SUBJECT: PLANS AND PROPOSAL ADDENDUMS

PROJECT: C 254-7-8 CONTROL: 0254-07-008
COUNTY: JIM WELLS
LETTING: 06/01/2023
REFERENCE NO: 0622

PROPOSAL ADDENDUMS

X PROPOSAL COVER
X BID INSERTS (SH. NO.: ALL)
_ GENERAL NOTES (SH. NO.:)
X SPEC LIST (SH. NO.: ALL)
X SPECIAL PROVISIONS:
ADDED: 6064--001

DELETED:

X SPECIAL SPECIFICATIONS:
ADDED: 6007, 6008, 6010, 6064, 6185, 6186, 6247, 6327

DELETED:

X OTHER: PLAN SHEET AND OTHER CHANGES

DESCRIPTION OF ABOVE CHANGES
(INCLUDING PLANS SHEET CHANGES)

***** PROPOSAL COVER *****

REVISED CONTRACT TO 937 WORKING DAY

***** BID INSERTS*****

REVISED QUANTITIES FOR THE FOLLOWING BID ITEMS:
260-6043, 260-6073, 420-6029, 420-6037, 432-6001, 454-6018
502-6001, 545-6005, 545-6013, 618-6046, 618-6047, 620-6008
620-6010, 666-6306, 666-6309, 666-6321, 6246-6001

ADDED THE FOLLOWING BID ITEMS:
416-6005, 416-6007, 618-6023, 618-6053, 618-6054, 618-6074
620-6002, 624-6010, 628-6149, 650-6028, 6007-6017, 6007-6020
6007-6021, 6007-6023, 6007-6026, 6008-6027, 6010-6010, 6064-6047
6064-6092, 6185-6005, 6186-6002, 6186-6008, 6247-6003, 6327-6004

DELETED THE FOLLOWING BID ITEMS:
260-6012, 275-6001, 275-6010, 316-6001, 316-6427, 454-6001
666-6300, 666-6303, 666-6315

DESCRIPTION OF ABOVE CHANGES (CONTINUED)
(INCLUDING PLANS SHEET CHANGES)

***** PLAN SHEETS *****

SHEET 1 (TITLE SHEET): ADDED RAILROD CROSSING INFORMATION

SHEETS 2-3 (INDEX OF SHEETS):

ADDED NEW SHEETS: 58A, 994A, 994B-994JJ, 994KK-994UU, 1055A-1055QQ, 1099-1104

REVISED SHEETS: 14-24, 25-30, 43, 53, 501, 598, 681, 697, 713, 728, 778

DELETED SHEETS: 888

SHEETS 14-24 (PROPOSED TYPICAL SECTIONS): REVISED LEGEND

SHEET 25-30 (ESTIMATE & QUANTITY): REVISED SHEET FOR ABOVE BID ITEMS

SHEET 43 (PAVEMENT SUMMARY SHEET): REVISED FOR ABOVE ITEMS

SHEET 53-56 (SUMMARY SHEET): REVISED FOR ABOVE ITEMS

SHEET 58 (ILLUMINATION SUMMARY): REMOVED TABLE

SHEET 58A (ITS SUMMARY): ADDED SHEET

SHEET 501 (NB MAIN LANE QUANTITIES BEARING SEAT ELEV.): REVISED ITEMS

SHEET 598 (SB MAIN LANE QUANTITIES BEARING SEAT ELEV.): REVISED ITEMS

SHEET 681 (NB FRONTAGE ESTIMATED QUANTITIES BEARING SEAT ELEV.): REVISED ITEMS

SHEET 697 (SB FRONTAGE ESTIMATED QUANTITIES BEARING SEAT ELEV.): REVISED ITEMS

SHEET 713 (NB RAMP 5 BRIDGE QUANTITIES BEARING SEAT ELEV.): REVISED ITEMS

SHEET 728 (SB RAMP 6 BRIDGE QUANTITIES BEARING SEAT ELEV.): REVISED ITEMS

SHEET 778 (CR 129 MSE RETAINING WALL DESIGN DATA): REVISED STATIONING

SHEET 888 (RW(MSE)DD): SHEET OMITTED

SHEETS 984-992 (ILLUMINATION LAYOUT): FILLED IN TABLES

SHEET 994A (PROJECT LOCATION MAP - ITS LAYOUT): SHEET ADDED

SHEET 994B-994JJ (ITS LAYOUT): SHEETS ADDED

DESCRIPTION OF ABOVE CHANGES (CONTINUED)
(INCLUDING PLANS SHEET CHANGES)

SHEET 994KK-994UU (ITS LAYOUT): SHEETS ADDED

SHEET 1055A-1055QQ (ITS LAYOUT): SHEETS ADDED

SHEET 1099-1100 (RAILROAD SCOPE OF WORK PROJECT SPECIFIC DETAILS): SHEETS ADDED

SHEET 1101-1102 (RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS): SHEETS ADDED

SHEET 1103-1104 (RCD(1-2)-22): SHEETS ADDED

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

STATE PROJECT NO.			
C 254-7-8			
CONT	SECT	JOB	HIGHWAY
0254	07	008,ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0001

STATE PROJECT NO. C 254-7-8

US 281
JIM WELLS COUNTY

CSJ: 0254-07-008
FUNCTIONAL CLASSIFACTION:
PRINCIPAL ARTERIAL
DESIGN SPEED = 70 MPH
A.D.T. (2022) = 9,700
A.D.T. (2042) = 13,500

CSJ: 0254-07-010
FUNCTIONAL CLASSIFACTION:
PRINCIPAL ARTERIAL
DESIGN SPEED = 60 MPH
A.D.T. (2022) = 9,700
A.D.T. (2042) = 13,500

CCSJ: 0254-07-008

NET LENGTH OF ROADWAY = 11,276.02 FT. = 2.135 MI.
NET LENGTH OF BRIDGE = 6,775.50 FT. = 1.283 MI.

CSJ: 0254-07-010

NET LENGTH OF ROADWAY = 16,125.00 FT. = 3.053 MI.
NET LENGTH OF BRIDGE = 375.00 FT. = 0.071 MI.

NET LENGTH OF PROJECT = 34,551.52 FT. = 6.542 MI.

LIMITS: FROM: BU 281 R N. OF ALICE
TO: BU 281 R S. OF ALICE

FOR THE CONSTRUCTION OF CONVERT NON-FREEWAY TO FREEWAY
CONSISTING OF CONSTRUCT GRADE SEPARATION (FUTURE I-69 CORRIDOR)

REQUIRED SIGNS SHALL BE IN ACCORDANCE WITH BC (1)- 21 THRU BC (12)- 21 AND THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

TDLR INSPECTION NOT REQUIRED

FINAL PLANS

LETTING DATE: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS COMPLETED & ACCEPTED: _____

FINAL CONTRACT COST: $ _____

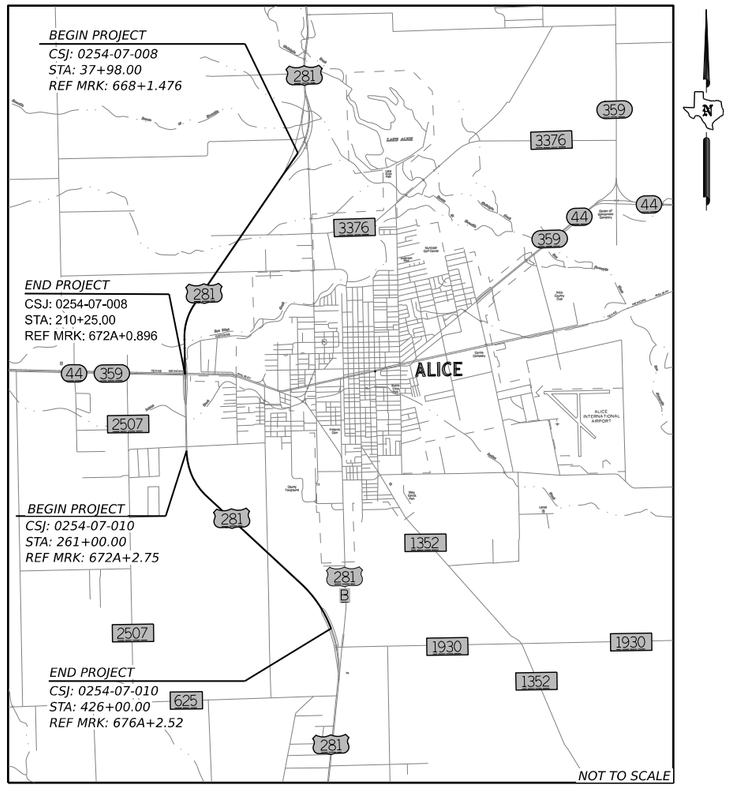
CONTRACTOR : _____

1

RAILROAD CROSSINGS KANSAS CITY SOUTHERN RAILROAD:

DOT# 793981G	RR AT GRADE ON US 281 SOUTHBOUND FRONTAGE ROAD
DOT# 793800A	RR AT GRADE ON US 281 NORTHBOUND FRONTAGE ROAD
DOT# 793982N	RR UNDER US 281 SOUTHBOUND MAIN LANES
DOT # 793980A	RR UNDER US 281 NORTHBOUND MAIN LANES
DOT # 923783X	RR UNDER US 281 MAIN LANES

NOTE: REFER TO RAILROAD SCOPE OF WORK SHEETS FOR CONTACTS AND MORE INFORMATION.



EXCEPTIONS: NONE
EQUATIONS: STA. 60+63.37 BK =
STA. 49+91.85 AH + 1071.52'
RAILROAD CROSSINGS: SEE NOTES ABOVE.

THE CONSTRUCTION WORK WAS PERFORMED IN ACCORDANCE WITH THE PLANS AND CONTRACT

_____ *P.E.* _____ *DATE*
AREA ENGINEER

PREPARED BY:
Phillip J. Pawelek, P.E
PHILLIP J. PAWELEK, PE #82739
PROJECT MANAGER
5-15-2023
DATE

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND THE SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: SPECIAL LABOR PROVISIONS FOR THE STATE PROJECTS (000-008)

Texas Department of Transportation

APPROVED FOR LETTING: 5/22/2023
DocuSigned by:
Paula Sales-Evans, P.E.
5975450A18CC435...
DISTRICT DIRECTOR OF TRANSPORTATION
PLANNING AND DEVELOPMENT

APPROVED FOR LETTING: 5/22/2023
DocuSigned by:
Valente Olivarez
303F64E8A9B44E0...
DISTRICT ENGINEER

1 *REVISED SHEET 5/15/2023*

DATE: 5/15/2023 11:55:24 AM
FILE: N:\Project\u2994\WA#02 U2994.200 US 281\500 PS&E\PlanSet01\ORD\4 - Design\Plan Set\1 General\Title Border addendum 1.dgn

DATE: 5/19/2023 10:15:02 AM
FILE: N:\Project\u2994\WA#02 U2994.200 US 281\500_PS&E\PlanSet01\ORD14 - Design\Plan Set\1. General\Index for Addendum 1\US281_INDEX OF SHEETS_ADD1.dgn

CK | DW | CK | DW

I. GENERAL

II. TRAFFIC CONTROL PLAN

III. TRAFFIC CONTROL PLAN STANDARDS

IV. ROADWAY DETAILS

V ROADWAY STANDARDS

VI. DRAINAGE DETAILS

VII. DRAINAGE STANDARDS

VIII. BRIDGE DETAILS

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED
PROFESSIONAL ENGINEER

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE BY A "" HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.*

Daniel Garces P.E. — 5 / 19 / 2023 (DATE)

STATE OF TEXAS
NICOLE N. DESKUS
136038
LICENSED
PROFESSIONAL ENGINEER

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Nicole N. Deskus — 5 / 19 / 2023 (DATE)

1

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED
PROFESSIONAL ENGINEER

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Robert H. Siegfried P.E. — 5 / 19 / 2023 (DATE)

1 REVISED SHEET 5/19/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

INDEX OF SHEETS

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0002

704 - 705		SB FRONTAGE FRAMING PLAN
706 - 709		SB FRONTAGE GIRDER DETAILS
710		NB RAMP 5 BRIDGE TYPICAL SECTIONS
711 - 712		NB RAMP 5 BRIDGE LAYOUT
713		NB RAMP 5 BRIDGE QUANTITIES & BEARING SEAT ELEV.
714 - 715		NB RAMP 5 BRIDGE FOUNDATION LAYOUT
716 - 718		AIG-24 (MOD)
719		BIG-24 (MOD)
720 - 721		NB RAMP 5 BRIDGE FRAMING PLAN
722 - 723		NB RAMP 5 BRIDGE GIRDER SLAB DETAILS
724		NB RAMP 5 IGND
725		SB RAMP 6 BRIDGE TYPICAL SECTIONS
726 - 727		SB RAMP 6 BRIDGE LAYOUT
728		SB RAMP 6 BRIDGE QUANTITIES & BEARING SEAT ELEV.
729 - 730		SB RAMP 6 BRIDGE FOUNDATION LAYOUT
731 - 733		AIG-24 (MOD)
734		BIG-24 (MOD)
735 - 736		SB RAMP 6 BRIDGE FRAMING PLAN
737 - 738		SB RAMP 6 BRIDGE GIRDER & SLAB DETAILS
739		SB RAMP 6 IGND
740 - 741		NB CR 129 BRIDGE LAYOUT & TYPICAL
742		NB CR 129 BRIDGE QUANTITIES & BEARING SEAT ELEV.
743		NB CR 129 BRIDGE FOUNDATION LAYOUT
744 - 747		NB CR 129 BRIDGE ABUTMENT 1 AND 6 DETAILS
748 - 749		NB CR 129 BRIDGE BENT 2- 5 DETAILS
750 - 751		NB CR 129 BRIDGE FRAMING PLAN
752 - 754		NB CR 129 BRIDGE SLAB PLAN AND TYPICAL SECTION
755		NB CR 129 BRIDGE BEAM DESIGN
756 - 757		SB CR 129 BRIDGE LAYOUT & TYPICAL
758		SB CR 129 BRIDGE QUANTITIES & BEARING SEAT ELEV.
759		SB CR 129 BRIDGE FOUNDATION LAYOUT
760 - 763		SB CR 129 BRIDGE ABUTMENT 1 AND 6 DETAILS
764 - 765		SB CR 129 BRIDGE BENT 2 - 5 DETAILS
766 - 767		SB CR 129 BRIDGE FRAMING PLAN
768 - 770		SB CR 129 BRIDGE SLAB PLAN AND TYPICAL SECTION
771		SB CR 129 BRIDGE BEAM DESIGN
772		CR 129 RETAINING WALL LAYOUT KEY PLAN
773 - 777		CR 129 RETAINING WALL 1 - 4 LAYOUT
778		CR 129 MSE RETAINING WALL DESIGN DATA
779 - 857		BORING LOGS

IX. BRIDGE STANDARDS

*,# [S]	858		BAS-A
*,# [S]	859 - 860		BL
*,# [S]	861 - 863		BMCS
*,# [S]	864		CRR
*,# [S]	865 - 866		CSAB
*,# [S]	867 - 868		FD
*,# [S]	869 - 872		PCP
*,# [S]	873		SEJ-M
*,# [S]	874 - 875		TYPE SSTR
*,# [S]	876		IGCS
*,# [S]	877 - 878		IGD
*,# [S]	879 - 881		IGEB
*,# [S]	882 - 883		IGMS
*,# [S]	884		IGND
*,# [S]	885		IGTS
*,# [S]	886 - 887		MEBR(C)
*,# [S]	888		OMIT
*,# [S]	889 - 890		RW(MSE)
*,# [S]	891		RW(EM)
*,# [S]	892		RW(TRF)
*,# [S]	893 - 894		RW(LB)
*,# [S]	895		TRF
*,# [S]	896 - 897		IGSD-24
*,# [S]	898 - 899		IGSD-38
*,# [S]	900		IGSK
*,# [S]	901 - 902		OMIT
*,# [S]	903 - 904		OMIT
*,# [S]	905		PCP-FAB
*,# [S]	906 - 907		PMDF
*,# [S]	908 - 909		SRR
*,# [S]	910 - 912		AIG-24
*,# [S]	913 - 915		AIG-38
*,# [S]	916		BIG-24
*,# [S]	917		BIG-38
*,# [S]	918 - 919		SIG-24
*,# [S]	920 - 921		SIG-38

X. TRAFFIC ITEMS

922 - 937		SIGNING & PAVEMENT MARKINGS LAYOUT
938 - 952		SIGNS & PAVEMENT MARKING LAYOUT
953 - 955		SMALL AND LARGE SIGN DETAIL SHEET
956 - 958		OVERHEAD SIGN STRUCTURE ELEVATION LAYOUT
959 - 961		SOLS
962 - 972		SOSS
973 - 992		ILLUMINATION LAYOUT
993		ILLUMINATION LAYOUT CIRCUIT DIAGRAM
994		ELECTRICAL SERVICE DATA SHEET
994A		PROJECT LOCAITON MAP - ITS LAYOUT
994B - 994JJ		ITS LAYOUT
994KK		ITS DETAILS CCTV #1
994LL		ITS DETAILS CCTV #2
994MM		ITS DETAILS DMS #1
994NN		ITS DETAILS CCTV #3
994OO		ITS DETAILS CCTV #4
994PP		ITS DETAILS DMS #2
994QQ		ITS DETAILS CCTV #5
994RR		ITS DETAILS CCTV #6
994SS		ITS FIBER OVERVIEW
994TT		ITS COMMUNICATION SCHEMATIC LAYOUT
994UU		ITS FIBER TERMINATION CHART

XI. TRAFFIC STANDARDS

*,# [S]	995 - 1001		D&OM(1)-20 - D&OM(6)-20, D&OM(VIA)-20
*,# [S]	1002		CPM(1)-23
*,# [S]	1003 - 1005		PM(1)-22 - PM(3)-22
*,# [S]	1006 - 1010		FPM(1)-22 - FPM(5)-22
*,# [S]	1011		RS(1)-23
*,# [S]	1012		RS(4)-23
*,# [S]	1013 - 1014		SMD(8W1)-08, SMD(8W2)-08
*,# [S]	1015 - 1018		SMD(2-1)-08 - SMD(2-4)-08
*,# [S]	1019		SMD(FRP)-08
*,# [S]	1020		SMD(GEN)-08
*,# [S]	1021 - 1023		SMD(SLIP-1)-08 - SMD(SLIP-3)-08
*,# [S]	1024		SMD(TWT)-08
*,# [S]	1025		SMD(TY G)-08
*,# [S]	1026		SMD(BR-1)-14
*,# [S]	1027 - 1031		TSR(1)-13 - TSR(5)-13
*,# [S]	1032		COSSD
*,# [S]	1033		COSS-Z4 & Z4I-10
*,# [S]	1034		COSSF-21
*,# [S]	1035		COSS-FD
*,# [S]	1036		HCOSS-Z1-21
*,# [S]	1037		COSS & OSB-SZ-21 (MOD)
*,# [S]	1038		WV & IZ-14
*,# [S]	1039		WIND VELOCITY WORKSHEET
*,# [S]	1040 - 1046		ED(1)-14 - ED(7) -14
*,# [S]	1047		ED(10)-14
*,# [S]	1048 - 1050		RID(1)-20 - RID(3)-20
*,# [S]	1051 - 1054		RIP(1)-19 - RIP(4)-19
*,# [S]	1055		SL(1)-95
## [S]	1055A		ITS(1)-15
## [S]	1055B		ITS(3)-16
## [S]	1055C		ITS(4)-15
## [S]	1055D		ITS(4A)-15
## [S]	1055E		ITS(5)-15
## [S]	1055F		ITS(6)-15
## [S]	1055G		ITS(7)-15
## [S]	1055H		ITS(14)-15
## [S]	1055I		ITS(15)-15
## [S]	1055J		ITS(16)-15
## [S]	1055K		ITS(17)-15
## [S]	1055L		ITS(18)-15
## [S]	1055M		ITS(19)-17
## [S]	1055N		ITS(20)-15
## [S]	1055O		ITS(21)-15
## [S]	1055P		ITS(22)-15
## [S]	1055Q		ITS(23)-15
## [S]	1055R		ITS(27)-16
## [S]	1055S		ITS(28)-16
## [S]	1055T		ITS(29)-22
## [S]	1055U		ITS(30)-16
## [S]	1055V		ITS(31)-16
## [S]	1055W		ITS(32)-16
## [S]	1055X		ITS(33)-16
## [S]	1055Y		ITS(34)-16
## [S]	1055Z		ITS(35)-16
## [S]	1055AA		ITS(36)-16
## [S]	1055BB		ITS(37)-22
## [S]	1055CC		ITS(38)-17
## [S]	1055DD		ITS(39)-16
## [S]	1055EE		ITS(40)-17
## [S]	1055FF		ITS(42)-16
## [S]	1055GG		ITS(43)-16
## [S]	1055HH		RSE(3)-21
## [D]	1055II		ITS/TRAFFIC SIGNAL POLE RODENT DETERRENT
## [S]	1055JJ		ED(9)-14
## [S]	1055KK		ED(11)-14
## [S]	1055LL		DMS(HZ-1)-21
## [S]	1055MM		DMS(HZ-2)-21
## [S]	1055NN		DMS(TM-1)-16
## [S]	1055OO		DMS(TM-2)-16
## [S]	1055PP		DMS(TM-3)-16
## [S]	1055QQ		COSS-SE

XII. ENVIRONMENTAL ISSUES

*,# [S]	1056 - 1057		STORM WATER POLLUTION PREVENTION PLAN (SW3P)
	1058		ENVIRONMENTAL PERMITS, ISSUES, AND COMMITMENTS (EPIC)
*,# [S]	1059 - 1074		STORM WATER POLLUTION PREVENTION PLAN LAYOUTS
	1075 - 1076		STORM WATER POLLUTION PREVENTION PLAN (SW3P)
	1077 - 1091		STORM WATER POLLUTION PREVENTION PLAN LAYOUTS

XIII. ENVIRONMENTAL STANDARDS

*,# [S]	1092		EC(1)-16
*,# [S]	1093		EC(2)-16
*,# [S]	1094		EC(3)-16
*,# [S]	1095		EC(6)-16
*,# [S]	1096 - 1098		EC(9)-16

XIV. RAILROAD ISSUES

	1099 - 1100		RAILROAD SCOPE OF WORK PROJECT SPECIFIC DETAILS
* [S]	1101 - 1102		RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS
* [S]	1103 - 1104		RCD(1)-22 THROUGH RCD(2)-22

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED
PROFESSIONAL ENGINEER

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Daniel Garces P.E. — 5 / 19 / 2023 (DATE)

STATE OF TEXAS
NICOLE N. DESKUS
136038
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STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
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Robert H. Siegfried P.E. — 5 / 19 / 2023 (DATE)

1 REVISED SHEET 5/19/2023

S&B INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

INDEX OF SHEETS

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0003

DATE: 5/19/2023 10:15:36 AM
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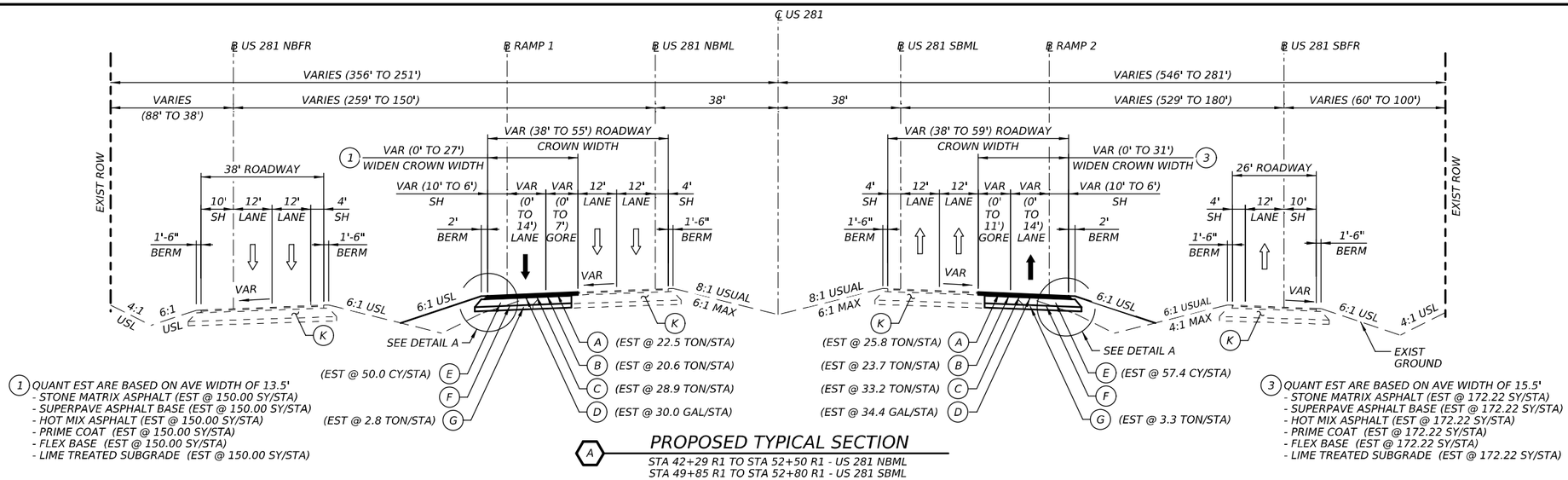
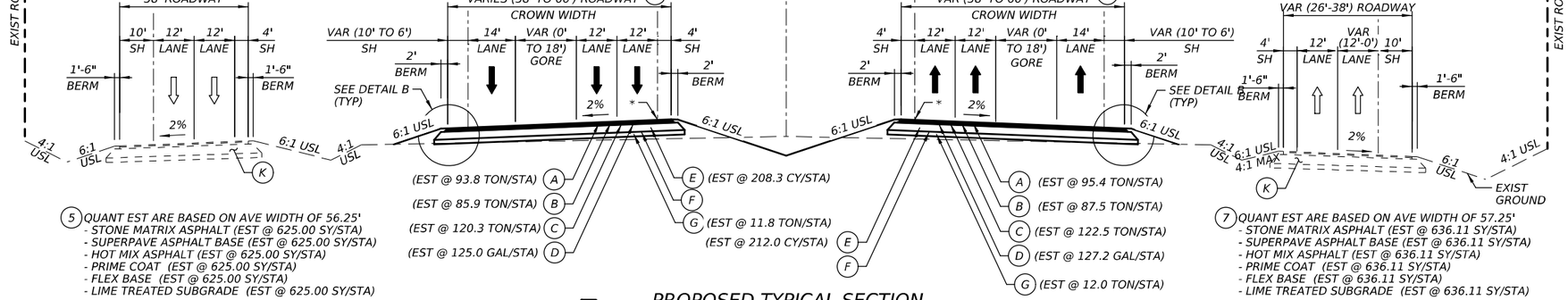


1 QUANT EST ARE BASED ON AVE WIDTH OF 13.5'
- STONE MATRIX ASPHALT (EST @ 150.00 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 150.00 SY/STA)
- HOT MIX ASPHALT (EST @ 150.00 SY/STA)
- PRIME COAT (EST @ 150.00 SY/STA)
- FLEX BASE (EST @ 150.00 SY/STA)
- LIME TREATED SUBGRADE (EST @ 150.00 SY/STA)

3 QUANT EST ARE BASED ON AVE WIDTH OF 15.5'
- STONE MATRIX ASPHALT (EST @ 172.22 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 172.22 SY/STA)
- HOT MIX ASPHALT (EST @ 172.22 SY/STA)
- PRIME COAT (EST @ 172.22 SY/STA)
- FLEX BASE (EST @ 172.22 SY/STA)
- LIME TREATED SUBGRADE (EST @ 172.22 SY/STA)

A PROPOSED TYPICAL SECTION

STA 42+29 R1 TO STA 52+50 R1 - US 281 NBML
STA 49+85 R1 TO STA 52+80 R1 - US 281 SBML



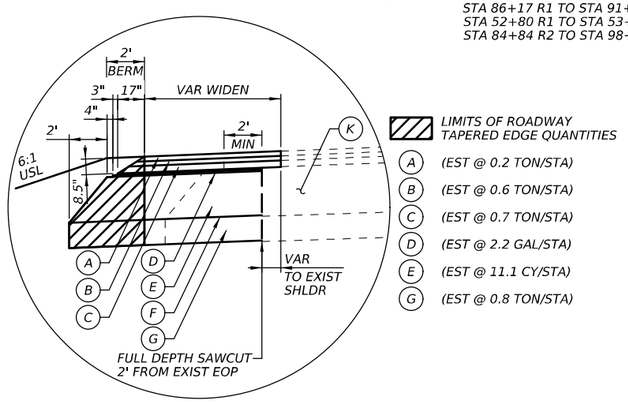
5 QUANT EST ARE BASED ON AVE WIDTH OF 56.25'
- STONE MATRIX ASPHALT (EST @ 625.00 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 625.00 SY/STA)
- HOT MIX ASPHALT (EST @ 625.00 SY/STA)
- PRIME COAT (EST @ 625.00 SY/STA)
- FLEX BASE (EST @ 625.00 SY/STA)
- LIME TREATED SUBGRADE (EST @ 625.00 SY/STA)

7 QUANT EST ARE BASED ON AVE WIDTH OF 57.25'
- STONE MATRIX ASPHALT (EST @ 636.11 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 636.11 SY/STA)
- HOT MIX ASPHALT (EST @ 636.11 SY/STA)
- PRIME COAT (EST @ 636.11 SY/STA)
- FLEX BASE (EST @ 636.11 SY/STA)
- LIME TREATED SUBGRADE (EST @ 636.11 SY/STA)

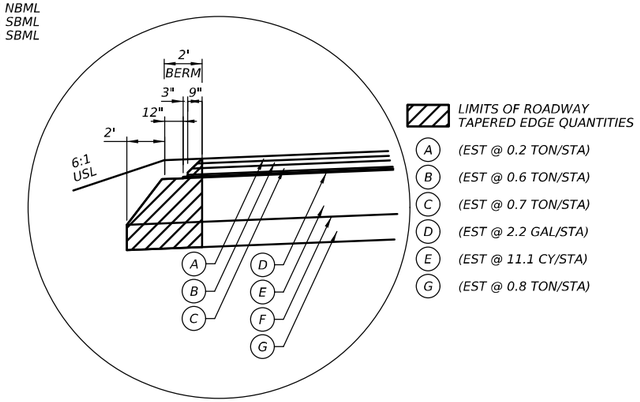
B PROPOSED TYPICAL SECTION

STA 52+50 R1 TO STA 54+55 R1 - US 281 NBML
STA 86+17 R1 TO STA 91+21 R2 - US 281 NBML
STA 52+80 R1 TO STA 53+86 R1 - US 281 SBML
STA 84+84 R2 TO STA 98+39 R2 - US 281 SBML

* PGL



DETAIL A
WIDEN



DETAIL B

1 REVISED 05/18/2023

LEGEND

- A 2.5" STONE-MTRX-ASPH SMA-D SAC-A PG76-22 W/TACK COAT @ 120 LBS/SY/IN
- B 2.5" SP MIXES SP-C PG 70-22 W/TACK COAT @ 110 LBS/SY/IN
- C 3.5" D-GR HMA TY-B PG64-22 W/TACK COAT @ 110 LBS/SY/IN
- D PRIME COAT (MC-30) @ 0.2 GAL/SY
- E 12" FLEX BASE (TY A GR 1-2) *
  12" FLEX BASE (TY A GR 5) **
  3% CEMENT BY WEIGHT **
  12" CEMENT TREAT (NEW BASE) **
- F GEOGRID REINFORCEMENT (TY II)
- G 8" LIME TREATED SUBGRADE WITH 6% LIME BY WEIGHT
- I TRAFFIC RAIL TY SSTR
- J TRAFFIC RAIL TY SSTR W/ TRF
- K EXISTING PAVEMENT TO REMAIN

PROPOSED TRAFFIC FLOW DIRECTION

EXISTING TRAFFIC FLOW DIRECTION

* ALT BID 1
** ALT BID 1A

SCALE: N.T.S

STATE OF TEXAS
NICOLE N. DESKUS
136038
LICENSED
PROFESSIONAL ENGINEER
5/18/2023

NO.	DATE	REVISION	APPROV.
01	05/2023	PROPOSED SUBGRADE MATERIAL REVISED	

Texas Department of Transportation

PGAL
TBPE REG. NO. F-2742
3131 Briarpark Dr, Suite 200
Houston, Texas 77042
(713) 622-1444

US 281

PROPOSED TYPICAL SECTIONS

(NORTH)

SHEET 1 OF 7

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC.	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0014

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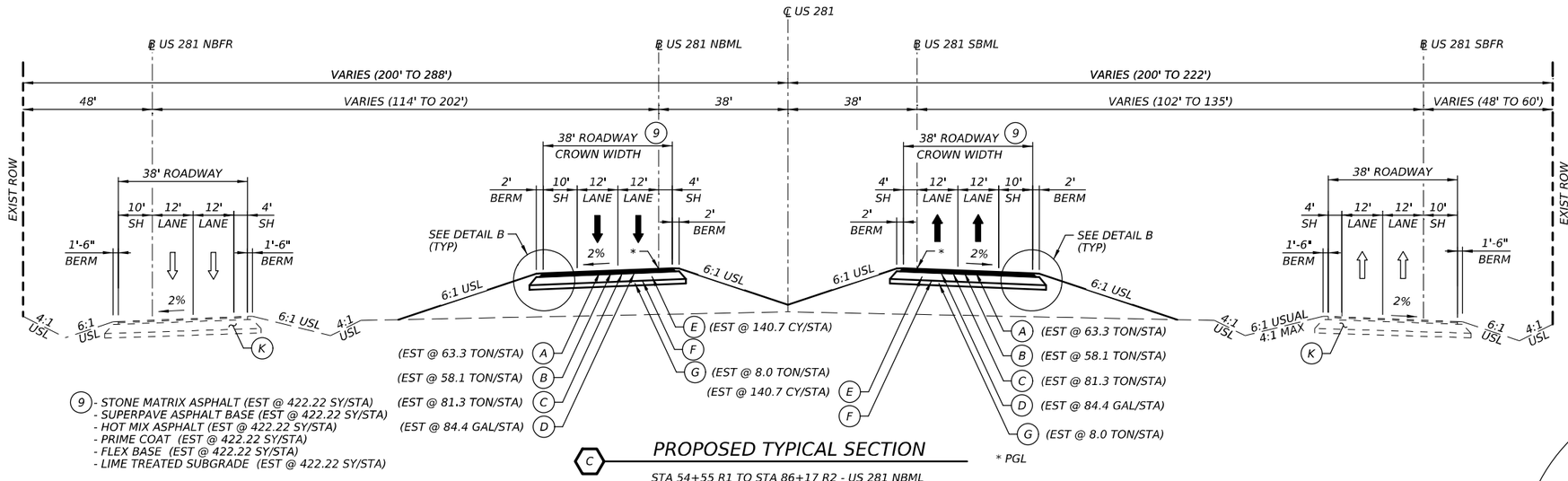
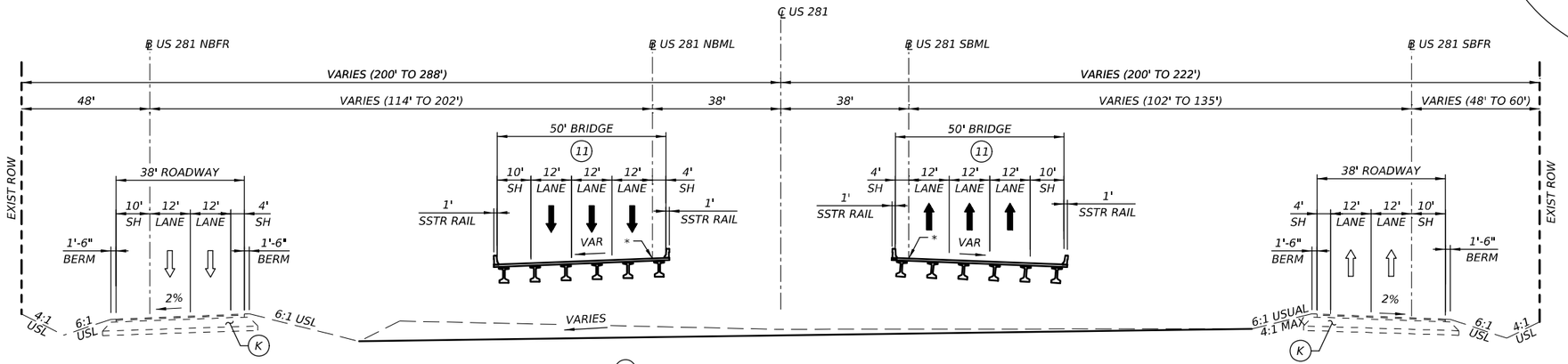


9 - STONE MATRIX ASPHALT (EST @ 422.22 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 422.22 SY/STA)
- HOT MIX ASPHALT (EST @ 422.22 SY/STA)
- PRIME COAT (EST @ 422.22 SY/STA)
- FLEX BASE (EST @ 422.22 SY/STA)
- LIME TREATED SUBGRADE (EST @ 422.22 SY/STA)

C PROPOSED TYPICAL SECTION

STA 54+55 R1 TO STA 86+17 R2 - US 281 NBML
STA 91+21 R2 TO STA 100+96 R2 - US 281 NBML
STA 53+86 R2 TO STA 84+84 R2 - US 281 SBML
STA 98+39 R2 TO STA 101+51 R2 - US 281 SBML



11 SEE BRIDGE TYPICAL SECTIONS FOR MORE DETAILS

D PROPOSED TYPICAL SECTION

STA 100+96 R2 TO STA 158+54 R2 - NBML BRIDGE
STA 101+51 R2 TO STA 157+98 R2 - SBML BRIDGE

* PGL

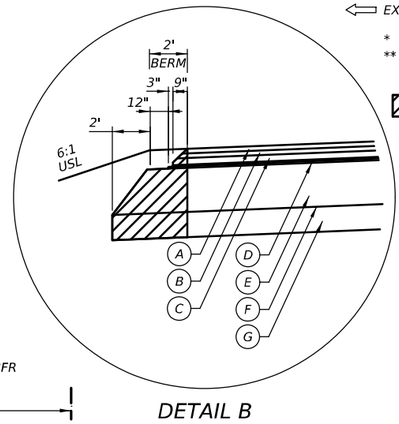
LEGEND

- A 2.5" STONE-MTRX-ASPH SMA-D SAC-A PG76-22 W/TACK COAT @ 120 LBS/SY/IN
- B 2.5" SP MIXES SP-C PG 70-22 W/TACK COAT @ 110 LBS/SY/IN
- C 3.5" D-GR HMA TY-B PG64-22 W/TACK COAT @ 110 LBS/SY/IN
- D PRIME COAT (MC-30) @ 0.2 GAL/SY
- E 12" FLEX BASE (TY A GR 1-2) *
  12" FLEX BASE (TY A GR 5) **
  3% CEMENT BY WEIGHT **
  12" CEMENT TREAT (NEW BASE) **
- F GEOGRID REINFORCEMENT (TY II)
- G 8" LIME TREATED SUBGRADE WITH 6% LIME BY WEIGHT
- I TRAFFIC RAIL TY SSTR
- J TRAFFIC RAIL TY SSTR W/ TRF
- K EXISTING PAVEMENT TO REMAIN

PROPOSED TRAFFIC FLOW DIRECTION

EXISTING TRAFFIC FLOW DIRECTION

* ALT BID 1
** ALT BID 1A



DETAIL B

LIMITS OF ROADWAY TAPERED EDGE QUANTITIES

- A (EST @ 0.2 TON/STA)
- B (EST @ 0.6 TON/STA)
- C (EST @ 0.7 TON/STA)
- D (EST @ 2.2 GAL/STA)
- E (EST @ 11.1 CY/STA)
- G (EST @ 0.8 TON/STA)

SCALE: N.T.S

STATE OF TEXAS
NICOLE N. DESKUS
136038
LICENSED
PROFESSIONAL ENGINEER
5/18/2023

NO.	DATE	REVISION	APPROV.
01	05/2023	PROPOSED SUBGRADE MATERIAL REVISED	

Texas Department of Transportation

PGAL
TBPE REG. NO. F-2742
3131 Briarpark Dr, Suite 200
Houston, Texas 77042
(713) 622-1444

US 281

PROPOSED TYPICAL SECTIONS

(NORTH)

SHEET 2 OF 7

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC.	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0015

1 REVISED 05/18/2023

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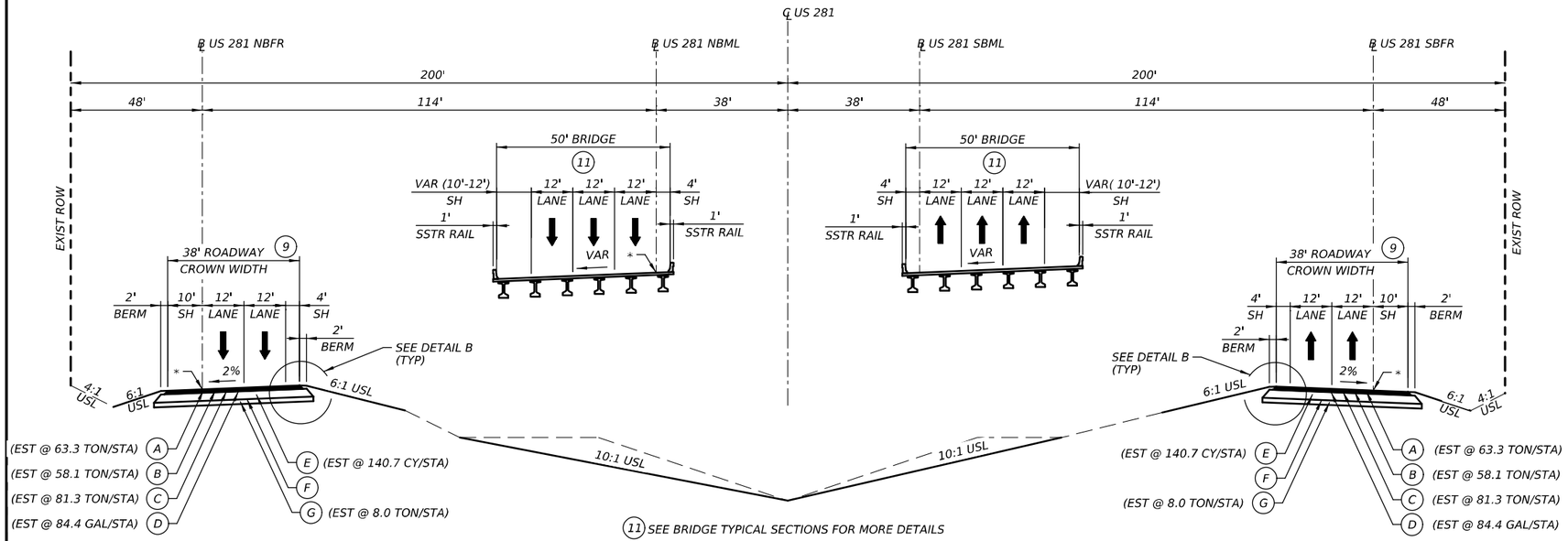
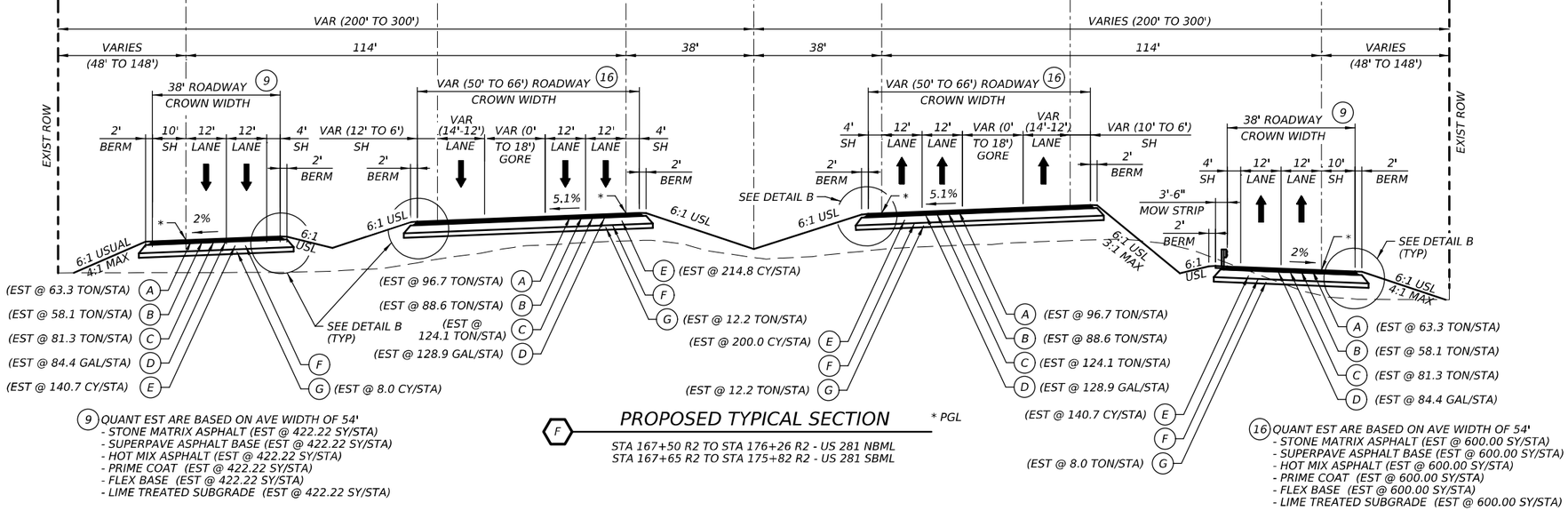


9 - STONE MATRIX ASPHALT (EST @ 422.22 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 422.22 SY/STA)
- HOT MIX ASPHALT (EST @ 422.22 SY/STA)
- PRIME COAT (EST @ 422.22 SY/STA)
- FLEX BASE (EST @ 422.22 SY/STA)
- LIME TREATED SUBGRADE (EST @ 422.22 SY/STA)

E PROPOSED TYPICAL SECTION * PGL

STA 158+54 R2 TO STA 167+50 R2 - US 281 NBML
STA 157+98 R2 TO STA 167+65 R2 - US 281 SBML



9 QUANT EST ARE BASED ON AVE WIDTH OF 54'
- STONE MATRIX ASPHALT (EST @ 422.22 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 422.22 SY/STA)
- HOT MIX ASPHALT (EST @ 422.22 SY/STA)
- PRIME COAT (EST @ 422.22 SY/STA)
- FLEX BASE (EST @ 422.22 SY/STA)
- LIME TREATED SUBGRADE (EST @ 422.22 SY/STA)

F PROPOSED TYPICAL SECTION * PGL

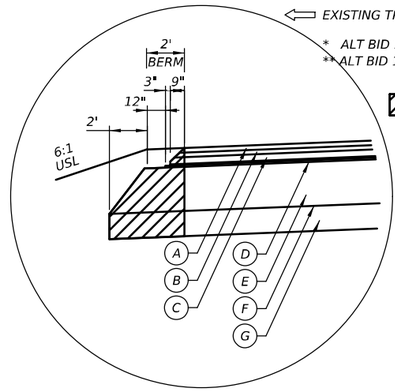
STA 167+50 R2 TO STA 176+26 R2 - US 281 NBML
STA 167+65 R2 TO STA 175+82 R2 - US 281 SBML

16 QUANT EST ARE BASED ON AVE WIDTH OF 54'
- STONE MATRIX ASPHALT (EST @ 600.00 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 600.00 SY/STA)
- HOT MIX ASPHALT (EST @ 600.00 SY/STA)
- PRIME COAT (EST @ 600.00 SY/STA)
- FLEX BASE (EST @ 600.00 SY/STA)
- LIME TREATED SUBGRADE (EST @ 600.00 SY/STA)

LEGEND

- A 2.5" STONE-MTRX-ASPH SMA-D SAC-A PG76-22 W/TACK COAT @ 120 LBS/SY/IN
- B 2.5" SP MIXES SP-C PG 70-22 W/TACK COAT @ 110 LBS/SY/IN
- C 3.5" D-GR HMA TY-B PG64-22 W/TACK COAT @ 110 LBS/SY/IN
- D PRIME COAT (MC-30) @ 0.2 GAL/SY
- E 12" FLEX BASE (TY A GR 1-2) *
  12" FLEX BASE (TY A GR 5) **
  3% CEMENT BY WEIGHT **
  12" CEMENT TREAT (NEW BASE) **
- F GEOGRID REINFORCEMENT (TY II)
- 1 G 8" LIME TREATED SUBGRADE WITH 6% LIME BY WEIGHT
- I TRAFFIC RAIL TY SSTR
- J TRAFFIC RAIL TY SSTR W/ TRF
- K EXISTING PAVEMENT TO REMAIN
- PROPOSED TRAFFIC FLOW DIRECTION
- EXISTING TRAFFIC FLOW DIRECTION

* ALT BID 1
** ALT BID 1A



LIMITS OF ROADWAY TAPERED EDGE QUANTITIES
- A (EST @ 0.2 TON/STA)
- B (EST @ 0.6 TON/STA)
- C (EST @ 0.7 TON/STA)
- D (EST @ 2.2 GAL/STA)
- E (EST @ 11.1 CY/STA)
- G (EST @ 0.8 TON/STA)

DETAIL B

SCALE: N.T.S

STATE OF TEXAS
NICOLE N. DESKUS
136038
LICENSED
PROFESSIONAL ENGINEER
5/18/2023

NO.	DATE	REVISION	APPROV
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Texas Department of Transportation

PGAL TBPE REG. NO. F-2742
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Houston, Texas 77042
(713) 622-1444

US 281

PROPOSED TYPICAL SECTIONS

(NORTH)

SHEET 3 OF 7

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC.	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0016

1 REVISED 05/18/2023

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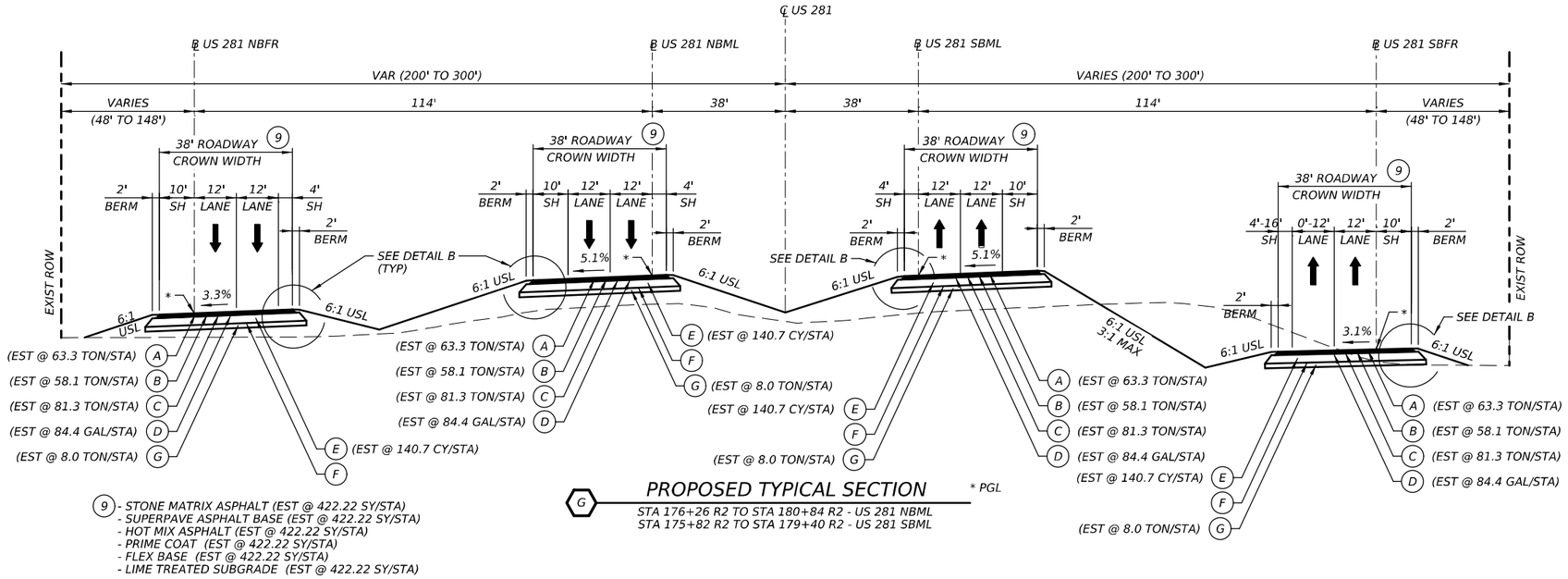
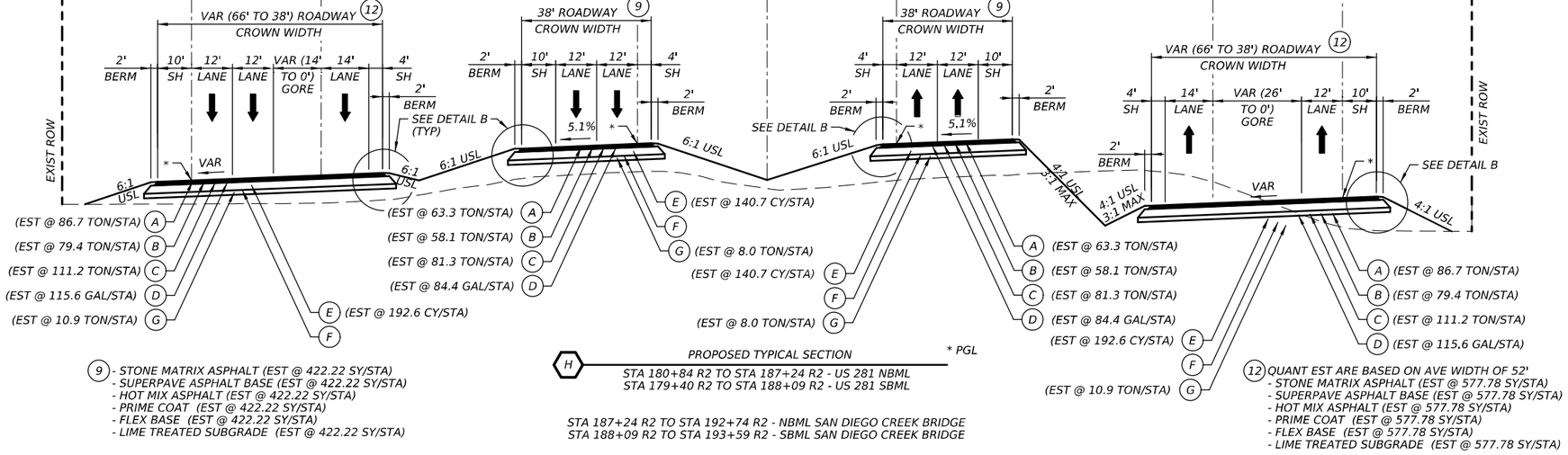
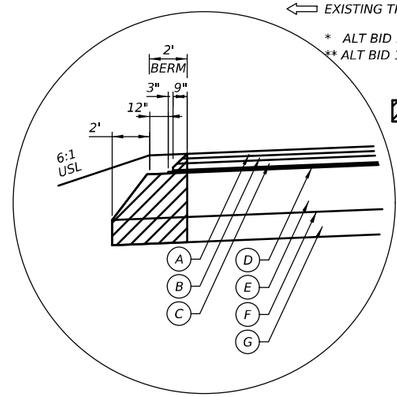




LEGEND

- A — 2.5" STONE-MTRX-ASPH SMA-D SAC-A PG76-22 W/TACK COAT @ 120 LBS/SY/IN
- B — 2.5" SP MIXES SP-C PG 70-22 W/TACK COAT @ 110 LBS/SY/IN
- C — 3.5" D-GR HMA TY-B PG64-22 W/TACK COAT @ 110 LBS/SY/IN
- D — PRIME COAT (MC-30) @ 0.2 GAL/SY
- E — 12" FLEX BASE (TY A GR 1-2) *
12" FLEX BASE (TY A GR 5) **
3% CEMENT BY WEIGHT **
12" CEMENT TREAT (NEW BASE) **
- F — GEOGRID REINFORCEMENT (TY II)
- G — 8" LIME TREATED SUBGRADE WITH 6% LIME BY WEIGHT (1)
- I — TRAFFIC RAIL TY SSTR
- J — TRAFFIC RAIL TY SSTR W/ TRF
- K — EXISTING PAVEMENT TO REMAIN
- PROPOSED TRAFFIC FLOW DIRECTION
- EXISTING TRAFFIC FLOW DIRECTION

* ALT BID 1
** ALT BID 1A



LIMITS OF ROADWAY TAPERED EDGE QUANTITIES

- A — (EST @ 0.2 TON/STA)
- B — (EST @ 0.6 TON/STA)
- C — (EST @ 0.7 TON/STA)
- D — (EST @ 2.2 GAL/STA)
- E — (EST @ 11.1 CY/STA)
- G — (EST @ 0.8 TON/STA)

DETAIL B

SCALE: N.T.S

STATE OF TEXAS
NICOLE N. DESKUS
136038
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PROFESSIONAL ENGINEER
5/18/2023

NO.	DATE	REVISION	APPROV.
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Texas Department of Transportation

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TBPE REG. NO. F-2742
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Houston, Texas 77042
(713) 622-1444

US 281

PROPOSED TYPICAL SECTIONS

(NORTH)

SHEET 4 OF 7

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC.	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0017

(1) REVISED 05/18/2023

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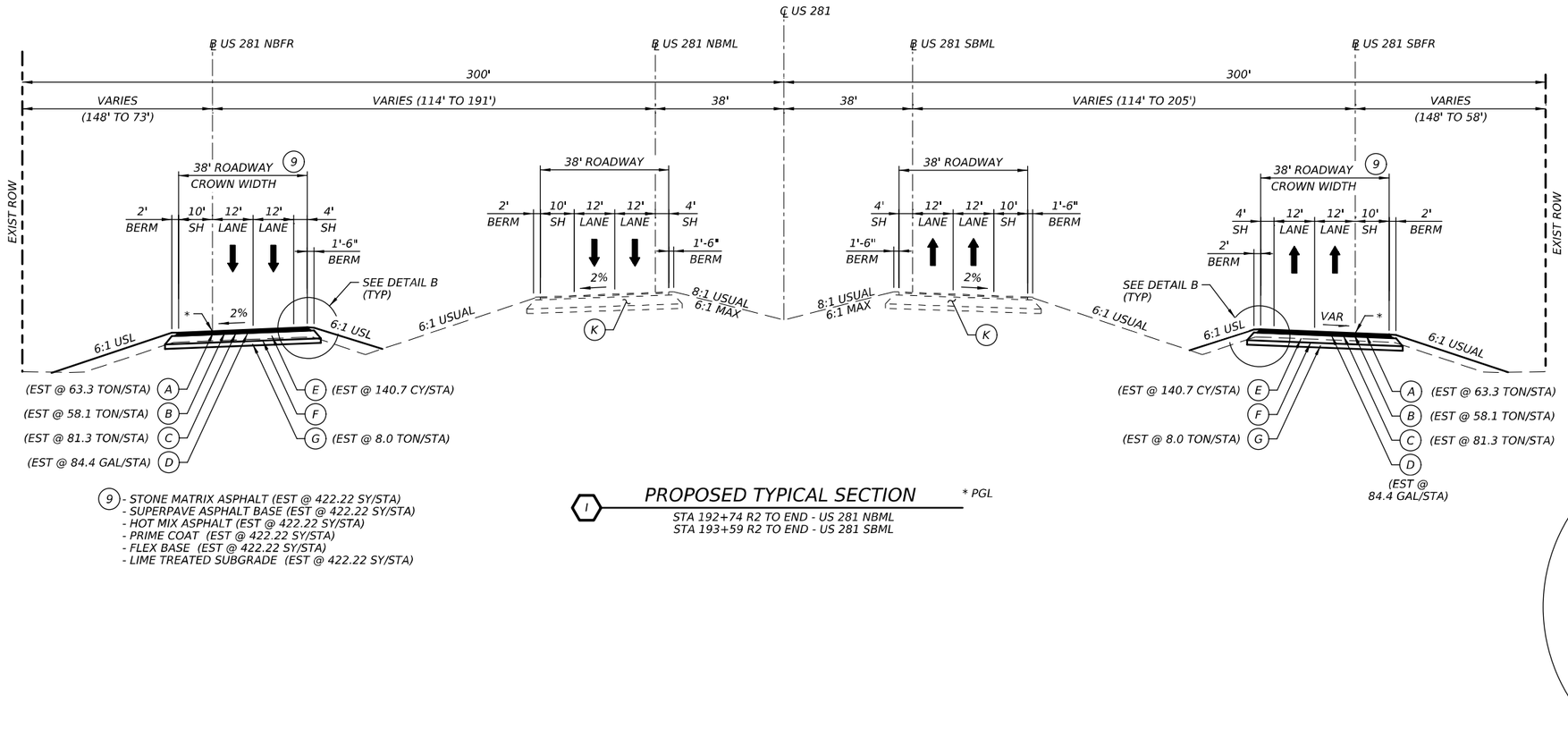


9 - STONE MATRIX ASPHALT (EST @ 422.22 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 422.22 SY/STA)
- HOT MIX ASPHALT (EST @ 422.22 SY/STA)
- PRIME COAT (EST @ 422.22 SY/STA)
- FLEX BASE (EST @ 422.22 SY/STA)
- LIME TREATED SUBGRADE (EST @ 422.22 SY/STA)

1 PROPOSED TYPICAL SECTION

* PGL

STA 192+74 R2 TO END - US 281 NBML
STA 193+59 R2 TO END - US 281 SBML

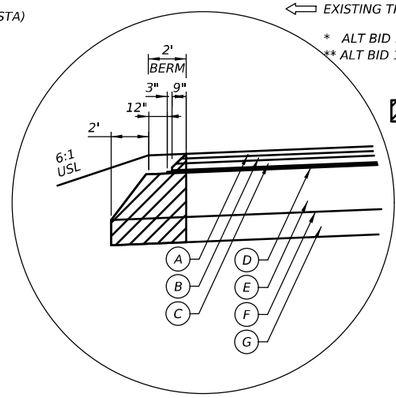
LEGEND

- A 2.5" STONE-MTRX-ASPH SMA-D SAC-A PG76-22 W/TACK COAT @ 120 LBS/SY/IN
- B 2.5" SP MIXES SP-C PG 70-22 W/TACK COAT @ 110 LBS/SY/IN
- C 3.5" D-GR HMA TY-B PG64-22 W/TACK COAT @ 110 LBS/SY/IN
- D PRIME COAT (MC-30) @ 0.2 GAL/SY
- E 12" FLEX BASE (TY A GR 1-2) *
  12" FLEX BASE (TY A GR 5) **
  3% CEMENT BY WEIGHT **
  12" CEMENT TREAT (NEW BASE) **
- F GEOGRID REINFORCEMENT (TY II)
- G 8" LIME TREATED SUBGRADE WITH 6% LIME BY WEIGHT
- I TRAFFIC RAIL TY SSTR
- J TRAFFIC RAIL TY SSTR W/ TRF
- K EXISTING PAVEMENT TO REMAIN

PROPOSED TRAFFIC FLOW DIRECTION

EXISTING TRAFFIC FLOW DIRECTION

* ALT BID 1
** ALT BID 1A



LIMITS OF ROADWAY TAPERED EDGE QUANTITIES

- A (EST @ 0.2 TON/STA)
- B (EST @ 0.6 TON/STA)
- C (EST @ 0.7 TON/STA)
- D (EST @ 2.2 GAL/STA)
- E (EST @ 11.1 CY/STA)
- G (EST @ 0.8 TON/STA)

DETAIL B

SCALE: N.T.S

STATE OF TEXAS
NICOLE N. DESKUS
136038
LICENSED
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5/18/2023

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Texas Department of Transportation

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3131 Briarpark Dr, Suite 200
Houston, Texas 77042
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US 281

PROPOSED TYPICAL SECTIONS

(NORTH)

SHEET 5 OF 7

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC.	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0018

1 REVISED 05/18/2023

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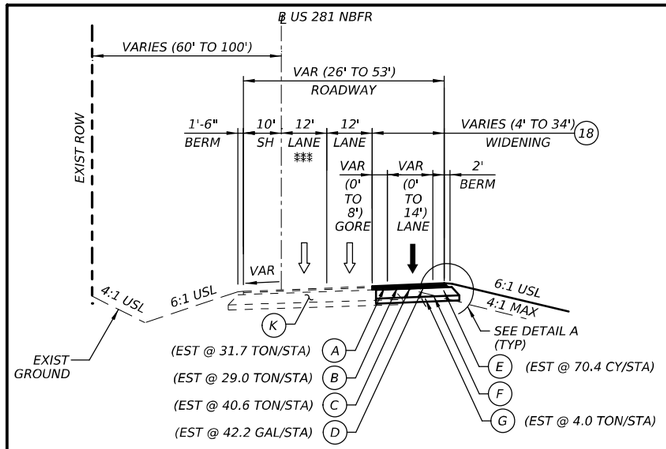
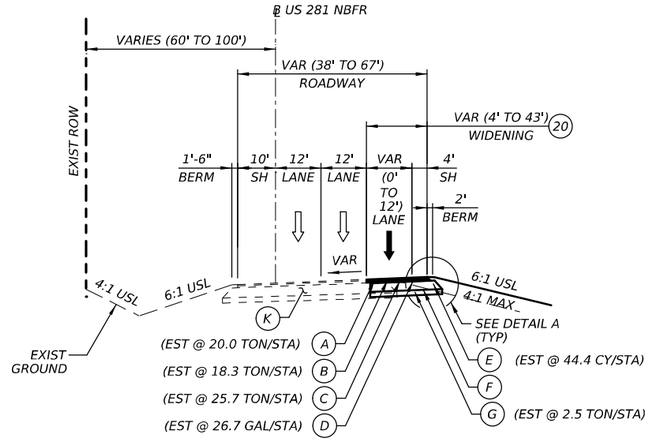


*** STA 88+26 TO STA 91+74 - US 281 NBFR
NO LANE IN THIS STATION RANGE

J PROPOSED NBFR WIDENING TYPICAL SECTION

STA 57+39 TO STA 68+29 - US 281 NBFR
STA 88+26 TO STA 91+74 - US 281 NBFR
STA 147+34 TO STA 152+54 - US 281 NBFR

18 QUANT EST ARE BASED ON AVE WIDTH OF 19'
- STONE MATRIX ASPHALT (EST @ 211.11 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 211.11 SY/STA)
- HOT MIX ASPHALT (EST @ 211.11 SY/STA)
- PRIME COAT (EST @ 211.11 SY/STA)
- FLEX BASE (EST @ 211.11 SY/STA)
- LIME TREATED SUBGRADE (EST @ 211.11 SY/STA)



K PROPOSED NBFR WIDENING TYPICAL SECTION

STA 103+52 TO STA 112+23 - US 281 NBFR

20 QUANT EST ARE BASED ON WEIGHTED AVE WIDTH OF 12'
- STONE MATRIX ASPHALT (EST @ 133.33 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 133.33 SY/STA)
- HOT MIX ASPHALT (EST @ 133.33 SY/STA)
- PRIME COAT (EST @ 133.33 SY/STA)
- FLEX BASE (EST @ 133.33 SY/STA)
- LIME TREATED SUBGRADE (EST @ 133.33 SY/STA)

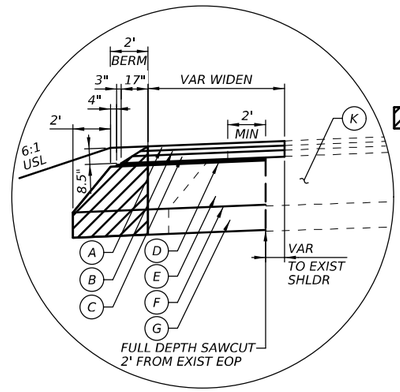
LEGEND

- A 2.5" STONE-MTRX-ASPH SMA-D SAC-A PG76-22 W/TACK COAT @ 120 LBS/SY/IN
- B 2.5" SP MIXES SP-C PG 70-22 W/TACK COAT @ 110 LBS/SY/IN
- C 3.5" D-GR HMA TY-B PG64-22 W/TACK COAT @ 110 LBS/SY/IN
- D PRIME COAT (MC-30) @ 0.2 GAL/SY
- E 12" FLEX BASE (TY A GR 1-2) *
  12" FLEX BASE (TY A GR 5) **
  3% CEMENT BY WEIGHT **
  12" CEMENT TREAT (NEW BASE) **
- F GEOGRID REINFORCEMENT (TY II)
- 1 G 8" LIME TREATED SUBGRADE WITH 6% LIME BY WEIGHT
- I TRAFFIC RAIL TY SSTR
- J TRAFFIC RAIL TY SSTR W/ TRF
- K EXISTING PAVEMENT TO REMAIN

PROPOSED TRAFFIC FLOW DIRECTION

EXISTING TRAFFIC FLOW DIRECTION

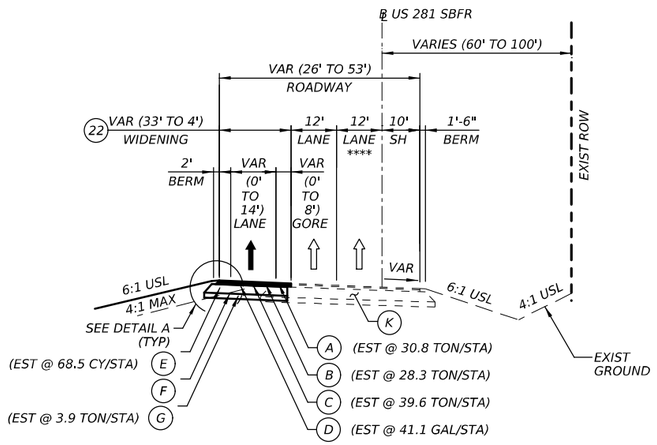
* ALT BID 1
** ALT BID 1A



DETAIL A
WIDEN

LIMITS OF ROADWAY TAPERED EDGE QUANTITIES

- A (EST @ 0.2 TON/STA)
- B (EST @ 0.6 TON/STA)
- C (EST @ 0.7 TON/STA)
- D (EST @ 2.2 GAL/STA)
- E (EST @ 11.1 CY/STA)
- G (EST @ 0.8 TON/STA)

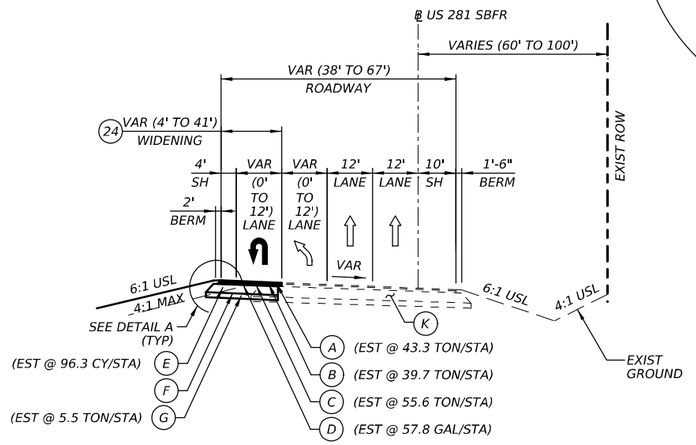


**** STA 59+22 TO STA 78+74 - US 281 SBFR
NO LANE IN THIS STATION RANGE

L PROPOSED SBFR WIDENING TYPICAL SECTION

STA 59+22 TO STA 78+74 - US 281 SBFR
STA 84+94 TO STA 94+54 - US 281 SBFR
STA 149+54 TO STA 154+43 - US 281 SBFR

22 QUANT EST ARE BASED ON AVE WIDTH OF 18.5'
- STONE MATRIX ASPHALT (EST @ 205.56 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 205.56 SY/STA)
- HOT MIX ASPHALT (EST @ 205.56 SY/STA)
- PRIME COAT (EST @ 205.56 SY/STA)
- FLEX BASE (EST @ 205.56 SY/STA)
- LIME TREATED SUBGRADE (EST @ 205.56 SY/STA)



M PROPOSED SBFR WIDENING TYPICAL SECTION

STA 105+15 TO STA 114+30 - US 281 SBFR

24 QUANT EST ARE BASED ON WEIGHTED AVE WIDTH OF 26'
- STONE MATRIX ASPHALT (EST @ 288.89 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 288.89 SY/STA)
- HOT MIX ASPHALT (EST @ 288.89 SY/STA)
- PRIME COAT (EST @ 288.89 SY/STA)
- FLEX BASE (EST @ 288.89 SY/STA)
- LIME TREATED SUBGRADE (EST @ 288.89 SY/STA)

1 REVISED 05/18/2023

SCALE: N.T.S

STATE OF TEXAS
NICOLE N. DESKUS
136038
LICENSED
PROFESSIONAL ENGINEER
5/18/2023

NO.	DATE	REVISION	APPROV.
01	05/2023	PROPOSED SUBGRADE MATERIAL REVISED	

Texas Department of Transportation

PGAL TBPE REG. NO. F-2742
3131 Briarpark Dr, Suite 200
Houston, Texas 77042
(713) 622-1444

US 281

PROPOSED TYPICAL SECTIONS

(NORTH)

SHEET 6 OF 7

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC.	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0019

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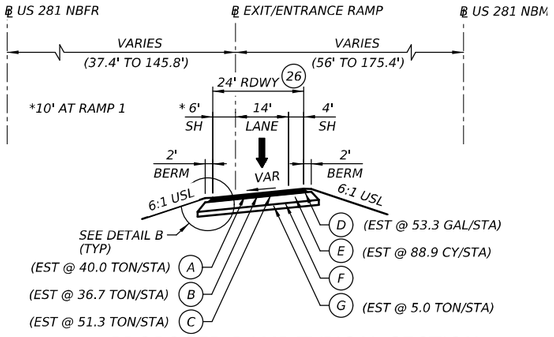
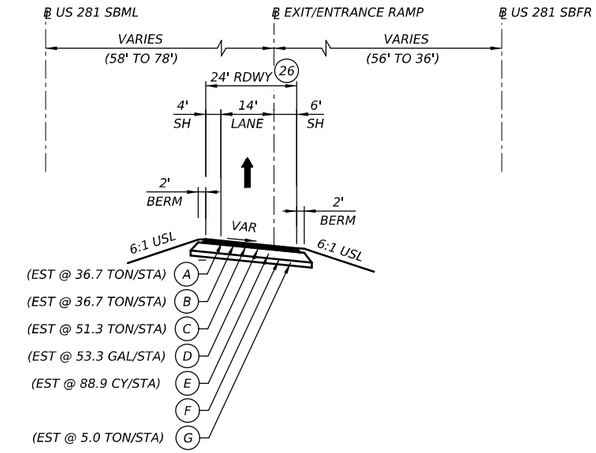


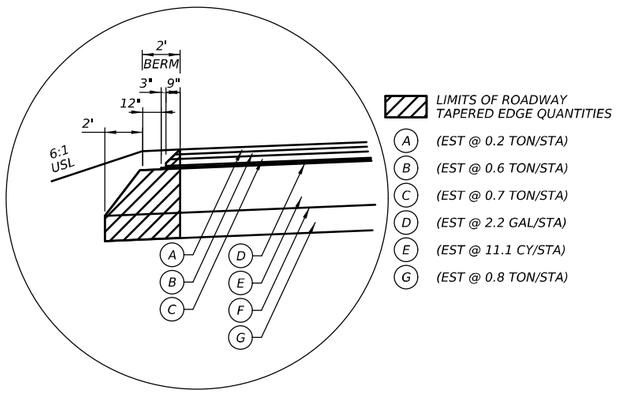
N PROPOSED RAMP TYPICAL SECTION

STA 5054+55 R1 TO STA 5057+88 R1 - RAMP 1
STA 5080+39 R2 TO STA 5086+17 R2 - RAMP 3
STA 5141+04.50 R2 TO STA 5144+25 R2 - RAMP 5
STA 5176+26 R2 TO STA 5180+76.50 R2 - RAMP 7



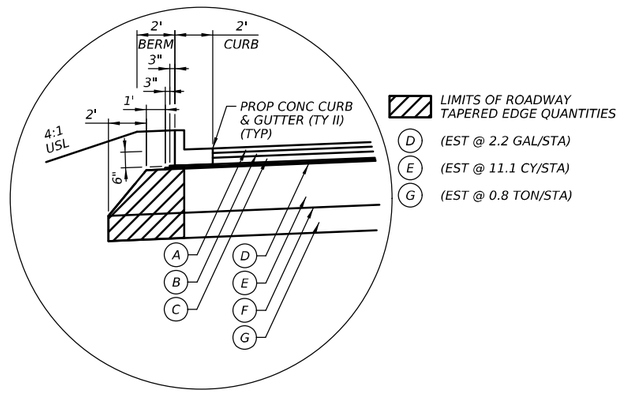
P PROPOSED RAMP TYPICAL SECTION

STA 7175+87 R2 TO STA 7179+50 R2 - RAMP 8



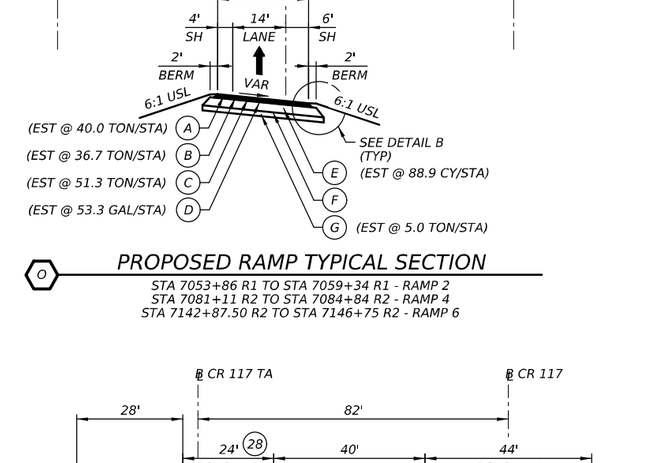
LIMITS OF ROADWAY TAPERED EDGE QUANTITIES
A (EST @ 0.2 TON/STA)
B (EST @ 0.6 TON/STA)
C (EST @ 0.7 TON/STA)
D (EST @ 2.2 GAL/STA)
E (EST @ 11.1 CY/STA)
G (EST @ 0.8 TON/STA)

DETAIL B



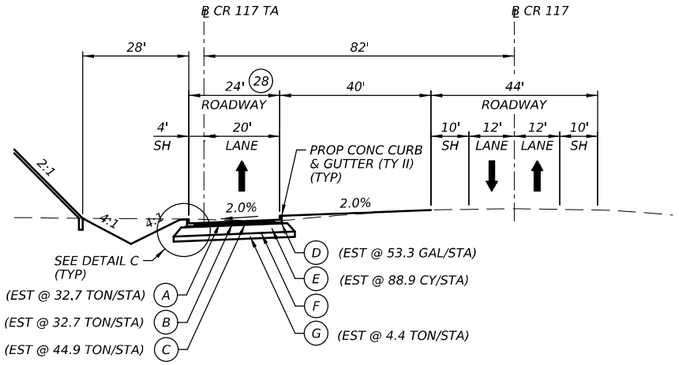
LIMITS OF ROADWAY TAPERED EDGE QUANTITIES
D (EST @ 2.2 GAL/STA)
E (EST @ 11.1 CY/STA)
G (EST @ 0.8 TON/STA)

DETAIL C



O PROPOSED RAMP TYPICAL SECTION

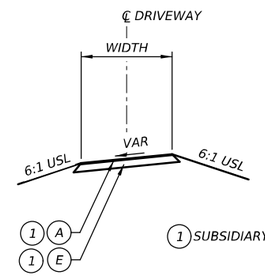
STA 7053+86 R1 TO STA 7059+34 R1 - RAMP 2
STA 7081+11 R2 TO STA 7084+84 R2 - RAMP 4
STA 7142+87.50 R2 TO STA 7146+75 R2 - RAMP 6



Q PROPOSED RAMP TYPICAL SECTION

STA 46+97.50 TO STA 51+44 - BL CR 117 TA

(28) - STONE MATRIX ASPHALT (EST @ 233.33 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 233.33 SY/STA)
- HOT MIX ASPHALT (EST @ 266.67 SY/STA)
- PRIME COAT (EST @ 266.67 SY/STA)
- FLEX BASE (EST @ 266.67 SY/STA)
- LIME TREATED SUBGRADE (EST @ 266.67 SY/STA)



1 SUBSIDIARY TO 530-6005

PROPOSED DRIVEWAY TYPICAL SECTION

DRIVEWAYS, CR 115

1 REVISED 05/18/2023

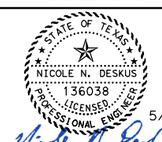
LEGEND

A 2.5" STONE-MTRX-ASPH SMA-D SAC-A PG76-22 W/TACK COAT @ 120 LBS/SY/IN
B 2.5" SP MIXES SP-C PG 70-22 W/TACK COAT @ 110 LBS/SY/IN
C 3.5" D-GR HMA TY-B PG64-22 W/TACK COAT @ 110 LBS/SY/IN
D PRIME COAT (MC-30) @ 0.2 GAL/SY
E 12" FLEX BASE (TY A GR 1-2) *
12" FLEX BASE (TY A GR 5) **
3% CEMENT BY WEIGHT **
12" CEMENT TREAT (NEW BASE) **
F GEOGRID REINFORCEMENT (TY II)
1 G 8" LIME TREATED SUBGRADE WITH 6% LIME BY WEIGHT
I TRAFFIC RAIL TY SSTR
J TRAFFIC RAIL TY SSTR W/ TRF
K EXISTING PAVEMENT TO REMAIN
PROPOSED TRAFFIC FLOW DIRECTION
EXISTING TRAFFIC FLOW DIRECTION

* ALT BID 1
** ALT BID 1A

(26) - STONE MATRIX ASPHALT (EST @ 266.67 SY/STA)
- SUPERPAVE ASPHALT BASE (EST @ 266.67 SY/STA)
- HOT MIX ASPHALT (EST @ 266.67 SY/STA)
- PRIME COAT (EST @ 266.67 SY/STA)
- FLEX BASE (EST @ 266.67 SY/STA)
- LIME TREATED SUBGRADE (EST @ 266.67 SY/STA)

SCALE: N.T.S



NO.	DATE	REVISION	APPROV
01	05/2023	PROPOSED SUBGRADE MATERIAL REVISED	

Texas Department of Transportation

PGAL
TBPE REG. NO. F-2742
3131 Briarpark Dr. Suite 200
Houston, Texas 77042
(713) 622-1444

US 281

PROPOSED TYPICAL SECTIONS

(NORTH)

SHEET 7 OF 7

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC.	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0020

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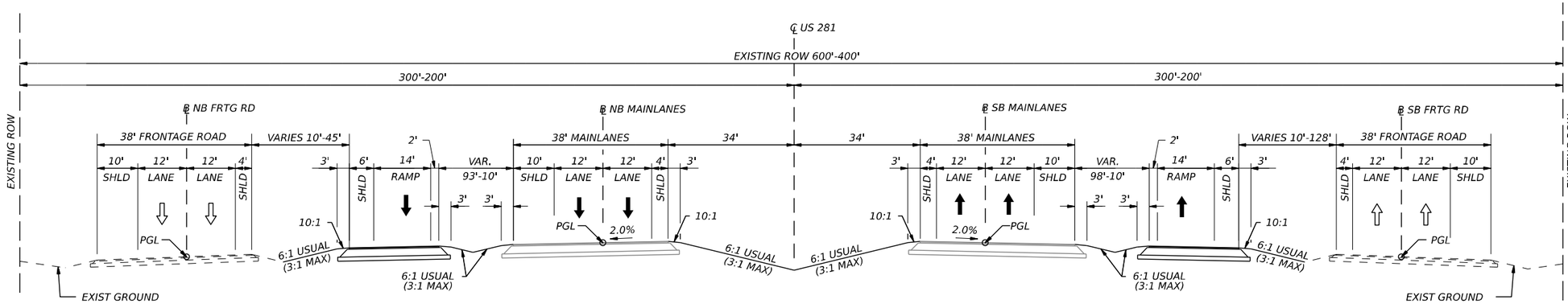


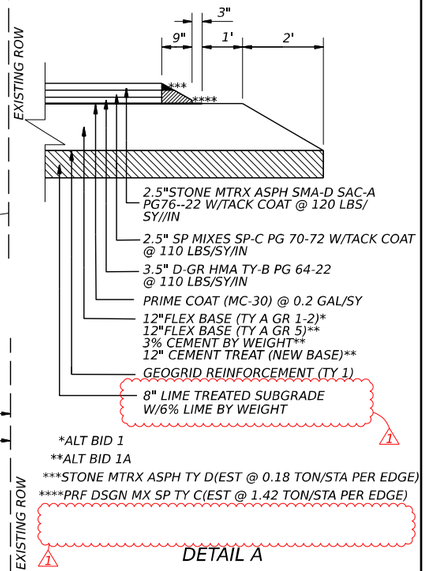
PROPOSED US 281
NORTHBOUND RAMPS

STA 271+61 TO 280+12
STA 333+23 TO 334+74
STA 374+12 TO 375+33
STA 403+28 TO 409+59

PROPOSED US 281
TYPICAL SECTION

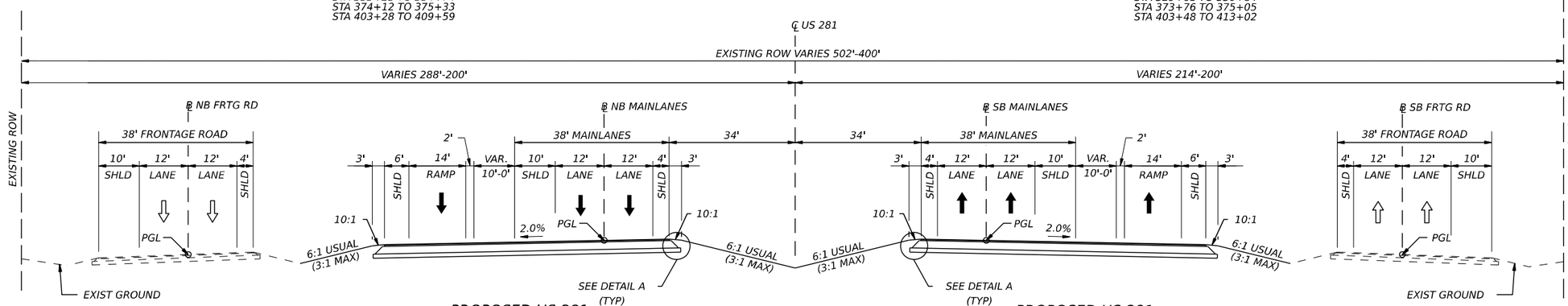
PROPOSED US 281
SOUTHBOUND RAMPS

STA 274+28 TO 279+71
STA 329+61 TO 330+84
STA 373+76 TO 375+05
STA 403+48 TO 413+02



*ALT BID 1
**ALT BID 1A
***STONE MTRX ASPH TY D(EST @ 0.18 TON/STA PER EDGE)
****PRF DSGN MX SP TY C(EST @ 1.42 TON/STA PER EDGE)

DETAIL A



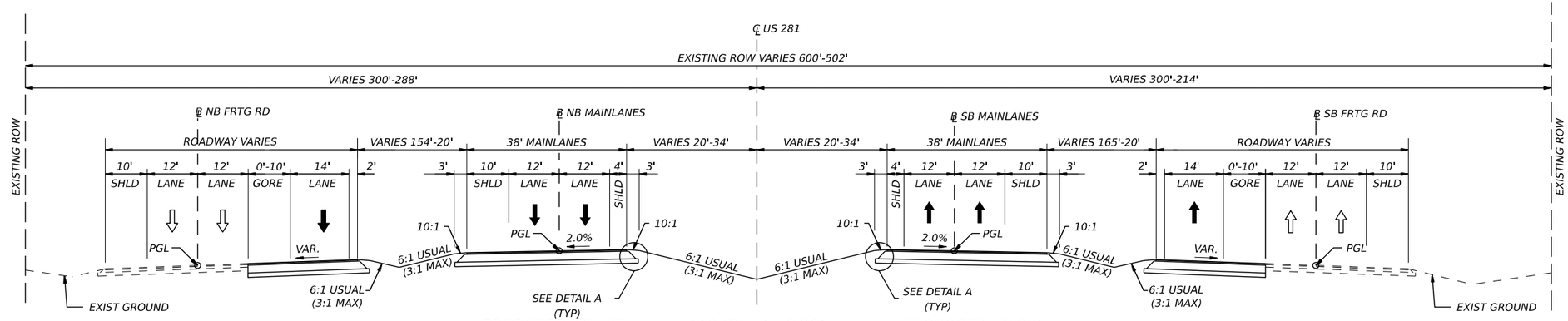
PROPOSED US 281
NORTHBOUND MAINLANES

STA 280+12 TO 286+44
STA 318+66 TO 333+23
STA 375+33 TO 385+70
STA 390+46 TO 403+28

PROPOSED US 281
TYPICAL SECTION

PROPOSED US 281
SOUTHBOUND MAINLANES

STA 279+71 TO 286+44
STA 318+66 TO 329+61
STA 375+05 TO 385+70
STA 390+46 TO 403+48



PROPOSED US 281
NORTHBOUND MAINLANES

STA 261+00 TO 271+61
STA 286+44 TO 318+66
STA 334+74 TO 374+12
#STA 342+35 TO 352+55
#STA 357+32 TO 369+36
STA 385+70 TO 390+46
STA 403+28 TO 426+00

PROPOSED US 281
TYPICAL SECTION

PROPOSED US 281
SOUTHBOUND MAINLANES

STA 261+00 TO 274+28
STA 286+44 TO 318+66
STA 330+84 TO 373+76
#STA 344+64 TO 353+99
#STA 358+76 TO 369+65
STA 385+70 TO 390+46
STA 403+48 TO 426+00

RET WALL 1-4 ARE FROM STA 342+35 TO 369+65.
SEE SHEET "US 281 OVER CR 129 RETAINING WALL LAYOUT" FOR TYPICAL SECTION

1 REVISED SHEET 5/18/2023

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED PROFESSIONAL ENGINEER

5/18/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

PROPOSED TYPICAL SECTIONS

SCALE: 1"=30' SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0021

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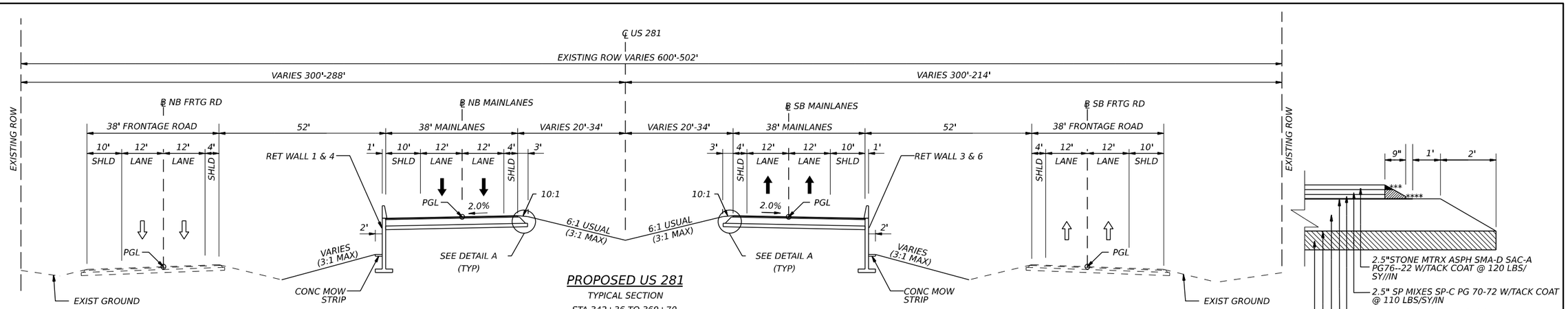
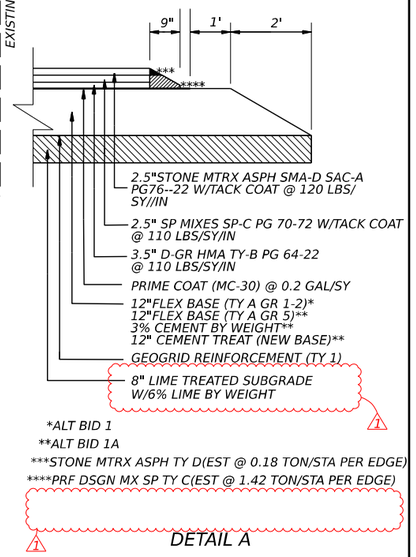


PROPOSED US 281

TYPICAL SECTION

STA 342+36 TO 369+70

PROPOSED BRIDGE FROM
STA. 353+80.22 TO STA. 357+55.22



*ALT BID 1

**ALT BID 1A

***STONE MTRX ASPH TY D(EST @ 0.18 TON/STA PER EDGE)

****PRF DSGN MX SP TY C(EST @ 1.42 TON/STA PER EDGE)

1 DETAIL A

PROPOSED US281 BRIDGE TYPICAL SECTION

SPAN 1-3

STA. 353+80.22 TO STA. 357+55.22

1 REVISED SHEET 5/18/2023

DANIEL GARCES
100029
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
5/18/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

PROPOSED
TYPICAL SECTIONS

SCALE: 1"=30' SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0022

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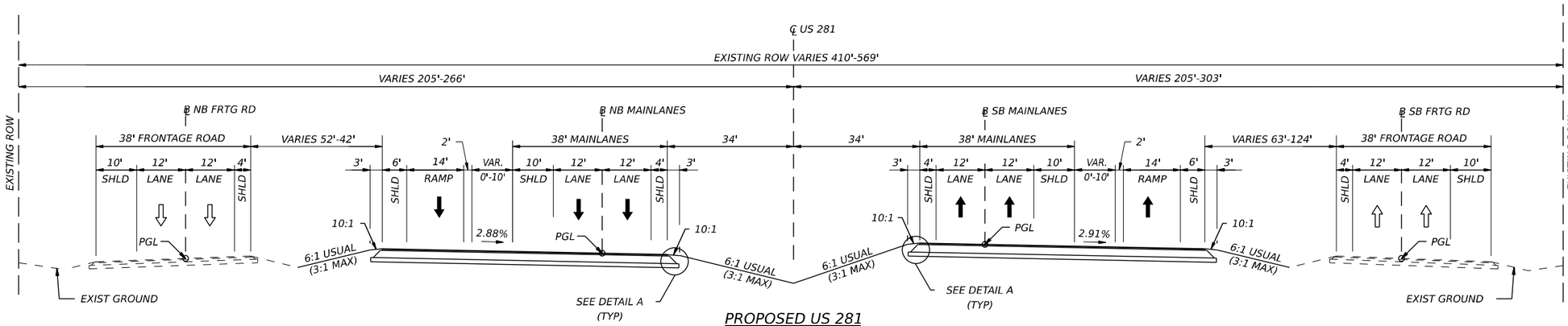
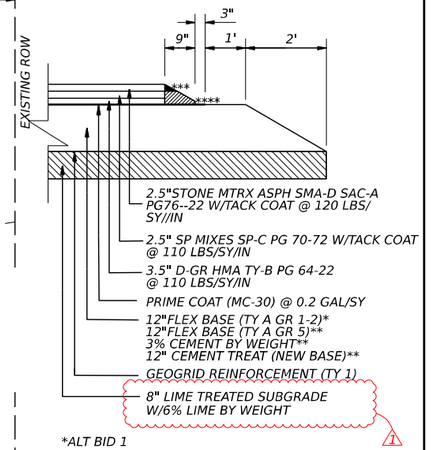


PROPOSED US 281

TYPICAL SECTION

STA 390+34 TO 404+00



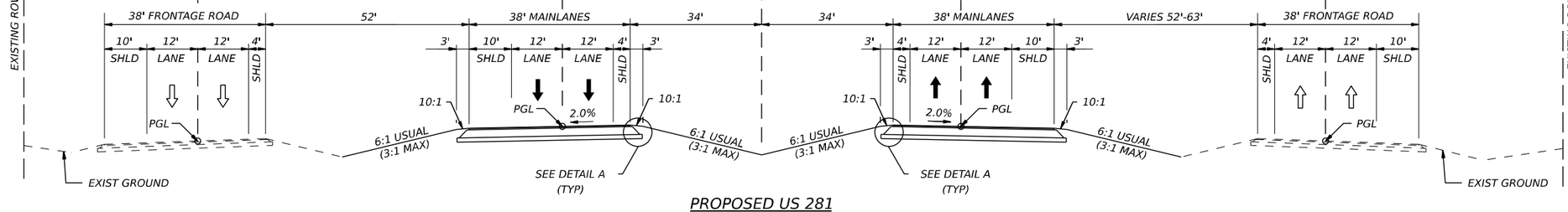
*ALT BID 1

**ALT BID 1A

***STONE MTRX ASPH TY D(EST @ 0.18 TON/STA PER EDGE)

****PRF DSGN MX SP TY C(EST @ 1.42 TON/STA PER EDGE)

1 DETAIL A



PROPOSED US 281

TYPICAL SECTION

STA 385+43 TO 390+34

1 REVISED SHEET 5/18/2023

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED PROFESSIONAL ENGINEER

P.E.

5/18/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

PROPOSED TYPICAL SECTIONS

SCALE: 1"=30' SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO
CRP	JIM WELLS		0023

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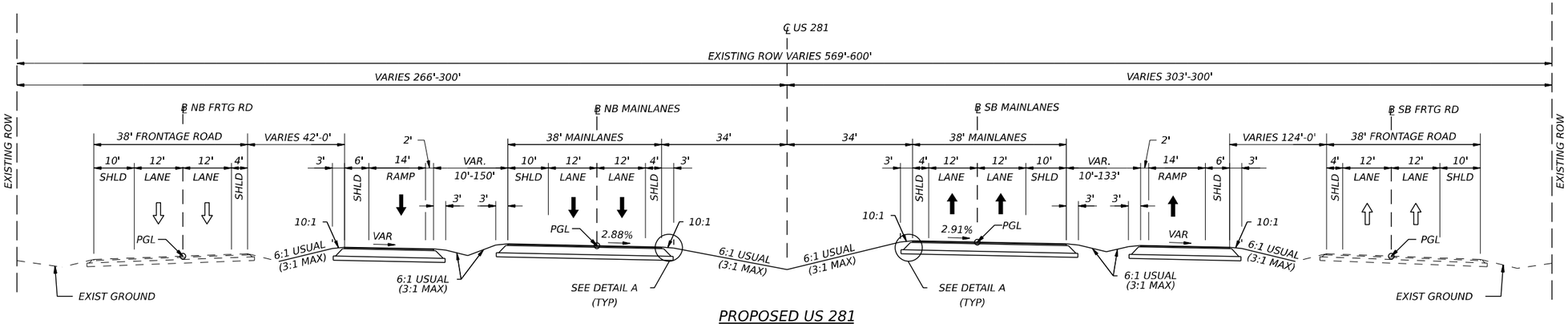
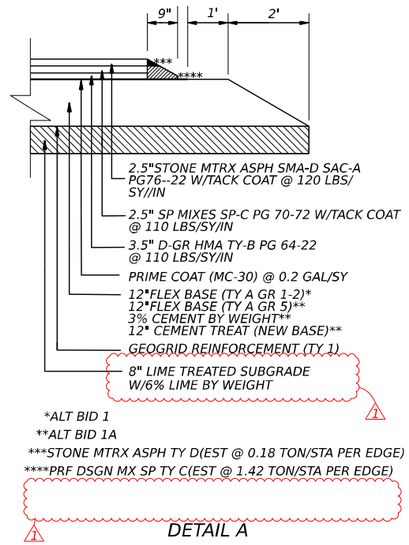


PROPOSED US 281

TYPICAL SECTION

STA 404+00 TO 426+00



*ALT BID 1

**ALT BID 1A

***STONE MTRX ASPH TY D(EST @ 0.18 TON/STA PER EDGE)

****PRF DSGN MX SP TY C(EST @ 1.42 TON/STA PER EDGE)

DETAIL A

1 REVISED SHEET 5/18/2023

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED PROFESSIONAL ENGINEER
P.E.
5/18/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

PROPOSED TYPICAL SECTIONS

SCALE: 1"=30' SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0024

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Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0254-07-008 **DISTRICT** Corpus Christi **COUNTY** Jim Wells
HIGHWAY US 281

ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL
	100-6001	PREPARING ROW	AC	51.660	
	100-6002	PREPARING ROW	STA	526.580	
	104-6009	REMOVING CONC (RIPRAP)	SY	386.000	
	105-6072	REMOVING STAB BASE & ASPH PAV(26"-32")	SY	64,479.000	
	110-6001	EXCAVATION (ROADWAY)	CY	215,395.000	
	132-6006	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	840,859.000	
	164-6009	BROADCAST SEED (TEMP) (WARM)	SY	381,368.000	
	164-6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	838,289.000	
	164-6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	456,921.000	
	166-6002	FERTILIZER	TON	47.400	
	168-6001	VEGETATIVE WATERING	MG	12,341.000	
	169-6001	SOIL RETENTION BLANKETS (CL 1) (TY A)	SY	12,533.000	
	260-6043	LIME (HYD, COM OR QK)(SLURRY)	TON	7,776.000	
	260-6073	LIME TRT (SUBGRADE)(8")	SY	411,593.000	
	310-6009	PRIME COAT (MC-30)	GAL	72,193.000	
	354-6061	PLANE ASHP CONC PAV (2" TO 9")	SY	1,038.000	
	400-6005	CEM STABIL BKFL	CY	4,199.300	
	402-6001	TRENCH EXCAVATION PROTECTION	LF	232.000	
	416-6001	DRILL SHAFT (18 IN)	LF	1,130.000	
	416-6004	DRILL SHAFT (36 IN)	LF	22,319.000	
	416-6005	DRILL SHAFT (42 IN)	LF	144.000	
	416-6007	DRILL SHAFT (54 IN)	LF	70.000	
	416-6018	DRILL SHAFT (SIGN MTS) (24 IN)	LF	88.000	
	416-6023	DRILL SHAFT (SIGN MTS) (54 IN)	LF	140.000	
	416-6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	408.000	
	420-6013	CL C CONC (ABUT)	CY	533.800	
	420-6029	CL C CONC (CAP)	CY	2,665.500	
	420-6037	CL C CONC (COLUMN)	CY	2,404.100	
	420-6066	CL C CONC (RAIL FOUNDATION)	CY	266.500	
	422-6001	REINF CONC SLAB	SF	708,695.000	
	422-6015	APPROACH SLAB	CY	414.100	
	423-6001	RETAINING WALL (MSE)	SF	71,022.000	
	425-6039	PRESTR CONC GIRDER (TX54)	LF	90,632.740	
	432-6001	RIPRAP (CONC)(4 IN)	CY	472.000	
	432-6002	RIPRAP (CONC)(5 IN)	CY	220.000	
	432-6006	RIPRAP (CONC)(CL B)	CY	10.500	
	432-6008	RIPRAP (CONC)(CL B)(RR8&RR9)	CY	379.400	
	432-6024	RIPRAP (STONE COMMON)(DRY)(12 IN)	CY	3,030.500	
	432-6031	RIPRAP (STONE PROTECTION)(12 IN)	CY	1,458.000	
	432-6044	RIPRAP (CONC)(FLUME)	CY	0.800	
	432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	135.400	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0254-07-008 **DISTRICT** Corpus Christi **COUNTY** Jim Wells
HIGHWAY US 281

ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL
	450-6023	RAIL (TY SSTR)	LF	43,527.960	
	454-6018	SEALED EXPANSION JOINT (4 IN) (SEJ - M)	LF	2,561.400	
	462-6007	CONC BOX CULV (5 FT X 3 FT)	LF	292.000	
	462-6010	CONC BOX CULV (6 FT X 3 FT)	LF	450.000	
	462-6101	CONC BOX CULV (10 FT X 4 FT)	LF	598.000	
	464-6003	RC PIPE (CL III)(18 IN)	LF	1,425.000	
	464-6005	RC PIPE (CL III)(24 IN)	LF	745.000	
	464-6007	RC PIPE (CL III)(30 IN)	LF	3,020.000	
	464-6008	RC PIPE (CL III)(36 IN)	LF	88.000	
	465-6012	JCTBOX(COMPL)(PJB)(8FTX8FT)	EA	1.000	
	465-6127	INLET (COMPL)(PSL)(FG)(4FTX4FT-3FTX3FT)	EA	10.000	
	465-6128	INLET (COMPL)(PSL)(FG)(4FTX4FT-4FTX4FT)	EA	11.000	
	465-6135	INLET (COMPL)(PSL)(FG)(5FTX5FT-4FTX4FT)	EA	1.000	
	465-6143	INLET (COMPL)(PSL)(FG)(8FTX8FT-3FTX3FT)	EA	5.000	
	465-6144	INLET (COMPL)(PSL)(FG)(8FTX8FT-4FTX4FT)	EA	1.000	
	465-6164	INLET (COMPL)(TY H)(MOD)	EA	6.000	
	465-6236	INLET (COMPL)(RWI)(TY II)	EA	14.000	
	466-6151	WINGWALL (FW - 0) (HW=4 FT)	EA	1.000	
	466-6207	WINGWALL (SW - 0) (HW=4 FT)	EA	1.000	
	467-6358	SET (TY II) (18 IN) (RCP) (4: 1) (C)	EA	15.000	
	467-6362	SET (TY II) (18 IN) (RCP) (6: 1) (C)	EA	10.000	
	467-6389	SET (TY II) (24 IN) (RCP) (3: 1) (P)	EA	1.000	
	467-6390	SET (TY II) (24 IN) (RCP) (4: 1) (C)	EA	1.000	
	467-6391	SET (TY II) (24 IN) (RCP) (4: 1) (P)	EA	1.000	
	467-6394	SET (TY II) (24 IN) (RCP) (6: 1) (C)	EA	4.000	
	467-6419	SET (TY II) (30 IN) (RCP) (4: 1) (C)	EA	3.000	
	467-6422	SET (TY II) (30 IN) (RCP) (6: 1) (C)	EA	5.000	
	467-6453	SET (TY II) (36 IN) (RCP) (6: 1) (C)	EA	1.000	
	496-6002	REMOV STR (INLET)	EA	3.000	
	496-6004	REMOV STR (SET)	EA	39.000	
	496-6005	REMOV STR (WINGWALL)	EA	2.000	
	496-6006	REMOV STR (HEADWALL)	EA	1.000	
	496-6007	REMOV STR (PIPE)	LF	1,185.000	
	496-6008	REMOV STR (BOX CULVERT)	LF	168.000	
	496-6072	REMOVING ROCK RIPRAP	LF	325.000	
	496-6099	REMOVE STR (RAIL)	LF	366.000	
	500-6001	MOBILIZATION	LS	1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	55.000	
	506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	960.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF	960.000	
	506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	604.000	

1 REVISED SHEET 5/25/2023

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0254-07-008 **DISTRICT** Corpus Christi **COUNTY** Jim Wells
HIGHWAY US 281

ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	604.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	38,479.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	38,479.000	
	506-6042	BIODEG EROSN CONT LOGS (INSTL) (18")	LF	8,508.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	8,508.000	
	508-6001	CONSTRUCTING DETOURS	SY	11,726.000	
	512-6001	PORT CTB (FUR & INST)(SGL SLOPE)(TY 1)	LF	36,630.000	
	512-6025	PORT CTB (MOVE)(SGL SLP)(TY 1)	LF	33,510.000	
	512-6049	PORT CTB (REMOVE)(SGL SLP)(TY 1)	LF	36,630.000	
	529-6008	CONC CURB & GUTTER (TY II)	LF	1,108.000	
	530-6005	DRIVEWAYS (ACP)	SY	1,022.000	
	533-6001	RUMBLE STRIPS (SHOULDER)	LF	78,476.000	
	540-6001	MTL W-BEAM GD FEN (TIM POST)	LF	1,500.000	
	540-6006	MTL BEAM GD FEN TRANS (THRIE-BEAM)	EA	16.000	
	542-6001	REMOVE METAL BEAM GUARD FENCE	LF	750.000	
	542-6004	RM MTL BM GD FENCE TRANS (THRIE-BEAM)	EA	10.000	
	544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA	9.000	
	544-6003	GUARDRAIL END TREATMENT (REMOVE)	EA	4.000	
	545-6003	CRASH CUSH ATTEN (MOVE & RESET)	EA	21.000	
	545-6005	CRASH CUSH ATTEN (REMOVE)	EA	25.000	
	545-6007	CRASH CUSH ATTEN (INSTL)(L)(N)(TL3)	EA	9.000	
	545-6010	CRASH CUSH ATTEN (INSTL)(L)(W)(TL3)	EA	1.000	
	545-6013	CRASH CUSH ATTEN (INSTL)(R)(N)(TL3)	EA	25.000	
	610-6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	22.000	
	610-6198	IN RD IL (TY SA) 40B-8 (250W EQ) LED	EA	13.000	
	610-6214	IN RD IL (TY SA) 40T-8 (250W EQ) LED	EA	21.000	
	610-6254	IN RD IL (TY ST) 40T-8 (250W EQ) LED	EA	24.000	
	618-6023	CONDT (PVC) (SCH 40) (2")	LF	2,027.000	
	618-6046	CONDT (PVC) (SCH 80) (2")	LF	26,413.000	
	618-6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	4,679.000	
	618-6053	CONDT (PVC) (SCH 80) (3")	LF	71,328.000	
	618-6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	9,152.000	
	618-6064	CONDT (RM) (1")	LF	10.000	
	618-6070	CONDT (RM) (2")	LF	4,575.000	
	618-6074	CONDT (RM) (3")	LF	968.000	
	620-6002	ELEC CONDR (NO.14) INSULATED	LF	44,481.000	
	620-6008	ELEC CONDR (NO.8) INSULATED	LF	48,330.000	
	620-6009	ELEC CONDR (NO.6) BARE	LF	17,235.000	
	620-6010	ELEC CONDR (NO.6) INSULATED	LF	50,042.000	
	624-6002	GROUND BOX TY A (122311)W/APRON	EA	38.000	
	624-6010	GROUND BOX TY D (162922)W/APRON	EA	32.000	

1 REVISED SHEET 5/25/2023

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0254-07-008 **DISTRICT** Corpus Christi **COUNTY** Jim Wells
HIGHWAY US 281

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	628-6045	ELC SRV TY A 240/480 060(NS)SS(E)SP(O)	EA	5.000	
	628-6050	ELC SRV TY A 240/480 060(NS)SS(T)TP(O)	EA	7.000	
	628-6149	ELC SRV TY D 120/240 060(NS)SS(N)GC(O)	EA	7.000	
	636-6002	ALUMINUM SIGNS (TY G)	SF	1,413.250	
	636-6003	ALUMINUM SIGNS (TY O)	SF	445.250	
	644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	42.000	
	644-6028	IN SM RD SN SUP&AM TYS80(1)SA(P-BM)	EA	8.000	
	644-6030	IN SM RD SN SUP&AM TYS80(1)SA(T)	EA	85.000	
	644-6031	IN SM RD SN SUP&AM TYS80(1)SA(T-2EXT)	EA	1.000	
	644-6033	IN SM RD SN SUP&AM TYS80(1)SA(U)	EA	8.000	
	644-6039	IN SM RD SN SUP&AM TYS80(1)SB(P)	EA	4.000	
	644-6042	IN SM RD SN SUP&AM TYS80(1)SB(T)	EA	2.000	
	644-6044	IN SM RD SN SUP&AM TYS80(1)SB(U)	EA	1.000	
	644-6051	IN SM RD SN SUP&AM TYS80(2)SA(P-EXAL)	EA	1.000	
	644-6064	IN BRIDGE MNT CLEARANCE SGN ASSM(TY N)	EA	2.000	
	644-6065	IN BRIDGE MNT CLEARANCE SGN ASSM(TY S)	EA	7.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA	74.000	
	644-6083	IN SRSS & AM (RAIL)(90 MPH)(P-BM MOUNT)	EA	2.000	
	644-6084	IN SRSS & AM (RAIL)(90 MPH)(T MOUNT)	EA	4.000	
	644-6085	IN SRSS & AM (RAIL)(90 MPH)(U MOUNT)	EA	1.000	
	647-6001	INSTALL LRSS (STRUCT STEEL)	LB	6,288.510	
	647-6003	REMOVE LRSA	EA	8.000	
	650-6028	INS OH SN SUP(30 FT BAL TEE)	EA	2.000	
	650-6045	INS OH SN SUP(40 FT CANT)	EA	3.000	
	658-6013	INSTL DEL ASSM (D-SW)SZ (BRF)CTB	EA	185.000	
	658-6026	INSTL DEL ASSM (D-SY)SZ (BRF)CTB	EA	170.000	
	658-6047	INSTL OM ASSM (OM-2Y)(WC)GND	EA	15.000	
	658-6061	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2	EA	18.000	
	658-6064	INSTL DEL ASSM (D-SY)SZ 1(BRF)GF2	EA	19.000	
	658-6080	INSTL DEL ASSM (D-SW)SZ 1(WFLX)GND	EA	37.000	
	658-6092	INSTL DEL ASSM (D-DW)SZ 1(WFLX)GND	EA	28.000	
	662-6001	WK ZN PAV MRK NON-REMOV (W)4"(BRK)	LF	15,113.000	
	662-6004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	89,882.000	
	662-6012	WK ZN PAV MRK NON-REMOV (W)8"(SLD)	LF	21,899.000	
	662-6034	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	LF	86,664.000	
	662-6050	WK ZN PAV MRK REMOV (REFL) TY II-A-A	EA	2,374.000	
	662-6060	WK ZN PAV MRK REMOV (W)4"(BRK)	LF	8,614.000	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	94,864.000	
	662-6071	WK ZN PAV MRK REMOV (W)8"(SLD)	LF	4,640.000	
	662-6092	WK ZN PAV MRK REMOV (W)36"(YLD TRI)	EA	36.000	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	88,539.000	

1 REVISED SHEET 5/25/2023

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0254-07-008 **DISTRICT** Corpus Christi **COUNTY** Jim Wells
HIGHWAY US 281

ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL
	666-6018	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	LF	416.000	
	666-6030	REFL PAV MRK TY I (W)8"(DOT)(100MIL)	LF	80.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	26,124.000	
	666-6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	LF	890.000	
	666-6138	REFL PAV MRK TY I (Y)8"(SLD)(100MIL)	LF	1,525.000	
	666-6218	REFL PAV MRK TY II (BLACK) 4"(SHADOW)	LF	23.000	
	666-6225	PAVEMENT SEALER 6"	LF	37,170.000	
	666-6226	PAVEMENT SEALER 8"	LF	6,270.000	
	666-6228	PAVEMENT SEALER 12"	LF	1,540.000	
	666-6230	PAVEMENT SEALER 24"	LF	50.000	
	666-6231	PAVEMENT SEALER (ARROW)	EA	4.000	
	666-6232	PAVEMENT SEALER (WORD)	EA	4.000	
	666-6237	PAVEMENT SEALER (LNDP ARROW)	EA	1.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF	17,053.000	
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	96,877.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF	96,355.000	
	666-6350	REFL PAV MRK TY I (W)12"(DOT)(100MIL)	LF	513.000	
	668-6010	PREFAB PAV MRK TY B (W)(6")(BRK)CNTST	LF	3,710.000	
	668-6074	PREFAB PAV MRK TY C (W) (12") (SLD)	LF	5,980.000	
	668-6076	PREFAB PAV MRK TY C (W) (24") (SLD)	LF	50.000	
	668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	6.000	
	668-6080	PREFAB PAV MRK TY C (W) (UTURN ARROW)	EA	2.000	
	668-6083	PREFAB PAV MRK TY C (W) (LNDP ARROW)	EA	4.000	
	668-6085	PREFAB PAV MRK TY C (W) (WORD)	EA	8.000	
	668-6092	PREFAB PAV MRK TY C (W) (36")(YLD TRI)	EA	6.000	
	668-6106	PREFAB PAV MRK TY C (Y) (12") (SLD)	LF	1,635.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	83.000	
	672-6010	REFL PAV MRKR TY II-C-R	EA	2,333.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	114,681.000	
	677-6038	ELIM EXT PAV MRK & MRKRS(PLOWABLE RPMS)	EA	30.000	
	678-6002	PAV SURF PREP FOR MRK (6")	LF	37,170.000	
	678-6004	PAV SURF PREP FOR MRK (8")	LF	6,270.000	
	678-6006	PAV SURF PREP FOR MRK (12")	LF	1,540.000	
	678-6008	PAV SURF PREP FOR MRK (24")	LF	50.000	
	678-6009	PAV SURF PREP FOR MRK (ARROW)	EA	5.000	
	678-6016	PAV SURF PREP FOR MRK (WORD)	EA	4.000	
	752-6015	TREE AND BRUSH REMOVAL	AC	75.000	
	3076-6001	D-GR HMA TY-B PG64-22	TON	66,624.000	
	3076-6066	TACK COAT	GAL	34,890.000	
	3077-6021	SP MIXESSP-CPG70-22	TON	47,693.000	
	3077-6075	TACK COAT	GAL	34,611.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0254-07-008 **DISTRICT** Corpus Christi **COUNTY** Jim Wells
HIGHWAY US 281

