

King County Metro Transit - Capital Project Delivery:
Trolley Overhead Standard Drawings

Prepared by:

Supervisor:
John Davis

Engineers:
Alex Wolak
Medhanie Embaye

Designers:
Grant Carey
Linda Anderson
Ethan Tu

Prepared for:

Metro Transit Engineering

December 2021



King County Metro Transit - Capital Project Delivery:

Engineering Section Design Standard

Professional Seal

Per the Washington Administrative Code 196-23-020:

“...Any final document must contain the seal/stamp, signature and date of signature of the licensee who prepared or directly supervised the work. For the purpose of this section "document" is defined as plans, specifications, plats, surveys, as-built documents prepared by the licensee, and reports.”

Preparation of this Document was directly supervised by the following licensed Civil Engineer & Structural Engineer:



John C. Davis, S.E.



Alexander Wolak, P.E.

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	DESIGNED: DPG/AW	APPROVED: P. ENG
	DRAWN: D.BENNETT	
	CHECKED: J. DAVIS	
No.	REVISION	
		APP'D
		DATE
		METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS INDEX
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NUMBER	TITLE	SHEETS				
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	DESIGNED: DPG/AW	APPROVED: P. ENG				
	DRAWN: D.BENNETT	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS INDEX				
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TROLLEY CONSTRUCTION STANDARD REQUIREMENTS

1. ANY CONSTRUCTION OR INSTALLATION ACTIVITIES AFFECTING TRANSIT OPERATIONS OR FACILITIES MUST BE COORDINATED THROUGH THE METRO TRANSIT CONSTRUCTION INFORMATION CENTER.
PLEASE PROVIDE FIVE BUSINESS DAYS NOTIFICATION FOR BUS STOP IMPACTS AND TEN BUSINESS DAYS NOTIFICATION FOR BUS REROUTES. FOR NOTIFICATION INFORMATION AND GUIDELINES, PLEASE VISIT :

HTTP://WWW.KINGCOUNTY.GOV/TRANSPORTATION/KCDOT/METROTRANSIT/CONSTRUCTION.ASPX

OR CONTACT CONSTRUCTION COORDINATORS AT: 206-477-1140 OR 206 477-1150 FOR TROLLEY RELATED ACTIVITIES.
A MINIMUM OF 60 BUSINESS DAYS' ADVANCE NOTICE IS REQUIRED TO START ANY SHIFT OF THE TROLLEY OVERHEAD CATENARY SYSTEM (OCS).
2. A CHANNELIZATION PLAN, APPROVED BY THE CITY OF SEATTLE AND KING COUNTY, IS REQUIRED PRIOR TO ANY MOVEMENT OF THE TROLLEY OCS.
3. NO TRANSFER OF SUPPORT SPANS WILL OCCUR PRIOR TO FORMAL APPROVAL OF ALL SUPPORT STRUCTURES BY KING COUNTY. A MINIMUM OF 5 BUSINESS DAYS' NOTICE IS REQUIRED FOR INSPECTION.
4. ALL OVERHEAD CATENARY, VAULTS, DUCT BANKS AND SUPPORT STRUCTURES, REMOVED DURING CONSTRUCTION, SHALL BE REPLACED WITH NEW EQUIPMENT, AS SHOWN ON THE CONTRACT DOCUMENTS, AND RESTORED PER KING COUNTY METRO TROLLEY STANDARDS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RESTORATION. THE COST OF RESTORATION SHALL BE AT THE CONTRACTOR'S EXPENSE OR SHALL BE ESTABLISHED THROUGH AN APPROVED MEMORANDUM OF AGREEMENT (MOA).
6. SALVAGED EQUIPMENT SHALL BECOME THE PROPERTY OF KING COUNTY METRO.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS CONSTRUCTION GUIDELINE	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-096
					CHECKED: J. DAVIS			SHT NO:
No.	REVISION	BY	APP'D	DATE				1 OF 1

SPECIAL WORK MATERIAL LIST

ITEM #	DESCRIPTION	WABCO CAT. NO.
1	15° WSE, RH, IC, RS	55964-3001
2	15° WSE, LH, IC, RS	55964-3002
3	15° WSE, RH, IC, RC	55964-3005
4	15° WSE, LH, IC, RC	55964-3006
5	15° WSE, RH, IS, RS	55973-3001
6	15° WSE, LH, IS, RS	55973-3002
7	15° WSE, RH, IS, RC	55973-3003
8	15° WSE, LH, IS, RC	55973-3004
9	15° WTR, RH, IC, RC	55979-3001
10	15° WTR, LH, IC, RC	55979-3002
11	15° WTR, RH, IC, RS	55979-3005
12	15° WTR, LH, IC, RS	55979-3006
13	15° WTR, RH, IS, RC	55981-3001
14	15° WTR, LH, IS, RC	55981-3002
15	15° WTR, RH, IS, RS	55981-3003
16	15° WTR, LH, IS, RS	55981-3004
17	30° WSE, RH, IC, RS	56425-3001
18	30° WSE, LH, IC, RS	56425-3002
19	30° WSE, RH, IC, RC	56425-3003
20	30° WSE, LH, IC, RC	56425-3004
21	30° WSE, RH, IS, RS	57143-3001
22	30° WSE, LH, IS, RS	57143-3002
23	30° WSE, RH, IS, RC	57143-3003
24	30° WSE, LH, IS, RC	57143-3004
25	30° WTR, RH, IS, RC	56596-3005
26	30° WTR, LH, IS, RC	56596-3006
27	30° WTR, RH, IS, RS	56596-3007
28	30° WTR, LH, IS, RS	56596-3008
29	30° WTR, RH, IC, RC	56597-3001
30	30° WTR, LH, IC, RC	56597-3002
31	30° WTR, RH, IC, RS	56597-3005
32	30° WTR, LH, IC, RS	56597-3006
33	17° RXO	17872 A OR B
34	27° RXO	17874 A OR B
35	30° RXO	55968-3003
36	37° RXO	17877 A OR B
37	45° RXO	55967-3003
38	50° RXO	57857-3007
39	60° RXO	55966-3001
40	90° RXO	55965-3001
41	30° - 60° XOCS, RH	57123-3001
42	30° - 60° XOCS, LH	57123-3002

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					L. ANDERSON			SA-097
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					J. DAVIS			1 OF 2

SPECIAL WORK MATERIAL LIST

ITEM #	DESCRIPTION	WABCO CAT. NO.
43	30°- 45° XOCS, LH	
44	58° TO 65° AXO	18438
45	66° TO 90° AXO	18437
46	15° Y, IND, ILH, RST RH	59503-3004
47	23° WSE, RH, IC, RS	55961-3001
48	23° WSE, LH, IC, RS	55961-3002
49	23° WTR, RH, IC, RS	55978-3001
50	23° WTR, LH, IC, RS	55978-3002
51	45° WSE, RH, IC, RS	56593-3001
52	45° WSE, LH, IC, RS	56593-3002
53	45° WSE, RH, IC, RC	56593-3005
54	45° WSE, LH, IC, RC	56593-3006
55	45° WSE, RH, IS, RS	57904-3001
56	45° WSE, LH, IS, RS	57904-3002
57	45° WSE, RH, IS, RC	57904-3005
58	45° WSE, LH, IS, RC	57904-3006
59	45° WTR, RH, IC, RC	56595-3005
60	45° WTR, LH, IC, RC	56595-3006
61	45° WTR, RH, IC, RS	56595-3007
62	45° WTR, LH, IC, RS	56595-3008
63	45° WTR, RH, IS, RC	56592-3005
64	45° WTR, LH, IS, RC	56592-3006
65	45° WTR, RH, IS, RS	56592-3007
66	45° WTR, LH, IS, RS	56592-3008

LEGEND

IS = INSULATION IN STRAIGHT

IC = INSULATION IN CURVE

ILH = INSULATION IN LH OF Y

IND = ELECTRICALLY OPERATED INDUCTIVE SWITCH

LH = LEFT HAND SWITCH

RH = RIGHT HAND SWITCH

Y = Y SWITCH

WSE = ELECTRICALLY OPERATED INDUCTIVE SWITCH

WTR = TRAILING SWITCH

RC = RESET TO CURVE

AXO = ADJUSTABLE CROSSOVER

RS = RESET TO STRAIGHT

RXO = RIGID CROSSOVER

RSTRH = RESET TO RH OF Y

XOCS = CROSSOVER CURVE SEGMENT

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MASTER MATERIAL LIST

ITEM #	METRO STANDARD SA-DWG - ITEM LOCATION & USE REFERENCE
01	153, 165, 190, 300, 301, 302, 303, 304, 305, 306, 307, 309, 311, 312, 313, 314, 315, 316, 317, 321, 322, 325, 331, 332, 334, 345, 348, 355, 358
02	190, 301, 302, 305, 306, 309, 311, 312, 315, 316, 355, 345
03	152, 166, 167, 233, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 320, 321, 322, 325, 331, 332, 342, 343, 345, 348, 352, 370, 371, 372, 373, 355, 358
04	152, 233, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 320, 321, 322, 325, 331, 332, 342, 343, 345, 348, 352, 370, 371, 372, 373, 355, 358
05	152, 166, 233, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 320, 321, 322, 325, 331, 332, 342, 343, 345, 348, 352, 370, 371, 372, 373, 355, 358
06	152, 166, 233, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 320, 321, 322, 325, 331, 332, 342, 343, 345, 348, 352, 370, 371, 372, 373, 355, 358
07	152, 233, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 320, 321, 322, 325, 331, 332, 342, 343, 345, 348, 352, 370, 371, 372, 373, 355, 358
08	152, 166, 167, 233, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 320, 321, 322, 325, 331, 332, 342, 343, 345, 348, 352, 370, 371, 372, 373, 355, 358
09	152, 305, 306, 310, 315, 316, 331, 371, 372
10	153, 303, 304, 307, 308, 313, 314, 317, 318, 334, 342, 345, 348, 352, 370, 373, 358
11	152, 310, 342, 343, 345, 348, 352, 371, 372, 355, 358
12	310, 320, 322, 325, 332, 342, 343, 345, 352, 370, 371, 373
13	152, 166, 167, 231, 232, 233, 305, 306, 315, 316, 371, 373
14	152, 153, 231, 232, 233, 305, 306, 315, 316, 371, 373
15	166, 233, 305, 306, 315, 316, 341, 342, 345, 348, 349, 351, 352, 371, 373, 55, 358
16	152, 166, 167, 231, 232, 233, 305, 306, 315, 316, 371, 373
17	152, 153, 233, 234, 305, 306, 315, 316, 341, 342, 345, 348, 349, 351, 352, 371, 373, 355, 358
18	167, 310, 372
19	167
20	343
21	321, 322, 331, 332
22	321, 322, 325, 331, 332
23	153, 321, 331
24	361
25	310, 320, 342, 352
26	321, 322, 331, 332
27	321, 322, 331, 332
28	341, 348, 349, 351, 361, 358
29	333

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MASTER MATERIAL LIST

ITEM #	METRO STANDARD SA-DWG - ITEM LOCATION & USE REFERENCE
30	341, 349, 351, 361
31	341, 349, 351, 361
32	325
33	325
34	152, 153
35	163, 165
36	361
37	333
38	152
39	152, 308, 348, 358
40	321, 331, 342, 345, 352
41	321, 322, 325, 331, 332, 349
42	349
43	*
44	WFSC ONLY
45	WFSC ONLY
46	WFSC ONLY
47	WFSC ONLY
48	*
49	349
50	349
51	349
52	349
53	307, 317, 342, 352, 373
54	308, 318, 342, 352, 373
55	234, 341, 342, 345, 348, 349, 351, 352, 355, 358
56	234, 341, 342, 345, 348, 349, 351, 352, 355, 358
57	341, 342, 345, 348, 349, 351, 352, 358
58	300, 345
59	402
60	321, 322, 331, 332, 349, 402
61	231, 232
62	231
63	232
64	232
65	232, 351
66	232
67	401
68	402
69	402
70	321, 331, 372
71	402

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MASTER MATERIAL LIST

ITEM #	METRO STANDARD SA-DWG - ITEM LOCATION & USE REFERENCE
72	165
73	WFSC ONLY
74	190
75	190
76	325
77	401, 411
78	401
79	341, 349, 351
80	321, 331, 341, 343, 349, 351, 361, 401
81	401
82	232
83	401
84	343, 361
85	401
86	402
87	361
88	361
89	361
90	234, 341, 342, 345, 348, 349, 351, 352, 355, 358
91	401
92	373
93	401
94	103, 351, 352, 355, 358
95	103
96	103, 351, 352, 355, 358
97	104, 351, 352, 355, 358
98	104
99	103, 104, 351, 352
100	321, 331
101	152, 321, 331
102	152, 164, 233, 234, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 320, 321, 322, 325, 331, 332, 341, 342, 343, 345, 348, 349, 371, 372, 373, 355, 358
103	152, 164, 233, 234, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 320, 321, 322, 325, 331, 332, 371, 372, 373 104 231, 232 105 * 106 343
107	SEE PLANS FOR FREQUENCY OF USE (USED WITH SA-221)
108	341, 349, 351, 352, 348, 355, 345, 342, 358
109	341, 349, 351
110	342, 345, 348, 352, 355, 358
111	351, 352, 355, 358
112	ATL BASE TRACK SPREADER
113	ATL BASE TRACK SPREADER

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS MASTER MATERIAL LIST USAGE REFERENCE	DATE: 03/2021
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MASTER MATERIAL LIST

ITEM #

METRO STANDARD SA-DWG - ITEM LOCATION & USE REFERENCE

114

115

401

116

349, 401

117

401

118

401

119

401

120

401

121

401

122

WFSC ONLY

123

WFSC ONLY

124

WFSC ONLY

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS MASTER MATERIAL LIST USAGE REFERENCE	DATE: 03/2021
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MASTER MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01		DETROIT CLAMP ASSY	WABCO	9293-3007
02		AGC TANGENT SPAN HANGER	WABCO	19360-2000
03		GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04		GUY GRIP DEADEND	PREFORMED	CDE-3106
05		WIRE ROPE CLIP, 5/16"	CROSBY	G450
06		FRICTION TAPE, 3/4" (6 WRAPS)		
07		THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08		GUY STRAND	COPPERWELD	8M
09		BULL RING	WABCO	18567-2000
10		HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
11		7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6120
12		7/8 TRANSLITE STRAIN INSUL CL-EYE	WABCO	55339-6120
13		GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	506
14		GUY GRIP DEADEND	PREFORMED	CDE-3115
15		WIRE ROPE CLIP, 3/8"	CROSBY	G450
16		GUY STRAND	COPPERWELD	16M
17		THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
18		GUY STRAND, COVERED	COPPERWELD	8MI
19		GUY STRAND, COVERED	COPPERWELD	16MI
20		EYEBOLT	WABCO	11933-2000
21		7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6360
22		CLAMP STRAIN EYE	WABCO	10571-2000
23		7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6260
24		TROLLEY WIRE SUPPORT ASSY	WABCO	54962-3003
25		CURVE SEGMENT 8-12 DEG TYPE C	WABCO	22301-3014
		CURVE SEGMENT 13-27 DEG TYPE C	WABCO	22302-3005
		CURVE SEGMENT 28-47 DEG TYPE C	WABCO	22303-3005
26		TYPE PH-4 POS FEED SPAN HANGER	WABCO	54937-3002
27		TYPE PH-5 NEG FEED SPAN HANGER	WABCO	54936-3002
28		INSULATOR SPOOL	WABCO	16835-2000
29		TYPE TCL CLEVIS TIP 4/0	WABCO	54950-3002
30		TROLLEY SUPPORT-LARGE PIPE ARMS	WABCO	54940-4001
31		SPRING DETROIT CLAMP	WABCO	54959-3001
32		TYPE PH-5 NEG FEED SPAN HANGER	WABCO	54936-3001
33		TYPE PH-4 POS FEED SPAN HANGER	WABCO	54937-3001
34		TYPE T DOUBLE EAR STRAIN CLAMP	WABCO	17700-2000
35		CLAMP-INSUL LEAD WIRE	WABCO	19655-2000
36		7/8 TRANSLITE STRAIN INSUL W/ ADJUST END FITTINGS	WABCO	54980-6385
37		NO-BO SECTION INSUL	WABCO	55025-3001

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS MASTER MATERIAL LIST USAGE REFERENCE	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-099
					CHECKED: J. DAVIS			SHT NO: 1 OF 4
No.	REVISION	BY	APP'D	DATE				

MASTER MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
38		7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6200
39		5/8" SHACKLE	WABCO	13722-2000
40		7/8 TRANSLITE STRAIN INSUL CL-90	WABCO	54995-6120
41		H.S.P. FEEDER CLAMP ASSY, BRONZE	WABCO	19879-2000
42		FEEDER CLAMP, BRONZE	WABCO	19790-4004
43				
44		RUNNER, 6 FT TYPE C, 8 TO 12 DEG	WABCO	21375-2000
45		PLATE-STRAIN 5 TO 12 DEG	WABCO	20290-2000
46		SINGLE CURVE HANGER, TYPE A-2	WABCO	14072-2000
47		DOUBLE CURVE HANGER, TYPE A-2	WABCO	14073-2000
48		5/8" U-BOLT GALVANIZED	VARIES	VARIES
49		COMPRESSION CONNECTOR COPPER, LONG BARREL, TIN PLATED, FLARED	ANDERSON / SQUARE D	VHCL-2/0-12BNF
50		COMPRESSION CONNECTOR COPPER, LONG BARREL, TIN PLATED, FLARED	ANDERSON/ SQUARE D	VHCL-500-12BNF
51		MULTI-LOK TIES (18") NYLON COATED	BAND-IT	AE714
52		TUF NEOPRENE AIR HOSE SLEEVE 1.5" ID x 2.0625" OD (BLACK)	McMASTER-CARR	3 BRAID
53		CURVE RAIL (1° TO 5°, 2' LG)	K & M	851 B412/0
54		CURVE RAIL (5.5° TO 7.5°, 4' LG)	K & M	851 B412/1
55		PHILLYSTRAN (3/8")	PHILLYSTRAN INC	HPTG 6700I
56		PHILLYSTRAN BIG GRIP	PHILLYSTRAN INC	PLP 2755
57		FIBERGLASS REINFORCED PLASTIC (FRP) TUBE 5" DIA x 1/4"	STRONGWELL	EXTREN SERIES 525
58		TANGENT SPAN HANGER	K & M	C-1728-01
59		CONDUIT CLAMP WITH 2" MTG SCREW		
60		FEED SPAN CABLE, 500 KNM CU UNSHIELDED, 5 KV EPR WITH PVC JACKET		
61		GUY GUARD, 8 FT FOR USE ON 3/16" TO 1/2" STRAND	PREFORMED	PG 5518
62		POWER INSTALLED SCREW ANCHOR	CHANCE	E102-1219
63		POWER INSTALLED SCREW ANCHOR	CHANCE	C102-1260
64		POLE PLATE, 2 1/2" PIPE	JOSLYN	J0521
65		LAG SCREW, FETTER DRIVE, 1/2" x 4"	JOSLYN	J8754
66		END FITTING, 2 1/2" PIPE	COOPER POWER SYSTEM	DG5G1
67		CLOVERLEAF EPOXIROD STANDOFF	CHANCE	C653-1038
68		UNIVERSAL SERVICE CONNECTOR	BURNDY	KVSU34
69		SEALING BUSHING, TYPE KR WITH TYPE M CABLE SUPPORT, 2 1/2" CONDUIT	O-Z-GEDNEY	KR250 & RPLG-2001-1

DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS MASTER MATERIAL LIST USAGE REFERENCE	DATE: 03/2021
DRAWN: L. ANDERSON			STD DET NO: SA-099
CHECKED: J. DAVIS			SHT NO: 2 OF 4

MASTER MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
70		EYEBOLT, 5/8" x 6" WITH 2 NUTS & LOCKWASHER		
71		WATERTIGHT STR STRAIN RELIEF CONN, 1 1/2" CONDUIT	O-Z-GEDNEY	SR 15012 H.D. GALV
72		INDUCTIVE CONTROL SYSTEM RECEIVER INDUCTIVE CONTROL SYSTEM ANTENNA	UNITRAC UNITRAC	320100 -16X 320310 - 4X
73		ANCHOR SHACKLE	JOSLYN	J2742
74		4' x 8' x 1/2" EXTERIOR PLYWOOD		
75		U-BOLT TO FIT 4/0 TROLLEY WIRE		
76		4/0 STRANDED INSUL CABLE		
77		ELECT WARNING TAPE, 6" YELLOW	BRADY	UT 20-Y6
78		CONNECTOR, PARALLEL CLAMP	BURNDY	QPX342C
79		5/8"-11 UNC x 3/8" STUD		
80		3/4" x 0.03" SS BANDING TYPE 201	BAND-IT	C206
81		CONNECTOR, SERVICE, SPLIT BOLT	BURNDY	KS20
82		2 1/2" DIA ASTM A53 GRB STD WT GALV STEEL PIPE		
83		MOLDING, PLASTIC, GROUND WIRE, 1/2" X 1/16" X 8'	JOSLYN	PM128
84		SCHED 40 PVC, GREY, SPLIT		
85		1000 VOLT DC ARRESTER, 907 MCOV	IMPULSE	P/N 1057
86		GALV RIGID STEEL CONDUIT		
87		5/8"-11 UNC x 6" THREADED ROD, GALV ASTM A36		
88		5/8"-11 UNC HVY HEX JAM NUT GALV ASTM A563 GRA		
89		11/16" LOCKWASHER		
90		HEAVY PIPE CLAMP, GALV	GRINNELL	FIG 216
91		STAPLES, ROLLED POINT, GALV, 2" x 1/2" x 0.162"	JOSLYN	J156
92		ANGLE CLAMP, DUCTILE IRON	ANDERSON/ SQUARE D	82860-2000
93		STAPLES, ROLLED POINT, GALV, 1 3/4" x 1/4" x 0.148"	JOSLYN	J1673
94		5/8" OVAL EYEBOLT WITH NUT	JOSLYN	J94XX
95		3/4" OVAL EYEBOLT WITH NUT	JOSLYN	J95XX
96		SQ CURVED WASHER 3" x 3" x 1/4", 11/16" DIA	JOSLYN	J113
97		3/4" MACHINE BOLT	JOSLYN	J89XX
98		GUY HOOK, 3/4"	STANLEY FLAGG	P133AX

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS MASTER MATERIAL LIST USAGE REFERENCE	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-099
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			3 OF 4

[illegible]

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS MASTER MATERIAL LIST USAGE REFERENCE	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-099
No.	REVISION	BY	APP'D	DATE	CHECKED: J. DAVIS			SHT NO: 4 OF 4

STANDARD #SYMBOLSDESCRIPTION

SA-202 & SA-214



EXISTING WOOD POLE



INSTALL WOOD POLE



REMOVE WOOD POLE



EXISTING DIRECT EMBEDMENT STEEL POLE



INSTALL DIRECT EMBEDMENT STEEL POLE



REMOVE DIRECT EMBEDMENT STEEL POLE



EXISTING ANCHOR BASE STEEL POLE



INSTALL ANCHOR BASE STEEL POLE



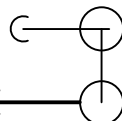
REMOVE ANCHOR BASE STEEL POLE



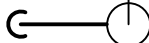
EXISTING BUILDING EYEBOLT



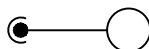
INSTALL NEW BUILDING EYEBOLT



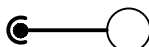
EXISTING DOWN GUY ON POLE



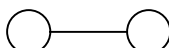
INSTALL DOWN GUY ON POLE



EXISTING SIDEWALK GUY ON POLE



INSTALL SIDEWALK GUY ON POLE



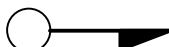
EXISTING HEAD GUY, POLE TO POLE



INSTALL HEAD GUY, POLE TO POLE



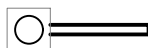
EXISTING POLE BRACKET



INSTALL WOOD POLE BRACKET



INSTALL STEEL POLE BRACKET



TRAFFIC SIGNAL MAST ARM

SA-107 & SA-221

SA-231

SA-232

SA-233

SA-351 & SA-352

SA-341 & SA-342

DESIGNED:

DPG/AW

DRAWN:

L. ANDERSON

CHECKED:

J. DAVIS

APPROVED:

P. ENG

**King County
METRO**METRO TRANSIT CAPITAL DIVISION
TROLLEY STANDARD DETAILS
**SYMBOLS
AND
ABBREVIATIONS**

DATE:

03/2021

STD DET NO:

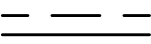
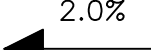
SA-100

SHT NO:

1 OF 3

SYMBOLS

DESCRIPTION

	PORCELAIN STRAIN INSULATOR
	ADJUSTMENT POINT (AT INSULATOR)
	TROLLEY WIRE— — —NEGATIVE (DOUBLE LINE)— — —POSITIVE
	TROLLEY WIRES, NEGATIVE AND POSITIVE (SINGLE LINE)
	STREET GRADE (DOWNHILL SLOPE)
	TROLLEY STANDARD DRAWING NUMBER
	BULLRING
	INDUCTIVE CONTROL ENCLOSURE ON POLE
	INDUCTIVE CONTROL ENCLOSURE ON WALL

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS SYMBOLS AND ABBREVIATIONS	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:	 King County METRO		STD DET NO:
					L. ANDERSON			SA-100
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			2 OF 3

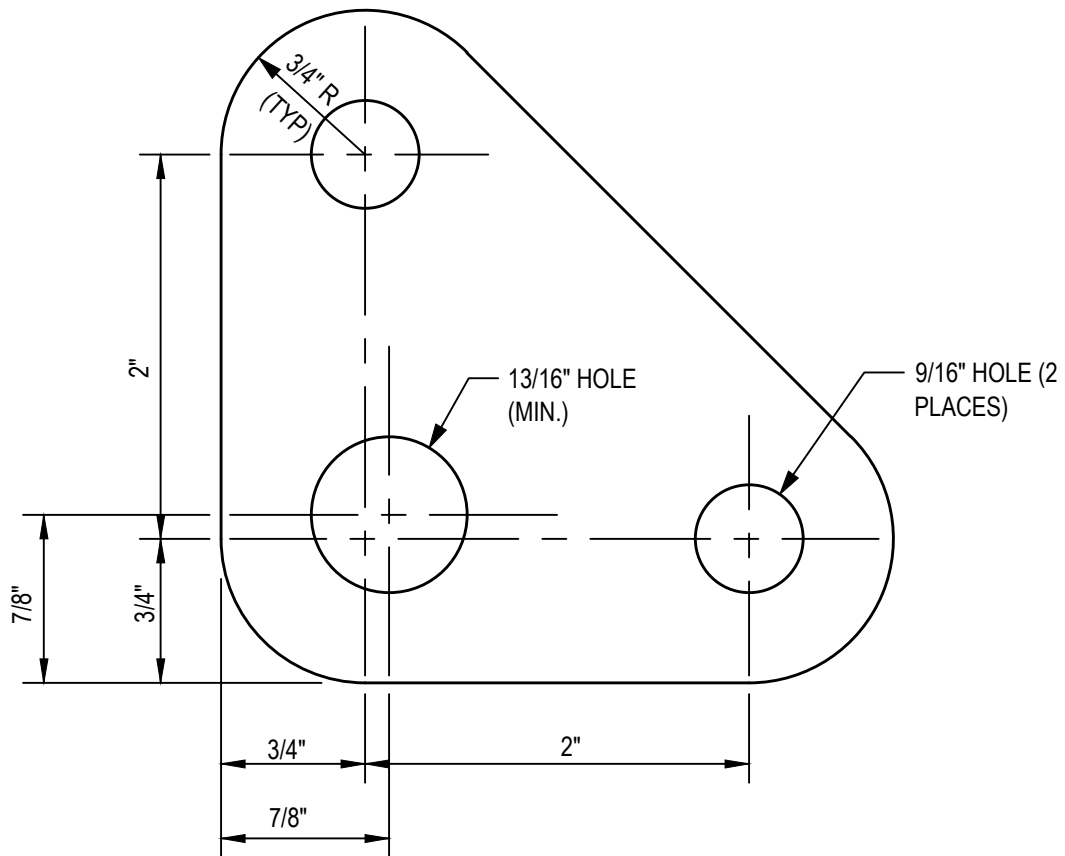
ABBREVIATIONS

DESCRIPTIONS

BEB	BUILDING EYEBOLT
CS	CURVE SEGMENT
DCH	DOUBLE CURVE HANGER
LHI	LEFT HAND INDUCTIVE SWITCH
RHI	RIGHT HAND INDUCTIVE SWITCH
LHD	LEFT HAND DIRECTIONAL SWITCH
RHD	RIGHT HAND DIRECTIONAL SWITCH
LHT	LEFT HAND TRAILING SWITCH
RHT	RIGHT HAND TRAILING SWITCH
R XO	RIGID CROSSOVER
XOCS	RIGID CROSSOVER AND CURVE SEGMENT ASSEMBLY
C, SCL	SEATTLE CITY LIGHT
L	LUMINAIRE, SED
M	METRO
S	TRAFFIC SIGNAL, SED
T	TELEPHONE
V	CABLE TV
8M, 16M	COPPERWELD GUY WIRE
8MI, 16MI	COPPERWELD GUY WIRE, COVERED
IS.	INSULATION IN STRAIGHT
IC.	INSULATION IN CURVE
RS	RESET TO STRAIGHT
RC	RESET TO CURVE

PRESENTED IN VARIOUS
JOINT USE POLE
COMBINATIONS

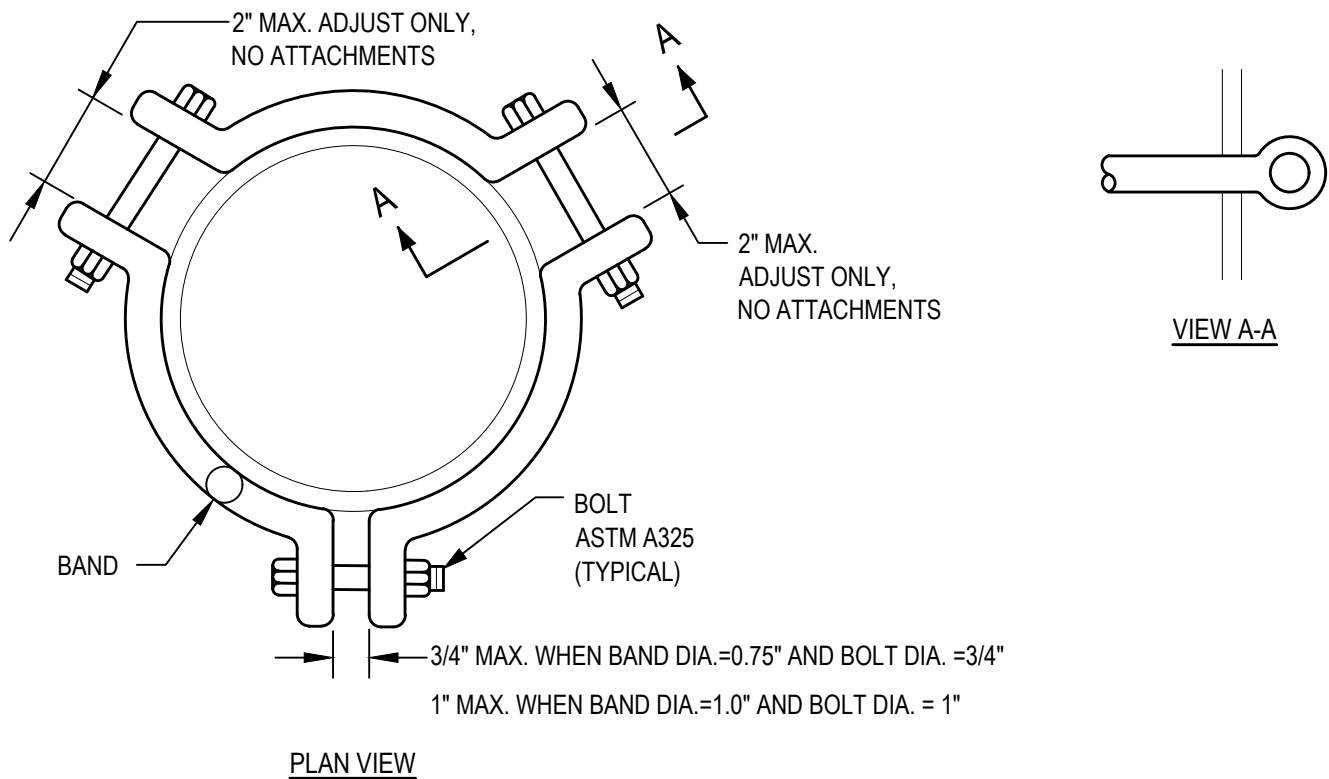
					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS SYMBOLS AND ABBREVIATIONS	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-100
					CHECKED:		SHT NO:	
No.	REVISION	BY	APP'D	DATE	J. DAVIS		3 OF 3	



MATERIAL: ASTM A36 1/2" STEEL PLATE
HOT DP GALVANIZE AFTER FABRICATION.

NOTE: USED ON DOUBLE FEEDER SPANS
AND DEADENDS.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STRAIN PLATE	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-101
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 1



COLLAR MAX LOAD = 4000 LB			
DIAMETER RANGE	POLE SIZE		BAND & BOLT DIA.
	BUTT Ø	ATT HT	
4.25" - 5.5"	8"	19' - 24'	.75"
6" - 7.25"	10"	19' - 29'	.75"
7" - 8.25"	11"	19' - 29'	.75"
8" - 9.25"	12"	19' - 29'	.75"
9" - 10.25"	13"	19' - 29'	.75"
10" - 11.25"	14"	19' - 29'	.75"
11" - 12.25"	15"	19' - 29'	.75"

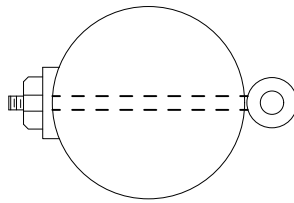
COLLAR MAX LOAD = 7000 LB			
DIAMETER RANGE	POLE SIZE		BAND & BOLT DIA.
	BUTT Ø	ATT HT	
9" - 10.25"	13"	19' - 29'	.75"
10" - 11.25"	14"	19' - 29'	1"
11" - 12.25"	15"	19' - 29'	1"

NOTES:

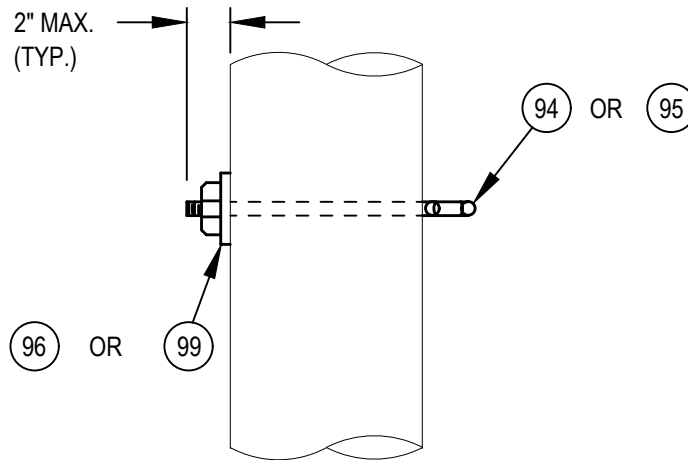
- CONTACT KORTICK MFG CO AT: 5600 3RD ST, SAN FRANCISCO, CA. (415) 822-6660
- MAXIMUM NUMBER OF ATTACHMENTS PER COLLAR IS ONE, UNLESS APPROVED BY THE ENGINEER.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
		DESIGNED: DPG/AW	APPROVED: P. ENG	DATE: 03/2021
		DRAWN: L. ANDERSON		STD DET NO: SA-102
		CHECKED: J. DAVIS		SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE



PLAN



WOOD POLE EYEBOLT

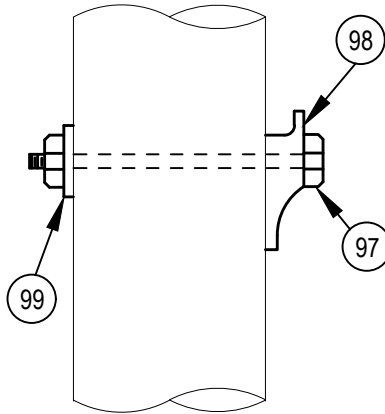
NOTES:

- WOOD POLE EYEBOLTS SHALL HAVE A MINIMUM DIAMETER OF 5/8". 5/8" DIAMETER EYEBOLTS SHALL BE USED FOR WOOD POLE ATTACHMENT OF ALL SINGLE 8M TANGENT WORK SPANS. 3/4" DIAMETER EYEBOLTS SHALL BE USED FOR ALL OTHER WOOD POLE ATTACHMENTS.
- MULTIPLE CABLE ATTACHMENTS TO 3/4" DIAMETER EYEBOLTS SHALL BE LIMITED TO A RESOLVED (RESULTANT) DESIGN TENSION OF 5000 LBS @ 60 DEGREES F.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
94	*	5/8" OVAL EYEBOLT W/ NUT	JOSLYN	J94XX
95	*	3/4" OVAL EYEBOLT W/ NUT	JOSLYN	J95XX
96	*	SQ CURVED WASHER 3"x3"x 4 ", 1-11/16" DIA	JOSLYN	J113
99	*	SQ CURVED WASHER 3"x3"x 4 ", 1-13/16" DIA	JOSLYN	J6823

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS WOOD POLE EYEBOLT ASSEMBLY	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-103
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				

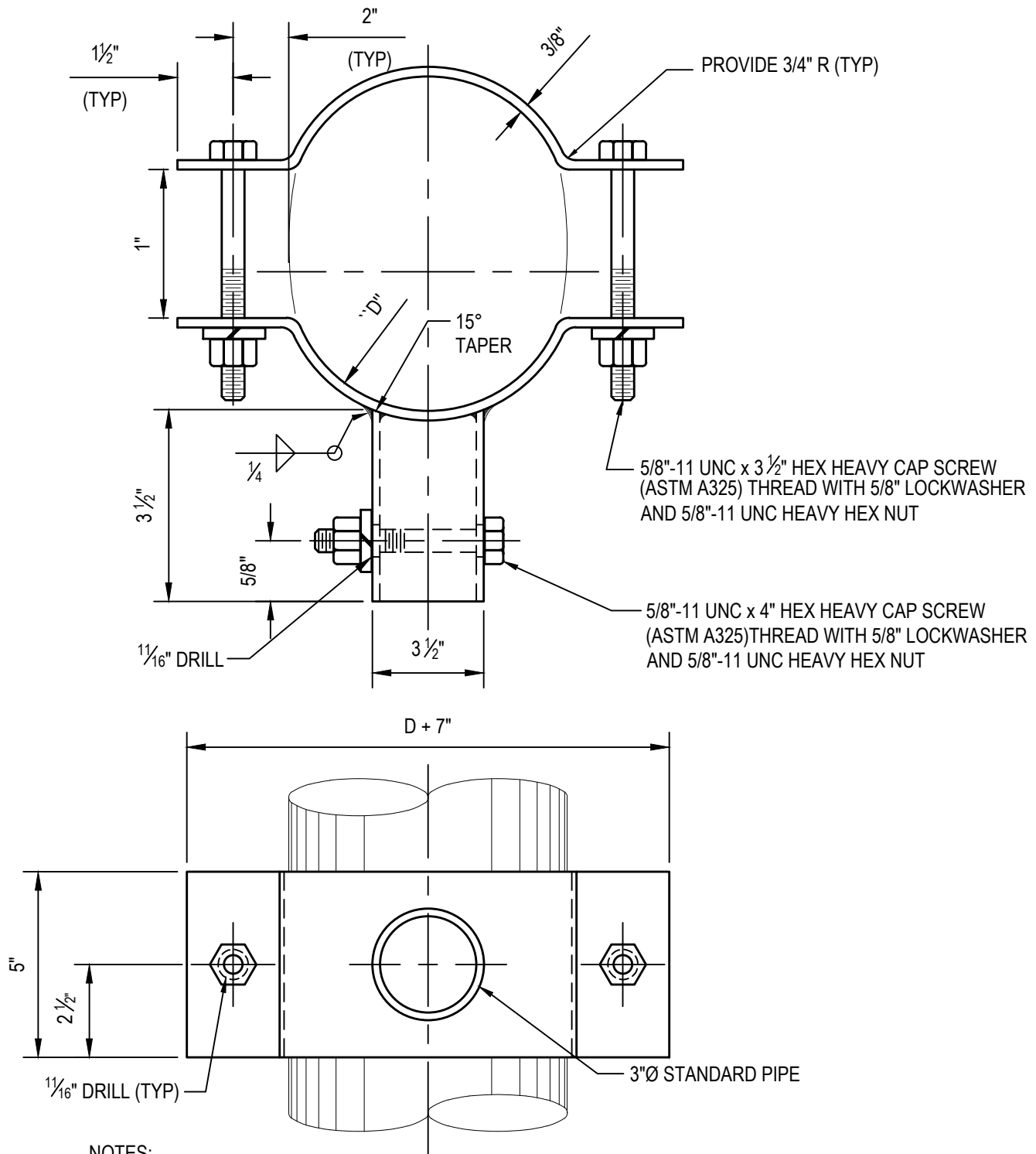


WOOD POLE DOWN GUY
ATTACHMENT

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
97	1	3/4" MACHINE BOLT	JOSLYN	J89XX
98	1	GUY HOOK, 3/4"	JOSLYN	P-133AX
99	1	SQ CURVED WASHER 3"x3" x 1/4", 13/16" DIA	JOSLYN	J6823

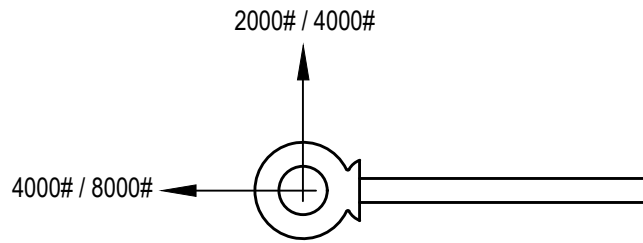
					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS WOOD POLE DOWN GUY ASSEMBLY	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-104
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				



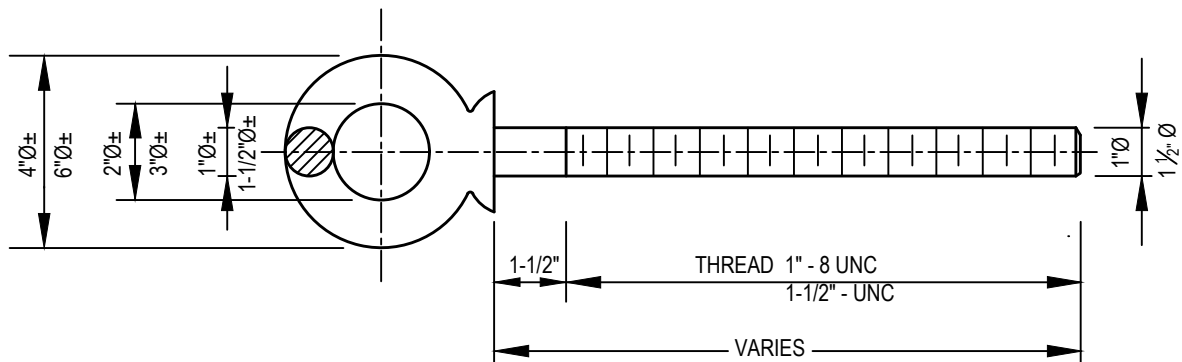
NOTES:

1. DIMENSION "D" TO BE FIELD MEASURED AT DESIGN ATTACHMENT HEIGHT. .
2. MATERIAL FOR COLLARS SHALL BE ASTM A-36 STEEL. HOT DIP GALVANIZE METAL AFTER FABRICATION.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS COMPRESSION POLE END CAP POLE COLLAR	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-106
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 1



ALLOWABLE DEAD LOAD AT 60°.



GENERAL NOTES:

- 1 EYEBOLT SHALL BE 1" DROP FORGED, STAINLESS STEEL, SHOULDER PATTERN; MADE FROM TYPE 316 STAINLESS STEEL.
- 2 EYEBOLT SHALL BE MCGRAW-EDISON, CAMPBELL CHAIN M-29-ST 640-5015, McMaster-CARR 3032T49. NUMBERS ARE FOR 6" LENGTH; OTHER LENGTHS ARE SPECIAL.
- 3 MATERIAL YIELD STRESS SHALL BE 30,000 PSI MIN. TENSILE STRESS SHALL BE 75,000 PSI MIN.

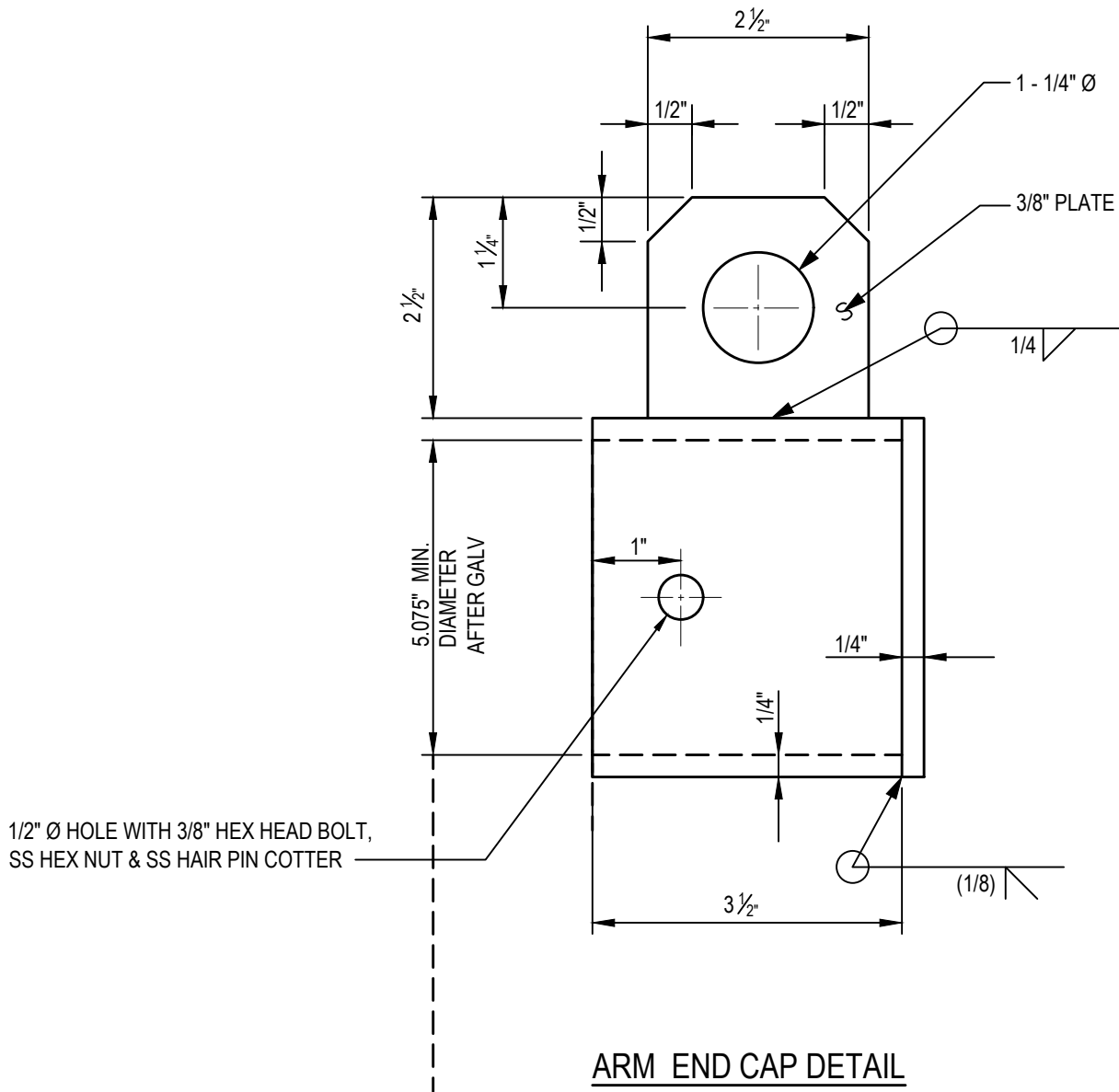
DESIGN NOTES:

1. THE DEAD LOAD + LIVE LOAD IS 2 TIMES THE ALLOWABLE DEAD LOAD AT 60°.
2. THE BREAKING LOAD IS 4 TIMES THE ALLOWABLE DEAD LOAD AT 60°.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STAINLESS STEEL EYEBOLT	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-107
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 1



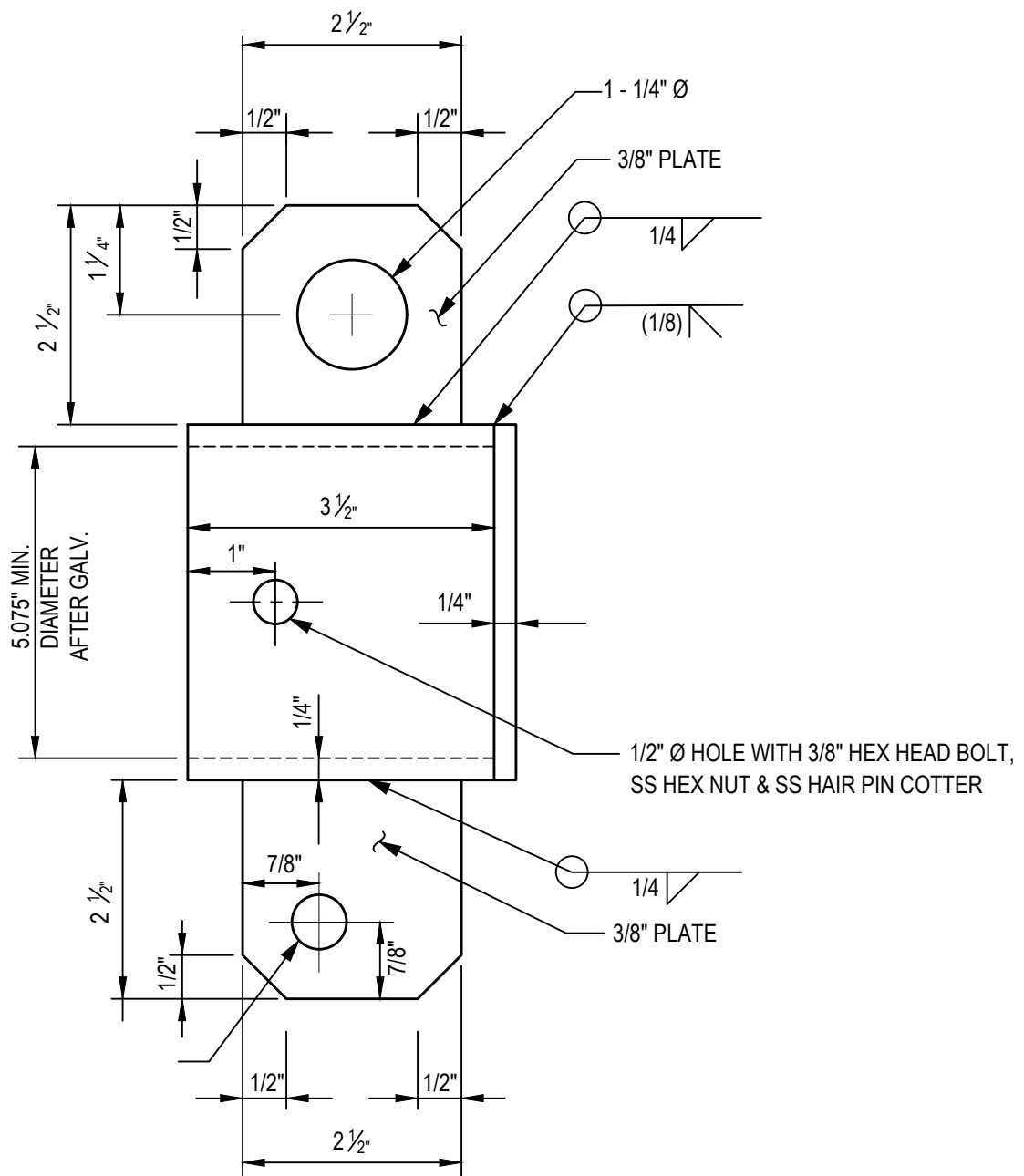
1. GALVANIZE AFTER FABRICATION.



