FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			1373
STATE	STATE DIST.	COUNTY	
TEXAS	9	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

VOLUME 8

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1373	TITLE SHEET
1374-1378	INDEX OF SHEETS

RAS INSPECTION REQUIRED

TDLR NO. EABPRJA ____

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT:
CSJ: 0015-01-246

McLENNAN COUNTY
IH 35

LIMITS: FROM SOUTH STATE LOOP 340 TO 12TH ST

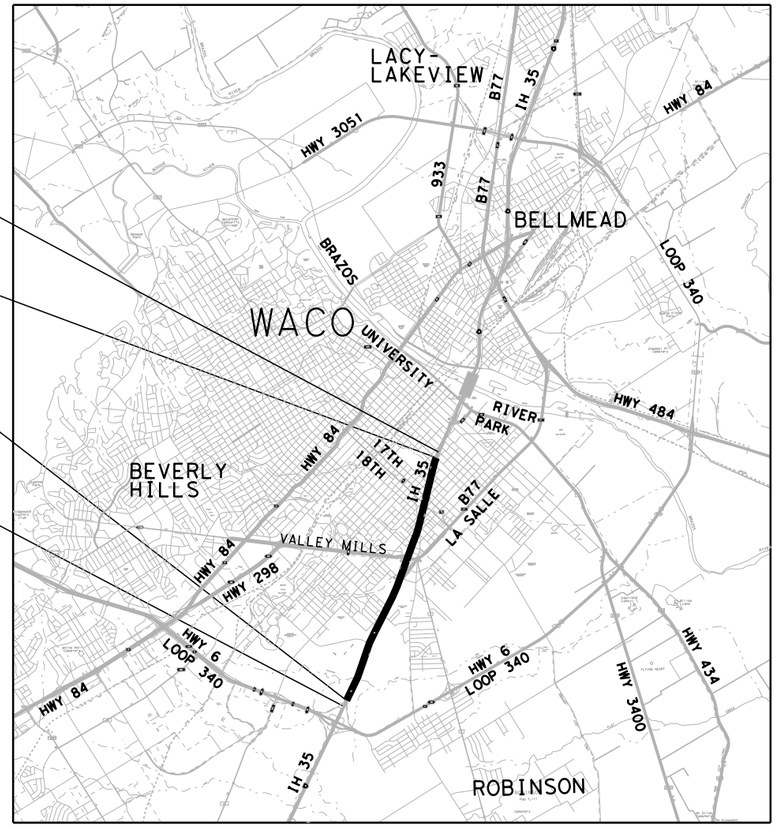
ROADWAY = 14,587.00 FT = 2.763 MI
BRIDGE = 1,063.00 FT = 0.201 MI
NET LENGTH OF PROJECT = 15,650.00 FT = 2.964 MI

FUNCTIONAL CLASS: URBAN INTERSTATE
DESIGN SPEED: 60 MPH - IH 35 MAINLANES
45 MPH - RAMPS
40 MPH - BYPASS RAMPS
40 MPH - FRONTAGE ROADS
45 MPH - INTERSECTING STREETS - NEW RD, 18TH, 17TH
30 MPH - INTERSECTING STREETS - IRVING LEE
20 MPH - VALLEY MILLS DDI
15 MPH - U-TURNS

YEAR	ADT
2013	131,800
2033	187,400

FOR THE CONSTRUCTION OF THE WIDENING OF A FREEWAY FACILITY CONSISTING OF WIDENING, GRADING, STRUCTURES & SURFACES.

NOT TO SCALE



END CONSTRUCTION
CSJ: 0015-01-243
℄ IH 35 STA 167+00.00

END PROJECT
END CSJ: 0015-01-246
BEGIN CSJ: 0015-01-243
℄ IH 35 STA 156+50.00
REF. MRKR. 334+0.485

BEGIN PROJECT
CSJ: 0015-01-246
EQUATION:
℄ IH 35 STA 935+11.96 (BK) =
℄ IH 35 STA 0+00.00 (AH)

BEGIN CONSTRUCTION
CSJ: 0015-01-246
℄ IH 35 STA 922+25.00

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

EXCEPTIONS: NONE

EQUATIONS: ℄ IH 35 STA 935+11.96 (BK) = ℄ IH 35 STA 0+00.00 (AH)

RAILROAD CROSSINGS: NONE

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

SUBMITTED FOR LETTING

PROJECT MANAGER

Texas Department of Transportation
© 2024

RECOMMENDED FOR LETTING

AREA ENGINEER

RECOMMENDED FOR LETTING

DIRECTOR OF TRANSPORTATION PLANNING & DEVELOPMENT

APPROVED FOR LETTING

DISTRICT ENGINEER

PLOTDRIVER: WACO_PSE-pdf.pltcfg PENTABLE: TxDOT_Waco.tbl
DATE:8/23/2024 11:29:51 AM USER:
FILE:c:\caddlib\pw\hntb.jipinq\central\d0202097\68651_V01-TITLE_SHEET.DGN

COUNTY McLENNAN PROJ. NO.
HWY. NO. IH 35 LETTING DATE 09/03/2024
DATE ACCEPTED

...\68651_V01-TITLE_SHEET.DGN

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

STATE OF TEXAS
JESUS IPINA
135023
LICENSED PROFESSIONAL ENGINEER
* 024

STATE OF TEXAS
RYAN J. LAGSDING
\# 8/23/2024

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

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6	SEE TITLE SHEET		1374
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

	SHEET NO	DESCRIPTION
*	588	BED-14
*	589	CCCG-22
*	590-591	CRCP(1)-23
*	592-593	CRCP(2)-23
*	594	CRR
*	595	GF(31)19
*	596	GF(31)DAT-19
*	597-598	GF(31)TR TL3-20
*	599	GF(31)MS-19
*	600	JS-14
*	601-604	PED-18
*	605	RS(1)-23
*	606	SGT(11S)31-18
*	607	SGT(12S)31-18
*	608	SSCB(1)-16
*	609	SSCB(3)-10
*	610	SSCB(4)-19
*	611	TAU-II-R(N)-16
*	612	REACT(M)-21
*	613	QGELITE(M10)(N)-20
*	614-616	CONCRETE SIDEWALK DETAILS (WACO DISTRICT STANDARD)
*	617	MOW STRIP FOR SIGNS AND RETAINING WALLS (WACO DISTRICT STANDARD)
		VOLUME IV
		IV. RETAINING WALL DETAILS
	618	TITLE SHEET
	619-623	INDEX OF SHEETS
	624-629	PROPOSED TYPICAL SECTIONS RETAINING WALLS
	630	RETAINING WALL KEYMAP
	631-633	RETAINING WALL LAYOUT WALL AA1
	634-636	RETAINING WALL LAYOUT WALL AC1
	637	RETAINING WALL LAYOUT WALL AB1
	638-639	RETAINING WALL LAYOUT WALL AI1
	640-642	RETAINING WALL LAYOUT WALL AG1
	643	RETAINING WALL LAYOUT WALL AB2
	644-645	RETAINING WALL LAYOUT WALL AI3
	646-653	RETAINING WALL SOIL NAIL LAYOUT WALL AI3
	654-655	RETAINING WALL LAYOUT WALL AA2
	656-657	RETAINING WALL LAYOUT WALL AI2
	658	RETAINING WALL LAYOUT WALL AB3
	659-660	RETAINING WALL LAYOUT WALL AG2
	661-662	RETAINING WALL LAYOUT WALL AC2
	663	RETAINING WALL LAYOUT WALL AB4
	664-666	RETAINING WALL LAYOUT WALL AG3
	667-678	RETAINING WALL SOIL NAIL LAYOUT WALL AG3
	679-681	RETAINING WALL LAYOUT WALL AC3
	682-694	RETAINING WALL SOIL NAIL LAYOUT WALL AC3
	695-697	RETAINING WALL LAYOUT WALL ACC3
	698-707	RETAINING WALL SOIL NAIL LAYOUT WALL ACC3
	708-709	RETAINING WALL LAYOUT WALL AM1
	710-711	RETAINING WALL LAYOUT WALL AA3
	712-717	RETAINING WALL SOIL NAIL LAYOUT WALL AA3
	718-719	RETAINING WALL LAYOUT WALL BA1
	720-721	RETAINING WALL LAYOUT WALL BC1
	722	RETAINING WALL LAYOUT WALL BB1
	723	RETAINING WALL LAYOUT WALL BA2
	724	RETAINING WALL LAYOUT WALL BC2
	725	RETAINING WALL LAYOUT WALL BB3
	726	RETAINING WALL LAYOUT WALL BB5
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	729-730	RETAINING WALL LAYOUT WALL BC3
	731	RETAINING WALL LAYOUT WALL BB7
	732-742	TEST HOLE DATA NORTHBOUND
	743-752	TEST HOLE DATA SOUTHBOUND
	753	RETAINING WALL AESTHETICS
	754	RETAINING WALLS CUT ROCK PANEL DETAILS
	755-756	SOIL NAIL RETAINING WALL DETAILS
*	757	RW(BTR)
*	758	RW(EM)
*	759-760	RW(MSE)
*	761	RW(MSE)DD
*	762	RW(TEW)
*	763	RW(TRF)
*	764	WACO DISTRICT RETAINING WALL FINISH ASHLAR SPECIAL

	SHEET NO	DESCRIPTION
		VOLUME V
		V. DRAINAGE DETAILS
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	766-770	INDEX OF SHEETS
	771	OVERALL DRAINAGE AREA MAP
	772-774	HYDRAULIC DATA SHEETS - COTTONWOOD CREEK
	775-778	HYDRAULIC DATA SHEETS - PRIMOSE CREEK
	779-781	HYDRAULIC DATA SHEETS - TRIB. PRIMOSE CREEK
	782-787	BRIDGE-CLASS CULVERT LAYOUTS
	788-790	PRIMROSE CREEK DITCH LAYOUT
	791-800	DRAINAGE RUNOFF COMPUTATIONS
	801-824	INLET COMPUTATIONS
	825-857	LINK COMPUTATIONS
	858-888	INTERIOR DRAINAGE AREA MAPS
	889-903	DRAINAGE PLAN & PROFILE NB MAINLANES
	904-918	DRAINAGE PLAN & PROFILE SB MAINLANES
	919-930	DRAINAGE PLAN & PROFILE NB FRONTAGE ROAD
	931-942	DRAINAGE PLAN & PROFILE SB FRONTAGE ROAD
	943	DRAINAGE PLAN & PROFILE VALLEY MILLS DR WB
	944	DRAINAGE PLAN & PROFILE VALLEY MILLS DR EB
	945	DRAINAGE PLAN & PROFILE VALLEY MILLS DR
	946-948	DRAINAGE PLAN & PROFILE VALLEY MILLS OUTFALL
	949-978	DRAINAGE LATERALS
	979-980	DRAINAGE LATERALS VALLEY MILLS DR
	981-982	DITCH TABLES IH 35 NB ML
	983-985	CULVERT MISCELLANEOUS DETAILS
	986	DRAINAGE DETAILS
**	987-991	MI-CBC (FTW)
**	992	BC-ECD
**	993-994	MDD(FTW)
**	995-996	MODIFIED PCU INLET
**	997	PW(MOD)
**	998-1001	TYPE C402
**	1002	SCC-MD
**	1003-1004	SCC-3 & 4
**	1005-1006	SCC-5 & 6
**	1007-1008	SCC-7
**	1009-1010	SCC-8
**	1011	SCP-MD
**	1012-1015	SCP-3 THRU SCP-6
**	1016	SCP-7
**	1017	SCP-8
**	1018	SCP-10
**	1019	MC-MD
**	1020-1021	MC-6-16
**	1022-1023	MC-8-13
**	1024-1025	MC-10-7
**	1026	ECD
**	1027	BCS
**	1028	SW-O
**	1029	PW
**	1030	SETP-PD
**	1031	PB
**	1032	PBGC
**	1033	PJB
**	1034	PDD
**	1035-1036	PCO
**	1037-1038	PCU
**	1039-1040	PSL
**	1041	POD
**	1042-1043	PMBD
**	1044	PAZD
**	1045	CGT-PCO
**	1046	CGT-PCU
**	1047-1048	RAC
	1049	OMIT

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

STATE OF TEXAS
JESUS IPINA
135023
LICENSED PROFESSIONAL ENGINEER

* 024

STATE OF TEXAS
VIVEK SINGH
115010
LICENSED PROFESSIONAL ENGINEER

** 8/23/2024

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

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6	SEE TITLE SHEET	1375

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

SHEET NO	DESCRIPTION
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	VI. UTILITIES
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1051-1055	INDEX OF SHEETS
1056	WATER RELOCATION PROJECT LAYOUT
1057	WASTE WATER RELOCATION PROJECT LAYOUT
1058	GENERAL NOTES TxDOT
1059-1068	HORIZONTAL ALIGNMENT DATA
1069-1072	WATER LINE "01" PLAN AND PROFILE
1073	WATER LINE "02" PLAN AND PROFILE
1074-1086	WATER LINE "03" PLAN AND PROFILE
1087	WATER LINE "04" PLAN AND PROFILE
1088	WATER LINE "05" PLAN AND PROFILE
1089-1092	WATER LINE "06" PLAN AND PROFILE
1093	WATER LINE "07" PLAN AND PROFILE
1094	WATER LINE "08" PLAN AND PROFILE
1095	WATER LINE "09" PLAN AND PROFILE
1096	WATER LINE "10" PLAN AND PROFILE
1097-1098	WATER LINE "11" PLAN AND PROFILE
1099	WATER LINE "12" PLAN AND PROFILE
1100-1101	WATER LINE "13" PLAN AND PROFILE
1102-1104	WATER LINE "14" PLAN AND PROFILE
1105-1106	WATER LINE "16" PLAN AND PROFILE
1107-1108	WATER LINE "17" PLAN AND PROFILE
1109-1110	WATER LINE "18" PLAN AND PROFILE
1111	WATER LINE "19" PLAN AND PROFILE
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1114	WATER LINE "21" PLAN AND PROFILE
1115	WATER LINE "22" PLAN AND PROFILE
1116	WATER LINE "23" PLAN AND PROFILE
1117	WATER LINE "33-34" PLAN AND PROFILE
1118	WATER LINE "36-31-32" PLAN AND PROFILE
1119	WATER LINE "41" PLAN AND PROFILE
1120	WATER LINE "121-122" PLAN AND PROFILE
1121	WATER LINE "161-162" PLAN AND PROFILE
1122	WATER LINE "171-141" PLAN AND PROFILE
1123-1125	WASTE WATER LINE "01" PLAN AND PROFILE
1126	WASTE WATER LINE "02" PLAN AND PROFILE
1127-1130	WASTE WATER LINE "03" PLAN AND PROFILE
1131-1133	WASTE WATER LINE "04" PLAN AND PROFILE
1134-1136	WASTE WATER LINE "05" PLAN AND PROFILE
1137-1138	WASTE WATER LINE "06" PLAN AND PROFILE
1139-1142	WASTE WATER LINE "07" PLAN AND PROFILE
1143-1149	WASTE WATER LINE "08" PLAN AND PROFILE
1150	WASTE WATER LINE "09" PLAN AND PROFILE
1151	WASTE WATER LINE "11-12-13" PLAN AND PROFILE
1152	WASTE WATER LINE "14-41" PLAN AND PROFILE
1153	WASTE WATER LINE "71-81" PLAN AND PROFILE
1154	WASTE WATER LINE "83-84-82" PLAN AND PROFILE
1155	GENERAL NOTES CITY OF WACO
1156-1160	WATER DETAILS
1161-1163, 1163A	WASTEWATER DETAILS
	VOLUME VII
	VII. BRIDGES
1164	TITLE SHEET
1165-1169	INDEX OF SHEETS

SHEET NO	DESCRIPTION
	IH 35 SB & NB OVERPASS AT NEW ROAD
1170	BRIDGE LAYOUT IH 35 SB OVERPASS AT NEW ROAD
1171	BRIDGE LAYOUT IH 35 NB OVERPASS AT NEW ROAD
1172	PHASED TYPICAL SECTIONS IH 35 SB & NB OVERPASS AT NEW ROAD
1173	TEST HOLE DATA IH 35 SB & NB OVERPASS AT NEW ROAD
1174	ESTIMATED QUANTITIES IH 35 SB & NB OVERPASS AT NEW ROAD
1175	BEARING SEAT ELEVATIONS IH 35 SB & NB OVERPASS AT NEW ROAD
1176	BEARING PAD TAPER REPORT IH 35 SB & NB OVERPASS AT NEW ROAD
1177	ABUTMENT 1 IH 35 SB OVERPASS AT NEW ROAD
1178	ABUTMENT 4 IH 35 SB OVERPASS AT NEW ROAD
1179	ABUTMENT DETAILS IH 35 SB OVERPASS AT NEW ROAD
1180	BENT 2 IH 35 SB OVERPASS AT NEW ROAD
1181	BENT 3 IH 35 SB OVERPASS AT NEW ROAD
1182-1183	BENT DETAILS IH 35 SB OVERPASS AT NEW ROAD
1184	BEAM LAYOUT IH 35 SB OVERPASS AT NEW ROAD
1185-1186	308.000' PRESTRESSED CONCRETE U-BEAM UNIT IH 35 SB OVERPASS AT NEW ROAD
1187	ABUTMENT 1 IH 35 NB OVERPASS AT NEW ROAD
1188	ABUTMENT 4 IH 35 NB OVERPASS AT NEW ROAD
1189	ABUTMENT DETAILS IH 35 NB OVERPASS AT NEW ROAD
1190	BENT 2 IH 35 NB OVERPASS AT NEW ROAD
1191	BENT 3 IH 35 NB OVERPASS AT NEW ROAD
1192-1193	BENT DETAILS IH 35 NB OVERPASS AT NEW ROAD
1194	BEAM LAYOUT IH 35 NB OVERPASS AT NEW ROAD
1195-1196	308.000' PRESTRESSED CONCRETE U-BEAM UNIT IH 35 NB OVERPASS AT NEW ROAD
1197	PRESTRESSED CONCRETE U-BEAMS (DESIGN DATA)
	IH 35 SB & NB OVERPASS AT IRVING LEE/PRIMROSE
1198	BRIDGE LAYOUT IH 35 SB OVERPASS AT IRVING LEE/PRIMROSE
1199	BRIDGE LAYOUT IH 35 NB OVERPASS AT IRVING LEE/PRIMROSE
1200	PHASED TYPICAL SECTIONS IH 35 SB & NB OVERPASS AT IRVING LEE/PRIMROSE
1201-1202	TEST HOLE DATA IH 35 SB & NB OVERPASS AT IRVING LEE/PRIMROSE
1203	ESTIMATED QUANTITIES IH 35 SB & NB OVERPASS AT IRVING LEE/PRIMROSE
1204	BEARING SEAT ELEVATIONS IH 35 SB & NB OVERPASS AT IRVING LEE/PRIMROSE
1205	BEARING PAD TAPER REPORT IH 35 SB & NB OVERPASS AT IRVING LEE/PRIMROSE
1206	ABUTMENT 1 IH 35 SB OVERPASS AT IRVING LEE/PRIMROSE
1207	ABUTMENT 4 IH 35 SB OVERPASS AT IRVING LEE/PRIMROSE
1208	ABUTMENT DETAILS IH 35 SB OVERPASS AT IRVING LEE/PRIMROSE
1209	BENT 2 IH 35 SB OVERPASS AT IRVING LEE/PRIMROSE
1210	BENT 3 IH 35 SB OVERPASS AT IRVING LEE/PRIMROSE
1211-1212	BENT DETAILS IH 35 SB OVERPASS AT IRVING LEE/PRIMROSE
1213	BEAM LAYOUT IH 35 SB OVERPASS AT IRVING LEE/PRIMROSE
1214-1215	265.000' PRESTRESSED CONCRETE U-BEAM UNIT IH 35 SB OVERPASS AT IRVING LEE/PRIMROSE
1216	ABUTMENT 1 IH 35 NB OVERPASS AT IRVING LEE/PRIMROSE
1217	ABUTMENT 4 IH 35 NB OVERPASS AT IRVING LEE/PRIMROSE
1218	ABUTMENT DETAILS IH 35 NB OVERPASS AT IRVING LEE/PRIMROSE
1219	BENT 2 IH 35 NB OVERPASS AT IRVING LEE/PRIMROSE
1220	BENT 3 IH 35 NB OVERPASS AT IRVING LEE/PRIMROSE
1221-1222	BENT DETAILS IH 35 NB OVERPASS AT IRVING LEE/PRIMROSE
1223	BEAM LAYOUT IH 35 NB OVERPASS AT IRVING LEE/PRIMROSE
1224-1225	265.000' PRESTRESSED CONCRETE U-BEAM UNIT IH 35 NB OVERPASS AT IRVING LEE/PRIMROSE
1226	PRESTRESSED CONCRETE U-BEAMS (DESIGN DATA)
	IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1227	BRIDGE LAYOUT IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1228	TYPICAL SECTIONS IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1229	TEST HOLE DATA IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1230	ESTIMATED QUANTITIES IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1231	BEARING SEAT ELEVATIONS IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1232	BEARING PAD TAPER REPORT IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1233	ABUTMENT 1 IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1234	ABUTMENT 5 IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1235	ABUTMENT DETAILS IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1236	BENT 2 IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

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FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1376
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

SHEET NO	DESCRIPTION
1237	BENT 3 IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1238	BENT 4 IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1239-1241	BENT DETAILS IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1242	BEAM LAYOUT SPAN 1 IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1243-1244	34.500' PRESTRESSED CONCRETE U-BEAM UNIT IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS DRIVE)
1245	BEAM LAYOUT SPANS 2 & 3 IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS)
1246-1247	188.000' PRESTRESSED CONCRETE U-BEAM UNIT IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS)
1248	BEAM LAYOUT SPAN 4 IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS)
1249-1250	72.500' PRESTRESSED CONCRETE U-BEAM UNIT IH 35 UNDERPASS AT LP 396 WB (VALLEY MILLS)
1251	PRESTRESSED CONCRETE U-BEAMS (DESIGN DATA)
	IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1252	BRIDGE LAYOUT IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1253	TYPICAL SECTIONS IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1254	TEST HOLE DATA IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1255	ESTIMATED QUANTITIES IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1256	BEARING SEAT ELEVATIONS IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1257	BEARING PAD TAPER REPORT IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1258	ABUTMENT 1 IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1259	ABUTMENT 5 IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1260	ABUTMENT DETAILS IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1261	BENT 2 IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1262-1263	BENT 2 DETAILS IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1264	BENT 3 IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1265	BENT 4 IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1266-1267	BENTS 3 & 4 DETAILS IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1268	BEAM LAYOUT SPAN 1 IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1269-1270	34.000' PRESTRESSED CONCRETE U-BEAM UNIT IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS DRIVE)
1271	BEAM LAYOUT SPANS 2 & 3 IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS)
1272-1273	185.750' PRESTRESSED CONCRETE U-BEAM UNIT IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS)
1274	BEAM LAYOUT SPAN 4 IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS)
1275-1276	71.670' PRESTRESSED CONCRETE U-BEAM UNIT IH 35 UNDERPASS AT LP 396 EB (VALLEY MILLS)
1277	PRESTRESSED CONCRETE U-BEAMS (DESIGN DATA)
	IH 35 SB & NB OVERPASS AT 18TH STREET
1278	BRIDGE LAYOUT IH 35 SB OVERPASS AT 18TH STREET
1279	BRIDGE LAYOUT IH 35 NB OVERPASS AT 18TH STREET
1280	PHASED TYPICAL SECTIONS IH 35 SB & NB OVERPASS AT 18TH STREET
1281	TEST HOLE DATA IH 35 SB & NB OVERPASS AT 18TH STREET
1282	ESTIMATED QUANTITIES IH 35 SB & NB OVERPASS AT 18TH STREET
1283	BEARING SEAT ELEVATIONS IH 35 SB & NB OVERPASS AT 18TH STREET
1284	BEARING PAD TAPER REPORT IH 35 SB & NB OVERPASS AT 18TH STREET
1285	ABUTMENT 1 IH 35 SB OVERPASS AT 18TH STREET
1286	ABUTMENT 3 IH 35 SB OVERPASS AT 18TH STREET
1287	ABUTMENT DETAILS IH 35 SB OVERPASS AT 18TH STREET
1288	BENT 2 IH 35 SB OVERPASS AT 18TH STREET
1289-1290	BENT DETAILS IH 35 SB OVERPASS AT 18TH STREET
1291	BEAM LAYOUT IH 35 SB OVERPASS AT 18TH STREET
1292-1293	250.000' PRESTRESSED CONCRETE U-BEAM UNIT IH 35 SB OVERPASS AT 18TH STREET
1294	ABUTMENT 1 IH 35 NB OVERPASS AT 18TH STREET
1295	ABUTMENT 3 IH 35 NB OVERPASS AT 18TH STREET
1296	ABUTMENT DETAILS IH 35 NB OVERPASS AT 18TH STREET
1297	BENT 2 IH 35 NB OVERPASS AT 18TH STREET
1298-1299	BENT DETAILS IH 35 NB OVERPASS AT 18TH STREET
1300	BEAM LAYOUT IH 35 NB OVERPASS AT 18TH STREET
1301-1302	250.000' PRESTRESSED CONCRETE U-BEAM UNIT IH 35 NB OVERPASS AT 18TH STREET
1303	PRESTRESSED CONCRETE U-BEAMS (DESIGN DATA)
	IH 35 SB & NB OVERPASS AT 17TH STREET
1304	BRIDGE LAYOUT IH 35 SB OVERPASS AT 17TH STREET
1305	BRIDGE LAYOUT IH 35 NB OVERPASS AT 17TH STREET
1306	PHASED TYPICAL SECTIONS IH 35 SB & NB OVERPASS AT 17TH STREET
1307	TEST HOLE DATA IH 35 SB & NB OVERPASS AT 17TH STREET
1308	ESTIMATED QUANTITIES IH 35 SB & NB OVERPASS AT 17TH STREET
1309	BEARING SEAT ELEVATIONS IH 35 SB & NB OVERPASS AT 17TH STREET
1310	BEARING PAD TAPER REPORT IH 35 SB & NB OVERPASS AT 17TH STREET
1311	ABUTMENT 1 IH 35 SB OVERPASS AT 17TH STREET
1312	ABUTMENT 3 IH 35 SB OVERPASS AT 17TH STREET
1313	ABUTMENT DETAILS IH 35 SB OVERPASS AT 17TH STREET
1314	BENT 2 IH 35 SB OVERPASS AT 17TH STREET
1315-1316	BENT DETAILS IH 35 SB OVERPASS AT 17TH STREET
1317	BEAM LAYOUT IH 35 SB OVERPASS AT 17TH STREET
1318-1319	240.000' PRESTRESSED CONCRETE U-BEAM UNIT IH 35 SB OVERPASS AT 17TH STREET
1320	ABUTMENT 1 IH 35 NB OVERPASS AT 17TH STREET
1321	ABUTMENT 3 IH 35 NB OVERPASS AT 17TH STREET

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

	SHEET NO	DESCRIPTION
	1322	ABUTMENT DETAILS IH 35 NB OVERPASS AT 17TH STREET
	1323	BENT 2 IH 35 NB OVERPASS AT 17TH STREET
	1324-1325	BENT DETAILS IH 35 NB OVERPASS AT 17TH STREET
	1326	BEAM LAYOUT IH 35 NB OVERPASS AT 17TH STREET
	1327-1328	240.000' PRESTRESSED CONCRETE U-BEAM UNIT IH 35 NB OVERPASS AT 17TH STREET
	1329	PRESTRESSED CONCRETE U-BEAMS (DESIGN DATA)
		BRIDGE PROJECT STANDARDS
	1330	INTERIOR BENT AESTHETIC DETAILS
	1331	SPECIAL MODIFICATION TO TYPE SSTR RAIL
***	1332-1333	BAS-C(MOD)
***	1334-1338	TYPE C402(MOD)
***	1339-1341	TYPE SSTR(MOD)
***	1342-1345	TYPE T402(MOD)
***	1346-1348	BMCS
***	1349-1350	BRSM
***	1351	BS-EJCP
***	1352-1353	CSAB
***	1354-1355	FD
***	1356	MEBR(U)
***	1357	NBIS
***	1358-1361	PCP
***	1362	PCP-FAB
***	1363-1364	PMDF
***	1365	SEJ-M
***	1366-1368	UBD
***	1369-1370	UBEB
***	1371	UBMS
***	1372	UBTS

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*** 8/23/2024

VOLUME VIII

VIII. TRAFFIC ITEMS

	1373	TITLE SHEET
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	1379-1394	LIGHTING LAYOUT
	1395-1398	UNDERBRIDGE LIGHTING
	1399-1427	PAVEMENT MARKINGS
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	1454-1470	GUIDE SIGN ELEVATION LAYOUT
	1471-1476	OVERHEAD SIGN BRIDGE DETAILS
	1477-1484	LARGE SIGN DETAILS
	1485-1486	GROUND MOUNTED SIGN DETAILS
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	1489	PROPOSED SIGNAL LAYOUT SBFR AT NEW RD
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	1491	SIGNAL SUMMARY NEW ROAD
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	1493C	SIGNAL SUMMARY IRVING LEE ST/PRIMROSE DR
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	1495	PROPOSED SIGNAL LAYOUT SBFR AT 18TH ST
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	1500	ITS GENERAL NOTES
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	1505-1527	ITS LAYOUT
	1528	ITS DMS ELEVATION DETAILS DMS
	1529	ITS ELECTRICAL SERVICES SUMMARY
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****	1550-1551	HMIP(1)-16 & HMIP(2)-16
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****	1553	MA-D-12
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Texas Department of Transportation

HNTB Corporation
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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

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6	SEE TITLE SHEET		1377
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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	SHEET NO	DESCRIPTION
****	1562-1563	COSSD
****	1564	HCOSS-Z1-21
****	1565-1566	HOSB-Z2I
****	1567	OSBC
****	1568-1573	D&OM(1)-20 THRU D&OM(6)-20
****	1574	D&OM(VIA)-20
****	1575-1576	SP-80(1)-12 & SP-80(2)-12
****	1577-1578	SMA-80(1)-12 & SMA-80(2)-12
****	1579-1583	LMA(1)-12 THRU LMA(5)-12
****	1584	MA-C-12
****	1585	MA-DPD-20
****	1586-1589	SMD(2-1)-08 THRU SMD(2-4)-08
****	1590	SMD(2-6)-01
****	1591-1593	SMD(BR-1)-14 THRU SMD(BR-3)-14
****	1594	SMD(FRP)-08
****	1595	SMD(GEN)-08
****	1596-1598	SMD(SLIP-1)-08 THRU SMD(SLIP-3)-08
****	1599	SMD(TWT)-08
****	1600	SMD(TY-G)-08
****	1601-1602	SMD(8W1)-08 & SMD(8W2)-08
****	1603	TS-BP-20
****	1604	TS-CF-21
****	1605	TS-FD-12
****	1606-1610	TSR(1)-13 THRU TSR(5)-13
****	1611-1616	FPM(1)-22 THRU FPM(6)-22
****	1617-1620	PM(1)-22 THRU PM(3)-22, PM(4)-22A
****	1621-1623	BMCS
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####	1647	ITS(37)-22
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##	1873-1875	EC(1)-16 THRU EC(3)-16
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THE STANDARD SHEETS (**** OR ## OR ####) SPECIFICALLY IDENTIFIED HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT

STATE OF TEXAS
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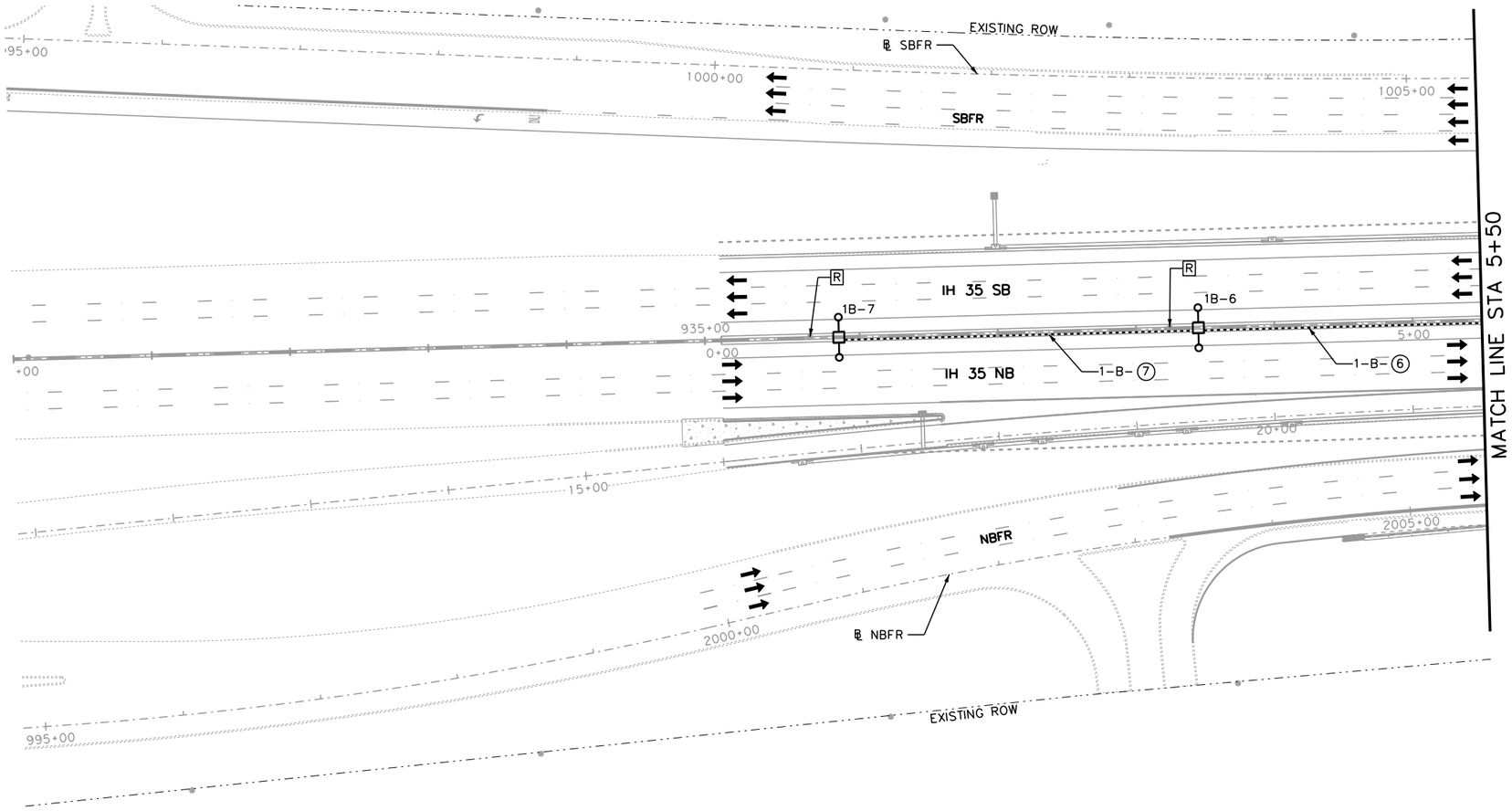
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

INDEX OF SHEETS

SHEET 5 OF 5

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1378
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35



0' 25' 50' 100'

LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL

X-X-(XX)
- RUN NO.
- CIRCUIT NO.
- SERVICE NO.

XX-X
- POLE NO.
- SERVICE NO. & CIRCUIT LETTER

SUMMARY OF CABLE AND CONDUIT QUANTITIES

RUN NO.	618 6023 CONDT (PVC) (SCH 40) (2") LF	618 6047 CONDT (PVC) (SCH 80) (2") BORE LF	620 6007 ELEC CONDR (NO. 8) BARE LF	620 6008 ELEC CONDR (NO. 8) INSULATED LF	624 6002 GROUND BOX TY A (122311)W/APRON EA
CSJ 0015-01-246					
1-B-6	215		220	440	
1-B-7	260		265	530	
SUBTOTAL	**475**	**0**	**485**	**970**	**0**

SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES

LIGHT NO.	ALIGNMENT	STA	OFFSET	416 6029 DRILL SHAFT (RDWY ILL POLE) (30 IN) LF	610 6008 REMOVE RD IL ASM (CTB MOUNT) EA	610 6214 IN RD IL (TY SA) 40T-8 (250W EQ) LED EA	610 6263 IN RD IL (TY SP) 48S-8-8 (400W EQ) LED EA
CSJ 0015-01-246							
1B-6	ML	3+45	C/L				1
1B-7	ML	0+85	C/L				1
REMOVALS					2		
SUBTOTAL				**0**	**2**	**0**	**2**

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

Robert Kouba

STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED PROFESSIONAL ENGINEER

10/18/2023

NO.	DATE	REVISION	APPROVED

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The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

BEGIN TO STA 5+50

SHEET 1 OF 16

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1379

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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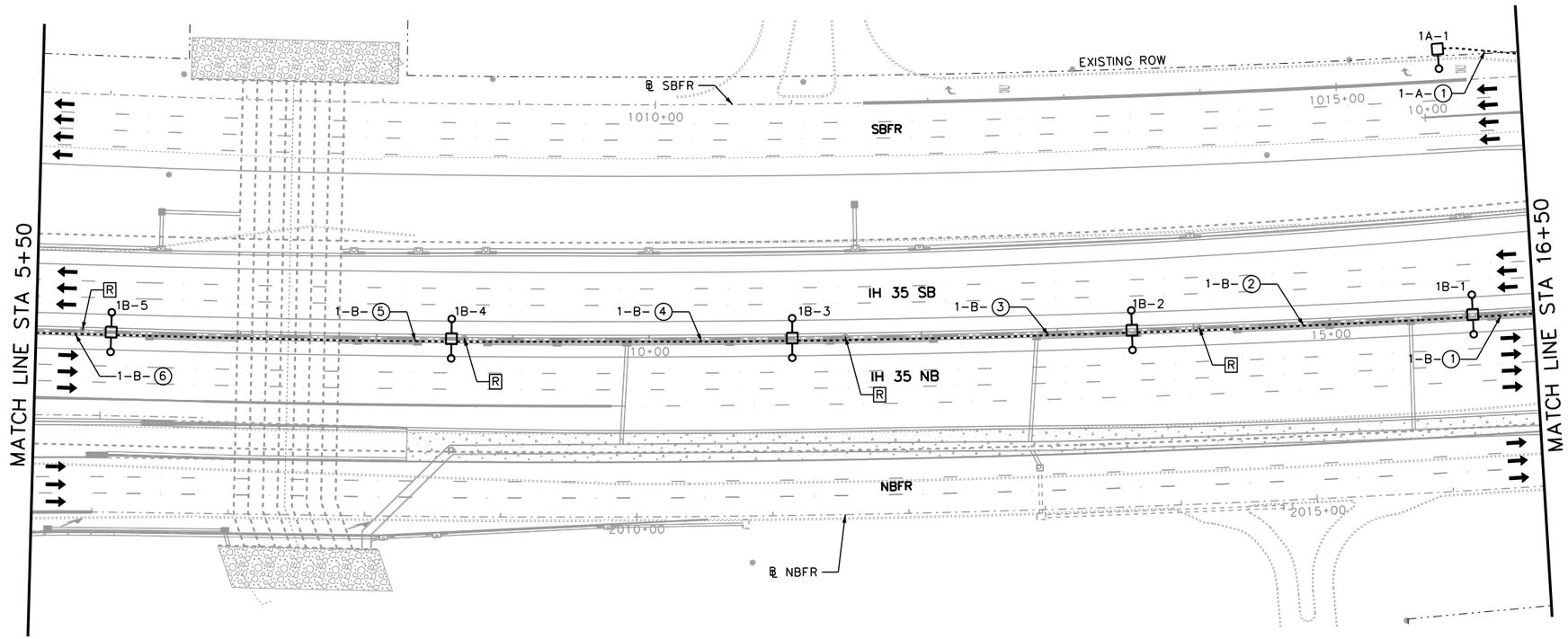

0' 25' 50' 100'

LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL

X-X-(XX)
- RUN NO.
- CIRCUIT NO.
- SERVICE NO.

XX-X
- POLE NO.
- SERVICE NO. & CIRCUIT LETTER

SUMMARY OF CABLE AND CONDUIT QUANTITIES

RUN NO.	618 6023 CONDT (PVC) (SCH 40) (2")	618 6047 CONDT (PVC) (SCH 80) (2") BORE	620 6007 ELEC CONDR (NO. 8) BARE	620 6008 ELEC CONDR (NO. 8) INSULATED	624 6002 GROUND BOX TY A (122311)W/APRON
	LF	LF	LF	LF	EA
CSJ 0015-01-246					
1-A-1	60		60	120	
1-B-1	45		45	90	
1-B-2	250		255	510	
1-B-3	250		255	510	
1-B-4	250		255	510	
1-B-5	250		255	510	
1-B-6	45		45	90	
SUBTOTAL	**1150**	**0**	**1170**	**2340**	**0**

SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES

LIGHT NO.	ALIGNMENT	STA	OFFSET	416 6029 DRILL SHAFT (RDWY ILL POLE) (30 IN)	610 6008 REMOVE RD IL ASM (CTB MOUNT)	610 6214 IN RD IL (TY SA) 40T-8 (250W EQ) LED	610 6263 IN RD IL (TY SP) 48S-8-8 (400W EQ) LED
			LF	LF	EA	EA	EA
CSJ 0015-01-246							
1A-1	SBFR	1014+80	25	6		1	
1B-1	ML	16+05	C/L				1
1B-2	ML	13+55	C/L				1
1B-3	ML	11+05	C/L				1
1B-4	ML	8+55	C/L				1
1B-5	ML	6+05	C/L				1
REMOVALS					4		
SUBTOTAL				**6**	**4**	**1**	**5**

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
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LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 5+50 TO STA 16+50

SHEET 2 OF 16

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1380
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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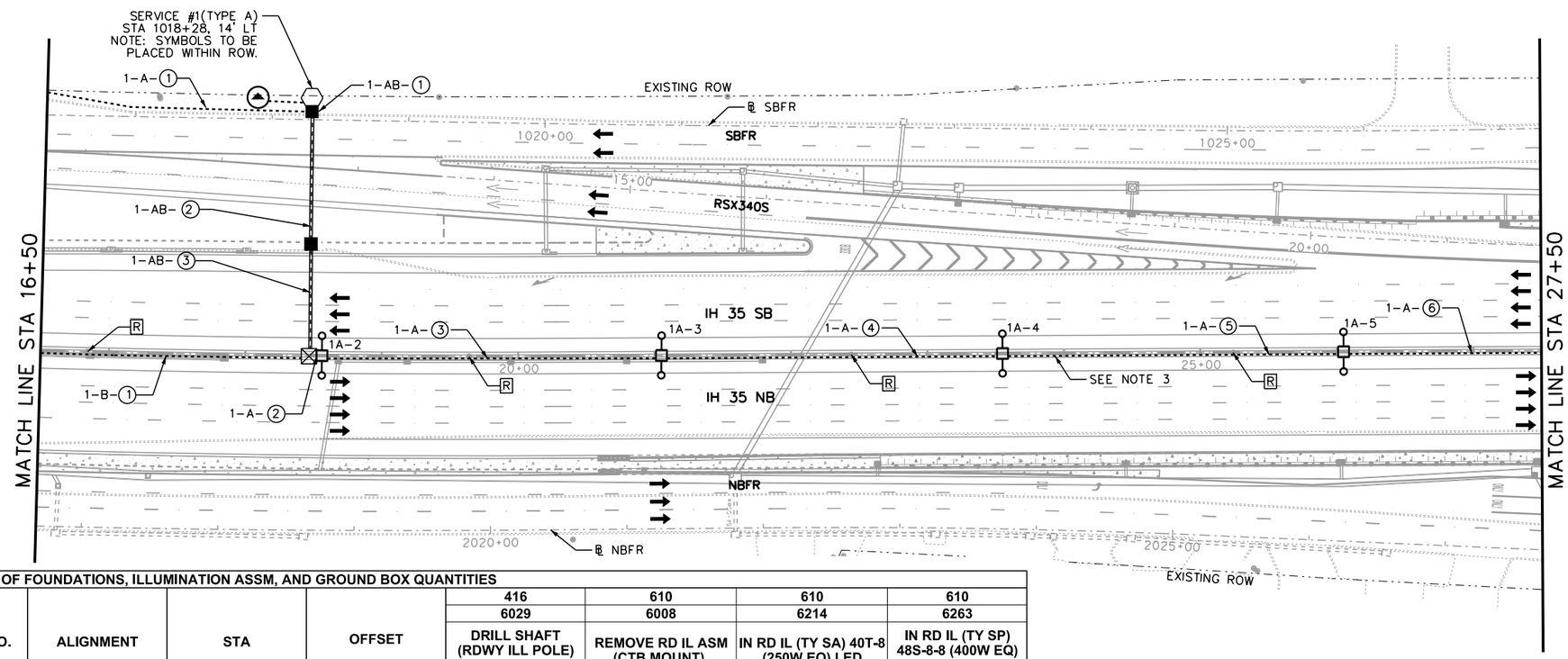
ELECTRICAL SERVICE DATA												
ELEC SERVICE NO.	SHEET NO.	ELECTRICAL SERVICE DESCRIPTION (SE ED (5) - 14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BKR. POLE/AMPS	TWO-POLE CONTACTOR AMPS	PANEL BD/LOADCENTER AMP RATING	CIRCUIT NO.	BRANCH CKT. BKR. POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
1	3 OF 15	ELEC SERV TY A (240/480) 60 (NS) (SS) PS(U)	2"	3#6	N/A	2P/60	60	N/A	A B	2P/20 2P/20	8.7 7.2	7.70



0' 25' 50' 100'

LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL

X-X-(XX) — RUN NO., CIRCUIT NO., SERVICE NO.
XX-X — POLE NO., SERVICE NO. & CIRCUIT LETTER

SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES							
				416 6029	610 6008	610 6214	610 6263
LIGHT NO.	ALIGNMENT	STA	OFFSET	DRILL SHAFT (RDWY ILL POLE) (30 IN)	REMOVE RD IL ASM (CTB MOUNT)	IN RD IL (TY SA) 40T-8 (250W EQ) LED	IN RD IL (TY SP) 48S-8-8 (400W EQ) LED
			LF	LF	EA	EA	EA
CSJ 0015-01-246							
1A-2	ML	18+55	C/L				1
1A-3	ML	21+05	C/L				1
1A-4	ML	23+55	C/L				1
1A-5	ML	26+05	C/L				1
REMOVALS					4		
SUBTOTAL				0	4	0	4

SUMMARY OF CABLE AND CONDUIT QUANTITIES					
	618 6023	618 6047	620 6007	620 6008	624 6002
RUN NO.	CONDT (PVC) (SCH 40) (2")	CONDT (PVC) (SCH 80) (2") BORE	ELEC CONDR (NO. 8) BARE	ELEC CONDR (NO. 8) INSULATED	GROUND BOX TY A (122311)W/APRON
	LF	LF	LF	LF	EA
CSJ 0015-01-246					
S1*	100				
1-AB-1	10		15	60	1
1-A-1	190		195	390	1
1-AB-2		100	105	420	
1-AB-3		82	87	348	
1-A-2	5		10	20	
1-A-3	250		255	510	
1-A-4	250		255	510	
1-A-5	250		255	510	
1-A-6	145		150	300	
1-B-1	200		205	410	
SUBTOTAL	1400	182	1532	3478	2

* CONDUIT BETWEEN ELECTRIC METER AND POWER SOURCE TO BE SUBSIDIARY TO ITEM 628. ONCOR TO INSTALL WIRING IN CONDUIT BETWEEN ELECTRIC METER AND POWER SOURCE.

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 16+50 TO STA 27+50

SHEET 3 OF 16

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1381
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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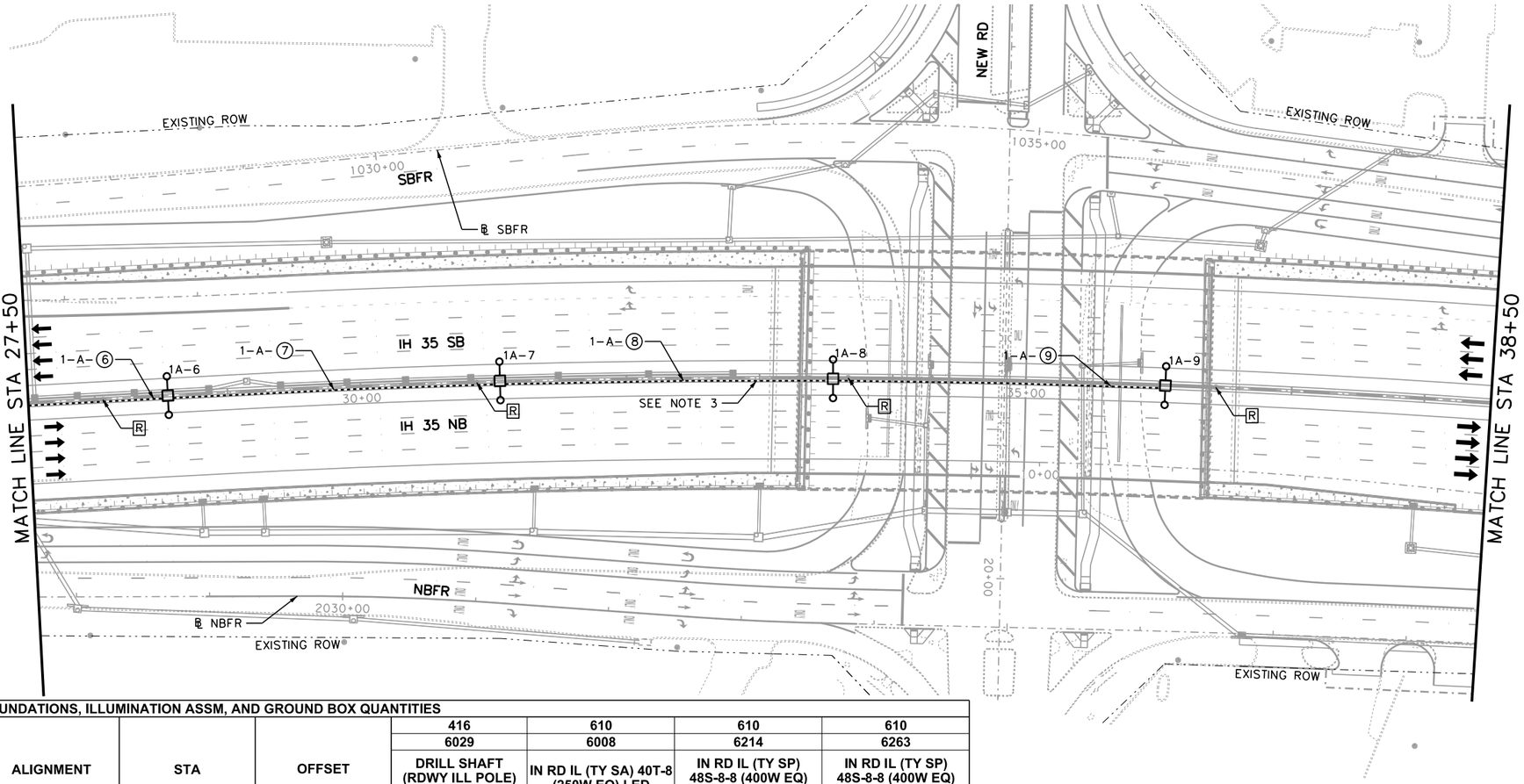

0' 25' 50' 100'

LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL

X-X-(XX)
- RUN NO.
- CIRCUIT NO.
- SERVICE NO.

XX-X
- POLE NO.
- SERVICE NO. & CIRCUIT LETTER

SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES

LIGHT NO.	ALIGNMENT	STA	OFFSET	416 6029 DRILL SHAFT (RDWY ILL POLE) (30 IN)	610 6008 IN RD IL (TY SA) 40T-8 (250W EQ) LED	610 6214 IN RD IL (TY SP) 48S-8-8 (400W EQ) LED	610 6263 IN RD IL (TY SP) 48S-8-8 (400W EQ) LED
			LF	LF	EA	EA	EA
CSJ 0015-01-246							
1A-6	ML	28+55	C/L				1
1A-7	ML	31+05	C/L				1
1A-8	ML	33+55	C/L				1
1A-9	ML	36+05	C/L				1
REMOVALS					4		
SUBTOTAL				**0**	**4**	**0**	**4**

SUMMARY OF CABLE AND CONDUIT QUANTITIES

RUN NO.	618 6023 CONDT (PVC) (SCH 40) (2")	618 6047 CONDT (PVC) (SCH 80) (2") BORE	620 6007 ELEC CONDR (NO. 8) BARE	620 6008 ELEC CONDR (NO. 8) INSULATED	624 6002 GROUND BOX TY A (122311)W/APRON
	LF	LF	LF	LF	EA
CSJ 0015-01-246					
1-A-7	105		110	220	
1-A-8	250		255	510	
1-A-9	250		255	510	
1-A-10	250		255	510	
SUBTOTAL	**855**	**0**	**875**	**1750**	**0**

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

Robert Kouba

STATE OF TEXAS
ROB A. KOUBA
85865
PROFESSIONAL ENGINEER

10/18/2023

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 27+50 TO STA 38+50

SHEET 4 OF 16

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1382
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\LTLY1_002.DGN
DATE: 10/18/2023 1:09:14 PM
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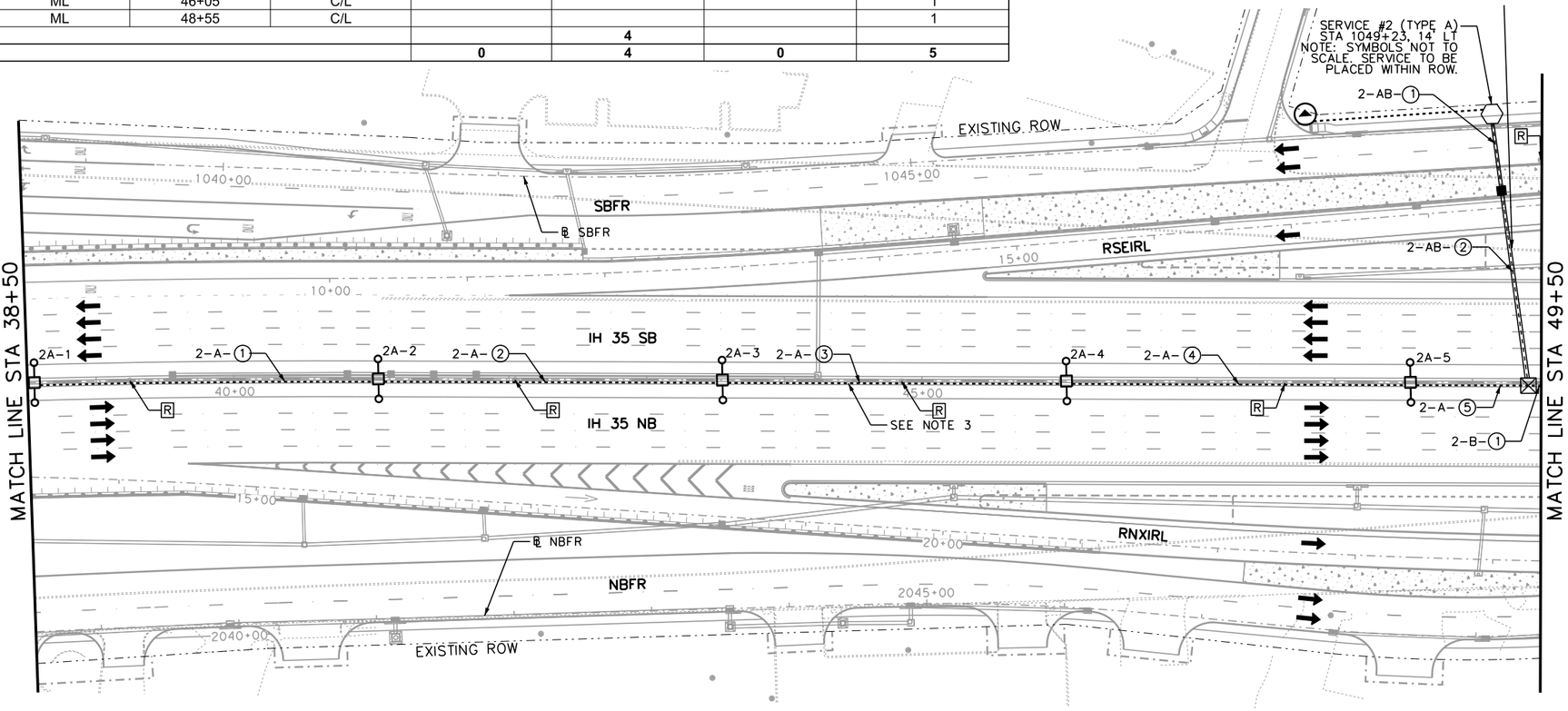
SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES							
LIGHT NO.	ALIGNMENT	STA	OFFSET	416 6029 DRILL SHAFT (RDWY ILL POLE) (30 IN)	610 6008 REMOVE RD IL ASM (CTB MOUNT)	610 6214 IN RD IL (TY SA) 40T-8 (250W EQ) LED	610 6263 IN RD IL (TY SP) 48S-8-8 (400W EQ) LED
			LF	LF	EA	EA	EA
CSJ 0015-01-246							
2A-1	ML	38+55	C/L				1
2A-2	ML	41+05	C/L				1
2A-3	ML	43+55	C/L				1
2A-4	ML	46+05	C/L				1
2A-5	ML	48+55	C/L				1
REMOVALS					4		
SUBTOTAL				0	4	0	5



ELECTRICAL SERVICE DATA											
ELEC SERVICE NO.	SHEET NO.	ELECTRICAL SERVICE DESCRIPTION (SE ED (5) - 14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BKR. POLE/AMPS	TWO-POLE CONTACTOR AMPS	PANEL BD/LOADCENTER AMP RATING	CIRCUIT NO.	BRANCH CKT. BKR. POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
2	5 OF 15	ELEC SERV TY A (240/480) 60 (NS) (SS) PS(U)	2"	3#6	N/A	2P/60	60	N/A	A B	2P/20 2P/20	5.2 8.3	6.20

SUMMARY OF CABLE AND CONDUIT QUANTITIES					
RUN NO.	618 6023 CONDT (PVC) (SCH 40) (2")	618 6047 CONDT (PVC) (SCH 80) (2") BORE	620 6007 ELEC CONDR (NO. 8) BARE	620 6008 ELEC CONDR (NO. 8) INSULATED	620 6002 GROUND BOX TY A (122311)W/APRON
	LF	LF	LF	LF	EA
CSJ 0015-01-246					
S2*	135				
2-AB-1		56	61	244	1
2-AB-2		142	147	588	
2-A-1	250		255	510	
2-A-2	250		255	510	
2-A-3	250		255	510	
2-A-4	250		255	510	
2-A-5	85		90	180	
2-B-1	10		10	20	
SUBTOTAL	1095	198	1328	3072	1

* CONDUIT BETWEEN ELECTRIC METER AND POWER SOURCE TO BE SUBSIDIARY TO ITEM 628. ONCOR TO INSTALL WIRING IN CONDUIT BETWEEN ELECTRIC METER AND POWER SOURCE.

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

0' 25' 50' 100'

LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL

X-X-(XX)
- RUN NO.
- CIRCUIT NO.
- SERVICE NO.

XX-X
- POLE NO.
- SERVICE NO. & CIRCUIT LETTER

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 38+50 TO STA 49+50

SHEET 5 OF 16

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1383
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB / HIGHWAY NO.
0015	01	246 / IH 35

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DATE: 10/18/2023 1:09:20 PM
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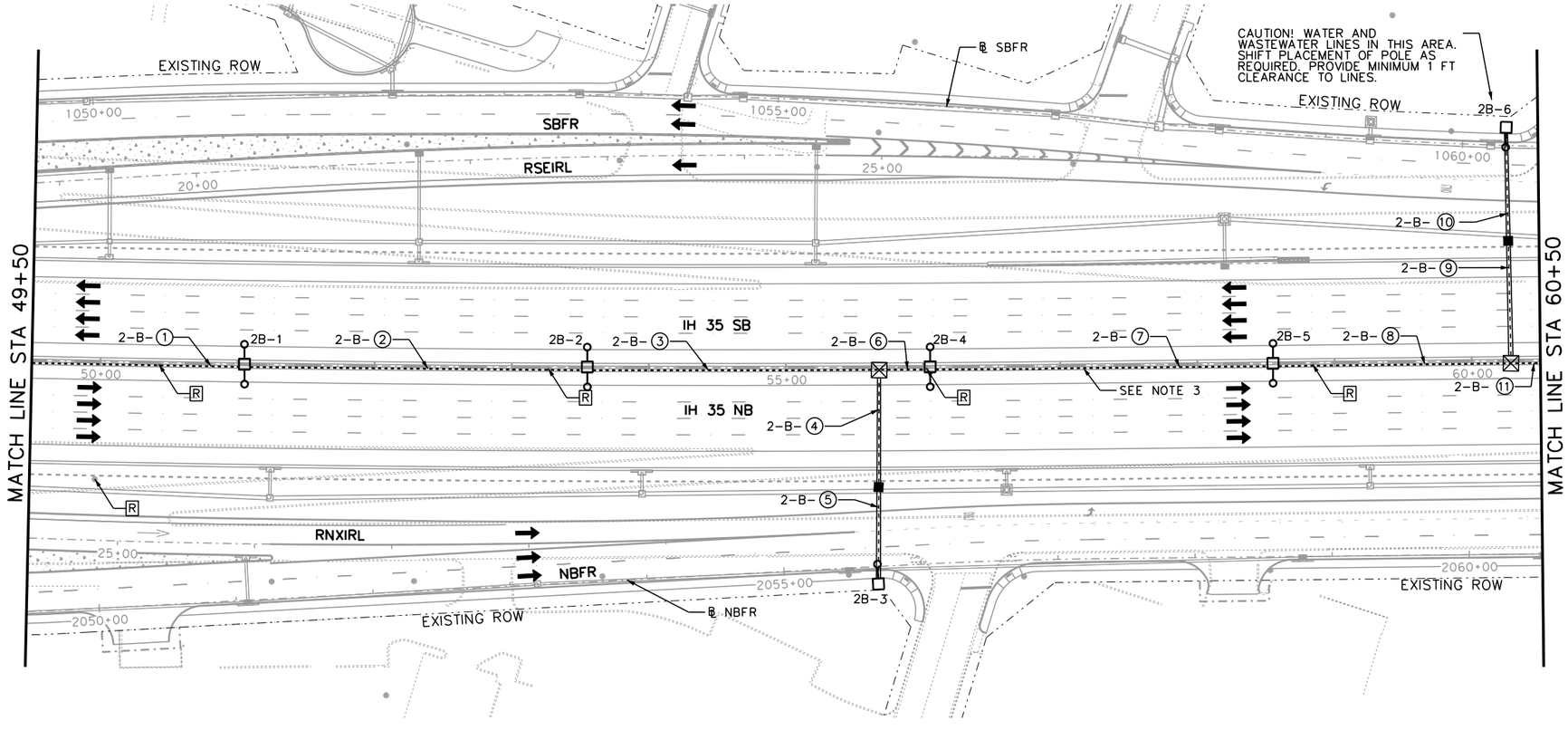
SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES								
				416	610	610	610	610
				6029	6008	6009	6214	6263
LIGHT NO.	ALIGNMENT	STA	OFFSET	DRILL SHAFT (RDWY ILL POLE) (30 IN)	REMOVE RD IL ASM (CTB MOUNT)	REMOVE RD IL ASM (TRANS-BASE)	IN RD IL (TY SA) 40T-8 (250W EQ) LED	IN RD IL (TY SP) 48S-8-8 (400W EQ) LED
			LF	LF	EA	EA	EA	EA
CSJ 0015-01-246								
2B-1	ML	51+05	CL					1
2B-2	ML	53+55	CL					1
2B-3	NBFR	2055+70	9	6			1	
2B-4	ML	56+05	CL					1
2B-5	ML	58+55	CL					1
2B-6	SBFR	1060+35	9	6			1	
REMOVALS					4	2		
SUBTOTAL				12	4	2	2	4



SUMMARY OF CABLE AND CONDUIT QUANTITIES					
	618	618	620	620	624
	6023	6047	6007	6008	6002
RUN NO.	CONDT (PVC) (SCH 40) (2")	CONDT (PVC) (SCH 80) (2") BORE	ELEC CONDR (NO. 8) BARE	ELEC CONDR (NO. 8) INSULATED	GROUND BOX TY A (122311)W/APRON
	LF	LF	LF	LF	EA
CSJ 0015-01-246					
2-B-1	155		160	320	
2-B-2	250		255	510	
2-B-3	215		220	440	
2-B-4		80	85	170	1
2-B-5		78	83	166	
2-B-6	35		40	80	
2-B-7	250		255	510	
2-B-8	175		180	360	
2-B-9		77	82	164	1
2-B-10		90	95	190	
2-B-11	20		20	40	
SUBTOTAL	1100	325	1475	2950	2

0' 25' 50' 100'

LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL

X-X-(XX)
- RUN NO.
- CIRCUIT NO.
- SERVICE NO.

XX-X
- POLE NO.
- SERVICE NO. & CIRCUIT LETTER

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

Robert Kouba

STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED
PROFESSIONAL ENGINEER

10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 49+50 TO STA 60+50

SHEET 6 OF 16

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1384

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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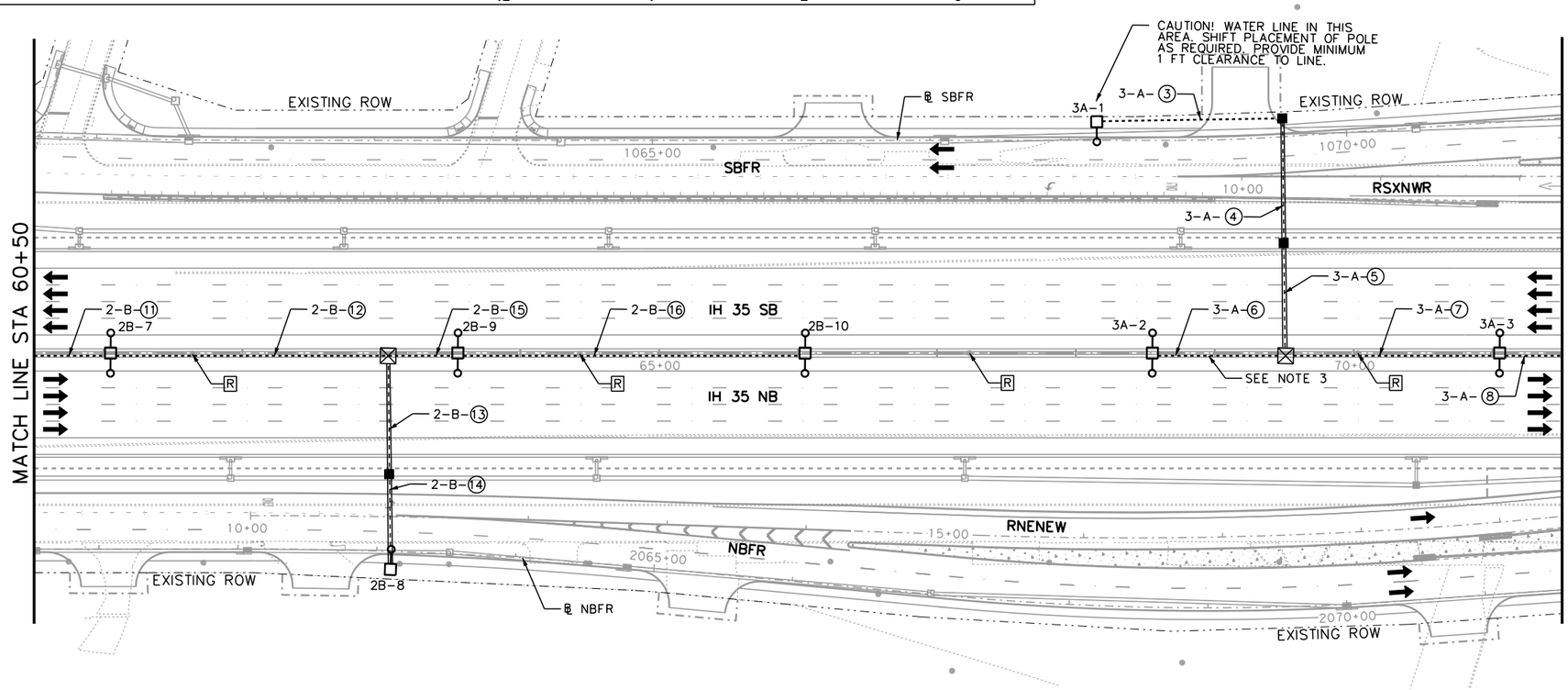
DATE: 10/18/2023 1:09:27 PM USER:

SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES							
				416	610	610	610
				6029	6008	6214	6263
LIGHT NO.	ALIGNMENT	STA	OFFSET	DRILL SHAFT (RDWY ILL POLE) (30 IN)	REMOVE RD IL ASM (CTB MOUNT)	IN RD IL (TY SA) 40T-8 (250W EQ) LED	IN RD IL (TY SP) 48S-8-8 (400W EQ) LED
			LF	LF	EA	EA	EA
CSJ 0015-01-246							
2B-7	ML	61+05	CL				1
2B-8	NBFR	2063+10	9	6		1	
2B-9	ML	63+55	CL				1
2B-10	ML	66+05	CL				1
3A-1	SBFR	1068+30	9	6		1	
3A-2	ML	68+55	CL				1
3A-3	ML	71+05	CL				1
REMOVALS					4		
SUBTOTAL				**12**	**4**	**2**	**5**



0' 25' 50' 100'

LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL

X-X-(XX) — RUN NO. / CIRCUIT NO. / SERVICE NO.

XX-X — POLE NO. / SERVICE NO. & CIRCUIT LETTER

SUMMARY OF CABLE AND CONDUIT QUANTITIES					
	618	618	620	620	624
	6023	6047	6007	6008	6002
RUN NO.	CONDT (PVC) (SCH 40) (2")	CONDT (PVC) (SCH 80) (2") BORE	ELEC CONDR (NO. 8) BARE	ELEC CONDR (NO. 8) INSULATED	GROUND BOX TY A (122311)W/APRON
	LF	LF	LF	LF	EA
CSJ 0015-01-246					
2-B-11	55		60	120	
2-B-12	200		205	410	
2-B-13		78	83	166	1
2-B-14		74	79	158	
2-B-15	50		55	110	
2-B-16	250		255	510	
3-A-3	130		135	270	
3-A-4		90	95	190	1
3-A-5		77	82	164	
3-A-6	98		103	206	
3-A-7	152		157	314	
3-A-8	45		50	100	
SUBTOTAL	**980**	**319**	**1359**	**2718**	**2**

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 60+50 TO STA 71+50

SHEET 7 OF 16

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1385
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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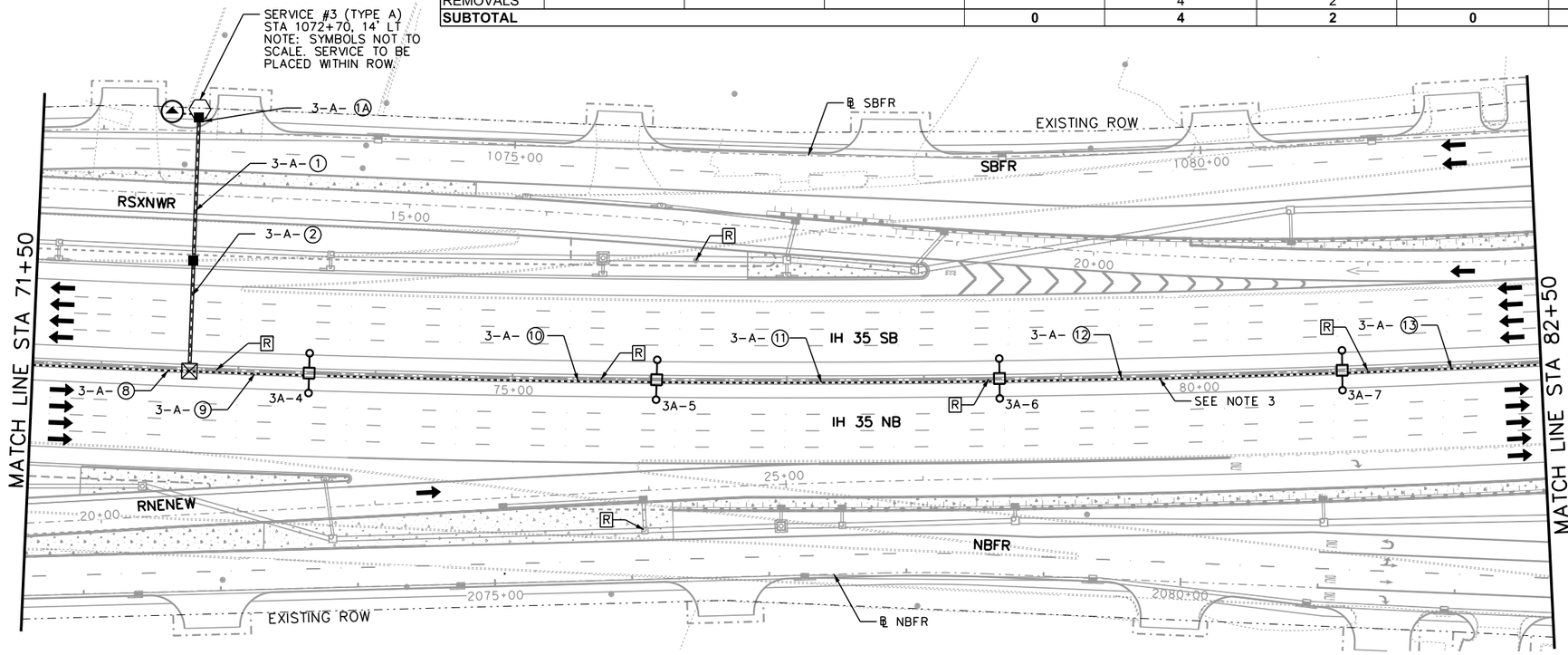
SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES								
				416	610	610	610	610
				6029	6008	6009	6214	6263
LIGHT NO.	ALIGNMENT	STA	OFFSET	DRILL SHAFT (RDWY ILL POLE) (30 IN)	REMOVE RD IL ASM (CTB MOUNT)	REMOVE RD IL ASM (TRANS-BASE)	IN RD IL (TY SA) 40T-8 (250W EQ) LED	IN RD IL (TY SP) 48S-8-8 (400W EQ) LED
			LF	LF	EA	EA	EA	EA
CSJ 0015-01-246								
3A-4	ML	73+52	CL					1
3A-5	ML	76+05	CL					1
3A-6	ML	78+55	CL					1
3A-7	ML	81+05	CL					1
REMOVALS					4	2		
SUBTOTAL				0	4	2	0	4



0' 25' 50' 100'

LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL
- X-X-(XX): RUN NO. / CIRCUIT NO. / SERVICE NO.
- XX-X: POLE NO. / SERVICE NO. & CIRCUIT LETTER

ELECTRICAL SERVICE DATA											
ELEC SERVICE NO.	SHEET NO.	ELECTRICAL SERVICE DESCRIPTION (SE ED (5) - 14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BKR. POLE/AMPS	TWO-POLE CONTACTOR AMPS	PANEL BD/LOADCENTER AMP RATING	CIRCUIT NO.	BRANCH CKT. BKR. POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
3	8 OF 15	ELEC SERV TY A (240/480) 60 (NS) (SS) PS(U)	2"	3#6	N/A	2P/60	60	N/A	A	2P/20	10.8	5.30

SUMMARY OF CABLE AND CONDUIT QUANTITIES					
	618	618	620	620	624
	6023	6047	6007	6008	6002
RUN NO.	CONDT (PVC) (SCH 40) (2")	CONDT (PVC) (SCH 80) (2") BORE	ELEC CONDR (NO. 8) BARE	ELEC CONDR (NO. 8) INSULATED	GROUND BOX TY A (122311)W/APRON
	LF	LF	LF	LF	EA
CSJ 0015-01-246					
S3*	50	60			
3-A-1A	10		15	30	1
3-A-1		43	48	96	1
3-A-2		140	145	290	
3-A-8	202		207	414	
3-A-9	10		15	30	
3-A-10	253		258	516	
3-A-11	250		255	510	
3-A-12	250		255	510	
3-A-13	145		145	290	
SUBTOTAL	1120	183	1343	2686	2

* CONDUIT BETWEEN ELECTRIC METER AND POWER SOURCE TO BE SUBSIDIARY TO ITEM 628. ONCOR TO INSTALL WIRING IN CONDUIT BETWEEN ELECTRIC METER AND POWER SOURCE.

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 71+50 TO STA 82+50

SHEET 8 OF 16

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1386
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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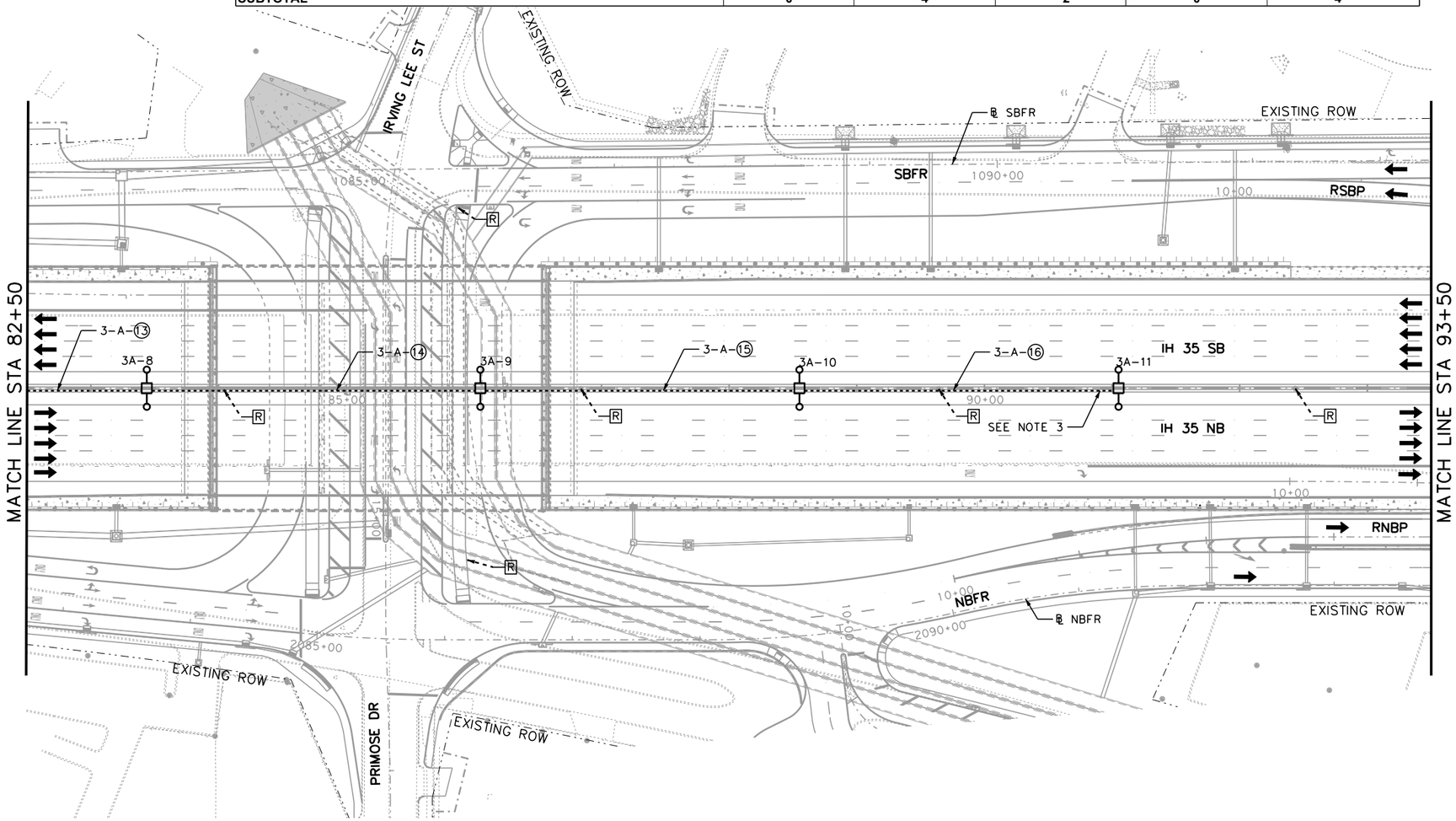
SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES								
				416	610	610	610	610
				6029	6008	6009	6214	6263
LIGHT NO.	ALIGNMENT	STA	OFFSET	DRILL SHAFT (RDWY ILL POLE) (30 IN)	REMOVE RD IL ASM (CTB MOUNT)	REMOVE RD IL ASM (TRANS-BASE)	IN RD IL (TY SA) 40T-8 (250W EQ) LED	IN RD IL (TY SP) 48S-8-8 (400W EQ) LED
			LF	LF	EA	EA	EA	EA
CSJ 0015-01-246								
3A-8	ML	83+47	CL					1
3A-9	ML	86+05	CL					1
3A-10	ML	88+55	CL					1
3A-11	ML	91+05	CL					1
REMOVALS					4	2		
SUBTOTAL				**0**	**4**	**2**	**0**	**4**



SUMMARY OF CABLE AND CONDUIT QUANTITIES					
	618	618	620	620	624
	6023	6047	6007	6008	6002
RUN NO.	CONDT (PVC) (SCH 40) (2")	CONDT (PVC) (SCH 80) (2") BORE	ELEC CONDR (NO. 8) BARE	ELEC CONDR (NO. 8) INSULATED	GROUND BOX TY A (122311)W/APRON
	LF	LF	LF	LF	EA
CSJ 0015-01-246					
3-A-13	97		102	204	
3-A-14	258		263	526	
3-A-15	250		250	500	
3-A-16	250		250	500	
SUBTOTAL	**855**	**0**	**865**	**1730**	**0**

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

0' 25' 50' 100'

LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL

X-X-(XX)
- RUN NO.
- CIRCUIT NO.
- SERVICE NO.

XX-X
- POLE NO.
- SERVICE NO. & CIRCUIT LETTER

Robert Kouba

STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED PROFESSIONAL ENGINEER

10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 82+50 TO STA 93+50

SHEET 9 OF 16

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1387

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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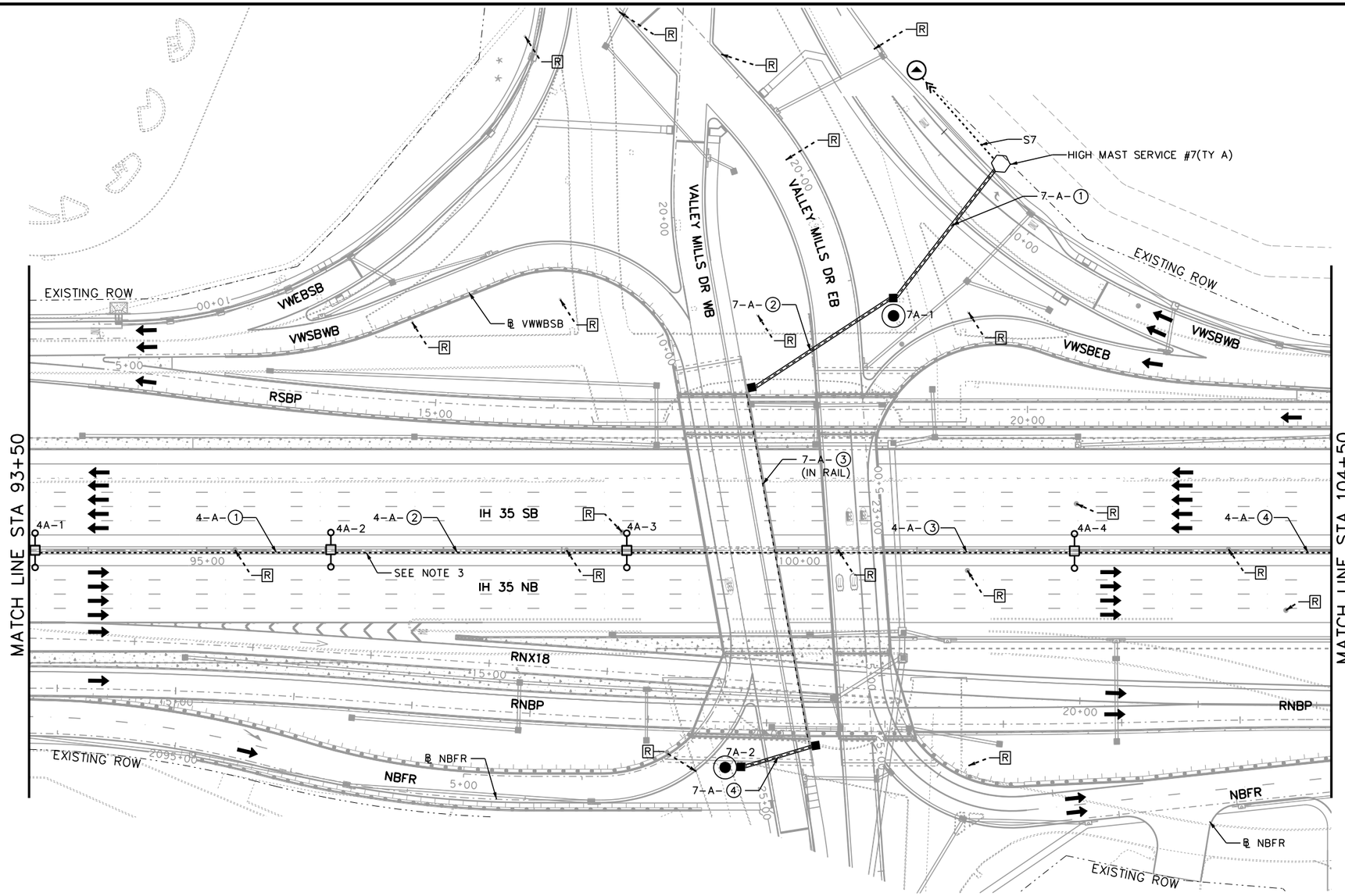

0' 25' 50' 100'

LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL

X-X-(XX) — RUN NO., CIRCUIT NO., SERVICE NO.

XX-X — POLE NO., SERVICE NO. & CIRCUIT LETTER

ELECTRICAL SERVICE DATA

ELEC SERVICE NO.	SHEET NO.	ELECTRICAL SERVICE DESCRIPTION (SE ED (5) - 14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BKR. POLE/AMPS	TWO-POLE CONTACTOR AMPS	PANEL BD/LOADCENTER AMP RATING	CIRCUIT NO.	BRANCH CKT. BKR. POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
7	10 OF 15	ELEC SERV TY A (240/480) 60 (NS) (SS) (E)PS(U)	2"	3#6	N/A	2P/60	60	N/A	A	2P/20	15	7.2

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 93+50 TO STA 104+50

SHEET 10 OF 16

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1388

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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SUMMARY OF CABLE AND CONDUIT QUANTITIES							
RUN NO.	618 6023 CONDT (PVC) (SCH 40) (2")	618 6047 CONDT (PVC) (SCH 80) (2") BORE	620 6007 ELEC CONDR (NO. 8) BARE	620 6008 ELEC CONDR (NO. 8) INSULATED	620 6009 ELEC CONDR (NO. 6) BARE	620 6010 ELEC CONDR (NO. 6) INSULATED	624 6002 GROUND BOX TY A (122311)W/APRON
	LF	LF	LF	LF	LF	LF	EA
CSJ 0015-01-246							
4-A-1	250		255	510			
4-A-2	250		255	510			
4-A-3	378		383	766			
4-A-4	217		222	444			
S7*	370						
7-A-1		140			145	290	1
7-A-2		144			149	298	1
7-A-3	306				311	622	1
7-A-4		60			65	130	1
SUBTOTAL	**1401**	**344**	**1115**	**2230**	**670**	**1340**	**4**

* CONDUIT BETWEEN ELECTRIC METER AND POWER SOURCE TO BE SUBSIDIARY TO ITEM 628. ONCOR TO INSTALL WIRING IN CONDUIT BETWEEN ELECTRIC METER AND POWER SOURCE.

SUMMARY OF HIGH MAST ILLUMINATION ASSM				
RUN NO.	416 6026 DRILL SHAFT (HIGH MAST POLE)(60 IN)	432 6001 RIPRAP (CONC) 4"	613 6005 HI MST IL POLE (150 FT)(80 MPH)	6156 6002 LED HI MST IL ASM (6 FIXT)(ASYM) (TY A)
	LF	CY	EA	EA
CSJ 0015-01-246				
7A-1	23	3	1	1
7A-2	26	3	1	1
SUBTOTAL	**49**	**6**	**2**	**2**

SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES								
LIGHT NO.	ALIGNMENT	STA	OFFSET	416 6029 DRILL SHAFT (RDWY ILL POLE) (30 IN)	610 6008 REMOVE RD IL ASM (CTB MOUNT)	610 6009 REMOVE RD IL ASM (TRANS-BASE)	610 6214 IN RD IL (TY SA) 40T-8 (250W EQ) LED	610 6263 IN RD IL (TY SP) 48S-8-8 (400W EQ) LED
			LF	LF	EA	EA	EA	EA
CSJ 0015-01-246								
4A-1	ML	93+55	CL					1
4A-2	ML	96+05	CL					1
4A-3	ML	98+55	CL					1
4A-4	ML	102+33	CL					1
REMOVALS					4	15		
SUBTOTAL				**0**	**4**	**15**	**0**	**4**

Robert Kouba

STATE OF TEXAS
ROB A. KOUBA
85865
PROFESSIONAL ENGINEER

10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 93+50 TO STA 104+50

SHEET 11 OF 16

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1389
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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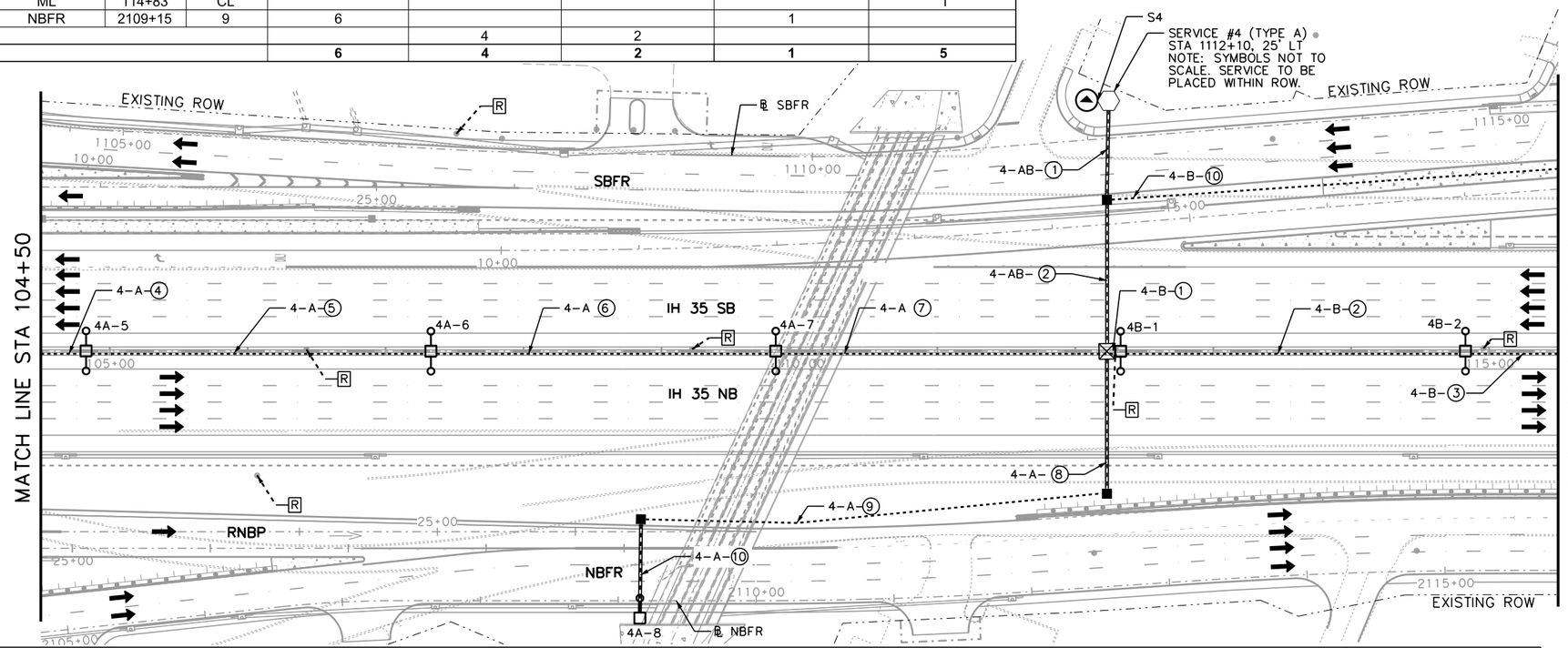
DATE: 10/18/2023 1:10:23 PM USER:

SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES								
				416	610	610	610	610
				6029	6263	6263	6214	6263
LIGHT NO.	ALIGNMENT	STA	OFFSET	DRILL SHAFT (RDWY ILL POLE) (30 IN)	REMOVE RD IL ASM (CTB MOUNT)	REMOVE RD IL ASM (TRANS MOUNT)	IN RD IL (TY SA) 40T-8 (250W EQ) LED	IN RD IL (TY SP) 48S-8-8 (400W EQ) LED
			LF	LF	EA	EA	EA	EA
CSJ 0015-01-246								
4A-7	ML	109+83	CL					1
4A-6	ML	107+33	CL					1
4A-5	ML	104+83	CL					1
4B-1	ML	112+33	CL					1
4B-2	ML	114+83	CL					1
4A-8	NBFR	2109+15	9	6			1	
REMOVALS					4	2		
SUBTOTAL				6	4	2	1	5



0' 25' 50' 100'

LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL

X-X-(XX)
- RUN NO.
- CIRCUIT NO.
- SERVICE NO.

XX-X
- POLE NO.
- SERVICE NO. & CIRCUIT LETTER

ELECTRICAL SERVICE DATA												
ELEC SERVICE NO.	SHEET NO.	ELECTRICAL SERVICE DESCRIPTION (SE ED (5) - 14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BKR. POLE/AMPS	TWO-POLE CONTACTOR AMPS	PANEL BD/LOADCENTER AMP RATING	CIRCUIT NO.	BRANCH CKT. BKR. POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
4	11 OF 15	ELEC SERV TY A (240/480) 60 (NS) (SS) PS(U)	2"	3#6	N/A	2P/60	60	N/A	A B	2P/20 2P/20	7.6 6.9	7.20

SUMMARY OF CABLE AND CONDUIT QUANTITIES					
	618	618	620	620	624
	6023	6047	6007	6008	6002
RUN NO.	CONDT (PVC) (SCH 40) (2")	CONDT (PVC) (SCH 80) (2") BORE	ELEC CONDR (NO. 8) BARE	ELEC CONDR (NO. 8) INSULATED	GROUND BOX TY A (122311)W/APRON
	LF	LF	LF	LF	EA
CSJ 0015-01-246					
S4*		100			
4-AB-1		75	80	320	1
4-AB-2		107	112	448	
4-A-4	34		39	78	
4-A-5	250		255	510	
4-A-6	250		255	510	
4-A-7	240		245	490	
4-A-8		106	111	222	1
4-A-9	343		348	696	1
4-A-10	69		74	148	
4-B-1	10		15	30	
4-B-2	250		255	510	
4-B-3	62		67	134	
4-B-10	327		332	664	
SUBTOTAL	1835	388	2188	4760	3

* CONDUIT BETWEEN ELECTRIC METER AND POWER SOURCE TO BE SUBSIDIARY TO ITEM 628. ONCOR TO INSTALL WIRING IN CONDUIT BETWEEN ELECTRIC METER AND POWER SOURCE.

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

Robert Kouba

STATE OF TEXAS
ROB A. KOUBA
85865
PROFESSIONAL ENGINEER

10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 104+50 TO STA 115+50

SHEET 12 OF 16

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1390

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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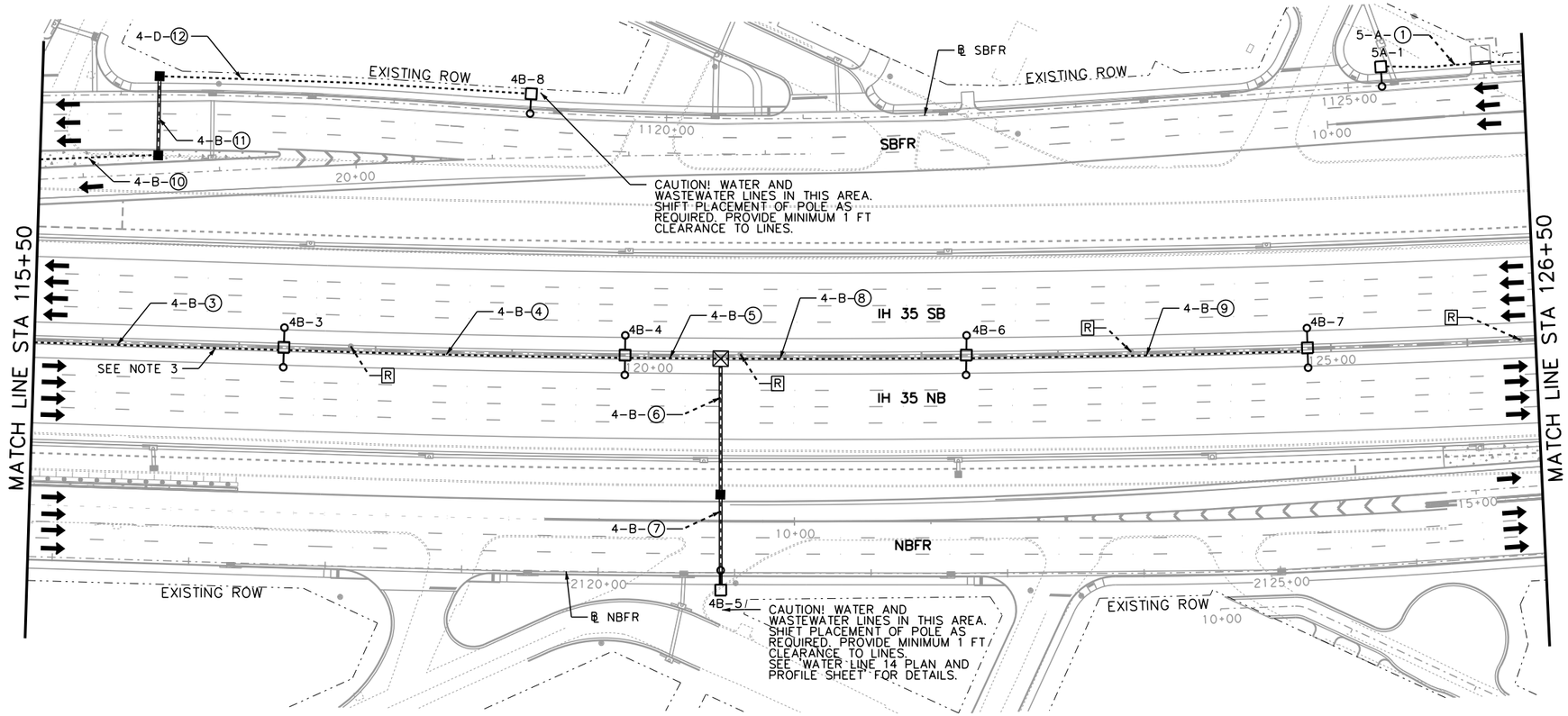
SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES							
				416	610	610	610
				6029	6008	6214	6263
LIGHT NO.	ALIGNMENT	STA	OFFSET	DRILL SHAFT (RDWY ILL POLE) (30 IN)	REMOVE RD IL ASM (CTB MOUNT)	IN RD IL (TY SA) 40T-8 (250W EQ) LED	IN RD IL (TY SP) 48S-8-8 (400W EQ) LED
			LF	LF	EA	EA	EA
CSJ 0015-01-246							
4B-3	ML	117+33	CL				1
4B-4	ML	119+83	CL				1
4B-5	NBFR	2120+90	9	6		1	
4B-6	ML	122+33	CL				1
4B-7	ML	124+83	CL				1
4B-8	SBFR	1119+00	9	6		1	
5A-1	SBFR	1125+25	9	6		1	
REMOVALS					4		
SUBTOTAL				**18**	**4**	**3**	**4**



0' 25' 50' 100'

LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL

X-X-(XX)
- RUN NO.
- CIRCUIT NO.
- SERVICE NO.

XX-X
- POLE NO.
- SERVICE NO. & CIRCUIT LETTER

SUMMARY OF CABLE AND CONDUIT QUANTITIES					
	618	618	620	620	624
	6023	6047	6007	6008	6002
RUN NO.	CONDT (PVC) (SCH 40) (2")	CONDT (PVC) (SCH 80) (2") BORE	ELEC CONDR (NO. 8) BARE	ELEC CONDR (NO. 8) INSULATED	GROUND BOX TY A (122311)W/APRON
	LF	LF	LF	LF	EA
CSJ 0015-01-246					
4-B-3	182		187	374	
4-B-4	250		255	510	
4-B-5	70		75	150	
4-B-6		104	109	218	1
4-B-7		66	71	142	
4-B-8	180		185	370	
4-B-9	250		255	510	
4-B-10	87		87	174	1
4-B-11		54	59	118	1
4-B-12	272		277	554	
5-A-1	87	15	102	204	
SUBTOTAL	**1378**	**239**	**1662**	**3324**	**3**

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 115+50 TO STA 126+50

SHEET 13 OF 16

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1391
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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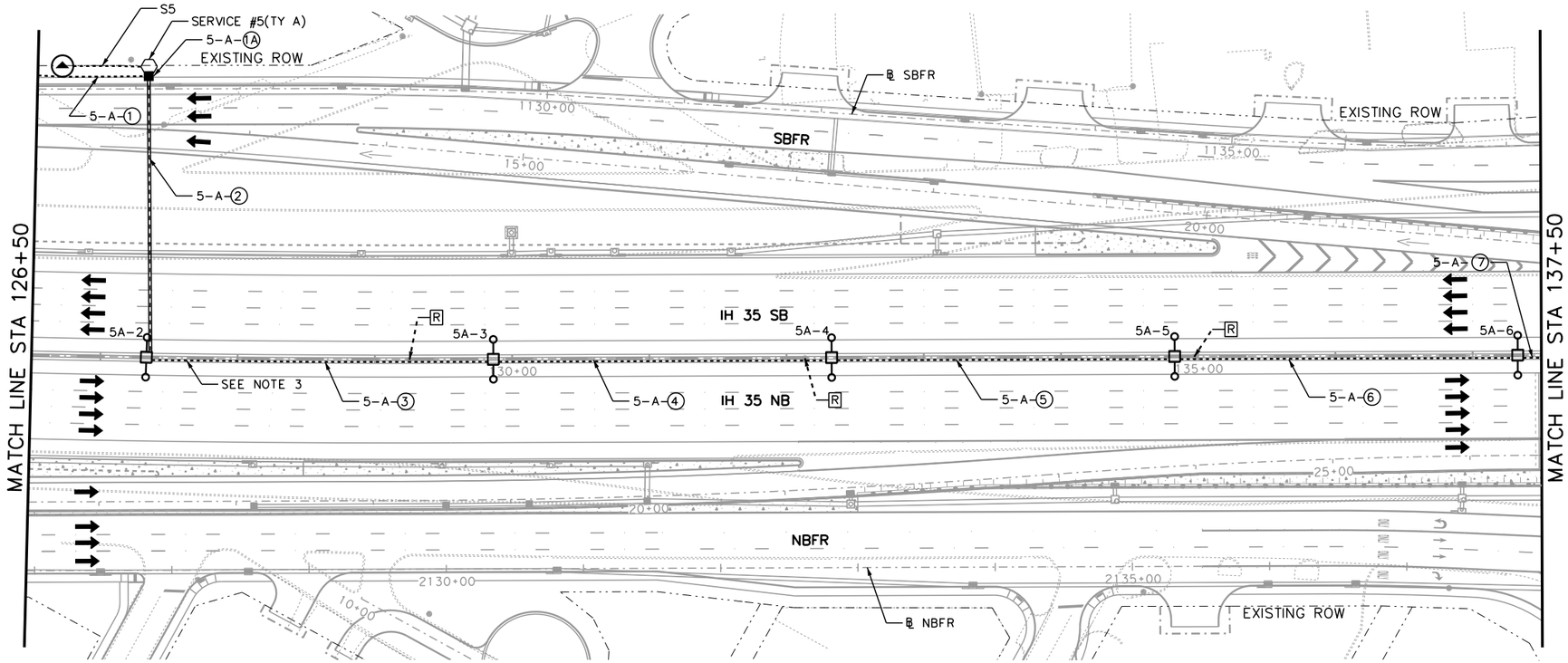
SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES							
LIGHT NO.	ALIGNMENT	STA	OFFSET	416 6029 DRILL SHAFT (RDWY ILL POLE) (30 IN)	610 6008 REMOVE RD IL ASM (CTB MOUNT)	610 6214 IN RD IL (TY SA) 40T-8 (250W EQ) LED	610 6263 IN RD IL (TY SP) 48S-8-8 (400W EQ) LED
			LF	LF	EA	EA	EA
CSJ 0015-01-246							
5A-2	ML	127+34	CL				1
5A-3	ML	129+86	CL				1
5A-4	ML	132+33	CL				1
5A-5	ML	134+83	CL				1
5A-6	ML	137+33	CL				1
REMOVALS					3		
SUBTOTAL				**0**	**3**	**0**	**5**



ELECTRICAL SERVICE DATA												
ELEC SERVICE NO.	SHEET NO.	ELECTRICAL SERVICE DESCRIPTION (SE ED (5) - 14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BKR. POLE/AMPS	TWO-POLE CONTACTOR AMPS	PANEL BD/LOADCENTER AMP RATING	CIRCUIT NO.	BRANCH CKT. BKR. POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
5	13 OF 15	ELEC SERV TY A (240/480) 60 (NS) (SS) PS(U)	2"	3#6	N/A	2P/60	60	N/A	A	2P/20	9.7	4.80

SUMMARY OF CABLE AND CONDUIT QUANTITIES					
RUN NO.	618 6023 CONDT (PVC) (SCH 40) (2")	618 6047 CONDT (PVC) (SCH 80) (2") BORE	620 6007 ELEC CONDR (NO. 8) BARE	620 6008 ELEC CONDR (NO. 8) INSULATED	624 6002 GROUND BOX TY A (122311)W/APRON
	LF	LF	LF	LF	EA
CSJ 0015-01-246					
S5*	100				
5-A-1A	10		15	30	1
5-A-1	80		85	170	
5-A-2		260	265	530	
5-A-3	252		257	514	
5-A-4	247		252	504	
5-A-5	250		255	510	
5-A-6	250		255	510	
5-A-7	15		15	30	
SUBTOTAL	**1204**	**260**	**1399**	**2798**	**1**

* CONDUIT BETWEEN ELECTRIC METER AND POWER SOURCE TO BE SUBSIDIARY TO ITEM 628. ONCOR TO INSTALL WIRING IN CONDUIT BETWEEN ELECTRIC METER AND POWER SOURCE.

0' 25' 50' 100'

LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL

X-X-(XX) — RUN NO., CIRCUIT NO., SERVICE NO.

XX-X — POLE NO., SERVICE NO. & CIRCUIT LETTER

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 126+50 TO STA 137+50

SHEET 14 OF 16

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1392
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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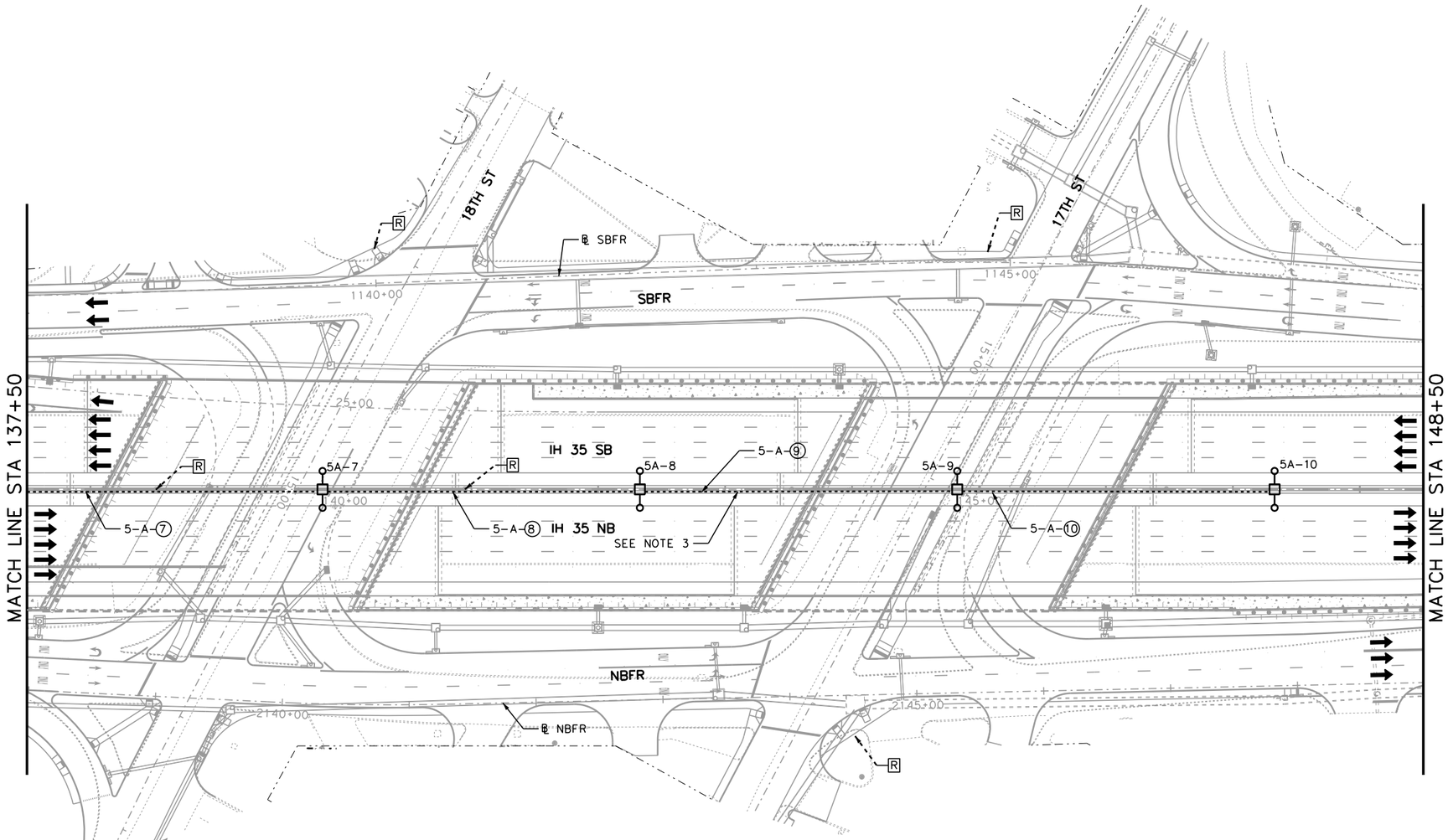

0' 25' 50' 100'

LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL

X-X-(XX)
- RUN NO.
- CIRCUIT NO.
- SERVICE NO.

XX-X
- POLE NO.
- SERVICE NO. & CIRCUIT LETTER

SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES

LIGHT NO.	ALIGNMENT	STA	OFFSET	416 6029 DRILL SHAFT (RDWY ILL POLE) (30 IN)	610 6008 IN RD IL (TY SA) 40T-8 (250W EQ) LED	610 6009 IN RD IL (TY SP) 48S-8-8 (400W EQ) LED	610 6214 IN RD IL (TY SA) 40T-8 (250W EQ) LED	610 6263 IN RD IL (TY SP) 48S-8-8 (400W EQ) LED
			LF	LF	EA	EA	EA	EA
CSJ 0015-01-246								
5A-7	ML	139+83	CL					1
5A-8	ML	142+33	CL					1
5A-9	ML	144+83	CL					1
5A-10	ML	147+33	CL					1
REMOVALS					2	3		
SUBTOTAL				**0**	**2**	**3**	**0**	**4**

SUMMARY OF CABLE AND CONDUIT QUANTITIES

RUN NO.	618 6023 CONDT (PVC) (SCH 40) (2")	618 6047 CONDT (PVC) (SCH 80) (2") BORE	620 6007 ELEC CONDR (NO. 8) BARE	620 6008 ELEC CONDR (NO. 8) INSULATED	624 6002 GROUND BOX TY A (122311)W/APRON
	LF	LF	LF	LF	EA
CSJ 0015-01-246					
5-A-7	233		238	476	
5-A-8	250		255	510	
5-A-9	250		255	510	
5-A-10	250		255	510	
SUBTOTAL	**983**	**0**	**1003**	**2006**	**0**

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

Robert Kouba

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10/18/2023

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 137+50 TO STA 148+50

SHEET 15 OF 16

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1393
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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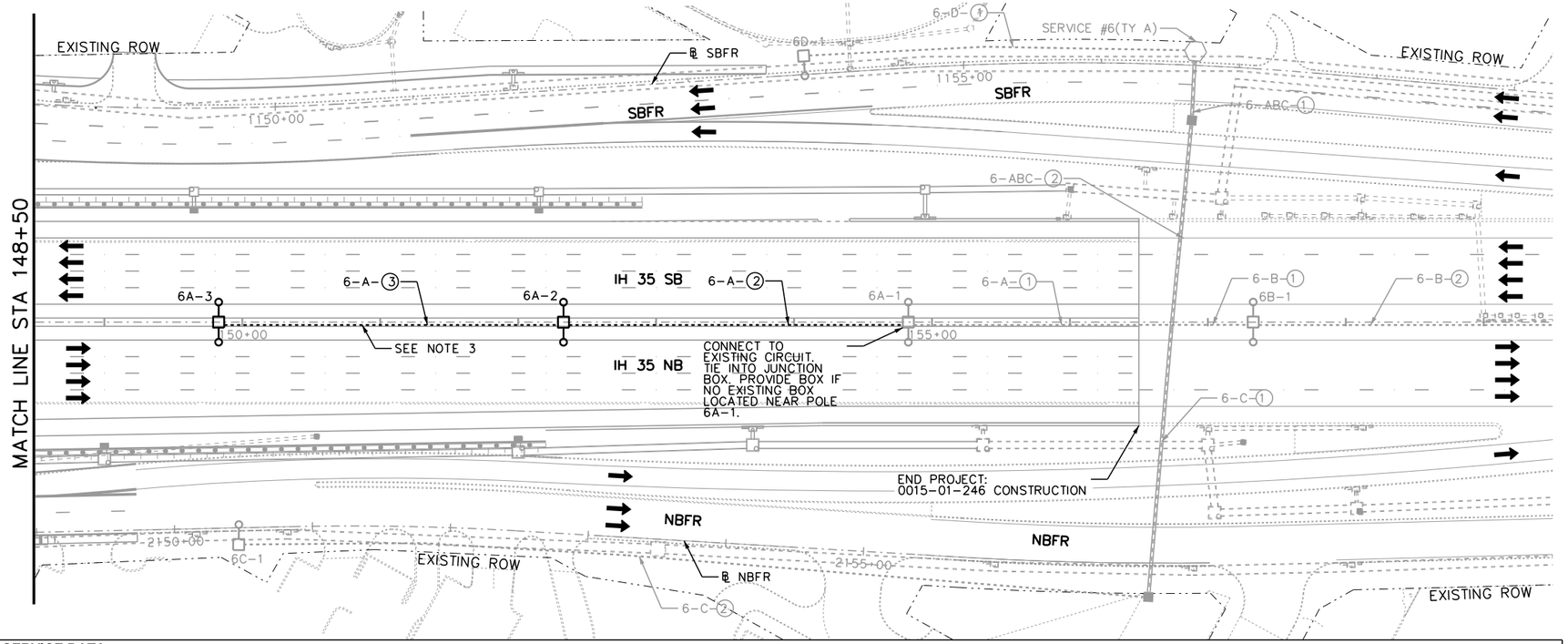
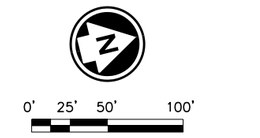
USER:

SUMMARY OF FOUNDATIONS, ILLUMINATION ASSM, AND GROUND BOX QUANTITIES						
LIGHT NO.	ALIGNMENT	STA	OFFSET	416 6029 DRILL SHAFT (RDWY ILL POLE) (30 IN)	610 6214 IN RD IL (TY SA) 40T-8 (250W EQ) LED	610 6263 IN RD IL (TY SP) 48S-8-8 (400W EQ) LED
			LF	LF	EA	EA
CSJ 0015-01-246						
6A-2	ML	152+33	CL			1
6A-3	ML	149+83	CL			1
SUBTOTAL				0	0	2





LEGEND:

- PROP ROADWAY ILLUM. ASSEMBLY
- PROP ROADWAY ILLUM. ASSEMBLY (DBL)
- PROP HIGH MAST ILLUM ASSEMBLY
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE CONDUIT AND WIRING OR WITHIN BARRIER
- CONDUIT UNDER ROADWAY (BORE)
- RIGID METAL CONDUIT
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- POWER SOURCE
- R ILLUMINATION POLE REMOVAL

X-X-(XX)
- RUN NO.
- CIRCUIT NO.
- SERVICE NO.

XX-X
- POLE NO.
- SERVICE NO. & CIRCUIT LETTER

ELECTRICAL SERVICE DATA											
ELEC SERVICE NO.	SHEET NO.	ELECTRICAL SERVICE DESCRIPTION (SE ED (5) - 14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BKR. POLE/AMPS	TWO-POLE CONTACTOR AMPS	PANEL BD/LOADCENTER AMP RATING	CIRCUIT NO.	BRANCH CKT. BKR. POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
6	15 OF 15	ELEC SERV TY A (240/480) 60 (NS) (SS) PS(U) (EXISTING TO REMAIN)	2"	3#6	N/A	2P/60	60	N/A	ABCD	2P/20	11	5.30

SUMMARY OF CABLE AND CONDUIT QUANTITIES					
RUN NO.	618 6023 CONDT (PVC) (SCH 40) (2")	618 6047 CONDT (PVC) (SCH 80) (2") BORE	620 6007 ELEC CONDR (NO. 8) BARE	620 6008 ELEC CONDR (NO. 8) INSULATED	624 6002 GROUND BOX TY A (122311)W/APRON
	LF	LF	LF	LF	EA
CSJ 0015-01-246					
6-A-2	250		255	510	
6-A-3	250		255	510	
SUBTOTAL	500	0	510	1020	0

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. CONDUIT RUNNING DOWN CENTER OF IH-35 IS LOCATED IN BARRIER. SEE SHEET 'SPECIAL MODIFICATION TO TYPE SSTR RAIL'.

Robert Kouba

STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED
PROFESSIONAL ENGINEER

10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LIGHTING LAYOUT

STA 148+50 TO STA 159+50

SHEET 16 OF 16

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1394
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB / HIGHWAY NO.
0015	01	246 / IH 35

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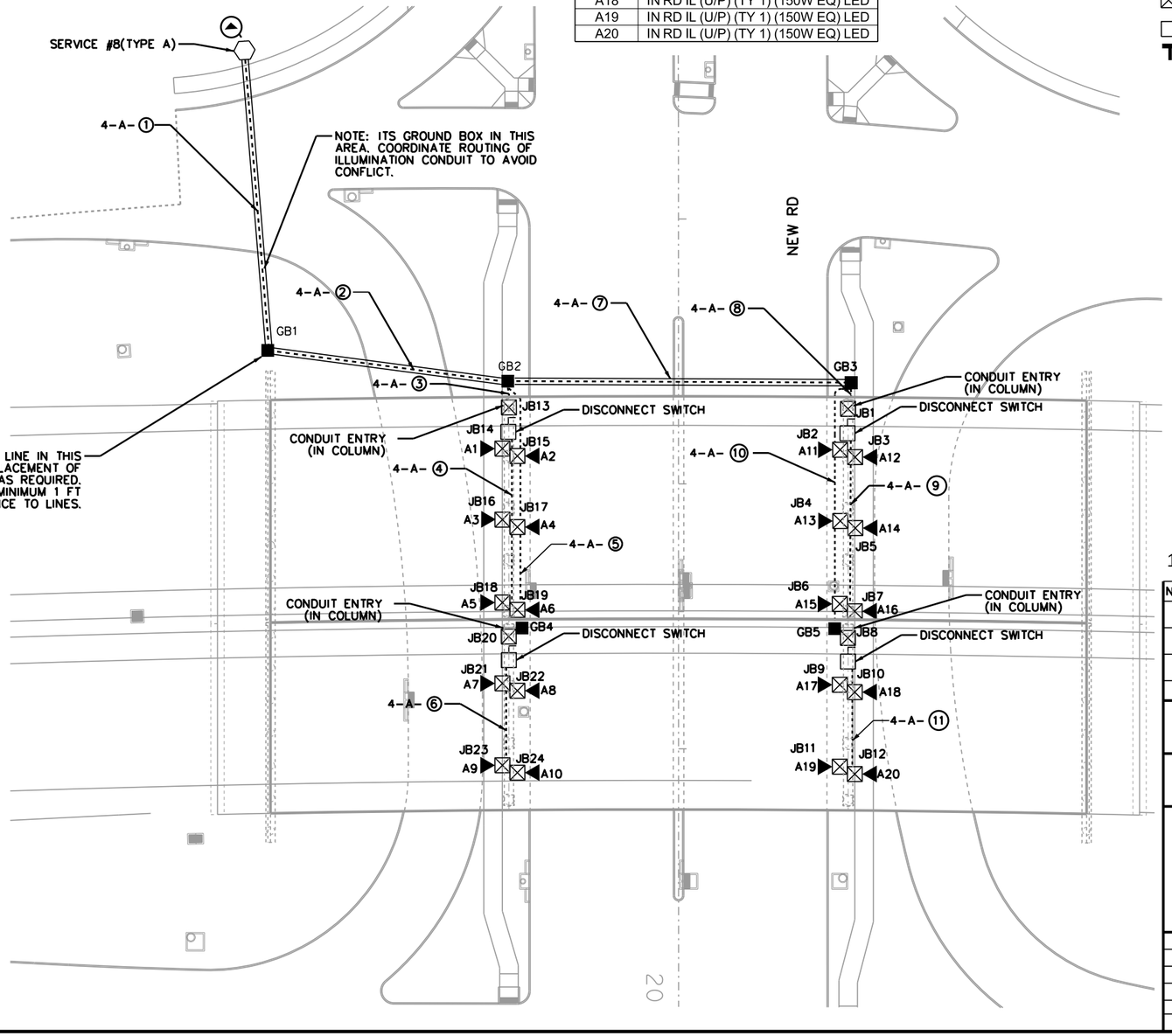
USER:

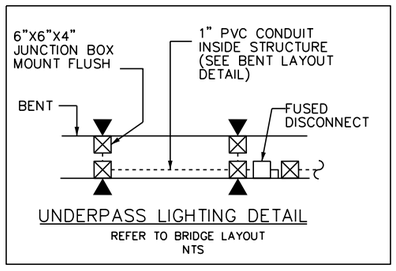
SUMMARY OF CABLE AND CONDUIT QUANTITIES								
SERVICE	CIRCUIT	RUN NO.	RUN LENGTH (FT)	618 6016 CONDT (PVC) (SCH 40) (1")	618 6023 CONDT (PVC) (SCH 40) (2")	618 6047 CONDT (PVC) (SCH 80) (2") BORE	620 6005 ELEC CONDR (NO. 10) BARE	620 6006 ELEC CONDR (NO. 10) INSULATED
				LF	LF	LF	LF	LF
CSJ 0015-01-249								
#8	A	8-A-1	115			115	115	230
#8	A	8-A-2	95			95	95	190
#8	A	8-A-3	30	20	10		30	60
#8	A	8-A-8	80	80			80	160
#8	A	8-A-5	115	20	95		115	230
#8	A	8-A-6	60	60			60	120
#8	A	8-A-7	130			130	130	260
#8	A	8-A-8	30	20	10		30	60
#8	A	8-A-9	85	85			85	170
#8	A	8-A-10	120	20	100		120	240
#8	A	8-A-11	60	60			60	120
TOTAL				365	215	340	920	1840

ROADWAY ILLUMINATION ASSEMBLY SHEET SUMMARY	
FIXT NO.	STANDARD TYPE
A1	IN RD IL (U/P) (TY 1) (150W EQ) LED
A2	IN RD IL (U/P) (TY 1) (150W EQ) LED
A3	IN RD IL (U/P) (TY 1) (150W EQ) LED
A4	IN RD IL (U/P) (TY 1) (150W EQ) LED
A5	IN RD IL (U/P) (TY 1) (150W EQ) LED
A6	IN RD IL (U/P) (TY 1) (150W EQ) LED
A7	IN RD IL (U/P) (TY 1) (150W EQ) LED
A8	IN RD IL (U/P) (TY 1) (150W EQ) LED
A9	IN RD IL (U/P) (TY 1) (150W EQ) LED
A10	IN RD IL (U/P) (TY 1) (150W EQ) LED
A11	IN RD IL (U/P) (TY 1) (150W EQ) LED
A12	IN RD IL (U/P) (TY 1) (150W EQ) LED
A13	IN RD IL (U/P) (TY 1) (150W EQ) LED
A14	IN RD IL (U/P) (TY 1) (150W EQ) LED
A15	IN RD IL (U/P) (TY 1) (150W EQ) LED
A16	IN RD IL (U/P) (TY 1) (150W EQ) LED
A17	IN RD IL (U/P) (TY 1) (150W EQ) LED
A18	IN RD IL (U/P) (TY 1) (150W EQ) LED
A19	IN RD IL (U/P) (TY 1) (150W EQ) LED
A20	IN RD IL (U/P) (TY 1) (150W EQ) LED

SUMMARY OF ILLUMINATION QUANTITIES			
GRAND TOTALS			
ITEM NO.	DESCRIPTION	UNITS	SHEET TOTAL
0610 6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	20
*	JUNCTION BOX	EA	24
0618 6016	CONDT (PVC) (SCH 40) (1")	LF	365
0618 6023	CONDT (PVC) (SCH 40) (2")	LF	215
0618 6047	CONDT (PVC) (SCH 80) (2") BORE	LF	340
0620 6005	ELEC CONDR (NO. 10) BARE	LF	920
0620 6006	ELEC CONDR (NO. 10) INSULATED	LF	1840
0624 6004	GROUND BOX TY A (122311) W/APRON	EA	5
0628-6044	ELC SRV TY A 240/480 060(NS)SS(S)PS(U)	EA	1

*FOR CONTRACTOR INFORMATION ONLY. ITEM WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO ITEM 610.





NOTE: FOR ELECTRICAL SERVICE DATA, SEE 'ELECTRICAL SERVICE DATA' SHEET.

0' 25' 50'

LEGEND:

- POWER SOURCE
- PROP UNDERPASS LUMINAIRE
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE AND INSIDE STRUCTURE CONDUIT WIRING
- CONDUIT UNDER ROADWAY (BORE)
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- DISCONNECT SWITCH
- STUB OUT (FOR FUTURE USE)

X-X-X
RUN NUMBER
CIRCUIT NUMBER
SERVICE NUMBER

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
PROFESSIONAL LICENSED ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

UNDERBRIDGE LIGHTING

NEW ROAD

SHEET 1 OF 4

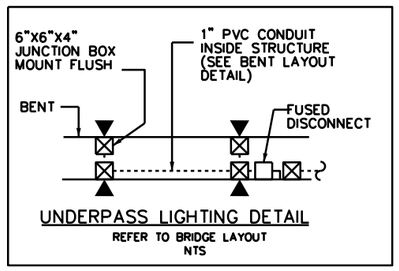
FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1395
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

SUMMARY OF CABLE AND CONDUIT QUANTITIES								
				618	618	618	620	620
				6016	6023	6047	6005	6006
SERVICE	CIRCUIT	RUN NO.	RUN LENGTH (FT)	CONDT (PVC) (SCH 40) (1")	CONDT (PVC) (SCH 40) (2")	CONDT (PVC) (SCH 80) (2") BORE	ELEC CONDR (NO. 10) BARE	ELEC CONDR (NO. 10) INSULATED
				LF	LF	LF	LF	LF
CSJ 0015-01-246								
#9	A	9-A-1	90			90	95	190
#9	A	9-A-2	85			85	90	180
#9	A	9-A-3	100			100	105	210
#9	A	9-A-4	40	40			45	90
#9	A	9-A-5	65		65		70	140
#9	A	9-A-6	150	20	130		155	310
#9	A	9-A-7	75	75			80	160
#9	A	9-A-8	30	20	10		35	70
#9	A	9-A-9	65	65			70	140
#9	A	9-A-10	120	20	100		125	250
#9	A	9-A-11	75	75			80	160
TOTAL				315	305	275	950	1900

ROADWAY ILLUMINATION ASSEMBLY SHEET SUMMARY	
FIXT NO.	STANDARD TYPE
A1	IN RD IL (U/P) (TY 1) (150W EQ) LED
A2	IN RD IL (U/P) (TY 1) (150W EQ) LED
A3	IN RD IL (U/P) (TY 1) (150W EQ) LED
A4	IN RD IL (U/P) (TY 1) (150W EQ) LED
A5	IN RD IL (U/P) (TY 1) (150W EQ) LED
A6	IN RD IL (U/P) (TY 1) (150W EQ) LED
A7	IN RD IL (U/P) (TY 1) (150W EQ) LED
A8	IN RD IL (U/P) (TY 1) (150W EQ) LED
A9	IN RD IL (U/P) (TY 1) (150W EQ) LED
A10	IN RD IL (U/P) (TY 1) (150W EQ) LED
A11	IN RD IL (U/P) (TY 1) (150W EQ) LED
A12	IN RD IL (U/P) (TY 1) (150W EQ) LED
A13	IN RD IL (U/P) (TY 1) (150W EQ) LED
A14	IN RD IL (U/P) (TY 1) (150W EQ) LED
A15	IN RD IL (U/P) (TY 1) (150W EQ) LED
A16	IN RD IL (U/P) (TY 1) (150W EQ) LED
A17	IN RD IL (U/P) (TY 1) (150W EQ) LED
A18	IN RD IL (U/P) (TY 1) (150W EQ) LED
A19	IN RD IL (U/P) (TY 1) (150W EQ) LED
A20	IN RD IL (U/P) (TY 1) (150W EQ) LED

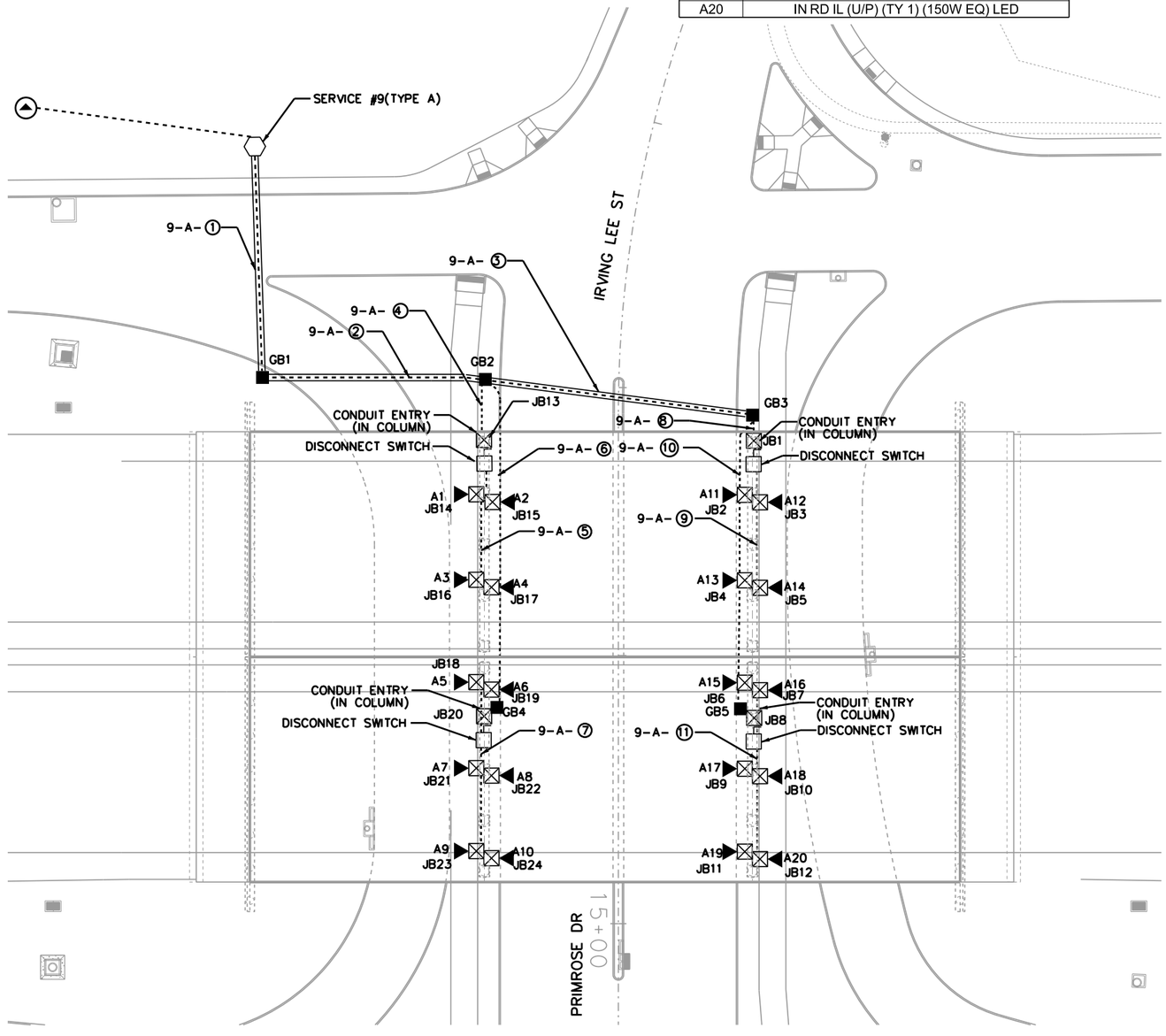
SUMMARY OF ILLUMINATION QUANTITIES			
GRAND TOTALS			
ITEM NO.	DESCRIPTION	UNITS	SHEET TOTAL
0610 6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	20
*	JUNCTION BOX	EA	24
0618 6016	CONDT (PVC) (SCH 40) (1")	LF	315
0618 6023	CONDT (PVC) (SCH 40) (2")	LF	305
0618 6047	CONDT (PVC) (SCH 80) (2") BORE	LF	275
0620 6005	ELEC CONDR (NO. 10) BARE	LF	950
0620 6006	ELEC CONDR (NO. 10) INSULATED	LF	1900
0624 6004	GROUND BOX TY A (122311) W/APRON	EA	5
0628-6044	ELC SRV TY A 240/480 060(NS)SS(S)PS(U)	EA	1

*FOR CONTRACTOR INFORMATION ONLY. ITEM WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO ITEM 610.



UNDERPASS LIGHTING DETAIL
REFER TO BRIDGE LAYOUT
NTS

NOTE: FOR ELECTRICAL SERVICE DATA, SEE 'ELECTRICAL SERVICE DATA' SHEET.



0' 25' 50'

LEGEND:

- POWER SOURCE
- PROP UNDERPASS LUMINAIRE
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE AND INSIDE STRUCTURE CONDUIT WIRING
- CONDUIT UNDER ROADWAY (BORE)
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- DISCONNECT SWITCH
- STUB OUT (FOR FUTURE USE)

X-X-X
RUN NUMBER
CIRCUIT NUMBER
SERVICE NUMBER

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

UNDERBRIDGE LIGHTING

IRVING LEE ST/PRIMROSE DR

SHEET 2 OF 4

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1396
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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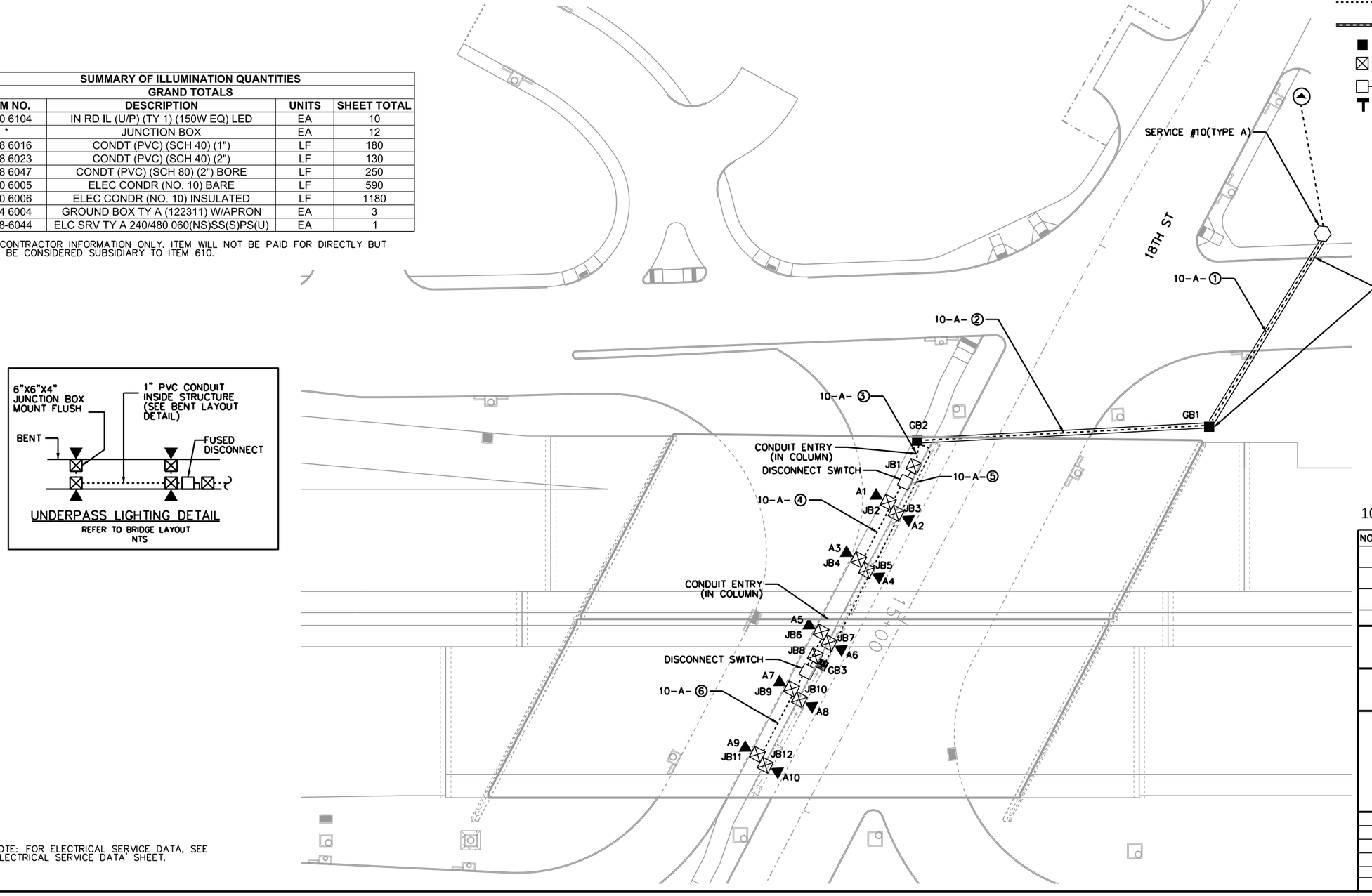
SUMMARY OF CABLE AND CONDUIT QUANTITIES								
SERVICE	CIRCUIT	RUN NO.	RUN LENGTH (FT)	618 6016 CONDT (PVC) (SCH 40) (1")	618 6023 CONDT (PVC) (SCH 40) (2")	618 6047 CONDT (PVC) (SCH 80) (2") BORE	620 6005 ELEC CONDR (NO. 10) BARE	620 6006 ELEC CONDR (NO. 10) INSULATED
				LF	LF	LF	LF	LF
CSJ 0015-01-246								
#10	A	10-A-1	110			110	115	230
#10	A	10-A-2	140			140	145	290
#10	A	10-A-3	30	20	10		35	70
#10	A	10-A-4	60	60			65	130
#10	A	10-A-5	140	20	120		145	290
#10	A	10-A-6	80	80			85	170
TOTAL				140	130	250	590	1180

ROADWAY ILLUMINATION ASSEMBLY SHEET SUMMARY	
FIXT NO.	STANDARD TYPE
A1	IN RD IL (U/P) (TY 1) (150W EQ) LED
A2	IN RD IL (U/P) (TY 1) (150W EQ) LED
A3	IN RD IL (U/P) (TY 1) (150W EQ) LED
A4	IN RD IL (U/P) (TY 1) (150W EQ) LED
A5	IN RD IL (U/P) (TY 1) (150W EQ) LED
A6	IN RD IL (U/P) (TY 1) (150W EQ) LED
A7	IN RD IL (U/P) (TY 1) (150W EQ) LED
A8	IN RD IL (U/P) (TY 1) (150W EQ) LED
A9	IN RD IL (U/P) (TY 1) (150W EQ) LED
A10	IN RD IL (U/P) (TY 1) (150W EQ) LED

SUMMARY OF ILLUMINATION QUANTITIES			
GRAND TOTALS			
ITEM NO.	DESCRIPTION	UNITS	SHEET TOTAL
0610 6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	10
*	JUNCTION BOX	EA	12
0618 6016	CONDT (PVC) (SCH 40) (1")	LF	180
0618 6023	CONDT (PVC) (SCH 40) (2")	LF	130
0618 6047	CONDT (PVC) (SCH 80) (2") BORE	LF	250
0620 6005	ELEC CONDR (NO. 10) BARE	LF	590
0620 6006	ELEC CONDR (NO. 10) INSULATED	LF	1180
0624 6004	GROUND BOX TY A (122311) W/APRON	EA	3
0628-6044	ELC SRV TY A 240/480 060(NS)SS(S)PS(U)	EA	1

*FOR CONTRACTOR INFORMATION ONLY. ITEM WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO ITEM 610.



NOTE: FOR ELECTRICAL SERVICE DATA, SEE 'ELECTRICAL SERVICE DATA' SHEET.

0' 25' 50'

LEGEND:

- POWER SOURCE
- PROP UNDERPASS LUMINAIRE
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE AND INSIDE STRUCTURE CONDUIT WIRING
- CONDUIT UNDER ROADWAY (BORE)
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- DISCONNECT SWITCH
- STUB OUT (FOR FUTURE USE)

X-X-X RUN NUMBER / CIRCUIT NUMBER / SERVICE NUMBER

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

UNDERBRIDGE LIGHTING

18TH ST

SHEET 3 OF 4

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1397
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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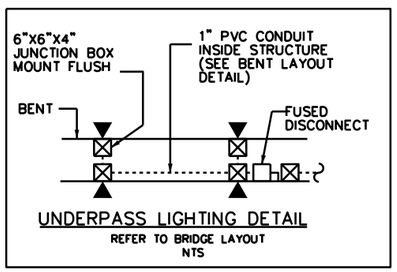
SUMMARY OF CABLE AND CONDUIT QUANTITIES								
SERVICE	CIRCUIT	RUN NO.	RUN LENGTH (FT)	618 6016 CONDT (PVC) (SCH 40) (1")	618 6023 CONDT (PVC) (SCH 40) (2")	618 6047 CONDT (PVC) (SCH 80) (2") BORE	620 6005 ELEC CONDR (NO. 10) BARE	620 6006 ELEC CONDR (NO. 10) INSULATED
				LF	LF	LF	LF	LF
CSJ 0015-01-246								
#11	A	11-A-1	125			125	130	260
#11	A	11-A-2	120			120	125	250
#11	A	11-A-3	150	20	130		155	310
#11	A	11-A-4	70	70			75	150
#11	A	11-A-5	80	20	60		85	170
#11	A	11-A-6	50	50			55	110
TOTAL				160	190	245	625	1250

ROADWAY ILLUMINATION ASSEMBLY SHEET SUMMARY	
FIXT NO.	STANDARD TYPE
A1	IN RD IL (U/P) (TY 1) (150W EQ) LED
A2	IN RD IL (U/P) (TY 1) (150W EQ) LED
A3	IN RD IL (U/P) (TY 1) (150W EQ) LED
A4	IN RD IL (U/P) (TY 1) (150W EQ) LED
A5	IN RD IL (U/P) (TY 1) (150W EQ) LED
A6	IN RD IL (U/P) (TY 1) (150W EQ) LED
A7	IN RD IL (U/P) (TY 1) (150W EQ) LED
A8	IN RD IL (U/P) (TY 1) (150W EQ) LED
A9	IN RD IL (U/P) (TY 1) (150W EQ) LED
A10	IN RD IL (U/P) (TY 1) (150W EQ) LED
A11	IN RD IL (U/P) (TY 1) (150W EQ) LED
A12	IN RD IL (U/P) (TY 1) (150W EQ) LED

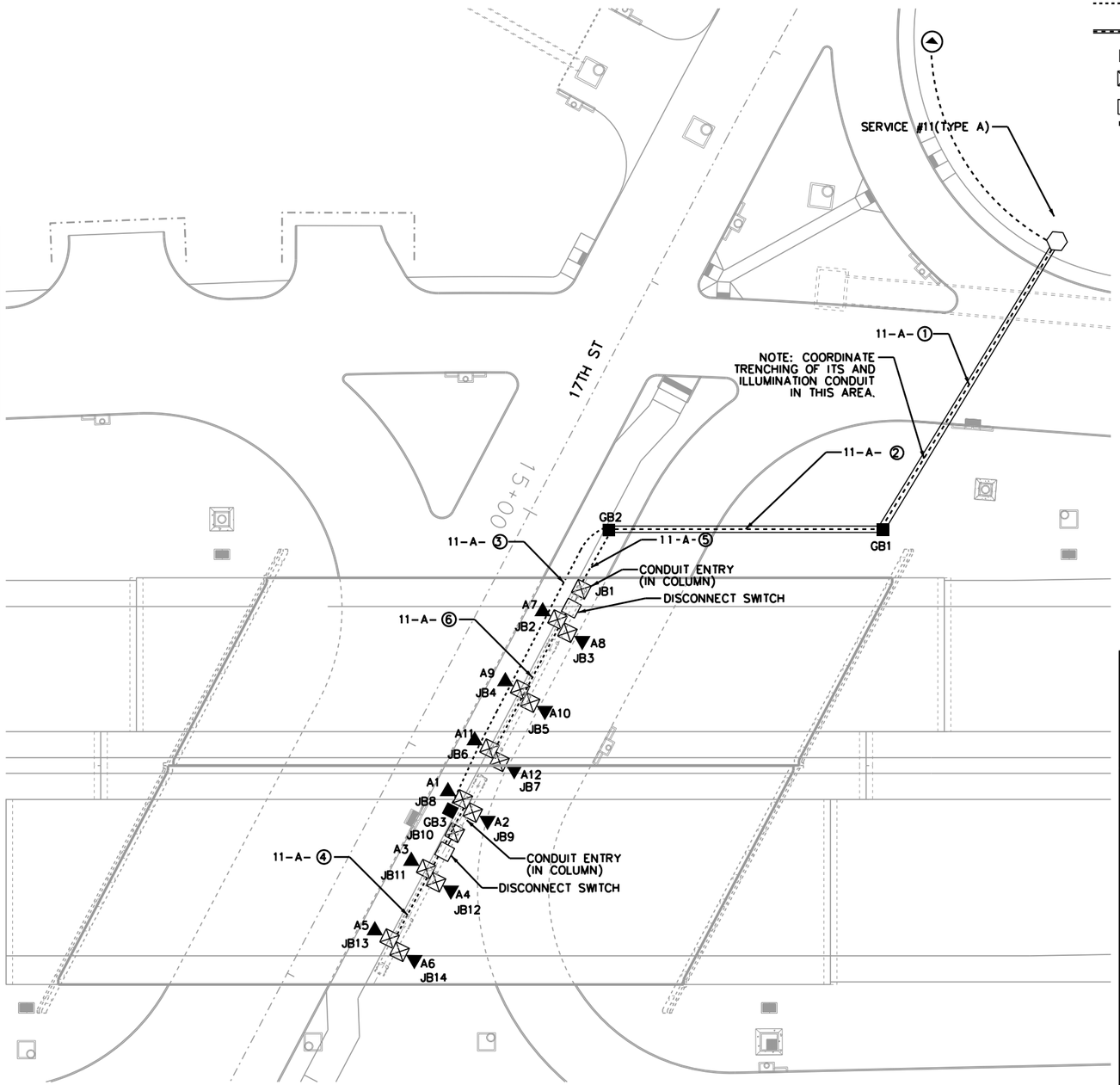
SUMMARY OF ILLUMINATION QUANTITIES GRAND TOTALS			
ITEM NO.	DESCRIPTION	UNITS	SHEET TOTAL
0610 6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	12
*	JUNCTION BOX	EA	14
0618 6016	CONDT (PVC) (SCH 40) (1")	LF	160
0618 6023	CONDT (PVC) (SCH 40) (2")	LF	190
0618 6047	CONDT (PVC) (SCH 80) (2") BORE	LF	245
0620 6005	ELEC CONDR (NO. 10) BARE	LF	625
0620 6006	ELEC CONDR (NO. 10) INSULATED	LF	1250
0624 6004	GROUND BOX TY A (122311) W/APRON	EA	3
0628-6044	ELC SRV TY A 240/480 060(NS)SS(S)PS(U)	EA	1

*FOR CONTRACTOR INFORMATION ONLY. ITEM WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO ITEM 610.



UNDERPASS LIGHTING DETAIL
REFER TO BRIDGE LAYOUT
NTS

NOTE: FOR ELECTRICAL SERVICE DATA, SEE 'ELECTRICAL SERVICE DATA' SHEET.



0' 25' 50'

LEGEND:

- POWER SOURCE
- PROP UNDERPASS LUMINAIRE
- PROP ELECTRICAL SERVICE TYPE "A"
- BELOW GRADE AND INSIDE STRUCTURE CONDUIT WIRING
- CONDUIT UNDER ROADWAY (BORE)
- GROUND BOX (TYPE A) WITH APRON
- JUNCTION BOX ON STRUCTURE
- DISCONNECT SWITCH
- STUB OUT (FOR FUTURE USE)

X-X-X RUN NUMBER, CIRCUIT NUMBER, SERVICE NUMBER

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED
PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

UNDERBRIDGE LIGHTING

17TH ST

SHEET 4 OF 4

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1398
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB / HIGHWAY NO.
0015	01	246 / IH 35

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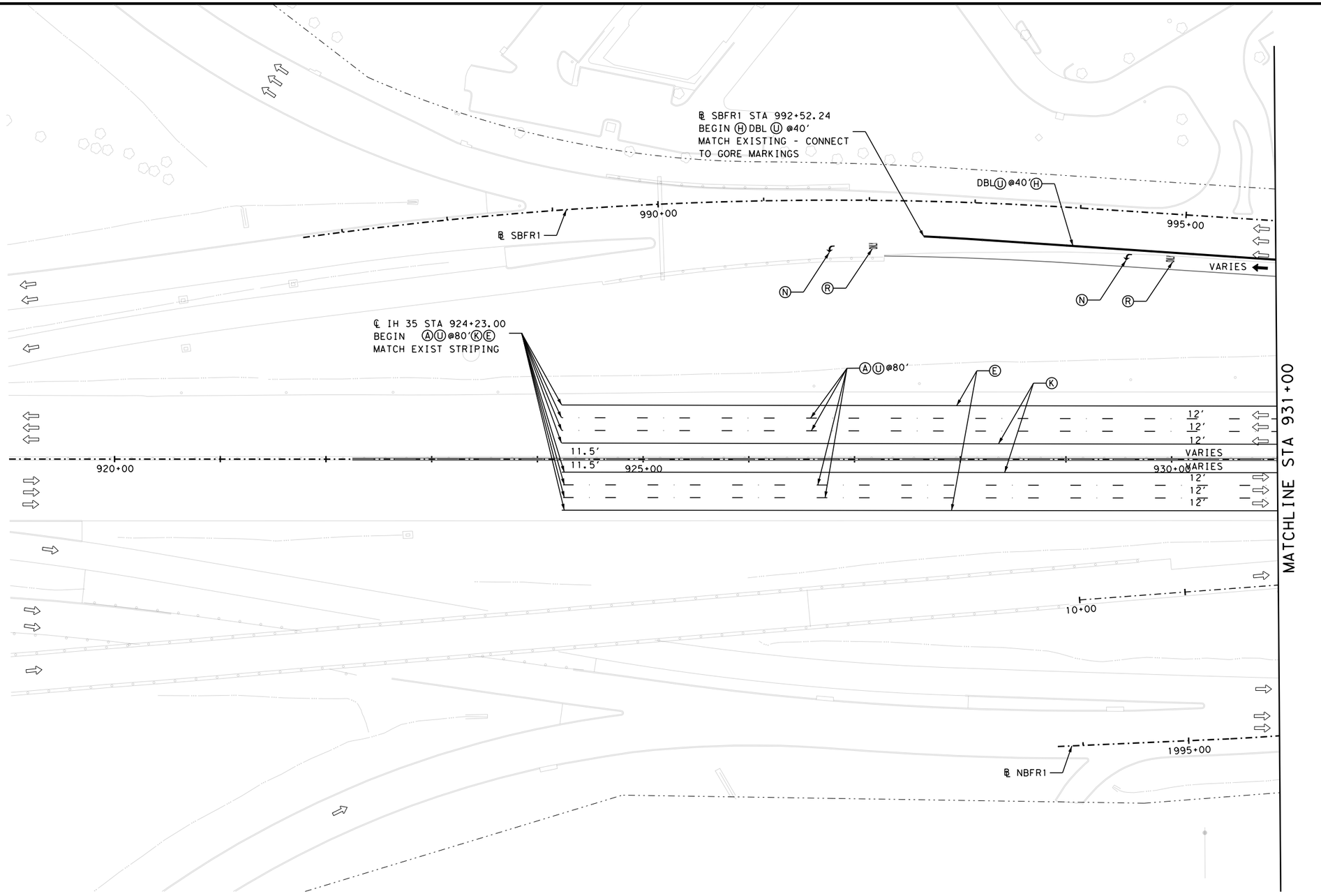

0' 25' 50' 100'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- ⇨ EXISTING
- ➡ PROPOSED
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
PROFESSIONAL LICENSED ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

BEG PROJ TO STA 931+00

SHEET 1 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1399

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\PMLY1_001.dgn
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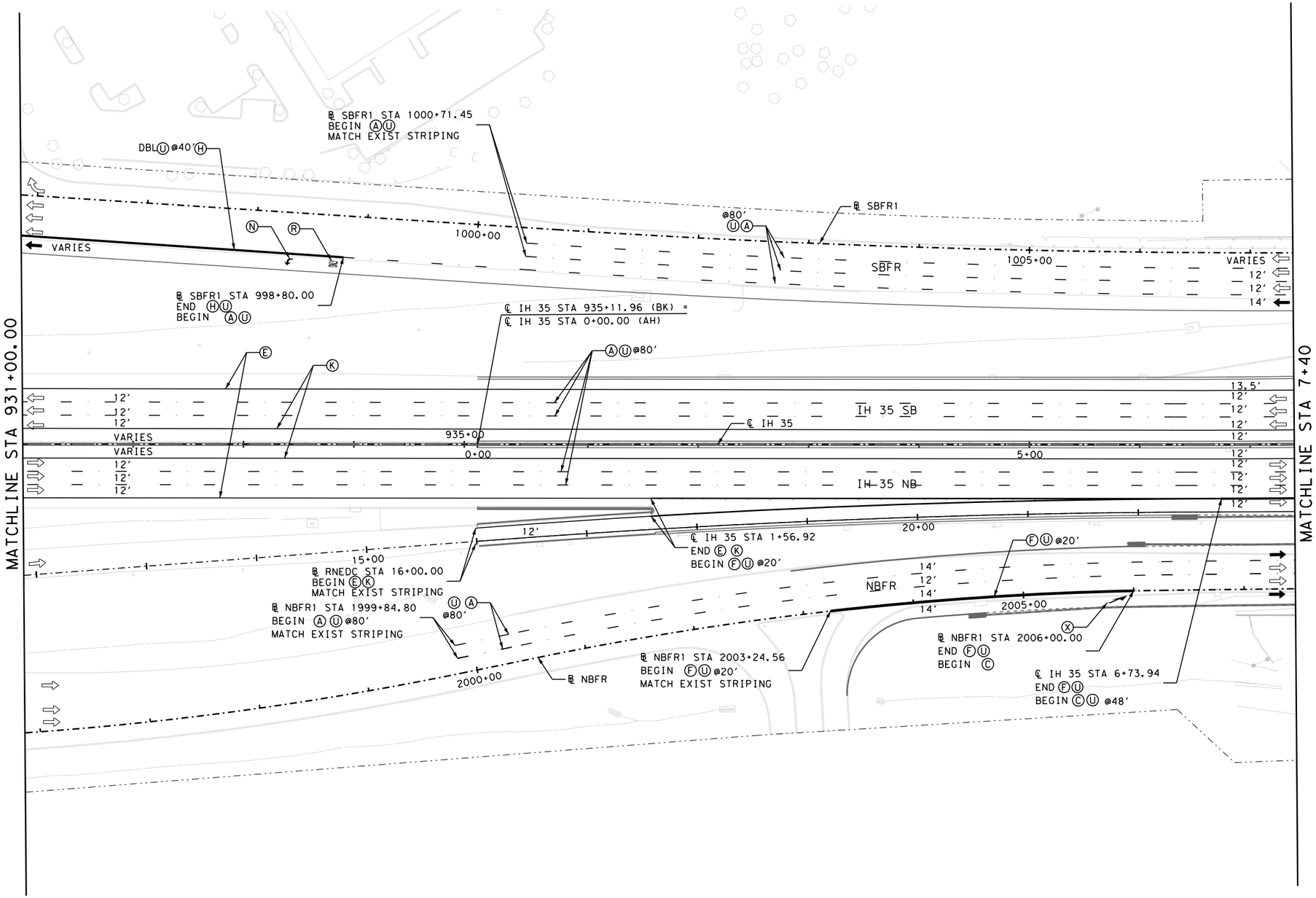

0' 25' 50' 100'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 931+00 TO STA 7+40

SHEET 2 OF 29

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1400
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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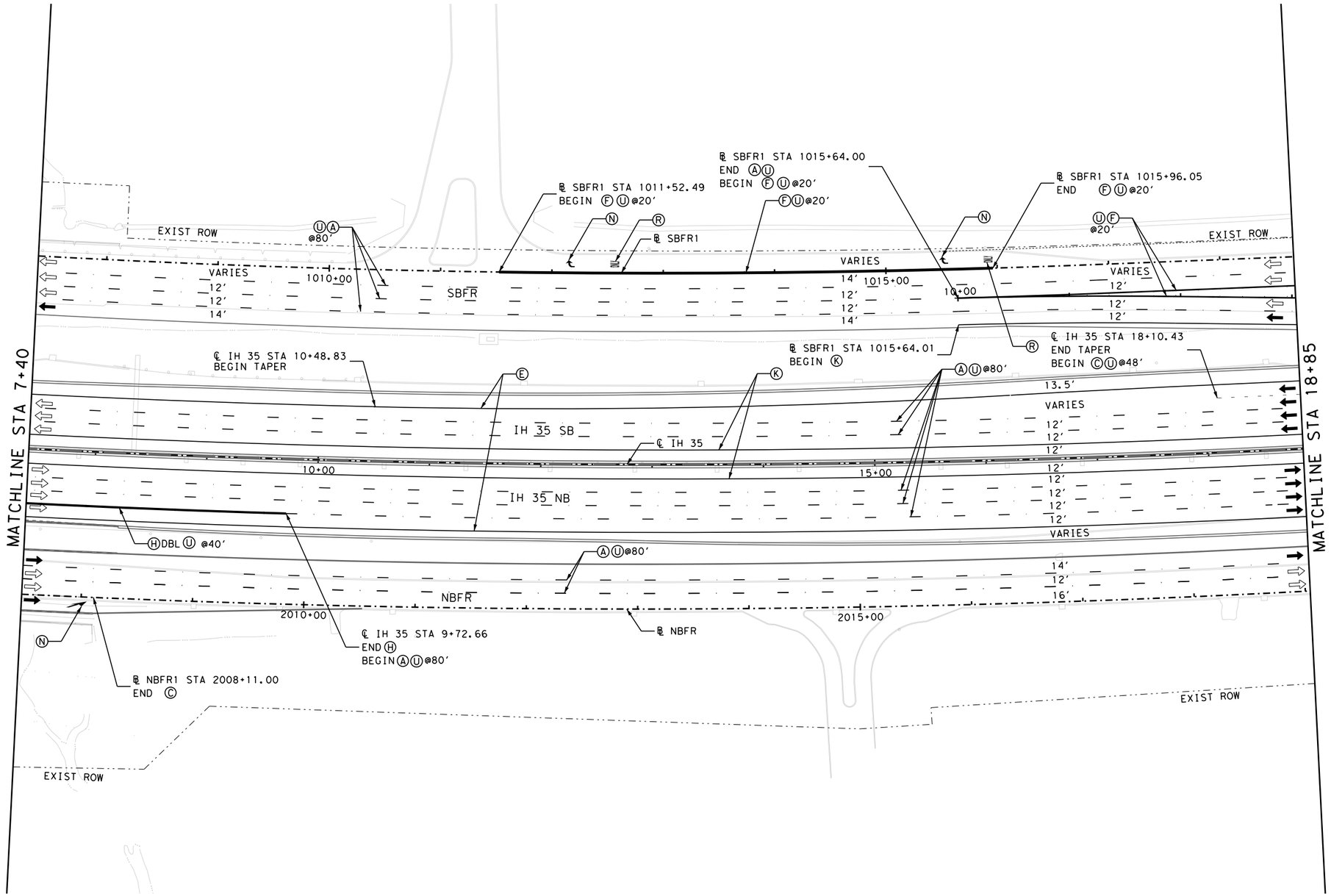

0' 25' 50' 100'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK) MULTI POLYMER PAV MRK (BLACK)(6")(BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W)(18")(YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W)8"(BRK)(100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED
PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
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HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 7+40 TO STA 18+85

SHEET 3 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1401

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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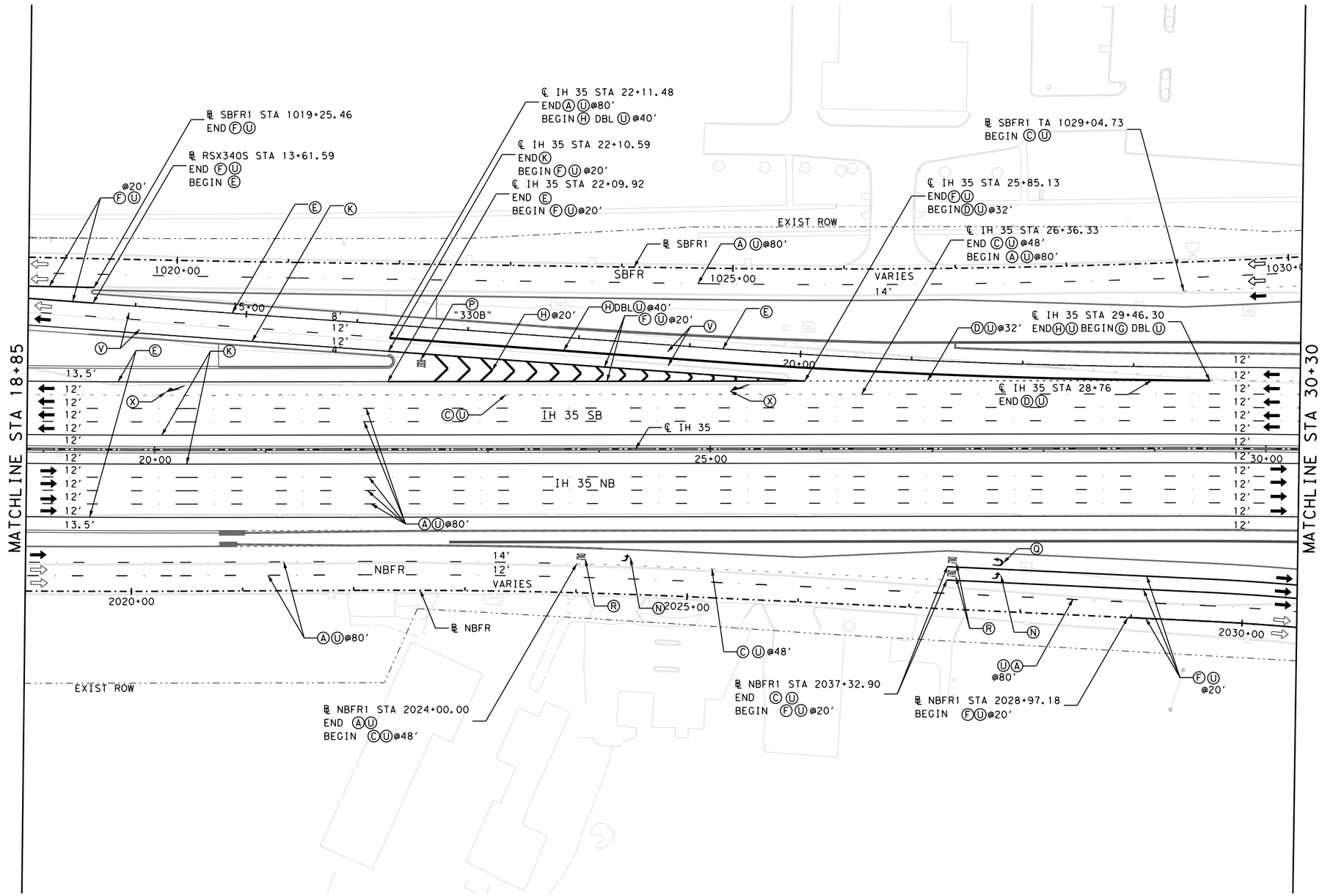

0' 25' 50' 100'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK)(6")(BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W)(18")(YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W)8"(BRK)(100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
REGISTERED PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
©2024

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 18+85 TO STA 30+30

SHEET 4 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1402

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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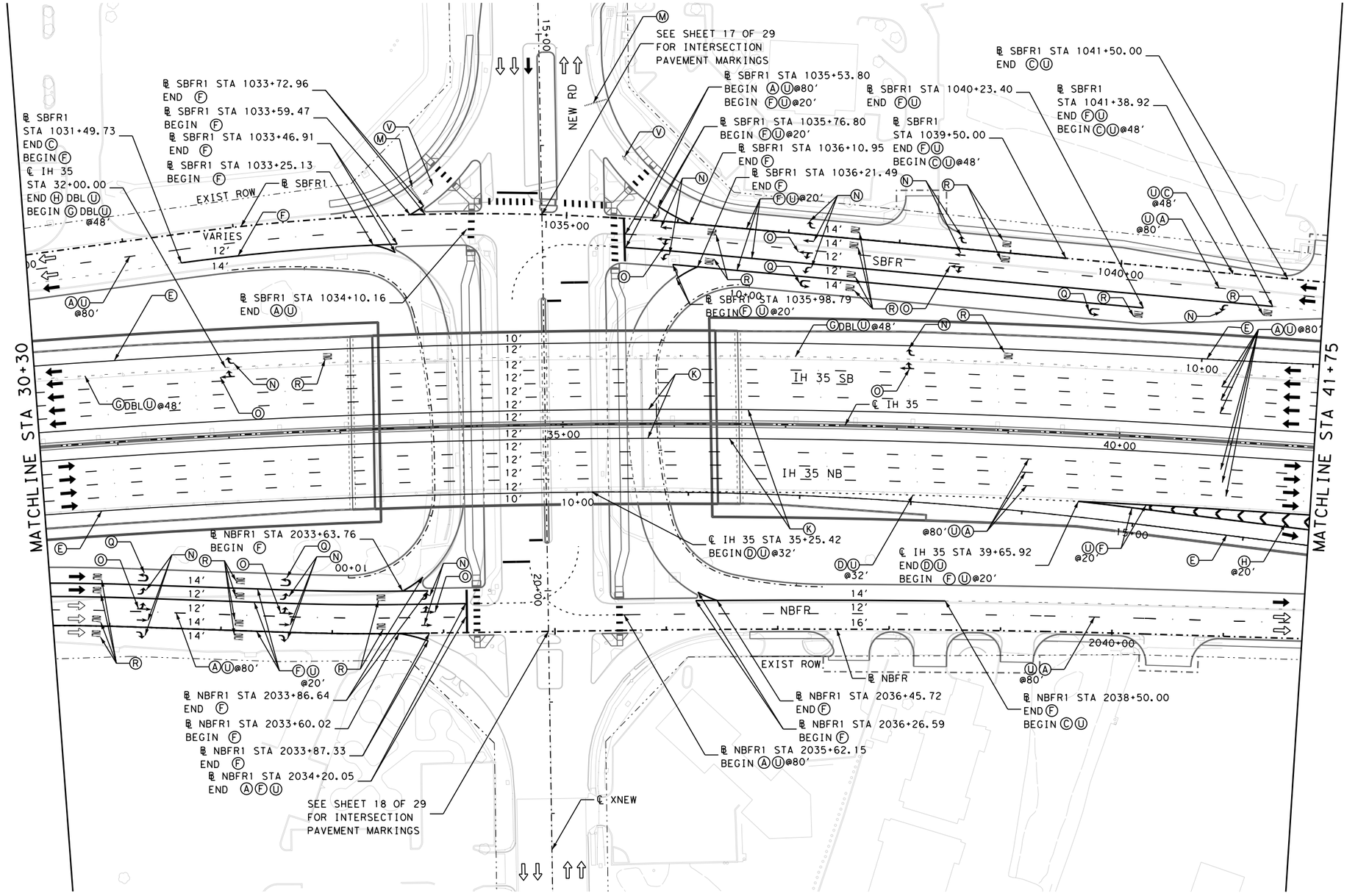

0′ 25′ 50′ 100′

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- Ⓐ MULTI POLYMER PAV MRK (W) (6") (BRK) / MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- Ⓑ MULTI POLYMER PAV MRK (W) (6") (BRK)
- Ⓒ MULTI POLYMER PAV MRK (W) (6") (3′-DOT)
- Ⓓ MULTI POLYMER PAV MRK (W) (6") (2′-DOT)
- Ⓔ MULTI POLYMER PAV MRK (W) (6") (SLD)
- Ⓕ MULTI POLYMER PAV MRK (W) (8") (SLD)
- Ⓖ MULTI POLYMER PAV MRK (W) (12") (LNDP)
- Ⓗ MULTI POLYMER PAV MRK (W) (12") (SLD)
- Ⓘ MULTI POLYMER PAV MRK (W) (24") (SLD)
- Ⓙ MULTI POLYMER PAV MRK (Y) (6") (BRK)
- Ⓚ MULTI POLYMER PAV MRK (Y) (6") (SLD)
- Ⓛ MULTI POLYMER PAV MRK (Y) (12") (SLD)
- Ⓜ PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- Ⓝ PREFAB PAV MRK TY C (W) (ARROW)
- Ⓞ PREFAB PAV MRK TY C (W) (DBL ARROW)
- Ⓟ PREFAB PAV MRK TY C (W) (NUMBER)
- Ⓠ PREFAB PAV MRK TY C (W) (UTURN ARROW)
- Ⓡ PREFAB PAV MRK TY C (W) (WORD)
- Ⓢ REFL RAV MRK TY I (W) (24") (SLD)
- Ⓣ RAISED PAV MRKR (REFL) TY II-A-A
- Ⓤ RAISED PAV MRKR (REFL) TY II-C-R
- Ⓥ WRONG WAY ARROWS (RAIS PAV MRKR)
- Ⓦ PREFAB PAV MRK TY C (MULTI) (SHIELD)
- ⇨ EXISTING
- ➡ PROPOSED
- Ⓧ PREFAB PAV MRK TY C (W) (LNDP ARROW)
- Ⓨ REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

JAIME A. SAENZ GARCIA 130696 LICENSED PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 30+30 TO STA 41+75

SHEET 5 OF 29

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1403
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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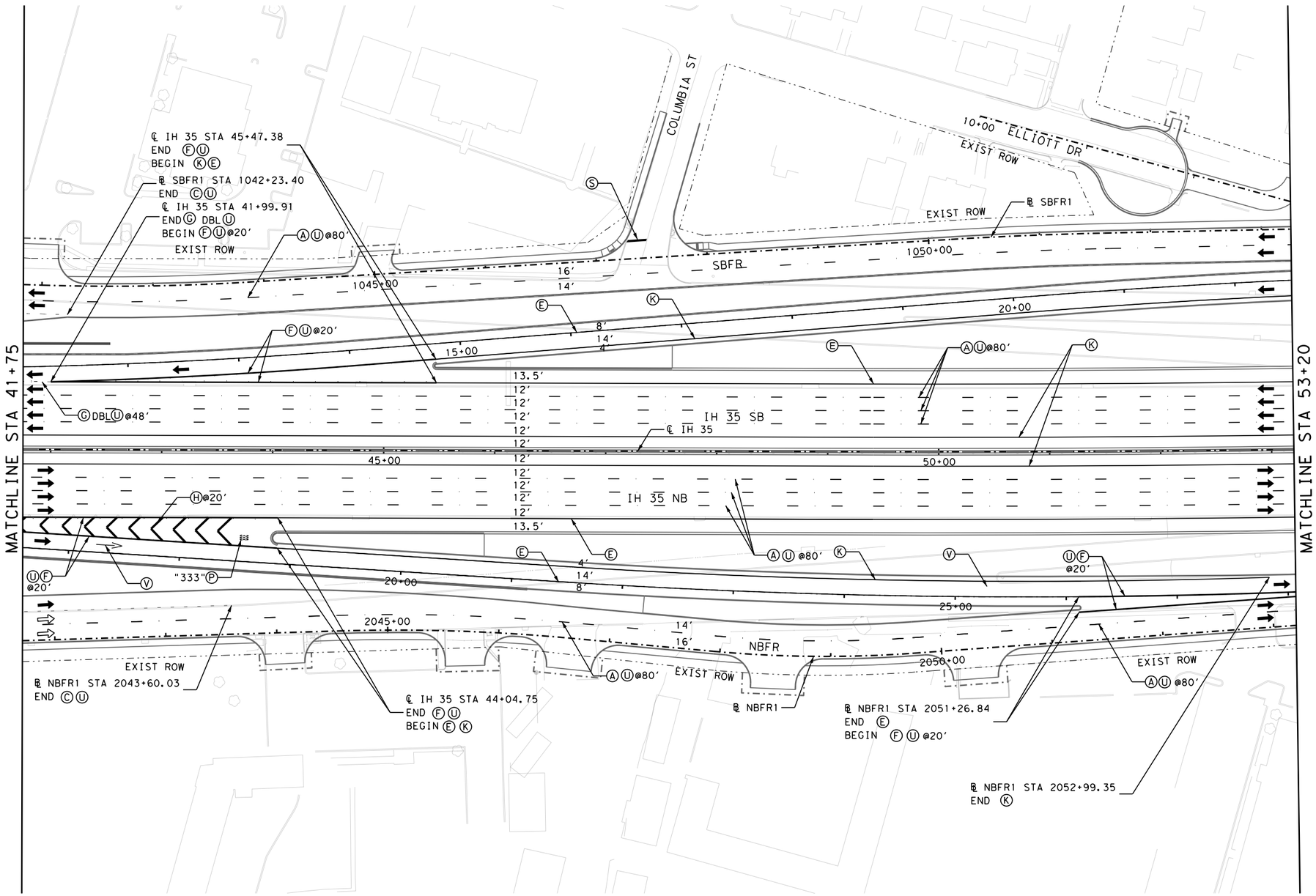

0' 25' 50' 100'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
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5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK) / MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
REGISTERED/LICENSED
PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
©2024

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 41+75 TO STA 53+20

SHEET 6 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1404

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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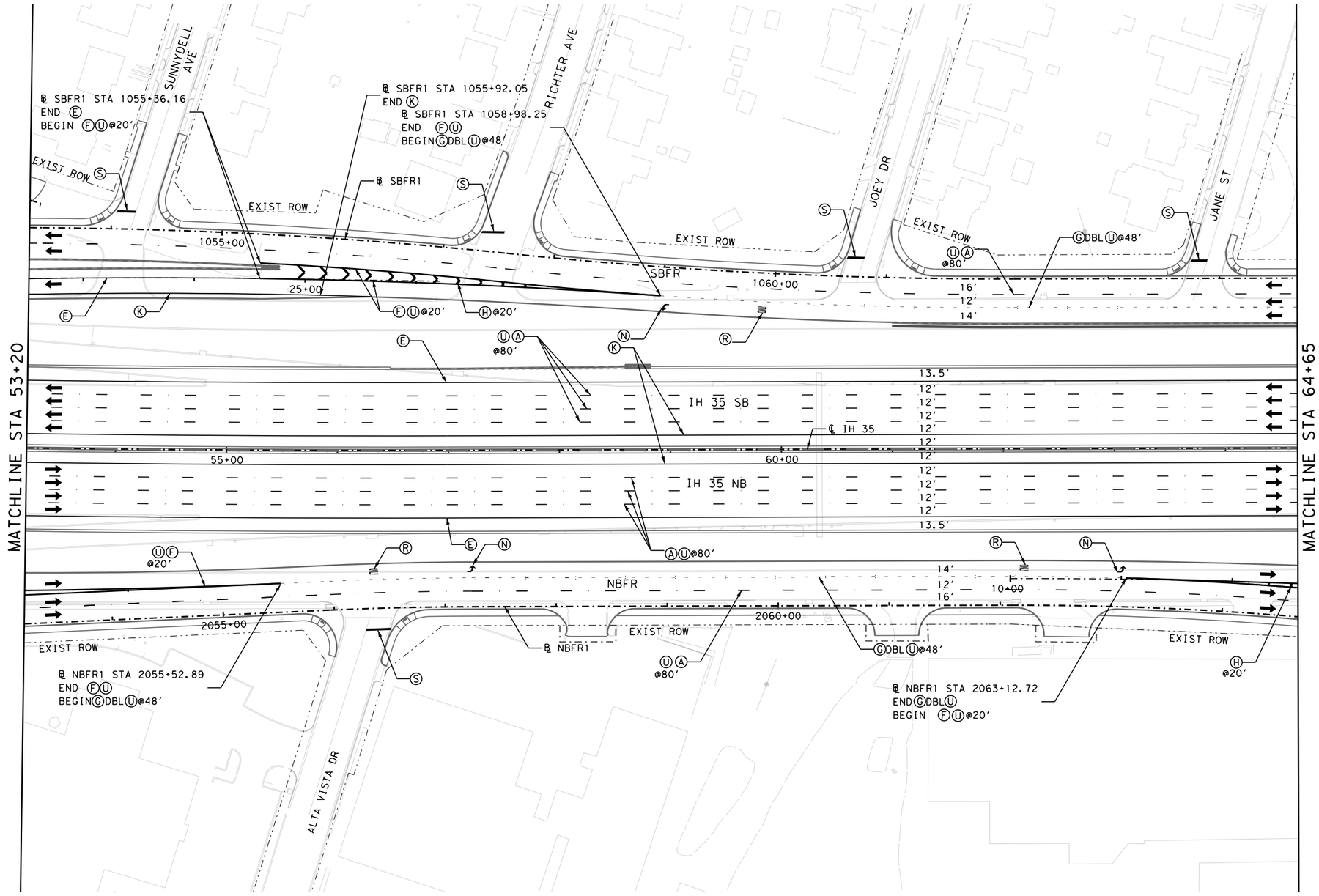

0' 25' 50' 100'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 53+20 TO STA 64+65

SHEET 7 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1405

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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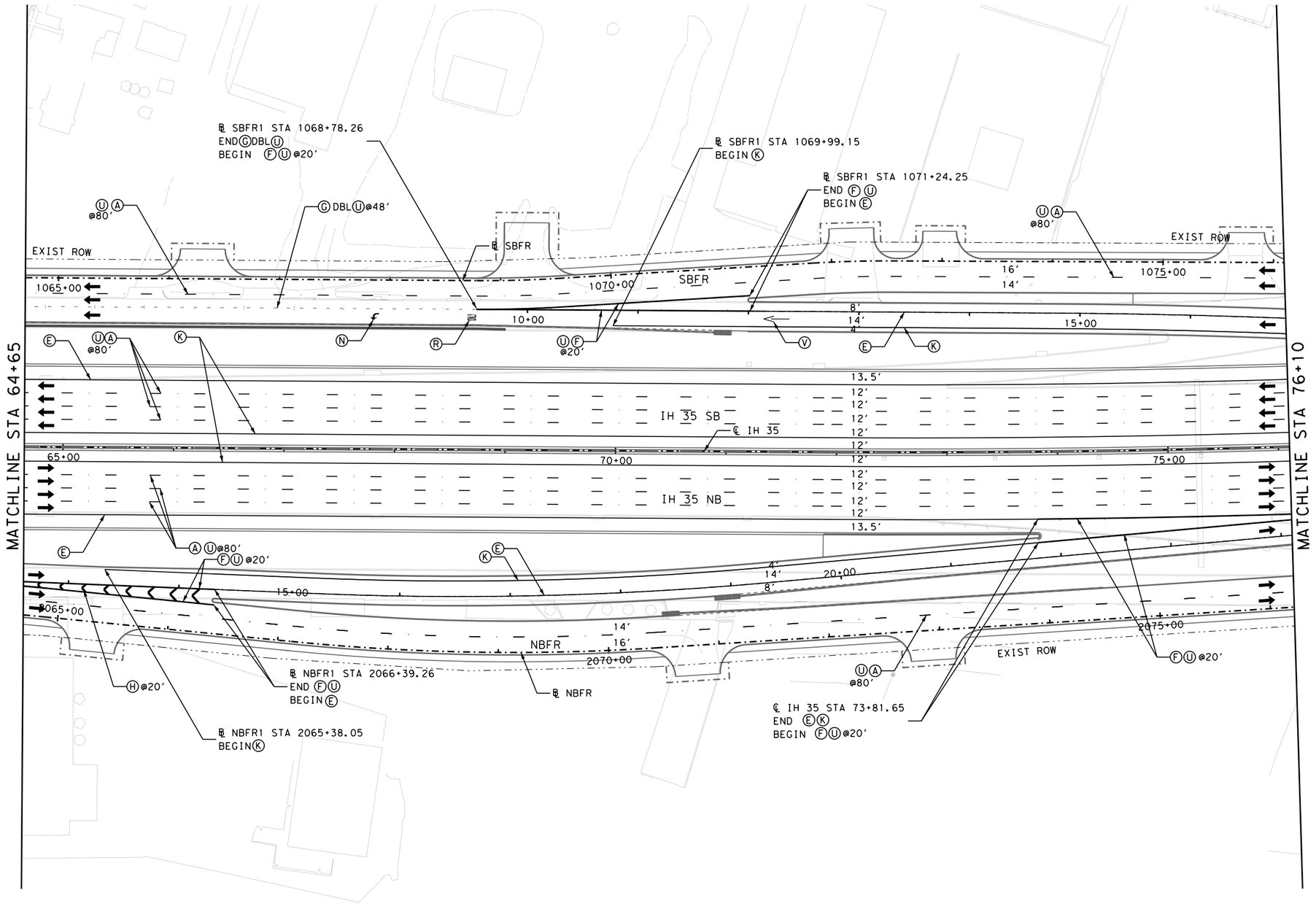

0′ 25′ 50′ 100′

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- Ⓐ MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- Ⓑ MULTI POLYMER PAV MRK (W) (6") (BRK)
- Ⓒ MULTI POLYMER PAV MRK (W) (6") (3′-DOT)
- Ⓓ MULTI POLYMER PAV MRK (W) (6") (2′-DOT)
- Ⓔ MULTI POLYMER PAV MRK (W) (6") (SLD)
- Ⓕ MULTI POLYMER PAV MRK (W) (8") (SLD)
- Ⓖ MULTI POLYMER PAV MRK (W) (12") (LNDP)
- Ⓗ MULTI POLYMER PAV MRK (W) (12") (SLD)
- Ⓘ MULTI POLYMER PAV MRK (W) (24") (SLD)
- Ⓙ MULTI POLYMER PAV MRK (Y) (6") (BRK)
- Ⓚ MULTI POLYMER PAV MRK (Y) (6") (SLD)
- Ⓛ MULTI POLYMER PAV MRK (Y) (12") (SLD)
- Ⓜ PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- Ⓝ PREFAB PAV MRK TY C (W) (ARROW)
- Ⓞ PREFAB PAV MRK TY C (W) (DBL ARROW)
- Ⓟ PREFAB PAV MRK TY C (W) (NUMBER)
- Ⓠ PREFAB PAV MRK TY C (W) (UTURN ARROW)
- Ⓡ PREFAB PAV MRK TY C (W) (WORD)
- Ⓢ REFL RAV MRK TY I (W) (24") (SLD)
- Ⓣ RAISED PAV MRKR (REFL) TY II-A-A
- Ⓤ RAISED PAV MRKR (REFL) TY II-C-R
- Ⓥ WRONG WAY ARROWS (RAIS PAV MRKR)
- Ⓦ PREFAB PAV MRK TY C (MULTI) (SHIELD)
- Ⓧ PREFAB PAV MRK TY C (W) (LNDP ARROW)
- Ⓨ REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
PROFESSIONAL ENGINEER
LICENSED
6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 64+65 TO STA 76+10

SHEET 8 OF 29

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1406
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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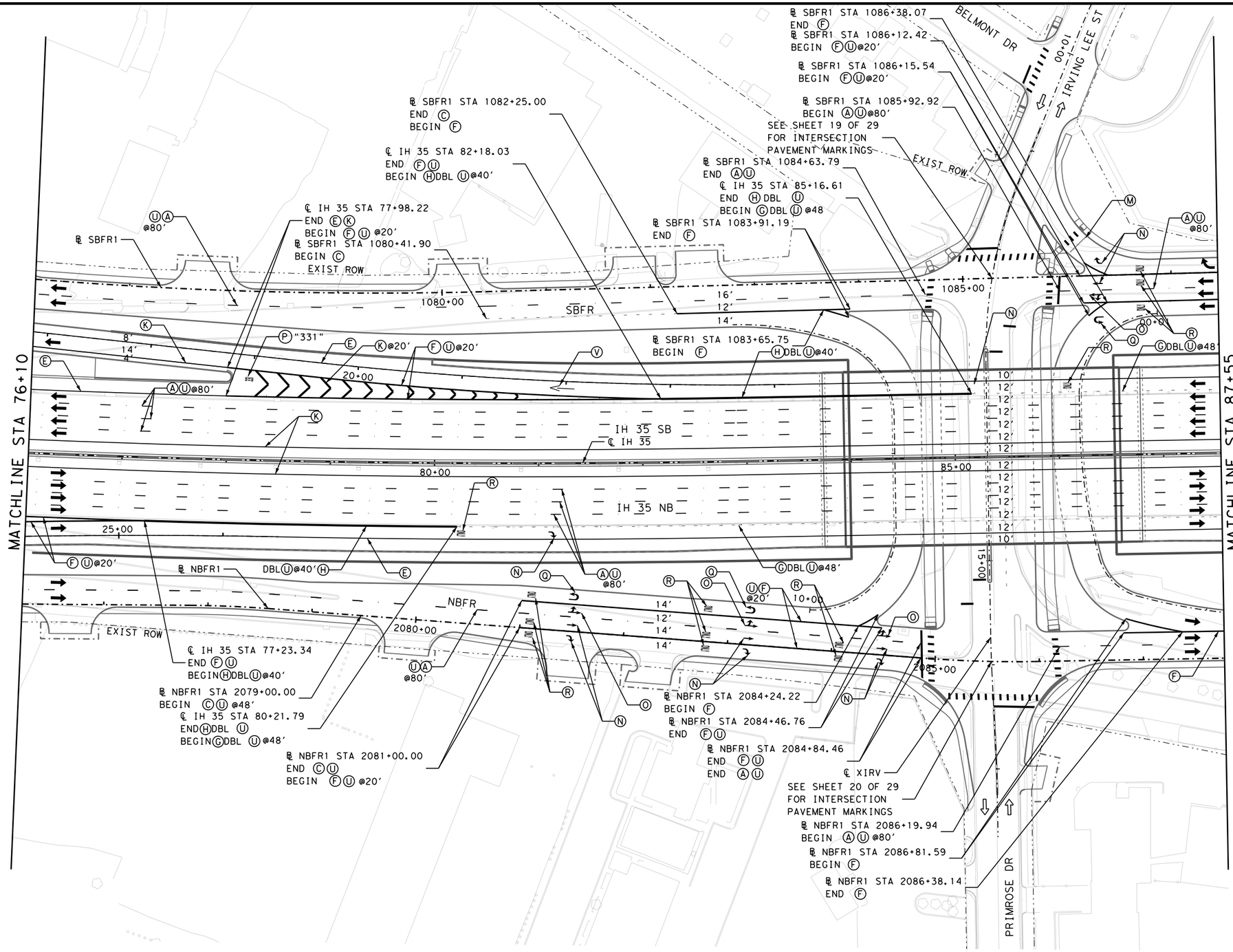

0′ 25′ 50′ 100′

NOTES:

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2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3′-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2′-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED
PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 76+10 TO STA 87+55

SHEET 9 OF 29

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1407
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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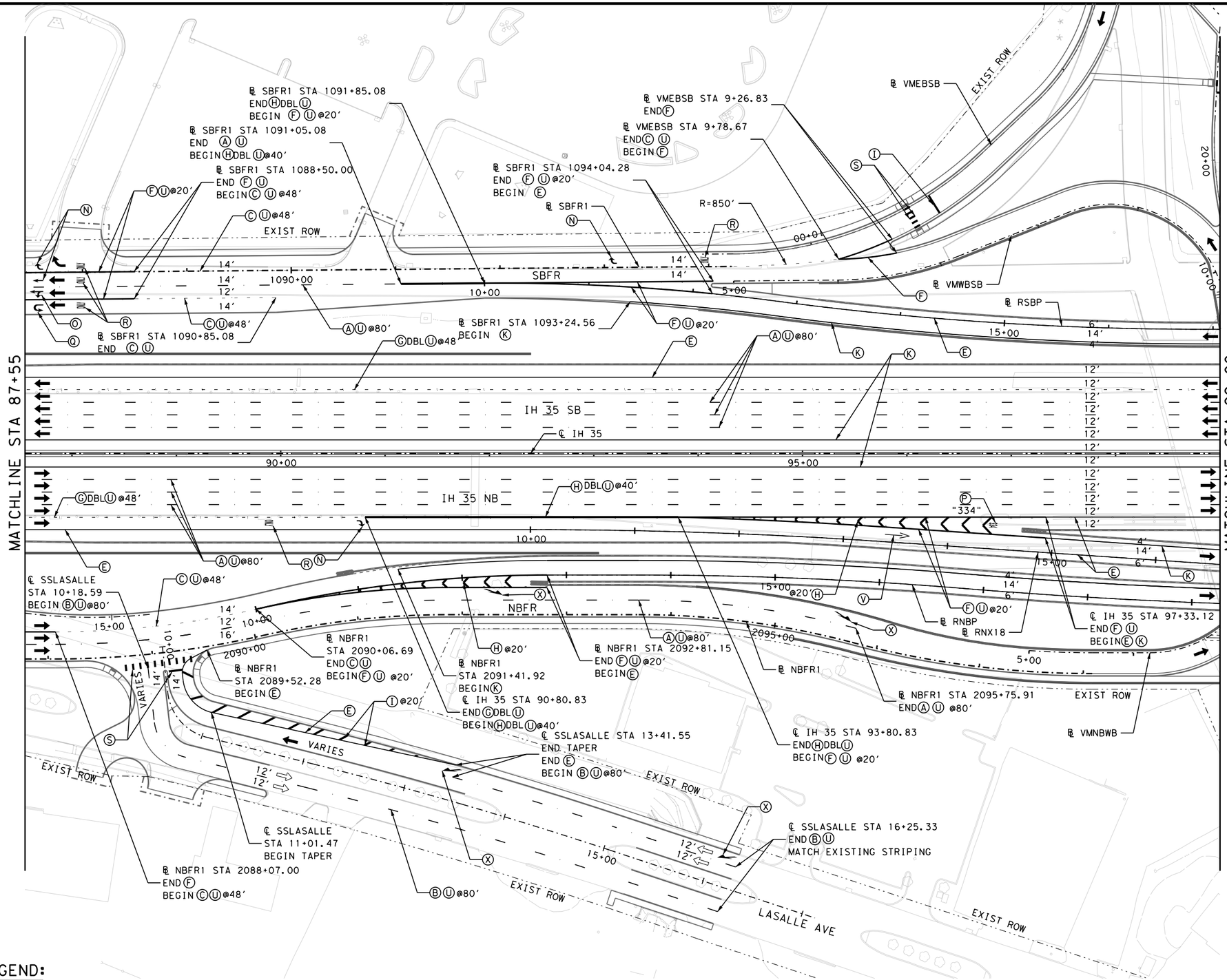

0' 25' 50' 100'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK) MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 87+55 TO STA 99+00

SHEET 10 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1408
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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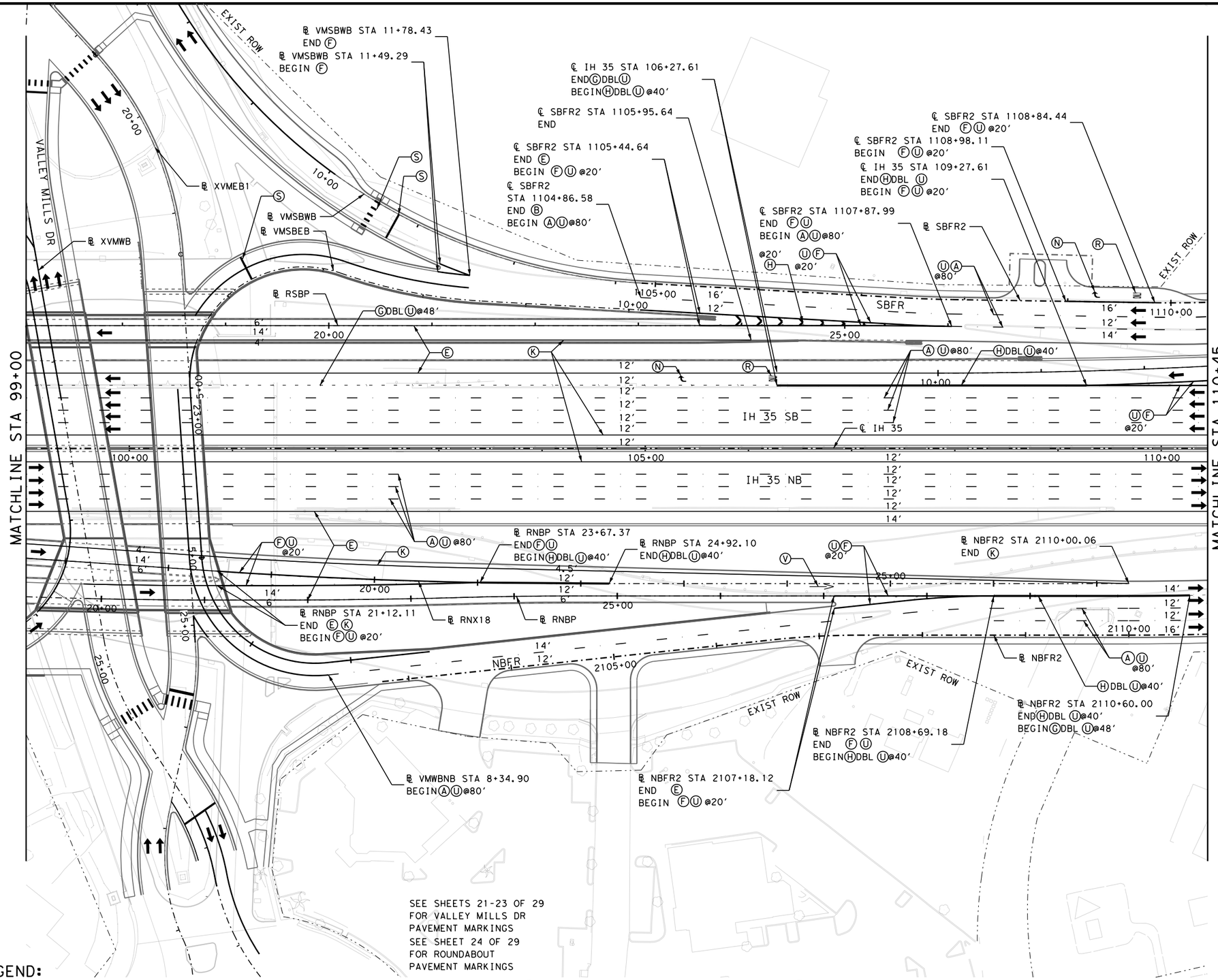

0' 25' 50' 100'

NOTES:

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3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)
- (Z) PREFAB PM TY C (W) (TPL ARROW)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
PROFESSIONAL ENGINEER
LICENSED
8/23/2024

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 99+00 TO STA 110+45

SHEET 11 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1409

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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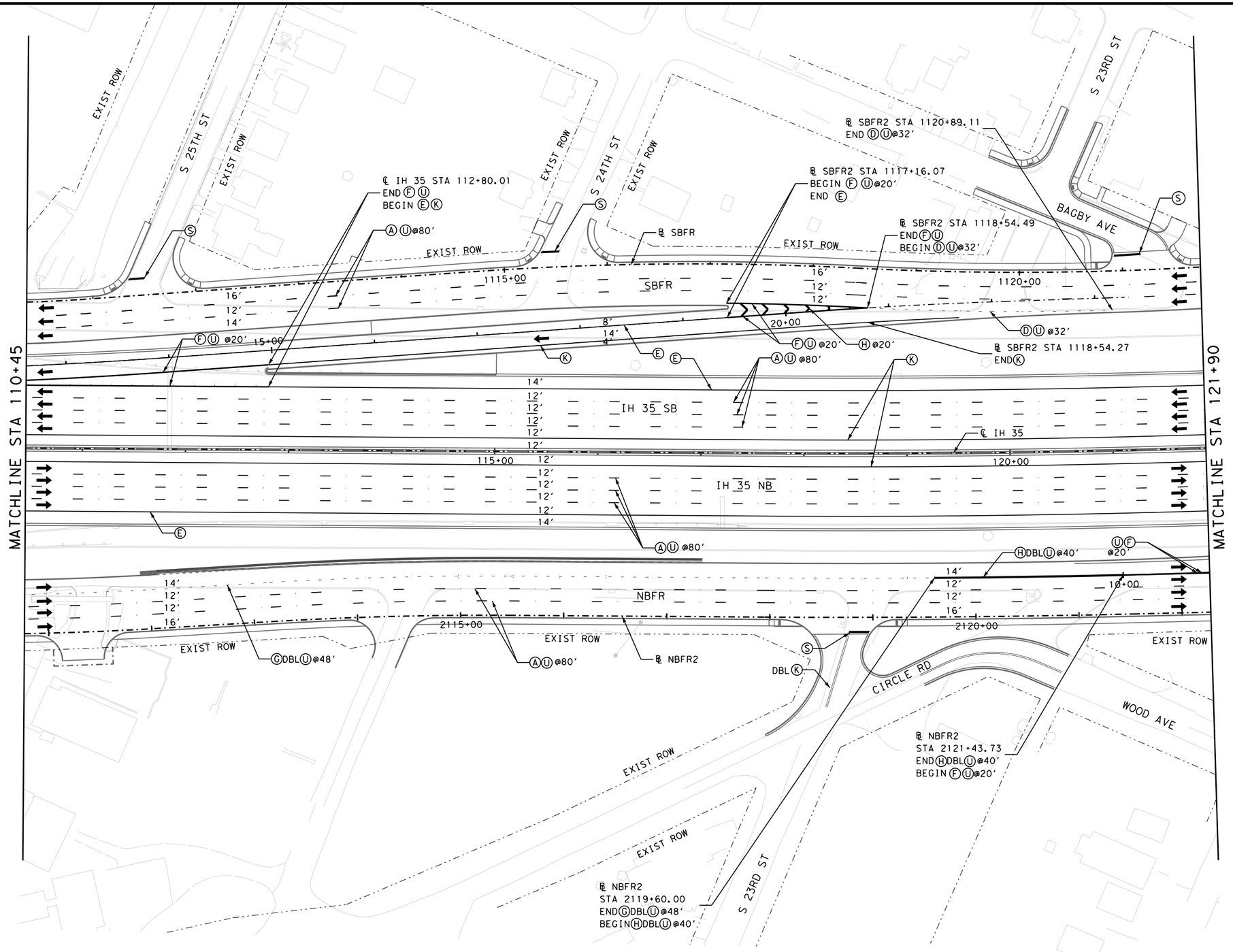

NOTES:

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2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
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LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
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- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

0' 25' 50' 100'

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 110+45 TO STA 121+90

SHEET 12 OF 29

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1410
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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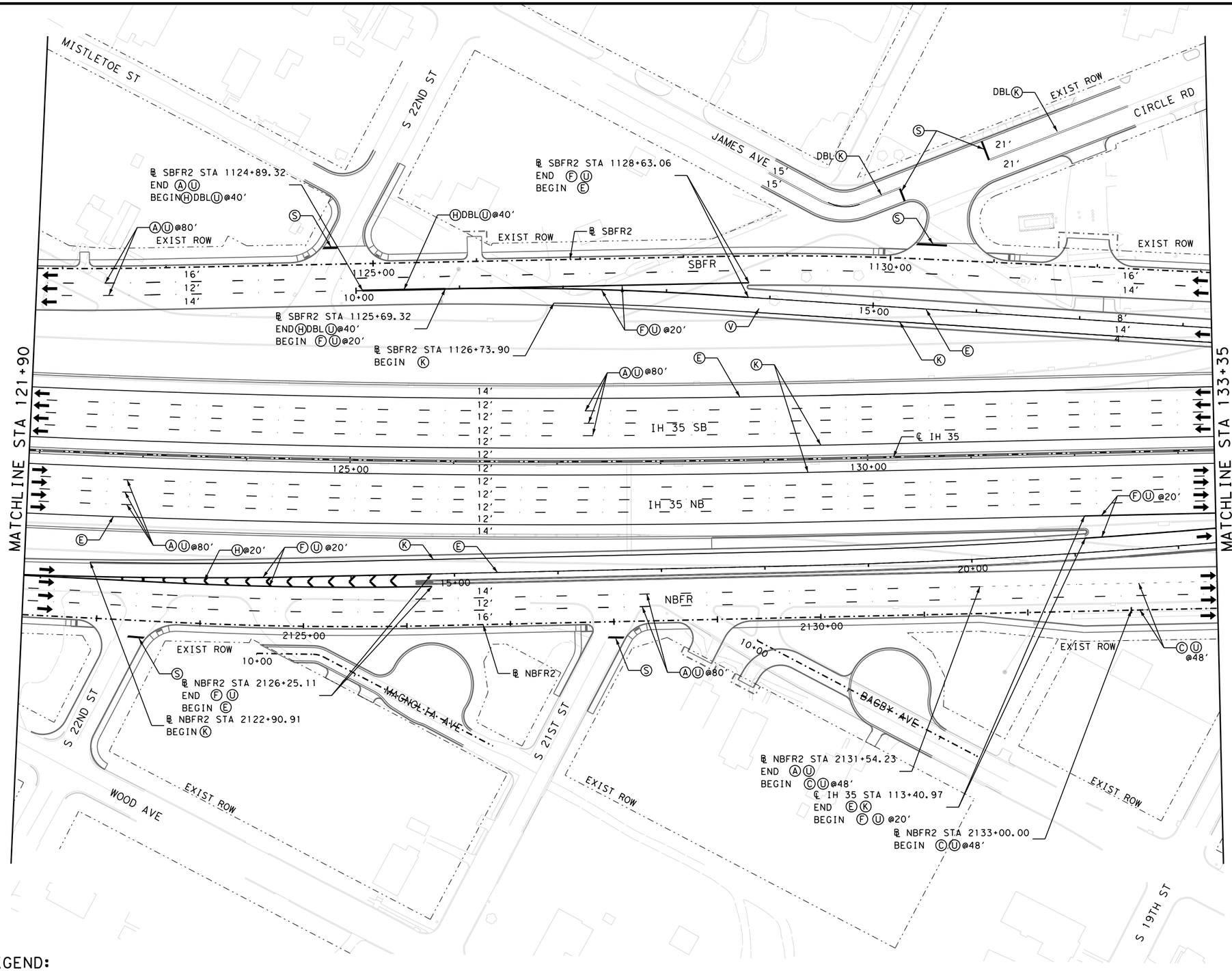

0′ 25′ 50′ 100′

NOTES:

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5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3′-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2′-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED
PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
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HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 121+90 TO STA 133+35

SHEET 13 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1411

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\PMLY1_013.dgn
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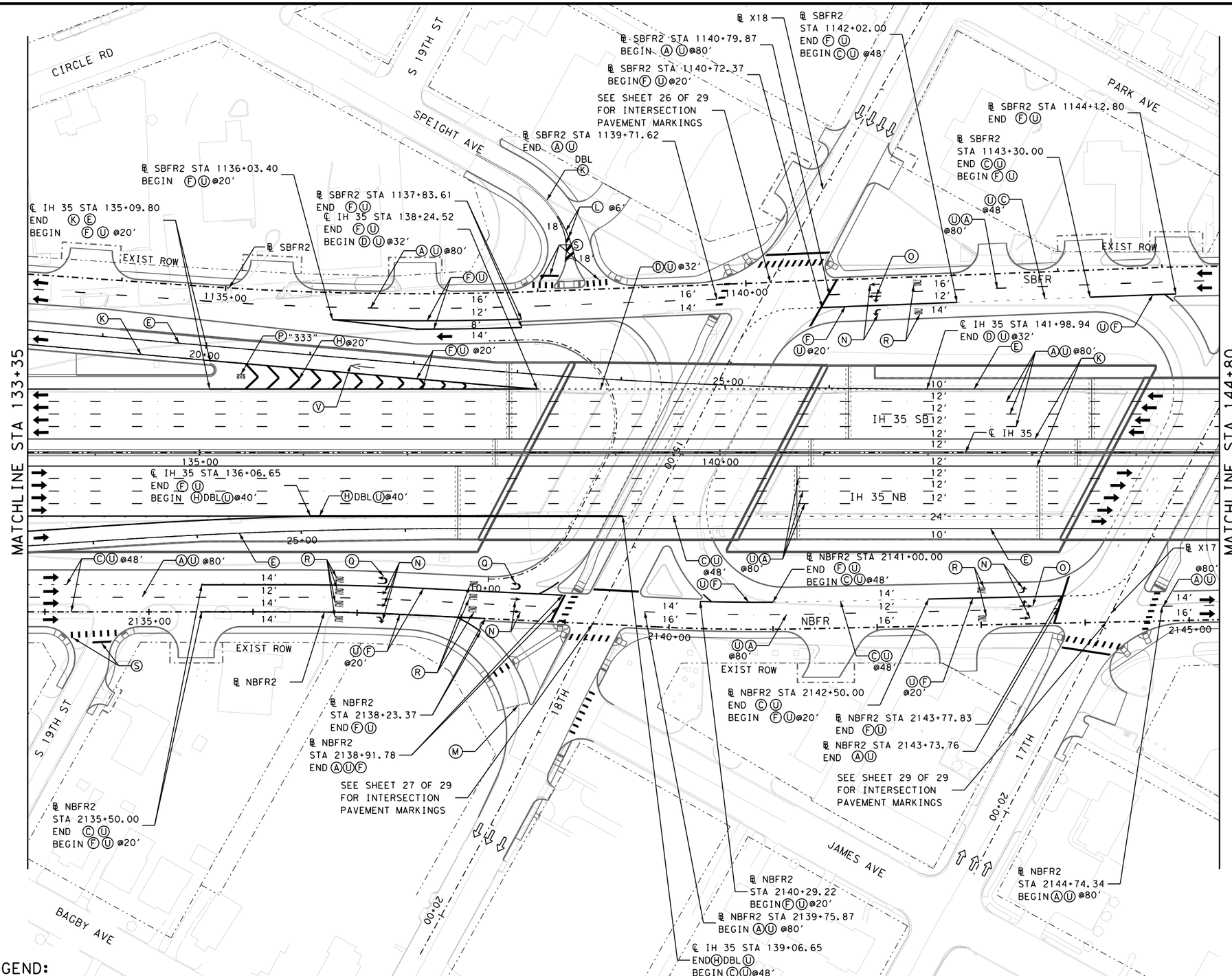

0' 25' 50' 100'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK) / MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3′-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2′-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
PROFESSIONAL ENGINEER
LICENSED
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation ©2024

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 133+35 TO STA 144+80

SHEET 14 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1412

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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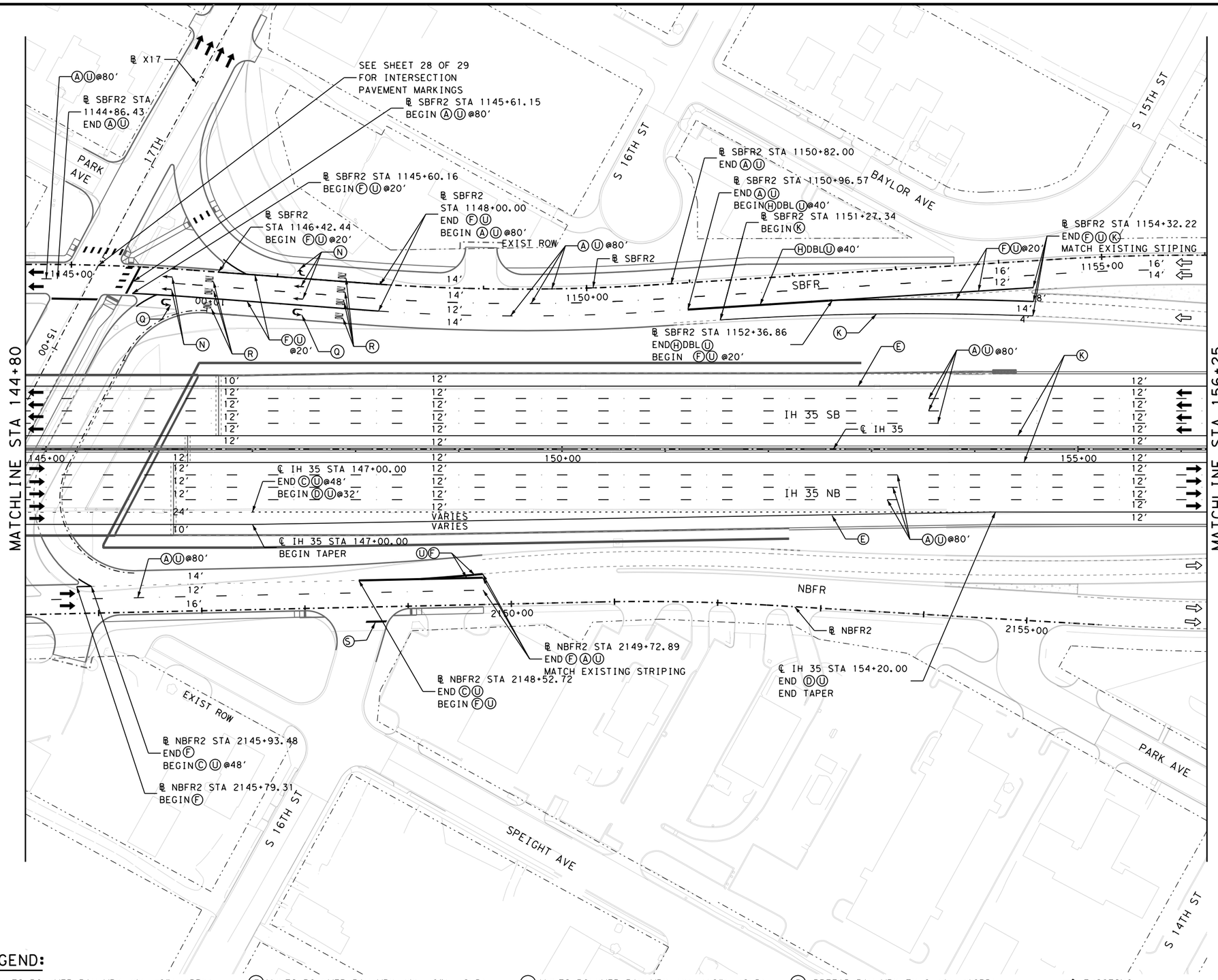

0' 25' 50' 100'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 144+80 TO STA 156+25

SHEET 15 OF 29

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1413
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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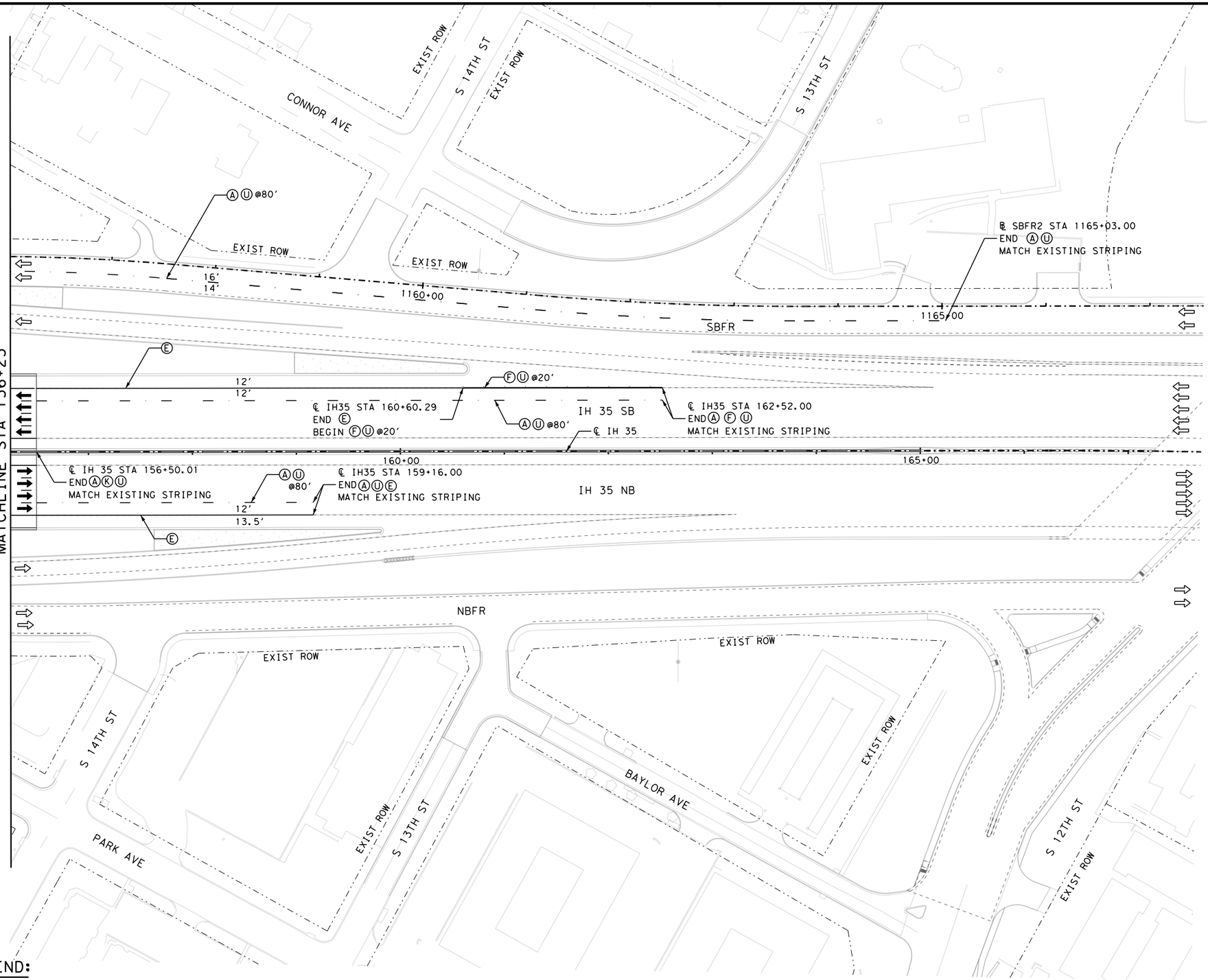