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	3080-6007	STONE-MTRX-ASPH SMA-D SAC-A PG76-22	TON	51,864.000	
	3080-6029	TACK COAT	GAL	34,548.000	
	5001-6002	GEOGRID BASE REINFORCEMENT (TY II)	SY	391,672.000	
	6007-6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	42,448.000	
	6007-6020	FIBER OPTIC PIGTAIL (12 FIBER)	LF	17,832.000	
	6007-6021	FIBER OPTIC SPLICE ENCLOSURE	EA	9.000	
	6007-6023	FIBER OPTIC PATCH PANEL (12 POSITION)	EA	24.000	
	6007-6026	FIBER OPTIC CABLE ROAD MARKER	EA	70.000	
	6008-6027	ITS GRND MNT CAB (TY 4) (CONF 2)	EA	8.000	
	6010-6010	CCTV FIELD EQUIP (ANALOG) (INSTL ONLY)	EA	6.000	
	6027-6004	JUNCTION BOX (INSTALL)	EA	16.000	
	6064-6047	ITS POLE (55 FT)(110 MPH)	EA	6.000	
	6064-6092	ITS POLE MNT CAB (TY 3)(CONF 2)	EA	6.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY	30.000	
	6186-6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	57.000	
	6186-6008	ITS GND BOX(PCAST) TY 2 (366036)W/APRN	EA	11.000	
	6246-6001	INSTALL OF DMS SYSTEM (POLE MOUNT)	EA	2.000	
	6247-6003	INSTALL OF FIELD HARD ETHERNET SWITCH	EA	16.000	
	6327-6004	INSTALL OF ETHERNET SURGE PROTECT	EA	15.000	
	08	CONTRACTOR FORCE ACCOUNT SAFETY CONTINGENCY (NON-PARTICIPATING)	LS	1.000	
		CONTRACTOR FORCE ACCOUNT EROSION CONTROL MAINTENANCE (NON-PARTICIPATING)	LS	1.000	
1	247-6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	124,885.000	
1A	247-6366	FL BS (CMP IN PLC)(TY A GR 5)(FNAL POS)	CY	124,885.000	
	275-6035	CEMENT TREAT (NEW BASE)(12")	SY	374,655.000	
	275-6099	CEMENT ALT 1X	TON	6,322.410	

SUMMARY OF PAVEMENT QUANTITIES

TYPICAL SECTION	ROADWAY	PAVEMENT CONSTRUCTION DESCRIPTION	LOCATION STA		LOCATION STA		ITEM	*247	**247	260	260	**275	275	275	**275	310	354	3076	3080	3077	3077	3080	3080	3076	5001
							DESCRIPTION	6041	6366	6043	6073	6099	6001	6010	6035	6009	6061	6001	6029	6021	6075	6007	6007	6066	6002
								FL BS (CMP IN PLC) (TYA GR1-2) (FNAL POS)	FL BS (CMP IN PLC) (TY A GR 5) (FNAL POS)	LIME (HYD, COM OR QK) (SLURRY) QK(DRY)	LIME TRT (SUBGRADE) (8")	CEMENT	CEMENT	CMT TRT (SUBGRADE) (8")	CEMENT TREAT (NEW BASE)(12")	PRIME COAT (MC-30)	PLANE ASPH CONC PAV (2" TO 9")	D-GR HMA TY-B PG64-22	TACK COAT	SP MIXES SP-C PG 70-22	TACK COAT	STONE-MTRX-ASPH SMA-D SAC-A PG76-22	STONE-MTRX-ASPH SMA-D SAC-A PG76-22 (LEVEL-UP)	TACK COAT	GEOGRID BASE REINFORCEMENT (TY II)
			STA		STA			CY	CY	TON	SY	TON	TON	SY	SY	GAL	SY	TON	GAL	TON	GAL	TON		GAL	SY
A	NBML	WIDENING	42+29	R1	52+50	R1		624	624	38	1,986	32			1,872	329		302	155	216	159	232		161	1,986
	SBML	WIDENING	49+85	R1	52+80	R1		235	235	15	770	12			705	115		102	52	71	53	77		56	770
B	NBML	TRANSITION	52+50	R1	54+55	R1		473	473	27	1,463	24			1,419	265		250	129	178	129	193		131	1,463
	SBML	TRANSITION	52+80	R1	53+87	R1		251	251	15	776	13			753	141		132	68	95	69	102		70	776
	NBML	TRANSITION	86+17	R2	91+21	R2		1,083	1,083	63	3,360	55			3,249	604		568	293	405	294	439		299	3,360
	SBML	TRANSITION	84+84	R2	98+39	R2		2,911	2,911	171	9,033	147			8,733	1,626		1,525	789	1,089	790	1,179		804	9,033
C	NBML	FULL WIDTH	54+55	R1	86+17	R2		6,900	6,900	409	21,641	349			20,700	3,763		3,498	1,808	2,499	1,811	2,697		1,854	21,641
			91+21	R2	100+96	R2		1,589	1,589	94	4,984	80			4,767	866		805	417	575	417	621		427	4,984
	SBML	FULL WIDTH	53+86	R1	84+84	R2		6,796	6,796	403	21,314	344			20,388	3,706		3,445	1,780	2,461	1,784	2,656		1,826	21,314
			98+39	R2	101+51	R2		508	508	30	1,594	26			1,524	277		258	133	184	134	199		137	1,594
D	-	BRIDGE	-		-			-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-
E	NBFR	FULL WIDTH	158+54	R2	167+50	R2		1,460	1,460	87	4,579	74			4,380	797		740	382	529	383	570		392	4,579
	SBFR	FULL WIDTH	157+98	R2	167+65	R2		1,576	1,576	93	4,943	80			4,728	860		799	413	570	413	615		423	4,943
F	NBML	FULL WIDTH	167+50	R2	169+20	R2		353	353	21	1,095	18			1,059	197		184	95	132	95	143		97	1,095
	SBML	FULL WIDTH	167+65	R2	173+23	R2		1,157	1,157	68	3,596	59			3,471	645		605	313	431	316	467		319	3,596
	NBFR	FULL WIDTH	168+59		169+20			100	100	6	312	5			300	55		51	26	36	26	39		27	312
	SBFR	FULL WIDTH	168+75		171+90			513	513	30	1,610	26			1,539	280		260	134	186	135	201		138	1,610
	NBML	TRANSITION	169+20	R2	176+26	R2		1,674	1,674	98	5,178	85			5,022	941		886	458	633	459	684		466	5,178
	SBML	TRANSITION	173+23	R2	175+82	R2		614	614	36	1,899	31			1,842	346		324	168	232	170	251		171	1,899
	NBFR	FULL WIDTH	169+20		176+27			1,152	1,152	68	3,613	58			3,456	628		585	302	417	303	450		310	3,613
	SBFR	FULL WIDTH	171+90		176+22			704	704	41	2,208	36			2,112	384		357	184	255	184	276		189	2,208
G	NBML	FULL WIDTH	176+26	R2	180+84	R2		747	747	45	2,341	38			2,241	407		378	195	270	195	292		200	2,341
	SBML	FULL WIDTH	175+82	R2	179+40	R2		584	584	35	1,830	30			1,752	318		296	153	211	155	228		157	1,830
	NBFR	FULL WIDTH	176+27		180+84			745	745	44	2,336	38			2,235	406		377	195	269	195	291		200	2,336
	SBFR	FULL WIDTH	176+22		183+60			1,203	1,203	71	3,772	61			3,609	656		610	315	435	316	470		323	3,772
H	NBML	FULL WIDTH	180+84	R2	187+24	R2		1,043	1,043	62	3,271	53			3,129	568		529	273	378	273	407		280	3,271
	SBML	FULL WIDTH	179+40	R2	188+09	R2		1,416	1,416	84	4,441	72			4,248	773		718	371	513	376	553		381	4,441
	NBFR	TRANSITION	180+84		187+24			1,375	1,375	81	4,267	70			4,125	768		721	373	514	373	557		380	4,267
	SBFR	TRANSITION	183+60		188+09			915	915	53	2,794	46			2,745	529		502	260	361	261	390		262	2,794
I	NBFR	FULL WIDTH	192+74		203+46			1,747	1,747	104	5,479	88			5,241	953		885	458	632	459	683		470	5,479
	SBFR	FULL WIDTH	193+59		203+11			1,552	1,552	92	4,866	79			4,656	846		787	406	562	407	606		417	4,866
J	NBFR	WIDENING	57+39		68+29			888	888	52	2,785	45			2,664	484	242	450	233	321	236	347	1	238	2,785
			88+26		91+74			284	284	17	890	14			852	155	77	143	74	103	75	111	1	76	890
			147+34		152+54			424	424	25	1,329	21			1,272	232	116	215	111	154	113	166		114	1,329
K	NBFR	WIDENING	103+52		112+23			484	484	29	1,548	25			1,452	251		230	118	164	121	176		123	1,548
L	SBFR	WIDENING	59+22		78+74			1,554	1,554	92	4,880	79			4,662	845	434	785	406	561	412	605	0	416	4,880
			84+94		92+54			605	605	36	1,900	31			1,815	329	169	306	158	219	160	235	1	162	1,900
			149+54		154+43			389	389	23	1,222	20			1,167	212		196	102	140	104	152		105	1,222
M	SBFR	WIDENING	105+15		114+30			983	983	58	3,050	50			2,949	549		515	266	367	269	399		271	3,050
N	RAMP 1	FULL WIDTH	5054+55		5057+28			304	304	19	971	15			912	158		144	74	103	74	110		77	971
	RAMP 3	FULL WIDTH	5080+39		5086+17			642	642	39	2,055	33			1,926	334		305	157	218	157	233		163	2,055
	RAMP 5	FULL WIDTH	5141+04.50		5144+25			356	356	21	1,140	18			1,068	185		169	86	121	87	129		90	1,140
	RAMP 7	FULL WIDTH	5176+26		5180+76.50			500	500	31	1,601	25			1,500	260		237	122	169	122	182		127	1,601
O	RAMP 2	FULL WIDTH	7053+86		7059+34			609	609	37	1,948	31			1,827	316		288	149	206	149	221		155	1,948
	RAMP 4	FULL WIDTH	7081+11		7084+84			415	415	25	1,327	21			1,245	216		196	101	141	101	150		105	1,327
	RAMP 6	FULL WIDTH	7142+87.50		7146+75			430	430	27	1,377	22			1,290	224		204	105	146	105	156		109	1,377
P	RAMP 8	FULL WIDTH	7175+87		7179+50			404	404	24	1,291	20			1,212	210		191	99	136	101	146		103	1,291
Q	CR 117 TA	FULL WIDTH	46+97.50		51+44			397	397	24	1,389	20			1,191	248		201	119	147	121	156		119	1,389
							TOTAL	**51,668**	**51,668**	**3,063**	**162,054**	**2,616**	**0**	**0**	**155,004**	**28,257**	**1,038**	**26,254**	**13,578**	**18,755**	**13,641**	**20,242**	**3**	**13,920**	**162,054**

1 1

* ALT BID 1
** ALT BID 1A

1

1 REVISED 05/18/2023

NO.	DATE	REVISION	APPROV
01	05/2023	PROPOSED SUBGRADE MATERIAL REVISED	

Texas Department of Transportation

PGAL
TBPE REG. NO. F-2742
3131 Briarpark Dr, Suite 200
Houston, Texas 77042
(713) 622-1444

US 281

PAVEMENT SUMMARY

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC.	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0043

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DATE: 5/18/2023 9:00:55 PM
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SUMMARY OF ROADWAY ITEMS

STATION		100-6002	# 247-6041	260-6043	260-6073	275-6001	275-6010	310-6009	316-6001	316-6427	3076-6001	3076-6066	3077-6021	3077-6075	3080-6007	3080-6029	5001-6002
		PREPARING R.O.W.	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	LIME(HYD,COM OR QK)(SLURRY) (@ 6% BY WT)	LIME TRT (SUBGRADE) (8")	CEMENT (@ 6% BY WT)	CEMENT TRT (SUBGRADE) (8")	PRIME COAT (MC-30) (0.20 GAL/SY)	ASPH (MULTI OPTION) (0.3 GAL/SY)	AGGR(TY-PB GR-4S OR TY-PB GR-4)(SAC-B)	D-GR HMA TY-B PG64-22 (3.5")	TACK COAT (0.1 GAL/SY)	SP MIXES SP-C PG70-22 (2.5")	TACK COAT (0.1 GAL/SY)	STONE-MTRX-ASPH SMA-D SAC-A PG76-22 (2.5")	TACK COAT (0.1 GAL/SY)	GEOGRID BASE REINFORCEMENT (TY II)
BEGIN	END	STA	CY	TON	SY	TON	SY	GAL	GAL	CY	TON	GAL	TON	GAL	TON	GAL	SY
NORTHBOUND ML																	
261+00.00	279+94.00	19	2,810	183	9,680			1,684			1,539	800	1,153	800	1,206	800	9,680
279+94.00	286+18.00	6	1,387	81	4,299			777			721	374	533	374	564	374	4,299
286+18.00	318+31.00	32	4,959	310	16,422			2,856			2,611	1,357	1,957	1,357	2,046	1,357	16,422
318+31.00	332+87.00	15	2,959	190	10,030			1,812			1,682	874	1,243	874	1,316	874	10,030
332+87.00	351+69.39	19	2,791	182	9,621			1,673			1,530	795	1,146	795	1,199	795	9,621
351+69.39	357+94.39	6								PROPOSED BRIDGE							
357+94.39	374+97.00	17	2,498	164	8,702			1,513			1,384	719	1,037	719	1,084	719	8,702
374+97.00	385+34.00	10	2,027	135	7,144			1,290			1,198	622	885	622	937	622	7,144
385+34.00	390+01.00	5	761	45	2,387			415			380	197	284	197	297	197	2,387
390+01.00	402+99.00	13	2,607	169	8,942			1,615			1,499	779	1,108	779	1,173	779	8,942
402+99.00	426+00.00	23	3,473	222	11,761			2,045			1,870	972	1,401	972	1,466	972	11,761
NORTHBOUND ML TOTALS		165	26,272	1,681	88,988			15,681			14,414	7,489	10,747	7,489	11,288	7,489	88,988
NORTHBOUND FR																	
266+00.00	271+26.00	0	1,169	68	3,624			655			608	316	448	316	475	316	3,624
271+26.00	273+72.00	0	401	24	1,257			219			200	104	151	104	157	104	1,257
332+00.00	333+47.00	0	240	14	751			131			119	62	91	62	94	62	751
333+47.00	341+25.00	0	1,452	101	5,360			968			899	467	665	467	703	467	5,360
341+25.00	345+00.00	0	611	36	1,917			333			305	158	229	158	239	158	1,917
364+00.00	365+09.00	0	178	11	557			97			89	46	66	46	69	46	557
365+09.00	372+85.00	0	1,447	101	5,346			966			896	466	663	466	701	466	5,346
372+85.00	376+43.00	0	583	35	1,830			318			291	151	222	151	229	151	1,830
406+65.00	408+75.00	0	342	20	1,073			187			171	89	128	89	134	89	1,073
408+75.00	416+64.00	0	1,476	103	5,435			982			911	473	676	473	713	473	5,435
416+64.00	420+00.00	0	548	32	1,717			299			273	142	206	142	214	142	1,717
NORTHBOUND FR TOTALS		0	8,447	545	28,867			5,153			4,762	2,474	3,545	2,474	3,728	2,474	28,867
NORTHBOUND RAMPS																	
271+28.00	279+56.00	0	859	52	2,760			442			390	202	301	202	306	202	2,760
332+87.00	334+40.00	0	159	10	510			82			72	37	57	37	57	37	510
372+85.00	374+09.00	0	129	8	413			66			58	30	47	30	46	30	413
403+04.00	409+53.00	0	673	41	2,163			346			305	159	235	159	240	159	2,163
NORTHBOUND RAMPS TOTALS		0	1,820	111	5,846			935			825	428	640	428	649	428	5,846
SOUTHBOUND ML																	
261+00.00	279+89.00	0	2,801	182	9,655			1,679			1,535	798	1,151	798	1,203	798	9,655
279+89.00	294+03.00	0	2,865	184	9,741			1,760			1,633	848	1,209	848	1,278	848	9,741
294+03.00	319+02.00	0	3,795	241	12,773			2,221			2,031	1,055	1,522	1,055	1,592	1,055	12,773
319+02.00	329+96.00	0	2,154	142	7,536			1,361			1,264	656	931	656	988	656	7,536
329+96.00	353+39.90	0	3,543	226	11,980			2,083			1,905	990	1,429	990	1,493	990	11,980
353+39.90	359+64.90	0								PROPOSED BRIDGE							
359+64.90	375+41.00	0	2,291	152	8,056			1,401			1,281	665	960	665	1,004	665	8,056
375+41.00	385+78.00	0	2,027	135	7,144			1,290			1,198	622	884	622	937	622	7,144
385+78.00	394+50.00	0	1,421	84	4,457			775			709	368	532	368	556	368	4,457
394+50.00	403+76.00	0	1,782	121	6,379			1,152			1,070	556	790	556	837	556	6,379
403+76.00	426+00.00	0	3,348	215	11,367			1,977			1,808	939	1,356	939	1,417	939	11,367
SOUTHBOUND ML TOTAL		0	26,027	1,682	89,088			15,701			14,434	7,497	10,764	7,497	11,305	7,497	89,088
SOUTHBOUND FR																	
269+00.00	269+84.00	0	137	8	429			75			68	35	52	35	54	35	429
269+84.00	281+01.00	0	2,206	145	7,695			1,390			1,290	670	956	670	1,010	670	7,695
281+01.00	283+00.00	0	324	19	1,017			177			162	84	121	84	127	84	1,017
337+00.00	338+35.00	0	220	13	690			120			110	57	81	57	86	57	690
338+35.00	346+10.00	0	1,446	101	5,339			964			895	465	662	465	700	465	5,339
346+10.00	347+00.00	0	147	9	460			80			73	38	55	38	57	38	460
372+00.00	373+51.00	0	246	15	772			134			123	64	91	64	96	64	772
373+51.00	381+27.00	0	1,448	101	5,346			966			896	466	663	466	701	466	5,346
381+27.00	383+00.00	0	282	17	884			154			141	73	106	73	110	73	884
414+02.00	419+97.00	0	970	57	3,041			529			484	251	362	251	379	251	3,041
419+97.00	426+00.00	0	1,064	79	4,154			750			696	362	517	362	545	362	4,154
426+00.00	428+00.00	0	326	19	1,022			178			163	84	122	84	127	84	1,022
SOUTHBOUND FR TOTAL		0	8,816	583	30,849			5,517			5,101	2,649	3,788	2,649	3,992	2,649	30,849
SOUTHBOUND RAMPS																	
280+98.00	286+67.00	0	590	36	1,897			303			268	139	208	139	211	139	1,897
329+96.00	331+21.00	0	130	8	417			67			59	31	48	31	47	31	417
381+27.00	382+59.00	0	137	8	440			70			62	32	50	32	49	32	440
403+72.00	413+16.00	0	979	59	3,147			503			444	231	346	231	350	231	3,147
SOUTHBOUND RAMPS TOTAL		0	1,835	111	5,901			944			833	433	652	433	657	433	5,901
PROJECT TOTAL		165	73,217	4,713	249,539	0	0	43,931	0	0	40,369	20,970	30,136	20,970	31,619	20,970	249,539

ALT BID 1

US 281 SIGN SUMMARY

STATION		636-6002	644-6027	644-6030	644-6033	644-6076	647-6001	647-6003
		ALUMINUM SIGNS (TY G)	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)	REMOVE SM RD SN SUP&AM	INSTALL LRSS (STRUCT STEEL)	REMOVE LRSA
BEGIN	END	SF	EA	EA	EA	EA	LB	EA
261+00.00	269+00.00	0	0	1	0	1	0	0
269+00.00	281+00.00	30	2	7	1	3	0	0
281+00.00	293+00.00	124	0	1	0	0	611	1
293+00.00	305+00.00	0	0	1	0	0	0	0
305+00.00	317+00.00	84	0	0	0	0	315	1
317+00.00	329+00.00	51	0	3	0	0	295	0
329+00.00	341+00.00	107	1	7	1	0	304	0
341+00.00	353+00.00	77	0	0	0	0	306	0
353+00.00	365+00.00	0	0	1	0	0	0	0
365+00.00	377+00.00	114	1	7	1	0	315	0
377+00.00	389+00.00	51	0	2	0	1	295	1
389+00.00	401+00.00	64	0	2	0	1	326	0
401+00.00	413+00.00	90	1	7	1	1	285	1
413+00.00	425+00.00	39	0	0	0	3	194	0
425+00.00	426+00.00	0	0	1	0	0	0	0
PROJECT TOTAL		831	5	40	4	10	3,246	4

US 281 ALTERNATIVE BID ITEMS

OVERALL PROJECT		## 247-6366	## 275-6035	## 275-6099
		FL BS (CMP IN PLC)(TY A GR 5)(FNAL POS)	CEMENT TREAT (NEW BASE)(12*)	CEMENT ALT 1X
		CY	SY	TON
ALTERNATIVE BID 1A		73,217	219,651	3,706.67
PROJECT TOTAL		73,217	219,651	3,706.67

ALT BID 1A

US 281 BRIDGE SUMMARY

STATION		400-6005	416-6001	416-6004	420-6013	420-6029	420-6037	422-6001	422-6015	423-6001	425-6039	432-2072	450-6023	454-6018	533-6001	544-6001
		CEM STABIL BKFL	DRILL SHAFT (18 IN)	DRILL SHAFT (36 IN)	CL C CONC (ABUT)	CL C CONC (CAP)	CL C CONC (COLUMN)	REINF CONC SLAB	APPROACH SLAB	RETAINING WALL (MSE)	PRESTR CONC GIRDER (TX54)	RIPRAP (CONC)(CL B)(RR8&RR 9)	RAIL (TY SSTR)	SEALED EXPANSION JOINT (4 IN) (SEJ-M)	RUMBLE STRIPS (SHOULDER)	GUARDRAIL END TREATMENT (INSTALL)
BEGIN	END	CY	LF	LF	CY	CY	CY	SF	CY	SF	LF	CY	LF	LF	LF	EA
NORTHBOUND																
352+55.21	358+80.21	322	162	1,036	74.3	100	77.4	25,000	130	25,669	3,111.54	189.7	1,304	164.7	6,480	4
SOUTHBOUND																
352+55.21	358+80.21	322	138	1,030	74.3	100	77.4	25,000	130	25,669	3,111.54	189.7	1,304	164.7	6,480	4
PROJECT TOTAL		644	300	2,066	148.6	200	154.8	50,000	260	51,338	6,223.08	379.4	2,608	329.4	12,960	8

⚠1 REVISED SHEET 5/18/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

SUMMARY SHEET

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0053

CK
DW
CK
DW

US 281 SW3P SUMMARY

STATION		100-6001	164-6009	164-6035	168-6001	506-6020	506-6024	506-6038	506-6039	506-6042	506-6043
		PREPARING ROW	DRILL SEEDING (TEMP) (WARM)	DRILL SEEDING (PERM) (RURAL) (CLAY)	VEGETATIVE WATERING	CONSTRUCTION EXITS (INSTALL) (TY 1)	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (18")	BIODEG EROSN CONT LOGS (REMOVE)
BEGIN	END	AC	SY	SY	MG	SY	SY	LF	LF	LF	LF
261+00.00	269+00.00	0	22519	22519	237	112	112	1667	1667	45	45
269+00.00	281+00.00	0	31244	31244	329	0	0	2399	2399	234	234
281+00.00	293+00.00	0	20446	20446	215	0	0	2402	2402	206	206
293+00.00	305+00.00	2.1	20130	20130	212	0	0	2400	2400	355	355
305+00.00	317+00.00	3.85	13896	13896	146	0	0	2400	2400	210	210
317+00.00	329+00.00	4.09	15997	15997	168	0	0	2400	2400	625	625
329+00.00	341+00.00	0.82	18194	18194	191	0	0	2400	2400	690	690
341+00.00	353+00.00	0	23008	23008	242	0	0	2419	2419	690	690
353+00.00	365+00.00	0	23029	23029	242	224	224	2393	2393	290	290
365+00.00	377+00.00	0	19558	19558	206	0	0	2400	2400	755	755
377+00.00	389+00.00	0	21853	21853	230	0	0	2400	2400	325	325
389+00.00	401+00.00	0	30247	30247	318	0	0	2392	2392	635	635
401+00.00	413+00.00	0	37148	37148	391	0	0	2387	2387	140	140
413+00.00	425+00.00	0	44272	44272	466	0	0	2400	2400	235	235
425+00.00	426+00.00	0	39827	39827	419	112	112	360	360	245	245
PROJECT TOTAL		11	381,368	381,368	4,012	448	448	33,219	33,219	5,680	5,680

NOTE: VEGETATIVE WATERING APPLICATION RATE OF 3394 GAL/AC AT 15 CYCLES

US 281 MBGF SUMMARY

STATION		432-6045	540-6001	544-6001
		RIPRAP (MOW STRIP)(4 IN)	MTL W-BEAM GD FEN (TIM POST)	GUARDRAIL END TREATMENT (INSTALL)
BEGIN	END	CY	LF	EA
NORTHBOUND				
261+00.00	269+00.00	0	0	0
269+00.00	281+00.00	0	0	0
281+00.00	293+00.00	0	0	0
293+00.00	305+00.00	0	0	0
305+00.00	317+00.00	0	0	0
317+00.00	329+00.00	0	0	0
329+00.00	341+00.00	8	150	1
341+00.00	352+55.21	20	350	1
352+55.21	358+80.21	0	0	0
358+80.21	365+00.00	16	313	1
365+00.00	377+00.00	16	313	1
377+00.00	389+00.00	0	0	0
389+00.00	401+00.00	0	0	0
401+00.00	413+00.00	0	0	0
413+00.00	425+00.00	0	0	0
425+00.00	426+00.00	0	0	0
NORTHBOUND TOTAL		60	1,126	4
SOUTHBOUND				
261+00.00	269+00.00	0	0	0
269+00.00	281+00.00	0	0	0
281+00.00	293+00.00	0	0	0
293+00.00	305+00.00	0	0	0
305+00.00	317+00.00	0	0	0
317+00.00	329+00.00	0	0	0
329+00.00	341+00.00	0	0	0
341+00.00	353+00.00	25	488	2
353+00.00	352+55.21	7	138	0
352+55.21	358+80.21	0	0	0
358+80.21	365+00.00	14	250	1
365+00.00	377+00.00	14	250	1
377+00.00	389+00.00	0	0	0
389+00.00	401+00.00	0	0	0
401+00.00	413+00.00	0	0	0
413+00.00	425+00.00	0	0	0
425+00.00	426+00.00	0	0	0
SOUTHBOUND TOTAL		60	1,126	4
PROJECT TOTAL		120	2,252	8

US 281 REMOVAL SUMMARY

STATION		105-6072
		REMOVING STAB BASE & ASPH PAVE (26"-32")
BEGIN	END	SY
NORTHBOUND		
261+00.00	269+00.00	277
269+00.00	281+00.00	3,523
281+00.00	293+00.00	111
293+00.00	305+00.00	0
305+00.00	317+00.00	0
317+00.00	329+00.00	0
329+00.00	341+00.00	0
341+00.00	352+55.21	0
352+55.21	358+80.21	0
358+80.21	365+00.00	0
365+00.00	377+00.00	0
377+00.00	389+00.00	0
389+00.00	401+00.00	257
401+00.00	413+00.00	2,675
413+00.00	425+00.00	1,994
425+00.00	426+00.00	0
NORTHBOUND TOTAL		8,837
SOUTHBOUND		
261+00.00	269+00.00	597
269+00.00	281+00.00	4,417
281+00.00	293+00.00	1,447
293+00.00	305+00.00	41
305+00.00	317+00.00	0
317+00.00	329+00.00	0
329+00.00	341+00.00	0
341+00.00	353+00.00	0
353+00.00	352+55.21	0
352+55.21	358+80.21	0
358+80.21	365+00.00	0
365+00.00	377+00.00	0
377+00.00	389+00.00	0
389+00.00	401+00.00	0
401+00.00	413+00.00	1,045
413+00.00	425+00.00	2,689
425+00.00	426+00.00	0
SOUTHBOUND TOTAL		10,235
PROJECT TOTAL		19,073

US 281 PAVEMENT MARKING SUMMARY

STATION		666-6178	666-6180	666-6219	666-6225	666-6306	666-6309	666-6321	672-6010	677-6001	678-6002
		REFL PAV MRK TY II (W) 8" (SLD)	REFL PAV MRK TY II (W) 12" (SLD)	REFL PAV MRK TY II (BLACK) 6" (SHADOW)	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (W)6"(BRK) (100MIL)	RE PM W/RET REQ TY I (W)6"(SLD) (100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD) (100MIL)	REFL PAV MRKER TY II-C-R	ELIM EXT PAV MRK & MRKS (4")	PAV SURF PREP FOR MRK (6")
		LF	LF	LF	LF	LF	LF	LF	EA	LF	LF
261+00.00	269+00.00	0	0	0	5,743	630	2,591	2,522	32	920	5,743
269+00.00	281+00.00	1,802	111	0	10,626	914	4,663	5,049	120	1,054	10,626
281+00.00	293+00.00	1,576	137	0	5,914	600	2,913	2,401	80	0	5,914
293+00.00	305+00.00	0	0	0	5,400	600	2,400	2,400	30	0	5,400
305+00.00	317+00.00	0	0	0	5,400	600	2,400	2,400	30	0	5,400
317+00.00	329+00.00	1,291	139	0	5,366	600	2,366	2,400	66	0	5,366
329+00.00	341+00.00	2,261	60	0	9,186	1,044	3,690	4,452	116	1,789	9,186
341+00.00	353+00.00	0	0	0	6,586	732	2,927	2,927	37	706	6,586
353+00.00	365+00.00	0	0	23	5,515	613	2,451	2,451	31	51	5,515
365+00.00	377+00.00	2,012	144	0	10,586	1,156	4,553	4,877	120	1,763	10,586
377+00.00	389+00.00	849	60	0	5,626	618	2,537	2,471	41	0	5,626
389+00.00	401+00.00	1,312	29	0	5,305	602	2,301	2,402	70	0	5,305
401+00.00	413+00.00	1,402	210	0	11,177	889	5,146	5,142	104	351	11,177
413+00.00	425+00.00	489	0	0	8,959	995	3,981	3,983	68	1,578	8,959
425+00.00	426+00.00	0	0	0	446	50	198	198	2	0	446
PROJECT TOTAL		12,994	890	23	101,835	10,643	45,117	46,075	947	8,212	101,835

US 281 DRAINAGE SUMMARY

LOCATION		400-6005	402-6001	432-6031	462-6007	462-6010	464-6003	464-6005	464-6007	465-6164	465-6012	465-6127	465-6135	465-6143	465-6144	465-6236	467-6358	467-6362	467-6394	467-6422
		CEM STABIL BKFL	TRENCH ECAVATION PROTECTION	RIPRAP (STONE PROTECTION) (12 IN)	CONC BOX CULV (5 FT X 3 FT)	CONC BOX CULV (6 FT X 3 FT)	RC PIPE (CL III) (18 IN)	RC PIPE (CL III) (24 IN)	RC PIP (CL III)(30 IN)	INLET (COMPL)(TY H)(MOD)	JCTBOX (COMPL)(PJB)(8XFTX8FT)	INLET (COMPL)(PSL)(FG)(4FTX4FT-3FTX3FT)	INLET (COMPL)(PSL)(FG)(5FTX5FT-4FTX4FT)	INLET (COMPL)(PSL)(FG)(8FTX8FT-3FTX3FT)	INLET (COMPL)(PSL)(FG)(8FTX8FT-4FTX4FT)	INLET (COMPL)(RWI)(TYII)	SET (TY II)(18 IN)(RCP)(4:1)(C)	SET (TY II)(18 IN)(RCP)(6:1)(C)	SET (TY II)(24 IN)(RCP)(6:1)(C)	SET (TY II)(30 IN)(RCP)(6:1)(C)
BEGIN	END	CY	LF	CY	LF	LF	LF	LF	LF		EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
DRAINAGE LATERALS (SHEET		59	0	0	0	0	213	143	0	0	0	2	0	0	0	0	0	4	2	0
DRAINAGE LATERALS (SHEET		88	0	848	0	0	412	0	0	0	0	0	0	0	0	8	8	0	0	0
DRAINAGE LATERALS (SHEET		66	0	610	0	0	312	0	0	0	0	0	0	0	0	6	6	0	0	0
CULVERT 18		51	82	0	0	0	456	0	0	0	0	0	0	1	0	0	0	6	0	0
CULVERT 19		94	0	0	0	450	0	0	0	3	0	0	0	0	0	0	0	0	0	0
CULVERT 20		94	0	0	0	0	0	0	556	3	0	0	0	0	0	0	0	0	0	0
CULVERT 21		90	0	0	0	0	0	0	392	0	0	0	0	1	0	0	0	0	0	0
CULVERT 22		61	0	0	0	0	0	0	392	0	1	0	0	1	0	0	0	0	0	0
CULVERT 23		61	0	0	0	0	0	0	372	0	0	0	0	2	1	0	0	0	0	0
CULVERT 24		49	0	0	146	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
CULVERT 25		49	0	0	146	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
CULVERT 26		64	0	0	0	0	0	0	220	0	0	1	0	0	0	0	0	0	0	0
CULVERT 27		43	0	0	0	0	0	0	171	0	0	2	0	0	0	0	0	0	0	0
CULVERT 28		80	150	0	0	0	0	0	358	0	0	2	0	0	0	0	0	0	0	2
CULVERT 29		50	0	0	0	0	0	0	209	0	0	1	1	0	0	0	0	0	0	1
PROJECT TOTAL		999	232	1,458	292	450	1,393	143	2,670	6	1	10	1	5	1	14	14	10	2	3

1 REVISED SHEET 5/22/2023

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INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

SUMMARY SHEET

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0054

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS

	SHEET NO	508-6001 DETOUR	512-6001 PORT CTB (FURN & (SGL SLP) (TY 1)	512-6025 PORT CTB (MOVE) (SGL SLP) (TY 1)	512-6049 PORT CTB (REMOVE) (SGL SLP) (TY 1)	545-6003 CRASH CUSH ATTEN (MOVE & RESET)	545-6005 CRASH CUSH ATTEN (REMOVE)	545-6013 CRASH CUSH ATTEN (INSTAL) (N)(TL3)	662-6001 WK ZN PAV MRK NON-REMOV (W)4"(BRK)	662-6004 WK ZN PAV MRK NON-REMOV (W) 4"(SLD)	662-6012 WK ZN PAV MRK NON-REMOV (W)8"(SLD)	662-6034 WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	662-6060 WK ZN PAV MRK REMOV (W)4"(BRK)	662-6063 WK ZN PAV MRK REMOV (W) 4"(SLD)	662-6071 WK ZN PAV MRK REMOV (W)8"(SLD)	662-6092 WK ZN PAV MRK REMOV (W)(36(YLD TRI)	662-6095 WK ZN PAV MRK REMOV (Y)4"(SLD)	672-6009 REFL PAV MRKR TY II-A-A	677-6001 ELIM EXT PAV MRK & MRKS (4")	3020-6000 REMOVE SHOULDER TEXTURING	6185-6005 TMA (MOBIL OPERATION)
		SY	LF	LF	LF	EA	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	LF	LF	DAY
DETOUR	1 OF 5	2,322	1,920	1,920		1		1												1,848	
	2 OF 5	974	1,080	1,080		1		1												1,050	
	3 OF 5	387	600	600		1		1												600	
	4 OF 5	1,104	600	600																537	
	5 OF 5	939	780	780		1		1												700	
DETOUR TOTALS		5,726	4,980	4,980	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	4,735	0
PHASE I	1 OF 21		1,925	1,925		1		1						270			320		540		
	2 OF 21		3,205	3,205		4		4						1,500	720	4	1,640		2,559		
	3 OF 21		780	780		1		1					340	1,340			1,340	34	2,300		
	4 OF 21		870	870		1		1					420	1,685			1,685	42	2,790		
	5 OF 21		1,890	1,890		2		2					530	2,100	60		2,100	53	4,730		
	6 OF 21		30	30									30	100	100		100	3	430		
	7 OF 21		510	510		1		1					150	450	55		700	15	1,300		
	8 OF 21			1,050		1							410	1,615			1,615	41	3,590		
	9 OF 21			1,290		3		2	510	2,027		1,956						51	1,850		
	10 OF 21			906		2		2	310	1,480		1,594	260	1,458	204		1,046	57	2,700		
	11 OF 21		510	1,104		1				756		390		524					2,940		
	12 OF 21								340	1,525		1,525	260	1,032			1,032	60	5,390		
	13 OF 21		1,682	1,682		1		1	600	2,254	158	1,412						60	5,400		
	14 OF 21		988	988		1		1			418	1,472	350					35	1,750		
	15 OF 21																				
	16 OF 21		2,040	2,040		1	1	2													
	17 OF 21		1,890	1,890			1	1													
	18 OF 21		210	210			1	1													
	19 OF 21		540	540			1	1													
	20 OF 21		270	1,410			1														
	21 OF 21																				
PHASE I TOTALS		**0**	**17,340**	**22,320**	**0**	**20**	**5**	**21**	**1,760**	**8,042**	**576**	**8,349**	**2,750**	**12,074**	**1,139**	**4**	**11,578**	**451**	**38,269**	**0**	**0**
PHASE II	1 OF 3													252					322		
	2 OF 3			3,420		4							510	3,283			1,992	51	6,288		
	3 OF 3												570	2,793	240		2,273	57			
PHASE II TOTALS		0	0	3,420	0	4	0	0	0	0	0	0	1,080	6,328	240	0	4,265	108	6,610	0	0
PHASE III	1 OF 13			570		1							720	2,210		0	2,868	72	3,500		
	2 OF 13			630		1							840	1,457		3	2,053	84	5,030		
	3 OF 13													251	504				310		
	4 OF 13			1,140		2							190	7,397	1,379	4	7,178	19	4,650		
	5 OF 13			3,920		3				2,405		2,403		6,887	204		6,334		4,250		
	6 OF 13			1,140		1								1,162			1,365		140		
	7 OF 13			1,260		1				600		600		1,130			1,950		2,150		
	8 OF 13			930		1								1,331			1,603		1,860		
	9 OF 13																1,478		380		
	10 OF 13																228		60		
	11 OF 13									400							768		300		
	12 OF 13			1,680		1			233	1,673		2,125						24	1,790		
	13 OF 13			690		1			250	600		600	220	1,876			1,951	47	5,120		
PHASE III TOTALS		**0**	**0**	**11,960**	**0**	**12**	**0**	**0**	**483**	**5,678**	**0**	**5,728**	**1,970**	**23,701**	**2,087**	**7**	**27,776**	**246**	**29,540**	**0**	**0**

1 REVISED SHEET 5/22/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

SUMMARY SHEET

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0055

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SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS (CONT.)

	SHEET NO	508-6001 DETOUR	512-6001 PORT CTB (FURN & (SGL SLP) (TY 1)	512-6025 PORT CTB (MOVE) (SGL SLP) (TY 1)	512-6049 PORT CTB (REMOVE) (SGL SLP) (TY 1)	545-6003 CRASH CUSH ATTEN (MOVE & RESET)	545-6005 CRASH CUSH ATTEN (REMOVE)	545-6013 CRASH CUSH ATTEN (INSTAL) (N)(TL3)	662-6001 WK ZN PAV MRK NON-REMOV (W)4"(BRK)	662-6004 WK ZN PAV MRK NON-REMOV (W) 4"(SLD)	662-6012 WK ZN PAV MRK NON-REMOV (W)8"(SLD)	662-6034 WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	662-6060 WK ZN PAV MRK REMOV (W)4"(BRK)	662-6063 WK ZN PAV MRK REMOV (W) 4"(SLD)	662-6071 WK ZN PAV MRK REMOV (W)8"(SLD)	662-6092 WK ZN PAV MRK REMOV (W)(36(YLD TRI)	662-6095 WK ZN PAV MRK REMOV (Y)4"(SLD)	672-6009 REFL PAV MRKR TY II-A-A	677-6001 ELIM EXT PAV MRK & MRKS (4")	3020-6000 REMOVE SHOULDER TEXTURING	6185-6005 TMA (MOBIL OPERATION)
		SY	LF	LF	LF	EA	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	LF	LF	DAY
PHASE IIIA	1 OF 21			930		1	1		270	2,027	2,118	1,110				4		27			
	2 OF 21			60		2	2		1,110	5,533	611	6,558						111			
	3 OF 21								600	2,400	355	3,080						60			
	4 OF 21								600	3,148	2,178	4,195						60			
	5 OF 21								500	2,110	1,060	4,057	100	500			500	60			
	6 OF 21												1,200	4,800			4,800	120			
	7 OF 21										31	364	600	2,400			2,400	60			
	8 OF 21									716	739	1,297	600	4,088	96		3,723	60			
	9 OF 21			4,310			3						604	9,273	1,617	4	9,290	61			
	10 OF 21			4,210			2		600	2,403		2,521	240	5,522			2,521	84			
	11 OF 21								280	1,104		1,118						28			
	12 OF 21			810	1,140		2			1,901		1,149		1,870			1,953		280		
	13 OF 21		1,950		2,790		2		300	2,089		2,294		2,560			2,587	30	3,180		
	14 OF 21								1,480	2,500		6,545		2,380			765	148	3,700		
	15 OF 21								1,200	3,640		4,800		1,495			1,300	120	1,935		
	16 OF 21				2,460	2			1,200	5,700		7,105		1,955			1,270	120	3,530		
	17 OF 21				2,130	1			1,200	6,820		6,820		1,446	840		1,562	120	3,770		
	18 OF 21				360	1			1,200	1,445		5,351		4,569			1,986	120	3,510		
	19 OF 21				870	1			760	1,541		3,176		2,545			1,280	76	2,200		
	20 OF 21				3,570	2			30	2,111		4,375		2,697			430	3	2,450		
	21 OF 21				660	1								2,010			3,074		2,185		
PHASE IIIA TOTALS		**0**	**1,950**	**10,320**	**13,980**	**11**	**12**	**0**	**11,330**	**47,188**	**7,092**	**65,915**	**3,344**	**50,110**	**2,553**	**8**	**39,441**	**1,468**	**26,740**	**0**	**0**
PHASE IIIB	1 OF 10				630		1		170	1,226		500		519			294	17			
	2 OF 10				1,770		1		630	5,291	1,181	2,870		745		4	780	63			
	3 OF 10								1,065	4,504	2,220	4,472		679			435	107			
	4 OF 10									1,670	0			1,300							
	5 OF 10				2,460		2			3,512	2,994	1,754		1,280		4	1,638				
	6 OF 10				2,130		1			2,196	1,032	2,160		1,186		4	247				
	7 OF 10				360		1			4,030	1,598	560		1,481			225				
	8 OF 10				870		1			3,906	1,950	1,920		985			560				
	9 OF 10				2,070		1		560	4,400	488	1,644		480		4	50	56			
	10 OF 10								150	628				823				15			
PHASE IIIB TOTALS		**0**	**0**	**0**	**10,290**	**0**	**8**	**0**	**2,575**	**31,363**	**11,463**	**15,880**	**0**	**9,478**	**0**	**16**	**4,229**	**258**	**0**	**0**	**30**
PROJECT TOTAL		**5,726**	**24,270**	**53,000**	**24,270**	**51**	**25**	**25**	**16,148**	**92,271**	**19,131**	**95,872**	**9,144**	**101,691**	**6,019**	**35**	**87,289**	**2,531**	**101,159**	**4,735**	**30**

1 REVISED SHEET 5/22/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

SUMMARY SHEET

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0056

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CK
DW
CK
DW

US 281 ILLUMINATION SUMMARY

SHEET NO.	416-6029 DRILL SHAFT (ILL POLE) (30 IN) (LF)		610-6104 IN RD IL (U/P) (TY 1) (150 W EQ) (LED) (EA)		610-6254 IN RD IL (TY SA 40T-8) (250 W EQ) (LED) (EA)		618-6046 CONDT (PVC) (SCH 80) (2") (LF)		618-6047 CONDT (PVC) (SCH 80) (2") (BORE) (LF)		620-6009 ELEC CONDR (NO.6) BARE (LF)		620-6010 ELEC CONDR (NO.6) INSULATED (LF)		624-6002 GROUND BOX TY A 122311 W/APRON (EA)		628-6050 ELC SRV TY A 240/480 060 (NS)SS(T) TP(0) (EA)		6027-6004 JUNCTION BOX (INSTALL) (EA)	
	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
SHEET 1 OF 9	60				6		1,666		101		1,767		3,534		0		0		2	
SHEET 2 OF 9	0				0		2,400		0		2,400		4,800		0		0		0	
SHEET 3 OF 9	0				0		1,931		0		1,931		3,862		3		3		3	
SHEET 4 OF 9	60				6		1,822		94		1,916		3,832				0		2	
SHEET 5 OF 9	0		12		0		1,400		116		1,516		3,032		3		3		4	
SHEET 6 OF 9	0				0		2,400		0		2,400		4,800		0		0		0	
SHEET 7 OF 9	60				6		1,383		94		1,477		2,954		0		0		2	
SHEET 8 OF 9	60				6		1,663		197		1,860		3,720		0		0		2	
SHEET 9 OF 9	0				0		1,968		0		1,968		3,936		1		1		1	
TOTAL	240	0	12	0	24	0	16,633	0	602	0	17,235	0	34,470	0	7	0	7	0	16	0

US 281 CONDUIT SUMMARY

		CONDUIT SIZE AND LENGTH			
		2" PVC (SCH 80)	2" PVC (SCH 80) (BORE)	#6 BARE	#6 INSULATED
ITEM NO.		618-6046	618-6047	620-6009	620-6010
FIXTURE	RUN NO.				
P1, P2, P3	100	3164	47	3211	6422
P4, P5, P6	200	2179	54	2233	4466
P7, P8, P9	300	1059	47	1106	2212
P10, P11, P12	400	1417	47	1464	2928
P13, P14, P15	500	2321	47	2368	4736
P16, P17, P18	600	2248	47	2295	4590
P19, P20, P21	700	1931	50	1981	3962
P22, P23, P24	800	1700	147	1847	3694
P25, P26, P27, P28, P29, P30	900	367	58	425	850
P31, P32, P33, P34, P35, P36	1000	247	58	305	610
TOTAL		16633	602	17235	34470

US 281 ELECTRICAL SERVICE DATA

SERVICE POLE NO.	SERVICE POLE QTY.	ELECTRICAL SERVICE DESCRIPTION	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT		PANEL BD/ LOAD CENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT. BKR. POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
						SWITCH AMP/FUSE	CKT. BKR. POLE/AMP					
1	1	ELC SRV TY A 240/480	2"	3/#2	N/A	N/A	2P/100	100	A	2P/20	8	3.25
		060(NS)SS(T) TP (0)							B	2P/20	8	3.25
2	1	ELC SRV TY A 240/480	2"	3/#2	N/A	N/A	2P/100	100	A	2P/20	8	3.25
		060(NS)SS(T) TP (0)							B	2P/20	8	3.25
3	1	ELC SRV TY A 240/480	2"	3/#2	N/A	N/A	2P/100	100	A	2P/20	8	3.25
		060(NS)SS(T) TP (0)							B	2P/20	8	3.25
4	1	ELC SRV TY A 240/480	2"	3/#2	N/A	N/A	2P/100	100	A	2P/20	8	3.25
		060(NS)SS(T) TP (0)							B	2P/20	8	3.25
5	1	ELC SRV TY A 240/480	2"	3/#2	N/A	N/A	2P/100	100	A	2P/20	8	3.25
		060(NS)SS(T) TP (0)							B	2P/20	8	3.25
6	1	ELC SRV TY A 240/480	2"	3/#2	N/A	N/A	2P/100	100	A	2P/20	8	3.25
		060(NS)SS(T) TP (0)							B	2P/20	8	3.25
7	1	ELC SRV TY A 240/480	2"	3/#2	N/A	N/A	2P/100	100	A	2P/20	8	3.25
		060(NS)SS(T) TP (0)							B	2P/20	8	3.25

1 REVISED SHEET 5/22/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

ILLUMINATION SUMMARY

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0058

DATE: 5/22/2023 12:01:59 PM
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SHEET NUMBER CSJ: 0254-07-008, ETC	0416 6005 DRILL SHAFT (42 IN) (LF)	0416 6007 DRILL SHAFT (54 IN) (LF)	0432 6001 RIPRAP (CONC)(4 IN) (CY)	0618 6023 CONDT (PVC) (SCH 40)(2") (LF)	0618 6046 CONDT (PVC) (SCH 80)(2") (LF)	0618 6047 CONDT (PVC) (SCH 80)(2") (BORE)(LF)	0618 6053 CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	0618 6054 CONDT (PVC) (SCH 80) (3") (BORE)(LF)	0618 6074 CONDT (RM) (3") (LF)	0620 6002 ELEC CONDR (NO.14) INSULATED (LF)	0620 6008 ELEC CONDR (NO.8) INSULATED (LF)	0620 6010 ELEC CONDR (NO.6) INSULATED (LF)	0624 6010 GROUND BOX TY D (162922) W/APRON (EA)	0628 6149 ELC SRV TY D 120/240 060(NS)SS(N)GC(O) (EA)	0650 6028 INS OH SN SUP (30 FT BAL TEE) (EA)	6007 6017 FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)	6007 6020 FIBER OPTIC PIGTAIL (12 FIBER) (LF)	6007 6021 FIBER OPTIC SPLICE ENCLOSURE (EA)	6007 6023 FIBER OPTIC PATCH PANEL (12 POSITION) (EA)
SHEET 01 OF 35 - BEGIN TO STA 43+00	24		1.25	499	206	36	966	26		728	921	1,900	4	1		570	308	1	3
SHEET 02 OF 35 - STA 43+00 TO STA 55+00							2400			1200						1225			
SHEET 03 OF 35 - STA 55+00 TO STA 56+00							2522	100		1311						1361			
SHEET 04 OF 35 - STA 56+00 TO STA 68+00							2400			1200						1225			
SHEET 05 OF 35 - STA 68+00 TO STA 80+00							2400			1200						1225			
SHEET 06 OF 35 - STA 80+00 TO STA 92+00					400	50	2028	380		1654						1229	1050		
SHEET 07 OF 35 - STA 92+00 TO STA 104+00					997	95	1860	550		2202		380		1		1305	1047	1	1
SHEET 08 OF 35 - STA 104+00 TO STA 116+00							2,192	210		1,201						1,251			
SHEET 09 OF 35 - STA 116+00 TO STA 128+00							2,400			1,200						1,225			
SHEET 10 OF 35 - STA 128+00 TO STA 140+00	24		1.25	485	241	112	1,308	356		1,073	1716	4,024	6	1		957	266	1	4
SHEET 11 OF 35 - STA 140+00 TO STA 152+00		35	1.25	329	250		1,650	756		1,453		1,316	3		1	1,228	390	1	3
SHEET 12 OF 35 - STA 152+00 TO STA 164+00							2,430			1,215						1,240			
SHEET 13 OF 35 - STA 164+00 TO STA 176+00							2,478			1,239						1,264			
SHEET 14 OF 35 - STA 176+00 TO STA 188+00							1,590	860		1,225						1,250			
SHEET 15 OF 35 - STA 188+00 TO STA 200+00							1,668	734		1,201						1,226			
SHEET 16 OF 35 - STA 200+00 TO STA 212+00	24		1.25	215	110	447	1,410		968	1,518	1254	1,540	5	1		1,314	379	1	3
SHEET 17 OF 35 - STA 212+00 TO STA 224+00							1,734			867						892			
SHEET 18 OF 35 - STA 224+00 TO STA 236+00							2,410			1,205						1,230			
SHEET 19 OF 35 - STA 236+00 TO STA 247+00							2,108	288		1,198						1,248			
SHEET 20 OF 35 - STA 247+00 TO STA 256+50							1,290	614		952						977			
SHEET 21 OF 35 - STA 256+50 TO STA 269+00	24		1.25	259	90	1377	1,686	850		1,783	1593	4,804	5	1		1,393	3253	1	5
SHEET 22 OF 35 - STA 269+00 TO STA 281+00							1,952	550		1,251						1,301	2502		
SHEET 23 OF 35 - STA 281+00 TO STA 293+00							2,410			1,205						1,255	2410		
SHEET 24 OF 35 - STA 293+00 TO STA 305+00							1,904			952						977	1904		
SHEET 25 OF 35 - STA 305+00 TO STA 317+00		35	1.25	84	40	228	2,408			1,420		544	3		1	1,329	2409	1	1
SHEET 26 OF 35 - STA 317+00 TO STA 329+00	24		1.25	20	47	164	960			600	333		2	1		580	457	1	1
SHEET 27 OF 35 - STA 329+00 TO STA 341+00							1,938	476		1,207						1,232			
SHEET 28 OF 35 - STA 341+00 TO STA 353+00							2,400			1,200						1,225			
SHEET 29 OF 35 - STA 353+00 TO STA 365+00							2,190	220		1,205						1,230			
SHEET 30 OF 35 - STA 365+00 TO STA 377+00							1,876	524		1,200						1,250			
SHEET 31 OF 35 - STA 377+00 TO STA 389+00							2,400			1,200						1,225			
SHEET 32 OF 35 - STA 389+00 TO STA 401+00							2,400			1,200						1,225			
SHEET 33 OF 35 - STA 401+00 TO STA 413+00							1,920	450		1,185						1,210			
SHEET 34 OF 35 - STA 413+00 TO STA 425+00							1,770	758		1,264						1,289			
SHEET 35 OF 35 - STA 425+00 TO END	24		1.25	136	139	273	1,950			1,382	573	1,064	4	1		1,075	1457	1	3
PROJECT TOTALS	144	70	10	2,027	2,520	2,782	71,328	9,152	968	44,481	6,390	15,572	32	7	2	42,448	17,832	9	24

SHEET NUMBER CSJ: 0254-07-008, ETC	6007 6026 FIBER OPTIC CABLE ROAD MARKER (EA)	6008 6027 ITS GRND MNT CAB (TY 4) (CONF 2) (EA)	6010 6010 CCTV FIELD EQUIPMENT (DIGITAL) (INSTL ONLY) (EA)	6064 6047 ITS POLE (55 FT) (110 MPH) (EA)	6064 6092 ITS POLE MNT CAB (TY 3)(CONF 2)(EA)	6186 6002 ITS GND BOX (PCAST) TY 1 (243636)W/APRON (EA)	6186 6008 ITS GND BOX (PCAST) TY 2 (366036)W/APRON (EA)	6246 6001 INSTALL OF DMS SYSTEM (POLE MOUNT) EA	6247 6003 INSTALL OF FIELD HARD ETHERNET SWITCH	6327 6004 INSTALL OF ETHERNET SURGE PROTECT
SHEET 01 OF 35 - BEGIN TO STA 43+00	2	1	1	1	1	1	1		2	2
SHEET 02 OF 35 - STA 43+00 TO STA 55+00	2					1			1	
SHEET 03 OF 35 - STA 55+00 TO STA 56+00	3					3				
SHEET 04 OF 35 - STA 56+00 TO STA 68+00	1					1				
SHEET 05 OF 35 - STA 68+00 TO STA 80+00	1					1				
SHEET 06 OF 35 - STA 80+00 TO STA 92+00	4					4				
SHEET 07 OF 35 - STA 92+00 TO STA 104+00	2	1				1	1		1	1
SHEET 08 OF 35 - STA 104+00 TO STA 116+00	2					2				
SHEET 09 OF 35 - STA 116+00 TO STA 128+00	1					1				
SHEET 10 OF 35 - STA 128+00 TO STA 140+00	2	1	1	1	1	1	1		2	2
SHEET 11 OF 35 - STA 140+00 TO STA 152+00	3	1				2	1	1	2	2
SHEET 12 OF 35 - STA 152+00 TO STA 164+00	2					1				
SHEET 13 OF 35 - STA 164+00 TO STA 176+00	1					1				
SHEET 14 OF 35 - STA 176+00 TO STA 188+00	2					1				
SHEET 15 OF 35 - STA 188+00 TO STA 200+00	2					2				
SHEET 16 OF 35 - STA 200+00 TO STA 212+00	3	1	1	1	1	1	2		2	2
SHEET 17 OF 35 - STA 212+00 TO STA 224+00	1					1				
SHEET 18 OF 35 - STA 224+00 TO STA 236+00	1					1				
SHEET 19 OF 35 - STA 236+00 TO STA 247+00	2					2				
SHEET 20 OF 35 - STA 247+00 TO STA 256+50	1					1				
SHEET 21 OF 35 - STA 256+50 TO STA 269+00	2	1	1	1	1	1	1		2	2
SHEET 22 OF 35 - STA 269+00 TO STA 281+00	3					3				
SHEET 23 OF 35 - STA 281+00 TO STA 293+00	2					2				
SHEET 24 OF 35 - STA 293+00 TO STA 305+00	1					1				
SHEET 25 OF 35 - STA 305+00 TO STA 317+00	2					1	1	1	1	1
SHEET 26 OF 35 - STA 317+00 TO STA 329+00	1		1	1	1	1	1		1	1
SHEET 27 OF 35 - STA 329+00 TO STA 341+00	3					2				
SHEET 28 OF 35 - STA 341+00 TO STA 353+00	2					2				
SHEET 29 OF 35 - STA 353+00 TO STA 365+00	3	1				1	1			
SHEET 30 OF 35 - STA 365+00 TO STA 377+00	3					3				
SHEET 31 OF 35 - STA 377+00 TO STA 389+00	1					1				
SHEET 32 OF 35 - STA 389+00 TO STA 401+00	1					1				
SHEET 33 OF 35 - STA 401+00 TO STA 413+00	2					2				
SHEET 34 OF 35 - STA 413+00 TO STA 425+00	3					3				
SHEET 35 OF 35 - STA 425+00 TO END	1	1	1	1	1	2	1		2	2
PROJECT TOTALS	70	8	6	6	6	57	11	2	16	15

ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS SUMMARY

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		58A

DATE: 5/21/2023 3:28:41 PM
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SUMMARY OF ESTIMATED BRIDGE QUANTITIES

ITEM	400 6005	416 6001	416 6004	420 6013	420 6029	420 6037	422 6001	422 6015	425 6039	432 6001	450 6023	454 6018
DESCRIPTION	CEM STABIL BKFL	DRILL SHAFT (18 IN)	DRILL SHAFT (36 IN)	CL C CONC (ABUT)	CL C CONC (CAP)	CL C CONC (COLUMN)	REINF CONC SLAB	APPROACH SLAB	PRESTR CONC GIRDER (TX54)	RIPRAP (CONC)(4 IN)	RAIL (TY SSTR)	SEALED EXPANSION JOINT (4 IN) (SEJ - M)
UNIT	CY	LF	LF	CY	CY	CY	SF	CY	LF	CY	LF	LF
ABUTMENT 1	160	80	200	41.2				50.6		176	44.0	48
ABUTMENT 6	180	80	240	43.9				41.7		58	44.0	53
BENT TYPE 1 (BENTS 2 TO 10, AND 27 TO 30)			1,600		289.9	342.3						
BENT TYPE 2 (BENTS 11 TO 26, AND 31 TO 41)			3,585		472.5	532.7						
BENT TYPE 3 (BENT 42)			270		31.3	26.7						
BENT TYPE 4 (BENT 43)			225		27.2	20.9						
BENT TYPE 5 (BENT 44)			250		24.4	16.8						
BENT TYPE 6 (BENTS 45 TO 49)			820		115.0	70.1						
BENT TYPE 7 (BENTS 50 TO 55)			1,040		138.0	46.0						
250.00 PRSTR CONC I-GIRDER UNIT 1*							10,000		1,245.00		500.0	
375.00 PRSTR CONC I-GIRDER UNIT 2*							15,000		1,867.50		750.0	48
375.00 PRSTR CONC I-GIRDER UNIT 3*							15,000		1,867.50		750.0	48
336.00 PRSTR CONC I-GIRDER UNIT 4*							12,520		1,557.54		626.0	48
375.00 PRSTR CONC I-GIRDER UNIT 5*							13,600		1,692.50		680.0	39
375.00 PRSTR CONC I-GIRDER UNIT 6*							15,000		1,867.50		750.0	39
375.00 PRSTR CONC I-GIRDER UNIT 7*							15,000		1,867.50		750.0	39
375.00 PRSTR CONC I-GIRDER UNIT 8*							15,000		1,867.50		750.0	39
263.50 PRSTR CONC I-GIRDER UNIT 9*							13,000		1,617.46		650.0	39
375.00 PRSTR CONC I-GIRDER UNIT 10*							15,000		1,867.50		750.0	48
298.50 PRSTR CONC I-GIRDER UNIT 11*							14,480		1,802.57		724.0	48
375.00 PRSTR CONC I-GIRDER UNIT 12*							15,000		1,867.50		750.0	39
375.00 PRSTR CONC I-GIRDER UNIT 13*							15,000		1,867.50		750.0	39
375.00 PRSTR CONC I-GIRDER UNIT 14*							15,000		1,867.50		750.0	39
250.00 PRSTR CONC I-GIRDER UNIT 15*							22,114		2,989.58		750.5	70
375.00 PRSTR CONC I-GIRDER UNIT 16*							19,500		2,614.50		750.0	51
370.00 PRSTR CONC I-GIRDER UNIT 17*							19,150		2,518.74		722.7	51
360.00 PRSTR CONC I-GIRDER UNIT 18*							18,945		2,445.39		701.7	53
360.00 PRSTR CONC I-GIRDER UNIT 19*							12,630		1,630.26		467.8	53
OVERALL TOTAL	340	160	8,230	85.1	1,098.3	1,055.5	290,939	92.3	36,921.04	234	13,410.7	931

* SEJ-M QTY IS PROVIDED AT BEGINNING OF EACH UNIT.

HL-93 LOADING

STATE OF TEXAS
MOHAMAD MANSOUR
110096
LICENSED
PROFESSIONAL ENGINEER

5/18/2023

The seal appearing on this document was authorized by Mohamad Mansour, P.E. 110096 on 5/18/2023.

NO.	DATE	REVISION	APPROV.
1	05/2023	OVERALL QTY CHANGED, ITEM # CHANGED	

Texas Department of Transportation

PGAL
TBPE REG. NO. F-2742

3131 Briarpark Dr, Suite 200
Houston, Texas 77042
(713) 622-1444

US 281
ESTIMATED QUANTITIES & BEARING SEAT ELEV. NB MAIN LANE

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0501

1 REVISED 05/18/2023

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SUMMARY OF ESTIMATED BRIDGE QUANTITIES

ITEM	400 6005	416 6001	416 6004	420 6013	420 6029	420 6037	422 6001	422 6015	425 6039	432 6001	450 6023	454 6018
DESCRIPTION	CEM STABIL BKFL	DRILL SHAFT (18 IN)	DRILL SHAFT (36 IN)	CL C CONC (ABUT)	CL C CONC (CAP)	CL C CONC (COLUMN)	REINF CONC SLAB	APPROACH SLAB	PRESTR CONC GIRDER (TX54)	RIPRAP (CONC)(4 IN)	RAIL (TY SSTR)	SEALED EXPANSION JOINT (4 IN) (SEJ - M)
UNIT	CY	LF	LF	CY	CY	CY	SF	CY	LF	CY	LF	LF
ABUTMENT 1	160	80	200	41.2				50.6		162	44.0	48
ABUTMENT 56	205	40	280	47.1				47.3		66	44.0	59
BENT TYPE 1 (BENTS 2 TO 10, AND 27 TO 30)			1,600		289.9	340.1						
BENT TYPE 2 (BENTS 11 TO 26, AND 31 TO 43)			3,945		507.5	539.0						
BENT TYPE 3 (BENT 44)			270		31.7	22.0						
BENT TYPE 4 (BENT 45)			225		27.2	17.0						
BENT TYPE 5 (BENT 46)			225		24.4	15.7						
BENT TYPE 6 (BENTS 47 AND 48)			360		46.2	23.0						
BENT TYPE 7 (BENT 49)			225		24.9	14.4						
BENT TYPE 8 (BENTS 50 TO 55)			1,175		160.2	66.9						
250.00 PRSTR CONC I-GIRDER UNIT 1*							10,000		1,245.00		500.0	
375.00 PRSTR CONC I-GIRDER UNIT 2*							15,000		1,867.50		750.0	48
375.00 PRSTR CONC I-GIRDER UNIT 3*							15,000		1,867.50		750.0	48
336.00 PRSTR CONC I-GIRDER UNIT 4*							13,000		1,617.46		650.0	48
375.00 PRSTR CONC I-GIRDER UNIT 5*							15,000		1,867.50		750.0	39
375.00 PRSTR CONC I-GIRDER UNIT 6*							15,000		1,867.50		750.0	39
375.00 PRSTR CONC I-GIRDER UNIT 7*							15,000		1,867.50		750.0	39
375.00 PRSTR CONC I-GIRDER UNIT 8*							15,000		1,867.50		750.0	39
263.50 PRSTR CONC I-GIRDER UNIT 9*							10,981		1,365.07		549.0	39
375.00 PRSTR CONC I-GIRDER UNIT 10*							15,000		1,867.50		750.0	48
298.50 PRSTR CONC I-GIRDER UNIT 11*							11,499		1,429.93		575.0	48
375.00 PRSTR CONC I-GIRDER UNIT 12*							15,000		1,867.50		750.0	39
375.00 PRSTR CONC I-GIRDER UNIT 13*							15,000		1,867.50		750.0	39
375.00 PRSTR CONC I-GIRDER UNIT 14*							15,000		1,867.50		750.0	39
250.00 PRSTR CONC I-GIRDER UNIT 15*							10,000		1,245.00		500.0	39
375.00 PRSTR CONC I-GIRDER UNIT 16*							22,133		2,989.60		750.5	70
370.00 PRSTR CONC I-GIRDER UNIT 17*							20,236		2,700.25		740.4	51
360.00 PRSTR CONC I-GIRDER UNIT 18*							21,693		2,880.48		723.1	59
360.00 PRSTR CONC I-GIRDER UNIT 19*							21,696		2,880.48		723.2	59
OVERALL TOTAL	365	120	8,505	88.3	1112.0	1038.1	291,238	97.9	37,028.27	228	13,299.2	937

* SEJ-M QTY IS PROVIDED AT BEGINNING OF EACH UNIT.

HL-93 LOADING

STATE OF TEXAS
MOHAMAD MANSOUR
110096
LICENSED
PROFESSIONAL ENGINEER

5/18/2023

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NO.	DATE	REVISION	APPROV.
1	05/2023	ITEM # CHANGED	

Texas Department of Transportation

PGAL
TBPE REG. NO. F-2742

3131 Briarpark Dr, Suite 200
Houston, Texas 77042
(713) 622-1444

US 281
ESTIMATED QUANTITIES & BEARING SEAT ELEV. SB MAIN LANE

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0598

1 REVISED 05/18/2023

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SUMMARY OF ESTIMATED BRIDGE QUANTITIES

ITEM	400 6005	416 6001	416 6004	420 6013	420 6029	420 6037	422 6001	422 6015	425 6039	432 6024	450 6023	454 6018
DESCRIPTION	CEM STABIL BKFL	DRILL SHAFT (18 IN)	DRILL SHAFT (36 IN)	CL C CONC (ABUT) (1)	CL C CONC (CAP) (1)	CL C CONC (COLUMN)	REINF CONC SLAB	APPROACH SLAB	PRESTR CONC GIRDER (TX54)	RIPRAP (STONE COMMON)(DRY)(12 IN)	RAIL (TY SSTR)	SEALED EXPANSION JOINT (4 IN) (SEJ - M)
UNIT	CY	LF	LF	CY	CY	CY	SF	CY	LF	CY	LF	LF
ABUTMENT 1	150	80	200	39.7				46.4		337	44.0	44
ABUTMENT 6	150	100	250	39.7				46.3		176	44.0	44
BENT 2			165		21.0	13.4						
BENT 3			180		21.0	13.4						44
BENT 4			180		21.0	13.4						
BENT 5			180		21.0	5.5						
220.00 PRSTR CONC I-GIRDER UNIT 1							8,800		1,094.81		440.0	
330.00 PRSTR CONC I-GIRDER UNIT 2							13,200		1,642.31		660.0	
OVERALL TOTAL	300	180	1,155	79.4	84.0	45.7	22,000	92.7	2,737.12	513	1,188.0	132

(1) ABUTMENTS & BENTS QUANTITY INCLUDES THE SHEAR KEY (SEE TxDOT STANDARD IGSK FOR DETAILS)

BEARING SEAT ELEVATIONS

		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
ABUT 1	(FWD)	233.389	233.583	233.778	233.972	234.167
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
BENT 2	(BK)	233.928	234.122	234.317	234.511	234.706
	(FWD)	233.938	234.132	234.327	234.521	234.716
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
BENT 3	(BK)	234.478	234.672	234.867	235.061	235.256
	(FWD)	234.488	234.682	234.877	235.071	235.266
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
BENT 4	(BK)	235.028	235.222	235.417	235.611	235.806
	(FWD)	235.038	235.232	235.427	235.621	235.816
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
BENT 5	(BK)	235.578	235.772	235.967	236.161	236.356
	(FWD)	235.588	235.782	235.977	236.171	236.366
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
ABUT 6	(BK)	236.127	236.321	236.516	236.711	236.905

HL-93 LOADING

STATE OF TEXAS
MOHAMAD MANSOUR
110096
LICENSED
PROFESSIONAL ENGINEER
5/18/2023

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NO.	DATE	REVISION	APPROV.
1	05/2023	ITEM # CHANGED	

Texas Department of Transportation

PGAL
TBPE REG. NO. F-2742

3131 Briarpark Dr, Suite 200
Houston, Texas 77042
(713) 622-1444

US 281
ESTIMATED QUANTITIES & BEARING SEAT ELEV. NB FRONTAGE

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0681

1 REVISED 05/18/2023

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SUMMARY OF ESTIMATED BRIDGE QUANTITIES

ITEM	400 6005	416 6001	416 6004	420 6013	420 6029	420 6037	422 6001	422 6015	425 6039	432 6024	450 6023	454 6018
DESCRIPTION	CEM STABIL BKFL	DRILL SHAFT (18 IN)	DRILL SHAFT (36 IN)	CL C CONC (ABUT) (1)	CL C CONC (CAP) (1)	CL C CONC (COLUMN)	REINF CONC SLAB	APPROACH SLAB	PRESTR CONC GIRDER (TX54)	RIPRAP (STONE COMMON)(DRY)(12 IN)	RAIL (TY SSTR)	SEALED EXPANSION JOINT (4 IN) (SEJ - M)
UNIT	CY	LF	LF	CY	CY	CY	SF	CY	LF	CY	LF	LF
ABUTMENT 1	150	100	250	39.7				46.3		337	44.0	44
ABUTMENT 6	150	90	225	39.7				46.3		348	44.0	44
BENT 2			180		21.0	12.6						
BENT 3			180		21.0	13.4						44
BENT 4			180		21.0	12.6						
BENT 5			180		21.0	11.8						
220.00 PRSTR CONC I-GIRDER UNIT 1							8,800		1,094.81		440.0	
330.00 PRSTR CONC I-GIRDER UNIT 2							13,200		1,642.31		660.0	
OVERALL TOTAL	300	190	1,195	79.4	84.0	50.4	22,000	92.6	2,737.12	685	1,188.0	132

(1) ABUTMENTS & BENTS QUANTITY INCLUDES THE SHEAR KEY (SEE TxDOT STANDARD IGSK FOR DETAILS)

BEARING SEAT ELEVATIONS

		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
ABUT 1	(FWD)	233.974	233.829	233.683	233.538	233.392
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
BENT 2	(BK)	234.513	234.368	234.222	234.077	233.931
	(FWD)	234.523	234.378	234.232	234.087	233.941
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
BENT 3	(BK)	235.063	234.918	234.772	234.627	234.481
	(FWD)	235.073	234.928	234.782	234.637	234.491
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
BENT 4	(BK)	235.613	235.468	235.322	235.177	235.031
	(FWD)	235.623	235.478	235.332	235.187	235.041
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
BENT 5	(BK)	236.163	236.018	235.872	235.727	235.581
	(FWD)	236.173	236.028	235.882	235.737	235.591
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
ABUT 6	(BK)	236.712	236.567	236.422	236.276	236.131

HL-93 LOADING

STATE OF TEXAS
MOHAMAD MANSOUR
110096
LICENSED
PROFESSIONAL ENGINEER
5/18/2023

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NO.	DATE	REVISION	APPROV.
1	05/2023	ITEM # CHANGED	

Texas Department of Transportation

PGAL
TBPE REG. NO. F-2742
3131 Briarpark Dr, Suite 200
Houston, Texas 77042
(713) 622-1444

US 281
ESTIMATED QUANTITIES & BEARING SEAT ELEV. SB FRONTAGE

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0697

1 REVISED 05/18/2023

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DW

SUMMARY OF ESTIMATED BRIDGE QUANTITIES

ITEM	400 6005	416 6001	416 6004	420 6013	420 6029	420 6037	422 6001	422 6015	425 6039	432 6024	450 6023	454 6018
DESCRIPTION	CEM STABIL BKFL	DRILL SHAFT (18 IN)	DRILL SHAFT (36 IN)	CL C CONC (ABUT)	CL C CONC (CAP)	CL C CONC (COLUMN)	REINF CONC SLAB	APPROACH SLAB	PRESTR CONC GIRDER (TX54)	RIPRAP (STONE COMMON)(DRY)(12 IN)	RAIL (TY SSTR)	SEALED EXPANSION JOINT (4 IN) (SEJ - M)
UNIT	CY	LF	LF	CY	CY	CY	SF	CY	LF	CY	LF	LF
ABUTMENT 1	69	90	135	26.6				19.3		93.2	36.0	25
BENT 2			150		11.1	7.9						
BENT 3			150		11.1	11.0						25
BENT 4			150		11.1	13.4						
BENT 5			150		11.1	14.1						
250.00 PRSTR CONC I-GIRDER UNIT 1							6,500		996.00		500.0	
374.99 PRSTR CONC I-GIRDER UNIT 2							9,771		1,497.19		749.8	
OVERALL TOTAL	69	90	600	26.6	44.4	46.4	16,271	19.3	2,493.19	93.2	1,285.8	50

BEARING SEAT ELEVATIONS

		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4
ABUT 1	(FWD)	222.739	222.872	223.005	223.139
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4
BENT 2	(BK)	226.183	226.316	226.449	226.583
	(FWD)	226.239	226.372	226.505	226.639
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4
BENT 3	(BK)	229.683	229.816	229.949	230.083
	(FWD)	229.739	229.872	230.005	230.139
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4
BENT 4	(BK)	232.755	232.889	233.022	233.155
	(FWD)	232.794	232.927	233.061	233.194
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4
BENT 5	(BK)	234.495	234.629	234.762	234.895
	(FWD)	234.512	234.645	234.779	234.912
		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4
BENT 42	(BK)	234.874	235.006	235.138	235.271

HL-93 LOADING

STATE OF TEXAS
MOHAMAD MANSOUR
110096
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PROFESSIONAL ENGINEER
5/18/2023

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NO.	DATE	REVISION	APPROV.
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TBPE REG. NO. F-2742
3131 Briarpark Dr, Suite 200
Houston, Texas 77042
(713) 622-1444

US 281
ESTIMATED QUANTITIES & BEARING SEAT ELEV. NB RAMP 5

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0713

1 REVISED 05/18/2023

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SUMMARY OF ESTIMATED BRIDGE QUANTITIES

ITEM	400 6005	416 6001	416 6004	420 6013	420 6029	420 6037	422 6001	422 6015	425 6039	432 6024	450 6023	454 6018
DESCRIPTION	CEM STABIL BKFL	DRILL SHAFT (18 IN)	DRILL SHAFT (36 IN)	CL C CONC (ABUT)	CL C CONC (CAP)	CL C CONC (COLUMN)	REINF CONC SLAB	APPROACH SLAB	PRESTR CONC GIRDER (TX54)	RIPRAP (STONE COMMON)(DRY)(12 IN)	RAIL (TY SSTR)	SEALED EXPANSION JOINT (4 IN) (SEJ - M)
UNIT	CY	LF	LF	CY	CY	CY	SF	CY	LF	CY	LF	LF
ABUTMENT 1	69	90	135	26.4				19.3		93	36.0	25
BENT 2			150		10.7	2.4						
BENT 3			150		10.7	4.7						25
BENT 4			150		10.7	6.3						
BENT 5			150		10.7	7.1						
250.00 PRSTR CONC I-GIRDER UNIT 1							6,500		996.00		500.0	
375.03 PRSTR CONC I-GIRDER UNIT 2							9,747		1,497.04		751.5	
OVERALL TOTAL	69	90	600	26.4	42.8	13.4	16,247	19.3	2,493.04	93	1,287.5	50

BEARING SEAT ELEVATIONS

		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4
ABUT 1	(FWD)	221.787	221.654	221.52	221.387

		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4
BENT 2	(BK)	225.784	225.65	225.517	225.384
	(FWD)	225.849	225.715	225.582	225.449

		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4
BENT 3	(BK)	229.759	229.625	229.492	229.359
	(FWD)	229.816	229.682	229.549	229.416

		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4
BENT 4	(BK)	232.692	232.559	232.426	232.292
	(FWD)	232.729	232.595	232.462	232.328

		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4
BENT 5	(BK)	234.322	234.189	234.055	233.922
	(FWD)	234.338	234.204	234.071	233.938

		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4
BENT 44	(BK)	234.645	234.513	234.381	234.249

HL-93 LOADING

STATE OF TEXAS
MOHAMAD MANSOUR
110096
LICENSED
PROFESSIONAL ENGINEER

5/18/2023

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Texas Department of Transportation

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TBPE REG. NO. F-2742
3131 Briarpark Dr, Suite 200
Houston, Texas 77042
(713) 622-1444

US 281
ESTIMATED QUANTITIES & BEARING SEAT ELEV. SB RAMP 6

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0728

1 REVISED 05/18/2023

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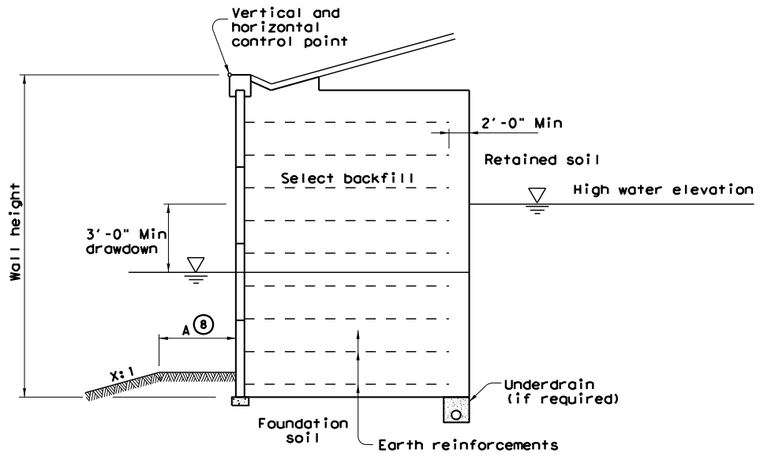
WALL SUMMARY

MSE Retaining Wall	Begin Station ①	End Station ①	Retained Soil Friction Angle ②	Foundation Soil Friction Angle ②	Ground Imporvement ③	Min. Earth Reinf. Length (ft) ④	Min Wall Embedment ⑤	Underdrain Required ⑥	Drawdown Analysis ⑦	Bench Width ⑧
Wall #1	341+99.19	344+89.19	28	26	Not Required	8.0	2'-0"	Required	Not Required	4'-0"
Wall #1	344+89.19	349+14.19	28	26	Not Required	19.7	2'-0"	Required	Not Required	4'-0"
Wall #1	349+14.19	349+64.19	28	26	Not Required	23.3	2'-0"	Required	Not Required	4'-0"
Wall #1	349+64.19	351+48.39	28	26	Not Required	31.9	2'-0"	Required	Not Required	4'-0"
Wall #2	342+99.43	345+85.43	28	26	Not Required	8.0	2'-0"	Required	Not Required	4'-0"
Wall #2	345+85.43	350+35.43	28	26	Not Required	19.7	2'-0"	Required	Not Required	4'-0"
Wall #2	350+35.43	351+10.43	28	26	Not Required	23.3	2'-0"	Required	Not Required	4'-0"
Wall #2	351+10.43	353+61.63	28	26	Not Required	32.9	2'-0"	Required	Not Required	4'-0"
Wall #3	357+73.39	365+14.19	28	28	Not Required	21.7	2'-0"	Required	Not Required	4'-0"
Wall #3	365+14.19	369+00.19	28	28	Not Required	8.0	2'-0"	Required	Not Required	4'-0"
Wall #4	359+86.63	366+85.43	28	28	Not Required	21.1	2'-0"	Required	Not Required	4'-0"
Wall #4	366+85.43	370+00.43	28	28	Not Required	8.0	2'-0"	Required	Not Required	4'-0"

GENERAL STRUCTURE NOTES

WALL SUMMARY DATA ARE BASED ON GEOTECHNICAL REPORT #HG1910351.6.2 DATED 09/28/2022 BY HVJ ASSOCIATES, INC.



TYPICAL SECTION

(Rapid drawdown condition.)

① Indicate limits for which the stated soil design requirements and assumptions are applicable.

② Base the listed retained and foundation friction angle on local experience or measured/correlated long term strength values.

③ Indicate if ground improvement is required or not required. If shown as required, refer to ground improvement detail(s) shown elsewhere in the plans for additional information.

④ Indicate on table both the minimum length and length ratio required. The minimum default length of earth reinforcements is either 8 feet or 70% of the wall height, whichever is greater. Wall height and design wall height may differ depending on project geometry and loading conditions. Note: Wall height at bridge abutments is equal to the distance between the top of leveling pad and finished grade at the bridge abutment backwall.

⑤ Guidance to wall designer of record for determination of minimum wall embedment. Unless noted elsewhere in the plans, provide a minimum embedment from the top of leveling pad to finish grade of
- 1 foot for level ground where there is no potential for erosion or future excavation, or
- 2 feet for sloping ground (4.0H:1.0V or steeper) or where there is potential for removal of soil in front of the wall.

⑥ Indicate if underdrain is required or not required.

⑦ Indicate if rapid drawdown analysis is required.

⑧ Horizontal bench width at base of wall varies. Use the following criteria to establish base width:
A = 2-foot Min for X > 4 or
A = 4-foot Min for X = 4
Applicable to both drawdown and dry condition.

⚠ REVISED SHEET 5/18/2023

STATE OF TEXAS
LONG H. BUI
120630
LICENSED PROFESSIONAL ENGINEER

5/18/2023

HL93 LOADING

S&B INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281
OVER CR129 MECHANICALLY STABILIZED EARTH RETAINING WALL DESIGN DATA

SCALE:1"=20' SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0778

DATE: 5/18/2023 2:23:57 PM
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NOTES:

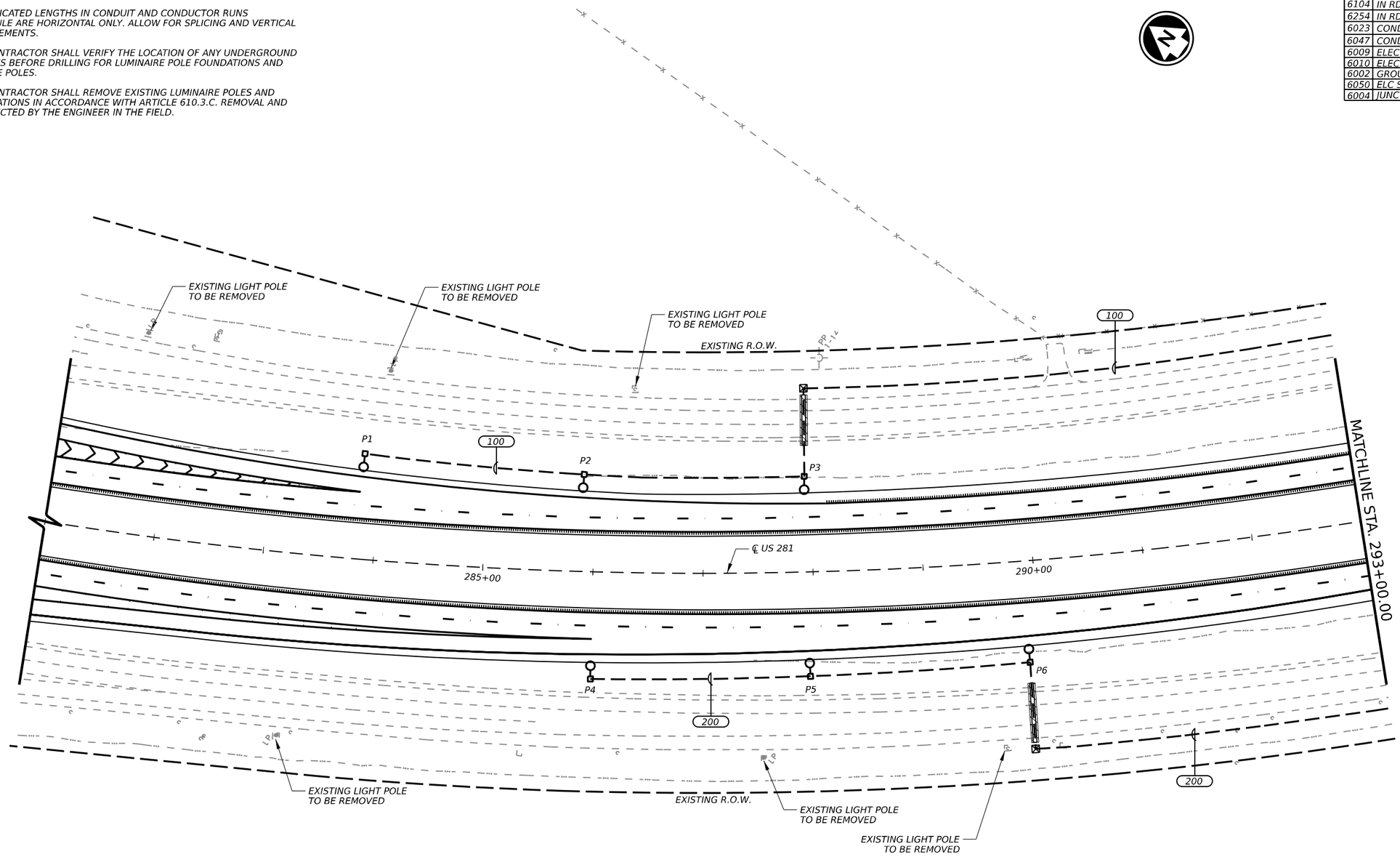
1. POLE LOCATION MAY BE ADJUSTED 3' TO 5' IN ORDER TO AVOID THE EXISTING AND PROPOSED UTILITIES AND DRAINAGE STRUCTURES.
2. ALL INDICATED LENGTHS IN CONDUIT AND CONDUCTOR RUNS SCHEDULE ARE HORIZONTAL ONLY. ALLOW FOR SPLICING AND VERTICAL REQUIREMENTS.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ANY UNDERGROUND UTILITIES BEFORE DRILLING FOR LUMINAIRE POLE FOUNDATIONS AND SERVICE POLES.
4. THE CONTRACTOR SHALL REMOVE EXISTING LUMINAIRE POLES AND FOUNDATIONS IN ACCORDANCE WITH ARTICLE 610.3.C. REMOVAL AND AS DIRECTED BY THE ENGINEER IN THE FIELD.

ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY
6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	60
6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	0
6254	IN RD IL (TY SA 40T-8) (250W EQ) LED	EA	6
6023	CONDT (PVC) (SCH 40) (2")	LF	1,666
6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	101
6009	ELEC CONDR (NO.6) BARE	LF	1,767
6010	ELEC CONDR (NO.6) INSULATED	LF	3,534
6002	GROUND BOX TY A (122311) W/APRON	EA	0
6050	ELC SRV TY A 240/480 060(NS)SS(T)TP(O)	EA	0
6004	JUNCTION BOX (INSTALL)	EA	2

PLAN LEGEND

- IN RD IL (TY SA 30T-8) (250 W EQ) (LED)
- IN RD IL (U/P) (TY 1) (150 W EQ) (LED)
- ELECTRICAL SERVICE POLE
- JUNCTION BOX, BELOW GRADE
- GROUND BOX, BELOW GRADE
- PROPOSED CONDUIT (PVC) (SCHD 40)
- PROPOSED CONDUIT BORE (PVC) (SCHD 80)
- PROPOSED 24" BORE
- EXISTING POWER POLE



STATE OF TEXAS
DANIEL GARCES
100029
LICENSED PROFESSIONAL ENGINEER
5/22/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

ILLUMINATION LAYOUT

SCALE: 1"=100' SHEET 1 OF 9

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0984

⚠ REVISED SHEET 5/22/2023

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CK: DW: CK: DW:

NOTES:

1. POLE LOCATION MAY BE ADJUSTED 3' TO 5' IN ORDER TO AVOID THE EXISTING AND PROPOSED UTILITIES AND DRAINAGE STRUCTURES.
2. ALL INDICATED LENGTHS IN CONDUIT AND CONDUCTOR RUNS SCHEDULE ARE HORIZONTAL ONLY. ALLOW FOR SPLICING AND VERTICAL REQUIREMENTS.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ANY UNDERGROUND UTILITIES BEFORE DRILLING FOR LUMINAIRE POLE FOUNDATIONS AND SERVICE POLES.
4. THE CONTRACTOR SHALL REMOVE EXISTING LUMINAIRE POLES AND FOUNDATIONS IN ACCORDANCE WITH ARTICLE 610.3.C. REMOVAL AND AS DIRECTED BY THE ENGINEER IN THE FIELD.

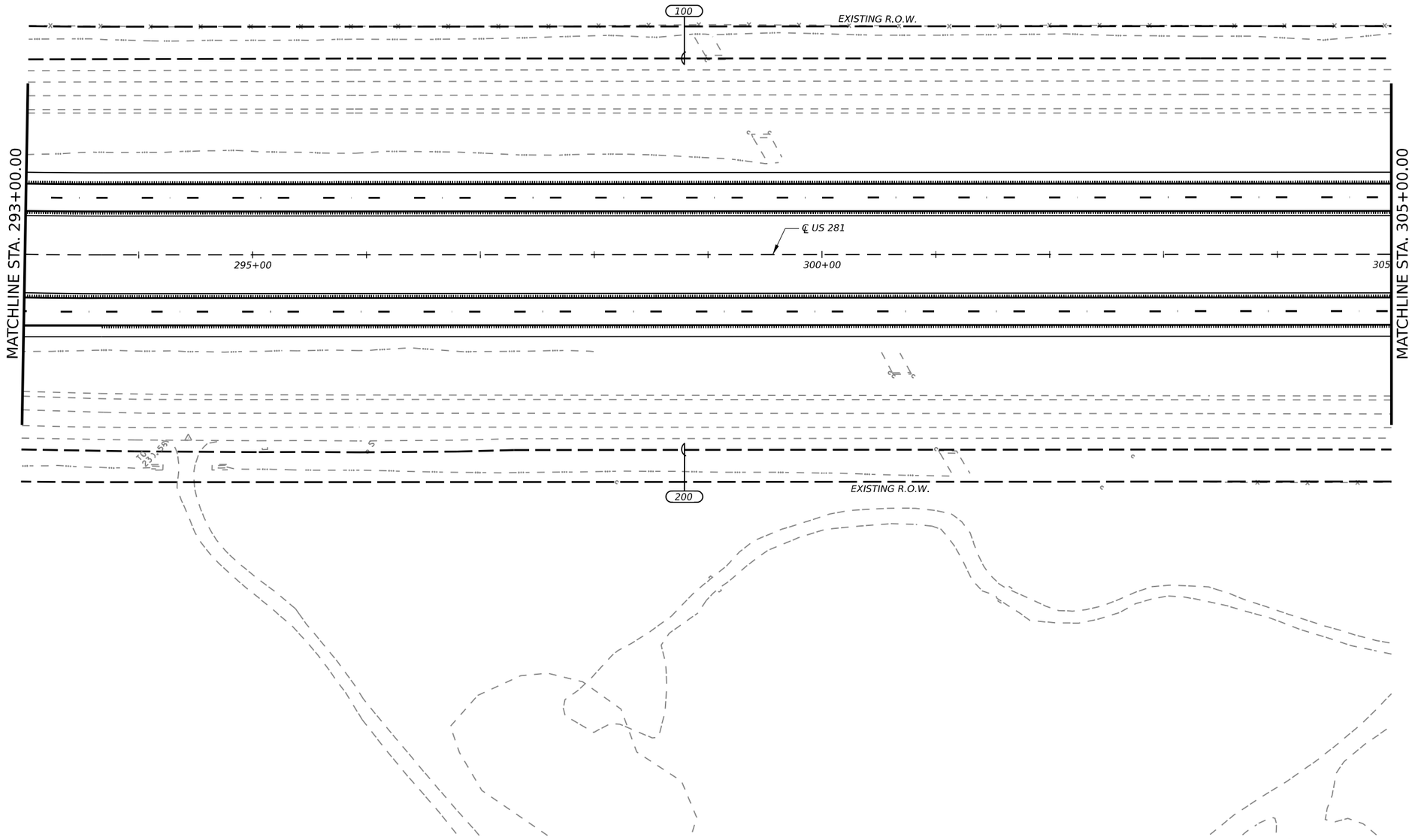
ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY
6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	0
6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	0
6254	IN RD IL (TY SA 40T-8) (250W EQ) LED	EA	0
6023	CONDT (PVC) (SCH 40) (2")	LF	2,400
6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	0
6009	ELEC CONDR (NO.6) BARE	LF	2,400
6010	ELEC CONDR (NO.6) INSULATED	LF	4,800
6002	GROUND BOX TY A (122311) W/APRON	EA	0
6050	ELC SRV TY A 240/480 060(NS)SS(T)TP(O)	EA	0
6004	JUNCTION BOX (INSTALL)	EA	0

1

PLAN LEGEND

- IN RD IL (TY SA 30T-8) (250 W EQ) (LED)
- IN RD IL (U/P) (TY 1) (150 W EQ) (LED)
- ELECTRICAL SERVICE POLE
- JUNCTION BOX, BELOW GRADE
- GROUND BOX, BELOW GRADE
- PROPOSED CONDUIT (PVC) (SCHD 40)
- PROPOSED CONDUIT BORE (PVC) (SCHD 80)
- PROPOSED 24" BORE
- EXISTING POWER POLE



1 REVISED SHEET 5/22/2023

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED PROFESSIONAL ENGINEER
P.E.
5/22/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

ILLUMINATION LAYOUT

SCALE: 1"=100' SHEET 2 OF 9

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0985

DATE: 5/22/2023 12:06:57 PM
FILE: N:\Project\u2994WA#02 U2994.200 US 281\500 PS&E\PlanSet01\ORD14 - Design\Plan Set\8. Traffic\US281 ILLUM PLAN 02.dgn

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NOTES:

1. POLE LOCATION MAY BE ADJUSTED 3' TO 5' IN ORDER TO AVOID THE EXISTING AND PROPOSED UTILITIES AND DRAINAGE STRUCTURES.
2. ALL INDICATED LENGTHS IN CONDUIT AND CONDUCTOR RUNS SCHEDULE ARE HORIZONTAL ONLY. ALLOW FOR SPLICING AND VERTICAL REQUIREMENTS.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ANY UNDERGROUND UTILITIES BEFORE DRILLING FOR LUMINAIRE POLE FOUNDATIONS AND SERVICE POLES.
4. THE CONTRACTOR SHALL REMOVE EXISTING LUMINAIRE POLES AND FOUNDATIONS IN ACCORDANCE WITH ARTICLE 610.3.C. REMOVAL AND AS DIRECTED BY THE ENGINEER IN THE FIELD.

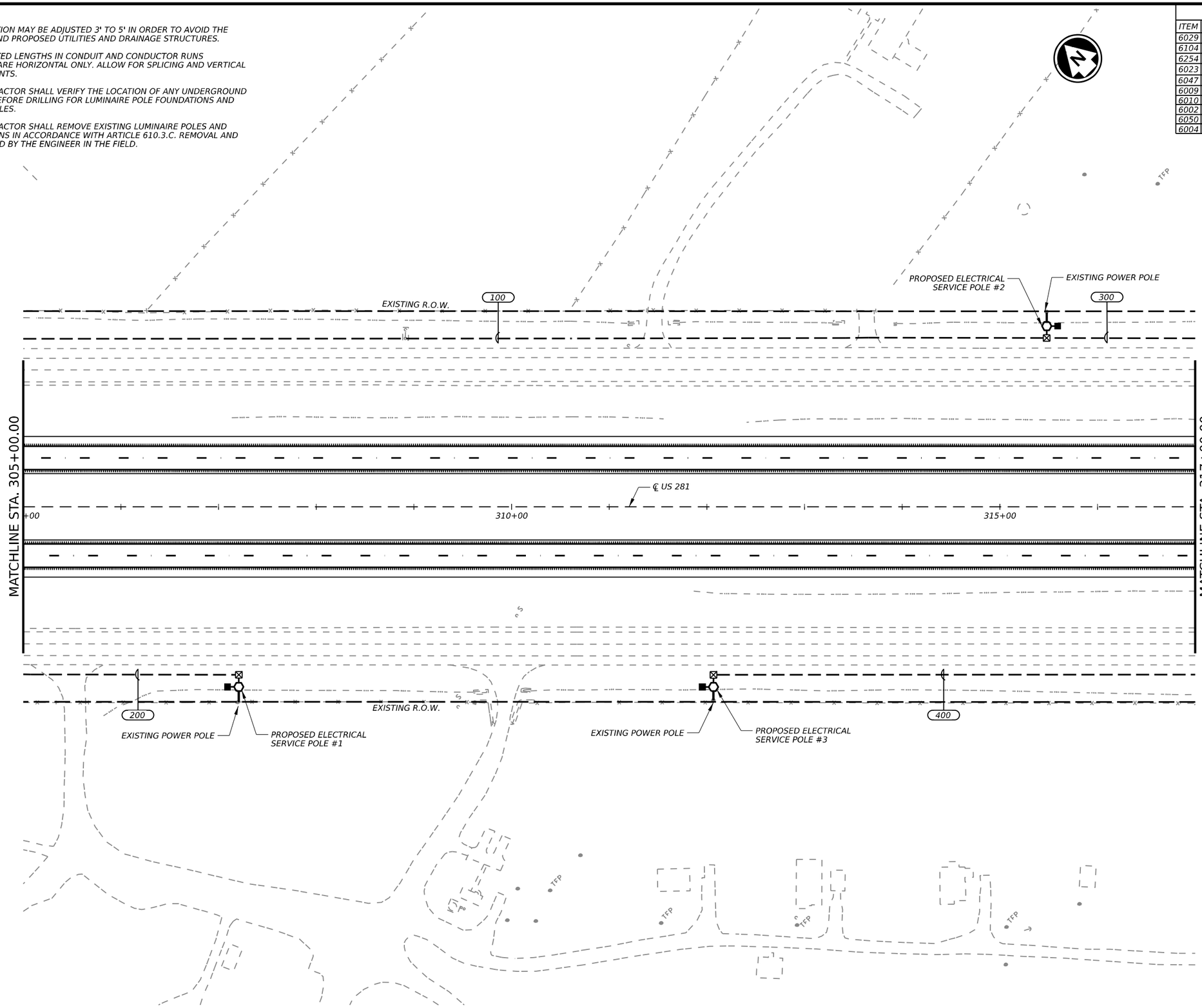
ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY.
6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	0
6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	0
6254	IN RD IL (TY SA 40T-8) (250W EQ) LED	EA	0
6023	CONDT (PVC) (SCH 40) (2")	LF	1,931
6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	0
6009	ELEC CONDR (NO.6) BARE	LF	1,931
6010	ELEC CONDR (NO.6) INSULATED	LF	3,832
6002	GROUND BOX TY A (122311) W/APRON	EA	3
6050	ELC SRV TY A 240/480 060(NS)SS(T)TP(O)	EA	3
6004	JUNCTION BOX (INSTALL)	EA	3

1

PLAN LEGEND

- IN RD IL (TY SA 30T-8) (250 W EQ) (LED)
- IN RD IL (U/P) (TY 1) (150 W EQ) (LED)
- ELECTRICAL SERVICE POLE
- JUNCTION BOX, BELOW GRADE
- GROUND BOX, BELOW GRADE
- PROPOSED CONDUIT (PVC) (SCHD 40)
- PROPOSED CONDUIT BORE (PVC) (SCHD 80)
- PROPOSED 24" BORE
- EXISTING POWER POLE



1 REVISED SHEET 5/22/2023

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED PROFESSIONAL ENGINEER
P.E.
5/22/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

ILLUMINATION LAYOUT

SCALE: 1"=100' SHEET 3 OF 9

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0986

DATE: 5/22/2023 12:06:58 PM
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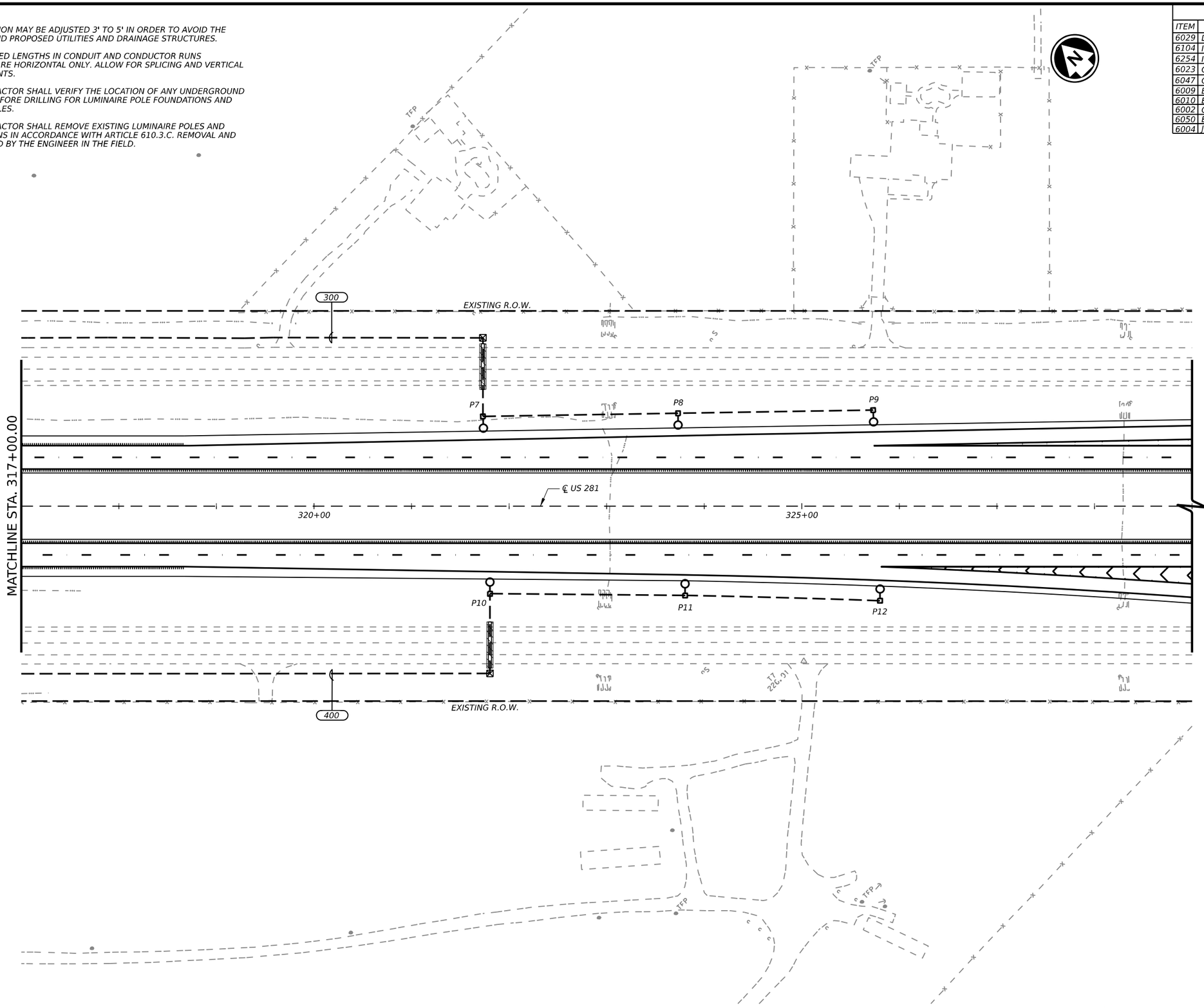
NOTES:

1. POLE LOCATION MAY BE ADJUSTED 3' TO 5' IN ORDER TO AVOID THE EXISTING AND PROPOSED UTILITIES AND DRAINAGE STRUCTURES.
2. ALL INDICATED LENGTHS IN CONDUIT AND CONDUCTOR RUNS SCHEDULE ARE HORIZONTAL ONLY. ALLOW FOR SPLICING AND VERTICAL REQUIREMENTS.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ANY UNDERGROUND UTILITIES BEFORE DRILLING FOR LUMINAIRE POLE FOUNDATIONS AND SERVICE POLES.
4. THE CONTRACTOR SHALL REMOVE EXISTING LUMINAIRE POLES AND FOUNDATIONS IN ACCORDANCE WITH ARTICLE 610.3.C. REMOVAL AND AS DIRECTED BY THE ENGINEER IN THE FIELD.



ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY
6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	60
6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	0
6254	IN RD IL (TY SA 40T-8) (250W EQ) LED	EA	6
6023	CONDT (PVC) (SCH 40) (2")	LF	1,822
6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	94
6009	ELEC CONDR (NO.6) BARE	LF	1,916
6010	ELEC CONDR (NO.6) INSULATED	LF	3,832
6002	GROUND BOX TY A (122311) W/APRON	EA	0
6050	ELC SRV TY A 240/480 060(NS)SS(T)TP(O)	EA	2
6004	JUNCTION BOX (INSTALL)	EA	2

1

PLAN LEGEND

- IN RD IL (TY SA 30T-8) (250 W EQ) (LED)
- IN RD IL (U/P) (TY 1) (150 W EQ) (LED)
- ELECTRICAL SERVICE POLE
- JUNCTION BOX, BELOW GRADE
- GROUND BOX, BELOW GRADE
- PROPOSED CONDUIT (PVC) (SCHD 40)
- PROPOSED CONDUIT BORE (PVC) (SCHD 80)
- PROPOSED 24" BORE
- EXISTING POWER POLE

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED
PROFESSIONAL ENGINEER

5/22/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

ILLUMINATION LAYOUT

SCALE: 1"=100' SHEET 4 OF 9

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0987

1 REVISED SHEET 5/22/2023

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NOTES:

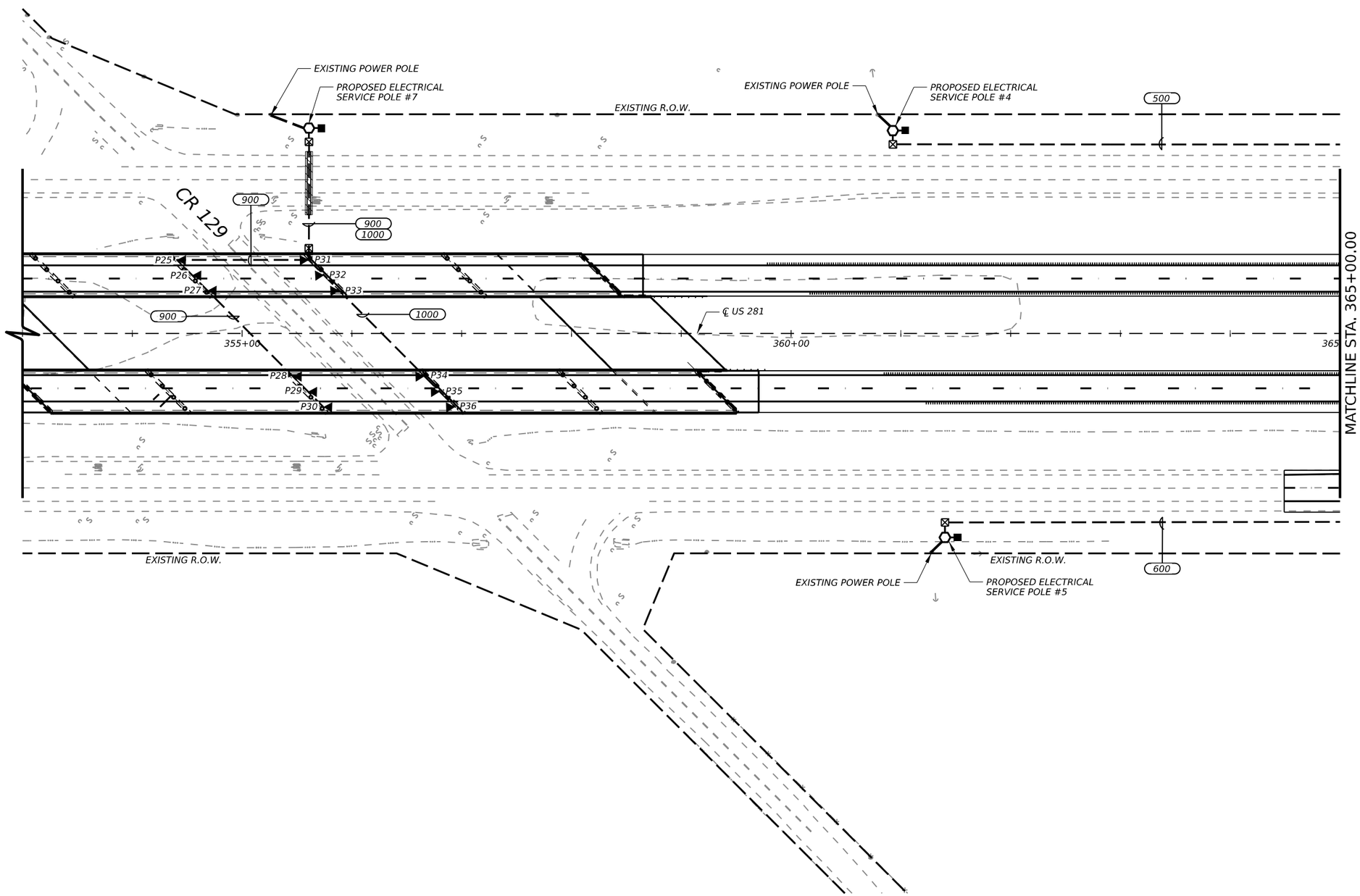
1. POLE LOCATION MAY BE ADJUSTED 3' TO 5' IN ORDER TO AVOID THE EXISTING AND PROPOSED UTILITIES AND DRAINAGE STRUCTURES.
2. ALL INDICATED LENGTHS IN CONDUIT AND CONDUCTOR RUNS SCHEDULE ARE HORIZONTAL ONLY. ALLOW FOR SPLICING AND VERTICAL REQUIREMENTS.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ANY UNDERGROUND UTILITIES BEFORE DRILLING FOR LUMINAIRE POLE FOUNDATIONS AND SERVICE POLES.
4. THE CONTRACTOR SHALL REMOVE EXISTING LUMINAIRE POLES AND FOUNDATIONS IN ACCORDANCE WITH ARTICLE 610.3.C. REMOVAL AND AS DIRECTED BY THE ENGINEER IN THE FIELD.

ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY
6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	0
6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	12
6254	IN RD IL (TY SA 40T-8) (250W EQ) LED	EA	0
6023	CONDT (PVC) (SCH 40) (2")	LF	1,400
6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	116
6009	ELEC CONDR (NO.6) BARE	LF	1,516
6010	ELEC CONDR (NO.6) INSULATED	LF	3,032
6002	GROUND BOX TY A (122311) W/APRON	EA	3
6050	ELC SRV TY A 240/480 060(NS)SS(T)TP(O)	EA	3
6004	JUNCTION BOX (INSTALL)	EA	4

PLAN LEGEND

- IN RD IL (TY SA 30T-8) (250 W EQ) (LED)
- IN RD IL (U/P) (TY 1) (150 W EQ) (LED)
- ELECTRICAL SERVICE POLE
- JUNCTION BOX, BELOW GRADE
- GROUND BOX, BELOW GRADE
- PROPOSED CONDUIT (PVC) (SCHD 40)
- PROPOSED CONDUIT BORE (PVC) (SCHD 80)
- PROPOSED 24" BORE
- EXISTING POWER POLE



⚠ REVISED SHEET 5/22/2023

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED PROFESSIONAL ENGINEER
P.E.
5/22/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

ILLUMINATION LAYOUT

SCALE: 1"=100' SHEET 5 OF 9

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0988

DATE: 5/22/2023 12:07:01 PM
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NOTES:

1. POLE LOCATION MAY BE ADJUSTED 3' TO 5' IN ORDER TO AVOID THE EXISTING AND PROPOSED UTILITIES AND DRAINAGE STRUCTURES.
2. ALL INDICATED LENGTHS IN CONDUIT AND CONDUCTOR RUNS SCHEDULE ARE HORIZONTAL ONLY. ALLOW FOR SPLICING AND VERTICAL REQUIREMENTS.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ANY UNDERGROUND UTILITIES BEFORE DRILLING FOR LUMINAIRE POLE FOUNDATIONS AND SERVICE POLES.
4. THE CONTRACTOR SHALL REMOVE EXISTING LUMINAIRE POLES AND FOUNDATIONS IN ACCORDANCE WITH ARTICLE 610.3.C. REMOVAL AND AS DIRECTED BY THE ENGINEER IN THE FIELD.

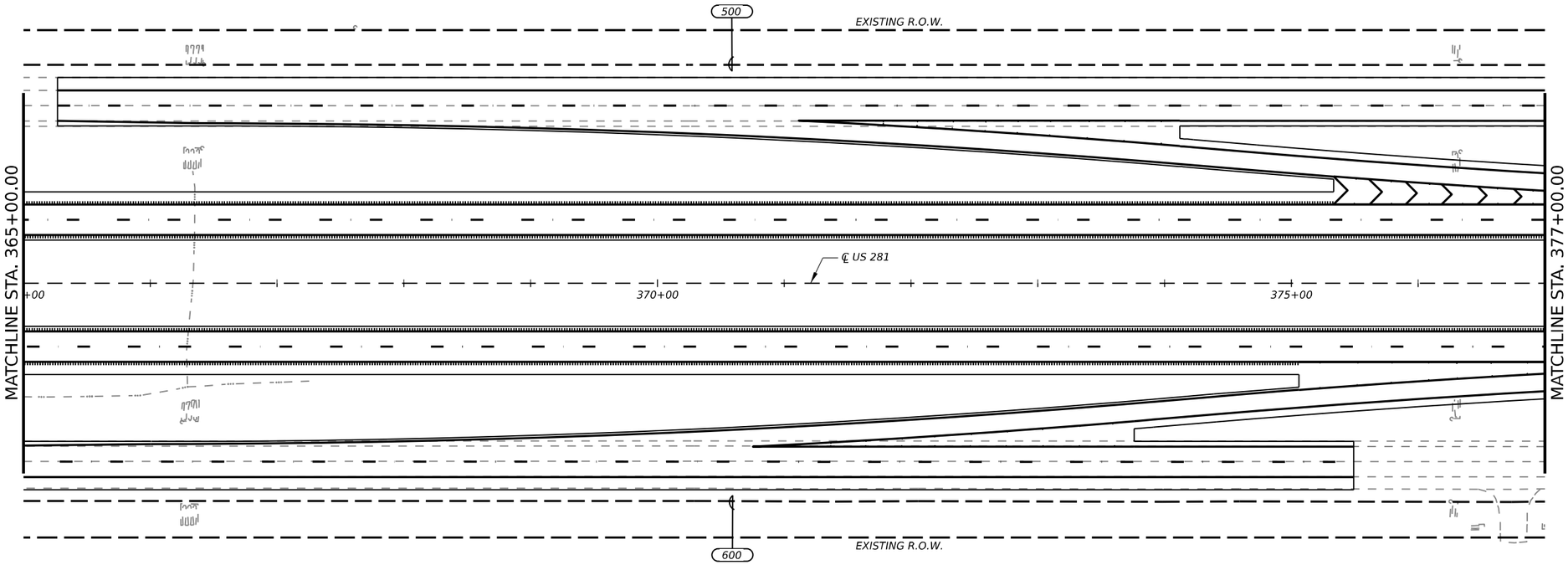
ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY
6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	0
6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	0
6254	IN RD IL (TY SA 40T-8) (250W EQ) LED	EA	0
6023	CONDT (PVC) (SCH 40) (2")	LF	2,400
6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	0
6009	ELEC CONDR (NO.6) BARE	LF	2,400
6010	ELEC CONDR (NO.6) INSULATED	LF	4,800
6002	GROUND BOX TY A (122311) W/APRON	EA	0
6050	ELC SRV TY A 240/480 060(NS)SS(T)TP(O)	EA	0
6004	JUNCTION BOX (INSTALL)	EA	0

1

PLAN LEGEND

- IN RD IL (TY SA 30T-8) (250 W EQ) (LED)
- IN RD IL (U/P) (TY 1) (150 W EQ) (LED)
- ELECTRICAL SERVICE POLE
- JUNCTION BOX, BELOW GRADE
- GROUND BOX, BELOW GRADE
- PROPOSED CONDUIT (PVC) (SCHD 40)
- PROPOSED CONDUIT BORE (PVC) (SCHD 80)
- PROPOSED 24" BORE
- EXISTING POWER POLE



1 REVISED SHEET 5/22/2023

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED PROFESSIONAL ENGINEER
P.E.
5/22/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

ILLUMINATION LAYOUT

SCALE: 1"=100' SHEET 6 OF 9

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0989

DATE: 5/22/2023 12:07:02 PM
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NOTES:

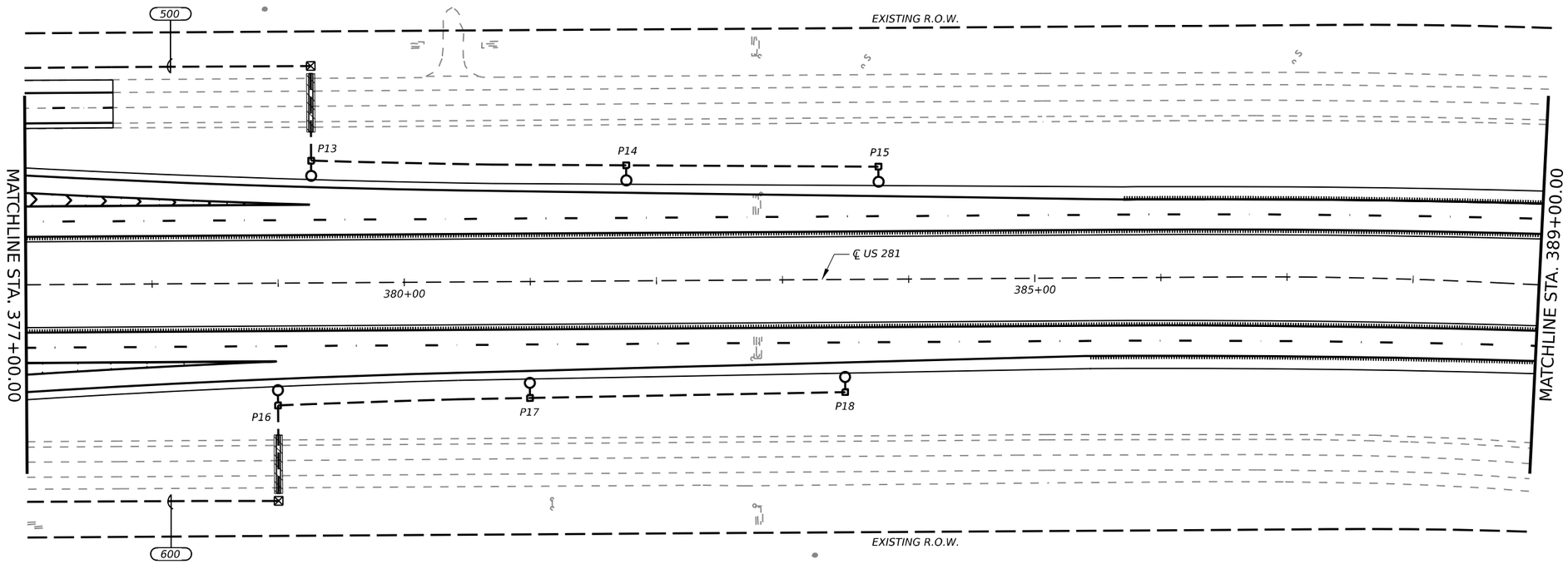
1. POLE LOCATION MAY BE ADJUSTED 3' TO 5' IN ORDER TO AVOID THE EXISTING AND PROPOSED UTILITIES AND DRAINAGE STRUCTURES.
2. ALL INDICATED LENGTHS IN CONDUIT AND CONDUCTOR RUNS SCHEDULE ARE HORIZONTAL ONLY. ALLOW FOR SPLICING AND VERTICAL REQUIREMENTS.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ANY UNDERGROUND UTILITIES BEFORE DRILLING FOR LUMINAIRE POLE FOUNDATIONS AND SERVICE POLES.
4. THE CONTRACTOR SHALL REMOVE EXISTING LUMINAIRE POLES AND FOUNDATIONS IN ACCORDANCE WITH ARTICLE 610.3.C. REMOVAL AND AS DIRECTED BY THE ENGINEER IN THE FIELD.

ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY
6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	60
6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	0
6254	IN RD IL (TY SA 40T-8) (250W EQ) LED	EA	6
6023	CONDT (PVC) (SCH 40) (2")	LF	1,383
6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	94
6009	ELEC CONDR (NO.6) BARE	LF	1,477
6010	ELEC CONDR (NO.6) INSULATED	LF	2,954
6002	GROUND BOX TY A (122311) W/APRON	EA	0
6050	ELC SRV TY A 240/480 060(NS)SS(T)TP(O)	EA	0
6004	JUNCTION BOX (INSTALL)	EA	2

PLAN LEGEND

- IN RD IL (TY SA 30T-8) (250 W EQ) (LED)
- IN RD IL (U/P) (TY 1) (150 W EQ) (LED)
- ELECTRICAL SERVICE POLE
- JUNCTION BOX, BELOW GRADE
- GROUND BOX, BELOW GRADE
- PROPOSED CONDUIT (PVC) (SCHD 40)
- PROPOSED CONDUIT BORE (PVC) (SCHD 80)
- PROPOSED 24" BORE
- EXISTING POWER POLE



REVISED SHEET 5/22/2023

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED
PROFESSIONAL ENGINEER
P.E.
5/22/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

ILLUMINATION LAYOUT

SCALE: 1"=100' SHEET 7 OF 9

CONT.	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0990

DATE: 5/22/2023 12:07:04 PM
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NOTES:

1. POLE LOCATION MAY BE ADJUSTED 3' TO 5' IN ORDER TO AVOID THE EXISTING AND PROPOSED UTILITIES AND DRAINAGE STRUCTURES.
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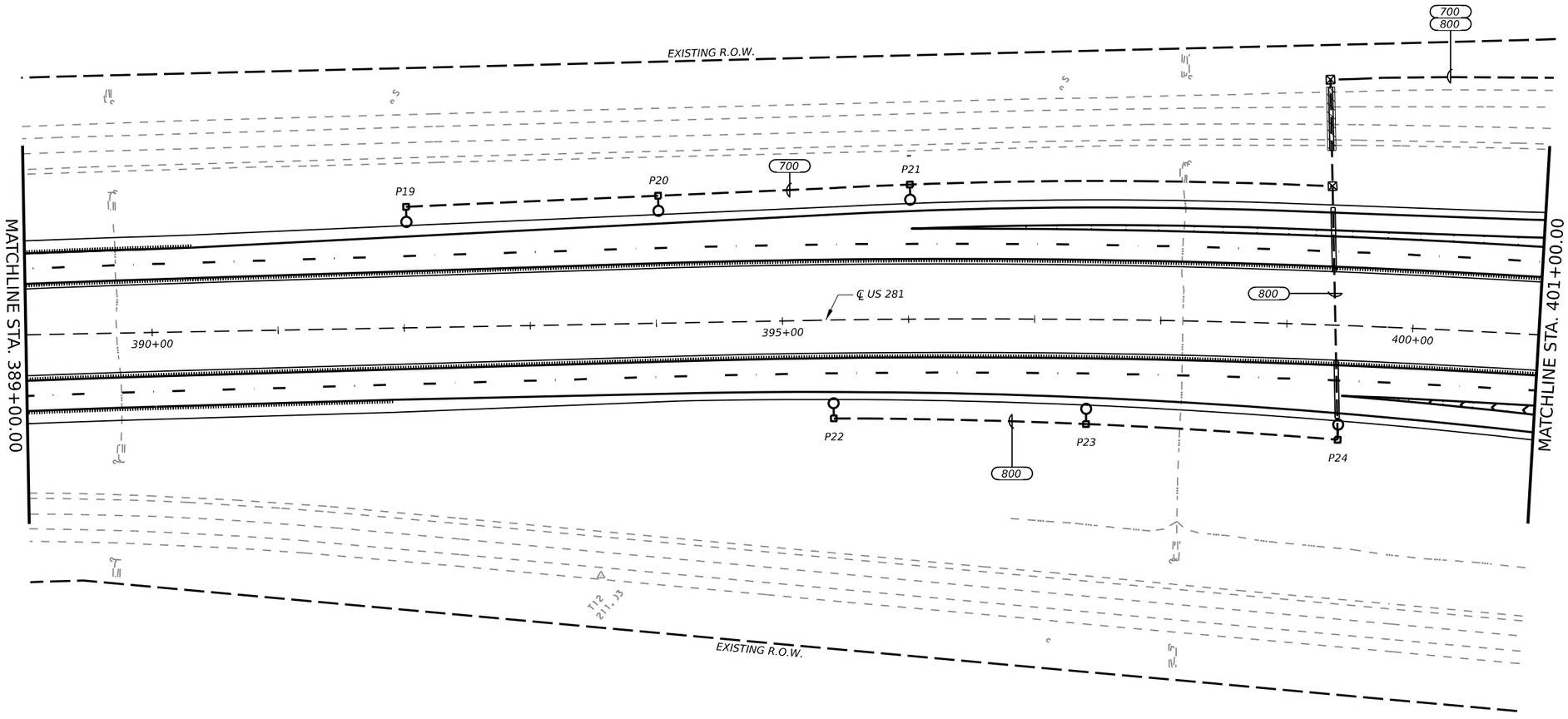
ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY
6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	60
6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	0
6254	IN RD IL (TY SA 40T-8) (250W EQ) LED	EA	6
6023	CONDT (PVC) (SCH 40) (2")	LF	1,663
6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	197
6009	ELEC CONDR (NO.6) BARE	LF	1,860
6010	ELEC CONDR (NO.6) INSULATED	LF	3,720
6002	GROUND BOX TY A (122311) W/APRON	EA	0
6050	ELC SRV TY A 240/480 060(NS)SS(T)TP(O)	EA	0
6004	JUNCTION BOX (INSTALL)	EA	2

PLAN LEGEND

- IN RD IL (TY SA 30T-8) (250 W EQ) (LED)
- IN RD IL (U/P) (TY 1) (150 W EQ) (LED)
- ELECTRICAL SERVICE POLE
- JUNCTION BOX, BELOW GRADE
- GROUND BOX, BELOW GRADE
- PROPOSED CONDUIT (PVC) (SCHD 40)
- PROPOSED CONDUIT BORE (PVC) (SCHD 80)
- PROPOSED 24" BORE
- EXISTING POWER POLE



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⚠ REVISED SHEET 5/22/2023

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED
PROFESSIONAL ENGINEER
P.E.
5/22/2023

S&B INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

ILLUMINATION LAYOUT

SCALE: 1"=100' SHEET 8 OF 9

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		0991

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NOTES:

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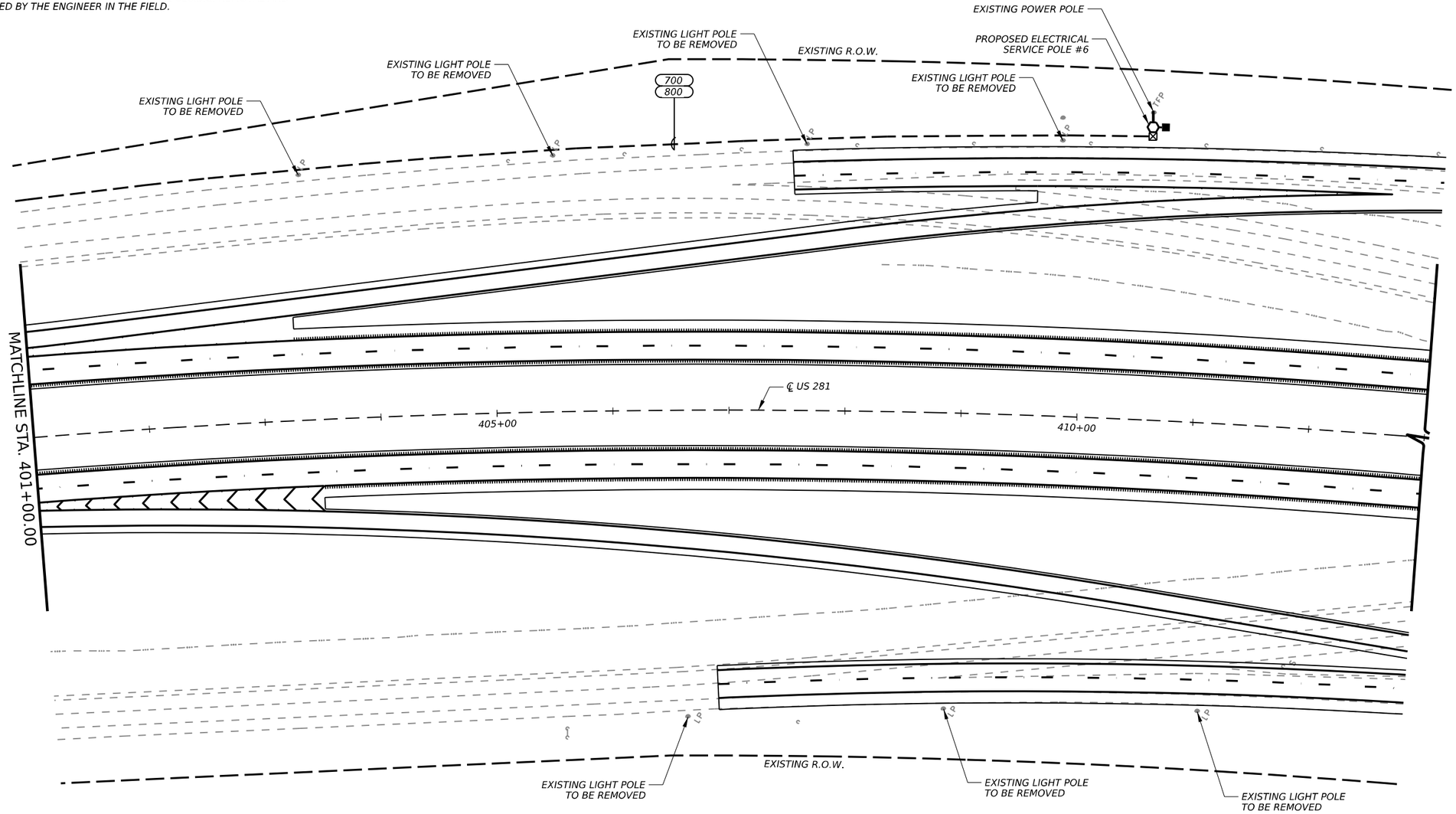
ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY
6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	0
6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	0
6254	IN RD IL (TY SA 40T-8) (250W EQ) LED	EA	0
6023	CONDT (PVC) (SCH 40) (2")	LF	1,968
6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	0
6009	ELEC CONDR (NO.6) BARE	LF	1,968
6010	ELEC CONDR (NO.6) INSULATED	LF	3,936
6002	GROUND BOX TY A (122311) W/APRON	EA	1
6050	ELC SRV TY A 240/480 060(NS)SS(T)TP(O)	EA	1
6004	JUNCTION BOX (INSTALL)	EA	1



PLAN LEGEND

- IN RD IL (TY SA 30T-8) (250 W EQ) (LED)
- IN RD IL (U/P) (TY 1) (150 W EQ) (LED)
- ELECTRICAL SERVICE POLE
- JUNCTION BOX, BELOW GRADE
- GROUND BOX, BELOW GRADE
- PROPOSED CONDUIT (PVC) (SCHD 40)
- PROPOSED CONDUIT BORE (PVC) (SCHD 80)
- PROPOSED 24" BORE
- EXISTING POWER POLE

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED PROFESSIONAL ENGINEER

5/22/2023

INFRASTRUCTURE
TEXAS BOARD OF PROFESSIONAL ENGINEERS #: F-1582

Texas Department of Transportation

US 281

ILLUMINATION LAYOUT

SCALE: 1"=100' SHEET 9 OF 9

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO
CRP	JIM WELLS		0992

REVISED SHEET 5/22/2023

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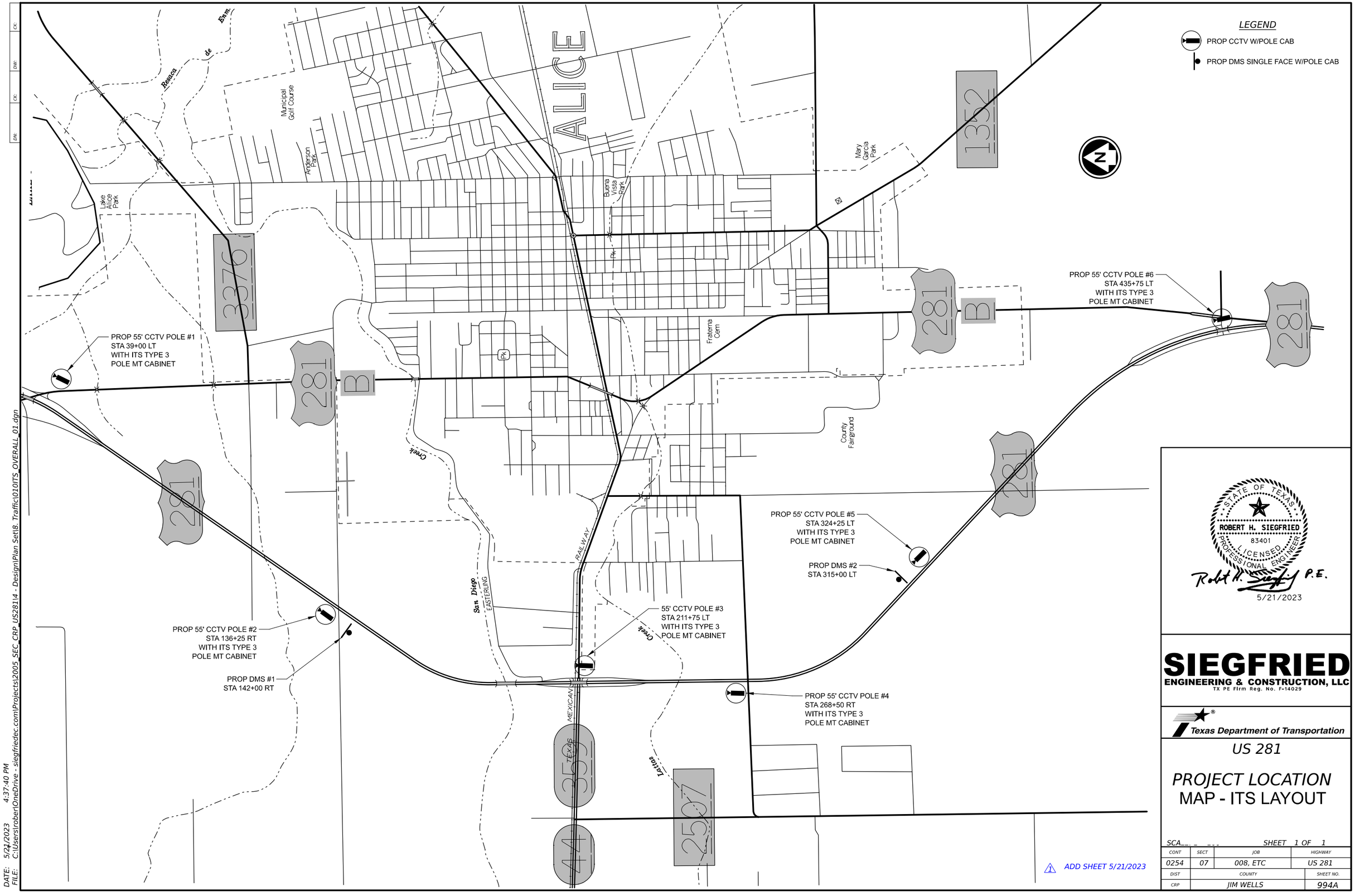

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ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

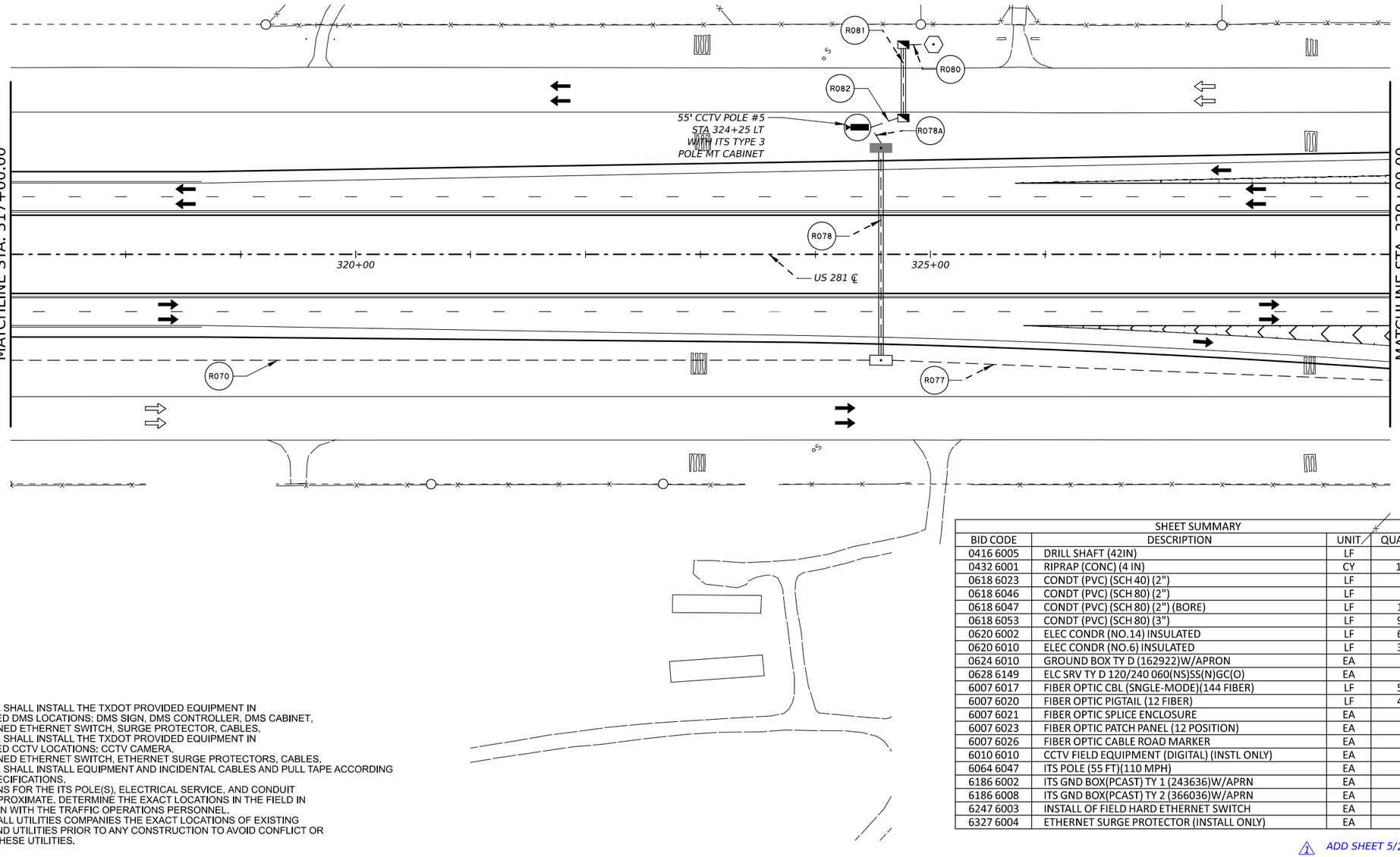
US 281

PROJECT LOCATION MAP - ITS LAYOUT

SCA... SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994A

CONDUIT AND CONDUCTOR RUNS TABLE								
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT			TRACER WIRE		COMMUNICATION CABLE	
		0618 6046	0618 6047	0618 6053	0620 6002	0620 6008	6007 6017	6007 6020
		CONDT (PVC) (SCH 80)(2") (LF)	CONDT (PVC) (SCH 80)(2") (BORE)(LF)	CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	ELEC CONDR (NO.8) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)	FIBER OPTIC PIGTAIL (12 FIBER) (LF)
R070	240			2	1		1	1
R077	240			2	1		1	
R078	60		1		1			1
R078A	60		1		1			1
RO80	44		1			3		
R081	47	1				3		1
RO82	20					3		
TOTAL		47	164	960	600	333	580	457



NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
2. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED CCTV LOCATIONS: CCTV CAMERA, FIELD HARDENED ETHERNET SWITCH, ETHERNET SURGE PROTECTORS, CABLES.
3. CONTRACTOR SHALL INSTALL EQUIPMENT AND INCIDENTAL CABLES AND PULL TAPE ACCORDING TO TXDOT SPECIFICATIONS.
4. THE LOCATIONS FOR THE ITS POLE(S), ELECTRICAL SERVICE, AND CONDUIT RUNS ARE APPROXIMATE. DETERMINE THE EXACT LOCATIONS IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
5. VERIFY WITH ALL UTILITIES COMPANIES THE EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THESE UTILITIES.

SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0416 6005	DRILL SHAFT (42IN)	LF	24
0432 6001	RIPRAP (CONC) (4 IN)	CY	1.25
0618 6023	CONDT (PVC) (SCH 40) (2")	LF	20
0618 6046	CONDT (PVC) (SCH 80) (2")	LF	47
0618 6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	164
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	960
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	600
0620 6010	ELEC CONDR (NO.6) INSULATED	LF	333
0624 6010	GROUND BOX TY D (162922)W/APRON	EA	2
0628 6149	ELC SRV TY D 120/240 060(NS)SS(N)GC(O)	EA	1
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	580
6007 6020	FIBER OPTIC PIGTAIL (12 FIBER)	LF	457
6007 6021	FIBER OPTIC SPLICE ENCLOSURE	EA	1
6007 6023	FIBER OPTIC PATCH PANEL (12 POSITION)	EA	1
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	1
6010 6010	CCTV FIELD EQUIPMENT (DIGITAL) (INSTL ONLY)	EA	1
6064 6047	ITS POLE (55 FT)(110 MPH)	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1
6186 6008	ITS GND BOX(PCAST) TY 2 (366036)W/APRN	EA	1
6247 6003	INSTALL OF FIELD HARD ETHERNET SWITCH	EA	1
6327 6004	ETHERNET SURGE PROTECTOR (INSTALL ONLY)	EA	1

1 ADD SHEET 5/21/2023

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 317+00 TO STA 329+00

SCALE: 1"=100' SHEET 26 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994AA

DATE: 5/21/2023 3:31:22 PM
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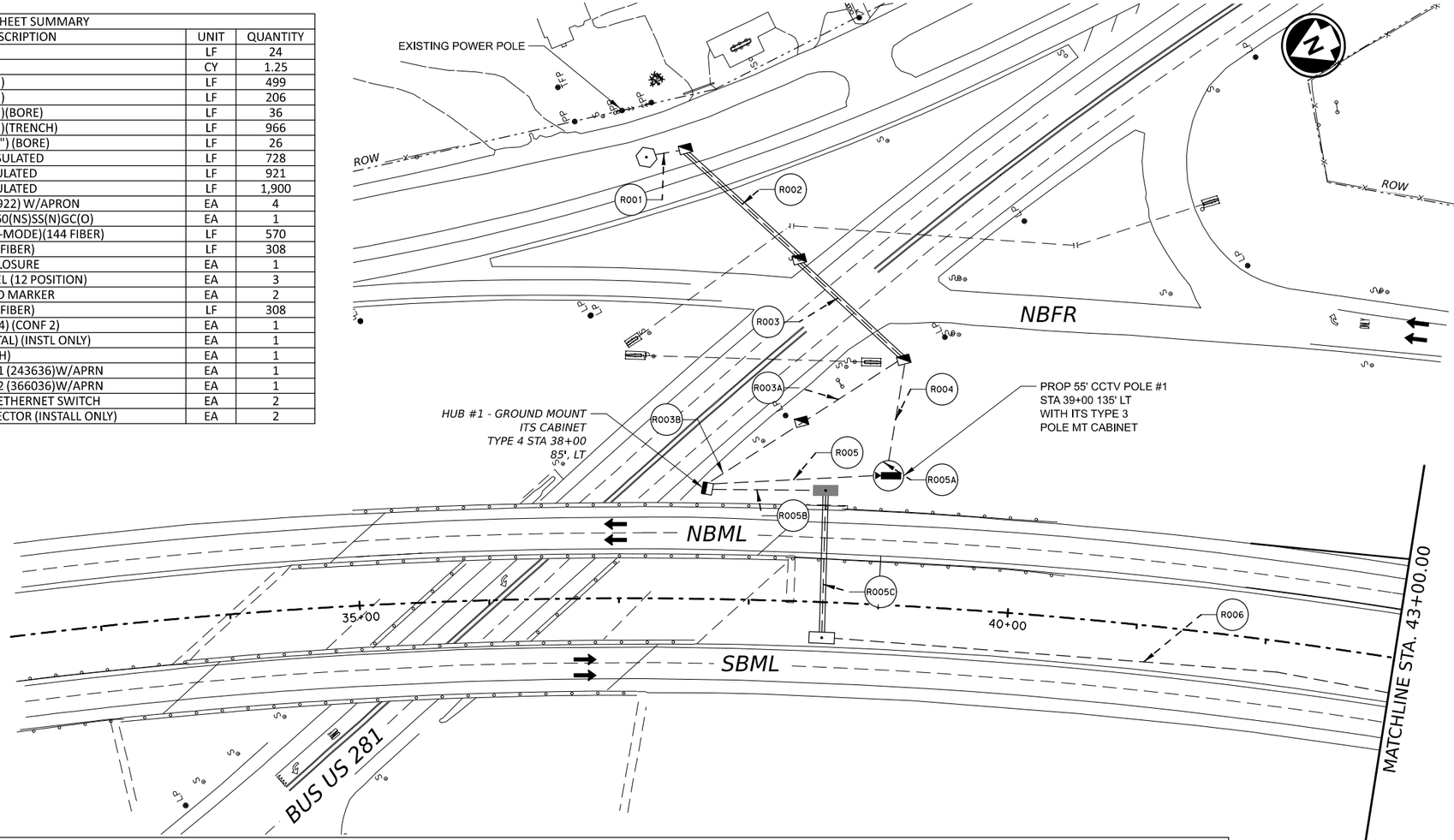
SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0416 6005	DRILL SHAFT	LF	24
0432 6001	RIPRAP (CONC)(4 IN)	CY	1.25
0618 6023	CONDT (PVC)(SCH 40)(2")	LF	499
0618 6046	CONDT (PVC)(SCH 80)(2")	LF	206
0618 6047	CONDT (PVC)(SCH 80)(2")(BORE)	LF	36
0618 6053	CONDT (PVC)(SCH 80)(3")(TRENCH)	LF	966
0618 6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	26
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	728
0620 6008	ELEC CONDR (NO.8) INSULATED	LF	921
0620 6010	ELEC CONDR (NO.6) INSULATED	LF	1,900
0624 6010	GROUND BOX TY D (162922) W/APRON	EA	4
0628 6149	ELC SRV TY D 120/240 060(NS)SS(N)GC(O)	EA	1
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	570
6007 2020	FIBER OPTIC PIGTAIL (12 FIBER)	LF	308
6007 6021	FIBER OPTIC SPLICE ENCLOSURE	EA	1
6007 6023	FIBER OPTIC PATCH PANEL (12 POSITION)	EA	3
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	2
6007 6042	FIBER OPTIC PIGTAIL (12 FIBER)	LF	308
6008 6027	ITS GRND MNT CAB (TY 4) (CONF 2)	EA	1
6010 6010	CCTV FIELD EQUIP (DIGITAL) (INSTL ONLY)	EA	1
6064 6047	ITS POLE (55 FT)(110 MPH)	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1
6186 6008	ITS GND BOX(PCAST) TY 2 (366036)W/APRN	EA	2
6247 6003	INSTALL OF FIELD HARD ETHERNET SWITCH	EA	2
6327 6004	ETHERNET SURGE PROTECTOR (INSTALL ONLY)	EA	2



LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

CONDUIT AND CONDUCTOR RUNS TABLE

CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT					TRACER WIRE				
		0618 6023	0618 6046	0618 6047	0618 6053	0618 6054	0620 6002	0620 6008	0620 6010	6007 6017	6007 6020
		CONDT (PVC) (SCH 40)(2") (LF)	CONDT (PVC) (SCH 80)(2") (LF)	CONDT (PVC) (SCH 80)(2") (BORE)(LF)	CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (PVC) (SCH 80) (3") (BORE)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	ELEC CONDR (NO.8) INSULATED (LF)	ELEC CONDR (NO.6) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)	FIBER OPTIC PIGTAIL (12 FIBER) (LF)
R001	36			1				3	4		
R002	85	1						3	4		
R003	126	1						3	4		
R003A	182	1							4		
R003B	46	1							4		
R004	60	1						3			
R005	180		1				1				1
R005A	26		1				1				1
R005B	26				1		1				1
R005C	26					1	1				1
R006	470				2		1			1	
TOTAL		499	206	36	966	26	728	921	1,900	570	308

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
2. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED CCTV LOCATIONS: CCTV CAMERA, FIELD HARDENED ETHERNET SWITCH, ETHERNET SURGE PROTECTORS, CABLES.
3. CONTRACTOR SHALL INSTALL EQUIPMENT AND INCIDENTAL CABLES AND PULL TAPE ACCORDING TO TXDOT SPECIFICATIONS.
4. THE LOCATIONS FOR THE ITS POLE(S), ELECTRICAL SERVICE, AND CONDUIT RUNS ARE APPROXIMATE. DETERMINE THE EXACT LOCATIONS IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
5. VERIFY WITH ALL UTILITIES COMPANIES THE EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THESE UTILITIES.

⚠1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

BEGIN PROJECT TO STA 43+00

SCALE: 1"=100' SHEET 1 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994B

DATE: 5/21/2023 3:28:52 PM
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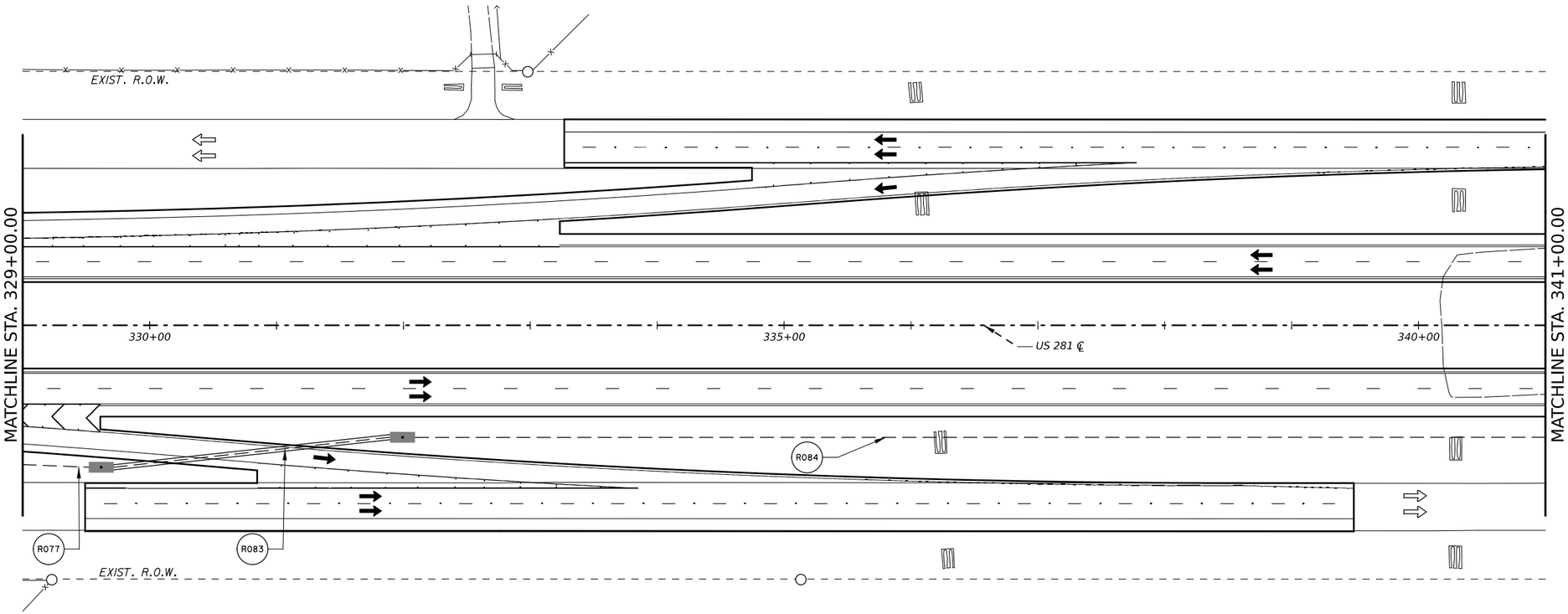
CONDUIT AND CONDUCTOR RUNS TABLE					
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT		TRACER WIRE	COMMUNICATION CABLE
		0618 6053	0618 6054	0620 6002	6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (PVC) (SCH 80) (3") (BORE)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R077	64	2		1	1
R083	238		2	1	1
R084	905	2		1	1
TOTAL		1,938	476	1,207	1,232

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	1,938
0618 6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	476
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,207
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,232
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	3
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	2

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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1 ADD SHEET 5/21/2023

STATE OF TEXAS
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83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 329+00 TO STA 341+00

SCALE: 1"=100' SHEET 27 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994BB

DATE: 5/21/2023 3:31:28 PM
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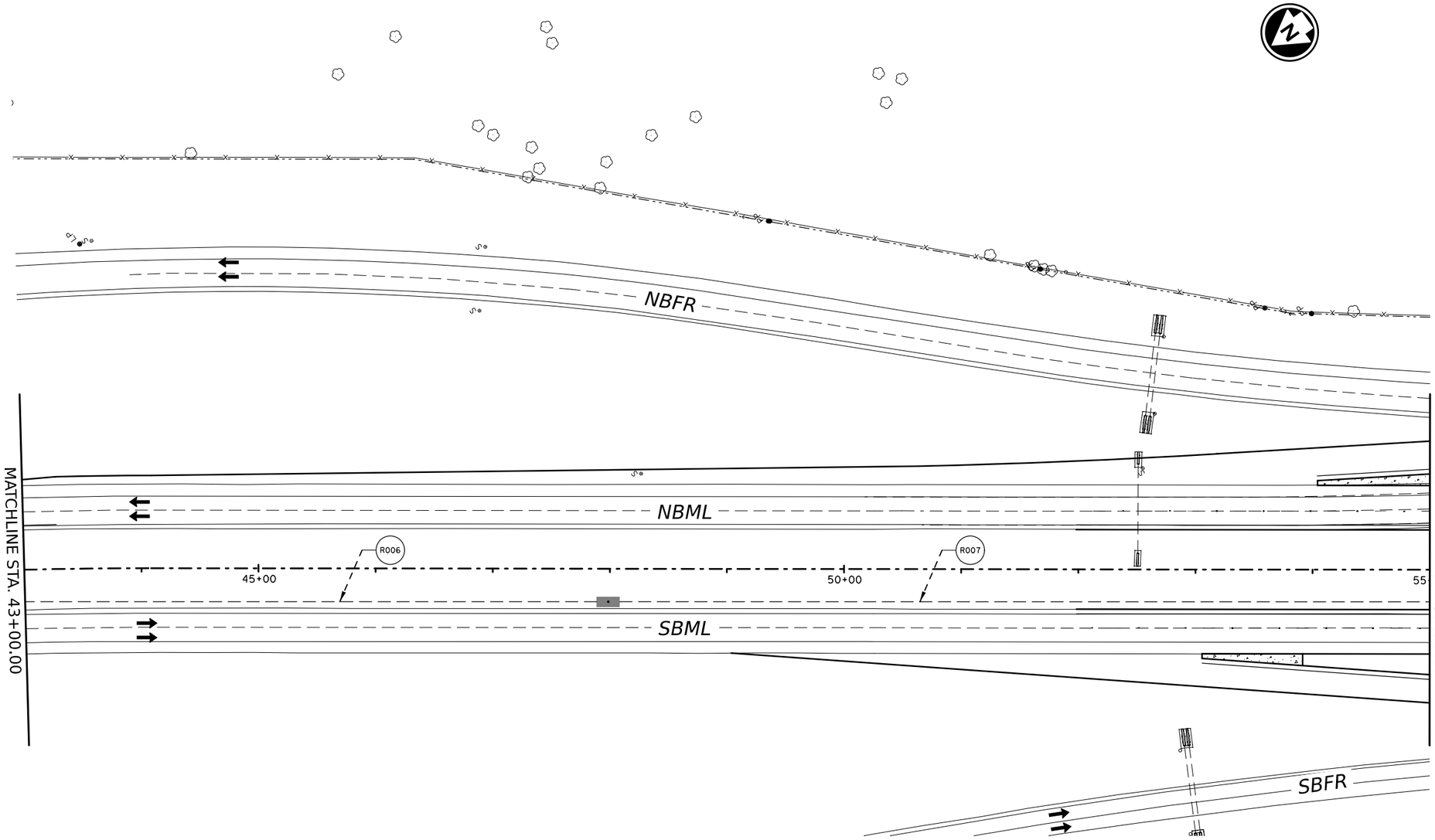

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

CONDUIT AND CONDUCTOR RUNS TABLE				
				COMMUNICATION
CONDUIT RUN NUMBER	RUN LENGTH (FT)	0618 6053	0620 6002	6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R006	500	2	1	1
R007	700	2	1	1
TOTAL		2,400	1,200	1,225

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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5. VERIFY WITH ALL UTILITIES COMPANIES THE EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THESE UTILITIES.

SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,400
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,200
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,225
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	2

ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 43+00 TO STA 55+00

SCALE: 1"=100' SHEET 2 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994C

DATE: 5/21/2023 3:28:59 PM
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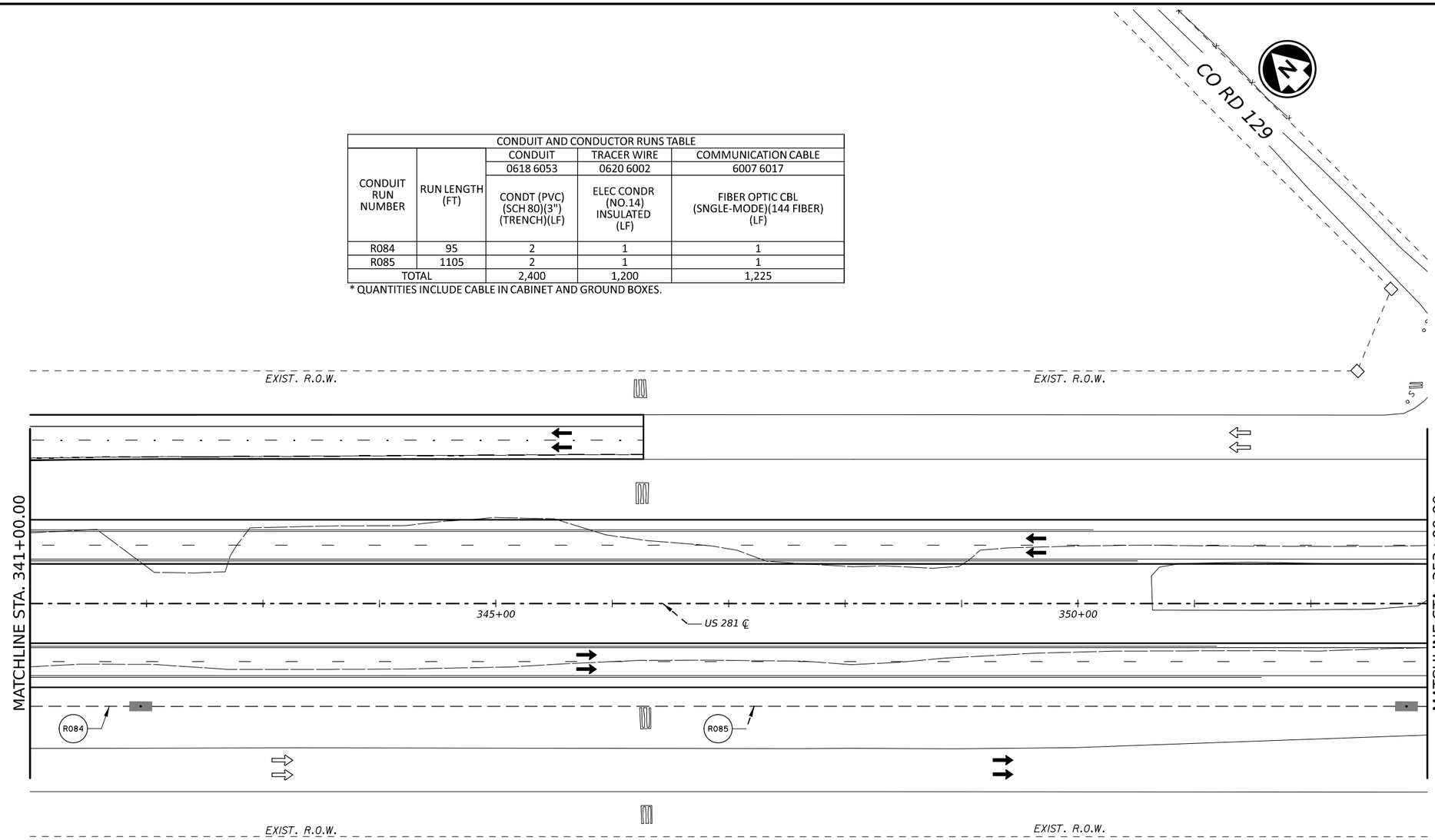
CONDUIT AND CONDUCTOR RUNS TABLE				
		CONDUIT	TRACER WIRE	COMMUNICATION CABLE
		0618 6053	0620 6002	6007 6017
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R084	95	2	1	1
R085	1105	2	1	1
TOTAL		2,400	1,200	1,225

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



LEGEND

- PROP CCTV W/POLE CAB
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- PROP DIRECTION OF TRAFFIC
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SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,400
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,200
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,225
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	2
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	2

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
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LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 341+00 TO STA 353+00

SCALE: 1"=100' SHEET 28 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994CC

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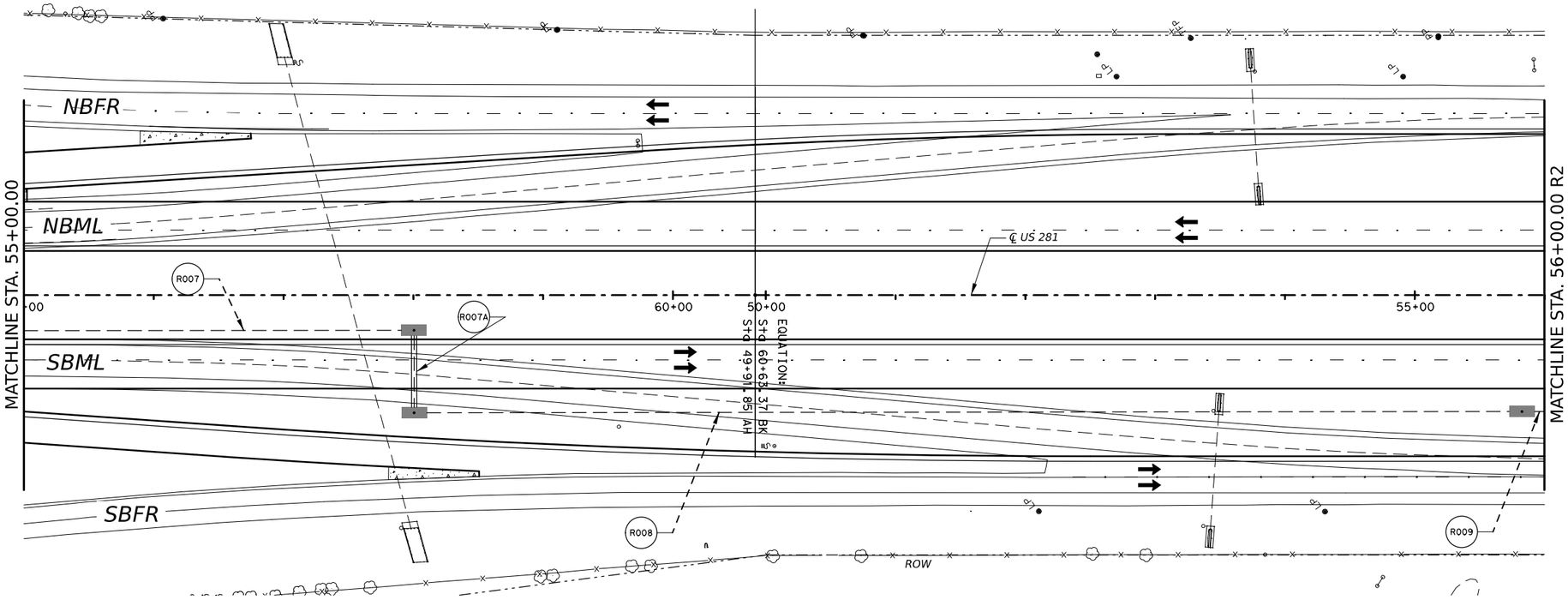

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

CONDUIT AND CONDUCTOR RUNS TABLE					
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT		TRACER WIRE	COMMUNICATION CABLE
		0618 6053	0618 6054	0620 6002	6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (PVC) (SCH 80) (3") (BORE)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R007	300	2	0	1	1
R007A	50	0	2	1	1
R008	911	2	0	1	1
R009	50	2	0	1	1
TOTAL		2,522	100	1,311	1,361

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.

SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,522
0618 6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	100
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,311
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,361
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	3
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	3

NOTES:
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ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
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5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 55+00 TO STA 56+00 R2

SCALE: 1"=100' SHEET 3 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994D

DATE: 5/21/2023 3:29:05 PM
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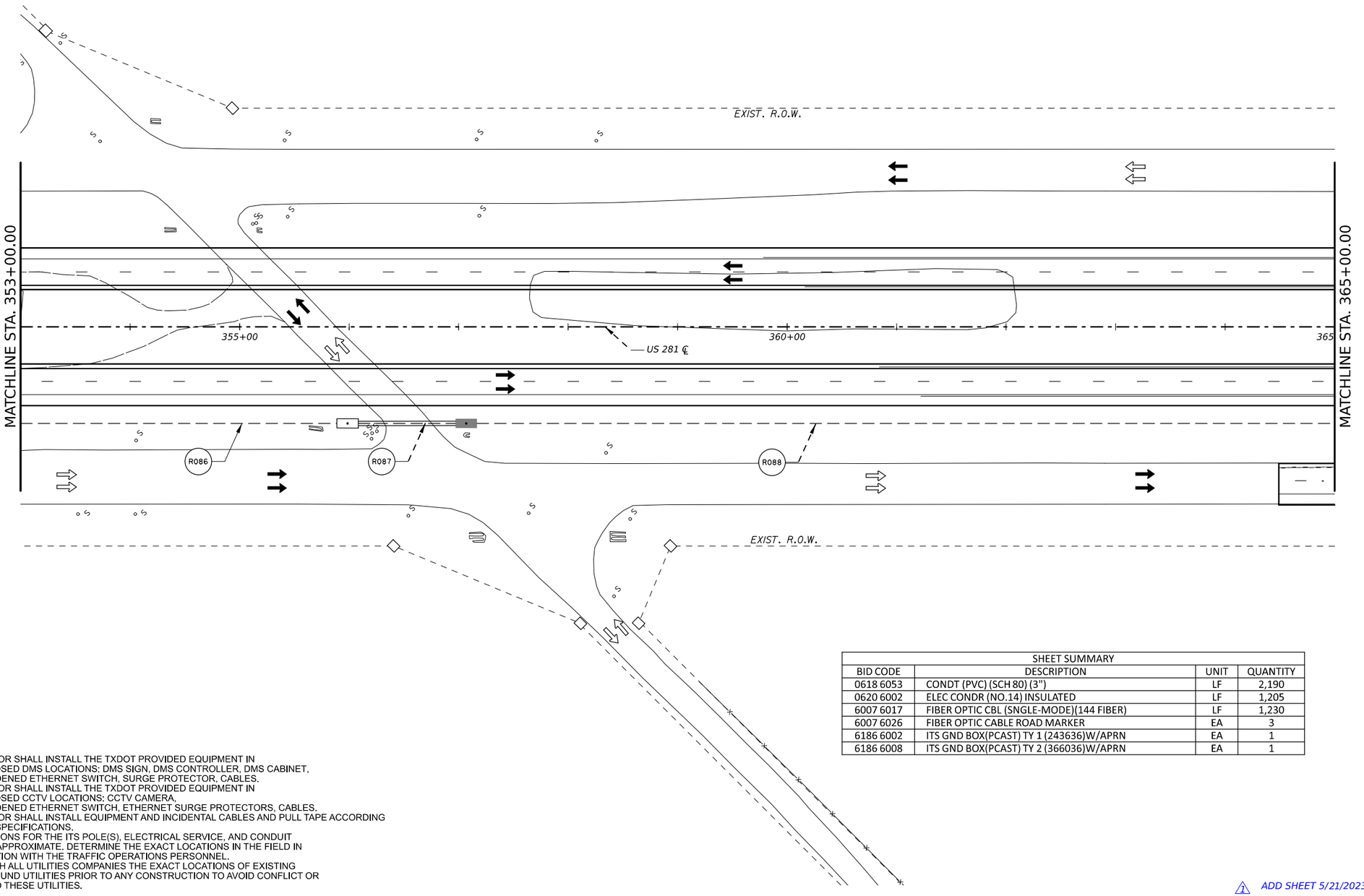
CONDUIT AND CONDUCTOR RUNS TABLE					
CONDUIT RUN NUMBER	RUN LENGTH ◯ (FT)	CONDUIT		TRACER WIRE	COMMUNICATION CABLE
		0618 6053	0618 6054	0620 6002	6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (PVC) (SCH 80) (3") (BORE)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R086	300	2		1	1
R087	110		2	1	1
R088	795	2		1	1
TOTAL		2,190	220	1,205	1,230

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,190
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,205
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,230
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	3
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1
6186 6008	ITS GND BOX(PCAST) TY 2 (366036)W/APRN	EA	1

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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⚠ ADD SHEET 5/21/2023

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
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- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

STATE OF TEXAS
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5/21/2023

SIEGFRIED
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Texas Department of Transportation

US 281

ITS LAYOUT

STA 353+00 TO STA 365+00

SCALE: 1"=100' SHEET 29 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994DD

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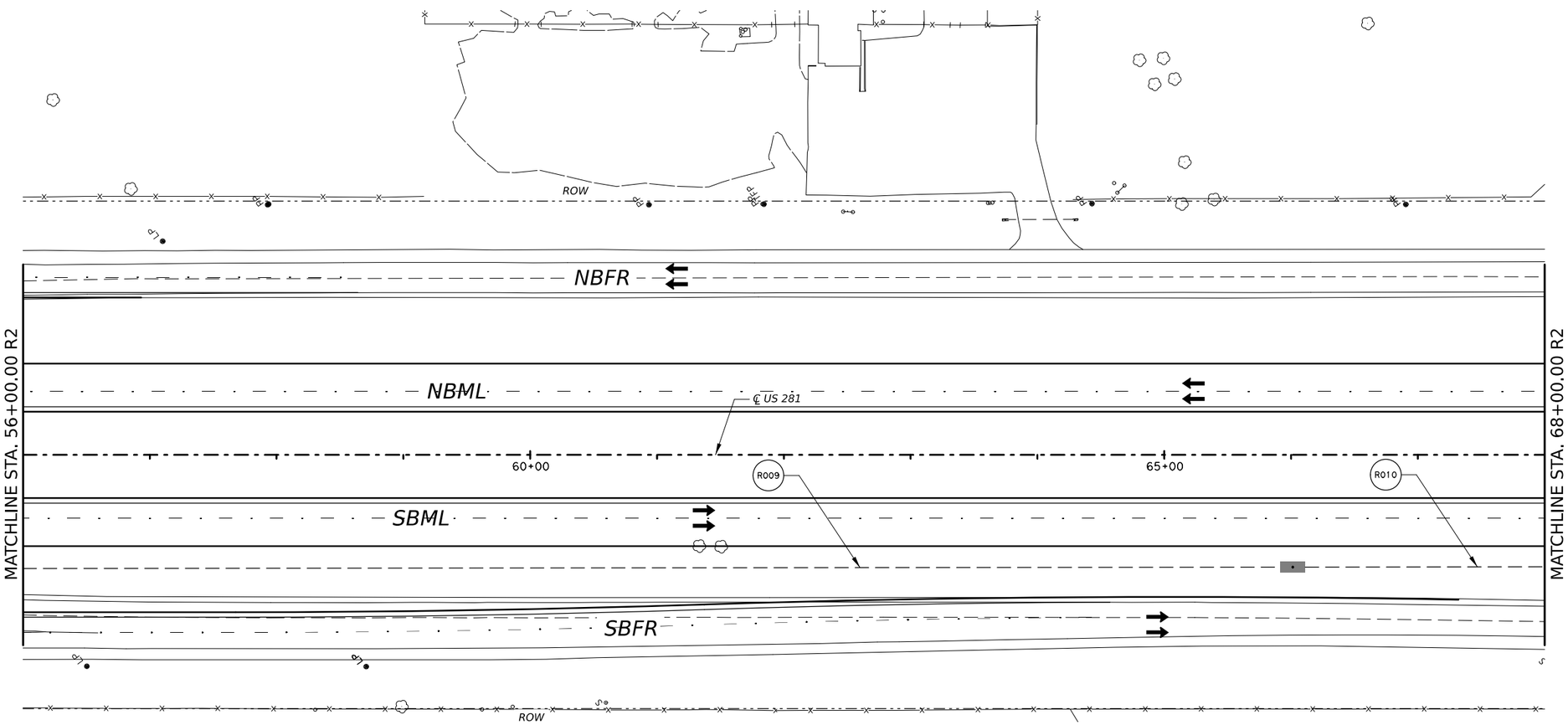

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

CONDUIT AND CONDUCTOR RUNS TABLE				
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT	TRACER WIRE	COMMUNICATION CABLE
		0618 6053	0620 6002	6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R009	1000	2	1	1
R010	200	2	1	1
TOTAL		2,400	1,200	1,225

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.

SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,400
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,200
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,225
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
2. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED CCTV LOCATIONS: CCTV CAMERA, FIELD HARDENED ETHERNET SWITCH, ETHERNET SURGE PROTECTORS, CABLES.
3. CONTRACTOR SHALL INSTALL EQUIPMENT AND INCIDENTAL CABLES AND PULL TAPE ACCORDING TO TXDOT SPECIFICATIONS.
4. THE LOCATIONS FOR THE ITS POLE(S), ELECTRICAL SERVICE, AND CONDUIT RUNS ARE APPROXIMATE, DETERMINE THE EXACT LOCATIONS IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
5. VERIFY WITH ALL UTILITIES COMPANIES THE EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THESE UTILITIES.

⚠1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 56+00 R2 TO STA 68+00 R2

SCALE: 1"=100' SHEET 4 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994E

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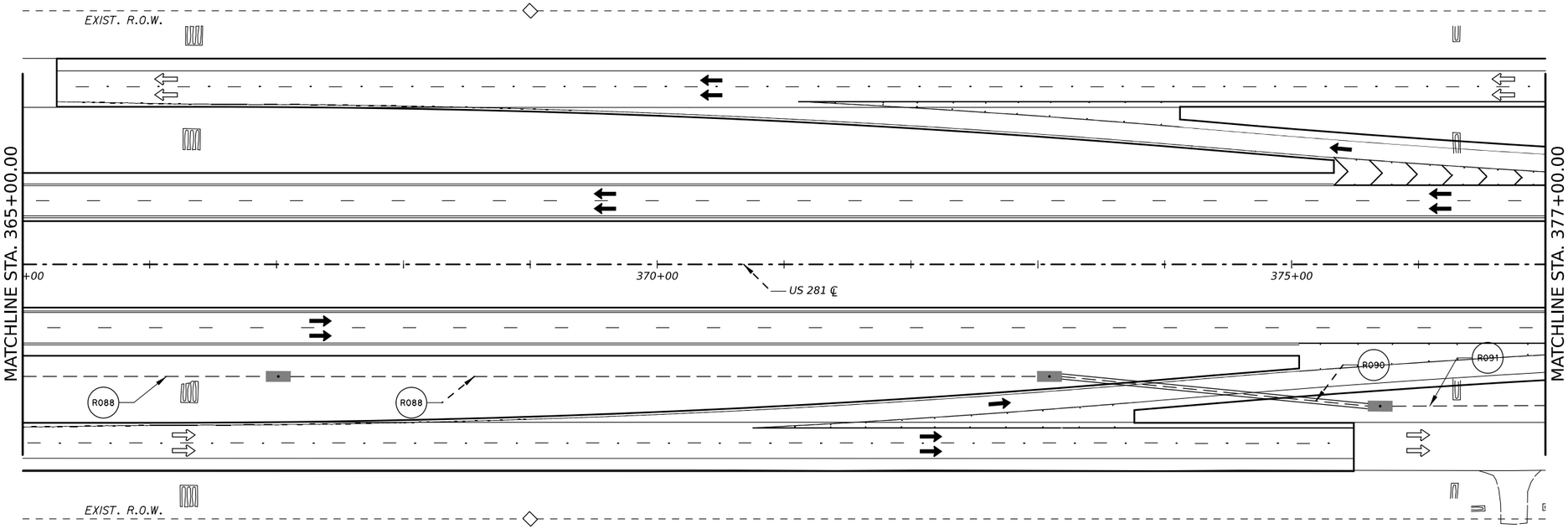
CONDUIT AND CONDUCTOR RUNS TABLE					
CONDUIT RUN NUMBER	RUN LENGTH (FT)				COMMUNICATION CABLE
		0618 6053	0618 6054	0620 6002	6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (PVC) (SCH 80) (3") (BORE)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R088	200	2		1	1
R089	610	2		1	1
R090	262		2	1	1
R091	128	2		1	1
TOTAL		1,876	524	1,200	1,250

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	1,876
0618 6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	524
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,200
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,250
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	3
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	3

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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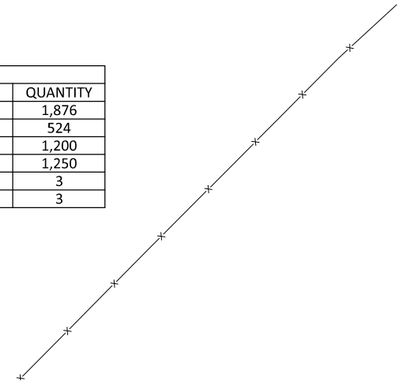
5. VERIFY WITH ALL UTILITIES COMPANIES THE EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THESE UTILITIES.



⚠ ADD SHEET 5/21/2023

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED
PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 365+00 TO STA 377+00

SCALE: 1"=100' SHEET 30 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994EE

DATE: 5/21/2023 3:31:45 PM
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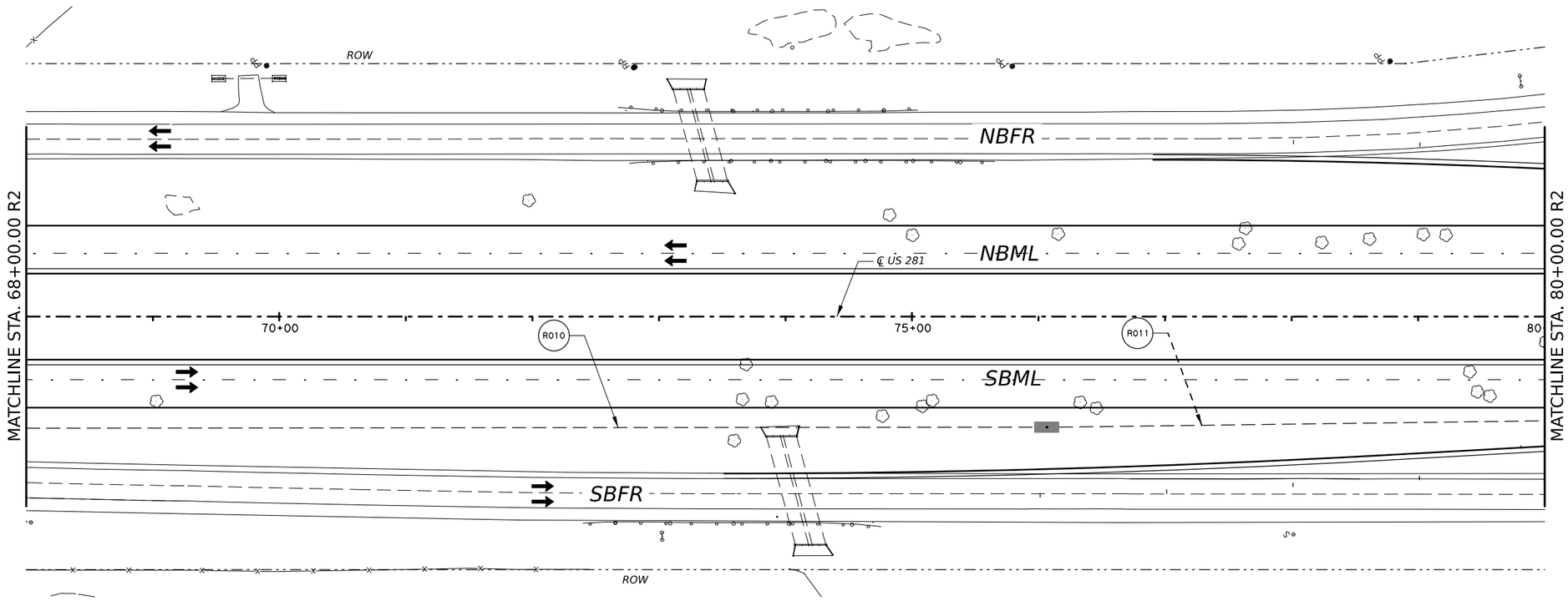

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

CONDUIT AND CONDUCTOR RUNS TABLE				
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT 0618 6053 CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	TRACER WIRE 0620 6002 ELEC CONDR (NO.14) INSULATED (LF)	COMMUNICATION CABLE 6007 6017 FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R010	800	2	1	1
R011	400	2	1	1
TOTAL		2,400	1,200	1,225

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.

SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,400
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,200
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,225
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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5. VERIFY WITH ALL UTILITIES COMPANIES THE EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THESE UTILITIES.

⚠ ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 68+00 R2 TO STA 80+00 R2

SCALE: 1"=100' SHEET 5 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994F

DATE: 5/21/2023 3:29:18 PM
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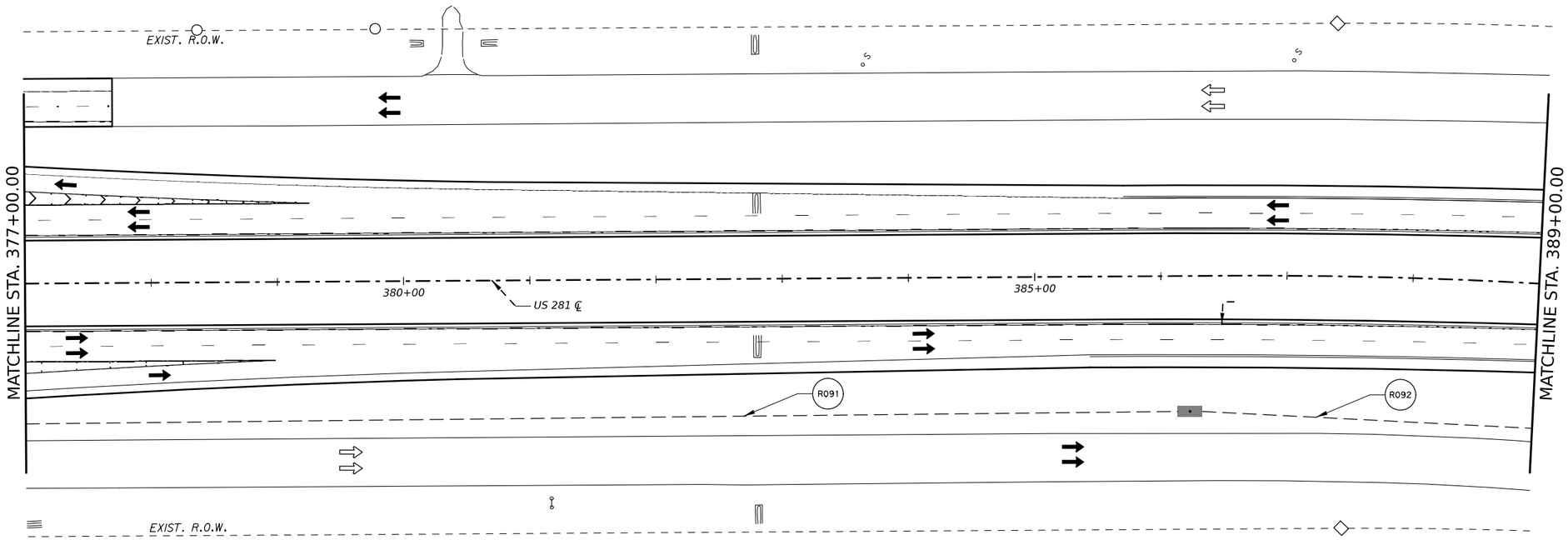
CONDUIT AND CONDUCTOR RUNS TABLE				
CONDUIT RUN NUMBER	RUN LENGTH (FT)			COMMUNICATION CABLE
		0618 6053	0620 6002	6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R091	925	2	1	1
R092	275	2	1	1
TOTAL		2,400	1,200	1,225

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,400
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,200
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,225
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 377+00 TO STA 389+00

SCALE: 1"=100' SHEET 31 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994FF

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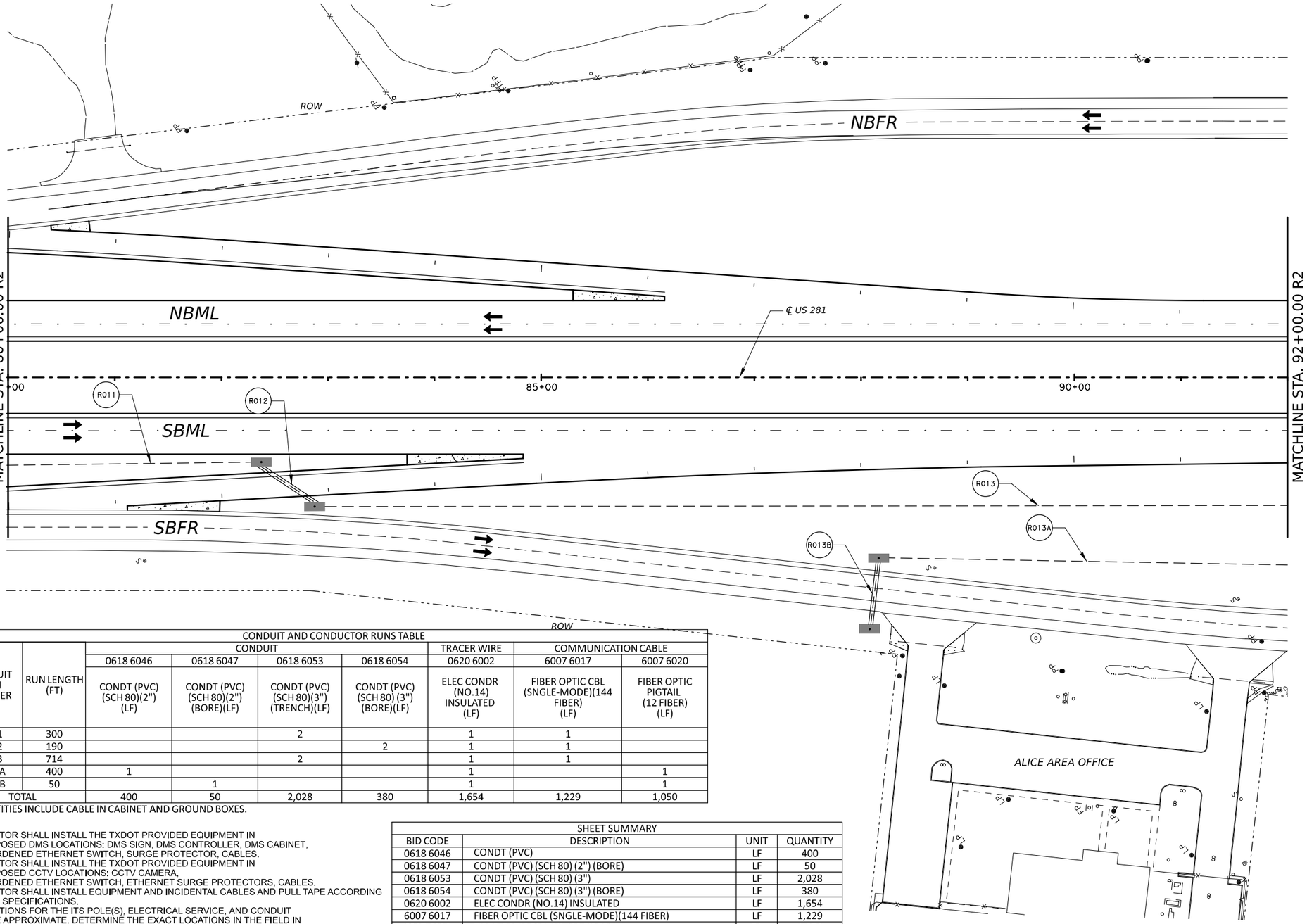

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

CONDUIT AND CONDUCTOR RUNS TABLE

CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT 0618 6046 CONDT (PVC) (SCH 80)(2") (LF)	CONDUIT 0618 6047 CONDT (PVC) (SCH 80)(2") (BORE)(LF)	CONDUIT 0618 6053 CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDUIT 0618 6054 CONDT (PVC) (SCH 80) (3") (BORE)(LF)	TRACER WIRE 0620 6002 ELEC CONDR (NO.14) INSULATED (LF)	COMMUNICATION CABLE 6007 6017 FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)	COMMUNICATION CABLE 6007 6020 FIBER OPTIC PIGTAIL (12 FIBER) (LF)
R011	300			2		1	1	
R012	190				2	1	1	
R013	714			2		1	1	
R013A	400	1				1		1
R013B	50		1			1		1
TOTAL		400	50	2,028	380	1,654	1,229	1,050

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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SHEET SUMMARY

BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6046	CONDT (PVC)	LF	400
0618 6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	50
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,028
0618 6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	380
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,654
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,229
6007 6020	FIBER OPTIC PIGTAIL (12 FIBER)	EA	1,050
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	4
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	4

⚠ ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 80+00 R2 TO STA 92+00 R2

SCALE: 1"=100' SHEET 6 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994G

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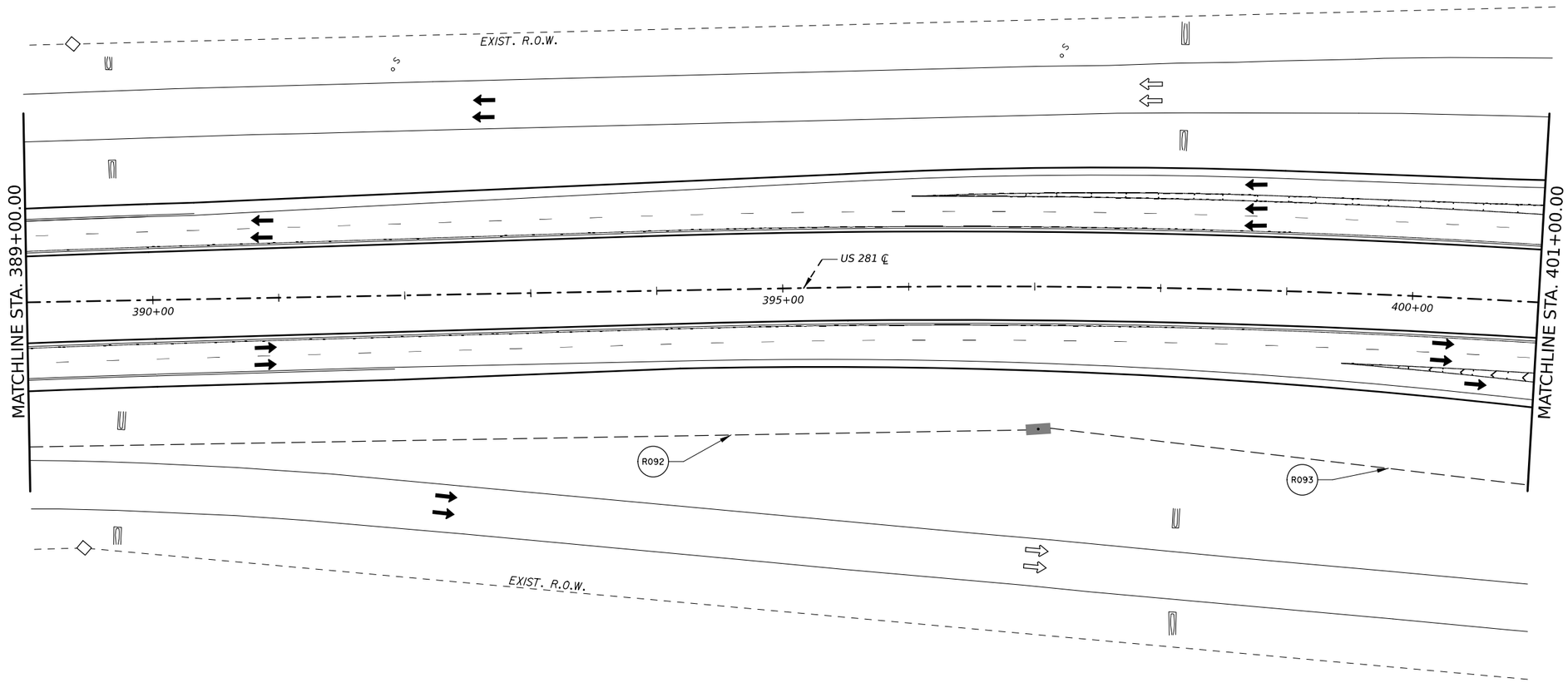
CONDUIT AND CONDUCTOR RUNS TABLE				
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT 0618 6053	TRACER WIRE 0620 6002	COMMUNICATION CABLE 6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R092	800	2	1	1
R093	395	2	1	1
TOTAL		2,400	1,200	1,225

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,400
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,200
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,225
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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⚠ ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
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Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 389+00 TO STA 401+00

SCALE: 1"=100' SHEET 32 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994GG

DATE: 5/21/2023 3:31:57 PM
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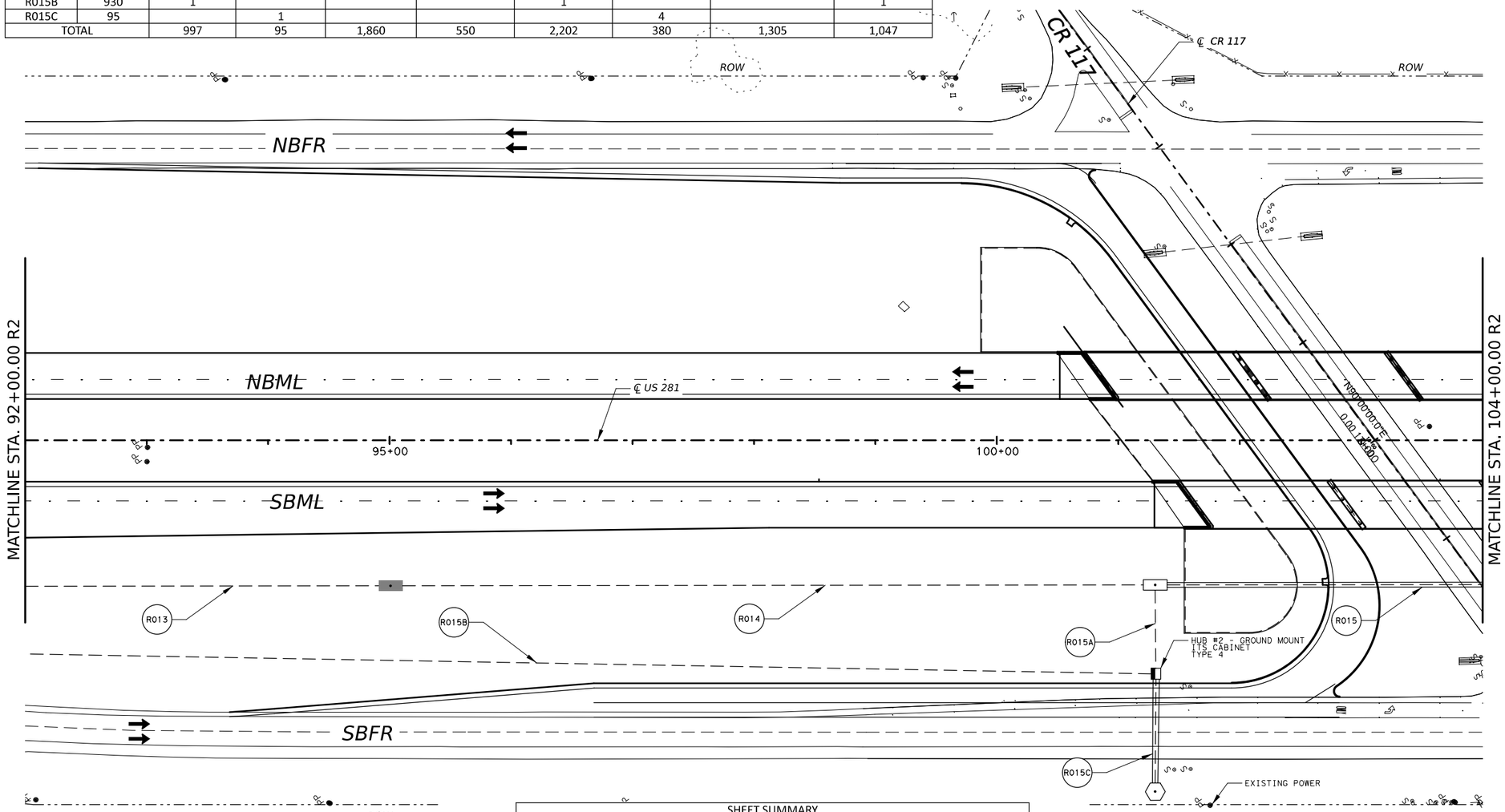
CONDUIT AND CONDUCTOR RUNS TABLE									
CONDUIT RUN NUMBER	RUN LENGTH (FT)	0618 6023	0618 6047	0618 6053	0618 6054	0620 6002	0620 6010	6007 6017	6007 6042
		CONDT (PVC) (SCH 80)(2") (LF)	CONDT (PVC) (SCH 80)(2") (BORE)(LF)	CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (PVC) (SCH 80) (3") (BORE)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	ELEC CONDR (NO.4) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)	FIBER OPTIC PIGTAIL (12 FIBER) (LF)
R013	300			2		1		1	
R014	630			2		1		1	
R015	275				2	1		1	
R015A	67	1				1			1
R015B	930	1				1			1
R015C	95		1				4		
TOTAL		997	95	1,860	550	2,202	380	1,305	1,047



LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
2. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED CCTV LOCATIONS: CCTV CAMERA, FIELD HARDENED ETHERNET SWITCH, ETHERNET SURGE PROTECTORS, CABLES.
3. CONTRACTOR SHALL INSTALL EQUIPMENT AND INCIDENTAL CABLES AND PULL TAPE ACCORDING TO TXDOT SPECIFICATIONS.
4. THE LOCATIONS FOR THE ITS POLE(S), ELECTRICAL SERVICE, AND CONDUIT RUNS ARE APPROXIMATE. DETERMINE THE EXACT LOCATIONS IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
5. VERIFY WITH ALL UTILITIES COMPANIES THE EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THESE UTILITIES.

SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6023	CONDT (PVC)(SCH 80)(2")	LF	997
0618 6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	95
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	1,860
0618 6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	550
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	2,202
0620 6010	ELEC CONDR (NO.6) INSULATED	LF	380
0624 6010	GROUND BOX TY D (162922)W/APRON	EA	1
0628 6149	ELC SRV TY D 120/240 060(NS)SS(N)GC(O)	EA	1
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,305
6007 2020	FIBER OPTIC PIGTAIL (12 FIBER)	LF	1,047
6007 6021	FIBER OPTIC SPLICE ENCLOSURE	EA	1
6007 6023	FIBER OPTIC PATCH PANEL (12 POSITION)	EA	1
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	2
6008 6027	ITS GRND MNT CAB (TY 4) (CONF 2)	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1
6186 6008	ITS GND BOX(PCAST) TY 2 (366036)W/APRN	EA	1
6247 6003	INSTALL OF FIELD HARD ETHERNET SWITCH	EA	1
6327 6004	ETHERNET SURGE PROTECTOR (INSTALL ONLY)	EA	1

⚠ ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 92+00 R2 TO STA 104+00 R2

SCALE: 1"=100' SHEET 7 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994H

DATE: 5/21/2023 3:29:32 PM
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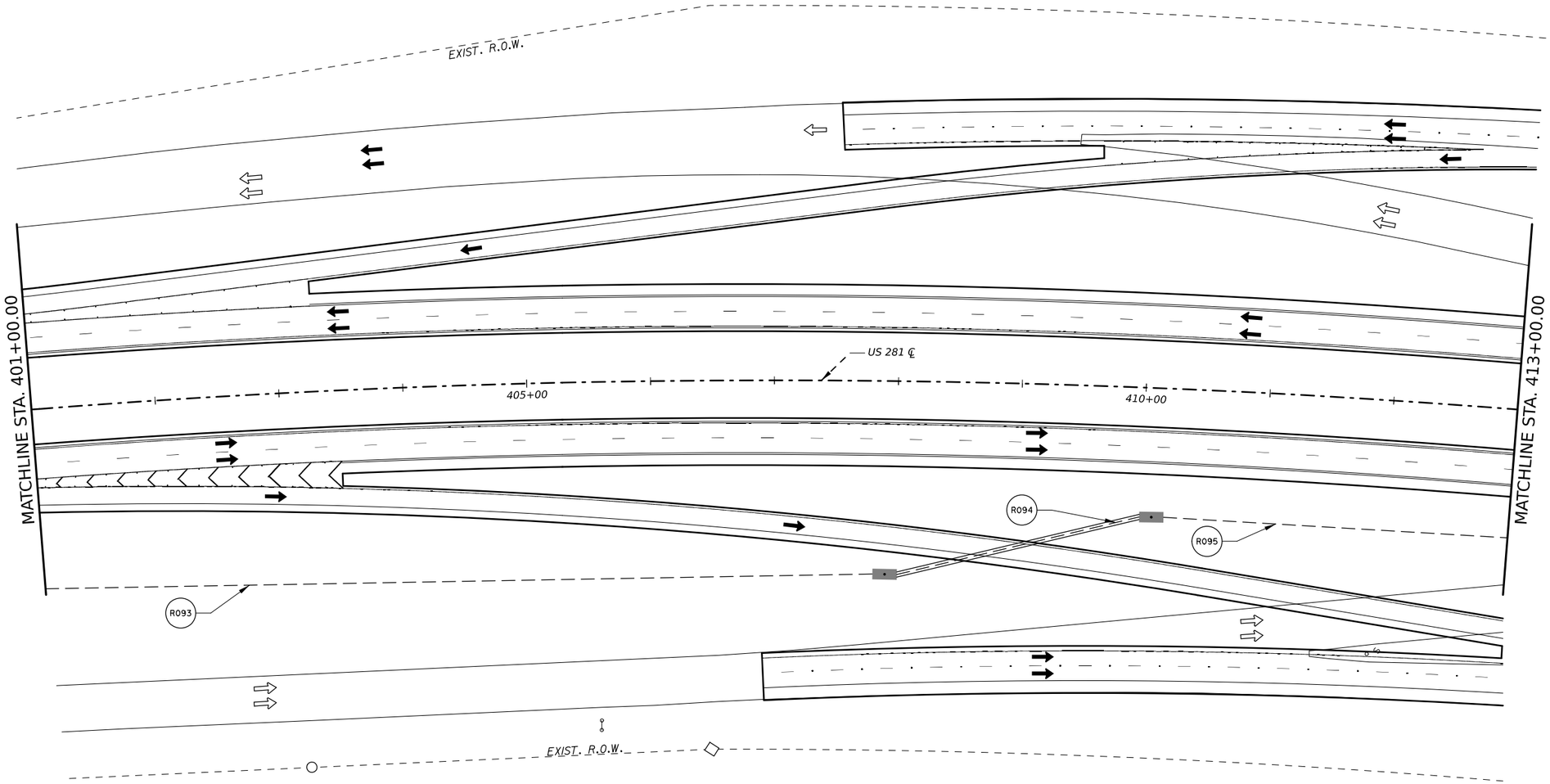
CONDUIT AND CONDUCTOR RUNS TABLE					
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT		TRACER WIRE	COMMUNICATION CABLE
		0618 6053	0618 6054	0620 6002	6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (PVC) (SCH 80) (3") (BORE)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R093	680	2		1	1
R094	225		2	1	1
R095	280	2		1	1
TOTAL		1,920	450	1,185	1,210

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	1,920
0618 6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	450
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,185
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,210
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	2
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	2

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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5. VERIFY WITH ALL UTILITIES COMPANIES THE EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THESE UTILITIES.

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

STATE OF TEXAS
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5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 401+00 TO STA 413+00

SCALE: 1"=100' SHEET 33 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994HH

1 ADD SHEET 5/21/2023

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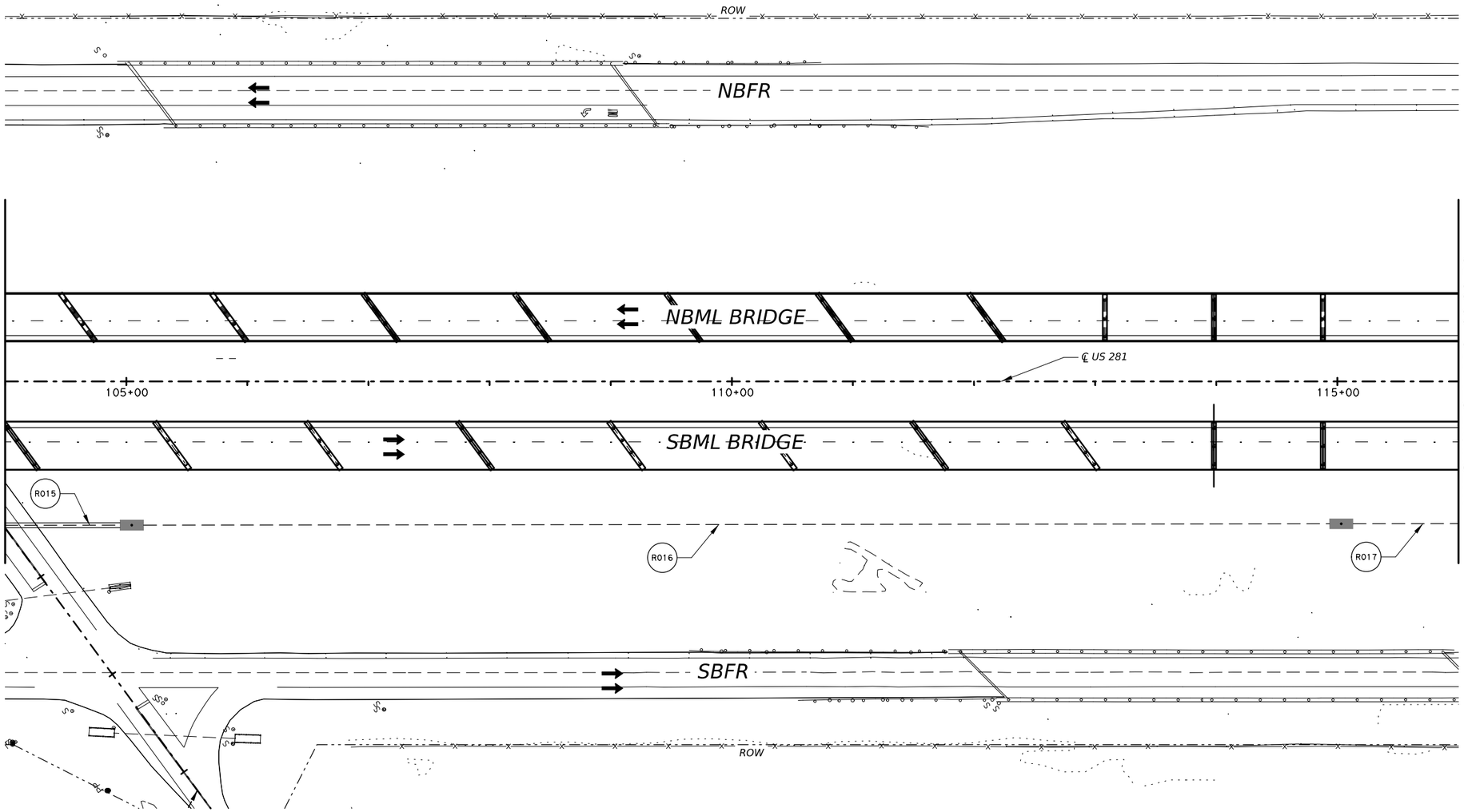
CONDUIT AND CONDUCTOR RUNS TABLE					
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT		TRACER WIRE	COMMUNICATION CABLE
		0618 6053	0618 6054	0620 6002	6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (PVC) (SCH 80) (3") (BORE)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R015	105		2	1	1
R016	1000	2		1	1
R017	96	2		1	1
TOTAL		2,192	210	1,201	1,251

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

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1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,192
0618 6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	210
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,201
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,251
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	2

1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
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LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
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TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 104+00 R2 TO STA 116+00 R2

SCALE: 1"=100' SHEET 8 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994I

DATE: 5/21/2023 3:29:38 PM
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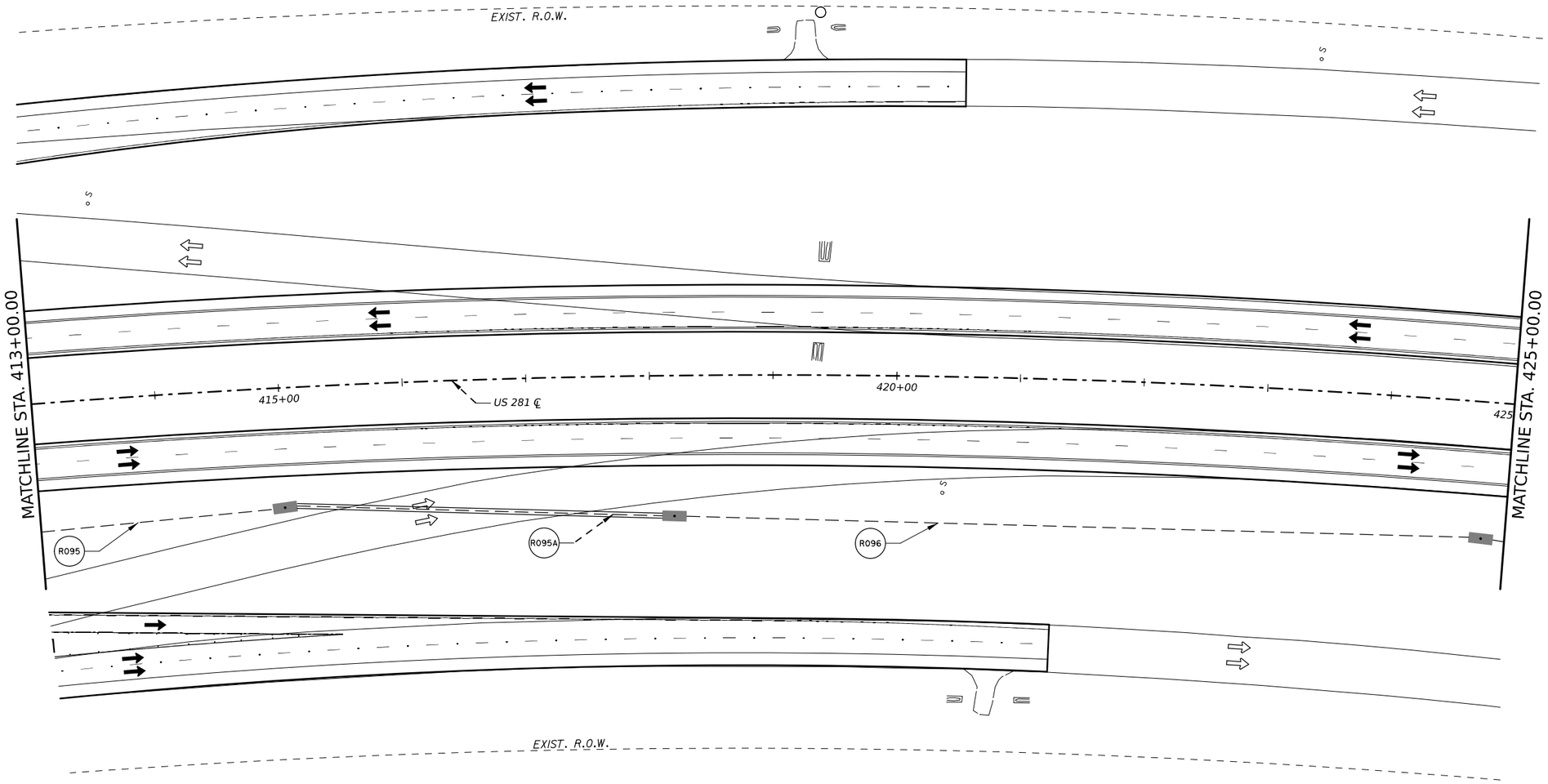
CONDUIT AND CONDUCTOR RUNS TABLE					
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT		TRACER WIRE	COMMUNICATION CABLE
		0618 6053	0618 6054	0620 6002	6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (PVC) (SCH 80) (3") (BORE)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R095	280	2		1	1
R095A	379		2	1	1
R096	605	2		1	1
TOTAL		1,770	758	1,264	1,289

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
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SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	1,770
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6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,289
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	3
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	3

⚠ ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robt H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 413+00 TO STA 425+00

SCALE: 1"=100' SHEET 34 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		9941I

DATE: 5/21/2023 3:32:09 PM
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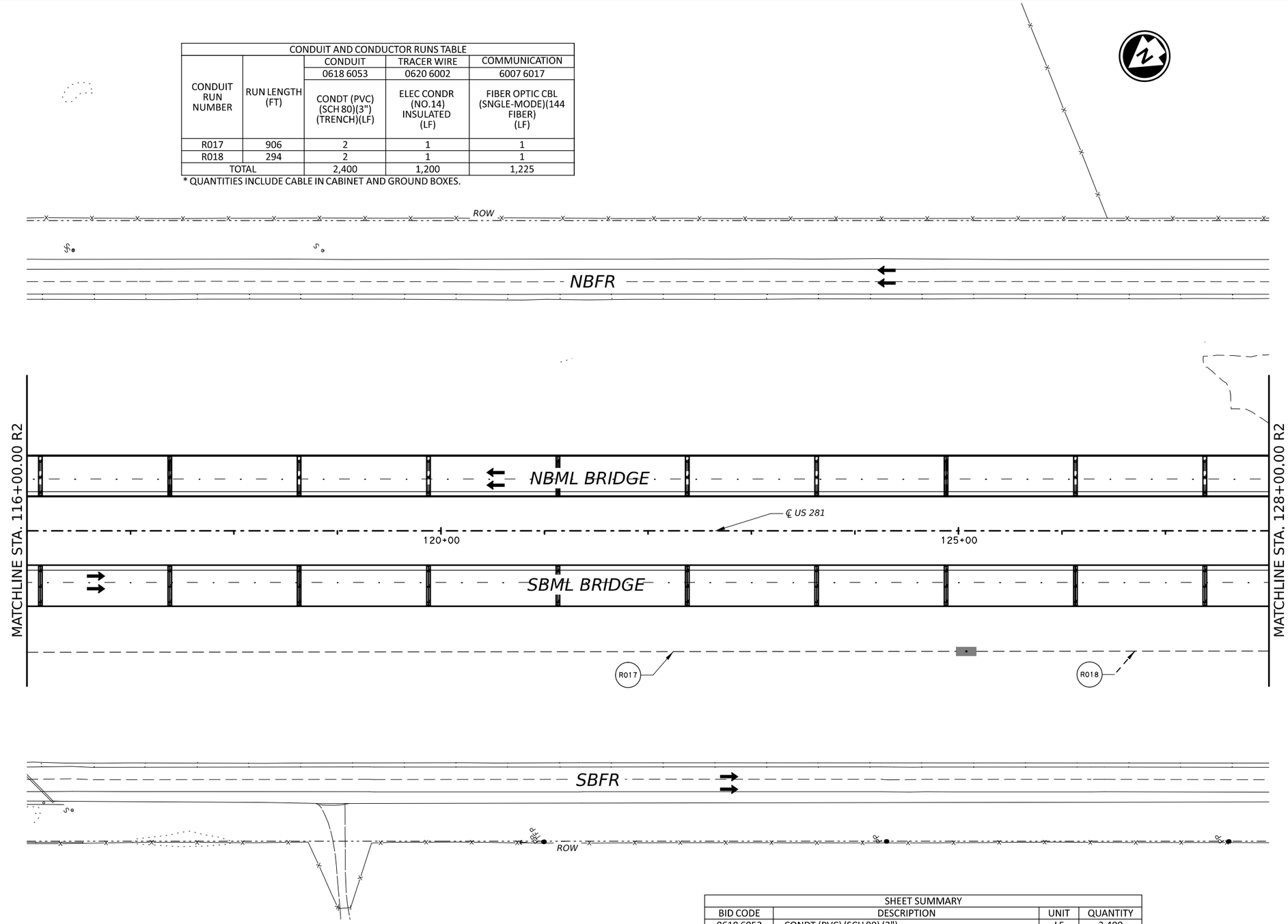
CONDUIT AND CONDUCTOR RUNS TABLE				
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT 0618 6053 CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	TRACER WIRE 0620 6002 ELEC CONDR (NO.14) INSULATED (LF)	COMMUNICATION 6007 6017 FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R017	906	2	1	1
R018	294	2	1	1
TOTAL		2,400	1,200	1,225

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

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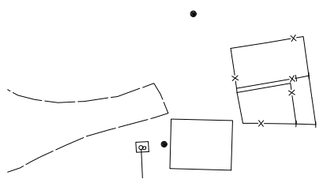

SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
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0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,200
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,225
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1

1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED
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Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 116+00 R2 TO STA 128+00 R2

SCALE: 1"=100' SHEET 9 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994J

DATE: 5/21/2023 3:29:44 PM
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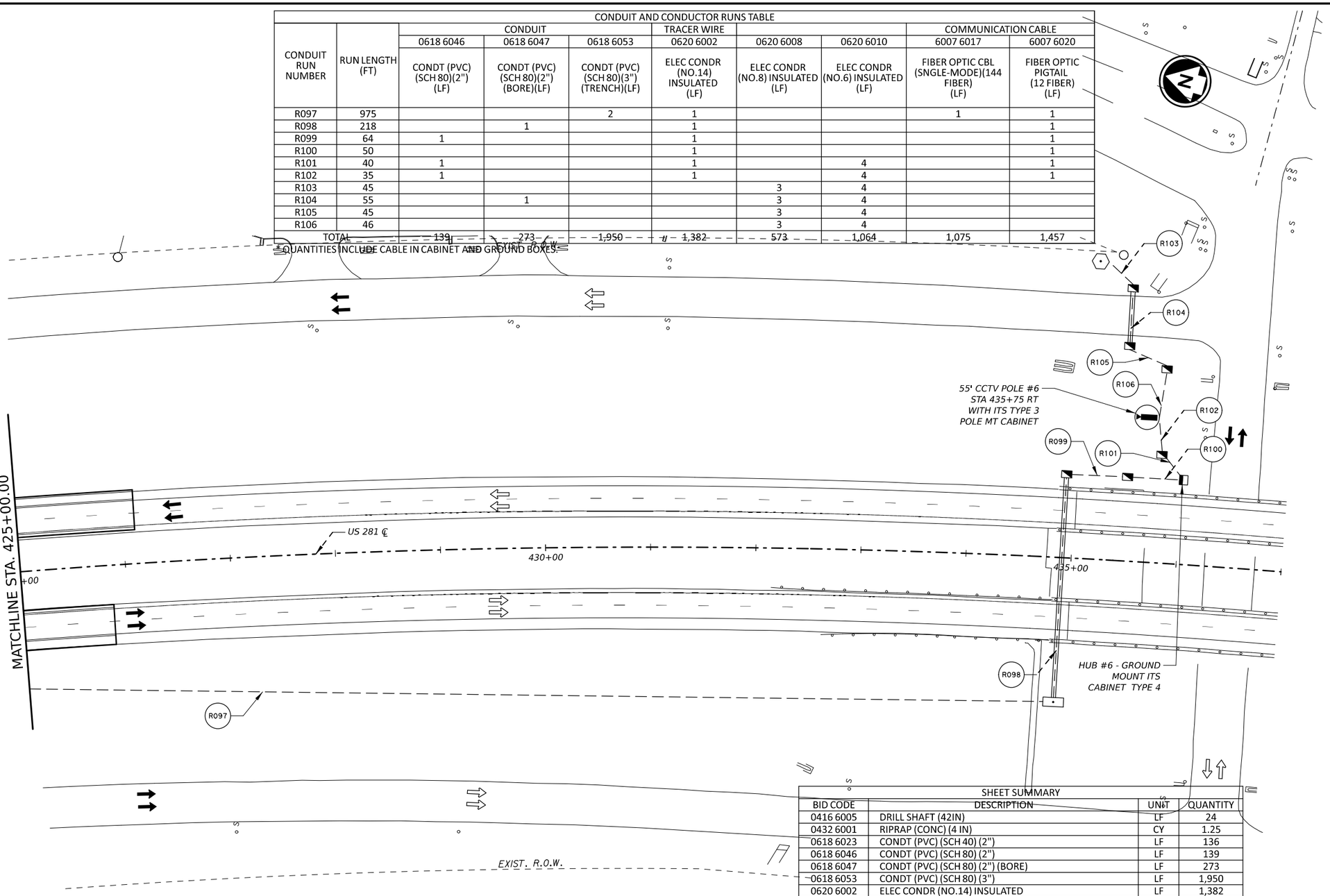
CK:
DW:
CK:
DW:

CONDUIT AND CONDUCTOR RUNS TABLE

CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT 0618 6046 CONDT (PVC) (SCH 80)(2") (LF)	CONDUIT 0618 6047 CONDT (PVC) (SCH 80)(2") (BORE)(LF)	CONDUIT 0618 6053 CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	TRACER WIRE 0620 6002 ELEC CONDR (NO.14) INSULATED (LF)	0620 6008 ELEC CONDR (NO.8) INSULATED (LF)	0620 6010 ELEC CONDR (NO.6) INSULATED (LF)	COMMUNICATION CABLE 6007 6017 FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)	6007 6020 FIBER OPTIC PIGTAIL (12 FIBER) (LF)
R097	975			2	1			1	1
R098	218		1		1				1
R099	64	1			1				1
R100	50				1				1
R101	40	1			1		4		1
R102	35	1			1		4		1
R103	45					3	4		
R104	55		1			3	4		
R105	45					3	4		
R106	46					3	4		
TOTAL		139	273	1,950	1,382	573	1,064	1,075	1,457

℄ QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

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SHEET SUMMARY

BID CODE	DESCRIPTION	UNIT	QUANTITY
0416 6005	DRILL SHAFT (42IN)	LF	24
0432 6001	RIPRAP (CONC) (4 IN)	CY	1.25
0618 6023	CONDT (PVC) (SCH 40) (2")	LF	136
0618 6046	CONDT (PVC) (SCH 80) (2")	LF	139
0618 6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	273
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	1,950
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,382
0620 6008	ELEC CONDR (NO.8) INSULATED	LF	1,064
0620 6010	ELEC CONDR (NO.6) INSULATED	LF	573
0624 6010	GROUND BOX TY D (162922)W/APRON	EA	4
0628 6149	ELC SRV TY D 120/240 060(NS)SS(N)GC(O)	EA	1
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,075
6007 6020	FIBER OPTIC PIGTAIL (12 FIBER)	LF	1,457
6007 6021	FIBER OPTIC SPLICE ENCLOSURE	EA	1
6007 6023	FIBER OPTIC PATCH PANEL (12 POSITION)	EA	3
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	1
6008 6027	ITS GRND MNT CAB (TY 4)(CONF 2)	EA	1
6010 6010	CCTV FIELD EQUIPMENT (DIGITAL) (INSTL ONLY)	EA	1
6064 6047	ITS POLE (55 FT)(110 MPH)	EA	1
6064 6092	ITS POLE MNT CAB (TY 3)(CONF 3)	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	2
6186 6008	ITS GND BOX(PCAST) TY 2 (366036)W/APRN	EA	1
6247 6003	INSTALL OF FIELD HARD ETHERNET SWITCH	EA	2
6327 6004	ETHERNET SURGE PROTECTOR (INSTALL ONLY)	EA	2

⚠ ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
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5/21/2023

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Texas Department of Transportation

US 281

ITS LAYOUT

STA 425+00 TO END PROJECT

SCALE: 1"=100' SHEET 35 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994JJ

DATE: 5/21/2023 3:32:15 PM
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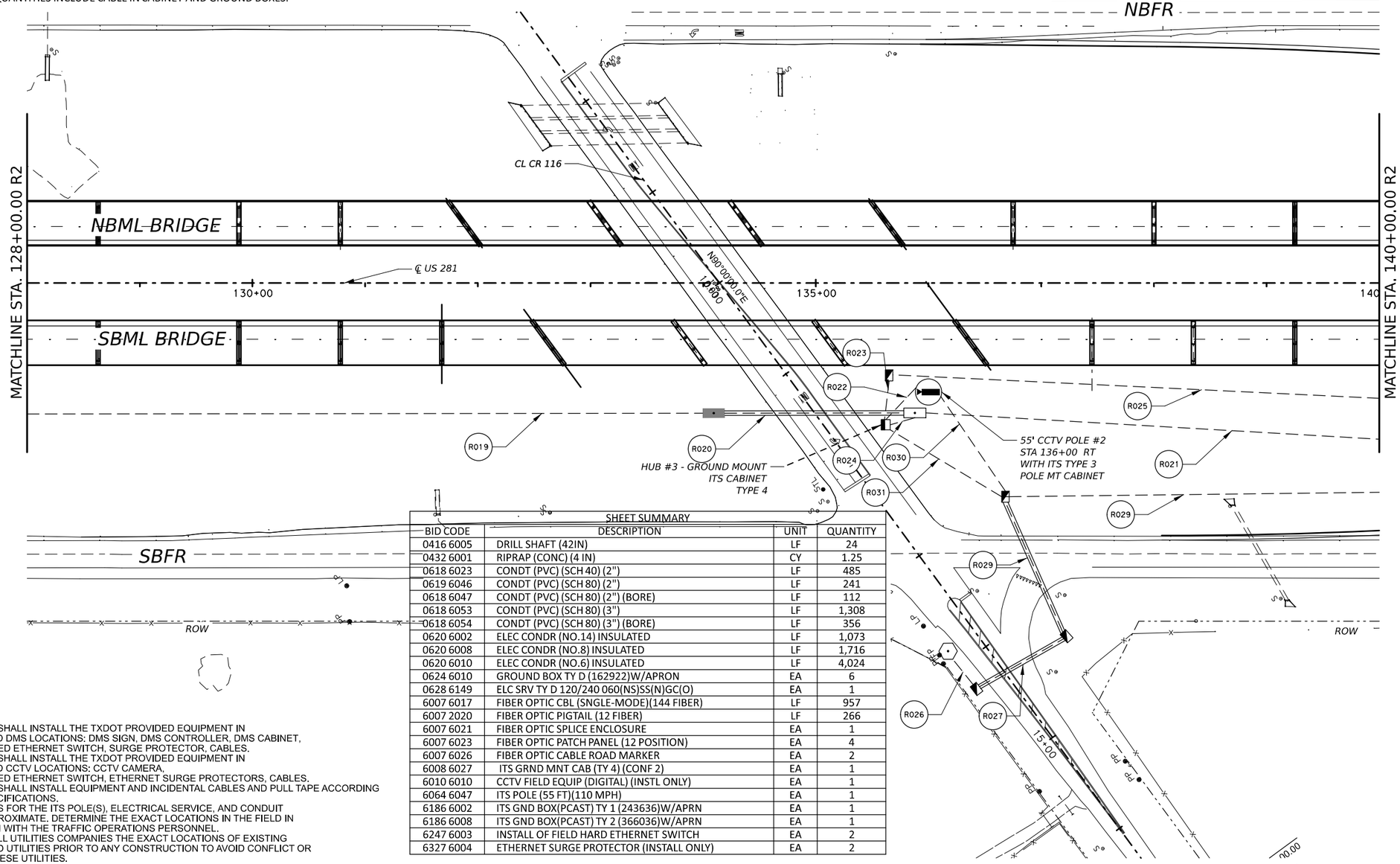
CONDUIT AND CONDUCTOR RUNS TABLE

CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT					TRACER WIRE	POWER CONDUCTOR		COMMUNICATION CABLE	
		0618 6023	0618 6046	0618 6047	0618 6053	0618 6054	0620 6002	0620 6008	0620 6010	6007 6017	6007 6020
		CONDT (PVC) (SCH 40)(2") (LF)	CONDT (PVC) (SCH 80)(2") (LF)	CONDT (PVC) (SCH 80)(2") (BORE)(LF)	CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (PVC) (SCH 80) (3") (BORE)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	ELEC CONDR (NO.8) INSULATED (LF)	ELEC CONDR (NO.6) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)	FIBER OPTIC PIGTAIL (12 FIBER) (LF)
R019	610				2		1			1	
R020	178					2	1			1	
R021	44				2		1			1	
R022	25		1				1				1
R023	35		1				1				1
R024	46		1				1				1
R025	135		1				1				1
R026	96	1						3	12		
R027	46			1				3	12		
R028	66			1				3	12		
R029	25	1							8		
R030	32	1						3			
R031	332	1						3	4		
TOTAL		485	241	112	1,308	356	1,073	1,716	4,024	957	266

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



SHEET SUMMARY

BID CODE	DESCRIPTION	UNIT	QUANTITY
0416 6005	DRILL SHAFT (42IN)	LF	24
0432 6001	RIPRAP (CONC) (4 IN)	CY	1.25
0618 6023	CONDT (PVC) (SCH 40) (2")	LF	485
0619 6046	CONDT (PVC) (SCH 80) (2")	LF	241
0618 6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	112
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	1,308
0618 6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	356
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,073
0620 6008	ELEC CONDR (NO.8) INSULATED	LF	1,716
0620 6010	ELEC CONDR (NO.6) INSULATED	LF	4,024
0624 6010	GROUND BOX TY D (162922)W/APRON	EA	6
0628 6149	ELC SRV TY D 120/240 060(NS)SS(N)GC(O)	EA	1
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	957
6007 2020	FIBER OPTIC PIGTAIL (12 FIBER)	LF	266
6007 6021	FIBER OPTIC SPLICE ENCLOSURE	EA	1
6007 6023	FIBER OPTIC PATCH PANEL (12 POSITION)	EA	4
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	2
6008 6027	ITS GRND MNT CAB (TY 4) (CONF 2)	EA	1
6010 6010	CCTV FIELD EQUIP (DIGITAL) (INSTL ONLY)	EA	1
6064 6047	ITS POLE (55 FT)(110 MPH)	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1
6186 6008	ITS GND BOX(PCAST) TY 2 (366036)W/APRN	EA	1
6247 6003	INSTALL OF FIELD HARD ETHERNET SWITCH	EA	2
6327 6004	ETHERNET SURGE PROTECTOR (INSTALL ONLY)	EA	2

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
2. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED CCTV LOCATIONS: CCTV CAMERA, FIELD HARDENED ETHERNET SWITCH, ETHERNET SURGE PROTECTORS, CABLES.
3. CONTRACTOR SHALL INSTALL EQUIPMENT AND INCIDENTAL CABLES AND PULL TAPE ACCORDING TO TXDOT SPECIFICATIONS.
4. THE LOCATIONS FOR THE ITS POLE(S), ELECTRICAL SERVICE, AND CONDUIT RUNS ARE APPROXIMATE. DETERMINE THE EXACT LOCATIONS IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
5. VERIFY WITH ALL UTILITIES COMPANIES THE EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THESE UTILITIES.