NOTES:

1. GALVANIZE AFTER FABRICATION.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-109
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 1

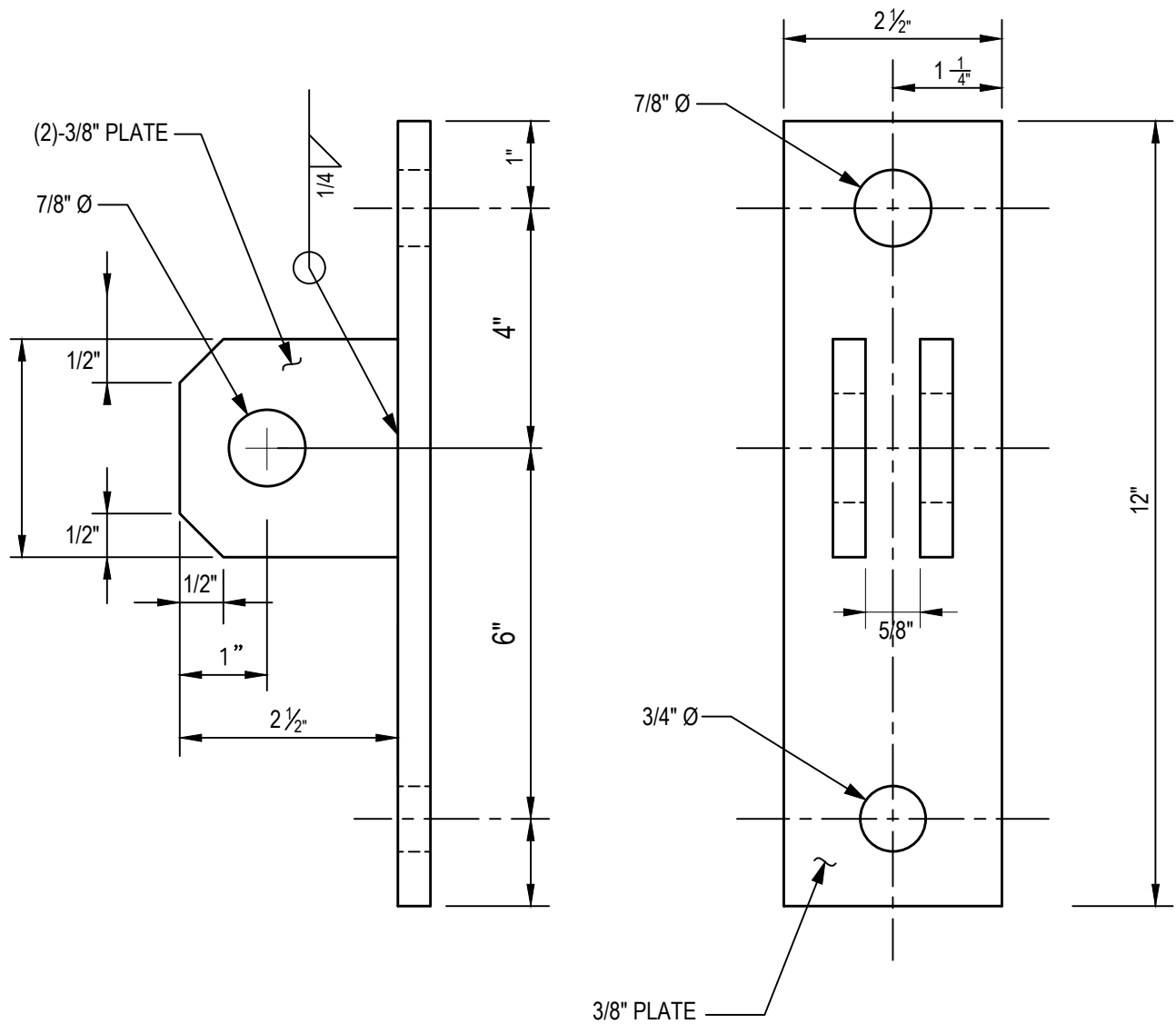


UNDERSLING END CAP DETAIL

NOTES:

1. GALVANIZE AFTER FABRICATION.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS BRACKET ARM UNDERSLING END CAP	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-110
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				

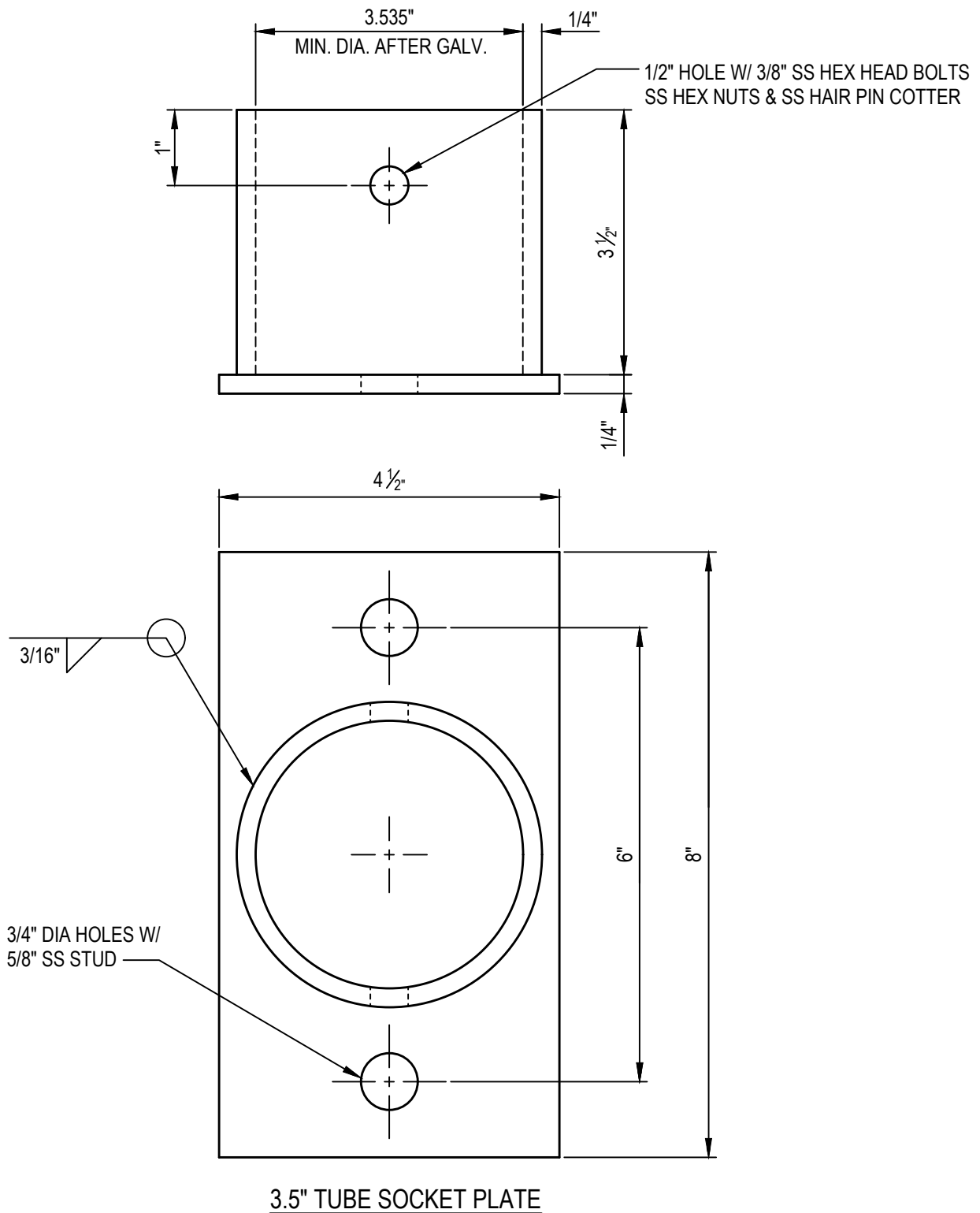


WOOD POLE
MOUNTING BRACKET DETAIL

NOTES:

1. GALVANIZE AFTER FABRICATION.

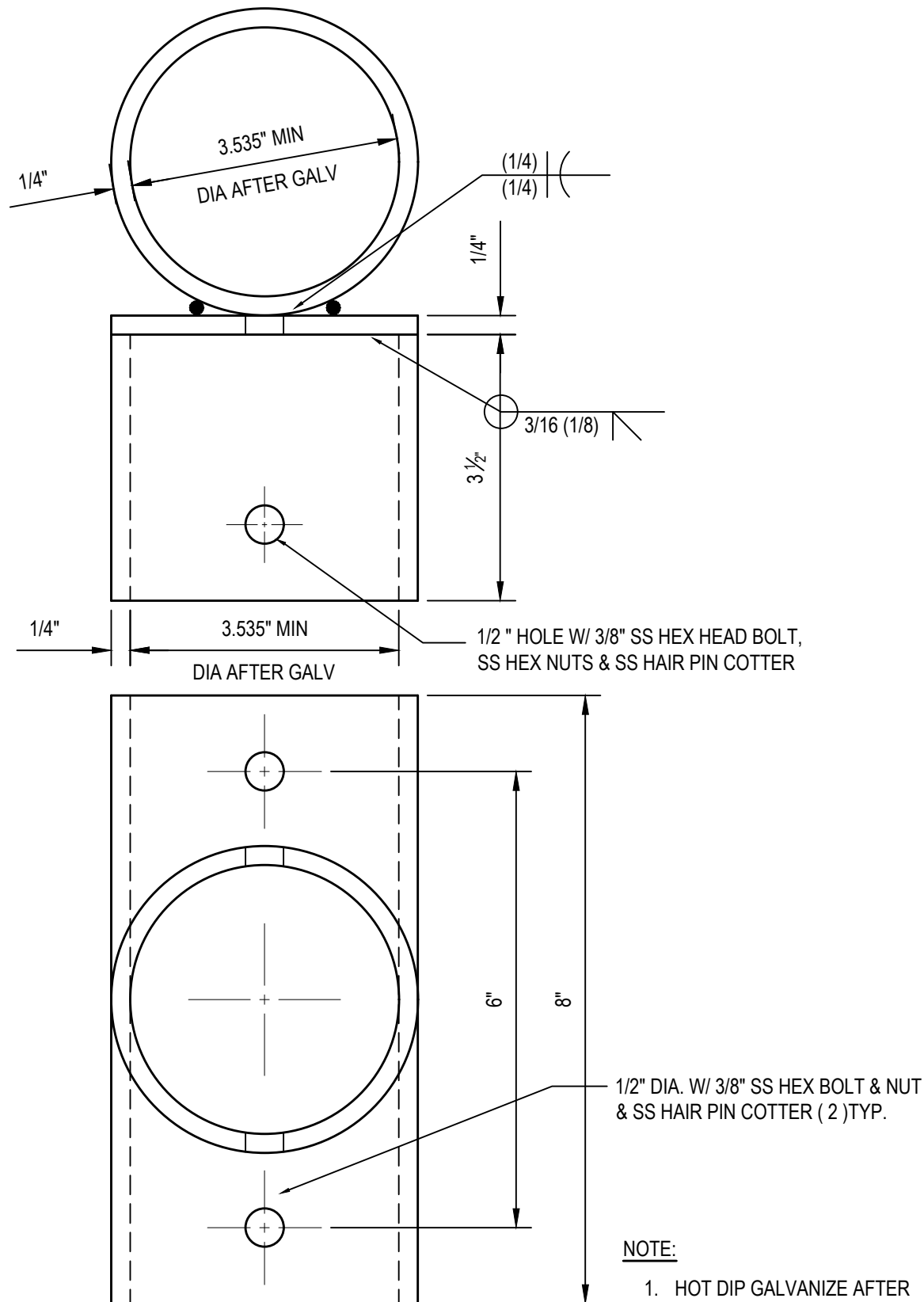
					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS WOOD POLE MOUNTING BRACKET	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-111
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				



NOTES:

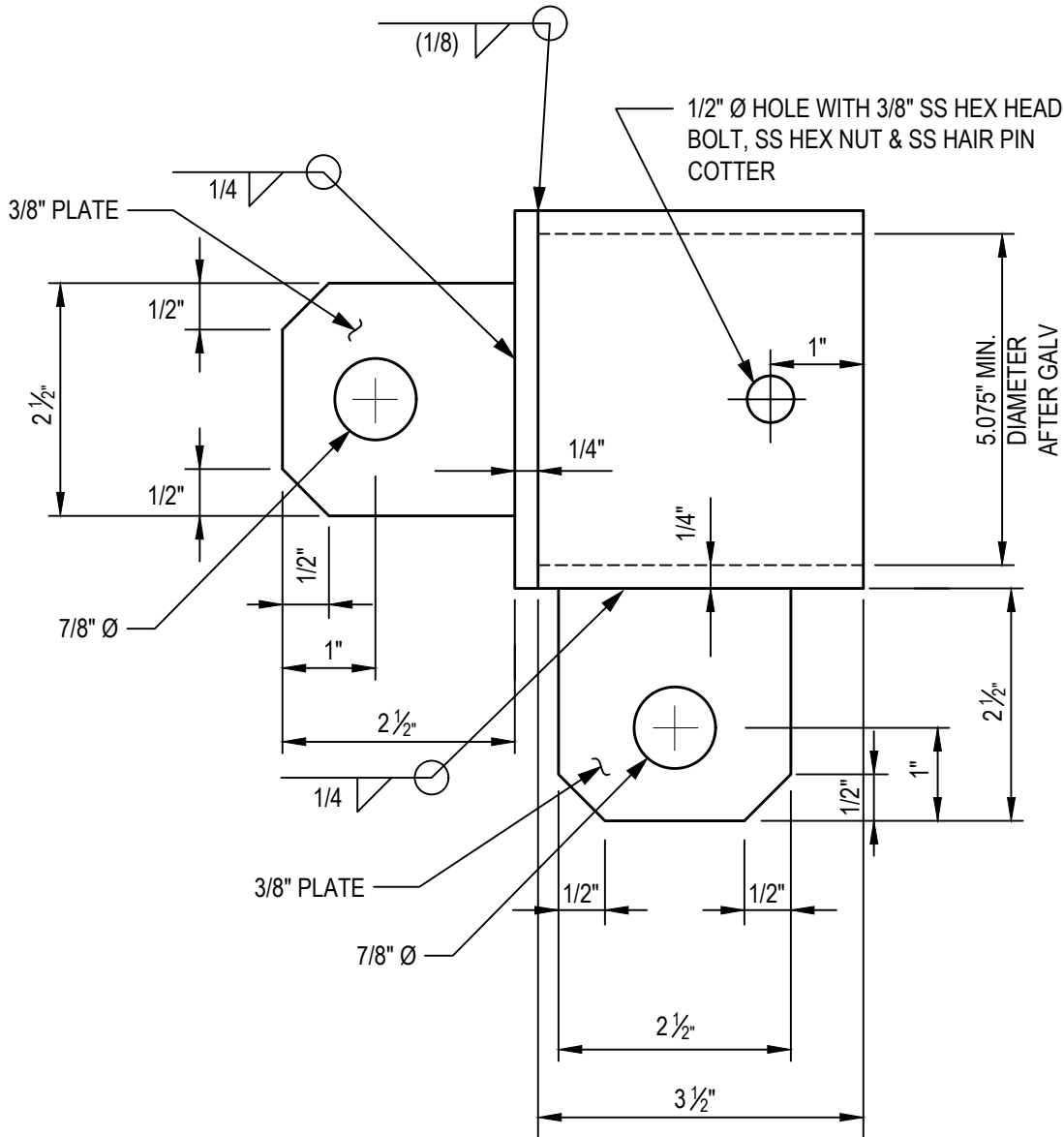
- HOT DIP GALVANIZE AFTER FABRICATION.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS 3.5" TUBE SOCKET PLATE	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-112
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				



3.5" TUBE TEE SLIPFIT & SOCKET

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS 3.5" TUBE TEE SLIPFIT & SOCKET	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-113
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				

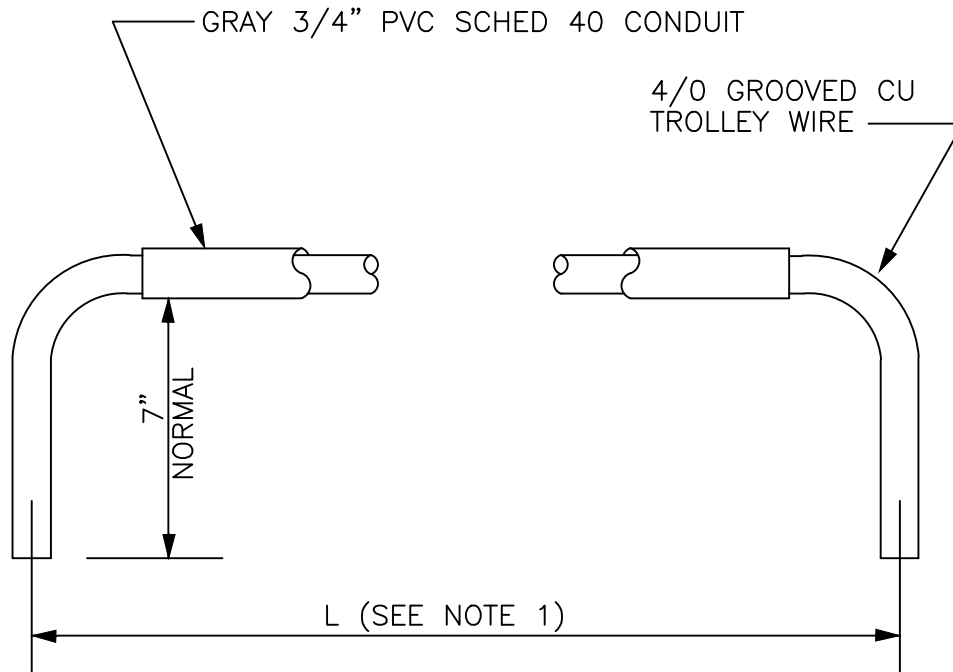


POLE END CAP WITH BOTTOM TAB DETAIL

NOTE:

1. HOT DIP GALVANIZE AFTER FABRICATION

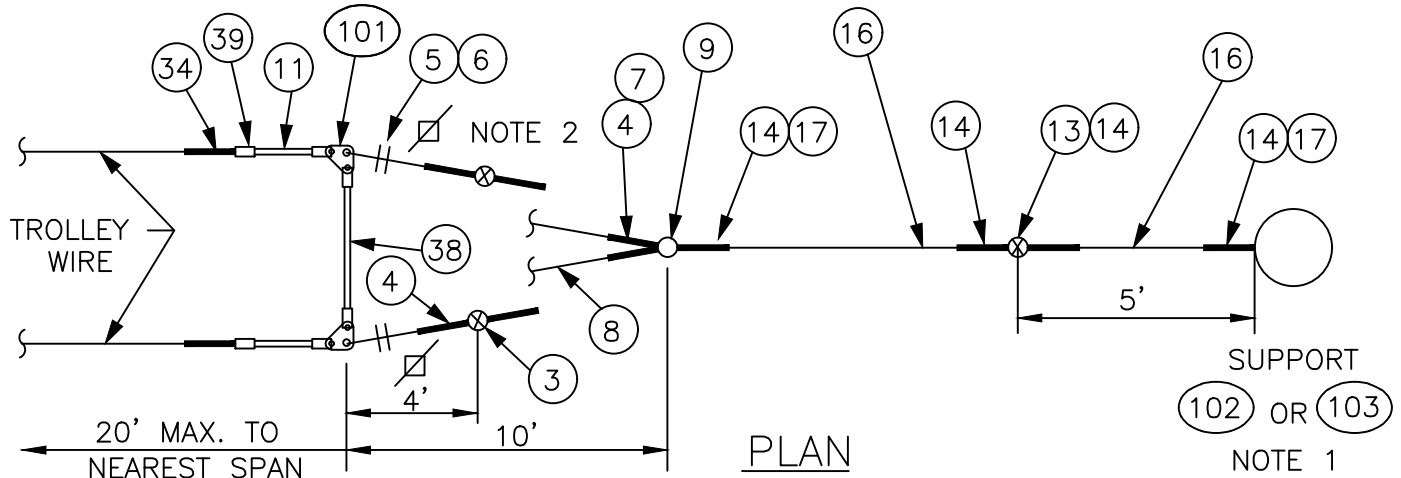
					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS BRACKET ARM POLE END CAP WITH BOTTOM TAB	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-114
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 1



NOTES:

1. JUMPER WIRE AND ASSOCIATED INSULATING SLEEVE SHALL BE FIELD CUT TO LENGTH AS REQUIRED FOR EACH SPECIAL WORK DEVICE.

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS SPECIAL WORK INSULATED JUMPER ASSEMBLY	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-151
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 1



DEAD END ASSEMBLY (A)

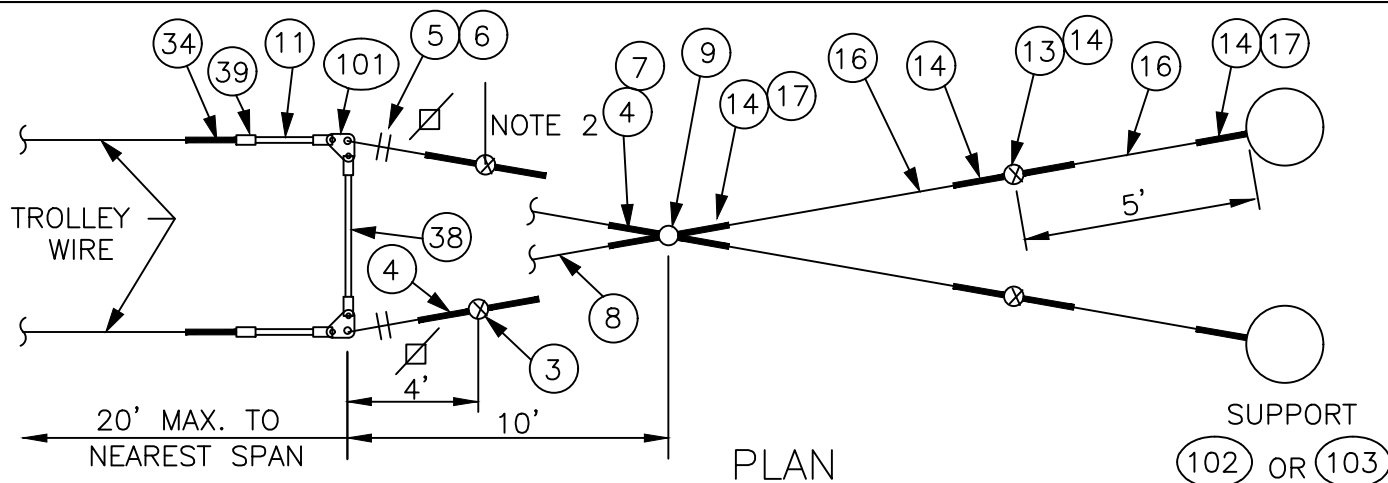
NOTES

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS SHOWN ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "☒". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	2	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	6	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	2	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
09	1	BULL RING	WABCO	18567-2000
11	2	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6120
13	1	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	506
14	4	GUY GRIP DEADEND	PREFORMED	CDE-3115
16	VARIES	GUY STRAND	COPPERWELD	16M
17	2	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
34	2	TYPE T DOUBLE EAR STRAIN CLAMP	WABCO	17700-2000
38	1	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6200
39	2	5/8" SHACKLE	WABCO	13722-2000
101	2	STRAIN PLATE	METRO STD	SA-101
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TROLLEY WIRE DEADEND ASSEMBLY	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-152
					CHECKED: J. DAVIS			SHT NO: 1 OF 2
No.	REVISION	BY	APP'D	DATE				



DEAD END ASSEMBLY (B)

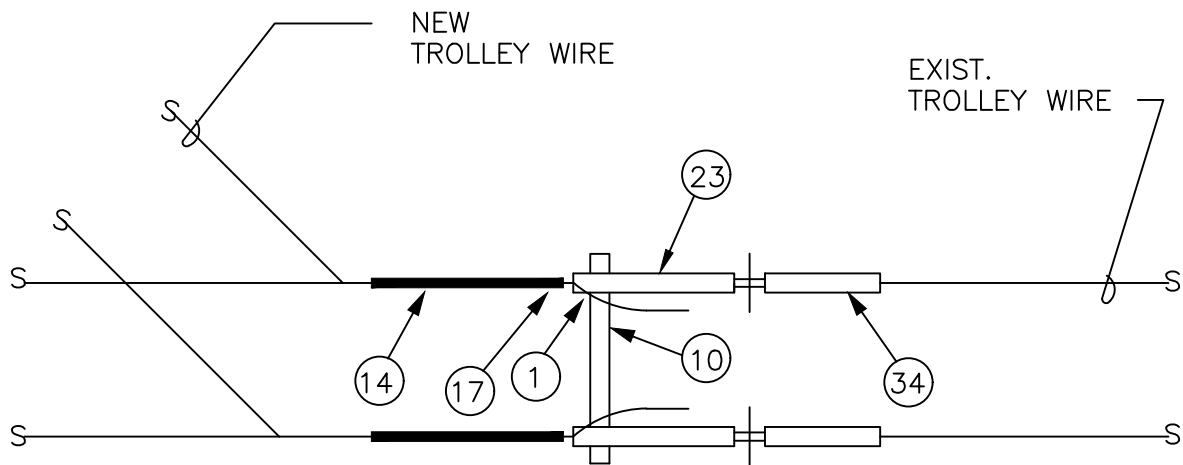
NOTES

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS SHOWN ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "X". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.

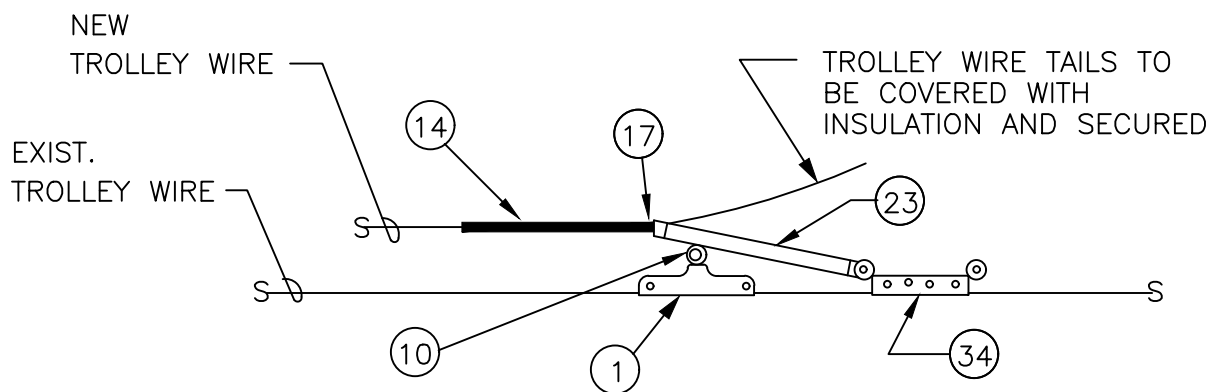
MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	2	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	6	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	2	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
09	1	BULL RING	WABCO	18567-2000
11	2	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6120
13	2	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	506
14	8	GUY GRIP DEADEND	PREFORMED	CDE-3115
16	VARIES	GUY STRAND	COPPERWELD	16M
17	2	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
34	2	TYPE T DOUBLE EAR STRAIN CLAMP	WABCO	17700-2000
38	1	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6200
39	2	5/8" SHACKLE	WABCO	13722-2000
101	2	STRAIN PLATE	METRO STD	SA-101
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:	 King County METRO		STD DET NO:
					L. ANDERSON			SA-152
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS		TROLLEY WIRE DEADEND ASSEMBLY	2 OF 2



PLAN



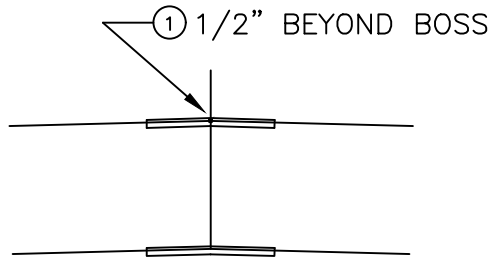
ELEVATION

SCALE: NONE

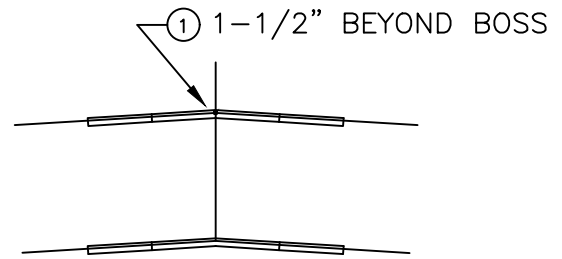
MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	2	DETROIT CLAMP ASSY	WABCO	19293-3007
10	1	HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
14	2	GUY GRIP DEADEND	PREFORMED	CDE-3115
17	2	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
23	2	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6260
34	2	TYPE T DOUBLE EAR STRAIN CLAMP	WABCO	17700-2000

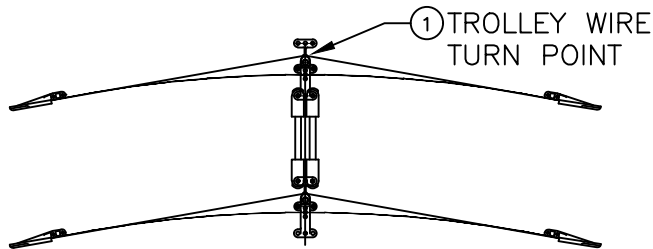
					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STAGING DEADEND ASSEMBLY	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-153
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				



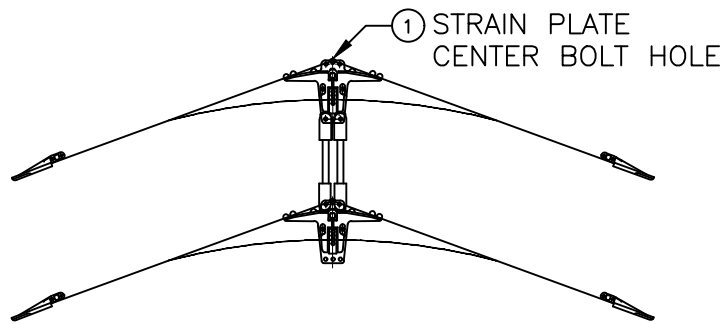
1°-5° CURVE RAIL



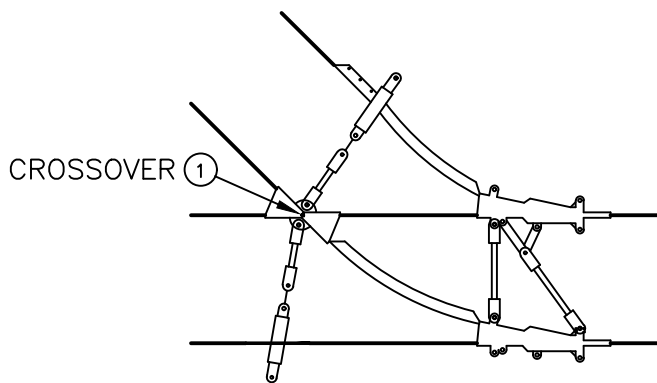
5.5°-7.5° CURVE RAIL



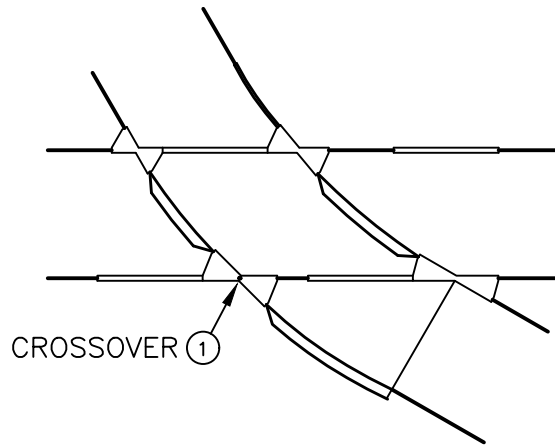
8°-12° & 13°-27° CURVE SEGMENT



28°-47° CURVE SEGMENT



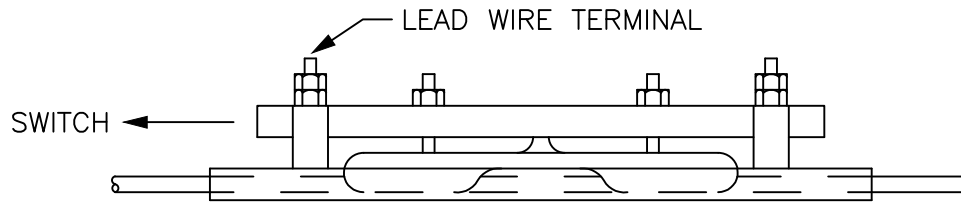
SWITCH OR TRAILING FROG



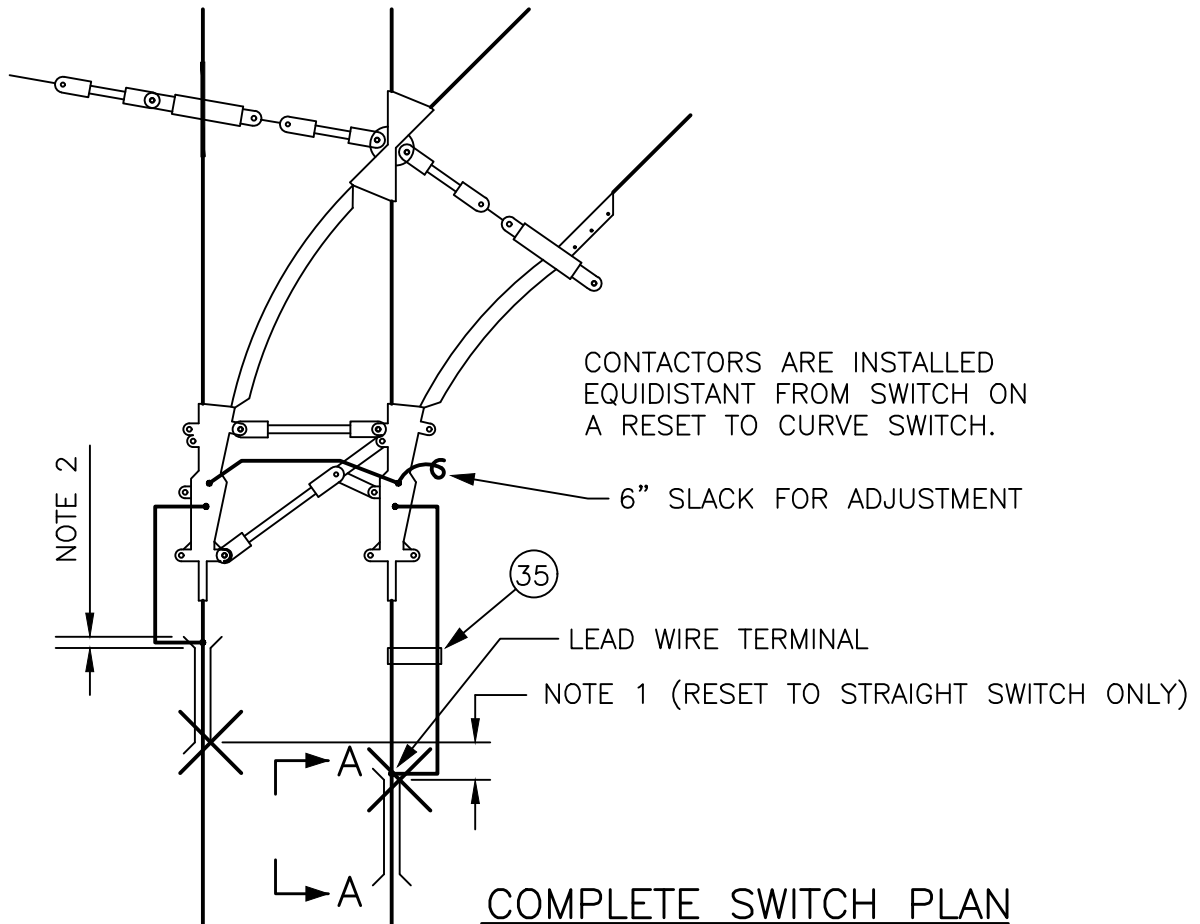
CROSSOVER/CURVE SEGMENT

① DEVICE REFERENCE POINT

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS SPECIAL WORK DEVICE REFERENCE POINT LOCATIONS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-161
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 1



CONTACTOR ELEVATION A-A



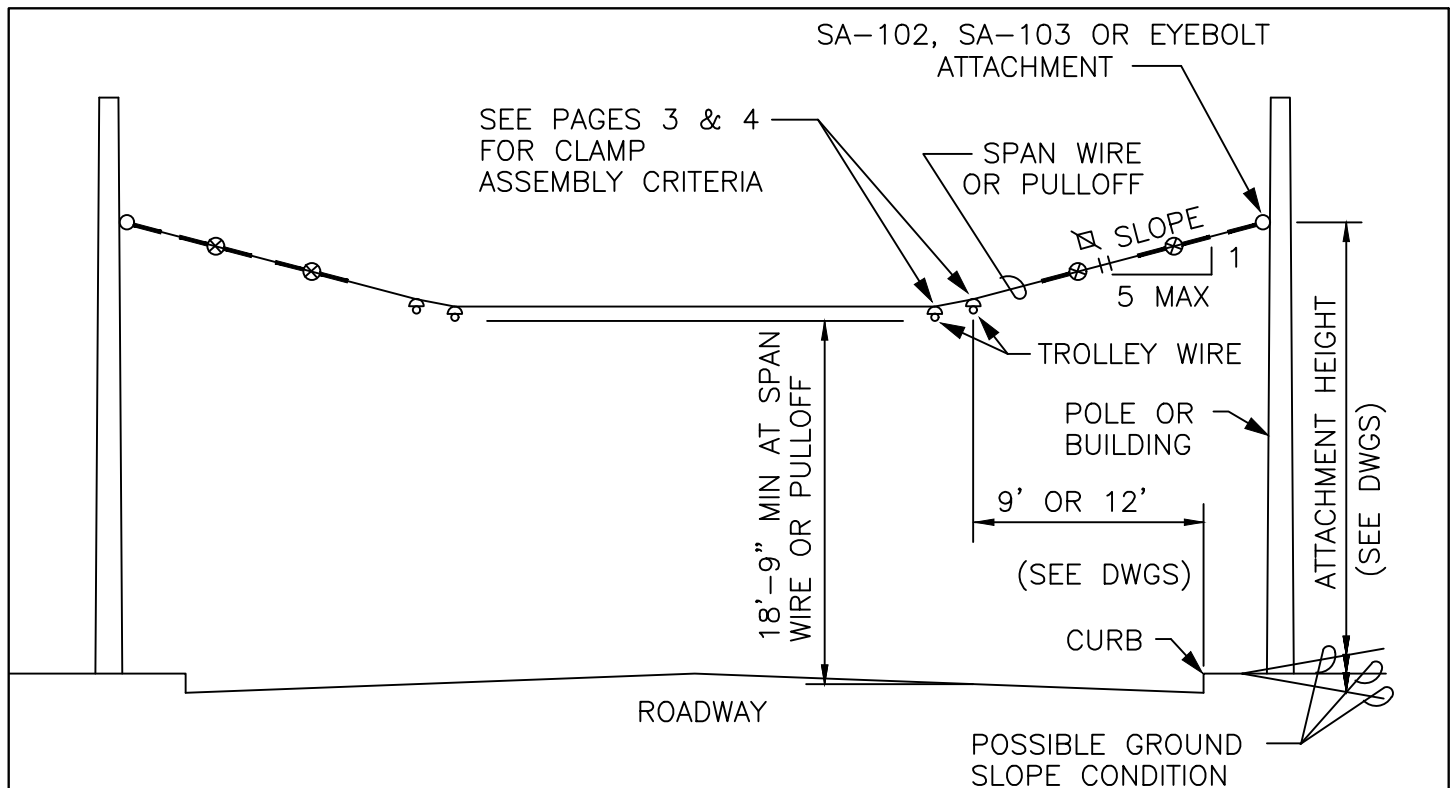
COMPLETE SWITCH PLAN

NOTES:

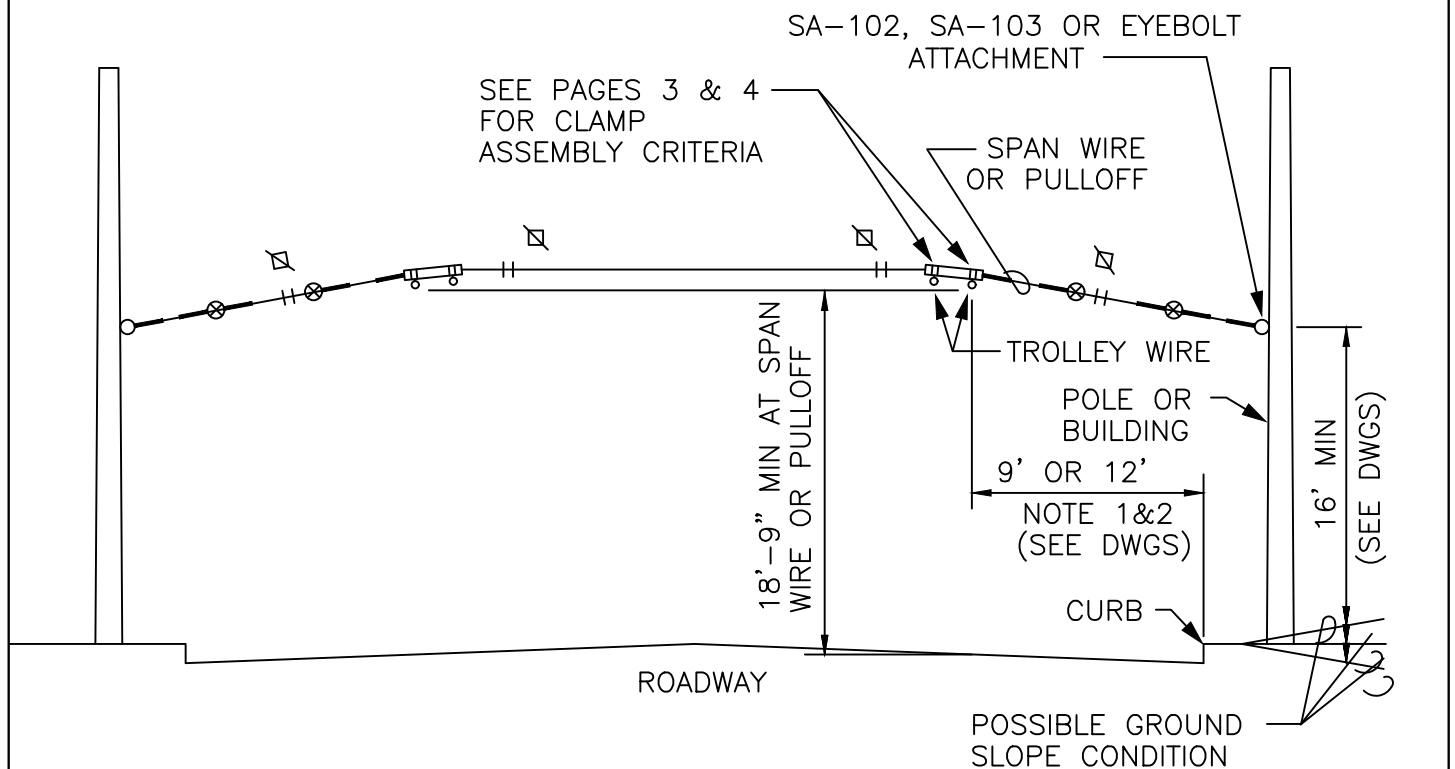
1. PROVIDE A 4-1/2" INTERVAL BETWEEN OPPOSITE POLARITY CONTACTORS. MEASURE FROM POINT OF CONTACT WITH TROLLEY SHOE AND CONTACTOR.
2. PROVIDE A 1" OVERLAP BETWEEN CONTACTOR AND END OF SWITCH TROLLEY WIRE CLAMP.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
35	AS REQD	CLAMP, INSUL LEAD WIRE	WABCO	19655-2000
		DESIGNED: DPG/AW		DATE: 03/2021
		DRAWN: L. ANDERSON		STD DET NO: SA-163
		CHECKED: J. DAVIS		SHT NO: 1 OF 1
No.	REVISION	BY APP'D DATE		

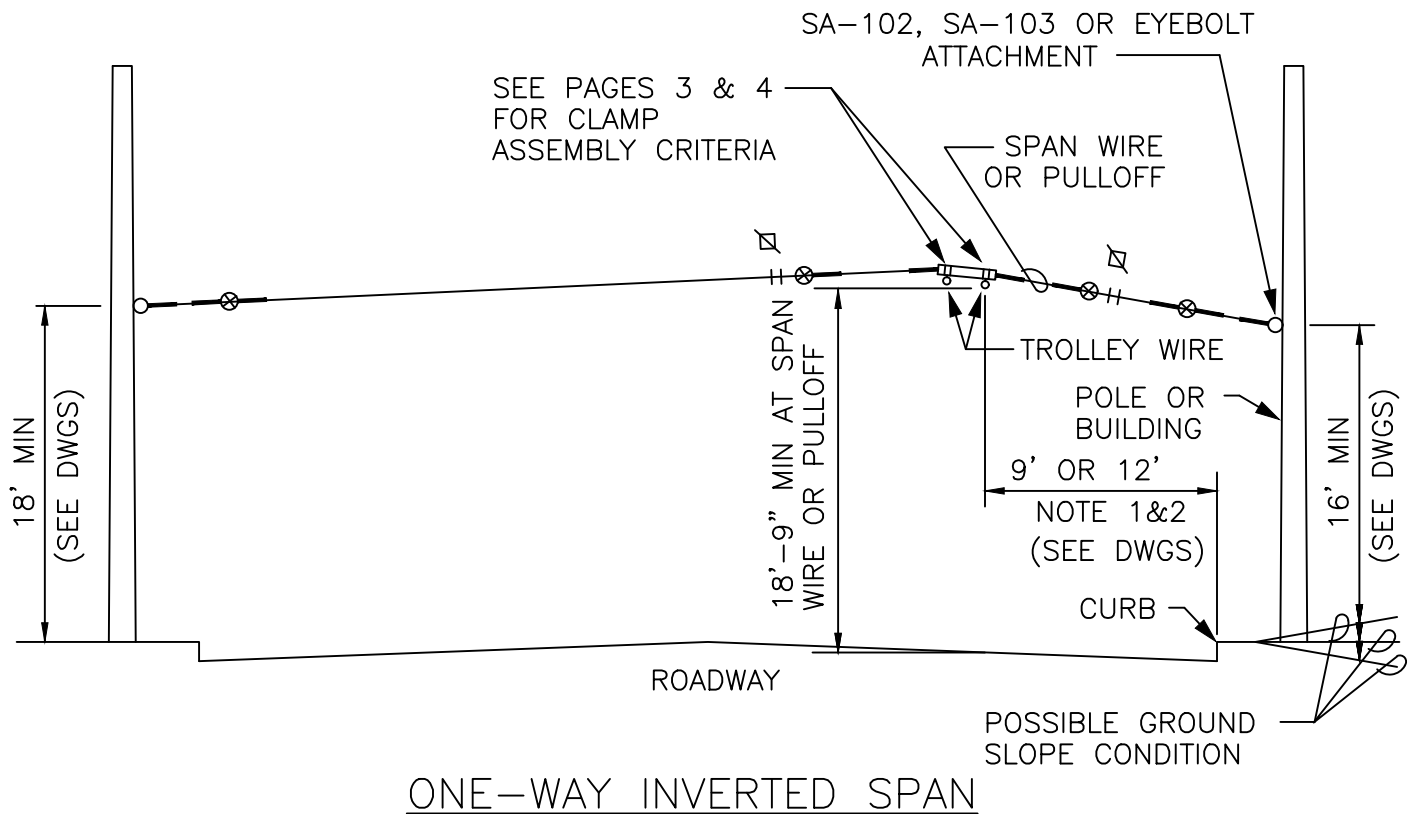
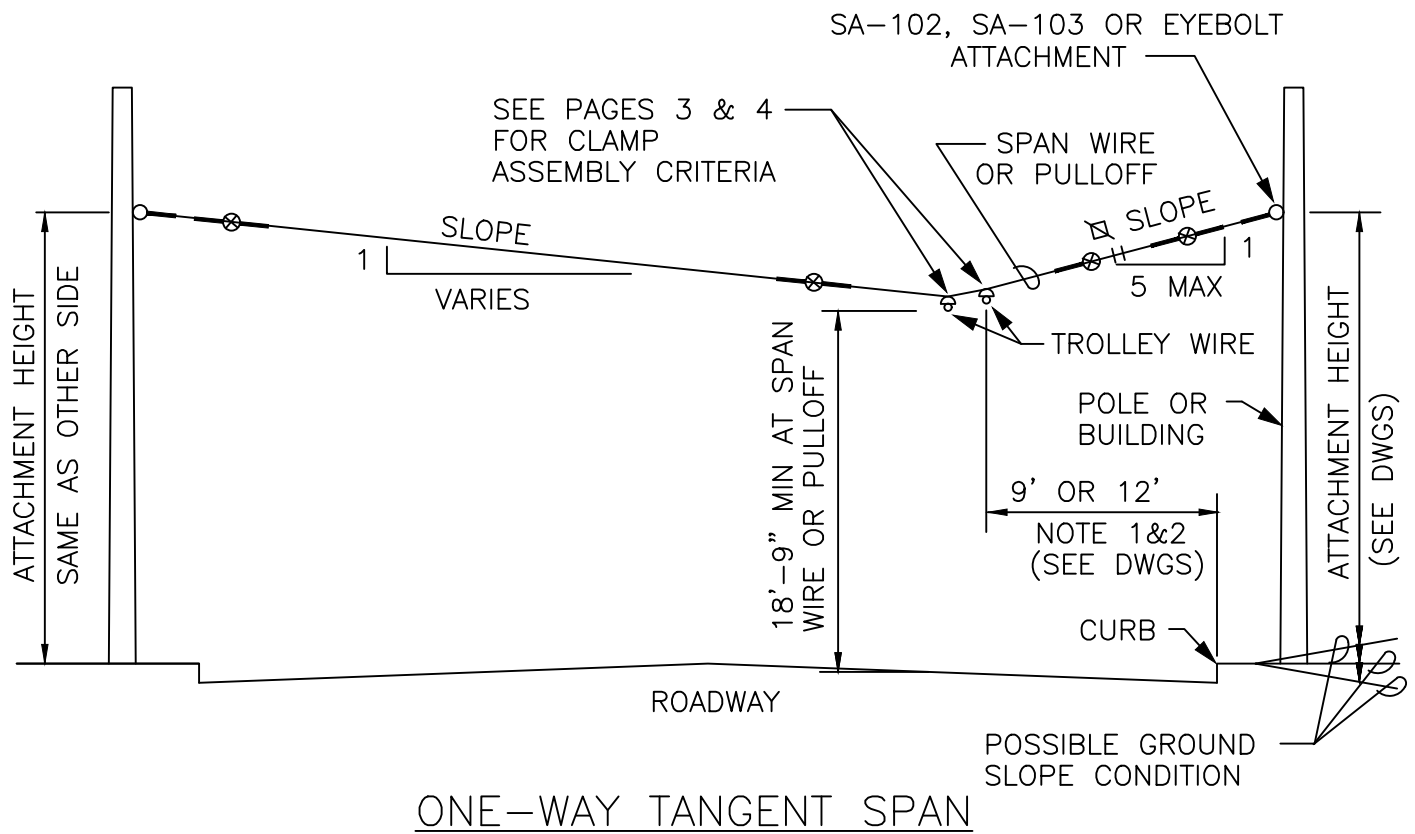


TWO-WAY TANGENT SPAN

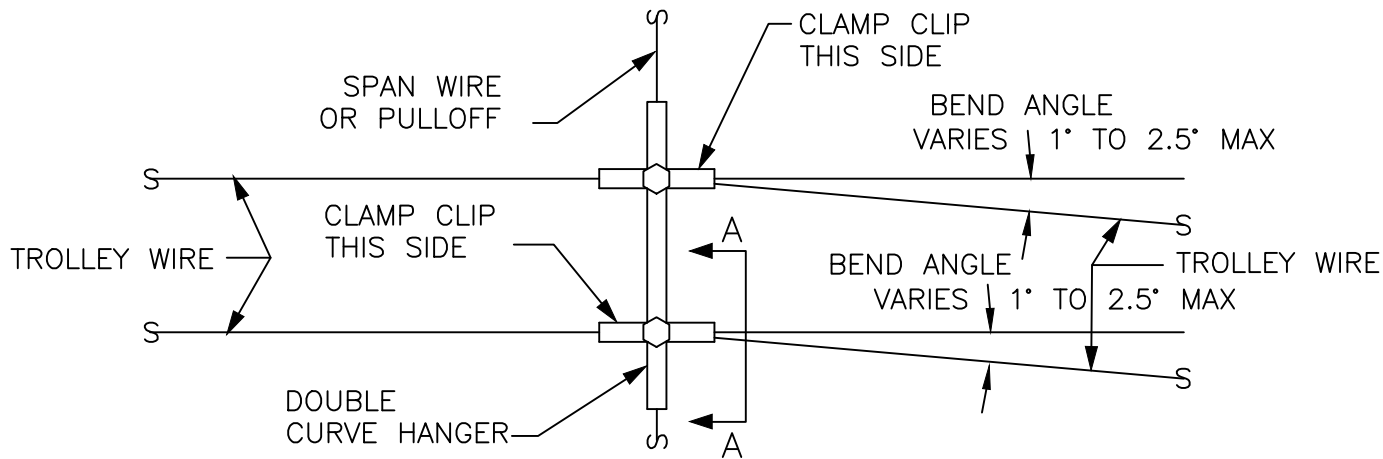


TWO-WAY INVERTED SPAN

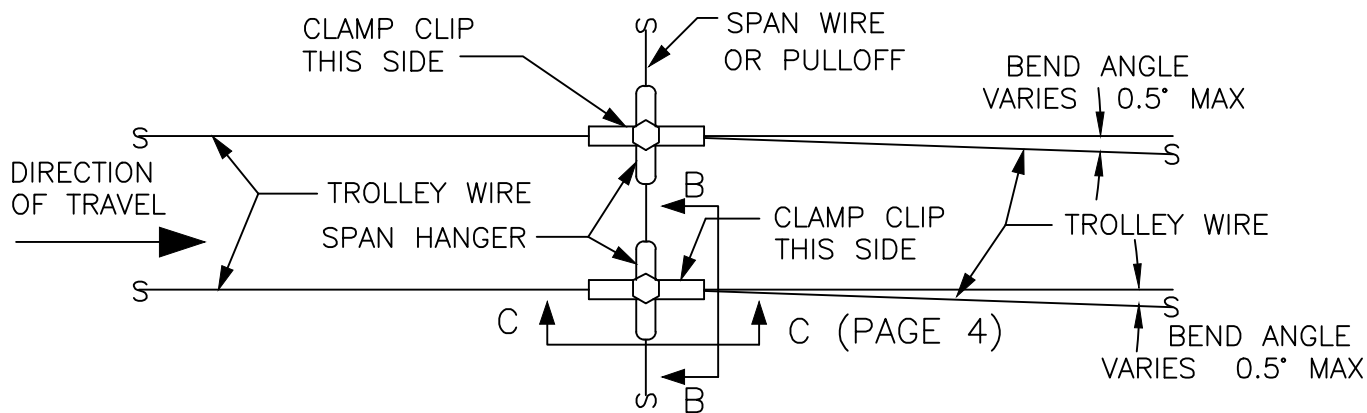
					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TROLLEY WIRE SUPPORT SPAN ATTACHMENT CRITERIA	DATE: 11/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-164
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 4



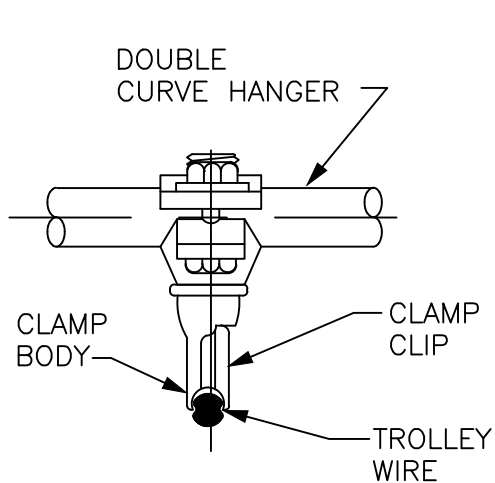
					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TROLLEY WIRE SUPPORT SPAN ATTACHMENT CRITERIA	DATE:
					DPG/AW	P. ENG		11/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-164
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			2 OF 4



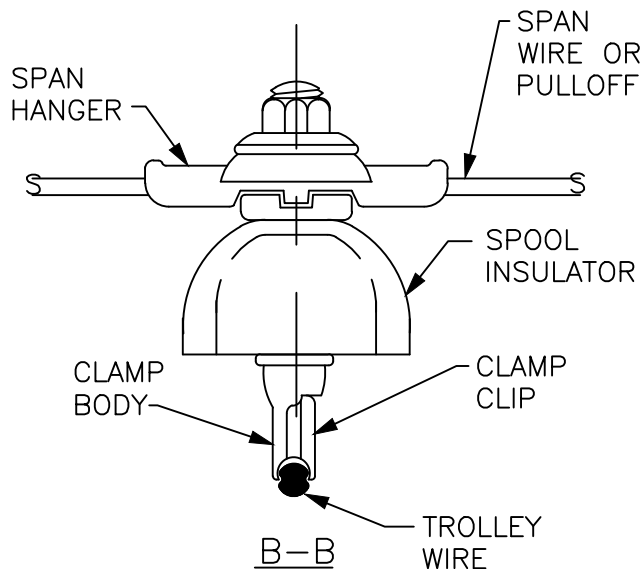
DOUBLE CURVE HANGER SPAN



TANGENT SPAN WITH CURVATURE



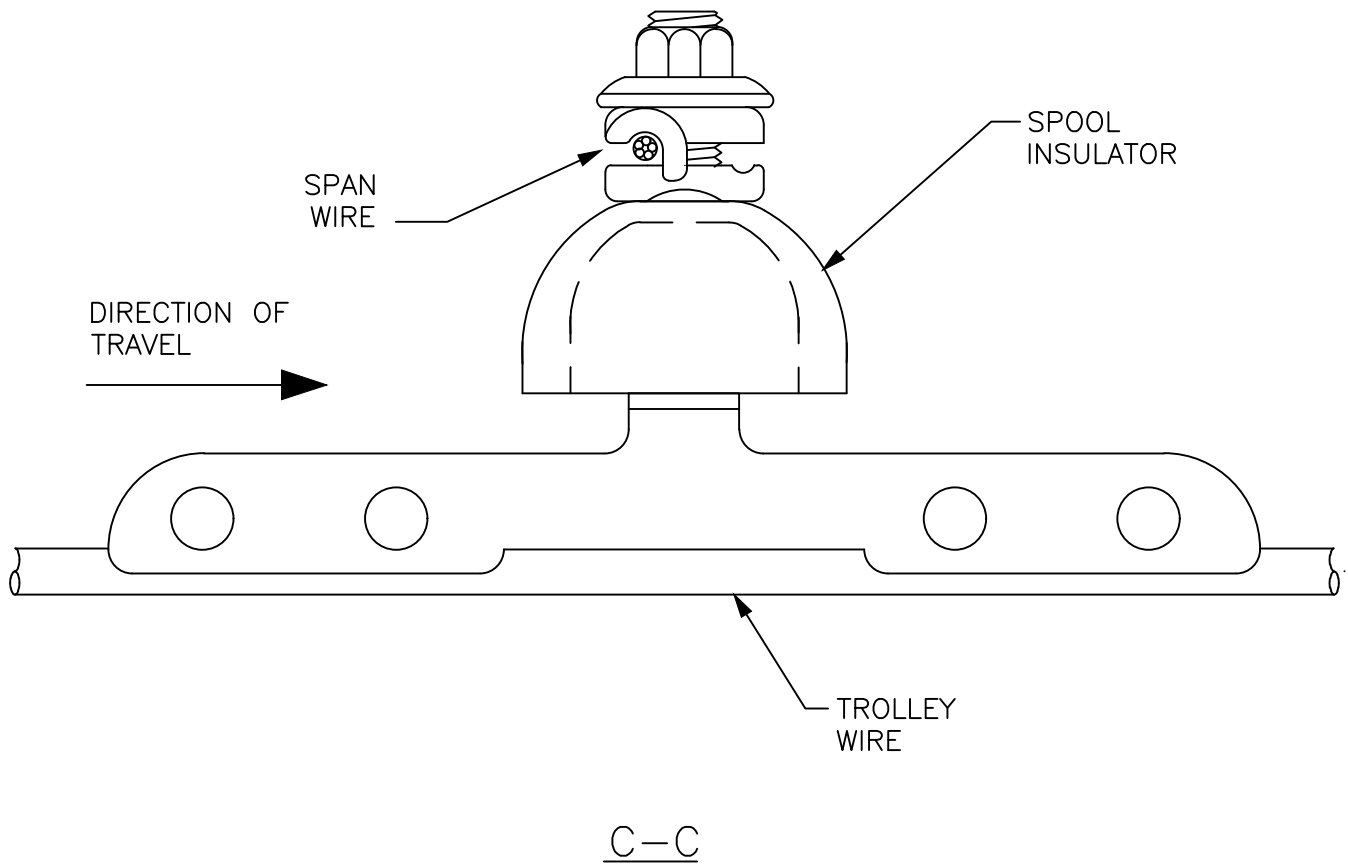
A-A



B-B

CLAMP ASSEMBLY CRITERIA

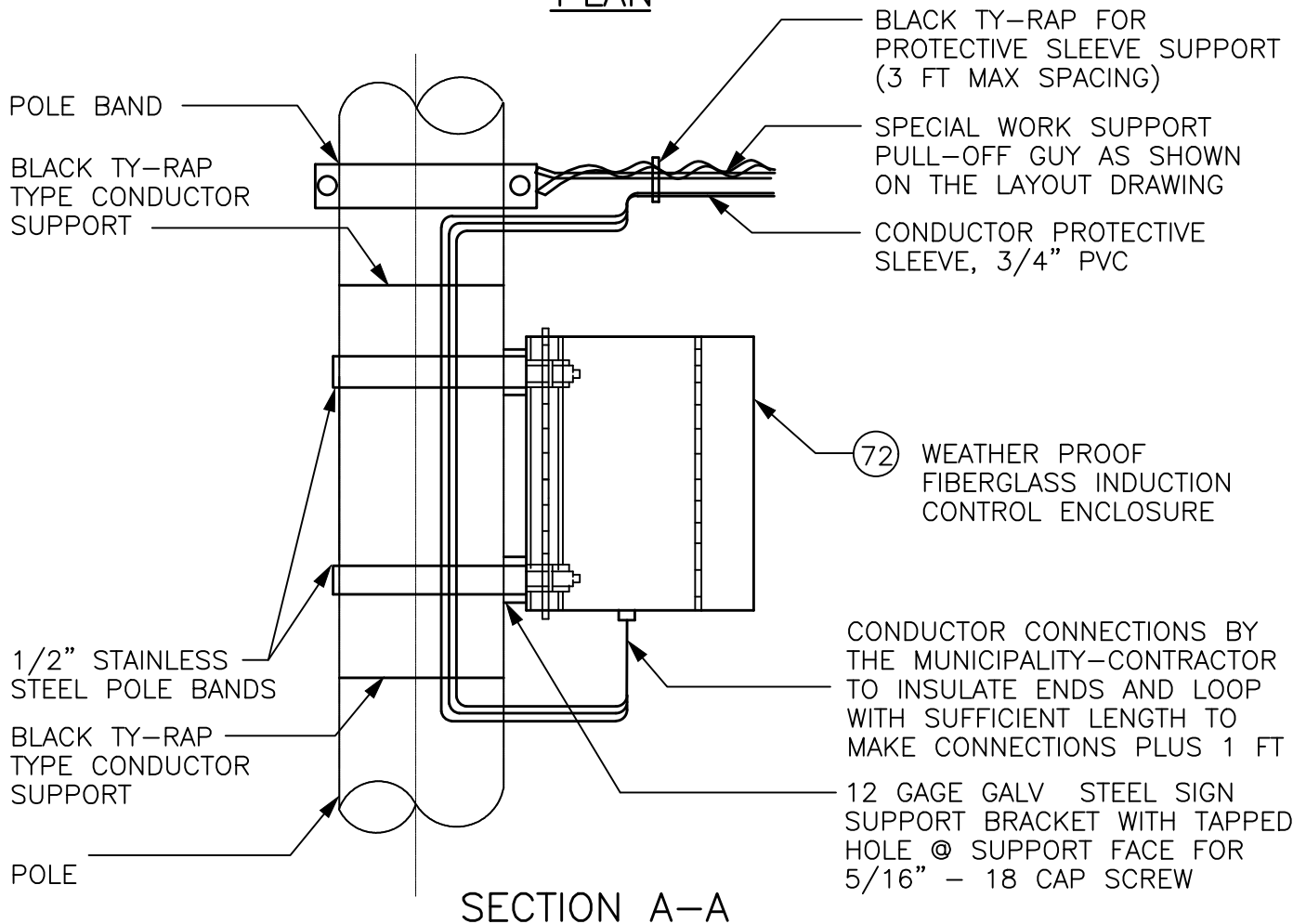
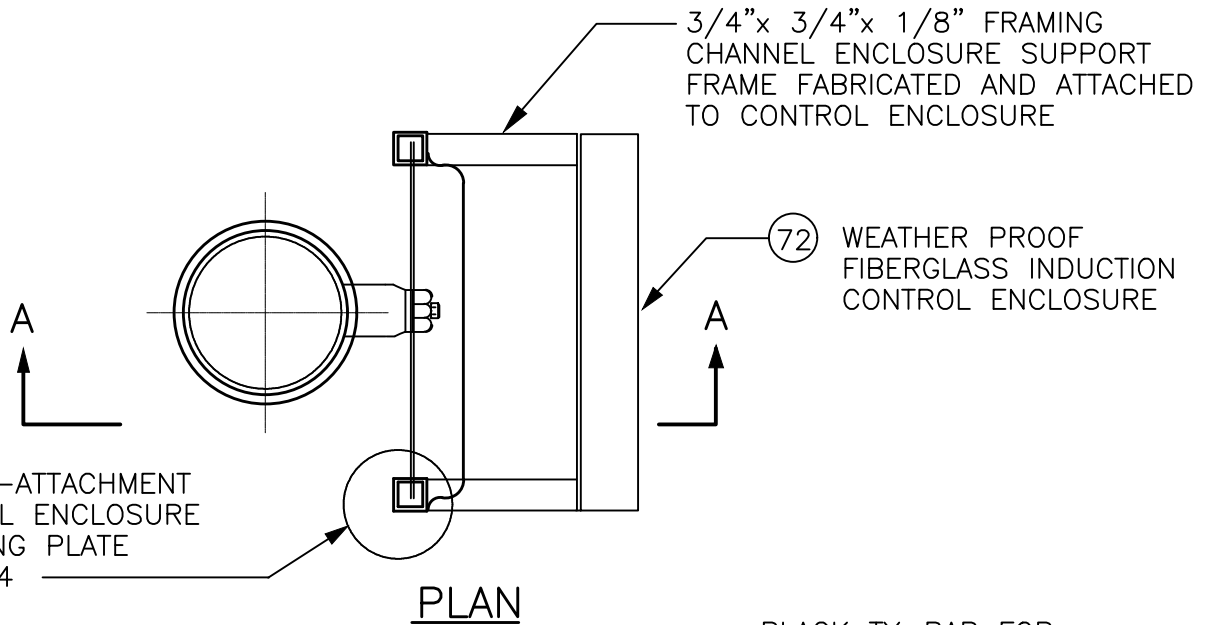
					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TROLLEY WIRE SUPPORT SPAN ATTACHMENT CRITERIA	DATE:
					DPG/AW	P. ENG		11/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-164
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS		3 OF 4	



NOTES:

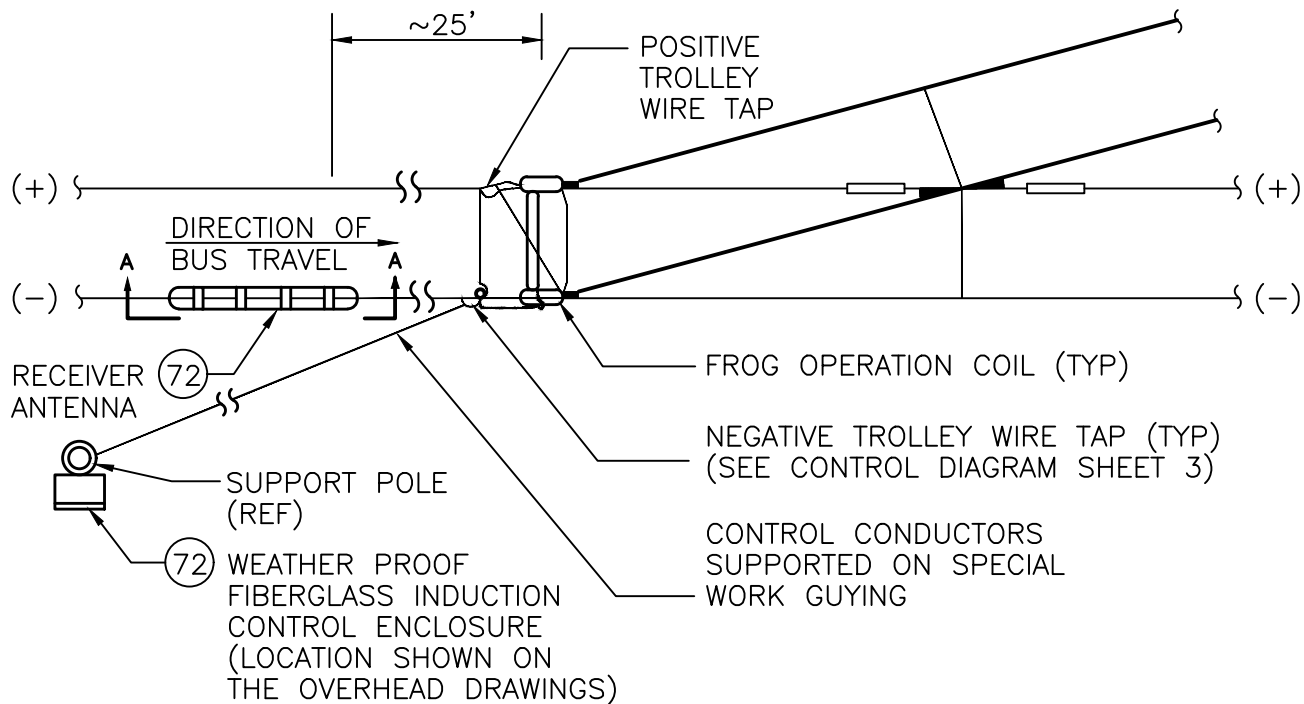
1. 9' IS NORMAL FOR EXTENDED ZONES OF TANGENT SPANS WHERE NO PARKING IS ALLOWED. SEE SA-171 FOR ADDITIONAL TROLLEY WIRE LOCATION STANDARDS.
2. TROLLEY WIRES SHALL BE WITHIN A BUS TRAVEL LANE AT ALL TIMES. SEE SA-171 FOR MINIMUM TROLLEY WIRE LOCATION FOR TYPICAL ROADWAY CONFIGURATIONS.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TROLLEY WIRE SUPPORT SPAN ATTACHMENT CRITERIA	DATE: 11/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-164
					CHECKED: J. DAVIS			SHT NO: 4 OF 4
No.	REVISION	BY	APP'D	DATE				

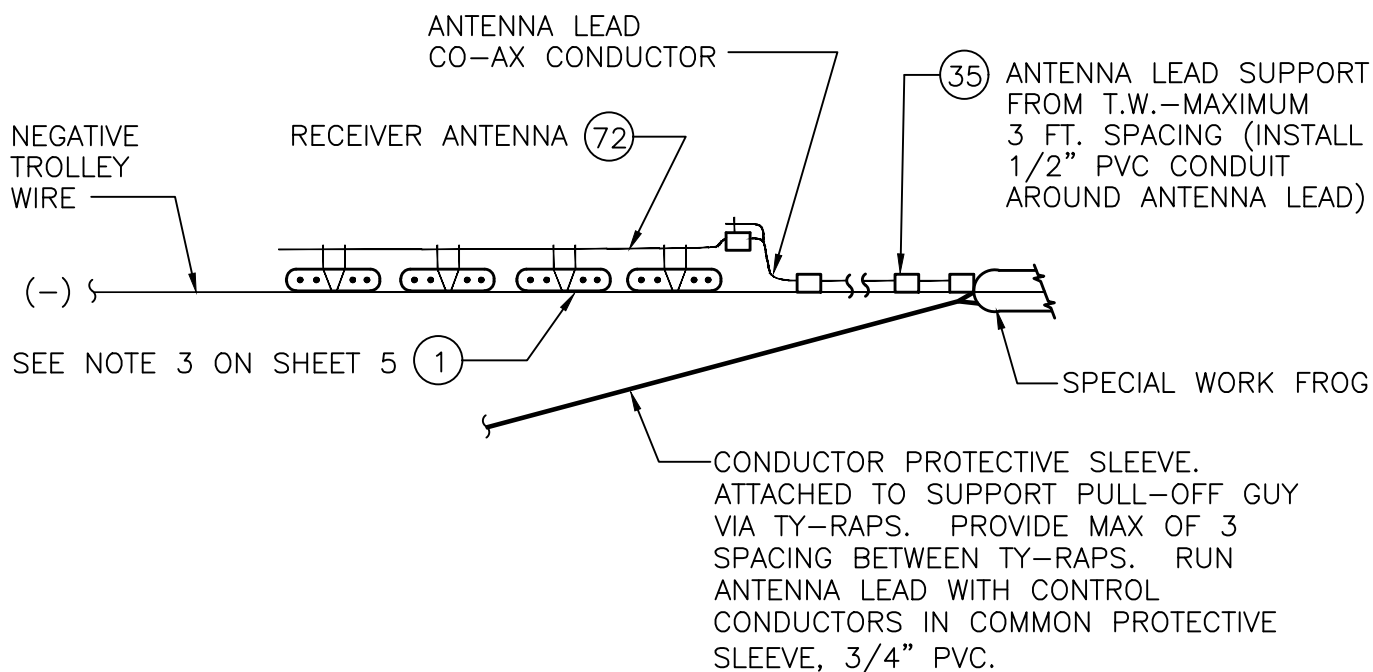


INDUCTION CONTROL ENCLOSURE POLE ASSEMBLY

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-165
					CHECKED: J. DAVIS			SHT NO: 1 OF 6
No.	REVISION	BY	APP'D	DATE				FROG INDUCTION CONTROL SYSTEM

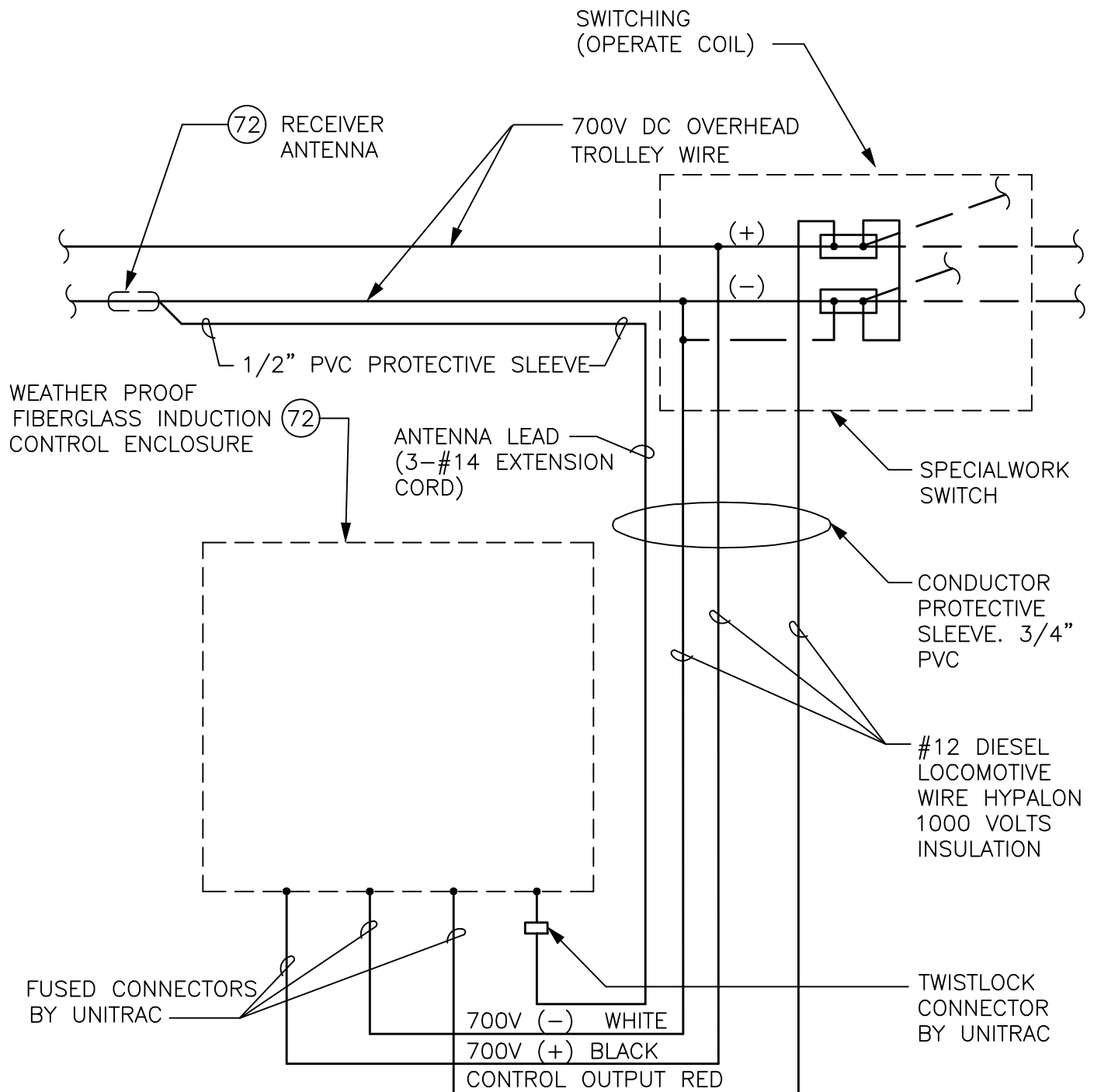


FROG INDUCTION CONTROL ASSEMBLY PLAN



SECTION A-A

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-165
					CHECKED: J. DAVIS			SHT NO: 2 OF 6
No.	REVISION	BY	APP'D	DATE				

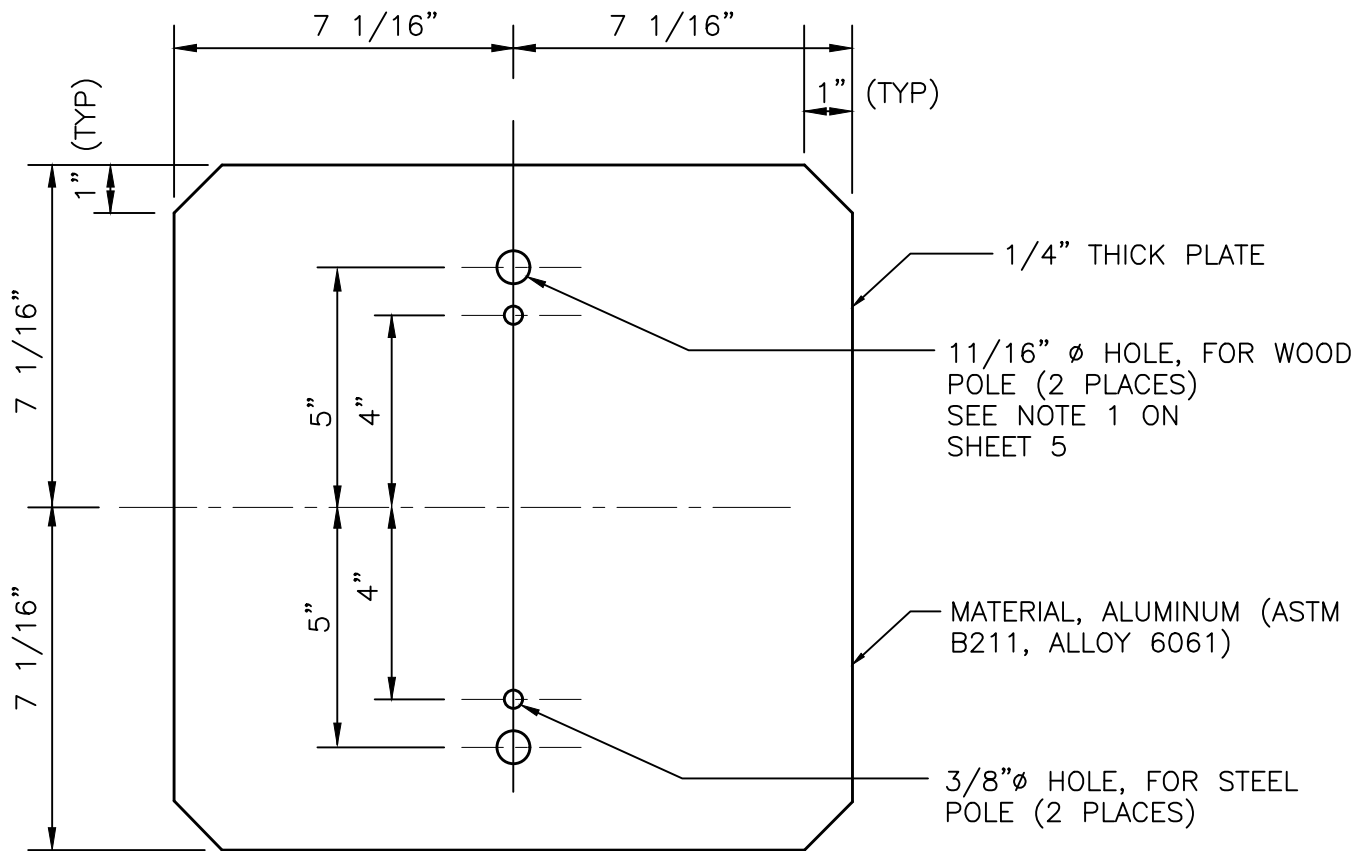


INDUCTION SYSTEM CONTROL DIAGRAM

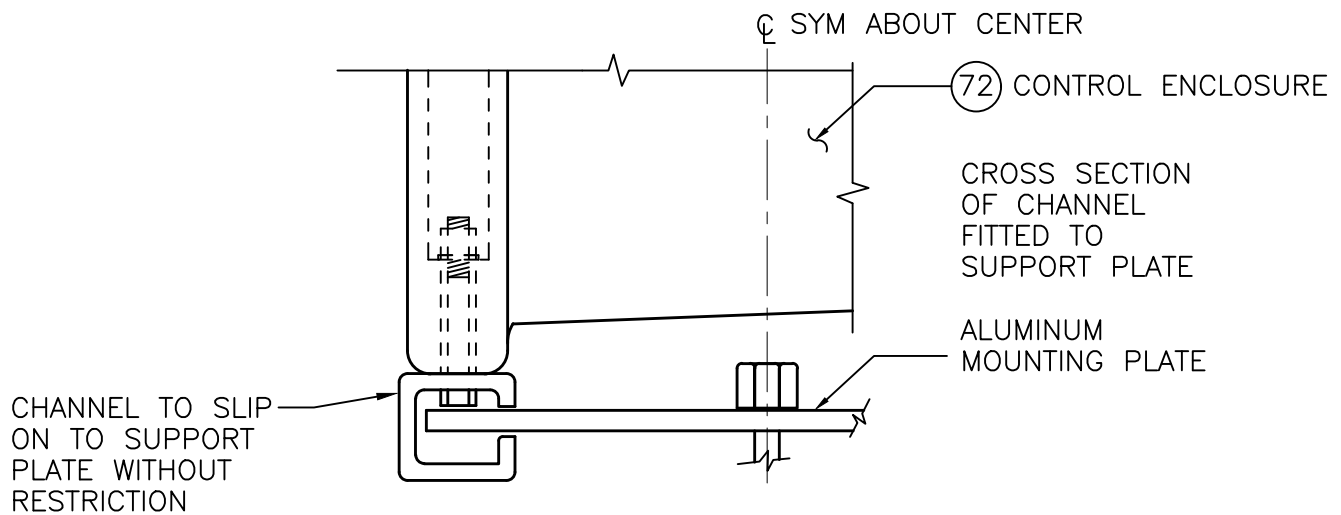
NOTES:

ALL CONNECTIONS AT ANTENNA, SWITCH AND CONTROL BOX BY THE MUNICIPALITY.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS FROG INDUCTION CONTROL SYSTEM	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-165
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			3 OF 6



ALUMINUM MOUNTING PLATE DETAIL



DETAIL-ATTACHMENT OF CONTROL ENCLOSURE TO MOUNTING PLATE

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS FROG INDUCTION CONTROL SYSTEM	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-165
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			4 OF 6

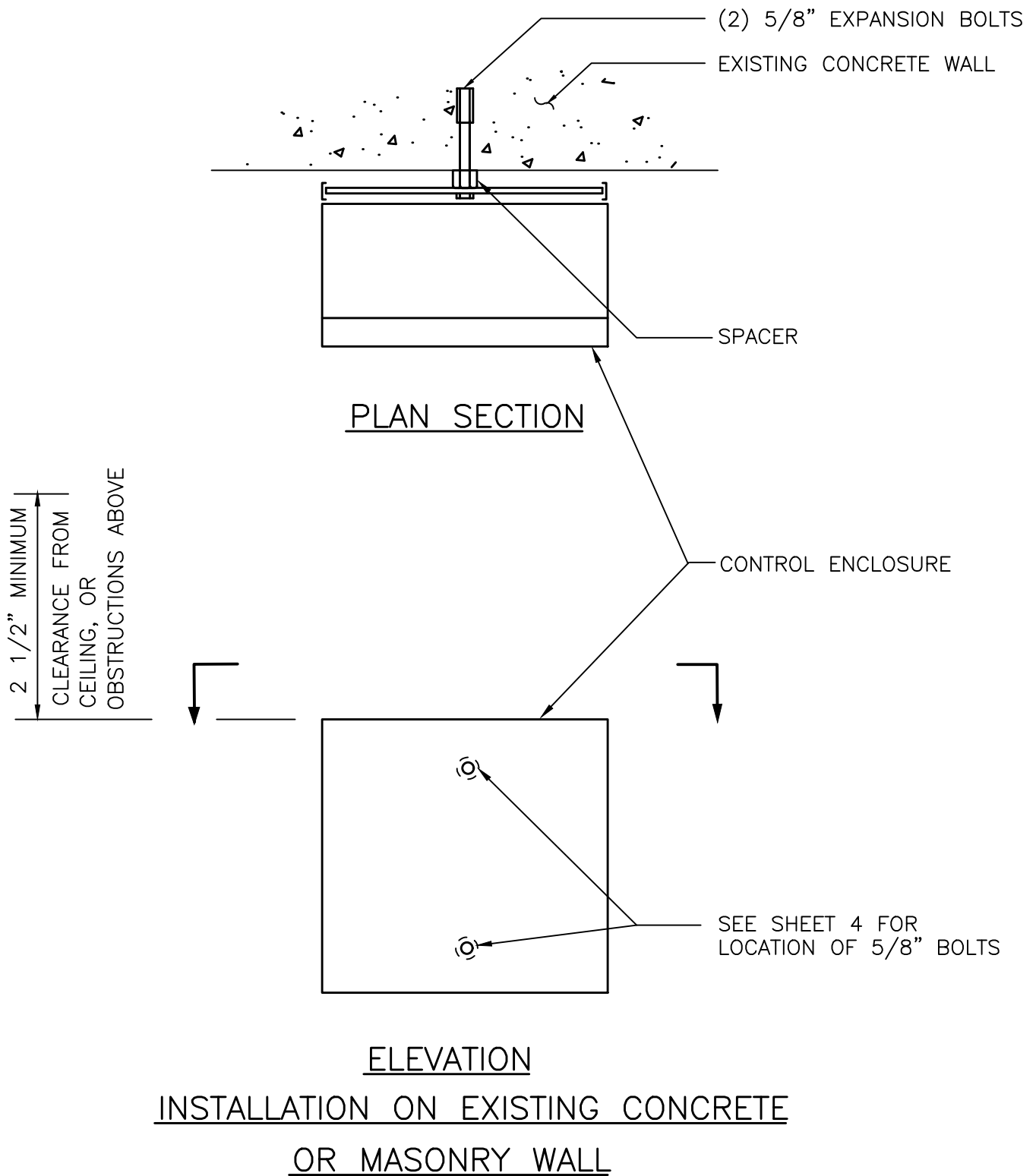
GENERAL NOTES

1. WHERE THE SUPPORT POLE IS WOOD, THE CONTROL ENCLOSURE MOUNTING PLATE SHALL BE ATTACHED DIRECTLY TO THE POLE BY MEANS OF ONE HOT-DIP GALVANIZED 5/8-INCH DIAMETER HEX HEAD THROUGH BOLT WITH ATTACHMENT NUT AND WASHER MOUNTED THROUGH THE TOP HOLE OF THE SUPPORT PLATE AND ONE HOT-DIP GALVANIZED 5/8-INCH BY 6-INCH GIMLET POINT HEX HEAD LAG SCREW MOUNTED THROUGH THE BOTTOM HOLE OF THE SUPPORT PLATE.
2. THE CONTROL ENCLOSURE SHALL BE LOCATED IN PROXIMITY OF THE PULL-OFF CABLE ATTACHMENTS AT THE SUPPORT POLE. THE ENCLOSURE SHALL, AS PRACTICAL, BE LOCATED AT THE SIDE OF THE POLE FACING THE CURB. THE ENCLOSURE MAY BE INSTALLED EITHER ABOVE OR BELOW THE PULL-OFF GUY CABLE ATTACHMENT AT THE POLE, AS SUITABLE, TO PREVENT CONFLICT WITH OTHER ATTACHMENTS TO THE POLE. THE ENCLOSURE SHALL BE SO LOCATED ON THE POLE THAT CONFLICTS WILL NOT BE INTRODUCED TO ACCESSIBILITY OF EXISTING UTILITIES AND POLE CLIMBING SPACES. ON JOINT USE POLES HAVING A CROSS-ARM, THE ENCLOSURE SHALL BE MOUNTED ON THE CROSS-ARM TO PREVENT CONFLICT WITH CLIMBING SPACE. WHERE A JOINT USE POLE IS WITHOUT A CROSS-ARM, THE CONTRACTOR SHALL COORDINATE ENCLOSURE MOUNTING SPACE WITH THE JOINT USE OWNERS OF THE POLE.
3. THE HOLES FORMED IN THE ANTENNA WEB FOR MOUNTING OF THE ANTENNA MAY BE ENLARGED TO ACCOMMODATE THE 5/8-INCH DIAMETER BOLTS REQUIRED FOR ANTENNA ATTACHMENT TO THE SUPPORTING TROLLEY WIRE CLAMPS.

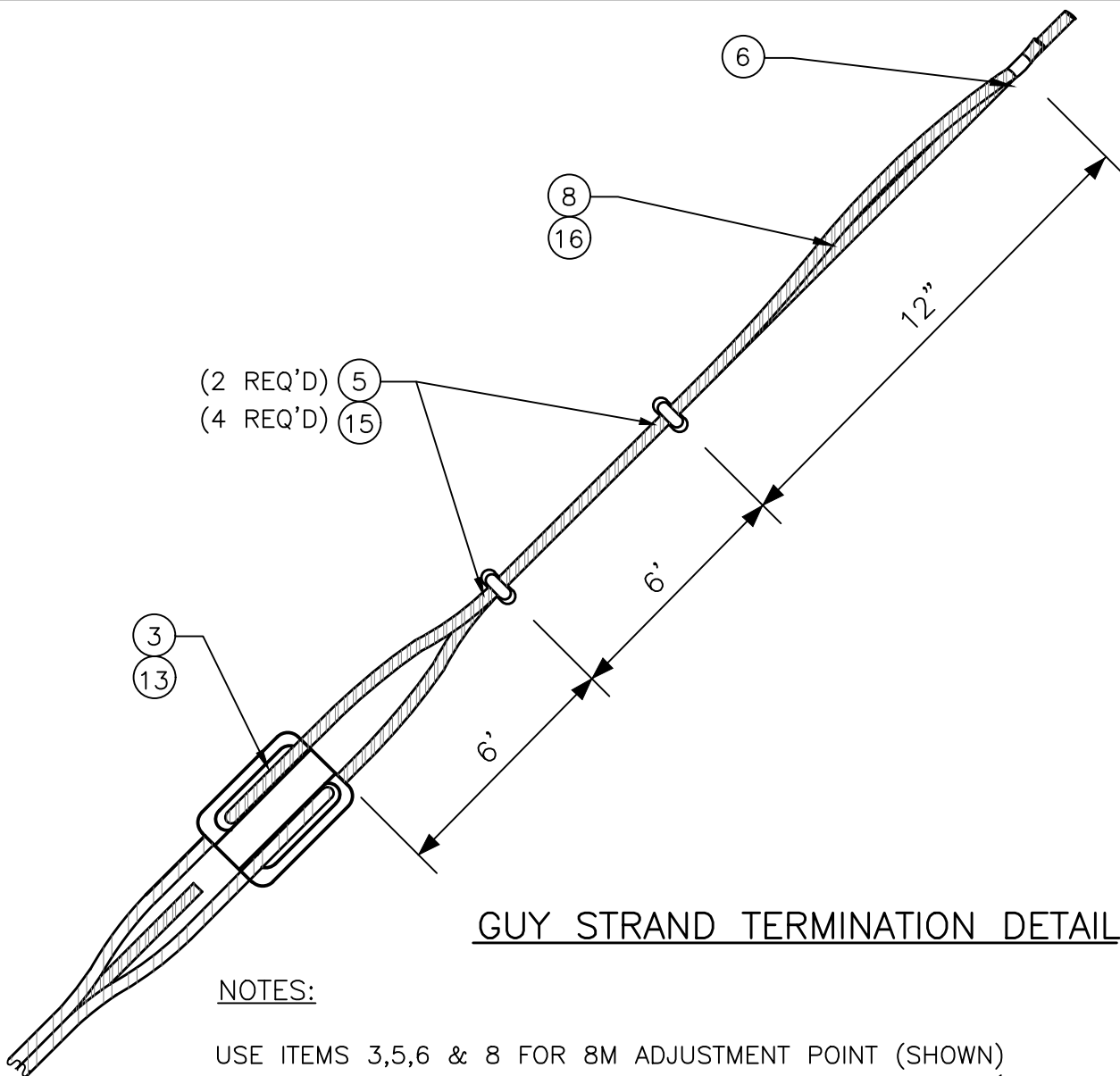
MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	4	DETROIT CLAMP ASSY	WABCO	19293-3007
35	AS REQD	CLAMP, INSUL LEAD WIRE	WABCO	19655-2000
72	1	INDUCTIVE CONTROL SYSTEM RECEIVER	UNITRAC	320100-16X
	1	INDUCTIVE CONTROL SYSTEM ANTENNA	UNITRAC	320310-4X
DESIGNED: DPG/AW DRAWN: L. ANDERSON CHECKED: J. DAVIS			APPROVED: P. ENG 	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS FROG INDUCTION CONTROL SYSTEM
No.	REVISION	BY	APP'D	DATE

DATE:
03/2021
 STD DET NO:
SA-165
 SHT NO:
5 OF 6



					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-165
					CHECKED:		FROG INDUCTION CONTROL SYSTEM	SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			6 OF 6



GUY STRAND TERMINATION DETAIL

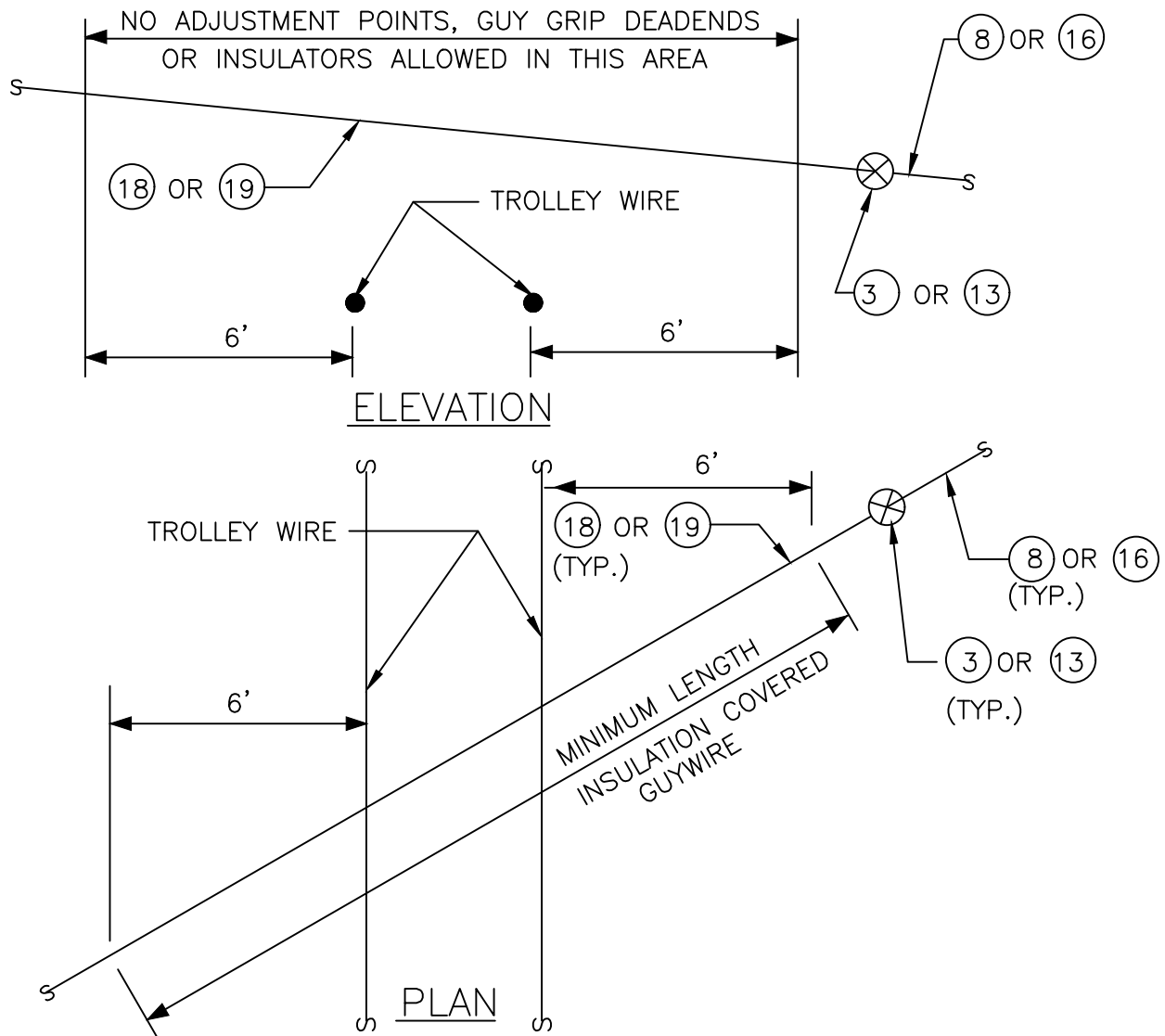
NOTES:

USE ITEMS 3,5,6 & 8 FOR 8M ADJUSTMENT POINT (SHOWN)
 USE ITEMS 6, 13, 15 & 16 FOR 16M ADJUSTMENT POINT (SIMILAR EXCEPT
 USE (4) ITEM 15'S SPACED AT 6")

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	VARIES	GUY STRAIN INSUL, CABLE OD Max-1/2"	PORCELAIN PRODUCTS CO.	504
05	VARIES	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQ'D	FRICTION TAPE, 3/4" (6 WRAPS)		
08	VARIES	GUY STRAND	COPPERWELD	8M
13	VARIES	GUY STRAIN INSUL, CABLE OD Max-5/8"	PORCELAIN PRODUCTS CO.	506
15	VARIES	WIRE ROPE CLIP, 3/8"	CROSBY	G450
16	VARIES	GUY STRAND, COVERED	COPPERWELD	16M

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS ADJUSTMENT POINT	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-166
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				



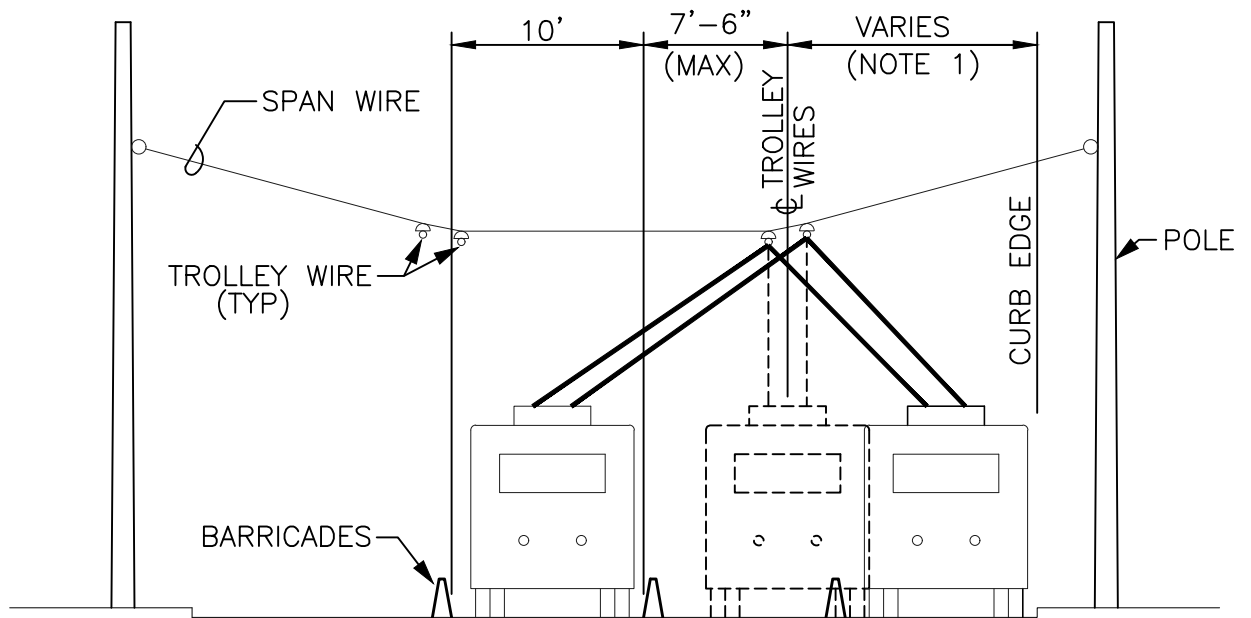
NOTES:

1. THE ENGINEER SHALL CONCUR WITH ANY EXCEPTIONS TO THESE CRITERIA.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	VARIES	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
08	VARIES	GUY STRAND	COPPERWELD	8M
13	VARIES	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	506
16	VARIES	GUY STRAND	COPPERWELD	16M
18	VARIES	GUY STRAND, COVERED	COPPERWELD	8MI
19	VARIES	GUY STRAND, COVERED	COPPERWELD	16MI

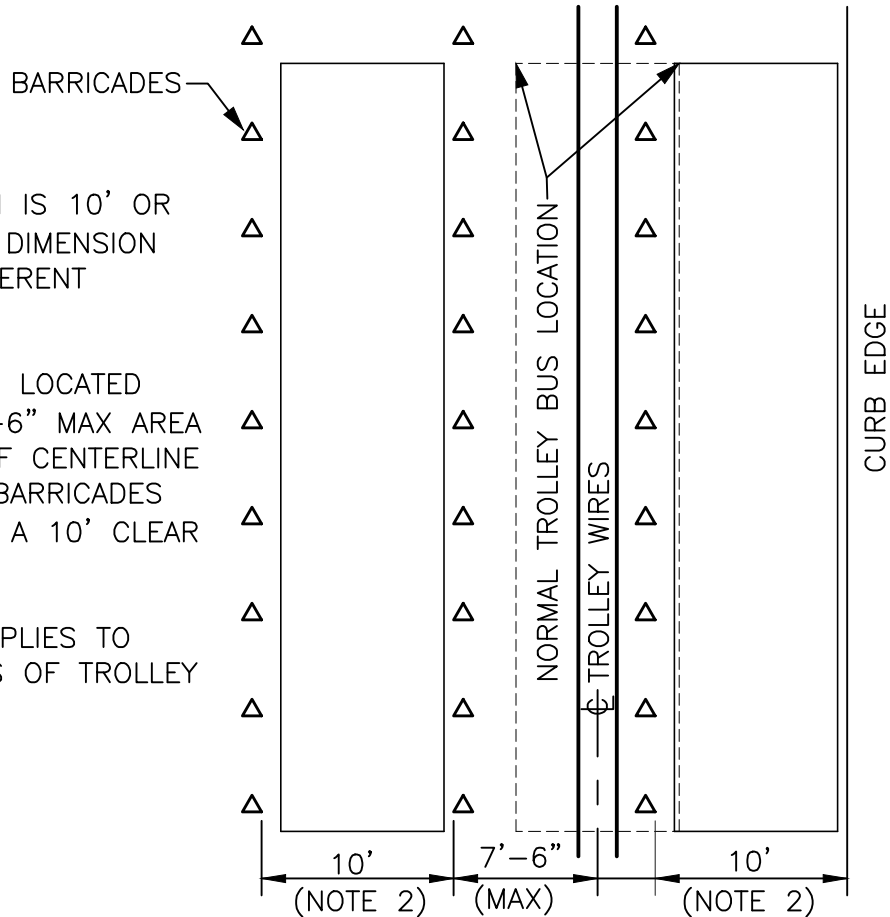
					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS INSULATION COVERED GUY WIRE REQUIREMENT CRITERIA	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-167
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 1



ELEVATION

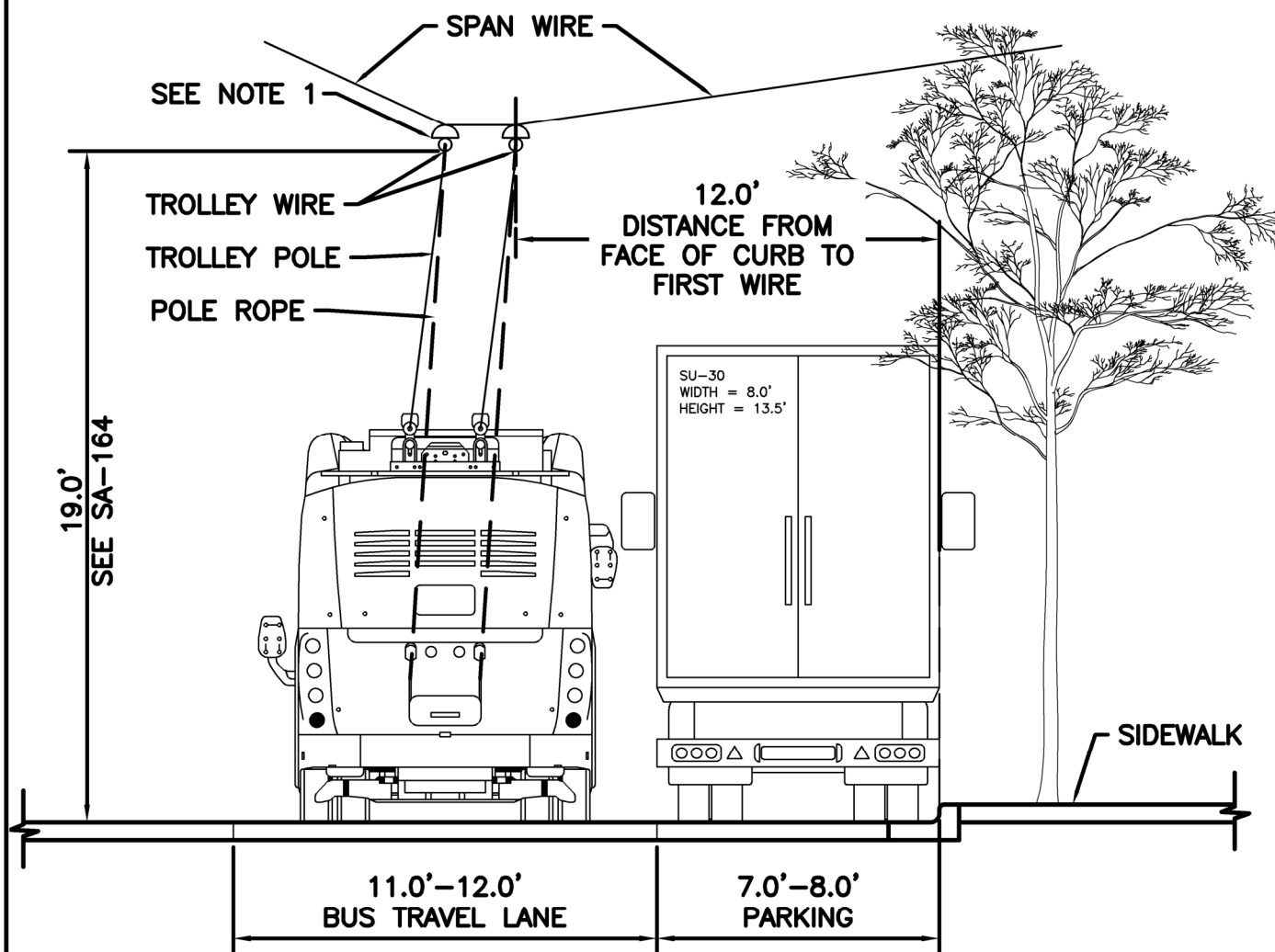
NOTES:

1. NORMAL DIMENSION IS 10' OR 13', BUT EXISTING DIMENSION WILL VARY AT DIFFERENT LOCATIONS.
2. BARRICADES TO BE LOCATED INSIDE OF THE 7'-6" MAX AREA ON EITHER SIDE OF CENTERLINE TROLLEY WIRES. BARRICADES SHALL ALSO FORM A 10' CLEAR TRAVEL LANE.
1. THIS STANDARD APPLIES TO STRAIGHT SECTIONS OF TROLLEY WIRE ONLY.



PLAN

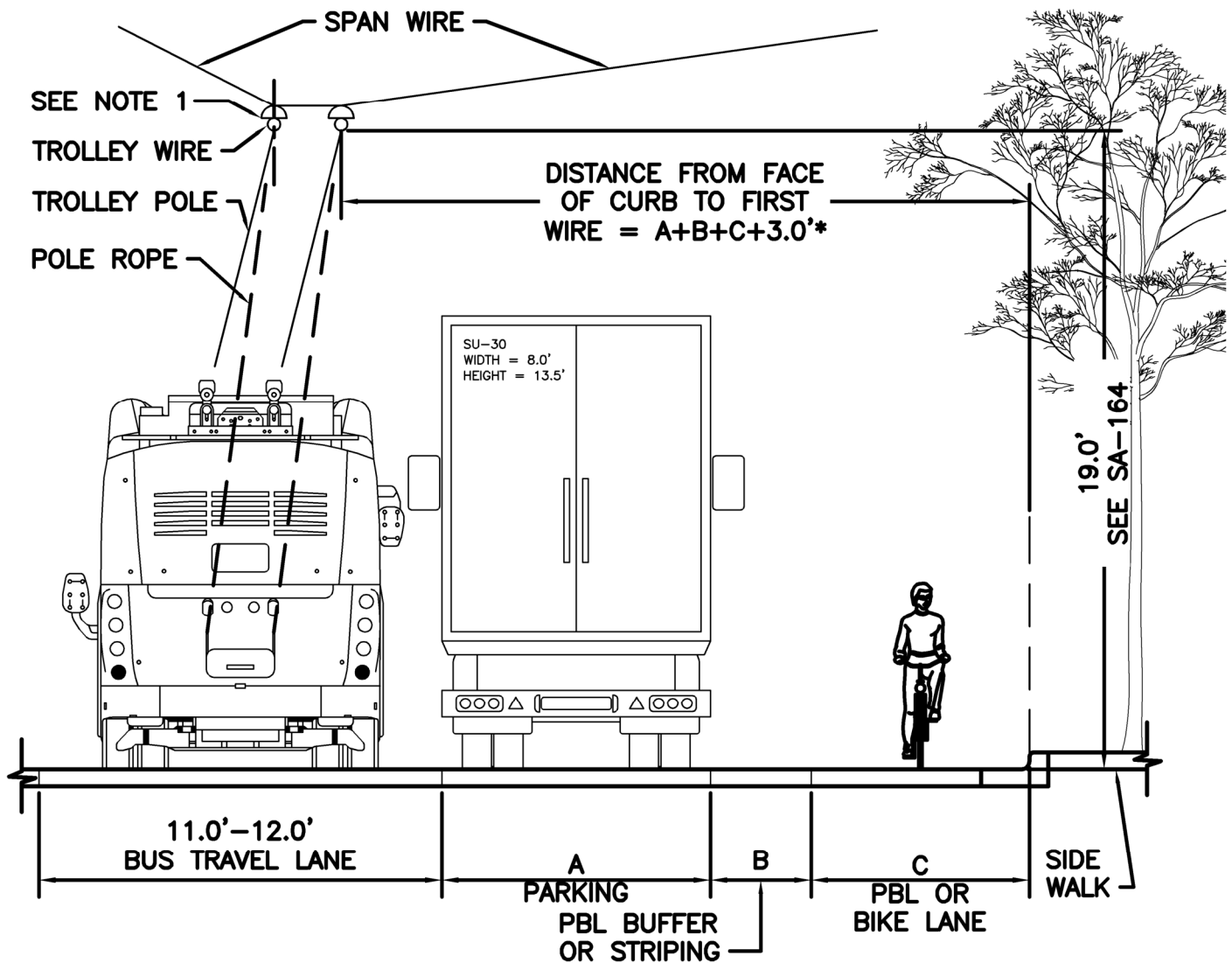
					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TROLLEY COACH TRAVEL AREA IN CONSTRUCTION ZONE	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-170
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				



NOTES:

TYPICAL CONFIGURATION 1
TANGENT SPAN TROLLEY WIRE
PARKING LANE

					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TROLLEY WIRE LOCATIONS FOR TYPICAL ROADWAY CONFIGURATIONS	DATE: 11/2021
					DRAWN: G. CAREY			STD DET NO: SA-171
					CHECKED: J. DAVIS			SHT NO: 1 OF 4
No.	REVISION	BY	APP'D	DATE				



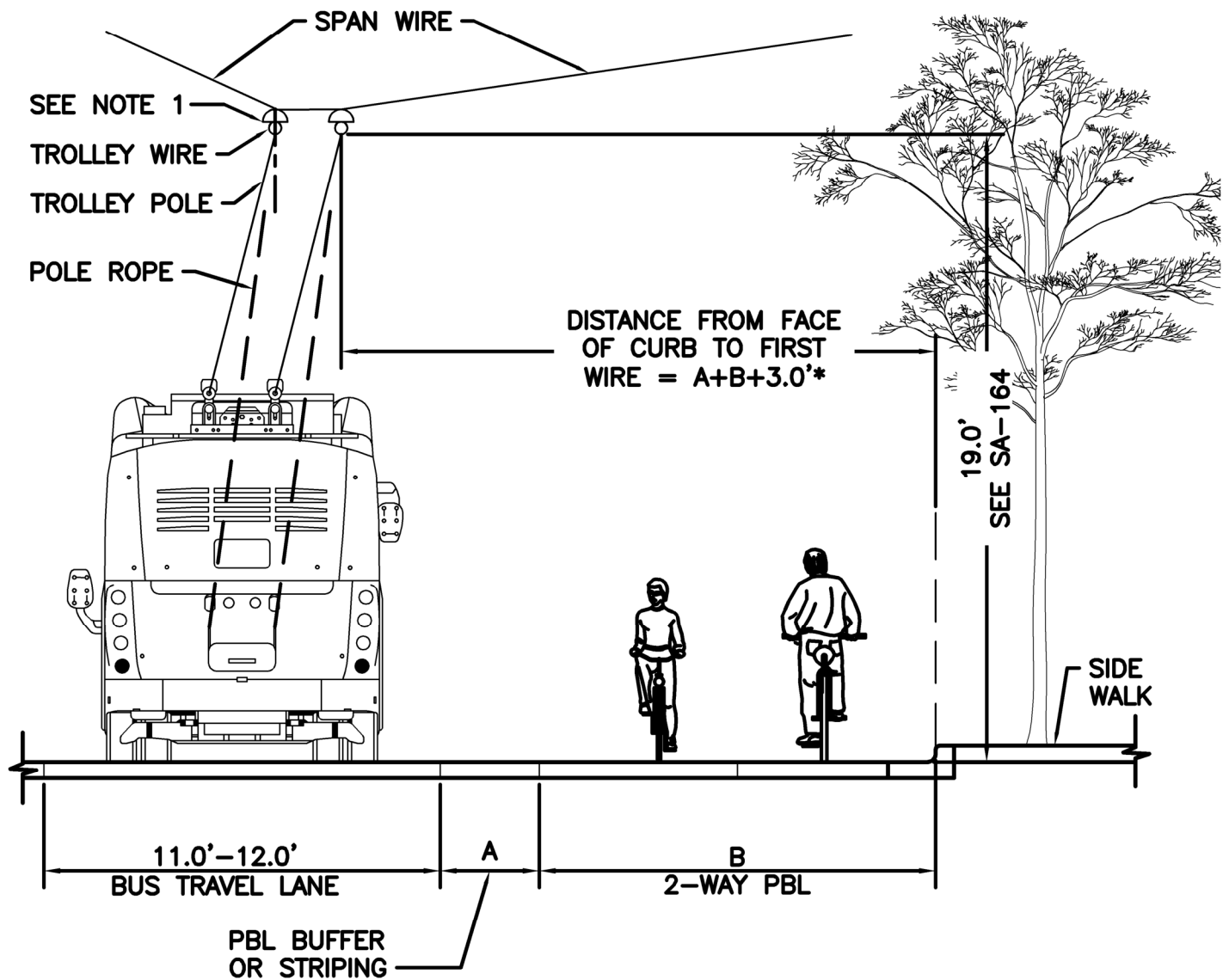
NOTES:

- STANDARD IS FOR EXTENDED DISTANCES OF TANGENT SPANS.
- 3.0' MINIMUM. THE MAXIMUM DISTANCE IS DEPENDANT ON REQUIRED OPERATIONS.

TYPICAL CONFIGURATION 2 TANGENT SPAN TROLLEY WIRE PARKING AND PBL OR BIKE LANE

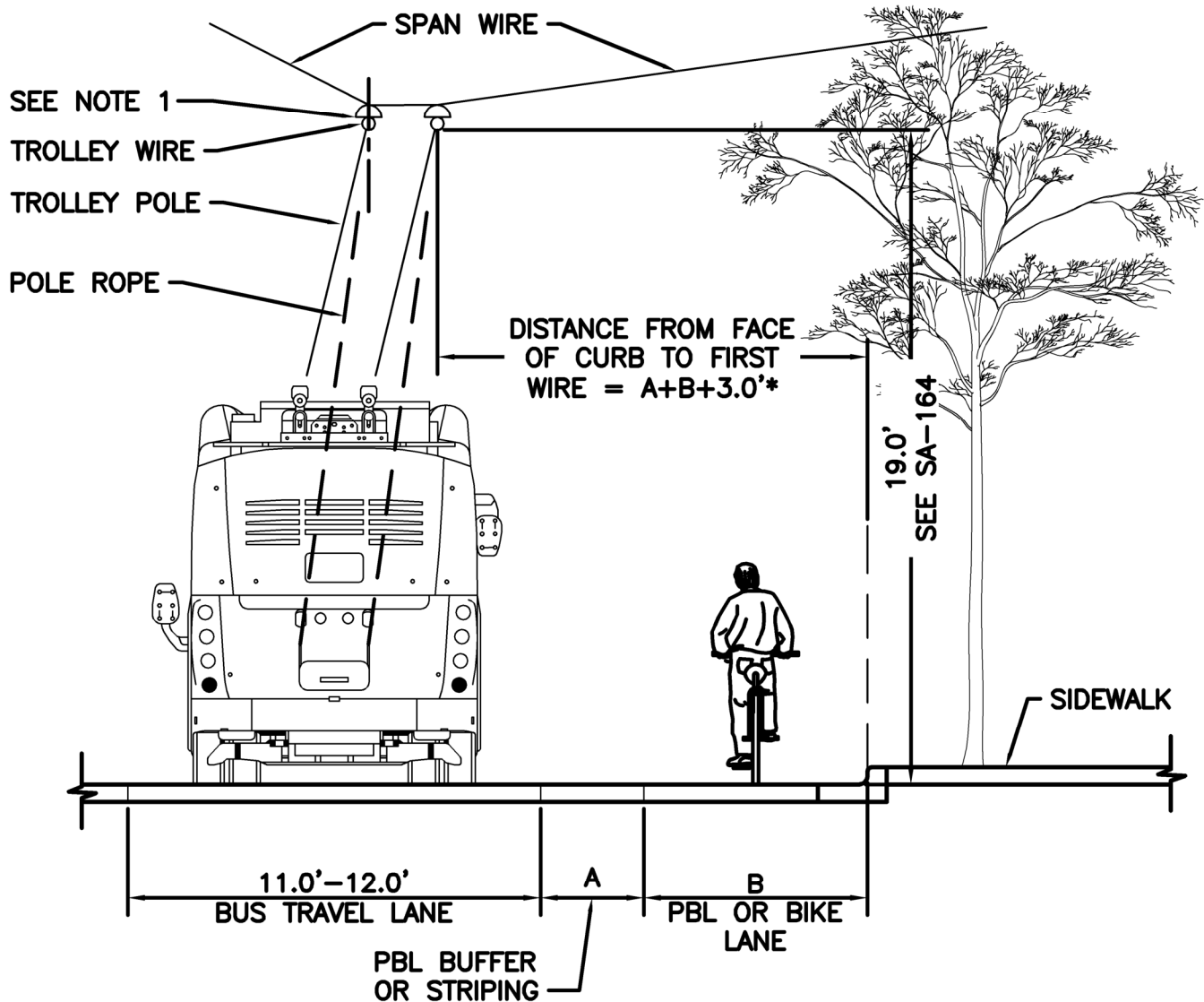
SCALE: NTS

					DESIGNED: A.WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TROLLEY WIRE LOCATIONS FOR TYPICAL ROADWAY CONFIGURATIONS	DATE: 11/2021
					DRAWN: G.CAREY/ LSA			STD DET NO: SA-171
					CHECKED: J. DAVIS			SHT NO: 2 OF 4
No.	REVISION	BY	APP'D	DATE				



TYPICAL CONFIGURATION 3
TANGENT SPAN TROLLEY WIRE
TWO-WAY PBL

					DESIGNED: A.WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TROLLEY WIRE LOCATIONS FOR TYPICAL ROADWAY CONFIGURATIONS	DATE: 11/2021
					DRAWN: G.CAREY / LSA			STD DET NO: SA-171
					CHECKED: J. DAVIS			SHT NO: 3 OF 4
No.	REVISION	BY	APP'D	DATE				



NOTES:

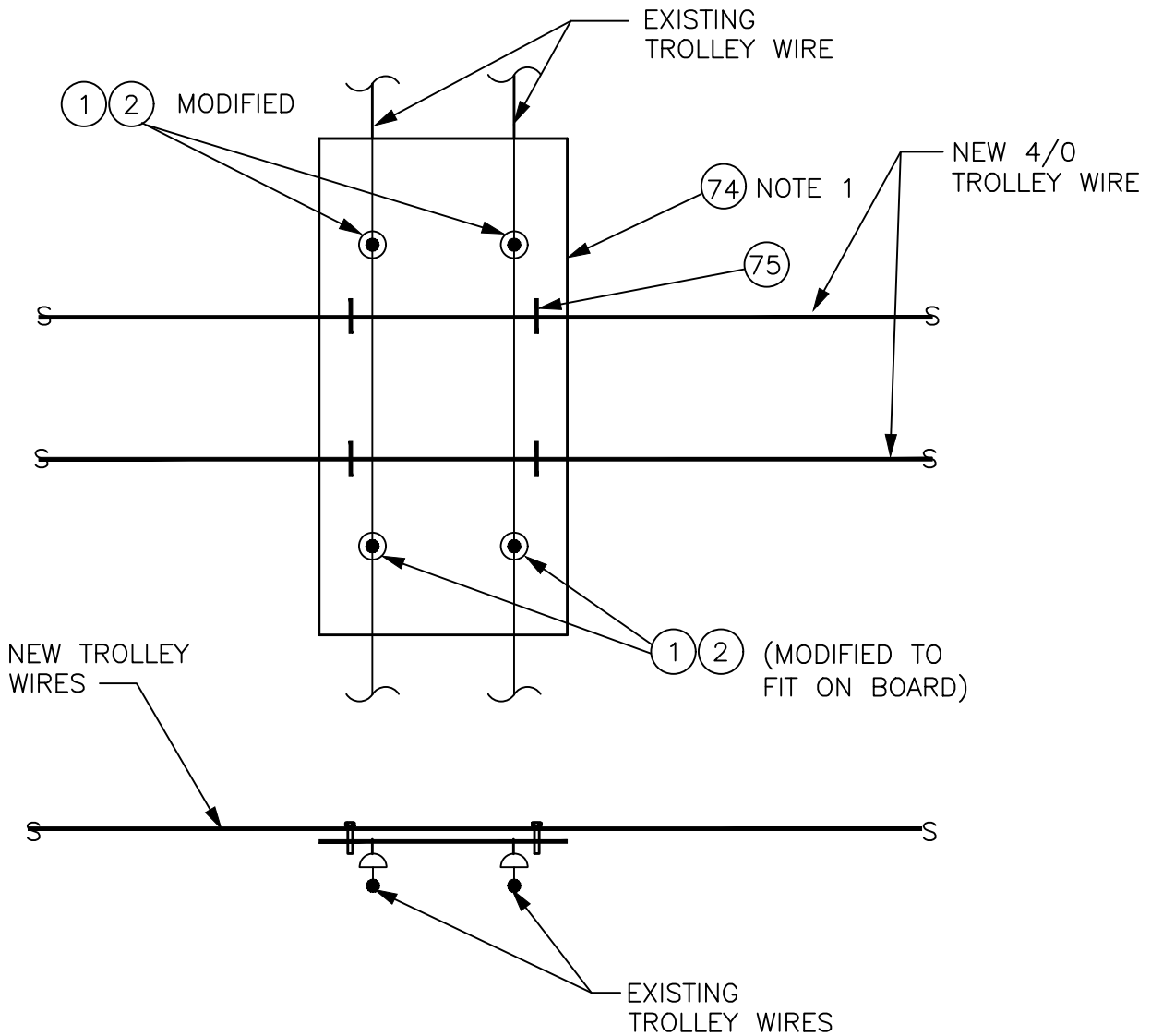
1. STANDARD IS FOR EXTENDED DISTANCES OF TANGENT SPANS.

* 3.0' MINIMUM. THE MAXIMUM DISTANCE IS DEPENDANT ON REQUIRED OPERATIONS.