0' 25' 50' 100'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK) MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- ⇨ EXISTING
- ➡ PROPOSED
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

STA 156+25 TO END PROJ

SHEET 16 OF 29

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1414
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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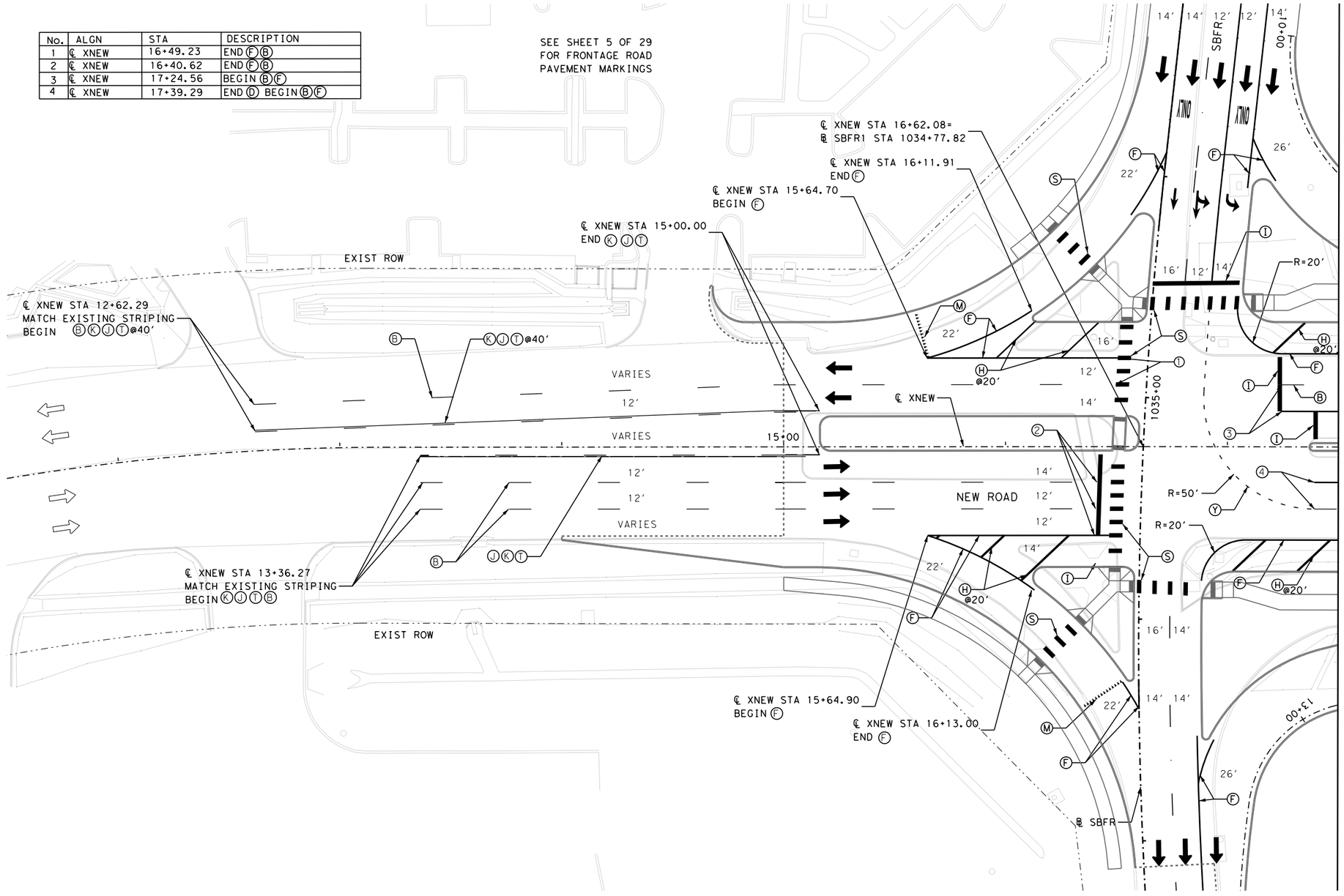
No.	ALGN	STA	DESCRIPTION
1	℄ XNEW	16+49.23	END (F)(B)
2	℄ XNEW	16+40.62	END (F)(B)
3	℄ XNEW	17+24.56	BEGIN (B)(F)
4	℄ XNEW	17+39.29	END (D) BEGIN (B)(F)



0' 25' 50'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK)(6")(BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W)(18")(YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W)8"(BRK)(100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

NEW RD
BEGIN TO STA 17+50

SHEET 17 OF 29

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1415
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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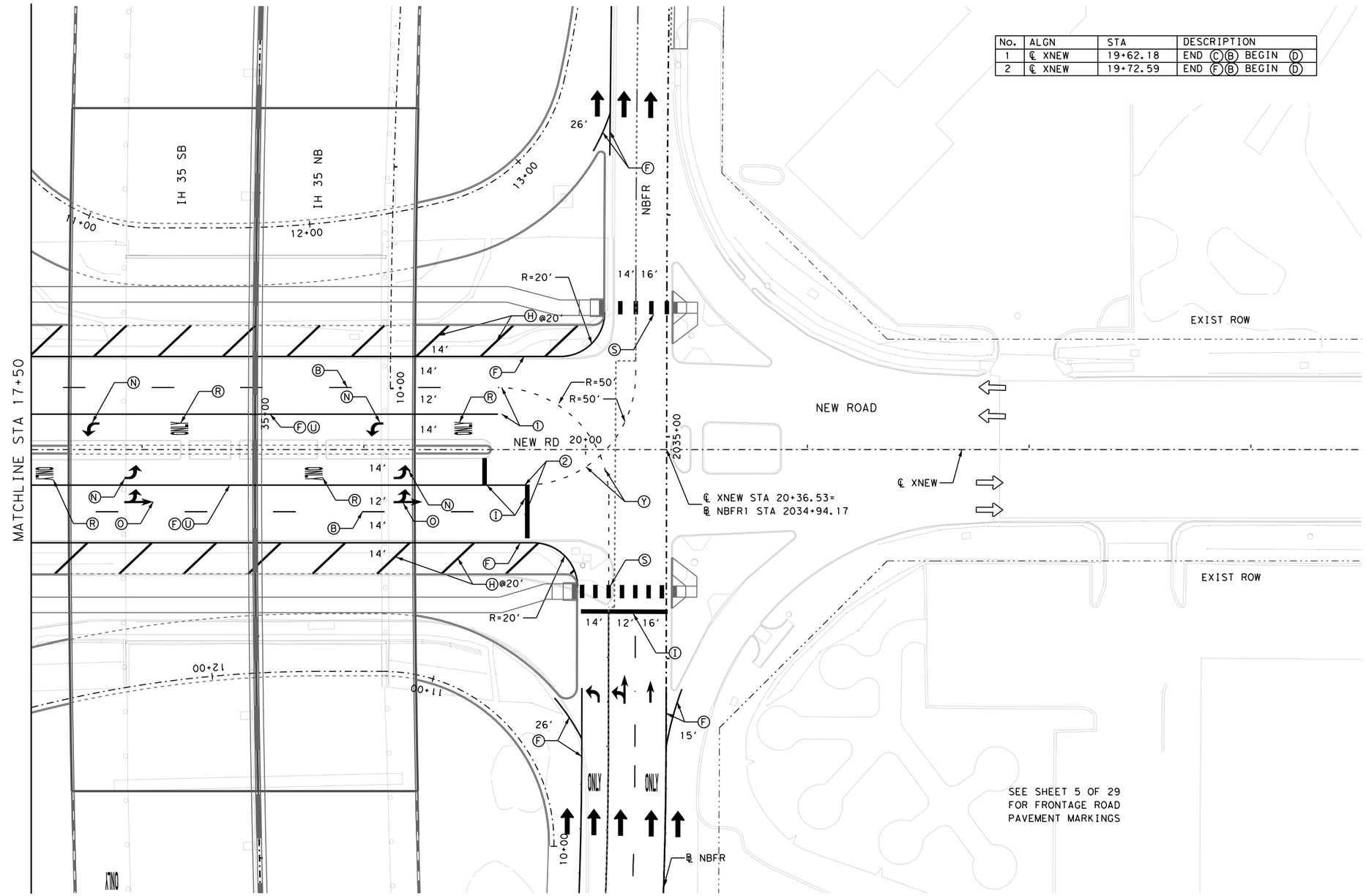

No.	ALGN	STA	DESCRIPTION
1	℄ XNEW	19+62.18	END (C)(B) BEGIN (D)
2	℄ XNEW	19+72.59	END (F)(B) BEGIN (D)

0′ 25′ 50′

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3′-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2′-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
REGISTERED LICENSED PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
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HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

NEW RD

STA 17+50 TO END

SHEET 18 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1416

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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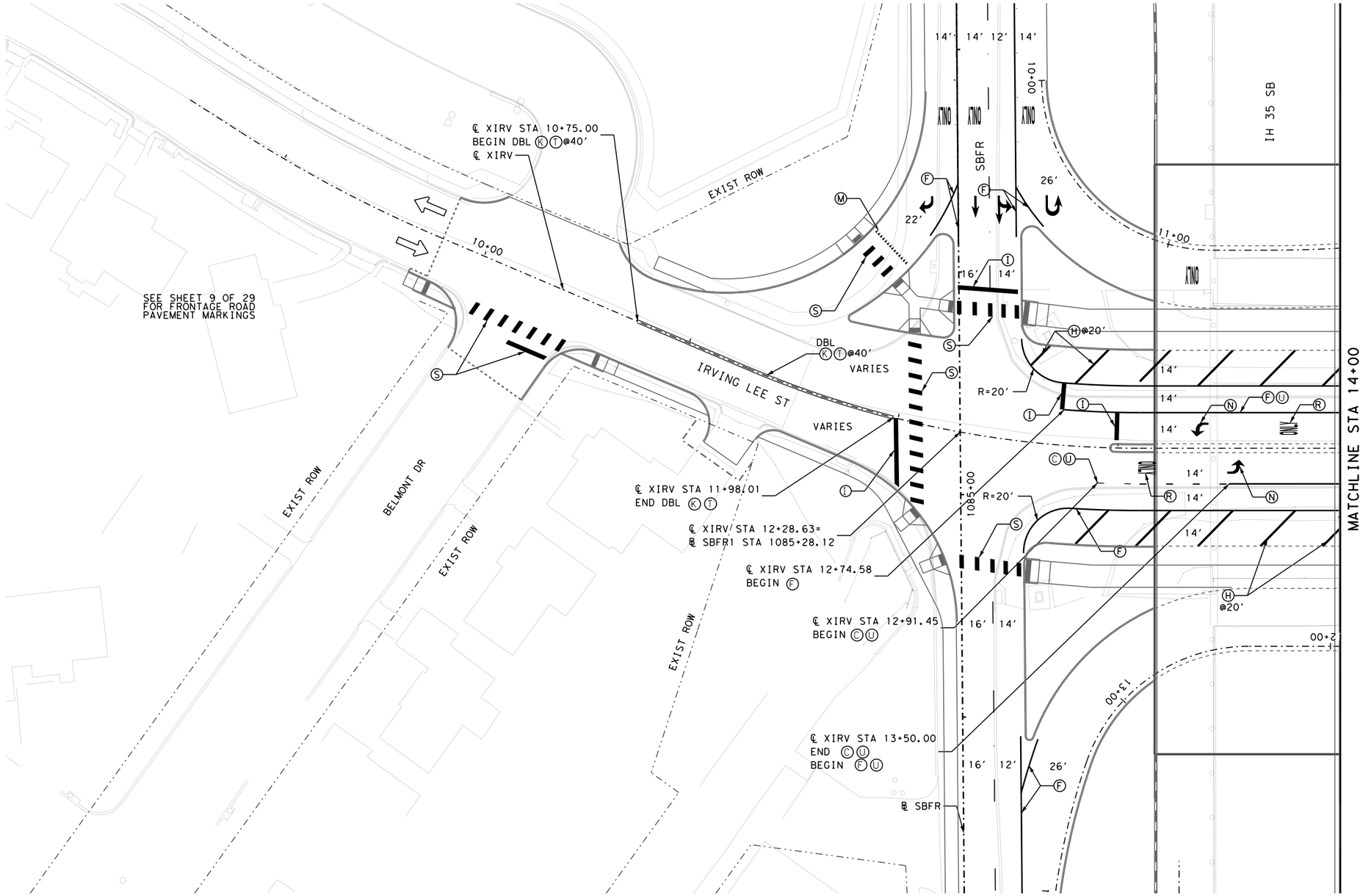

0' 25' 50'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
PROFESSIONAL ENGINEER
LICENSED
6/13/2024

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

IRVING LEE ST

SHEET 19 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1417

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\PML\Y1_019.dgn
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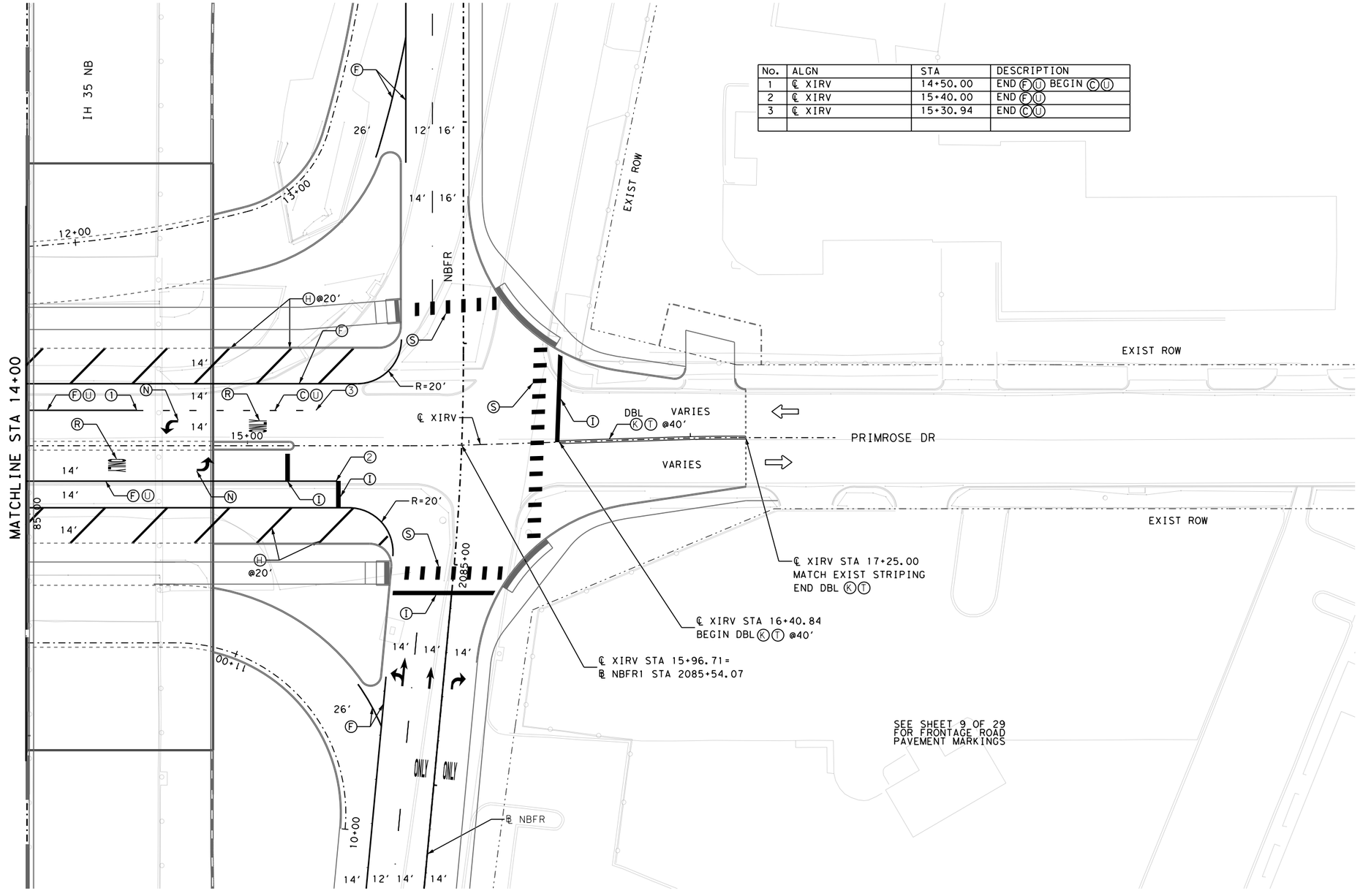

No.	ALGN	STA	DESCRIPTION
1	℄ XIRV	14+50.00	END FU BEGIN CU
2	℄ XIRV	15+40.00	END FU
3	℄ XIRV	15+30.94	END CU

0' 25' 50'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

PRIMROSE DR

SHEET 20 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1418

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\PMLY1_020.dgn
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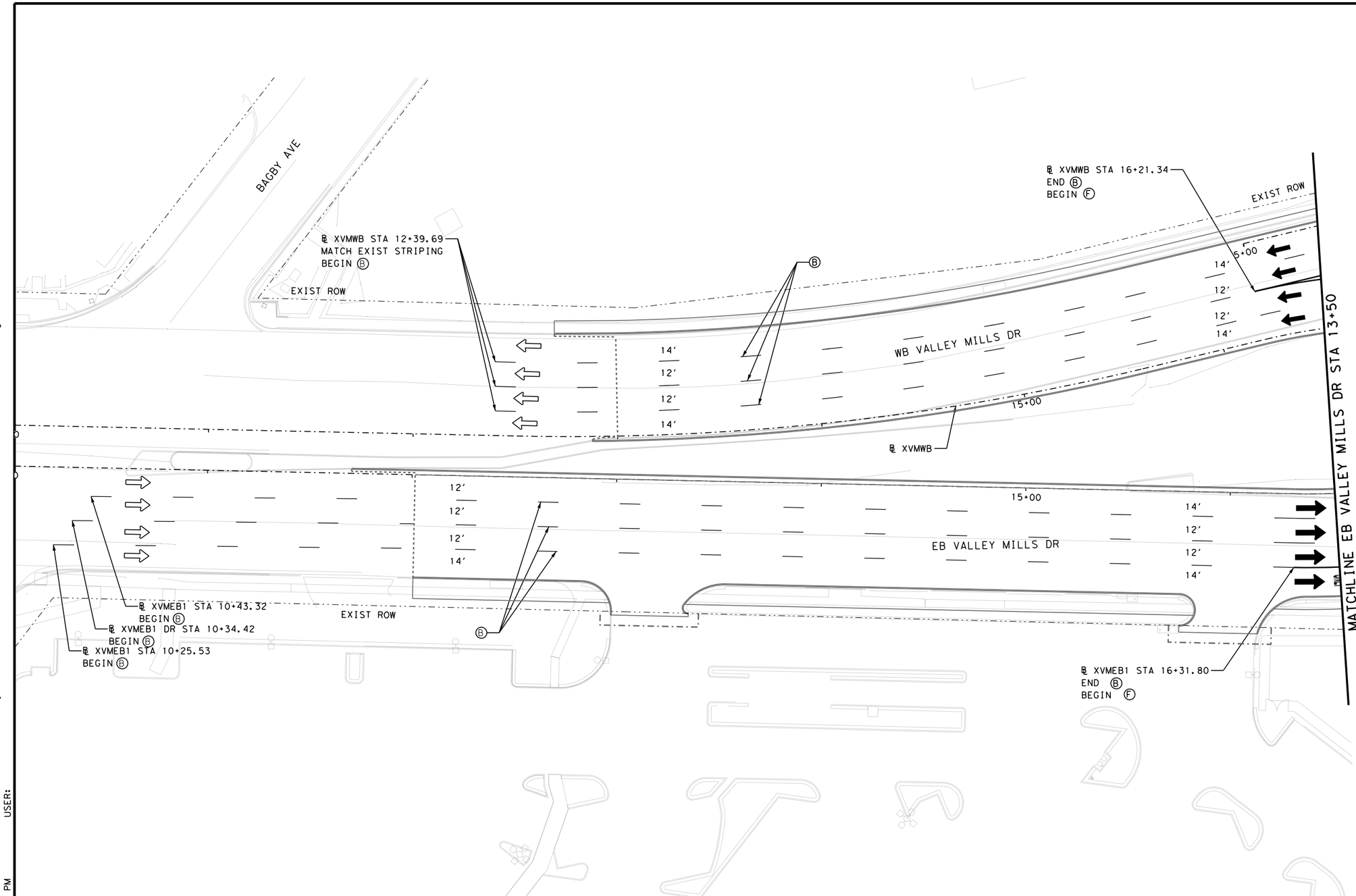

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- ⇨ EXISTING
- ➡ PROPOSED
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED
PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

VALLEY MILLS DR

SHEET 21 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1419

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\PMLY1_021.dgn
DATE: 6/13/2024 6:35:28 PM
USER:

SEE SHEET 10-11 OF 29
FOR FRONTAGE ROAD
PAVEMENT MARKINGS

℄ VMSBWB STA 10+05.98
END (F)(U) @20'

℄ VMSBWB STA 7+68.28
BEGIN (F)(U) @20'

℄ XVMWB STA 17+05.68
END (F)

EXIST ROW

℄ VMSBWB

℄ XVMEB1

℄ VMSBEB

℄ RSBP

℄ VMSBEB
STA 6+27.62
BEGIN (F)

℄ VMSBEB
STA 5+66.86
END (F)
BEGIN (Y)

℄ XVMEB1
STA 22+29.41
BEGIN (F)

R=110'

℄ XVMEB1 STA 19+20.68
END (Y)

℄ XVMWB STA 19+22.18
END (Y)

EB VALLEY MILLS DR

20'00

℄ XVMEB1 STA 19+28.77
BEGIN (B)

℄ XVMWB STA 18+37.16
END (B)
BEGIN (Y)

℄ XVMEB1 STA 17+47.84
END (F)

℄ XVMEB1 STA 18+10.97
END (B)
BEGIN (Y)

WB VALLEY MILLS DR

20'00

℄ XVMWB

℄ XVMWB STA 19+36.18
BEGIN (B)

℄ XVMWB STA 20+58.13
BEGIN (F)

℄ XVMEB1 STA 23+00.00
END (B)(Y)
BEGIN (F)(U)

IH 35 SB

℄ VMEBSB

℄ VMWBSB

℄ XVMWB
STA 20+91.53
BEGIN (F)

R=110'

℄ XVMWB STA 22+37.69
END (F)
BEGIN (B)

℄ XVMEB1 STA 17+20.87
BEGIN (F)

EXIST ROW

MATCHLINE EB VALLEY MILLS DR STA 13+50

MATCHLINE EB VALLEY MILLS DR STA 19+50

0' 25' 50'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)
- (Z) PREFAB PM TY C (W) (TPL ARROW)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
PROFESSIONAL LICENSED ENGINEER
8/23/2024

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

VALLEY MILLS DR

SHEET 22 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1420
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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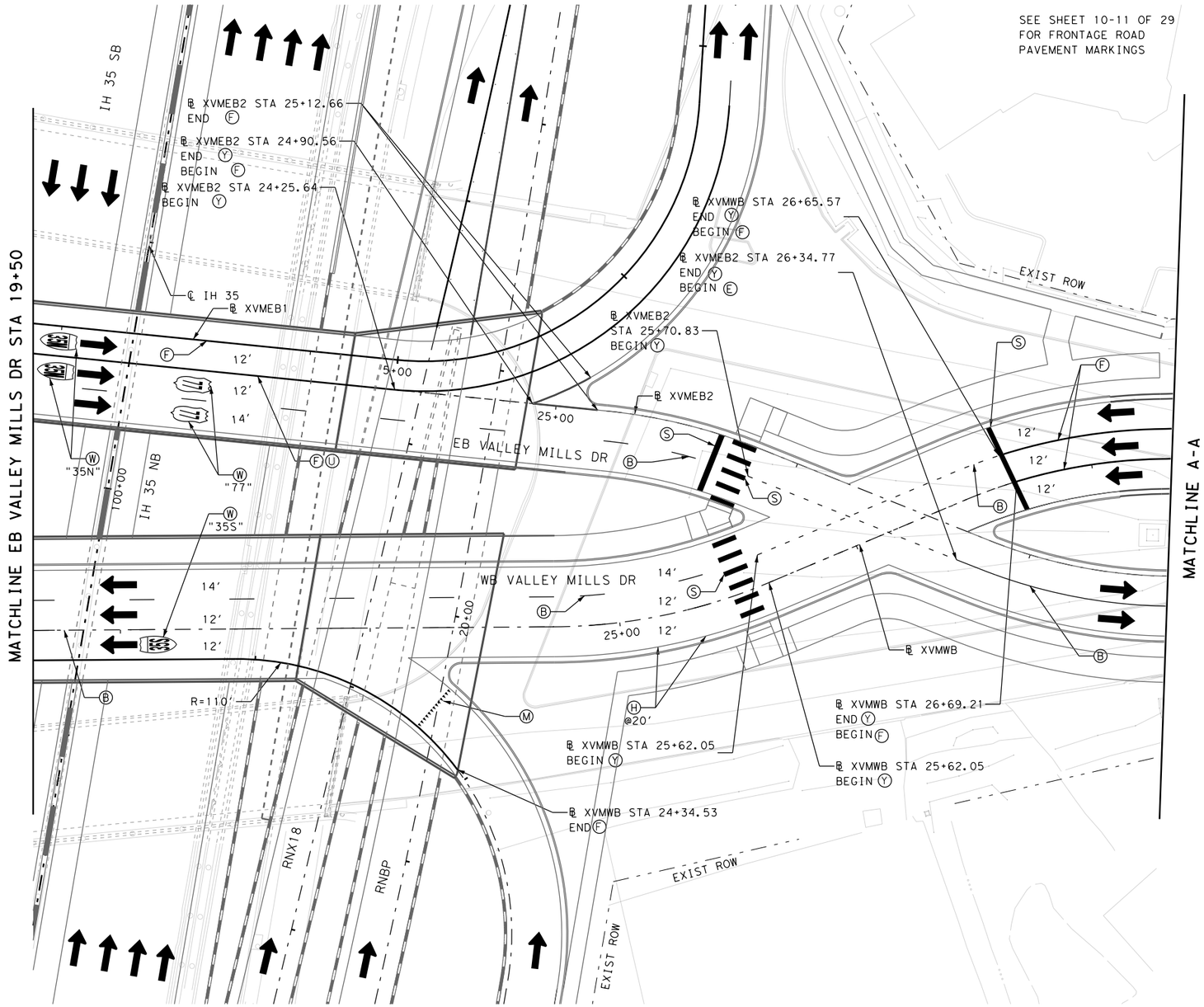

0′ 25′ 50′

NOTES:

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2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
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LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- ⇨ EXISTING
- ➡ PROPOSED
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)
- (Z) PREFAB PM TY C (W) (TPL ARROW)

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
PROFESSIONAL ENGINEER
LICENSED
8/23/2024

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

VALLEY MILLS DR

SHEET 23 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1421

STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN

CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\PMLY1_023.dgn
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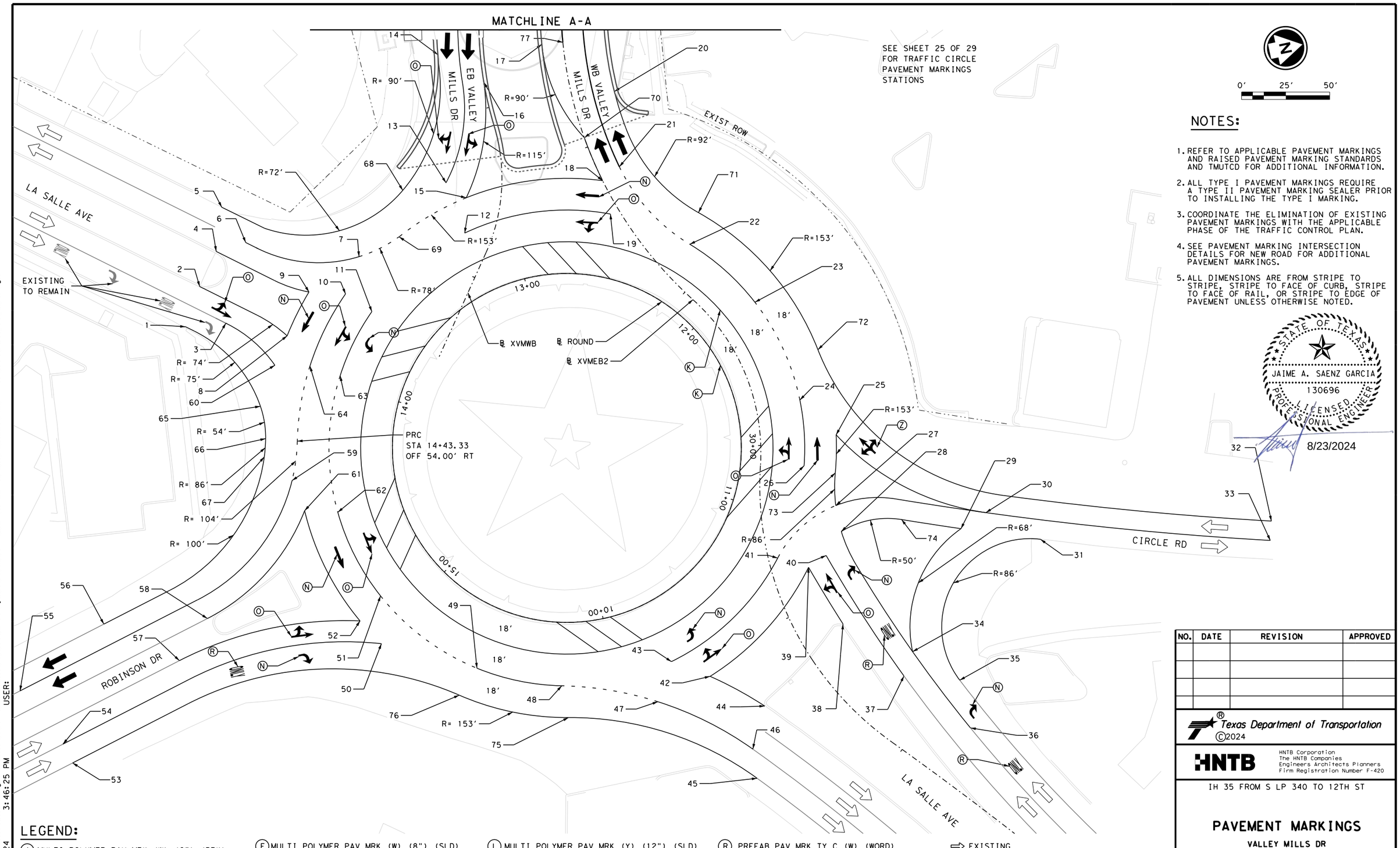

0' 25' 50'

NOTES:

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STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
PROFESSIONAL LICENSED ENGINEER
8/23/2024

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
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- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
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- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
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- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)
- (Z) PREFAB PM TY C (W) (TPL ARROW)

⇨ EXISTING
➡ PROPOSED

NO.	DATE	REVISION	APPROVED

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

VALLEY MILLS DR

SHEET 24 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1422

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\PMLY1_024.dgn
DATE: 8/23/2024 3:46:25 PM
USER:

No.	ALGN	STA	OFFSET	DESCRIPTION
1	℄ ROUND	14+15.33	128.06' RT	BEGIN (E)
2	℄ ROUND	14+04.80	128.60' RT	BEGIN (K)
3	℄ ROUND	14+11.09	107.04' RT	BEGIN (E) MATCH EXISTING
4	℄ ROUND	13+95.24	129.06' RT	BEGIN (K)
5	℄ ROUND	13+85.51	139.76' RT	END (E)
6	℄ ROUND	13+89.47	117.31' RT	END (E) MATCH EXISTING
7	℄ ROUND	STA 13+72.	61.27' RT	BEGIN (E) END (D)
8	℄ ROUND	14+08.07	72.00' RT	END (K)
9	℄ ROUND	13+91.96	72.00' RT	BEGIN (E) END (K)
10	℄ ROUND	13+85.62	54.00' RT	BEGIN (E)
11	℄ ROUND	13+85.42	36.00' RT	BEGIN (E)
12	℄ ROUND	13+34.22	36.00' RT	END (E)
13	℄ ROUND	13+32.62	66.35' RT	END (E)
14	℄ ROUND	13+21.67	135.87' RT	BEGIN (E)
15	℄ ROUND	13+28.14	54.00' RT	END (E),(K) BEGIN (D)
16	℄ ROUND	13+12.40	113.75' RT	BEGIN (K)
17	℄ ROUND	12+96.42	130.43' RT	END (K)
18	℄ ROUND	12+77.11	54.00' RT	BEGIN (E),(K)
19	℄ ROUND	12+72.06	36.00' RT	BEGIN (E)
20	℄ ROUND	12+77.17	105.04' RT	END (E)
21	℄ ROUND	12+72.01	63.31' RT	BEGIN (F) END (D)
22	℄ ROUND	12+36.51	36.00' RT	END OF (C) BEGIN (D)
23	℄ ROUND	12+00.04	36.00' RT	BEGIN (E) END (D)
24	℄ ROUND	11+54.86	36.00' RT	BEGIN (D) END (E)
25	℄ ROUND	11+39.60	54.00' RT	END (E),(K)

No.	ALGN	STA	OFFSET	DESCRIPTION
26	℄ ROUND	11+27.33	36.00' RT	BEGIN (E)
27	℄ ROUND	11+13.88	57.08' RT	BEGIN (E),(K)
28	℄ ROUND	11+05.53	63.81' RT	BEGIN (E)
29	℄ ROUND	11+14.78	129.32' RT	END (E)
30	℄ ROUND	11+19.62	141.62' RT	BEGIN (K)
31	℄ ROUND	11+15.97	174.85' RT	END (E)
32	℄ ROUND	11+24.54	302.98' RT	BEGIN (E)
33	℄ ROUND	11+21.84	303.64' RT	END (K)
34	℄ ROUND	10+82.07	128.75' RT	BEGIN (E)
35	℄ ROUND	10+81.93	160.03' RT	BEGIN (E) MATCH EXISTING
36	℄ ROUND	10+74.74	179.79' RT	BEGIN (E) MATCH EXISTING
37	℄ ROUND	10+75.91	131.97' RT	BEGIN (E) MATCH EXISTING
38	℄ ROUND	10+78.60	86.88' RT	BEGIN (K)
39	℄ ROUND	10+89.36	54.00' RT	END (E),(K)
40	℄ ROUND	10+95.85	60.33' RT	END (E)
41	℄ ROUND	10+87.41	36.00' RT	END (E) BEGIN (D)
42	℄ ROUND	10+34.74	54.00' RT	BEGIN (E),(K)
43	℄ ROUND	10+24.32	36.00' RT	BEGIN (E)
44	℄ ROUND	10+44.03	85.58' RT	END (K)
45	℄ ROUND	10+31.01	117.34' RT	END (E) MATCH EXISTING
46	℄ ROUND	10+34.05	101.89' RT	END (E) MATCH EXISTING
47	℄ ROUND	10+13.38	54.00' RT	END (D) BEGIN (E)
48	℄ ROUND	15+99.21	36.00' RT	BEGIN (D) END (E)
49	℄ ROUND	15+62.93	36.00' RT	END (D) BEGIN (E)
50	℄ ROUND	15+26.24	54.00' RT	END (E)

No.	ALGN	STA	OFFSET	DESCRIPTION
51	℄ ROUND	15+12.26	36.00' RT	BEGIN (D)
52	℄ ROUND	15+14.76	54.00' RT	END (K)
53	℄ ROUND	15+01.98	233.59' RT	END (E) MATCH EXISTING
54	℄ ROUND	14+98.41	232.68' RT	BEGIN (E) MATCH EXISTING
55	℄ ROUND	14+87.19	240.53' RT	END (E) MATCH EXISTING
56	℄ ROUND	14+81.80	182.12' RT	END (E) MATCH EXISTING
57	℄ ROUND	14+95.50	151.81' RT	BEGIN (K) MATCH EXISTING
58	℄ ROUND	14+89.67	126.78' RT	END (K) MATCH EXISTING
59	℄ ROUND	14+57.48	57.99' RT	END (D) BEGIN E
60	℄ ROUND	14+18.49	73.19' RT	END (E)
61	℄ ROUND	14+69.06	54.00' RT	BEGIN (E),(K)
62	℄ ROUND	14+72.90	36.00' RT	END (E) BEGIN (E)
63	℄ ROUND	14+15.27	36.00' RT	END (E) BEGIN (D)
64	℄ ROUND	14+15.27	54.00' RT	END (E) BEGIN (D)
65	℄ ROUND	14+32.43	76.48' RT	PCC
66	℄ ROUND	14+42.75	72.01' RT	PCC
67	℄ ROUND	14+48.75	72.77' RT	PCC
68	℄ ROUND	13+46.44	74.29' RT	PCC
69	℄ ROUND	13+56.78	54.06' RT	PRC
70	℄ ROUND	12+84.72	77.35' RT	PI
71	℄ ROUND	12+39.79	54.00' RT	PRC
72	℄ ROUND	11+71.70	54.00' RT	PRC
73	℄ ROUND	11+25.58	54.00' RT	PRC
74	℄ ROUND	11+13.92	95.27' RT	PI
75	℄ ROUND	16+01.92	54.00' RT	PRC
76	℄ ROUND	15+60.68	54.00' RT	PRC
77	℄ ROUND	12+91.26	131.18' RT	BEGIN (F)

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)
- (Z) PREFAB PM TY C (W) (TPL ARROW)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
8/23/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

VALLEY MILLS DR

SHEET 25 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1423
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\PMLY1_025.dgn
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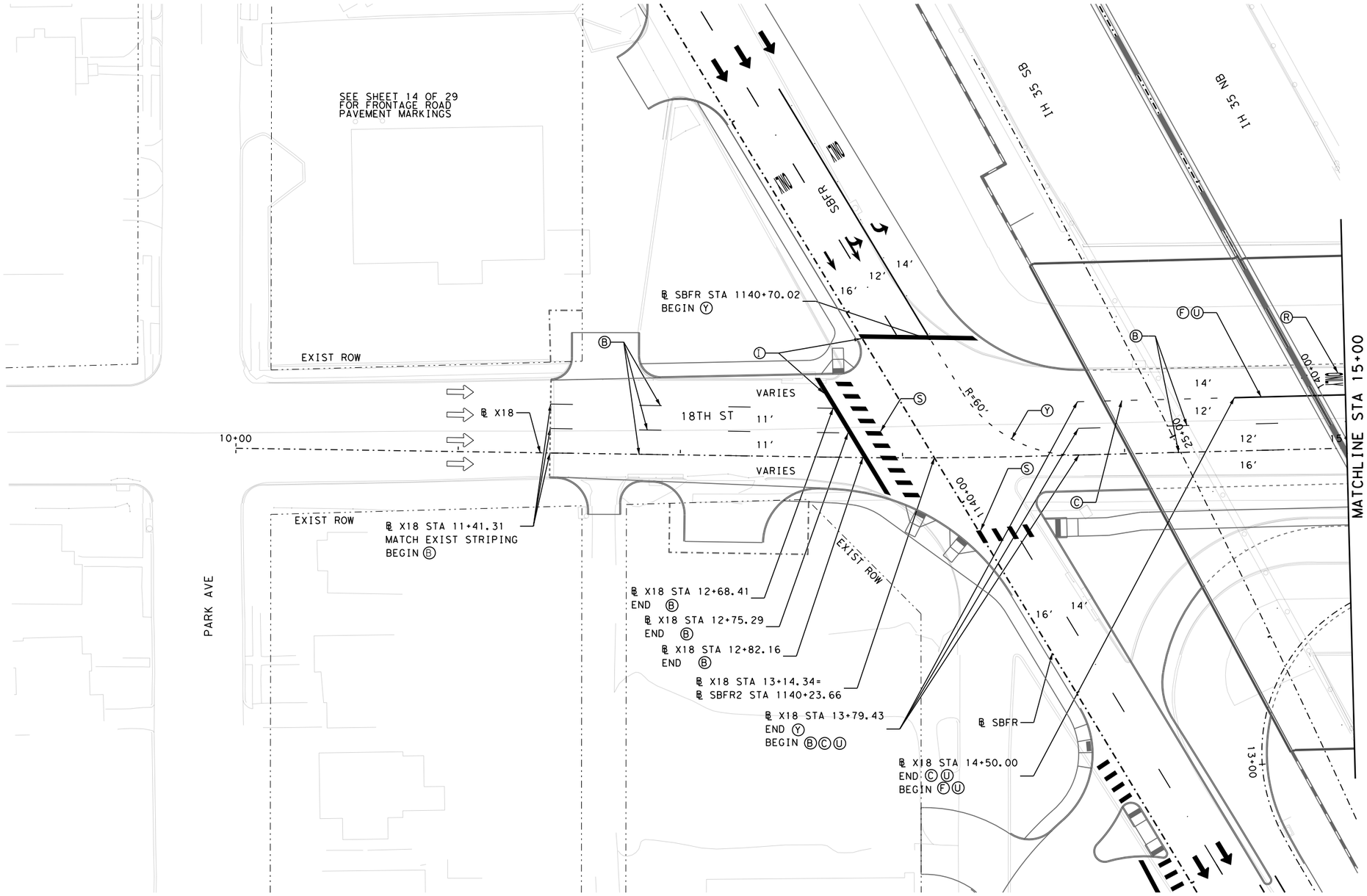

0' 25' 50'

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
5. ALL DIMENSIONS ARE FROM STRIPE TO STRIPE, STRIPE TO FACE OF CURB, STRIPE TO FACE OF RAIL, OR STRIPE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
PROFESSIONAL ENGINEER
LICENSED
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
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HNTB Corporation
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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

18TH ST
BEGIN TO STA 15+00

SHEET 26 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1424
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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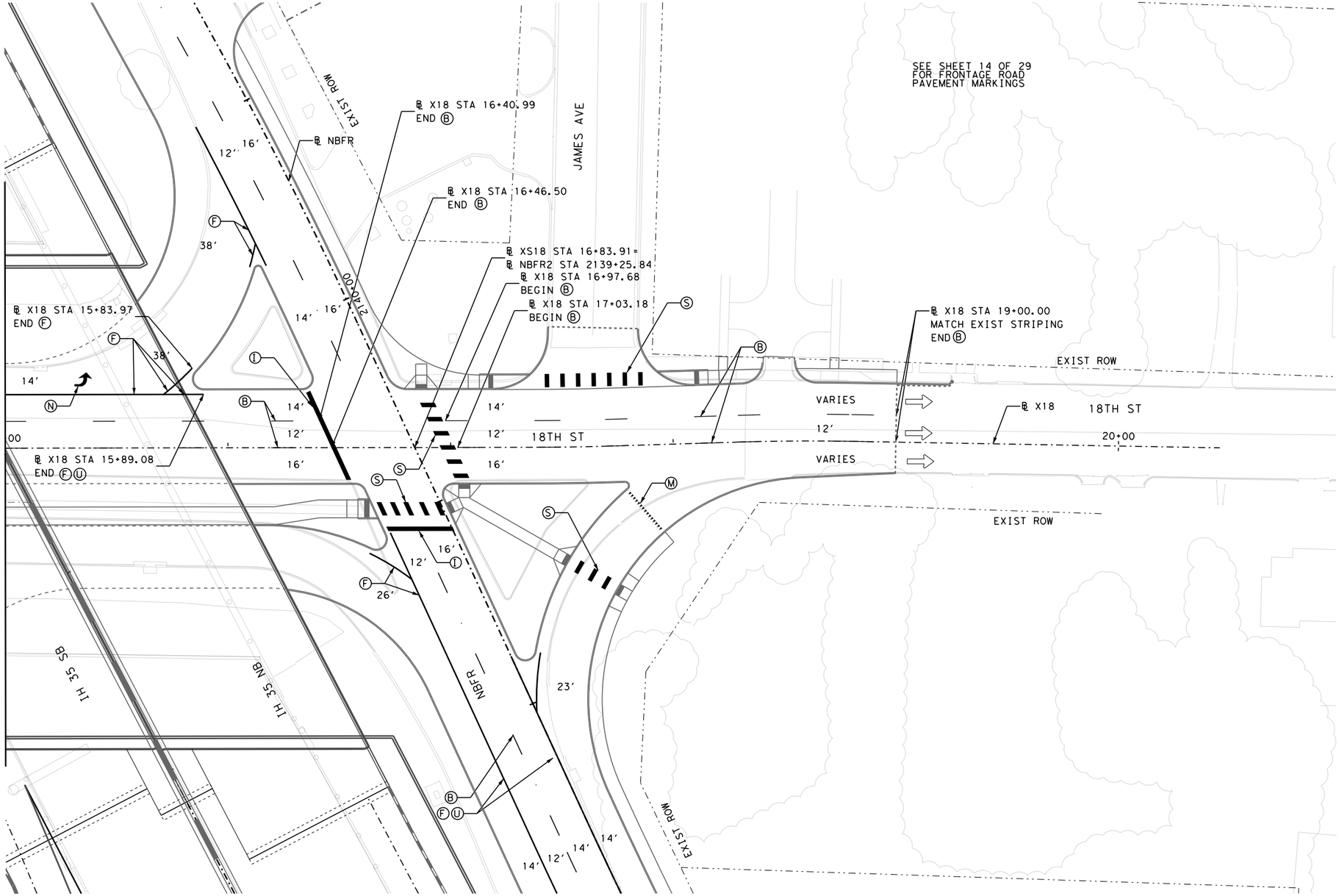

0′ 25′ 50′

NOTES:

1. REFER TO APPLICABLE PAVEMENT MARKINGS AND RAISED PAVEMENT MARKING STANDARDS AND TMUTCD FOR ADDITIONAL INFORMATION.
2. ALL TYPE I PAVEMENT MARKINGS REQUIRE A TYPE II PAVEMENT MARKING SEALER PRIOR TO INSTALLING THE TYPE I MARKING.
3. COORDINATE THE ELIMINATION OF EXISTING PAVEMENT MARKINGS WITH THE APPLICABLE PHASE OF THE TRAFFIC CONTROL PLAN.
4. SEE PAVEMENT MARKING INTERSECTION DETAILS FOR NEW ROAD FOR ADDITIONAL PAVEMENT MARKINGS.
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LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED
PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
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HNTB Corporation
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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

18TH ST
STA 15+00 TO END

SHEET 27 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1425
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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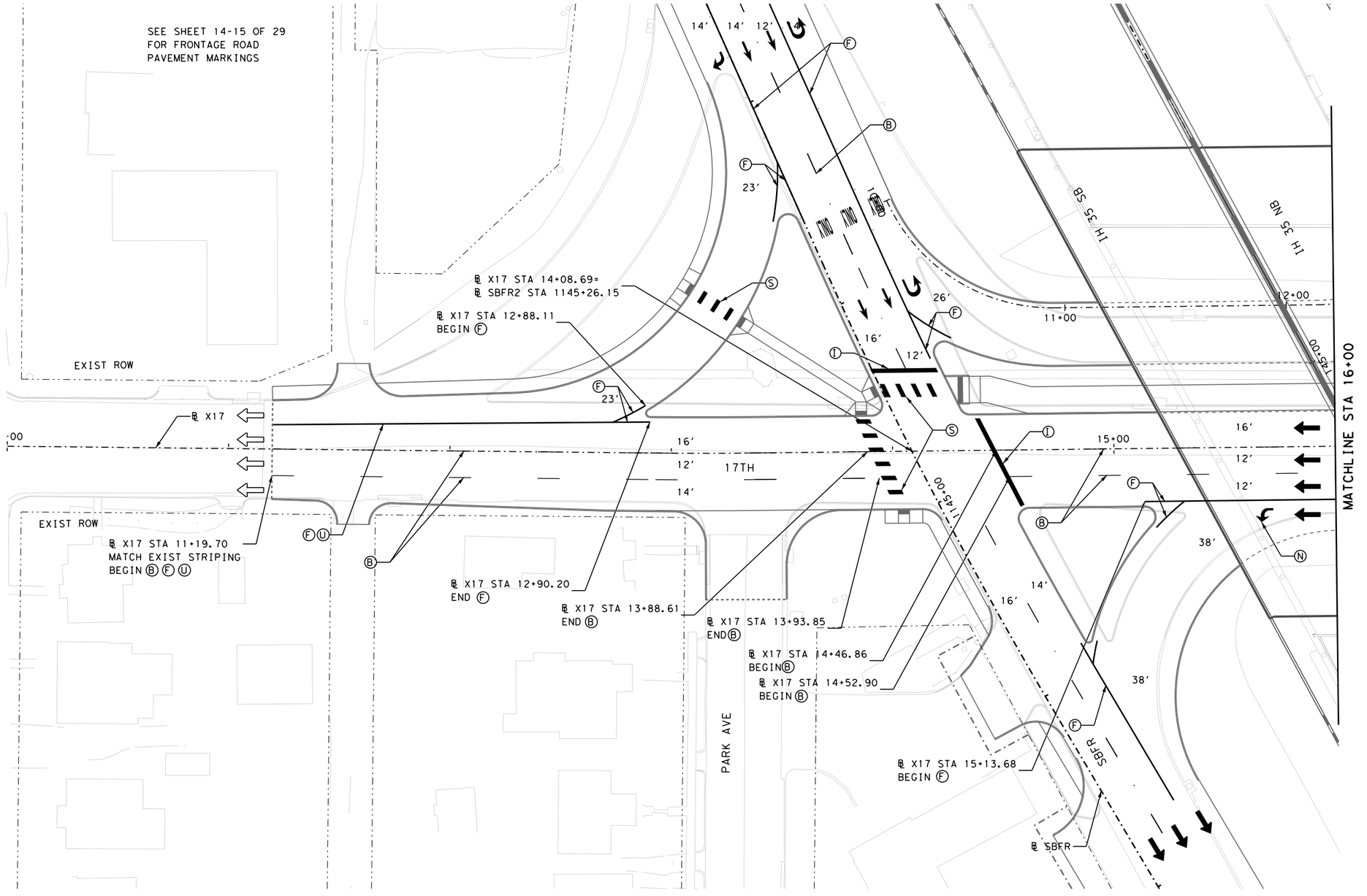

0′ 25′ 50′

NOTES:

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LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

⇨ EXISTING
➡ PROPOSED

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS
17TH ST
BEGIN TO STA 16+00

SHEET 28 OF 29

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1426

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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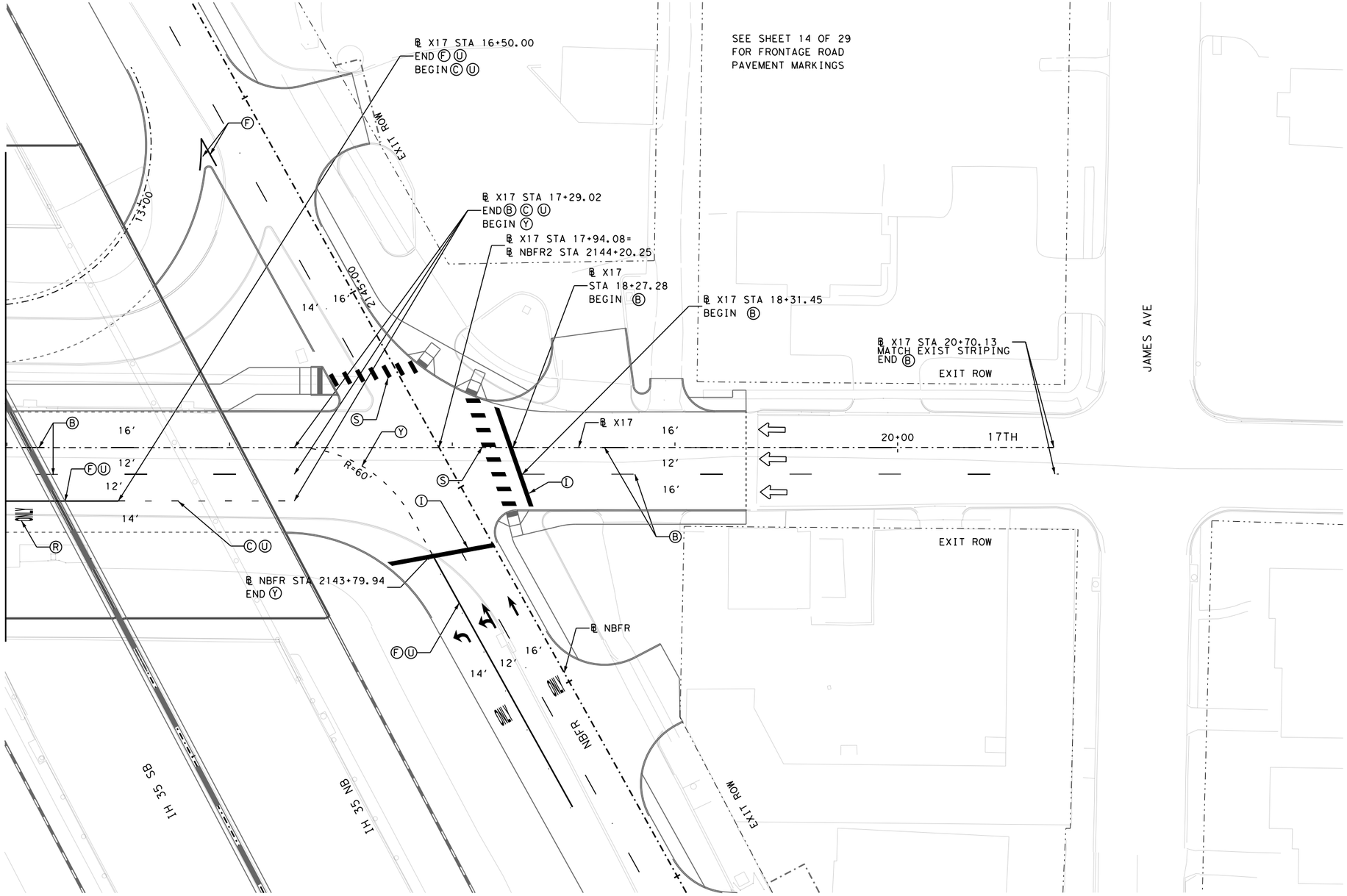

0′ 25′ 50′

NOTES:

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LEGEND:

- (A) MULTI POLYMER PAV MRK (W) (6") (BRK)
  MULTI POLYMER PAV MRK (BLACK) (6") (BRK)
- (B) MULTI POLYMER PAV MRK (W) (6") (BRK)
- (C) MULTI POLYMER PAV MRK (W) (6") (3'-DOT)
- (D) MULTI POLYMER PAV MRK (W) (6") (2'-DOT)
- (E) MULTI POLYMER PAV MRK (W) (6") (SLD)
- (F) MULTI POLYMER PAV MRK (W) (8") (SLD)
- (G) MULTI POLYMER PAV MRK (W) (12") (LNDP)
- (H) MULTI POLYMER PAV MRK (W) (12") (SLD)
- (I) MULTI POLYMER PAV MRK (W) (24") (SLD)
- (J) MULTI POLYMER PAV MRK (Y) (6") (BRK)
- (K) MULTI POLYMER PAV MRK (Y) (6") (SLD)
- (L) MULTI POLYMER PAV MRK (Y) (12") (SLD)
- (M) PREFAB PAV MRK TY C (W) (18") (YLD TRI)
- (N) PREFAB PAV MRK TY C (W) (ARROW)
- (O) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (P) PREFAB PAV MRK TY C (W) (NUMBER)
- (Q) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (R) PREFAB PAV MRK TY C (W) (WORD)
- (S) REFL RAV MRK TY I (W) (24") (SLD)
- (T) RAISED PAV MRKR (REFL) TY II-A-A
- (U) RAISED PAV MRKR (REFL) TY II-C-R
- (V) WRONG WAY ARROWS (RAIS PAV MRKR)
- (W) PREFAB PAV MRK TY C (MULTI) (SHIELD)
- ⇨ EXISTING
- ➡ PROPOSED
- (X) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (Y) REFL PAV MRK TY I (W) 8" (BRK) (100MIL)

JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
6/13/2024

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The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PAVEMENT MARKINGS

17TH ST

STA 16+00 TO END

SHEET 29 OF 29

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1427
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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DATE: 6/13/2024 6:36:14 PM
USER:

EXIST SIGN
TO BE REPLACED
WITH SIGN NO. 2

New Rd 1/2
Valley Mills Dr LOOP 396 1 3/4
24th - 19th Sts 2 1/4

2

PROPOSED LARGE SIGN NO. 2
NEW SIGN ON EXISTING COSST
SEE LAGE SIGN DETAILS, SHEET 1 OF 8
1 MILE FROM ℄ IH35 STA 0+00

New Rd 1/2
Valley Mills Dr LOOP 396 1 3/4
18th - 17th Sts 2 3/4

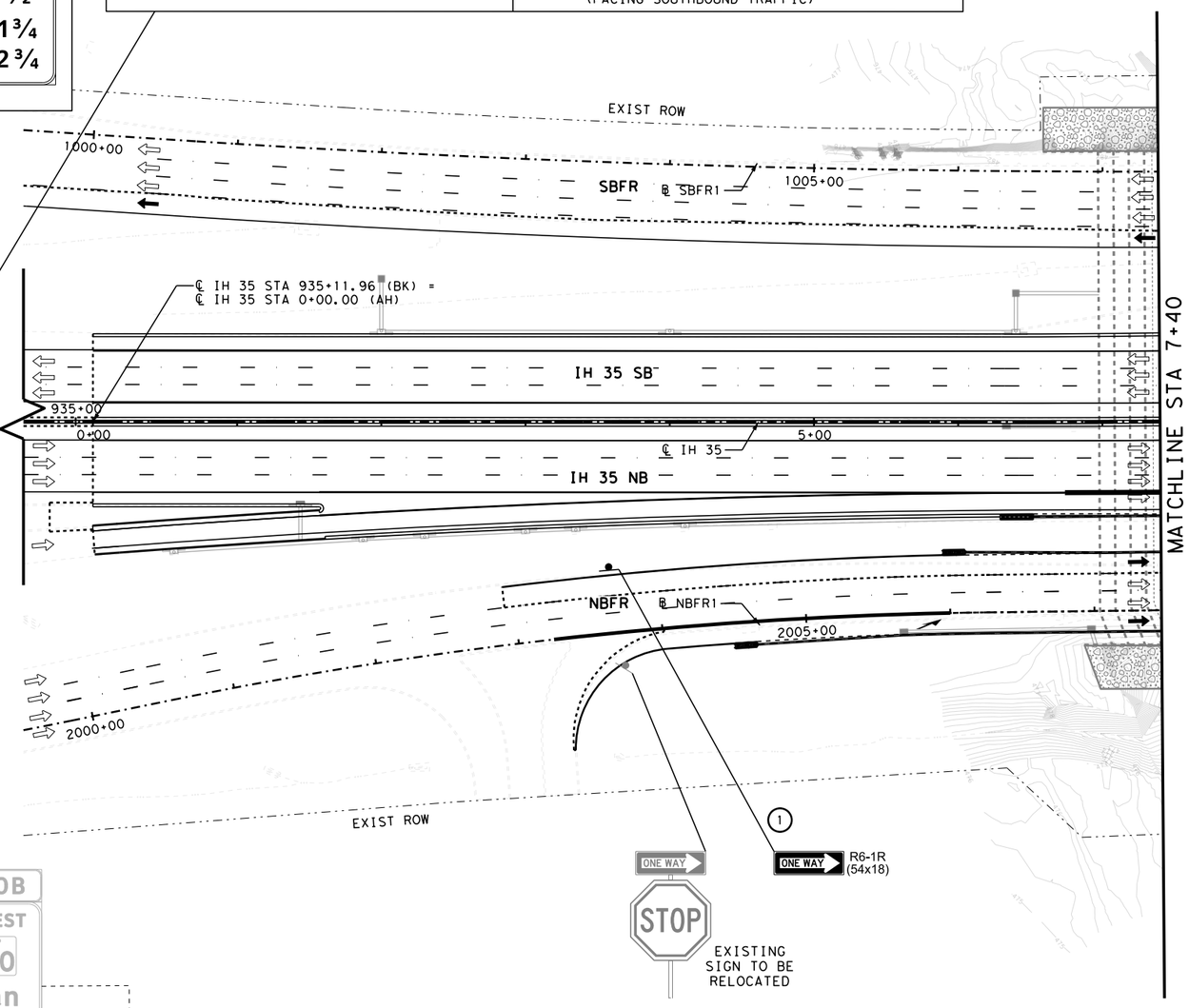
3

Valley Mills Dr LOOP 396 1
18th - 17th Sts 2

PROPOSED SIGN NO. 3
NEW SIGN ON EXISTING COSST
SEE LARGE SIGN DETAILS, SHEET 1 OF 8
1/4 MILE FROM ℄ IH35 STA 0+00
(FACING NORTHBOUND TRAFFIC)

Corporation Pkwy 1/2
Sun Valley Blvd FM 2063 2 1/2
Spring Valley Rd FM 2113

EXISTING SIGN TO REMAIN
(FACING SOUTHBOUND TRAFFIC)



1

EXIT 333
LOOP 396
Valley Mills Dr
2 MILES

PROPOSED LARGE SIGN NO. 1
NEW SIGN ON EXISTING OHSB
SEE LARGE SIGN DETAILS, SHEET 1 OF 8
1 1/4 MILE FROM ℄ IH35 STA 0+00

EXIT 331
New Road
3/4 MILE

EXIT 330B
NORTH WEST
TEXAS 6 LOOP 340
Meridian

EXISTING SIGN TO REMAIN

0' 25' 50' 100'

LEGEND:

- SMALL SIGN DESIGNATION
- LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

NOTES:

1. SIGN LOCATION SHOWN IS APPROXIMATE FIELD ADJUSTMENT MAY BE NECESSARY TO COMPLY WITH APPLICABLE TXDOT & MUTCD STANDARDS.
2. REFER TO DELINEATOR & OBJECT MARKER STANDARDS AND MUTCD FOR DELINEATOR INFORMATION.
3. EXISTING SPECIFIC SERVICE LOGO SIGNS SHALL BE RELOCATED AS DIRECTED BY TXDOT.
4. SEE PAVEMENT MARKING SHEETS FOR PAVEMENT MARKINGS & STRIPING.
5. SEE INTERSECTION SHEETS FOR NEW ROAD INTERSECTION SIGNING & DELINEATION.

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
PROFESSIONAL LICENSED ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

BEG PROJ TO STA 7+40

SHEET 1 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1428
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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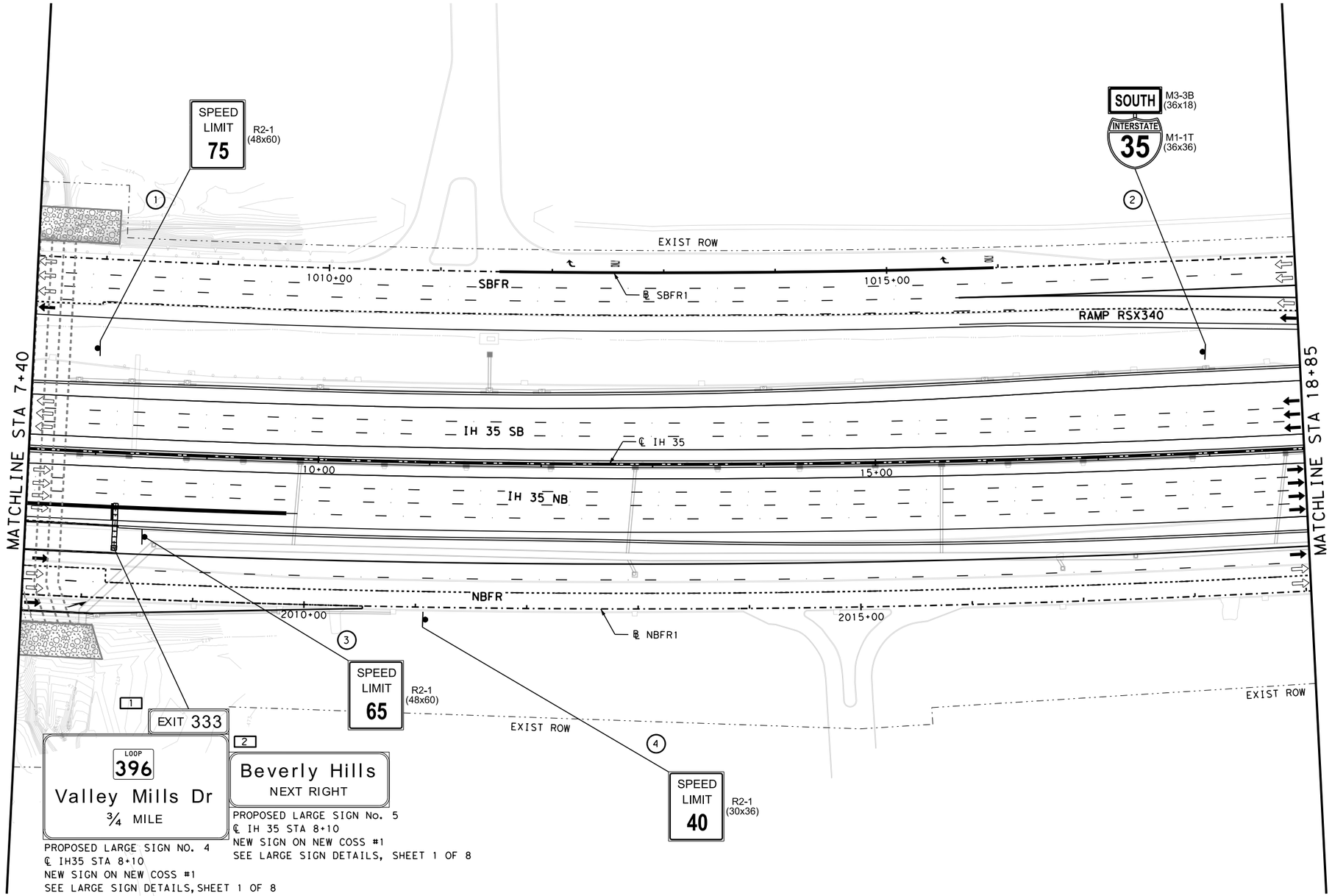

0' 25' 50' 100'

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
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- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

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IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

STA 7+40 TO STA 18+85

SHEET 2 OF 26

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1429
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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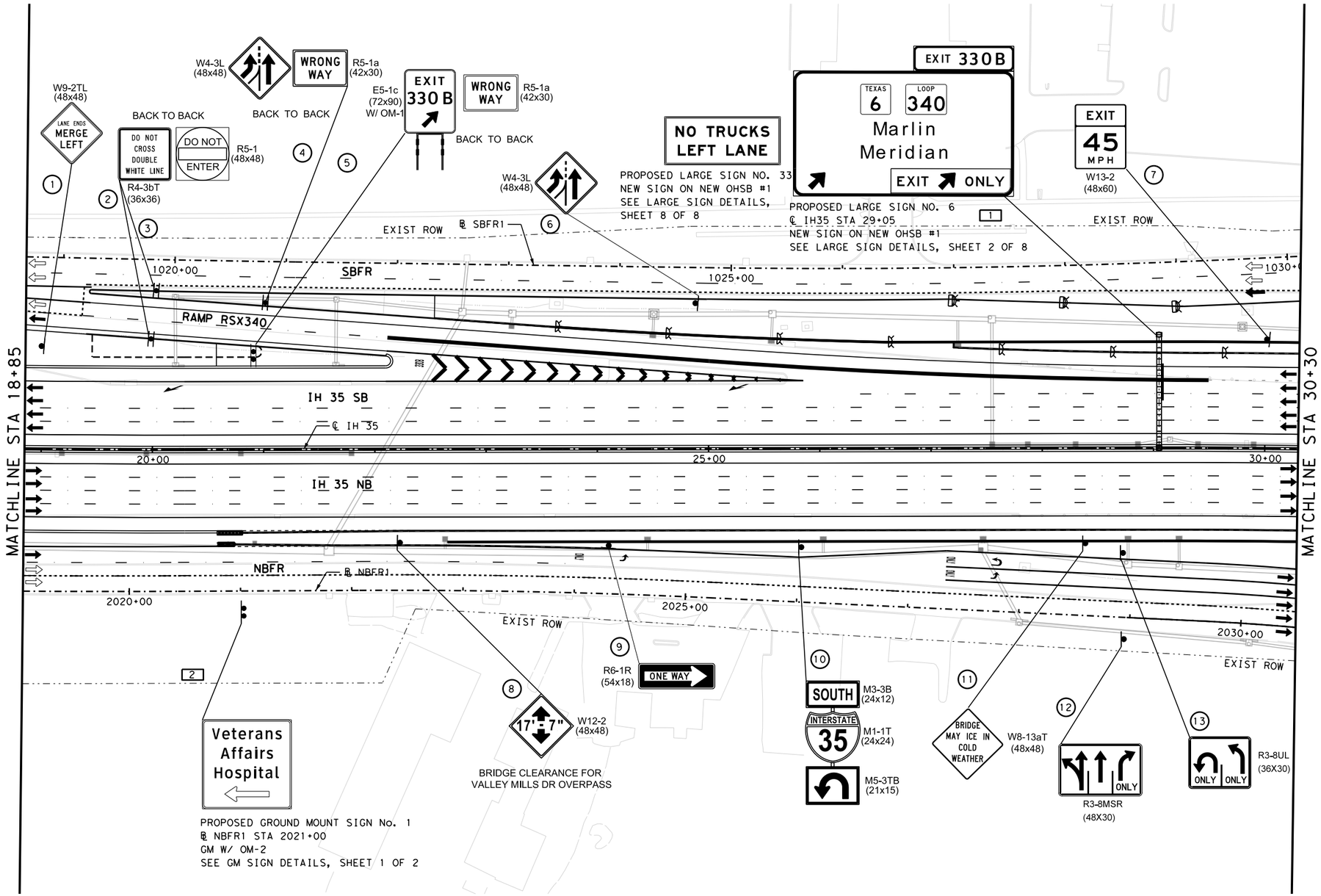

0' 25' 50' 100'

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

NOTES:

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6/13/2024

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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

STA 18+85 TO STA 30+30

SHEET 3 OF 26

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1430
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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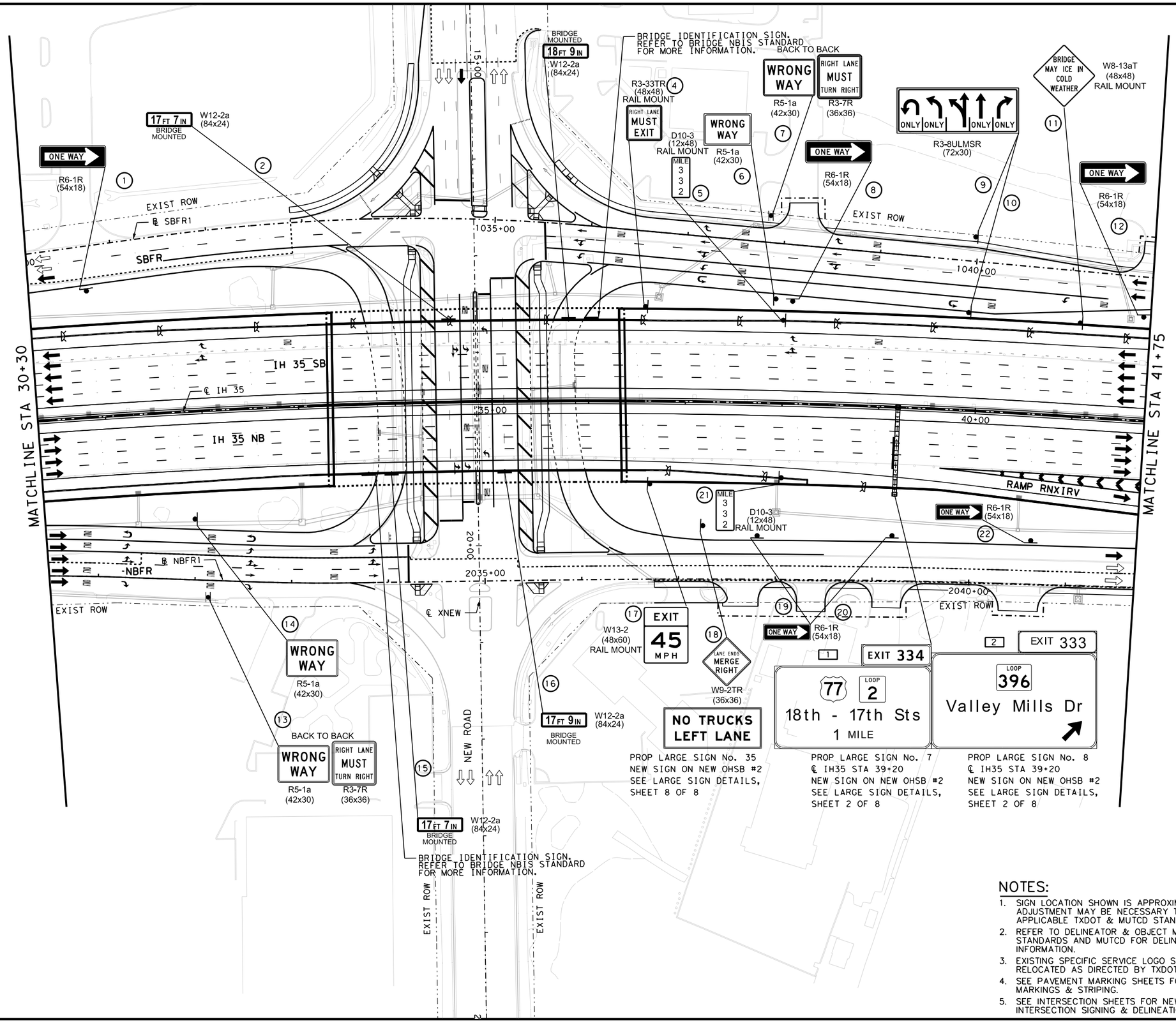

0' 25' 50' 100'

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

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IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

STA 30+30 TO STA 41+75

SHEET 4 OF 26

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1431
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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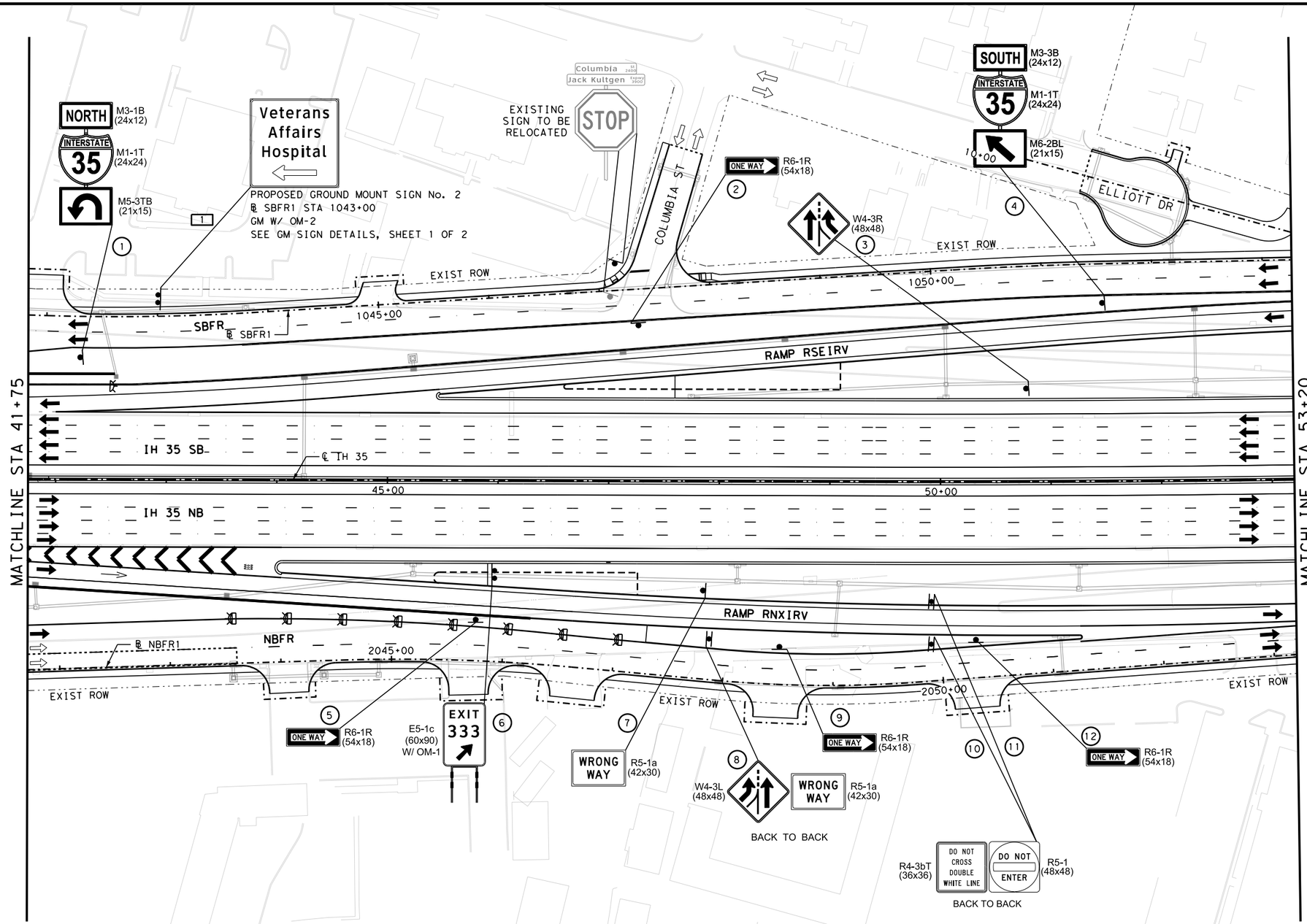

0' 25' 50' 100'

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
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- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
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- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

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STATE OF TEXAS
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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

STA 41+75 TO STA 53+20

SHEET 5 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1432
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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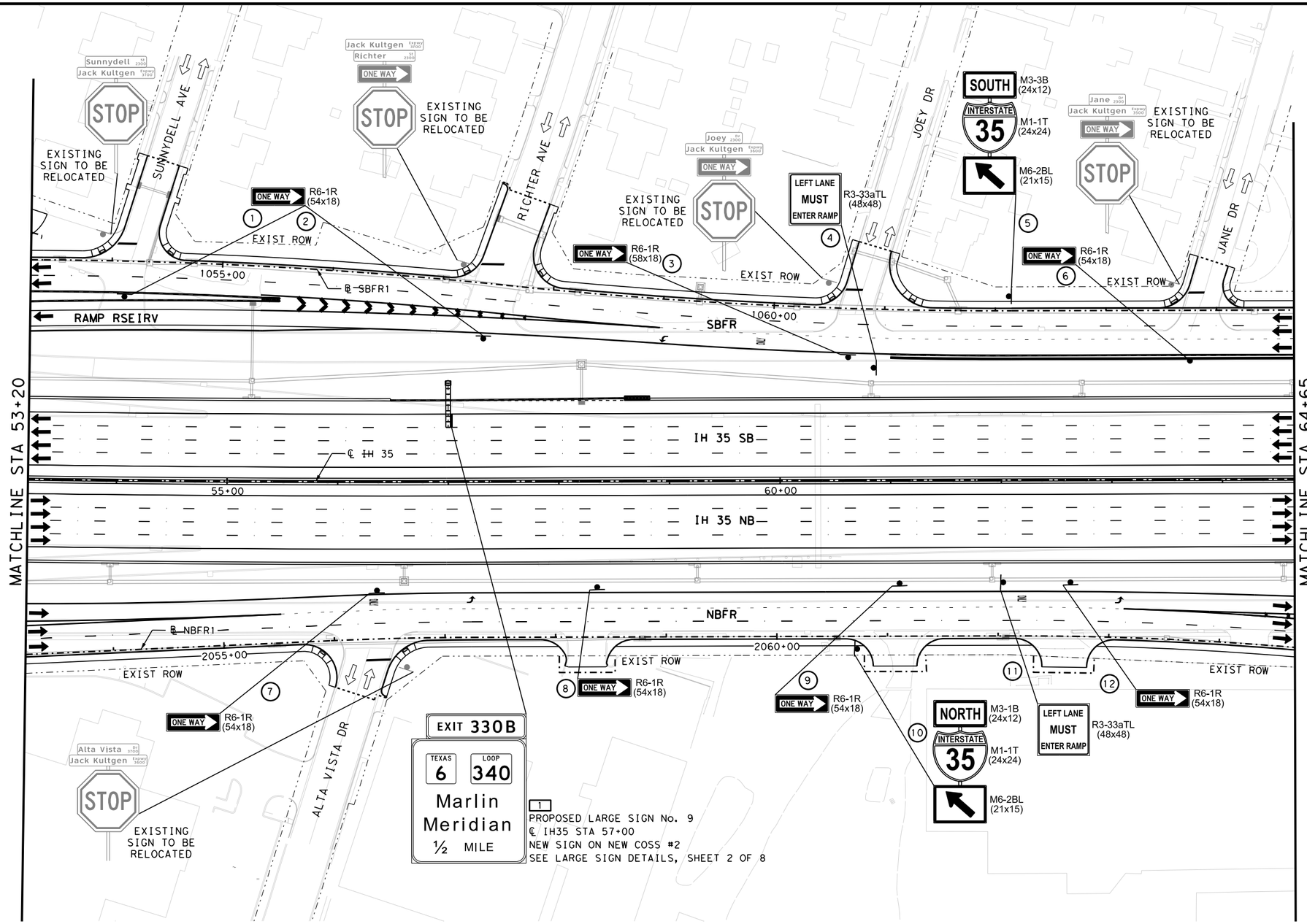

1 PROPOSED LARGE SIGN No. 9
℄ IH35 STA 57+00
NEW SIGN ON NEW COSS #2
SEE LARGE SIGN DETAILS, SHEET 2 OF 8

0' 25' 50' 100'

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

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STATE OF TEXAS
JAIME A. SAENZ GARCIA
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6/13/2024

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The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

STA 53+20 TO STA 64+65

SHEET 6 OF 26

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1433
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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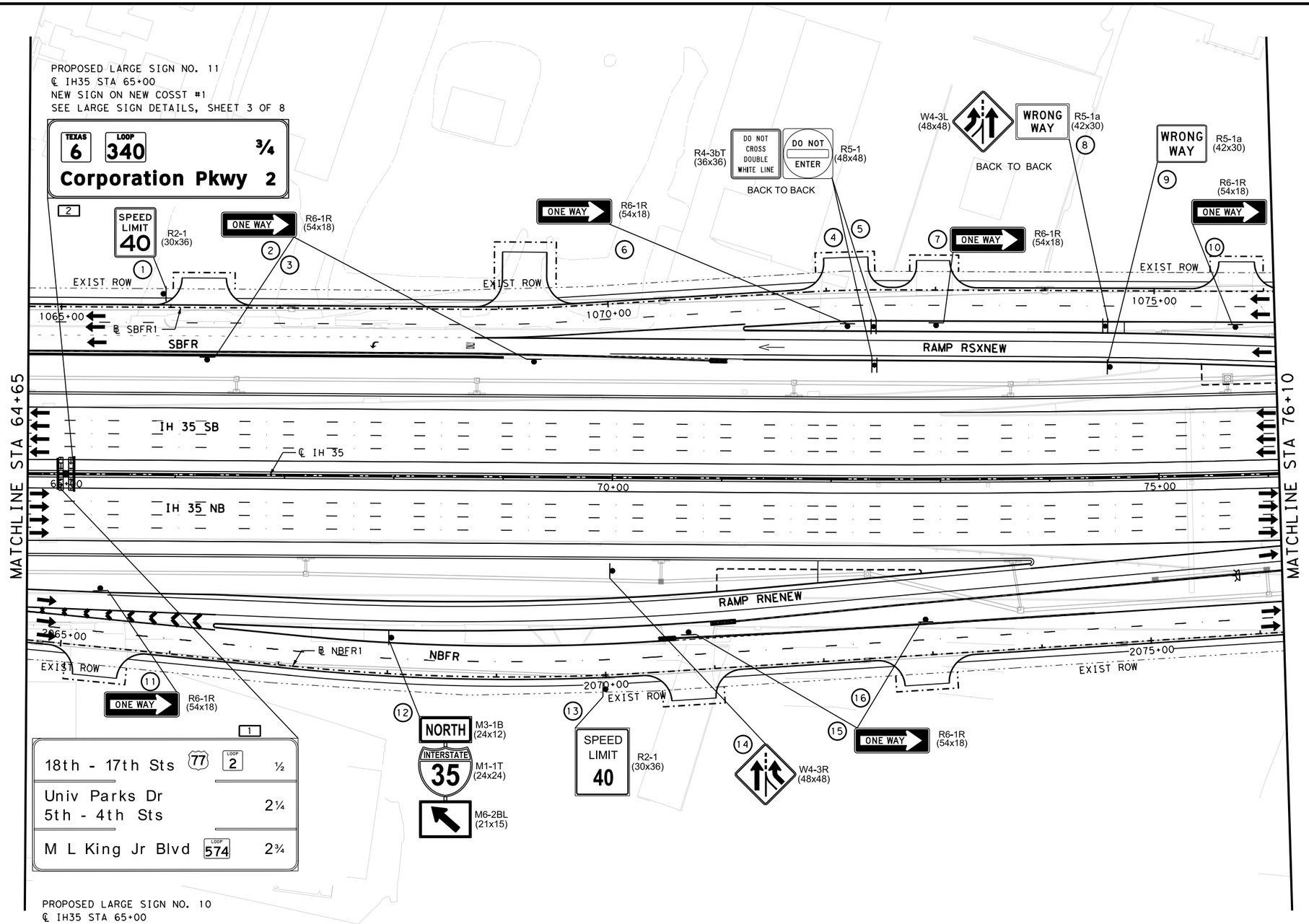

PROPOSED LARGE SIGN NO. 10
℄ IH35 STA 65+00
NEW SIGN ON NEW COSST #1
SEE LARGE SIGN DETAILS, SHEET 3 OF 8

0' 25' 50' 100'

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
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STATE OF TEXAS
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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

STA 64+65 TO STA 76+10

SHEET 7 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1434

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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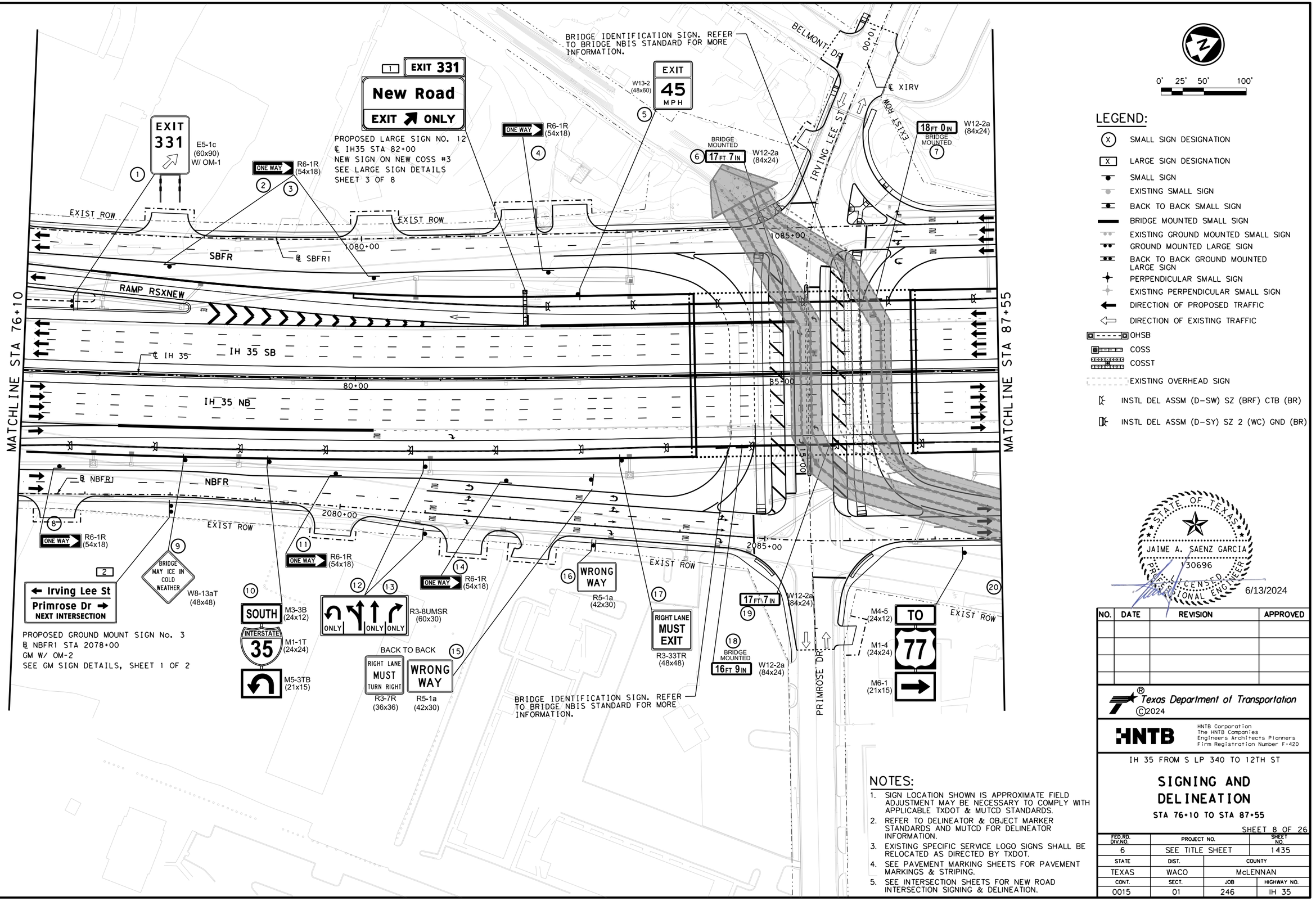

NOTES:

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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

STA 76+10 TO STA 87+55

SHEET 8 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1435

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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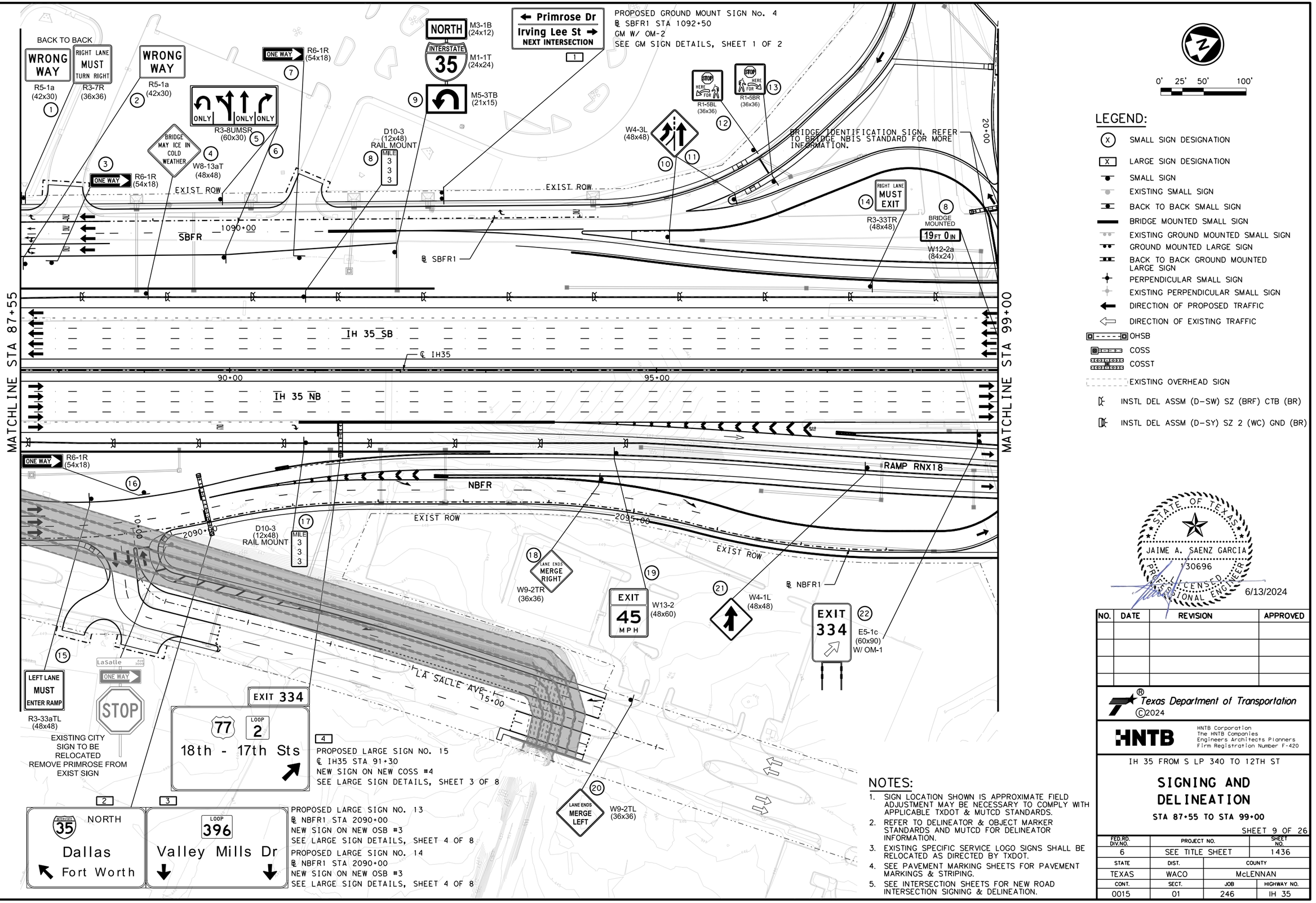

0' 25' 50' 100'

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

STA 87+55 TO STA 99+00

SHEET 9 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1436
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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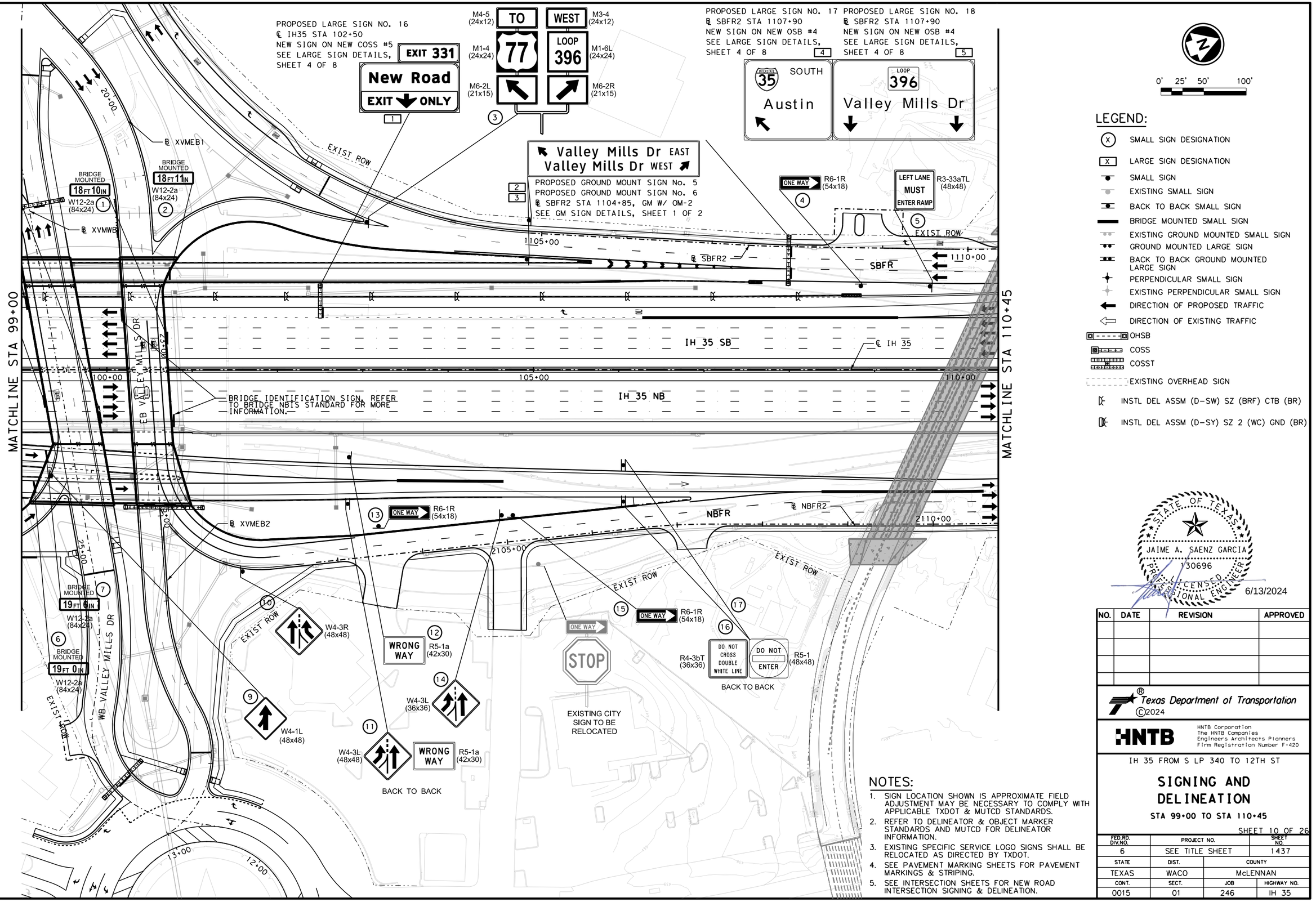

0' 25' 50' 100'

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

NOTES:

1. SIGN LOCATION SHOWN IS APPROXIMATE FIELD ADJUSTMENT MAY BE NECESSARY TO COMPLY WITH APPLICABLE TXDOT & MUTCD STANDARDS.
2. REFER TO DELINEATOR & OBJECT MARKER STANDARDS AND MUTCD FOR DELINEATOR INFORMATION.
3. EXISTING SPECIFIC SERVICE LOGO SIGNS SHALL BE RELOCATED AS DIRECTED BY TXDOT.
4. SEE PAVEMENT MARKING SHEETS FOR PAVEMENT MARKINGS & STRIPING.
5. SEE INTERSECTION SHEETS FOR NEW ROAD INTERSECTION SIGNING & DELINEATION.

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

STA 99+00 TO STA 110+45

SHEET 10 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1437

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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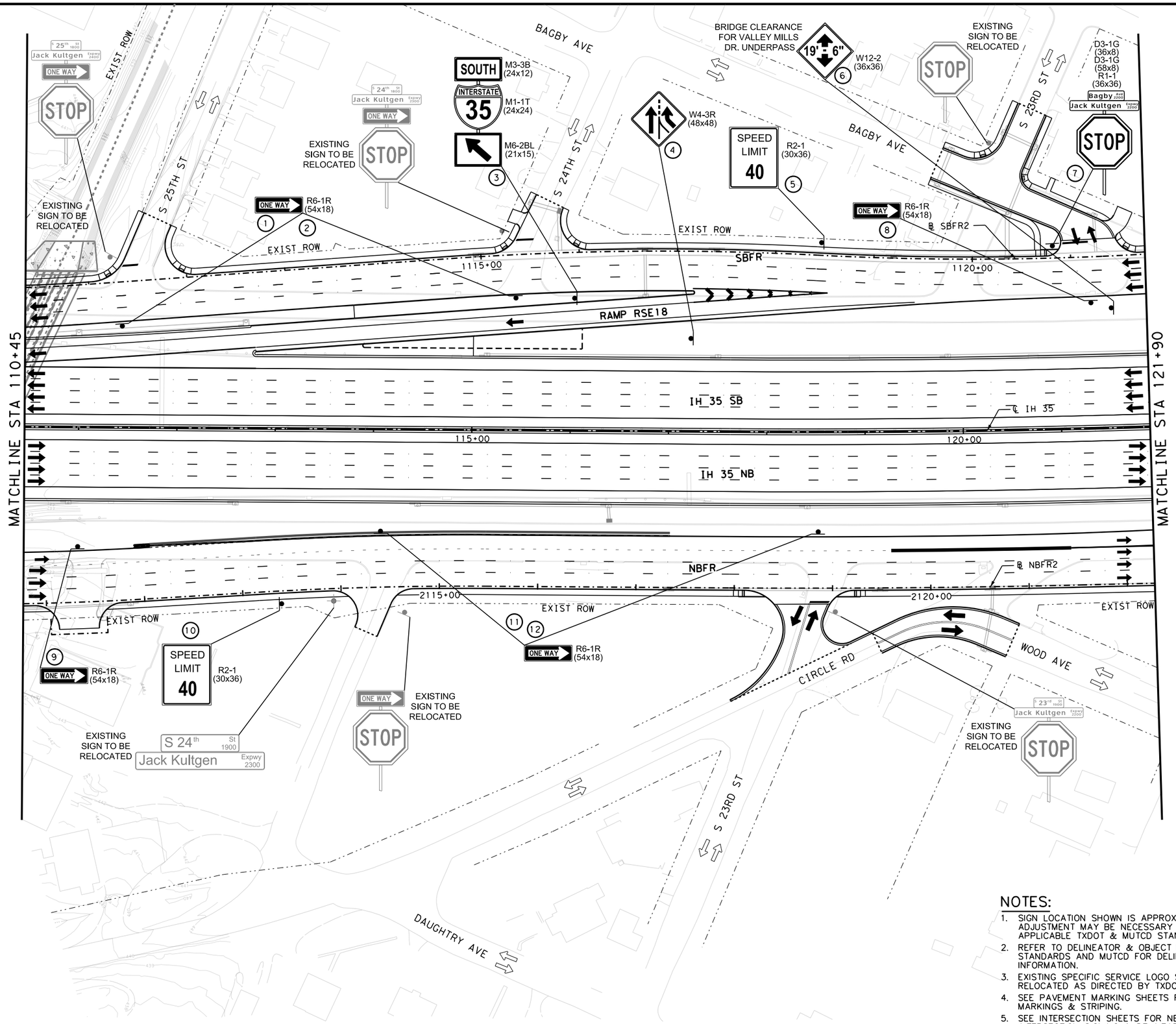

0' 25' 50' 100'

LEGEND:

- SMALL SIGN DESIGNATION
- LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

STA 110+45 TO STA 121+90

SHEET 11 OF 26

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1438
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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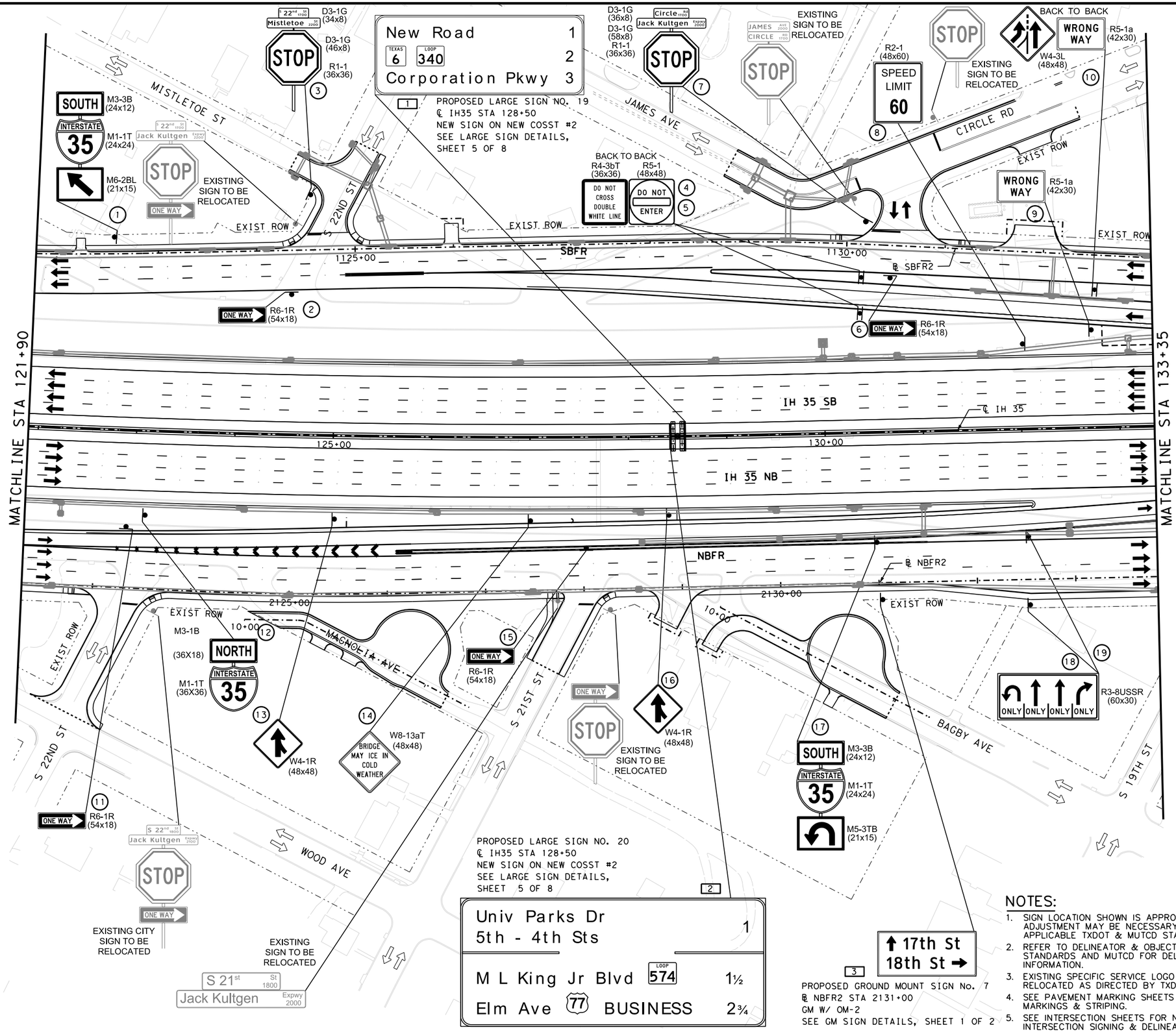

PROPOSED GROUND MOUNT SIGN No. 7
℄ NBFR2 STA 2131+00
GM W/ OM-2
SEE GM SIGN DETAILS, SHEET 1 OF 2

NOTES:

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5. SEE INTERSECTION SHEETS FOR NEW ROAD INTERSECTION SIGNING & DELINEATION.

0' 25' 50' 100'

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

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IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

STA 121+90 TO STA 133+35

SHEET 12 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1439
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB / HIGHWAY NO.
0015	01	246 / IH 35

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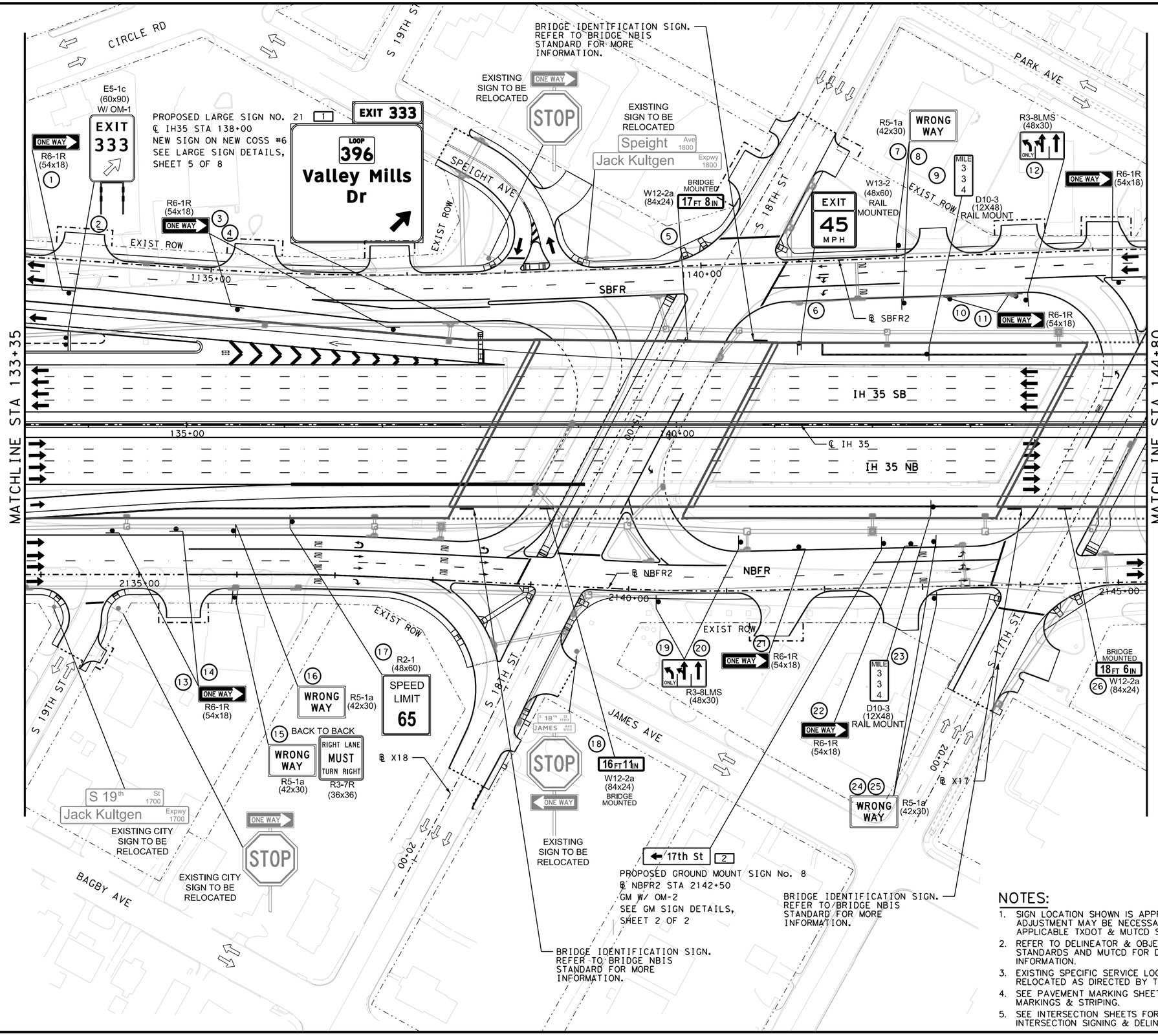

0' 25' 50' 100'

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
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- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

STATE OF TEXAS
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IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

STA 133+35 TO STA 144+80

SHEET 13 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1440

STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN

CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

NOTES:

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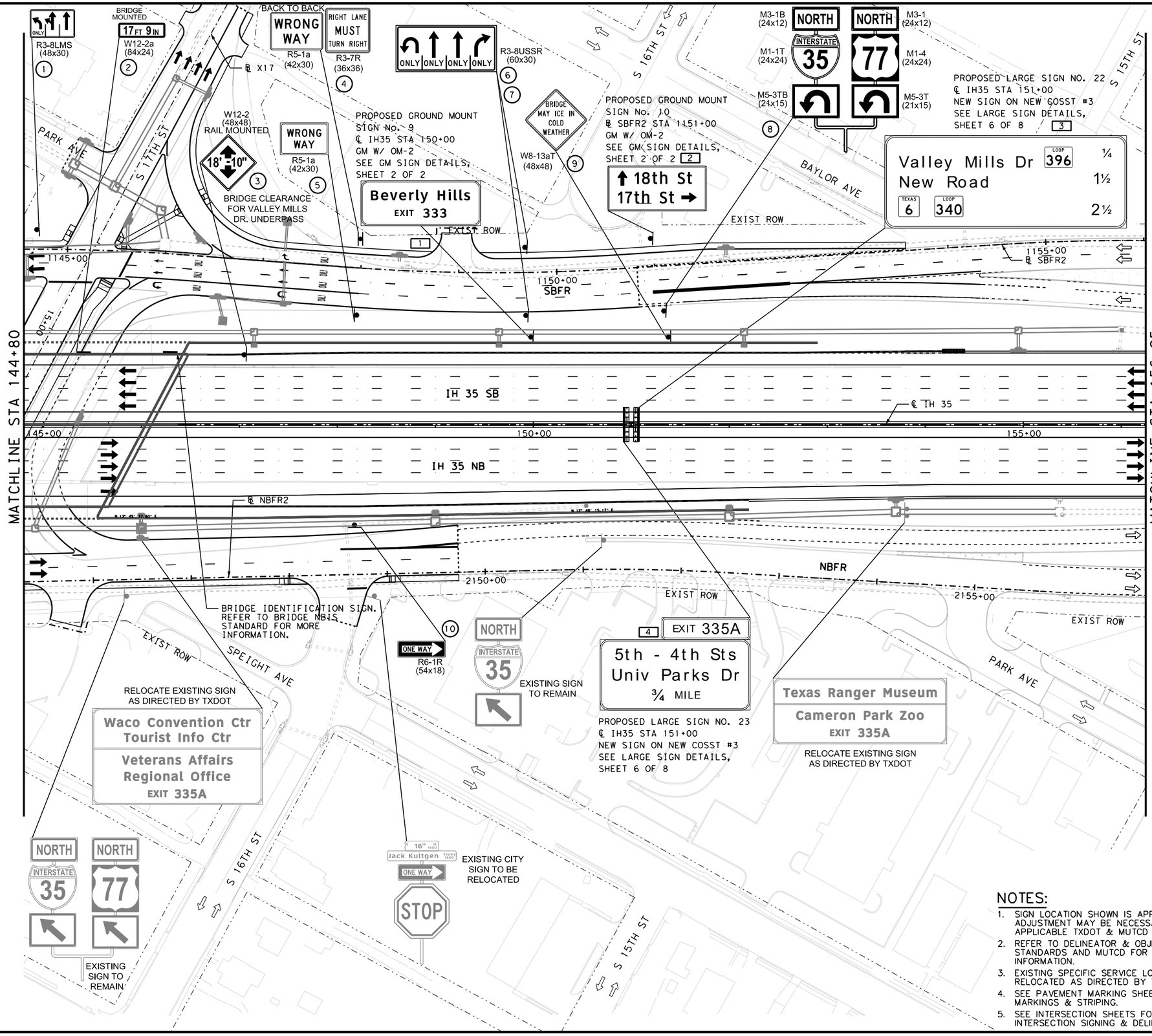

0' 25' 50' 100'

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
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- OHSB
- COSS
- COSST
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NOTES:

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STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
PROFESSIONAL LICENSED ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

STA 144+80 TO STA 156+25

SHEET 14 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1441

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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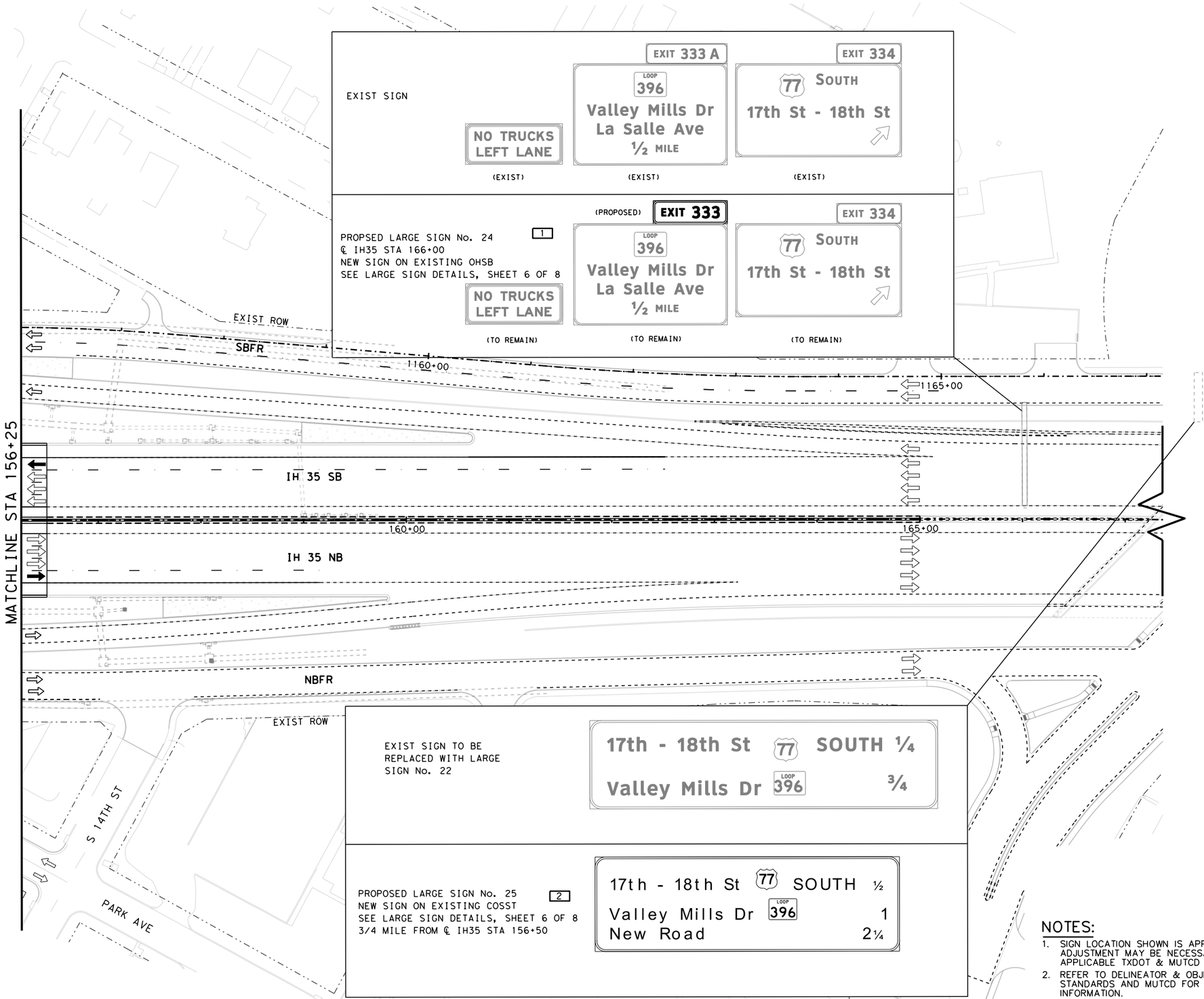

0' 25' 50' 100'

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
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- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
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- OHSB
- COSS
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STATE OF TEXAS
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6/13/2024

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The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

STA 156+25 TO END PROJ

SHEET 15 OF 26

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1442
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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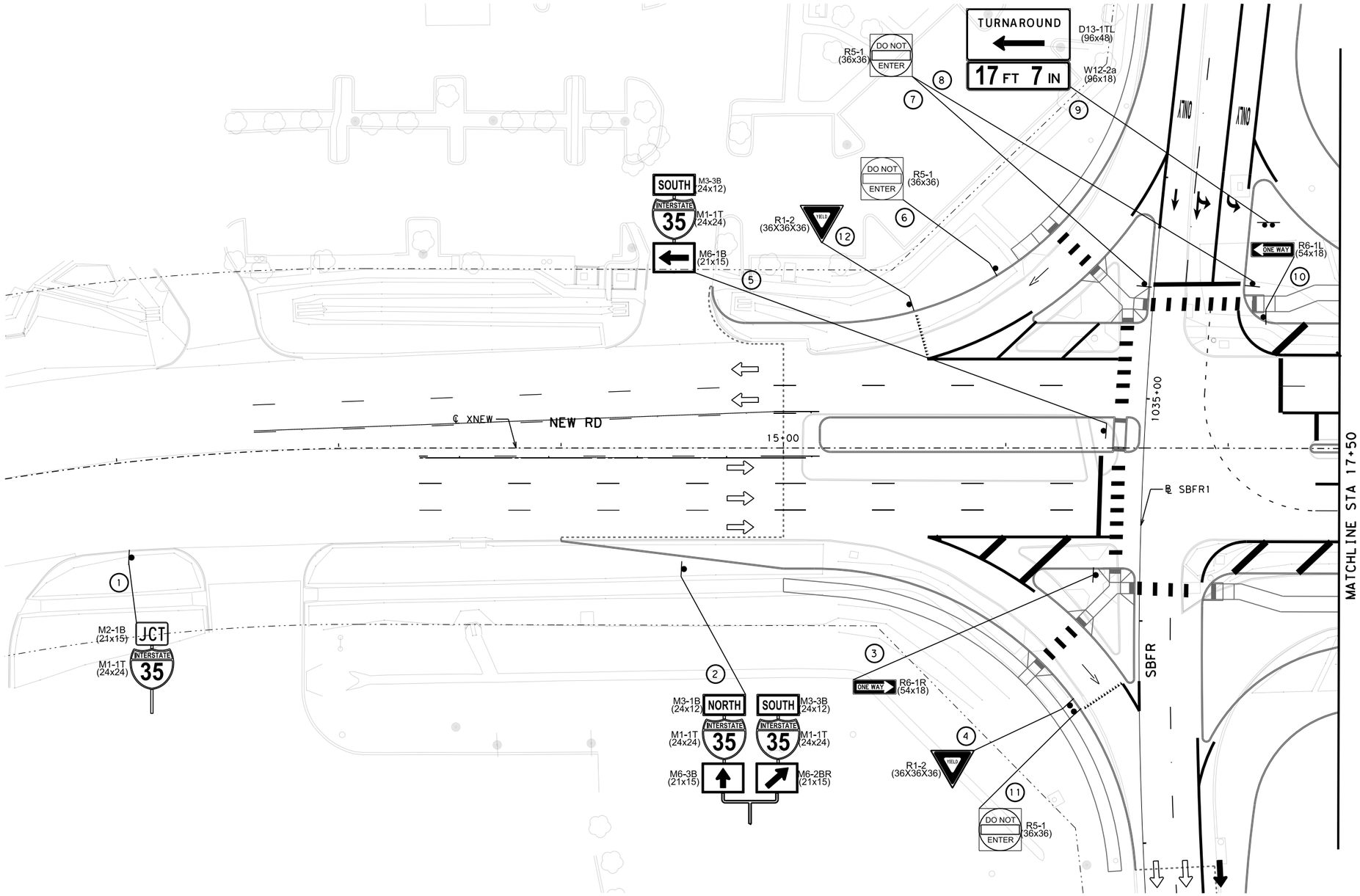

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
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NOTES:

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STATE OF TEXAS
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HNTB
HNTB Corporation
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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

NEW RD

SHEET 16 OF 26

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1443
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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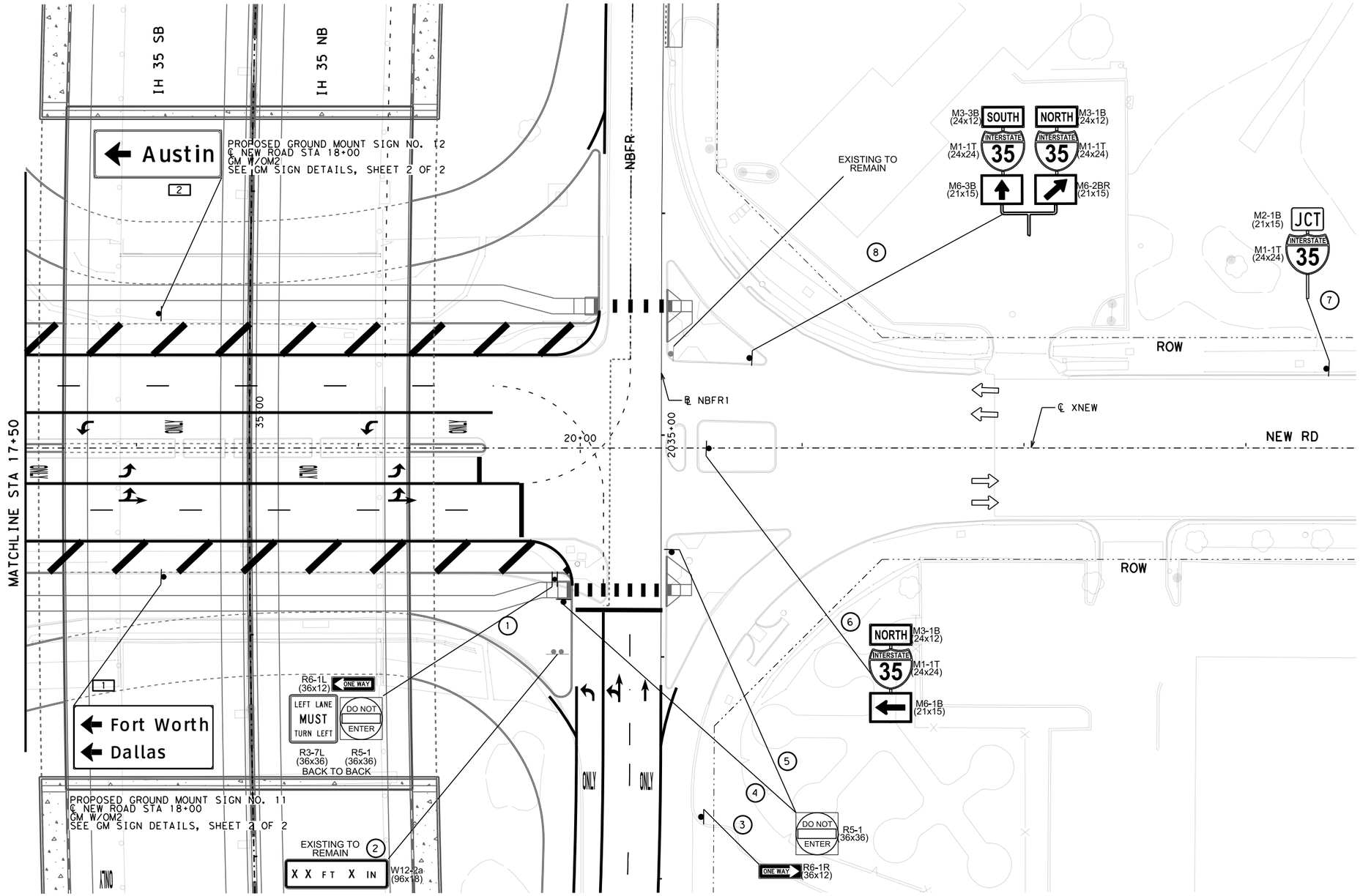

0′ 25′ 50′

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
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NOTES:

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IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

NEW ROAD

SHEET 17 OF 26

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1444
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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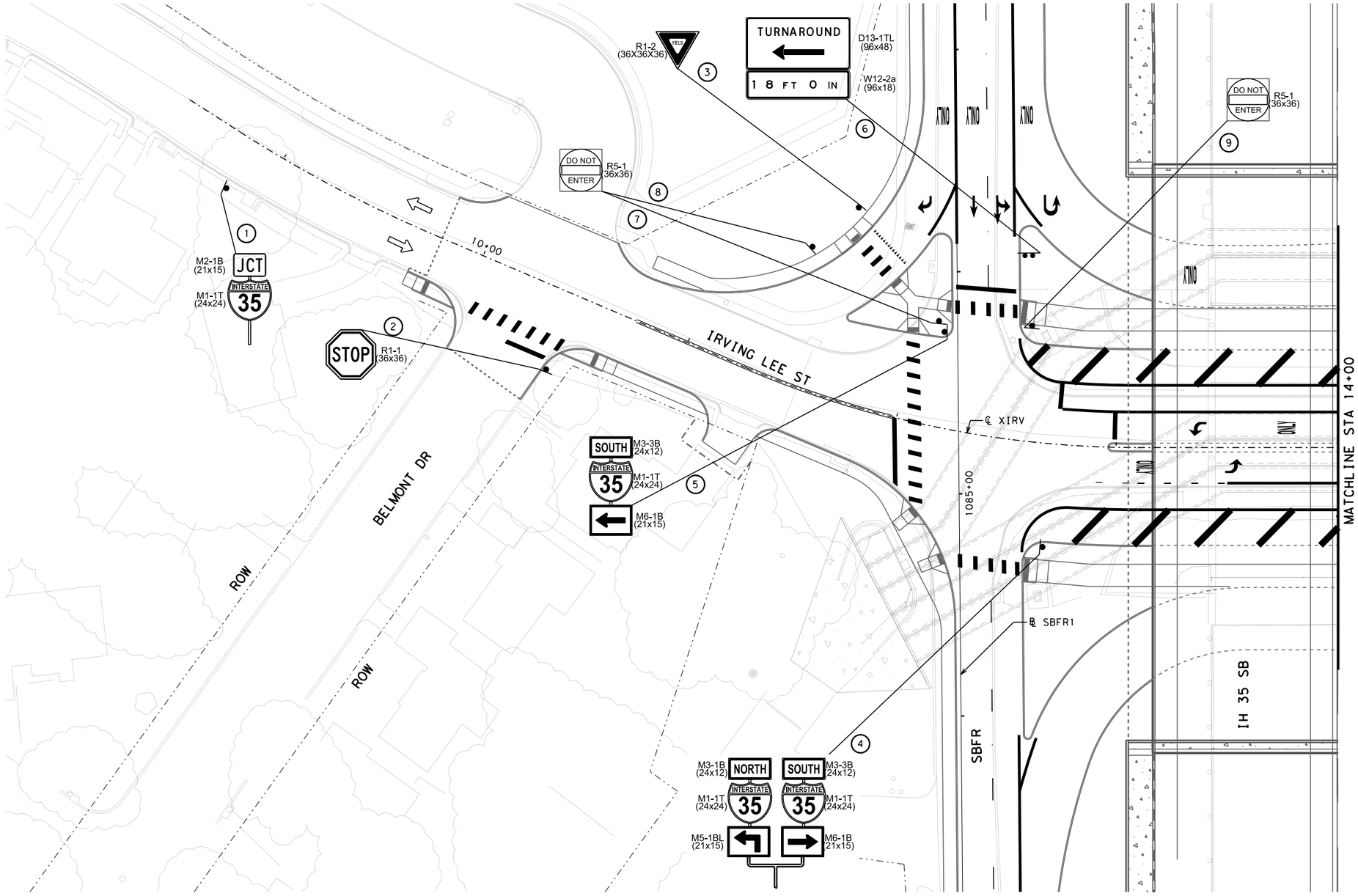

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
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- OHSB
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- COSST
- EXISTING OVERHEAD SIGN
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- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

0′ 25′ 50′

NOTES:

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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

IRVING LEE ST

SHEET 18 OF 26

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1445
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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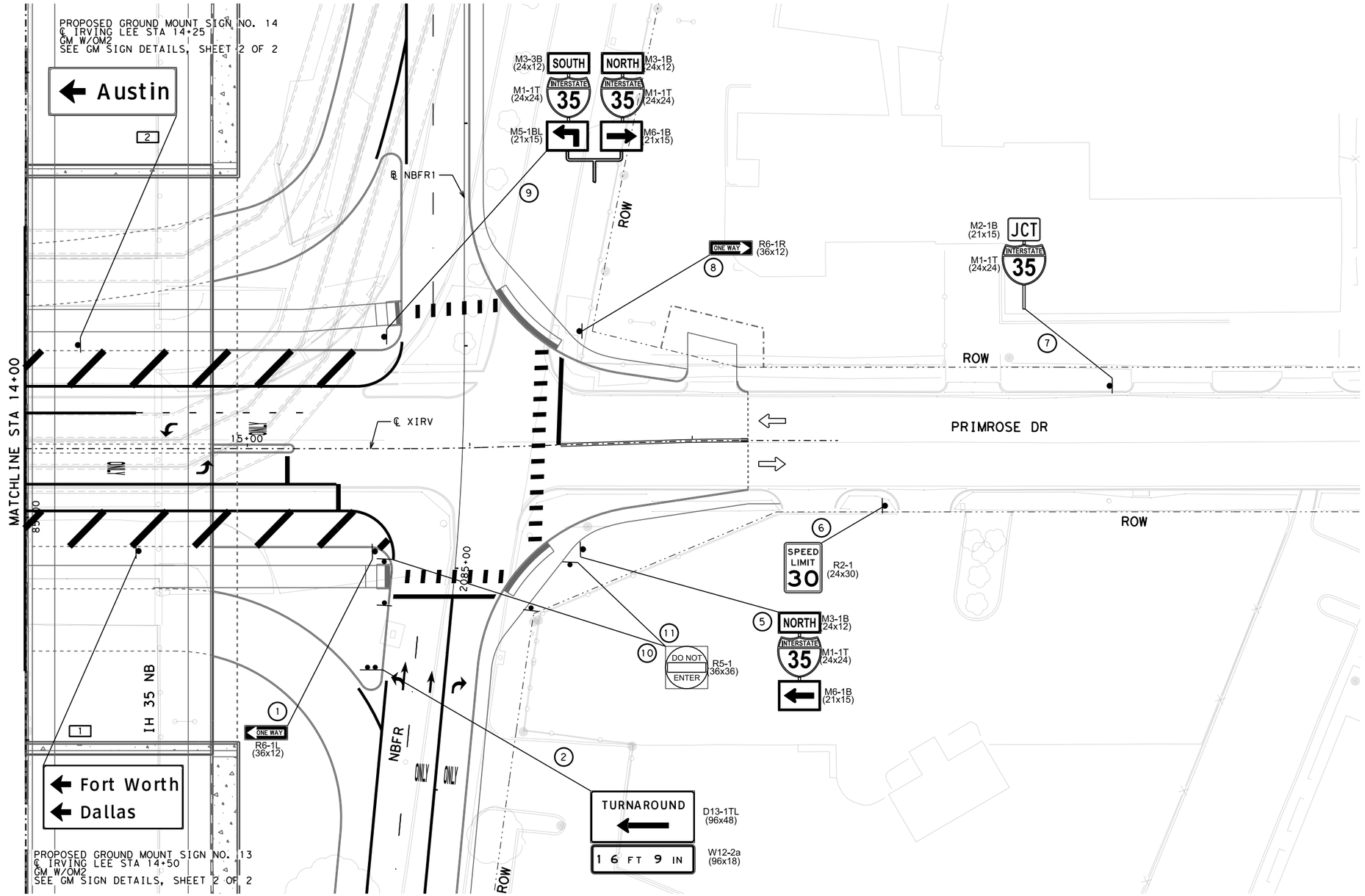

0′ 25′ 50′

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
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LICENSED PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

PRIMROSE DR

SHEET 19 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1446
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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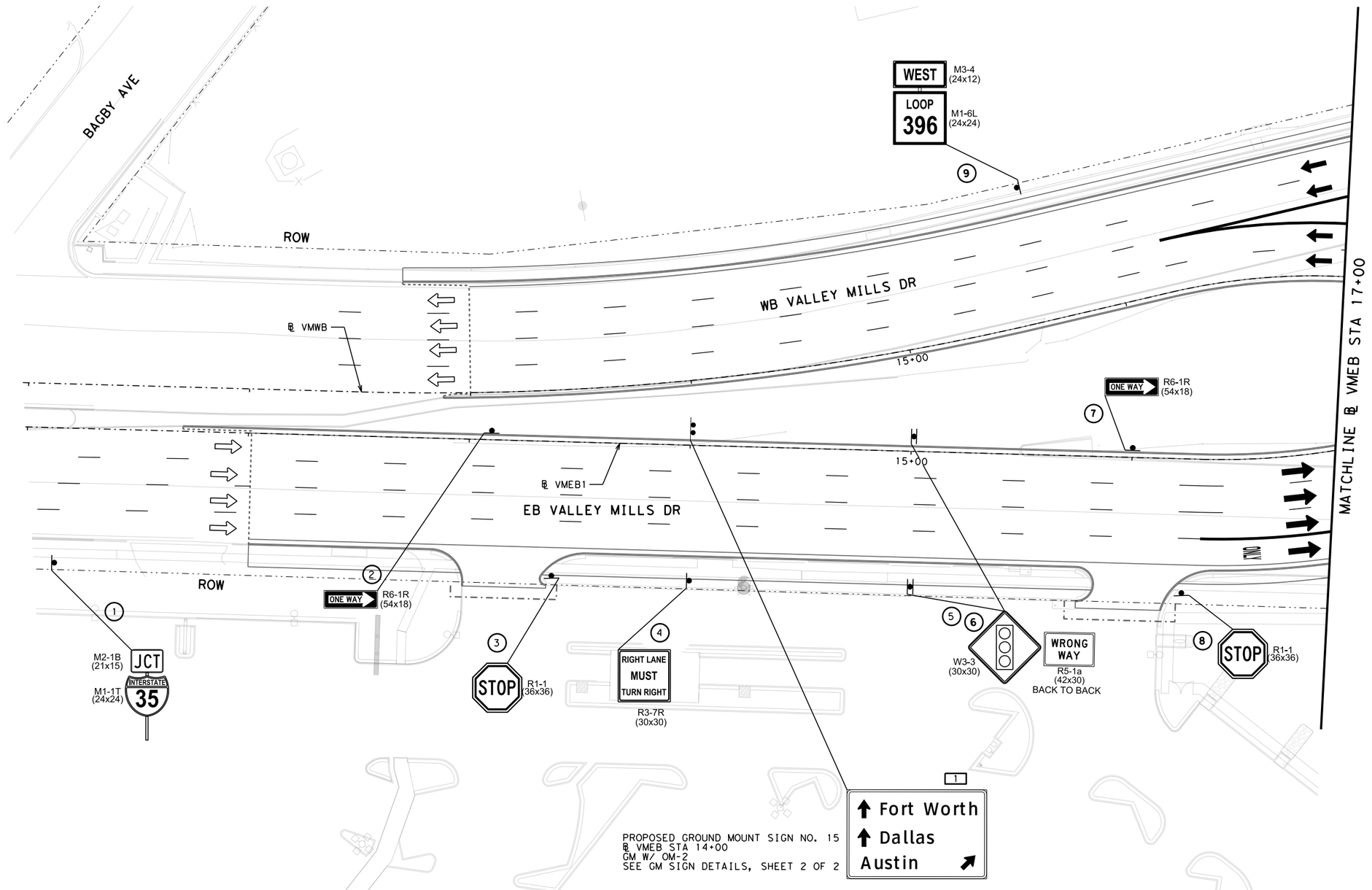

0′ 25′ 50′

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

NOTES:

1. SIGN LOCATION SHOWN IS APPROXIMATE FIELD ADJUSTMENT MAY BE NECESSARY TO COMPLY WITH APPLICABLE TXDOT & MUTCD STANDARDS.
2. REFER TO DELINEATOR & OBJECT MARKER STANDARDS AND MUTCD FOR DELINEATOR INFORMATION.
3. EXISTING SPECIFIC SERVICE LOGO SIGNS SHALL BE RELOCATED AS DIRECTED BY TXDOT.
4. SEE PAVEMENT MARKING SHEETS FOR PAVEMENT MARKINGS & STRIPING.
5. SEE INTERSECTION SHEETS FOR NEW ROAD INTERSECTION SIGNING & DELINEATION.

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
6/13/2024

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IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

VALLEY MILLS DR

SHEET 20 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1447
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\PMSN1_020.dgn
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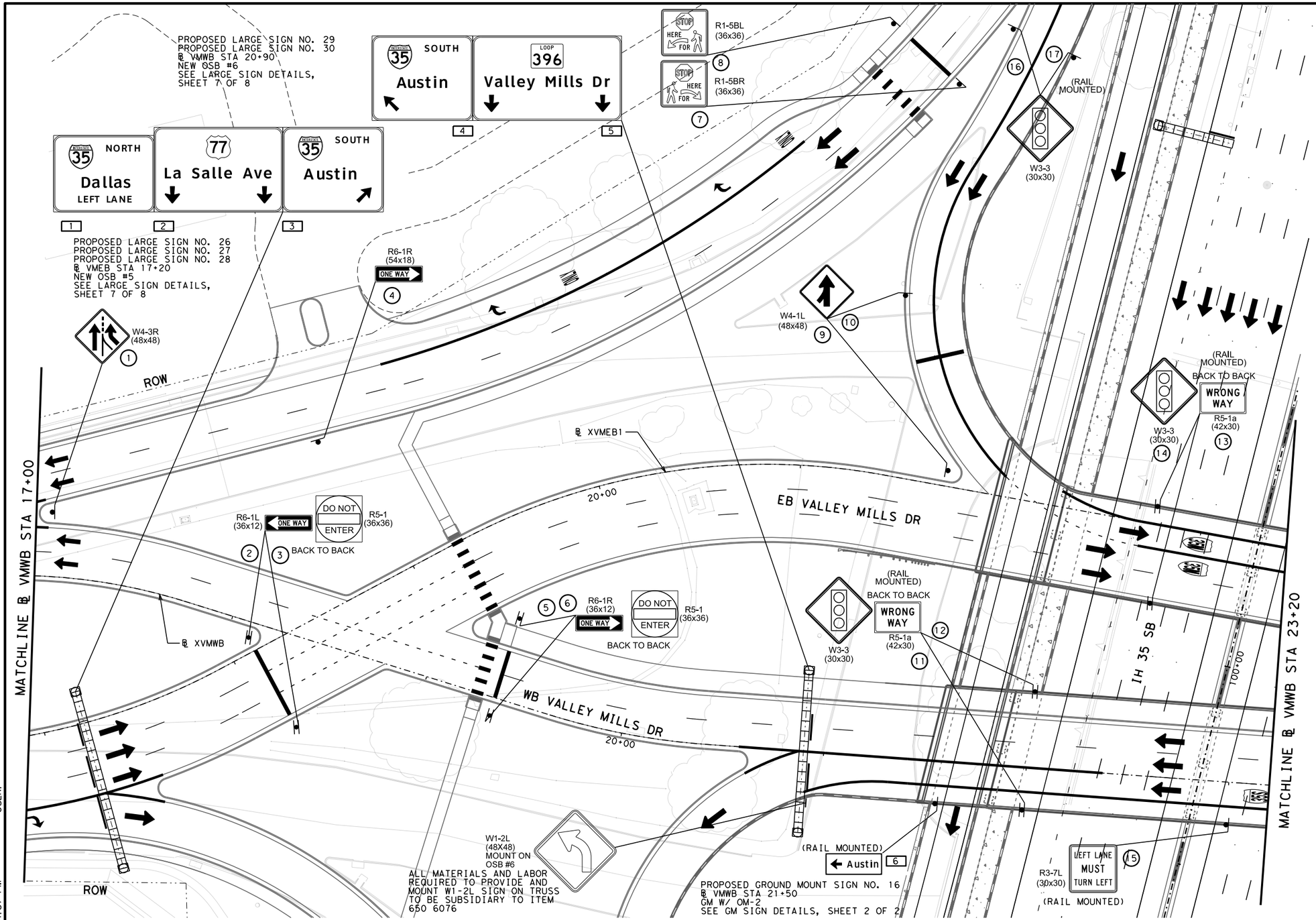

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

NOTES:

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5. SEE INTERSECTION SHEETS FOR NEW ROAD INTERSECTION SIGNING & DELINEATION.

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8/23/2024

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IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINATION

VALLEY MILLS DR

SHEET 21 OF 26

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1448
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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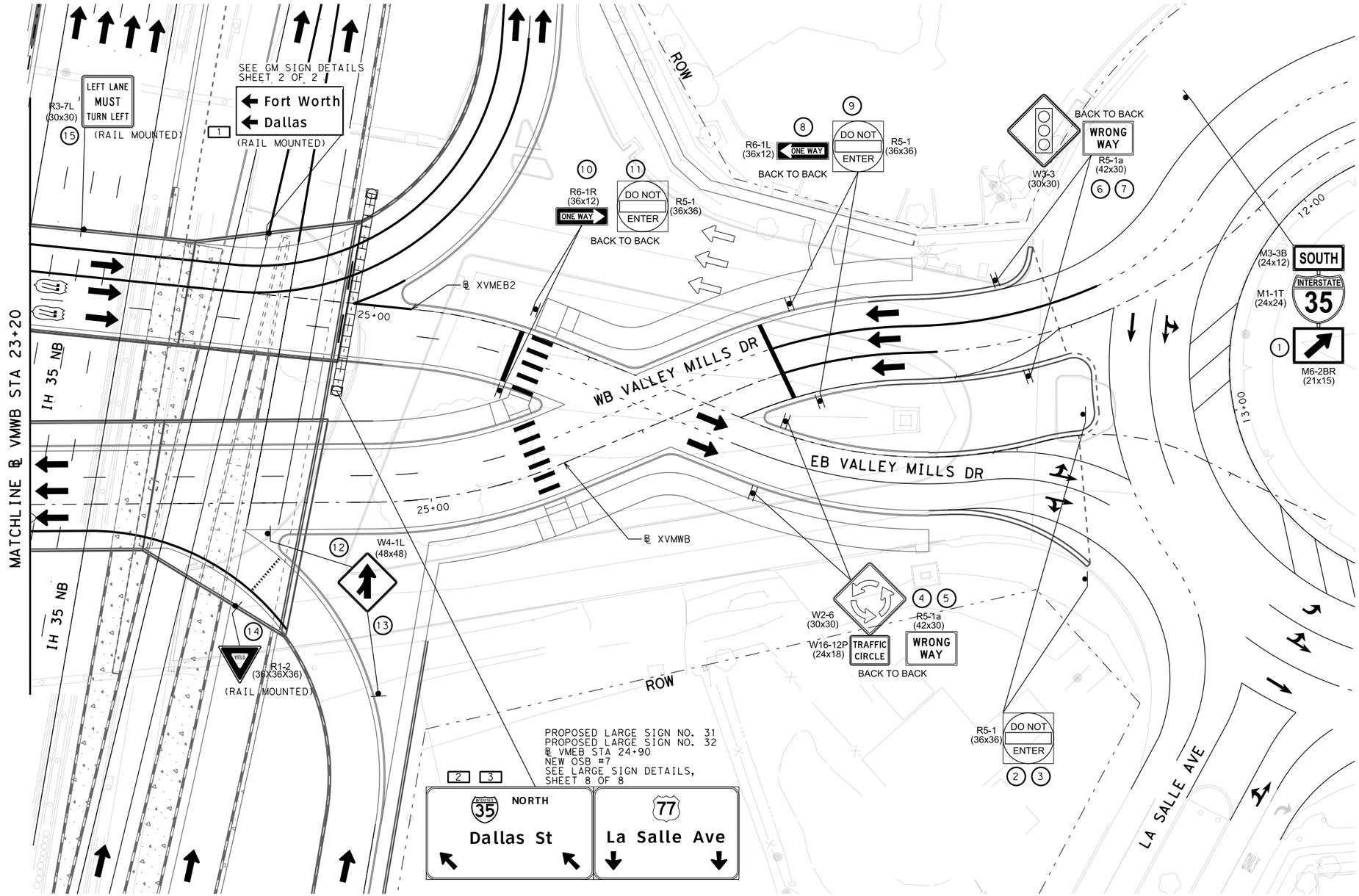

NOTES:

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2. REFER TO DELINEATOR & OBJECT MARKER STANDARDS AND MUTCD FOR DELINEATOR INFORMATION.
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4. SEE PAVEMENT MARKING SHEETS FOR PAVEMENT MARKINGS & STRIPING.
5. SEE INTERSECTION SHEETS FOR NEW ROAD INTERSECTION SIGNING & DELINEATION.

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8/23/2024

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IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

VALLEY MILLS DR

SHEET 22 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1449

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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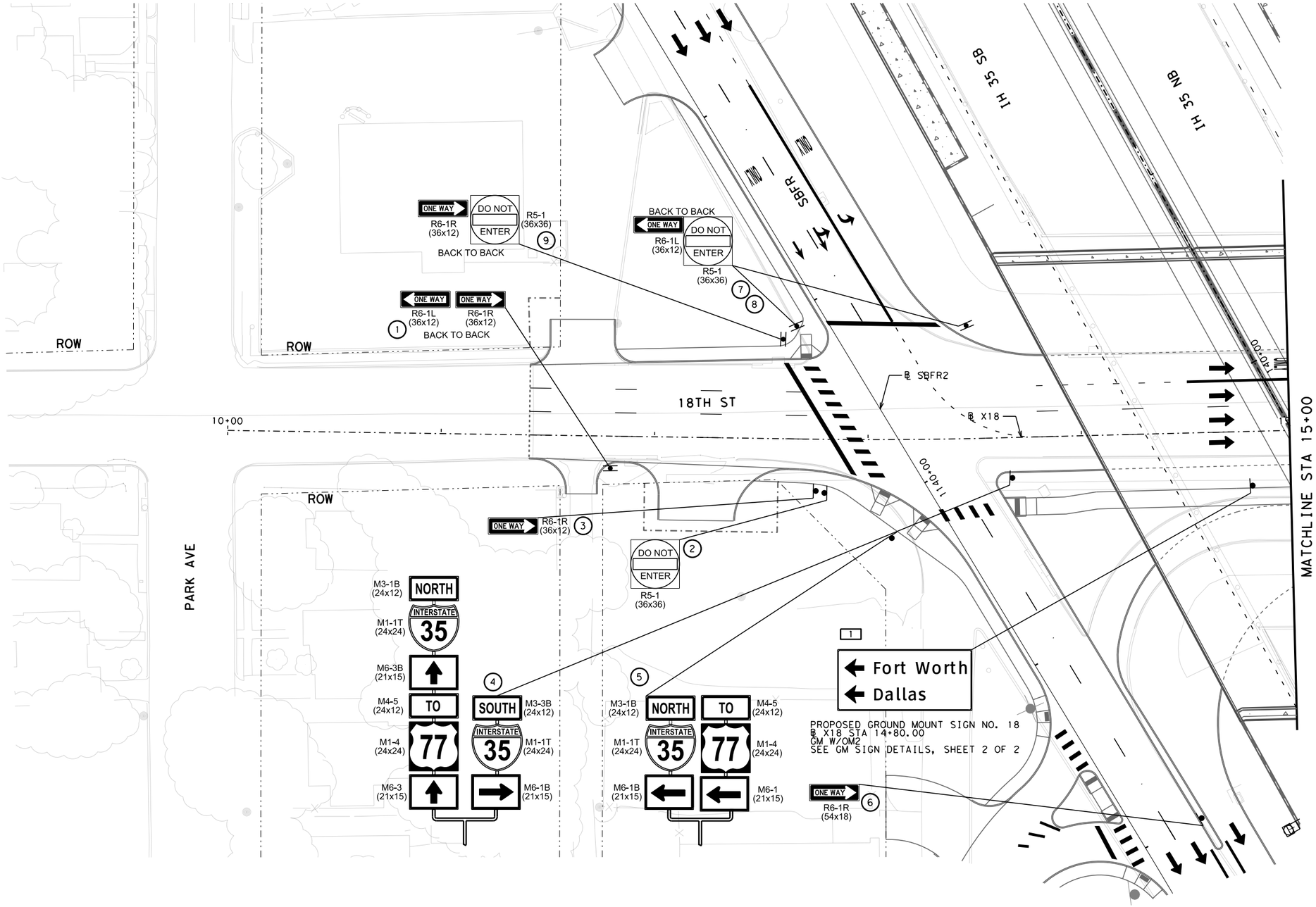

0′ 25′ 50′

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

NOTES:

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IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

18TH ST

SHEET 23 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1450

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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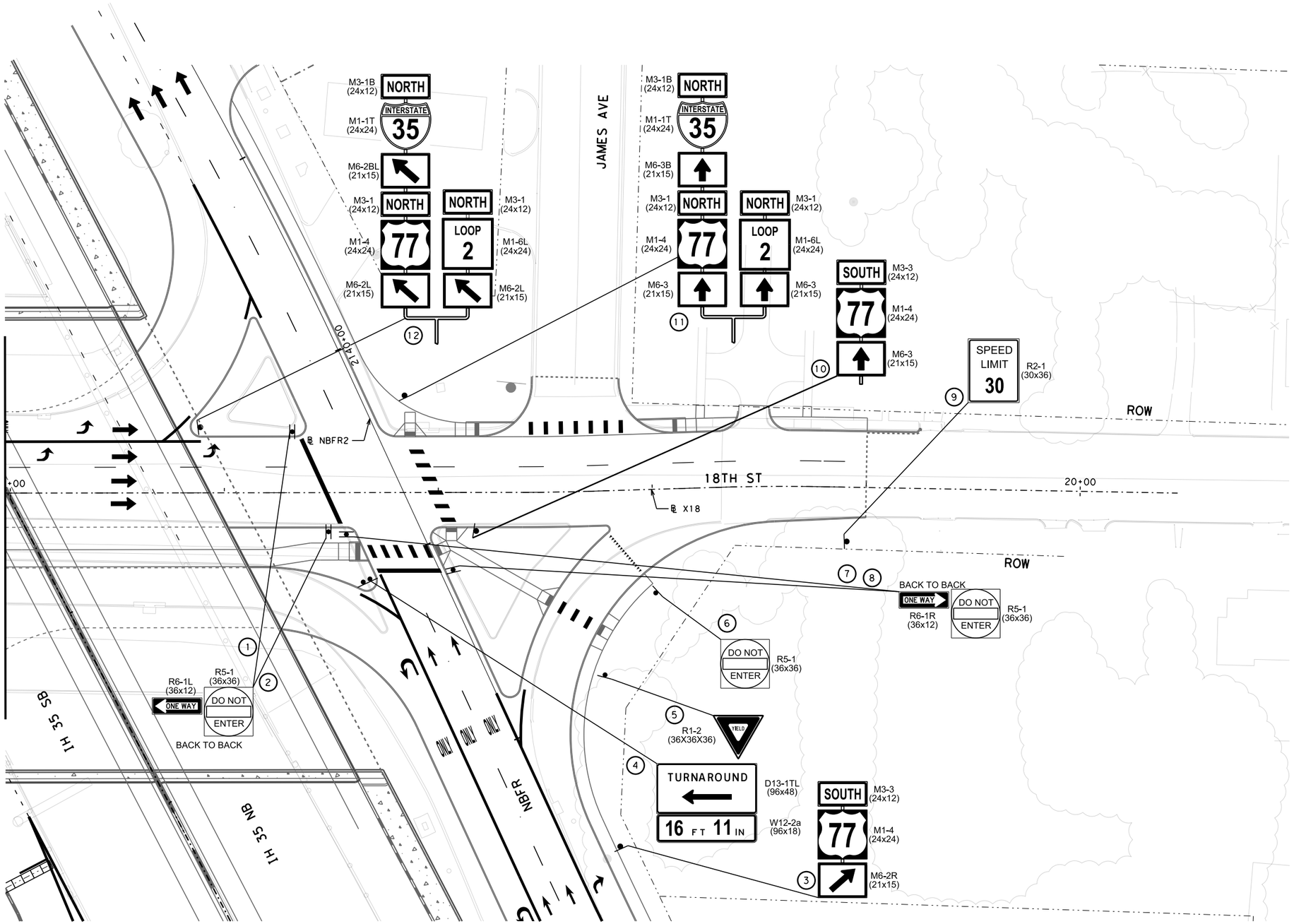

0′ 25′ 50′

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

NOTES:

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IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

18TH ST

SHEET 24 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1451

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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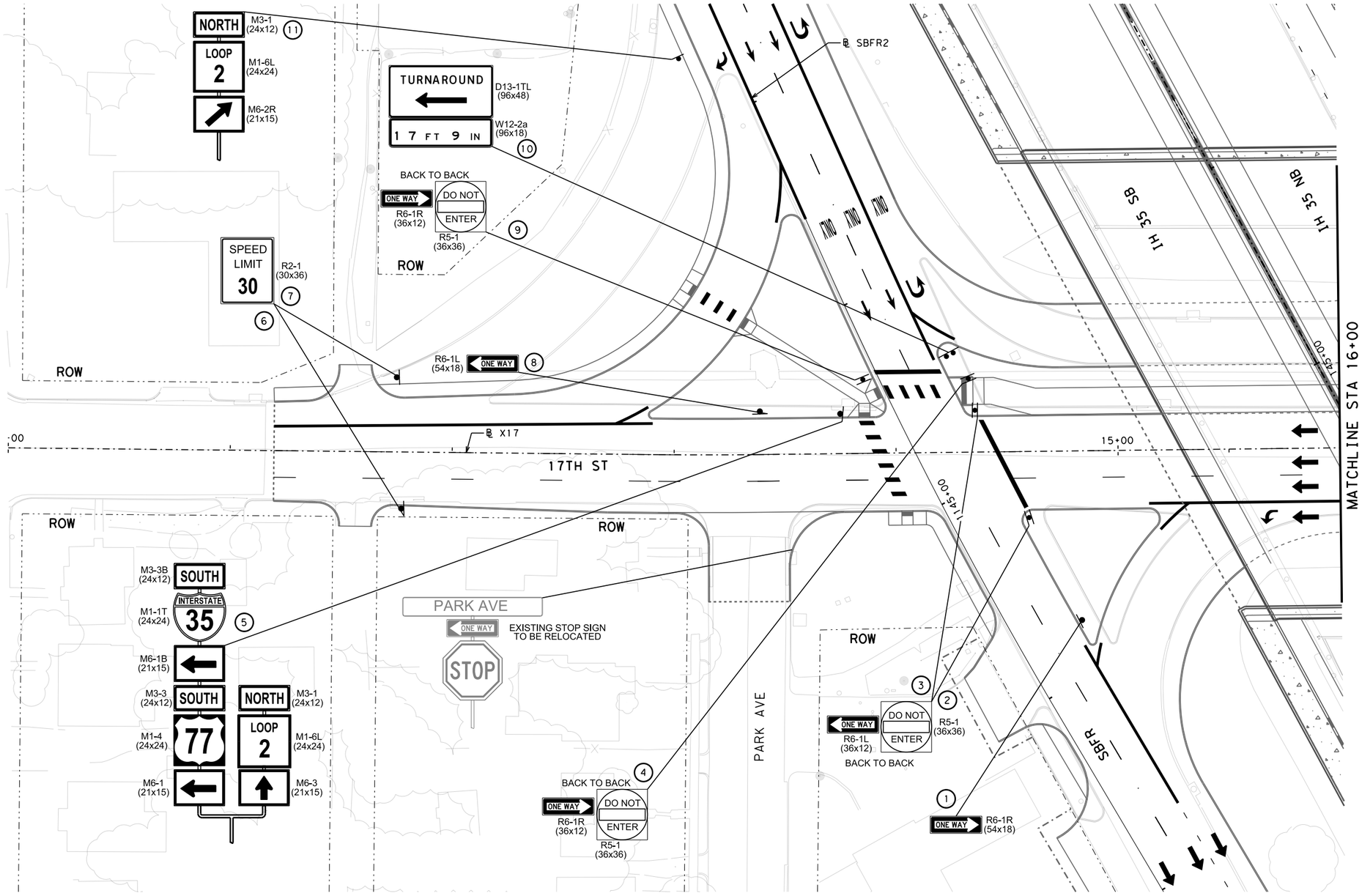

0′ 25′ 50′

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
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- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
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IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

17TH ST

SHEET 25 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1452
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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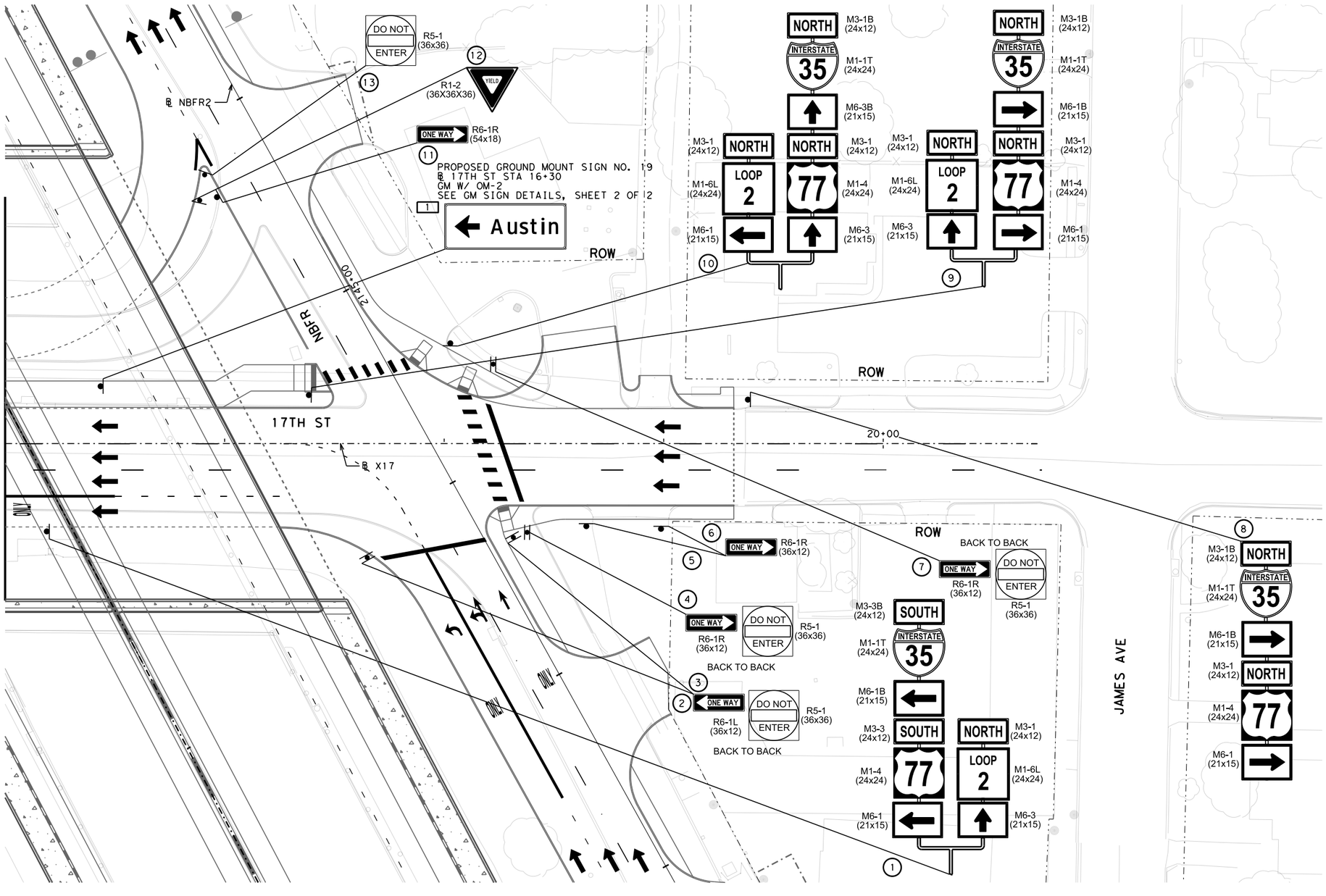

LEGEND:

- (X) SMALL SIGN DESIGNATION
- [X] LARGE SIGN DESIGNATION
- SMALL SIGN
- EXISTING SMALL SIGN
- BACK TO BACK SMALL SIGN
- BRIDGE MOUNTED SMALL SIGN
- EXISTING GROUND MOUNTED SMALL SIGN
- GROUND MOUNTED LARGE SIGN
- BACK TO BACK GROUND MOUNTED LARGE SIGN
- PERPENDICULAR SMALL SIGN
- EXISTING PERPENDICULAR SMALL SIGN
- DIRECTION OF PROPOSED TRAFFIC
- DIRECTION OF EXISTING TRAFFIC
- OHSB
- COSS
- COSST
- EXISTING OVERHEAD SIGN
- INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BR)
- INSTL DEL ASSM (D-SY) SZ 2 (WC) GND (BR)

NOTES:

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6/13/2024

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNING AND DELINEATION

17TH ST

SHEET 26 OF 26

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1453

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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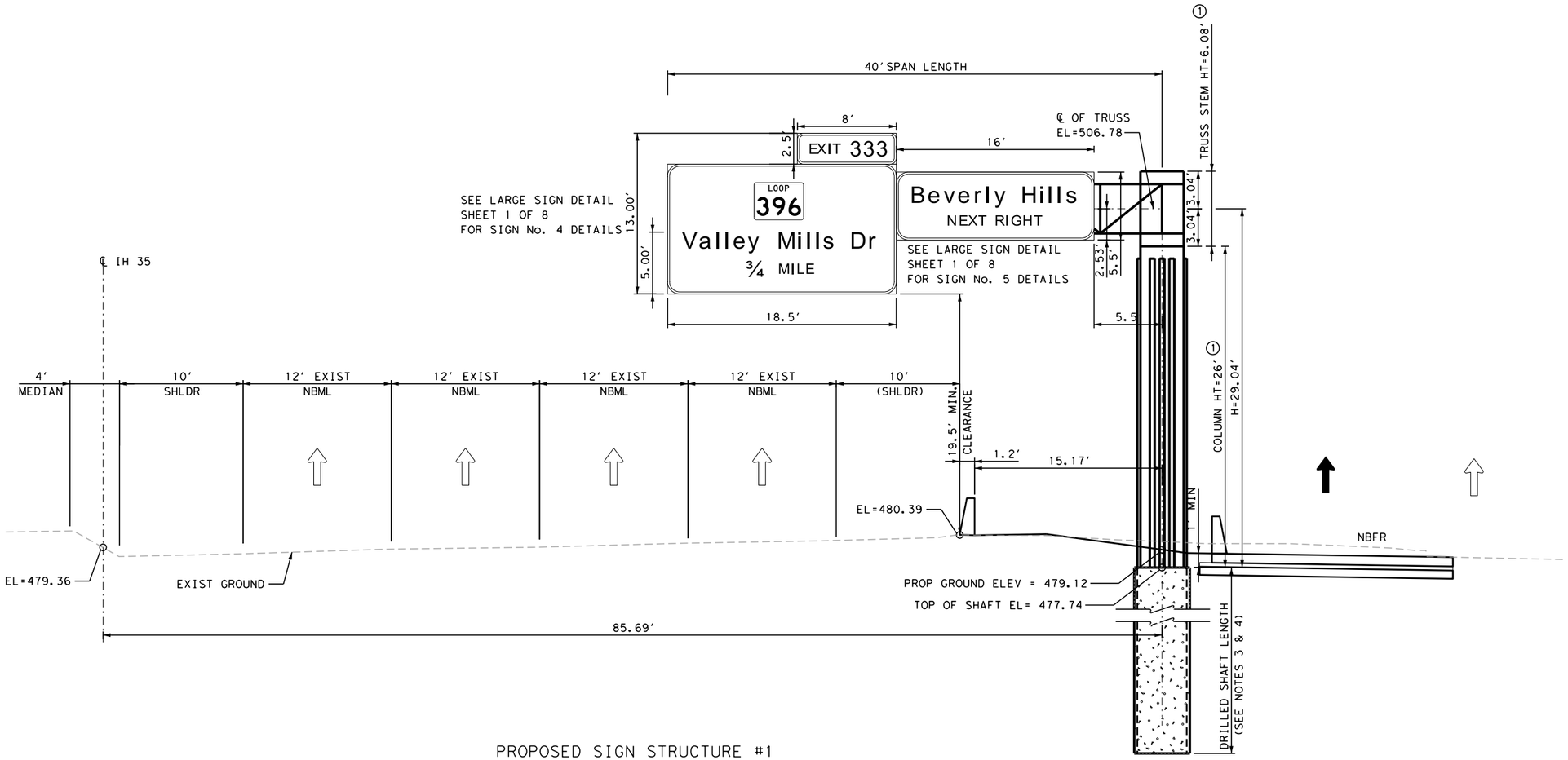

PROPOSED SIGN STRUCTURE #1
PROPOSED COSS #1
℄ IH35 STA 8+10

DESIGN DATA

SPAN LENGTH	40'
ACTUAL SIGN AREA	339.25 SF

① SEE NOTE 4.

0' 2.5' 5' 10'
HORZ. SCALE IN FEET

0' 2.5' 5' 10'
VERT. SCALE IN FEET

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
3. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD SIGN BRIDGE DETAILS OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, DARK GRAY MUDSTONE.
4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD HCOSS-Z1-21, TRUSS DETAILS TABLE WITH SPAN=40'.

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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

COSS #1 IH35 STA 8+10

SHEET 1 OF 17

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1454
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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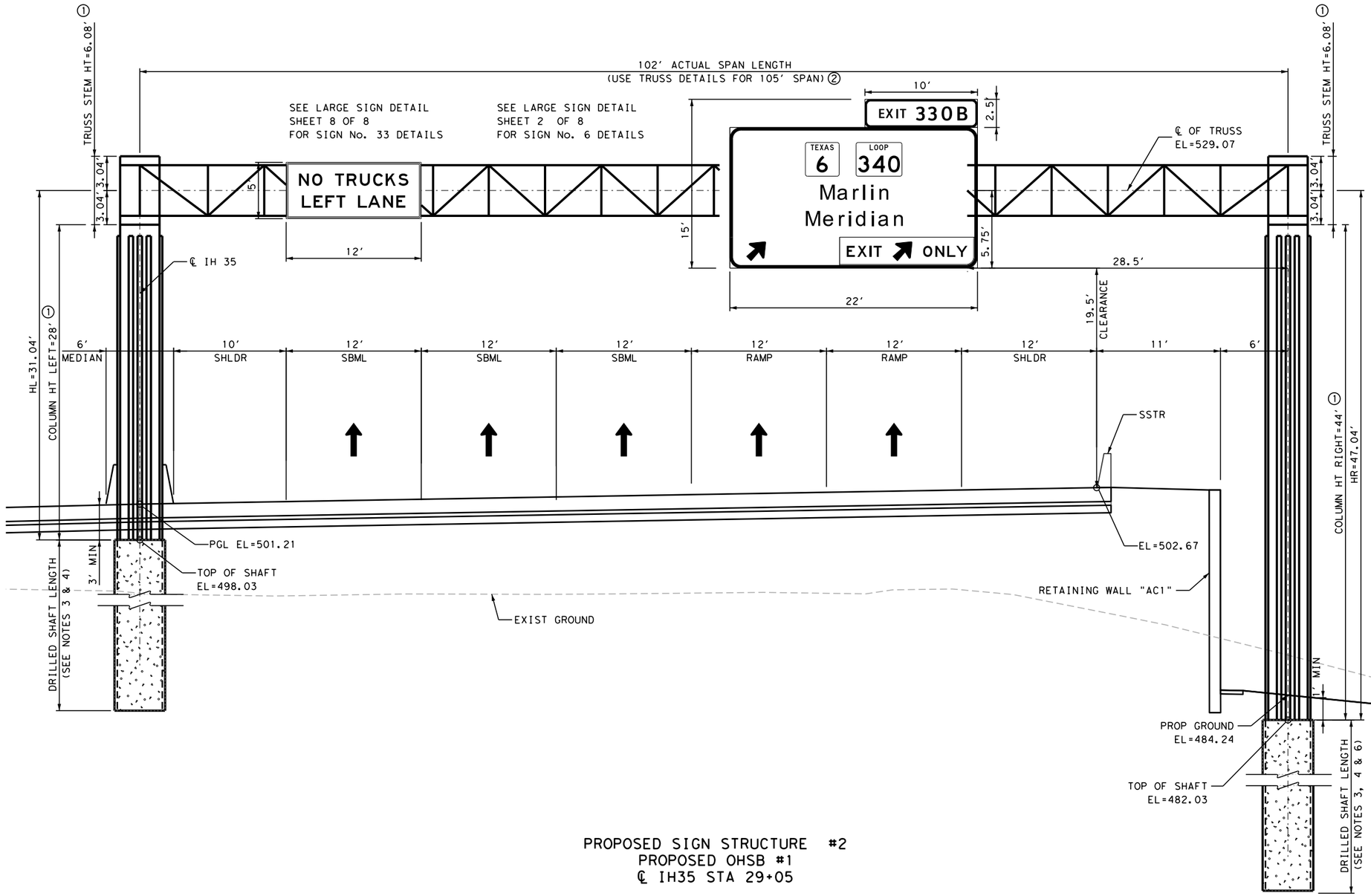

PROPOSED SIGN STRUCTURE #2
PROPOSED OHSB #1
℄ IH35 STA 29+05

DESIGN DATA
ACTUAL SPAN LENGTH 102' ②
ACTUAL SIGN AREA 380 SF

① SEE NOTE 4.
② SEE NOTE 5.

0' 2.5' 5' 10'
HORZ. SCALE IN FEET

0' 2.5' 5' 10'
VERT. SCALE IN FEET

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
3. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD SIGN BRIDGE DETAILS OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, DARK GRAY MUDSTONE.
4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD **HOSB-Z21,** TRUSS DETAILS TABLE WITH SPAN=**105'.**
6. FOUNDATION TO BE PLACED BEFORE WALL WORK BEGINS.

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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

OHSB #1 IH35 STA 29+05

SHEET 2 OF 17

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1455
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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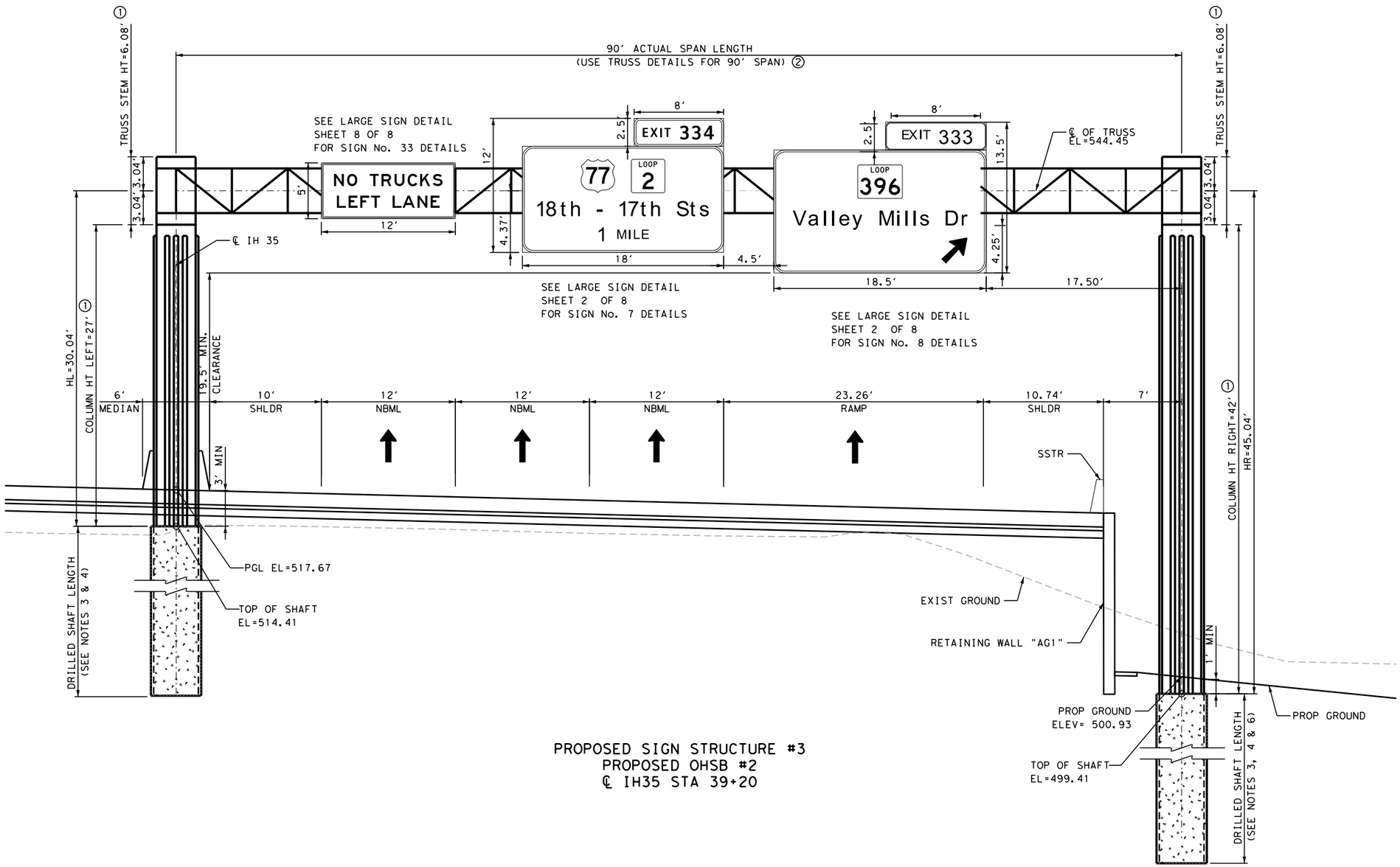

PROPOSED SIGN STRUCTURE #3
PROPOSED OHSB #2
℄ IH35 STA 39+20

DESIGN DATA

ACTUAL SPAN LENGTH	90' ②
ACTUAL SIGN AREA	540.75 SF

① SEE NOTE 4.
② SEE NOTE 5.

0' 2.5' 5' 10'
HORZ. SCALE IN FEET

0' 2.5' 5' 10'
VERT. SCALE IN FEET

NOTES:

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2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
3. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD SIGN BRIDGE DETAILS OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, DARK GRAY MUDSTONE.
4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD **HOSB-Z21,** TRUSS DETAILS TABLE WITH SPAN=**90'.**
6. FOUNDATION TO BE PLACED BEFORE WALL WORK BEGINS.

STATE OF TEXAS
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IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

OHSB #2 IH35 STA 39+20

SHEET 3 OF 17

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1456
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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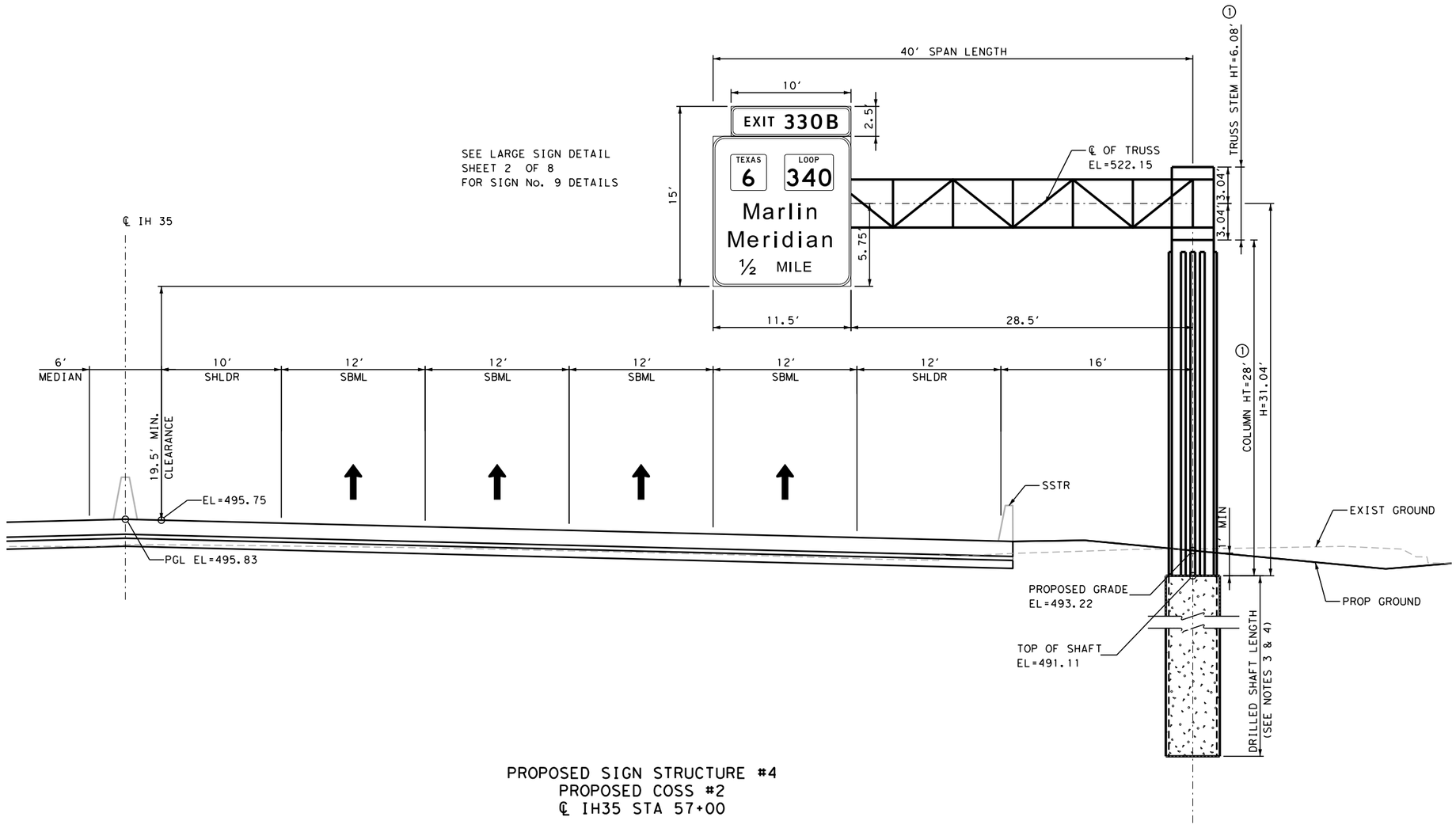

PROPOSED SIGN STRUCTURE #4
PROPOSED COSS #2
℄ IH35 STA 57+00

DESIGN DATA

SPAN LENGTH	40'
ACTUAL SIGN AREA	168.75 SF

① SEE NOTE 4.

0' 2.5' 5' 10'
HORZ. SCALE IN FEET

0' 2.5' 5' 10'
VERT. SCALE IN FEET

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
3. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD SIGN BRIDGE DETAILS OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, DARK GRAY MUDSTONE.
4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD **HCOSS-Z1-21**, TRUSS DETAILS TABLE WITH SPAN=**40'**.

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED
PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

COSS #3 IH35 STA 57+00

SHEET 4 OF 17

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1457
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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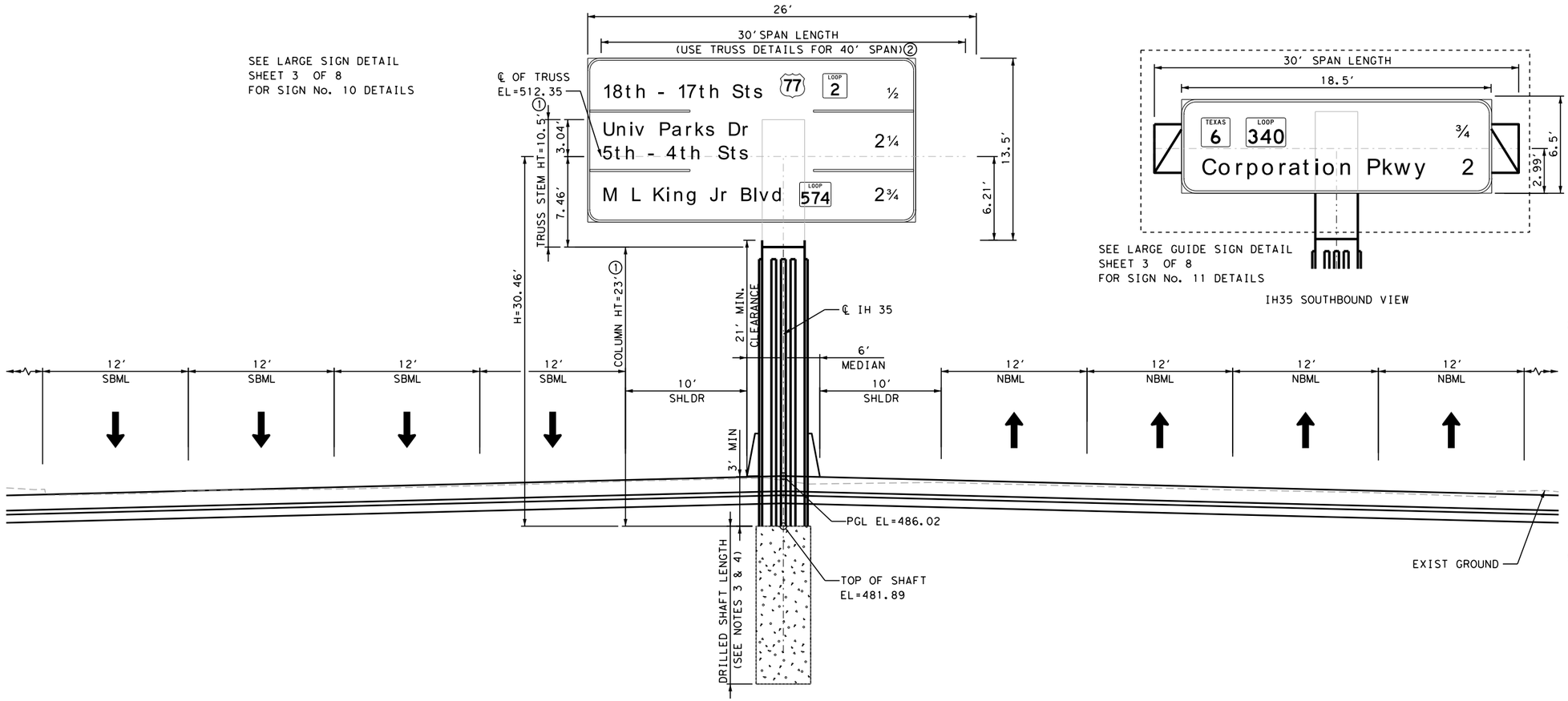

PROPOSED SIGN STRUCTURE #5
PROPOSED COSST #1
℄ IH 35 STA 65+00

DESIGN DATA
ACTUAL SPAN LENGTH 30'②
ACTUAL SIGN AREA 471.25 SF

① SEE NOTE 4.
② SEE NOTE 5.

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
3. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD SIGN BRIDGE DETAILS OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, DARK GRAY MUDSTONE.
4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD HCOSS-Z1-21, TRUSS DETAILS TABLE WITH SPAN=40'.

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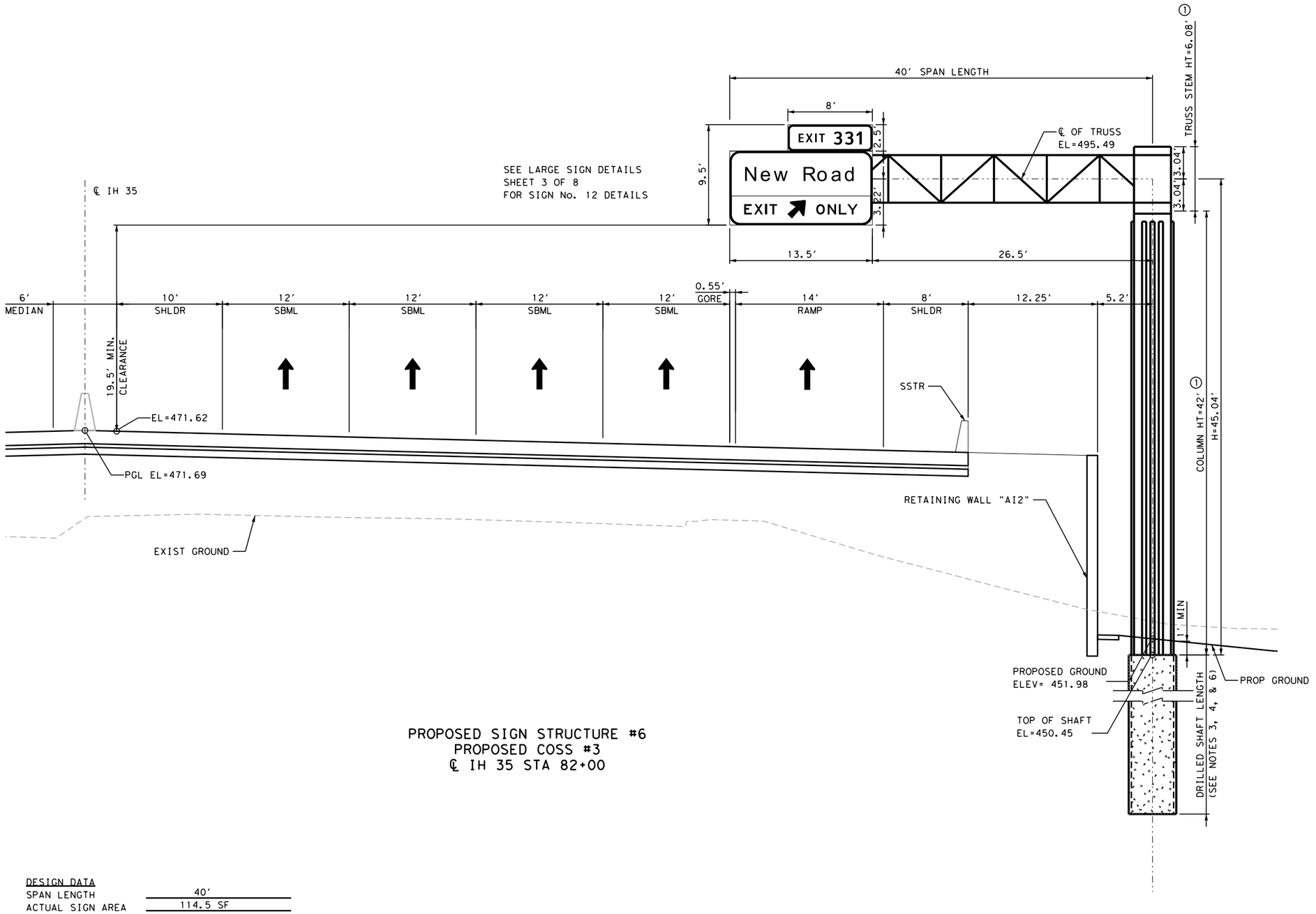
IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

COSST #1 IH35 STA 65+00

SHEET 5 OF 17

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1458
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35



PROPOSED SIGN STRUCTURE #6
PROPOSED COSS #3
℄ IH 35 STA 82+00

DESIGN DATA

SPAN LENGTH	40'
ACTUAL SIGN AREA	114.5 SF

① SEE NOTE 4.

0' 2.5' 5' 10'
HORZ. SCALE IN FEET

0' 2.5' 5' 10'
VERT. SCALE IN FEET

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
3. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD SIGN BRIDGE DETAILS OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, DARK GRAY MUDSTONE.
4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD **HCOSS-Z1-21,** TRUSS DETAILS TABLE WITH SPAN= **40'.**

STATE OF TEXAS
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IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

COSS #4 IH35 STA 82+00

SHEET 6 OF 17

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1459

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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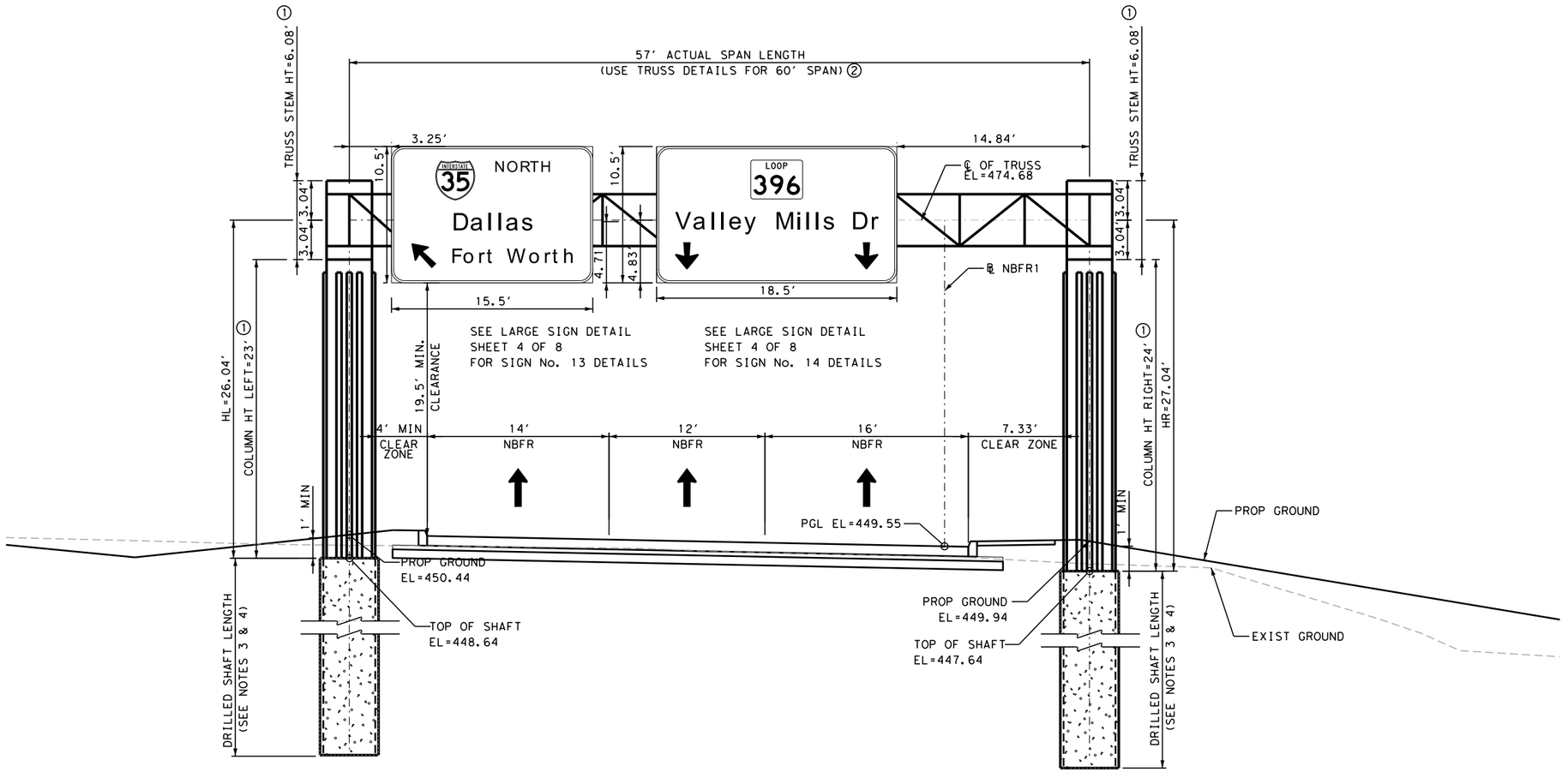

PROPOSED SIGN STRUCTURE #7
PROPOSED OHSB #3
℄ NBFR1 STA 2090+00

DESIGN DATA

ACTUAL SPAN LENGTH	57′ ②
ACTUAL SIGN AREA	413.50 SF

① SEE NOTE 4.
② SEE NOTE 5.

0′ 2.5′ 5′ 10′
HORZ. SCALE IN FEET

0′ 2.5′ 5′ 10′
VERT. SCALE IN FEET

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
3. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD SIGN BRIDGE DETAILS OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, DARK GRAY MUDSTONE.
4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD **HOSB-Z21,** TRUSS DETAILS TABLE WITH SPAN=**60′.**

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IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

OHSB #3 NBFR1 STA 2090+00

SHEET 7 OF 17

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1460
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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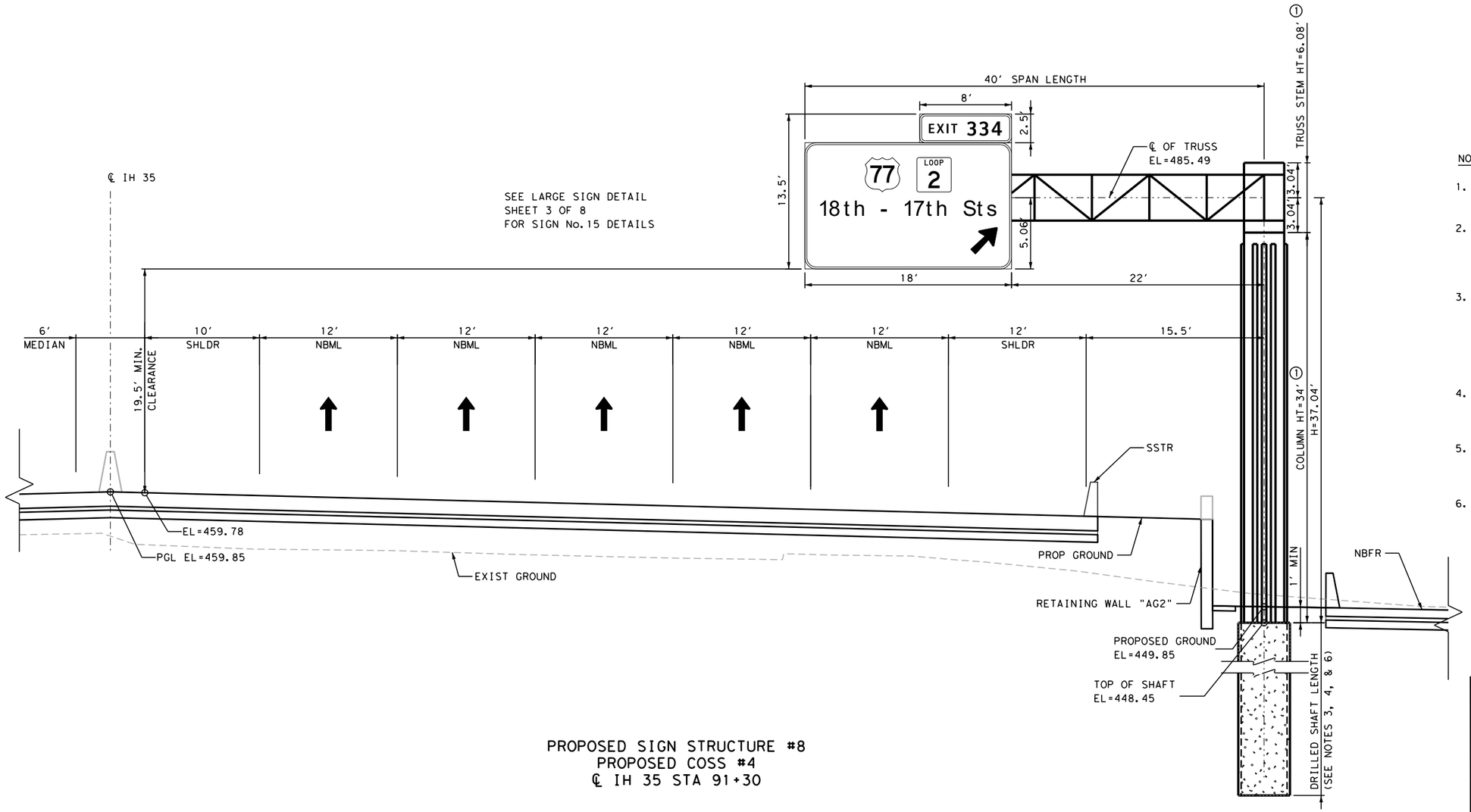

PROPOSED SIGN STRUCTURE #8
PROPOSED COSS #4
℄ IH 35 STA 91+30

DESIGN DATA

SPAN LENGTH	40′
ACTUAL SIGN AREA	218 SF

① SEE NOTE 4.

0′ 2.5′ 5′ 10′
HORZ. SCALE IN FEET

0′ 2.5′ 5′ 10′
VERT. SCALE IN FEET

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
3. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD SIGN BRIDGE DETAILS OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, DARK GRAY MUDSTONE.
4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD HCOSS-Z1-21, TRUSS DETAILS TABLE WITH SPAN=40′.
6. FOUNDATION TO BE PLACED BEFORE WALL WORK BEGINS.

STATE OF TEXAS
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PROFESSIONAL LICENSED ENGINEER
6/13/2024

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IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

COSS #4 IH35 STA 91+30

SHEET 8 OF 17

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1461
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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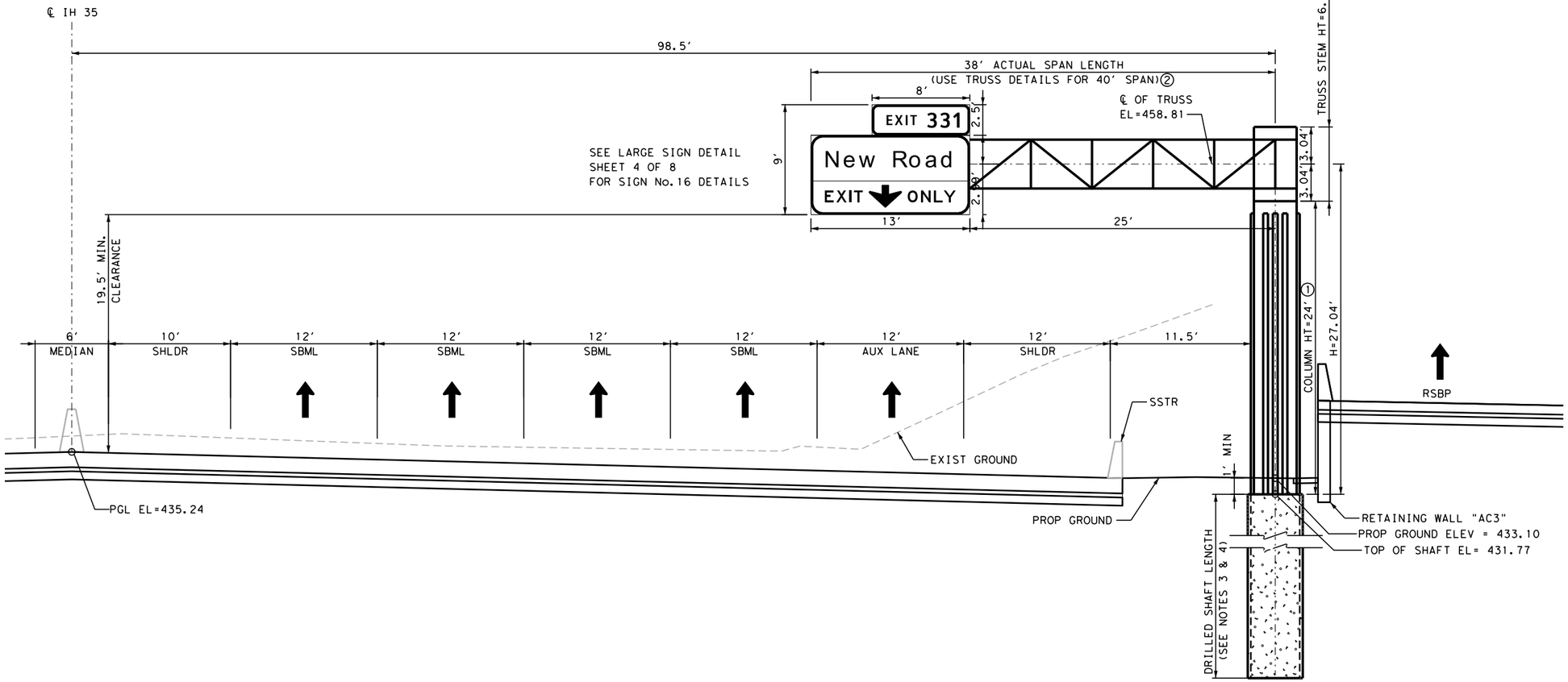

0′ 2.5′ 5′ 10′

HORZ. SCALE IN FEET

0′ 2.5′ 5′ 10′

VERT. SCALE IN FEET

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
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4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD HCOSS-Z1-21, TRUSS DETAILS TABLE WITH SPAN=40′.

STATE OF TEXAS
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6/13/2024

PROPOSED SIGN STRUCTUE #9
PROPOSED COSS #5
℄ IH 35 STA 102+50

DESIGN DATA

ACTUAL SPAN LENGTH	38′ ②
ACTUAL SIGN AREA	104.5 SF

① SEE NOTE 4.
② SEE NOTE 5.

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IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

COSS #5 IH35 STA 102+50

SHEET 9 OF 17

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1462
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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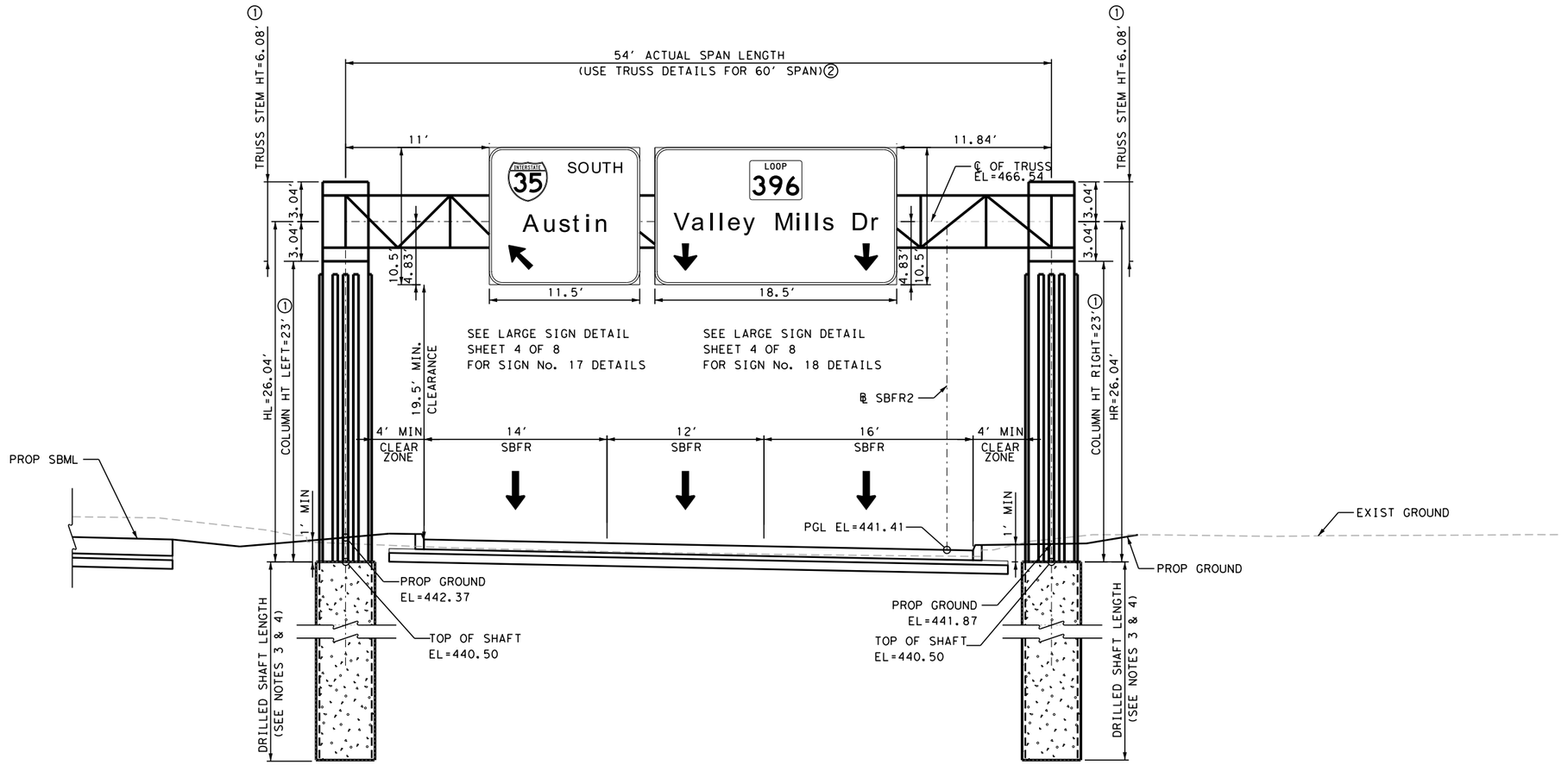

PROPOSED SIGN STRUCTURE #10
PROPOSED OHSB #4
℄ SBFR2 STA 1107+90

DESIGN DATA
ACTUAL SPAN LENGTH 54′ ②
ACTUAL SIGN AREA 367.50 SF

① SEE NOTE 4.
② SEE NOTE 5.

0′ 2.5′ 5′ 10′
HORZ. SCALE IN FEET

0′ 2.5′ 5′ 10′
VERT. SCALE IN FEET

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
3. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD SIGN BRIDGE DETAILS OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, DARK GRAY MUDSTONE.
4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD HOSB-Z2I, TRUSS DETAILS TABLE WITH SPAN= 60′.

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
PRINTED NAME OF LICENSED PROFESSIONAL ENGINEER
6/13/2024

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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

OHSB #4 SBFR2 STA 1107+90

SHEET 10 OF 17

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1463
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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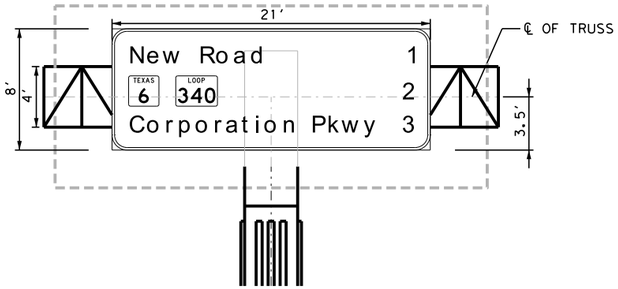
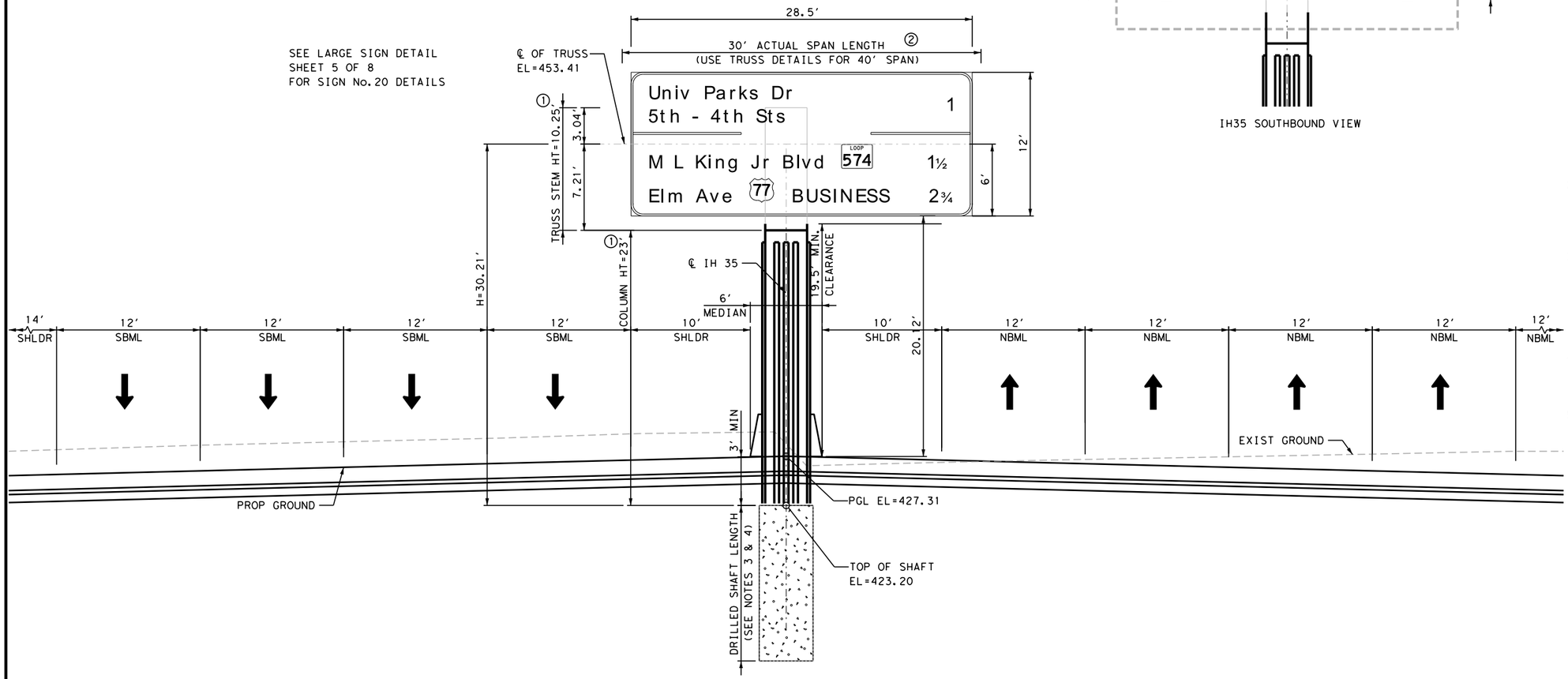
SEE LARGE SIGN DETAIL
SHEET 5 OF 8
FOR SIGN No.19 DETAILS



IH35 SOUTHBOUND VIEW

SEE LARGE SIGN DETAIL
SHEET 5 OF 8
FOR SIGN No.20 DETAILS



PROPOSED SIGN STRUCTURE #11
PROPOSED COSST #2
℄ IH 35 STA 128+50

DESIGN DATA

ACTUAL SPAN LENGTH	30′②
ACTUAL SIGN AREA	475.50 SF

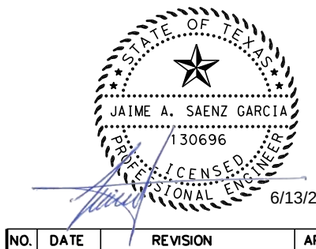
① SEE NOTE 4.
② SEE NOTE 5.

0′ 2.5′ 5′ 10′
HORZ. SCALE IN FEET

0′ 2.5′ 5′ 10′
VERT. SCALE IN FEET

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
3. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD SIGN BRIDGE DETAILS OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, DARK GRAY MUDSTONE.
4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD HCOSS-Z1-21, TRUSS DETAILS TABLE WITH SPAN= 40′.



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IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

COSST #2 IH35 STA 128+50

SHEET 11 OF 17

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1464

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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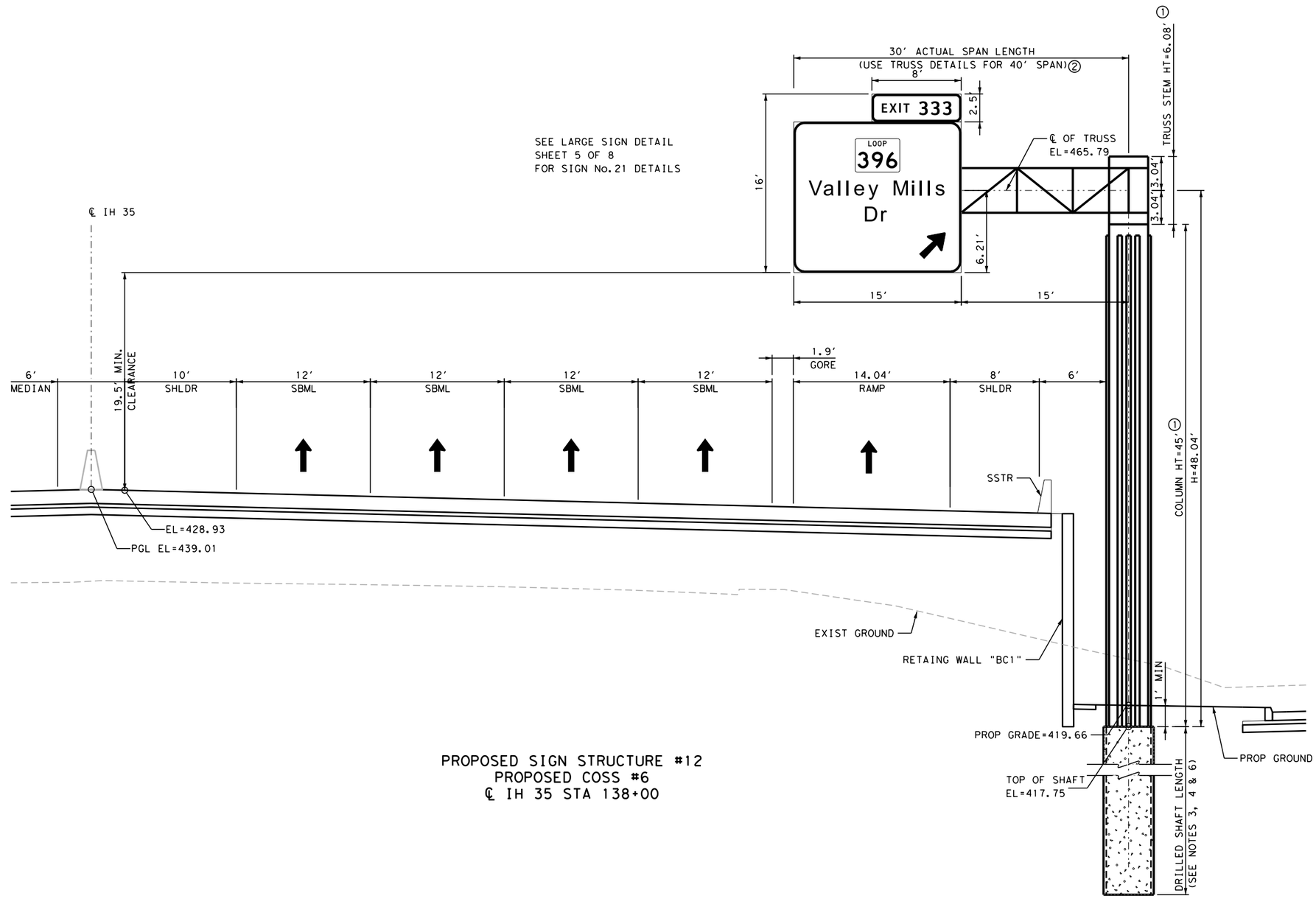

PROPOSED SIGN STRUCTURE #12
PROPOSED COSS #6
℄ IH 35 STA 138+00

DESIGN DATA

ACTUAL SPAN LENGTH	30'②
ACTUAL SIGN AREA	222.5 SF

① SEE NOTE 4.
② SEE NOTE 5.

