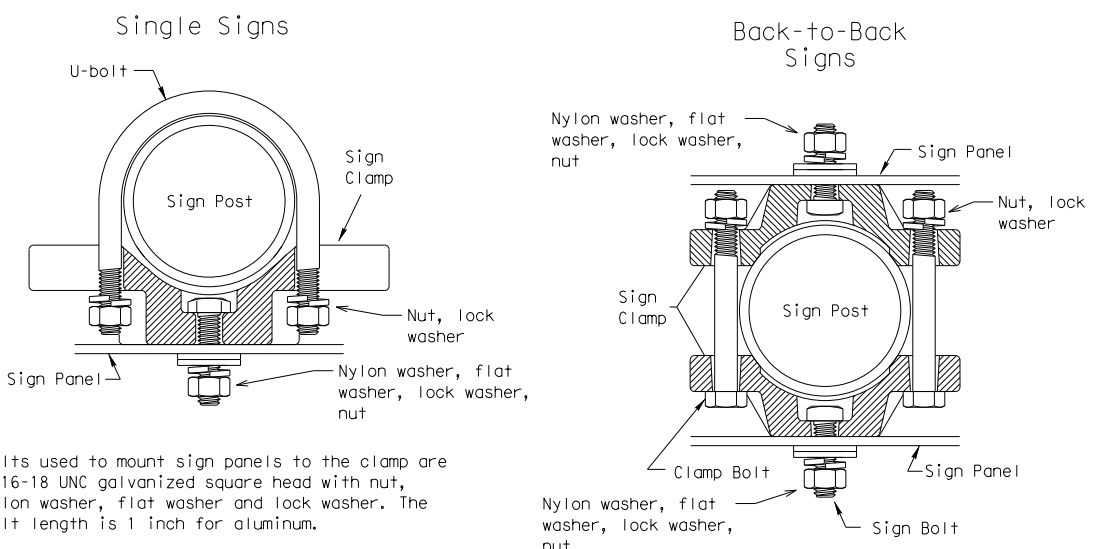


**Sign clearance based on distance required for proper guard rail or concrete barrier performance.



* Signs shall be mounted using the following condition that results in the greatest sign elevation:
 (1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or
 (2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.
 The maximum values may be increased when directed by the Engineer.
 See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.
 The website address is:
<http://www.txdot.gov/publications/traffic.htm>

TYPICAL SIGN ATTACHMENT DETAIL



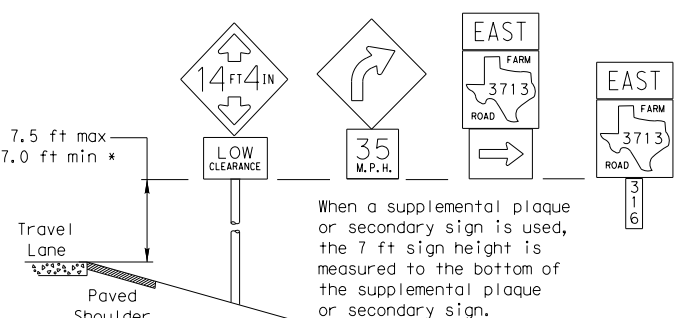
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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

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

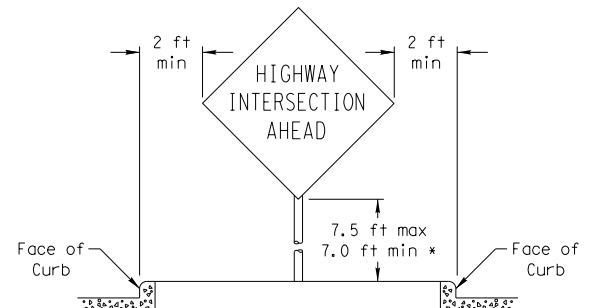
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



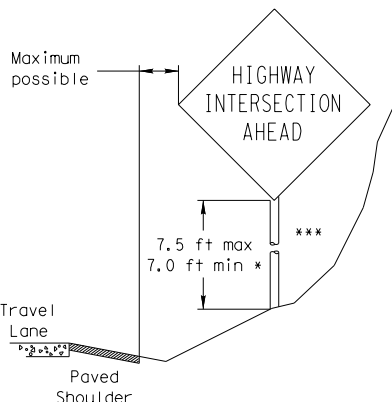
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



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

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

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

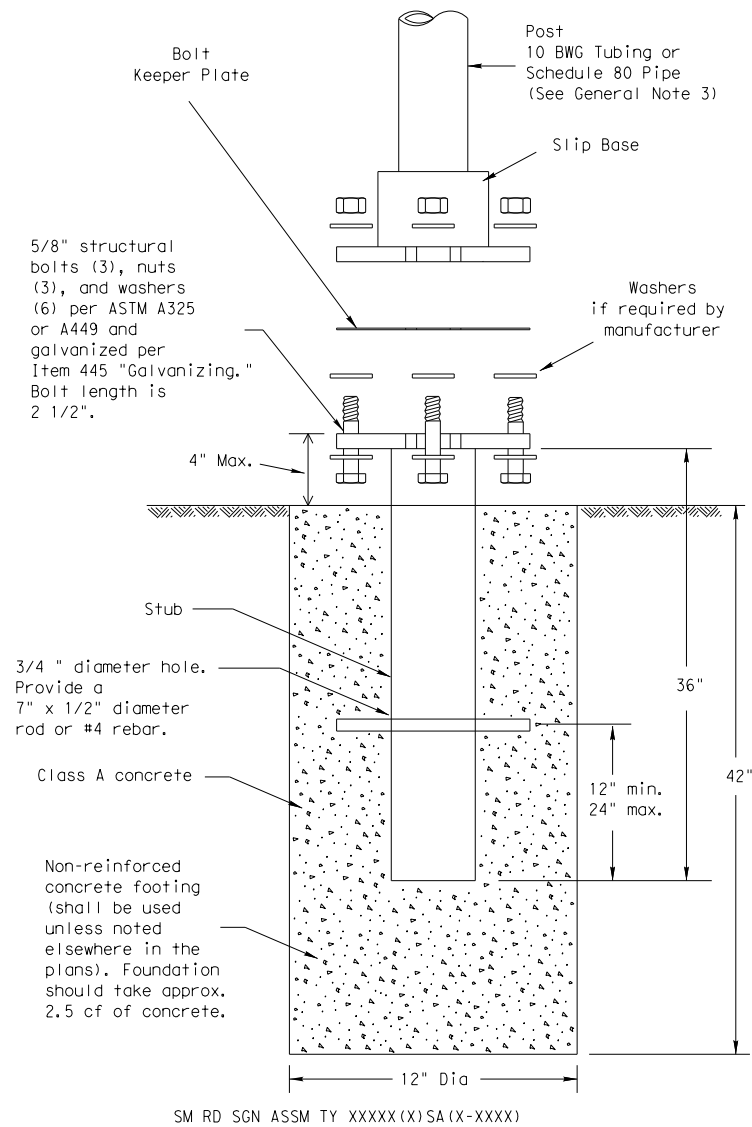


SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS SMD(GEN)-08

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9-08	REVISIONS	CONTRACT NO. 0887	SECTION 01	JOB NO. 039, ETC.
		DISTRICT	COUNTY	SHEET NO.
		ODA	ECTOR, ETC.	293

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TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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:

- 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.
- 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
- 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>
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

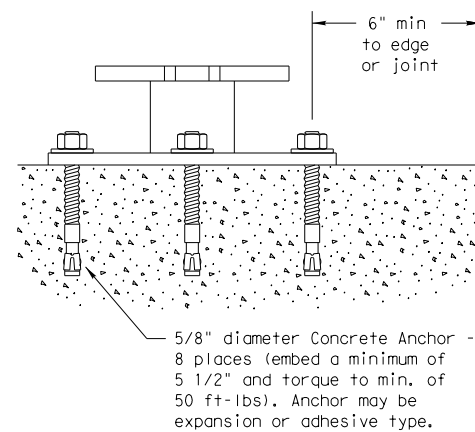
Foundation

- 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.
- 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.
- 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.
- Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
- The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support

- 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.
- 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, "Epoxyes 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.

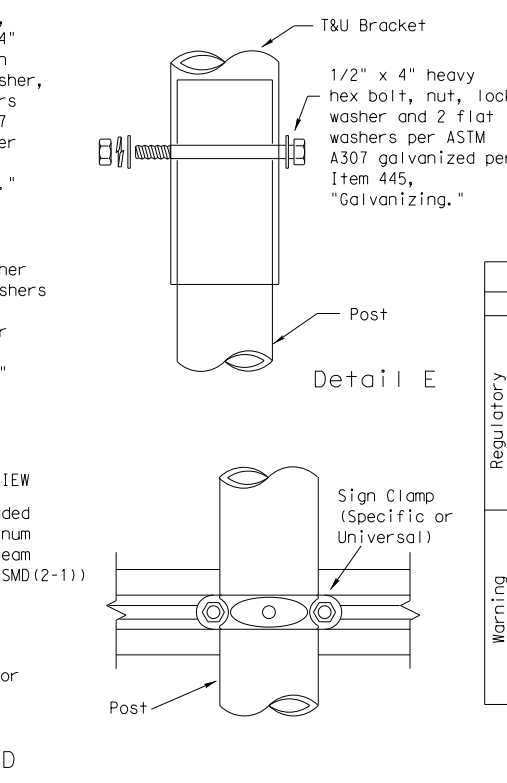
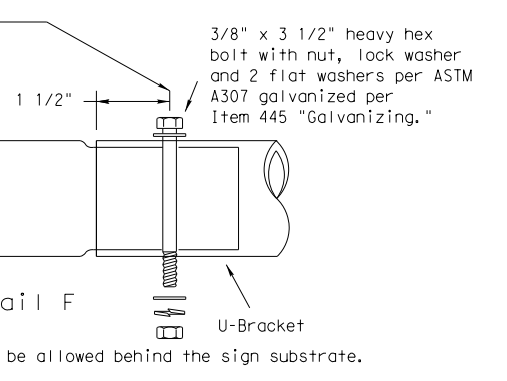
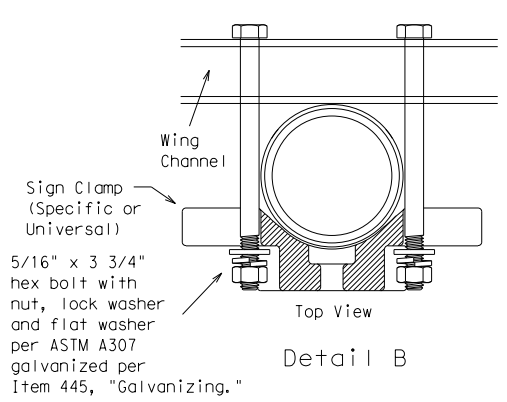
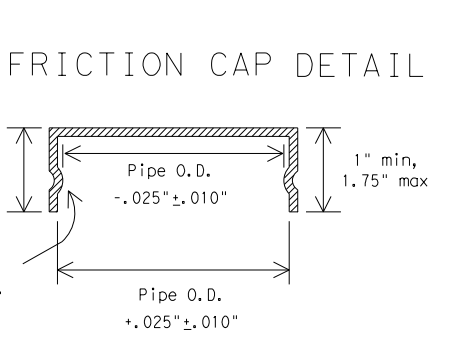
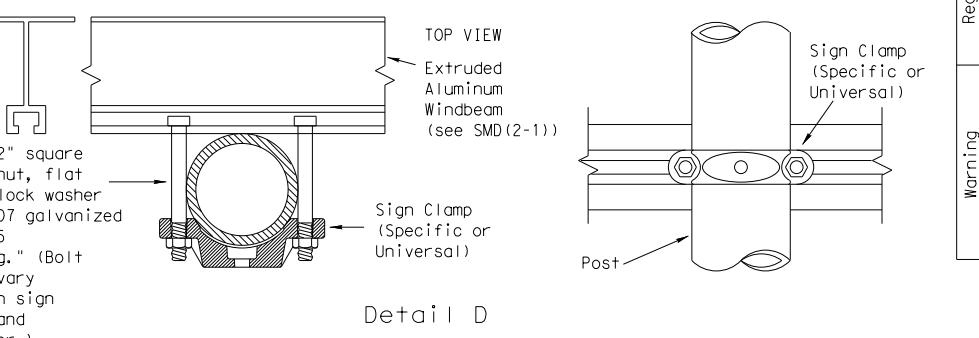
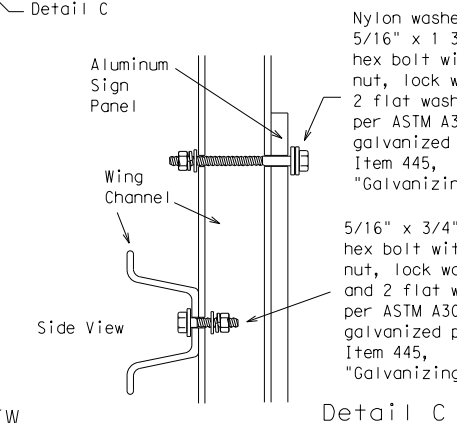
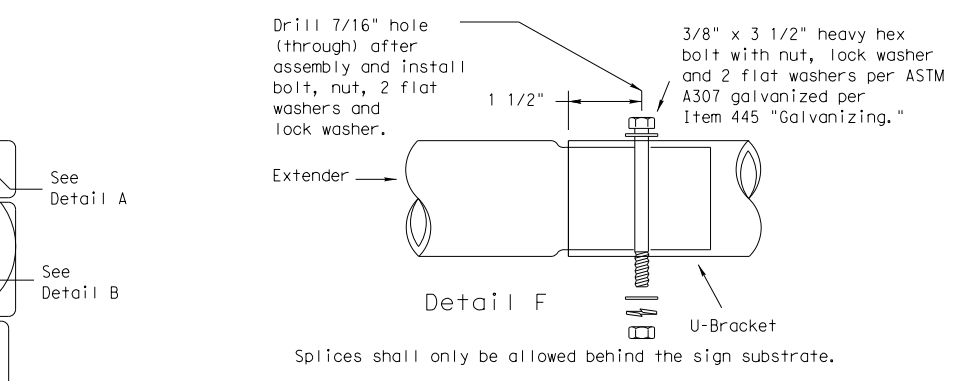
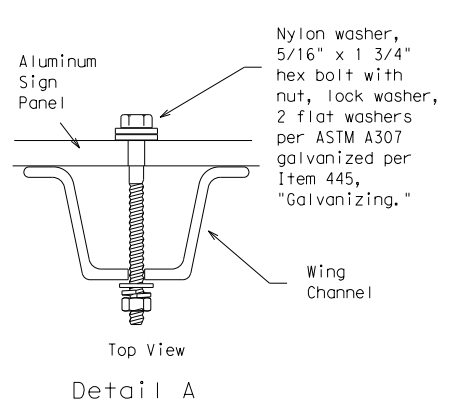
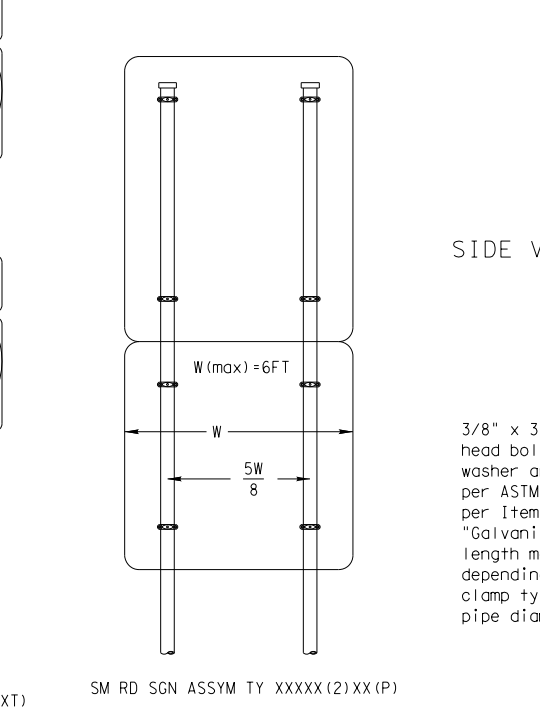
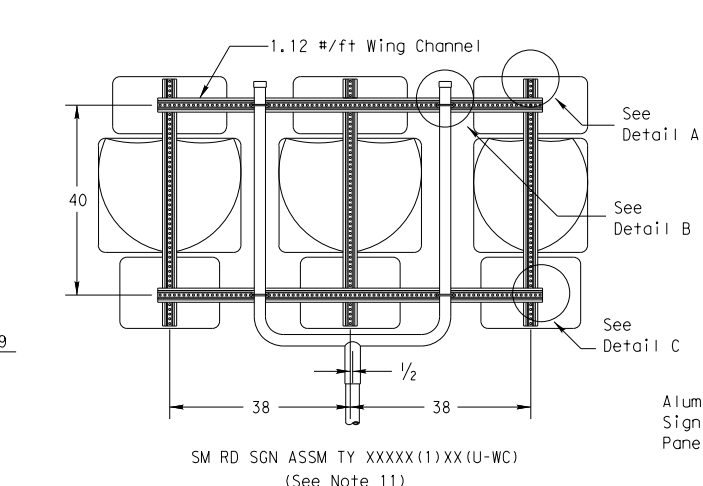
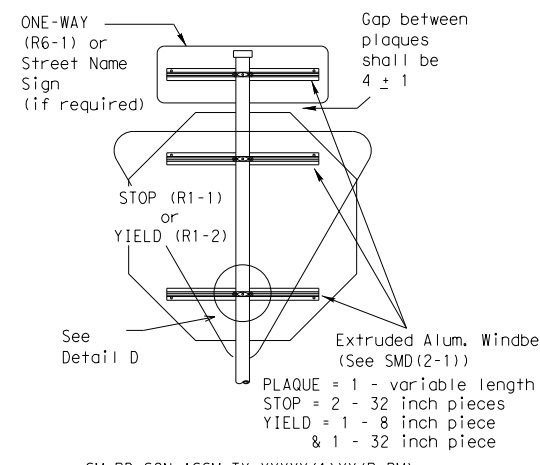
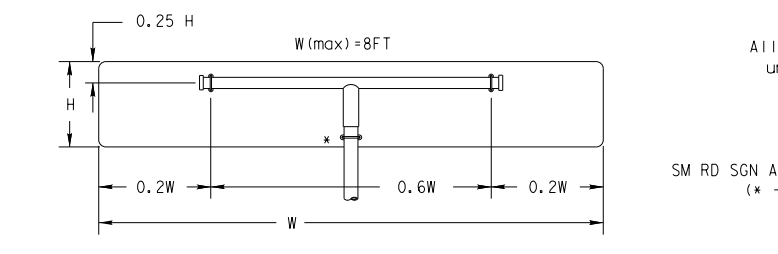
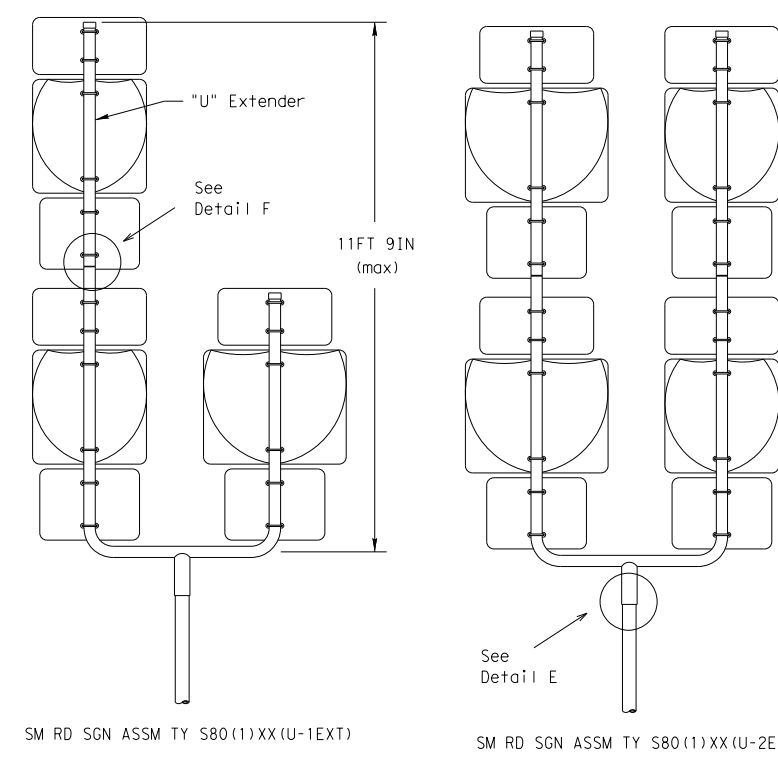
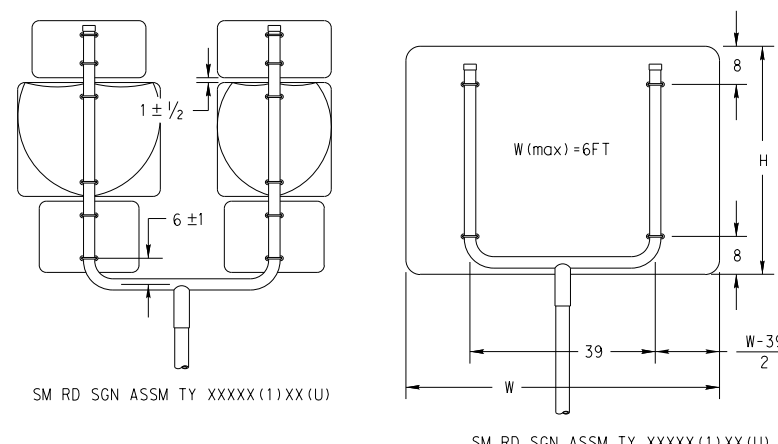
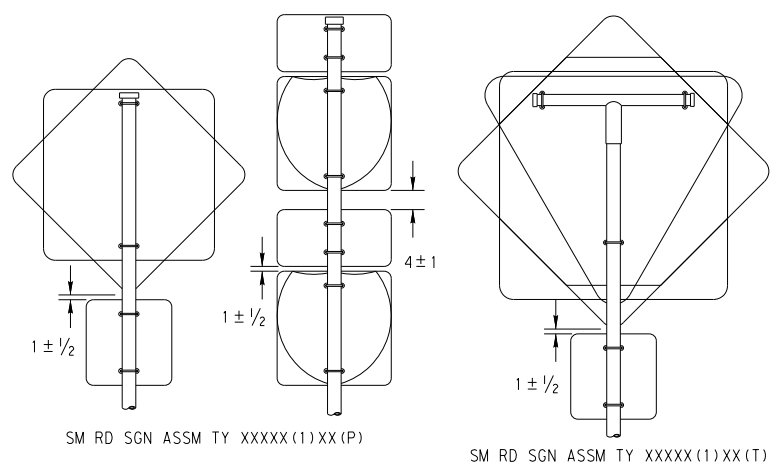


SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
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		DIST	COUNTY		SHEET NO.
		ODA	ECTOR, ETC.		294

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All dimensions are in english unless detailed otherwise.

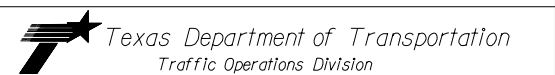
SM RD SGN ASSM TY XXXX(1)XX(T) (* - See Note 12)

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 |
- 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.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- 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.
- Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
- 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.
- 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.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- 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."
- Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
- 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.
- Post open ends shall be fitted with Friction Caps.
- Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT		
SIGN DESCRIPTION	SUPPORT	
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
Warning	48x60-inch signs	TY S80(1)XX(T)
	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)	

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.

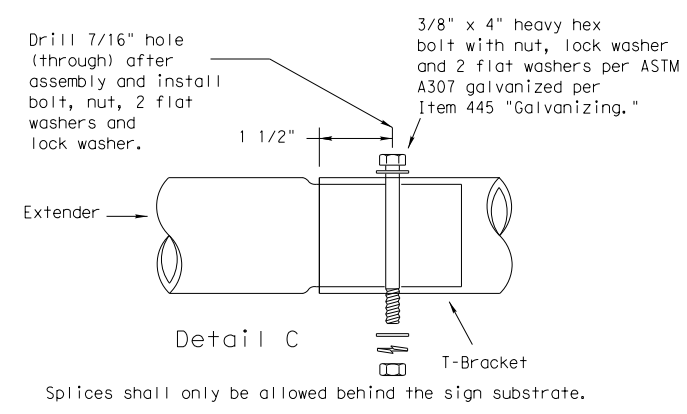
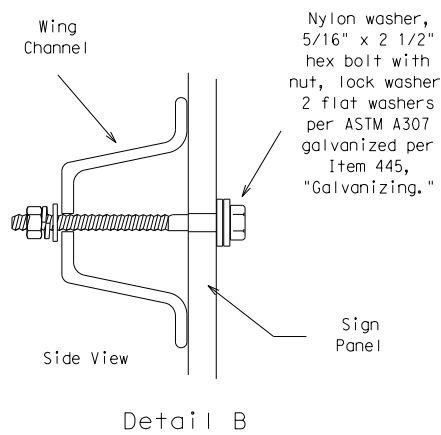
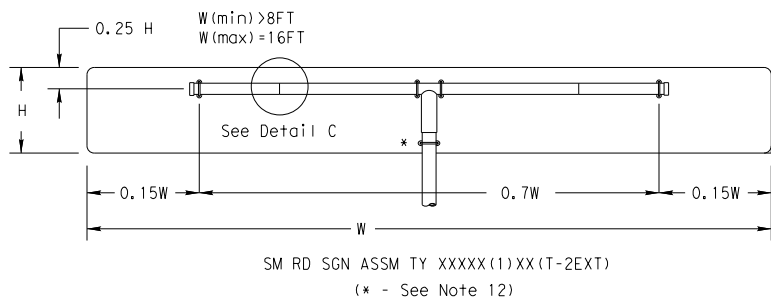


SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD(SLIP-2)-08

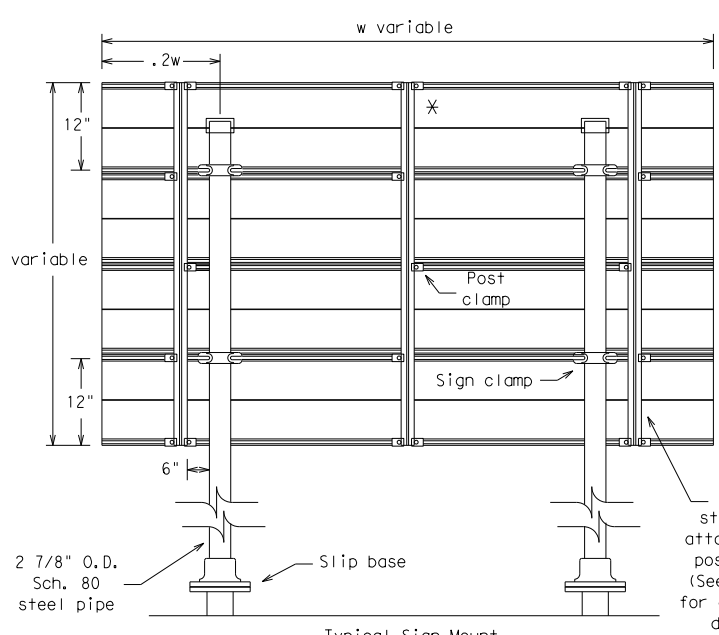
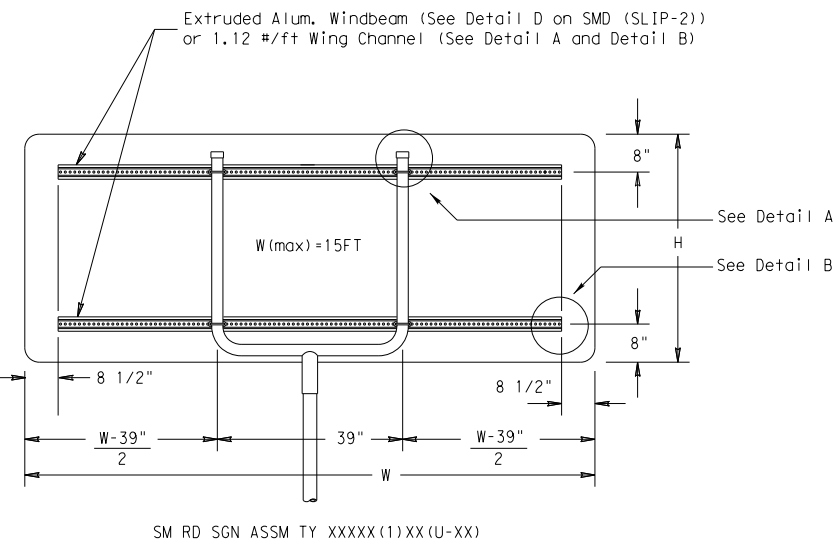
© TxDOT July 2002	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	REVISIONS	CON: 0887	SECT: 01	JOB: 039, ETC.
		DIST: ODA	COUNTY: ECTOR, ETC.	SHEET NO.: 295

DATE: 8/20/2020
 FILE: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\11-1524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. Traffic\Signing & Pavement\

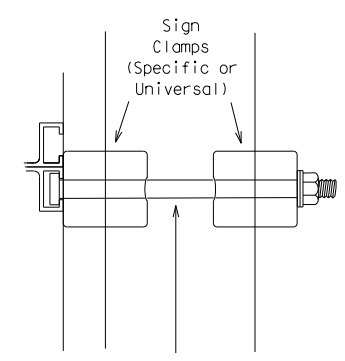
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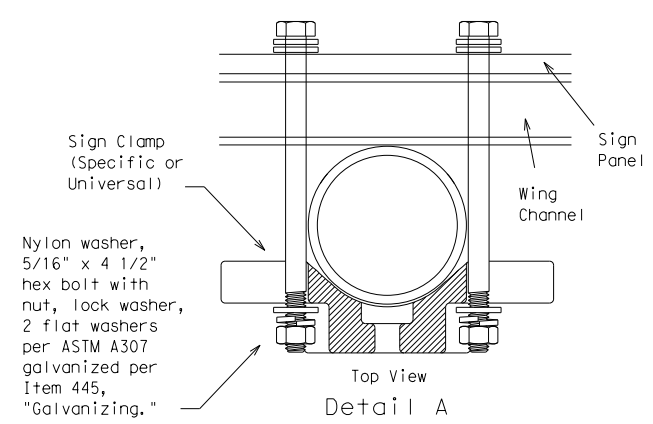
Splices shall only be allowed behind the sign substrate.