**TYPICAL CONFIGURATION 4
TANGENT SPAN TROLLEY WIRE
ONE-WAY PBL OR ONE-WAY BIKE LANE**

SCALE: NTS

No.	REVISION	BY	APP'D	DATE	DESIGNED: A. WOLAK	APPROVED: P. ENG 	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TROLLEY WIRE LOCATIONS FOR TYPICAL ROADWAY CONFIGURATIONS	DATE: 11/2021
					DRAWN: G. CAREY / LSA			STD DET NO: SA-171
					CHECKED: J. DAVIS			SHT NO: 4 OF 4



NOTES:

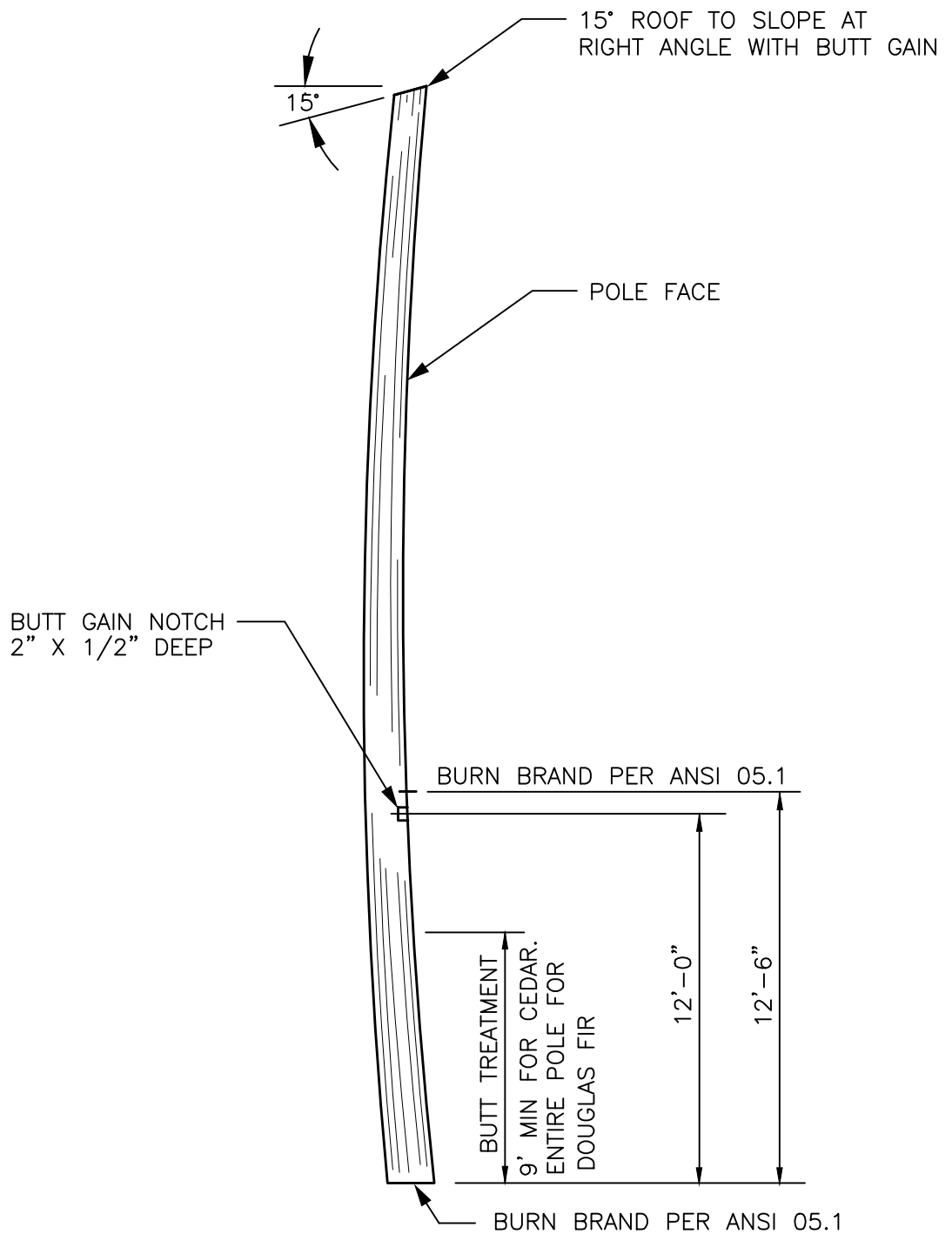
1. 4' x 8' SIZE IS A MINIMUM. USE 2 OR MORE WHEN REQUIRED.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	4	DETROIT CLAMP ASSY	WABCO	19293-3007
02	4	AGC TANGENT SPAN HANGER	WABCO	19360-2000
74	1	4' X 8' X 1/2" EXTERIOR PLYWOOD		
75	4	U BOLT, FOR 4/0 TROLLEY WIRE		

DESIGNED: DPG/AW DRAWN: L. ANDERSON CHECKED: J. DAVIS		APPROVED: P. ENG 		METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TEMPORARY INSULATION BOARD	DATE: 03/2021 STD DET NO: SA-190 SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE	

V:\Library & Standards\Working Documents\Trolley\Details\SA-202.dwg | Update for 2021 publication\03_Review set\SA-202.dwg | Layout: SA-202
 PLOT DATE: 03/16/2021 10:15:58am By: jdoernett
 XREFS: TTA A Size.dwg
 IMAGES:



NOTES:

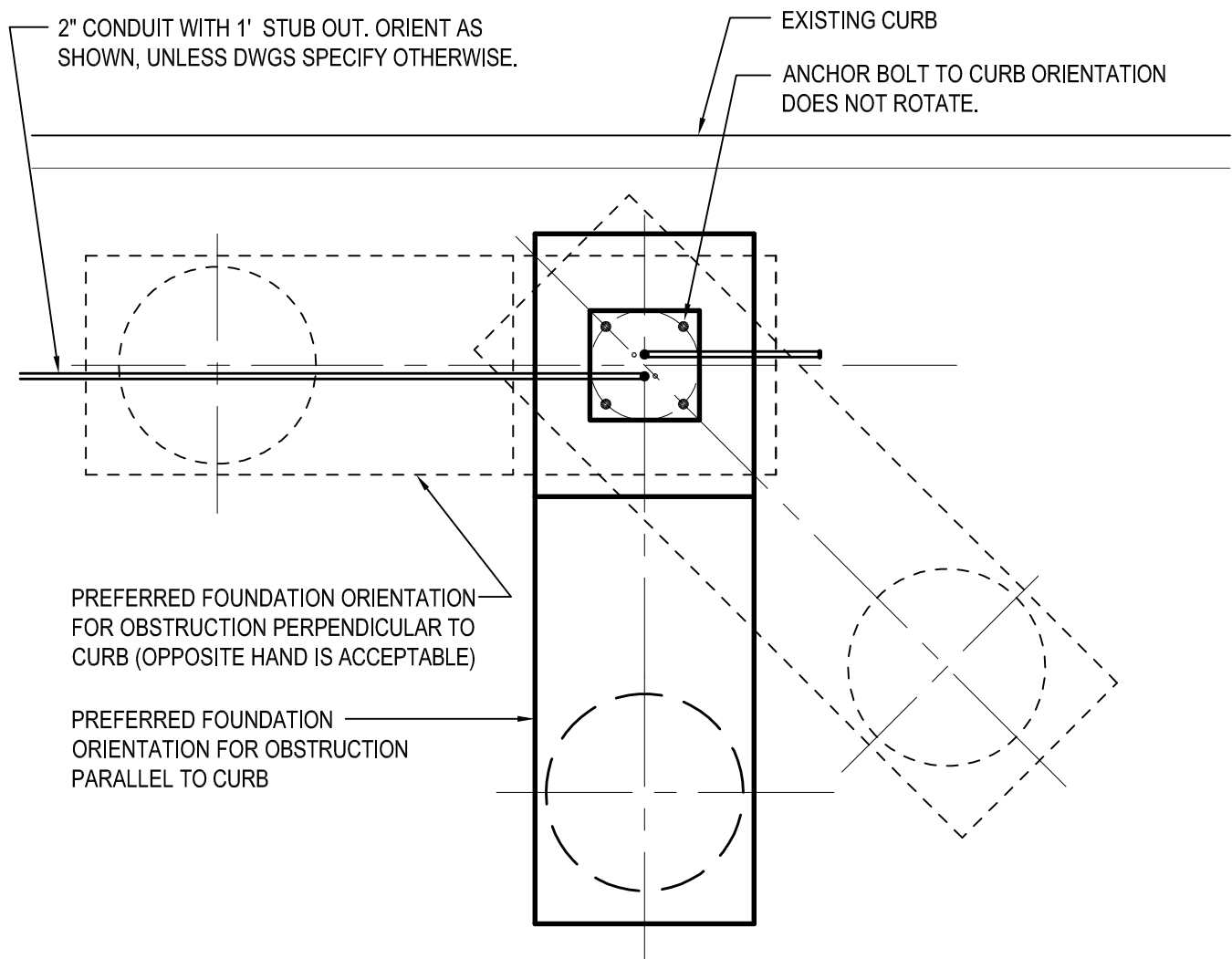
1. POLE SHALL BE CLASS 1, WESTERN RED CEDAR OR DOUGLAS FIR, PER ANSI 05.1—LATEST EDITION.
2. METAL TAGS AND NAILS FOR BURN BRAND ARE NOT ALLOWED.

					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS WOOD POLE FRAMING DETAIL	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-202
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				

DETAILS FOR SHTS 2,3 & 4

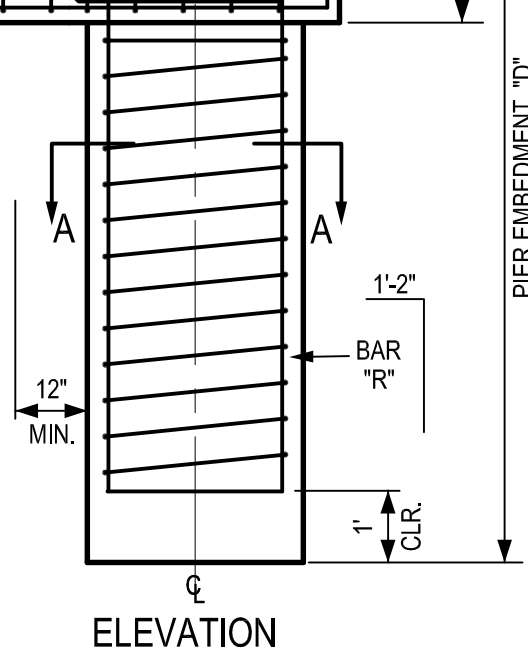
FOUNDATION TYPE	NORMAL WORKING MOMENT (LB-FT)	DIMENSIONS					REBAR QUANTITIES					
		A	P	G	B	D	R*	T	V	W	Y	Z
SA-211B	40,000	2'-4"	9"	6.5"	2.5"	8'-6"	8-#8	4-#7	6-#7	6-#7	#4@6"	4-#7
SA-211D	80,000	2'-8"	10"	7"	3"	10'-6"	12-#8	4-#8	6-#8	6-#8	#5@5"	4-#8
SA-211F	155,000	3'-0"	11.5"	8"	3.5"	13'-0"	12-#8	4-#8	6-#8	6-#8	#5@4"	4-#8

* ADD (1) #8 VERTICAL FOR GROUNDING

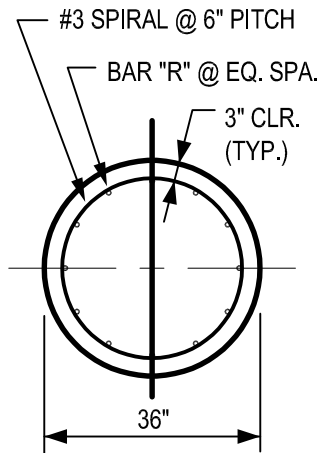


ORIENTATION PLAN

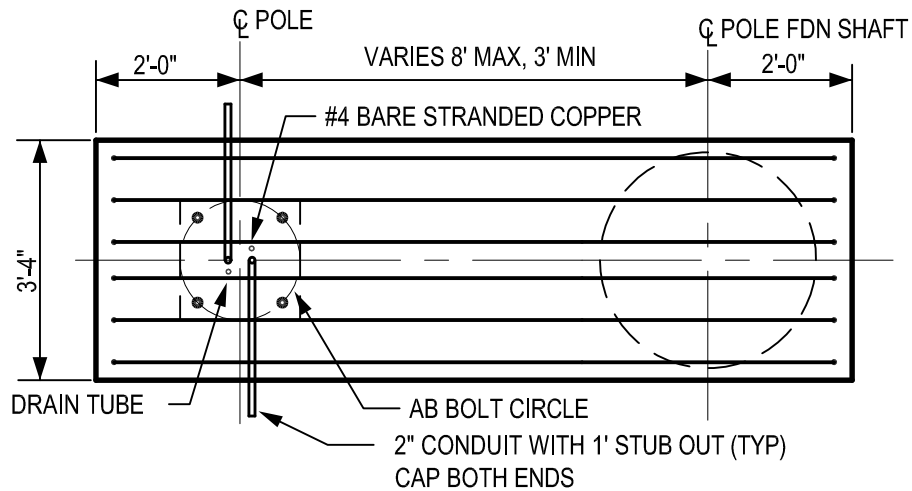
					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 02/2022
					DRAWN: L. ANDERSON			STD DET NO: SA-211
					CHECKED: J. DAVIS			SHR NO: 1 OF 7
No.	REVISION	BY	APP'D	DATE			OFFSET FOUNDATION ANCHOR BASE STEEL POLE	



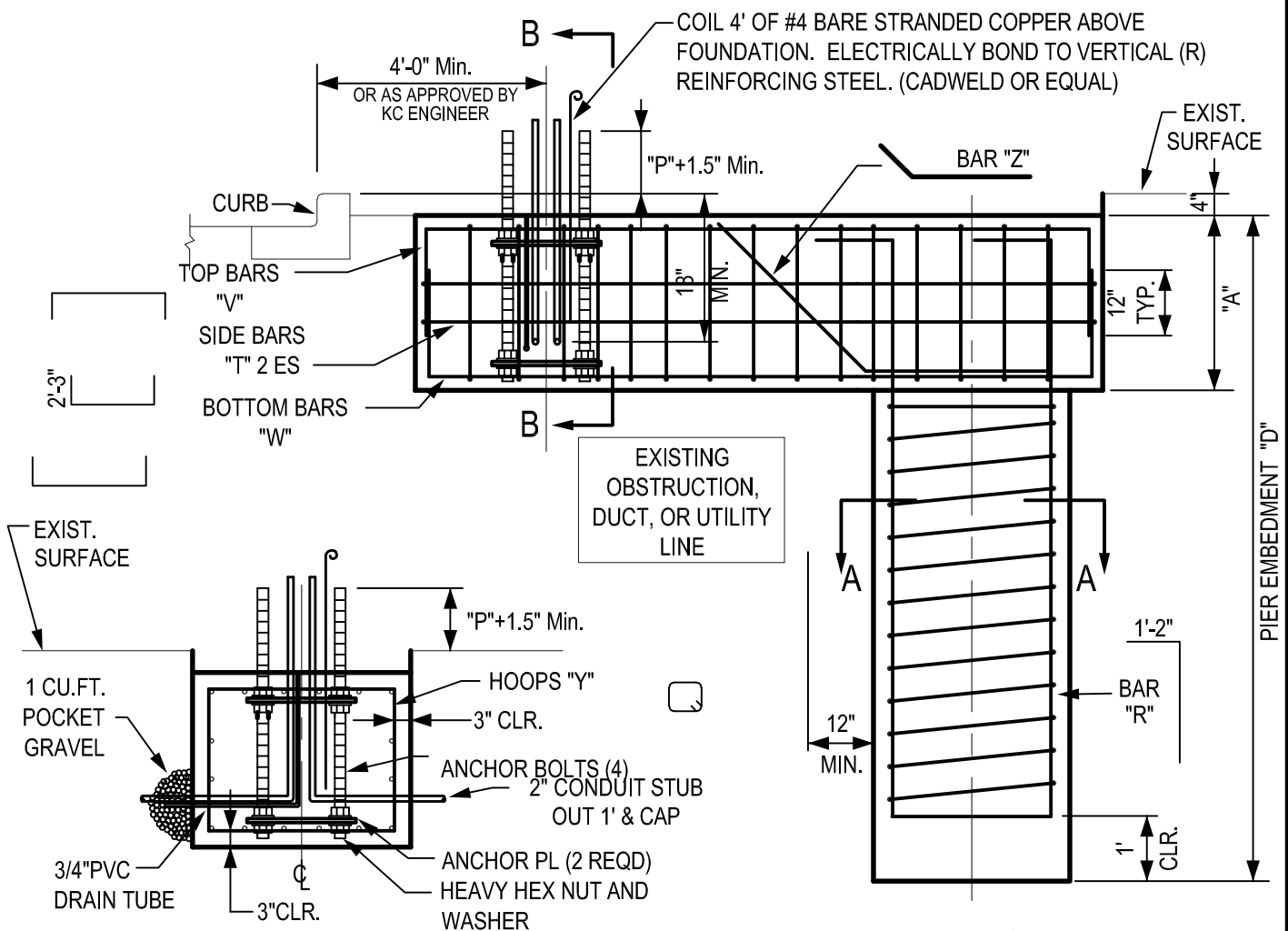
				DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS OFFSET FOUNDATION ANCHOR BASE STEEL POLE (WITH SIDEWALK)	DATE:
				DPG/AW	P. ENG		02/2022
				DRAWN:			STD DET NO:
				D. BENNETT			SA-211
				CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS		2 OF 7



SECTION A-A



PLAN



SECTION B-B

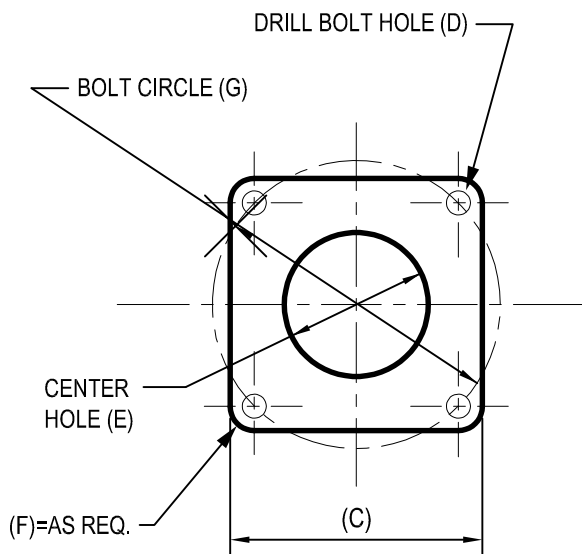
ELEVATION

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS OFFSET FOUNDATION ANCHOR BASE POLE (WITHOUT SIDEWALK)	DATE: 02/2022
					DRAWN: D. BENNETT	 King County METRO		STD DET NO: SA-211
					CHECKED: J. DAVIS			SHT NO: 3 OF 7
No.	REVISION	BY	APP'D	DATE				

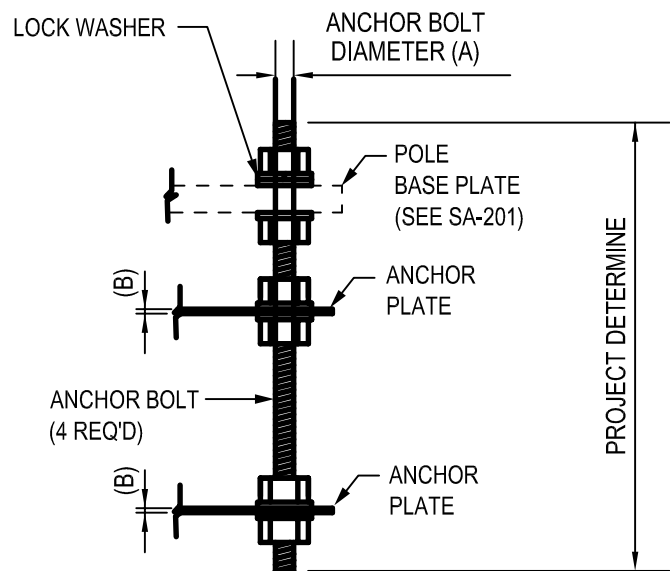


					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS OFFSET FOUNDATION ANCHOR BASE POLE (CHIEF SEATTLE BASE)	DATE:
					DPG/AW	P. ENG		02/2022
					DRAWN:			STD DET NO:
					D. BENNETT			SA-211
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			4 OF 7

FOUNDATION TYPE	ANCHOR BOLT DIAM. (INCHES) (A)	ANCHOR PLATE DIMENSIONS (INCHES)					
		PLATE THICK. (B)	PLATE WIDTH (C)	BOLT HOLE (D)	CENTER HOLE (E)	CORNER RADIUS (F)	BOLT CIRCLE (G)
SA-211B	1 3/4	3/8	16 X 16	1 7/8	12 1/2	1 5/8	18
SA-211D	2	3/8	18 X 18	2 1/8	14	2	20
SA-211F	2 1/2	1/2	20 X 20	2 5/8	15	2 1/4	22



**ANCHOR PLATE
DETAIL**



TYP. ANCHOR BOLT
COMPLETE WITH 6 NUTS
6 FLAT WASHERS & 1 LOCK WASHER

No.	REVISION	BY	APP'D	DATE	DESIGNED: DPG/AW	APPROVED: P. ENG 	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS OFFSET FOUNDATION ANCHOR BASE POLE	DATE: 02/2022
					DRAWN: L. ANDERSON			STD DET NO: SA-211
					CHECKED: J. DAVIS			SHT NO: 5 OF 7

GENERAL NOTES

1. CONCRETE AND REINFORCING STEEL

- 1.1 ALL WORK SHALL BE DONE PER CITY OF SEATTLE BOARD OF PUBLIC WORKS RULES: CHAPTER 40.4 - STREET AND SIDEWALK PAVEMENT OPENING AND RESTORATION RULES IF IN STREET RIGHT OF WAY.
- 1.2 CONCRETE SHALL BE CITY OF SEATTLE CLASS 4000P AIR ENTRAINED, 3/4" MAX AGGREGATE, AND WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
- 1.3 ALL REINFORCING BARS SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM A615 GRADE 60.
- 1.4 MINIMUM CLEAR CONCRETE COVER SHALL BE 3 INCHES.
- 1.5 REINFORCING DETAILS AND FABRICATION SHALL BE AS RECOMMENDED IN ACI 315 "DETAILS & DETAILING OF CONCRETE REINFORCEMENT."
- 1.6 NO CONSTRUCTION JOINTS SHALL BE PERMITTED.

2. ANCHOR PLATES, BOLTS, NUTS AND WASHERS

- 2.1 ANCHOR BOLTS INCLUDING NUTS AND FLAT WASHERS SHALL CONFORM TO ASTM 2.1 F1554-99 GRADE 105 CLASS 2A INCLUDING SUPPLEMENTARY REQUIREMENTS S2, S3, AND S5. THREADS SHALL CONFORM TO THE ANSI STANDARD B1.1 FOR UNC THREAD. ANCHOR BOLTS SHALL HAVE 36 INCHES OF THREAD ON EXPOSED END AND 12 INCHES OF THREAD ON THE EMBEDDED END, OR SHALL BE FULLY THREADED.
- 2.2 ANCHOR PLATES SHALL CONFORM TO ASTM A36.

3. GALVANIZING

- 3.1 ANCHOR PLATES, ANCHOR BOLTS, ANCHOR BOLT NUTS AND WASHERS SHALL BE HOT-DIP GALVANIZED IN CONFORMANCE TO ASTM A153 OR ASTM A123.

4. SOIL

- 4.1 EMBEDMENT DEPTH IS ADEQUATE FOR THREE TIMES THE WORKING MOMENT IN COHESIVE SOILS OF C=1000PSF AND $\phi=0^\circ$ OR BETTER AND COHESIONLESS SOILS OF C=0PSF AND $\phi=26^\circ$ OR BETTER.
- 4.2 EMBEDMENT DEPTH IS ADEQUATE FOR THREE TIMES THE WORKING MOMENT IN COHESIVE SOILS OF C=1000PSF AND $\phi=0^\circ$ OR BETTER, AND IN COHESIONLESS SOILS OF C = 0PSF AND $\phi=26^\circ$ OR BETTER.

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE:
					DPG/AW	P. ENG		02/2022
					DRAWN:	 King County METRO		STD DET NO:
					L. ANDERSON			SA-211
					CHECKED:		OFFSET FOUNDATION ANCHOR BASE POLE	SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			6 OF 7

GENERAL NOTES

5. SUBMITTALS

- 5.1 REINFORCING STEEL SHOP DRAWINGS AND CERTIFICATE OF COMPLIANCE.
- 5.2 CONCRETE MIX PROPORTIONS, ADMIXTURES AND SLUMP.
- 5.3 ANCHOR PLATE, ANCHOR BOLT, ANCHOR BOLT NUTS AND WASHERS CERTIFICATES OF COMPLIANCE.
- 5.4 A TEST REPORT SHALL BE PROVIDED IN ACCORDANCE WITH ASTM F1554-99 AND SUPPLEMENTARY REQUIREMENTS.

6. INSPECTION

- 6.1 CONCRETE SHALL NOT BE PLACED UNTIL THE ENGINEER HAS INSPECTED THE EXCAVATION, THE GROUNDING, THE ANCHOR BOLTS, AND THE PLACEMENT OF THE REINFORCING BAR CAGE.

7. ANCHOR BOLT SETTING

- 7.1 COVER EXPOSED ANCHOR BOLT THREADS AND NUTS WITH AT LEAST 3 LAYERS OF PLASTIC TAPE BEFORE PLACING CONCRETE.
- 7.2 ANCHOR BOLT TEMPLATE SHALL BY USED TEMPORARILY AT THE TOP OF ANCHOR BOLTS FOR ACCURATE POSITIONING AND ALIGNING.

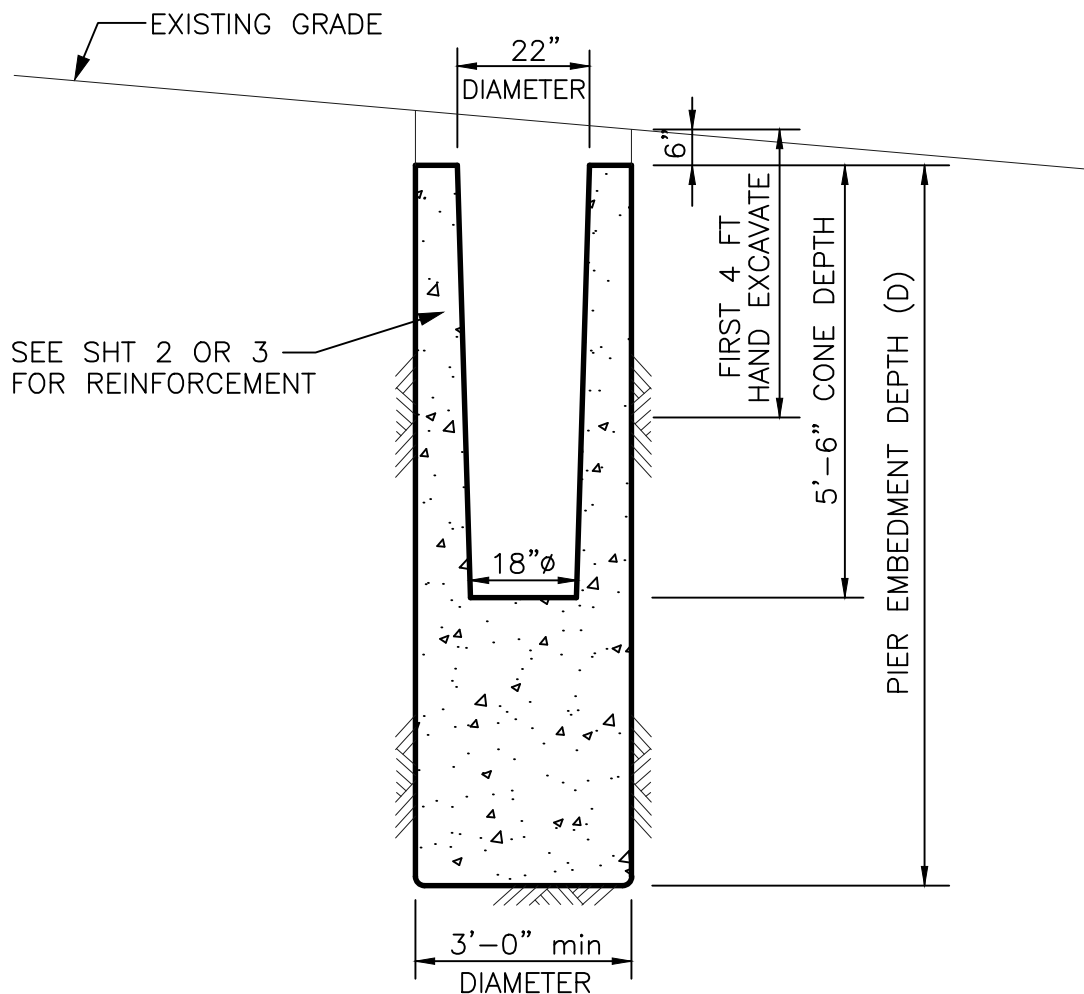
8. CONDUIT

- 8.1 CONDUIT FROM FOUNDATION SHALL BE SCHEDULE 80 PVC. CONDUIT BENDS SHALL HAVE A MINIMUM RADIUS OF 12".

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE:
					DPG/AW	P. ENG		02/2022
					DRAWN:	 King County METRO		STD DET NO:
					L. ANDERSON			SA-211
					CHECKED:		OFFSET FOUNDATION ANCHOR BASE POLE	SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			7 OF 7

EMBEDDED FOUNDATION SCHEDULE				
FOUNDATION TYPE	NORMAL WORKING MOMENT (LB-FT)	PIER EMBEDMENT DEPTH (D) (FEET)	REBAR REQUIREMENTS	
			VERTICAL*	SPIRAL TIES
SA-212-B	40,000	8.5	8-#8	#3 @ 6"
SA-212-D	80,000	10.5	12-#8	#3 @ 6"
SA-212-F	155,000	13	12-#8	#3 @ 6"

*ADD (1) #8 VERTICAL FOR GROUNDING



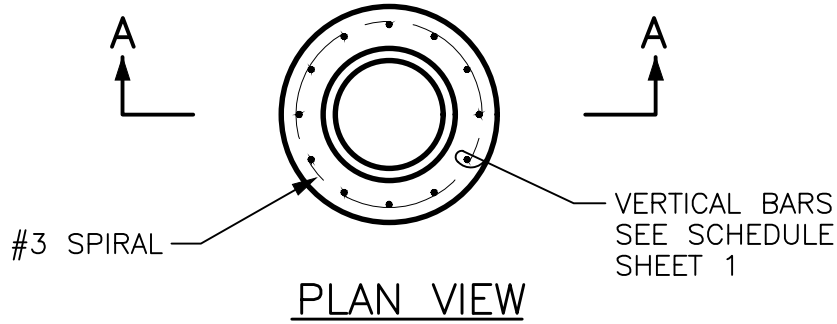
INCLINED CONDITION & CONE DETAIL

REBAR NOT SHOWN FOR CLARITY

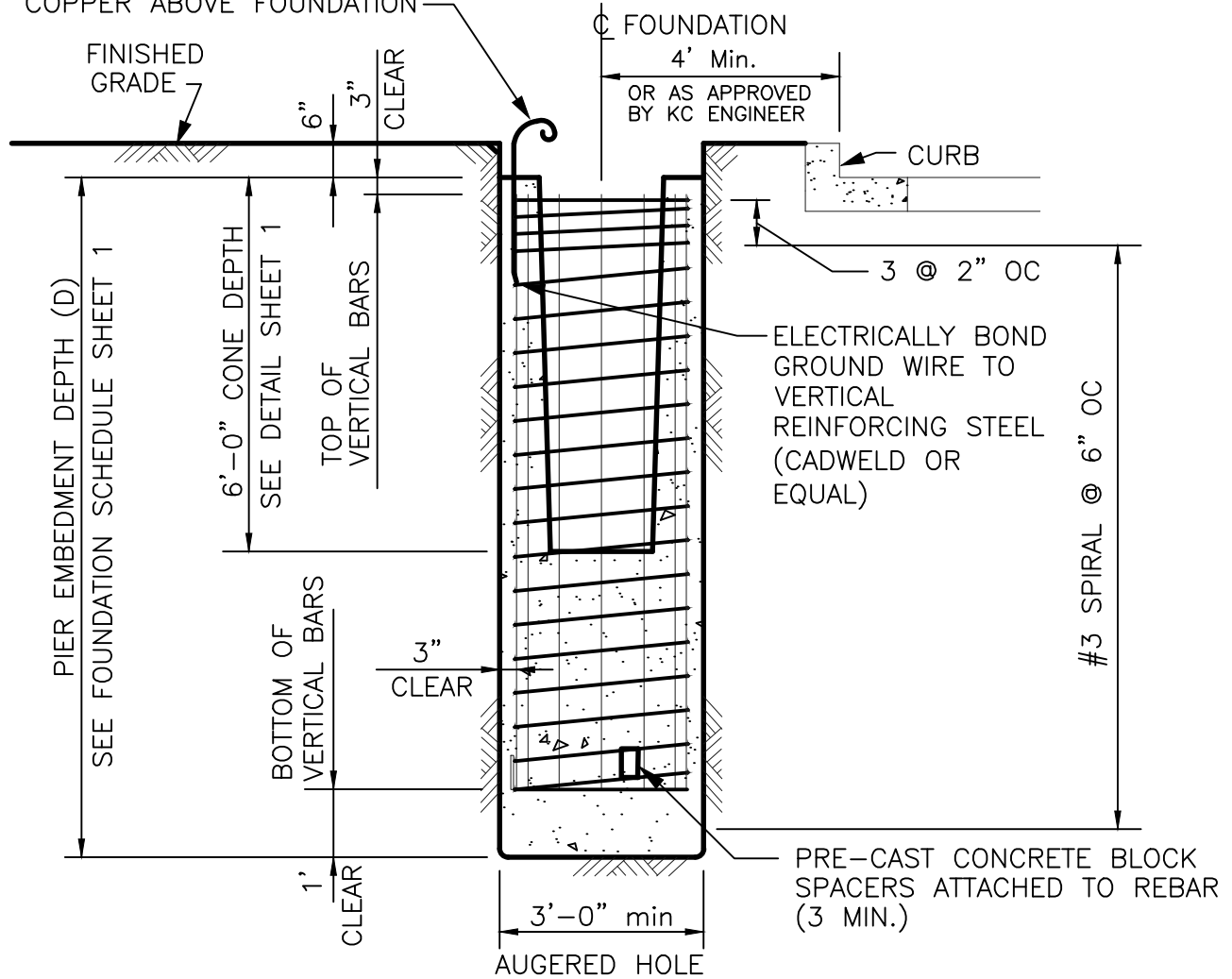
NOTES:

- SEE SHEET 4 FOR GENERAL NOTES.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-212
					CHECKED: J. DAVIS		EMBEDDED STEEL POLE (STANDARD FOUNDATION)	SHT NO: 1 OF 6
No.	REVISION	BY	APP'D	DATE				



COIL 4' OF #4 BARE STRANDED
COPPER ABOVE FOUNDATION

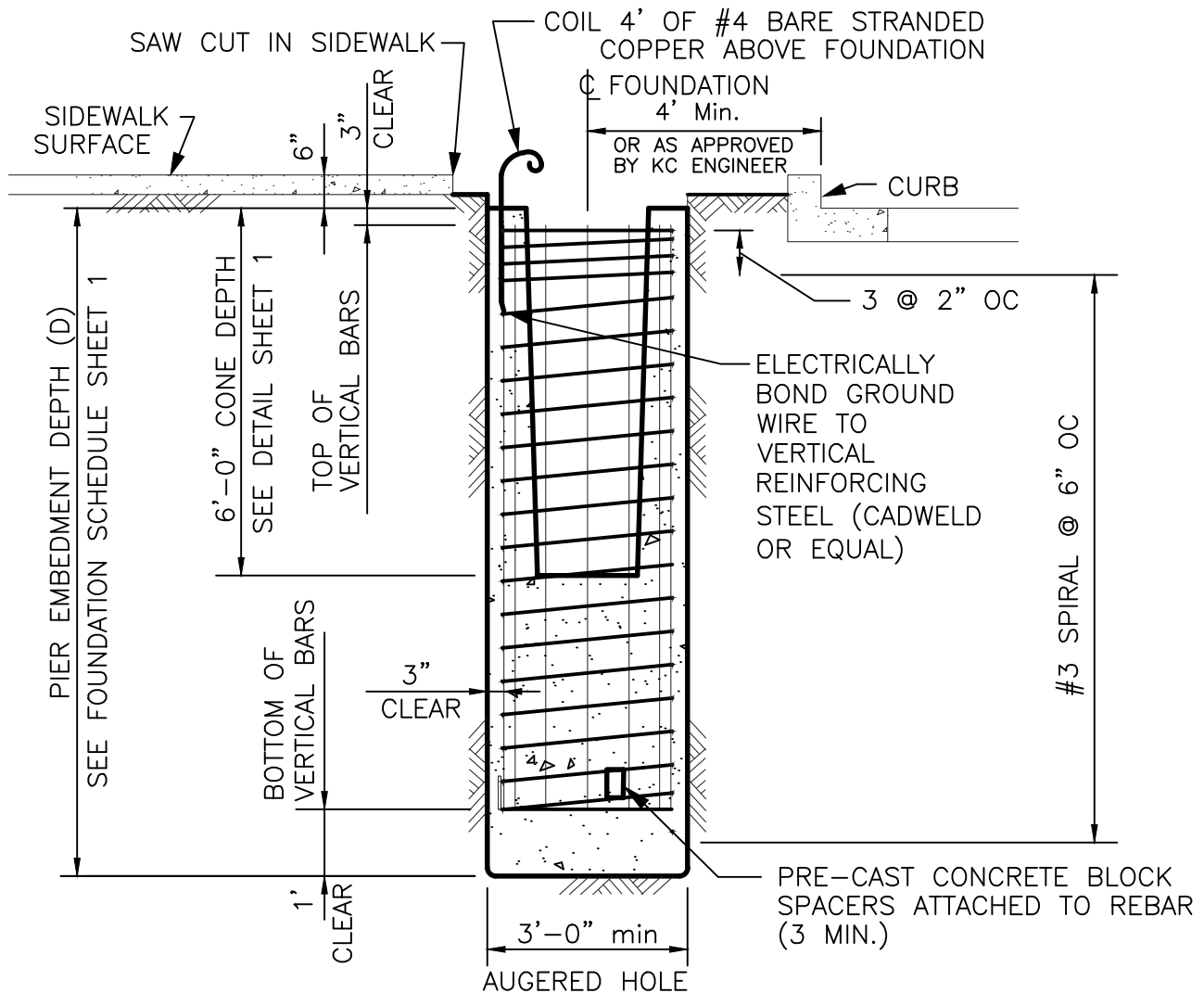
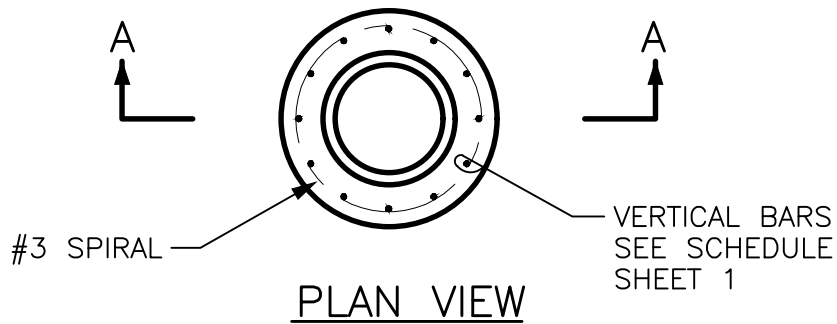


SECTION A-A
WITHOUT SIDEWALK

NOTES:

1. SEE SHEET 4 FOR GENERAL NOTES.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-212
					CHECKED: J. DAVIS			SHT NO: 2 OF 6
No.	REVISION	BY	APP'D	DATE			EMBEDDED STEEL POLE (STANDARD FOUNDATION)	



**SECTION A-A
WITH SIDEWALK**

NOTES:

1. SEE SHEET 4 FOR GENERAL NOTES.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-212
					CHECKED: J. DAVIS			SHT NO: 3 OF 6
No.	REVISION	BY	APP'D	DATE			EMBEDDED STEEL POLE (STANDARD FOUNDATION)	

GENERAL NOTES

1. CONCRETE

- 1.1 All work shall be done per City of Seattle Board of Public Works Rules: Chapter 40.4 – Street and Sidewalk Pavement Opening and Restoration Rules if in Street Right Of Way.
- 1.2 Concrete shall be City of Seattle Class 4000p air entrained, 3/4" max aggregate, and with a minimum compressive strength of 4000 PSI at 28 days.
- 1.3 All reinforcing bars shall be deformed billet steel conforming to ASTM A615 Grade 60.
- 1.4 Minimum clear concrete cover shall be 3 inches.
- 1.5 Reinforcing details and fabrication shall be as recommended in ACI 315 "Details & Detailing of Concrete Reinforcement."
- 1.6 No construction joints shall be permitted.

2. SOIL

- 2.1 Embedment depth is based upon research report numbers 105-1, 105-2 Resistance of a drilled shaft footing to overturning loads by Texas Transportation Institute, 1968.
- 2.2 Embedment depth is adequate for three times the working moment in cohesive soils of $c=1000\text{PSF}$ and $\phi=0^\circ$ or better and cohesionless soils of $c=0\text{PSF}$ and $\phi=26^\circ$ or better.

3. SUBMITTALS

- 3.1 Reinforcing steel shop drawings and certificate of compliance.
- 3.2 Concrete mix proportions, admixtures and slump.

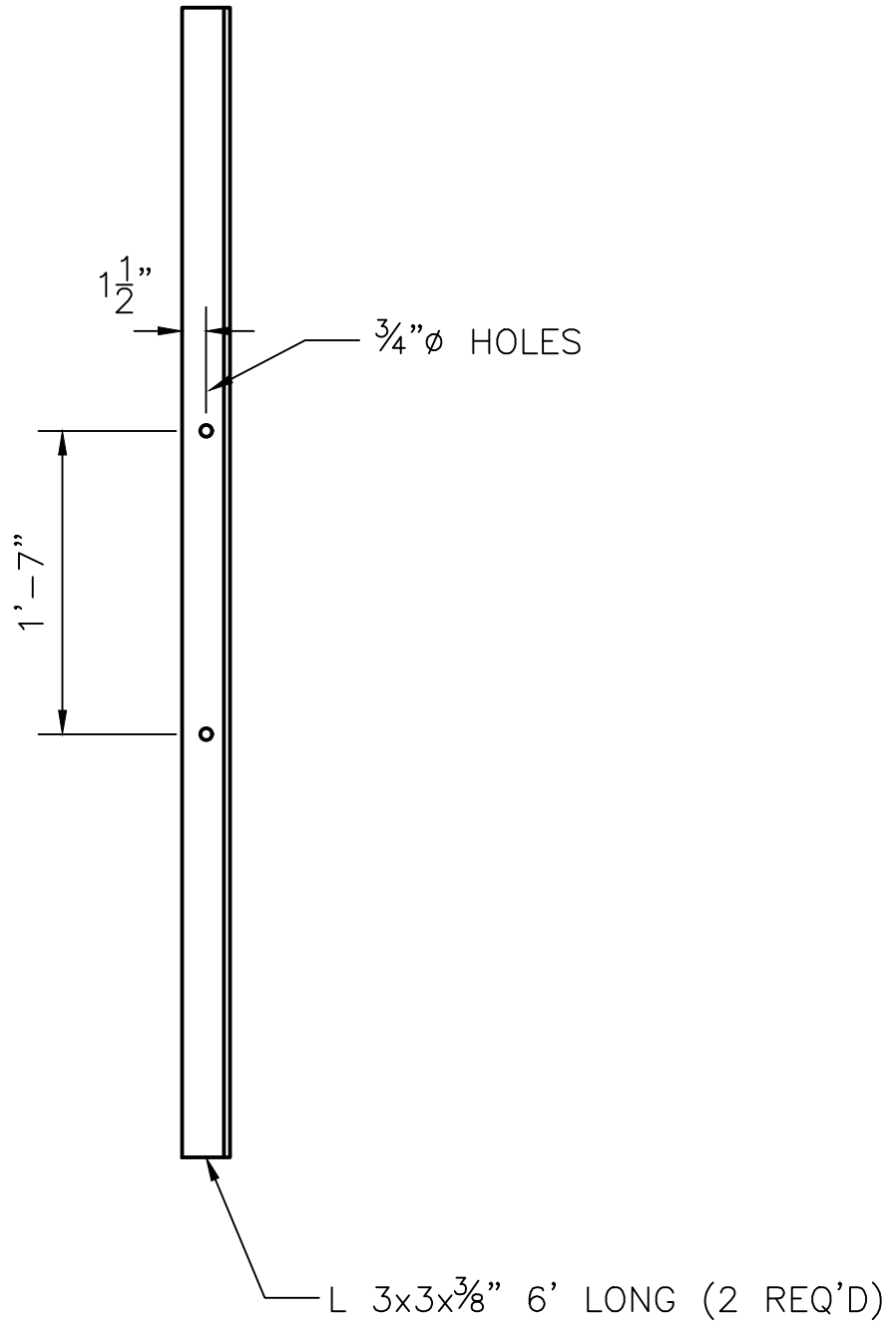
4. INSPECTION

- 4.1 Concrete shall not be placed until the Engineer has inspected the excavation, the grounding, the cone, and the placement of the reinforcing bar cage.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS EMBEDDED STEEL POLE (STANDARD FOUNDATION)	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-212
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			4 OF 6

NOTE:

MATERIAL SHALL BE
ASTM A36.



					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS EMBEDDED STEEL POLE FOUNDATION INTERIOR CONE FORM	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-212
					CHECKED:		SHT NO:	
No.	REVISION	BY	APP'D	DATE	J. DAVIS		6 OF 6	

#3 SPIRAL

VERTICAL BARS
SEE SCHEDULE
SHEET 4

#4 BARE STRANDED
COPPER

PLAN VIEW

CURBLINE

ANCHOR BOLT CIRCLE
SEE SCHEDULE SHEET 4.
ORIENT ANCHOR BOLTS
TO CURBLINE AS SHOWN

(2) 2" CONDUIT STUB OUT 1' & CAP
BOTH ENDS (TYP). ORIENT AS SHOWN
UNLESS DWGS SPECIFY OTHERWISE.

SEE SHEETS 2
& 3 "TOP OF
FOUNDATION
DETAILS" FOR
DEPTH BELOW
SURFACE

TOP OF
FOUNDATION

PIER EMBEDMENT DEPTH (D)
SEE FOUNDATION SCHEDULE SHEET 4

1.5" CLEAR

TOP OF VERTICAL BARS

BOTTOM OF VERTICAL BARS

FIRST 4 FT
HAND
EXCAVATE

3" CLR

1' CLEAR

COIL 4' OF #4 BARE STRANDED COPPER
ABOVE FOUNDATION TERMINATED WITH
BURNDY YA4CN

4' MIN
OR AS APPROVED BY
KC ENGINEER

TOP
OF 2"
CONDUIT

CURB

3 @ 2" OC

18" MIN

ELECTRICALLY BOND
GROUND WIRE TO
VERTICAL REINFORCING
STEEL (CADWELD OR
EQUAL)

#3 SPIRAL @ 6" OC

PRE-CAST CONCRETE BLOCK
SPACERS ATTACHED TO REBAR
(3 MIN)

AUGERED HOLE
SEE SHEET 4

SECTION A-A

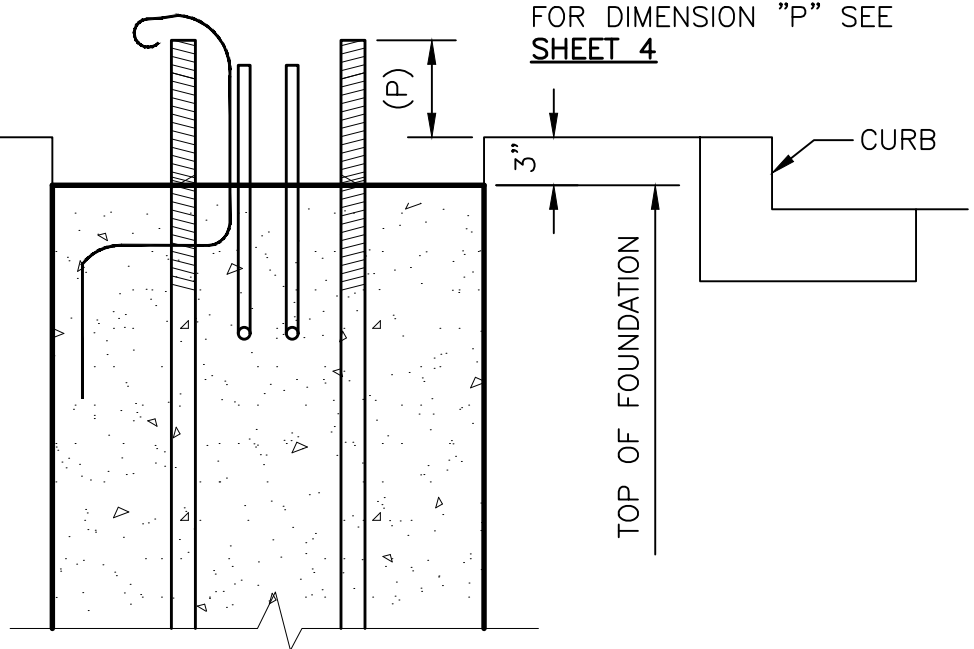
NOTES:

- SEE SHEETS 6 & 7
FOR GENERAL NOTES.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-213
					CHECKED: J. DAVIS		ANCHOR BASE STEEL POLE (STANDARD FOUNDATION)	SHT NO: 1 OF 7
No.	REVISION	BY	APP'D	DATE				

FINISH GRADE

ALL FOUNDATIONS
SHALL BE THIS TYPE
UNLESS SPECIFIED
OTHERWISE ON
DRAWINGS.
SEE **SHEET 4** FOR
INCLINED DETAILS



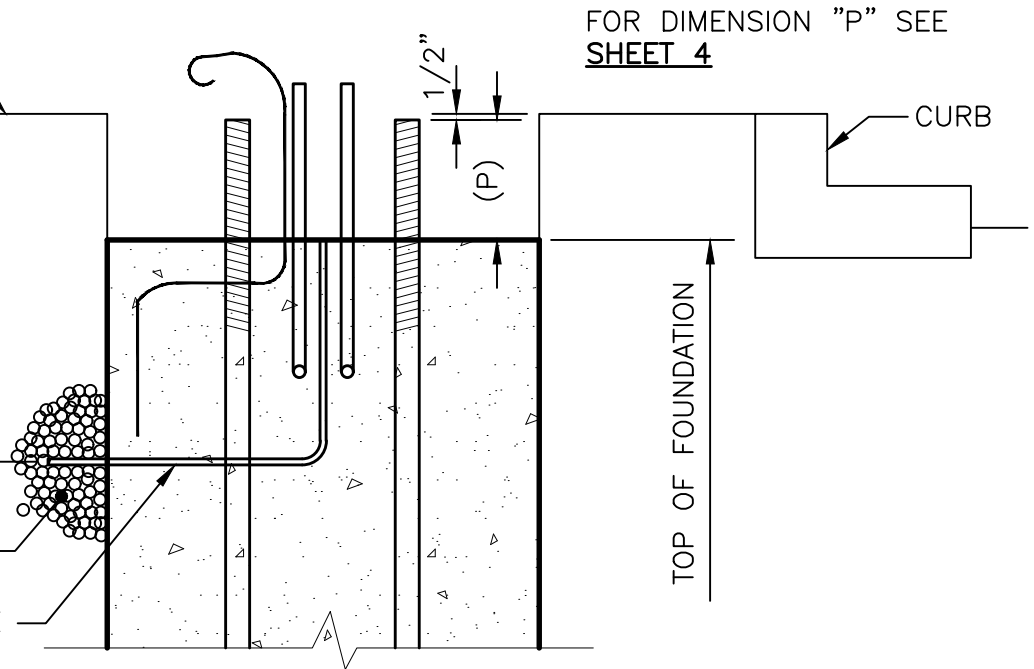
STANDARD CONDITION
TOP OF FOUNDATION DETAILS

FINISH GRADE

1/2 CUBIC FOOT
GRAVEL POCKET

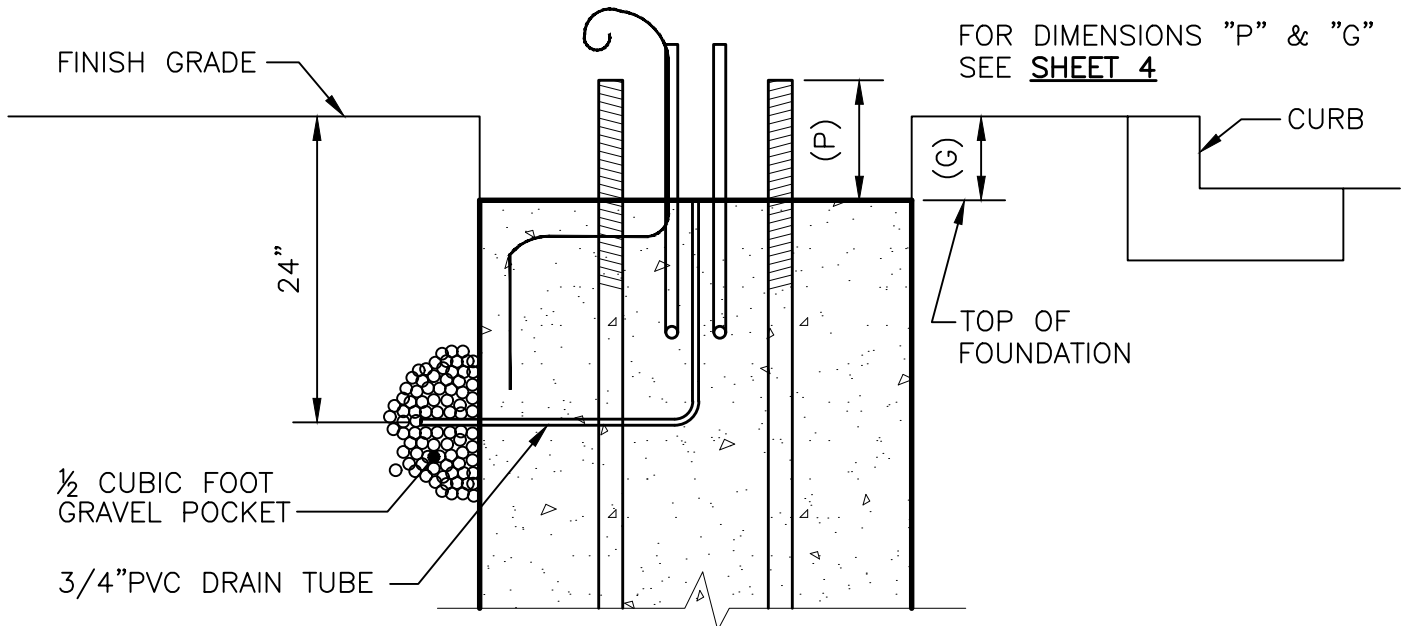
3/4" PVC DRAIN TUBE

24"

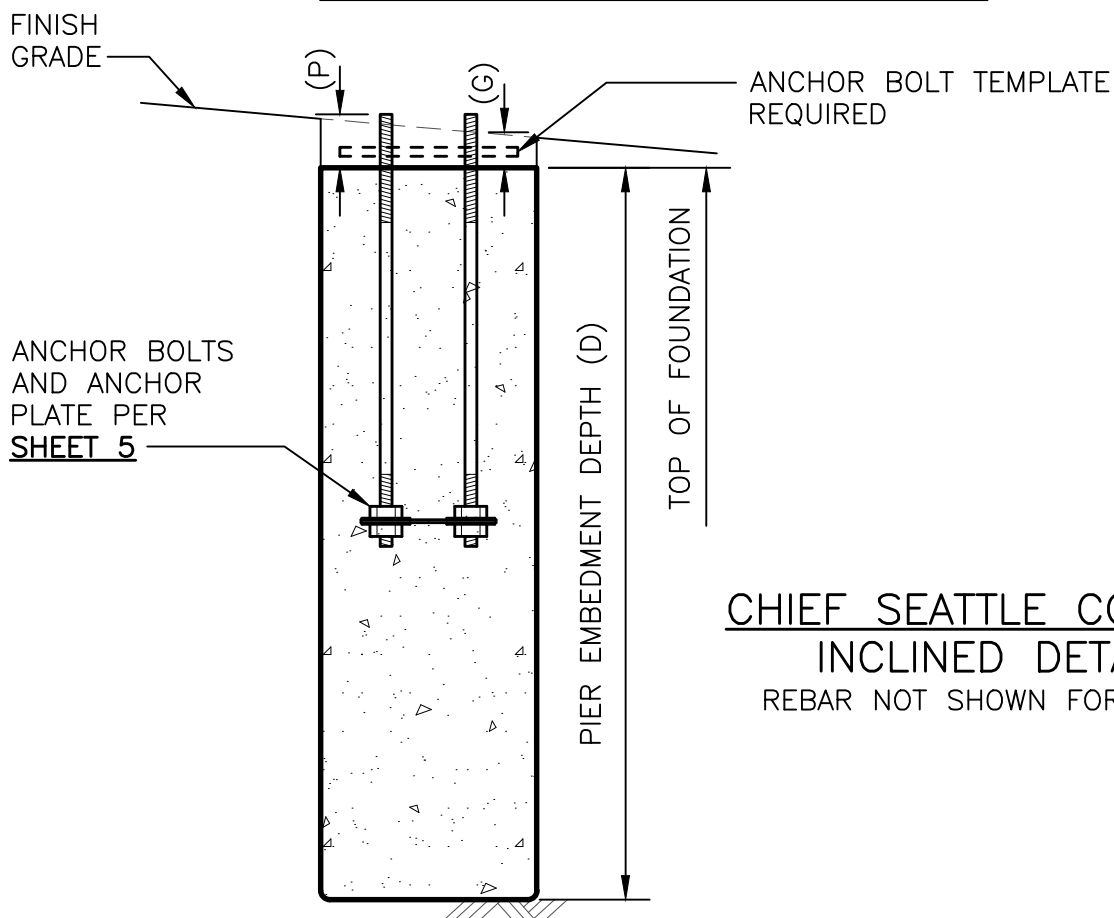


BURIED CONDITION
TOP OF FOUNDATION DETAILS
SEE **SHEET 4** FOR INCLINED DETAILS

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON		SA-213	
					CHECKED:		ANCHOR BASE STEEL POLE (STANDARD FOUNDATION)	SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			2 OF 7



CHIEF SEATTLE CONDITION
TOP OF FOUNDATION DETAILS
 USE ONLY WHERE NOTED ON DRAWINGS



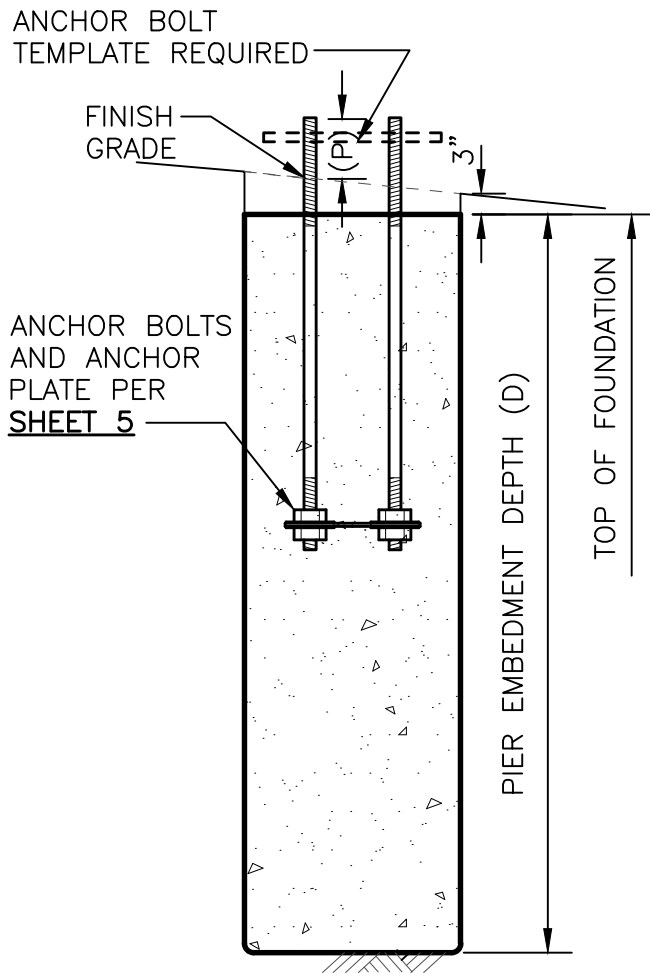
CHIEF SEATTLE CONDITION
INCLINED DETAILS
 REBAR NOT SHOWN FOR CLARITY

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021	
					DRAWN: L. ANDERSON			STD DET NO: SA-213	
					CHECKED: J. DAVIS			SHT NO: 3 OF 7	
No.	REVISION	BY	APP'D	DATE				ANCHOR BASE STEEL POLE (STANDARD FOUNDATION)	

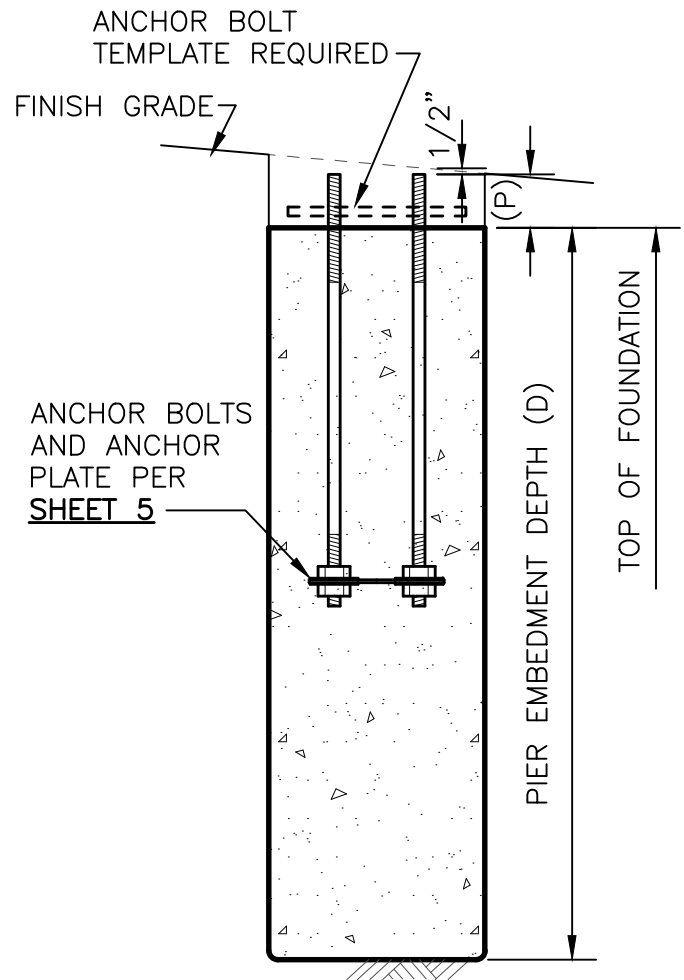
ANCHOR BASE FOUNDATION SCHEDULE

FOUNDATION TYPE	POLE My STANDARD/ MAXIMUM (KIP-FT)	PIER EMBEDMENT DEPTH (D)		PIER DIAMETER (FEET)	REBAR REQUIREMENTS		BOLT CIRCLE ANCHOR	BOLT PROJ ANCHOR	ONLY CHIEF SEATTLE
		4 BLOWS PER FT	2 BLOWS PER FT		VERTICAL*	CONTINUOUS TIES			
SA-213-A	110/180	9	14	3'-0"	8-#8	#3	15"	8.5"	6"
SA-213-B	110/180	9	14	3'-0"	8-#8	#3	18"	9"	6.5"
SA-213-D	180/270	10.5	16	3'-0"	12-#8	#3	20"	10"	7"
SA-213-F	330/400	13	19	3'-0"	12-#9	#3	22"	11.5"	8"
SA-213-H	600/600	15.5	21	3'-6"	14-#9	#3	24"	12"	8.5"

*ADD (1) #8 VERTICAL FOR GROUNDING



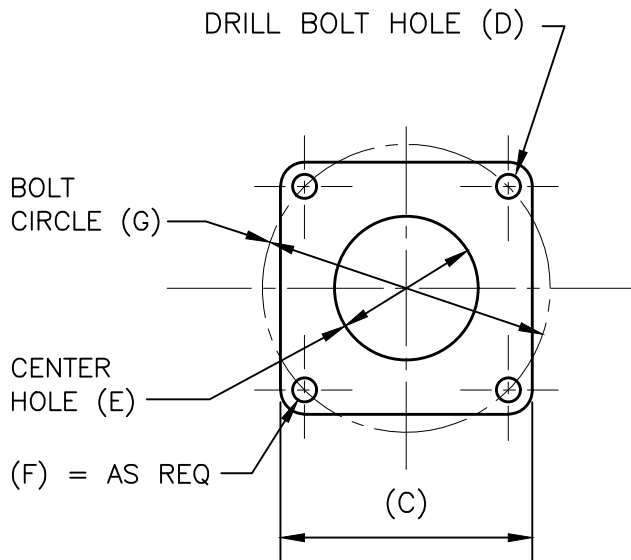
**STANDARD CONDITION
INCLINED DETAILS**
REBAR NOT SHOWN FOR CLARITY



**BURIED CONDITION
INCLINED DETAILS**
REBAR NOT SHOWN FOR CLARITY

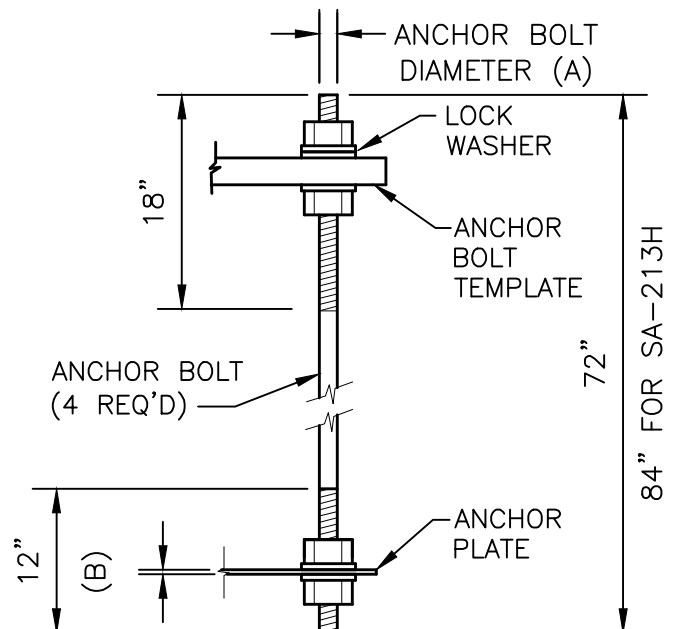
					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-213
					CHECKED: J. DAVIS			ANCHOR BASE STEEL POLE (STANDARD FOUNDATION)
No.	REVISION	BY	APP'D	DATE				

FOUNDATION TYPE	ANCHOR BOLT DIAMETER (INCHES) (A)	ANCHOR PLATE DIMENSIONS (INCHES)					
		PLATE THICKNESS (B)	PLATE WIDTH (C)	BOLT HOLE (D)	CENTER HOLE (E)	CORNER RADIUS (F)	BOLT CIRCLE (G)
SA-213-A	1 1/2	3/8	16 X 16	1 5/8	10 1/2	1 1/2	15
SA-213-B	1 3/4	3/8	16 X 16	1 7/8	12 1/2	1 5/8	18
SA-213-D	2	3/8	18 X 18	2 1/8	14	2	20
SA-213-F	2 1/2	3/8	20 X 20	2 5/8	15	2 1/4	22
SA-213-H	2 1/2	3/8	24.5 X 24.5	2 5/8	16 1/2	2 1/2	24



ANCHOR PLATE DETAIL

SEE GENERAL NOTES SHEETS 6 & 7



TYPICAL ANCHOR BOLT

COMPLETE WITH 4 NUTS 4 FLAT
WASHERS & 1 LOCK WASHER.