0' 2.5' 5' 10'
HORZ. SCALE IN FEET

0' 2.5' 5' 10'
VERT. SCALE IN FEET

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
3. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD SIGN BRIDGE DETAILS OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, DARK GRAY MUDSTONE.
4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD HCOSS-Z1-21, TRUSS DETAILS TABLE WITH SPAN=40'.
6. FOUNDATION TO BE PLACED BEFORE WALL WORK BEGINS.

STATE OF TEXAS
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IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

COSS #6 IH35 STA 138+00

SHEET 12 OF 17

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1465
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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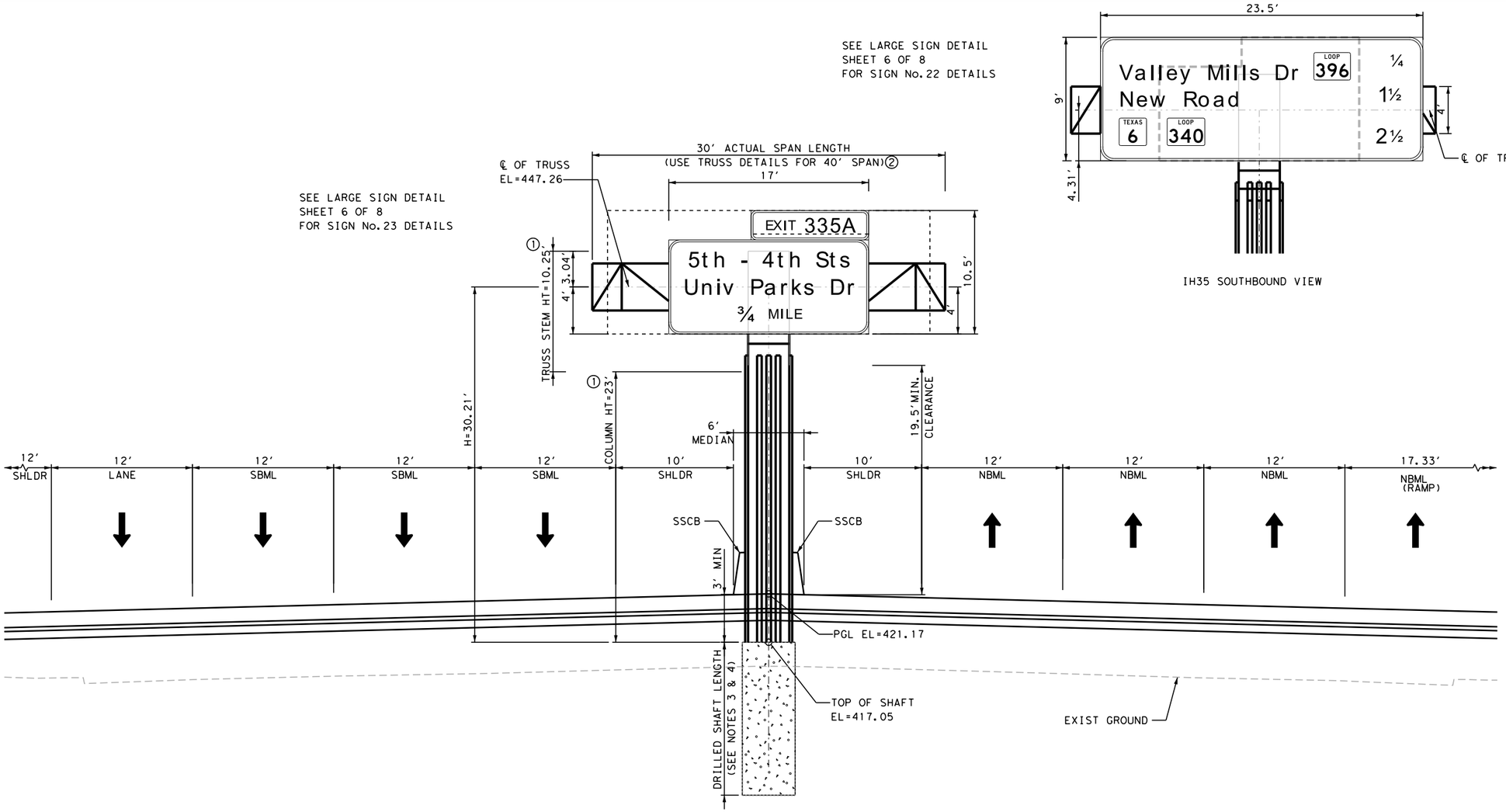
SEE LARGE SIGN DETAIL
SHEET 6 OF 8
FOR SIGN No.22 DETAILS

SEE LARGE SIGN DETAIL
SHEET 6 OF 8
FOR SIGN No.23 DETAILS



IH35 SOUTHBOUND VIEW

0′ 2.5′ 5′ 10′
HORZ. SCALE IN FEET

0′ 2.5′ 5′ 10′
VERT. SCALE IN FEET

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
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4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD HCOSS-Z1-21, TRUSS DETAILS TABLE WITH SPAN= 40′.

PROPOSED SIGN STRUCTURE #13
PROPOSED COSST #3
℄ IH 35 STA 151+00

DESIGN DATA

ACTUAL SPAN LENGTH	30′②
ACTUAL SIGN AREA	459.00 SF

① SEE NOTE 4.
② SEE NOTE 5.

STATE OF TEXAS
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IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

COSST #3 IH35 STA 151+00

SHEET 13 OF 17

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1466
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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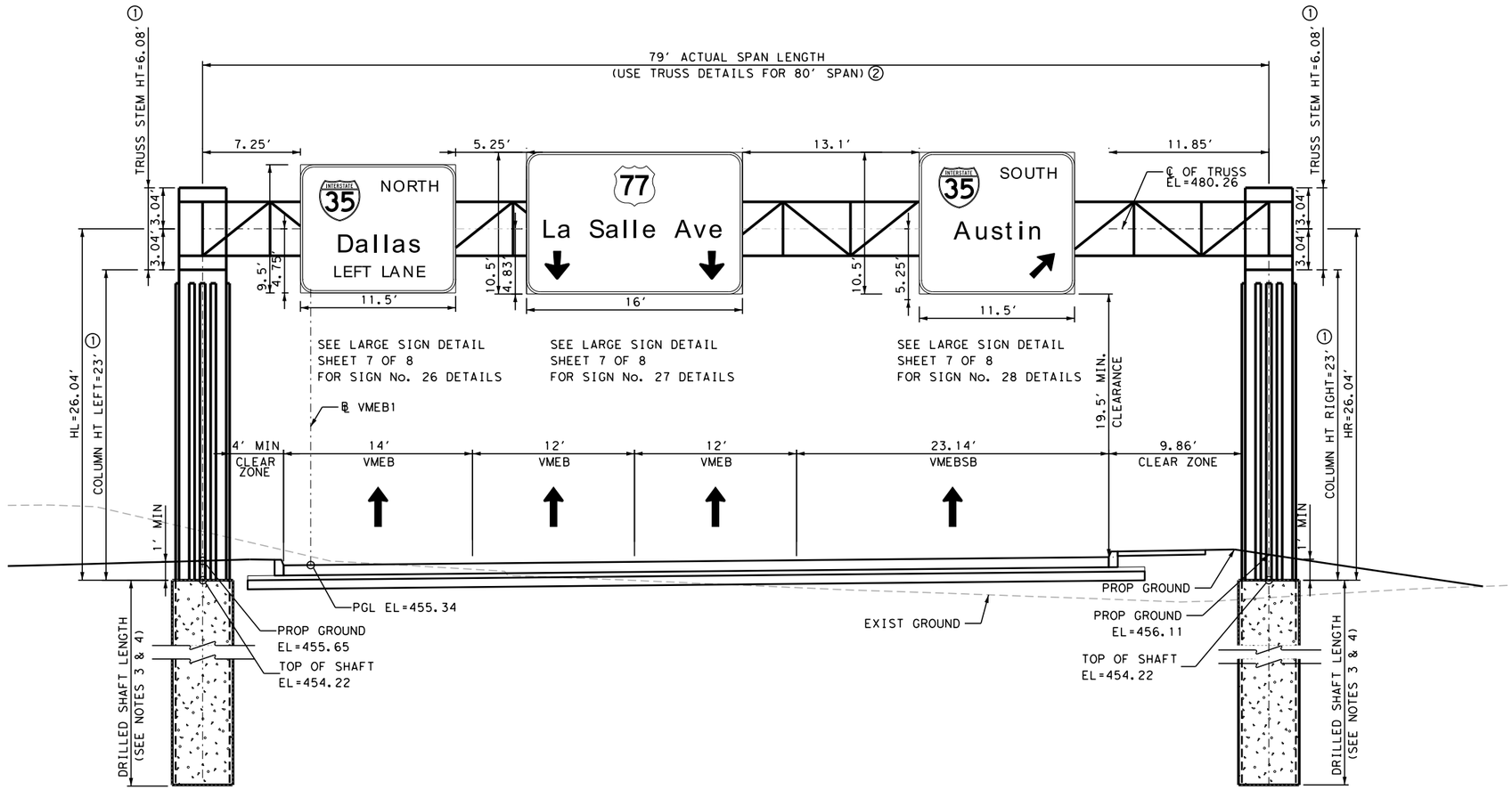

PROPOSED SIGN STRUCTURE #14
PROPOSED OHSB #5
℄ VMEB STA 17+20

DESIGN DATA

ACTUAL SPAN LENGTH	79' ②
ACTUAL SIGN AREA	450.50 SF

① SEE NOTE 4.
② SEE NOTE 5.

0' 2.5' 5' 10'
HORZ. SCALE IN FEET

0' 2.5' 5' 10'
VERT. SCALE IN FEET

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
3. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD SIGN BRIDGE DETAILS OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, DARK GRAY MUDSTONE.
4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD **HOSB-Z21,** TRUSS DETAILS TABLE WITH SPAN=**80'.**

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED
PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

OHSB #5 VMEB STA 17+20

SHEET 14 OF 17

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1467
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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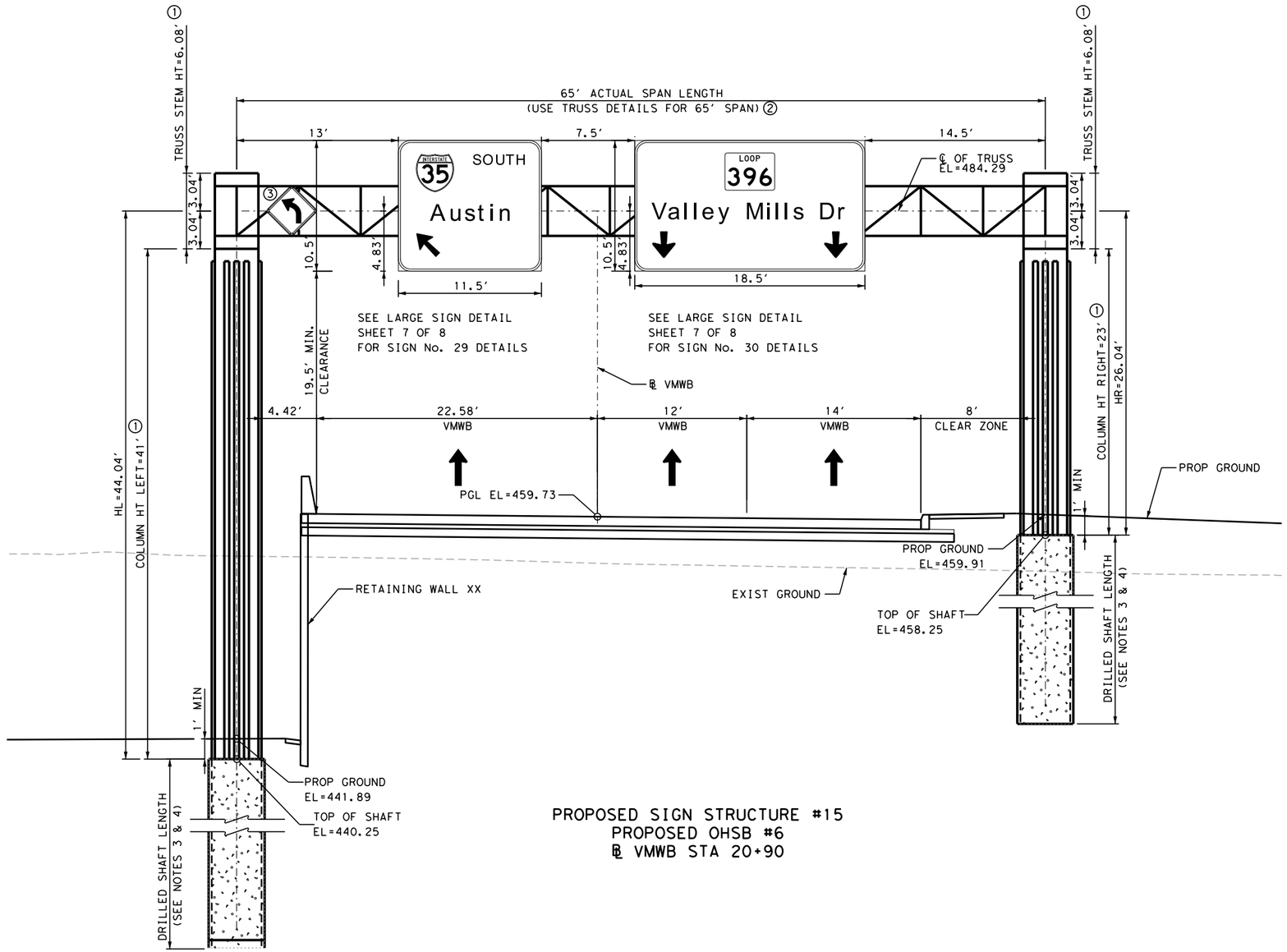

PROPOSED SIGN STRUCTURE #15
PROPOSED OHSB #6
℄ VMWB STA 20+90

DESIGN DATA
ACTUAL SPAN LENGTH 65' ②
ACTUAL SIGN AREA 367.50 SF

① SEE NOTE 4.
② SEE NOTE 5.
③ SEE NOTE 6.

0' 2.5' 5' 10'
HORZ. SCALE IN FEET

0' 2.5' 5' 10'
VERT. SCALE IN FEET

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
3. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD SIGN BRIDGE DETAILS OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, DARK GRAY MUDSTONE.
4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD **HOSB-Z21,** TRUSS DETAILS TABLE WITH SPAN=**65'.**
6. ALL MATERIALS AND LABOR REQUIRED TO PROVIDE AND MOUNT W1-2L SIGN ON TRUSS TO BE SUBSIDIARY TO ITEM 650 6076.

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED
PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

OHSB #6 VMWB STA 20+90

SHEET 15 OF 17

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1468
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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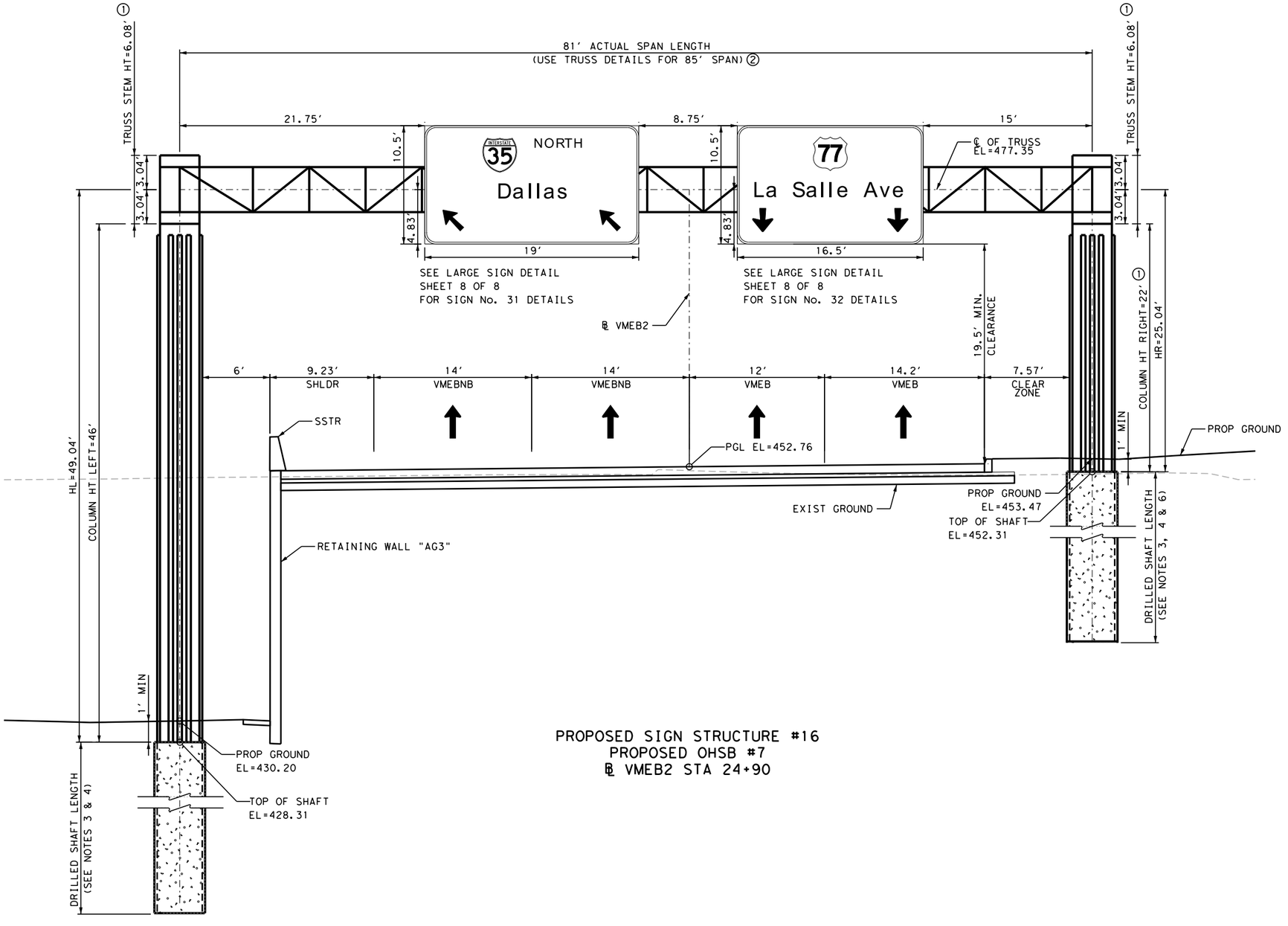

PROPOSED SIGN STRUCTURE #16
PROPOSED OHSB #7
℄ VMEB2 STA 24+90

DESIGN DATA

ACTUAL SPAN LENGTH	81′ ②
ACTUAL SIGN AREA	372.75 SF

① SEE NOTE 4.
② SEE NOTE 5.

0′ 2.5′ 5′ 10′
HORZ. SCALE IN FEET

0′ 2.5′ 5′ 10′
VERT. SCALE IN FEET

NOTES:

1. ELEVATIONS SHOWN ON THESE DRAWINGS ARE FOR ESTIMATING PURPOSE ONLY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAKE AND TAKE ACTUAL ELEVATIONS BEFORE ORDERING FABRICATION OF COMPONENTS.
3. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD SIGN BRIDGE DETAILS OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, DARK GRAY MUDSTONE.
4. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.
5. TRUSS MEMBER SIZES AND DETAILS SHALL BE PER TXDOT STANDARD **HOSB-Z21,** TRUSS DETAILS TABLE WITH SPAN=**85′.**
6. FOUNDATION TO BE PLACED BEFORE WALL WORK BEGINS.

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

OHSB #7 VMEB2 STA 24+90

SHEET 16 OF 17

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1469
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

GUIDE SIGN ELEVATION LAYOUT

OHSB #8 VMWB STA 27+80

SHEET 17 OF 17

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1470
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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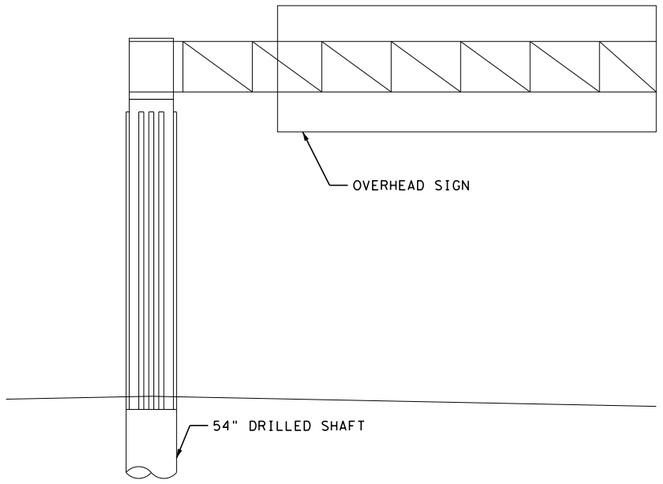
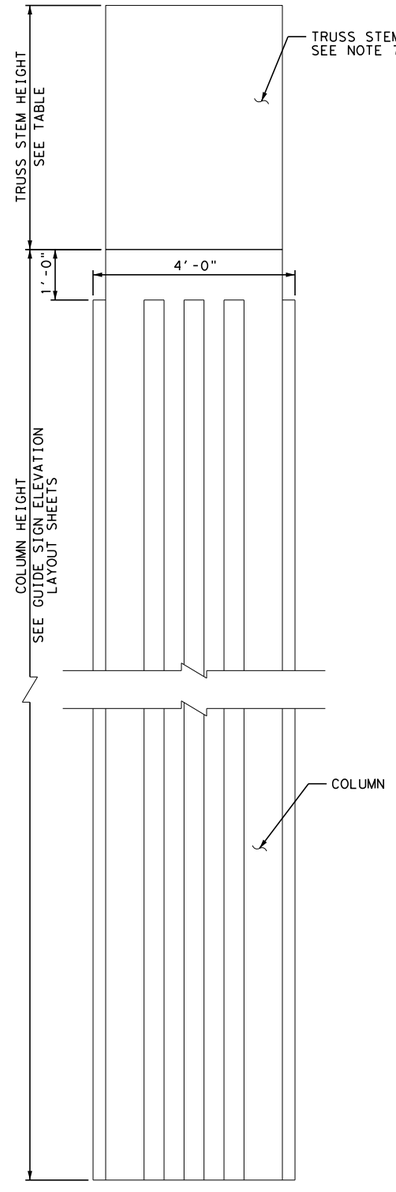


CANTILEVER OVERHEAD SIGN BRIDGE
ELEVATION SCHEMATIC

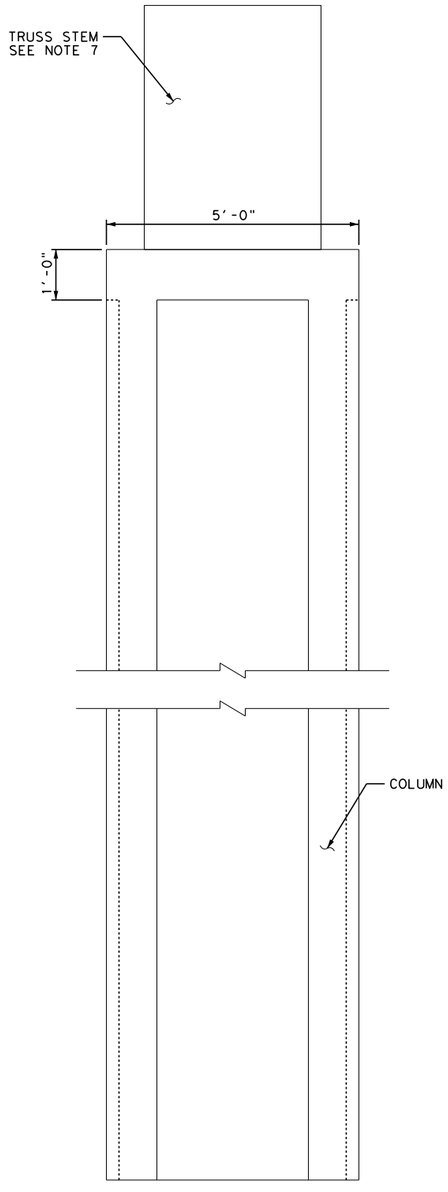
CANTILEVER SIGN STRUCTURE				
STRUCTURE	ROADWAY	STATION	TRUSS STEM HEIGHT (FT-IN)	54" DRILLED SHAFT LENGTH (FT)
COSS #1	NB IH 35	8+10	6'-1"	38
COSS #2	SB IH 35	57+00	6'-1"	35
COSS #3	SB IH 35	82+00	6'-1"	61
COSS #4	NB IH 35	91+30	6'-1"	63
COSS #5	SB IH 35	102+50	6'-1"	37
COSS #6	SB IH 35	138+00	6'-1"	30

GENERAL NOTES:

1. DESIGNED IN ACCORDANCE WITH 1994 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.
2. SIGN COLUMN AND TRUSS CONNECTION DESIGNED FOR DEAD LOADS CONSISTENT WITH TXDOT STANDARDS HCOSS-Z1 FOR 40 FT MAXIMUM SPAN LENGTH AND 50 FT MAXIMUM DESIGN HEIGHT. DESIGN WIND SPEED = 70 MPH.
3. SEE GUIDE SIGN ELEVATION LAYOUT SHEETS FOR SPECIFIC DETAILS FOR EACH INDIVIDUAL SIGN STRUCTURE. TAKE TRUSS DETAILS AND OTHER INFORMATION NOT SHOWN FROM THE TXDOT STANDARD AND SPAN LENGTH REFERENCED IN THE GUIDE SIGN ELEVATION LAYOUT SHEETS.
4. USE CLASS "C" CONCRETE STRENGTH f'c = 3600 psi.
5. USE GRADE 60 REINFORCING STEEL.
6. FOUND DRILLED SHAFTS AT LENGTHS SHOWN OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. SEE GUIDE SIGN ELEVATION LAYOUT SHEETS FOR ROCK DEFINITION PER STRUCTURE.
7. REFER TO COLUMN & FOUNDATION DETAIL SHEETS FOR TRUSS STEM DIMENSIONS, AND REINFORCEMENT.



FRONT ELEVATION



SIDE ELEVATION

STATE OF TEXAS
BRENT T. JONES
98873
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

OVERHEAD SIGN BRIDGE DETAILS

OVERHEAD SIGN SUPPORTS CANTILEVER SPANS

SHEET 1 OF 6

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1471
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB / HIGHWAY NO.
0015	01	246 / IH 35

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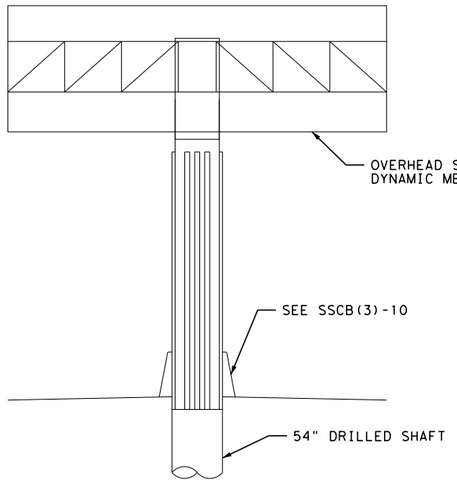


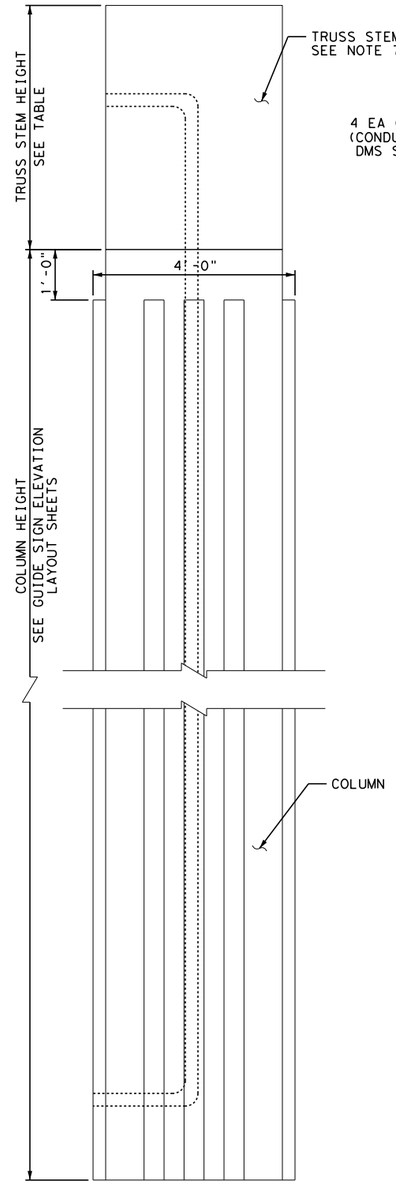
CANTILEVER OVERHEAD SIGN BRIDGE
BALANCED TEE ELEVATION SCHEMATIC

DOUBLE CANTILEVER SIGN STRUCTURE				
STRUCTURE	ROADWAY	STATION	TRUSS STEM HEIGHT (FT-IN)	54" DRILLED SHAFT LENGTH (FT)
COSST #1	IH 35	65+00	10'-6"	36
COSST #2	IH 35	128+50	10'-3"	46
COSST #3	IH 35	151+00	10'-3"	54
DMS #1/#2	IH 35	75+00	7'-2"	72

(3) PROVIDE WATER TIGHT CAP AT EACH END FOR ANY CONDUITS TO BE USED ON FUTURE CONTRACTS.

GENERAL NOTES:

1. DESIGNED IN ACCORDANCE WITH 1994 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.
2. SIGN COLUMN AND TRUSS CONNECTION DESIGNED FOR DEAD LOADS CONSISTENT WITH TXDOT STANDARDS HCOSS-Z1 FOR 40 FT MAXIMUM SPAN LENGTH AND 50 FT MAXIMUM DESIGN HEIGHT. DESIGN WIND SPEED = 70 MPH.
3. SEE GUIDE SIGN ELEVATION LAYOUT SHEETS FOR SPECIFIC DETAILS FOR EACH INDIVIDUAL SIGN STRUCTURE. TAKE TRUSS DETAILS AND OTHER INFORMATION NOT SHOWN FROM THE TXDOT STANDARD AND SPAN LENGTH REFERENCED IN THE GUIDE SIGN ELEVATION LAYOUT SHEETS.
4. USE CLASS "C" CONCRETE STRENGTH f'c = 3600 psi.
5. USE GRADE 60 REINFORCING STEEL.
6. FOUND DRILLED SHAFTS AT LENGTHS SHOWN OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. SEE GUIDE SIGN ELEVATION LAYOUT SHEETS FOR ROCK DEFINITION PER STRUCTURE.
7. REFER TO COLUMN & FOUNDATION DETAIL SHEETS FOR TRUSS STEM DIMENSIONS, AND REINFORCEMENT.



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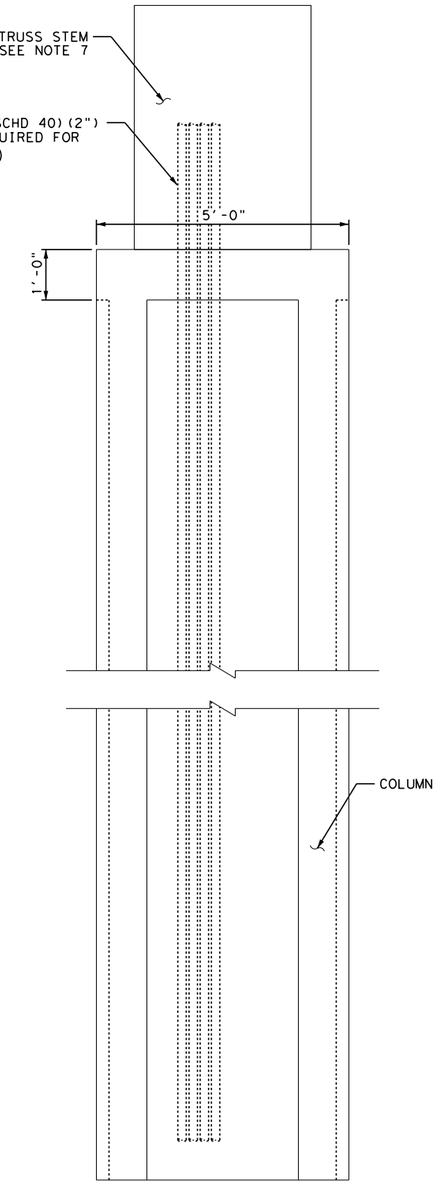

SIDE ELEVATION

STATE OF TEXAS
BRENT T. JONES
98873
LICENSED
PROFESSIONAL ENGINEER

Brent T. Jones 6/12/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

OVERHEAD SIGN BRIDGE DETAILS

OVERHEAD SIGN SUPPORTS
DOUBLE CANTILEVER SPANS

SHEET 2 OF 6

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1472
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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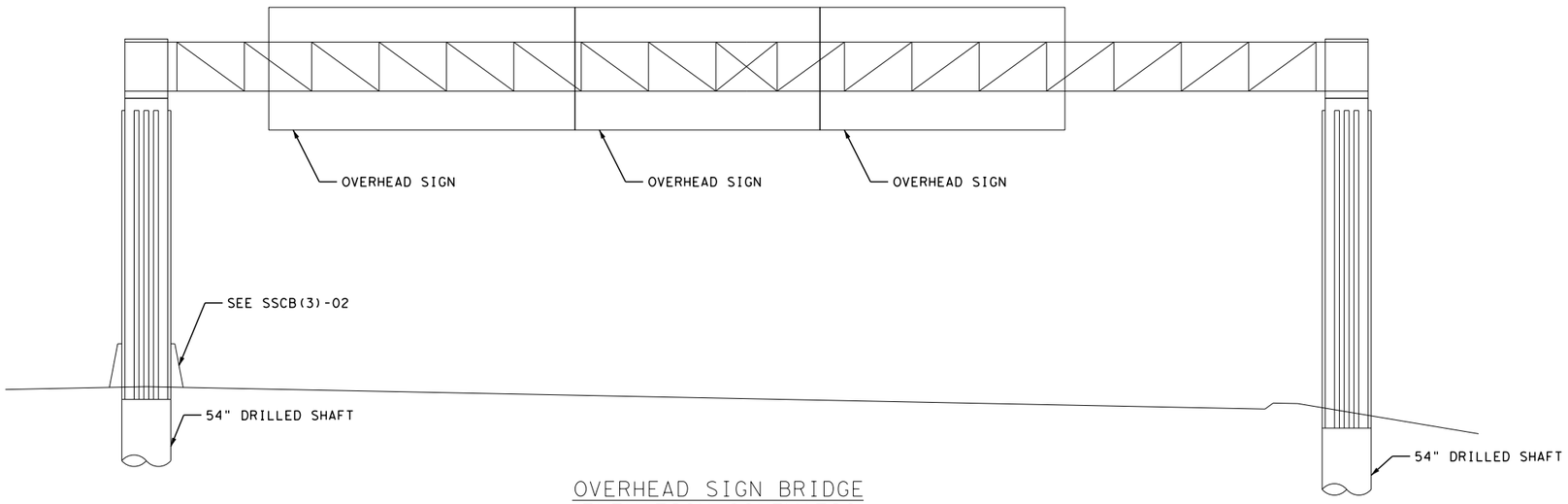
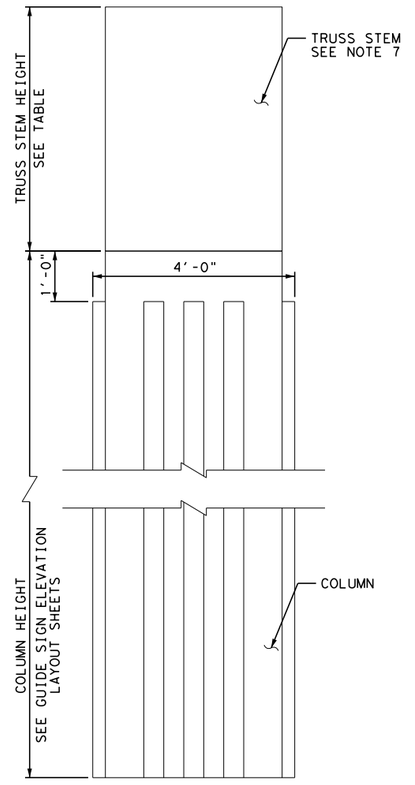
OVERHEAD SIGN BRIDGE					
STRUCTURE	ROADWAY	STATION	TRUSS STEM HEIGHT (FT-IN)	54" DRILLED SHAFT LENGTH (FT)	
				LEFT	RIGHT
OHSB #1	SB IH 35	29+10	6'-1"	59	43
OHSB #2	NB IH 35	39+20	6'-1"	40	25
OHSB #3	NBFR1	2090+00	6'-1"	63	62
OHSB #4	SBFR2	1107+90	6'-1"	48	48
OHSB #5	VMEB	17+20	6'-1"	60	60
OHSB #6	VMWB	20+90	6'-1"	46	64
OHSB #7	VMEB2	24+90	6'-1"	30	54
OHSB #8	VMWB	27+80	6'-1"	46	46



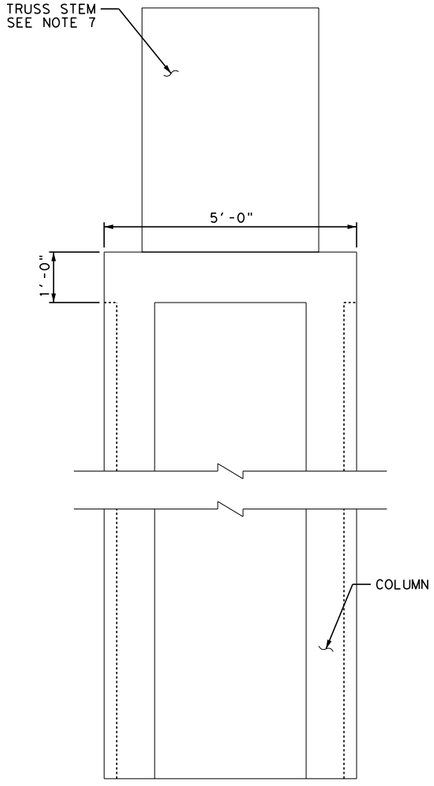
OVERHEAD SIGN BRIDGE
ELEVATION SCHEMATIC

GENERAL NOTES:

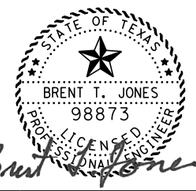
1. DESIGNED IN ACCORDANCE WITH 1994 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.
2. SIGN COLUMN AND TRUSS CONNECTION DESIGNED FOR DEAD LOADS CONSISTENT WITH TXDOT STANDARD HOSB-Z2I FOR 105 FT MAXIMUM SPAN LENGTH AND 50 FT MAXIMUM DESIGN HEIGHT. DESIGN WIND SPEED = 70 MPH.
3. SEE GUIDE SIGN ELEVATION LAYOUT SHEETS FOR SPECIFIC DETAILS FOR EACH INDIVIDUAL SIGN STRUCTURE. TAKE TRUSS DETAILS AND OTHER INFORMATION NOT SHOWN FROM THE TXDOT STANDARD AND SPAN LENGTH REFERENCED IN THE GUIDE SIGN ELEVATION LAYOUT SHEETS.
4. USE CLASS "C" CONCRETE STRENGTH f'c = 3600 psi.
5. USE GRADE 60 REINFORCING STEEL.
6. FOUND DRILLED SHAFTS AT LENGTHS SHOWN OR LONGER TO OBTAIN A MINIMUM TWO DIAMETER SHAFT PENETRATION INTO ROCK. SEE GUIDE SIGN ELEVATION LAYOUT SHEETS FOR ROCK DEFINITION PER STRUCTURE.
7. REFER TO COLUMN & FOUNDATION DETAIL SHEETS FOR TRUSS STEM DIMENSIONS, AND REINFORCEMENT.



FRONT ELEVATION



SIDE ELEVATION



11/22/2023

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

OVERHEAD SIGN BRIDGE DETAILS

OVERHEAD SIGN SUPPORTS SIGN BRIDGE

SHEET 3 OF 6

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1473
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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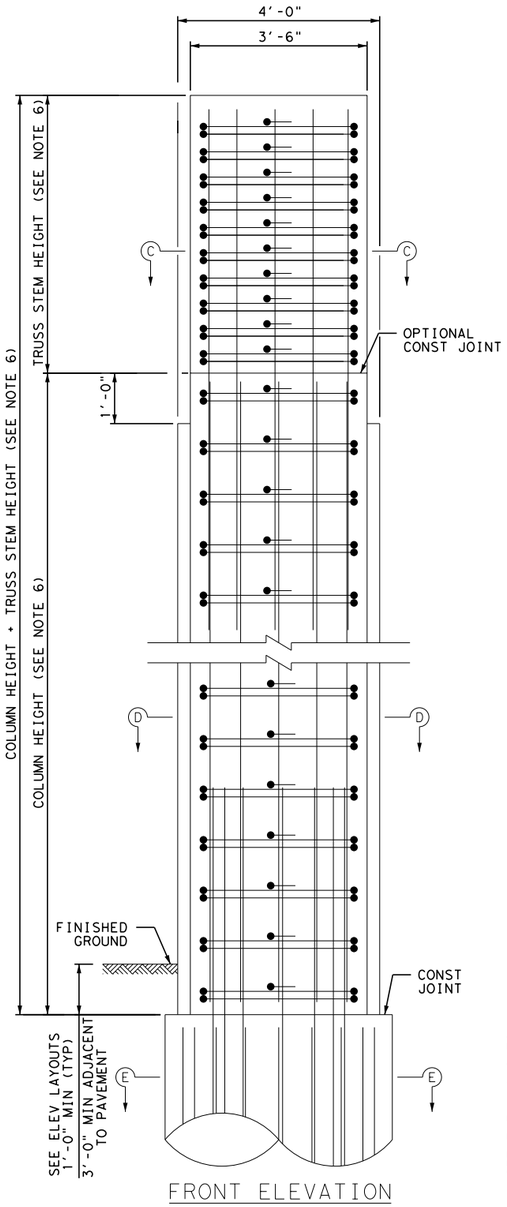
DATE: 11/22/2023 9:43:10 AM USER:

GENERAL NOTES:

1. DESIGNED IN ACCORDANCE WITH AASHTO 1994 STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.
2. SIGN COLUMN AND TRUSS CONNECTION DESIGNED FOR WIND AND DEAD LOADS AS NOTED ON OVERHEAD SIGN BRIDGE DETAIL SHEETS.
3. SEE GUIDE SIGN ELEVATION LAYOUT SHEETS FOR SPECIFIC DETAILS FOR EACH INDIVIDUAL SIGN STRUCTURE. TAKE TRUSS DETAILS AND OTHER INFORMATION NOT SHOWN FROM THE TXDOT STANDARD REFERENCED IN THE GUIDE SIGN ELEVATION LAYOUT SHEETS.
4. USE CLASS "C" CONCRETE STRENGTH f'c = 3600 psi.
5. USE GRADE 60 REINFORCING STEEL.
6. SEE OVERHEAD SIGN BRIDGE DETAILS SHEETS FOR TRUSS STEM HEIGHTS AND DRILLED SHAFT LENGTHS. SEE GUIDE SIGN ELEVATION LAYOUT SHEETS FOR COLUMN HEIGHTS.



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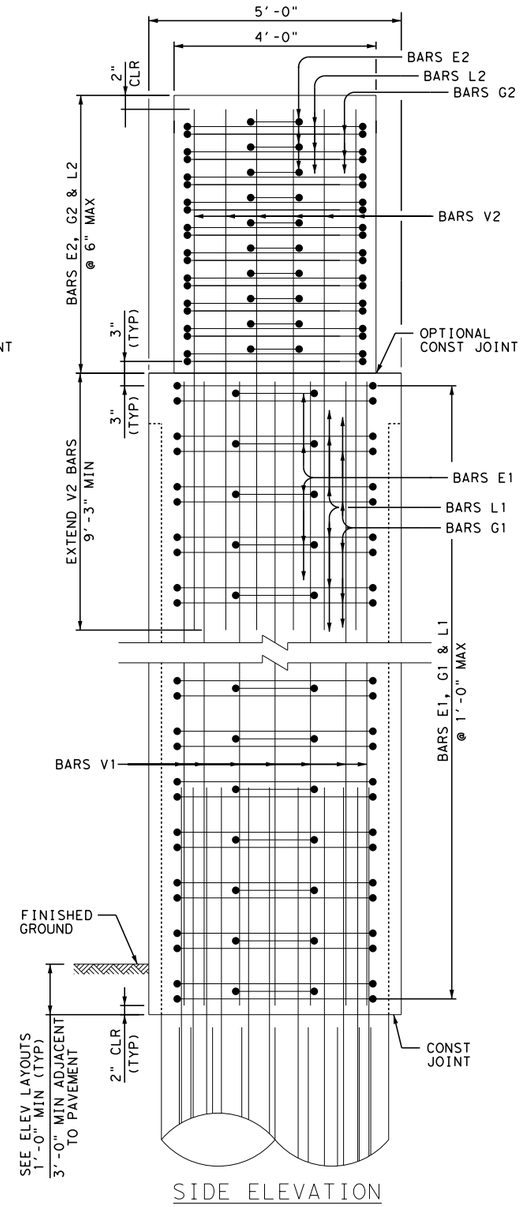

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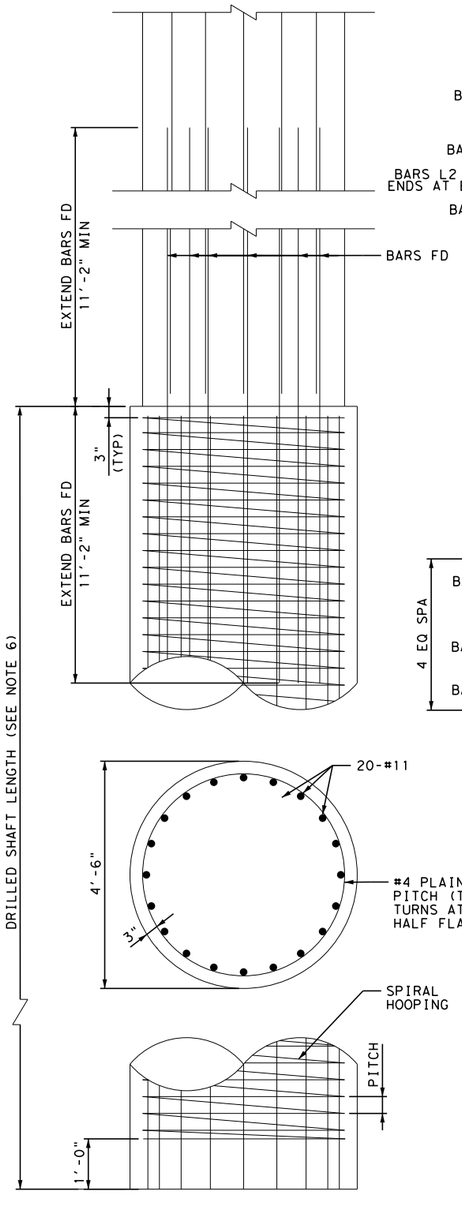

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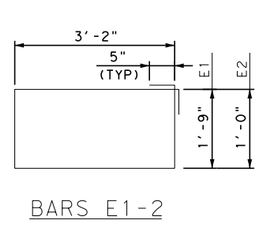
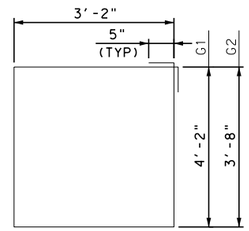
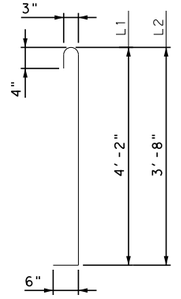


BARS E1-2



BARS G1-2



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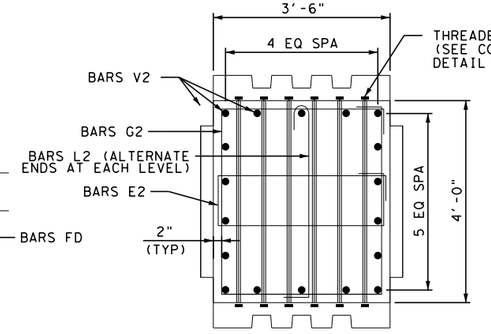

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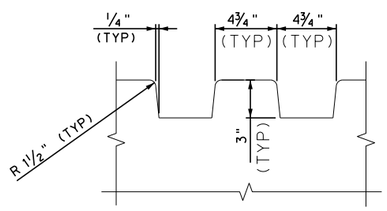
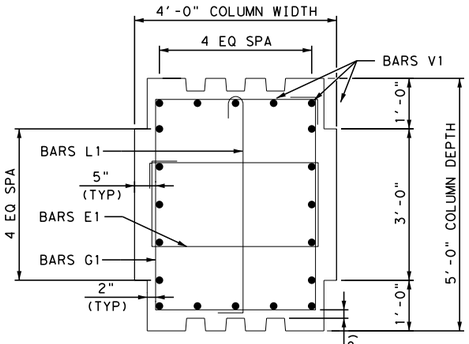
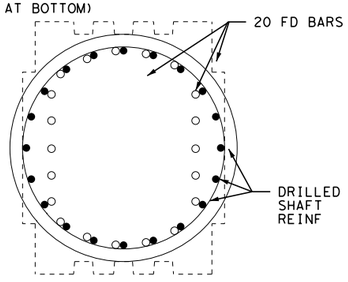


GROOVE DETAIL



SECTION D-D



SECTION E-E

STATE OF TEXAS
BRENT T. JONES
98873
PROFESSIONAL ENGINEER
LICENSED
10/17/2023

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
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HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

OVERHEAD SIGN BRIDGE DETAILS

COLUMN AND FOUNDATION DETAILS

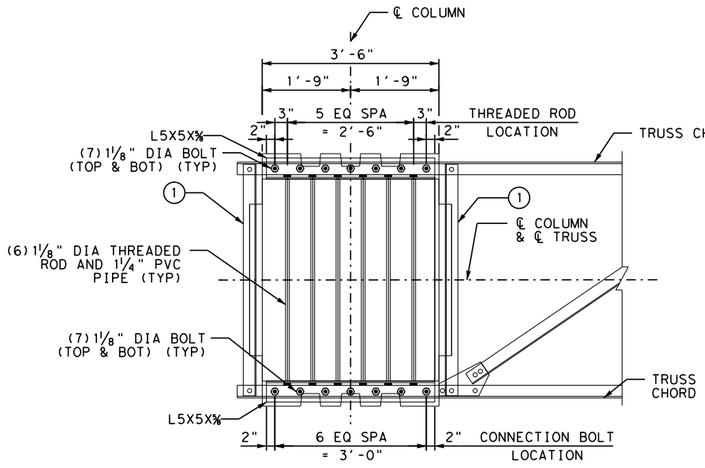
SHEET 4 OF 6

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1474
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

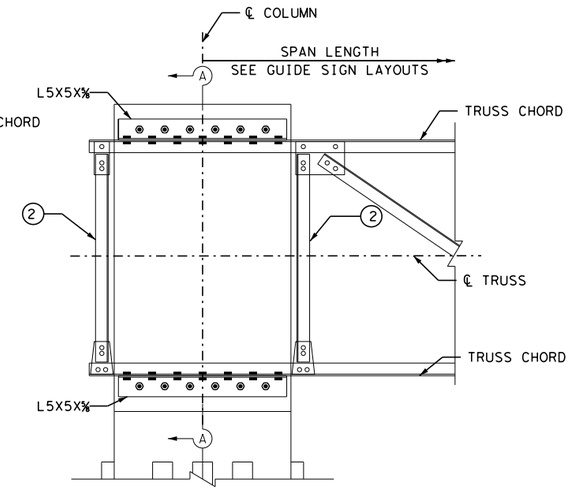
FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\Standards\Signing\PMDT5_OSB_007.dgn
DATE: 10/18/2023 2:49:16 PM USER:

GENERAL NOTES:

1. DESIGNED IN ACCORDANCE WITH 1994 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.
2. USE GRADE 50 STRUCTURAL STEEL CONFORMING WITH ASTM A442, A572, OR A588 FOR CONNECTION OF TRUSS TO SIGN COLUMN.
3. ALL THREADED RODS SHALL CONFORM TO ASTM F1554 (GR. 36).
4. ALL CONNECTION BOLTS SHALL CONFORM TO ASTM A325.
5. GALVANIZE ALL STRUCTURAL STEEL CONNECTION BOLTS, NUTS, RODS, AND WASHERS IN ACCORDANCE WITH THE SPECIFICATIONS.
6. SEE OVERHEAD SIGN BRIDGE TRUSS DETAILS STANDARD (OSBC) AND CANTILEVER OVERHEAD SIGN SUPPORT DETAIL STANDARD (COSSD) FOR ALL TRUSS DETAILS NOT SHOWN. DETAILS SHOWN ON THIS SHEET SUPERSEDE DETAILS ON OSBC AND COSSD STANDARDS.
7. SPLICE PLATES, THREADED RODS, BOLTS, ANGLES, PVC ANCHOR ROD PIPES, AND PVC CONDUITS ARE SUBSIDIARY TO TRUSS.
8. ROD THREADS SHALL BE STROKED AT TWO PLACES OUTSIDE OF THE HEAVY HEX NUT.

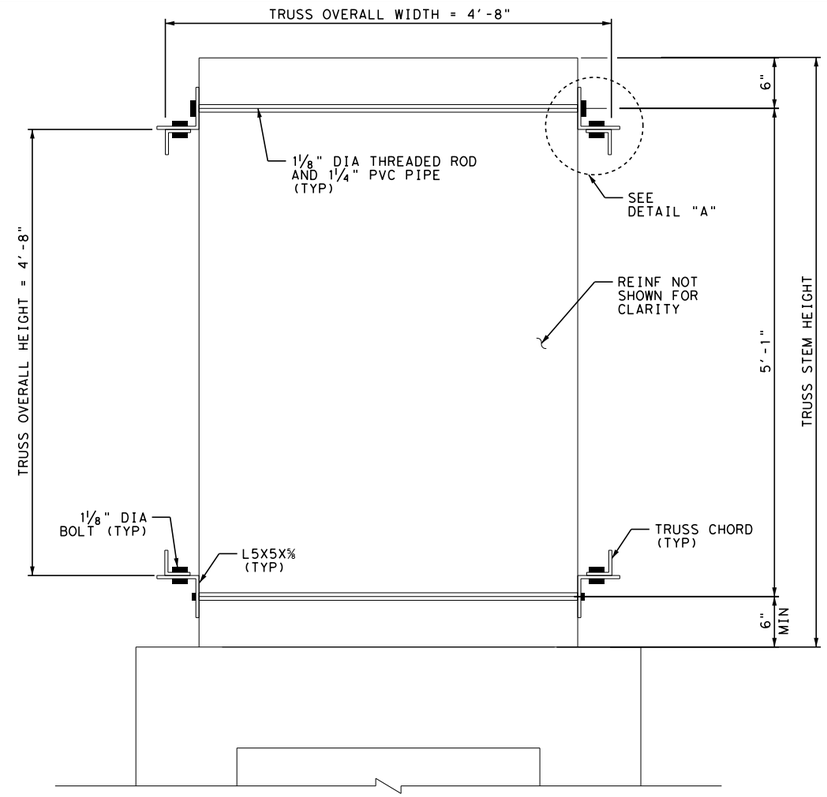


PLAN

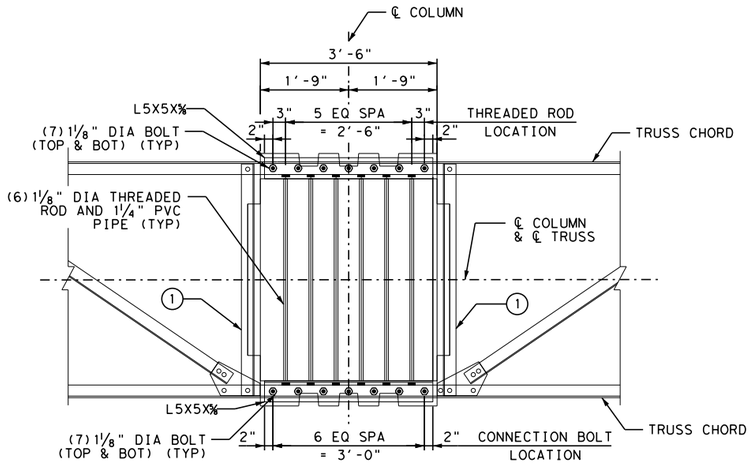


FRONT ELEVATION

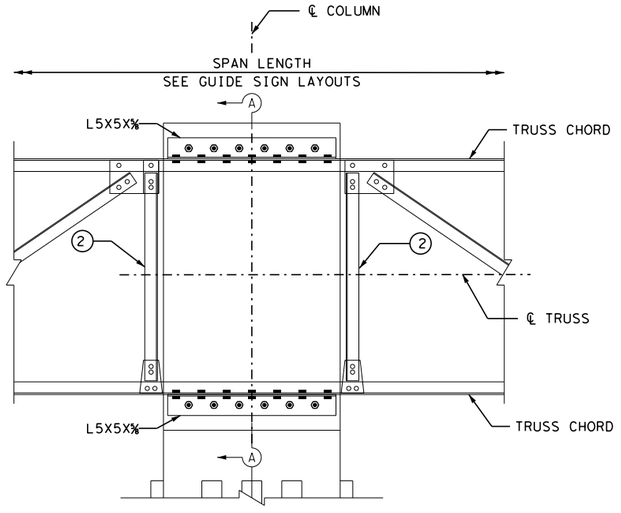
DETAIL FOR CANTILEVER SUPPORT & OVERHEAD SIGN BRIDGE END SUPPORT



SECTION A-A



PLAN

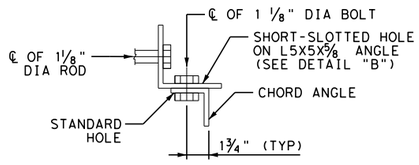


FRONT ELEVATION

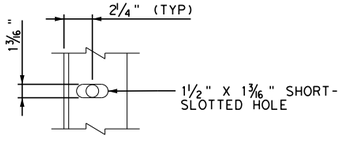
DETAIL FOR DOUBLE CANTILEVER SUPPORT

① WIND LOAD STRUTS (TOP & BOTT), SEE TRUSS DETAILS.

② DEAD LOAD VERTICALS (EACH FACE), SEE TRUSS DETAILS.



DETAIL "A"



DETAIL "B"

STATE OF TEXAS
BRENT T. JONES
98873
LICENSED
PROFESSIONAL ENGINEER

Brent T. Jones 11/22/2023

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

OVERHEAD SIGN BRIDGE DETAILS

CONNECTION DETAILS

SHEET 5 OF 6

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1475
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

TABLE OF CANTILEVER OVERHEAD SIGN COLUMN QUANTITIES

COSS #1 (COLUMN HEIGHT = 26')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	27	#4	10'- 8"	193
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	27	#4	15'- 6"	280
G2	13	#4	14'- 6"	126
L1	27	#4	5'- 3"	95
L2	13	#4	4'- 9"	42
V1	20	#10	25'- 8"	2210
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				6117
CL "C" CONCRETE (COLUMN) (CY)				20.9

COSS #2 (COLUMN HEIGHT = 28')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	29	#4	10'- 8"	207
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	29	#4	15'- 6"	301
G2	13	#4	14'- 6"	126
L1	29	#4	5'- 3"	102
L2	13	#4	4'- 9"	42
V1	20	#10	27'- 8"	2382
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				6331
CL "C" CONCRETE (COLUMN) (CY)				22.3

COSS #3 (COLUMN HEIGHT = 42')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	43	#4	10'- 8"	307
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	43	#4	15'- 6"	446
G2	13	#4	14'- 6"	126
L1	43	#4	5'- 3"	151
L2	13	#4	4'- 9"	42
V1	20	#10	41'- 8"	3587
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				7830
CL "C" CONCRETE (COLUMN) (CY)				31.8

COSS #4 (COLUMN HEIGHT = 34')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	35	#4	10'- 8"	250
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	35	#4	15'- 6"	363
G2	13	#4	14'- 6"	126
L1	35	#4	5'- 3"	123
L2	13	#4	4'- 9"	42
V1	20	#10	33'- 8"	2898
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				6973
CL "C" CONCRETE (COLUMN) (CY)				26.4

COSS #5 (COLUMN HEIGHT = 24')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	25	#4	10'- 8"	179
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	25	#4	15'- 6"	259
G2	13	#4	14'- 6"	126
L1	25	#4	5'- 3"	88
L2	13	#4	4'- 9"	42
V1	20	#10	23'- 8"	2038
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				5903
CL "C" CONCRETE (COLUMN) (CY)				19.6

COSS #6 (COLUMN HEIGHT = 45')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	46	#4	10'- 8"	328
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	46	#4	15'- 6"	477
G2	13	#4	14'- 6"	126
L1	46	#4	5'- 3"	162
L2	13	#4	4'- 9"	42
V1	20	#10	44'- 8"	3845
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				8151
CL "C" CONCRETE (COLUMN) (CY)				33.9

TABLE OF DOUBLE CANTILEVER OVERHEAD SIGN COLUMN QUANTITIES

COSST #1 (COLUMN HEIGHT = 23')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	24	#4	10'- 8"	172
E2	21	#4	9'- 2"	129
FD	20	#10	22'- 4"	1922
G1	24	#4	15'- 6"	249
G2	21	#4	14'- 6"	204
L1	24	#4	5'- 3"	85
L2	21	#4	4'- 9"	67
V1	20	#10	22'- 8"	1951
V2	18	#10	19'- 6"	1511
REINFORCING STEEL (LB)*				6290
CL "C" CONCRETE (COLUMN) (CY)				21.2

COSST #2 (COLUMN HEIGHT = 23')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	24	#4	10'- 8"	172
E2	21	#4	9'- 2"	129
FD	20	#10	22'- 4"	1922
G1	24	#4	15'- 6"	249
G2	21	#4	14'- 6"	204
L1	24	#4	5'- 3"	85
L2	21	#4	4'- 9"	67
V1	20	#10	22'- 8"	1951
V2	18	#10	19'- 3"	1491
REINFORCING STEEL (LB)*				6270
CL "C" CONCRETE (COLUMN) (CY)				21.0

COSST #3 (COLUMN HEIGHT = 23')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	24	#4	10'- 8"	172
E2	21	#4	9'- 2"	129
FD	20	#10	22'- 4"	1922
G1	24	#4	15'- 6"	249
G2	21	#4	14'- 6"	204
L1	24	#4	5'- 3"	85
L2	21	#4	4'- 9"	67
V1	20	#10	22'- 8"	1951
V2	18	#10	19'- 3"	1491
REINFORCING STEEL (LB)*				6270
CL "C" CONCRETE (COLUMN) (CY)				21.0

DMS #1/#2 (COLUMN HEIGHT = 24')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	25	#4	10'- 8"	179
E2	15	#4	9'- 2"	92
FD	20	#10	22'- 4"	1922
G1	25	#4	15'- 6"	259
G2	15	#4	14'- 6"	146
L1	25	#4	5'- 3"	88
L2	15	#4	4'- 9"	48
V1	20	#10	23'- 8"	2038
V2	18	#10	16'- 2"	1253
REINFORCING STEEL (LB)*				6025
CL "C" CONCRETE (COLUMN) (CY)				20.1

TABLE OF OVERHEAD BRIDGE SIGN COLUMN QUANTITIES

OHSB #1 (LEFT) (COLUMN HEIGHT = 28')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	29	#4	10'- 8"	207
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	29	#4	15'- 6"	301
G2	13	#4	14'- 6"	126
L1	29	#4	5'- 3"	102
L2	13	#4	4'- 9"	42
V1	20	#10	27'- 8"	2382
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				6331
CL "C" CONCRETE (COLUMN) (CY)				22.3

OHSB #1 (RIGHT) (COLUMN HEIGHT = 44')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	45	#4	10'- 8"	321
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	45	#4	15'- 6"	466
G2	13	#4	14'- 6"	126
L1	45	#4	5'- 3"	158
L2	13	#4	4'- 9"	42
V1	20	#10	43'- 8"	3759
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				8043
CL "C" CONCRETE (COLUMN) (CY)				33.2

OHSB #2 (LEFT) (COLUMN HEIGHT = 27')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	28	#4	10'- 8"	200
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	28	#4	15'- 6"	290
G2	13	#4	14'- 6"	126
L1	28	#4	5'- 3"	99
L2	13	#4	4'- 9"	42
V1	20	#10	26'- 8"	2296
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				6224
CL "C" CONCRETE (COLUMN) (CY)				21.6

OHSB #2 (RIGHT) (COLUMN HEIGHT = 42')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	43	#4	10'- 8"	307
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	43	#4	15'- 6"	446
G2	13	#4	14'- 6"	126
L1	43	#4	5'- 3"	151
L2	13	#4	4'- 9"	42
V1	20	#10	41'- 8"	3587
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				7830
CL "C" CONCRETE (COLUMN) (CY)				31.8

OHSB #3 (LEFT) (COLUMN HEIGHT = 23')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	24	#4	10'- 8"	172
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	24	#4	15'- 6"	249
G2	13	#4	14'- 6"	126
L1	24	#4	5'- 3"	85
L2	13	#4	4'- 9"	42
V1	20	#10	22'- 8"	1951
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				5796
CL "C" CONCRETE (COLUMN) (CY)				18.9

OHSB #3 (RIGHT) (COLUMN HEIGHT = 24')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	25	#4	10'- 8"	179
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	25	#4	15'- 6"	259
G2	13	#4	14'- 6"	126
L1	25	#4	5'- 3"	88
L2	13	#4	4'- 9"	42
V1	20	#10	23'- 8"	2038
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				5903
CL "C" CONCRETE (COLUMN) (CY)				19.6

OHSB #4 (LEFT) (COLUMN HEIGHT = 23')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	24	#4	10'- 8"	172
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	24	#4	15'- 6"	249
G2	13	#4	14'- 6"	126
L1	24	#4	5'- 3"	85
L2	13	#4	4'- 9"	42
V1	20	#10	22'- 8"	1951
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				5796
CL "C" CONCRETE (COLUMN) (CY)				18.9

OHSB #4 (RIGHT) (COLUMN HEIGHT = 23')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	24	#4	10'- 8"	172
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	24	#4	15'- 6"	249
G2	13	#4	14'- 6"	126
L1	24	#4	5'- 3"	85
L2	13	#4	4'- 9"	42
V1	20	#10	22'- 8"	1951
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				5796
CL "C" CONCRETE (COLUMN) (CY)				18.9

OHSB #5 (LEFT) (COLUMN HEIGHT = 23')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	24	#4	10'- 8"	172
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	24	#4	15'- 6"	249
G2	13	#4	14'- 6"	126
L1	24	#4	5'- 3"	85
L2	13	#4	4'- 9"	42
V1	20	#10	22'- 8"	1951
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				5796
CL "C" CONCRETE (COLUMN) (CY)				18.9

OHSB #5 (RIGHT) (COLUMN HEIGHT = 23')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	24	#4	10'- 8"	172
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	24	#4	15'- 6"	249
G2	13	#4	14'- 6"	126
L1	24	#4	5'- 3"	85
L2	13	#4	4'- 9"	42
V1	20	#10	22'- 8"	1951
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				5796
CL "C" CONCRETE (COLUMN) (CY)				18.9

OHSB #6 (LEFT) (COLUMN HEIGHT = 41')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	42	#4	10'- 8"	300
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	42	#4	15'- 6"	435
G2	13	#4	14'- 6"	126
L1	42	#4	5'- 3"	148
L2	13	#4	4'- 9"	42
V1	20	#10	40'- 8"	3501
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				7723
CL "C" CONCRETE (COLUMN) (CY)				31.1

OHSB #6 (RIGHT) (COLUMN HEIGHT = 23')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	24	#4	10'- 8"	172
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	24	#4	15'- 6"	249
G2	13	#4	14'- 6"	126
L1	24	#4	5'- 3"	85
L2	13	#4	4'- 9"	42
V1	20	#10	22'- 8"	1951
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				5,796
CL "C" CONCRETE (COLUMN) (CY)				18.9

OHSB #7 (LEFT) (COLUMN HEIGHT = 46')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	47	#4	10'- 8"	335
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	47	#4	15'- 6"	487
G2	13	#4	14'- 6"	126
L1	47	#4	5'- 3"	165
L2	13	#4	4'- 9"	42
V1	20	#10	45'- 8"	3931
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				8,257
CL "C" CONCRETE (COLUMN) (CY)				34.5

OHSB #7 (RIGHT) (COLUMN HEIGHT = 22')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	23	#4	10'- 8"	164
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	23	#4	15'- 6"	239
G2	13	#4	14'- 6"	126
L1	23	#4	5'- 3"	81
L2	13	#4	4'- 9"	42
V1	20	#10	21'- 8"	1865
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				5688
CL "C" CONCRETE (COLUMN) (CY)				18.2

OHSB #8 (LEFT) (COLUMN HEIGHT = 23')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	24	#4	10'- 8"	172
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	24	#4	15'- 6"	249
G2	13	#4	14'- 6"	126
L1	24	#4	5'- 3"	85
L2	13	#4	4'- 9"	42
V1	20	#10	22'- 8"	1951
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				5796
CL "C" CONCRETE (COLUMN) (CY)				18.9

OHSB #8 (RIGHT) (COLUMN HEIGHT = 23')

BAR	NO	SIZE	LENGTH	WEIGHT
E1	24	#4	10'- 8"	172
E2	13	#4	9'- 2"	80
FD	20	#10	22'- 4"	1922
G1	24	#4	15'- 6"	249
G2	13	#4	14'- 6"	126
L1	24	#4	5'- 3"	85
L2	13	#4	4'- 9"	42
V1	20	#10	22'- 8"	1951
V2	18	#10	15'- 1"	1169
REINFORCING STEEL (LB)*				5796
CL "C" CONCRETE (COLUMN) (CY)				18.9

* FOR CONTRACTORS INFORMATION ONLY

STATE OF TEXAS
BRENT T. JONES
98873
LICENSED
PROFESSIONAL ENGINEER

10/17/2023

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
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HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

OVERHEAD SIGN BRIDGE DETAILS

OVERHEAD SIGN SUPPORTS TABLE OF QUANTIES

SHEET 6 OF 6

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1476

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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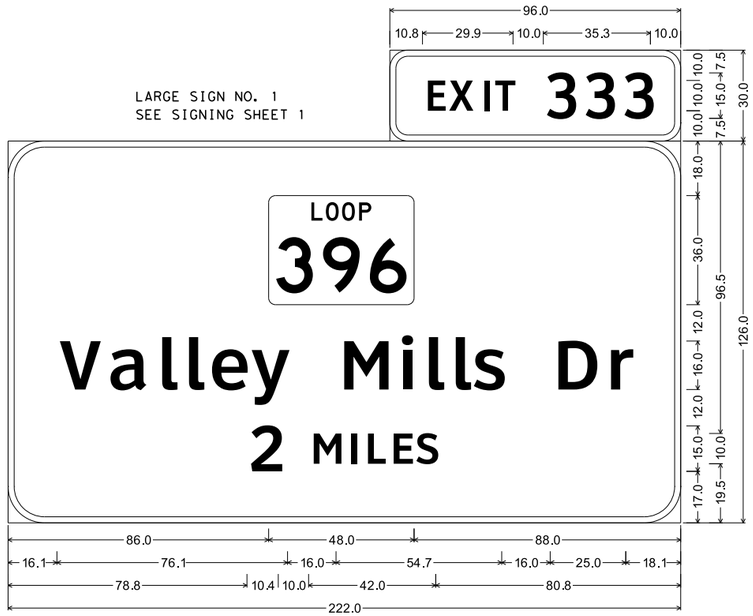
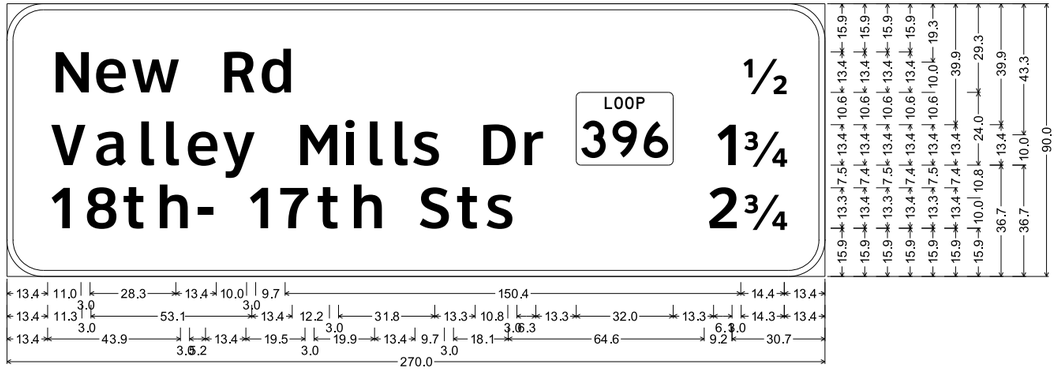


LARGE SIGN NO. 1
SEE SIGNING SHEET 1

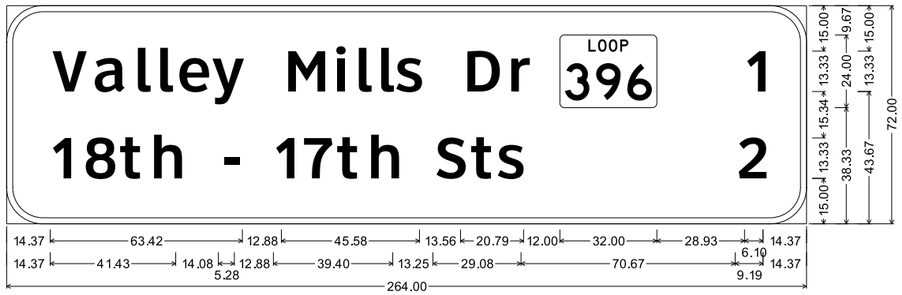
6.0" Radius, 2.0" Border, White on Green;
"EXIT", ClearviewHwy-4-W; "333", ClearviewHwy-4-W;

12.0" Radius, 2.0" Border, White on Green;
State Highway 396 M1-6L3; "Valley", ClearviewHwy-5-W-R; "Mills", ClearviewHwy-5-W-R;
"Dr", ClearviewHwy-5-W-R; "2", ClearviewHwy-5-W-R; "MILES", ClearviewHwy-5-W-R;



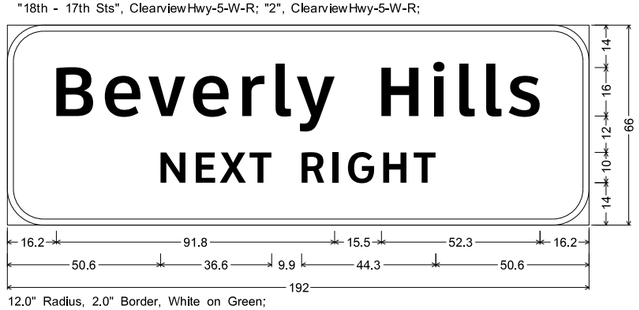
12.0" Radius, 2.0" Border, White on Green;
"N", ClearviewHwy-5-W; "ew", ClearviewHwy-5-W; "R", ClearviewHwy-5-W; "d", ClearviewHwy-5-W; "½", ClearviewHwy-5-W-R;
"V", ClearviewHwy-5-W; "alley", ClearviewHwy-5-W; "M", ClearviewHwy-5-W; "ills", ClearviewHwy-5-W; "D", ClearviewHwy-5-W;
"r", ClearviewHwy-5-W; State Highway 396 M1-6L3; "1", ClearviewHwy-5-W; "¾", ClearviewHwy-5-W; "18th", ClearviewHwy-5-W;
"-", ClearviewHwy-5-W; "17", ClearviewHwy-5-W; "th", ClearviewHwy-5-W; "S", ClearviewHwy-5-W; "ts", ClearviewHwy-5-W;
"2", ClearviewHwy-5-W; "¾", ClearviewHwy-5-W;

LARGE SIGN NO. 2
SEE SIGNING SHEET 1



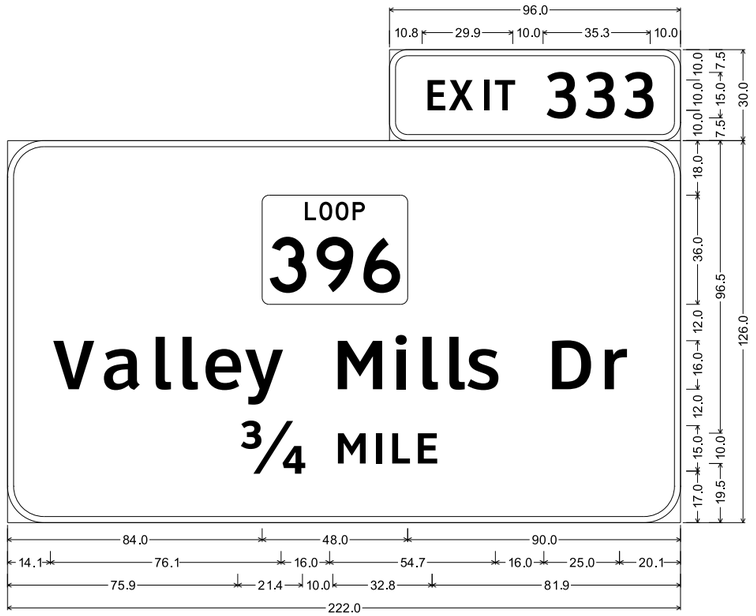
12.00" Radius, 2.00" Border, White on Green;
"Valley Mills Dr", ClearviewHwy-5-W-R; State Highway 396 M1-6L3; "1", ClearviewHwy-5-W-R;
"18th - 17th Sts", ClearviewHwy-5-W-R; "2", ClearviewHwy-5-W-R;

LARGE SIGN NO. 3
SEE SIGNING SHEET 1



12.0" Radius, 2.0" Border, White on Green;
[Beverly Hills] ClearviewHwy-5-W-R; [NEXT RIGHT] ClearviewHwy-5-W-R;

LARGE SIGN NO. 5
℄ IH 35 STA 8+10.00
SEE SIGNING SHEET 2
SEE GUIDE SIGN ELEVATION SHEET 1



6.0" Radius, 2.0" Border, White on Green;
"EXIT", ClearviewHwy-4-W; "333", ClearviewHwy-4-W;

12.0" Radius, 2.0" Border, White on Green;
State Highway 396 M1-6L3; "Valley", ClearviewHwy-5-W-R; "Mills", ClearviewHwy-5-W-R;
"Dr", ClearviewHwy-5-W-R; "¾", ClearviewHwy-5-W-R; "MILE", ClearviewHwy-5-W-R;

LARGE SIGN NO. 4
℄ IH 35 STA 8+10.00
SEE SIGNING SHEET 2
SEE GUIDE SIGN ELEVATION SHEET 1

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
PROFESSIONAL ENGINEER
LICENSED
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LARGE SIGN DETAILS

SHEET 1 OF 8

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1477
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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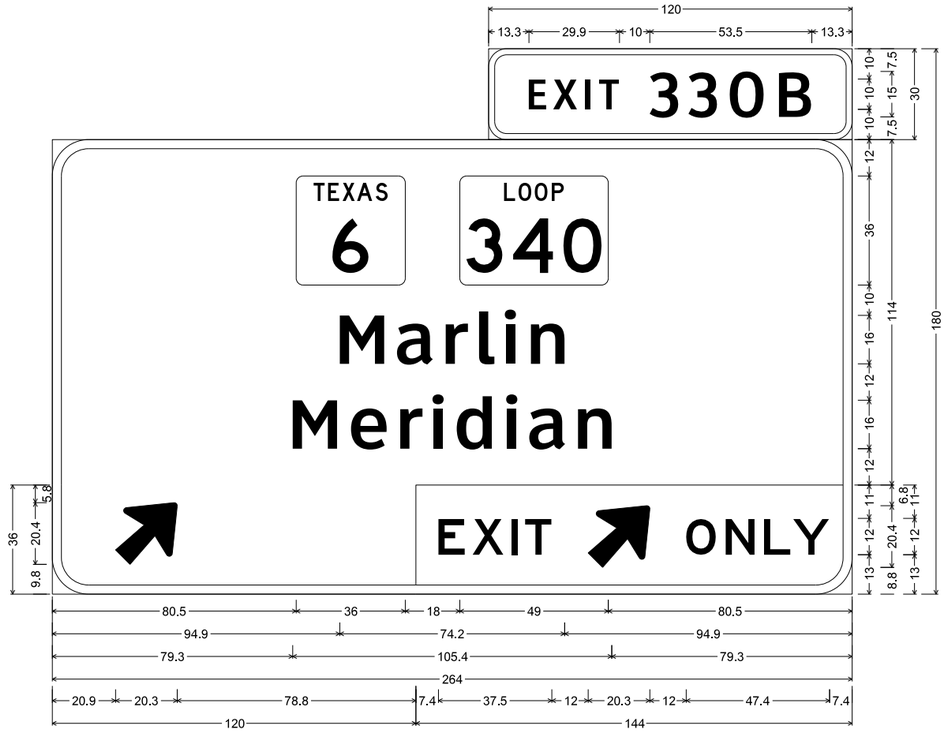
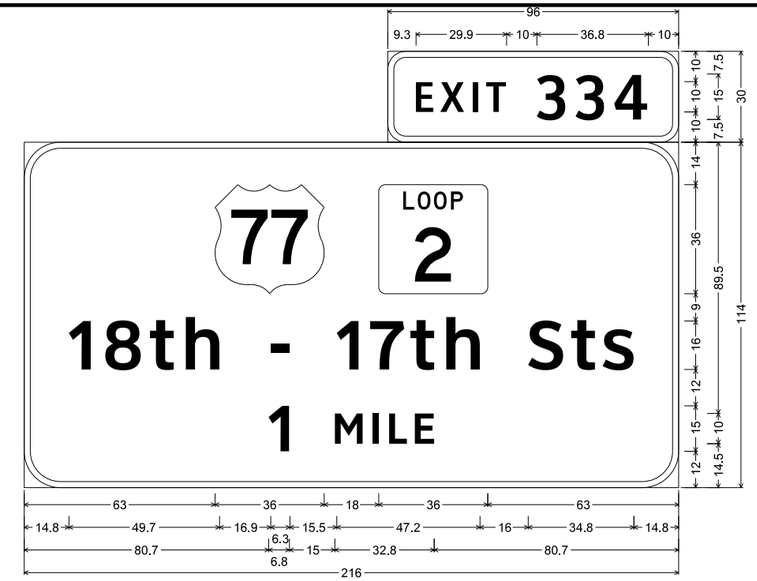


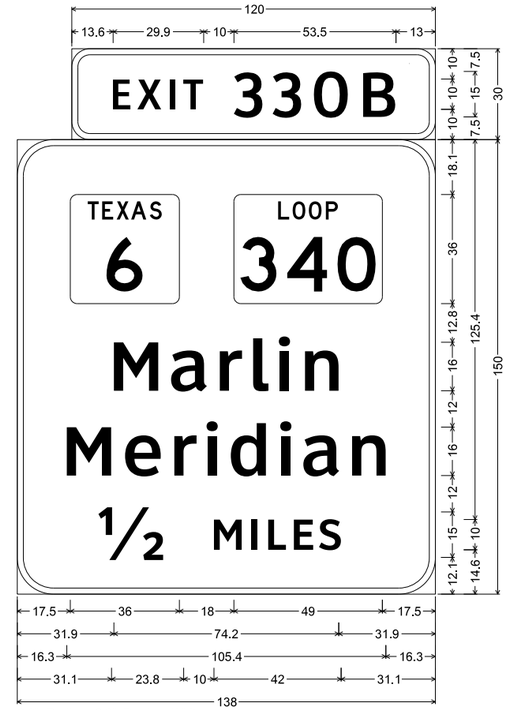
6.0" Radius, 2.0" Border, White on Green;
"EXIT", ClearviewHwy-4-W; "330B", ClearviewHwy-4-W;
12.0" Radius, 3.0" Border, White on Green;
State Highway 6 M1-6T1; State Highway 340 M1-6L3; "Marlin", ClearviewHwy-5-W-R; "Meridian", ClearviewHwy-5-W-R;
12.0" Radius, 3.0" Border, White on Green;
Arrow B-3 - 25.0" 45°;
12.0" Radius, 3.0" Border, Black on Yellow;
"EXIT", E; Arrow B-3 - 25.0" 45°; "ONLY", E;

LARGE SIGN No. 6
℄ IH 35 STA 29+05
SEE SIGNING SHEET 3
SEE GUIDE SIGN ELEVATION SHEET 2



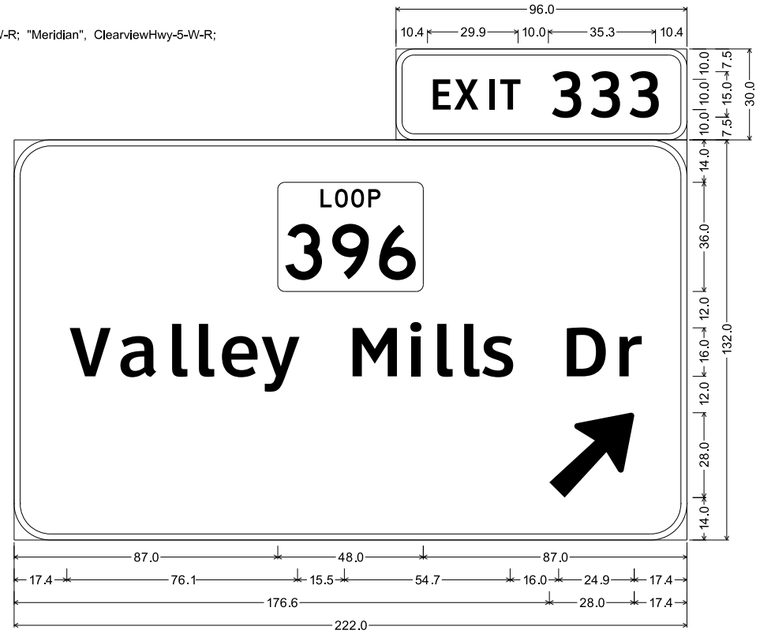
6.0" Radius, 2.0" Border, White on Green;
[EXIT] ClearviewHwy-4-W; [334] ClearviewHwy-4-W;
12.0" Radius, 2.0" Border, White on Green;
State Highway 2 M1-6L1; [18th - 17th Sts] ClearviewHwy-5-W-R; [1] ClearviewHwy-5-W-R;
[MILE] ClearviewHwy-5-W-R;

LARGE SIGN No. 7
℄ IH 35 STA 39+20
SEE SIGNING SHEET 4
SEE GUIDE SIGN ELEVATION SHEET 3



6.0" Radius, 2.0" Border, White on Green;
[EXIT] ClearviewHwy-4-W; [330B] ClearviewHwy-4-W;
12.0" Radius, 2.0" Border, White on Green;
State Highway 6 M1-6T1; State Highway 340 M1-6L3;
[Marlin] ClearviewHwy-5-W-R; [Meridian] ClearviewHwy-5-W-R;
[½] ClearviewHwy-5-W-R; [MILES] ClearviewHwy-5-W-R;

LARGE SIGN No. 9
℄ IH 35 STA 57+00
SEE SIGNING SHEET 6
SEE GUIDE SIGN ELEVATION SHEET 4



6.0" Radius, 2.0" Border, White on Green;
"EXIT", ClearviewHwy-4-W; "333", ClearviewHwy-4-W;

12.0" Radius, 2.0" Border, White on Green;
State Highway 396 M1-6L3; "Valley Mills", ClearviewHwy-5-W-R; "Dr", ClearviewHwy-5-W-R;
Arrow A-3 - 35.6" 45°;

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED
PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LARGE SIGN DETAILS

SHEET 2 OF 8

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1478
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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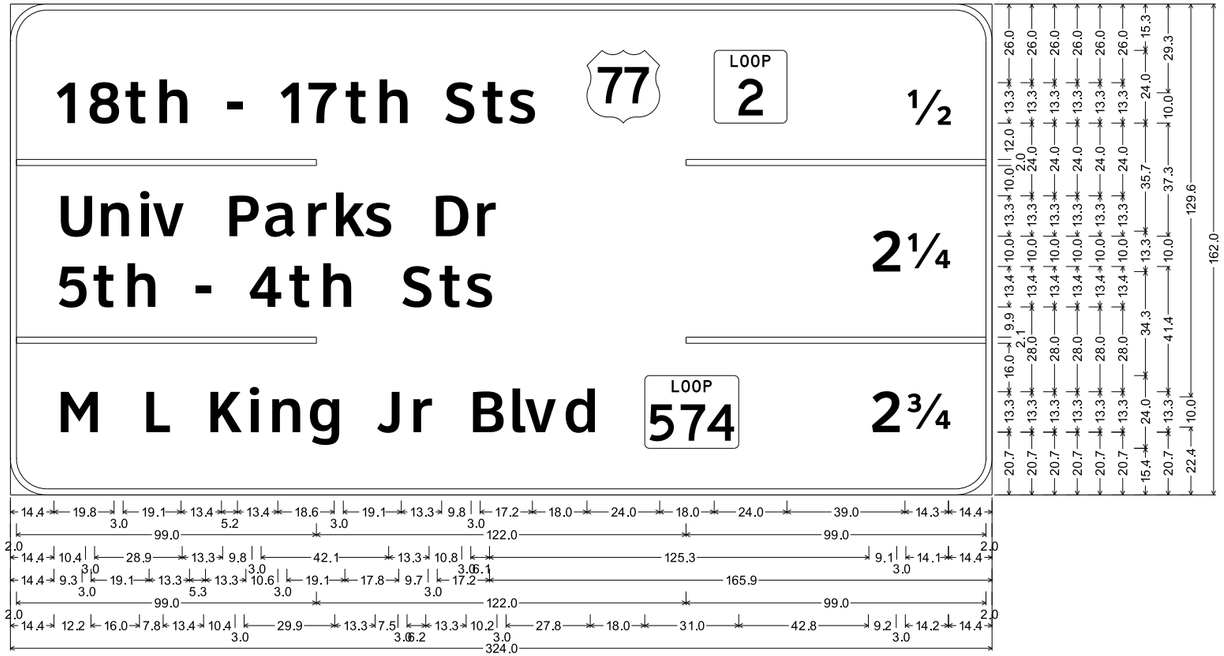
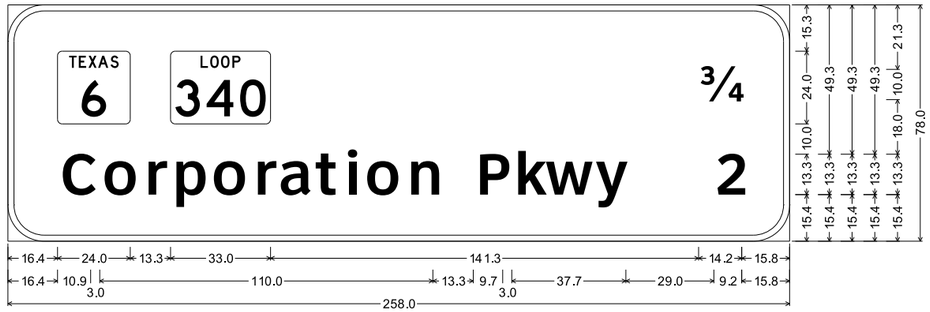


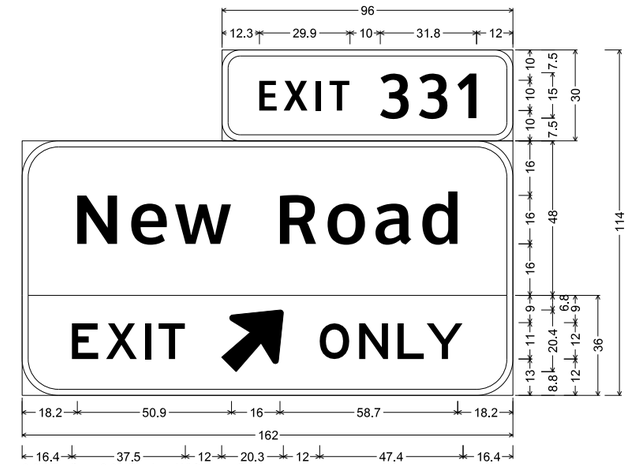
12.0" Radius, 2.0" Border, White on Green;
"18", ClearviewHwy-5-W-R; "th", ClearviewHwy-5-W-R; "-", ClearviewHwy-5-W-R; "17", ClearviewHwy-5-W-R; "th", ClearviewHwy-5-W-R;
"S", ClearviewHwy-5-W-R; "ts", ClearviewHwy-5-W-R; State Highway 2 M1-6L1; "½", ClearviewHwy-5-W-R; "U", ClearviewHwy-5-W-R;
"niv", ClearviewHwy-5-W-R; "P", ClearviewHwy-5-W-R; "arks", ClearviewHwy-5-W-R; "D", ClearviewHwy-5-W-R; "r", ClearviewHwy-5-W-R;
"5", ClearviewHwy-5-W-R; "th", ClearviewHwy-5-W-R; "-", ClearviewHwy-5-W-R; "4", ClearviewHwy-5-W-R; "th", ClearviewHwy-5-W-R; "S", ClearviewHwy-5-W-R;
"ts", ClearviewHwy-5-W-R; "2", ClearviewHwy-5-W-R; "¼", ClearviewHwy-5-W-R; "M", ClearviewHwy-5-W-R; "L", ClearviewHwy-5-W-R; "K", ClearviewHwy-5-W-R;
"ing", ClearviewHwy-5-W-R; "J", ClearviewHwy-5-W-R; "r", ClearviewHwy-5-W-R; "B", ClearviewHwy-5-W-R; "lvd", ClearviewHwy-5-W-R;
State Highway 574 M1-6L3; "", ClearviewHwy-5-W-R; "2", ClearviewHwy-5-W-R; "¾", ClearviewHwy-5-W-R;

LARGE SIGN NO. 10
℄ IH 35 STA 65+00
SEE SIGNING SHEET 7
SEE GUIDE SIGN ELEVATION SHEET 5



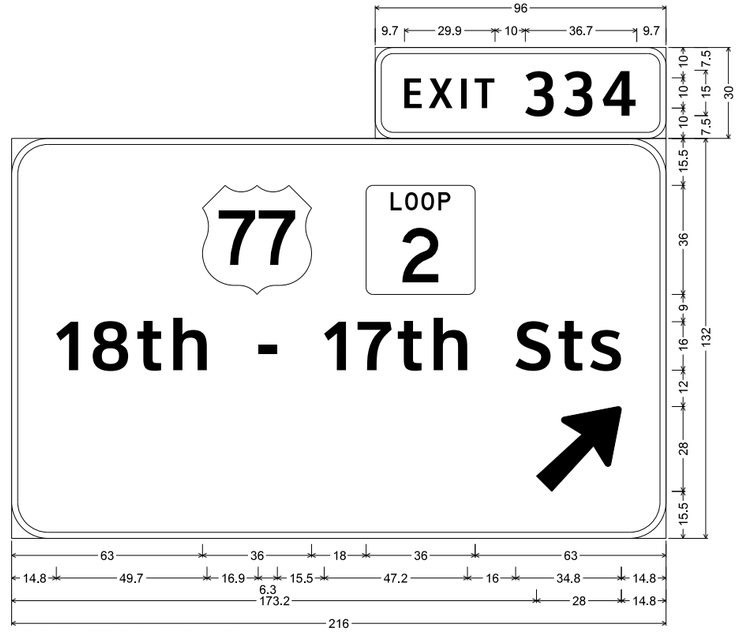
12.0" Radius, 2.0" Border, White on Green;
State Highway 6 M1-6T1; State Highway 340 M1-6L3; "C", ClearviewHwy-5-W-R; "orporation", ClearviewHwy-5-W-R;
"P", ClearviewHwy-5-W-R; "kwy", ClearviewHwy-5-W-R; "¾", ClearviewHwy-5-W-R; "2", ClearviewHwy-5-W-R;

LARGE SIGN NO. 11
℄ IH 35 STA 65+00
SEE SIGNING SHEET 7
SEE GUIDE SIGN ELEVATION SHEET 5



6.0" Radius, 2.0" Border, White on Green;
"EXIT", ClearviewHwy-4-W; "331", ClearviewHwy-4-W;
12.0" Radius, 2.0" Border, White on Green;
"New", ClearviewHwy-5-W-R; "Road", ClearviewHwy-5-W-R;
12.0" Radius, 2.0" Border, Black on Yellow;
"EXIT", E; Arrow B-3 - 25.0" 45°; "ONLY", E;

LARGE SIGN NO. 12
℄ IH 35 STA 82+00
SEE SIGNING SHEET 8
SEE GUIDE SIGN ELEVATION SHEET 6



6.0" Radius, 2.0" Border, White on Green;
[EXIT] ClearviewHwy-4-W; [334] ClearviewHwy-4-W;
12.0" Radius, 2.0" Border, White on Green;
US 77 M1-4; State Highway 2 M1-6L1; [18th - 17th Sts] ClearviewHwy-5-W-R; Arrow A-3 - 35.6" 45°;

LARGE SIGN NO. 15
℄ IH 35 STA 91+30
SEE SIGNING SHEET 9
SEE GUIDE SIGN ELEVATION SHEET 8

STATE OF TEXAS
JAIME A. SAENZ GARCIA
130696
LICENSED
PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
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HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LARGE SIGN DETAILS

SHEET 3 OF 8

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1479
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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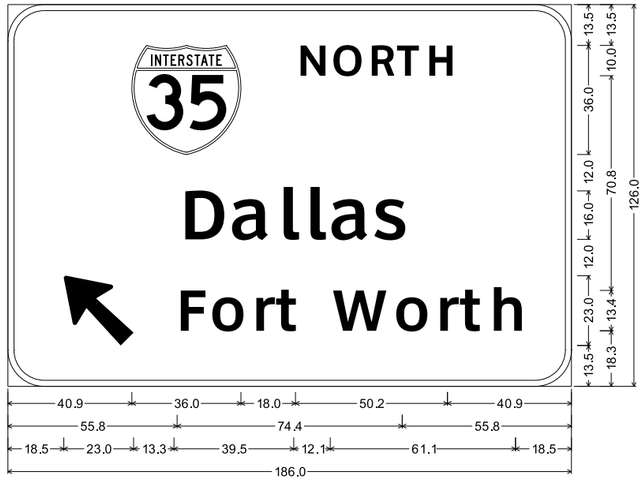
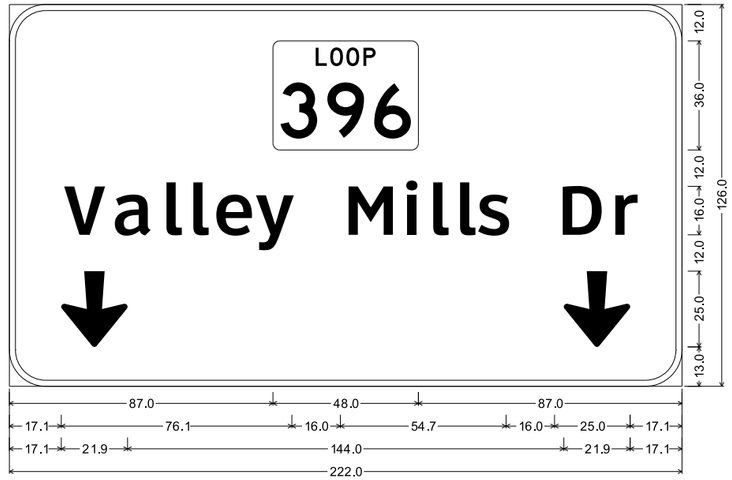


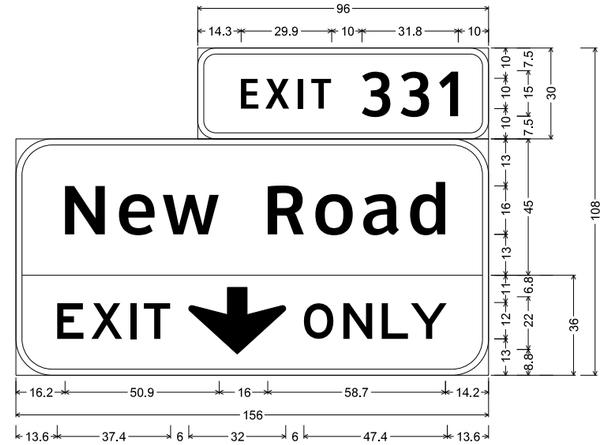
12.0" Radius, 2.0" Border, White on Green;
Interstate 35 M1-1; "NORTH", ClearviewHwy-5-W-R; "Dallas", ClearviewHwy-5-W-R;
Arrow A-2 - 29.3" 135°; "Fort Worth", ClearviewHwy-5-W-R;

LARGE SIGN NO. 13
℄ NBFR1 STA 2090+00
SEE SIGNING SHEET 9
SEE GUIDE SIGN ELEVATION SHEET 7



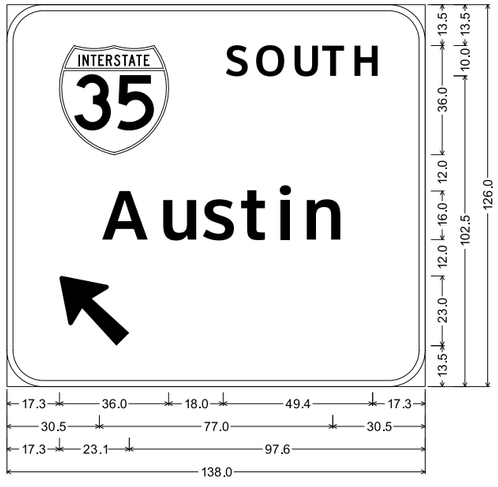
12.0" Radius, 2.0" Border, White on Green;
State Highway 396 M1-6L3; "Valley", ClearviewHwy-5-W-R; "Mills", ClearviewHwy-5-W-R;
"Dr", ClearviewHwy-5-W-R; Arrow B-3 - 25.0" 270°; Arrow B-3 - 25.0" 270°;

LARGE SIGN NO. 14
℄ NBFR1 STA 2090+00
SEE SIGNING SHEET 9
SEE GUIDE SIGN ELEVATION SHEET 7



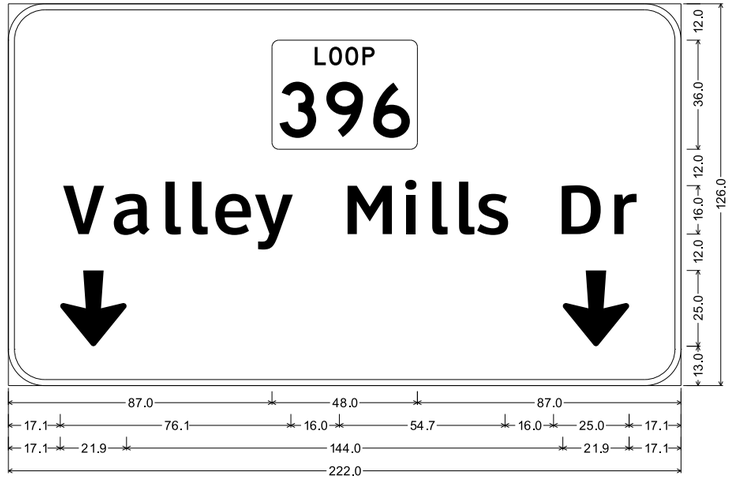
6.0" Radius, 2.0" Border, White on Green;
"EXIT", ClearviewHwy-4-W; "331", ClearviewHwy-4-W;
12.0" Radius, 2.0" Border, White on Green;
"New", ClearviewHwy-5-W-R; "Road", ClearviewHwy-5-W-R;
12.0" Radius, 2.0" Border, Black on Yellow;
"EXIT", E; Down Arrow 22 - 22.0" 270°; "ONLY", E;

LARGE SIGN NO. 16
℄ IH35 STA 102+50
SEE SIGNING SHEET 10
SEE GUIDE SIGN ELEVATION SHEET 9



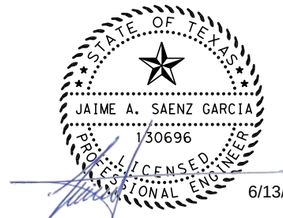
12.0" Radius, 2.0" Border, White on Green;
Interstate 35 M1-1; "SOUTH", ClearviewHwy-5-W-R;
"Austin", ClearviewHwy-5-W-R; Arrow A-2 - 29.3" 135°;

LARGE SIGN NO. 17
℄ SBFR2 STA 1107+90
SEE SIGNING SHEET 10
SEE GUIDE SIGN ELEVATION SHEET 10



12.0" Radius, 2.0" Border, White on Green;
State Highway 396 M1-6L3; "Valley", ClearviewHwy-5-W-R; "Mills", ClearviewHwy-5-W-R;
"Dr", ClearviewHwy-5-W-R; Arrow B-3 - 25.0" 270°; Arrow B-3 - 25.0" 270°;

LARGE SIGN NO. 18
℄ SBFR2 STA 1107+90
SEE SIGNING SHEET 10
SEE GUIDE SIGN ELEVATION SHEET 10



6/13/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
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HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LARGE SIGN DETAILS

SHEET 4 OF 8

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1480
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\PMDT1_LARGE_SIGN_004.dgn
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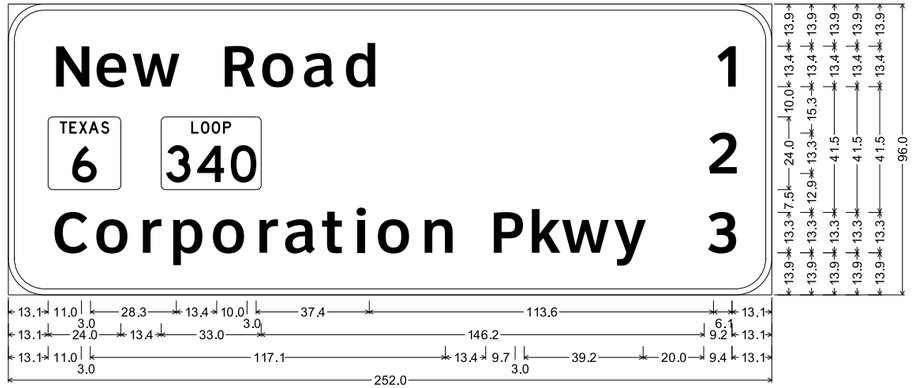
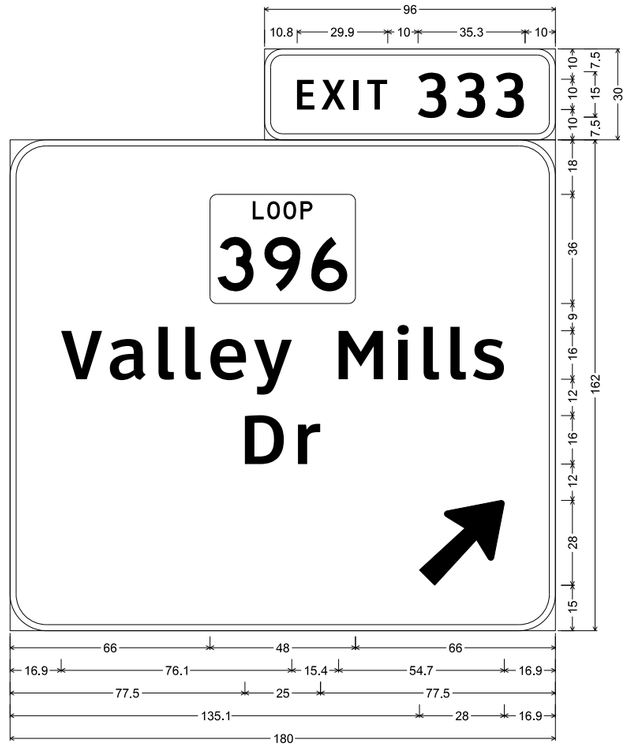


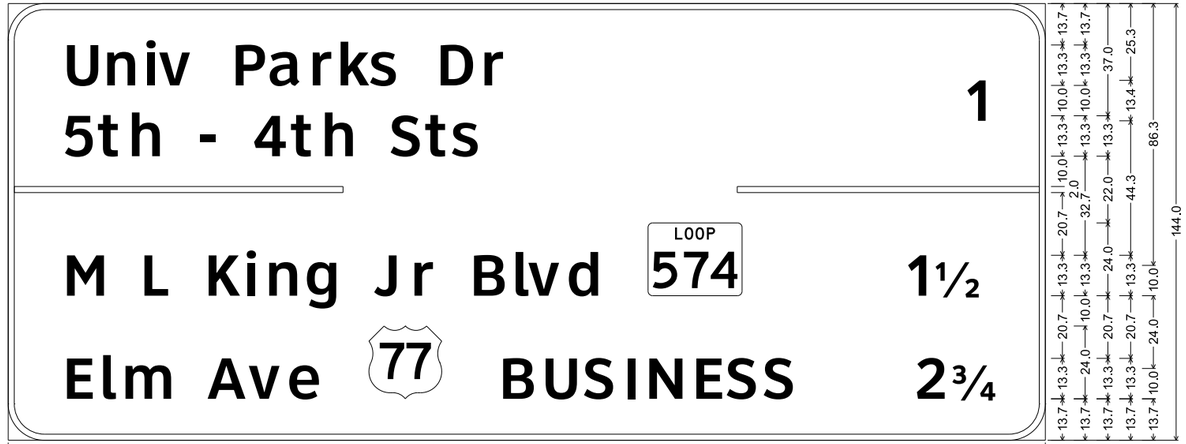
12.0" Radius, 2.0" Border, White on Green;
"N", ClearviewHwy-5-W; "ew", ClearviewHwy-5-W; "R", ClearviewHwy-5-W; "oad", ClearviewHwy-5-W;
"1", ClearviewHwy-5-W; State Highway 6 M1-6T1; State Highway 340 M1-6L3; "2", ClearviewHwy-5-W;
"C", ClearviewHwy-5-W; "orporation", ClearviewHwy-5-W; "P", ClearviewHwy-5-W; "kwy", ClearviewHwy-5-W;
"3", ClearviewHwy-5-W;

LARGE SIGN No. 19
℄ IH35 STA 128+50
SEE SIGNING SHEET 12
SEE GUIDE SIGN ELEVATION SHEET 11



6.0" Radius, 2.0" Border, White on Green;
[EXIT] ClearviewHwy-4-W; [333] ClearviewHwy-4-W;
12.0" Radius, 2.0" Border, White on Green;
State Highway 396 M1-6L3; [Valley Mills] ClearviewHwy-5-W-R;
[Dr] ClearviewHwy-5-W-R; Arrow A-3 - 35.6" 45°;

LARGE SIGN No. 21
℄ IH35 STA 138+00
SEE SIGNING SHEET 13
SEE GUIDE SIGN ELEVATION SHEET 12



12.0" Radius, 2.0" Border, White on Green;
"U", ClearviewHwy-5-W-R; "niv", ClearviewHwy-5-W-R; "Parks", ClearviewHwy-5-W-R; "Dr", ClearviewHwy-5-W-R; "5th", ClearviewHwy-5-W-R; "-", ClearviewHwy-5-W-R;
"4th", ClearviewHwy-5-W-R; "Sts", ClearviewHwy-5-W-R; "1 ", ClearviewHwy-5-W-R; "M", ClearviewHwy-5-W-R; "L", ClearviewHwy-5-W-R; "King", ClearviewHwy-5-W-R;
"Jr", ClearviewHwy-5-W-R; "Blvd", ClearviewHwy-5-W-R; State Highway 574 M1-6L3; " 1", ClearviewHwy-5-W-R; "½", ClearviewHwy-5-W-R; "Elm", ClearviewHwy-5-W-R;
"Ave", ClearviewHwy-5-W-R; "BUSINESS", ClearviewHwy-5-W-R; "2", ClearviewHwy-5-W-R; "¾", ClearviewHwy-5-W-R;

LARGE SIGN No. 20
℄ IH35 STA 128+50
SEE SIGNING SHEET 12
SEE GUIDE SIGN ELEVATION SHEET 11

JAIME A. SAENZ GARCIA
130696
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

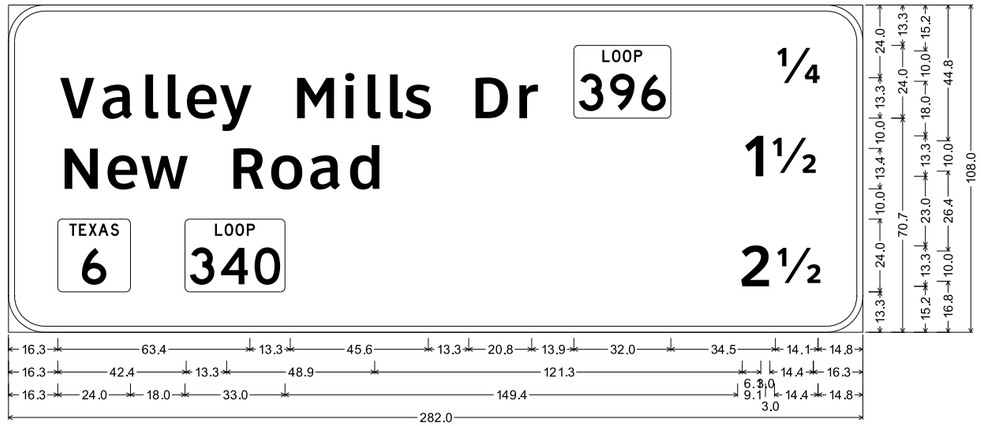
IH 35 FROM S LP 340 TO 12TH ST

LARGE SIGN DETAILS

SHEET 5 OF 8

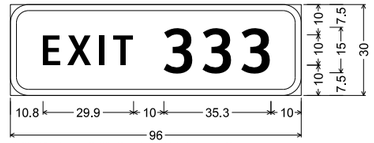
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1481
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\PMDT1_LARGE_SIGN_005.dgn
DATE: 6/13/2024 4:59:26 PM USER:



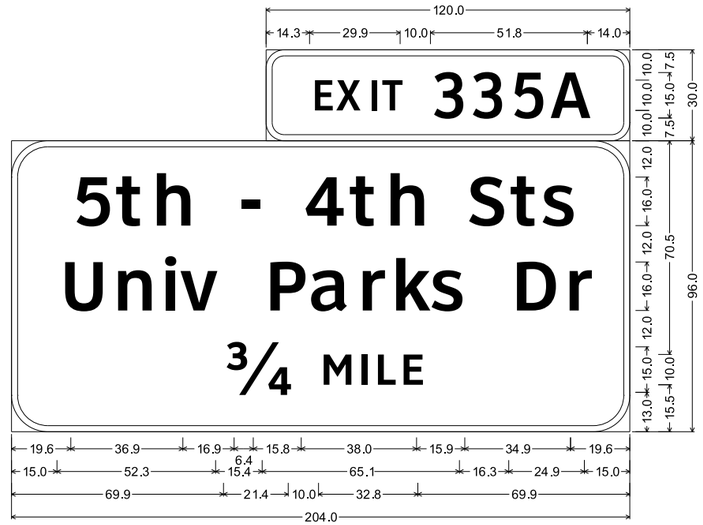
12.0" Radius, 2.0" Border, White on Green;
"Valley", ClearviewHwy-5-W-R; "Mills", ClearviewHwy-5-W-R; "Dr ", ClearviewHwy-5-W-R; State Highway 396 M1-6L3;
"New", ClearviewHwy-5-W-R; "Road", ClearviewHwy-5-W-R; State Highway 6 M1-6T1; State Highway 340 M1-6L3;
"1/4", ClearviewHwy-5-W-R; "1", ClearviewHwy-5-W-R; "1/2", ClearviewHwy-5-W-R; "2", ClearviewHwy-5-W-R; "1/2", ClearviewHwy-5-W-R;

LARGE SIGN No. 22
℄ IH35 STA 151+00
SEE SIGNING SHEET 14
SEE GUIDE SIGN ELEVATION SHEET 13



6.0" Radius, 2.0" Border, White on Green;
[EXIT] ClearviewHwy-4-W;
[333] ClearviewHwy-4-W;

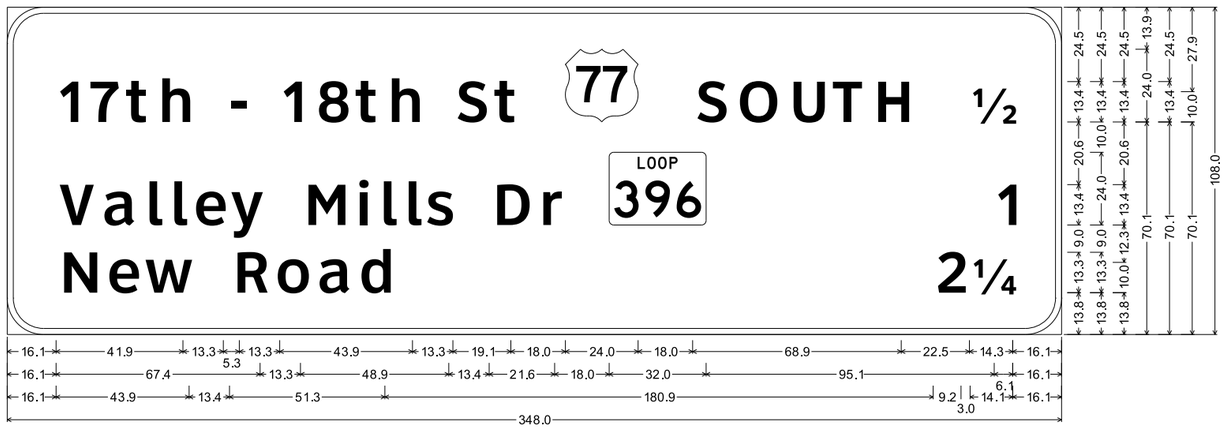
LARGE SIGN No. 24
℄ IH35 STA 166+00
SEE SIGNING SHEET 15



6.0" Radius, 2.0" Border, White on Green;
"EXIT", ClearviewHwy-4-W; "335A", ClearviewHwy-4-W;

12.0" Radius, 2.0" Border, White on Green;
"5th - 4th Sts", ClearviewHwy-5-W-R; "Univ Parks Dr", ClearviewHwy-5-W-R;
"3/4", ClearviewHwy-5-W-R; "MILE", ClearviewHwy-5-W-R;

LARGE SIGN No. 23
℄ IH35 STA 151+00
SEE SIGNING SHEET 14
SEE GUIDE SIGN ELEVATION SHEET 13



12.0" Radius, 2.0" Border, White on Green;
"17th", ClearviewHwy-5-W; "-", ClearviewHwy-5-W; "18th", ClearviewHwy-5-W; "St", ClearviewHwy-5-W; US 77 M1-4; "SOUTH", ClearviewHwy-5-W; "1/2", ClearviewHwy-5-W;
"Valley", ClearviewHwy-5-W; "Mills", ClearviewHwy-5-W; "Dr", ClearviewHwy-5-W; State Highway 396 M1-6L3; "1", ClearviewHwy-5-W; "New", ClearviewHwy-5-W;
"Road", ClearviewHwy-5-W; "2", ClearviewHwy-5-W; "1/4", ClearviewHwy-5-W;

LARGE SIGN No. 25
3/4 MILE FROM ℄ IH35 STA 156+50
SEE SIGNING SHEET 15

JAIME A. SAENZ GARCIA
130696
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LARGE SIGN DETAILS

SHEET 6 OF 8

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1482
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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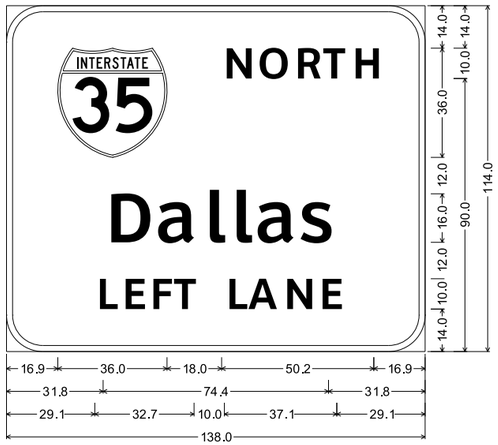
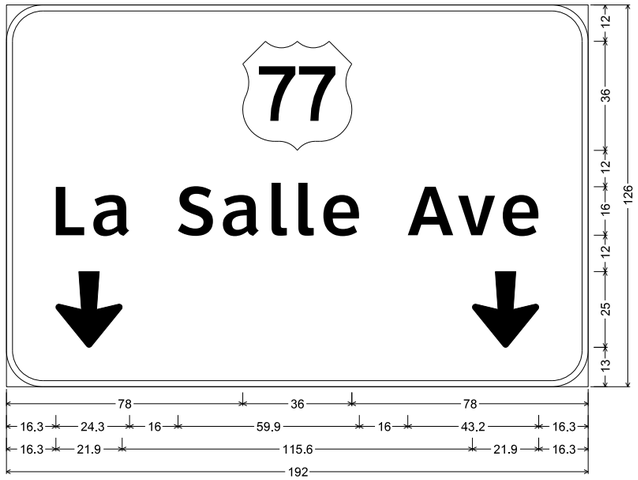


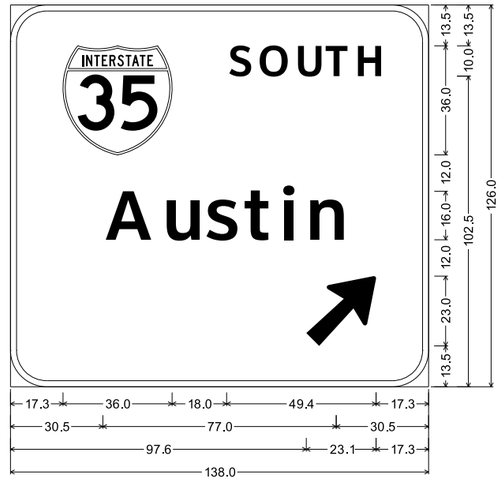
12.0" Radius, 2.0" Border, White on Green;
Interstate 35 M1-1; "NORTH", ClearviewHwy-5-W-R;
"Dallas", ClearviewHwy-5-W-R; "LEFT", ClearviewHwy-5-W-R;
"LANE", ClearviewHwy-5-W-R;

LARGE SIGN No. 26
℄ VMEB STA 17+20
SEE SIGNING SHEET 21
SEE GUIDE SIGN ELEVATION SHEET 14



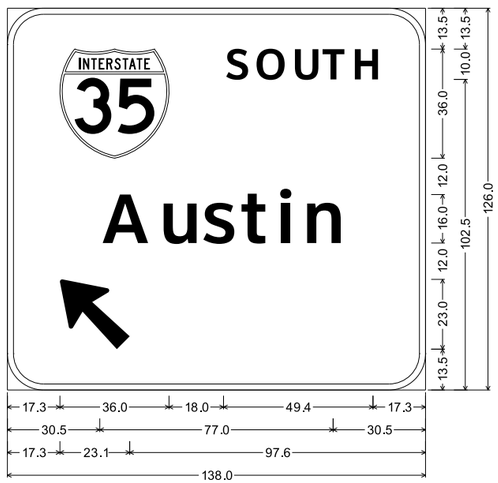
12.0" Radius, 2.0" Border, White on Green;
US 77 M1-4; "La", ClearviewHwy-5-W-R; "Salle", ClearviewHwy-5-W-R;
"Ave", ClearviewHwy-5-W-R; Arrow B-3 - 25.0" 270°; Arrow B-3 - 25.0" 270°;

LARGE SIGN No. 27
℄ VMEB STA 17+20
SEE SIGNING SHEET 21
SEE GUIDE SIGN ELEVATION SHEET 14



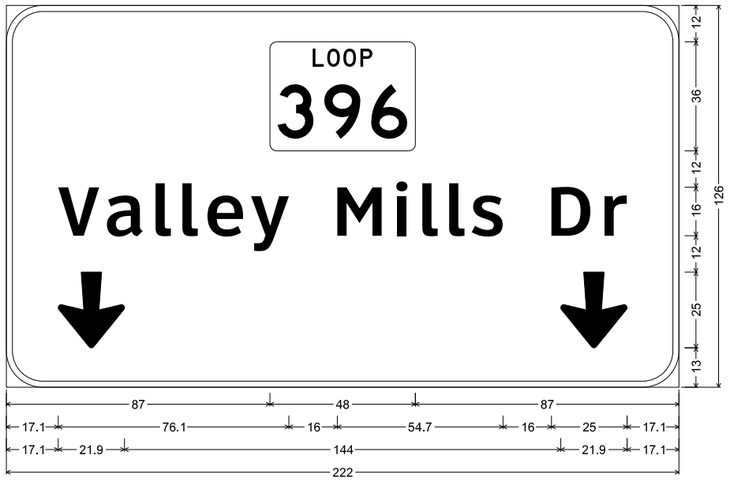
12.0" Radius, 2.0" Border, White on Green;
Interstate 35 M1-1; "SOUTH", ClearviewHwy-5-W-R;
"Austin", ClearviewHwy-5-W-R; Arrow A-2 - 29.3" 45°;

LARGE SIGN No. 28
℄ VMEB STA 17+20
SEE SIGNING SHEET 21
SEE GUIDE SIGN ELEVATION SHEET 14



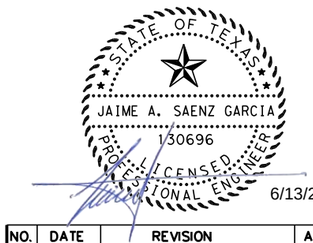
12.0" Radius, 2.0" Border, White on Green;
Interstate 35 M1-1; "SOUTH", ClearviewHwy-5-W-R;
"Austin", ClearviewHwy-5-W-R; Arrow A-2 - 29.3" 135°;

LARGE SIGN No. 29
℄ VMWB STA 20+90
SEE SIGNING SHEET 21
SEE GUIDE SIGN ELEVATION SHEET 15



12.0" Radius, 2.0" Border, White on Green;
State Highway 396 M1-6L3; "Valley", ClearviewHwy-5-W-R; "Mills", ClearviewHwy-5-W-R;
"Dr", ClearviewHwy-5-W-R; Arrow B-3 - 25.0" 270°; Arrow B-3 - 25.0" 270°;

LARGE SIGN No. 30
℄ VMWB STA 20+90
SEE SIGNING SHEET 21
SEE GUIDE SIGN ELEVATION SHEET 15



6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LARGE SIGN DETAILS

SHEET 7 OF 8

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1483

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\PMDT1_LARGE_SIGN_007.dgn
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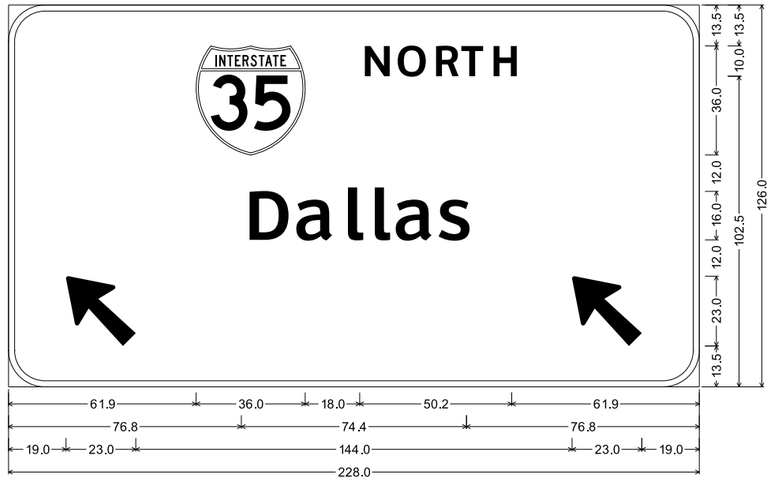
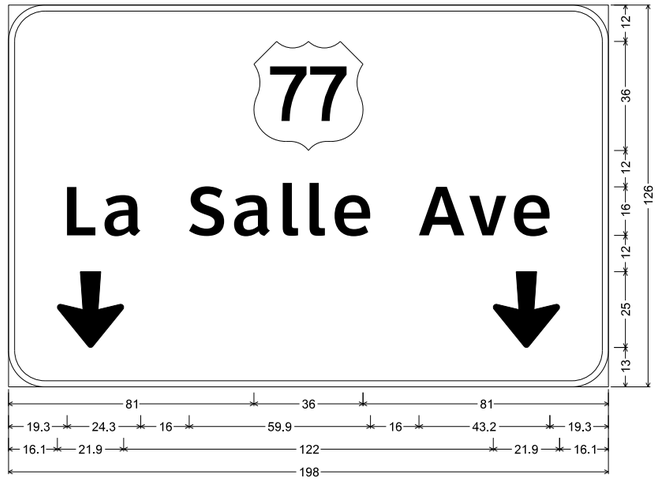


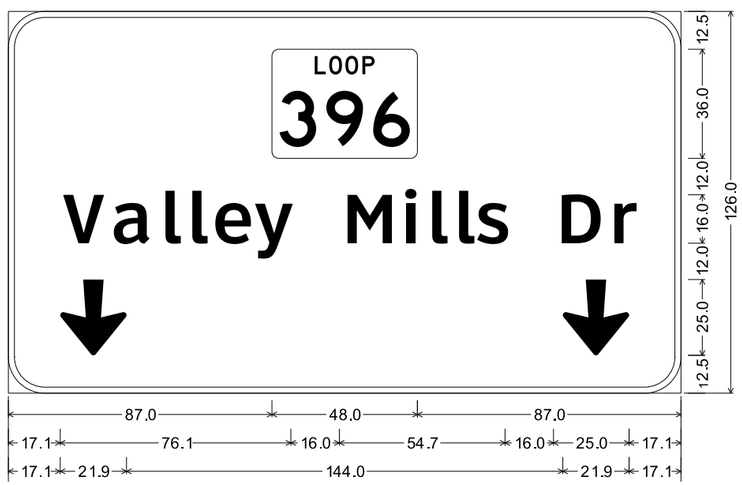
12.0" Radius, 2.0" Border, White on Green;
Interstate 35 M1-1; "NORTH", ClearviewHwy-5-W-R; "Dallas", ClearviewHwy-5-W-R; Arrow A-2 - 29.3" 135°;
Arrow A-2 - 29.3" 135°;

LARGE SIGN No. 31
℄ VMEB STA 24+90
SEE SIGNING SHEET 22
SEE GUIDE SIGN ELEVATION SHEET 16

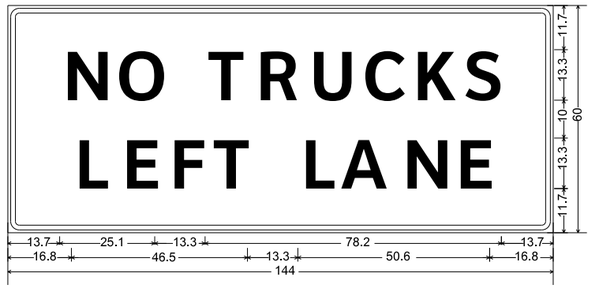


12.0" Radius, 2.0" Border, White on Green;
US 77 M1-4; "La", ClearviewHwy-5-W-R; "Salle", ClearviewHwy-5-W-R;
"Ave", ClearviewHwy-5-W-R; Arrow B-3 - 25.0" 270°; Arrow B-3 - 25.0" 270°;

LARGE SIGN No. 32
℄ VMEB STA 24+90
SEE SIGNING SHEET 22
SEE GUIDE SIGN ELEVATION SHEET 16



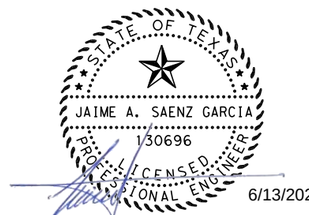
LARGE SIGN No. 34
℄ VMWB STA 27+80
SEE SIGNING SHEET 22
SEE GUIDE SIGN ELEVATION SHEET 17



R3-28_114x48;
1.3" Border, 0.8" Indent, Black on White;
"NO", E; "TRUCKS", E; "LEFT", E; "LANE", E;

LARGE SIGN No. 35
℄ VMEB STA 39+20
SEE SIGNING SHEET 22
SEE GUIDE SIGN ELEVATION SHEET 2

LARGE SIGN No. 33
℄ VMEB STA 29+05
SEE SIGNING SHEET 22
SEE GUIDE SIGN ELEVATION SHEET 3



6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

LARGE SIGN DETAILS

SHEET 8 OF 8

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1484
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\PMDT1_LARGE_SIGN_008.dgn
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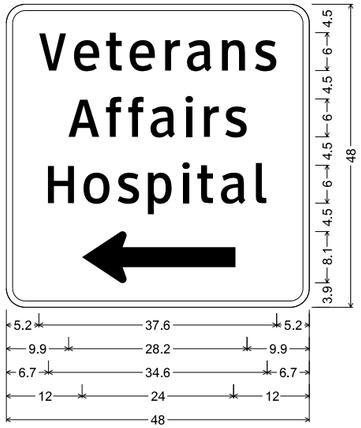
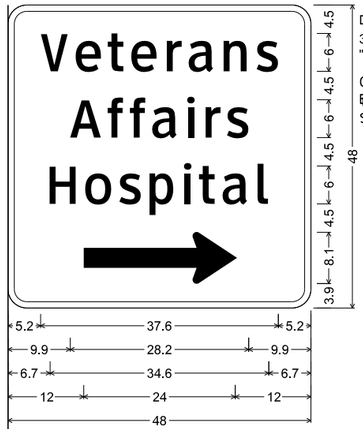


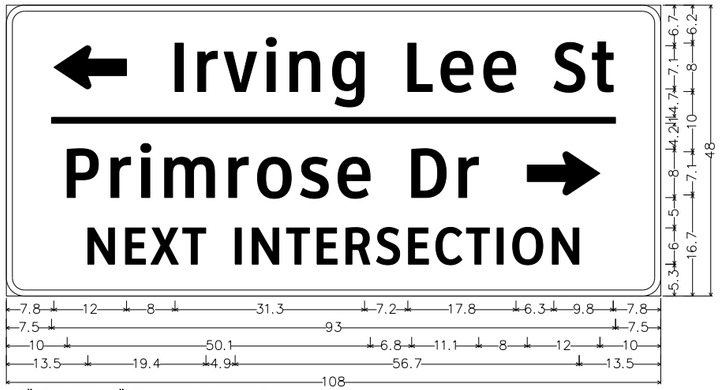
D25-2TL_48x48;
3.0" Radius, 1.0" Border, White on Green; "Veterans", ClearviewHwy-3-W; "Affairs", ClearviewHwy-3-W; "Hospital", ClearviewHwy-3-W; Standard Arrow Custom 24.0" X 8.1" 180°;

GROUND MOUNT SIGN NO. 1
@ NBFR1 STA 2021+00
SEE SIGNING SHEET 3



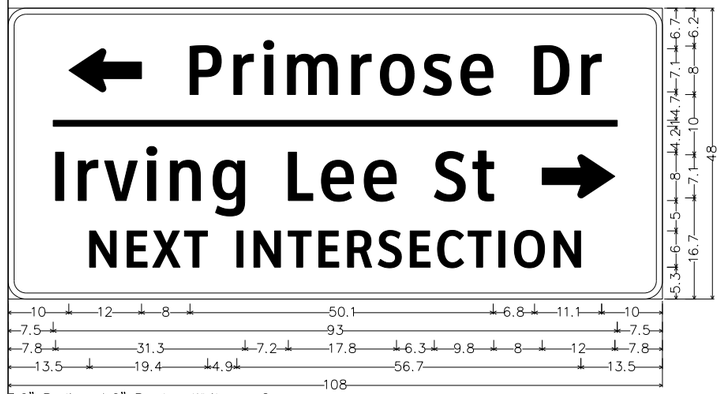
D25-2TR_48x48;
3.0" Radius, 1.0" Border, White on Green; "Veterans", ClearviewHwy-3-W; "Affairs", ClearviewHwy-3-W; "Hospital", ClearviewHwy-3-W; Standard Arrow Custom 24.0" X 8.1" 0°;

GROUND MOUNT SIGN NO. 2
@ SBFR1 STA 1043+00
SEE SIGNING SHEET 5



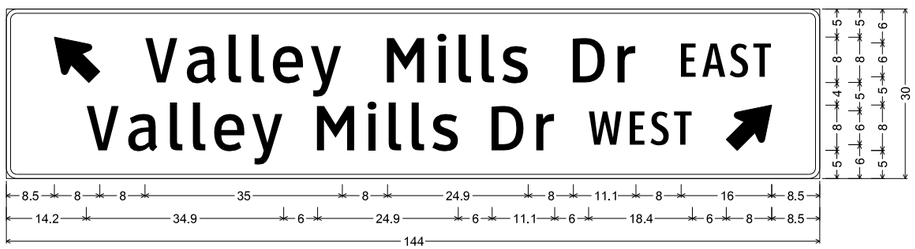
3.0" Radius, 1.0" Border, White on Green;
Standard Arrow Custom 12.0" X 7.1" 180°; [Irving Lee St] ClearviewHwy-3-W; [Primrose Dr] ClearviewHwy-3-W;
Standard Arrow Custom 12.0" X 7.1" 0°; [NEXT INTERSECTION] ClearviewHwy-3-W;

GROUND MOUNT SIGN NO. 3
@ NBFR1 STA 2078+00
SEE SIGNING SHEET 8



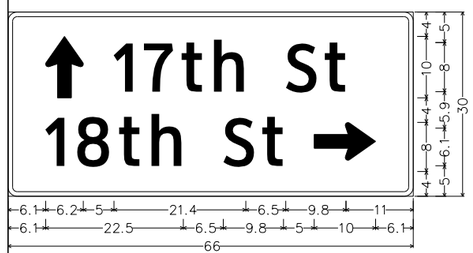
3.0" Radius, 1.0" Border, White on Green;
Standard Arrow Custom 12.0" X 7.1" 180°; [Primrose Dr] ClearviewHwy-3-W; [Irving Lee St] ClearviewHwy-3-W;
Standard Arrow Custom 12.0" X 7.1" 0°; [NEXT INTERSECTION] ClearviewHwy-3-W;

GROUND MOUNT SIGN NO. 4
@ SBFR1 STA 1092+50
SEE SIGNING SHEET 9



1.9" Radius, 0.8" Border, White on Green;
Standard Arrow Custom 10.0" X 7.1" 135°; "Valley", ClearviewHwy-3-W; "Mills", ClearviewHwy-3-W; "Dr", ClearviewHwy-3-W; "EAST", ClearviewHwy-2-W; "Valley", ClearviewHwy-3-W; "Mills", ClearviewHwy-3-W; "Dr", ClearviewHwy-3-W; "WEST", ClearviewHwy-2-W; Standard Arrow Custom 10.0" X 7.1" 45°;

GROUND MOUNT SIGN NO. 5
GROUND MOUNT SIGN NO. 6
@ SBFR2 STA 1104+85
SEE SIGNING SHEET 10



1.5" Radius, 0.8" Border, White on Green;
[18th St] ClearviewHwy-3-W; Standard Arrow Custom 10.0" X 6.1" 0°;
Standard Arrow Custom 10.0" X 6.1" 90°; [17th St] ClearviewHwy-3-W;

GROUND MOUNT SIGN NO. 7
@ NBFR2 STA 2131+00
SEE SIGNING SHEET 12

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

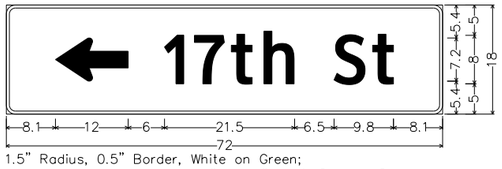
HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

GROUND MOUNTED SIGN DETAILS

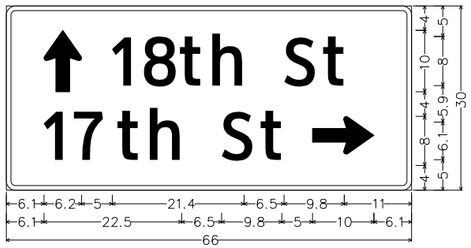
SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1485
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35



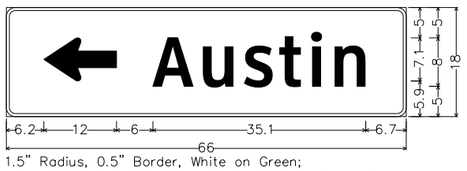
1.5" Radius, 0.5" Border, White on Green;
Standard Arrow Custom 12.0" X 7.1" 180{; [17th St] ClearviewHwy-3-W;

GROUND MOUNT SIGN NO. 8
℄ NBFR2 STA 2142+50
SEE SIGNING SHEET 13



1.5" Radius, 0.8" Border, White on Green;
[18th St] ClearviewHwy-3-W; Standard Arrow Custom 10.0" X 6.1" 0{;
Standard Arrow Custom 10.0" X 6.1" 90{; [17th St] ClearviewHwy-3-W;

GROUND MOUNT SIGN NO. 10
℄ SBFR2 STA 1151+00
SEE SIGNING SHEET 14



1.5" Radius, 0.5" Border, White on Green;
Standard Arrow Custom 12.0" X 7.1" 180{; [Austin] ClearviewHwy-3-W;

GROUND MOUNT SIGN NO. 12
℄ XNEW STA 18+00
SEE SIGNING SHEET 17

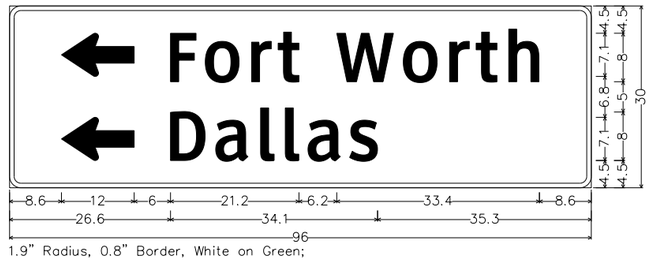
GROUND MOUNT SIGN NO. 14
℄ XIRV STA 14+50
SEE SIGNING SHEET 19

GROUND MOUNT SIGN NO. 16
℄ VMWB STA 21+50
SEE SIGNING SHEET 21

GROUND MOUNT SIGN NO. 19
℄ X17 STA 16+30
SEE SIGNING SHEET 26

12.0" Radius, 2.0" Border, White on Green;
[Beverly Hills] ClearviewHwy-5-W-R; [EXIT] ClearviewHwy-5-W-R; [333] ClearviewHwy-5-W-R;

GROUND MOUNT SIGN NO. 9
℄ IH35 STA 150+00
SEE SIGNING SHEET 14



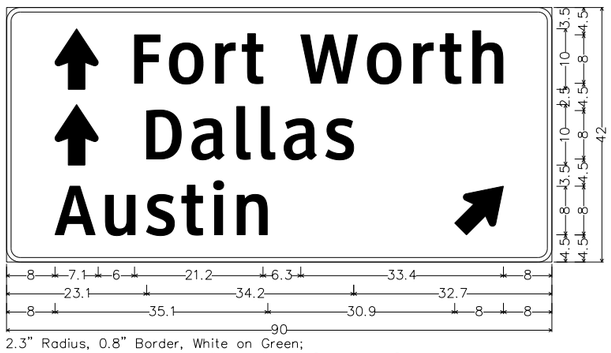
1.9" Radius, 0.8" Border, White on Green;
Standard Arrow Custom 12.0" X 7.1" 180{; Standard Arrow Custom 12.0" X 7.1" 180{;
[Fort Worth] ClearviewHwy-3-W; [Dallas] ClearviewHwy-3-W;

GROUND MOUNT SIGN NO. 11
℄ XNEW STA 18+00
SEE SIGNING SHEET 17

GROUND MOUNT SIGN NO. 13
℄ XIRV STA 14+50
SEE SIGNING SHEET 19

GROUND MOUNT SIGN NO. 17
℄ VMEB STA 24+00
SEE SIGNING SHEET 22

GROUND MOUNT SIGN NO. 18
℄ X18 STA 14+80
SEE SIGNING SHEET 23



2.3" Radius, 0.8" Border, White on Green;
Standard Arrow Custom 10.0" X 7.1" 90{; [Fort Worth] ClearviewHwy-3-W;
Standard Arrow Custom 10.0" X 7.1" 90{; [Dallas] ClearviewHwy-3-W; [Austin] ClearviewHwy-3-W;
Standard Arrow Custom 10.0" X 7.1" 45{;

GROUND MOUNT SIGN NO. 15
℄ VMEB STA 14+00
SEE SIGNING SHEET 20

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED
PROFESSIONAL ENGINEER
10/18/2023

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

GROUND MOUNTED SIGN DETAILS

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1486
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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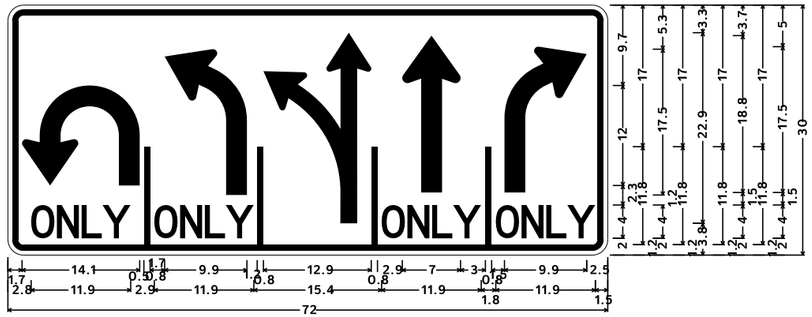
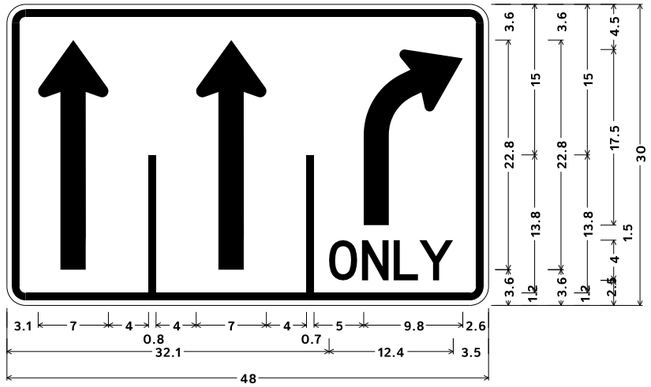
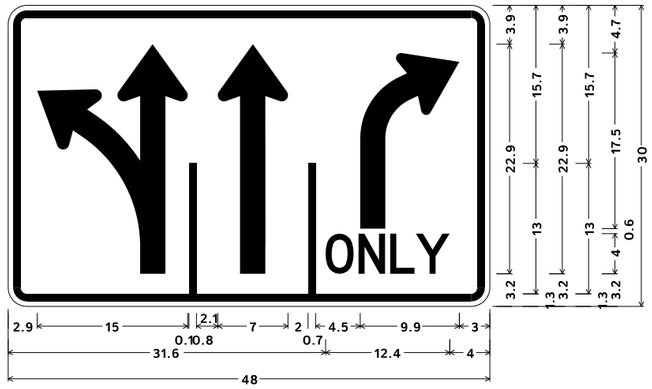
DATE: 10/18/2023 1:23:45 PM USER:



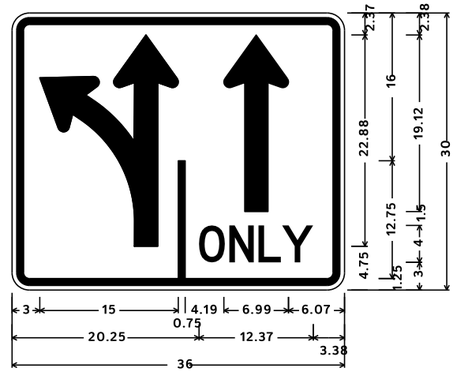
R3-8ULMSR 72x30; 1.9" Radius, 0.8" Border, 0.5" Indent, Black on White;
U ir=3.5, s=2.5; ONLY D 30I spacing; L ir=4.25, s=2.5; ONLY D 30I spacing; B2L ir=13.25, s=2;
C h=18.875, s=2.5; ONLY D 30I spacing; L ir=4.25, s=2.5; ONLY D 30I spacing;



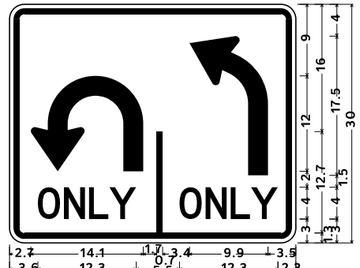
R3-8SSR 48X30; 1.9" Radius, 0.8" Border,
0.5" Indent, Black on White;
K ir=13.25, s=2.5; K ir=13.25, s=2.5;
L ir=4.25, s=2.5; (ONLY) D 50I spacing;



R3-8MSR 48x30; 1.9" Radius, 0.8" Border,
0.5" Indent, Black on White;
( ) E Mod; ( ) D; ( ) D; ( ) D; ( ) D; ( ) D; ( ) D;
K ir=13.25, s=2.5; ( ) D; ( ) D; ( ) D;
( ) D; K ir=13.25, s=2.5; L ir=4.25, s=2.5; (ONLY
) D 50I spacing; ( ) D; ( ) D;
( ) E Mod; ( ) E Mod; ( ) Red E Mod;



R3-8MS(2)_36x30;
1.88" Radius, 0.75" Border, 0.50" Indent, Black on, White;
M ir=13.25, s=2.5; S h=19.125, s=2.5;
"ONLY", D 50% spacing;



R3-8UL 36x30; 1.9" Radius, 0.8" Border,
0.5" Indent, Black on White;
U ir=3.5, s=2.5; (ONLY) D 50I spacing;
L ir=4.25, s=2.5;
(ONLY) D 50I spacing;

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
PROFESSIONAL ENGINEER
LICENSED

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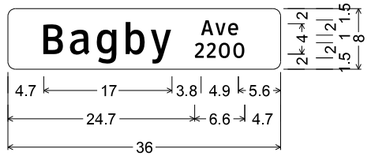
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

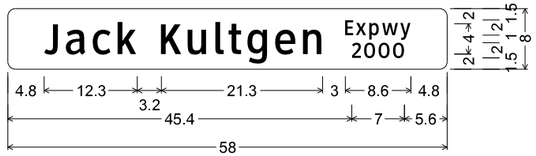
SMALL SIGN DETAILS

SHEET 1 OF 2

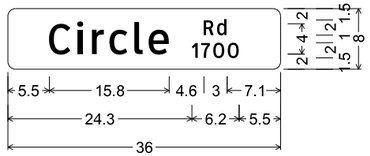
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1487
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35



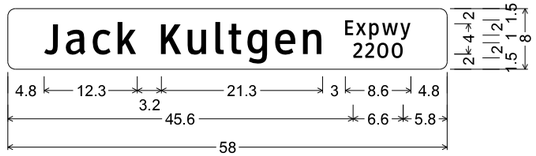
1.0" Radius, No border, White on Green;
[Bagby] White ClearviewHwy-3-W;
[Ave] White ClearviewHwy-3-W;
[2200] White ClearviewHwy-3-W;



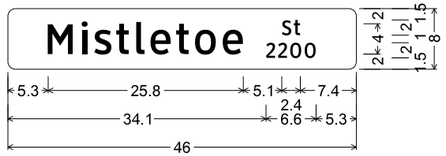
1.0" Radius, No border, White on Green;
[Jack Kultgen] White ClearviewHwy-3-W;
[Expwy] White ClearviewHwy-3-W;
[2000] White ClearviewHwy-3-W;



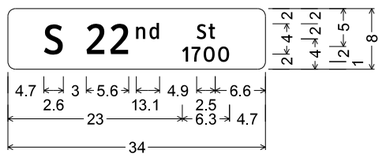
1.0" Radius, No border, White on Green;
[Circle] White ClearviewHwy-3-W;
[Rd] White ClearviewHwy-3-W;
[1700] White ClearviewHwy-3-W;



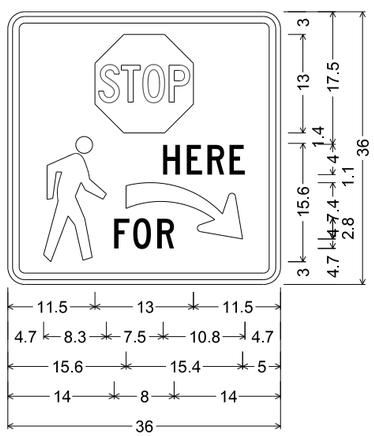
1.0" Radius, No border, White on Green;
[Jack Kultgen] White ClearviewHwy-3-W;
[Expwy] White ClearviewHwy-3-W;
[2200] White ClearviewHwy-3-W;



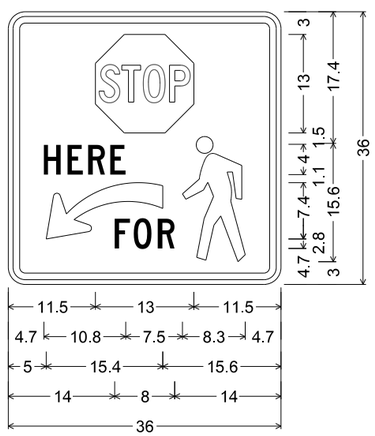
1.0" Radius, No border, White on Green;
[Mistletoe] White ClearviewHwy-3-W;
[St] White ClearviewHwy-3-W;
[2200] White ClearviewHwy-3-W;



1.0" Radius, No border, White on Green;
[S 22] White ClearviewHwy-3-W;
[nd] White ClearviewHwy-3-W;
[St] White ClearviewHwy-3-W;
[1700] White ClearviewHwy-3-W;



R1-5bR_36x36;
2.3" Radius, 0.9" Border, 0.6" Indent, Black on White;
R1-1;
"HERE", C 2K specified length;
"FOR", C 2K specified length;



R1-5bL_36x36;
2.3" Radius, 0.9" Border, 0.6" Indent, Black on White;
R1-1;
"HERE", C 2K specified length;
"FOR", C 2K specified length;

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED
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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SMALL SIGN DETAILS

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1488

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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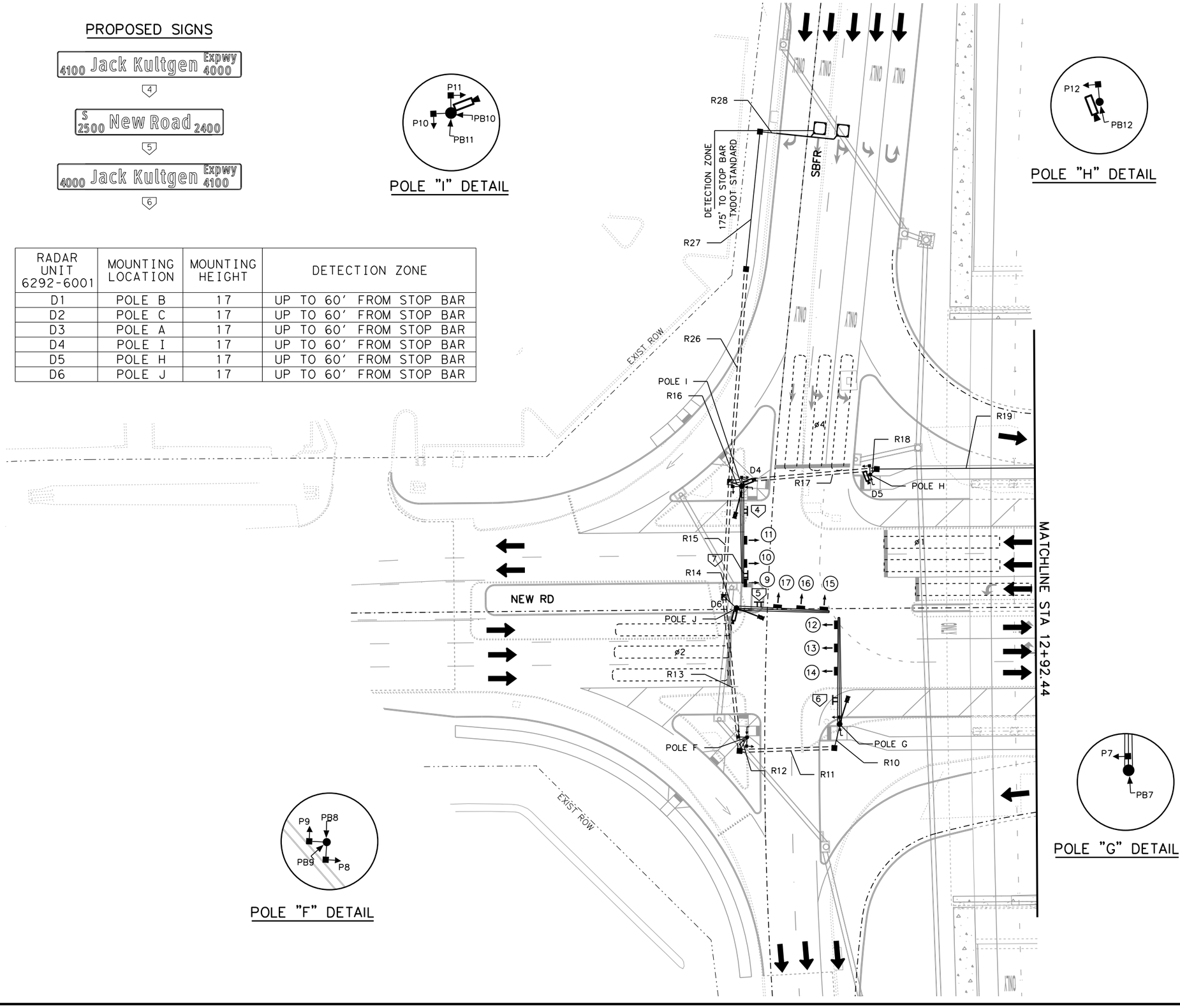
DATE: 10/18/2023 1:23:53 PM
USER:

PROPOSED SIGNS

POLE "I" DETAIL

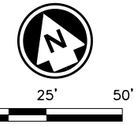
RADAR UNIT 6292-6001	MOUNTING LOCATION	MOUNTING HEIGHT	DETECTION ZONE
D1	POLE B	17	UP TO 60' FROM STOP BAR
D2	POLE C	17	UP TO 60' FROM STOP BAR
D3	POLE A	17	UP TO 60' FROM STOP BAR
D4	POLE I	17	UP TO 60' FROM STOP BAR
D5	POLE H	17	UP TO 60' FROM STOP BAR
D6	POLE J	17	UP TO 60' FROM STOP BAR



POLE "F" DETAIL

POLE "H" DETAIL

POLE "G" DETAIL



LEGEND:

- D# RVSD NUMBER
- R# RUN NUMBER
- (#) SIGNAL HEAD NUMBER
- [#] SIGN NUMBER
- P# PED SIGNAL HEAD NUMBER
- PB# PED PUSH BUTTON NUMBER
- CONTROLLER WITH BATTERY BACKUP
- HORIZONTAL SIGNAL HEAD
- VERTICAL SIGNAL HEAD
- SIGNAL POLE
- PEDESTRIAN PUSH BUTTON
- PEDESTRIAN SIGNAL HEAD
- LUMINAIRE (250W EQ)(LED)
- GROUND BOX TY A (122311) W/APRON
- GROUND BOX TY D (162922) W/APRON
- METER LOOP SRVC DISCNT
- BORE
- TRENCH
- PROP SIGN
- VIVDS
- VIVDS DETECTION ZONE
- LOOP DETECTOR

Robert Kouba

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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PROPOSED SIGNAL LAYOUT

SBFR AT NEW RD

SHEET 1 OF 3

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1489
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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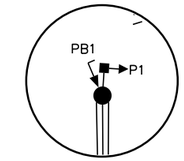
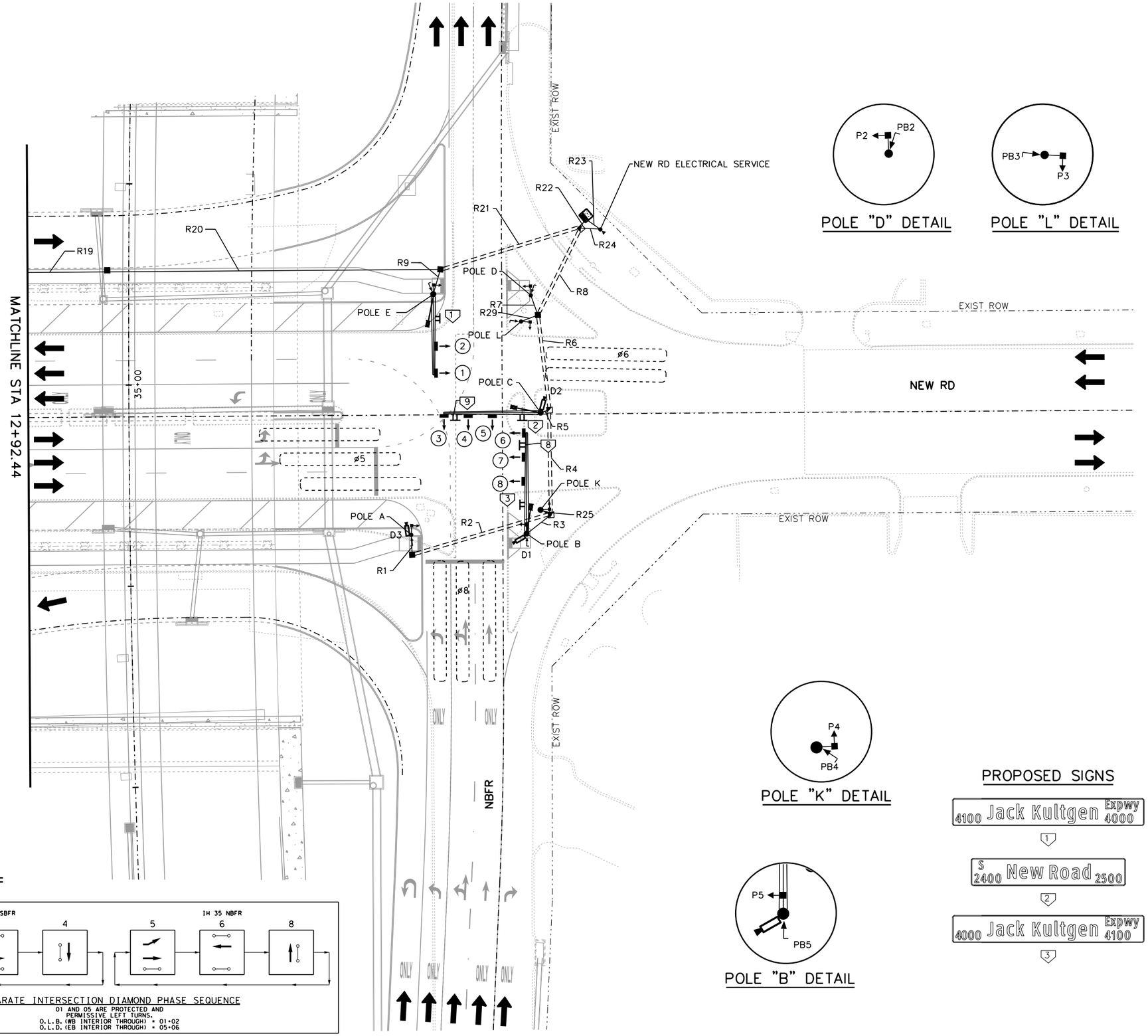
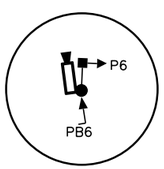


POLE "E" DETAIL

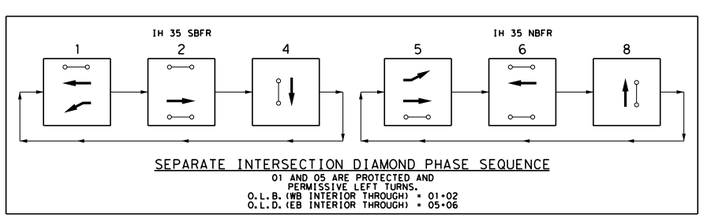


POLE "D" DETAIL

POLE "L" DETAIL



POLE "A" DETAIL



SEPARATE INTERSECTION DIAMOND PHASE SEQUENCE

01 AND 05 ARE PROTECTED AND PERMISSIVE LEFT TURNS.
O.L.B. (WB INTERIOR THROUGH) = 01-02
O.L.D. (EB INTERIOR THROUGH) = 05-06

POLE "K" DETAIL

POLE "B" DETAIL

LEGEND:

- D# RVSD NUMBER
- R# RUN NUMBER
- (#) SIGNAL HEAD NUMBER
- #/ SIGN NUMBER
- P# PED SIGNAL HEAD NUMBER
- PB# PED PUSH BUTTON NUMBER
- CONTROLLER WITH BATTERY BACKUP
- HORIZONTAL SIGNAL HEAD
- SIGNAL POLE
- PEDESTRIAN PUSH BUTTON
- PEDESTRIAN SIGNAL HEAD
- LUMINAIRE (250W EQ)(LED)
- GROUND BOX TY A (122311) W/APRON
- GROUND BOX TY D (162922) W/APRON
- METER LOOP SRVC DISCNT
- BORE
- TRENCH
- PROP SIGN
- VIVDS
- VIVDS DETECTION ZONE
- LOOP DETECTOR

PROPOSED SIGNS

Robert Kouba

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ROB A. KOUBA
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IH 35 FROM S LP 340 TO 12TH ST

PROPOSED SIGNAL LAYOUT

NBFR AT NEW RD

SHEET 2 OF 3

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1490
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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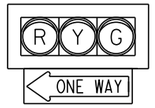
DATE: 10/18/2023 1:24:23 PM USER:

SUMMARY OF CONDUIT AND CONDUCTORS

RUN# (LF)	CONDT (PVC) SCHD 40 (2") 0618-6023 LF	CONDT (PVC) SCHD 40 (3") 0618-6029 LF	CONDT (PVC) SCHD 80(2")BORE 0618-6047 LF	CONDT (PVC) SCHD 80(3")BORE 0618-6054 LF	TRF SIG CBL (TYA) 12AWG 4CONDR 0684-6009 LF	TRF SIG CBL (TYA) 12AWG 7CONDR 0684-6012 LF	TRF SIG CBL (TYA) 12AWG 16CONDR 0684-6021 LF	TRF SIG CBL (TYA) 12AWG 2CONDR 0684-6007 LF	ELEC CONDR NO.6 BARE 0620-6009 LF	ELEC CONDR NO.6 INSULATED 0620-6010 LF	ELEC CONDR NO.8 BARE 0620-6007 LF	TRAY CABLE NO.8 (3 CONDR) 0621-6004 LF	VIVDS CABLE 6306-6007 LF
R1 = 20	20				20	20					20		20
R2 = 75			150		75	75					150		75
R3 = 20		40			20	20	40				40	20	20
R4 = 60				120	180	180	120				120	60	120
R5 = 20		40					20				40	20	20
R6 = 50				100	150	150	150				100	100	150
R7 = 15	15				15	15					15		
R8 = 55				110	275	275	165				110	110	165
R9 = 20	40				20	20	20				40	20	
R10 = 15	30				15	15	15				30	15	
R11 = 55				110	55	55	55				110	55	
R12 = 10	10				20	20					10		
R13 = 85				170	255	255	85				170	85	
R14 = 10	20						10				20	10	10
R15 = 65				130	195	195	130				130	130	65
R16 = 10	20				20	20	20				20	10	10
R17 = 80				160	400	400	320	80			160	240	160
R18 = 10	10				10	10					10		10
R19 = 130		260			780	780	520	130			260	390	390
R20 = 170		340			1020	1020	680	170			340	510	510
R21 = 80				160	480	480	320	80			160	320	240
R22 = 10		30			110	110	70	10			30		60
R23 = 25	25								25	50			
R24 = 10	10										10	60	
R25 = 10	10				10	10					10		
R26 = 115			115					115			115		
R27 = 75	75							75			75		
R28 = 10	10							10			10		
R29 = 10	10				10	10					10		
POLE A					5	10							30
POLE B					5	20	40					30	30
POLE C							20					30	30
POLE D					5	10							
POLE E					5	10	20					30	
POLE F					10	20							
POLE G					5	10	20					30	
POLE H					5	10							30
POLE I					10	20	40					30	30
POLE J							40					30	30
POLE K					5	10							
POLE L					5	10							
TOTAL	305	710	265	1060	4195	4265	2920	670	25	50	2315	2335	2205

SIGNAL HEAD INVENTORY



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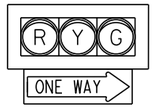
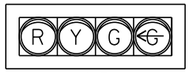


1, 12

2, 5, 10, 13, 14, 15, 16, 17



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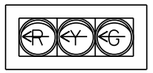
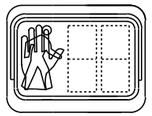


3, 6, 9


P1-P12

SUMMARY OF TRAFFIC SIGNAL HEADS

SIGNAL HEAD NUMBER	BACKPLATE W/REFL BRDR (3 SEC) ALUM ITEM 0682-6054 EA	BACKPLATE W/REFL BRDR (5 SEC)ALUM ITEM 0682-6055 EA	PED SIG SEC (LED)(COUNTDOWN) ITEM 0682-6018 EA	VEH SIG SEC (12 IN) LED (RED ARW) ITEM 0682-6006 EA	VEH SIG SEC (12 IN) LED (RED) ITEM 0682-6005 EA	VEH SIG SEC (12 IN) LED (YEL ARW) ITEM 0682-6004 EA	VEH SIG SEC (12 IN) LED (YELLOW) ITEM 0682-6003 EA	VEH SIG SEC (12 IN) LED (GRN ARW) ITEM 0682-6002 EA	VEH SIG SEC (12 IN) LED (GREEN) ITEM 0682-6001 EA
1	1				1		1		1
2	1				1		1		1
3	1			1		1		1	
4		1			1		1	1	1
5	1				1		1		1
6	1			1		1		1	
7		1			1		1	1	1
8	1				1		1		1
9	1			1		1		1	
10	1				1		1		1
11	1				1		1		1
12	1				1		1		1
13	1				1		1		1
14	1				1		1		1
15	1				1		1		1
16	1				1		1		1
17	1				1		1		1
P1			1						
P2			1						
P3			1						
P4			1						
P5			1						
P6			1						
P7			1						
P8			1						
P9			1						
P10			1						
P11			1						
P12			1						
TOTAL	15	2	12	3	14	3	14	5	14

SIGN INVENTORY

R10-3EL (9x15)

PB1, PB5, PB7 PB10, PB12

R10-3ER (9x15)

PB2, PB3, PB4, PB6, PB8, PB9 PB11

R3-8

8 9

R3-5L

7

TRAFFIC SIGNAL POLES

SIGNAL POLE	DESCRIPTION	ITEM NO.
A	PED POLE ASSEMBLY (21')	687-6001
B	INS TRF SIG PL AM (S) 1 ARM (48') LUM	686-6051
C	INS TRF SIG PL AM (S) 1 ARM (48') LUM	686-6051
D	PED POLE ASSEMBLY	687-6001
E	INS TRF SIG PL AM (S) 1 ARM (40') LUM	686-6043
F	PED POLE ASSEMBLY	687-6001
G	INS TRF SIG PL AM (S) 1 ARM (55') LUM	686-6059
H	PED POLE ASSEMBLY (21')	687-6001
I	INS TRF SIG PL AM (S) 1 ARM (48') LUM	686-6051
J	INS TRF SIG PL AM (S) 1 ARM (44') LUM	686-6047
K	PED POLE ASSEMBLY	687-6001
L	PED POLE ASSEMBLY	687-6001

SUMMARY OF SIGNAL POLE FOUNDATIONS

SIGNAL POLE	FOUNDATION TYPE	DRILL SHAFT (TRF SIG POLE) (24 IN) SUBSIDIARY TO ITEM 687 LF	DRILL SHAFT (TRF SIG POLE) (36 IN) ITEM 416-6032 LF	DRILL SHAFT (TRF SIG POLE) (48 IN) ITEM 416-6034 LF
POLE A	24-A	6		
POLE B	36-A		14	
POLE C	36-A		14	
POLE D	24-A	6		
POLE E	36-A		14	
POLE F	24-A	6		
POLE G	48-A			22
POLE H	24-A	6		
POLE I	36-A		14	
POLE J	36-A		14	
POLE K	24-A	6		
POLE L	24-A	6		
	TOTAL	36	70	22

NOTES (CITY OF WACO)

1) WINDFOILS TO BE INSTALLED ON ALL MAST ARMS NEXT TO END OF ARM SIGNAL HEAD. DAMPING PLATE NOT REQUIRED ON MAST WITH LENGTH GREATER THAN 50 FT LENGTH.
2) CONTACT CITY OF WACO FOR OVERHEAD STREET NAME SIGN DETAILS.
3) ALL MAST ARMS AND LUMINAIRES SHOULD BE MOUNTED PERPENDICULAR TO ROADWAY.
4) THE LOCATION SHOWN FOR THE SIGNAL POLES, DETECTION ZONE, CONDUIT RUNS AND GROUND BOXES IS APPROXIMATE. THE EXACT LOCATION WILL BE DETERMINED IN THE FIELD BY THE ENGINEER IN COORDINATION WITH THE WACO DISTRICT TRAFFIC SECTION.
5) PEDESTRIAN SIGNAL HEADS SHALL BE POSITIONED AND ADJUSTED TO PROVIDE MAXIMUM VISIBILITY AT THE BEGINNING OF CROSSWALK.

SUMMARY OF MISCELLANEOUS ITEMS

ITEM NO	DESCRIPTION	UNIT	QUANTITY
624-6002	GROUND BOX TY A (122311) W/APRON	EA	9
624-6010	GROUND BOX TY D (162922) W/APRON	EA	5
628-6187	ELC SRV TY D 120/240 070 (NS) SS (E) PS (U)	EA	1
680-6002	INSTALL HWY. TRF SIG (ISOLATED)	EA	1
688-6001	PED DETECT PUSH BUTTON (APS)	EA	12
688-6003	PED DETECTOR CONTROLLER UNIT	EA	1
688-6004	VEH LOOP DETECT (SAWCUT)	LF	85
690-6027	REMOVAL OF SIGNAL RELATED SIGNS	EA	10
6036-6001	VIVDS PROSR SYS	EA	1
6036-6002	VIVDS CAM ASSY FXD LENS	EA	6
*	CONTRACTOR TO SOLE SOURCE ITERIS M60 CONTROLLER & CABINET AND ITERIS VIDEO DETECTION EQUIPMENT FOR COMPATIBILITY WITH CITY OF WACO SYSTEMS		

Robert Kouba

STATE OF TEXAS
ROB A. KOUBA
85865
PROFESSIONAL ENGINEER

10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNAL SUMMARY

NEW ROAD

SHEET 3 OF 3

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1491
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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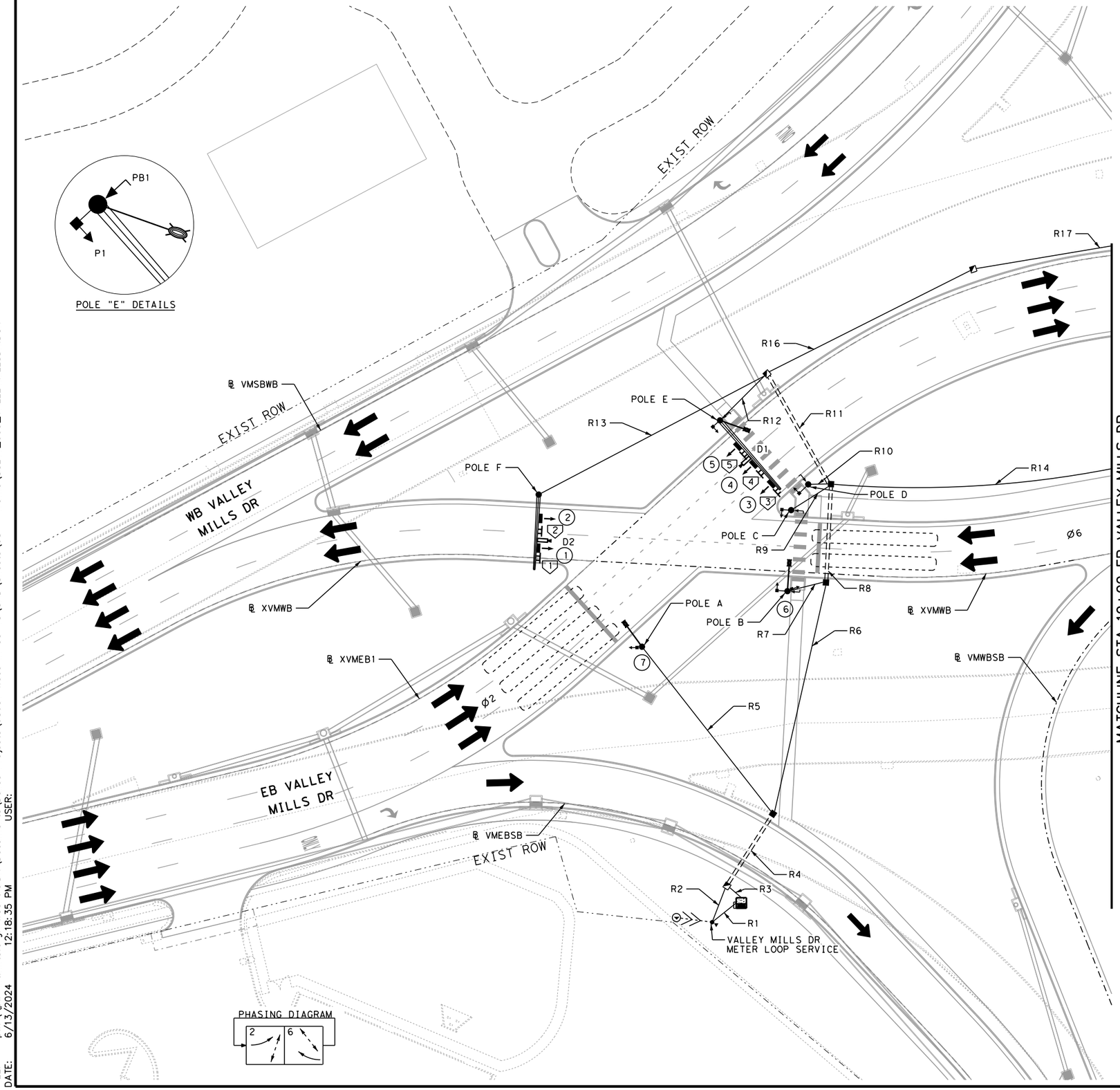

LEGEND:

- R# RUN NUMBER
- (#) SIGNAL HEAD NUMBER
- #| SIGN NUMBER
- P# PED SIGNAL HEAD NUMBER
- PB# PED PUSH BUTTON NUMBER
- CONTROLLER WITH BATTERY BACKUP
- HORIZONTAL SIGNAL HEAD
- VERTICAL SIGNAL HEAD
- SIGNAL POLE
- PEDESTRIAN PUSH BUTTON
- PEDESTRIAN SIGNAL HEAD
- LUMINAIRE (250W EQ)(LED)
- GROUND BOX TY A (122311) W/APRON
- GROUND BOX TY D (162922) W/APRON
- JUNCTION BOX
- METER LOOP SRVC DISCNT
- POWER SOURCE
- BORE
- TRENCH
- RIGID METAL CONDUIT
- PROP SIGN
- VIVDS
- D# VIVDS ID
- VIVDS DETECTION ZONE

STATE OF TEXAS
EDUARDO I. ADAME
126153
LICENSED PROFESSIONAL ENGINEER

Eduardo Adame, P.E. 6/13/2024

NO.	DATE	REVISION	APPROVED

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The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PROPOSED SIGNAL LAYOUT

VALLEY MILLS DR

SHEET 1 OF 3

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1492
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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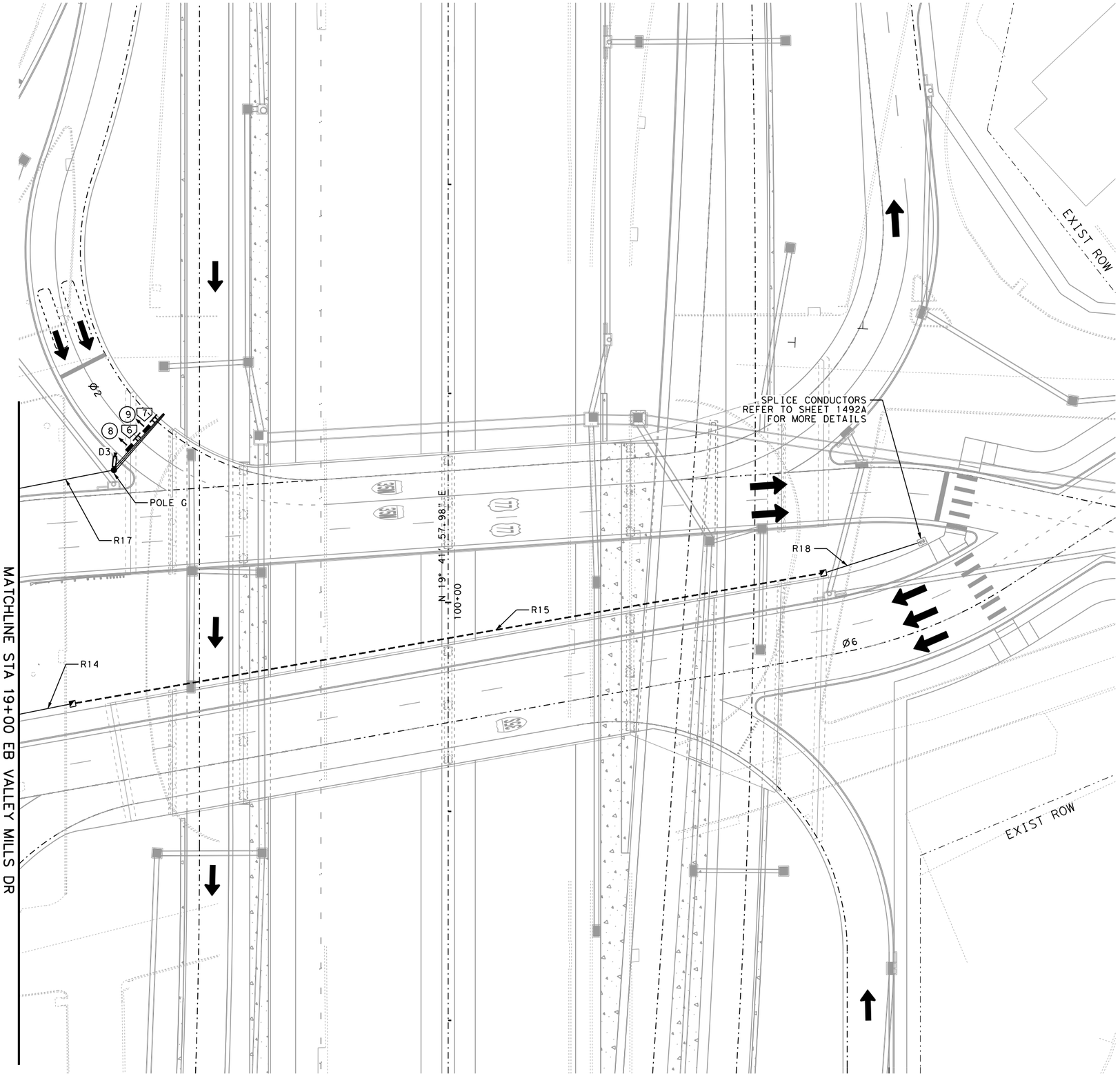
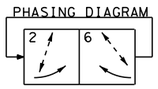
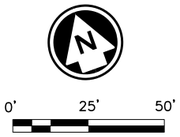


PHASING DIAGRAM





LEGEND:

- R# RUN NUMBER
- (#) SIGNAL HEAD NUMBER
- #| SIGN NUMBER
- P# PED SIGNAL HEAD NUMBER
- PB# PED PUSH BUTTON NUMBER
- CONTROLLER WITH BATTERY BACKUP
- HORIZONTAL SIGNAL HEAD
- VERTICAL SIGNAL HEAD
- SIGNAL POLE
- PEDESTRIAN PUSH BUTTON
- PEDESTRIAN SIGNAL HEAD
- LUMINAIRE (250W EQ)(LED)
- GROUND BOX TY A (122311) W/APRON
- GROUND BOX TY D (162922) W/APRON
- JUNCTION BOX
- METER LOOP SRVC DISCNT
- POWER SOURCE
- BORE
- TRENCH
- RIGID METAL CONDUIT
- PROP SIGN
- VIVDS
- D# VIVDS ID
- VIVDS DETECTION ZONE

STATE OF TEXAS
EDUARDO I. ADAME
126153
LICENSED
PROFESSIONAL ENGINEER

Eduardo Adame, P.E. 8/23/2024

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PROPOSED SIGNAL LAYOUT

VALLEY MILLS DR

SHEET 2 OF 3

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1492A
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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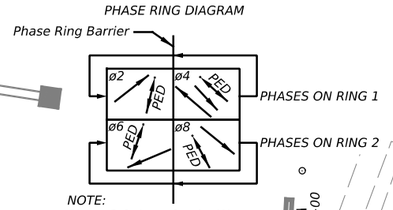
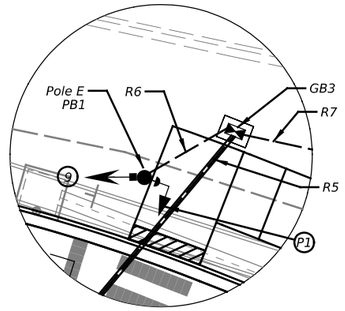
100% SUBMITTAL

DW: JAB | CK: NRM | DW: JAB | CK: NRM

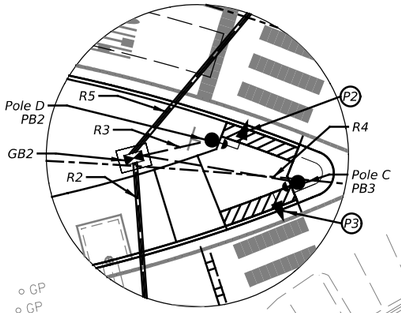
PHASE RING DIAGRAM



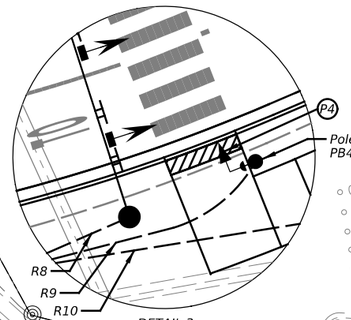
NOTE:
Phase 2 & 4 are for the West Crossover whereas Phases 6 & 8 are for the East Crossover.



DETAIL 1



DETAIL 2



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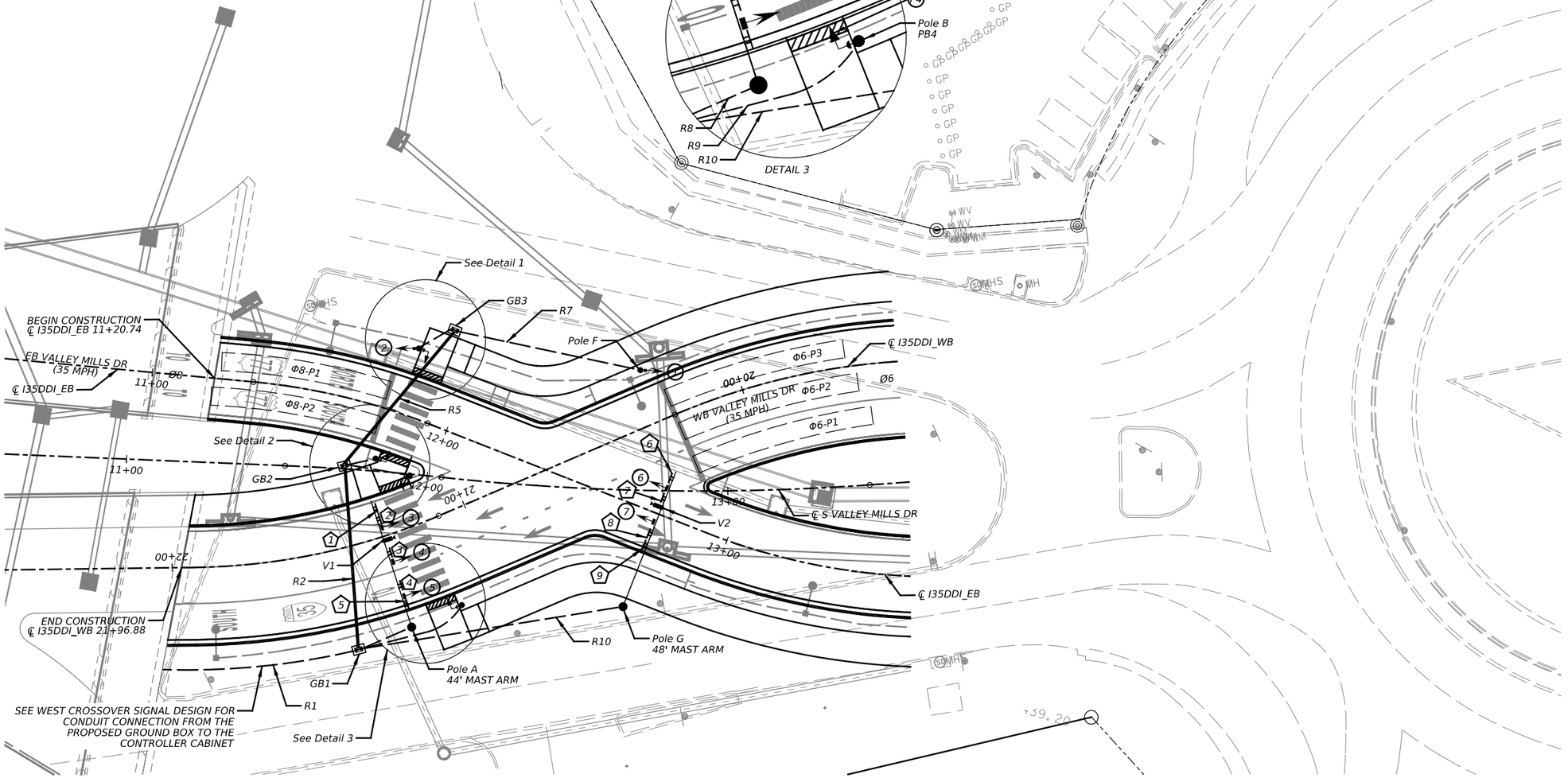

0 20 40
SCALE IN FEET

LEGEND:

V#	VIVDS NUMBER
R#	RUN NUMBER
(#)	SIGNAL HEAD NUMBER
(#)	SIGN NUMBER
P#	PEDESTRIAN SIGNAL HEAD NUMBER
PB#	PED PUSH BUTTON NUMBER
	HORIZONTAL SIGNAL HEAD
	VERTICAL SIGNAL HEAD
	SIGNAL POLE
	PEDESTRIAN PUSH BUTTON
	PEDESTRIAN SIGNAL HEAD
	GROUND BOX (TYPE D) WITH APRON
	BORE
	TRENCH
	VIVDS CAMERA
	VIVDS DETECTION ZONE
	PROPOSED SIGN
	PEDESTAL POLE

STATE OF TEXAS
RAHUL M. RAJBHARA
128825
LICENSED
PROFESSIONAL ENGINEER

7/15/2024

NO.	DATE	REVISION	APPROVED

AMERICAN STRUCTUREPOINT INC.
TBPE FIRM NO. F-10069
3711 SOUTH MOPAC EXPY
BUILDING ONE, SUITE 350
AUSTIN, TX 78746
TEL 512.494.6037 FAX 317.543.0270
www.structurepoint.com

Texas Department of Transportation

IH 35 FROM S LP 340 TO 12TH ST

PROPOSED SIGNAL LAYOUT

(IH 35 & Valley Mills Dr - East Crossover)

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	MCLENNAN		1492A

DATE: 7/15/2024
FILE: ...\202300948.TR.SIG - 01.dgn

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SUMMARY OF CONDUIT AND CONDUCTORS

RUN# (LF)	CONDT (PVC) SCHD 40 (2") 0618-6023	CONDT (PVC) SCHD 40 (3") 0618-6029	CONDT (PVC) SCHD 80(3")BORE 0618-6054	CONDT (RM) (3") 0618-6074	TRF SIG CBL (TYA) 12AWG 4CONDR 0684-6009	TRF SIG CBL (TYA) 12AWG 7CONDR 0684-6012	TRF SIG CBL (TYA) 12AWG 16CONDR 0684-6021	ELEC CONDR NO.4 BARE 0620-6009	ELEC CONDR NO.4 INSULATED 0620-6010	ELEC CONDR NO.8 BARE 0620-6007	TRAY CABLE NO.8 (3 CONDR) 0621-6004	VIVDS CABLE 6306-6007
	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF
R1 = 15	15							20	40			
R2 = 20	20										25	
R3 = 10		20			90	60	45			30		45
R4 = 40			80		270	160	135			90	45	135
R5 = 120		120			125					125	125	
R6 = 115		230			600	480	360			240	120	360
R7 = 20		20			50	25				25	25	
R8 = 45			90		150	150	150			100	50	150
R9 = 25		25			30	30				30		
R10 = 10		10			15	15				15		
R11 = 60			120		65	65	195			130	65	195
R12 = 25		50			30	30	30			60	30	30
R13 = 120		240					125			250		125
R14 = 160		320								330		
R15 = 365				730						740		
R16 = 115		230								240		120
R17 = 110		220					115			230		115
R18 = 30		60								70		
POLE A					16						30	
POLE B					21	16					30	
POLE C					5	16						
POLE D					5	16						
POLE E					5	16	64				30	55
POLE F							56					50
POLE G							56					30
TOTAL	35	1545	290	730	1477	1079	1331	20	40	2705	575	1410

SUMMARY OF CONDUIT AND CONDUCTORS

RUN# (LF)	TRF SIG CBL (TYA) 12AWG 4CONDR 0684-6009	TRF SIG CBL (TYA) 12AWG 7CONDR 0684-6012	TRF SIG CBL (TYA) 12AWG 16CONDR 0684-6021
	LF	LF	LF
R3 = 10	90	60	30
R4 = 40	270	180	90
R6 = 115	720	480	240
R8 = 45	300	200	100
R14 = 160	990	660	330
R15 = 365	2220	1480	740
R18 = 30	210	140	70
TOTAL	4800	3200	1600

SUMMARY OF MISCELLANEOUS ITEMS

ITEM NO	DESCRIPTION	UNIT	QUANTITY
624-6002	GROUND BOX TY A (122311) W/APRON	EA	3
624-6010	GROUND BOX TY D (162922) W/APRON	EA	5
628-6187	ELC SRV TY D 120/240 070 (NS) SS (E) PS (U)	EA	1
680-6002	INSTALL HWY TRF SIG (SYSTEM)	EA	1
688-6003	PED DETECT PUSH BUTTON (APS)	EA	4
688-6003	PED DETECTOR CONTROLLER UNIT	EA	1
690-6131	INSTALL BBU SYSTEM	EA	1
6036-6001	VIVDS PROSR SYS	EA	1
6036-6002	VIVDS CAM ASSY FXD LENS	EA	3
*	CONTRACTOR TO SOLE SOURCE ITERIS M60 CONTROLLER & CABINET AND ITERIS VIDEO DETECTION EQUIPMENT FOR COMPATIBILITY WITH CITY OF WACO		

SUMMARY OF TRAFFIC SIGNAL HEADS

SIGNAL HEAD NUMBER	BACKPLATE W/REFL BRDR (3 SEC)(VENT) ALUM ITEM 0682-6054	VEH SIG SEC (12 IN) LED (GREEN) ITEM 0682-6001	VEH SIG SEC (12")LED(GRN ARW) ITEM 682-6002	VEH SIG SEC (12 IN) LED (YELLOW) ITEM 0682-6003	VEH SIG SEC (12 IN) LED (RED) ITEM 0682-6005	PED SIG SEC (LED)(COUNTDOWN) ITEM 0682-6018
	EA	EA	EA	EA	EA	EA
1	1		1	1	1	
2	1		1	1	1	
3	1		1	1	1	
4	1		1	1	1	
5	1		1	1	1	
6	1	1		1	1	
7	1	1		1	1	
8	1		1	1	1	
9	1		1	1	1	
P1						1
P2						1
P3						1
P4						1
TOTAL	9	2	7	9	9	4

TRAFFIC SIGNAL POLES

SIGNAL POLE	DESCRIPTION	ITEM NO.
A	INS TRF SIG PL AM (S)STR(TY B)LUM	686-6008
B	INS TRF SIG PL AM (S)STR(TY B)LUM	686-6008
C	PED POLE ASSEMBLY	687-6001
D	PED POLE ASSEMBLY	687-6001
E	INS TRF SIG PL AM (S) 1 ARM (44') LUM	686-6047
F	INS TRF SIG PL AM (S) 1 ARM (36') LUM	686-6039
G	INS TRF SIG PL AM (S) 1 ARM (36') LUM	686-6039

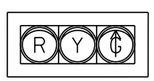
SUMMARY OF SIGNAL POLE FOUNDATIONS

SIGNAL POLE	FOUNDATION TYPE	DRILL SHAFT (TRF SIG POLE) (24 IN) SUBSIDIARY TO ITEM 687	DRILL SHAFT (TRF SIG POLE) (36 IN) ITEM 416-6032
POLE A	36-A		14
POLE B	36-A		14
POLE C	24-A	6 *	
POLE D	24-A	6 *	
POLE E	36-A		14
POLE F	36-A		14
POLE G	36-A		14
	TOTAL	12	70

* SUBSIDIARY TO BID ITEM 687

ELEC. SRVC. NO.	ELECTRICAL SERVICE DESCRIPTION	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BRK. POLE/AMP	TWO-POLE CONTRACTOR AMPS	PANEL BD/LOAD CENTER	BRANCH CKT. BKR. POLE/A	BRANCH CIRCUIT AMPS	KVA LOAD
S1	ELC SRV TY D 120/240 070 (NS) SS (E) PS (U)	2"	3/#4	N/A	2P/60	30	100	1P/50 2P/20	T.S. LIGHTING	<7.1

SIGNAL HEAD INVENTORY



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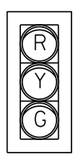

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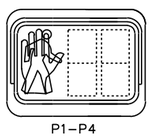

P1-P4

SIGN INVENTORY

R10-3EL (9x15)

PB1, PB2, PB3

R10-3ER (9x15)

PB4

R3-5a

NOTES (TXDOT)

1) ALL SIGNAL HEAD HOUSINGS SHALL BE BLACK IN COLOR WITH BLACK BACK PLATES. INDICATIONS SHALL BE L.E.D.
2) ALL MAST ARMS AND LUMINAIRES SHOULD BE MOUNTED PERPENDICULAR TO ROADWAY.
3) THE LOCATION SHOWN FOR THE SIGNAL POLES, DETECTION ZONE, CONDUIT RUNS AND GROUND BOXES IS APPROXIMATE. THE EXACT LOCATION WILL BE DETERMINED IN THE FIELD BY THE ENGINEER IN COORDINATION WITH THE WACO DISTRICT TRAFFIC SECTION.
4) PEDESTRIAN SIGNAL HEADS SHALL BE POSITIONED AND ADJUSTED TO PROVIDE MAXIMUM VISIBILITY AT THE BEGINNING OF THE CROSSWALK.

Eduardo Adame, P.E. 6/13/2024

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNAL SUMMARY

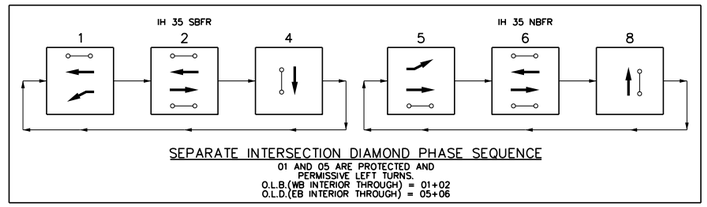
VALLEY MILLS DR

SHEET 3 OF 3

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1493
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB / HIGHWAY NO.
0015	01	246 / IH 35

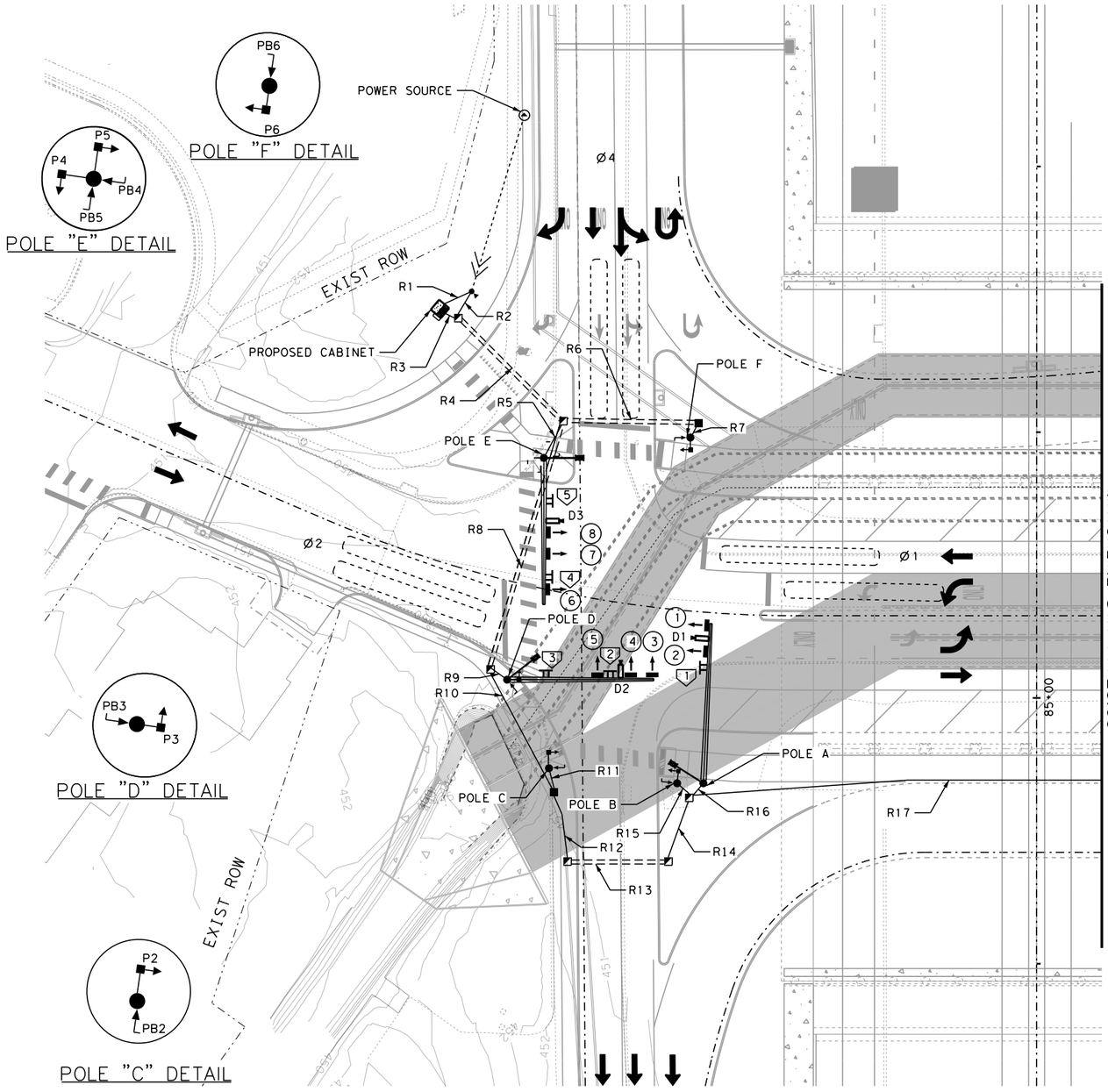
FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\SGLY1_003_VALLEYMILLSDR_SIG_SUM.dgn
DATE: 6/13/2024 12:19:13 PM USER:

PROPOSED SIGNS



SEPARATE INTERSECTION DIAMOND PHASE SEQUENCE

01 AND 05 ARE PROTECTED AND PERMISSIVE LEFT TURNS.
O.L.B.(WB INTERIOR THROUGH) = 01+02
O.L.D.(EB INTERIOR THROUGH) = 05+06



LEGEND:

R#	RUN NUMBER
(#)	SIGNAL HEAD NUMBER
#▽	SIGN NUMBER
P#	PED SIGNAL HEAD NUMBER
PB#	PED PUSH BUTTON NUMBER
	CONTROLLER WITH BATTERY BACKUP
	HORIZONTAL SIGNAL HEAD
	SIGNAL POLE
	PEDESTRIAN PUSH BUTTON
	PEDESTRIAN SIGNAL HEAD
	LUMINAIRE (250W EQ)(LED)
	GROUND BOX TY A (122311) W/APRON
	GROUND BOX TY D (162922) W/APRON
	METER LOOP SRVC DISCNT
	POWER SOURCE
	BORE
	TRENCH
	PROP SIGN
	VIVDS
D#	VIVDS ID
	VIVDS DETECTION ZONE
	PROPOSED BOX CULVERT

NOTE: FOR APS CROSSING MESSAGE, VOICE CROSSING SHALL BE USED AND NOT AUDIO TONE/BEEPS.

0' 25' 50'

STATE OF TEXAS
JAIME A. SAENZ GARCIA
85865
PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PROPOSED SIGNAL LAYOUT

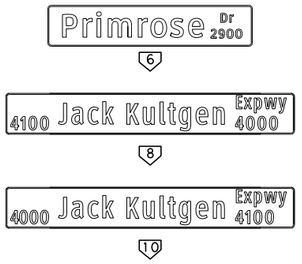
SBFR AT IRVING LEE ST

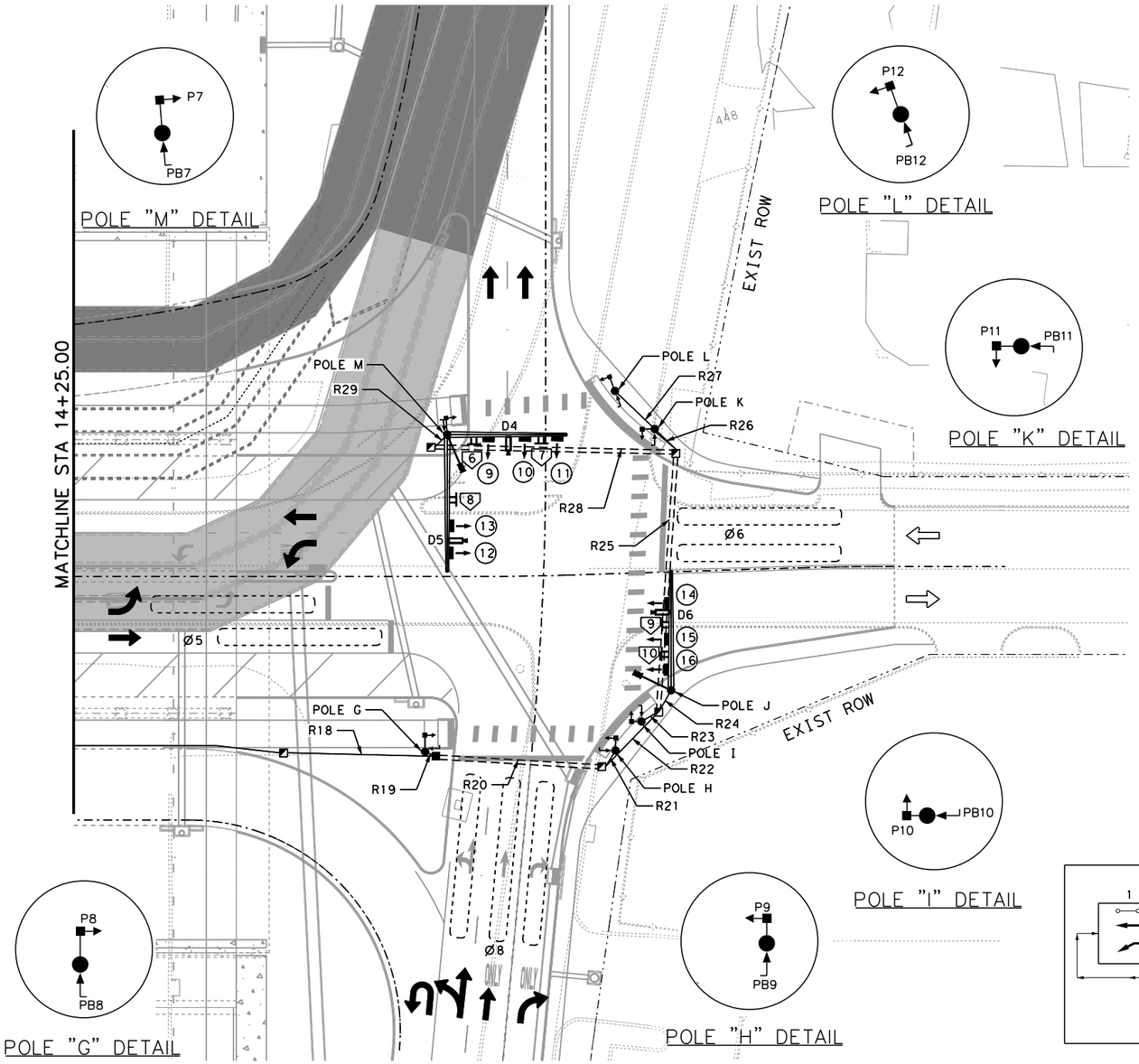
SHEET 1 OF 3

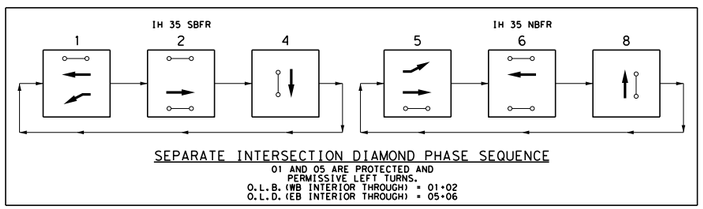
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1493A
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\SGLY1_006_IRVING_LEE_NBFR.DGN
DATE: 6/13/2024 12:19:31 PM USER:

PROPOSED SIGNS







0' 25' 50'

LEGEND:

- R# RUN NUMBER
- (#) SIGNAL HEAD NUMBER
- #◇ SIGN NUMBER
- P# PED SIGNAL HEAD NUMBER
- PB# PED PUSH BUTTON NUMBER
- CONTROLLER WITH BATTERY BACKUP
- HORIZONTAL SIGNAL HEAD
- SIGNAL POLE
- PEDESTRIAN PUSH BUTTON
- PEDESTRIAN SIGNAL HEAD
- LUMINAIRE (250W EQ)(LED)
- GROUND BOX TY A (122311) W/APRON
- GROUND BOX TY D (162922) W/APRON
- METER LOOP SRVC DISCNT
- BORE
- TRENCH
- PROP SIGN
- VIVDS
- D# VIVDS ID
- VIVDS DETECTION ZONE
- PROPOSED BOX CULVERT

STATE OF TEXAS
JAIME A. SAENZ GARCIA
85865
LICENSED
PROFESSIONAL ENGINEER
6/13/2024

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PROPOSED SIGNAL LAYOUT

NBFR AT PRIMROSE DR

SHEET 2 OF 3

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1493C
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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DATE: 6/13/2024 12:19:40 PM USER:

SUMMARY OF CONDUIT AND CONDUCTORS

RUN# (LF)	CONDT (PVC) SCHD 40 (2") 0618-6023 LF	CONDT (PVC) SCHD 40 (3") 0618-6029 LF	CONDT (PVC) SCHD 80(3")BORE 0618-6054 LF	TRF SIG CBL (TYA) 12AWG 4CONDR 0684-6009 LF	TRF SIG CBL (TYA) 12AWG 7CONDR 0684-6012 LF	TRF SIG CBL (TYA) 12AWG 16CONDR 0684-6021 LF	ELEC CONDR NO.4 BARE 0620-6009 LF	ELEC CONDR NO.4 INSULATED 0620-6010 LF	ELEC CONDR NO.8 BARE 0620-6007 LF	TRAY CABLE NO.8 (3 CONDR) 0621-6004 LF	VIVDS CABLE 6306-6007 LF
R1 = 15	15						20	40			
R2 = 10	10									15	
R3 = 5		10		120	120	30			10		60
R4 = 55			110	720	720	360			120	60	360
R5 = 15			30	40	40	20			40	20	20
R6 = 50			100	55	55				110		
R7 = 10		10		15	15				15		
R8 = 95			190	900	900	500			200	100	500
R9 = 10		20		15	15	15			30	15	15
R10 = 55		110		480	480	240			120	60	240
R11 = 10		10		15	15				15		
R12 = 25		50		210	210	120			60	30	120
R13 = 35			70	280	280	160			80	40	160
R14 = 35		70		280	280	160			80	40	160
R15 = 10		10		15	15				15		
R16 = 10		20				15			30	15	15
R17 = 230		460		1410	1410	705			470	235	705
R18 = 55		110		360	360	180			120	60	180
R19 = 10		10		15	15				15		
R20 = 60			120	325	325	195			130	65	195
R21 = 10		10		15	15				15		
R22 = 30		60		140	140	105			70	35	105
R23 = 10		10		15	15				15		
R24 = 10		20				15			30	15	15
R25 = 95			190	300	300	200			200	100	200
R26 = 10		10		15	15				15		
R27 = 30		30		35	35				35		
R28 = 90			180	95	95	190			190	95	190
R29 = 10		20		15	15	30			30	15	30
POLE A						80				30	60
POLE B				5	16						
POLE C				5	16						
POLE D				5	16	75				30	60
POLE E				10	32	75				30	60
POLE F				5	16						
POLE G				5	16						
POLE H				5	16						
POLE I				5	16						
POLE J						64				30	60
POLE K				5	16						
POLE L				5	16						
POLE M				5	16	134				30	120
TOTAL	25	1050	990	5930	6077	3668	20	40	2260	1165	3630

ELEC. SRVC. NO.	ELECTRICAL SERVICE DESCRIPTION	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BRK. POLE/AMP	TWO-POLE CONTRACTOR AMPS	PANEL BD/LOAD CENTER	BRANCH CKT. BKR. POLE/A	BRANCH CIRCUIT AMPS	KVA LOAD
S2	ELC SRV TY D 120/240 070 (NS) SS (E) PS (U)	2"	3/#4	N/A	2P/60	30	100	1P/50 2P/20	T.S. LIGHTING	<7.1

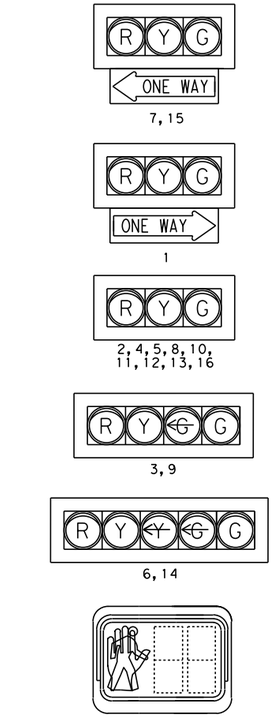
TRAFFIC SIGNAL POLES		
SIGNAL POLE	DESCRIPTION	ITEM NO.
A	INS TRF SIG PL AM(S)1 ARM(60')LUM	686-7063
B	PED POLE ASSEMBLY	687-7001
C	PED POLE ASSEMBLY	687-7001
D	INS TRF SIG PL AM (S) 1 ARM (55') LUM	686-7059
E	INS TRF SIG PL AM (S) 1 ARM (55') LUM	686-7059
F	PED POLE ASSEMBLY	687-7001
G	PED POLE ASSEMBLY	687-7001
H	PED POLE ASSEMBLY	687-7001
I	PED POLE ASSEMBLY	687-7001
J	INS TRF SIG PL AM(S)1 ARM(44')LUM	686-7047
K	PED POLE ASSEMBLY	687-7001
L	PED POLE ASSEMBLY	687-7001
M	INS TRF SIG PL AM(S)2 ARM(50-44')LUM	686-7195

NOTES (CITY OF WACO)

1) WINDFOILS TO BE INSTALLED ON ALL MAST ARMS NEXT TO END OF ARM SIGNAL HEAD. DAMPING PLATE NOT REQUIRED ON MAST WITH LENGTH GREATER THAN 50 FT LENGTH.
2) CONTACT CITY OF WACO FOR OVERHEAD STREET NAME SIGN DETAILS.
3) ALL MAST ARMS AND LUMINAIRES SHOULD BE MOUNTED PERPENDICULAR TO ROADWAY.
4) THE LOCATION SHOWN FOR THE SIGNAL POLES, DETECTION ZONE, CONDUIT RUNS AND GROUND BOXES IS APPROXIMATE. THE EXACT LOCATION WILL BE DETERMINED IN THE FIELD BY THE ENGINEER IN COORDINATION WITH THE WACO DISTRICT TRAFFIC SECTION.
5) PEDESTRIAN SIGNAL HEADS SHALL BE POSITIONED AND ADJUSTED TO PROVIDE MAXIMUM VISIBILITY AT THE BEGINNING OF CROSSWALK.