LEGEND
- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED
PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 128+00 R2 TO STA 140+00 R2

SCALE: 1"=100' SHEET 10 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994K

DATE: 5/21/2023 3:29:49 PM
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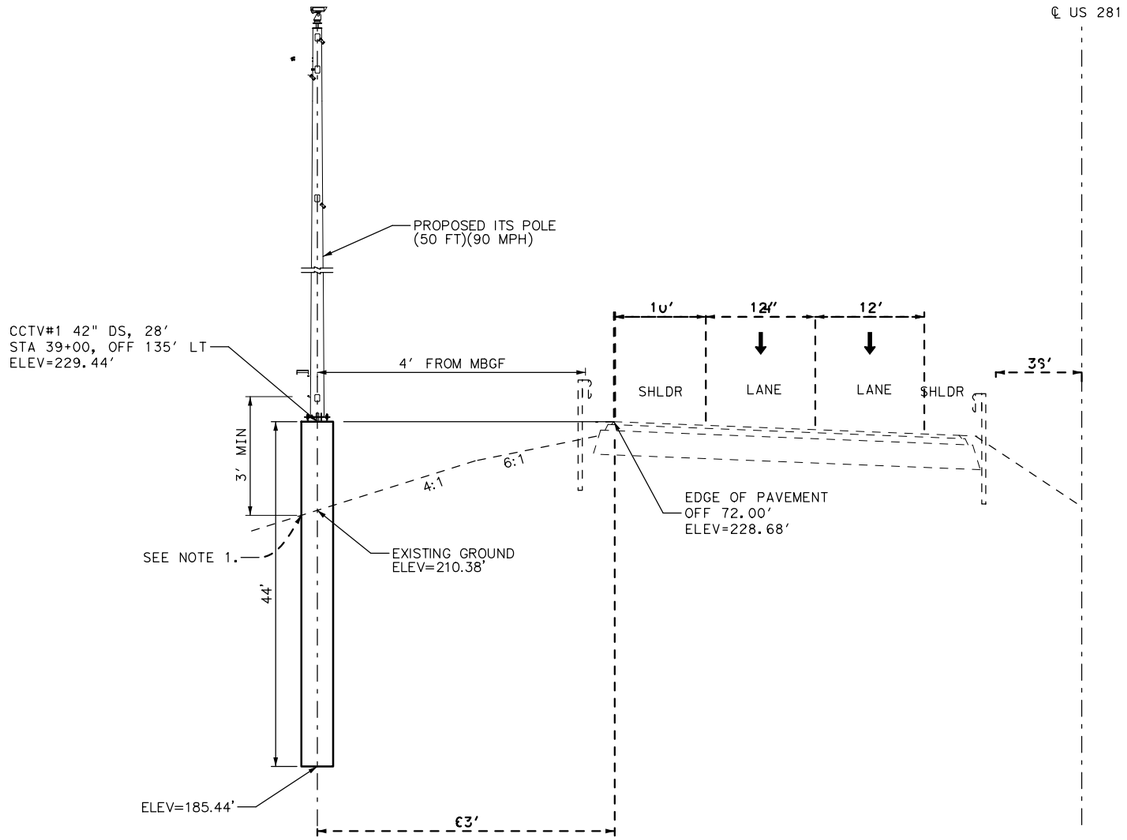

NOTES:

1. INSTALL RIP RAP AS PER STANDARD "ITS POLE RIPRAP DETAILS, ITS(7)-15.
2. THE LOCATION FOR THE ITS POLE, ELECTRIC SERVICE, AND CONDUITS ARE APPROXIMATE. DETERMINE THE EXACT LOCATION IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
3. VERIFY WITH ALL UTILITY COMPANIES THE EXACT LOCATIONS OF THE UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO UTILITIES.

ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED
PROFESSIONAL ENGINEER
P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS DETAILS
CCTV #1
STA 39+00, 135' LT

SCALE: 1"=100' SHEET 1 OF 8

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994KK

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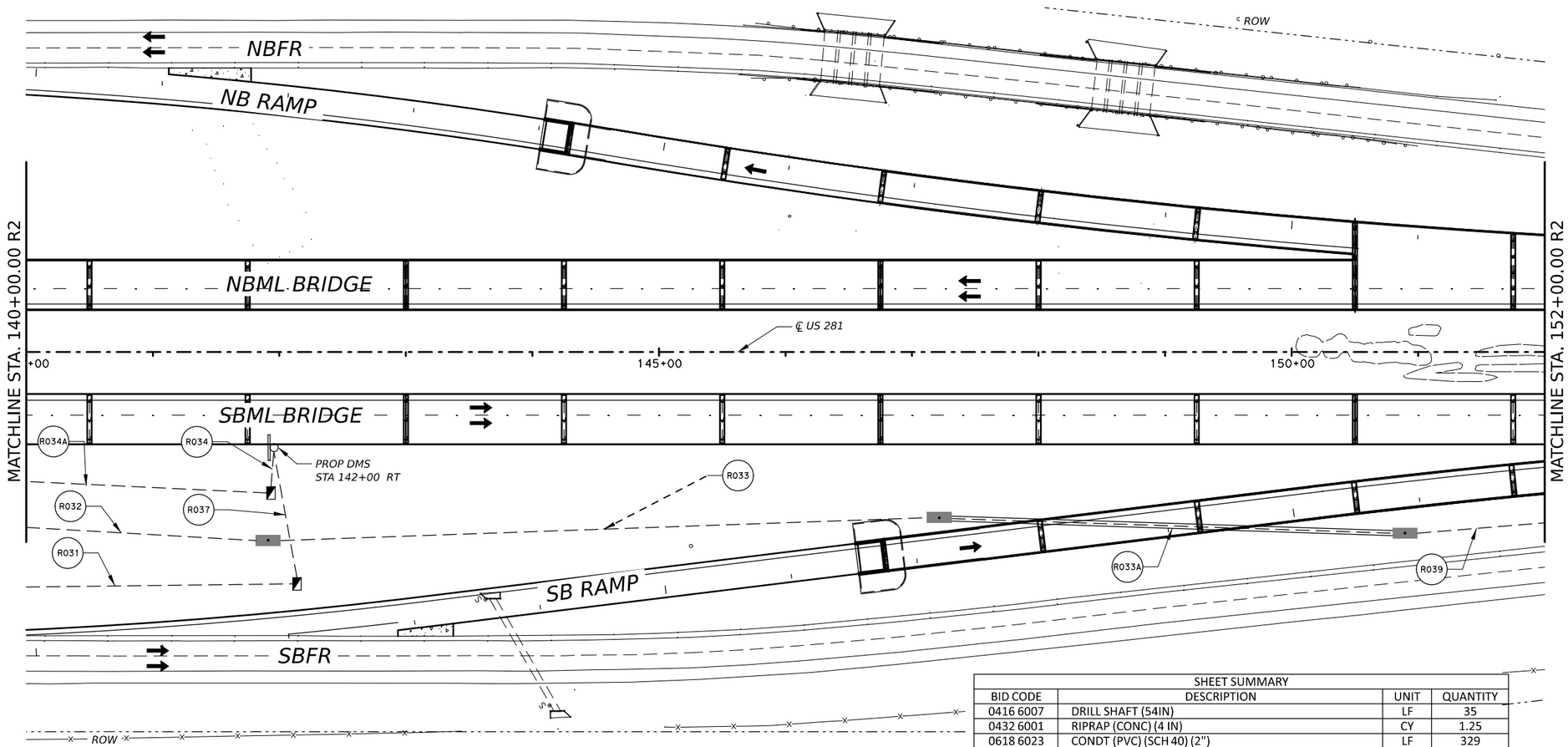
CONDUIT AND CONDUCTOR RUNS TABLE									
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT				TRACER WIRE	POWER CONDUCTOR	COMMUNICATION CABLE	
		0618 6023	0618 6046	0618 6053	0618 6054	0620 6002	0620 6010	6007 6017	6007 6020
		CONDT (PVC) (SCH 40)(2") (LF)	CONDT (PVC) (SCH 80)(2") (LF)	CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (PVC) (SCH 80) (3") (BORE)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	ELEC CONDR (NO.6) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)	FIBER OPTIC PIGTAIL (12 FIBER) (LF)
R031	240	1					4		
R032	203			2		1		1	
R033	507			2		1		1	
R033A	378				2	1		1	
R034	200		1			1			1
R34A	50					1			1
R037	89	1					4		
R039	115			2		1		1	1
TOTAL		329	250	1,650	756	1,453	1,316	1,228	390



NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
2. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED CCTV LOCATIONS: CCTV CAMERA, FIELD HARDENED ETHERNET SWITCH, ETHERNET SURGE PROTECTORS, CABLES.
3. CONTRACTOR SHALL INSTALL EQUIPMENT AND INCIDENTAL CABLES AND PULL TAPE ACCORDING TO TXDOT SPECIFICATIONS.
4. THE LOCATIONS FOR THE ITS POLE(S), ELECTRICAL SERVICE, AND CONDUIT RUNS ARE APPROXIMATE. DETERMINE THE EXACT LOCATIONS IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
5. VERIFY WITH ALL UTILITIES COMPANIES THE EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THESE UTILITIES.

SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0416 6007	DRILL SHAFT (54IN)	LF	35
0432 6001	RIPRAP (CONC) (4 IN)	CY	1.25
0618 6023	CONDT (PVC) (SCH 40) (2")	LF	329
0618 6046	CONDT (PVC) (SCH 80) (2")	LF	250
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	1,650
0618 6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	756
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,453
0620 6010	ELEC CONDR (NO.6) INSULATED	LF	1,316
0624 6008	GROUND BOX TY C (162911)W/APRON	EA	1,453
0650 6028	INS OH SN SUP (30 FT BAL TEE)	EA	1
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,228
6007 2020	FIBER OPTIC PIGTAIL (12 FIBER)	LF	390
6007 6021	FIBER OPTIC SPLICE ENCLOSURE	EA	1
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	3
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	2
6186 6008	ITS GND BOX(PCAST) TY 2 (366036)W/APRN	EA	1
6246 6001	INSTALL OF DMS SYSTEM (POLE MOUNT)	EA	1
6247 6003	INSTALL OF FIELD HARD ETHERNET SWITCH	EA	2
6327 6004	ETHERNET SURGE PROTECTOR (INSTALL ONLY)	EA	2

⚠1 ADD SHEET 5/21/2023

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED
PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 140+00 R2 TO STA 152+00 R2

SCALE: 1"=100' SHEET 11 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994L

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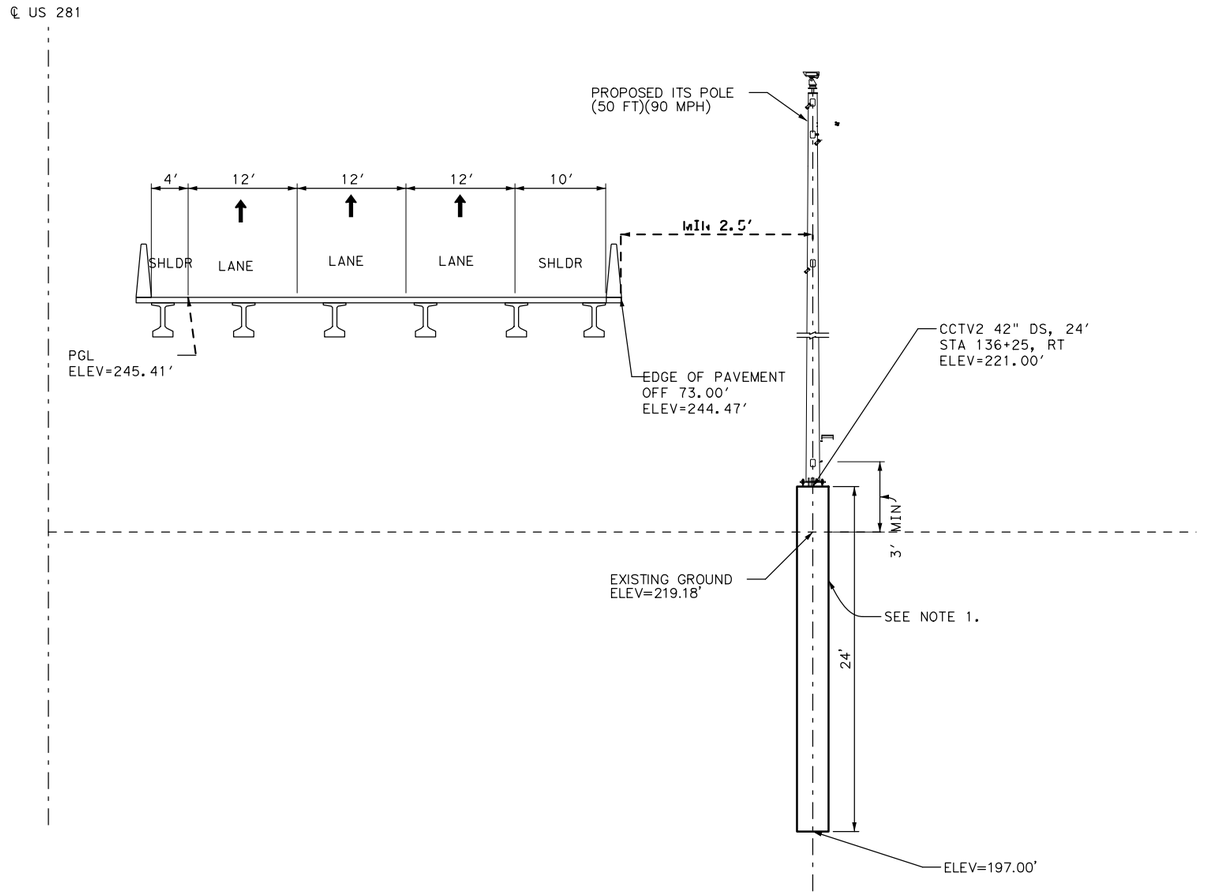

NOTES:

1. INSTALL RIP RAP AS PER STANDARD "ITS POLE RIPRAP DETAILS, ITS(7)-15.
2. THE LOCATION FOR THE ITS POLE, ELECTRIC SERVICE, AND CONDUITS ARE APPROXIMATE. DETERMINE THE EXACT LOCATION IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
3. VERIFY WITH ALL UTILITY COMPANIES THE EXACT LOCATIONS OF THE UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO UTILITIES.

1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED
PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS DETAILS
CCTV #2
STA 136+25, 150' RT

SCALE: 1"=100' SHEET 2 OF 8

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994KK

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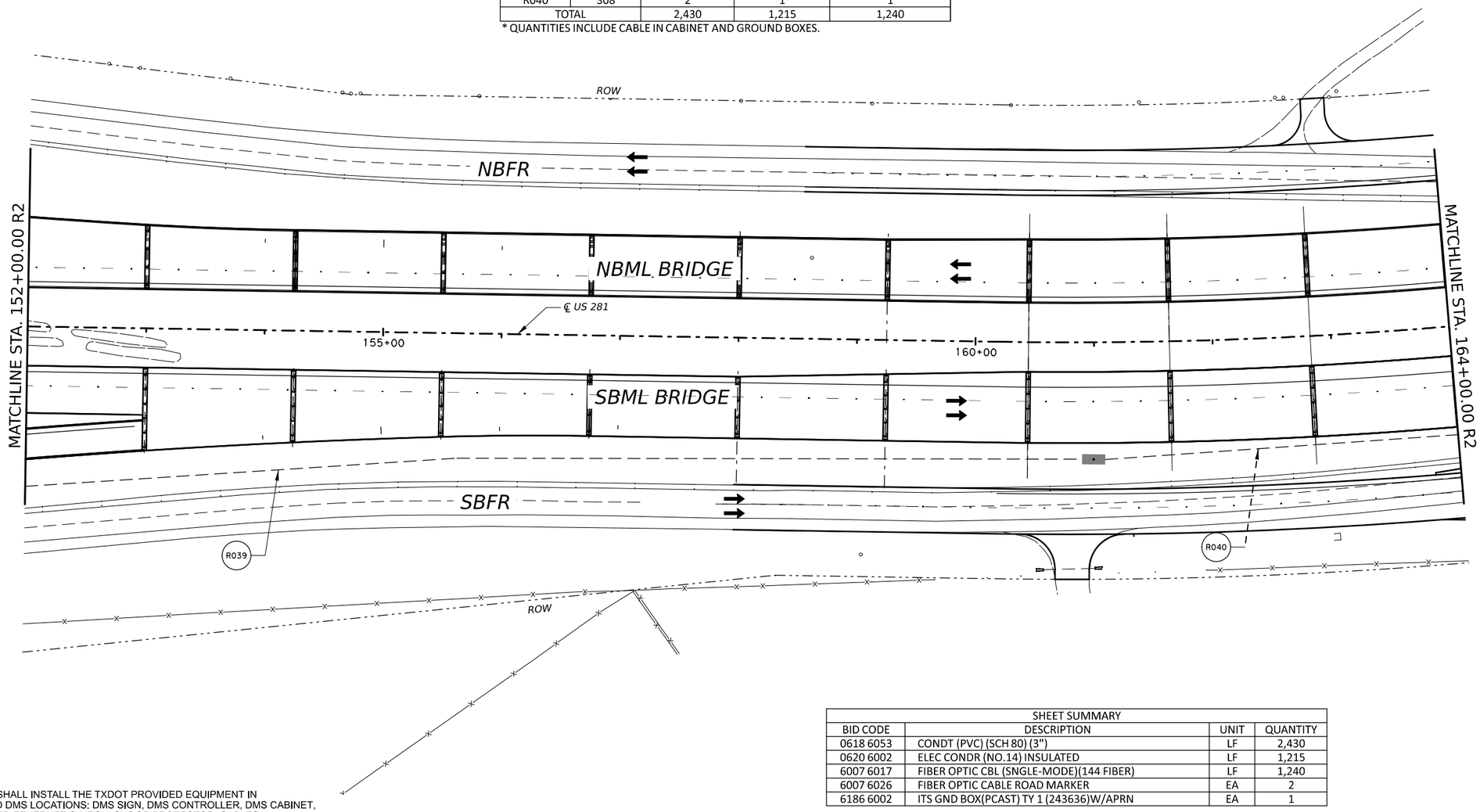
CONDUIT AND CONDUCTOR RUNS TABLE				
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT	TRACER WIRE	COMMUNICATION
		0618 6053	0620 6002	6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R039	907	2	1	1
R040	308	2	1	1
TOTAL		2,430	1,215	1,240

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,430
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,215
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,240
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	2
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
2. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED CCTV LOCATIONS: CCTV CAMERA, FIELD HARDENED ETHERNET SWITCH, ETHERNET SURGE PROTECTORS, CABLES.
3. CONTRACTOR SHALL INSTALL EQUIPMENT AND INCIDENTAL CABLES AND PULL TAPE ACCORDING TO TXDOT SPECIFICATIONS.
4. THE LOCATIONS FOR THE ITS POLE(S), ELECTRICAL SERVICE, AND CONDUIT RUNS ARE APPROXIMATE. DETERMINE THE EXACT LOCATIONS IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
5. VERIFY WITH ALL UTILITIES COMPANIES THE EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THESE UTILITIES.

1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 152+00 R2 TO STA 164+00 R2

SCALE: 1"=100' SHEET 12 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994M

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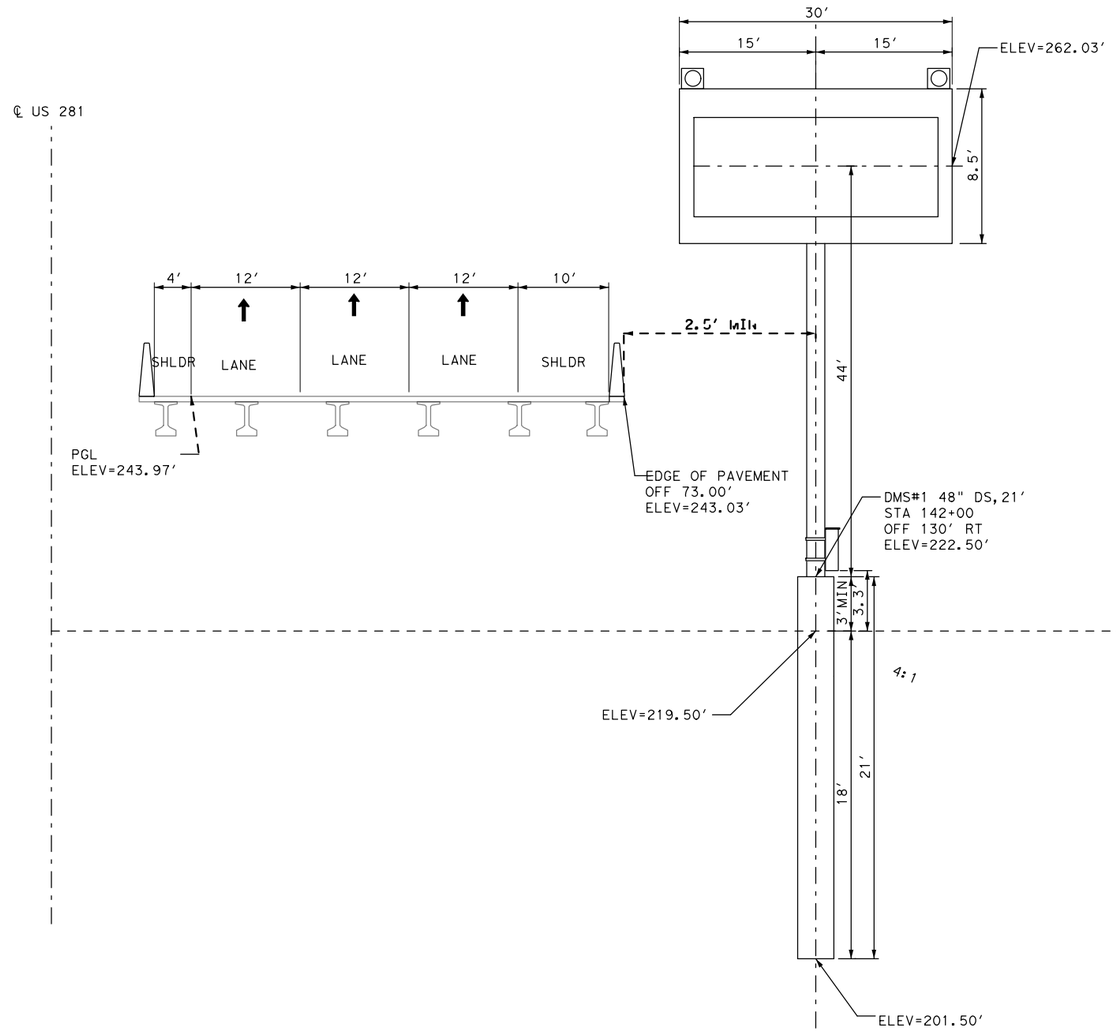

DESIGN DATA		ELEVATION DATA		STRUCTURE DETAILS		FOUNDATION DETAILS		PENOTROMETER DATA
LONG SPAN	15.0′	TRUSS ℄ ELEV	262.03 FT	TRUSS TYPE	4′-6" X 4′-6"	SHAFT DIAM	48"	ASSUMED PENETROMETER VALUE = 10
SPAN LENTH	30.0′	TOP OF DS ELEV	222.50 FT	TOWER PIPE DIAMETER	24"	SHAFT REINF	16-#10(C)	
DESIGN HEIGHT	28.8′	BOTTOM OF DS ELEV	201.50 FT	ANCHOR	2" X 4′-3"	SHAFT EMBEDMENT LENGHT	18′	
TOWER HEIGHT	22.6′(23′)					SHAFT TOTAL LENGTH	21′	
TORSION	47.54 K-FT							
MOMENT	327.40 K-FT							

NOTES:

1. CONTRACTOR SHALL VERIFY THE MINIMUM VERTICAL CLEARANCE FROM THE BOTTOM OF THE OVERHEAD SIGN STRUCTURE TO THE ROADWAY AS SHOWN ON THIS DETAIL.
2. THE LOCATION FOR THE DMS POLE, ELECTRICAL SERVICE, AND CONDUITS ARE APPROXIMATE. DETERMINE THE EXACT LOCATION IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
3. VERIFY WITH ALL UTILITY COMPANIES THE EXACT LOCATIONS OF THE UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO UTILITIES.

⚠1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED
PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS DETAILS
DMS #1
STA 142+00, 130' RT

SCALE: 1"=100' SHEET 3 OF 8

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994MM

DATE: 5/21/2023 4:33:55 PM
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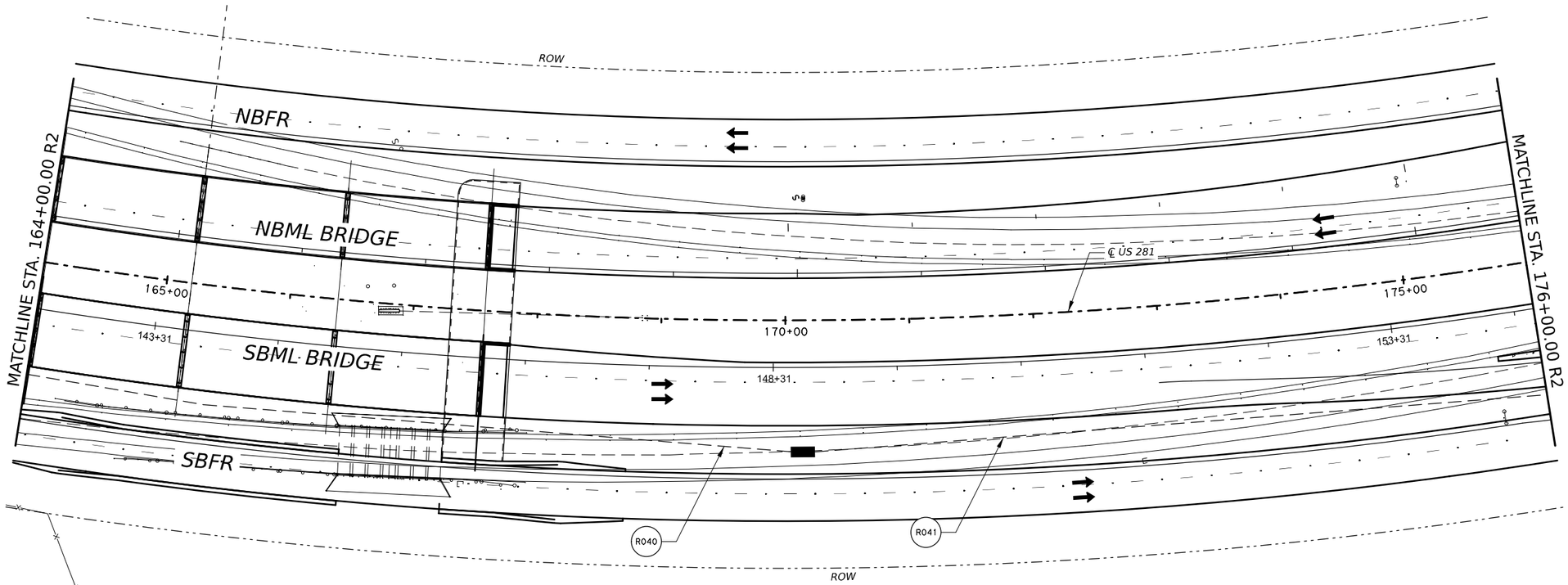
CONDUIT AND CONDUCTOR RUNS TABLE				
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONCUIT 0618 6053	TRACER WIRE 0620 6002	COMMUNICATION CABLE 6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R040	635	2	1	1
R041	604	2	1	1
TOTAL		2,478	1,239	1,264

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,478
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,239
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,264
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
2. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED CCTV LOCATIONS: CCTV CAMERA, FIELD HARDENED ETHERNET SWITCH, ETHERNET SURGE PROTECTORS, CABLES.
3. CONTRACTOR SHALL INSTALL EQUIPMENT AND INCIDENTAL CABLES AND PULL TAPE ACCORDING TO TXDOT SPECIFICATIONS.
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⚠ ADD SHEET 5/21/2023

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 164+00 R2 TO STA 176+00 R2

SCALE: 1"=100' SHEET 13 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994N

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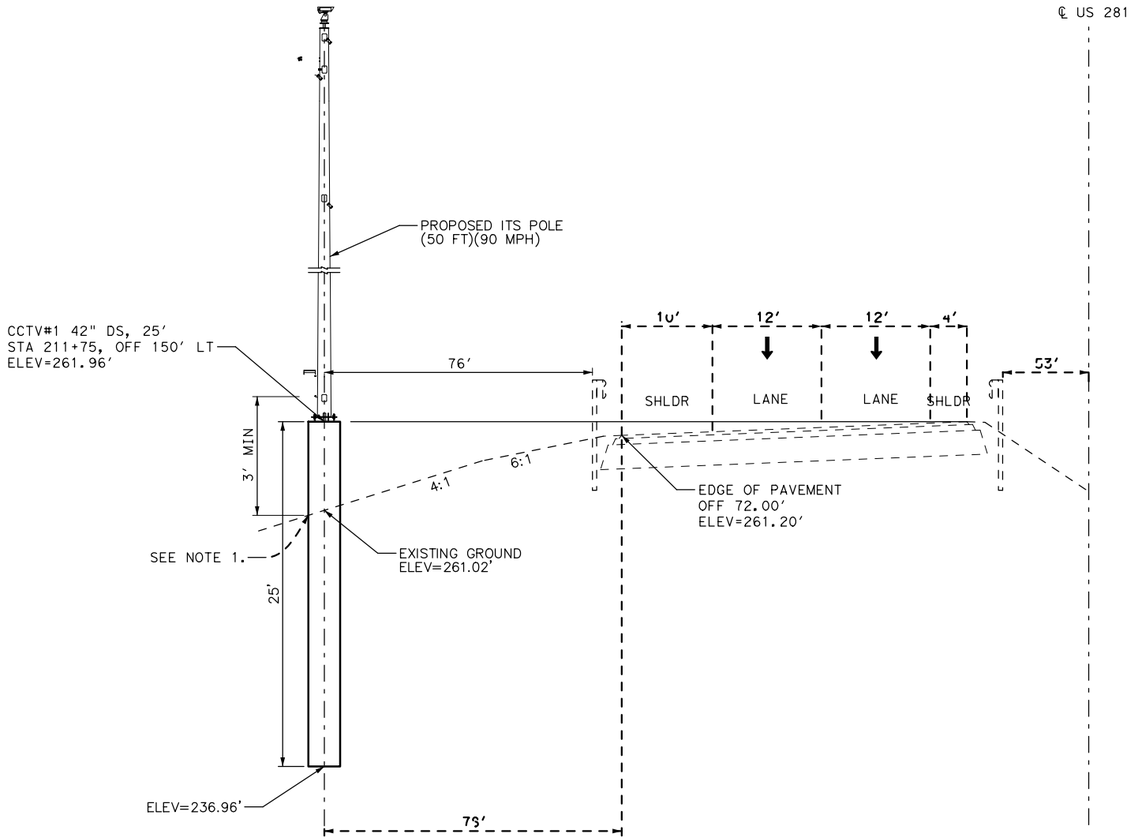

NOTES:

1. INSTALL RIP RAP AS PER STANDARD "ITS POLE RIPRAP DETAILS, ITS(7)-15.
2. THE LOCATION FOR THE ITS POLE, ELECTRIC SERVICE, AND CONDUITS ARE APPROXIMATE. DETERMINE THE EXACT LOCATION IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
3. VERIFY WITH ALL UTILITY COMPANIES THE EXACT LOCATIONS OF THE UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO UTILITIES.

1 ADD SHEET 5/21/2023

STATE OF TEXAS
PRELIMINARY
Released for review only under the authority of ROBERT H. SIEGFRIED, P.E. 84901, on 5/21/2023. It is not to be used for bidding, construction, or permit purposes.
ROBERT H. SIEGFRIED P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS DETAILS
CCTV #3
STA 211+75, LT

SCALE: 1"=100' SHEET 4 OF 8

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994NN

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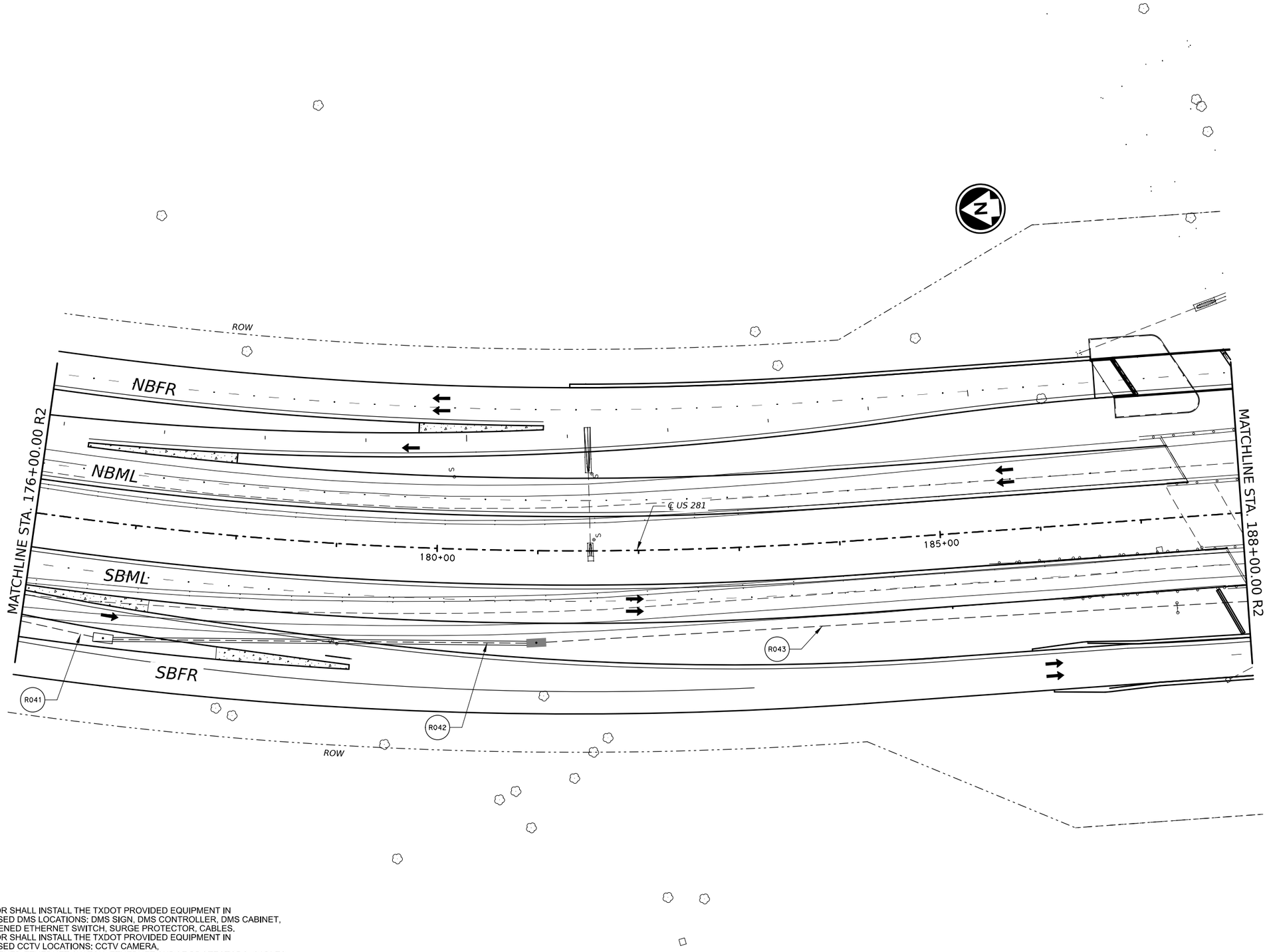

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 176+00 R2 TO STA 188+00 R2

SCALE: 1"=100' SHEET 14 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994O

DATE: 5/21/2023 3:30:13 PM
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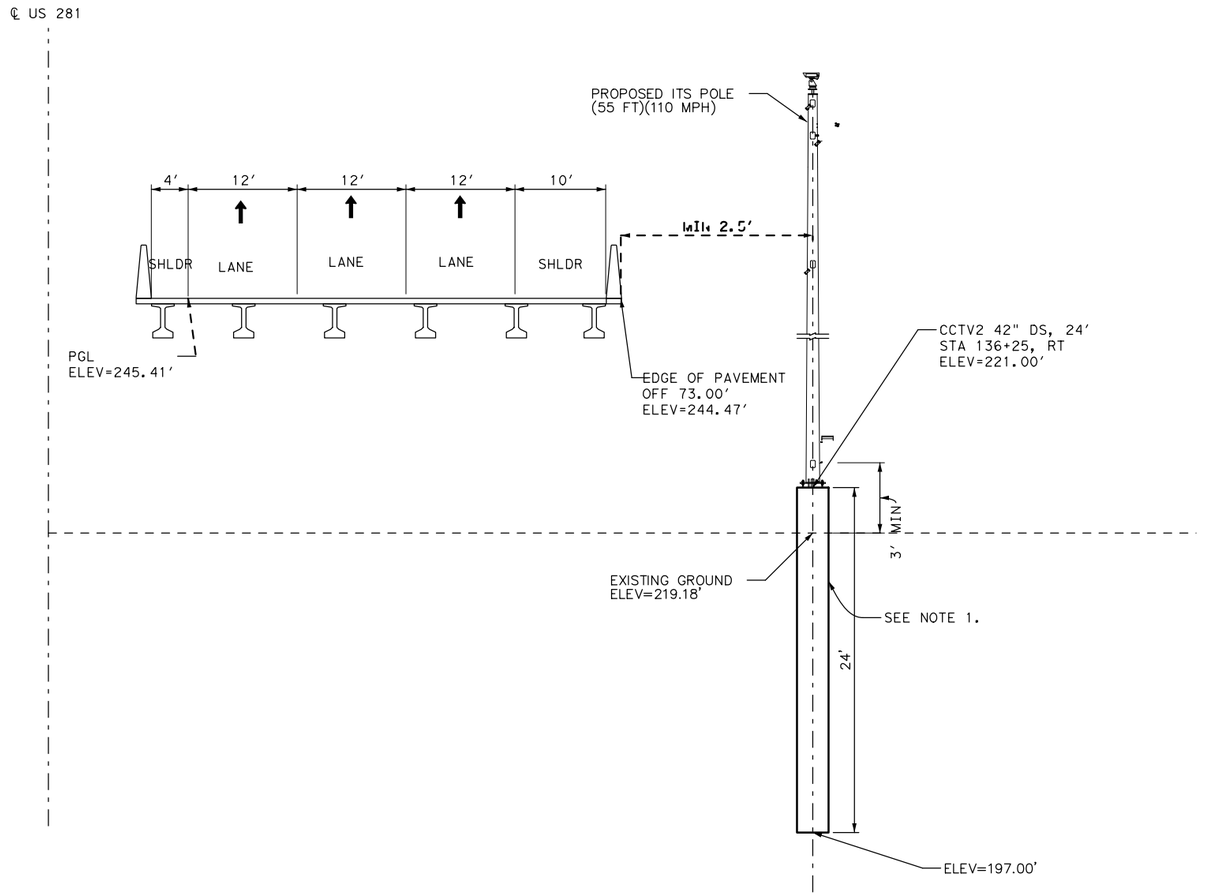

NOTES:

1. INSTALL RIP RAP AS PER STANDARD "ITS POLE RIPRAP DETAILS, ITS(7)-15.
2. THE LOCATION FOR THE ITS POLE, ELECTRIC SERVICE, AND CONDUITS ARE APPROXIMATE. DETERMINE THE EXACT LOCATION IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
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1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED
PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS DETAILS
CCTV #4

STA 258+50, RT

SCALE: 1"=100' SHEET 5 OF 8

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994KK

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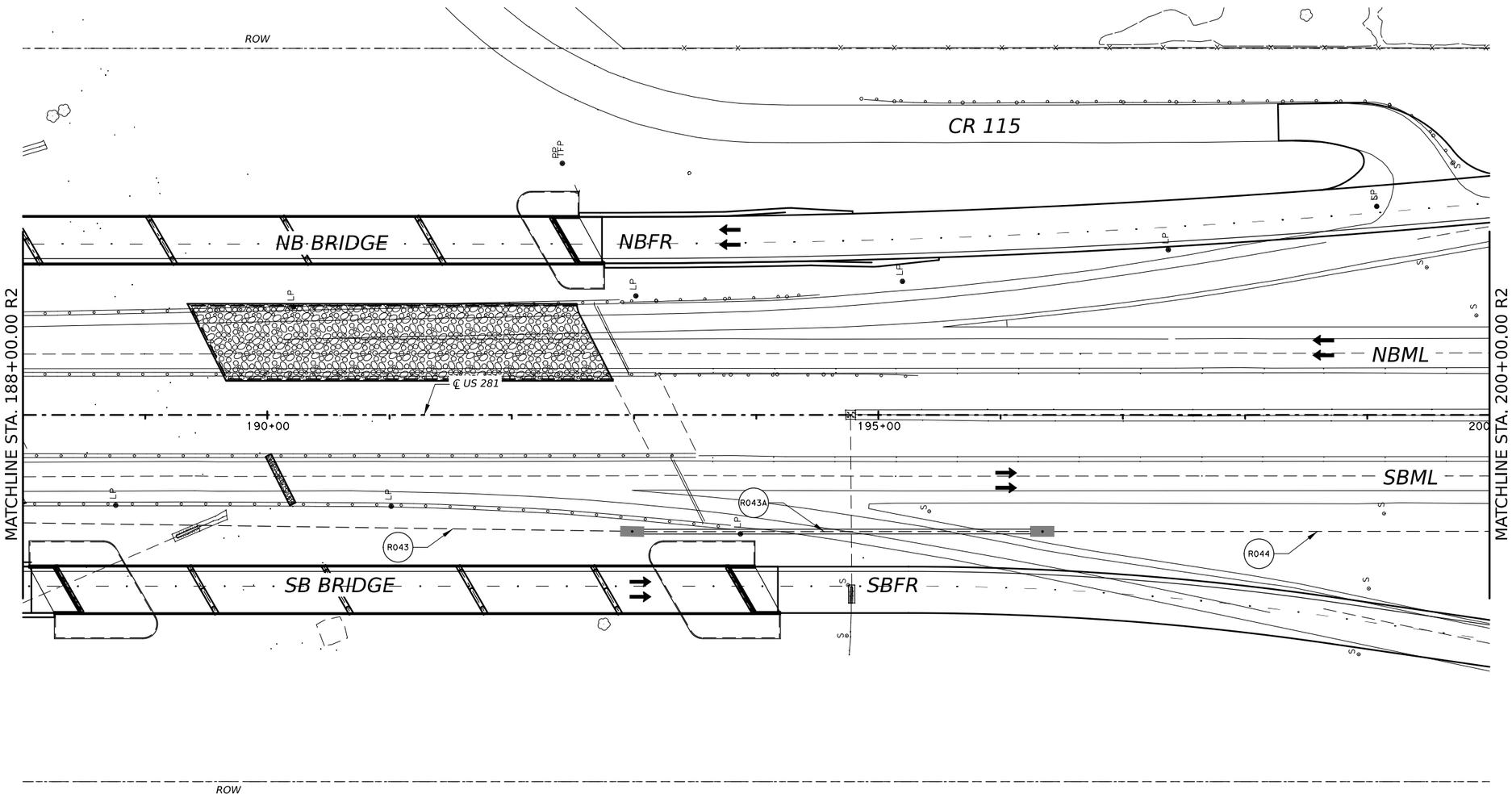
CONDUIT AND CONDUCTOR RUNS TABLE					
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT		TRACER WIRE	COMMUNICATION CABLE
		0618 6053	0618 6054	0620 6002	6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (PVC) (SCH 80) (3") (BORE)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R043	500	2		1	1
R043A	367		2	1	1
R044	334	2		1	1
TOTAL		1,668	734	1,201	1,226

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	1,668
0618 6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	734
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,201
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,226
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	2
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	2

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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1 ADD SHEET 5/21/2023

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 188+00 R2 TO STA 200+00 R2

SCALE: 1"=100' SHEET 15 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994P

DATE: 5/21/2023 3:30:18 PM
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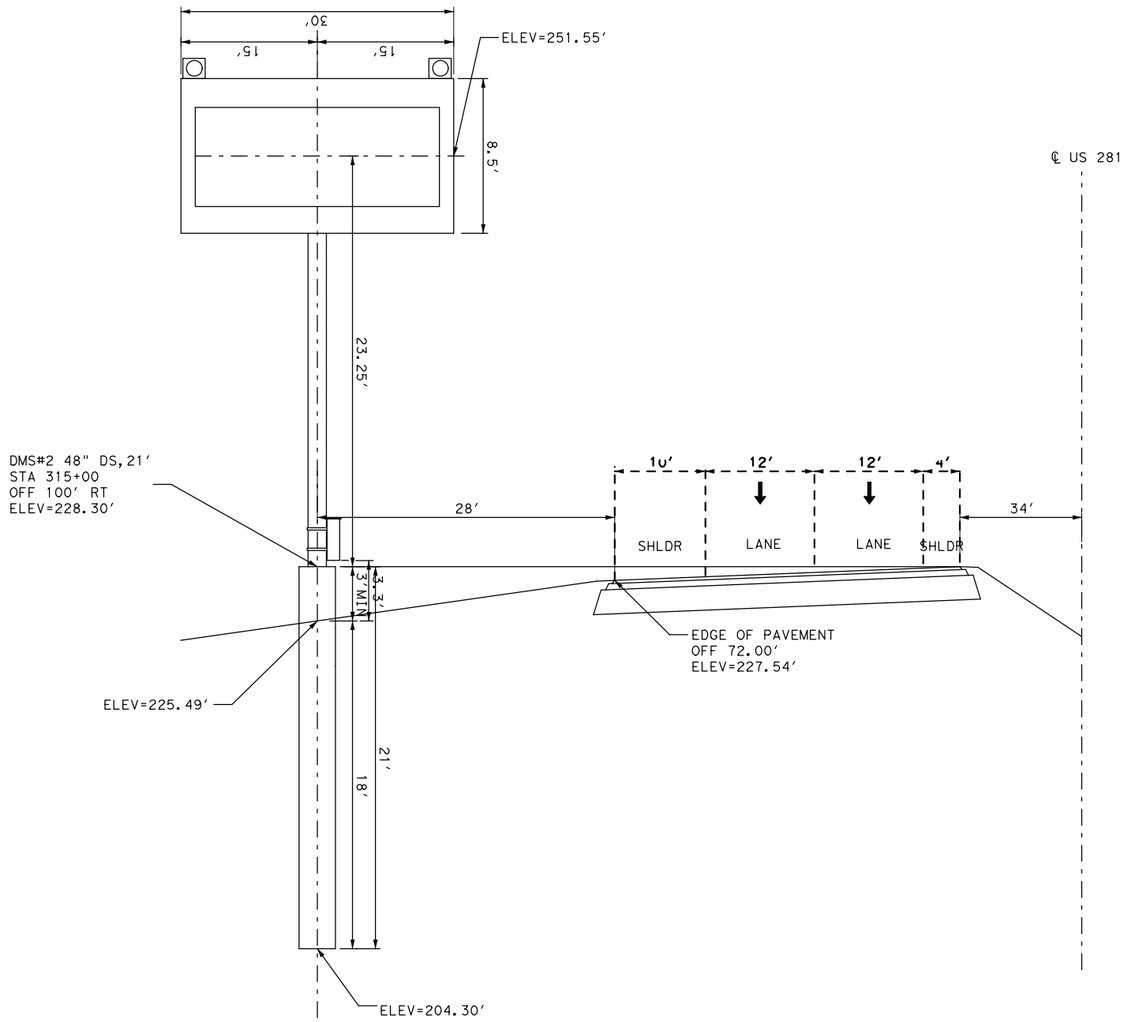

DESIGN DATA

LONG SPAN	15.0'
SPAN LENTH	30.0'
DESIGN HEIGHT	28.8'
TOWER HEIGHT	22.6'(23')
TORSION	47.54 K-FT
MOMENT	327.40 K-FT

ELEVATION DATA

TRUSS ℄ ELEV	251.55 FT
TOP OF DS ELEV	228.30 FT
BOTTOM OF DS ELEV	204.30 FT

STRUCTURE DETAILS

TRUSS TYPE	4'-6" X 4'-6"
TOWER PIPE DIAMETER	24"
ANCHOR	2" X 4'-3"

FOUNDATION DETAILS

SHAFT DIAM	48"
SHAFT REINF	16-#10(C)
SHAFT EMBEDMENT LENGHT	18'
SHAFT TOTAL LENGTH	21'

PENOTROMETER DATA

ASSUMED PENETROMETER VALUE = 10

NOTES:

1. CONTRACTOR SHALL VERIFY THE MINIMUM VERTICAL CLEARANCE FROM THE BOTTOM OF THE OVERHEAD SIGN STRUCTURE TO THE ROADWAY AS SHOWN ON THIS DETAIL.
2. THE LOCATION FOR THE DMS POLE, ELECTRICAL SERVICE, AND CONDUITS ARE APPROXIMATE. DETERMINE THE EXACT LOCATION IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
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⚠ ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS DETAILS
DMS #2
STA 315+00, 100' LT

SCALE: 1"=100' SHEET 6 OF 8

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994PP

DATE: 5/21/2023 4:34:06 PM
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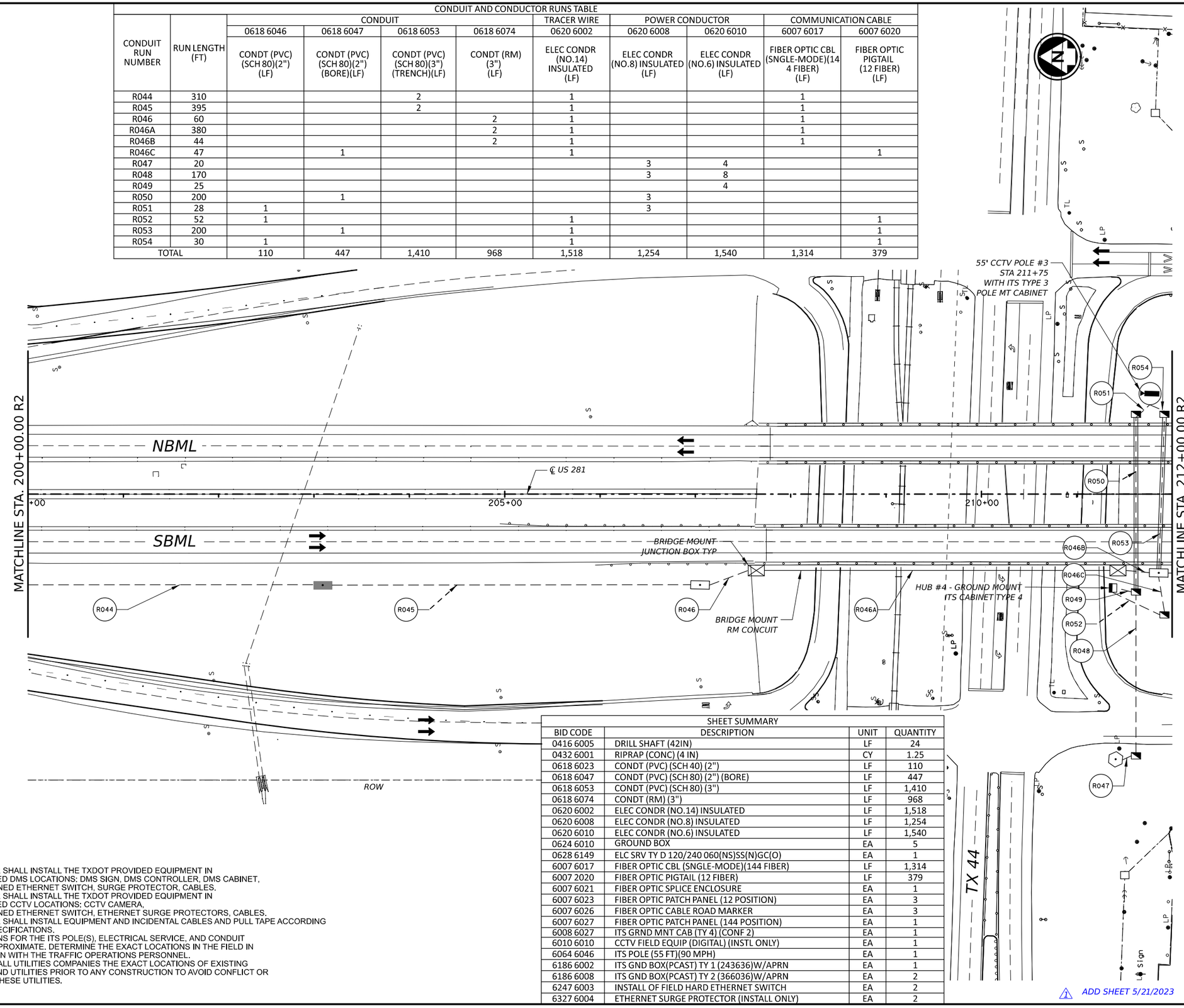
CONDUIT AND CONDUCTOR RUNS TABLE										
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT				TRACER WIRE	POWER CONDUCTOR		COMMUNICATION CABLE	
		0618 6046	0618 6047	0618 6053	0618 6074	0620 6002	0620 6008	0620 6010	6007 6017	6007 6020
		CONDT (PVC) (SCH 80)(2") (LF)	CONDT (PVC) (SCH 80)(2") (BORE)(LF)	CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (RM) (3") (LF)	ELEC CONDR (NO.14) INSULATED (LF)	ELEC CONDR (NO.8) INSULATED (LF)	ELEC CONDR (NO.6) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)	FIBER OPTIC PIGTAIL (12 FIBER) (LF)
R044	310			2		1			1	
R045	395			2		1			1	
R046	60				2	1			1	
R046A	380				2	1			1	
R046B	44				2	1			1	
R046C	47		1			1				1
R047	20						3	4		
R048	170						3	8		
R049	25							4		
R050	200		1				3			
R051	28	1					3			
R052	52	1				1				1
R053	200		1			1				1
R054	30	1				1				1
TOTAL		110	447	1,410	968	1,518	1,254	1,540	1,314	379



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SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0416 6005	DRILL SHAFT (42IN)	LF	24
0432 6001	RIPRAP (CONC) (4 IN)	CY	1.25
0618 6023	CONDT (PVC) (SCH 40) (2")	LF	110
0618 6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	447
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	1,410
0618 6074	CONDT (RM) (3")	LF	968
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,518
0620 6008	ELEC CONDR (NO.8) INSULATED	LF	1,254
0620 6010	ELEC CONDR (NO.6) INSULATED	LF	1,540
0624 6010	GROUND BOX	EA	5
0628 6149	ELC SRV TY D 120/240 060(NS)SS(N)GC(O)	EA	1
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,314
6007 2020	FIBER OPTIC PIGTAIL (12 FIBER)	LF	379
6007 6021	FIBER OPTIC SPLICE ENCLOSURE	EA	1
6007 6023	FIBER OPTIC PATCH PANEL (12 POSITION)	EA	3
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	3
6007 6027	FIBER OPTIC PATCH PANEL (144 POSITION)	EA	1
6008 6027	ITS GRND MNT CAB (TY 4) (CONF 2)	EA	1
6010 6010	CCTV FIELD EQUIP (DIGITAL) (INSTL ONLY)	EA	1
6064 6046	ITS POLE (55 FT)(90 MPH)	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1
6186 6008	ITS GND BOX(PCAST) TY 2 (366036)W/APRN	EA	2
6247 6003	INSTALL OF FIELD HARD ETHERNET SWITCH	EA	2
6327 6004	ETHERNET SURGE PROTECTOR (INSTALL ONLY)	EA	2

1 ADD SHEET 5/21/2023

LEGEND

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- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

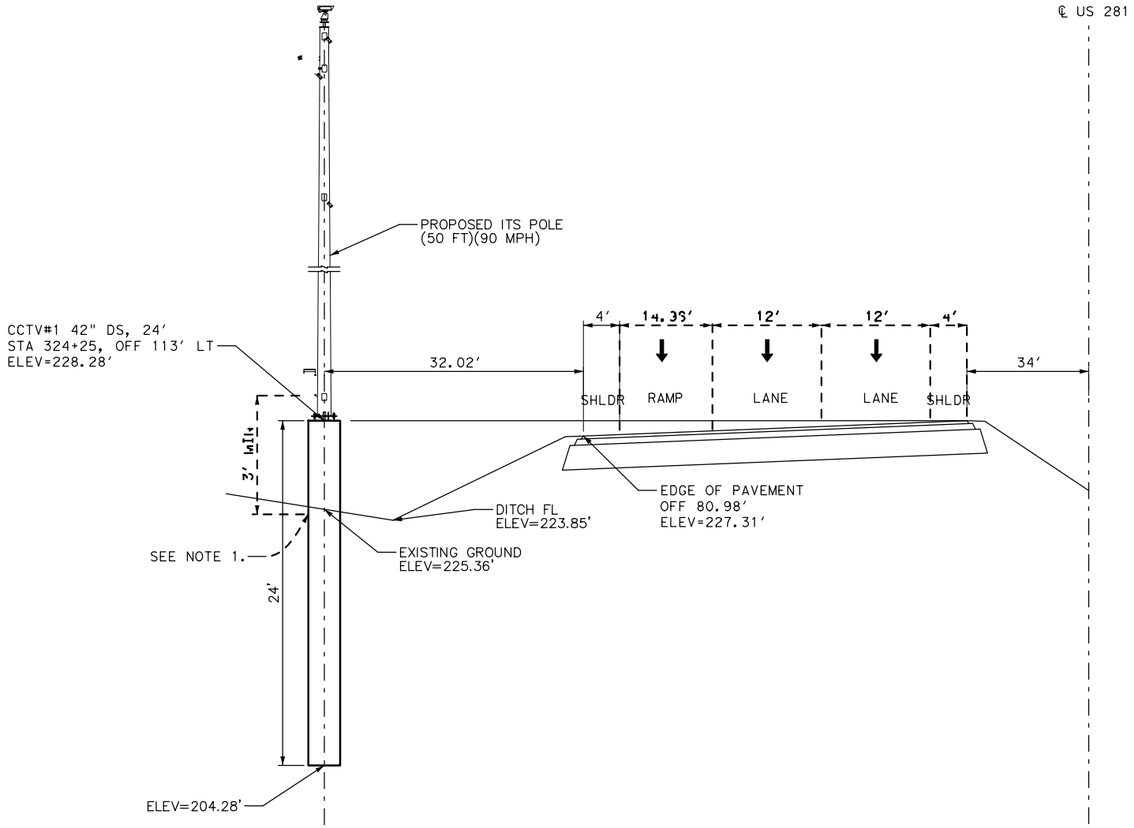
US 281

ITS LAYOUT

STA 200+00 R2 TO STA 212+00 R2

SCALE: 1"=100' SHEET 16 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994Q



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1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
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5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS DETAILS CCTV #5

STA 324+25, 113' LT

SCALE: 1"=100' *SHEET 7 OF 8*

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994QQ

DATE: 5/21/2023 4:34:10 PM
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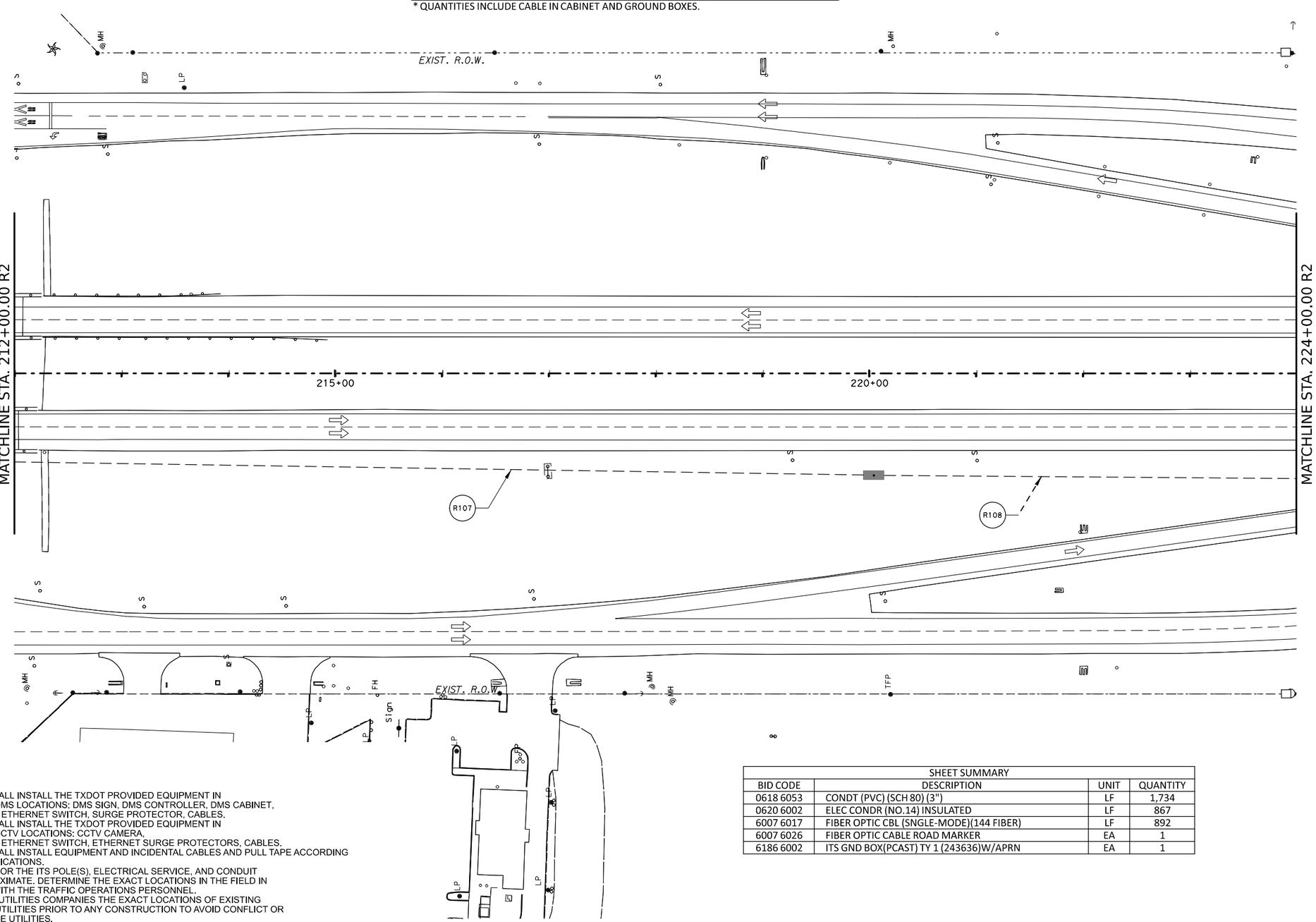
CONDUIT AND CONDUCTOR RUNS TABLE				
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT 0618 6053 CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	TRACER WIRE 0620 6002 ELEC CONDR (NO.14) INSULATED (LF)	COMMUNICATION CABLE 6007 6017 FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R107	500	2	1	1
R108	367	2	1	1
TOTAL		1,734	867	892

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



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SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	1,734
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6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	892
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1

ADD SHEET 5/21/2023

LEGEND

- PROP CCTV W/POLE CAB
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- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

STATE OF TEXAS
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5/21/2023

SIEGFRIED
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TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 212+00 R2 TO STA 224+00 R2

SCALE: 1"=100' SHEET 17 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994R

DATE: 5/21/2023 3:30:31 PM
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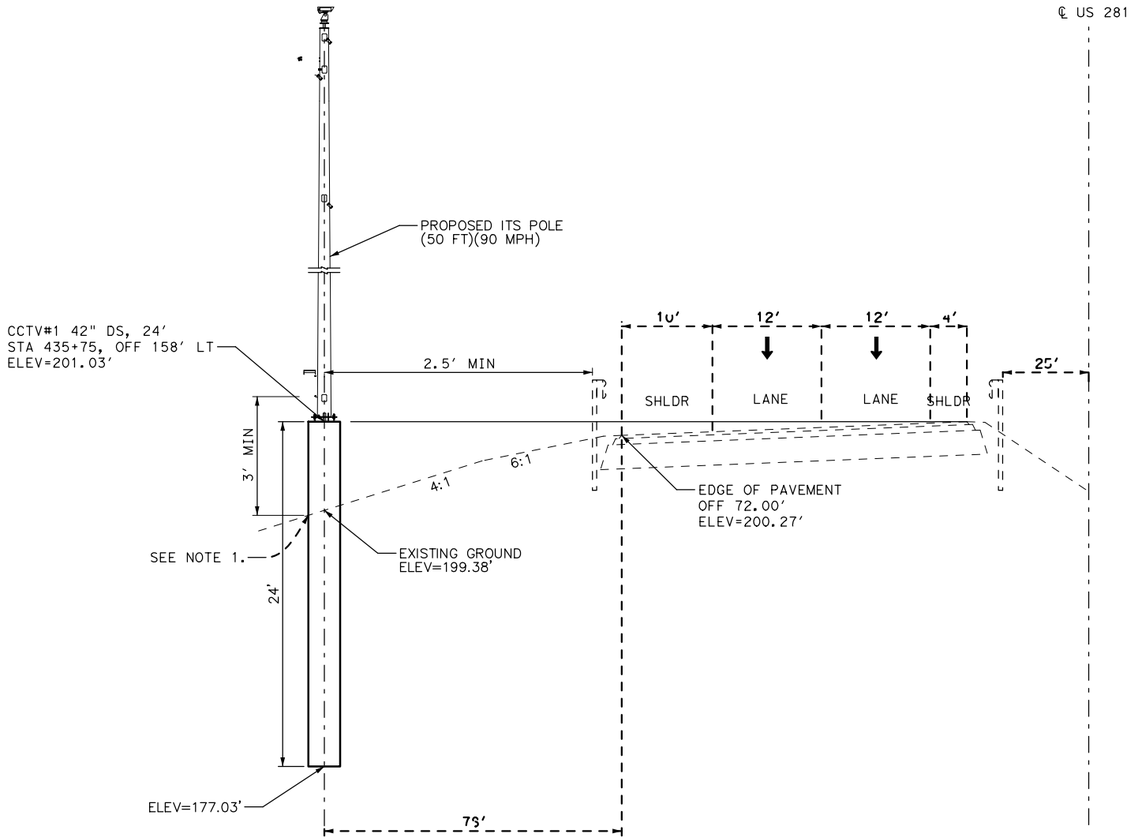

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SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
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Texas Department of Transportation

US 281

ITS DETAILS
CCTV #6
STA 435+75, 158' LT

SCALE: 1"=100' SHEET 8 OF 8

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994RR

DATE: 5/21/2023 4:34:13 PM
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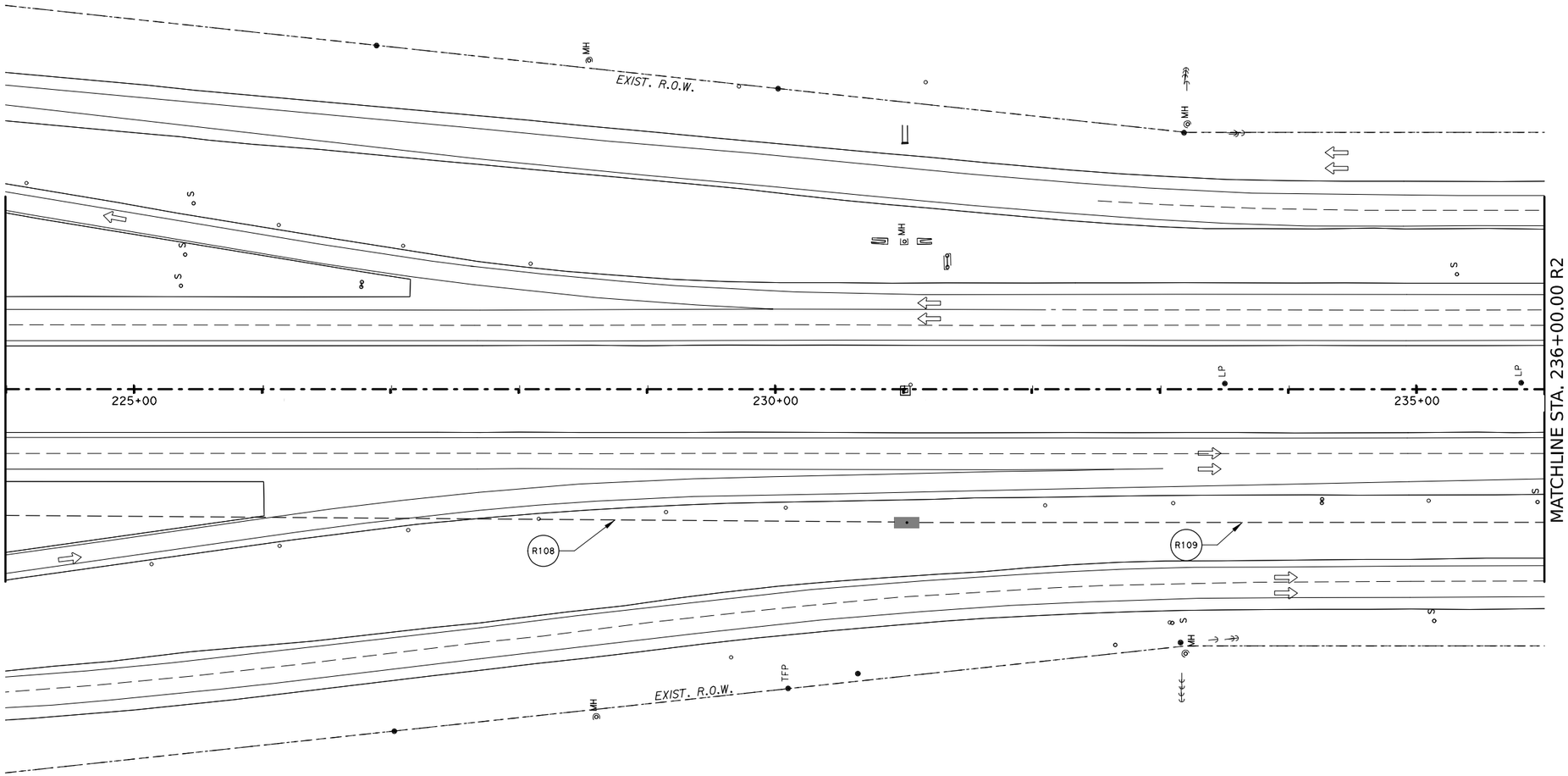
CONDUIT AND CONDUCTOR RUNS TABLE				
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT 0618 6053	TRACER WIRE 0620 6002	COMMUNICATION CABLE 6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R108	705	2	1	1
R109	500	2	1	1
TOTAL		2,410	1,205	1,230

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,410
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,205
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,230
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
2. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED CCTV LOCATIONS: CCTV CAMERA, FIELD HARDENED ETHERNET SWITCH, ETHERNET SURGE PROTECTORS, CABLES.
3. CONTRACTOR SHALL INSTALL EQUIPMENT AND INCIDENTAL CABLES AND PULL TAPE ACCORDING TO TXDOT SPECIFICATIONS.
4. THE LOCATIONS FOR THE ITS POLE(S), ELECTRICAL SERVICE, AND CONDUIT RUNS ARE APPROXIMATE. DETERMINE THE EXACT LOCATIONS IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
5. VERIFY WITH ALL UTILITIES COMPANIES THE EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THESE UTILITIES.

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED
PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 224+00 R2 TO STA 236+00 R2

SCALE: 1"=100' SHEET 18 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994S

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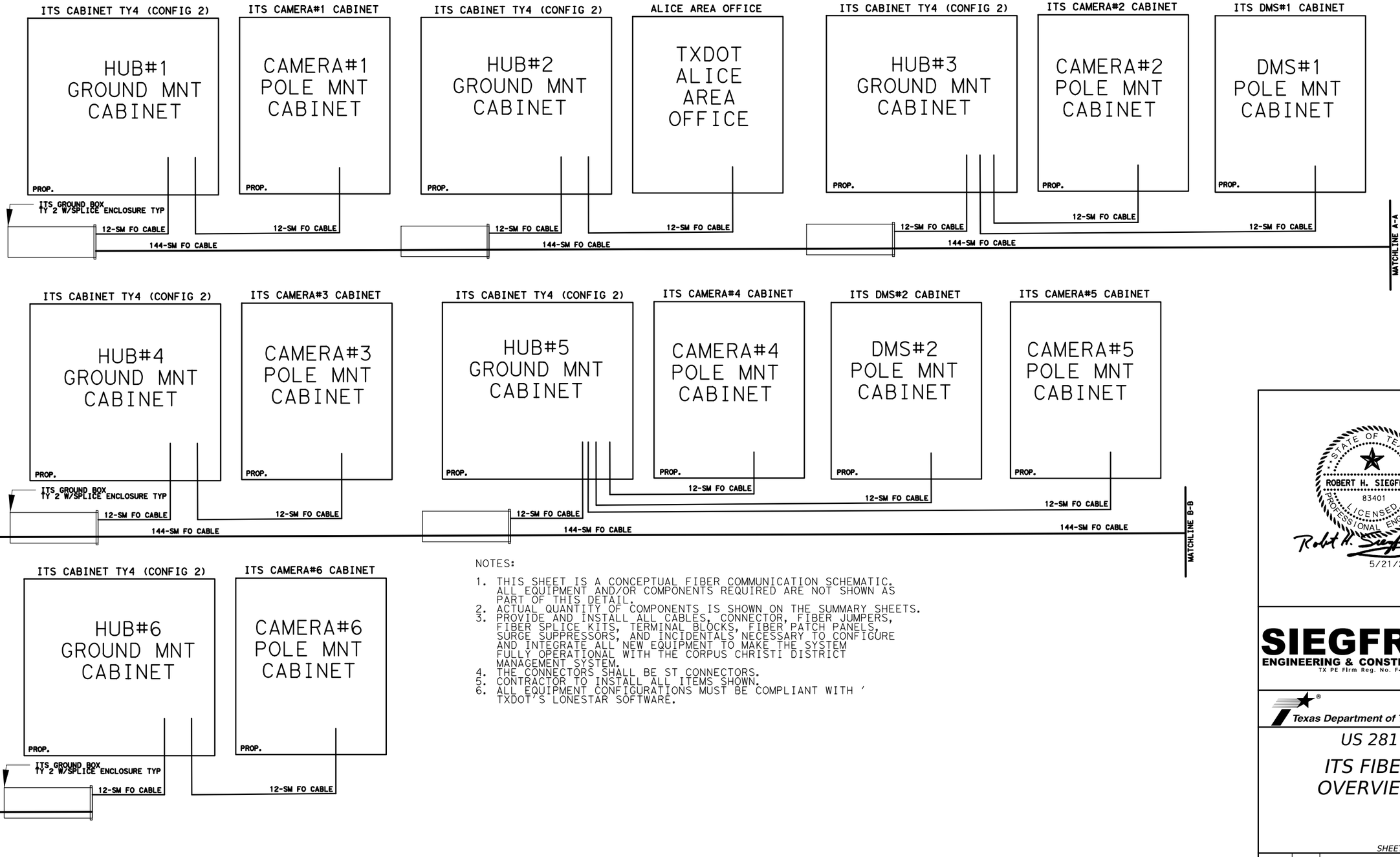

NOTES:

1. THIS SHEET IS A CONCEPTUAL FIBER COMMUNICATION SCHEMATIC. ALL EQUIPMENT AND/OR COMPONENTS REQUIRED ARE NOT SHOWN AS PART OF THIS DETAIL.
2. ACTUAL QUANTITY OF COMPONENTS IS SHOWN ON THE SUMMARY SHEETS.
3. PROVIDE AND INSTALL ALL CABLES, CONNECTOR, FIBER JUMPERS, FIBER SPLICE KITS, TERMINAL BLOCKS, FIBER PATCH PANELS, SURGE SUPPRESSORS, AND INCIDENTALS NECESSARY TO CONFIGURE AND INTEGRATE ALL NEW EQUIPMENT TO MAKE THE SYSTEM FULLY OPERATIONAL WITH THE CORPUS CHRISTI DISTRICT MANAGEMENT SYSTEM.
4. THE CONNECTORS SHALL BE ST CONNECTORS.
5. CONTRACTOR TO INSTALL ALL ITEMS SHOWN.
6. ALL EQUIPMENT CONFIGURATIONS MUST BE COMPLIANT WITH ' TXDOT'S LONESTAR SOFTWARE.

1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS FIBER OVERVIEW

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994SS

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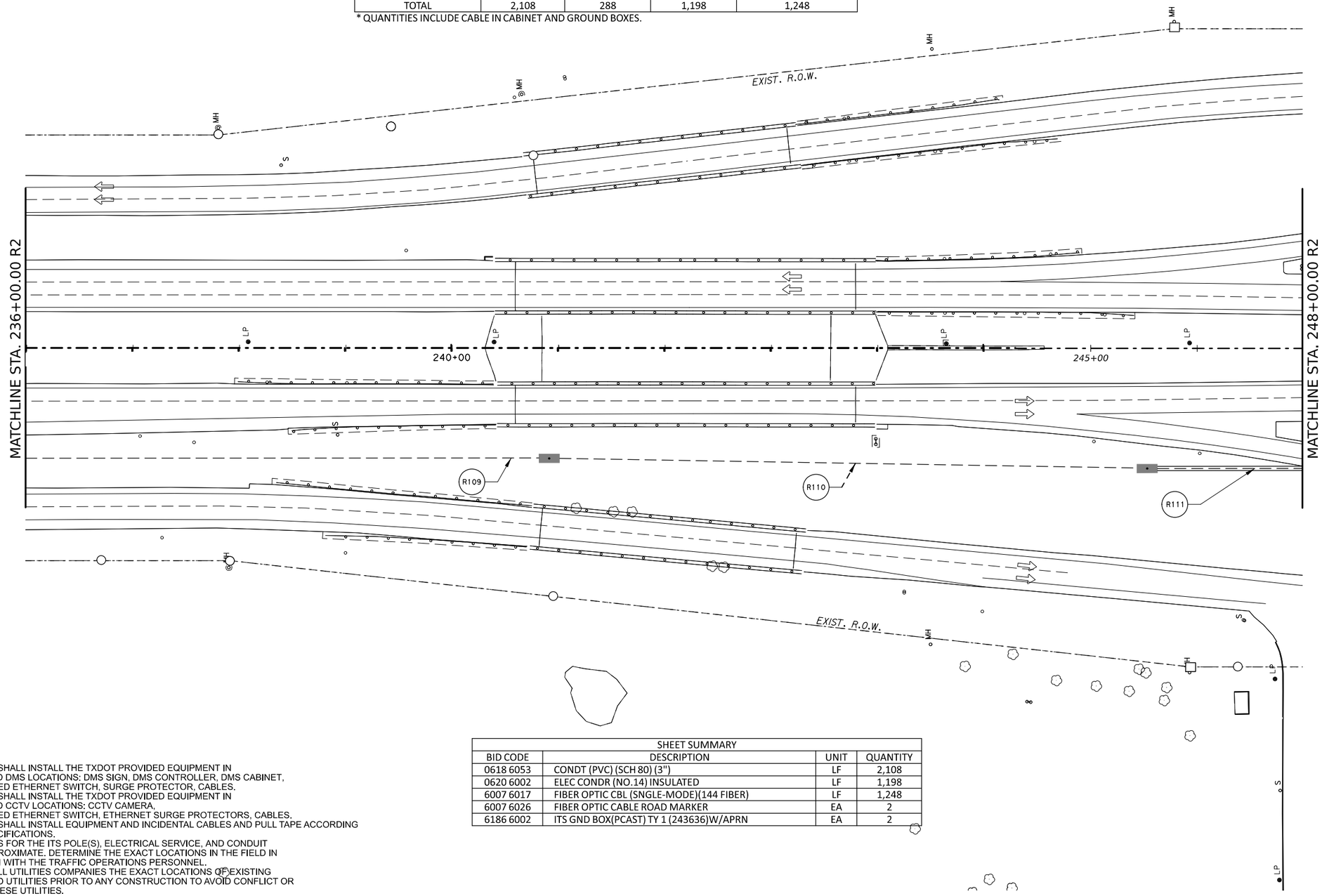
CONDUIT AND CONDUCTOR RUNS TABLE					
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT		TRACER WIRE	COMMUNICATION CABLE
		0618 6053	0618 6054	0620 6002	6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (PVC) (SCH 80) (3") (BORE)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R109	492	2		1	1
R110	562	2		1	1
R111	144		2	1	1
TOTAL		2,108	288	1,198	1,248

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,108
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,198
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,248
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	2
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	2

NOTES:
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⚠ ADD SHEET 5/21/2023

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

STATE OF TEXAS
ROBERT H. SIEGFRIED
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LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 236+00 R2 TO STA 248+00 R2

SCALE: 1"=100' SHEET 19 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994T

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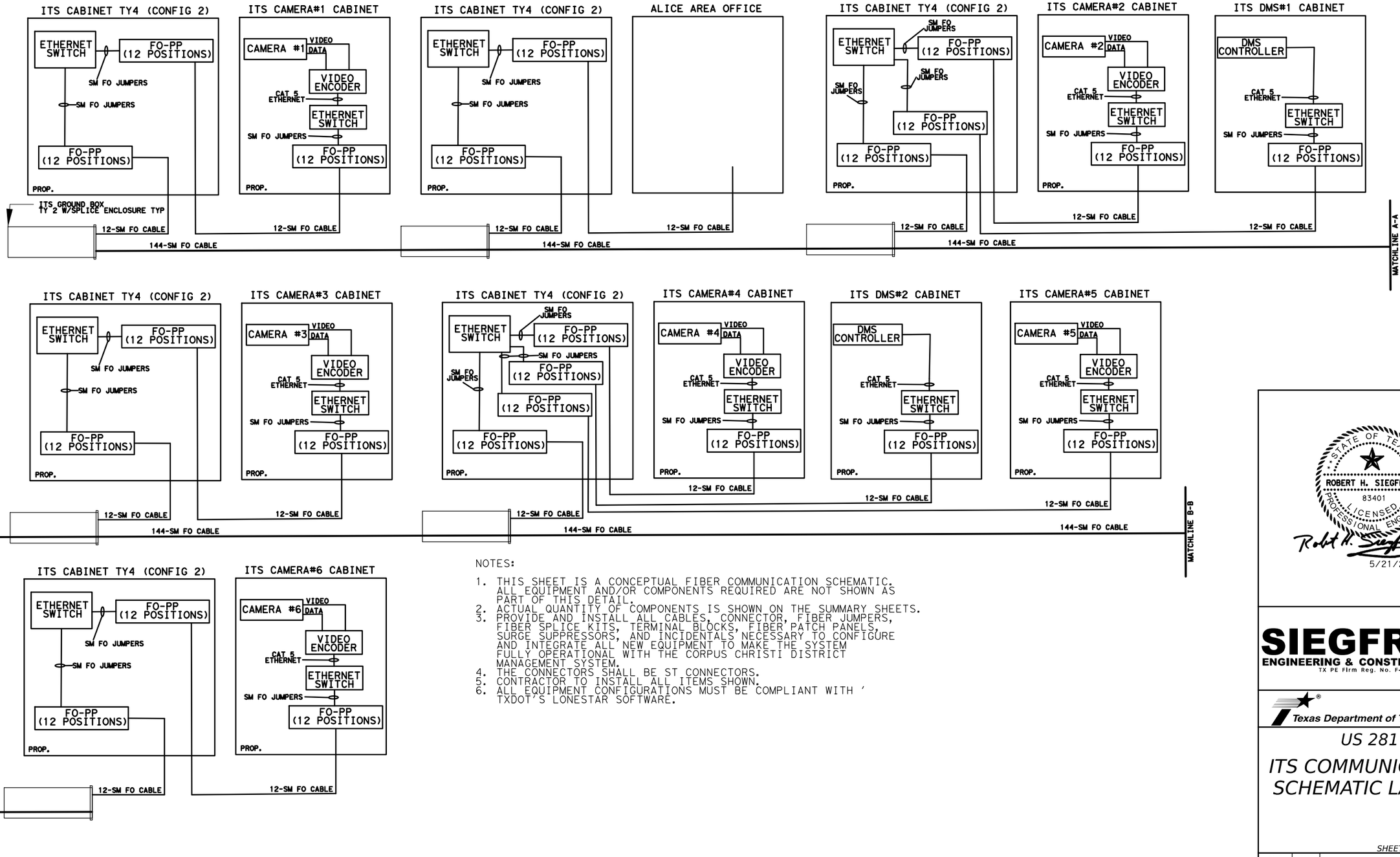

NOTES:

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1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
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Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS COMMUNICATION SCHEMATIC LAYOUT

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994TT

DATE: 5/21/2023 3:32:54 PM
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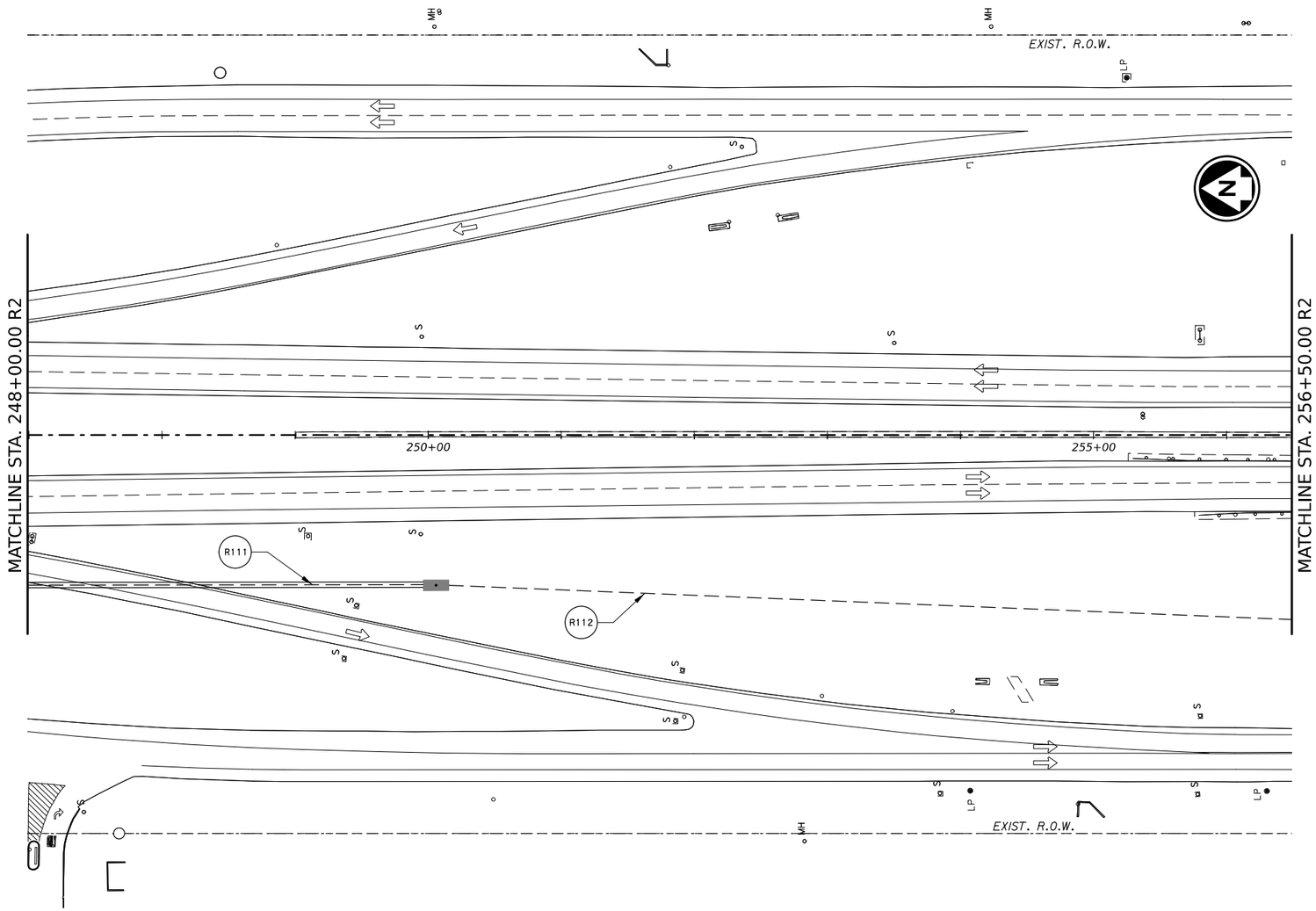
CONDUIT AND CONDUCTOR RUNS TABLE					
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDUIT		TRACER WIRE	COMMUNICATION CABLE
		0618 6053	0618 6054	0620 6002	6007 6017
		CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	CONDT (PVC) (SCH 80) (3") (BORE)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)
R111	307		2	1	1
R112	645	2		1	1
TOTAL		1,290	614	952	977

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	1,290
0618 6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	614
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	952
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	977
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 248+00 R2 TO STA 256+50 R2

SCALE: 1"=100' SHEET 20 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994U

1 ADD SHEET 5/21/2023

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FIBER TERMINATION CHART HUB #1 STA. (38+00 LT)						
FIBER NO.	FIBER COLOR	BUFFER TUBE COLOR	FIBER FUNCTION DATA COMMUNICATION	SPLICE / TERMINATION	CONNECTOR NUMBER	F0-PP CONNECTOR MODULE
1	BLUE	BLUE	TX	TERMINATE	1	CCTV #1
2	ORANGE	BLUE	RX	TERMINATE	2	CCTV #1
3	GREEN	BLUE	(TX BACKUP)	TERMINATE	3	CCTV #1
4	BROWN	BLUE	(RX BACKUP)	TERMINATE	4	CCTV #1
5	SLATE	BLUE	FUTURE	TERMINATE	5	RESERVE
6	WHITE	BLUE	FUTURE	TERMINATE	6	RESERVE
7	RED	BLUE	FUTURE	TERMINATE	7	RESERVE
8	BLACK	BLUE	FUTURE	TERMINATE	8	RESERVE
9	YELLOW	BLUE	FUTURE	TERMINATE	9	RESERVE
10	VIOLET	BLUE	FUTURE	TERMINATE	10	RESERVE
11	ROSE	BLUE	FUTURE	TERMINATE	11	RESERVE
12	AQUA	BLUE	FUTURE	TERMINATE	12	RESERVE

FIBER TERMINATION CHART HUB #2 (STA. 90+00 RT)						
FIBER NO.	FIBER COLOR	BUFFER TUBE COLOR	FIBER FUNCTION DATA COMMUNICATION	SPLICE / TERMINATION	CONNECTOR NUMBER	F0-PP CONNECTOR MODULE
13	BLUE	ORANGE	TX	TERMINATE	13	ALICE AREA OFFICE
14	ORANGE	ORANGE	RX	TERMINATE	14	ALICE AREA OFFICE
15	GREEN	ORANGE	(TX BACKUP)	TERMINATE	15	ALICE AREA OFFICE
16	BROWN	ORANGE	(RX BACKUP)	TERMINATE	16	ALICE AREA OFFICE
17	SLATE	ORANGE	FUTURE	TERMINATE	17	ALICE AREA OFFICE
18	WHITE	ORANGE	FUTURE	TERMINATE	18	ALICE AREA OFFICE
19	RED	ORANGE	FUTURE	TERMINATE	12	RESERVE
20	BLACK	ORANGE	FUTURE	TERMINATE	12	RESERVE
21	YELLOW	ORANGE	FUTURE	TERMINATE	12	RESERVE
22	VIOLET	ORANGE	FUTURE	TERMINATE	12	RESERVE
23	ROSE	ORANGE	FUTURE	TERMINATE	12	RESERVE
24	AQUA	ORANGE	FUTURE	TERMINATE	12	RESERVE

FIBER TERMINATION CHART HUB #3 STA. (136+00 RT)						
FIBER NO.	FIBER COLOR	BUFFER TUBE COLOR	FIBER FUNCTION DATA COMMUNICATION	SPLICE / TERMINATION	CONNECTOR NUMBER	F0-PP CONNECTOR MODULE
25	BLUE	GREEN	TX	TERMINATE	13	CCTV #2
26	ORANGE	GREEN	RX	TERMINATE	14	CCTV #2
27	GREEN	GREEN	(TX BACKUP)	TERMINATE	15	CCTV #2
28	BROWN	GREEN	(RX BACKUP)	TERMINATE	16	CCTV #2
29	SLATE	GREEN	FUTURE	TERMINATE	17	RESERVE
30	WHITE	GREEN	FUTURE	TERMINATE	18	RESERVE
31	RED	GREEN	DMS #1	TERMINATE	19	DMS #1
32	BLACK	GREEN	DMS #1	TERMINATE	20	DMS #1
33	YELLOW	GREEN	DMS #1	TERMINATE	21	DMS #1
34	VIOLET	GREEN	DMS #1	TERMINATE	22	DMS #1
35	ROSE	GREEN	RESERVE	TERMINATE	23	RESERVE
36	AQUA	GREEN	RESERVE	TERMINATE	24	RESERVE

FIBER TERMINATION CHART HUB #4 STA. (211+75 RT)						
FIBER NO.	FIBER COLOR	BUFFER TUBE COLOR	FIBER FUNCTION DATA COMMUNICATION	SPLICE / TERMINATION	CONNECTOR NUMBER	F0-PP CONNECTOR MODULE
37	BLUE	BROWN	TX	TERMINATE	1	CCTV #3
38	ORANGE	BROWN	RX	TERMINATE	2	CCTV #3
39	GREEN	BROWN	(TX BACKUP)	TERMINATE	3	CCTV #3
40	BROWN	BROWN	(RX BACKUP)	TERMINATE	4	CCTV #3
41	SLATE	BROWN	FUTURE	TERMINATE	5	RESERVE
42	WHITE	BROWN	FUTURE	TERMINATE	6	RESERVE
43	RED	BROWN	FUTURE	TERMINATE	7	RESERVE
44	BLACK	BROWN	FUTURE	TERMINATE	8	RESERVE
45	YELLOW	BROWN	FUTURE	TERMINATE	9	RESERVE
46	VIOLET	BROWN	FUTURE	TERMINATE	10	RESERVE
47	ROSE	BROWN	FUTURE	TERMINATE	11	RESERVE
48	AQUA	BROWN	FUTURE	TERMINATE	12	RESERVE

PANEL FIBER TERMINATION CHART HUB #5 STA. (256+62 75' RT)						
FIBER NO.	FIBER COLOR	BUFFER TUBE COLOR	FIBER FUNCTION DATA COMMUNICATION	SPLICE / TERMINATION	CONNECTOR NUMBER	F0-PP CONNECTOR MODULE
49	BLUE	SLATE	TX	TERMINATE	13	CCTV #4
50	ORANGE	SLATE	RX	TERMINATE	14	CCTV #4
51	GREEN	SLATE	(TX BACKUP)	TERMINATE	15	CCTV #4
52	BROWN	SLATE	(RX BACKUP)	TERMINATE	16	CCTV #4
53	SLATE	SLATE	FUTURE	TERMINATE	17	RESERVE
54	WHITE	SLATE	FUTURE	TERMINATE	18	RESERVE
55	RED	SLATE	DMS #1	TERMINATE	19	DMS #2
56	BLACK	SLATE	DMS #1	TERMINATE	20	DMS #2
57	YELLOW	SLATE	DMS #1	TERMINATE	21	DMS #2
58	VIOLET	SLATE	DMS #1	TERMINATE	22	DMS #2
59	ROSE	SLATE	RESERVE	TERMINATE	23	RESERVE
60	AQUA	SLATE	RESERVE	TERMINATE	24	RESERVE
61	BLUE	WHITE	TX	TERMINATE	13	CCTV #5
62	ORANGE	WHITE	RX	TERMINATE	14	CCTV #5
63	GREEN	WHITE	(TX BACKUP)	TERMINATE	15	CCTV #5
64	BROWN	WHITE	(RX BACKUP)	TERMINATE	16	CCTV #5
65	SLATE	WHITE	FUTURE	TERMINATE	17	RESERVE
66	WHITE	WHITE	FUTURE	TERMINATE	18	RESERVE
67	RED	WHITE	RESERVE	TERMINATE	19	RESERVE
68	BLACK	WHITE	RESERVE	TERMINATE	20	RESERVE
69	YELLOW	WHITE	RESERVE	TERMINATE	21	RESERVE
70	VIOLET	WHITE	RESERVE	TERMINATE	22	RESERVE
71	ROSE	WHITE	RESERVE	TERMINATE	23	RESERVE
72	AQUA	WHITE	RESERVE	TERMINATE	24	RESERVE

PANEL FIBER TERMINATION CHART HUB #6 STA.						
FIBER NO.	FIBER COLOR	BUFFER TUBE COLOR	FIBER FUNCTION DATA COMMUNICATION	SPLICE / TERMINATION	CONNECTOR NUMBER	F0-PP CONNECTOR MODULE
73	BLUE	RED	TX	TERMINATE	13	CCTV #6
74	ORANGE	RED	RX	TERMINATE	14	CCTV #6
75	GREEN	RED	(TX BACKUP)	TERMINATE	15	CCTV #6
76	BROWN	RED	(RX BACKUP)	TERMINATE	16	CCTV #6
77	SLATE	RED	FUTURE	TERMINATE	17	RESERVE
78	WHITE	RED	FUTURE	TERMINATE	18	RESERVE
79	RED	RED	RESERVE	TERMINATE	19	RESERVE
80	BLACK	RED	RESERVE	TERMINATE	20	RESERVE
81	YELLOW	RED	RESERVE	TERMINATE	21	RESERVE
82	VIOLET	RED	RESERVE	TERMINATE	22	RESERVE
83	ROSE	RED	RESERVE	TERMINATE	23	RESERVE
84	AQUA	RED	RESERVE	TERMINATE	24	RESERVE

FIBER TERMINATION CHART						
FIBER NO.	FIBER COLOR	BUFFER TUBE COLOR	FIBER FUNCTION DATA COMMUNICATION	SPLICE / TERMINATION	CONNECTOR NUMBER	F0-PP CONNECTOR MODULE
85-96	VARIOUS	BLACK	FUTURE	TERMINATE	85-96	FUTURE
97-108	VARIOUS	YELLOW	FUTURE	TERMINATE	97-108	FUTURE
109-120	VARIOUS	VIOLET	FUTURE	TERMINATE	109-120	FUTURE
121-132	VARIOUS	ROSE	FUTURE	TERMINATE	121-132	FUTURE
133-144	VARIOUS	AQUA	FUTURE	TERMINATE	133-144	FUTURE

1 ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS FIBER TERMINATION CHART

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994UU

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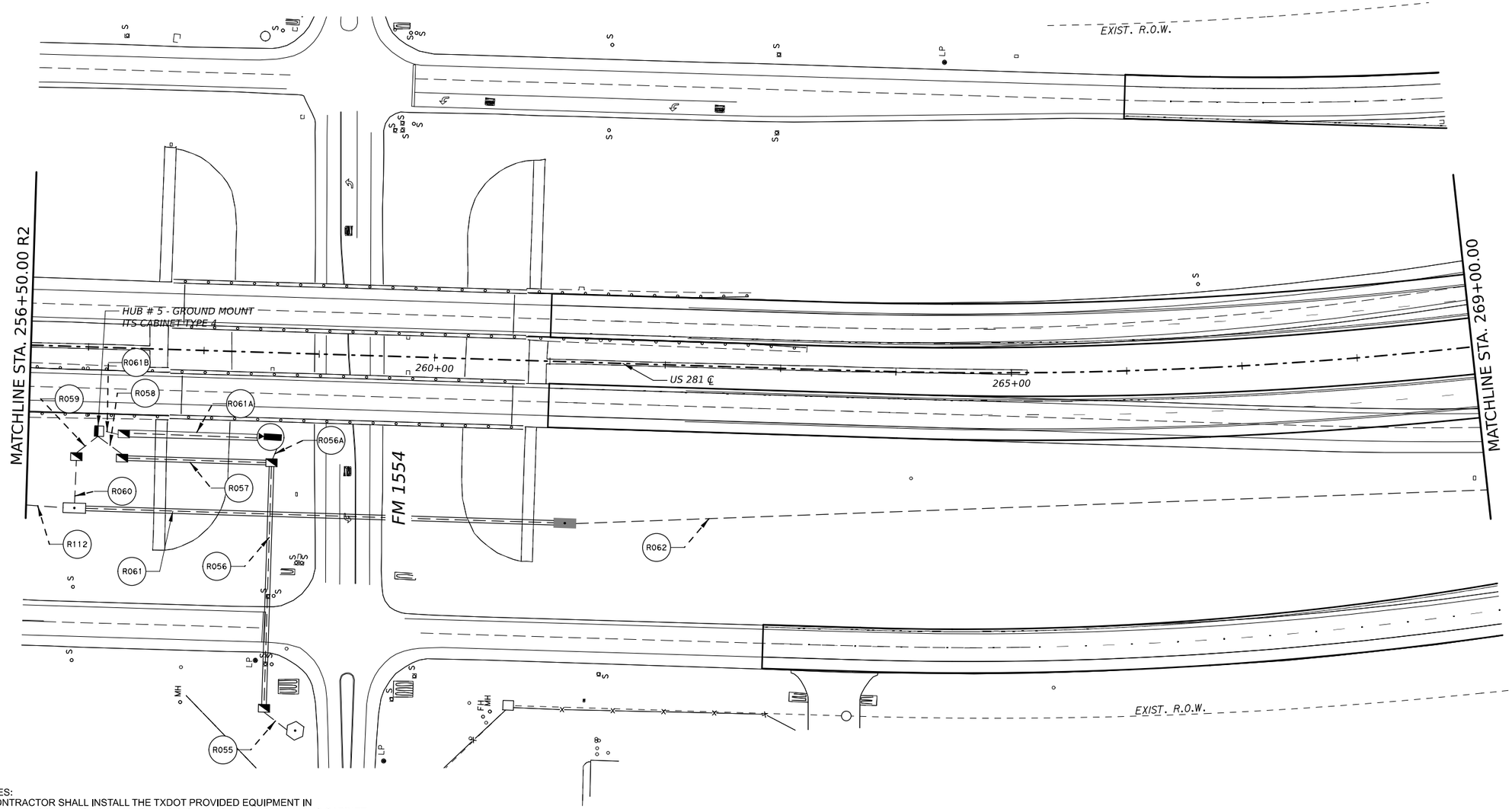

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LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

ADD SHEET 5/21/2023

STATE OF TEXAS
ROBERT H. SIEGFRIED
83401
LICENSED PROFESSIONAL ENGINEER
Robert H. Siegfried P.E.
5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 257+00 TO STA 269+00

SCALE: 1"=100' SHEET 21 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994V

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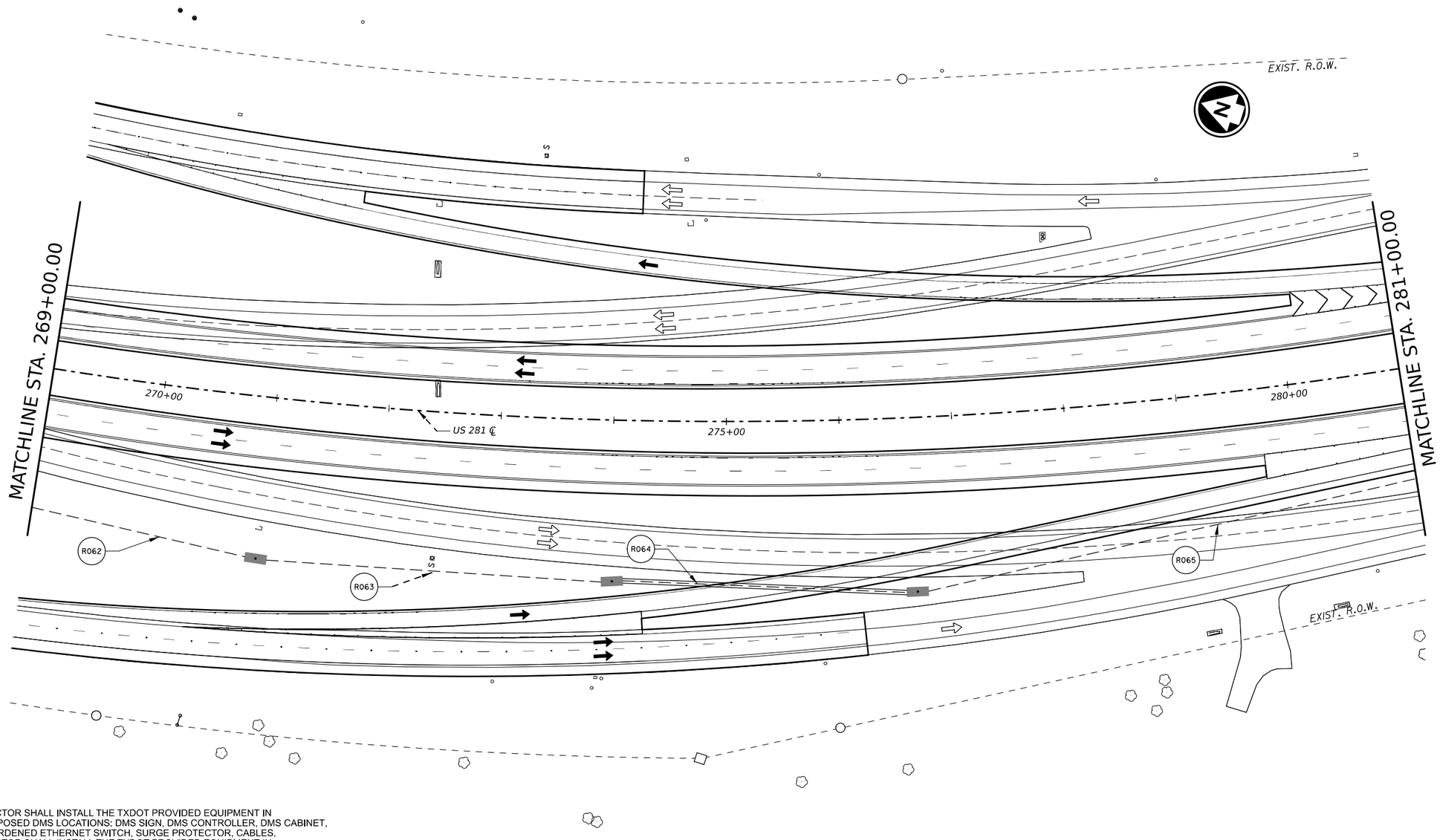

LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
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- PROP CONDUIT-RM
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- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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4. THE LOCATIONS FOR THE ITS POLE(S), ELECTRICAL SERVICE, AND CONDUIT RUNS ARE APPROXIMATE. DETERMINE THE EXACT LOCATIONS IN THE FIELD IN COORDINATION WITH THE TRAFFIC OPERATIONS PERSONNEL.
5. VERIFY WITH ALL UTILITIES COMPANIES THE EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THESE UTILITIES.

⚠1 ADD SHEET 5/21/2023

STATE OF TEXAS
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Texas Department of Transportation

US 281

ITS LAYOUT

STA 269+00 TO STA 281

SCALE: 1"=100' SHEET 22 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994W

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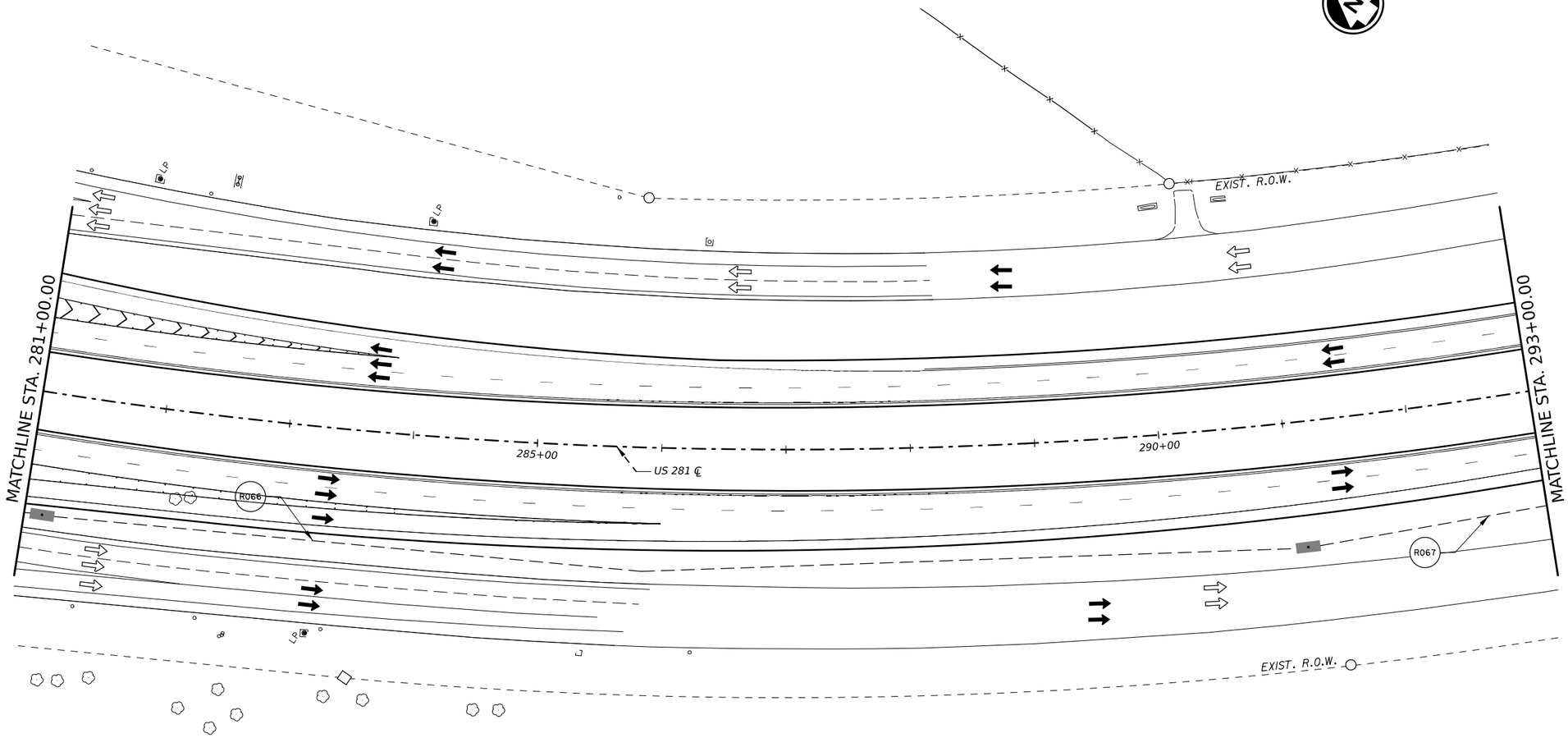
CONDUIT AND CONDUCTOR RUNS TABLE					
CONDUIT RUN NUMBER	RUN LENGTH (FT)	0618 6053 CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	0620 6002 ELEC CONDR (NO.14) INSULATED (LF)	6007 6017 FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)	6007 6042 FIBER OPTIC PIGTAIL (12 FIBER) (LF)
R066	1030	2	1	1	2
R067	175	2	1	1	2
TOTAL		2,410	1,205	1,255	2,410

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
- PROP HUB ITS CABINET
- PROP ELECTRIC SERVICE
- PROP TYPE D GROUND BOX
- PROP CONDUIT-TRENCH
- PROP CONDUIT-BORE
- PROP CONDUIT-RM
- PROP CONDUIT/CONDUCTOR RUN
- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,410
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,205
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,255
6007 6020	FIBER OPTIC PIGTAIL (12 FIBER)	LF	2,410
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	2
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	2

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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ADD SHEET 5/21/2023

STATE OF TEXAS
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5/21/2023

SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 281+00 TO STA 293+00

SCALE: 1"=100' SHEET 23 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994X

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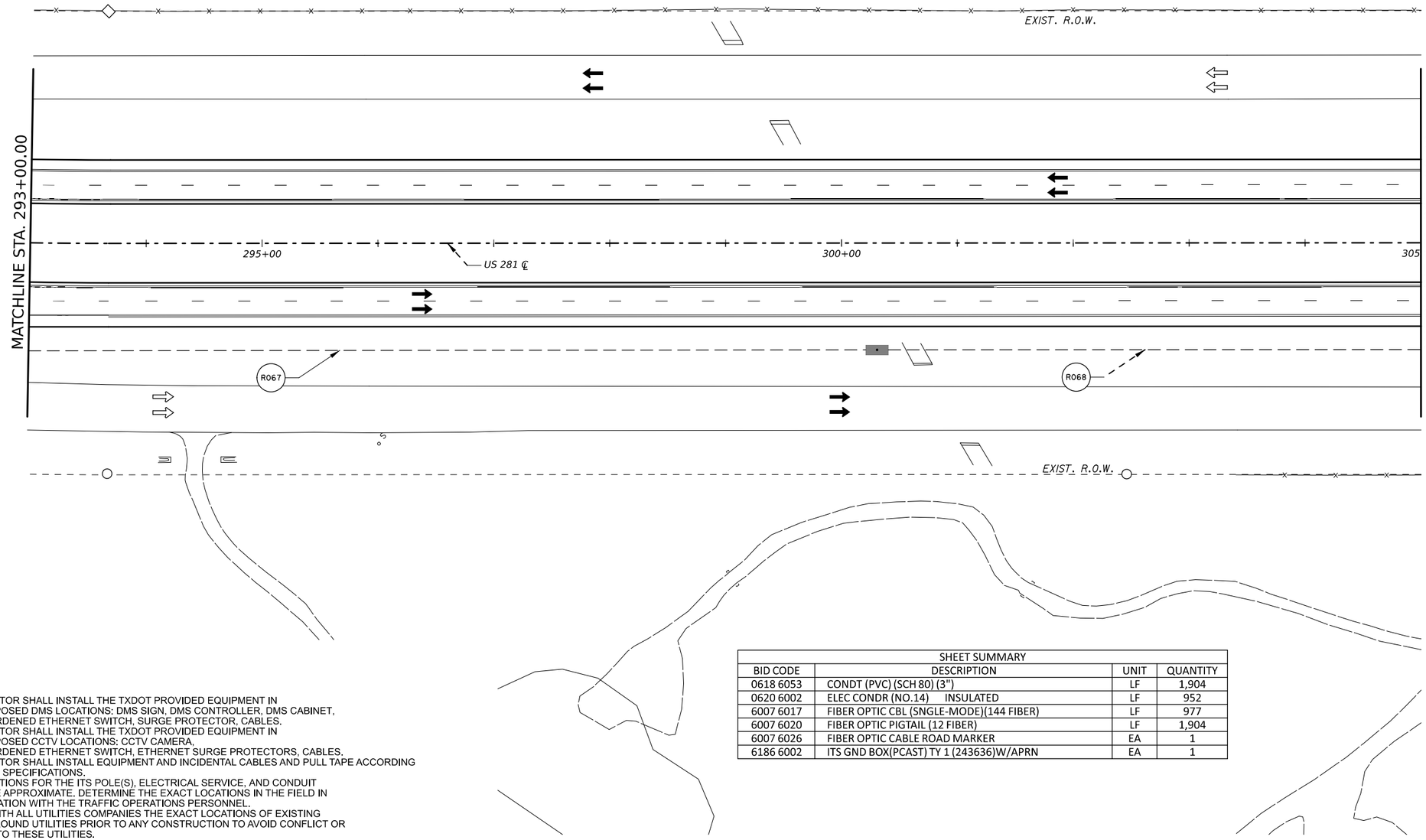
CONDUIT AND CONDUCTOR RUNS TABLE					
		CONDUIT	TRACER WIRE	COMMUNICATION CABLE	
		0618 6053	0620 6002	6007 6017	6007 6042
CONDUIT RUN NUMBER	RUN LENGTH (FT)	CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)	FIBER OPTIC PIGTAIL (12 FIBER) (LF)
R067	307	2	1	1	2
R068	645	2	1	1	2
TOTAL		1,904	952	977	1,904

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



LEGEND

- PROP CCTV W/POLE CAB
- PROP DMS SINGLE FACE W/POLE CAB
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- PROP TYPE D GROUND BOX
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- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
- PROP ITS GND BOX TY 2

SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	1,904
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	952
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	977
6007 6020	FIBER OPTIC PIGTAIL (12 FIBER)	LF	1,904
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1

NOTES:
1. CONTRACTOR SHALL INSTALL THE TXDOT PROVIDED EQUIPMENT IN THE PROPOSED DMS LOCATIONS: DMS SIGN, DMS CONTROLLER, DMS CABINET, FIELD HARDENED ETHERNET SWITCH, SURGE PROTECTOR, CABLES.
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SIEGFRIED
ENGINEERING & CONSTRUCTION, LLC
TX PE Firm Reg. No. F-14029

Texas Department of Transportation

US 281

ITS LAYOUT

STA 293+00 TO STA 305+00

SCALE: 1"=100' SHEET 24 OF 35

CONT	SECT	JOB	HIGHWAY
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DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994Y

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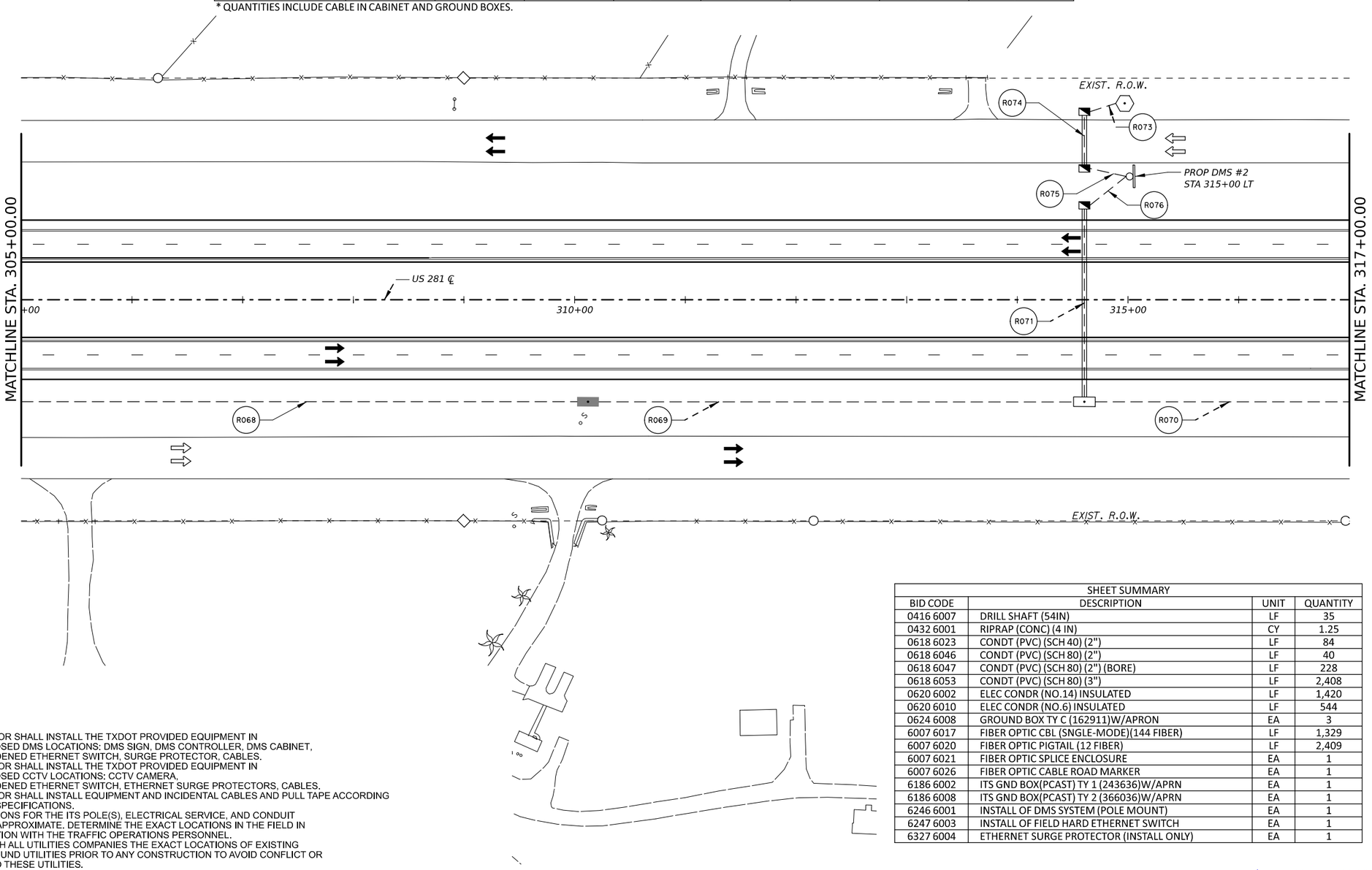
CONDUIT AND CONDUCTOR RUNS TABLE									
CONDUIT RUN NUMBER	RUN LENGTH (FT)	DUCT BANK 0618 6031	CONDUIT 0618 6046	CONDUIT 0618 6047	CONDUIT 0618 6053	TRACER WIRE 0620 6002	0620 6010	COMMUNICATION CABLE 6007 6017	COMMUNICATION CABLE 6007 6020
		CONDT (PVC) (SCH 40) (3") (CONC ENCSE) (LF)	CONDT (PVC) (SCH 80)(2") (LF)	CONDT (PVC) (SCH 80)(2") (BORE)(LF)	CONDT (PVC) (SCH 80)(3") (TRENCH)(LF)	ELEC CONDR (NO.14) INSULATED (LF)	ELEC CONDR (NO.6) INSULATED (LF)	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) (LF)	FIBER OPTIC PIGTAIL (12 FIBER) (LF)
R068	512				2	1		1	2
R069	452				2	1		1	2
R070	240				2	1		1	1
R071	176			1		1			1
R073	40	1					4		
R074	52			1			4		
R075	44	1					4		
R076	40		1			1			1
TOTAL		84	40	228	2,408	1,420	544	1,329	2,409

* QUANTITIES INCLUDE CABLE IN CABINET AND GROUND BOXES.