SEE GENERAL NOTES/SHEETS 6 & 7

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-213
					CHECKED: J. DAVIS			ANCHOR BASE STEEL POLE (STANDARD FOUNDATION)
No.	REVISION	BY	APP'D	DATE				

GENERAL NOTES

1. CONCRETE AND REINFORCING STEEL

- 1.1 All work shall be done per Seattle Sidewalk and Street Paving and Restoration Rules and Regulations if in Street Right Of Way.
- 1.2 Concrete shall be City of Seattle CLASS 4000P entrained, 3/4" max aggregate, and with a minimum compressive strength of 4000 PSI at 28 days.
- 1.3 All reinforcing bars shall be deformed billet steel conforming to ASTM A615 Grade 60.
- 1.4 Minimum clear concrete cover shall be 3" from sides and bottom and 1" from the top.
- 1.5 Reinforcing details and fabrication shall be as recommended in ACI 315 "Details & Detailing of Concrete Reinforcement."
- 1.6 No construction joints shall be permitted.

2. ANCHOR PLATES, BOLTS, NUTS AND WASHERS

- 2.1 Anchor bolts including nuts and flat washers shall conform to ASTM F1554-07 Grade 105 Class 2A including supplementary requirements S2, S3 and S5. Threads shall conform to the ANSI Standard B1.1 for UNC thread. Anchor bolts shall have 18 inches of thread on exposed end and 12 inches of thread on the embedded end.
- 2.2 Anchor plates shall conform to ASTM A36.

3. GALVANIZING

- 3.1 Anchor plates, anchor bolts, anchor bolt nuts and washers shall be hot-dip galvanized in conformance to ASTM 2329 and ASTM A123.

4. SOIL

- 4.1 Embedment depth is adequate for three times the working moment in cohesive soils of $c=1000\text{PSF}$ and $\phi=0^\circ$ or better and cohesionless soils of $c=0\text{PSF}$ and $\phi=26^\circ$ or better.

(continued, sheet 7 of 7)

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021	
					DRAWN: L. ANDERSON			STD DET NO: SA-213	
					CHECKED: J. DAVIS			SHT NO: 6 OF 7	
No.	REVISION	BY	APP'D	DATE				ANCHOR BASE STEEL POLE (STANDARD FOUNDATION)	

GENERAL NOTES

(Continued from sheet 6 of 7)

5. SUBMITTALS

- 5.1 Reinforcing steel shop drawings and certificate of compliance.
- 5.2 Concrete mix proportions, admixtures and slump.
- 5.3 Anchor plate, anchor bolt, anchor bolt nuts and washers certificates of compliance.
- 5.4 A test report shall be provided in accordance with ASTM F1554-07 and supplementary requirements. (continued, sheet 7 of 7)

6. INSPECTION

- 6.1 Concrete shall not be placed until the King County Project Representative has inspected the excavation, the grounding, the anchor bolts, and the placement of the reinforcing bar cage.

7. ANCHOR BOLT SETTING

- 7.1 Cover exposed anchor bolt threads and nuts with at least 3 layers of plastic tap before placing concrete
- 7.2 Anchor bolt template shall be used temporarily at the top of anchor bolts for accurate positioning and aligning.
- 7.3 Anchor bolts shall not exceed 1/8" from vertical over the entire length of bolt upon completion of foundation.

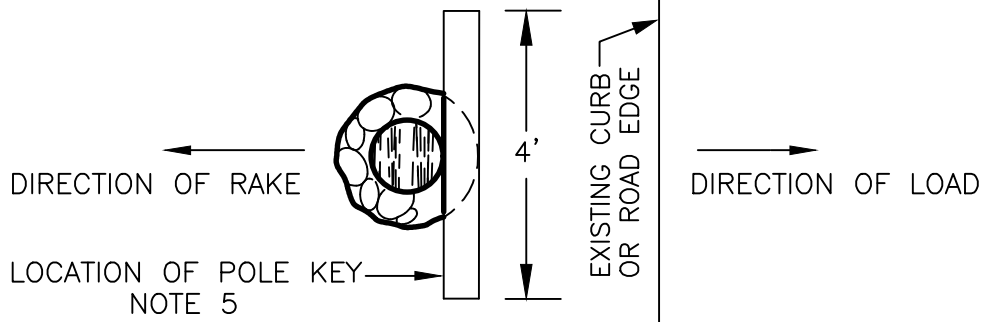
8. CONDUIT

- 8.1 Conduit from foundation shall be schedule 80 PVC. Conduit bends shall have a minimum radius of 12".

9. COMPRESSION CONNECTION

- 9.1 Compression connection shall be Burndy YA4CN. One-Hole HYlug/Code Conductor-long Barrel installed per manufacturer's specifications.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021	
					DRAWN: L. ANDERSON			STD DET NO: SA-213	
					CHECKED: J. DAVIS			SHT NO: 7 OF 7	
No.	REVISION	BY	APP'D	DATE				ANCHOR BASE STEEL POLE (STANDARD FOUNDATION)	



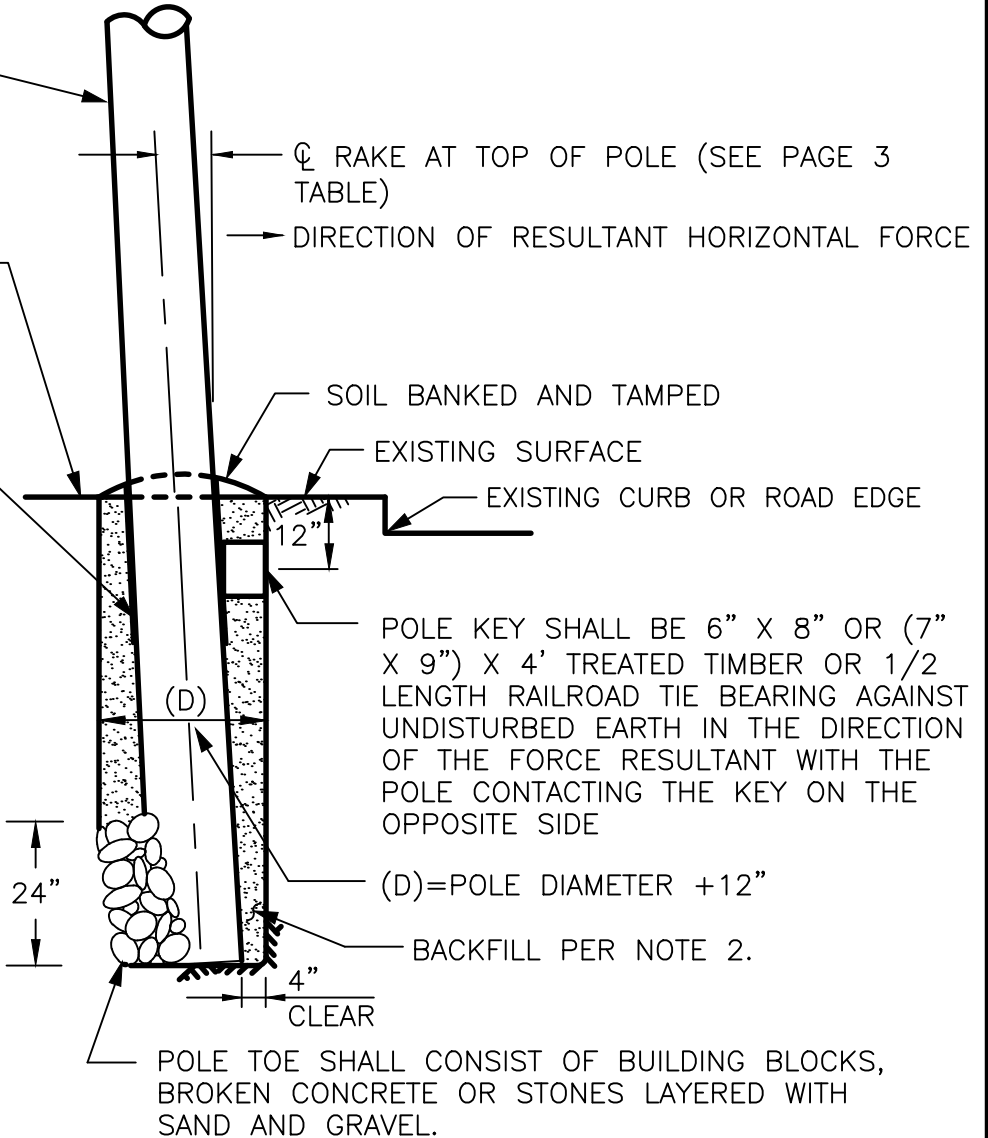
PLAN

POLE FACE SHALL BE PARALLEL TO CURB OR ROAD EDGE AND AWAY FROM ROAD EDGE

EMBEDMENT IS MEASURED FROM LOW POINT IF GROUND IS SLOPED

GROUNDLINE PRESERVATIVE WRAP (TENINO WOOD PRESERVATIVES—CUNAP WRAP)

EMBEDMENT SEE PAGE 3 TABLE

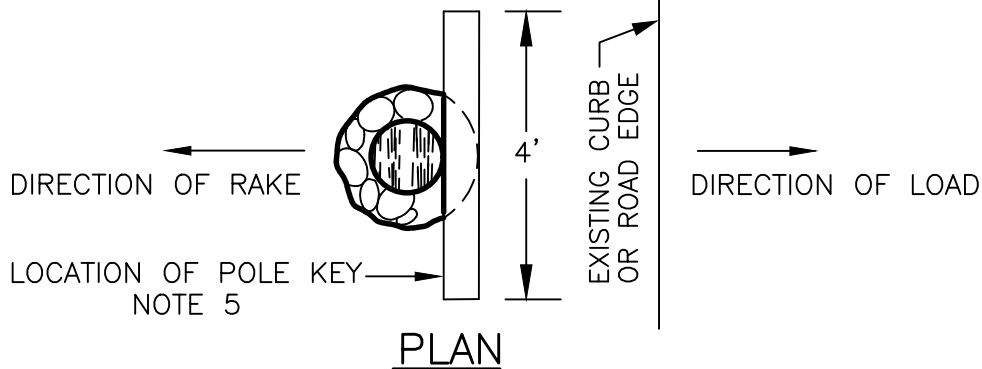


NOTES:

1. SEE SHEET 3 FOR GENERAL NOTES.

ELEVATION

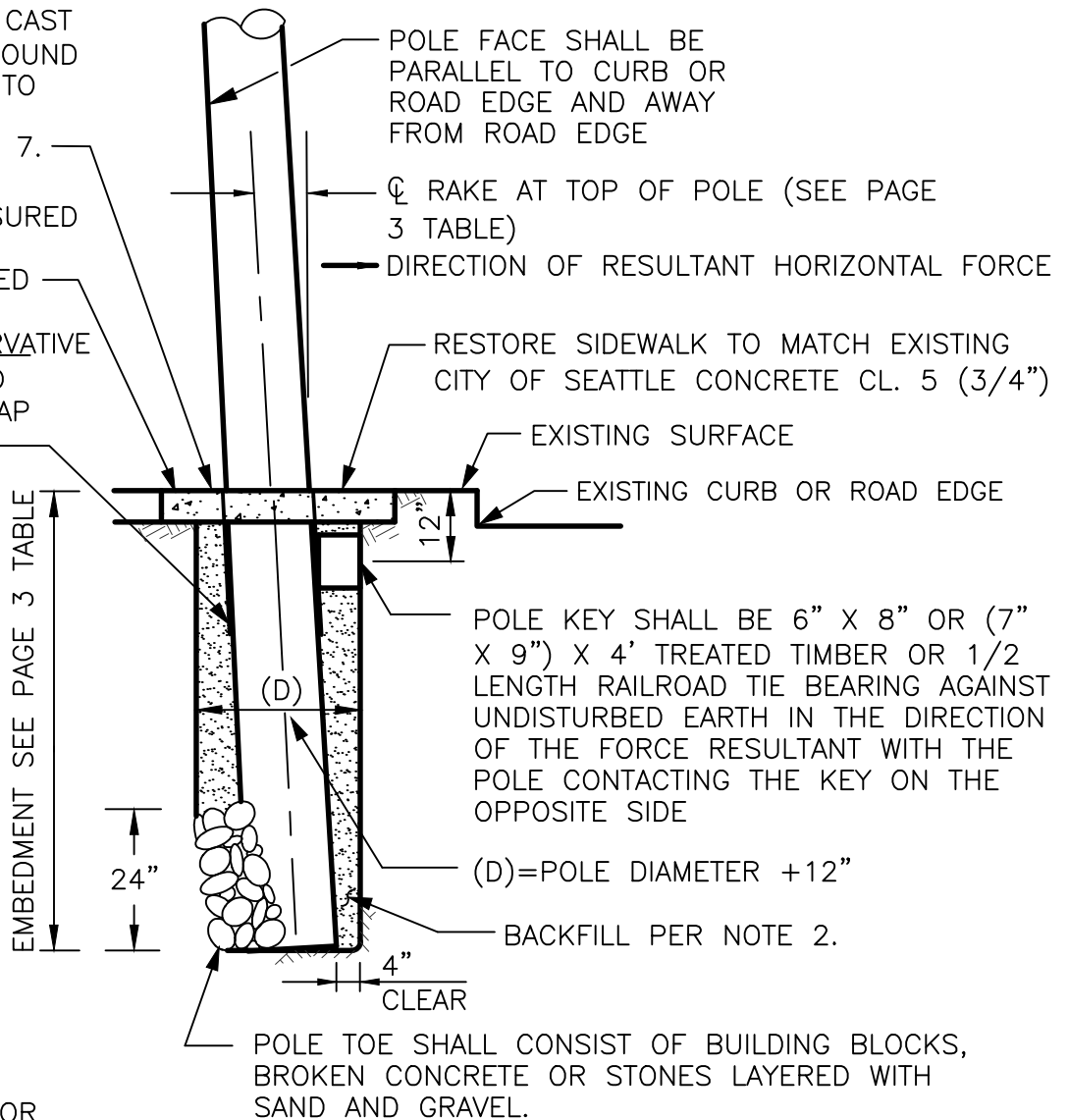
					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS WOOD POLE SETTING STANDARD (WITHOUT SIDEWALK)	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-214
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS		1 OF 3	



FOR NEW SIDEWALK, CAST 3'x3' CONC SLAB AROUND WOOD JOINTS. SLAB TO MATCH ADJACENT SIDEWALK. SEE NOTE 7.

EMBEDMENT IS MEASURED FROM LOW POINT IF SIDE-WALK IS SLOPED

GROUNDLINE PRESERVATIVE WRAP (TENINO WOOD PRESERVATIVES-CUNAP WRAP)



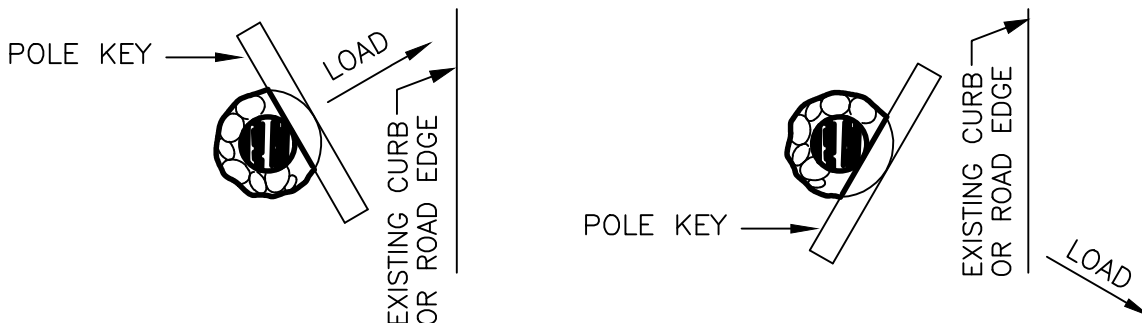
NOTES:

- SEE SHEET 3 FOR GENERAL NOTES.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS WOOD POLE SETTING STANDARD (WITH SIDEWALK)	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-214
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			2 OF 3

NOTES:

1. THIS DETAIL APPLIES TO SOIL FREE OF PEAT, MUCK OR OTHER ORGANIC MATTER. SOILS HAVING THE ABOVE MENTIONED QUALITIES SHALL REQUIRE SPECIAL INVESTIGATION.
2. SOIL USED FOR BACKFILL SHALL BE WELL GRADED SAND AND GRAVEL MIX FREE FROM SOD, GRASS, WEEDS AND ALL SIMILAR ORGANIC MATERIALS AND SUITABLY DRY FOR COMPACTION. SAND AND GRAVEL MIX CAN BE EITHER EXCAVATED SOIL OR IMPORTED.
3. ALL WATER IN HOLE SHALL BE REMOVED BEFORE SETTING AND TAMPING THE HOLE.
4. IN BACKFILLING, THE SAND AND GRAVEL MIX SHALL BE REPLACED IN EVEN LAYERS APPROXIMATELY 6" THICK AND FIRMLY AND THOROUGHLY TAMPED TO A DRY DENSITY NOT LESS THAN THE NATURAL IN-PLACE DRY DENSITY OF THE SURROUNDING EARTH. IF HAND TAMPING BARS ARE USED, NOT MORE THAN ONE PERSON SHALL SHOVEL WHILE THREE PERSONS ARE TAMPING.
5. POLE KEY SHALL BE INSTALLED PERPENDICULAR TO DIRECTION OF LOAD, AND MAY NOT BE PARALLEL TO EXISTING CURB OR ROAD EDGE. SEE PLAN EXAMPLES BELOW
6. DELETE POLE KEY & POLE TOE IF POLE IS GUYED WITH SA-231, SA-232, OR SA-233.
7. FOR AN EXISTING SIDEWALK, SAWCUT 3'x3' AROUND A POLE OR AT NEAREST CONSTRUCTION JOINT AS DIRECTED BY COS ENGINEER.



EMBEDMENT AND RAKE SCHEDULE				
POLE LENGTH (ft)	EMBEDMENT (ft)	RAKE		
		UNGUYED	GUYED	BRACKET ARM
35	8'-0"	17"	7"	7"
40	8'-0"	20"	8"	8"

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					DRAWN: L. ANDERSON			STD DET NO: SA-214
					CHECKED: J. DAVIS			SHT NO: 3 OF 3
No.	REVISION	BY	APP'D	DATE				

RAKE BACK FACE OF POLE
1/8" PER FT MAXIMUM

1/2" X FULL DEPTH EXPANSION
JOINT MAT'L ALL AROUND AT
SIDEWALK/POLE SURFACE

POUR NON-SHRINK
GROUT KEY SEPARATELY

CITY OF SEATTLE CONCRETE
CLASS 5 (3/4"), 6" DEPTH,
4'x6' MINIMUM

4" DEPTH
EXPANSION
JOINT

EXISTING
CURB

THICKEN EDGE

FILL CONE WITH COMPACTED
DRY AND CLEAN SAND HAVING
THE FOLLOWING GRADING:

SIEVE SIZE	% PASSING
US NO. 8	95-100
US NO. 16	60-70
US NO. 30	15-25
US NO. 50	0-5
US NO. 100	0-2
US NO. 200	0-1

THE FRACTURE SHALL BE 10%.
THIS MATERIAL IS CRUSHED
SAND.

EXISTING
SIDEWALK

CONNECT GROUND
WIRE TO EXISTING
CAP SCREW

COLD TAR SHAFT
EXTERIOR TO 3" ABOVE
INSTALLATION GRADE
AND BOTTOM 18" OF
SHAFT INTERIOR

FOR FOUNDATION
DETAILS SEE
SA-212

16" (REF)

6'-0" (REF)

12"
5"
16"

1 1/2"

3"

4"

1 1/2"

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS EMBEDDED STEEL POLE INSTALLATION (WITH SIDEWALK)	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-215
					CHECKED: J. DAVIS			SHT NO: 1 OF 3
No.	REVISION	BY	APP'D	DATE				

RAKE BACK FACE OF POLE
1/8" PER FT MAXIMUM

12"
5"
1/6"

CONNECT GROUND
WIRE TO EXISTING
CAP SCREW

EXISTING GRADE

1"

3"

1"

1/2" X FULL DEPTH
EXPANSION JOINT MATERIAL
ALL AROUND

CITY OF SEATTLE CONCRETE
CLASS 5 (3/4"), 6" DEPTH,
5'-6" x 5'

2% SLOPE

EXISTING
CURB

1
1 1/2

POUR NON-SHRINK GROUT KEY
SEPARATELY

COLD TAR SHAFT
EXTERIOR TO 3"
ABOVE INSTALLATION
GRADE AND BOTTOM
18" OF SHAFT
INTERIOR

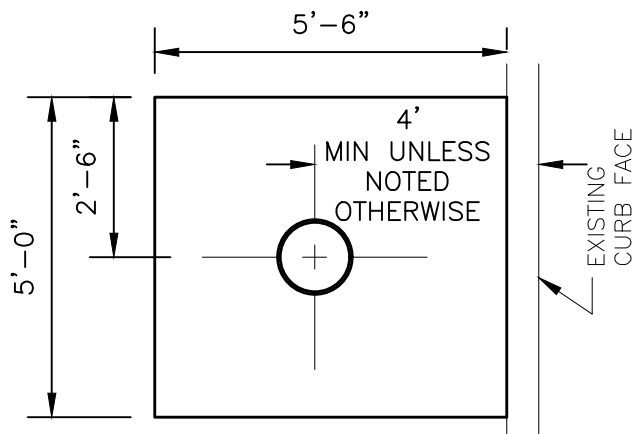
FOR FOUNDATION
DETAILS SEE
SA-212

FILL CONE WITH COMPACTED
DRY AND CLEAN SAND HAVING
THE FOLLOWING GRADING:

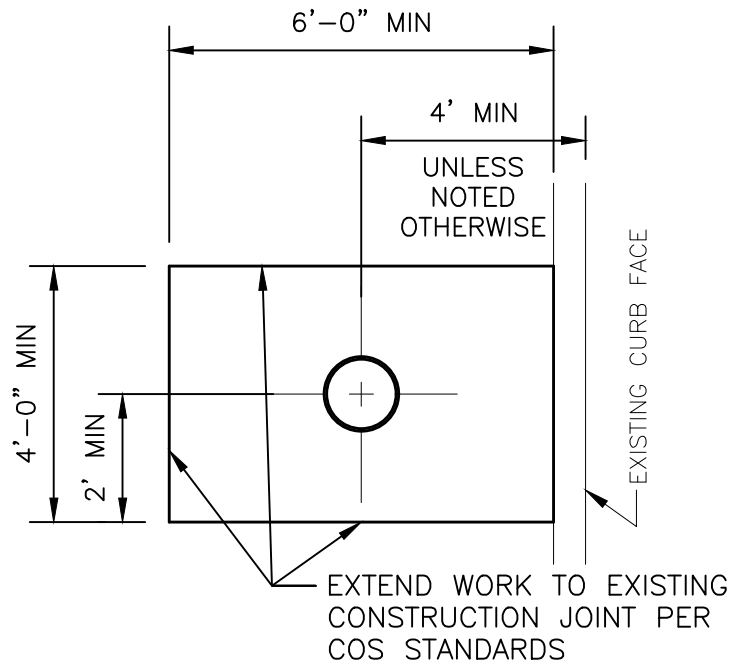
SIEVE SIZE	% PASSING
US NO. 8	95-100
US NO. 16	60-70
US NO. 30	15-25
US NO. 50	0-5
US NO. 100	0-2
US NO. 200	0-1

THE FRACTURE SHALL BE 10%.
THIS MATERIAL IS CRUSHED
SAND.

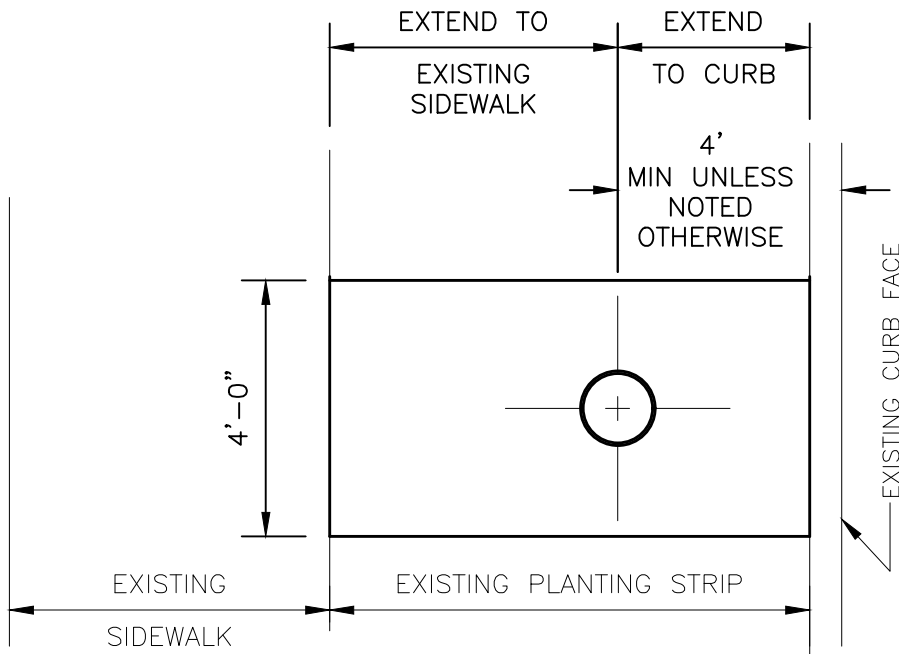
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					DRAWN: L. ANDERSON			STD DET NO: SA-215
					CHECKED: J. DAVIS			SHT NO: 2 OF 3



NO SIDEWALK
CONDITION



EXISTING SIDEWALK
CONDITION



EXISTING SIDEWALK
& PLANTING STRIP
CONDITION

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-215
					CHECKED: J. DAVIS			SHT NO: 3 OF 3
No.	REVISION	BY	APP'D	DATE			EMBEDDED STEEL POLE INSTALLATION	

RAKE FACE OF POLE AS SHOWN
UNLESS DWG SHOWS OTHERWISE.
(RAKE IS Min. 1/8" PER FT, Max.
3/16" PER FT, FOR BRACKET ARM
POLES SA-341, SA-342 &
SA-343)

CONNECT GROUND
WIRE TO EXISTING
CAP SCREW

PROVIDE A
CONCRETE PAD.
SEE SHEET 4
OF 4

EXISTING
SURFACE

WRAP ANCHOR BOLT
PERIMETER WITH TAPE
TO PREVENT CONCRETE
IN THREADS

NOTE: PAD TO MATCH
EXISTING SIDEWALK &
CURB. USE CITY OF
SEATTLE CONCRETE
CLASS 5 (3/4")

Max. 1/4" 12"
Min. 3/16" 12"

1-1/2" OR THREE
THREADS FROM TOP

LOCKWASHER & (2) FLAT
WASHERS (TYPICAL)

GROUT, WRAP ANCHOR
BOLT PERIPHERY WITH
TAPE TO PREVENT GROUT
UNDER POLE

1/2" DRAIN TUBE ON
LOW SIDE. CUT FLUSH
WITH GROUT

EXISTING
CURB &
GUTTER

3/8"
MIN

EXISTING ANCHOR BOLTS

FOR FOUNDATION
DETAILS SEE SA-213

STANDARD CONDITION

ALL FOUNDATIONS SHALL BE THIS TYPE, UNLESS NOTED OTHERWISE ON DRAWINGS

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS ANCHOR BASE STEEL POLE INSTALLATION	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-216
					CHECKED: J. DAVIS			SHT NO: 1 OF 4
No.	REVISION	BY	APP'D	DATE				

RAKE FACE OF POLE AS SHOWN
UNLESS DWG SHOWS OTHERWISE.
(RAKE IS Min. 1/8" PER FT, Max.
3/16" PER FT, FOR BRACKET
ARM POLES SA-341, SA-342 &
SA-343)

CONNECT GROUND WIRE
TO EXISTING CAP SCREW

PROVIDE A CONCRETE
PAD. SEE SHEET 4.
NOTE: PAD TO MATCH
EXIST. SIDEWALK & CURB.
USE CITY OF SEATTLE
CONCRETE CL 5 (3/4")

EXISTING SURFACE

Max. 1/4" 12"
Min. 3/16" 12"

LOCKWASHER & (2)
FLAT WASHERS. WRAP
PERIPHERY TO PREVENT
CONCRETE ON SURFACE.
(TYPICAL)

WRAP ANCHOR BOLT
PERIPHERY WITH TAPE
TO PREVENT CONCRETE
AND SAND UNDER POLE
AND IN THREADS

EXISTING
CURB

2" CONC
SAND

1/2"

EXISTING ANCHOR BOLTS

FOR FOUNDATION
DETAILS SEE
SA-213

BURIED CONDITION

USE ONLY WHERE NOTED ON DWGS

						DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS ANCHOR BASE STEEL POLE INSTALLATION (BURIED CONDITION)	DATE: 03/2021
						DRAWN: L. ANDERSON			STD DET NO: SA-216
						CHECKED: J. DAVIS			SHT NO: 2 OF 4
No.	REVISION	BY	APP'D	DATE					

RAKE FACE OF POLE AS SHOWN
UNLESS DWG SHOWS OTHERWISE.
(RAKE IS Min. 1/8" PER FT,
Max. 3/16" PER FT, FOR
BRACKET ARM POLES SA-341,
SA-342 & SA-343)

CONNECT GROUND WIRE
TO EXISTING HANDHOLE
CAP SCREW

RESTORE SIDEWALK TO
MATCH EXISTING. USE
CITY OF SEATTLE
CONCRETE CL.5 (3/4"),
SLOPE FOR DRAINAGE.
SEE SHEET 4.

EXISTING SIDEWALK

Max. 1/4"
Min. 3/16"

1-1/2"

CHIEF SEATTLE BASE
IS SEATED ON POLE
BASE PLATE

LOCKWASHER & (2)
FLAT WASHERS
(TYPICAL)

WRAP ANCHOR BOLT
PERIPHERY WITH TAPE
TO PREVENT CONCRETE
UNDER POLE AND IN
THREADS

1/2"

EXISTING CURB

THICKENED EDGE
PER SED STD 420.1

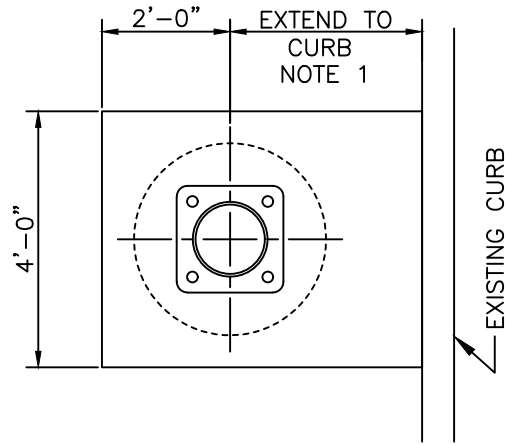
EXISTING ANCHOR BOLTS

FOR FOUNDATION
DETAILS SEE
SA-213

CHIEF SEATTLE CONDITION

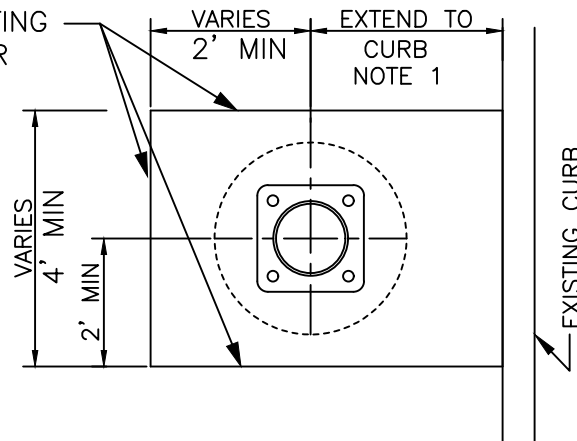
USE ONLY WHERE NOTED ON DWGS

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS ANCHOR BASESTEEL POLE INSTALLATION (CHIEF SEATTLE BASE)	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-216
					CHECKED: J. DAVIS			SHT NO: 3 OF 4
No.	REVISION	BY	APP'D	DATE				

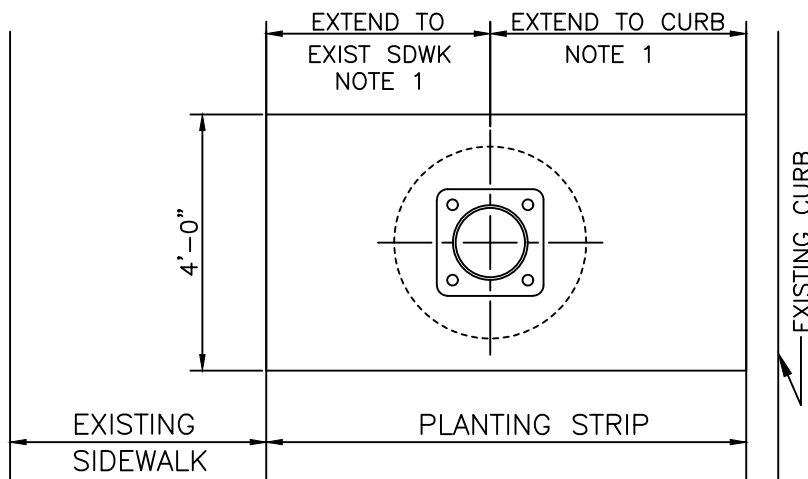


NO SIDEWALK CONDITION

SAWCUT AT EXISTING
CONST JOINT PER
SED STDS



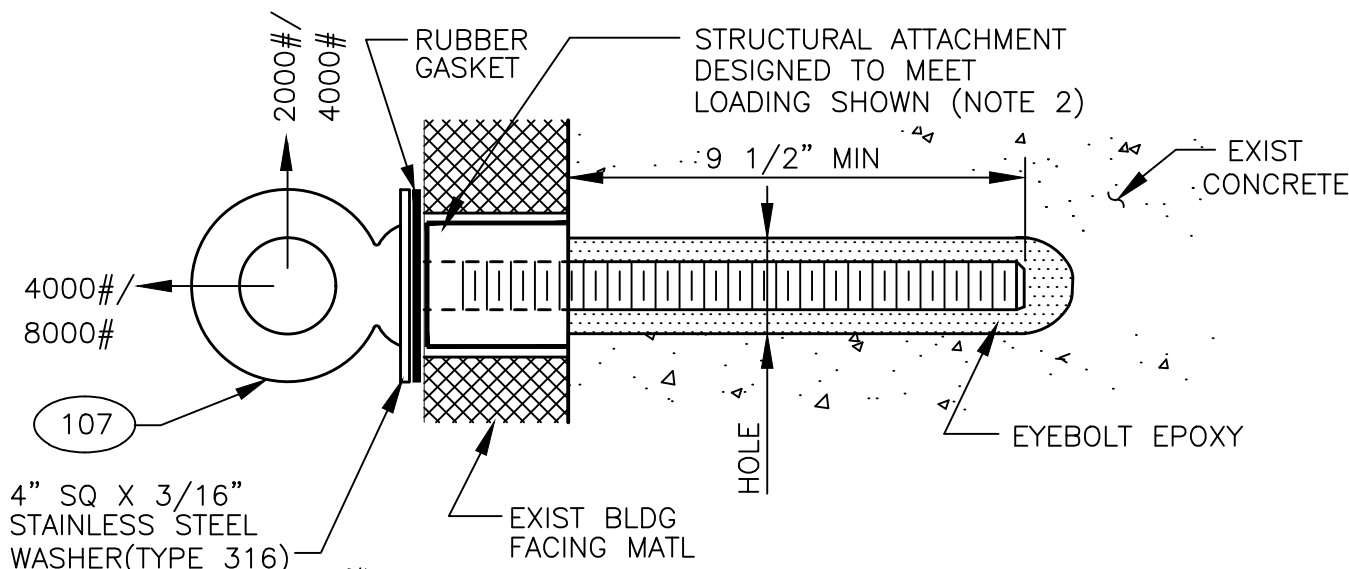
EXISTING SIDEWALK CONDITION



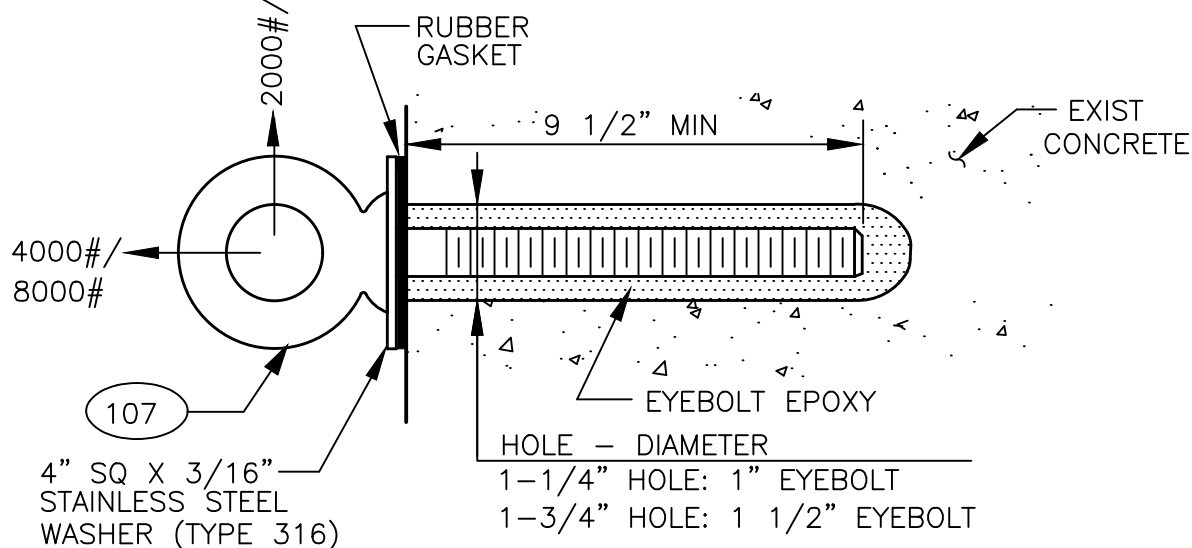
EXISTING SIDEWALK & PLANTING STRIP CONDITION

NOTE 1: 2 FT MIN DIMENSION MAY BE USED IF DIMENSION EXCEEDS 6 FT.

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS ANCHOR BASESTEEL POLE INSTALLATION	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-216
					CHECKED:		SHT NO:	
No.	REVISION	BY	APP'D	DATE	J. DAVIS		4 OF 4	



PLAN VIEW W/ FACING MATERIAL



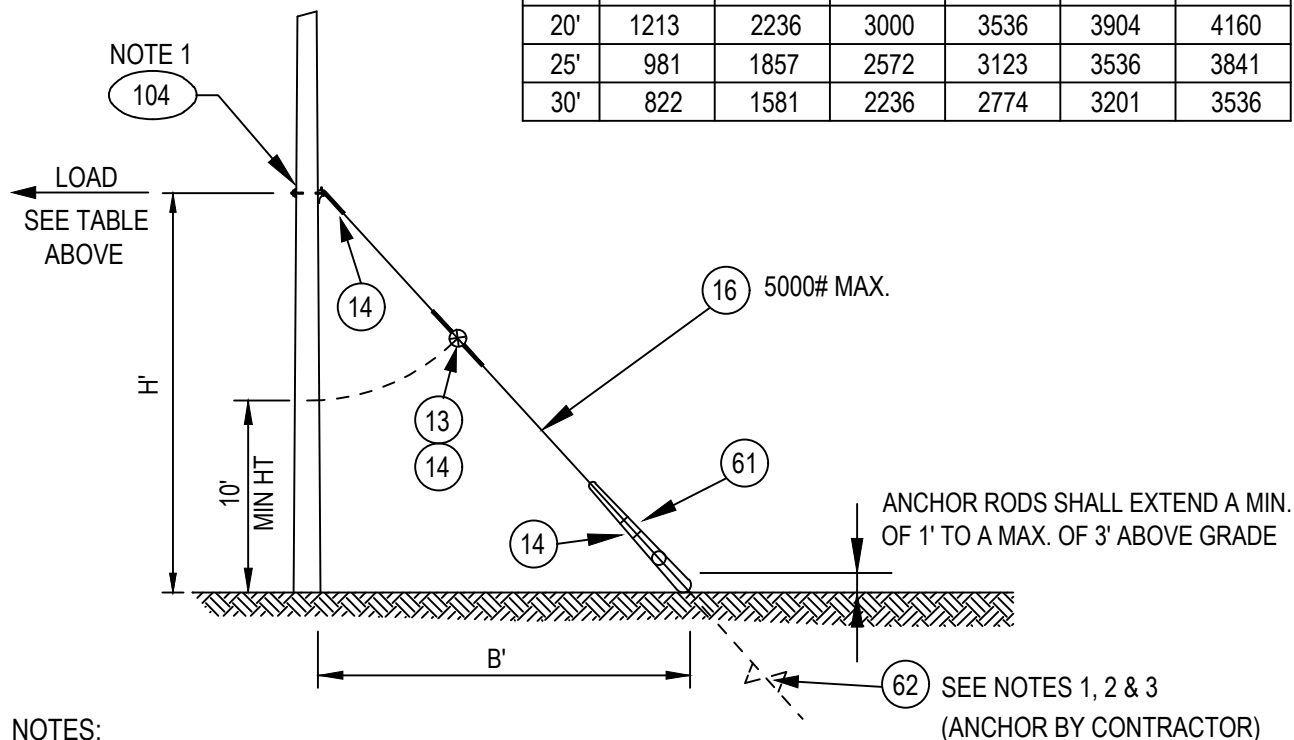
PLAN VIEW

NOTES:

1. INSTALL EYEBOLT EYE IN A HORIZONTAL ORIENTATION.
2. USE ITW RAMSET/REDHEAD EPCON EPOXY ANCHORING SYSTEM TO SET THE EYEBOLT. AN EPCON E101 HAND TOOL INJECTOR WITH AN E24 NOZZLE SHALL BE USED TO INJECT CERAMIC 6 EPOXY. INSTALL PER THE MANUFACTURES RECOMMENDATIONS.
3. TO PREVENT SPALLING, DEFLECTION RESULTING FROM SHEAR LOADING SHALL NOT ALLOW THE EYEBOLT TO CONTACT BUILDING FACING MATERIAL.
4. EYEBOLT SHOULDER SHALL BE SEATED.
5. A TWO FOOT MINIMUM SPACING IS REQUIRED BETWEEN EYEBOLTS.

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS BUILDING EYEBOLT INSTALLATION (EXISTING CONCRETE STRUCTURE)	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:	 King County METRO		STD DET NO:
					L. ANDERSON			SA-221
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 5

ALLOWABLE LOADS / ITEM 16						
B H	5'	10'	15'	20'	25'	30'
15'	1581	2774	3536	4000	4287	4472
20'	1213	2236	3000	3536	3904	4160
25'	981	1857	2572	3123	3536	3841
30'	822	1581	2236	2774	3201	3536



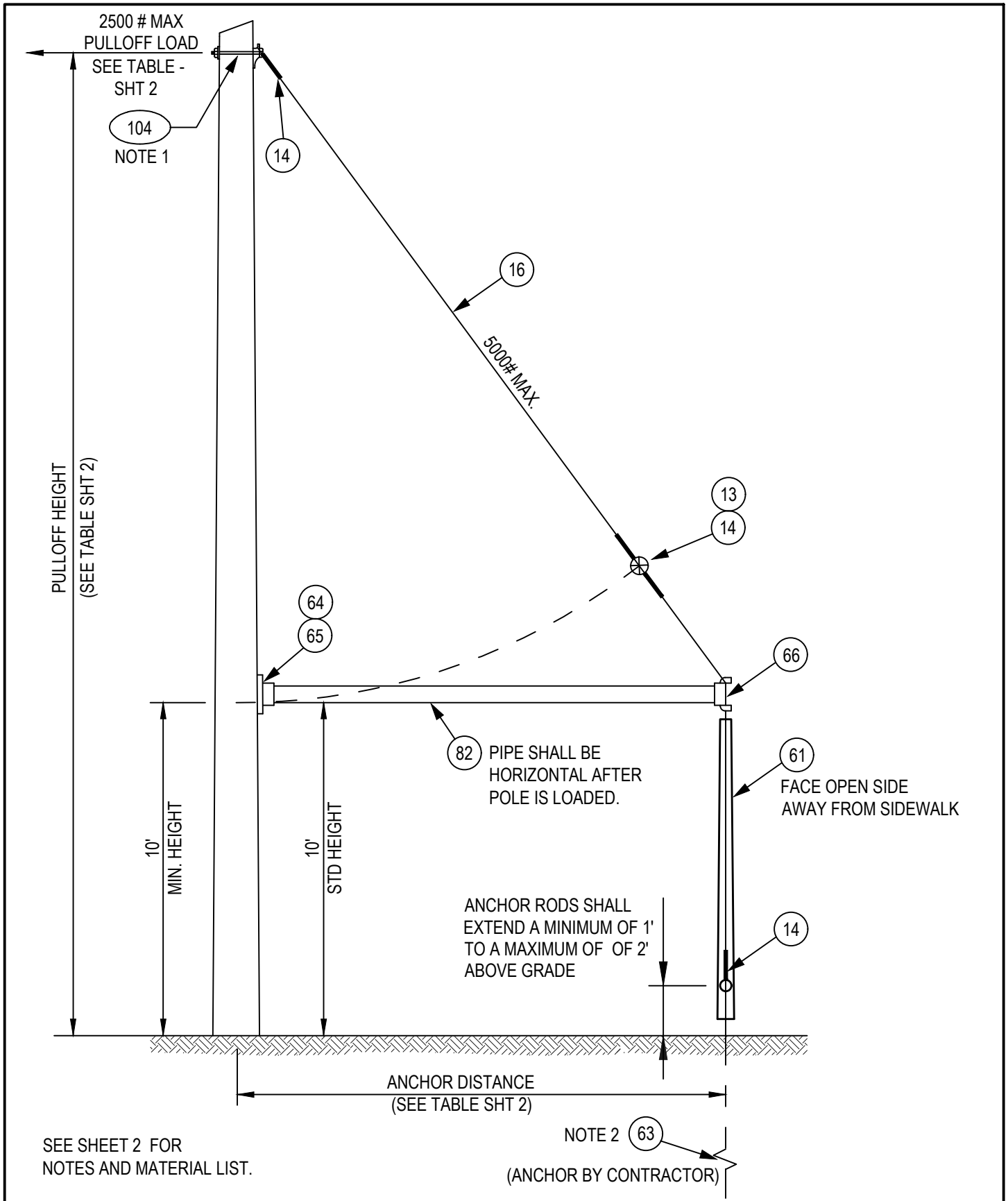
NOTES:

1. INSTALLATION HEIGHT AND LOCATION OF ANCHOR IS INDICATED ON THE OVERHEAD DWGS.
2. SCREW ANCHOR SHALL HAVE TWO 8" HELIXES FOR GLACIAL TILL WITH A 1-1 1/2" HUB CAPABLE OF DEVELOPING 7000 FT-LBS MAXIMUM WORKING TORQUE. THE ANCHOR ROD SHALL BE 1" DIA. WITH A TRIPLE EYE.
3. MINIMUM INSTALLATION TORQUE FOR THE SCREW ANCHORS SHALL BE 3500 FOOT-LBS. THIS TORQUE VALUE WILL REQUIRE THE USE OF 7 SHEAR PINS FOR USE WITH THE A.B. CHANCE TORQUE INDICATOR, CATALOG # C303-044.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
13	1	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO	506
14	4	GUY GRIP DEADEND	PREFORMED	CDE-3115
16	VARIES	GUY STRAND	COPPERWELD	16M
61	1	GUY GUARD - 8 FT FOR USE ON 3/16" TO 1/2" STRAND	PREFORMED	PG 5518
62	1	POWER INSTALLED SCREW ANCHOR	CHANCE	E102-1219
104	VARIES	WOOD POLE DOWNGUY ASSEMBLY	METRO STD	SA-104

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS DOWN GUY	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-231
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				



					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS SIDEWALK GUY	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-232
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 2

NOTES:

1. INSTALLATION HEIGHT AND LOCATION OF ANCHOR IS INDICATED ON THE OVERHEAD DRAWINGS.
2. SCREW ANCHOR SHALL HAVE TWO 8" HELIXES FOR GLACIAL TILL WITH A 1 1/2" HUB CAPABLE OF DEVELOPING 7000 FT-LBS MAX. WORKING TORQUE. THE ANCHOR ROD SHALL BE 1" DIAMETER WITH A TRIPLE EYE. MINIMUM INSTALLATION TORQUE FOR SCREW ANCHORS SHALL BE 3500 FT-LBS. THIS TORQUE VALUE WILL REQUIRE THE USE OF 7 SHEAR PINS FOR USE WITH THE A.B. CHANCE TORQUE INDICATOR, CAT. # C303-0044.

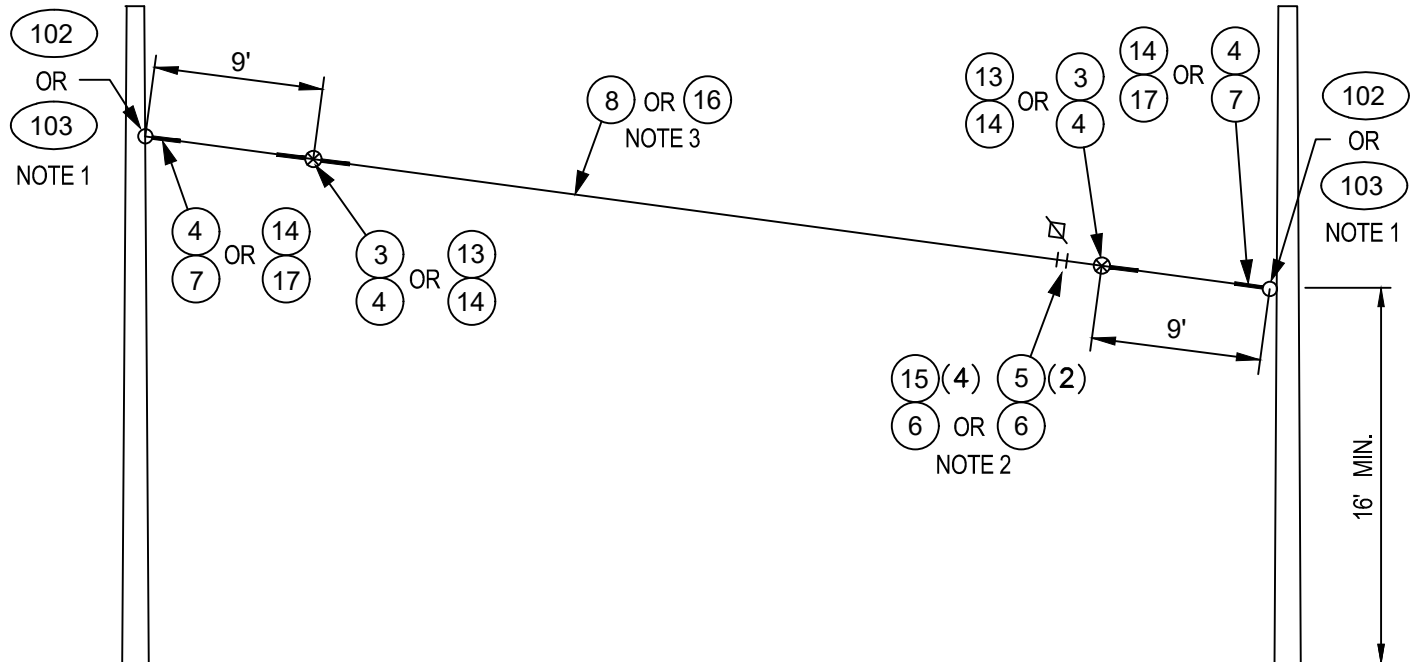
ALLOWABLE PULLOFF LOADING PER GUY									
		ANCHOR DISTANCE							
		5'	6'	7'	8'	9'	10'	11'	12'
PULLOFF HEIGHT	16'	*	*	*	*	*	*	*	*
	18'	2500	*	*	*	*	*	*	*
	20'	2236	2500	*	*	*	*	*	*
	22'	1923	2236	2500	2500	*	*	*	*
	24'	1682	1970	2236	2480	2500	*	*	*
	26'	1491	1756	2004	2236	2451	2500	*	*
	28'	1338	1581	1812	2030	2236	2428	2500	*
	30'	1213	1437	1652	1857	2052	2236	2410	2500

* = MAXIMUM LOAD OF 2500 # APPLIES.