SUMMARY OF MISCELLANEOUS ITEMS			
ITEM NO	DESCRIPTION	UNIT	QUANTITY
624-6002	GROUND BOX TY A (122311) W/APRON	EA	3
624-6010	GROUND BOX TY D (162922) W/APRON	EA	11
628-6187	ELC SRV TY D 120/240 070 (NS) SS (E) PS (U)	EA	1
680-6003	INSTALL HWY TRF SIG (SYSTEM)	EA	1
688-6001	PED DETECT PUSH BUTTON (APS)	EA	12
688-6003	PED DETECTOR CONTROLLER UNIT	EA	1
690-6131	INSTALL BBU SYSTEM	EA	1
6036-6001	VIVDS PROSR SYS	EA	1
6036-6002	VIVDS CAM ASSY FXD LENS	EA	6
*	CONTRACTOR TO SOLE SOURCE ITERIS M60 CONTROLLER & CABINET AND ITERIS VIDEO DETECTION EQUIPMENT FOR COMPATIBILITY WITH CITY OF WACO		

SIGNAL HEAD INVENTORY

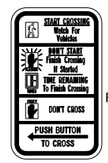


SUMMARY OF TRAFFIC SIGNAL HEADS									
SIGNAL HEAD NUMBER	BACKPLATE W/REFL BRDR (3 SEC) (VENT)ALUM ITEM 0682-6054 EA	BACKPLATE W/REFL BRDR (4 SEC)(VENT)ALUM ITEM 0682-6055 EA	BACKPLATE W/REFL BRDR (5 SEC)(VENT)ALUM ITEM 0682-6056 EA	PED SIG SEC (LED)(COUNTDOWN) ITEM 0682-6018 EA	VEH SIG SEC (12 IN) LED (RED) ITEM 0682-6005 EA	VEH SIG SEC (12 IN) LED (YELARW) ITEM 0682-6004 EA	VEH SIG SEC (12 IN) LED (YELLOW) ITEM 0682-6003 EA	VEH SIG SEC (12 IN) LED (GRN ARW) ITEM 0682-6002 EA	VEH SIG SEC (12 IN) LED (GREEN) ITEM 0682-6001 EA
1	1				1		1		1
2	1				1		1		1
3		1			1		1	1	1
4	1				1		1		1
5	1				1		1		1
6			1		1	1	1	1	1
7	1				1		1		1
8	1				1		1		1
9		1			1		1	1	1
10	1				1		1		1
11	1				1		1		1
12	1				1		1		1
13	1				1		1		1
14			1		1	1	1	1	1
15	1				1		1		1
16	1				1		1		1
P1				1					
P2				1					
P3				1					
P4				1					
P5				1					
P6				1					
P7				1					
P8				1					
P9				1					
P10				1					
P11				1					
P12				1					
TOTAL	12	2	2	12	16	2	16	4	16

SUMMARY OF SIGNAL POLE FOUNDATIONS				
SIGNAL POLE	FOUNDATION TYPE	DRILL SHAFT (TRF SIG POLE) (24 IN) SUBSIDIARY TO ITEM 687 LF	DRILL SHAFT (TRF SIG POLE) (36 IN) ITEM 416-6032 LF	DRILL SHAFT (TRF SIG POLE) (48 IN) ITEM 416-6034 LF
POLE A	48-A			22
POLE B	REFER TO PEDESTRIAN POLE SPREAD FOOTING SHEET *			
POLE C	REFER TO PEDESTRIAN POLE SPREAD FOOTING SHEET *			
POLE D	48-A			22
POLE E	48-A			22
POLE F	24-A	6*		
POLE G	24-A	6*		
POLE H	24-A	6*		
POLE I	24-A	6*		
POLE J	36-A		14	
POLE K	24-A	6*		
POLE L	24-A	6*		
POLE M	48-A			22
	TOTAL	36	14	88

* SUBSIDIARY TO BID ITEM 687

SIGN INVENTORY



R10-3EL (9x15)

PB2, PB5, PB6 PB7, PB8, PB10 PB12

R10-3ER (9x15)

PB1, PB3, PB4 PB9, PB11

R3-8MS

2 7

R3-5L

4 9

6/13/2024

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNAL SUMMARY

IRVING LEE ST/PRIMROSE DR

SHEET 3 OF 3

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1493B
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB / HIGHWAY NO.
0015	01	246 / IH 35

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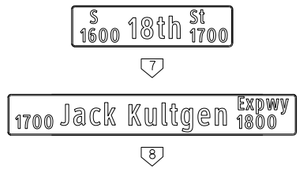
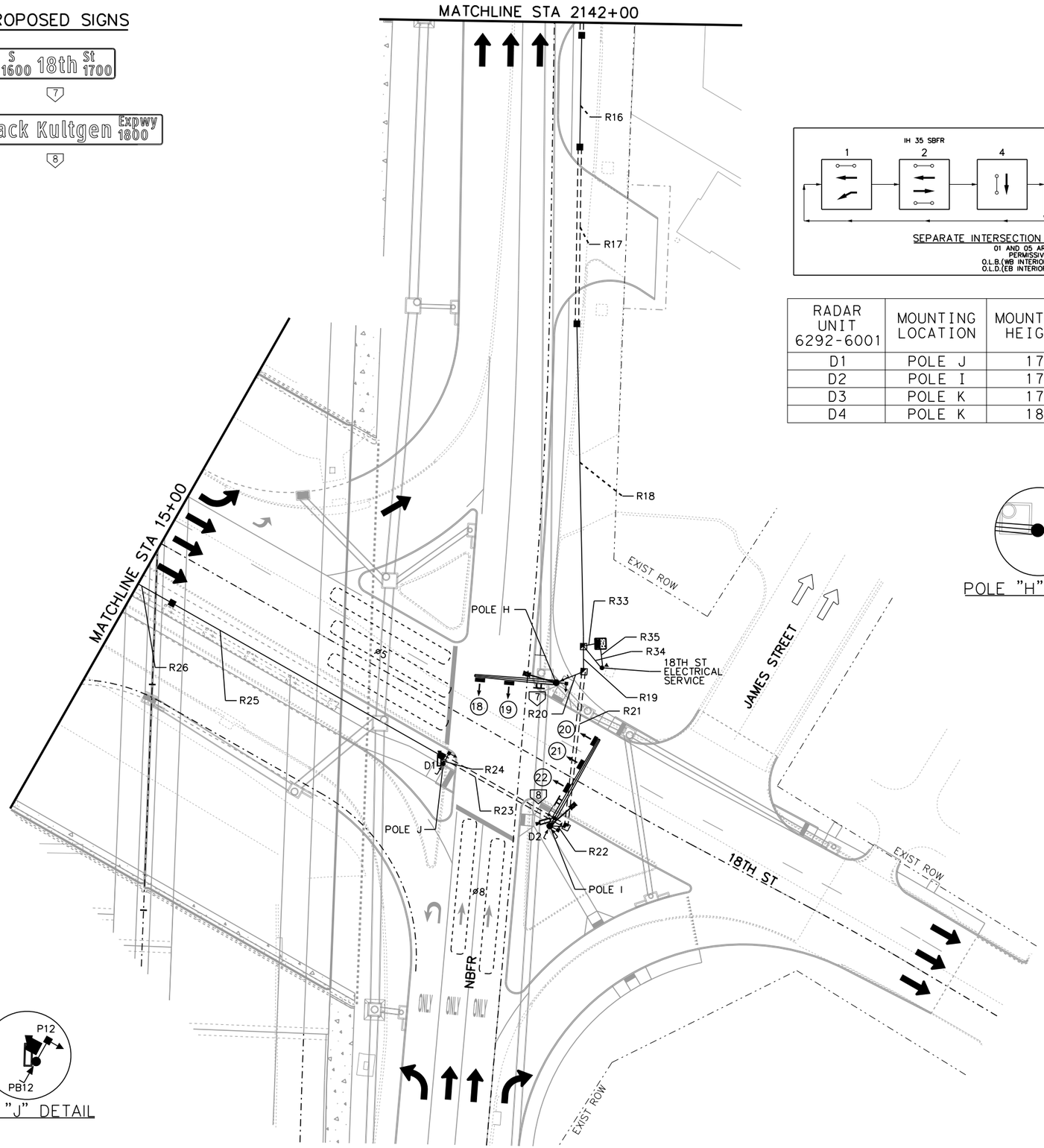
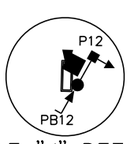
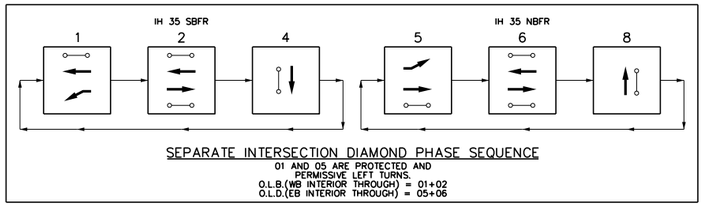
PROPOSED SIGNS





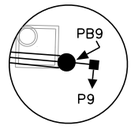


POLE "J" DETAIL

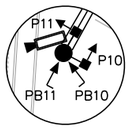


SEPARATE INTERSECTION DIAMOND PHASE SEQUENCE
01 AND 05 ARE PROTECTED AND PERMISSIVE LEFT TURNS.
O.L.B.(WB INTERIOR THROUGH) = 01+02
O.L.D.(EB INTERIOR THROUGH) = 05+06

RADAR UNIT 6292-6001	MOUNTING LOCATION	MOUNTING HEIGHT	DETECTION ZONE
D1	POLE J	17	UP TO 60' FROM STOP BAR
D2	POLE I	17	UP TO 60' FROM STOP BAR
D3	POLE K	17	UP TO 60' FROM STOP BAR
D4	POLE K	18	UP TO 60' FROM STOP BAR



POLE "H" DETAIL



POLE "I" DETAIL

LEGEND:

- D# RVSD NUMBER
- R# RUN NUMBER
- (#) SIGNAL HEAD NUMBER
- #/ SIGN NUMBER
- P# PED SIGNAL HEAD NUMBER
- PB# PED PUSH BUTTON NUMBER
- CONTROLLER WITH BATTERY BACKUP
- HORIZONTAL SIGNAL HEAD
- SIGNAL POLE
- PEDESTRIAN PUSH BUTTON
- PEDESTRIAN SIGNAL HEAD
- LUMINAIRE (250W EQ)(LED)
- GROUND BOX TY A (122311) W/APRON
- GROUND BOX TY D (162922) W/APRON
- METER LOOP SRVC DISCNT
- BORE
- TRENCH
- PROP SIGN
- VIVDS
- VIVDS DETECTION ZONE

NOTE: FOR APS CROSSING MESSAGE, VOICE CROSSING SHALL BE USED AND NOT AUDIO TONE/BEEPS.

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PROPOSED SIGNAL LAYOUT

NBFR AT 18TH ST

SHEET 1 OF 6

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1494
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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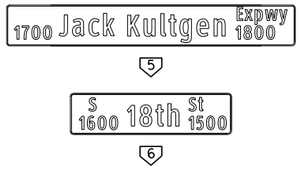
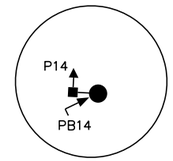
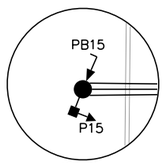
PROPOSED SIGNS



MATCHLINE STA 1143+00

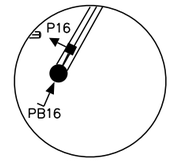


POLE "N" DETAIL

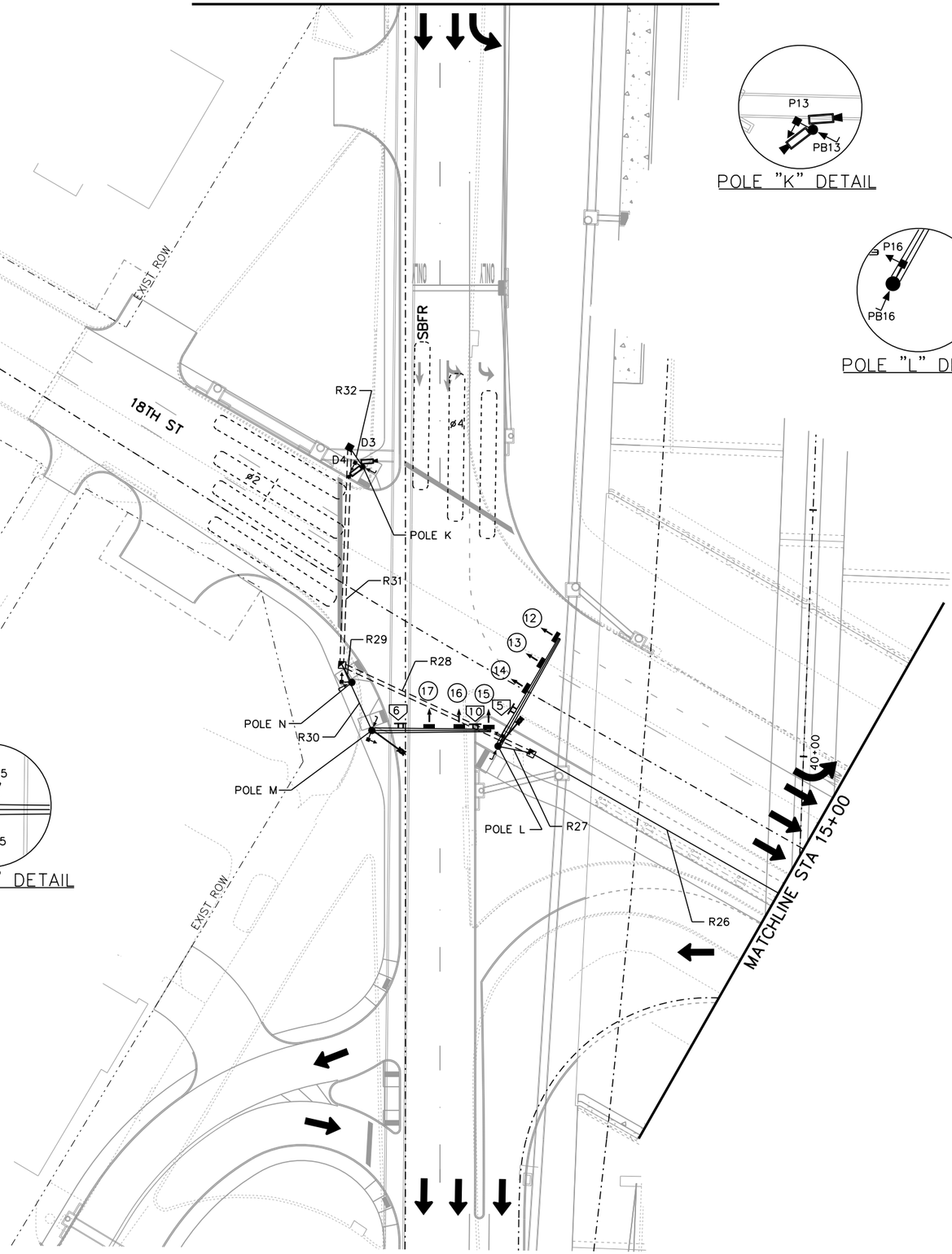


POLE "M" DETAIL

POLE "K" DETAIL



POLE "L" DETAIL



0' 25' 50'

LEGEND:

- D# RVSD NUMBER
- R# RUN NUMBER
- (#) SIGNAL HEAD NUMBER
- [#] SIGN NUMBER
- P# PED SIGNAL HEAD NUMBER
- PB# PED PUSH BUTTON NUMBER
- CONTROLLER WITH BATTERY BACKUP
- HORIZONTAL SIGNAL HEAD
- SIGNAL POLE
- PEDESTRIAN PUSH BUTTON
- PEDESTRIAN SIGNAL HEAD
- LUMINAIRE (250W EQ)(LED)
- GROUND BOX TY A (122311) W/APRON
- GROUND BOX TY D (162922) W/APRON
- METER LOOP SRVC DISCNT
- BORE
- TRENCH
- PROP SIGN
- VIVDS
- VIVDS DETECTION ZONE

Robert Kouba
STATE OF TEXAS
ROB A. KOUBA
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PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PROPOSED SIGNAL LAYOUT

SBFR AT 18TH ST

SHEET 2 OF 6

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1495
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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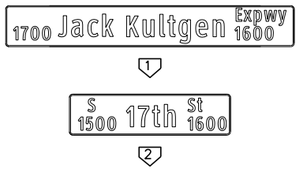
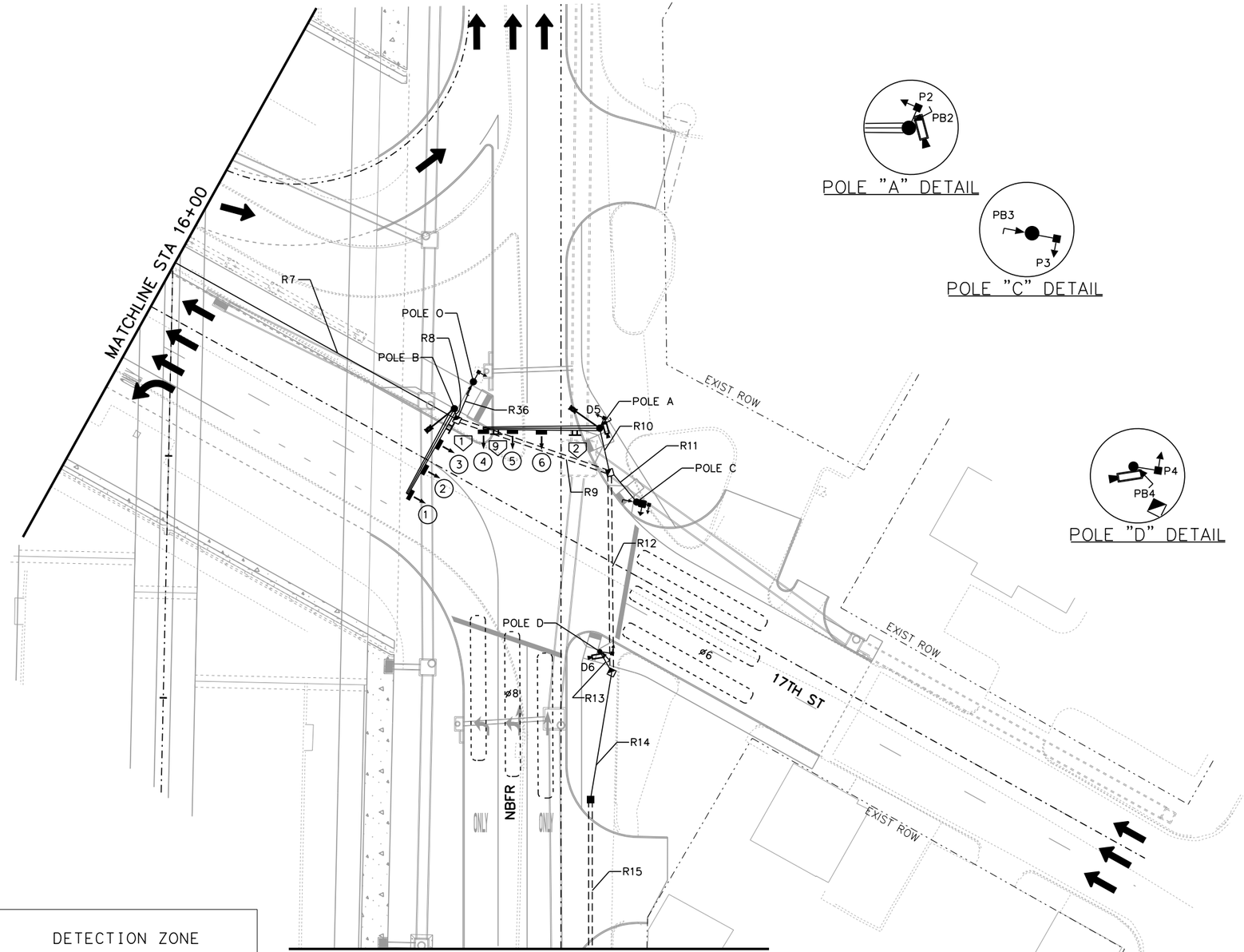
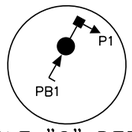
USER:

PROPOSED SIGNS







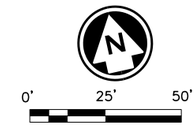
POLE "O" DETAIL

POLE "A" DETAIL

POLE "C" DETAIL

POLE "D" DETAIL

RADAR UNIT 6292-6001	MOUNTING LOCATION	MOUNTING HEIGHT	DETECTION ZONE
D5	POLE A	17	UP TO 60' FROM STOP BAR
D6	POLE D	17	UP TO 60' FROM STOP BAR
D7	POLE F	17	UP TO 60' FROM STOP BAR
D8	POLE G	17	UP TO 60' FROM STOP BAR



LEGEND:

- D# RVSD NUMBER
- R# RUN NUMBER
- (#) SIGNAL HEAD NUMBER
- #| SIGN NUMBER
- P# PED SIGNAL HEAD NUMBER
- PB# PED PUSH BUTTON NUMBER
- CONTROLLER WITH BATTERY BACKUP
- HORIZONTAL SIGNAL HEAD
- SIGNAL POLE
- PEDESTRIAN PUSH BUTTON
- PEDESTRIAN SIGNAL HEAD
- LUMINAIRE (250W EQ)(LED)
- GROUND BOX TY A (122311) W/APRON
- GROUND BOX TY D (162922) W/APRON
- METER LOOP SRVC DISCNT
- BORE
- TRENCH
- PROP SIGN
- VIVDS
- VIVDS DETECTION ZONE

Robert Kouba

STATE OF TEXAS
ROB A. KOUBA
85865
LICENSED
PROFESSIONAL ENGINEER

10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PROPOSED SIGNAL LAYOUT

NBFR AT 17TH ST

SHEET 3 OF 6

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1496
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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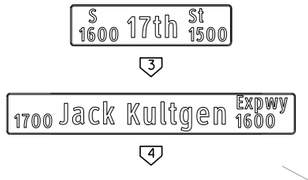
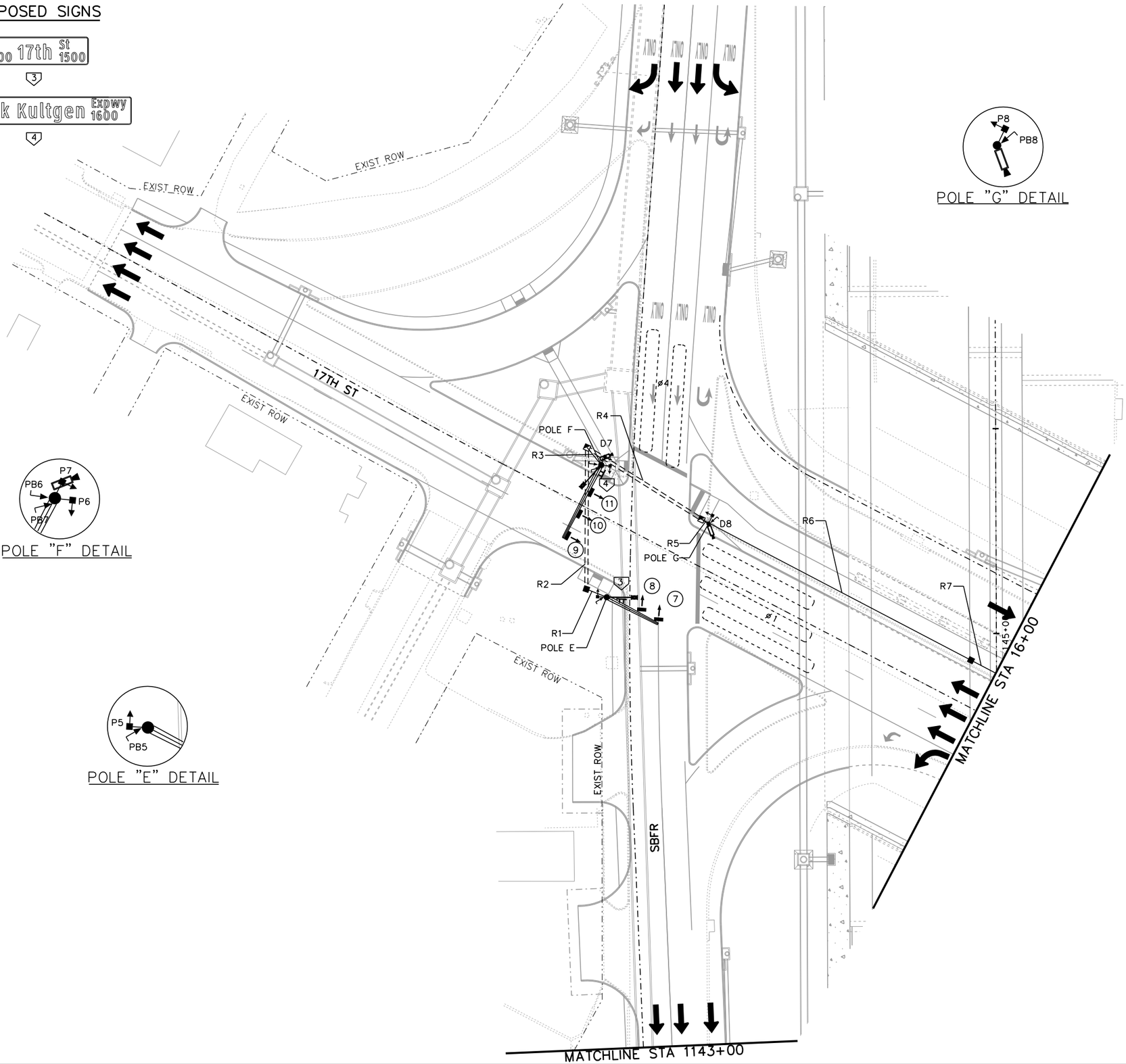
PROPOSED SIGNS



POLE "F" DETAIL

POLE "E" DETAIL



POLE "G" DETAIL

0' 25' 50'

LEGEND:

- D# RVSD NUMBER
- R# RUN NUMBER
- (#) SIGNAL HEAD NUMBER
- SIGN NUMBER
- P# PED SIGNAL HEAD NUMBER
- PB# PED PUSH BUTTON NUMBER
- CONTROLLER WITH BATTERY BACKUP
- HORIZONTAL SIGNAL HEAD
- SIGNAL POLE
- PEDESTRIAN PUSH BUTTON
- PEDESTRIAN SIGNAL HEAD
- LUMINAIRE (250W EQ)(LED)
- GROUND BOX TY A (122311) W/APRON
- GROUND BOX TY D (162922) W/APRON
- METER LOOP SRVC DISCNT
- BORE
- TRENCH
- PROP SIGN
- VIVDS
- VIVDS DETECTION ZONE

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IH 35 FROM S LP 340 TO 12TH ST

PROPOSED SIGNAL LAYOUT

SBFR AT 17TH ST

SHEET 4 OF 6

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1497
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw:\\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\08 - Traffic\SGLY1_005_17th_SBFR.DGN
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SUMMARY OF CONDUIT AND CONDUCTORS

RUN# (LF)	CONDT (PVC) SCHD 40 (2") 0618-6023 LF	CONDT (PVC) SCHD 40 (3") 0618-6029 LF	CONDT (PVC) SCHD 80(3")BORE 0618-6054 LF	TRF SIG CBL (TYA) 12AWG 4CONDR 0684-6009 LF	TRF SIG CBL (TYA) 12AWG 7CONDR 0684-6012 LF	TRF SIG CBL (TYA) 12AWG 16CONDR 0684-6021 LF	ELEC CONDR NO.6 BARE 0620-6009 LF	ELEC CONDR NO.6 INSULATED 0620-6010 LF	ELEC CONDR NO.8 BARE 0620-6007 LF	TRAY CABLE NO.8 (3 CONDR) 0621-6004 LF	VIVDS CABLE 6306-6007 LF
R1 = 15	15	15		15	15	15			30	15	
R2 = 70			140	70	70	70			140	70	
R3 = 10	10	10		20	20	10			20	10	10
R4 = 65			130	195	195	130			130	65	65
R5 = 10	10			10	10				10		10
R6 = 150			300	600	600	300			300	150	300
R7 = 150			300	600	600	300			300	150	300
R8 = 10	10	10				10			20	10	20
R9 = 70			140	350	350	210			140	70	140
R10 = 20	20	20		20	20	20			40	20	20
R11 = 10	10			10	10				10		
R12 = 85			170	595	595	340			170	85	255
R13 = 10	10			10	10				10		10
R14 = 55		110		440	440	220			110	55	220
R15 = 65			130	520	520	260			130	65	260
R16 = 50		100		400	400	200			100	50	200
R17 = 80			160	640	640	320			160	80	320
R18 = 145		290		1160	1160	580			290	145	580
R19 = 10			20	80	80	40			20	10	40
R20 = 15		15		15	15	15			30	15	
R21 = 70			140	490	490	210			140	70	280
R22 = 10	10	10		20	20	10			20	10	10
R23 = 65			130	325	325	130			130	65	195
R24 = 10	10			10	10				10		10
R25 = 140		280		560	560	280			280	140	280
R26 = 135		270		540	540	270			270	135	270
R27 = 10	10	10		10	10	10			20	10	
R28 = 85			170	255	255	85			170	85	170
R29 = 10	10			10	10				10		
R30 = 25	10	10		10	10	10			20	10	
R31 = 90			90	90	90				90		180
R32 = 10	10			10	10				30		60
R33 = 10		30		160	160	80			20	10	80
R34 = 15	15								15	15	
R35 = 10	10						10	20			
R36 = 10				10	10						
POLE A				5	10	130				30	30
POLE B				5	10	120				30	
POLE C				5	10						
POLE D				5	10						30
POLE E				5	10	70				30	
POLE F				10	20	110				30	30
POLE G				5	10						30
POLE H				5	10	80				30	
POLE I				10	20	120				30	30
POLE J				5	10						30
POLE K				5	10						60
POLE L				5	10	130				30	
POLE M				5	10	130				30	
POLE N				5	10						
POLE O				5	10						
TOTAL	170	1180	2020	8335	8420	5015	10	20	3385	1855	4525

SIGN INVENTORY

R3-8
(36 X 36)
9 10

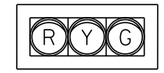
R10-3EL
(9 X 15)

PB5, PB8, PB9
PB11, PB13, PB14
PB15, PB16

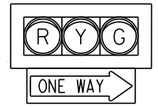
R10-3ER
(9 X 15)

PB1, PB2, PB3
PB4, PB6, PB7
PB10, PB12

SIGNAL HEAD INVENTORY

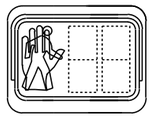


2,3,4,5,8,9
10,13,14,15,
16,19,20,21

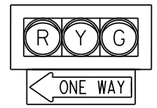


R6-1R

1,7,12,18



P1-P16



R6-1L

6,11,17,22

NOTES (CITY OF WACO)

1) WINDFOILS TO BE INSTALLED ON ALL MAST ARMS NEXT TO END OF ARM SIGNAL HEAD.
2) CONTACT CITY OF WACO FOR OVERHEAD STREET NAME SIGN DETAILS.
3) ALL MAST ARMS AND LUMINAIRES SHOULD BE MOUNTED PERPENDICULAR TO ROADWAY.
4) THE LOCATION SHOWN FOR THE SIGNAL POLES, DETECTION ZONE, CONDUIT RUNS AND GROUND BOXES IS APPROXIMATE. THE EXACT LOCATION WILL BE DETERMINED IN THE FIELD BY THE ENGINEER IN COORDINATION WITH THE WACO DISTRICT TRAFFIC SECTION.

Robert Kouba

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

SIGNAL SUMMARY

18TH & 17TH

SHEET 5 OF 6

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1498
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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SUMMARY OF TRAFFIC SIGNAL HEADS					
SIGNAL HEAD NUMBER	BACKPLATE W/REFL BRDR (3 SEC)(VENT) ALUM ITEM 0682-6054 EA	PED SIG SEC (LED)(COUNTDOWN) ITEM 0682-6018 EA	VEH SIG SEC (12 IN) LED (RED) ITEM 0682-6005 EA	VEH SIG SEC (12 IN) LED (YELLOW) ITEM 0682-6003 EA	VEH SIG SEC (12 IN) LED (GREEN) ITEM 0682-6001 EA
1	1		1	1	1
2	1		1	1	1
3	1		1	1	1
4	1		1	1	1
5	1		1	1	1
6	1		1	1	1
7	1		1	1	1
8	1		1	1	1
9	1		1	1	1
10	1		1	1	1
11	1		1	1	1
12	1		1	1	1
13	1		1	1	1
14	1		1	1	1
15	1		1	1	1
16	1		1	1	1
17	1		1	1	1
18	1		1	1	1
19	1		1	1	1
20	1		1	1	1
21	1		1	1	1
22	1		1	1	1
P1		1			
P2		1			
P3		1			
P4		1			
P5		1			
P6		1			
P7		1			
P8		1			
P9		1			
P10		1			
P11		1			
P12		1			
P13		1			
P14		1			
P15		1			
P16		1			
TOTAL	22	16	22	22	22

TRAFFIC SIGNAL POLES		
SIGNAL POLE	DESCRIPTION	ITEM NO.
A	INS TRF SIG PL AM (S) 1 ARM (48') LUM	686-6051
B	INS TRF SIG PL AM (S) 1 ARM (40') LUM	686-6043
C	PED POLE ASSEMBLY	687-6001
D	PED POLE ASSEMBLY (21')	687-6001
E	INS TRF SIG PL AM (S) 1 ARM (28') LUM	686-6031
F	INS TRF SIG PL AM (S) 1 ARM (40') LUM	686-6043
G	PED POLE ASSEMBLY (21')	687-6001
H	INS TRF SIG PL AM (S) 1 ARM (36') LUM	686-6039
I	INS TRF SIG PL AM (S) 1 ARM (44') LUM	686-6047
J	PED POLE ASSEMBLY (21')	687-6001
K	PED POLE ASSEMBLY (21')	687-6001
L	INS TRF SIG PL AM (S) 1 ARM (48') LUM	686-6051
M	INS TRF SIG PL AM (S) 1 ARM (48') LUM	686-6051
N	PED POLE ASSEMBLY	687-6001
O	PED POLE ASSEMBLY	687-6001

SUMMARY OF MISCELLANEOUS ITEMS			
ITEM NO	DESCRIPTION	UNIT	QUANTITY
624-6002	GROUND BOX TY A (122311) W/APRON	EA	9
624-6010	GROUND BOX TY D (162922) W/APRON	EA	11
628-6187	ELC SRV TY D 120/240 070 (NS) SS (E) PS (U)	EA	1
680-6002	INSTALL HWY. TRF SIG (ISOLATED)	EA	1
688-6001	PED DETECT PUSH BUTTON (APS)	EA	16
688-6003	PED DETECTOR CONTROLLER UNIT	EA	1
690-6027	REMOVAL OF SIGNAL RELATED SIGNS	EA	16
6036-6001	VIVDS PROSR SYS	EA	1
6036-6002	VIVDS CAM ASSY FXD LENS	EA	8
*	CONCTRACTOR TO SOLE SOURCE ITERIS M60 CONTROLLER & CABINET AND ITERIS VIDEO DETECTION EQUIPMENT FOR COMPATIBILITY WITH CITY		

SUMMARY OF SIGNAL POLE FOUNDATIONS				
SIGNAL POLE	FOUNDATION TYPE	DRILL SHAFT (TRF SIG POLE) (24 IN) SUBSIDIARY TO ITEM 687	DRILL SHAFT (TRF SIG POLE) (30 IN) ITEM 416-6031	DRILL SHAFT (TRF SIG POLE) (36 IN) ITEM 416-6032
POLE A	36-A			14
POLE B	36-A			14
POLE C	24-A	6		
POLE D	24-A	6		
POLE E	30-A		12	
POLE F	36-A			14
POLE G	24-A	6		
POLE H	36-A			14
POLE I	36-A			14
POLE J	24-A	6		
POLE K	24-A	6		
POLE L	36-A			14
POLE M	36-A			14
POLE N	24-A	6		
POLE O	24-A	6		
	TOTAL	42	12	98

NOTES (CITY OF WACO)

1) WINDFOILS TO BE INSTALLED ON ALL MAST ARMS NEXT TO END OF ARM SIGNAL HEAD.
2) CONTACT CITY OF WACO FOR OVERHEAD STREET NAME SIGN DETAILS.
3) ALL MAST ARMS AND LUMINAIRES SHOULD BE MOUNTED PERPENDICULAR TO ROADWAY.
4) THE LOCATION SHOWN FOR THE SIGNAL POLES, DETECTION ZONE, CONDUIT RUNS AND GROUND BOXES IS APPROXIMATE. THE EXACT LOCATION WILL BE DETERMINED IN THE FIELD BY THE ENGINEER IN COORDINATION WITH THE WACO DISTRICT TRAFFIC SECTION.

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STATE OF TEXAS
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HNTB
HNTB Corporation
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Engineers Architects Planners
Firm Registration Number F-420

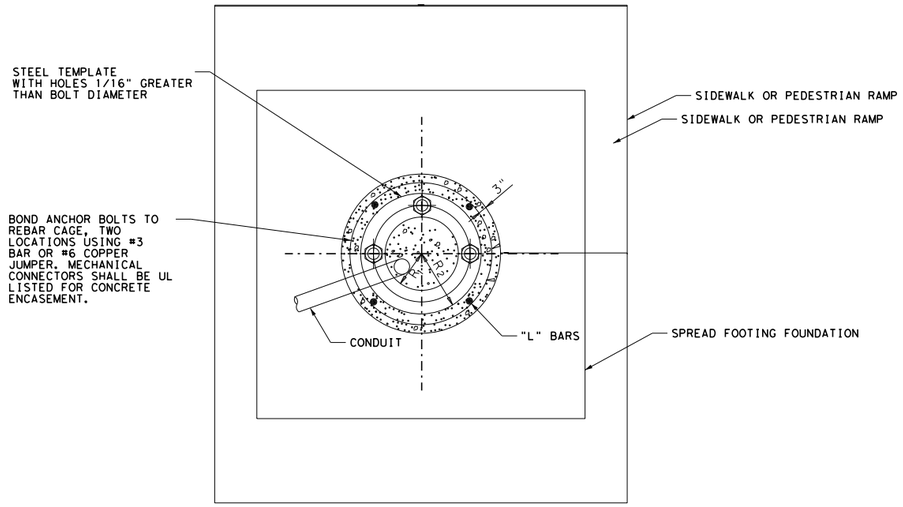
IH 35 FROM S LP 340 TO 12TH ST

SIGNAL SUMMARY

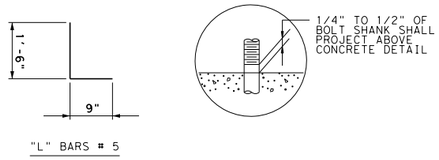
18TH & 17TH

SHEET 6 OF 6

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1499
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB / HIGHWAY NO.
0015	01	246 / IH 35



TOP VIEW

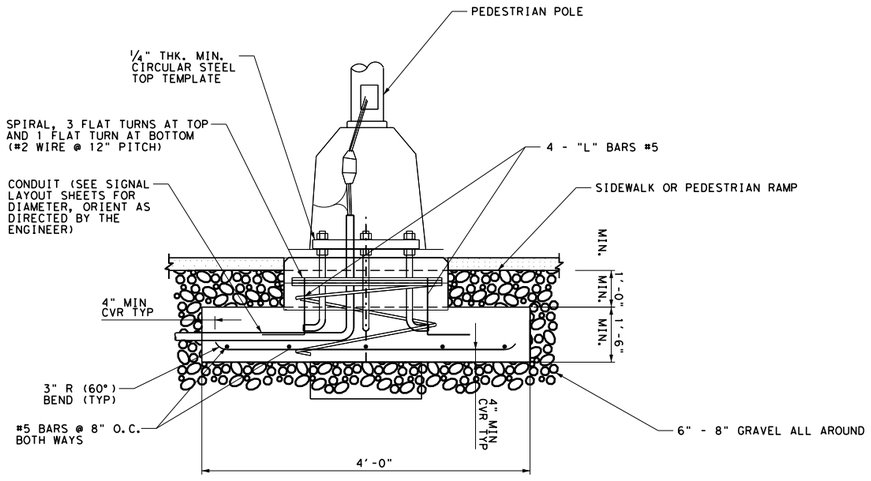


"L" BARS # 5

ANCHOR BOLT & TEMPLATE SIZES						
BOLT DIA IN.	BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
3/4"	1'-6"	3"	—	12 3/4"	7 1/8"	5 5/8"

NOTES:

1. PROVIDE CLASS "C" CONCRETE, f'C=3600PSI.
2. PROVIDE GRADE 60 REINFORCEMENT. REINFORCEMENT STEEL SHALL CONFORM TO ITEM 440. "REINFORCING STEEL".
3. REFER TO TS-FD-12 FOR ANCHOR BOLT ASSEMBLY DETAILS.
4. LOCATION AND APPLICABILITY OF THIS FOUNDATION SHALL BE DIRECTED BY THE ENGINEER IN THE FIELD.
5. CONSTRUCTION OF SPREAD FOOTING FOUNDATION AND ADDITIONAL SIDEWALK IN LIEU OF SCREW ANCHOR FOUNDATION SHALL BE SUBSIDIARY TO ITEM 687.

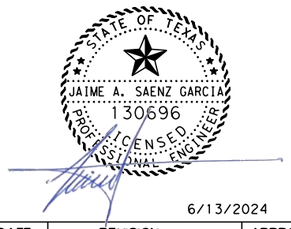


PEDESTRIAN POLE SPREAD FOOTING FOUNDATION

4' X 4' X 1.5' MAIN BODY OF SPREAD FOOTING
24" DIA. RISER TO SURFACE (CENTERED)

SIDE VIEW

NOT TO SCALE



6/13/2024

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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

PEDESTRIAN POLE SPREAD FOOTING

IRVING LEE ST/PRIMROSE DR

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1499A
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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DATE: 6/13/2024 12:40:35 PM USER:

1. ELECTRICAL CONDUITS SHOWN ADJACENT TO FIBER OPTIC CABLE BACKBONE CONDUITS MAY BE PLACED IN THE SAME TRENCH PER ITS DETAIL ITS (27)-16.

2. EXISTING UTILITIES & DRAINAGE STRUCTURES SHOWN ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR BEFORE CONSTRUCTION. LOCATIONS, LENGTHS, AND QUANTITIES SHOWN FOR EXISTING ITS/TMS EQUIPMENT, CONDUIT, GROUND BOXES, MANHOLES, ETC. ARE NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE AND SHALL BE VERIFIED BY THE CONTRACTOR. ANY OTHER UTILITIES (INCLUDING TRAFFIC SIGNAL EQUIPMENT) SHALL BE LOCATED PRIOR TO CONSTRUCTION. ANY UTILITIES DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT NO COST TO TXDOT.

3. CONDUIT & CABLES SIGNIFIED BY (*) ARE SUBSIDIARY TO ITEM 6028 "INSTALL DMS (FOUNDATION MTD CABINET)," ANY QUANTITY IS CALCULATED FOR INFORMATION PURPOSES ONLY. THE SIZE IS DEPENDENT ON THE MANUFACTURER OF THE ITEM AND IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY.

4. ALL FIBER OPTIC SPLICES SHALL BE SUBSIDIARY TO THE ITEM "FIBER OPTIC CABLE" OF THE TYPE SPECIFIED.

5. ALL ITS BACKBONE CONDUIT IS ASSUMED TO BE BURIED AT THE MINIMUM 42 INCHES BELOW THE FINISHED GRADE PER ITS (27)-16 WHICH DOES NOT REQUIRE CONCRETE ENCASEMENT WHEN INSTALLED UNDER A ROADWAY. WHERE A MINIMUM 42-INCH DEPTH IS NOT POSSIBLE DUE TO FIELD CONDITIONS OR UTILITY CONFLICTS, THE CONDUITS SHALL BE ENCASED IN CONCRETE. REFER TO PROJECT REQUIREMENTS.

6. THE MAIN ITS BACKBONE CONDUIT RUN SHALL CONSIST OF TWO MULTI-DUCT 4-WAY CONDUIT AND TWO 3" CONDUITS FOR FUTURE USE. UTILIZE ONE MULTIDUCT FOR THE BACKBONE FIBER OPTIC CABLE INSTALLATIONS.

7. FLOWABLE BACKFILL AND CONCRETE ENCASEMENT SHALL BE SUBSIDIARY TO MULTI-DUCT ITS CONDUIT. REFER TO PROJECT REQUIREMENTS.

8. 1/C ELECTRICAL CABLES SHALL HAVE 3 LF OF SLACK (SERVICE LOOP) IN EACH GROUND BOX WHICH IS INCLUDED IN QUANTITIES.

9. ITS GROUND BOXES SHALL INCLUDE 100 LF OF SLACK OF FIBER OPTIC BACKBONE CABLE AND 25 LF OF FIBER OPTIC DROP CABLE UNLESS A LARGER AMOUNT OF SLACK IS SHOWN AT A SPECIFIC LOCATION. SLACK IS INCLUDED IN QUANTITIES.

10. CABLES ARE SUBSIDIARY TO THE DEVICE(S) MOUNTED TO THE ITS POLE.

11. CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF THE EQUIPMENT PROVIDED. IF THE EQUIPMENT IS DAMAGED DURING TRANSPORTATION OR WORK THE CONTRACTOR SHALL REPLACE THE EQUIPMENT AT THE CONTRACTOR'S EXPENSE. CONTACT THE TRAFFIC ENGINEERING INSPECTION AND MAINTENANCE SECTION AT (254) 867-2808 AT LEAST 48 HOURS IN ADVANCE TO COORDINATE PICK-UP AND INSTALLATION OF EQUIPMENT PROVIDED BY TXDOT.

12. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CABLING AND CONNECTORS NEEDED TO COMPLETE A FULLY FUNCTIONAL SYSTEM, INCLUDING BUT NOT LIMITED TO CAT5E CABLES FOR ETHERNET CONNECTION AND FIBER OPTIC JUMPERS UNLESS OTHERWISE SPECIFIED.

13. TERMINATE THE STRANDS OF THE BACKBONE 144 STRAND FIBER OPTIC CABLE AS SHOWN ON THE PLANS AND AS NECESSARY FOR THE INTERCONNECTION OF EQUIPMENT. FULLY SPLICE ALL REMAINING STRANDS TO FORM A CONTINUOUS CONNECTION ON EACH STRAND THROUGHOUT THE PROJECT LIMITS. PROVIDE ALL FIBER OPTIC PATCH PANEL AND OTHER INCIDENTALS NEEDED TO PERFORM THE SPLICING.

14. CONTRACTOR TO REFERENCE OVERHEAD SIGN BRIDGE DETAILS FOR TRUSS, COLUMN AND FOUNDATION DETAILS FOR THE DYNAMIC MESSAGE SIGNS.

15. CONTRACTOR SHALL IMPLEMENT NECESSARY LANE CLOSURES, AS NEEDED, AFTER THE INSTALLATION OF THE DYNAMIC MESSAGE SIGNS TO PERMIT ACCESS TO THE SIGN DURING COMMISSIONING AND TESTING PROCESSES BEFORE THE SIGN HAS SUCCESSFULLY COMPLETED FINAL ACCEPTANCE TESTING. ALL LABOR AND MATERIALS NEEDED TO IMPLEMENT THESE LANE CLOSURES SHALL BE SUBSIDIARY TO THE ITEM 6028 "INSTALL DMS (FOUNDATION MED CABINET)".

16. CONDUIT BETWEEN ELECTRIC METER AND POWER SOURCE TO BE INSTALLED BY CONTRACTOR AND PAID FOR BY ITEM 618. ONCOR TO INSTALL WIRING IN CONDUIT BETWEEN THE ELECTRIC METER AND THE POWER SOURCE. COORDINATE FINAL SERVICE LOCATION, CONDUIT SPECIFICATIONS AND DEPTH WITH LOCAL UTILITY REPRESENTATIVE.

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Engineers Architects Planners
Firm Registration Number F-420

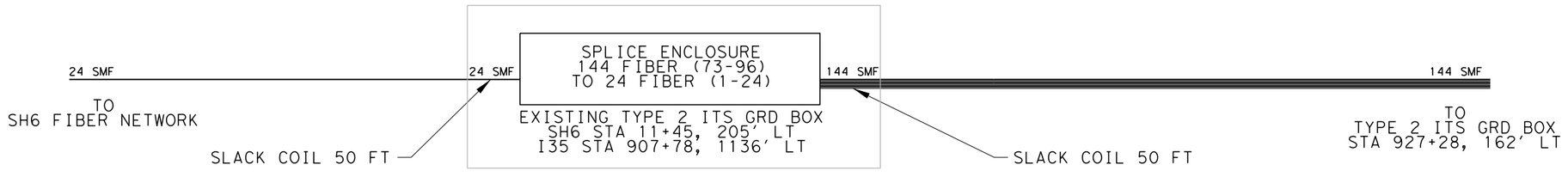
IH 35 FROM S LP 340 TO 12TH ST

ITS
GENERAL NOTES

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1500
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

NOTES:

1. LOCATE THE EXISTING SH6 GROUND BOX WITH EXISTING 24 STRAND SINGLEMODE FIBER OPTIC CABLE SLACK COILED AND STORED INSIDE. MODIFY THE PULL BOX TO INTERFACE NEW MULTIDUCT CONDUIT INTO IT PER PLANS, AND PULL IN AND SPLICE NEW BACKBONE 144 FIBER CABLE TO THE EXISTING 24 STRAND CABLE.



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NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS
NETWORK SCHEMATIC

SHEET 1 OF 4

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1501
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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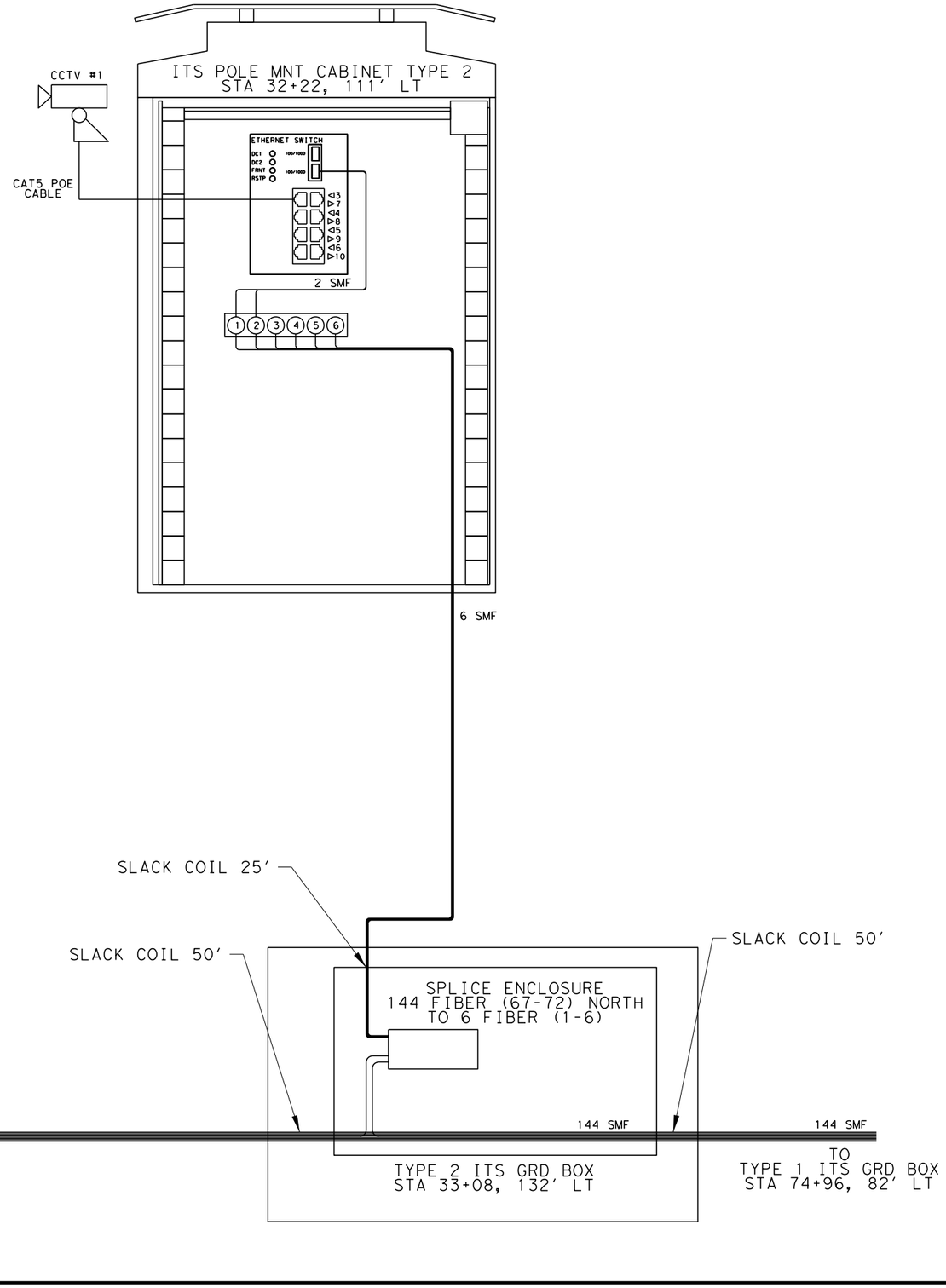
DATE: 10/18/2023 2:52:11 PM USER:

NOTES:

1. THE 144 FIBER BACKBONE CABLE SHALL BE PREPARED VIA MID-SHEATH ENTRY, THUS ONLY THE WHITE BUFFER TUBE WITH FIBERS 61-72 SHALL BE CUT AND SPLICED. FIBERS 61-66 SHALL BE STRAIGHT SPLICED FOR A CONTINUOUS FIBER LINK ON THE BACKBONE NORTH AND SOUTH BOUND. FIBERS 67-72 SHALL BE SPLICED TO THE LATERAL CABLE FACING THE ITS CABINET.



10/18/2023

NO.	DATE	REVISION	APPROVED

HNTB

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS
NETWORK SCHEMATIC

SHEET 2 OF 4

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1502
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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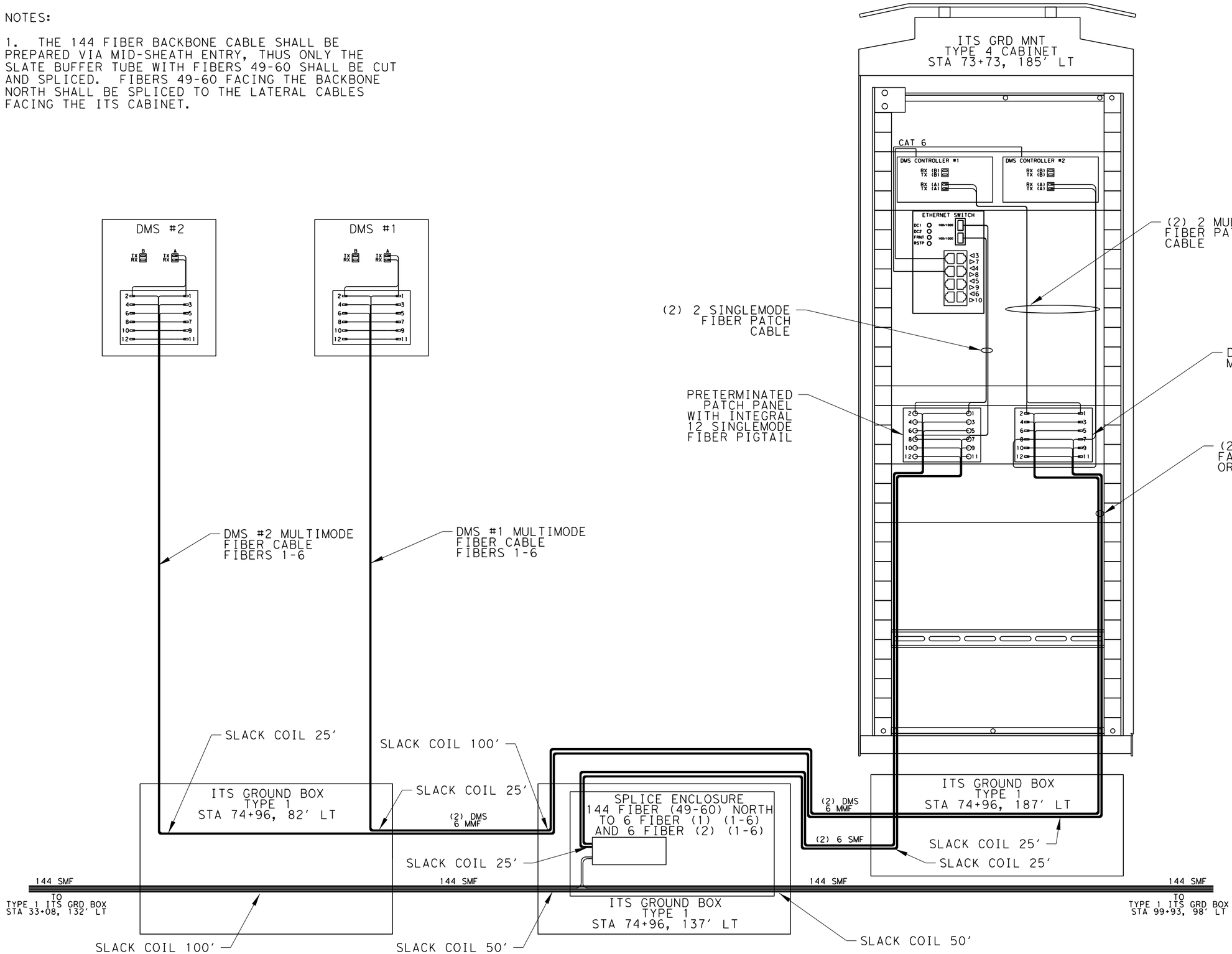
USER:

NOTES:

1. THE 144 FIBER BACKBONE CABLE SHALL BE PREPARED VIA MID-SHEATH ENTRY, THUS ONLY THE SLATE BUFFER TUBE WITH FIBERS 49-60 SHALL BE CUT AND SPLICED. FIBERS 49-60 FACING THE BACKBONE NORTH SHALL BE SPLICED TO THE LATERAL CABLES FACING THE ITS CABINET.



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Texas Department of Transportation

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS NETWORK SCHEMATIC

SHEET 3 OF 4

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1503
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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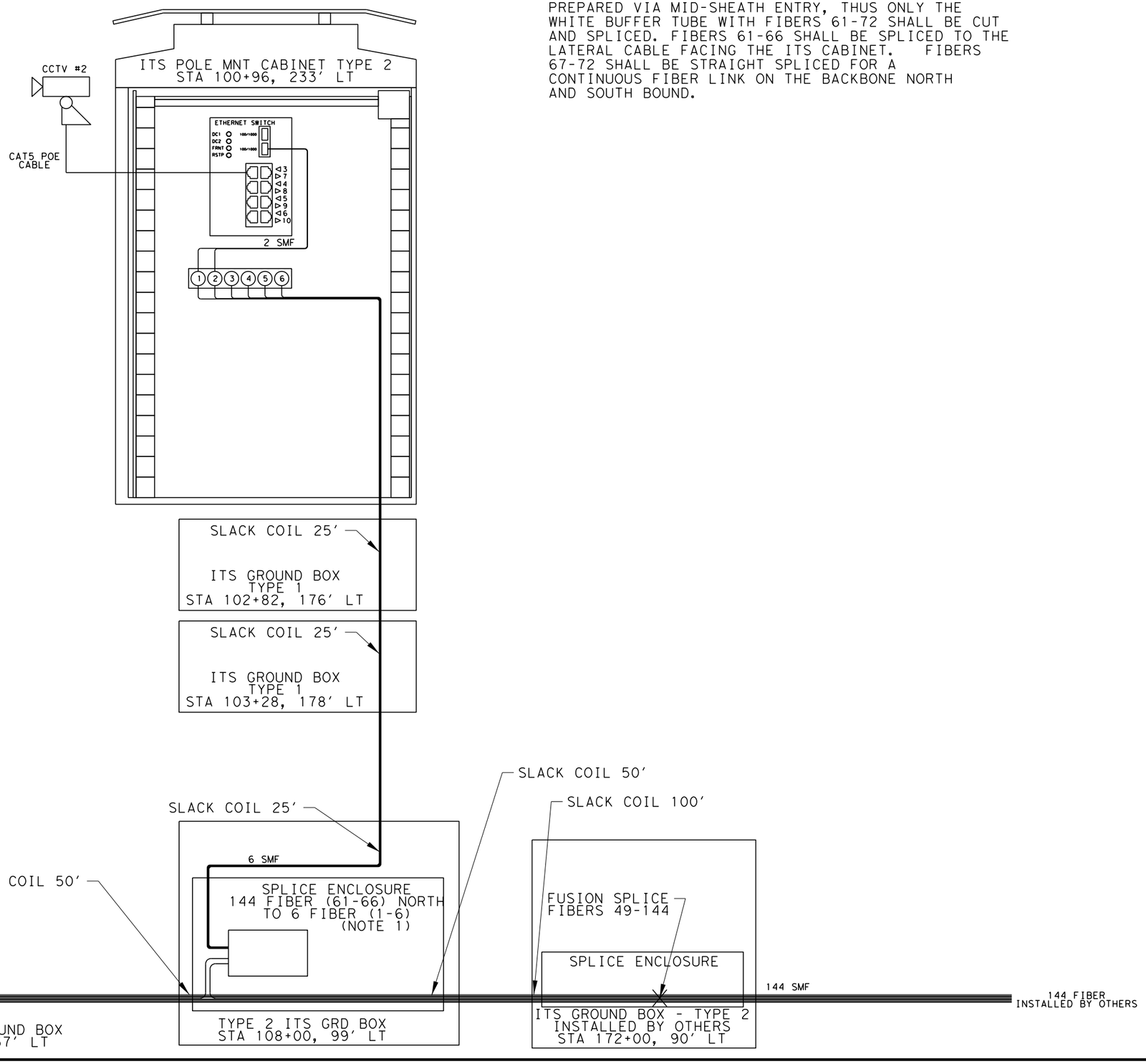

NOTES:

1. THE 144 FIBER BACKBONE CABLE SHALL BE PREPARED VIA MID-SHEATH ENTRY, THUS ONLY THE WHITE BUFFER TUBE WITH FIBERS 61-72 SHALL BE CUT AND SPLICED. FIBERS 61-66 SHALL BE SPLICED TO THE LATERAL CABLE FACING THE ITS CABINET. FIBERS 67-72 SHALL BE STRAIGHT SPLICED FOR A CONTINUOUS FIBER LINK ON THE BACKBONE NORTH AND SOUTH BOUND.

STATE OF TEXAS
SELENA ASIRE
99244
PROFESSIONAL LICENSED ENGINEER

10/18/2023

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS NETWORK SCHEMATIC

SHEET 4 OF 4

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1504
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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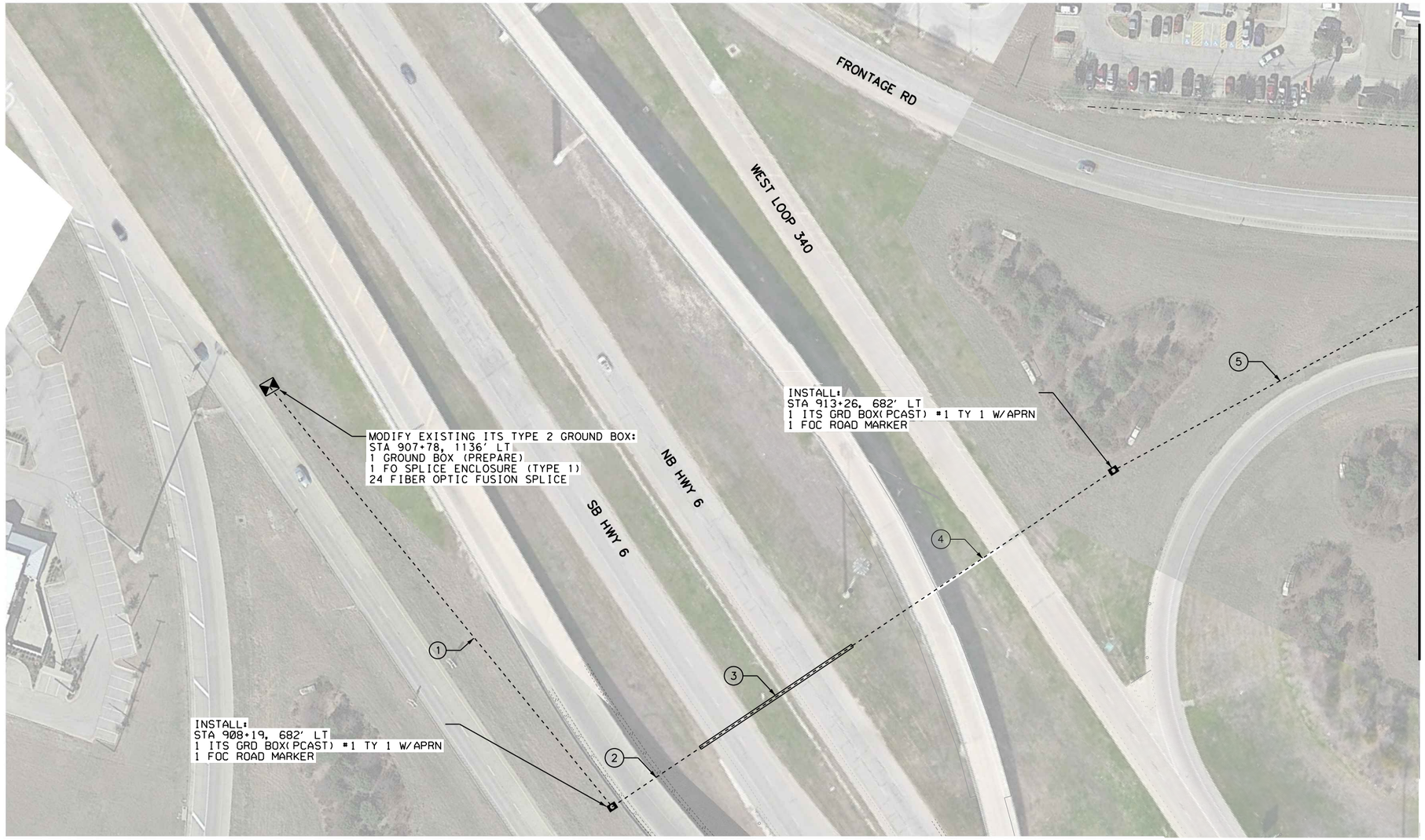

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

907+78 TO 915+22
CONDUIT& CABLE CHART

RUN NUMBER	6186029 CONDT (PVC) (SCH 40) (3")	6186054 CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	620 6002 ELEC CONDR (NO.14) INSULATED (TRACER)	6007 6017 FIBEROPTIC CBL (SNGLE-MODE) (144FIBER)	6016 6006 ITSMULTI-DUCT CND (PVC-40)	6016 6011 ITSMULTI-DUCT CND (PVC-80) (BORE)	RUN LENGTH FEET
1	2		1	1	2		455
2	2		1	1	2		89
3		2	1	1		2	154
4	2		1	1	2		264
5	2		1	1	2		292
WIRE SLACK			3				5
SLACK FO BB 100				3			100
TOTAL	LF	LF	LF	LF	LF	LF	
	2200	308	1269	1554	2200	308	

SUMMARY OF QUANTITIES

BIDITEM& DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3")(ITS)	LF	2200
618 6054	CONDT (PVC) (SCH 80) (3")(BORE)(ITS)	LF	308
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	1269
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1554
6007 6087	FO SPLICE ENCLOSURE (TYPE 1)	EA	1
6007 6094	FIBER OPTIC FUSION SPLICE	EA	24
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	2200
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	308
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	2
6027 6008	GROUND BOX (PREPARE)	EA	1
6186 6004	ITS GND BOX(PCAST) TY 1 (243648)W/APRN	EA	2

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.
4. ITS GROUND BOX TYPE 1 AT STA. 907+78, 1136' LT SHOWN IS EXISTING AND SHALL BE MODIFIED TO PENETRATE NEW MULTIDUCTS AND CONDUITS. ADD NEW SPLICE ENCLOSURE AT THIS LOCATION.

STATE OF TEXAS
SELENA ASIRE
99244
LICENSED
PROFESSIONAL ENGINEER
6/12/2024

NO.	DATE	REVISION	APPROVED

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The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 907+78 TO STA 915+22

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1505
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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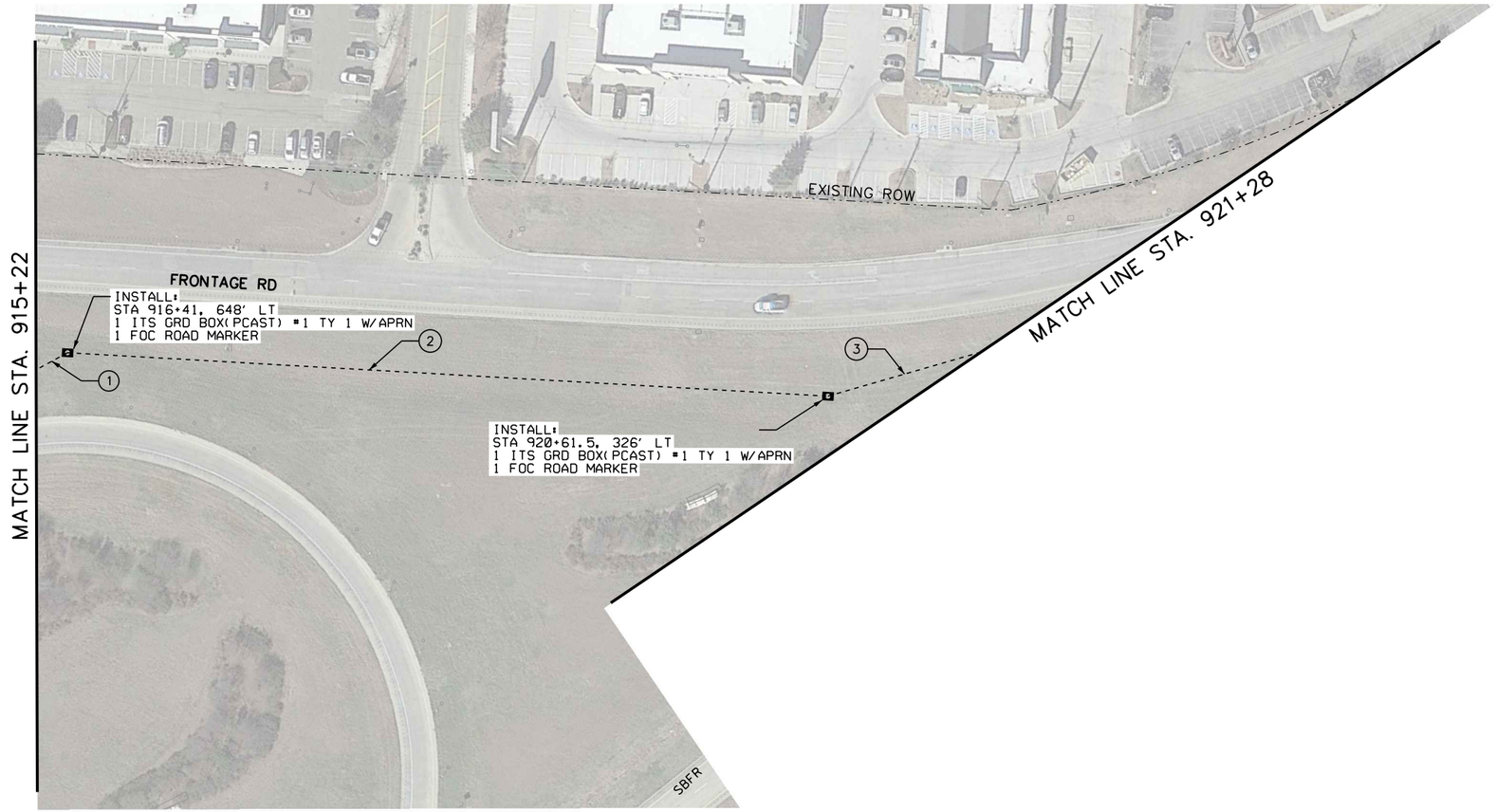

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

915+22 to 921+28 CONDUIT & CABLE CHART

RUN NUMBER	6186029 CONDT (PVC) (SCH 40) (3")	620 6002 ELEC CONDR (NO. 14) INSULATED (TRACER)	6007 6017 FIBEROPTIC CBL (SNGLE-MODE) (144FIBER)	60166006 ITSMULTI-DUCT CND (PVC-40)	RUN LENGTH FEET
1	2	1	1	2	25
2	2	1	1	2	530
3	2	1	1	2	110
WIRE SLACK		2			5
SLACK FO BB 100			2		100
TOTAL	LF	LF	LF	LF	
	1330	675	865	1330	

SUMMARY OF QUANTITIES

BIDITEM& DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3"))(ITS)	LF	1330
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	675
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	865
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	1330
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	2
6186 6004	ITS GND BOX(PCAST) TY 1 (243648)W/APRN	EA	2

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.
4. PULL BOX SHOWN IS LOCATED USING PROJECT IH35 STATIONING PLUS THE OFFSET.

STATE OF TEXAS
SELENA ASIRE
99244
LICENSED PROFESSIONAL ENGINEER
6/12/2024

NO.	DATE	REVISION	APPROVED

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 915+22 TO STA 921+28

SHEET 2 OF 20

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1506
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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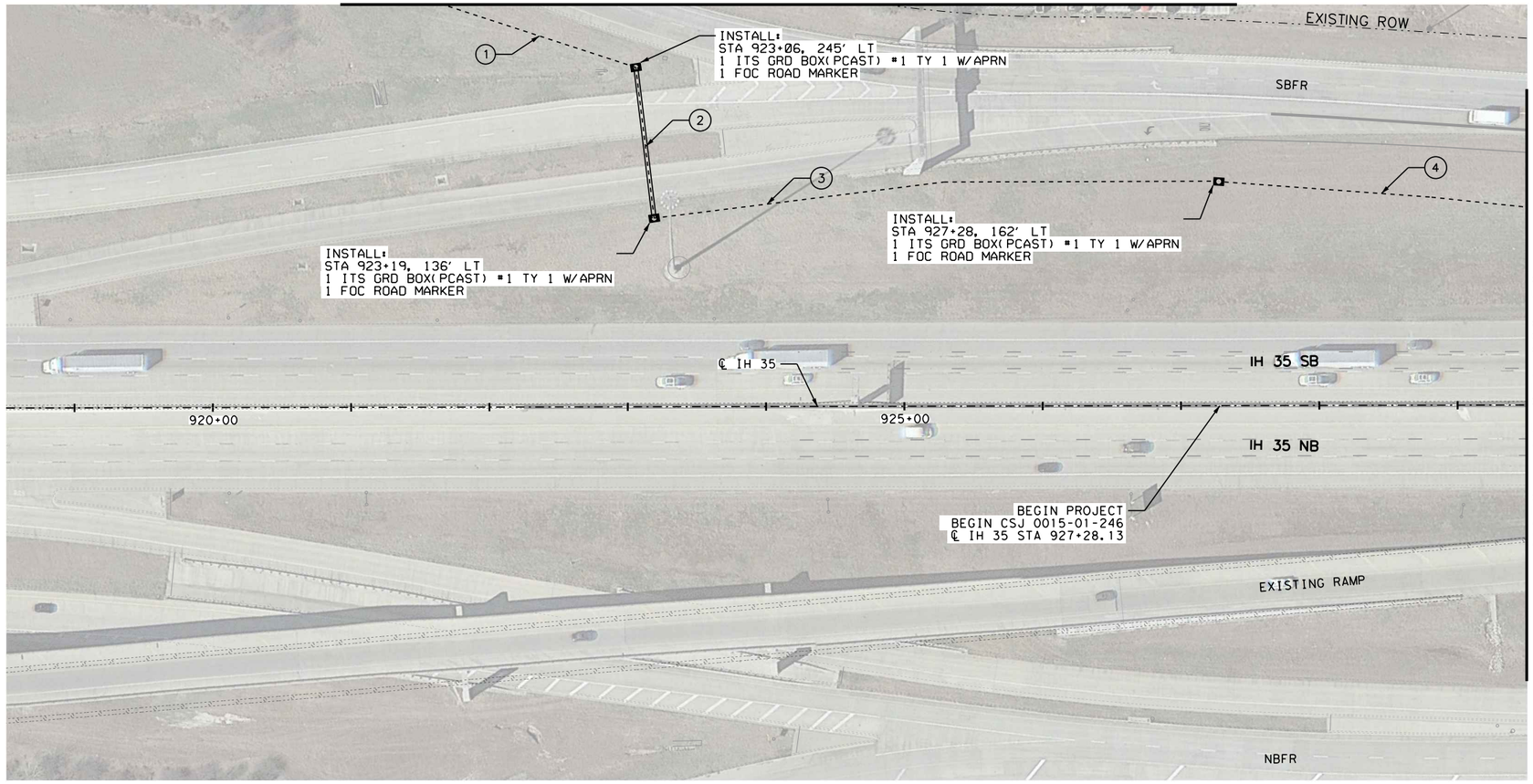

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

921+28 to 929+50
CONDUIT & CABLE CHART

RUN NUMBER	618 6029 CONDT (PVC) (SCH 40) (3")	618 6054 CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	620 6002 ELEC CONDR (NO.14) INSULATED (TRACER)	6007 6017 FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	6016 6006 ITS MULTI-DUCT CND (PVC-40)	6016 6011 ITS MULTI-DUCT CND (PVC-80) (BORE)	RUN LENGTH FEET
1	2		1	1	2		147
2		2	1	1		2	110
3	2		1	1	2		410
4	2		1	1	2		224
WIRE SLACK			3				5
SLACK FO BB 100				3			100
TOTAL	LF 1562	LF 220	LF 906	LF 1191	LF 1562	220	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3")(ITS)	LF	1562
618 6054	CONDT (PVC) (SCH 80) (3")(BORE)(ITS)	LF	220
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	906
6007 6017	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	LF	1191
6016 6006	ITS MULTI-DUCT CND (PVC-40)	EA	1562
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	220
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	3
6186 6004	ITS GND BOX(PCAST) TY 1(243648)W/APRN	EA	3

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.

STATE OF TEXAS
SELENA ASIRE
99244
PROFESSIONAL ENGINEER
6/12/2024

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 921+28 TO STA 929+50

SHEET 3 OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1507

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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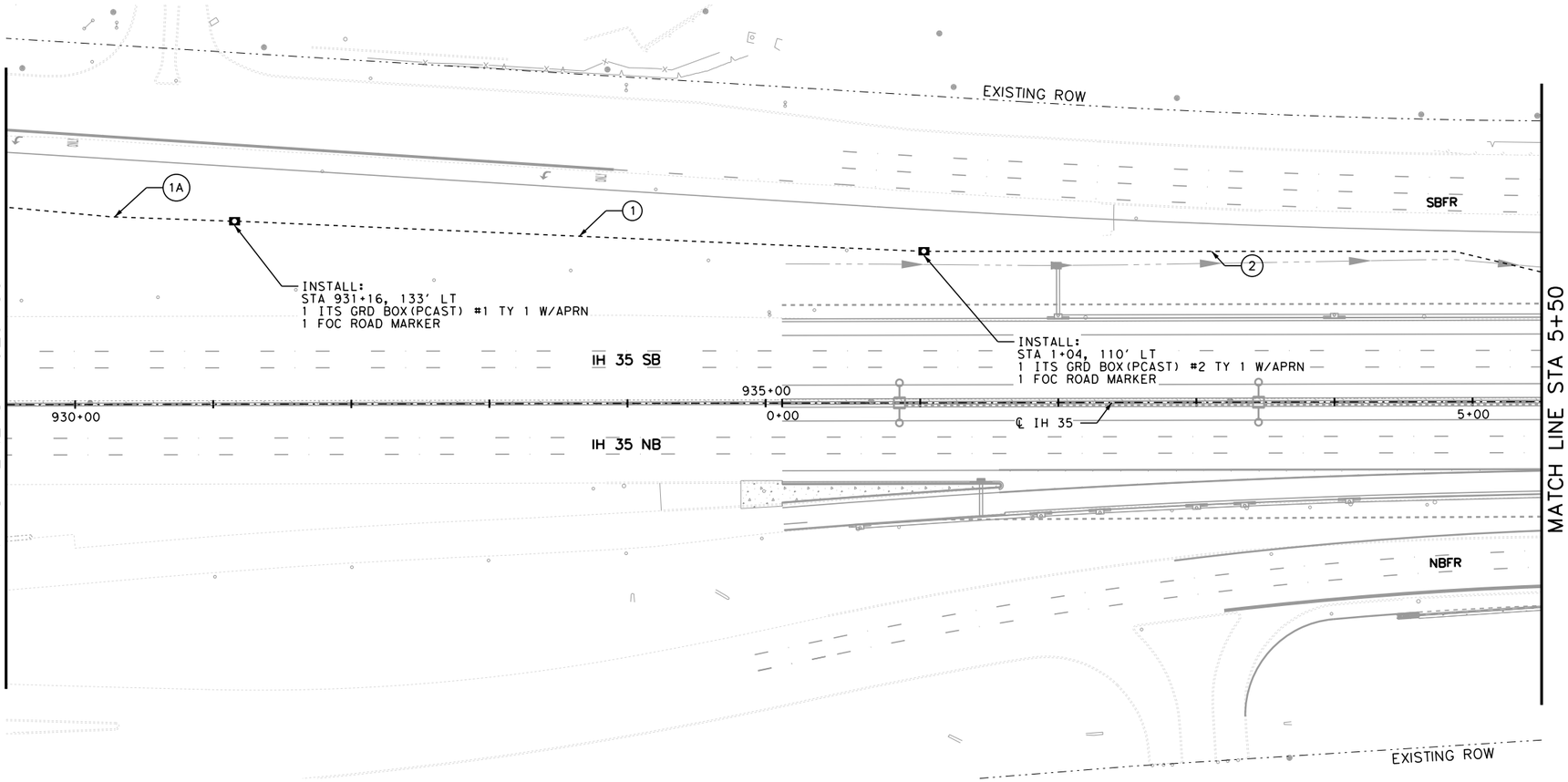

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

929+50 TO 5+50 CONDUIT & CABLE CHART					
RUN NUMBER	618 6029	620 6002	6007 6017	6016 6006	RUN LENGTH
	CONDT (PVC) (SCH 40) (3") (ITS)	ELEC CONDR (NO.14) INSULATED (TRACER)	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	ITS MULTI-DUCT CND (PVC-40)	FEET
1A	2	1	1	2	166
1	2	1	1	2	500
2	2	1	1	2	449
WIRE SLACK		2			5
SLACK FO BB 100			2		100
TOTAL	LF	LF	LF	LF	
	2230	1125	1315	2230	

SUMMARY OF QUANTITIES			
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3") (ITS)	LF	2230
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	1125
6007 6017	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	LF	1315
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	2230
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	2
6186 6004	ITS GND BOX(PCAST) TY 1 (243648)W/APRN	EA	2

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.

STATE OF TEXAS
SELENA ASIRE
99244
LICENSED PROFESSIONAL ENGINEER

10/18/2023

NO.	DATE	REVISION	APPROVED

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The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 929+50 TO STA 5+50

SHEET 4 OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1508

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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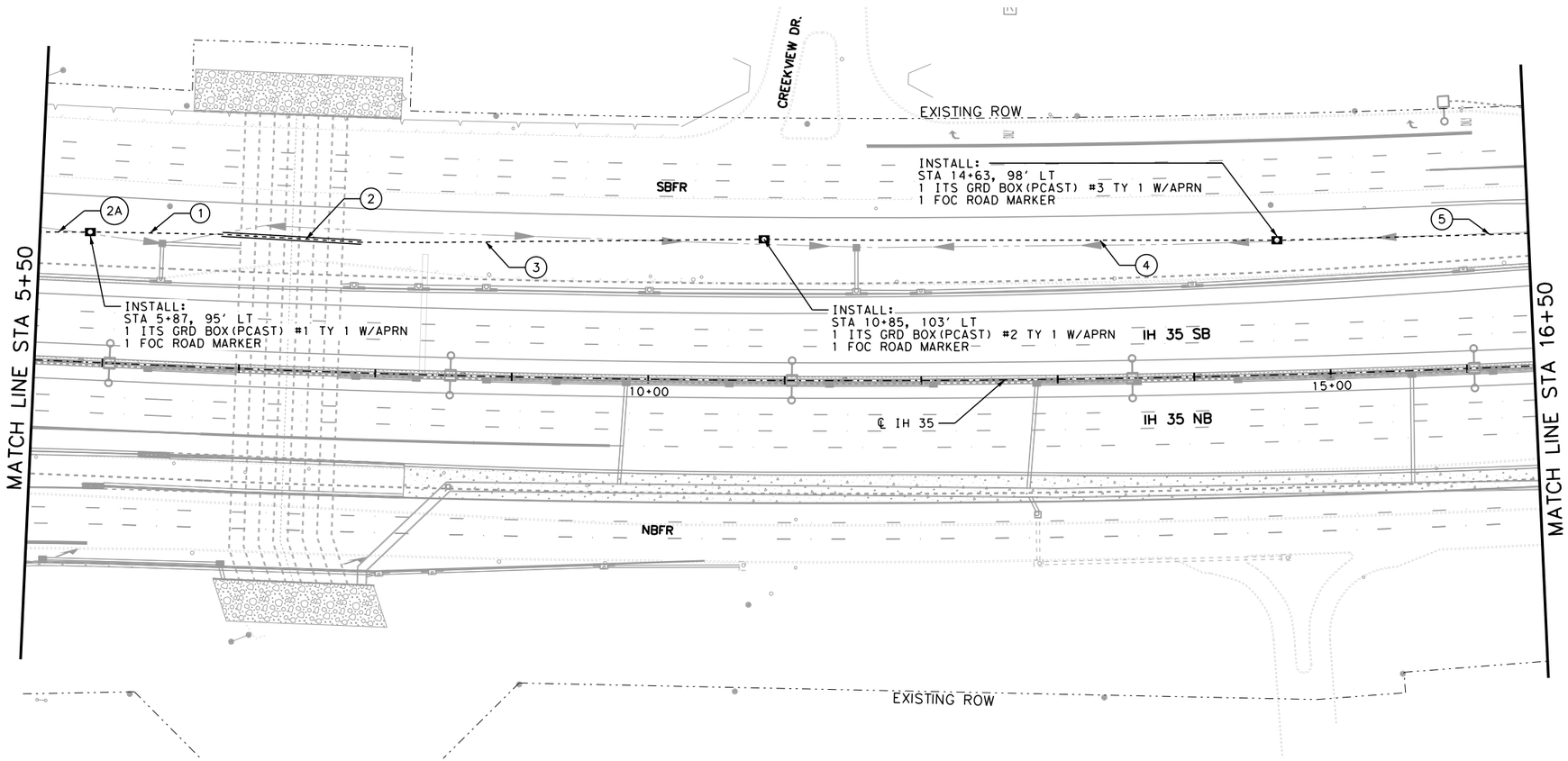

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

5+50 TO 16+50
CONDUIT & CABLE CHART

RUN NUMBER	618 6029 CONDT (PVC) (SCH 40) (3") (ITS)	618 6054 CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	620 6002 ELEC CONDR (NO.14) INSULATED (TRACER)	6007 6017 FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	6016 6006 ITS MULTI-DUCT CND (PVC-40)	6016 6011 ITS MULTI-DUCT CND (PVC-80) (BORE)	RUN LENGTH FEET
2A	2		1	1	2		38
1	2		1	1	2		97
2		2	1	1		2	103
3	2		1	1	2		296
4	2		1	1	2		376
5	2		1	1	2		185
WIRE SLACK			3				5
SLACK FO BB 100				3			100
TOTAL	LF 1984	LF 206	LF 1110	LF 1395	LF 1984	LF 206	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3") (ITS)	LF	1984
618 6054	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	LF	206
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	1110
6007 6017	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	LF	1395
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	1984
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	206
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	3
6186 6004	ITS GND BOX(PCAST) TY 1 (243648)W/APRN	EA	3

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.

STATE OF TEXAS
SELENA ASIRE
99244
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 5+50 TO STA 16+50

SHEET 5 OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1509
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB / HIGHWAY NO.
0015	01	246 / IH 35

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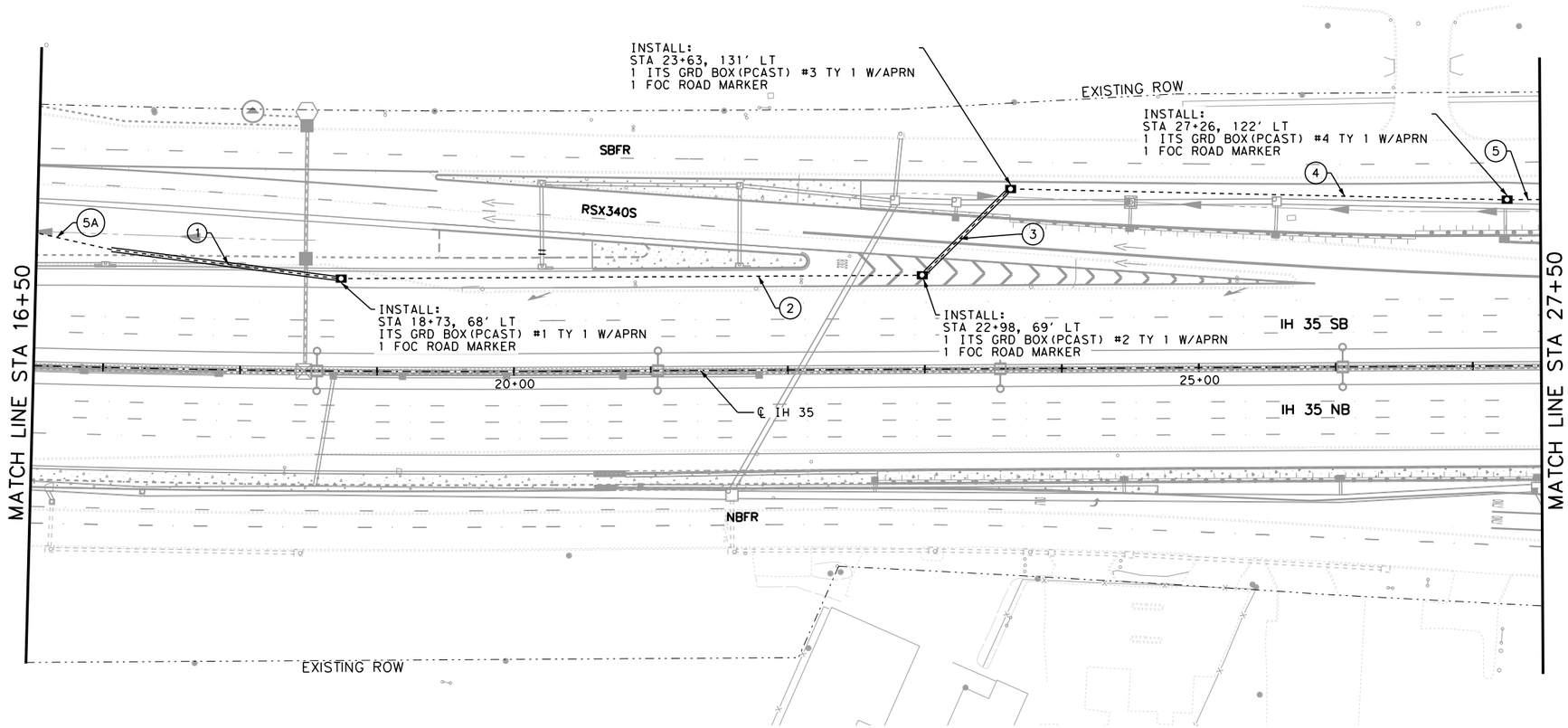

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

16+50 TO 27+50
CONDUIT & CABLE CHART

RUN NUMBER	618 6029	618 6054	620 6002	6007 6017	6016 6006	6016 6011	RUN LENGTH
	CONDT (PVC) (SCH 40) (3") (ITS)	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	ELEC CONDR (NO.14) INSULATED (TRACER)	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	ITS MULTI-DUCT CND (PVC-40)	ITS MULTI-DUCT CND (PVC-80) (BORE)	FEET
5A	2		1	1	2		55
1		2	1	1		2	168
2	2		1	1	2		425
3		2	1	1		2	91
4	2		1	1	2		363
5	2		1	1	2		25
WIRE SLACK			4				5
SLACK FO BB 100				4			100
TOTAL	LF	LF	LF	LF	LF	LF	
	1736	518	1147	1527	1736	518	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3") (ITS)	LF	1736
618 6054	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	LF	518
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	1147
6007 6017	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	LF	1527
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	1736
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	518
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	4
6186 6004	ITS GND BOX(PCAST) TY 1 (243648) W/APRN	EA	4

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.

STATE OF TEXAS
SELENA ASIRE
99244
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 16+50 TO STA 27+50

SHEET 6 OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1510
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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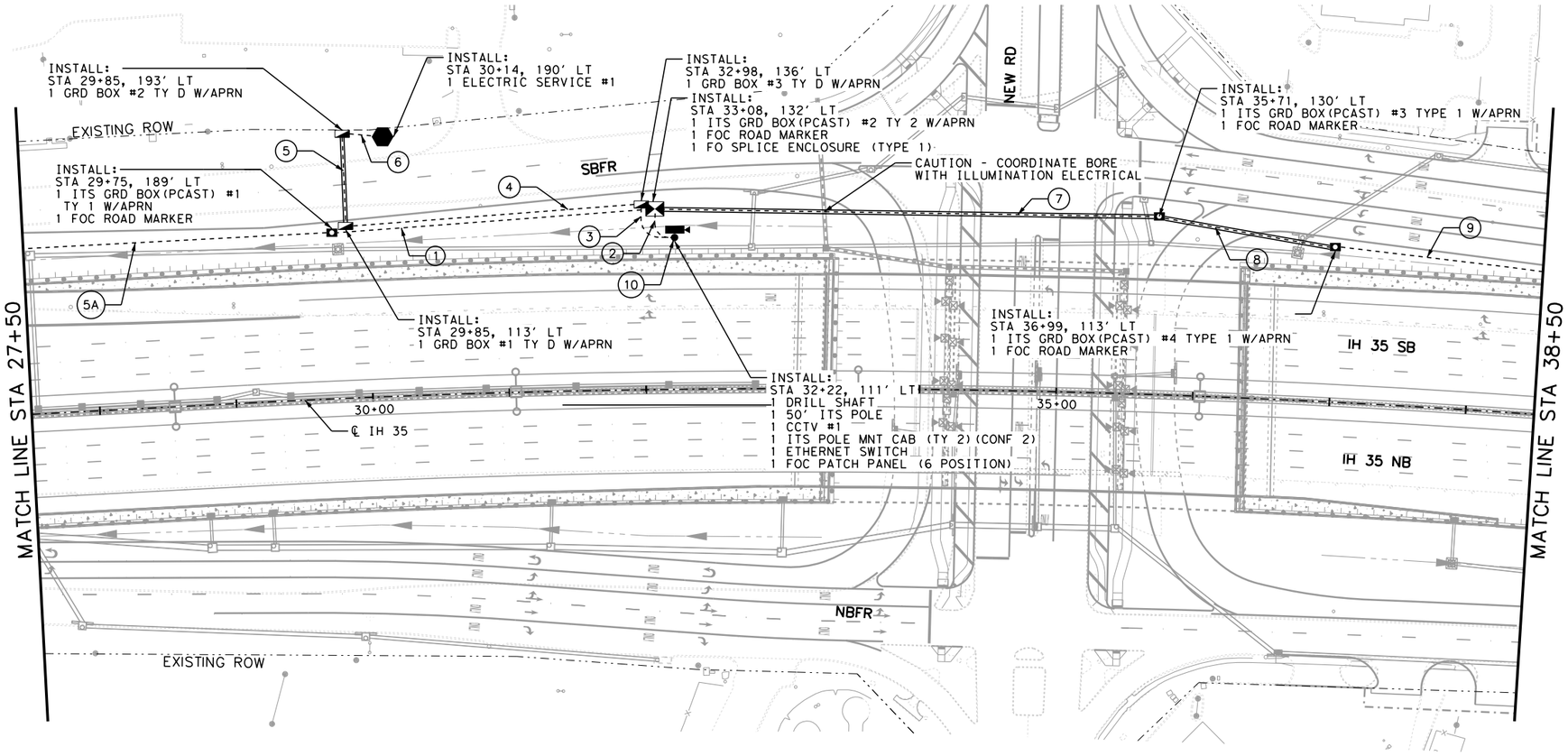

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
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STATE OF TEXAS
SELENA ASIRE
99244
LICENSED PROFESSIONAL ENGINEER

10/18/2023

NO.	DATE	REVISION	APPROVED

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 27+50 TO STA 38+50

SHEET 7 OF 20

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1511
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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27+50 TO 38+50
CONDUIT & CABLE CHART

RUN NUMBER	618 6029 CONDT (PVC) (SCH 40) (3") (ITS)	618 6029 CONDT (PVC) (SCH 40) (3") (ELECT)	618 6054 CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	618 6054 CONDT (PVC) (SCH 80) (3") (BORE) (ELECT)	618 6074 CONDT (RM) (3")	620 6002 ELEC CONDR (NO.14) INSULATED (TRACER)	620 6011 ELEC CONDR (NO.4) BARE	620 6012 ELEC CONDR (NO.4) INSULATED	6007 6010 FIBER OPTIC CBL (SNGLE-MODE) (6 FIBER)	6007 6017 FIBER OPTIC CBL (SINGLE-MODE) (144 FIBER)	6007 6034 FIBER OPTIC PIGTAIL (6 FIBER)	6016 6006 ITS MULTI-DUCT CND (PVC-40)	6016 6011 ITS MULTI-DUCT CND (PVC-80) (BORE)	RUN LENGTH FEET
5A	2					1				1		2		227
1	2					1				1		2		237
2	2					1			1					30
3		1					1	2						43
4		1					1	2						217
5				1			1	2						68
6		1					1	2						30
7			2			1				1			2	362
8			2			1				1			2	138
9	2					1				1		2		154
10					0.25						1			10
WIRE SLACK						4	3	6						5
SLACK FO BB 100										4				100
SLACK FO 25									1					25
TOTAL	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	
	1296	290	1000	68	2.50	1168	373	746	55	1518	10	1236	1000	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
416 6005	DRILL SHAFT (42 IN)	LF	22
432 6001	RIPRAP (CONC) (4 IN)	CY	1.25
618 6029	CONDT (PVC) (SCH 40) (3") (ELECT)	LF	290
618 6029	CONDT (PVC) (SCH 40) (3") (ITS)	LF	1296
618 6054	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	LF	1000
618 6054	CONDT (PVC) (SCH 80) (3") (BORE) (ELECT)	LF	68
618 6074	CONDT (RM) (3")	LF	2.50
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	1168
620 6011	ELEC CONDR (NO.4) BARE	LF	373
620 6012	ELEC CONDR (NO.4) INSULATED	LF	746
624 6010	GROUND BOX TY D (162922) W/APRON	EA	3
628 6308	ELC SRV TY T 120/240 000(NS)GS(N)SP(U)	EA	1
6007 6010	FIBER OPTIC CBL (SNGLE-MODE) (6 FIBER)	LF	55
6007 6017	FIBER OPTIC CBL (SINGLE-MODE) (144 FIBER)	LF	1518
6007 6034	FIBER OPTIC PIGTAIL (6 FIBER)	LF	10
6007 6087	FO SPLICE ENCLOSURE (TYPE 1)	EA	1
6007 6094	FIBER OPTIC FUSION SPLICE	EA	6
6007 6095	FIBER OPTIC PATCH PANEL (6 POSITION)	EA	1
6007 6109	FIBER OPTIC JUMPERS	EA	1
6010 6002	CCTV FIELD EQUIP (DIGITAL)	EA	1
6010 6004	CCTV MOUNT (POLE)	EA	1
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	1236
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	1000
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	4
6064 6037	ITS POLE (50 FT) (90 MPH)	EA	1
6064 6084	ITS POLE MNT CAB (TY2) (CONF 2)	EA	1
6186 6004	ITS GND BOX(PCAST) TY 1 (243648) W/APRN	EA	3
6186 6010	ITS GND BOX(PCAST) TY 2 (366048) W/APRN	EA	1
6320 6001	ETHERNET SWITCH (INSTALL ONLY)	EA	1
TXDOT 0011 *	SFP 100MBS SINGLE-MODE OPTICS (10KM)	EA	1
TXDOT 0012 *	ETHERNET SWITCH	EA	1

* FOR CONTRACTOR INFORMATION ONLY. ITEM TO BE FURNISHED BY TXDOT THROUGH FORCE ACCOUNT AND INSTALLED BY THE CONTRACTOR.

10/18/2023

NO.	DATE	REVISION	APPROVED

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 27+50 TO STA 38+50

SHEET 7A OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1512

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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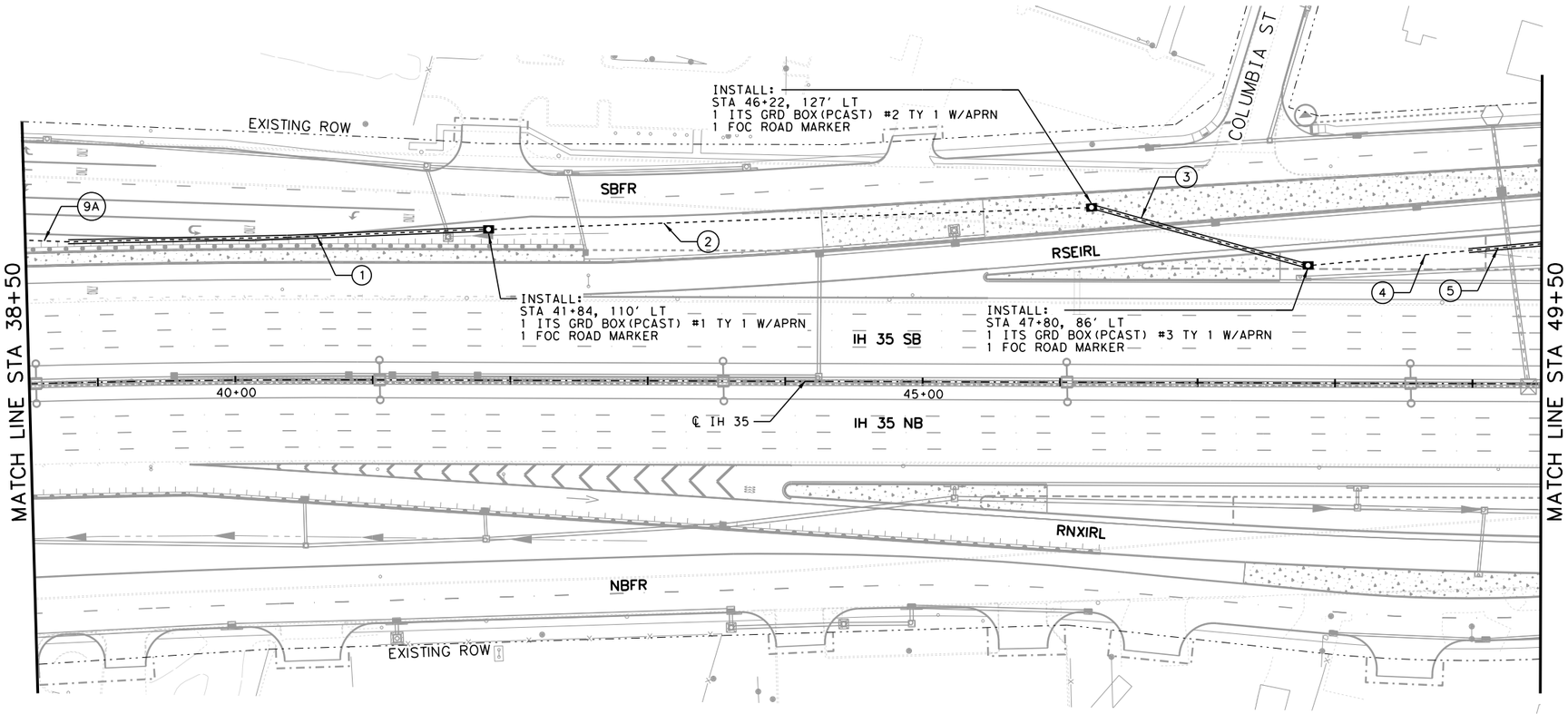

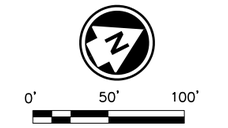

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

38+50 TO 49+50
CONDUIT & CABLE CHART

RUN NUMBER	618 6029	618 6054	620 6002	6007 6017	6016 6006	6016 6011	RUN LENGTH
	CONDT (PVC) (SCH 40) (3")(ITS)	CONDT (PVC) (SCH 80) (3") (BORE)(ITS)	ELEC CONDR (NO.14) INSULATED (TRACER)	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	ITS MULTI-DUCT CND (PVC-40)	ITS MULTI-DUCT CND (PVC-80) (BORE)	FEET
9A	2		1	1	2		32
1		2	1	1		2	307
2	2		1	1	2		439
3		2	1	1		2	164
4	2		1	1	2		118
5		2	1	1		2	53
WIRE SLACK			3				5
SLACK FO BB 100				3			100
SLACK FO 25							25
SLACK FO							100
RVSD CABLE							40
DMS CABLE							40
TOTAL	LF	LF	LF	LF	LF	LF	
	1178	1048	1128	1413	1178	1048	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3")(ITS)	LF	1178
618 6054	CONDT (PVC) (SCH 80) (3") (BORE)(ITS)	LF	1048
620 6002	ELEC CONDR (NO.14) INSULATED TRACER	LF	1128
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1413
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	1178
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	1048
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	4
6186 6004	ITS GND BOX(PCAST) TY 1 (243648)W/APRN	EA	3

NOTES:

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10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 38+50 TO STA 49+50

SHEET 8 OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1513

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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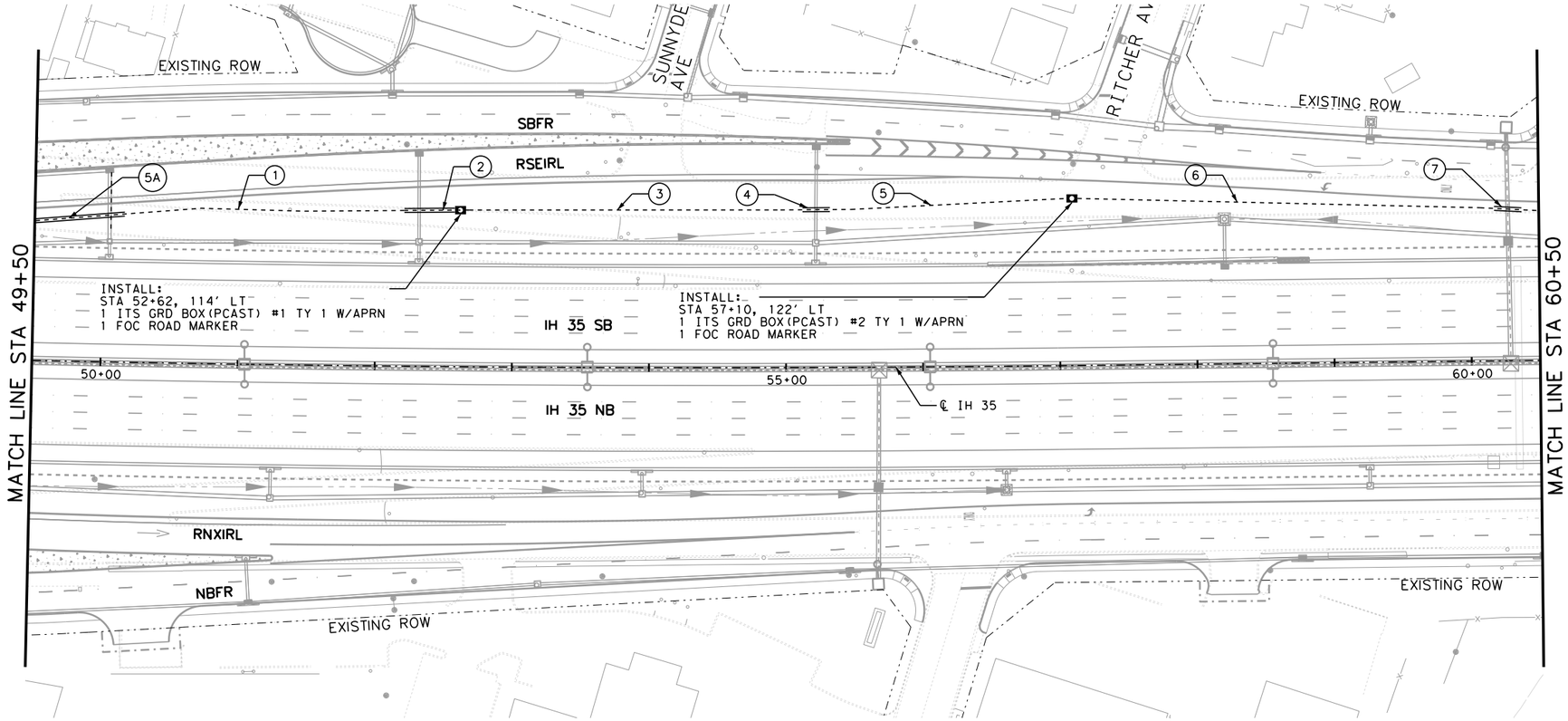

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

49+50 TO 60+50
CONDUIT & CABLE CHART

RUN NUMBER	618 6029	618 6054	620 6002	6007 6017	6016 6006	6016 6011	RUN LENGTH
	CONDT (PVC) (SCH 40) (3") (ITS)	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	ELEC CONDR (NO.14) INSULATED (TRACER)	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	ITS MULTI-DUCT CND (PVC-40)	ITS MULTI-DUCT CND (PVC-80) (BORE)	FEET
5A		2	1	1		2	79
1	2		1	1	2		177
2		2	1	1		2	56
3	2		1	1	2		234
4		2	1	1		2	52
5	2		1	1	2		160
6	2		1	1	2		198
7		2	1	1		2	43
WIRE SLACK			2				5
SLACK FO BB 100				2			100
SLACK FO 25							25
TOTAL	LF	LF	LF	LF	LF	LF	
	1538	460	1009	1199	1538	460	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3") (ITS)	LF	1538
618 6054	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	LF	460
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	1009
6007 6017	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	LF	1199
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	1538
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	460
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	2
6186 6004	ITS GND BOX(PCAST) TY 1 (243648)W/APRN	EA	2

NOTES:

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STATE OF TEXAS
SELENA ASIRE
99244
LICENSED
PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

Texas Department of Transportation
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The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 49+50 TO STA 60+50

SHEET 9 OF 20

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1514
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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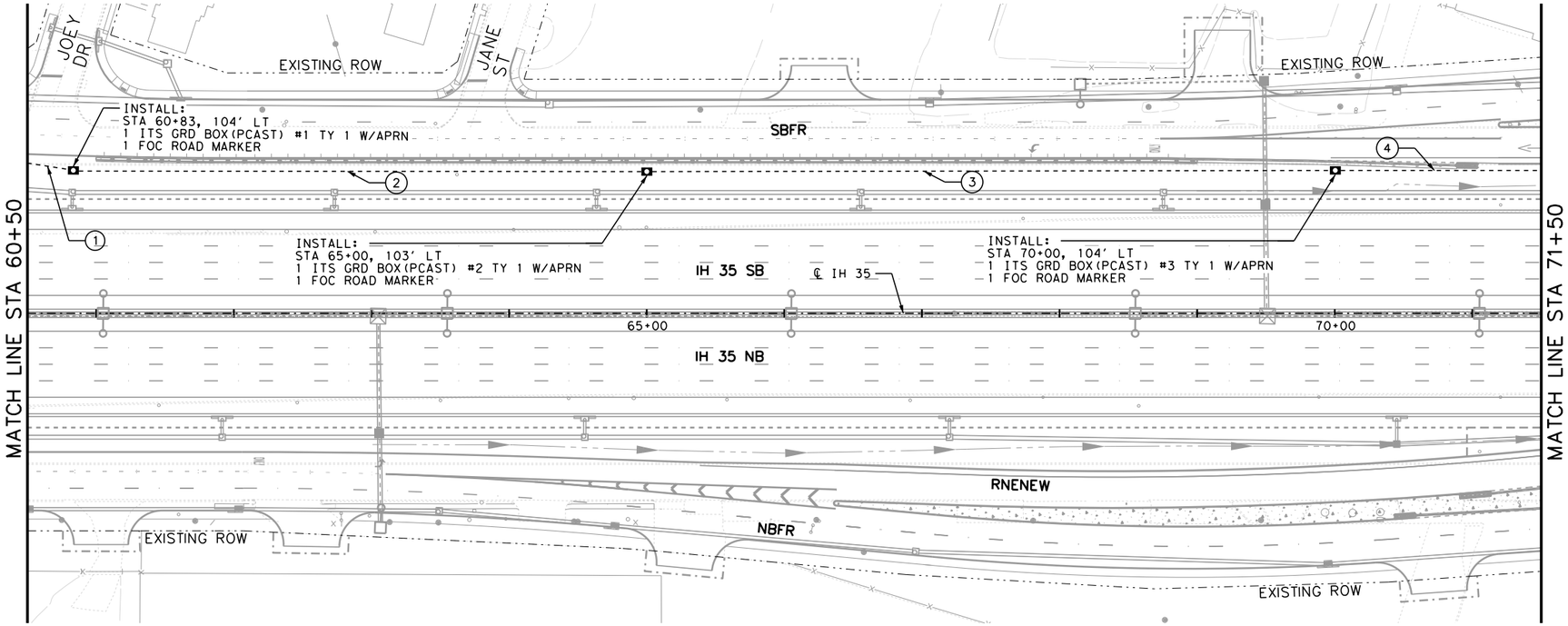

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

60+50 TO 71+50
CONDUIT & CABLE CHART

RUN NUMBER	618 6029	620 6002	6007 6017	6016 6006	RUN LENGTH
	CONDT (PVC) (SCH 40) (3") (ITS)	ELEC CONDR (NO.14) INSULATED (TRACER)	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	ITS MULTI-DUCT CND (PVC-40)	FEET
1	2	1	1	2	33
2	2	1	1	2	417
3	2	1	1	2	501
4	2	1	1	2	148
WIRE SLACK		3			5
SLACK FO BB 100			3		100
SLACK FO 25					25
TOTAL	LF	LF	LF	LF	
	2198	1114	1399	2198	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3") (ITS)	LF	2198
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	1114
6007 6017	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	LF	1399
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	2198
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	3
6186 6004	ITS GND BOX(PCAST) TY 1 (243648) W/APRN	EA	3

NOTES:

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STATE OF TEXAS
SELENA ASIRE
99244
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 60+50 TO STA 71+50

SHEET 10 OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1515

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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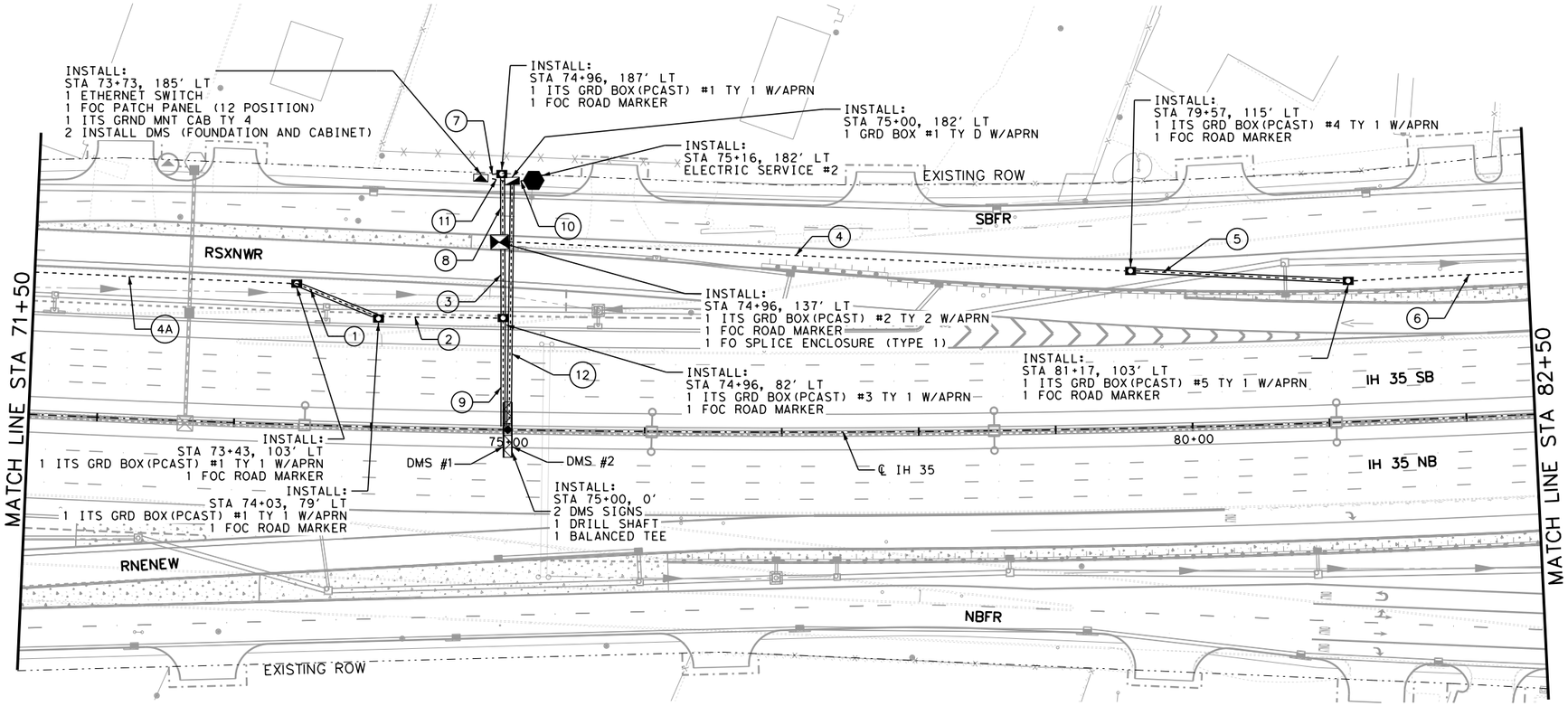

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
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STATE OF TEXAS
SELENA ASIRE
99244
LICENSED PROFESSIONAL ENGINEER

10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 71+50 TO STA 82+50

SHEET 11 OF 20

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1516
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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71+50 TO 82+50
CONDUIT & CABLE CHART

RUN NUMBER	618 6029 CONDT (PVC) (SCH 40) (3") (ITS)	618 6029 CONDT (PVC) (SCH 40) (3") (ELECT)	0618 6047 CONDT (PVC) (SCH80) (2") (BORE) (ITS)	0618 6047 CONDT (PVC) (SCH80) (2") (BORE) (ELECT)	618 6054 CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	620 6002 ELEC CONDR (NO.14) INSULATED (TRACER)	620 6009 ELEC CONDR (NO.6) BARE	620 6010 ELEC CONDR (NO.6) INSULATED	6007 6010 FIBER OPTIC CBL (SINGLE-MODE) (6 FIBER)	6007 6017 FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	6007 6029 FO CBL (6 SMF) (INS ONLY)	6007 6034 FIBER OPTIC PIGTAIL (6 FIBER)	6016 6006 ITS MULTI-DUCT CND (PVC-40)	6016 6011 ITS MULTI-DUCT CND (PVC-80) (BORE)	RUN LENGTH FEET
4A	2					1				1			2		12
1					2	1				1				2	63
2	2					1				1			2		93
3					2	1				1	2			2	56
4	2					1				1			2		425
5					2	1				1				2	194
6	2					1				1			2		131
7	2					1			2		2	1			17
8					2	1			2		2				51
9			2			1					2				82
10		1					2	4							16
11		2					2	4							24
12				2			2	4							182
WIRE SLACK						6	3	6							5
SLACK FO BB 100										6					100
SLACK FO 25									8						25
TOTAL	LF 1356	LF 64	LF 164	LF 364	LF 728	LF 1154	LF 459	LF 918	LF 336	LF 1574	LF 412	LF 16	LF 1322	LF 626	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
416 6023	DRILL SHAFT (SIGN MTS) (54 IN)	LF	72
420 6068	CL C CONC (SIGN COLUMN)	CY	20.1
618 6029	CONDT (PVC) (SCH 40) (3") (ITS)	LF	1356
618 6029	CONDT (PVC) (SCH 40) (3") (ELECT)	LF	64
618 6047	CONDT (PVC) (SCH 40) (2") (ITS)	LF	164
618 6047	CONDT (PVC) (SCH 40) (2") (ELECT)	LF	364
618 6054	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	LF	728
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	1154
620 6009	ELEC CONDR (NO.6) BARE	LF	459
620 6010	ELEC CONDR (NO.6) INSULATED	LF	918
624 6010	GROUND BOX TY D (162922) W/APRON	EA	1
628 6308	ELC SRV TY T 120/240 000 (NS) GS (N) SP (U)	EA	1
650 6031	INS OH SN SUP (30 FT BAL TEE) (SPAN ONLY)	EA	1
6007 6010	FIBER OPTIC CBL (SINGLE-MODE) (6 FIBER)	LF	336
6007 6017	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	LF	1574
6007 6034	FIBER OPTIC PIGTAIL (6 FIBER)	LF	16
6007 6087	FO SPLICE ENCLOSURE (TYPE 1)	EA	1
6007 6094	FIBER OPTIC FUSION SPLICE	EA	48
6007 6096	FIBER OPTIC PATCH PANEL (12 POSITION)	EA	1
6007 6109	FIBER OPTIC JUMPERS	EA	2
6008 6023	ITS GRND MNT CAB (TY 4) (CONF 1)	EA	1
6007 6029 **	FO CBL (6 SMF) (INS ONLY)	LF	412
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	1322
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	626
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	5
6028 6002	INSTALL DMS (FOUNDATION MTD CABINET)	EA	2
6186 6004	ITS GND BOX (PCAST) TY 1 (243648) W/APRN	EA	5
6186 6010	ITS GND BOX (PCAST) TY 2 (366048) W/APRN	EA	1
6320 6001	ETHERNET SWITCH (INSTALL ONLY)	EA	1
TXDOT 0001 *	DMS SIGN	EA	2
TXDOT 0011 *	SFP 100MBS SINGLE-MODE OPTICS (10KM)	EA	1
TXDOT 0012 *	ETHERNET SWITCH	EA	1

* FOR CONTRACTOR INFORMATION ONLY. ITEM TO BE FURNISHED BY TXDOT THROUGH FORCE ACCOUNT AND INSTALLED BY THE CONTRACTOR.
** BID ITEM DESCRIPTION INDICATES SINGLEMODE FIBER INSTALLATION. ON THIS PROJECT IT IS FOR THE CONTRACTOR'S INSTALLATION OF THE DMS MULTIMODE FIBER CABLES TO BE PROVIDED BY TXDOT AND THEIR DMS MANUFACTURER. CONTRACTOR SHALL COORDINATE CABLE LENGTHS WITH THE MANUFACTURER.

10/18/2023

NO.	DATE	REVISION	APPROVED

HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 71+50 TO STA 82+50

SHEET 11A OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1517

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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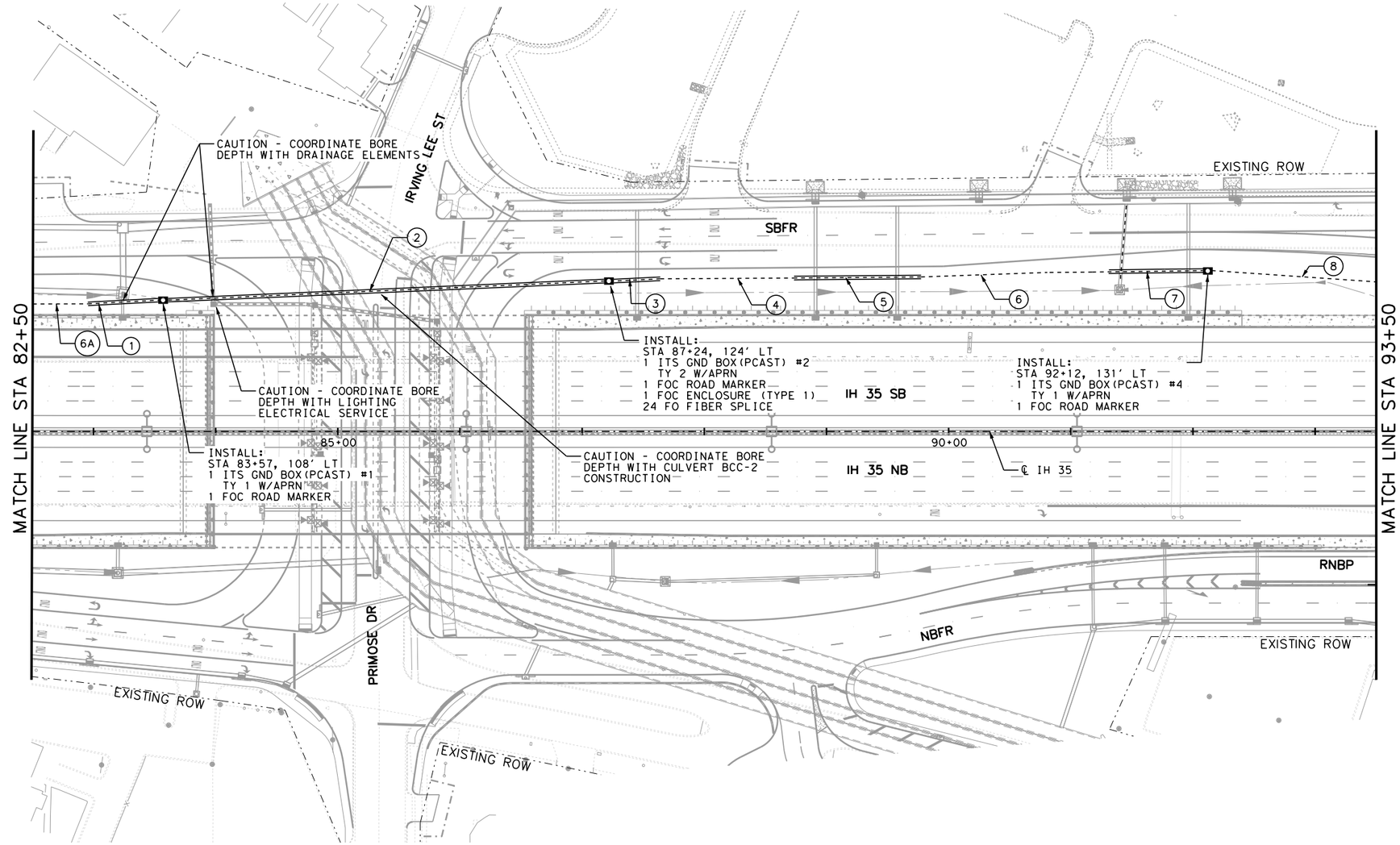

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

82+50 TO 93+50
CONDUIT & CABLE CHART

RUN NUMBER	618 6029 CONDT (PVC) (SCH 40) (3") (ITS)	618 6054 CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	620 6002 ELEC CONDR (NO.14) INSULATED (TRACER)	6007 6017 FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	6016 6006 ITS MULTI-DUCT CND (PVC-40)	6016 6011 ITS MULTI-DUCT CND (PVC-80) (BORE)	RUN LENGTH FEET
6A	2		1	1	2		48
1		2	1	1		2	59
2		2	1	1		2	368
3		2	1	1		2	40
4	2		1	1	2		112
5		2	1	1		2	104
6	2		1	1	2		141
7		2	1	1		2	100
8	2		1	1	2		132
WIRE SLACK			4				5
SLACK FO BB 100				3			100
SLACK FO 25							25
SLACK FO							100
RVSD CABLE							40
DMS CABLE							40
TOTAL	LF 866	LF 1342	LF 1124	LF 1404	LF 866	LF 1342	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3") (ITS)	LF	866
618 6054	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	LF	1342
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	1124
6007 6017	FIBER OPTIC CBL (SINGLE-MODE) (144 FIBER)	LF	1404
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	866
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	1342
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	3
6186 6004	ITS GND BOX(PCAST) TY 1 (243648)W/APRN	EA	3

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.

STATE OF TEXAS
SELENA ASIRE
99244
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 82+50 TO STA 93+50

SHEET 12 OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1518
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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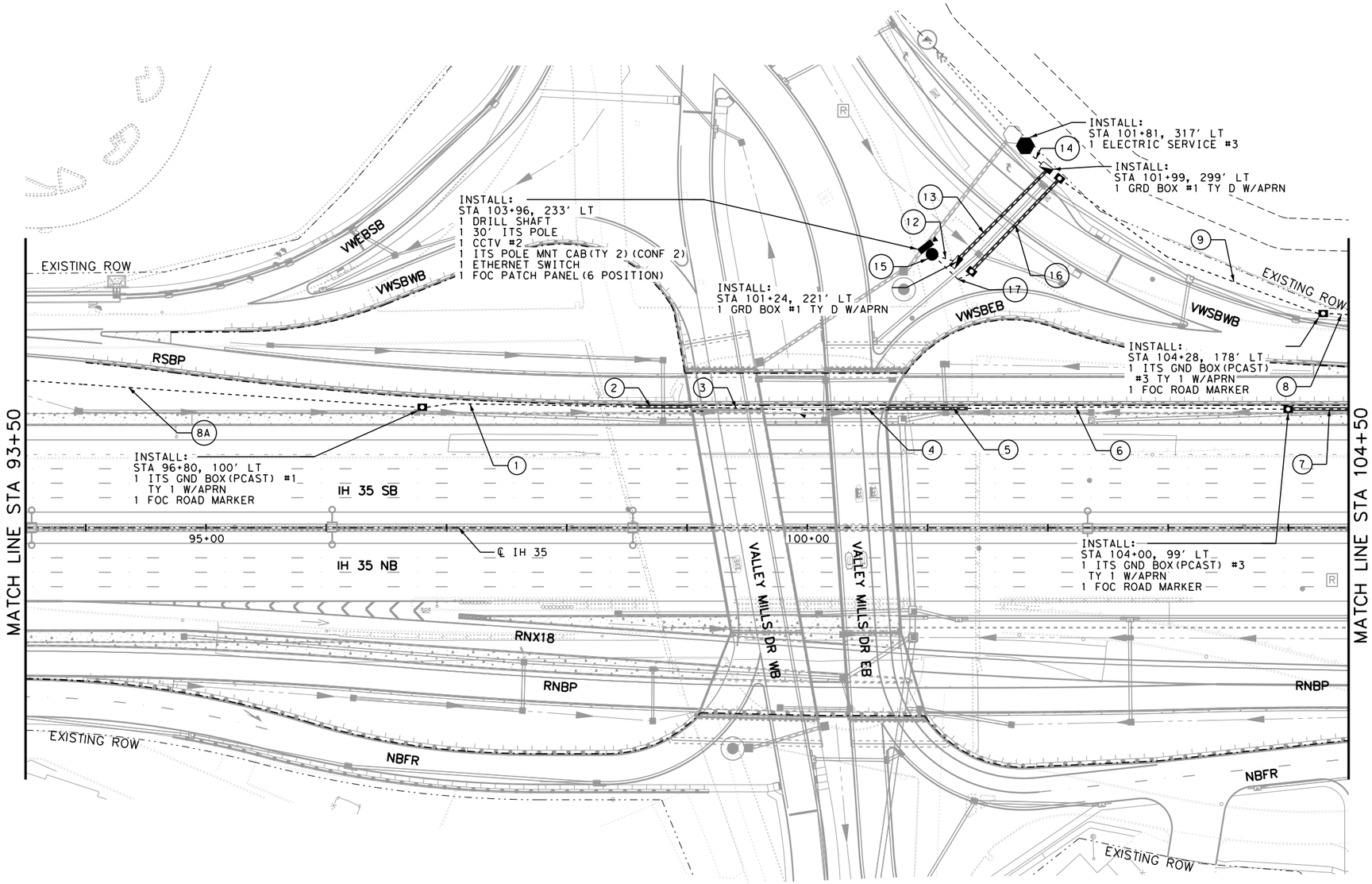

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.

STATE OF TEXAS
SELENA ASIRE
99244
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 93+50 TO STA 104+50

SHEET 13 OF 20

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1519
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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93+50 TO 104+50
CONDUIT & CABLE CHART

RUN NUMBER	618 6029 CONDT (PVC) (SCH 40) (3") (ITS)	618 6029 CONDT (PVC) (SCH 40) (3") (ELECT)	618 6054 CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	618 6054 CONDT (PVC) (SCH 80) (3") (BORE) (ELECT)	620 6002 ELEC CONDR (NO.14) INSULATED (TRACER)	620 6007 ELEC CONDR (NO.8) BARE	620 6008 ELEC CONDR (NO.8) INSULATED	6007 6010 FIBER OPTIC CBL (SNGLE-MODE) (6 FIBER)	6007 6017 FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	6007 6034 FIBER OPTIC PIGTAIL (6 FIBER)	6016 6006 ITS MULTI-DUCT CND (PVC-40)	6016 6011 ITS MULTI-DUCT CND (PVC-80) (BORE)	RUN LENGTH FEET
8A	2				1			1	1		2		331
1	2				1			1	1		2		177
2			2		1			1	1			2	45
3	2				1			1	1		2		93
4	2				1				1		2		71
5			2		1				1			2	70
6	2				1				1		2		266
7			2		1				1			2	51
8	2				1			1			2	2	21
9	2				1			1			2	2	130
10			2		1			1				2	50
11	2				1			1			2	2	190
12		1			1	1	2						25
13				1	1	1	2						105
14					1	1	2						19
15	0.25	1								1			10
16			2		1			1				2	105
17	2				1			1			2		15
WIRE SLACK					17	3	6						5
SLACK FO BB 100									3				100
SLACK FO 25								4					25
SLACK FO													100
RVSD CABLE													40
DMS CABLE													40
TOTAL	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	
	2591	35	642	105	1849	164	328	1257	1404	10	2588	1324	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
416 6004	DRILL SHAFT (36 IN)	LF	15
432 6001	RIPRAP (CONC) (4 IN)	CY	1.25
618 6029	CONDT (PVC) (SCH 40) (3") (ELECT)	LF	35
618 6029	CONDT (PVC) (SCH 40) (3") (ITS)	LF	2591
618 6054	CONDT (PVC) (SCH 80) (3") (BORE) (ELECT)	LF	105
618 6054	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	LF	642
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	1849
620 6007	ELEC CONDR (NO.8) BARE	LF	164
620 6008	ELEC CONDR (NO.8) INSULATED	LF	328
624 6010	GROUND BOX TY D (162922) W/APRON	EA	2
628 6308	ELC SRV TY T 120/240 000 (NS) GS (N) SP (U)	EA	1
6007 6010	FIBER OPTIC CBL (SNGLE-MODE) (6 FIBER)	LF	1257
6007 6017	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	LF	1404
6007 6034	FO CBL (6 SMF) (PIGTAIL)	LF	10
6007 6094	FIBER OPTIC FUSION SPLICE	EA	6
6007 6095	FIBER OPTIC PATCH PANEL (6 POSITION)	EA	1
6007 6109	FIBER OPTIC JUMPERS	EA	2
6010 6002	CCTV FIELD EQUIP (DIGITAL) (INSTL ONLY)	EA	1
6010 6004	CCTV MOUNT (POLE)	EA	1
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	2588
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	1324
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	5
6062 6041	ITS POLE (30 FT) (90 MPH)	EA	1
6064 6084	ITS POLE MNT CAB (TY 2) (CONF 2)	EA	1
6186 6004	ITS GND BOX (PCAST) TY 1 (243648) W/APRN	EA	5
6320 6001	ETHERNET SWITCH (INSTALL ONLY)	EA	1
TXDOT 0011 *	SFP 100MBS SINGLE-MODE OPTICS (10KM)	EA	1
TXDOT 0012 *	ETHERNET SWITCH	EA	1

* FOR CONTRACTOR INFORMATION ONLY. ITEM TO BE FURNISHED BY TXDOT THROUGH FORCE ACCOUNT AND INSTALLED BY THE CONTRACTOR.

STATE OF TEXAS
SELENA ASIRE
99244
LICENSED PROFESSIONAL ENGINEER
10/18/2023

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 93+50 TO STA 104+50

SHEET 13A OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1520
STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN
CONT.	SECT.	JOB / HIGHWAY NO.
0015	01	246 / IH 35

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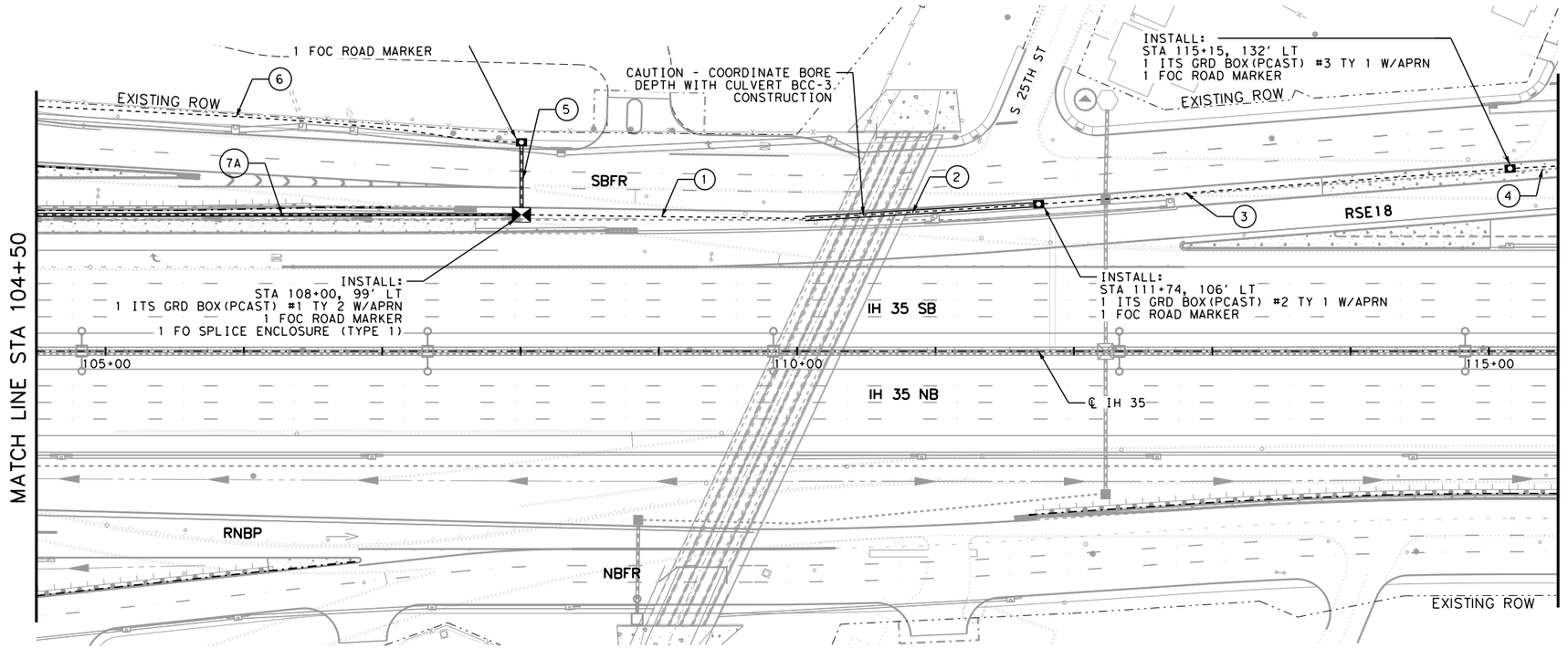

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

104+50 TO 115+50
CONDUIT & CABLE CHART

RUN NUMBER	618 6029	618 6054	620 6002	6007 6010	6007 6017	6016 6006	6016 6011	RUN LENGTH
	CONDT (PVC) (SCH 40) (3") (ITS)	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	ELEC CONDR (NO.14) INSULATED (TRACER)	FIBER OPTIC CBL (SNGLE-MODE) (6 FIBER)	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	ITS MULTI-DUCT CND (PVC-40)	ITS MULTI-DUCT CND (PVC-80) (BORE)	FEET
7A		2	1		1		2	324
1	2		1		1	2		230
2		2	1		1		2	175
3	2		1		1	2		340
4	2		1		1	2		34
5		2	1	1			2	50
6	2		1	1		2		370
WIRE SLACK			3					5
SLACK FO BB 100					3			100
SLACK FO 25				2				25
SLACK FO								100
RVSD CABLE								40
DMS CABLE								40
TOTAL	LF	LF	LF	LF	LF	LF	LF	
	1948	1098	1538	470	1403	1948	1098	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3") (ITS)	LF	1948
618 6054	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	LF	1098
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	1538
6007 6010	FIBER OPTIC CBL (SINGLE MODE) (6 FIBER)	LF	470
6007 6017	FIBER OPTIC CBL (SINGLE-MODE) (144 FIBER)	LF	1403
6007 6029	FO SPLICE ENCLOSURE (TYPE 1)	EA	1
6007 6094	FIBER OPTIC FUSION SPLICE	EA	6
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	1948
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	1098
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	4
6186 6004	ITS GND BOX(PCAST) TY 1 (243648)W/APRN	EA	3
6186 6010	ITS GND BOX(PCAST) TY 2 (366048)W/APRN	EA	1

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.

STATE OF TEXAS
SELENA ASIRE
99244
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 104+50 TO STA 115+50

SHEET 14 OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1521

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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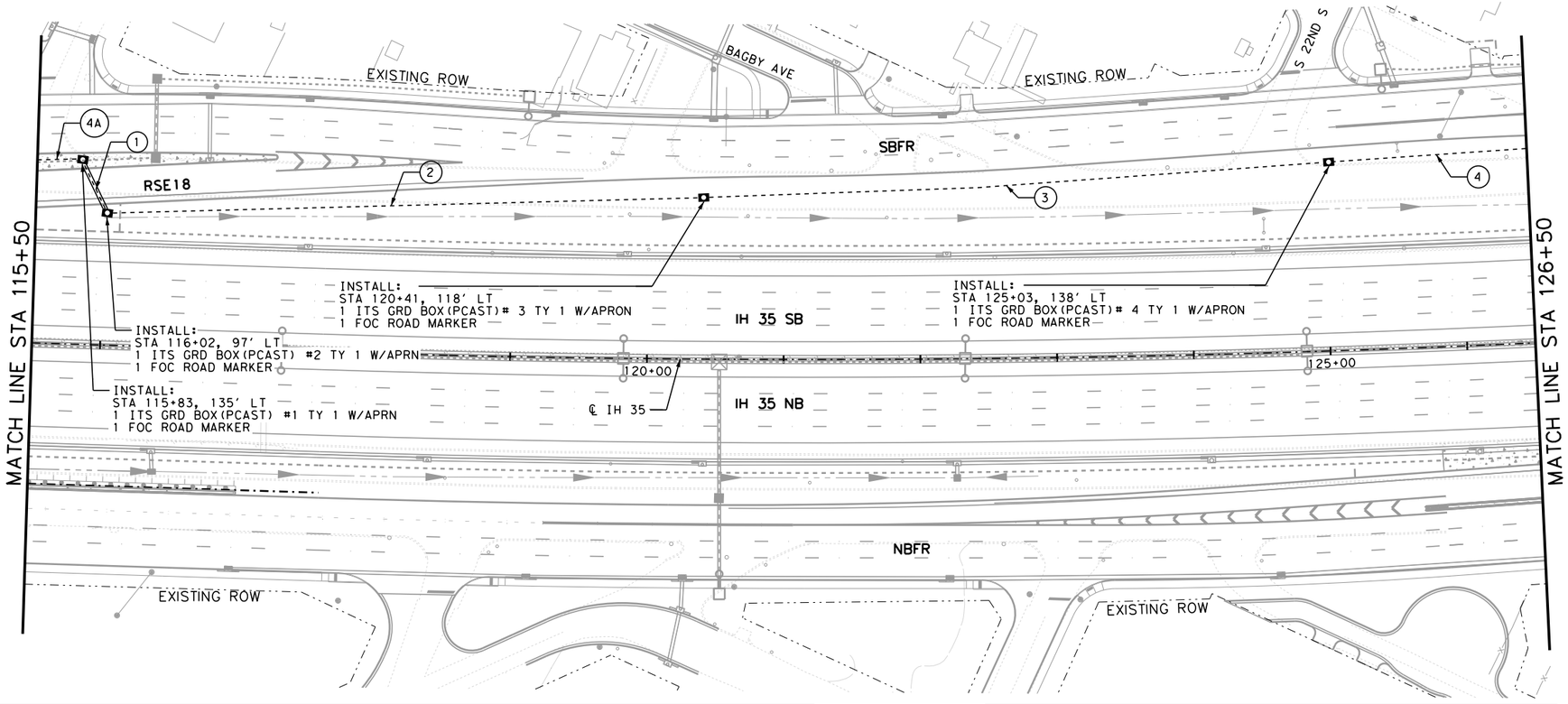

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

115+50 TO 126+50
CONDUIT & CABLE CHART

RUN NUMBER	618 6029	618 6054	620 6002	6007 6017	6016 6006	6016 6011	RUN LENGTH
	CONDT (PVC) (SCH 40) (3") (ITS)	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	ELEC CONDR (NO.14) INSULATED (TRACER)	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	ITS MULTI-DUCT CND (PVC-40)	ITS MULTI-DUCT CND (PVC-80) (BORE)	FEET
4A	2		1	1	2		33
1		2	1	1		2	62
2	2		1	1	2		419
3	2		1	1	2		458
4	2		1	1	2		146
WIRE SLACK			4				5
SLACK FO BB 100				4			100
TOTAL	LF	LF	LF	LF	LF	LF	
	2112	124	1138	1518	2112	124	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3") (ITS)	LF	2112
618 6054	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	LF	124
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	1138
6007 6017	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	LF	1518
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	2112
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	124
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	4
6186 6004	ITS GND BOX(PCAST) TY 1 (243648)W/APRN	EA	4

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.

STATE OF TEXAS
SELENA ASIRE
99244
PROFESSIONAL LICENSED ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 115+50 TO STA 126+50

SHEET 15 OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1522

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

FILE: pw: \\pw-int.hntb.org:PWCentralDiv\Documents\Dallas Projects\68651 Waco IH 35 4C\CAD\Sheets\09 - ITS\ITS_013.DGN
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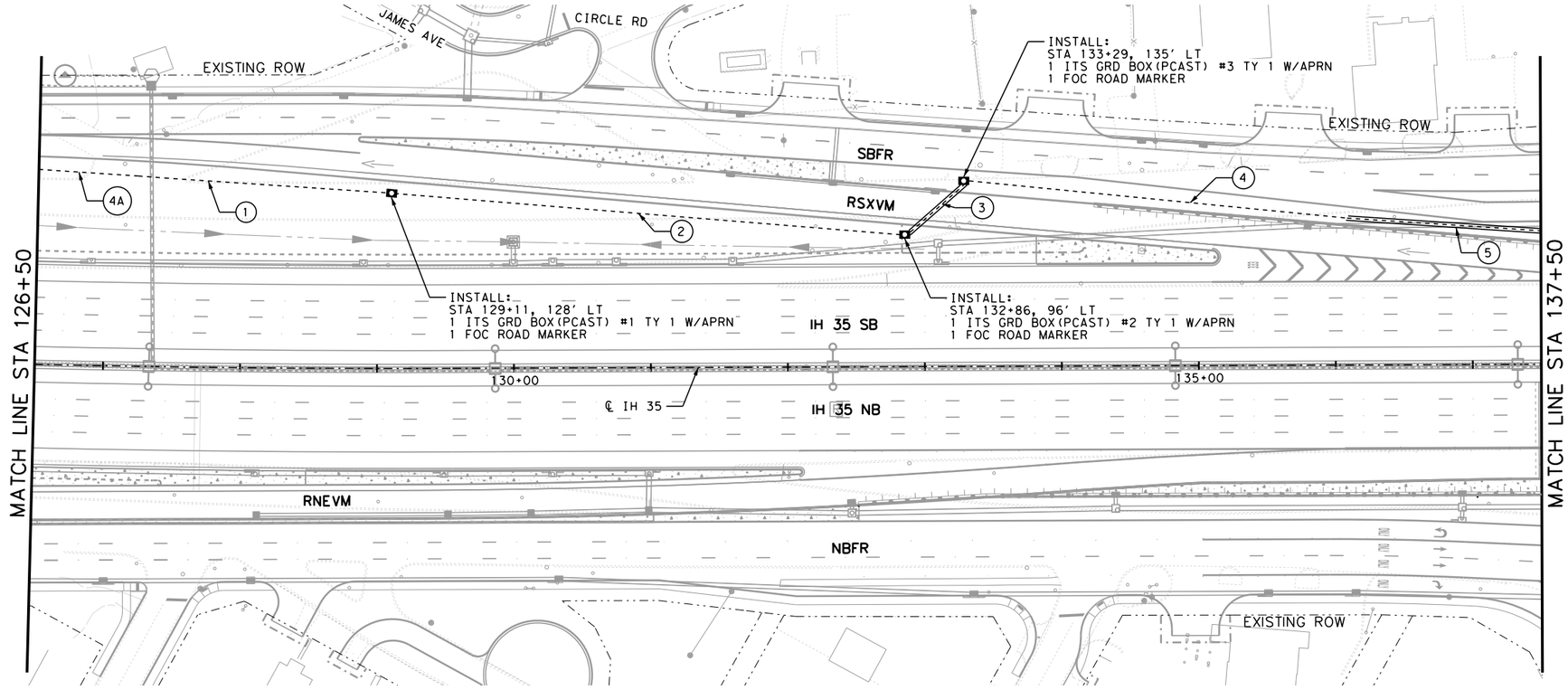

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

126+50 TO 137+50
CONDUIT & CABLE CHART

RUN NUMBER	618 6029 CONDT (PVC) (SCH 40) (3") (ITS)	618 6054 CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	620 6002 ELEC CONDR (NO. 14) INSULATED (TRACER)	6007 6017 FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	6016 6006 ITS MULTI-DUCT CND (PVC-40)	6016 6011 ITS MULTI-DUCT CND (PVC-80) (BORE)	RUN LENGTH FEET
4A	2		1	1	2		324
1	2		1	1	2		230
2	2		1	1	2		175
3		2	1	1		2	340
4	2		1	1	2		34
5							
WIRE SLACK			3				5
SLACK FO BB 100				3			100
TOTAL	LF	LF	LF	LF	LF	LF	
	1526	680	1118	1403	1526	680	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3") (ITS)	LF	1526
618 6054	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	LF	680
620 6002	ELEC CONDR (NO. 14) INSULATED (TRACER)	LF	1118
6007 6017	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	LF	1403
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	1526
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	680
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	3
6186 6004	ITS GND BOX (PCAST) TY 1 (243648) W/APRN	EA	3

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.

STATE OF TEXAS
SELENA ASIRE
99244
LICENSED PROFESSIONAL ENGINEER
10/18/2023

NO.	DATE	REVISION	APPROVED

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 126+50 TO STA 137+50

SHEET 16 OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1523

STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN

CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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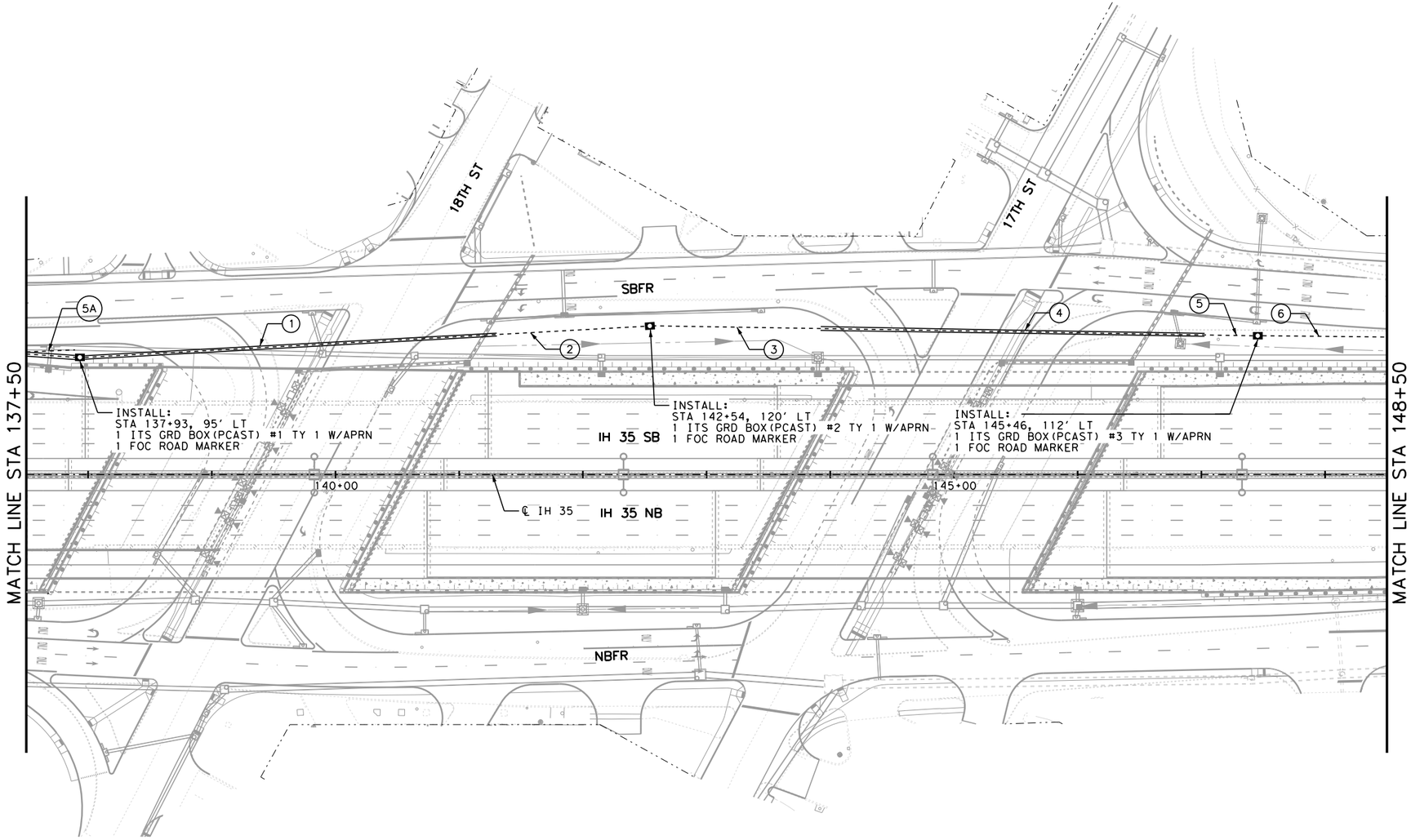

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

137+50 TO 148+50 CONDUIT & CABLE CHART

RUN NUMBER	618 6029	618 6054	620 6002	6007 6017	6016 6006	6016 6011	RUN LENGTH
	CONDT (PVC) (SCH 40) (3")(ITS)	CONDT (PVC) (SCH 80) (3") (BORE)(ITS)	ELEC CONDR (NO.14) INSULATED (TRACER)	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	ITS MULTI-DUCT CND (PVC-40)	ITS MULTI-DUCT CND (PVC-80) (BORE)	FEET
5A		2	1	1		2	44
1		2	1	1		2	341
2	2		1	1	2		122
3	2		1	1	2		139
4		2	1	1		2	309
5	2		1	1	2		44
6	2		1	1	2		105
WIRE SLACK			3				5
SLACK FO BB 100				3			100
TOTAL	LF	LF	LF	LF	LF	LF	
	820	1388	1119	1404	820	1388	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3")(ITS)	LF	820
618 6054	CONDT (PVC) (SCH 80) (3") (BORE)(ITS)	LF	1388
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	1119
6007 6017	FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER)	LF	1404
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	820
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	1388
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	3
6186 6004	ITS GND BOX(PCAST) TY 1 (243648)W/APRN	EA	3

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.

STATE OF TEXAS
SELENA ASIRE
99244
LICENSED PROFESSIONAL ENGINEER

10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 137+50 TO STA 148+50

SHEET 17 OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1524

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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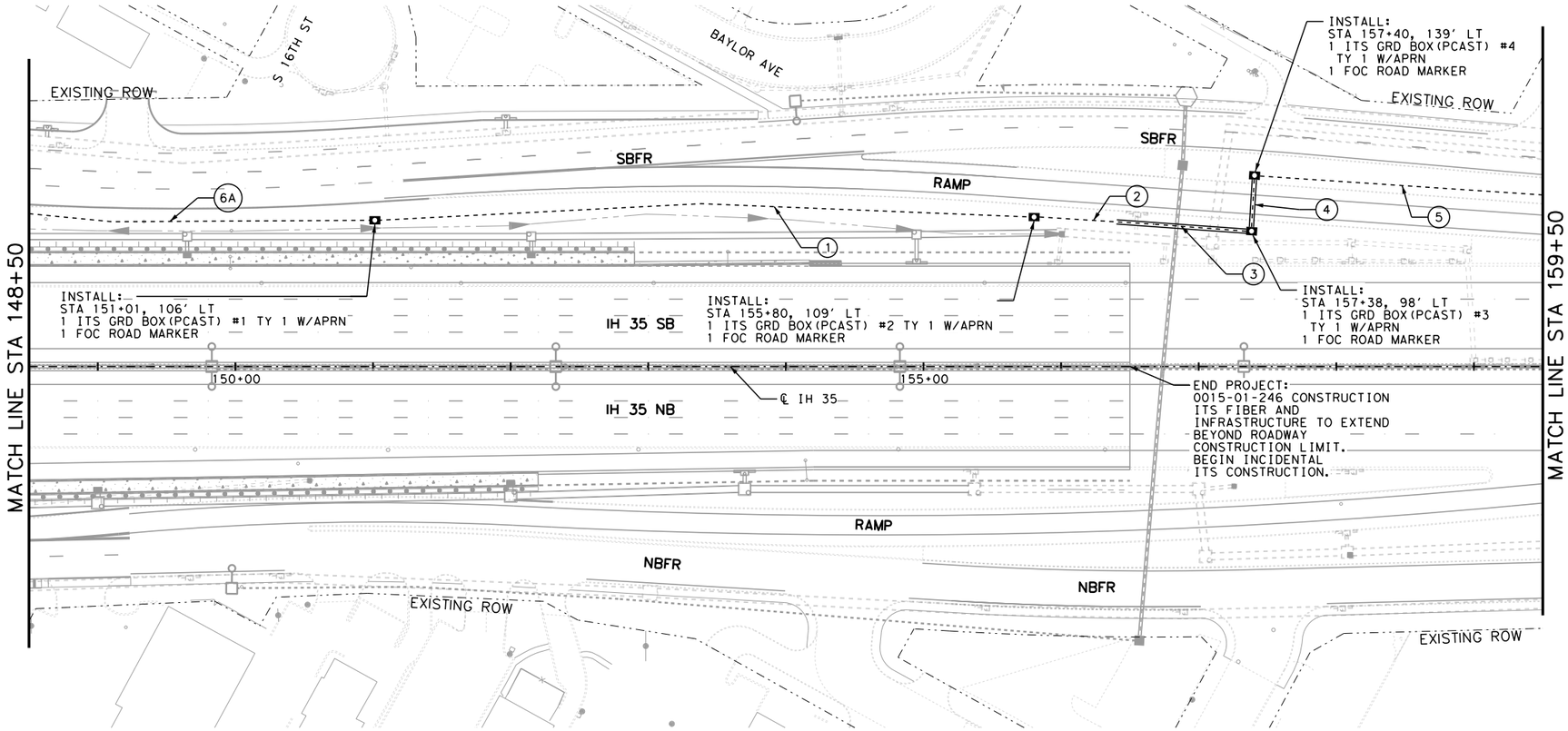

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

148+50 TO 159+50
CONDUIT & CABLE CHART

RUN NUMBER	618 6029	618 6054	620 6002	6007 6017	6016 6006	6016 6011	RUN LENGTH
	CONDT (PVC) (SCH 40) (3") (ITS)	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	ELEC CONDR (NO.14) INSULATED (TRACER)	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	ITS MULTI-DUCT CND (PVC-40)	ITS MULTI-DUCT CND (PVC-80) (BORE)	FEET
6A	2		1	1	2		253
1	2		1	1	2		480
2	2		1	1	2		58
3		2	1	1		2	100
4		2	1	1		2	42
5	2		1	1	2		211
WIRE SLACK			4				5
SLACK FO BB 100				4			100
TOTAL	LF	LF	LF	LF	LF	LF	
	2004	284	1164	1544	2004	284	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3") (ITS)	LF	2004
618 6054	CONDT (PVC) (SCH 80) (3") (BORE) (ITS)	LF	284
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	1164
6007 6017	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	LF	1544
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	2004
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	284
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	4
6186 6004	ITS GND BOX(PCAST) TY 1 (243648)W/APRN	EA	4

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.

STATE OF TEXAS
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99244
LICENSED PROFESSIONAL ENGINEER
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Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 148+50 TO STA 159+50

SHEET 18 OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1525

STATE	DIST.	COUNTY
TEXAS	WACO	McLENNAN

CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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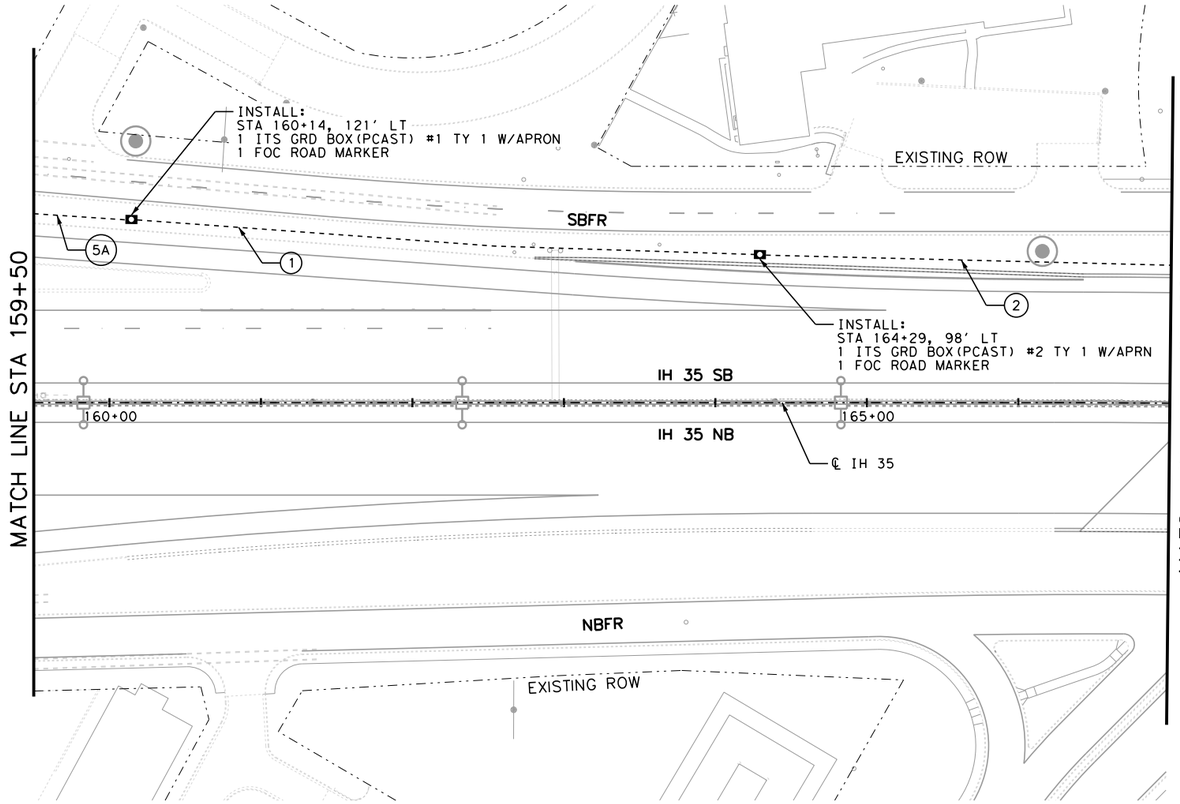

0' 50' 100'

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

159+50 TO 167+00
CONDUIT & CABLE CHART

RUN NUMBER	618 6029	620 6002	6007 6017	6016 6006	RUN LENGTH
	CONDT (PVC) (SCH 40) (3") (ITS)	ELEC CONDR (NO.14) INSULATED (TRACER)	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	ITS MULTI-DUCT CND (PVC-40)	FEET
5A	2	1	1	2	324
1	2	1	1	2	230
2	2	1	1	2	175
WIRE SLACK		2			5
SLACK FO BB 100			2		100
TOTAL	LF	LF	LF	LF	
	1458	739	929	1458	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3") (ITS)	LF	1458
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	739
6007 6017	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	LF	929
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	1458
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	2
6186 6004	ITS GND BOX(PCAST) TY 1 (243648)W/APRN	EA	2

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.

STATE OF TEXAS
SELENA ASIRE
99244
LICENSED PROFESSIONAL ENGINEER

10/18/2023

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Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 159+50 TO STA 167+00

SHEET 19 OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1526

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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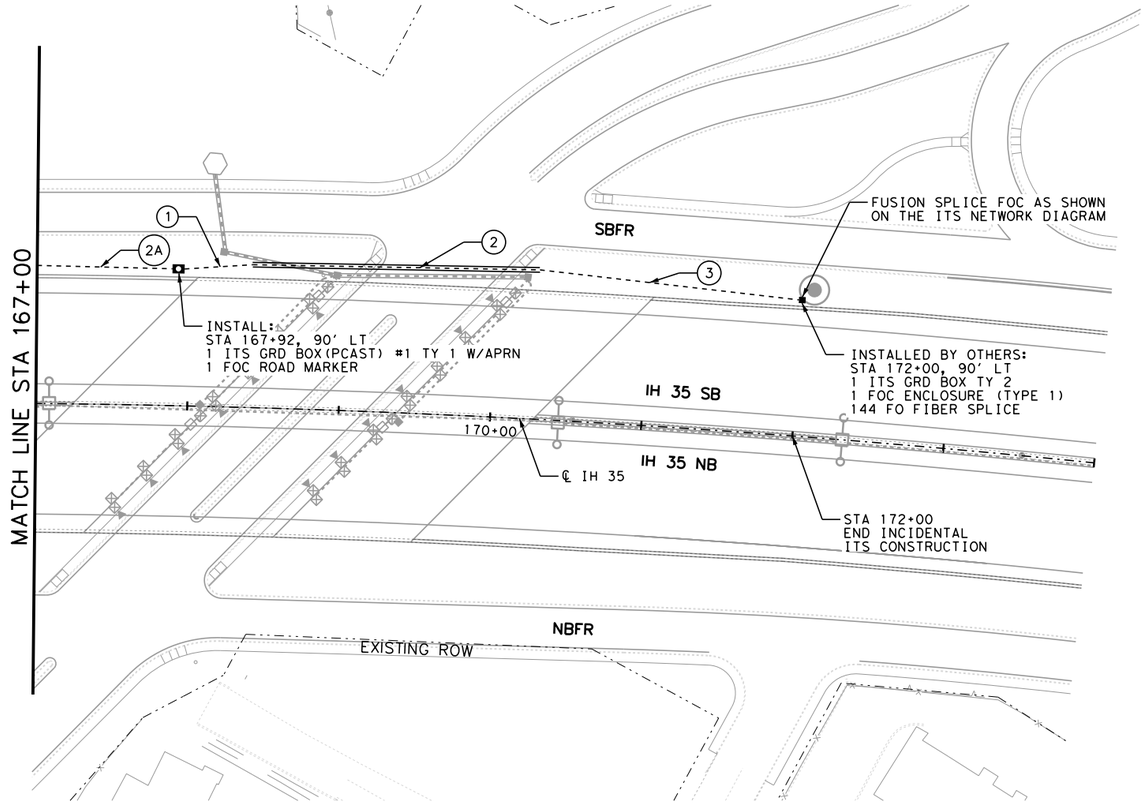

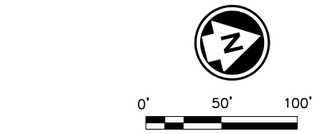

LEGEND:

- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- (#) CONDUIT RUN NUMBER
- PROP GRD BOX (TY D)
- PROP ITS GRD BOX (TY 1)
- PROP ITS GROUND BOX (TY 2)
- PROP GROUND MOUNTED DMS CAB
- PROP 332 CABINET/2070 (TY 4)
- PROP ITS CABINET (TY 6)
- PROP ELECTRICAL SERVICE
- PROP CCTV CAMERA
- PROP DMS - BALANCED TEE
- PROP ITS CCTV POLE

167+00 TO END
CONDUIT & CABLE CHART

RUN NUMBER	618 6029 CONDT (PVC) (SCH 40) (3")(ITS)	618 6054 CONDT (PVC) (SCH 80) (3") (BORE)(ITS)	620 6002 ELEC CONDR (NO.14) INSULATED (TRACER)	6007 6017 FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	6016 6006 ITS MULTI-DUCT CND (PVC-40)	6016 6011 ITS MULTI-DUCT CND (PVC-80) (BORE)	RUN LENGTH FEET
2A	2		1	1	2		94
1	2		1	1	2		49
2		2	1	1		2	190
3	2		1	1	2		174
WIRE SLACK			1				5
SLACK FO BB 100				2			100
TOTAL	LF	LF	LF	LF	LF	LF	
	634	380	512	707	634	380	

SUMMARY OF QUANTITIES

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
618 6029	CONDT (PVC) (SCH 40) (3")(ITS)	LF	634
618 6054	CONDT (PVC) (SCH 80) (3") (BORE)(ITS)	LF	380
620 6002	ELEC CONDR (NO.14) INSULATED (TRACER)	LF	512
6007 6017	FIBER OPTIC CBL (SNGLE-MODE) (144 FIBER)	LF	707
6007 6087	FO SPLICE ENCLOSURE (TYPE 1)	EA	1
6007 6094	FIBER OPTIC FUSION SPLICE	EA	144
6016 6006	ITS MULTI-DUCT CND (PVC-40)	LF	634
6016 6011	ITS MULTI-DUCT CND (PVC-80) (BORE)	LF	380
6016 6015	FIBER OPTIC CABLE ROAD MARKER	EA	1
6027 6008	GROUND BOX (PREPARE)	EA	1
6186 6004	ITS GND BOX(PCAST) TY 1 (243648)W/APRN	EA	1

NOTES:

1. CONTRACTOR MUST FIELD VERIFY ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES.
2. CONTRACTOR TO VERIFY THE EXISTING AND PROPOSED GROUND ELEVATIONS AND PROTECT THE NEW ELECTRICAL CONDUITS AND BOXES.
3. LEGEND SYMBOLS UTILIZED ON LAYOUT PLAN ARE NOT TO SCALE. LOCATE ITEMS USING STATIONING AND OFFSETS.
4. LOCATE THE EXISTING GROUND BOX AT 172+00, 90' LT WITH EXISTING 144 STRAND SINGLEMODE FIBER OPTIC CABLE SLACK COILED AND STORED INSIDE. MODIFY THE PULL BOX TO INTERFACE NEW MULTIDUCT CONDUIT INTO IT PER PLANS. PROVIDE A SPLICE ENCLOSURE. INSTALL AND SPLICE NEW BACKBONE 144 FIBER CABLE TO THE EXISTING 144 FIBER CABLE.

10/18/2023

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS LAYOUT

STA 167+00 TO END

SHEET 20 OF 20

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	1527

STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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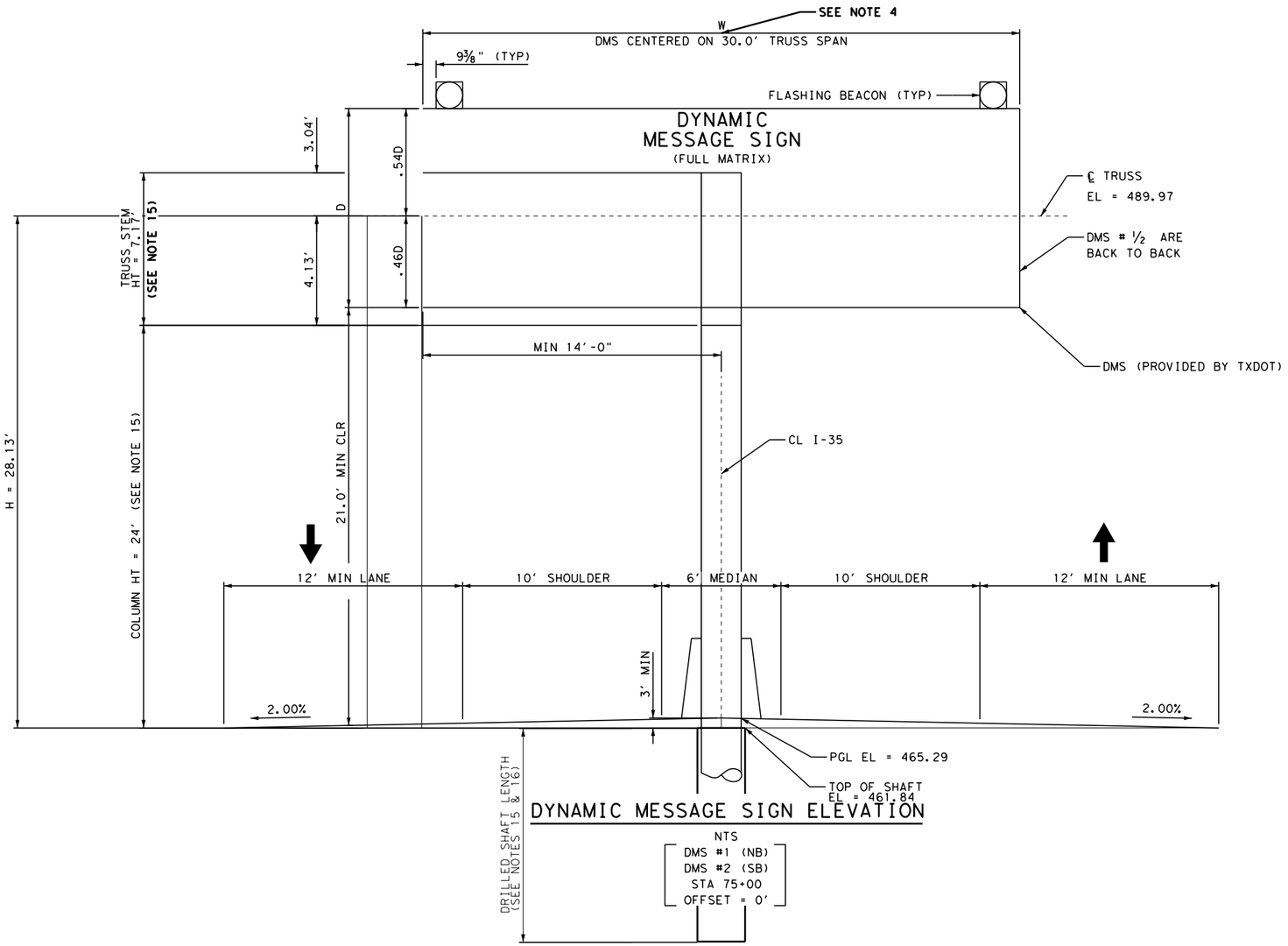

DYNAMIC MESSAGE SIGN ELEVATION

NTS

DMS #1 (NB)
DMS #2 (SB)
STA 75+00
OFFSET = 0'

NOTES

1. CONTRACTOR IS RESPONSIBLE FOR COORDINATING INSTALLATION OF BALANCED "T" MOUNTS WITH ENGINEER SO AS NOT TO INTERFERE WITH ANY ROADWAY WIDENING/CONSTRUCTION.

2. CONTRACTOR IS RESPONSIBLE FOR SURVEYING THE LOCATION(S) OF NEW SIGN SUPPORT STRUCTURES TO CONFIRM THAT THEY MEET THE HEIGHT AND OFFSET DIMENSIONS SHOWN.

3. THE NEW DMS SIGNS SUPPLIED BY TXDOT ARE TYPICALLY 29'-3/16" WIDE X 7-10 1/8" TALL WITH 2 EA FLASHING BEACONS ON TOP. SHOP DRAWINGS MAY BE REQUESTED FROM TXDOT.

4. THE CONTRACTOR SHALL SUPPLY "T" MOUNTS. USE TRUSS DETAILS AND MEMBERS FROM TXDOT STD HCOSS-Z1-21 (SPAN=40').

5. FOR ADDITIONAL DETAILS SEE THE FOLLOWING STANDARDS SHEETS:
   OVERHEAD SIGN BRIDGE DETAILS
   HCOSS-Z1-21, DMS(TM-1)-16, DMS(TM-2)-16, DMS(TM-3)-16, DMS(HZ-2)-21

6. THE BALANCE "T" MOUNTS SUPPLIED AND INSTALLED BY THE CONTRACTOR SHALL BE PAID FOR UNDER ITMES 416, 420, AND 650 FOR THE DRILL SHAFT, COLUMN, AND TRUSS, RESPECTIVELY.

7. CONTRACTOR IS REQUIRED TO VERIFY ALL ABOVE DIMENSIONS BEFORE FABRICATION OF NEW BALANCED "T" MOUNTS.

8. CONTRACTOR SHALL STAKE PROPOSED SIGN LOCATIONS. ENGINEER APPROVAL OF STAKED LOCATION IS REQUIRED BEFORE STARTING DRILL SHAFT CONSTRUCTION.

9. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO ADJUST SIGN LOCATIONS AND ACCOMODATE FIELD CONDITIONS (TO AVOID ANY CONFLICTS WITH EXISTING UTILITIES OR DRAINAGE STRUCTURES).

10. THE DMS MAKE/MODEL TO BE USED WILL BE DETERMINED AND PROVIDED BY TXDOT.

11. WEIGHT OF DYNAMIC MESSAGE SIGN IS ASSUMED TO BE LESS THAN OR EQUAL TO 4,000 POUNDS FOR DESIGN.

12. THE DIMENSIONS SHOWN FOR THE PROPOSED DYNAMIC MESSAGE SIGN ARE BASED ON TXDOT'S CURRENT APPROVED VENDOR'S HARDWARE AND DO NOT NECESSARILY REPRESENT FUTURE VENDOR PROVIDED DYNAMIC MESSAGE SIGN DIMENSIONS.

13. WALKWAY NOT REQUIRED.

14. ELEVATIONS SHOWN ON THIS DRAWING ARE FOR ESTIMATING PURPOSES ONLY.

15. SEE OVERHEAD SIGN BRIDGE DETAILS FOR COLUMN, TRUSS STEM, FOUNDATION, TRUSS CONNECTION, AND AESTHETIC DETAILS.

16. FOUND DRILLED SHAFTS AT LENGTHS SHOWN IN OVERHEAD BRIDGE DETAILS OR LONGER TO OBTAIN MINIMUM TWO DIAMETERS SHAFT PENETRATION INTO ROCK. ROCK IS DEFINED AS VERY HARD, GRAY LIMESTONE.

STATE OF TEXAS
SELENA ASIRE
99244
LICENSED
PROFESSIONAL ENGINEER
10/18/2023

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Texas Department of Transportation

HNTB
HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS
DMS ELEVATION
DETAILS DMS

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1528
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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ELECTRICAL SERVICE SUMMARY														
ITEM & CODE	SERVICE NUMBER	STATION & OFFSET	ELECTRICAL SERVICE DESCRIPTION DATA (SEE ED(5) - 14, ED(6) - 14 AND ED(7) - 14)	SERVICE SUPPORT TYPE	SERVICE FEED	SERVICE CONDUIT SIZE (RMC)*	SERVICE CONDUCTORS NO./SIZE	MAIN CKT. BRK. POLE/AMP	PANEL BD./ LOADCENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT. BRK. POLE/AMPS	BRANCH CIRCUIT AMPS	VOLTAGE	KVA LOAD
628 6308	PROPOSED ELECTRIC SERVICE 1	30+14, 190' LT	ELC SRV TY T 120/240 000(NS)GS(N)SP(U)	STEEL POLE	UNDERGROUND	2	3/#4	N/A	100	CCTV #1	1P/30	20	120	2.4
628 6308	PROPOSED ELECTRIC SERVICE 2	75+16, 182' LT	ELC SRV TY T 120/240 000(NS)GS(N)SP(U)	STEEL POLE	UNDERGROUND	2	3/#3	N/A	100	DMS CAB	1P/30	20	120	2.4
										DMS #1	2P/40	32	240	7.68
										DMS #2	2P/40	32	240	7.68
628 6308	PROPOSED ELECTRIC SERVICE 3	101+81, 317' LT	ELC SRV TY T 120/240 000(NS)GS(N)SP(U)	STEEL POLE	UNDERGROUND	2	3/#4	N/A	100	CCTV #2	1P/30	20	120	2.4

10/18/2023

NO.	DATE	REVISION	APPROVED

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HNTB Corporation
The HNTB Companies
Engineers Architects Planners
Firm Registration Number F-420

IH 35 FROM S LP 340 TO 12TH ST

ITS
ELECTRICAL SERVICES SUMMARY

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		1529
STATE	DIST.	COUNTY	
TEXAS	WACO	McLENNAN	
CONT.	SECT.	JOB	HIGHWAY NO.
0015	01	246	IH 35

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GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is ½ in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

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		DIST	COUNTY		SHEET NO.
		WACO	McLENNAN		1530

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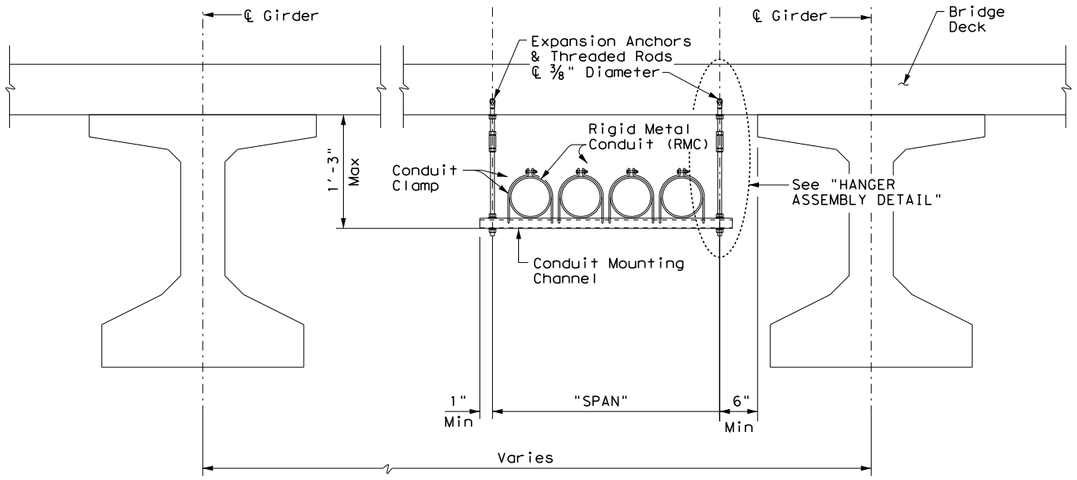
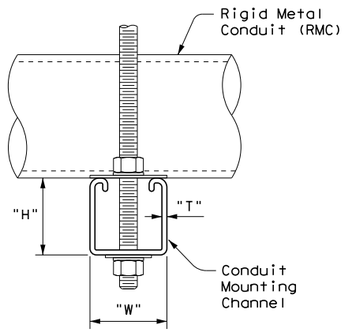
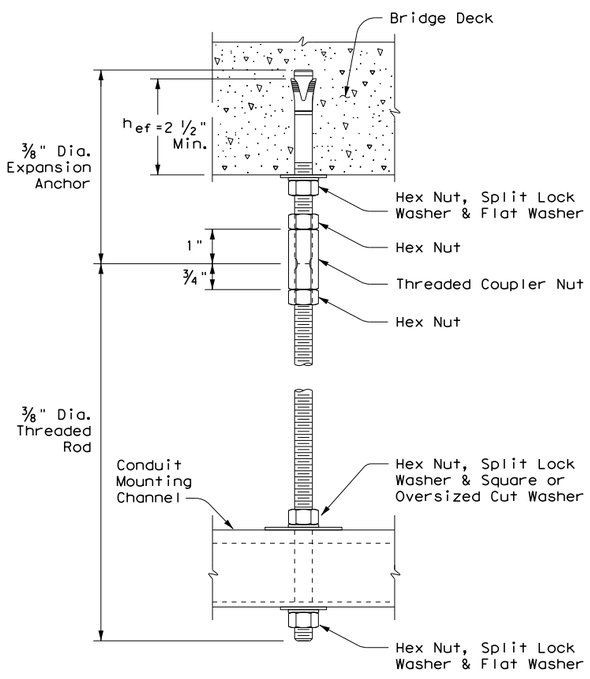


CONDUIT HANGING DETAIL

CONDUIT MOUNTING CHANNEL		
"SPAN"	"W" x "H"	"T"
less than 2'	1 5/8" x 1 3/8"	12 Ga.
2'-0" to 2'-6"	1 5/8" x 1 5/8"	12 Ga.
>2'-6" to 3'-0"	1 5/8" x 2 7/16"	12 Ga.

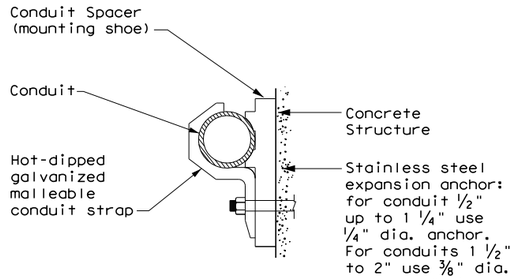
Channels with round or short slotted hole patterns are allowed, if the load carrying capacity is not reduced by more than 15%.

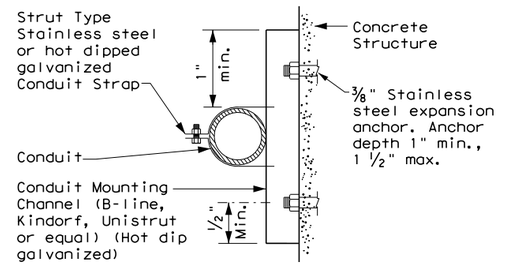




HANGER ASSEMBLY DETAIL

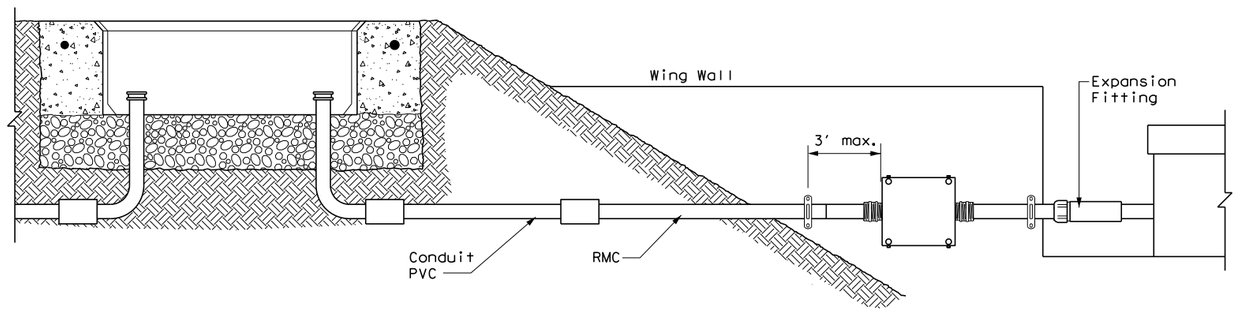
ELECTRIC CONDUIT TO BRIDGE DECK ATTACHMENT





CONDUIT MOUNTING OPTIONS

Attachment to concrete surfaces
See ED(1)B.2



TYPICAL CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL

EXPANSION ANCHOR NOTES FOR BRIDGE DECK ATTACHMENT

1. Use torque controlled mechanical expansion anchors that are approved for use in cracked concrete by the International Code Council, Evaluation Service (ICC-ES). The chosen anchor product shall have a designated ICC-ES Evaluation Report number, and its approval status shall be maintained on the ICC-ES website under Division 031600 for Concrete Anchors.

2. Unless otherwise approved by the Engineer: do not use adhesive anchors; do not use expansion anchors that are not included in the ICC-ES approval list; and do not use expansion anchors that are only approved for use in uncracked concrete.

3. Use anchors manufactured with stainless steel expansion wedges. Anchors manufactured with carbon steel expansion wedges are not allowed. Anchor bodies can be either zinc-plated carbon steel or stainless steel. For application in marine environment, both the anchor body and expansion wedge shall be stainless steel.

4. Install anchors as shown on the plans and in accordance with the anchor manufacturer's published installation instructions. Arrange a field demonstration test to evaluate the procedures and tools. The test shall be witnessed and approved by the Engineer prior to furnishing anchors on the structure.

5. Prior to hole drilling, use rebar locator to ensure clearing of existing deck strands or reinforcement. Install anchors to ensure a minimum effective embedment depth, (h_{ef}), as shown. Increase (h_{ef})as needed to ensure sufficient thread length for proper torqueing and tightening of anchors.

6. Use anchors of minimum 1600 Lbs tensile capacity (minimum of steel, concrete breakout, and concrete pullout strengths as determined by ACI 318 Appendix D) at the required minimum embedment depth (h_{ef}). No lateral loads shall be introduced after conduit installation.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
CONDUIT SUPPORTS

ED(2)-14

FILE: ed2-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1531

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ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.
2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.
3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.
4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.
2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.
3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.
4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.
5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.
6. Support conductors in illumination poles with a J-hook at the top of the pole.
7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.
8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.
9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.
10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.
11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.
12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.
2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.
3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.
4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.
5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

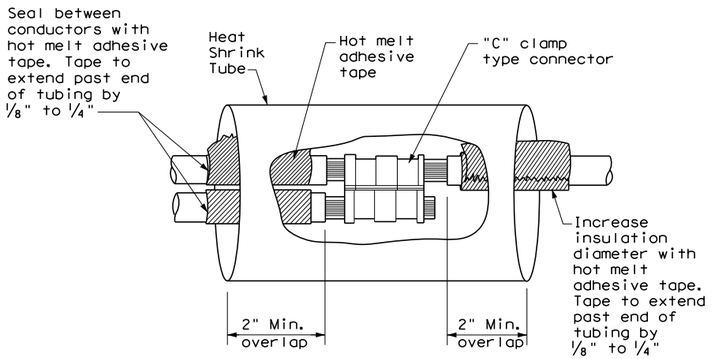
GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.
2. Do not place ground rods in the same drilled hole as a timber pole.
3. Install ground rods so the imprinted part number is at the upper end of the rod.
4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.
6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



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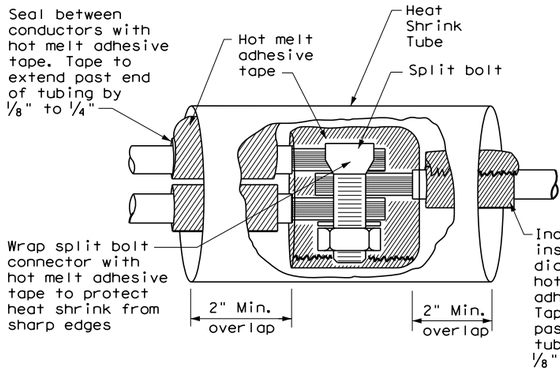
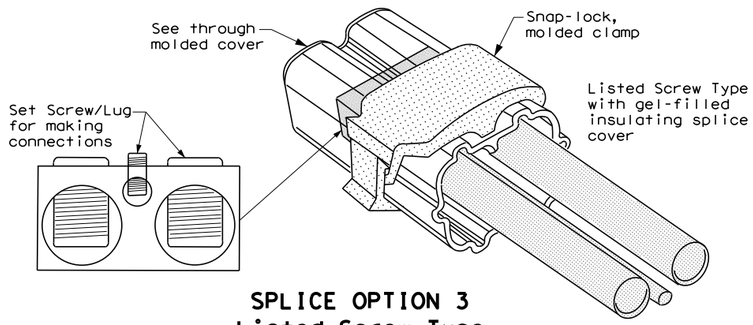


SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
CONDUCTORS

ED(3)-14

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	WACO	McLENNAN		1532

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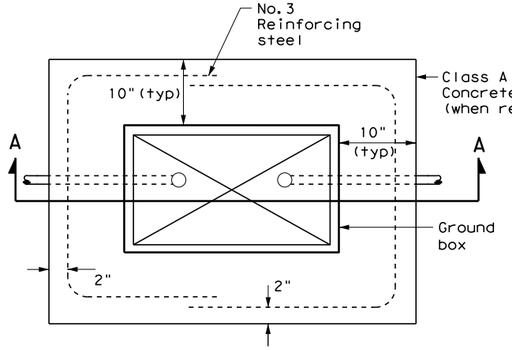
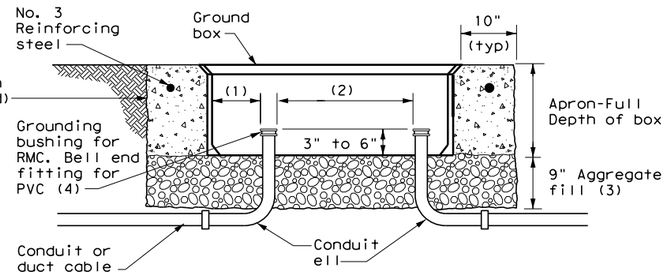


PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

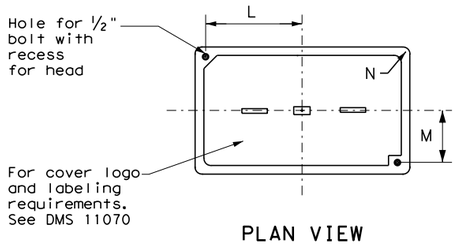
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

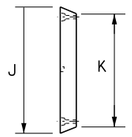
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



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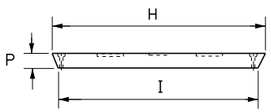

SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
GROUND BOXES

ED(4)-14

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	DIST	COUNTY		SHEET NO.
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FILE:

ELECTRICAL SERVICES NOTES

1. Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.

2. Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services,"DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

3. Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.

4. Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

5. The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

6. Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

7. When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

8. Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.

9. All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.

10. Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.

11. Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.

12. Ensure all mounting hardware and installation details of services conform to utility company specifications.

13. For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.

14. When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.

15. Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

1. Provide threaded hub for all conduit entries into the top of enclosure.

2. Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.

3. Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.

4. Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

1. Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.

2. When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

PHOTOELECTRIC CONTROL

1. Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

* ELECTRICAL SERVICE DATA

Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit **Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 ¼"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 ¼"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National ELectrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X XXX/XXX XXX (XX) XX (X) XX (X)

Schematic Type

Service Voltage V / V

Disconnect Amp Rating
000 indicates main lug only/
Typically Type T

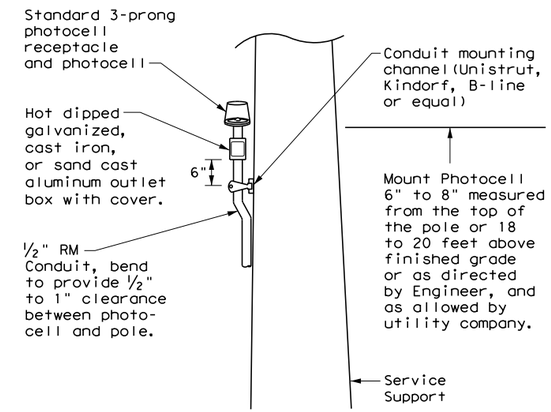
(SS)= Safety Switch Ahead of Meter-Check with Utility
(NS)= No safety Switch Ahead of Meter-Check with Utility

Enclosure Type
GS= Galvanized steel("off the shelf")
SS= Stainless steel(Custom Enclosure)See MPL
AL= Aluminum (Custom Enclosure)See MPL

Photocell Mounting Location
(E)= Inside Service/Enclosure Mounted
(T)= Top of pole
(L)= Luminaire mounted
(N)= None/No Photocell or Lighting Contactor Required

Service Support Type
GC= Granite concrete
OC= Other concrete
TP= Timber pole
SP= Steel pole
SF= Steel frame
OT= Pole by others or paid for separately
EX= Existing pole
TS= Service on traffic signal pole
PS= Pedestal Service

O= Overhead Service Feed from Utility
U= Underground Service Feed from Utility



TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

ED(5)-14

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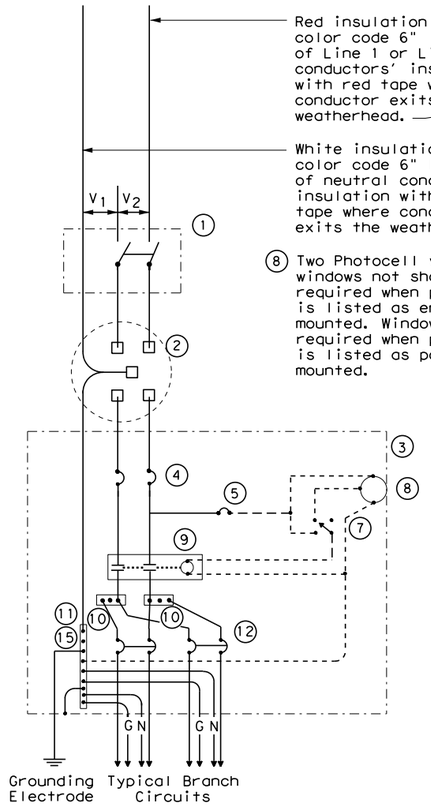
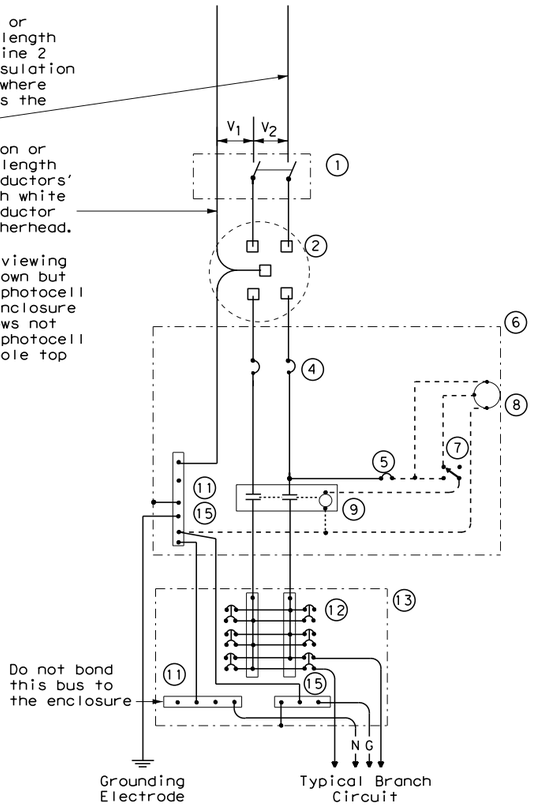
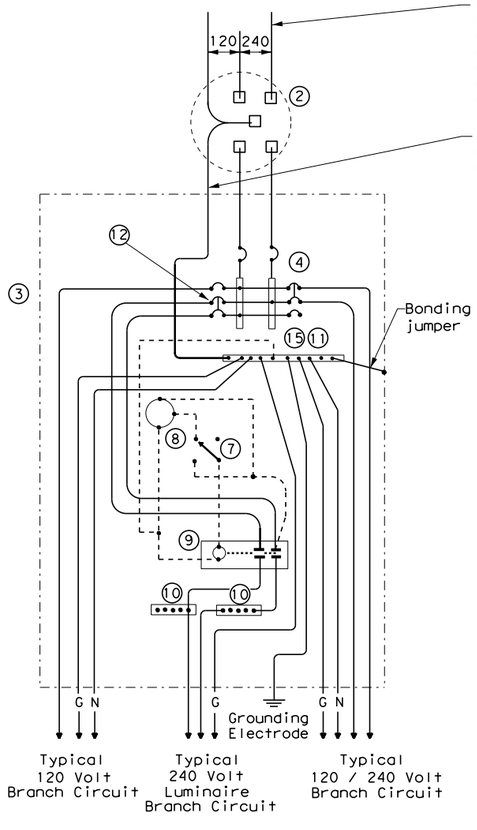


SCHEMATIC TYPE A
THREE WIRE

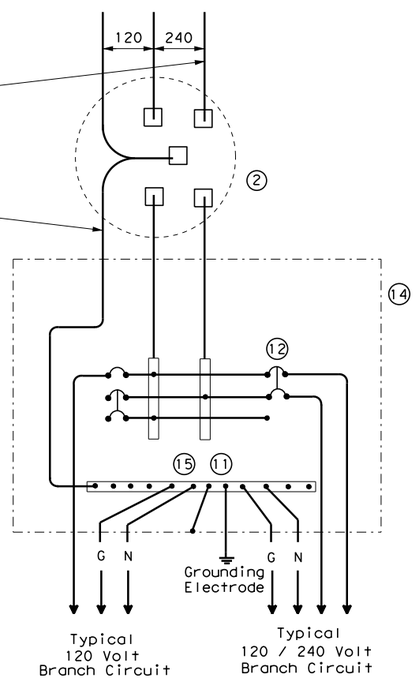
(8) Two Photocell viewing windows not shown but required when photocell is listed as enclosure mounted. Windows not required when photocell is listed as pole top mounted.



SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE

Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

WIRING LEGEND	
———	Power Wiring
-------	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES

ED(6)-14

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SUPPORT TYPE STEEL POLE (SP) AND STEEL FRAME (SF)

1. Provide steel pole and steel frame supports as per TxDOT Departmental Material Specification (DMS)11080 "Electrical Services." Mount all equipment and conduit on 12 gauge galvanized steel or stainless steel channel strut, 1 ½ in. or 1 ⅝ in. wide by 1 in. up to 3 ¾ in. deep Unistrut, Kindorf, B-line or equal. Bolt or weld all channel and hardware to vertical members as approved. Do not stack channel. File smooth and paint field cut ends of all channel with zinc-rich paint before installing.

2. Provide poles for overhead service with an eyebolt or similar fitting for attachment of the service drop to the pole in conformance with the electric utility provider's specifications.

3. Provide and install galvanized ¾ in. x 18 in. x 4 in. (dia. x length x hook length) anchor bolts for underground service supports. Provide and install galvanized ¾ in. x 56 in. x 4 in. anchor bolts for overhead service supports. Ensure anchor bolts have 3 in of thread, with 3 ¼ in. to 3 ½ in. of the exposed anchor bolt projecting above finished foundation. Provide and install leveling nuts for all anchor bolts.

4. Bond one of the anchor bolts to the rebar cage with 6 AWG bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. See Inset B.

5. Furnish and install rigid metallic ells in all steel pole and steel frame foundations for all conduits entering the service from underground.

6. Use class C concrete for foundations. Ensure reinforcing steel is Grade 60 with 3" of unobstructed concrete cover.

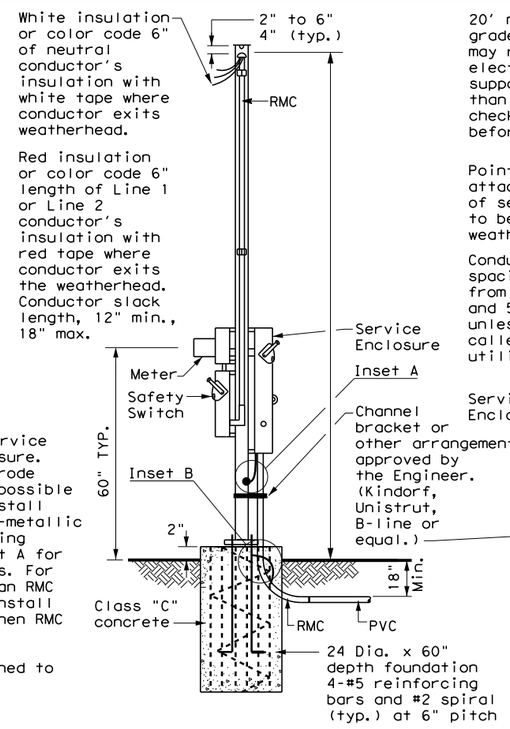
7. Drill and tap steel poles and frames for ½ in. X 13 UNC tank ground fitting. For steel pole service supports, provide and install tank ground fitting 4 in. to 6 in. below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. For steel frame service supports, provide and install tank ground fitting on steel frame post. Install service grounding electrode conductor in a non-metallic conduit or tubing from the enclosure to the steel frame post. Connect electrical service grounding electrode conductor to the tank ground fitting. See steel frame and steel pole details and Inset A for more information. Size service entrance conduit and branch circuit conduit as shown in the plans. For underground conduit runs from the electrical service, extend RMC from the service enclosure to an RMC elbow, and then connect the schedule type and size of conduit shown in the plans. Provide and install grounding bushings where RMC terminates in the enclosure. Grounding bushings are not required when RMC is fitted into a sealing hub or threaded boss.

8. If Steel pole or frame is painted, bond each separate painted piece with a bonding jumper attached to a tapped hole.

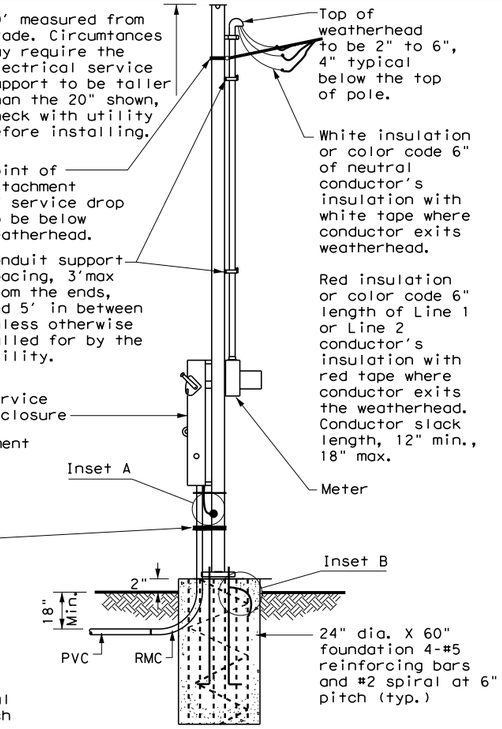
9. Provide ¼" - 20 machine screws for bonding. Do not use sheet metal screws. Remove all non-conductive material at contact points. Terminate bonding jumpers with listed devices. Install minimum size 6 AWG stranded copper bonding jumpers. Make up all threaded bonding connections wrench tight.

10. Avoid contact of the service drop and service entrance conductors with the metal pole to prevent abrasion of the insulated conductors.

11. Shop drawings are not required for service support structure unless specifically stated elsewhere or directed by the Engineer.

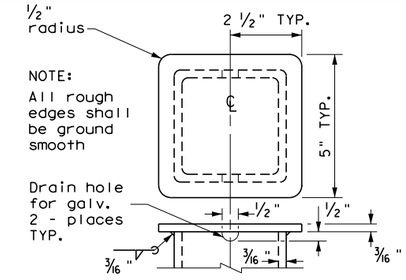


WITH SAFETY SWITCH

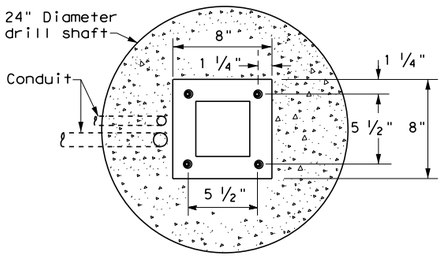


WITHOUT SAFETY SWITCH

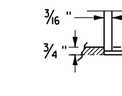
SERVICE SUPPORT TYPE SP (O) - OVERHEAD SERVICE



POLE TOP PLATE

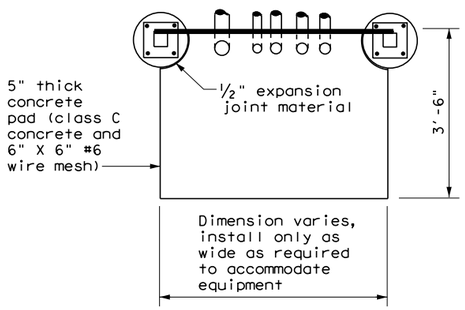


BASE PLATE DETAIL



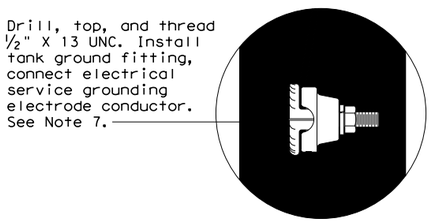
BOTTOM OF POLE

SERVICE SUPPORT TYPE SF & SP



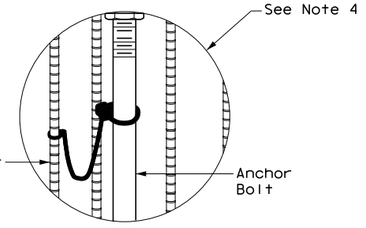
TOP VIEW

SERVICE SUPPORT TY SF (O) & SF (U)

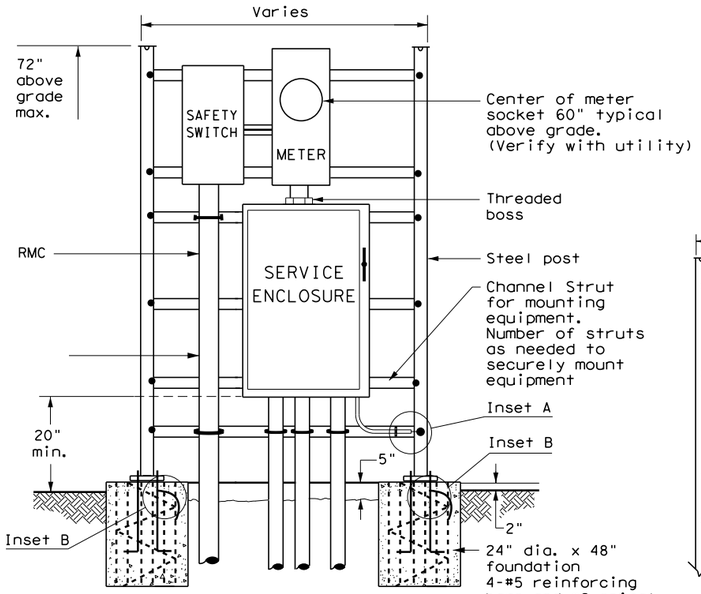


FRONT VIEW

INSET A

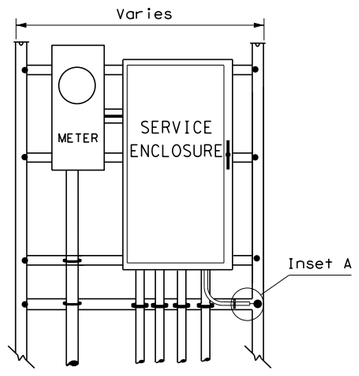


INSET B



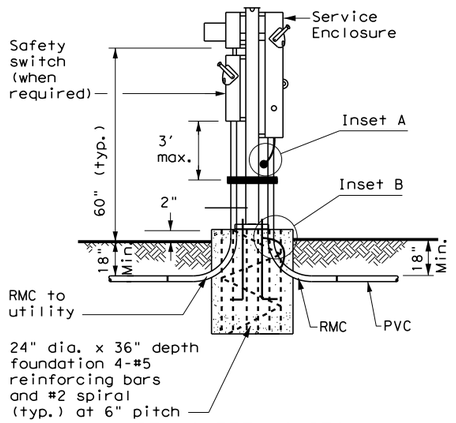
WITH SAFETY SWITCH

FRONT VIEW

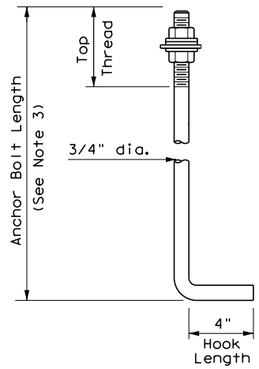


WITHOUT SAFETY SWITCH

SERVICE SUPPORT TYPE SF(U) - UNDERGROUND SERVICE



WITH SAFETY SWITCH



HOOKED ANCHOR DETAIL

SERVICE SUPPORT TYPE SP(U) - UNDERGROUND SERVICE

Texas Department of Transportation

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ELECTRICAL DETAILS SERVICE SUPPORT TYPES SF & SP

ED(7)-14

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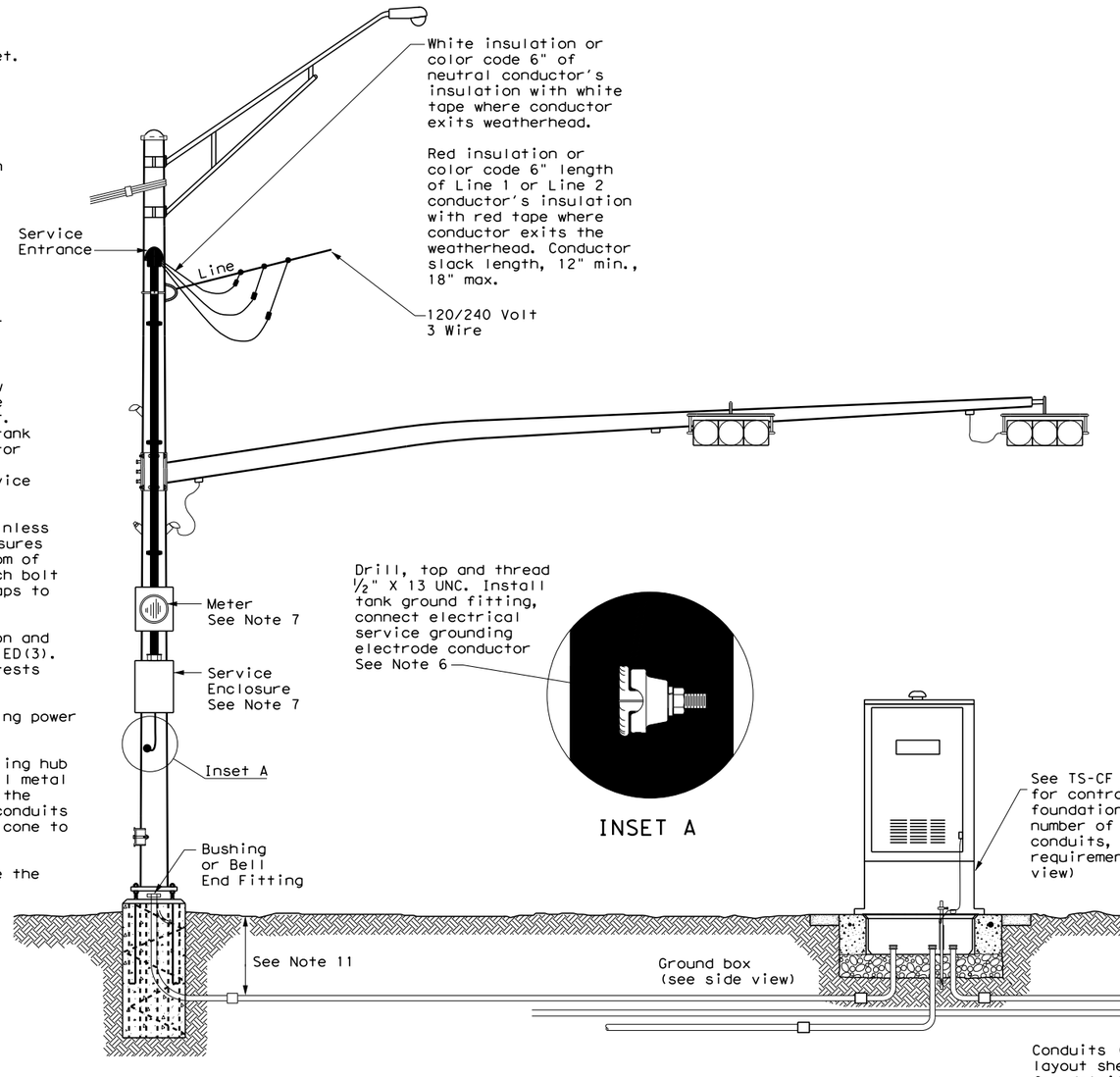
TRAFFIC SIGNAL NOTES

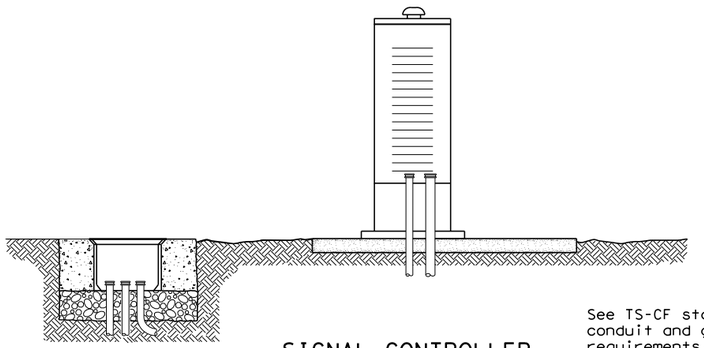
1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material and construction sections of Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.
4. If internally illuminated street name signs are approved for use, ground the fixture to the pole with a 12 AWG green XHHW conductor.
5. Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.
6. Drill and tap signal poles for ½ in. X 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of ¾ in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.
8. Conduct pull tests and insulation resistance tests on all illumination and power conductors as required in Item 620 "Electrical Conductors" and ED(3). To prevent electronics damage, do not conduct insulation resistance tests on traffic signal cables after termination.
9. Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.
11. For all conduits, ensure the burial depth is a minimum of 18". Ensure the minimum burial depth for conduit placed under a roadway is 24".