NOTES:
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SHEET SUMMARY			
BID CODE	DESCRIPTION	UNIT	QUANTITY
0416 6007	DRILL SHAFT (54IN)	LF	35
0432 6001	RIPRAP (CONC) (4 IN)	CY	1.25
0618 6023	CONDT (PVC) (SCH 40) (2")	LF	84
0618 6046	CONDT (PVC) (SCH 80) (2")	LF	40
0618 6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	228
0618 6053	CONDT (PVC) (SCH 80) (3")	LF	2,408
0620 6002	ELEC CONDR (NO.14) INSULATED	LF	1,420
0620 6010	ELEC CONDR (NO.6) INSULATED	LF	544
0624 6008	GROUND BOX TY C (162911)W/APRON	EA	3
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1,329
6007 6020	FIBER OPTIC PIGTAIL (12 FIBER)	LF	2,409
6007 6021	FIBER OPTIC SPLICE ENCLOSURE	EA	1
6007 6026	FIBER OPTIC CABLE ROAD MARKER	EA	1
6186 6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	1
6186 6008	ITS GND BOX(PCAST) TY 2 (366036)W/APRN	EA	1
6246 6001	INSTALL OF DMS SYSTEM (POLE MOUNT)	EA	1
6247 6003	INSTALL OF FIELD HARD ETHERNET SWITCH	EA	1
6327 6004	ETHERNET SURGE PROTECTOR (INSTALL ONLY)	EA	1

1 ADD SHEET 5/21/2023

LEGEND

- PROP CCTV W/POLE CAB
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- PROP DIRECTION OF TRAFFIC
- PROP ITS GND BOX TY 1
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STATE OF TEXAS
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Texas Department of Transportation

US 281

ITS LAYOUT

STA 305+00 TO STA 317+00

SCALE: 1"=100' SHEET 25 OF 35

CONT	SECT	JOB	HIGHWAY
0254	07	008, ETC	US 281
DIST	COUNTY		SHEET NO.
CRP	JIM WELLS		994Z

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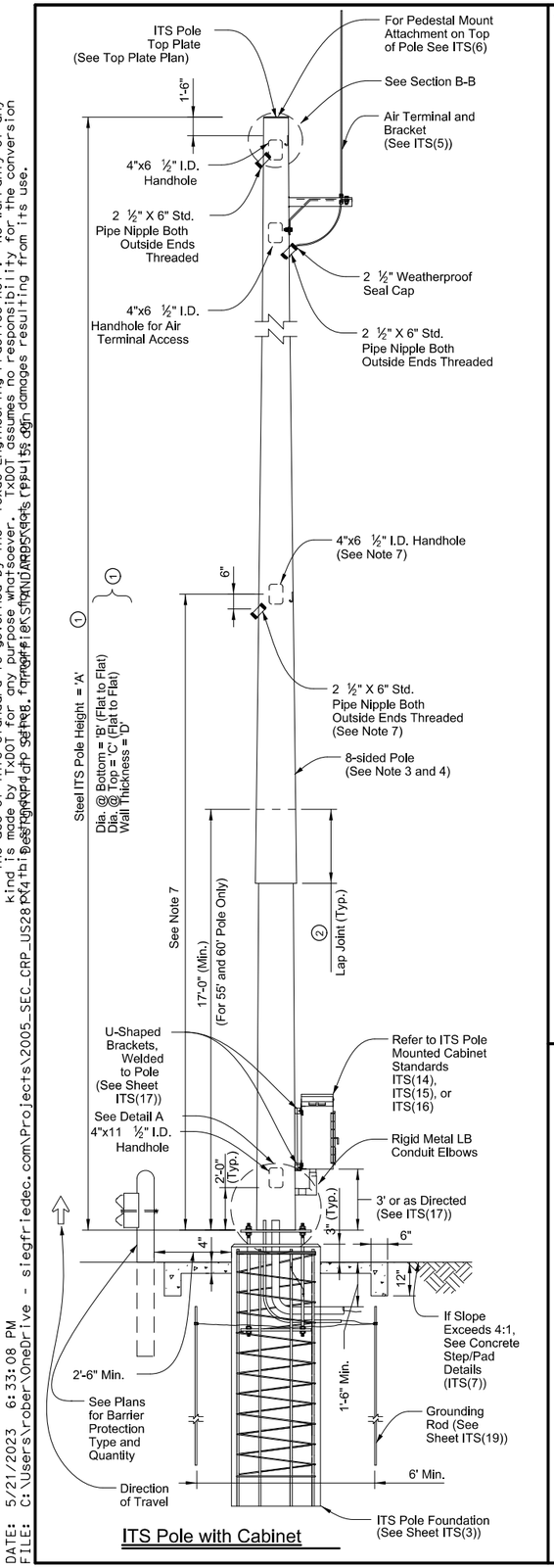
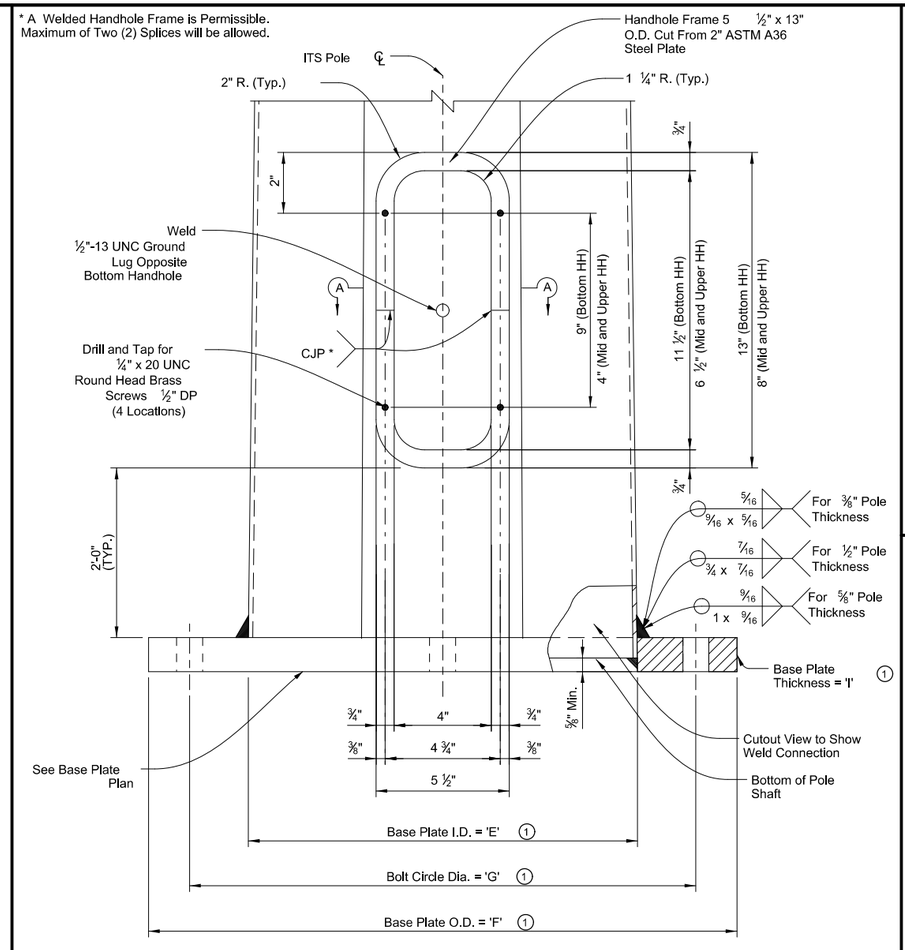
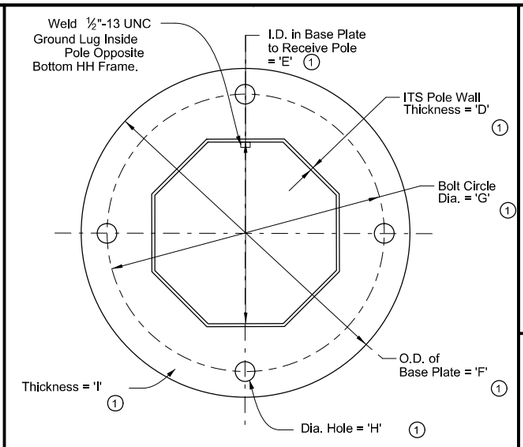


ITS Pole with Cabinet

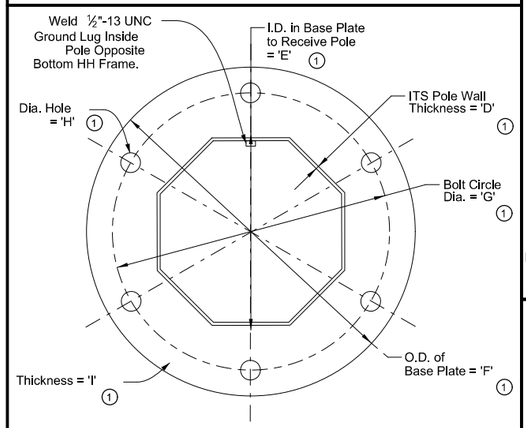


Detail A



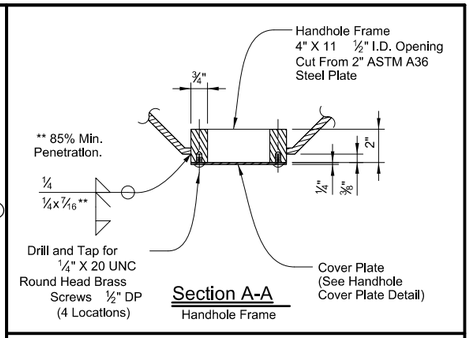
Base Plate Plan

4 Bolt Base Plate (ASTM A36)



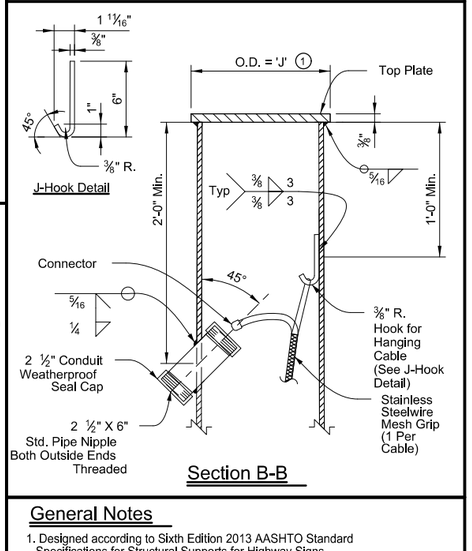
Base Plate Plan

6 Bolt Base Plate (ASTM A36)



Section A-A

Handhole Frame



Section B-B

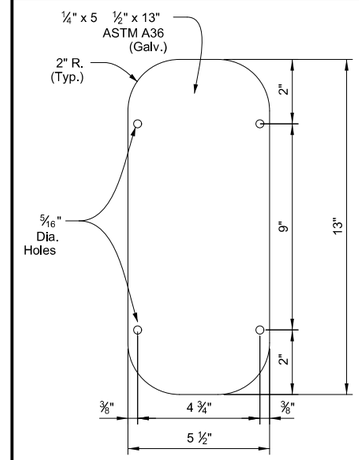
General Notes

1. Designed according to Sixth Edition 2013 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications.
2. Unless otherwise noted, all parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."
3. Deviation from the design criteria, values, and dimensions shown herein and on ITS(4), constitutes an alternative design and will require submission of shop drawings and calculations for approval, sealed by a Texas Professional Engineer.
4. Direct substitution of twelve sided or round poles, matching the design criteria, values, and dimensions shown herein, require submission of shop drawings for approval to confirm design criteria and values on ITS(4) is met.
5. Locate handholes opposite of the direction of travel.
6. Appropriate number of anchor bolts for base plate determined by height of pole. See 'L' on sheet ITS(4).
7. Location for ITS equipment mount may vary by device. Locate mid span handhole and pipe nipple to accommodate location for ITS equipment as identified in the plans or per manufacturer recommendations. Identify location for mid span handhole and pipe nipple on shop drawings for approval.

Reference Notes:

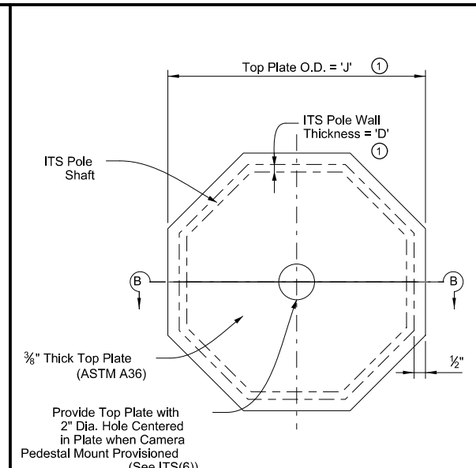
(1) See tables on Sheet ITS(4) for values of dimension variables.

(2) See lap joint note for 55' and 60' pole heights on ITS(4) at the bottom of each table.

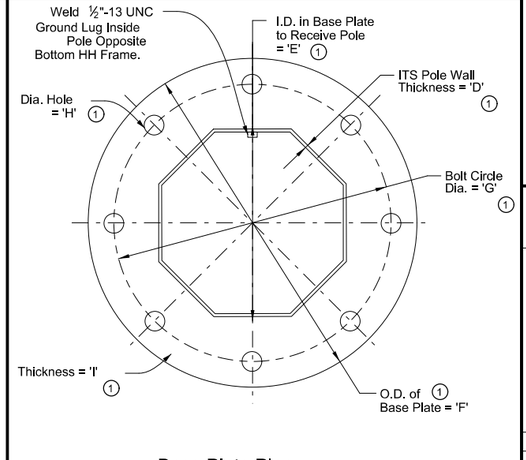


Handhole Cover Plate Detail

(Bottom Handhole)



Top Plate Plan



Base Plate Plan

8 Bolt Base Plate (ASTM A36)

⚠ ADD SHEET 5/21/2023

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE DETAILS OCTAGONAL POLE (EIGHT SIDED POLE)

ITS(1)-15

FILE: its(1)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0254	07	008,ETC	US 281
	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1055A

DATE: 5/21/2023 6:34:39 PM
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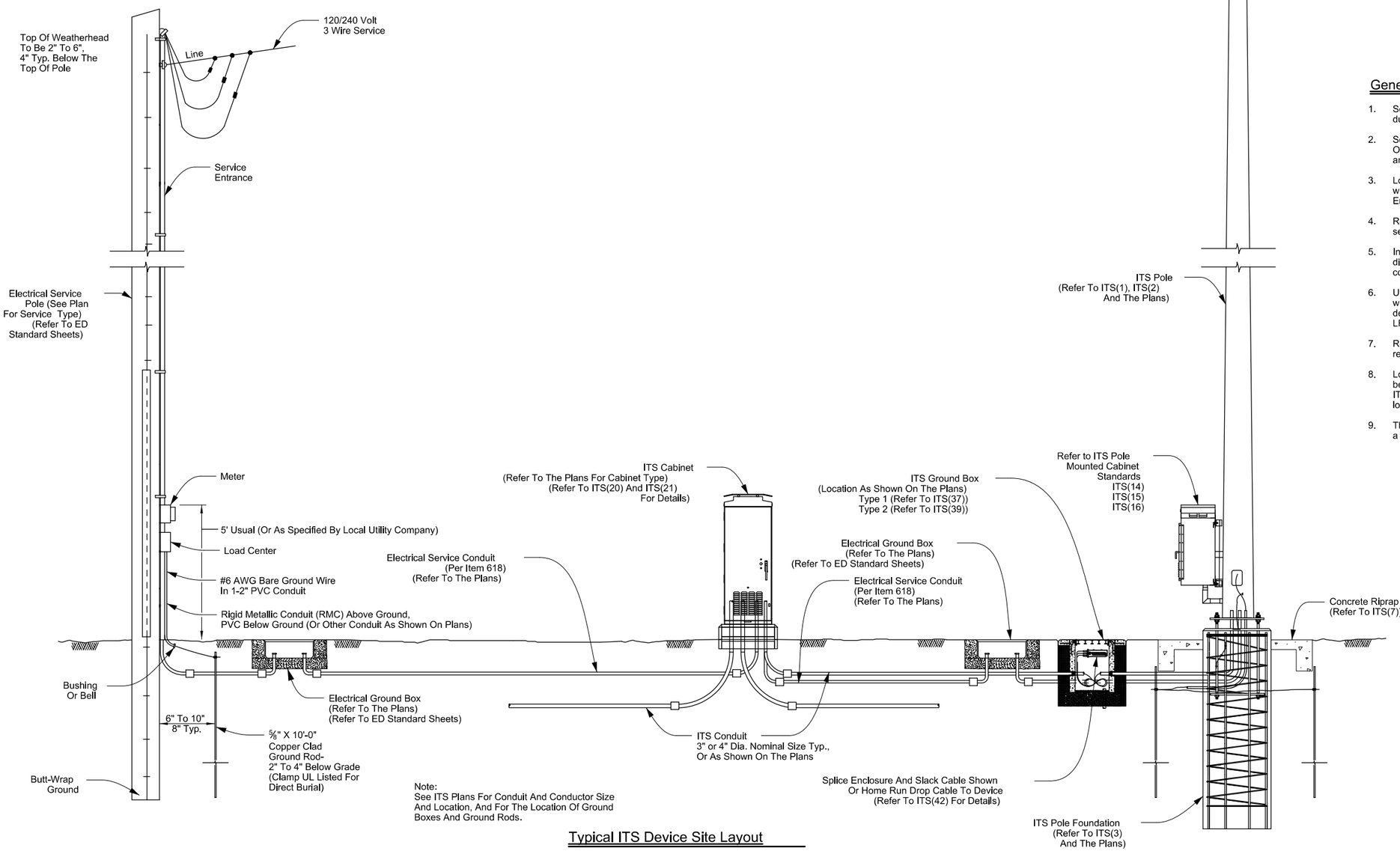


Note:
See ITS Plans For Conduit And Conductor Size And Location, And For The Location Of Ground Boxes And Ground Rods.

Typical ITS Device Site Layout

General Notes:

1. Seal all ITS communications conduits with waterproof duct plugs and seals.
2. Seal ends of all conduit entries into ITS cabinets with Oakum or other as approved by the District representative and pack with duct sealant.
3. Locate ground boxes for electrical and ITS communications within 5'-0" of cabinet enclosure, or as directed by the Engineer.
4. Refer to ED standard sheets for additional notes regarding electrical service.
5. Install service pole ground rod at alternate location when directed by the engineer. Maintain a minimum of 8'-0" in contact with the earth.
6. Utilize liquidtight flexible metal conduit (LFMC), as required when meter and service enclosure are mounted 90 to 180 degrees to each other. Refer to ED standard sheets for details on LFMC use.
7. Refer to ITS(21), ITS(37) and ITS(39) for details regarding conduit depth and entry into ITS ground boxes.
8. Lock all enclosures and bolt all ground box covers before power is applied to the circuit. Refer to the ITS cabinet references indicated on this sheet for cabinet lock requirements.
9. The detail shown is diagrammatic and is intended to represent a typical layout from electrical service to ITS devices.

1 ADD SHEET 5/21/2023

Sheet Details
Not to Scale

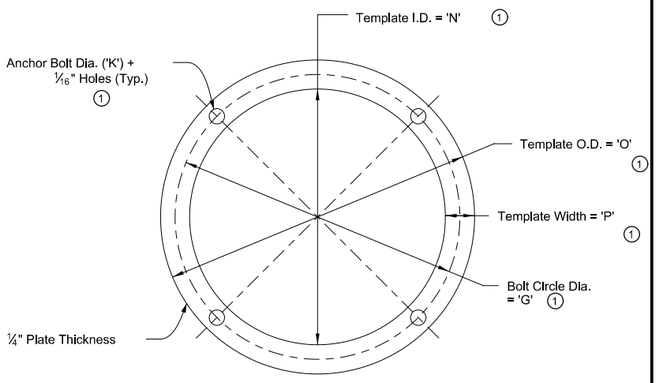
Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL ITS DEVICE SITE LAYOUT

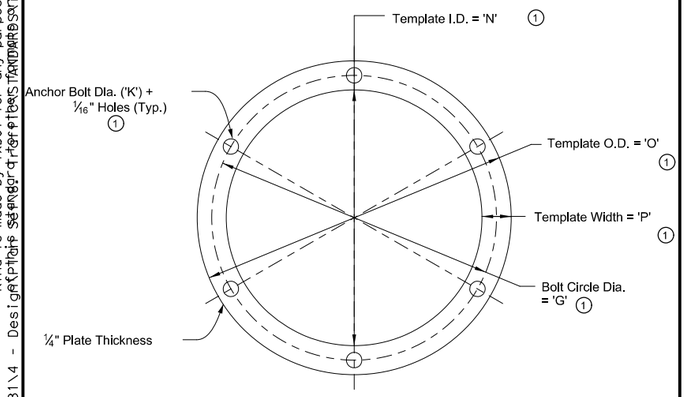
ITS(36)-16

FILE: its(36)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0254	07	008,ETC	US 281
	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1055AA



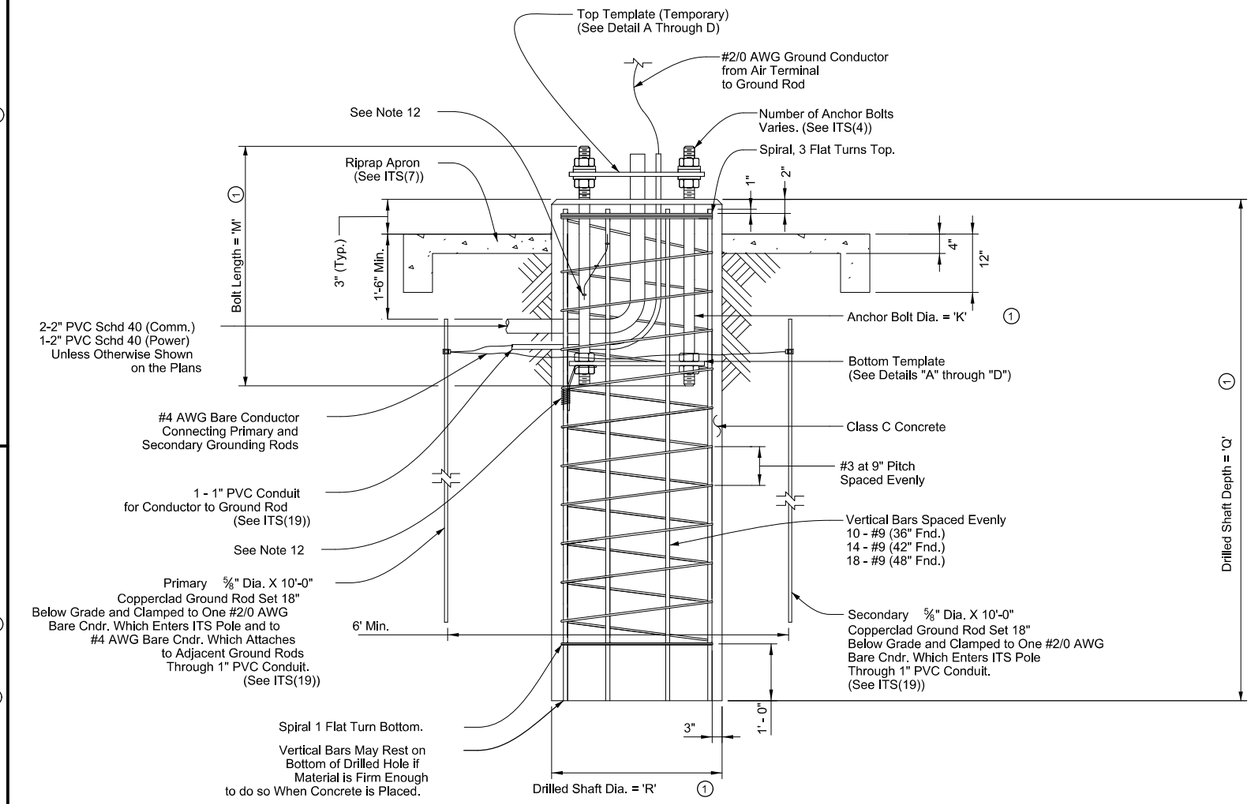
Top and Bottom Template (Four Bolt)

Detail A



Top and Bottom Template (Six Bolt)

Detail B



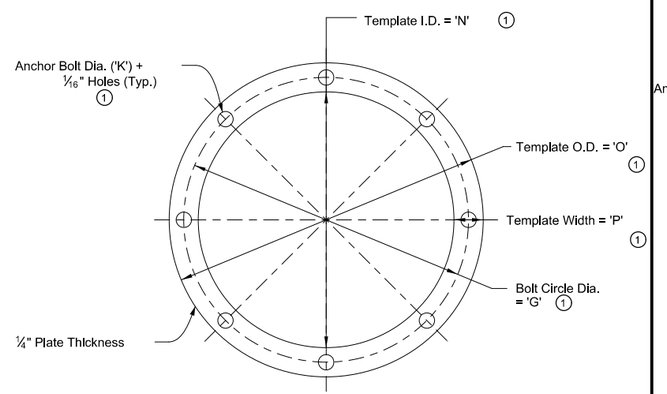
Foundation Details (Typical)

Elevation

Not to Scale

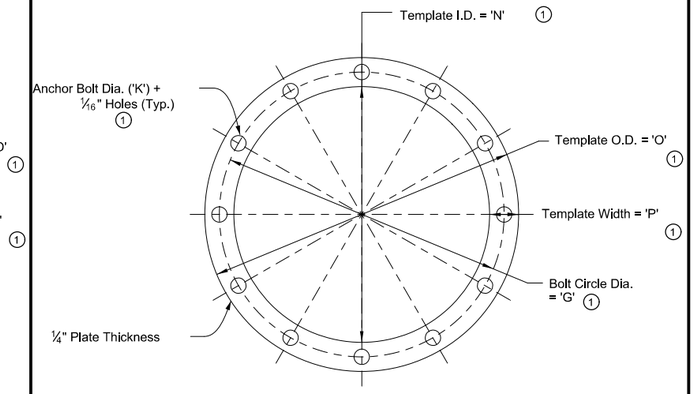
General Notes:

1. Drilled shaft concrete shall be Class "C" (f'c = 3,600 PSI) in accordance with Item 416, "Drilled Shaft Foundations."
2. Reinforcing bars shall be Grade 60 (Fy = 60 KSI) and conform to ASTM A-615. All reinforcing shall conform to Item 440, "Reinforcing Steel."
3. Provide ASTM A-36 steel for templates. Top and bottom templates need not be galvanized.
4. Anchor bolts shall be rigidly held in position during concrete placement using steel templates at the top and bottom. Top templates shall remain in place until the concrete has cured in place beyond initial set time.
5. Lubricate and tighten anchor bolts, when erecting pole, in accordance with Item 449, "Anchor Bolts."
6. Anchor bolts shall conform to ASTM F1554 Grade 55, or ASTM A193 B7 with ASTM A194 Grade 2H or A563 heavy hex nuts with F436 washers. Galvanize a minimum of the top end thread length plus 6 inches 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."
7. All vertical reinforcement shall be carried to the bottom of the drilled shaft.
8. Place three flat turns of the spiral bar at the top and one flat turn at the bottom of the drilled shaft.
9. Drilled shaft shall be measured by the linear foot and paid under Item 416, "Drill Shaft Foundations."
10. If rock is encountered, the drilled shaft to extend a minimum of two diameters into solid rock.
11. Location for conduit entering foundation may vary. Orient conduit entering foundation to coincide with location of ground boxes and primary ground rod.
12. Bond anchor bolts to rebar with #2/0 AWG jumper and two mechanical connectors or by bending No. 3 bar on bottom template as shown and wire tightly with ten turns of No. 10 wire or one mechanical connector. Mechanical connectors shall be UL Listed for concrete encasement.



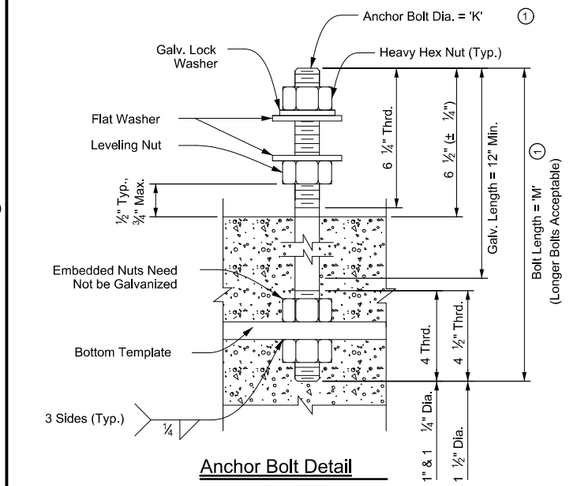
Top and Bottom Template (Eight Bolt)

Detail C



Top and Bottom Template (Twelve Bolt)

Detail D



Anchor Bolt Detail

Detail D

ADD SHEET 5/21/2023

Reference Notes:

(1) See tables on Sheet ITS(4) for values of dimension variables.

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE FOUNDATION DETAILS

ITS(3)-16

FILE: its(3)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS April 2016	0254	07	008,ETC	US 281
	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1055B

DATE: 5/21/2023 6:33:09 PM
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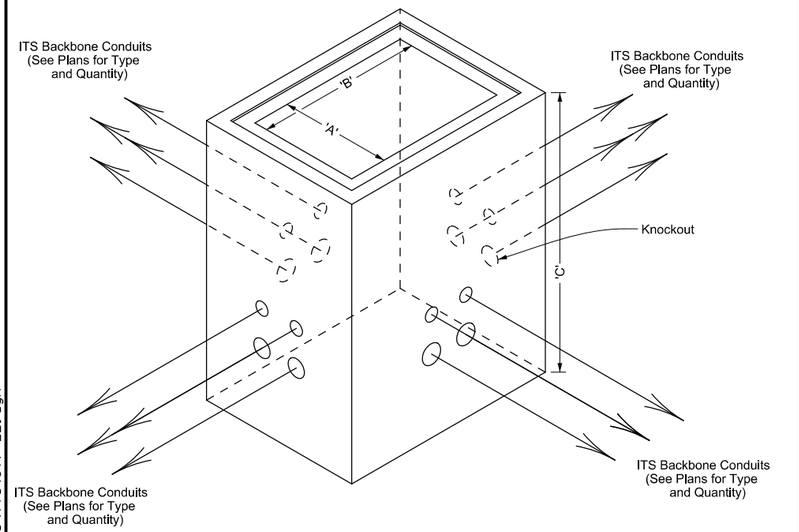
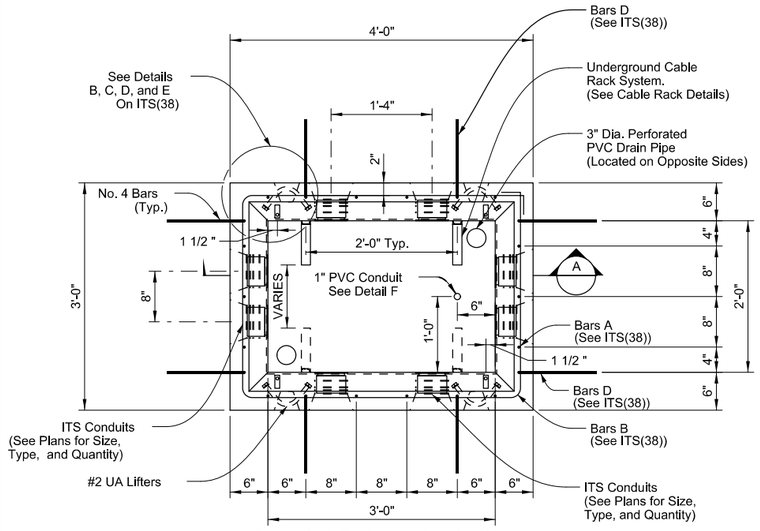


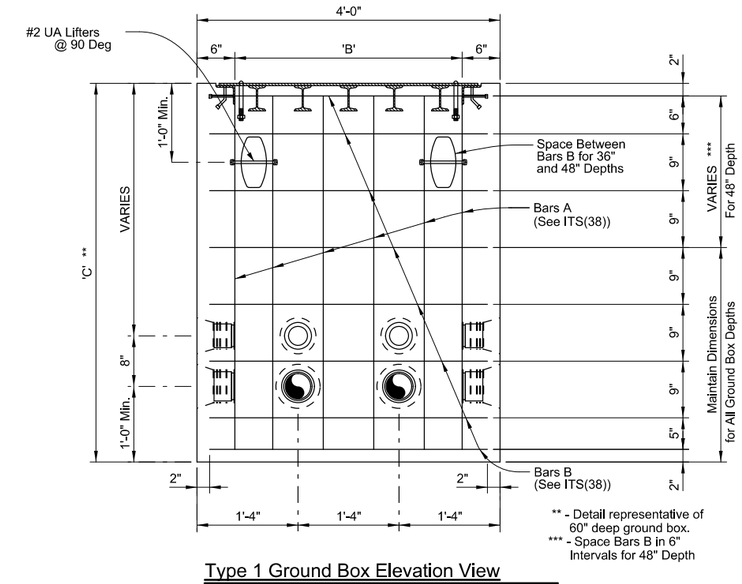
See Ground Box Schedule for A, B, and C Dimensions

Type 1 Ground Box Isometric View



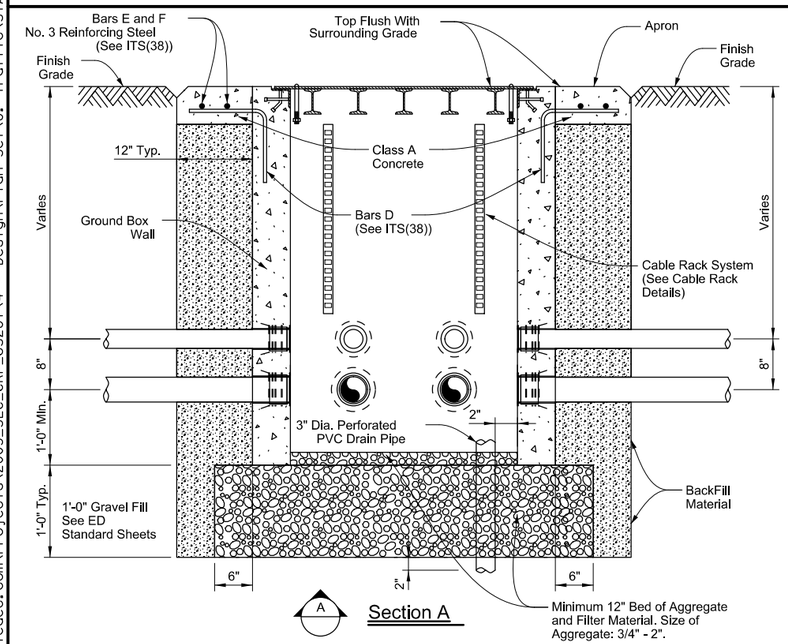
Note: Bar Spacing is The Same on Opposing Sides.

Type 1 Ground Box Plan View

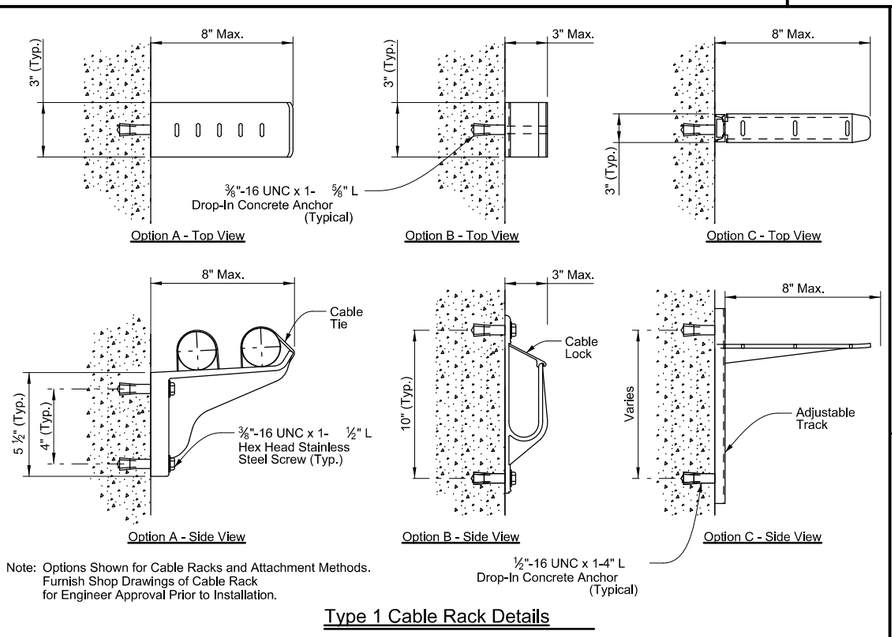


** - Detail representative of 60" deep ground box.
*** - Space Bars B in 6" Intervals for 48" Depth

Type 1 Ground Box Elevation View

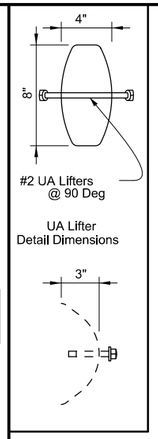


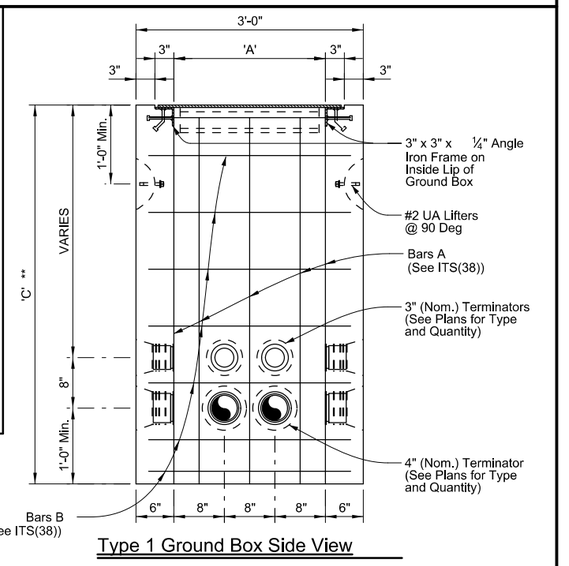
Section A



Note: Options Shown for Cable Racks and Attachment Methods. Furnish Shop Drawings of Cable Rack for Engineer Approval Prior to Installation.

Type 1 Cable Rack Details





Type 1 Ground Box Side View

** - Detail representative of 60" deep ground box.

SHEET 1 OF 2

General Notes:

1. Conduit entry points shown represent the standard configuration for backbone conduit as detailed on ITS(27). Additional conduits may be required as shown on the plans.
2. Provide Class A concrete for Type "1" ground boxes.
3. Provide terminators for the PVC conduit cast in the walls and placed symmetrically about the centerline of the box at the depths shown, unless otherwise noted, for the number of conduits identified on the plans to enter the box.
4. Provide terminators appropriately sized for the conduits indicated on the plans. Provide terminators with an air tight and water tight connection.
5. Closed bottom Type "1" ground boxes are acceptable in lieu of open bottom boxes. Provide two 3" Dia. perforated PVC drain pipes on opposite corners to optimize water drainage. Provide 12-inch bed of aggregate that extends 6 inches in all directions from the perimeter of the box for closed bottom boxes. Aggregate bed will be subsidiary to Special Specification, "ITS Ground Box."
6. Install all open bottom Type "1" ground boxes on a 12-inch bed of aggregate that extends 6 inches in all directions from the perimeter of the box. Aggregate bed will be subsidiary to Special Specification, "ITS Ground Box."
7. Cap and seal terminators that do not have conduits attached.
8. When additional conduit entry points are needed to accommodate existing conduit, core drill conduit knockouts in the field of the appropriate number and size of conduit at each location, as directed by the Engineer.
9. Provide a bell fitting on the end of each conduit to ensure a flush fit inside the ground box.
10. Concrete grout around the knockout (inside and out) and around the conduit and bell fitting to ensure a neat watertight fit after the conduit and bell fitting have been placed in a knockout. Ensure all openings in the ground box are sealed prior to grouting operations.
11. Install a nylon string and plug all unused conduits with tug-plugs sized for the particular conduits. Provide split innerduct plugs in conduits or innerducts with cables to seal the innerduct around the cables to prevent water and dirt from entering.
12. Provide steel (ASTM A-153), glass reinforced nylon, or equivalent cable rack assemblies designed to support the amount of cable storage slack identified in the plans. Locate cable rack system on one side only (longer length side) to allow access to the inside of the ground box. Cable racks may be installed at the factory or in the field. When mounting cable racks in the field, seal all penetrations to the concrete side wall to prevent moisture penetration. Ground metallic cable rack systems to grounding system inside ground box in accordance with the National Electrical Code.

Ground Box Schedule			
Ground Box Type	'A' Width Inside (Inches)	'B' Length Inside (Inches)	'C' Depth Inside (Inches)
Type 1	24	36	36, 48, 60

ADD SHEET 5/21/2023

Sheet Details
Not to Scale

Texas Department of Transportation

Traffic Safety Division Standard

ITS GROUND BOX DETAILS TYPE "1" WITH STEEL COVER

ITS(37)-22

FILE: its(37)-22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 02-16 10-22	0254	07	008,ETC	US 281
	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1055BB

TABLE 1: ITS POLE - 90 MPH (W/ 2 SOLAR PANELS) (4)

POLE TYPE (1)	POLE HEIGHT (FT)	POLE SHAFT (1) (10)			BASE PLATE (1)					TOP PLATE (2)	ANCHOR BOLT (3)						FOUNDATION (3)			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICKNESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICKNESS (IN)	OUTSIDE DIA. (IN)	DIA. (IN)	NO. OF BOLTS	LENGTH OF BOLT MIN. (IN)	TEMPLATE INSIDE DIA. (IN)	TEMPLATE OUTSIDE DIA. (IN)	TEMPLATE WIDTH (IN)	DRILL SHAFT DEPTH - TEXAS CONE PENETROMETER (N - BLOWS/FT.) (SEE NOTE 5) 'Q' N = 10	N = 15	N = 40	DRILLED SHAFT DIA. (IN)
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'				'R'
8 SIDED	20	10	8	1/2	10-1/16	21	16	1-1/4	1-1/2	9	1	4	29	14	18	2	12	11	10	36
8 SIDED	30	13	9	1/2	13-1/16	24	19	1-9/16	1-1/2	10	1-1/4	4	35	16-1/2	21-1/2	2-1/2	15	13	10	36
8 SIDED	40	15	9	1/2	15-1/16	26	21	1-9/16	1-1/2	10	1-1/4	6	35	18-1/2	23-1/2	2-1/2	17	14	11	42
8 SIDED	45	16	10	1/2	16-1/16	27	22	1-9/16	1-1/2	11	1-1/4	6	35	19-1/2	24-1/2	2-1/2	18	16	12	42
8 SIDED	50	17	10	1/2	17-1/16	28	23	1-9/16	1-1/2	11	1-1/4	6	35	20-1/2	25-1/2	2-1/2	19	16	12	42
8 SIDED	55 (6) (7)	19	11	5/8	19-1/16	30	25	1-13/16	2	12	1-1/2	6	40	22	28	3	21	18	13	42
8 SIDED	60 (6) (7)	20	11	5/8	20-1/16	31	26	1-13/16	2	12	1-1/2	6	40	23	29	3	21	19	14	48

TABLE 2: ITS POLE - 110 MPH (W/ 2 SOLAR PANELS) (4)

POLE TYPE (1)	POLE HEIGHT (FT)	POLE SHAFT (1) (10)			BASE PLATE (1)					TOP PLATE (2)	ANCHOR BOLT (3)						FOUNDATION (3)			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICKNESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICKNESS (IN)	OUTSIDE DIA. (IN)	DIA. (IN)	NO. OF BOLTS	LENGTH OF BOLT MIN. (IN)	TEMPLATE INSIDE DIA. (IN)	TEMPLATE OUTSIDE DIA. (IN)	TEMPLATE WIDTH (IN)	DRILL SHAFT DEPTH - TEXAS CONE PENETROMETER (N - BLOWS/FT.) (SEE NOTE 5) 'Q' N = 10	N = 15	N = 40	DRILLED SHAFT DIA. (IN)
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'				'R'
8 SIDED	20	10	8	1/2	10-1/16	21	16	1-1/4	1-1/2	9	1	4	29	14	18	2	14	12	10	36
8 SIDED	30	13	9	1/2	13-1/16	24	19	1-9/16	1-3/4	10	1-1/4	6	35	16-1/2	21-1/2	2-1/2	18	15	11	36
8 SIDED	40	15	9	1/2	15-1/16	25	21	1-9/16	1-3/4	10	1-1/4	6	35	18-1/2	23-1/2	2-1/2	20	17	12	42
8 SIDED	45	16	10	1/2	17-1/16	27	22	1-9/16	1-3/4	11	1-1/4	8	35	19-1/2	24-1/2	2-1/2	21	18	13	42
8 SIDED	50	17	10	1/2	18-1/16	28	23	1-9/16	1-3/4	11	1-1/4	8	35	20-1/2	25-1/2	2-1/2	22	19	14	42
8 SIDED	55 (7)	19	11	5/8	19-1/16	30	25	1-9/16	2	12	1-1/4	8	35	22-1/2	27-1/2	2-1/2	24	20	14	42
8 SIDED	60 (7)	20	11	5/8	20-1/16	31	26	1-13/16	2	12	1-1/2	6	40	23	29	3	25	21	15	48

TABLE 3: ITS POLE - 130 MPH (W/ 1 SOLAR PANEL) (5)

POLE TYPE (1)	POLE HEIGHT (FT)	POLE SHAFT (1) (10)			BASE PLATE (1)					TOP PLATE (2)	ANCHOR BOLT (3)						FOUNDATION (3)			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICKNESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICKNESS (IN)	OUTSIDE DIA. (IN)	DIA. (IN)	NO. OF BOLTS	LENGTH OF BOLT MIN. (IN)	TEMPLATE INSIDE DIA. (IN)	TEMPLATE OUTSIDE DIA. (IN)	TEMPLATE WIDTH (IN)	DRILL SHAFT DEPTH - TEXAS CONE PENETROMETER (N - BLOWS/FT.) (SEE NOTE 5) 'Q' N = 10	N = 15	N = 40	DRILLED SHAFT DIA. (IN)
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'				'R'
8 SIDED	20	10	8	1/2	10-1/16	21	16	1-9/16	1-3/4	9	1-1/4	4	35	13-1/2	18-1/2	2-1/2	16	14	10	36
8 SIDED	30	13	9	1/2	15-1/16	24	19	1-9/16	1-3/4	10	1-1/4	6	35	16-1/2	21-1/2	2-1/2	18	16	11	36
8 SIDED	40	15	9	1/2	15-1/16	26	21	1-9/16	1-3/4	10	1-1/4	6	35	18-1/2	23-1/2	2-1/2	21	18	13	42
8 SIDED	45	16	10	1/2	16-1/16	27	22	1-9/16	1-3/4	11	1-1/4	8	35	19-1/2	24-1/2	2-1/2	23	19	14	42
8 SIDED	50	17	10	1/2	17-1/16	28	23	1-9/16	2	11	1-1/2	8	40	20	26	3	24	20	14	42
8 SIDED	55 (7)	19	11	5/8	19-1/16	30	25	1-13/16	2	12	1-1/2	8	40	22	28	3	27	22	15	42
8 SIDED	60 (7)	20	11	5/8	20-1/16	31	26	1-13/16	2	12	1-1/2	8	40	23	29	3	28	23	16	48

TABLE 4: ITS POLE WITH STIFFENERS - 90 MPH (W/ 4 SOLAR PANELS) (8)

POLE TYPE (1)	POLE HEIGHT (FT)	POLE SHAFT (1)			BASE PLATE (1)					TOP PLATE (2)	ANCHOR BOLT (3)						FOUNDATION (3)			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICKNESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICKNESS (IN)	OUTSIDE DIA. (IN)	DIA. (IN)	NO. OF BOLTS	LENGTH OF BOLT MIN. (IN)	TEMPLATE INSIDE DIA. (IN)	TEMPLATE OUTSIDE DIA. (IN)	TEMPLATE WIDTH (IN)	DRILL SHAFT DEPTH - TEXAS CONE PENETROMETER (N - BLOWS/FT.) (SEE NOTE 5) 'Q' N = 10	N = 15	N = 40	DRILLED SHAFT DIA. (IN)
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'				'R'
8 SIDED	30	13	9	3/8	13-1/16	28	22	1-1/4	1-3/4	10	1	8	29	20	24	2	17	15	11	42
8 SIDED	40	15	9	1/2	15-1/16	30	24	1-1/4	2	10	1	8	29	22	26	2	20	17	12	42
8 SIDED	45	16	10	1/2	16-1/16	31	25	1-9/16	2	11	1-1/4	8	35	22-1/2	27-1/2	2-1/2	21	18	13	42
8 SIDED	50	17	10	1/2	17-1/16	32	26	1-9/16	2	11	1-1/4	8	35	23-1/2	28-1/2	2-1/2	21	18	13	42
12 sided	55 (7)	19	11	5/8	19-1/16	34	27	1-9/16	2	12	1-1/4	12	35	24-1/2	29-1/2	2-1/2	21	18	13	48
12 sided	60 (7)	20	12	5/8	20-1/16	35	28	1-9/16	2	13	1-1/4	12	35	25-1/2	30-1/2	2-1/2	22	19	14	48

TABLE 5: ITS POLE WITH STIFFENERS - 110 MPH (W/ 4 SOLAR PANELS) (8)

POLE TYPE (1)	POLE HEIGHT (FT)	POLE SHAFT (1)			BASE PLATE (1)					TOP PLATE (2)	ANCHOR BOLT (3)						FOUNDATION (3)			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICKNESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICKNESS (IN)	OUTSIDE DIA. (IN)	DIA. (IN)	NO. OF BOLTS	LENGTH OF BOLT MIN. (IN)	TEMPLATE INSIDE DIA. (IN)	TEMPLATE OUTSIDE DIA. (IN)	TEMPLATE WIDTH (IN)	DRILL SHAFT DEPTH - TEXAS CONE PENETROMETER (N - BLOWS/FT.) (SEE NOTE 5) 'Q' N = 10	N = 15	N = 40	DRILLED SHAFT DIA. (IN)
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'				'R'
8 SIDED	30	13	9	1/2	13-1/16	28	22	1-9/16	2-1/4	10	1-1/4	8	35	19-1/2	24-1/2	2-1/2	20	17	12	42
8 SIDED	40	16	10	1/2	16-1/16	31	25	1-9/16	2-1/4	11	1-1/4	8	35	22-1/2	27-1/2	2-1/2	24	20	14	42
8 SIDED	45	17	11	1/2	17-1/16	32	26	1-9/16	2-1/4	12	1-1/4	8	35	23-1/2	28-1/2	2-1/2	25	21	15	42
8 SIDED	50	18	11	1/2	18-1/16	32	26	1-13/16	2-1/2	12	1-1/2	8	40	23	29	3	25	21	15	48
12 SIDED	55 (7)	19	11	5/8	19-1/16	34	27	1-9/16	2-1/4	12	1-1/4	12	35	24-1/2	29-1/2	2-1/2	24	21	15	48
12 SIDED	60 (7)	20	12	5/8	20-1/16	35	28	1-9/16	2-1/4	13	1-1/4	12	35	25-1/2	30-1/2	2-1/2	25	22	15	48

TABLE 6: ITS POLE WITH STIFFENERS - 130 MPH (W/ 3 SOLAR PANELS) (9)

POLE TYPE (1)	POLE HEIGHT (FT)	POLE SHAFT (1)			BASE PLATE (1)					TOP PLATE (2)	ANCHOR BOLT (3)						FOUNDATION (3)			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICKNESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICKNESS (IN)	OUTSIDE DIA. (IN)	DIA. (IN)	NO. OF BOLTS	LENGTH OF BOLT MIN. (IN)	TEMPLATE INSIDE DIA. (IN)	TEMPLATE OUTSIDE DIA. (IN)	TEMPLATE WIDTH (IN)	DRILL SHAFT DEPTH - TEXAS CONE PENETROMETER (N - BLOWS/FT.) (SEE NOTE 5) 'Q' N = 10	N = 15	N = 40	DRILLED SHAFT DIA. (IN)
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'				'R'
8 SIDED	30	13	9	1/2	13-1/16	28	22	1-9/16	2-1/2	10	1-1/4	8	35	19-1/2	24-1/2	2-1/2	23	19	14	42
8 SIDED	40	16	10	1/2	16-1/16	31	25	1-9/16	2-1/2	11	1-1/2	8	40	22	28	3	25	21	14	42
8 SIDED	45	17	11	1/2	17-1/16	32	26	1-13/16	2-1/2	12	1-1/2	8	40	23	29	3	26	22	16	48
8 SIDED	50	18	11	1/2	18-1/16	33	27	1-13/16	2-1/2	12	1-1/2	8	40	24	30	3	27	23	16	48
12 SIDED	55 (7)	19	11	5/8	19-1/16	34	27	1-9/16	2-1/4	12	1-1/4	12	35	24-1/2	29-1/2	2-1/2	26	22	16	48
12 SIDED	60 (7)	20	12	5/8	20-1/16	35	28	1-9/16	2-1/4	13	1-1/4	12	35	25 1/2	30 1/2	2-1/2	27	23	16	48

General Notes:

1. Designed according to Sixth Edition 2013 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto.

2. Table 1 and Table 4 design wind speed equals 90 MPH (3-Second Wind Gusts) with a 1.14 gust factor. A wind importance factor of 1.00 is applied to adjust the wind speed to a 50 year recurrence interval at 33 FT above the ground for Exposure C category in accordance with TxDOT WV&IZ(LTS2013). Design values listed in the table allow the base of the pole to be elevated above the surrounding ground level no more than 20 FT.

3. Table 2 and Table 5 design wind speed equals 110 MPH (3-Second Wind Gusts) with a 1.14 gust factor. A wind importance factor of 1.00 is applied to adjust the wind speed to a 50 year recurrence interval at 33 FT above the ground for Exposure C category in accordance with TxDOT WV&IZ(LTS2013). Design values listed in the table allow the base of the pole to be elevated above the surrounding ground level no more than 20 FT.

4. Table 3 and Table 6 design wind speed equals 130 MPH (3-Second Wind Gusts) with a 1.14 gust factor. A wind importance factor of 1.00 is applied to adjust the wind speed to a 50 year recurrence interval at 33 FT above the ground for Exposure C category in accordance with TxDOT WV&IZ(LTS2013). Design values listed in the table allow the base of the pole to be elevated above the surrounding ground level no more than 20 FT.

5. Recommended embedment lengths are for information purposes only. Foundation embedment depth is based off Texas Cone Penetrometer Value N = 10 blows/ft. for soft soils and up to 40 blows/ft. for hard soils. 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.

6. Deviation from the design criteria and values contained in the tables above constitute and alternative design and will require submission of shop drawings and calculations for approval, sealed by a Texas Professional Engineer.

7. 12-sided or round poles as a direct substitution for 8-sided and round poles as a direct substitution for 12-sided poles, meeting the design criteria and values contained in the tables above, require submission of shop drawings for approval.

Reference Notes

(1) See the following ITS Pole Standard sheets:
- 8-sided Pole - ITS(1)
- 12-sided Pole - ITS(2)

(2) Provision for 2" Dia. opening in top plate for poles requiring cameras mounted on top.
- See ITS Pole Mounting Details - ITS(6)

(3) See ITS Pole Foundation Details - ITS(3)

(4) Designed to support the following:
- Two Type 3 ITS pole mounted cabinets (280 LBS/EA and EPA = 14.50 sq. ft. per cabinet). See ITS(16).
- Two 250 W (50 LBS/EA and EPA = 30.70 sq. ft. per panel) solar panels (see ITS(24) "Solar Panel Matrix Table")
- Combined ITS equipment dead load of 170 LBS with an EPA = 6 sq. ft.

(5) Designed to support the following:
- Two Type 3 ITS pole mounted cabinets (280 LBS/EA and EPA = 14.50 sq. ft. per cabinet). See ITS(16).
- One 250 W (50 LBS/EA and EPA = 30.70 sq. ft. per panel) solar panels (see ITS(24) "Solar Panel Matrix Table")
- Combined ITS equipment dead load of 170 LBS with an EPA = 6 sq. ft.

(6) Pole heights at 55 Ft. and 60 Ft. located in the AMA, CHS, and LBB Districts, will require special design and design values shown shall not be used. Submit shop drawings for pole design and supporting calculations for 55 Ft. and 60 Ft. pole heights signed and sealed by a Texas Professional Engineer for approval.

(7) Ensure minimum nominal splice length is 1.5 times the average pole diameter at the splice to the nearest inch. Ensure longitudinal seam welds that will be in contact at a slip joint splice are ground smooth for the length of splice plus a minimum of six inches. Ensure a 100% longitudinal seam weld for a length of 1.5 pole diameter plus a minimum of 6 inches in outer sections at splices and at base plate. Provide 85% penetration in longitudinal seam welds at other pole sections.

(8) Designed to support the following:
- Two Type 3 ITS pole mounted cabinets (280 LBS/EA and EPA = 14.50 sq. ft. per cabinet). See ITS(16).
- Four 250 W (50 LBS/EA and EPA = 30.70 sq. ft. per panel) solar panels (see ITS(24) "Solar Panel Matrix Table")
- Combined ITS equipment dead load of 170 LBS with an EPA = 6 sq. ft.

Refer to ITS(4A) for stiffening plate details at the pole to base plate connection.

(9) Designed to support the following:
- Two Type 3 ITS pole mounted cabinets (280 LBS/EA and EPA = 14.50 sq. ft. per cabinet). See ITS(16).
- Three 250 W (50 LBS/EA and EPA = 30.70 sq. ft. per panel) solar panels (see ITS(24) "Solar Panel Matrix Table")
- Combined ITS equipment dead load of 170 LBS with an EPA = 6 sq. ft.

Refer to ITS(4A) for stiffening plate details at the pole to base plate connection.

(10) When solar panels are not provisioned in the plans, ITS pole wall thickness may be reduced by 1/8".

1 ADD SHEET 5/21/2023

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE DESIGN DETAILS DATA LOOKUP TABLE

ITS(4)-15

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	CRP	JIM WELLS		1055C

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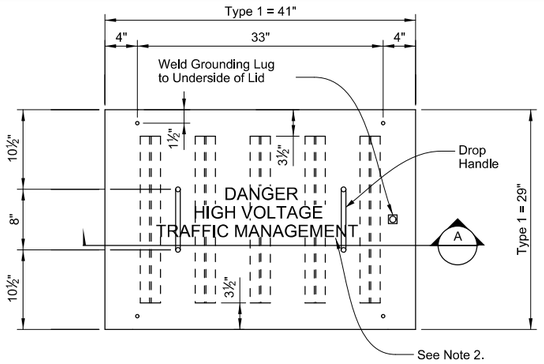
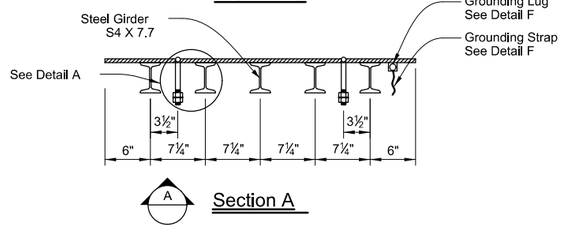
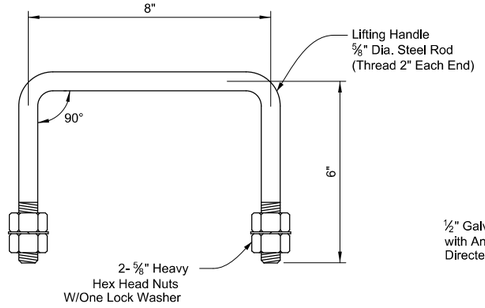


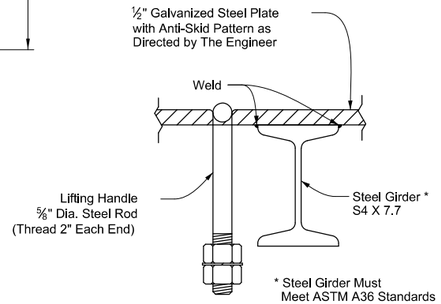
Type 1 Steel Cover Details
Top View



Section A



Drop Handle Detail



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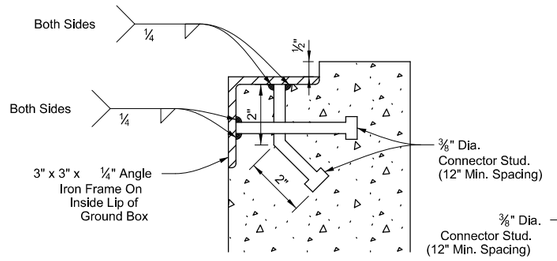
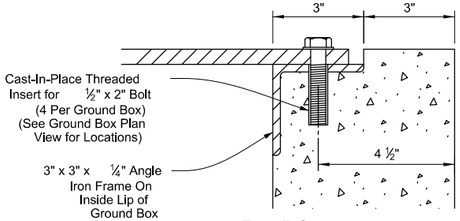
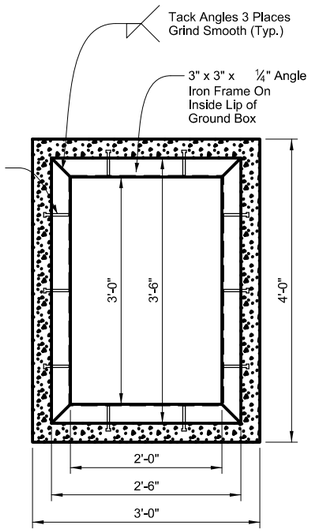


Detail B



Detail C
Lid Attachment Detail

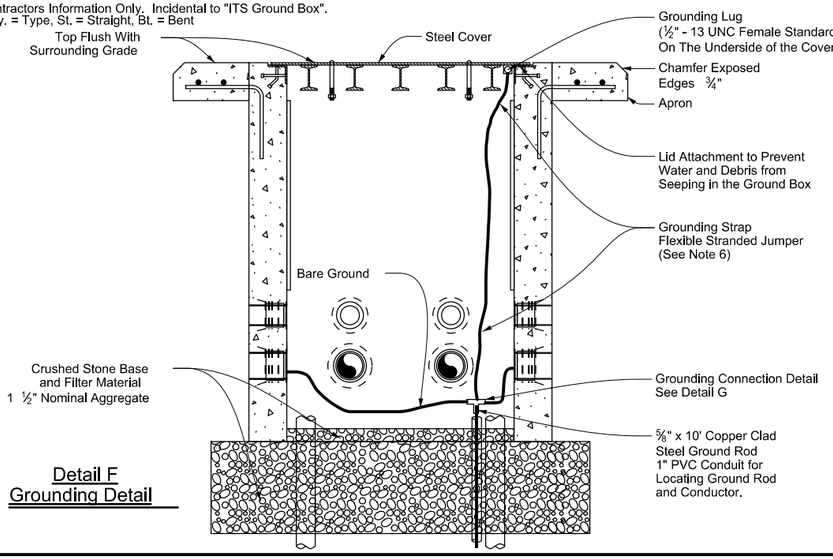


Detail D

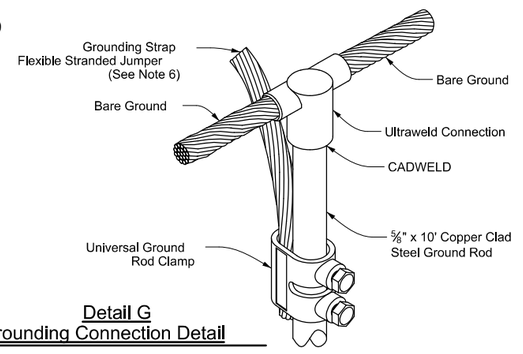
Detail E
Ground Box Apron Detail

Ground Box Type 1	BAR A					BAR B					BAR D					BAR E					BAR F					TOTALS	
	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	Steel * LBS.	Conc. * CY
36" Depth	22	#4	St.	2'-8"	39.3	5	#4	Bt.	13'-2"	44.1	8	#4	Bt.	2'-0"	10.7	1	#3	Bt.	17'-2"	6.5	1	#3	Bt.	19'-10"	7.5	108.1	.67
48" Depth	22	#4	St.	3'-8"	54.0	7	#4	Bt.	13'-2"	61.8	8	#4	Bt.	2'-0"	10.7	1	#3	Bt.	17'-2"	6.5	1	#3	Bt.	19'-10"	7.5	140.5	.89
60" Depth	22	#4	St.	4'-8"	68.8	8	#4	Bt.	13'-2"	70.6	8	#4	Bt.	2'-0"	10.7	1	#3	Bt.	17'-2"	6.5	1	#3	Bt.	19'-10"	7.5	164.1	1.11

* - For Contractors Information Only. Incidental to "ITS Ground Box".
Legend: Ty. = Type, St. = Straight, Bt. = Bent



Detail F
Grounding Detail



Detail G
Grounding Connection Detail

Note - All grounding connections to be CADWELD or approved equal. This work will not be paid for directly, but is considered incidental to ITS ground box.

General Notes:

1. See ITS(37) for additional Type "1" ground box details.
2. Hot-dip galvanized steel covers after all welds are made.
3. Label top of cover with the words "DANGER HIGH VOLTAGE TRAFFIC MANAGEMENT" using template-guided, hand-welded lettering at a height of 2 inches to ensure neatness.
4. Provide all Type "1" ground boxes with a securable, tamper-proof cover equipped with a bolting system that positively secures the cover in place.
5. Ground steel covers in accordance with the National Electrical Code.
6. Ground covers to the grounding cable using a split-bolt kearney clamp, and a minimum 8-foot long flexible stranded jumper the same size as the grounding conductor. Terminate to metal ground box cover with a tank ground type lug as approved and directed by the Engineer.
7. Provide Type "1" ground box and cover designed for heavy duty loading in accordance with AASHTO H20 loading when located where the box may experience deliberate, continuous vehicular traffic, such as near the shoulder or an auxiliary lane, or immediately adjacent to the unprotected edge of pavement.
8. Provide a Type "1" ground box and cover tested by a laboratory independent of the manufacturer certifying loading requirements are met. Provide certification of such tests to the Engineer for approval.
9. Provide a steel or cast iron cover in accordance with Item 471, Article 471.2, "Frames, Grates, Rings, and Covers." Provide covers with the number of drop handles shown. Provide Class "A" concrete for ground box construction and aprons.
10. Fabricate cover so to fits properly on the ground box, and no undue noise results when traffic contacts the cover.

1 ADD SHEET 5/21/2023

Sheet Details
Not to Scale

SHEET 2 OF 2

Texas Department of Transportation | Traffic Operations Division Standard

ITS GROUND BOX DETAILS TYPE "1" WITH STEEL COVER

ITS(38)-17

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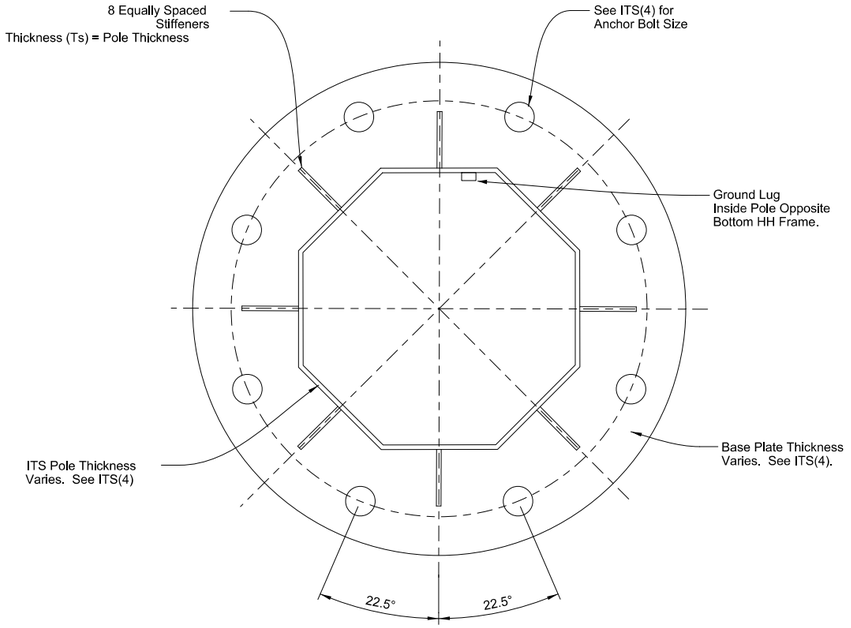
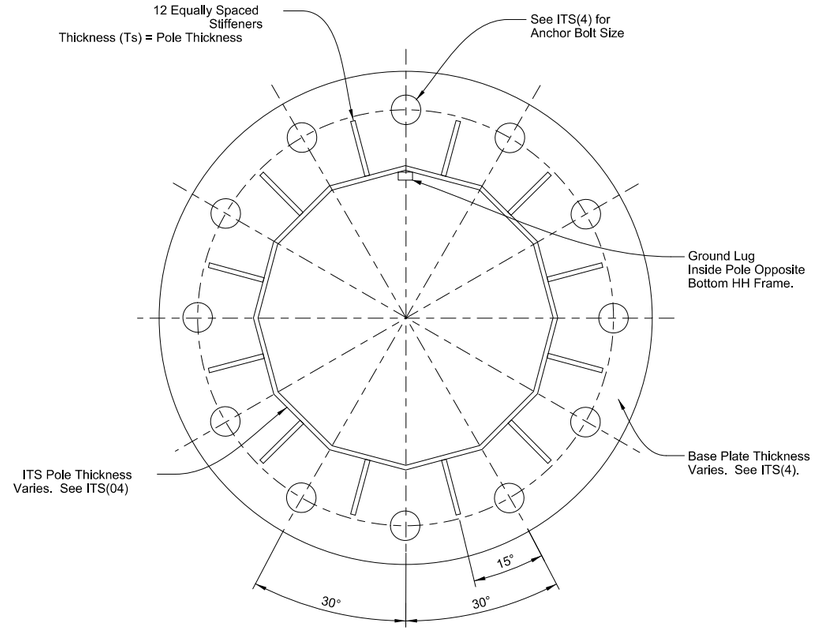


8-sided Pole Base Plate Detail



12-sided Pole Base Plate Detail

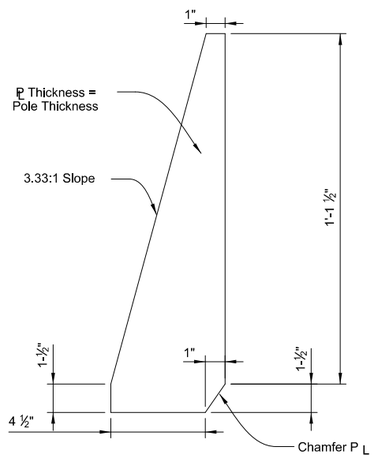
General Notes:

1. Steel stiffening plates shall conform to ASTM A36.
2. Make all welds conform to Item 441, "Steel Structures."
3. Galvanize in accordance with Item 445, "Galvanizing" unless otherwise noted.
4. Submit shop drawings detailing stiffening plate orientation along with ITS equipment intended for mounting for review and approval prior to fabrication.
5. HH = Handhole
6. T = Thickness

Reference Notes:

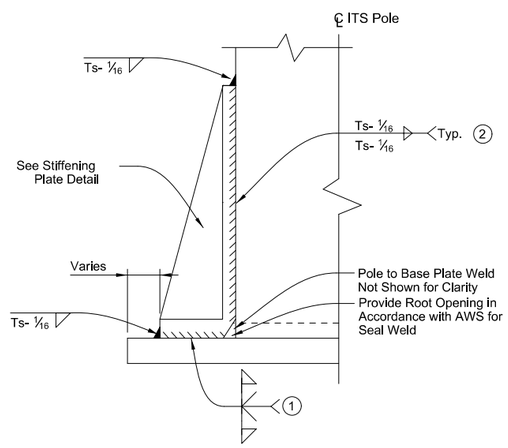
(1) Complete Joint Penetration Weld per AWS

(2) Wrap Fillet Weld Around Tip of Stiffener



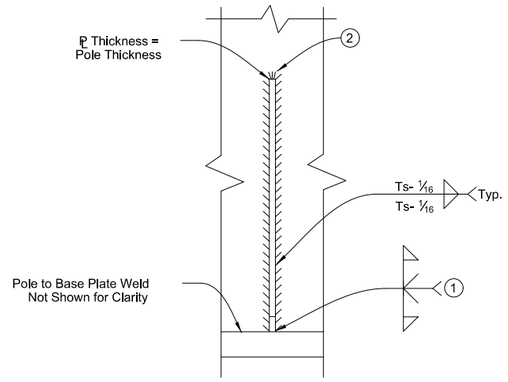
Stiffening Plate Detail

Not to Scale



Stiffening Detail - Elevation View

Not to Scale



Stiffening Detail - Front View

Not to Scale

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Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE STIFFENER PLATE DETAILS

ITS(4A)-15

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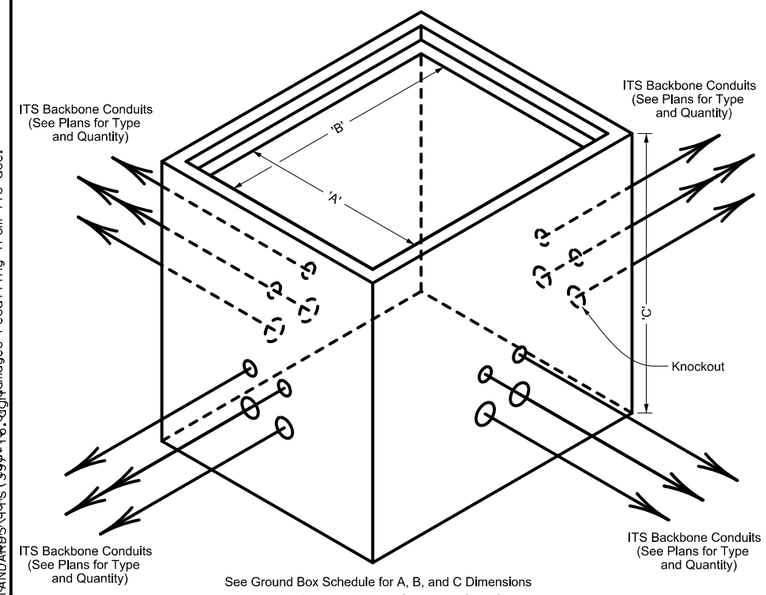
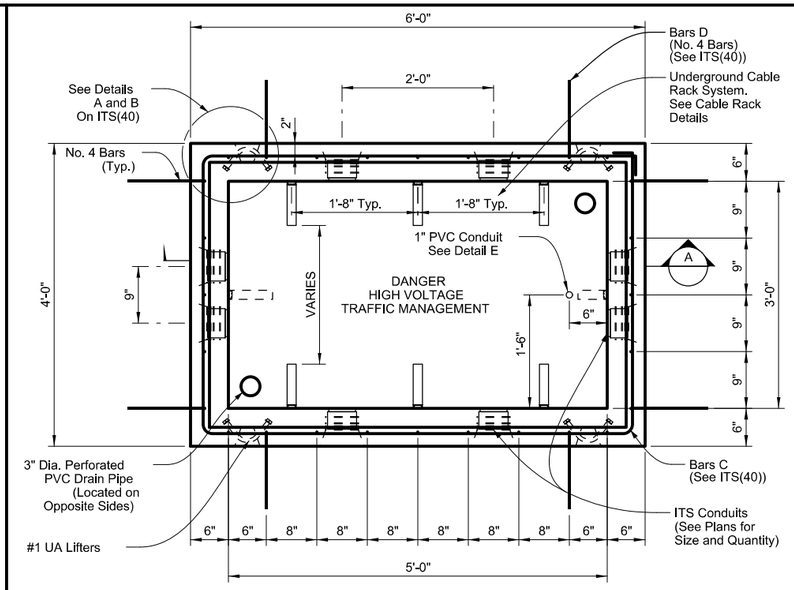


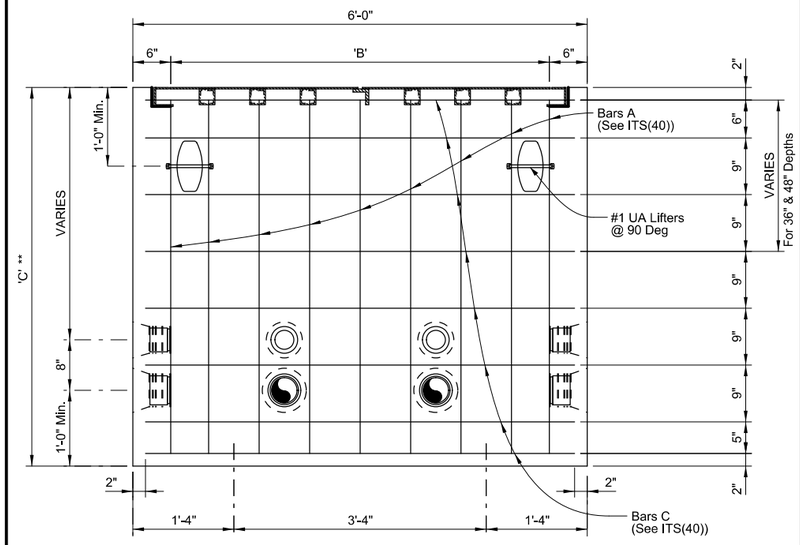
See Ground Box Schedule for A, B, and C Dimensions

Type 2 Ground Box Isometric View



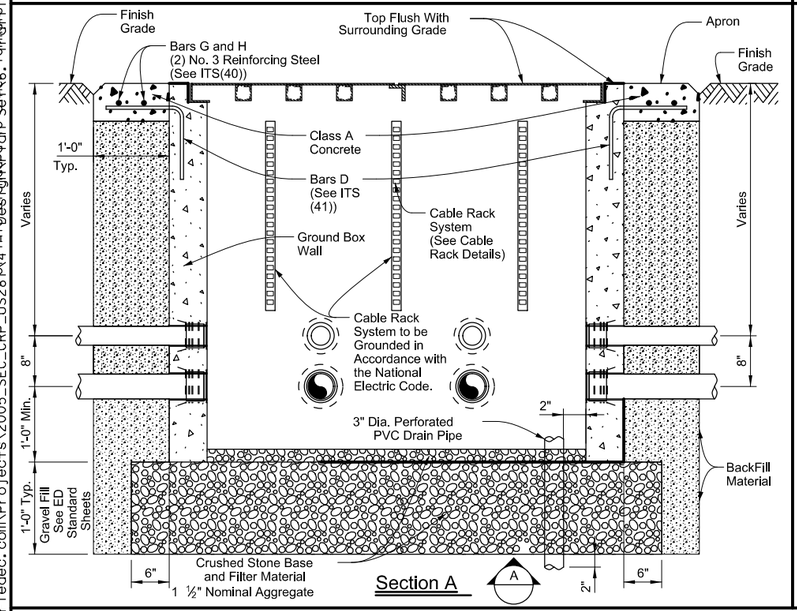
Note: Bar Spacing is The Same on Opposing Sides.

Type 2 Ground Box Plan View

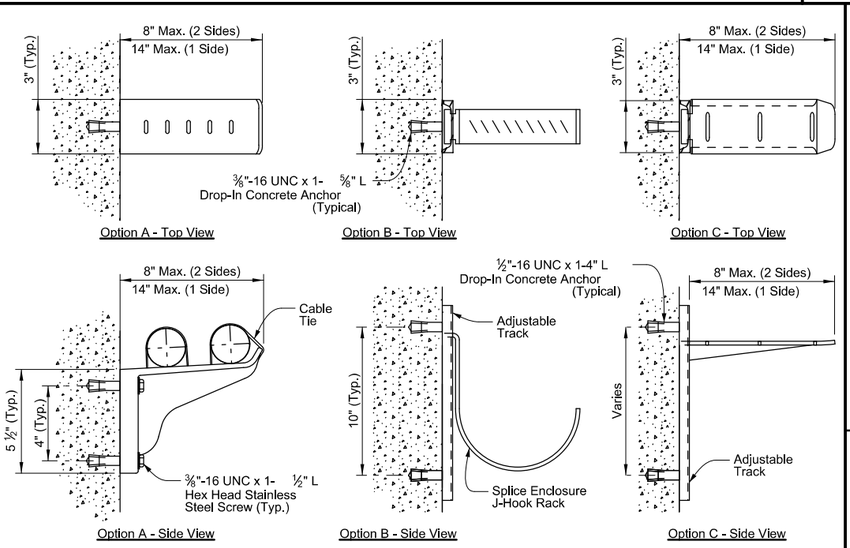


** - Detail representative of 60" deep ground box.

Type 2 Ground Box Elevation View

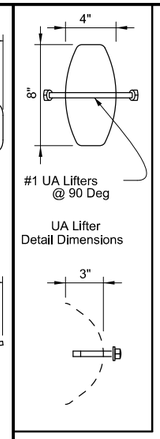


Section A

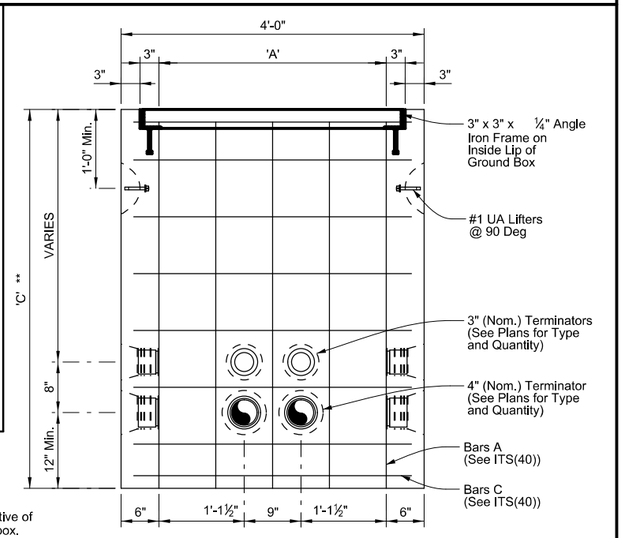


Note: Options Shown for Cable Racks and Attachment Methods Contractor to Supply Shop Drawings of Cable Rack and Cable Rack Grounding System (If Applicable) for Engineer Approval Prior to Installation.

Type 2 Cable Rack Details



** - Detail representative of 60" deep ground box.



Type 2 Ground Box Side View

SHEET 1 OF 2

General Notes:

1. Conduit entry points shown represent the standard configuration for backbone conduit as detailed on ITS(27). Additional conduits may be required as shown on the plans.
2. Provide Class "A" concrete for Type "2" ground boxes.
3. Provide terminators for the PVC conduit cast in the walls and placed symmetrically about the centerline of the box at the depths shown, unless otherwise noted, for the number of conduits identified on the plans to enter the box.
4. Provide terminators appropriately sized for the conduits indicated on the plans. Provide terminators with an air tight and water tight connection.
5. Closed bottom Type "2" ground boxes are acceptable in lieu of open bottom boxes. Provide two 3" Dia. perforated PVC drain pipes on opposite corners to optimize water drainage. Provide closed bottom boxes with a 12-inch base of crushed stone which extends 6 inches in all directions from the perimeter of the box. Crushed stone will be subsidiary to Special Specification, "ITS Ground Box."
6. When additional conduit entry points are needed to accommodate existing conduit, core drill conduit knockouts in the field of the appropriate number and size of conduit at each location, as directed by the Engineer.
7. Provide a bell fitting on the end of each conduit to ensure a flush fit inside the ground box.
8. Concrete grout around the knockout (inside and out) and around the conduit and bell fitting to ensure a neat watertight fit after the conduit and bell fitting have been placed in a knockout. Ensure all openings in the ground box are sealed prior to grouting operations.
9. Install a nylon string and plug all unused conduits with tug-plugs sized for the particular conduits. Provide split innerduct plugs in conduits or innerducts with cables to seal the innerduct around the cables to prevent water and dirt from entering.
10. Install all open bottom Type "2" ground boxes on a 12-inch base of crushed stone which extends 6 inches in all directions from the perimeter of the box. Crushed stone will be subsidiary to special specification, "ITS Ground Box."
11. Cap and seal terminators that do not have conduits attached.
12. Backfill in accordance with Item 400, "Excavation and Backfill for Structures."
13. Provide steel (ASTM A-153), glass reinforced nylon, or equivalent cable rack assemblies designed to support the amount of cable storage slack and splice enclosures identified in the plans. Locate cable rack system on any side but allow for sufficient access to the inside of the ground box. Cable racks may be installed at the factory or in the field. When mounting cable racks in the field, seal all penetrations to the concrete side wall to prevent moisture penetration. Ground metallic cable rack systems to grounding system inside ground box in accordance with the National Electrical Code.

Ground Box Schedule

Ground Box Type	'A' Width Inside (Inches)	'B' Length Inside (Inches)	'C' Depth Inside (Inches)
Type 2	36	60	36, 48, 60

1 ADD SHEET 5/21/2023

Sheet Details
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Texas Department of Transportation

Traffic Operations Division Standard

ITS GROUND BOX DETAILS TYPE "2" WITH STEEL COVER

ITS(39)-16

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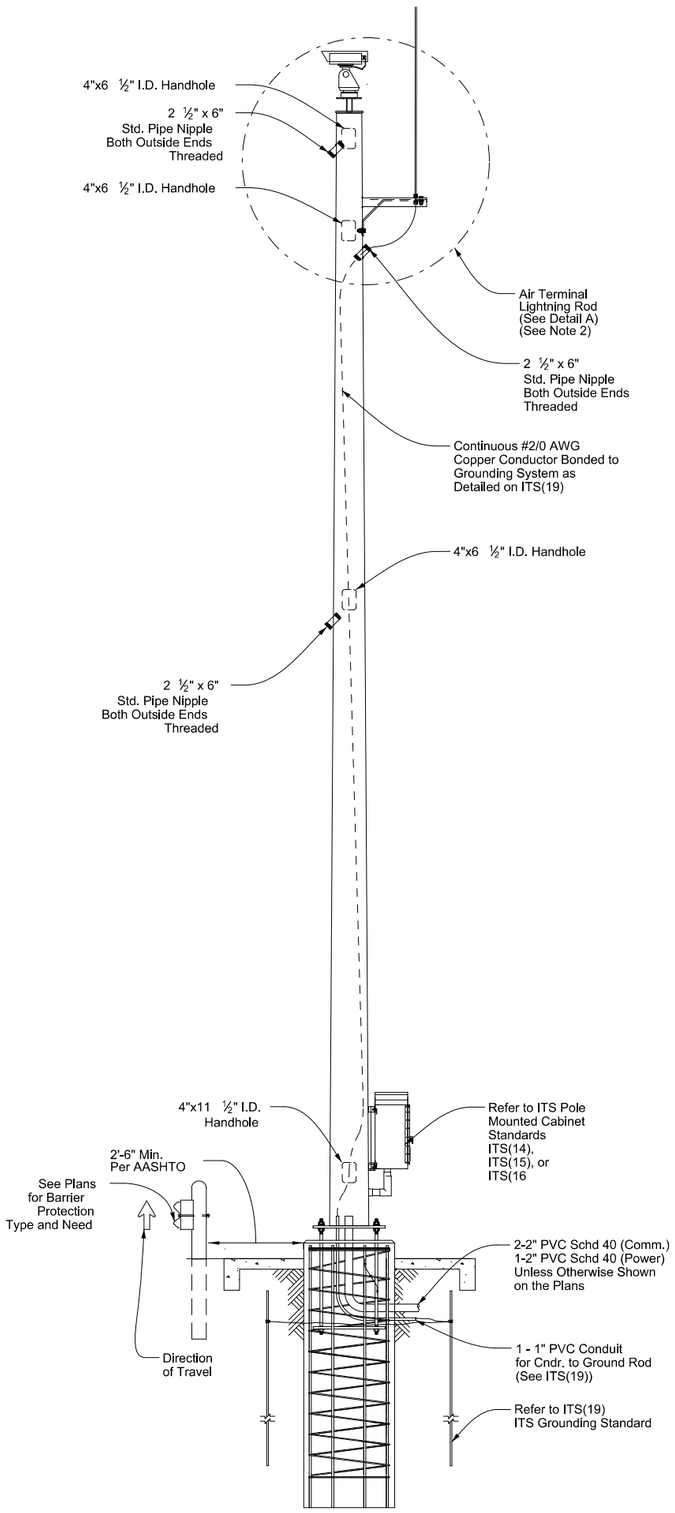
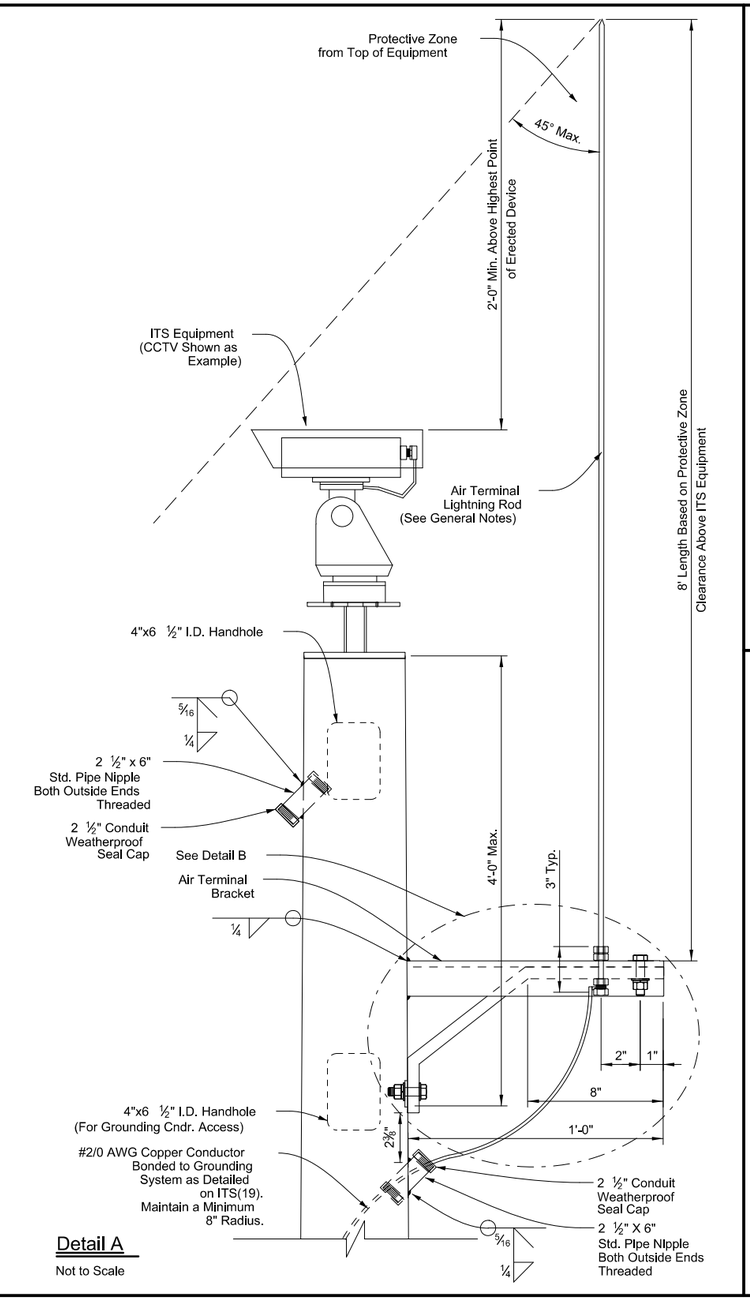


ITS Pole with Cabinet



Detail A

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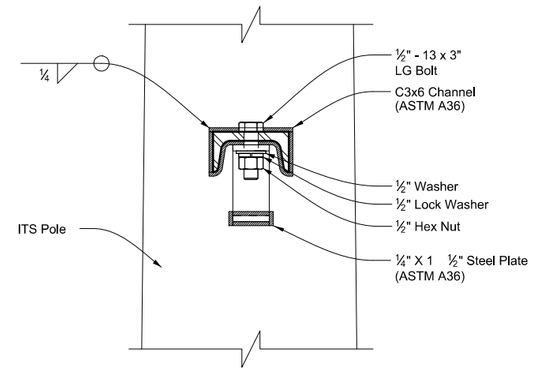

Section A-A

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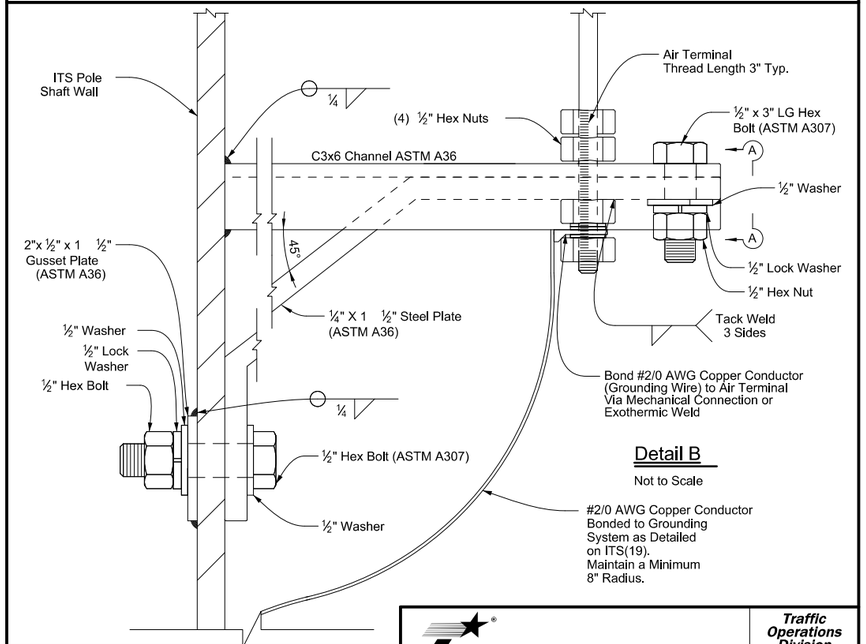

Detail B

Not to Scale

General Notes:

1. Provide lightning protection using air terminals on structures utilizing the rolling sphere method. Provide lightning protection system consisting of air terminals, down conductor, and grounding system installed in accordance with NFPA 780 and tested in accordance with IEEE 142. Meet the following requirements:
   A. Position - in center of least utilized field of view.
   B. Height - camera equipment to be within 45 degree protective zone of air terminal.
   C. Material - ½" ETP alloy 110 copper air terminal (Class II)
   D. Clearance - 24" minimum height above highest point of ITS equipment.
   E. Bonding - attach air terminal to bracket by exothermic weld or with approved clamping.
   F. Structure wind rating in accordance with TxDOT WV & IZ (LTS2013).
   G. Galvanize air terminal bracket in accordance with Item 445, "Galvanizing."
2. Alternative orientation for air terminal and pole mounted cabinet due to project specific needs to be indicated on the plans and detailed in shop drawing submittal for approval.
3. Weld air terminal bracket to ITS pole in accordance with Item 448 "Structural Field Welding." Bracket may be welded by the fabricator in the shop prior to delivery. A bolted connection for the air terminal bracket is acceptable in lieu of a welded connection with approval by the Engineer and detailed in the shop drawings.

1 ADD SHEET 5/21/2023

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE AIR TERMINAL DETAILS

ITS(5)-15

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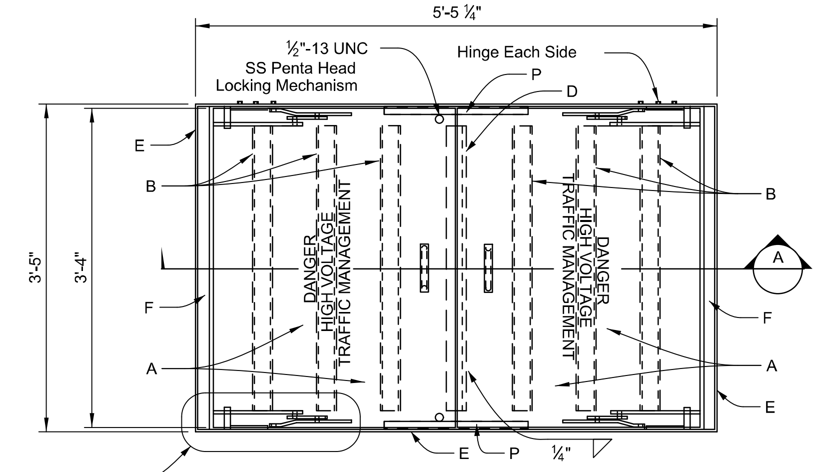
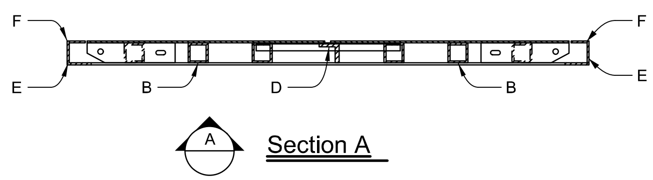
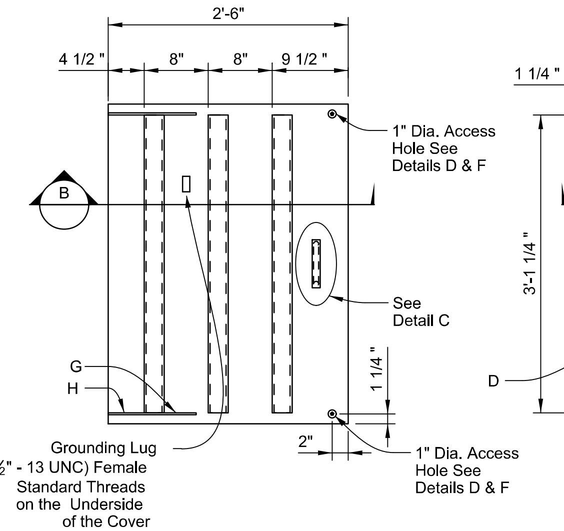


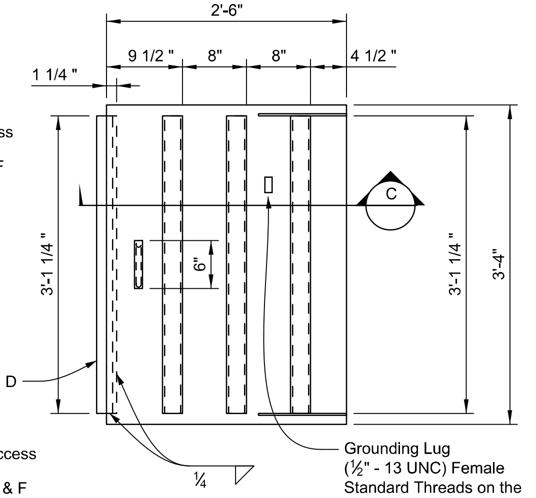
Type 2 Steel Cover Details
Top View



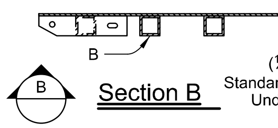
Section A



Type 2 Steel Cover Details
Bottom View (Left)

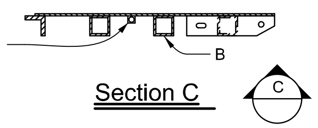


Type 2 Steel Cover Details
Bottom View (Right)

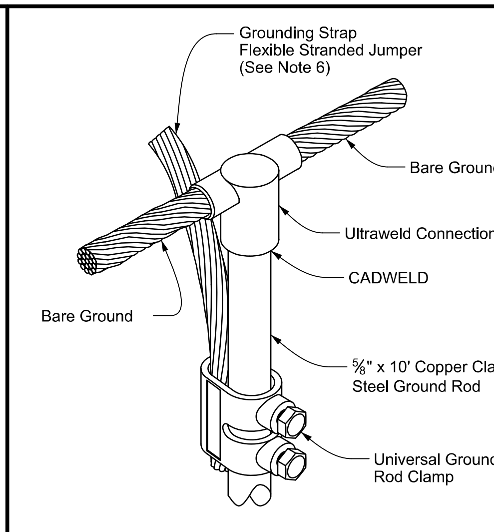


Section B

Grounding Lug
(½" - 13 UNC) Female
Standard Threads On The
Underside of the Cover



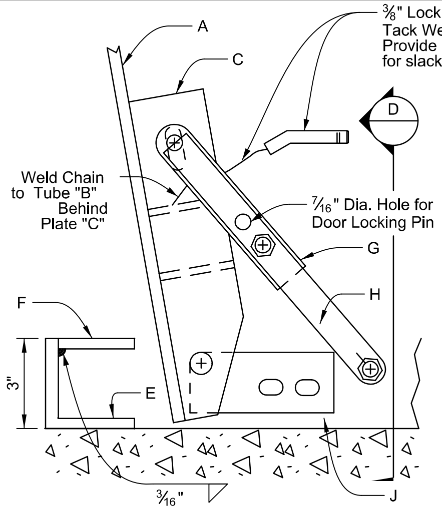
Section C



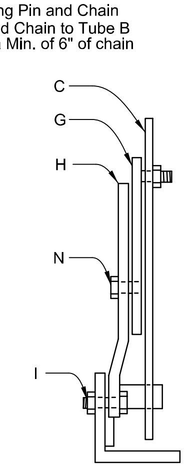
Detail G
Grounding Connection Detail

Note - All grounding connections to be CADWELD or approved equal. This work will not be paid for directly, but is considered incidental to ITS ground box.

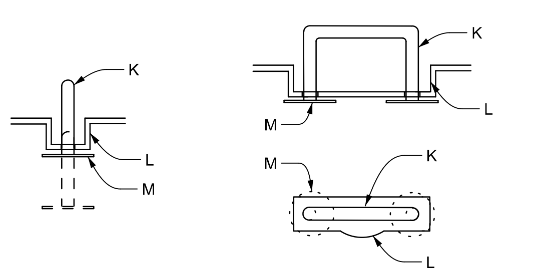
Item	Qty	Incidental "ITS Ground Box" Material
A	2	¼" Floor Plate 40" x 30"
B	6	2 ½" x 2 ½" x 37 ¼" Tube
C	4	11" x 2 ½" x ¼" Plate
D	1	2 ½" x 2 ½" x ½" x 37" ¼ Angle
E	4	3" x 3" x ¼" Angle
F	2	40 ½" x 2" x ¼" Plate
G	4	6 ½" x 1 ¼" x ¼" Plate
H	4	10 ½" x 1 ¼" x ¼" Plate
I	12	½" Bolt/Nut
J	4	4 ¾ x 2" x ¾" Plate
K	2	⅝" Drop Handle
L	2	1 ½" x ⅝" x $^{3}/_{16}$" Channel x 7"
M	4	1 ½" x ⅛" P Disk
N	8	½" x ⅝" Bolt
P	2	1" x 1" x ⅛" Angle x 18"



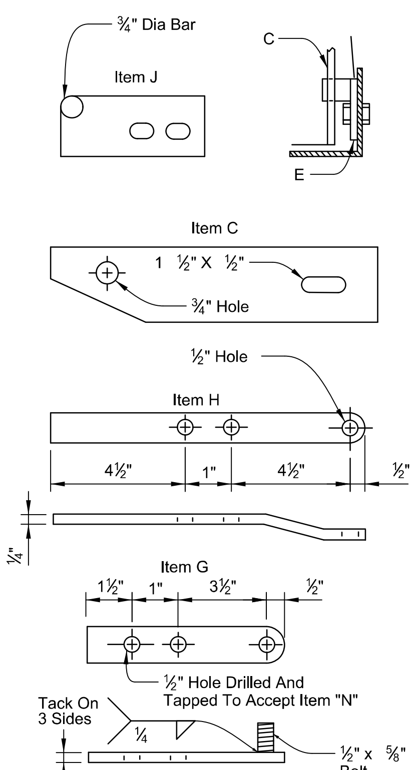
Detail A
Type 2 Cover Side View Detail



Section D



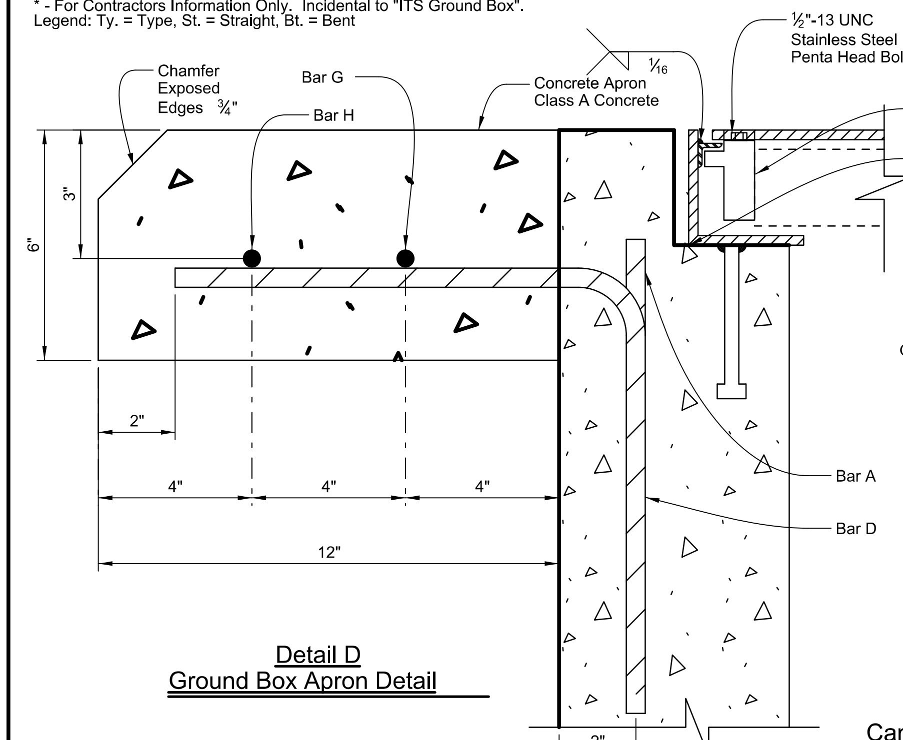
Detail C
Type 2 Drop Handle Details



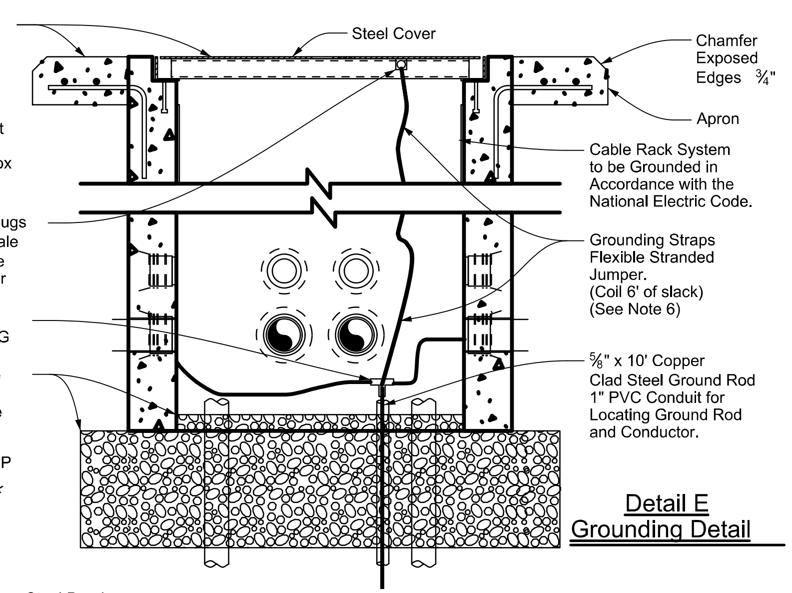
Detail B
Type 2 Hinge Details

Ground Box Type 2	BAR A					BAR C					BAR D					BAR G					BAR H					TOTALS	
	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	Steel * LBS.	Conc. * CY
36" Depth	28	#4	St.	2'-8"	50.0	5	#4	Bt.	19'-1"	63.9	8	#4	Bt.	2'-0"	10.7	1	#3	Bt.	23'-3"	8.8	1	#3	Bt.	25'-11"	9.8	143.2	1.00
48" Depth	28	#4	St.	3'-8"	68.8	7	#4	Bt.	19'-1"	89.5	8	#4	Bt.	2'-0"	10.7	1	#3	Bt.	23'-3"	8.8	1	#3	Bt.	25'-11"	9.8	187.6	1.33
60" Depth	28	#4	St.	4'-8"	87.5	8	#4	Bt.	19'-1"	102.3	8	#4	Bt.	2'-0"	10.7	1	#3	Bt.	23'-3"	8.8	1	#3	Bt.	25'-11"	9.8	219.1	1.67

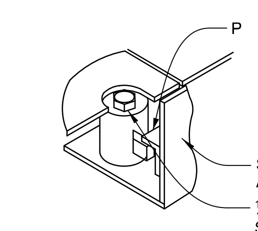
* - For Contractors Information Only. Incidental to "ITS Ground Box".
Legend: Ty. = Type, St. = Straight, Bt. = Bent



Detail D
Ground Box Apron Detail



Detail E
Grounding Detail



Detail F
Cam Locking Mechanism

SHEET 2 OF 2

General Notes:

1. See ITS(39) for additional Type "2" ground box details.
2. Hot-dip galvanized steel covers after all welds are made.
3. Label top of cover with the words "DANGER HIGH VOLTAGE TRAFFIC MANAGEMENT" using template-guided, hand-welded lettering at a height of 2 inches to ensure neatness.
4. Provide all Type "2" ground boxes with a securable, tamper-proof cover equipped with a bolting system that positively secures the cover in place.
5. Ground steel covers in accordance with the National Electrical Code.
6. Ground covers to the grounding cable using a split-bolt kearney clamp, and a minimum 8-foot long flexible stranded jumper the same size as the grounding conductor. Terminate to metal ground box cover with a tank ground type lug as approved and directed by the Engineer.
7. Provide Type "2" ground box and cover designed for heavy duty loading in accordance with AASHTO H20 loading when located where the box may experience deliberate, continuous vehicular traffic, such as near the shoulder or an auxiliary lane, or immediately adjacent to the unprotected edge of pavement.
8. Provide a Type "2" ground box and cover tested by a laboratory independent of the manufacturer certifying loading requirements are met. Provide certification of such tests to the Engineer for approval.
9. Provide a steel or cast iron cover in accordance with Item 471, Article 471.2, "Frames, Grates, Rings, and Covers." Provide covers with the number of drop handles shown. Provide Class "A" concrete for ground box construction and aprons.
10. Fabricate cover so to fits properly on the ground box, and no undue noise results when traffic contacts the cover.