MATERIAL LIST

ITEM#	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
13	1	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO	506
14	4	GUY GRIP DEADEND	PREFORMED	CDE-3115
16	VARIES	GUY STRAND	COPPERWELD	16M
61	1	GUY GUARD, 8 FT, FOR USE ON 3/16" TO 1/2" STRAND	PREFORMED	PG 5518
63	1	POWER INSTALLED SCREW ANCHOR	CHANCE	C102-1260
64	1	POLE PLATE, 2 1/2" PIPE	JOSLYN	J0521
65	4	LAG SCREW, FETTER DRIVE, 1/2" x 4"	JOSLYN	J8754
66	1	END FITTING, 2 1/2" PIPE	COOPER POWER SYSTEM	DG5G1
82	VARIES	2 1/2" DIA. ASTM A53 GRB STD. WT. GALV STEEL PIPE		
104	VARIES	WOOD POLE DOWNGUY ASSEMBLY	METRO STD	SA-104

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS SIDEWALK GUY	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-232
					CHECKED: J. DAVIS			SHT NO: 2 OF 2
No.	REVISION	BY	APP'D	DATE				



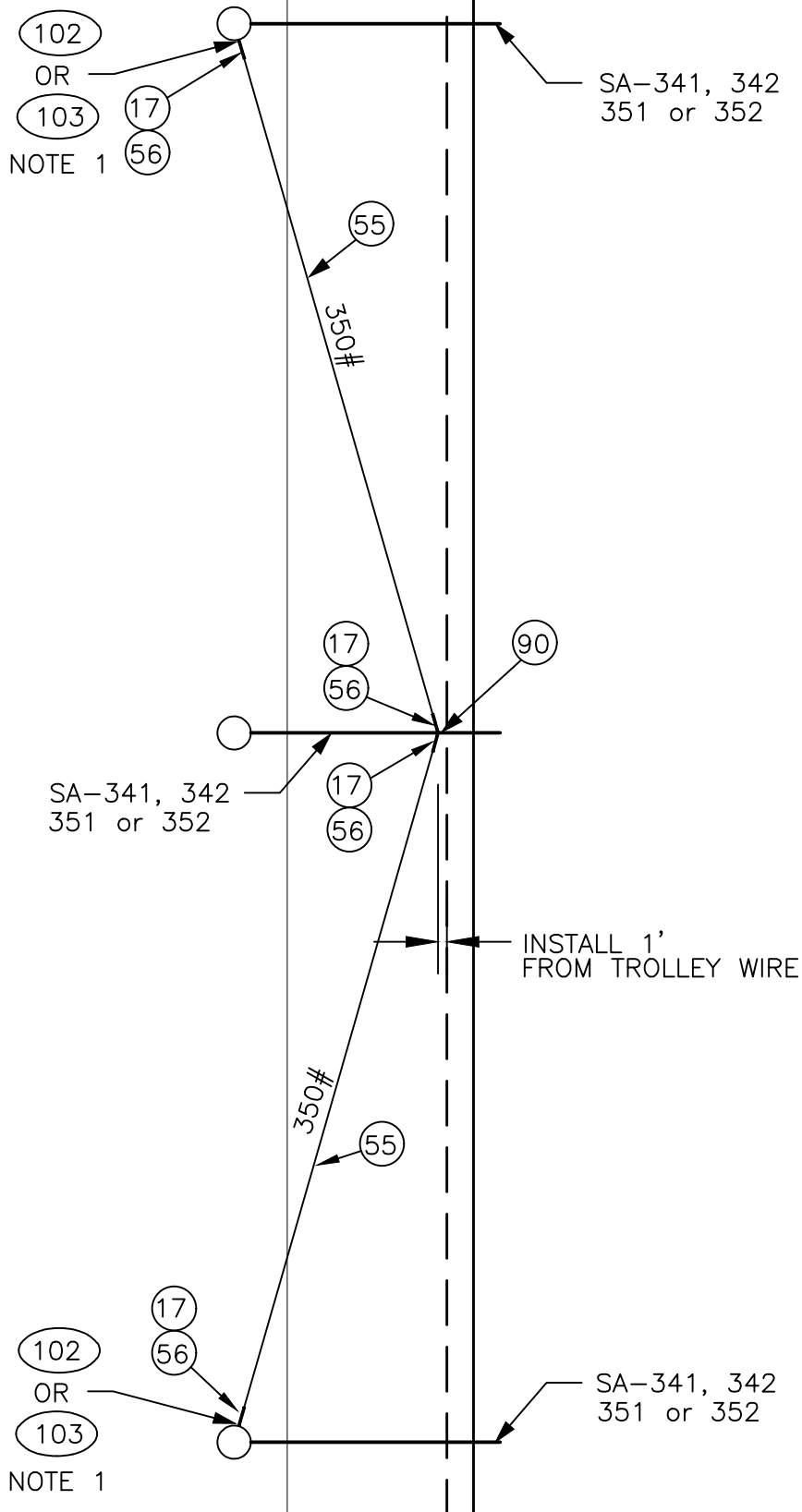
NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⊠"
3. SEE SA-167 FOR INSULATED GUY CRITERIA. GUY TENSION IS INDICATED ON THE OVERHEAD DRAWINGS.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
SA-233L ----- GUY TENSIONS 0 - 2500 LBS				
03	1	GUY STRAIN INSUL.	WABCO	31504-3060
04	3	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	2	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	2	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M - NOTE 3
SA-233H ----- GUY TENSIONS 2500 - 5000 LBS				
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
13	2	GUY STRAIN INSUL.	WABCO	31506-3060
14	5	GUY GRIP DEADEND	PREFORMED	CDE-3115
15	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
16	VARIES	GUY STRAND	COPPERWELD	16M - NOTE 3
17	2	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
ALSO ----- SA-233L & SA-233H				
102	VARIES	STEEL POLE COLLAR	METRO STD.	SA-102
103	VARIES	WOOD POLE EYEBOLT	METRO STD.	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STANDARD HEAD GUY	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-233
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 1



					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS BRACKET ARM GUY	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-234
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 2

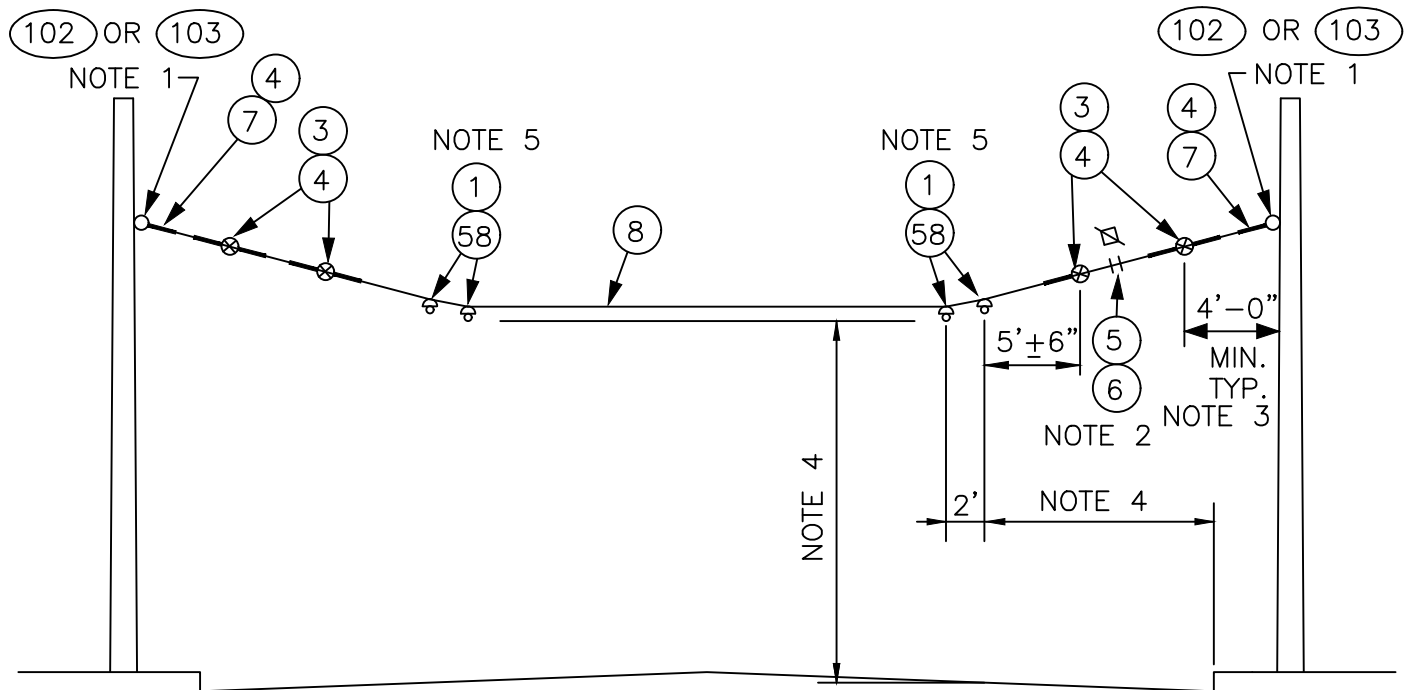
MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
17	4	THIMBLE, ½" XHD, OPEN	CROSBY	G414
55	VARIES	PHILLYSTRAN (¾")	PHILLYSTRAN INC	HPTG 67001
56	4	PHILLYSTRAN BIG GRIP	PHILLYSTRAN INC	PLP2755
90	1	HEAVY PIPE CLAMP, GALV 3" IPS	GRINNELL	FIG. 216
102	VARIES	FORGED 3-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD EYEBOLT	METRO STD	SA-103

NOTE:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103. INSTALLATION HEIGHT IS 1 FOOT ABOVE THE BRACKET ARM UNLESS SRAWINGS SPECIFY OTHERWISE.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS BRACKET ARM GUY	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-234
					CHECKED: J. DAVIS			SHT NO: 2 OF 2
No.	REVISION	BY	APP'D	DATE				



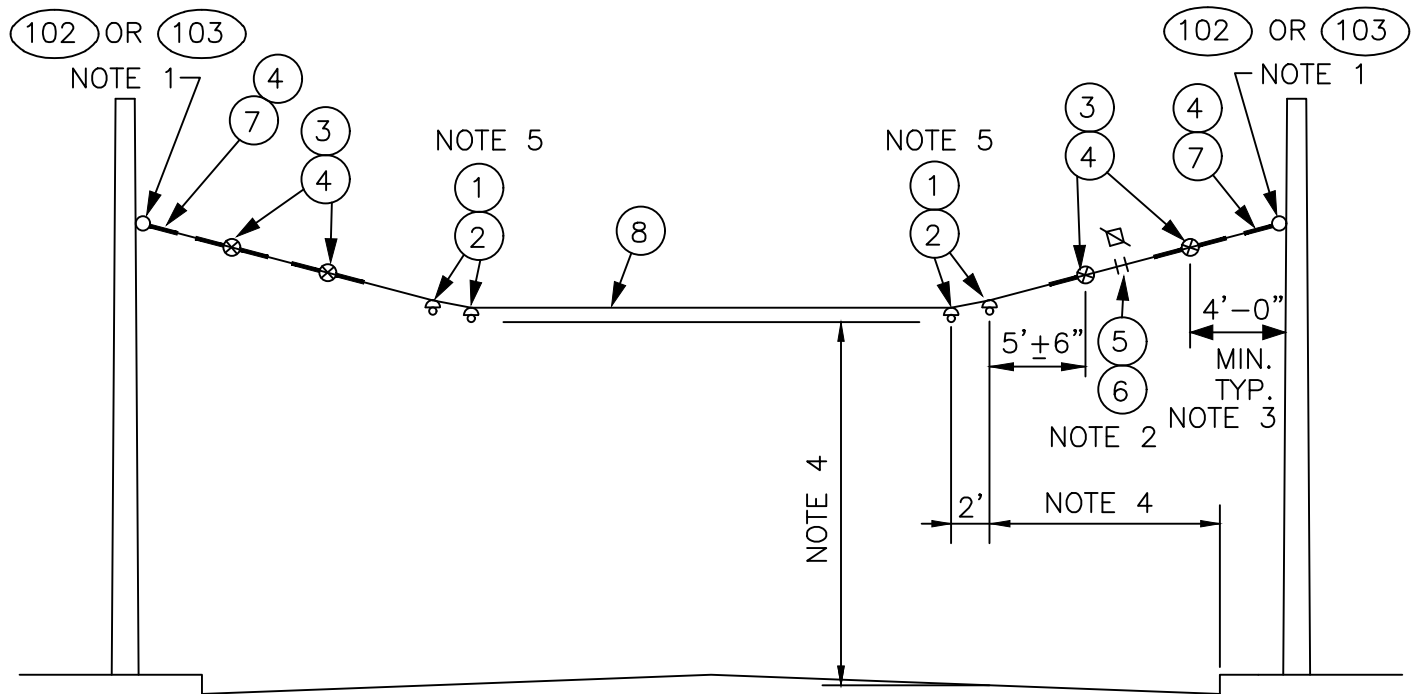
NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "N". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-370 FOR LIMITED SPACE VARIANCES.
4. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.
5. MAXIMUM ANGLE IS 0.5°. SEE SA-307, PLAN VIEW.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	4	DETROIT CLAMP ASSY	WABCO	19293-3007
03	4	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	9	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	2	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	2	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
58	2	TANGENT SPAN HANGER	K & M	C-1728-01
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TANGENT SPAN TWO WAY TRAFFIC W/ K & M HANGERS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-300
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 1



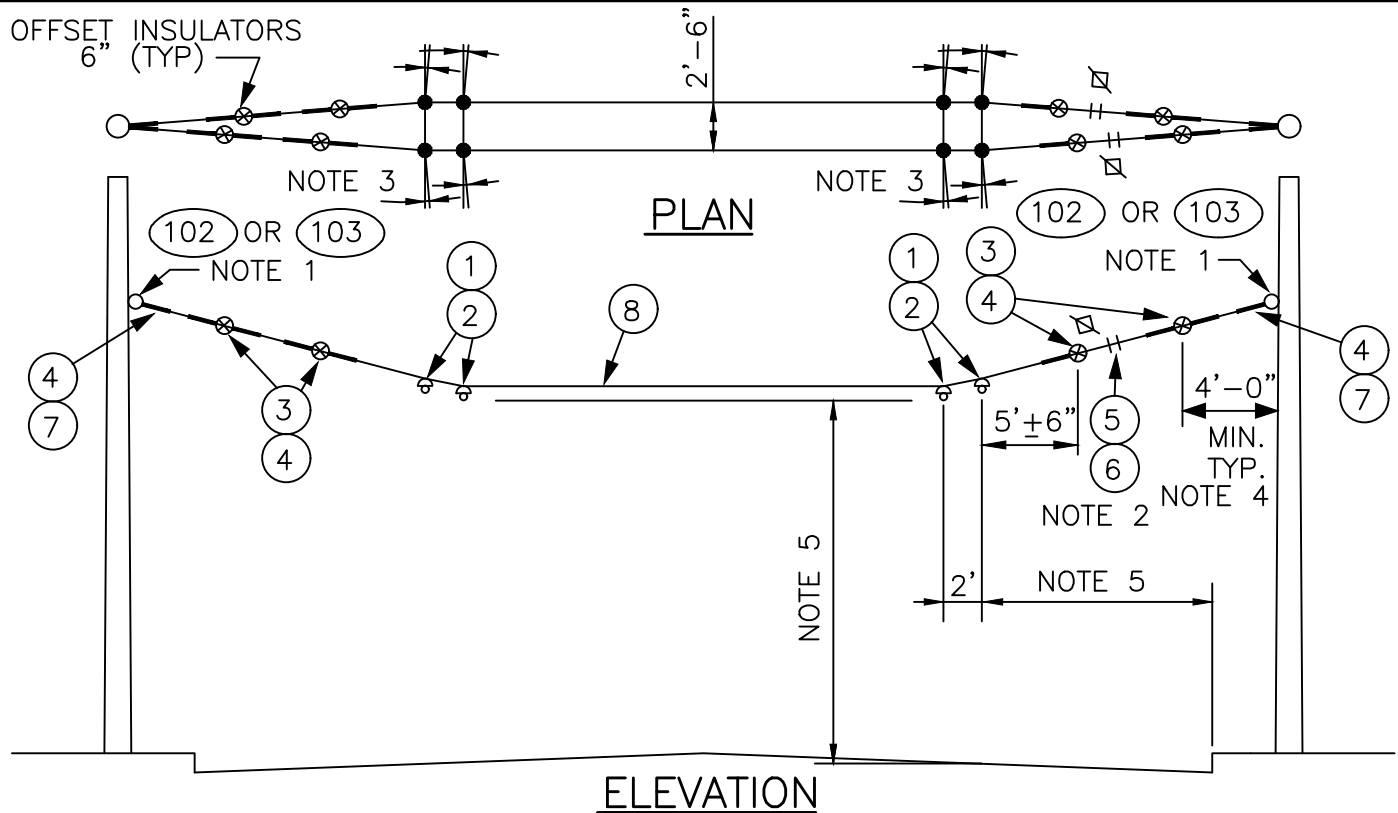
NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "X". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-370 FOR LIMITED SPACE VARIANCES.
4. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.
5. MAXIMUM ANGLE IS 0.5°. SEE SA-307, PLAN VIEW.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	4	DETROIT CLAMP ASSY	WABCO	19293-3007
02	4	AGC TANGENT SPAN HANGER	WABCO	19360-2000
03	4	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	9	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	2	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	2	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TANGENT SPAN TWO WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-301
					CHECKED: J. DAVIS			SHT NO: 1
No.	REVISION	BY	APP'D	DATE				OF 1



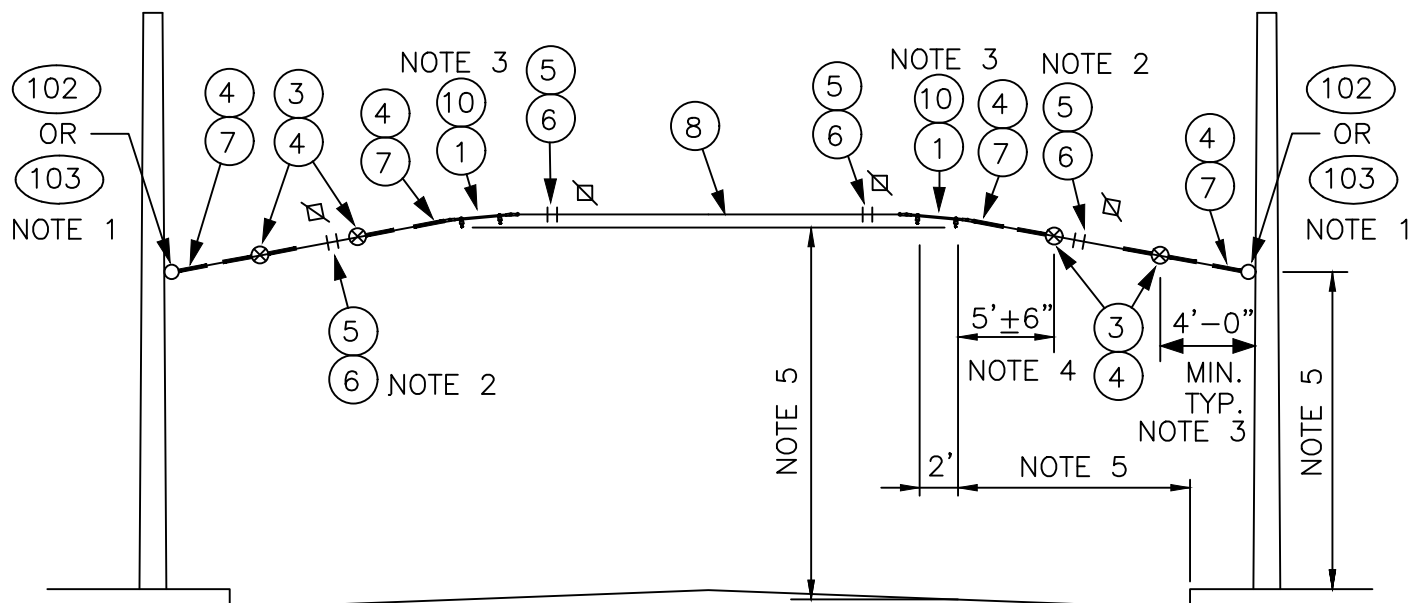
NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⌵". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. MAXIMUM ANGLE 1°, 0.5° PER SPAN HANGER.
4. SEE SA-370 FOR LIMITED SPACE VARIANCES.
5. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	8	DETROIT CLAMP ASSY	WABCO	19293-3007
02	8	AGC TANGENT SPAN HANGER	WABCO	19360-2000
03	8	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	18	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	4	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS HOLDUP TANGENT SPAN BRACKET ARM GUY	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-302
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				



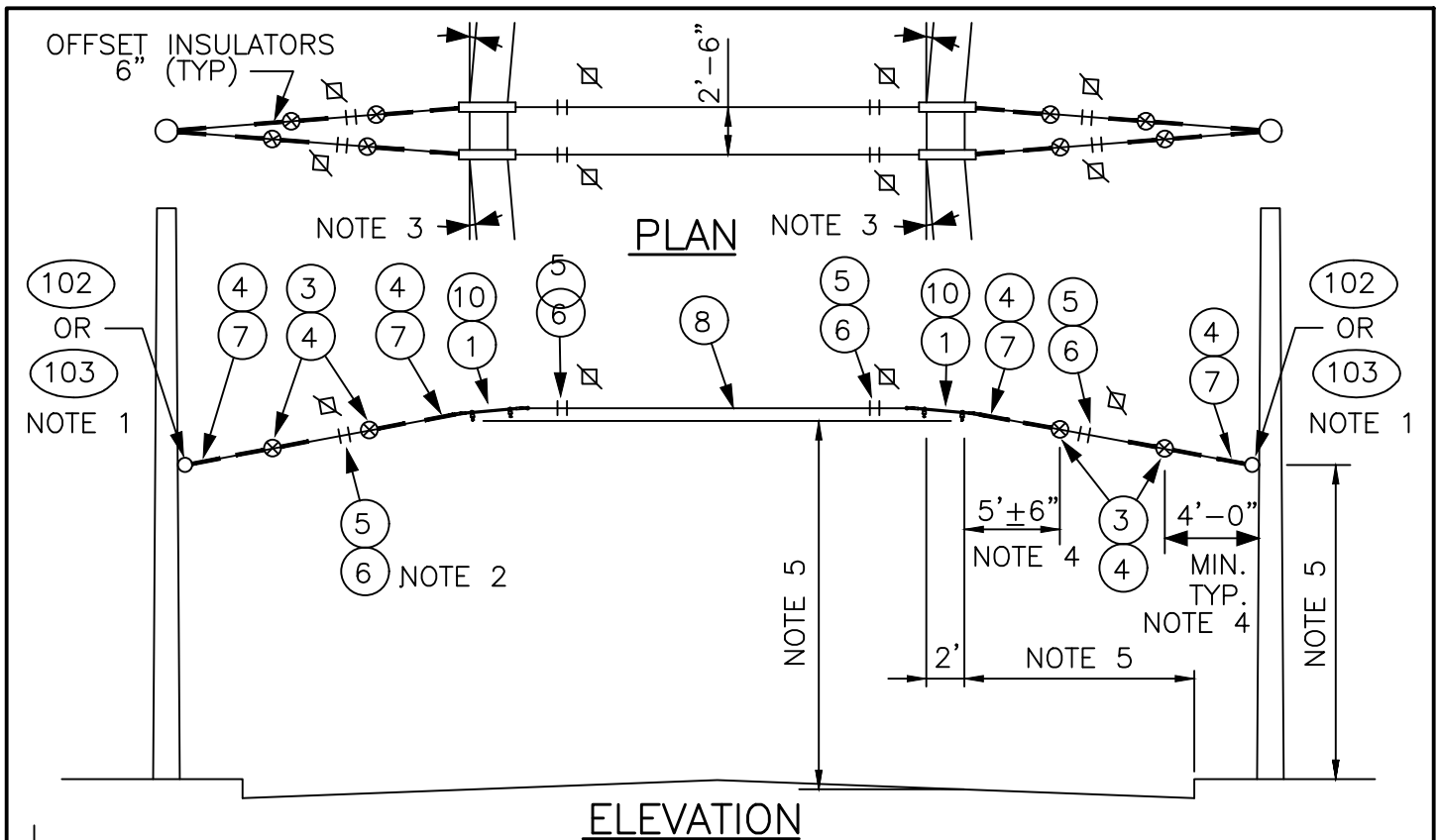
NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "X". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. MAXIMUM ANGLE 0.5 DEGREE. SEE SA-307, PLAN VIEW.
4. SEE SA-370 FOR LIMITED SPACE VARIANCES.
5. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	4	DETROIT CLAMP ASSY	WABCO	19293-3007
03	4	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	10	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	8	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	4	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
10	2	HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021	
					DRAWN: L. ANDERSON			STD DET NO: SA-303	
					CHECKED: J. DAVIS			SHT NO: 1 OF 1	
No.	REVISION	BY	APP'D	DATE				INVERTED TANGENT SPAN TWO-WAY TRAFFIC	



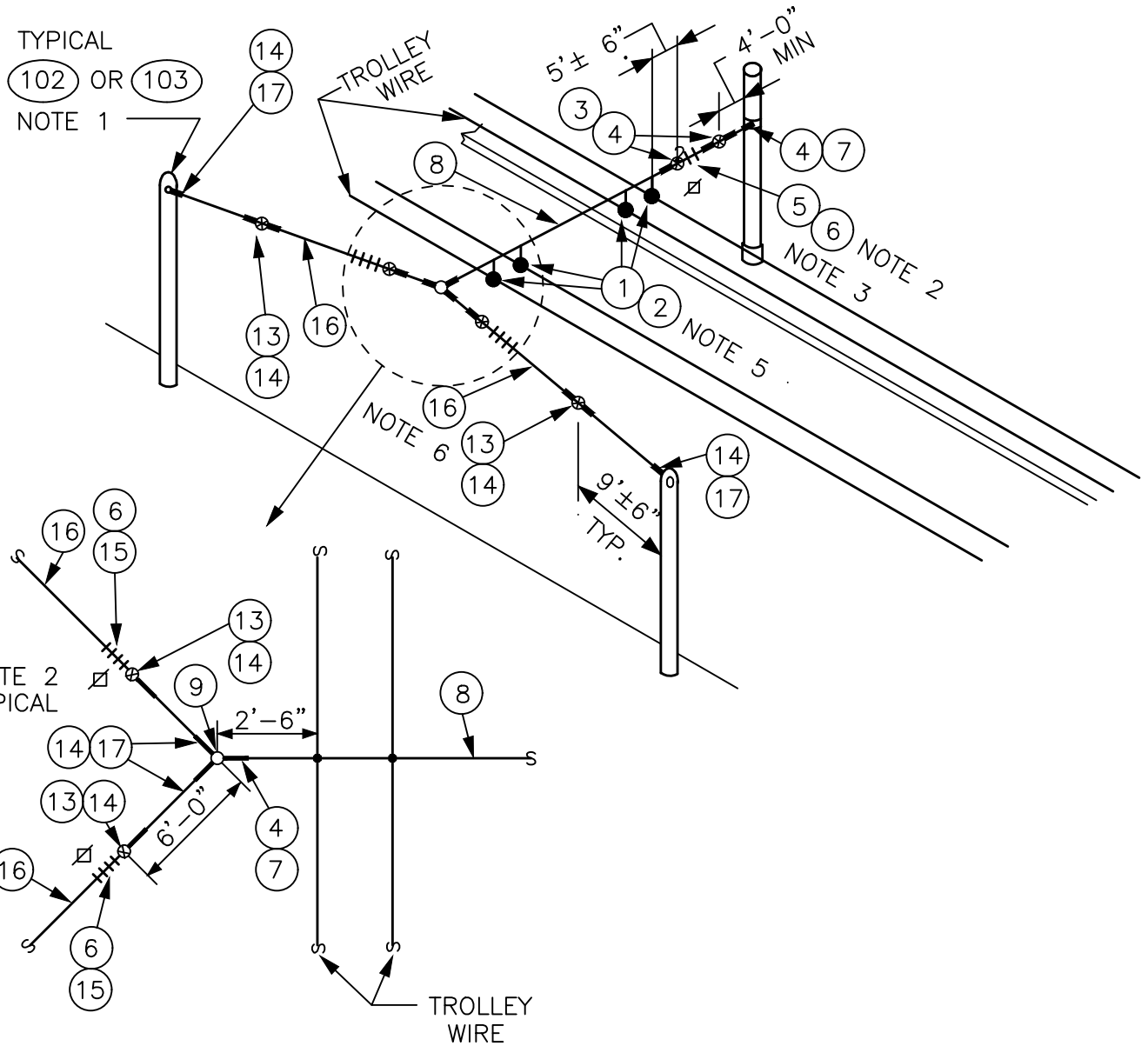
NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "X". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. MAXIMUM ANGLE 1°, 0.5° PER DOUBLE CURVE HANGER.
4. SEE SA-370 FOR LIMITED SPACE VARIANCES.
5. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	8	DETROIT CLAMP ASSY	WABCO	19293-3007
03	8	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	20	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	16	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	8	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
10	4	HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-304
					CHECKED: J. DAVIS			HOLDDOWN TANGENT SPAN TWO-WAY TRAFFIC
No.	REVISION	BY	APP'D	DATE				



					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-305
					CHECKED:		BRIDLE TANGENT SPAN	SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS		TWO WAY TRAFFIC	1 OF 2

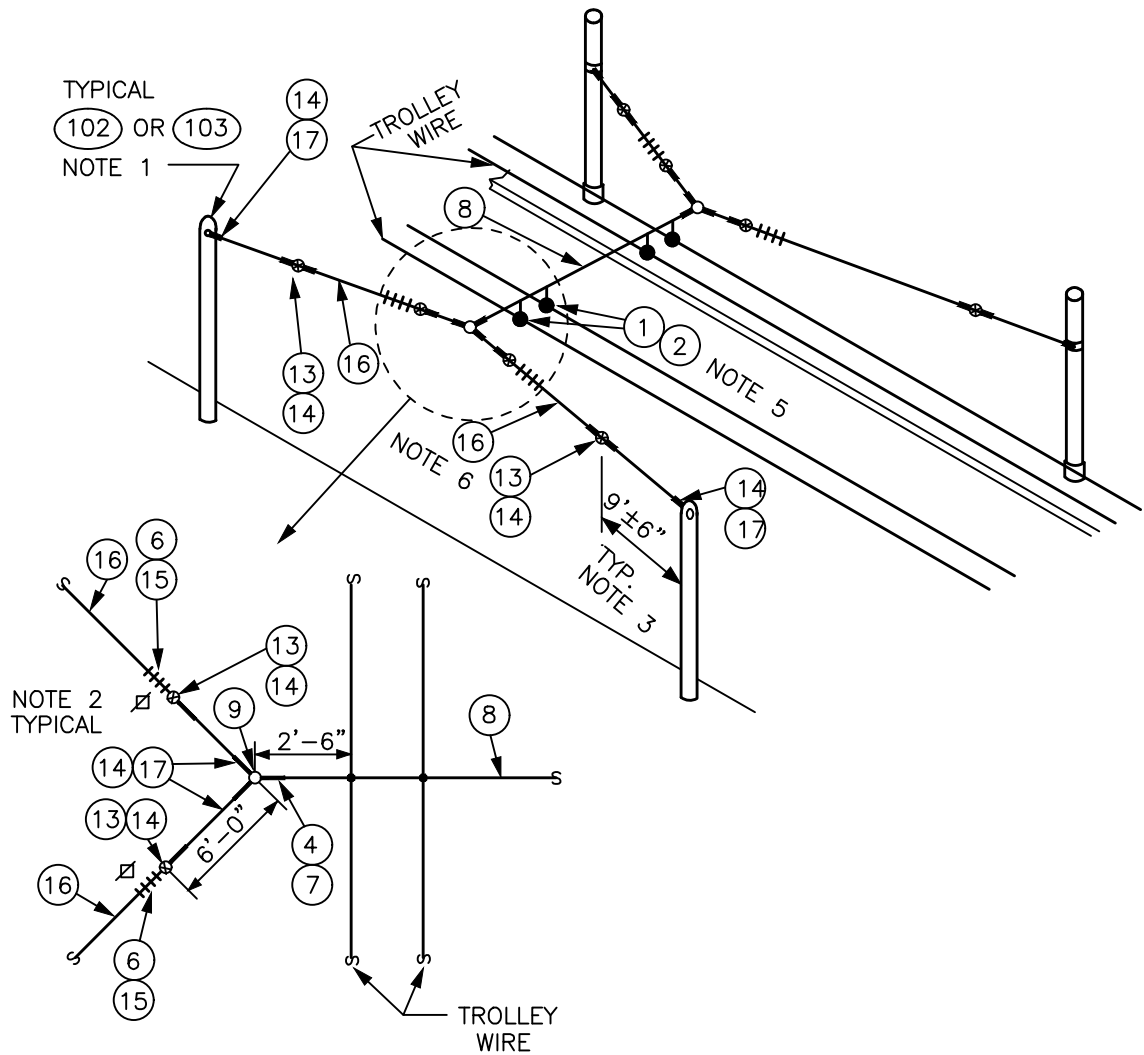
MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	4	DETROIT CLAMP ASSY	WABCO	19293-3007
02	4	AGC TANGENT SPAN HANGER	WABCO	19360-2000
03	VARIES	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	VARIES	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	VARIES	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	VARIES	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
09	1	BULL RING	WABCO	18567-2000
13	VARIES	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	506
14	VARIES	GUY GRIP DEADEND	PREFORMED	CDE-3115
15	VARIES	WIRE ROPE CLIP, 3/8"	CROSBY	G450
16	VARIES	GUY STRAND	COPPERWELD	16M
17	VARIES	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "N". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-370 FOR LIMITED SPACE VARIANCES.
4. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.
5. MAXIMUM ANGLE IS 0.5°. SEE SA-307, PLAN VIEW.
6. IF LOAD SHOWN ON OVERHEAD DRAWINGS IS LESS THAN 2500 LBS, THEN ITEM 8 MAY BE USED INSTEAD OF ITEM 16. THE ASSOCIATED ITEMS SHALL ALSO BE CHANGED I.E. 3 FOR 13, 4 FOR 14, 5 FOR 15 AND 7 FOR 17.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON		BRIDLE TANGENT SPAN TWO-WAY TRAFFIC	STD DET NO: SA-305
					CHECKED: J. DAVIS			SHT NO: 2 OF 2
No.	REVISION	BY	APP'D	DATE				



					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS DOUBLE BRIDLE TANGENT SPAN TWO-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-306
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 2

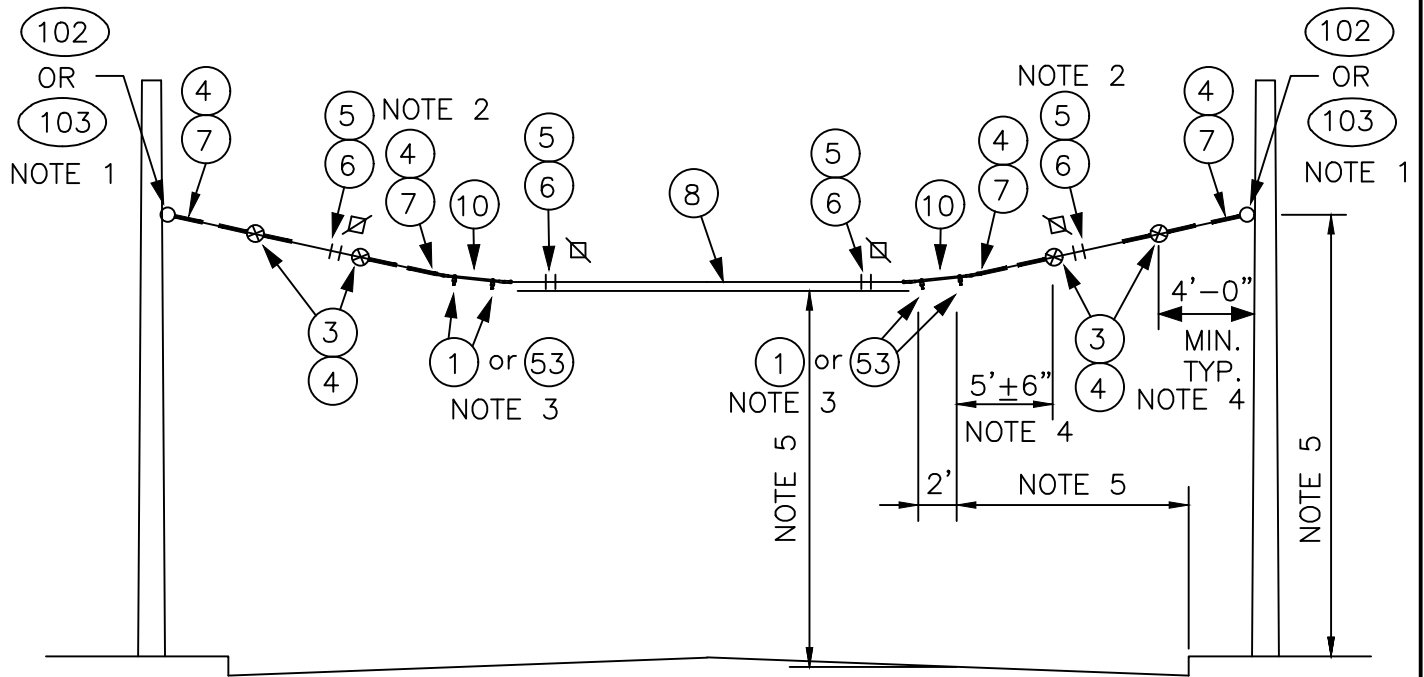
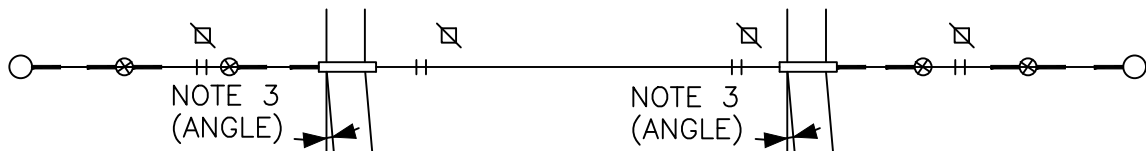
MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	4	DETROIT CLAMP ASSY	WABCO	19293-3007
02	4	AGC TANGENT SPAN HANGER	WABCO	19360-2000
03	VARIES	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	VARIES	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	VARIES	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	VARIES	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
09	2	BULL RING	WABCO	18567-2000
13	VARIES	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	506
14	VARIES	GUY GRIP DEADEND	PREFORMED	CDE-3115
15	VARIES	WIRE ROPE CLIP, 3/8"	CROSBY	G450
16	VARIES	GUY STRAND	COPPERWELD	16M
17	VARIES	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "X". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-370 FOR LIMITED SPACE VARIANCES.
4. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.
5. MAXIMUM ANGLE IS 0.5°. SEE SA-307, PLAN VIEW.
6. IF LOAD SHOWN ON OVERHEAD DRAWINGS IS LESS THAN 2500 LBS, THEN ITEM 8 MAY BE USED INSTEAD OF ITEM 16. THE ASSOCIATED ITEMS SHALL ALSO BE CHANGED I.E. 3 FOR 13, 4 FOR 14, 5 FOR 15 AND 7 FOR 17.

						DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS DOUBLE BRIDLE TANGENT SPAN TWO-WAY TRAFFIC	DATE: 03/2021
						DRAWN: L. ANDERSON			STD DET NO: SA-306
						CHECKED: J. DAVIS			SHT NO: 2 OF 2
No.	REVISION	BY	APP'D	DATE					



NOTES:

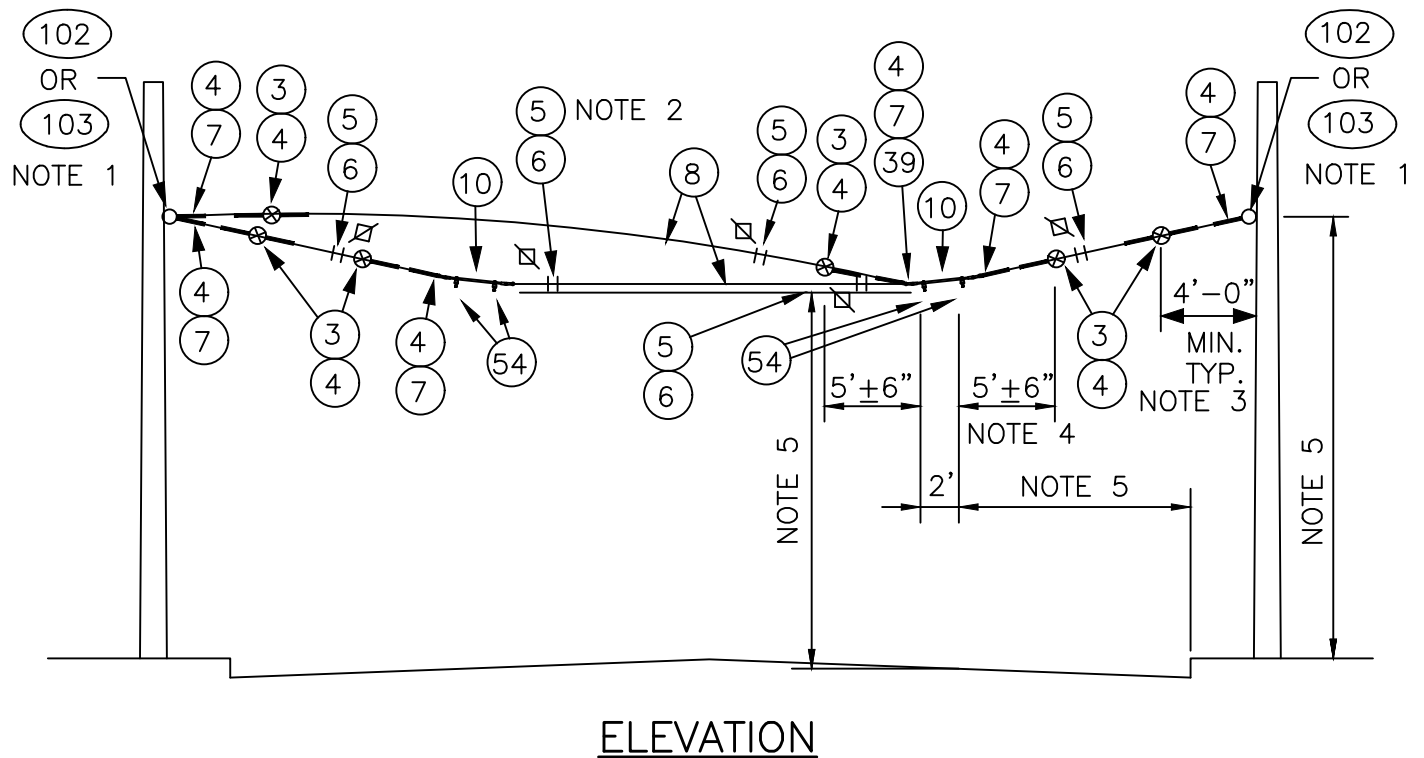
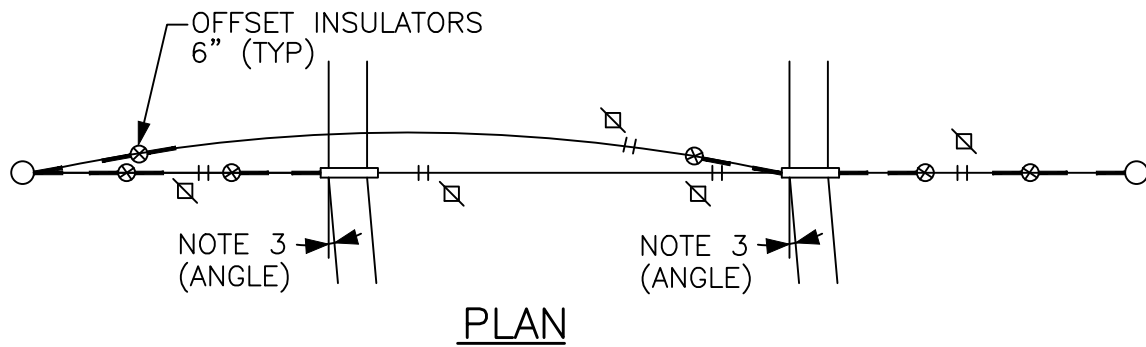
1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⌵". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. ANGLE VARIES FROM 1° TO 5°. USE ITEM 1 FOR 1° TO 2.5° ANGLE. USE ITEM 53 FOR 3° TO 5° ANGLE.
4. SEE SA-370 FOR LIMITED SPACE VARIANCES.
5. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS 1° TO 5° CURVE SPAN WITH 2 FOOT CURVE RAILS TWO-WAY TRAFFIC	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:	 King County METRO		STD DET NO:
					L. ANDERSON			SA-307
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 2

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	VARIES	DETROIT CLAMP ASSY	WABCO	19293-3007
03	4	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	10	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	8	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	4	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
10	2	HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
53	VARIES	CURVE RAIL (3° TO 5° 2 FT LG)	K & M	851 B412/0
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS 1° TO 5° CURVE SPAN WITH 2 FOOT CURVE RAILS TWO-WAY TRAFFIC	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-307
					CHECKED:		SHT NO:	
No.	REVISION	BY	APP'D	DATE	J. DAVIS		2 OF 2	



NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⌵". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. ANGLE VARIES FROM 5.5° TO 7.5°.
4. SEE SA-370 FOR LIMITED SPACE VARIANCES. SEE SA-167 FOR INSULATED GUY CRITERIA.
5. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.

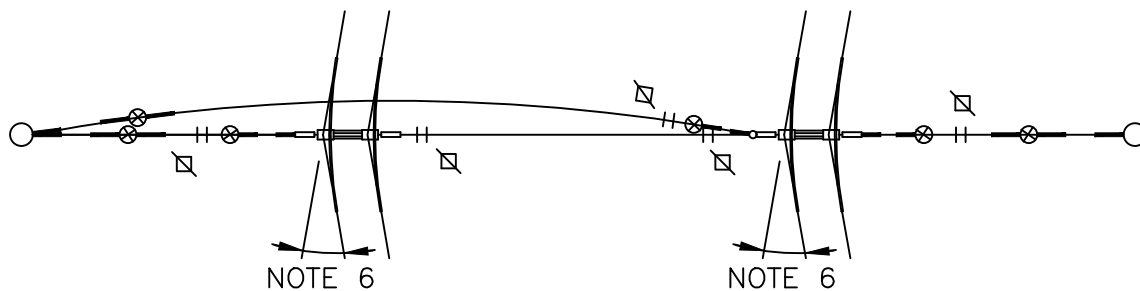
					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS 5.5° TO 7.5° CURVE SPAN WITH 4 FOOT CURVE RAILS TWO-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-308
					CHECKED: J. DAVIS			SHT NO: 1 OF 2
No.	REVISION	BY	APP'D	DATE				

MATERIAL LIST

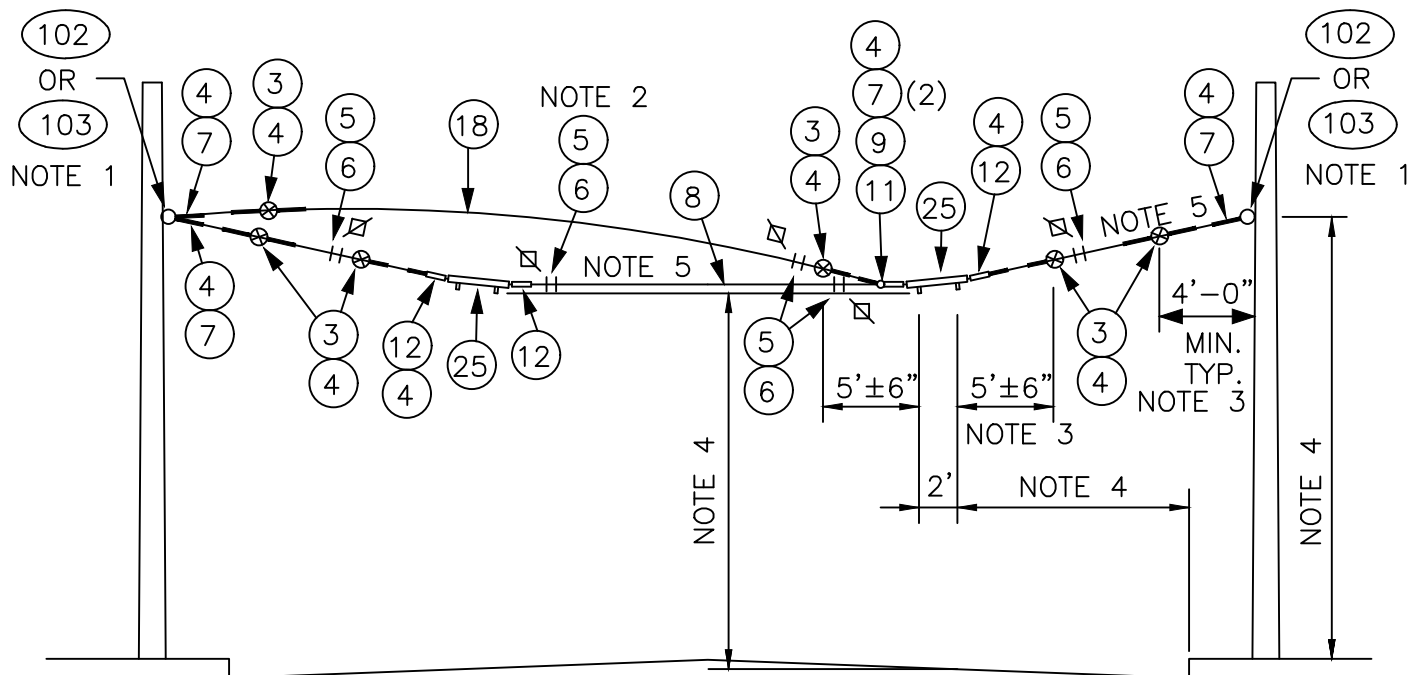
ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	6	GUY STRAIN INSUL, CABLE OD MAX: 1/2"	PORCELAIN 504 PRODUCTS CO.	
04	15	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	10	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	6	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
10	2	HI-LITE DOUBLE CURVE HANGER		54962-3001
39	1	5/8" SHACKLE	WABCO	13722-2000
54	VARIES	CURVE RAIL (5.5° TO 7.5° 4 FT LG)	K&M	851 B412/1
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	VARIES
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS 5.5° TO 7.5° CURVE SPAN WITH 4 FOOT CURVE RAILS TWO-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-308
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			2 OF 2

\\v:\Library & Standards\Working Documents\Trolley\Details\SA Updates for 2021_publication\03_Review set\SA-300-309.dwg | Layout: SA-309
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PLAN



ELEVATION

NOTES:

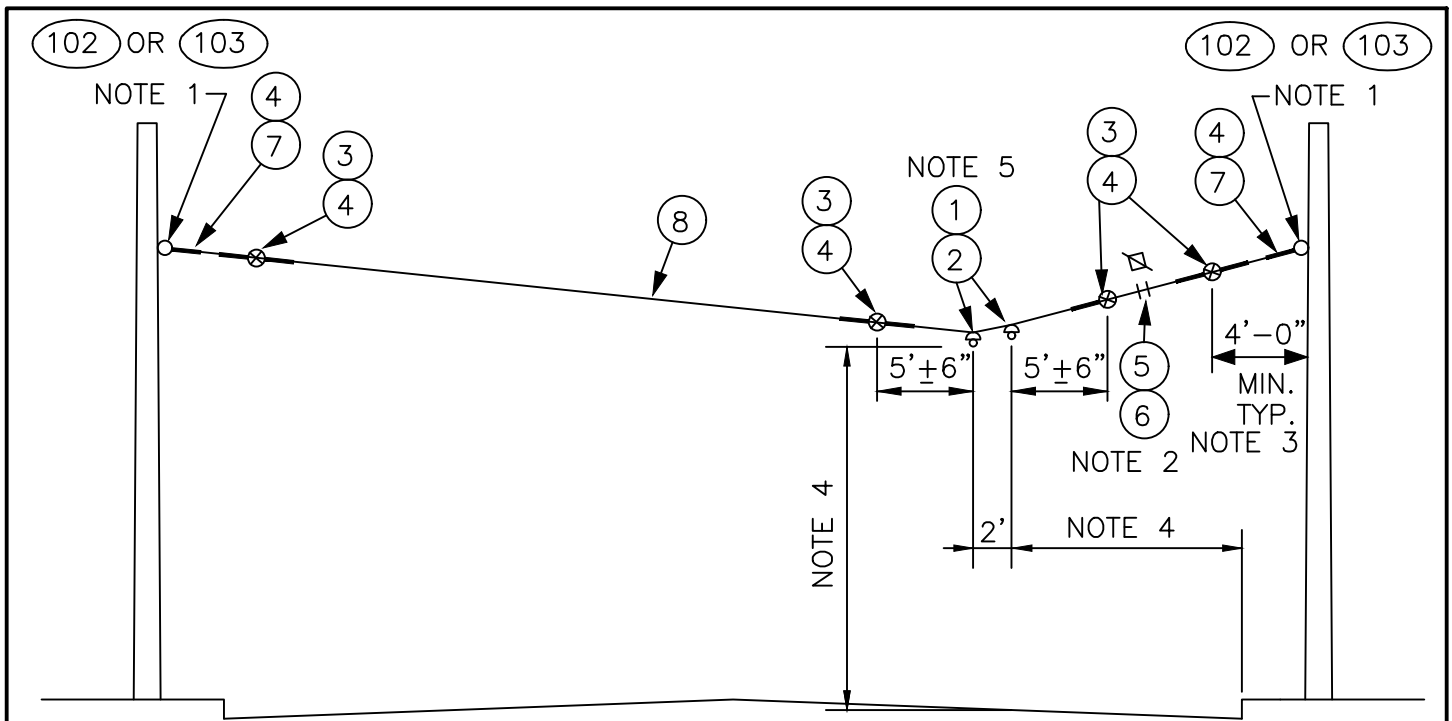
1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⌵". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-371 FOR LIMITED SPACE VARIANCES. SEE SA-167 FOR INSULATED GUY CRITERIA.
4. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.
5. INSIDE PULLOFF MAY NOT BE REQUIRED, SEE DRAWINGS FOR EACH INSTALLATION.
6. ANGLE VARIES FROM 8° TO 30°.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS 8° TO 30° CURVE SPAN WITH CURVE SEGMENTS TWO-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-310
					CHECKED: J. DAVIS			SHT NO: 1 OF 2
No.	REVISION	BY	APP'D	DATE				

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	6	GUY STRAIN INSUL	PORCELAIN	504
04	15	GUY GRIP DEADEND	PRODUCTS CO PREFORMED	CDE-3106
05	10	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS	FRICTION TAPE, 3/4" (6 WRAPS)		
07	REQD	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
09	VARIES	BULL RING	WABCO	18567-2000
11	1	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6120
12	3	7/8 TRANSLITE STRAIN INSUL CL-EYE	WABCO	55339-6120
18	VARIES	GUY STRAND, COVERED	COPPERWELD	8M
25	VARIES	CURVE SEGMENT 8-12 DEG TYPE C	WABCO	22301-3014
	VARIES	CURVE SEGMENT 13-27 DEG TYPE C	WABCO	22302-3005
	SEE	CURVE SEGMENT 28-47 DEG TYPE C	WABCO	22303-3005
102	PLAN VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS 8° TO 30° CURVE SPAN WITH CURVE SEGMENTS TWO-WAY TRAFFIC	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-310
					CHECKED:		SHT NO:	
No.	REVISION	BY	APP'D	DATE	J. DAVIS		2 OF 2	



ELEVATION

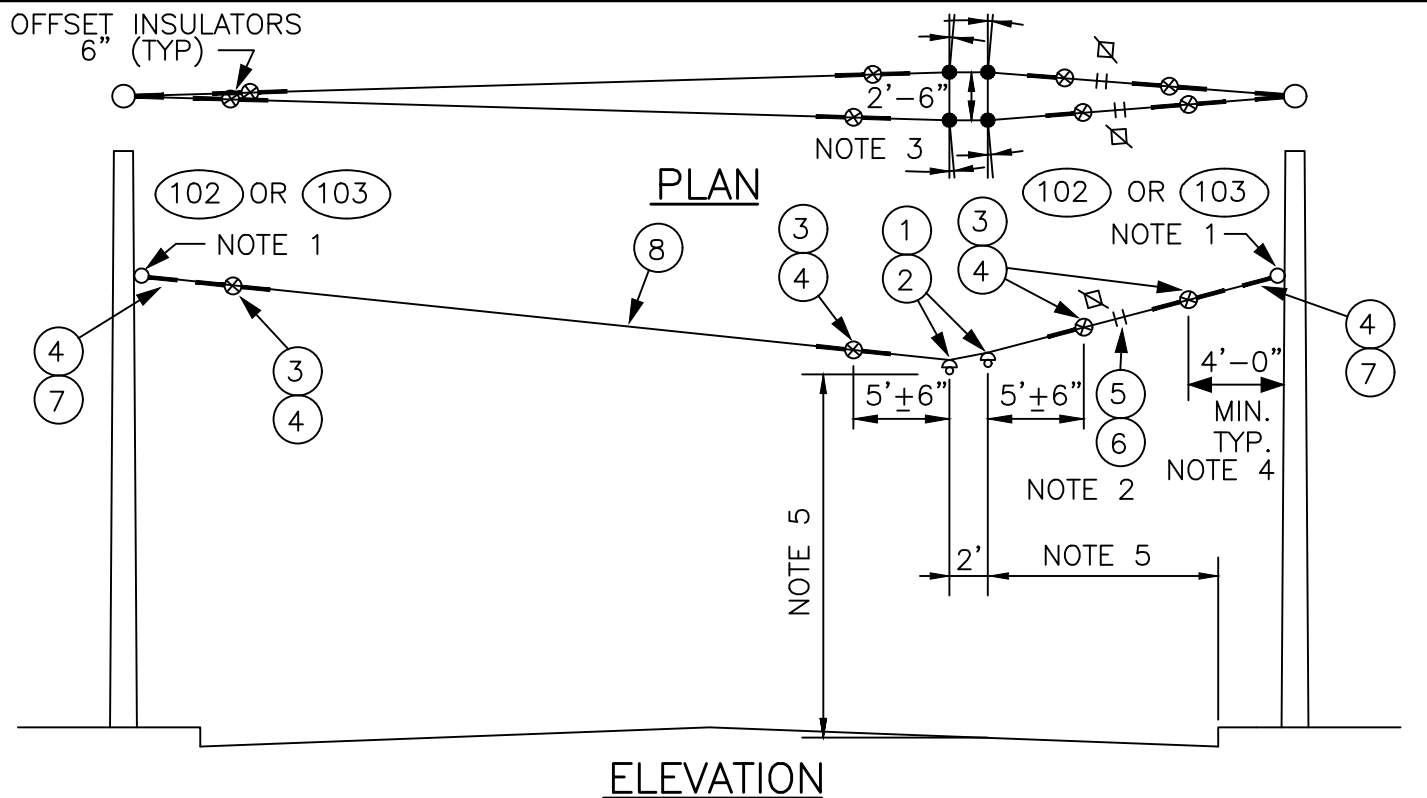
NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⊠". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-370 FOR LIMITED SPACE VARIANCES.
4. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.
5. MAXIMUM ANGLE IS 0.5°. SEE SA-317 PLAN VIEW.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	2	DETROIT CLAMP ASSY	WABCO	19293-3007
02	2	AGC TANGENT SPAN HANGER	WABCO	19360-2000
03	4	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	9	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	2	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	2	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TANGENT SPAN ONE-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-311
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				



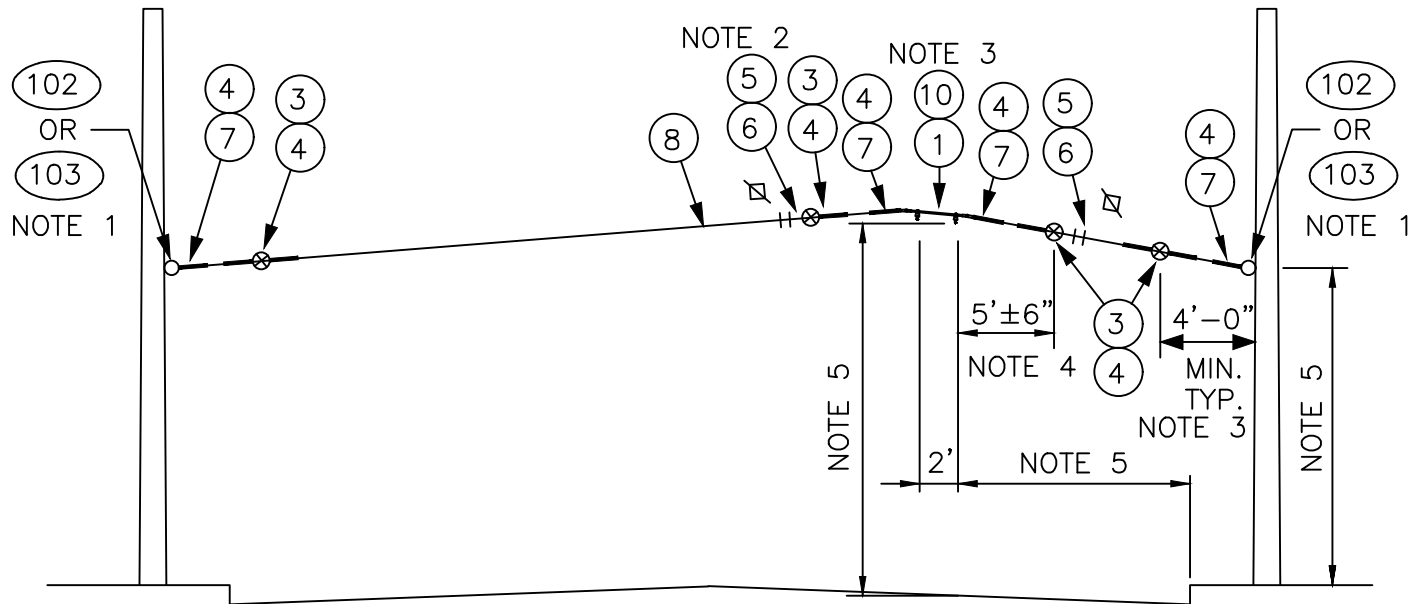
NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⌵". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. MAXIMUM ANGLE 1°, 0.5° PER SPAN HANGER.
4. SEE SA-370 FOR LIMITED SPACE VARIANCES.
5. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	4	DETROIT CLAMP ASSY	WABCO	19293-3007
02	4	AGC TANGENT SPAN HANGER	WABCO	19360-2000
03	8	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	18	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	4	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS HOLDUP TANGENT SPAN ONE-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-312
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				