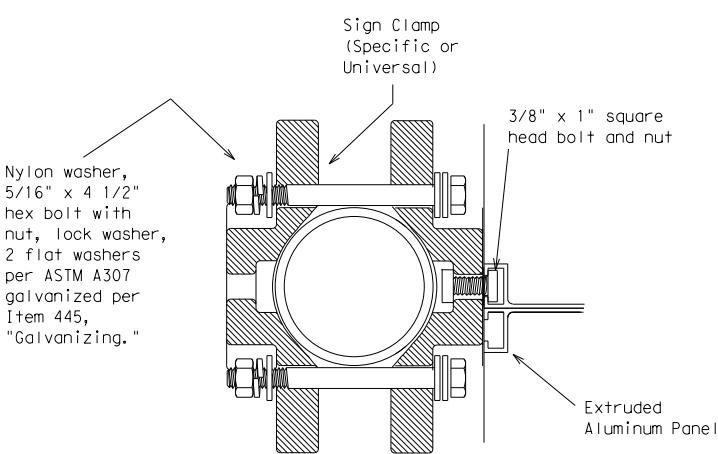
Typical Sign Mount
SM RD SGN ASSM TY S80(2)XX(P-EXAL)
* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.



Detail E

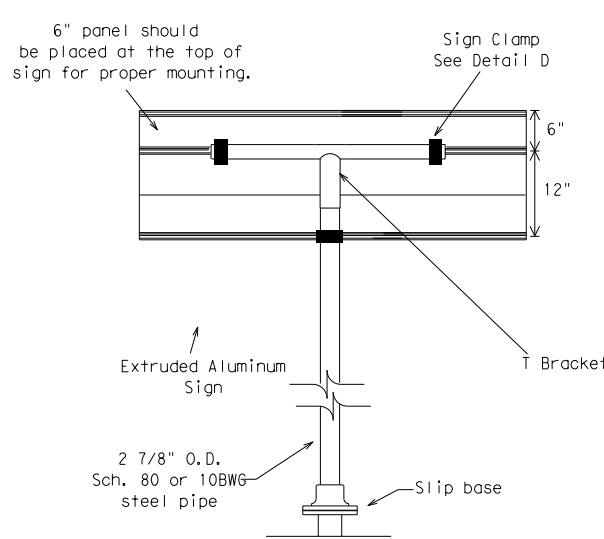


Detail A

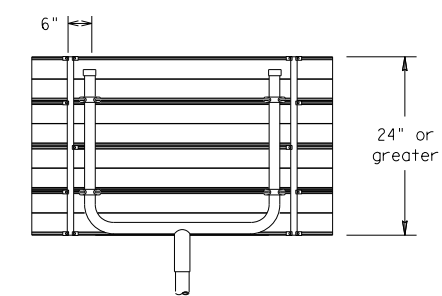


Detail D

EXTRUDED ALUMINUM SIGN WITH T BRACKET



Extruded Aluminum Sign With T Bracket



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 |
- 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.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- 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.
- Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
- 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.
- 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.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- 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."
- Sign blanks shall be the sizes and shapes shown on the plans.
- 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.
- 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)



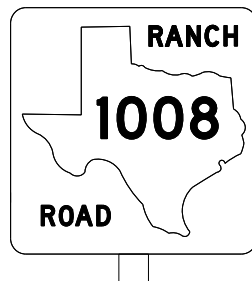
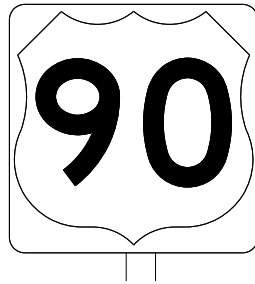
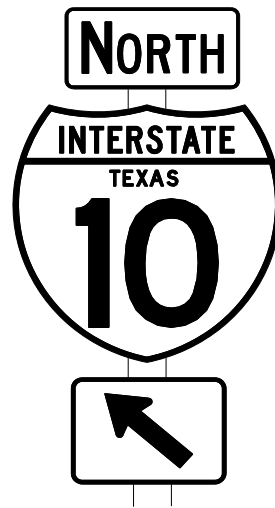
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD(SLIP-3) -08

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9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
		0887	01	039, ETC.	VARIOUS
		DIST	COUNTY		SHEET NO.
		ODA	ECTOR, ETC.		296

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 FILE: \\jmt-pw-bent\ey.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8 - Traffic\Signing & Pavement

REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

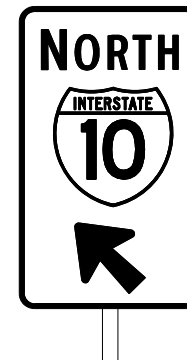
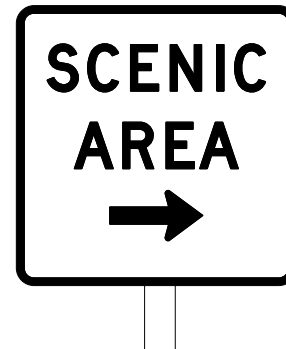
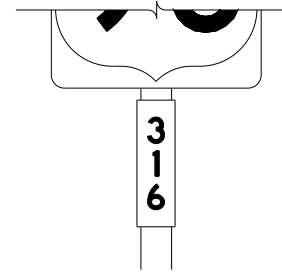
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

GENERAL NOTES

- 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).
- White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

- Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).
- 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.
- Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.
- Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.
- Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
- Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

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

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

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

<http://www.txdot.gov/>



TYPICAL SIGN REQUIREMENTS

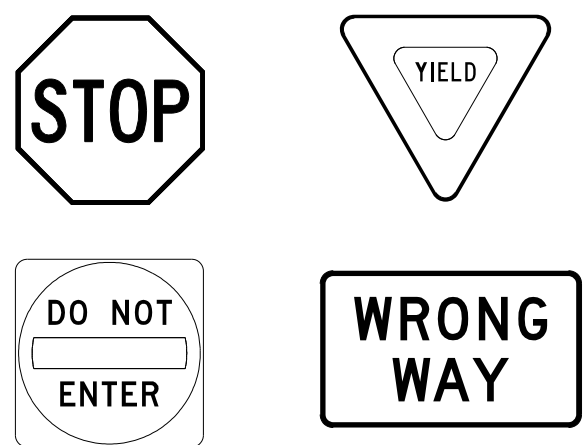
TSR(3) - 13

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© TxDOT	October 2003	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0887	01	039, ETC.		VARIOUS			
12-03	7-13	DIST	COUNTY		SHEET NO.				
9-08		ODA	ECTOR, ETC.		297				

DATE: 8/20/2020
 FILE: pw:\jmt-pw_bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\8. Traffic\Signing & Pavement
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REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

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



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

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

REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

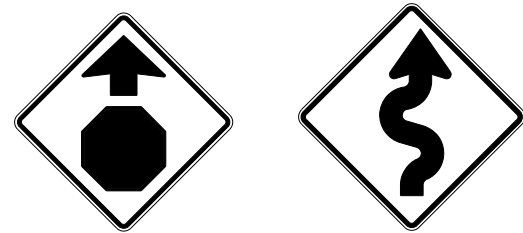
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



TYPICAL EXAMPLES

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

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

- 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).
- Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
- 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.
- Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
- 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.
- 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.
- Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
- 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/>



TYPICAL SIGN REQUIREMENTS

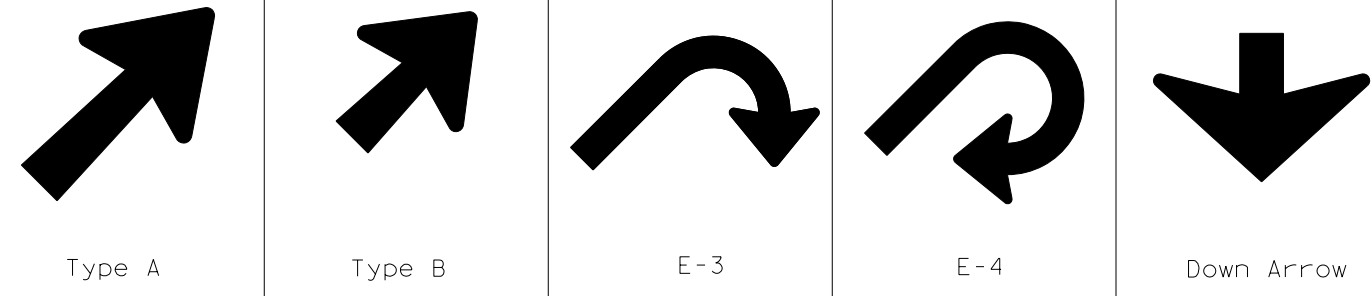
TSR (4) - 13

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REVISIONS		0887	01	039, ETC.	VARIOUS				
12-03	7-13	DIST	COUNTY	SHEET NO.					
9-08		ODA	ECTOR, ETC.	298					

DATE: 8/20/2020
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ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

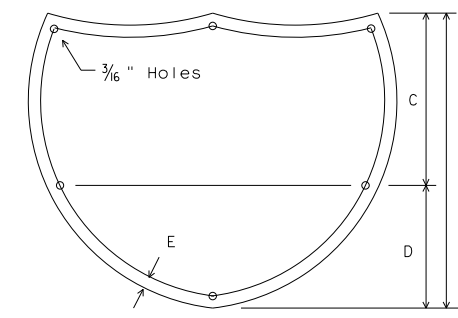
NOTE

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

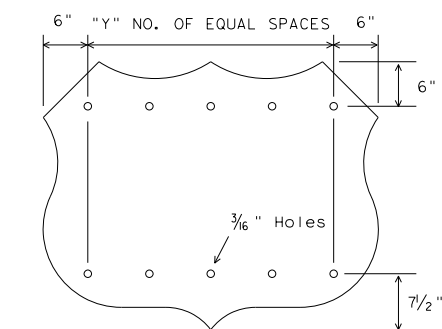
The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:
<http://www.txdot.gov/>

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)



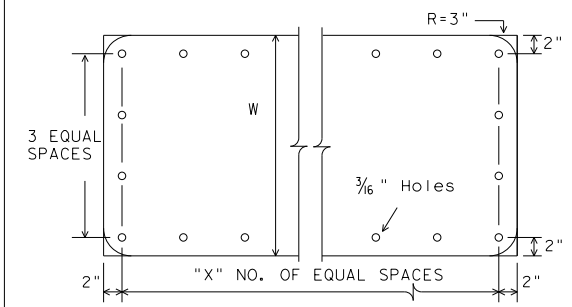
INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4



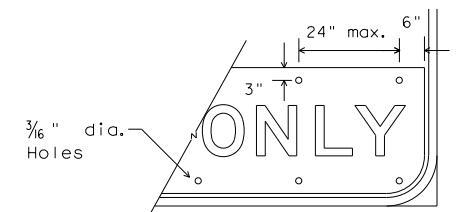
U.S. ROUTE MARKERS

Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



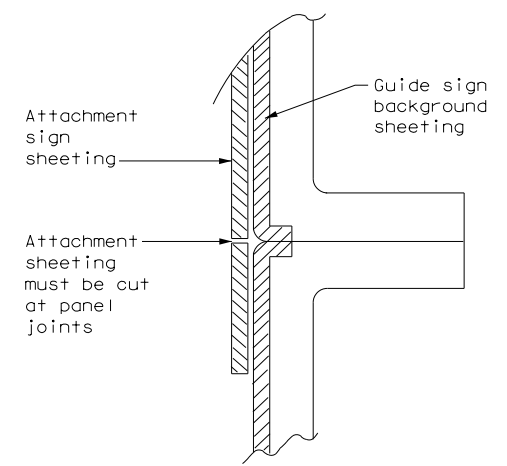
STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5

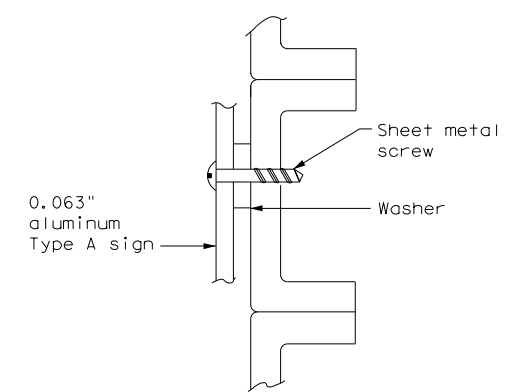


EXIT ONLY PANEL

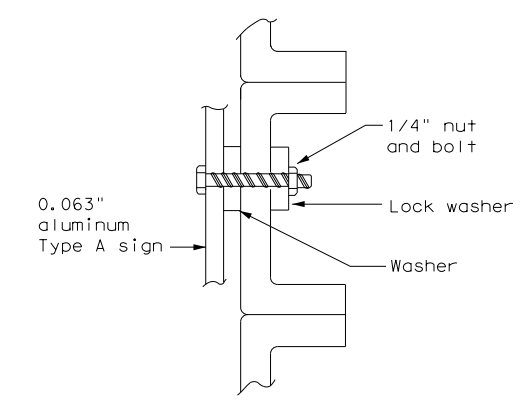
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



DIRECT APPLIED ATTACHMENT



SCREW ATTACHMENT

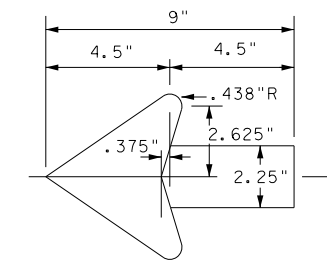


NUT/BOLT ATTACHMENT

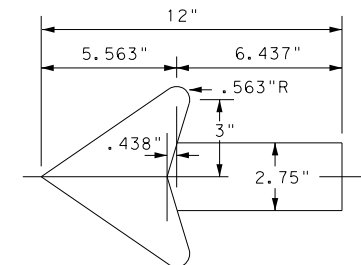
- NOTE:**
- Sheeting for legend, symbols, and borders must be cut at panel joints.
 - Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".

- NOTE:**
- Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

ARROW DETAILS for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.



TYPICAL SIGN REQUIREMENTS

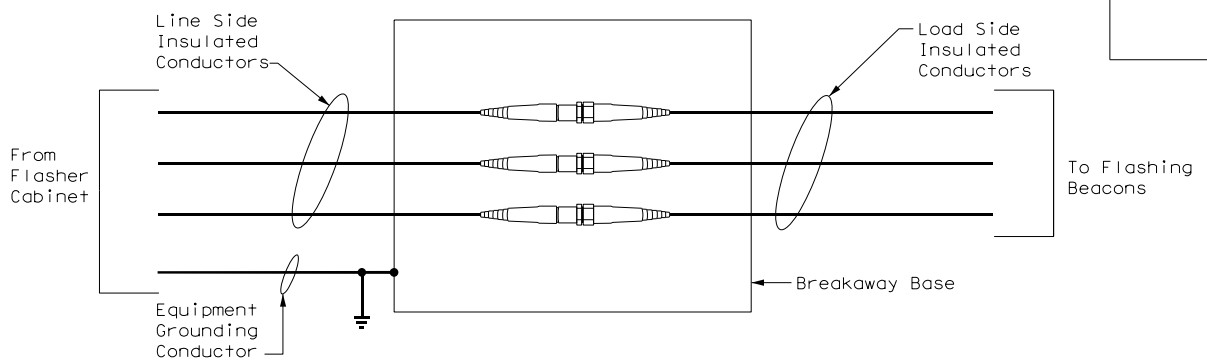
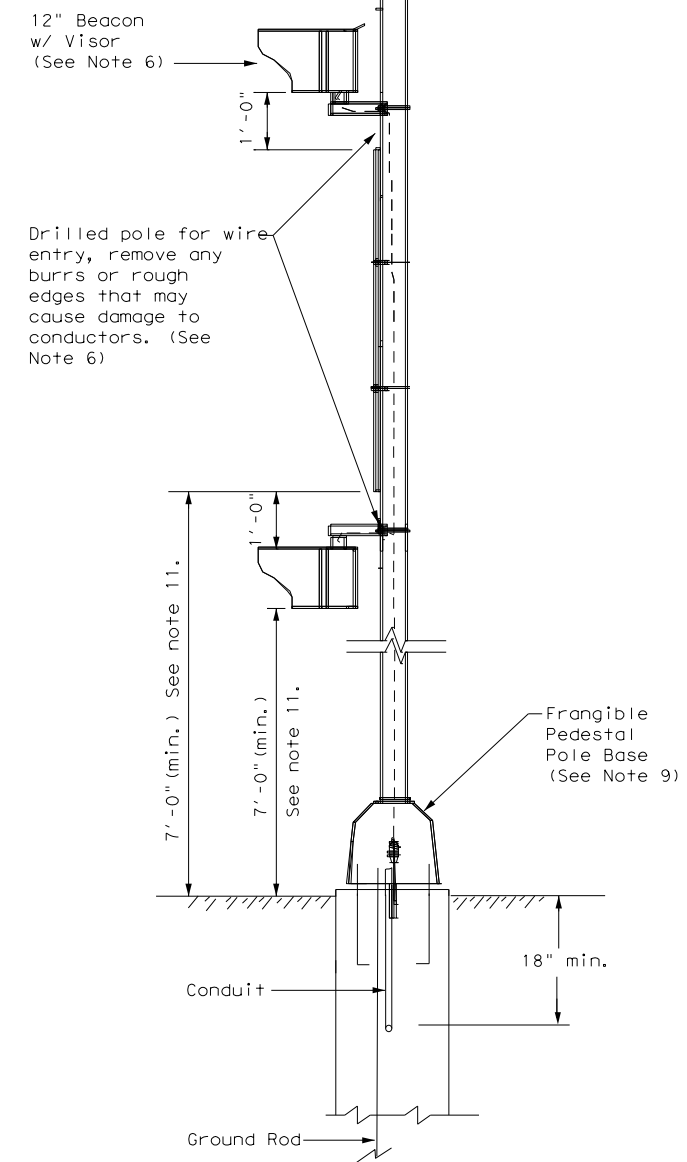
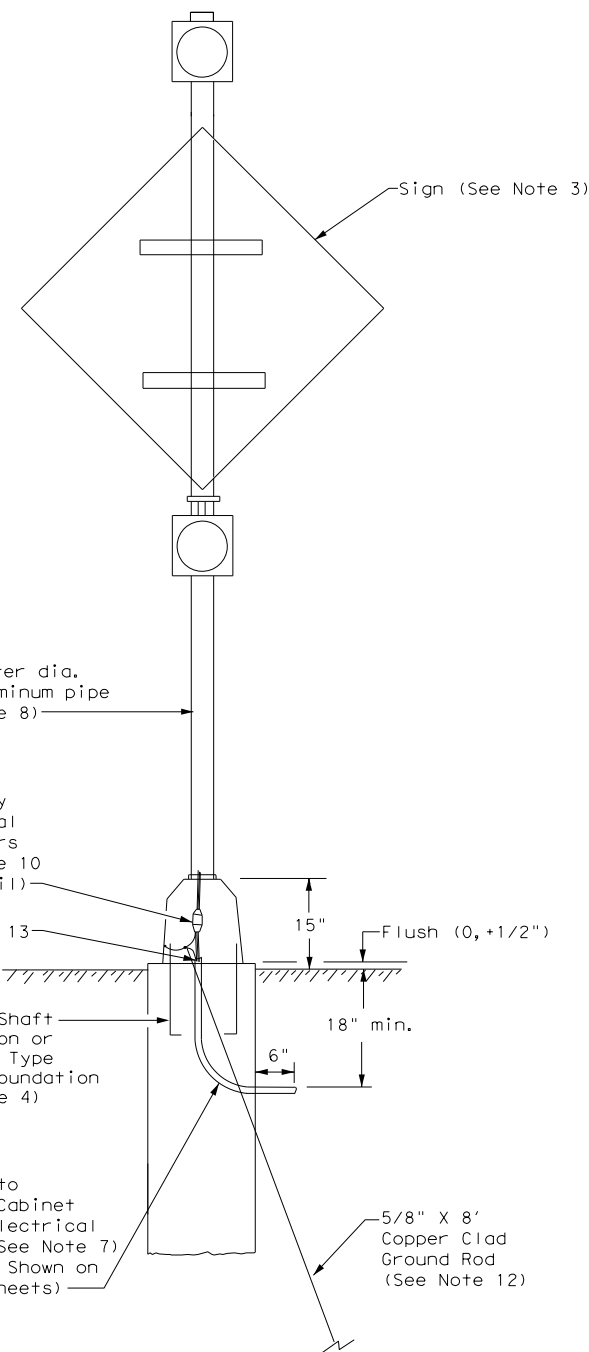
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REVISIONS	0887	01	039, ETC.	VARIOUS
12-03 7-13	DIST	COUNTY	SHEET NO.	
9-08	ODA	ECTOR, ETC.	299	

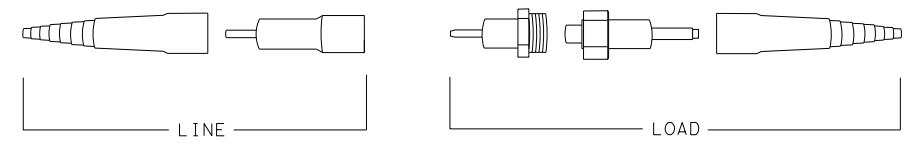
DATE: 8/20/2020
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GENERAL NOTES:

- Details show a typical warning sign with two flashing beacon heads, other arrangements are possible. When only one beacon is required, install the upper beacon.
- See Item 685, "Roadside Flashing Beacon Assemblies" for further requirements.
- See SMD standard sheets for lateral and vertical clearances and sign mounting details. Install signs as shown on the sign layout sheets.
- Use either a Screw-In Type Anchor Foundation or a Drilled Shaft Foundation as shown elsewhere in the plans. When plans require a Drilled Shaft Foundation, see standard sheet TS-FD. Install the Screw-In Type Anchor Foundation as per manufacturer's recommendations. On a slope, install one edge at ground level. Screw-In/Drilled Shaft Foundation is subsidiary to Item 685. Installation of a ground rod is not required for solar powered flashing beacon assemblies.
- When used, provide Screw-In Type Anchor Foundations as shown on TxDOT's Material Producer List (MPL) in the file "Highway Traffic Signals".
- Install beacon heads as shown here, as shown elsewhere on the plans, or as directed. Use hardware specifically designed for mounting beacon heads on poles.
- Conduit in foundation and within 6 in. of foundation is subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies."
- Unless otherwise shown on the plans, pole shaft shall be one piece, Schedule 40 Aluminum pipe, ASTM B429 or B221 (Alloy 6061-T6 only). Aluminum conduit will not develop the necessary strength and will not be allowed.
- Per manufacturer's recommendations, engage all threads on the pedestal pole base and pipe unless the pipe is fully seated into base. In high winds, use a pole and base collar assembly to add strength and prevent loosening of connection.
- Provide single pole non-fused watertight breakaway electrical connectors for frangible pedestal pole bases, as shown on TxDOT's MPL in the file "Roadway Illumination and Electrical Supplies." Approved models are listed under Item 685. For ungrounded (hot) conductors, install a breakaway connector with a dummy fuse slug. For grounded (neutral) conductors, install a breakaway connector with a white colored marking and a permanently installed dummy fuse (slug).
- Provide clearance as shown above the sidewalk or pavement grade at the edge of the road. When a bottom beacon is not used, mount the bottom of the sign at least 7 ft. above the sidewalk or pavement grade at the edge of the road.
- Make connections to ground rods according to NEC. Ground rod clamps shall be listed for their intended purpose.
- Ensure height of conduit and ground rod is below top of anchor bolts.



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS



**NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS
EXPLODED VIEW**

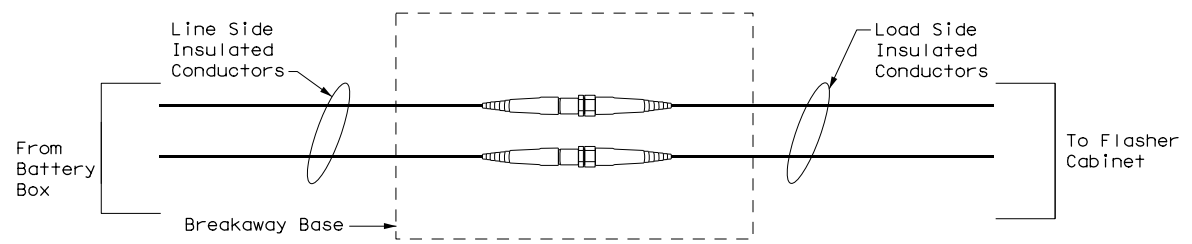
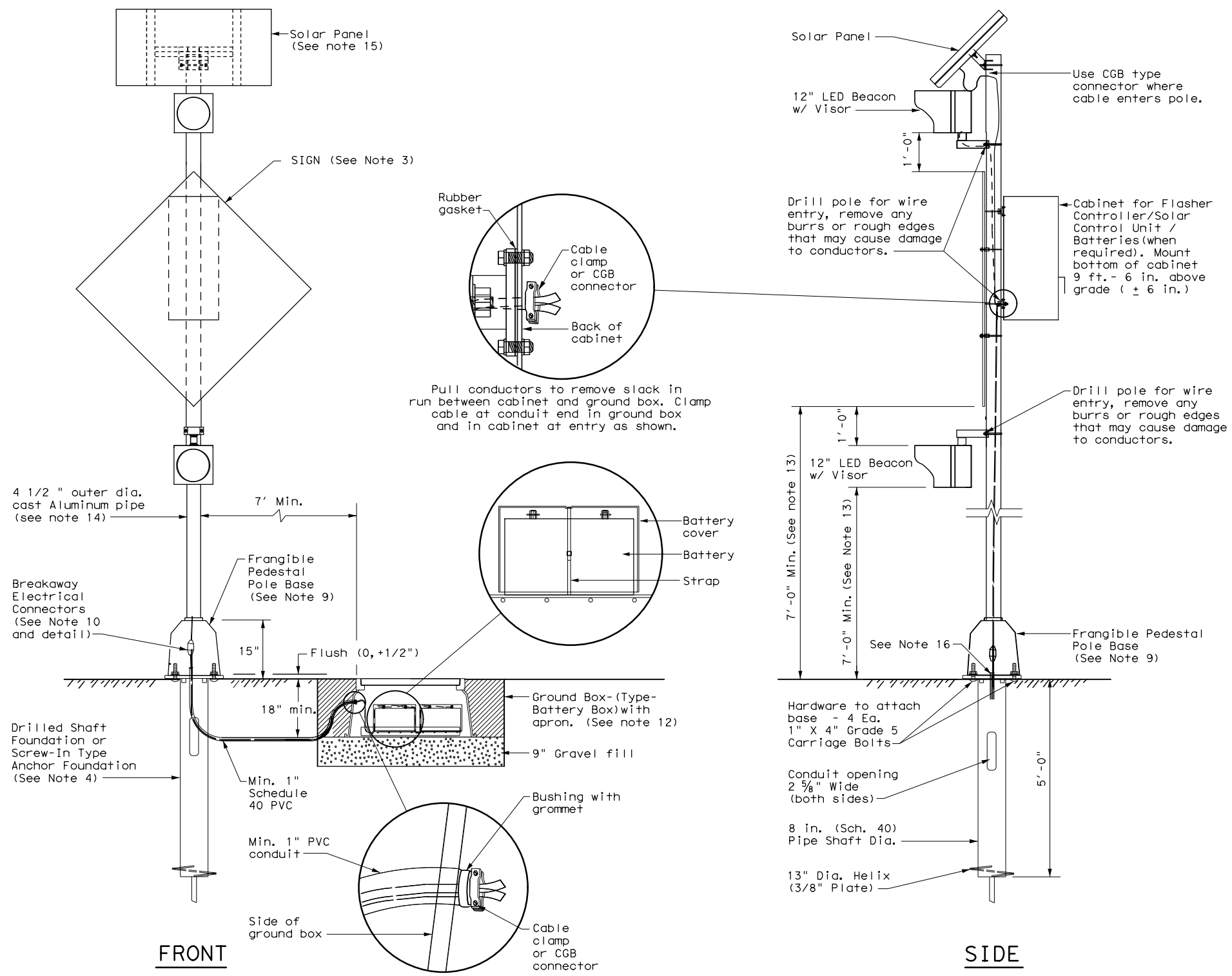
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<h2>ROADSIDE FLASHING BEACON ASSEMBLY</h2>					
<h3>RFBA-13</h3>					
FILE: rfb-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
© TxDOT January 1992	CONT	SECT	JOB	HIGHWAY	
REVISIONS			0887 01	039, ETC.	VARIOUS
5-93 12-04					
10-93 3-13					
4-98					
	DIST	COUNTY		SHEET NO.	
	ODA	ECTOR, ETC.		300	

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

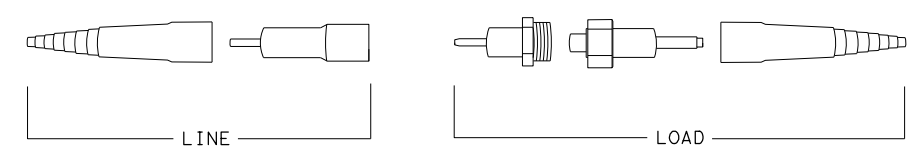
DATE: 8/20/2020
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GENERAL NOTES:

- Details show a typical warning sign with two flashing beacon heads, other arrangements are possible. When only one beacon is required, install the upper beacon.
- See Item 685, "Roadside Flashing Beacon Assemblies" for further requirements.
- See SMD standard sheets for lateral and vertical clearances and sign mounting details. Install signs as shown on the sign layout sheets.
- Use either a Screw-In Type Anchor Foundation or a Drilled Shaft Foundation as shown elsewhere in the plans. When plans require a Drilled Shaft Foundation, see standard sheet TS-FD. Install the Screw-In Type Anchor Foundation as per manufacturer's recommendations. On a slope, install one edge at ground level. Screw-In/Drilled Shaft Foundation is subsidiary to Item 685. Installation of a ground rod is not required for solar powered flashing beacon assemblies.
- When used, provide Screw-In Type Anchor Foundations as shown on TxDOT's Material Producer List (MPL) in the file "Highway Traffic Signals".
- Use materials specifically designed for attaching cabinets, beacon heads, solar panels, etc., to poles.
- Install beacon heads as shown here, as shown elsewhere on the plans, or as directed. Use hardware specifically designed for mounting beacon heads on poles.
- Conduit in foundation and within 6 in. of foundation is subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies."
- Per manufacturer's recommendations, engage all threads on the pedestal pole base and pipe unless the pipe is fully seated into base. In high winds, use a pole and base collar assembly to add strength and prevent loosening on connection.
- Provide single pole non-fused watertight breakaway electrical connectors for frangible pedestal pole bases, as shown on TxDOT's MPL in the file "Roadway Illumination and Electrical Supplies." Approved models are listed under Item 685. For ungrounded (hot) conductors, install a breakaway connector with a dummy fuse slug. For grounded (neutral) conductors, install a breakaway connector with a white colored marking and a permanently installed dummy fuse (slug).
- Install the batteries in a battery box. Place the batteries on a 3/16" thick plastic sheet and connect together. Place a plastic cover (battery bell jar) over the top of each battery and secure the battery bell jar to the battery with a strap. The batteries, bell jars, straps and 3/16" plastic sheet are subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies." When required, install batteries in the flasher cabinet. Wire batteries according to manufacturer's recommendations. Provide the number of batteries as required by the manufacturer.
- See standard sheet Electrical Details (ED) for additional requirements regarding the installation of ground boxes/battery boxes, conduit, and cabinets.
- Provide clearance as shown above the sidewalk or pavement grade at the edge of the road. When a bottom beacon is not used, mount the bottom of the sign at least 7 ft. above the sidewalk or pavement grade at the edge of the road.
- Unless otherwise shown on the plans, pole shaft shall be one piece, Schedule 40 Aluminum pipe, ASTM B429 or B221 (Alloy 6061-T6 only). Aluminum conduit will not develop the necessary strength and will not be allowed.
- Orient solar panel for optimum exposure to sunlight (face to the south). Prior to installation, check the location to ensure there is no overhead obstruction that would block the solar panel from receiving full sunlight. Unless specified elsewhere, mount a minimum of 14' above grade.
- Ensure height of conduit is below top of anchor bolts.