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Sheet Details
Not to Scale

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Traffic Operations Division Standard

ITS GROUND BOX DETAILS TYPE "2" WITH STEEL COVER

ITS(40)-17

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265

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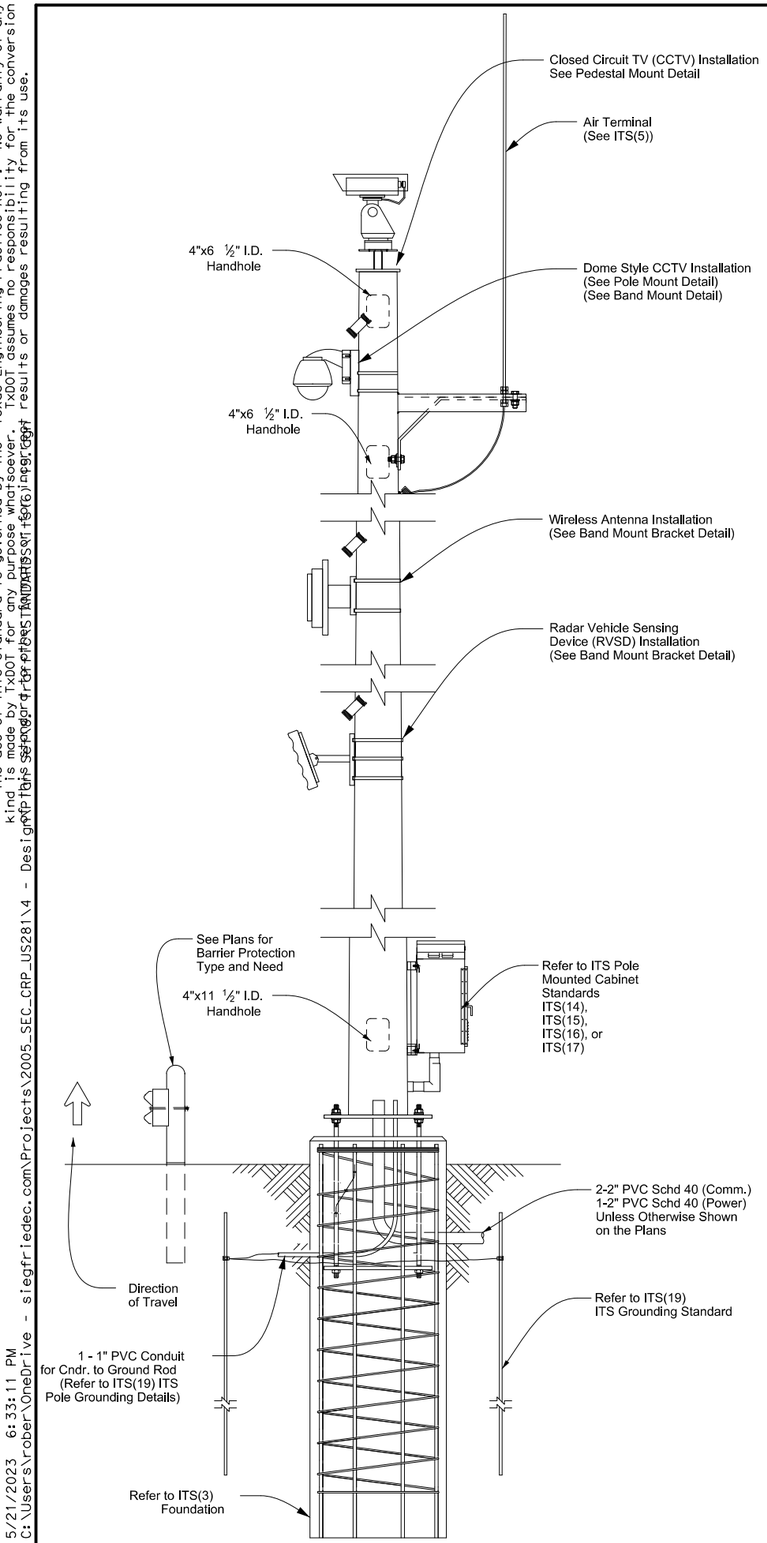
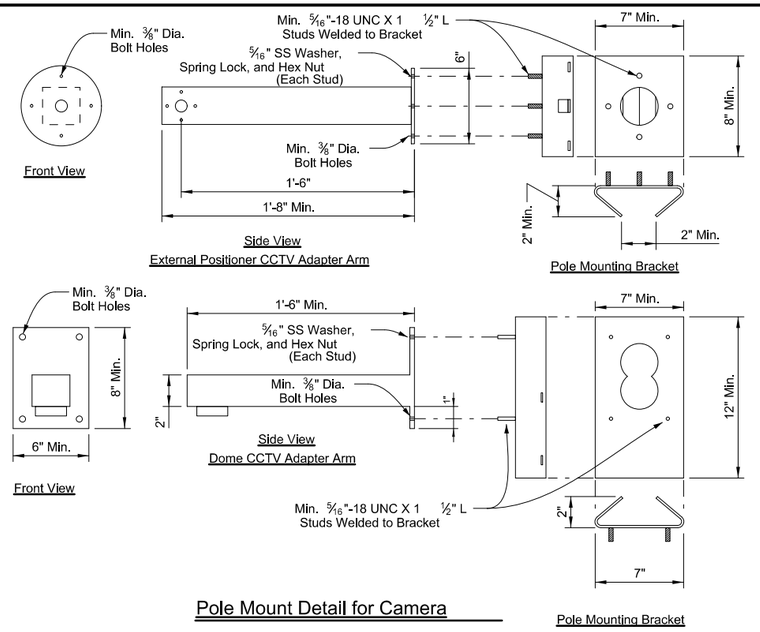
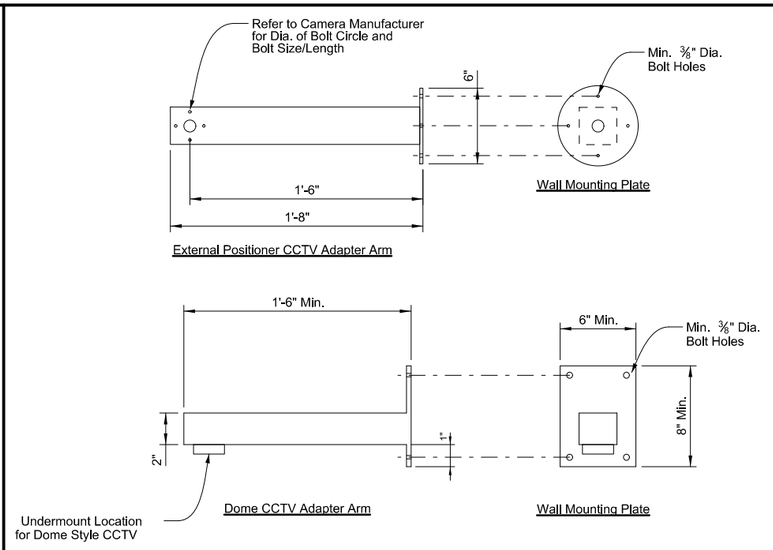


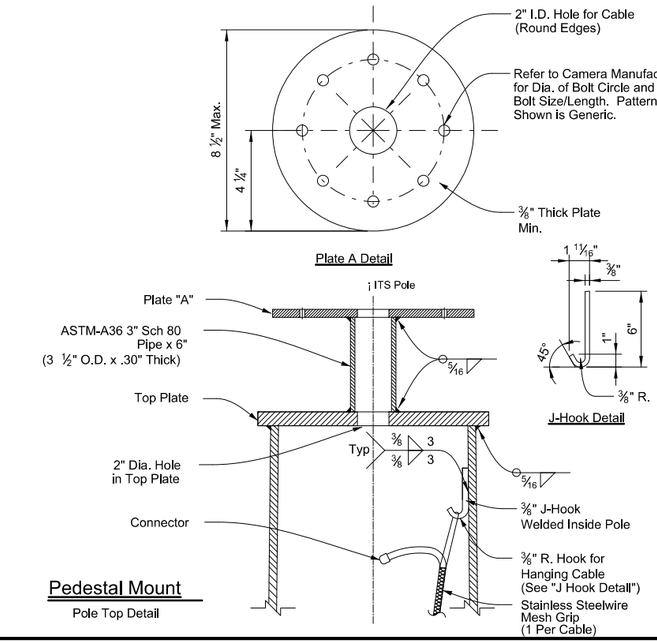
ITS Pole with Cabinet



Pole Mount Detail for Camera

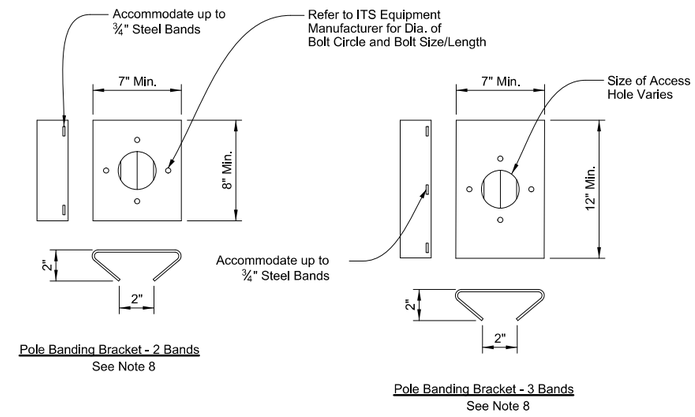


Wall Mount Detail



Pedestal Mount

Pole Top Detail



Band Mount Bracket Details

General Notes:

1. Designed according to Sixth Edition AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications.
2. Hang all cabling inside ITS pole structure with stainless steel wire mesh grips.
3. Bolt positioning in the pedestal top plate (Plate "A") for the pan/tilt base must be determined in the field per camera manufacturers recommendations. This will allow positioning of the camera to maximize coverage area. The Engineer will determine the camera's blind zone at each location.
4. Provide pedestal top plate and Plate "A" that conform to ASTM A36.
5. Make all welds conform to Item 441 and AWSD 1.1 (Structural Welding). Repair damaged galvanized coating per Item 445, "Galvanizing."
6. Galvanize parts in accordance with Item 445, "Galvanizing" unless otherwise noted.
7. The type of ITS equipment shown to be mounted to the ITS pole is intended to represent the most common ITS equipment applications and should not be treated as all inclusive. Other ITS equipment applications may exist that are project specific.
8. Mounting brackets are intended to be diagrammatic and for information only, and are not all inclusive. Contractor responsible for submitting mounting bracket design for approval by the Engineer prior to fabrication. Mounting bracket designed to support a maximum 35 Lbs. Off-the-shelf mounting brackets are acceptable and shall be submitted by shop drawing for approval.
9. Mounting heights to be determined in the field based on manufacturer recommendations.

1 ADD SHEET 5/21/2023

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Traffic Operations Division Standard

ITS POLE EQUIPMENT MOUNTING DETAILS

ITS(6)-15

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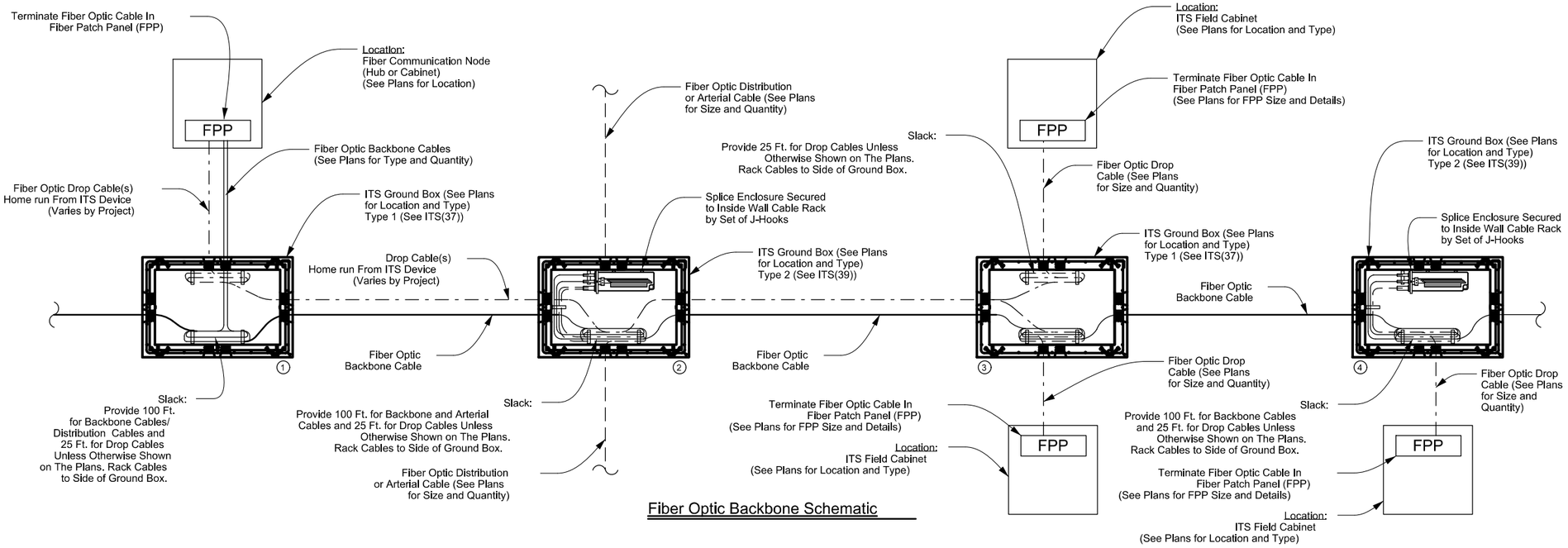
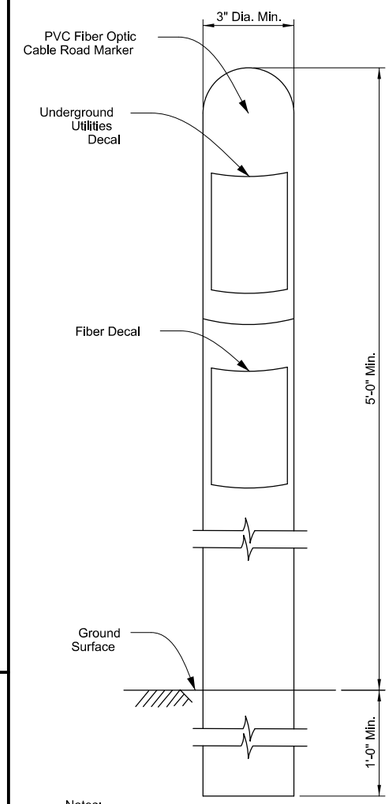
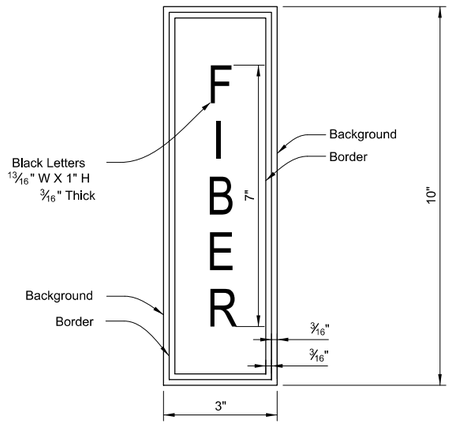


Fiber Optic Backbone Schematic



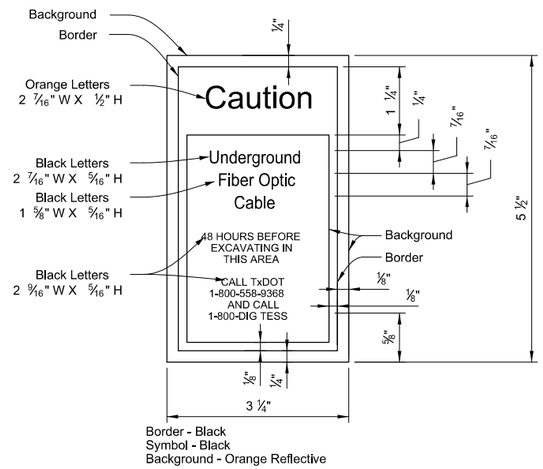
Notes:
1. Space fiber optic cable road markers at maximum 1000' intervals or at significant changes in direction such as a 90 degree turn.
2. Provide all orange fiber optic cable road markers for non-splice locations.
3. Provide orange fiber optic cable road markers with white dome for splice locations.
4. Locate marker within concrete apron of fiber ground box.

Fiber Optic Cable Road Markers



Border - Black
Background - Orange Reflective

Fiber Decal Details



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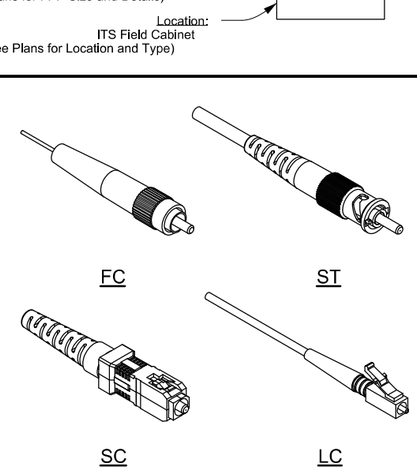
Symbol - Black
Background - Orange Reflective

Underground Utilities Decal Details



Fiber Optic Connectors

Note - Details are diagrammatic and may vary by manufacturer.

General Notes:

1. The fiber optic backbone schematic shown is diagrammatic only and intended to represent the various fiber optic communication architectures seen across the state and may not show all configurations seen. Connection of ITS field equipment to ITS communication nodes or hubs is achieved through home run drop cables or spliced to the backbone in a splice enclosure. Refer to fiber communication schematic details and fiber termination information shown on the plans for further information.
2. Install a flat pull cord in all empty conduits and inner-ducts identified for communication use. The pull cord must have a tensile strength of 1,250 lbs minimum and have foot markings to determine length installed. Furnish and installation of pull cord will be subsidiary to special specification "ITS Fiber Optic Cable".
3. Color code each type of fiber optic cable to identify the cable as a "backbone" (green or blue), "distribution" (red), or "drop" (orange or yellow).
4. Terminate fibers at fiber patch panel (FPP), also referred to as patch panel, with SC connectors for new installations. When connecting to existing FPP, terminate with FC or ST connectors as shown on the plans. Provide connector adaptors as required to accommodate existing equipment if information is not provided in the plans.
5. Provide a list showing cable number assignments and highway or facility that the cable services.
6. Provide a single 1/C #14 insulated wire in conduit runs which have been identified in the plans to carry fiber optic cable. Provide UL listed solid copper wire with orange color low density polyethylene insulation suitable for conduit installation rated for temperature range -20 C to 60 C and a voltage rating of 600V. This wire will serve as a tracer, or locate, wire for locating underground conduit containing fiber optic cabling and will be paid for under Item 620, "Electrical Conductors."
7. Ensure each cable is marked on the outer jacket with a label detailing the manufacturer's name, the date of manufacturer (month/year), the fiber count (Example: 48F SM or 48 SMF), and sequential length markings at maximum 3 FT increments.

Reference Notes:

1. Fiber architecture at communication node.
2. Fiber architecture for splicing arterial distribution cables.
3. Fiber architecture for home run of drop cables from ITS field equipment cabinets to communication node.
4. Fiber architecture for splicing drop cable from ITS field equipment cabinet.

SHEET 1 OF 2

Texas Department of Transportation

Traffic Operations Division Standard

ITS FIBER OPTIC CABLE MISCELLANEOUS DETAILS

ITS(42)-16

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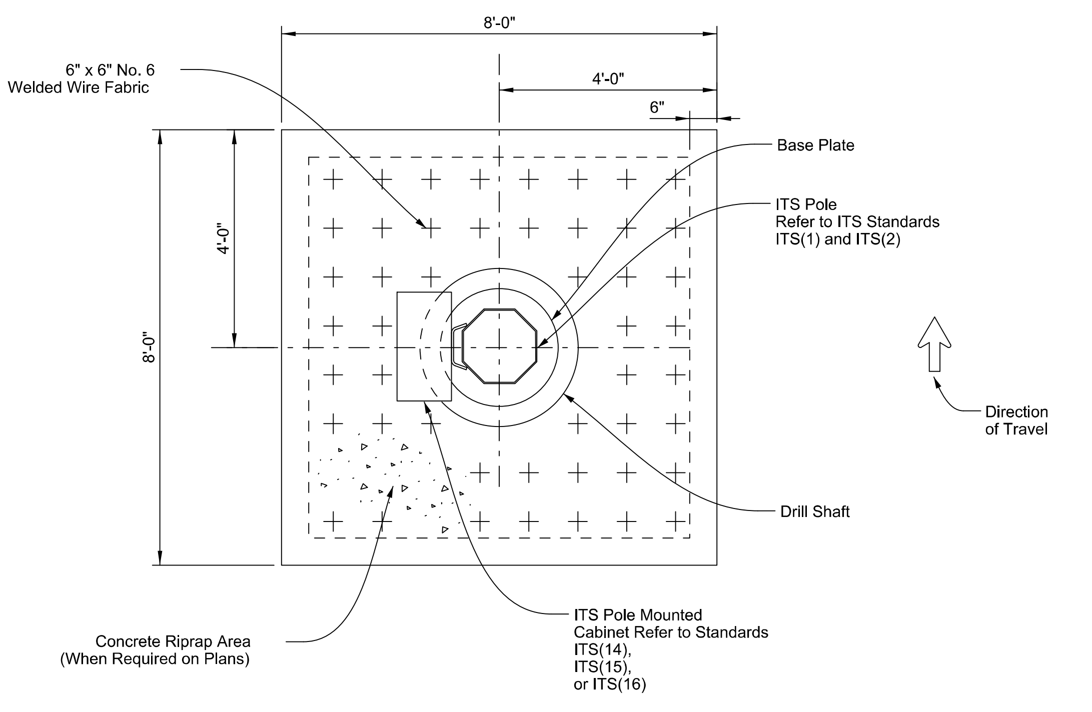
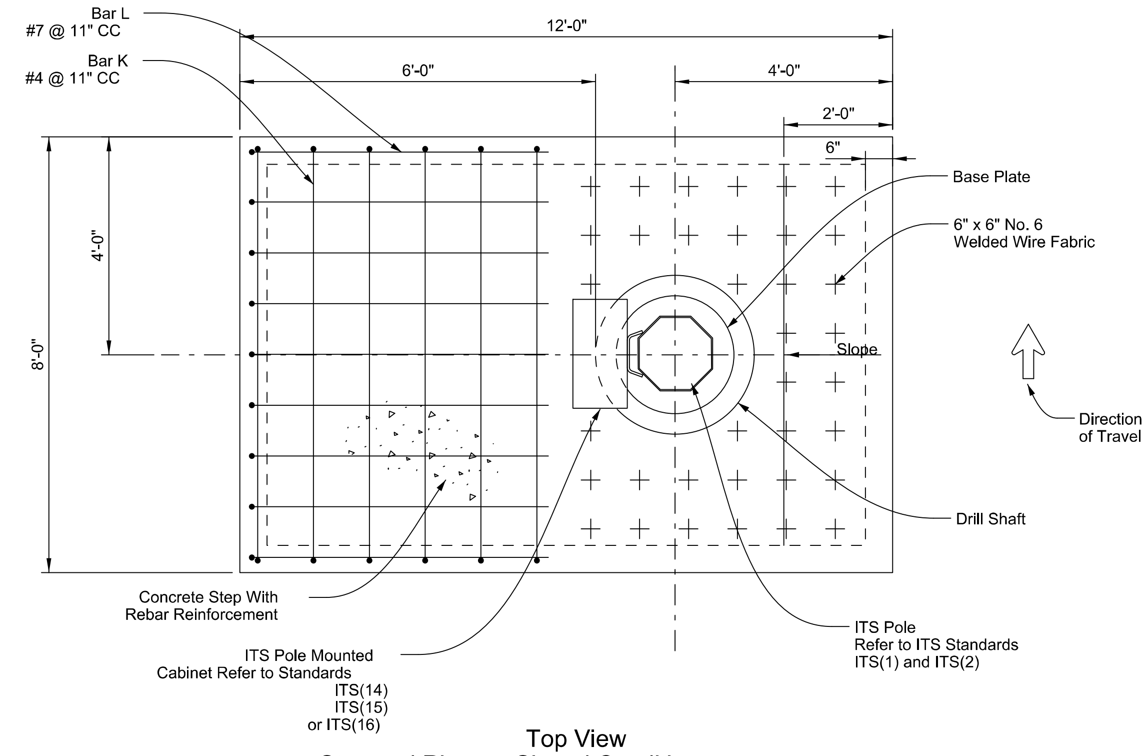
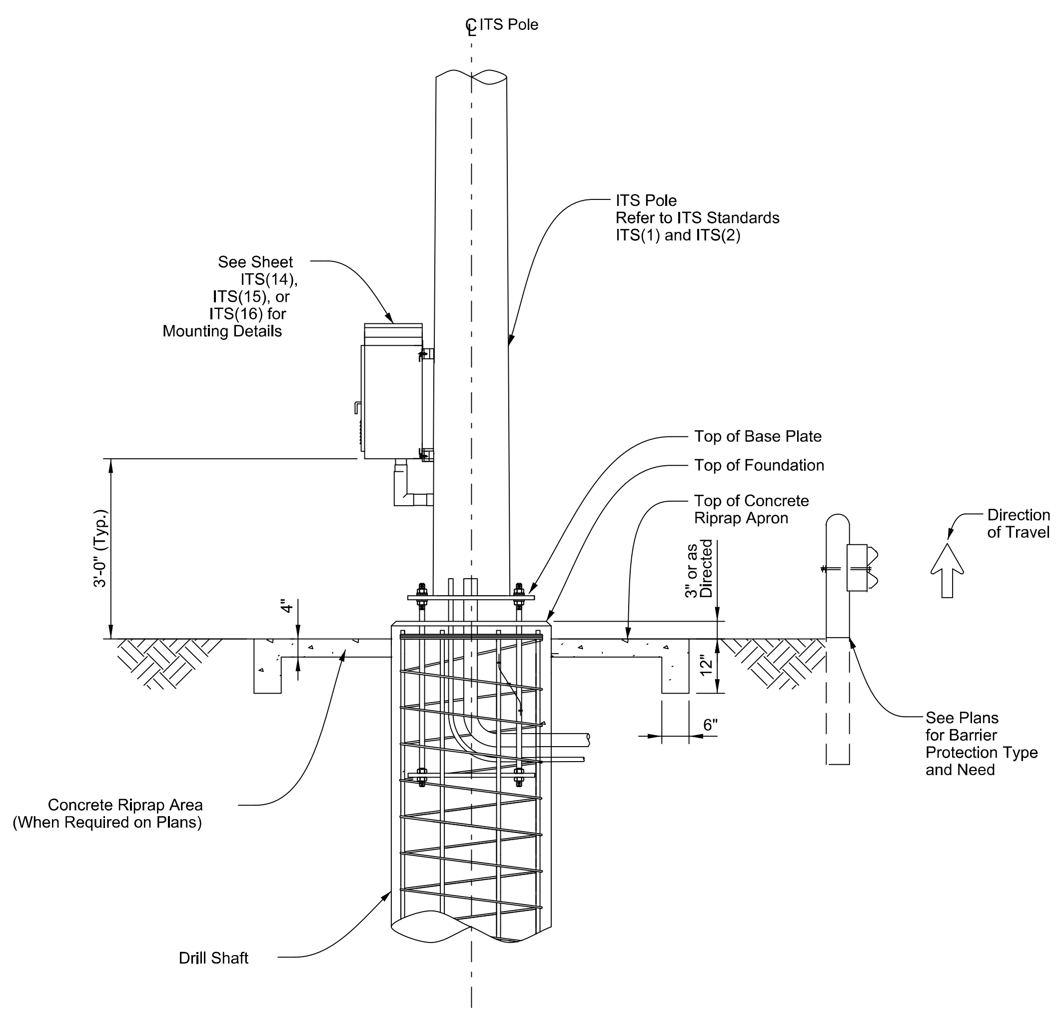


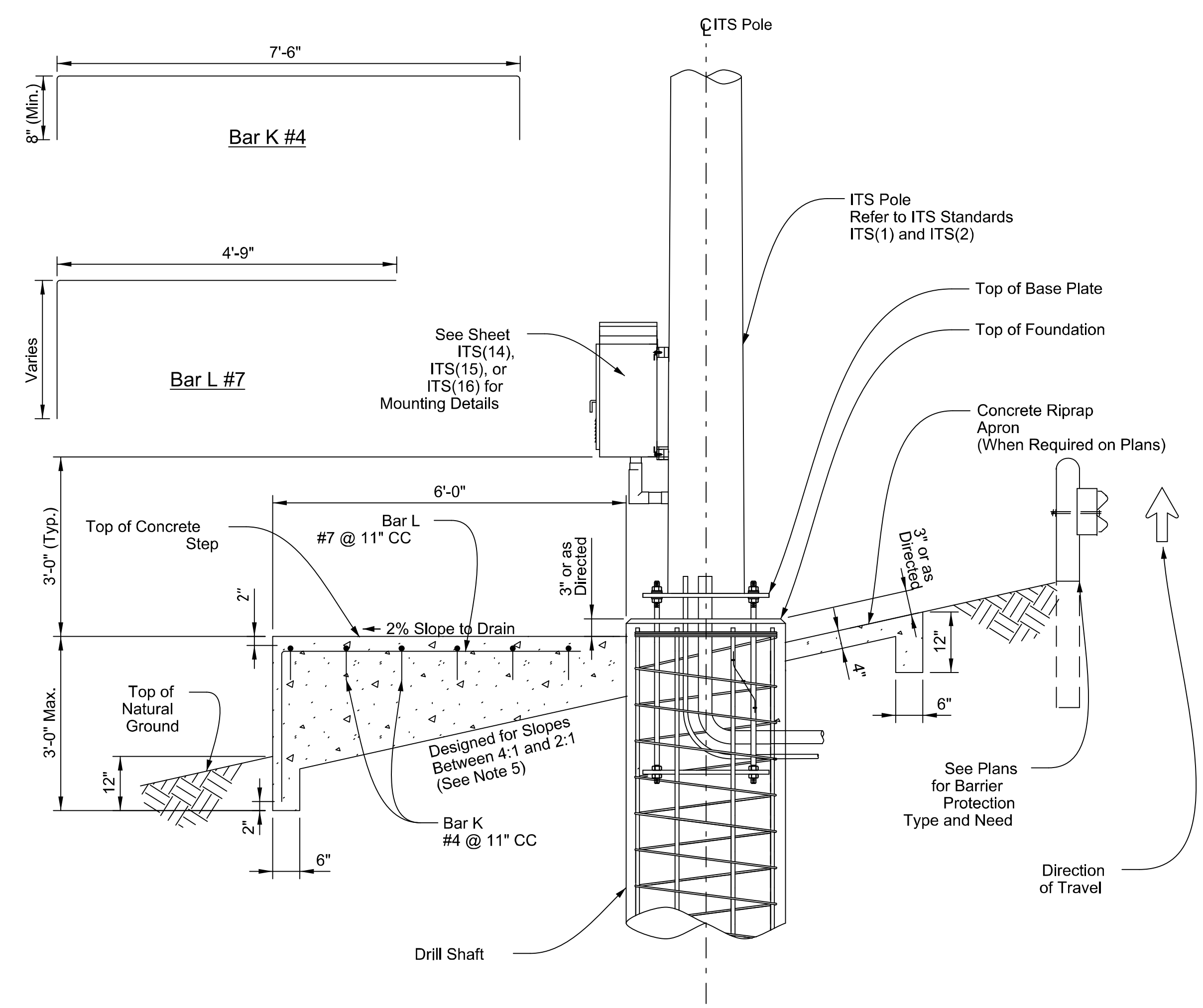
Top View
Riprap - Non-Sloped Conditions



Top View
Step and Riprap - Sloped Conditions



Elevation View
Riprap Apron Detail - Non-Sloped Conditions



Elevation View
Riprap Apron/Step Detail - Sloped Conditions
(Slopes Exceeding 4:1)

General Notes:

1. For non-sloped grassy areas, an 8' x 8' concrete riprap apron shall be poured around ITS pole foundations (see detail on this sheet), estimated at 1.25 CY per site, paid for under Item 432 "Riprap."

2. For sloped grassy areas, a concrete "step" (for maintenance personnel to access cabinet) shall be poured as part of the riprap apron. The step shall vary in height depending on slope, but shall extend 6' horizontally from ITS pole drilled shaft foundation and be the same width as riprap apron (8'). Step shall be poured at same time as riprap apron (see detail on this sheet). Any additional concrete necessary to fabricate step (over and above the 1.25 CY) shall be considered subsidiary to the various bid items and no direct payment shall be made.

3. For sloped areas where riprap exists, a 6' (horizontal from drilled shaft foundation) x 4' wide step shall be installed (see detail this sheet). Concrete for step shall be considered subsidiary to the various bid items and no direct payment shall be made.

4. Cabinet orientation may vary depending on field conditions or project constraints. Accommodate configuration of platform according to cabinet orientation.

5. Slopes greater than a 2:1 or when 3'-0" Max. step wall height is exceeded, an alternative design with safety railing is required and shall be detailed in the shop drawings for approval.

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ITS POLE RIPRAP DETAILS

ITS(7)-15

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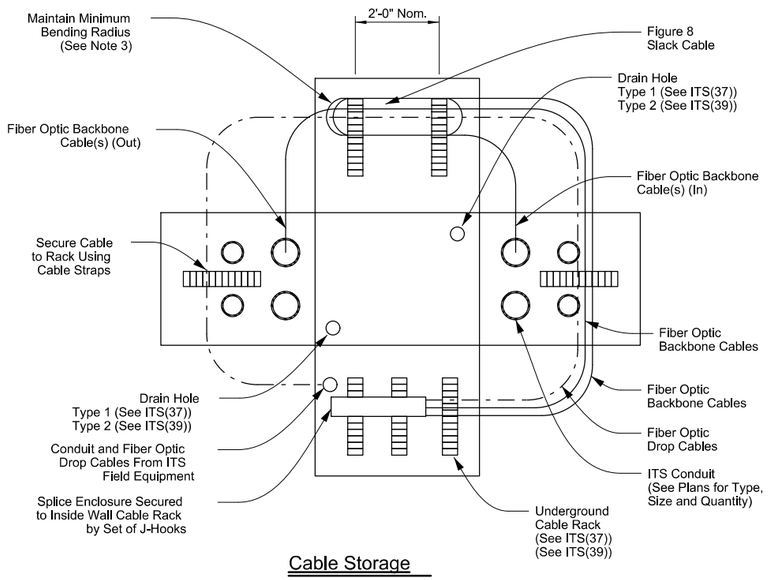
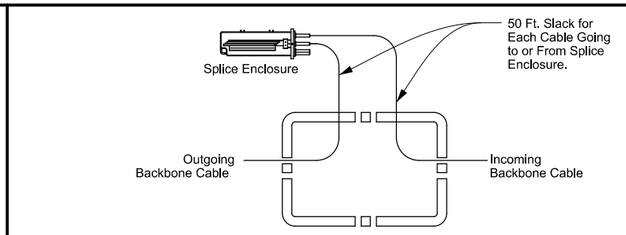
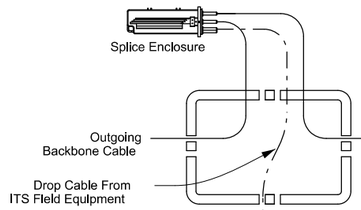


Cable Storage

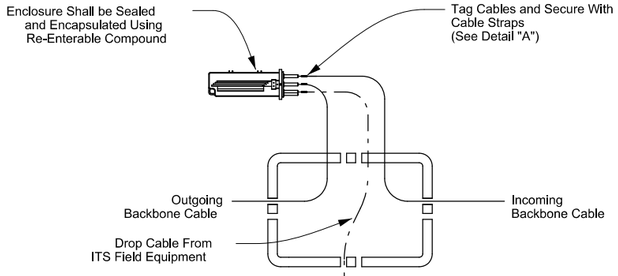
Top View - Ground Box Walls Folded Down for Clarity



Step 1



Step 2



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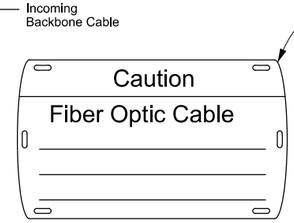
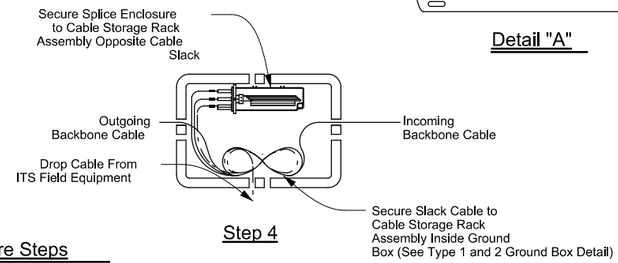


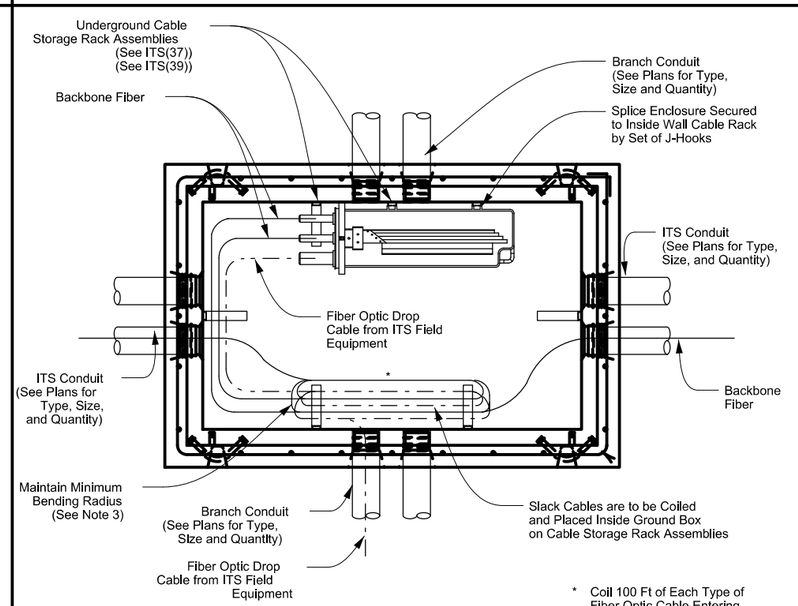
Detail "A"



Step 4

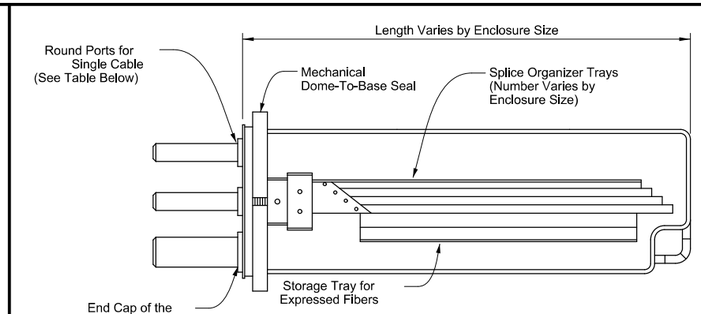
Splice Procedure Steps

Type "1" Ground Box



Type "2" Ground Box

with Splice



Splice Enclosure Sizes			
Type	No. of Ports	Port Capacity	Fiber Use
1	4	2 - Up to 144 Sm	Backbone
		2 - Up to 48 Sm	Drop
2	6	4 - Up to 144 Sm	Backbone/Arterial
		2 - Up to 48 Sm	Drop
3	8	4 - Up to 144 Sm	Backbone/Arterial
		4 - Up to 48 Sm	Drop

Splice Enclosure Fiber Accommodations

General Notes:

1. Conduit entry points to the Type 1 and Type 2 ground boxes are diagrammatic. Refer to ITS ground box standards, ITS(37) and ITS(39), for more information. Additional conduits may be required as shown on the plans.
2. Type 2 ground boxes are to be used, as shown on the plans, when splice enclosures are required.
3. Maintain a minimum bend radius of 20 times the fiber optic cable diameter during installation, relocation, and removal and a minimum of 10 times the fiber optic cable diameter when in operation.
4. Caulk all conduit around the top of the cable ducts with an engineer approved caulking compound to seal clearance between the cables and ducts. Place conduit plugs in all vacant conduits or inner-ducts.
5. Provide cable straps that will withstand ultra-violet exposure and do not damage cables when tightening.
6. All incidental equipment necessary for the cable installation and mounting of splice enclosure within the ground box will be incidental to Special Specification, "ITS Fiber Optic Cable."
7. Submit all splice locations to the field engineer for approval before beginning work.
8. Provide splice enclosures designed to seal, bond, anchor, and protect fiber optic cable splices. Provide splice enclosures designed to handle mechanical and fusion type splices. Provide splice enclosures with port configurations for the sizes detailed above.
9. Provide splice enclosures designed for underground placement with a sealing system preventing water penetration when submerged under 10 ft. of water.
10. Furnish, install, and secure fiber optic cable tags for each fiber optic cable entering a ground box, ITS field equipment cabinet (ground and pole), and hub building or communication node as detailed above. Provide information including fiber optic type, count, origin, and destination on the cable tag. Use UV resistant tie-wraps for securing the tag to the cable. Provide tie-wraps that do not damage fiber when securing to cable.

1 ADD SHEET 5/21/2023

Sheet Details
Not to Scale

Texas Department of Transportation

Traffic Operations Division Standard

ITS FIBER OPTIC CABLE MISCELLANEOUS DETAILS

ITS(43)-16

FILE: its(43)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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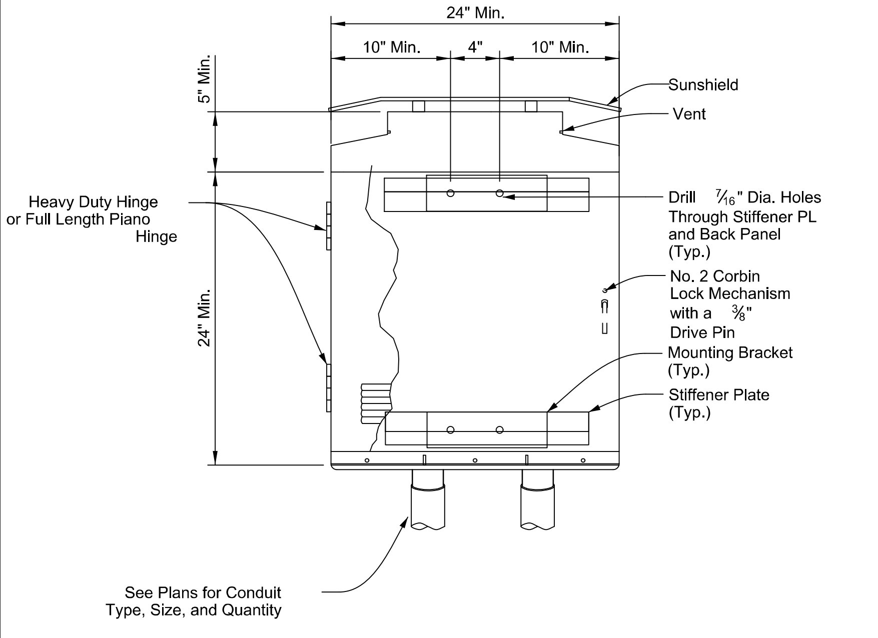
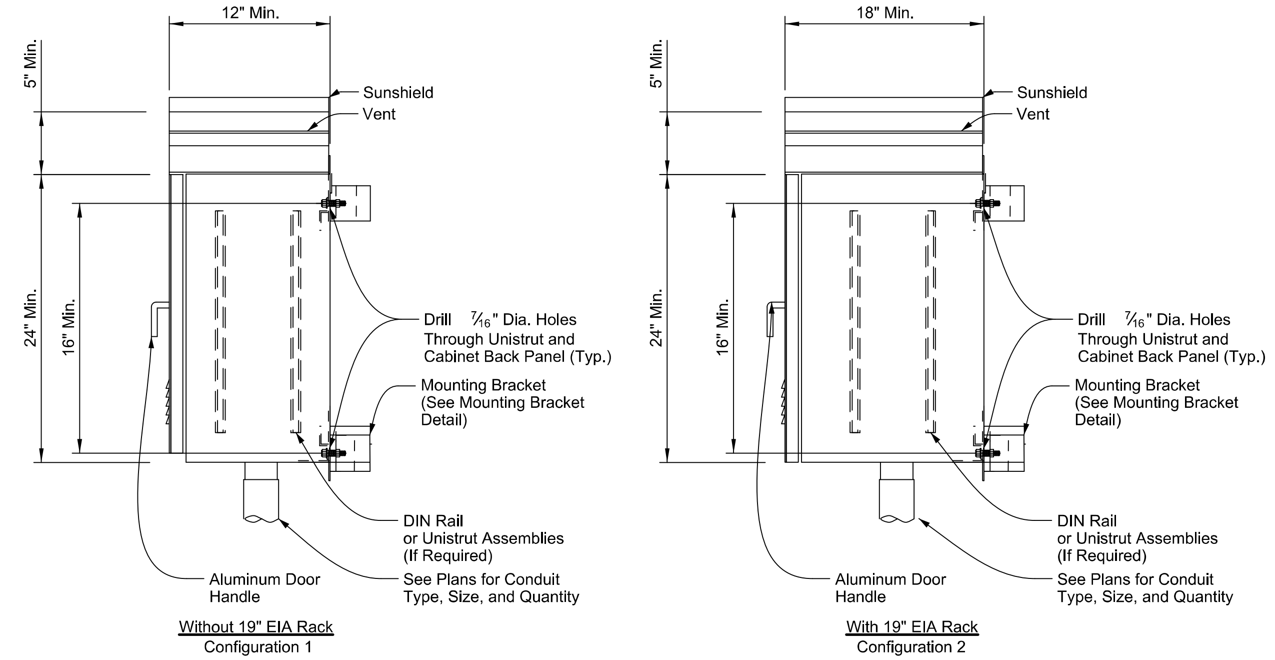
REVISIONS	0254	07	008,ETC	US 281
	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1055GG



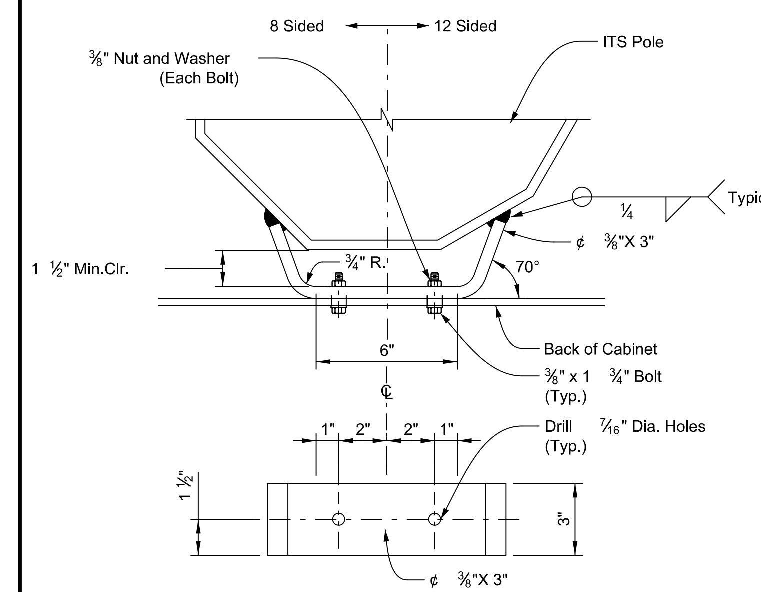
Pole Mounted Cabinet - Type 1 Front View

Not to Scale



Pole Mounted Cabinet - Type 1 Side View

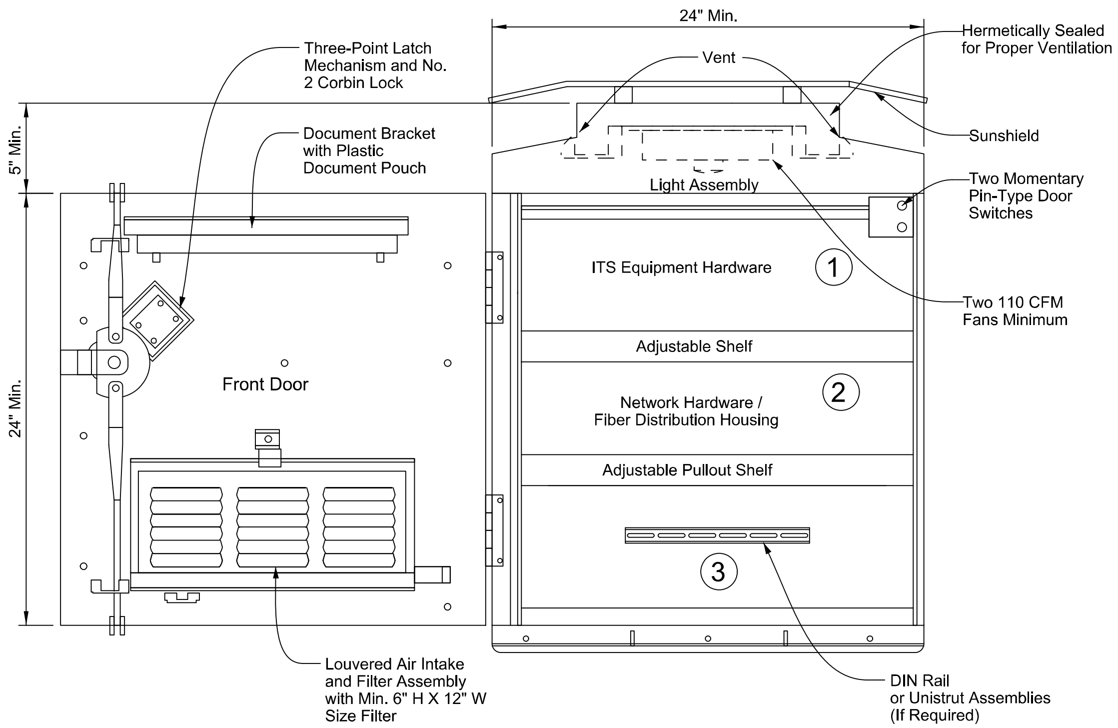
Not to Scale



Note:
ITS Pole May be Round, Octagonal (8 Sided), or Dodecahedron (12 Sided).
See ITS(1), and ITS(2) for Details.

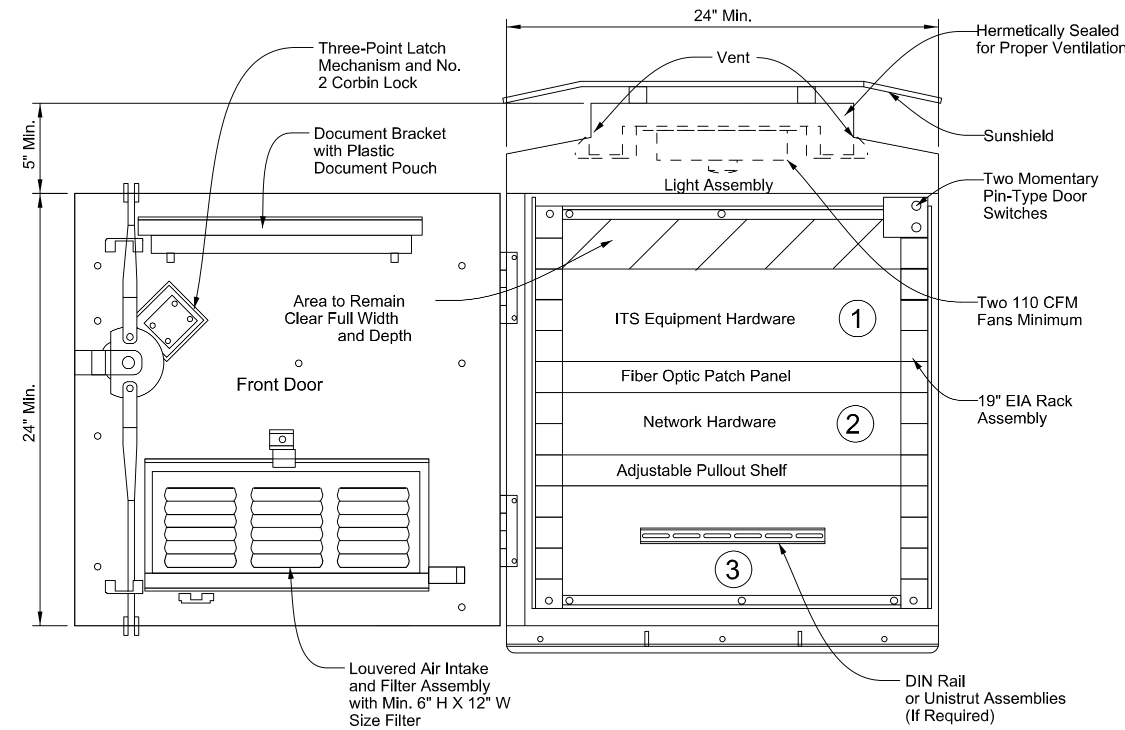
Mounting Bracket Detail

Not to Scale



Interior - Type 1 Without 19" EIA Rack - Front View

Not to Scale



Interior - Type 1 With 19" EIA Rack - Front View

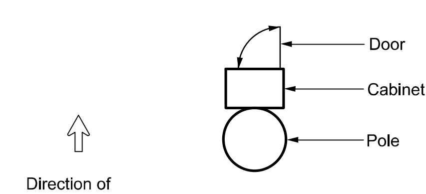
Not to Scale

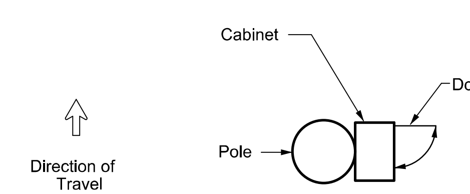
Typical Equipment Layout Legend

	Example Equipment
1	CCTV Interface Panel, Radar Vehicle Sensing Device (RVSD) Equipment, Environmental Sensor Station (ESS) Equipment, Bluetooth Equipment, or ITS Radio Equipment (See General Note 1)
2	Ethernet Switch, Video Encoder, Terminal Server, Fiber Optic Transceivers, or Media Conversion Equipment (See General Note 1)
3	Power Distribution Assembly, Service Entrance Breakers, Primary AC Power, Auxiliary Power Strip, Ground Bus Bar Surge Protection Equipment

General Notes:

1. Layout of hardware equipment and configuration shown is diagrammatic in nature and intended to represent a preferred Type 1 pole mounted cabinet setup. Hardware needed for each Type 1 cabinet varies and not all cabinet equipment may be shown. The contractor will be responsible for configuring cabinets with all appropriate ITS hardware and power supplies in accordance with the plans and specifications. The contractor may alter the cabinet configuration shown to maximize space and ensure easy access for maintenance.
2. Mount cabinet as detailed on ITS(14) or ITS(17). Orientation of cabinet on ITS pole may vary depending on field conditions. Mount the pole mounted cabinet to the backside of the ITS pole, to allow maintenance personnel to access the cabinet while being able to view oncoming traffic.
3. For ITS pole sites located on slopes greater than 4H:1V, mount the cabinet to the backside of the ITS pole as detailed on ITS(7). Mounting height to accommodate maintenance pad for easy access.
4. All dimensions are approximate and represent minimum cabinet dimensions.
5. Provide conduit entrances at the bottom of the cabinet.
6. Paid under Special Specification "ITS Pole with Cabinet" (Configuration 1) without 19" EIA rack. Paid under Special Specification "ITS Pole with Cabinet" (Configuration 2) with 19" EIA rack.





Orientation of Type 1 Cabinet on ITS Pole (Typical)

Not to Scale

1 ADD SHEET 5/21/2023

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE MOUNTED CABINET TYPE 1 DETAILS

ITS(14)-15

FILE: its(14)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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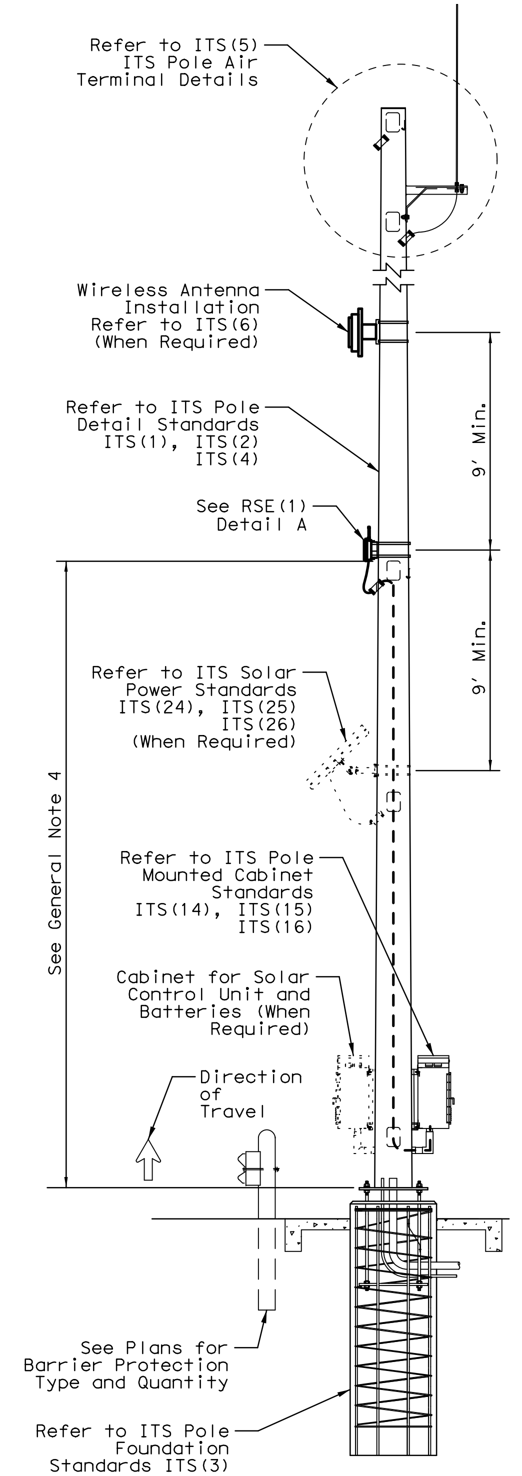
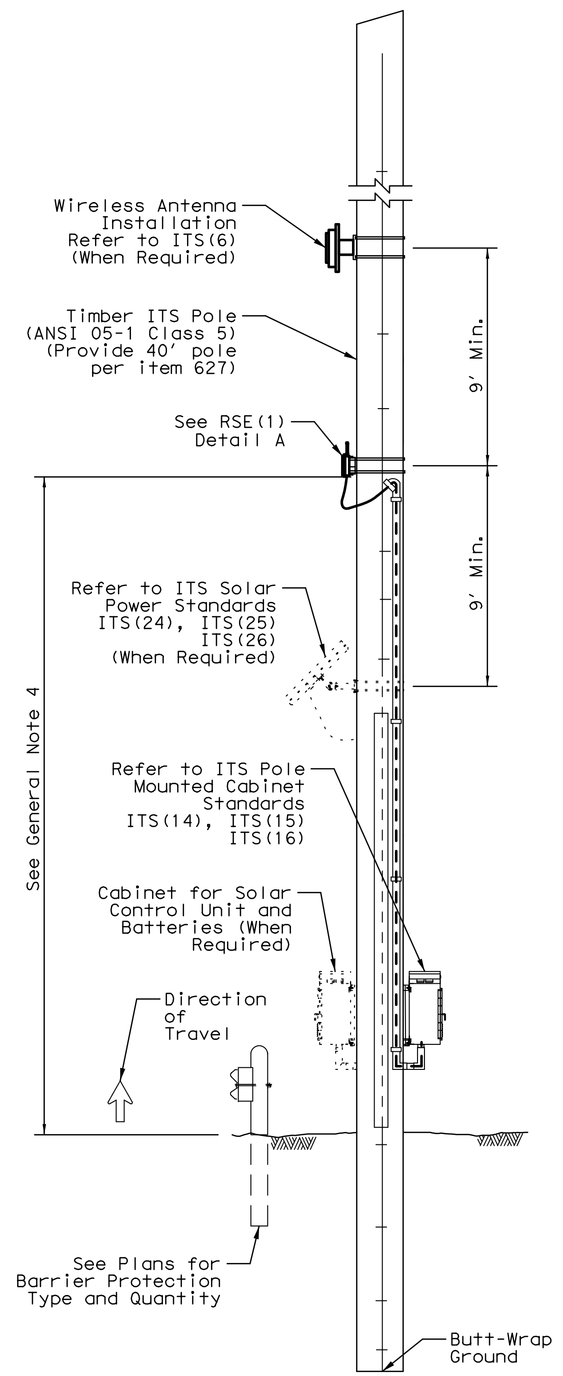
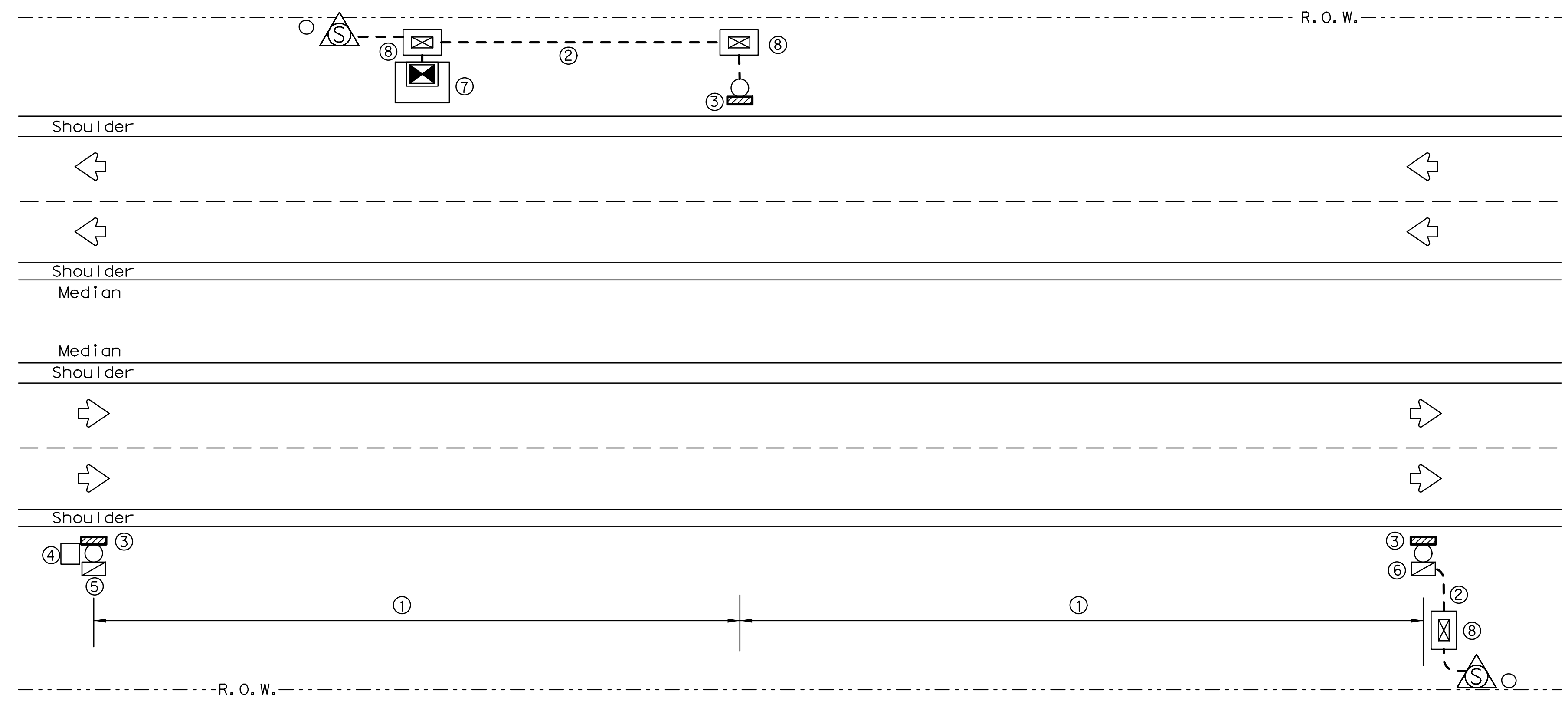


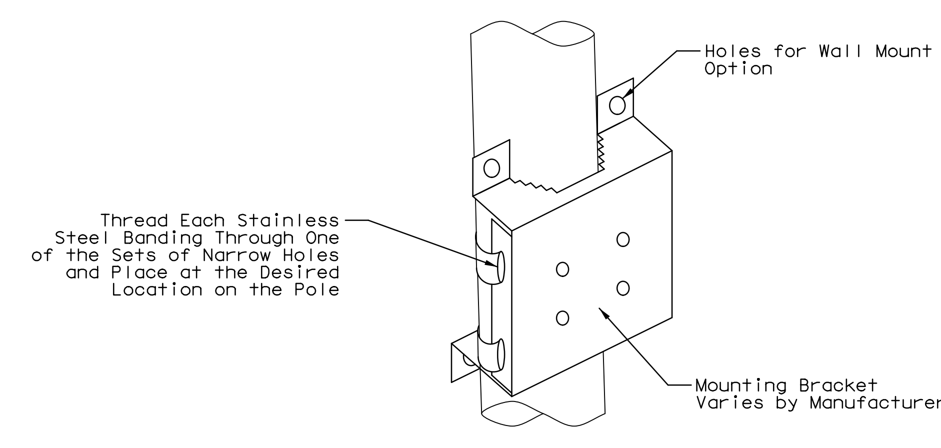
STEEL ITS POLE



TIMBER ITS POLE



LAYOUT VIEW



DETAIL A

ADD SHEET 5/21/2023

GENERAL NOTES:

1. Mounting bracket(s), extension arms, antennas, cabling and PoE injector are incidental to the roadside unit. All items not listed, shown, or otherwise noted, but necessary for a complete installation, are paid for under other Items.
2. Drawings are intended to be a general guideline for roadside unit placement and are illustrative only. Actual site conditions may vary.
3. All existing equipment is to remain operational when installing at an existing ITS site.
4. Height of the roadside unit shall not exceed 26 feet. Refer to manufacturer recommendations for optimum mounting height.

REFERENCE KEY NOTES:

① Recommended maximum spacing between units is 1,000 ft. Minimum spacing and number of units to cover area is dependent on the results of V2X radio frequency study.

② If cable length greater than 328 feet, use mid-span injector located at ground box or pole base to extend cable. See plans for conduit type, size, location, and quantity.

③ Roadside unit placement is illustrative only. Refer to manufacturer recommendations for ideal placement with respect to the roadway surface and coverage zone. Distance of ITS pole from edge of pavement must be 6.5 ft minimum. Recommendation is to use a pole extension bracket arm to place roadside unit closer to roadway if existing ITS pole is more than 6.5 ft away from edge of pavement. Mount roadside unit at least 9 ft minimum away from other devices if collocating on same pole.

④ Refer to Standard ITS(24), ITS(25), and ITS (26) for solar power details.

⑤ 12 VDC ITS pole cabinet with solar power option. Refer to Standards RSE(1), ITS(14), ITS(15), ITS(16), and ITS(17).

⑥ 120 VAC ITS pole cabinet with conventional power option. Refer to Standards RSE(1), ITS(14), ITS(15), ITS(16), and ITS(17).

⑦ 120 VAC ITS ground mounted cabinet with conventional power option. Refer to Standards RSE(1), ITS(20), ITS(21) and ITS(23).

⑧ Refer to Standards ITS(37) and ITS(38) or ITS(39) and ITS(40) for ground box details. See plans for ground box size, type, and location.

SHEET 3 OF 5

Texas Department of Transportation

Traffic Safety Division Standard

ROADSIDE EQUIPMENT ITS POLE INSTALLATIONS (ACCESS CONTROLLED)

RSE(3)-21

FILE: rse(3)-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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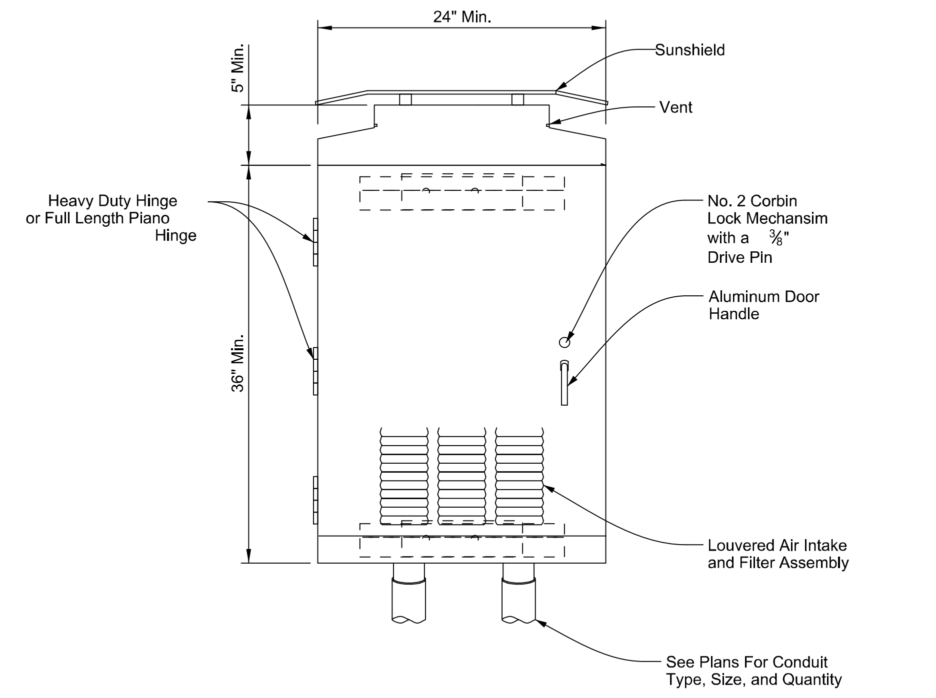
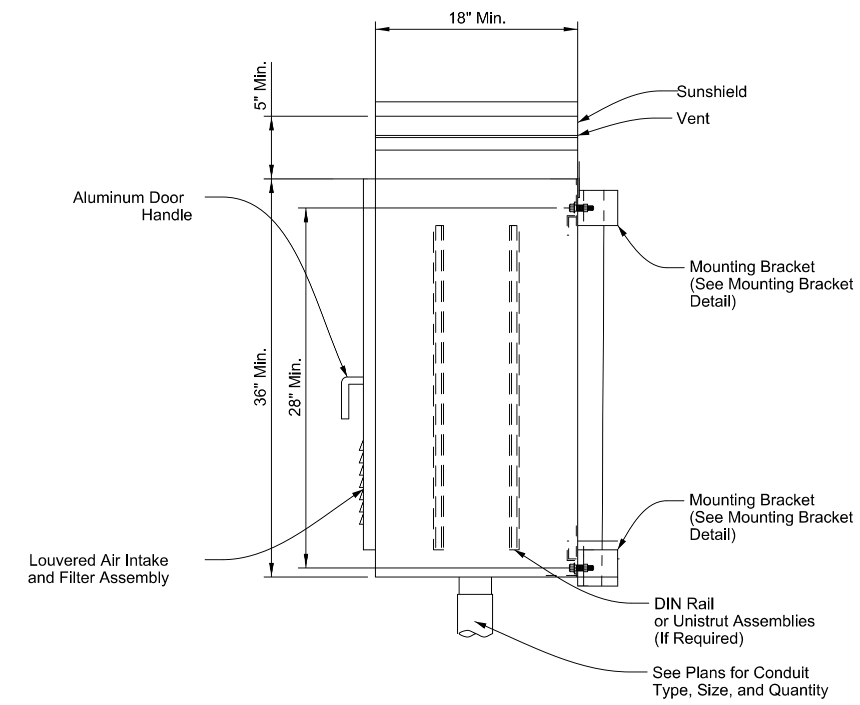
	CRP		JIM WELLS	1055HH



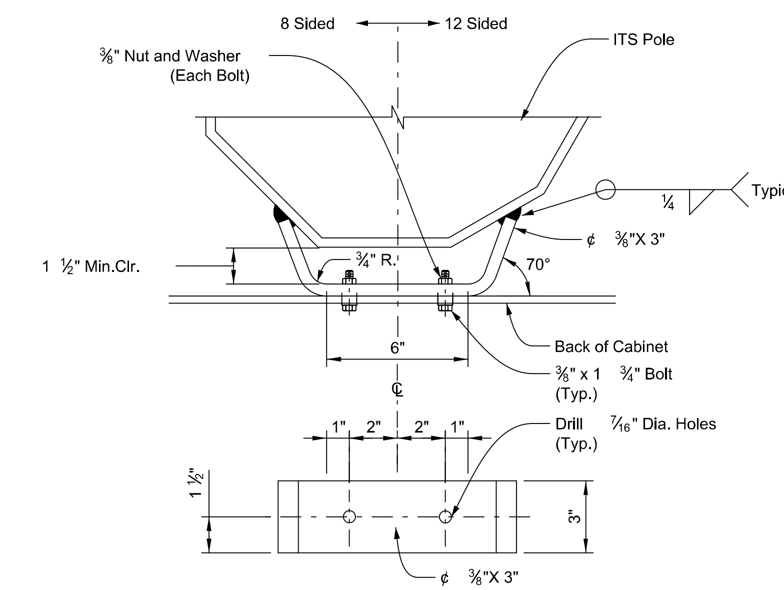
Pole Mounted Cabinet - Type 2 Front View

Not to Scale



Pole Mounted Cabinet - Type 2 Side View

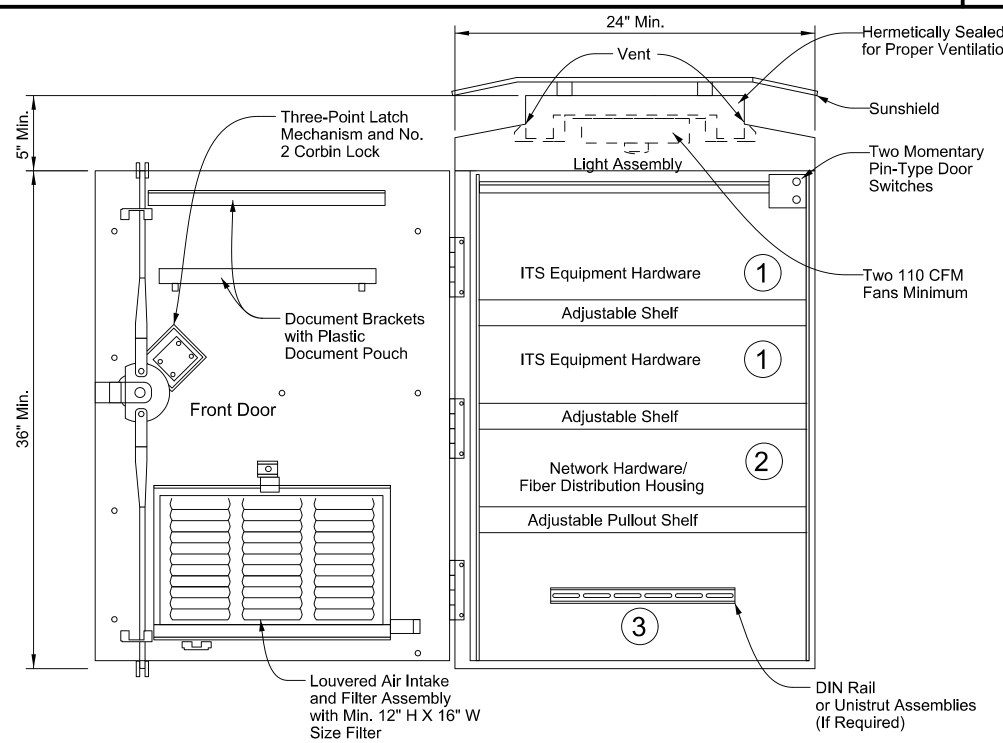
Not to Scale



Note:
ITS Pole May be Round, Octagonal (8 Sided), or Dodecahedron (12 Sided).
See ITS(1), and ITS(2) for Details.

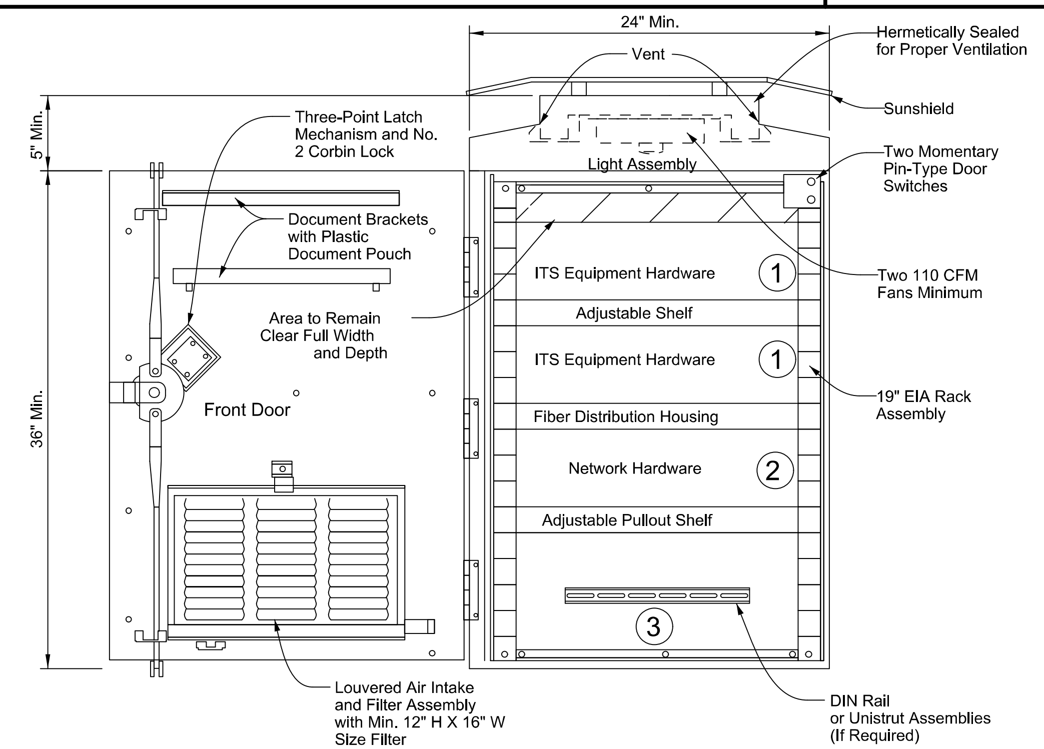
Mounting Bracket Detail

Not to Scale



Interior - Type 2 Without 19" EIA Rack - Front View

Not to Scale



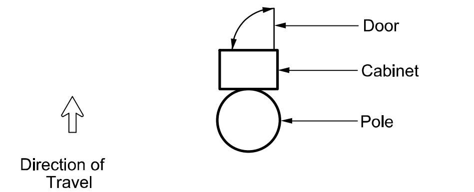
Interior - Type 2 With 19" EIA Rack - Front View

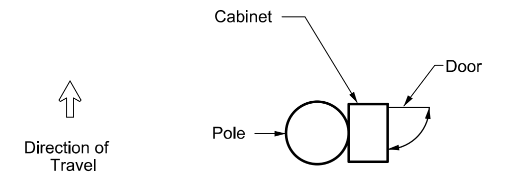
Not to Scale

Typical Equipment Layout Legend	
	Example Equipment
1	CCTV Interface Panel, Radar Vehicle Sensing Device (RVSD) Equipment, DMS/LCS Controller Environmental Sensor Station (ESS) Equipment, Bluetooth Equipment, or ITS Radio Equipment (See General Note 1)
2	Ethernet Switch, Video Encoder, Terminal Server, Fiber Optic Transceivers, or Media Conversion Equipment (See General Note 1)
3	Power Distribution Assembly, Service Entrance Breakers, Primary AC Power, Auxiliary Power Strip, Ground Bus Bar Surge Protection Equipment

General Notes:

1. Layout of hardware equipment and configuration shown is diagrammatic in nature and intended to represent a preferred Type 2 pole mounted cabinet setup. Hardware needed for each Type 2 cabinet varies and not all cabinet equipment may be shown. The contractor will be responsible for configuring cabinets with all appropriate ITS hardware and power supplies in accordance with the plans and specifications. The contractor may alter the cabinet configuration shown to maximize space and ensure easy access for maintenance.
2. Mount cabinet as detailed on ITS(15) or ITS(17). Orientation of cabinet on ITS pole may vary depending on field conditions. Mount the pole mounted cabinet to the backside of the ITS pole, to allow maintenance personnel to access the cabinet while being able to view oncoming traffic.
3. For ITS pole sites located on slopes greater than 4H:1V, mount the cabinet to the backside of the ITS pole as detailed on ITS(7). Mounting height to accommodate maintenance pad for easy access.
4. All dimensions are approximate and represent minimum cabinet dimensions.
5. Provide conduit entrances at the bottom of the cabinet.
6. Paid under Special Specification "ITS Pole with Cabinet" (Configuration 1) without 19" EIA rack.
   Paid under Special Specification "ITS Pole with Cabinet" (Configuration 2) with 19" EIA rack.





Orientation of Type 2 Cabinet on ITS Pole (Typical)

Not to Scale

ADD SHEET 5/21/2023

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE MOUNTED CABINET TYPE 2 DETAILS

ITS(15)-15

FILE: its(15)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	CRP		JIM WELLS	1055I

240

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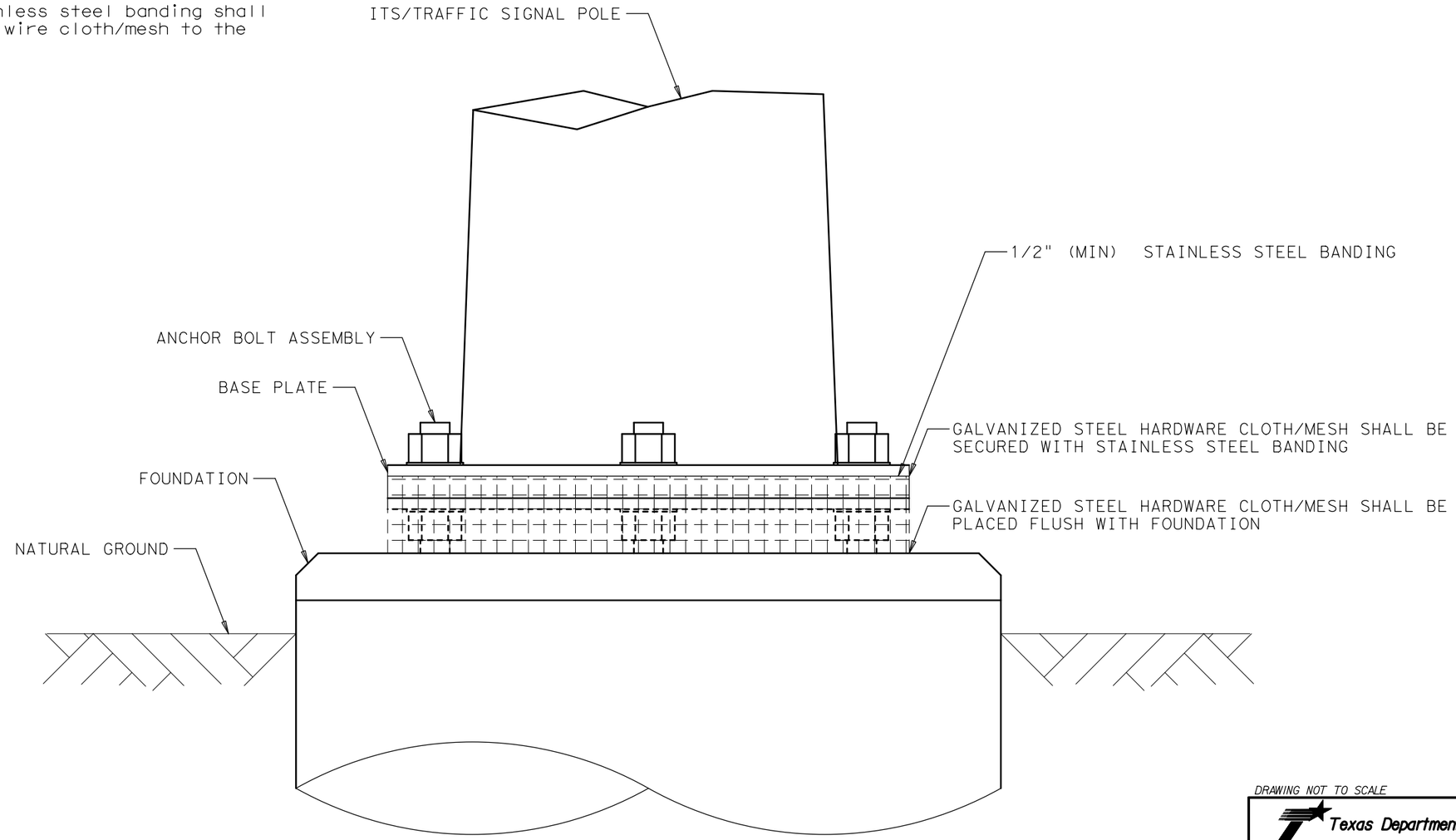
FILE: C:\Users\rober\OneDrive - siegfriedec.com\Projects\2005*SEC*CRP*US281\4 - Design\Plan Set\8. Traffic\STANDARDS\CRP ITS - Traffic Signal Pole Rodent Deterrent Standard.dgn

NOTES:

1. Wire cloth/mesh shall be placed flush with the foundation, firmly secured around the baseplate with a minimum 6" overlap, and secured with stainless steel banding
2. 1/4" Opening space (max), 14 Gauge (min) Galvanized Hardware Cloth or Galvanized Wire Mesh shall be used
3. Minimum 1/2" stainless steel banding shall be used to secure wire cloth/mesh to the baseplate



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1 ADD SHEET 5/21/2023

Texas Department of Transportation

ITS/TRAFFIC SIGNAL POLE RODENT DETERRENT

CORPUS CHRISTI DISTRICT STANDARD

REVISIONS

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CRP	JIM WELLS		10551

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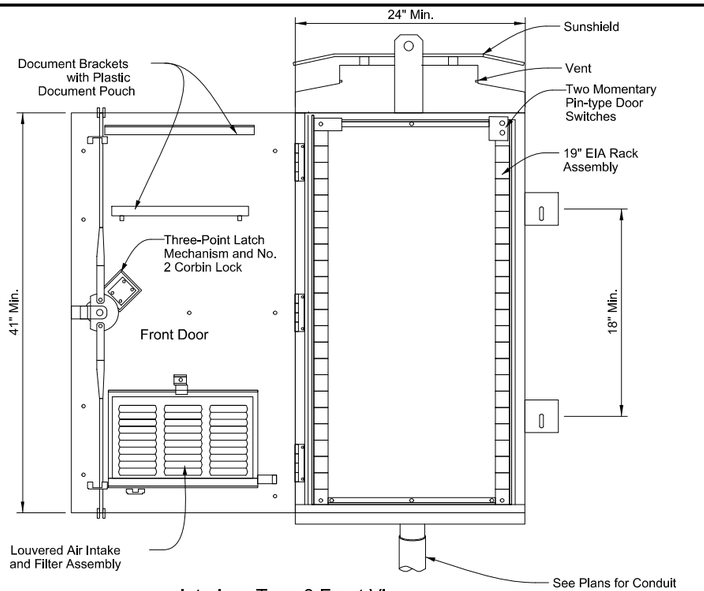
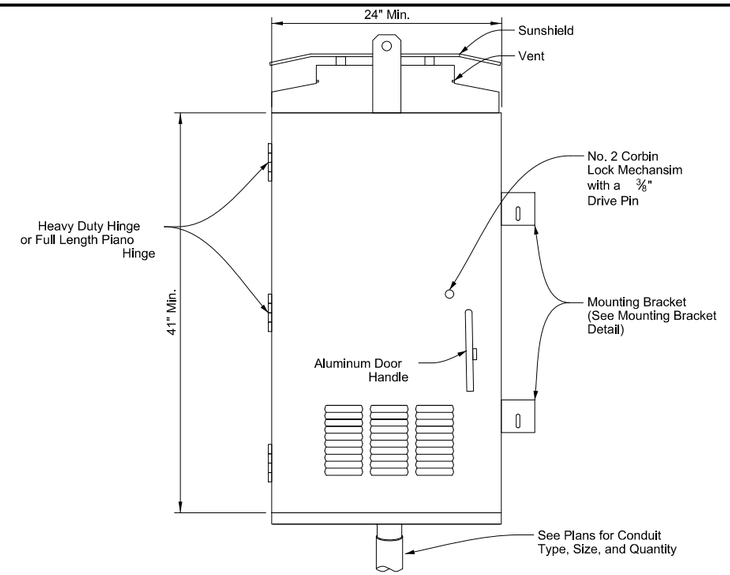


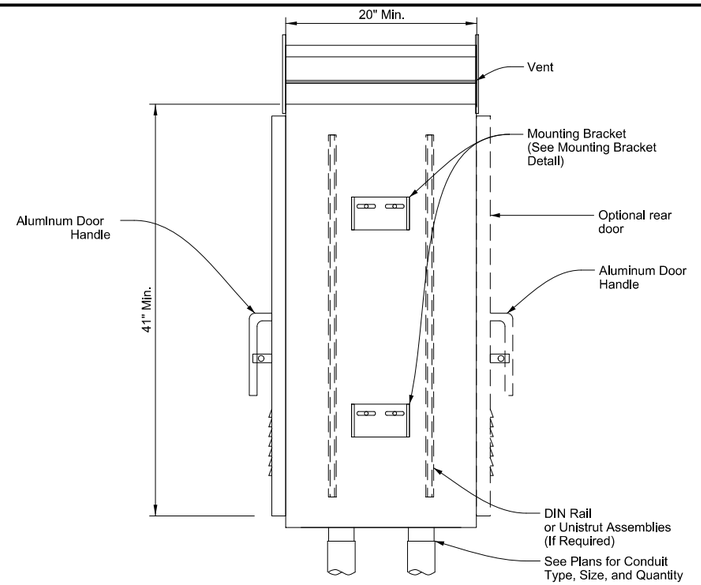
Interior - Type 3 Front View

Not to Scale



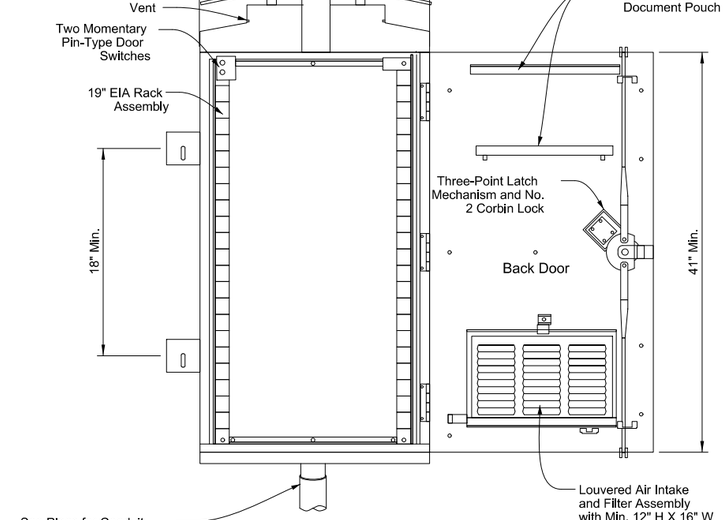
Pole Mounted Cabinet - Type 3 Front View

Not to Scale



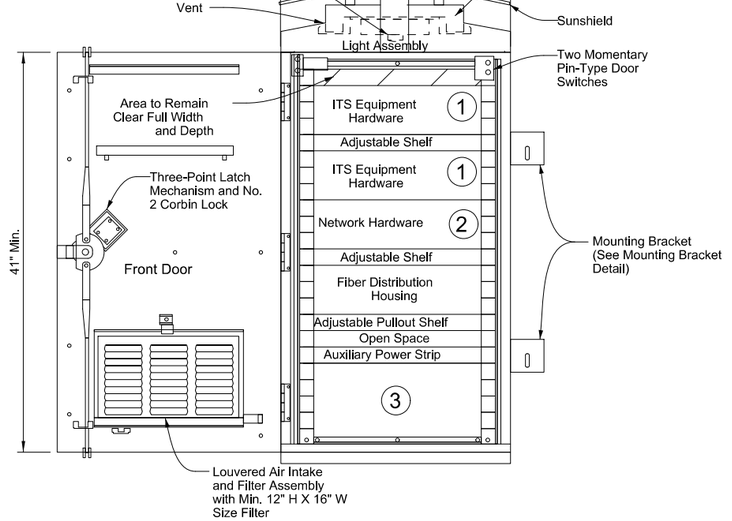
Pole Mounted Cabinet - Type 3 Side View

Not to Scale



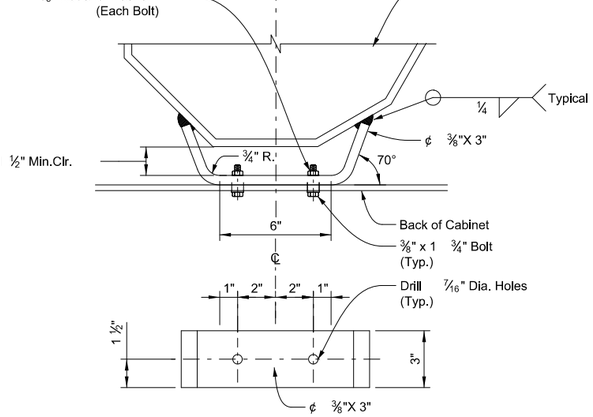
Interior - Type 3 Back View

Not to Scale



Interior - Type 3 With Rack Front View

Not to Scale



Note:
ITS Pole May be Round, Octagonal (8 Sided), or Dodecahedron (12 Sided).
See ITS(1), and ITS(2) for Details.

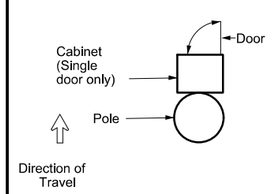
Mounting Bracket Detail

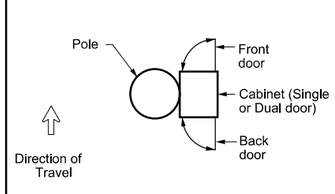
Not to Scale

ADD SHEET 5/21/2023

General Notes:

1. Layout of hardware equipment and configuration shown is diagrammatic in nature and intended to represent a preferred Type 3 pole mounted cabinet setup. Hardware needed for each Type 3 cabinet varies and not all cabinet equipment may be shown. The contractor will be responsible for configuring cabinets with all appropriate ITS hardware and power supplies in accordance with the plans and specifications. The contractor may alter the cabinet configuration shown to maximize space and ensure easy access for maintenance.
2. Mount cabinet as detailed on ITS(16) or ITS(17). Orientation of cabinet on ITS pole may vary depending on field conditions. Mount the pole mounted cabinet to the backside of the ITS pole, to allow maintenance personnel to access the cabinet while being able to view oncoming traffic. A dual door configuration (configuration 2) is detailed above.
3. For ITS pole sites located on slopes greater than 4H:1V, Mount the cabinet to the backside of the ITS pole as detailed on ITS(7). Mounting height to accommodate maintenance pad for easy access.
4. All dimensions are approximate and represent minimum cabinet dimensions.
5. Provide conduit entrances at the bottom of the cabinet.
6. Paid under Special Specification "ITS Pole with Cabinet" (Configuration 1) with single door. Paid under Special Specification "ITS Pole with Cabinet" (Configuration 2) with dual door





Orientation of Type 3 Cabinet on ITS Pole (Typical)

Not to Scale

Typical Equipment Layout Legend

	Example Equipment
1	CCTV Interface Panel, Radar Vehicle Sensing Device (RVSD) Equipment, DMS/LCS Controller Environmental Sensor Station (ESS) Equipment, Bluetooth Equipment, or ITS Radio Equipment (See General Note 1)
2	Ethernet Switch, Video Encoder, Terminal Server, Fiber Optic Transceivers, or Media Conversion Equipment (See General Note 1)
3	Power Distribution Assembly, Service Entrance Breakers, Primary AC Power, Auxiliary Power Strip, Ground Bus Bar Surge Protection Equipment

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE MOUNTED CABINET TYPE 3 DETAILS

ITS(16)-15

FILE: its(16)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1055J

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PEDESTAL SERVICE NOTES

1. Manufacture pedestal electrical services in accordance with Departmental Material Specifications (DMS)11080 "Electrical Services", 11085 "Electrical Services-Pedestal (PS)" and Item 628 "Electrical Services. "Provide pedestal electrical services as listed on the Material Producers list (MPL) on the Department's web site under "Roadway Illumination and Electrical Supplies," Item 628. Ensure all mounting hardware and installation details of services meet utility company specifications. Contact the local utility company for approval of pedestal details prior to installing the electrical pedestal service. Submit any changes required by the utility company prior to manufacturing the pedestal enclosure.

2. When a meter socket is required, provide a socket with a minimum 100 amp rating that complies with local utility requirements.

3. Provide Class A or C concrete for pedestal service foundations in accordance with Item 420, "Concrete Substructures," except that concrete will not be paid for directly but is considered subsidiary to Item 628.

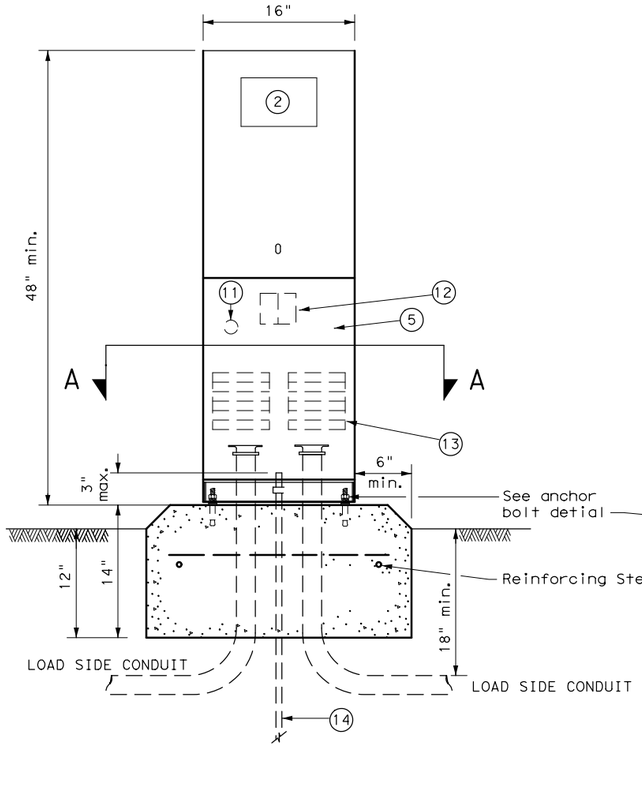
4. Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."

5. Install ½ in. X 2 1/16 in. minimum length concrete single expansion type anchors for mounting pedestal enclosure to foundation. Anchor location to match mounting holes in each corner of enclosure. Secure each of the four corners of the pedestal enclosure to the anchors in the foundation with a ½ in. galvanized or stainless steel machine thread bolt, a properly sized locknut and a flat washer.

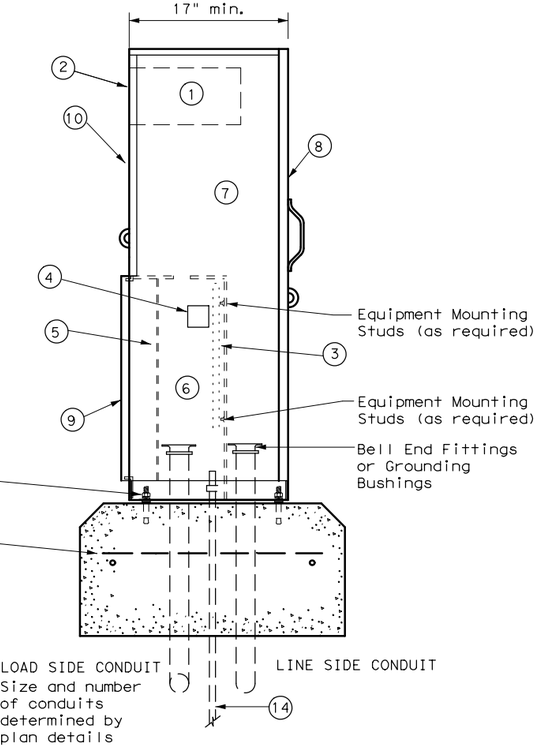
6. Finish top of concrete foundation in a neat and workmanlike manner. If leveling washers are used, ensure no more than ⅛ in. gap at any corner. Do not exceed a maximum dip or rise in the foundation of ⅛ in. per foot. When properly installed, ensure the top of the service enclosure is level front to back and side to side within ¼ in. Repair rocking or movement of the service enclosure at no additional cost to the department.

7. Do not use liquidtight flexible metal conduit (LFMC) on pedestal type services.

8. Ensure all elbows in the foundation are sized as per utility provider's conduit requirements for underground conduit and feeders. PVC extensions may be installed provided the ends of the rigid metal conduits are more than 2 in. below the top of the concrete foundation. Where extension conduits are metal, grounding bushings must be installed with a bonding jumper properly terminated.

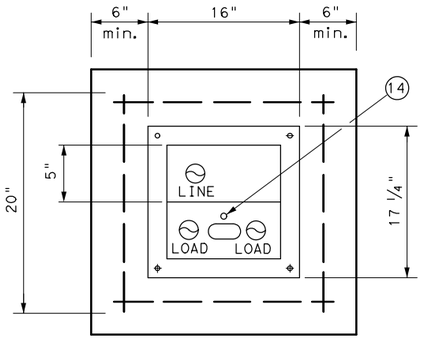


FRONT VIEW

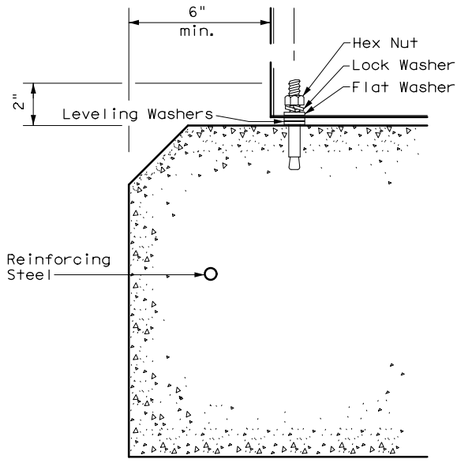


SIDE VIEW

TYPE C shown, TYPE A similar except that TYPE A shall have individual circuit breakers (CB) mounted on an equipment mounting panel. CB Handles shall protrude through hinged deadfront trim.



SECTION A-A



ANCHOR BOLT DETAIL

LEGEND	
1	Meter Socket, (when required)
2	Meter Socket Window, (when required)
3	Equipment Mounting Panel
4	Photo Electric Control Window, (When required)
5	Hinged Deadfront Trim
6	Load Side Conduit Trim
7	Line Side Conduit Area
8	Utility Access Door, with handle
9	Pedestal Door
10	Hinged Meter Access
11	Control Station (H-O-A Switch)
12	Main Disconnect
13	Branch Circuit Breakers
14	Copper Clad Ground Rod - 5/8" X 10'

1 ADD SHEET 5/21/2023

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
ELECTRICAL SERVICE SUPPORT
PEDESTAL SERVICE TYPE PS

ED(9)-14

FILE: ed9-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0254	07	008,ETC	US 281
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	CRP	JIM WELLS		1055JJ

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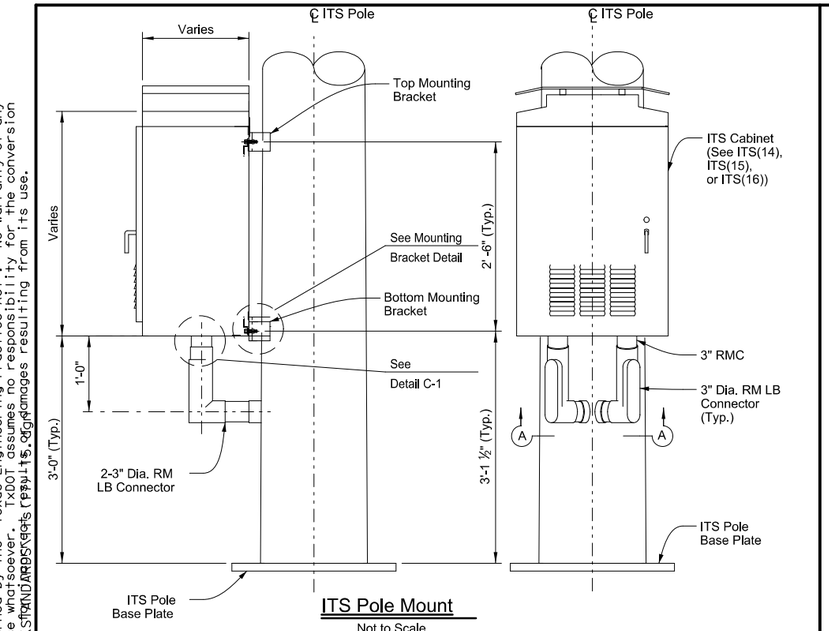
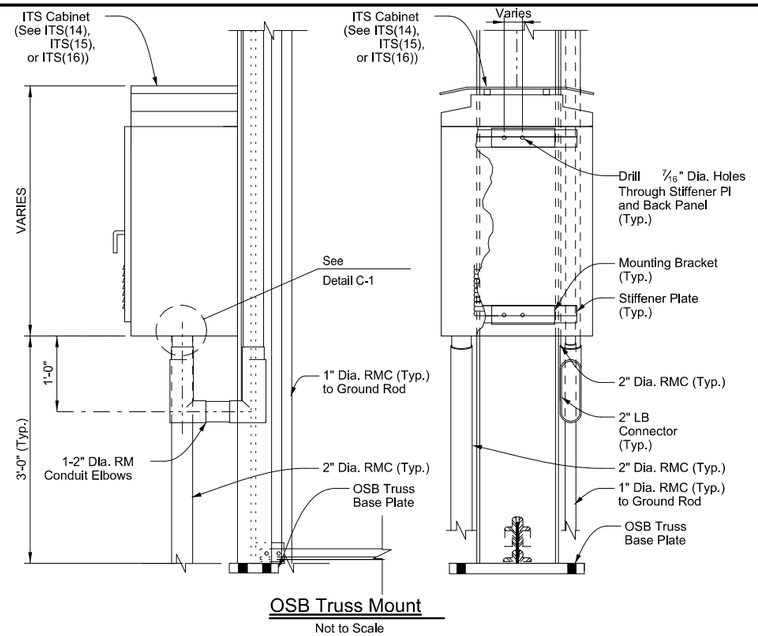


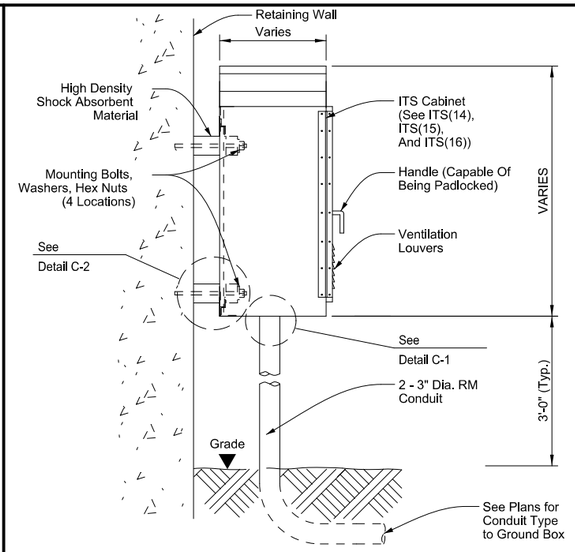
ITS Pole Mount

Not to Scale



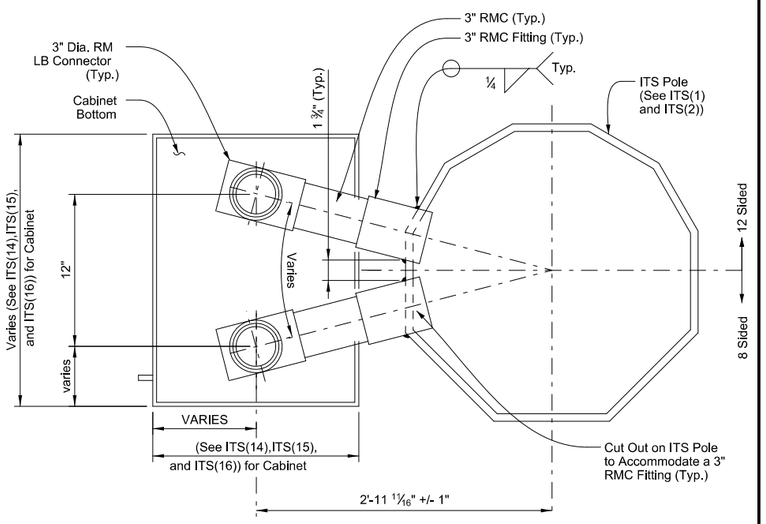
OSB Truss Mount

Not to Scale



Retaining Wall Mount

Not to Scale



Section A-A

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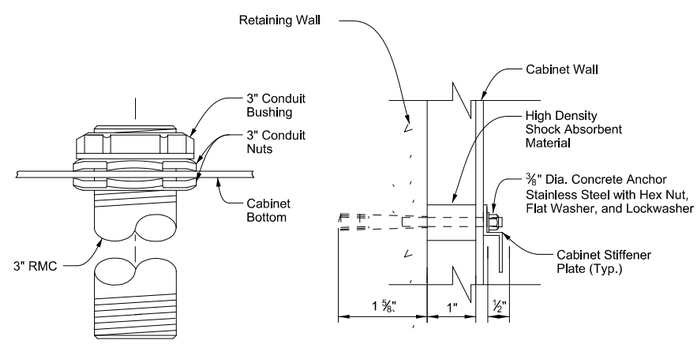
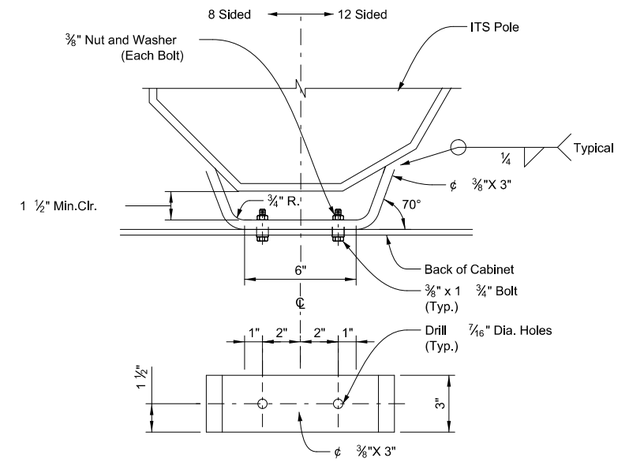


Detail C-1

Detail C-2

Detail C-1 and C-2

Not to Scale



Note:
ITS Pole May be Round, Octagonal (8 Sided), or Dodecahedron (12 Sided).
See ITS(1), and ITS(2) for Details.

Mounting Bracket Detail

Not to Scale

General Notes:

1. Mount cabinet as detailed on ITS(14), ITS(15), ITS(16), or ITS(17). Orientation of cabinet on ITS pole may vary depending on field conditions. Mount the pole mounted cabinet to the backside of the ITS pole, to allow maintenance personnel to access the cabinet while being able to view oncoming traffic.
2. For ITS pole sites located on slopes greater than 4V:1H, mount the cabinet to the backside of the ITS pole as detailed on ITS(7). Mounting height to accommodate maintenance pad for easy access.
3. All dimensions are approximate and represent minimum dimensions.
4. Provide conduit entrances at the bottom of the cabinet.

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Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE MOUNTED CABINET MISC. MOUNTING DETAILS

ITS(17)-15

FILE: its(17)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0254	07	008,ETC	US 281
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	CRP	JIM WELLS		1055K

DATE: 5/21/2023 6:34:47 PM
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DUCT CABLE & HDPE CONDUIT NOTES

1. Provide duct cable in accordance with Departmental Material Specification (DMS) 11060 "Duct Cable" and Item 622 "Duct Cable." Provide duct cable as listed on the Material Producer List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 622.

2. Provide High-Density Polyethylene (HDPE) conduit in accordance with DMS 11060 and Item 618, "Conduit." Provide HDPE as listed on the MPL on the Department web site under "Roadway Illumination and Electrical Supplies," Item 618.

3. Supply duct cable with a minimum 2 in. diameter, unless otherwise shown in the plans. Provide duct cable and HDPE conduit as shown by descriptive code or on the plans. Bend duct cable and HDPE conduit as recommended by the manufacturer, with a minimum bending radius of 26 in. for 2 in. duct. Follow manufacturers' recommendations when handling duct cable and HDPE conduit reels and during installation of duct cable and HDPE conduit.

4. Do not splice conductors within duct cable or HDPE conduit. Couple duct cable and HDPE entering a ground box or foundation to a PVC elbow. When galvanized steel RMC elbows are called for in the plans and any portion of the RMC elbow is buried less than 18" from possible contact, ground the RMC elbow.

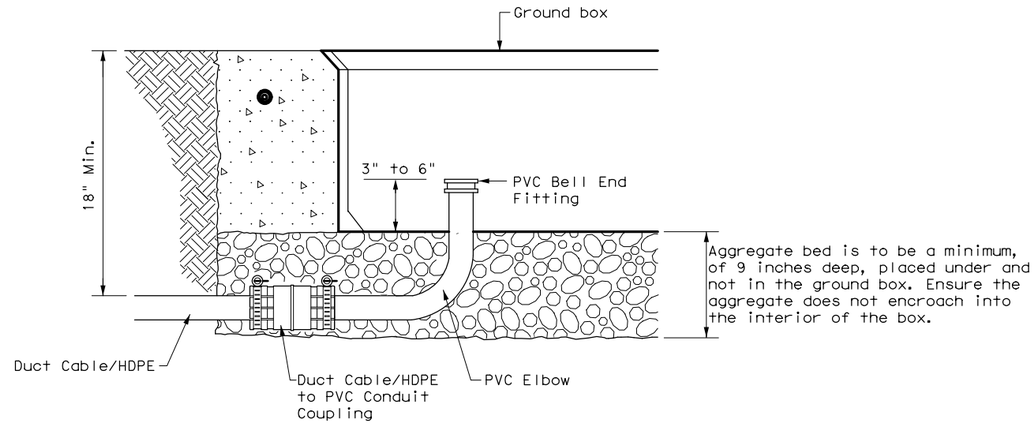
5. Furnish and install duct cable with factory installed conductors, sized as shown in the plans and as required by the National Electrical Code (NEC). The NEC contains specific requirements for duct cable in Article, "Nonmetallic Underground Conduit with Conductors: Type NUCC."

6. When conduit casing is called for in the plans, extend duct cable or HDPE conduit through the conduit casing in one continuous length without connection to the casing.

7. Seal the ends of duct cable or HDPE conduit with duct seal, expandable foam, or other approved method after completing the pull tests required by Item 622.

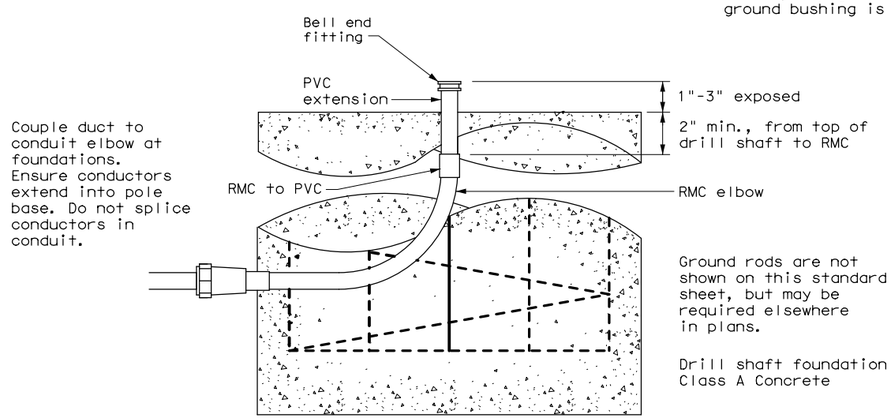
8. Provide minimum cover of 24 in. under roadways, 18 in. in other locations, or as shown on the plans.

9. Furnish and install listed fittings to couple duct cable or HDPE conduit to other types of conduit. Duct cable and HDPE conduit may be field-threaded and spliced with PVC or RMC threaded couplings; connected with listed tie-wrap fittings; connected using listed coupling made of HDPE with stainless steel external banding clamps and locking rings; connected with approved electrofusion conduit couplings; or connected using an approved chemical fusion method using an epoxy or adhesive specifically designed for HDPE couplings and connectors all installed in accordance with their manufacturer's instructions. Do not use PVC glue on HDPE. Do not use water pipe fittings, or connect conduit with heat shrink tubing.

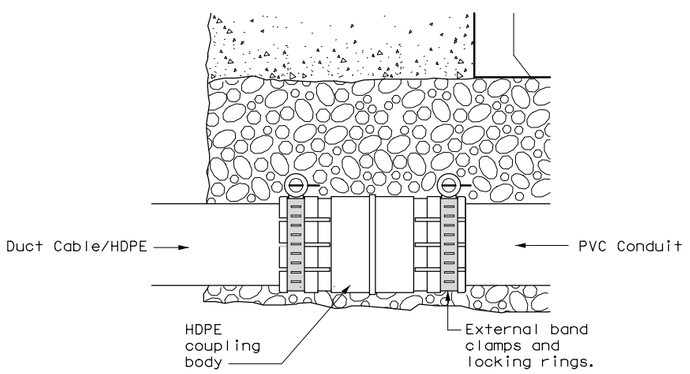


DUCT CABLE/HDPE AT GROUND BOX

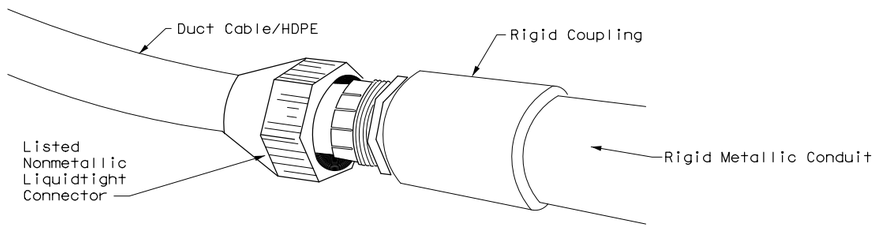
When the upper end of an RMC Ell does not enter the ground box, it may be extended with a SCH-40 PVC conduit nipple and bell end, provided there is a minimum of 18" of cover over all parts of the elbow. If not, a rigid extension and ground bushing is required.