ELEVATION

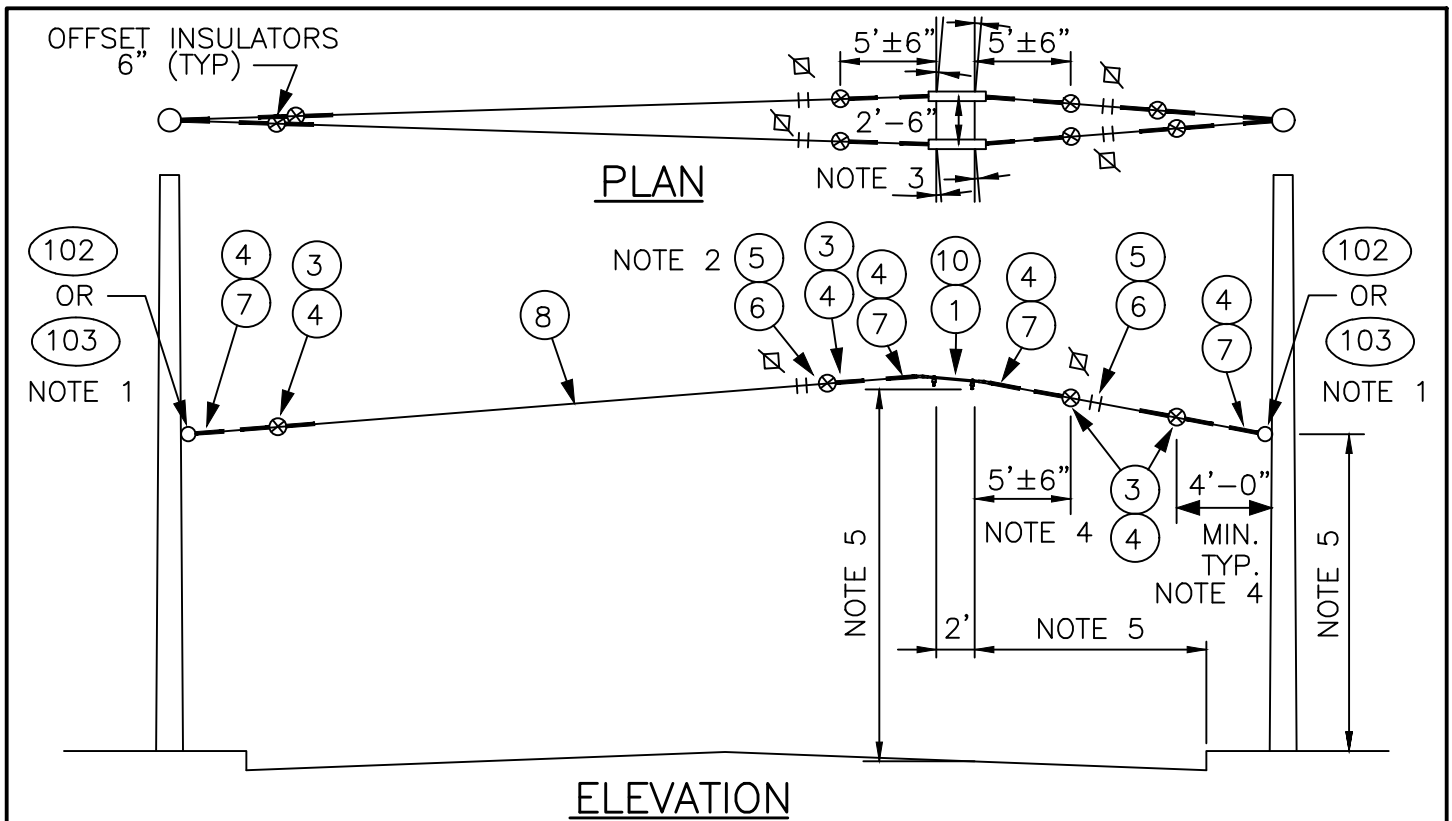
NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "X". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. MAXIMUM ANGLE 0.5°. SEE SA-317, PLAN VIEW.
4. SEE SA-370 FOR LIMITED SPACE VARIANCES.
5. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	2	DETROIT CLAMP ASSY	WABCO	19293-3007
03	4	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	10	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	4	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
10	1	HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS INVERTED TANGENT SPAN ONE-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-313
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				



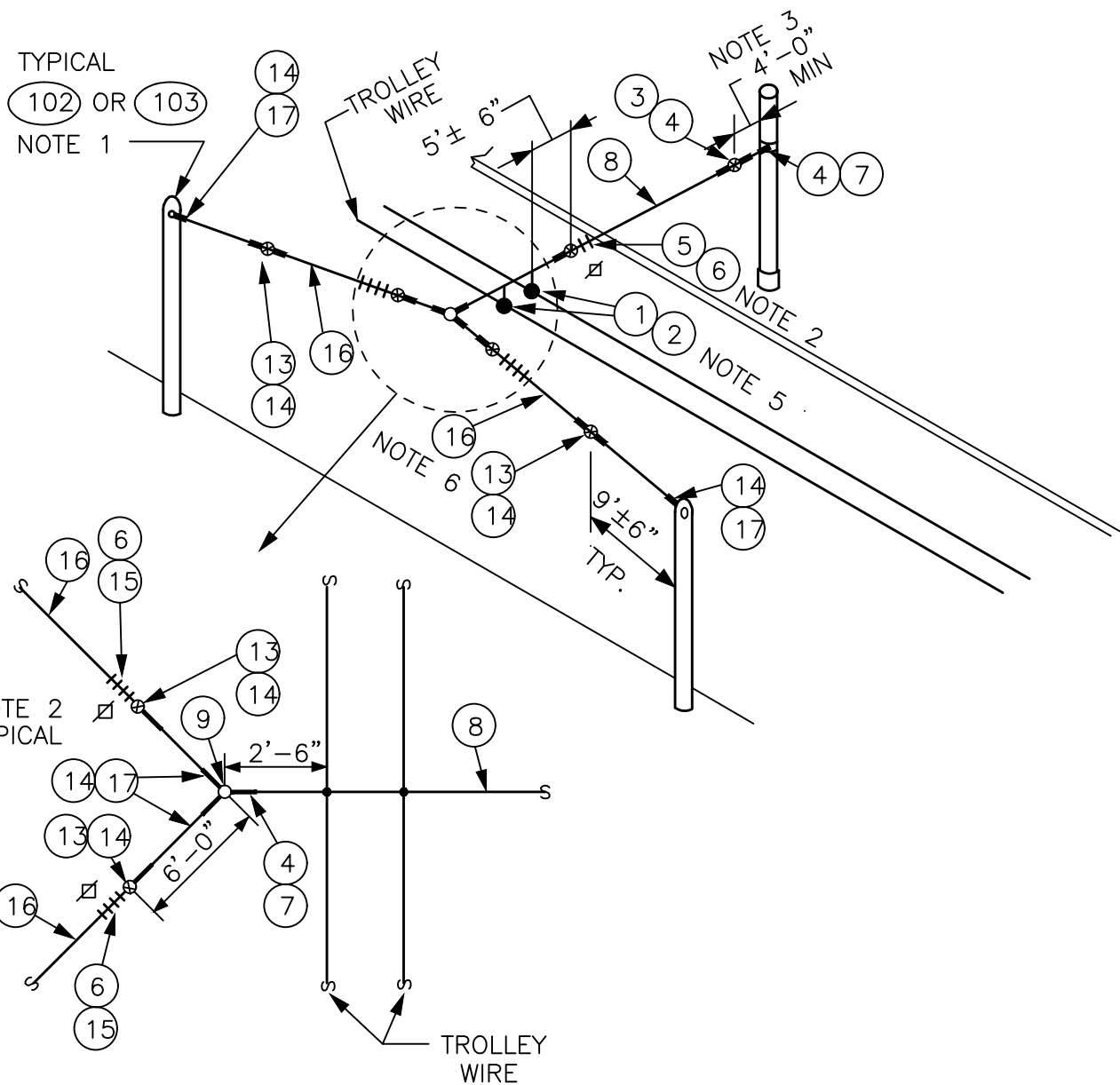
NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⌵". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. MAXIMUM ANGLE 1 DEGREE, 0.5° PER DOUBLE CURVE HANGER.
4. SEE SA-370 FOR LIMITED SPACE VARIANCES.
5. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	4	DETROIT CLAMP ASSY	WABCO	19293-3007
03	8	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	20	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	8	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	8	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
10	2	HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-314
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE			HOLDDOWN TANGENT SPAN ONE-WAY TRAFFIC	



					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-315
					CHECKED: J. DAVIS			SHT NO: 1 OF 2
No.	REVISION	BY	APP'D	DATE			BRIDLE TANGENT SPAN ONE-WAY TRAFFIC	

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	2	DETROIT CLAMP ASSY	WABCO	19293-3007
02	2	AGC TANGENT SPAN HANGER	WABCO	19360-2000
03	VARIES	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	VARIES	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	VARIES	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	VARIES	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
09	1	BULL RING	WABCO	18567-2000
13	VARIES	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	506
14	VARIES	GUY GRIP DEADEND	PREFORMED	CDE-3115
15	VARIES	WIRE ROPE CLIP, 3/8"	CROSBY	G450
16	VARIES	GUY STRAND	COPPERWELD	16M
17	VARIES	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "X". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-370 FOR LIMITED SPACE VARIANCES.
4. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.
5. MAXIMUM ANGLE IS 0.5°. SEE SA-307, PLAN VIEW.
6. IF LOAD SHOWN ON OVERHEAD DRAWINGS IS LESS THAN 2500 LBS, THEN ITEM 8 MAY BE USED INSTEAD OF ITEM 16. THE ASSOCIATED ITEMS SHALL ALSO BE CHANGED I.E. 3 FOR 13, 4 FOR 14, 5 FOR 15 AND 7 FOR 17.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS BRIDLE TANGENT SPAN ONW-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-315
					CHECKED: J. DAVIS			SHT NO: 2 OF 2
No.	REVISION	BY	APP'D	DATE				

TYPICAL
 (102) OR (103)
 NOTE 1

TROLLEY WIRE

NOTE 5

NOTE 6

9'±6"
 TYP.
 NOTE 3

NOTE 2
 TYPICAL

TROLLEY WIRE

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS DOUBLE BRIDLE TANGENT SPAN ONE-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-316
					CHECKED: J. DAVIS			SHT NO: 1 OF 2
No.	REVISION	BY	APP'D	DATE				

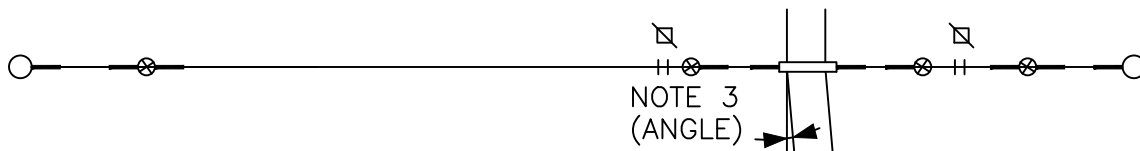
MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	2	DETROIT CLAMP ASSY	WABCO	19293-3007
02	2	AGC TANGENT SPAN HANGER	WABCO	19360-2000
03	VARIES	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	VARIES	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	VARIES	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	VARIES	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
09	2	BULL RING	WABCO	18567-2000
13	VARIES	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	506
14	VARIES	GUY GRIP DEADEND	PREFORMED	CDE-3115
15	VARIES	WIRE ROPE CLIP, 3/8"	CROSBY	G450
16	VARIES	GUY STRAND	COPPERWELD	16M
17	VARIES	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

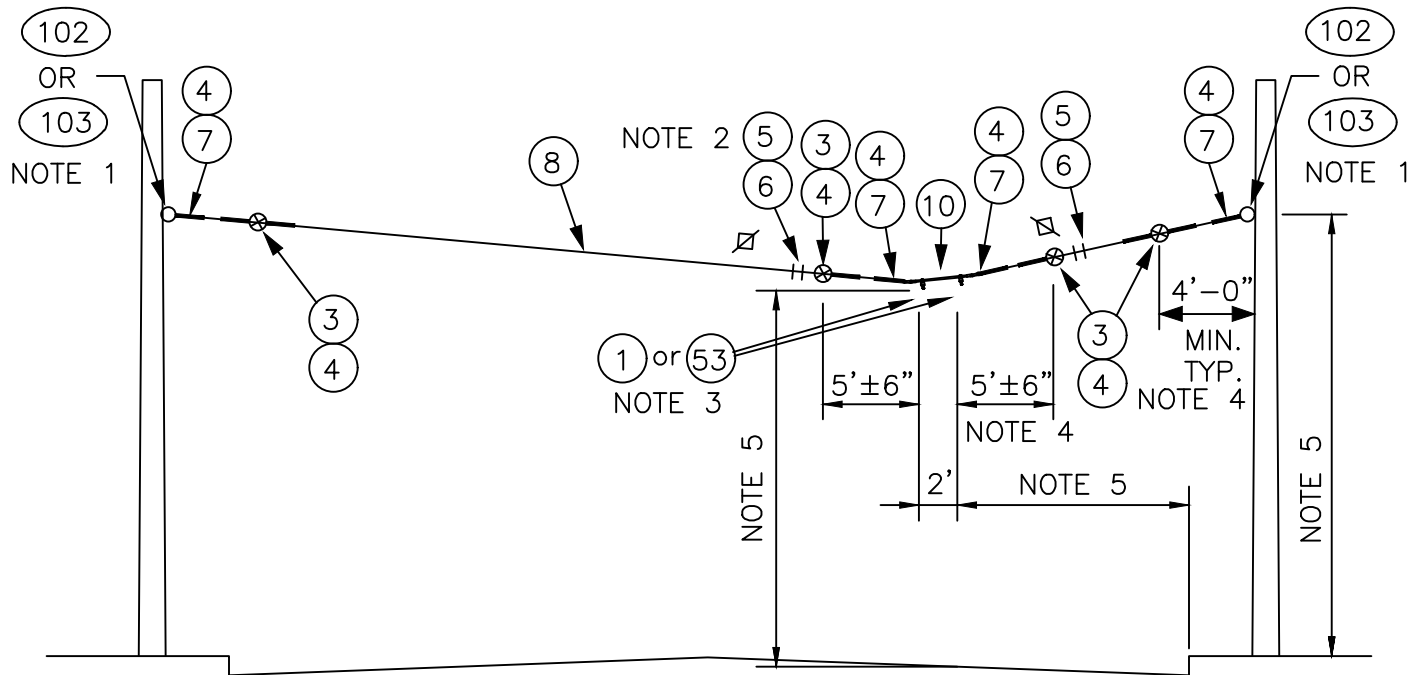
NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "N". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-370 FOR LIMITED SPACE VARIANCES.
4. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.
5. MAXIMUM ANGLE IS 0.5°. SEE SA-307, PLAN VIEW.
6. IF LOAD SHOWN ON OVERHEAD DRAWINGS IS LESS THAN 2500 LBS, THEN ITEM 8 MAY BE USED INSTEAD OF ITEM 16. THE ASSOCIATED ITEMS SHALL ALSO BE CHANGED I.E. 3 FOR 13, 4 FOR 14, 5 FOR 15 AND 7 FOR 17.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS DOUBLE BRIDLE TANGENT SPAN ONE-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-316
					CHECKED: J. DAVIS			SHT NO: 2 OF 2
No.	REVISION	BY	APP'D	DATE				



PLAN



ELEVATION

NOTES:

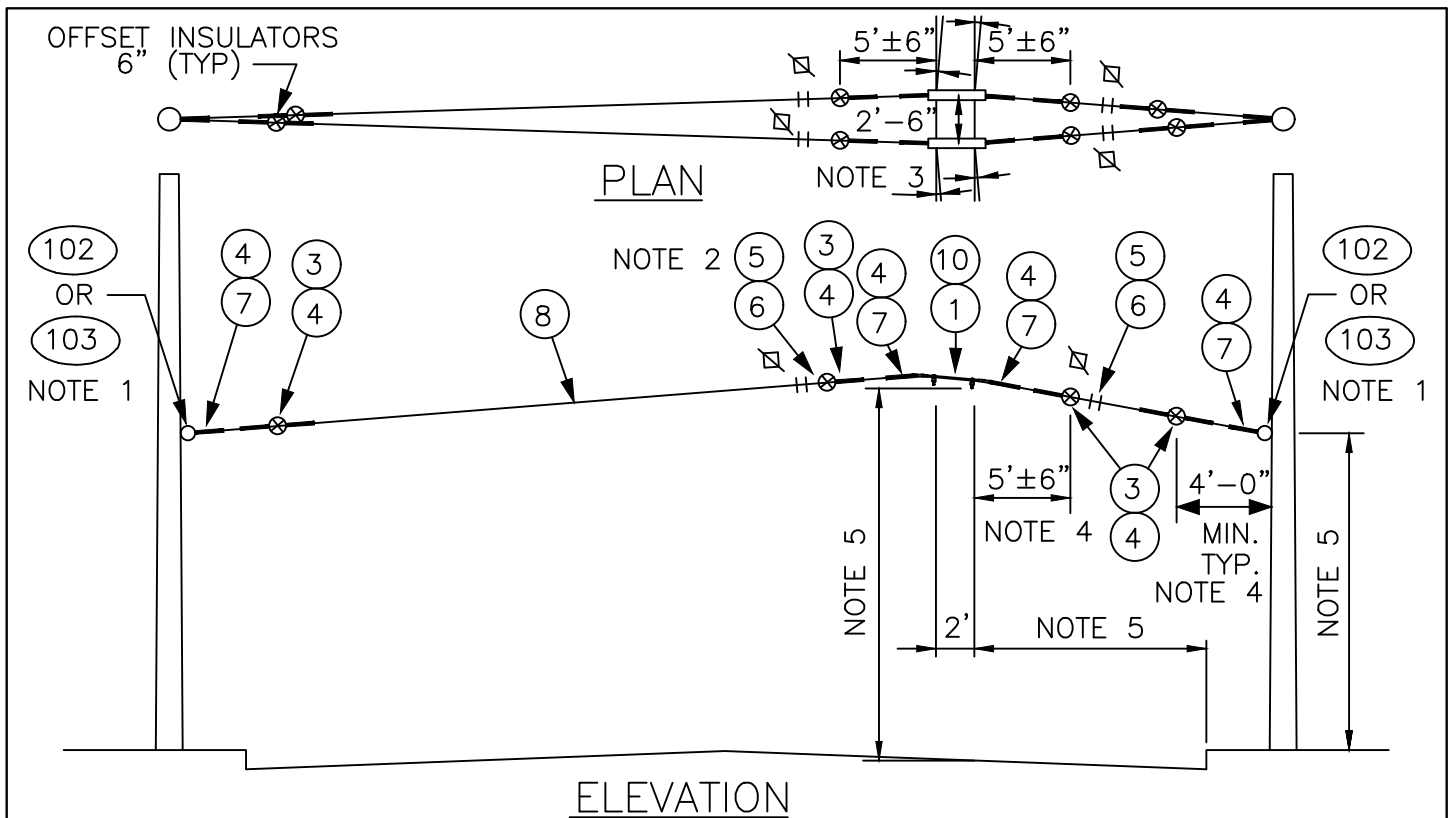
1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⌘". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. ANGLE VARIES FROM 1° TO 5°. USE ITEM 1 FOR 1° TO 2.5° ANGLE. USE ITEM 53 FOR 3° TO 5° ANGLE.
4. SEE SA-370 FOR LIMITED SPACE VARIANCES.
5. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS 1° TO 5° CURVE SPAN WITH 2 FOOT CURVE RAILS ONE-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-317
					CHECKED: J. DAVIS			SHT NO: 1 OF 2
No.	REVISION	BY	APP'D	DATE				

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	VARIES	DETROIT CLAMP ASSY	WABCO	19293-3007
03	4	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	10	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	4	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
10	1	HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
53	VARIES	CURVE RAIL (1° TO 5° 2 FT LG)	K & M	851 B412/0
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS 1° TO 5° CURVE SPAN WITH 2 FOOT CURVE RAILS ONE-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-317
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			2 OF 2



NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⌘". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. MAXIMUM ANGLE 1 DEGREE, 0.5° PER DOUBLE CURVE HANGER.
4. SEE SA-370 FOR LIMITED SPACE VARIANCES.
5. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	4	DETROIT CLAMP ASSY	WABCO	19293-3007
03	8	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	20	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	8	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	8	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
10	2	HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS 5.5° TO 7.5° CURVE SPAN WITH 4 FOOT CURVE RAILS ONE-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-318
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				

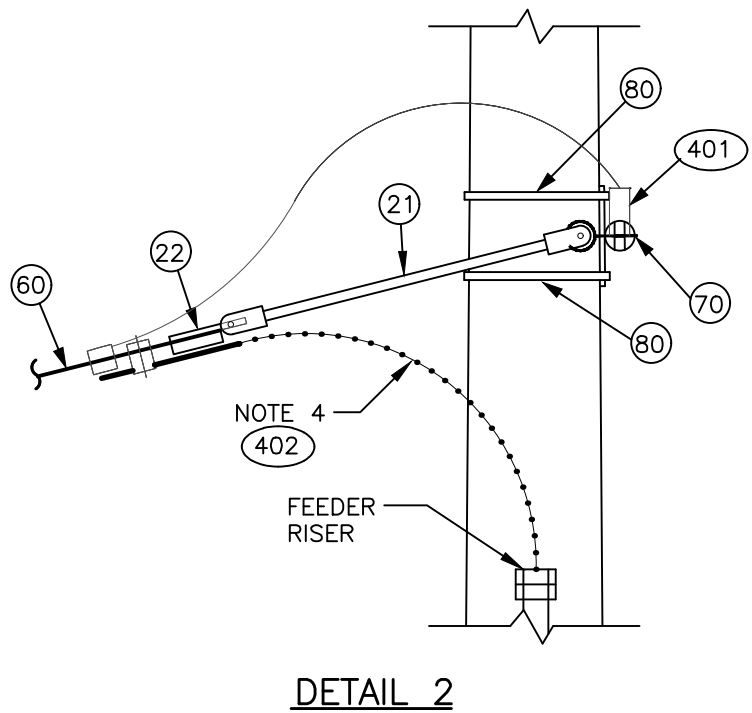
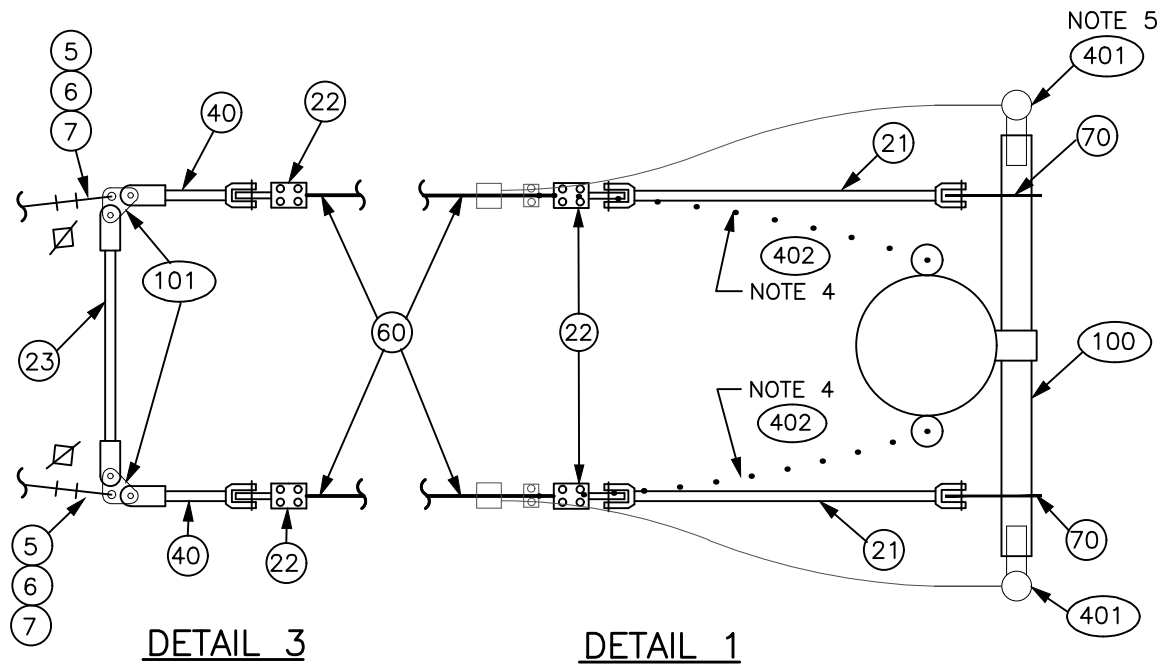
The elevation view shows the bridge deck structure. Key features include:

- Deck Profile:** A line representing the top surface of the bridge deck, with a slight dip in the center.
- Dimensions:**
 - NOTE 1:** Points to the left abutment structure.
 - NOTE 2:** Points to the right abutment structure.
 - NOTE 3:** Points to the central span area.
 - NOTE 4:** Points to the central span area.
- Labels:**
 - OR 102 OR 103:** Labels for the abutment structures.
 - NOTE 1:** Label for the left abutment.
 - NOTE 2:** Label for the right abutment.
 - NOTE 3:** Label for the central span.
 - NOTE 4:** Label for the central span.
- Dimensions:**
 - 4'-0" MIN. TYP.:** Dimension for the central span.
 - 5'±6":** Dimension for the central span.
 - 2'±6":** Dimension for the central span.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	4	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	10	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	4	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
12	1	7/8 TRANSLITE STRAIN INSUL CL-EYE	WABCO	55339-6120
25	VARIES (SEE PLAN)	CURVE SEGMENT 8-12 DEG TYPE C CURVE SEGMENT 13-27 DEG TYPE C CURVE SEGMENT 28-47 DEG TYPE C	WABCO WABCO WABCO	22301-3014 22302-3005 22303-3005
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS 8' TO 30' CURVE SPAN WITH CURVE SEGMENT ONE-WAY TRAFFIC	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-320
					CHECKED:		SHT NO:	
No.	REVISION	BY	APP'D	DATE	J. DAVIS		2 OF 5	

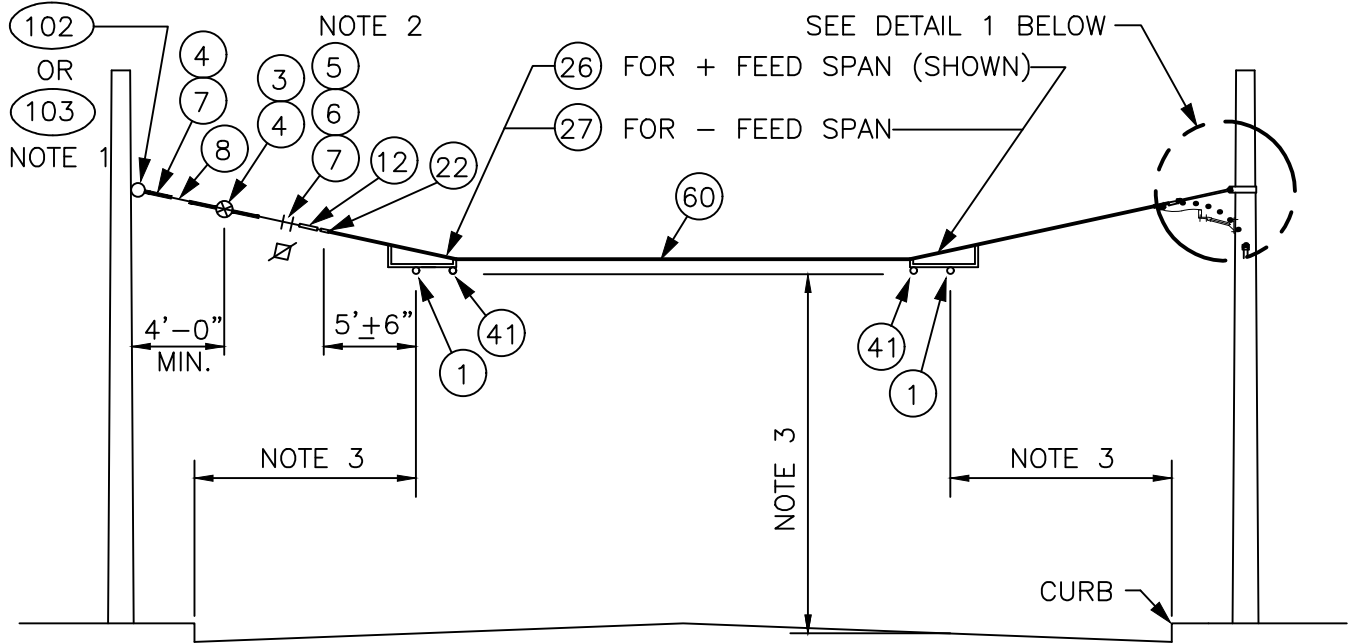


					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS DOUBLE FEEDER SPAN TWO-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-321
					CHECKED: J. DAVIS			SHT NO: 2 OF 3
No.	REVISION	BY	APP'D	DATE				

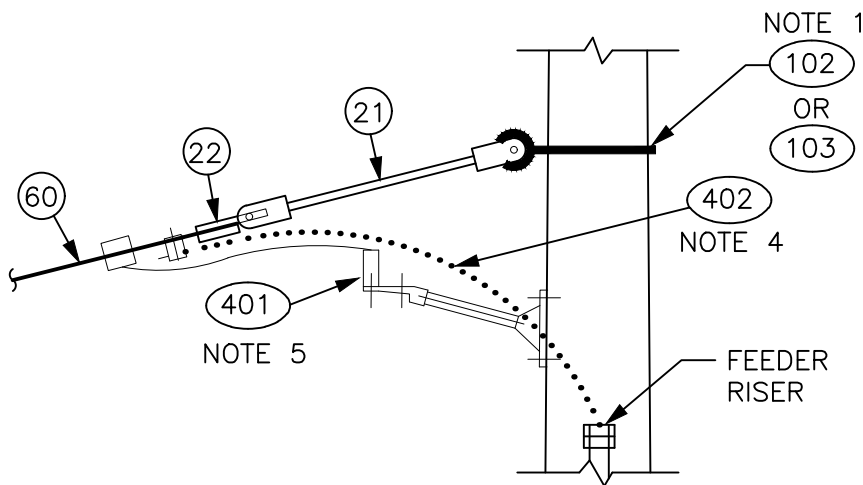
MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	4	DETROIT CLAMP ASSEMBLY	WABCO	19293-3007
03	2	GUY STRAIN INSULATOR	PORCELAIN PRODUCTS CO	504
04	6	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQ'D	FRICTION TAPE, 3/4" (6 WRAPS)		
07	4	THIMBLE, 3/8" x HD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
12	2	7/8 TRANSLITE STRAIN INSULATOR CL-CL	WABCO	55339-6120
21	2	7/8 TRANSLITE STRAIN INSULATOR CL-CL	WABCO	54975-6360
22	4	CLAMP STRAIN EYE	WABCO	10571-2000
26	2	TYPE PH-4 POSITIVE FEED SPAN HANGER	WABCO	54937-3002
27	2	TYPE PH-5 NEGATIVE FEED SPAN HANGER	WABCO	54936-3002
41	4	HSP FEEDER CLAMP ASSEMBLY, BRONZE	WABCO	19879-2000
60	AS REQ'D	FEED SPAN CABLE 500 KCM CU, UNSHIELDED, 5 KV EPR W/ PVC JACKET		
70	4	EYEBOLT, 5/8"x6" W/ 2 NUTS & LOCKWASHER		
80	AS REQ'D	3/4" x 0.030" SS BANDING TYPE 201	BAND-IT	C206
100	2	EPOXIROD DEADEND ARM	CHANCE	C653-1023
401	AS REQ'D	LIGHTNING ARRESTER	METRO STANDARD	SA-401
402	AS REQ'D	FEEDER RISER	METRO STANDARD	SA-402

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS DOUBLE FEEDER SPAN TWO-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-321
					CHECKED: J. DAVIS			SHT NO: 3 OF 3
No.	REVISION	BY	APP'D	DATE				



ELEVATION



DETAIL 1

NOTES:

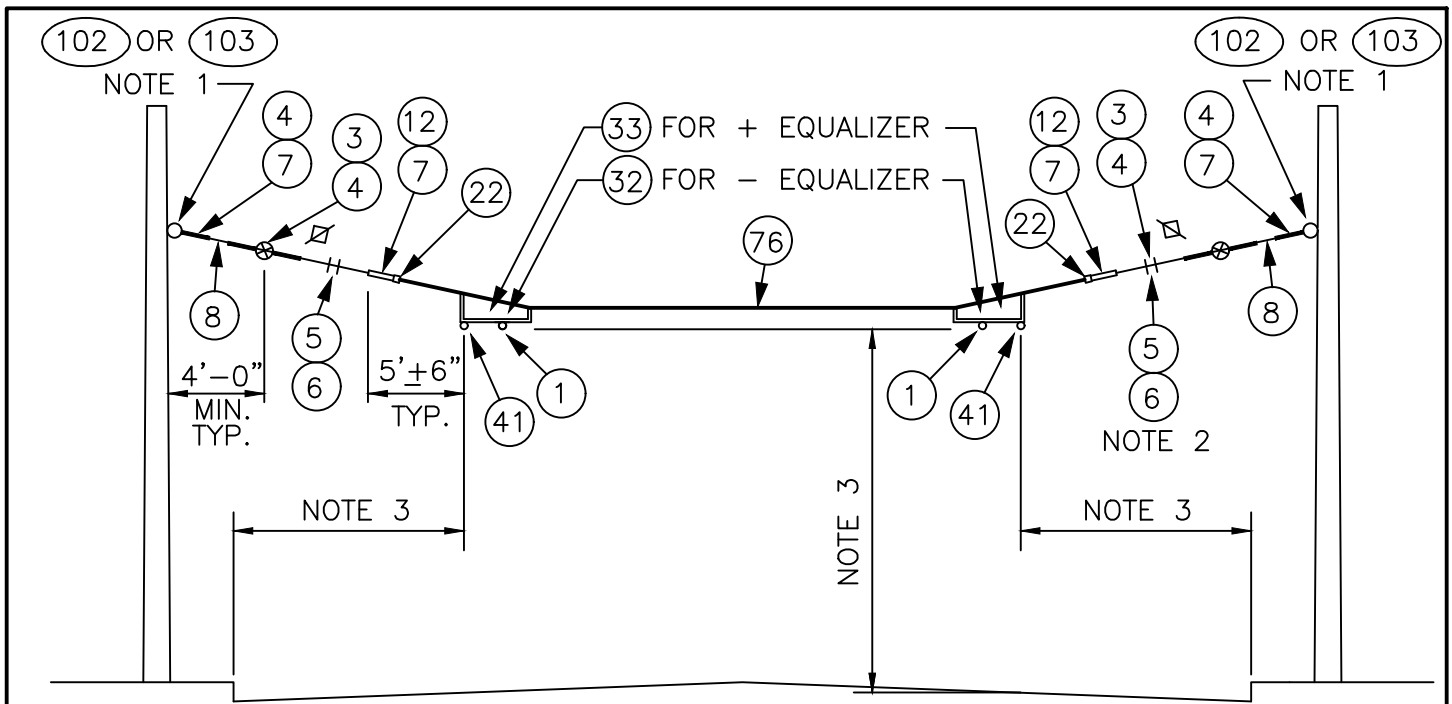
1. A POLE COLLAR, OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "Ø". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-164 FOR HORIZONTAL & VERTICAL DIMENSIONS TO TROLLEY WIRE.
4. CONNECT FEEDER RISER TO FEED SPAN. SEE SA-402.
5. INSTALL LIGHTNING ARRESTERS PER SA-401.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS SINGLE FEEDER SPAN TWO-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-322
					CHECKED: J. DAVIS			SHT NO: 1 OF 2
No.	REVISION	BY	APP'D	DATE				

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	2	DETROIT CLAMP ASSY	WABCO	19293-3007
03	1	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO	504
04	3	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	2	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	2	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
12	1	7/8 TRANSLITE STRAIN INSUL CL-EYE	WABCO	55339-6120
21	1	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6360
22	2	CLAMP STRAIN EYE	WABCO	10571-2000
26	2/0	TYPE PH-4 POS FEED SPAN HANGER	WABCO	54937-3002
27	0/2	TYPE PH-5 NEG FEED SPAN HANGER	WABCO	54936-3002
41	2	H.S.P. FEEDER CLAMP ASSY, BRONZE	WABCO	19879-2000
60	AS REQD	FEED SPAN CABLE 500 KCM CU, UNSHIELDED 5 KV EPR W/ PVC JACKET		
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103
401	AS REQD	LIGHTNING ARRESTER	METRO STD	SA-401
402	AS REQD	FEEDER RISER	METRO STD	SA-402

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-322
					CHECKED: J. DAVIS			SHT NO: 2 OF 2
No.	REVISION	BY	APP'D	DATE			SINGLE FEEDER SPAN TWO-WAY TRAFFIC	



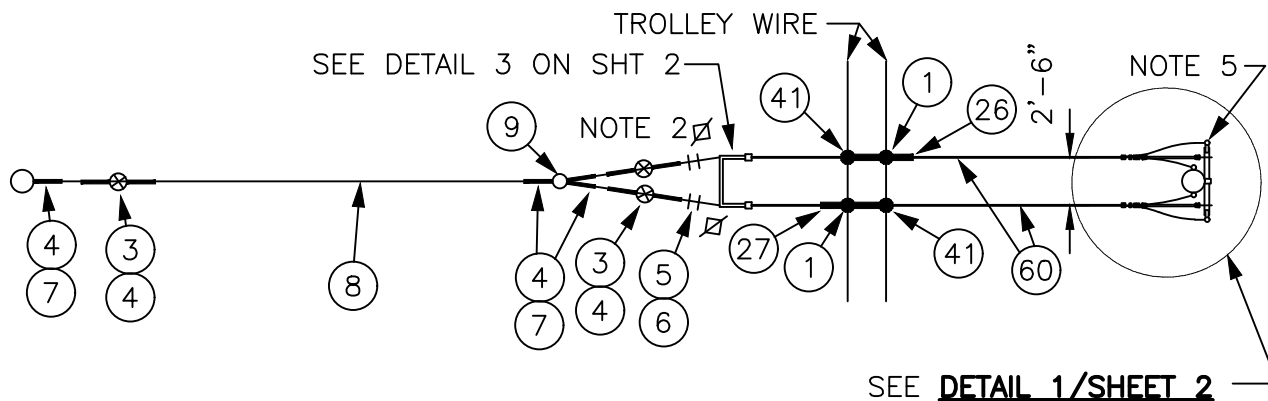
NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⌵". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.

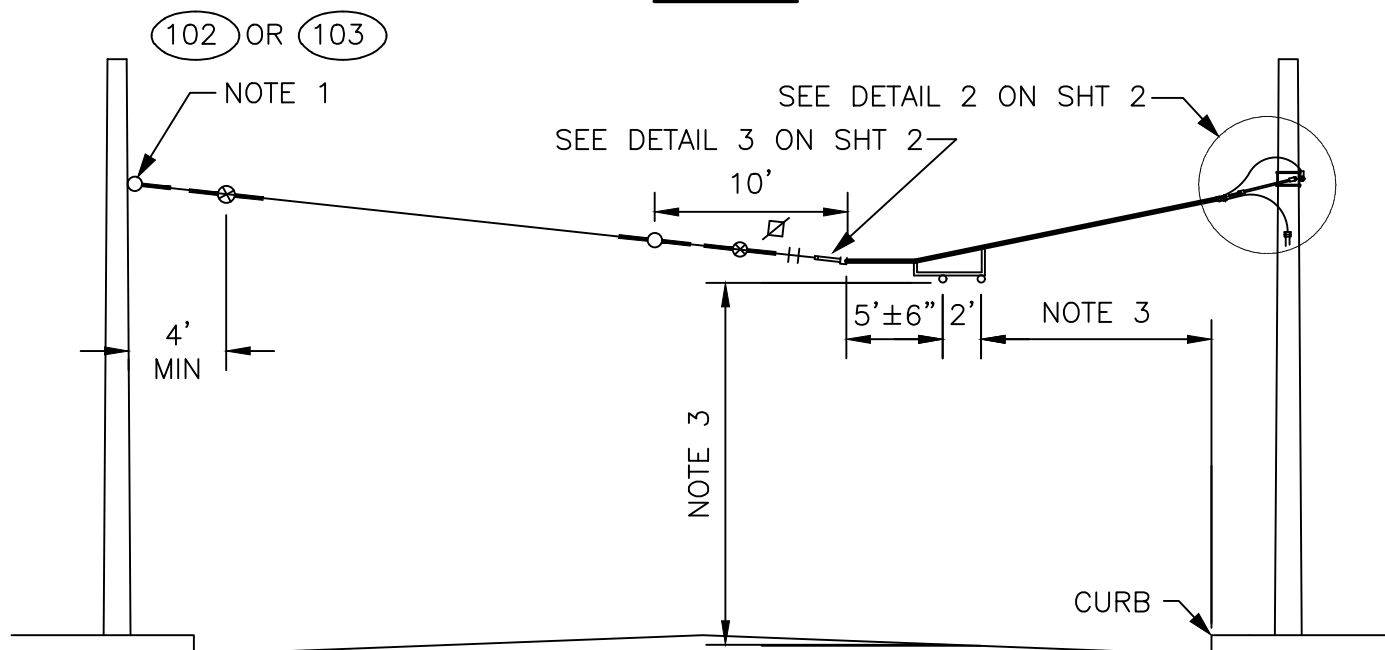
MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	2	DETROIT CLAMP ASSY	WABCO	19293-3007
03	2	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO	504
04	6	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	4	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
12	2	7/8 TRANSLITE STRAIN INSUL CL-EYE	WABCO	55339-6120
22	2	CLAMP STRAIN EYE	WABCO	10571-2000
32	2/0	TYPE PH-4 POS FEED SPAN HANGER	WABCO	54936-3001
33	0/2	TYPE PH-5 NEG FEED SPAN HANGER	WABCO	54937-3001
41	2	HSP FEEDER CLAMP ASSY, BRONZE	WABCO	19879-2000
76	AS REQD	4/0 STRANDED INSUL CABLE		
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-325
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE			EQUALIZER SPAN TWO-WAY TRAFFIC	



PLAN



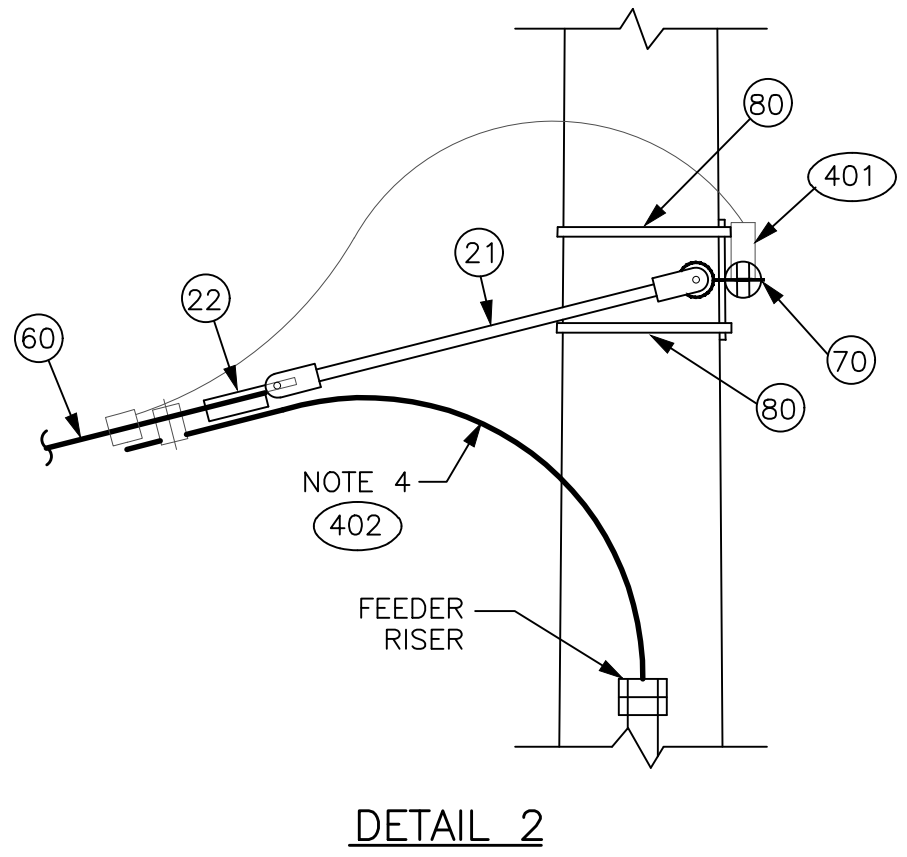
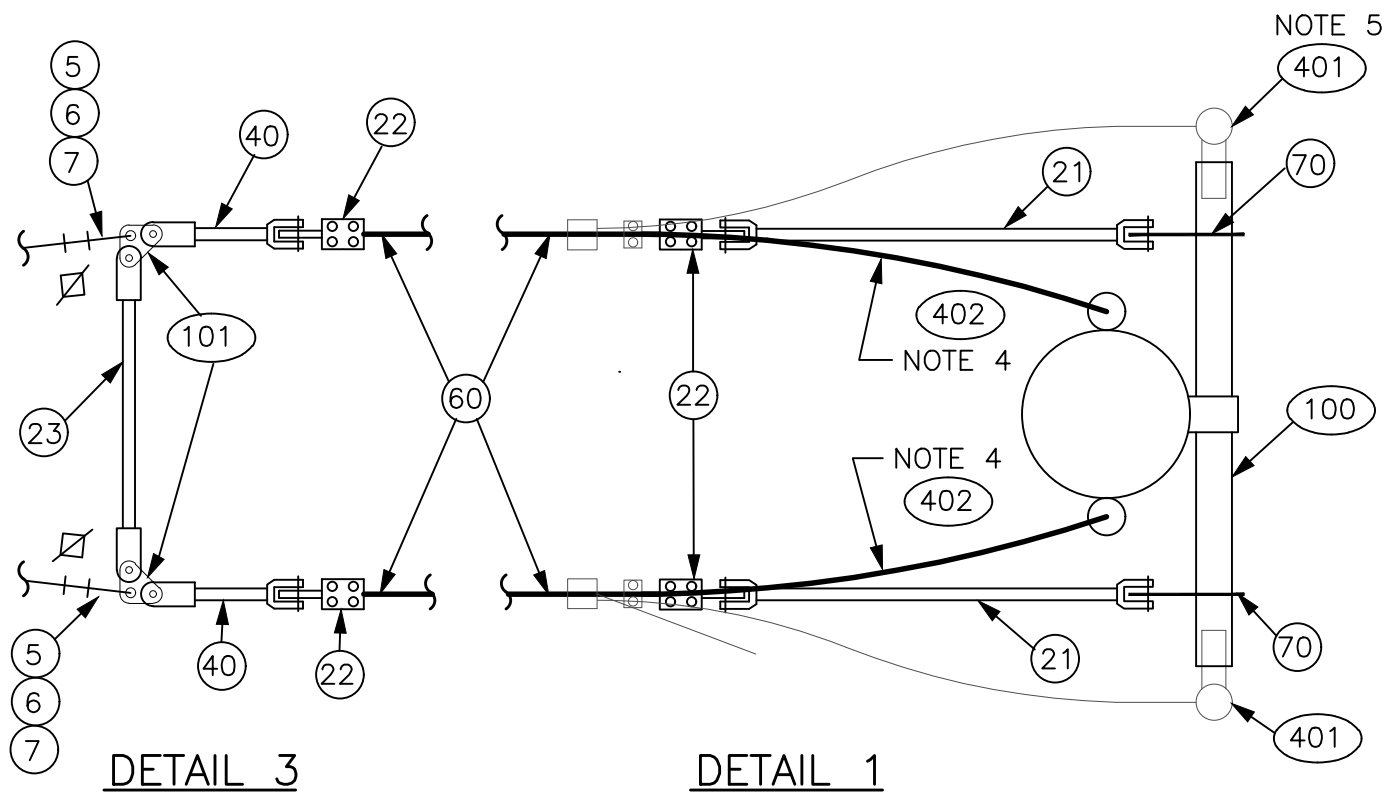
ELEVATION

NOTES:

1. A POLE COLLAR, OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⚡". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-164 FOR HORIZONTAL & VERTICAL DIMENSIONS TO TROLLEY WIRE.
4. CONNECT FEEDER RISER TO FEED SPAN. SEE SA-402.
5. INSTALL LIGHTNING ARRESTERS PER SA-401.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS DOUBLE FEEDER SPAN ONE-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-331
					CHECKED: J. DAVIS			SHT NO: 1 OF 3
No.	REVISION	BY	APP'D	DATE				

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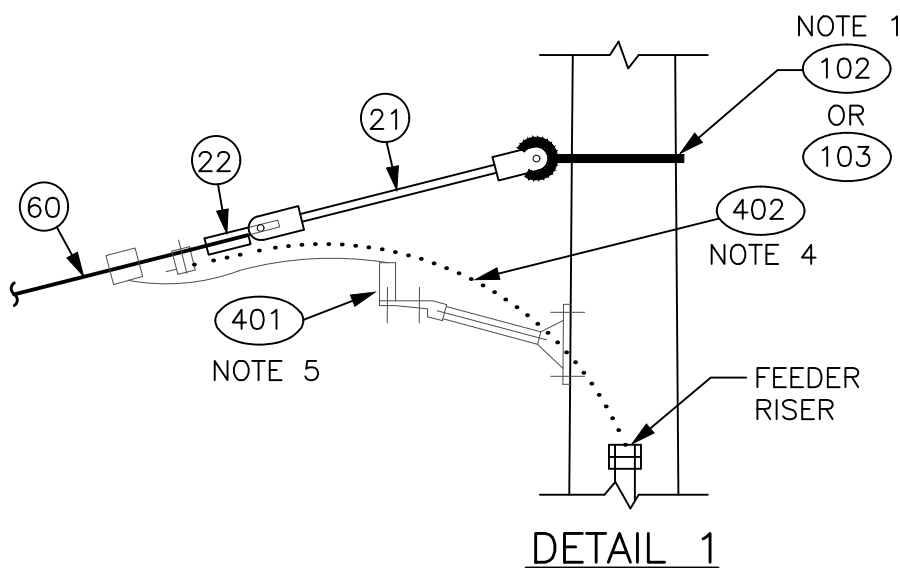
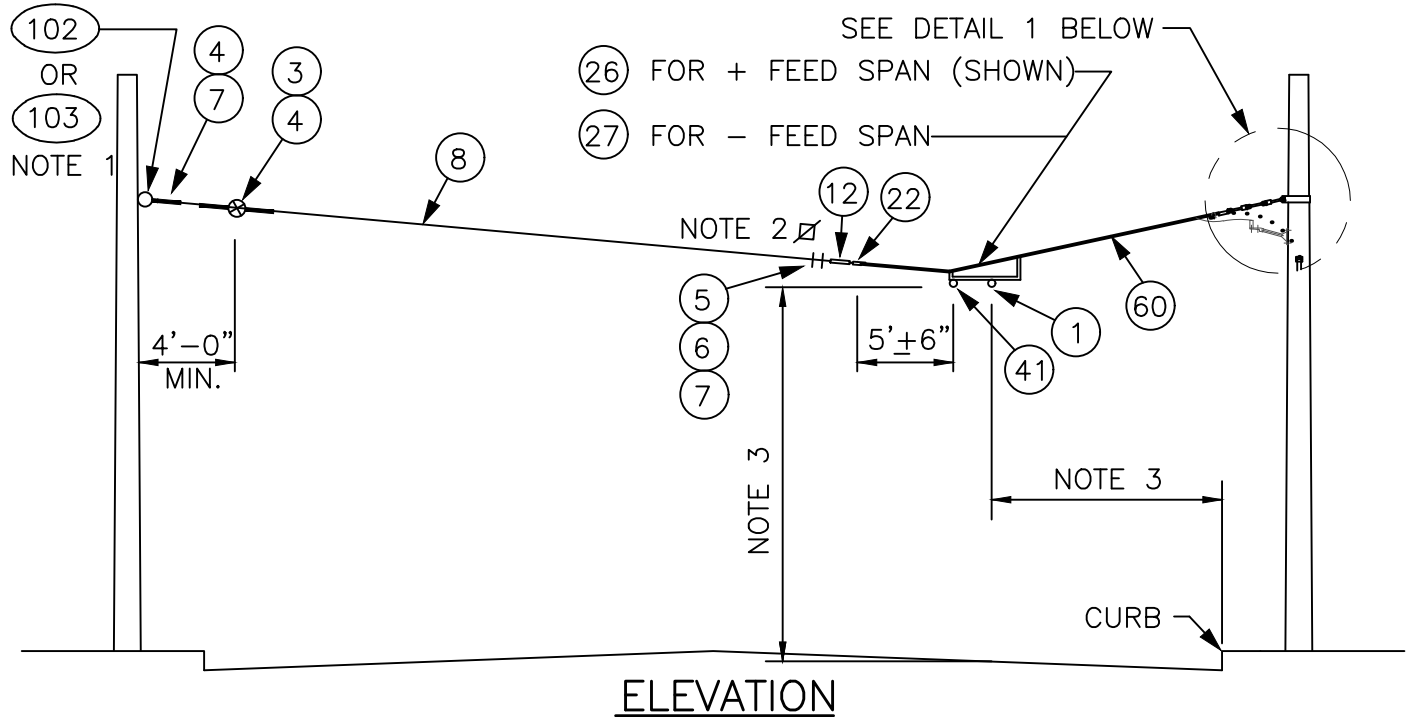


					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-331
					CHECKED: J. DAVIS			SHOT NO: 2 OF 3
No.	REVISION	BY	APP'D	DATE			DOUBLE FEEDER SPAN ONE-WAY TRAFFIC	

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	2	DETROIT CLAMP ASSY	WABCO	19293-3007
03	3	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	10	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	6	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
09	1	BULL RING	WABCO	18567-2000
21	2	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6360
22	4	CLAMP STRAIN EYE	WABCO	10571-2000
23	1	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6260
26	1	TYPE PH-4 POS FEED SPAN HANGER	WABCO	54937-3002
27	1	TYPE PH-5 NEG FEED SPAN HANGER	WABCO	54936-3002
40	2	7/8 TRANSLITE STRAIN INSUL CL-90	WABCO	54995-6120
41	2	H.S.P. FEEDER CLAMP ASSY, BRONZE	WABCO	19879-2000
60	AS REQD	FEED SPAN CABLE 500 KCM CU, UNSHIELDED, 5KV EPR W/ PVC JACKET		
70	2	EYEBOLT, 5/8" x 6", WITH 2 NUTS & LOCKWASHER		
80	AS REQD	3/4" x 0.03" SS BANDING TYPE 201	BAND-IT	C206
100	VARIES	EPOXIROD DEADEND ARM	CHANCE	C653-1023
101	2	STRAIN PLATE	METRO STD	SA-101
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103
401	AS REQD	LIGHTNING ARRESTER	METRO STD	SA-401
402	AS REQD	FEEDER RISER	METRO STD	SA-402

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-331
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS		DOUBLE FEEDER SPAN ONE-WAY TRAFFIC	3 OF 3



NOTES:

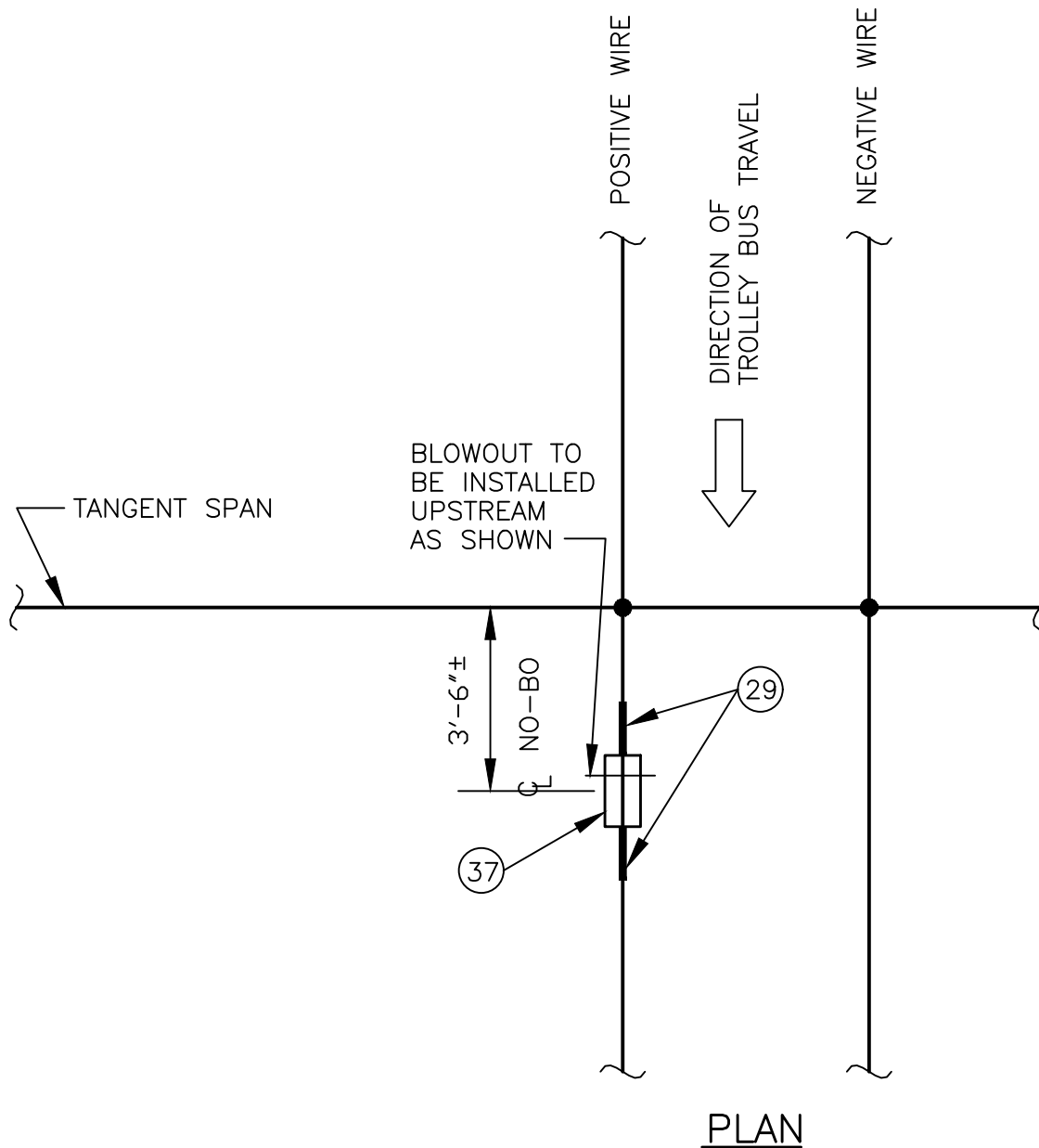
1. A POLE COLLAR, OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "∕". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-164 FOR HORIZONTAL & VERTICAL DIMENSIONS TO TROLLEY WIRE.
4. CONNECT FEEDER RISER TO FEED SPAN. SEE SA-402.
5. INSTALL LIGHTNING ARRESTERS PER SA-401.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS SINGLE FEEDER SPAN ONE-WAY TRAFFIC	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-332
					CHECKED: J. DAVIS			SHT NO: 1 OF 2
No.	REVISION	BY	APP'D	DATE				

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	1	DETROIT CLAMP ASSY	WABCO	19293-3007
03	1	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	3	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	2	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	2	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
12	1	7/8 TRANSLITE STRAIN INSUL CL-EYE	WABCO	55339-6120
21	1	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6360
22	2	CLAMP STRAIN EYE	WABCO	10571-2000
26	1/0	TYPE PH-4 POS FEED SPAN HANGER	WABCO	54937-3002
27	0/1	TYPE PH-5 NEG FEED SPAN HANGER	WABCO	54936-3002
41	1	H.S.P. FEEDER CLAMP ASSY, BRONZE	WABCO	19879-2000
60	AS REQD	FEED SPAN CABLE 500 KCM CU, UNSHIELDED, 5KV EPR W/ PVC JACKET		
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103
401	AS REQD	LIGHTNING ARRESTER	METRO STD	SA-401
402	AS REQD	FEEDER RISER	METRO STD	SA-402