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS



**NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS
EXPLODED VIEW**

SOLAR POWERED ROADSIDE FLASHING BEACON ASSEMBLY DETAILS
SPRFBA (1) - 13

FILE: spb1-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0887	01	039, ETC.	VARIOUS
12-04	DIST	COUNTY	SHEET NO.	
3-13	ODA	ECTOR, ETC.	301	

STORM WATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TPDES General Permit TXR150000. The operator, The Texas Department of Transportation ensures that: Project specifications provide that adequate BMPs have been developed for this project. The contractor shall be the party responsible for implementing the BMPs described herein. The contractor shall implement changes approved by the Project Engineer to the SWP3 within the times specified in the SWP3 or the TPDES General Permit. Operators affected by modifications to specifications will be notified in a timely manner.

1. SITE OR PROJECT DESCRIPTION:

NATURE OF THE CONSTRUCTION ACTIVITY: SEE TITLE SHEET

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

SEQUENCE OF ACTIVITIES THAT WILL DISTURB SOILS:

- Blade existing topsoil into windrows, prep ROW, clear and grub*
- Grading operations, excavation, and embankment*
- Rework slopes, grade ditches*
- Blade windrowed material back across slopes*
- Existing pavement removal/disposal*
- _____
- _____
- _____

AREAS:

TOTAL AREA OF PROJECT: 44.54 ACRES
 TOTAL AREA OF SOIL DISTURBANCE: 12.85 ACRES
 TOTAL AREA OFF-SITE: _____

DATA DESCRIBING THE SOIL: SOILS WITHIN PROJECT LIMITS ARE PRIMARILY AMARILLO FINE SANDY LOAM (0 TO 3 PERCENT SLOPES), KIMBROUGH LOAM (0 TO 3 PERFECT SLOPES), AND KIMBROUGH-SLAUGHTER COMPLEX (0 TO 3 PERCENT SLOPES). ALL ARE WELL DRAINED.

GENERAL LOCATION MAP: SEE TITLE SHEET

DETAILED SITE MAP: SEE SWP3 SITE MAP/S SHEET/S

THE LOCATION AND DESCRIPTION OF CONCRETE AND ASPHALT PLANTS:

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

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

NAME OF RECEIVING WATERS:

Storm water from all project sites will eventually flow into the Colorado River Basin segment no. 1412.

A COPY OF TPDES CGP TXR150000 IS INCLUDED IN THE SWP3 FILE.

REMARKS: *N/A*

401 WATER QUALITY CERTIFICATION: YES _____ NO X

2. BEST MANAGEMENT PRACTICES (BMPs):

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

INTERIM(INT), PERMANENT(PER), AND 401 CERTIFICATION BMP'S:							
EROSION CONTROLS:	401	INT	PER	SEDIMENT CONTROLS:	401	INT	PER
<input type="checkbox"/> Blankets and Matting	—	—	—	<input type="checkbox"/> Silt Fence	—	—	—
<input type="checkbox"/> Sod	—	—	—	<input checked="" type="checkbox"/> Rock Berm	—	<u>X</u>	—
<input checked="" type="checkbox"/> Preserve Existing Vegetation	—	—	<u>X</u>	<input type="checkbox"/> Buffer Zones	—	—	—
<input type="checkbox"/> Soil Stabilization	—	—	—	<input type="checkbox"/> Vegetative Filter Strips	—	—	—
<input checked="" type="checkbox"/> Permanent Vegetation	—	—	<u>X</u>	<input checked="" type="checkbox"/> Biodegradable Erosion Cont Logs	—	<u>X</u>	—
<input type="checkbox"/> No Erosion Controls are Required.				<input type="checkbox"/> No Sediment Controls are Required.			

POST CONSTRUCTION TSS CONTROL (401 CERTIFICATION ONLY):

- | | |
|--|--|
| <input type="checkbox"/> Vegetation Lined Drainage Ditch | <input type="checkbox"/> Grassy Swales |
| <input type="checkbox"/> Retention/Irrigation | <input type="checkbox"/> Vegetative Filter Strips |
| <input type="checkbox"/> Erosion Control Compost | <input checked="" type="checkbox"/> No Post Construction TSS Control Required. |

SEQUENCE OR SCHEDULE OF IMPLEMENTATION:

- Install biodegradable erosion control logs and rock filter berms*
- Windrow topsoil to preserve seed bank*
- Windrow topsoil back*
- Maintain biodegradable erosion control logs and rock filter dams*
- Inspect until 70% vegetative cover is attained*
- _____
- _____
- _____

The dates of major grading activities, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization practices are initiated, are available in the project diary or SWP3. Stabilization measures must be initiated as soon as practicable in portions of the site where construction has temporarily or permanently ceased. The Odessa District is located in a semi-arid area and the 14 and 21 day requirements are not applicable except, as directed by the Engineer.

3. STRUCTURAL CONTROL PRACTICES: Structural control practices for this project are listed elsewhere herein.

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

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

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

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

5. OTHER CONTROLS (CONT):

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

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

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

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

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

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

6. APPROVED STATE AND LOCAL PLANS: This SWP3 is consistent with requirements specified in applicable sediment and erosion site plans or site permits, or storm water management site plans or permits approved by federal, state, or local officials.

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

8. INSPECTION OF CONTROLS: A TxDOT inspector will inspect disturbed areas of the site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, and structural controls for evidence of, or the potential for, pollutants entering the drainage system. Sediment and erosion controls measures identified in the SWP3 will be inspected to ensure that they are operating correctly. Locations where vehicles enter or exit the site will be inspected for evidence of off-site vehicle tracking. Inspections will be conducted every month and within 24 hours after the end of a storm event of 0.5 inches or greater. The SWP3 will be modified based on the result of these inspections. Revisions will be completed within 7 Calendar days following the inspection. Revised implementation schedules will be described in the SWP3 and implemented as soon as practicable. Rain gages will be maintained on site for the duration of the project. Reports summarizing the scope of the inspections are included in the SWP3 file.

9. NON-STORM WATER COMPONENTS: The contractor shall be required to implement appropriate pollution prevention controls and measures for all eligible non-storm water components of the discharge as approved and directed by the Project Engineer.



SWP3 NOTES
 Texas Department of Transportation
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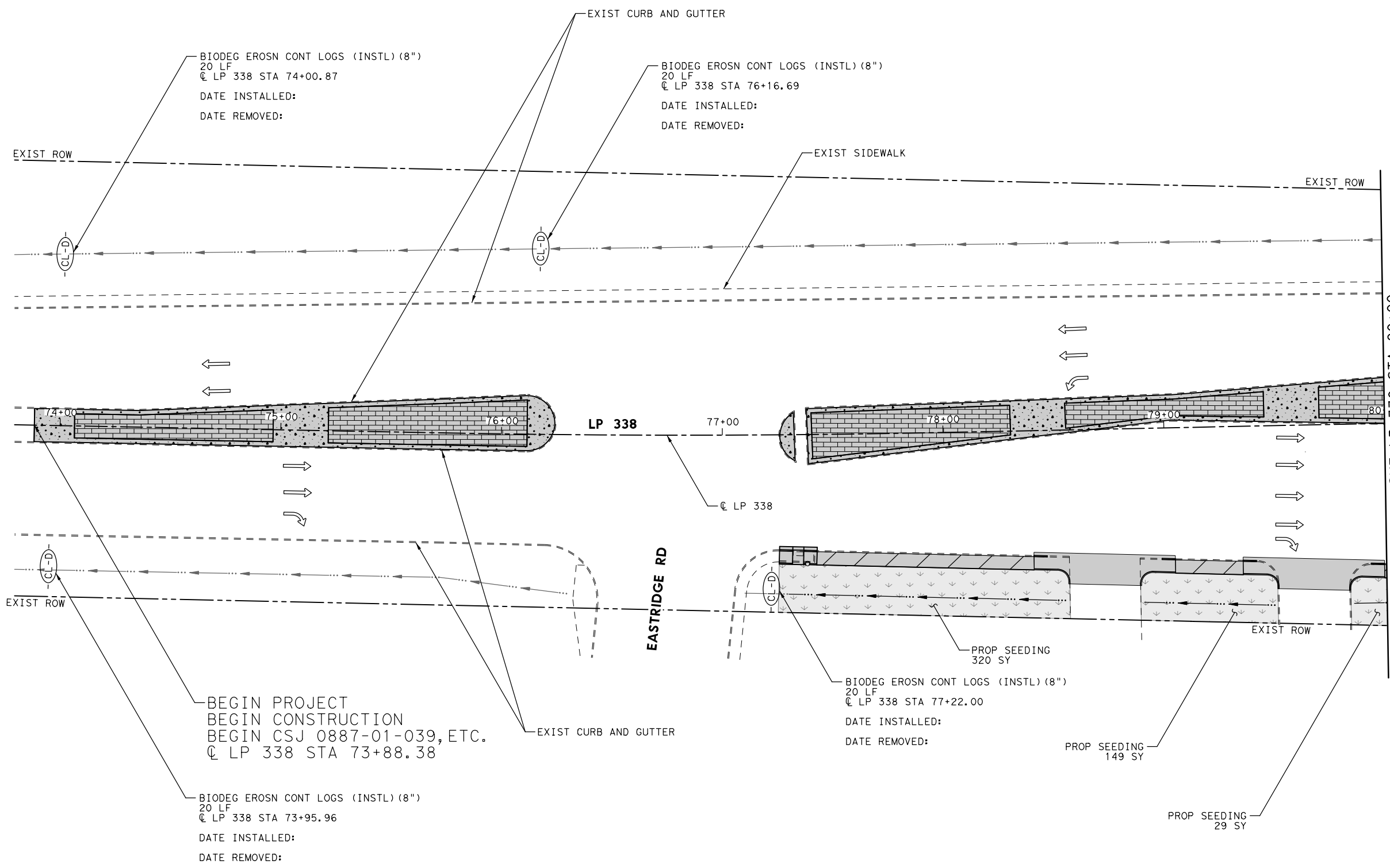
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6	(SEE TITLE SHEET)	302	
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	ECTOR, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0887	01	039, ETC.	VARIOUS

REV: 10-25-16

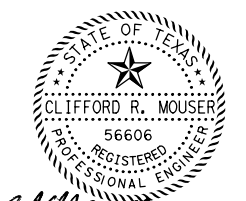
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0' 25' 50'
 SCALE IN FEET



- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP SEEDING
 - EROSION CONTROL LOG DAM
 - EROSION CONTROL LOG AT DROP INLET
 - ROCK FILTER DAM TY 2
 - EXIST FLOW LINE
 - PROPOSED FLOW LINE



Clifford R. Mouser 8/20/2020


BEGIN PROJECT
 BEGIN CONSTRUCTION
 BEGIN CSJ 0887-01-039, ETC.
 @ LP 338 STA 73+88.38

BIODEG EROSN CONT LOGS (IN STL) (8")
 20 LF
 @ LP 338 STA 73+95.96
 DATE INSTALLED:
 DATE REMOVED:


BIODEG EROSN CONT LOGS (IN STL) (8")
 20 LF
 @ LP 338 STA 77+22.00
 DATE INSTALLED:
 DATE REMOVED:

PROP SEEDING
 149 SY

PROP SEEDING
 29 SY



STATE OF TEXAS
 CLIFFORD R. MOUSER
 56606
 REGISTERED
 PROFESSIONAL ENGINEER



ODESSA DISTRICT INTERSECTION IMPROVEMENTS

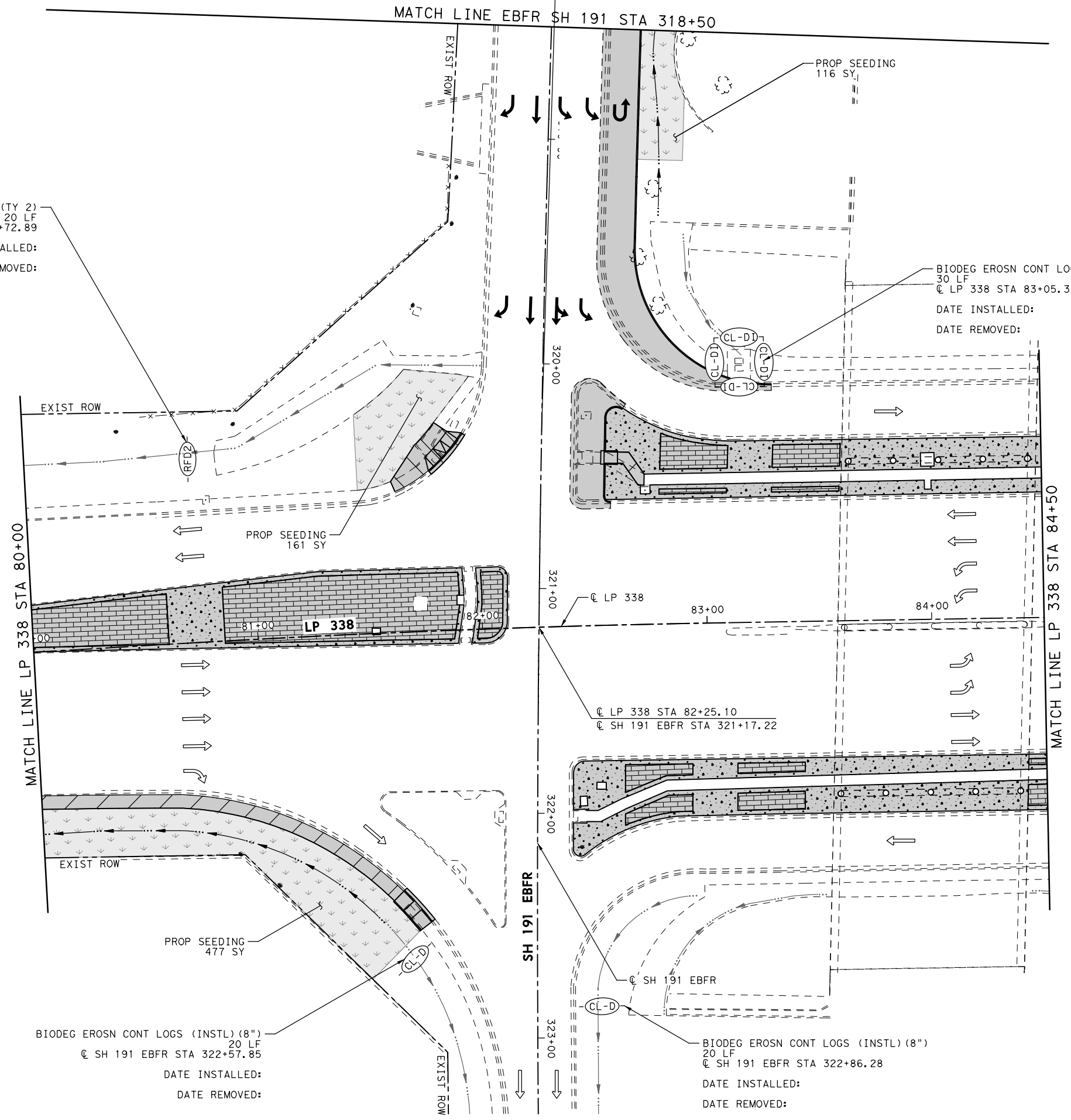
**LP 338
 SW3P
 AT SH 191**

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GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

SHEET 1 OF 7

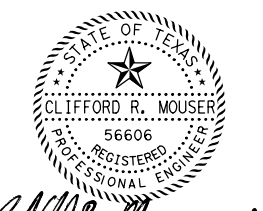
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0' 25' 50'
 SCALE IN FEET

- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP SEEDING
 - EROSION CONTROL LOG DAM
 - EROSION CONTROL LOG AT DROP INLET
 - ROCK FILTER DAM TY 2
 - EXIST FLOW LINE
 - PROPOSED FLOW LINE



Clifford R. Mouser 8/20/2020

JMT TBPE REGISTRATION NO. F-16341

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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

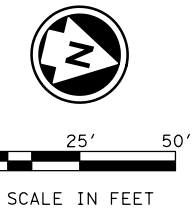
**LP 338
 SW3P
 AT SH 191 EBFR**

SHEET 2 OF 7

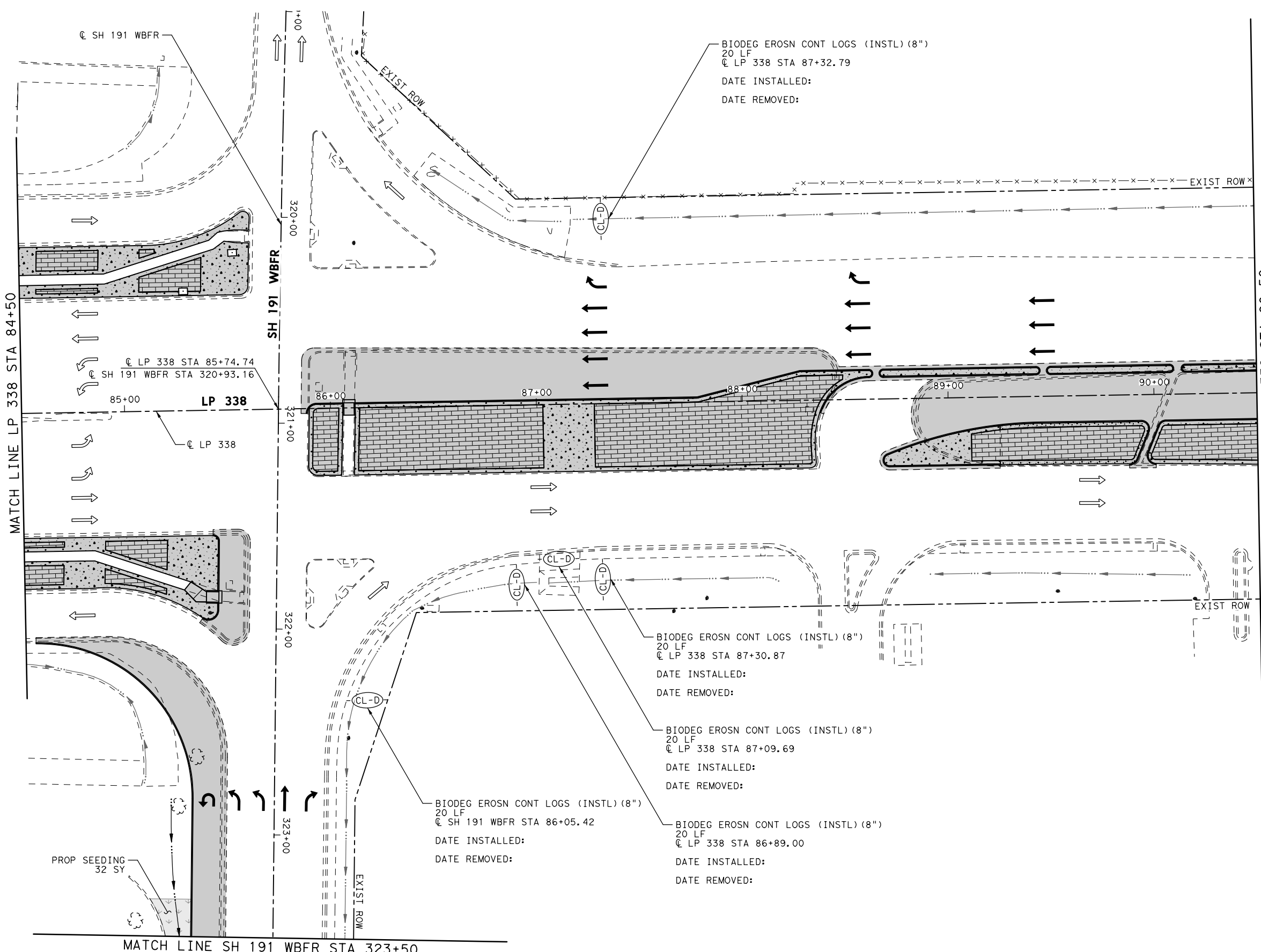
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JMT	6	(SEE TITLE SHEET)	VARIOUS
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JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

304

DATE: 8/20/2020
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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP SEEDING
 - EROSION CONTROL LOG DAM
 - EROSION CONTROL LOG AT DROP INLET
 - ROCK FILTER DAM TY 2
 - EXIST FLOW LINE
 - PROPOSED FLOW LINE



STATE OF TEXAS
 CLIFFORD R. MOUSER
 56606
 REGISTERED
 PROFESSIONAL ENGINEER
Clifford R. Mouser 8/20/2020

JMT TBPE REGISTRATION NO. F-16341

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Texas Department of Transportation
 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**LP 338
 SW3P
 AT SH 191 WBFR**

SHEET 3 OF 7

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
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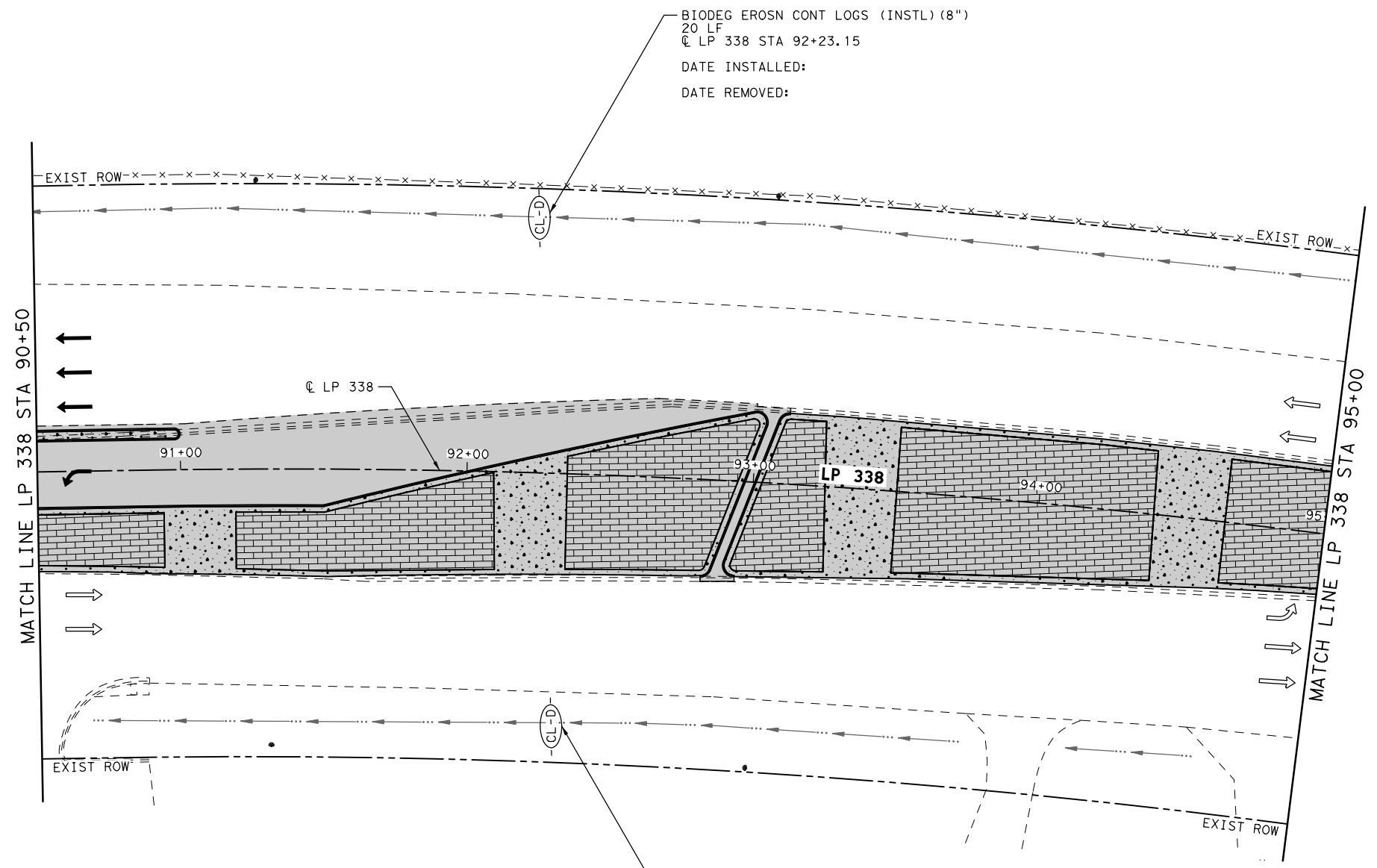
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0' 25' 50'
 SCALE IN FEET

LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP SEEDING
- EROSION CONTROL LOG DAM
- EROSION CONTROL LOG AT DROP INLET
- ROCK FILTER DAM TY 2
- EXIST FLOW LINE
- PROPOSED FLOW LINE



BIODEG EROSN CONT LOGS (INSL) (8")
 20 LF
 @ LP 338 STA 92+23.15
 DATE INSTALLED:
 DATE REMOVED:

BIODEG EROSN CONT LOGS (INSL) (8")
 20 LF
 @ LP 338 STA 92+31.67
 DATE INSTALLED:
 DATE REMOVED:



Clifford R. Mouser 8/20/2020



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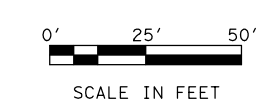
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**LP 338
 SW3P
 AT SH 191**

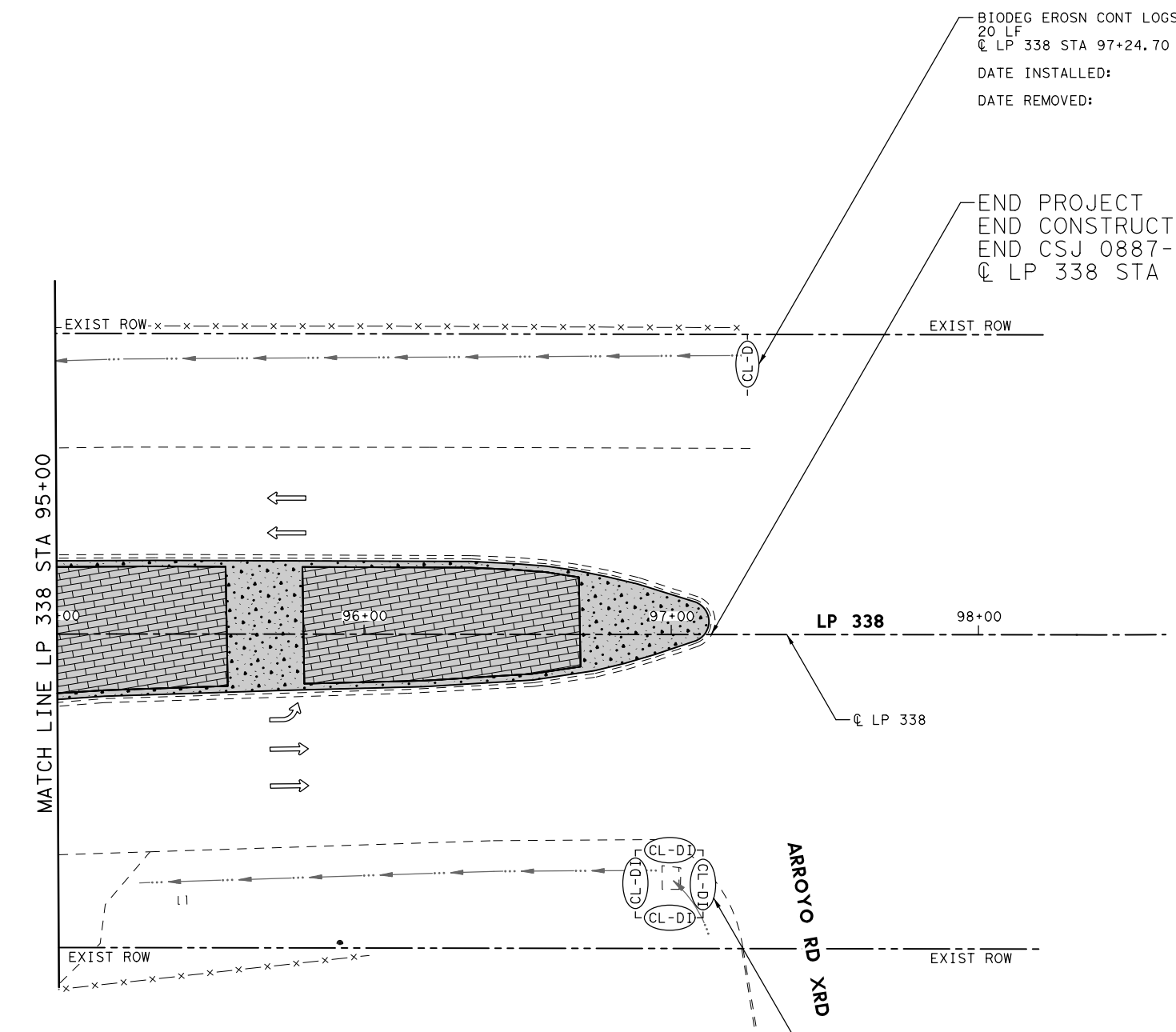
SHEET 4 OF 7

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	Texas	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.
			306