SIGNAL POLE WITH SERVICE

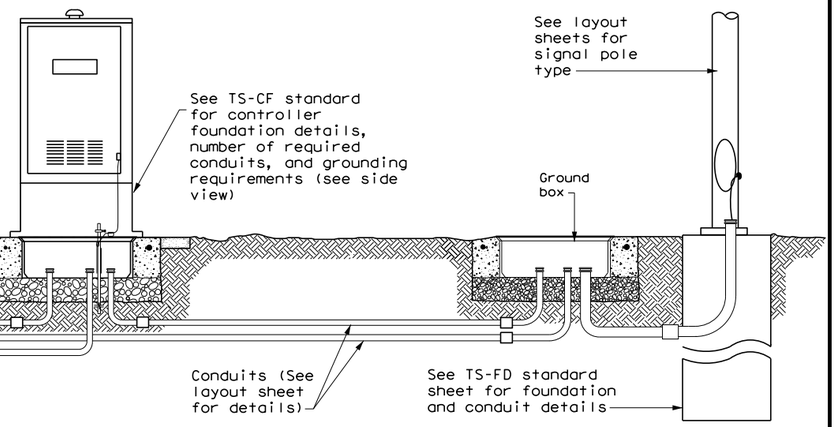
Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.

INSET A



SIGNAL CONTROLLER SIDE VIEW

See TS-CF standard for conduit and grounding requirements. See layout sheets for ground box locations and any additional conduits that are required.



SIGNAL CONTROLLER FRONT VIEW

SIGNAL POLE

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS
ED(8)-14

FILE: ed8-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT			
© TxDOT October 2014	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0015	01	246		IH 35		
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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.

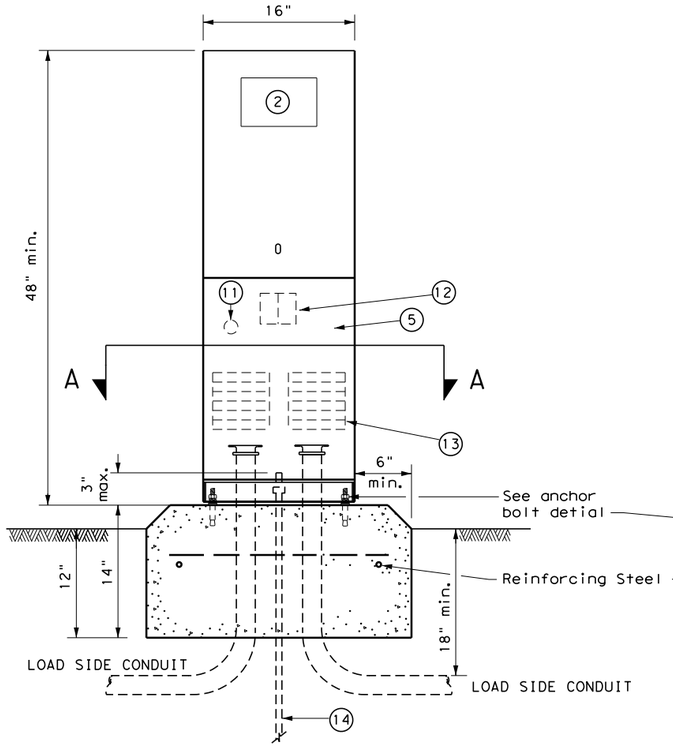
4. Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."

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.

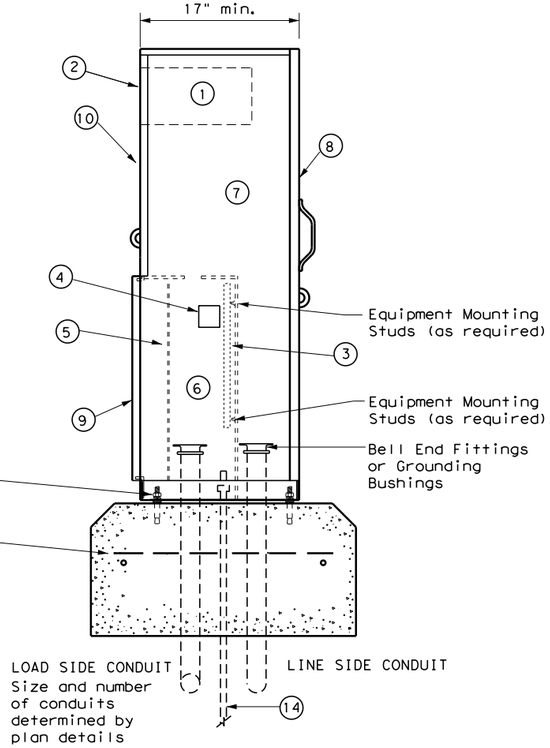
6. Finish top of concrete foundation in a neat and workmanlike manner. If leveling washers are used, ensure no more than ⅛ in. gap at any corner. Do not exceed a maximum dip or rise in the foundation of ⅛ in. per foot. When properly installed, ensure the top of the service enclosure is level front to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

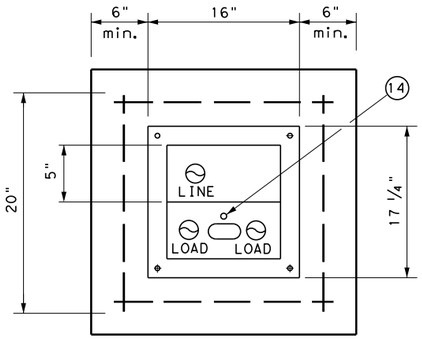


FRONT VIEW

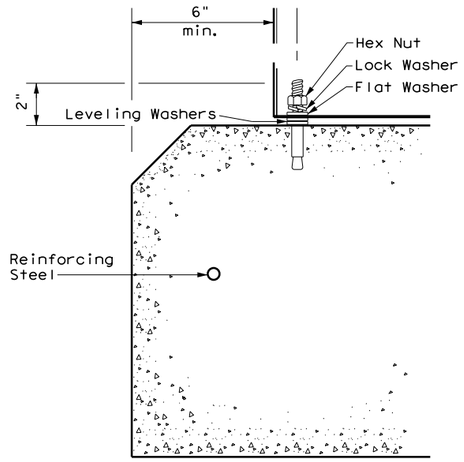


SIDE VIEW

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'

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		
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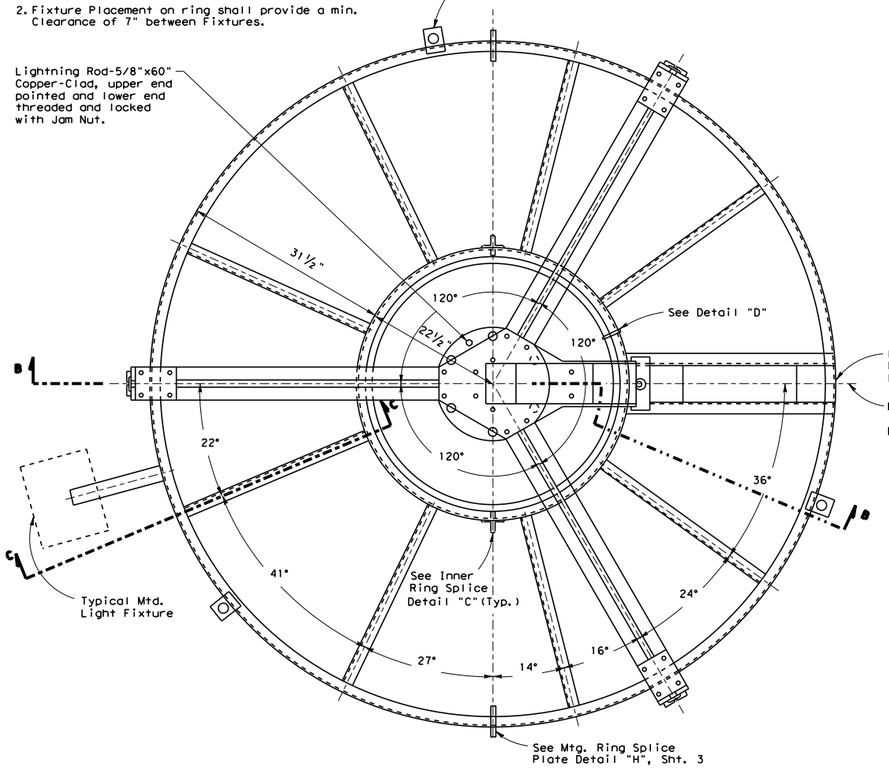
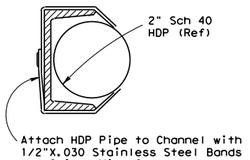
NOTES:

1. Pole, Ring, and Ring Support shall be assembled and erected so that Reference Line is parallel to center line of roadway or as shown on "Lighting Layouts" sheets.
2. Fixture Placement on ring shall provide a min. Clearance of 7" between Fixtures.

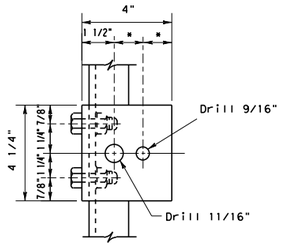


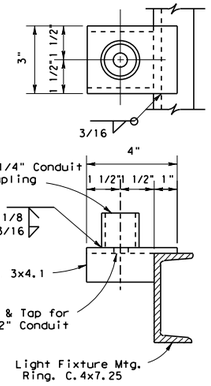
LIGHT MOUNTING RING & SUPPORT ASSEMBLY



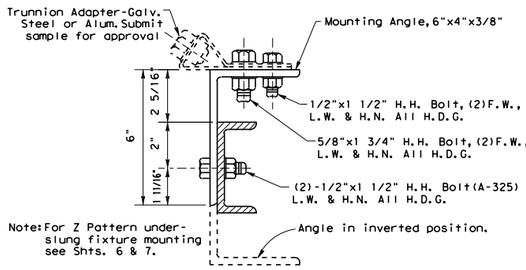
DETAIL "D"
BUMPER RING ATTACHMENT

* As required by Trunnion Adapter supplied.





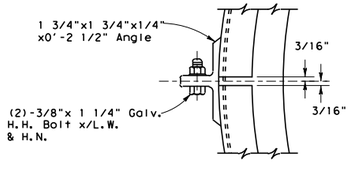
DETAIL "E"
(CONDUIT ATTACHMENT FOR OBSTRUCTION LIGHTS, TYPICAL (3) PLACES)



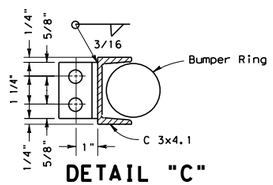
Note: Aiming capabilities may be by method shown or by Steel Mounting-Aiming Device as approved by the Engineer. Mark position of fixture with center punch or drill after fixture has been aligned to the right position on the roadway, as directed by the Engineer.

SECTION C-C
(FOR TRUNNION MOUNT)

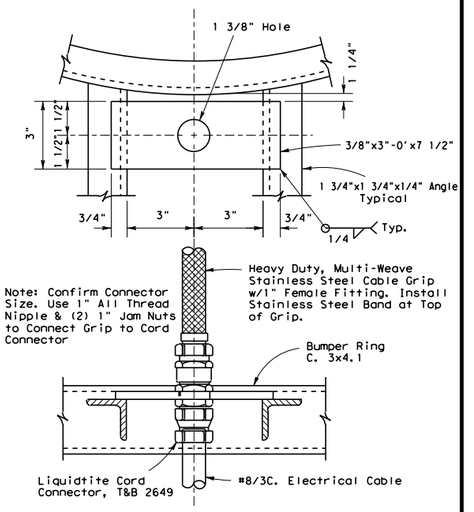
NOTE: Provide S.S. or galv. cable safety lanyard for Light Fixture when Trunnion Mount is used.



PLAN

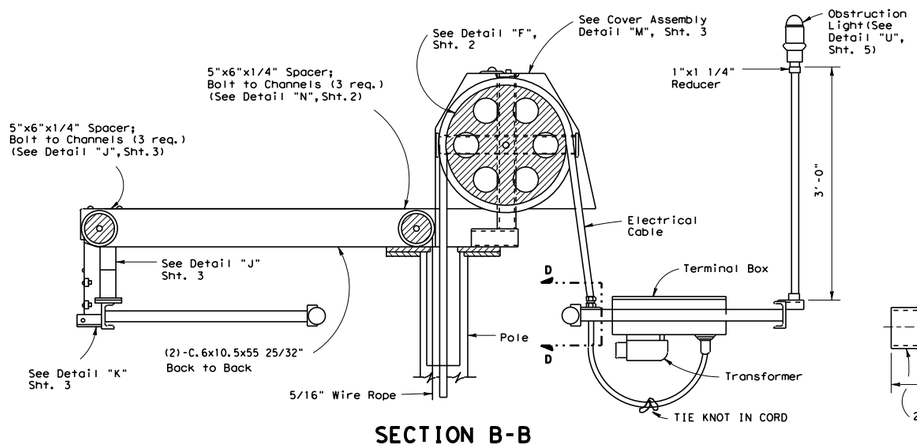


DETAIL "C"
INNER RING SPLICE

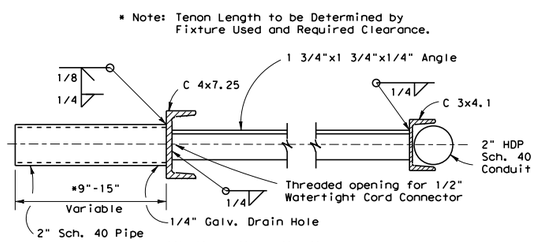


SECTION D-D

NOTE: COVER CORD WITH HEAT SHRINK TUBING FROM CABLE GRIP TO WITHIN ONE INCH OF GRIP TO CONNECTOR TRANSITION PRIOR TO INSTALLING CABLE GRIP.

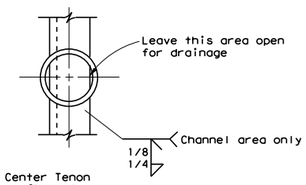


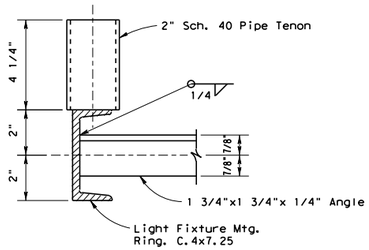
SECTION B-B



SECTION C-C
(FOR AREA LIGHTS)

Note: Center Tenon on Channel





SECTION C-C
(FOR FLOODLIGHTS)

Texas Department of Transportation
Traffic Operations Division

HIGH MAST ILLUMINATION DETAILS

HMID(1)-03

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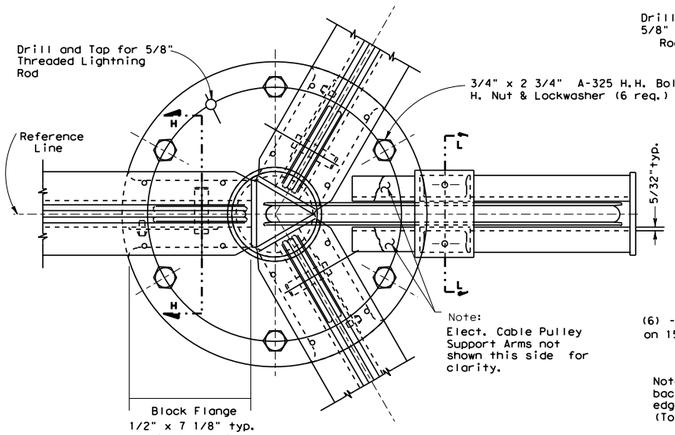
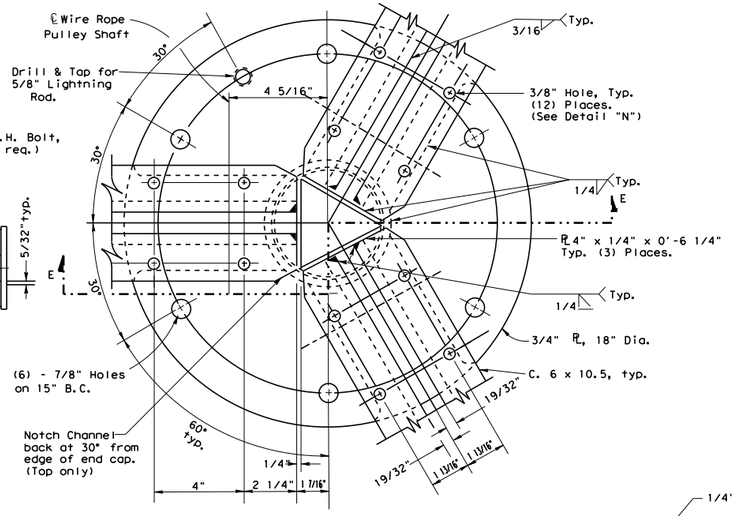
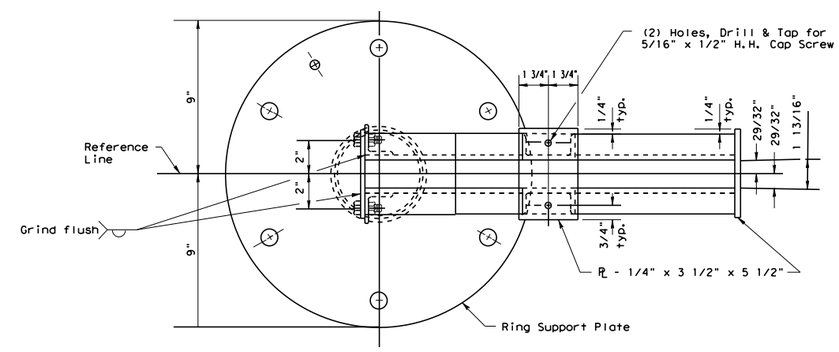


PLAN VIEW



DETAIL "G"
TOP PLATE CONNECTION
(LESS ELECT. CABLE PULLEY SUPPORT)
(SEE DETAIL "L")



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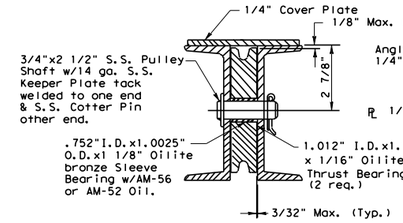
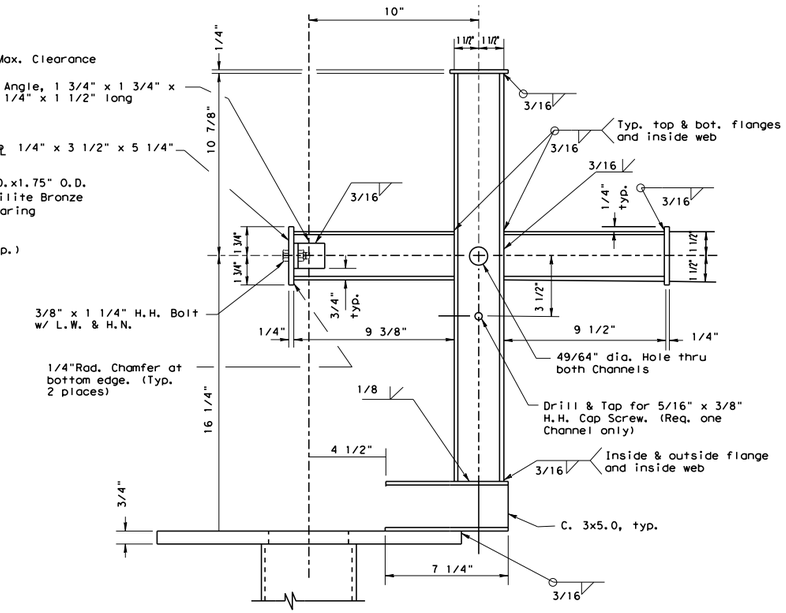
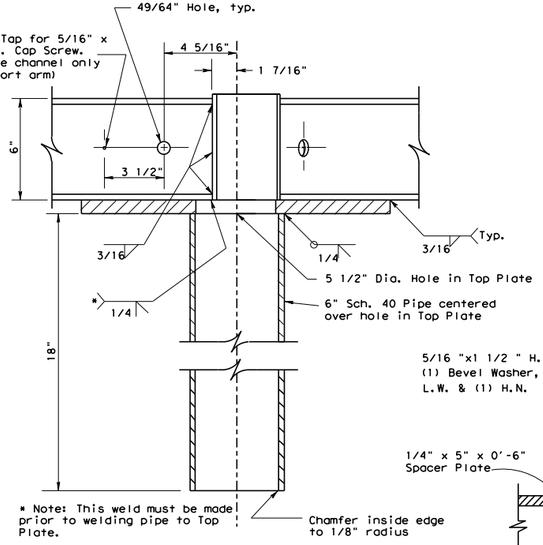


SECTION "H-H"
PULLEY MOUNTING FOR RING SUPPORT ARMS

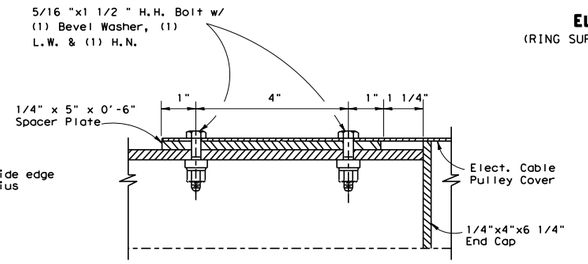


DETAIL "L"
ELECT. CABLE PULLEY SUPPORT
(RING SUPPORT ARMS NOT SHOWN FOR CLARITY)

DETAIL "F"
RING SUPPORT ASSEMBLY
(NEAR SIDE SUPPORT ARM & ELECT. CABLE PULLEY COVER NOT SHOWN FOR CLARITY)



SECTION "E - E"



DETAIL "N"

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Traffic Operations Division

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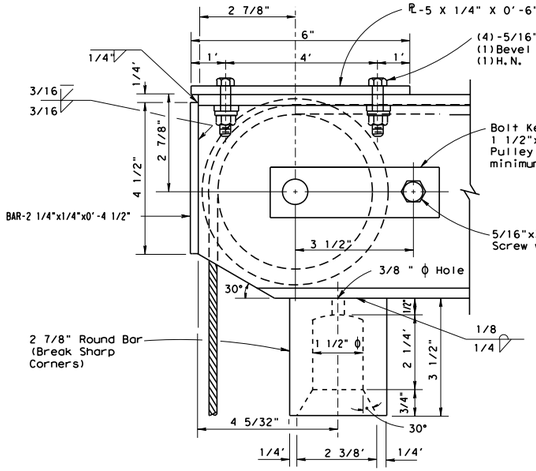

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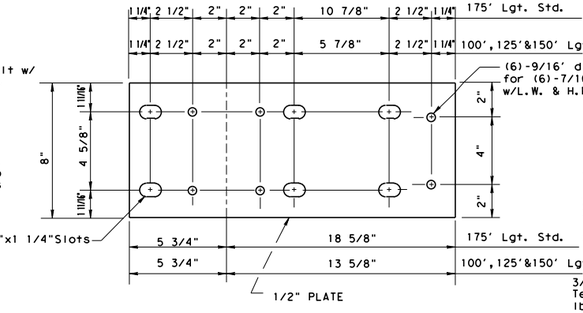
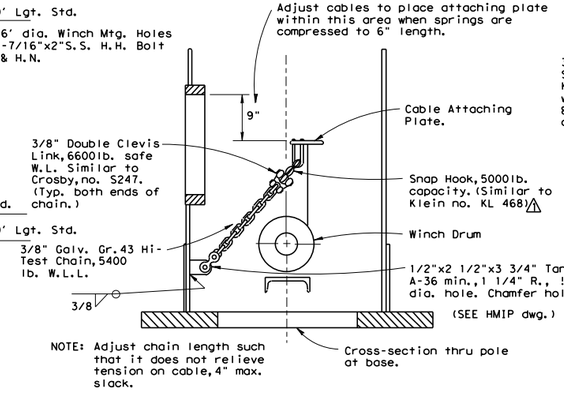


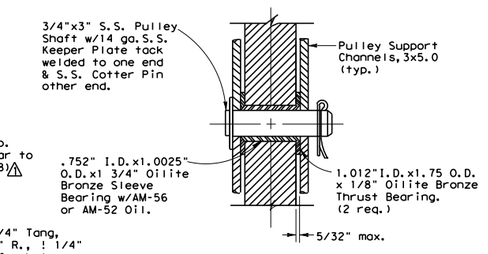
DETAIL "V"

WINCH MOUNTING PLATE

NOTE: Dimensions may vary-Verify with winch manufacturer.

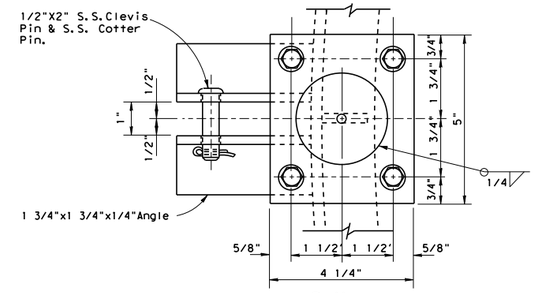


SAFETY LANYARD DETAIL

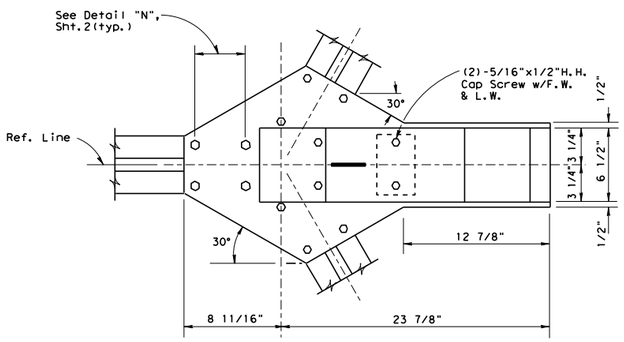


SECTION L-L

ELECTRICAL CABLE PULLEY MOUNTING



PLAN



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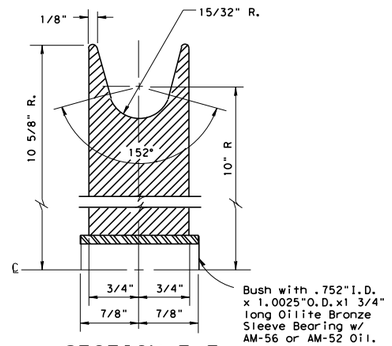
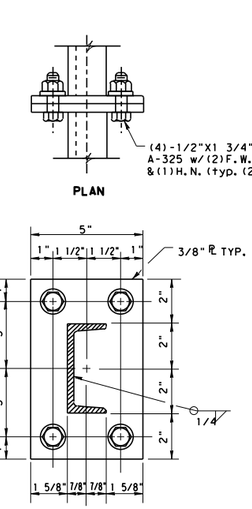


SECTION F-F

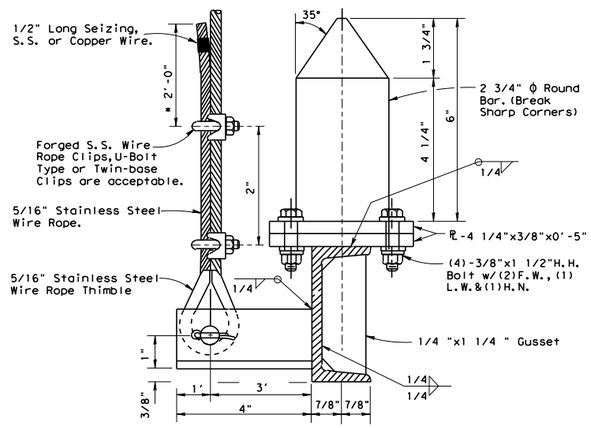
ELECTRICAL CABLE PULLEY

(Pulley material to be aluminum alloy, Type 356-T6 or equal)



DETAIL "H"

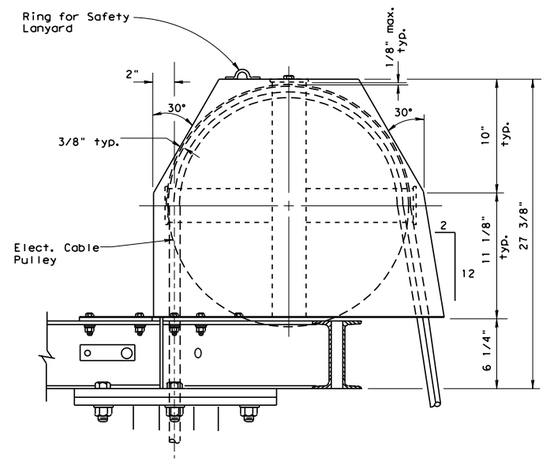
MOUNTING RING SPLICE PLATE



DETAIL "K"

MOUNTING RING CONNECTION & STABILIZER

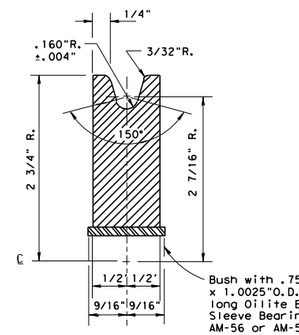
* EXTRA 2'-0" of wire cable to be attached to ring with SS Bands as directed by Engineer.



DETAIL "M"

COVER CAP ASSEMBLY

NOTE: Cover to be 14 ga. galv. sht. metal or 0.10" anodized aluminum sheet.



SECTION G-G

WIRE ROPE PULLEY

(Pulley material to be plated steel or Stainless Steel)

Texas Department of Transportation
Traffic Operations Division

HIGH MAST ILLUMINATION DETAILS

HMID(3)-03

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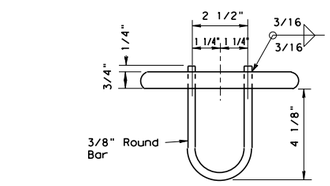
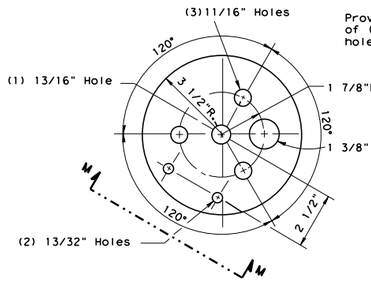
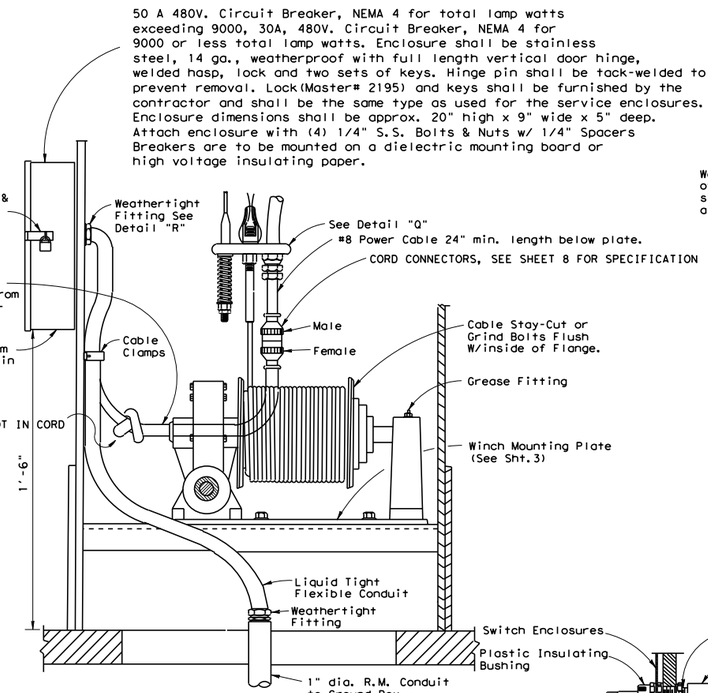


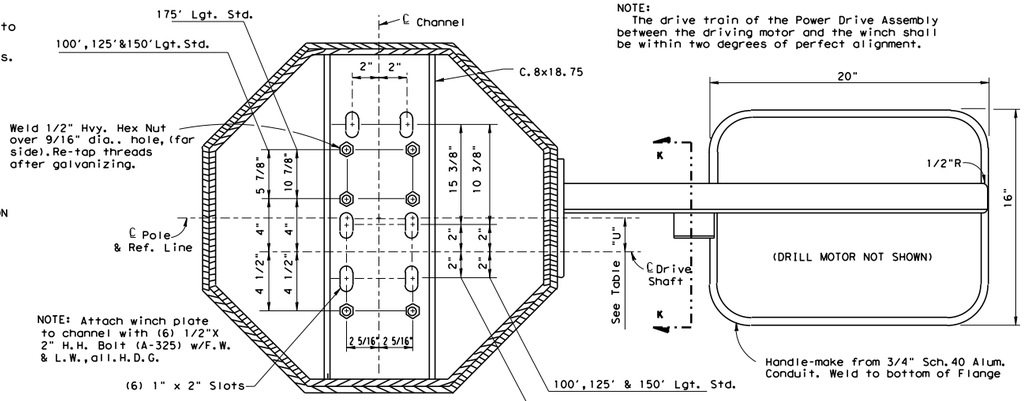
VIEW "M-M"



PLAN VIEW



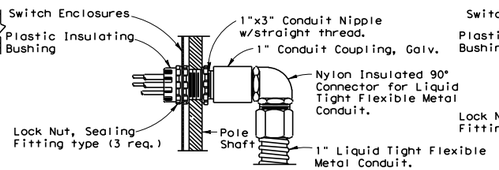
SECTION J-J
(WINCH ASSEMBLY)



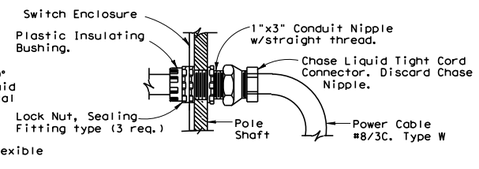
DETAIL "P"
(WINCH MOUNTING CHANNEL)
Dimensions may vary-Verify with winch manufacturer.

TABLE OF "U" DIMENSIONS

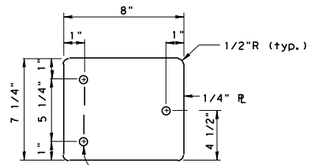
Pole Ht. Ft.	8 Sided 80 MPH	8 Sided 100 MPH	12 Sided 80 MPH	12 Sided 100 MPH
100	3 1/2"	3 1/2"	2 1/2"	2 1/2"
125	3 1/2"	3 1/2"	2 1/2"	2 1/2"
150	3 1/2"	3 1/2"	2 1/2"	2 1/2"
175	4 1/2"	4 1/2"	3 1/2"	3 1/2"



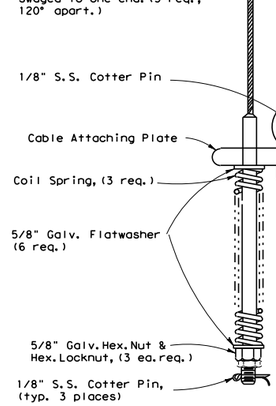
(POWER FEED FROM GROUND BOX)



(POWER OUT TO LIGHT RING)

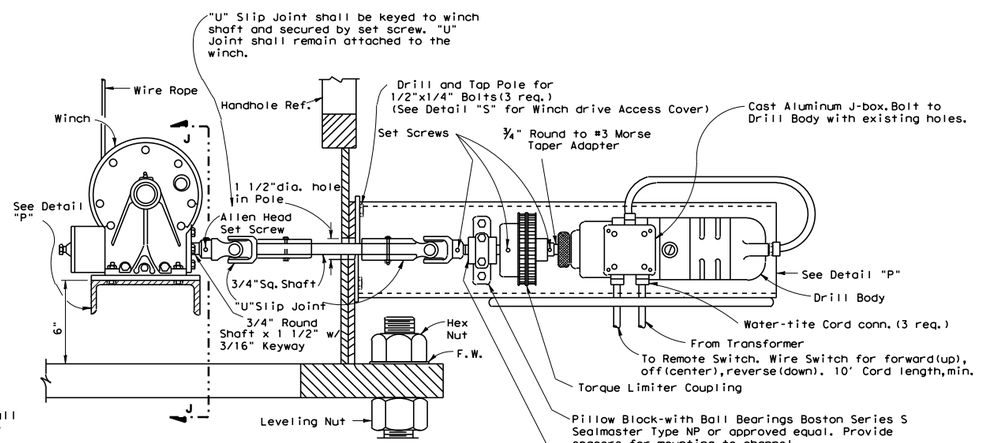


DETAIL "S"
(WINCH DRIVE ACCESS COVER)

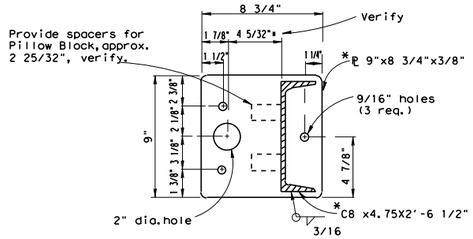


DETAIL "Q"
(CABLE ATTACHING PLATE)

NOTE: 3/8" Cable for this Project shall be 19x7 Rotation Resistant per Sheet 9.



POWER DRIVE ASSEMBLY



SECTION K-K
(DRILL MOTOR MOUNTING PLATE)
* Make from 6061-T6 Aluminum

Texas Department of Transportation
Traffic Operations Division

HIGH MAST ILLUMINATION DETAILS

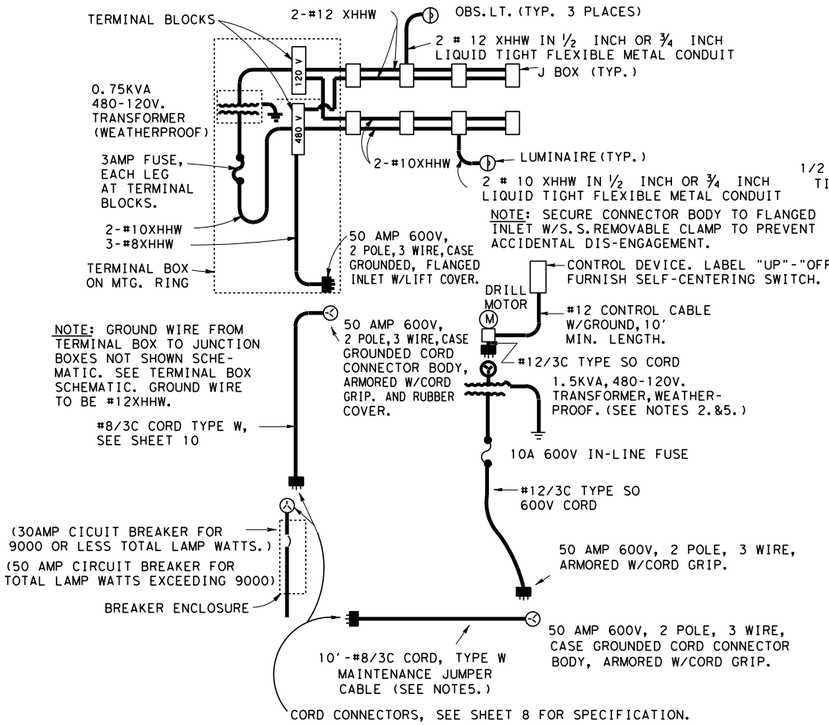
HMID(4)-03

REVISIONS
4-86, 5-86, 12-87, 4-96, 12-3-86, 4-89, 12-8-86, 10-93

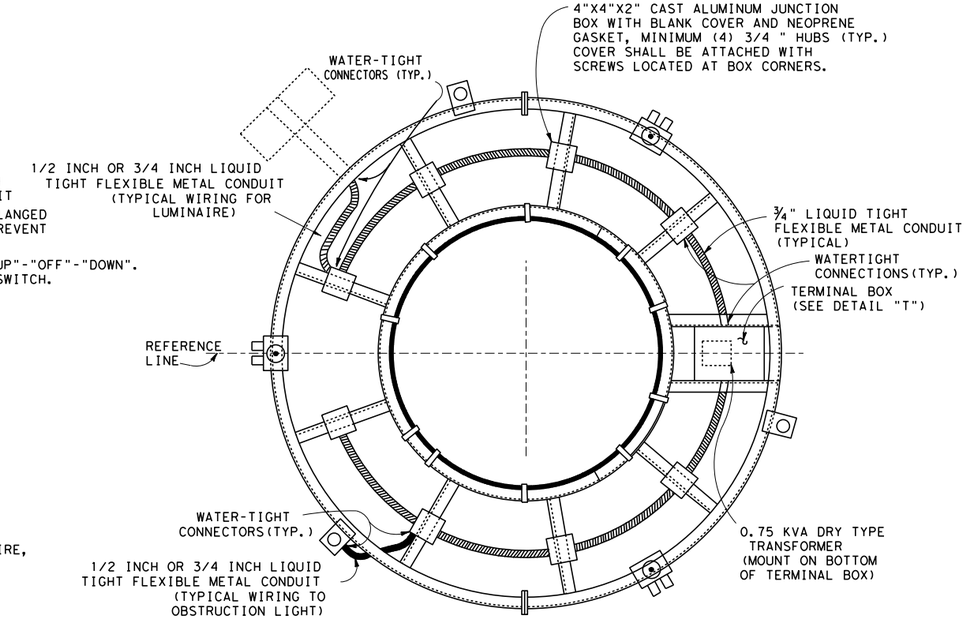
DN: TXDOT | CK: TXDOT | DW: TXDOT | CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1542

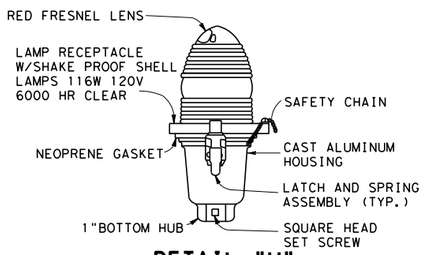
DATE:
FILE:



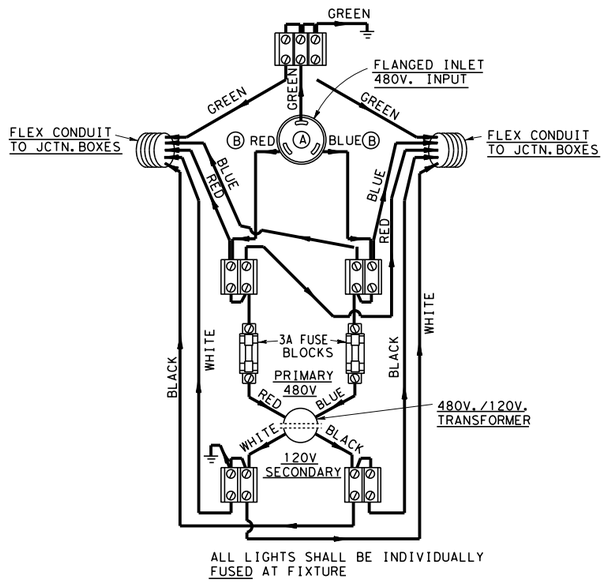
ONE-LINE SCHEMATIC



LIGHT MOUNTING RING

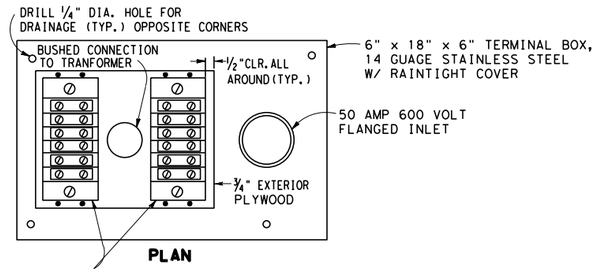


DETAIL "U"
(OBSTRUCTION LIGHT)



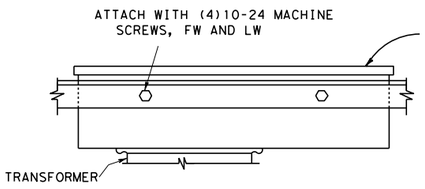
TERMINAL BOX SCHEMATIC

NOTES:
1. OBSTRUCTION LIGHTS COLOR CODE: FROM SECONDARY SIDE OF TRANSFORMER THROUGH-OUT-CIRCUIT TO SOCKET, WHITE-NEUTRAL, BLACK-LOAD.
2. POWER SUPPLY CORD TO FLANGED INLET: GREEN-GROUND, WHITE LINE, BLACK LINE. FROM FLANGED INLET Ⓐ TO TERMINAL BLOCKS: GREEN-GROUND, RED LINE, BLUE-LINE. FROM THERE ON ALL 480V. CIRCUIT WIRES TO BE RED AND BLUE TO JUNCTION BOXES.
3. WIRE SIZE FROM POWER SUPPLY TO TERMINAL BLOCKS SHALL BE #8 AWG-SEE Ⓑ.
4. WIRE SIZE FROM TERMINAL BLOCKS TO JUNCTION BOXES SHALL BE #12 AWG.
5. MOUNT TERMINAL BLOCKS ON ¾" EXTERIOR GRADE PLYWOOD.
6. FOR 2-WIRE, 480V. SERVICE, OMIT FUSE IN GROUNDED CONDUCTOR IN LEADS TO TRANSFORMER.



PLAN

600 VOLT TERMINAL BLOCKS



DETAIL "T"
(TERMINAL BOX)

NOTES:

1. PLUGS, CONNECTOR BODIES AND FLANGED INLETS AT CORD TO RING CONNECTION SHALL BE "TWIST LOCK" TYPE, 3-PRONG, RATED 50 AMPS AT 600V, AND 20 AMPS FOR 120 V. 50 AMP CONNECTORS SHALL BE 3 WIRE CASE GROUNDED, ARMORED, WITH CORD GRIP, 20 AMP CONNECTOR SHALL BE 3 WIRE GROUNDING WITH CORD GRIP, NEMA TYPE L5-20.
2. PROVIDE HANDLE ON 1.5KVA TRANSFORMER FOR PORTABILITY. (SEE ONE-LINE SCHEMATIC)
3. CIRCUIT BREAKERS SHALL BE ITE #E43B030 OR #E43B050, SQUARE "D" #FAL24030 S/N OR #FAL24050 S/N, OR EQUAL.
4. CONDUIT ENTRIES INTO TERMINAL BOX SHALL BE INTO THE SIDE OF THE BOX.
5. A MINIMUM OF ONE (1) MAINTENANCE JUMPER CABLE SHALL BE SUPPLIED FOR EACH PROJECT. SUPPLY ONE (1) PORTABLE TRANSFORMER FOR EACH POWER DRIVE UNIT REQUIRED FOR PROJECT.

DATE:
FILE:

Texas Department of Transportation
Traffic Operations Division

HIGH MAST ILLUMINATION DETAILS

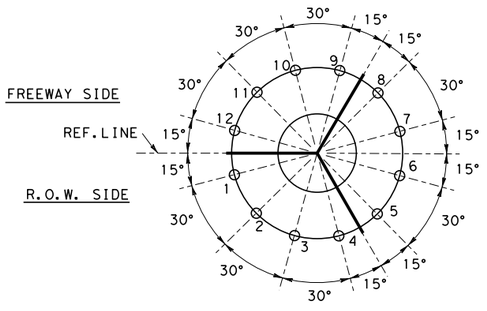
HMID(5)-03

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

REVISIONS
6-87
11-87
10-88
10-93
4-96

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1543

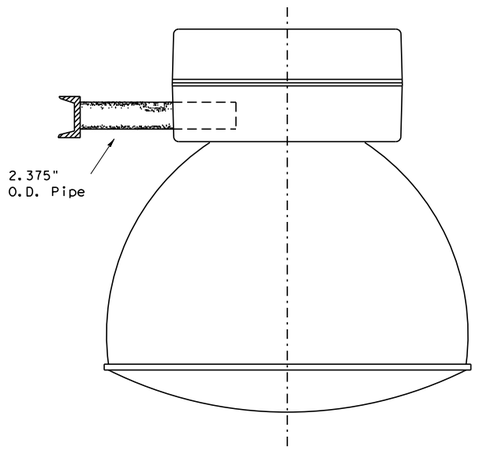
DATE:
FILE:



12-LIGHT SETTING

LUMINAIRE LOCATIONS

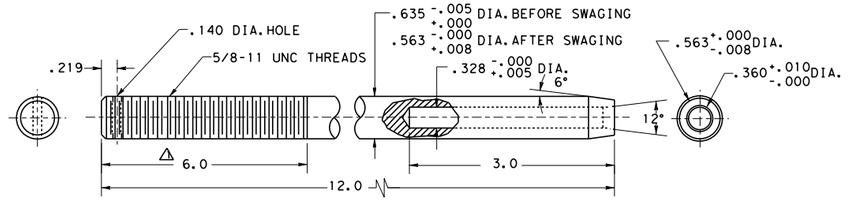
NOTE: AIRCRAFT OBSTRUCTION LIGHT LOCATIONS NOT SHOWN. THREE ARE REQUIRED LOCATED APPROX. 120° APART. LOCATIONS WILL VARY DEPENDENT ON THE LIGHT SETTING USED.



AREALIGHT MOUNTING ASSEMBLY
(SYMMETRIC AND ASYMMETRIC)

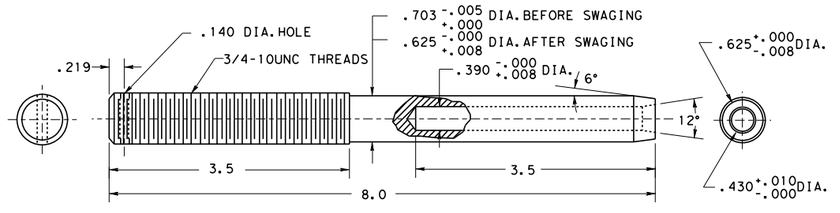
NOTES: IF ASYMMETRIC FIXTURES ARE USED, THE REFRACTORS SHALL BE ORIENTED TO PROPERLY ILLUMINATE THE ADJACENT ROADWAYS. ORIENTION SHALL BE AS SHOWN IN PLANS.

NOTE: MIN. SWAGE LENGTH = 2.06
MAX. SWAGE LENGTH = 2.94



TERMINAL FOR 5/16 "WIRE ROPE
MATERIAL: STAINLESS STEEL, TYPE 303SE OR 304
WITH 115,000 P.S.I. MAX. ULTIMATE TENSILE STRENGH.

NOTE: MIN. SWAGE LENGTH = 3.12
MAX. SWAGE LENGTH = 3.44



TERMINAL FOR 3/8 "WIRE ROPE
MATERIAL: STAINLESS STEEL, TYPE 303SE OR 304
WITH 115,000 P.S.I. MAX. ULTIMATE TENSILE STRENGH.

GENERAL NOTES:

1. AFTER FINAL AIMING HAS BEEN COMPLETED AND APPROVED BY THE ENGINEER, FIXTURES MUST BE LOCKED IN POSITION. CONTRACTOR MUST SUBMIT PROPOSED LOCKING SCHEME WITH THE FIXTURE SUBMITTAL. (FLOODLIGHTS ONLY).

⚠1 3/03 Revision
Removed obsolete diagrams and updated drawings.

Texas Department of Transportation
Traffic Operations Division

HIGH MAST ILLUMINATION DETAILS

HMID(6)-03

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

REVISIONS
10-93
10-95
4-96
3-03

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1544

DATE:
FILE:

1. AREA LIGHTING (Bid under Item 614, "High Mast Illumination Assemblies")

A. Area lighting shall be symmetric or asymmetric, as shown on the descriptive code. The number and wattage of the fixtures on each pole shall be as shown on the lighting layouts. The lighting pattern for symmetric fixtures shall be IES Type V; for asymmetric fixtures, it shall be IES Type II, III, or IV.

B. All luminaires shall be pre-qualified before installation. A sample of each type of luminaire to be considered for pre-qualification shall be submitted to TXDOT's Traffic Operations Division - Traffic Engineering Section (TRF-TE).

Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, TX 78701-2483

Sample luminaires are non-returnable. A list of pre-qualified luminaires may be obtained by contacting TRF-TE. In addition, luminaires will be sampled and tested in accordance with Item 614. Luminaires that inconsistently pass testing or that are inconsistent with published photometric information will be removed from the pre-qualified list at the discretion of the Engineer. Once a fixture has been approved, no changes shall be made in any material or manufacturing methods without prior approval of the Department. Unapproved changes will result in rejection of all fixtures.

C. Symmetric and Asymmetric fixtures shall meet the following requirements unless otherwise approved by the Engineer:

1. Luminaire Construction

a) The luminaire housing shall be formed, cast or drawn from low copper aluminum and shall be free of cracks and excessive porosity. Formed aluminum shall have a minimum thickness of 0.090, and shall have all seams welded. The minimum thickness of cast parts shall be as approved by the Engineer. Nuts, screws, and washers shall be made of Type 316 stainless steel. The housing shall be marked with minimum 2" letters to indicate the photometric type as being either A, B, C, or S as specified. Marking shall be permanent and shall be by stencil or stick on labels similar to "wattage" label on cobra heads. Wattage label will not be required on high mast fixtures. The fixture housing shall be constructed separate from the fixture reflector.

b) Fixtures shall be natural aluminum in color or shall be painted gray.

c) The slipfitter shall securely attach the luminaire to the tenon on the ring assembly with a minimum of 2 bolts and clamp. A positive means of vertical adjustment shall be provided.

d) For optical assemblies with lenses, reflectors shall be polished aluminum with Alzak or equal coating and shall not be painted. The optic assembly shall be sealed. The lens shall be tempered glass or prismatic glass, either flat or sag. The optic assembly shall be provided with a resilient seamless or sonically welded silicone rubber gasket, and constructed so that a positive seal against weather and other contaminants will be maintained. The latches shall be stainless steel, spring loaded, and hand operated (2 latches minimum, 3 attachment points),and shall provide a positive means of maintaining closure of the luminaire.

e) For optical assemblies without lenses, optical assembly shall consist of an open ventilated borosilicate glass reflector. The reflecting prisms shall be protected from dirt depreciation by a spun on hermetically sealed aluminum cover. There shall be no glass lens/refractor on this optical assembly.

f) Asymmetric fixtures shall have field rotatable optics with accurate degree of rotation markings. Reflector shall have "house side" and "street side" markings.

g) The socket shell shall be nickel plated and shall be rigidly attached to a high grade porcelain mogul base, which shall extend and enclose the metal shell. A locking means shall be incorporated in the shell of the socket to positively resist the removal of the lamp. This locking means shall be a spring loaded center tip. Lamp socket shall be non-adjustable and shall be riveted, welded, or otherwise permanently installed. Lamps shall be held securely in the proper position with a lamp support.

h) The terminal block shall use nickel plated brass connectors.

i) Fixture weight including ballast shall not exceed 80 pounds, and effective projected area (EPA) shall not exceed 2.62 square feet.

j) The Contractor may be responsible for fixture testing costs. See TXDOT's "Manual of Testing Procedures," Chapter 11 - "Traffic Systems and Illumination," TEX-1110-T - "Sampling Lighting Assemblies," at http://manuals.dot.state.tx.us/dynaweb/.

2. Photometrics

a) The Contractor shall submit a computer generated light level array of the area to be lighted by high mast poles. All computer generated arrays shall have 400 watt fixtures derated to 40,000 lumens per lamp.

b) The Type "A" 400 watt asymmetric fixture shall be IES cutoff. The Department will use the measured photometric data of sampled fixtures to run the following tests on a computer simulation:

(1) When mounted in the level position, 50 ft. above the midpoint and 20 ft outside of either long side of a rectangular area measuring 340 ft. by 50 ft., the fixture shall pass the following tests:

(a) The fixture shall provide a measured minimum intensity of 0.15 horizontal foot-candles at any point on the surface of this area.

(b) The fixture shall provide a measured maximum to minimum light ratio, based on horizontal foot-candles, of less than 25.

(c) The fixture shall provide an average measured intensity of 0.6 horizontal foot-candles on the surface area.

(2) When mounted in the level position, 50 ft. above the midpoint and 20 ft outside of either long side of a rectangular area measuring 260 ft. by 30 ft., the fixture shall provide a measured minimum intensity of 0.30 horizontal foot-candles at any point on the surface of this area.

c) The Type "B" 400 watt asymmetric fixture shall be IES cutoff. The Department will use the measured photometric data of sampled fixtures to run the following tests on a computer simulation:

(1) When mounted in the level position, 50 ft. above the midpoint and 20 ft outside of either long side of a rectangular area measuring 260 ft. by 65 ft., the fixture shall pass the following tests:

(a) The fixture shall provide a measured minimum intensity of 0.15 horizontal foot-candles at any point on the surface of this area.

(b) The fixture shall provide a measured maximum to minimum light ratio, based on horizontal foot-candles, of less than 25.

(c) The fixture shall provide an average measured intensity of 0.6 horizontal foot-candles on the surface area.

(2) When mounted in the level position, 50 ft. above the midpoint and 20 ft outside of either long side of a rectangular area measuring 200 ft. by 40 ft., the fixture shall provide a measured minimum intensity of 0.30 horizontal foot-candles at any point on the surface of this area.

d) The Type "C" 400 watt asymmetric fixture shall be IES cutoff. The Department will use the measured photometric data of sampled fixtures to run the following tests on a computer simulation:

(1) When mounted in the level position, 50 ft. above the midpoint and 20 ft. outside of either long side of a rectangular area measuring 220 ft. by 80 ft., the fixture shall pass the following tests:

(a) The fixture shall provide a measured minimum intensity of 0.15 horizontal foot-candles at any point on the surface of this area.

(b) The fixture shall provide a measured maximum to minimum light ratio, based on horizontal foot-candles, of less than 25.

(c) The fixture shall provide an average measured intensity of 0.6 horizontal foot-candles on the surface area.

(2) When mounted in the level position, 50 ft. above the midpoint and 20 ft. outside of either long side of a rectangular area measuring 160 ft. by 50 ft., the fixture shall provide a measured minimum intensity of 0.30 horizontal foot-candles at any point on the surface of this area.

e) The Type "S" 400 watt Symmetric fixture shall be IES cutoff. The Department will use the measured photometric data of sampled fixtures to run the following tests on a computer simulation:

(1) When mounted in the level position at 50 foot mounting height, the fixture shall provide the minimum light levels as shown below:

(a) 0.15 horizontal foot-candles within a 130 foot radius.

(b) 0.30 horizontal foot-candles within a 100 foot radius.

(c) 0.50 horizontal foot-candles within a 60 foot radius.

3. Ballasts

a) All ballasts shall be isolated-winding lag-type magnetic regulators designed to operate 400 watt high pressure sodium lamps rated 480 volts. Ballasts shall be capable of starting lamps at an ambient temperature of -20 degrees F. Ballast wiring shall include a grounding terminal bonded to metal housing. Ballasts shall be fused with a 5 amp time-delay fuse in an insulated fuse holder. Fuse holders shall be internal to the housing. Ballast wiring to the terminal board shall be through a quick-disconnect plug. Windings shall be made from copper wire.

b) When the circuit voltage indicated on the plans is applied, the ballast input wattage during fluctuations of the test voltage of +10% and -10% shall not exceed 552 watts for a 400 watt HPS lamp.

3/03 Revision

⚠1 Revised Area Lighting Requirements

Texas Department of Transportation
Traffic Operations Division

HIGH MAST ILLUMINATION DETAILS

HMID(7)-03

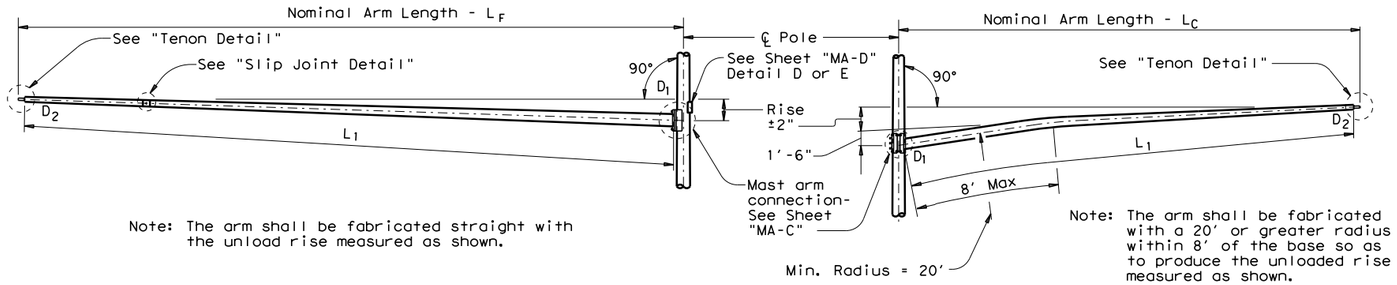
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
9-91
10-93
4-96
3-03

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1545

76G

DATE:
FILE:

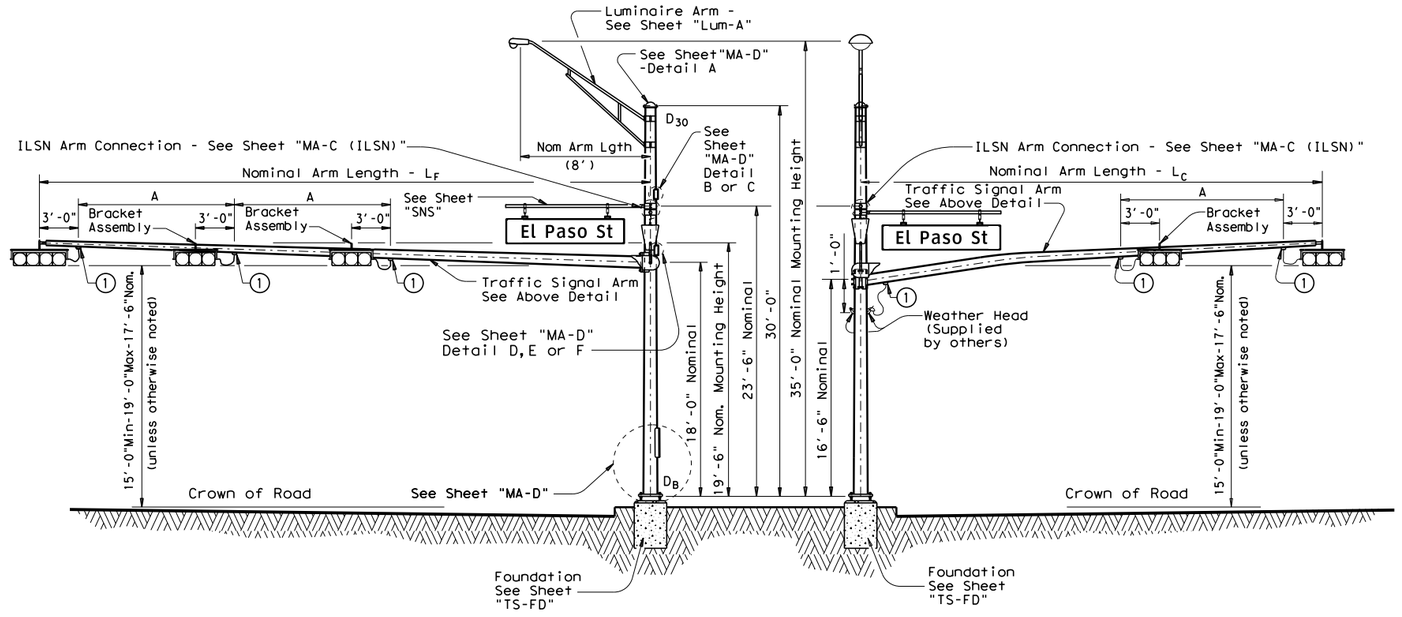


Note: The arm shall be fabricated straight with the unload rise measured as shown.

Note: The arm shall be fabricated with a 20' or greater radius within 8' of the base so as to produce the unloaded rise measured as shown.

FIXED MOUNT TRAFFIC SIGNAL ARM

CLAMP-ON TRAFFIC SIGNAL ARM



ELEVATION

(Showing fixed mount arm)

STRUCTURE ASSEMBLY

① Threaded Coupling for CGB Connector See "ARM COUPLING DETAILS" Sheet 2 of 3

ELEVATION

(Showing clamp mount arm)

TABLE OF DIMENSIONS "A"						
Arm Length	24'	28'	32'	36'	40'	44'
Arm Type II	10'	11'	12'	13'		
Arm Type III			10'	11'	12'	12'

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor. Designs are based on an arm included angle of 90 degrees or more. Angles of less than approximately 75 degrees will require a special design.

Poles are designed to support one 8'-0" luminaire arm, two 9'-0" internally lighted street name signs and two traffic signal arms with length combinations as tabulated. The specified luminaire load applied at the end of luminaire arm equals 60 lbs vertical dead load plus the horizontal wind load on an effective projected area of 1.6 sq ft. The specified internally lighted street name sign applied 4'-6" from the centerline of the pole equals 85 lbs vertical dead load plus the horizontal wind load on an effective projected area of 11.5 sq ft. The specified signal load applied at the end of the traffic signal arm equals 180 lbs vertical dead load plus the horizontal wind load on an effective projected area of 32.4 sq ft (actual area times drag coefficient).

See Standard Sheet "MA-D" for pole details, "MA-C" for traffic signal arm connection details, "MA-C (ILSN)" for internally lighted street name sign arm connection details, "LUM-A" for luminaire arm and connection details, "SNS" for internally lighted street name sign details, and "TS-FD" for anchor bolt and foundation details. See "MA-C" for material specifications.

Fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing", after fabrication.

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

DUAL MAST ARM ASSEMBLY

(80 MPH WIND ZONE)

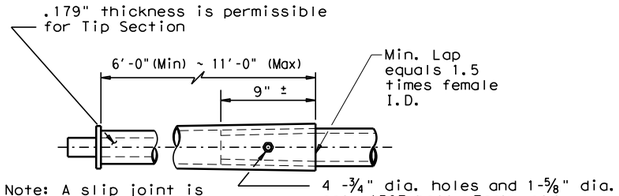
DMA-80 (1)-12

DN: MS	CK: JSY	DW: MMF	CK: JSY

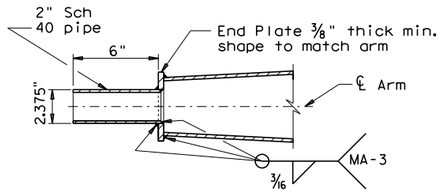
REVISIONS
5-96
1-12

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1546

124A



SLIP JOINT DETAIL



TENON DETAIL

Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1 ½" Dia Threaded Coupling.

BRACKET ASSEMBLY

VIBRATION WARNING

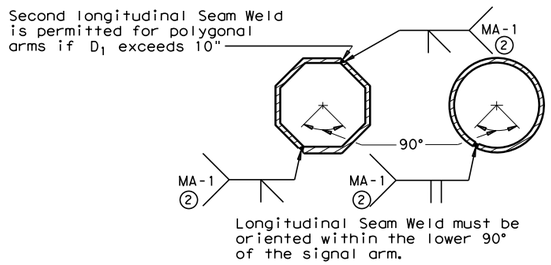
Mast Arms of SMA and DMA structures and clamp-on Arms of LMA structures of approximately 40 ft or longer are subject to harmonic vertical vibrations in light wind conditions due to the aeroelastic characteristics of a few of the myriads of possible combinations of the following: signal numbers, weights and positions; existence/solidity of backplates; presence of additional attachments to the arm, such as signs and cameras; arm-wind orientation; and arm-pole stiffness.

Such vibrations may cause fatigue damage to the structure and may lead to galloping in moderate wind conditions which may further damage the structure and alarm the public. Tests have indicated that when wind is blowing toward the back side of signal heads having un-vented backplates attached the probability of unacceptable harmonic vibration and/or galloping is rather high.

If backplates are not required for improved visibility they should not be applied to the signal heads or, if they must be applied, they should be vented as a first and inexpensive measure to mitigate vibrations.

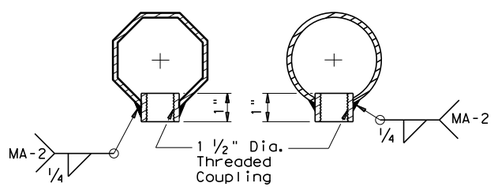
The traffic signal mast arms shall be visually inspected in 5 to 20 mph wind conditions after installation of signal heads and any attachments, including any required backpates. If vertical movements with a total excursion (maximum upward excursion to maximum downward excursion) of more than approximately 8" are observed at the arm tip, a damping plate shall be fitted to the arm. See "Damping Plate Mounting Details" on standard sheet, MA-DPD-10.

This visual inspection shall be repeated after each modification of the structure that could affect its aeroelastic response. Excessive vibrations shall not be allowed to continue for more than two days.



ARM WELD DETAIL

②60% Min. penetration
100% pemetration within 6" of circumferential base welds.



ARM COUPLING DETAILS

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

DUAL MAST ARM ASSEMBLY

(80 MPH WIND ZONE)

DMA-80 (2)-12

DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
1-12

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1547

DATE:
FILE:

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DATE:
FILE:

SHIPPING PARTS LIST

Ship each pole with the following attached: enlarged hand hole, pole cap, fixed arm connection bolts and washers and any additional hardware listed in the table.

Nominal Arm Length		30' Poles With Luminaire		24' Poles With ILSN		19' Poles With no Luminaire and no ILSN	
		See note above plus: one (or two if ILSN attached) small hand hole, clamp-on simplex		See note above plus one small hand hole		See note above	
LF	Lc						
ft.	ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20	2020L-80		2020S-80		2020-80	
24	20	2420L-80		2420S-80		2420-80	
	24	2424L-80		2424S-80		2424-80	
28	20	2820L-80		2820S-80		2820-80	
	24	2824L-80		2824S-80		2824-80	
	28	2828L-80		2828S-80		2828-80	
32	20	3220L-80		3220S-80		3220-80	
	24	3224L-80		3224S-80		3224-80	
	28	3228L-80		3228S-80		3228-80	
	32	3232L-80		3232S-80		3232-80	
36	20	3620L-80		3620S-80		3620-80	
	24	3624L-80		3624S-80		3624-80	
	28	3628L-80		3628S-80		3628-80	
	32	3632L-80		3632S-80		3632-80	
	36	3636L-80		3636S-80		3636-80	
40	20	4020L-80		4020S-80		4020-80	
	24	4024L-80		4024S-80		4024-80	
	28	4028L-80		4028S-80		4028-80	
	32	4032L-80		4032S-80		4032-80	
	36	4036L-80		4036S-80		4036-80	
44	20	4420L-80		4420S-80		4420-80	
	24	4424L-80		4424S-80		4424-80	
	28	4428L-80		4428S-80		4428-80	
	32	4432L-80		4432S-80		4432-80	
	36	4436L-80		4436S-80		4436-80	

Traffic Signal Arms (Fixed Mount) (1 per pole) Ship each arm w/ the listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal)		Type II Arm (2 Signals)		Type III Arm (3 Signals)	
	1 CGB connector		1 Bracket Assembly and 2 CGB Connectors		2 Bracket Assemblies and 3 CGB Connectors	
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-80					
24	24I-80		24II-80			
28	28I-80		28II-80			
32			32II-80		32III-80	
36			36II-80		36III-80	
40					40III-80	
44					44III-80	

Traffic Signal Arms (Clamp-On Mount) (1 per pole) Ship each arm w/ the listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal)		Type II Arm (2 Signals)		Type III Arm (3 Signals)	
	2 CGB connector and 1 clamp w/bolts and washers		1 Bracket Assembly, 3 CGB Connectors, and 1 clamp w/bolts and washers		2 Bracket Assemblies, 4 CGB Connectors, and 1 clamp w/bolts and washers	
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-80					
24	24I-80		24II-80			
28	28I-80		28II-80			
32			32II-80		32III-80	
36			36II-80		36III-80	

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	

ILSN Arm (1 or 2 per pole) ship with clamps, bolts and washers

Nominal Arm Length	Quantity
7' Arm	
9' Arm	

Anchor Bolt Assemblies (1 per pole)

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
1 1/2"	3'-4"	
1 3/4"	3'-10"	
2"	4'-3"	

Each anchor bolt assembly consists of the following: Top and Bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers, and 4 nut anchor devices (Type 2) per Standard Drawing "TS-FD".

Templates may be removed for shipment.

ARMS		ROUND POLES					POLYGONAL POLES					Foundation Type
LF	Lc	D_B	D_{19}	D_{24}	D_{30}	③ thk	D_B	D_{19}	D_{24}	D_{30}	③ thk	
ft.	ft.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
20	20	11.5	8.8	8.1	7.3	.179	12.5	9.5	8.7	7.8	.179	30-A
24	20	12.0	9.3	8.6	7.8	.179	13.0	10.0	9.2	8.3	.179	30-A
	24	12.0	9.3	8.6	7.8	.179	13.0	10.0	9.2	8.3	.239	30-A
28	20	12.5	9.8	9.1	8.3	.179	12.0	9.0	8.2	7.3	.239	30-A
	24	12.5	9.8	9.1	8.3	.179	12.0	9.0	8.2	7.3	.239	30-A
	28	13.0	10.3	9.6	8.8	.179	12.5	9.5	8.7	7.8	.239	30-A
32	20	13.0	10.3	9.6	8.8	.179	12.5	9.5	8.7	7.8	.239	30-A
	24	13.0	10.3	9.6	8.8	.179	12.5	9.5	8.7	7.8	.239	30-A
	28	12.0	9.3	8.6	7.8	.239	13.0	10.0	9.2	8.3	.239	30-A
	32	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
36	20	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
	24	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
	28	12.5	9.8	9.1	8.3	.239	13.5	10.5	9.7	8.8	.239	36-A
	32	12.5	9.8	9.1	8.3	.239	13.5	10.5	9.7	8.8	.239	36-A
	36	12.5	9.8	9.1	8.3	.239	14.0	11.0	10.2	9.3	.239	36-A
40	20	12.5	9.8	9.1	8.3	.239	14.0	11.0	10.2	9.3	.239	36-A
	24	12.5	9.8	9.1	8.3	.239	14.0	11.0	10.2	9.3	.239	36-A
	28	13.0	10.3	9.6	8.8	.239	14.0	11.0	10.2	9.3	.239	36-A
	32	13.0	10.3	9.6	8.8	.239	15.0	12.0	11.2	10.3	.239	36-A
	36	13.5	10.8	10.1	9.3	.239	15.0	12.0	11.2	10.3	.239	36-A
44	20	13.5	10.8	10.1	9.3	.239	15.0	12.0	11.2	10.3	.239	36-A
	24	13.5	10.8	10.1	9.3	.239	15.0	12.0	11.2	10.3	.239	36-A
	28	13.5	10.8	10.1	9.3	.239	15.0	12.0	11.2	10.3	.239	36-A
	32	14.0	11.3	10.6	9.8	.239	15.5	12.5	11.7	10.8	.239	36-B
	36	14.0	11.3	10.6	9.8	.239	15.5	12.5	11.7	10.8	.239	36-B

Arm L_F or L_C	ROUND ARMS					POLYGONAL ARMS				
	L_1	D_1	D_2	③ thk	Rise	L_1	D_1	④ D_2	③ thk	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	6.5	3.8	.179	1'-9"	19.1	7.0	3.5	.179	1'-8"
24	23.1	7.5	4.3	.179	1'-10"	23.1	7.5	3.5	.179	1'-9"
28	27.1	8.0	4.2	.179	1'-11"	27.1	8.0	3.5	.179	1'-10"
32	31.0	9.0	4.7	.179	2'-1"	31.0	9.0	3.5	.179	2'-0"
36	35.0	9.5	4.6	.179	2'-4"	35.0	10.0	3.5	.179	2'-1"
40	39.0	9.5	4.1	.239	2'-8"	39.0	9.5	3.5	.239	2'-3"
44	43.0	10.0	4.1	.239	2'-11"	43.0	10.0	3.5	.239	2'-6"

D_B = Pole Base O.D.
D_{19} = Pole Top O.D. with no Luminaire and no ILSN
D_{24} = Pole Top O.D. with ILSN w/out Luminaire
D_{30} = Pole Top O.D. with Luminaire

D_1 = Arm Base O.D.
D_2 = Arm End O.D.
L_1 = Shaft Length
L_F = Fixed Arm Length
L_C = Clamp-on Arm Length (36' Max)

③ Thickness shown are minimums, thicker materials may be used.

④ D_2 may be increased by up to 1.0" for polygonal arms.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

DUAL MAST ARM ASSEMBLY

(80 MPH WIND ZONE)

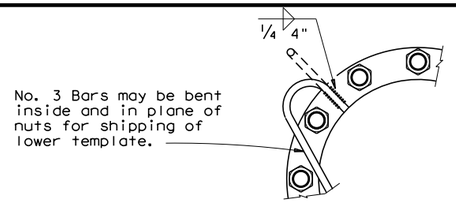
DMA-80 (3)-12

DN: MS	CK: JSY	DW: MMF	CK: JSY

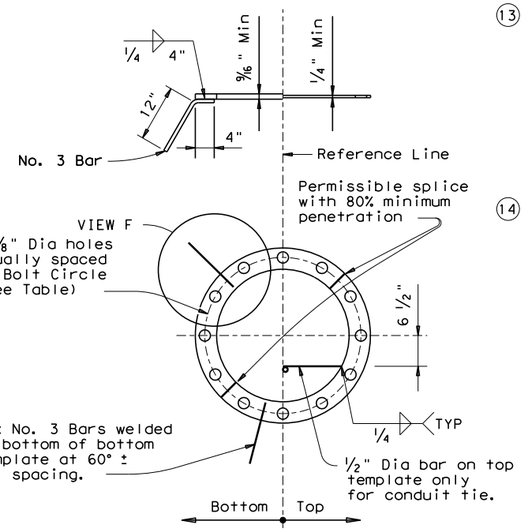
REVISIONS
5-96
1-12

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1547A

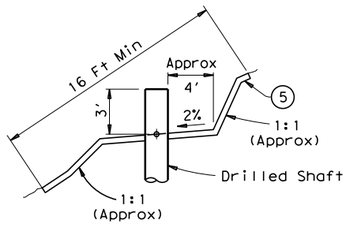
DATE:
FILE:



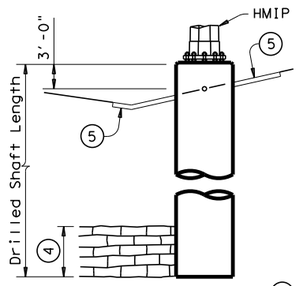
VIEW F



ANCHOR BOLT TEMPLATES

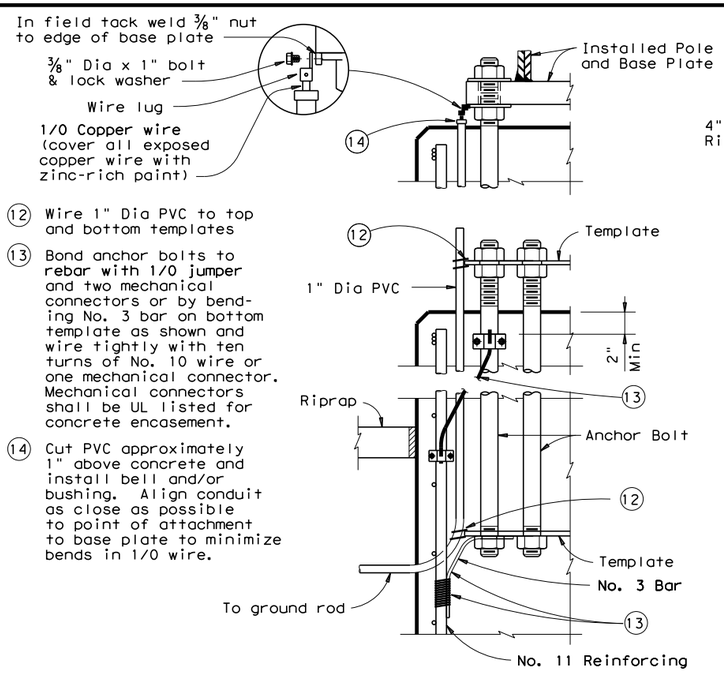


RIPRAP ON SLOPES



(5) Match slope of finished ground if slope is less than approx 4 to 1. For steeper slopes, bench to provide work area with approx 2 % slope around pole base. Other configurations may be shown elsewhere on the plans.

(4) If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

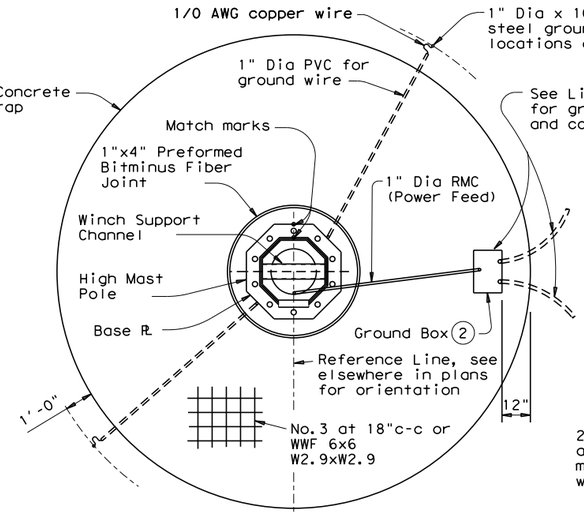


(12) Wire 1" Dia PVC to top and bottom templates

(13) Bond anchor bolts to rebar with 1/0 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.

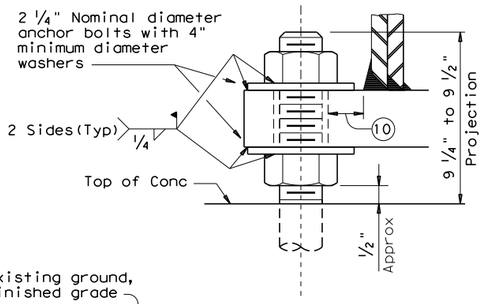
(14) Cut PVC approximately 1" above concrete and install bell and/or bushing. Align conduit as close as possible to point of attachment to base plate to minimize bends in 1/0 wire.

LIGHTNING PROTECTION SYSTEM



(2) Place ground box cover flush with riprap.

(10) If, due to tolerances in fabrication, the anchor bolt hole to ground sleeve weld is less than approx 7/8", clipped 1/2" thick washers shall be supplied at those



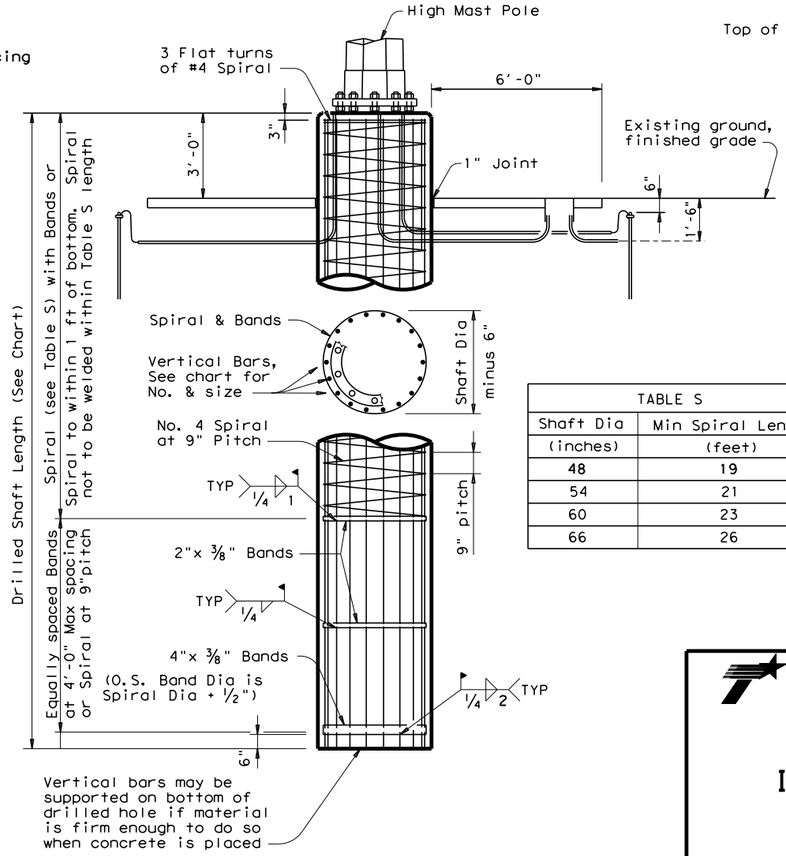
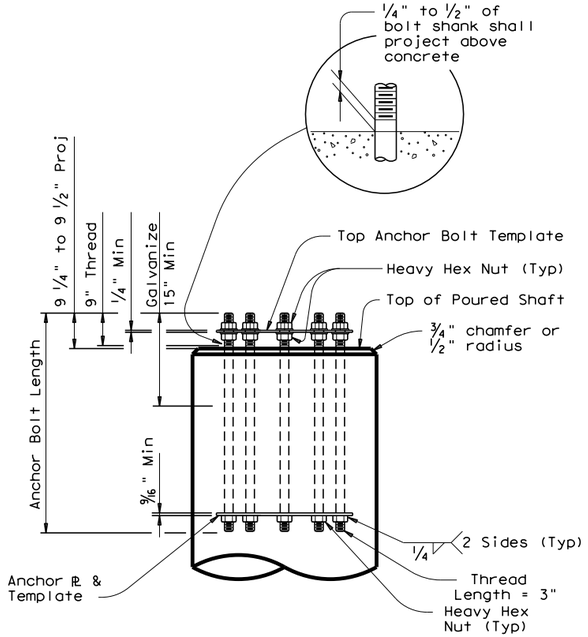


TABLE S	
Shaft Dia (inches)	Min Spiral Length (feet)
48	19
54	21
60	23
66	26

DRILLED SHAFT FOUNDATION DETAIL



ANCHOR BOLT ASSEMBLY

(See Anchor Bolt Table for number of bolts required)

Texas Department of Transportation
Traffic Operations Division

HIGH MAST ILLUMINATION POLE FOUNDATIONS

SHEET 1 OF 2 HMIF(1)-98

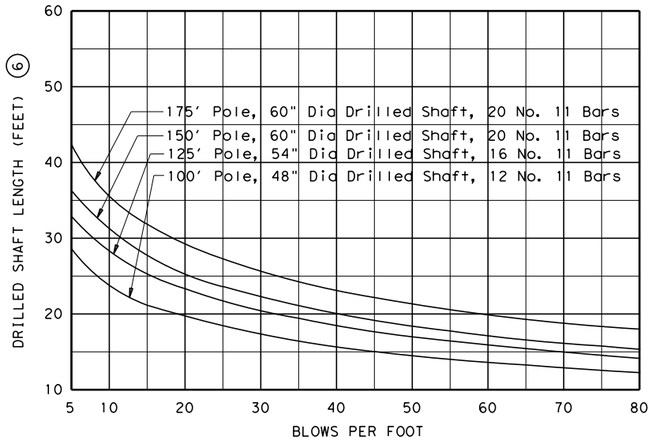
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
11-97
5-98 ~ Anchor Bolt Circle Dia

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1548

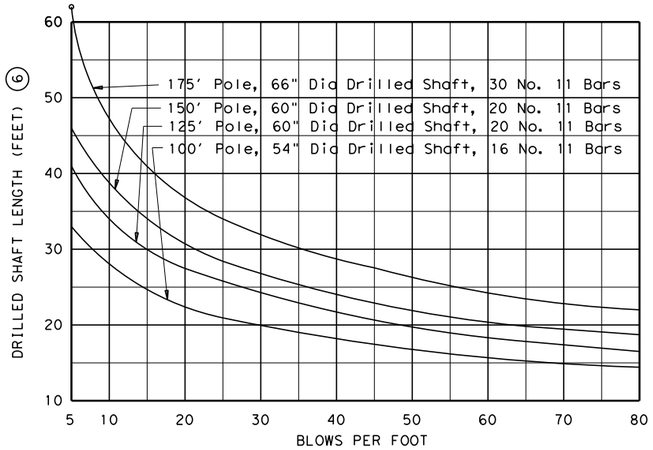
DATE:
FILE:

⑥ Includes normal 3 Ft exposure. Shafts with more than 3 Ft exposure must have additional length.



80 MPH POLES

Do not extrapolate below 5 Blows/Ft. A special design will be required for soil less than 5 Blows/Ft.



100 MPH POLES

Do not extrapolate below 5 Blows/Ft. A special design will be required for soil less than 5 Blows/Ft.

TEXAS CONE PENETROMETER TEST TABLES

NOTE: Use average "N" value over the top third of the embedded shaft. Ignore the top 2′ of soil.

ANCHOR BOLT TABLE

	Pole Height	Bolt Diameter	Bolt Length	Bolt Templates O D	Bolt Templates I D	No. of Bolts	Bolt Cir Dia
	(feet)	(inches)	(feet)	(inches)	(inches)	~	(inches)
80 MPH DESIGNS	8 SIDED POLE						
	175	2.25	4.83	45.5	36.5	16	41
	150	2.25	4.83	42.5	33.5	12	38
	125	2.25	4.83	39.5	30.5	8	35
	100	2.25	4.83	35.5	26.5	6	31
	12 SIDED POLE						
	175	2.25	4.83	48.5	39.5	12	44
	150	2.25	4.83	45.5	36.5	10	41
	125	2.25	4.83	40.5	31.5	8	36
	100	2.25	4.83	36.5	27.5	6	32
100 MPH DESIGNS	8 SIDED POLE						
	175	2.25	4.83	50.5	41.5	20	46
	150	2.25	4.83	47.5	38.5	16	43
	125	2.25	4.83	43.5	34.5	12	39
	100	2.25	4.83	38.5	29.5	10	34
	12 SIDED POLE						
	175	2.25	4.83	50.5	41.5	16	46
	150	2.25	4.83	48.5	39.5	12	44
	125	2.25	4.83	44.5	35.5	10	40
	100	2.25	4.83	40.5	31.5	6	36

MISCELLANEOUS QUANTITIES - ONE HMIF

Shaft Diameter	(in) ⑦	48	54	60
Concrete Riprap	(CY)	2.33	2.44	2.56
Reinforcing	(Lbs) ⑧	94	99	103
Ground Box	(ea)	1	1	1
R O W Marker	(ea) ⑨	1	1	1

⑦ See elsewhere on plans for length of Drilled Shaft required.
⑧ For Contractors information only.
⑨ Designated elsewhere on plans if required.

GENERAL NOTES:

Unless otherwise noted, the welded steel bands may be replaced with spiral as shown on the foundation details.

Anchor bolts shall be placed in foundation so there are always two bolts on reference line.

Drilled shaft lengths as determined from the foundation design chart or other acceptable methods are to be as shown elsewhere on the plans.

ODSR may not be used for HMIF drilled shafts.

Concrete for drilled shafts shall be Class C.

Repair welded areas with zinc-rich paint.

All Anchor Bolts, Nuts and Washers shall be galvanized in accordance with Item 445, "Galvanizing".

Texas Department of Transportation
Traffic Operations Division

HIGH MAST ILLUMINATION POLE FOUNDATIONS

SHEET 2 OF 2 **HMIF(2)-98**

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

REVISIONS
5-98 ~ Anchor Bolt Circle Dia

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1549

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DATE:
FILE:

℄ 4 Permissible 1" Dia assembly holes 180° apart. (Typ each splice)

4 additional 1" Dia holes are permissable 12" from assembly holes

6" Min
12" Max

12"

12"

SPLICE DETAIL

⅞" Dia Holes equally spaced on 15" Dia Bolt Circle

7 ¼" Dia

Match Mark

¾"

⅜"

85 Percent Minimum Penetration

HM-6

Reference Line

VIEW C

8"

¼" Plate

1"

5 ¼"

1"

3 ½"

7 ¼"

1"

6"

1"

Provide 3~ ½" Dia x1 ¼" bolts

WINCH DRIVE ACCESS COVER

Reference Line

O.D. of Base Plate

Match marks

C 8x18.75 for mounting winch (See Detail)

VIEW E (2 opposite corners)

℄ 2 ~ 1 ⅜" Dia holes 24" above Base Plate

2 ¾" Dia Bolt Holes equally spaced on Bolt circle

℄ Pole

2"

2"

I.D. Base Plate

T

Galvanizing drain slots are not permitted in base plate. Drain to small end.

SECTION A-A

℄ Winch Drive

Reference Line

U

Cut channel to fit for 100′ & 125′ 12 Sided Poles

4 ½" 4" 5 ⅞" 100′,125′ & 150′ Poles

10 ⅞" 175′ Pole

6 ~ ½" Heavy Hex Nuts welded under 9⁄16" Dia holes. Tap nuts after galvanizing.

2 5⁄16"

2 5⁄16"

2"2"

℄ Channel

6 ~ 1"x2" Slots 2"2" 10 ⅜" 100′,125′ & 150′ Poles

15 ⅜" 175′ Pole

WINCH MOUNTING CHANNEL

U

Reference Line

6 ~ ⅝"x1 ¼" Slots 4 ½" 4" 5 ⅞" 100′,125′ & 150′ Poles

10 ⅞" 175′ Pole

2 ½" 1 ¼" 2"2"2" 2 ½" 1 ¼"

1 11⁄16"

8"

4 5⁄8"

1 11⁄16"

2"

4"

2"

½" Plate

6 ~ ⅝" Dia holes 2"2" 10 ⅜" 100′,125′ & 150′ Poles

15 ⅜" 175′ Pole

WINCH MOUNTING PLATE

G

HM-9

G

S

A bent and welded handhole frame is permissable. Heating, bending, and finish grinding must be approved with the HM-9 weld procedure.

OPTIONAL HANDHOLE FRAME

Nominal Pole Height

Taper 0.1600 in/ft(for 80 MPH) and 0.1900 in/ft(for 100 MPH)

A B C D E F

Splice Length

8 SIDED

VIEW C

Taper 0.1750 in/ft(for 80 MPH) and 0.1850 in/ft(for 100 MPH)

A B C D

Section Length

12 SIDED

POLE ELEVATIONS

(Showing 175 Ft Poles)

T

½"

Handhole Frame

HM-3

¼

¾"x ⅜

¼

HM-7

Winch Drive Access Cover

Tang

Channel

8"

6"

VIEW F

VIEW D

HM-8

⅜

½"x2 ½"x3 ¾" Tang, A36 Min, 1 ¼" R, 1 ¼" Dia chamfered hole. Place Tang on flat adjacent to handhole.

SECTION B-B

1′-0"

B

Access Cover to be ¼" Plate

Drill and tap for ½"x1" cap screw (4 req'd)

A

Ground Sleeve

¼"

Typ

S

R=3 ½"

1′-6"

A

Drill and Tap for 3 ½" bolts.

1 ½" Dia Hole

5 ¼"

5 5⁄8"

3"3"

8 7⁄8"

8 7⁄8"

1′-0"

1′-7"

See HMIF for Anchor Bolt Detail

⅜" U

6"

VIEW G

B

ELEV OF POLE BASE

⅜"

t

¼

HM-1

t x ⅜

t

STANDARD WELD

¼

Chip & Grind

OPTIONAL WELD STEP 1

(a) Prepare Shaft and ground sleeve.
(b) Weld shaft to base plate, chip and grind flush (1/8 " max radius.)

⅜"

t

¼

HM-2

t x ⅜

t

OPTIONAL WELD STEP 2

(c) Positiion ground sleeve.
(d) Weld to base plate with tapered reinforcement.

VIEWS D

85% Minimum penetration

HM-5

Ground sleeve to be same thickness as lower pole section, except shall not be less than 0.375 inch

Provide 100% penetration in outer sections at splices and at base plates for 1.5 pole diameters plus 6". Also provide 100% penetration for ground sleeve seam welds.

VIEW E

t

HM-4

7/8xt

⅞"

VIEW F

℄ Winch Drive

1 ⅜" Min

G

Provide welded and ground filler or cover plate where winch drive conflicts with bend line in ground sleeve for the 8 sided, 80 mph, 100′ pole, the 12 sided, 100 mph, 100′ pole, and the 12 sided, 80 mph, 175′, 125′ and 100′ poles.

VIEW G

SHEET 1 OF 2

Texas Department of Transportation

Traffic Operations Division Standard

HIGH MAST ILLUMINATION POLES 100′ - 125′ - 150′ - 175′

HMIP(1)-16

FILE: hmip-16.dgn	DN:	CK:	DW:	CK:
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
5-98	DIST	COUNTY		SHEET NO.
8-16	WACO	McLENNAN		1550

77A

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DATE:
FILE:

TABLE OF VARIABLE POLE DIMENSIONS

	Ht (ft)	Section	8 SIDED POLE Diameter (Inches) Bottom	Top	Thickness (inches)	Length (feet)	Splice (inches)	12 SIDED POLE Diameter (Inches) Bottom	Top	Thickness (inches)	Length (feet)	Splice (inches)
80 MPH DESIGNS	175	A	13.083	7.750	.250	33.33	19	16.792	7.750	.250	51.67	24
		B	17.792	12.205	.375	34.92	25	24.858	15.817	.313	51.67	36
		C	22.250	16.583	.375	35.42	32	32.625	23.583	.313	51.67	48
		D	25.375	20.948	.438	27.67	36	36.250	31.175	.375	29.00	~
		E	28.375	23.895	.500	28.00	41					
		F	31.250	26.703	.500	28.42	~					
	150	A	13.083	7.750	.250	33.33	19	16.792	7.750	.250	51.67	24
		B	17.792	12.205	.375	34.92	25	24.858	15.817	.313	51.67	36
		C	22.250	16.583	.375	35.42	32	32.625	23.583	.313	51.67	~
		D	25.375	20.948	.438	27.67	36					
		E	28.375	23.895	.500	28.00	~					
	125	A	13.083	7.750	.250	33.33	19	16.792	7.750	.250	51.67	24
		B	17.792	12.205	.375	34.92	25	24.858	15.817	.313	51.67	36
		C	22.250	16.583	.375	35.67	32	28.250	23.583	.313	26.67	~
		D	25.375	20.948	.438	27.67	~					
	100	A	13.083	7.750	.250	33.33	19	16.792	7.750	.250	51.67	24
		B	17.792	12.205	.375	34.67	25	24.625	15.817	.313	50.33	~
		C	22.250	16.583	.375	35.67	~					
100 MPH DESIGNS	175	A	14.208	7.875	.313	33.33	20	17.433	7.875	.375	51.67	25
		B	19.792	13.142	.375	35.00	28	25.747	16.173	.438	51.75	37
		C	25.250	18.473	.438	35.67	36	33.750	24.176	.438	51.75	49
		D	29.000	23.680	.500	28.00	42	37.375	31.995	.500	29.08	~
		E	32.625	27.210	.563	28.50	47					
		F	36.125	30.631	.563	28.92	~					
	150	A	14.208	7.875	.313	33.33	20	17.433	7.875	.375	51.67	25
		B	19.792	13.142	.375	35.00	28	25.747	16.173	.438	51.75	37
		C	25.250	18.473	.438	35.67	36	33.750	24.176	.438	51.75	~
		D	29.00	23.680	.500	28.00	42					
		E	32.625	27.210	.563	28.50	~					
	125	A	14.208	7.785	.313	33.33	20	17.433	7.875	.375	51.67	25
		B	19.792	13.142	.375	35.00	28	25.747	16.173	.438	51.75	37
		C	25.250	18.473	.438	35.67	36	29.125	24.176	,438	26.75	~
		D	29.00	23.680	.500	28.00	~					
	100	A	14.208	7,875	.313	33.33	20	17.433	7.875	.375	51.67	25
		B	19.792	13.142	.375	35.00	28	25.500	16.173	.375	50.42	~
		C	25.250	18.473	.438	35.67	~					

Diameters are measured across the flats.

TABLE OF VARIABLE BASE DIMENSIONS

	Ht (ft)	O.D. (inches)	I.D. (inches)	Bolt Cir (inches)	No. Bolts	S (inches)	T (inches)	U (inches)
	8 SIDED POLE							
80 MPH DESIGNS	175′	47	22	41	16	2.00	3.75	4.50
	150′	44	18	38	12	2.00	4.00	3.50
	125′	41	16	35	8	2.00	4.50	3.50
	100′	37	14	31	6	2.00	5.00	3.50
	12 SIDED POLE							
	175′	50	24	44	12	1.75	3.50	3.50
	150′	47	22	41	10	1.75	3.50	2.50
	125′	42	18	36	8	1.75	3.75	2.50
	100′	38	13	32	6	1.75	4.00	2.50
	8 SIDED POLE							
100 MPH DESIGNS	175′	52	27	46	20	1.75	3.50	4.50
	150′	49	23	43	16	1.75	4.00	3.50
	125′	45	21	39	12	1.75	4.50	3.50
	100′	40	17	34	10	1.75	4.50	3.50
	12 SIDED POLE							
	175′	52	27	46	16	1.75	3.25	3.50
	150′	50	25	44	12	1.75	3.50	2.50
	125′	46	22	40	10	1.75	3.75	2.50
	100′	42	19	36	6	1.75	4.00	2.50

NOTE: Base Plate may be round or with 8 or 12 equal segments matching the pole.

MATERIALS

Polygonal Shafts Ground Sleeves	ASTM A709 Grade 50 A572 Grade 50 (1) (2)
Base Plate and Handhole Frame	ASTM A709 Grade 50 A572 Grade 50 (1) A633 Grade C (1)
Miscellaneous Steel	ASTM A36 or equal

(1) ASTM A572 and A633 may have higher yield strength but shall not have less elongation than the grade indicated.

(2) The silicon content of all steel shall be controlled to ensure high quality galvanizing and to avoid discoloration.

GENERAL NOTES:

1. Design conforms to AASHTO 1994 Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals and Interim Revisions thereto. The Design Wind Speed is 80 mph or 100 mph.

2. The required design height and wind speed shall be as shown elsewhere in the plans.

3. Each pole section, top flange plate and base plate shall be permanently marked on the reference line. The required mark locations are shown on the baseplate, top plate, and foundation plan details. These marks shall be used in pole assembly and erection alignment. The reference line and anchor bolt orientation shall be parallel to roadway centerline unless otherwise shown on Lighting Layouts.

Texas Department of Transportation

Traffic Operations Division Standard

HIGH MAST ILLUMINATION POLES 100′ - 125′ - 150′ - 175′

HMIP(2)-16

FILE: hmip-16.dgn	DN:	CK:	DW:	CK:
© TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
5-98	DIST	COUNTY		SHEET NO.
8-16	WACO	McLENNAN		1551

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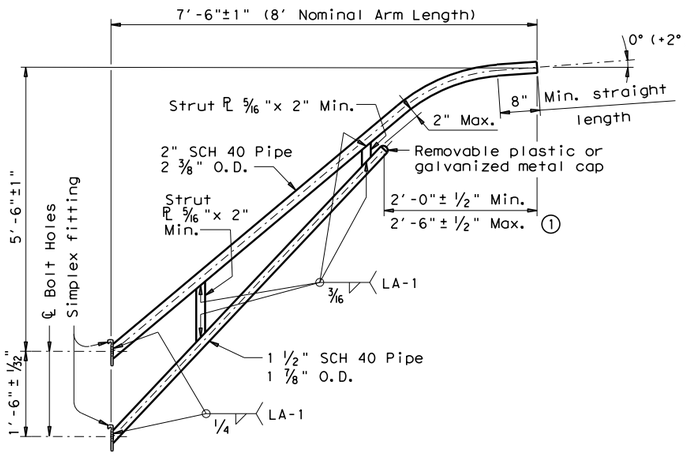
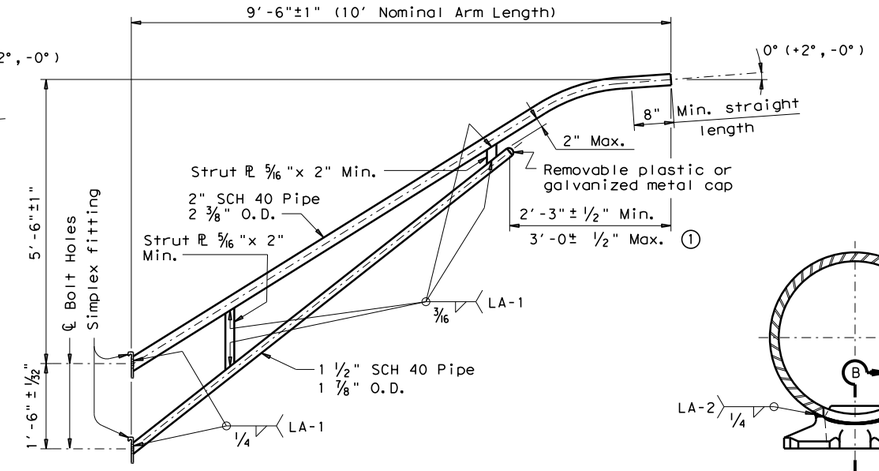
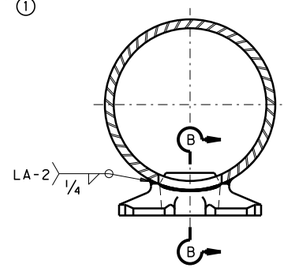
DATE:
FILE:



8-FOOT LUMINAIRE ARM



10-FOOT LUMINAIRE ARM



DIRECT ATTACHMENT DETAIL

MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr.65-35 or A148 Gr.80-50, A576 Gr.1021 (3), or A36 (Arm only)
Arm Pipes	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50 (4), or A1011 HSLAS-F Gr.50 (4)
Arm Strut Plates (2)	ASTM A36, A572 Gr.50 (4), or A588
Misc.	ASTM designations as noted

(1) Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.

(2) Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.

(3) A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.

(4) ASTM A572, A1008 HSLAS-F, and A1011 HSLAS-F may have higher yield strengths but shall not have less elongation than the grade indicated.

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. Design Wind Speed equals 90 mph plus a 1.3 gust factor. Arms are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq. ft.

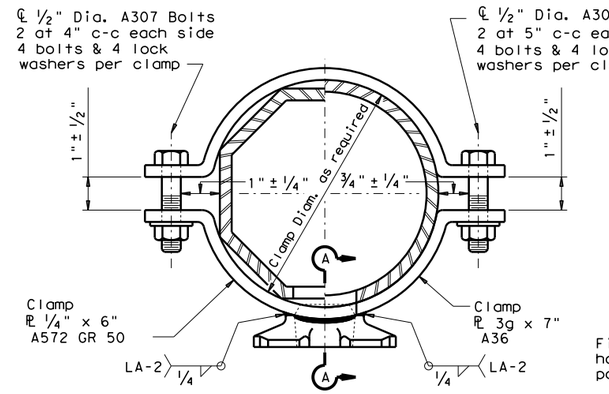
Materials and fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absense of specified Fabricaton tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.

Unless otherwise noted, all parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing".

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

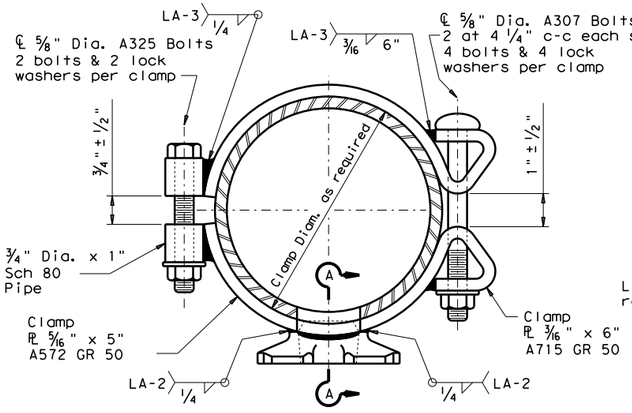
Each pole simplex fitting shall be supplied with 2 ASTM A325 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans. When clamp attachment is specified, the Fabricator shall ship the clamp assembly securely attached to the pole at the location shown on the plans.

If clamp assemblies are ordered without poles, the Fabricator shall ship one upper and one lower clamp assembly together in a single package, including all nuts and washers required for the clamps and simplex fittings.



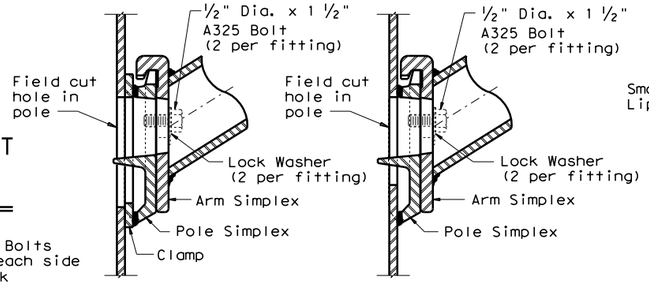
CLAMP ATTACHMENT DETAIL NO. 1 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 2 (HALF SECTION)



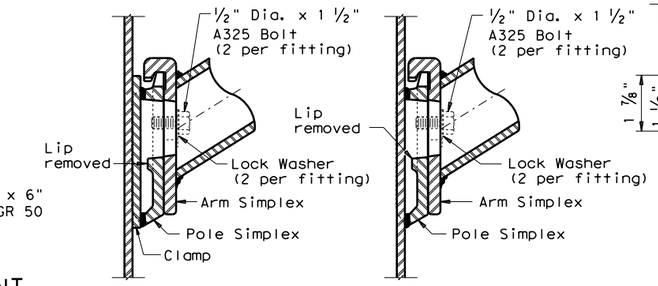
CLAMP ATTACHMENT DETAIL NO. 3 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 4 (HALF SECTION)



UPPER SIMPLEX FITTING

UPPER SIMPLEX FITTING

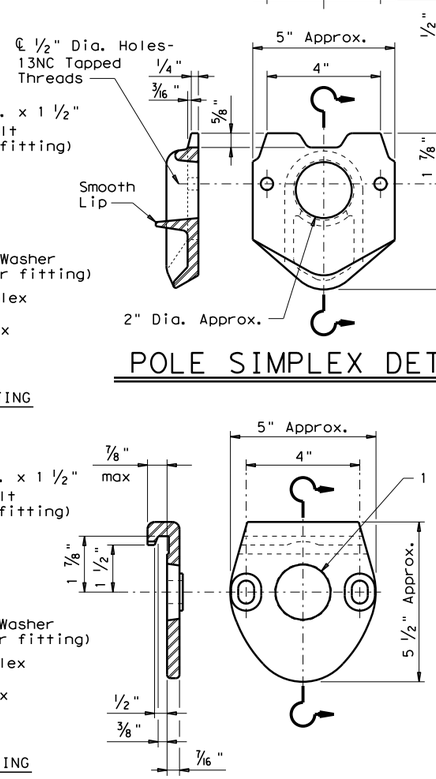


LOWER SIMPLEX FITTING

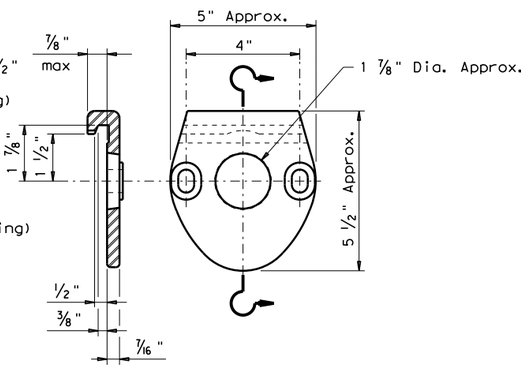
LOWER SIMPLEX FITTING

SECTON A-A

SECTON B-B



POLE SIMPLEX DETAIL



ARM SIMPLEX DETAIL

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY DRAWINGS FOR LUMINAIRE SUPPORT STRUCTURES

ARM DETAILS

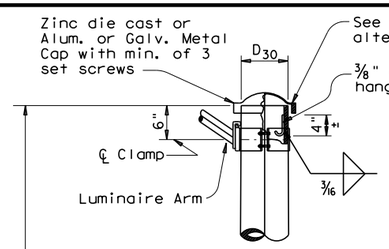
LUM-A-12

DN: LEH | CK: JSY | DW: LTT | CK: TEB

REVISIONS: 5-96, 1-99, 1-12

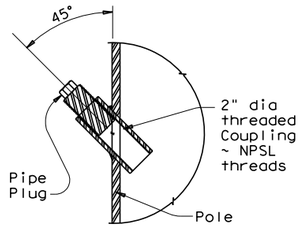
CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1552

DATE:
FILE:

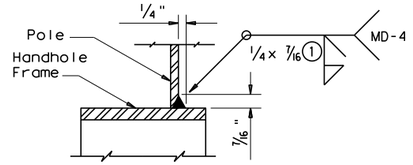


DETAIL A

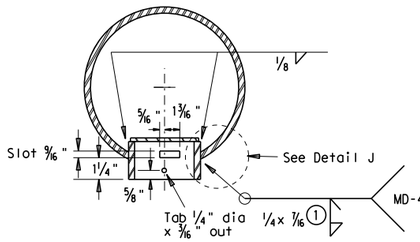
(for pole with luminaire)



POLE COUPLING DETAIL

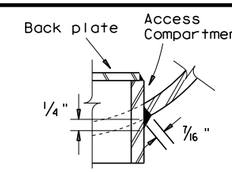


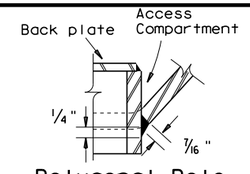
DETAIL G



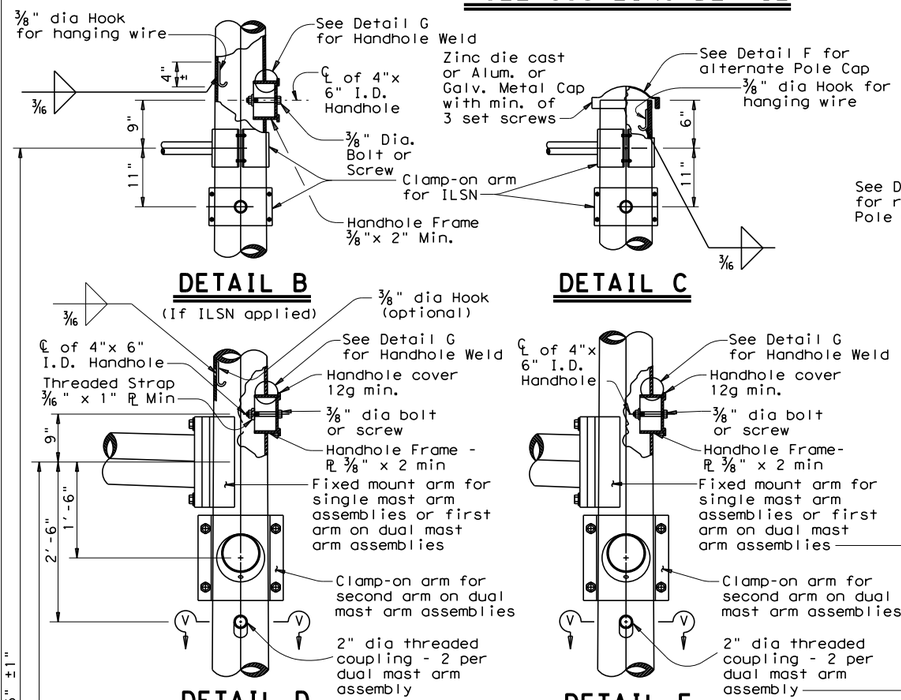
SECTION X-X

Opening for access compartment shall be no more than 1/16 inch wider than the access compartment itself.





DETAIL J



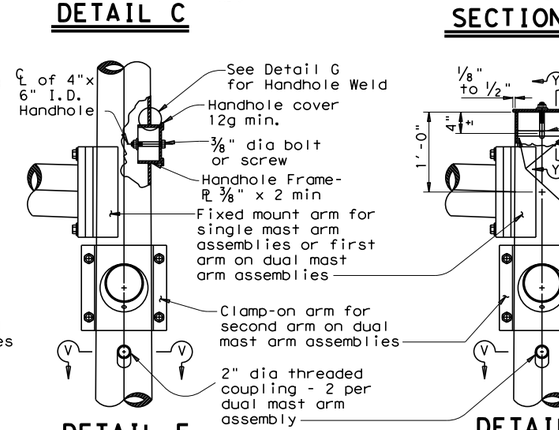
DETAIL B

(If ILSN applied)

DETAIL C

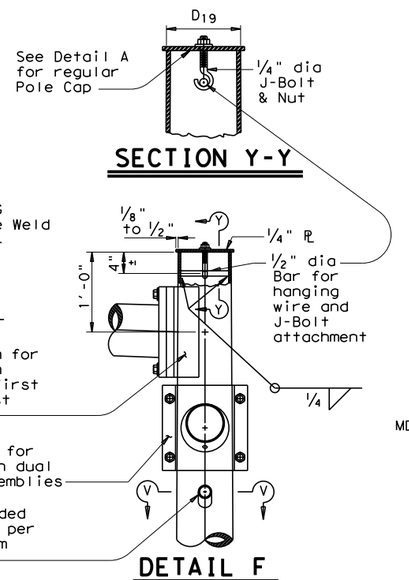
DETAIL D

(for 30' pole with luminaire and ILSN sign)



DETAIL E

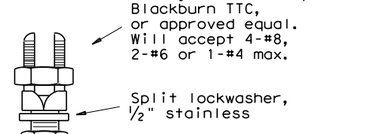
(for 24' pole with ILSN sign and no luminaire)



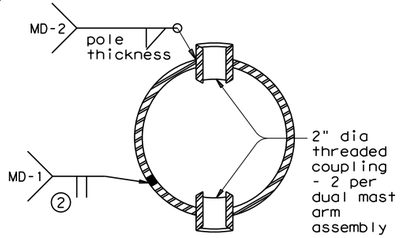
SECTION Y-Y

DETAIL F

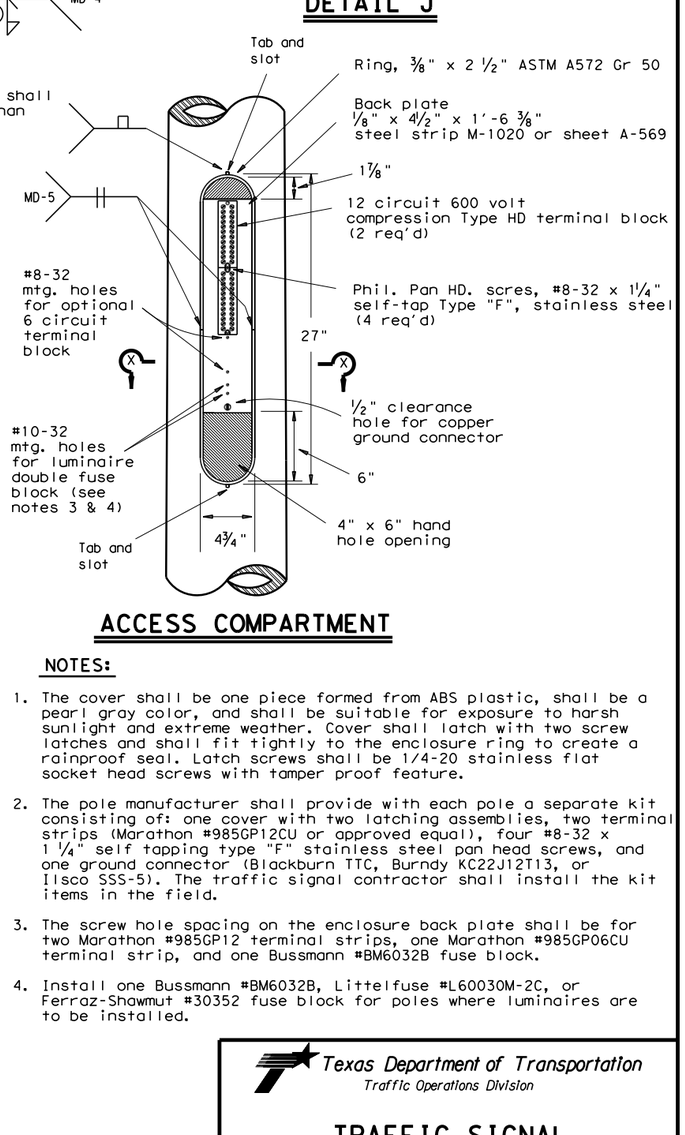
(for 19' pole with no ILSN sign and no luminaire)



COPPER GROUND CONNECTOR



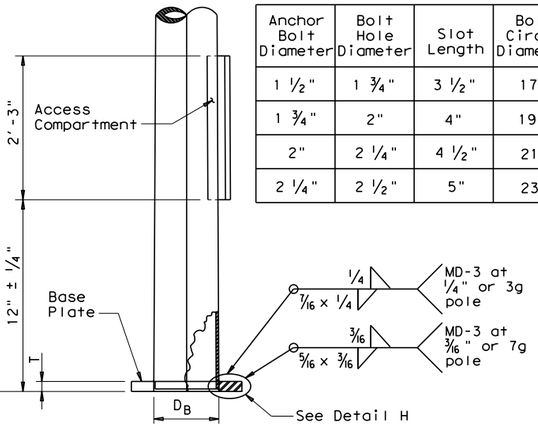
SECTION V-V



ACCESS COMPARTMENT

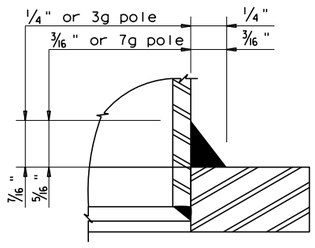
NOTES:

1. The cover shall be one piece formed from ABS plastic, shall be a pearl gray color, and shall be suitable for exposure to harsh sunlight and extreme weather. Cover shall latch with two screw latches and shall fit tightly to the enclosure ring to create a rainproof seal. Latch screws shall be 1/4-20 stainless flat socket head screws with tamper proof feature.
2. The pole manufacturer shall provide with each pole a separate kit consisting of: one cover with two latching assemblies, two terminal strips (Marathon #985GP12CU or approved equal), four #8-32 x 1 1/4" self tapping type "F" stainless steel pan head screws, and one ground connector (Blackburn TTC, Burndy KC22J12T13, or Ilsco SSS-5). The traffic signal contractor shall install the kit items in the field.
3. The screw hole spacing on the enclosure back plate shall be for two Marathon #985GP12 terminal strips, one Marathon #985GP06CU terminal strip, and one Bussmann #BM6032B fuse block.
4. Install one Bussmann #BM6032B, Littelfuse #L60030M-2C, or Ferraz-Shawmut #30352 fuse block for poles where luminaires are to be installed.

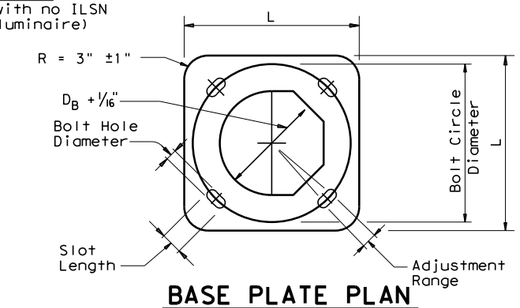


Anchor Bolt Diameter	Bolt Hole Diameter	Slot Length	Bolt Circle Diameter	Base ℞ Dim. L x T	Adjust. Range
1 1/2"	1 3/4"	3 1/2"	17"	18" x 1 1/2"	13.4°
1 3/4"	2"	4"	19"	20" x 1 3/4"	13.5°
2"	2 1/4"	4 1/2"	21"	22" x 2"	13.6°
2 1/4"	2 1/2"	5"	23"	24" x 2 1/4"	13.7°

POLE ELEVATION



DETAIL H



BASE PLATE PLAN

(1) 85% Min. penetration

(2) 60% Min. penetration 100% pemetration within 6" of circumferential base welds.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES MAST ARM POLE DETAILS

MA-D-12

DN: MS	CK: JSY	DW: FDN	CK: CAL

REVISIONS
8-99
1-12

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1553

DATE: 10/18/2023 1:31:01 PM
FILE: c:\caddlib\pw\kdwatson\centraldiv\d0204664\rid1-20 (2).dgn

ROADWAY ILLUMINATION ASSEMBLY NOTES

1. Details apply to roadway lighting installations bid or referenced under Item 610, "Roadway Illumination Assemblies." Provide, furnish, and install all other materials not shown on the plans which may be necessary for complete and proper construction. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the State such warranties or guarantees.

2. The locations of poles and fixtures may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.

3. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC),TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA),and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association, Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection.

4. Provide Roadway Illumination Light Fixtures as per TxDOT Departmental Material Specification (DMS) 11010, Item 610, and as shown on the Material Producers List (MPL) for Roadway Illumination and Electrical Supplies.

5. Fabricate steel roadway illumination poles in accordance with Roadway Illumination Poles (RIP) standards and Item 610. Poles fabricated according to RIP standards do not require shop drawing submittals.

   a. Alternate designs to RIP standards or the use of aluminum to fabricate poles will require the submission of shop drawings electronically. For instructions on submitting shop drawings electronically see "Guide to Electronic Shop Drawing Submittal" on the TxDOT web site.

   b. Limitations on use of the RIP standard: The RIP standard details were developed for installations in locations where the 3-second gust basic maximum wind speed is 110 mph, and where the elevation of the base of the pole is less than (i.e. not more than) 25′ above the elevation of the surrounding terrain, in accordance with the "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," 6th Edition (2013) of the AASHTO Design Specifications. For poles to be installed in regions where the maximum basic wind speed exceeds 110 mph or to be mounted more than 25′ above the surrounding terrain, provide poles meeting the following requirements:

      i. Submittals. Following the electronic shop drawing submittal process (see Guide to Electronic Shop Drawing Submittal on the TxDOT web site), submit to the Engineer for approval fabrication drawings and calculations for the poles, sealed by a Texas licensed professional engineer (P.E.).

      ii. Luminaire Structural Support Requirements. Provide light poles, arms, and anchor bolt assemblies with a 25 year design life to safely resist dead loads, ice loads and the required basic wind speeds at the location of installation in accordance with the 6th edition (2013) of the AASHTO Design Specifications. For transformer base poles, include transformer base and connecting hardware in calculations and shop drawing submittals. Structurally test all transformer bases to resist the theoretical plastic moment capacity of the pole. Submit certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished with the shop drawings. Show breakaway base model number, manufacturer's name, and logo on shop drawings. Include on manufacturer's shop drawings the ASTM designations for all materials to be used.

6. For both transformer and shoe-base type illumination poles, provide and install double-pole breakaway fuse holders as specified by DMS-11040. Breakaway fuse holders are listed on the MPL for Roadway Illumination and Electrical Supplies under Items 610 & 620. Provide 10 amp time delay fuses for breakaway connectors in light poles, or inside the light fixture for underpass luminaires. In each pole, connect luminaires to the breakaway connector with continuous stranded 12 AWG copper conductors as listed on the MPL. Bond all equipment grounding conductors together and to the ground lug in the transformer base or hand hole.

7. Tighten anchor bolts for shoe base, concrete traffic barrier base, and bridge mount roadway illumination poles, in accordance with Item 449.

8. Install T-Base with following procedure:

   a. Anchor Bolt Tightening.

      i. Coat the threads of the anchor bolts with electrically conductive lubricant.

      ii. Place the T-base over the anchor bolts. Foundation must be level and flat. The maximum permissible gap under any one corner of the t-base is 1/8" before nuts are tightened.

      iii. Coat the bearing surfaces of the nuts and washers with electrically conductive lubricant. Install (1) 1/2" hold down washer, (1) lock washer, and (1) nut on each anchor bolt. Turn the nuts onto the bolts so that each is hand-tight against the washer.

      iv. Using a torque wrench, tighten each nut to 150 ft-lb. Uniform contact is required between the foundation and the T-base in the corner regions of the T-base, and all corner gaps must be closed after applying torque. If a gap still exists after torquing to 150 ft-lbs, continue torquing each bolt incrementally until gap is closed or maximum allowable torque of 250 ft. pound is reached, whichever comes first. If 250 ft-lbs is not enough to close the gap the foundation must be leveled. Gaps along the straight sides of the T-bases and the foundation are permissible. Ensure that no high point of contact occurs between the straight sides of the T-base and the foundation.

      v. Check top of T-base for level. If not level then foundation must be leveled.

   b. Top Bolt Procedure

      i. Erect pole over T-base with crane. Coat bolts, nuts, washers, and lock washers with electrically conductive lubricant.

      ii. Install bolts and 1/2" connecting washers from the inside of the T-base, thread up through the pole base. Install flat washers, lock washers and nuts snug tight according to Item 447, "Structural Bolting."

      iii. Tighten each nut to 150 ft-lb. using a torque wrench.

   c. Level and Plumb

      i. Ensure pole is plumb and mast arm is perpendicular to the roadway according to plans to within 5 degrees.

9. Construct luminaire pole foundations in accordance with Item 416, "Drilled Shaft Foundations," and TxDOT standard sheet RID(2).

10. Provide and install underpass luminaires in accordance with Item 610, DMS-11010, and TxDOT standard sheet RID(3). Typical luminaire size for underpass luminaires is 150W HPS or 150W EQ LED.

11. Mount luminaires on arms level as shown by the luminaire level indicator.

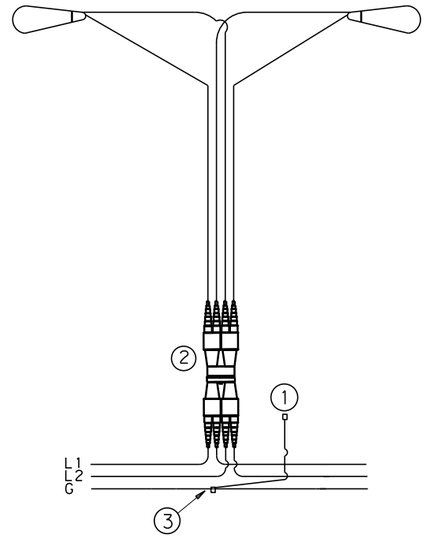
12. Orient luminaires perpendicular to the roadway intended to be lit unless otherwise shown on the plans.

Wiring Diagram Notes:

(1) Use 1/2 in.-13 UNC threaded, copper or tin-plated copper, pole bonding connector, sized appropriately for conductors, bonded to T-base, or use ground lug in handhole as available.

(2) Use pre-qualified two-pole breakaway connectors for all luminaire pole installations. For luminaires fed by a circuit with a neutral conductor, use double pole breakaway connectors with the neutral side unfused and marked white.

(3) Split Bolt or other connector.



L1,L2 = Hot Conductors
G = Grounding Conductor

TYPICAL WIRING DIAGRAM

LUMINAIRES SERVED AT 480V ON 240/480 VOLT SERVICE OR LUMINAIRES SERVED AT 240V FOR 120/240 VOLT SERVICE.

Decorative LED Lighting Notes:

1. LED Drivers in Remote Outdoor enclosures (for drivers that do not include an enclosure as part of a factory assembly):

   a. Provide NEMA 3R outdoor enclosure or as approved.

   b. Install enclosure at least 12" above ground or other horizontal surface. Mount vertically or on ceiling, and avoid direct sun where possible.

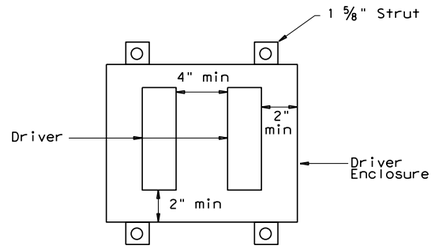
   c. Install drivers with at least 2 inches of space from enclosure walls.

   d. For multiple drivers in an enclosure, provide at least 4 inches side to side and 1 inch end to end from other drivers or electronic equipment

   e. For drivers mounted on back wall of enclosure, mount enclosure on 1 5/8" strut or other standoff to dissipate heat, or mount driver to side of the enclosure or to the metal cover.

   f. Provide remote drivers with a maximum of 100 watts

   g. Provide drivers with documentation of 100,000 hr lifetime at Tcase of 65C or higher.



Driver Spacing In Remote Enclosure

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION DETAILS

RID(1)-20

FILE: rid1-20.dgn	DN:	CK:	DW:	CK:
©TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
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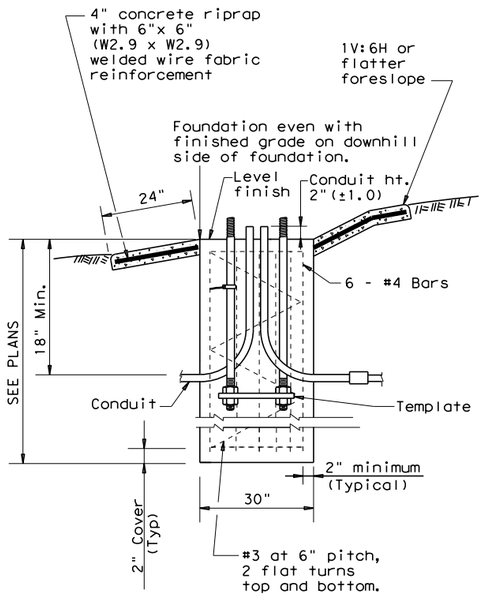
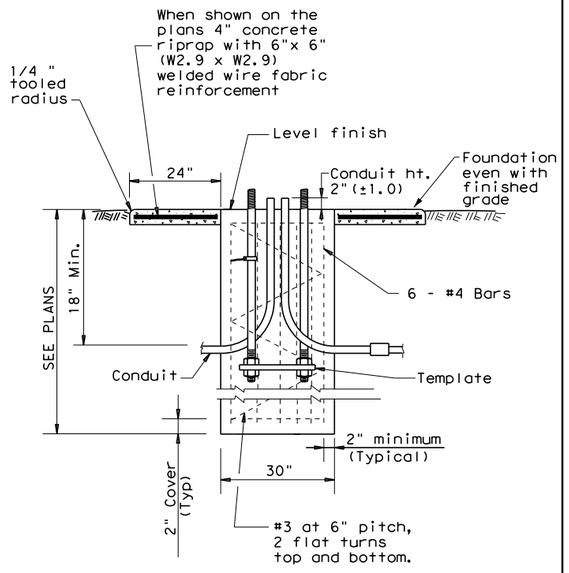
7-17	DIST	COUNTY		SHEET NO.
12-20	WACO	McLENNAN		1554

72A



SECTION A-A
SHOWING SLOPED GRADE



SECTION A-A
SHOWING CONSTANT GRADE

TABLE 1

ANCHOR BOLTS

POLE MOUNTING HEIGHT	BOLT CIRCLE		ANCHOR BOLT SIZE
	Shoe Base	T-Base	
<40 ft.	13 in.	14 in.	1in. x 30in.
40-50 ft.	15 in.	17 ¼in.	1 ¼in. x 30in.

TABLE 2

RECOMMENDED FOUNDATION LENGTHS
(See note 1)

MOUNTING HEIGHT	TEXAS CONE PENETROMETER N Blows/ft		
	10	15	40
≤20 ft.	6′	6′	6′
>20 ft. to 30 ft.	8′	6′	6′
>30 ft. to 40 ft.	8′	8′	6′
>40 ft. to 50 ft.	10′	8′	6′

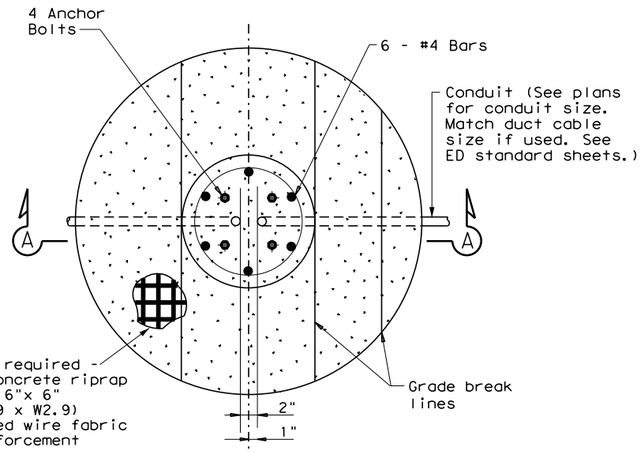
TABLE 3

PAY QUANTITY OF RIPRAP PER FOUNDATION (Install only when shown on the plans)

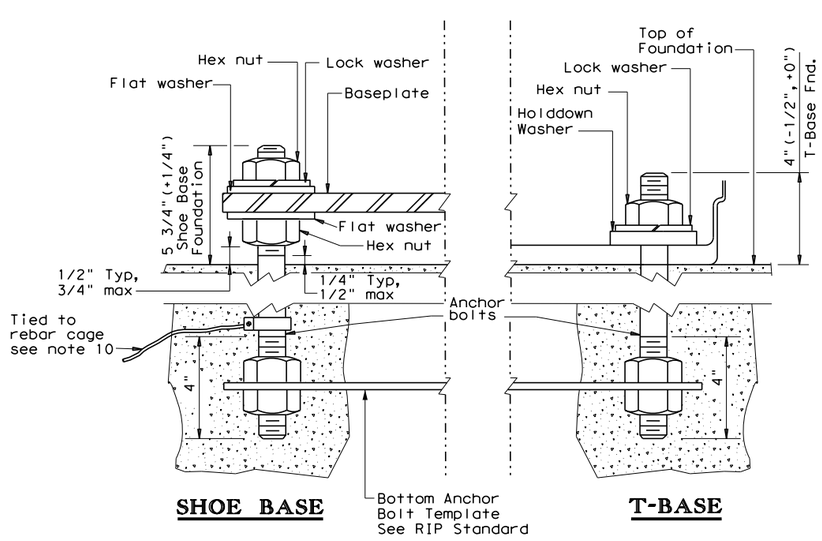
Foundation Diameter	RIPRAP DIAMETER	RIPRAP (CONC) (CL B)
30 in.	78 in.	0.35 CY

GENERAL NOTES:

1. "Recommended Foundation Lengths" table is for information purposes only. Foundation lengths shall be as shown on the plans, or as directed by the Engineer. Foundations will be paid for under Item 416, "Drilled Shaft Foundations," unless otherwise shown on the plans.
2. Erect roadway illumination assembly poles plumb and true. Form and level the top 6" of the foundation so the pole will be plumb. Use leveling nuts to plumb shoe base poles. Do not use shims or leveling nuts under transformer bases. Do not grout between baseplate and the foundation.
3. Ensure Class 2A and 2B fit for anchor bolts and nuts. Tap and chase nuts after galvanizing. Anchor bolt body with rolled threads need not be full size.
4. Use appropriate class of concrete as specified in Items 416 and 432. Concrete for riprap may be upgraded to Class C at no extra cost to the Department.
5. Place riprap around the foundation when called for elsewhere in the plans. Riprap will be paid for under Item 432.
6. Locate breakaway roadway illumination assemblies as shown in the placement table, unless otherwise dimensioned on the plans. Protect non-breakaway illumination assemblies from vehicular impact (i.e. 2.5 ft. behind guard rail or mounted on traffic barrier), or located outside the clear zone, except that 2.5 ft. from curb face is minimum desired for light poles on city streets, 45 mph or less. See Roadway Design Manual for further information.
7. Use 4 hold down and 4 connecting washers on transformer base poles as recommended by the manufacturer and supplied with base.
8. Install a minimum of 2 conduits in each foundation. See lighting layout sheets for locations of foundations with more than 2 conduits. Cap unused conduits in foundations on both ends.
9. Conduit location in foundations is critical for breakaway devices. Place conduits 2 in. apart on centerline as shown.
10. Bond anchor bolt to rebar cage with #6 bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. The bonded steel in the foundation creates a concrete encased grounding electrode which replaces the ground rod.
11. Grade earthwork around T-base foundations even with the finished grade as shown in Section A-A to ensure proper function of the breakaway device. Use riprap on T-base foundations that are located on sloped grades, and as shown on the plans for level grades.



FOUNDATION DETAIL



SHOE BASE **T-BASE**

ANCHOR BOLT DETAIL

TABLE 4

BREAKAWAY POLE PLACEMENT (See note 6)

ROADWAY FUNCTIONAL CLASSIFICATION	** POLE OFFSET (DISTANCE TO FACE OF TRANSFORMER BASE)
Freeway Mainlanes (roadway with full control of access)	15 ft. (minimum and typical) from lane edge
All curbed, 45 mph or less design speed	2.5 ft. minimum (15 ft. desirable) from curb face
All others	10 ft. minimum*(15 ft. desirable) from lane edge

* or as close to ROW line as is practical

** provide 2/5 of the luminaire mounting height behind the pole for "falling area" to prevent encroachment on the other travel lanes. See design guidelines.

Texas Department of Transportation — Traffic Safety Division Standard

ROADWAY ILLUMINATION DETAILS
(RDWY ILLUM FOUNDATIONS)
RID(2)-20

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© TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
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7-17	WACO	McLENNAN		1555
12-20				

72B

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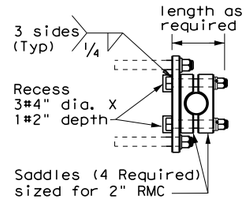
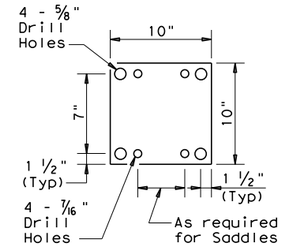
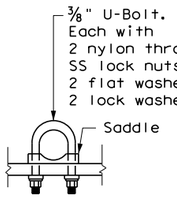


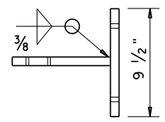
SECTION A-A



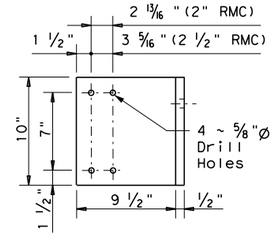
MOUNTING PLATE
(ASTM A-36 or better)



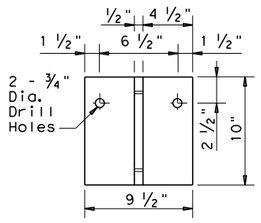
CLAMP DETAIL
(2 Req'd)



PLAN VIEW

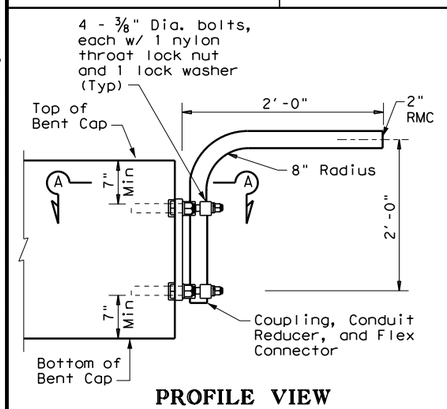


FRONT

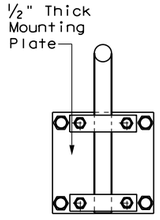


SIDE

BRACKET DETAIL
Make from 1/2" plate (ASTM A-36 or better)

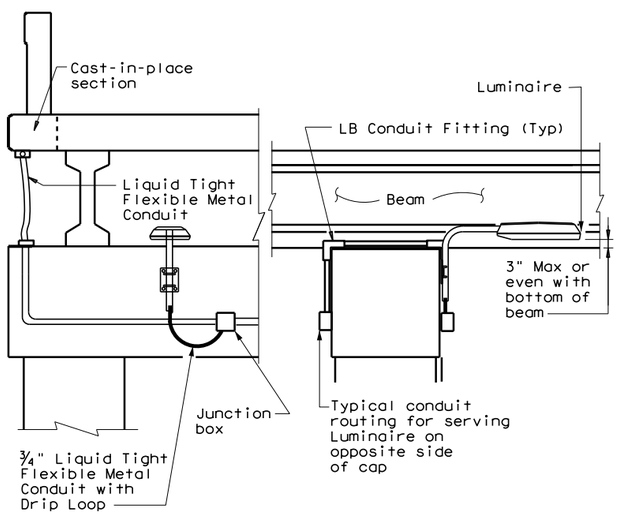


PROFILE VIEW
Or as Required
(See Note A.3)



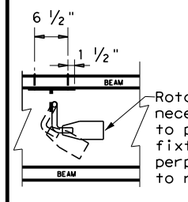
END VIEW

UNDERPASS LIGHTING ARM



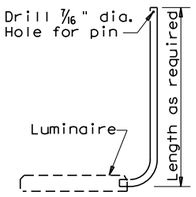
IN RD IL AM (U/P)(TY 1)
If bridge has pre-cast panels under deck, run circuit under deck edge.

UNDERPASS LIGHTING TYPE 1

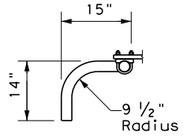


PLAN VIEW

FIXTURE ORIENTATION

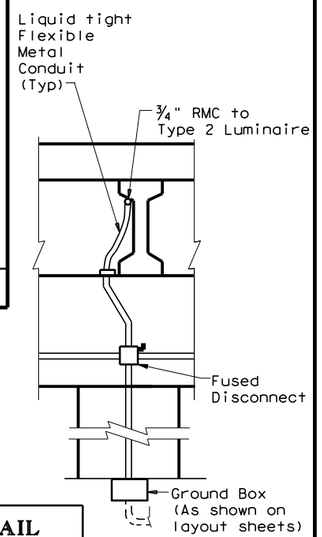


SIDE



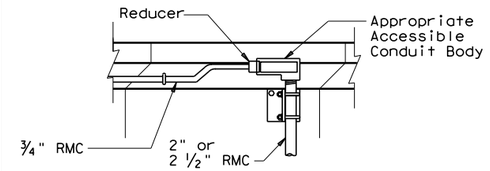
PLAN VIEW

ARM DETAIL

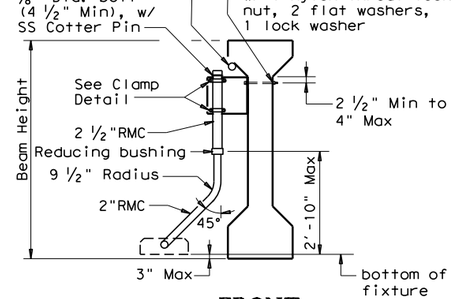


3 - No. 12 XHHW in 3/4" RMC for Branch Circuit runs from fused disconnect to underpass Luminaires

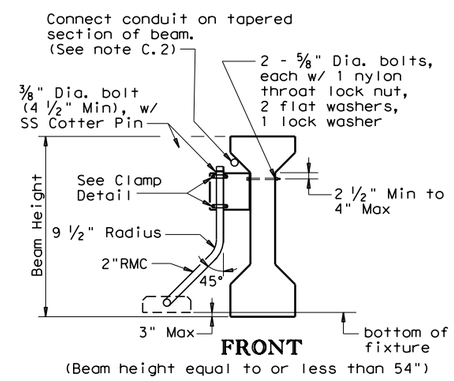
CONDUIT DETAIL



CONDUIT CONNECTION PROFILE

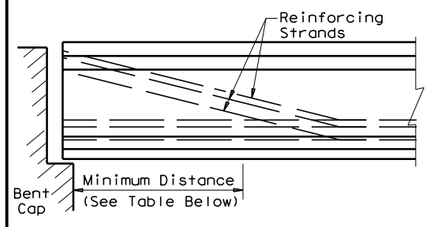


FRONT
(Beam height greater than 54")



FRONT
(Beam height equal to or less than 54")

IN RD IL AM (U/P)(TY 2)



LOCATION OF UNDERPASS LIGHT MOUNTING BRACKET

TABLE 5

LOCATION OF UNDERPASS LIGHT MOUNTING BRACKET TABLE

SPAN LENGTH	MINIMUM DISTANCE
≤ 50'	10'-0"
50' - 70'	15'-0"
70' - 90'	20'-0"
> 90'	25'-0"

UNDERPASS LIGHTING TYPE 2

GENERAL NOTES:

A. ALL 150 watt HPS and 150 watt equivalent LED Luminaires

1. Luminaire locations, conduit and conductor sizes and routing are typical and diagrammatic only. See project layout sheets for specific details.
2. Conduit will be paid for under Item 618, "Conduit" and conductors will be paid for under Item 620, "Electrical Conductors," unless otherwise shown on the plans.
3. Adjust conduit in saddles to place fixture height and orientation as required. See fixture orientation detail and plans. Where practicable, place luminaires so the bottom of luminaire is above the bottom of the beam, maximum of 3 in. (See detail UNDERPASS LIGHTING ARM TYPE 2)
4. Except as noted, galvanize all structural steel and exposed bolts, nuts, and washers in accordance with Item 445 "Galvanizing".
5. Fabrication of brackets and support arms will not be paid for directly but is subsidiary to Item 610, "Roadway Illumination Assemblies."
6. Install a heavy duty NEMA 3R fused disconnect or breaker enclosure rated at 30 amps and 480 volts to switch underpass luminaires as shown on plans, with at least one per bridge circuit. Install 20 amp time-delay fuses or inverse-time circuit breakers. Mount disconnect or breaker enclosure 10 ft.(min) above grade on columns or bent caps as approved by the Department. Modify disconnect to allow padlocking in the "ON" and "OFF" positions. Padlocks and disconnect switches or circuit breakers for underpass fixtures will not be paid for directly but are subsidiary to the various bid items of the contract.
7. Conduit on columns, caps, and slab is shown surface mounted. For new columns and caps, embed PVC conduit in concrete. Bond and ground metal junction boxes and conduit.

B. TYPE 1

1. Provide 2 in. rigid metal conduit (2.375" O.D., 0.146" wall) for Type 1 arm shaft.
2. Use 3/8 in. stainless steel bolt or stud non-epoxy type expansion anchors for concrete for Type 1 mounting. Except as noted, provide an allowable 2650 lbs minimum pull-out force (after consideration of adjustment factors for edge distance and bolt spacing) for each anchor. Install each anchor to the embedment depth recommended by the manufacturer.
3. Attach conduit to plate with 4 saddles, four - 3/8 in. diameter bolts, nylon throat lock nuts, and lock washers.

C. TYPE 2

1. Provide 2 in. rigid metal conduit (2.375" O.D., 0.146" wall) or provide a combination of 2 1/2 in. (2.875" O.D., 0.193" wall) and 2 in. (2.375" O.D., 0.146" wall) rigid metal conduits with a reducing bushing as beam height stipulated for Type 2 arm shaft. Field cutting and threading will be permitted. Paint cut and threaded areas with zinc rich paint after conduit is connected to adjacent fitting.
2. Connecting conduit may be strapped to tapered section only of precast beams as shown. Anchor as approved by the Engineer. Maximum anchor depth is 1 in.
3. Indiscriminate drilling into precast concrete beams may result in reduced beam strength. Use drilling location and method as directed by the Engineer. See Location of Underpass Lighting Mounting Bracket detail. The locations shown in the table are such that reinforcing strands will not be damaged.

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION DETAILS

(UNDERPASS LIGHT FIXTURES)

RID(3)-20

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12-20					

72C

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SHIPPING PARTS LIST - POLES AND LUMINAIRE ARMS

Nominal Mounting Ht. (ft)	Shoe Base					T-Base					CSB/SSCB Mounted				
	Designation				Quantity	Designation				Quantity	Designation				Quantity
	Pole	A1	A2	Luminaire		Pole	A1	A2	Luminaire		Pole	A1	A2	Luminaire	
20	(Type SA 20 S - 4)			(150W EQ) LED		(Type SA 20 T - 4)			(150W EQ) LED						
	(Type SA 20 S - 4 - 4)			(150W EQ) LED		(Type SA 20 T - 4 - 4)			(150W EQ) LED						
30	(Type SA 30 S - 4)			(250W EQ) LED		(Type SA 30 T - 4)			(250W EQ) LED		(Type SP 28 S - 4)			(250W EQ) LED	
	(Type SA 30 S - 4 - 4)			(250W EQ) LED		(Type SA 30 T - 4 - 4)			(250W EQ) LED		(Type SP 28 S - 4 - 4)			(250W EQ) LED	
	(Type SA 30 S - 8)			(250W EQ) LED		(Type SA 30 T - 8)			(250W EQ) LED		(Type SP 28 S - 8)			(250W EQ) LED	
	(Type SA 30 S - 8 - 8)			(250W EQ) LED		(Type SA 30 T - 8 - 8)			(250W EQ) LED		(Type SP 28 S - 8 - 8)			(250W EQ) LED	
40	(Type SA 40 S - 4)			(250W EQ) LED		(Type SA 40 T - 4)			(250W EQ) LED		(Type SP 38 S - 4)			(250W EQ) LED	
	(Type SA 40 S - 4 - 4)			(250W EQ) LED		(Type SA 40 T - 4 - 4)			(250W EQ) LED		(Type SP 38 S - 4 - 4)			(250W EQ) LED	
	(Type SA 40 S - 8)			(250W EQ) LED		(Type SA 40 T - 8)			(250W EQ) LED	9	(Type SP 38 S - 8)			(250W EQ) LED	
	(Type SA 40 S - 8 - 8)			(250W EQ) LED		(Type SA 40 T - 8 - 8)			(250W EQ) LED		(Type SP 38 S - 8 - 8)			(250W EQ) LED	
	(Type SA 40 S - 10)			(250W EQ) LED		(Type SA 40 T - 10)			(250W EQ) LED		(Type SP 38 S - 10)			(250W EQ) LED	
	(Type SA 40 S - 10 - 10)			(250W EQ) LED		(Type SA 40 T - 10 - 10)			(250W EQ) LED		(Type SP 38 S - 10 - 10)			(250W EQ) LED	
	(Type SA 40 S - 12)			(250W EQ) LED		(Type SA 40 T - 12)			(250W EQ) LED		(Type SP 38 S - 12)			(250W EQ) LED	
	(Type SA 40 S - 12 - 12)			(250W EQ) LED		(Type SA 40 T - 12 - 12)			(250W EQ) LED		(Type SP 38 S - 12 - 12)			(250W EQ) LED	
50	(Type SA 50 S - 4)			(400W EQ) LED		(Type SA 50 T - 4)			(400W EQ) LED		(Type SP 48 S - 4)			(400W EQ) LED	
	(Type SA 50 S - 4 - 4)			(400W EQ) LED		(Type SA 50 T - 4 - 4)			(400W EQ) LED		(Type SP 48 S - 4 - 4)			(400W EQ) LED	
	(Type SA 50 S - 8)			(400W EQ) LED		(Type SA 50 T - 8)			(400W EQ) LED		(Type SP 48 S - 8)			(400W EQ) LED	
	(Type SA 50 S - 8 - 8)			(400W EQ) LED		(Type SA 50 T - 8 - 8)			(400W EQ) LED		(Type SP 48 S - 8 - 8)			(400W EQ) LED	51
	(Type SA 50 S - 10)			(400W EQ) LED		(Type SA 50 T - 10)			(400W EQ) LED		(Type SP 48 S - 10)			(400W EQ) LED	
	(Type SA 50 S - 10 - 10)			(400W EQ) LED		(Type SA 50 T - 10 - 10)			(400W EQ) LED		(Type SP 48 S - 10 - 10)			(400W EQ) LED	
	(Type SA 50 S - 12)			(400W EQ) LED		(Type SA 50 T - 12)			(400W EQ) LED		(Type SP 48 S - 12)			(400W EQ) LED	
	(Type SA 50 S - 12 - 12)			(400W EQ) LED		(Type SA 50 T - 12 - 12)			(400W EQ) LED		(Type SP 48 S - 12 - 12)			(400W EQ) LED	

OTHER				
Designation				Quantity
Pole	A1	A2	Luminaire	

GENERAL NOTES:

1. All work, materials and services not shown on the plans which may be necessary for complete and proper construction shall be performed, furnished and installed by the Contractor. Faulty fabrication or poor workmanship in any material, equipment or installation will be considered justification for rejection. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the Department such warranties or guarantees.

2. The location of poles and fixtures are diagrammatic only and may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.

3. Standard Steel Pole Designs. Steel poles fabricated in accordance with the details and dimensions shown herein, shall be considered standard designs. Submission of shop drawings and design calculations for standard designs is not required.

4. Optional Steel Pole Designs. Multi-sided steel poles may be allowed as optional designs, if steel poles are permitted or required, pending approval by the Department as outlined below.

   a. Shop Drawings. Optional designs require submission of shop drawings and design calculations bearing the seal of an engineer licensed in the State of Texas, in accordance with Item 441, "Steel Structures." The Department may elect to pre-approve some shop drawings for optionally designed poles. Submission of shop drawings and design calculations is not required for structures fabricated in accordance with the details of shop drawings on the pre-approved list maintained by the TxDOT Traffic Operations Division. Any deviation from the pre-approved shop drawings will require submission of shop drawings of the complete assembly and design calculations as described above.
   b. Structural Support Design for Luminaires. Lighting support structures shall be designed for a 25 year design life in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto. All poles shall be designed for 110 mph 3-second gust wind speeds. The Gust Factor, G, and Wind Importance Factor, Ir, shall be applied as per the AASHTO Specifications assuming a 25-year design life. The design wind pressure for hurricane wind velocities greater than 100 mph shall not be less than the design wind pressure using 100 mph with the non-hurricane Wind Importance Factor, Ir, value. For transformer base poles, fabricator shall include transformer base and connecting hardware in design calculations and shop drawing submittals. All transformer bases shall have been structurally tested to resist the theoretical plastic moment capacity of the pole. Certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished shall be submitted with the shop drawings. Shop drawings shall show breakaway base model number, and manufacturer's name and logo. Manufacturer's shop drawings shall include the ASTM designations for all materials to be used.
   c. Mast Arm Attachments. All poles and attachments shall be structurally designed to support two 12-foot mast arms and luminaires. Poles shall be supplied with mast arm combinations as shown in the plans. All mast arms shall be designed for a 60-pound luminaire having an effective projected area of 1.6 square feet.
   d. Anchor Bolt Assembly. Anchor bolt assemblies for optionally designed poles shall be the same as those shown herein.

5. Aluminum Pole Designs. Aluminum pole designs may be allowed, if aluminum poles are permitted or required, pending approval by the Department as outlined below.

   a. Meet all of the requirements stated above for optional steel pole designs and the following:
      1. Aluminum poles shall be fabricated in accordance with "Structural Welding Code-Aluminum" AWS D1.2.
      2. Aluminum pole designs shall use the same anchor bolt assembly and be subject to the same geometric restraints and other requirements for steel poles specified herein.
      3. Aluminum poles shall be equipped with vibration mitigation devices, as approved by the engineer.
      4. Pole components shall be constructed using the following material:
         Shaft: ASTM B221 or B241 Alloy 6063-T6, ASTM B209 Alloy 5086-H34, ASTM B221 Alloy 6005-T5.
         Base Flange: ASTM B26 Alloy 356.0-T6 or ASTM B108 Alloy 356.0-T6 (Yield strength test required).
         Mast Arm Fitting: ASTM B209 Alloy 6061-T6 or ASTM B221 Alloy 6005-T5.
         Mast Arms: ASTM B241 Alloy 6061-T6 or Alloy 6063-T6.
         Pole Cap: ASTM B209 Alloy 5086-H32 or ASTM B108 or B26 Alloy 356.0-T6.
         Bolts: Stainless Steel AISI 300 series. Bolts threading into aluminum threads shall be treated with anti-seize compound, Never-Seez Compound, Permatex 133K or equal.

6. Special Designs. Poles with architectural treatments shall meet the requirements shown elsewhere in the plans.

7. Luminaire Mounting Height. Actual luminaire mounting height shall be the nominal mounting height given on RIP(2) for all pole-arm combinations except for poles with 4 ft. luminaire arms, which shall be 3'-0" lower than the nominal height, unless otherwise shown or directed.

EXPLANATION OF ROADWAY ILLUMINATION ASSEMBLY DESIGNATIONS

(TYPE SA 50 T - X - X) (400W EQ) LED

SA: Pole and mast arm may be steel or aluminum.
ST: Pole and mast arm must be steel.
AL: Pole and mast arm must be aluminum.
SP: Special (ovalized) steel or aluminum pole for installing on CSB or SSCB. See standard sheet CSB (4), or SSCB (4).

Two numerical digits denote nominal mounting height in feet.

Next letter denotes type of base, (S-Shoe Base, T-Transformer Base, or B-Bridge/Ret.Wall Mount)

First number denotes length of mast arm in feet.

Use of second mast arm is indicated by second dashed number which denotes length in feet.

Luminaire rating in watts (i.e. 400W). Equivalent wattage LED fixtures will include EQ (i.e. 400W EQ)

Last letters indicate light source (S - High Pressure Sodium; LED - LED luminaire)

SHEET 1 OF 4

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION POLES

RIP(1)-19

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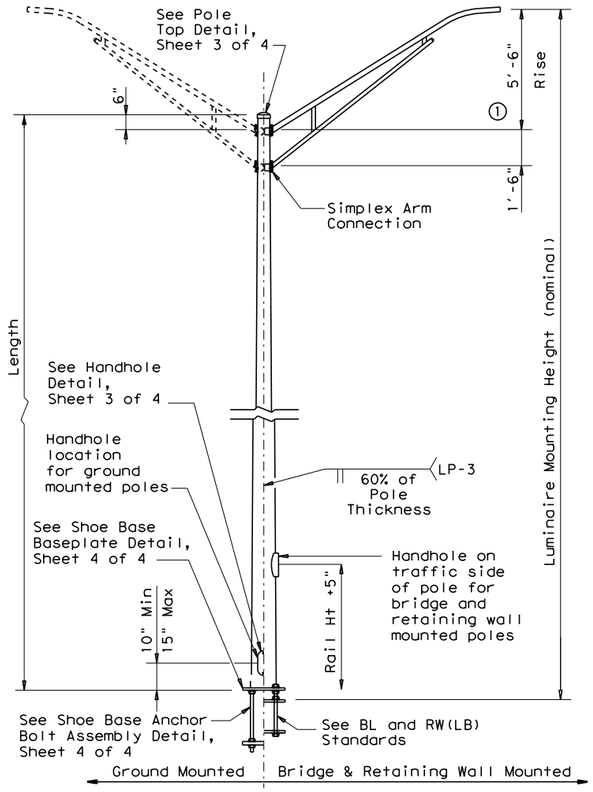
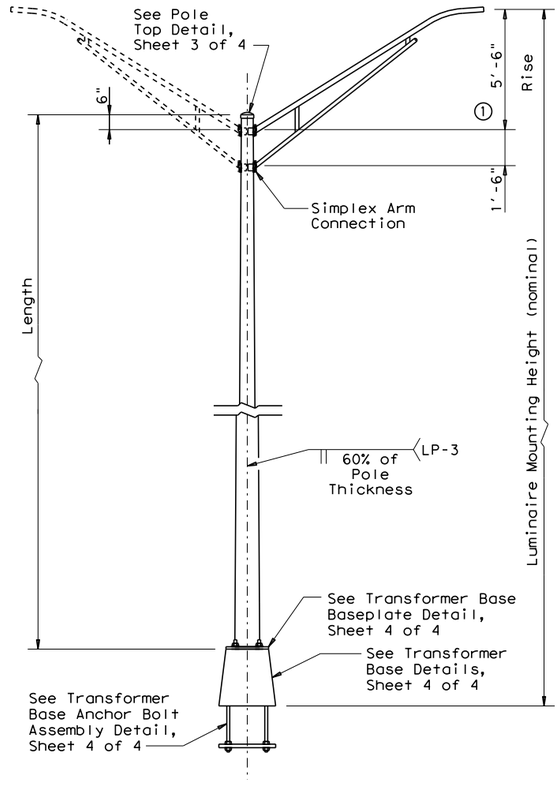


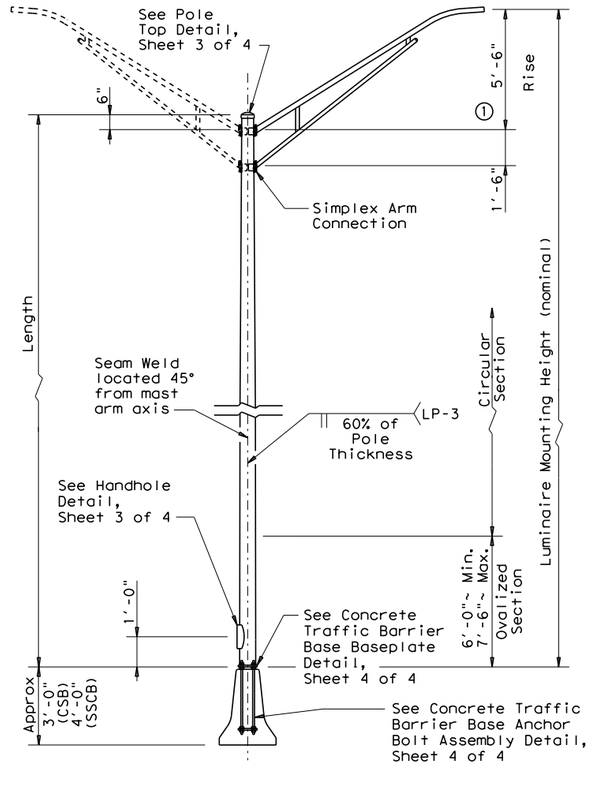
SHOE BASE POLE

SHOE BASE POLE					
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	4.90	15.00	0.1196	7.1
30.00	7.50	4.00	25.00	0.1196	13.2
31.00-39.00	8.00	4.36-3.24	26.00-34.00	0.1196	20.7
40.00	8.50	3.60	35.00	0.1196	20.7
50.00	10.50	4.20	45.00	0.1196	30.3



TRANSFORMER BASE POLE

TRANSFORMER BASE POLE					
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	5.11	13.50	0.1196	7.1
30.00	7.50	4.21	23.50	0.1196	13.2
31.00-39.00	8.00	4.57-3.45	24.50-32.50	0.1196	20.7
40.00	8.50	3.81	33.50	0.1196	20.7
50.00	10.00	3.91	43.50	0.1196	30.3



CONCRETE TRAFFIC BARRIER BASE POLE

CONCRETE TRAFFIC BARRIER BASE POLE (CSB/SSCB)						
Luminaire Mounting Height (Nominal) (ft)	Base ② Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)	
					About ℄ of Rail	Perp. to Rail
28.00	9.00	5.78	23.00	0.1196	10.3	13.2
38.00	9.00	4.38	33.00	0.1196	16.6	20.8
48.00	10.50	4.48	43.00	0.1345	25.1	30.5

MATERIAL DATA		
COMPONENT	ASTM DESIGNATION	MIN. YIELD (ksi)
Pole Shaft (0.14"/ft. Taper)	A572 Gr 50, A595 Gr A, A1011 HSLAS Gr 50 Cl 2 ③, or A1008 HSLAS Gr 50 Cl 2	50
Base Plate and Handhole Frame	A572 Gr.50, or A36	36
T-Base Connecting Bolts	F3125 Gr A325	92
Anchor Bolts	F1554 Gr 55, A193-B7 or A321	55 105
Anchor Bolt Templates	A36	36
Heavy Hex (H.H.) Nuts	A194 Gr 2H, or A563 Gr DH	
Flat Washers	F436	

NOTES:

① 2'-6" rise for 4 ft. luminaire arms.

② Before ovalized as shown on Concrete Traffic Barrier Base Baseplate details, Sheet 4 of 4.

③ A1011 SS Gr 50 may be used instead of HSLAS, provided the material meets the elongation requirements for HSLAS.

POLE ASSEMBLY FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Shaft length	+1"
I.D. of outside piece of slip fitting pieces	+1/8", -1/16"
O.D. of inside piece of slip fitting pieces	+1/32", -1/8"
Shaft diameter: other	+3/16"
Out of "round"	1/4"
Straightness of shaft	±1/4" in 10 ft
Twist in multi-sided shaft	4° in 50 ft
Perpendicular to baseplate	1/8" in 24"
Pole centered on baseplate	±1/4"
Location of Attachments	±1/4"
Bolt hole spacing	±1/16"

GENERAL NOTES:

1. Designs conform to AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals , 6th Edition (2013) and Interim Revisions thereto. Design 3-Second Gust Wind Speed equals 110 mph with a 1.14 gust factor. A wind importance factor of 0.80 is applied to adjust the wind speed to a 25 year recurrence interval. Design moments listed in tables assume base of pole is 25' above natural ground level.
2. Structures are designed to support two 12' luminaire mast arms and luminaires. Mast arms are designed to support a 60-pound luminaire having an effective projected area of 1.6 square feet.
3. Fabrication shall be in accordance with the Specifications and with the details, dimensions, and weld procedures shown herein. Do not submit shop drawings for roadway illumination pole assemblies fabricated in accordance with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of these sheets and the Specifications. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
4. For mounting heights between values shown in the tables, use base diameter and thickness values for the larger height.
5. Unless otherwise noted, all steel parts shall be galvanized in accordance with Item 445, "Galvanizing."
6. Steel poles shall be fabricated in accordance with Item 441, "Steel Structures." Longitudinal seam welds for pole sections shall have 60% minimum penetration. All welding shall be in accordance with AWS D1.1, Structural Welding Code-Steel.
7. Two-section poles joined by circumferential welds will not be permitted, unless otherwise shown on the plans. Poles may be fabricated in two sections and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint.
8. Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.
9. Lubricate and tighten anchor bolts, when erecting shoe base poles and concrete traffic barrier base poles, in accordance with Item 449, "Anchor Bolts."
10. All poles, except Transformer Base Poles, shall have hand holes with reinforcing frames and covers. For ground mounted shoe base poles, hand holes shall be placed 90 degrees to mast arm unless otherwise noted on the plans. For poles mounted on a concrete traffic barrier with one luminaire arm, hand holes shall be located 180 degrees from luminaire arm. For poles mounted on a concrete traffic barrier with two luminaire arms, all hand holes shall be on the same side of the barrier. For poles mounted on a bridge lighting bracket or a retaining wall lighting bracket, hand hole shall be on traffic side of the pole, at a height that will clear the barrier.
11. The finished pole shall have a smooth, uniform finish free of pits, blisters, or other defects. Scratched, chipped, and other damaged galvanized areas on poles and mast arms shall be repaired in accordance with Item 445, "Galvanizing."
12. Pole length is based on a 5'-6" luminaire arm rise. 4 ft. luminaire arms have a 2'-6" rise. A pole with 4 ft. luminaire arms will have an actual mounting height 3'-0" less than the nominal mounting height. Increasing the pole length to meet the nominal mounting height is allowed, but unnecessary unless otherwise directed by the engineer.
13. Erect transformer base poles in accordance with sheet RID(1).

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ROADWAY ILLUMINATION POLES

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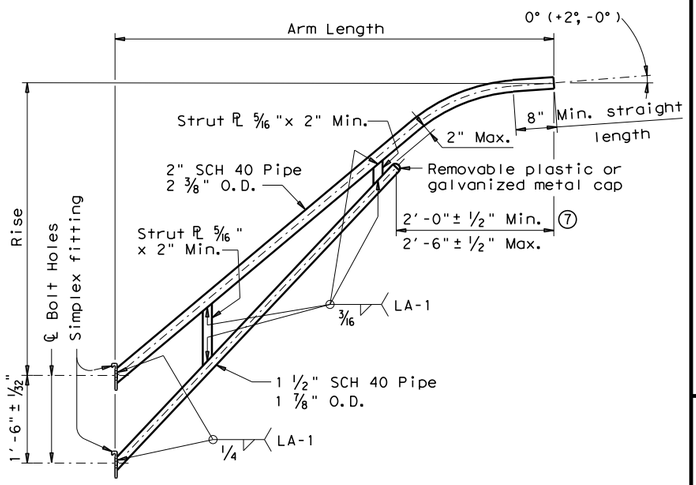
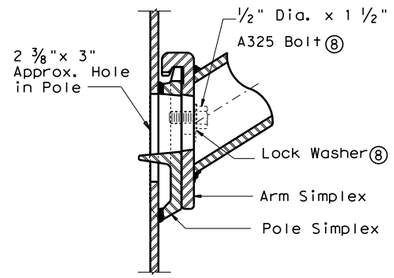


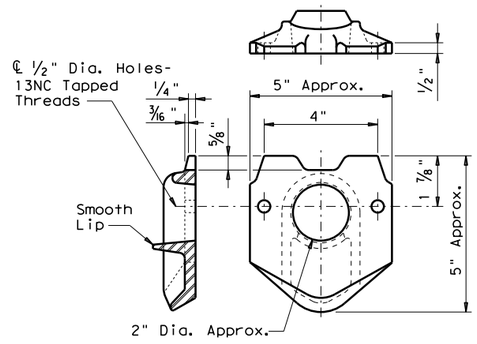
LUMINAIRE ARM

LUMINAIRE ARM DIMENSIONS		
Nominal Arm Length	Arm Length	Rise
4'-0"	3'-6"	2'-6"
6'-0"	5'-6"	5'-6"
8'-0"	7'-6"	5'-6"
10'-0"	9'-6"	5'-6"
12'-0"	11'-6"	5'-6"

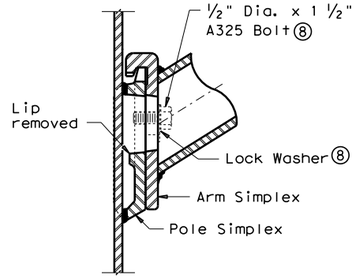
ARM ASSEMBLY FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Arm Length	±1"
Arm Rise	±1"
Deviation from flat	1/8" in 12"
Spacing between holes	±1/32"



UPPER SIMPLEX FITTING
(Gusset not shown for clarity)

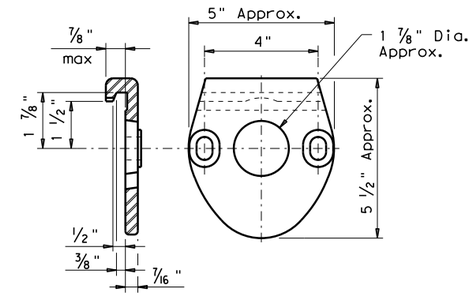


POLE SIMPLEX DETAIL ⑨



LOWER SIMPLEX FITTING
(Gusset not shown for clarity)

SECTION B-B



ARM SIMPLEX DETAIL ⑨

NOTES:

④ Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.

⑤ A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.

⑥ A572, A1008 HSLAS-F, and A1011 HSLAS-F materials may have higher yield strengths but shall not have less elongation than the grade indicated.

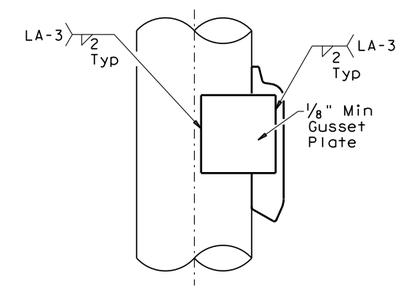
⑦ Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.

⑧ Each pole simplex fitting shall be supplied with 2 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans.

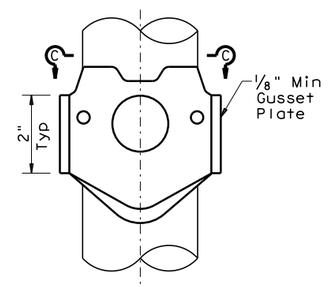
⑨ Proposed deviations in arm simplex dimensions or materials must be submitted to the Department for approval.

⑩ A welded handhole frame is permissible. Maximum of two (2) CJP weld splices is allowed.

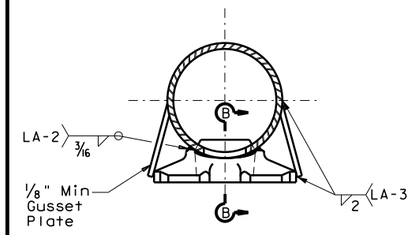
MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr 65-35 or Gr 70-36, A148 Gr 80-50, A576 Gr 1021 ⑤, or A36 (Arm only)
Arm Pipes	ASTM A53 Gr A or B, A500 Gr B, A501, A 1008 HSLAS-F Gr 50 ⑥, or A1011 HSLAS-F Gr 50 ⑥
Arm Struts and Gusset Plates ④	ASTM A36, A572 Gr 50 ⑥, or A588
Misc.	ASTM designations as noted



SIDE

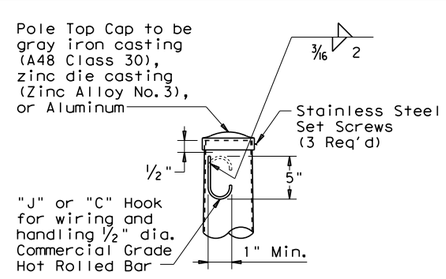


ELEVATION

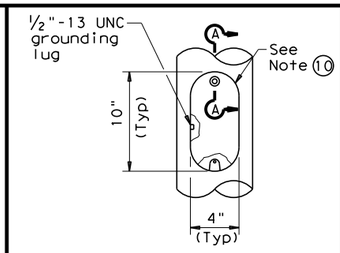


SECTION C-C

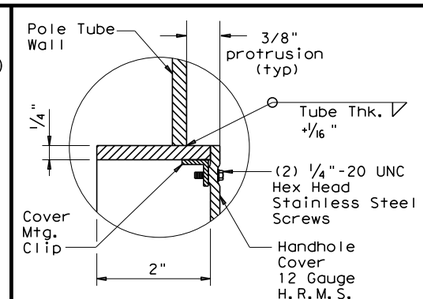
SIMPLEX ATTACHMENT DETAIL



POLE TOP



ELEVATION



SECTION A-A

HANDHOLE

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION POLES

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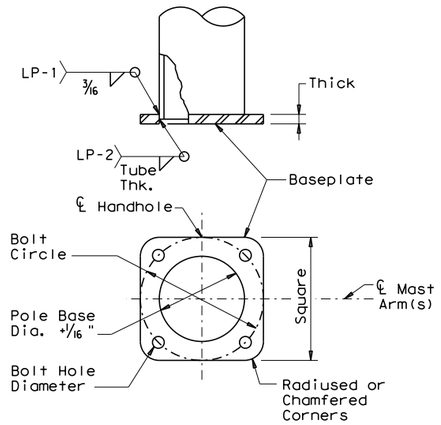
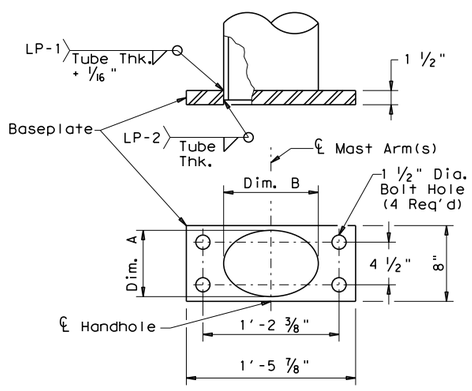


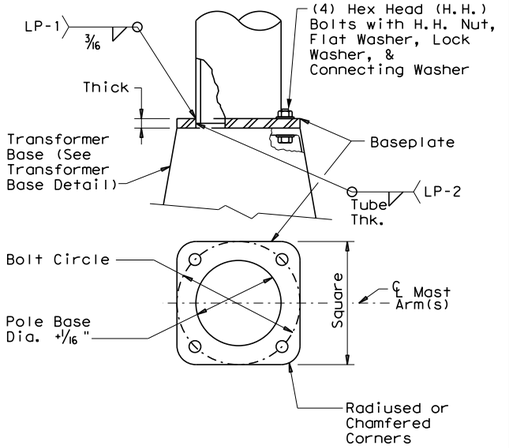
SHOE BASE BASEPLATE

SHOE BASE BASEPLATE TABLE				
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	BOLT HOLE DIAMETER
20' - 39'	13"	13"	1 1/4"	1 1/4"
40'	15"	15"	1 1/4"	1 1/2"
50'	15"	15"	1 1/2"	1 1/2"



CONCRETE TRAFFIC BARRIER BASE BASEPLATE

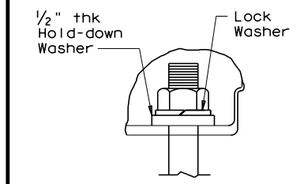
CONCRETE TRAFFIC BARRIER BASE BASEPLATE TABLE			
MOUNTING HEIGHTS (nominal)	POLE DIA.(12)	DIM. A	DIM. B
28' - 38'	9"	7" ± 1/4"	10" ± 1/4"
48'	10 1/2"	7" ± 1/4"	13" ± 1/4"



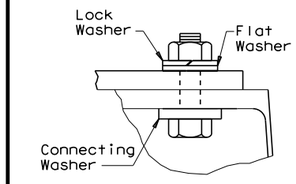
TRANSFORMER BASE BASEPLATE

TRANSFORMER BASE BASEPLATE TABLE						
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	CONNECTING BOLT DIA.	BOLT HOLE DIAMETER	TRANSFOMER BASE TYPE
20' - 39'	13"	13"	1 1/4"	1"	1 1/4"	A
40'	15"	15"	1 1/4"	1 1/4"	1 1/2"	B
50'	15"	15"	1 1/2"	1 1/4"	1 1/2"	B

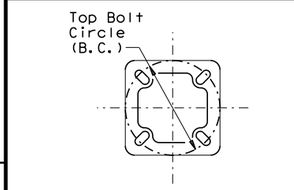
TRANSFORMER BASE TABLE		
TYPE	TOP B.C.	BTM. B.C.
A	13"	14"
B	15"	17 1/4"



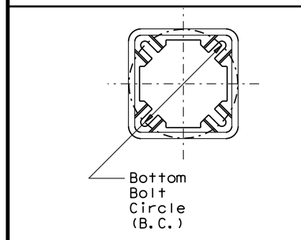
DETAIL A



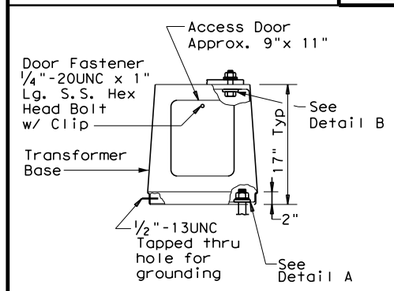
DETAIL B



TOP PLAN



BOTTOM PLAN



ELEVATION

TRANSFORMER BASE DETAILS

GENERAL NOTES:

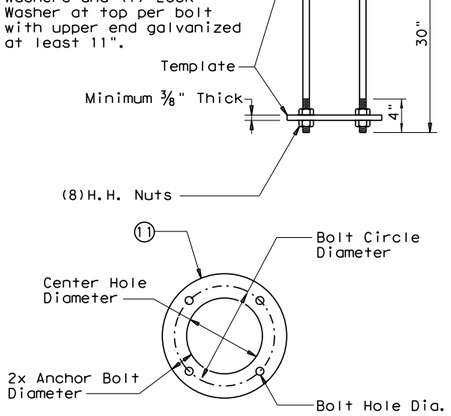
1. For mounting heights between those shown in the table, use the values in the table for the larger mounting height.
2. All breakaway bases shall meet the breakaway requirements of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto, and shall have been tested by FHWA-approved methods. All bases shall have been structurally tested to resist 150% of the design moment.
3. Transformer bases shall be cast from aluminum, ASTM B108 or B26 Alloy 356.0-T6, or other material approved by the Engineer. Four Hex Head (H.H.) bolts with four H.H. nuts, four lock washers, four flat washers, and connecting and hold-down washers as recommended by the manufacturer, galvanized to ASTM A153 Class C or D, or B695 Class 50, shall be provided with each transformer base for connecting the pole. Bolts shall be ASTM A325 or approved equal. Nuts shall be ASTM A563 grade DH galvanized.
4. Bases shall be stamped, incised or by other approved permanent means, marked to show fabricator's name or logo, and model number. Such information shall be placed in a readily seen location, inside or outside the base, but shall not be placed on the door.
5. Doors for transformer bases shall be made of plastic, fiberglass or other non-metallic material approved by the Engineer and shall be attached with stainless steel screws or bolts. Transformer bases shall be cleaned by grit blast cleaning after heat treatment. Certification by the manufacturer of heat treatment shall be furnished with transformer bases. The certification shall show the metal alloy and temper and that the base meets those requirements, chemical and physical. The certification shall also show the material ASTM specification. Transformer bases shall be cast with a removable tab bar for material testing. Some bars may have been removed by the manufacturer for testing.

NOTES:

(11) Anchor Bolt Templates do not need to be galvanized.

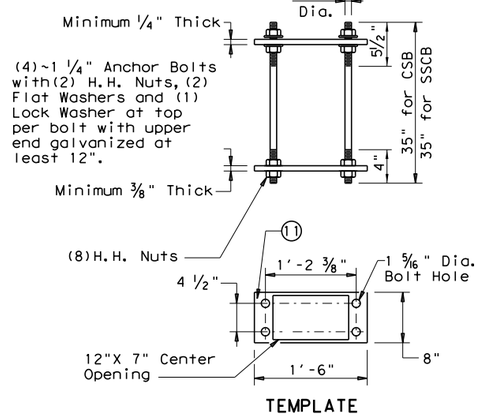
(12) Pole diameter before ovalized.

ANCHOR BOLT FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Length	± 1/2"
Threaded length	± 1/2"
Galvanized length (if required)	- 1/4"



SHOE BASE ANCHOR BOLT ASSEMBLY

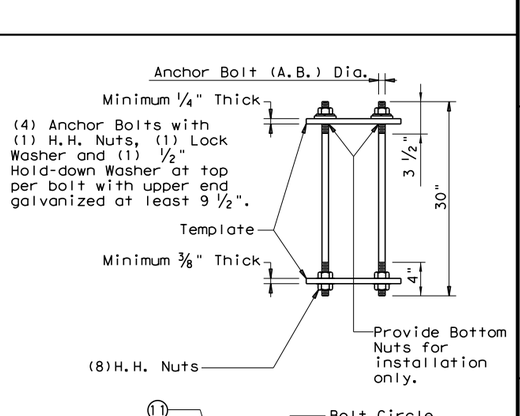
SHOE BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20'-39'	1"	13"	11"	1 1/16"
40'-50'	1 1/4"	15"	12 1/2"	1 5/16"



TEMPLATE

CONCRETE TRAFFIC BARRIER BASE ANCHOR BOLT ASSEMBLY

TRANSFORMER BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20' - 39'	1"	14"	12"	1 1/16"
40' - 50'	1 1/4"	17 1/4"	14 3/4"	1 5/16"



TRANSFORMER BASE ANCHOR BOLT ASSEMBLY

SHEET 4 OF 4

Texas Department of Transportation

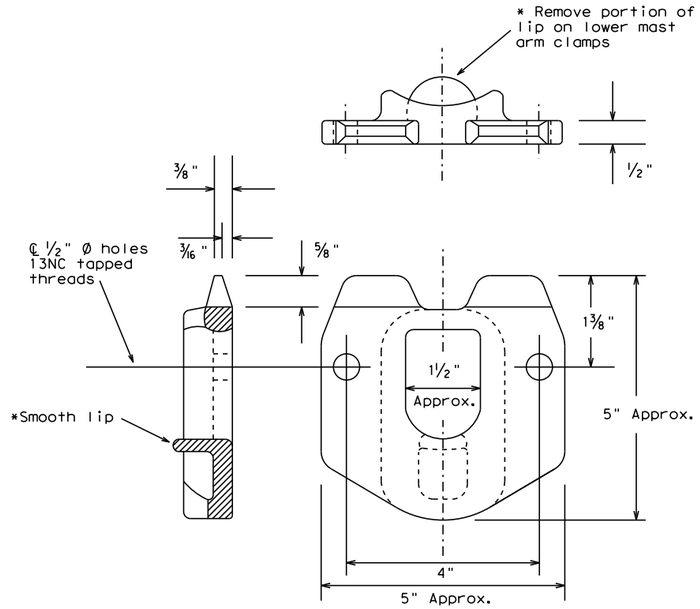
Traffic Safety Division Standard

ROADWAY ILLUMINATION POLES

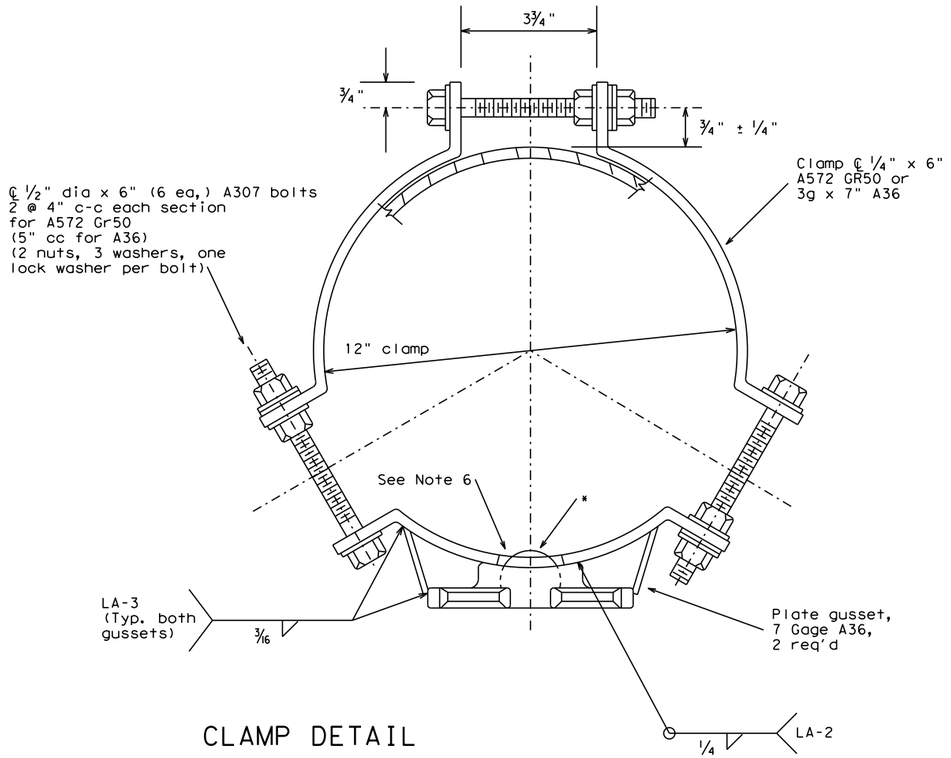
RIP(4)-19

FILE: rip-19.dgn	DN:	CK:	DW:	CK:
©TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS 7-17 12-19	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1560

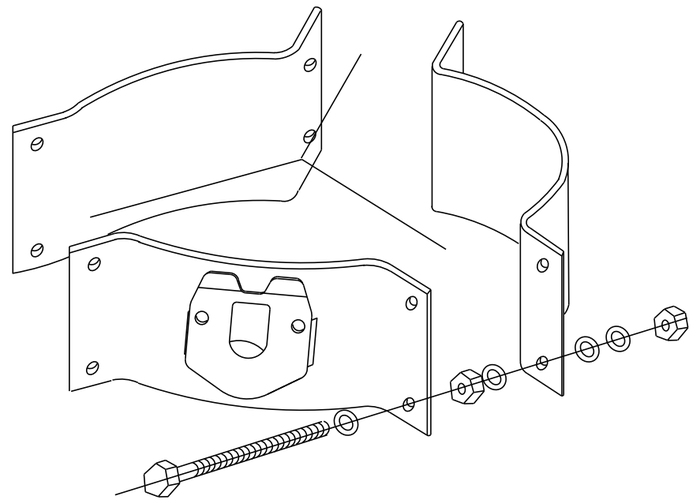
730



POLE SIMPLEX DETAILS



CLAMP DETAIL



PROJECTION

OTHER MATERIALS:

1. Pole simplex shall be ASTM A27 GR65-35 or A148 GR80-50 or A576 GR1021. ASTM A576 must be suitable for forging and also meet minimum tensile of 65ksi, minimum yield of 35ksi, and a minimum elongation of 22 percent in 2 inches.
2. Welded tabs and backplates shall be ASTM A-36 steel or better.
3. Nylon insert locknuts shall conform to ASTM A563.

GENERAL NOTES:

1. Materials and fabrication shall be in accordance with Standard Sheet "MA-C" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
2. All parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing". The throat of the Simplex shall be made free of all rough or sharp edges resulting from the galvanizing process.
3. Each simplex fitting shall be supplied with 2 ASTM A325 bolts, ½in. X 1½in. and 2 lock washers. The bolts and lock washers shall be secured to the clamp with the other hardware items. The Fabricator shall ship clamp assembly together in a single package, including all bolts, nuts, and washers required for the clamp and simplex fitting.
4. Design conforms to 1994 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals" and interim revisions thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor. Clamps are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq.ft.,12 ft. maximum arm length.
5. Each assembly shall consist of one upper piece simplex fitting having a smooth lip and one lower piece simplex fitting with the lip removed.
6. Approximately 2 in. diameter hole in upper mast arm clamp.

For 8.9 - 12 inch diameter Signal Poles
(Two req'd for each mast arm)

Texas Department of Transportation
Traffic Operations Division

CLAMP ON FITTING ASSEMBLY FOR LUMINAIRE MAST ARM

CFA-12

©TxDOT	DN: KAB	CK: RES	DW: FDN	CK: CAL
REVISIONS	CONT	SECT	JOB	HIGHWAY
11-99	0015	01	246	IH 35
1-12	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1561

DATE:
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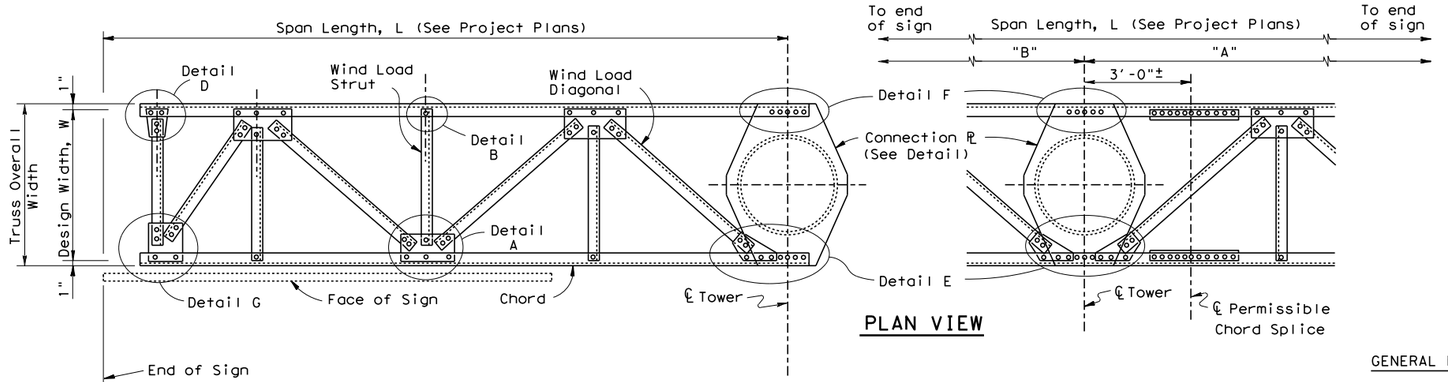
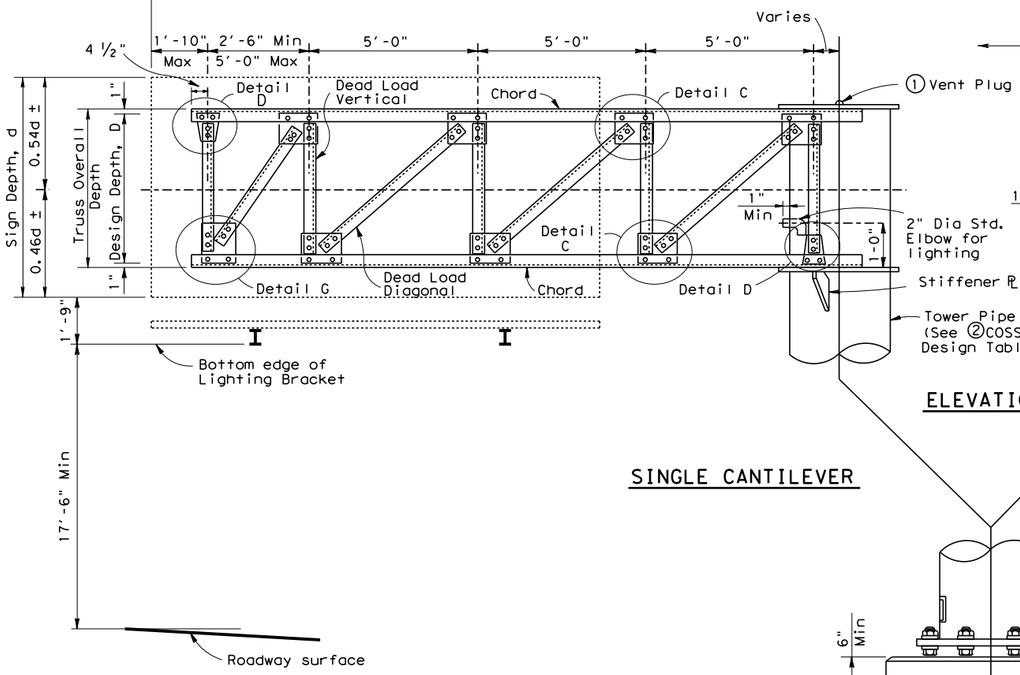


PLAN VIEW

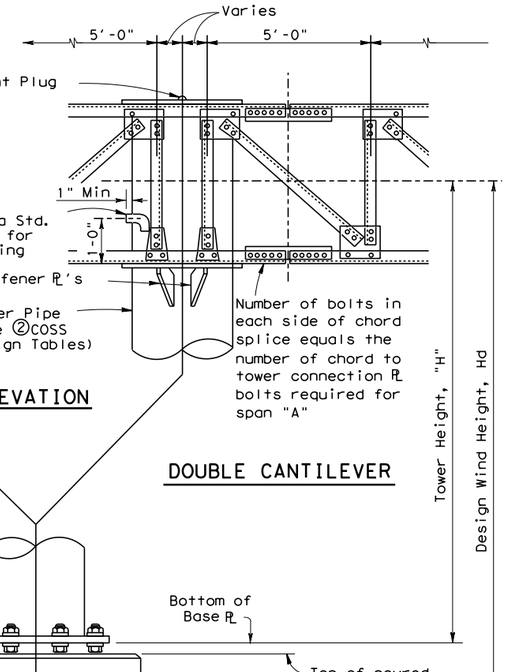
GENERAL NOTES:

Design conforms to 1975 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and Interim revisions thereto. Connection details are typical only. Actual size of member and number of bolts will vary. The details on this sheet are intended as a guide only. See "Cantilever Overhead Sign Supports" or "High Level Cantilever Overhead Sign Supports" sheets for number of bolts and size of members.

Gusset plates to be same thickness as thickest web member in connection.

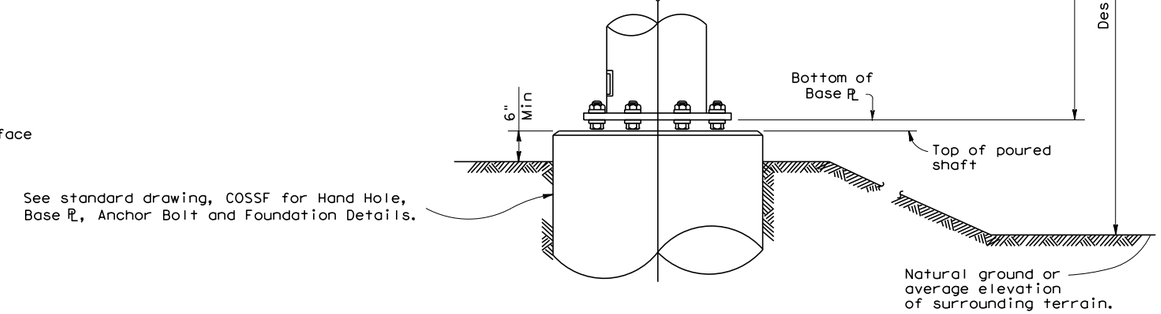


SINGLE CANTILEVER



ELEVATION

DOUBLE CANTILEVER



① Note: Cap shall be solid steel sheet ⅜" nominal thickness. Drill, tap and plug galvanizing vent. Weld plate to pipe with ⅜" weld all around.

② For COSS design tables see standard drawing, "Cantilever Overhead Sign Supports" or "High Level Cantilever Overhead Sign Supports".

Texas Department of Transportation
Traffic Operations Division

CANTILEVER OVERHEAD SIGN SUPPORT DETAILS

COSSD

REVISIONS

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

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35

DIST	COUNTY	SHEET NO.
WACO	McLENNAN	1562

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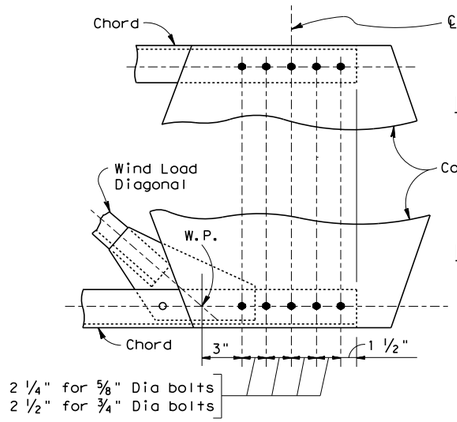
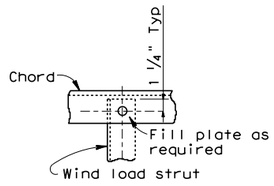
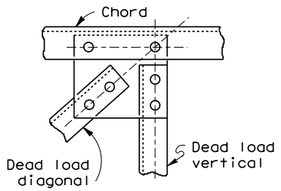


SINGLE CANTILEVER

DOUBLE CANTILEVER

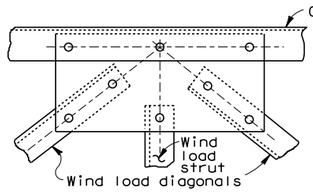


DETAIL B

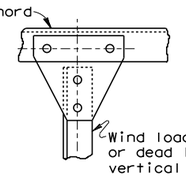


DETAIL C

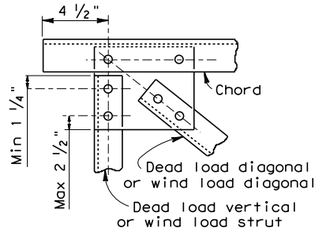
CONNECTION DETAILS



DETAIL A

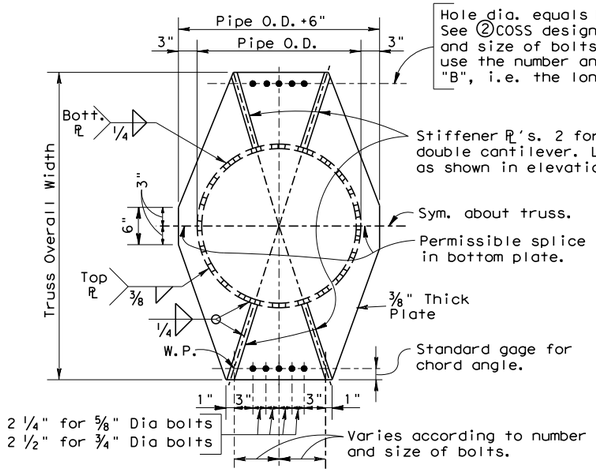


DETAIL D

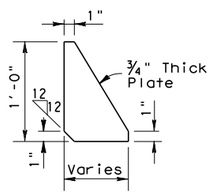


DETAIL G

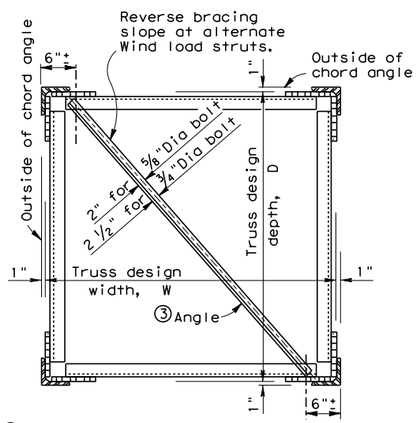
TOTAL NO. OF BOLTS IN DIAG'S. IN JOINT	NUMBER OF BOLTS REQD. IN GUSSET PL TO CHORD CONNECTION
0	2
2	2
3	3
4	3
5	4
6	4
8	5
10	6



CONNECTION PLATE DETAIL



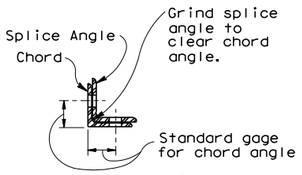
STIFFENER PL DETAIL



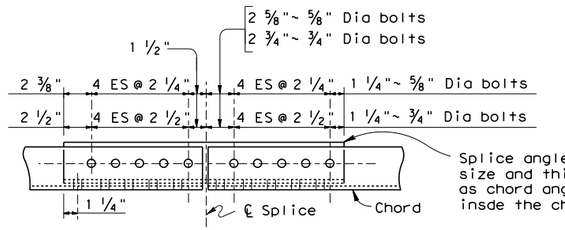
③ 2" x 2" x 3/16" angle for ⅝" Dia bolts [1]
2 ½" x 2" x 3/16" angle for ¾" Dia bolts [1]

TRUSS SECTION

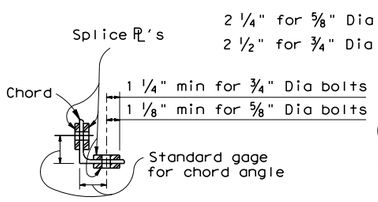
(DIAGONALS NOT SHOWN)



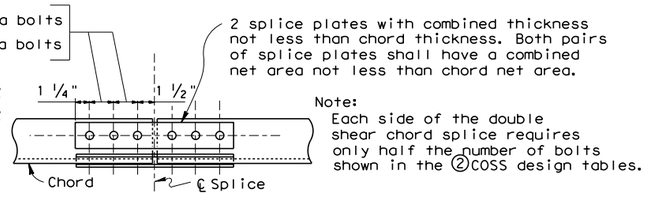
SECTION ON ℄ SPLICE



SINGLE SHEAR CHORD SPLICE

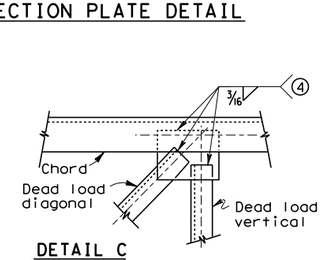


SECTION ON ℄ SPLICE



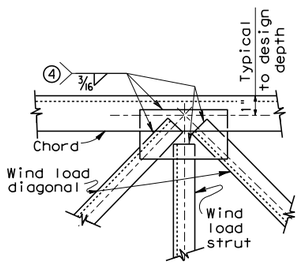
DOUBLE SHEAR CHORD SPLICE

SPLICE DETAILS



DETAIL C

(Gusset plates in other details to be similar)



DETAIL A

ALTERNATE WELDED CONNECTION DETAILS

④ MINIMUM LENGTH OF 3/16" FILLET WELD REQUIRED		
NUMBER OF BOLTS	TO REPLACE ⅝" DIA BOLTS	TO REPLACE ¾" DIA BOLTS
1	2"	3"
2	4"	6"
3	6"	9"
4	8"	11 ½"
5	10"	14 ½"
6	12"	17 ½"
7	14"	20"

SHEET 2 OF 2

Texas Department of Transportation
Traffic Operations Division

CANTILEVER OVERHEAD SIGN SUPPORT DETAILS

COSSD

REVISIONS

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1563

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ZONE 1 100 MPH WIND

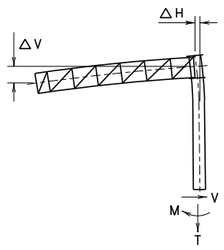
TOWER HEIGHT (ft)	10′ SPAN												15′ SPAN											
	TOWER PIPE			ANCHOR BOLTS			BASE PLATE	TRUSS	DESIGN LOADS				TOWER PIPE			ANCHOR BOLTS			BASE PLATE	TRUSS	DESIGN LOADS			
	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	TOWER HEIGHT (ft)	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	TOWER HEIGHT (ft)
25′	16	0.375	0.240	1 ½	8	21"	25 x1 ¾	0.2	6.46	27.82	153.70	25′	16	0.531	0.384	1 ¾	8	21 ½"	26 x2 ¼	0.5	9.30	62.60	225.51	25′
26′		0.375	0.250				25 x1 ¾		6.49		160.15	26′		0.531	0.415	1 ¾		21 ½"	26 x2 ¼		9.33		234.80	26′
27′		0.406	0.260				25 x1 ¾		6.52		166.65	27′		0.531	0.448	1 ¾		21 ½"	26 x2 ¼		9.36		244.12	27′
28′		0.438	0.260				25 x1 ⅞		6.55		173.18	28′		0.656	0.400	2		22"	27 x2 ⅜		9.39		253.47	28′
29′		0.469	0.260	1 ½		21"	25 x1 ⅞		6.58		179.73	29′		0.656	0.429				27 x2 ⅜		9.42		262.85	29′
30′			0.270	1 ¾		21 ½"	26 x1 ⅞		6.61		186.32	30′		0.687	0.441				27 x2 ½		9.45		272.26	30′
31′			0.290				26 x 2		6.64		192.94	31′			0.471						9.48		281.70	31′
32′		0.469	0.310				26 x 2		6.67		199.59	32′			0.502						9.50		291.17	32′
33′		0.500	0.320				26 x2 ⅛		6.70		206.26	33′		0.687	0.534						9.53		300.68	33′
34′		0.500	0.330						6.73		212.97	34′		0.750	0.525	2		22"	27 x2 ½		9.56		310.21	34′
35′		0.500	0.350						6.75		219.70	35′			0.557	2 ¼		22 ½"	28 x2 ⅝		9.59		319.77	35′
36′		0.531	0.350				26 x2 ⅛		6.78		226.47	36′			0.589				28 x2 ⅝		9.62		329.37	36′
37′		0.531	0.370				26 x2 ¼		6.81		233.26	37′			0.622				28 x2 ¾		9.65		338.99	37′
38′		0.531	0.390						6.84		240.08	38′		0.750	0.656				28 x2 ¾		9.65		347.49	38′
39′		0.656	0.350						6.87		246.94	39′		0.843	0.626				28 x2 ⅞		9.71		358.32	39′
40′		0.656	0.360	1 ¾		21 ½"	26 x2 ¼		6.90		253.82	40′		0.843	0.658				28 x2 ⅞		9.74		368.03	40′
42′		0.656	0.400	2		22"	27 x2 ⅜		6.96		267.67	42′		0.843	0.726				28 x 3		9.80		387.55	42′
44′		0.687	0.420	2		22"	27 x2 ⅜		7.02		281.64	44′		1.031	0.675				28 x 3		9.85		407.18	44′
45′	16	0.687	0.440	2	8	22"	27 x2 ⅜	0.2	7.05	27.82	288.67	45′	16	1.218	0.619	2 ¼	8	22 ½"	28 x 3	0.5	9.88	62.60	417.04	45′

TOWER HEIGHT (ft)	20′ SPAN												25′ SPAN											
	TOWER PIPE			ANCHOR BOLTS			BASE PLATE	TRUSS	DESIGN LOADS				TOWER PIPE			ANCHOR BOLTS			BASE PLATE	TRUSS	DESIGN LOADS			
	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	TOWER HEIGHT (ft)	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	TOWER HEIGHT (ft)
25′	20	0.438	0.411	2	8	25 ¾"	30½x2⅛	0.8	12.34	111.29	300.38	25′	24	0.469	0.356	2	8	29 ¾"	34½x2⅛	0.9	15.37	173.89	375.94	25′
26′		0.438	0.444				30½x2⅛		12.37		312.67	26′		0.469	0.385	2		29 ¾"	34½x2⅛		15.41		391.21	26′
27′		0.469	0.449				30½x2¼		12.41		325.01	27′		0.500	0.391	2		29 ¾"	34½x2¼		15.46		406.54	27′
28′		0.500	0.455						12.44		337.38	28′			0.421	2 ¼		30"	35 x2¼		15.50		421.92	28′
29′		0.500	0.488						12.48		349.80	29′			0.451						15.54		437.35	29′
30′		0.531	0.495				30½x2¼		12.52		362.25	30′		0.500	0.483						15.59		452.82	30′
31′		0.562	0.501	2		25 ¾"	30½x2⅜		12.55		374.75	31′		0.531	0.488					0.9	15.63		468.35	31′
32′		0.562	0.534	2 ¼		26"	31 x2⅜		12.59		387.28	32′			0.520					1.0	15.68		483.93	32′
33′		0.562	0.568				31 x2⅜		12.63		399.85	33′			0.553				35 x2¼		15.72		499.55	33′
34′		0.594	0.573				31 x2⅜		12.66		412.46	34′			0.587	2 ¼		30"	35 x2⅜		15.76		515.23	34′
35′		0.594	0.607				31 x2½		12.70		425.11	35′		0.531	0.622	2 ½		30 ½"	36 x2⅜		15.81		530.95	35′
36′		0.594	0.643				31 x2⅝		12.74		437.80	36′		0.562	0.624				36 x2½		15.85		546.71	36′
37′		0.625	0.648				31 x2⅝		12.77		450.53	37′		0.562	0.659				36 x2½	1.0	15.89		562.53	37′
38′		0.625	0.684				31 x2⅝		12.81		463.29	38′		0.562	0.695				36 x2½	1.1	15.94		578.39	38′
39′		0.656	0.689				31 x2¾		12.84		476.09	39′		0.594	0.696				36 x2⅝		15.98		594.30	39′
40′		0.656	0.725	2 ¼		26"	31 x2¾		12.88		488.93	40′		0.594	0.732				36 x2⅝		16.03		610.25	40′
42′		0.719	0.736	2 ½		26 ½"	31½x2¾		12.95		514.72	42′		0.625	0.770				36 x2¾		16.11		642.29	42′
44′		0.750	0.779	2 ½		26 ½"	31½x2⅞		13.03		540.66	44′		0.656	0.808				36 x2¾		16.20		674.52	44′
45′	20	0.750	0.814	2 ½	8	26 ½"	31½x2⅞	0.8	13.06	111.29	553.68	45′	24	0.688	0.809	2 ½	8	30 ½"	36 x2¾	1.1	16.24	173.89	690.71	45′

ZONE 1 100 MPH WIND

TOWER HEIGHT (ft)	30′ SPAN												35′ SPAN											
	TOWER PIPE			ANCHOR BOLTS			BASE PLATE	TRUSS	DESIGN LOADS				TOWER PIPE			ANCHOR BOLTS			BASE PLATE	TRUSS	DESIGN LOADS			
	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	TOWER HEIGHT (ft)	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	TOWER HEIGHT (ft)
25′	24	0.531	0.475	2 ¼	8	30"	35 x2¼	1.4	18.21	250.41	449.85	25′	30	0.406	0.442	2 ¼	8	36"	41 x 2	1.6	21.34	340.83	529.13	25′
26′		0.531	0.514				35 x2¼		18.25		467.86	26′		0.406	0.478				41 x 2	1.7	21.40		550.13	26′
27′		0.562	0.526				35 x2⅜		18.29		485.93	27′		0.438	0.479				41 x2⅛		21.45		571.21	27′
28′		0.562	0.566				35 x2⅜	1.4	18.34		504.07	28′			0.515				41 x2⅛		21.50		592.37	28′
29′		0.562	0.607	2 ¼		30"	35 x2⅜	1.5	18.38		522.25	29′			0.552	2 ¼		36"	41 x2⅛		21.56		613.61	29′
30′		0.594	0.617	2 ½		30 ½"	36 x2½	1.5	18.43		540.50	30′		0.438	0.591	2 ½		36 ½"	42 x2¼		21.61		634.92	30′
31′		0.594	0.659				36 x2½	1.5	18.47		558.79	31′		0.469	0.591				42 x2¼	1.7	21.67		656.31	31′
32′		0.594	0.702				36 x2⅝	1.6	18.51		577.14	32′		0.469	0.630				42 x2¼	1.8	21.72		677.76	32′
33′		0.625	0.712				36 x2⅝		18.56		595.54	33′		0.469	0.670				42 x2⅜		21.78		699.28	33′
34′		0.625	0.756				36 x2⅝		18.60		614.00	34′		0.500	0.669				42 x2⅜		21.83		720.87	34′
35′		0.656	0.766				36 x2¾		18.64		632.50	35′		0.500	0.709				42 x2½		21.89		742.53	35′
36′		0.656	0.811				36 x2¾		18.69		651.05	36′		0.500	0.750				42 x2½		21.94		764.25	36′
37′		0.688	0.820				36 x2¾		18.73		669.66	37′		0.531	0.749	2 ½		36 ½"	42 x2½		22.00		786.04	37′
38′		0.688	0.865				36 x2¾		18.78		688.31	38′		0.531	0.790	2 ¾		37"	43 x2⅝		22.05		807.89	38′
39′		0.719	0.875	2 ½		30 ½"	36 x2⅞		18.82		707.01	39′		0.562	0.788				43 x2⅝		22.10		829.80	39′
40′		0.719	0.920	2 ¾		31 ½"	38 x2⅞		18.86		725.76	40′		0.562	0.829				43 x2¾		22.16		851.78	40′
42′		0.750	0.977				38 x 3		18.95		763.41	42′		0.594	0.868				43 x2¾		22.27		895.92	42′
44′		0.937	0.877				38 x 3		19.04		801.24	44′		0.625	0.905				43 x2¾	1.8	22.38		940.31	44′
45′	24	0.937	0.918	2 ¾	8	31 ½"	38 x3⅛	1.6	19.08	250.41	820.23	45′	30	0.625	0.947	2 ¾	8	37"	43 x2¾	1.9	22.43	340.83	962.59	45′

TOWER HEIGHT (ft)	40′ SPAN											
	TOWER PIPE			ANCHOR BOLTS			BASE PLATE	TRUSS	DESIGN LOADS			
	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	TOWER HEIGHT (ft)
25′	30	0.500	0.502	2 ½	8	36 ½"	42 x2¼	2.1	24.18	445.17	606.83	25′
26′		0.500	0.543				42 x2¼	2.2	24.23		630.43	26′
27′		0.500	0.586				42 x2⅜	2.3	24.29		654.13	27′
28′		0.531	0.595				42 x2⅜		24.34		677.92	28′
29′		0.531	0.638				42 x2⅜		24.40		701.81	29′
30′		0.531	0.683				42 x2½	2.3	24.45		725.77	30′
31′		0.562	0.691	2 ½		36 ½"	42 x2½	2.4	24.51		749.82	31′
32′		0.562	0.737	2 ¾		37"	43 x2½		24.56		773.96	32′
33′		0.625	0.783				43 x2⅝		24.61		798.17	33′
34′		0.594	0.789				43 x2⅝		24.67		822.45	34′
35′		0.594	0.836				43 x2⅝	2.4	24.72		846.81	35′
36′		0.594	0.885				43 x2¾	2.5	24.78		871.25	36′
37′		0.625	0.891				43 x2¾		24.83		895.75	37′
38′		0.625	0.940				43 x2¾		24.89		920.33	38′
39′		0.656	0.946				43 x2¾		24.94		944.97	39′
40′		0.656	0.995	2 ¾		37"	43 x2⅞	2.5	25.00		969.68	40′
42′		0.688	1.150	3		37 ½"	44 x 3	2.7	25.11		1019.30	42′
44′		0.719	1.106	3		37 ½"	44 x 3	2.6	25.22		1069.19	44′
45′	30	0.719	1.157	3	8	37 ½"	44 x 3	2.6	25.27	445.17	1094.23	45′



ELEVATION

(SHOWING DESIGN LOADS AND DEAD LOAD DEFLECTIONS)

TRUSS DETAILS

SPAN	10′, 15′, & 20′	25′	30′	35′	40′
W x D = WIDTH x DEPTH	4.5 x 4.5	4.5 x 4.5	4.5 x 4.5	4.5 x 4.5	4.5 x 4.5
CHORD-①, Unless Otherwise Shown	L 3 x 3 x 3/16 ② [3]	L 3 x 3 x 1/4 ② [4]	L 3 ½x3 ½x 5/16 [8]	L 3 ½x3 ½x 5/16 [9]	L 3 ½x3 ½x 3/8 [8]
DEAD LOAD DIAGONAL-②	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 3 x 2 x 3/16 [2]
WIND LOAD DIAGONAL-②	L 3 x 3 x 3/16 [3]	L 3 x 3 x 3/16 [3]	L 3 x2 ½x 1/4 [3]	L 3 x 3 x 1/4 [4]	L 3 x 3 x 1/4 [3]
DEAD LOAD VERTICAL-②	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 3 x 2 x 3/16 [2]
WIND LOAD STRUT-②	L 2 x 2 x 3/16 [1]	L 2 x 2 x 3/16 [1]	L 2 x 2 x 3/16 [1]	L 2 x 2 x 3/16 [1]	L 2 ½x2 ½x 3/16 [1]
TRUSS DEAD LOAD	42 lb/ft	47 lb/ft	59 lb/ft	60 lb/ft	70 lb/ft
SIZE H. S. BOLTS IN CONNECTION	5/8" DIA	5/8" DIA	5/8" DIA	5/8" DIA	3/4" DIA
NO. & SIZE OF H. S. BOLTS IN CHORD ANGLE TO TOWER CONNECTION PLATE	3 ~ 5/8" DIA ea	5 ~ 5/8" DIA or 3 ~ 3/4" DIA ea	8 ~ 5/8" DIA or 6 ~ 3/4" DIA ea	9 ~ 5/8" DIA or 7 ~ 3/4" DIA ea	8 ~ 3/4" DIA ea

① "Low-Alloy Steel" for non-bridge structures per Item 442, "Metal For Structures".