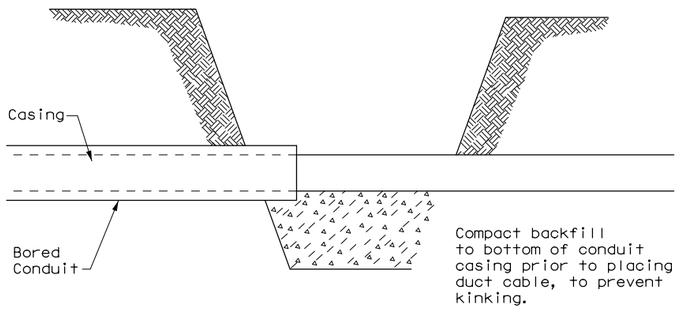
DUCT CABLE / HDPE AT FOUNDATION



DUCT CABLE/HDPE TO PVC



DUCT CABLE/HDPE TO RMC



BORE PIT DETAIL

ADD SHEET 5/21/2023

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
DUCT CABLE/ HDPE CONDUIT

ED(11)-14

FILE: ed11-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	CRP	JIM WELLS		1055KK

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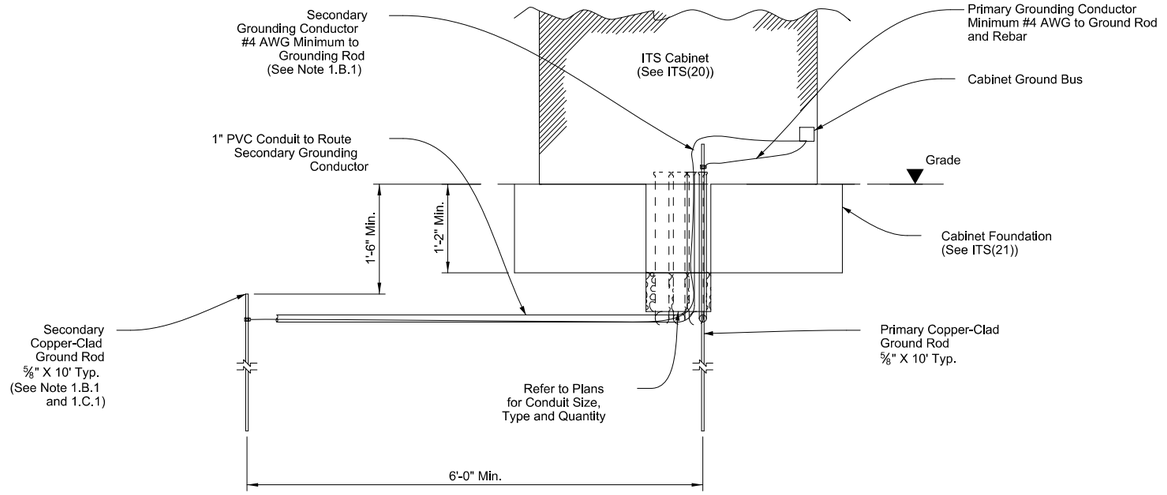
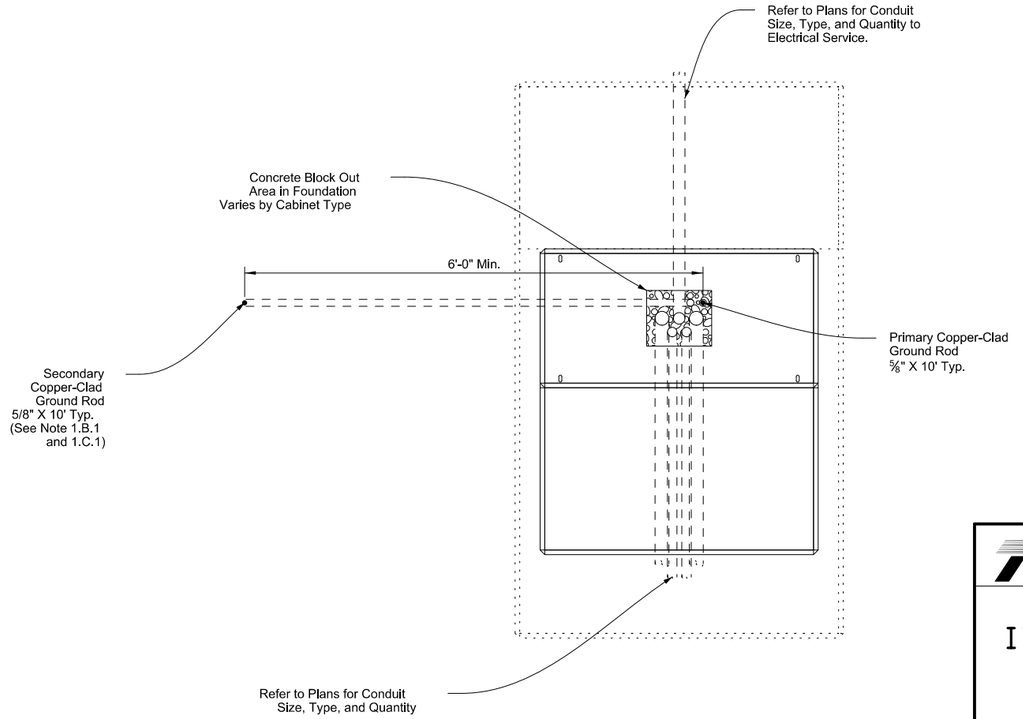
General Notes:

1. Grounding System:
   - A. Description:
     1. Provide ground system consisting of copper wires, ground rods, and concrete-encased grounding electrodes (Ufers), of the configuration shown to minimize potential gradient irregularities, drain leakage, and fault currents to earth.
   - B. Performance:
     1. Provide a grounding system, consisting of a minimum one ground rod, having a resistance not greater than 5 Ohms to ground. Additional ground rods may be added to the system to achieve less than 5 Ohms resistance.
   - C. Design Criteria:
     1. The combined ground resistance of separate systems bonded together below grade may be used to meet the specified ground resistance, but the minimum number of rods indicated shall still be provided.
     2. Measure the resistance of systems requiring separate ground resistance separately before bonding below grade.
     3. Only provide UL-approved materials listed for grounding systems.
     4. Do not combine materials that can form an electrolytic couple that will accelerate corrosion in the presence of moisture, unless moisture is permanently excluded from the junction of such materials.
     5. Submit product data for the materials and products used to perform the work of this section.
   - D. Materials:
     1. Conductors:
        - a. Bare Ground Conductor:
          1) For No. 8 AWG or larger bare ground wire sizes, provide soft drawn copper, Class A or Class B, stranded wire meeting the requirements of ASTM B 8.
     2. Ground Compression Connectors:
        - a. Provide molds, thermite packages, and other material for ground compression connectors that are full-rated to carry 100% of the cable rating and which meet IEEE 837.
          1) Provide the compression materials from a single manufacturer throughout the project.
        - b. Provide the items necessary for connecting cable to ground rods.
     3. Ground Rods:
        - a. Provide copper-clad steel ground rods conforming to the requirements specified in UL 467.
          1) Diameter: ⅝ in.
          2) Length: 10 Ft.
2. Installation:
   - A. Install grounding components and systems in accordance with the requirements specified in UL 467, IEEE 81, and IEEE 142.
   - B. System Grounding:
     1. Ground Rods:
        - a. Drive ground rods into the ground until the tops of the rods are approximately 18 in. below finished grade.
        - b. If multiple ground rods are needed to meet the minimum resistance of 5 Ohms, space ground rods as evenly as possible, at least 6 feet apart, and so conductors will be connected below grade.
     2. Conductors:
        - a. Provide minimum No. 4 AWG ground wire for system and equipment grounding.
        - b. Using suitable fasteners, securely attach exposed ground wires to structural supports at not more than 2 ft. intervals, where applicable.
        - c. Bends in ground wires greater than 45 degrees are unacceptable.
     3. Cable Connections:
        - a. Use approved exothermic-welded connections for conductor splices and connections between conductors and other components.
3. Testing:
   - A. Resistance Test:
     1. Test Procedure:
        - a. The ground-resistance measurements of each ground Rod shall be taken.
          1) The resistance to ground shall be measured in accordance with the fall-of-potential method specified in IEEE 81 and IEEE 142.
          2) Ground-resistance measurements shall be made in normally dry weather, not less than 48 hours after rainfall, and with the ground under test isolated from other grounds.
        - b. Test reports shall be prepared that indicate the location of the ground rod, the grounding system, and the resistance and soil conditions at the time the test was performed.
     2. Acceptance Criteria:
        - a. The grounding system must have a resistance not greater than 5 Ohms.
        - b. Do not energize any part of the electrical distribution system prior to the resistance testing of that system's ground rods and grounding system, and submission of the test results for approval.
     3. Inspections:
        - a. Prepare and submit as-built record drawings of the grounding system as installed and test reports for approval.



Ground Mounted Cabinet - Side View

(Slab & Base)
Not to Scale



Ground Mounted Cabinet - Top View

(Slab & Base)
Not to Scale

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Texas Department of Transportation

Traffic Operations Division Standard

ITS CABINET GROUNDING DETAILS

ITS(18)-15

FILE: its(18)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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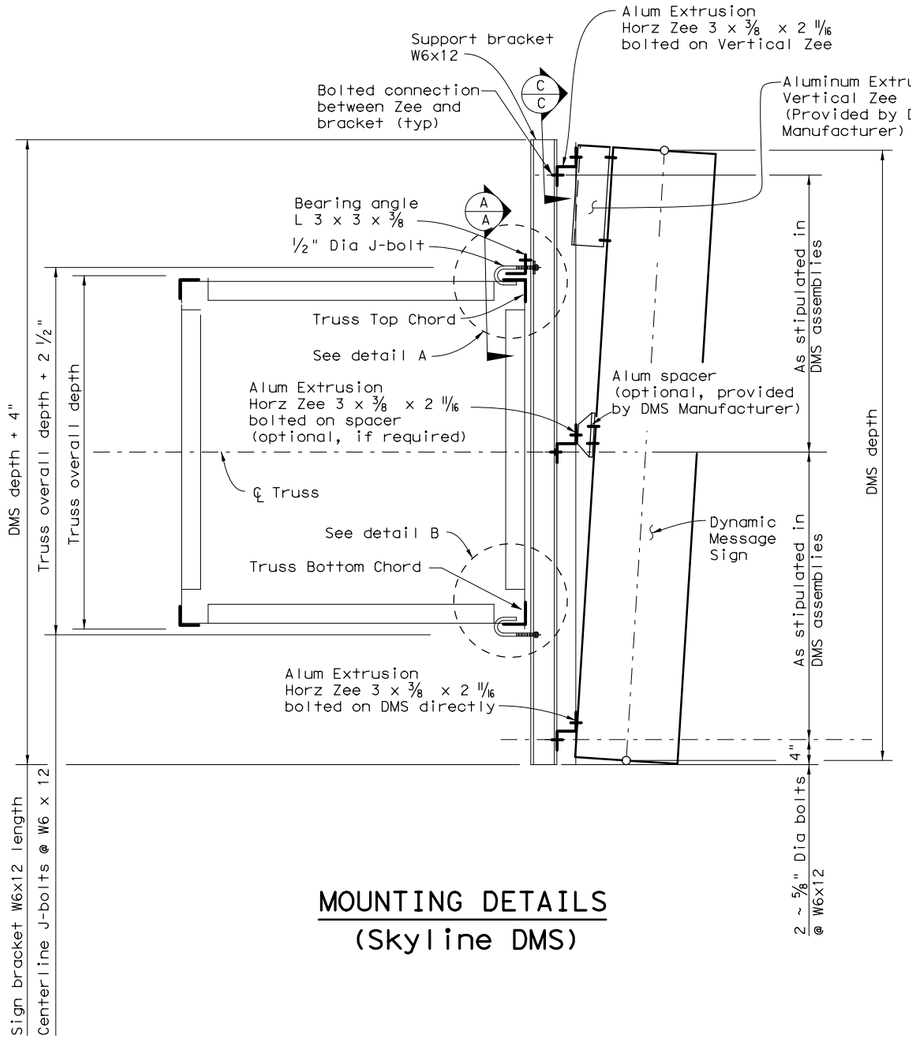
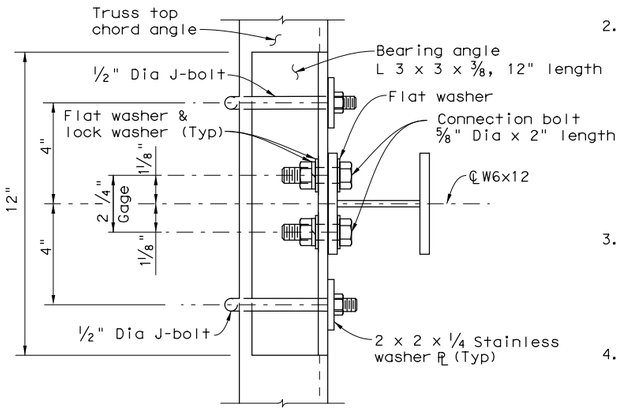
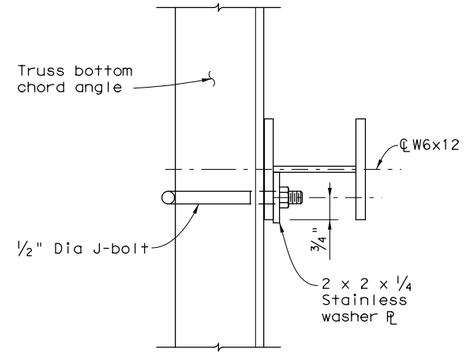


MOUNTING DETAILS
(Skyline DMS)



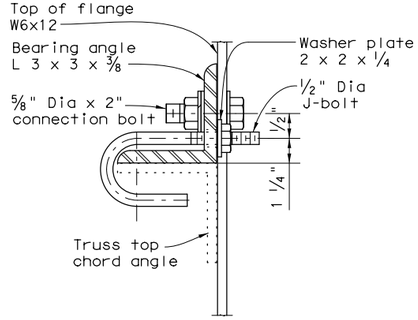
TOP VIEW
TRUSS TOP CONNECTION



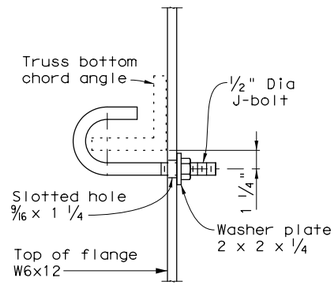
TOP VIEW
TRUSS BOTTOM CONNECTION

GENERAL NOTES:

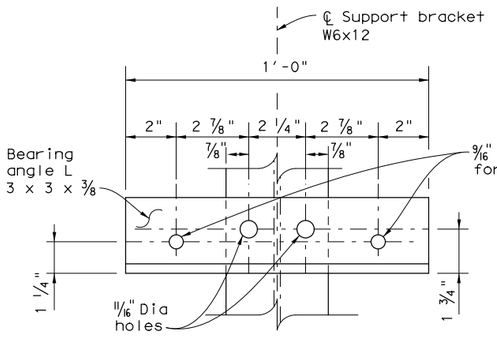
1. Determine the adequacy of the overhead sign support structure to support the dynamic message sign (DMS) prior to attaching the sign to the truss.
2. Designed according to the 1994 edition of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions. Designed for a Sustained (Fastest Mile) Wind Velocity of 100 mph with a gust factor of 1.3. Connections are designed for a DMS weight of 3800 lbs. The structural support is designed for an Effective Projected Area (EPA) of 441 sq. ft. based on a DMS nominal width of 30.5 feet and nominal depth of 8.25 feet, with a drag coefficient of 1.7 applied, plus four 1'-8" square flashing beacons with a drag coefficient of 1.2. DMS attachment is designed for a horizontal eccentricity of 1.3 ft. from the face of the truss to the center of gravity of the DMS. Provide an even number of sign supporting brackets (6 minimum), W6x12, spaced at 5'-6" max. The maximum distance between the sign edge to the nearest supporting bracket is 2'-3".
3. Verify applicable field dimensions before fabrication. Determine the required number and spacing of sign support brackets, along with the Aluminum Extrusion Vertical and Horizontal Zees provided by the DMS manufacturer, to connect the DMS to the truss. For the J-bolt connection of DMS to overhead sign structure, align each arranged sign bracket with its bearing angle to avoid conflict with the truss connection bolts at the point of attachment.
4. Provide structural steel meeting the requirements of ASTM A36, A572 Gr 50 or A588. Provide connection bolts meeting the requirements of ASTM F3125, Grade A325 or A449 with 1 heavy hex nut, 2 flat washers, and 1 lock washer. Provide Type 304 stainless steel J bolt and washer plate, with bolt minimum yield strength of 50 ksi and an elongation of 16 percent in 2 inches. Galvanize all parts except stainless steel.
5. Prior to the initialization of DMS mounting, the DMS manufacturer must provide and install the 6061-T6 Aluminum Extrusion Vertical and Horizontal Zees, 3 x ⅜ x 2 11/16, and the specified Aluminum Spacers (if any) to the back of the DMS.
6. The sign support bracket attached to the truss shown here is an example only. Adjust the bracket position along the truss depth to achieve the required vertical clearance to be confirmed by the Engineer.
7. When the structure is to be exposed to a highly corrosive environment, provide elastomeric spacer to separate aluminum alloy parts from direct contact with steel.



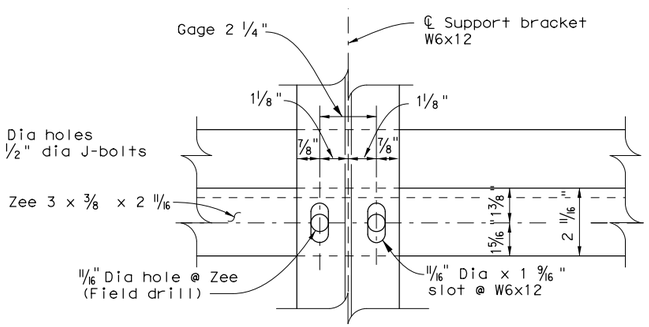
DETAIL A



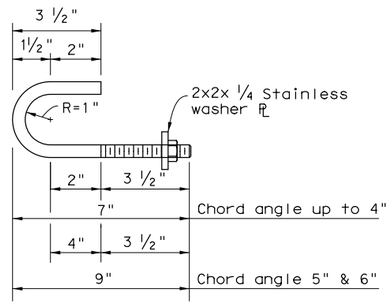
DETAIL B



SECTION A-A
(Truss chord angle not shown)



SECTION C-C



½" Dia J-BOLT

⚠1 ADD SHEET 5/21/2023

Texas Department of Transportation

Traffic Safety Division Standard

DMS-TO-TRUSS MOUNTING WITH HORIZONTAL ZEE EXTRUSIONS

DMS(HZ-1)-21

FILE: dms(hz-1)-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	CRP	JIM WELLS		1055LL

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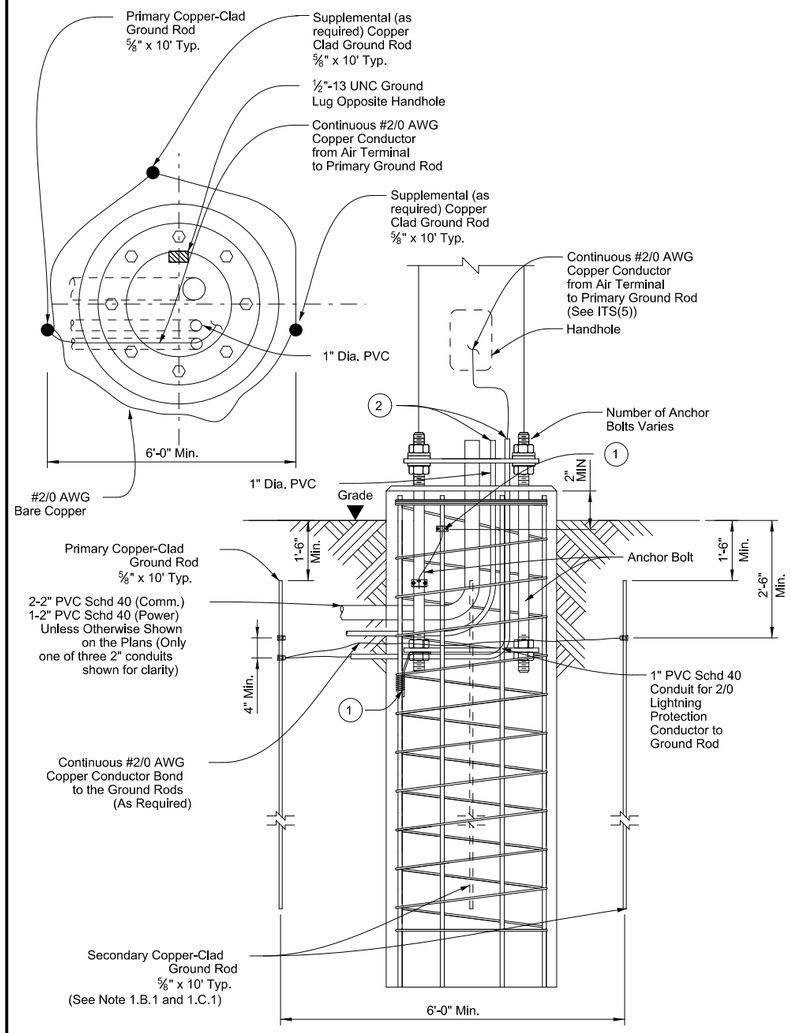
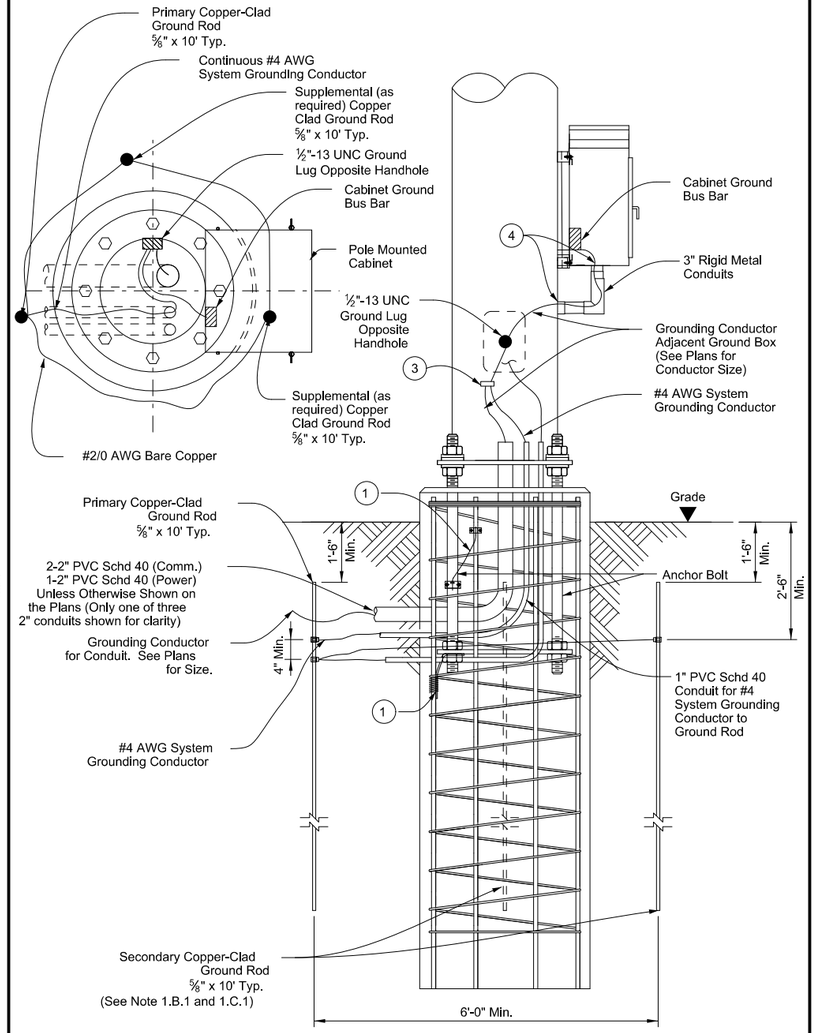
General Notes:

1. Grounding System:
   - A. Description:
     1. Provide ground system consisting of copper wires, ground rods, and concrete-encased grounding electrodes (Ufers), of the configuration shown to minimize potential gradient irregularities, drain leakage, and fault currents to earth.
   - B. Performance:
     1. Provide a grounding system, consisting of a minimum one ground rod, having a resistance not greater than 5 Ohms to ground. Provide up to 2 additional supplemental ground rods if necessary to achieve a resistance not greater than 5 Ohms to ground. If a total of 3 ground rods is needed then install as as part of a ground ring.
     2. If a ground ring is required, provide a minimum conductor length of 20 ft. placed at a minimum depth of 30 in..
   - C. Design Criteria:
     1. The grounding system of the ITS pole may be bonded below grade to the grounding systems of other nearby equipment to meet the specified grounding resistance. A minimum of one ground rod for the ITS pole is still required.
     2. Separately measure the grounding resistance of each system before bonding together below grade.
     3. Only provide UL-approved materials listed for grounding systems.
     4. Do not combine materials that can form an electrolytic couple that will accelerate corrosion in the presence of moisture, unless moisture is permanently excluded from the junction of such materials.
     5. Submit product data for the materials and products used to perform the work of this section.
   - D. Materials:
     1. Conductors:
        a. Bare Ground Conductor:
           1) Provide prequalified copper conductors appearing on the Material Producers List according to Item 618.
     2. Ground Compression Connectors:
        a. Provide molds, thermite packages, and other material for exothermic welding of grounding connections.
        b. Provide listed compression connectors fully rated to carry 100% of the cable rating and that meet IEEE 837. Provide compression materials from a single manufacturer througout the project.
     3. Ground Rods:
        a. Provide copper-clad steel ground rods conforming to the requirements specified in DMS 11040.
           1) Diameter: ⅝ in.
           2) Length: 10 ft.
2. Installation:
   - A. Install grounding components and systems in accordance with the requirements specified in IEEE 142.
   - B. System Grounding:
     1. Ground Rods:
        a. Drive ground rods into the ground until the tops of the rods are a minimum of 18 in. below finished grade.
        b. If multiple ground rods are needed to meet the minimum resistance of 5 Ohms, space ground rods as evenly as possible, at least 6 feet apart, so conductors will be connected below grade.
     2. Conductors:
        a. Provide minimum No. 2/0 AWG ground wire for lightning protection from air terminal.
        b. Provide minimum No. 4 AWG ground wire for system and equipment grounding.
        c. Using suitable fasteners, securely attach exposed ground wires to structural supports at not more than 2 ft. intervals, where applicable.
        d. Bends in ground wires greater than 45 degrees are unacceptable.
     3. Cable Connections:
        a. Use exothermic-welded connections or listed compression connectors for conductor splices and connections between conductors and other components.
3. Testing:
   - A. Resistance Test:
     1. Test Procedure:
        a. The ground-resistance measurements of each ground Rod shall be taken.
           1) The resistance to ground shall be measured in accordance with the fall-of-potential method specified in IEEE 81 and IEEE 142.
           2) Ground-resistance measurements shall be made in normally dry weather, not less than 48 hours after rainfall, and with the ground under test isolated from other grounds.
        b. Test reports shall be prepared that indicate the location of the ground rod, the grounding system, and the resistance and soil conditions at the time the test was performed.
     2. Acceptance Criteria:
        a. The grounding system must have a resistance not greater than 5 Ohms.
        b. Do not energize any part of the electrical distribution system prior to the resistance testing of that system's ground rods and grounding system, and submission of the test results for approval.
     3. Inspections:
        a. Prepare and submit as-built record drawings of the grounding system as installed and test reports for approval.



Grounding System

Not to Scale



Grounding System with Pole Mounted Cabinet

Not to Scale

Reference Notes:

1. Bond anchor bolts to rebar with #2/0 AWG jumper and two mechanical connectors or by bending No. 3 bar on bottom template as shown and wire tightly with ten turns of No. 10 wire or one mechanical connector. Mechanical connectors shall be UL Listed for concrete encasement.
2. Cut PVC approximately 1 in. above concrete and install bell or bushing. Align conduit as close as possible to point of attachment to base plate to minimize bends in #2/0 wire.
3. Bond grounding conductors via cadweld or mechanical connector, rated for size and number of conductors.
4. Provide and Install a grounding type bushing on 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.

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE GROUNDING DETAILS

ITS(19)-17

FILE: its(19)-17.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0254	07	008,ETC	US 281
7-17	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1055M

1 ADD SHEET 5/21/2023

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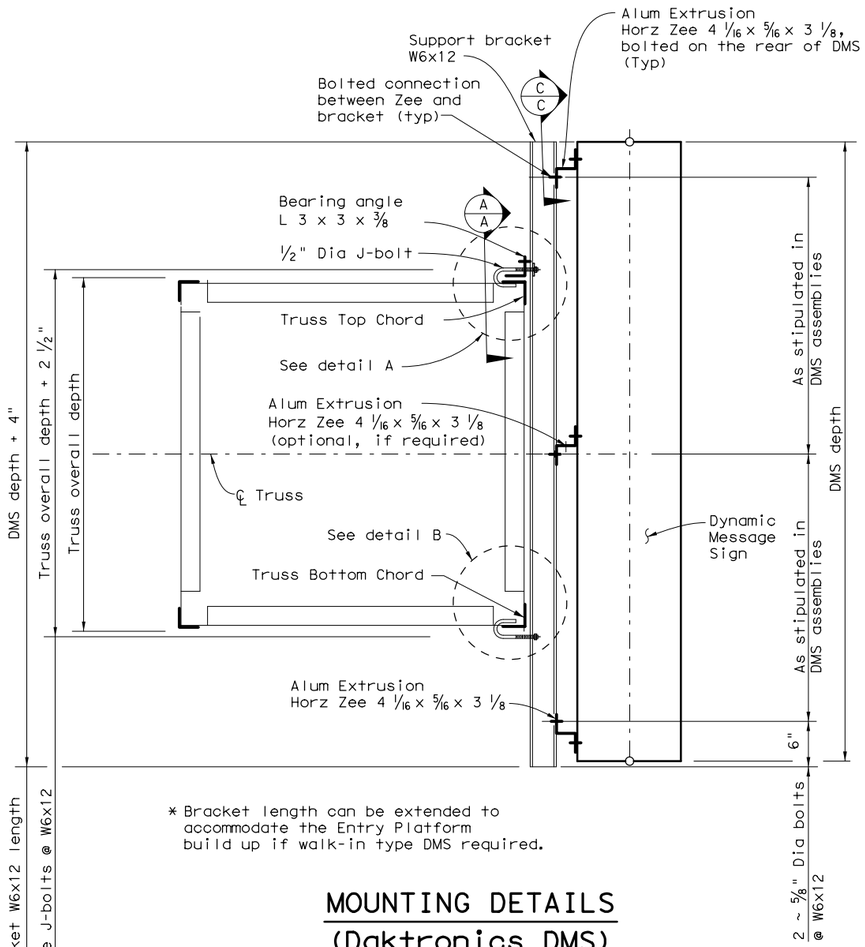
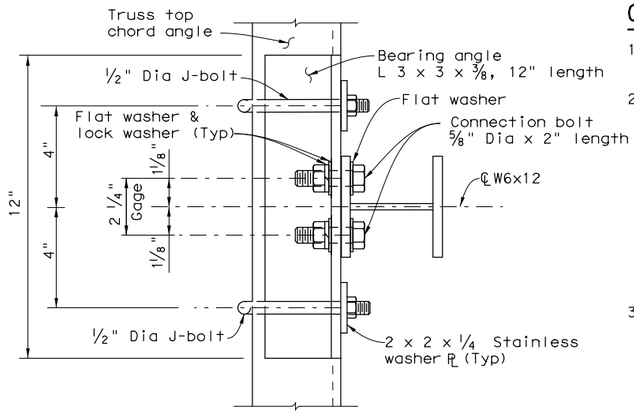
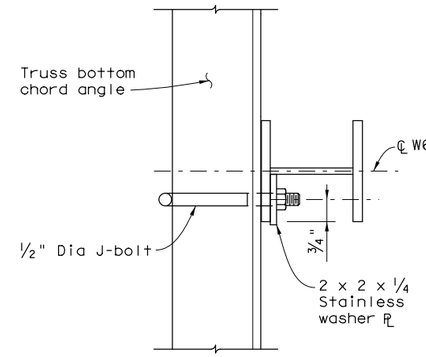


* Bracket length can be extended to accommodate the Entry Platform build up if walk-in type DMS required.

MOUNTING DETAILS (Daktronics DMS)



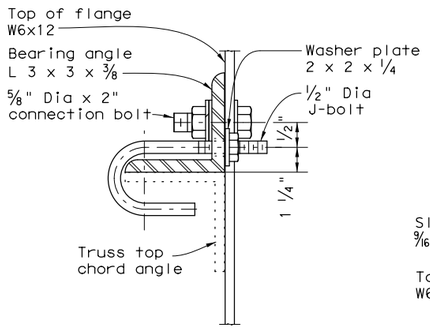
TOP VIEW TRUSS TOP CONNECTION



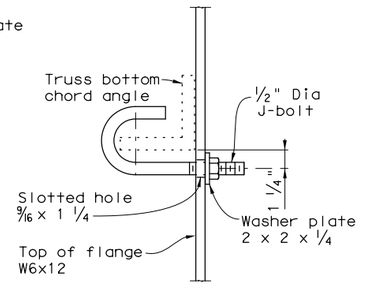
TOP VIEW TRUSS BOTTOM CONNECTION

GENERAL NOTES:

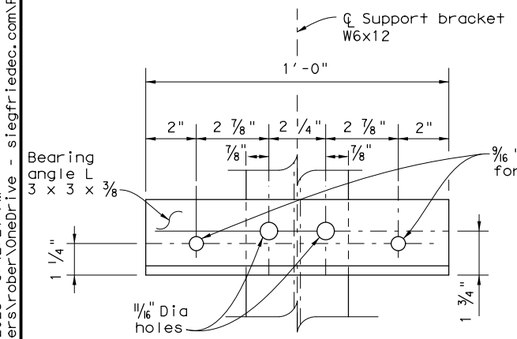
1. Determine the adequacy of the overhead sign support structure to support the dynamic message sign (DMS) prior to attaching the sign to the truss.
2. Designed according to the 1994 edition of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions. Designed for a Sustained (Fastest Mile) Wind Velocity of 100 mph with a gust factor of 1.3. Connections are designed for a DMS weight of 3800 lbs. The structural support is designed for an Effective Projected Area (EPA) of 399 sq. ft. based on a DMS nominal width of 29.1 feet and nominal depth of 7.8 feet, with a drag coefficient of 1.7 applied, plus four 1′-8" square flashing beacons with a drag coefficient of 1.2. DMS attachment is designed for a horizontal eccentricity of 2.4 ft. from the face of the truss to the center of gravity of the DMS. Provide an even number of sign supporting brackets (6 minimum), W6x12, spaced at 5′-6" max. The maximum distance between the sign edge to the nearest supporting bracket is 2′-3".
3. Verify applicable field dimensions before fabrication. Determine the required number and spacing of sign support brackets, along with the Aluminum Extrusion Horizontal Zees provided by the DMS manufacturer, to connect the DMS to the truss. For the J-bolt connection of DMS to overhead sign structure, align each arranged sign bracket with its bearing angle to avoid conflict with the truss connection bolts at the point of attachment.
4. Provide structural steel meeting the requirements of ASTM A36, A572 Gr 50 or A588. Provide connection bolts meeting the requirements of ASTM F3125, Grade A325 or A449 with 1 heavy hex nut, 2 flat washers, and 1 lock washer. Provide Type 304 stainless steel J bolt and washer plate, with bolt minimum yield strength of 50 ksi and an elongation of 16 percent in 2 inches. Galvanize all parts except stainless steel
5. Prior to the initialization of DMS mounting, the DMS manufacturer must provide and install the 6061-T6 Aluminum Extrusion Horizontal Zees, 4 1/16 x 5/16 x 3 1/8.
6. The sign support bracket attached to the truss shown here is an example only. Adjust the bracket position along the truss depth to achieve the required vertical clearance to be confirmed by the Engineer.
7. When the structure is to be exposed to a highly corrosive environment, provide elastomeric spacer to separate aluminum alloy parts from direct contact with steel.



DETAIL A

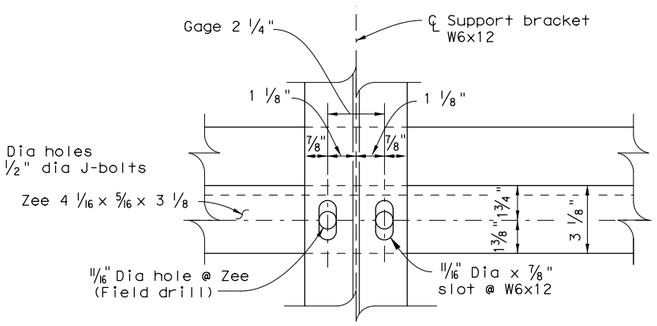


DETAIL B

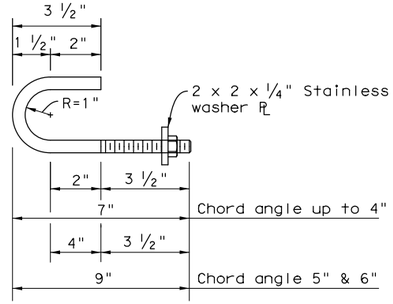


SECTION A-A

(Truss chord angle not shown)



SECTION C-C



1/2" Dia J-BOLT

ADD SHEET 5/21/2023

Texas Department of Transportation

Traffic Safety Division Standard

DMS-TO-TRUSS MOUNTING WITH HORIZONTAL ZEE EXTRUSIONS

DMS(HZ-2)-21

FILE: dms(hz-2)-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2021	CONT	SECT	JOB	HIGHWAY
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	CRP	JIM WELLS		1055MM

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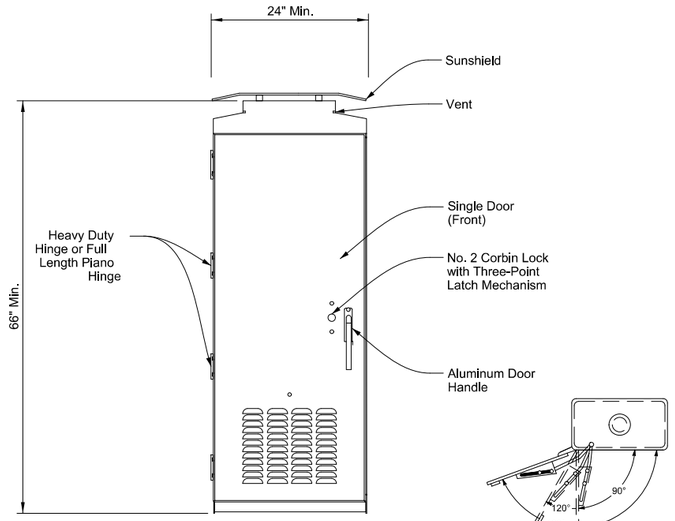
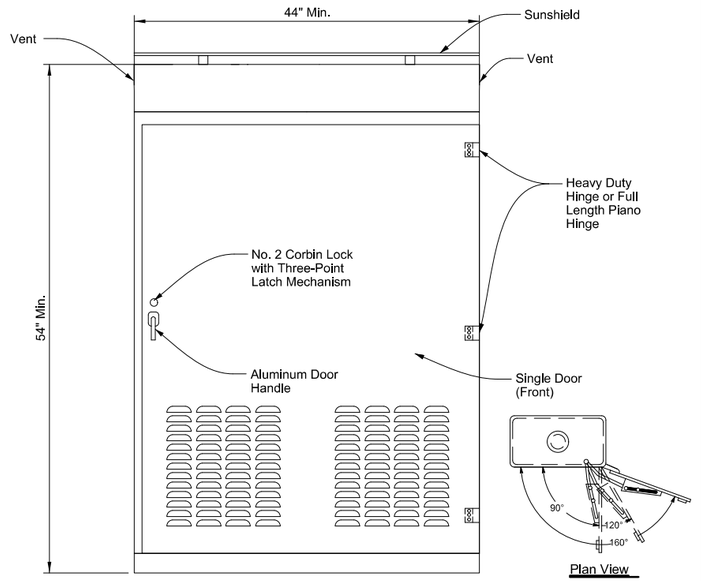


Plan View
Door Stop Detail (3 Positions)

Type 4 (Small) Cabinet

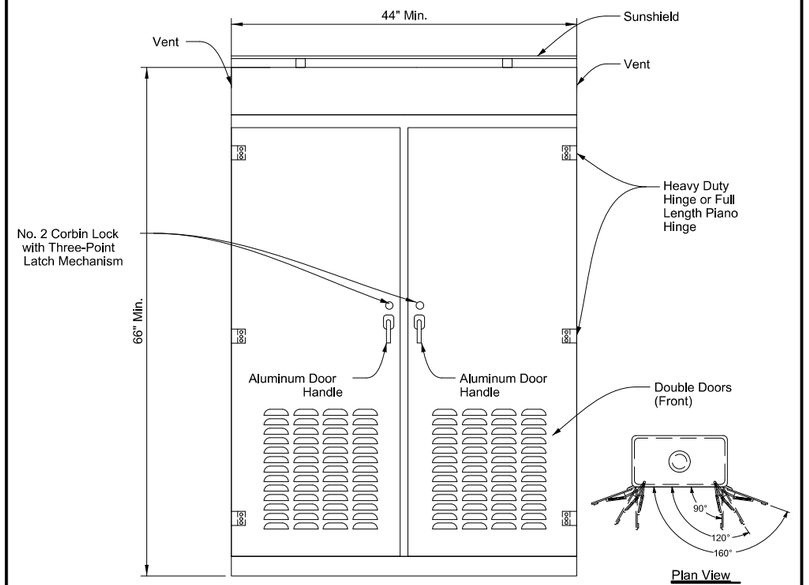
Front View



Plan View
Door Stop Detail (3 Positions)

Type 5 (Medium) Cabinet

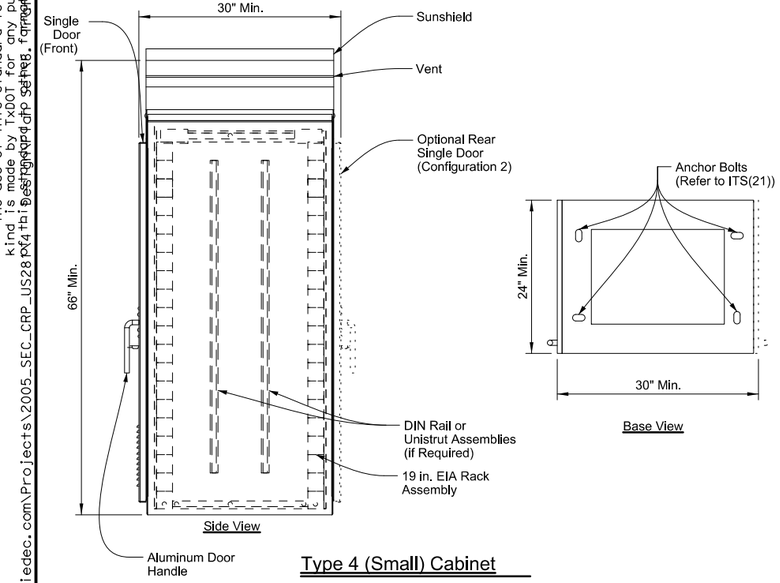
Front View



Plan View
Door Stop Detail (3 Positions)

Type 6 (Large) Cabinet

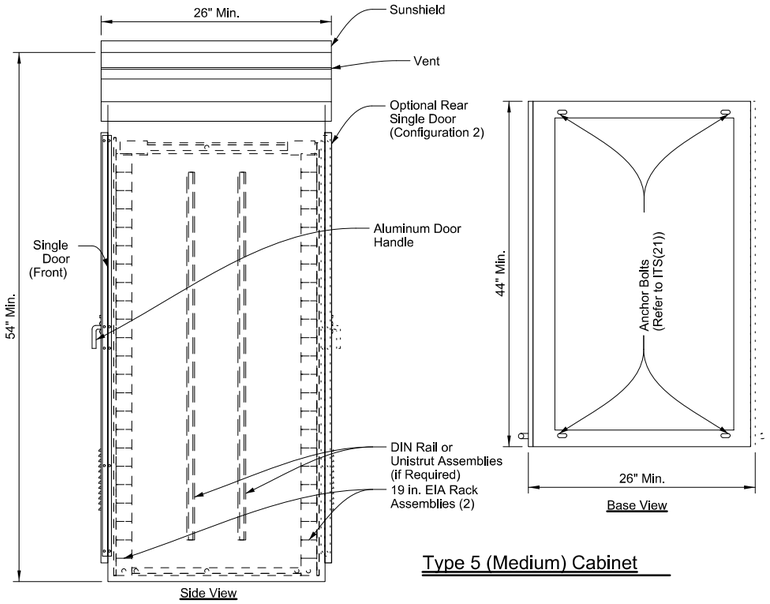
Front View



Side View

Base View

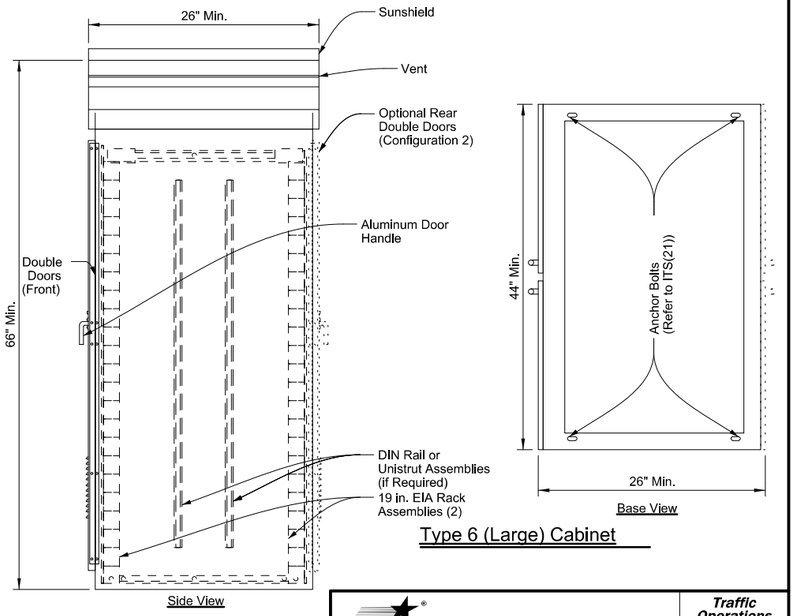
Type 4 (Small) Cabinet



Side View

Base View

Type 5 (Medium) Cabinet



Side View

Base View

Type 6 (Large) Cabinet

General Notes:

1. Cabinet hardware equipment and door configuration shown is diagrammatic in nature and intended to represent a preferred ground mounted cabinet setup. Door orientation may vary and will be noted in the plans. The contractor will be responsible for configuring cabinets with all appropriate ITS hardware and power supplies in accordance with the plans and specifications. The contractor may alter the cabinet configuration shown to maximize space and ensure easy access for maintenance.
2. All dimensions are approximate and represent minimum dimensions.
3. Provide conduit entrances at the bottom of the cabinet.
4. Paid under Special Specification "ITS Ground Mounted Cabinet" (Configuration 1) with single door. Paid under Special Specification "ITS Ground Mounted Cabinet" (Configuration 2) for rear door option.
5. Sunshield to be mounted to cabinet using nuts, bolts, and spacers. Water proof sealant to be used at cabinet surface/bolt contact points.

1 ADD SHEET 5/21/2023

Texas Department of Transportation

Traffic Operations Division Standard

ITS GROUND MOUNTED CABINET ELEVATION DETAILS

ITS(20)-15

FILE: its(20)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2015	CONT	SECT	JOB	HIGHWAY
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	CRP	JIM WELLS		1055N

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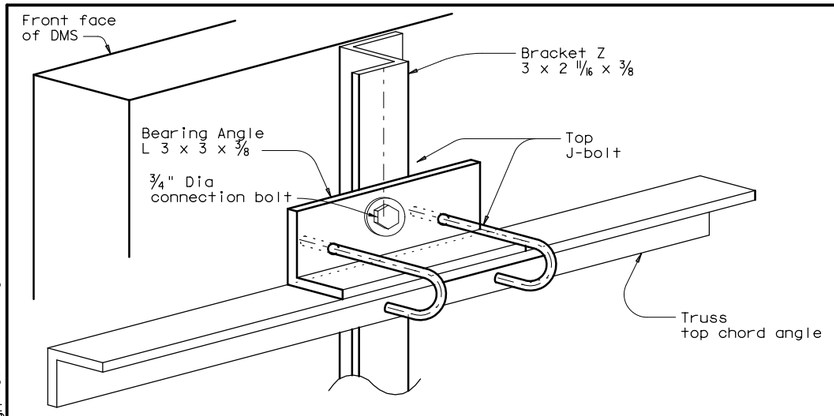
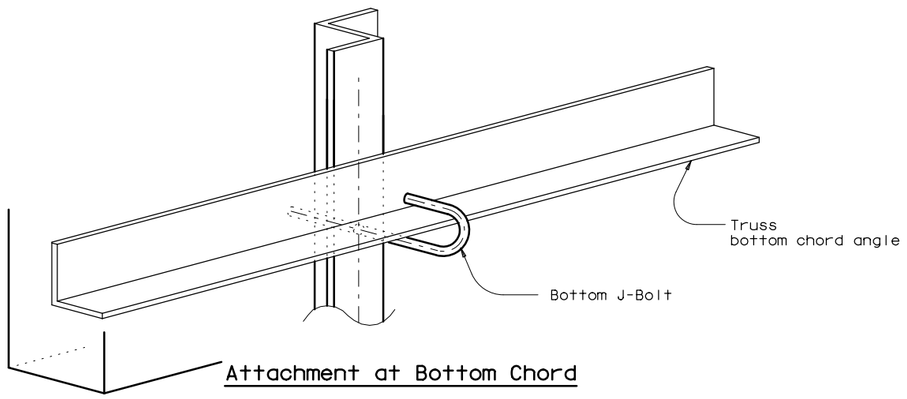
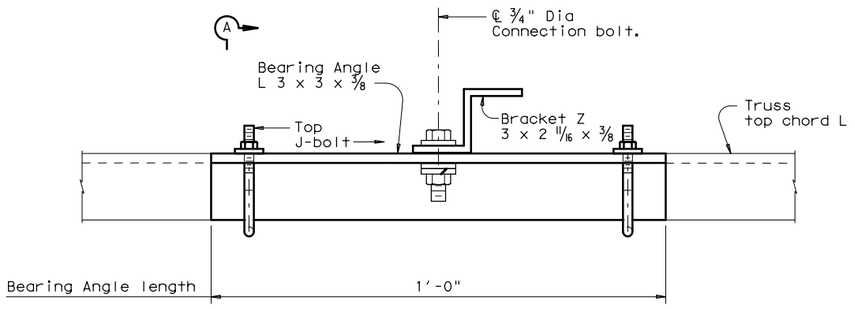


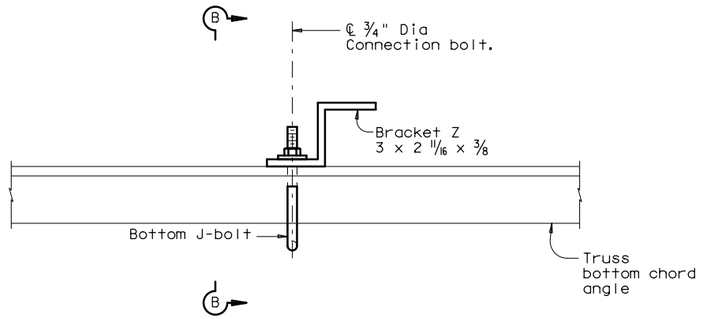
Attachment at Top Chord
(Showing Chord Angle 3")



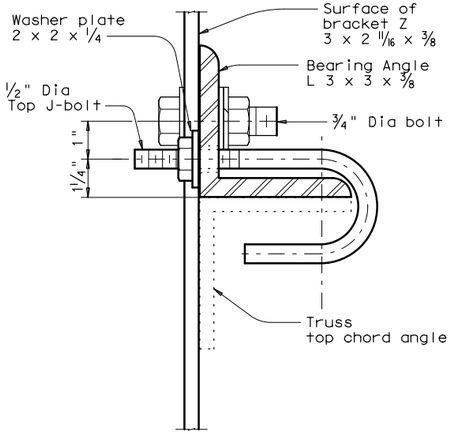
Attachment at Bottom Chord
ISOMETRIC VIEW



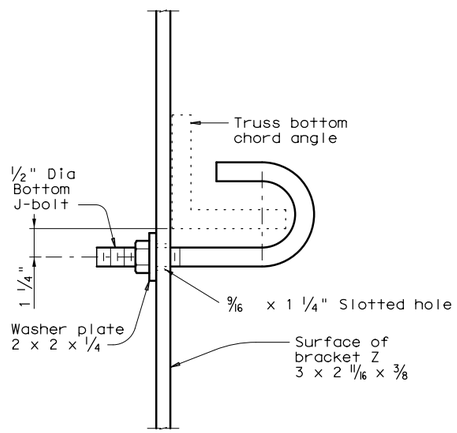
Attachment at Top Chord
(Showing Chord Angle 3")



Attachment at Bottom Chord
PLAN VIEW



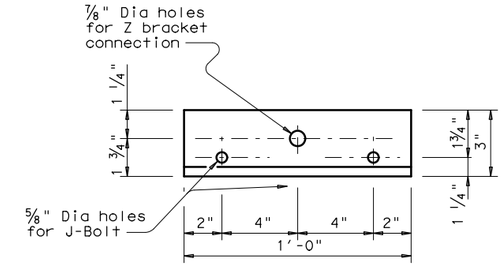
SECTION A-A



SECTION B-B

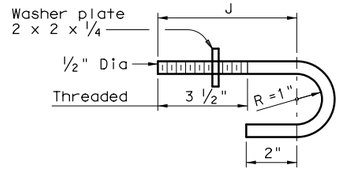
GENERAL NOTES:

1. Application of the mounting detailed on Sheet 1 of 3 is limited to a dynamic message sign (DMS) attachment that is not in conflict with the truss connection bolts at the point(s) of attachment. The overhead sign structure must have adequate capacity to support the DMS. A determination of adequacy shall be made prior to attaching the DMS supports to the truss.
2. Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. The Design Sustained Wind Velocity is 100 mph with a gust factor of 1.3. Connections are designed for a DMS weight of 3600 lbs and a design Effective Projected Area (EPA) of 441 sq ft, with the EPA based on a DMS nominal width of 30.5 feet and nominal depth of 8.25 feet plus four top and bottom 1'-8" square flashing beacons. The EPA includes drag coefficients of 1.7 (applied to sign area) and 1.2 (applied to flashing beacon area). A horizontal eccentricity of 1.0 ft from the face of the truss to the center of gravity of the DMS for attachment of DMS is assumed. An even number of Z brackets, spaced at 5 ft max., is assumed to transfer forces through the connection.
3. All structural steel shall conform to ASTM A36, A572 Gr 50 or A588. Connection bolts shall conform to ASTM A325 or A449. Each connection bolt shall be provided with 1 heavy hex nut, 2 flat washers, and 1 lock washer. J bolts and washer plate both shall be Type 304 stainless steel, with bolt minimum yield strength of 50 ksi and an elongation of 16 percent in 2 inches. All parts except stainless steel shall be galvanized.
4. Contractor shall verify applicable field dimensions before fabrication.



BEARING ANGLE 3 x 3 x 3/8

Chord Angle	J
3", 3 1/2", 4"	5 1/2"
5" and 6"	7 1/2"



TOP & BOTTOM J-BOLT

SHEET 1 OF 3

Texas Department of Transportation | Traffic Operations Division Standard

DMS-TO-TRUSS MOUNTING AT OVERHEAD SIGN SUPPORTS (NON BUILD-UP)

DMS(TM-1)-16

FILE: dms-tm-16.dgn	DN: TxDOT	CK:	DW: TxDOT	CK:
©TxDOT June 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0254	07	008,ETC	US 281
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	CRP	JIM WELLS		1055NN

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29C

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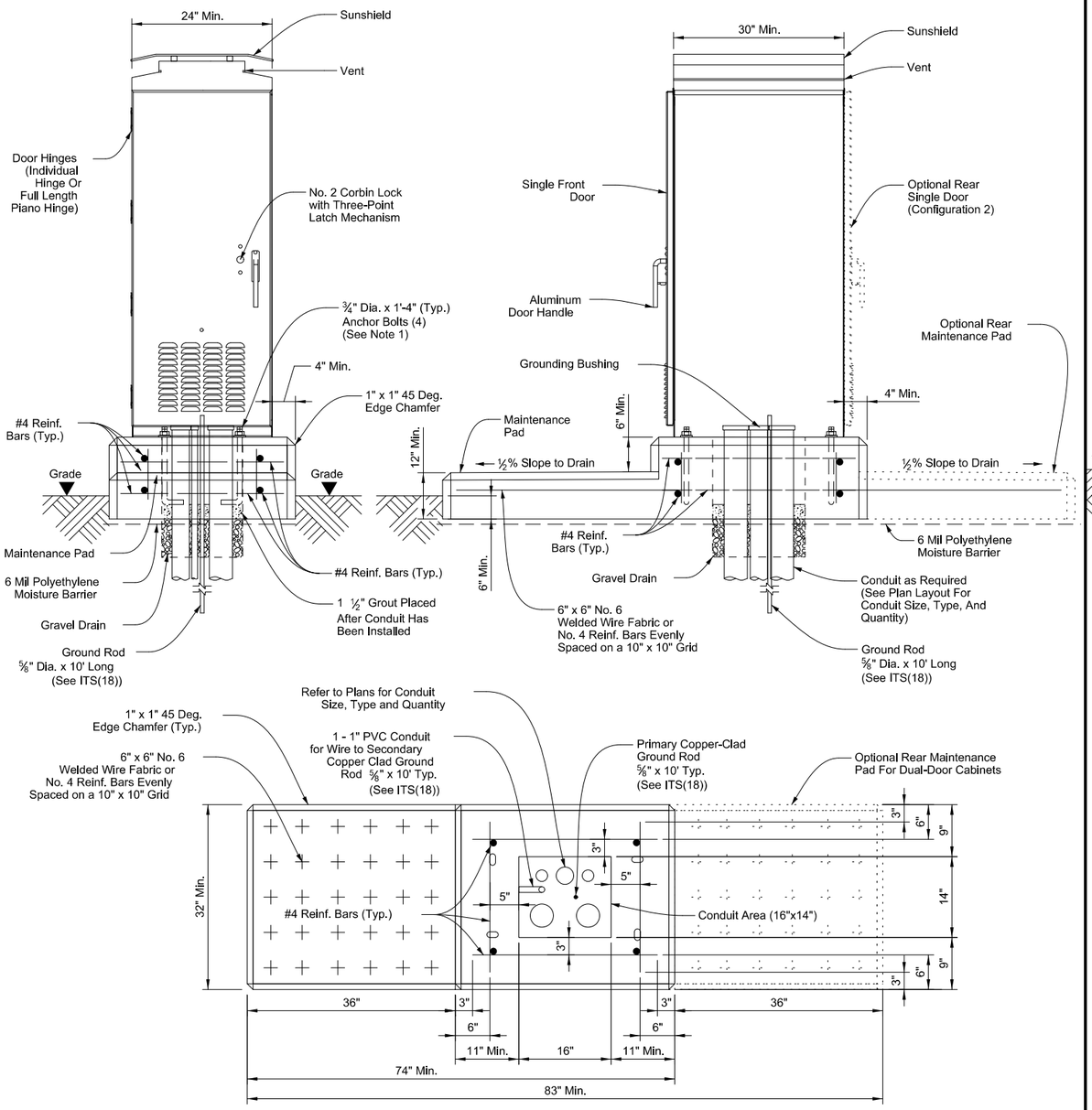
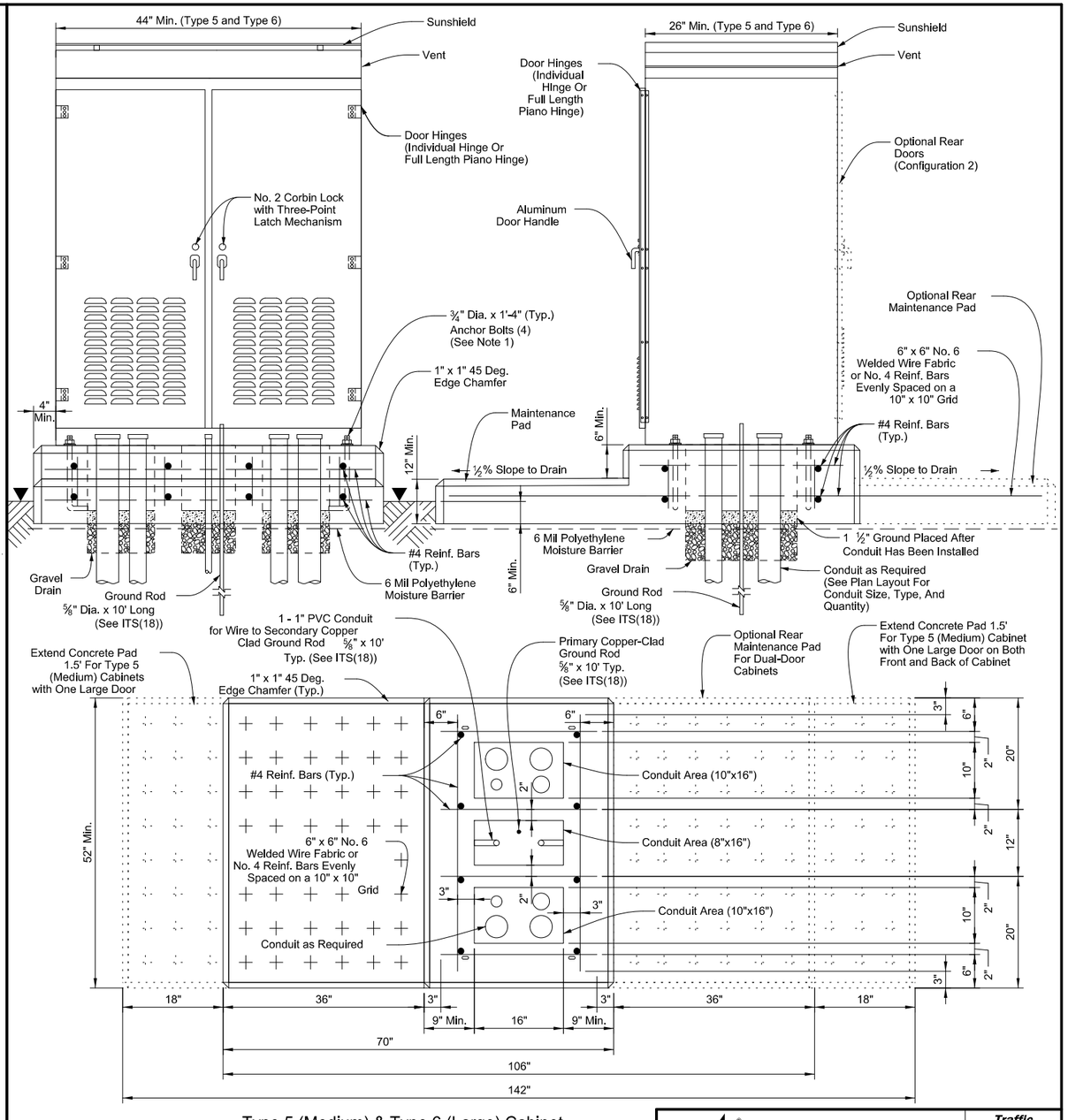


Type 4 (Small) Cabinet



Type 5 (Medium) & Type 6 (Large) Cabinet

General Notes:

1. Details of anchor bolt location to be furnished by the cabinet manufacturer. Size and length of anchor bolts shown in details may vary by manufacturer.
2. Modify concrete base dimensions to fit required cabinet type.
3. Ensure conduit area has gravel drain, 12" depth, course aggregate, grade No. 1.
4. All concrete to be Class "A" in accordance with Item 421.
5. Set the cabinet foundation level with the pavement surface, in unpaved area. The foundation shall be a minimum of 4" above surrounding grade, or as approved by the Engineer.
6. Furnish any additional concrete which may be necessary to stabilize foundation at unusual locations.
7. Foundation will be subsidiary to Special Specification "ITS Ground Mounted Cabinet.
8. Ground cabinet as required in cabinet specifications and as detailed on ITS(18) In accordance with the National Electric Code (NEC).
9. Treat cabinet foundation with moisture sealant.
10. Type 5 cabinet foundation will have a slightly larger foundation than Type 6. See foundation notes on details.
11. Drain pipe shall be screened for drainage portion below foundation in gravel.

⚠1 ADD SHEET 5/21/2023

Texas Department of Transportation

Traffic Operations Division Standard

ITS GROUND MOUNTED CABINET FOUNDATION DETAILS

ITS(21)-15

FILE: its(21)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2015	CONT	SECT	JOB	HIGHWAY
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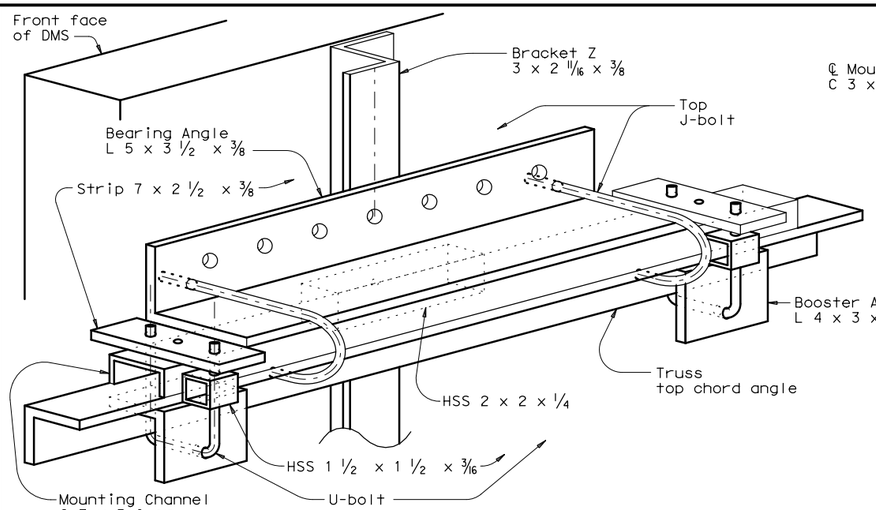
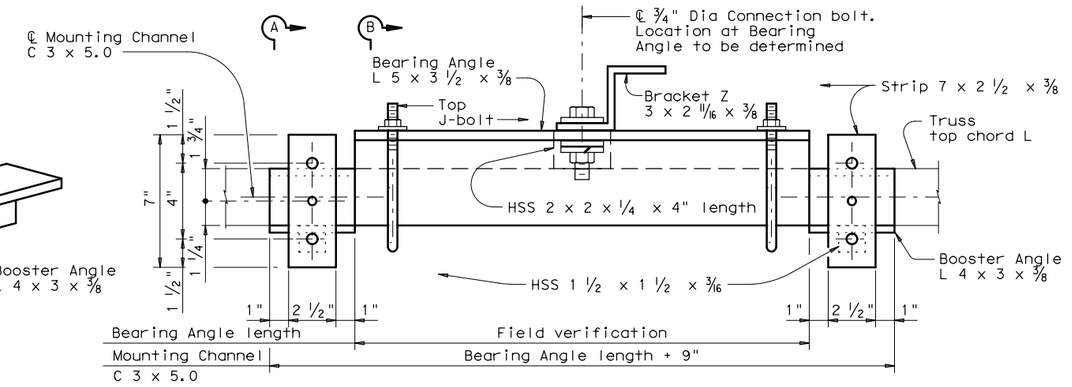
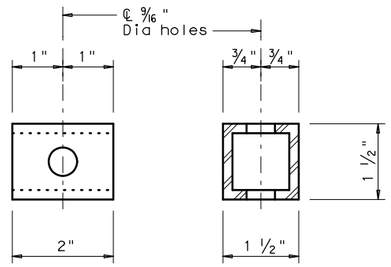


Built-up Attachment at Top Chord

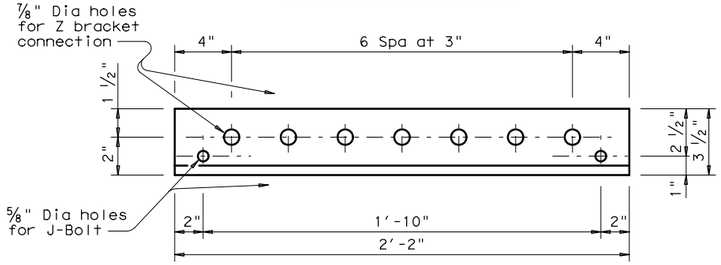
(Showing Chord Angle 3")



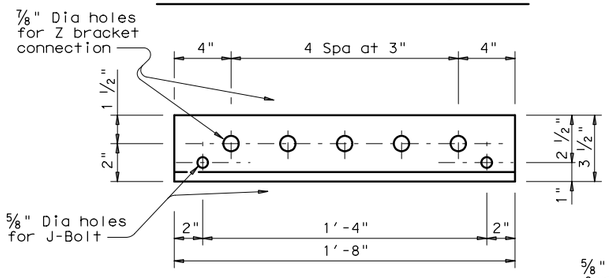


① HSS 1 1/2 x 1 1/2 x 3/16

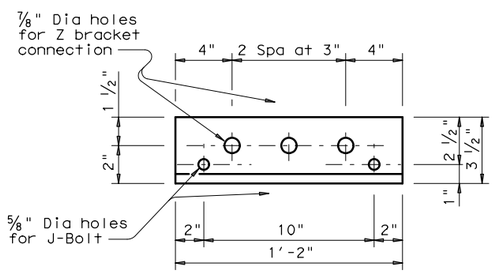
ISOMETRIC VIEW



BEARING ANGLE 5 x 3 1/2 x 3/8



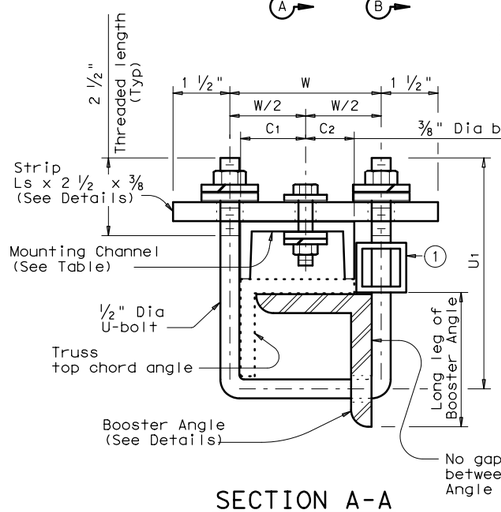
BEARING ANGLE 5 x 3 1/2 x 3/8



BEARING ANGLE 5 x 3 1/2 x 3/8

PLAN VIEW (AT TOP CHORD)

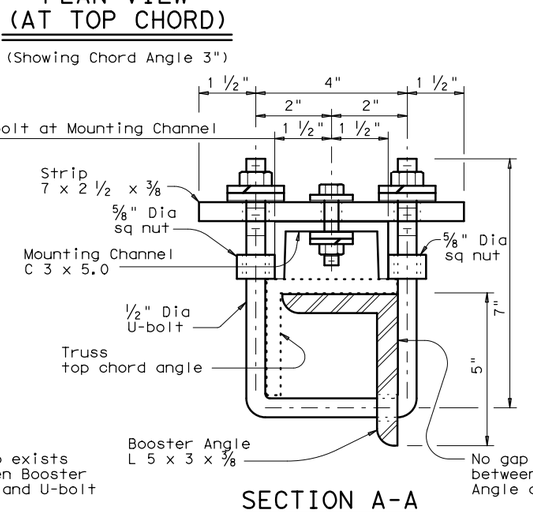
(Showing Chord Angle 3")



SECTION A-A

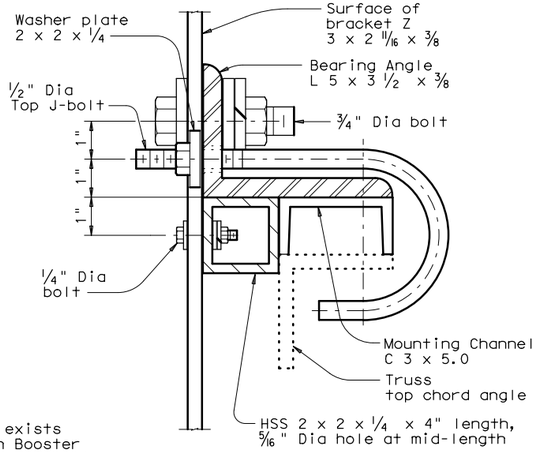
(Showing Chord Angle 3",4",5" & 6")

Chord Angle	U1	W	C1	C2	Mounting Channel
3"	7"	4"	1 3/4"	1 1/4"	C3 x 5.0
4"	8"	5"	2 1/4"	1 3/4"	C4 x 7.25
5"	9"	6"	2 3/4"	2 1/4"	C5 x 9.0
6"	10 1/2"	7"	3 1/4"	2 3/4"	C6 x 13

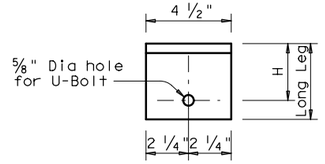


SECTION A-A

(Showing Chord Angle 3 1/2")



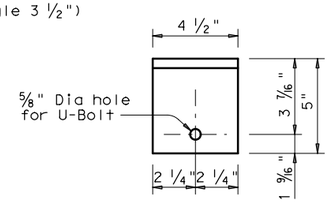
SECTION B-B



BOOSTER ANGLE

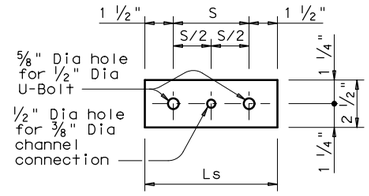
(For Chord Angle 3",4",5" and 6")

Chord Angle	Booster Angle	H
3"	4 x 3 x 3/8	3"
4"	5 x 3 1/2 x 3/8	3 13/16"
5"	6 x 4 x 3/8	4 13/16"
6"	7 x 4 x 3/8	5 5/8"



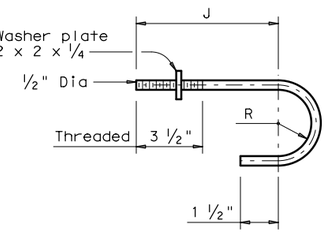
BOOSTER ANGLE 5 x 3 x 3/8

(For Chord Angle 3 1/2")



Strip Ls x 2 1/2 x 3/8

Chord Angle	S	Ls
3"	4"	7"
3 1/2"	4"	7"
4"	5"	8"
5"	6"	9"
6"	7"	10"



TOP J-BOLT

Chord Angle	J	R
3 & 3 1/2"	7"	1 3/4"
4 & 5"	8"	2"
6"	9"	2 1/4"

SHEET 2 OF 3

Texas Department of Transportation

Traffic Operations Division Standard

DMS-TO-TRUSS MOUNTING AT OVERHEAD SIGN SUPPORTS (WITH BUILD-UP)

DMS(TM-2)-16

FILE: dms-tm-16.dgn	DN: TxDOT	CK:	DW: TxDOT	CK:
©TxDOT JUNE 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0254	07	008,ETC	US 281
	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		105500

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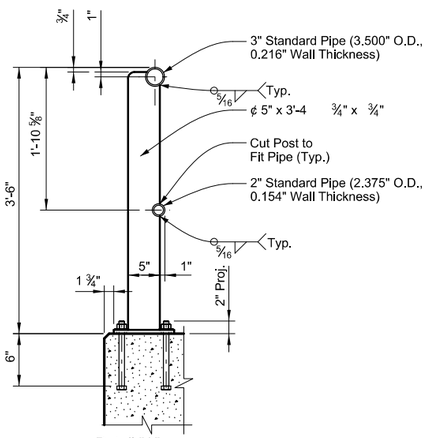
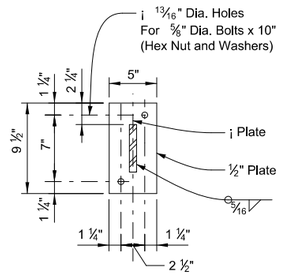
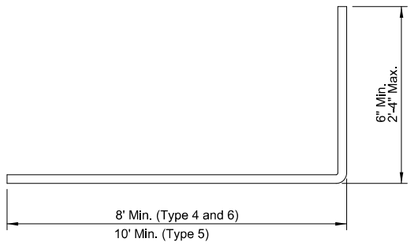


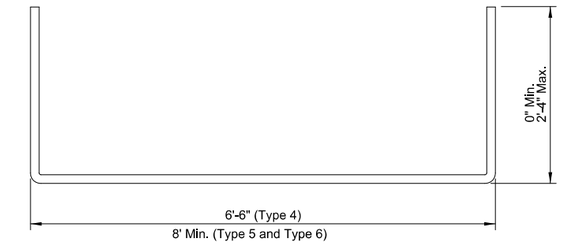
Detail "A"
Pedestrian Rail



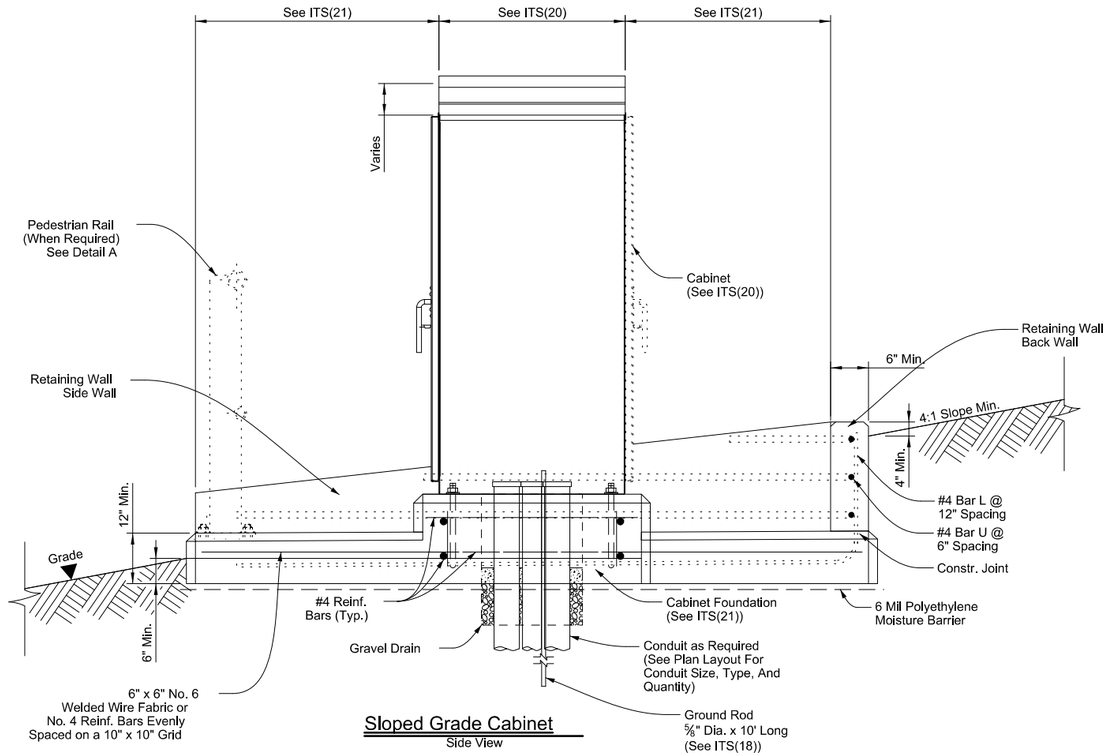
Pedestrian Rail Base Plate



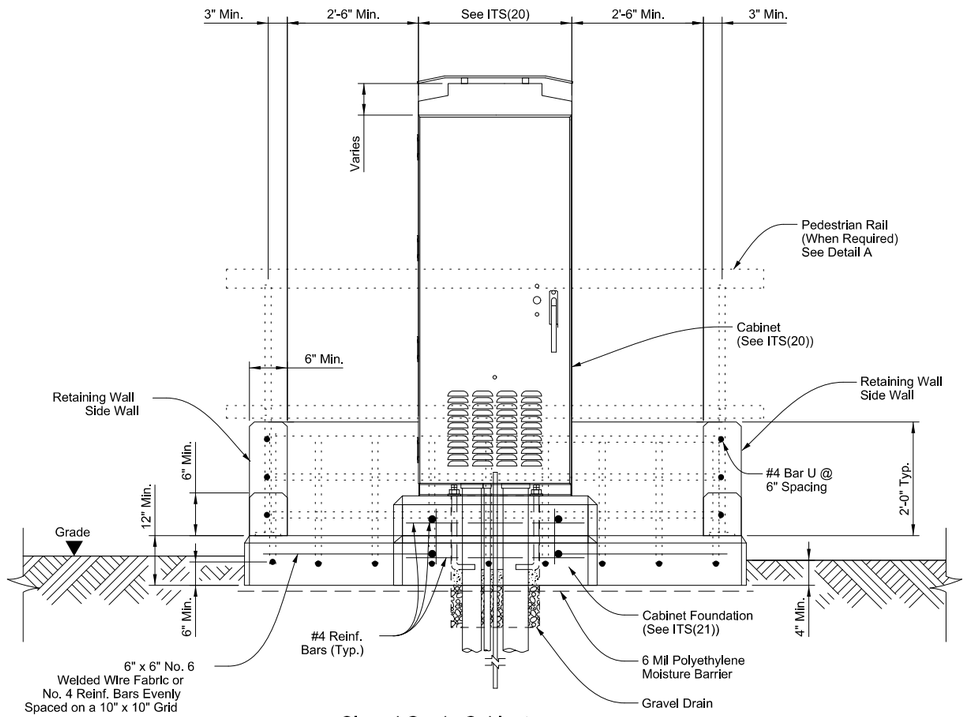
Reinforcement Bar L
#4 Bar @ 12" Spacing



Reinforcement Bar U
#4 Bar @ 6" Spacing



Sloped Grade Cabinet
Side View



Sloped Grade Cabinet
Front View

General Notes:

1. Details of anchor bolt location to be furnished by the cabinet manufacturer. See ITS(21) for size and type of anchor bolts. May vary by manufacturer.
2. Modify concrete base dimensions to fit required cabinet type.
3. Ensure conduit area has gravel drain, 12" depth, course aggregate, Grade No. 1.
4. All concrete to be Class "A" in accordance with Item 421.
5. Set the cabinet foundation level with the pavement surface, in unpaved area. The foundation shall be a minimum of 6" above surrounding grade, or as approved by the Engineer.
6. Furnish any additional concrete which may be necessary to stabilize foundation at unusual locations.
7. Foundation will be considered subsidiary to Special Specification "ITS Ground Mounted Cabinet."
8. Ground cabinet as required in cabinet specifications and as per National Electric Code (NEC).
9. Treat cabinet foundation with moisture sealant.
10. Type 5 cabinet foundation will have a slightly larger foundation than Type 6. See foundation notes on details.
11. Drain pipe shall be screened for drainage portion below foundation in gravel.
12. Pipe for pipe rail must conform to ASTM A53 GR B, or A500 GR B. Posts and plates must be ASTM A36. All steel components to be galvanized unless otherwise shown in plans.
13. Pedestrian rail anchor bolts must be 5/8" diameter ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt. Threaded rods may be 0.557" minimum diameter with rolled threads. Nuts must conform to A563 requirements.
14. Exposed edges of pipe rail and pipe rail posts must be rounded or chamfered to approximately 1/16" by grinding. Provide an end cap at either end of pipe railing.
15. Welded wire mesh not required in maintenance pad area when retaining wall rebar is integrated into maintenance pad.

1 ADD SHEET 5/21/2023

Texas Department of Transportation

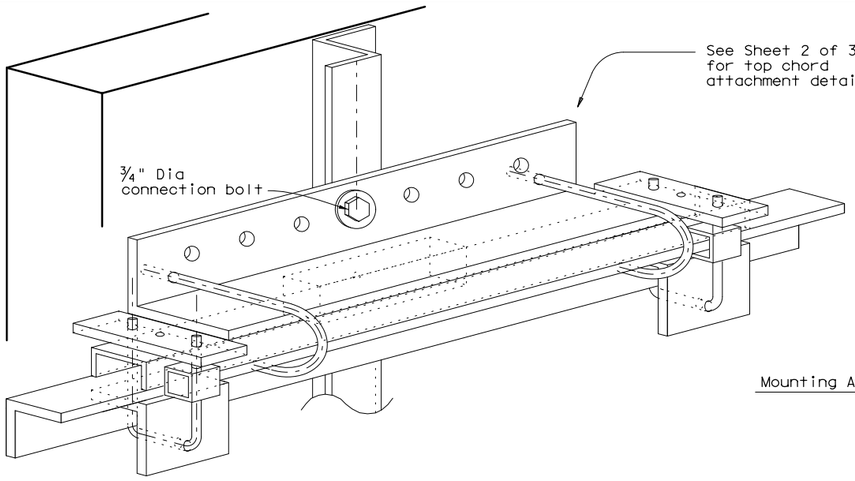
Traffic Operations Division Standard

ITS GROUND MOUNTED CABINET FOUNDATION ON SLOPE DETAILS

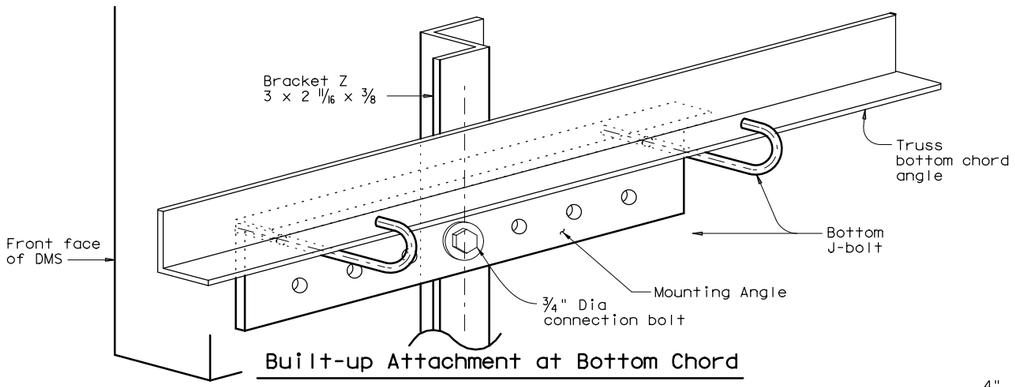
ITS(22)-15

FILE: its(22)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0254	07	008,ETC	US 281
	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1055P

DATE:
FILE:

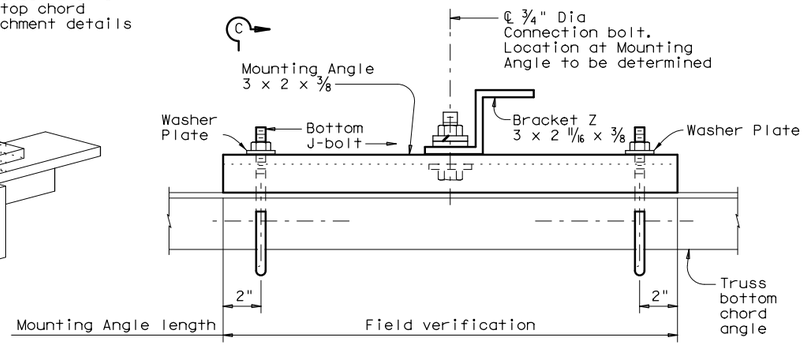


Built-up Attachment at Top Chord

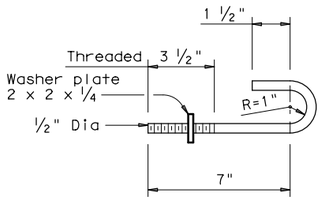


Built-up Attachment at Bottom Chord

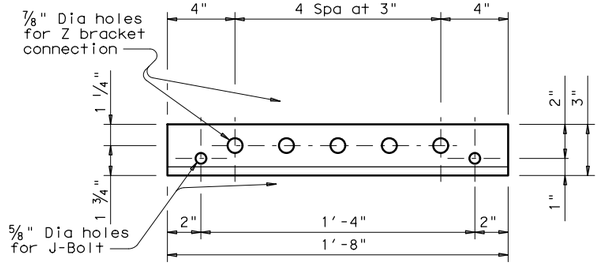
ISOMETRIC VIEW



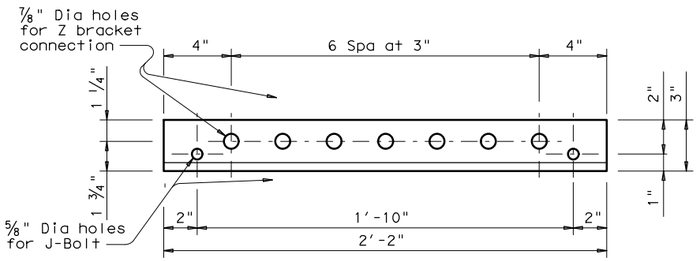
PLAN VIEW
(AT BOTTOM CHORD)



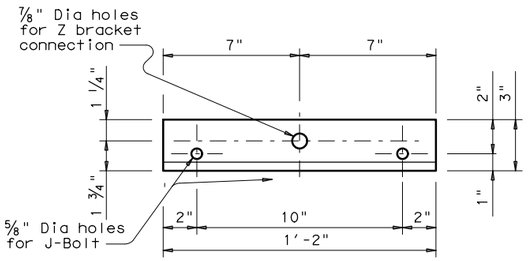
BOTTOM J-BOLT



MOUNTING ANGLE 3 x 2 x ⅜



MOUNTING ANGLE 3 x 2 x ⅜



MOUNTING ANGLE 3 x 2 x ⅜

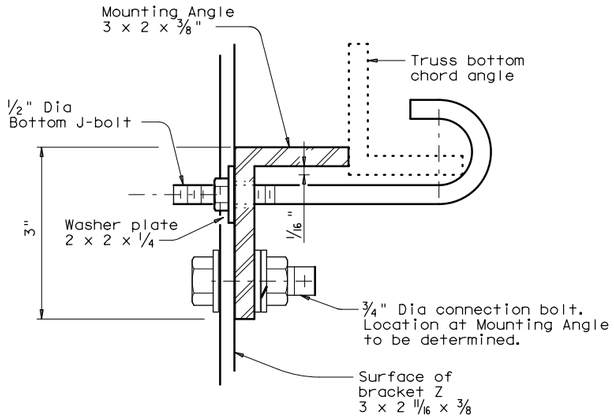
GENERAL NOTES:

1. Application of the built-up detailed on Sheet 2 and 3 of 3 is limited to the dynamic message sign (DMS) attachment which is in conflict with the truss connection bolts at the point(s) of attachment. The overhead sign structure must have adequate capacity to support the DMS. A determination of adequacy shall be made prior to attaching the DMS supports to the truss.

2. Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. The Design Sustained Wind Velocity is 100 mph with a gust factor of 1.3. Connections are designed for a DMS weight of 3600 lbs and a design Effective Projected Area (EPA) of 441 sq ft, with the EPA based on a DMS nominal width of 30.5 feet and nominal depth of 8.25 feet plus four top and bottom 1'-8" square flashing beacons. The EPA includes drag coefficients of 1.7 (applied to sign area) and 1.2 (applied to flashing beacon area). A horizontal eccentricity of 1.0 ft from the face of the truss to the center of gravity of the DMS for attachment of DMS is assumed. An even number of Z brackets, spaced at 5 ft max., is assumed to transfer forces through the connection.

3. All structural steel shall conform to ASTM A36, A572 Gr 50 or A588. Connection bolts shall conform to ASTM A325 or A449. Each connection bolt shall be provided with 1 heavy hex nut, 2 flat washers, and 1 lock washer. U bolts shall conform to ASTM A307 with 2 hex nuts, 2 flat washers and 2 lock washers. Hollow structural section (HSS) shall conform to ASTM A500, A501, or A847. J bolts and washer plate both shall be Type 304 stainless steel, with bolt minimum yield strength of 50 ksi and an elongation of 16 percent in 2 inches. All parts, except stainless steel shall be galvanized.

4. Contractor shall verify applicable field dimensions before fabrication. Various lengths of bearing and mounting angle are provided for suitable mounting. Contractor shall determine the proper bearing and mounting angle length, and the connection along the length at Z bracket to accommodate J-bolt hook. Contractor may substitute HSS for the mounting channel as long as the HSS has equal or greater thickness at the mounting channel. Limit HSS height to achieved mounting clearance.



SECTION C-C

SHEET 3 OF 3

Texas Department of Transportation

Traffic Operations Division Standard

DMS-TO-TRUSS MOUNTING AT OVERHEAD SIGN SUPPORTS (WITH BUILD-UP)

DMS(TM-3)-16

FILE: dms-tm-16.dgn	DN: TxDOT	CK:	DW: TxDOT	CK:
©TxDOT JUNE 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0254	07	008,ETC	US 281
	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1055PB

1 ADD SHEET 5/21/2023

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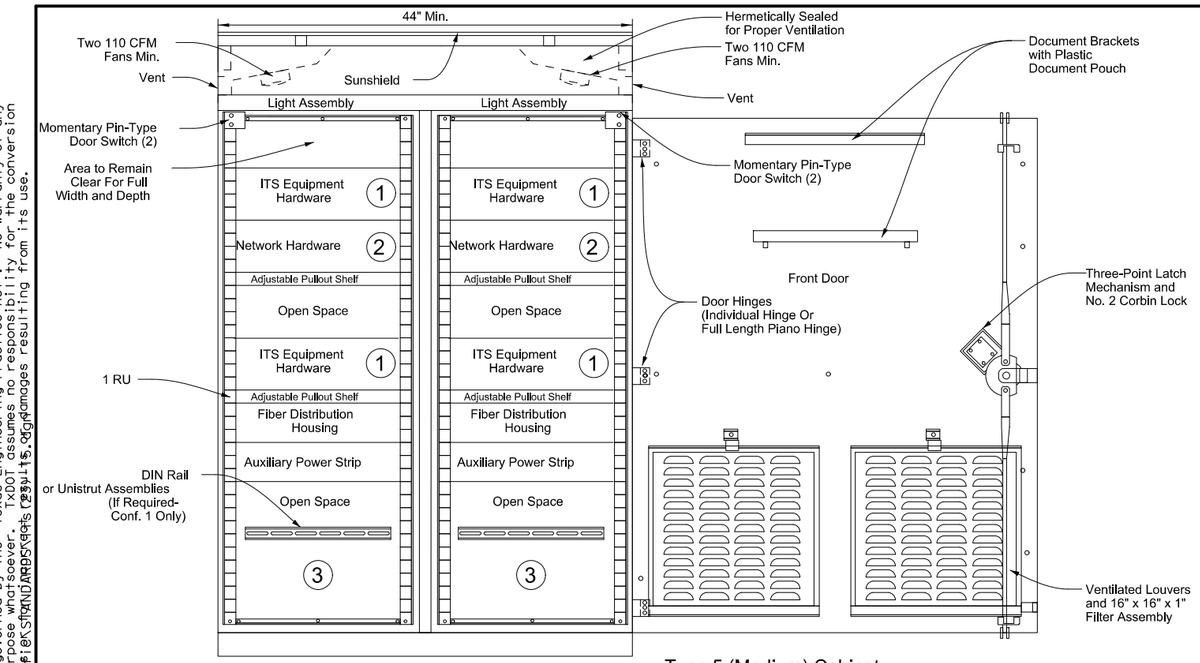
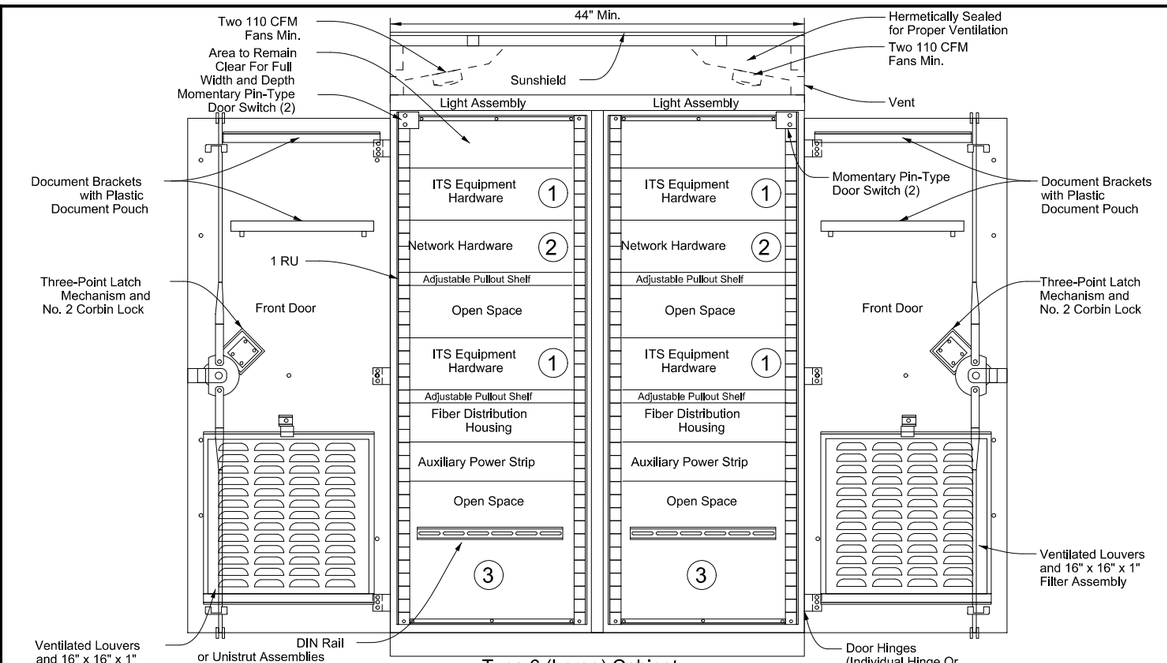


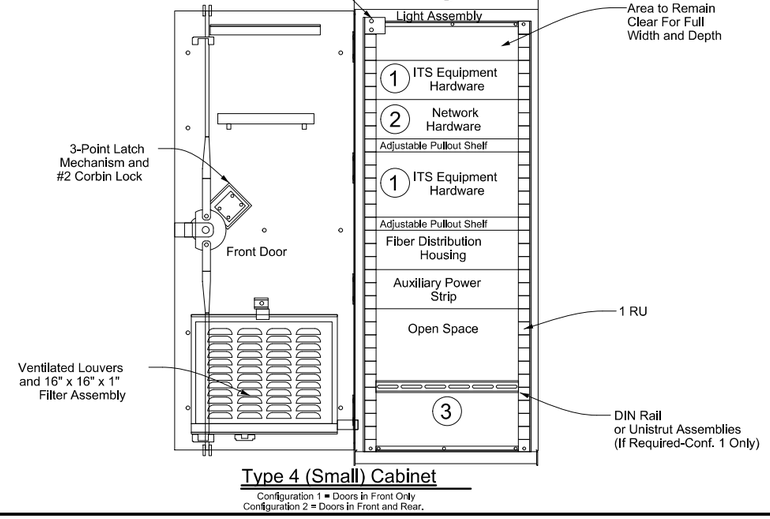
Type 5 (Medium) Cabinet

Configuration 1 = Doors In Front Only
Configuration 2 = Doors In Front and Rear.



Type 6 (Large) Cabinet

Configuration 1 = Doors In Front Only
Configuration 2 = Doors In Front and Rear.



Type 4 (Small) Cabinet

Configuration 1 = Doors in Front Only
Configuration 2 = Doors in Front and Rear.

Typical Equipment Layout Legend

	Example Equipment
1	CCTV Interface Panel, Radar Vehicle Sensing Device (RVSD) Equipment, DMS/LCS Controller Environmental Sensor Station (ESS) Equipment, Bluetooth Equipment, Highway Advisory Radio (HAR), Ramp Meter or Inductive Loop Card Rack, Automatic Vehicle Identification (AVI) Equipment, or ITS Radio Equipment (See General Note 1)
2	Ethernet Switch, Video Encoder, Terminal Server, Fiber Optic Transceivers, or Media Conversion Equipment (See General Note 1)
3	Power Distribution Assembly, Service Entrance Breakers, Primary AC Power, Auxiliary Power Strip, Ground Bus Bar Surge Protection Equipment, Solar Power System (If Required)

General Notes:

1. Layout of hardware equipment and configuration shown is diagrammatic in nature and intended to represent a preferred ground mounted cabinet setup. Hardware needed for each cabinet varies and not all cabinet equipment may be shown. The contractor will be responsible for configuring cabinets with all appropriate ITS hardware and power supplies in accordance with the plans and specifications. The contractor may alter the cabinet configuration shown to maximize space and ensure easy access for maintenance.
2. All dimensions are approximate and represent minimum dimensions.
3. Provide conduit entrances at the bottom of the cabinet.
4. Paid under Special Specification "ITS Ground Mounted Cabinet" (Configuration 1) with single door.
   Paid under Special Specification "ITS Ground Mounted Cabinet" (Configuration 2) for rear door option.
5. RU = rack unit.
6. Contractor to remove the cabinet removable center support, which ensures cabinet rigidity during shipping, during installation.

1 ADD SHEET 5/21/2023

Texas Department of Transportation

Traffic Operations Division Standard

ITS GROUND MOUNTED CABINET INTERIOR DETAILS

ITS(23)-15

FILE: its(23)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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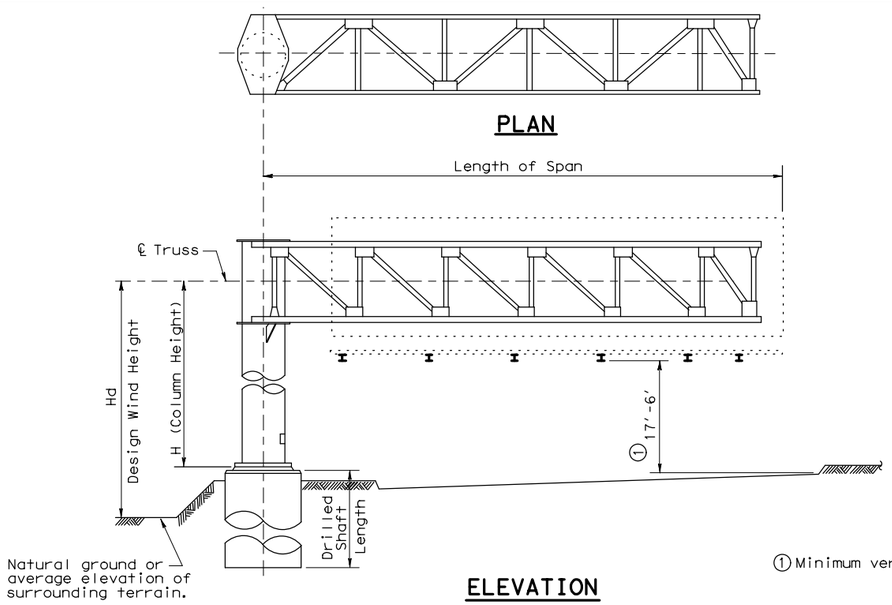
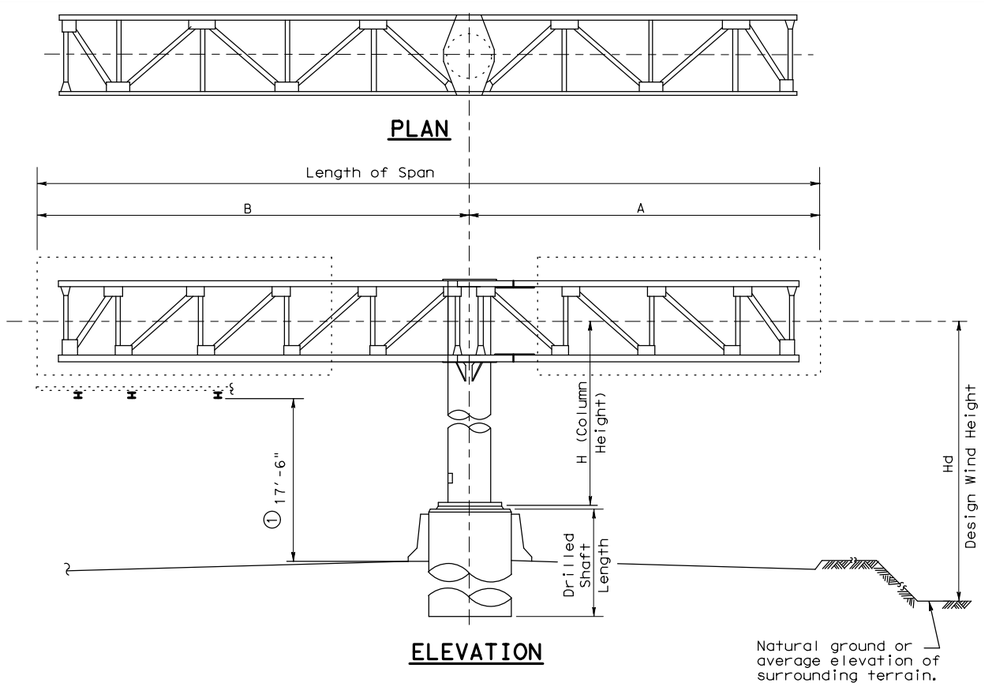


① Minimum vertical clearance



SELECTION EXAMPLE CANTILEVER SPAN

Given: Cantilever Span = 33′; Column Height, H = 23.3.′; Design Wind Height, Hd = 27′; Avg. Penetrometer Value, N = 15 (clay type soil); Hill County

Step 1: Select applicable COSS standard.
From Wind Velocity and Ice Zone sheet (WV & IZ-96) determine that Hill County is in Zone 4 (70 mph) and is above the ice line. Since Design Wind Height is less than 30′, use standard COSS-Z4 & Z4I. If Design Wind Height is more than 30′, use COSS-Z3 & Z3I. NOTE: In Zone 1 if Design Wind Height is greater than 30′ use HCOSS-Z1.

Step 2: Determine tower details from COSS-Z4 & Z4I. Use column height to nearest tabulated value′ i.e., 23′. Round span length up to the nearest tabulated value, i.e., 35′.
Tower details are:
Tower pipe 24" Dia with min. wall thickness = 0.312"
Base plate 33 ¾" Dia x 1 ¾"
Anchor bolts 8~1 ¾" Dia on 29 ⅜" bolt circle
Horizontal deflection of tower at ℄ truss = 0.889". During installation, double nuts at base plate may be used to plumb tower to compensate for horizontal deflection.
Design Moment = 244 Kip-ft
Design Torsion = 162 Kip-ft

Step 3: Determine truss details from COSS-Z4 & Z4I.
Read from small table at bottom of sheet for span = 35′.
Truss design width, W and depth, D = 4.0′x 4.0′.
Chord L 3 x 3 x 5/16 (HYC) with 6 bolt connection at tower
D.L. Diag. L 2 x 2 x 3/16 (HYC) with 2 bolt connection
W. L. Diag. L 3 x 3 x 3/16 (HYC) with 2 bolt connection
D. L. Vert. L 2 x 2 x 3/16 (HYC) with 2 bolt connection
W. L. Strut. L 2 x 2 x 3/16 (HYC) with 1 bolt connection
Bolts are ⅝" Dia high strength with 5~¾" Dia bolt alternate for chord connection at tower.
D.L. of truss = 50 lb/ft
Truss deflection at free end = 3.2". The fabricator shall compensate for this deflection by offsetting bolt holes between the upper and lower chords at the truss-to-tower connection.

Step 4: Determine foundation details. Use standard COSSF.
From COSSF with 24" Dia pipe and 1 ¾" Dia anchor bolts:
Anchor Bolts 1 ¾" Dia x 3′-10"
Drilled Shaft Dia 42"
Vertical Reinforcing 12 ~ #10 bars
Spiral C = #4 at 6" pitch Grade 60.
Misc. handhole, base plate, anchor bolt, and foundation details are shown on COSSF.

Step 5: Determine drilled shaft length from COSS-FD.
Enter the appropriate graph (for 42" Dia drilled shaft in clay soil) from the bottom with N = 15. Proceed upward interpolating moment curves (solid lines) to locate 244 Kip-ft. Project to the left side of the graph to determine the required embedment length, i.e., 12′.
Repeat the procedure for torsion curves (dashed lines) to locate 162 Kip-ft. The embedment length required to satisfy torsion is 14′. Add 3′-0" to the longer length to obtain a required drilled shaft length of 17′.

SELECTION EXAMPLE DOUBLE CANTILEVER SPAN

Given: Short span, A = 9′; Long Span, B = 25′; Total Cantilever Span = 34′; Column Height, H = 24′; Design Wind Height, Hd = 26′; Avg. Penetrometer Value, N = 20 (clay type soil); Wheeler County.

Step 1: Select applicable COSS standard.
From Wind Velocity and Ice Zone sheet determine that Wheeler County is in Zone 2 (90 mph) and is above the ice line. Since Design Wind Height is less than 30′ use standard COSS-Z2I. If Design Wind Height is more than 30′, use HCOSS-Z1.

Step 2: Determine tower details from COSS-Z2I.
Use column height = 24′. Round total span length up to the next longer tabulated length span, i.e., 35′. If total span length is greater than 40′, a special design would be required.
Tower details are:
Tower pipe 30" Dia with min. wall thickness = 0.310"
Base Plate 40 ½" Dia x 1 ¾"
Anchor bolts 8 ~ 2" Dia on 35 ¾" bolt circle
Horizontal deflection of tower at ℄ truss = 0.574-0.316 = 0.26".
During installation, double nuts at base plate may be used to plumb tower and compensate for horizontal deflection.
Design Moment = 403 Kip-ft (use total span = 35′)
Design Torsion = 136 Kip-ft (use long span = 25′)

Step 3: Determine truss details from COSS-Z2I.
Read from small table at bottom of sheet 2 of 2 for Span A = 9′ (use 10′):
Chord L 3 x 3 x 3/16 (HYC) with 3 bolt connection at splice
D.L. Diag. L 2 x 2 x 3/16 (HYC) with 2 bolt connection
W.L. Diag. L 3 x 3 x 3/16 (HYC) with 2 bolt connection
D.L. Vert. L 2 x 2 x 3/16 (HYC) with 2 bolt connection
W.L. Strut. L 2 x 2 x 3/16 (HYC) with 1 bolt connection
Bolts are ⅝" Dia high strength.
D.L. of truss = 42 lb/ft.
Span B = 25′:
Chord L 3 x 3 x 1/4 (HYC) with 4 bolt connection at tower
D.L. Diag. L 2 x 2 x 3/16 (HYC) with 2 bolt connection
W.L. Diag. L 3 x 3 x 3/16 (HYC) with 2 bolt connection
D.L. Vert. L 2 x 2 x 3/16 (HYC) with 2 bolt connection
W.L. Strut. L 2 x 2 x 3/16 (HYC) with 1 bolt connection
Bolts are ⅝" Dia high strength with 3 ~ ¾" Dia bolt alternate for chord connection at tower.
D.L. of truss = 47 lb/ft.
Truss defl. at free end = 0.2" for Span A, = 1.3" for Span B.
The fabricator shall compensate for deflections by offsetting bolt holes between upper and lower chords at splice and at truss-to-tower connection. Top chord shall be shortened between the tower and the splice to achieve the required offset.

Step 4: Determine foundation details. Use standard COSSF.
From COSSF with 30" Dia pipe and 2" Dia anchor bolts:
Anchor bolts 2" Dia x 4′-3"
Drilled shaft Dia 54"
Vertical Reinforcing 18 ~ #10 bars
Spiral C = #4 at 6" pitch Grade 60
Misc. handhole, base plate, anchor bolt, and foundation details are shown on COSSF.

Step 5: Determine drilled shaft length from COSS-FD.
Enter the appropriate graph (for 54" Dia drilled shaft in clay type soil) from the bottom with N = 20. Proceed upward interpolating moment curves (solid lines) to locate 403 Kip-ft. Project to the left side of graph to determine required embedment length, i.e., 13′.
Repeat the procedure for the torsion curves (dashed lines) to locate 136 Kip-ft. Embedment length required to satisfy torsion is 9′.
Add 3′ to the longer length to obtain required drilled shaft length of 16′.

⚠1 ADD SHEET 5/21/2023

Texas Department of Transportation
Traffic Operations Division

CANTILEVER OVERHEAD SIGN SUPPORTS SELECTION EXAMPLES

COSS-SE

REVISIONS

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

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0254	07	008,ETC	US 281

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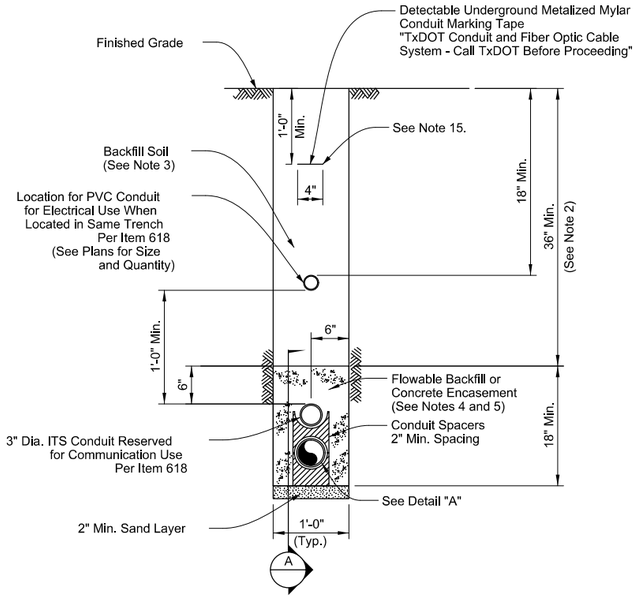
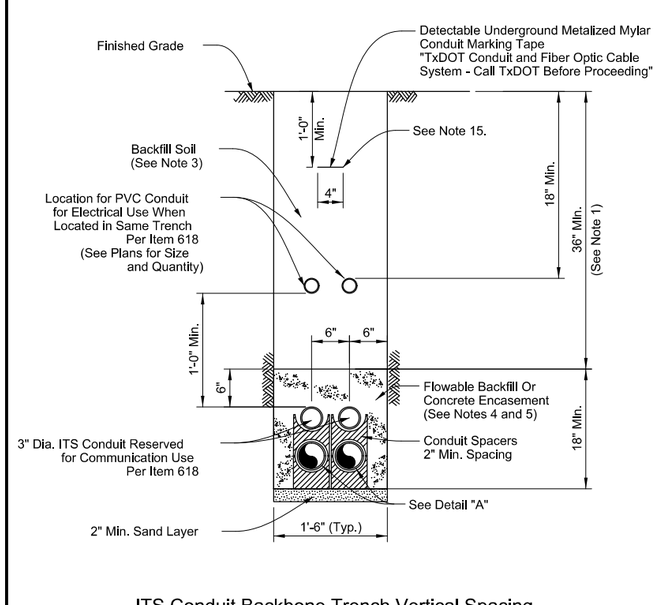


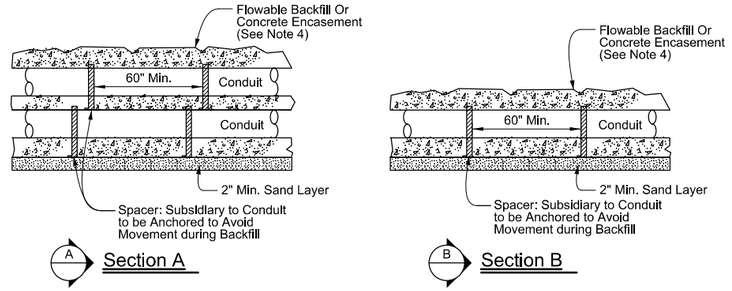
ITS Conduit Backbone Trench Vertical Spacing

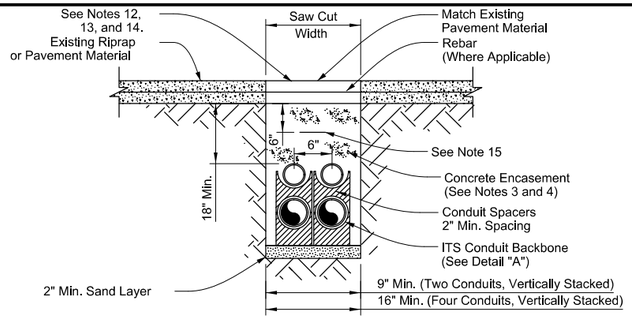
Two Conduit System



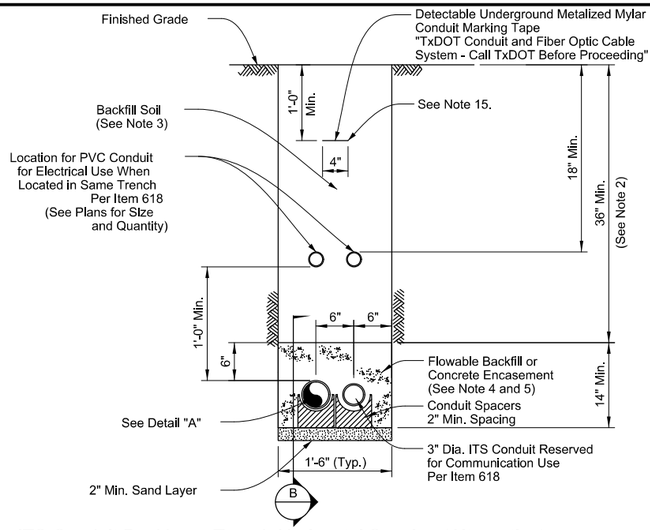
ITS Conduit Backbone Trench Vertical Spacing

Four Conduit System



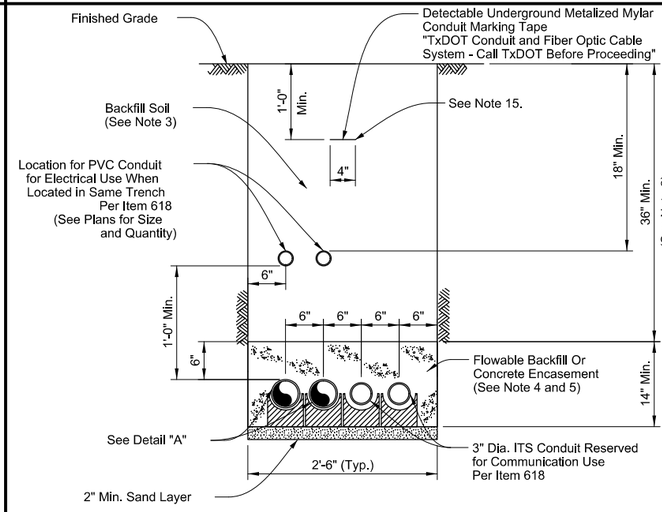


Open Cut Trenching Details



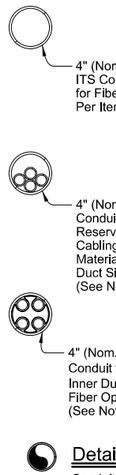
ITS Conduit Backbone Trench Horizontal Spacing (Alternative)

Two Conduit System



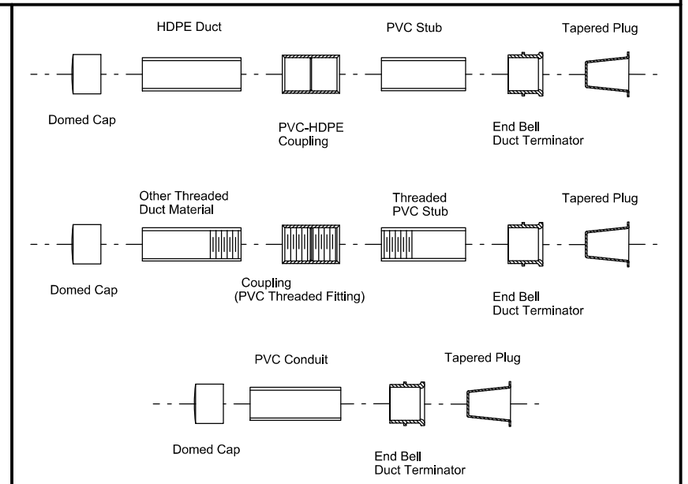
ITS Conduit Backbone Trench Horizontal Spacing (Alternative)

Four Conduit System



Detail "A"

Conduit Types
(See Plans for Type and Quantity)



Typical Conduit Fitting Combinations

2 Conduit and Single Conduit Configuration

SHEET 1 OF 2

General Notes:

1. Construct the ITS conduit backbone system by vertically spacing conduit, unless field constraints, obstructions, or utility conflicts require horizontal spacing of conduits. Both vertical and horizontal spacing configurations have been detailed for contractor information for construction.
2. Install ITS conduit backbone system a minimum of 42 inches from finished grade to the top of the conduit unless otherwise directed or to avoid conflicts or field conditions such as utilities or obstructions. Vary depth of the trench in order to pass over/under any existing utilities. Refer to ITS Conduit Obstruction Crossing Standard ITS(35) for further detail.
3. Perform trench excavation and backfilling in accordance with Item 400, "Excavation and Backfill for Structures."
4. When a trench depth greater than 24 inches can be achieved from the finished grade to the top of ITS conduit, encase the conduits with flowable backfill in accordance with Item 401, "Flowable Backfill." Use Class B concrete as a substitute in accordance with Item 421, "Hydraulic Cement Concrete" at the discretion of the Engineer.
5. When a trench depth of less than 24 inches is required due to field conditions, encase the conduits in Class B concrete in accordance with Item 421, "Hydraulic Cement Concrete."
6. Concrete encasement will be paid for under Special Specification "ITS Multi-Duct Conduit" or as shown on the plans.
7. Provide ITS PVC conduit identified for electrical and communication use in accordance with Item 618, "Conduit."
8. Provide ITS multi-duct conduit identified for fiber optic communication use in accordance with Special Specification "ITS Multi-Duct Conduit."
9. Conduit per Item 618, "Conduit" (See Plans for Material Type and Quantity).
10. Provide a single 1/C #14 insulated wire in conduit runs which have been identified in the plans to carry fiber optic cable. Provide UL listed solid copper wire with orange color low density polyethylene insulation suitable for conduit installation rated for temperature range -20 C to 60 C and a voltage rating of 600V. This wire will serve as a tracer, or locate, wire for locating underground conduit containing fiber optic cabling and will be paid for under Item 620, "Electrical Conductors."
11. Provide a flat pull cord in all empty conduits and innerducts. Provide a pull cord with a tensile strength of 1,250 Lbs. minimum and have foot markings to determine length installed. Pull cord and installation to be subsidiary to various bid items.
12. Remove saw cut width to accommodate conduit installation.
13. Replace rebar as necessary, lapped and tied a minimum of 3 inches to existing rebar.
14. Replace broken pavement materials with similar materials to exact shape, and thickness of existing.
15. Place marking tape a minimum of 1 foot - 0 inches below grade when no other electrical marking tape required, or 8 inches below electrical marking tape when provisioned under Item 618.
16. Provide a 1/C #8 insulated grounding conductor within one inner duct of a pre-assembled multi-duct when no other grounding conductor is provisioned for in the plans.