DATE: 8/20/2020
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- LEGEND**
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 - PROP DIRECTIONAL ARROW
 - PROP SEEDING
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 - EROSION CONTROL LOG AT DROP INLET
 - ROCK FILTER DAM TY 2
 - EXIST FLOW LINE
 - PROPOSED FLOW LINE




BIODEG EROSN CONT LOGS (IN STL) (8")
 20 LF
 @ LP 338 STA 97+24.70
 DATE INSTALLED:
 DATE REMOVED:

END PROJECT
 END CONSTRUCTION
 END CSJ 0887-01-039, ETC.
 @ LP 338 STA 97+13.00

BIODEG EROSN CONT LOGS (IN STL) (8")
 25 LF
 @ LP 338 STA 96+88.41
 DATE INSTALLED:
 DATE REMOVED:





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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**LP 338
 SW3P
 AT SH 191**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

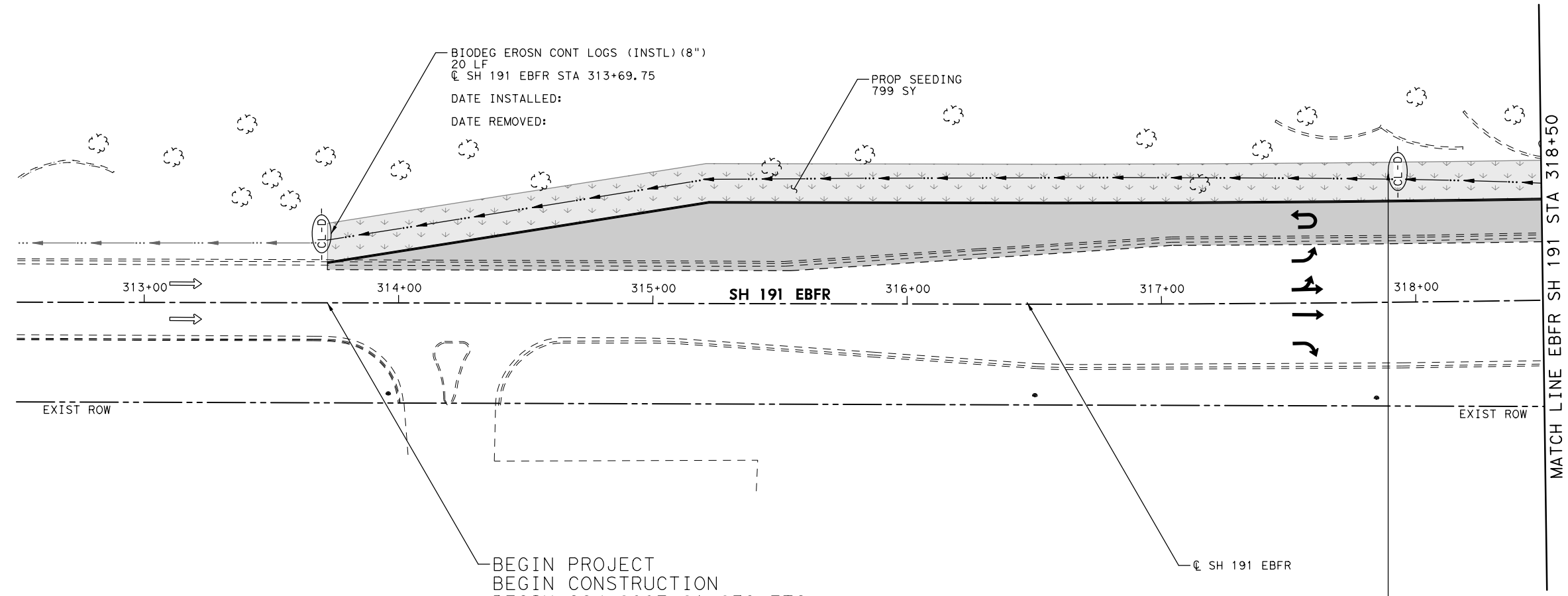
SHEET 5 OF 7
307

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\9. Environmental\LP3



0' 25' 50'
 SCALE IN FEET

- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP SEEDING
 - EROSION CONTROL LOG DAM
 - EROSION CONTROL LOG AT DROP INLET
 - ROCK FILTER DAM TY 2
 - EXIST FLOW LINE
 - PROPOSED FLOW LINE



BIODEG EROSN CONT LOGS (IN STL) (8")
 20 LF
 CL SH 191 EBFR STA 313+69.75
 DATE INSTALLED:
 DATE REMOVED:

PROP SEEDING
 799 SY

BEGIN PROJECT
 BEGIN CONSTRUCTION
 BEGIN CSJ 0887-01-039, ETC.
 CL EBFR SH 191 STA 313+72.02

BIODEG EROSN CONT LOGS (IN STL) (8")
 20 LF
 CL SH 191 EBFR STA 317+93.43
 DATE INSTALLED:
 DATE REMOVED:



Clifford R. Mouser 8/20/2020



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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

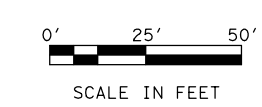
**SH 191 EBFR
 SW3P
 AT LP 338**

SHEET 6 OF 7

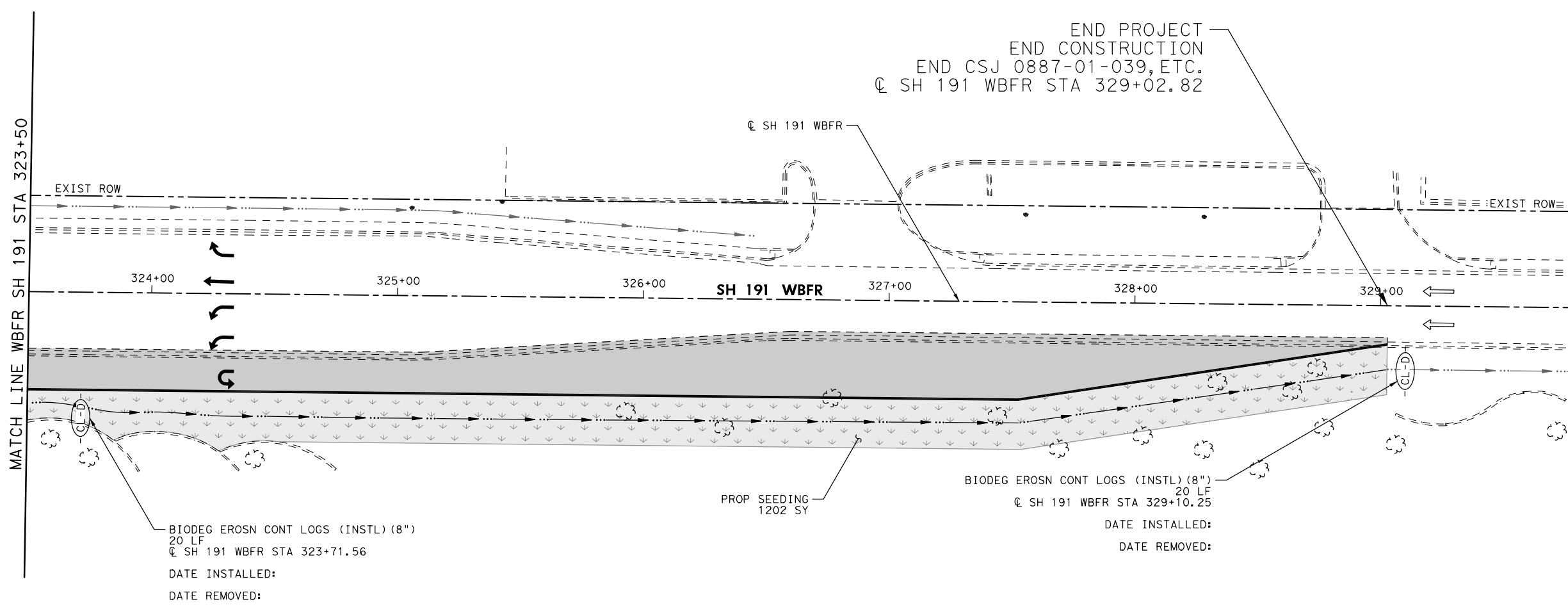
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JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.
CHECK			
JMT			


308

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - DesignPlan Set\9. Environmental\LP3



- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP SEEDING
 - EROSION CONTROL LOG DAM
 - EROSION CONTROL LOG AT DROP INLET
 - ROCK FILTER DAM TY 2
 - EXIST FLOW LINE
 - PROPOSED FLOW LINE





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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**SH 191 WBFR
 SW3P
 AT LP 338**

SHEET 7 OF 7

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

309

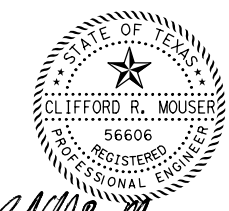
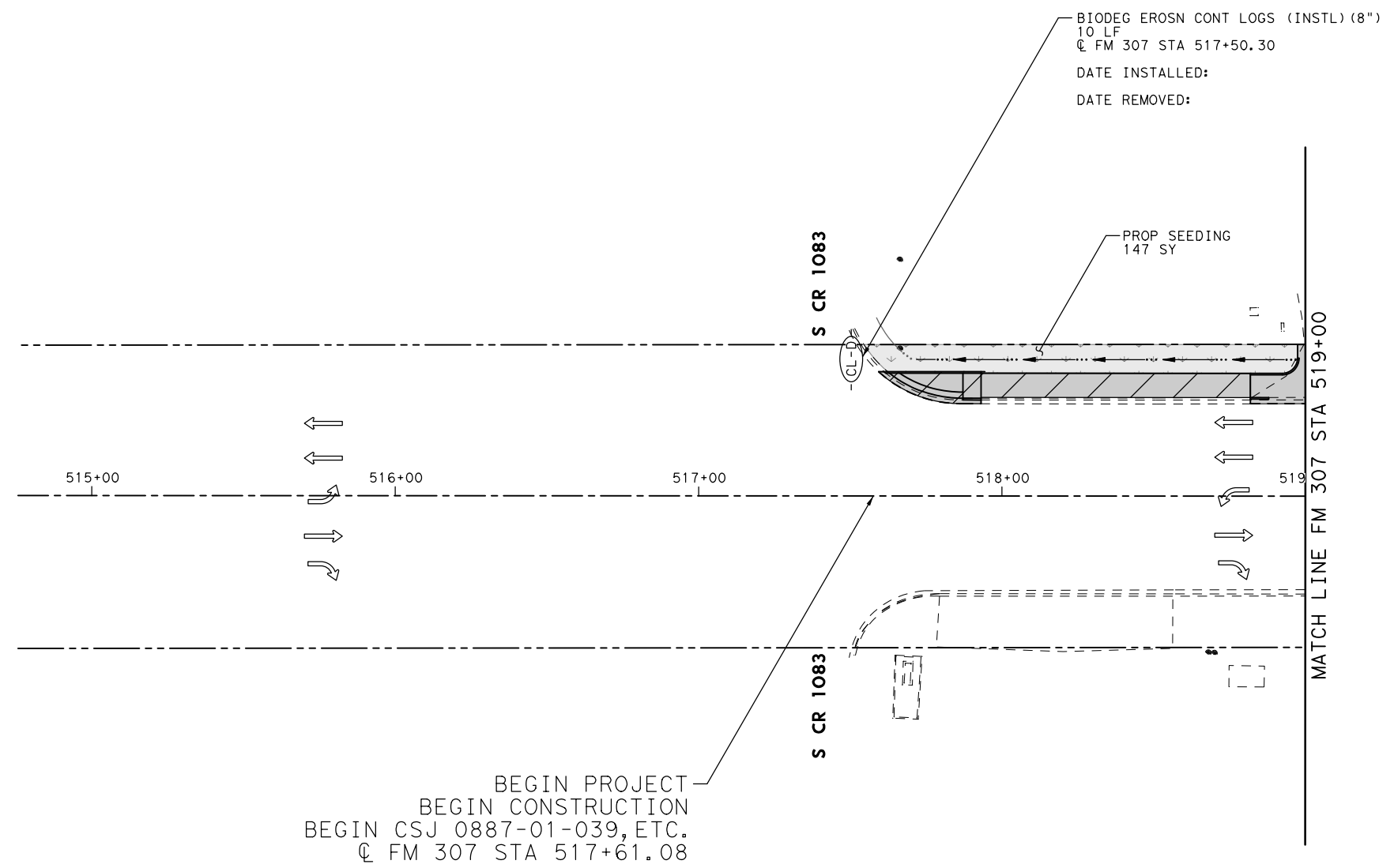
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0' 25' 50'
 SCALE IN FEET

LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP SEEDING
- EROSION CONTROL LOG DAM
- ROCK FILTER DAM TY 2
- EXIST FLOW LINE
- PROP FLOW LINE



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BEGIN PROJECT
 BEGIN CONSTRUCTION
 BEGIN CSJ 0887-01-039, ETC.
 Q FM 307 STA 517+61.08



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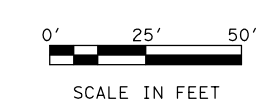
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
 SW3P
 AT FM 1379**

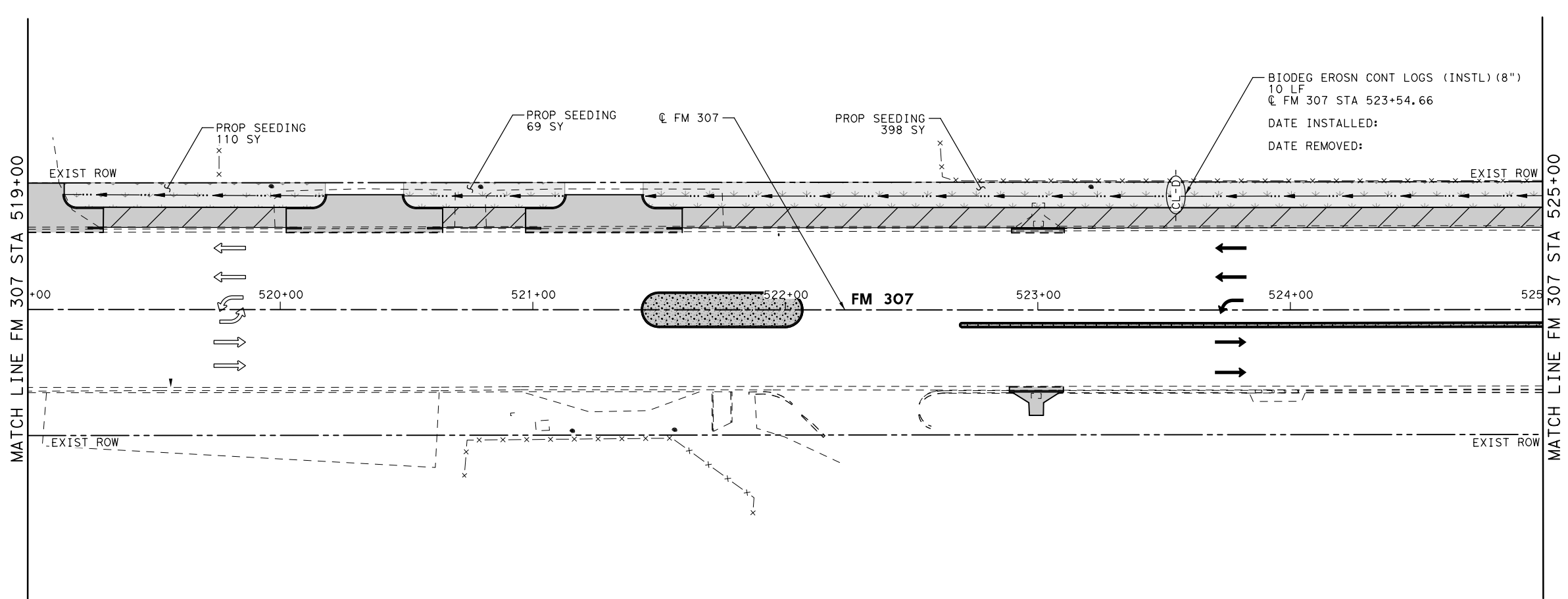
SHEET 1 OF 7

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						310

DATE: 8/20/2020
 FILENAME: pw:\jmt-pw.bentley.com:jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\9. Environmental\FM3



- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP SEEDING
 - EROSION CONTROL LOG DAM
 - ROCK FILTER DAM TY 2
 - EXIST FLOW LINE
 - PROP FLOW LINE



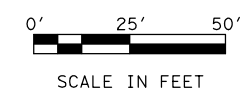
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
SW3P
AT FM 1379**

SHEET 2 OF 7

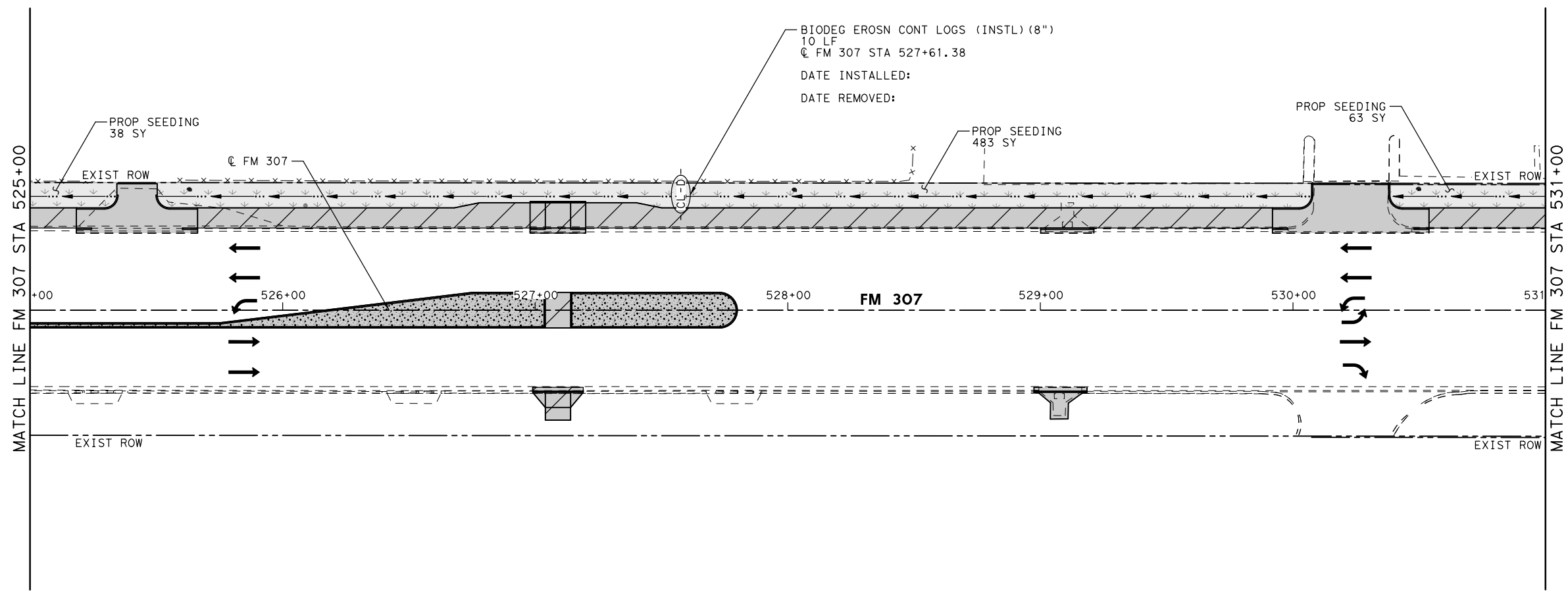
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GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						311

DATE: 8/20/2020
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LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP SEEDING
- EROSION CONTROL LOG DAM
- ROCK FILTER DAM TY 2
- EXIST FLOW LINE
- PROP FLOW LINE



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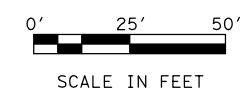
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
 SW3P
 AT FM 1379**

SHEET 3 OF 7

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
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LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP SEEDING
- EROSION CONTROL LOG DAM
- ROCK FILTER DAM TY 2
- EXIST FLOW LINE
- PROP FLOW LINE



Clifford R. Mouser 8/20/2020



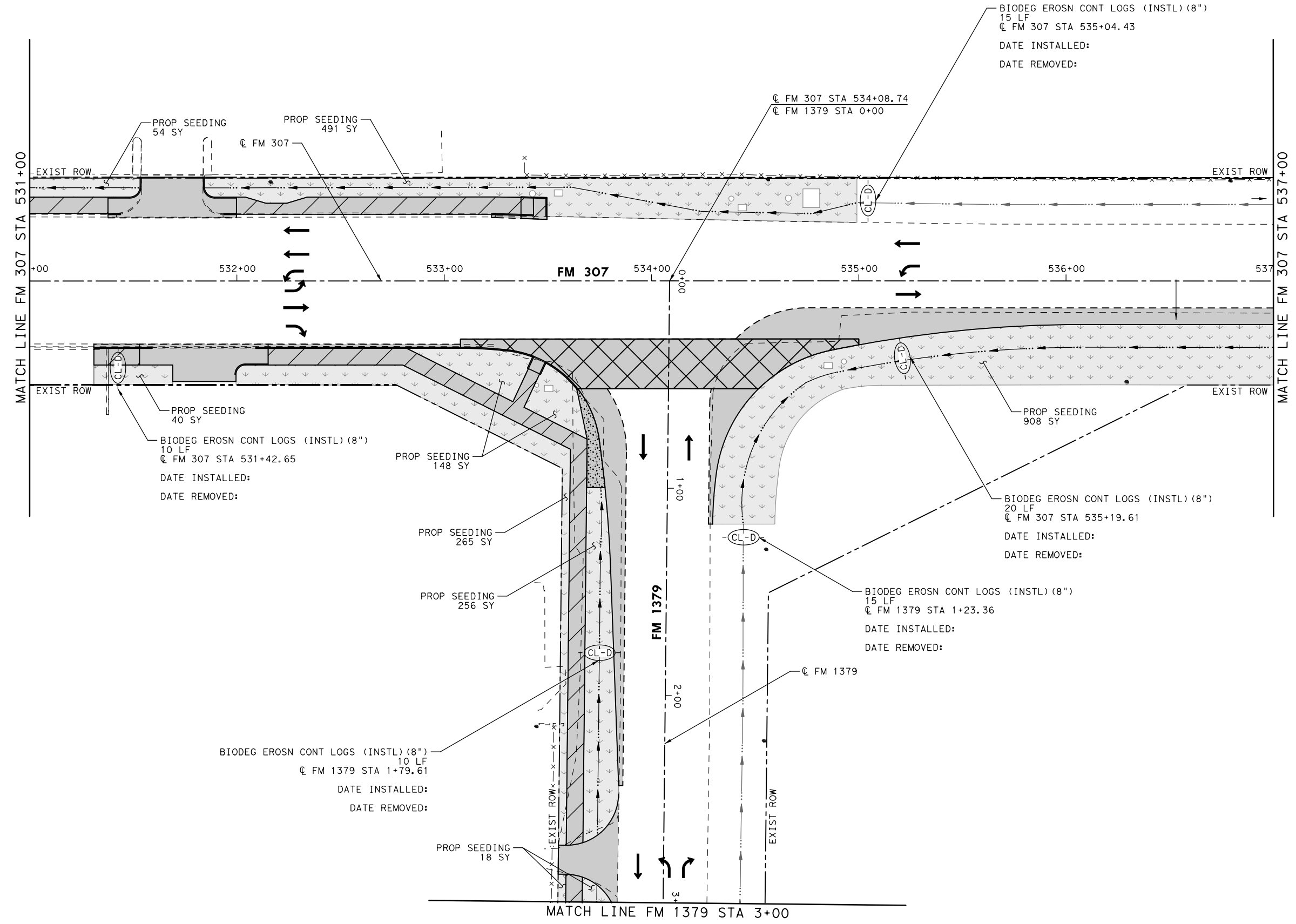
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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
 SW3P
 AT FM 1379**

SHEET 4 OF 7

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
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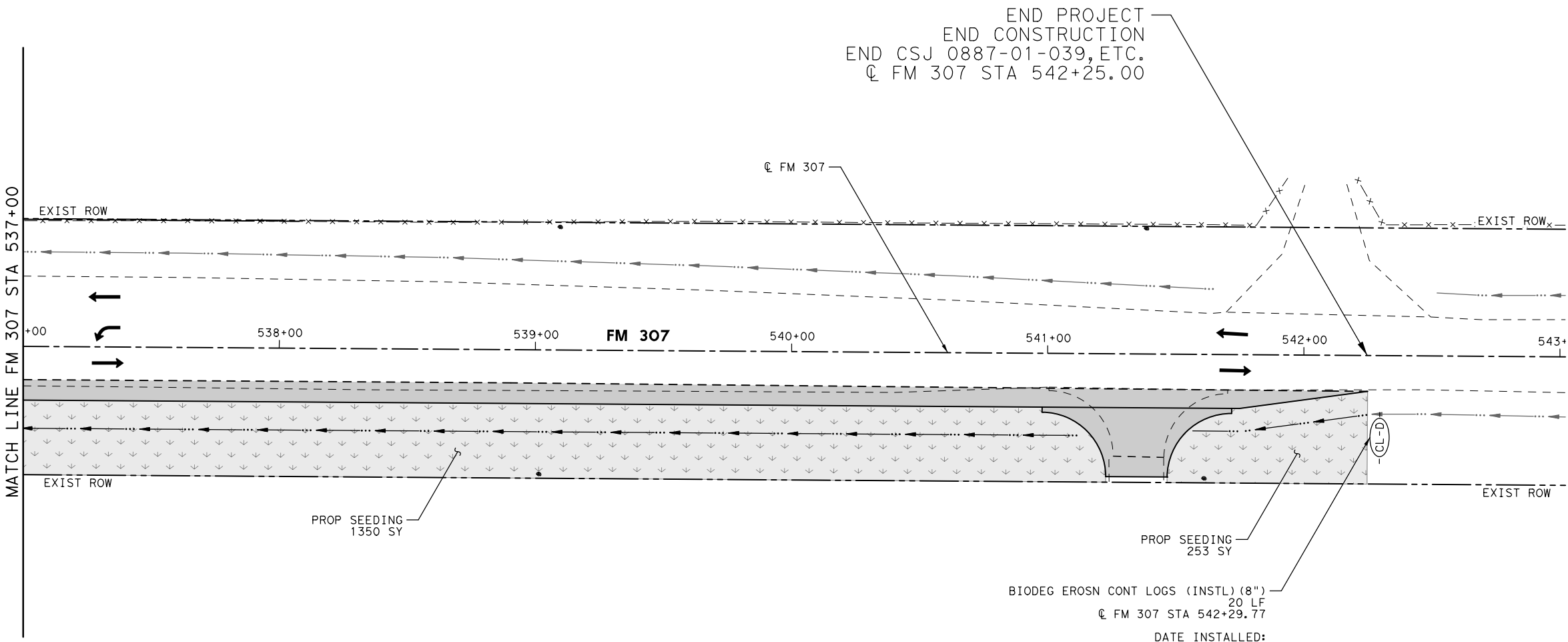
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0' 25' 50'
 SCALE IN FEET

LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP SEEDING
- EROSION CONTROL LOG DAM
- ROCK FILTER DAM TY 2
- EXIST FLOW LINE
- PROP FLOW LINE



STATE OF TEXAS
 CLIFFORD R. MOUSER
 56606
 REGISTERED PROFESSIONAL ENGINEER
Clifford R. Mouser 8/20/2020

JMT TBPE REGISTRATION NO. F-16341

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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 307
 SW3P
 AT FM 1379**