② "Carbon Steel" for non-bridge structures per Item 442, "Metal For Structures".

GENERAL NOTES

1. Design conforms to AASHTO 1994 Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto.
2. Steel for tower pipe shall conform to ASTM A53 Grade B or to ASTM A501. Tower pipe wall thickness shown is the minimum allowable. Fabricator may use the wall thickness shown or pipe of the same diameter with greater wall thickness.
3. All connection bolts shall conform to Item 447, "Structural Bolting". All structural steel, connection bolts, nuts and washers shall be galvanized in accordance with the Specifications.
4. Compensate for truss deflection at free end by offsetting upper and lower bolt holes at truss-to-tower connection.
5. For truss details see standard drawing COSSD.
6. For base and foundation details see standard drawing COSSF.
7. For cantilever truss lengths falling between those shown use sizes called for in the next longer span.
8. Truss and towers for cantilever sign supports are designed for the equivalent area of a 10′-0" deep sign panel over 100% of the span length. Design includes 3 pounds per foot squared for sign panel and 20 pounds per foot for lights and 50 pounds per foot for walkways all placed as specified for the design sign panel.
9. Details called for hereon are applicable for Design Wind Heights of 30′ to 50′ inclusive.
10. Number of High Strength bolts required in truss connection or splice are indicated in brackets, e.g. [3], after the member size.
11. Deflections shown include the design loads for Truss, Sign Panel, Lights and Walkways.

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Texas Department of Transportation

Traffic Safety Division Standard

OVERHEAD SIGN BRIDGE DETAILS

HCOSS-Z1-21

FILE: hcoss-z1-21.dgn	DN:	CK:	DW:	CK:
©TxDOT November 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
4-10	DIST	COUNTY		SHEET NO.
8-21	WACO	McLENNAN		1564

ZONE 2 WITH ICE 90 M.P.H. WIND

TRUSS DETAILS

5/8" Dia. H.S. Bolts, Spans 40' Thru 75'

SPAN	40'	45'	50'	55'	60'	65'	70'	75'
W x D = WIDTH x DEPTH	4.5 x 4.5	4.5 x 4.5	4.5 x 4.5	4.5 x 4.5	4.5 x 4.5	4.5 x 4.5	4.5 x 4.5	4.5 x 4.5
CHORD -②, Unless Otherwise Shown	L 3 x 3 x 3/16 ③ [3]	L 3 x 3 x 1/4 ③ [3]	L 3 x 3 x 1/4 ③ [4]	L 3 x 3 x 1/4 [4]	L 3 1/2 x 3 1/2 x 1/4 [5]	L 3 1/2 x 3 1/2 x 5/16 [6]	L 3 1/2 x 3 1/2 x 5/16 [7]	L 3 1/2 x 3 1/2 x 5/16 [7]
DEAD LOAD DIAGONAL -③	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 1/2 x 2 1/2 x 3/16 [3]
WIND LOAD DIAGONAL -③	L 3 x 3 x 3/16 [3]	L 3 x 3 x 3/16 [3]	L 3 x 3 x 3/16 [3]	L 3 x 3 x 3/16 [3]	L 3 x 2 1/2 x 1/4 [3]	L 3 x 2 1/2 x 1/4 [3]	L 3 x 2 1/2 x 1/4 [3]	L 3 x 3 x 1/4 [3]
DEAD LOAD VERTICAL -③	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 1/2 x 2 1/2 x 3/16 [2]	L 2 1/2 x 2 1/2 x 3/16 [2]	L 2 1/2 x 2 1/2 x 3/16 [2]	L 2 1/2 x 2 1/2 x 3/16 [2]
WIND LOAD STRUT - ③	L 2 x 2 x 3/16 [1]	L 2 x 2 x 3/16 [1]	L 2 x 2 x 3/16 [1]	L 2 x 2 x 3/16 [1]	L 2 x 2 x 3/16 [1]	L 2 x 2 x 3/16 [1]	L 2 x 2 x 3/16 [1]	L 2 x 2 x 3/16 [1]
TOTAL DEFL. & TRUSS D.L.	DEFL=0.14" L=42 lb/ft	DEFL=0.21" L=48 lb/ft	DEFL=0.22" L=48 lb/ft	DEFL=0.33" L=48 lb/ft	DEFL=0.41" L=53 lb/ft	DEFL=0.46" L=60 lb/ft	DEFL=0.61" L=60 lb/ft	DEFL=0.78" L=63 lb/ft

TOWER DETAILS

S = COLUMN SPACING

TOWER HEIGHT	6.0'	6.0'	6.0'	6.0'	6.5'	6.5'	6.5'	6.5'
25'	W 12 x 26 (50.9)	W 12 x 26 (55.6)	W 12 x 26 (60.2)	W 14 x 30 (64.9)	W 14 x 30 (64.0)	W 14 x 30 (68.2)	W 14 x 34 (72.5)	W 14 x 34 (76.9)
26'	W 12 x 26 (53.4)	W 12 x 26 (58.3)	W 14 x 30 (63.0)	W 14 x 30 (68.0)	W 14 x 30 (67.0)	W 14 x 30 (71.4)	W 14 x 34 (75.9)	W 14 x 34 (80.4)
27'	W 12 x 26 (55.9)	W 12 x 26 (61.0)	W 14 x 30 (65.9)	W 14 x 30 (71.0)	W 14 x 30 (70.0)	W 14 x 34 (74.6)	W 14 x 34 (79.2)	W 14 x 34 (84.0)
28'	W 12 x 26 (58.5)	W 14 x 30 (63.7)	W 14 x 30 (68.9)	W 14 x 34 (74.0)	W 14 x 34 (72.9)	W 14 x 34 (77.8)	W 14 x 34 (82.6)	W 16 x 36 (87.4)
29'	W 12 x 26 (61.1)	W 14 x 30 (66.4)	W 14 x 30 (71.9)	W 14 x 34 (77.2)	W 14 x 34 (76.0)	W 14 x 34 (81.0)	W 16 x 36 (85.9)	W 16 x 36 (91.0)
30'	W 14 x 30 (63.6)	W 14 x 30 (69.3)	W 14 x 34 (74.7)	W 14 x 34 (80.4)	W 14 x 34 (79.1)	W 16 x 36 (84.2)	W 16 x 36 (89.4)	W 16 x 36 (94.6)
31'	W 14 x 30 (66.3)	W 14 x 34 (72.0)	W 14 x 34 (77.7)	W 14 x 34 (83.6)	W 14 x 34 (82.2)	W 16 x 36 (87.5)	W 16 x 36 (92.9)	W 16 x 40 (98.0)
32'	W 14 x 30 (69.0)	W 14 x 34 (74.8)	W 14 x 34 (80.8)	W 16 x 36 (86.7)	W 16 x 36 (85.2)	W 16 x 36 (90.8)	W 16 x 40 (96.0)	W 16 x 40 (101.6)
33'	W 14 x 34 (71.8)	W 14 x 34 (77.7)	W 16 x 36 (83.9)	W 16 x 36 (90.0)	W 16 x 36 (88.4)	W 16 x 40 (94.2)	W 16 x 40 (99.6)	W 16 x 40 (105.4)
34'	W 14 x 34 (74.6)	W 14 x 34 (80.7)	W 16 x 36 (86.8)	W 16 x 36 (93.3)	W 16 x 36 (91.6)	W 16 x 40 (97.2)	W 16 x 40 (103.1)	W 18 x 46 (108.9)
35'	W 14 x 34 (77.3)	W 16 x 36 (83.5)	W 16 x 36 (90.0)	W 16 x 40 (96.2)	W 16 x 40 (94.5)	W 16 x 40 (100.6)	W 18 x 46 (106.5)	W 18 x 46 (112.7)
36'	W 16 x 36 (79.7)	W 16 x 36 (86.4)	W 16 x 36 (93.2)	W 16 x 40 (99.6)	W 16 x 40 (97.8)	W 18 x 46 (103.9)	W 18 x 46 (110.1)	W 18 x 46 (116.5)
37'	W 16 x 36 (82.5)	W 16 x 36 (89.5)	W 16 x 40 (96.0)	W 16 x 40 (102.9)	W 16 x 40 (101.1)	W 18 x 46 (107.4)	W 18 x 46 (113.8)	W 18 x 46 (120.3)
38'	W 16 x 36 (85.4)	W 16 x 40 (92.1)	W 16 x 40 (99.2)	W 18 x 46 (106.2)	W 18 x 46 (104.2)	W 18 x 46 (110.8)	W 18 x 46 (117.4)	W 18 x 46 (124.1)
39'	W 16 x 36 (88.2)	W 16 x 40 (95.2)	W 16 x 40 (102.5)	W 18 x 46 (109.6)	W 18 x 46 (107.5)	W 18 x 46 (114.4)	W 18 x 46 (121.1)	W 18 x 50 (129.9)
40'	W 16 x 40 (90.7)	W 16 x 40 (98.3)	W 18 x 46 (105.5)	W 18 x 46 (113.1)	W 18 x 46 (110.9)	W 18 x 46 (117.9)	W 18 x 50 (124.6)	W 18 x 50 (131.7)
42'	W 16 x 40 (96.6)	W 18 x 46 (104.3)	W 18 x 46 (112.2)	W 18 x 46 (120.1)	W 18 x 50 (117.5)	W 18 x 50 (124.8)	W 18 x 50 (132.1)	W 18 x 55 (143.3)
45'	W 18 x 46 (105.7)	W 18 x 46 (113.9)	W 18 x 50 (122.1)	W 18 x 50 (130.6)	W 18 x 50 (127.9)	W 18 x 55 (135.5)	W 21 x 57 (143.3)	W 21 x 57 (150.9)

COLUMN SIZE & UPLIFT (kips) — Tower Height = (HL + HR)/2

ZONE 2 WITH ICE 90 M.P.H. WIND

TRUSS DETAILS

3/4" Dia. H.S. Bolts, Spans 76' Thru 155'

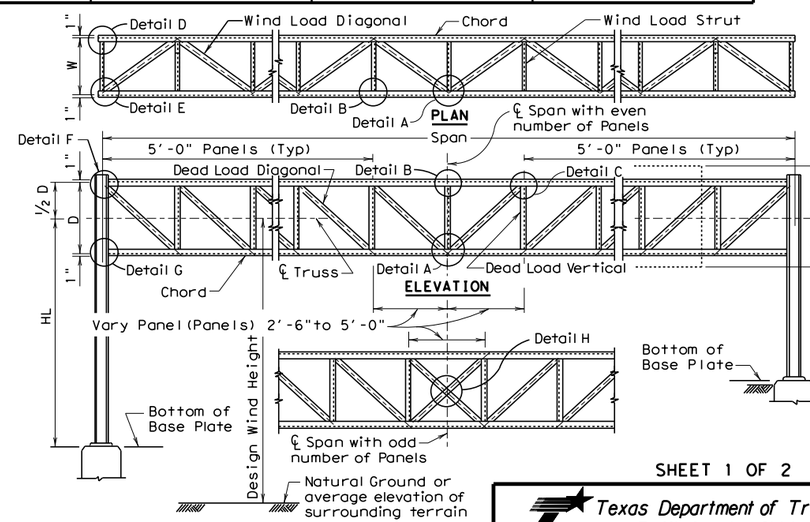
SPAN	80'	85'	90'	95'
W x D = WIDTH x DEPTH	4.5 x 4.5	4.5 x 4.5	4.5 x 4.5	4.5 x 4.5
CHORD -②, Unless Otherwise Shown	L 3 1/2 x 3 1/2 x 3/8 [6]	L 3 1/2 x 3 1/2 x 3/8 [6]	L 3 1/2 x 3 1/2 x 7/16 [7]	L 4 x 4 x 3/8 [8]
DEAD LOAD DIAGONAL -③	L 3 x 2 x 3/16 [2]	L 3 x 2 x 3/16 [2]	L 3 x 2 x 3/16 [2]	L 3 x 2 1/2 x 3/16 [2]
WIND LOAD DIAGONAL -③	L 3 x 3 x 1/4 [2]	L 3 x 3 x 1/4 [2]	L 3 x 3 x 1/4 [3]	L 3 x 3 x 1/4 [3]
DEAD LOAD VERTICAL -③	L 3 x 2 x 3/16 [2]	L 3 x 2 x 3/16 [2]	L 3 x 2 x 3/16 [2]	L 3 x 2 x 3/16 [2]
WIND LOAD STRUT - ③	L 2 1/2 x 2 1/2 x 3/16 [1]	L 2 1/2 x 2 1/2 x 3/16 [1]	L 2 1/2 x 2 1/2 x 3/16 [1]	L 2 1/2 x 2 1/2 x 3/16 [1]
TOTAL DEFL. & TRUSS D.L.	DEFL=0.86" L=70 lb/ft	DEFL=1.08" L=70 lb/ft	DEFL=1.22" L=76 lb/ft	DEFL=1.49" L=77 lb/ft

TOWER DETAILS

S = COLUMN SPACING

TOWER HEIGHT	7.0'	7.0'	7.0'	7.0'
25'	W 14 x 34 (75.1)	W 14 x 34 (79.4)	W 16 x 36 (82.8)	W 16 x 36 (86.9)
26'	W 14 x 34 (78.5)	W 14 x 34 (83.0)	W 16 x 36 (86.5)	W 16 x 36 (90.8)
27'	W 14 x 34 (82.0)	W 16 x 36 (86.3)	W 16 x 36 (90.3)	W 16 x 40 (94.8)
28'	W 16 x 36 (85.3)	W 16 x 36 (89.9)	W 16 x 40 (94.1)	W 16 x 40 (98.7)
29'	W 16 x 36 (88.8)	W 16 x 36 (93.6)	W 16 x 40 (97.9)	W 16 x 40 (102.7)
30'	W 16 x 40 (92.0)	W 16 x 40 (97.0)	W 16 x 40 (101.8)	W 18 x 46 (106.6)
31'	W 16 x 40 (95.6)	W 16 x 40 (100.7)	W 18 x 46 (105.6)	W 18 x 46 (110.7)
32'	W 16 x 40 (99.2)	W 18 x 46 (104.3)	W 18 x 46 (109.5)	W 18 x 46 (114.8)
33'	W 18 x 46 (102.6)	W 18 x 46 (108.1)	W 18 x 46 (113.4)	W 18 x 46 (118.9)
34'	W 18 x 46 (106.2)	W 18 x 46 (111.9)	W 18 x 46 (117.4)	W 18 x 46 (123.0)
35'	W 18 x 46 (109.9)	W 18 x 46 (115.7)	W 18 x 46 (121.3)	W 18 x 50 (126.9)
36'	W 18 x 46 (113.6)	W 18 x 46 (119.5)	W 18 x 50 (125.2)	W 18 x 50 (131.1)
37'	W 18 x 46 (117.3)	W 18 x 50 (123.2)	W 18 x 50 (129.2)	W 18 x 50 (135.3)
38'	W 18 x 50 (120.8)	W 18 x 50 (127.1)	W 18 x 50 (133.2)	W 18 x 55 (139.3)
39'	W 18 x 50 (124.5)	W 18 x 50 (131.0)	W 18 x 55 (137.1)	W 18 x 55 (143.6)
40'	W 18 x 50 (128.3)	W 18 x 55 (134.7)	W 18 x 55 (141.2)	W 21 x 57 (151.7)
42'	W 18 x 55 (135.7)	W 21 x 57 (142.3)	W 21 x 57 (149.5)	W 21 x 57 (156.1)
45'	W 21 x 57 (146.9)	W 21 x 62 (154.3)	W 21 x 62 (162.1)	W 21 x 62 (168.9)

COLUMN SIZE & UPLIFT (kips) — Tower Height = (HL + HR)/2



① d = Sign Depth
Where signs of different depths are used, the bottom edges of all signs may be placed in line. Where this is done, all signs should be so positioned that the bottom edges are approximately 0.46 of the depth of the deepest sign below the of the truss.

② "Low-Alloy Steel" for non-bridge structures per Item 442, "Metal For Structures".

③ "Carbon Steel" for non-bridge structures per Item 442, "Metal For Structures".

SHEET 1 OF 2

Texas Department of Transportation
Traffic Operations Division

HIGH LEVEL OVERHEAD SIGN BRIDGE DETAILS

HOSB-Z2I

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

REVISIONS
8/08 add missing HS bolt dia (select spans)

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1565

DATE: 10/18/2023 1:31:33 PM
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ZONE 2 WITH ICE 90 M.P.H. WIND

TRUSS DETAILS — ¾" Dia. H.S. Bolts, Spans 76' Thru 155'

SPAN	100'	105'	110'	115'	120'	125'	130'	135'
W x D = WIDTH x DEPTH	4.5 x 4.5	4.5 x 4.5	4.5 x 4.5	4.5 x 4.5	5.0 x 5.0	5.0 x 5.0	5.0 x 5.0	5.0 x 5.0
CHORD -②, Unless Otherwise Shown	L 4 x 4 x 7/16 [9]	L 4 x 4 x 1/2 [10]	L 5 x 5 x 7/16 [12]	L 5 x 5 x 7/16 [12]	L 5 x 5 x 7/16 [12]	L 5 x 5 x 1/2 [13]	L 5 x 5 x 1/2 [15]	L 5 x 5 x 1/2 [16]
DEAD LOAD DIAGONAL -③	L 3 x 2 1/2 x 3/16 [3]	L 3 x 3 x 3/16 [3]	L 3 x 2 x 1/4 [3]	L 3 x 2 1/2 x 1/4 [3]	L 3 x 3 x 1/4 [3]	L 3 x 3 x 1/4 [3]	L 3 x 3 x 1/4 [3]	L 3 x 3 x 1/4 [3]
WIND LOAD DIAGONAL -③	L 3 x 3 x 1/4 [3]	L 3 1/2 x 3 1/2 x 1/4 [3]	L 3 1/2 x 3 1/2 x 1/4 [3]	L 3 1/2 x 3 1/2 x 1/4 [3]	L 3 1/2 x 3 1/2 x 1/4 [3]	L 3 1/2 x 3 1/2 x 1/4 [3]	L 3 1/2 x 3 1/2 x 1/4 [3]	L 3 1/2 x 3 x 5/16 [4]
DEAD LOAD VERTICAL -③	L 3 x 2 x 3/16 [2]	L 3 x 2 x 3/16 [2]	L 3 x 2 1/2 x 3/16 [2]	L 3 x 2 1/2 x 3/16 [2]	L 3 x 2 1/2 x 3/16 [2]	L 3 x 2 1/2 x 3/16 [2]	L 3 x 3 x 3/16 [2]	L 3 x 3 x 3/16 [3]
WIND LOAD STRUT - ③	L 2 1/2 x 2 1/2 x 3/16 [1]	L 2 1/2 x 2 1/2 x 3/16 [1]	L 2 1/2 x 2 1/2 x 3/16 [1]	L 2 1/2 x 2 1/2 x 3/16 [1]	L 2 1/2 x 2 1/2 x 3/16 [1]	L 2 1/2 x 2 1/2 x 3/16 [1]	L 2 1/2 x 2 1/2 x 3/16 [1]	L 2 1/2 x 2 1/2 x 3/16 [1]
TOTAL DEFL. & TRUSS D.L.	DEFL=1.65" L=83 lb/ft	DEFL=1.88" L=94 lb/ft	DEFL=2.19" L=102 lb/ft	DEFL=2.41" L=102 lb/ft	DEFL=2.54" L=107 lb/ft	DEFL=2.59" L=115 lb/ft	DEFL=3.02" L=116 lb/ft	DEFL=3.55" L=120 lb/ft

TOWER DETAILS

S = COLUMN SPACING	7.5'	7.5'	7.5'	7.5'	7.5'	7.5'	7.5'	7.5'
TOWER HEIGHT								
25'	W 16 x 36 (84.8)	W 16 x 36 (88.5)	W 16 x 40 (92.0)	W 16 x 40 (95.6)	W 16 x 40 (99.6)	W 16 x 40 (103.3)	W 18 x 46 (107.1)	W 18 x 46 (111.2)
26'	W 16 x 36 (88.6)	W 16 x 40 (92.2)	W 16 x 40 (96.1)	W 16 x 40 (99.9)	W 18 x 46 (103.9)	W 18 x 46 (107.7)	W 18 x 46 (111.9)	W 18 x 46 (116.1)
27'	W 16 x 40 (92.1)	W 16 x 40 (96.2)	W 16 x 40 (100.3)	W 18 x 46 (104.1)	W 18 x 46 (108.4)	W 18 x 46 (112.4)	W 18 x 46 (116.7)	W 18 x 46 (121.1)
28'	W 16 x 40 (96.0)	W 16 x 40 (100.2)	W 18 x 46 (104.3)	W 18 x 46 (108.4)	W 18 x 46 (112.9)	W 18 x 46 (117.0)	W 18 x 46 (121.5)	W 18 x 50 (126.0)
29'	W 16 x 40 (99.8)	W 18 x 46 (104.1)	W 18 x 46 (108.5)	W 18 x 46 (112.7)	W 18 x 46 (117.4)	W 18 x 46 (121.7)	W 18 x 50 (126.2)	W 18 x 50 (131.0)
30'	W 18 x 46 (103.6)	W 18 x 46 (108.2)	W 18 x 46 (112.7)	W 18 x 46 (117.1)	W 18 x 50 (121.8)	W 18 x 50 (126.2)	W 18 x 50 (131.0)	W 18 x 55 (135.9)
31'	W 18 x 46 (107.5)	W 18 x 46 (112.3)	W 18 x 46 (117.0)	W 18 x 50 (121.4)	W 18 x 50 (126.3)	W 18 x 50 (130.9)	W 18 x 50 (135.9)	W 18 x 55 (141.0)
32'	W 18 x 46 (111.5)	W 18 x 46 (116.4)	W 18 x 50 (121.1)	W 18 x 50 (125.8)	W 18 x 50 (130.9)	W 18 x 55 (135.5)	W 18 x 55 (140.7)	W 18 x 55 (146.0)
33'	W 18 x 46 (115.5)	W 18 x 50 (120.3)	W 18 x 50 (125.3)	W 18 x 50 (130.2)	W 18 x 55 (135.4)	W 18 x 55 (140.3)	W 18 x 55 (145.6)	W 21 x 57 (150.8)
34'	W 18 x 50 (119.3)	W 18 x 50 (124.5)	W 18 x 50 (129.7)	W 18 x 55 (134.5)	W 18 x 55 (140.0)	W 18 x 55 (145.1)	W 21 x 57 (150.2)	W 21 x 57 (156.0)
35'	W 18 x 50 (123.3)	W 18 x 50 (128.7)	W 18 x 55 (133.8)	W 18 x 55 (139.0)	W 18 x 55 (144.6)	W 21 x 57 (149.6)	W 21 x 57 (155.2)	W 21 x 57 (161.1)
36'	W 18 x 50 (127.4)	W 18 x 55 (132.7)	W 18 x 55 (138.2)	W 21 x 57 (143.2)	W 21 x 57 (149.0)	W 21 x 57 (154.4)	W 21 x 57 (160.2)	W 21 x 62 (166.1)
37'	W 18 x 55 (131.2)	W 18 x 55 (136.9)	W 18 x 55 (142.5)	W 21 x 57 (147.7)	W 21 x 57 (153.7)	W 21 x 62 (159.1)	W 21 x 62 (165.0)	W 21 x 62 (171.3)
38'	W 18 x 55 (135.3)	W 18 x 55 (141.1)	W 21 x 57 (146.6)	W 21 x 57 (152.3)	W 21 x 62 (158.2)	W 21 x 62 (163.9)	W 21 x 62 (170.0)	W 21 x 62 (176.2)
39'	W 18 x 55 (139.4)	W 21 x 57 (145.0)	W 21 x 57 (151.0)	W 21 x 62 (156.6)	W 21 x 62 (162.9)	W 21 x 62 (168.8)	W 21 x 62 (175.1)	W 21 x 68 (181.5)
40'	W 21 x 57 (143.2)	W 21 x 57 (149.3)	W 21 x 57 (155.4)	W 21 x 62 (161.2)	W 21 x 62 (167.7)	W 21 x 62 (173.7)	W 21 x 68 (180.0)	W 21 x 68 (186.7)
42'	W 21 x 57 (151.5)	W 21 x 62 (157.7)	W 21 x 62 (168.7)	W 21 x 62 (170.5)	W 21 x 68 (186.7)	W 21 x 68 (183.4)	W 21 x 68 (190.2)	W 24 x 68 (197.3)
45'	W 21 x 62 (163.9)	W 21 x 62 (170.8)	W 21 x 68 (177.7)	W 21 x 68 (184.2)	W 24 x 68 (191.5)	W 24 x 68 (198.6)	W 24 x 68 (205.7)	W 24 x 68 (213.3)

Tower Height = (HL + HR)/2

COLUMN SIZE & UPLIFT (kips)

ZONE 2 WITH ICE 90 M.P.H. WIND

TRUSS DETAILS — ¾" Dia. H.S. Bolts, Spans 76' Thru 155'

SPAN	140'	145'	150'	155'
W x D = WIDTH x DEPTH	5.5 x 5.5	5.5 x 5.5	5.5 x 5.5	5.5 x 5.5
CHORD -②, Unless Otherwise Shown	L 5 x 5 x 1/2 [16]	L 6 x 6 x 1/2 [17]	L 6 x 6 x 9/16 [20]	L 6 x 6 x 9/16 [21]
DEAD LOAD DIAGONAL -③	L 3 x 2 1/2 x 5/16 [3]	L 3 x 2 1/2 x 5/16 [3]	L 3 1/2 x 2 1/2 x 5/16 [4]	L 3 1/2 x 3 1/2 x 1/4 [4]
WIND LOAD DIAGONAL -③	L 3 1/2 x 3 x 5/16 [4]	L 4 x 4 x 1/4 [4]	L 4 x 4 x 1/4 [4]	L 4 x 4 x 5/16 [4]
DEAD LOAD VERTICAL -③	L 3 x 2 1/2 x 1/4 [3]	L 3 x 2 1/2 x 1/4 [3]	L 3 x 2 1/2 x 1/4 [3]	L 3 x 2 1/2 x 1/4 [3]
WIND LOAD STRUT - ③	L 2 1/2 x 2 1/2 x 3/16 [1]	L 2 1/2 x 2 1/2 x 3/16 [1]	L 2 1/2 x 2 1/2 x 3/16 [1]	L 2 1/2 x 2 1/2 x 3/16 [1]
TOTAL DEFL. & TRUSS D.L.	DEFL=3.46" L=126 lb/ft	DEFL=3.93" L=140 lb/ft	DEFL=3.73" L=146 lb/ft	DEFL=4.42" L=156 lb/ft

TOWER DETAILS

S = COLUMN SPACING	7.5'	7.5'	7.5'	7.5'
TOWER HEIGHT				
25'	W 18 x 46 (115.4)	W 18 x 46 (119.1)	W 18 x 50 (122.9)	W 18 x 50 (126.9)
26'	W 18 x 46 (120.5)	W 18 x 46 (124.4)	W 18 x 50 (128.4)	W 18 x 55 (132.6)
27'	W 18 x 50 (125.5)	W 18 x 50 (129.6)	W 18 x 50 (133.9)	W 18 x 55 (138.1)
28'	W 18 x 50 (130.7)	W 18 x 50 (134.7)	W 18 x 55 (139.2)	W 18 x 55 (143.7)
29'	W 18 x 50 (135.8)	W 18 x 55 (140.1)	W 18 x 55 (144.7)	W 18 x 55 (149.4)
30'	W 18 x 55 (140.9)	W 18 x 55 (145.5)	W 18 x 55 (150.3)	W 21 x 57 (154.9)
31'	W 18 x 55 (146.1)	W 21 x 57 (150.6)	W 21 x 57 (155.6)	W 21 x 57 (160.7)
32'	W 21 x 57 (151.1)	W 21 x 57 (156.0)	W 21 x 57 (161.2)	W 21 x 62 (166.3)
33'	W 21 x 57 (156.4)	W 21 x 57 (161.5)	W 21 x 62 (166.6)	W 21 x 62 (172.1)
34'	W 21 x 57 (161.7)	W 21 x 62 (166.8)	W 21 x 62 (172.3)	W 21 x 62 (177.9)
35'	W 21 x 62 (166.8)	W 21 x 62 (172.3)	W 21 x 62 (177.9)	W 21 x 68 (183.5)
36'	W 21 x 62 (172.1)	W 21 x 62 (177.8)	W 21 x 68 (183.4)	W 21 x 68 (189.4)
37'	W 21 x 62 (177.5)	W 21 x 68 (183.1)	W 21 x 68 (189.1)	W 21 x 68 (195.2)
38'	W 21 x 68 (182.8)	W 21 x 68 (188.6)	W 21 x 68 (194.8)	W 24 x 68 (201.1)
39'	W 21 x 68 (188.2)	W 21 x 68 (194.2)	W 24 x 68 (206.3)	W 24 x 68 (207.1)
40'	W 21 x 68 (193.6)	W 24 x 68 (199.8)	W 24 x 68 (212.1)	W 24 x 68 (213.0)
42'	W 24 x 68 (204.5)	W 24 x 68 (211.1)	W 24 x 68 (217.8)	W 24 x 76 (224.6)
45'	W 24 x 76 (220.6)	W 24 x 76 (227.7)	W 24 x 76 (235.3)	W 24 x 84 (243.0)

Tower Height = (HL + HR)/2

COLUMN SIZE & UPLIFT (kips)

KEY TO TRUSS AND TOWER DETAILS

Truss members are all angles.
Truss columns are all wide flange shapes.

W 10 x 26 (44.2) ← 44.2 kips Uplift at base plate
- 26 Pounds per foot.
- 10" Nominal size
- Wide Flange

DEFL = 0.12" = inches Deflection due to dead load of truss, walkway, signs and lights.
DL = 42 lb/ft = pounds per foot dead load of truss members only; does not include walkway, signs, and lights.

NOTE: Details on these sheets are for Design Wind Heights between 30 feet and 50 feet.

GENERAL NOTES

Design conforms to AASHTO 1994 Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto.

For overhead sign bridges with different tower heights, average the height of the two towers and use the tabulated height nearest the calculated average. For average heights falling midway between the two tabulated heights use the larger height.

For truss lengths falling between those shown in the tables use the sizes called for in the next longer span.

Overhead sign bridges are designed for the equivalent area of a 10 foot deep sign panel over 75 percent of the span length, located as necessary to produce maximum stress. Design includes 3 pounds per square foot for sign panel, 20 pounds per linear foot for lights, and 50 pounds per linear foot for walkway, all placed as specified for the design sign panel.

Refer to "Overhead Sign Bridge Truss Details" for details called out in plan and elevation views.

The number of High Strength Bolts required in truss connection or splice are indicated in brackets, e.g. [3], after the member size.

SHEET 2 OF 2

Texas Department of Transportation
Traffic Operations Division

HIGH LEVEL OVERHEAD SIGN BRIDGE DETAILS

HOSB-Z21

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

REVISIONS
8/08 # of HS bolts; add missing HS bolt dia (select spans); applicability note; noted design specifications

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1566

36B

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DATE:
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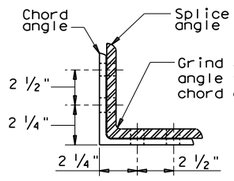
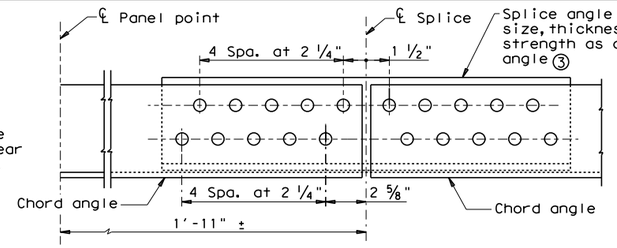
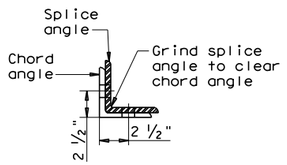


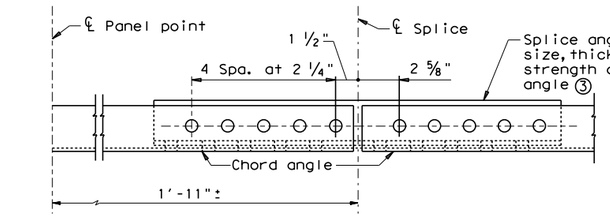
SECTION ON ℄ SPLICE
(6" L Shown)



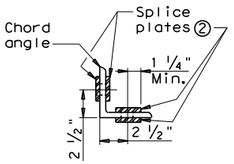
CHORD SPLICE USING ANGLES (SINGLE SHEAR)
(Place splice angle on inside of truss)
(6" L Shown)



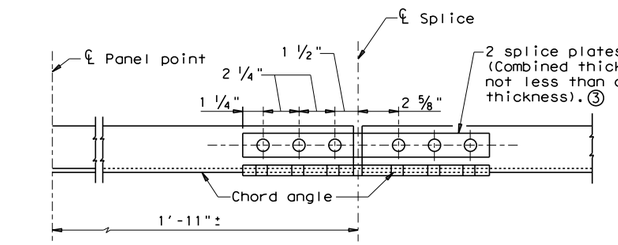
SECTION ON ℄ SPLICE
(4" L Shown)



CHORD SPLICE USING ANGLES (SINGLE SHEAR)
(Place splice angle on inside of truss)
(4" L Shown)

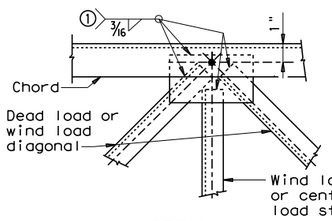


SECTION ON ℄ SPLICE
(4" L Shown)

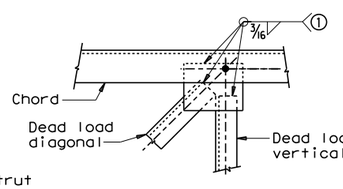


CHORD SPLICE USING PLATES (DOUBLE SHEAR) ④

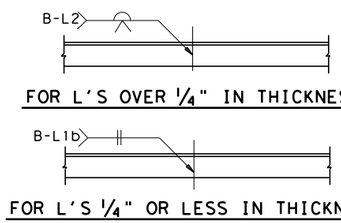
SPLICE DETAILS



DETAIL A



DETAIL C
Gussets plates in details "E" & "F" to be similar.

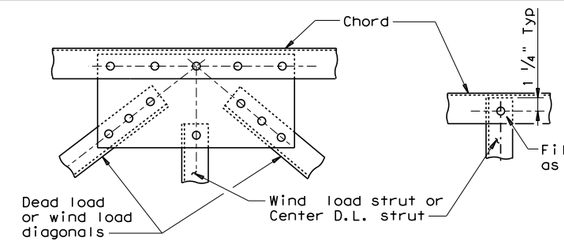


FOR L'S OVER 1/4" IN THICKNESS

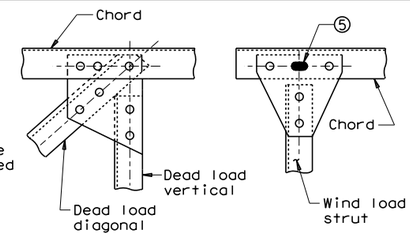
FOR L'S 1/4" OR LESS IN THICKNESS

ALTERNATE WELDED SPLICE AND CONNECTION DETAILS

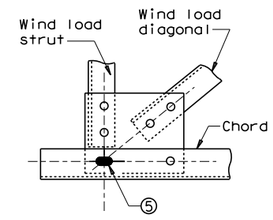
TABLE OF MINIMUM WELD LENGTHS		
Number of bolts	3/16" Fillet Weld Replaces:	
	5/8" Dia. Bolt	3/4" Dia. Bolt
1	2"	3"
2	4"	6"
3	6"	9"
4	8"	11 1/2"
5	10"	14 1/2"
6	12"	17 1/2"
7	14"	20"



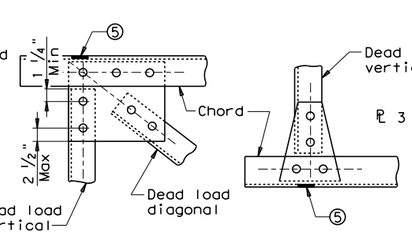
DETAIL A DETAIL B



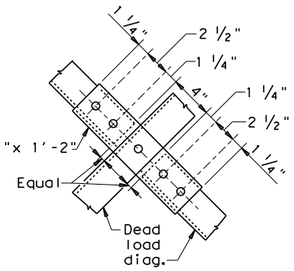
DETAIL C DETAIL D



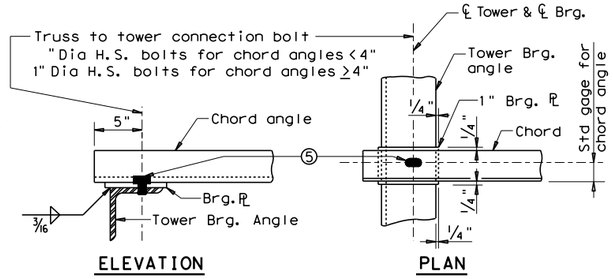
DETAIL E



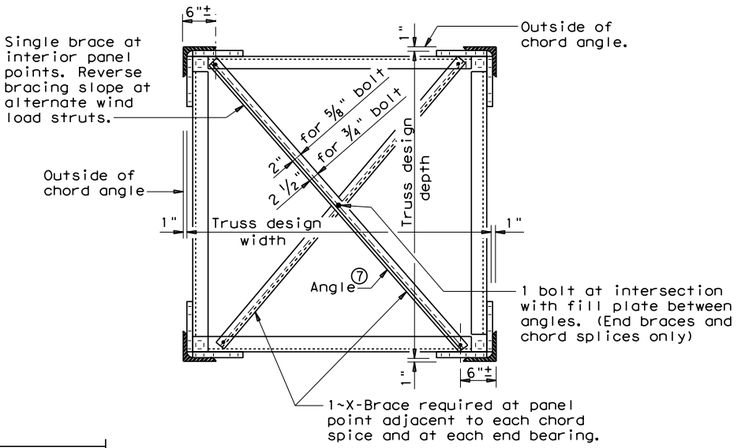
DETAIL F DETAIL G



DETAIL H



BEARING PLATE DETAILS ⑥



TRUSS SECTION

(Diagonals not shown)

Total No. of Bolts in Diagonals at Joints	No. of Bolts required in Gusset ℄ at Chord Connection
0	2
2	2
3	3
4	3
5	4
6	4
8	5
10	6
12	6

① See "TABLE OF MINIMUM WELD LENGTHS" for the length of welds.

② Area of splice plates shall be equal to or greater than area of chord angle.

③ When chord angles of different thickness are spliced, use shim plate and number of bolts required for thinner angle. For splice angle use thickness of the thinner angle.

④ When splice plates are used on both sides of chord angle (double shear) only half the number of bolts shown in the table on standard drawing "OVERHEAD SIGN BRIDGE DETAILS" are required.

⑤ Slotted hole in Gusset ℄ and chord angle 1"x 1 1/2" slot for 3/4" dia. bolts, 1 1/4"x 2" slot for 1" dia. bolts. Use ℄ washer on Gusset ℄ side.

⑥ Bearing plate may be omitted if welded connections are used on wind truss.

⑦ 2"x 1 1/2"x 3/16" angle for 5/8" Dia bolts [1]
2 1/2"x 2"x 3/16" angle for 3/4" Dia bolts [1]

GENERAL NOTES:

All bolts shall be in accordance with Item 447, "Structural Bolting".

The truss shall have an upward camber not less than the dead load deflections shown in the table on standard drawings "Overhead Sign Bridge Details" when blocked at the ends under dead load of the truss only.

Chord angles may be spliced in convenient lengths for galvanizing. Connection and splice details are typical only. Actual size of member and number of bolts will vary. The details shown on this sheet are intended as a guide only. See standard drawings "Overhead Sign Bridge Details" for number of bolts and size of members. Number of bolts shown for chord splice is based on single shear.

Gusset plates to be same thickness as thickest web member in connection.

Texas Department of Transportation
Traffic Operations Division

OVERHEAD SIGN BRIDGE TRUSS DETAILS

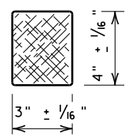
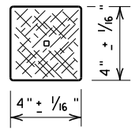
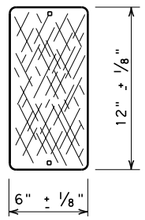
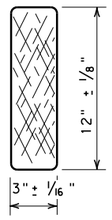
OSBC

REVISIONS

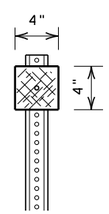
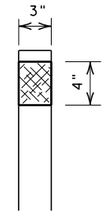
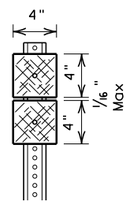
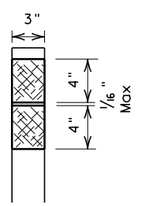
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1567

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX(XX)

NUMBER OF REFLECTORS
S = Single
D = Double

COLOR OF REFLECTORS
W = White
Y = Yellow
R = Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC = Wing Channel Post
YFLX = Yellow Flexible Post
WFLX = White Flexible Post
BRF = Barrier Reflector

TYPE OF MOUNT
GND = Embedded (drivable or set in concrete)
CTB = Concrete Barrier Mount
GF1 or GF2 = Guard Fence Attachment
SRF = Surface Mount

DIRECTION
If Required
BI = Bi-Directional
BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

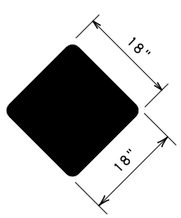
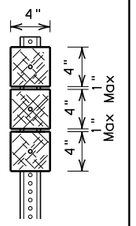
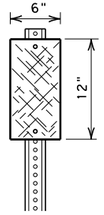
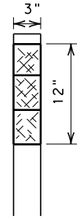
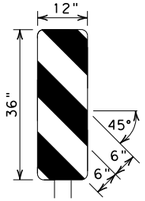
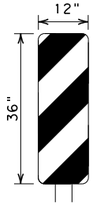
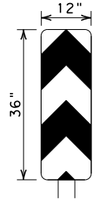
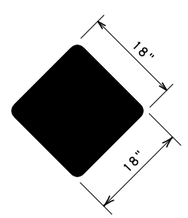
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s)(Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
WFLX = White Flexible Post
TWT = Thin Walled Tubing

TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

DIRECTION
If Required
BI = Bi-Directional

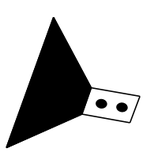
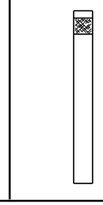
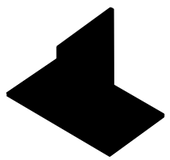
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

DEPARTMENTAL MATERIAL SPECIFICATIONS

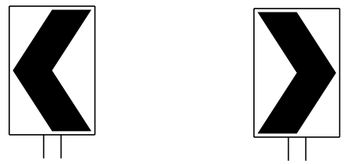
FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

BARRIER REFLECTORS (BRF)

	GF1	GF2	CTB
DEVICE			
	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.		
SHEETING	Yellow, White, Red		
NOTE	1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.		

CHEVRONS

DEVICE



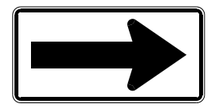
W1-8

SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	

NOTE
1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies).
2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).

ONE DIRECTION LARGE ARROW

DEVICE



W1-6

SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

NOTE:

Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	WACO	McLENNAN		1568

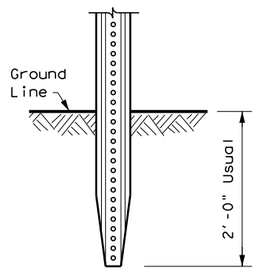
20A

DATE: 10/18/2023 11:31:43 PM
FILE: c:\oadlib\pw\kdwatson\centraldiv\d0204663\dom1-20.dgn

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

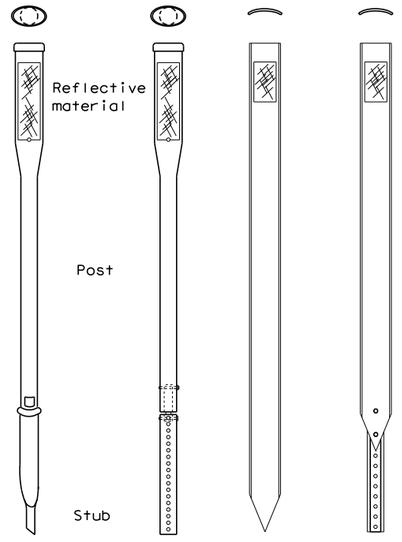


NOTES

1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

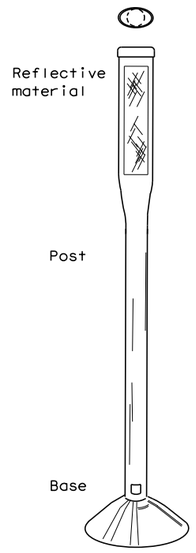
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



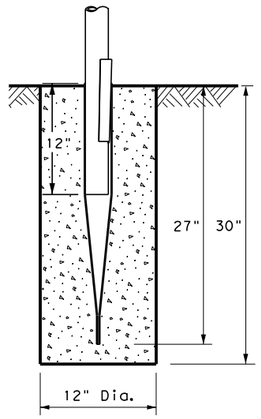
SURFACE MOUNT

NOTES

1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.

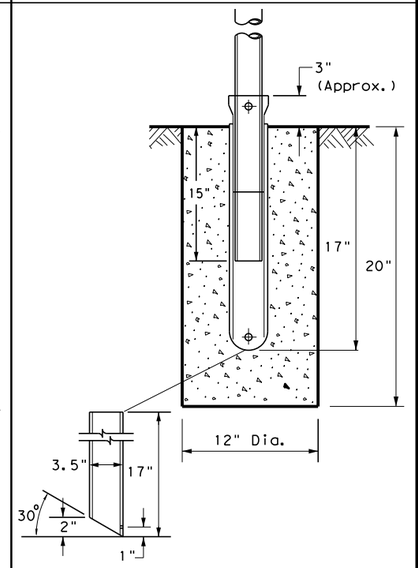
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

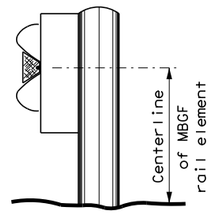
NOTE

1. Install per manufacturer's recommendations.

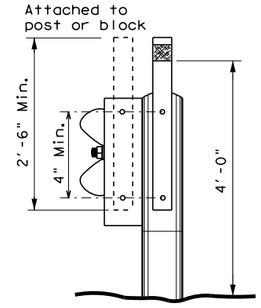
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

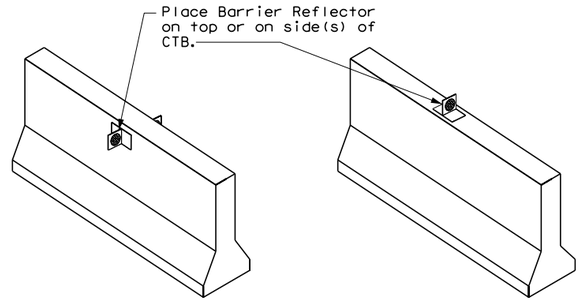
GF1



GF2



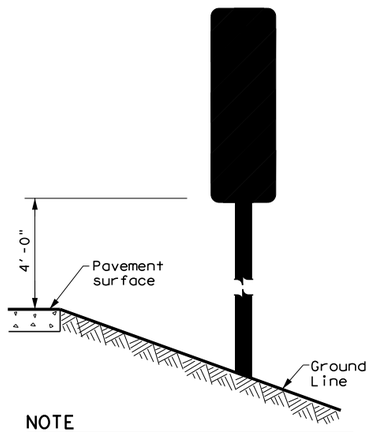
CONCRETE TRAFFIC BARRIER (CTB)



GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

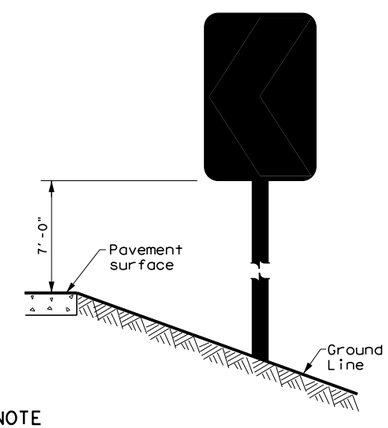
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

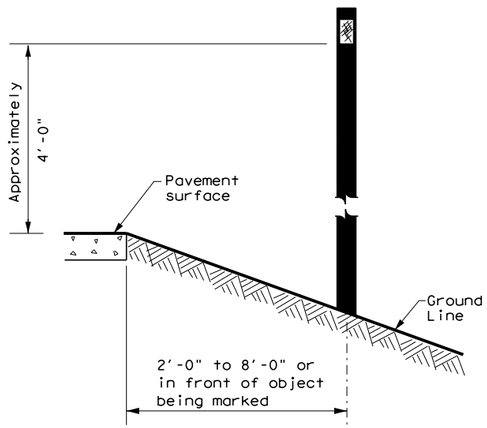
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

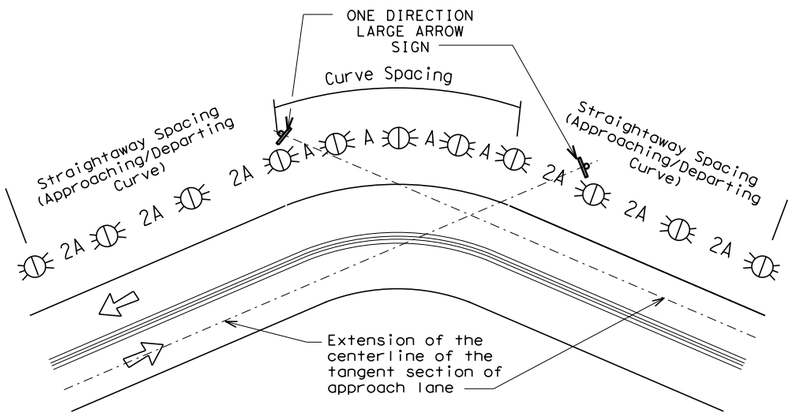
FILE: dom2-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	WACO	McLENNAN		1569

20B

MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

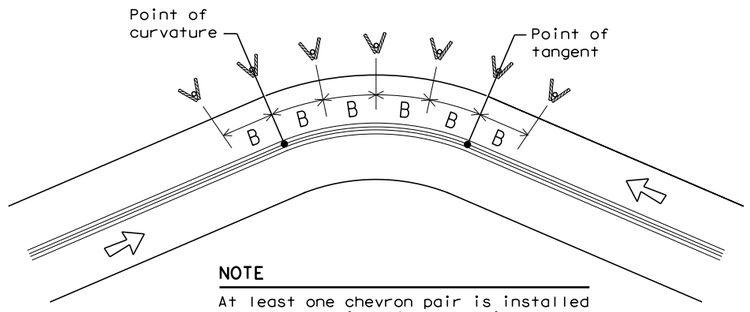
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	——
2	2865	160	320	——
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp.Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete)and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(3)-20

FILE: dom3-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
3-15 8-15	DIST	COUNTY		SHEET NO.
8-15 7-20	WACO	McLENNAN		1570

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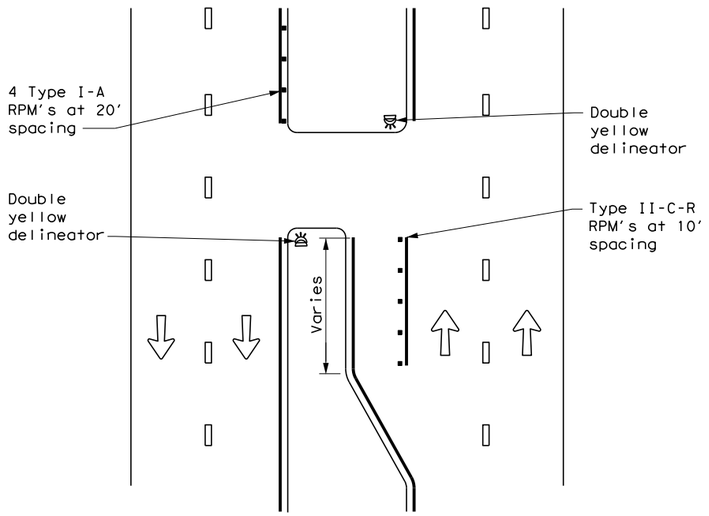
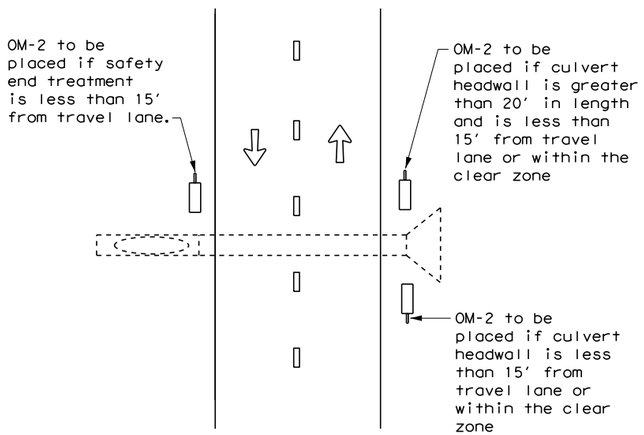
CROSSOVERS



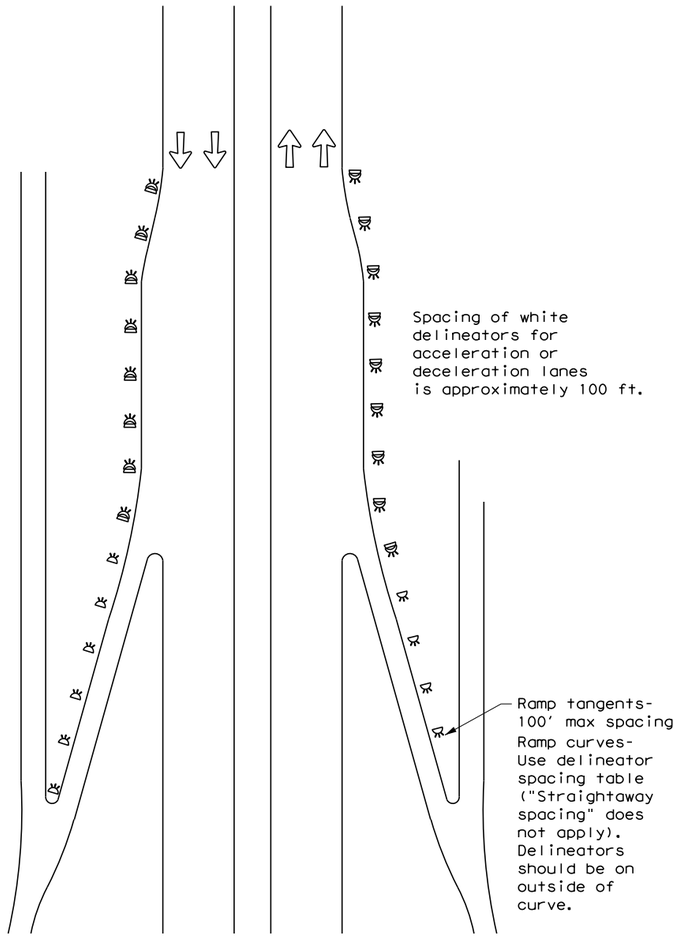
DETAIL 1

FOR CULVERTS WITHOUT MBGF



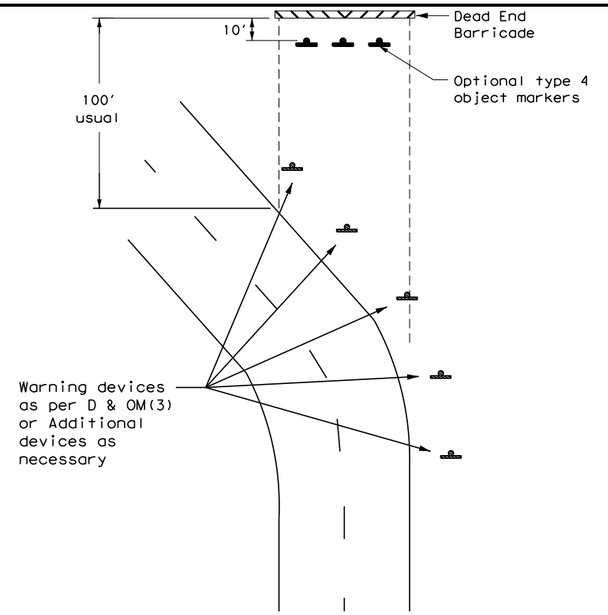
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



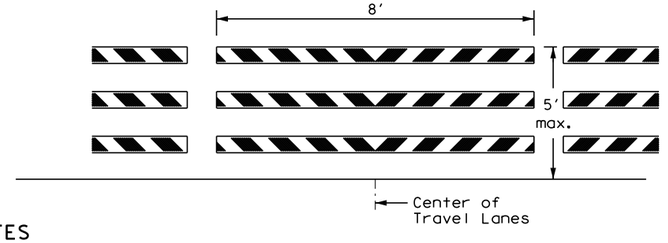
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND	
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-20

FILE: dom4-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
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3-15	DIST	COUNTY		SHEET NO.
7-20	WACO	McLENNAN		1571

20D

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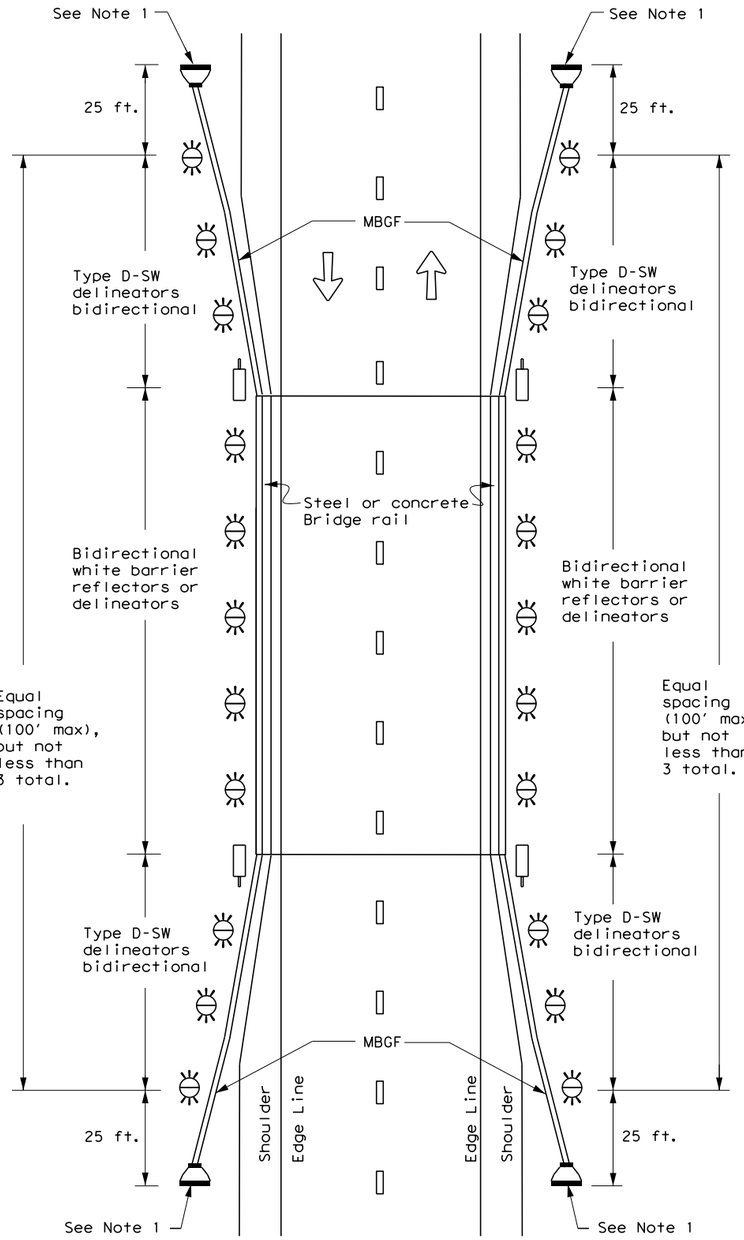
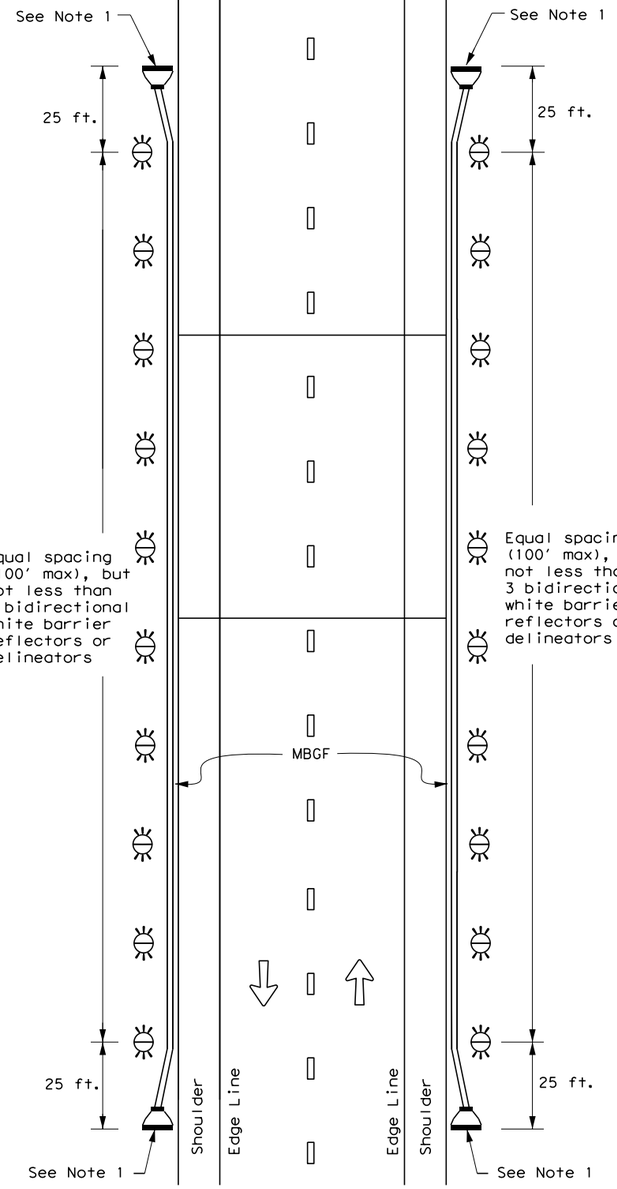
TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

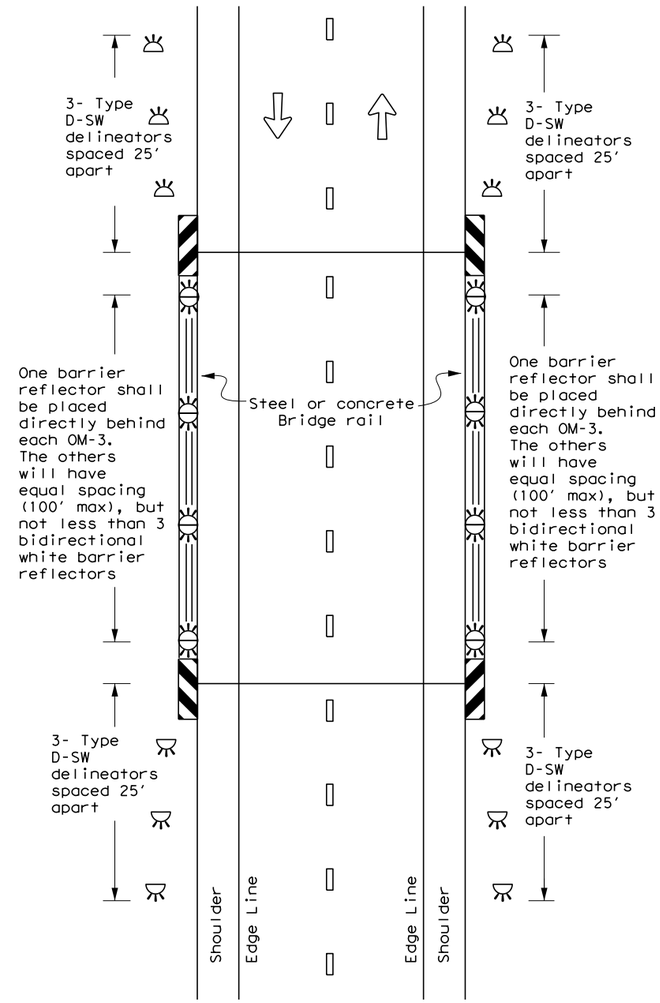
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(5)-20

FILE: dom5-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0015	01	246	IH 35
7-20	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1572

20E

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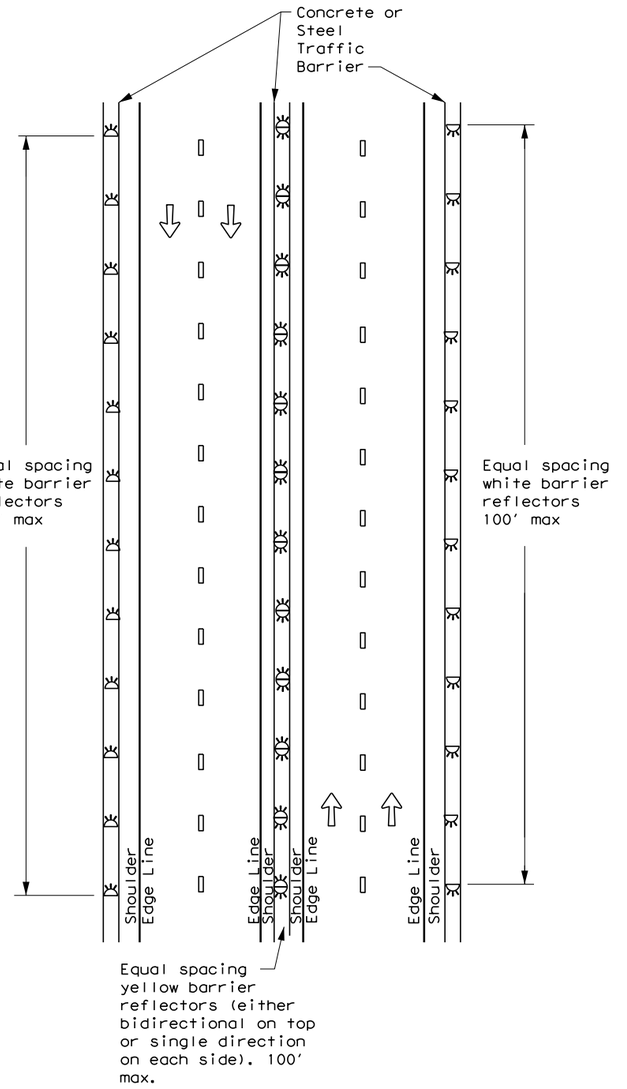
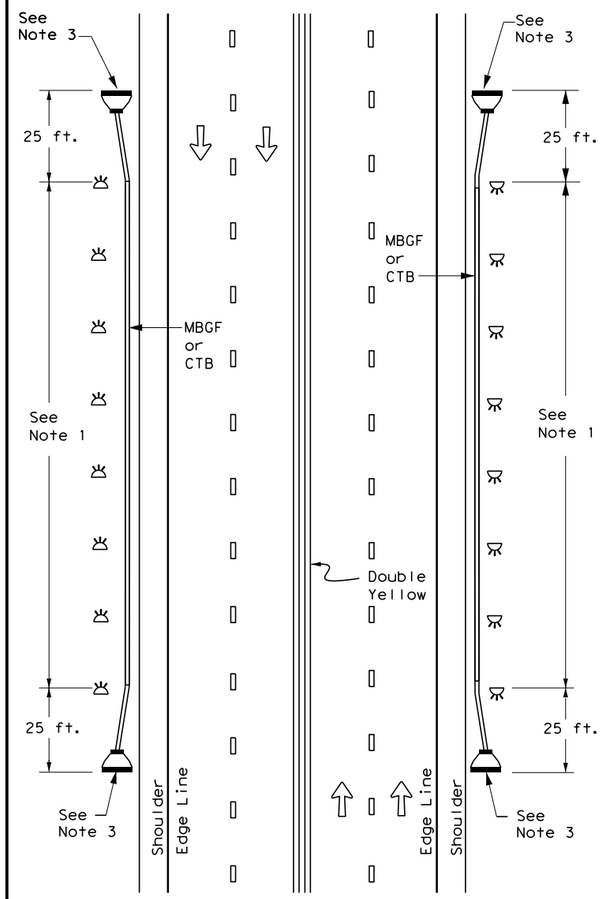
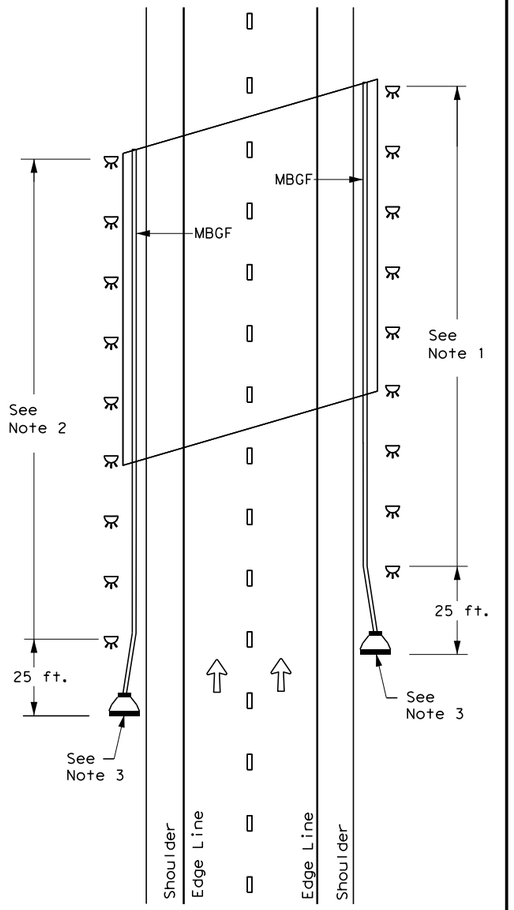
CONTINUOUS CONCRETE OR STEEL BARRIER



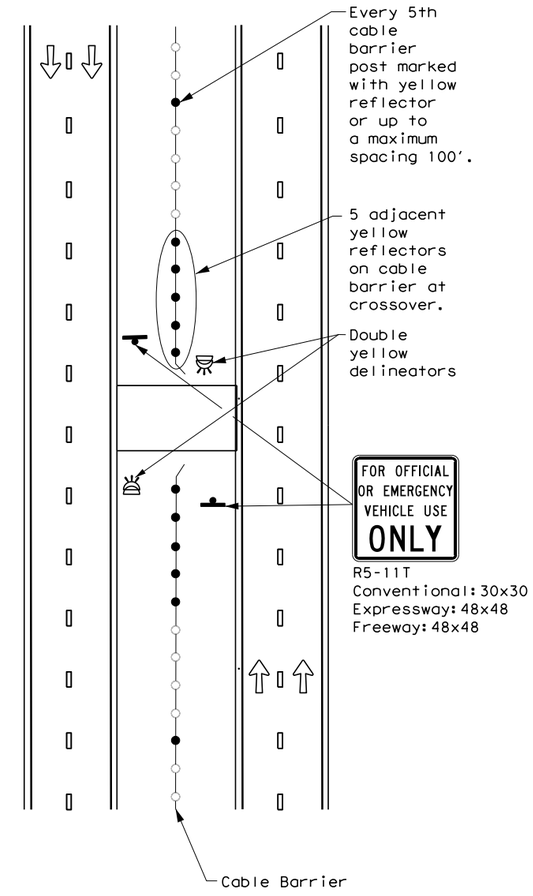
MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



DIVIDED ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



EMERGENCY CROSSOVER



NOTES

1. Equal spacing (100′ max), but not less than 3 single directional white barrier reflectors or delineators. On Continuos Barrier, equal spacing (100′ max.)
2. Equal spacing (100′ max), but not less than 3 single directional yellow barrier reflectors or delineators.
3. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3)in front of the terminal end.

LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(6)-20

FILE: dom6-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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7-20	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1573

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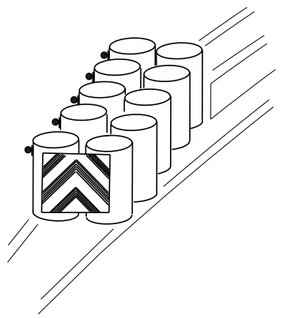
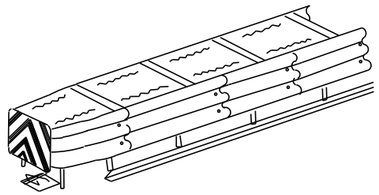
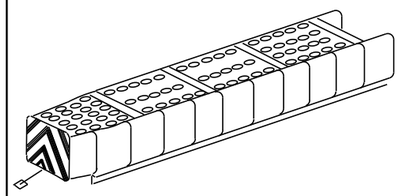
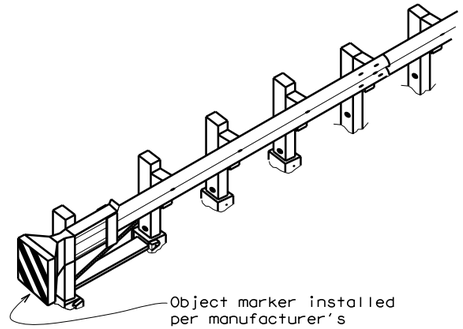
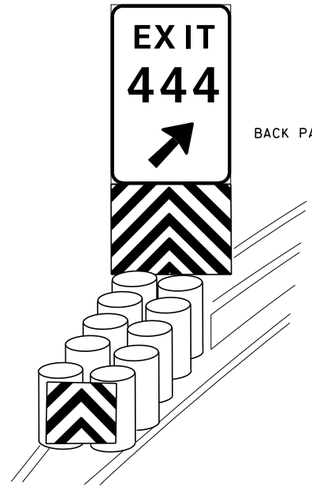
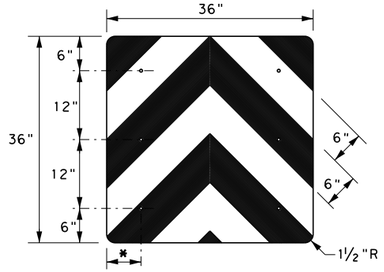


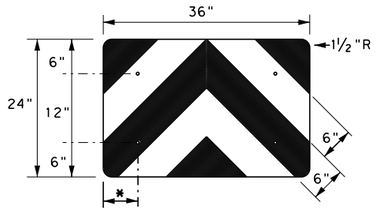




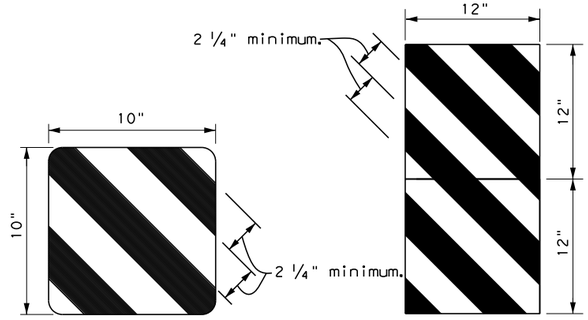




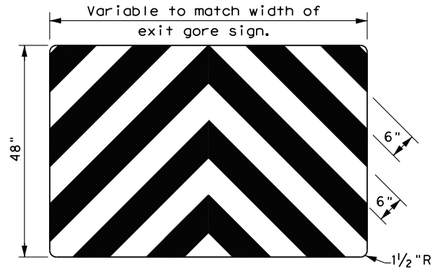


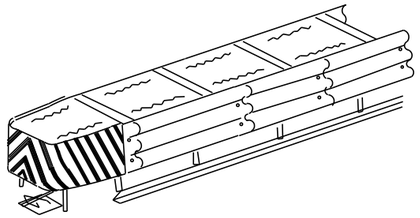


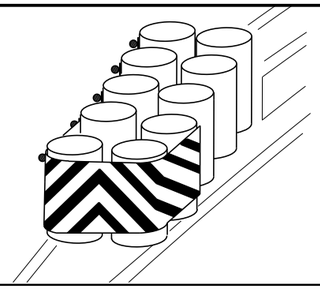
* Adjust to fit attenuator per manufacturer's recommendation, or as directed by the Engineer

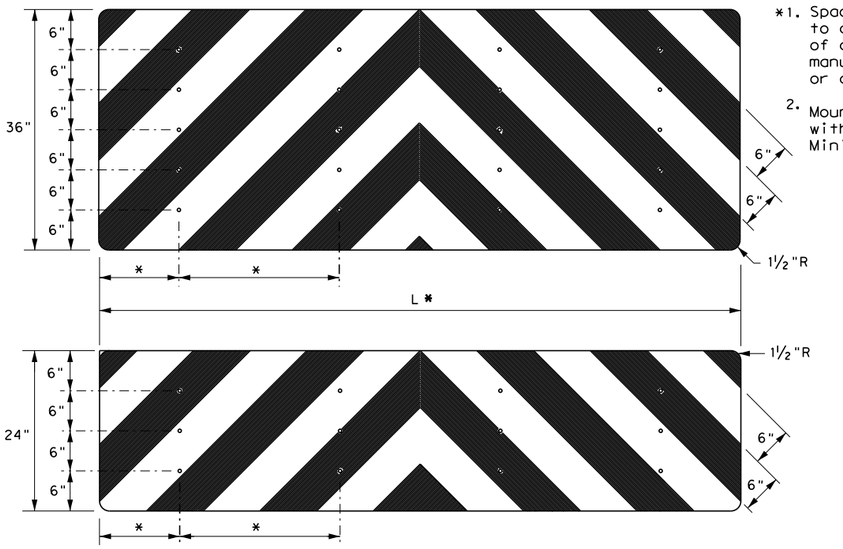


OBJECT MARKERS SMALLER THAN 3 FT^2









NOTES

*1. Spacing should be adjusted to attach through centerline of drum, per attenuator manufacturers recommendation, or as directed by the Engineer.

2. Mounting should be flush with top of attenuator. Minimum size 96" x 24".

NOTES

1. Object Markers shall conform to the Texas MUTCD and meet the color and reflectivity requirement of Department Material Specification DMS 8300. Background shall be yellow reflective sheeting (Type B or C) and Chevron shall be black.

2. Object Markers may be fabricated from adhesive backed reflective sheeting applied directly to guardrail end treatment, or applied directly to an "end cap" as per the manufacturer's recommendation. Direct applied sheeting shall provide a smooth surface and have no wrinkles, air bubbles, cuts or tears. A radius at the corners is not required for direct applied sheeting.

3. Object Marker size may be reduced to fit smaller devices. Width of alternating black and yellow stripes are typically 6". Object Markers smaller than 3ft may have reduced width stripes of a minimum of 2 ¼".

4. Pop rivets, screws, or nuts and bolts may be used to attach object markers and reflectors. Holes, slots or other openings may be cut or drilled through object markers to allow cable or other attachments.

5. Object Marker at nose of attenuator is subsidiary to the attenuator.

6. See D & OM (1-4) for required barrier reflectors.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER FOR VEHICLE IMPACT ATTENUATORS

D & OM(VIA)-20

FILE: domvia20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT December 1989	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
4-92 8-04	DIST	COUNTY		SHEET NO.
8-95 3-15	WACO	McLENNAN		1574
4-98 7-20				

20G

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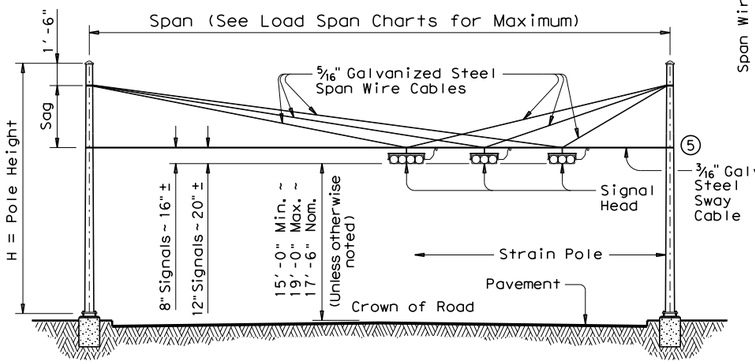
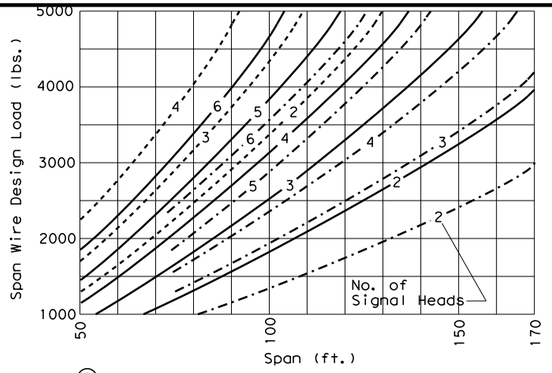
STRAIN POLE DESCRIPTION	Pole Type	Found-ation Type	Maximum Permissible Span Wire Load (lbs.)
26′ Pole	A	36-A	5200
30′ Pole	B	36-A	4600
30′ Pole with Lum.	B	36-A	4400
30′ Pole with 20′ Mast Arm	C	36-B	5600
30′ Pole with 24′ Mast Arm	C	36-B	5500
30′ Pole with 28′ Mast Arm	C	36-B	5300
30′ Pole with 32′ Mast Arm	C	36-B	5100
30′ Pole with 36′ Mast Arm	C	36-B	4900
30′ Pole with 20′ Mast Arm & Lum.	C	36-B	5300
30′ Pole with 24′ Mast Arm & Lum.	C	36-B	5200
30′ Pole with 28′ Mast Arm & Lum.	C	36-B	5000
30′ Pole with 32′ Mast Arm & Lum.	C	36-B	4800
30′ Pole with 36′ Mast Arm & Lum.	C	36-B	4500
34′ Pole	D	36-B	5600
34′ Pole with Lum.	D	36-B	5400

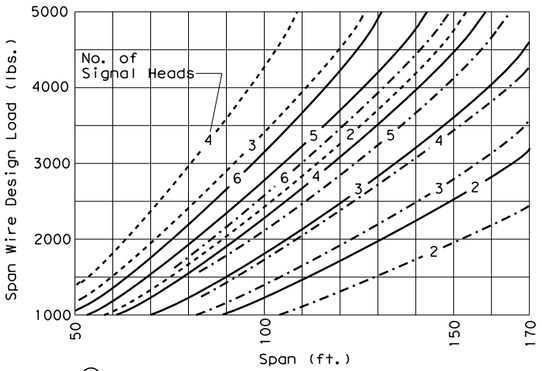
② Numbers on Load Span Charts indicate the number of signal heads on the span. The total span wire design load is based on one 5-section head and one or more additional 3-section head(s). Design wind pressures on cables are assumed as 1.0 lb/ft. Weight of span wire cables (one per signal head) is assumed as 0.65 lb/ft which includes an allowance for conductor cables and miscellaneous hardware. The effect of the sway cable on load distribution is ignored as it is assumed to break at design wind conditions. When a pole supports 2 spans, the span wire design loads for both spans should be added vectorially to determine the design load for that pole.



STRAIN POLE ELEVATIONS HORIZONTAL SIGNALS



② SIGNALS WITH 12-INCH LENS

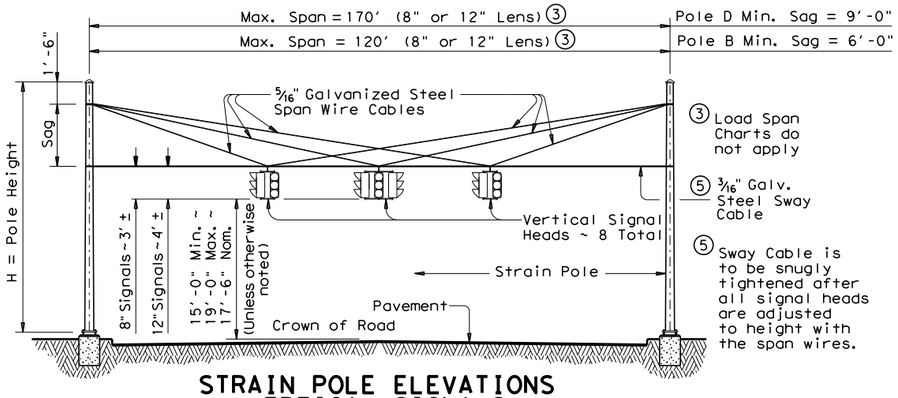


② SIGNALS WITH 8-INCH LENS

Signal Head Type	Wt. Per Head	Wind Area ⬙
5-Section, 12" Lens	125 lbs	9.6 sq. ft.
5-Section, 8" Lens	70 lbs	4.8 sq. ft.
3-Section, 12" Lens	75 lbs	5.64 sq. ft.
3-Section, 8" Lens	45 lbs	3.0 sq. ft.

⬙ Effective projected design wind area (actual area times drag coefficient)

---------- Sag = 4′-6" (26′ or 30′ Pole)
———— Sag = 8′-0" (30′ or 34′ Pole)
-·-·-·-·-·- Sag = 11′-6" (34′ Pole)



STRAIN POLE ELEVATIONS VERTICAL SIGNALS

(Mast arms are not used with vertical signals)

SHIPPING PARTS LIST

Poles (Without Traffic Signal Arm)

Pole Type	Strain poles with Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap, 2 clamp-on simplex and 1 pipe plug.			Strain poles without Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap and 1 pipe plug.		
	Description	Designation	Quantity	Description	Designation	Quantity
A				26′ Strain Pole	SP 26 A-80	
B	30′ Strain Pole	SPL 30 B-80	2	30′ Strain Pole	SP 30 B-80	
D	34′ Strain Pole	SPL 34 D-80		34′ Strain Pole	SP 34 D-80	

Poles (With Traffic Signal Arm)

Pole Type	Strain poles with Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap, clamp-on simplex and 3 pipe plugs.			Strain poles without Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap and 3 pipe plugs.		
	Description	Designation	Quantity	Description	Designation	Quantity
C	30′ SPw/TS Arm	SPL 30 C-80		30′ SPw/TS Arm	SP 30 C-80	

Traffic Signal Arms (For Type C poles)

Nominal Arm Length	Type I Arm (1 Signal): Ship each Type I Arm with the following hardware attached: 2 CGB Connectors, 1 clamp with bolts and washers		Type II Arm (2 Signals): Ship each Type II Arm with the following hardware attached: 1 Bracket Assembly ①, 3 CGB Connectors and 1 clamp with bolts and washers		Type III Arm (3 Signals): Ship each Type III Arm with the following hardware attached: 2 Bracket Assemblies ①, 4 CGB Connectors and 1 clamp with bolts and washers	
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-80					
24	24I-80		24 II -80			
28	28I-80		28 II -80			
32			32 II -80		32 III -80	
36			36 II -80		36 III -80	

Anchor Bolt Assemblies (1 per pole)

Templates may be removed for shipment.

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
1 3/4"	3′-10"	2
2"	4′-3"	

Each Anchor Bolt Assembly consists of the following: Top and Bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers, and 4 nut anchor devices (Type 2) per Standard Drawing "TS-FD".

Luminaire Arms

Nominal Arm Length	Quantity
8′ Arm	2

① See Sheet "DMA-80"

Pole Type	ROUND POLES D_B in.	D_T in.	④thk in.	H ft.	POLYGONAL POLES D_B in.	D_T in.	④thk in.	H ft.
A	12.5	8.9	.239	26	13.0	9.0	.239	26
B	13.5	9.3	.239	30	14.0	9.0	.239	30
C	15.5	11.3	.239	30	16.0	11.0	.239	30
D	15.5	10.7	.239	34	16.0	11.0	.239	34

④ Thickness shown are minimum, thicker materials may be used.

D_B = Pole Base O.D. D_T = Pole Top O.D. H = Pole Height

SHEET 1 OF 2

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES STRAIN POLE ASSEMBLIES

(80 MPH WIND ZONE)

SP-80(1)-12

DN: MS	CK: JSY	DW: BR	CK: JSY

REVISIONS: 6-96, 1-12

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1575

120A

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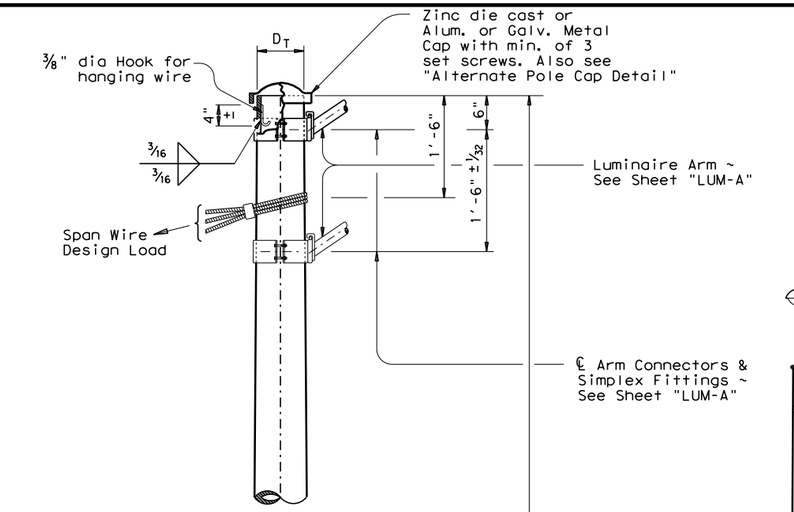
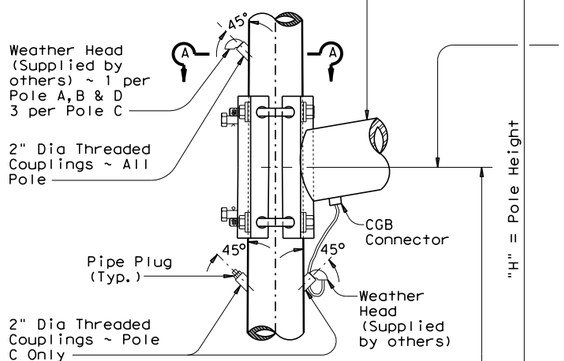


DETAIL A



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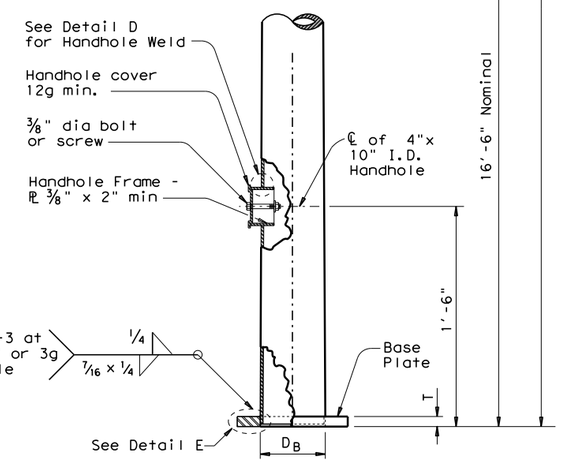
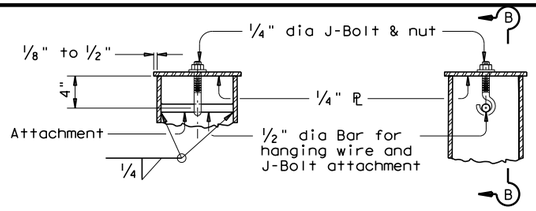


DETAIL C

POLE ELEVATION



SECTION B-B

ALTERNATE POLE CAP DETAIL

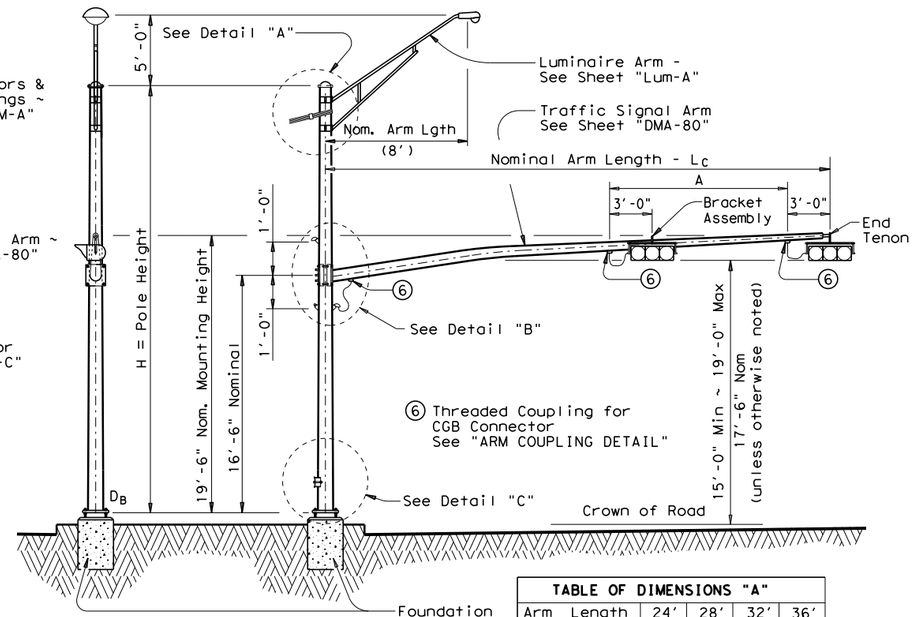
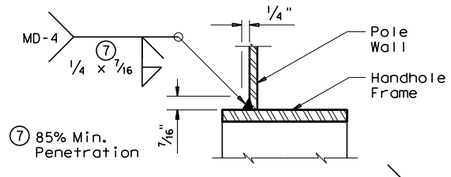
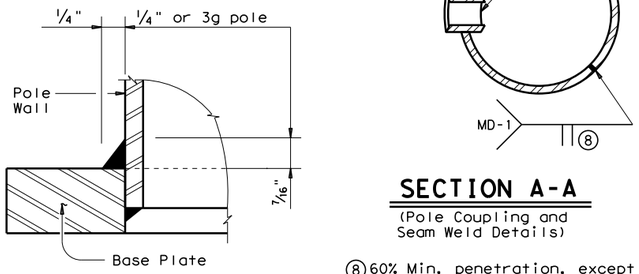


TABLE OF DIMENSIONS "A"				
Arm Length	24'	28'	32'	36'
Arm Type II	10'	11'	12'	13'
Arm Type III			10'	11'

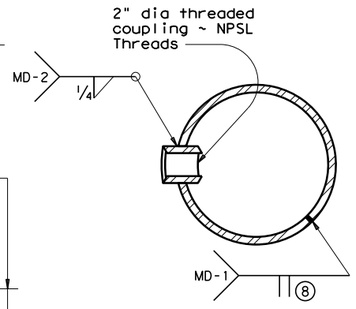
STRUCTURE ASSEMBLY



DETAIL D



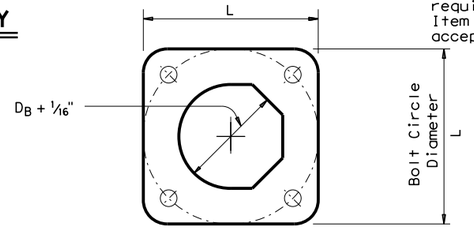
DETAIL E



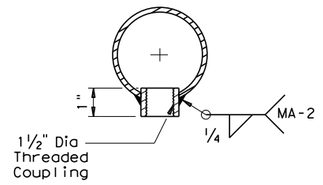
SECTION A-A

(Pole Coupling and Seam Weld Details)

8 60% Min. penetration, except 100% penetration within 6" of circumferential base welds.



BASE PLATE PLAN



ARM COUPLING DETAIL

MATERIALS	
Round Shafts or Polygonal Shafts (9)	ASTM A595 Gr.A, A588, A1008 HSLAS Gr.50 Class 2, A1011 HSLAS Gr.50 Class 2, A572 Gr.50 or A1011 SS Gr.50 (10)
Plates (9)	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325 except where noted
Pin Bolts	ASTM A325
Pipe (9)	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50, A1011 HSLAS-F Gr.50
Steel Cable	ASTM A475, 7 Wire Utilities Grade
Misc. Hardware	Galvanized steel or stainless steel or as noted

(9) ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F, or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.

(10) ASTM A1011 SS Gr.50 shall also have a minimum elongation of 18 percent in 8 inches or 23 percent in 2 inches. Material thickness in excess of those stipulated under A1011 SS will be acceptable providing the material meets all other A1011 SS requirements and the requirements of this item.

GENERAL NOTES

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor. The maximum permissible span wire design loads tabulated are calculated at a stress load of 1.4 times the basic allowable stress. A simultaneous wind on the pole, mast arm, and luminaire is also included.

See standard sheet "DMA-80" for details of clamp-on traffic signal arms, sheet "MA-C" for traffic signal arm connection details, sheet "LUM-A" for luminaire arm and connection details, and sheet "TS-FD" for anchor bolt and foundation details.

Fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing", after fabrication.

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

Foundation Type	Anchor Bolt Diameter	Bolt Hole Diameter	Bolt Circle Diameter	Base ℄ Dim. L x T
36-A	1 3/4"	2"	19"	19" x 1 3/4"
36-B	2"	2 1/4"	21"	21" x 2"

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES STRAIN POLE ASSEMBLIES

(80 MPH WIND ZONE)

SP-80(2)-12

DN: MS	CK: JSY	DW: BR	CK: JSY

REVISIONS
6-96
1-12

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1576

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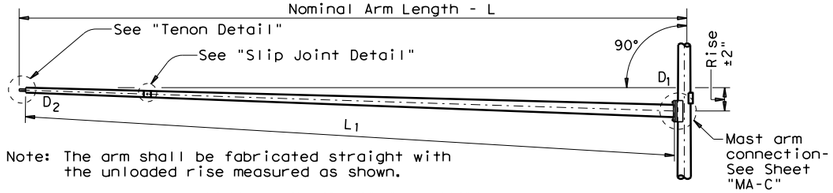
Arm Length	ROUND POLES					POLYGONAL POLES					Foundation Type
	D_B	D_{19}	D_{24}	D_{30}	① thk	D_B	D_{19}	D_{24}	D_{30}	① thk	
ft.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
20	10.5	7.8	7.1	6.3	.179	11.5	8.5	7.7	6.8	.179	30-A
24	11.0	8.3	7.6	6.8	.179	12.0	9.0	8.2	7.3	.179	30-A
28	11.5	8.8	8.1	7.3	.179	12.5	9.5	8.7	7.8	.179	30-A
32	12.5	9.8	9.1	8.3	.179	12.0	9.0	8.2	7.3	.239	30-A
36	12.0	9.3	8.6	7.8	.239	12.5	9.5	8.7	7.8	.239	36-A
40	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
44	12.5	9.8	9.1	8.3	.239	14.0	11.0	10.2	9.3	.239	36-A
48	13.0	10.3	9.6	8.8	.239	15.0	12.0	11.2	10.3	.239	36-A

Arm Length	ROUND ARMS					POLYGONAL ARMS				
	L_1	D_1	D_2	① thk	Rise	L_1	D_1	② D_2	① thk	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	6.5	3.8	.179	1'-9"	19.1	7.0	3.5	.179	1'-8"
24	23.1	7.5	4.3	.179	1'-10"	23.1	7.5	3.5	.179	1'-9"
28	27.1	8.0	4.2	.179	1'-11"	27.1	8.0	3.5	.179	1'-10"
32	31.0	9.0	4.7	.179	2'-1"	31.0	9.0	3.5	.179	2'-0"
36	35.0	9.5	4.6	.179	2'-4"	35.0	10.0	3.5	.179	2'-1"
40	39.0	9.5	4.1	.239	2'-8"	39.0	9.5	3.5	.239	2'-3"
44	43.0	10.0	4.1	.239	2'-11"	43.0	10.0	3.5	.239	2'-6"
48	47.0	10.5	4.1	.239	3'-4"	47.0	11.0	3.5	.239	2'-9"

D_B = Pole Base O.D.
D_{19} = Pole Top O.D. with no Luminaire and no ILSN
D_{24} = Pole Top O.D. with ILSN w/out Luminaire
D_{30} = Pole Top O.D. with Luminaire
D_1 = Arm Base O.D.
D_2 = Arm End O.D.
L_1 = Shaft Length
L = Nominal Arm Length

① Thickness shown are minimums, thicker materials may be used.

② D_2 may be increased by up to 1" for polygonal arms.



Note: The arm shall be fabricated straight with the unloaded rise measured as shown.

TRAFFIC SIGNAL ARM

(Fixed Mount)

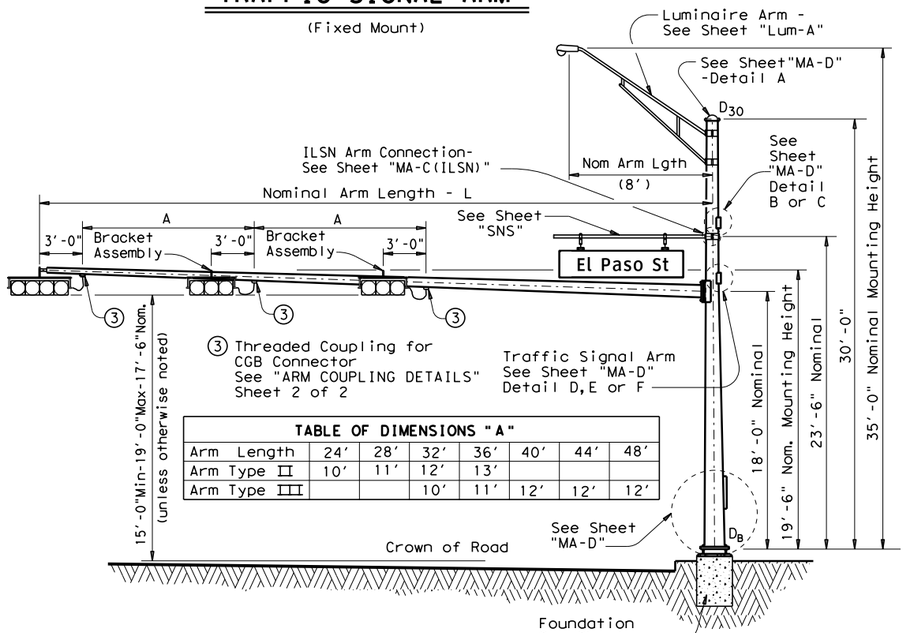


TABLE OF DIMENSIONS "A"

Arm Length	24'	28'	32'	36'	40'	44'	48'
Arm Type II	10'	11'	12'	13'			
Arm Type III			10'	11'	12'	12'	12'

STRUCTURE ASSEMBLY

SHIPPING PARTS LIST

Ship each pole with the following attached: enlarged hand hole, pole cap, fixed-arm connection bolts and washers and any additional hardware listed in the table.

Nominal Arm Length	30' Poles With Luminaire		24' Poles With ILSN		19' Poles With No Luminaire and No ILSN	
	Above hardware plus: One (or two if ILSN attached) small hand hole, clamp-on simplex		Above hardware plus one small hand hole		See note above	
ft	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20L-80		20S-80		20-80	
24	24L-80		24S-80		24-80	
28	28L-80	1	28S-80		28-80	
32	32L-80		32S-80		32-80	
36	36L-80	2	36S-80		36-80	
40	40L-80	3	40S-80		40-80	
44	44L-80	3	44S-80		44-80	
48	48L-80	6	48S-80		48-80	

Traffic Signal Arms (1 per Pole) Ship each arm with the listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal)		Type II Arm (2 Signals)		Type III Arm (3 Signals)	
	1 CGB connector		1 Bracket Assembly and 2 CGB Connectors		2 Bracket Assemblies and 3 CGB Connectors	
ft	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-80					
24	24I-80		24II-80			
28	28I-80		28II-80	1		
32			32II-80		32III-80	
36			36II-80	2	36III-80	
40					40III-80	3
44					44III-80	3
48					48III-80	6

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	15

ILSN Arm (Max. 2 per pole) Ship with clamps, bolts and washers

Nominal Arm Length	Quantity
7' Arm	
9' Arm	

Anchor Bolt Assemblies (1 per pole)

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
1 ½"	3'-4"	1
1 ¾"	3'-10"	14

Each anchor bolt assembly consists of the following: Top and Bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers, and 4 nut anchor devices (Type 2) per Standard Drawing "TS-FD".

Templates may be removed for shipment.

SHEET 1 OF 2

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

SINGLE MAST ARM ASSEMBLY

(80 MPH WIND ZONE)

SMA-80(1)-12

DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
11-99
1-12

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1577

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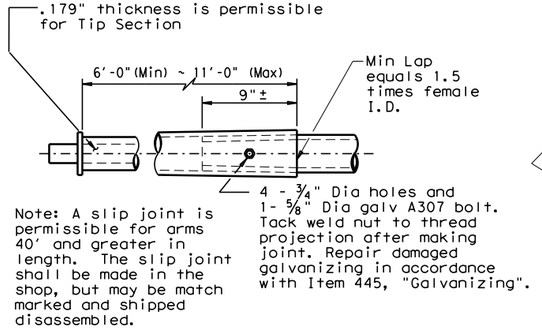
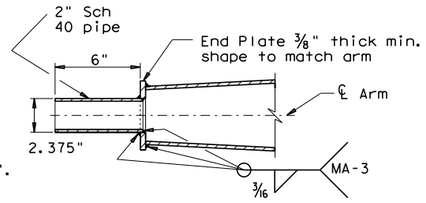


SLIP JOINT DETAIL



TENON DETAIL

VIBRATION WARNING

Mast Arms of SMA and DMA structures and clamp-on Arms of LMA structures of approximately 40 ft or longer are subject to harmonic vertical vibrations in light wind conditions due to the aeroelastic characteristics of a few of the myriads of possible combinations of the following: signal numbers, weights and positions; existence/solidity of backplates; presence of additional attachments to the arm, such as signs and cameras; arm-wind orientation; and arm-pole stiffness.

Such vibrations may cause fatigue damage to the structure and may lead to galloping in moderate wind conditions which may further damage the structure and alarm the public. Tests have indicated that when wind is blowing toward the back side of signal heads having un-vented backplates attached the probability of unacceptable harmonic vibration and/or galloping is rather high.

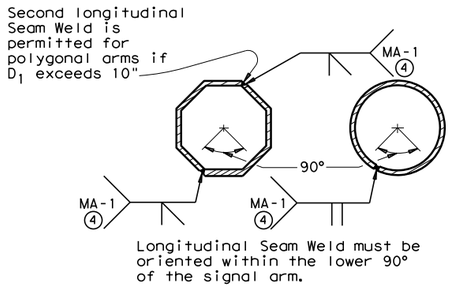
If backplates are not required for improved visibility they should not be applied to the signal heads or, if they must be applied, they should be vented as a first and inexpensive measure to mitigate vibrations.

The traffic signal mast arms shall be visually inspected in 5 to 20 mph wind conditions after installation of signal heads and any attachments, including any required backpates. If vertical movements with a total excursion (maximum upward excursion to maximum downward excursion) of more than approximately 8" are observed at the arm tip, a damping plate shall be fitted to the arm. See "Damping Plate Mounting Details" on standard sheet, MA-DPD-10.

This visual inspection shall be repeated after each modification of the structure that could affect its aeroelastic response. Excessive vibrations shall not be allowed to continue for more than two days.

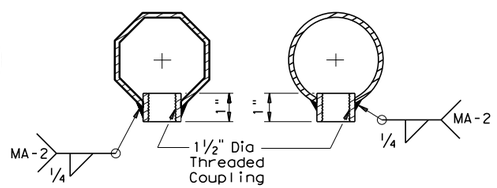
Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1 ½" Dia Threaded Coupling.

BRACKET ASSEMBLY



ARM WELD DETAIL

④ 60% Min. penetration 100% pemetration within 6" of circumferential base welds.



ARM COUPLING DETAILS

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor.

Poles are designed to support one 8'-0" luminaire arm, one 9'-0" internally lighted street name sign and one traffic signal arm with a length as tabulated. The specified luminaire load applied at the end of the luminaire arm equals 60 lbs vertical dead load plus the horizontal wind load on an effective projected area of 1.6 sq ft. The specified internally lighted street name sign load applied 4.5 ft from the centerline of the pole equals 85 lbs vertical dead load plus horizontal wind load on an effective projected area of 11.5 sq ft. The specified signal load applied at the end of the traffic signal arm equals 180 lbs vertical dead load plus the horizontal wind load on an effective projected area of 32.4 sq ft (actual area times drag coefficient).

See Standard Sheet "MA-D" for pole details, "MA-C" for traffic signal arm connection details, "MA-C (ILSN)" for internally lighted street name sign arm connection details, "LUM-A" for luminaire arm and connection details, "SNS" for internally lighted street name sign details, and "TS-FD" for anchor bolt and foundation details. See "MA-C" for material specifications.

Fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing", after fabrication.

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

SINGLE MAST ARM ASSEMBLY

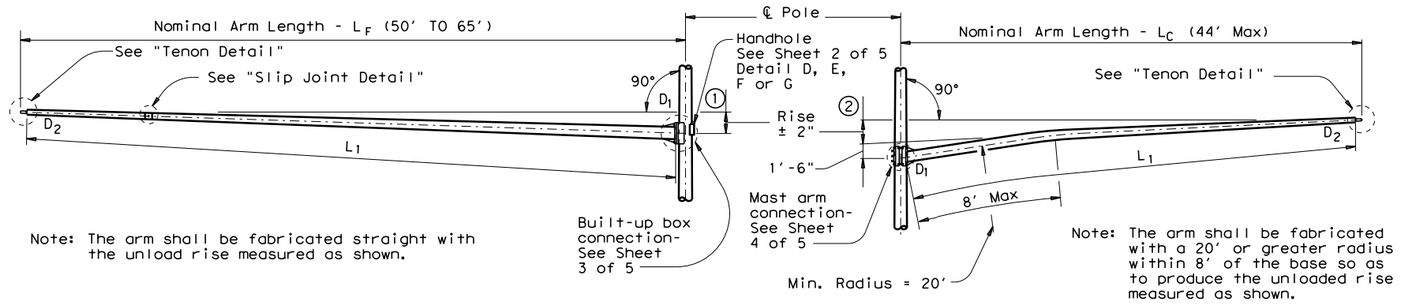
(80 MPH WIND ZONE)

SMA-80(2)-12

DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
1-12

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1578



Note: The arm shall be fabricated straight with the unload rise measured as shown.

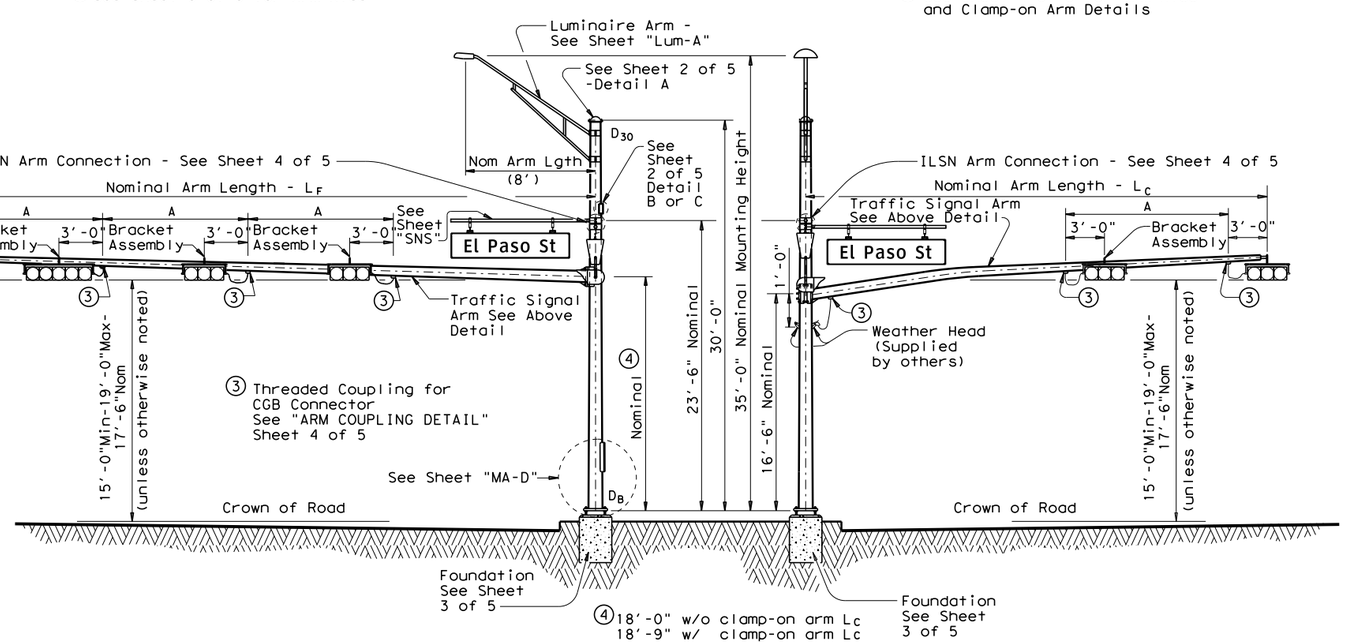
Note: The arm shall be fabricated with a 20' or greater radius within 8' of the base so as to produce the unloaded rise measured as shown.

FIXED MOUNT TRAFFIC SIGNAL ARM

① See Sheet 3 of 5 for Arm Rise

CLAMP-ON TRAFFIC SIGNAL ARM (IF REQUIRED)

② See Sheet 4 of 5 for Arm Rise and Clamp-on Arm Details

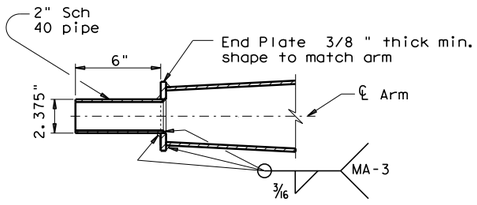


ELEVATION
(Showing fixed mount arm)

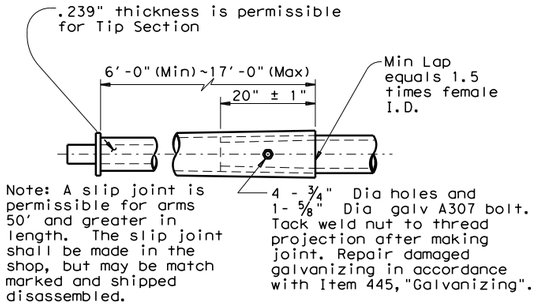
STRUCTURE ASSEMBLY

ELEVATION
(Showing clamp-on arm)

TABLE OF DIMENSIONS "A"										
Arm Length	24'	28'	32'	36'	40'	44'	50'	55'	60'	65'
Arm Type II	10'	11'	12'	13'						
Arm Type III			10'	11'	12'	12'				
Arm Type IV							12'	12'	12'	12'



TENON DETAIL



Note: A slip joint is permissible for arms 50' and greater in length. The slip joint shall be made in the shop, but may be match marked and shipped disassembled.

SLIP JOINT DETAIL (FIXED MOUNT ARM)

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed can be either 100 mph or 80 mph plus a 1.3 gust factor. If clamp-on traffic signal is required, designs are based on an arm included angle of 90 degrees or more. Angles of less than approximately 75 degrees will require a special design.

Poles are designed to support one 8'-0" luminaire arm, two 9'-0" internally lighted street name (ILSN) signs and two traffic signal arms with limited length combinations.

Each arm with its related attachment is shown below

Arm	Equivalent DL ⑤	WL EPA ⑤⑥
8' Luminaire Arm	Luminaire 60 lbs	1.6 sq ft
9' ILSN Arm	Sign 85 lbs	11.5 sq ft
50' to 65' Fixed Mount Arm	Signal Loads 310 lbs	52 sq ft
Up to 44' Clamp-on Arm	Signal Loads 180 lbs	32.4 sq ft

⑤ Equivalent dead load plus horizontal wind load applied at the end of arm except ILSN arm, which applied 4.5' from the centerline of the pole.

⑥ Effective projected area (actual area times drag coefficient) for the application of horizontal wind load.

Except as noted in Sheet 1 thru 5 of 5, other details not covered shall refer to Standard Sheet "MA-D" for pole details, "LUM-A" for luminaire arm and connection details, "SNS" for internally lighted street name sign details, and "TS-FD" for anchor bolt and foundation details.

Fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Material, fabrication tolerances, and shipping practices shall also meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing" after fabrication.

Deviations from the details and dimensions shown herein require submission of shop drawings in accordance with the Item 441, "Steel Structures". Alternate designs are not acceptable.

Installation of damping plate for the long mast arm is not recommended.

Provision of the bracket assembly used to support the traffic signal heads shall be under the direction of the Engineer for approval.

Design also conforms to NCHRP Report 412 for fatigue resistance except that there are no stiffeners at the base plate. TxDOT is conducting tests to determine if stiffeners at the base plate will or will not result in optimal performance; depending upon the results of the tests, poles may need a retrofit to ensure optimal fatigue performance.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE)
LMA(1)-12

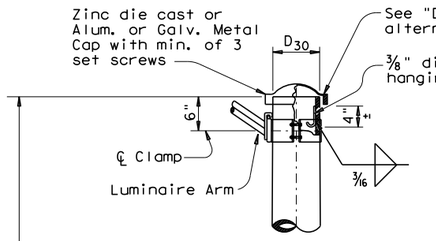
Sheet 1 of 5

REVISIONS	DN: JSY	CK: ARC	DW: TGG	CK: JSY
4-20-01	CONT	SECT	JOB	HIGHWAY
1-12	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1579

DATE:
FILE:

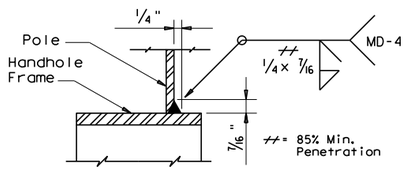
131A

DATE:
FILE:

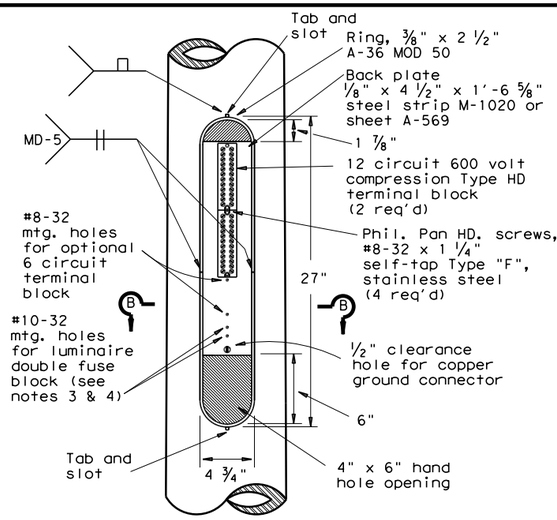


DETAIL A

(for pole with luminaire)



DETAIL H

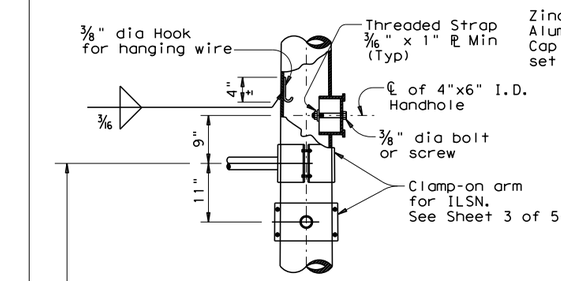


ACCESS COMPARTMENT

MATERIALS	
Round Shafts or Polygonal Shafts (7)	ASTM A595 Gr.A, A588, A1008 HSLAS Gr.50 Class 2, A1011 HSLAS Gr.50 Class 2, A572 Gr.50 or A1011 SS Gr.50 (8)
Plates (7)	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325, or A449 except where noted
Pin Bolts	ASTM A325
Pipe (7)	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50, A1011 HSLAS-F Gr.50
Misc. Hardware	Galvanized steel or stainless steel or as noted

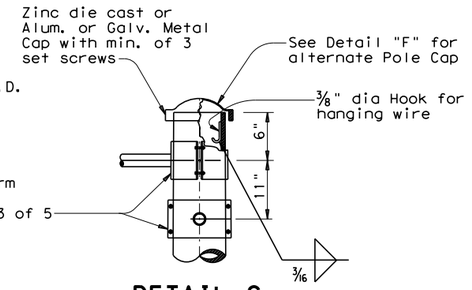
(7) ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F, or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.

(8) ASTM A1011 SS Gr.50 shall also have a minimum elongation of 18 percent in 8 inches or 23 percent in 2 inches. Material thickness in excess of those stipulated under A1011 SS will be acceptable providing the material meets all other A1011 SS requirements and the requirements of this item.

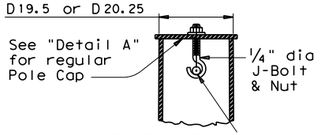


DETAIL B

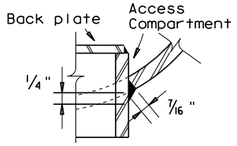
(If ILSN applied)



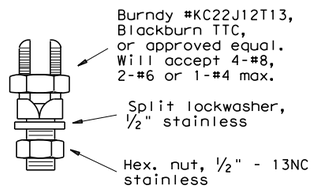
DETAIL C



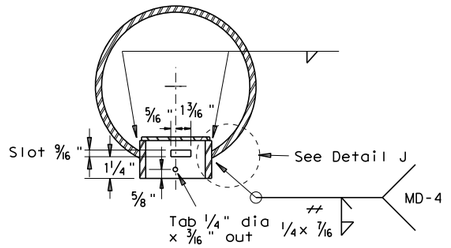
SECTION Y-Y



DETAIL J

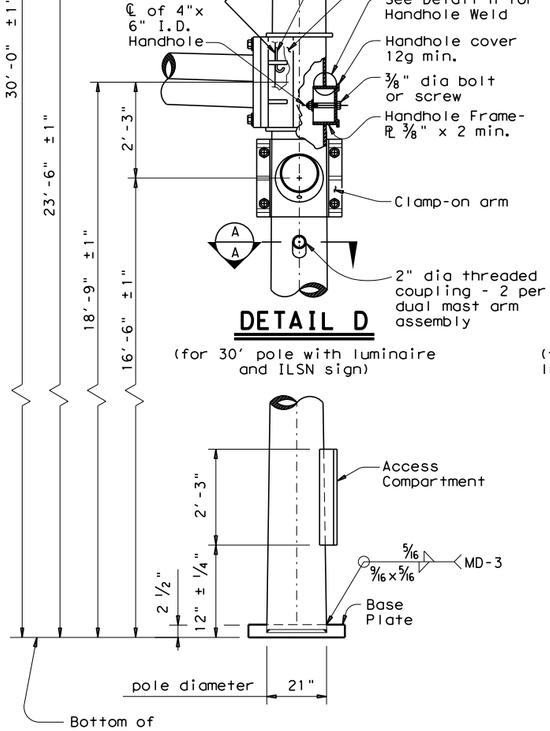


COPPER GROUND CONNECTOR



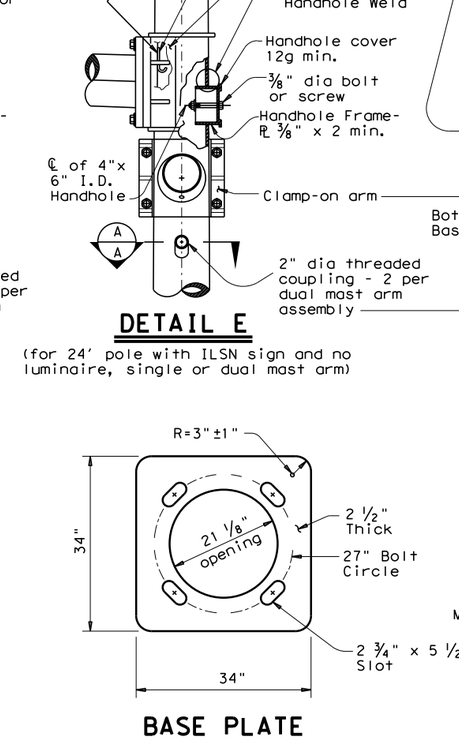
SECTION B-B

Opening for access compartment shall be no more than 1/16 inch wider than the access compartment itself.



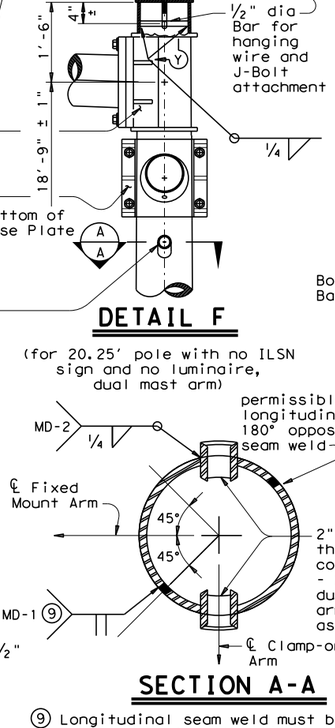
DETAIL D

(for 30' pole with luminaire and ILSN sign)



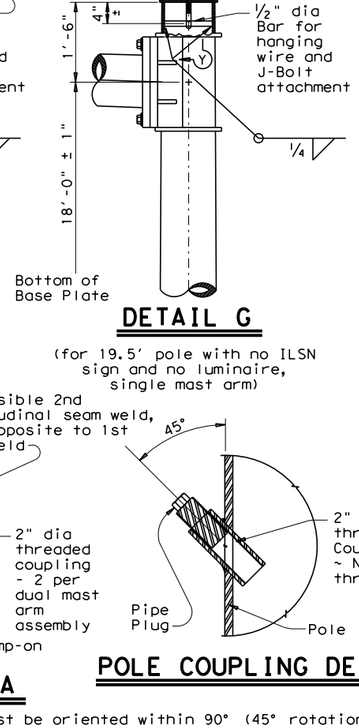
DETAIL E

(for 24' pole with ILSN sign and no luminaire, single or dual mast arm)



DETAIL F

(for 20.25' pole with no ILSN sign and no luminaire, dual mast arm)



DETAIL G

(for 19.5' pole with no ILSN sign and no luminaire, single mast arm)

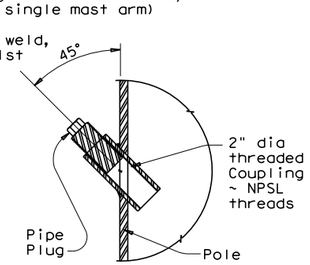
ACCESS COMPARTMENT NOTES:

1. The cover shall be one piece formed from ABS plastic, shall be a pearl gray color, and shall be suitable for exposure to harsh sunlight and extreme weather. Cover shall latch with two screw latches and shall fit tightly to the enclosure ring to create a rainproof seal. Latch screws shall be 1/4-20 stainless flat socket head screws with tamper proof feature.
2. The pole manufacturer shall provide with each pole a separate kit consisting of: one cover with two latching assemblies, two terminal strips (Marathon #985GP12CU or approved equal), four #8-32 x 1 1/4" self tapping type "F" stainless steel pan head screws, and one ground connector (Blackburn TTC, Burndy KC22J12T13, or Ilsco SSS-5). The traffic signal contractor shall install the kit items in the field.
3. The screw hole spacing on the enclosure back plate shall be for two Marathon #985GP12 terminal strips, one Marathon #985GP06CU terminal strip, and one Bussmann #BM6032B fuse block.
4. Install one Bussmann #BM6032B, Littelfuse #L60030M-2C, or Ferraz-Shawmut #30352 fuse block for poles where luminaires are to be installed.

POLE ELEVATION

BASE PLATE

SECTION A-A



POLE COUPLING DETAIL

(9) Longitudinal seam weld must be oriented within 90° (45° rotation each side) along the fixed mount arm. 60% min penetration required, 100% penetration within 6" of circumferential base weld.

Texas Department of Transportation
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TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE)

Sheet 2 of 5

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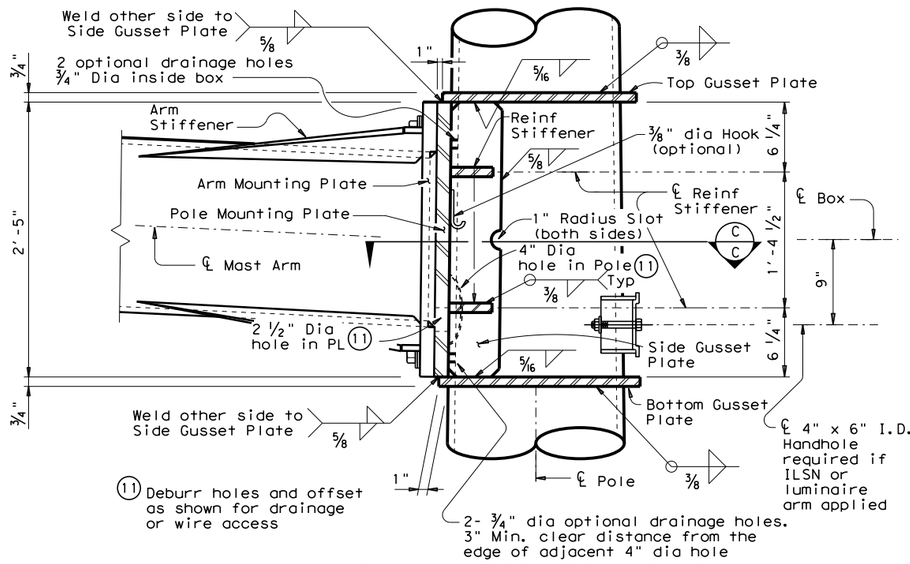
DN: JSY	CK: ARC	DW: TGG	CK: JSY

REVISIONS
4-20-01
1-12

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1580

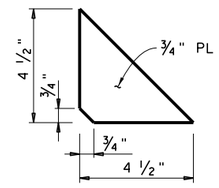
131B



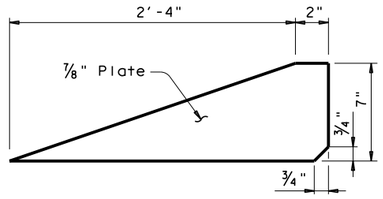
(11) Deburr holes and offset as shown for drainage or wire access

2- 3/4" dia optional drainage holes. 3" Min. clear distance from the edge of adjacent 4" dia hole

BUILT-UP BOX CONNECTION

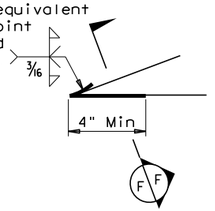


REINFORCING STIFFENER



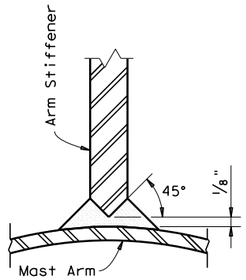
ARM STIFFENER
(Cut to match arm inclination and taper)

Provide Detail shown in SECTION F-F or equivalent 100% complete joint penetration weld from both sides.



Only 4" length at tip of Arm Stiffener requires a complete joint penetration weld. Smooth weld radius to connect Stiffener. Only a fillet weld is required for the remaining weld length.

DETAIL "K"



SECTION F-F

Fixed Mount Arm L_F	ROUND POLES (13)					Foundation Type
	D_B	$D_{19.5}$ or $D_{20.25}$	D_{24}	D_{30}	(12) thk	
ft.	in.	in.	in.	in.	in.	
50', 55' 60', 65'	21.0	18.2	17.6	16.8	.3125	48-A

Fixed Mount Arm L_F	ROUND ARMS (13)				
	L_1	D_1	D_2	(12) thk	Rise
ft.	ft.	in.	in.	in.	
50	49	18.5	11.7	.3125	3'- 3"
55	54	18.5	11.0	.3125	3'- 7"
60	59	18.5	10.3	.3125	3'-11"
65	64	18.5	9.6	.3125	4'- 4"

D_B = Pole Base O.D.
$D_{19.5}$ = Pole Top O.D. with no Luminaire and no ILSN (single mast arm)
$D_{20.25}$ = Pole Top O.D. with no Luminaire and no ILSN (dual mast arm)
D_{24} = Pole Top O.D. with ILSN w/out Luminaire
D_{30} = Pole Top O.D. with Luminaire
D_1 = Arm Base O.D.
D_2 = Arm End O.D.
L_1 = Shaft Length
L_F = Fixed Arm Length

(12) Thickness shown is minimum, thicker materials may be used.

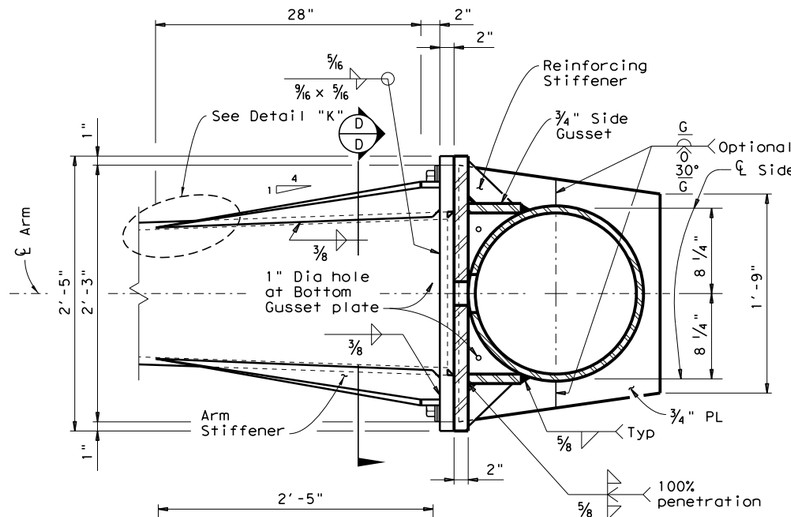
(13) Shaft profile 16-sided or 18-sided is considered to be equivalent to round section.

GENERAL NOTES:

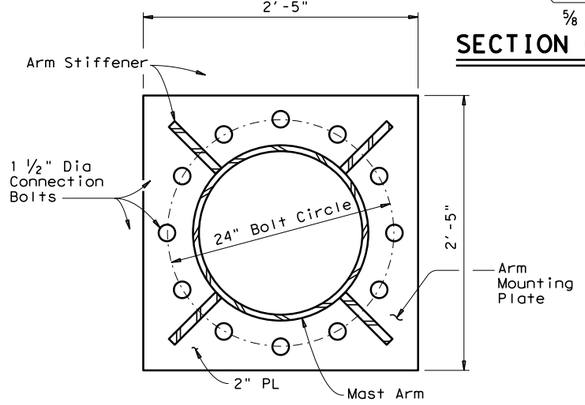
Built-up Box Connection: For the welded arm-to-pole connection as a build-up box configuration illustrated here is an example only, fabricators are required to submit a shop drawing of box connection for approval. The drawing shall specify the details of each box element, welds of arm-to-pole connection, arm-to-plate socket connection, and arm rise creation. Specify the proper location of drain holes along the pole. 2 1/2" dia hole in the pole mounting plate and 4" dia hole in the pole need to be aligned for wiring access or drainage. Arm stiffeners cut to match arm inclination and taper shall also be included.

The deviation from flat for either arm or pole mounting plate shall not exceed 1/32 in., which is measured along the center of mounting plate to a radial distance of 13.5 in. The deformed-from-flat connection between arm and pole mounting plates shall not be allowed if the center of both mounting plates cannot contact directly.

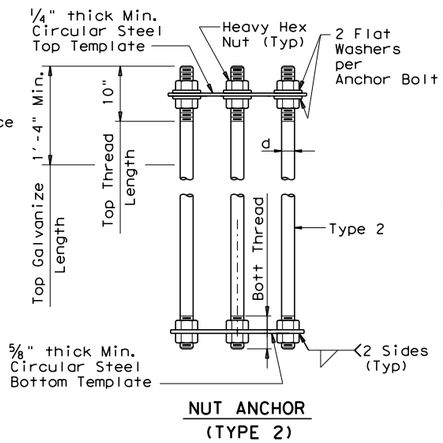
Fixed mount details are used for single mast arm assemblies and for the first arm on dual mast arm assemblies.



SECTION C-C

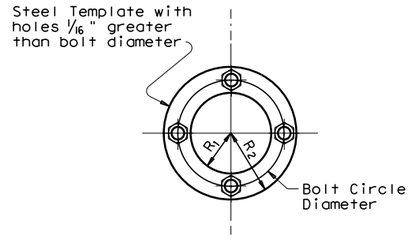


SECTION D-D



NUT ANCHOR
(TYPE 2)

ANCHOR BOLT ASSEMBLY



TEMPLATE DETAIL

ANCHOR BOLT & TEMPLATE SIZE						
Bolt Dia in.	Length ‡	Top Thread	Bottom Thread	Bolt Circle	R_2	R_1
2 1/2"	5'-2"	10"	6 1/2"	27"	16"	11"

‡ Min dimension given, longer bolts are acceptable.

FOUNDATION DESIGN TABLE													
FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		DRILLED SHAFT LENGTH-ft (16), (17), (18)			ANCHOR BOLT DESIGN (14)				FOUNDATION DESIGN LOAD (15)		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
				10	15	40							
48-A	48"	20 #9	#4 at 6"	21.9	19.5	14.7	2 1/2"	55	27"	2	490	10	50' to 65' Mast arm assembly.

SEE SHEET "TS-FD" FOR ADDITIONAL DETAILS.

(14) Anchor bolt design develops the foundation capacity given under Foundation Design Loads.

(15) Foundation Design Loads are the allowable moments and shears at the base of the structure.

(16) Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.

(17) If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

(18) Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

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TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE)

Sheet 3 of 5 LMA(3)-12

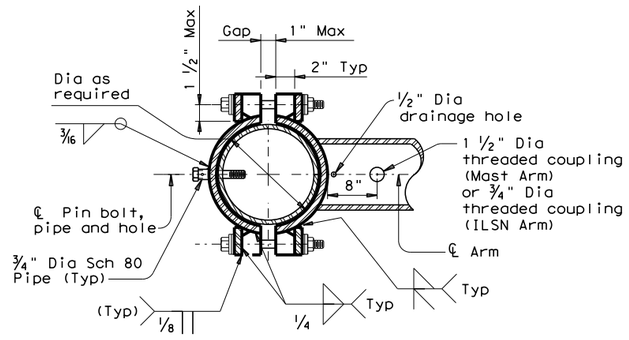
DN: JSY	CK: ARC	DW: TGG	CK: JSY

REVISIONS
4-20-01
1-12

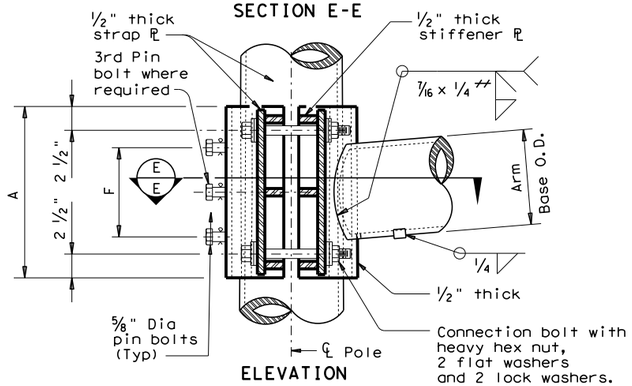
CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1581

DATE:
FILE:

131C



SECTION E-E



ELEVATION
(Mast Arm or ILSN Arm to pole)

= 85% Min. Penetration

CLAMP-ON CONNECTION

80 MPH WIND

Clamp-on Arm Lc	ROUND ARMS					POLYGONAL ARMS				
	L_1	D_1	D_2	thk (12)	Rise	L_1	D_1	D_2	thk (12)	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	6.5	3.8	.179	1'-9"	19.1	7.0	3.5	.179	1'-8"
24	23.1	7.5	4.3	.179	1'-10"	23.1	7.5	3.5	.179	1'-9"
28	27.1	8.0	4.2	.179	1'-11"	27.1	8.0	3.5	.179	1'-10"
32	31.0	9.0	4.7	.179	2'-1"	31.0	9.0	3.5	.179	2'-0"
36	35.0	9.5	4.6	.179	2'-4"	35.0	10.0	3.5	.179	2'-1"
40	39.0	9.5	4.1	.239	2'-8"	39.0	9.5	3.5	.239	2'-3"
44	43.0	10.0	4.1	.239	2'-11"	43.0	10.0	3.5	.239	2'-6"

100 MPH WIND

Clamp-on Arm Lc	ROUND ARMS					POLYGONAL ARMS				
	L_1	D_1	D_2	thk (12)	Rise	L_1	D_1	D_2	thk (12)	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	8.0	5.3	.179	1'-8"	19.1	8.0	3.5	.179	1'-7"
24	23.1	9.0	5.8	.179	1'-9"	23.1	9.0	3.5	.179	1'-8"
28	27.1	9.5	5.7	.179	1'-10"	27.1	10.0	3.5	.179	1'-9"
32	31.0	9.5	5.2	.239	1'-11"	31.0	9.5	3.5	.239	1'-10"
36	35.0	10.0	5.1	.239	2'-0"	35.0	10.0	3.5	.239	1'-11"
40	39.0	10.5	5.1	.239	2'-3"	39.0	11.0	3.5	.239	2'-1"
44	43.0	11.0	5.1	.239	2'-8"	43.0	11.5	4.0	.239	2'-3"

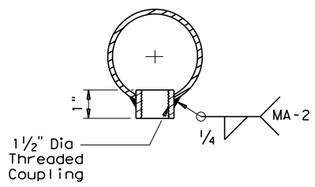
D1 = Arm Base O.D.
D2 = Arm End O.D.
L1 = Shaft Length
Lc = Clamp-on Arm Length

(12) Thickness shown is minimum, thicker materials may be used.

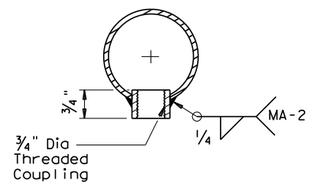
CLAMP-ON ARM CONNECTION

ILSN Arm Size		A	F	4 Conn. Bolts	⅝" Dia. Pin Bolts
Sch 40 pipe Dia	Thick			Dia	No.
in.	in.	in.	in.	in.	ea
3	.216	10	4	¾	2

Mast Arm Size		A	F	4 Conn. Bolts	⅝" Dia. Pin Bolts
Base Dia	Thick			Dia	No.
in.	in.	in.	in.	in.	ea
6.5	.179	12	6	1	2
7.5	.179	14	8	1	2
8.0	.179	14	8	1	2
9.0	.179	16	10	1	2
9.5	.179	18	12	1 ¼	3
9.5	.239	18	12	1 ¼	3
10.0	.239	18	12	1 ¼	3
10.5	.239	18	12	1 ¼	3
11.0	.239	18	12	1 ¼	3
11.5	.239	18	12	1 ¼	3



ARM COUPLING DETAIL



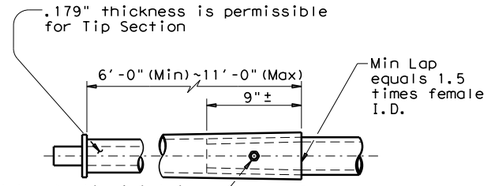
ILSN ARM COUPLING DETAIL

GENERAL NOTES:

Clamp-on details are used for the second arm on dual mast arm assemblies or ILSN arm support. For a clamp-on mast arm, a maximum 1 ½" wide vertical slotted hole may be cut in the front clamp plate to facilitate drainage during galvanizing. The slot shall be centered behind the arm and shall be no longer than the arm diameter minus 1". For an ILSN arm, a 1 ½" diameter hole shall be cut in the front clamp plate for wire access. A matched hole shall be field drilled through the pole to provide wire access after arm is oriented. Deburr both holes.

Where duplicate parts occur on a detail, welds shown for part shall apply to all similar parts on the detail.

Pin bolts are required to prevent rotation of clamp-on arms under design wind forces. Pin bolts shall be ASTM A325 with threads excluded from the shear plane. Pin bolt and ¾" diameter pipe shall have 3/16" diameter holes for a ⅛" diameter galvanized cotter pin. Back clamp plate shall be furnished with a ¾" diameter hole for each pin bolt. An 11/16" diameter hole for each pin bolt shall be field drilled through the pole after arm orientations have been approved by the Engineer.

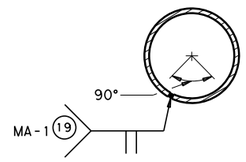


Note: A slip joint is permissible for arms 40' and greater in length. The slip joint shall be made in the shop, but may be match marked and shipped disassembled.

SLIP JOINT DETAIL (CLAMP-ON ARM)

Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1 ½" Dia Threaded Coupling.

BRACKET ASSEMBLY



ARM WELD DETAIL

(19) Longitudinal Seam Weld must be oriented within the lower 90° of the signal arm.
60% Min penetration
100% penetration within 6" of circumferential base welds.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY (50 TO 65 FT)
(80 AND 100 MPH WIND ZONE)

Sheet 4 of 5 — LMA(4)-12

DN: JK	CK: GRB	DW: FDN	CK: CAL

REVISIONS
4-20-01
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CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1582

131D

DATE:
FILE:

DATE:
FILE:

Shipping Parts List

Ship each pole with the following attached: enlarged hand hole, pole cap, fixed arm connection bolts and washers, and any additional hardware listed in the table.

Nominal Arm Length	30' Poles with Luminaire See note above plus: one (or two if ILSN attached) small hand hole, clamp-on simplex		24' Poles with ILSN See note above plus one small hand hole		19.50' (Single Mast Arm) 20.25' (Dual Mast Arm) Poles with no Luminaire and no ILSN See note above	
Single Mast Arm						
Lf ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
50	50L		50S		50	
55	55L	1	55S		55	
60	60L		60S		60	
65	65L		65S		65	
Dual Mast Arm						
Lf ft. / Lc ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
50 / 20	5020L		5020S		5020	
24	5024L		5024S		5024	
28	5028L		5028S		5028	
32	5032L		5032S		5032	
36	5036L		5036S		5036	
40	5040L		5040S		5040	
44	5044L		5044S		5044	
55 / 20	5520L		5520S		5520	
24	5524L		5524S		5524	
28	5528L		5528S		5528	
32	5532L		5532S		5532	
36	5536L		5536S		5536	
40	5540L		5540S		5540	
44	5544L		5544S		5544	
60 / 20	6020L		6020S		6020	
24	6024L		6024S		6024	
28	6028L		6028S		6028	
32	6032L		6032S		6032	
36	6036L		6036S		6036	
40	6040L		6040S		6040	
44	6044L		6044S		6044	
65 / 20	6520L		6520S		6520	
24	6524L		6524S		6524	
28	6528L		6528S		6528	
32	6532L		6532S		6532	
36	6536L		6536S		6536	
40	6540L		6540S		6540	
44	6544L		6544S		6544	

Foundation Summary Table **

Location Ident.	Avg. N Blow/ft.	No. Each	Drill Shaft *** Length (feet)
			48-A
NEW RD	10	1	22
Total Drill Shaft Length			22

Shipping Parts List

Traffic Signal Arms (Fixed Mount) (1 per pole)
Ship each arm with listed equipment attached

Nominal Arm Length	Type IV Arm (4 Signals) 3 Bracket Assembly and 4 CGB Connectors	
ft.	Designation	Quantity
50	50IV	
55	55IV	1
60	60IV	
65	65IV	

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	1

ILSN Arm (Max. 2 per pole) Ship with clamps, bolts and washers

Nominal Arm Length	Quantity
7' Arm	
9' Arm	

Traffic Signal Arms (80 MPH Clamp-On Mount) (1 per pole) Ship each arm with listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal) 2 CGB connector and 1 clamp w/bolts and washers		Type II Arm (2 Signals) 1 Bracket Assembly and 3 CGB connectors, and 1 clamp w/bolts and washers		Type III Arm (3 Signals) 2 Bracket Assembly and 4 CGB connectors, and 1 clamp w/bolts and washers	
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-80					
24	24I-80		24II-80			
28	28I-80		28II-80			
32			32II-80		32III-80	
36			36II-80		36III-80	
40					40III-80	
44					44III-80	

Traffic Signal Arms (100 MPH Clamp-On Mount) (1 per pole) Ship each arm with listed equipment attached

Nominal Arm	Type I Arm (1 Signal) 2 CGB connector and 1 clamp w/bolts and washers		Type II Arm (2 Signals) 1 Bracket Assembly and 3 CGB connectors, and 1 clamp		Type III Arm (3 Signals) 2 Bracket Assembly and 4 CGB connectors, and 1 clamp	
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-100					
24	24I-100		24II-100			
28	28I-100		28II-100			
32			32II-100		32III-100	
36			36II-100		36III-100	
40					40III-100	
44					44III-100	

Anchor Bolt Assemblies (1 per pole)

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
2 1/2 "	5' - 3"	1

Each anchor bolt assembly consists of the following: Top and bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers and 4 nut anchor devices (type 2) per Standard Drawing "TS-FD". Templates may be removed for shipment.

Notes

** Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

*** Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

Abbreviations
Lf= Fixed Arm Length
Lc= Clamp-on Arm Length (44' Max.)

Texas Department of Transportation
Traffic Operations Division

LONG MAST ARM ASSEMBLY PARTS LIST

LMA(5)-12

Sheet 5 of 5

DN: JK	CK: GRB	DW: FDN	CK: CAL

REVISIONS
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1-12

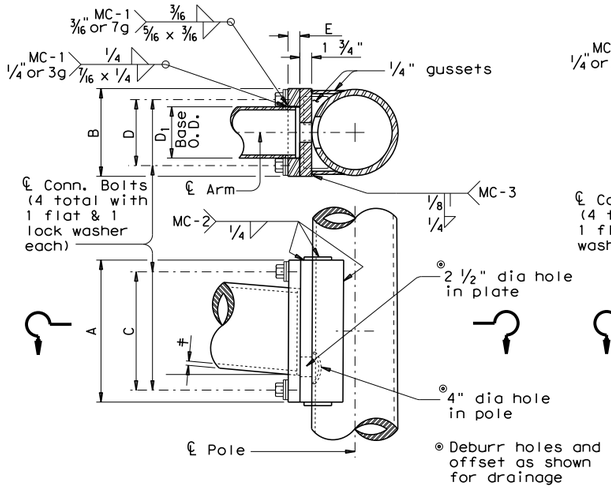
CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1583

131E

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

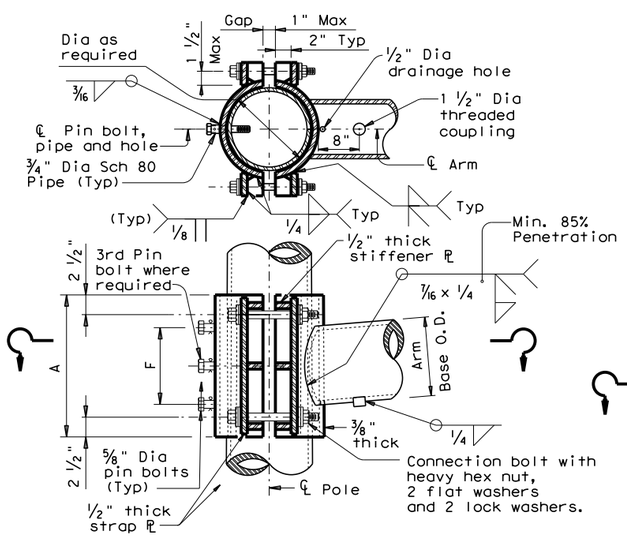
DATE:
FILE:

ARM SIZE D_1	ARM SIZE ǂ	A	B	C	D	E	CONN BOLT DIA
in.	in.	in.	in.	in.	in.	in.	in.
6.5	.179	12	9	9	6	1 ¾	1
7.5	.179	13	9	10	6	1 ¾	1
8.0	.179	14	10	11	7	2	1 ¼
9.0	.179	16	11	13	8	2	1 ¼
9.5	.179	17	12	14	9	2	1 ¼
9.5	.239	18	12	15	9	2	1 ¼
10.0	.239	18	12	15	9	2	1 ¼
10.5	.239	18	13	15	10	3	1 ½
11.0	.239	18	13	15	10	3	1 ½



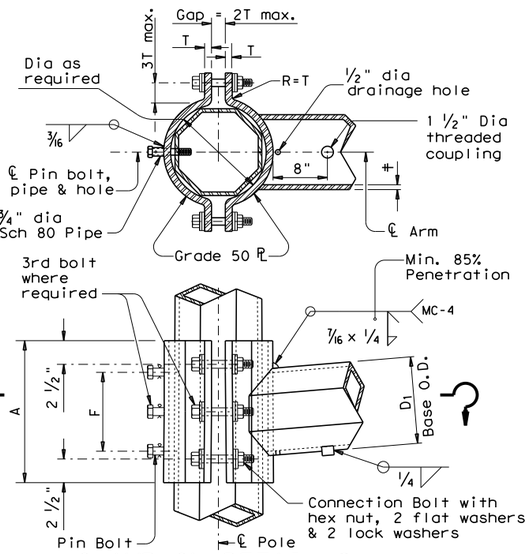
FIXED MOUNT DETAIL 1

ARM SIZE D_1	ARM SIZE ǂ	A	F	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	ea.	in.	ea.	in.
6.5	.179	12	6	4	1	2	⅝
7.5	.179	14	8	4	1	2	⅝
8.0	.179	14	8	4	1	2	⅝
9.0	.179	16	10	4	1	2	⅝
9.5	.179	18	12	4	1 ¼	3	⅝
9.5	.239	18	12	4	1 ¼	3	⅝
10.0	.239	18	12	4	1 ¼	3	⅝



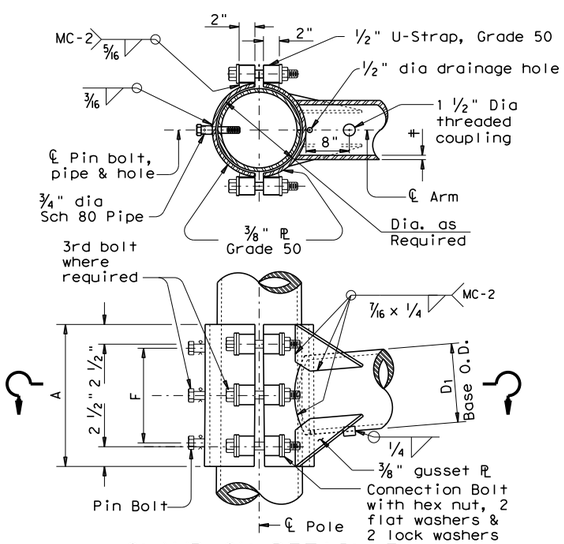
CLAMP-ON DETAIL 1

ARM SIZE D_1	ARM SIZE ǂ	A	F	T	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	in.	ea.	in.	ea.	in.
7.0	.179	12	6	¾	4	¾	2	⅝
7.5	.179	14	8	¾	4	¾	2	⅝
8.0	.179	14	8	¾	4	¾	2	⅝
9.0	.179	16	10	⅞	4	1	2	⅝
10.0	.179	18	10	⅞	4	1	2	⅝
9.5	.239	18	10	1	6	1	3	⅝
10.0	.239	18	10	1	6	1	3	⅝



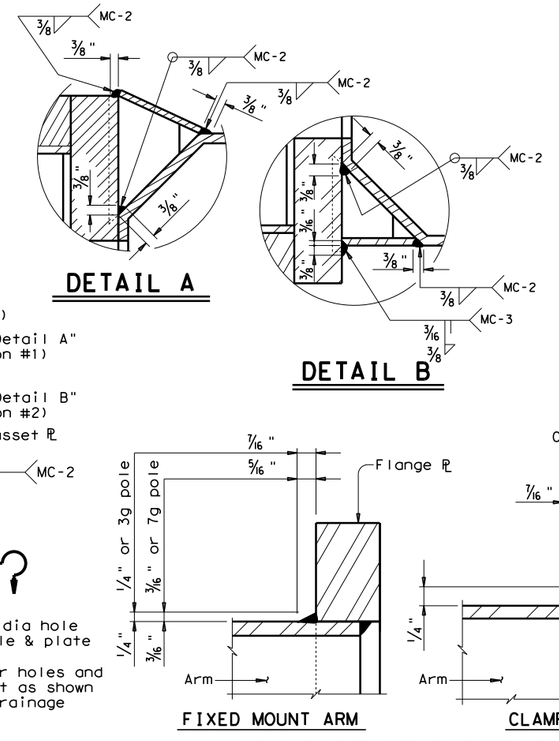
CLAMP-ON DETAIL 2

ARM SIZE D_1	ARM SIZE ǂ	A	F	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	ea.	in.	ea.	in.
6.5	.179	12	6	4	1	2	⅝
7.5	.179	14	8	4	1	2	⅝
8.0	.179	14	8	4	1	2	⅝
9.0	.179	16	10	4	1	2	⅝
9.5	.179	18	12	6	1	3	⅝
9.5	.239	18	12	6	1	3	⅝
10.0	.239	18	12	6	1	3	⅝



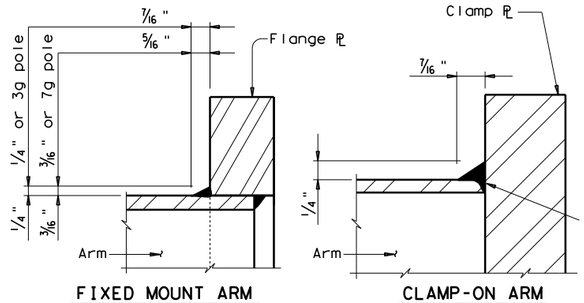
ARM BASE WELD DETAILS

ARM SIZE D_1	ARM SIZE ǂ	A	F	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	ea.	in.	ea.	in.
6.5	.179	12	6	4	1	2	⅝
7.5	.179	14	8	4	1	2	⅝
8.0	.179	14	8	4	1	2	⅝
9.0	.179	16	10	4	1	2	⅝
9.5	.179	18	12	6	1	3	⅝
9.5	.239	18	12	6	1	3	⅝
10.0	.239	18	12	6	1	3	⅝



DETAIL A

DETAIL B



FIXED MOUNT ARM

CLAMP-ON ARM

MATERIALS

Round Shafts or Polygonal Shafts ①	ASTM A595 Gr.A, A588, A1008 HSLAS Gr.50 Class 2, A1011 HSLAS Gr.50 Class 2, A572 Gr.50 or A1011 SS Gr.50 ②
Plates ①	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325 or A449, except where noted
Pin Bolts	ASTM A325
Pipe ①	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50, A1011 HSLAS-F Gr.50
Misc. Hardware	Galvanized steel or stainless steel or as noted

① ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.

② ASTM A1011 SS Gr.50 material shall also have a minimum elongation of 18 percent in 8 inches or 23 percent in 2 inches. Material thickness in excess of those stipulated under A1011 SS will be acceptable providing the material meets all other A1011 SS requirements and the requirements of this item.

GENERAL NOTES:

Clamp-on details are used for the second arm on dual mast arm assemblies. A Maximum 1 ½" wide vertical slotted hole shall be cut in the front clamp plate to facilitate drainage during galvanizing. The slot shall be centered behind the arm and shall be no longer than the arm diameter minus 1"

Fixed mount details are used for single mast arm assemblies and for the first arm on dual mast arm assemblies.

Where duplicate parts occur on a detail, welds shown for one part shall apply to all similar parts on the detail.

Pin bolts are required to prevent rotation of clamp-on arms under design wind forces.

NOTE:

Pin bolts shall be A325 with threads excluded from the shear plane. Pin bolt and ¾" dia pipe shall have 3/16" dia holes for a ⅛" dia galvanized cotter pin. Back clamp plate shall be furnished with a ¾" dia hole for each pin bolt. An 11/16" dia hole for each pin bolt shall be field drilled through the pole after arm orientations have been approved by the Engineer.

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY FOR TRAFFIC SIGNAL SUPPORT STRUCTURES

MAST ARM CONNECTIONS

MA-C-12

DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
5-09
1-12

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1584

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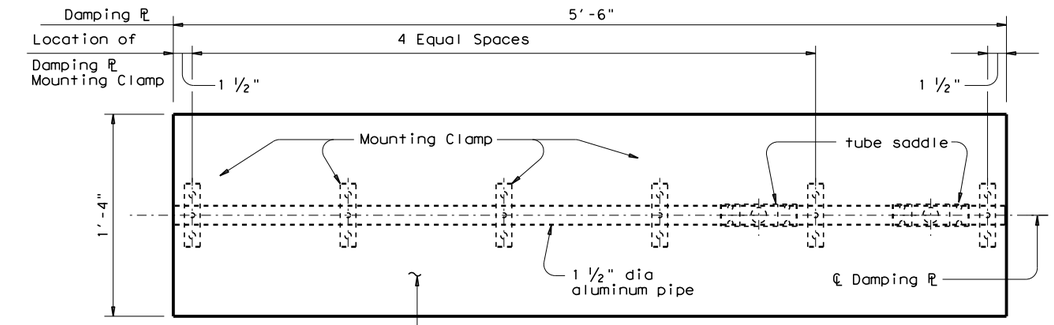
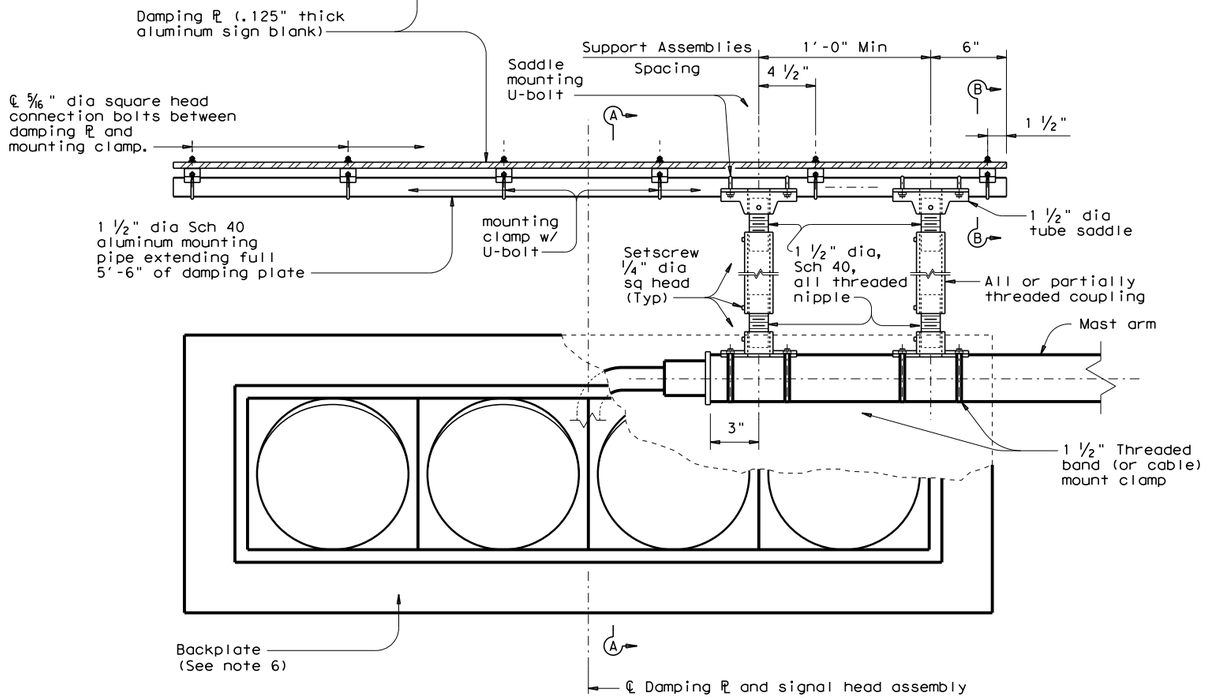


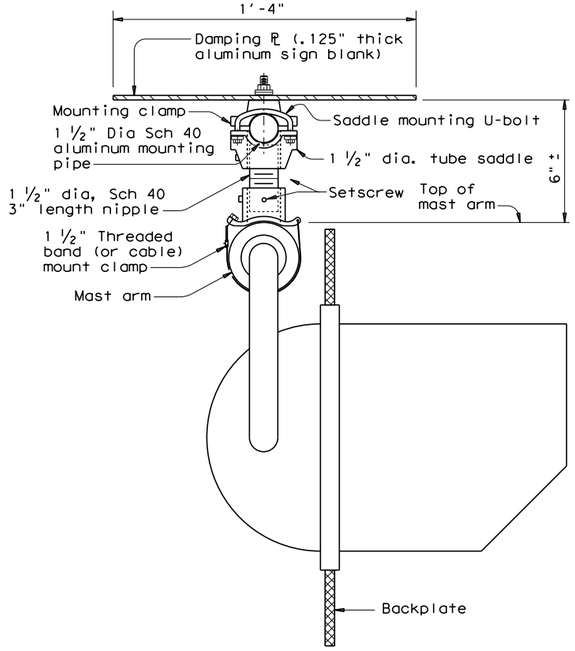
PLAN



ELEVATION

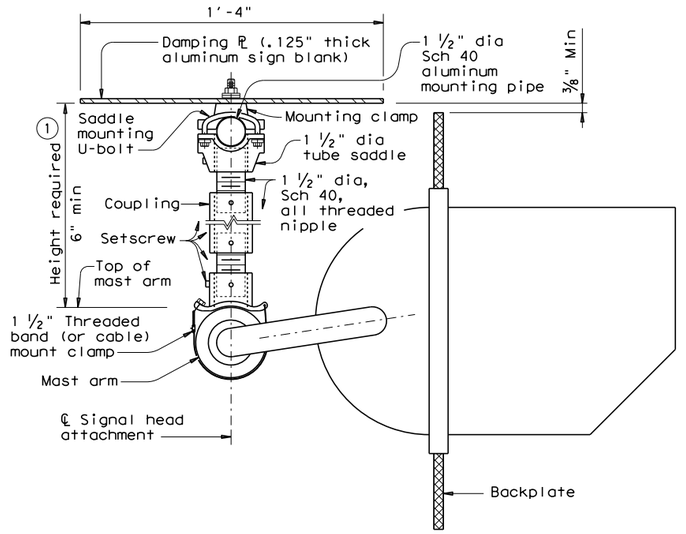
DAMPING PLATE MOUNTING DETAILS

(Showing alternate placement of signal head)



SECTION A-A

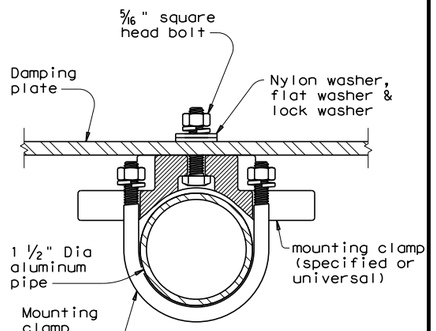
(Showing standard placement of signal head)
(Mounting clamp U-bolt is not shown for clarity)



SECTION A-A

(Showing alternate placement of signal head)
(Mounting clamp U-bolt is not shown for clarity)

① Recommended supporting assemblies to achieve required height for horizontal section heads			
Height required	One nipple each length	Two nipples each length plus	One coupling each length
6"-6 ¾"	3"	-	-
7"-8 ½"	4"	-	-
9"-10 ½"	6"	-	-
11"-15 ½"	-	4"	5"
16"-24"	-	6"	10"



SECTION B-B

(Showing damping plate attachment)

GENERAL NOTES:

1. In accordance with the findings of TxDOT sponsored research, the installation of a damping plate in accordance with the details shown here at the end of signal mast arms of SMA and DMA standard structures reduces excessive harmonic vertical vibration, and thus fatigue damage. Any deviation from these details may reduce the effectiveness of this damping device.

2. Aluminum sign blank for damping plate will conform to Departmental Material Specifications DMS-7110. Materials for mast arm mounting clamp and tube saddle will be aluminum castings or aluminum alloys as in accordance with manufacturers' stipulations. Mounting pipe, pipe nipple and coupling will be aluminum alloy 6061-T6 or 6063-T6. Damping plate mounting clamp and u-bolt assemblies will conform to Standard sheet SMD(GEN). U-bolts for saddle mounting will have a minimum yield strength of 36 ksi.

3. Damping plate will be mounted horizontally. Position centerline of damping plate to align with centerline of mast arm or horizontal signal head assembly. Vertical clearance between signal head (with or without backing plate) and bottom of damping plate will be maintained as shown. The attachments shown here are examples only, other supporting details which meet both alignment and vertical clearance requirements are also acceptable.

4. Unless stipulated by the manufacturers, all steel parts will be galvanized finish in accordance with Standard Specification Item 445, "Galvanizing".

5. Contractor will verify applicable field dimensions before the installation.

6. Backplates are optional for traffic signals. When backplates are used, Backplates will have a 2-inch fluorescent yellow AASHTO Type B_{FL} or C_{FL} retroreflective border conforming to TxDOT DMS-8300 "Sign Face Materials." See Sheet TS-BP-20 for backplate details.

Texas Department of Transportation

Traffic Safety Division Standard

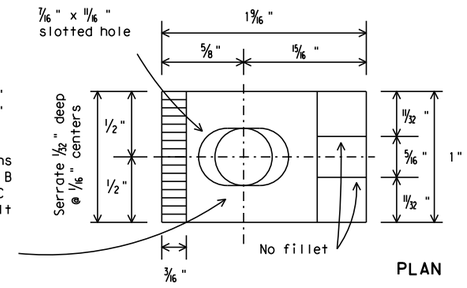
MAST ARM DAMPING PLATE DETAILS

MA-DPD-20

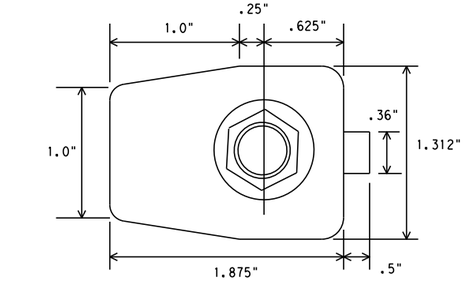
FILE: ma-dpd-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
6-20	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1585

DATE:
FILE:

NOTE: centerline of hole for 3/8" diameter squarehead bolt x 2 1/4" long with a flat washer and self-locking nut, or lock washer and hex. nut. Bolt head dimensions shall be in accordance with ANSI B 18.2.1 as referred to in the AISC Manual of steel construction. Bolt assembly shall be galvanized.



PLAN



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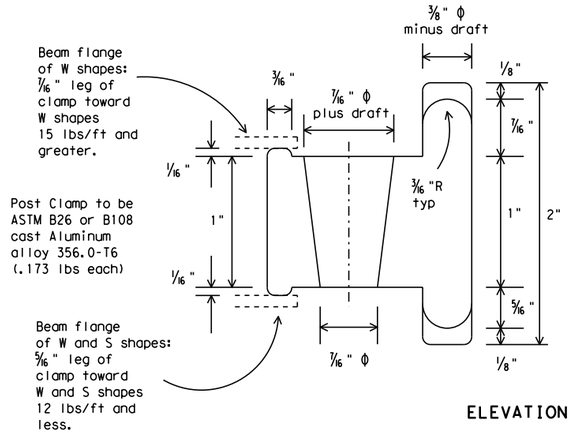
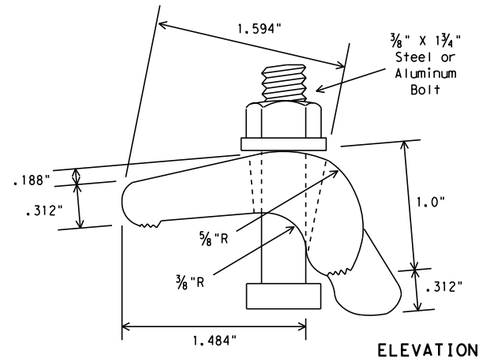


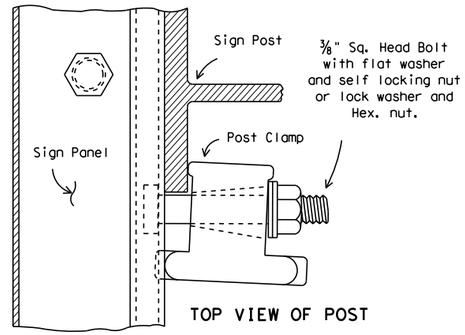
ELEVATION

POST CLAMP DETAIL

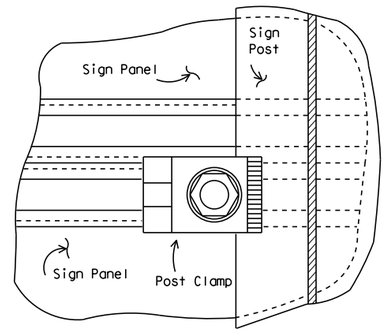


ELEVATION

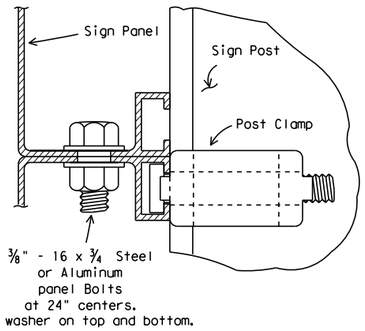
ALTERNATE POST CLAMP DETAIL



TOP VIEW OF POST



TOP VIEW OF CLAMP



SIDE VIEW OF PANELS

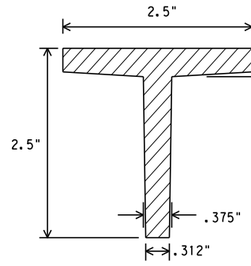
CONNECTION DETAILS

DEPARTMENTAL MATERIAL SPECIFICATIONS

SIGN HARDWARE — DMS-7120

GENERAL NOTES:

1. Design conforms with AASHTO Specifications for the design and construction of structural supports for highway signs.
2. Materials and fabrication shall conform to the requirements of the Department material specifications.
3. Structural steel shall be "low-alloy steel" for non-bridge structures per Item 442, "Metal For Structures."
4. For fiberglass substrate connection details, see manufacturer's recommendations.

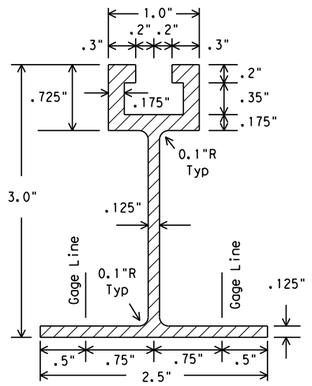


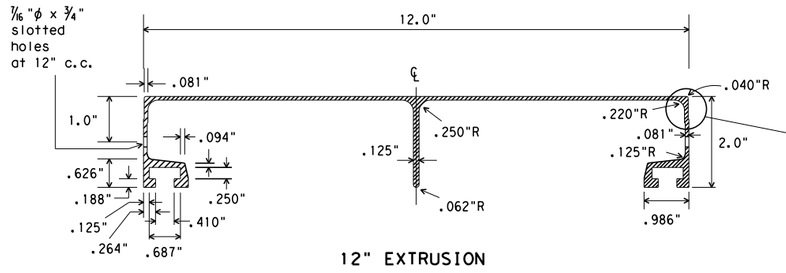
1.912 lbs/ft

ALUMINUM T SECTION OR APPROVED ALTERNATIVE

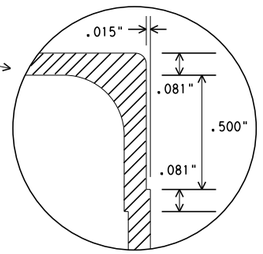
WINDBEAM CROSS SECTION

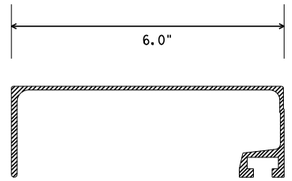
Windbeam to be extruded aluminum (1.175 lbs/ft) or approved alternative





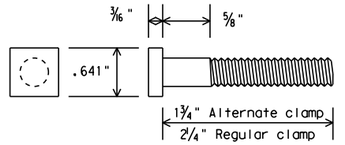
12" EXTRUSION





6" EXTRUSION

ALUMINUM SIGN PANEL EXTRUSION DETAILS



POST CLAMP BOLT DETAIL

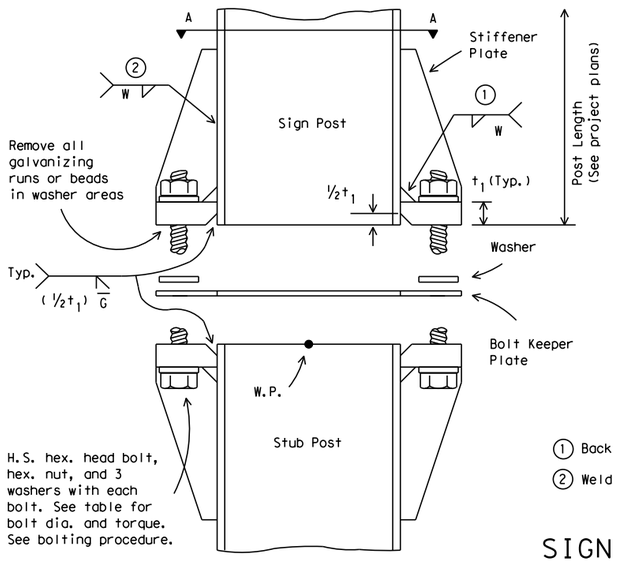
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS- EXTRUDED ALUMINUM SIGN PANELS & HARDWARE

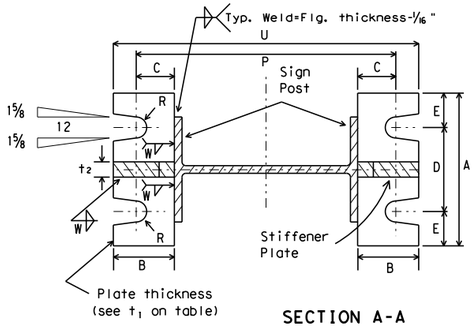
SMD(2-1)-08

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

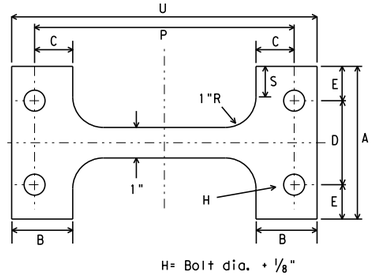
REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1586



ELEVATION



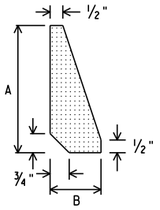
SECTION A-A



H= Bolt dia. + ⅛"

BOLT KEEPER PLATE

30 Ga galv. sheet steel



① Back up weld to be made before installing stiffener plate

② Weld W may be continued across clips to seal joint

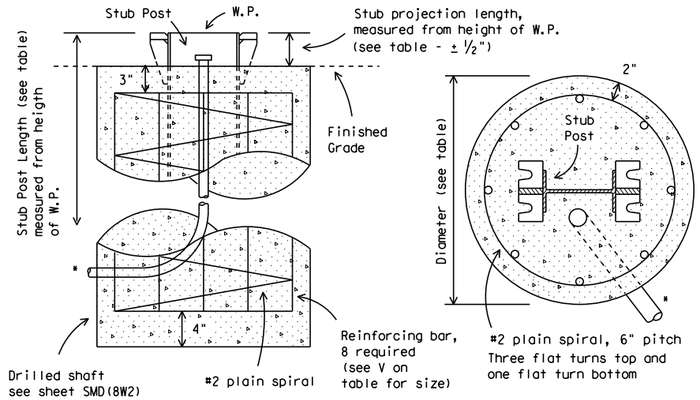
SIGN POST AND STUB POST

(For W Shapes)

STIFFENER PLATE DETAIL

Steel Plate (thickness = t_2)

(See table for dimensions)

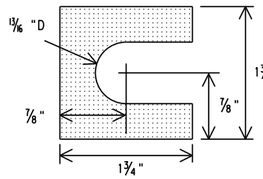


ELEVATION

PLAN

FOUNDATION DETAIL

*Note: For signs with electrical apparatus, see ED(10) for conduit required in founation.



SHIM DETAIL

Furnish two .012"± thick and two .032"± thick shims per post. Shims shall be fabricated from brass shim stock or strip conforming to ASTM B36.

BOLTING PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:

1. Assemble sign post, BOLT KEEPER PLATE and stub post with bolts and three flat washers per bolt as shown.
2. Shim as required to plumb post.
3. Tighten all bolts the maximum possible with a 12 to 15 inch wrench to clean bolt threads and to bed washers and shims.
4. Loosen each bolt in sequence and retighten bolts in a systematic order to the prescribed torque. Do not overtighten.
5. To prevent nut loosening, burr threads of bolt at junction with nut using a center punch.

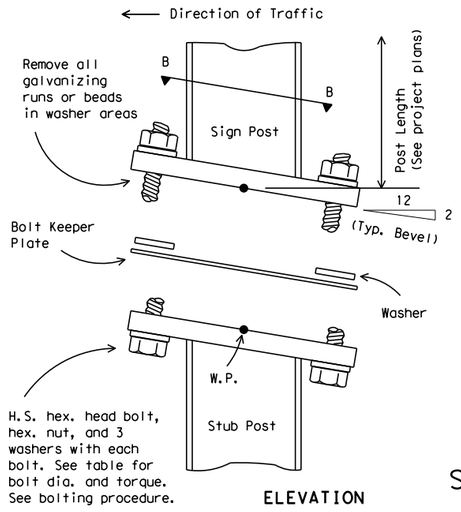
Dimensions / Post Size	Base Connection Data Table: Bolt Size & Torque	A	B	C	D	E	t_1	t_2	W	R
W6x9	⅝"ϕ x 2¾" 440-450 inch pounds 36-38 foot pounds	5"	2"	1¼"	2¾"	1⅛"	¾"	½"	¼"	11/32"
W6x12										
W6x15										
W8x18										
W8x21	¾"ϕ x 3½" 740-750 inch pounds 62-63 foot pounds	6"	2¼"	1⅜"	3½"	1¼"	1"	¾"	5/16"	13/32"
W10x22										
W10x26										
W12x26										
S3x5.7	½"ϕ x 2½" 440-450 inch pounds 36-38 foot pounds	See Detail Below								
S4x7.7										

Perforated Fuse Plate Data Table												Bolt Keeper Data			Foundation Data			
F	G	J	K	M	d_1	d_2	t_3	Bolt Dia.	Wt. (ea.) (lbs.)	Bolt length	P	S	U	Stub length	Stub projection	Dr. Shaft diameter	Bar V Size
4¼"	2"	4"	2¼"	1"	9/16"	¾"	¼"	½"	1.01	1½"	8⅜"	1"	9⅞"	2'-0"	3"	24"	#5
											8½"		10"				#5
5"	2½"	6"	3½"	1½"	11/16"	1¼"	⅜"	⅝"	2.51	2¼"	8½"		10"	2'-6"	3"		#6
5"	2½"	5¼"	2¾"	1¼"	11/16"	1 1/16"	⅜"	⅝"	2.26	2¼"	10⅝"		12⅛"	2'-6"	3"		#7
5½"	2½"	5¼"	2¾"	1¼"	13/16"	1"	½"	¾"	3.35	2¼"	11"	1½"	12¾"	3'-0"	2½"		#8
6"	3"	5¾"	2¾"	1⅜"	13/16"	1⅛"	½"	¾"	4.03	2¼"	12⅞"		14⅝"	3'-0"	2½"		#9
											13⅛"		14⅞"	3'-0"	2½"		#10
6"	3"	6½"	3½"	1⅝"	13/16"	1 5/16"	½"	¾"	4.47	2¼"	15"		16¾"	3'-0"	2½"		#11
3¾"	1½"	2⅝"	1½"	⅝"	9/16"	⅜"	¼"	½"	0.60	1½"	See Detail Below			3'-3½"	3½"	12"	Non-reinforced ③

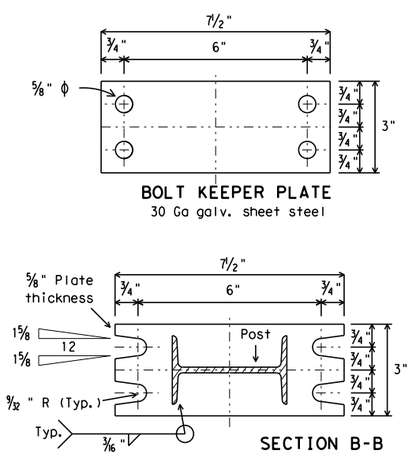
③ Foundation design shall be Type G Mount, see SMD (TY G).

PERFORATED FUSE PLATE DETAIL

Use H.S. hex head bolts, hex head nut and bevel or flat washer (where req'd) under nut. All holes shall be drilled, sub-punched and reamed. All plate cuts shall preferably be saw cuts. However, flame cutting will be permitted provided all edges are ground. Metal projecting beyond the plane of the plate face will not be permitted. Steel fuse plates shall conform to the requirements of ASTM A36. ASTM A572 Grade 50 or ASTM A588 may be substituted for A36 at the option of the fabricator. Mill test reports shall be submitted for Fuse Plates. Steel used shall have an ultimate tensile strength not to exceed 80 KSI. For alternative Fuse Plate contact Traffic Operations Division.



ELEVATION



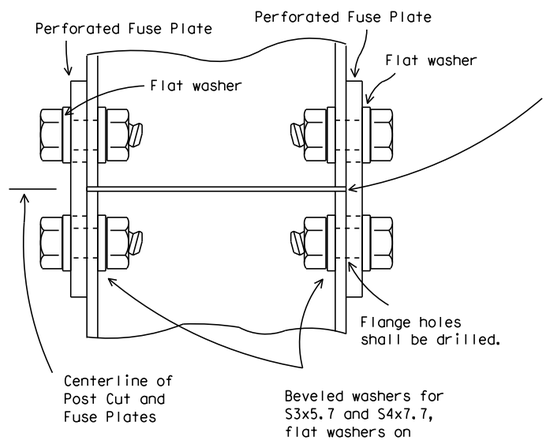
BOLT KEEPER PLATE

30 Ga galv. sheet steel

SECTION B-B

SIGN POST AND STUB POST

(For S4x7.7 and S3x5.7)



DETAIL "A"

Parts shall be saw cut either before galvanizing and the galvanized cut cleaned of zinc build-up, or saw cut after galvanizing and the cut surface repaired per Item 445, "Galvanizing."

Texas Department of Transportation
Traffic Operations Division

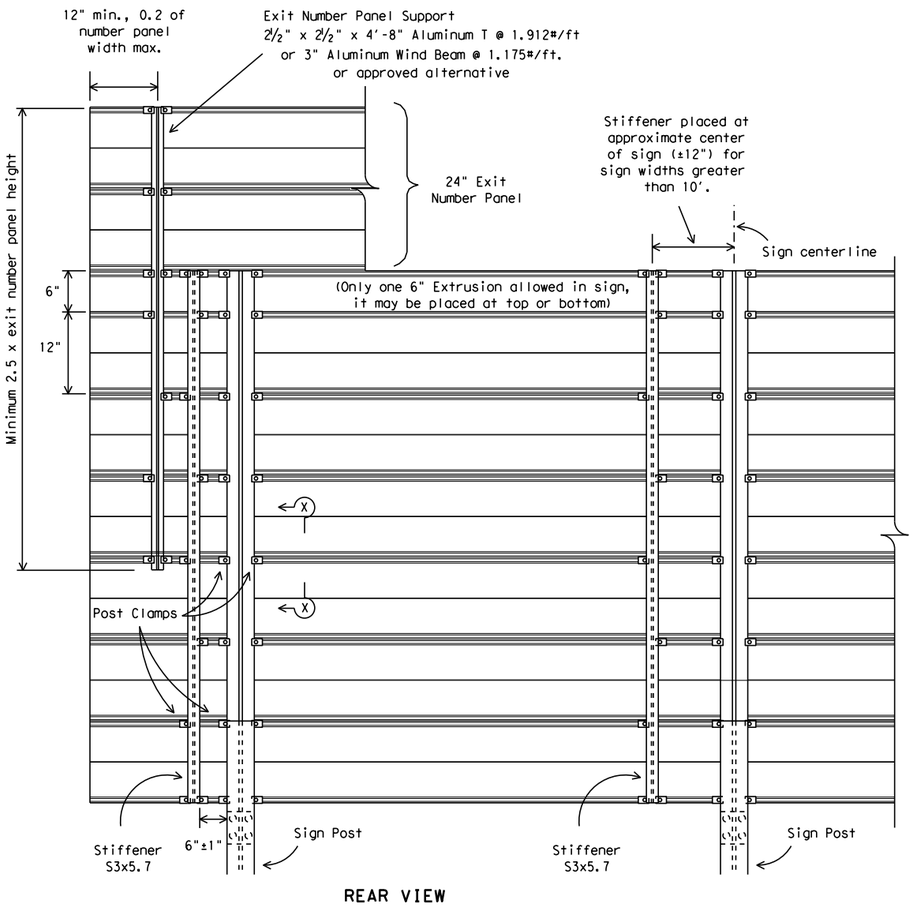
SIGN MOUNTING DETAILS- LARGE ROADSIDE SIGNS FOUNDATION & STUB

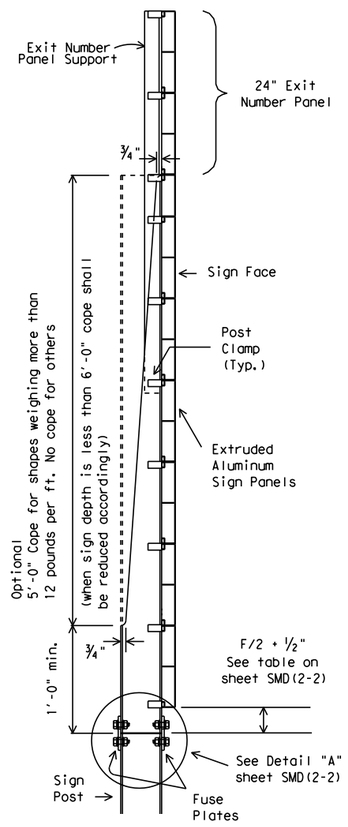
SMD(2-2)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
4-98	CONT	SECT	JOB	HIGHWAY
9-08	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1587

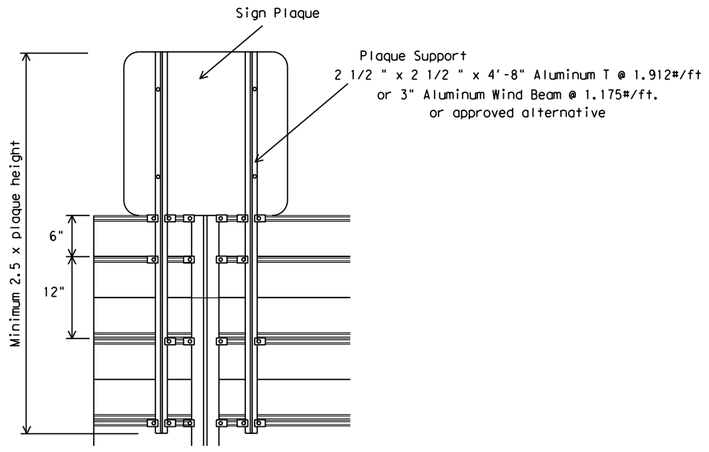
DATE:
FILE:

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



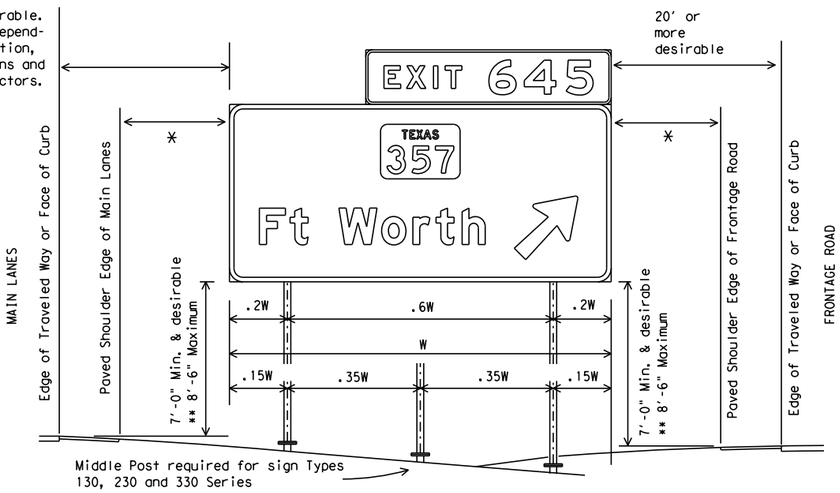


ALUMINUM PARENT SIGN & EXIT NUMBER PANEL MOUNTING DETAILS



SIGN PLAQUE MOUNTING DETAIL TO ALUMINUM PARENT SIGN

30' or more desirable. May be reduced depending on cross section, viewing conditions and other related factors.



TYPICAL SIGN INSTALLATION AND LOCATION

LATERAL CLEARANCE NOTES:

Lateral clearances of signs mounted on median side of main lanes are the same as shown above where space will permit.

Where a sign is to be located behind guardrail, an allowable minimum clearance of five feet may be used, measured from the face of the guardrail to the near edge of sign.

⁎ - 6' minimum and desirable may be used only in areas of limited lateral clearance and when approved by the Engineer.

POST SPACING NOTES:

Post spacing on a two post sign may vary a maximum of plus or minus 10% of total sign width to fit field conditions.

Post spacing on a three post sign may vary a maximum of plus or minus 5% of total sign width to fit field conditions.

SIGN HEIGHT NOTES:

** The 8' 6" maximum may be exceeded when placing signs on extreme slopes. In these conditions, a 7' minimum from natural ground to bottom of sign must be maintained.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN HARDWARE	DMS-7120

GENERAL NOTES:

1. Exit number panel shall be mounted to the right hand side of the parent sign for right exits and to the left hand side for left exits. The number panel shall be mounted with two uprights so its right edge is even with the right edge of the parent sign or vice-versa for left hand exits.
2. Exit number panel support shall be symmetrical about number panel centerline.
3. Exit number panel support shall be ASTM A36 structural steel galvanized after fabrication, or ASTM B221 aluminum alloy 6061-T6 or approved alternative.
4. All bolts, nuts and washers shall be galvanized per ASTM Designation: B695 Class 50, or A153 Class C or D.
5. Posts, parent sign panels, and exit number panels shall comply with notes on sheets SMD(2-1) and SMD(2-2).
6. Signs (such as exit number panels) attached above a parent sign shall be made of the same type material as the parent sign. General Service and Routing signs may be fabricated from flat sheet aluminum.
7. Exit number panel support and other connection hardware required to fasten exit number panel to parent sign shall be subsidiary to "Aluminum Signs" or "Fiberglass Signs."
8. For fiberglass sign installation details, see manufacturer's recommendations.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS-LARGE ROADSIDE SIGNS

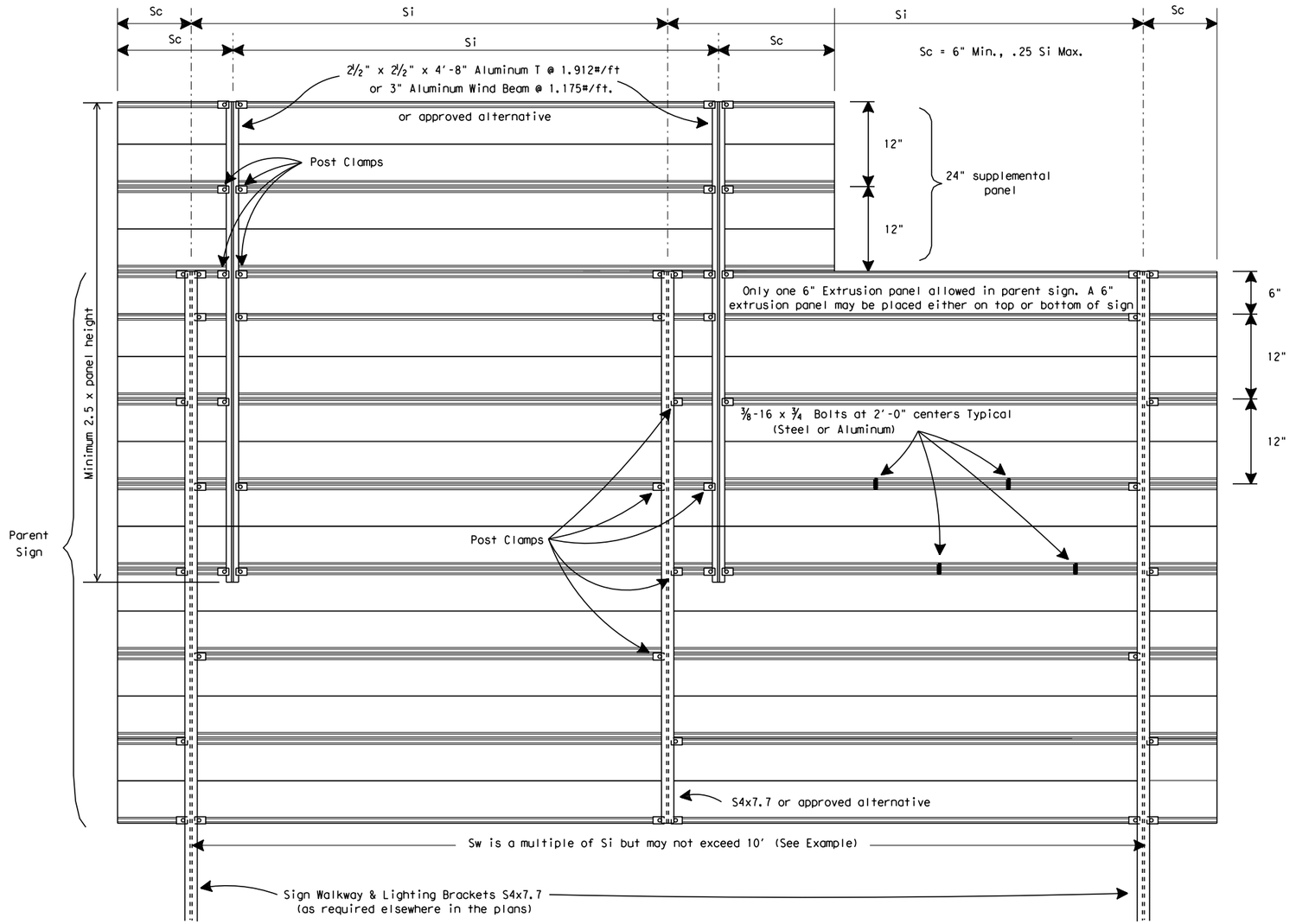
SMD(2-3)-08

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

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1588

REVISIONS
9-08

DATE:
FILE:

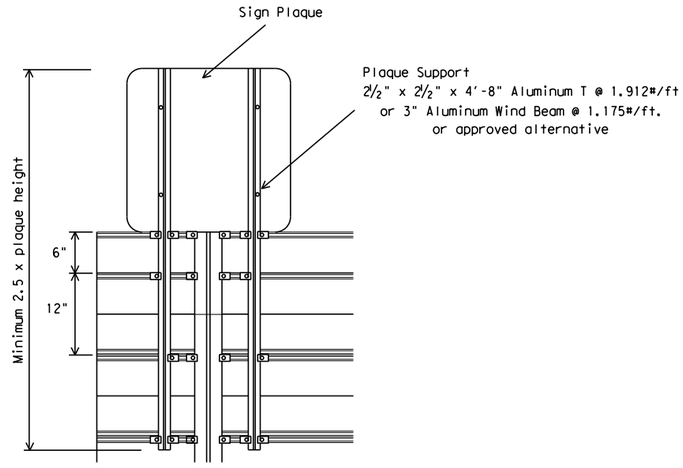


REAR VIEW

EXAMPLES (FOR DETERMINING Si and Sw)

NO.	ZONE	"d"	EXIT PANEL	WALKWAY	Si	Sw	COMMENT
1	1	15.0	YES	YES	4.5	9.0	Sw=2x(Si)
2	2	14.0	YES	NO	7.5	7.5	Sw = Si
3	1	15.0	NO	NO	8.5	8.5	Sw = Si
4	3	14.0	NO	YES	10.0	10.0	Sw = Si

Values shown for Si are maximum values. Si may be varied for different sign lengths and Truss mounting conditions. Sw should not exceed two times Si(Max.) or 10 feet.



SIGN PLAQUE MOUNTING DETAIL

MAXIMUM SIGN SUPPORT SPACING "Si" (FEET)

"d" Deepest Sign in Group (Ft.)	EXTRUDED ALUMINUM SIGN PANELS															
	WITH EXIT NUMBER PANELS								WITHOUT EXIT NUMBER PANELS							
	WITH WALKWAYS				WITHOUT WALKWAYS				WITH WALKWAYS				WITHOUT WALKWAYS			
	WIND ZONE				WIND ZONE				WIND ZONE				WIND ZONE			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
15	4.5	7	8	10	5	7	8	10	7	8	9	10	8.5	10	10	10
14	6	7.5	9.5	10	6	7.5	9.5	10	8	9	10	10	10	10	10	10
13	7.5	9	10	10	7.5	9	10	10	9	10	10	10	10	10	10	10
12	8.5	10	10	10	8.5	10	10	10	10	10	10	10	10	10	10	10
11 or less	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10

For fiberglass sign installations, see manufacturer's recommendations.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS- OVERHEAD SIGNS EXTRUDED ALUMINUM

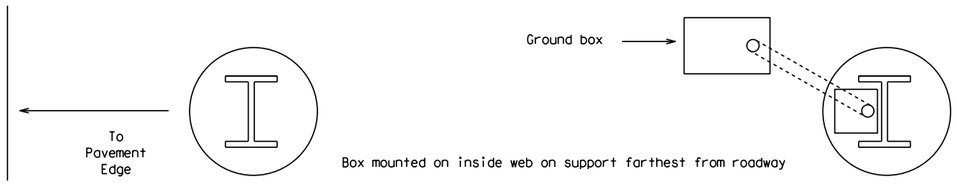
SMD(2-4)-08

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

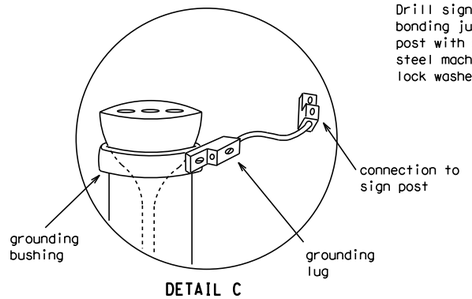
REVISIONS
9-08

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1589

DATE:
FILE:



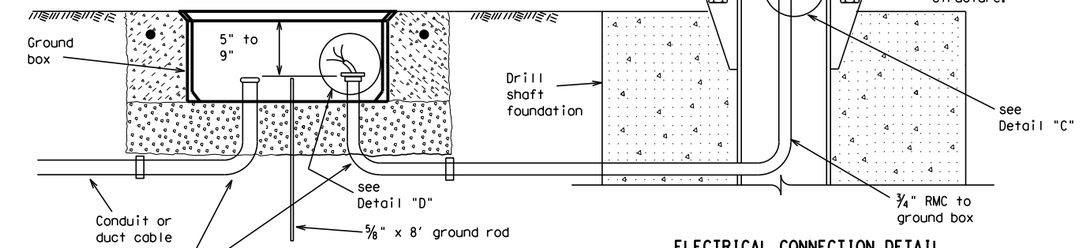
PLAN VIEW



DETAIL C

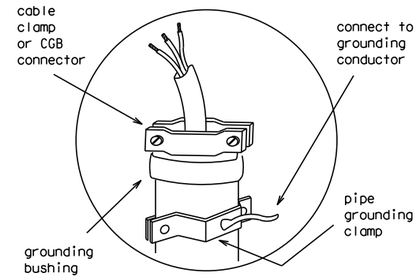
Drill sign post - structure leg, terminate bonding jumper with listed connector to post with a 10-24 (3/16") min. stainless steel machine screw, nut, flat washer and lock washer made wrench tight.

2 Pull connector down tight against conduit then clamp in ground box. See Detail "D"



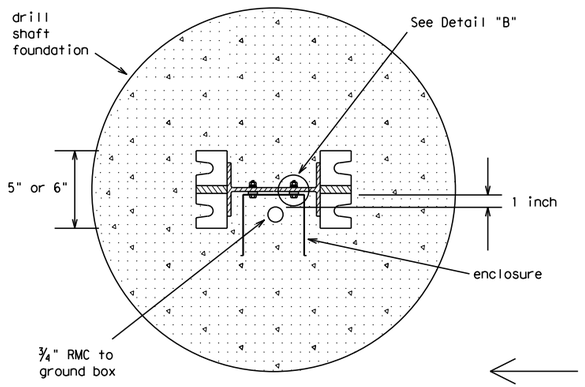
ELECTRICAL CONNECTION DETAIL

Enclosure cover not shown for clarity
Detail shows channel greater than 4 inches.
Less than 4 inches similar, see Detail A.



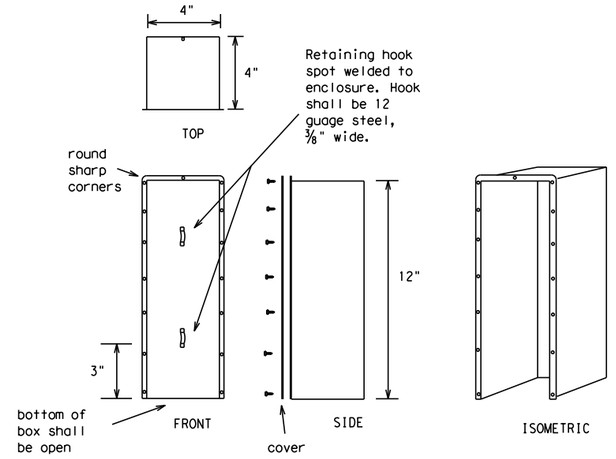
DETAIL D

Pull cable so opposite end connector is tight against conduit end, clamp cable at top of conduit as shown.



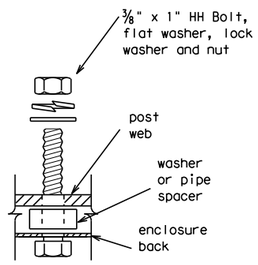
SECTION A-A

Stub-post connection
conduit, bolts and enclosure
(cover not shown)



ENCLOSURE

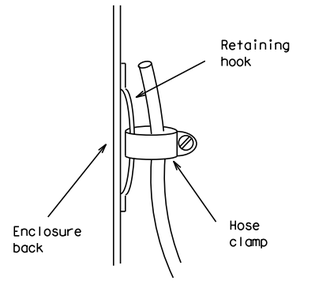
make from 12 gauge
galvanized sheet metal



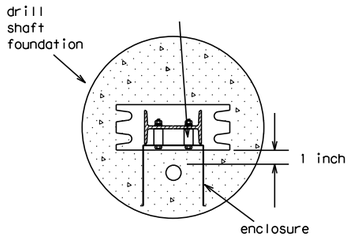
DETAIL B

enclosure connection
(4 places)

(use 2 inch bolt for
3 and 4 inch channels)



DETAIL E



DETAIL A

Stub-post connection
conduit, bolts and enclosure
for 3 and 4 inch channel
(cover not shown)

direction of
traffic

NOTES:

1. Breakaway connector shall be rated for 300 VAC, 30 amps and shall be waterproof. Connector shall be a three pole (two line conductors and neutral) polarized elastomer connector made from thermosetting synthetic polymer which remains fexible over the temperature range of -40 degrees C to 90 degrees C. The pins on the connector shall be overmolded 1 ¼" from the face of the connector toward the tips of the pins with the same material used in the construction of the connector body. This overmolding of the pins shall provide a non-conductive double taper which prevents the intrusion of water into the connection when the connectors are fully engaged. The pin receptors shall have current carrying barrels recessed 1 ½" from the face of the connector and surrounded by beryllium copper spring sleeves. The plug/receptacle combination shall be listed by an approved testing facility (UL or Factory Mutual) as suitable for outdoor use and shall have passed a rain test and a watertight (immersion) test as approved by the Engineer.
2. The female connector shall be integrally molded to a 13' length of type SO cord containing three number 10 or number 8 AWG conductors. The male connector shall be integrally molded to a 20" length of Type SO cord containing three number 10 or number 8 AWG conductors. Cord conductors shall have colored insulation, two black and one white, or shall be taped or painted to be two black and one white. Tape or paint marking shall cover entire exposed length. The contractor shall make a brochure submittal on cord connectors. Breakaway connector and cord shall not be paid for separately, but shall be subsidiary to the various items.
3. The contractor shall install in-line waterproof fuseholders for each line conductor in the ground box. Fuses shall be fast-acting 5 amp (Bussman KTK5, Gould ATM5, Littlefuse KLK5 or equal).
1 4. Conduit shall convert to ¾" liquidtight flexible metalic conduit below the fuse plate or knee joint and shall revert to ¾" RMC above the fuse plate or knee joint. The length of liquidtight flexible metal conduit shall not exceed 6".
5. Ground rod clamp shall be Blackburn GG 5/8H, Weaver W5.8 or equal.
6. Ground rod to be driven to a depth to leave between 2 to 4 inches of rod above the gravel placed under the ground box. See ED(2) standard sheet for ground box details.