Texas Department of Transportation

Traffic Operations Division Standard

ITS CONDUIT TRENCH DETAILS

ITS(27)-16

FILE: its(27)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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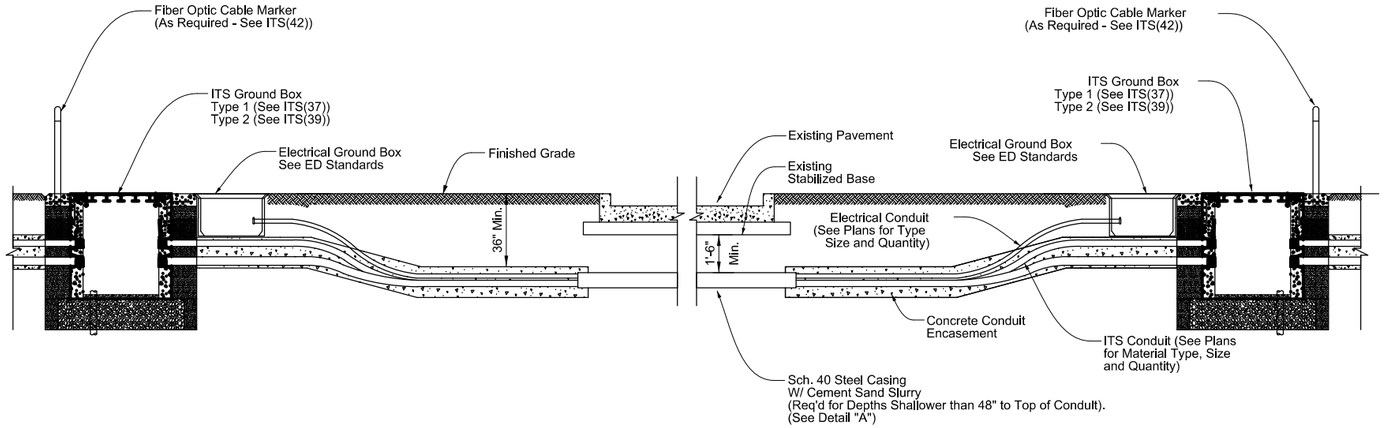
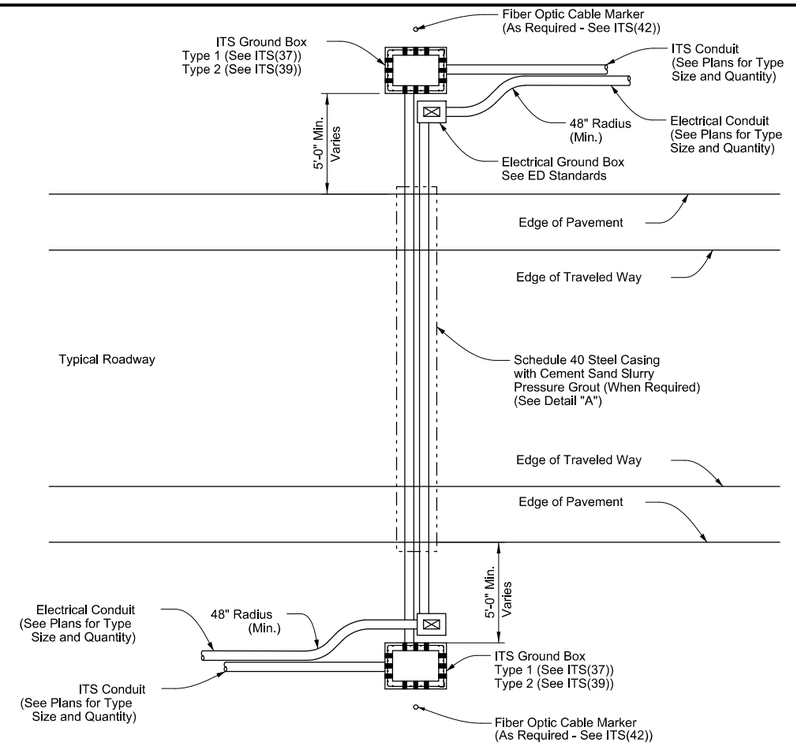
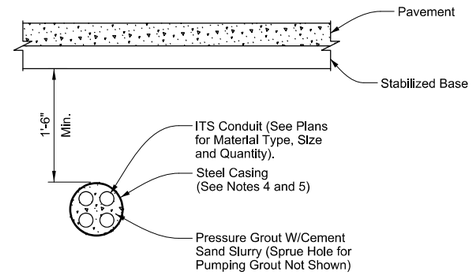


Typical Conduit Installation Jacking
or Boring Beneath Existing Roadway



Bore Under Pavement

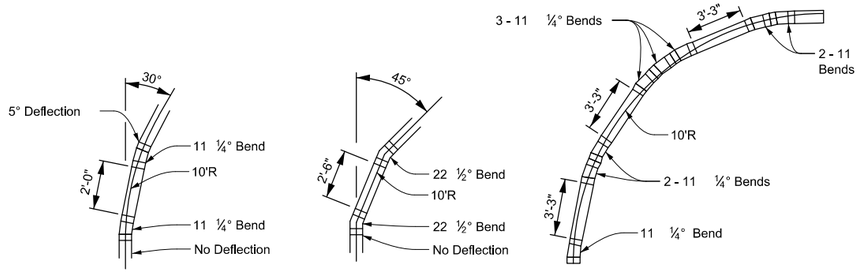
Typical Conduit Installation Jacking
or Boring Beneath Existing Roadway
(Where Concrete Encasement Not Required)



Steel Casing Detail "A"

General Notes:

1. Typical conduit installation details for jacking or boring beneath existing roadway is diagrammatic in nature. Roadway cross-slopes may vary for each crossing.
2. Jack or bore in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box" except for measurement and payment.
3. Furnishing and installation of pressure grouting will not be paid for directly but considered incidental to Special Specification "ITS Multi-Duct Conduit" or Item 618, "Conduit."
4. When boring under pavement shallower than 48 inches from finished grade to top of conduit, provide Schedule 40 steel casing under pavement to encase the conduit system. Provide steel casing of a size to accommodate ITS conduit and electrical conduit as shown in the plans. Provide a minimum 20 percent void space around all conduits. Steel casing will not be paid for directly but considered incidental to Special Specification, "ITS Multi-Duct Conduit" or Item 618, "Conduit."
5. When a depth greater than 48 inches can be achieved from finished grade to top of conduit, provide Schedule 80 PVC. No steel casing required unless otherwise directed.
6. Ensure all conduit bends are in conformance with the latest edition of the National Electrical Code.
7. Provide GPS coordinate points to the District for all ground boxes installed, and shifts or deviations of the conduit alignment from the plans required to avoid obstructions or utilities. Take GPS coordinate points at the start of the transition, at the point of curvature, and at the end of the transition at the point of tangency. Document the turnout radius and installed depth. Provide GPS coordinate points in NAD83 coordinate system and be accurate to 5 feet.



30° Turnout Detail

45° Turnout Detail

90° Turnout Detail

Provide this arrangement of conduit and fittings or approved equal at all 30°, 45°, and 90° bends, horizontal and vertical, to achieve a nominal 10' conduit radius for pre-assembled multi-duct conduit. See Note 7.

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SHEET 2 OF 2

Texas Department of Transportation

Traffic Operations Division Standard

ITS CONDUIT BORE AND STEEL CASING DETAILS

ITS(28)-16

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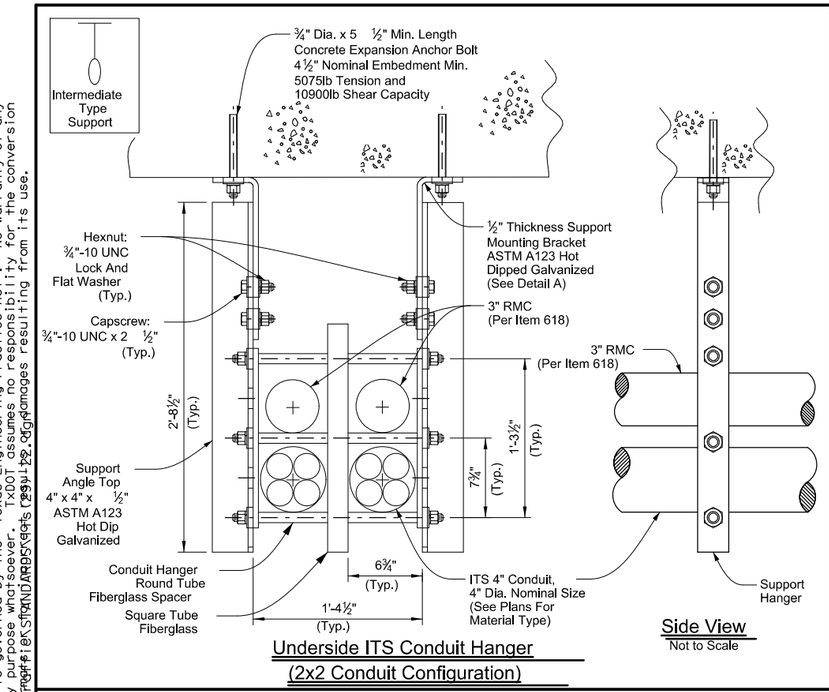
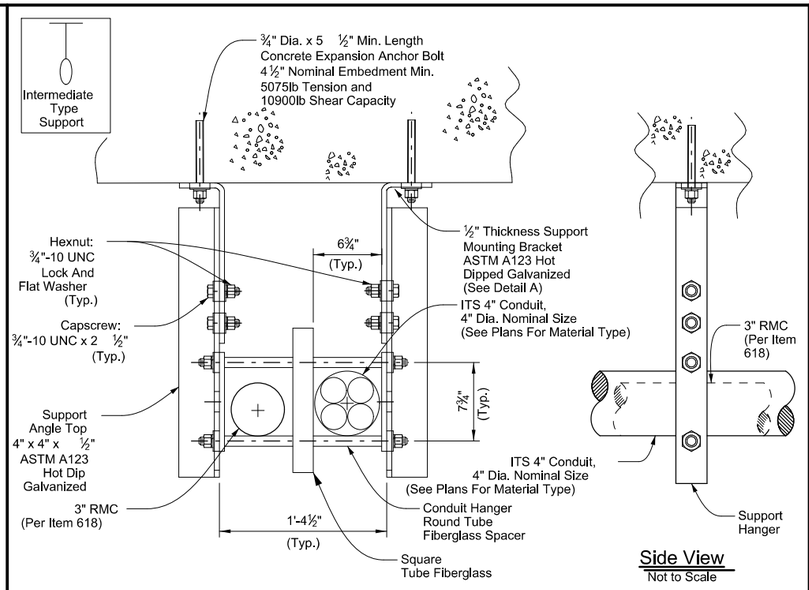
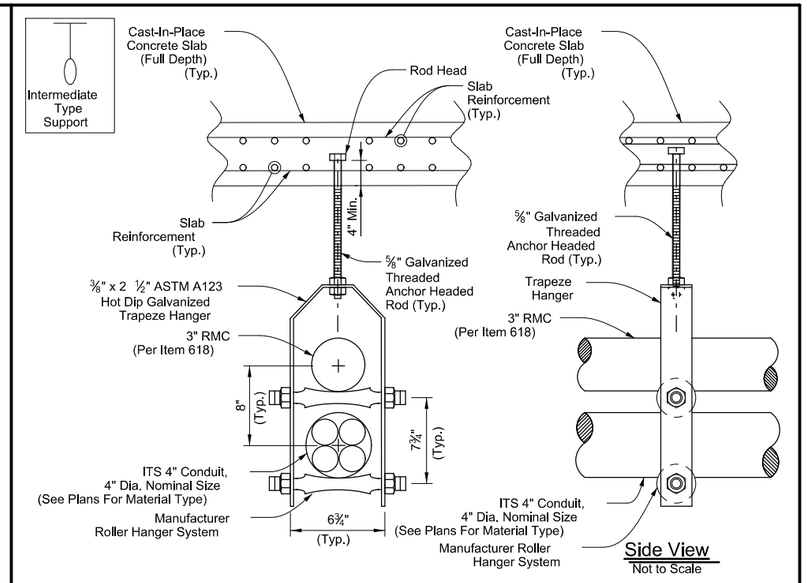


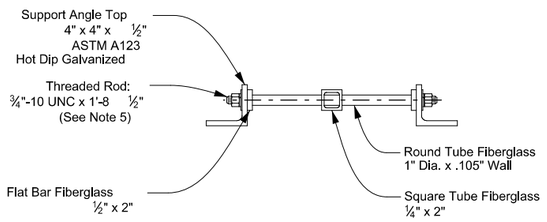
Underside ITS Conduit Hanger
(2x2 Conduit Configuration)



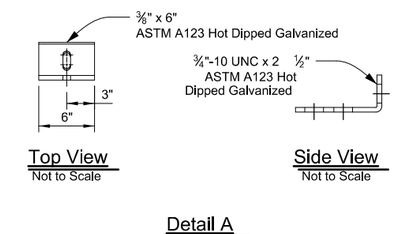
Underside ITS Conduit Hanger
(2x1 Conduit Configuration)



Underside ITS Conduit Roller Hanger
For New Construction
(1x2 Conduit Configuration)



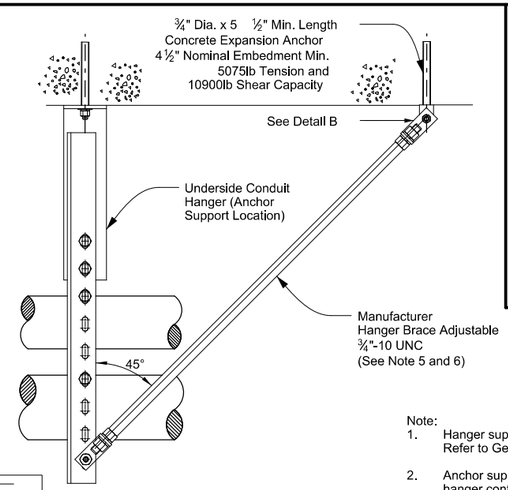
Underside ITS Conduit Hanger Spacer - Top View (Typ.)



Detail A
Support Mounting Bracket Detail

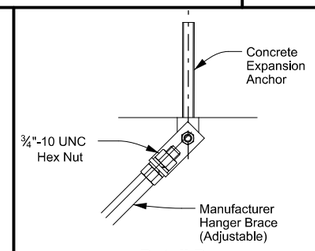
General Notes:

1. Use commercially designed multiple conduit support hangers as an alternative to the hanger details on this sheet, or standard sheet ED(2)-14 may be used. Verify sufficient tension and shear capacity before proposed substitution. Submit hanger details and specifications to the Engineer for approval prior to using on project.
2. Refer to the contract plans for conduit design and hanger configuration requirements. For two (2) conduit configurations, use the typical underside hanger or roller hanger system.
3. Maximum spacing of intermediate conduit hangers is 5'-0" C-C.
4. Hangers vary in length, but do not allow conduit to hang below bridge beams. Refer to ITS(30) for minimum clearance requirement below bridge deck.
5. Ensure all conduit hanger steel shapes conform to ASTM A36 and expansion anchors conform to ASTM A307 and are supplied with minimum of one nut and washer per bolt. Galvanize all steel plate, shapes, and hardware per Item 445, "Galvanizing".
6. Use angle bracing on both sides of conduit support for conduit anchor point hangers.
7. Refer to ITS(32) for expansion-deflection joint details.
8. Provide a minimum of two (2) expansion joints at all bridges. Ensure expansion joint spacing does not exceed manufacturer recommendations.
9. Select conduit lengths so that couplings do not coincide with conduit hanger locations.
10. Allowable types of outer duct material for above ground ITS conduit include rigid metallic conduit (RMC) and fiberglass.
11. Refer to ITS(30) for anchor details through pre-stressed concrete panels.
12. Bond all external structure conduit throughout entire length of run and ground at ground box locations according to ITS(38).

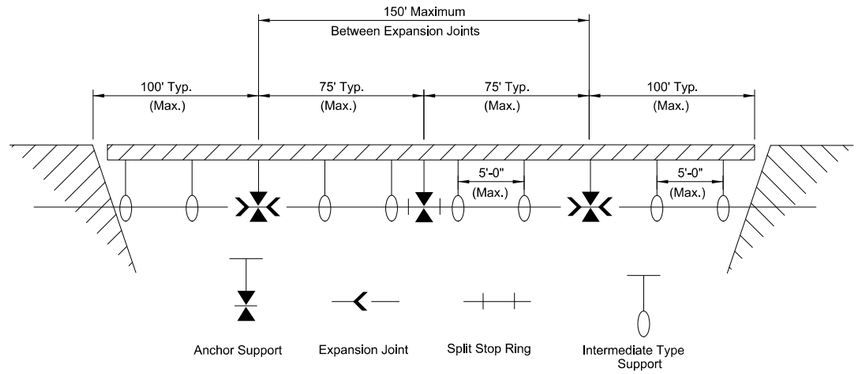


Note:
1. Hanger support shown is a typical configuration. Refer to General Note 1 on this sheet.
2. Anchor supports are required for all conduit hanger configurations.

Underside ITS Conduit
Anchor Hanger Support (Typ.)



Detail B
Brace Mounting Bracket Detail



Notes:
1. Install conduit supports within 3'-0" of all enclosures and conduit terminations.
2. The number of intermediate supports varies based upon the distance between anchor supports.

Underside Anchor Hanger Support Spacing (Typ.) *

* Refer To BICSI Outside Plant Design Reference Manual (OSPDRM) For Conduit Hanger Expansion Joint Placement

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Traffic Safety Division Standard

ITS CONDUIT HANGER DETAILS

ITS(29)-22

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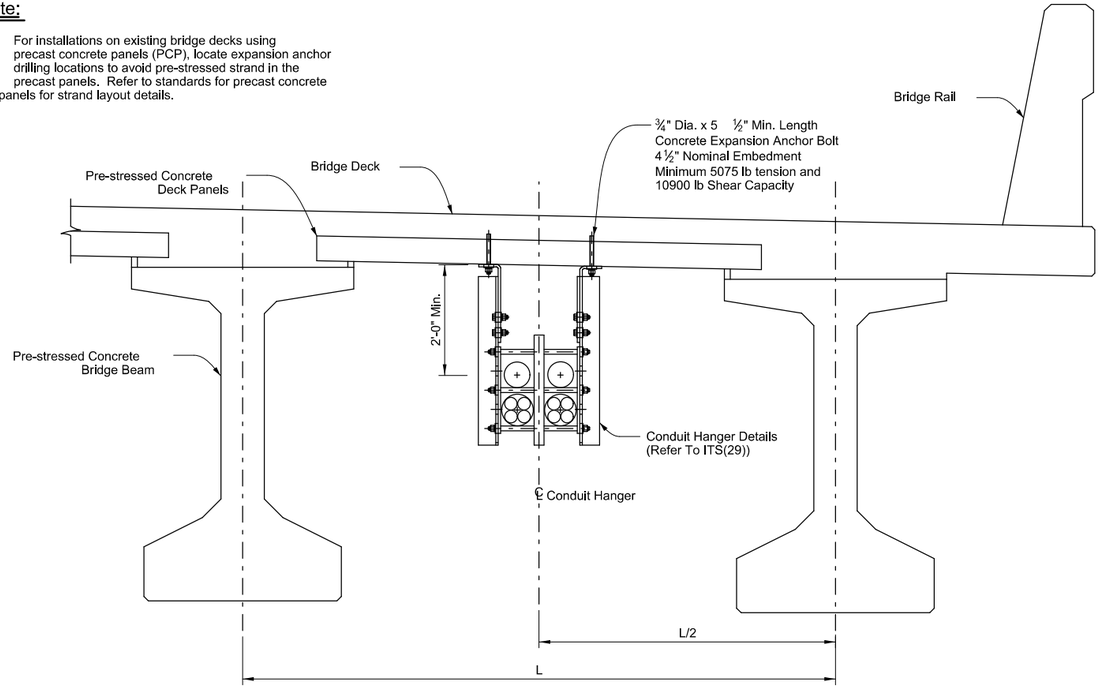
Note:

1. For installations on existing bridge decks using precast concrete panels (PCP), locate expansion anchor drilling locations to avoid pre-stressed strand in the precast panels. Refer to standards for precast concrete panels for strand layout details.

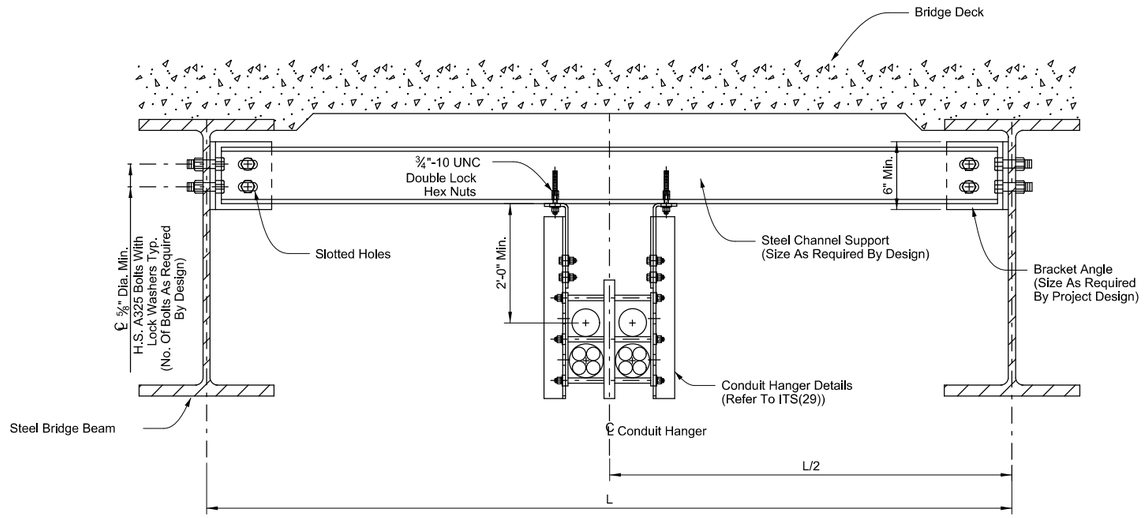


Structure Mounted ITS Conduit - Concrete Bridge Deck With Precast Panels

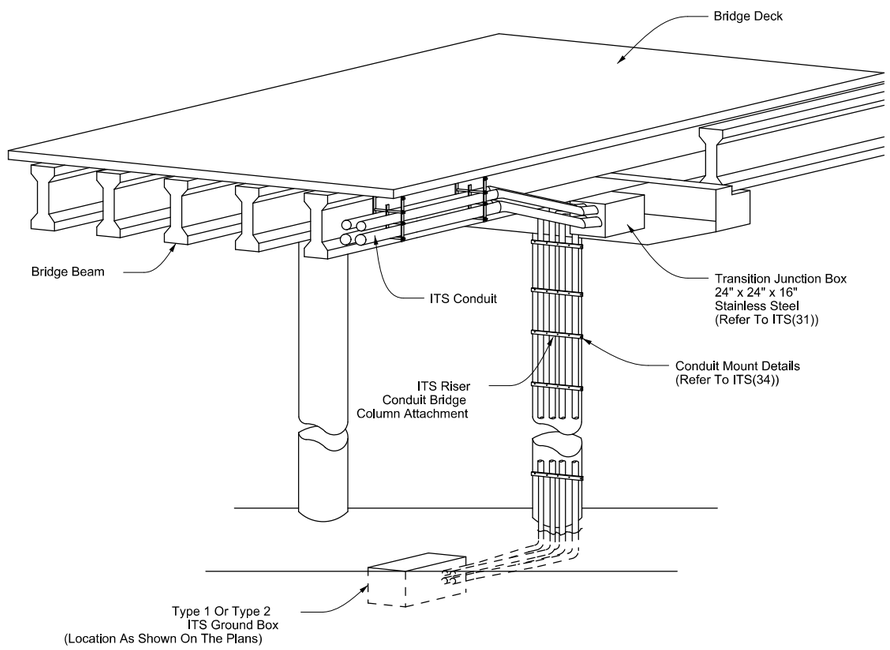
Refer To ITS(29) For General Notes

Note:

1. Position conduit hanger height to avoid conflicts with diaphragms in the conduit runs.



Typical Alternate Conduit Hanger Support (Steel I-Beam Mount)



Underside Conduit Hanger Transition Detail

General Notes:

1. The alternative mounting conduit hanger support mounting detail for steel I-Beam structures as shown is a suggested detail for steel structures. Submit details for the configuration shown on this sheet via shop drawings and include structural load analysis, support member and connection design. Seal all calculations and shop drawings by a Texas P.E.
2. Conduit hanger support mounting details for concrete bridge deck with precast panels as shown are a suggested method for pre-stressed concrete beam structures. Submit any deviation from these details via shop drawing and include structural load analysis, support member, and connection design. Seal all calculations and shop drawings by a Texas P.E.
3. Locate auxiliary conduit hanger supports for steel structures at a maximum 5'-0" spacing.
4. For conduit loads located between beams exceeding 5 lbs per ft, furnish structural load analysis calculations for adjacent beams in the shop drawing submission.
5. Submit design details for structure with cathodic protection in the shop drawing submission.
6. Do not extend conduit hangers below the bottom of the bridge beams (any exceptions at end spans are subject to approval).
7. Drilling in pre-stressed beams or field welding of steel beams is not permitted. Submit any exceptions on a case by case basis for evaluation and approval by the Engineer.
8. Ensure all conduit hanger assemblies are furnished and supplied by the conduit hanger manufacturer.
9. Galvanize all hardware and structural steel that is not stainless steel. Ensure all bolt hardware used to secure hangers to steel structures conforms to A325 for high strength. Ensure all expansion anchors conform to ASTM A307. Separate dissimilar materials for use of galvanized hardware with weathering steel girders.
10. Select conduit lengths so that couplings do no coincide with conduit hanger locations.
11. Refer to Special Specification, "ITS Multi-Duct Conduit" or Item 618 "Conduit", for details on conduit mandreling and other testing required upon conduit installation.
12. Provide a flat pull cord in each conduit and inner duct to allow for installation of future cables to match 1250 lbs-ft tension. Refer to ITS(27) for additional conduit details.
13. Provide a transition junction box for conduit access located outside the abutments for bridge spans < 800 ft. For bridge spans > 800 ft., locate an additional junction box for conduit access near the mid-span/pier.
14. Provide ITS conduit of the type and configuration shown on the plans in accordance with Special Specification, "ITS Multi-Duct Conduit" or Item 618 "Conduit". Ensure all other conduit is in accordance with Item 618 "Conduit" and as shown on the plans.
15. Bond all external structure mounted conduit throughout entire length of run and ground the run at ground box locations according to ITS(37) and ITS(39).

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STRUCTURE MOUNTED ITS CONDUIT

ITS(30)-16

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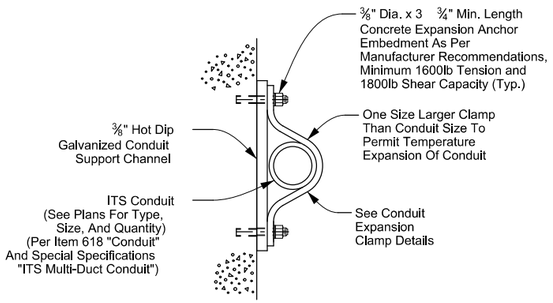
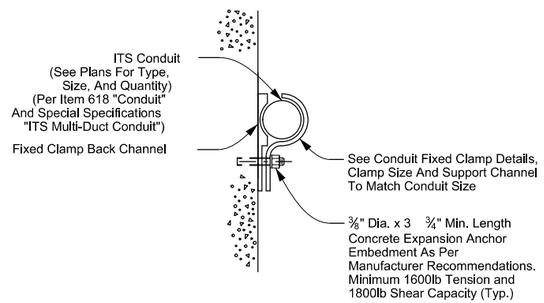
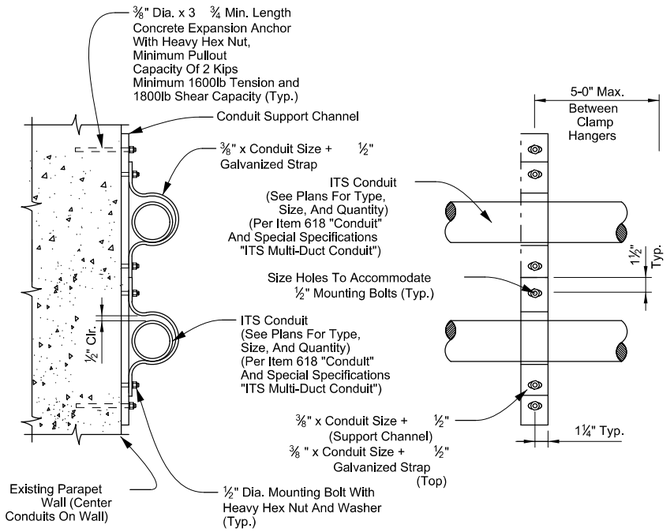


Conduit Expansion Clamp



Conduit Fixed Clamp

Conduit Clamp Details (Typ.)

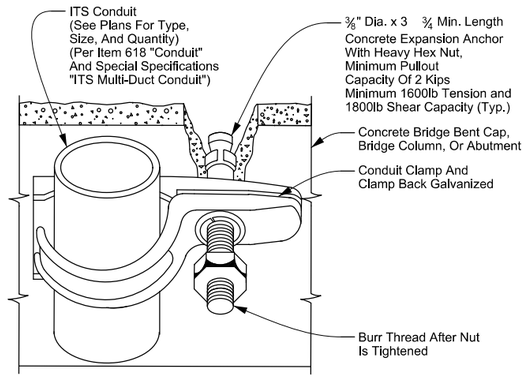


Side View

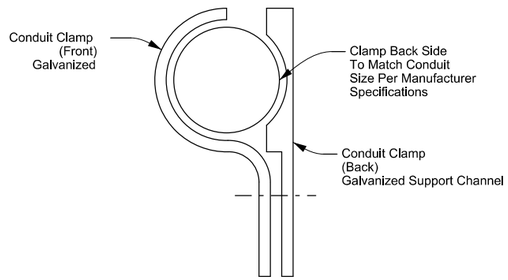
Top View

Elevation View

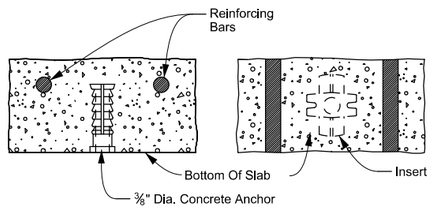
Conduit Expansion Clamp Details



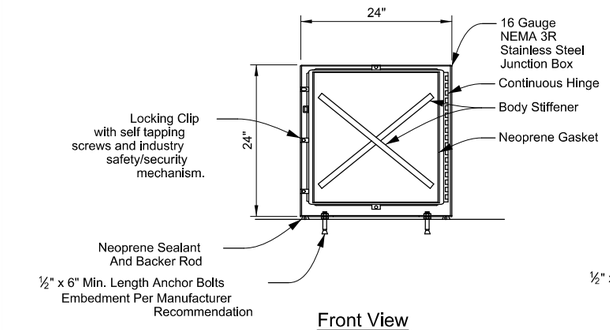
Conduit Fixed Clamp Back Channel



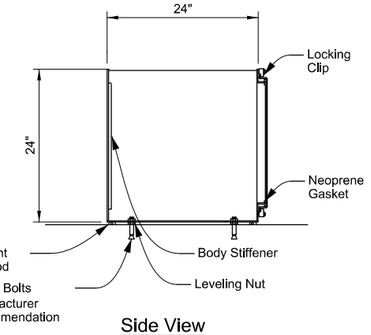
Conduit Fixed Clamp Details
Side View



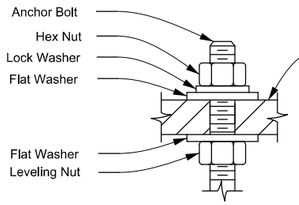
Conduit Fixed Clamp Concrete Insert Detail



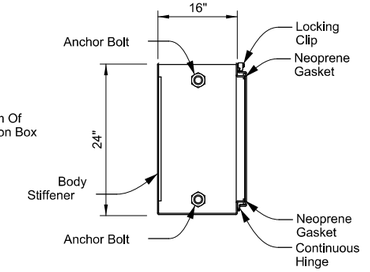
Front View



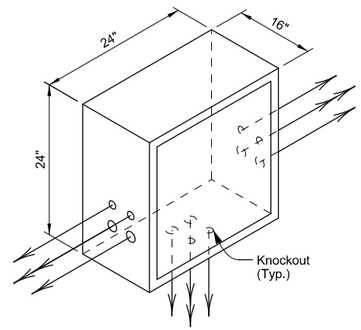
Side View



Anchor Bolt Detail
(May Vary On Mounting Scenario)



Top View



Isometric View

24" X 24" X 16" Stainless Steel Transition Junction Box Detail

Notes:
1. Transition box as depicted is top mount. Actual anchor fasteners and knockout location will vary based upon mount location and manufacturer recommendations.
2. Secure the transition box cover using self tapping screws with industry safety/security mechanism.
3. Typical knockout locations shown are for diagrammatic purposes only. The number of transition boxes required at a given location will vary depending on the number of conduits and cable storage requirements for cabling run(s).

General Notes:

1. Ensure all duct/conduit bends are in accordance with the latest version of the NFPA 70, National Electrical Code and as recommended by the manufacturer.
2. Utilize separate transition junction boxes for communications and electrical conduit runs.
3. Maintain constant slope in all duct/conduit runs.
4. Ensure maximum spacing of conduit clamps is 5'-0" C-C.
5. Galvanize all hardware, including anchor bolts, nuts, and washers per TxDOT Item 445, "Galvanizing". Ensure all expansion anchors conform to ASTM A307.
6. Provide a minimum NEMA 3R junction boxes. Construct all junction boxes in accordance with manufacturer specifications. Install junction boxes in accordance with the latest edition of NFPA 70, National Electrical Code.
7. Junction boxes and associated appurtenances are incidental to ITS conduit.
8. Install all conduit sweeps into junction boxes in accordance with allowable bend radius of the installed cable.
9. Install conduit support within 3'-0" of all enclosures and conduit terminations.
10. Refer to ED standard sheets for additional details on parapet mounted conduit.

Texas Department of Transportation — Traffic Operations Division Standard

PARAPET MOUNTED ITS CONDUIT AND TRANSITION BOX DETAIL

ITS(31)-16

FILE: its(31)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0254	07	008,ETC	US 281
	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1055V

1 ADD SHEET 5/21/2023

Sheet Details
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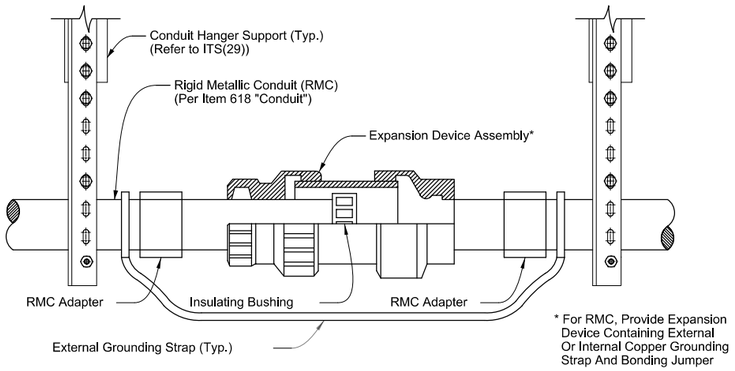
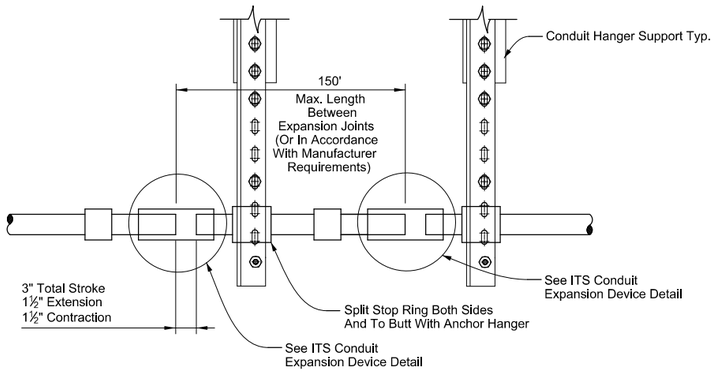
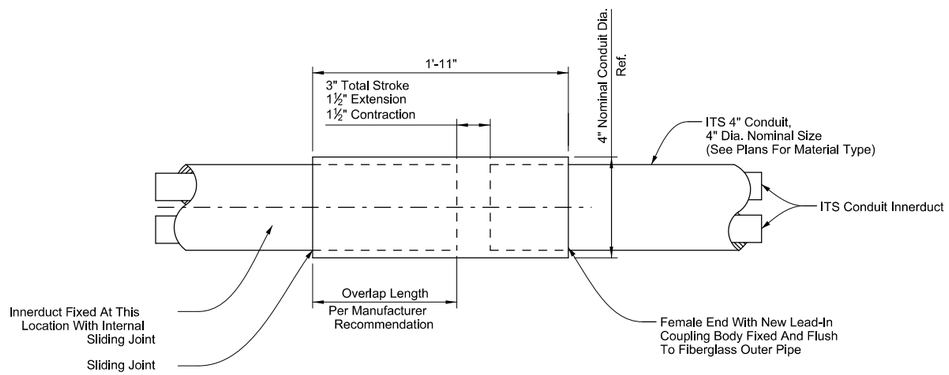


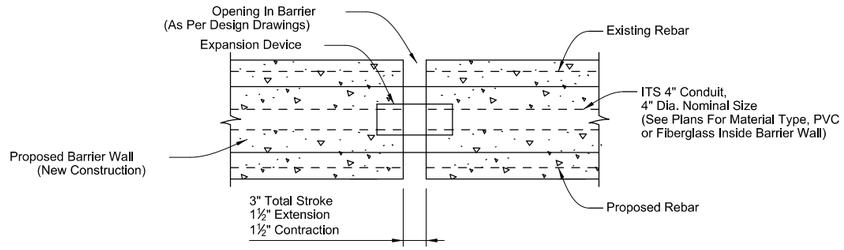
RMC Conduit Expansion Device Detail (Typ.)



ITS Conduit Expansion Device Placement (Typ.)



ITS Conduit Expansion Device Detail



ITS Conduit In New Construction Barrier Wall
Expansion And Deflection Joint Fitting (Typ.)

General Notes:

1. Install expansion device at all open joints, at each end of bridge abutments and between bridge bents, allowing for 3" movement.
2. Provide a minimum of two (2) expansion joints at all bridges. Ensure expansion joint spacing does not exceed manufacturer recommendations.
3. Ensure conduit lengths are selected so that couplings do not coincide with hanger locations.
4. Ensure all rigid metallic conduit (RMC) expansion devices are constructed per manufacturer specifications.
5. Bond all external structure mounted conduit throughout entire length of run and ground the run at ground box locations according to ITS(37) and ITS(39).

Texas Department of Transportation

Traffic Operations Division Standard

EXPANSION / DEFLECTION JOINT

ITS(32)-16

FILE: its(32)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0254	07	008,ETC	US 281
	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1055W

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Sheet Details
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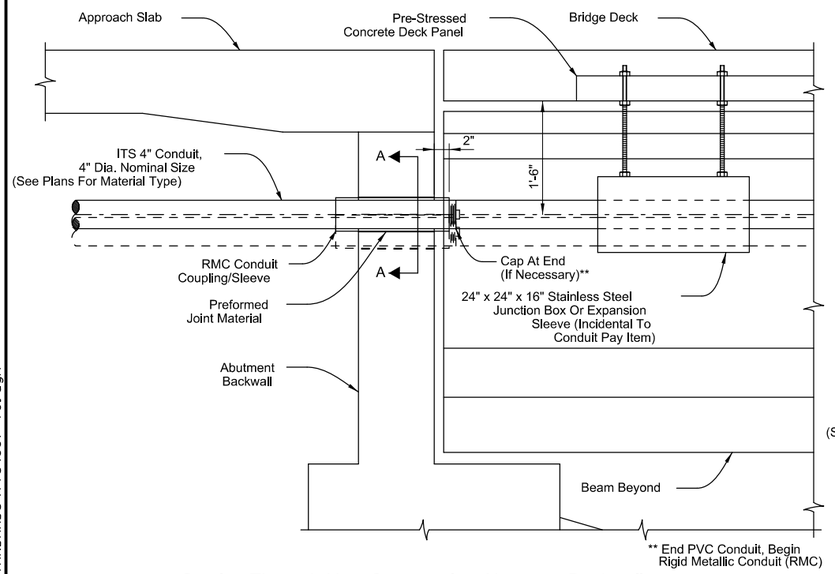
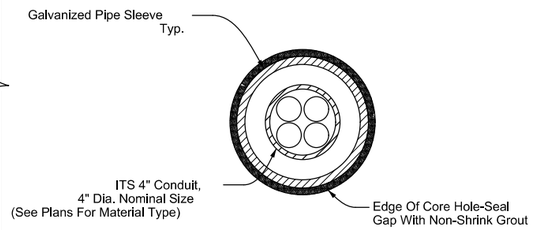


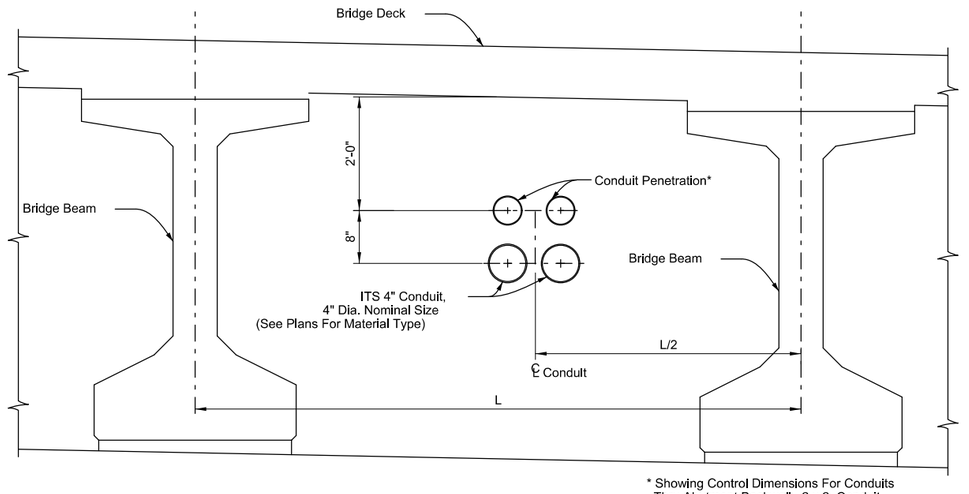
Section Through New Construction Abutment Backwall

Standard Notes:

1. If constant conduit elevation is maintained from the abutment backwall to the underside conduit hangers, provide an expansion joint sleeve (same size as conduit) with one travel overlap. If conduit elevation varies from the abutment backwall to the underside conduit hangers, provide an abutment wall mounted transition junction box (NEMA 3R rated).
2. Provide separate pipe sleeve for each conduit through abutment backwall. Size sleeve per manufacturer recommendations.



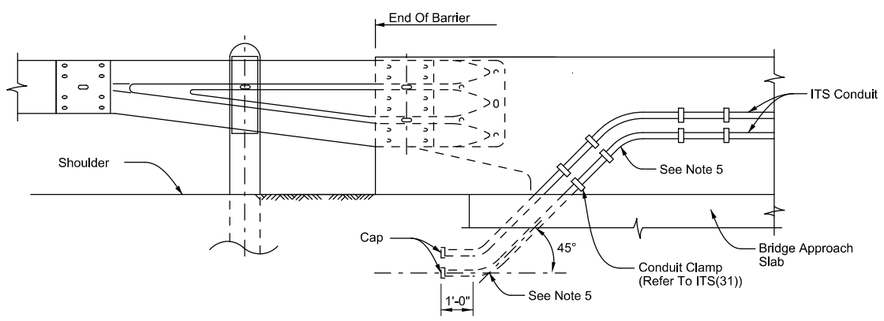
Section A-A (Typical Pipe Sleeve)



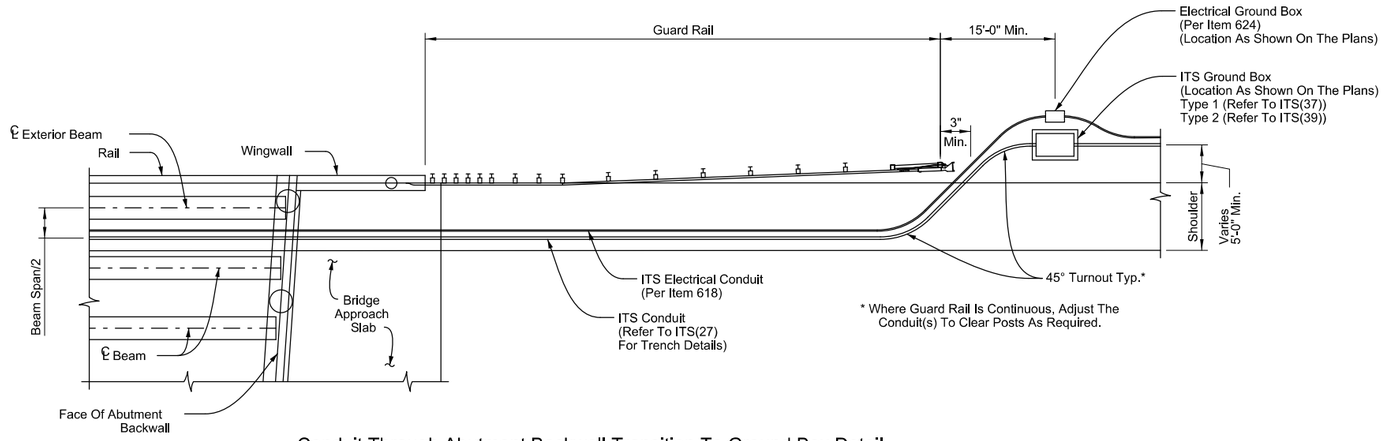
* Showing Control Dimensions For Conduits Thru Abutment Backwall. 2 x 2 Conduit Configuration Shown.

Abutment Elevation

ITS Conduit Transition At Bridge Abutment Detail



Parapet Mounted Conduit Transition To Ground Detail



* Where Guard Rail Is Continuous, Adjust The Conduit(s) To Clear Posts As Required.

Conduit Through Abutment Backwall Transition To Ground Box Detail

General Notes:

1. An alternative option to conduit mountings shown is conduit encased within parapet or bridge structure at crossings. Submit shop drawings and specifications to the engineer for approval.
2. Install expansion sleeves at bridge expansion joints and per manufacturer recommendations.
3. For conduit crossings over bridges, provide ITS communications junction boxes at 1000' maximum spacing and electrical junction boxes at 450' maximum spacing.
4. Keep all junction boxes sufficiently clear of guard rail or other obstructions to maintain clear access.
5. Install conduit sweep at an angle that accommodates cable bend radius. Do not exceed 45 degrees to the shoulder line. Refer to ITS(28) for conduit turn-out details.
6. Do not install junction boxes within paved shoulder area.
7. Ensure all work is in compliance with the latest edition of NFPA 70, National Electrical Code.
8. Junction boxes and associated appurtenances are incidental to ITS conduit.
9. For installation requiring ITS conduit transition within mechanically stabilized earth (MSE) walls with select fill, locate conduit to avoid reinforced straps. Refer to retaining wall standards for further details.
10. Bond all external structure mounted conduit throughout entire length of run and ground the run at ground box locations according to ITS(37) and ITS(39).

1 ADD SHEET 5/21/2023

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Texas Department of Transportation

Traffic Operations Division Standard

ITS CONDUIT TRANSITION AT ABUTMENT

ITS(33)-16

FILE: its(33)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0254	07	008,ETC	US 281
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	CRP	JIM WELLS		1055X

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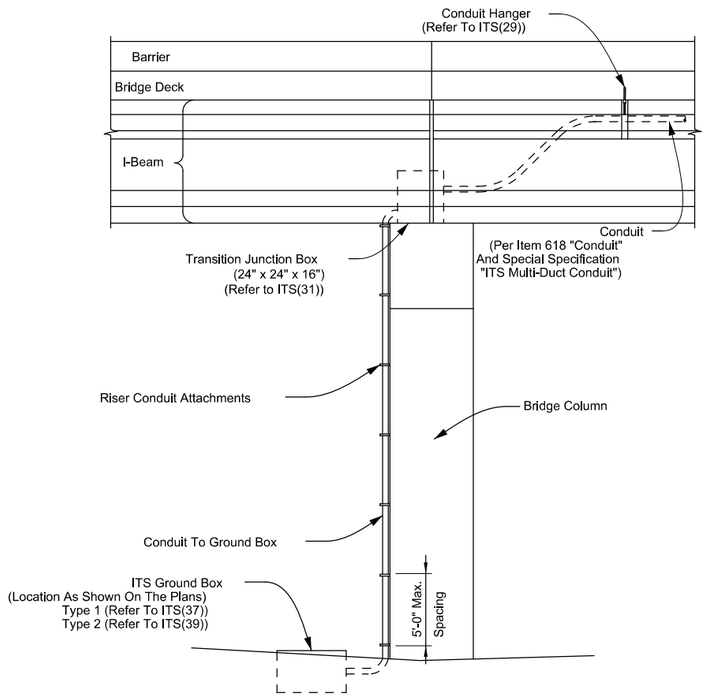
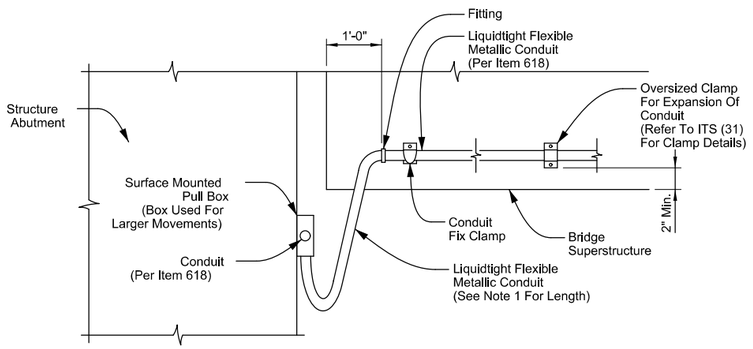


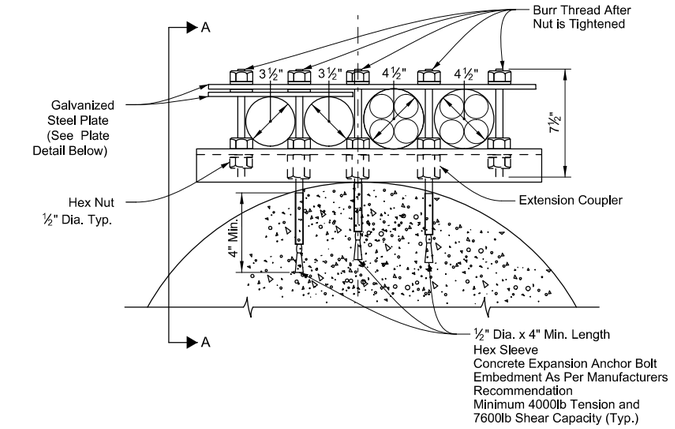
ITS Conduit Riser

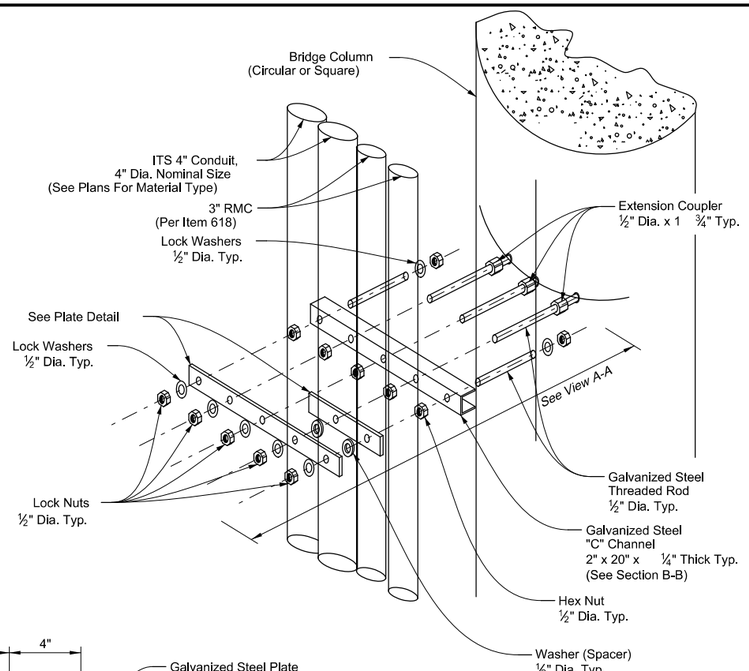


Exposed Conduit Connections At Expansion Joints

Notes:

1. Bond all external structure mounted conduit throughout entire length of run and ground the run at ground box locations according to ITS(37) and ITS(39).
2. The detail shown applies to conduit connections for conduit per Item 618 and is not intended for conduit for fiber optic cable applications.





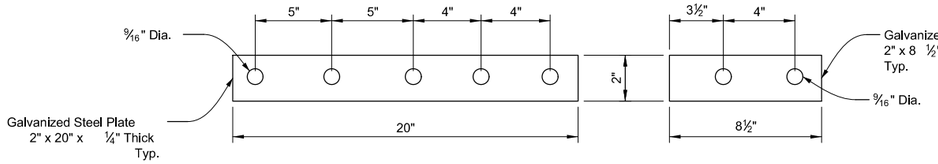
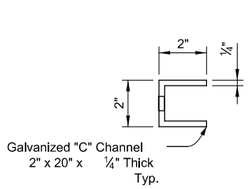
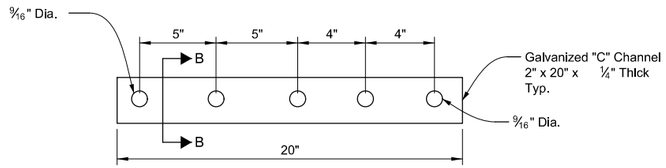


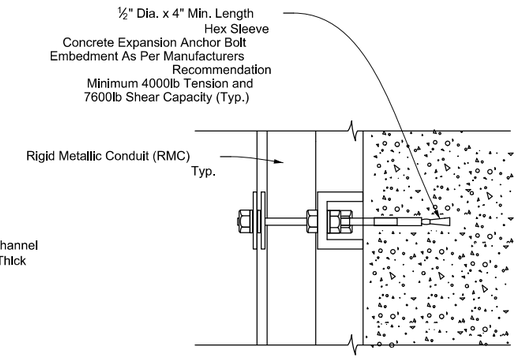
Plate Detail



Section B-B



"C" Channel Detail



View A-A

ITS Riser Conduit Bridge Column Attachment

General Notes:

1. Utilize an approximate length of flexible conduit at exposed connections of 2 times anticipated movement or 4'-0" minimum.
2. Size all transition boxes and surface mounted pull boxes per National Electrical Code Article 314 boxes and fittings.
3. For under bridge locations, ensure all junction boxes are kept inaccessible from general public and placed a minimum 10'-0" above surrounding ground.
4. Refer to ED standard sheets for additional notes and attachment details for riser conduit.
5. See plan sheets for number and size of conduit(s) to be installed.
6. Refer to ITS(33) for details involving conduit passing through the abutment.
7. Ensure maximum spacing between ITS riser conduit attachments is 5'-0" C-C.
8. Install conduit supports within 3'-0" of all enclosures and conduit terminations.
9. Ground all rigid metallic conduit (RMC) hangers per manufacturer recommendations when electrical conductors present.
10. Ensure all expansion anchors conform to ASTM A307.
11. Allowable types of outer duct material for above ground ITS conduit include rigid metallic conduit (RMC) and fiberglass.

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Sheet Details
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Texas Department of Transportation

Traffic Operations Division Standard

ITS CONDUIT RISER

ITS(34)-16

FILE: its(34)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0254	07	008,ETC	US 281
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	CRP	JIM WELLS		1055Y

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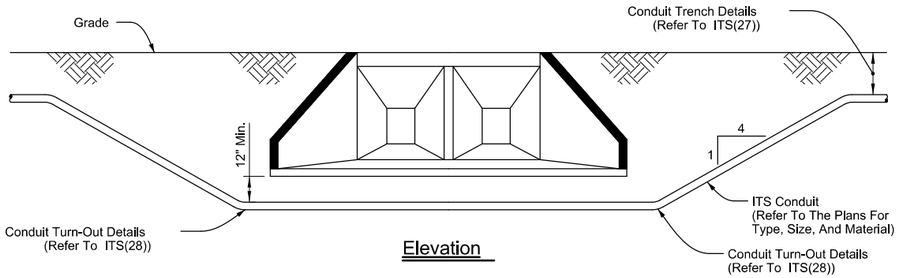
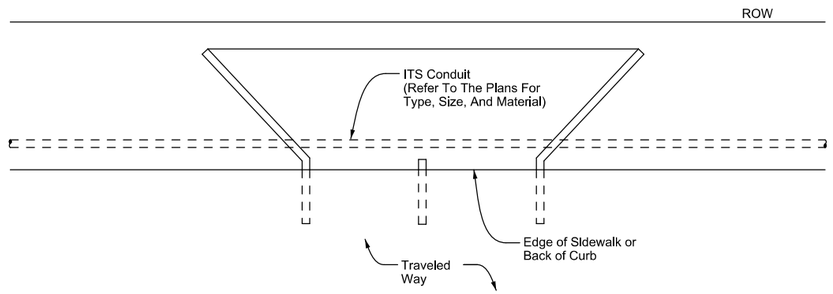
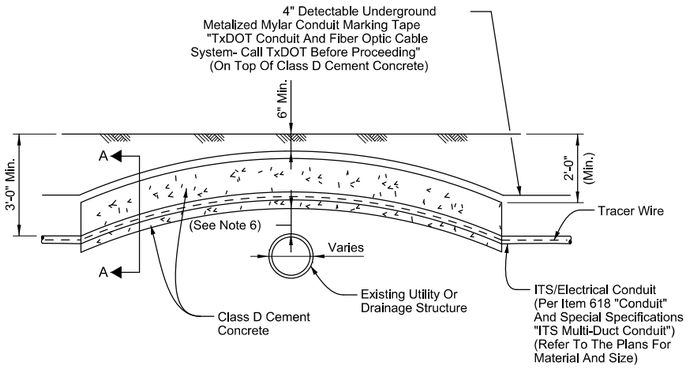


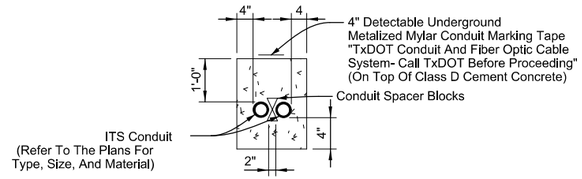
Elevation



Plan View

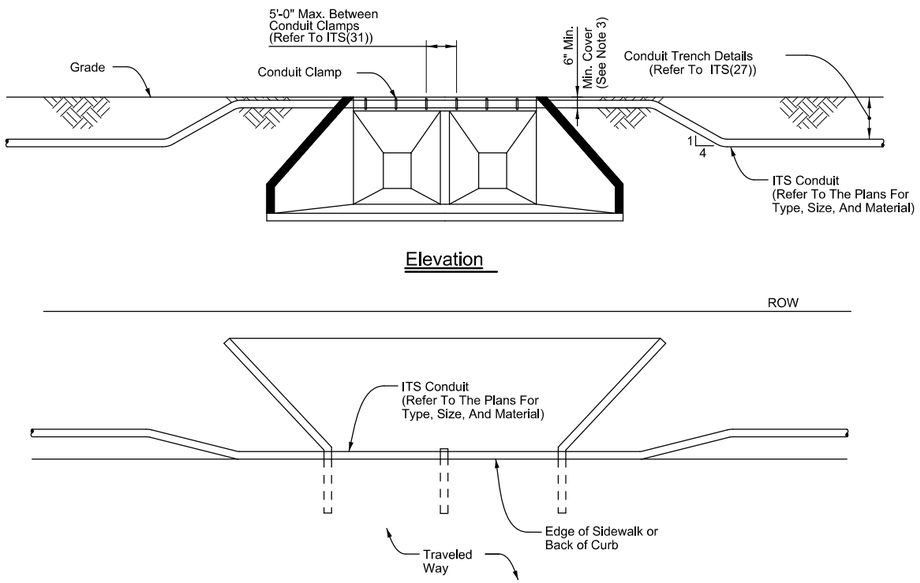
Conduit Bored Under Culvert





Section A-A

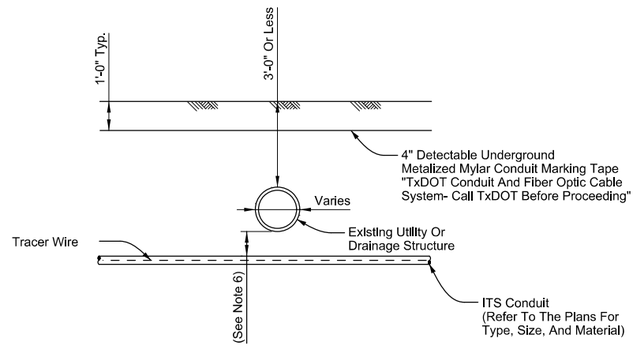
Conduit Installation Detail Above
Existing Drain Pipes Or Utilities



Elevation

Plan View

Conduit Attached To Culvert Headwall



Conduit Installation Detail Below
Existing Drain Pipes Or Utilities

General Notes:

1. With approval from the field engineer adjust the final burial depth of conduit(s) in circumstances requiring traversal of non-movable object conflicts.
2. Where conduits are to be installed over existing underground infrastructure (i.e., existing utility or drainage structure) which are less than 3'-0" deep, encase conduit in Class D cement concrete in accordance with Item 421, "Hydraulic Cement Concrete", for the entire length of the conduit that is installed at a depth of less than 3'-0".
3. If depth of cover over encasement is less than 6", install the conduit to pass beneath the underground infrastructure.
4. Refer to the plans for type, size and configuration of all conduits. Refer to ITS(27) and ITS(28) for further installation details.
5. It is the responsibility of the contractor to verify all existing underground infrastructure. The contractor is responsible for any damage to any underground infrastructure during construction. Verify all utility locations at least 100' in advance of trenches, plowing or boring, and make changes in conduit placement in the event of conflict.
6. If proposed conduit is crossing or in close proximity to an existing underground utility, maintain a minimum clearance of 1'-6" vertical, 1'-6" horizontal or a clearance dictated by municipal code and or utility owner.
7. Install underground warning tape directly above all conduits per ITS(27) standard.
8. Do not install communications and electric cables in the same conduit. Separate conduits installed within the same trench based on NFPA 70, National Electrical Code. Refer to ITS(27) for additional conduit installation details.
9. Ensure all work is in compliance with the latest edition of NFPA 70, National Electrical Code.
10. Utilize PVC conduit for all underground applications as required by design. Transition with a conduit coupling to RMC conduit or other as required by design that is approved for above ground applications.
11. Do not exceed a rise:run ratio of 1:4 for conduit sloped through increases or decreases in elevation.

ADD SHEET 5/21/2023

Texas Department of Transportation

Traffic Operations Division Standard

ITS CONDUIT OBSTRUCTION CROSSING

ITS(35)-16

FILE: its(35)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0254	07	008,ETC	US 281
	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1055Z

Sheet Details
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FILE: N:\Project\U2994\WA#02 U2994.200 US 281\500_PS&E\PlanSet01\ORD\4 - Design\

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

DOT #: 793981G
Crossing Type: ** At Grade
RR Company Owning Track at Crossing: Kansas City Southern Railway
Operating RR Company at Track: Kansas City Southern Railway
RR MP: 117.180
RR Subdivision: Laredo
City: Alice
County: Jim Wells
CSJ at this Crossing: 0254-07-008
Highway/Roadway name crossing the railroad: US 281 Southbound Frontage Road
# of regularly scheduled trains per day at this crossing: 15
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: 0.10%

DOT #: 793800A
Crossing Type: ** At Grade
RR Company Owning Track at Crossing: Texas Mexican Railway
Operating RR Company at Track: Kansas City Southern Railway
RR MP: 117.270
RR Subdivision: Laredo
City: Alice
County: Jim Wells
CSJ at this Crossing: 0254-07-008
Highway/Roadway name crossing the railroad: US 281 Northbound Frontage Road
# of regularly scheduled trains per day at this crossing: 16
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: 0.10%

Scope of Work at this Crossing to Be Performed by State Contractor:
The State's Contractor will be modifying pavement on the northbound frontage road 716 feet north of the railroad tracks. Pavement will be modified 455 feet north of the railroad tracks. Only traffic control will be implemented through railroad ROW. No TCP signs or channelizers will be within railroad ROW. RR flagging to be provided for the entire duration of TCP through UPRR ROW.

Scope of Work at this Crossing to Be Performed by Railroad Company:
None

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

Installation of traffic control channelizing devices

III. FLAGGING & INSPECTION

of Days of Railroad Flagging Expected: 1
On this project, night or weekend flagging is:
☐ Expected
☒ Not Expected

Flagging services will be provided by:
☐ Railroad Company: TxDOT will pay flagging invoices
☒ Outside Party: Contractor will pay flagging invoices, to be reimbursed by TxDOT

Contractor must incorporate flaggers into anticipated construction schedule. The Railroad requires a 30 day notice if their flaggers are to be utilized. If Contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact Information for Flagging:

☐ UPRR - UP.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
- UP.request@nrssinc.net
Call Center 877-984-6777

☐ BNSF - BNSF.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging

☒ KCS - KCS.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
- Bottom Line On-Track Safety Services
bottomline076@aol.com, 903-767-7630

☐ OTHERS

Contractor must incorporate Construction Inspection into anticipated construction schedule.

☒ Not Required

☐ Required: Contact Information for Construction Inspection:

IV. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

On this project, construction work to be performed by a railroad company is:
☐ Required
☒ Not Required

Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

V. RAILROAD INSURANCE REQUIREMENTS

Railroad reference number shall be provided by TxDOT CST or DO.

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.

Insurance policies must be issued for and on behalf of the Railroad. Where more than one Railroad Company is operating on the same right of way or where several Railroad Companies are involved and operate on their own separate rights of way, provide separate insurance policies in the name of each Railroad Company.

No direct compensation will be made to the Contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	$500,000 / $500,000 / $500,000
Commercial General Liability	$2,000,000 / $4,000,000
Business Automobile	$2,000,000 combined single limit

Railroad Protective Liability		
☐	Not Required	
☒	Non - Bridge Projects	$2,000,000 / $6,000,000
☐	Bridge Projects	$5,000,000 / $10,000,000
☐	Other	

VI. CONTRACTOR'S RIGHT OF ENTRY (ROE) AGREEMENT

On this project, an ROE agreement is:
☐ Not Required

☐ Required: TxDOT CST to assist in obtaining with the UPRR (see Item 5, Article 8.3)
☐ Required: UPRR Maintenance Consent Letter. TxDOT CST to assist.

☒ Required: Contractor to obtain (see Item 5, Article 8.4)
With the following railroad companies: Kansas City Southern Railroad

To view previously approved ROE Agreement templates agreed upon between the State and Railroad, see:

http://www.txdot.gov/inside-txdot/division/rail/samples.html

Approved ROE Agreement templates are not to be modified by the Contractor.

Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed ROE agreement between the Contractor and the Railroad if required on project.

VII. RAILROAD COORDINATION MEETING

On this project, a Railroad Coordination Meeting is:
☐ Not Required
☒ Required

See Item 5, Article 8.1 for more details.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are required to maintain the same insurance coverage as required of the Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
Call Kansas City Southern Railroad
Railroad Emergency Line at 800-527-9464
Location: DOT #793981G
RR Milepost 117.180
Subdivision Laredo

Location: DOT #793800A
RR Milepost 117.270
Subdivision Laredo

ADD SHEET 5/15/2023

SHEET 1 OF 2

Texas Department of Transportation
Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

FILE: RR Scope of Work.dgn	DN: TxDOT	CK:	DW:	CK:
© TxDOT June 2014	CONT 0254	SECT 07	JOB 008,ETC	HIGHWAY US 281
REVISIONS 9/2021	DIST CRP		COUNTY CRP	SHEET NO. 1099

DATE: 5/15/2023 10:12:30 AM
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I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

DOT #: 793982N
Crossing Type: ** RR Under
RR Company Owning Track at Crossing: Texas Mexican Railway
Operating RR Company at Track: Kansas City Southern Railway
RR MP: 117.220
RR Subdivision: Laredo
City: Alice
County: Jim Wells
CSJ at this Crossing: 0254-07-008
Highway/Roadway name crossing the railroad: US 281 Southbound Main Lanes
# of regularly scheduled trains per day at this crossing: 16
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: 0.10%

DOT #: 793980A
Crossing Type: ** RR Under
RR Company Owning Track at Crossing: Texas Mexican Railway
Operating RR Company at Track: Kansas City Southern Railway
RR MP: 117.430
RR Subdivision: Laredo
City: Alice
County: Jim Wells
CSJ at this Crossing: 0254-07-008
Highway/Roadway name crossing the railroad: US 281 Northbound Main Lanes
# of regularly scheduled trains per day at this crossing: --
# of switching movements per day at this crossing: --
% of estimated contract cost of work within railroad ROW: 0.10%

DOT #: 923783X
Crossing Type: ** RR Under
RR Company Owning Track at Crossing: Texas Mexican Railway
Operating RR Company at Track: Kansas City Southern Railway
RR MP: 117.220
RR Subdivision: Laredo
City: Alice
County: Jim Wells
CSJ at this Crossing: 0254-07-008
Highway/Roadway name crossing the railroad: US 281 Main Lanes
# of regularly scheduled trains per day at this crossing: --
# of switching movements per day at this crossing: --
% of estimated contract cost of work within railroad ROW: 0.10%

Scope of Work at this Crossing to Be Performed by State Contractor:
The State's Contractor will be replacing signs approximately 900 feet north of the railroad tracks on the roadway that runs over the tracks. Only traffic control will be implemented on the roadway that runs overhead above the railroad tracks through railroad ROW; however, no TCP signs or channelizers will be within UPRR ROW. RR flagging to be provided for the entire duration of TCP through UPRR ROW.

Scope of Work at this Crossing to Be Performed by Railroad Company:
None

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

Installation of traffic control channelizing devices

III. FLAGGING & INSPECTION

of Days of Railroad Flagging Expected: 1

On this project, night or weekend flagging is:

☐ Expected
☒ Not Expected

Flagging services will be provided by:

☐ Railroad Company: TxDOT will pay flagging invoices
☒ Outside Party: Contractor will pay flagging invoices, to be reimbursed by TxDOT

Contractor must incorporate flaggers into anticipated construction schedule. The Railroad requires a 30 day notice if their flaggers are to be utilized. If Contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact Information for Flagging:

☒ UPRR - UP.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
- UP.request@nrssinc.net
Call Center 877-984-6777

☐ BNSF - BNSF.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging

☐ KCS - KCS.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
- Bottom Line On-Track Safety Services
bottomline076@aol.com, 903-767-7630

☐ OTHERS

Contractor must incorporate Construction Inspection into anticipated construction schedule.

☒ Not Required

☐ Required: Contact Information for Construction Inspection:

IV. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

On this project, construction work to be performed by a railroad company is:

☐ Required
☒ Not Required

Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

V. RAILROAD INSURANCE REQUIREMENTS

Railroad reference number shall be provided by TxDOT CST or DO.

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.

Insurance policies must be issued for and on behalf of the Railroad. Where more than one Railroad Company is operating on the same right of way or where several Railroad Companies are involved and operate on their own separate rights of way, provide separate insurance policies in the name of each Railroad Company.

No direct compensation will be made to the Contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	$500,000 / $500,000 / $500,000
Commercial General Liability	$2,000,000 / $4,000,000
Business Automobile	$2,000,000 combined single limit

Railroad Protective Liability		
☐	Not Required	
☒	Non - Bridge Projects	$2,000,000 / $6,000,000
☐	Bridge Projects	$5,000,000 / $10,000,000
☐	Other	

VI. CONTRACTOR'S RIGHT OF ENTRY (ROE) AGREEMENT

On this project, an ROE agreement is:

☐ Not Required

☐ Required: TxDOT CST to assist in obtaining with the UPRR (see Item 5, Article 8.3)

☐ Required: UPRR Maintenance Consent Letter. TxDOT CST to assist.

☒ Required: Contractor to obtain (see Item 5, Article 8.4)
With the following railroad companies: Kansas City Southern Railroad

To view previously approved ROE Agreement templates agreed upon between the State and Railroad, see:

http://www.txdot.gov/inside-txdot/division/rail/samples.html

Approved ROE Agreement templates are not to be modified by the Contractor.

Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed ROE agreement between the Contractor and the Railroad if required on project.

VII. RAILROAD COORDINATION MEETING

On this project, a Railroad Coordination Meeting is:

☐ Not Required
☒ Required

See Item 5, Article 8.1 for more details.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are required to maintain the same insurance coverage as required of the Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
Call Kansas City Southern Railroad
Railroad Emergency Line at 877-527-9464
Location: DOT #793982N
RR Milepost 117.220
Subdivision Laredo

Location: DOT #793980A
RR Milepost 117.430
Subdivision Laredo

Location: DOT #923783X
RR Milepost 117.220
Subdivision Laredo

Texas Department of Transportation — Rail Division

RAILROAD SCOPE OF WORK

PROJECT SPECIFIC DETAILS

FILE: RR Scope of Work.dgn	DN: TxDOT	CK:	DW:	CK:
© TxDOT June 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS 9/2021	0254	07	008, ETC	US 281
	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1100

⚠ ADD SHEET 5/15/2023

PART 1 - GENERAL

1.01 DESCRIPTION

This project includes construction work within the right of way and/or properties of the Railroad and adjacent to its tracks, wire lines and other facilities. These sheets describe the minimum special requirements for coordination with the Railroad when working upon, over or under Railroad Right of Way or when impacting current or future Railroad operations. Coordinate with the Railroad while performing the work outlined herein, and afford the same cooperation with the Railroad as with TxDOT. Complete all submittals and work in accordance with TxDOT Standard Specifications, Railroad Guidelines and AREMA recommendations as modified by these minimum special requirements or as directed in writing by the Railroad Designated Representative.

For purposes of this project, the Railroad Designated Representative is the person or persons designated by the Railroad Manager of Industry and Public Projects to handle specific tasks related to the project.

1.02 REQUEST FOR INFORMATION / CLARIFICATION

Submit Requests for Information ("RFI") involving work within any Railroad Right of Way to the TxDOT Engineer. The TxDOT Engineer will submit the RFI to the Railroad Designated Representative for review and approval for RFI's corresponding to work within Railroad Right of Way. Allow six (6) weeks total time for review and approval, which includes four (4) weeks for review and approval by the Railroad.

1.03 PLANS / SPECIFICATIONS

TxDOT has received written Railroad approval of the plans and specifications for this project. Any revisions or changes in the plans after award of the Contract must have the approval of TxDOT and the Railroad.

PART 2 - UTILITIES AND FIBER OPTIC

Construct all utility installations in accordance with current AREMA recommendations, Railroad, TxDOT and owning utility specifications and requirements. Railroad general guidelines can be found on the Railroad website or by contacting the Railroad Designated Representative.

PART 3 - CONSTRUCTION

3.01 GENERAL

A. Perform all work in compliance with all applicable Railroad, Federal Railroad Administration (FRA), and TxDOT rules and regulations. Arrange and conduct work in a manner that does not endanger or interfere with the safe operation of the tracks and property of the Railroad and the traffic moving on such tracks, or the wires, signals and other property of the Railroad, its tenants or licensees, at or in the vicinity of the Work. The safe operation of railroad train movements takes precedence over any work to be performed by the Contractor. The Contractor is responsible for train delay cost and lost revenue claims due to any delays or interruption of train operations resulting from Contractor's construction or other activities.

B. Construction activities within 15 feet of the operational tracks will only be allowed if absolutely necessary and the Railroad's Designated Representative grants approval. Construction activities within 15 feet of the operational track(s) preferably allow the tracks to stay operational. In such cases, coordination and approval by the Railroad Track Manager is required with regard to schedule, flagging, and slow orders. See Sections 3.07 and 3.08 for additional information.

C. Provide track protection for all work equipment (including rubber tired equipment) operating within 25 feet from nearest rail. When not in use, keep Contractor machinery and materials at least 50 feet from the Railroad's nearest track.

D. Vehicular crossings of railroad track are allowed only at existing crossings, or haul road crossings developed with Railroad approval.

E. The Contractor is also advised that new railroad facilities within the project may be built by the Railroad. If applicable, these facilities are delineated in the plans. Be aware of the limits of responsibilities and coordinate efforts with the Railroad and TxDOT.

F. Railroad requirements do not allow work within 50 feet of track centers when a train passes the work site and all personnel must clear the area within 50 feet of the track centerline and secure all equipment. Additional allowances may be pursued as outlined in 3.02 and 3.03.

G. All permanent clearances shall be verified before project closing.

3.02 RAILROAD OPERATIONS

A. Trains and/or equipment are expected on any track, at any time, in either direction. Become familiar with the train schedules in this location and structure bid assuming intermittent track windows in this period, as defined in Paragraph B that follows.

B. All railroad tracks within and adjacent to the contract site are active, and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. Coordinate and schedule the work so that construction activities do not interfere with railroad operations.

C. Coordinate work windows with TxDOT and the Railroad's Designated Representative. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:

1. Conditional Work Window: A Conditional Work Window is a period of time that railroad operations have priority over construction activities. When construction activities may occur on and/or adjacent to the railroad tracks within 25 feet of the nearest track, a railroad flag person will be required. At the direction of the railroad flag person, upon approach of a train, and when trains are present on the tracks, the tracks must be cleared (i.e., no construction equipment, materials or personnel within 25 feet, or as directed by the Railroad Designated Representative, from the tracks). Conditional Work Windows are available for the Project.

2. Absolute Work Window: An Absolute Work Window is a period of time that construction activities are given priority over railroad operations. During this time frame, the designated railroad track(s) will be inactive for train movements and may be fouled by the Contractor. At the end of an Absolute Work Window, the railroad tracks and/or signals must be completely operational for train operations and all Railroad, Public Utilities Commission (PUC) and FRA requirements, codes and regulations for operational tracks must be satisfied. In the situation where the operating tracks and/or signals have been affected, the Railroad will perform inspections of the work prior to placing that track back into service. Railroad flag persons will be required for construction activities requiring an Absolute Work Window. Absolute Work Windows will not generally be granted. Any request will require a detailed explanation for Railroad review.

3.03 RIGHT OF ENTRY, ADVANCE NOTICE AND WORK STOPPAGES

A. Do not perform any work within Railroad Right of Way without a valid executed Right of Entry Agreement if required on this project.

B. Give advance notice to the Railroad as required in the "Contractor's Right of Entry Agreement" before commencing work in connection with construction upon or over Railroad Right of Way and observe the Railroad's rules and regulations with respect thereto.

C. Perform all work upon Railroad Right of Way in a manner to avoid interference with or endanger the operations of the Railroad. Whenever work may affect the operations or safety of trains, submit the work method to the Railroad Designated Representative for approval. Approval does not relieve the Contractor from liability. Do not commence any work which requires flagging service or inspection service until the flagging protection required by the Railroad is available at the job site. See Section 3.15 for railroad flagging requirements.

D. Make requests in writing for both Absolute and Conditional Work Windows, at least 30 days in advance of any work. Include in the written request:
1. Exactly what the work entails.
2. The days and hours that work will be performed.
3. The exact location of work, and proximity to the tracks.
4. The type of window requested and the amount of time requested.
5. The designated contact person.

Provide a written confirmation notice to the Railroad at least 48 hours before commencing work in connection with approved work windows when work is within 25 feet of nearest rail. Perform all work in accordance with previously approved work plans.

E. Make provisions to protect operations and property of the Railroad should a condition arising from, or in connection with the work, require immediate and unusual action. If in the judgment of the Railroad Designated Representative such provisions are insufficient, the Railroad Designated Representative may require or provide such provisions as deemed necessary. In any event, such provisions shall be at the Contractor's expense and without cost to the Railroad or TxDOT. The Railroad or TxDOT shall have the right to order the Contractor to temporarily cease operations in the event of an emergency or, if in the opinion of the Railroad Designated Representative, the Contractor's operations could endanger railroad operations. In the event of such an order, immediately notify TxDOT of the order.

3.04 INSURANCE

Do not begin work upon or over Railroad Right of Way until furnishing the Railroad with the insurance policies, binders, certificates and endorsements required by the "Contractor's Right of Entry Agreement", and until the Railroad Designated Representative has advised TxDOT that such insurance is in accordance with the Agreement.

3.05 RAILROAD SAFETY ORIENTATION

A. Complete the railroad course "Orientation for Contractor's Safety", and maintain current registration prior to working on railroad property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

"UPRR, BNSF, KCS/TEXMEX will not accept on-track safety training certificates from other railroads. Refer to Railroad specific contractor right of entry for training information."

B. Know and follow the "Contractor's Right of Entry Agreement" EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

3.06 COOPERATION

The Railroad will cooperate with Contractor so that work may be conducted in an efficient manner, and will cooperate with Contractor in enabling use of Railroad Right of Way in performing the work.

3.07 MINIMUM CONSTRUCTION CLEARANCES FOR FALSEWORK AND OTHER TEMPORARY STRUCTURES

Abide by the following minimum temporary clearances during the course of construction:
A. 15' - 0" (BNSF)(UPRR)and 14'-0" (KCS) horizontal from centerline of track
B. 22' (KCS) and 21' - 6" (UPRR & BNSF) vertically above top of rail.

For construction clearance less than listed above, obtain local Railroad Operating Unit review and approval.

3.08 APPROVAL OF REDUCED CLEARANCES

A. Maintain minimum track clearances during construction as specified in Section 3.07.

B. Submit any proposed infringement on the specified minimum clearances to the Railroad Designated Representative through TxDOT at least 30 days in advance of the work. Do not proceed with such infringement without written approval by the Railroad Designated Representative.

C. Do not commence work involving an approved infringement without receiving written assurance from the Railroad Designated Representative that arrangements have been made for any necessary flagging service.

ADD SHEET 5/15/2023

SHEET 1 OF 2

Texas Department of Transportation | Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS March 2020	0254	07	008, ETC	US 281
	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1101

3.09 MAINTENANCE OF RAILROAD FACILITIES

A. Maintain all ditches and drainage structures free of silt or other obstructions resulting from Contractor's operations. Repair eroded areas and any other damage within Railroad Right of Way and repair any other damage to the property of the Railroad, or its tenants.

B. Perform all such maintenance and repair of damages due to the Contractors's operations at Contractor's expense.

C. Submit a proposed method of erosion control for review by the Railroad prior to beginning any grading on the project site. Comply with all applicable local, state and federal regulations when developing and implementing such erosion control.

3.10 SITE INSPECTIONS BY RAILROAD's DESIGNATED REPRESENTATIVE

A. In addition to the office reviews of construction submittals, site inspections may be performed by the Railroad Designated Representative at significant points during construction, including the following if applicable:
   1. Pre-construction meetings.
   2. Pile driving/drilling of caissons or drilled shafts.
   3. Reinforcement and concrete placement for railroad bridge substructure and/or superstructure.
   4. Erection of precast concrete or steel bridge superstructure.
   5. Placement of waterproofing (prior to placing ballast on bridge deck).
   6. Completion of the bridge structure.

B. Site inspection is not limited to the milestone events listed above. Site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by the Railroad.

C. Provide a detailed construction schedule, including the proposed temporary horizontal and vertical clearances and construction sequence for all work to TxDOT for submittal to the Railroad Designated Representative for review prior to commencement of work. Include the anticipated dates when the above listed events will occur. Update this schedule for the above listed events as necessary and each month at a minimum to allow the Railroad to schedule site inspections.

3.11 RAILROAD REPRESENTATIVES

Railroad representatives, conductors, flag person or watch person will be provided by the Railroad at expense of TxDOT to protect Railroad facilities, property and movements of its trains or engines. In general, the Railroad will furnish such personnel or other protective services as follows:

A. When any part of any equipment is standing or being operated within 25 feet, measured horizontally, from nearest rail of any track on which trains may operate, or when any object is off the ground and any dimension thereof could extend inside the 25 foot limit, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.

B. For any excavation below elevation of track subgrade if, in the opinion of the Railroad Designated Representative, track or other railroad facilities may be subject to settlement or movement.

C. During any clearing, grubbing, excavation or grading in proximity to railroad facilities, which, in the opinion of the Railroad Designated Representative, may endanger railroad facilities or operations.

D. During any Contractor's operations when, in the opinion of the Railroad Designated Representative, railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines, or pipe lines, may be endangered.

E. Arrange with the Railroad Designated Representative to provide the adequate number of flag persons to accomplish the work.

3.12 COMMUNICATIONS AND SIGNAL LINES

If required, the Railroad will rearrange its communications and signal lines, its grade crossing warning devices, train signals and tracks, and facilities that are in use and maintained by the Railroad's forces in connection with its operation at expense of TxDOT. This work by the Railroad will be done by its own forces and it is not a part of the Work under this Contract.

3.13 TRAFFIC CONTROL

Coordinate any operations that control traffic across or around railroad facilities with the Railroad Designated Representative.

3.14 CONSTRUCTION EXCAVATIONS AND BORING ACTIVITIES UNDER TRACK

A. Take special precaution and care in connection with excavating and shoring. Excavations for construction of footings, piers, columns, walls or other facilities that require shoring shall comply with requirements of TxDOT, OSHA, AREMA and Railroad "Guidelines for Temporary Shoring".

B. The project plans indicate whether there are fiber optic lines or other such telecommunications systems that require consideration. Regardless, contact the necessary call center to determine if such cable systems are present:

   UPRR 1-800-336-9193
   7:00 AM to 9:00 PM CST Monday-Friday except holidays,
   staffed 24 hrs/day for emergencies
   48 hrs notice required

   BNSF 1-800-533-2891
   24 hour number
   5 working days notice required

   KCS 1-800-344-8377
   Texas One Call, a 24 hour number
   48 hrs notice required, excluding weekends and holidays

   If a telecommunications system is buried anywhere on or near railroad property, coordinate with TxDOT, the Railroad and the Telecommunication Company(ies) to arrange for relocation or protective measures prior to beginning work on or near railroad property. Refer to the project General Notes for additional information.

C. Projects involving a boring or jack and bore operation under track such as drainage pipes or culverts and utilities require an installation plan reviewed and approved by the Railroad and TxDOT prior to proceeding with such construction. A railroad inspector and contractor assisted monitoring of ground and track movement is required to maintain safe passage of rail traffic. Stop installation and do not allow passage of trains if movements in excess of 1/4 inch vertical or horizontal is detected in the tracks. Immediately repair the damage to the satisfaction of TxDOT and the Railroad before proceeding.

3.15 RAILROAD FLAGGING

Per the Right of Entry Agreement for flagging, notify the Railroad Representative at least 10 working days in advance of Contractor's work and at least 30 working days in advance of any Contractor's work in which any person or equipment will be within 25 feet of nearest rail or as specified in the Contractor Right of Entry (CROE).

3.16 CLEANING OF RIGHT-OF-WAY

When work is complete, remove all tools, implements, and other materials brought into Railroad Right of Way and leave the right of Way in a clean and presentable condition to the satisfaction of TxDOT and the Railroad.

Texas Department of Transportation | Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

ADD SHEET 5/15/2023

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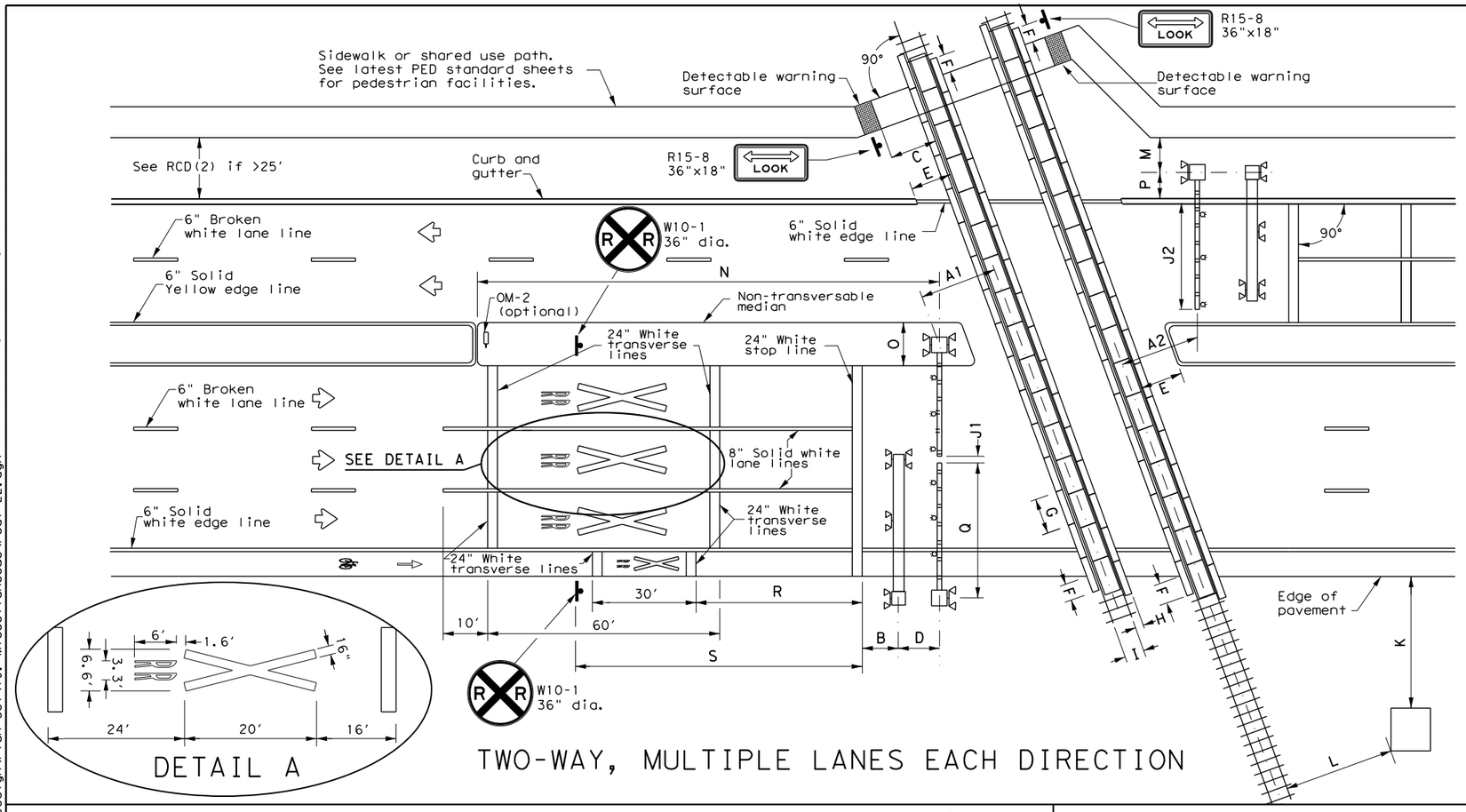
REVISIONS March 2020	0254	07	008, ETC	US 281
	DIST	COUNTY		SHEET NO.
	CRP	JIM WELLS		1102



DETAIL A

TWO-WAY, MULTIPLE LANES EACH DIRECTION

NOTES

A1: Center of RR mast to center of rail: 12' minimum, 15' typical.

A2: Tip of gate to center of rail: 12' minimum, 15' typical.

B: Center of mast (cantilever, gate, or mast flasher) of nearest active traffic control device to stop line: 8' (NOTE: Stop line may be moved as needed, but should be at least 8' back from gates, if present).

C: Near edge of detectable warning surface to nearest rail: 12' minimum.

D: Center of gate mast to center of cantilever mast: 6' typical. NOTE: Cantilever may be located in front or behind gates.

E: Edge of median or curb to nearest rail: 10' typical. NOTE: Design median edge to be parallel with rail.

F: Edge of planking panel from edge of pavement or sidewalk: 3' minimum. NOTE: Field panels need not be in line with gauge panels.

G: Length of panels along rail: 8' typical.

H: Width of field panel: 2' typical (check with railroad company).

I: Distance between rails: 4'- 8'1/2".

J1: Tip of gate to tip of gate: 2' maximum.

J2: 90% of traveled roadway to be covered by gate.

K: Nearest edge of RR cabinet from edge of pavement: 30' typical. NOTE: Cabinet not required to be parallel to edge of pavement.

L: Nearest edge of RR cabinet from nearest rail: 25' typical.

M: Center of RR mast to edge of sidewalk: 6' minimum.

N: Center of gate mast to leading edge of non-traversable median: 100' minimum to qualify as a Quiet Zone SSM. NOTE: 60'will suffice if there is a street intersection within the 100' and all street intersections within 60' are closed.

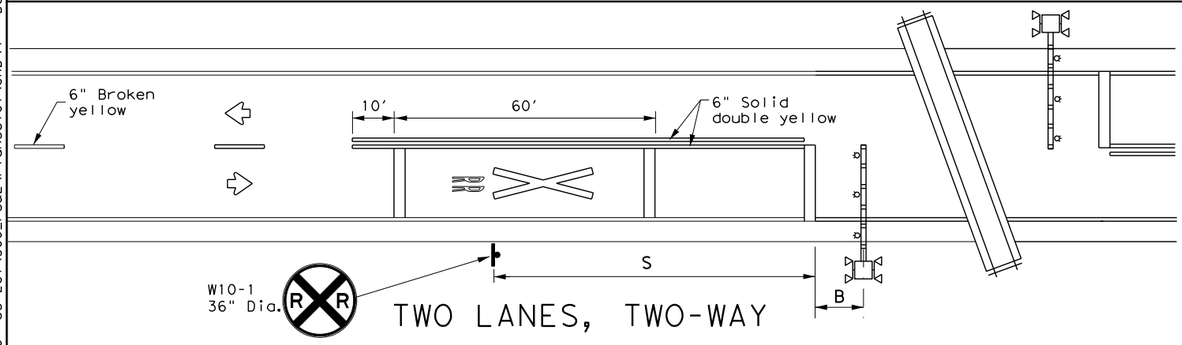
O: Width of median for RR gate assembly: 8'-6" minimum, 10' typical when using median gates. NOTE: Center of gate mast minimum 4'-3" from face of curb.

P: Center of RR mast to face of curb: 5'-3" minimum.
Center of RR mast to edge of pavement (with shoulder): 7' minimum.
Center of RR mast to edge of pavement (no shoulder): 9'-3" minimum.
NOTE: Final location determined by the railroad company.

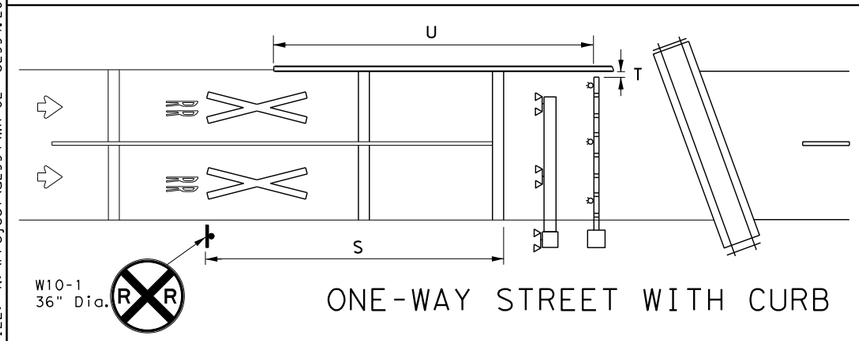
Q: Gate length: 28' or less typical, but railroad company may allow up to 32' under special circumstances.

R: Stop line to first RR Crossing transverse line (bike lane): 50' typical.

S: Stop line to GRADE CROSSING ADVANCE WARNING (W10-1) sign and adjacent RR Crossing pavement markings. See Table 1. See RCD(2) for other signs.



TWO LANES, TWO-WAY



ONE-WAY STREET WITH CURB

NOTES

T: Tip of gate to edge of curb: 1' maximum for Quiet Zone SSM, 90% of traveled way covered by gates for all other locations.

U: Non-traversable curb length from gate: 100' minimum for a Quiet Zone SSM, 10' minimum for all other locations.

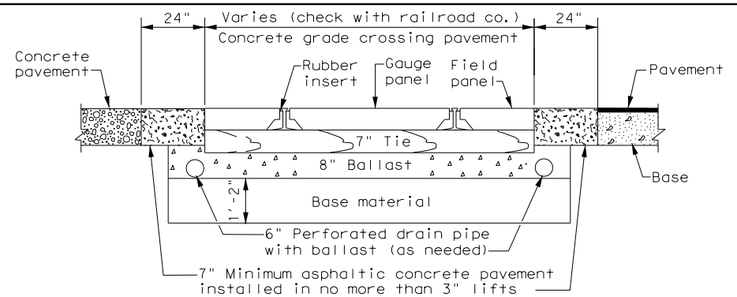
TABLE 1	
Approach Speed (mph)	Desirable Placement (feet)
20	100
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550
75	650

LEGEND	
	Sign
	Object Marker
	Traffic Flow
	Cantilever
	Gate Assembly
	Mast Flasher Pair

1 ADD SHEET 5/15/2023

GENERAL NOTES

1. Medians and curbs must be non-traversable to qualify as a Quiet Zone Supplementary Safety Measure (SSM). Non-traversable curbs in Quiet Zones are 6" tall minimum and used on roadways where speed does not exceed 40 mph.
2. Raised pavement markers may be used to supplement striping. See PM(2) and PM(3) standard sheets.
3. Medians preferred whenever possible to prevent vehicles from driving around gates.
4. Longitudinal edge striping may be continued thru crossing as needed. Illumination may also be considered for nighttime visibility.
5. See SMD standard sheets for sign mounting details.
6. See the Standard Highway Sign Design for Texas (SHSD) manual for sign and pavement marking details.



CROSSING SURFACE CROSS SECTION

Texas Department of Transportation

Traffic Safety Division Standard

RAILROAD CROSSING DETAILS SIGNING, STRIPING, AND DEVICE PLACEMENT RCD(1)-22

FILE: rcd1-22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0254	07	008, ETC	US 281
2-16	DIST	COUNTY		SHEET NO.
11-22	CRP	JIM WELLS		1103

DATE: 5/15/2023 10:35:37 AM
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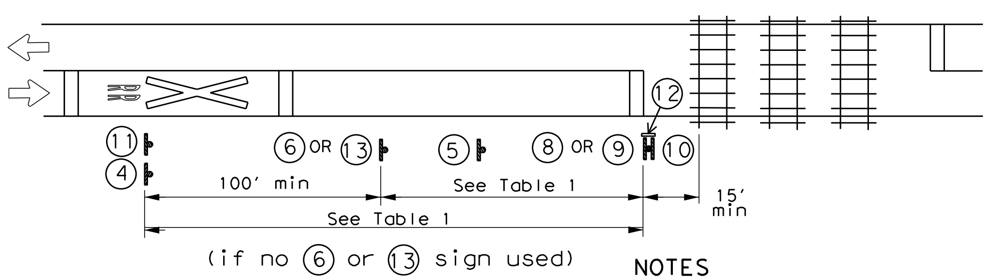
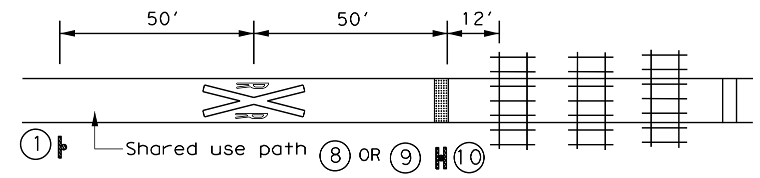
PASSIVE CROSSING



NOTES

1. STOP or YIELD sign may also be installed to the left of the crossbuck sign, rather than below it.
2. A 2" white retroreflective strip shall be installed on front and back of crossbuck sign post.
3. See the Crossbuck Assemblies with YIELD or STOP Signs at Passive Grade Crossings section of the TMUTCD for further details about sign mounting arrangements.

PATHWAY CROSSING



NOTES

1. A shared use path is considered a separate pathway crossing when more than 25' from traveled way of adjacent roadway.
2. Detectable warning used at stop bar.
3. Smaller signs preferred. See the Design of Bicycle Signs section within the TMUTCD for sizing details.

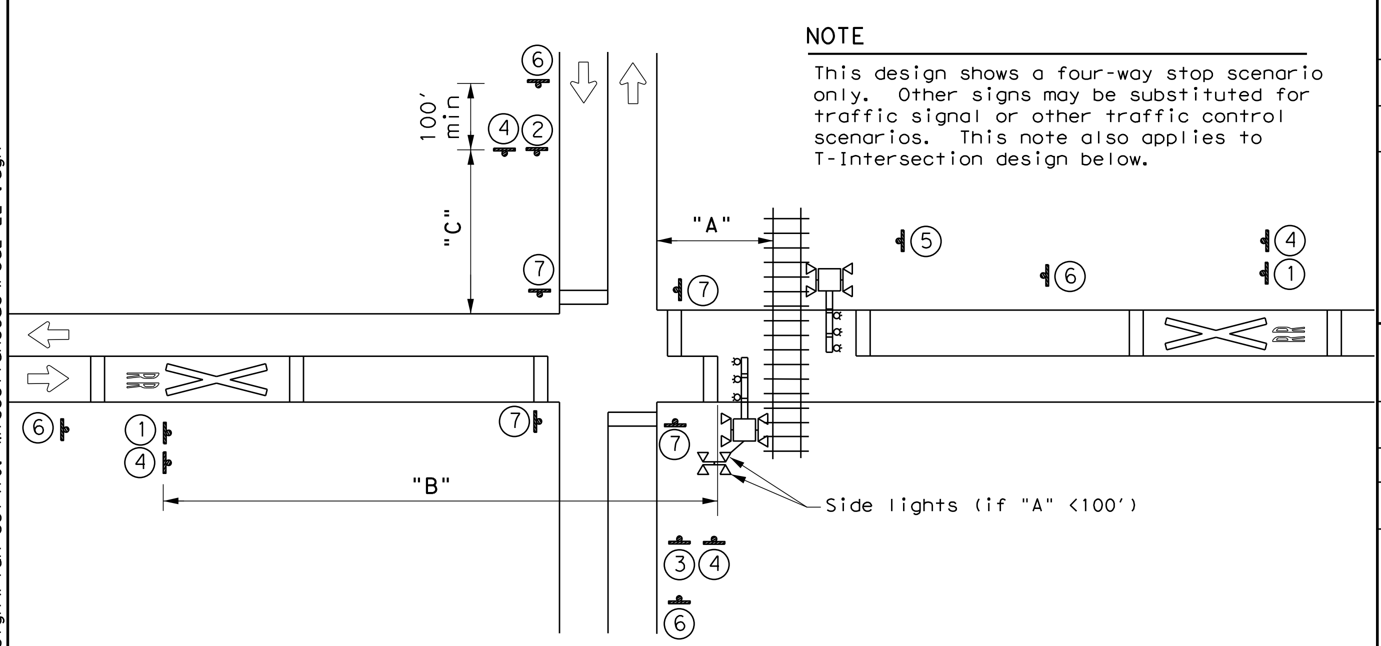
TABLE 1

Approach Speed (mph)	Desirable Placement (feet)
20	100
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550
75	650

GENERAL NOTES

1. Railroad company to provide active traffic control devices, CROSSBUCK (R15-1), NUMBER OF TRACKS (R15-2P) plaque (if more than 1 track), and EMERGENCY NOTIFICATION (I-13) signs.
2. LOW GROUND CLEARANCE (W10-5) signs may be relocated further upstream of crossing to provide advance warning of alternate route.
3. GRADE CROSSING AND INTERSECTION ADVANCE WARNING (W10-2) signs may be modified as needed to fit roadway geometry.
4. Table 1 placement distances may vary per the Placement of Warning Signs section of the TMUTCD.
5. See Table 1 to determine placement of STOP AHEAD (W3-1) and YIELD AHEAD (W3-2) signs unless shown otherwise.
6. DO NOT STOP ON TRACKS (R8-8) signs installed when potential for vehicles stopping on tracks is significant as determined by sealing engineer. Install so sign does not block view of RR mast.
7. See the Standard Highway Sign Design for Texas (SHSD) manual for sign and pavement marking details.

GRADE CROSSING NEAR A PARALLEL STREET

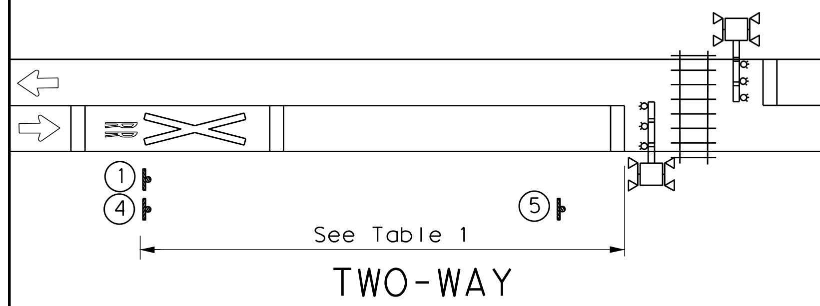


NOTE

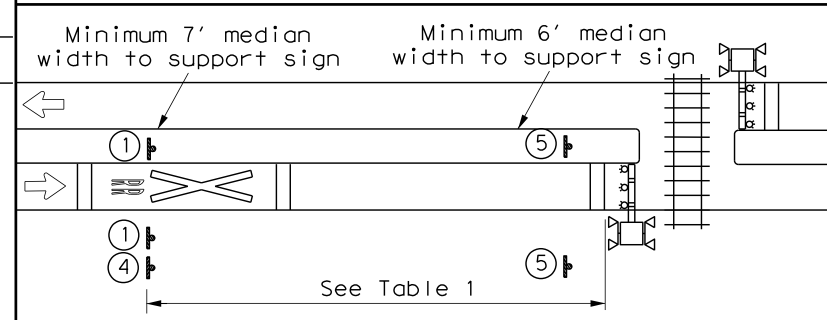
This design shows a four-way stop scenario only. Other signs may be substituted for traffic signal or other traffic control scenarios. This note also applies to T-Intersection design below.

	"A" <100'	"A" ≥100'
"B"	See Table 1. Place pavement markings and signs on opposite side of intersection from rail if spacing from Table 1 would put markings within intersection.	See Table 1. Place pavement markings and signs between rail and intersection if spacing from Table 1 would put markings within intersection.
"C"	See Table 1.	GRADE CROSSING AND INTERSECTION ADVANCE WARNING (W10-2, W10-3, W10-4) signs should only be installed if W10-1 sign is not between intersection and railroad crossing. If needed, see Table 1.

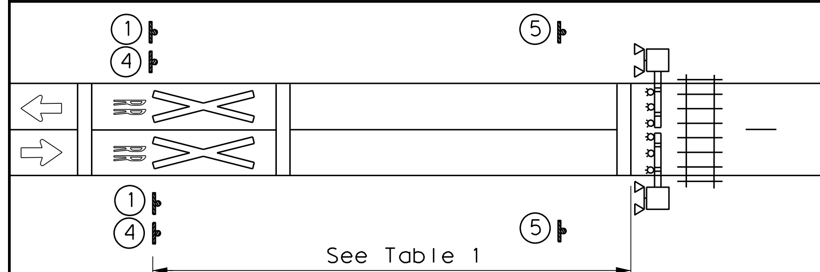
TWO-WAY



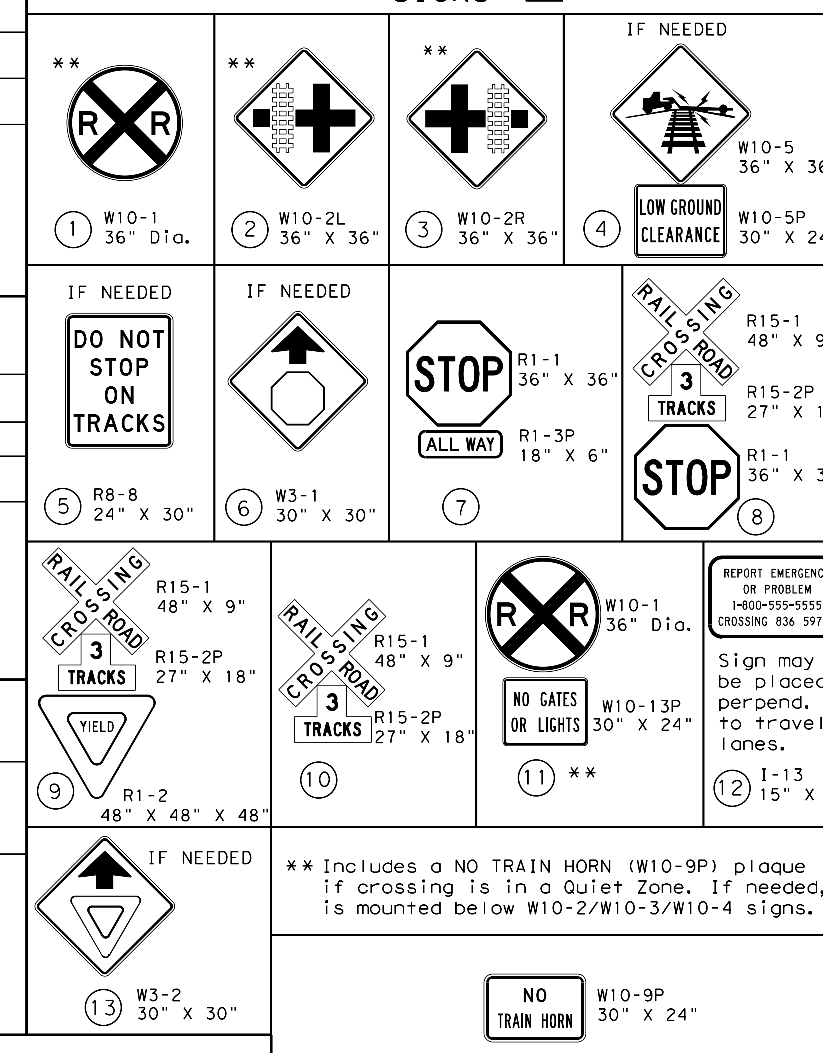
TWO-WAY WITH MEDIAN



ONE-WAY



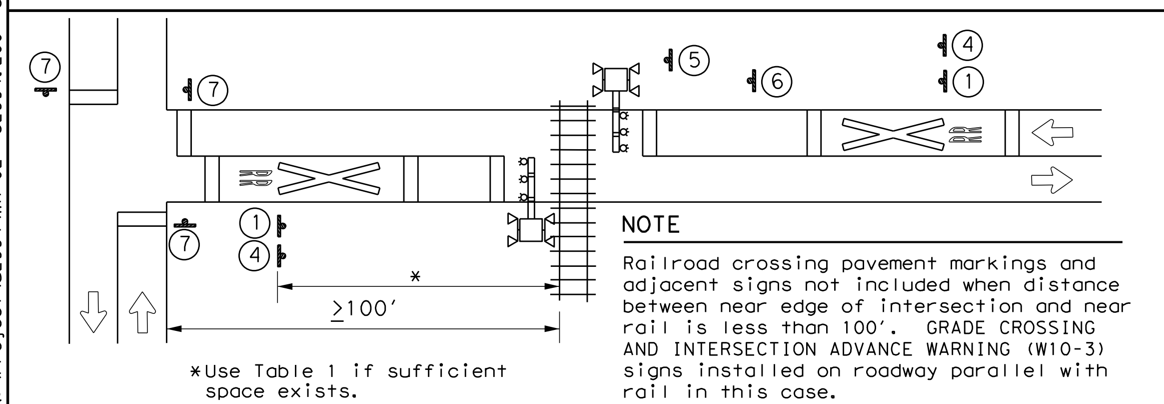
SIGNS



** Includes a NO TRAIN HORN (W10-9P) plaque if crossing is in a Quiet Zone. If needed, is mounted below W10-2/W10-3/W10-4 signs.

NO TRAIN HORN W10-9P 30" X 24"

T-INTERSECTION

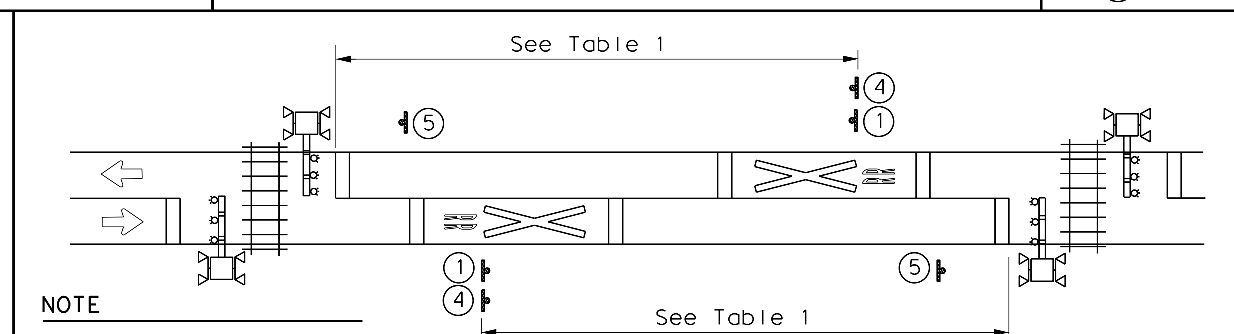


*Use Table 1 if sufficient space exists.

NOTE

Railroad crossing pavement markings and adjacent signs not included when distance between near edge of intersection and near rail is less than 100'. GRADE CROSSING AND INTERSECTION ADVANCE WARNING (W10-3) signs installed on roadway parallel with rail in this case.

TWO ADJACENT CROSSINGS



NOTE

Separate active traffic control devices, railroad crossing pavement markings, and adjacent signs required when tracks are more than 100' apart.

ADD SHEET 5/15/2023

Texas Department of Transportation — Traffic Safety Division Standard

RAILROAD CROSSING DETAILS SIGNING & STRIPING

RCD(2)-22

FILE: rcd2-22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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15