SHEET 5 OF 7

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
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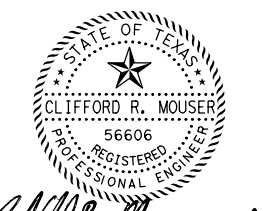
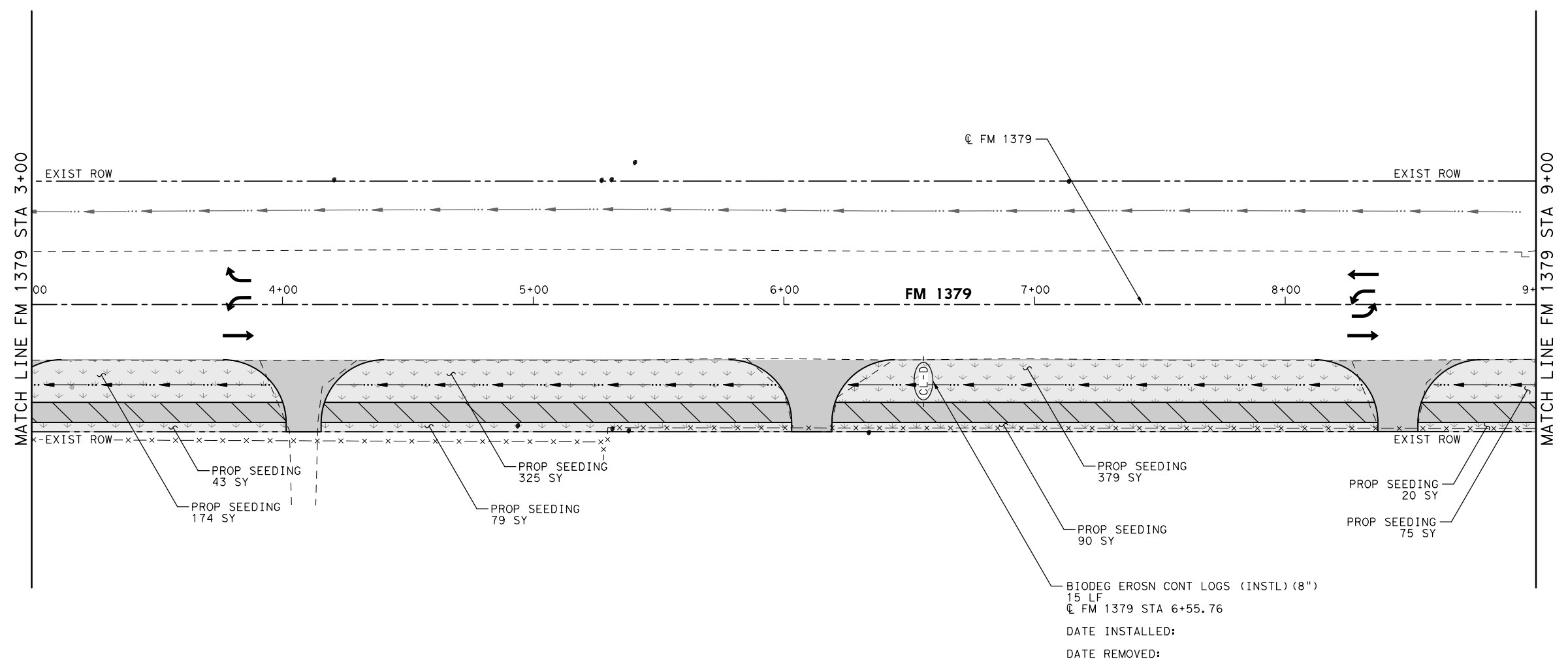
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0' 25' 50'
 SCALE IN FEET

LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP SEEDING
- EROSION CONTROL LOG DAM
- ROCK FILTER DAM TY 2
- EXIST FLOW LINE
- PROP FLOW LINE



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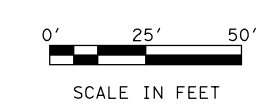
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1379
 SW3P
 AT FM 307**

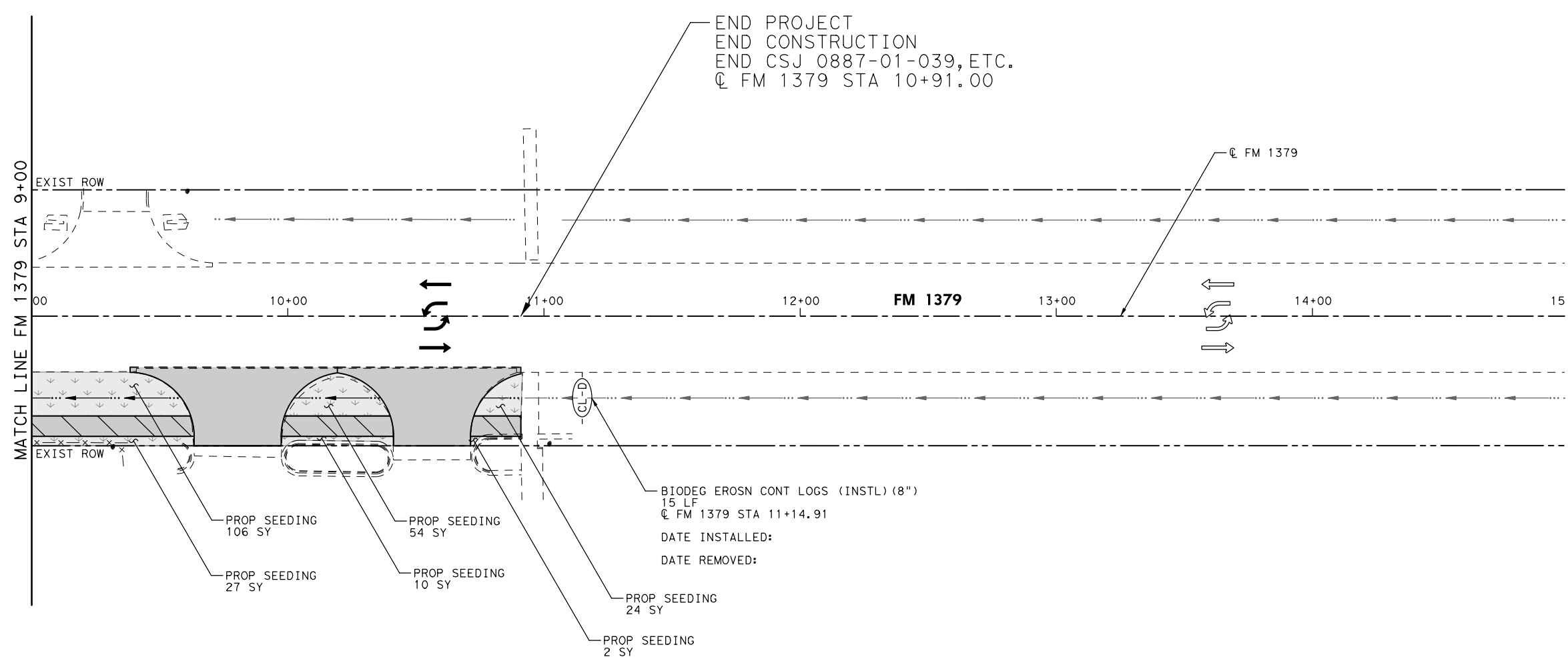
SHEET 6 OF 7

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
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CHECK	JMT						315

DATE: 8/20/2020
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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP SEEDING
 - EROSION CONTROL LOG DAM
 - ROCK FILTER DAM TY 2
 - EXIST FLOW LINE
 - PROP FLOW LINE



JMT TBPE REGISTRATION NO. F-16341

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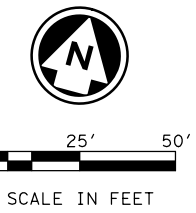
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1379
 SW3P
 AT FM 307**

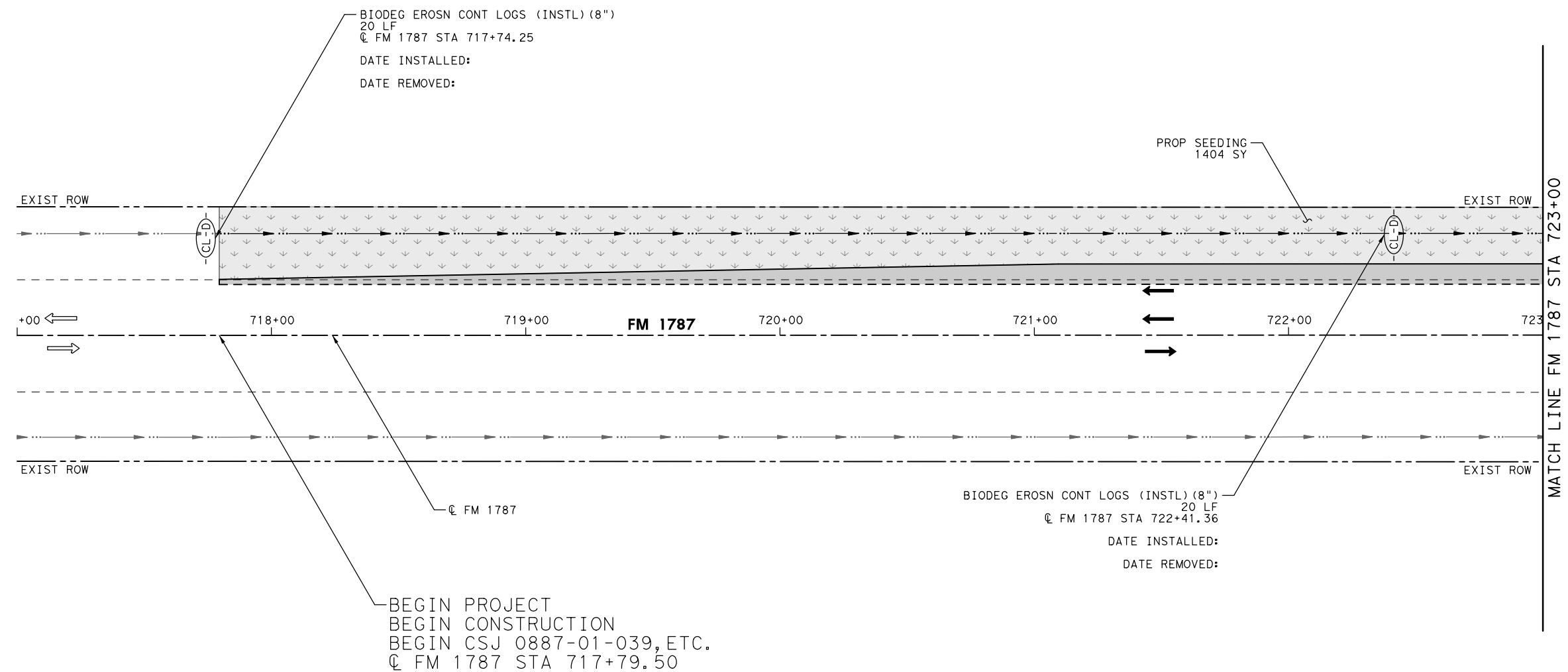
SHEET 7 OF 7

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
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DATE: 8/20/2020
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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP SEEDING
 - EROSION CONTROL LOG DAM
 - ROCK FILTER DAM TY 2
 - EXIST FLOW LINE
 - PROP FLOW LINE



JMT TBPE REGISTRATION NO. F-16341

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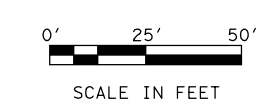
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 SW3P
 AT FM 1788**

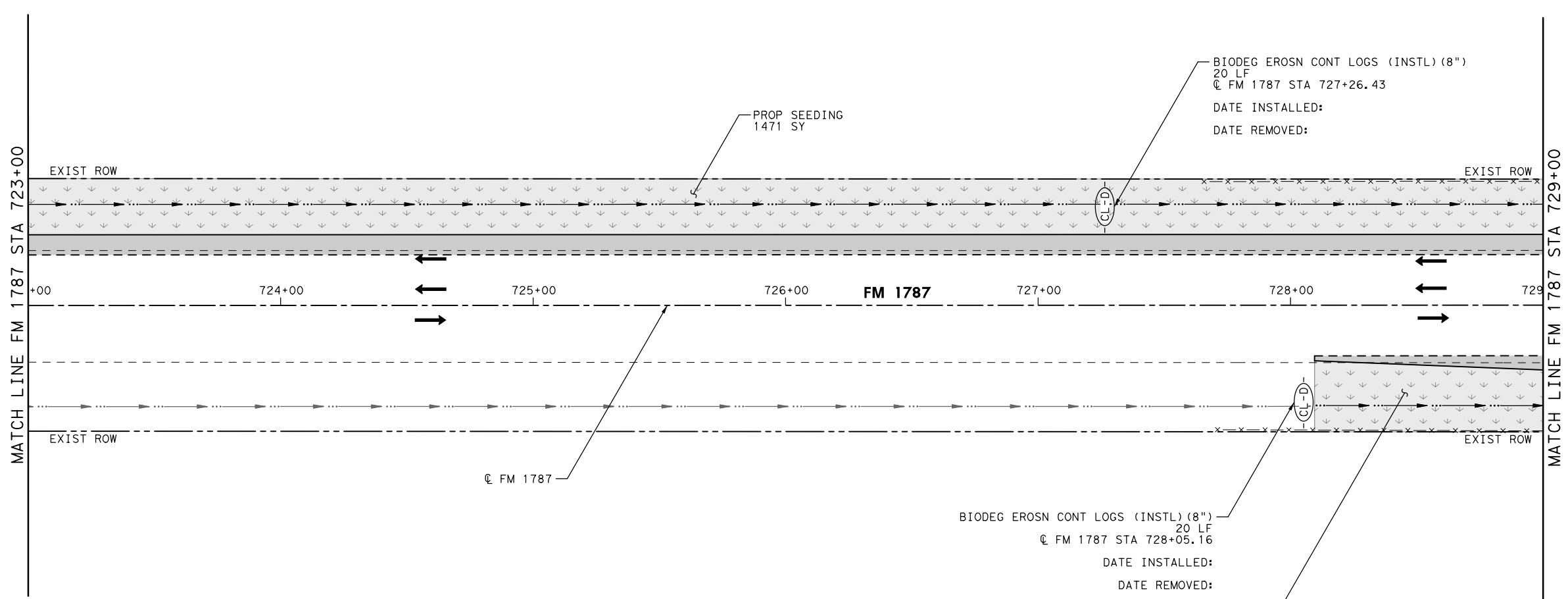
SHEET 1 OF 16

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS	
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.	
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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP SEEDING
 - EROSION CONTROL LOG DAM
 - ROCK FILTER DAM TY 2
 - EXIST FLOW LINE
 - PROP FLOW LINE



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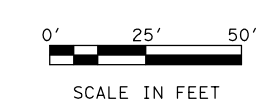
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 SW3P
 AT FM 1788**

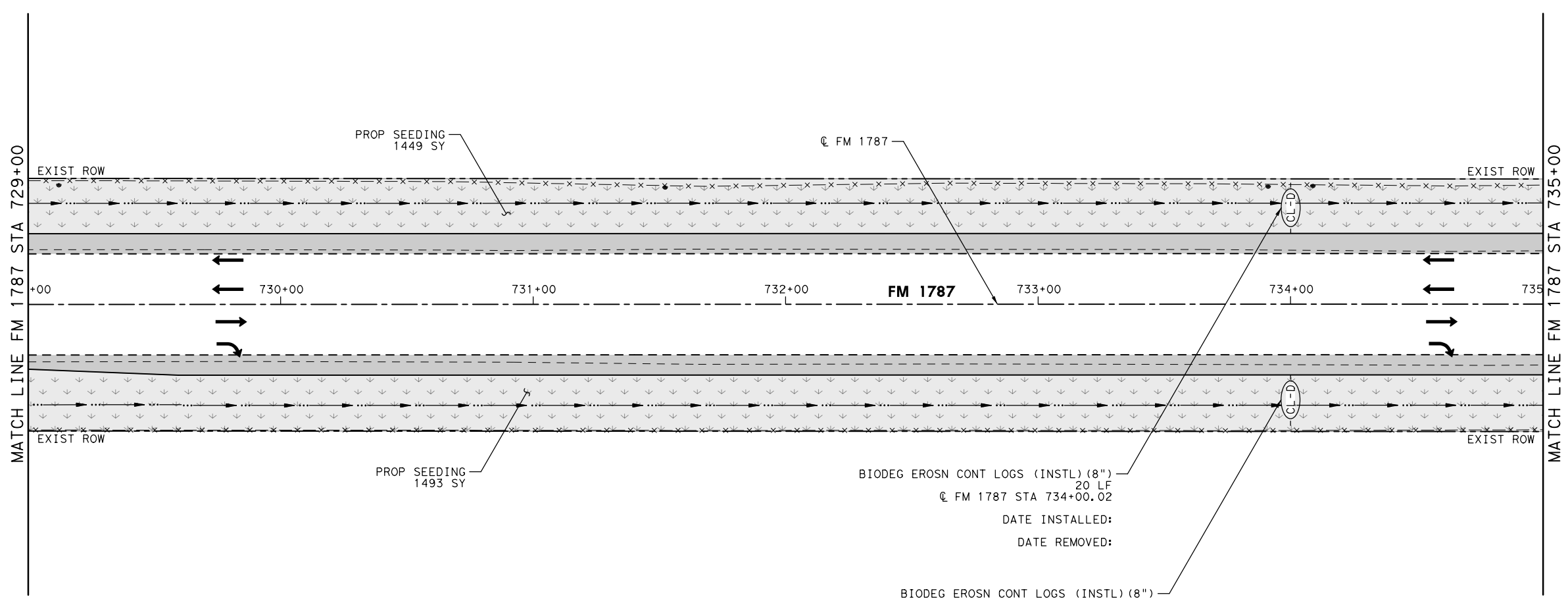
SHEET 2 OF 16


DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.
CHECK			SHEET NO.
JMT			318

DATE: 8/20/2020
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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP SEEDING
 - EROSION CONTROL LOG DAM
 - ROCK FILTER DAM TY 2
 - EXIST FLOW LINE
 - PROP FLOW LINE





TBPE REGISTRATION NO. F-16341



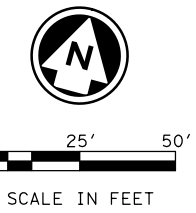
TEXAS DEPARTMENT OF TRANSPORTATION

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

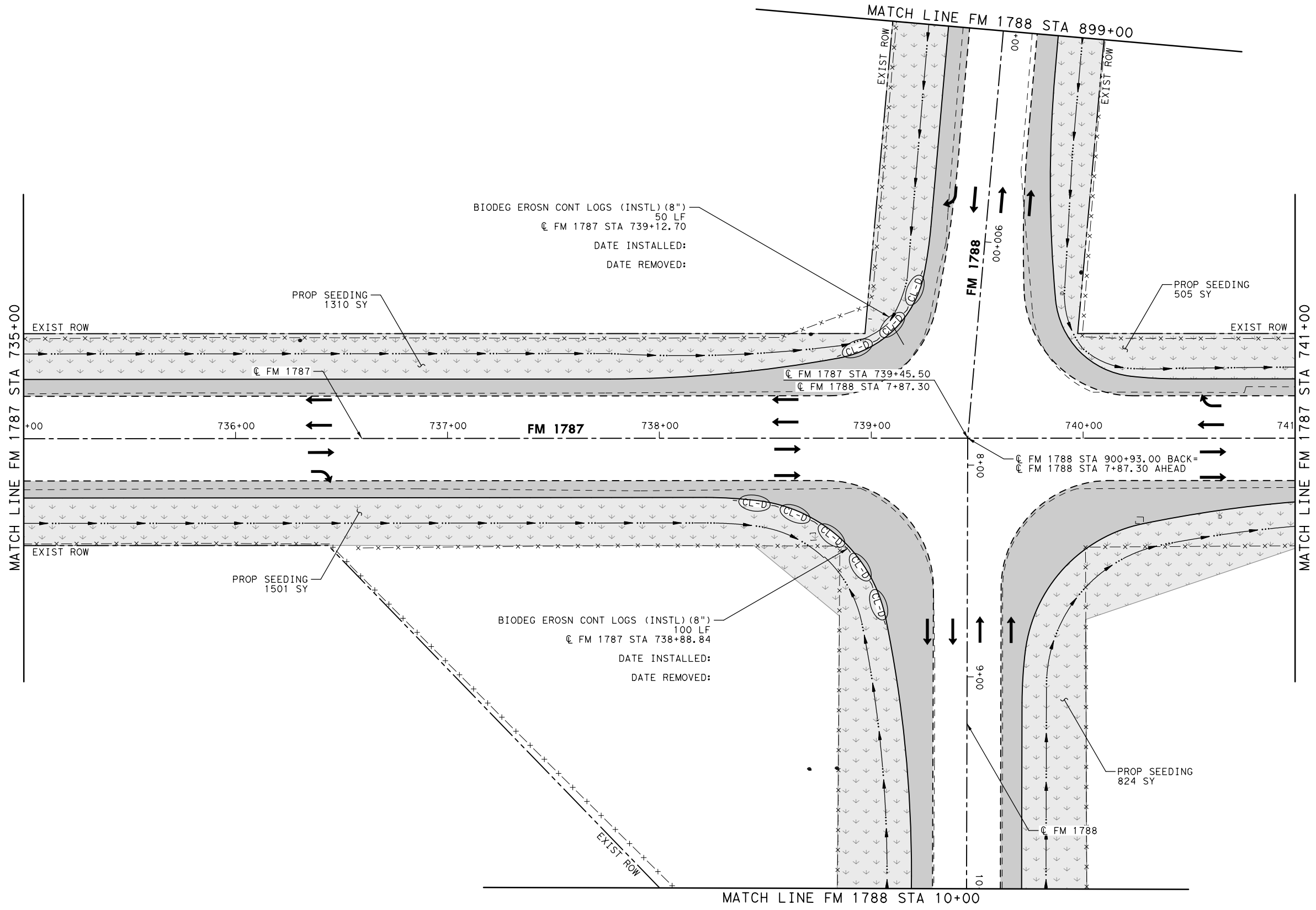
**FM 1787
SW3P
AT FM 1788**

SHEET 3 OF 16			
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.

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- LEGEND**
- EXIST DIRECTIONAL ARROW
 - PROP DIRECTIONAL ARROW
 - PROP SEEDING
 - EROSION CONTROL LOG DAM
 - ROCK FILTER DAM TY 2
 - EXIST FLOW LINE
 - PROP FLOW LINE



JMT TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

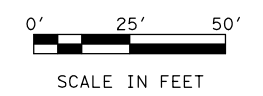
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 SW3P
 AT FM 1788**

SHEET 4 OF 16

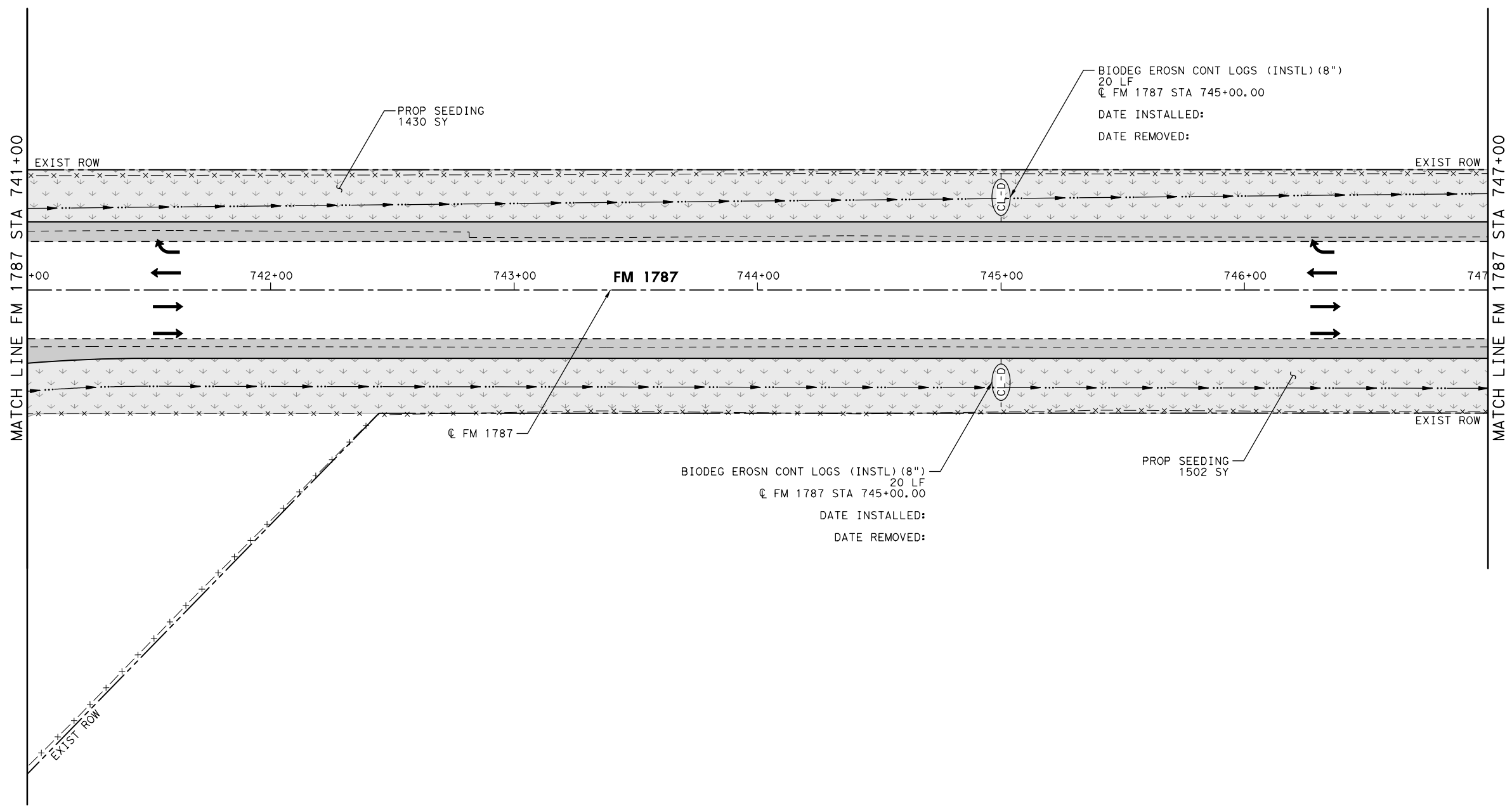
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CHECK	JMT						320

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LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP SEEDING
- EROSION CONTROL LOG DAM
- ROCK FILTER DAM TY 2
- EXIST FLOW LINE
- PROP FLOW LINE



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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 SW3P
 AT FM 1788**

SHEET 5 OF 16

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
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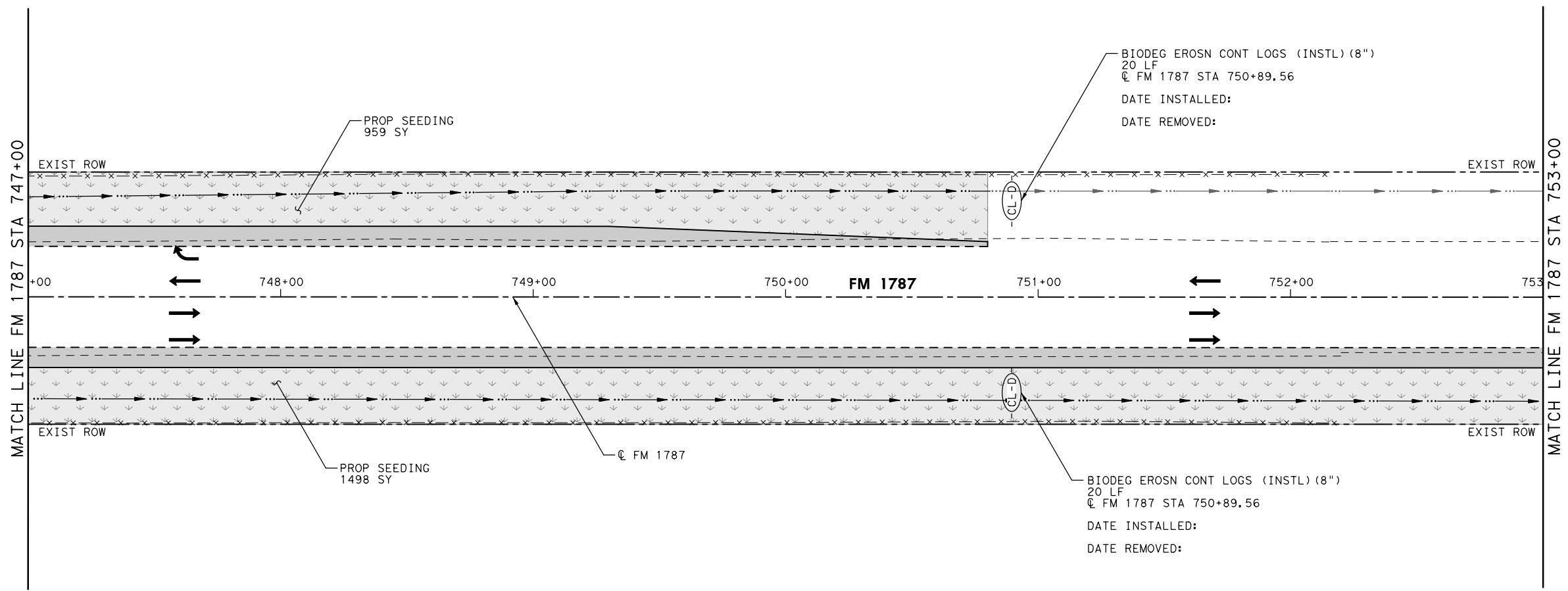
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0' 25' 50'
 SCALE IN FEET

LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP SEEDING
- EROSION CONTROL LOG DAM
- ROCK FILTER DAM TY 2
- EXIST FLOW LINE
- PROP FLOW LINE



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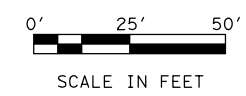
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 SW3P
 AT FM 1788**