11-01 Revision

1 Liquidtight conduit size corrected.
2 Editing of minor notes.

Texas Department of Transportation
Traffic Operations Division

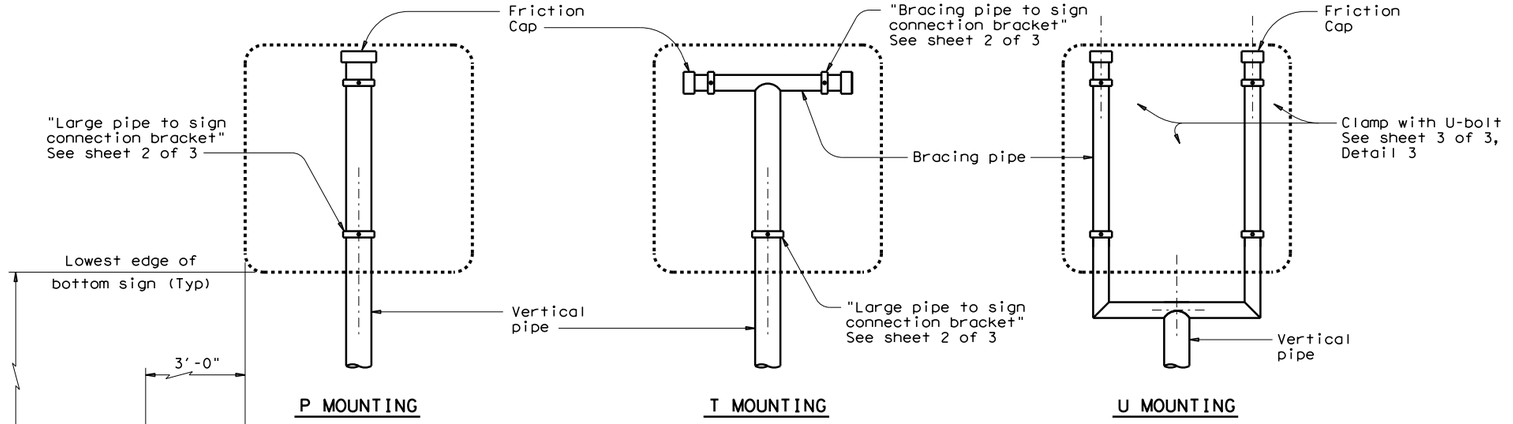
SIGN MOUNTING DETAILS-LARGE ROADSIDE SIGNS ELECTRICAL CONNECTION

SMD(2-6)-01

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
11-98	CONT	SECT	JOB	HIGHWAY
11-01	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1590

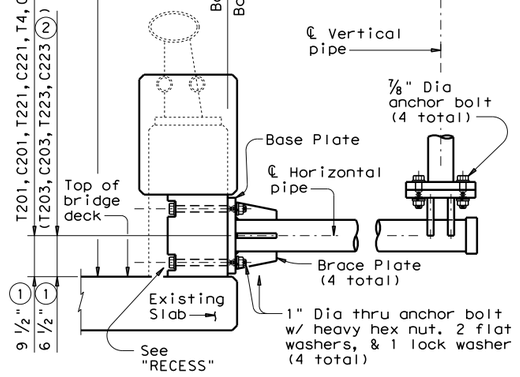
DATE:
FILE:

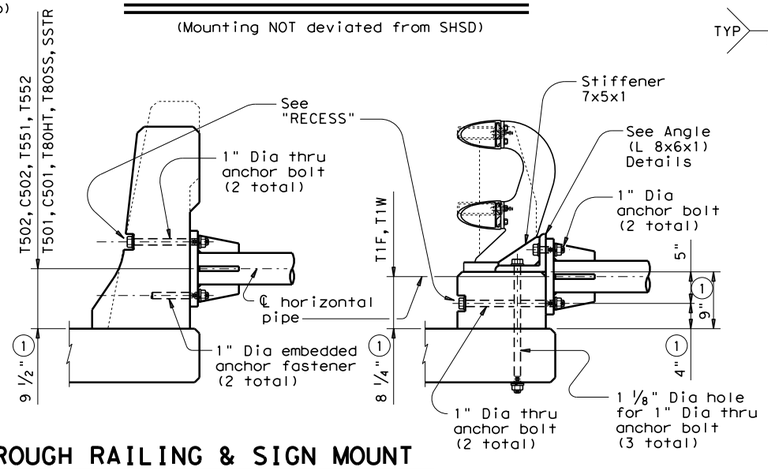
DATE:
FILE:



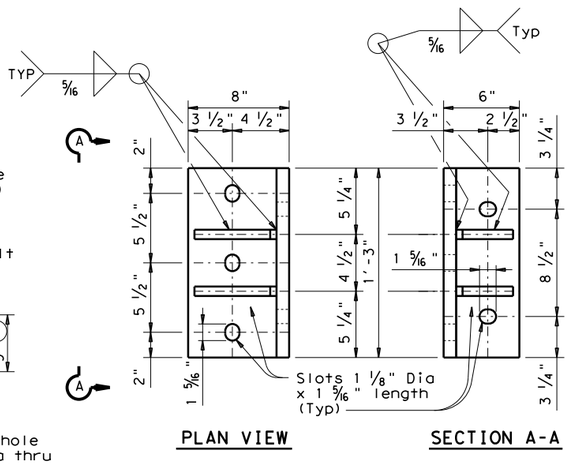
VARIOUS SIGN ATTACHMENTS

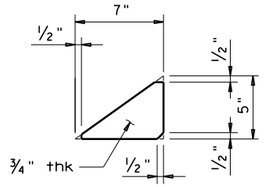
(Mounting NOT deviated from SHSD)





LONGITUDINAL SECTION THROUGH RAILING & SIGN MOUNT



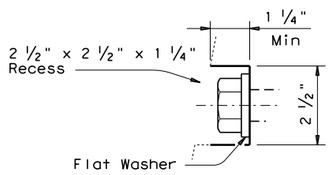


STIFFENER

ANGLE (L 8x6x1) DETAILS

① Increase 2" for structure with overlay.

② Attached at ℄ post.



RECESS

PIPE SIZE AND THICKNESS			
Pipe Placement / Design Wind Speed	Horizontal	Vertical	Bracing
90 mph	5" X-Strong (.375")	4" X-Strong (.337")	2 ½" Standard (.203")
130 mph	6" X-Strong (.432")	5" X-Strong (.375")	3" X-Strong (.300")

GENERAL NOTES:

Design conforms to 2013 AASHTO Standard Specifications for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design 3-second gust wind speeds of 90 mph and 130 mph with a 1.14 gust factor, and a wind importance factor of 1.0 (50-year mean recurrence interval) for the supporting structures. For mounting connection between sign panel and pipe, wind importance factors of 0.71 and 0.54, for 90 mph and 130 mph winds, respectively, are applied to adjust the wind speeds to a 10-year mean recurrence interval.

See standard sheet WV & IZ(LTS2013) for the boundaries of each design wind zone. All mounting shall be based on 130 mph wind speed design except when located in 90 mph wind zone. Maximum panel area is 30 sq. ft. Maximum design height is 50 ft, with design height defined as the distance between natural ground (average elevation of surrounding terrain) and the center of sign(s) at the mounting location.

Material for pipe shall be ASTM A53 Grade B, or A501. Structural steel plates shall be ASTM A36, A572 Grade 50, or A588. Bolts used to connect pipe and mounting bracket, and wind beam to sign panel shall be ASTM A307. Anchor bolts shall be ASTM A325 or A193 B7. Each anchor bolt shall be provided with 2 flat washers, 1 lock washer, and 1 heavy hex nut. All parts shall be galvanized in accordance with Standard Specifications Item 445, "Galvanizing".

Attach horizontal pipe at least 2'-0" from the edge of any nearby drain slot.

Contractor shall verify applicable field dimensions before fabrication. Holes drilled through the railing parapet wall shall be drilled with rotary (coring or masonry drill) type equipment. Percussion (star) drilling shall not be allowed. Anchorage for pipe attached to rail shall be placed using an anchoring system approved by the engineer. Installation of anchor fasteners including hole depth, diameter and material shall be in accordance with the manufacturers' recommendation.

Each embedded anchor fastener shall resist an allowable design loading (after applying the reduction factors of bolt spacing and bolt edge distance) of:

	130 mph	90 mph
Tension	12.5 kips	7.5 kips
Shear	9.0 kips	5.0 kips

Each anchoring system shall provide a capacity to resist the required tension and shear acting simultaneously.

For sign connection to mounting, shop drill holes on sign blank in accordance with the current Standard Highway Sign Designs for Texas (SHSD). Additional hole(s) needed to meet a stipulated-type mounting may be field drilled. For multi-sign or back-to-back signs mounting, the engineer shall determine the proper type which ensures each individual mounting meets requirements.

Refer to Standard sheets SMD(GEN), SMD(SLIP-2 and SMD(2-1) for details not covered here.

Texas Department of Transportation

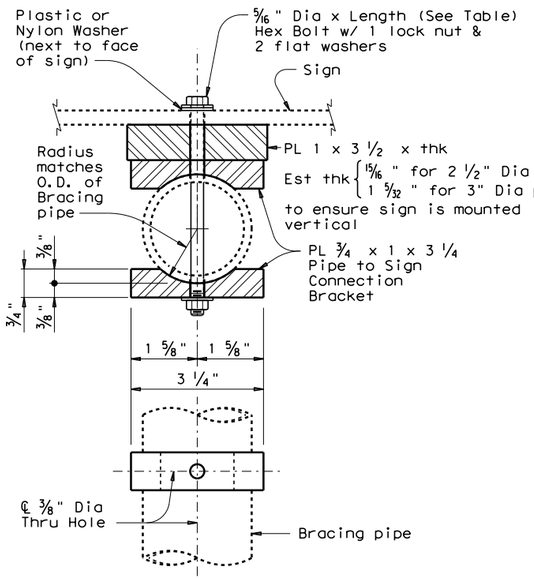
Traffic Operations Division Standard

BRIDGE RAILING SIGN MOUNT DETAILS

SMD(BR-1)-14

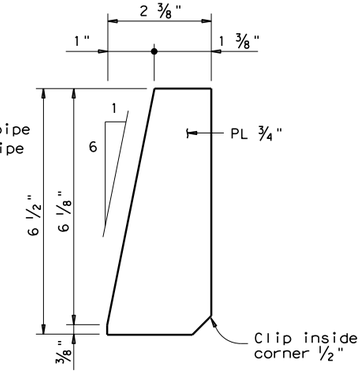
FILE: smdbr-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1591

DATE:
FILE:

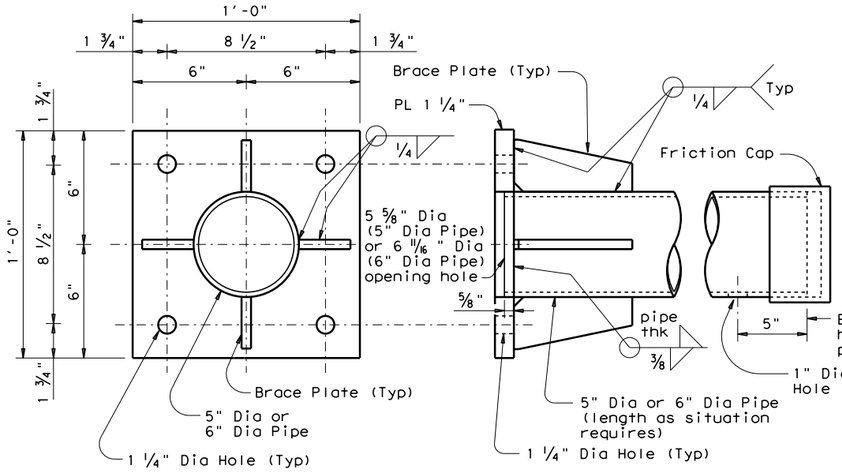


BRACING PIPE TO SIGN CONNECTION BRACKET DETAILS

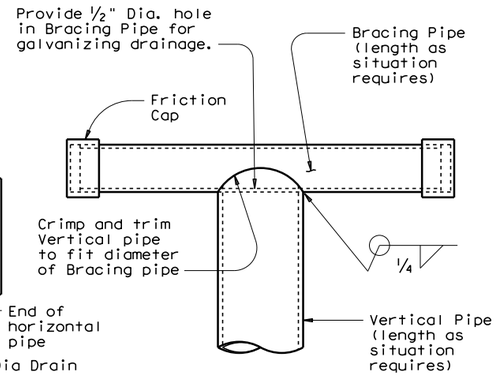
(Showing T Mounting)

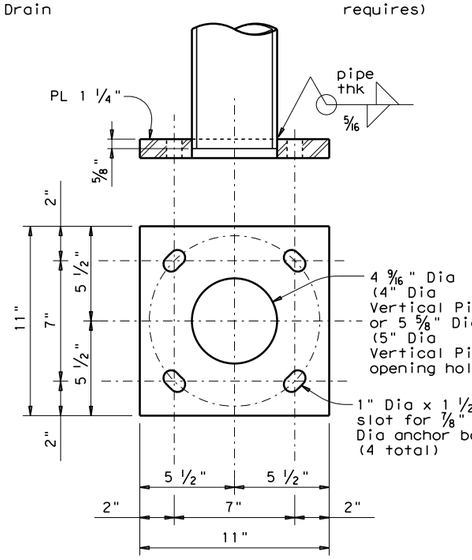


BRACE PLATE DETAILS



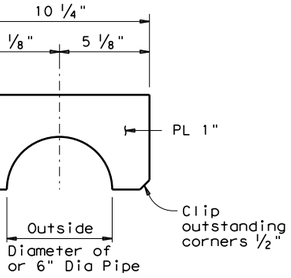
BASE PLATE DETAILS



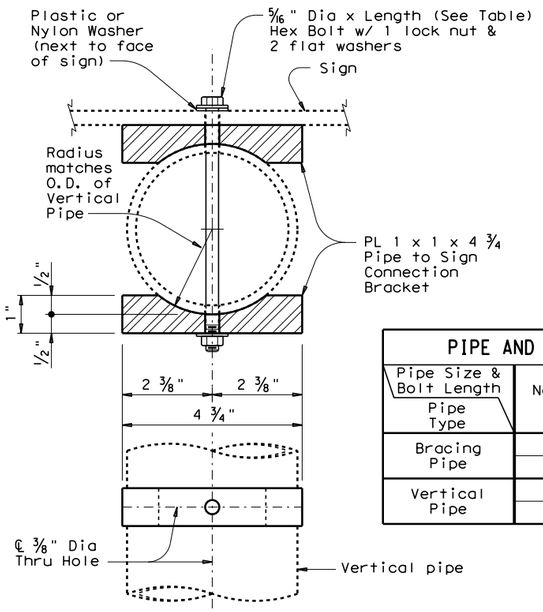


SIGN POLE & POLE BASE PLATE DETAILS

(Showing only T Mounting)



SIGN POLE SUPPORT PLATE BRACKET DETAILS



LARGE PIPE TO SIGN CONNECTION BRACKET DETAILS

(Showing P or T Mounting)

PIPE AND BOLT SPECIFICATIONS		
Pipe Size & Bolt Length / Pipe Type	Nominal Pipe Dia (in.)	Bolt Length (in.)
Bracing Pipe	2 1/2	6
	3	7
Vertical Pipe	4	7
	5	8

SIGN POLE SUPPORT PLATE DETAILS

SHEET 2 OF 3

Texas Department of Transportation

Traffic Operations Division Standard

BRIDGE RAILING SIGN MOUNT DETAILS

SMD(BR-2)-14

FILE: smdbr-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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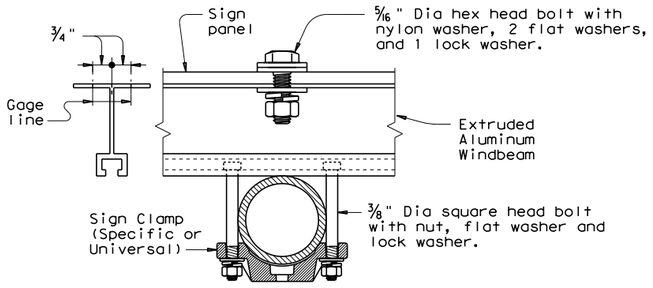
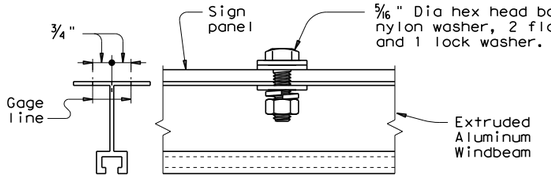
REVISIONS	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1592

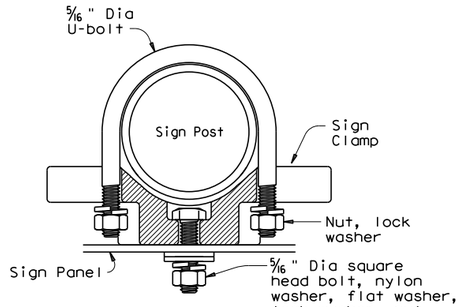
26H



DETAIL 1



DETAIL 2

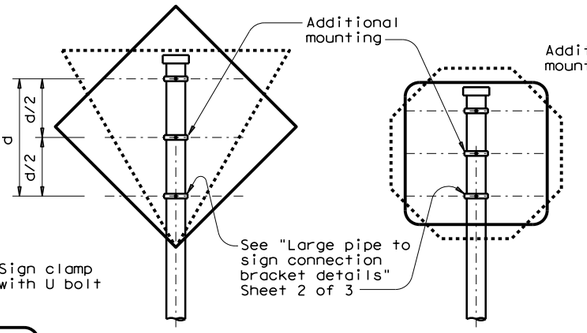


DETAIL 3

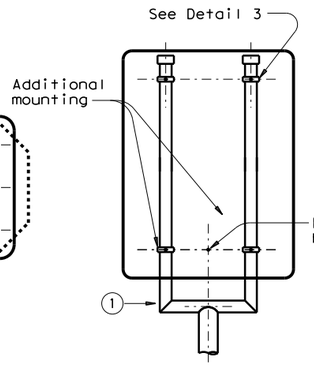
SIGN SHAPE	SQUARE			HORIZONTAL RECTANGLE			VERTICAL RECTANGLE			DIAMOND			OCTAGON			EQUILATERAL TRIANGLE			INTERSTATE SHIELD	PENTAGON (SCHOOL)	
Type of Sign Mounting on SHSD / Design Wind Speed	P	T	U	P	T	U	P	T	U	P	T	U	P	T	U	P	T	U	P	P	T
90 mph					(Type 23) 60"x48"	(Type 3) 72"x36" 78"x36" (Type 23) 72"x30" 84"x24"		(Type 2) 36"x48" (Type 32) 36"x60" 36"x72" 42"x60" 48"x54" 48"x60" 48"x72" (Type 3) 48"x84"			(Type 3) 60"x60"									(Type Special) 45"x36"		
130 mph	(Type 1) 30"x30" 36"x36"	(Type 3) 48"x48"		(Type 1) 36"x24" 36"x30"	(Type 23) 48"x42" 54"x42" 60"x30" 66"x36" 84"x24" (Type 3) 60"x48"	(Type 3) 72"x36" 78"x36" (Type 23) 72"x30" 84"x24"	(Type 1) 30"x36" 30"x42"	(Type 3) 36"x48" 36"x60" 36"x72" 42"x60" 48"x54" 48"x60" (Type 4) 48"x72" 48"x84"	(Type 3) 48"x60"	(Type 1) 36"x36"	(Type 3) 48"x48" 60"x60"					(Type 1) 48"x48"			(Type Special) 36"x36" 45"x36"		

Notes:
1. Drill holes in addition to the hole pattern of the Standard Highway Sign Designs for Texas (SHSD) at specified locations to meet a stipulated-type mounting indicated in the parenthesis ( ).
2. "Blank" in the above table indicates all other signs excluded from stipulated mounting shall be mounted in accordance with SHSD.

(1) In lieu of welding, the Fabricator may bend bracing pipe elbows if the following conditions are met:
a. Spacing between vertical bracing pipes is equal to or greater than 2'-6".
b. Bending radius is 12".
c. The distance between the lowest clamp and centerline of horizontal bent pipe is 13" max.



TYPE 1



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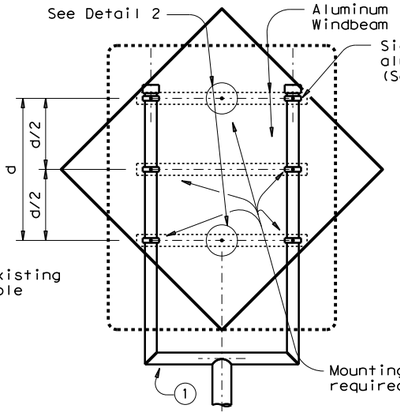
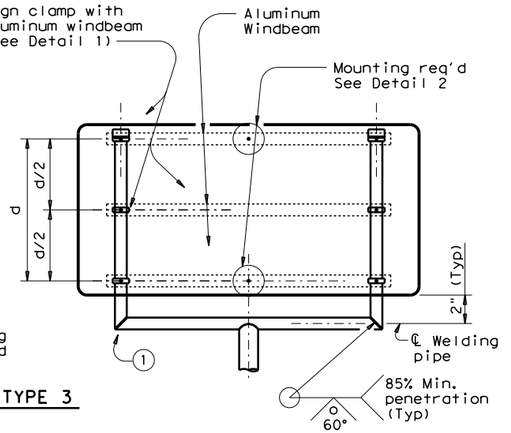
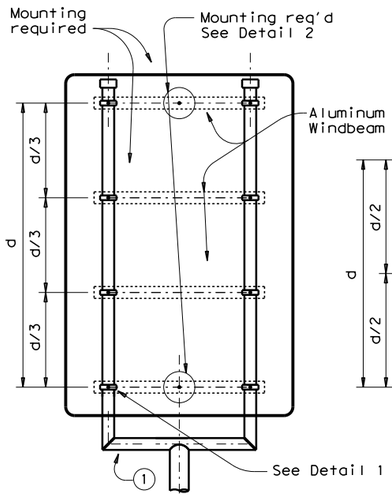
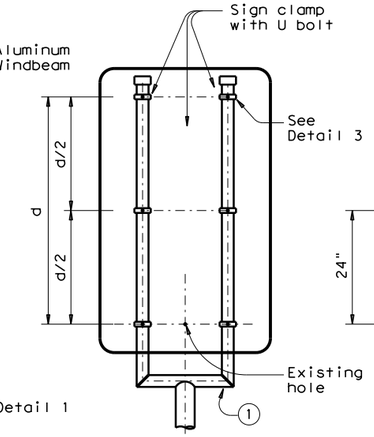




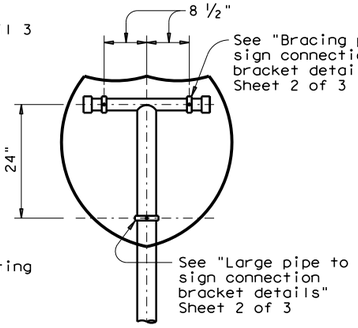
TYPE 3



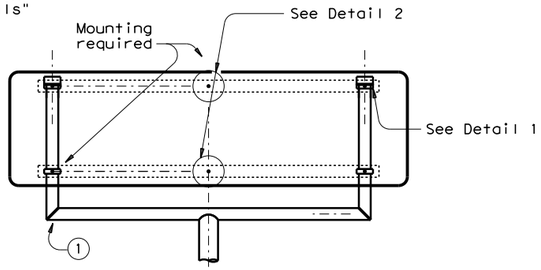
TYPE 4



TYPE 32



TYPE SPECIAL



TYPE 23

Texas Department of Transportation

Traffic Operations Division Standard

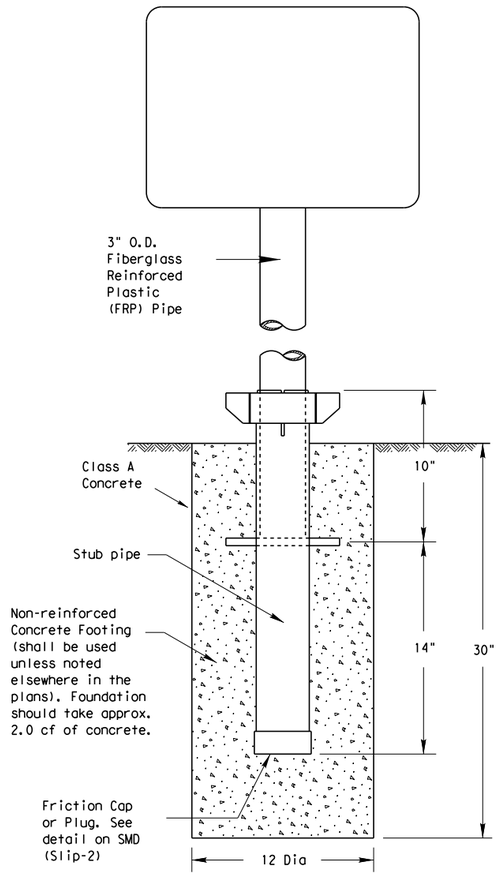
BRIDGE RAILING SIGN MOUNT DETAILS

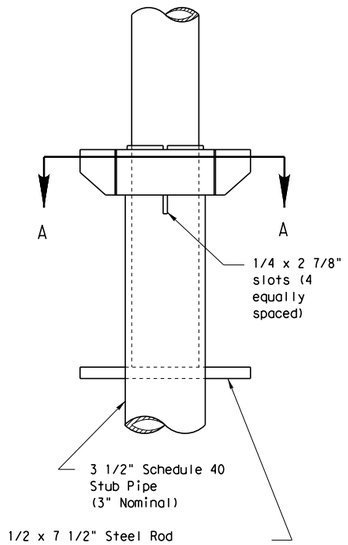
SMD(BR-3)-14

FILE: smdbr-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1593

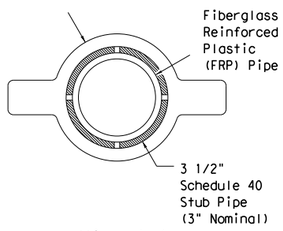
DATE:
FILE:

Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post



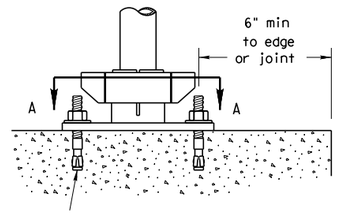


1/2 x 7 1/2" Steel Rod
Acts as a "stop" for the sign post and prevents stub from turning in the foundation.



View A-A

SM RD SGN ASSM TY FRP(X)UA(P)



5/8" diameter Concrete Anchor - 4 places (embed a min. of 3 3/8" and torque to min. of 50 ft-lbs). Anchor may be expansion or adhesive type.

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.

BOLT-DOWN DETAILS

SM RD SGN ASSM TY FRP(X)UB(P)

GENERAL NOTES:

1. FRP sign supports for a single type sign support may be used for signs up to and including 16 square feet. Dual post installation may be used for signs up to and including 32 square feet.
2. All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
3. See the Traffic Operations Division website for detailed drawings of sign clamps. The website address is: http://www.txdot.gov/publications/traffic.htm

FRP POST REQUIREMENTS

1. Materials shall conform to the requirements of Departmental Material Specification DMS-4410 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
2. Thickness of FRP sign support is 0.125" + 0.031", - 0.0".
3. FRP sign supports are prequalified by the Traffic Operations Division. Prequalification procedures are obtained by writing:
   Texas Department of Transportation
   Traffic Operations Division
   125 East 11th Street
   Austin, Texas 78701-2483

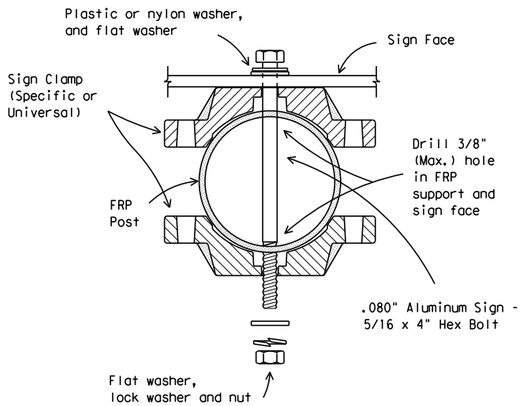
UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
4. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post slots shall be above the concrete footing.
5. Attach sign to FRP post.
6. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
7. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
8. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

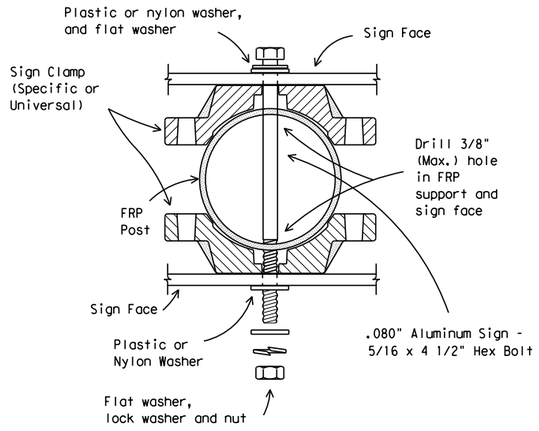
BOLT DOWN SIGN SUPPORT

1. Position base plate with coupler on existing concrete.
2. Drill holes into concrete and insert the 5/8" diameter bolts with wedge anchors, and tighten nuts.
3. Attach sign to FRP post.
4. Insert bottom of sign post into pipe stub.
5. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
6. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

Typical Sign Mounting Detail for FRP Support with Single Sign



Typical Sign Mounting Detail for FRP Support with Back-to-Back Signs



Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS UNIVERSAL ANCHOR SYSTEM WITH FRP POST

SMD(FRP)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1594

9-08 REVISIONS

DATE:
FILE:

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

Post Type

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

Number of Posts (1 or 2)

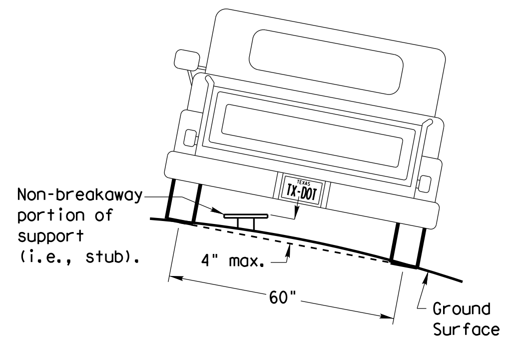
Anchor Type

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

Sign Mounting Designation

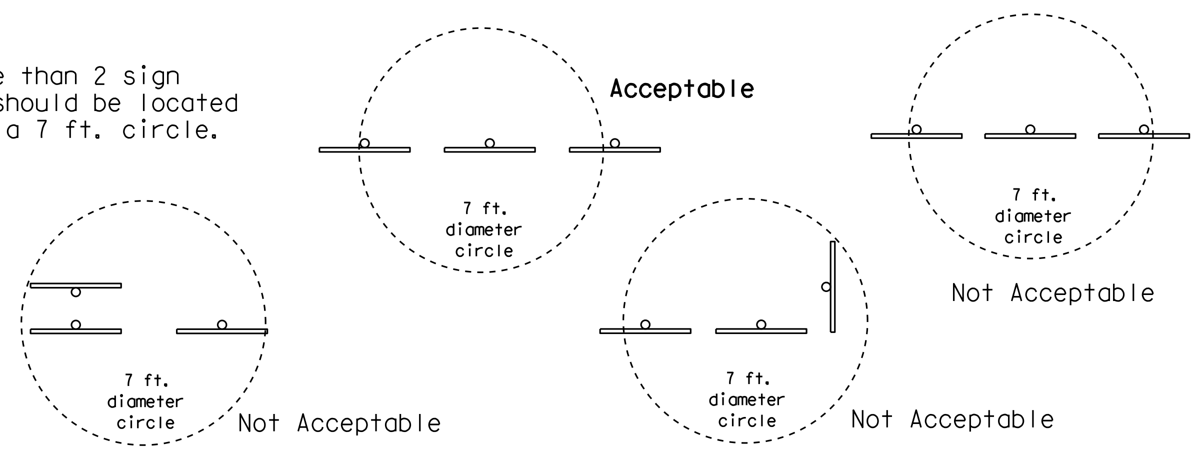
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))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

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



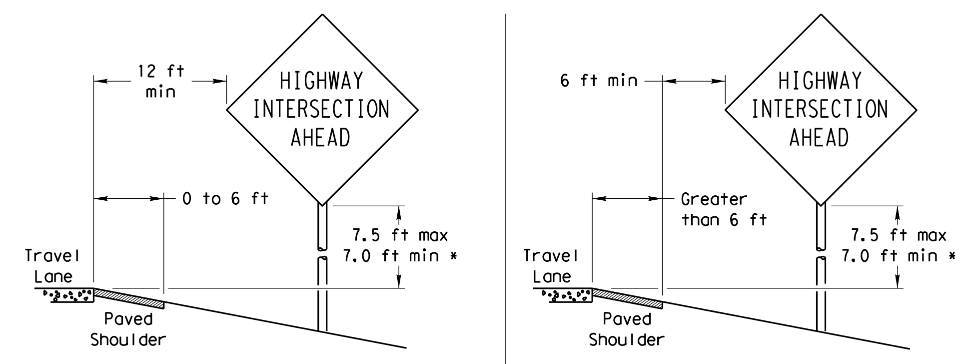
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

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



SIGN LOCATION

PAVED SHOULDERS



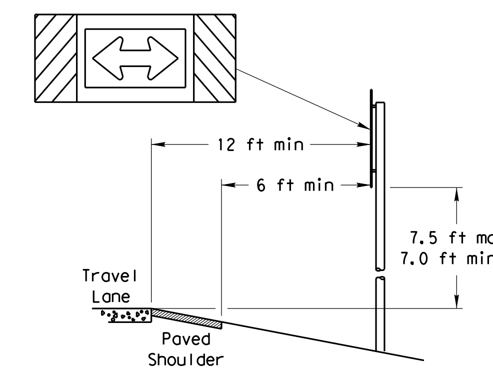
LESS THAN 6 FT. WIDE

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

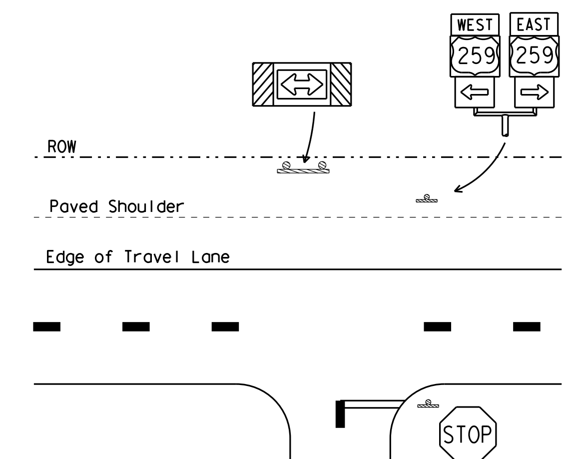
GREATER THAN 6 FT. WIDE

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

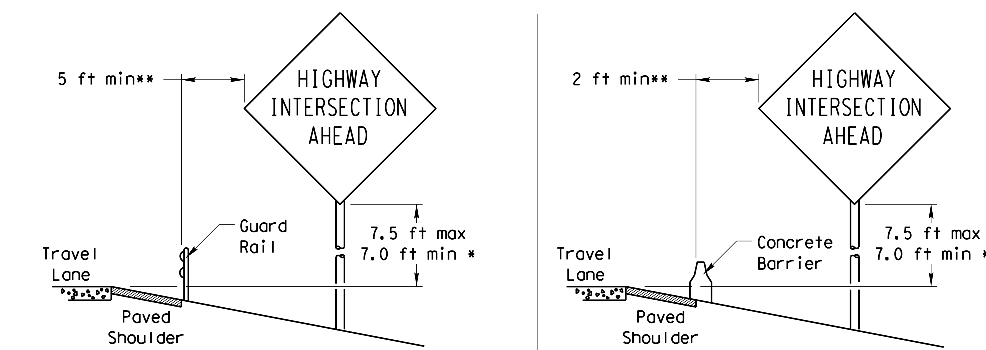
T-INTERSECTION



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



BEHIND BARRIER



BEHIND GUARDRAIL

BEHIND CONCRETE BARRIER

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

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

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

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

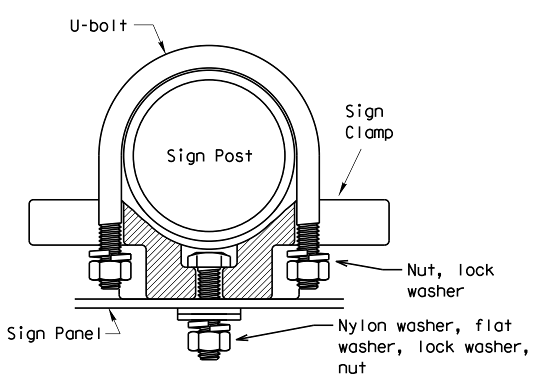
The maximum values may be increased when directed by the Engineer.

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

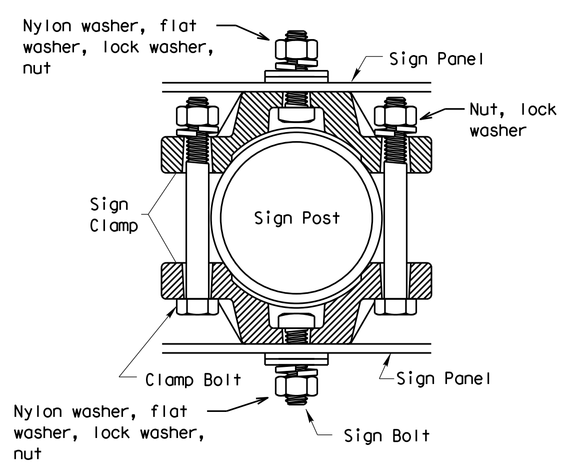
The website address is:
http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs



Back-to-Back Signs



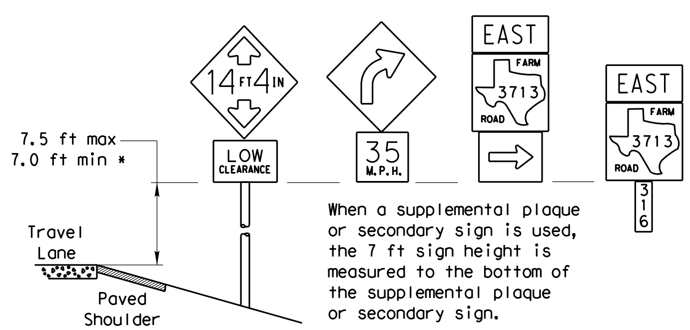
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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

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

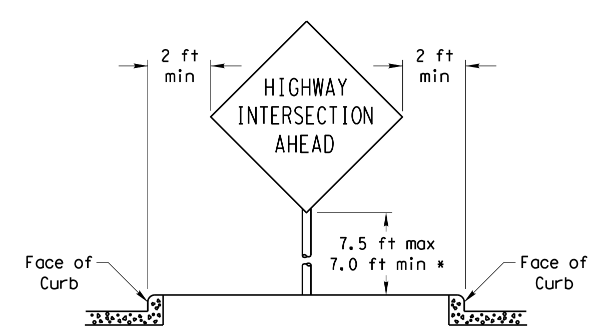
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



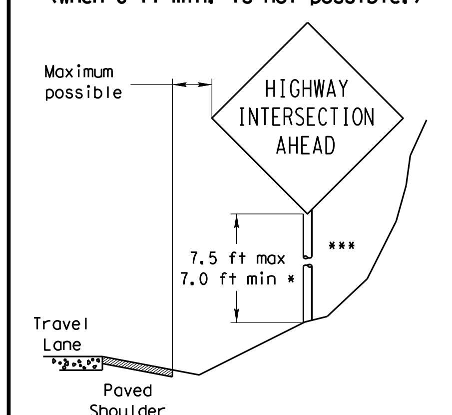
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



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

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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

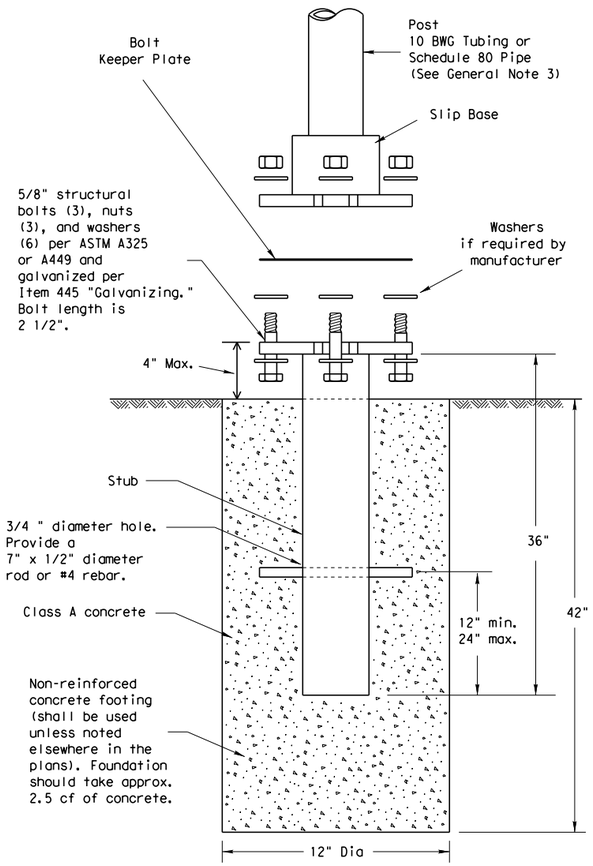
SMD(GEN)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT	
REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08	0015	01	246	IH 35
	DIST		COUNTY	SHEET NO.
	WACO		McLENNAN	1595

26A

DATE:
FILE:

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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

NOTE

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

GENERAL NOTES:

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

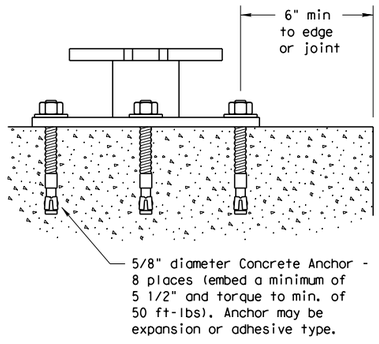
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum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

ASSEMBLY PROCEDURE

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

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

CONCRETE ANCHOR



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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

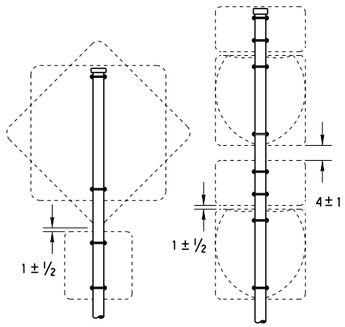
SMD(SLIP-1)-08

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

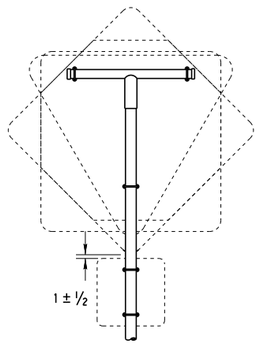
REVISIONS
9-08

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1596

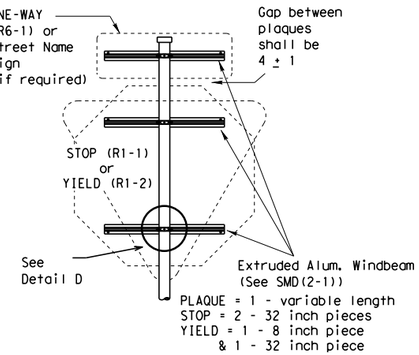
DATE:
FILE:



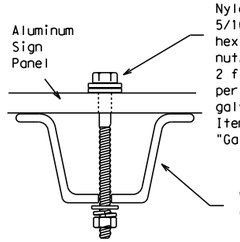
SM RD SGN ASSM TY XXXXX(1)XX(P)



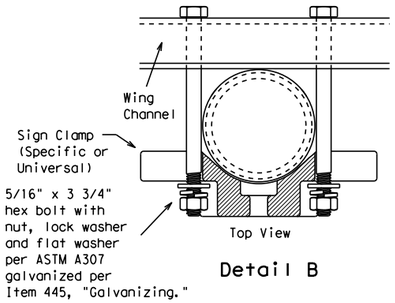
SM RD SGN ASSM TY XXXXX(1)XX(T)



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



Detail A



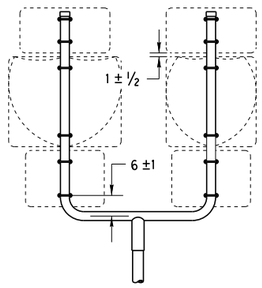
Detail B

GENERAL NOTES:

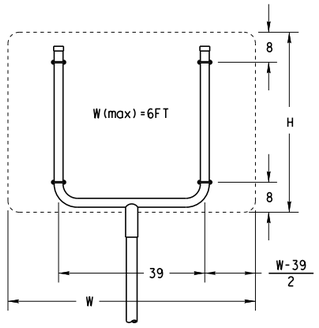
1.

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

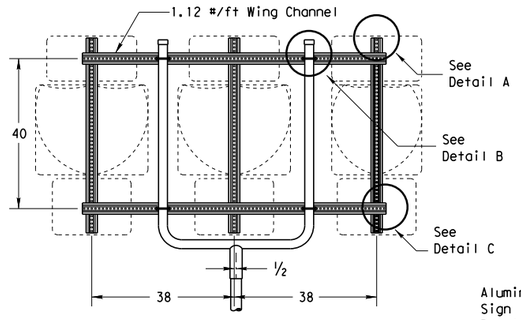
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material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



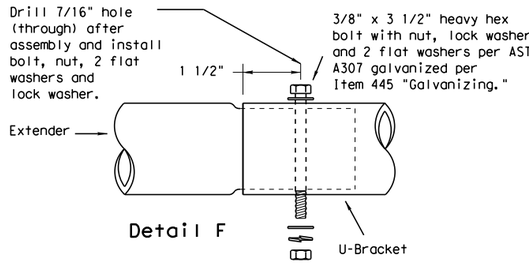
SM RD SGN ASSM TY XXXXX(1)XX(U)



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

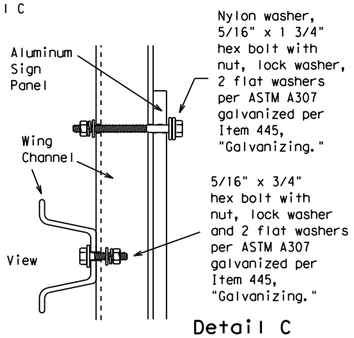


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)



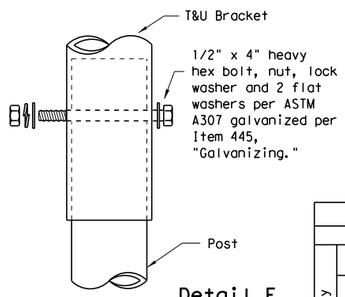
Detail F

Splices shall only be allowed behind the sign substrate.

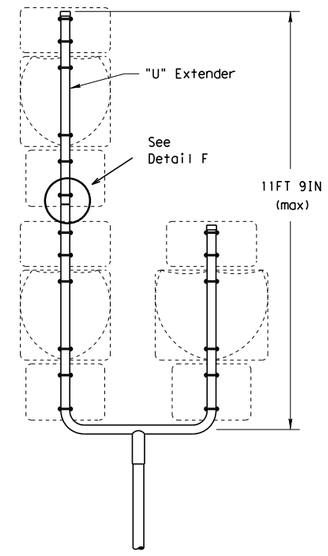


SIDE VIEW

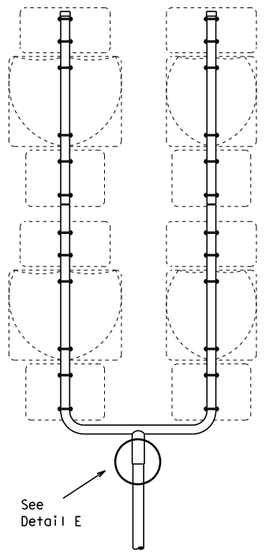
Detail C



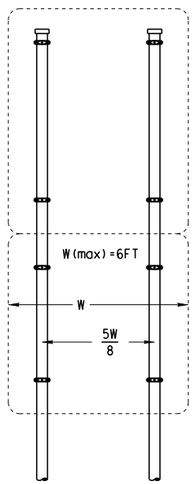
Detail E



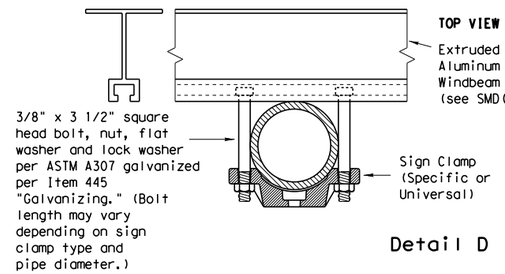
SM RD SGN ASSM TY S80(1)XX(U-1EXT)



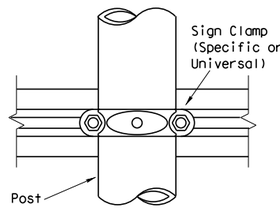
SM RD SGN ASSM TY S80(1)XX(U-2EXT)



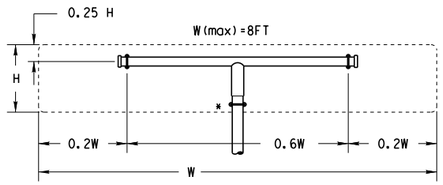
SM RD SGN ASSYM TY XXXXX(2)XX(P)



Detail D



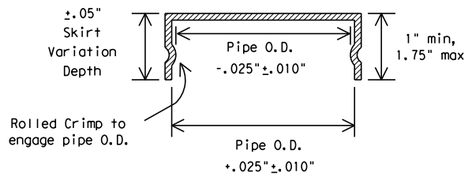
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)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



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

All dimensions are in english unless detailed otherwise.

FRICTION CAP DETAIL



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

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

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

Texas Department of Transportation
Traffic Operations Division

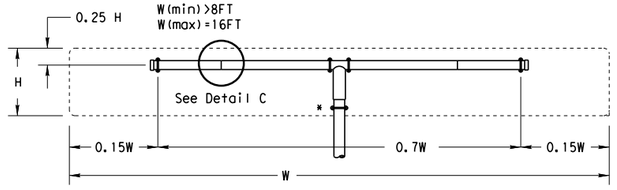
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1597

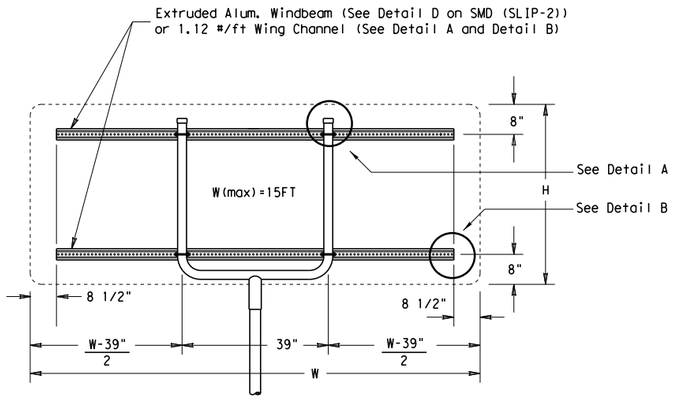
9-08 REVISIONS

DATE:
FILE:

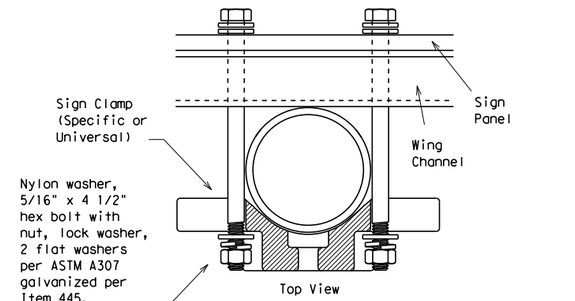


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)

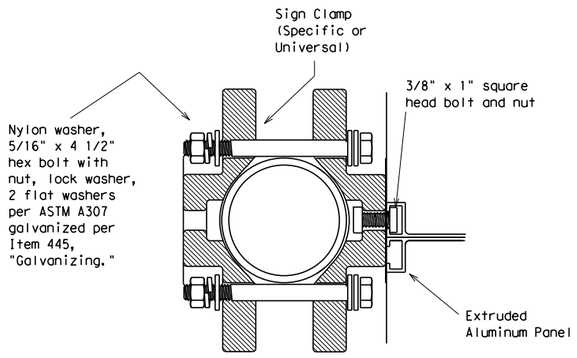
(* - See Note 12)



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

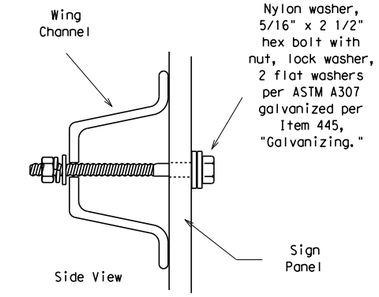


Detail A

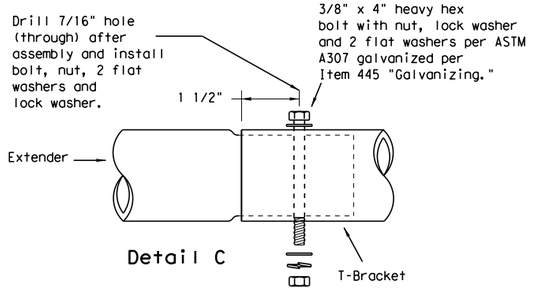


Detail D

EXTRUDED ALUMINUM SIGN WITH T BRACKET

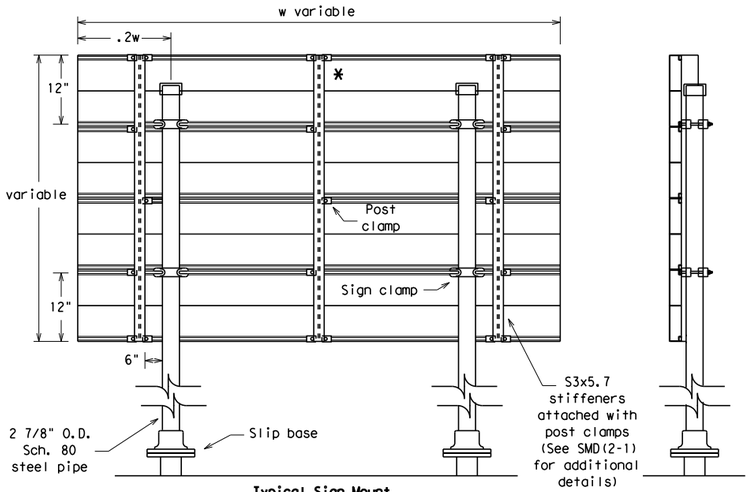


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

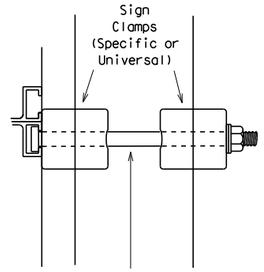


Typical Sign Mount

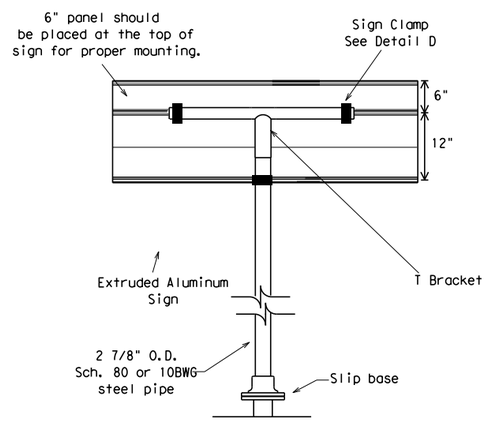
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

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

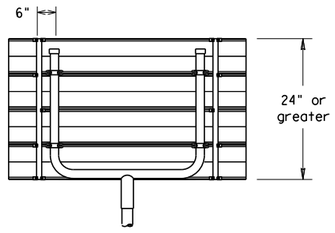
See Detail E
for clamp installation



Detail E



Extruded Aluminum Sign
With T Bracket



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

See Detail E
for clamp installation

GENERAL NOTES:

1.

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

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

REQUIRED SUPPORT

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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

REVISIONS

9-08

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1598

DATE:
FILE:

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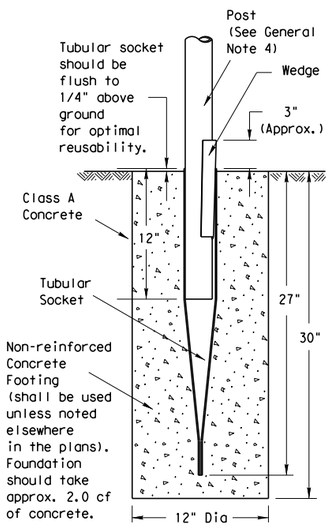
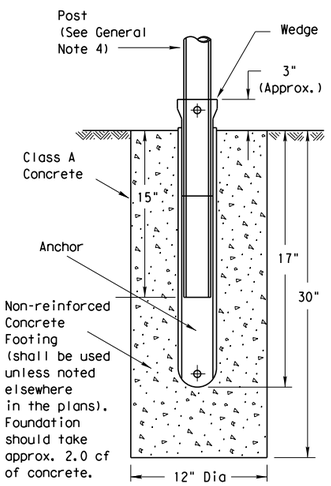
Wedge Anchor Steel System



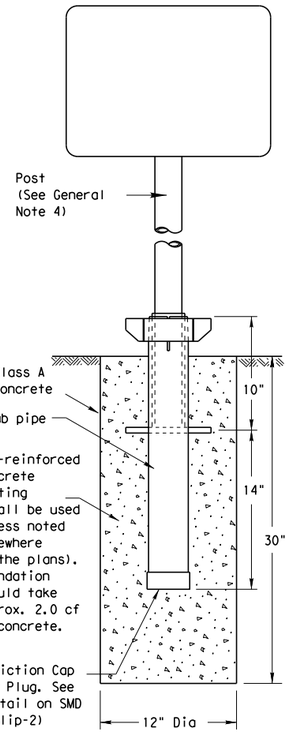
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

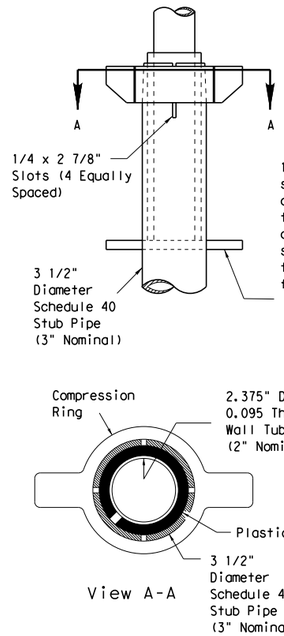


SMD RD SGN ASSM TY TWT(X)WP(X)

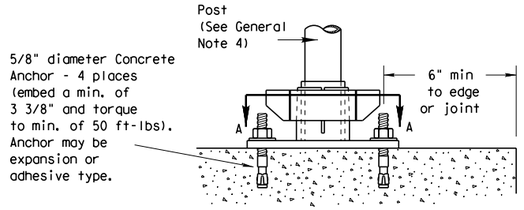
Universal Anchor System with Thin-Walled Tubing Post



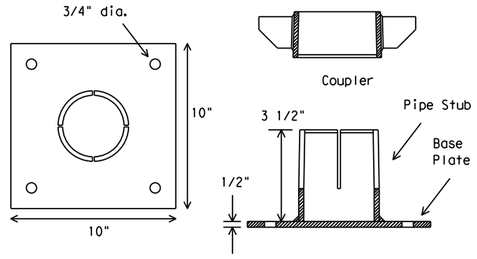
SM RD SGN ASSM TY TWT(X)UA(P)



Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

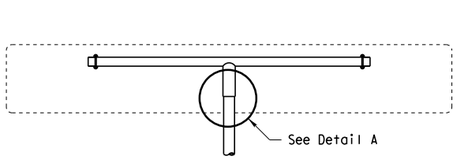


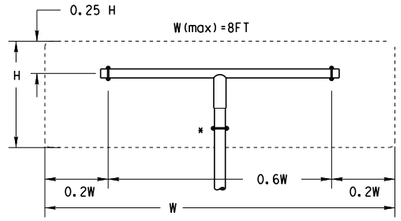
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



SM RD SGN ASSM TY TWT(X)UB(P)

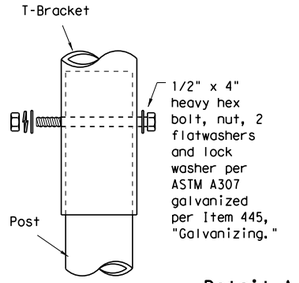
Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post





SM RD SGN ASSM TY TWT(X)XX(T)

(* - See General Note 6)



Detail A

9/16" hole may need to be drilled through post to accommodate bolt.

NOTE

The devices shall be installed per manufacturer's recommendations.
Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximaely 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

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

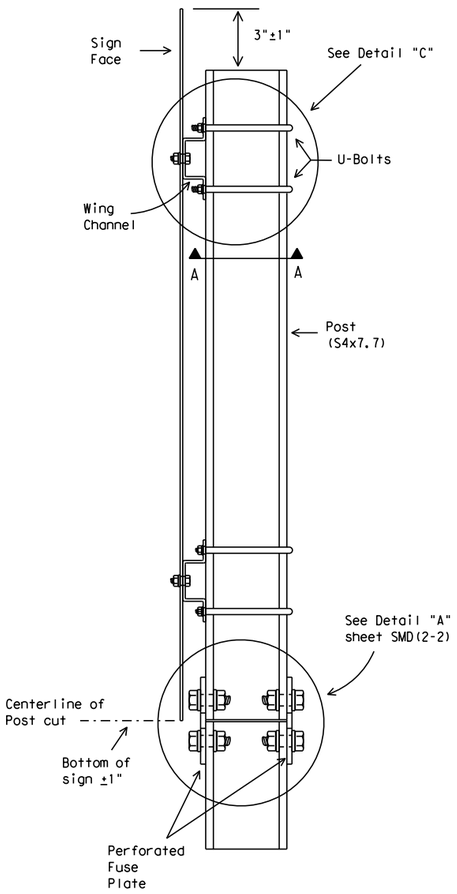
9-08 REVISIONS

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1599

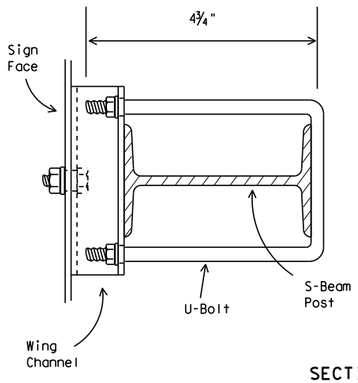
DATE:
FILE:

DATE:
FILE:

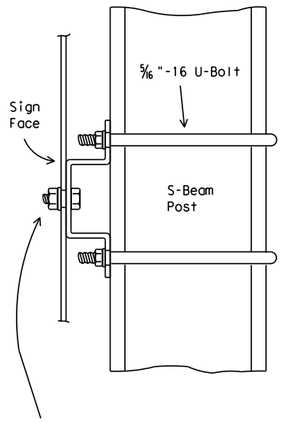
WING CHANNEL CLAMP DETAIL FOR TYPE G MOUNT



SIDE VIEW

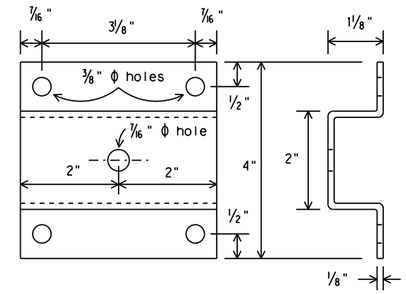


SECTION A-A



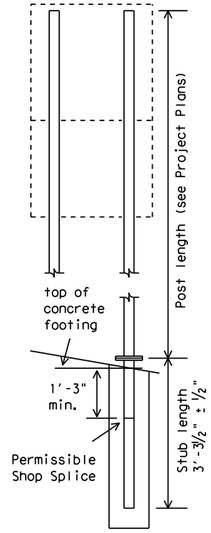
Galvanized steel or aluminum self-locking hex. head nut. 3/8 " - 16 x 3/4 " hex. head bolt for sheet metal. 3/8 " - 16 x 1 1/4 " hex. head bolt for plywood. 3/8 " galvanized medium washer.

DETAIL "C"

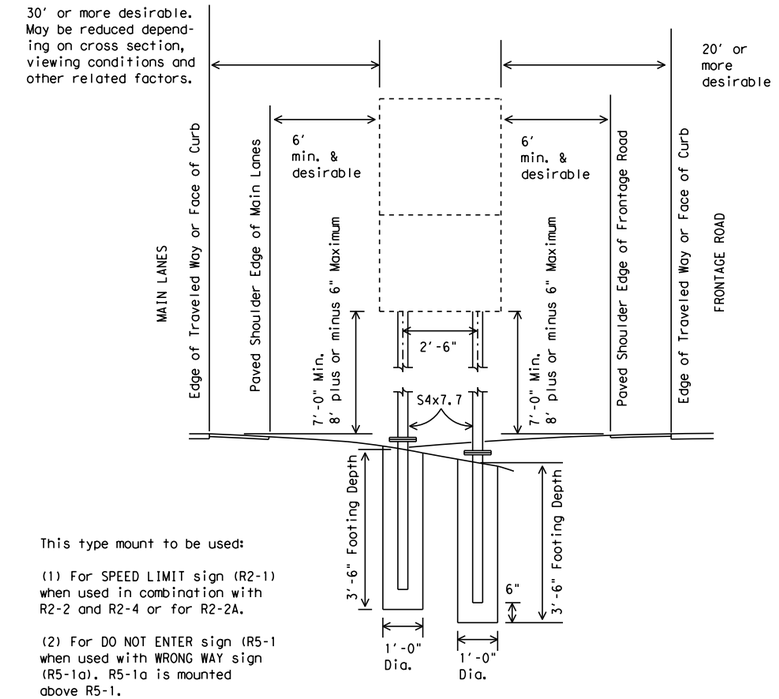


WING CHANNEL

Wing channel, 4" width x 1⅛" depth x ⅛" thickness, shall be aluminum (ASTM B221 6061-T6 or B308 6061-T6), galvanized steel (ASTM A36) or stainless steel (ASTM A167 type 304, No. 2B finish).



The weight of one S4x7.7 post is equal to 112.2 lbs. plus 7.7 lbs./ft x (post length in feet minus 10 ft). The weight of 112.2 lbs. includes 10 feet of post length, post foundation stub, related connection plates, friction fuse plate, and all high strength bolts, nuts and washers.



This type mount to be used:

(1) For SPEED LIMIT sign (R2-1) when used in combination with R2-2 and R2-4 or for R2-2A.

(2) For DO NOT ENTER sign (R5-1 when used with WRONG WAY sign (R5-1a). R5-1a is mounted above R5-1.

DEPARTMENTAL MATERIAL SPECIFICATIONS
SIGN HARDWARE DMS-7120

GENERAL NOTES:

1. Design conforms with AASHTO Specifications for the design and construction of structural supports for highway signs.
2. Materials and fabrication shall conform to the requirements of the Department material specifications.
3. Structural steel shall be "Low-Alloy Steel" for non-bridge structures per Item 442, "Metal For Structures."
4. Parts shall be saw cut either before galvanizing and the galvanized cut cleaned of zinc build-up, or saw cut after galvanizing and the cut surface repaired per Item 445, "Galvanizing." (Cut surface will not be treated until plate is installed and all bolts fully tightened.)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS, TYPE G SUPPORT

SMD(TY G)-08

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

REVISIONS
1-97
9-08

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1600

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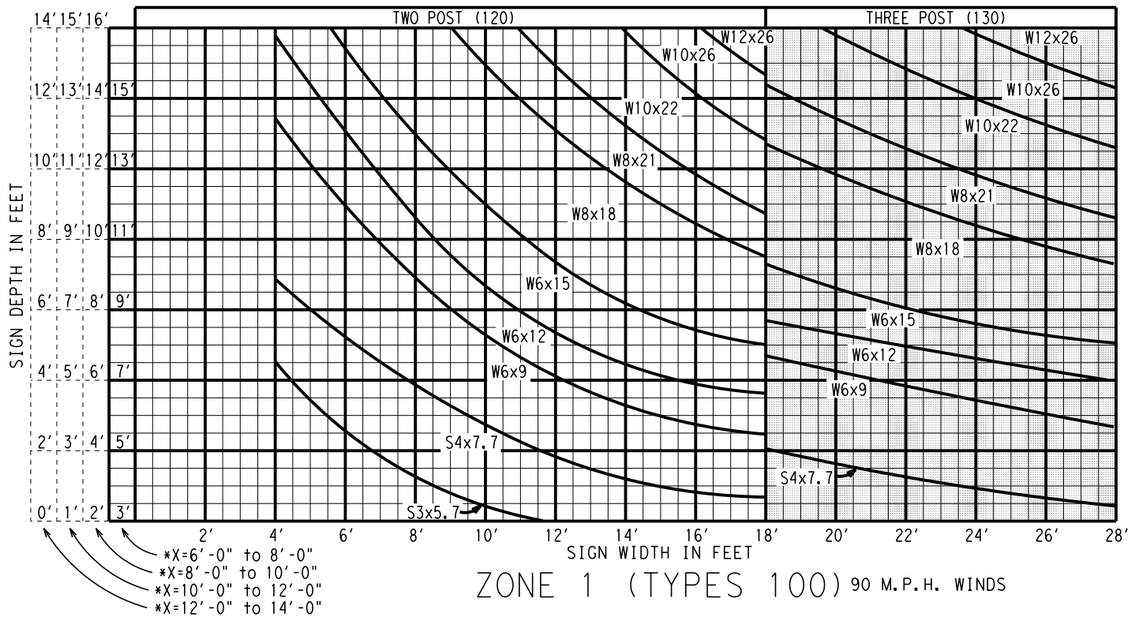
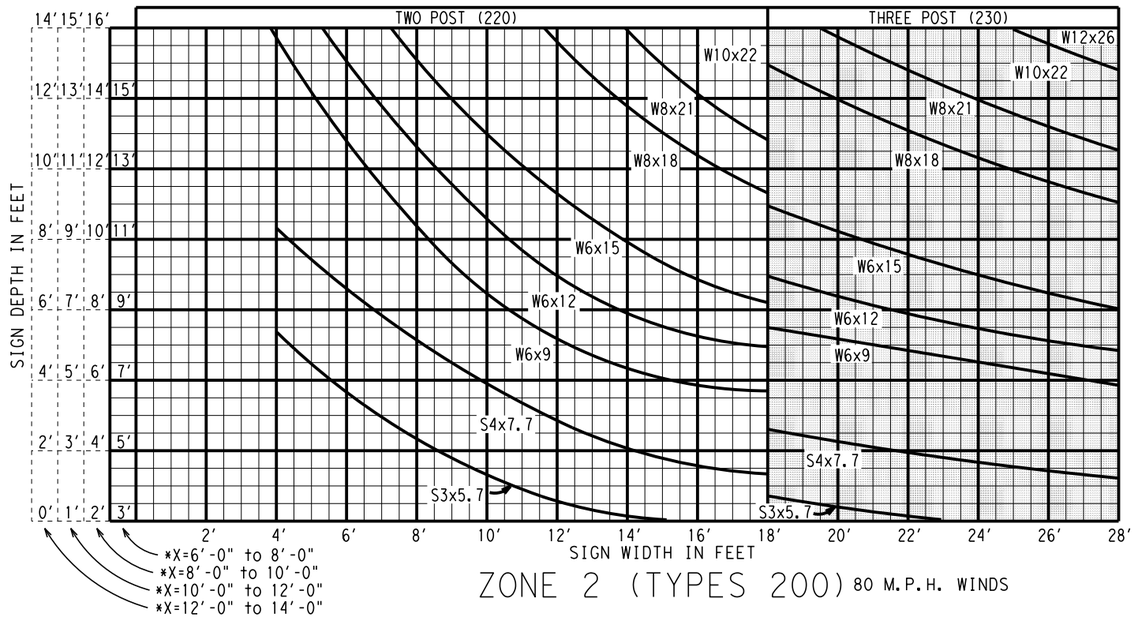
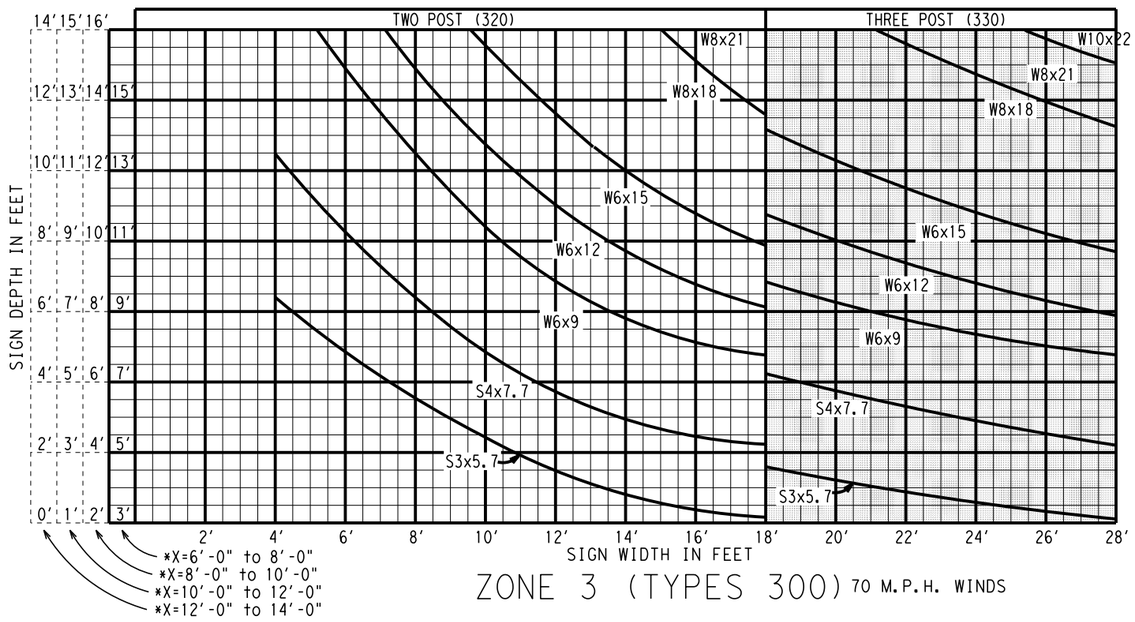
DATE:
FILE:



ZONE 1 (TYPES 100) 90 M.P.H. WINDS



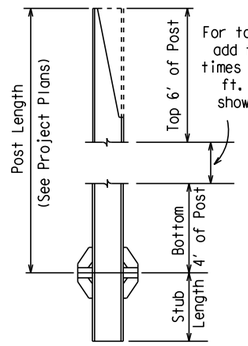
ZONE 2 (TYPES 200) 80 M.P.H. WINDS



ZONE 3 (TYPES 300) 70 M.P.H. WINDS

* NOTE: "X" EQUALS THE AVERAGE HEIGHT FROM THE GROUND LINE TO THE BOTTOM EDGE OF THE SIGN.

SHADED AREA DENOTES 3 POST SUPPORTS



POST WEIGHT DATA

POST SIZE	WEIGHT OF ONE POST (#)	WEIGHT OF TWO POSTS (#)	WEIGHT OF THREE POSTS (#)
W6x9*	123.2	246.4	369.6
W6x12*	160.3	320.6	480.9
W6x15*	167.8	335.6	503.4
W8x18*	201.8	403.6	605.4
W8x21*	254.7	509.4	764.1
W10x22*	266.0	532.0	798.0
W10x26*	308.0	616.0	924.0
W12x26*	308.6	617.2	925.8
S3x5.7*	85.9	171.8	257.7
S4x7.7*	112.2	224.4	336.6

*LAST FIGURES=POST WT. PER FT.

Weight Data is the weight of items shown for one, two or three posts - (includes top 6' of post, bottom 4' of post, post foundation stub, related base connection plates and stiffeners, friction fuse plate and all high strength bolts, nuts and washers).

SIGN TYPE

SIGN TYPE 1 3 0

- 1 — Wind Design Zone
- 3 — Series No.
- 0 — 0 Aluminum/Fiberglass, 1 Aluminum, 2 Fiberglass
- No. of Posts

Note: Footings for S3x5.7 and S4x7.7 post sizes shall be non-reinforced with Class A concrete, while footing for all other post sizes shall be reinforced with Class C concrete.

Texas Department of Transportation
Traffic Operations Division

LARGE ROADSIDE SIGN SUPPORTS
POST SELECTION
WORKSHEET
SMD(8W1)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
1-82	CONT	SECT	JOB	HIGHWAY
5-01	0015	01	246	IH 35
9-08	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1601

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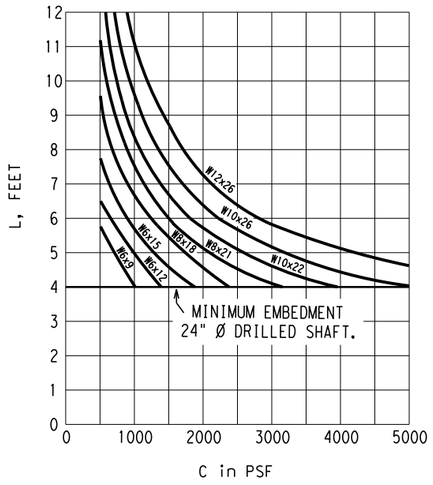
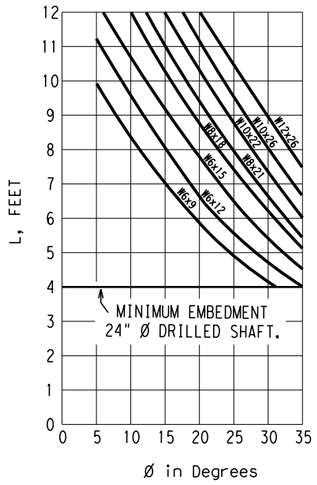
DATE:
FILE:

I



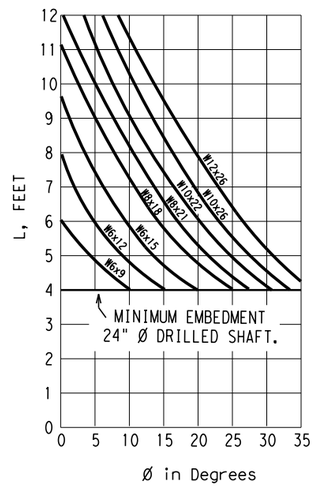
Ø = 0 Degrees

II



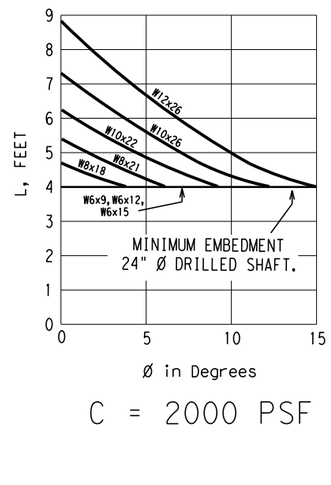
C = 0 PSF

III



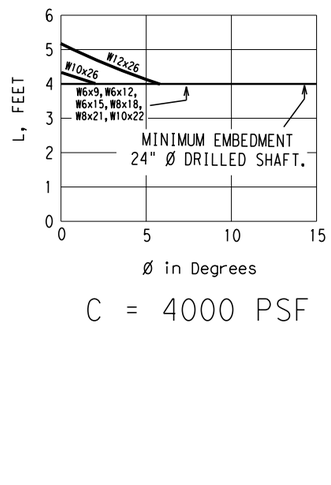
C = 500 PSF

IV



C = 2000 PSF

V



C = 4000 PSF

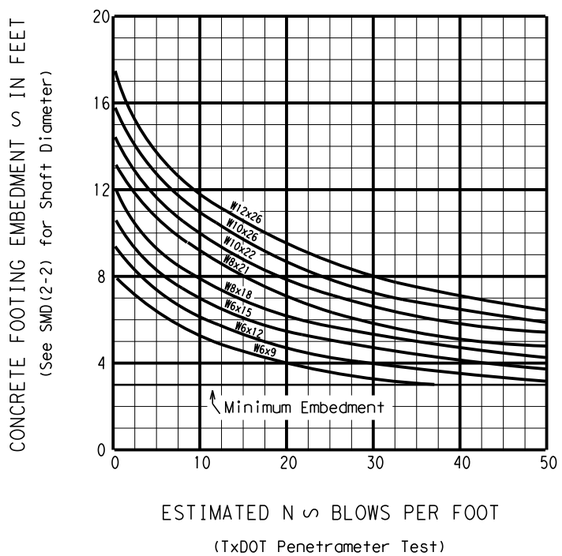
DRILLED CONCRETE FOOTING DEPTH CHART
(COHFRIC DESIGN)

NOTE: THESE CHARTS MAY BE USED AS AN ALTERNATE TO THE CHART BELOW, PROVIDED THAT SOIL COHESION AND INTERNAL FRICTION (COHFRIC) DATA ARE AVAILABLE.

LEGEND:

L = Required embedment of concrete drilled shaft, in feet
C = Cohesive shear strength of soil, in psf
Ø = Angle of internal friction of soil, in degrees

For values of C and Ø which are intermediate to those on the charts, embedments may be determined by straight - line interpolation.



DRILLED CONCRETE FOOTING DEPTH CHART
(TxDOT PENETROMETER DESIGN)

NOTE: ESTIMATED N SHOULD BE BASED AT APPROXIMATELY THE UPPER ONE-THIRD POINT OF THE DRILLED CONCRETE FOOTING BELOW THE GROUND LINE

Note:
1. Curves shown on this sheet are applicable for reinforced concrete footings only.

Texas Department of Transportation
Traffic Operations Division

LARGE ROADSIDE SIGN SUPPORTS FOUNDATION WORKSHEET
SMD(8W2)-08

REVISIONS
5-74
4-78
9-08

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

CONT	SECT	JOB	HIGHWAY
0015	01	246	IH 35
DIST	COUNTY		SHEET NO.
WACO	McLENNAN		1602

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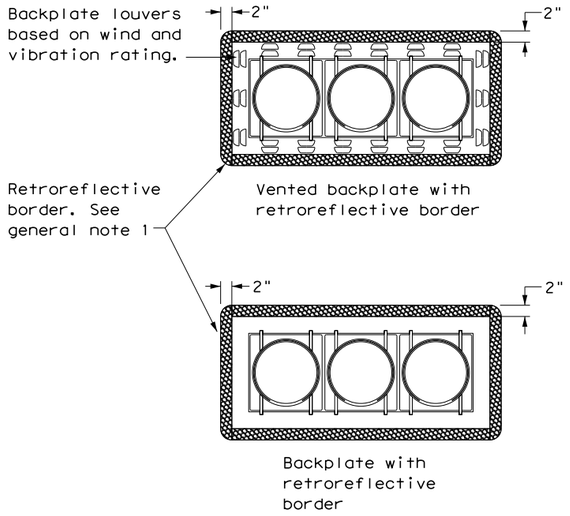

THREE-SECTION HEAD
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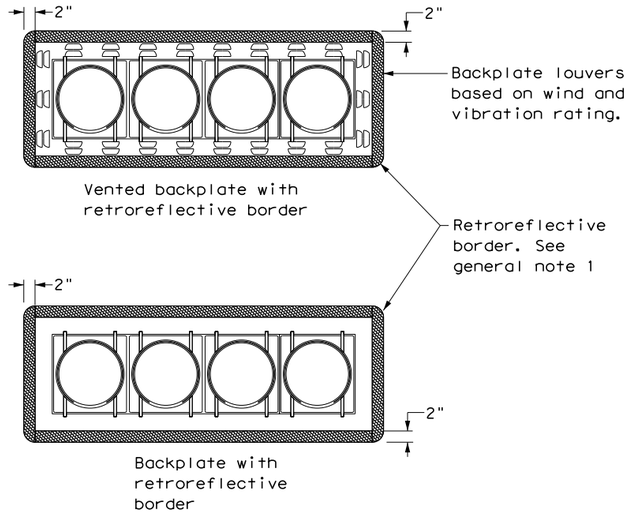
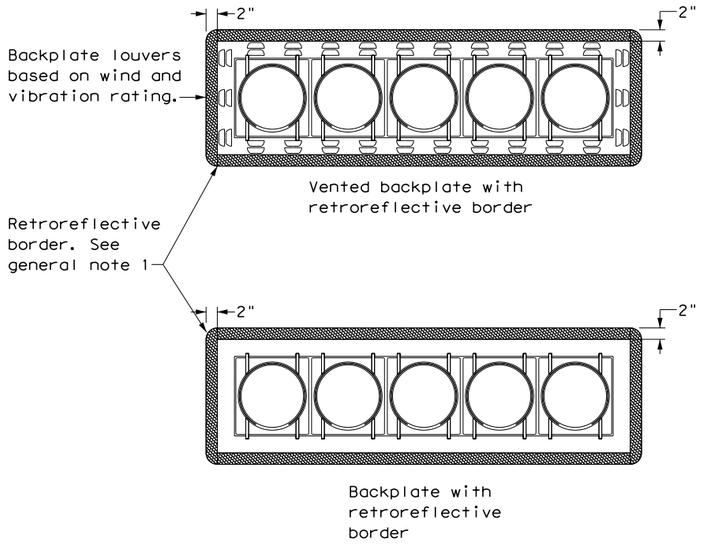
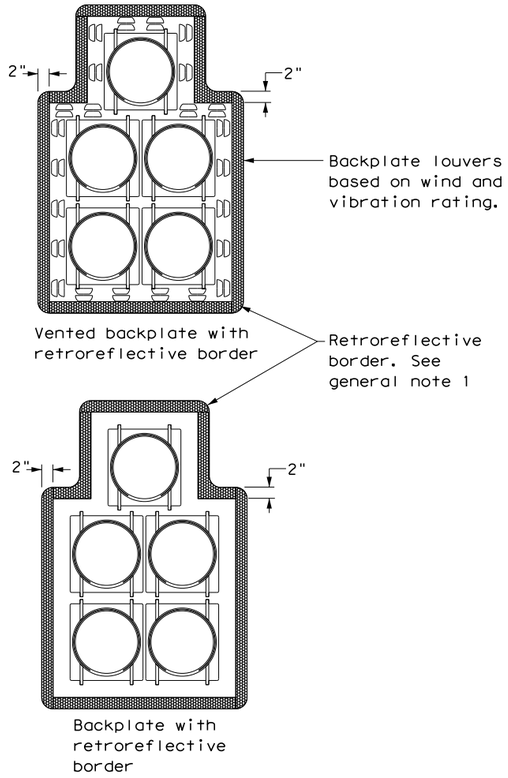


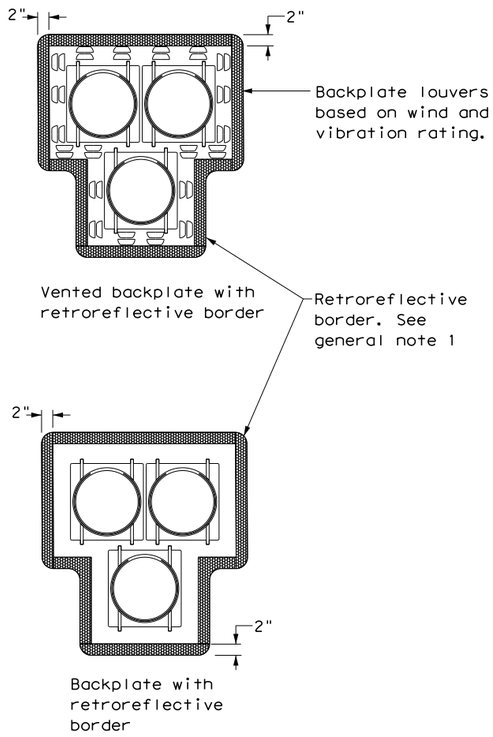
FOUR-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
CLUSTER



PEDESTRIAN HYBRID
BEACON

GENERAL NOTES:

1. Backplates are optional for traffic signals and pedestrian hybrid beacons. When backplates are used, a 2-inch wide fluorescent yellow AASHTO Type B_{FL} or C_{FL} retroreflective border conforming to TxDOT DMS-8300 is required. Place on all approaches when used.
2. Signal head and backplate compatability must be verified by the contractor prior to installation.
3. When using backplates on signal heads, venting is preferred to reduce cyclic vibration stress.
4. When a vented backplate is used, the retroreflective border must not be placed over the louvers.
5. This standard sheet applies to all signal heads with backplates, including but not limited to:
   - Pole mounted
   - Overhead mounted
   - Span wire mounted
   - Mast arm mounted
   - Vertical signal heads
   - Horizontal signal heads
   - Clustered signal heads
   - Pedestrian hybrid beacons

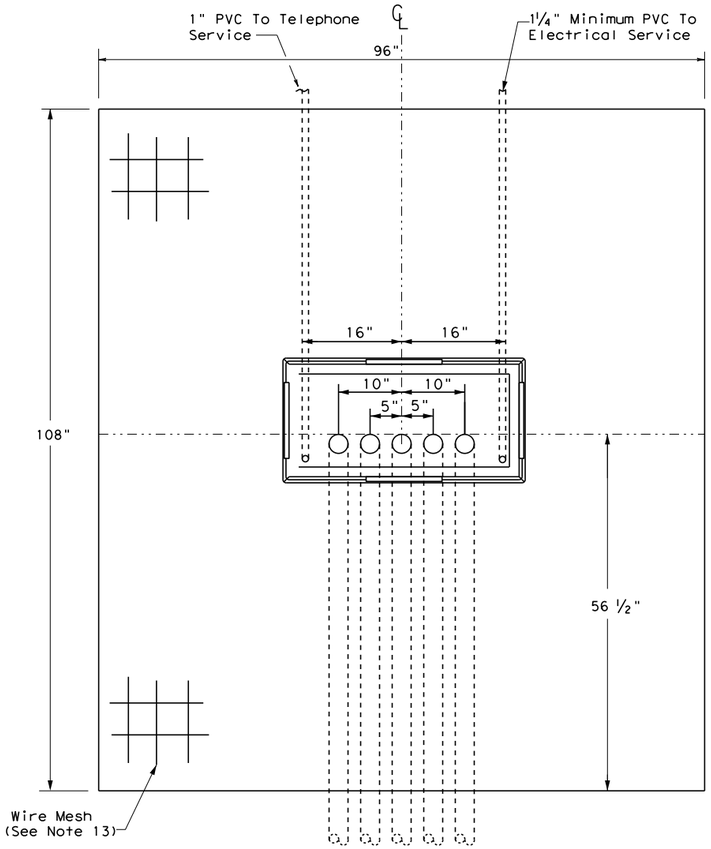
Texas Department of Transportation

Traffic Safety Division Standard

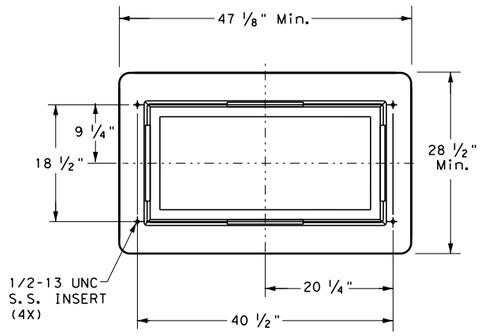
TRAFFIC SIGNAL HEAD WITH BACKPLATE

TS-BP-20

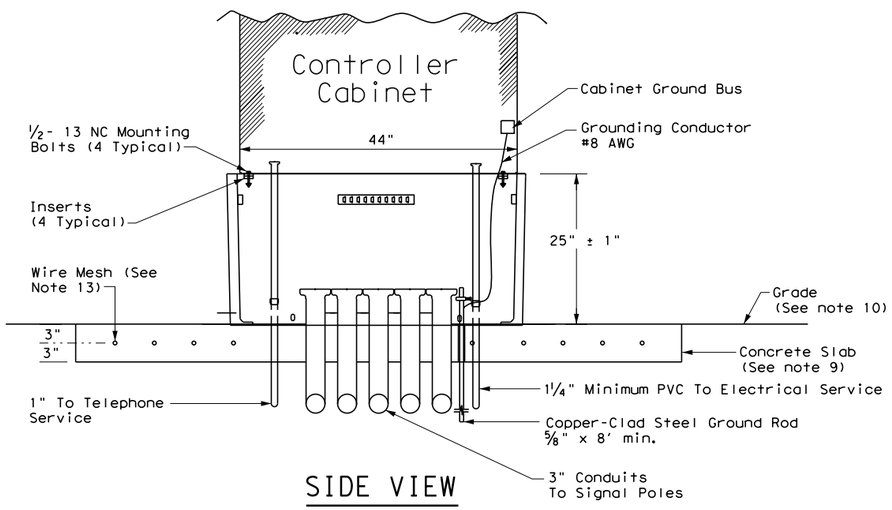
FILE: ts-bp-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1603



TOP VIEW



CABINET BASE



SIDE VIEW

TRAFFIC SIGNAL CONTROLLER BASE:

1. Provide a traffic signal controller base (cabinet base) manufactured of polymer concrete material consisting of calcareous and siliceous stone; glass fibers and thermoset polyester resin. The polymer concrete cabinet base must be reinforced on the inside of the cabinet base with fiberglass matting. Provide one of the following bases: Armorcast Part # A6001848X24, Quazite Model # PG3048Z709, or other as approved by TxDOT Traffic Safety Division.
2. The polymer concrete material must have a minimum compressive strength of 10,300 pounds per square inch (psi), minimum flexural strength of 3600 psi, and minimum shear strength of 3600 psi.
3. The polymer concrete cabinet base must conform to the dimensions shown and must accommodate a standard TxDOT basemount cabinet.
4. Supply the cabinet base with four 1#2"-13 UNC stainless steel inserts for attachment of the cabinet to the base. Inserts must withstand a minimum torque of 50 ft-lb and a minimum straight pull out strength of 750 lbs.
5. Provide the cabinet base with 4 cable racks mounted one on each side of the base 2" to 7 " from the top edge of the base. Unless approved otherwise, cable racks must be 1-1/2 x 9#16x 3#16inch steel channel with eight T-slots spaced at 1-1/2 inches. The cable racks must easily accommodate the insertion of tie wraps to attach field wiring to the racks to serve as strain relief. Secure cable racks to the base using 1#2"-13 UNC stainless steel screws and inserts.
6. The cabinet base, when secured to the concrete slab with controller cabinet attached, must withstand a minimum wind load of 125 mph or a 850 lb force applied at 49" above the bottom of the base without causing the base or cabinet to come out of their anchored position or cause any permanent deformation. The manufacturer must supply certification by an independent testing laboratory or sealed by a Texas Licensed Professional Engineer. Provide the cabinet base with hardware for attachment to a concrete slab.
7. The traffic signal base must be permanently marked either by impress or by permanent ink with the manufacturer's model number and name or logo.
8. Seal the base to the concrete with a silicone caulk bead and fastened to the slab per manufacturer's instructions.

CONCRETE SLAB:

9. Traffic signal controller pad must be a portland cement concrete slab poured in place, must conform to the dimensions shown, and must be level.
10. Grade earthwork such that it is flush with the concrete pad on all four sides, unless otherwise shown on the plans. Subsidiary to ITEM 680, four inch rip rap may be used in lieu of earthwork. Slopes shall gradually contour to match plans.
11. Bond a #8 AWG copper ground wire and an 8 ft ground rod bonded to the reinforcing mesh by a suitable UL Listed clamp and terminated to the cabinet grounding bus for the purpose of providing a local ground for the electrical grounding conductor. The electrical grounding conductor specified in Item 680-3.A.4 is required and must be terminated to the cabinet ground bus.
12. Install a PVC sleeve to prevent the ground rod from direct embedment in the slab.
13. Provide welded wire mesh 6X6-W2.9 X W2.9 for reinforcement. Provide joints and splices in the mesh with a minimum 6-inch overlap. Center the mesh between top and bottom and provide a minimum 3 inch cover on the edges.
14. Provide Class B concrete minimum for the slab in accordance with Item 421. Construct the slab in accordance with Item 531.

CONDUITS:

15. Stub up and run 3-inch conduits through the slab to the various traffic signal poles and ground boxes as shown on the layouts. Install the number of conduits as shown on layouts plus two additional 3 inch conduits for future use. Terminate the conduits with a bushing between 2 and 4-inches above the slab.
16. Extend conduits for future use at least 18-inches from the edge of the slab, terminate underground with a coupling, and cap and seal so that the seal can be removed without damaging the coupling. This must also apply to unused telephone conduit.
17. Stub up two separate conduits through the slab from the electrical and telephone services. Run the conduit for the electrical feed directly to the electrical service enclosure. Run the conduit for the telephone line directly to the telephone service, usually located on the same pole as the electrical service. Telephone must not under any circumstance share a conduit with any other function.
18. Terminate electric and telephone conduits above the slab with a coupling. After the base is installed, extend the conduits above the top of the base and secure to the base using a steel one-hole strap or similar suitable substitute.

CONTROLLER CABINET:

19. Anchor the controller cabinet to the base using four stainless steel 1/2-13 NC bolts.
20. The silicone caulk bead specified in Item 680.3.B must be RTV 133.

PAYMENT:

21. Bid TS-CF as subsidiary to Item 680.

Texas Department of Transportation

Traffic Safety Division Standard

TRAFFIC SIGNAL CONTROLLER CABINET BASE AND PAD
TS-CF-21

FILE: ts-cf-21.dgn	DN:	CK:	DW:	CK:
©TxDOT October 2000	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-04 2-21	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1604

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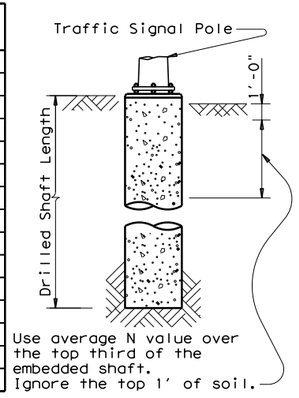
FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft ④, ⑤, ⑥			ANCHOR BOLT DESIGN ①				FOUNDATION DESIGN LOAD ②		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
				10	15	40							
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	¾"	36	12 ¾"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 ½"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 ¾"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 ¼"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

		FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	32'	48'		
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 28'	32' X 32'		
			36' X 36'		
			40' X 36'		
			44' X 28'	44' X 36'	
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS		24' X 24'		
			28' X 28'		
			32' X 24'	32' X 32'	
				36' X 36'	
				40' x24'	40' X 36'
					44' x 36'



NOTES:

① Anchor bolt design develops the foundation capacity given under Foundation Design Loads.

② Foundation Design Loads are the allowable moments and shears at the base of the structure.

③ Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

④ Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.

⑤ If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

⑥ Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

FOUNDATION SUMMARY TABLE ③

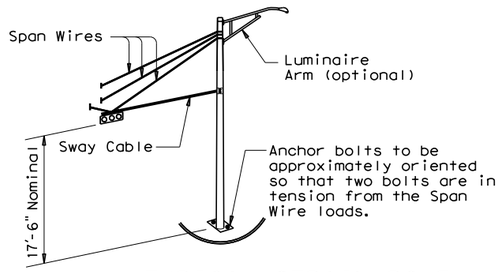
LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH ⑥ (FEET)				
				24-A	30-A	36-A	36-B	42-A
NEW RD								
A, D, F, H, K, L	10	24-A	6	36				
B, C, E, G, I, J	10	36-A	5			70		
VALLEY MILLS								
C, D	10	24-A	2	12				
A, B, E, F	10	36-A	4			56		
17TH/18TH								
C, D, G, J, K, N, O	10	24-A	7	42				
E	10	30-A	1		12			
A, B, F, H, I, L, M	10	36-A	7			98		
TOTAL DRILLED SHAFT LENGTHS				90	12	224		

ANCHOR BOLT & TEMPLATE SIZES

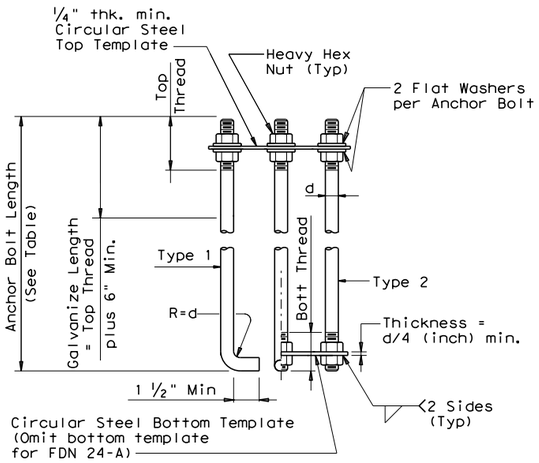
BOLT DIA IN.	⑦ BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
¾"	1'-6"	3"	—	12 ¾"	7 ⅛"	5 ⅝"
1 ½"	3'-4"	6"	4"	17"	10"	7"
1 ¾"	3'-10"	7"	4 ½"	19"	11 ¼"	7 ¾"
2"	4'-3"	8"	5"	21"	12 ½"	8 ½"
2 ¼"	4'-9"	9"	5 ½"	23"	13 ¾"	9 ¼"

⑦ Min dimensions given, longer bolts are acceptable.

EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.

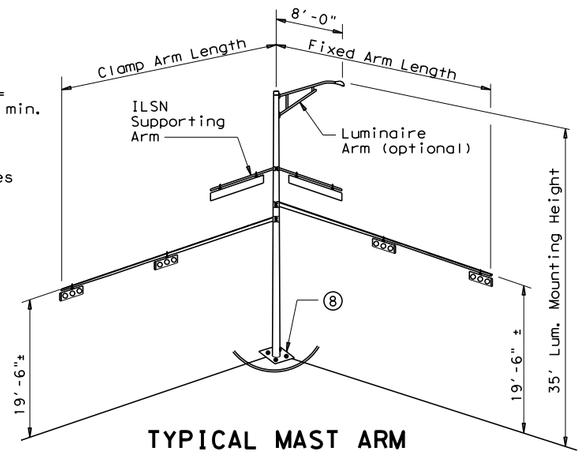


TYPICAL STRAIN POLE ASSEMBLY



HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY



TYPICAL MAST ARM ASSEMBLY

⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.

TOP VIEW

ELEVATION

FOUNDATION DETAILS

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".

Texas Department of Transportation
Traffic Operations Division

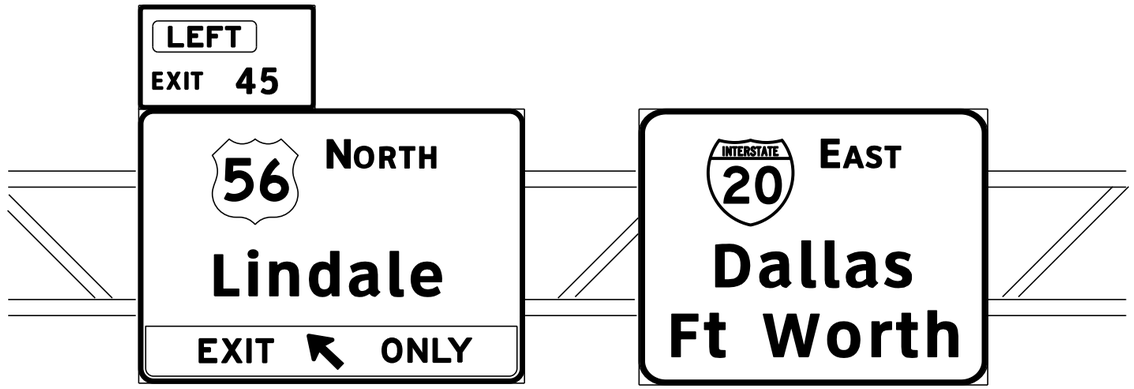
TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

REVISIONS	DN: MS	CK: JSY	DW: MAO/MMF	CK: JSY/TEB
5-96 11-99 1-12	CONT	SECT	JOB	HIGHWAY
	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1605

REQUIREMENTS FOR OVERHEAD AND LARGE GROUND-MOUNTED SIGNS

TYPICAL EXAMPLES



GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign summary sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Black legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod, or F).
   White legend shall use the Clearview Alphabet.
   The following Clearview fonts shall be used to replace the existing white FHWA lettering, when not specified in the SHSD or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be cut-out white sheeting applied to colored background sheeting.
6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius need not be trimmed or rounded if fabricated from an extruded material.
7. Sign substrate for ground-mounted signs shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative. Sign substrate for overhead signs shall be any material that meets DMS-7110. Exit Number Panels attached above the parent sign shall be made with the same substrate and sheeting as the parent sign.
8. Mounting details of attachments to parent sign face are shown on Standard Plan Sheet TSR(5). Mounting details of exit number panels above parent sign are shown in the "SMD series" Standard Plan Sheets.
9. Background sheeting shall be applied to the substrate per sheeting manufacturer's recommendations. Sheeting will not be allowed to bridge the horizontal gap between panels.
10. Cut all legend, symbols, borders, and direct applied sign attachments at panel joints.

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

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

http://www.txdot.gov/

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE B OR C SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(1)-13

FILE: tsr1-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	WACO	McLENNAN		1606

DATE:
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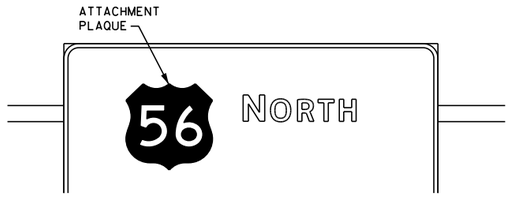
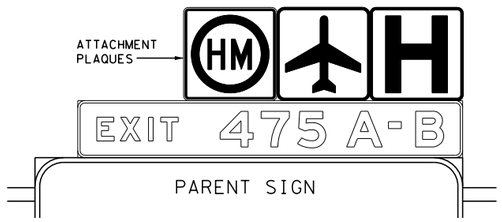
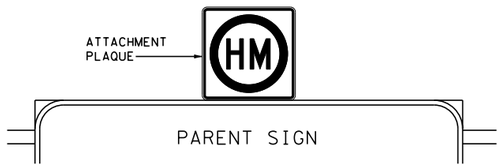
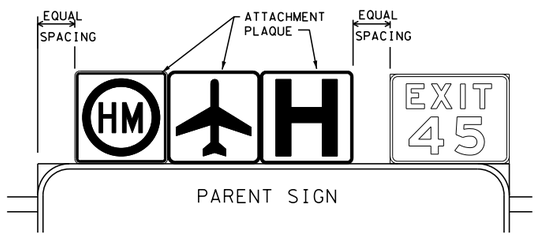
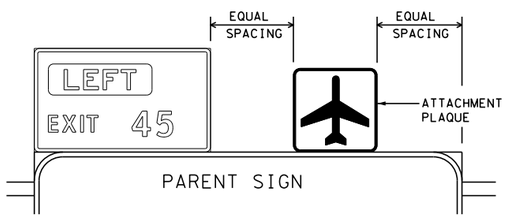
REQUIREMENTS FOR ATTACHMENTS TO OVERHEAD AND LARGE GROUND MOUNTED SIGNS











TYPICAL EXAMPLES

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

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B OR C SHEETING

GENERAL NOTES

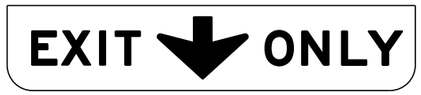
1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Route Marker legends (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod, or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to white background sheeting, or combination thereof.
7. Route markers and other attachments within the parent sign face shall be direct applied unless otherwise specified in the plans. Attachments not direct applied shall use 0.063 inch thick one piece sheet aluminum signs (Type A).
8. General Service Plaques shall be 0.080 inch thick and Routing Plaques shall be 0.100 inch thick.
9. The priority for Routing Plaques shall be (left to right) Hazardous Material, Airport then Hospital. See examples for mounting location.
10. Mounting details of attachments to parent signs face are shown on Standard Plan Sheet TSR(5). Mounting details of sign plaque attachments above and below parent sign are shown in the "SMD series" Standard Plan Sheets.
11. Plaques shall be horizontally centered at the top of the parent sign. If an exit number panel exists, the plaque shall be centered between the edge of the parent sign and the edge of the exit number panel. The plaque may be placed above the exit number panel when there is insufficient space.

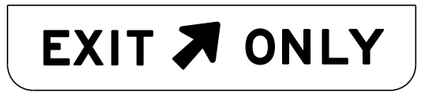
TYPICAL EXAMPLES

REQUIREMENTS FOR EXIT ONLY AND LEFT EXIT PANELS

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

SHEETING REQUIREMENTS FOR OVERHEAD EXIT PANELS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLUORESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND	BLACK	ACRYLIC NON-REFLECTIVE FILM





TYPICAL EXAMPLES

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD). Individual panel sizes shown in the plans may be adjusted to fit actual parent sign sizes if necessary.
2. Exit Panel legend shall use the Federal Highway Administration (FHWA)Standard Highway Alphabets E Series.
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend shall be applied by screening process or cut-out acrylic non-reflective black film to yellow background sheeting, or combination thereof.
5. Exit Only and Left Exit panels within the parent sign face shall be direct applied unless otherwise specified in the plans. Panels not direct applied shall use 0.063 inch thick one piece sheet aluminum signs (Type A).
6. Mounting details of Exit Only and Left Exit panel attachments to parent signs face are shown on Standard Plan Sheet TSR(5).

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

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(2)-13

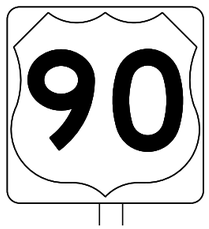
FILE: tsr2-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	WACO	McLENNAN		1607

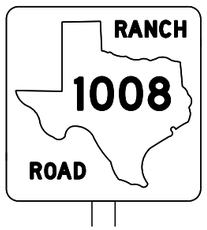
DATE:
FILE:

DATE:
FILE:

REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

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

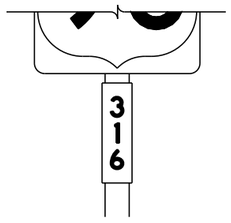


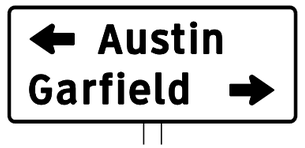


TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING





TYPICAL EXAMPLES

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).

2. White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).

4. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.

5. Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.

6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.

7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.

8. Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

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

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

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

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

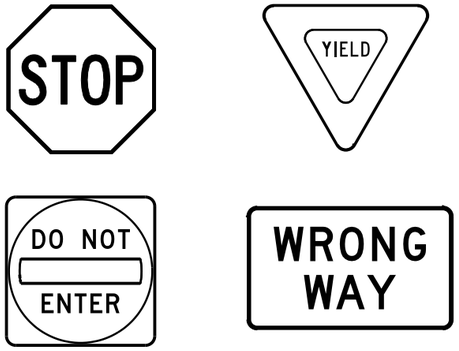
TSR(3)-13

FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	WACO	McLENNAN		1608

DATE:
FILE:

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

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



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

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

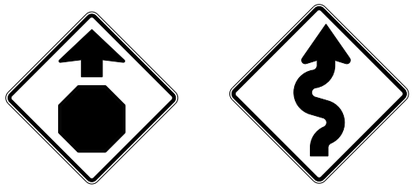
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

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

TYPICAL EXAMPLES

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

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

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

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

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

GENERAL NOTES

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

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

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

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

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

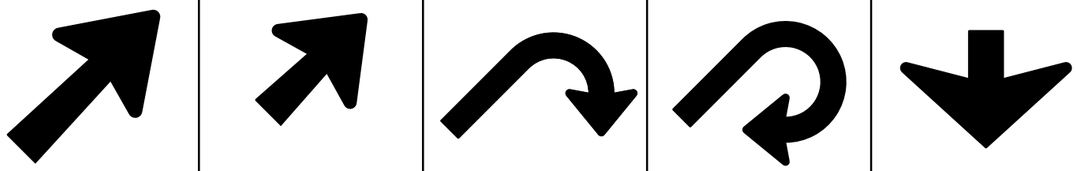
TYPICAL SIGN REQUIREMENTS

TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	WACO	McLENNAN		1609

ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

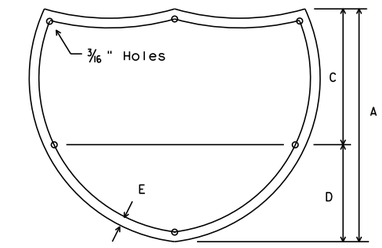
NOTE

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

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

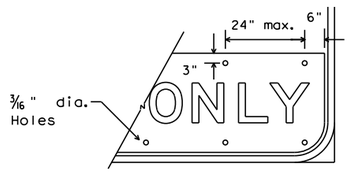
http://www.txdot.gov/

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)

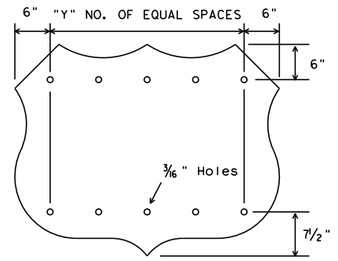


INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	11/2
48	28	20	13/4

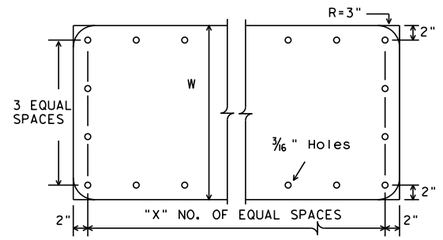


EXIT ONLY PANEL



U.S. ROUTE MARKERS

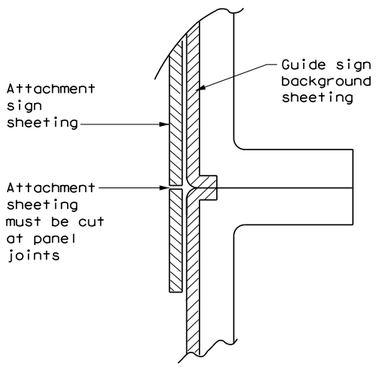
Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



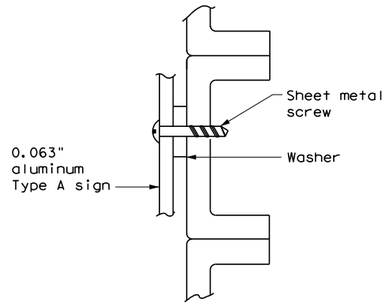
STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5

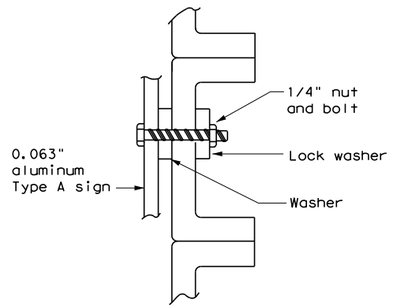
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



DIRECT APPLIED ATTACHMENT



SCREW ATTACHMENT



NUT/BOLT ATTACHMENT

NOTE:

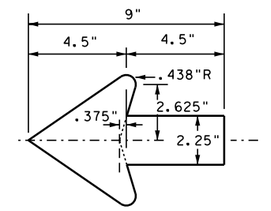
1. Sheeting for legend, symbols, and borders must be cut at panel joints.
2. Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".

NOTE:

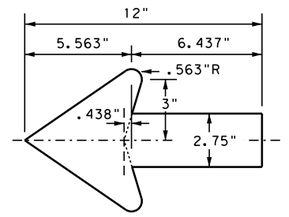
Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

ARROW DETAILS

for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.

Texas Department of Transportation

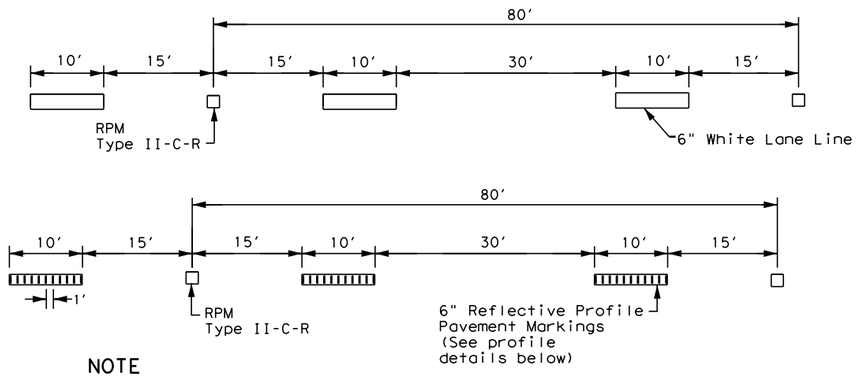
Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(5)-13

FILE:	tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS		0015	01	246	IH 35
12-03 7-13		DIST	COUNTY		SHEET NO.
9-08		WACO	McLENNAN		1610

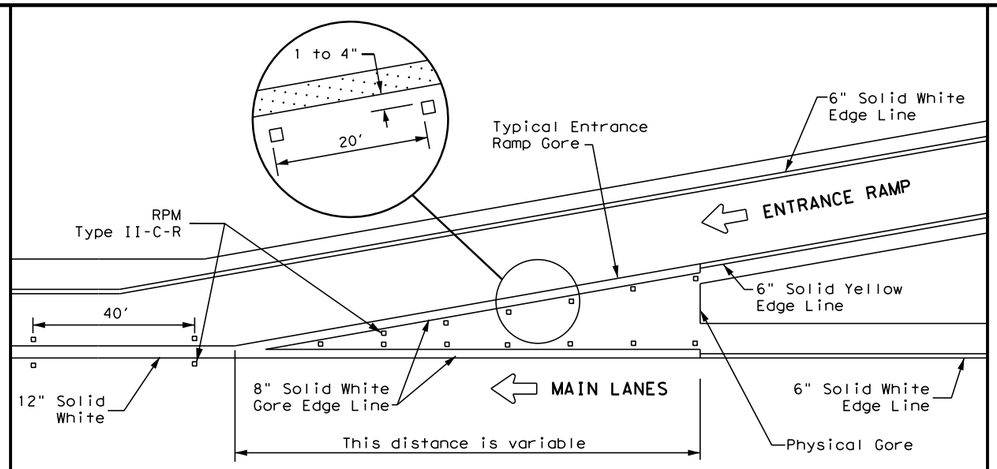
DATE:
FILE:



NOTE

Reflectorized raised pavement markers Type II-C-R shall be spaced on 80' centers with the clear face toward normal traffic and the red face toward wrong way traffic. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.

TRAFFIC LANE LINES PAVEMENT MARKING



TYPICAL ENTRANCE RAMP GORE MARKING

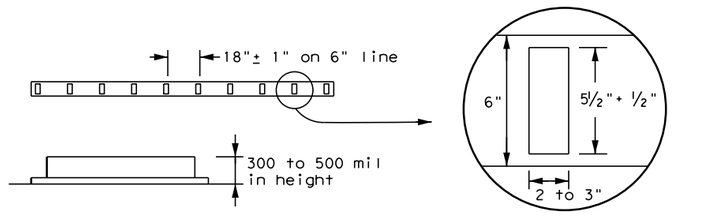
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

LEGEND	
⇦	Traffic flow
↱	Pavement marking arrows (white)
▫	Reflectorized Raised Markers (RPM) Type II-C-R

GENERAL NOTE

On concrete pavements the raised pavement markers shall be placed to one side of the longitudinal joints.



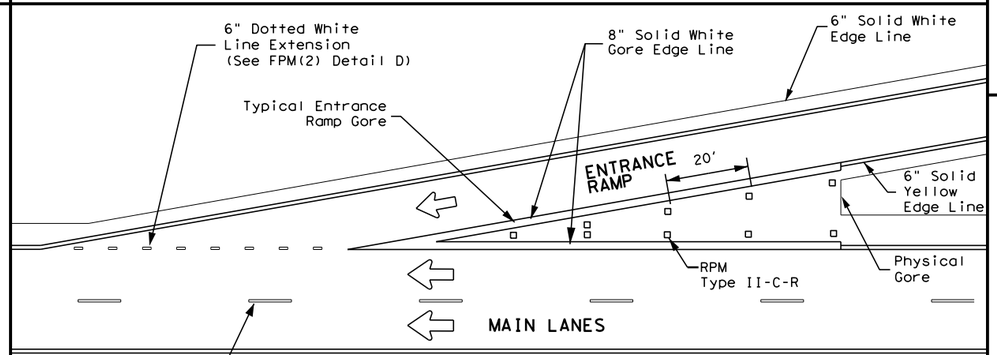
Reflective Profile Pavement Markings

Standard 6" Profile Detail

NOTE

Edge lines should typically be 6" wide and the materials shall be as specified in the plans. See details above if reflective profile pavement markings are to be used.

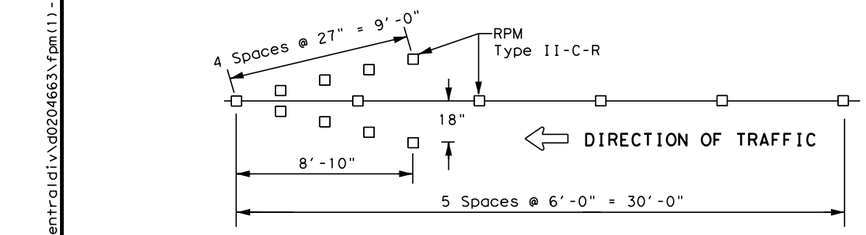
EDGE LINE PAVEMENT MARKINGS



NOTE

See the Roadway Design Manual Chapter 3 to determine if a tapered acceleration lane may be used.

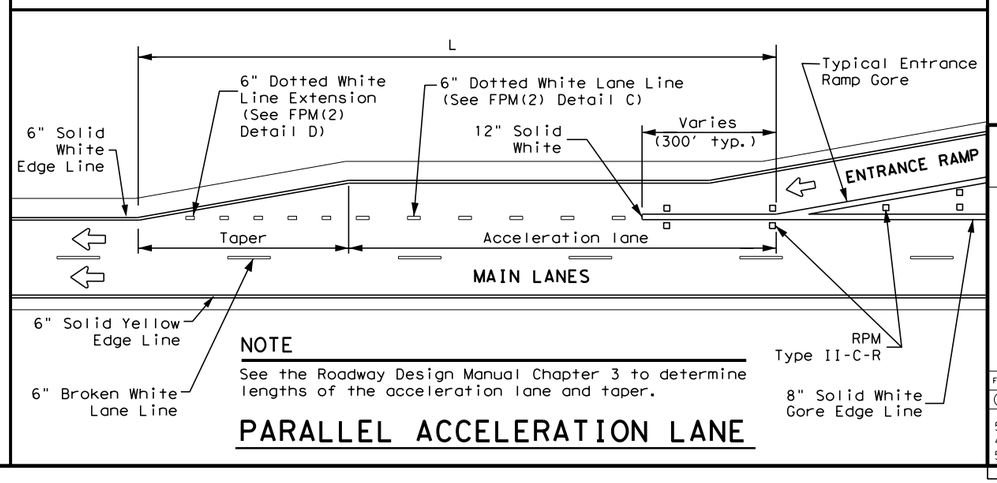
TAPERED ACCELERATION LANE



NOTES

1. Reflectorized raised pavement markers Type-II-C-R in the wrong way arrow shall have the clear face toward normal traffic and the red face toward the wrong way traffic.
2. Red reflectorized wrong way arrows, not to exceed two, may be placed on exit ramps. Locations of the arrows shall be as shown in the plans or as directed by the engineer.

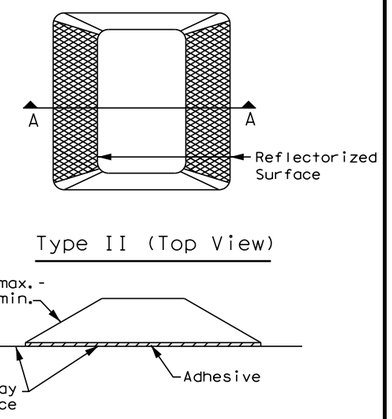
WRONG WAY ARROW



NOTE

See the Roadway Design Manual Chapter 3 to determine lengths of the acceleration lane and taper.

PARALLEL ACCELERATION LANE



SECTION A

REFLECTORIZED RAISED PAVEMENT MARKER (RPM)

Texas Department of Transportation

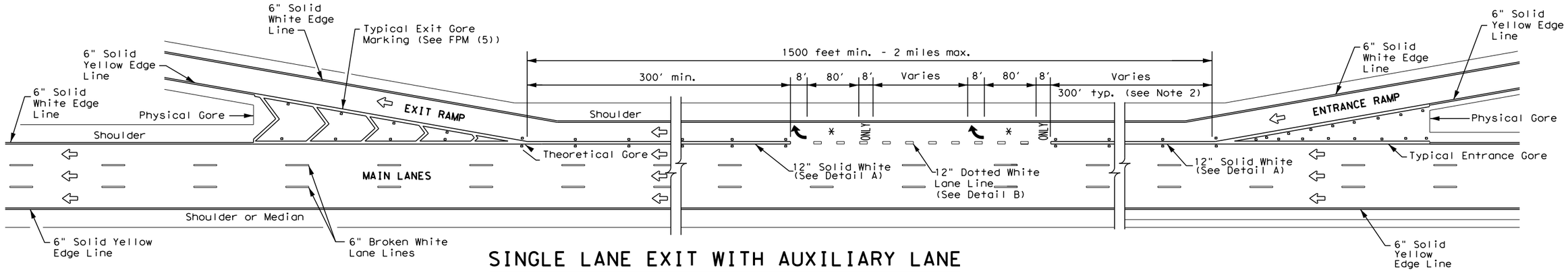
Traffic Safety Division Standard

TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS WITH RAISED PAVEMENT MARKERS

FPM(1)-22

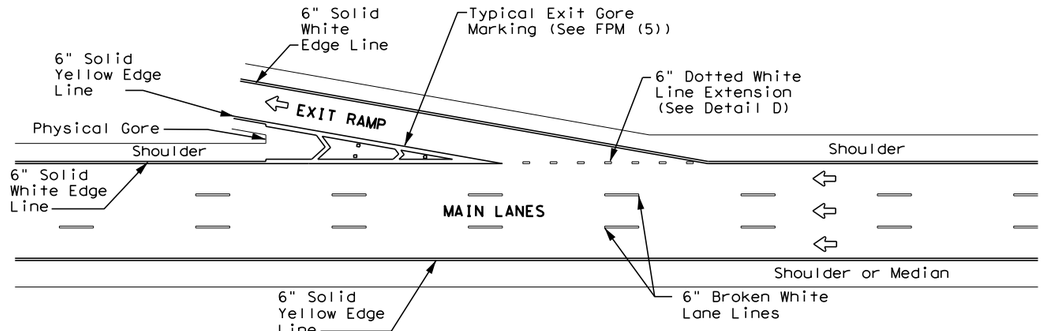
FILE: fpm(1)-22.dgn	DN:	CK:	DW:	CK:
©TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
5-74 8-00 2-12	DIST	COUNTY		SHEET NO.
4-92 2-08 10-22	WACO	McLENNAN		1611
5-00 2-10				

23A



SINGLE LANE EXIT WITH AUXILIARY LANE

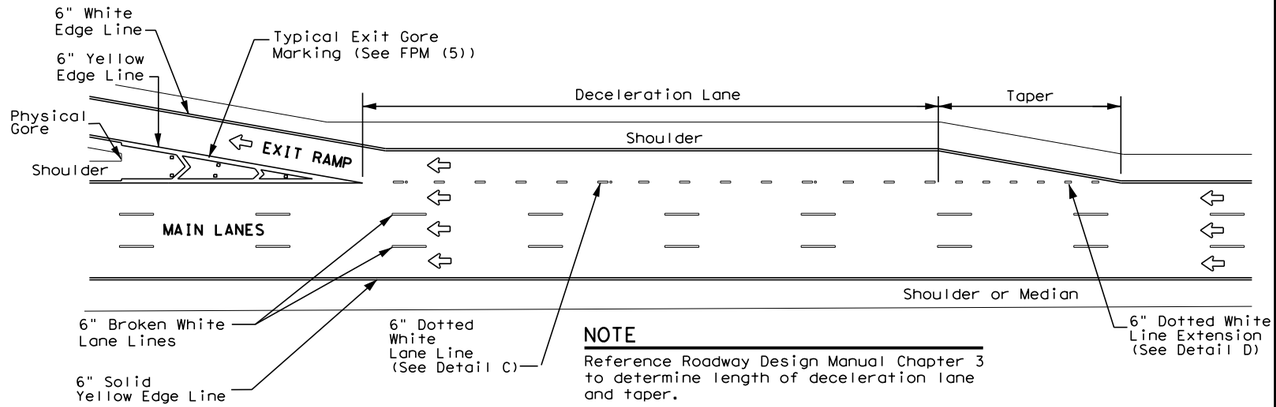
(See Note 2)



NOTE

Reference Roadway Design Manual Chapter 3 to determine if tapered deceleration lane may be used.

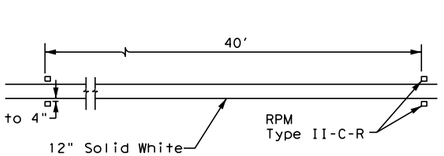
TAPERED DECELERATION LANE



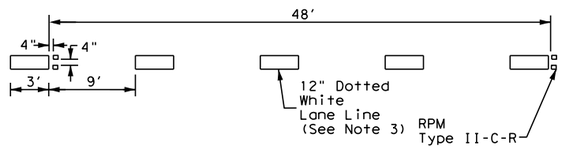
NOTE

Reference Roadway Design Manual Chapter 3 to determine length of deceleration lane and taper.

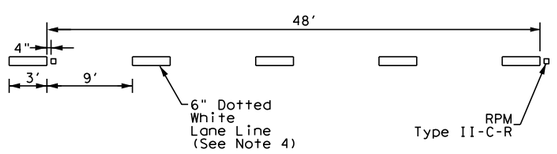
PARALLEL DECELERATION LANE



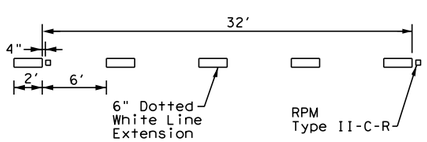
DETAIL A



DETAIL B



DETAIL C



DETAIL D

GENERAL NOTES

1. Pavement markings shall be white except as otherwise noted.
2. Length of 12" white line may vary depending on location.
3. Wide (12") dotted lane line (see Detail B) is used to separate a through lane that continues beyond the interchange from an adjacent mandatory exit lane.
4. Normal (6") dotted lane line (see Detail C) is used at parallel acceleration and deceleration lanes.
5. See FPM(1) for traffic lane line pavement marking details.

LEGEND	
⇦	Traffic flow
↱	Pavement marking arrows (white)
▫	Reflectorized Raised Markers (RPM) Type II-C-R
✳	Arrow markings are optional, however "ONLY" is required if arrow is used

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS ENTRANCE AND EXIT RAMPS

FPM(2)-22

FILE: fpm(2)-22.dgn	DN:	CK:	DW:	CK:
©TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-77 5-00 2-12 4-92 8-00 10-22 8-95 2-10	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1612

23B

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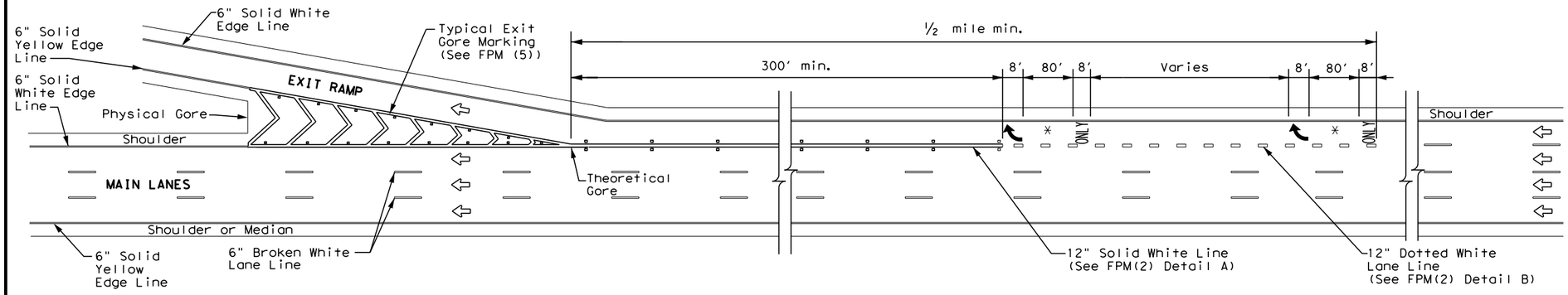
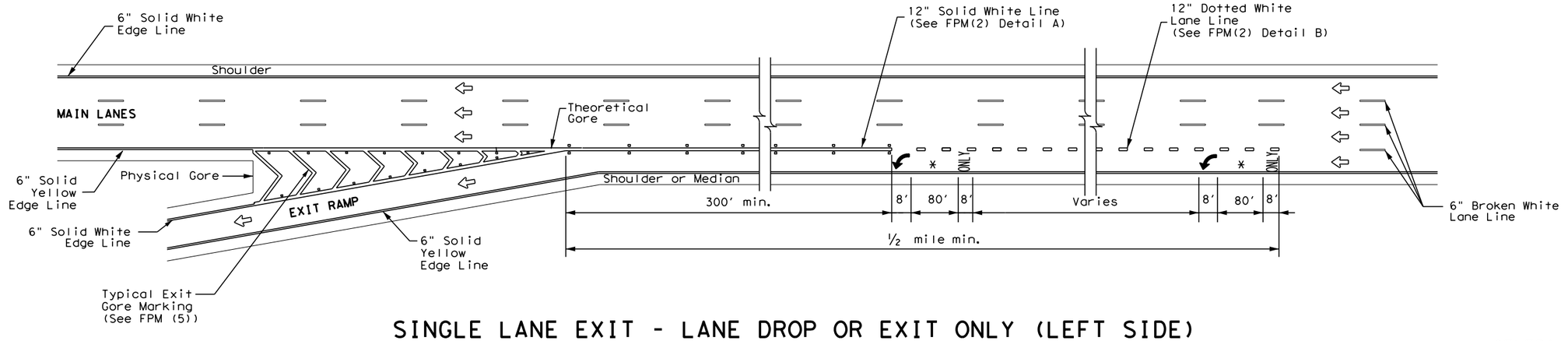


SINGLE LANE EXIT - LANE DROP OR EXIT ONLY

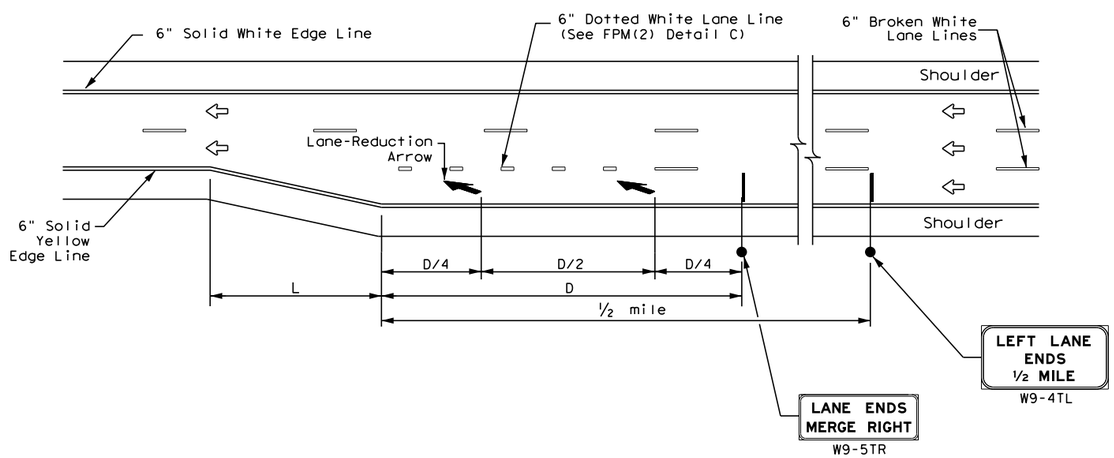
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

LEGEND	
⇦	Traffic flow
↱	Pavement marking arrows (white)
▫	Reflectorized Raised Markers (RPM) Type II-C-R
✳	Arrow markings are optional, however "ONLY" is required if arrow is used



SINGLE LANE EXIT - LANE DROP OR EXIT ONLY (LEFT SIDE)



FREEWAY LANE REDUCTION

NOTES

1. Large Guide signs shall conform to the TxDOT Freeway Signing Handbook.
2. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
3. Arrows and sign details can be found in the Standard Highway Sign Designs for Texas (SHSD) at http://www.txdot.gov.
4. These guidelines may also be applied to the design of a right side lane reduction. Use LANE ENDS MERGE LEFT (W9-5TL) and RIGHT LANE ENDS 1/2 MILE (W9-4TR) signs in lieu of what is shown on drawing.

ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	
80 MPH	1,500	
85 MPH	1,625	

GENERAL NOTES

1. Pavement markings shall be white except as otherwise noted.
2. Length of 12" white line may vary depending on location.
3. Wide (12") dotted lane line (see FPM(2) Detail B) is used to separate a through lane that continues beyond the interchange from an adjacent mandatory exit lane.
4. Edge lines are not required in curb and gutter sections of frontage roads.
5. See FPM(1) for traffic lane line pavement marking details.

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS SINGLE LANE DROP(EXIT ONLY) AND LANE REDUCTION DETAILS

FPM(3)-22

FILE: fpm(3)-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
4-92 2-10	DIST	COUNTY		SHEET NO.
5-00 2-12	WACO	McLENNAN		1613
8-00 10-22				

23C

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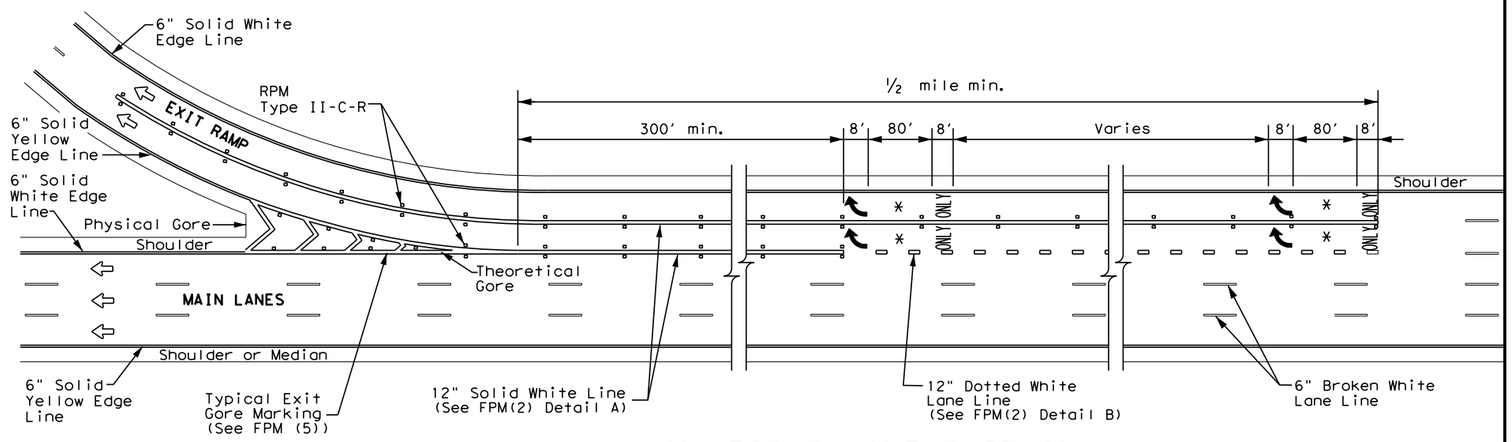


MULTIPLE LANE EXIT ONLY

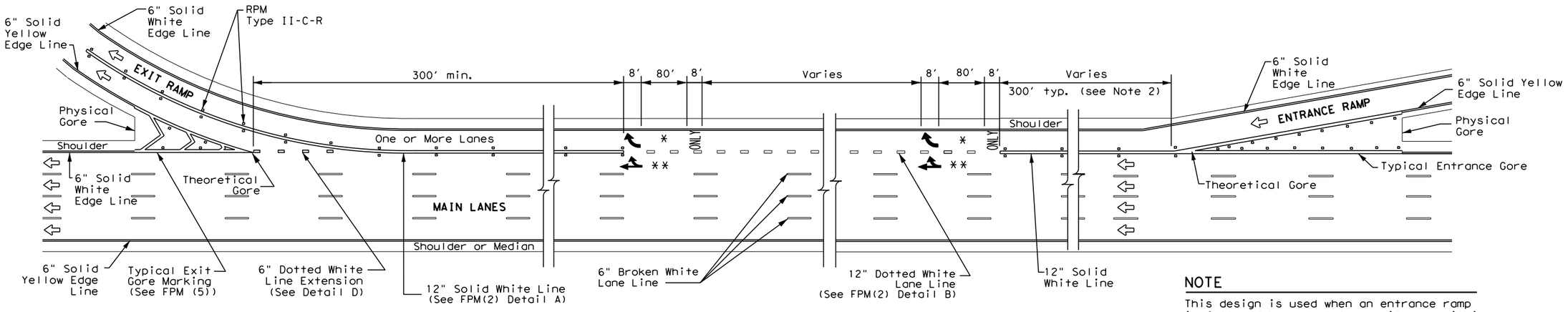
LEGEND	
⇦	Traffic Flow
▫	Reflectorized Raised Markers (RPM) Type II-C-R
↱	Pavement marking arrow (white)
*	Arrow markings are optional, however "ONLY" is required if arrow is used
**	Arrow markings are optional

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

GENERAL NOTES

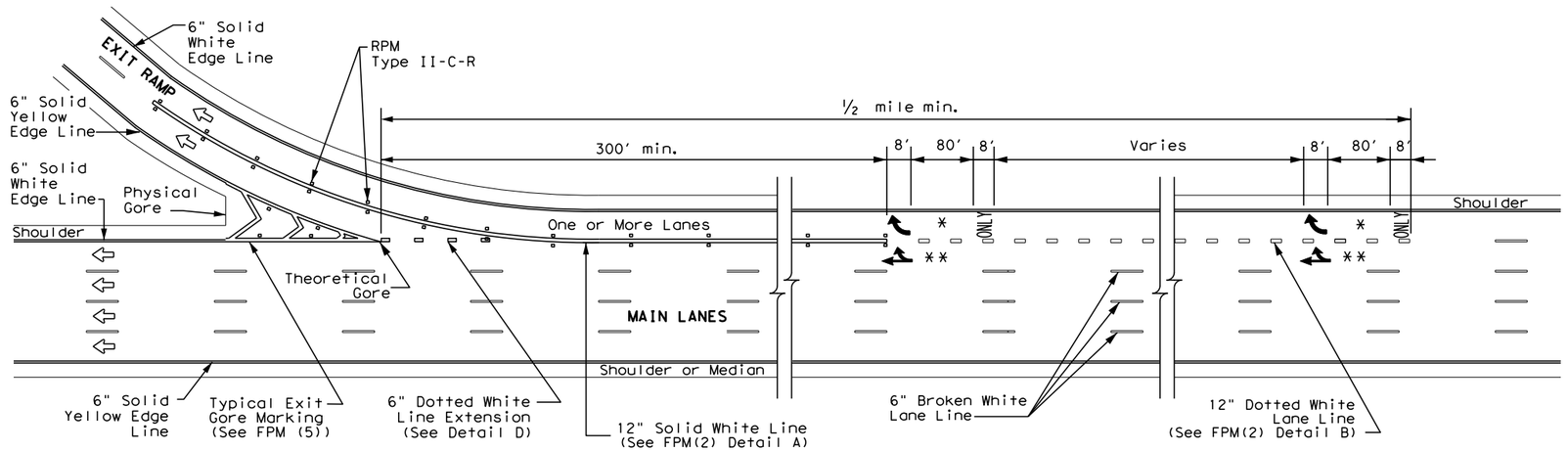
1. Pavement markings shall be white except as otherwise noted.
2. Length of 12" white line may vary depending on location.
3. Wide (12") dotted lane line (see FPM(2) Detail B) is used to separate a through lane that continues beyond the interchange from an adjacent mandatory exit lane.
4. Edge lines are not required in curb and gutter sections of frontage roads.
5. See FPM(1) for traffic lane line pavement marking details.



SINGLE LANE ENTRANCE WITH MULTIPLE LANE EXIT - EXIT ONLY WITH OPTION LANE

NOTE

This design is used when an entrance ramp is followed by a dual lane exit ramp within 2400' downstream (theoretical gore to theoretical gore).



MULTIPLE LANE EXIT - EXIT ONLY WITH OPTION LANE

Texas Department of Transportation — Traffic Safety Division Standard

TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS MULTIPLE LANE DROP (EXIT) DETAILS

FPM(4)-22

FILE: fpm(4)-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
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2-77 2-10	DIST	COUNTY		SHEET NO.
5-00 2-12	WACO	McLENNAN		1614
8-00 10-22				

230

DATE: 10/18/2023 1:35:04 PM
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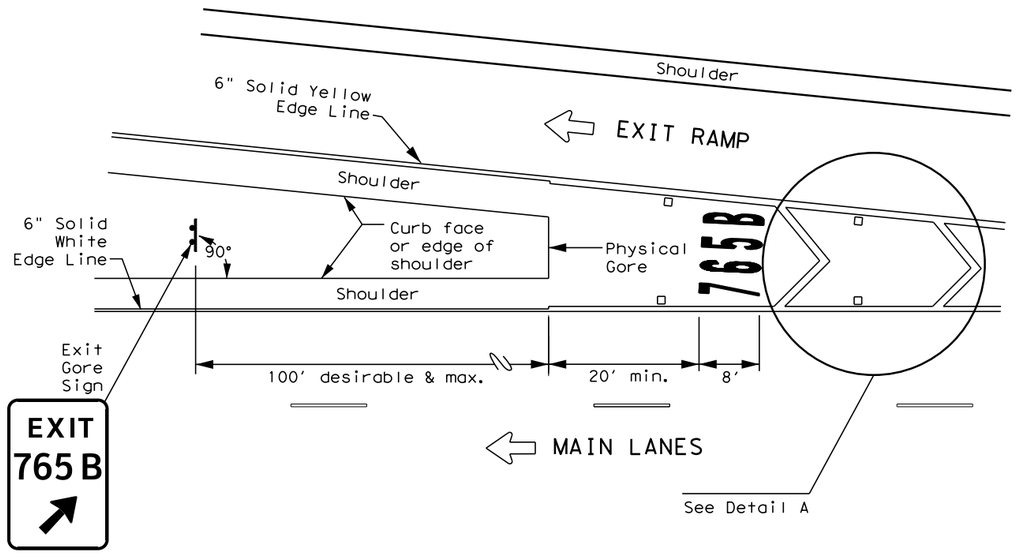
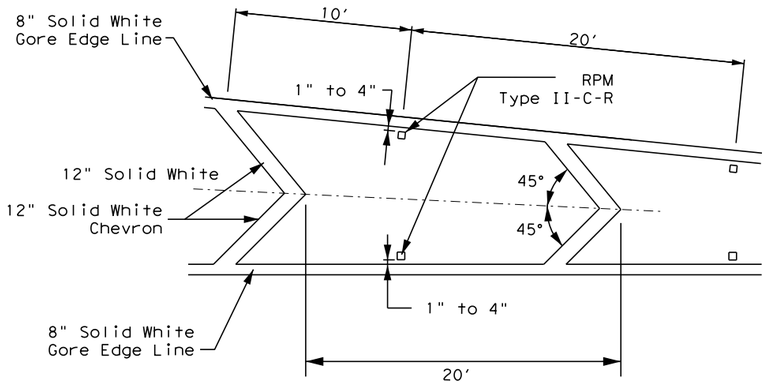
EXIT NUMBER PAVEMENT MARKING NOTES

1. Minimum 8 foot white exit number pavement markings should be used, unless otherwise noted.
2. Spacing between letters and numbers should be approximately 4 inches.
3. Pavement markings are to be located as specified elsewhere in the plans.
4. Numbers and Letters details can be found in the Standard Highway Design for Texas (SHSD) Section 12 at http://www.txdot.gov



MARKINGS WITH EXIT NUMBER



NOTES

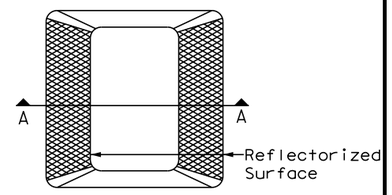
1. Raised pavement markers shall be centered between each chevron or neutral area line.
2. For more information, see Reflectorized Raised Pavement Marker Detail.

DETAIL A

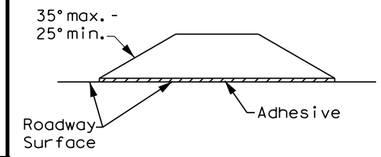
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

LEGEND	
⇦	Traffic flow
▫	Reflectorized Raised Markers (RPM) Type II-C-R

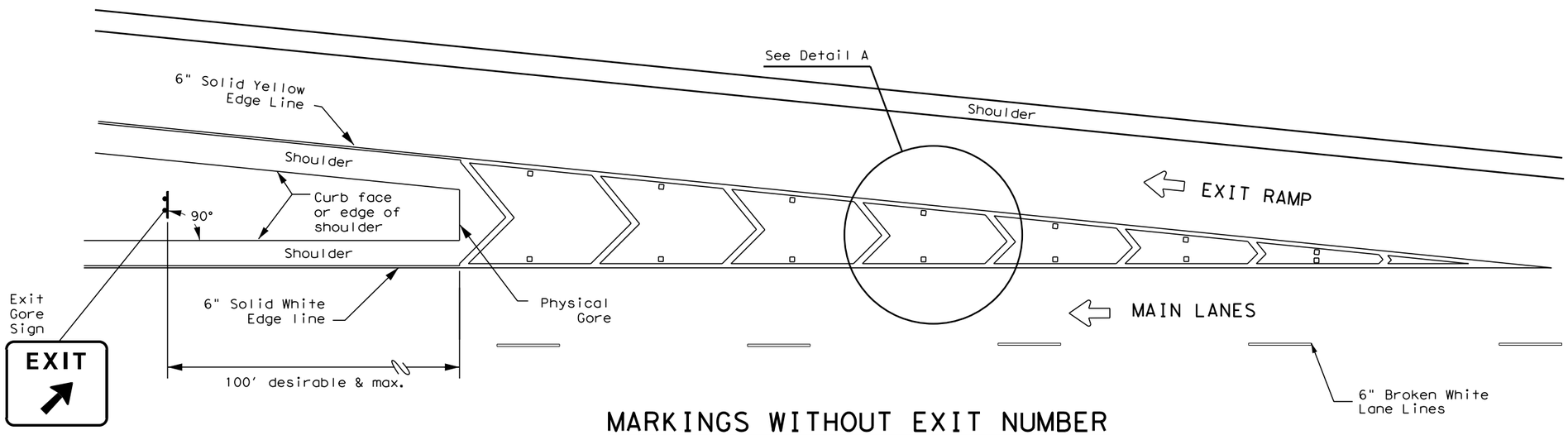


Type II (Top View)



SECTION A

REFLECTORIZED RAISED PAVEMENT MARKER (RPM)



MARKINGS WITHOUT EXIT NUMBER

Texas Department of Transportation

Traffic Safety Division Standard

EXIT GORE PAVEMENT MARKINGS

FPM(5)-22

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©TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
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	WACO	McLENNAN		1615

23E

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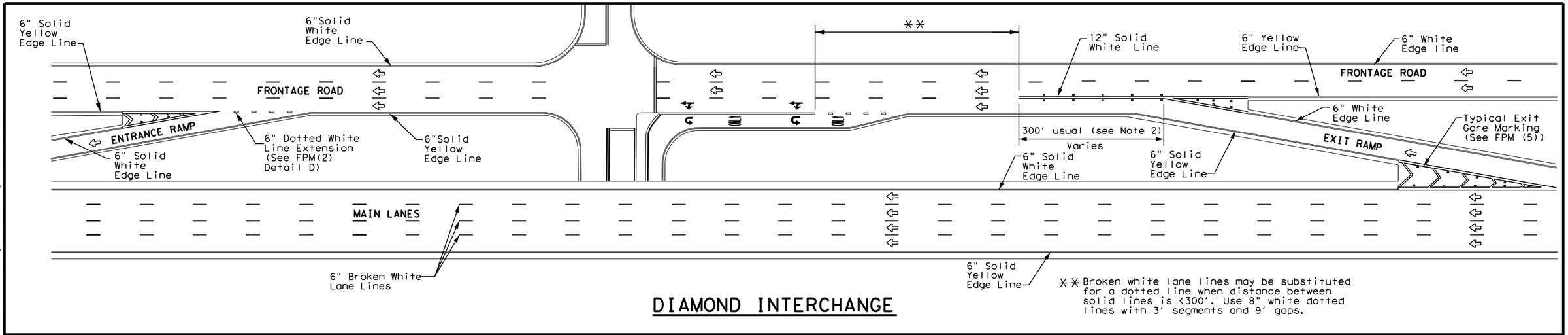
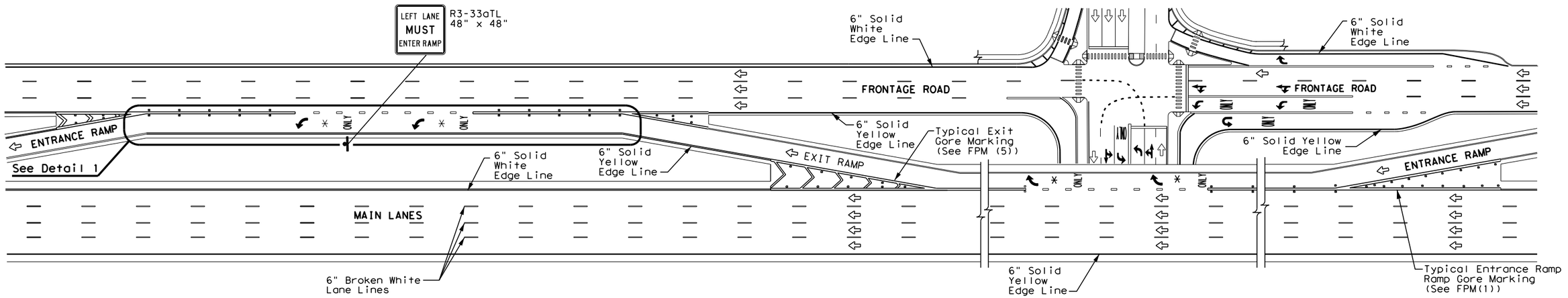
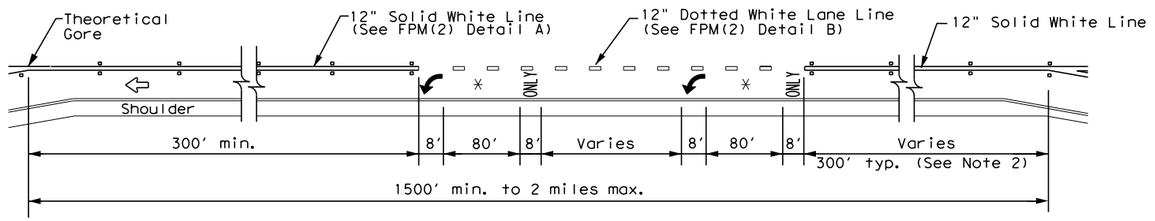


DIAMOND INTERCHANGE



URBAN X-RAMP WITH FRONTAGE ROAD AUXILIARY LANE



DETAIL 1

(Frontage Road Auxiliary Lane for X-Ramps)

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

GENERAL NOTES

1. Pavement markings shall be white except as otherwise noted.
2. Length of 12" white line may vary depending on location.
3. Wide (12") dotted lane line (see FPM(2) Detail B) is used to separate a through lane that continues beyond the interchange from an adjacent mandatory exit lane.
4. Edge lines are not required in curb and gutter sections of frontage roads.
5. See FPM(1) for traffic lane line pavement marking details.

LEGEND	
⇦	Traffic flow
↱	Pavement marking arrows (white)
▫	Reflectorized Raised Markers (RPM) Type II-C-R
*	Arrow markings are optional, however "ONLY" is required if arrow is used

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD FREEWAY AND FRONTAGE ROAD PAVEMENT MARKINGS

FPM(6)-22

FILE: fpm(6)-22.dgn	DN:	CK:	DW:	CK:
©TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 10-22	0015	01	246	IH 35
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	WACO	McLENNAN		1616

23F

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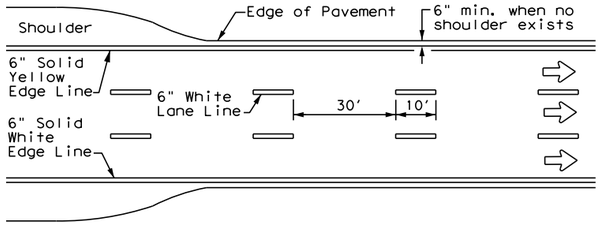
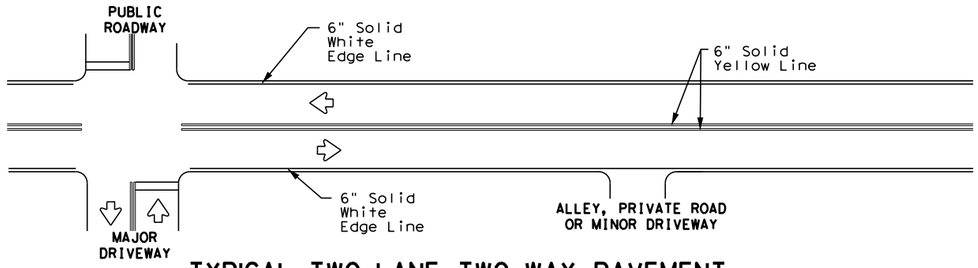
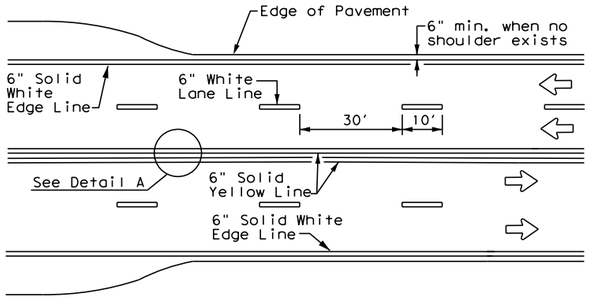
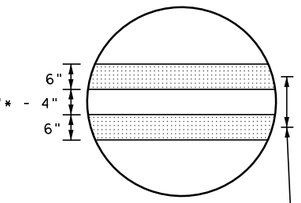


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS





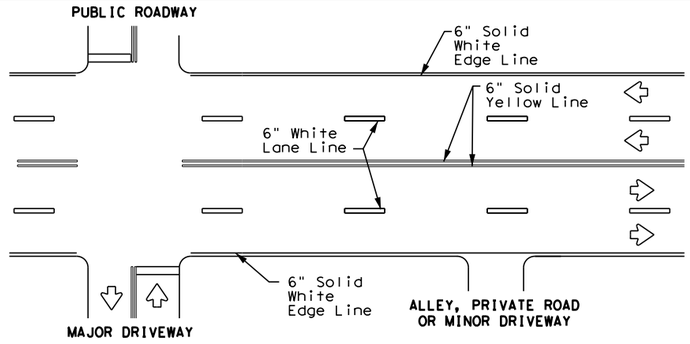
DETAIL "A"

9"** min. - 10" typ.
(18" max. for traveled way greater than 48' only)

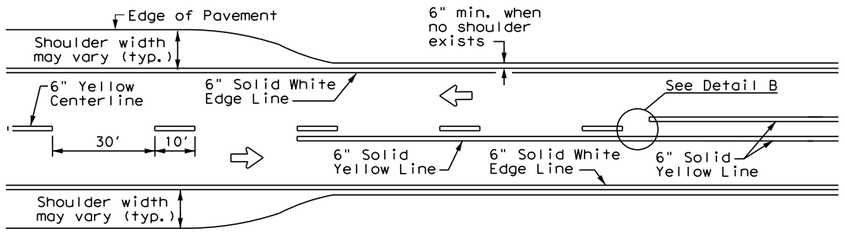
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

* 2" minimum for restripe projects when approved by the Engineer.

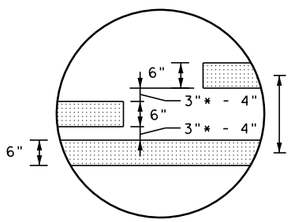
** 8" minimum for restripe projects when approved by the Engineer.



TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

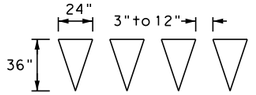


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



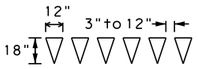
DETAIL "B"

* 2" minimum for restripe projects when approved by the Engineer.

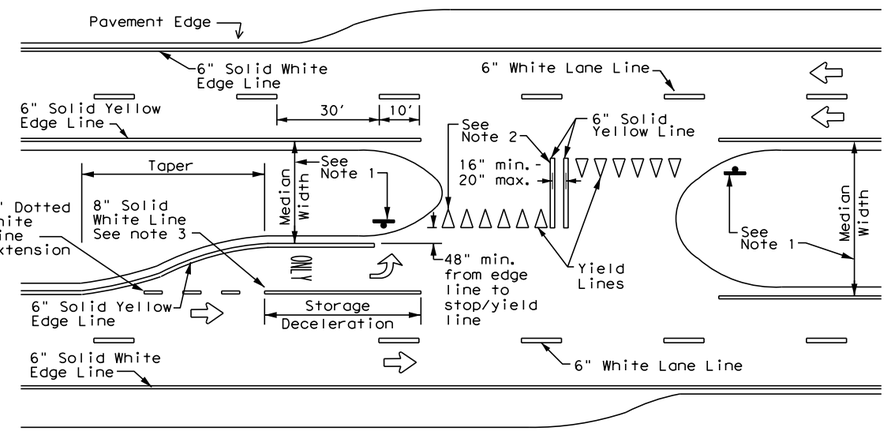


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



For posted speed on road being marked equal to or less than 40 MPH.



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

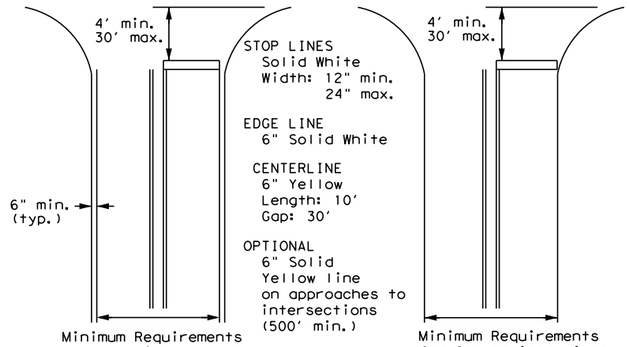
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20 / 8-95 3-03 12-22 / 5-00 2-12	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1617

22A

DATE: 10/18/2023 1:35:14 PM
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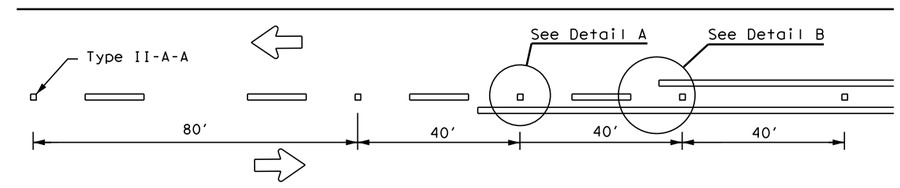
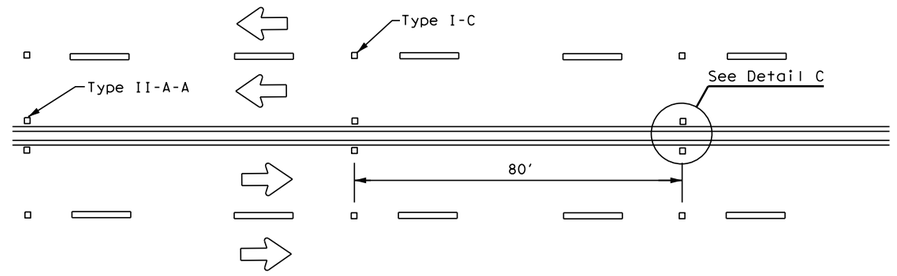
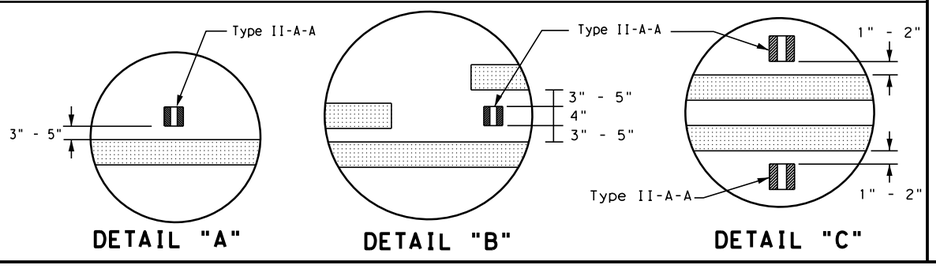
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



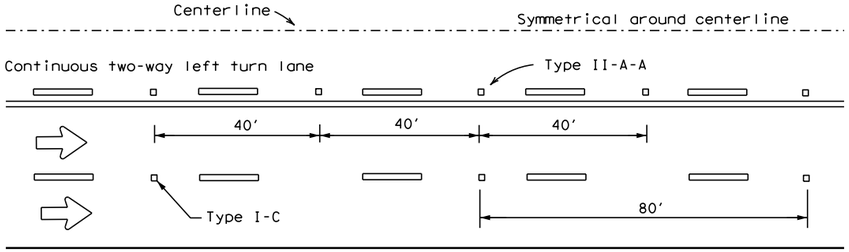
CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



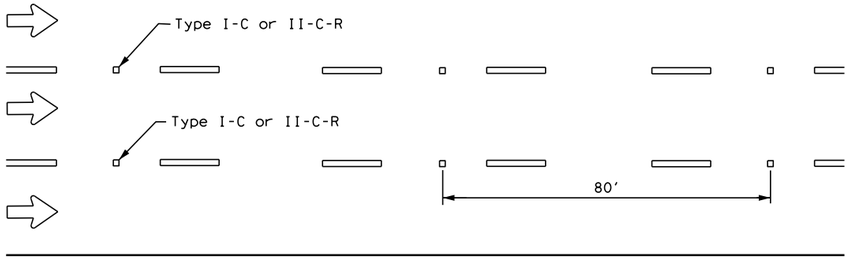
CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS



DETAIL "A" **DETAIL "B"** **DETAIL "C"**



CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



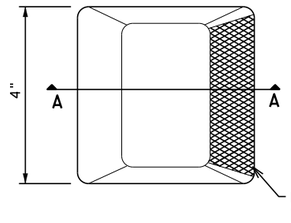
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

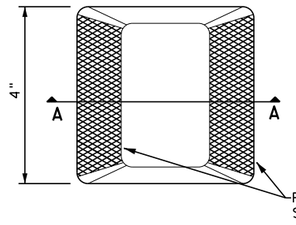
See Note 3.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

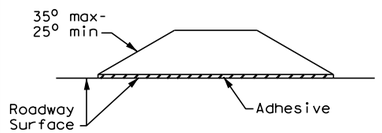
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

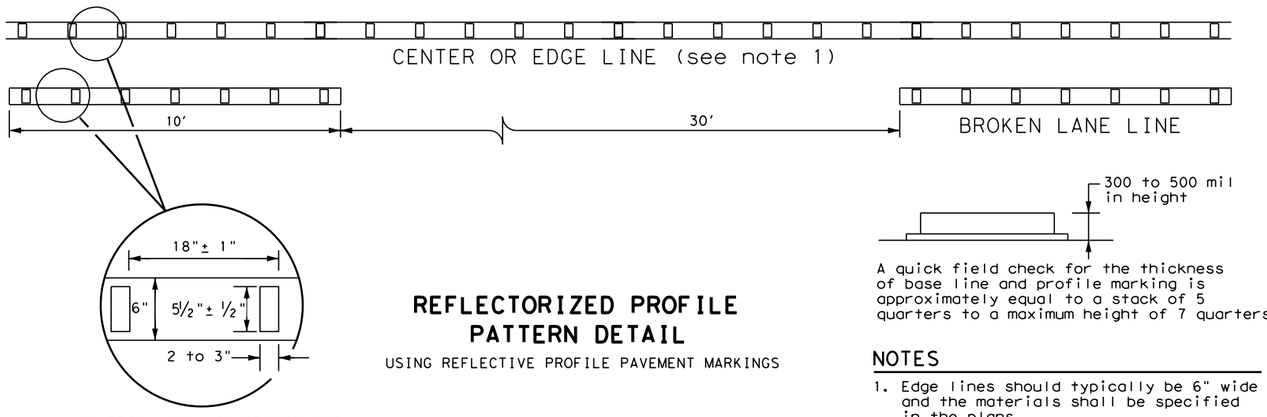


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



6" EDGE LINE, 6" CENTERLINE OR 6" LANE LINE

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

NOTES

1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

Texas Department of Transportation

Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-77 8-00 6-20 4-92 2-10 12-22 5-00 2-12	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1618

22B

DATE: 10/18/2023 1:35:16 PM
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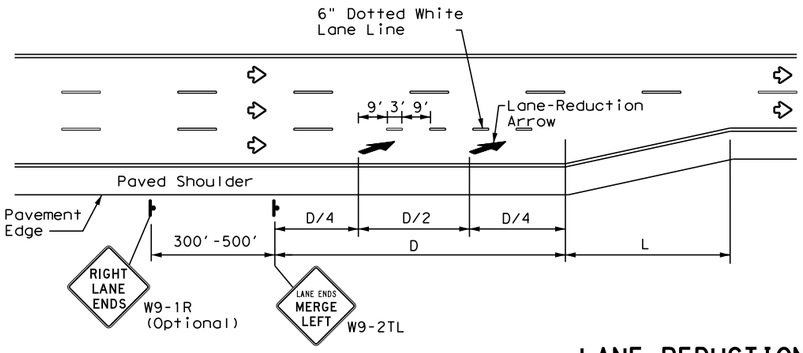


LANE REDUCTION

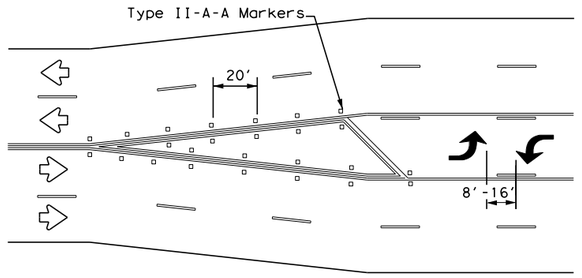
NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

GENERAL NOTES

1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

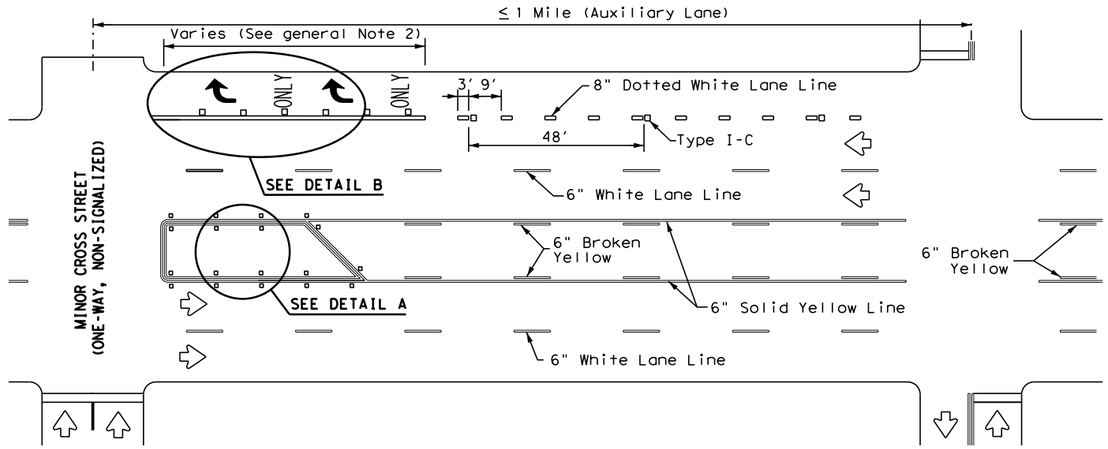


A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

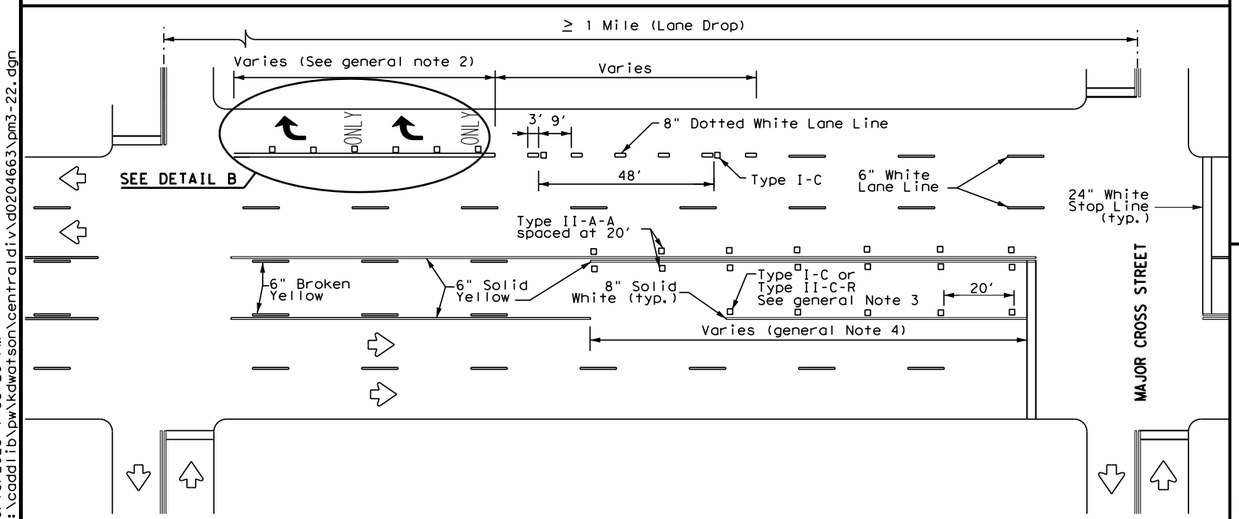
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

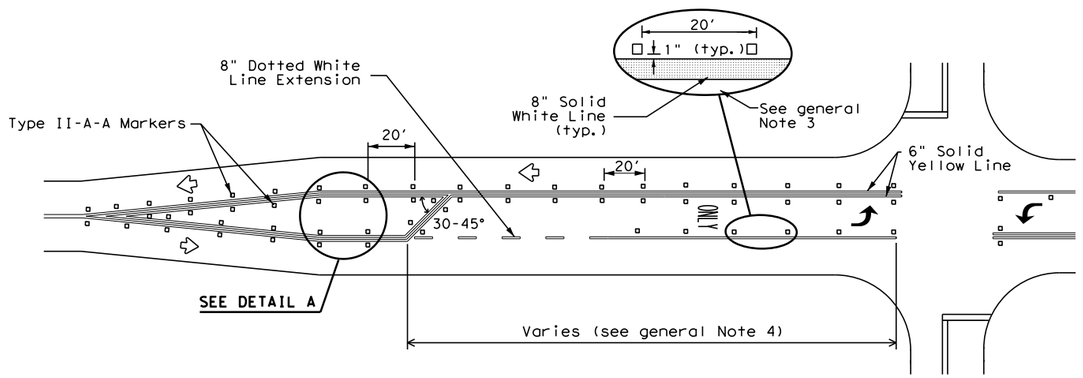
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



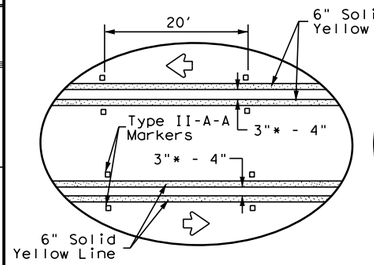
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



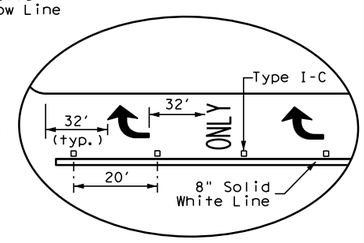
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A



DETAIL B

* 2" minimum allowed for restripe projects when approved by the Engineer.

Texas Department of Transportation

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS

PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 3-03 6-20 5-00 2-10 12-22 8-00 2-12	0015	01	246	IH 35
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	WACO	McLENNAN		1619

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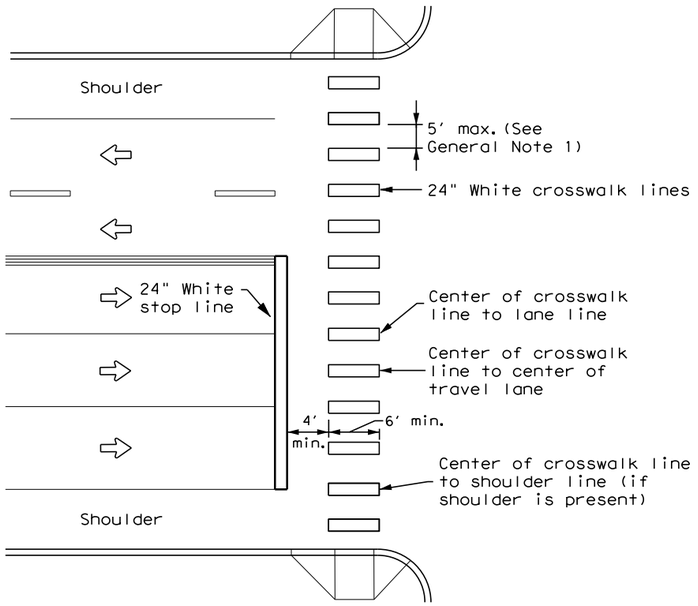


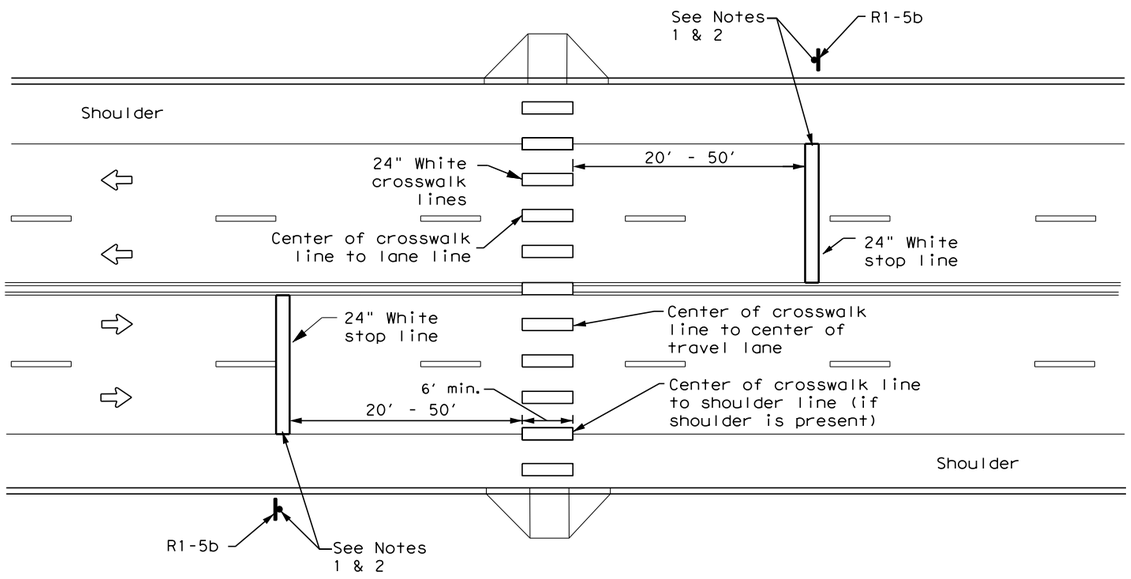
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with Stop Here For Pedestrians (R1-5b) signs at unsignalized midblock cross walks.
2. Use stop bars with STOP HERE ON RED (R10-6 or R10-6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

FILE: pm4-22.dgn	DN:	CK:	DW:	CK:
© TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 3-22	0015	01	246	IH 35
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	WACO	McLENNAN		1620

22D

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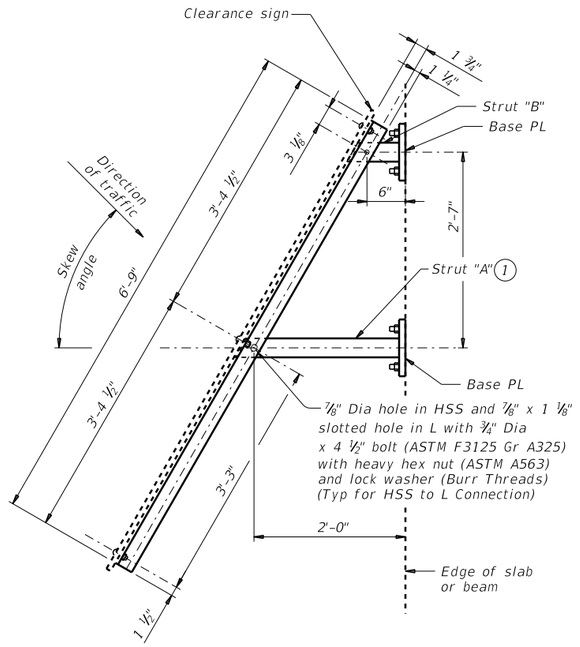
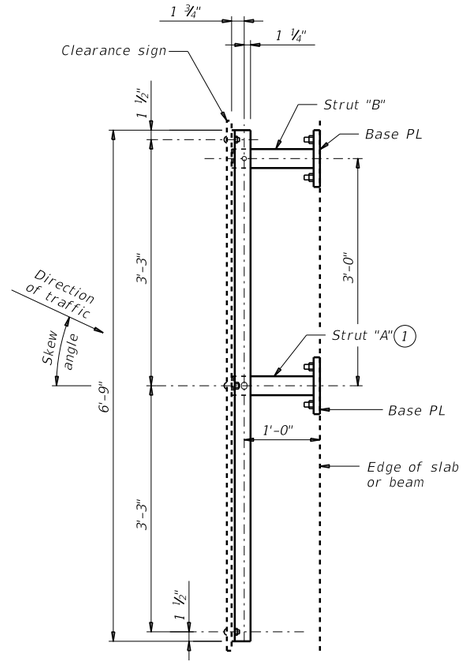


PLAN OF TYPE S MOUNT

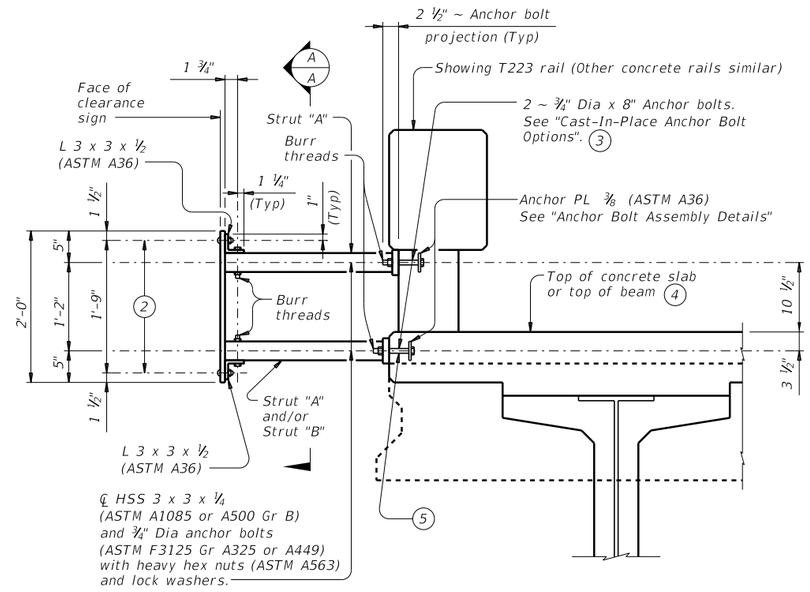
(Used for skews over 30°)



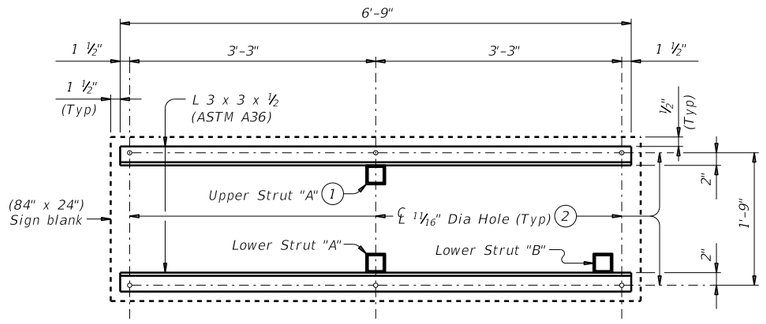
PLAN OF TYPE N MOUNT

(Used for 0° to 30° skews)

1. Locate centerline of Strut A no closer than 12" from a vertical concrete edge.
2. ℄ ⅝" Dia x 2" Hexagon socket button head cap screws (ASTM A574) with hex nuts. Attach hex nuts to L 3 x 3 x ½ by tack welding in two places. Threads must have Class 3A fit tolerance in accordance ASME B1.1. Six screws required.
3. At the Contractor's option fully threaded adhesive anchors may be use instead of cast-in-place anchor bolts. Expansion anchors are not allowed. Provide adhesive anchors that are ¾" Dia ASTM A193 Gr B7 or F1554 Gr 105 fully threaded rods with one hardened steel washer (ASTM F436) and one regular lock washer placed under heavy hex nut (ASTM A563). Embed fully threaded rods using a Type III, Class C, D, E, or F anchor adhesive. Adhesive anchor embedment depth is 8". Anchor adhesive chosen must be able to achieve a factored bond strength in tension of 2.2 kips per anchor (edge distance and spacing must be accounted for). Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".
4. For decked slab beams topped with a 2 course surface treatment and ACP overlay.
5. Anchor bolts to be cast into decked slab beams topped with a 2 course surface treatment or ACP overlay. Anchor bolts with heavy hex nuts, regular lock washers, hardened washers and anchor plate that is embedded in the beam will be provided by the beam Fabricator.



SECTION



SECTION A-A

CONSTRUCTION NOTES:

Install the vertical face of clearance sign plumb unless otherwise approved by the Engineer.

Test adhesive anchors in accordance with Item 450.3.3, "Tests". Test 1 anchor per bridge mounted clearance sign installed. Perform corrective measures to provide adequate capacity if any of the tests do not meet the required test load. Repair damage from testing as directed.

MATERIAL NOTES:

Galvanize all steel components after fabrication unless otherwise noted.

GENERAL NOTES:

This standard provides details to mount a vertical clearance sign (84" x 24") to bridges. Rail Types T631, T631LS, PR11, PR22 and PR3 are not accommodated.

The Engineer will furnish the clearance to be shown on the sign.

See Bridge Layout for sign location and mounting type (Type N or S).

Cost of furnishing, installing, relocating or removing a clearance sign, including structural steel for sign mount, is included in unit price bid for Item 644, "Small Roadside Sign Assemblies".

One Sign Blank (84" x 24") is 14 SF.

Average steel weight for one complete Type N Mount is 219 Lb.

Average steel weight for one complete Type S Mount is 233 Lb.

Texas Department of Transportation

Bridge Division Standard

BRIDGE MOUNTED CLEARANCE SIGN ASSEMBLY

BMCS

FILE: bmcsste1-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1621

DATE:
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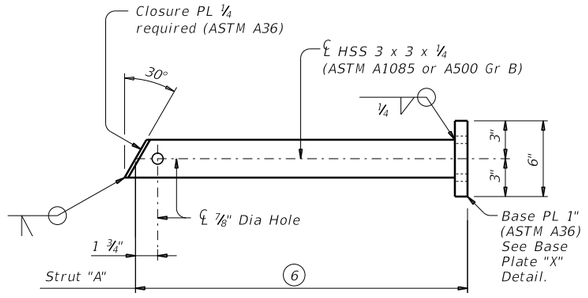
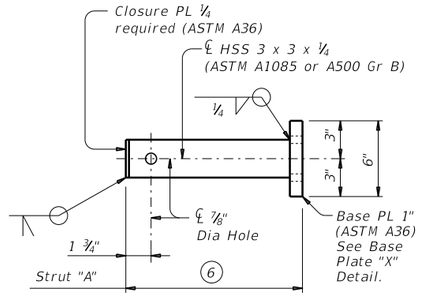
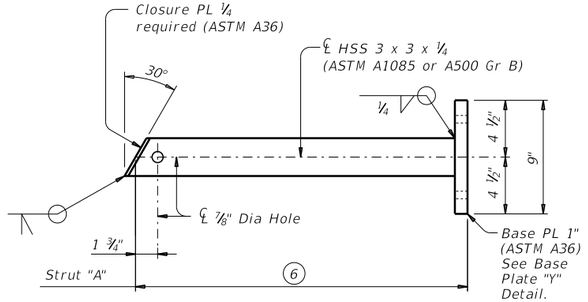


FOR T411 AND C411 RAIL TYPES



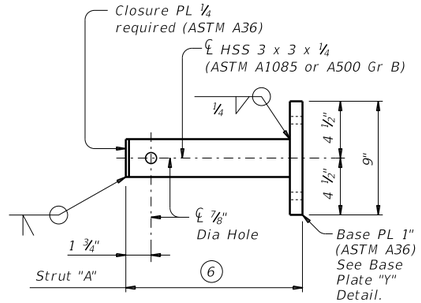
FOR T411 AND C411 RAIL TYPES



FOR T221, C221, T222, T223, C223, T401, T402, C402, T551, T552, T80HT, T80SS AND SSTR RAIL TYPES

UPPER STRUT DETAIL FOR (TYPE S MOUNT)

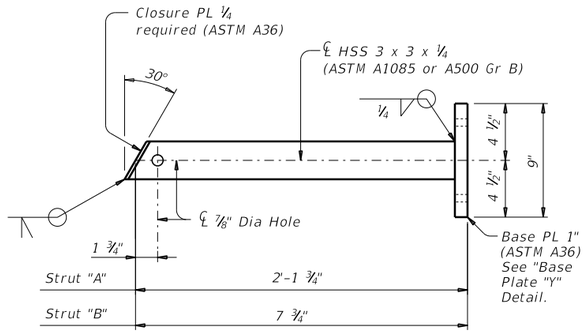
(Used for skews over 30°)



FOR T221, C221, T222, T223, C223, T401, T402, C402, T551, T552, T80HT, T80SS AND SSTR RAIL TYPES

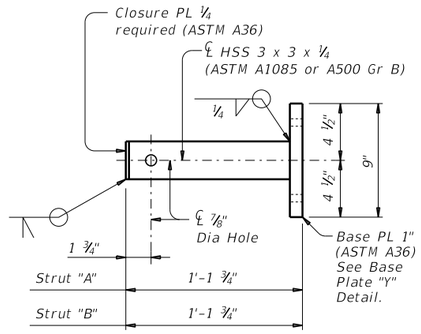
UPPER STRUT DETAIL FOR (TYPE N MOUNT)

(Used for 0° to 30° skews)



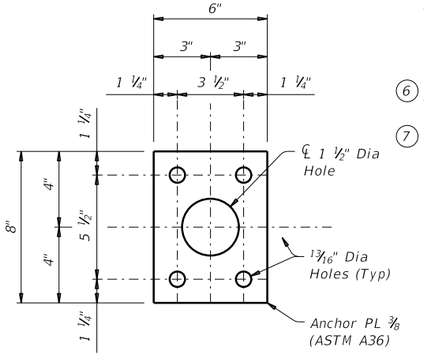
LOWER STRUT DETAILS FOR (TYPE S MOUNT)

(Used for skews over 30°)

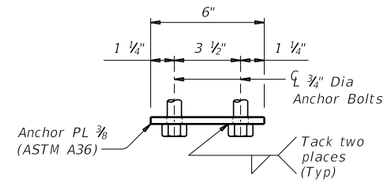


LOWER STRUT DETAILS FOR (TYPE N MOUNT)

(Used for 0° to 30° skews)



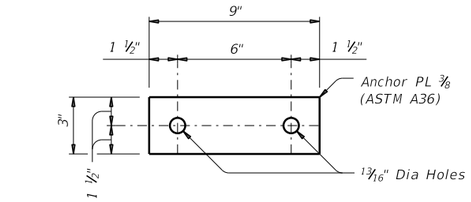
PLAN OF ANCHOR PLATE



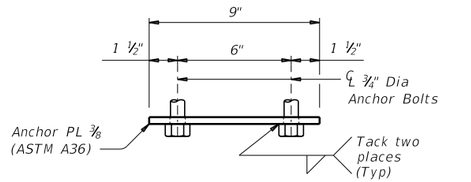
ELEVATION

ANCHOR BOLT ASSEMBLY DETAILS (3)

(Used on Base Plate "X" with T411 and C411 rail types.)



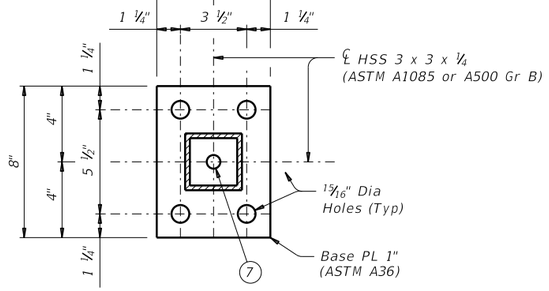
PLAN OF ANCHOR PLATE



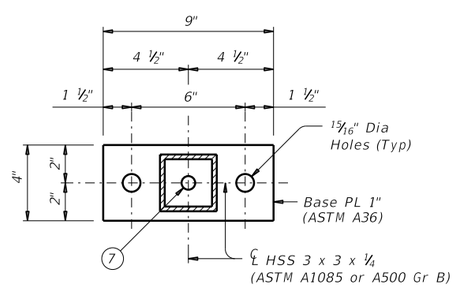
ELEVATION

ANCHOR BOLT ASSEMBLY DETAILS (3)

(Used on Base Plate "Y" and with T1F, T2P, C2P, T1W, C1W, T66 and C66 rail types.)

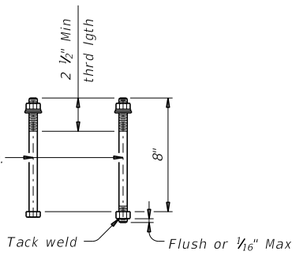


BASE PLATE "X" DETAIL



BASE PLATE "Y" DETAIL

℄ ¾" Dia heavy hex head anchor bolt (ASTM F3125 Gr A325 or A449) or threaded rod (ASTM A193 Gr B7 or F1554 Gr 105) with one hardened washer and one regular lock washer placed under heavy hex nut (ASTM A563). Furnish one additional heavy hex nut for each threaded rod.



CAST-IN-PLACE ANCHOR BOLT OPTIONS (3)

(3) At the Contractor's option fully threaded adhesive anchors may be use instead of cast-in-place anchor bolts. Expansion anchors are not allowed. Provide adhesive anchors that are ¾" Dia ASTM A193 Gr B7 or F1554 Gr 105 fully threaded rods with one hardened steel washer (ASTM F436) and one regular lock washer placed under heavy hex nut (ASTM A563). Embed fully threaded rods using a Type III, Class C, D, E, or F anchor adhesive. Adhesive anchor embedment depth is 8". Anchor adhesive chosen must be able to achieve a factored bond strength in tension of 2.2 kips per anchor (edge distance and spacing must be accounted for). Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".

(6) Adjust length to accommodate edge of slab to back of rail for specific project conditions and to help plumb the vertical face of clearance sign.

(7) Hole required to drain zinc from base plate during galvanizing.

Texas Department of Transportation

Bridge Division Standard

BRIDGE MOUNTED CLEARANCE SIGN ASSEMBLY

BMCS

FILE: bmcsste1-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1622

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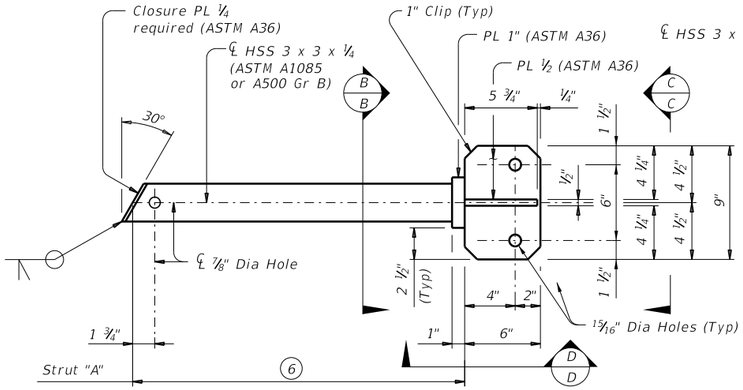
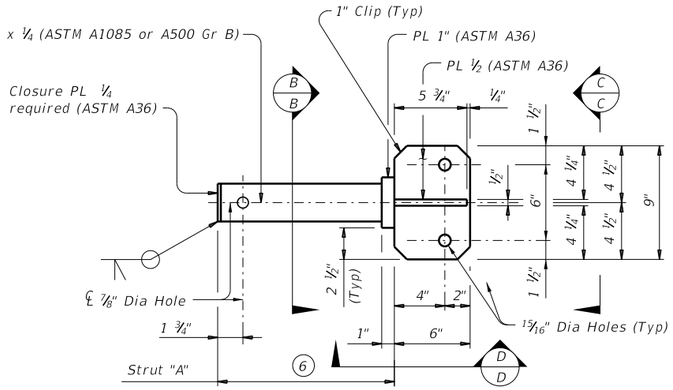
FILE:



FOR T1F, T2P, C2P, T1W, C1W, T66 AND C66 RAIL TYPES

UPPER STRUT DETAIL FOR (TYPE S MOUNT)

(Used for skews over 30°)



FOR T1F, T2P, C2P, T1W, C1W, T66 AND C66 RAIL TYPES

UPPER STRUT DETAIL FOR (TYPE N MOUNT)

(Used for 0° to 30° skews)

(2) ℄ ⅜" Dia x 2" Hexagon socket button head cap screws (ASTM A574) with hex nuts. Attach hex nuts to L 3 x 3 x ½ by tack welding in two places. Threads must have Class 3A fit tolerance in accordance ASME B1.1. Six screws required.

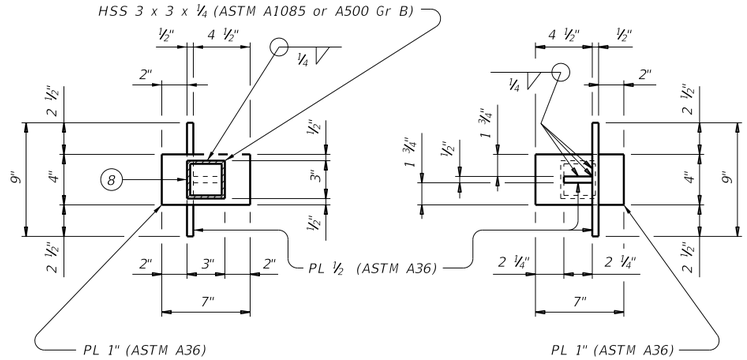
(3) At the Contractor's option fully threaded adhesive anchors may be use instead of cast-in-place anchor bolts. Expansion anchors are not allowed. Provide adhesive anchors that are ¾" Dia ASTM A193 Gr B7 or F1554 Gr 105 fully threaded rods with one hardened steel washer (ASTM F436) and one regular lock washer placed under heavy hex nut (ASTM A563). Embed fully threaded rods using a Type III, Class C, D, E, or F anchor adhesive. Adhesive anchor embedment depth is 8". Anchor adhesive chosen must be able to achieve a factored bond strength in tension of 2.2 kips per anchor (edge distance and spacing must be accounted for). Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".

(4) For decked slab beams topped with a 2 course surface treatment and ACP overlay.

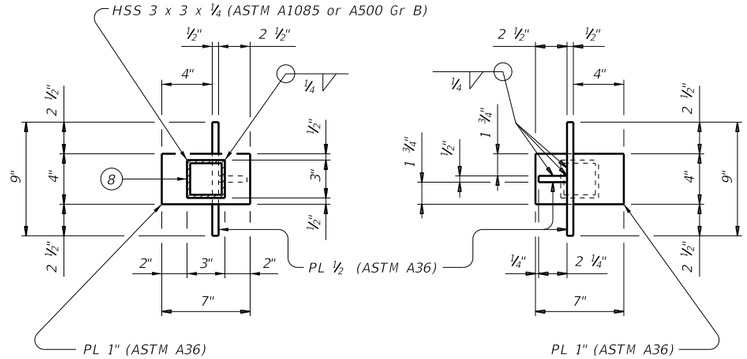
(6) Adjust length to accommodate edge of slab to back of rail for specific project conditions and to help plumb the vertical face of clearance sign.

(8) Hole required in bottom of HSS to drain zinc during galvanizing.

(9) 11" curb is for structures with 2" ACP overlay.

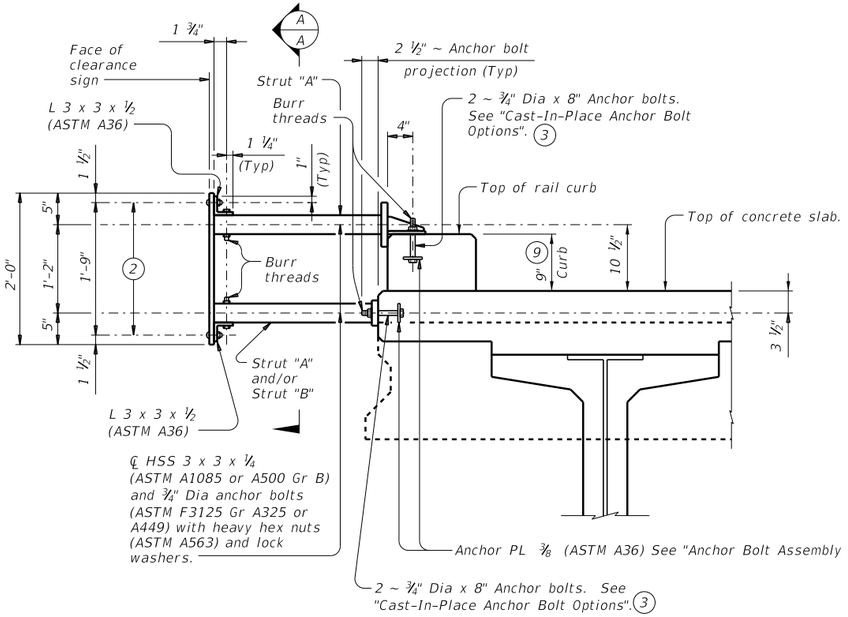


FOR 9" HIGH CURBS



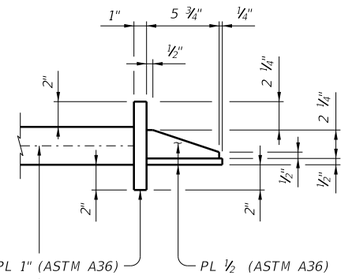
FOR 11" HIGH CURBS

SECTION B-B

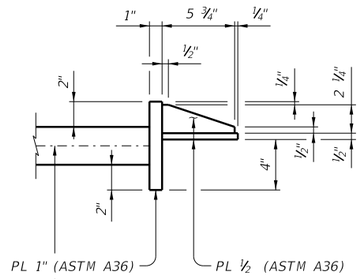


SECTION THRU T1F, T2P, C2P, T1W, C1W, T66 AND C66 RAIL CURB

Showing sign mount on a 9" high curb, 11" high curb similar.