SHEET 6 OF 16

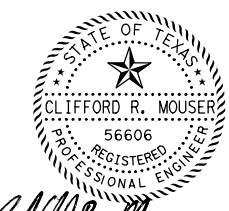
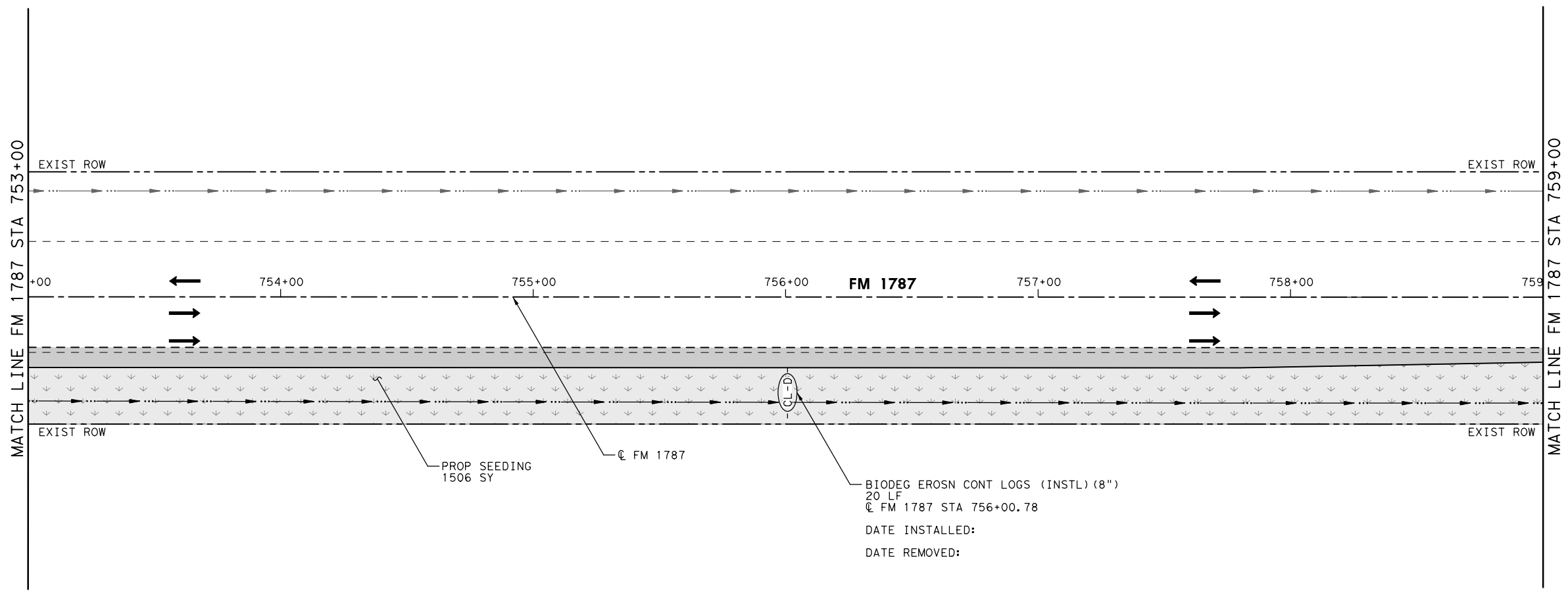
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CHECK	JMT						322

DATE: 8/20/2020
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LEGEND

- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP SEEDING
- EROSION CONTROL LOG DAM
- ROCK FILTER DAM TY 2
- EXIST FLOW LINE
- PROP FLOW LINE



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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 SW3P
 AT FM 1788**

SHEET 7 OF 16

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						323

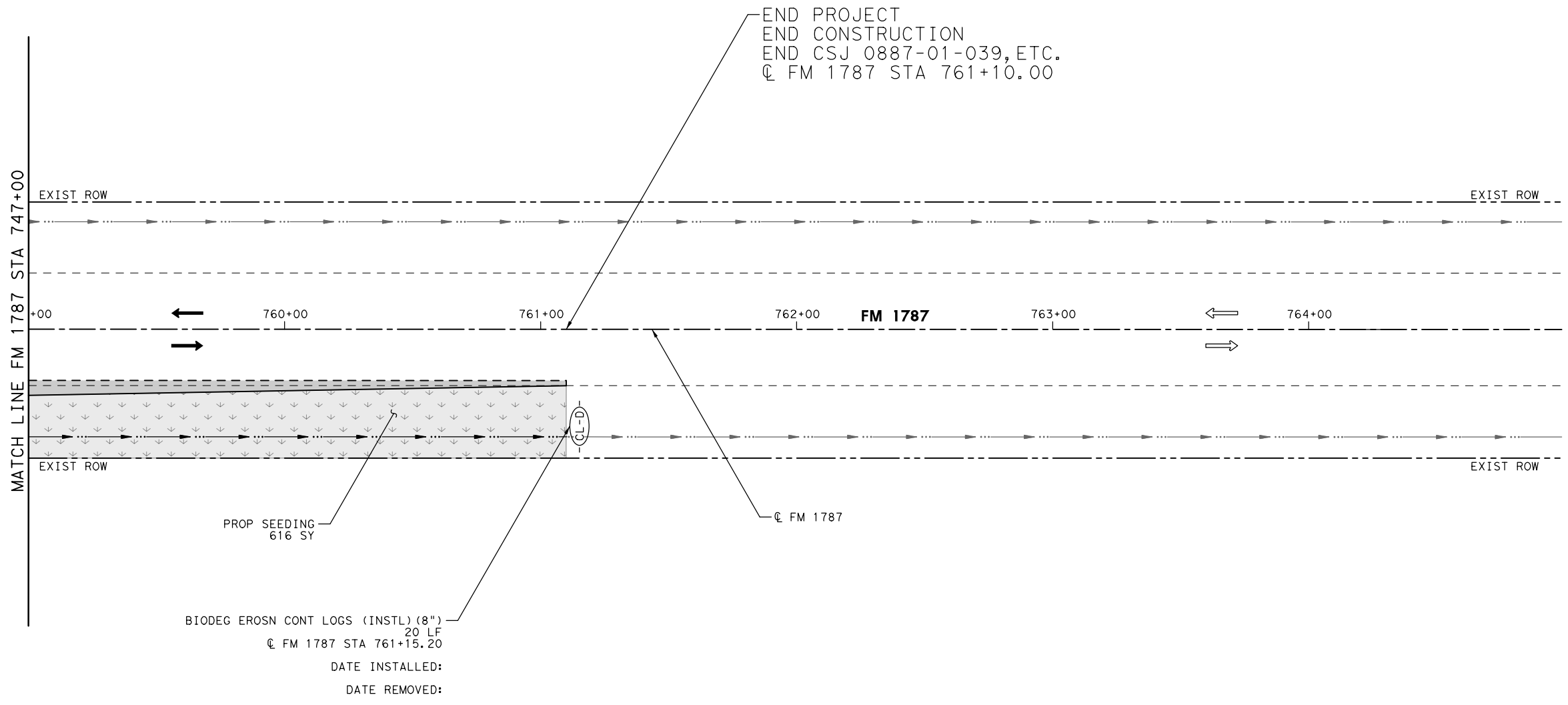
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0' 25' 50'
 SCALE IN FEET

LEGEND


- EXIST DIRECTIONAL ARROW
- PROP DIRECTIONAL ARROW
- PROP SEEDING
- EROSION CONTROL LOG DAM
- ROCK FILTER DAM TY 2
- EXIST FLOW LINE
- PROP FLOW LINE





TBPE REGISTRATION NO. F-16341

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TEXAS DEPARTMENT OF TRANSPORTATION

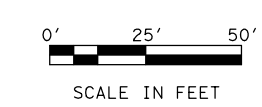
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1787
 SW3P
 AT FM 1788**

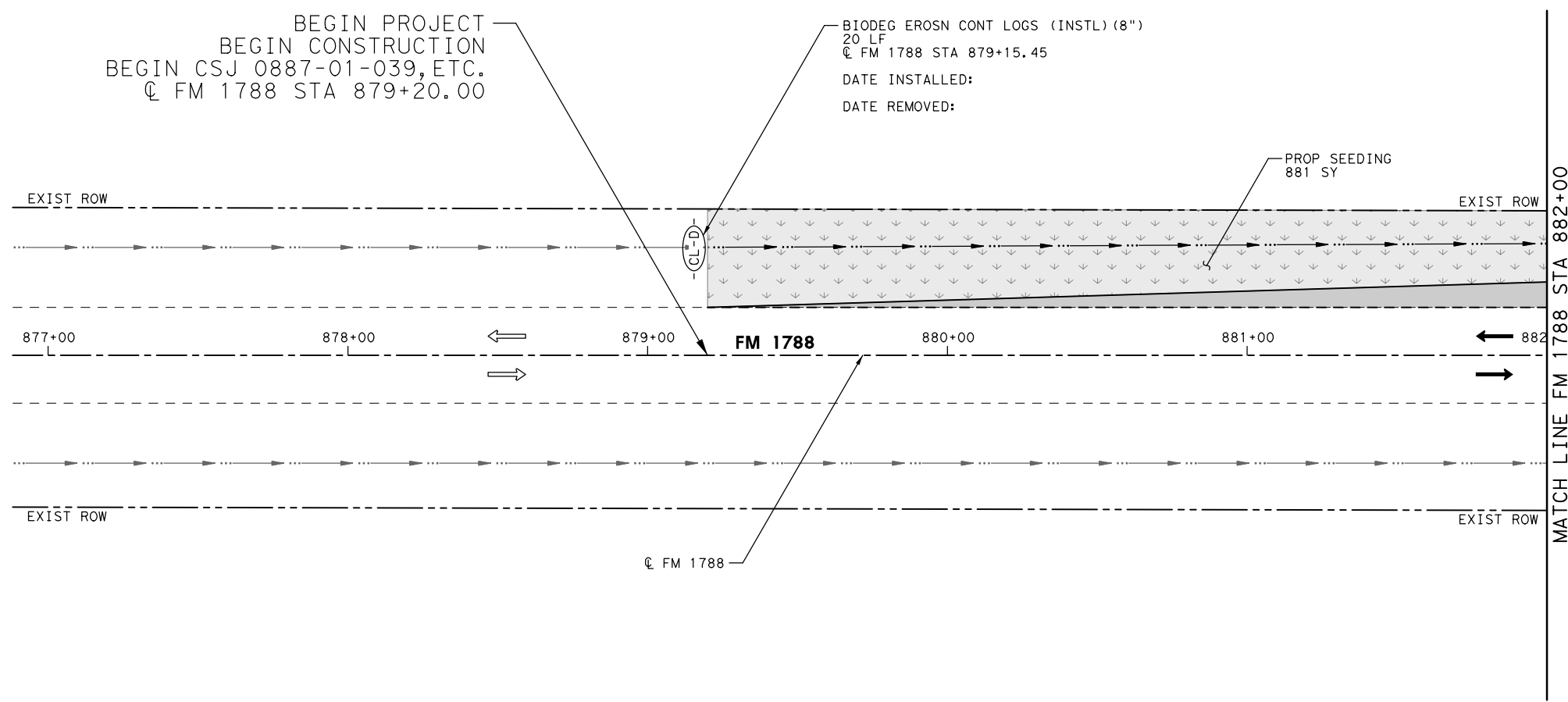
SHEET 8 OF 16

DESIGN JMT	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)	HIGHWAY NO. VARIOUS
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CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
CHECK JMT			324

DATE: 8/20/2020
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 - PROP FLOW LINE



STATE OF TEXAS
 CLIFFORD R. MOUSER
 56606
 REGISTERED PROFESSIONAL ENGINEER
Clifford R. Mouser 8/20/2020



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 Texas Department of Transportation

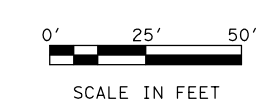
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

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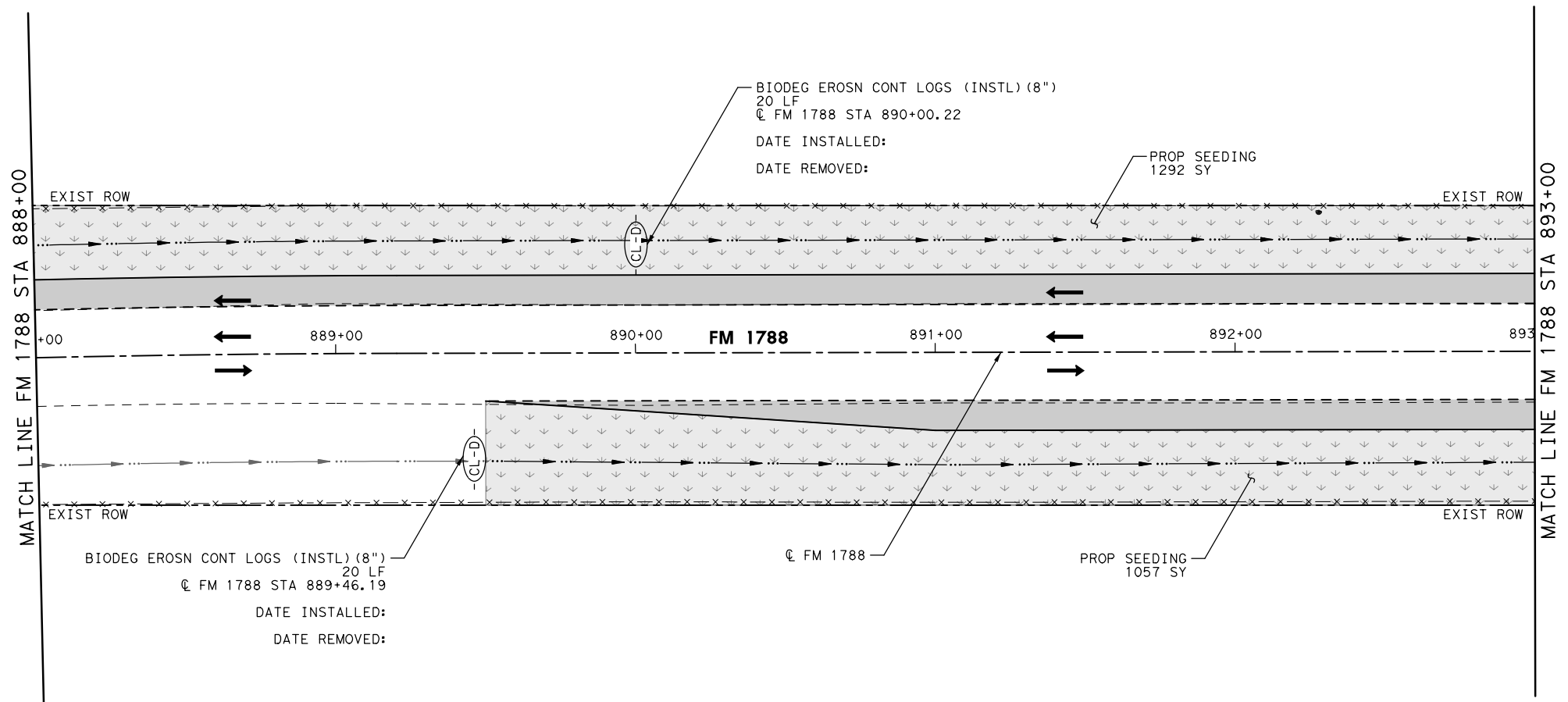
SHEET 9 OF 16


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CHECK	JMT						325

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TBPE REGISTRATION NO. F-16341



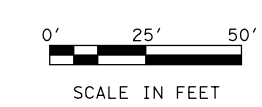
Texas Department of Transportation

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

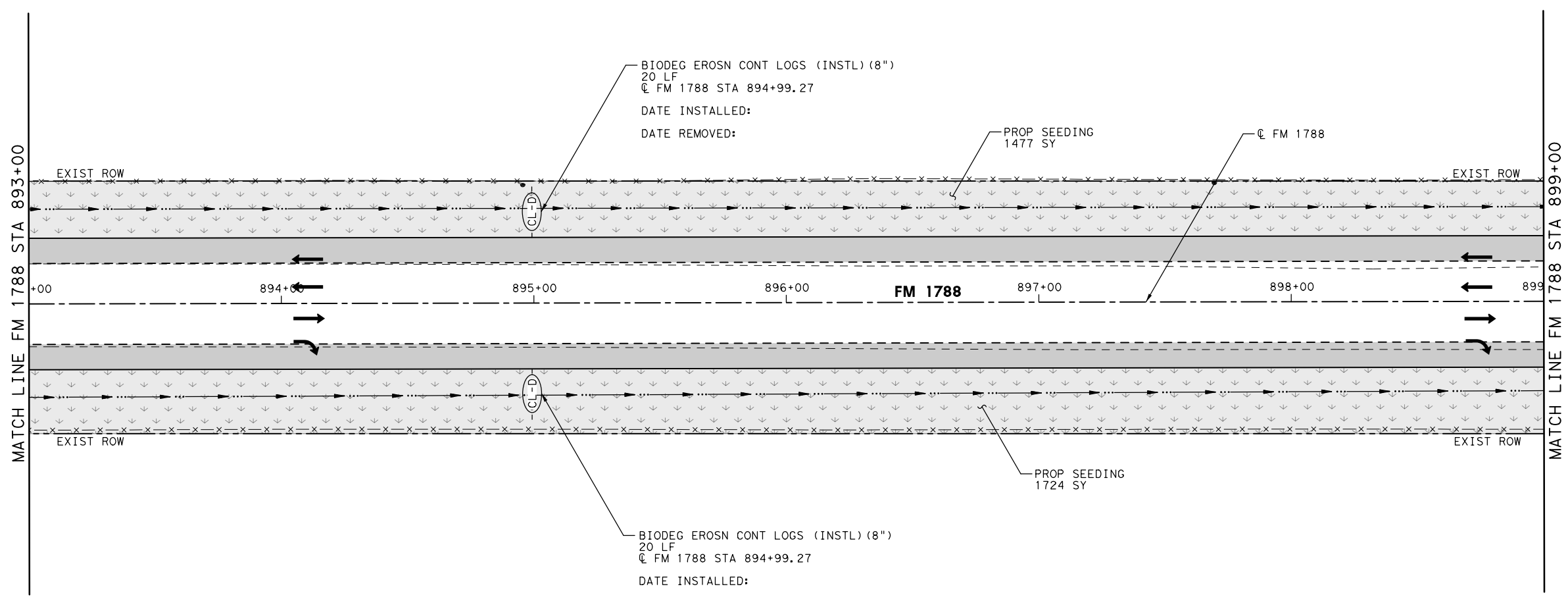
**FM 1788
SW3P
AT FM 1787**


SHEET 11 OF 16			
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.
CHECK			SHEET NO.
JMT			327

DATE: 8/20/2020
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JMT TBPE REGISTRATION NO. F-16341

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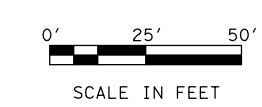
Texas Department of Transportation

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

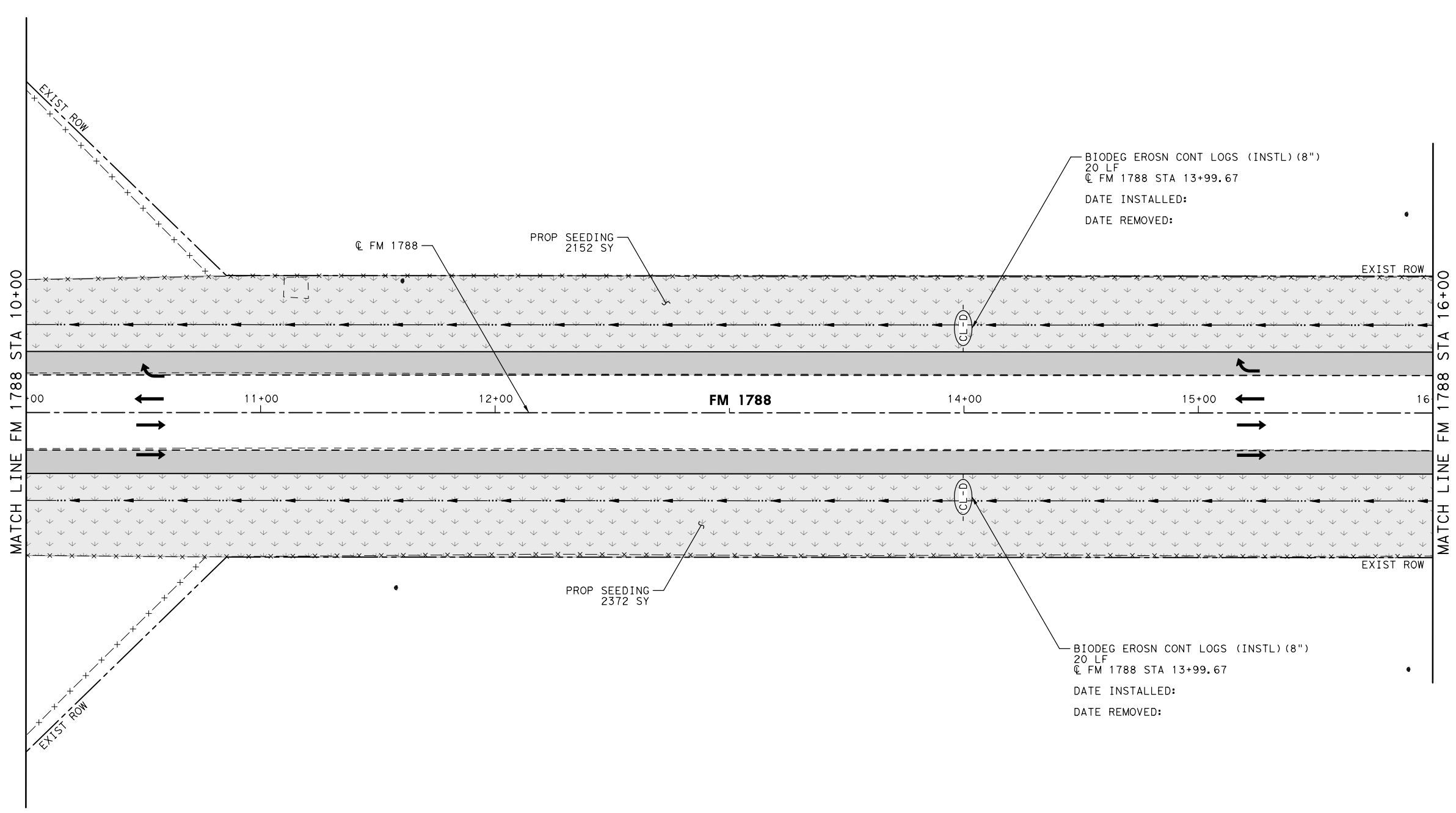
**FM 1788
SW3P
AT FM 1787**


SHEET 12 OF 16			
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
JMT	6	(SEE TITLE SHEET)	VARIOUS
GRAPHICS	STATE	DISTRICT	COUNTY
JMT	TEXAS	ODA	ECTOR, ETC.
CHECK	CONTROL	SECTION	JOB
JMT	0887	01	039, ETC.
			328

DATE: 8/20/2020
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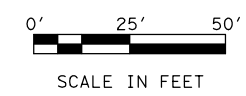


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 ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
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 AT FM 1787**

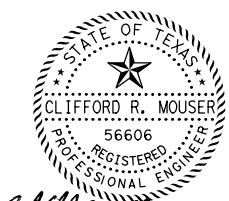
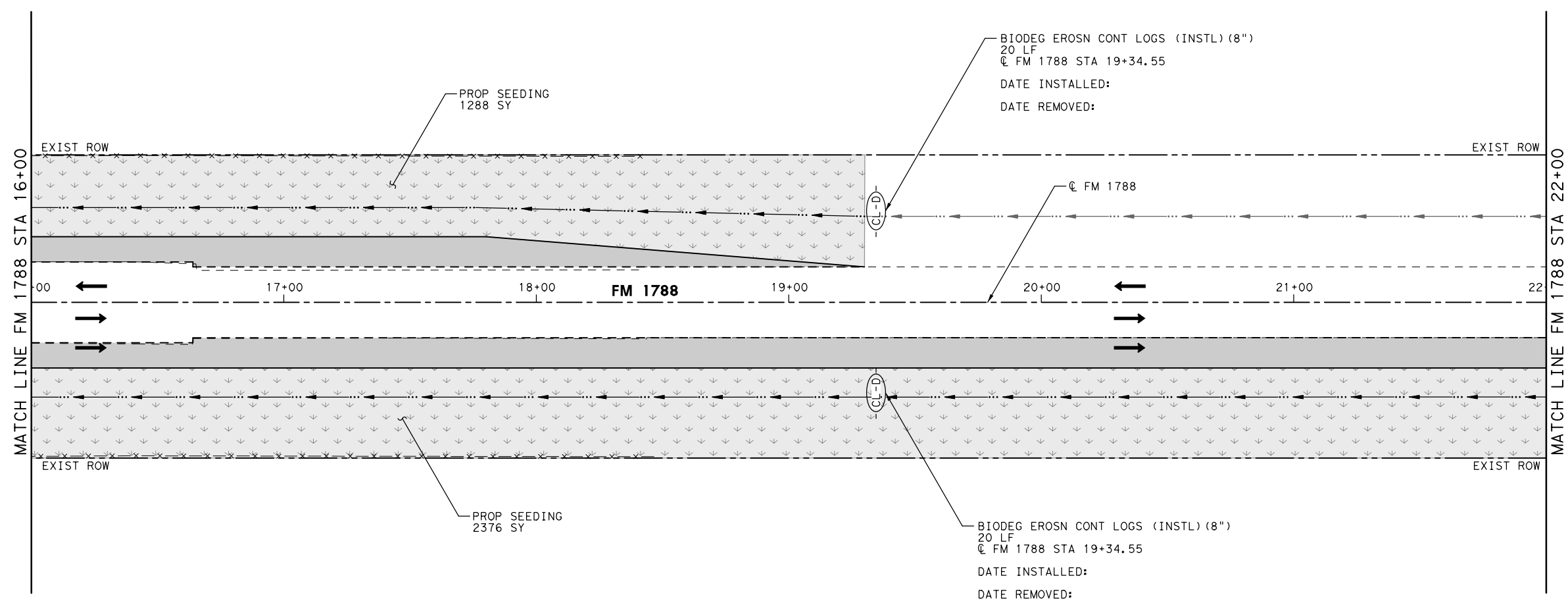
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CHECK JMT	CONTROL 0887	SECTION 01	JOB 039, ETC.
			329

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Clifford R. Mouser 8/20/2020



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ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 SW3P
 AT FM 1787**

SHEET 14 OF 16

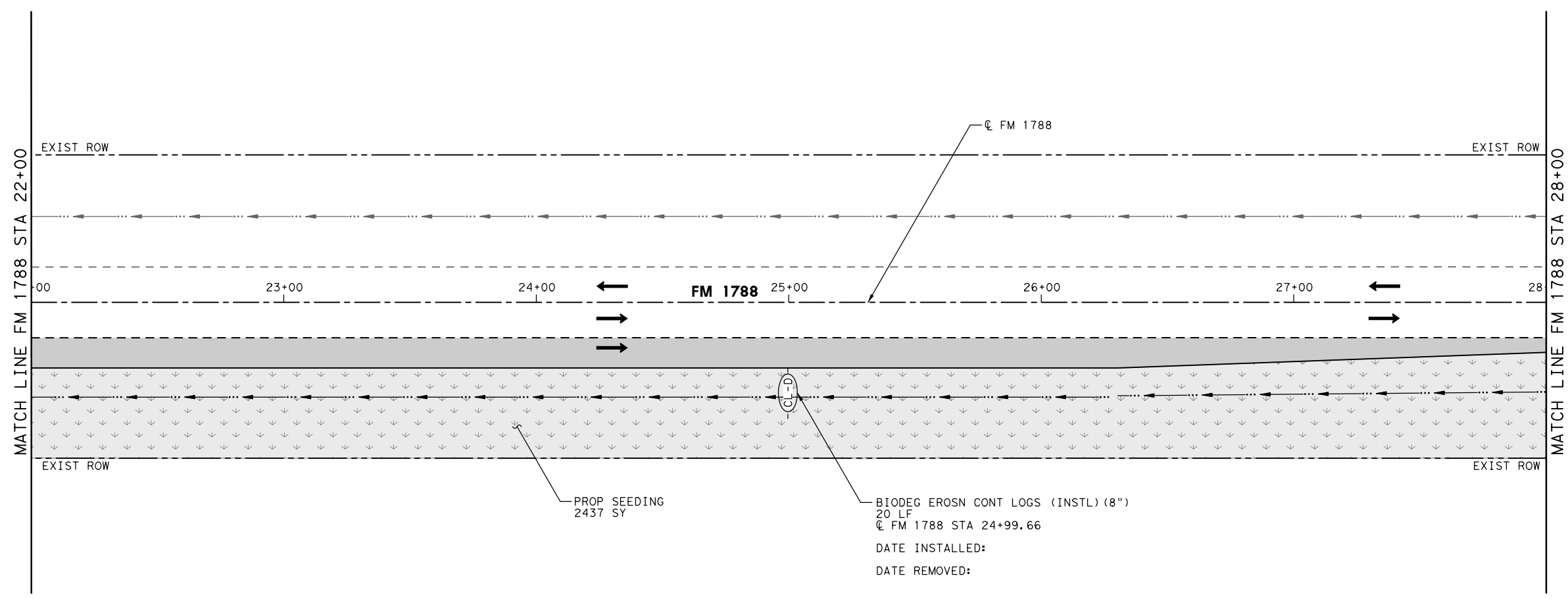
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Clifford R. Mouser 8/20/2020



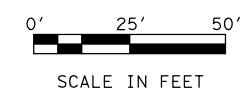
ODESSA DISTRICT INTERSECTION IMPROVEMENTS

**FM 1788
 SW3P
 AT FM 1787**

SHEET 15 OF 16

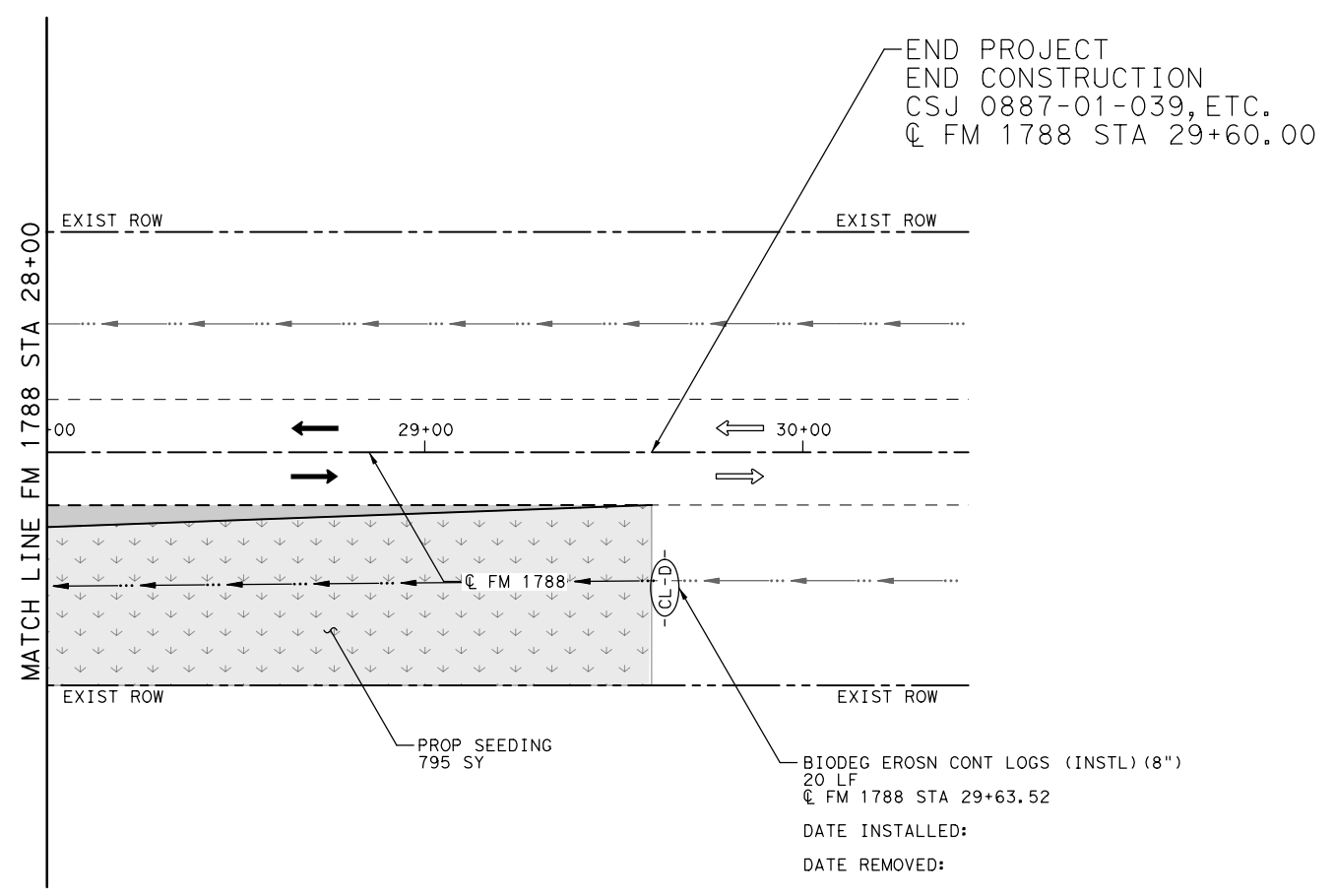
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TBPE REGISTRATION NO. F-16341

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TEXAS DEPARTMENT OF TRANSPORTATION

ODESSA DISTRICT INTERSECTION IMPROVEMENTS

FM 1788
SW3P
AT FM 1787

SHEET 16 OF 16

DESIGN	JMT	FED. RD. DIV. NO.	6	FEDERAL AID PROJECT NO.	(SEE TITLE SHEET)	HIGHWAY NO.	VARIOUS
GRAPHICS	JMT	STATE	TEXAS	DISTRICT	ODA	COUNTY	ECTOR, ETC.
CHECK	JMT	CONTROL	0887	SECTION	01	JOB	039, ETC.
CHECK	JMT						332

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DATE:
FILE:

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

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

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

1. Midland 3.
2. Odessa 4.
 No Action Required Required Action

Action No.

- Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
- Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
- Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
- When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

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

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

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

- No Permit Required
 Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
 Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)
 Individual 404 Permit Required
 Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

-
-
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-

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

Best Management Practices:

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

-
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-

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.

- The contractor shall only disturb vegetation necessary for construction.
- Re-vegetation of disturbed areas would be in compliance with EO 13112 on Invasive Species.
- Any landscaping shall be in compliance with the Executive Memorandum on Beneficial Landscaping.

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

- No Action Required Required Action

Action No.

- Contactors will avoid harm to migratory birds, eggs, and active nests.
- Inactive nests and/or vegetation suspected to contain nests should be removed outside of nesting season. Nesting season is typically March 15 through September 15.

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

LIST OF ABBREVIATIONS

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used. Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act. Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

- * Dead or distressed vegetation (not identified as normal)
- * Trash piles, drums, canister, barrels, etc.
- * Undesirable smells or odors
- * Evidence of leaching or seepage of substances

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

- Yes No

If "No", then no further action is required.

If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

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

- Yes No

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

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

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

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

- No Action Required Required Action

Action No.

-
-
-


VII. OTHER ENVIRONMENTAL ISSUES

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

- No Action Required Required Action

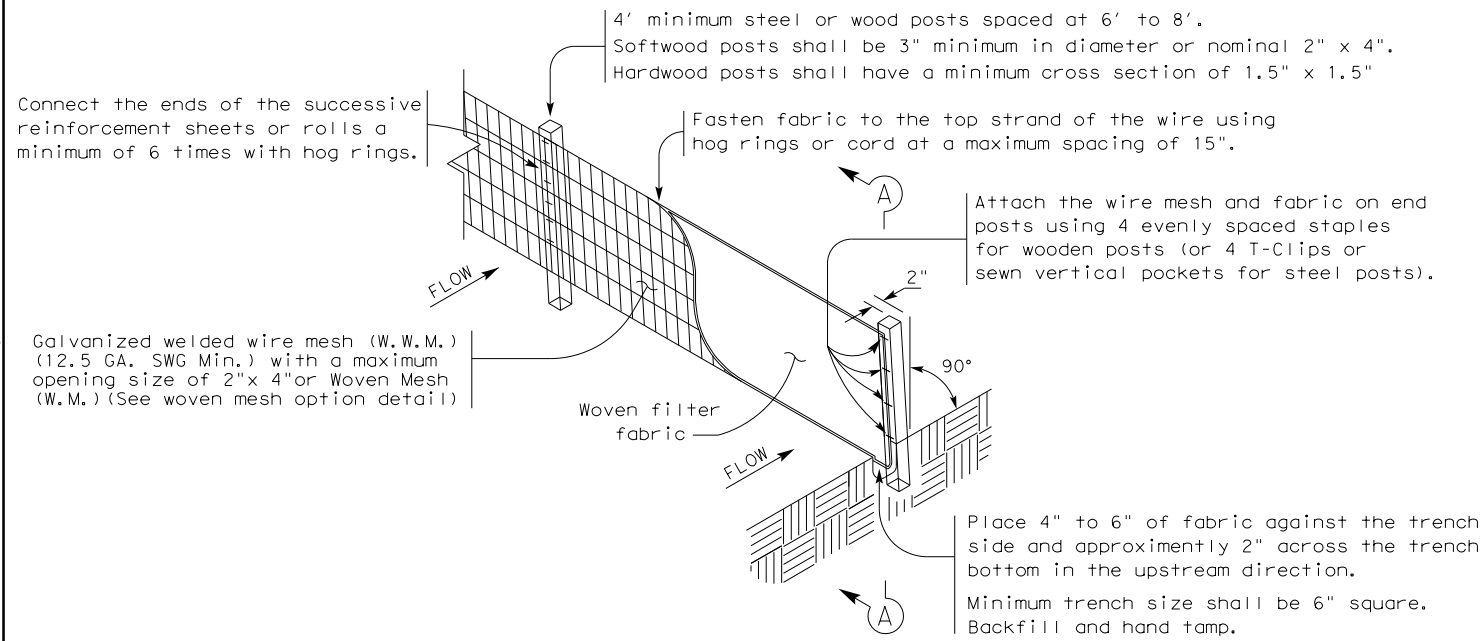
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 Texas Department of Transportation		Design Division Standard	
ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS EPIC			
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©TxDOT: February 2015	CONT	SECT	JOB
12-12-2011 IDS REVISIONS	0887	01	039, ETC.
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY	SHEET NO.
01-23-2015 SECTION I. CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	ODA	ECTOR, ETC.	333

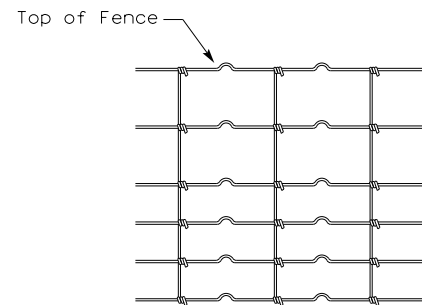
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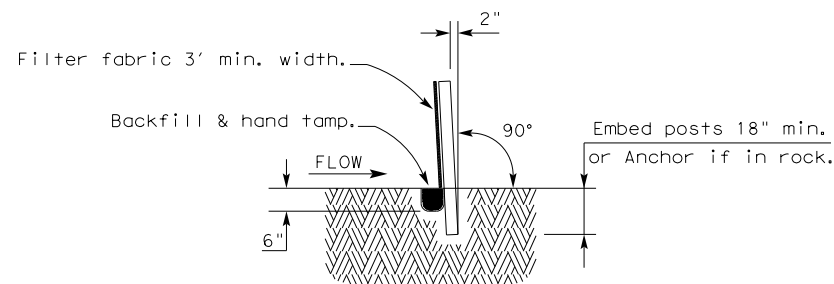
TEMPORARY SEDIMENT CONTROL FENCE

SCF



HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA. SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.



SECTION A-A

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT². Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

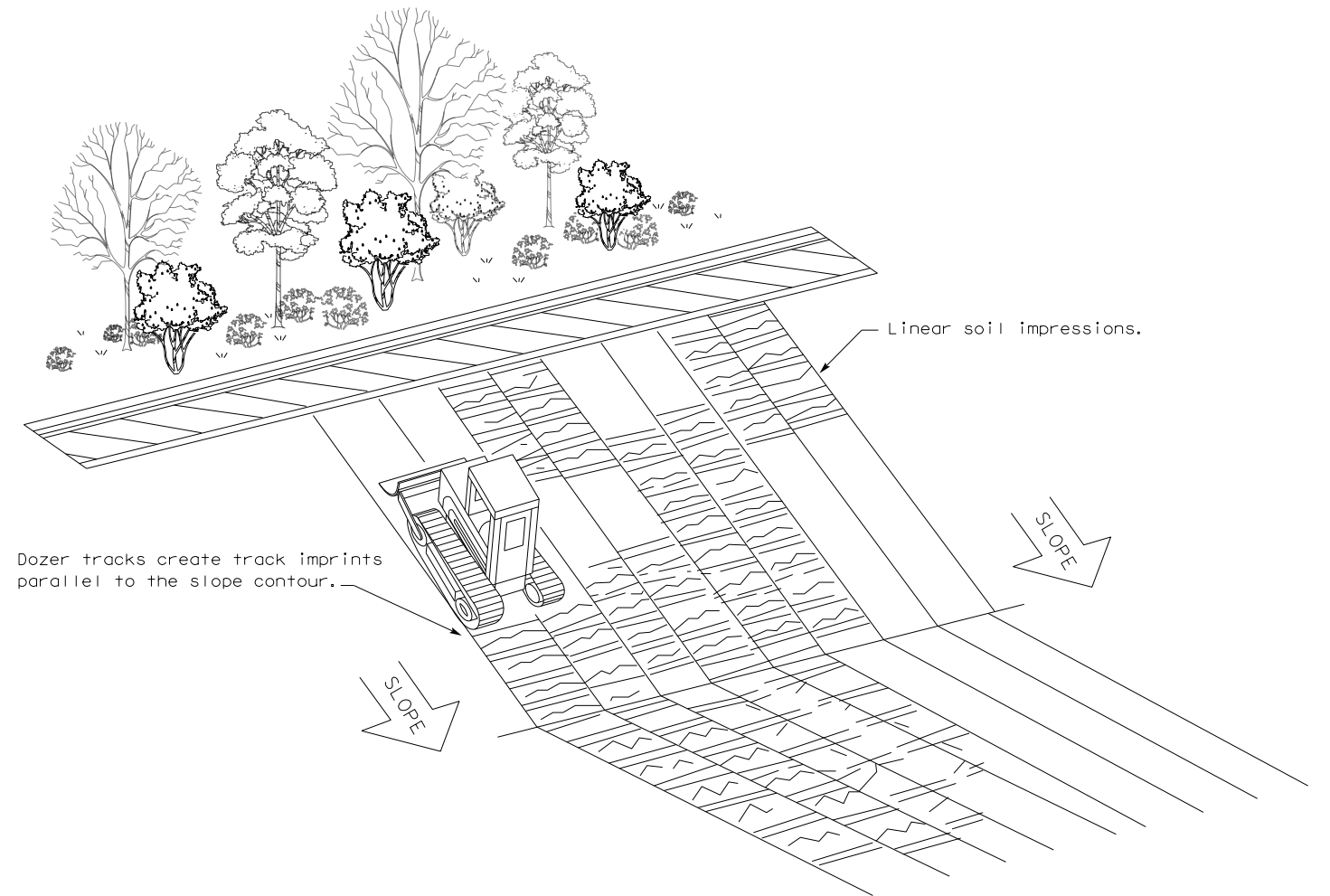
LEGEND

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 continuous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

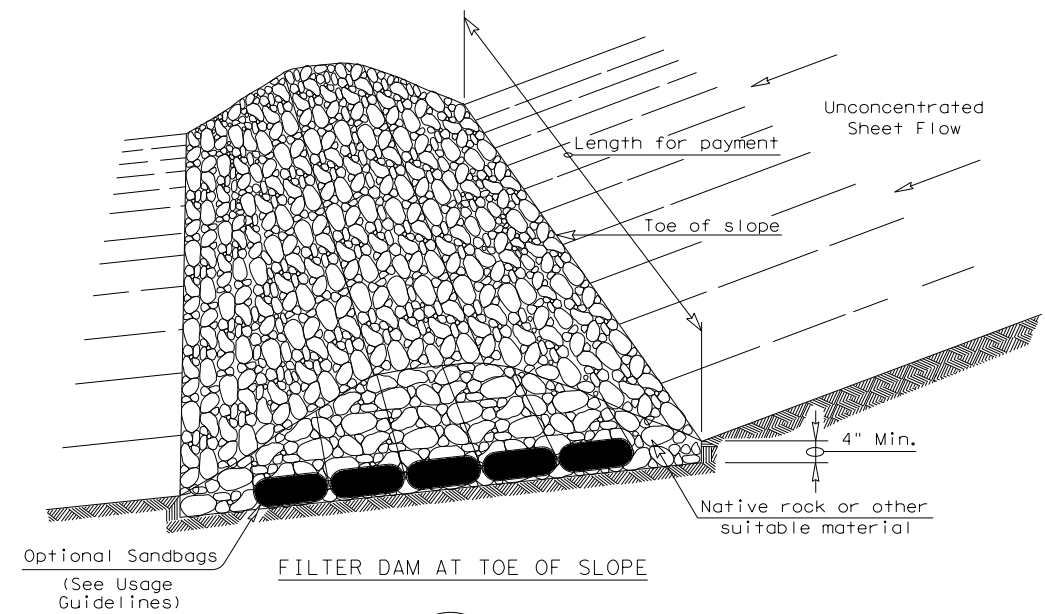


TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE & VERTICAL TRACKING
 EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0887	01	039, ETC.	VARIOUS
	DIST	COUNTY	SHEET NO.	
	ODA	ECTOR, ETC.	334	

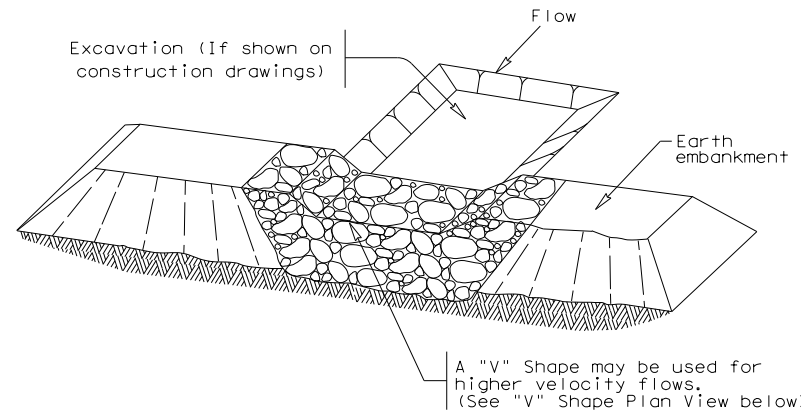
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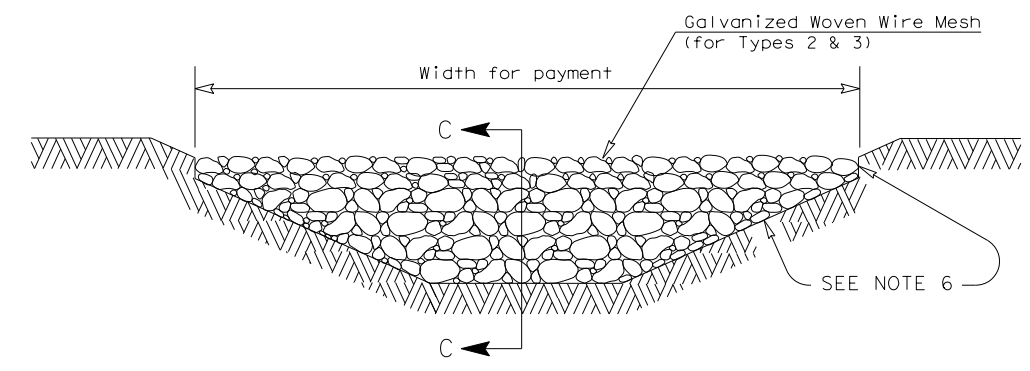
FILTER DAM AT TOE OF SLOPE

(RFD1)



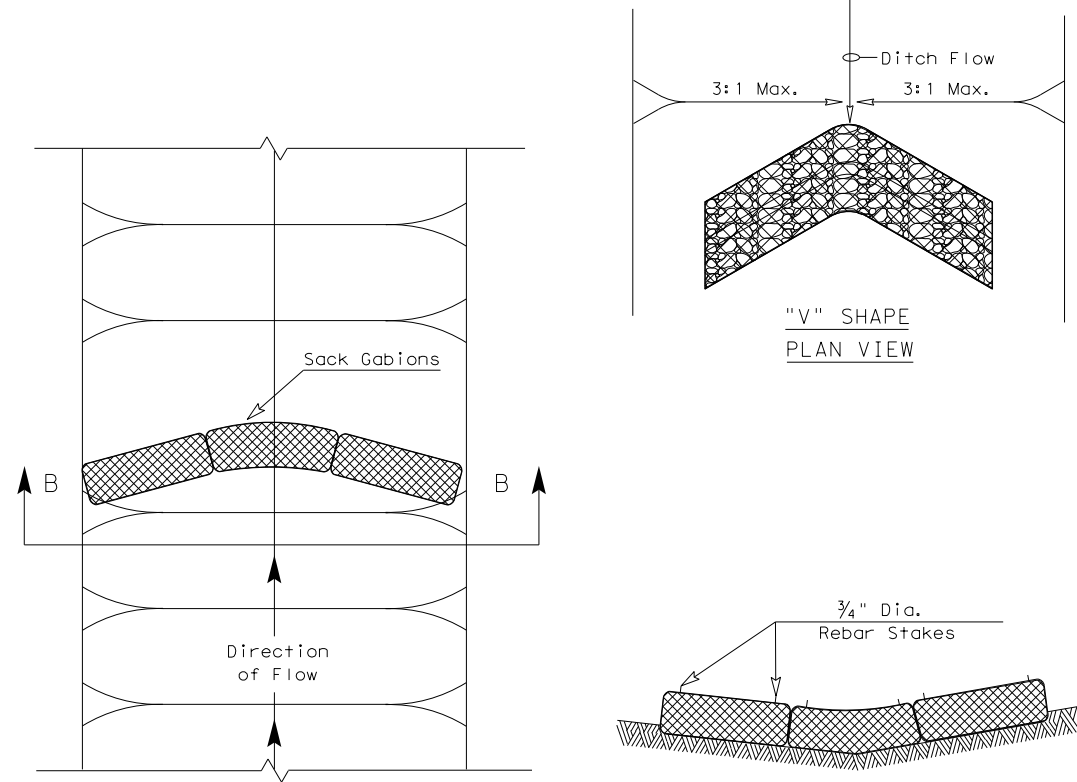
FILTER DAM AT SEDIMENT TRAP

(RFD1) OR (RFD2)



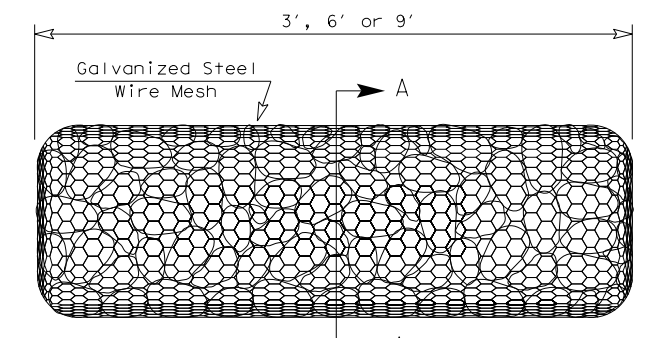
FILTER DAM AT CHANNEL SECTIONS

(RFD1) OR (RFD2) OR (RFD3)



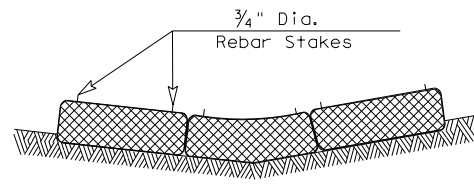
PLAN VIEW

SECTION B-B

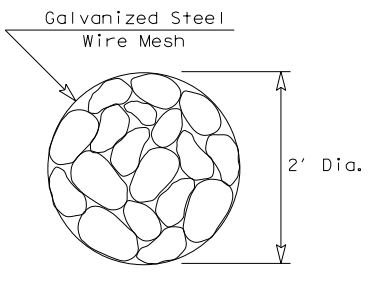


TYPE 4 (SACK GABIONS)

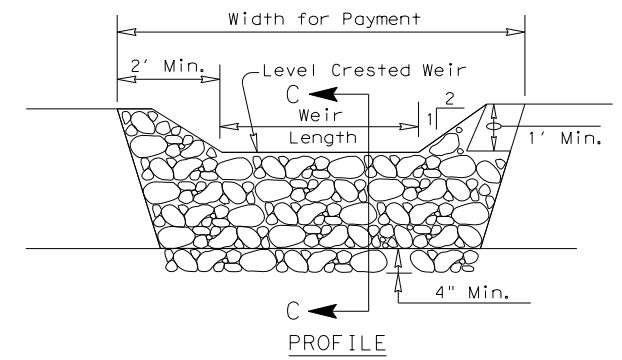
(RFD4)



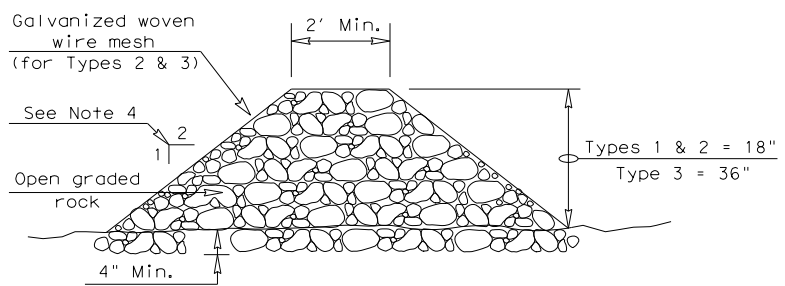
SECTION B-B



SECTION A-A



PROFILE



SECTION C-C

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT² of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximately 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

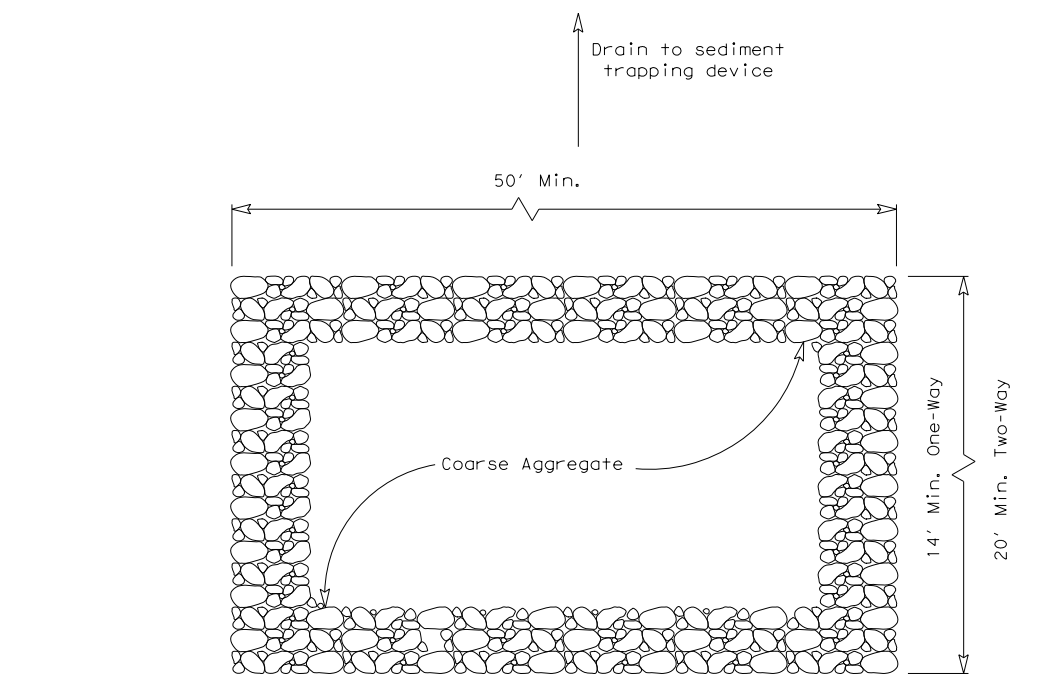
1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with 3/4" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 1/2" x 3 1/4".
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

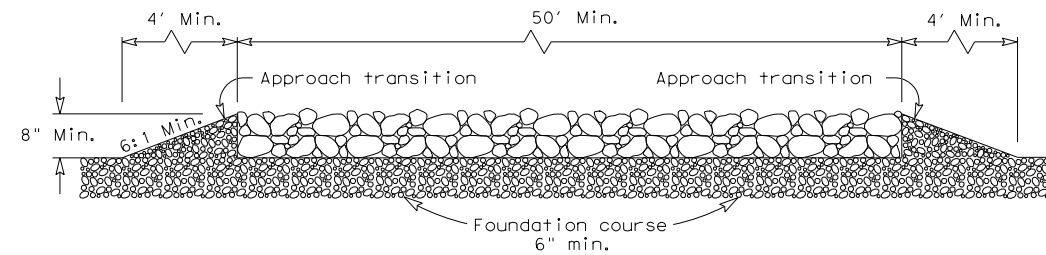
- Type 1 Rock Filter Dam (RFD1)
- Type 2 Rock Filter Dam (RFD2)
- Type 3 Rock Filter Dam (RFD3)
- Type 4 Rock Filter Dam (RFD4)

		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES ROCK FILTER DAMS EC(2)-16			
FILE: ec216	DN: TxDOT	CK: KM	DW: VP
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0887	01	039, ETC.
	DIST	COUNTY	SHEET NO.
	ODA	ECTOR, ETC.	335

DATE: 8/20/2020
 FILE: pw:\jmt-pw_bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP_338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\9 - Environmental\TXDOT ST-17-11524-004\09 - Environmental\TXDOT



PLAN VIEW

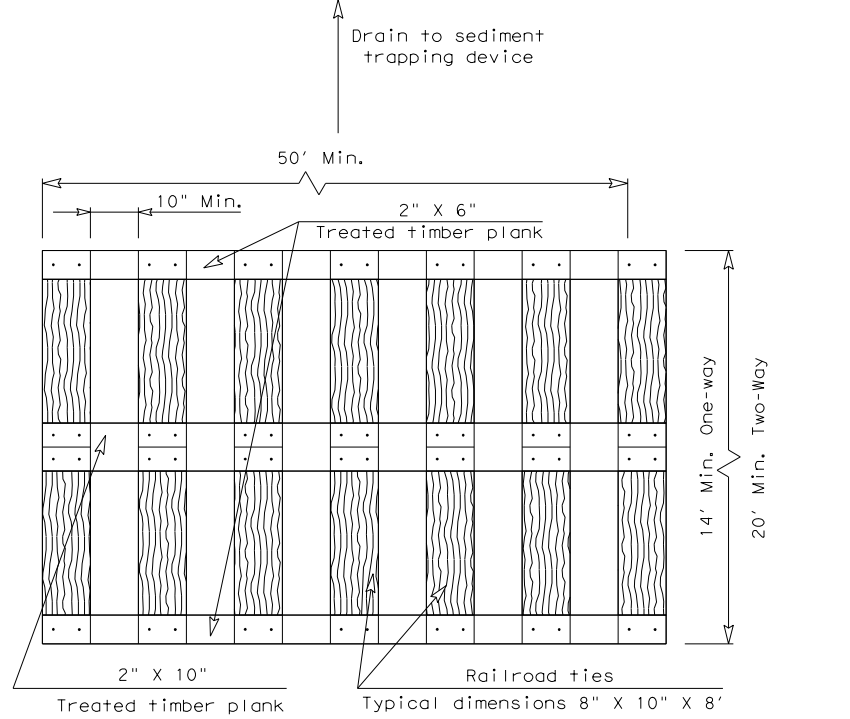


ELEVATION VIEW

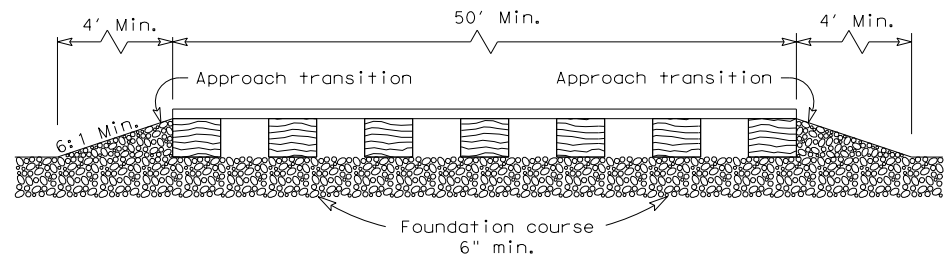
CONSTRUCTION EXIT (TYPE 1)
ROCK CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

- The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
- The coarse aggregate should be open graded with a size of 4" to 8".
- The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
- The construction exit shall be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.
- Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



PLAN VIEW

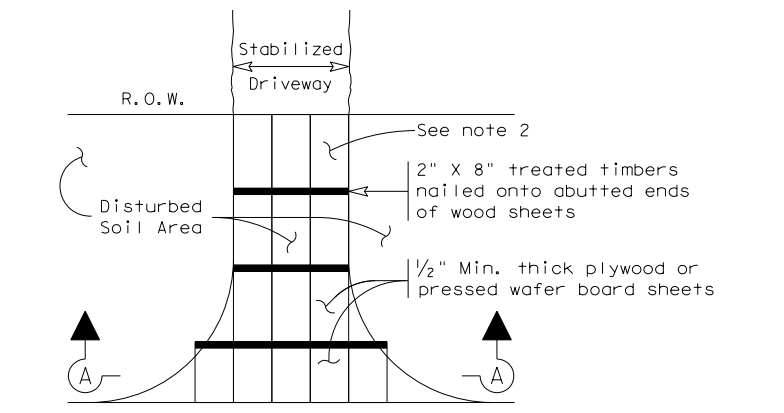


ELEVATION VIEW

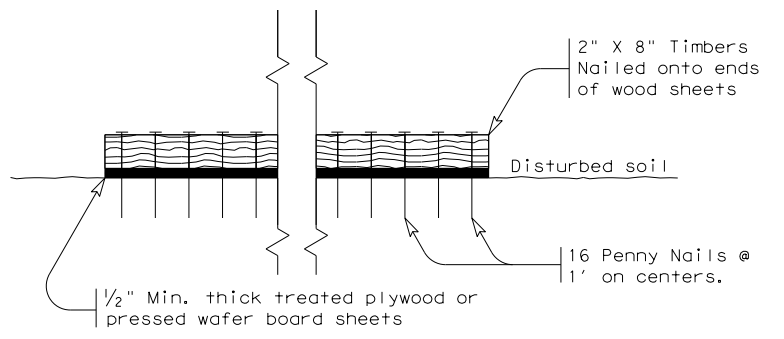
CONSTRUCTION EXIT (TYPE 2)
TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 2)

- The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
- The treated timber planks shall be attached to the railroad ties with 1/2" x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
- The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
- The construction exit should be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.
- Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)
SHORT TERM

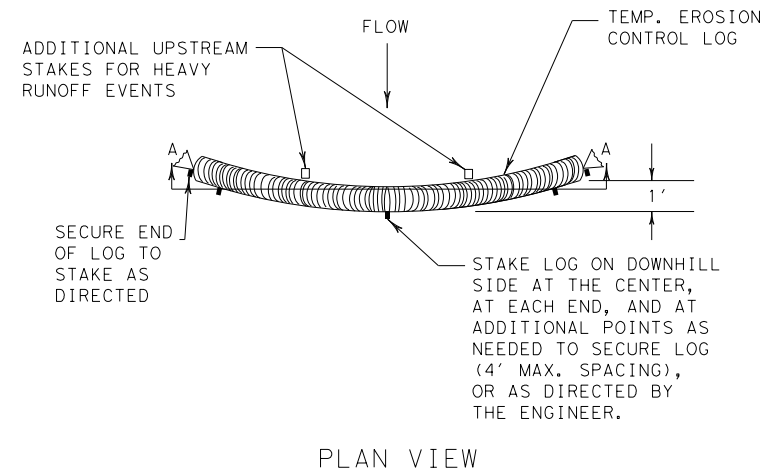
GENERAL NOTES (TYPE 3)

- The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
- The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
- The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.

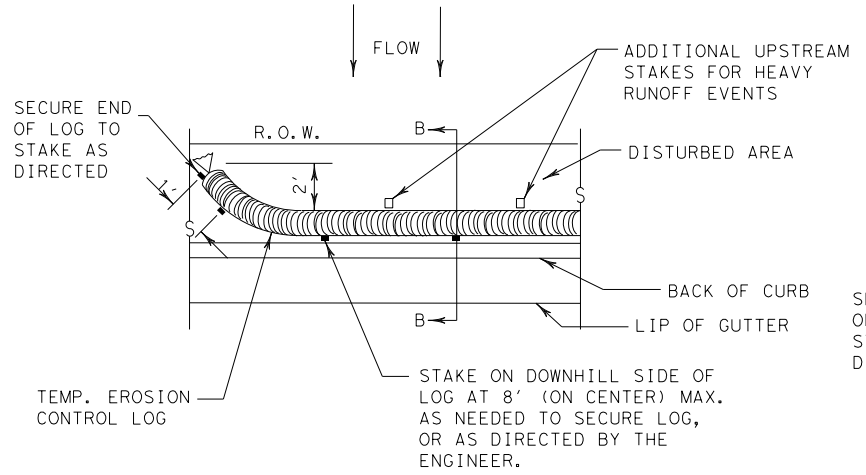
		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES CONSTRUCTION EXITS EC(3)-16			
FILE: ec316	DN: TXDOT	CK: KM	DW: VP
© TXDOT: JULY 2016	CONT	SECT	JOB
REVISIONS		0887 01	039, ETC.
DIST	COUNTY	SHEET NO.	
ODA	ECTOR, ETC.	336	

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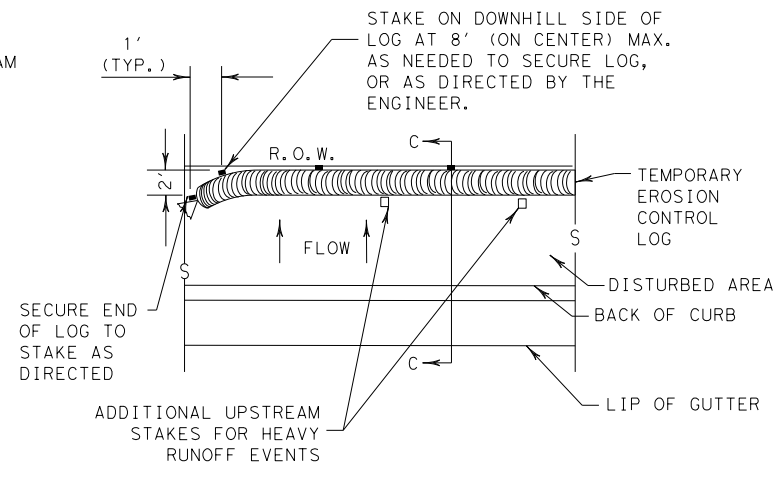
DATE: 8/20/2020
 FILE: pw:\jmt-pw.bentley.com\jmt-pw-01\Documents\Projects\2017\17-11524-004\DesignData\01 - LP 338, FM 307, FM 1787 (CSJ 0906-00-226)\4 - Design\Plan Set\9. Environmental\TxDOT ST



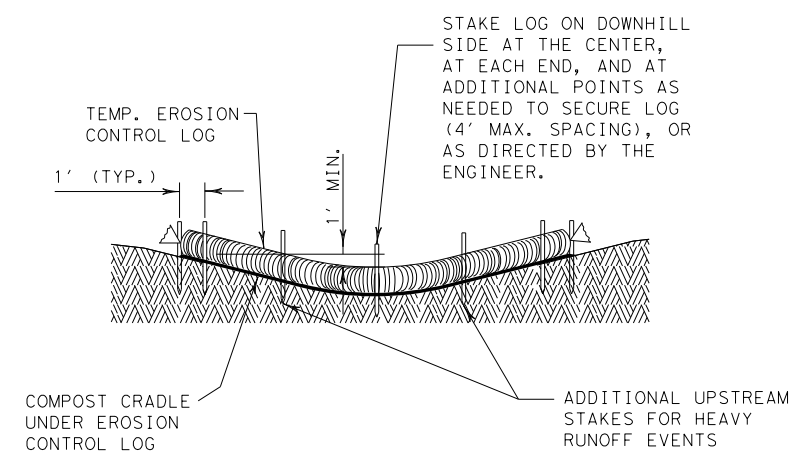
PLAN VIEW



PLAN VIEW



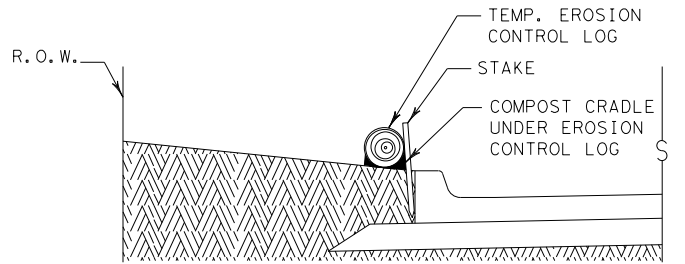
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

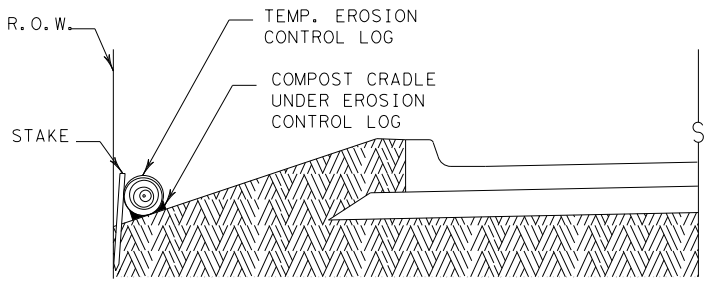
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

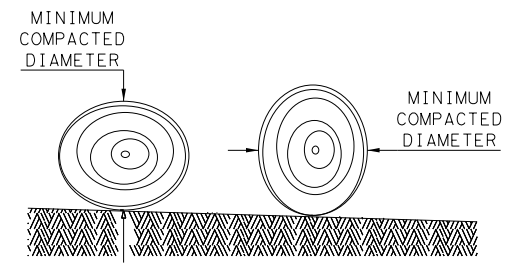
CL-BOC



SECTION C-C

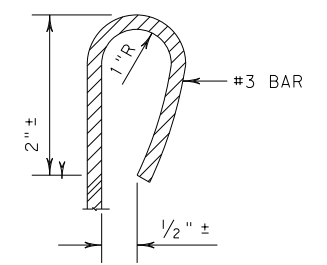
EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

- LEGEND
- CL-D EROSION CONTROL LOG DAM
 - CL-BOC EROSION CONTROL LOG AT BACK OF CURB
 - CL-ROW EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
 - CL-SST EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
 - CL-SSL EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
 - CL-DI EROSION CONTROL LOG AT DROP INLET
 - CL-CI EROSION CONTROL LOG AT CURB INLET
 - CL-GI EROSION CONTROL LOG AT CURB & GRATE INLET



REBAR STAKE DETAIL

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.

GENERAL NOTES:

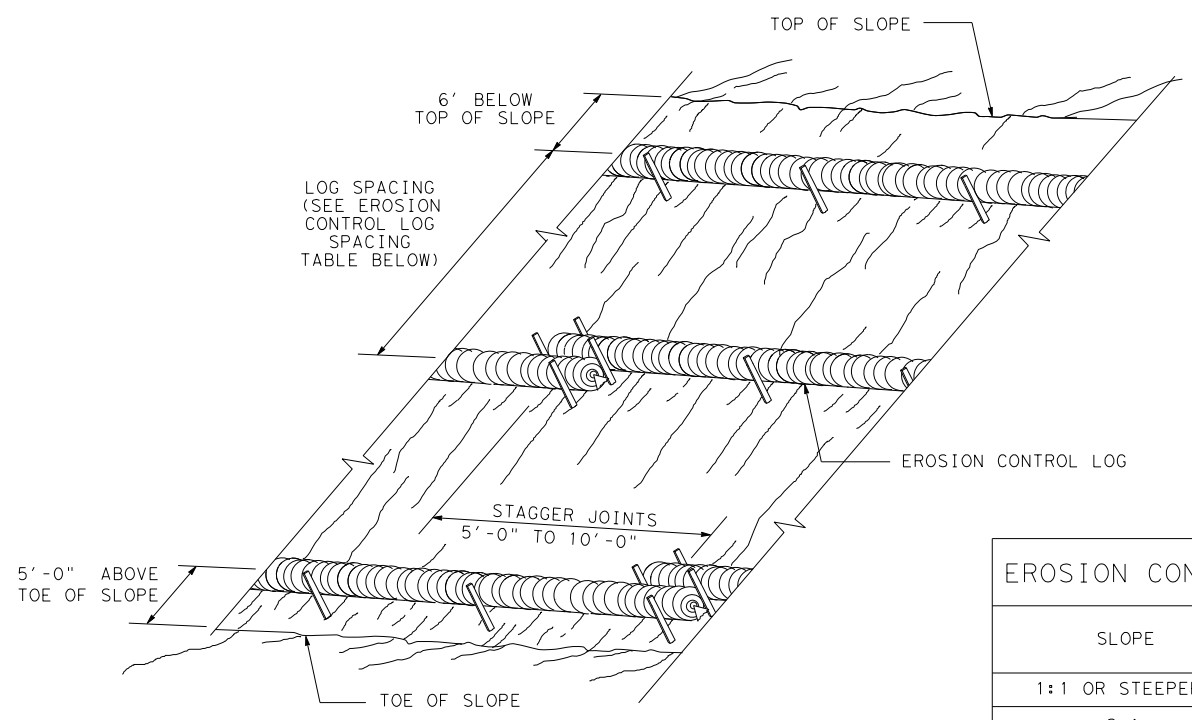
1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE 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.

SHEET 1 OF 3

		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
© TxDOT: JULY 2016	CONT SECT	JOB	HIGHWAY
	0887 01	039, ETC.	VARIOUS
	DIST	COUNTY	SHEET NO.
	ODA	ECTOR, ETC.	337

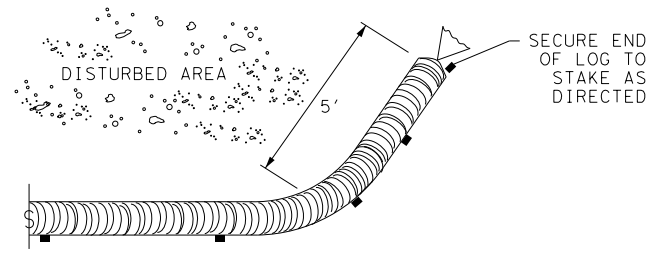
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EROSION CONTROL LOGS ON SLOPES
 STAKE AND TRENCHING ANCHORING

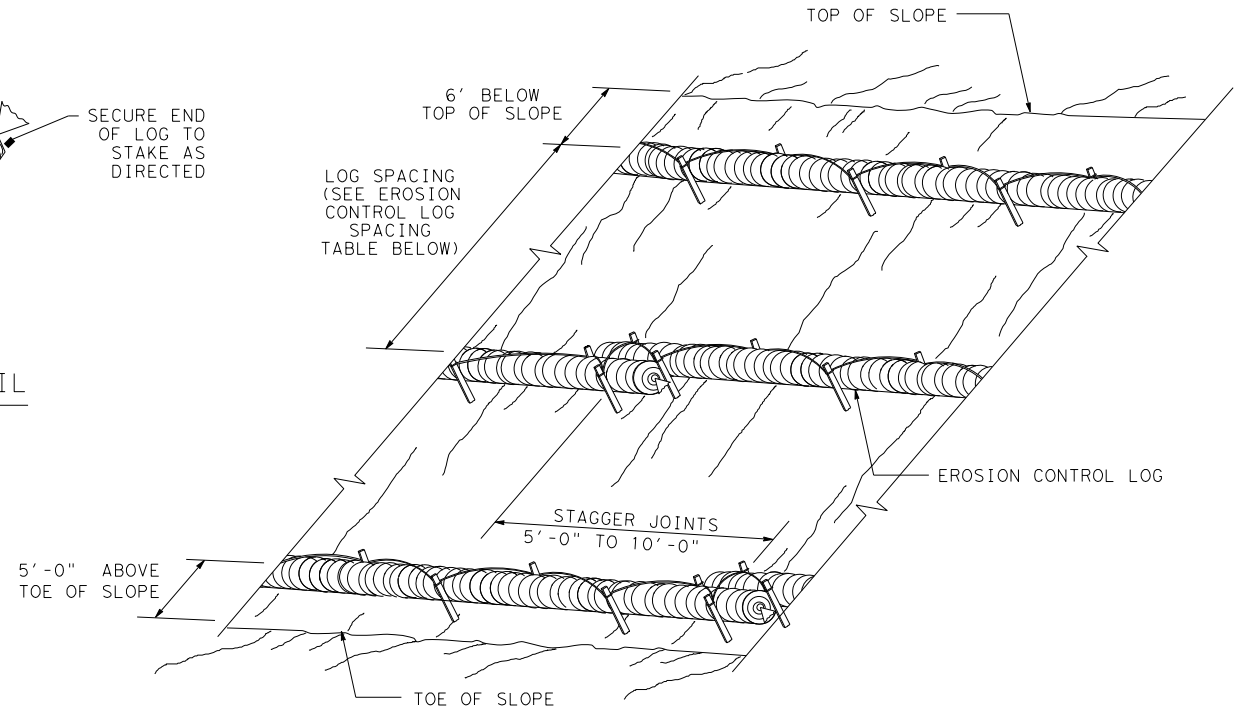
CL-SST



END SECTION RAP DETAIL

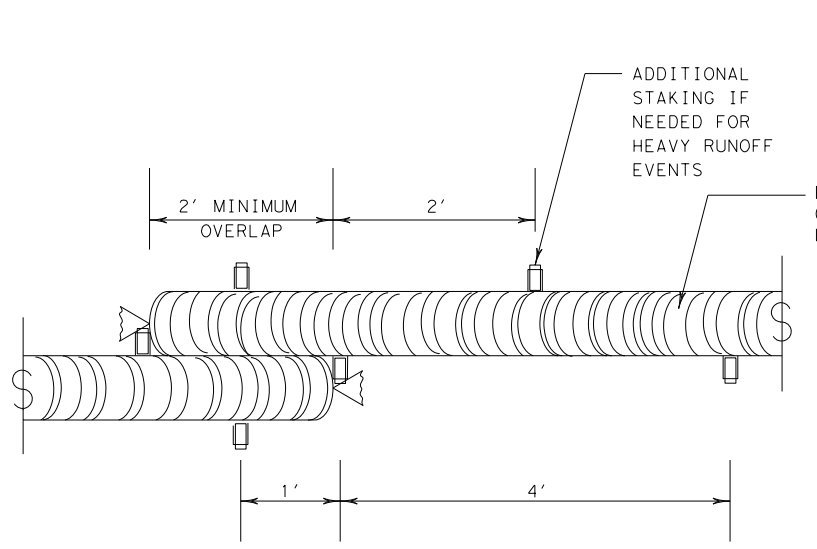
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
 SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
 HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



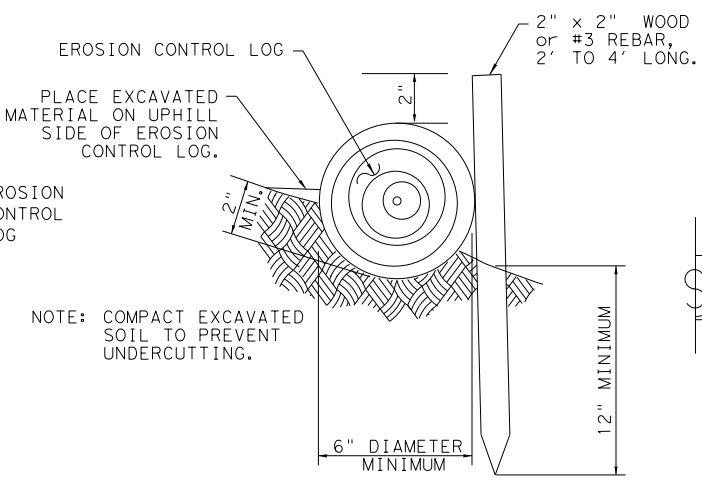
EROSION CONTROL LOGS ON SLOPES
 STAKE AND LASHING ANCHORING

CL-SSL

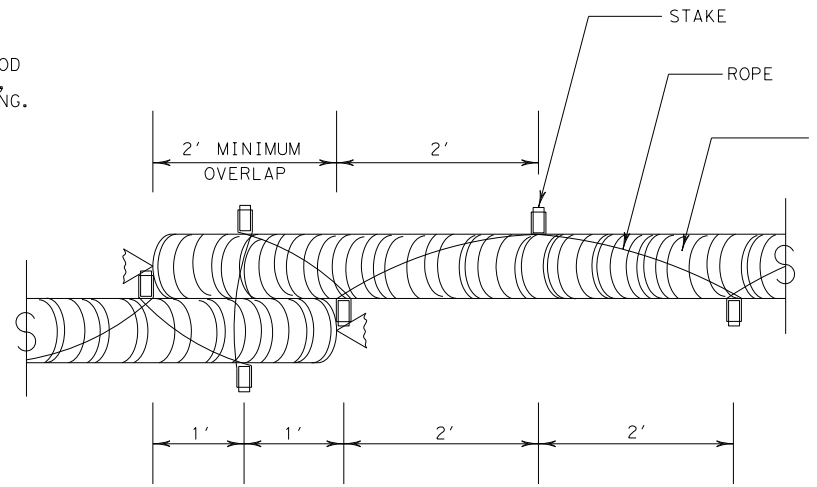


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

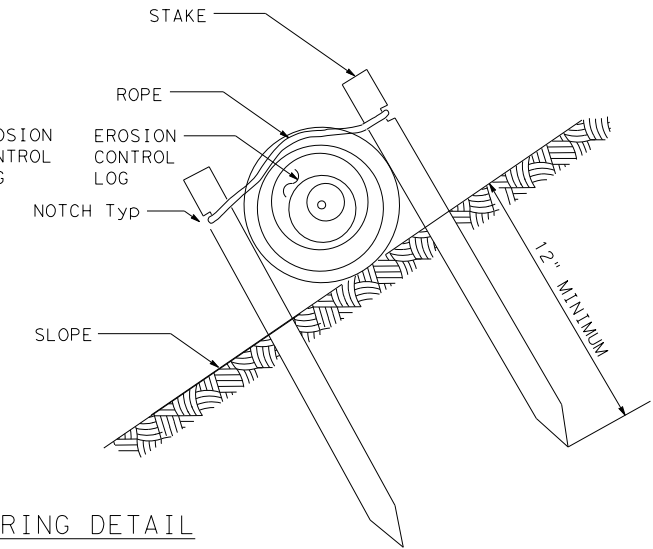


NOTE: COMPACT EXCAVATED SOIL TO PREVENT UNDERCUTTING.

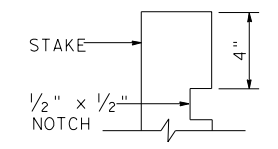


STAKE AND LASHING ANCHORING DETAIL

CL-SSL



TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"



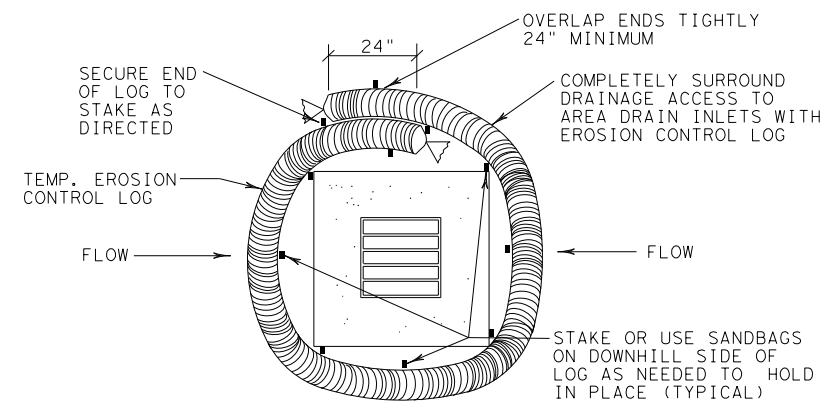
STAKE NOTCH DETAIL

SHEET 2 OF 3

		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
© TxDOT: JULY 2016	CONT SECT	JOB	HIGHWAY
REVISIONS	0887 01	039, ETC.	VARIOUS
DIST	COUNTY	SHEET NO.	
ODA	ECTOR, ETC.	338	

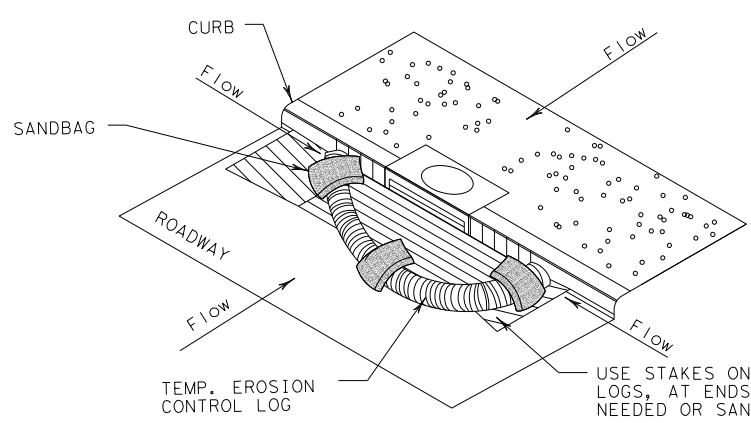
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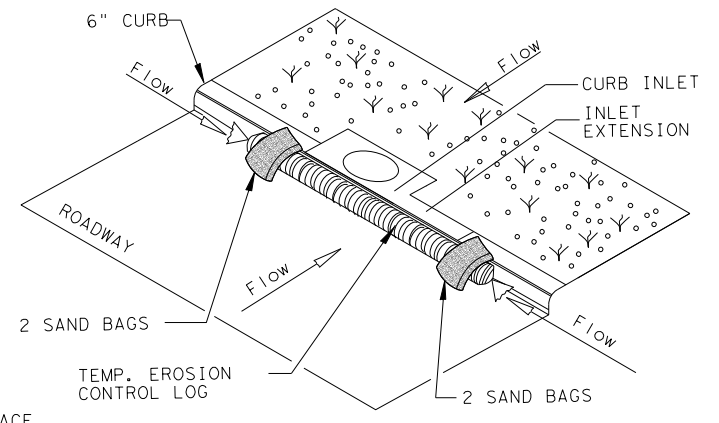
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

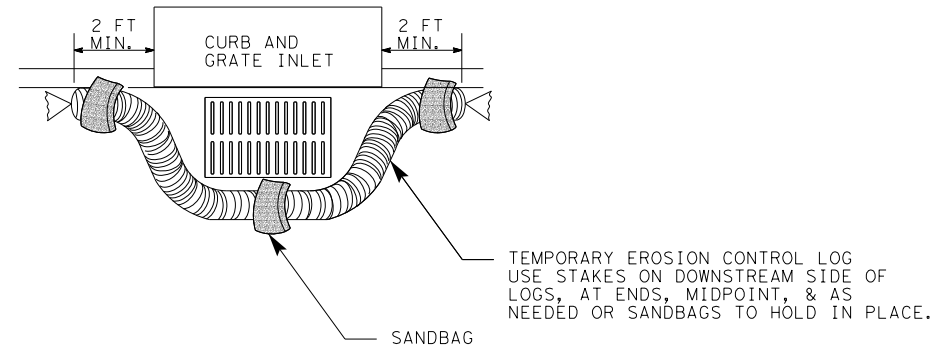
CL-CI



EROSION CONTROL LOG AT CURB INLET

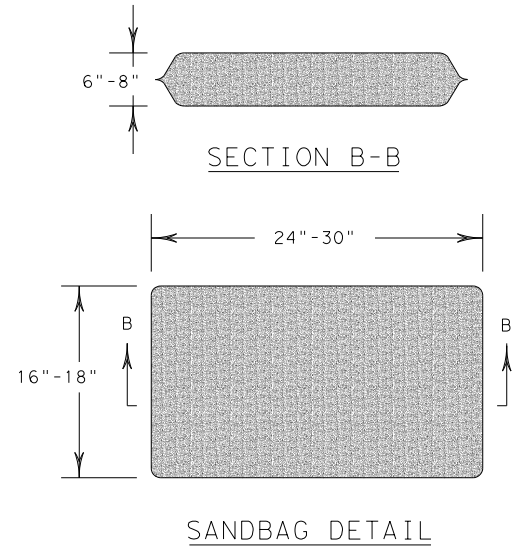
CL-CI

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



SANDBAG DETAIL

SHEET 3 OF 3

		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
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REVISIONS	0887	01	039, ETC.
DIST	COUNTY	SHEET NO.	
ODA	ECTOR, ETC.	339	