FOR 9" HIGH CURBS



FOR 11" HIGH CURBS

VIEW D-D

VIEW C-C

SHEET 3 OF 3

Texas Department of Transportation

Bridge Division Standard

BRIDGE MOUNTED CLEARANCE SIGN ASSEMBLY

BMCS

FILE: bmcsste1-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
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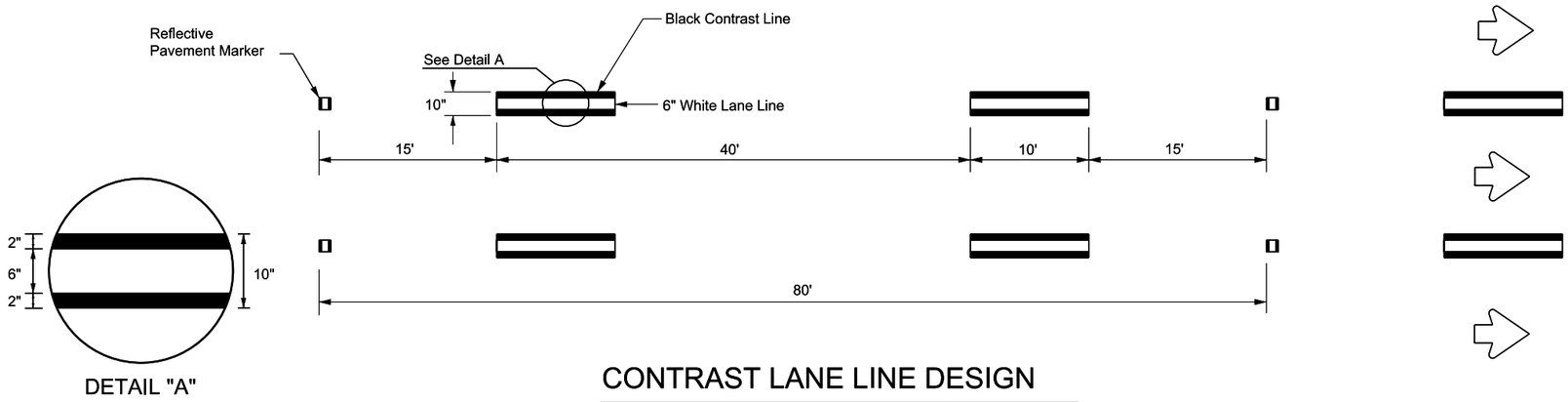
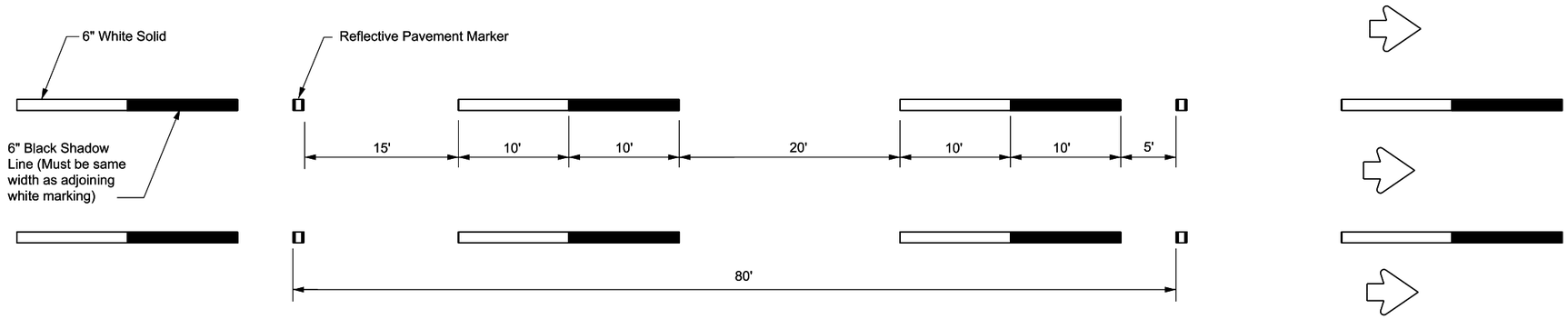
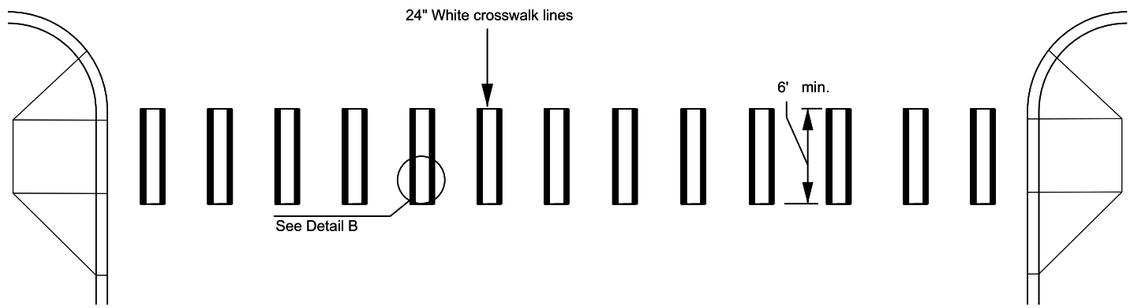


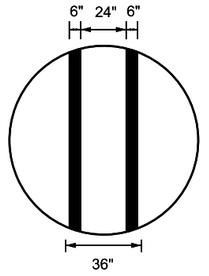
DETAIL "A"

CONTRAST LANE LINE DESIGN



SHADOW LANE LINE DESIGN





DETAIL "B"

(See PM(4) for crosswalk line placement details)

CONTRAST CROSSWALK DESIGN

GENERAL NOTES

1. Contrast and Shadow markings may only be used on concrete pavements.
2. Contrast and Shadow markings shall not be used on edge lines.
3. Contrast lane lines shall be permanent prefabricated pavement markings meeting DMS 8240.
4. Shadow lane line designs shall be a liquid markings system approved by TxDOT.
5. All raised reflective pavement markers placed in broken lines shall be placed in line with and midway between the white stripes.
6. See PM(2) for raised reflective pavement markings installation details.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

Texas Department of Transportation

Traffic Safety Division Standard

CONTRAST AND SHADOW PAVEMENT MARKINGS

CPM(1)-23

FILE: CPM(1)-23.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
5-14	DIST	COUNTY		SHEET NO.
2-23	WACO	McLENNAN		#CPM114#

DATE:
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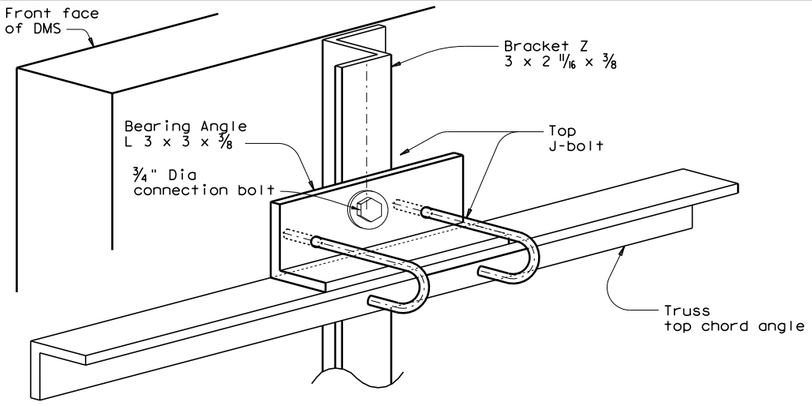
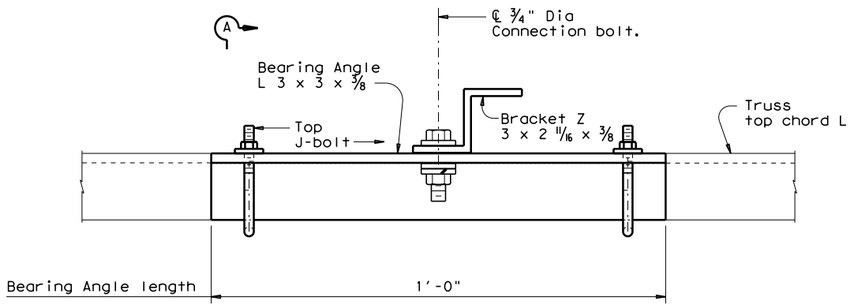


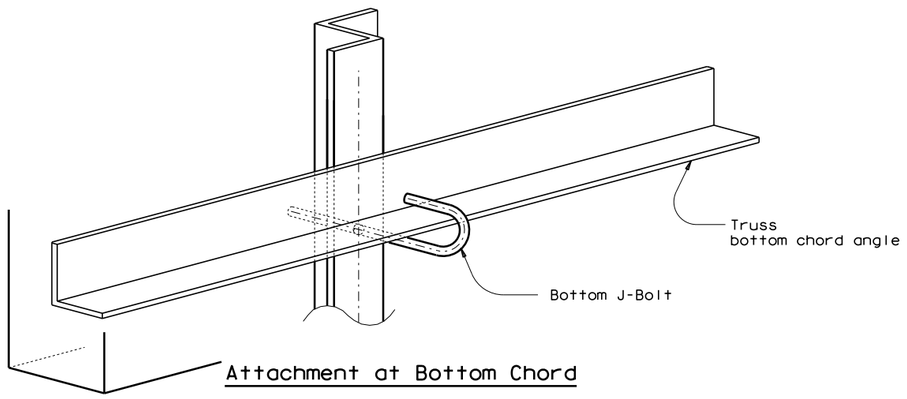
Attachment at Top Chord

(Showing Chord Angle 3")



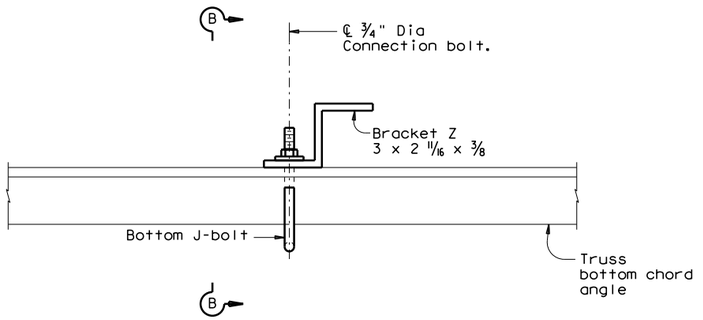
Attachment at Top Chord

(Showing Chord Angle 3")



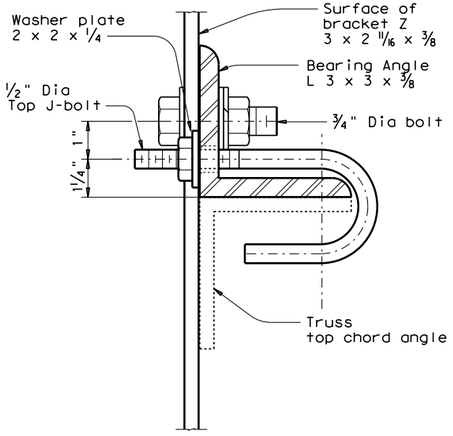
Attachment at Bottom Chord

ISOMETRIC VIEW

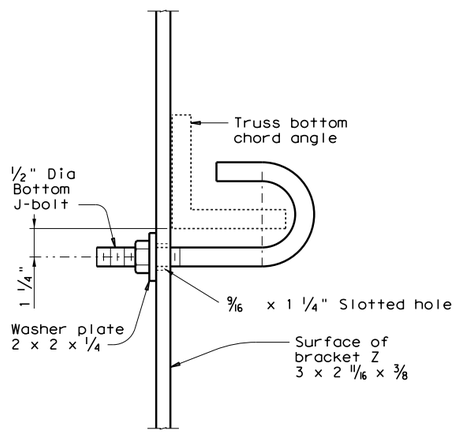


Attachment at Bottom Chord

PLAN VIEW



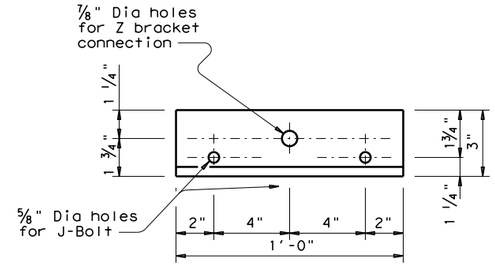
SECTION A-A



SECTION B-B

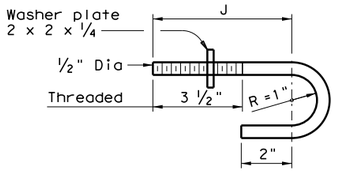
GENERAL NOTES:

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	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1625

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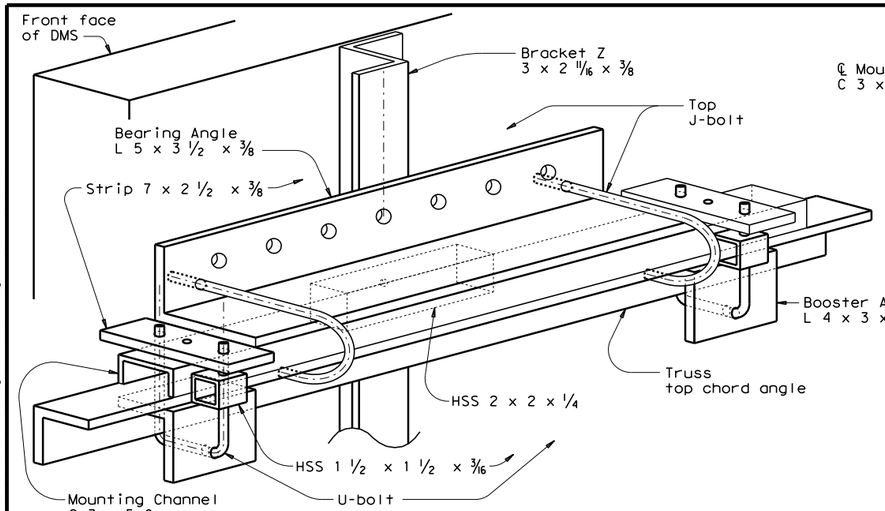
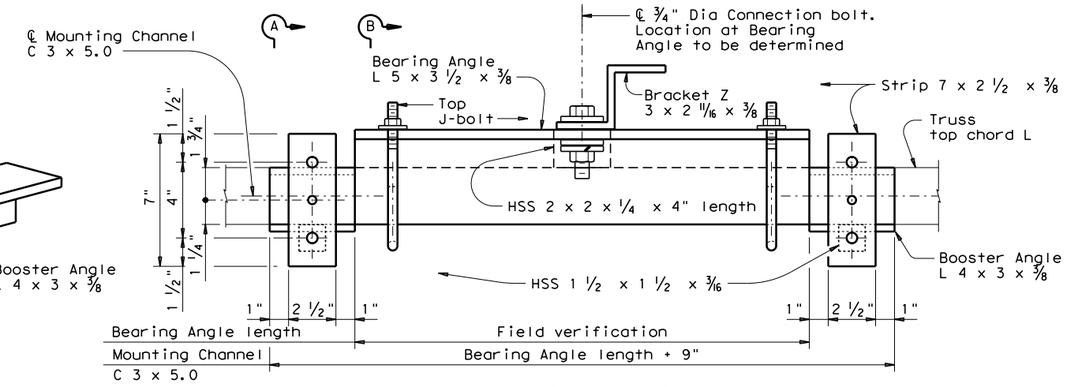
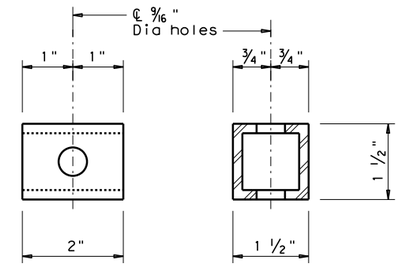


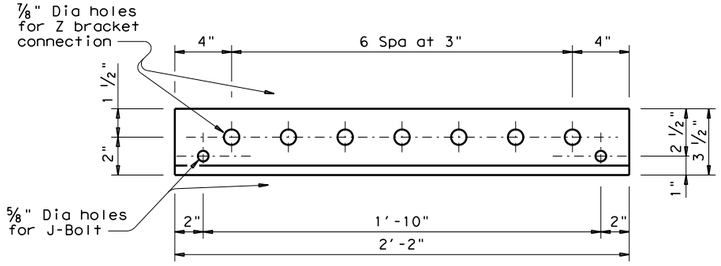
Built-up Attachment at Top Chord

(Showing Chord Angle 3")

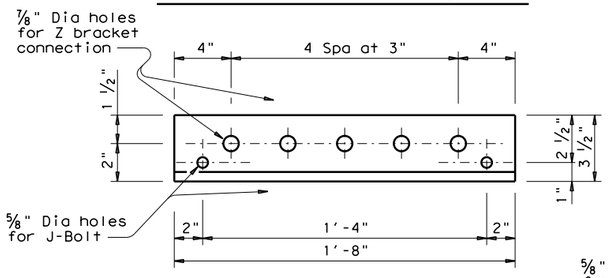




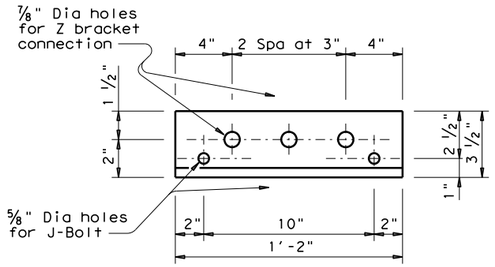
ISOMETRIC VIEW



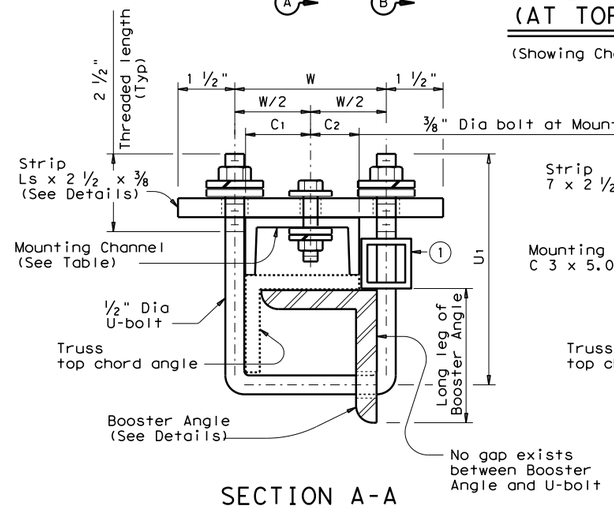
BEARING ANGLE 5 x 3 1/2 x 3/8



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



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



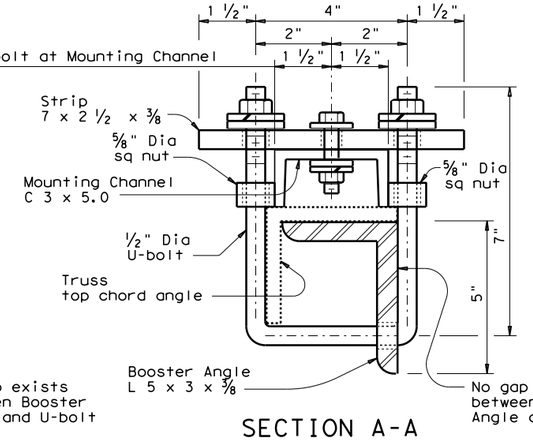
SECTION A-A

(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

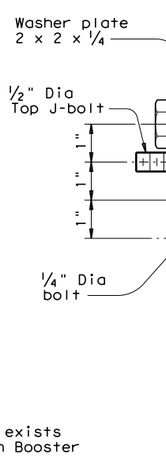
PLAN VIEW (AT TOP CHORD)

(Showing Chord Angle 3")

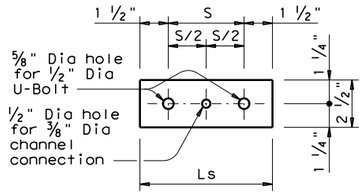


SECTION A-A

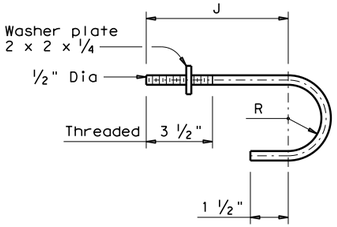
(Showing Chord Angle 3 1/2")



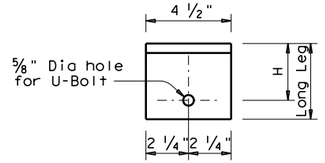
SECTION B-B



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



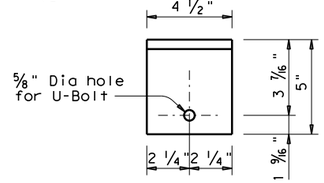
Chord Angle	J	R
3 & 3 1/2"	7"	1 3/4"
4 & 5"	8"	2"
6"	9"	2 1/4"



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")

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
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	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1626

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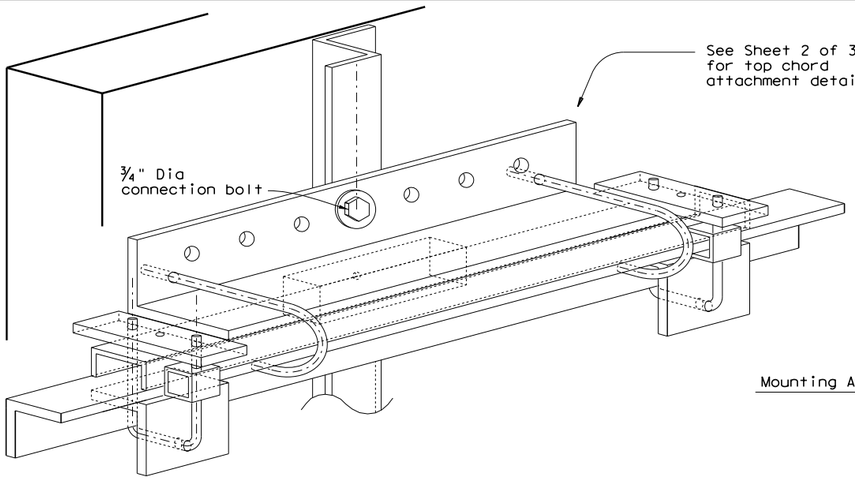
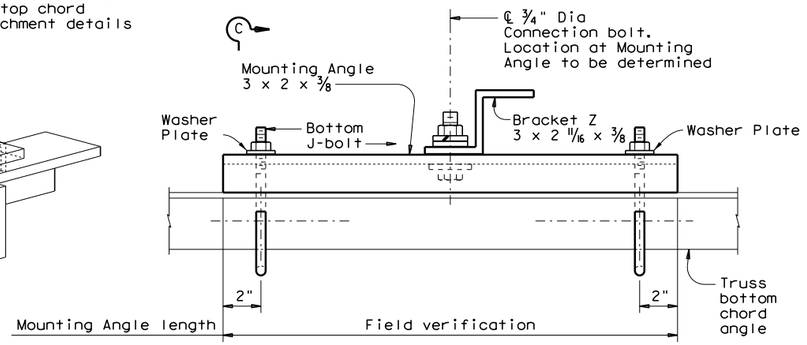
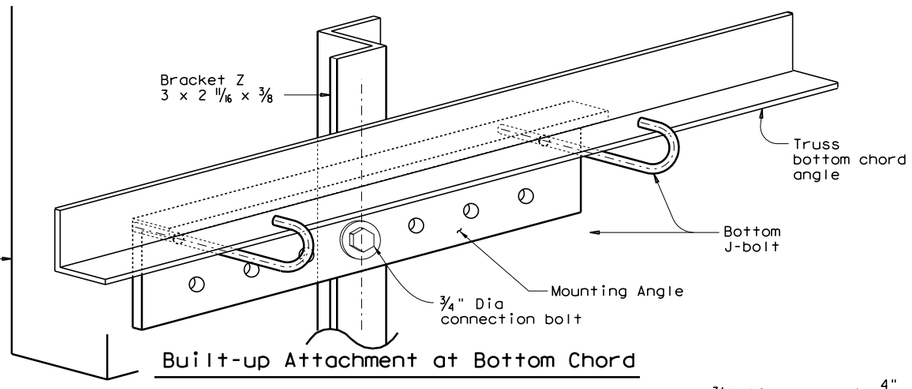


Built-up Attachment at Top Chord

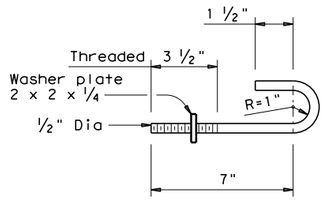




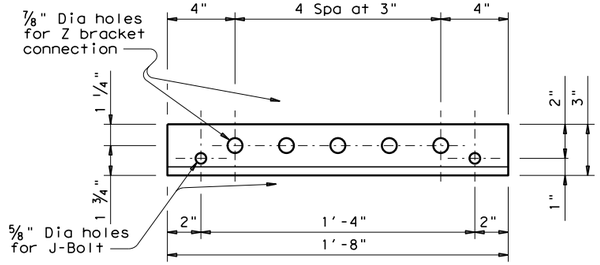
Built-up Attachment at Bottom Chord

ISOMETRIC VIEW

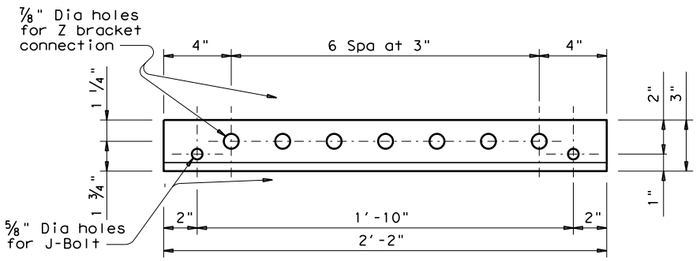
PLAN VIEW
(AT BOTTOM CHORD)



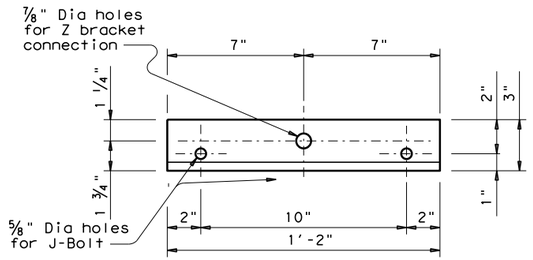
BOTTOM J-BOLT



MOUNTING ANGLE 3 x 2 x ⅜



MOUNTING ANGLE 3 x 2 x ⅜



MOUNTING ANGLE 3 x 2 x ⅜

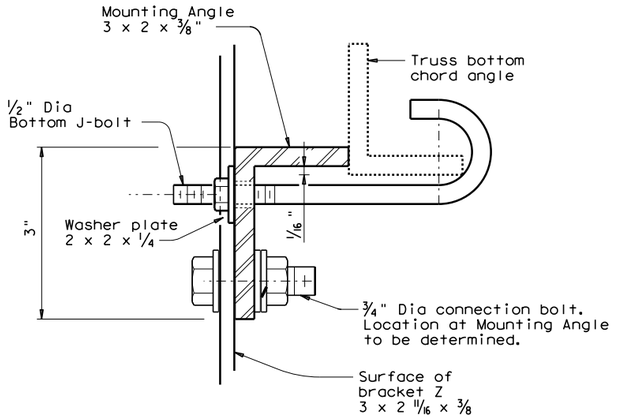
GENERAL NOTES:

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:		
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REVISIONS	0015	01	246	IH 35		
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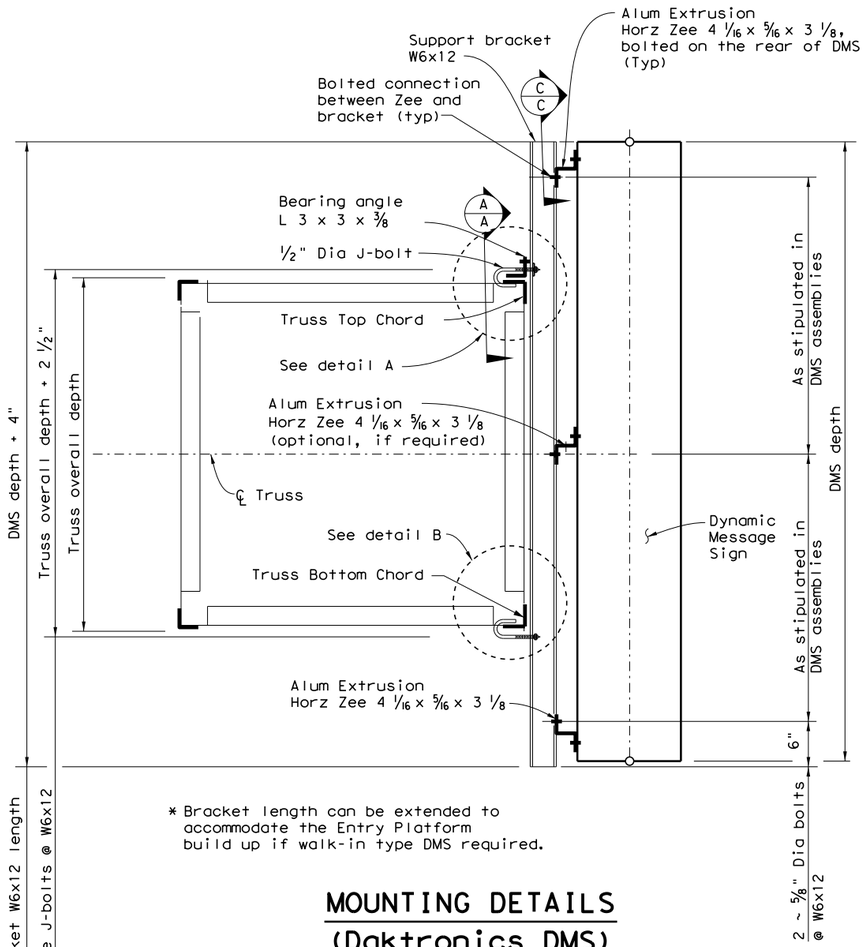
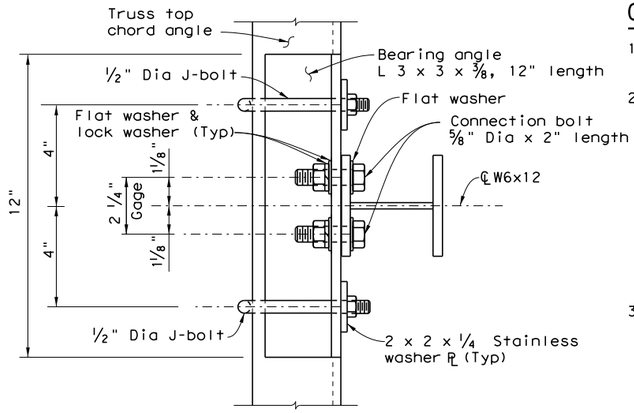
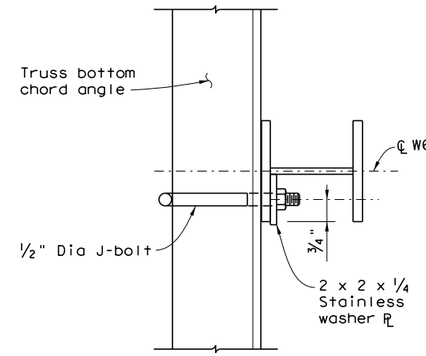


* Bracket length can be extended to accommodate the Entry Platform build up if walk-in type DMS required.

MOUNTING DETAILS (Daktronics DMS)



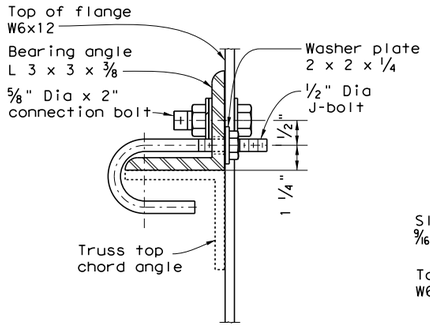
TOP VIEW TRUSS TOP CONNECTION



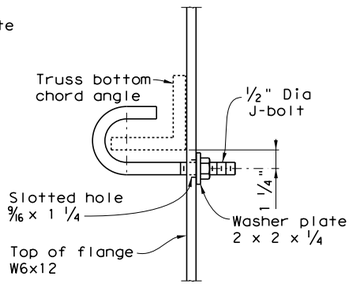
TOP VIEW TRUSS BOTTOM CONNECTION

GENERAL NOTES:

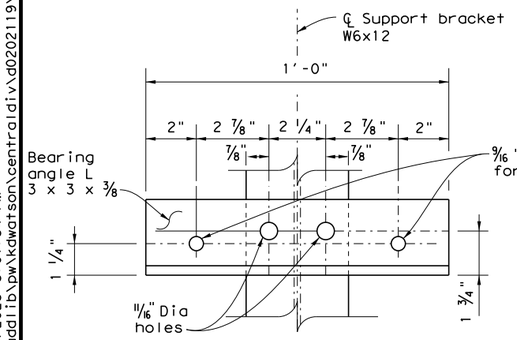
1. Determine the adequacy of the overhead sign support structure to support the dynamic message sign (DMS) prior to attaching the sign to the truss.
2. Designed according to the 1994 edition of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals 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

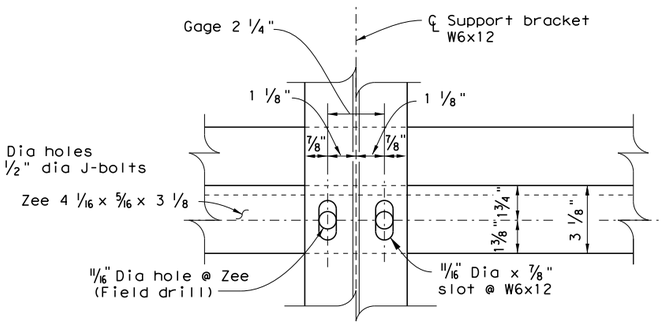


DETAIL B

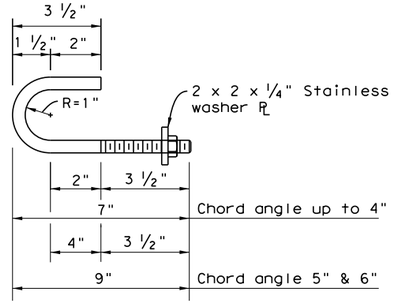


SECTION A-A

(Truss chord angle not shown)



SECTION C-C



1/2" Dia J-BOLT

Texas Department of Transportation

Traffic Safety Division Standard

DMS-TO-TRUSS MOUNTING WITH HORIZONTAL ZEE EXTRUSIONS

DMS(HZ-2)-21

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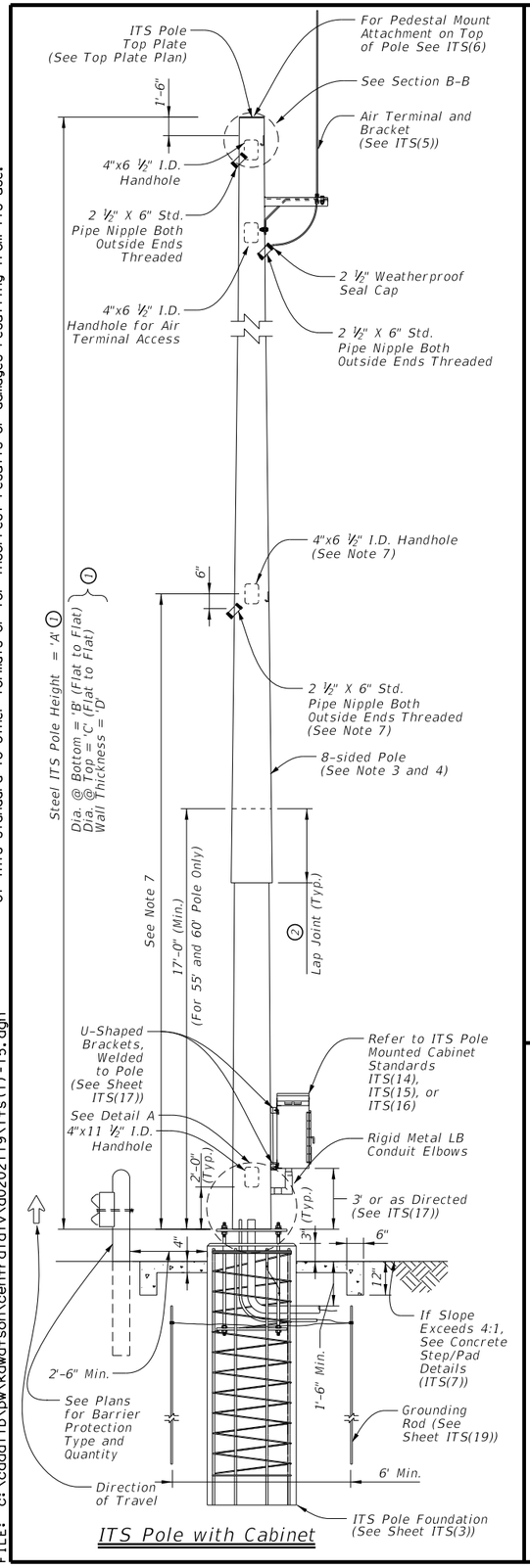
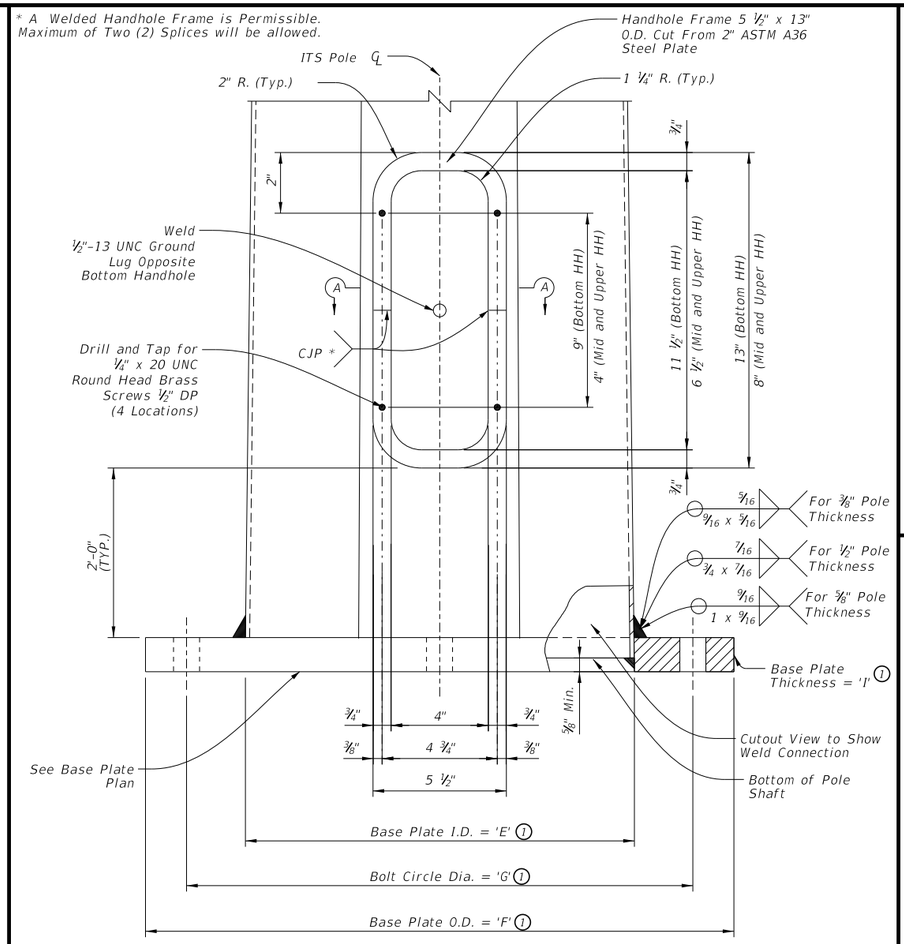
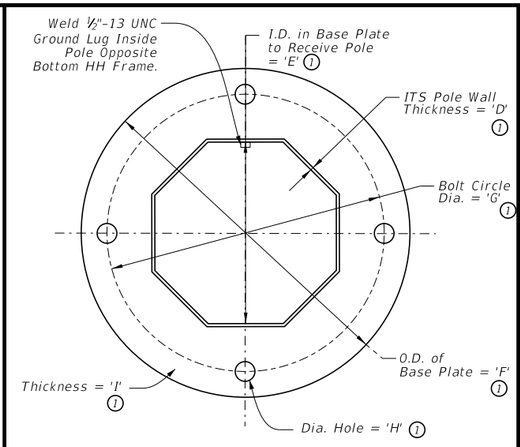


ITS Pole with Cabinet

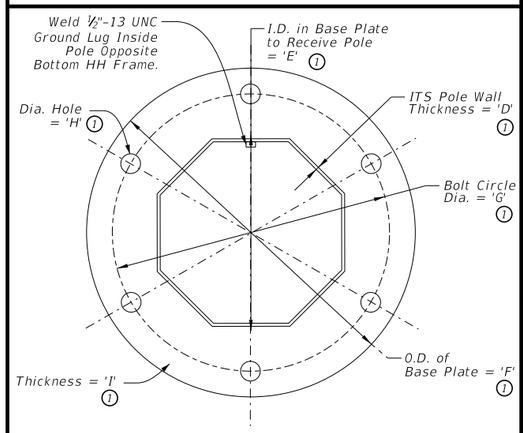


Detail A



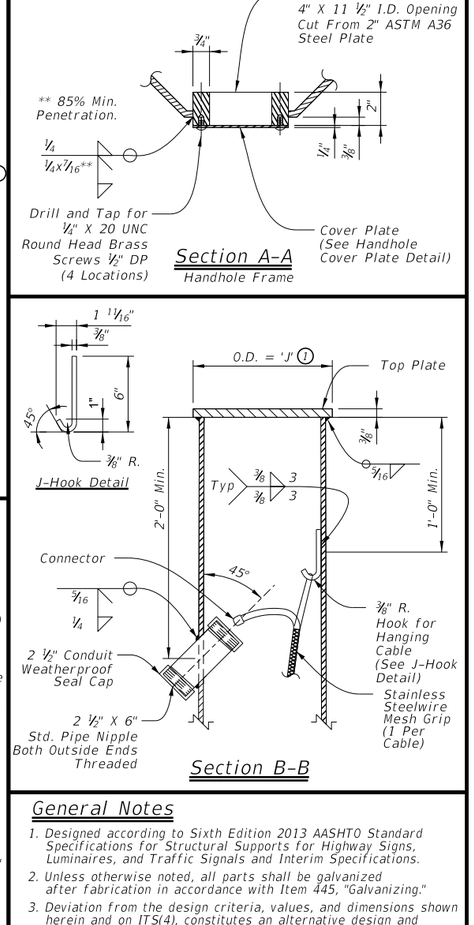
Base Plate Plan

4 Bolt Base Plate (ASTM A36)



Base Plate Plan

6 Bolt Base Plate (ASTM A36)



Section A-A

Handhole Frame

Section B-B

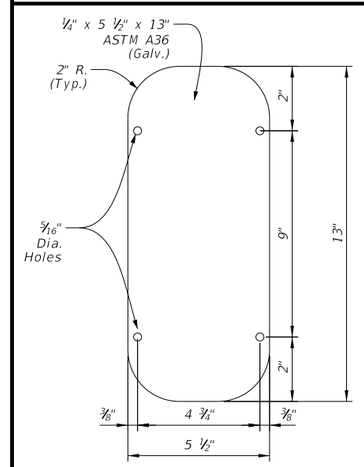
General Notes

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:

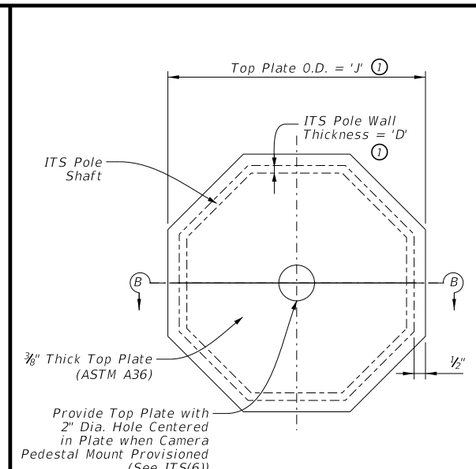
(1) See tables on Sheet ITS(4) for values of dimension variables.

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

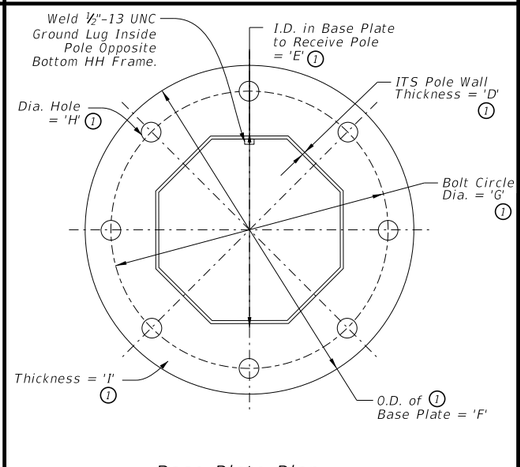


Handhole Cover Plate Detail

(Bottom Handhole)



Top Plate Plan



Base Plate Plan

8 Bolt Base Plate (ASTM A36)

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE DETAILS OCTAGONAL POLE (EIGHT SIDED POLE)

ITS(1)-15

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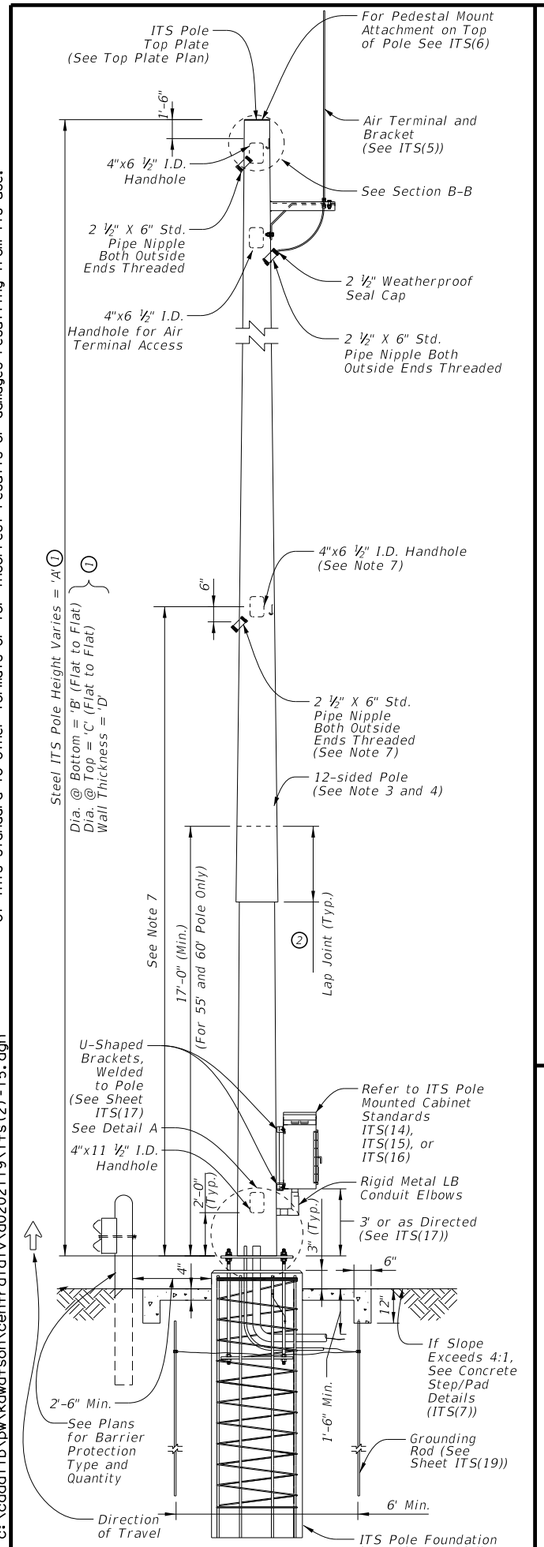
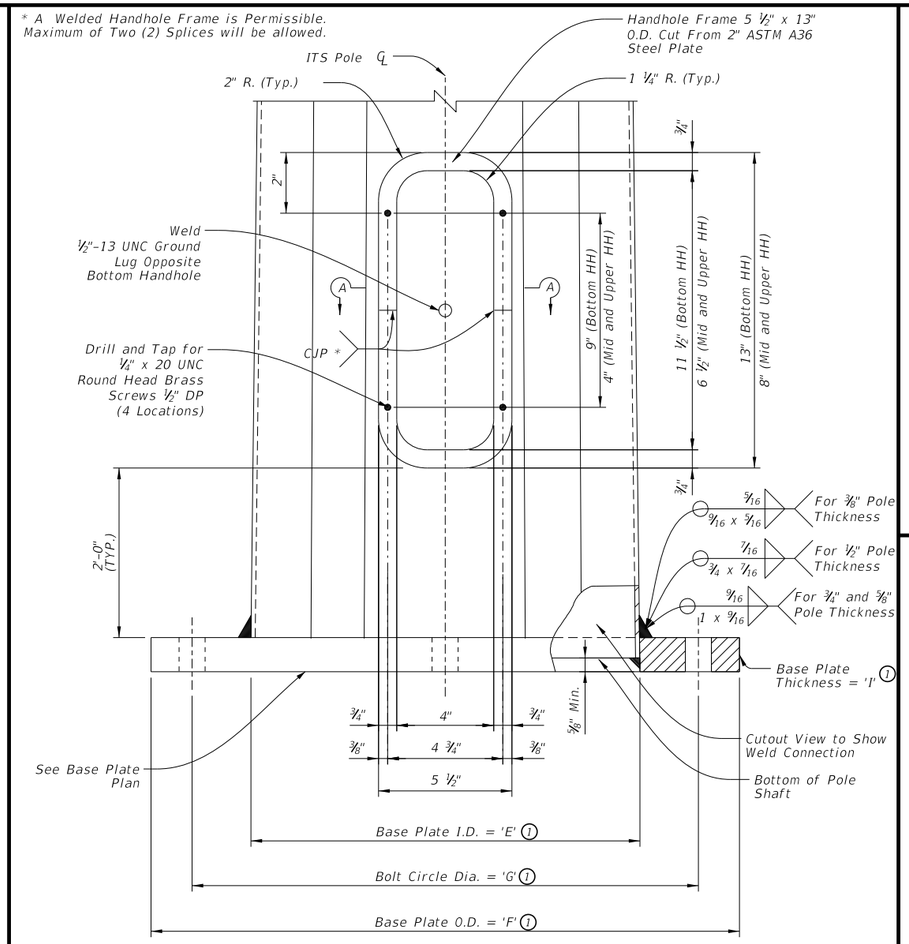
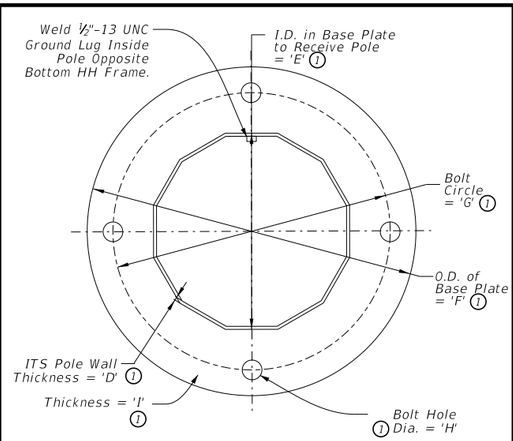


ITS Pole with Cabinet

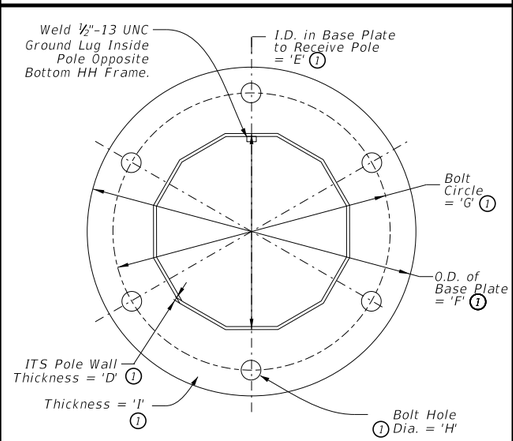


Detail A



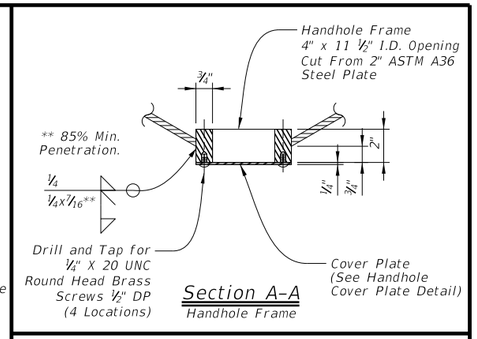
Base Plate Plan

4 Bolt Base Plate (ASTM A36)



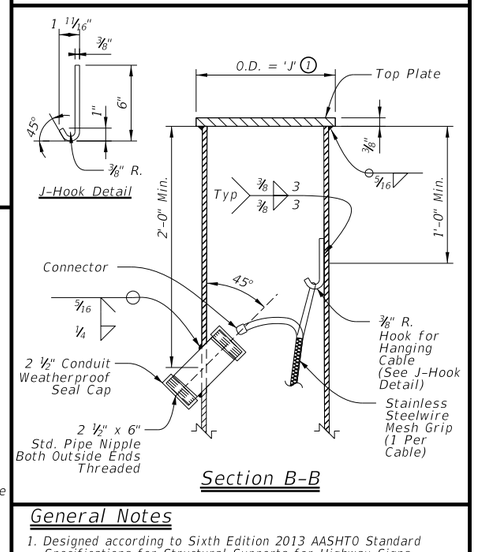
Base Plate Plan

6 Bolt Base Plate (ASTM A36)



Section A-A

Handhole Frame



Section B-B

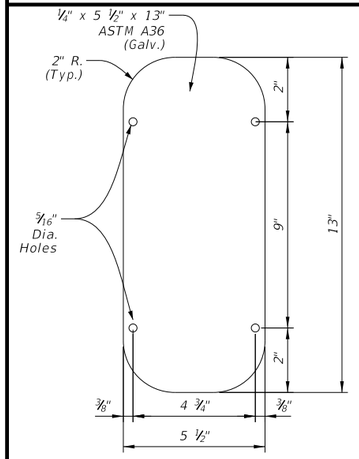
General Notes

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 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:

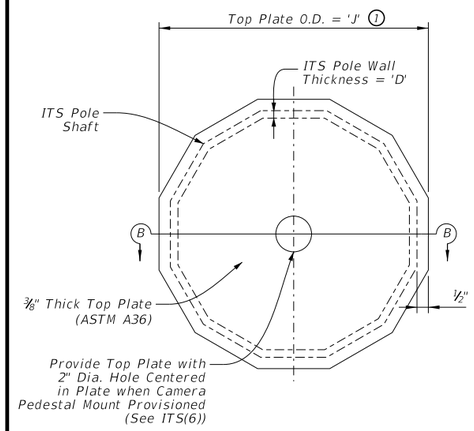
(1) See tables on Sheet ITS(4) for values of dimension variables.

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

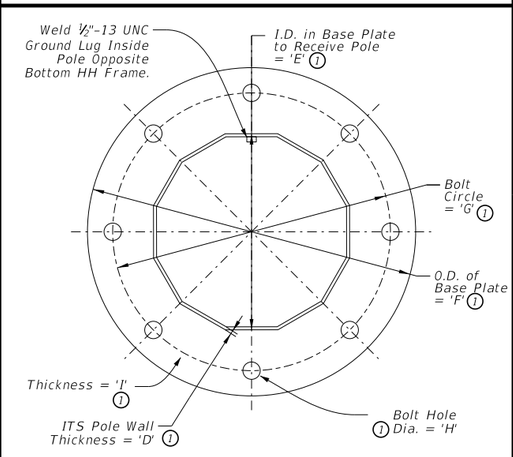


Handhole Cover Plate Detail

(Bottom Handhole)



Top Plate Plan



Base Plate Plan

8 Bolt Base Plate (ASTM A36)

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE DETAILS DODECAHEDRAL POLE (TWELVE SIDED POLE) (ALTERNATIVE) ITS(2)-15

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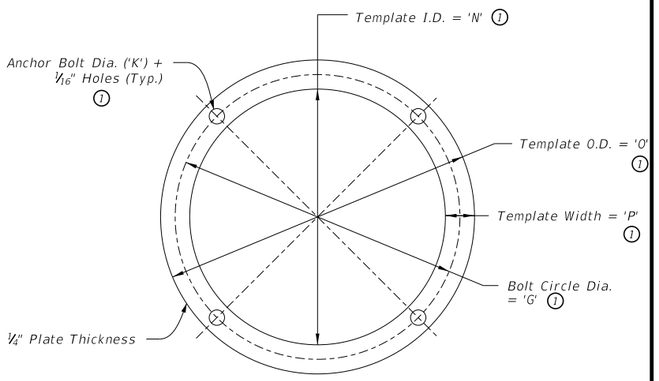
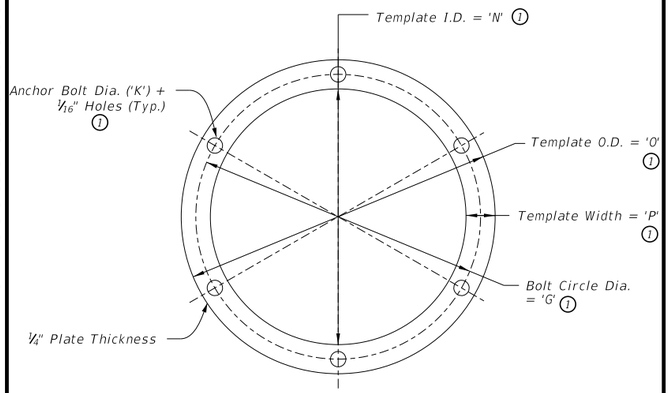
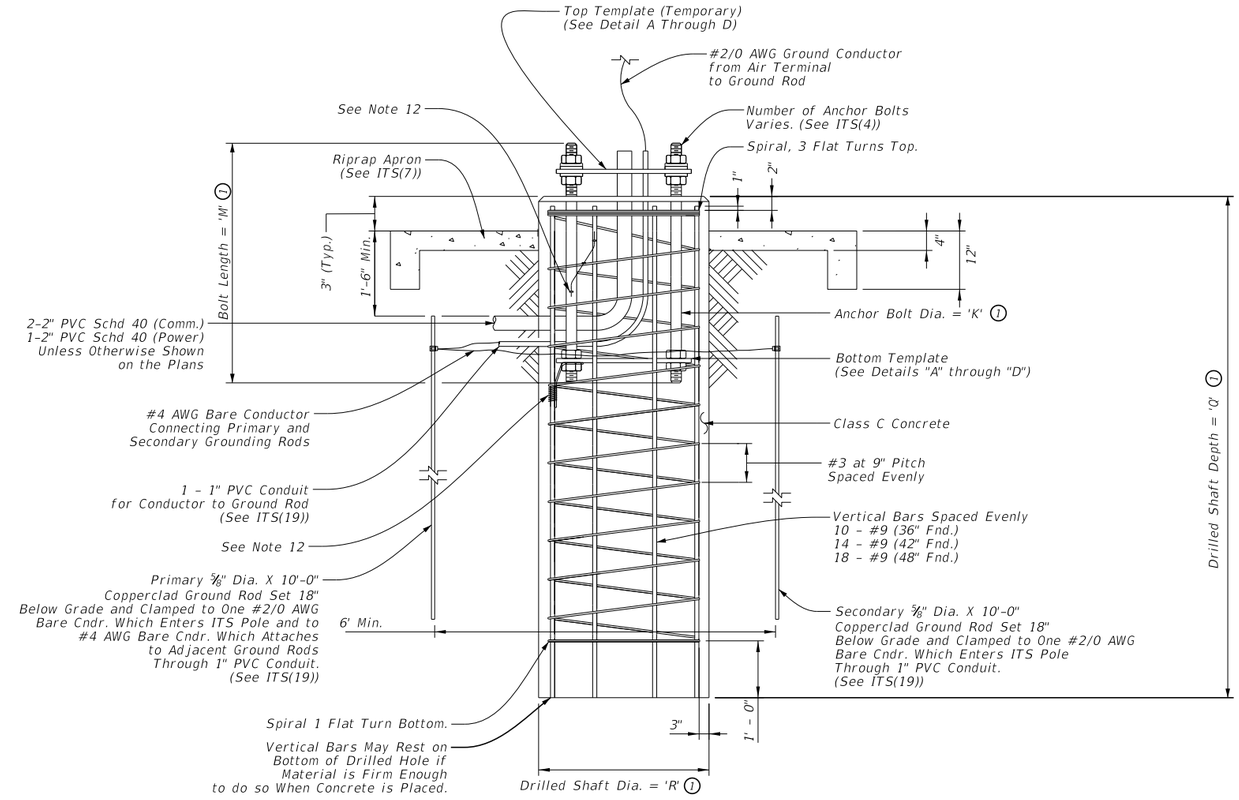


Top and Bottom Template (Four Bolt)
Detail A



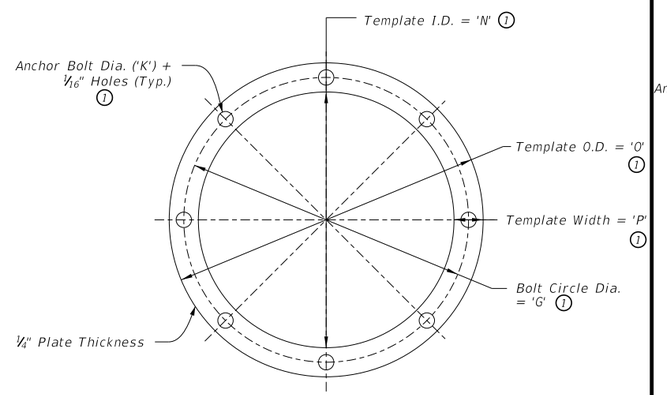
Top and Bottom Template (Six Bolt)
Detail B



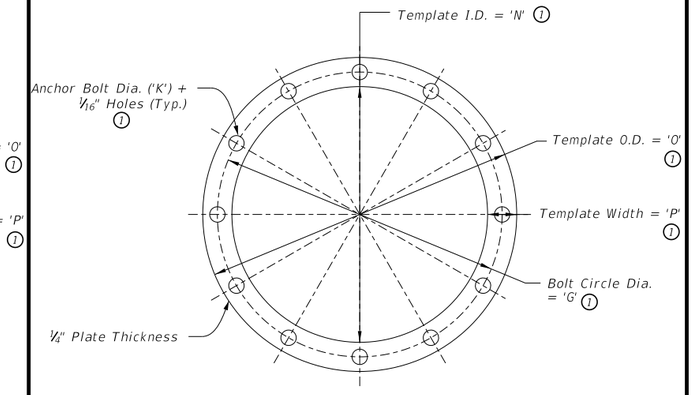
Foundation Details (Typical)
Elevation
Not to Scale

General Notes:

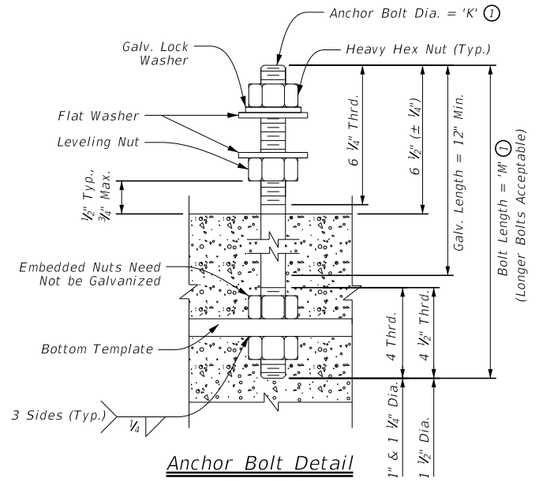
1. Drilled shaft concrete shall be Class "C" (f'c = 3,600 PSI) in accordance with Item 416, "Drilled Shaft Foundations."
2. Reinforcing bars shall be Grade 60 (Fy = 60 KSI) and conform to ASTM A-615. All reinforcing shall conform to Item 440, "Reinforcing Steel."
3. Provide ASTM A-36 steel for templates. 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

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

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

POLE TYPE ①	POLE HEIGHT (FT)	POLE SHAFT ①⑩			BASE PLATE ①					TOP PLATE ②	ANCHOR BOLT ③						FOUNDATION ③			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICK NESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICK NESS (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)			DRILLED SHAFT DIA. (IN)
																	N = 10	N = 15	N = 40	
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'	'Q'			'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
	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
	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
	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
	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
	55 ⑥⑦	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
	60 ⑥⑦	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 ①⑩			BASE PLATE ①					TOP PLATE ②	ANCHOR BOLT ③						FOUNDATION ③			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICK NESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICK NESS (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)			DRILLED SHAFT DIA. (IN)
																	N = 10	N = 15	N = 40	
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'	'Q'			'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
	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
	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
	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
	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
	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
	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 ①⑩			BASE PLATE ①					TOP PLATE ②	ANCHOR BOLT ③						FOUNDATION ③			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICK NESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICK NESS (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)			DRILLED SHAFT DIA. (IN)
																	N = 10	N = 15	N = 40	
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'	'Q'			'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
	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
	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
	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
	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
	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
	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 THICK NESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICK NESS (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)			DRILLED SHAFT DIA. (IN)
																	N = 10	N = 15	N = 40	
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'	'Q'			'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
	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
	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
	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
	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 THICK NESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICK NESS (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)			DRILLED SHAFT DIA. (IN)
																	N = 10	N = 15	N = 40	
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'	'Q'			'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
	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
	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
	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
	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 THICK NESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICK NESS (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)			DRILLED SHAFT DIA. (IN)
																	N = 10	N = 15	N = 40	
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'	'Q'			'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
	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
	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
	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
	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 EA = 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 ½".

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE DESIGN DETAILS DATA LOOKUP TABLE

ITS(4)-15

FILE: its(4)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2015	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1632

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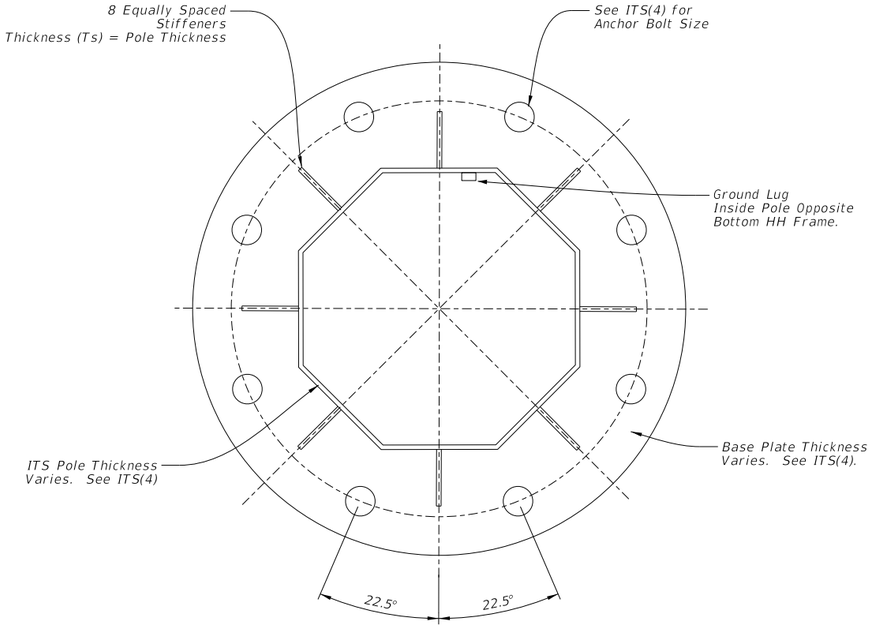
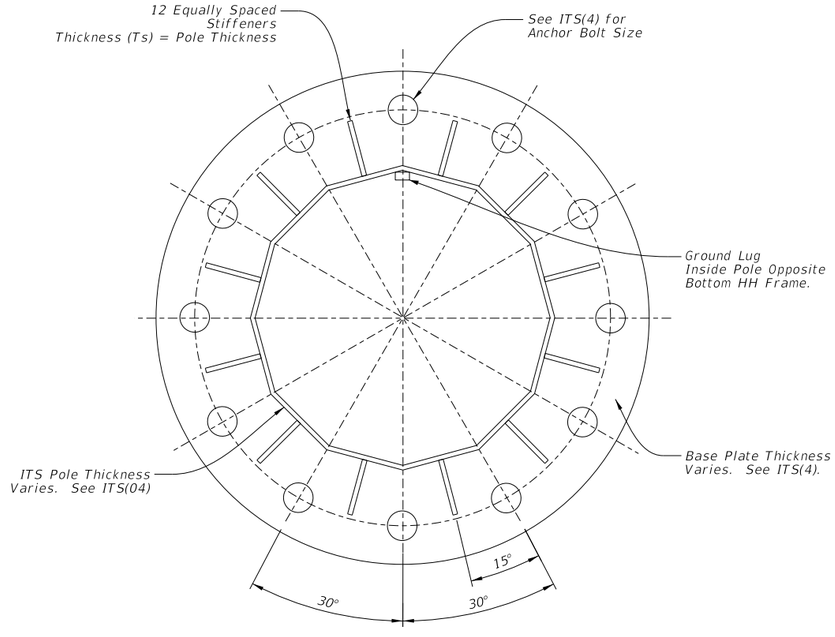


8-sided Pole Base Plate Detail



12-sided Pole Base Plate Detail

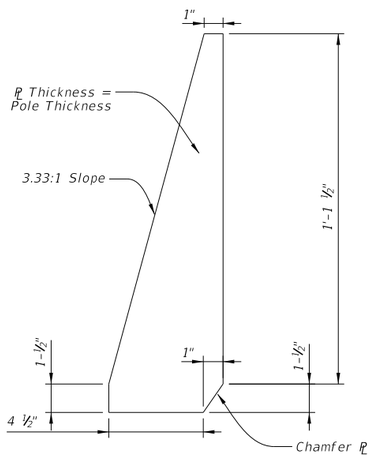
General Notes:

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_s = Thickness

Reference Notes:

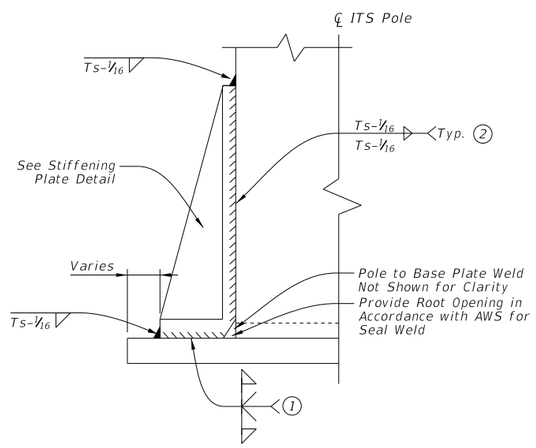
(1) Complete Joint Penetration Weld per AWS

(2) Wrap Fillet Weld Around Tip of Stiffener



Stiffening Plate Detail

Not to Scale



Stiffening Detail - Elevation View

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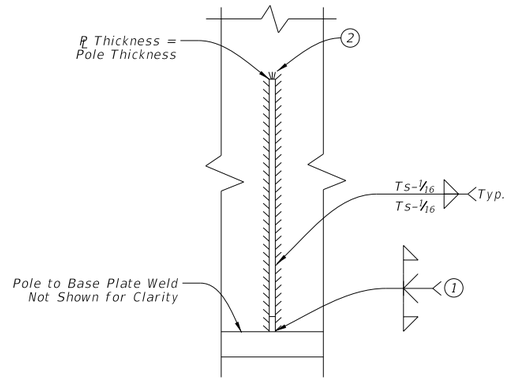

Stiffening Detail - Front View

Not to Scale

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE STIFFENER PLATE DETAILS ITS(4A)-15

FILE: its(4A)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	01	246	IH 35
	DIST	COUNTY		SHEET NO.
	WACO	McLENNAN		1632A

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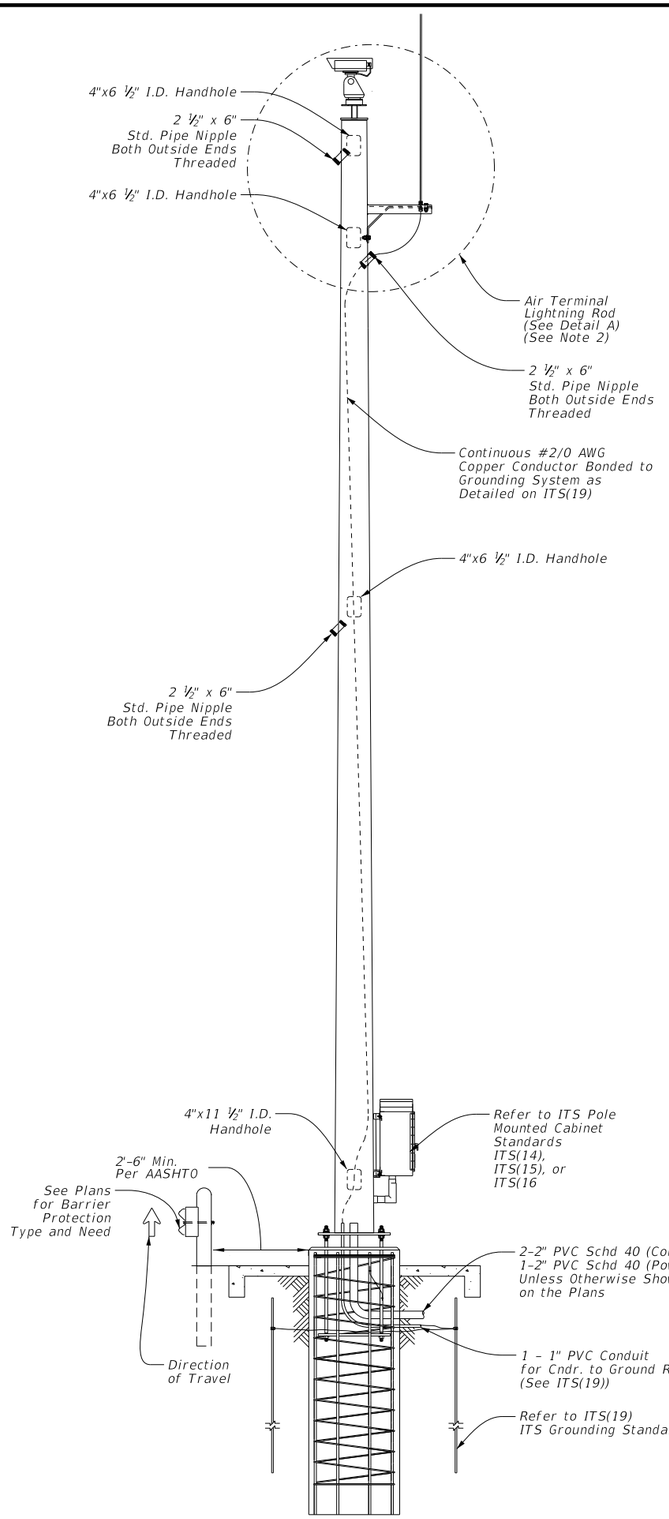
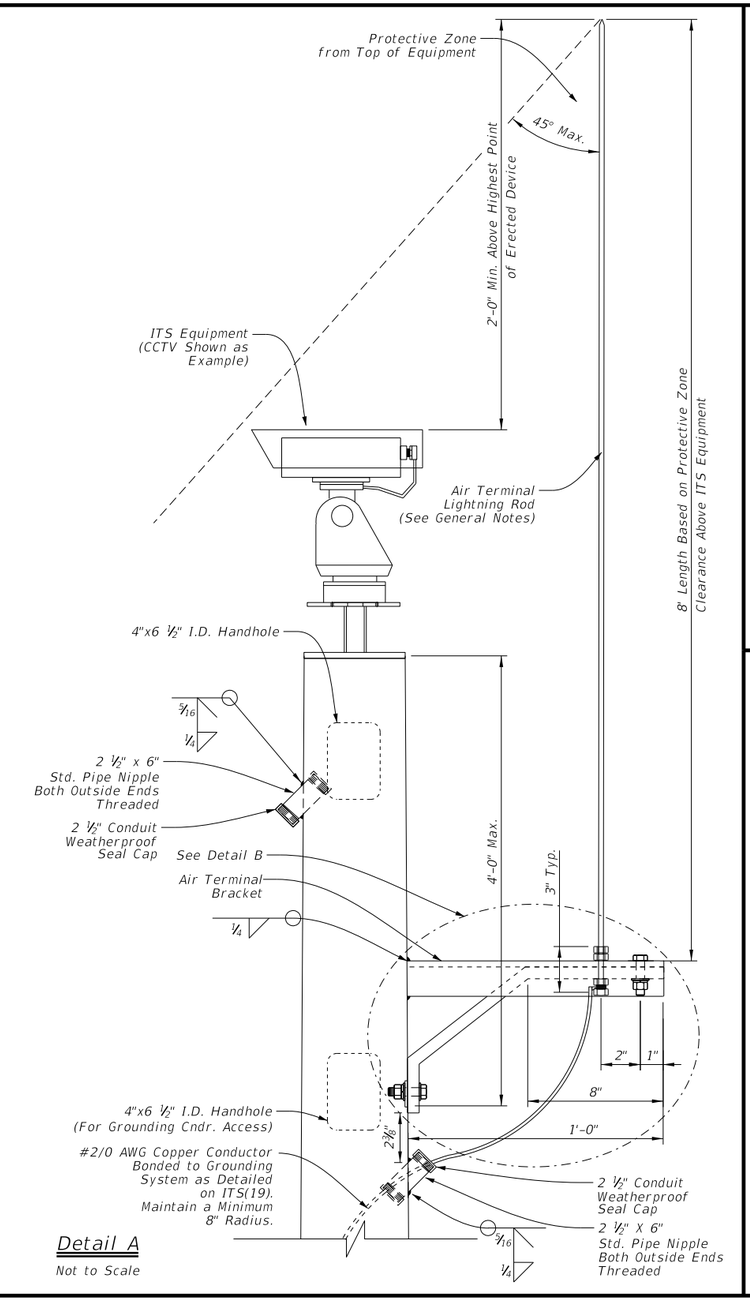


ITS Pole with Cabinet



Detail A

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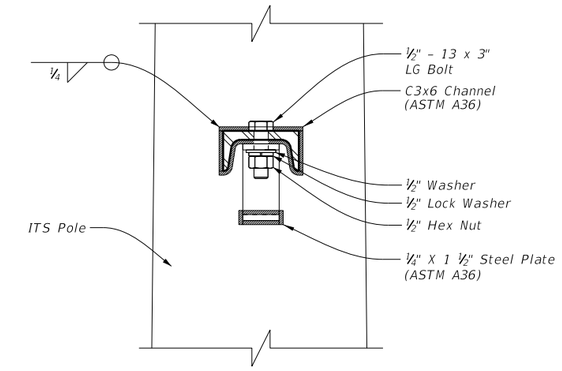

Section A-A

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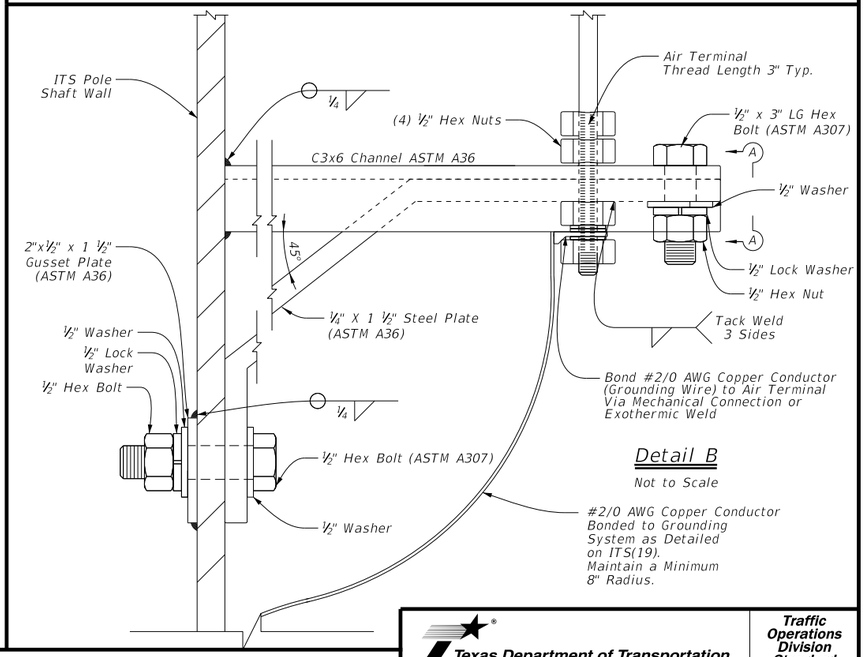

Detail B

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.

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Traffic Operations Division Standard

ITS POLE AIR TERMINAL DETAILS

ITS(5)-15

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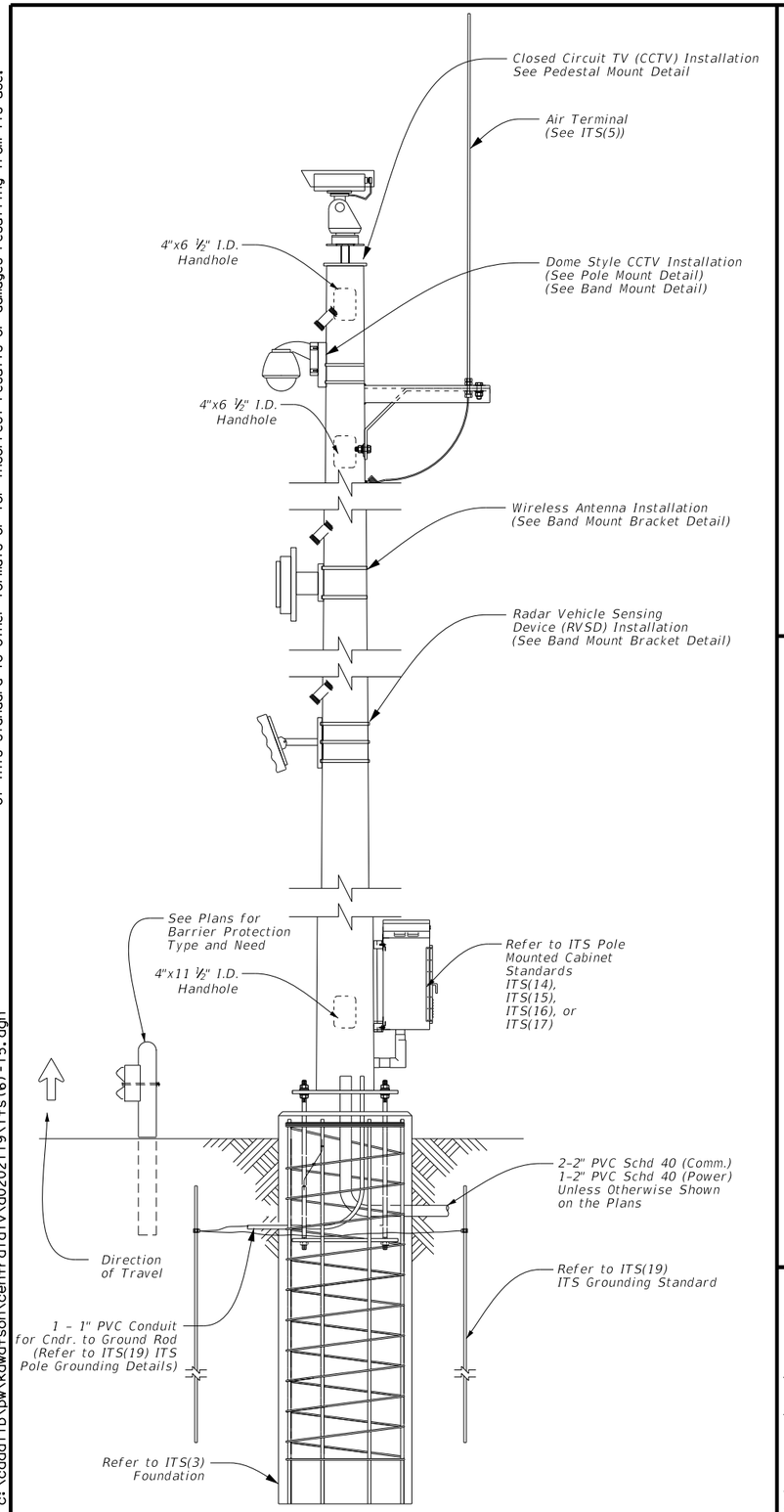
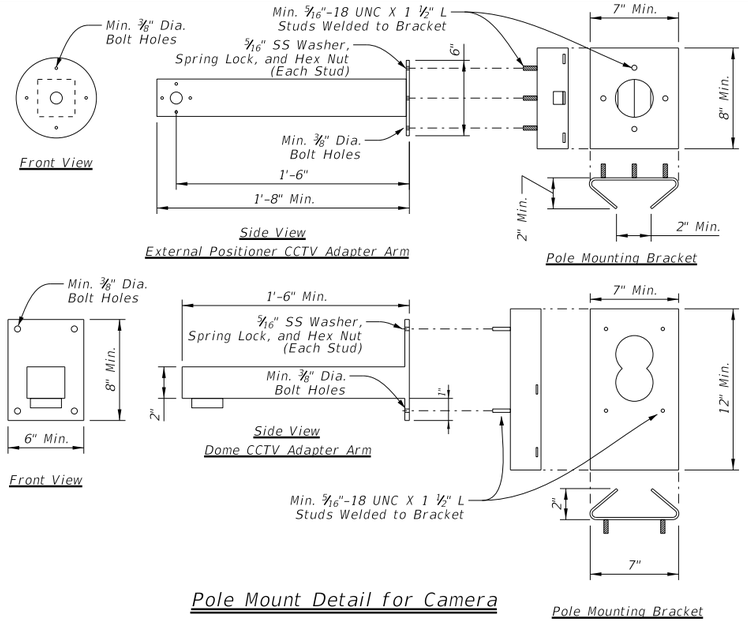
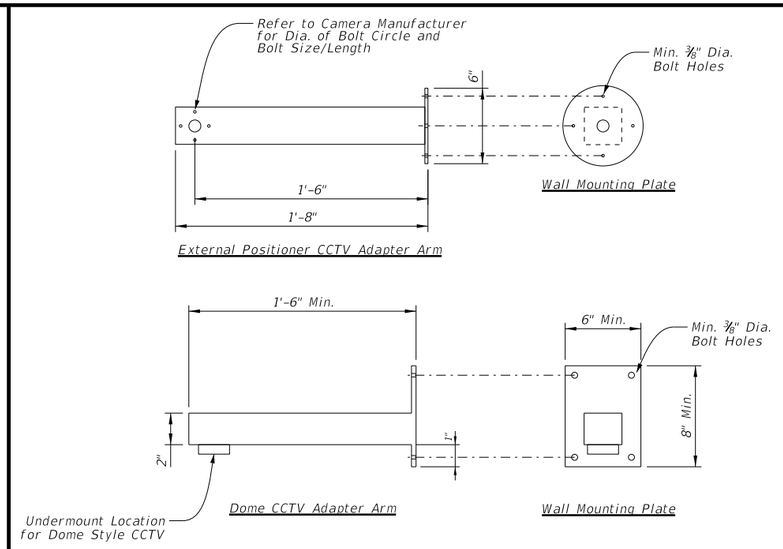


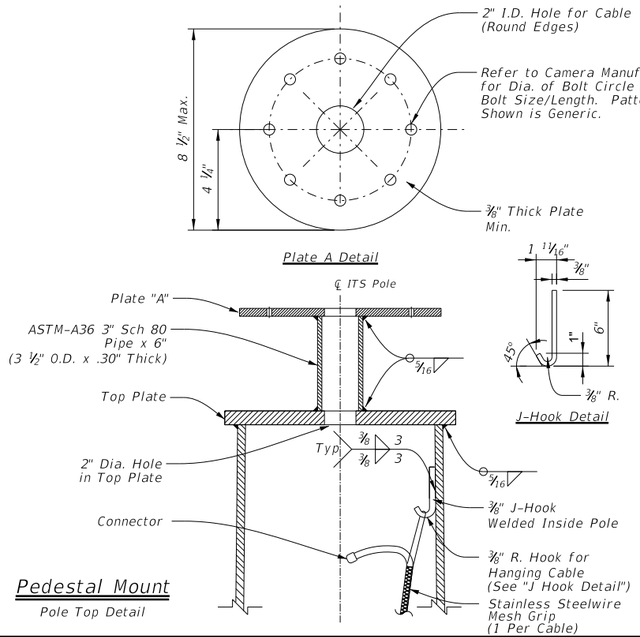
ITS Pole with Cabinet



Pole Mount Detail for Camera

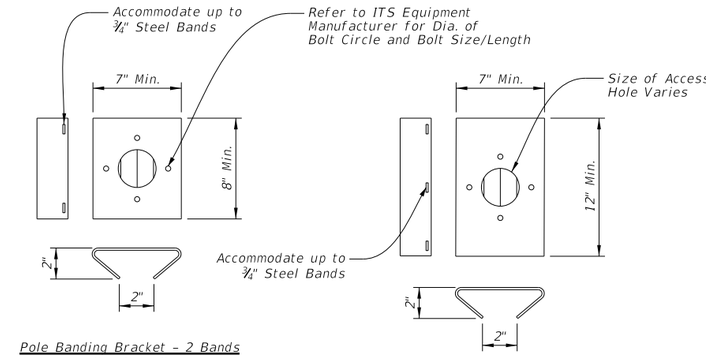


Wall Mount Detail



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.

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Traffic Operations Division Standard

ITS POLE EQUIPMENT MOUNTING DETAILS

ITS(6)-15

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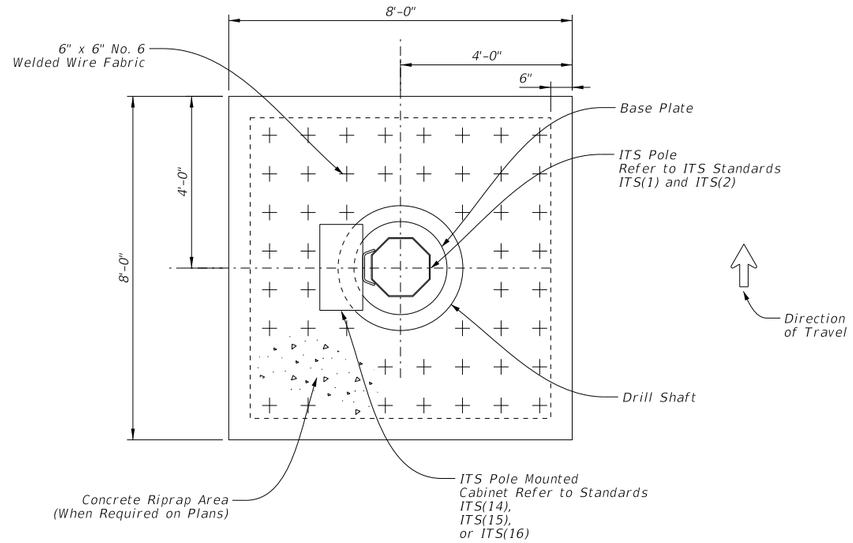
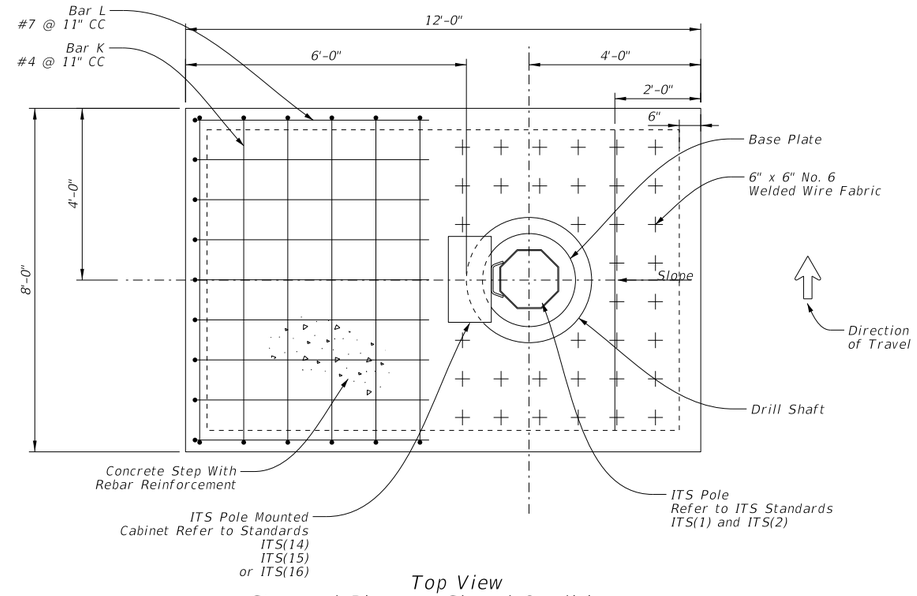


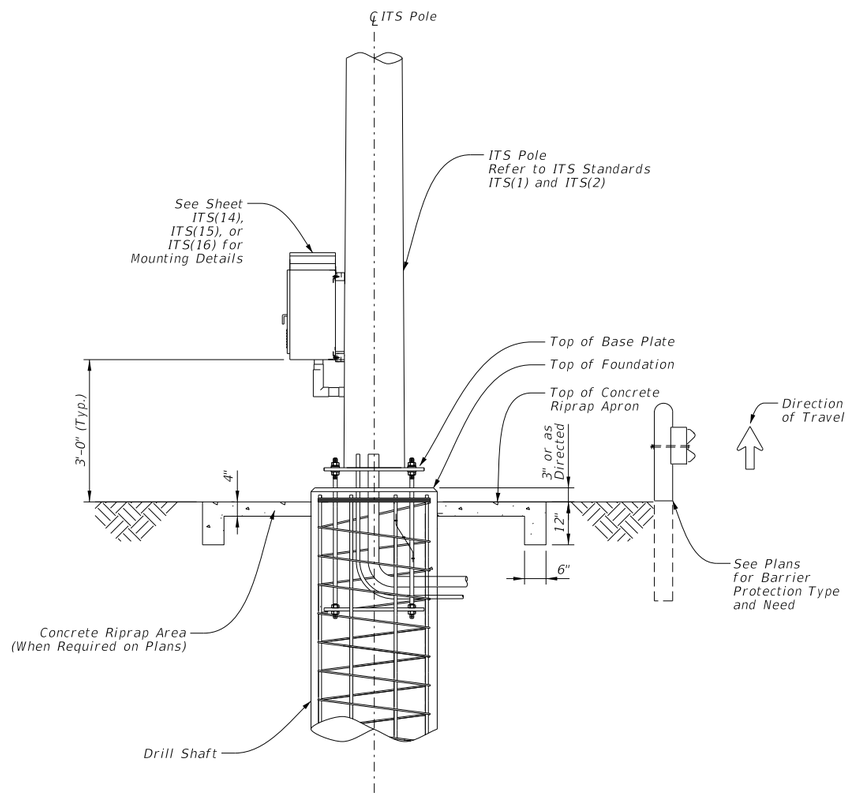
Top View
Riprap – Non-Sloped Conditions



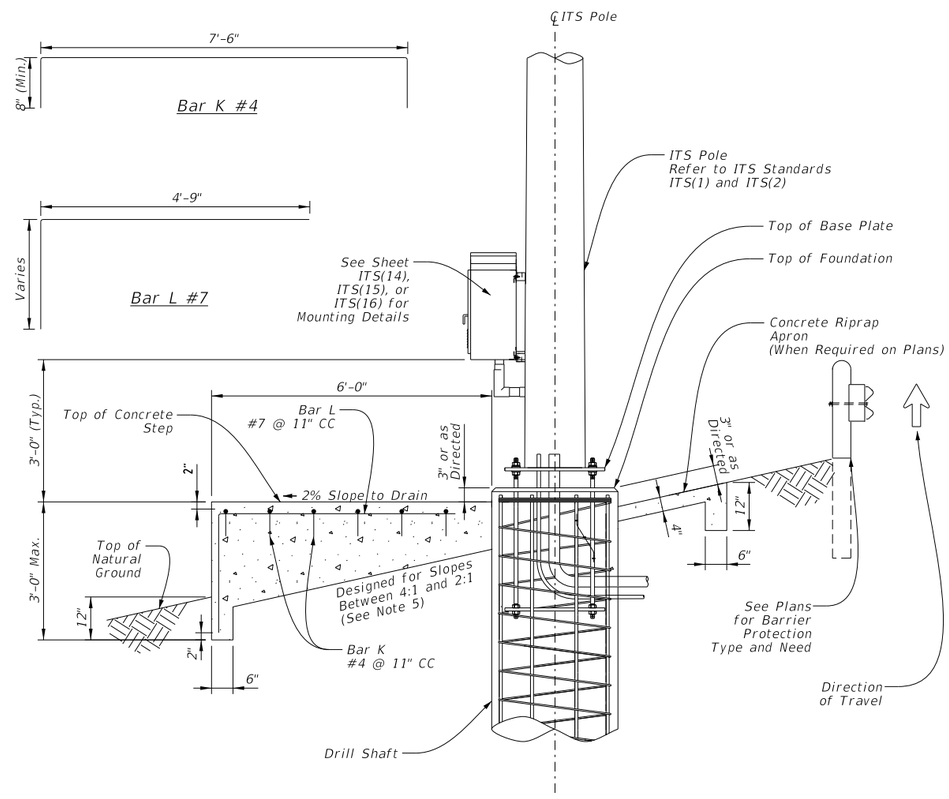
Top View
Step and Riprap – Sloped Conditions

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.



Elevation View
Riprap Apron Detail – Non-Sloped Conditions



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

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Traffic Operations Division Standard

ITS POLE RIPRAP DETAILS

ITS(7)-15

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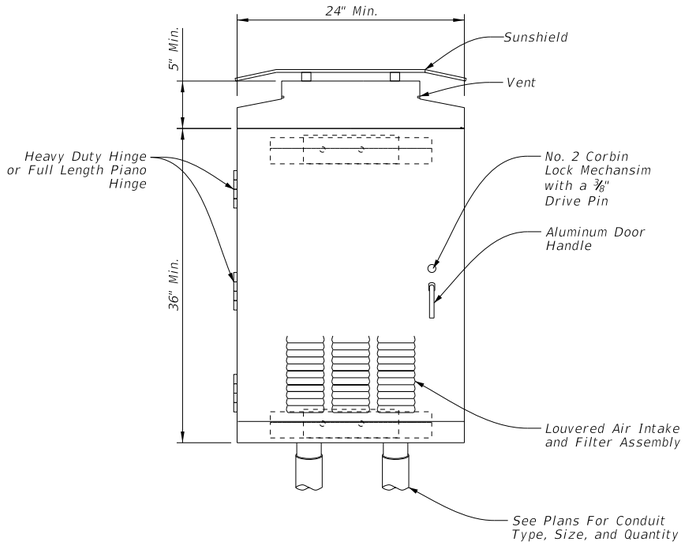
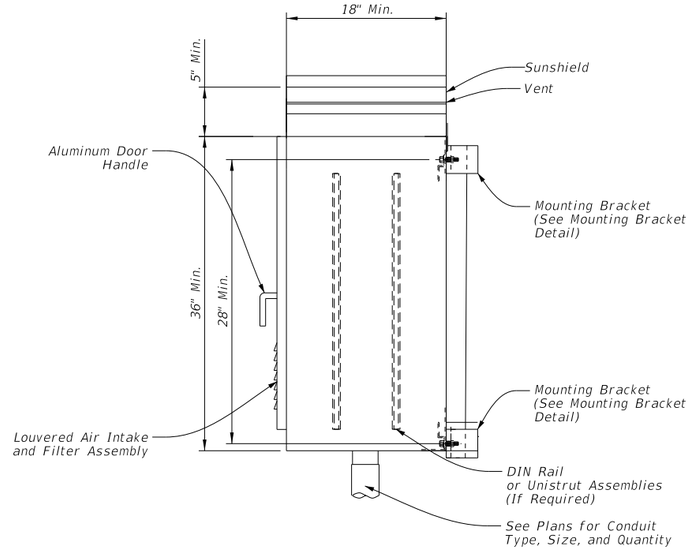


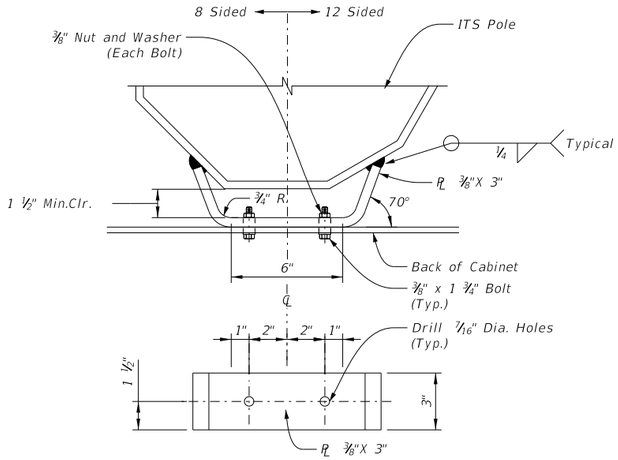
Pole Mounted Cabinet – Type 2 Front View

Not to Scale



Pole Mounted Cabinet – Type 2 Side View

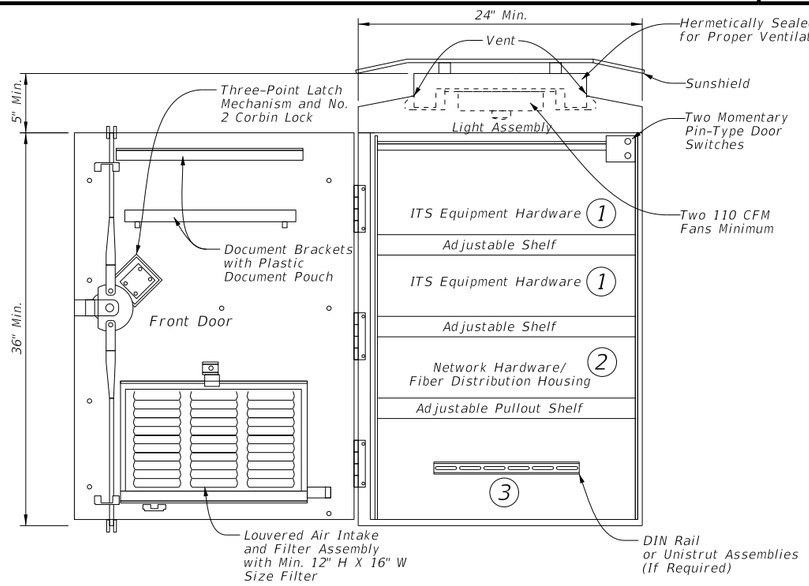
Not to Scale



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

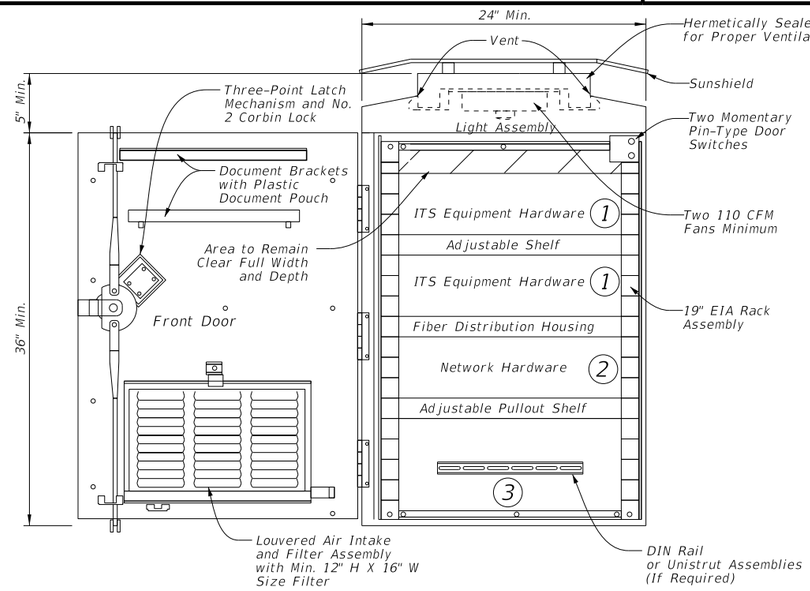
Mounting Bracket Detail

Not to Scale



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

Not to Scale



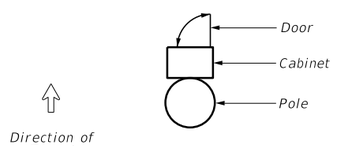
Interior – Type 2 With 19" EIA Rack – Front View

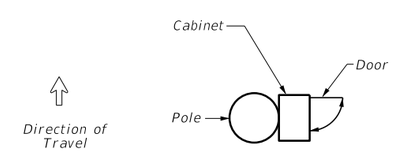
Not to Scale

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

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Traffic Operations Division Standard

ITS POLE MOUNTED CABINET TYPE 2 DETAILS

ITS(15)-15

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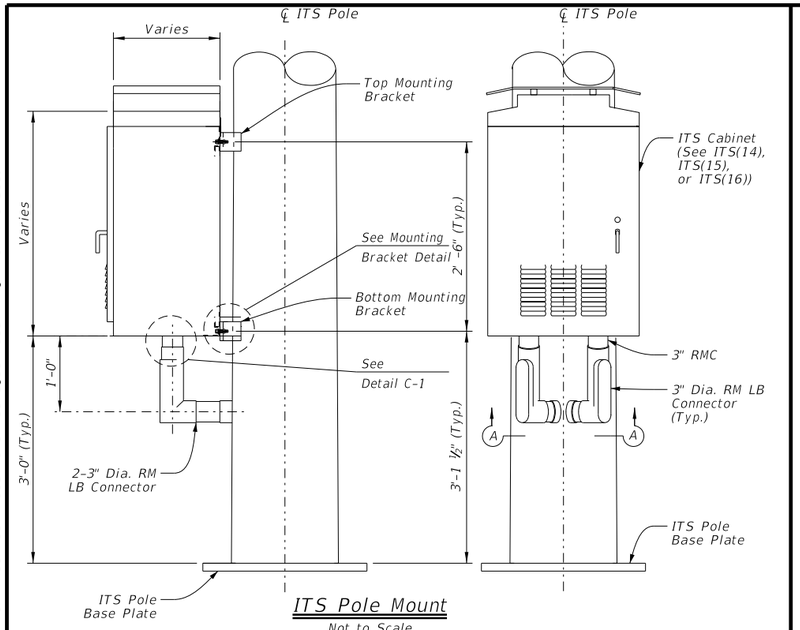

ITS Pole Mount

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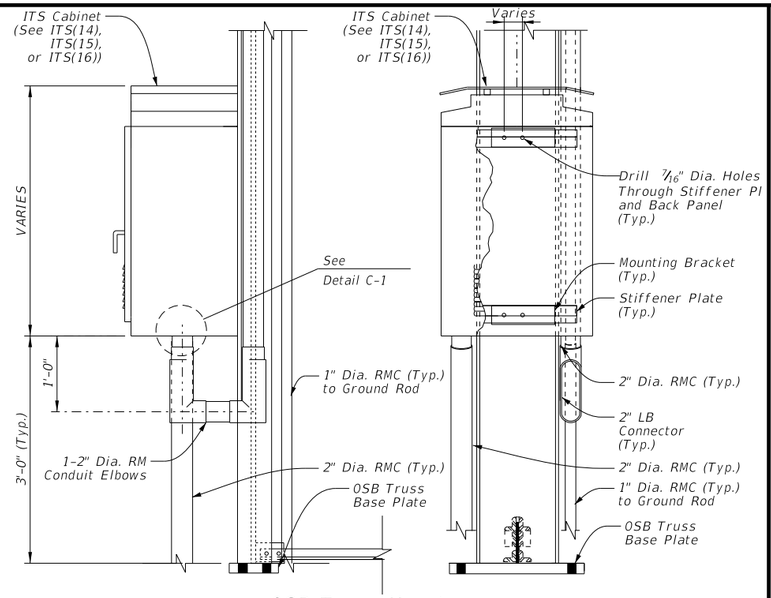

OSB Truss Mount

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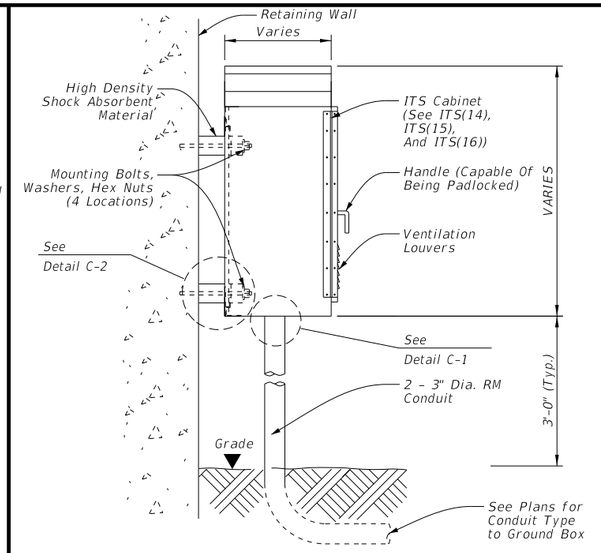

Retaining Wall Mount

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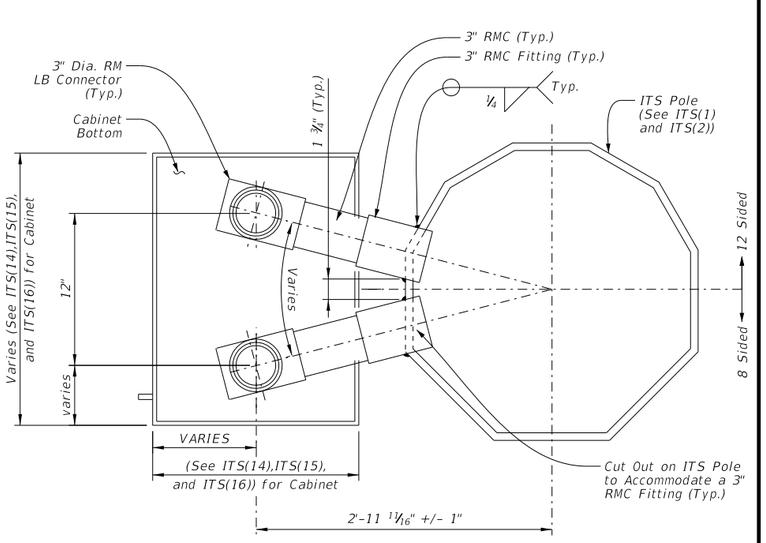

Section A-A

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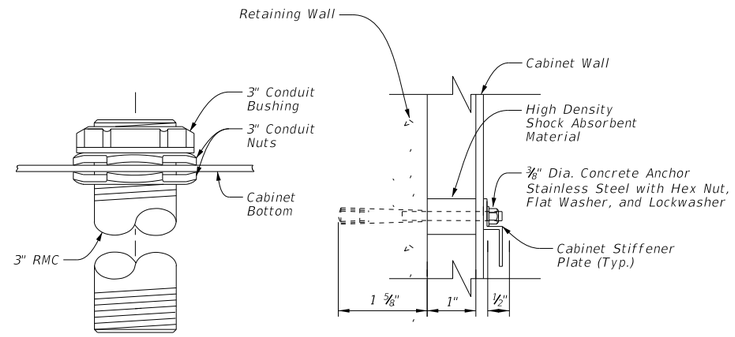
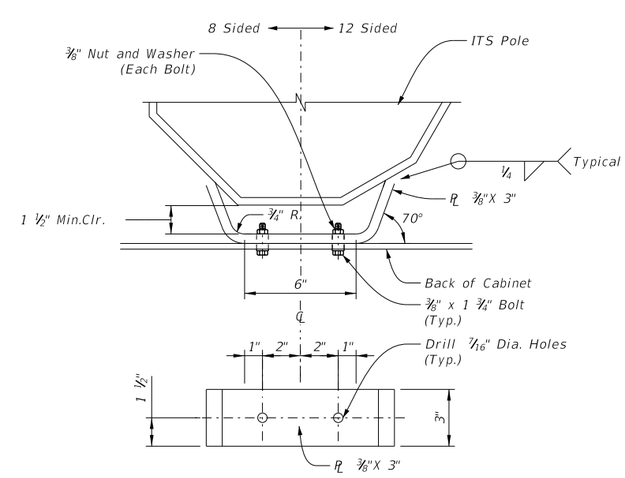


Detail C-1

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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Traffic Operations Division Standard

ITS POLE MOUNTED CABINET MISC. MOUNTING DETAILS

ITS(17)-15

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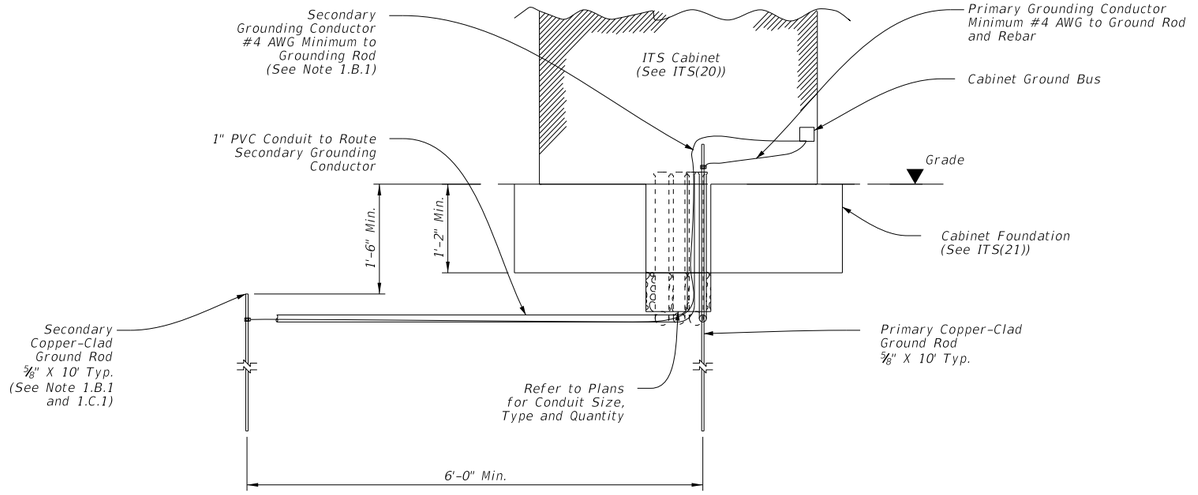
General Notes:

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.

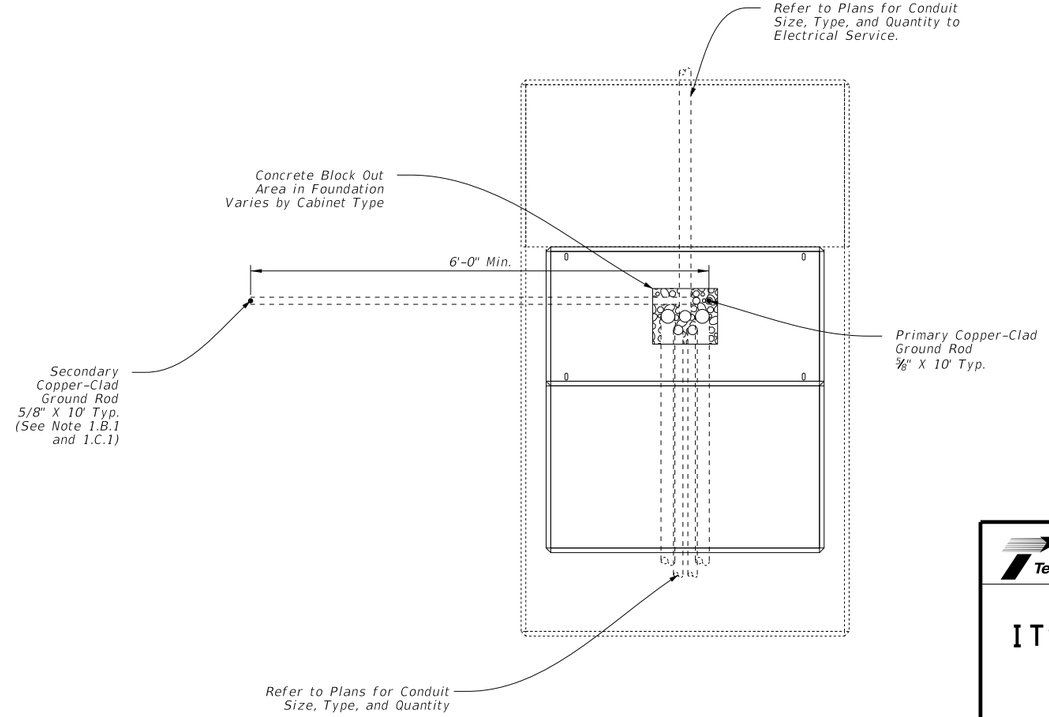
2. Installation:
   - A. Install grounding components and systems in accordance with the requirements specified in UL 467, IEEE 81, and IEEE 142.
   - B. System Grounding:
     1. Ground Rods:
        - a. Drive ground rods into the ground until the tops of the rods are approximately 18 in. below finished 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

Texas Department of Transportation

Traffic Operations Division Standard

ITS CABINET GROUNDING DETAILS

ITS(18)-15

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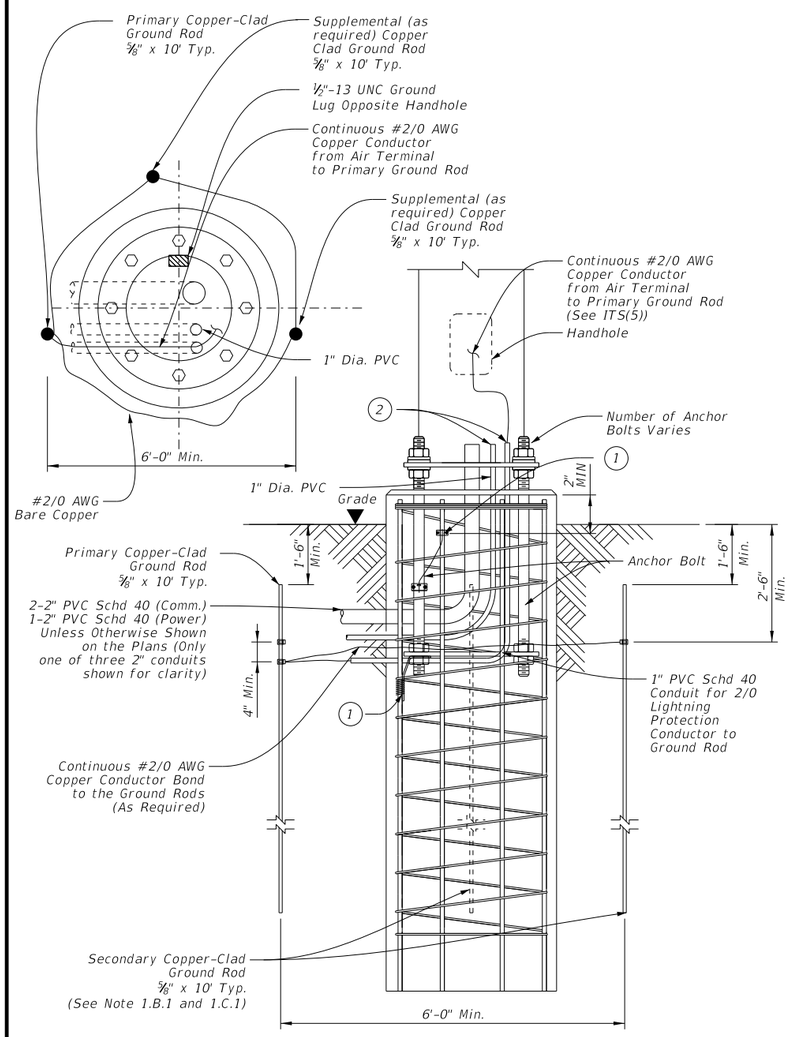
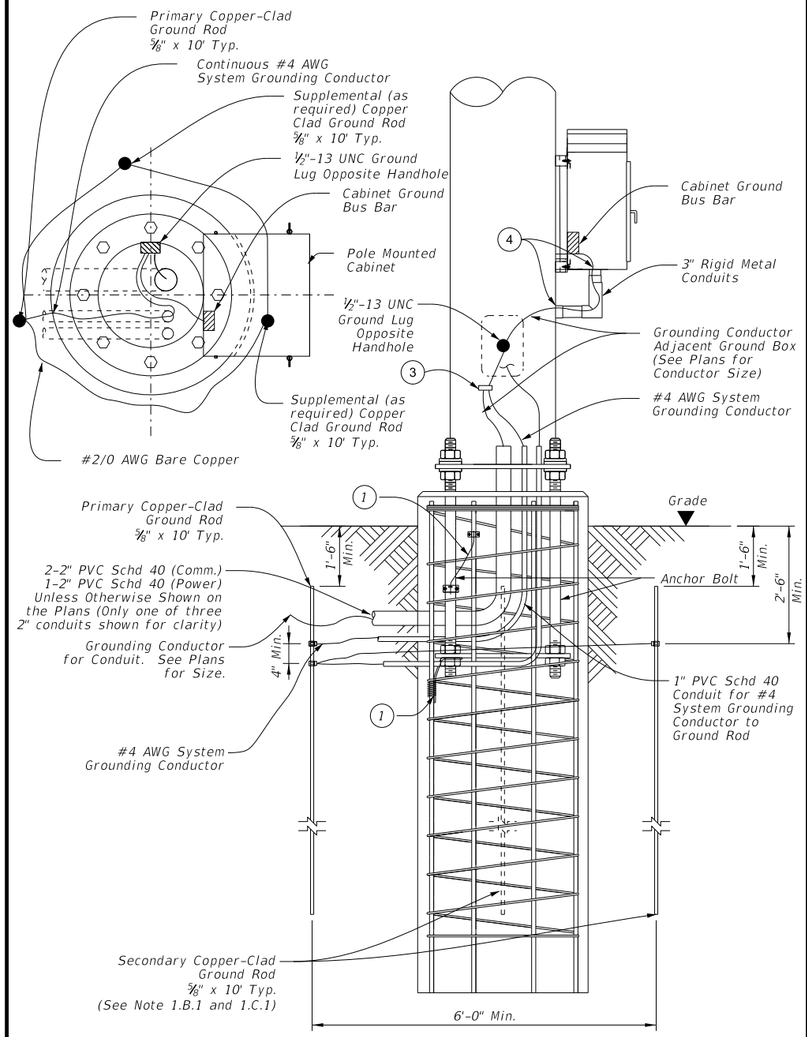
General Notes:

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

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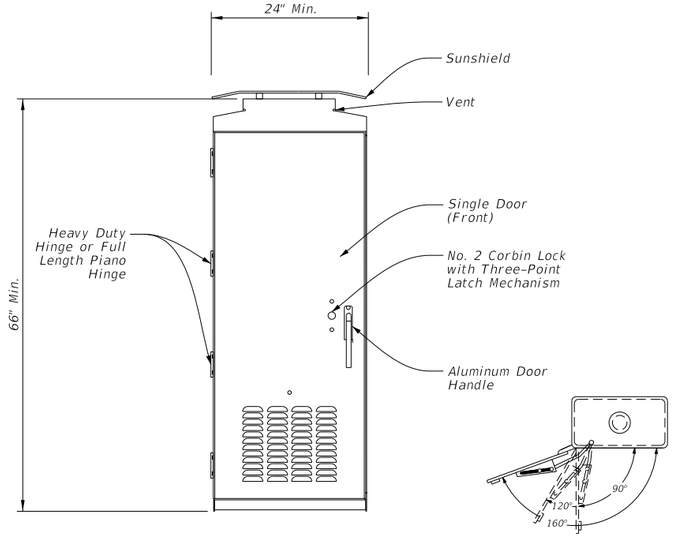
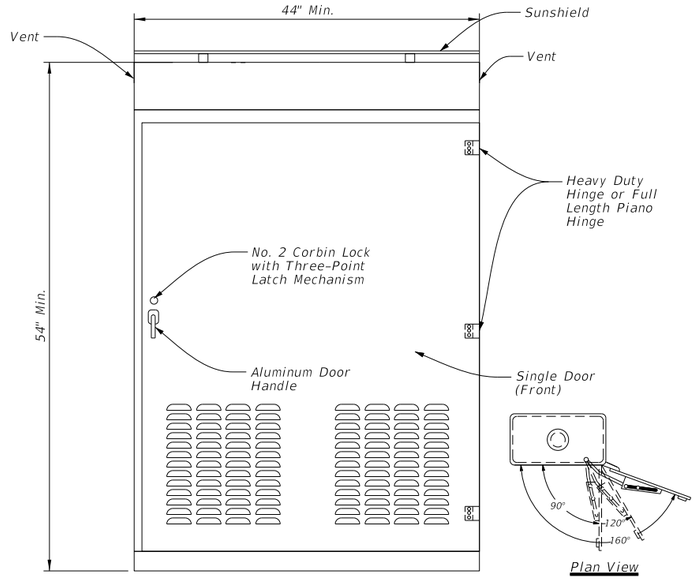


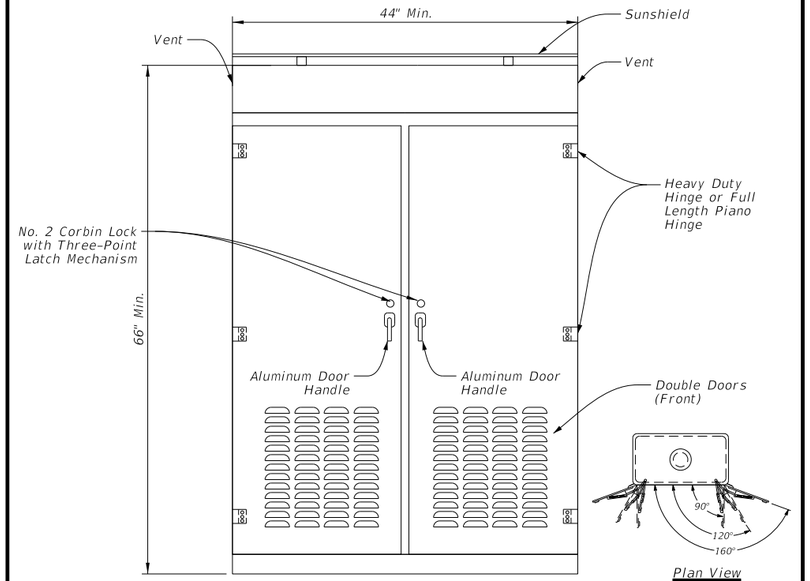
Type 4 (Small) Cabinet
Front View

Plan View
Door Stop Detail
(3 Positions)



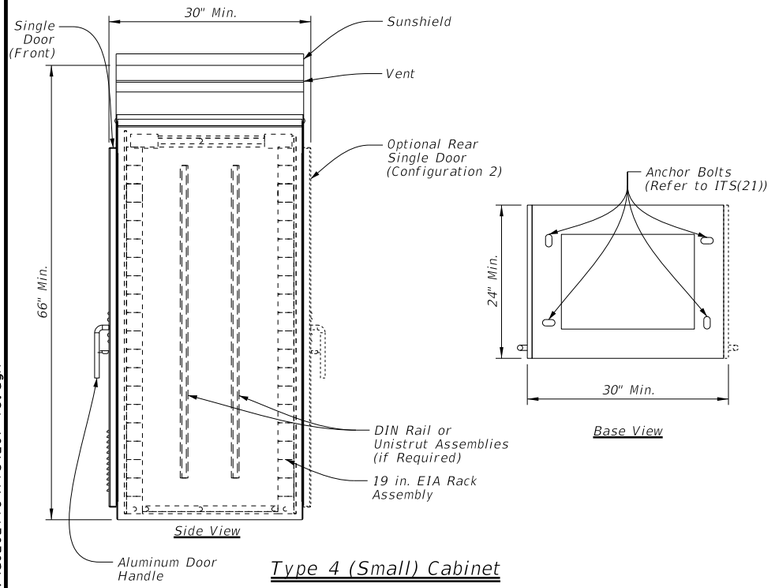
Type 5 (Medium) Cabinet
Front View

Plan View
Door Stop Detail
(3 Positions)



Type 6 (Large) Cabinet
Front View

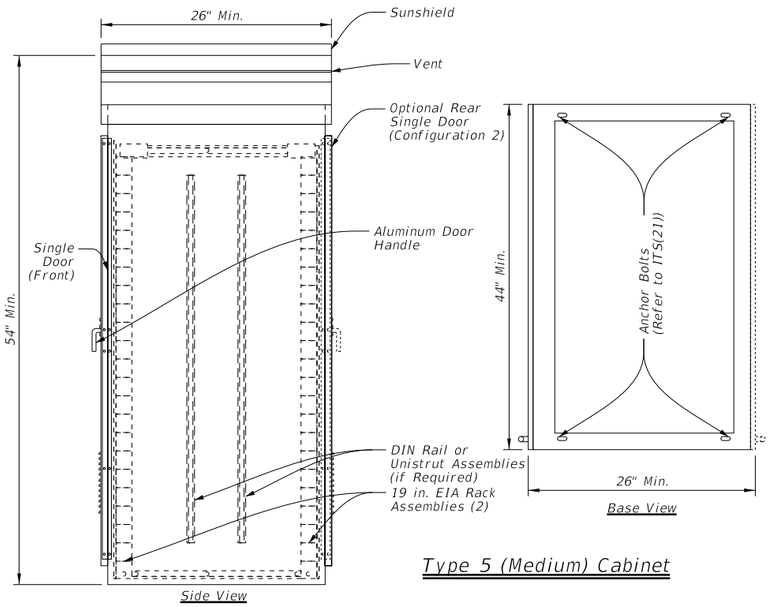
Plan View
Door Stop Detail
(3 Positions)



Side View

Base View

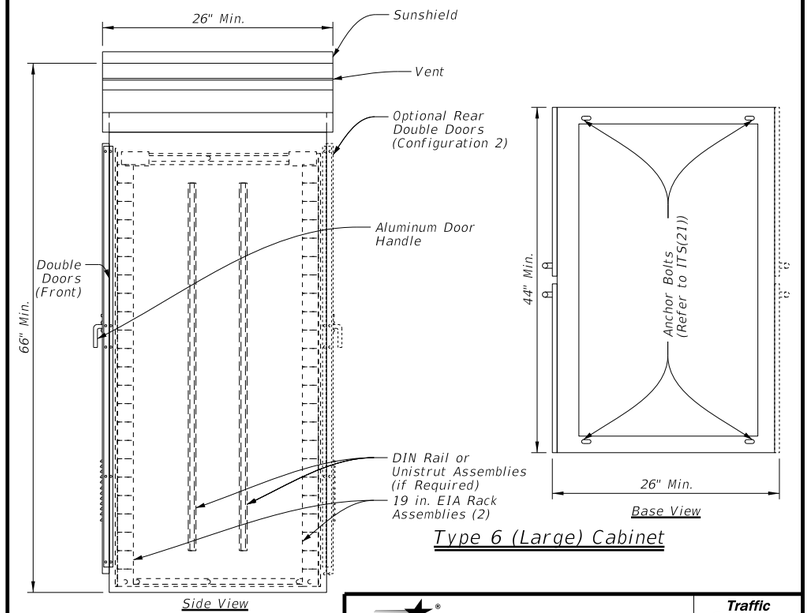
Type 4 (Small) Cabinet



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.

Texas Department of Transportation

Traffic Operations Division Standard

ITS GROUND MOUNTED CABINET ELEVATION DETAILS

ITS(20)-15

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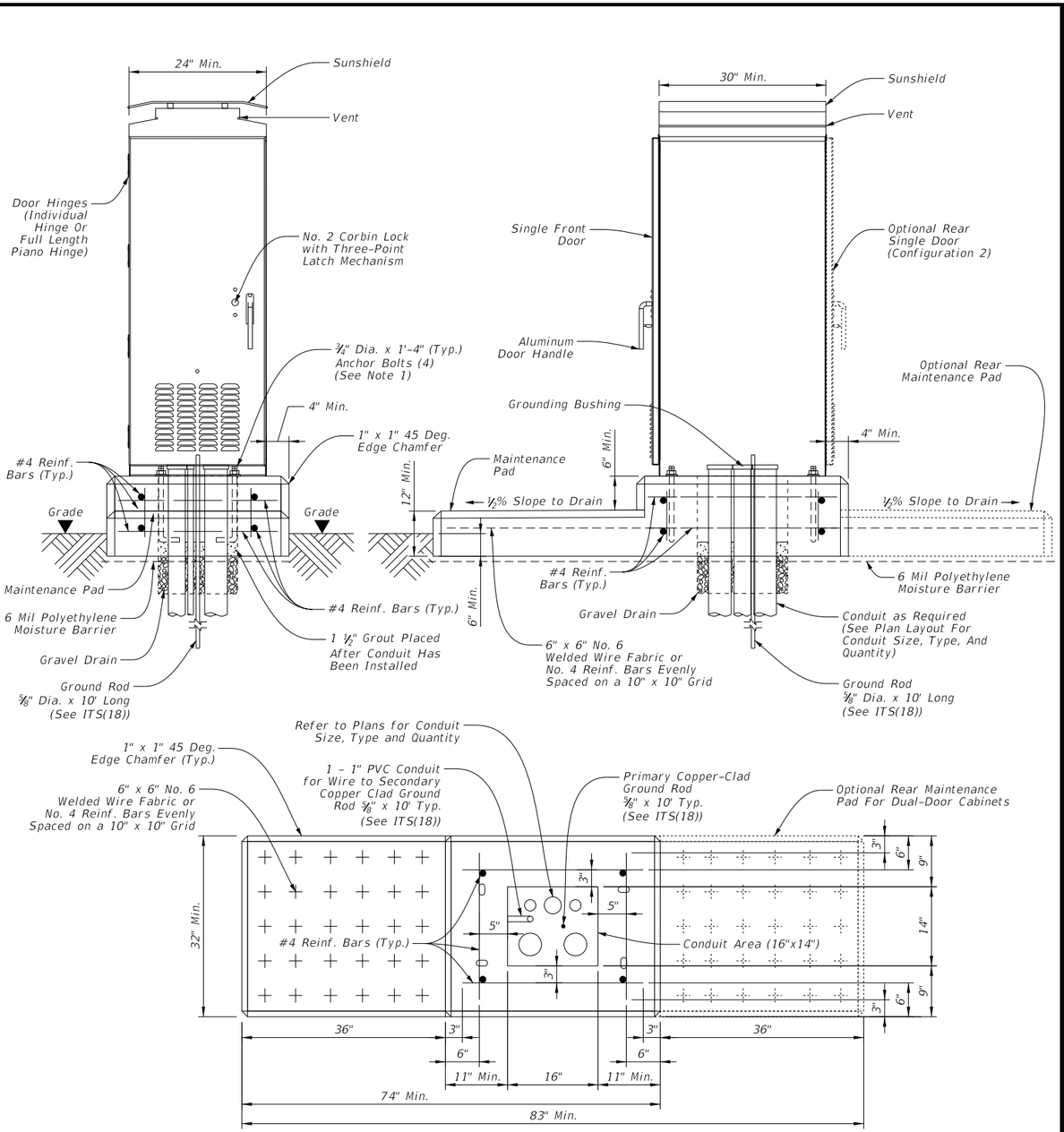
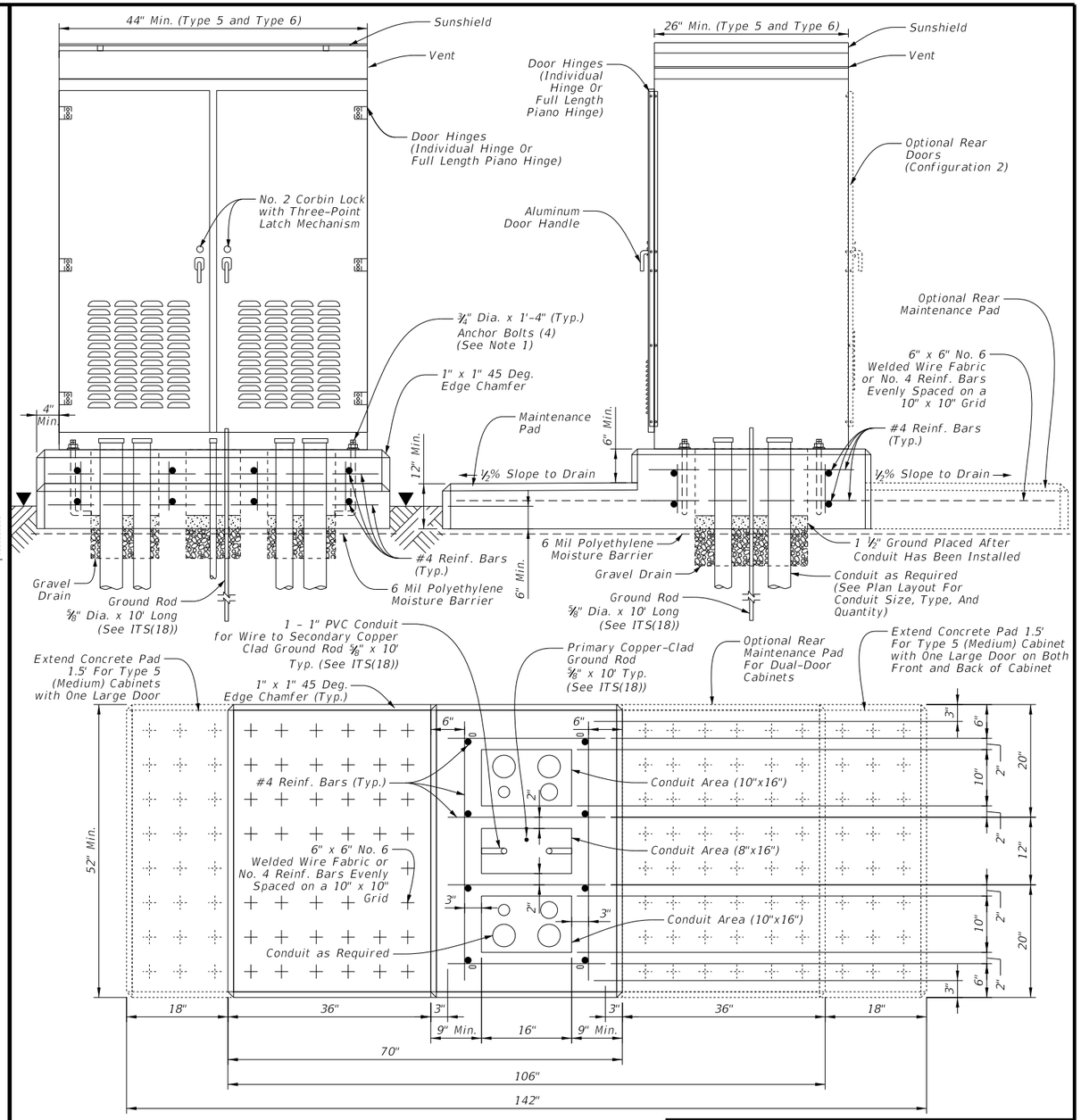


Type 4 (Small) Cabinet



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.

Texas Department of Transportation

Traffic Operations Division Standard

ITS GROUND MOUNTED CABINET FOUNDATION DETAILS

ITS(21)-15

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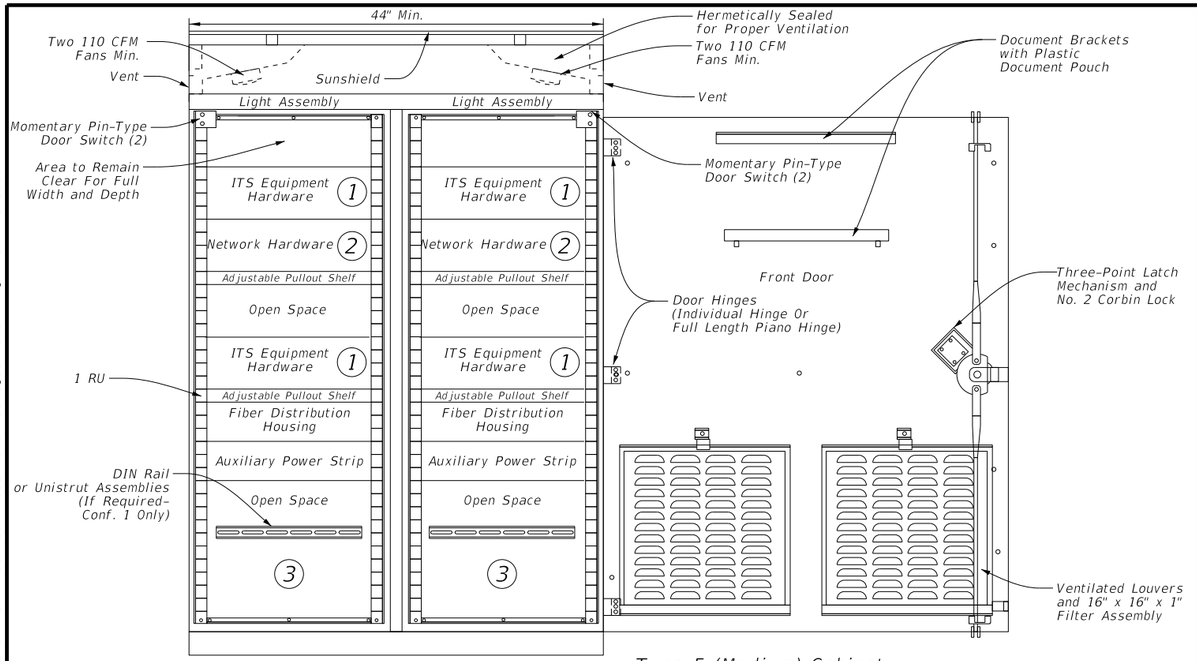
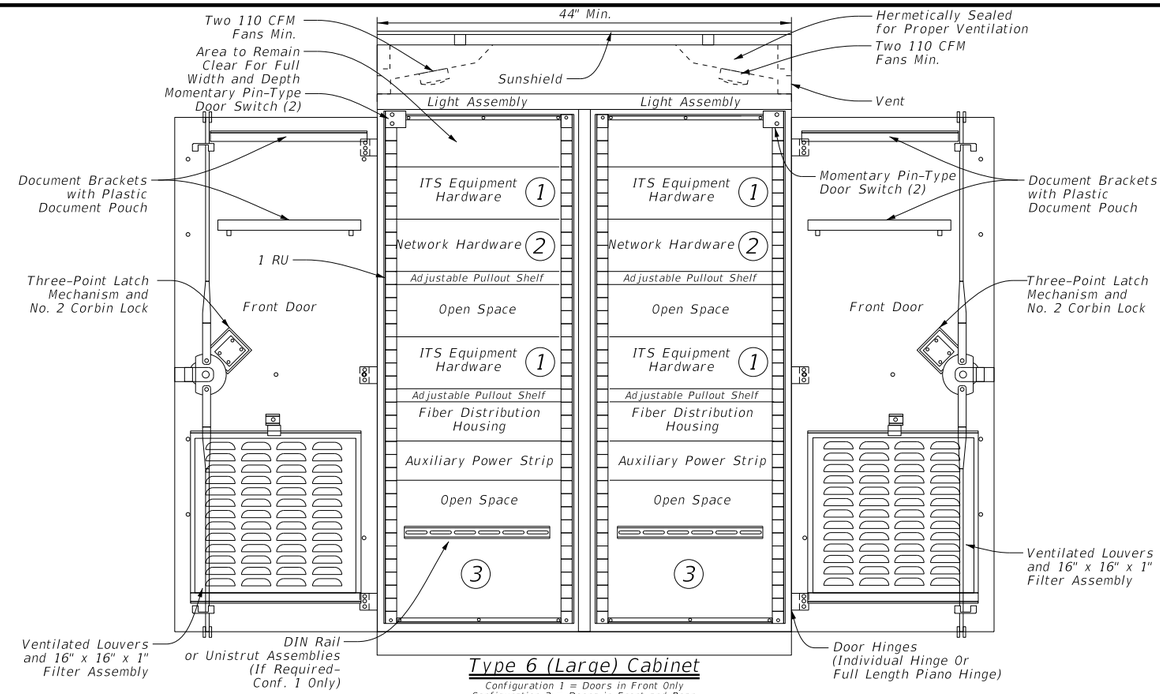


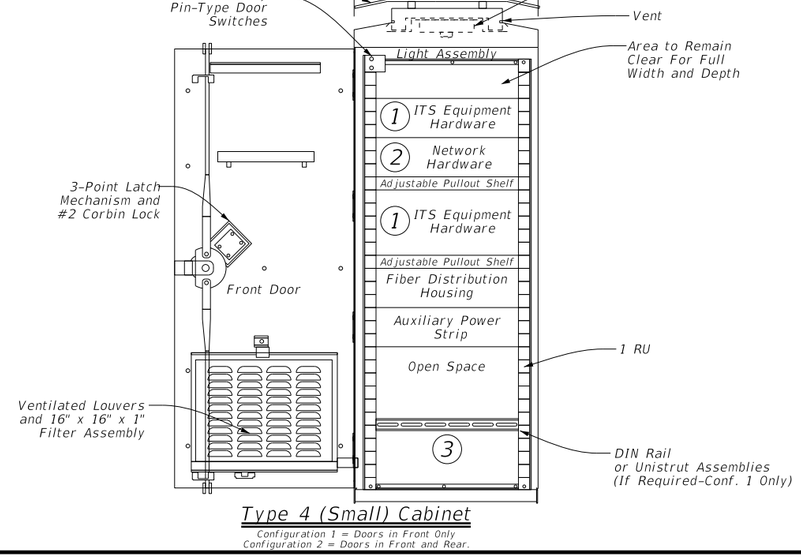
Type 5 (Medium) Cabinet

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.

Texas Department of Transportation

Traffic Operations Division Standard

ITS GROUND MOUNTED CABINET INTERIOR DETAILS

ITS(23)-15

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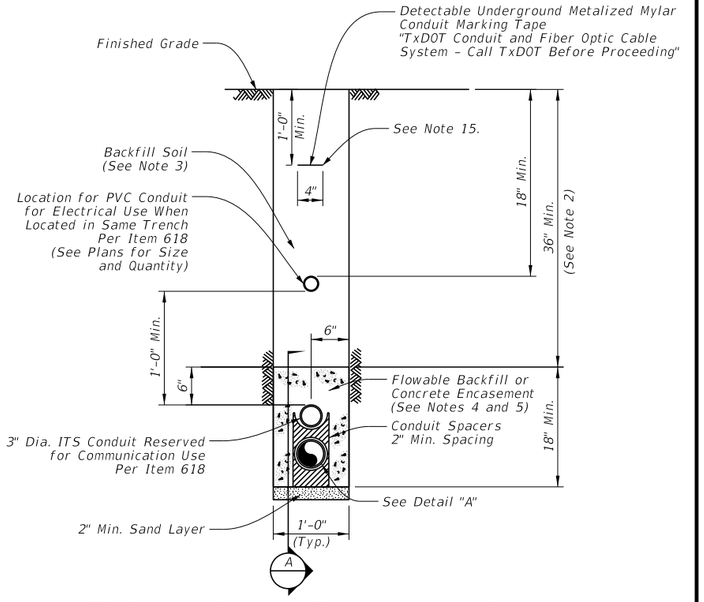
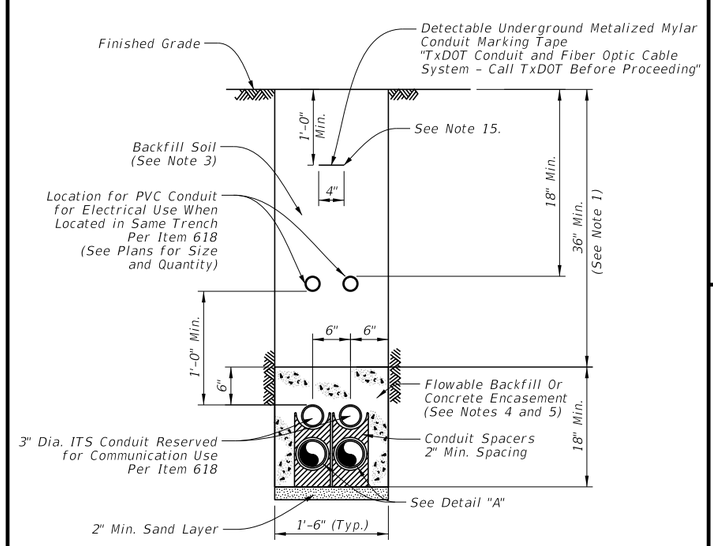


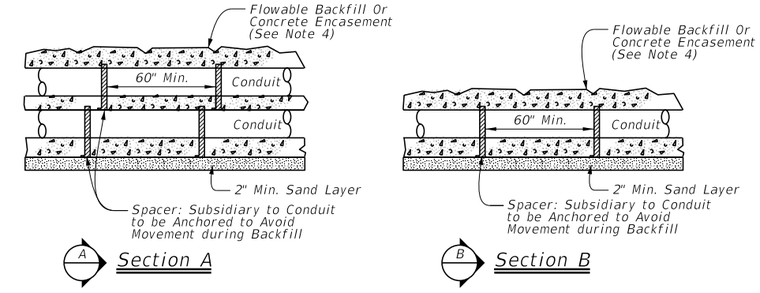
ITS Conduit Backbone Trench Vertical Spacing

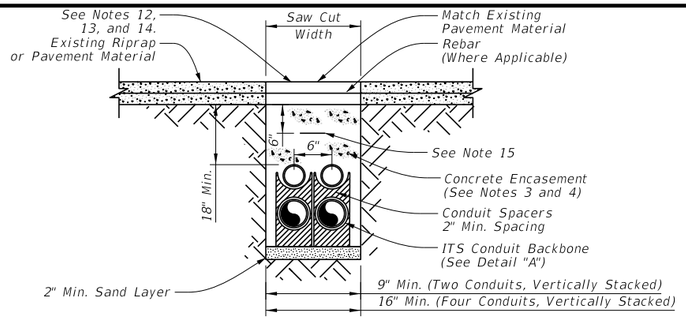
Two Conduit System



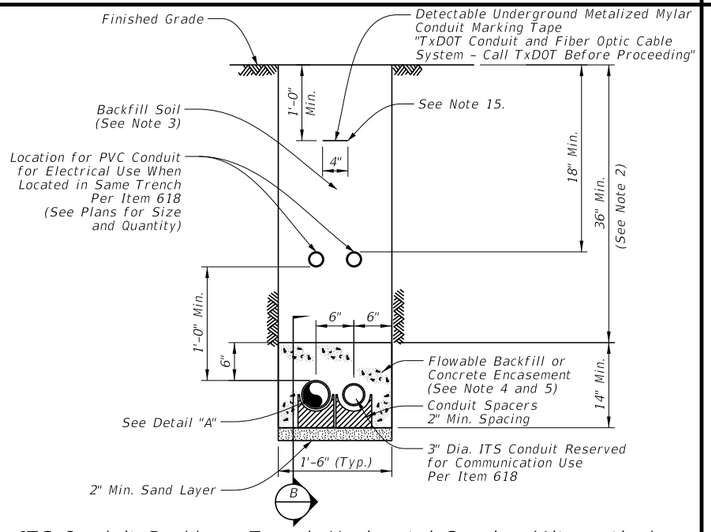
ITS Conduit Backbone Trench Vertical Spacing

Four Conduit System



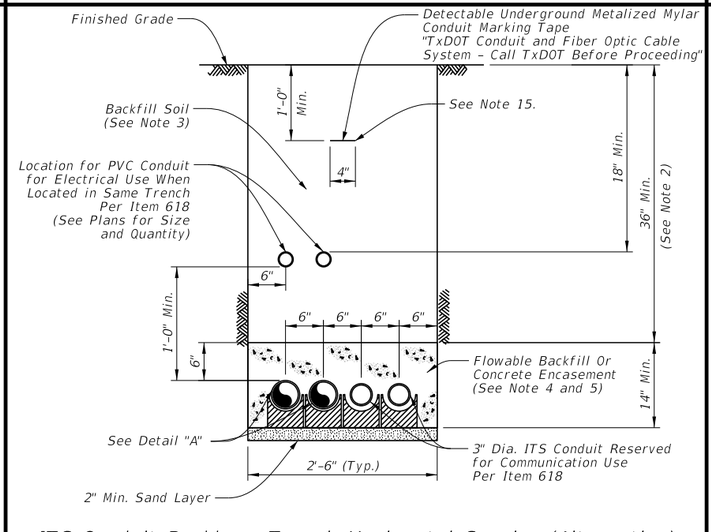


Open Cut Trenching Details



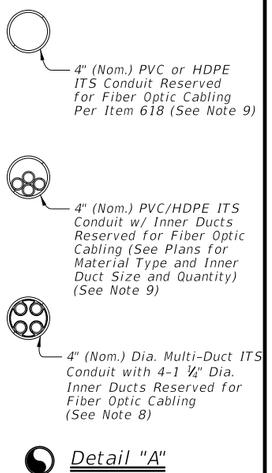
ITS Conduit Backbone Trench Horizontal Spacing (Alternative)

Two Conduit System



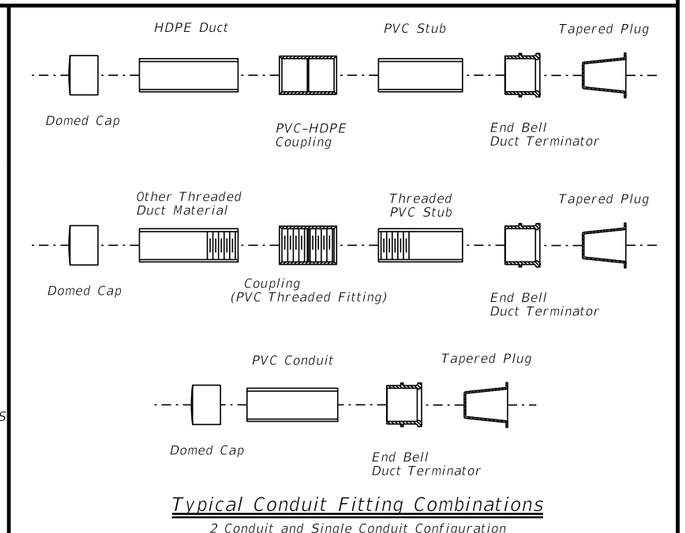
ITS Conduit Backbone Trench Horizontal Spacing (Alternative)

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.

Sheet Details

Not to Scale

Texas Department of Transportation

Traffic Operations Division Standard

ITS CONDUIT TRENCH DETAILS

ITS(27)-16

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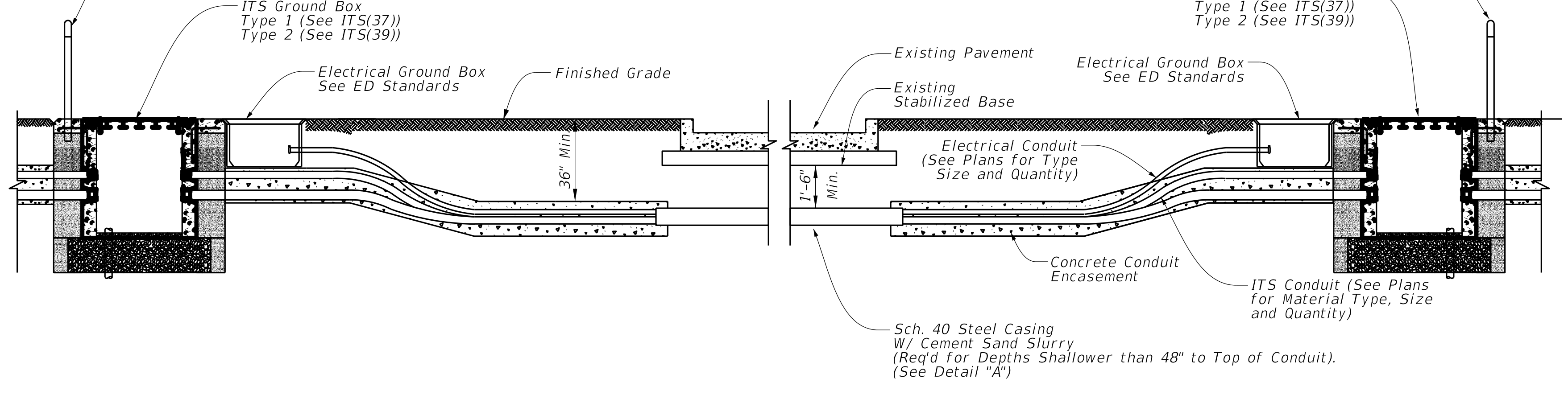
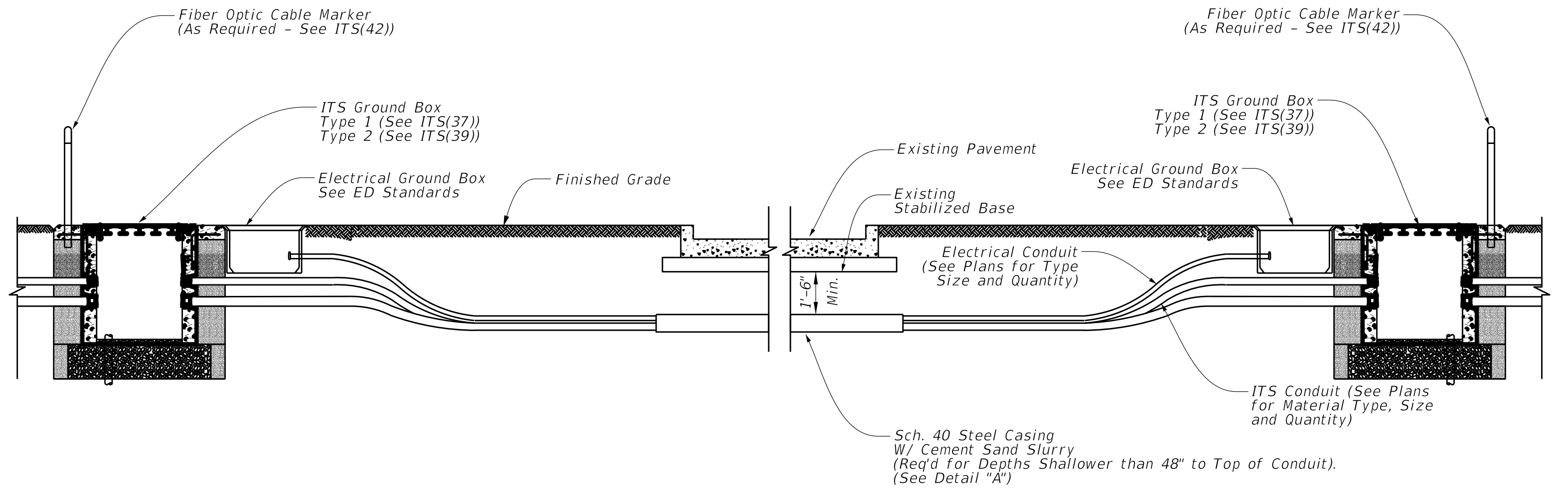
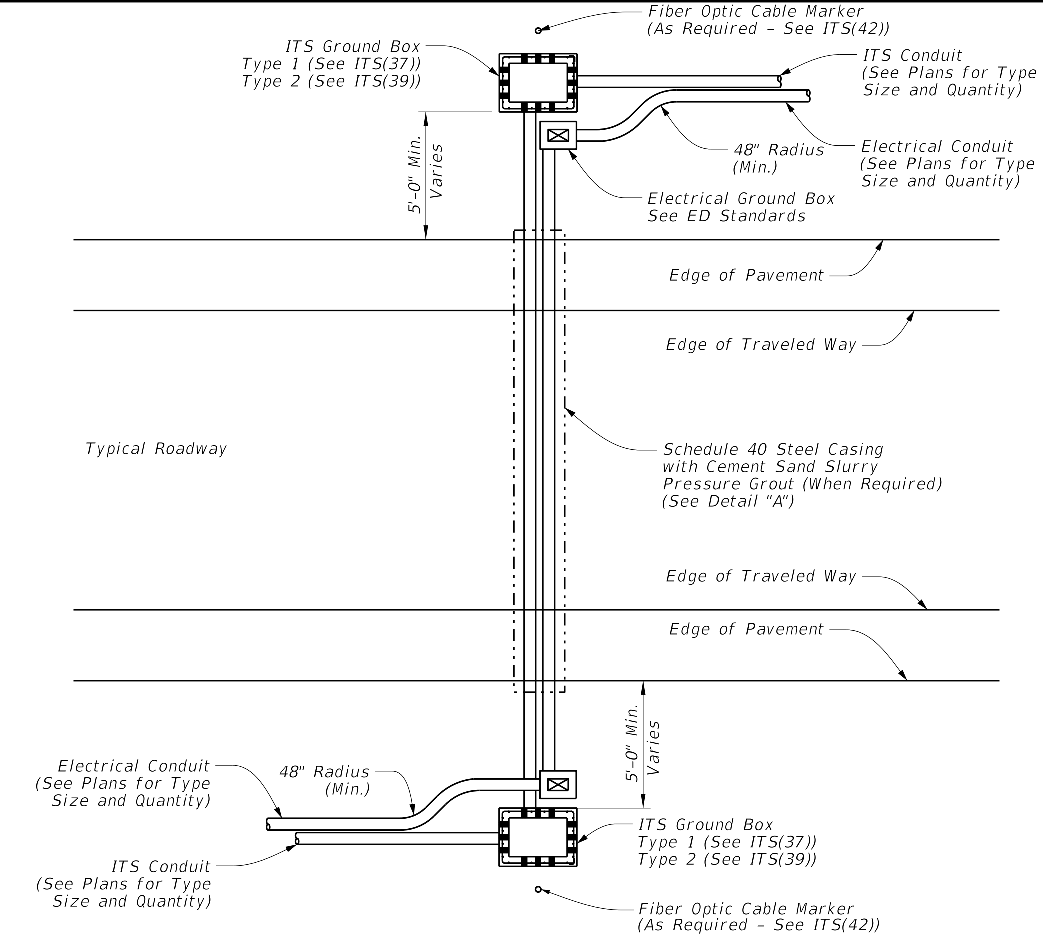


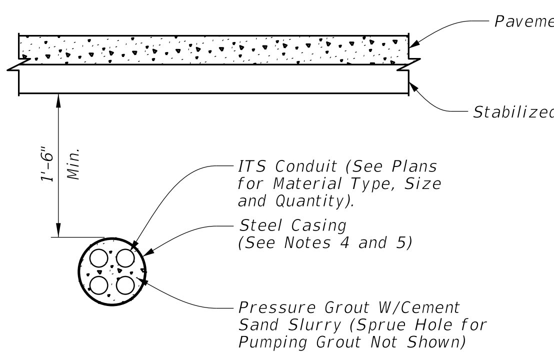
Typical Conduit Installation Jacking or Boring Beneath Existing Roadway



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



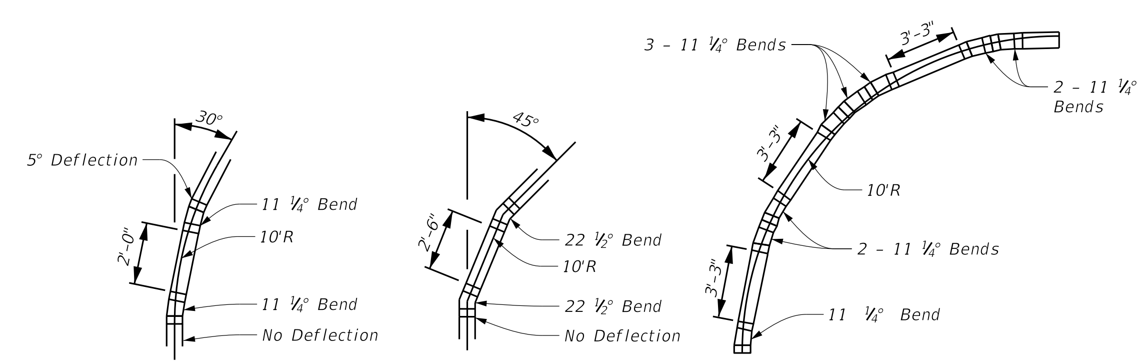
Bore Under Pavement



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.

Sheet Details
Not to Scale

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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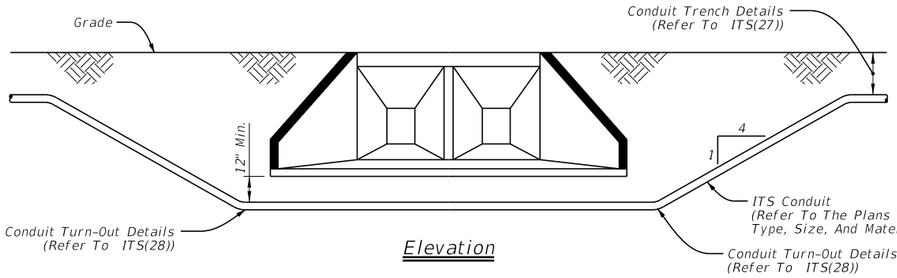
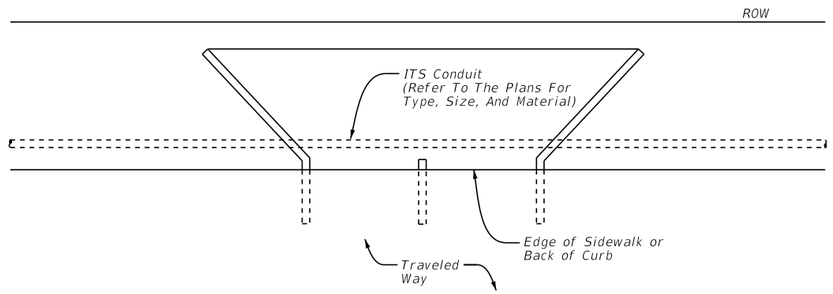
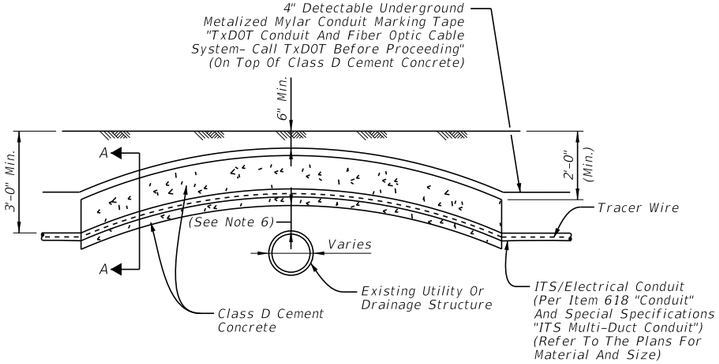


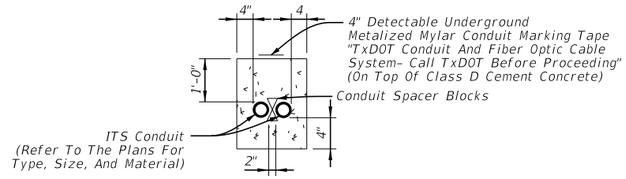
Elevation



Plan View

Conduit Bored Under Culvert



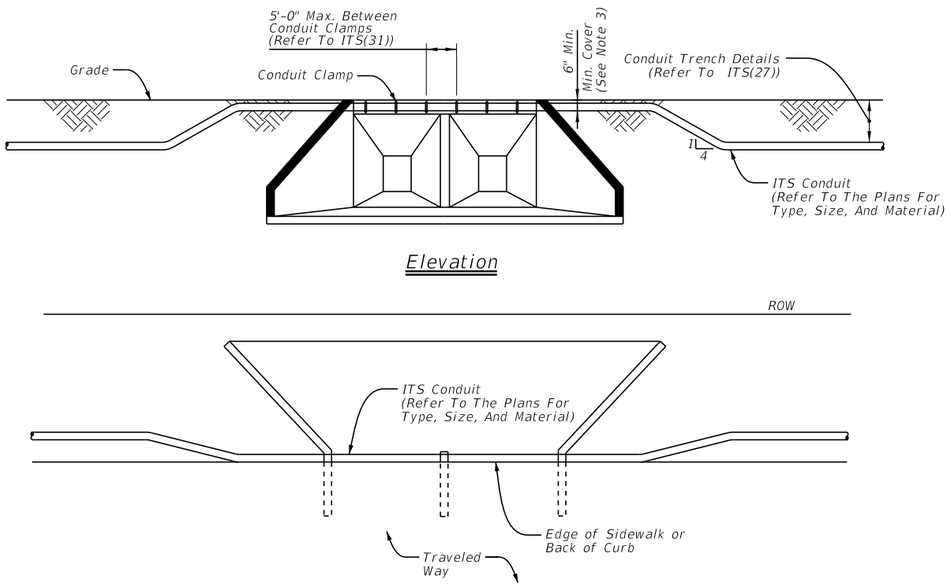


Section A-A

Conduit Installation Detail Above
Existing Drain Pipes Or Utilities

General Notes:

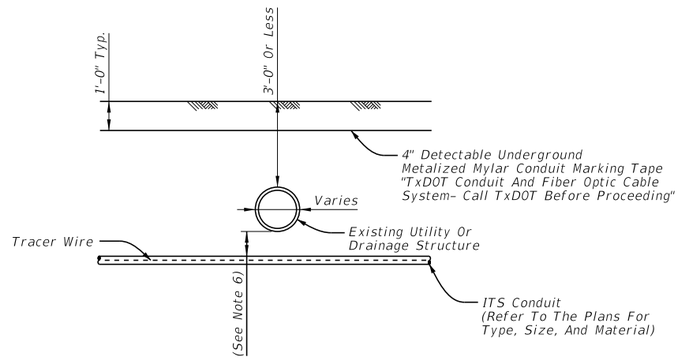
1. With approval from the field engineer adjust the final burial depth of conduit(s) in circumstances requiring traversal of non-movable object conflicts.
2. Where conduits are to be installed over existing underground infrastructure (i.e., existing utility or drainage structure) which are less than 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.



Elevation

Plan View

Conduit Attached To Culvert Headwall



Conduit Installation Detail Below
Existing Drain Pipes Or Utilities

Sheet Details
Not to Scale

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
	CONT	SECT	JOB	HIGHWAY
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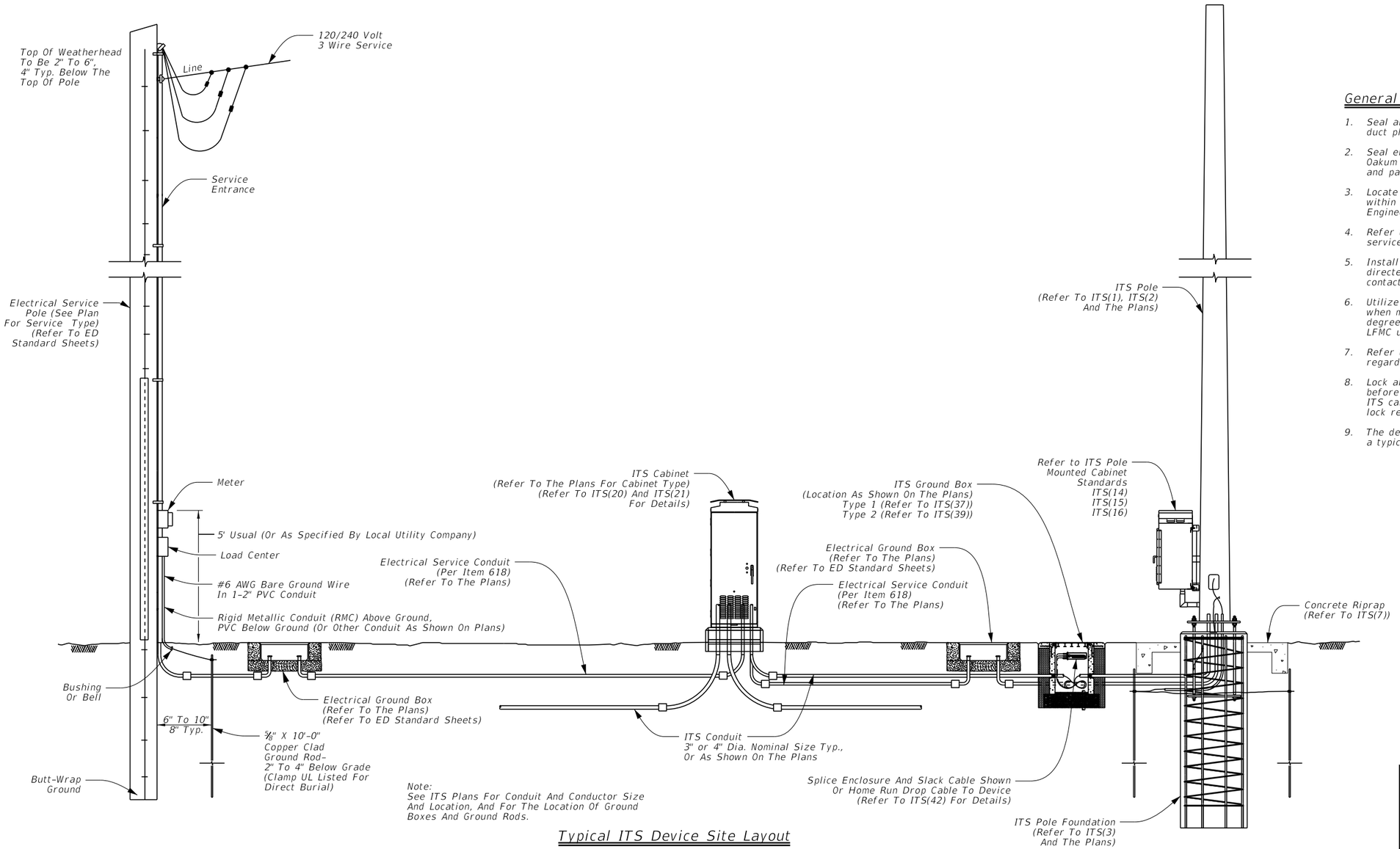

Typical ITS Device Site Layout

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.

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
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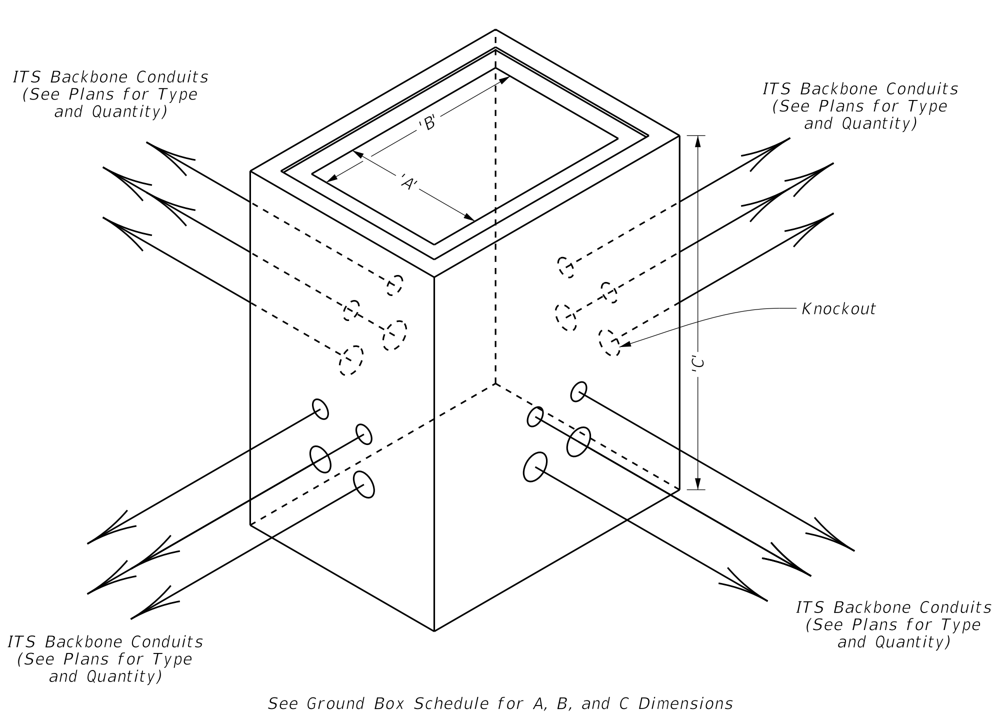
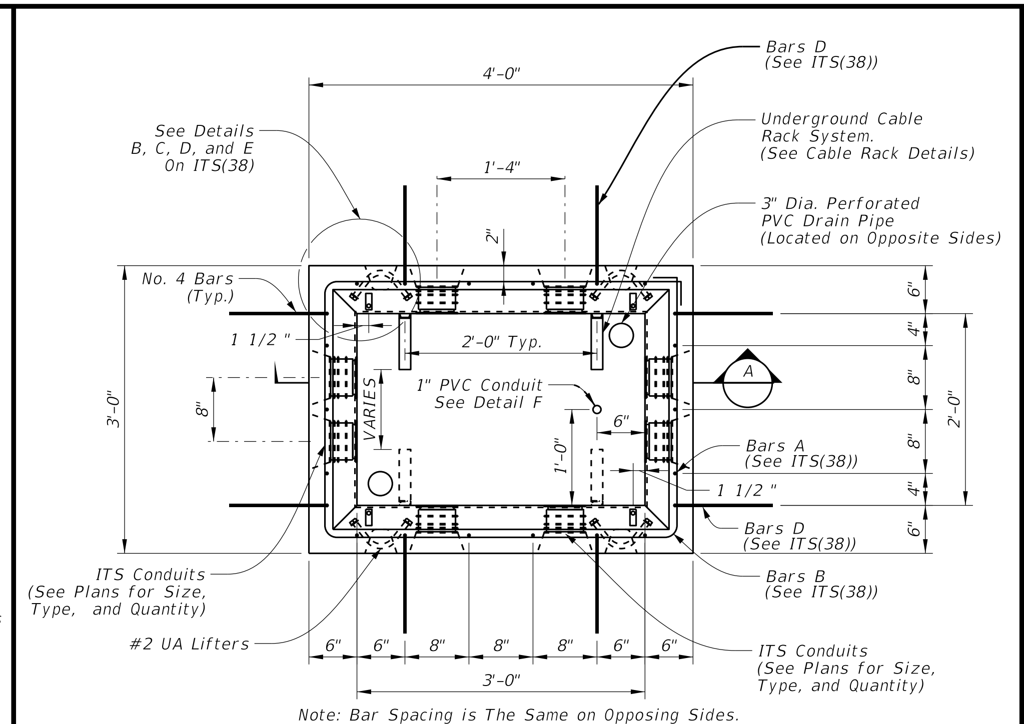
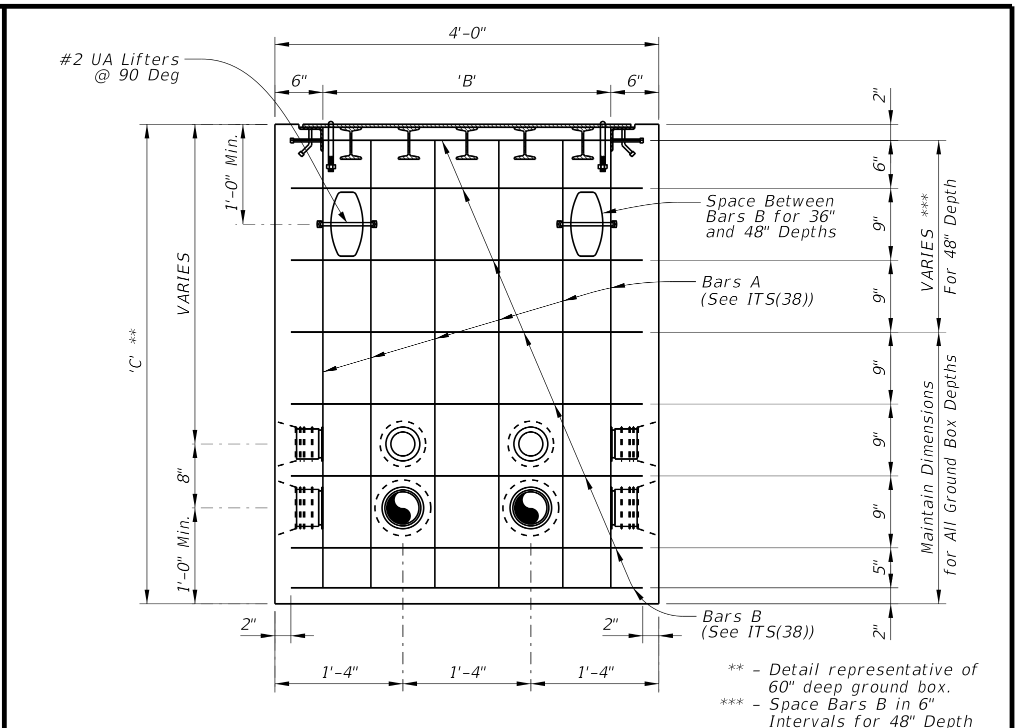
Sheet Details
Not to Scale



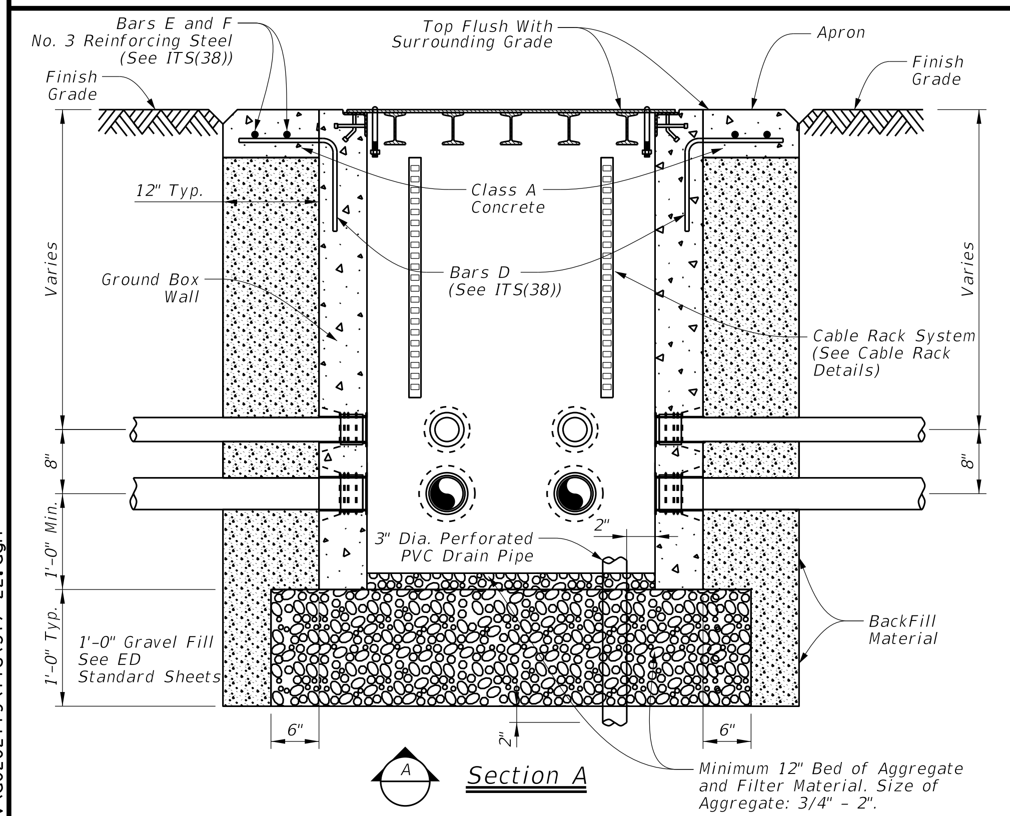
Type 1 Ground Box Isometric View



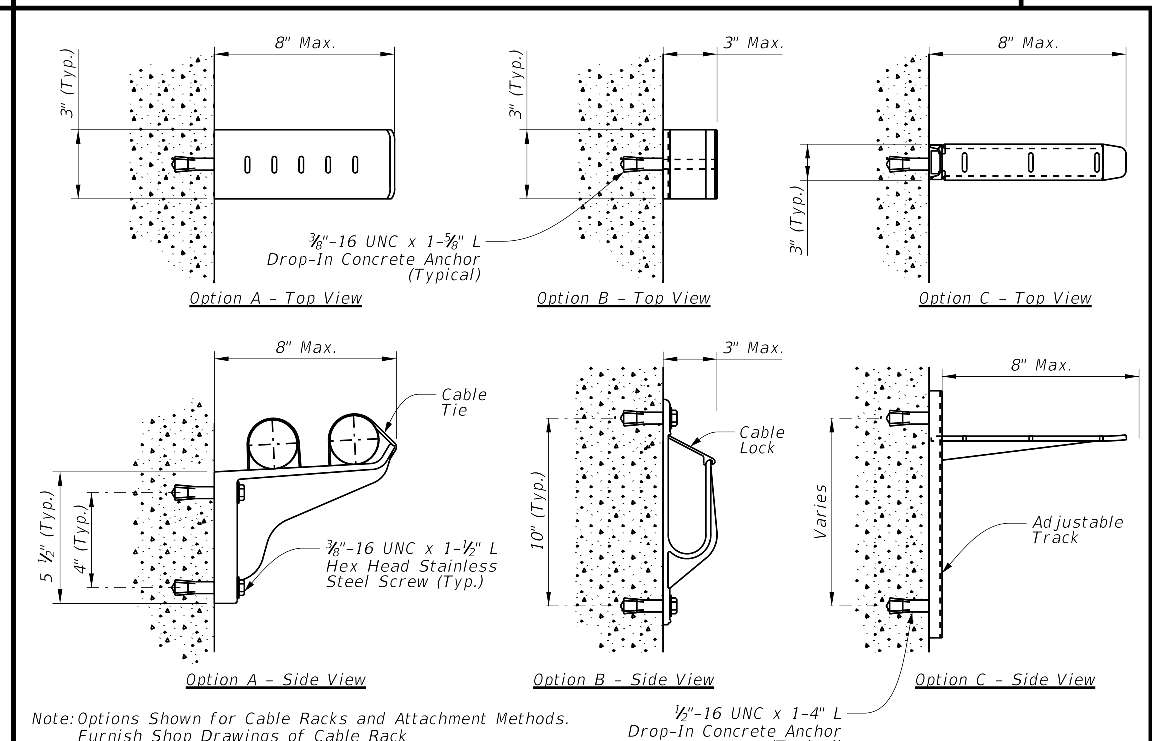
Type 1 Ground Box Plan View



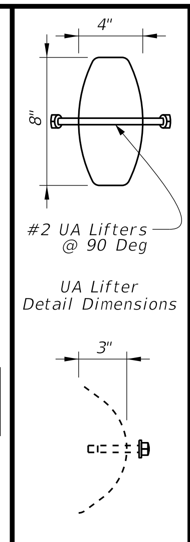
Type 1 Ground Box Elevation View

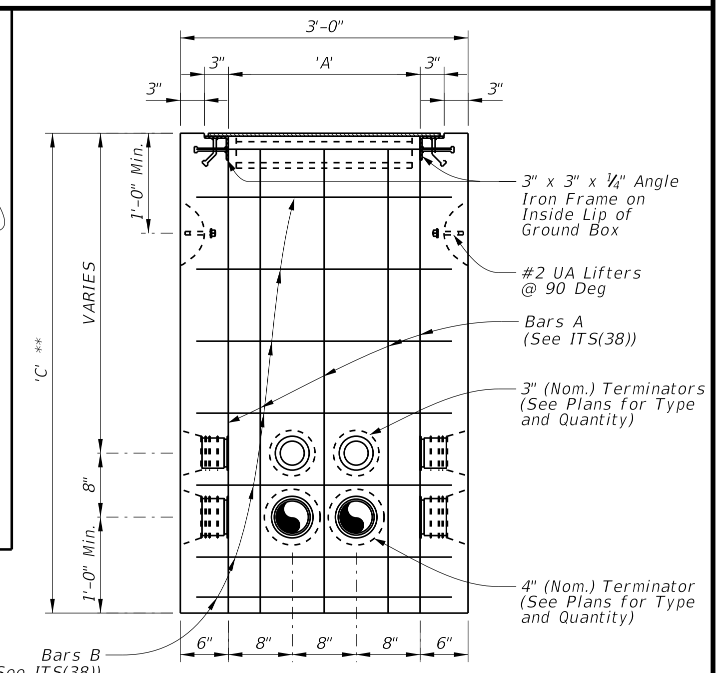


Section A



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

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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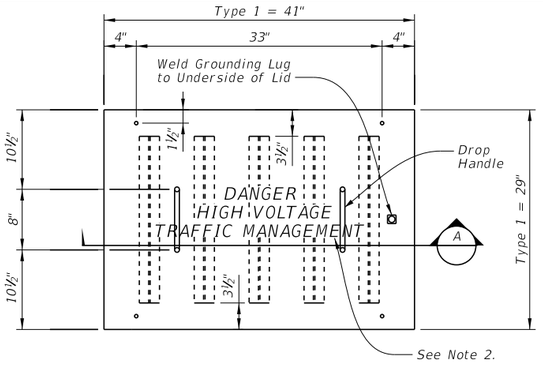
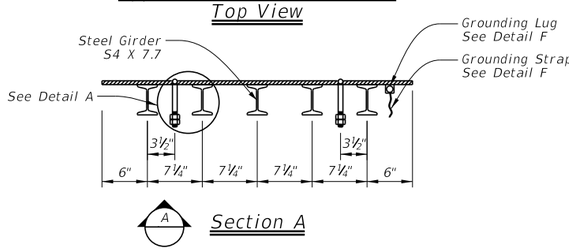
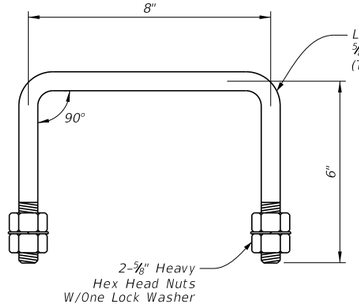


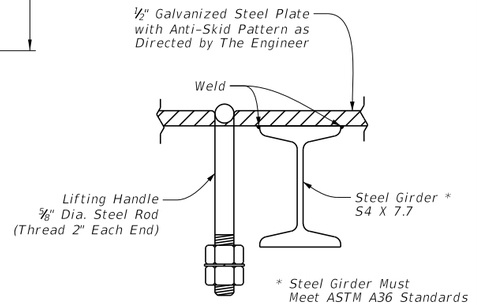
Type 1 Steel Cover Details
Top View



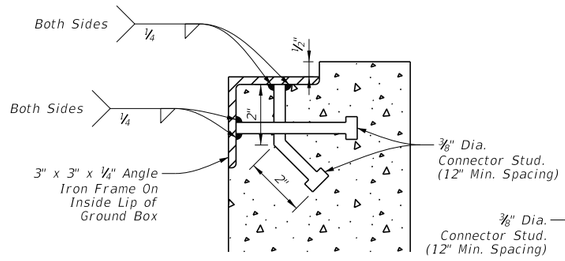
Section A



Drop Handle Detail



Detail A



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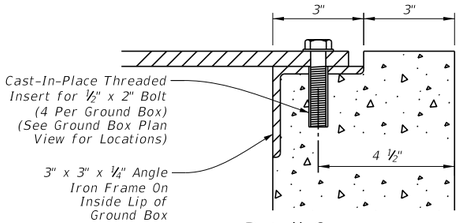
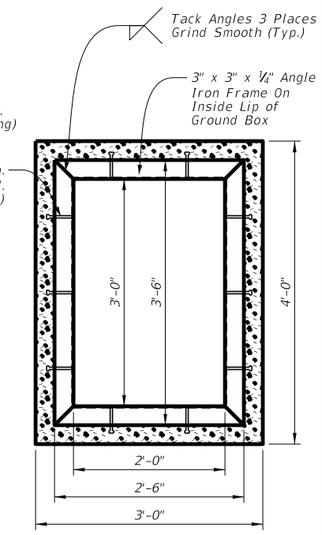


Detail C
Lid Attachment Detail



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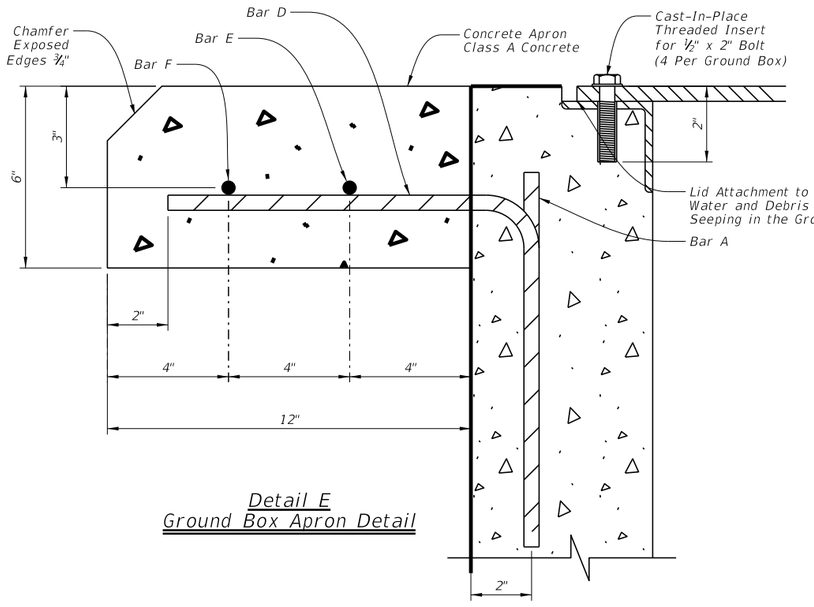
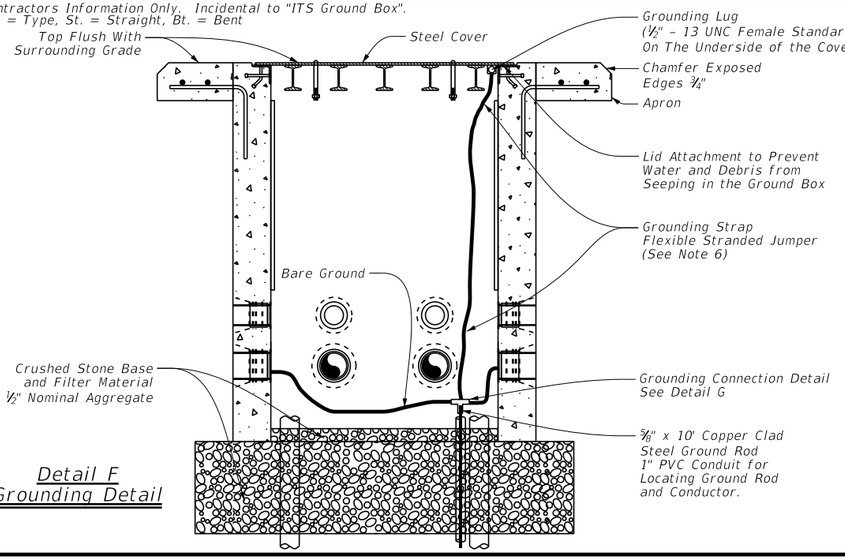


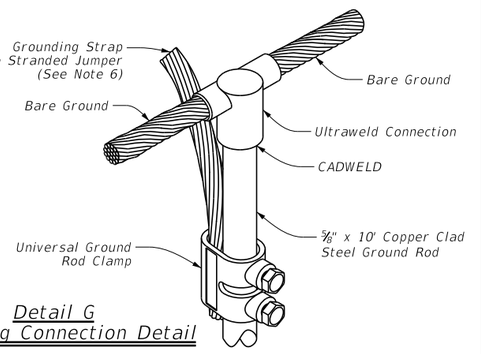
Detail E
Ground Box Apron Detail

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.

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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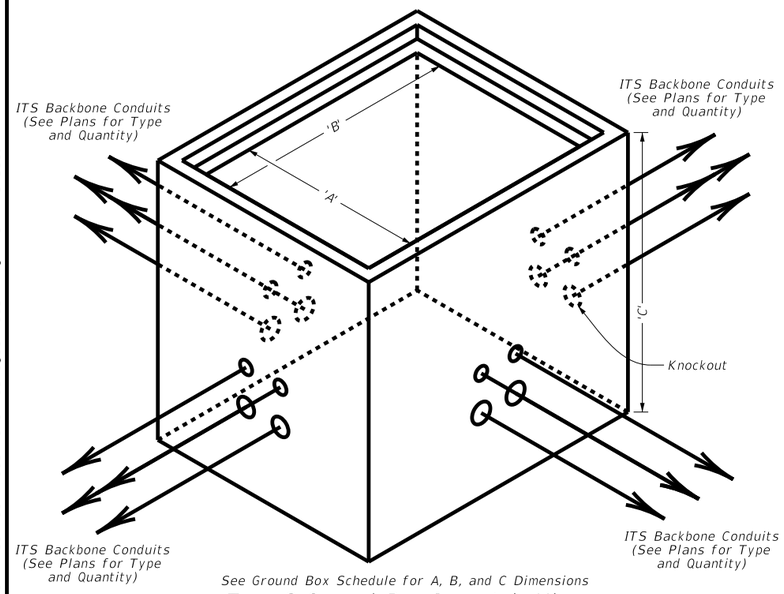
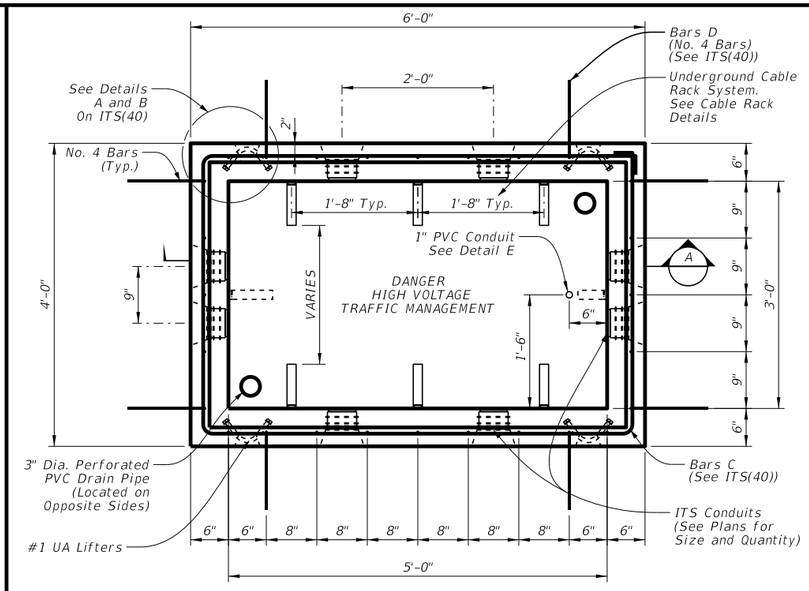


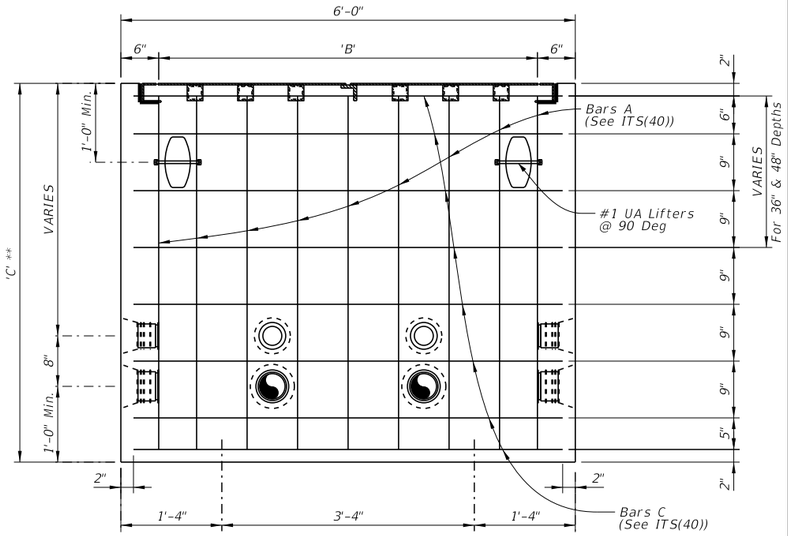
See Ground Box Schedule for A, B, and C Dimensions

Type 2 Ground Box Isometric View



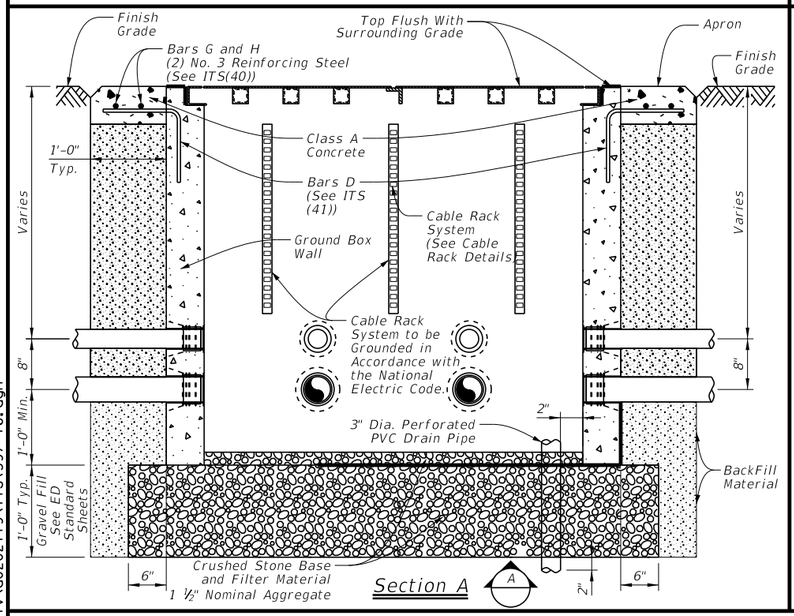
Note: Bar Spacing is The Same on Opposing Sides.

Type 2 Ground Box Plan View



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

Type 2 Ground Box Elevation View



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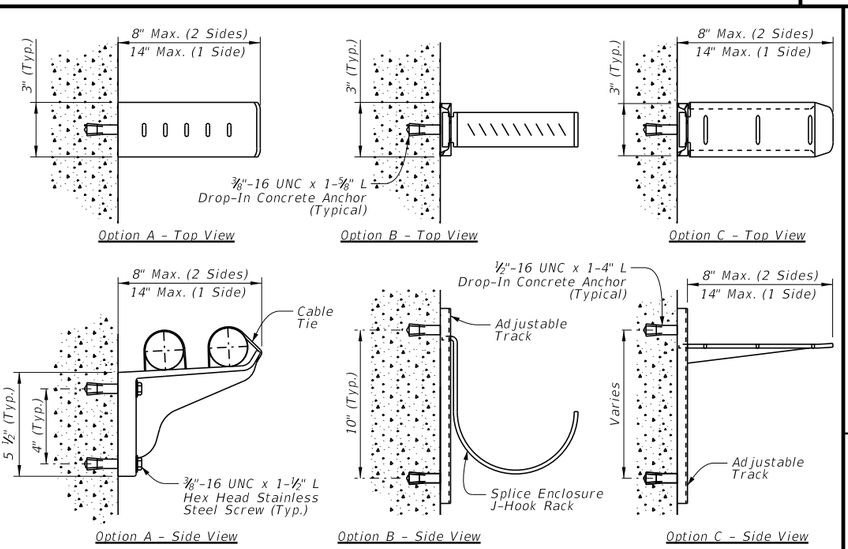
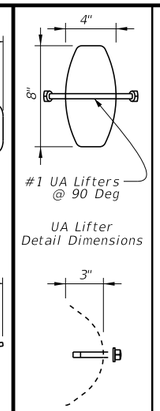
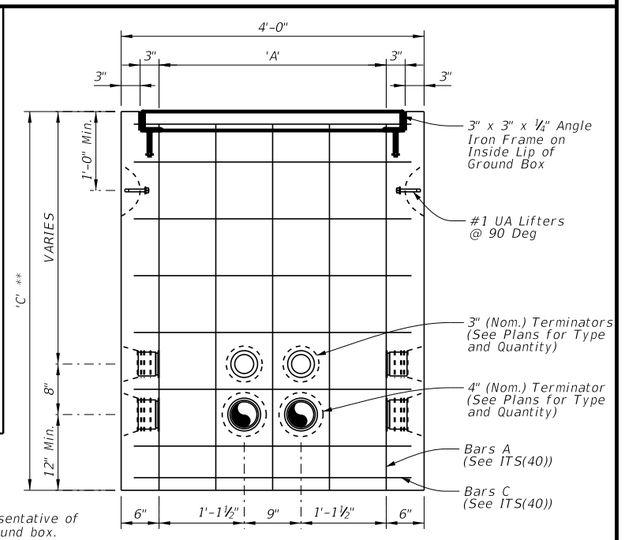


Note: Options Shown for Cable Racks and Attachment Methods Contractor to Supply Shop Drawings of Cable Rack and Cable Rack Grounding System (If Applicable) for Engineer Approval Prior to Installation.

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

Sheet Details
Not to Scale

Texas Department of Transportation

Traffic Operations Division Standard

ITS GROUND BOX DETAILS TYPE "2" WITH STEEL COVER

ITS(39)-16

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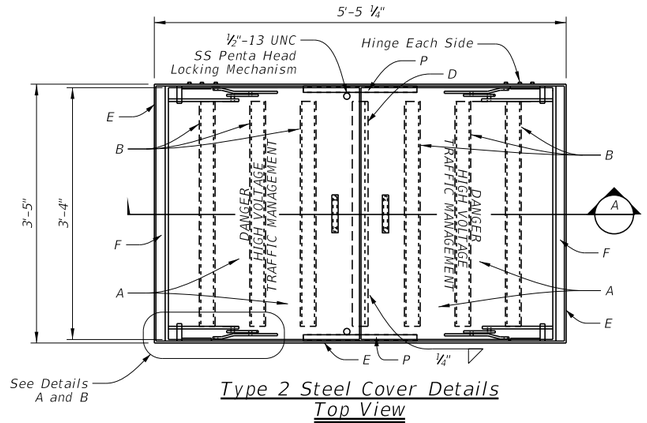
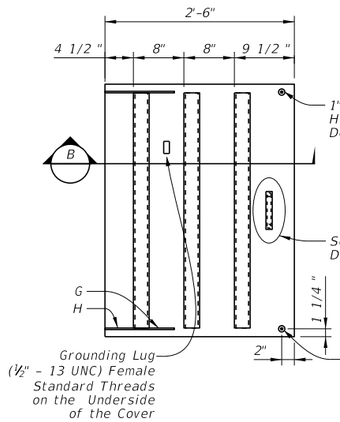
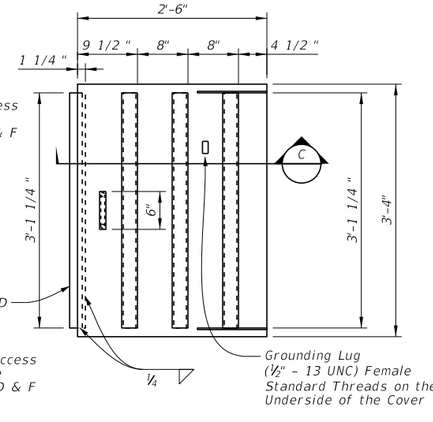


Type 2 Steel Cover Details Top View

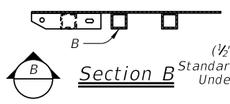
Section A



Type 2 Steel Cover Details Bottom View (Left)



Type 2 Steel Cover Details Bottom View (Right)



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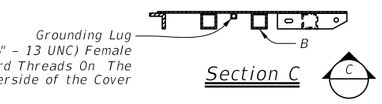

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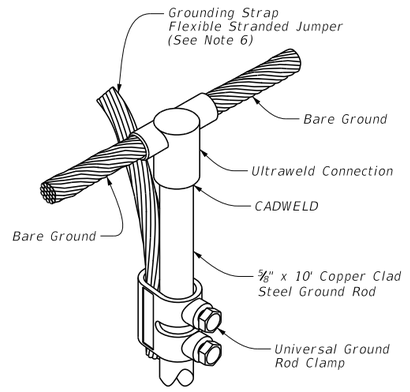
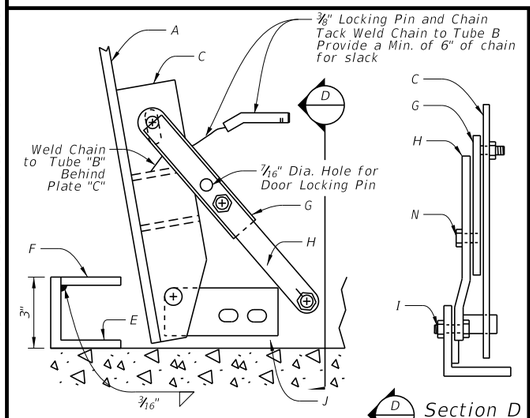


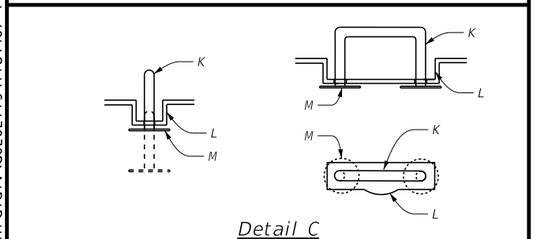
Detail G Grounding Connection Detail

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.

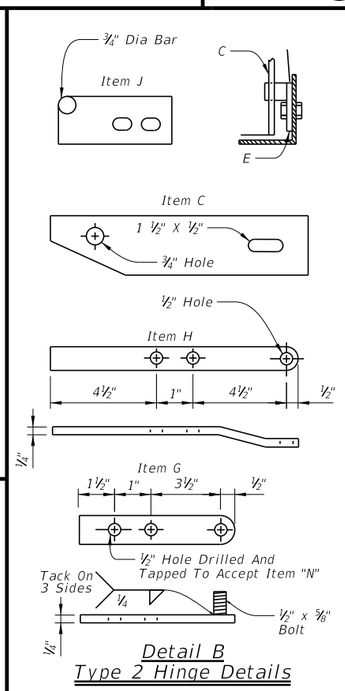
Item	Qty	Incidental "ITS Ground Box" Material
A	2	¼" Floor Plate 40" x 30"
B	6	2 ½" x 2 ½" x 37 ¼" Tube
C	4	11" x 2 ½" x ¼" Plate
D	1	2 ½" x 2 ½" x ½" x 37" ¼ Angle
E	4	3" x 3" x ¼" Angle
F	2	40 ½" x 2" x ¼" Plate
G	4	6 ½" x 1 ¼" x ¼" Plate
H	4	10 ½" x 1 ¼" x ¼" Plate
I	12	½" Bolt/Nut
J	4	4 ¾ x 2" x 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 ⅜" Bolt
P	2	1" x 1" x ⅛" Angle x 18"



Detail A Type 2 Cover Side View Detail



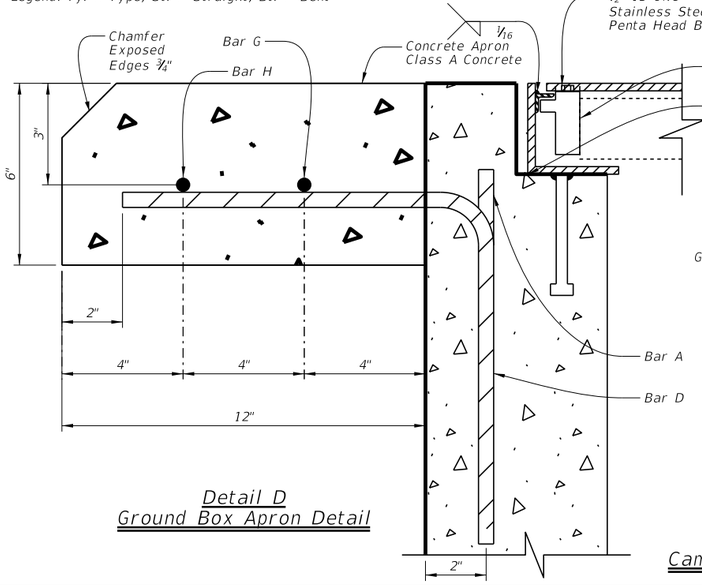
Detail C Type 2 Drop Handle Details



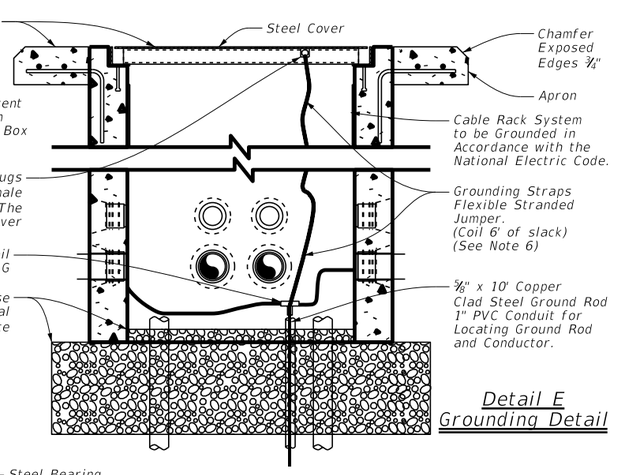
Detail B Type 2 Hinge Details

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

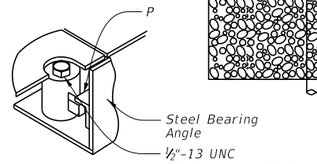
* – For Contractors Information Only. Incidental to "ITS Ground Box".
Legend: Ty. = Type, St. = Straight, Bt. = Bent



Detail D Ground Box Apron Detail



Detail E Grounding Detail



Detail F Cam Locking Mechanism

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.

Sheet Details
Not to Scale

SHEET 2 OF 2

Texas Department of Transportation

Traffic Operations Division Standard

ITS GROUND BOX DETAILS TYPE "2" WITH STEEL COVER

ITS(40)-17

FILE: its(40)-17.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	WACO	McLENNAN		1650

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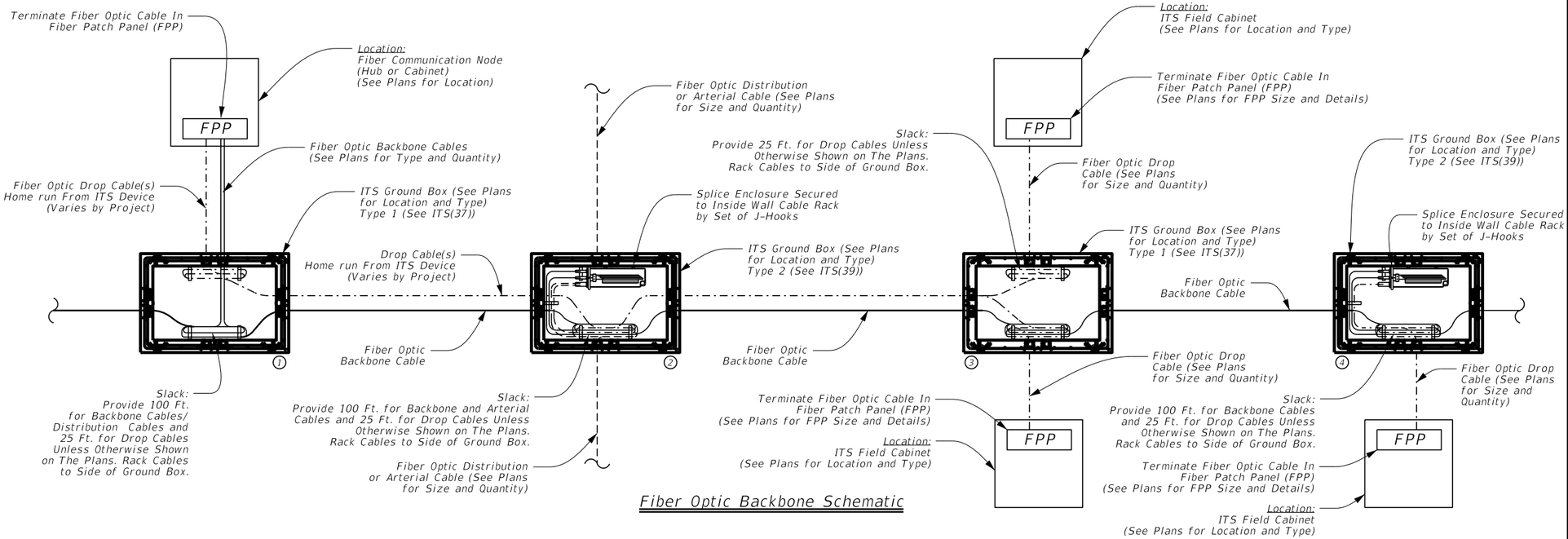
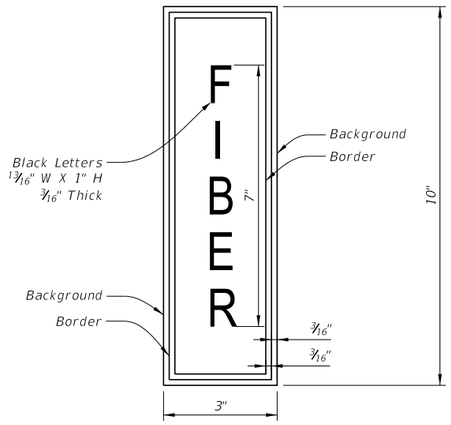
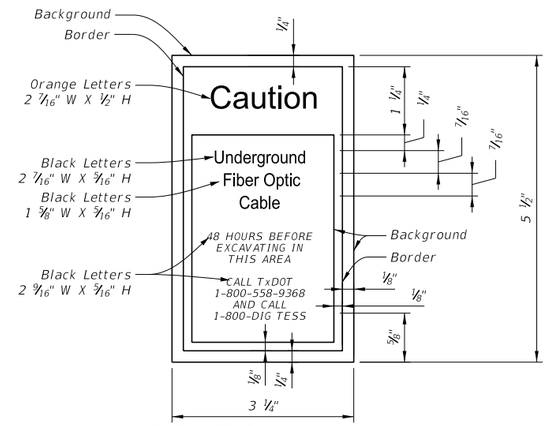


Fiber Optic Backbone Schematic



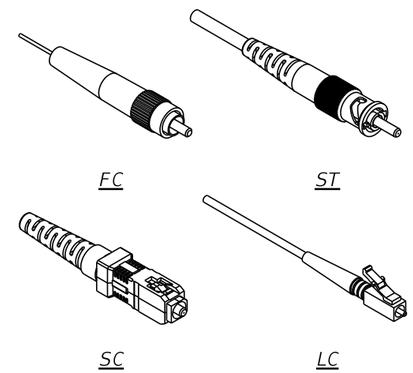
Border - Black
Background - Orange Reflective

Fiber Decal Details



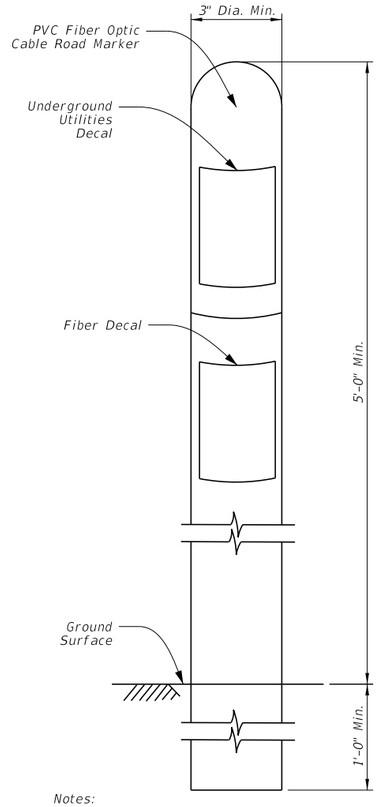
Border - Black
Symbol - Black
Background - Orange Reflective

Underground Utilities Decal Details



Fiber Optic Connectors

Note - Details are diagrammatic and may vary by manufacturer.



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

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

FILE: its(42)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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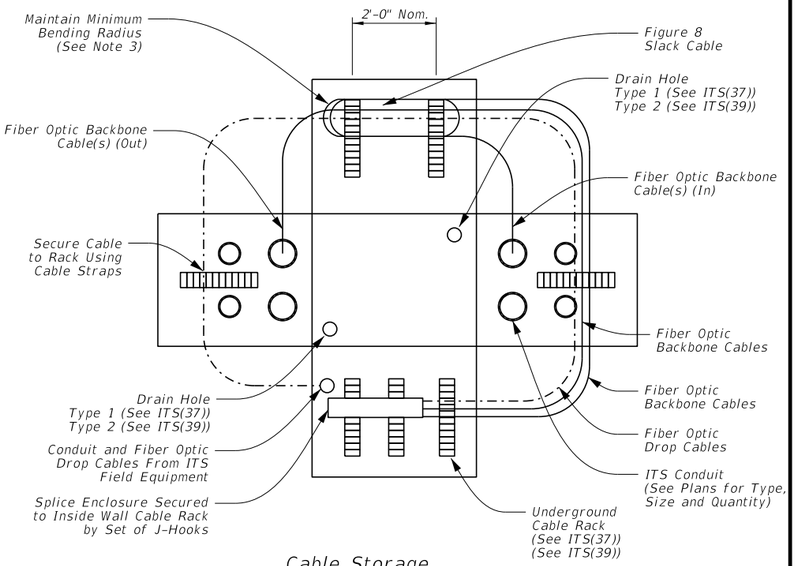
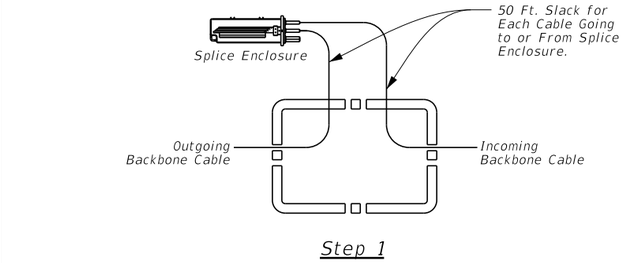
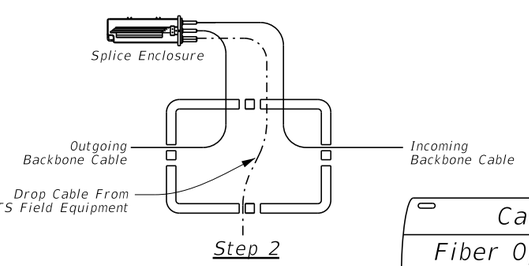


Cable Storage

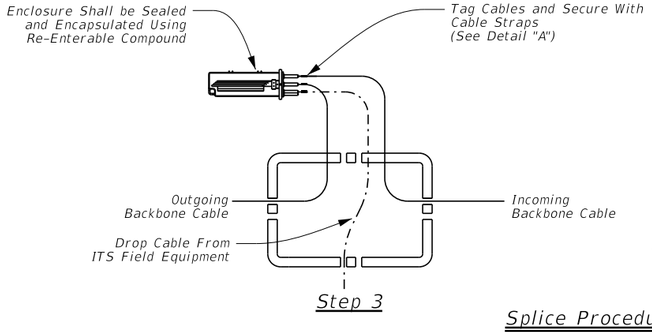
Top View - Ground Box Walls Folded Down for Clarity



Step 1



Step 2



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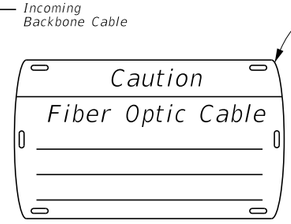
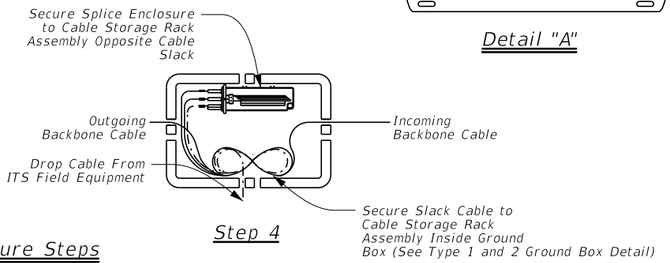


Fiber Optic Cable Tag

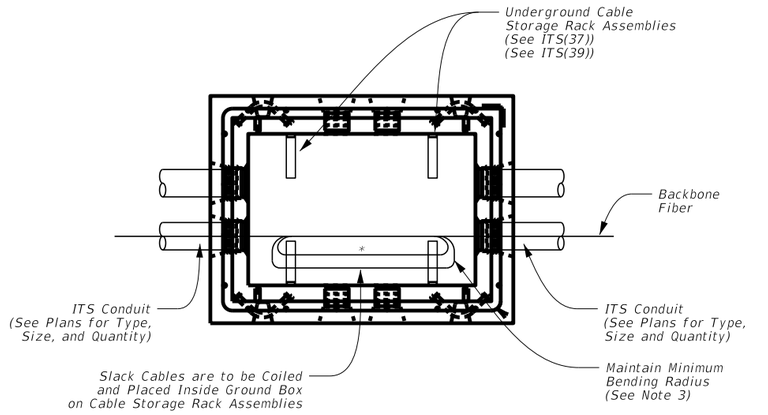
Panduit Inc. No. PST-FO
Hellerman-Tyton No. CST2003x2
Self-Lam Tag or Approved Equal

Detail "A"



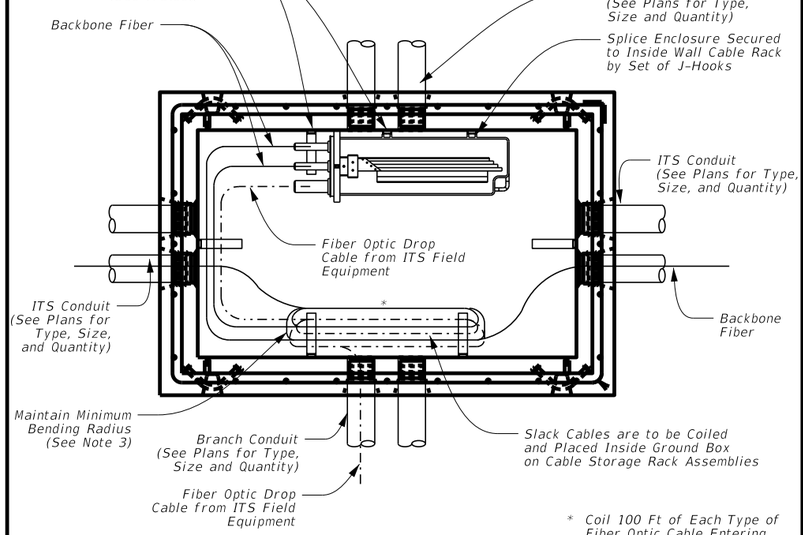
Step 4

Splice Procedure Steps



Type "1" Ground Box

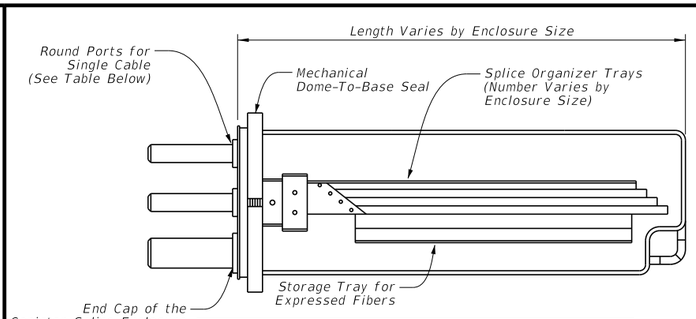
* Coil 25 Ft of Fiber Optic Cable for Slack



Type "2" Ground Box

with Splice

* Coil 100 Ft of Each Type of Fiber Optic Cable Entering the Ground Box



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.

Sheet Details
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Texas Department of Transportation

Traffic Operations Division Standard

ITS FIBER OPTIC CABLE MISCELLANEOUS DETAILS

ITS(43)-16

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	WACO	McLENNAN		1652

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