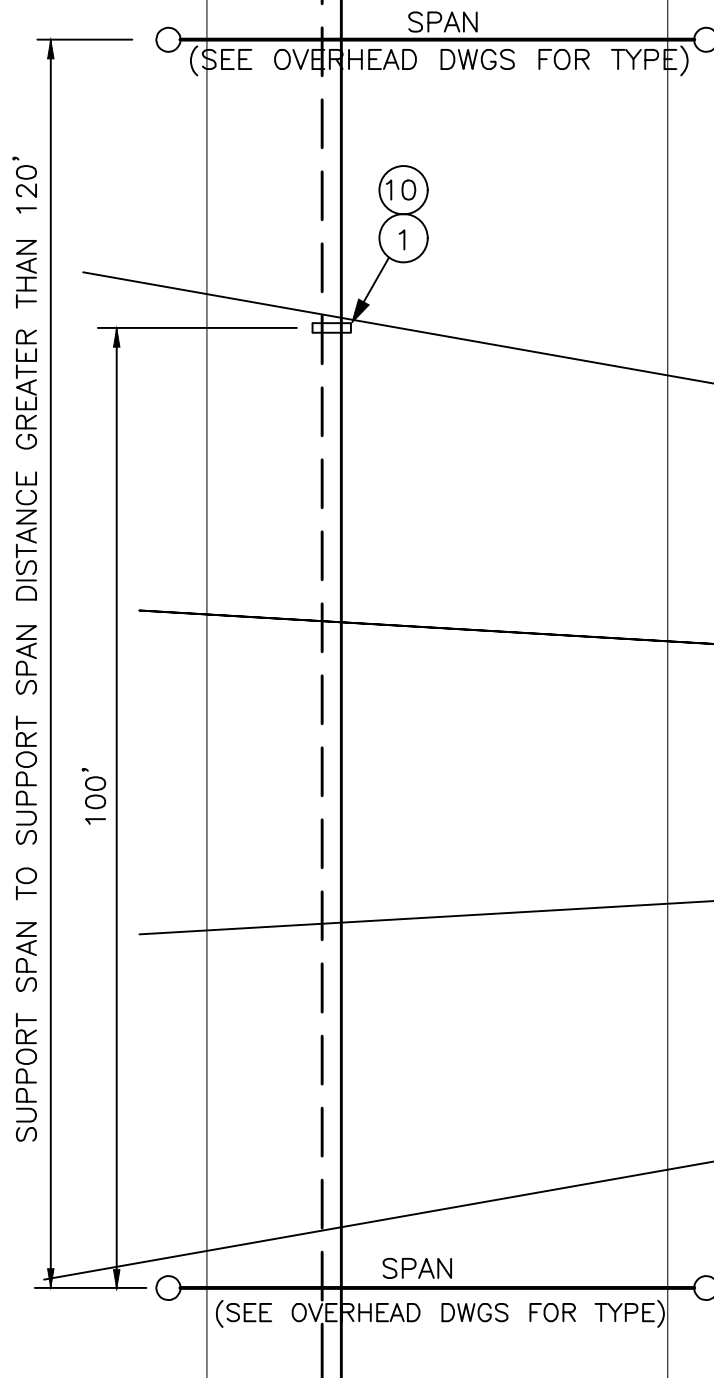
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					DRAWN: L. ANDERSON			STD DET NO: SA-332
					CHECKED: J. DAVIS			SHT NO: 2 OF 2
No.	REVISION	BY	APP'D	DATE				



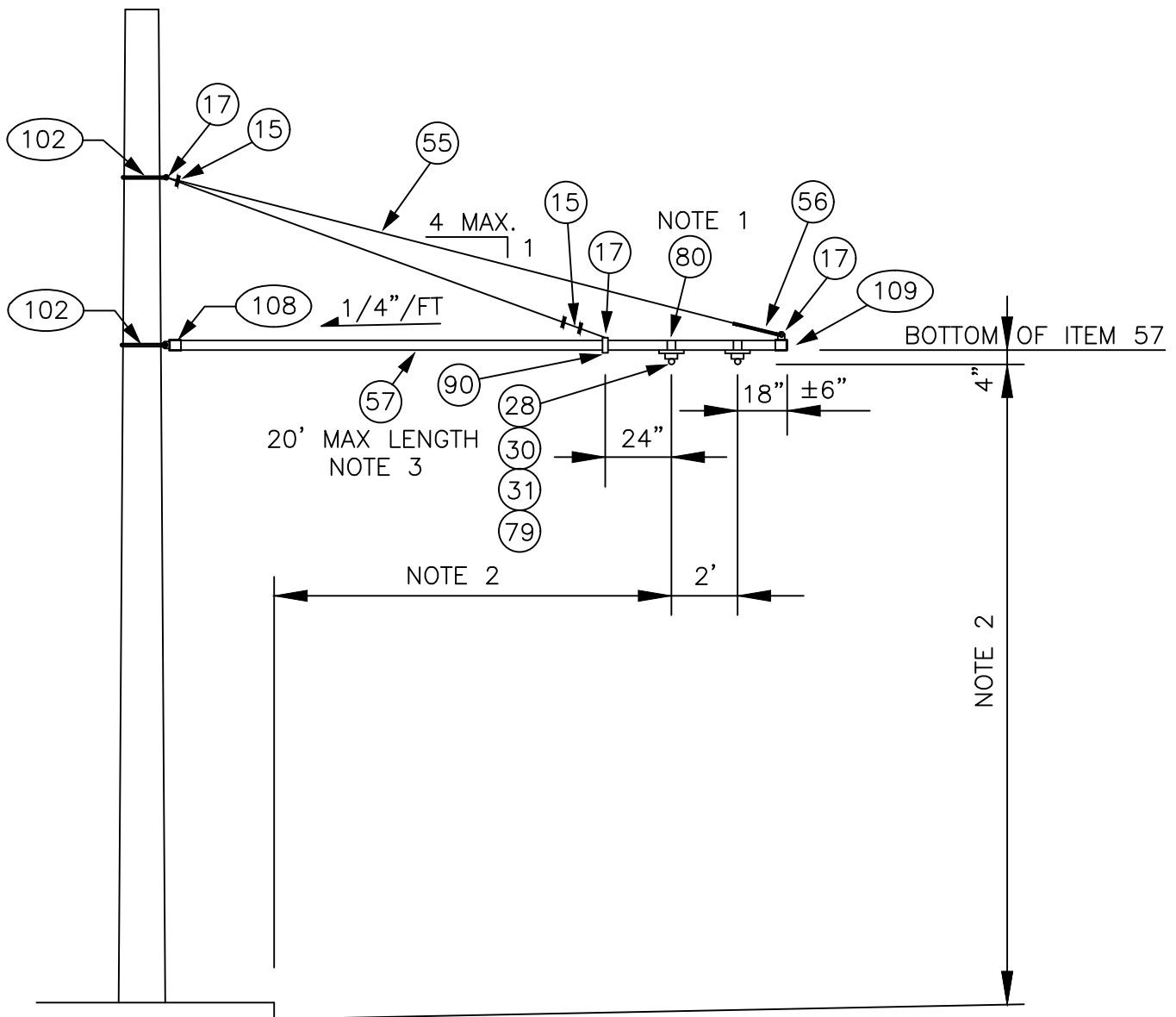
MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
29	2	TYPE TCL CLEVIS TIP 4/0	WABCO	54950-3002
37	1	NO-BO SECTION INSUL	WABCO	55025-3001

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS SECTIONALIZING SPAN ONE-WAY TRAFFICT	DATE: 02/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-333
					CHECKED: J. DAVIS			SHT NO:
No.	REVISION	BY	APP'D	DATE				1 OF 1



MATERIAL LIST



NOTES:

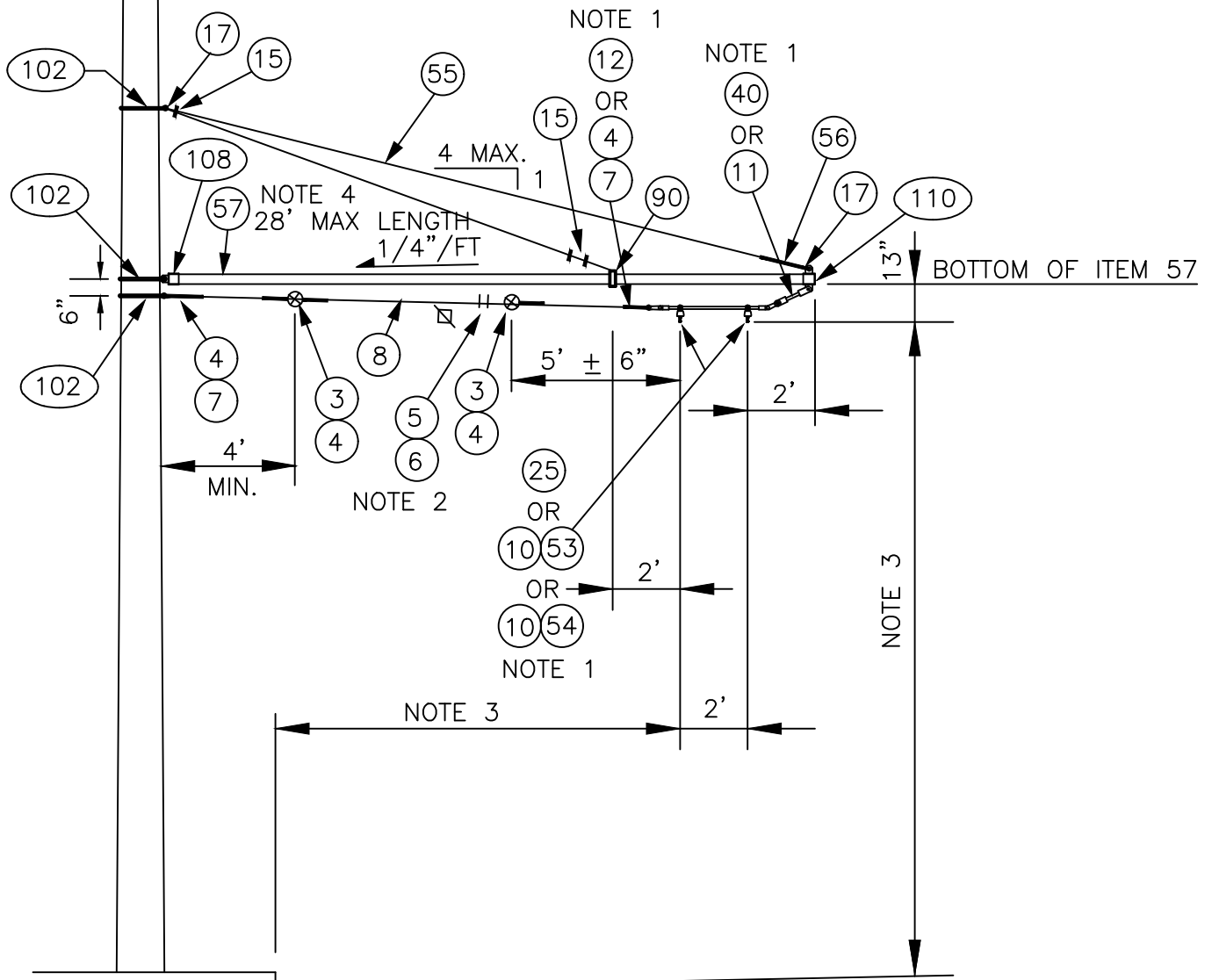
1. STAINLESS STEEL BANDING SHALL BE WRAPPED DOUBLE THICKNESS AROUND ITEM 57 PRIOR TO CLAMPING.
2. SEE SA-164 FOR HORIZONTAL & VERTICAL DIMENSIONS TO TROLLEY WIRE.
3. DRILL 1/2" HOLE IN TUBE TO MATCH HOLE IN ITEMS 108 & 109 FOR INSERTION OF 3/8" SS BOLT.

					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STEEL POLE BRACKET ASSEMBLY TANGENT CONSTRUCTION	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-341
					CHECKED: J. DAVIS			SHT NO: 1
No.	REVISION	BY	APP'D	DATE				OF 2

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
15	3	WIRE ROPE CLIP, 3/8"	CROSBY	G450
17	3	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
28	2	INSULATOR SPOOL	WABCO	16835-2000
30	2	TROLLEY SUPPORT-LARGE PIPE ARMS	WABCO	54940-4001
31	2	SPRING DETROIT CLAMP	WABCO	54959-3001
55	VARIES	PHILLYSTRAN (3/8")	PHILLYSTRAN INC.	HPTG 6700I
56	1	PHILLYSTRAN BIG GRIP	PHILLYSTRAN INC.	PLP 2755
57	VARIES	FIBERGLASS REINFORCED PLASTIC (FRP) TUBE 3 1/2" Ø X 1/2"	MORRISON MOLDED FG	EXTREN SERIES 525
79	2	5/8"-11 UNC X 1 3/8" STUD		
80	VARIES	3/4" STAINLESS STEEL BANDING	BAND-IT	TYPE 201
90	1	HEAVY PIPE CLAMP, GALV, 3" IPS	GRINNELL	FIG. 216
102	2	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
108	1	MAST ARM POLE END CAP	METRO STD	SA-108
109	1	MAST ARM ARM END CAP	METRO STD	SA-109

					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STEEL POLE BRACKET ASSEMBLY TANGENT CONSTRUCTION	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-341
					CHECKED: J. DAVIS			SHT NO: 2 OF 2
No.	REVISION	BY	APP'D	DATE				



NOTES:

1. USE ITEMS 4,7,10,11 & 53 WHEN ANGLE VARIES FROM 1° TO 5°. USE ITEMS 4,7, 10,11 & 54 WHEN ANGLE VARIES FROM 5° TO 7.5°. USE ITEMS 12, 25, & 40 WHEN ANGLE IS GREATER THAN 8°. SEGMENTS SHALL NOT BE USED FOR ANGLES GREATER THAN 12° WHEN POLE IS ON INSIDE OF CURVE.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⌵". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-164 FOR HORIZONTAL & VERTICAL DIMENSIONS TO TROLLEY WIRE.
4. DRILL 1/2" HOLE IN TUBE TO MATCH HOLE IN ITEMS 108 & 110 FOR INSERTION OF 3/8" SS BOLT.
5. LEVEL CURVE HANGER (ITEM 10) BY ADJUSTING HANGER ARMS.

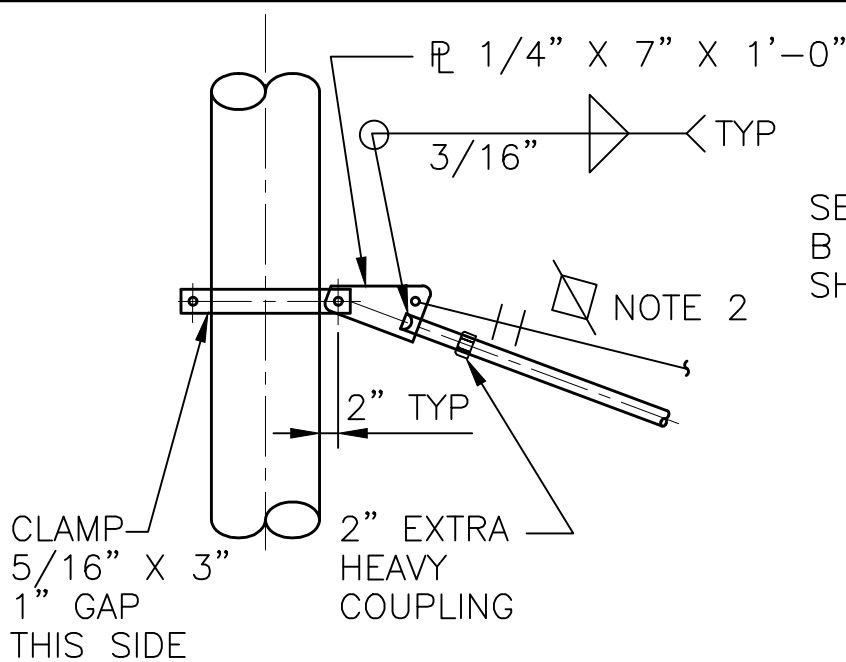
					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STEEL BRACKET ASSEMBLY CURVE CONSTRUCTION	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-342
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 2

MATERIAL LIST				
ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	2	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	VARIES	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	2	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	VARIES	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
10	VARIES	HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
11	VARIES	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6120
12	VARIES	7/8 TRANSLITE STRAIN INSUL CL-EYE	WABCO	55339-6120
15	3	WIRE ROPE CLIP, 3/8"	CROSBY	G450
17	2	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
25	VARIES SEE PLAN	CURVE SEGMENT 8-12 DEG TYPE C CURVE SEGMENT 13-27 DEG TYPE C CURVE SEGMENT 28-47 DEG TYPE C	WABCO WABCO WABCO	22301-3014 22302-3005 22303-3005
40	VARIES	7/8 TRANSLITE STRAIN INSUL CL-90	WABCO	54995-6120
53	VARIES	CURVE RAIL (1° TO 5° 2 FT LG)	K & M	851 B412/0
54	VARIES	CURVE RAIL (5.5° TO 7.5° 4 FT LG)	K & M	851 B412/1
55	VARIES	PHILLYSTRAN (3/8")	PHILLYSTRAN INC.	HPTG 6700I
56	1	PHILLYSTRAN BIG GRIP	PHILLYSTRAN INC.	PLP 2755
57	VARIES	FIBERGLASS REINFORCED PLASTIC (FRP) TUBE 5" Ø X 1/4"	STRONGWELL	EXTREN SERIES 525
90	1	HEAVY PIPE CLAMP, GALV	GRINNELL	FIG. 216
102	3	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
108	1	MAST ARM POLE END CAP	METRO STD	SA-108
110	1	MAST ARM UNDERSLING END CAP	METRO STD	SA-110

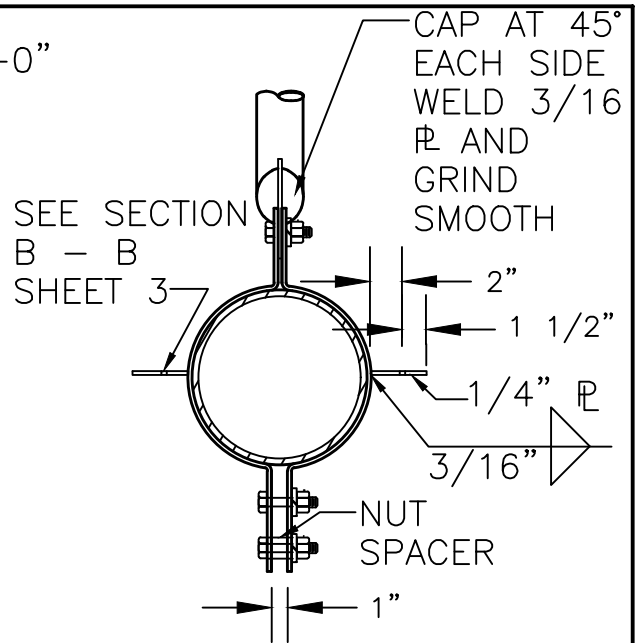
					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STEEL BRACKET ASSEMBLY CURVE CONSTRUCTION	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-342
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			2 OF 2



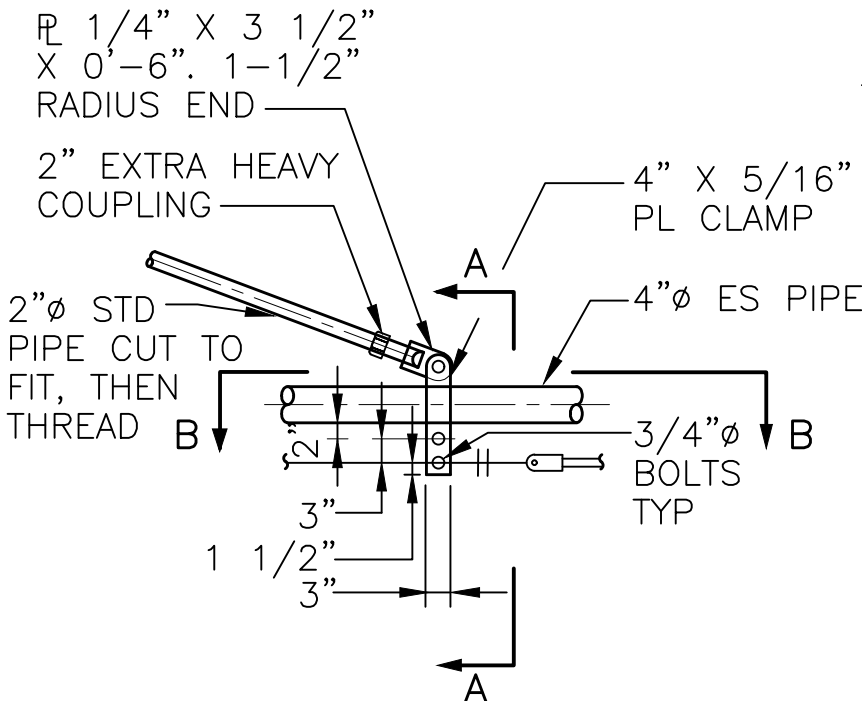
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					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-343
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 4



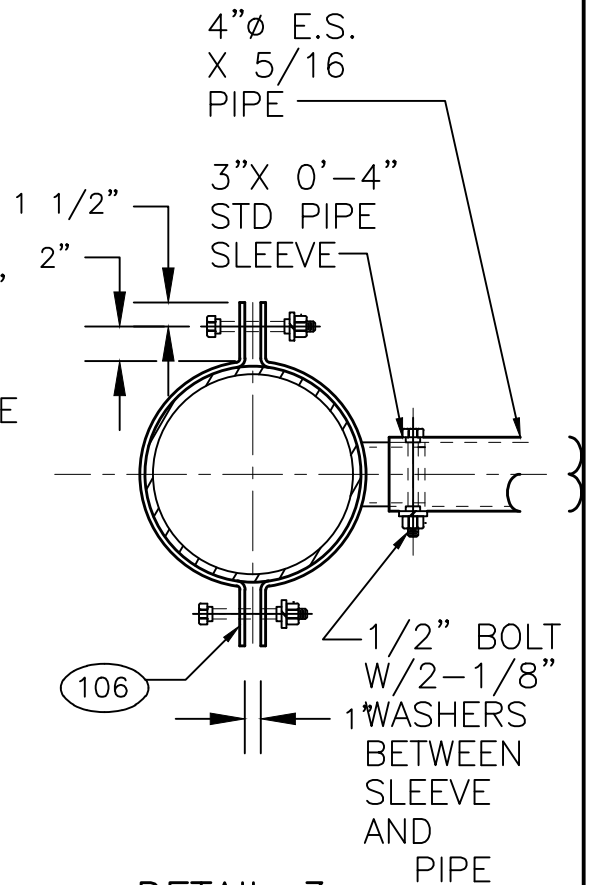
DETAIL 1



SECTION A-A

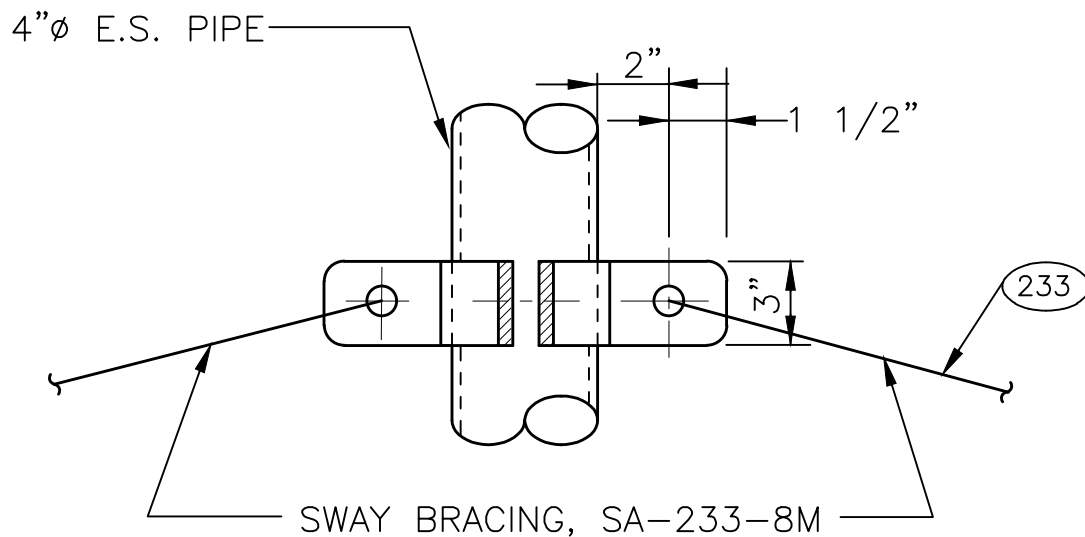


DETAIL 2

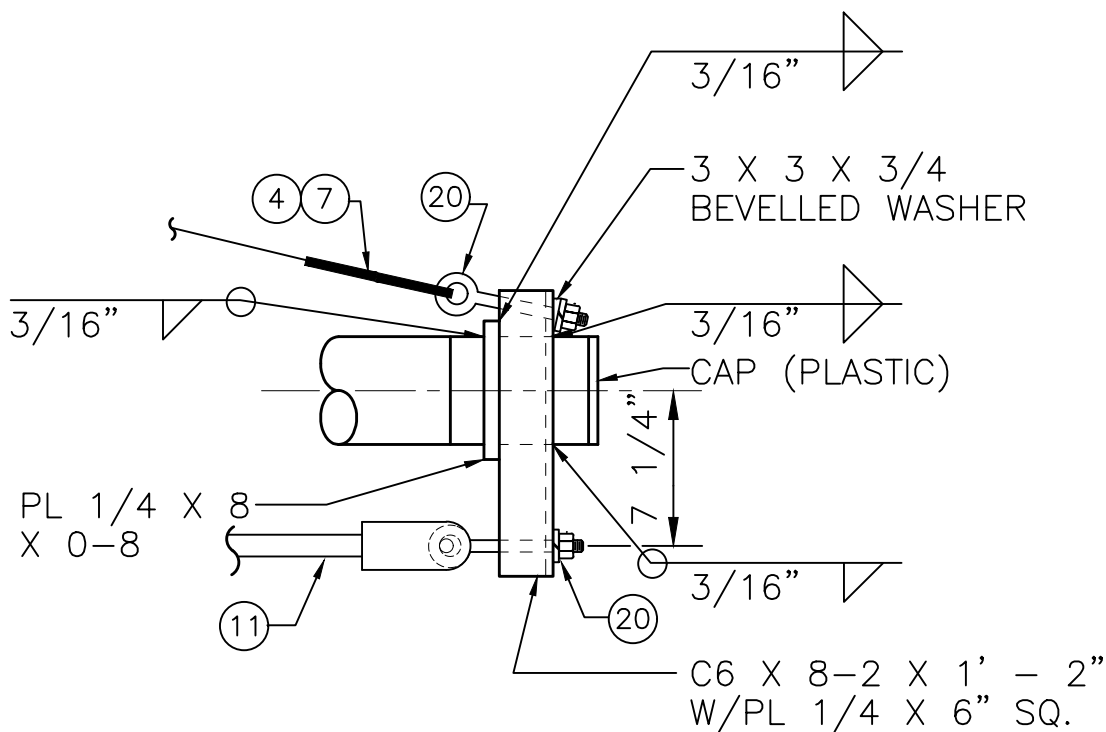


DETAIL 3

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STEEL POLE BRACKET ASSEMBLY COMPRESSION TYPE	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-343
					CHECKED: J. DAVIS			SHT NO: 2 OF 4
No.	REVISION	BY	APP'D	DATE				



SECTION B-B



DETAIL 4

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STEEL POLE BRACKET ASSEMBLY COMPRESSION TYPE	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-343
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			3 OF 4

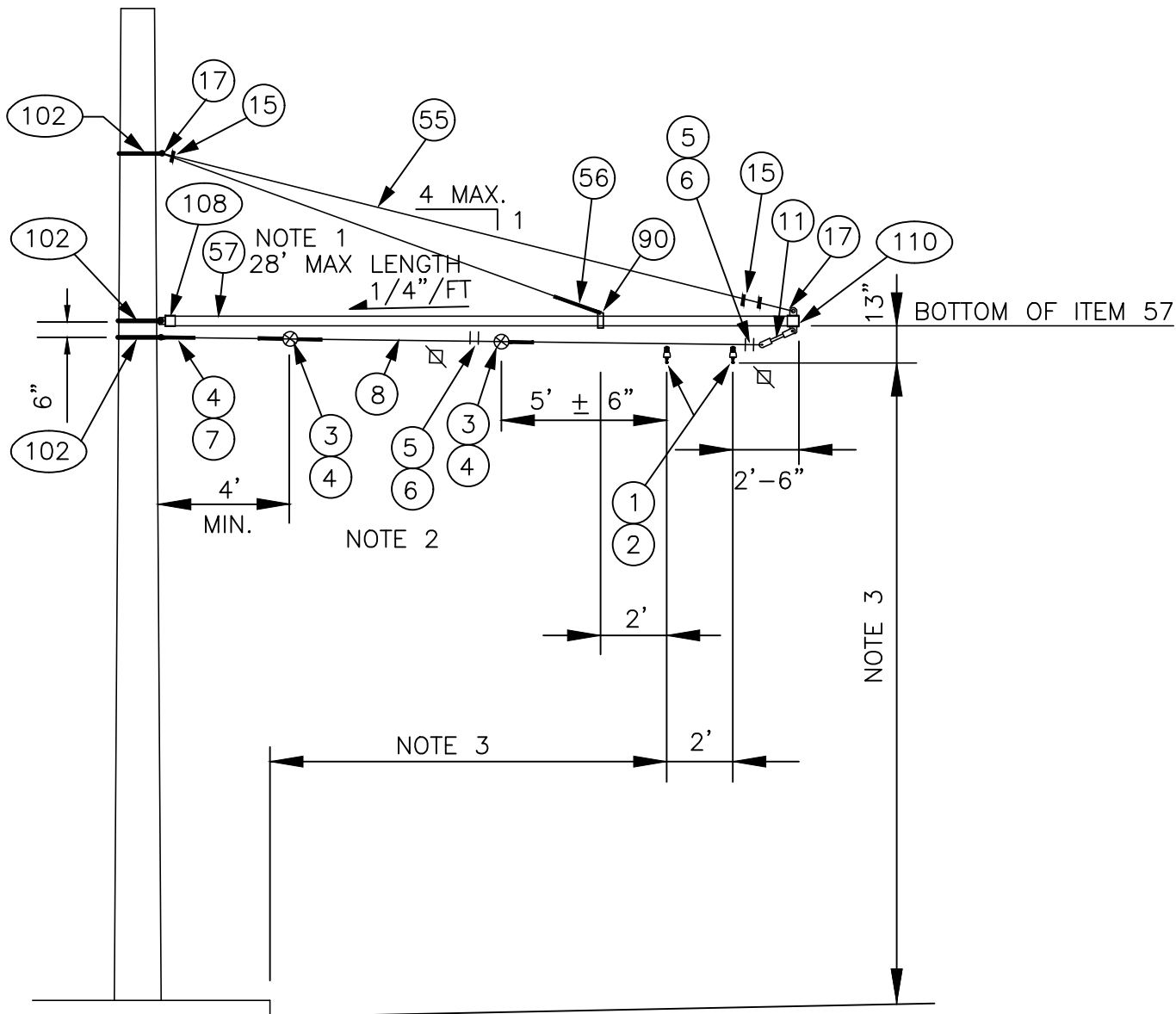
MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	2	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	6	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	3	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
11	1	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6120
12	1	7/8 TRANSLITE STRAIN INSUL CL-EYE	WABCO	55339-6120
20	2	EYEBOLT	WABCO	11933-2000
80	VARIES	3/4" STAINLESS STEEL BANDING	BAND-IT	TYPE 201
84	4 LF	SCHED 40 PVC, GREY, SPLIT		
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
106	1	COMPRESSION POLE BRACKET COLLAR	METRO STD	SA-106
233	2	SWAY BRACING, SA-233-8M	METRO STD	SA-233

NOTES:

- OVERHEAD DRAWINGS TO INDICATE CURVE SEGMENT TO BE INSTALLED. MAXIMUM ANGLE OF CURVE SEGMENT IS 35 DEGREES. MAXIMUM CHANGE IN STREET GRADIENT IS $\pm 5\%$
- PROVIDE TENSION ADJUSTMENT POINT AT LOCATION INDICATED BY "N". PROVIDE WIRE ROPE CLIPS AT THIS LOCATION. SEE SA-166.
- THE PIPE BRACKET SHALL BE 4" DIAMETER EXTRA STRONG ASTM A53, GRADE B GALVANIZED STEEL PIPE.
MAXIMUM PIPE LENGTH IS 18 FT.
- SEE SA-164 FOR HORIZONTAL AND VERTICAL DIMENSIONS TO THE TROLLEY WIRE.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STEEL POLE BRACKET ASSEMBLY COMPRESSION TYPE	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-343
					CHECKED: J. DAVIS			SHT NO: 4
No.	REVISION	BY	APP'D	DATE	OF 4			



NOTES:

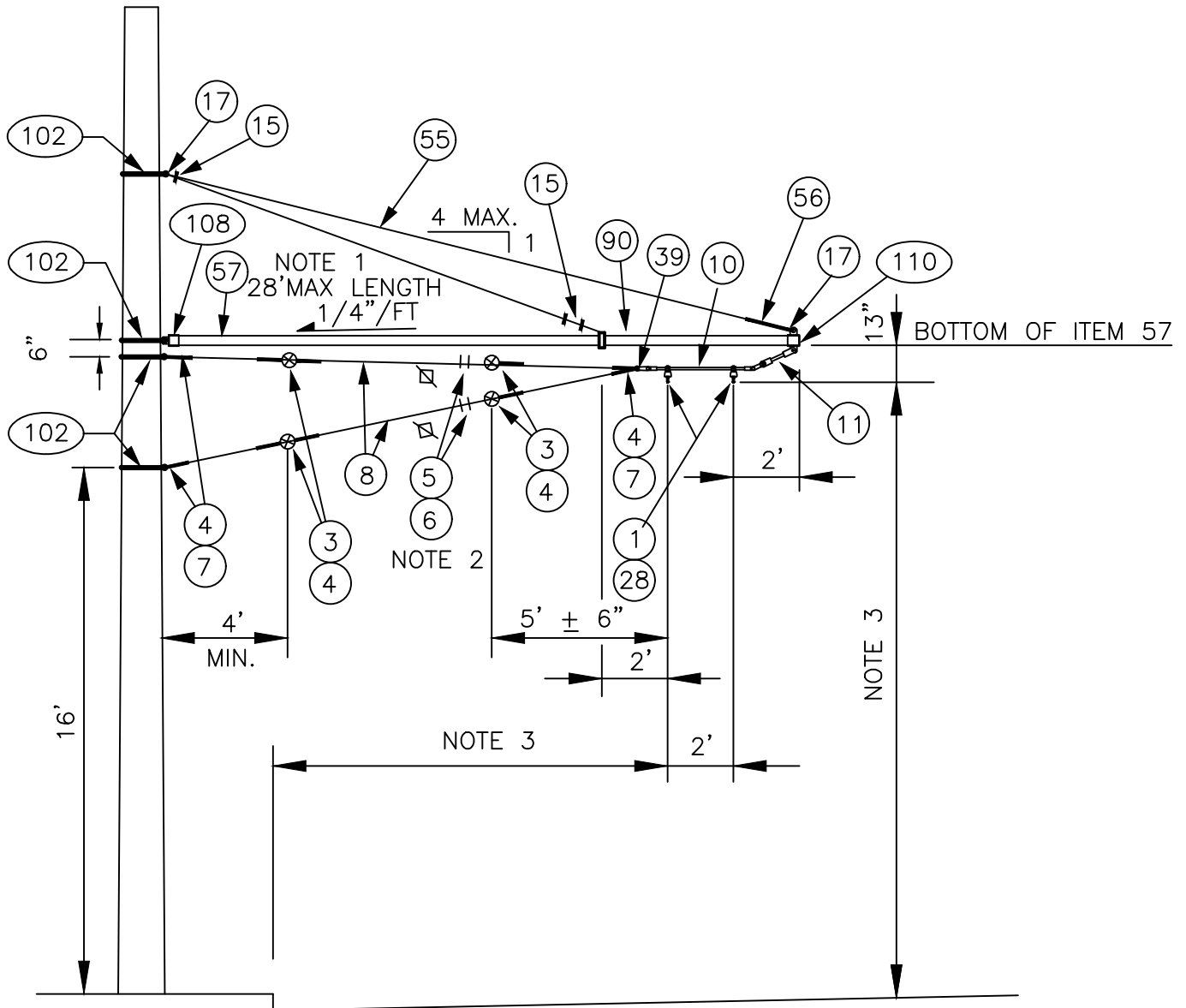
1. DRILL 1/2" HOLE IN TUBE TO MATCH HOLE IN ITEMS 108 & 110 FOR INSERTION OF 3/8" SS BOLT.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⌵". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-164 FOR HORIZONTAL & VERTICAL DIMENSIONS TO TROLLEY WIRE.
4. HANG CLAMP (ITEM 1) VERTICAL BY ADJUSTING SPAN HANGER (ITEM 2).

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STEEL POLE BRACKET ASSEMBLY UNDERSLING CONSTRUCTION	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-345
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 2

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	2	DETROIT CLAMP ASSY	WABCO	19293-3007
02	2	AGC TANGENT SPAN HANGER	WABCO	19360-2000
03	2	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	4	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	1	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
11	1	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6120
15	3	WIRE ROPE CLIP, 3/8"	CROSBY	G450
17	2	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
55	VARIES	PHILLYSTRAN (3/8")	PHILLYSTRAN INC.	HPTG 6700I
56	1	PHILLYSTRAN BIG GRIP	PHILLYSTRAN INC.	PLP 2755
57	VARIES	FIBERGLASS REINFORCED PLASTIC (FRP) TUBE 5" Ø X 1/4"	STRONGWELL	EXTREN SERIES 525
90	1	HEAVY PIPE CLAMP, GALV	GRINNELL	FIG. 216
102	3	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
108	1	MAST ARM POLE END CAP	METRO STD	SA-108
110	1	MAST ARM UNDERSLING END CAP	METRO STD	SA-110

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STEEL POLE BRACKET ASSEMBLY UNDERSLING CONSTRUCTION	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-345
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			2 OF 2



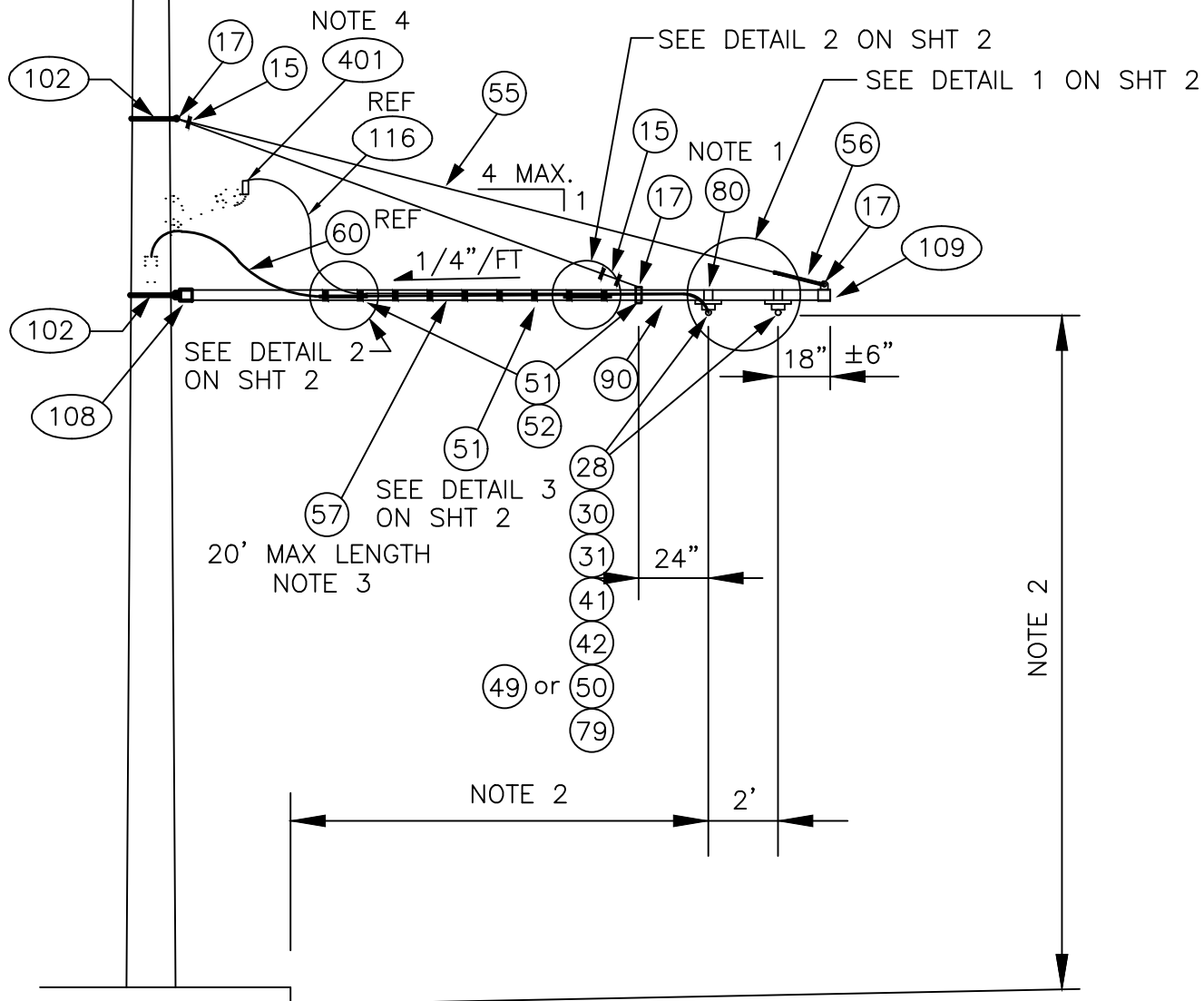
NOTES:

1. DRILL 1/2" HOLE IN TUBE TO MATCH HOLE IN ITEMS 108 & 110 FOR INSERTION OF 3/8" SS BOLT.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⌵". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-164 FOR HORIZONTAL & VERTICAL DIMENSIONS TO TROLLEY WIRE.
4. LEVEL CURVE HANGER (ITEM 10) BY ADJUSTING HANGER ARMS.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STEEL POLE HOLDDOWN BRACKET ASSEMBLY TANGENT CONSTRUCTION	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-348
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 2

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	2	DETROIT CLAMP ASSY	WABCO	19293-3007
03	4	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	10	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	4	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
10	1	HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
11	1	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6120
15	3	WIRE ROPE CLIP, 3/8"	CROSBY	G450
17	2	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
28	2	INSULATOR SPOOL	WABCO	16835-2000
39	1	5/8" SHACKLE	WABCO	13722-2000
55	VARIES	PHILLYSTRAN (3/8")	PHILLYSTRAN INC.	HPTG 6700I
56	1	PHILLYSTRAN BIG GRIP	PHILLYSTRAN INC.	PLP 2755
57	VARIES	FIBERGLASS REINFORCED PLASTIC (FRP) TUBE 5" Ø X 1/4"	STRONGWELL	EXTREN SERIES 525
90	1	HEAVY PIPE CLAMP, GALV	GRINNELL	FIG. 216
102	4	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
108	1	MAST ARM POLE END CAP	METRO STD	SA-108
110	1	MAST ARM UNDERSLING END CAP	METRO STD	SA-110

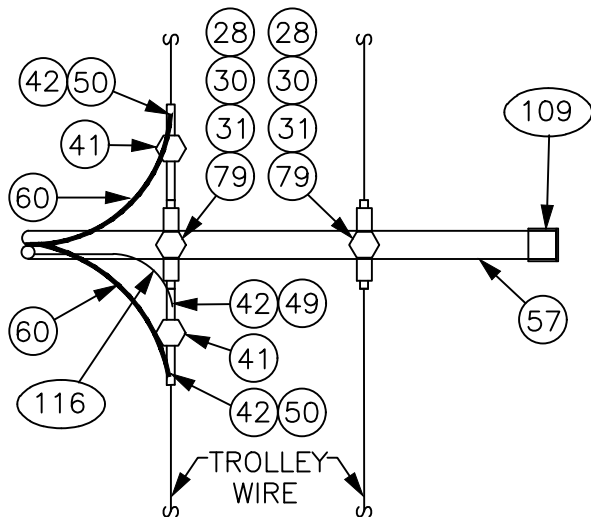
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					DRAWN: L. ANDERSON			STD DET NO: SA-348
					CHECKED: J. DAVIS			SHT NO: 2 OF 2
No.	REVISION	BY	APP'D	DATE				



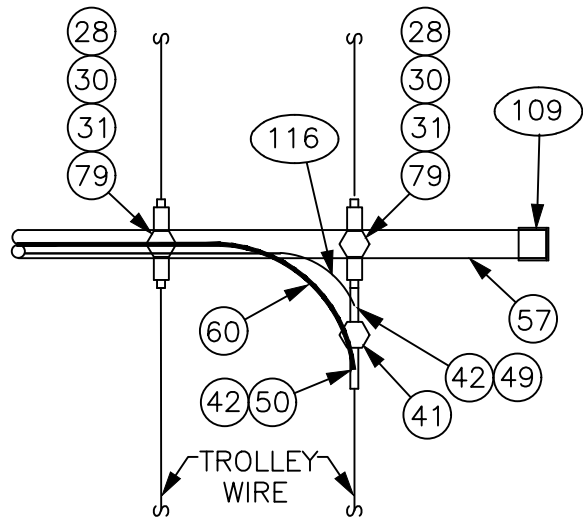
NOTES:

1. STAINLESS STEEL BANDING SHALL BE WRAPPED DOUBLE THICKNESS AROUND ITEM 57 PRIOR TO CLAMPING.
2. SEE SA-164 FOR HORIZONTAL & VERTICAL DIMENSIONS TO TROLLEY WIRE.
3. DRILL 1/2" HOLE IN TUBE TO MATCH HOLE IN ITEMS 108 & 109 FOR INSERTION OF 3/8" SS BOLT.
4. 60, 116 & 401 SHOWN FOR REFERENCE ONLY, SEE SA-401 FOR DETAILS. DOUBLE NEGATIVE FEEDER REQUIRES ONLY ONE SA-401.

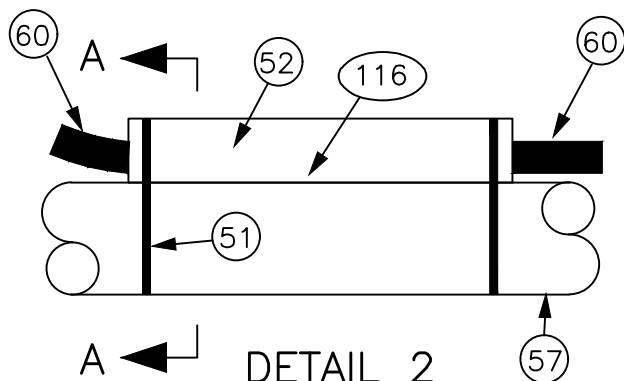
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					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-349
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS		1	OF 3



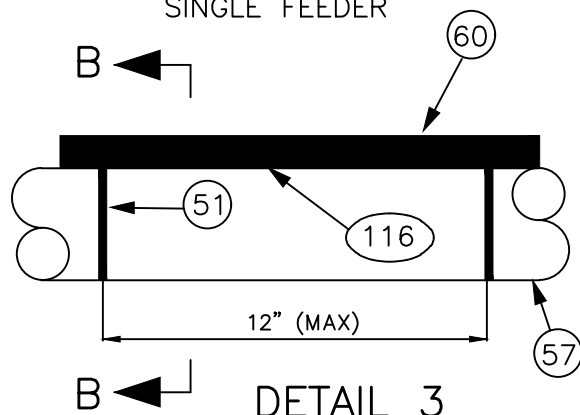
DETAIL 1
DOUBLE FEEDER



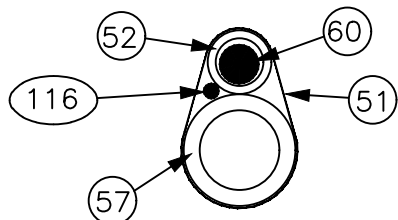
DETAIL 1
SINGLE FEEDER



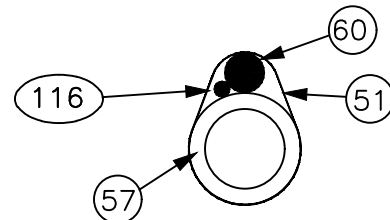
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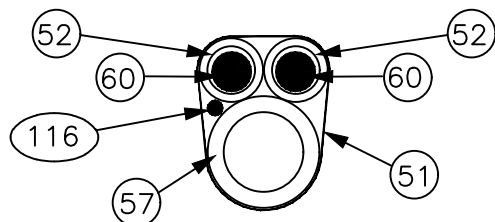
DETAIL 3



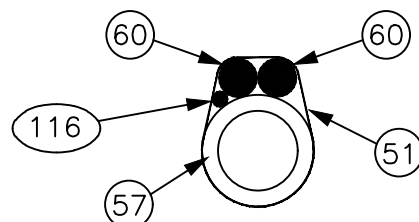
VIEW A-A
SINGLE FEEDER



VIEW B-B
SINGLE FEEDER



VIEW A-A
DOUBLE FEEDER



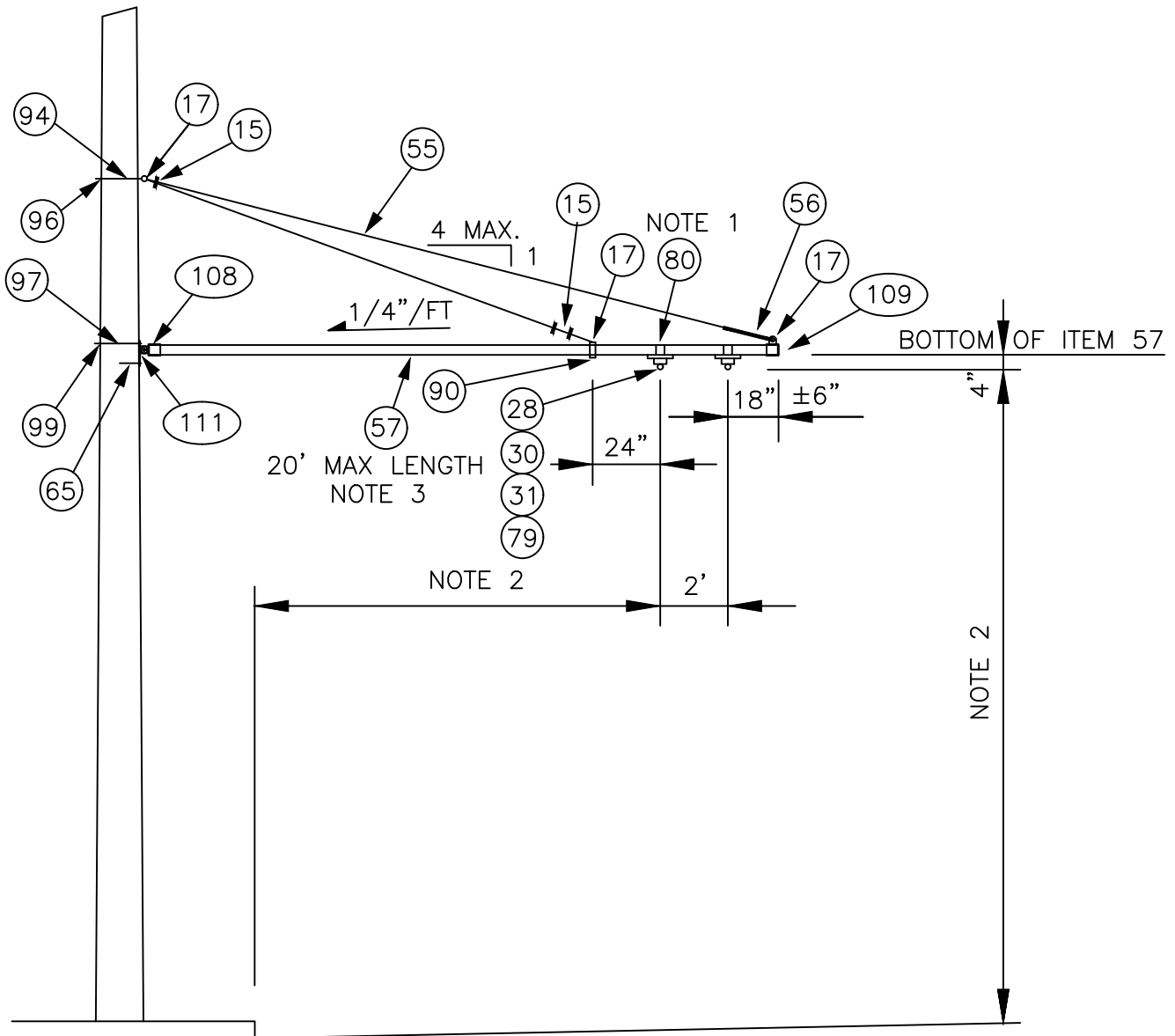
VIEW B-B
DOUBLE FEEDER

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STEEL POLE TANGENT FEEDER BRACKET ASSEMBLY	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-349
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			2 OF 3

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
15	3	WIRE ROPE CLIP, 3/8"	CROSBY	G450
17	3	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
28	2	INSULATOR SPOOL	WABCO	16835-2000
30	2	TROLLEY SUPPORT-LARGE PIPE ARMS	WABCO	54940-4001
31	2	SPRING DETROIT CLAMP	WABCO	54959-3001
41	VARIES	H. S. P. FEEDER CLAMP ASSY, BRONZE	WABCO	19880-2000
42	VARIES	FEEDER CLAMP, BRONZE	WABCO	19790-4004
49	VARIES	COMPRESSION CONNECTOR COPPER-LONG BARREL-TIN PLATED-FLARED	ANDERSON/ SQUARE D	VHCL- 2/O-12BNF
50	VARIES	COMPRESSION CONNECTOR COPPER-LONG BARREL-TIN PLATED-FLARED	ANDERSON/ SQUARE D	VHCL- 500-12BNF
51	AS REQD	MULTI-LOK TIES (18") NYLON COATED	BAND-IT	AE714
52	2 12" PIECES	TUF NEOPRENE AIR HOSE SLEEVE 1.5" ID X 2.0625" OD (BLACK)	MCMaster-CARR	3 BRAID
55	VARIES	PHILLYSTRAN (3/8")	PHILLYSTRAN INC.	HPTG 6700I
56	1	PHILLYSTRAN BIG GRIP	PHILLYSTRAN INC.	PLP 2755
57	VARIES	FIBERGLASS REINFORCED PLASTIC (FRP) TUBE 3 1/2" Ø X 1/2"	MORRISON MOLDED FG	EXTREN SERIES 525
60	AS REQD	FEED SPAN CABLE 500 KCM CU, UN-SHIELDED, 5 KV EPR W/ PVC JACKET		
79	2	5/8"-11 UNC X 1 3/8" STUD		
80	VARIES	3/4" STAINLESS STEEL BANDING	BAND-IT	TYPE 201
90	1	HEAVY PIPE CLAMP, GALV, 3" IPS	GRINNELL	FIG. 216
102	2	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
108	1	MAST ARM POLE END CAP	METRO STD	SA-108
109	1	MAST ARM ARM END CAP	METRO STD	SA-109
116	VARIES	WIRE, 2 OR 5 KV, #4 AWG CU, JACKETED, UNSHIELDED		

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STEEL POLE TANGENT FEEDER BRACKET ASSEMBLY	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-349
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			3 OF 3



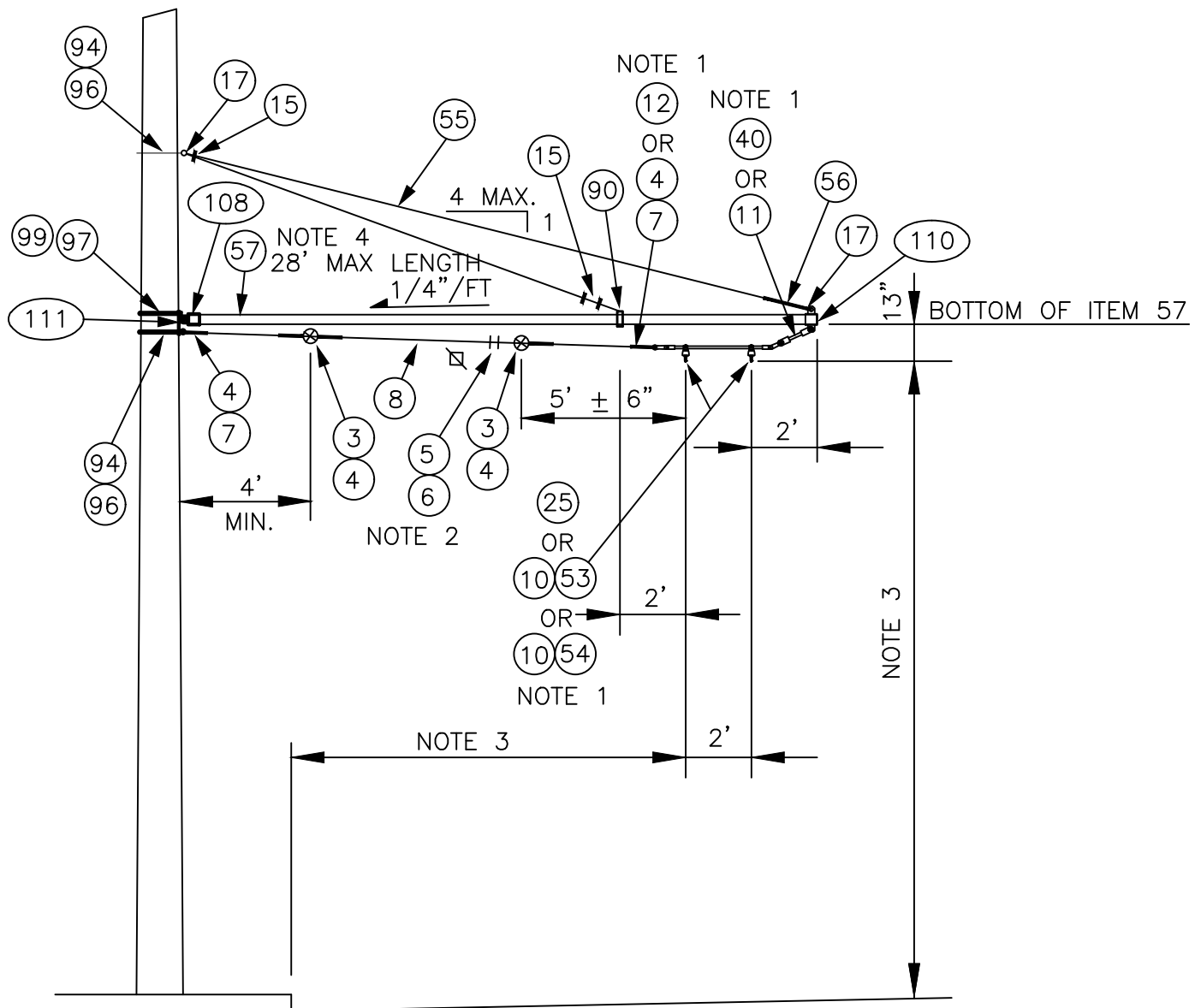
NOTES:

1. STAINLESS STEEL BANDING SHALL BE WRAPPED DOUBLE THICKNESS AROUND ITEM 57 PRIOR TO CLAMPING.
2. SEE SA-164 FOR HORIZONTAL & VERTICAL DIMENSIONS TO TROLLEY WIRE.
3. DRILL 1/2" HOLE IN TUBE TO MATCH HOLE IN ITEMS 108 & 109 FOR INSERTION OF 3/8" SS BOLT.

					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS WOOD POLE BRACKET ASSEMBLY TANGENT CONSTRUCTION	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-351
					CHECKED: J. DAVIS			SHT NO: 1 OF 2
No.	REVISION	BY	APP'D	DATE				

MATERIAL LIST				
ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
15	3	WIRE ROPE CLIP, 3/8"	CROSBY	G450
17	3	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
28	2	INSULATOR SPOOL	WABCO	16835-2000
30	2	TROLLEY SUPPORT-LARGE PIPE ARMS	WABCO	54940-4001
31	2	SPRING DETROIT CLAMP	WABCO	54959-3001
55	VARIES	PHILLYSTRAN (3/8")	PHILLYSTRAN INC.	HPTG 6700I
56	1	PHILLYSTRAN BIG GRIP	PHILLYSTRAN INC.	PLP 2755
57	VARIES	FIBERGLASS REINFORCED PLASTIC (FRP) TUBE 3 1/2" Ø X 1/2"	MORRISON MOLDED FG	EXTREN SERIES 525
65	1	LAG SCREW, FETTER DRIVE, 1/2" X 4"	JOSLYN	J8754
79	2	5/8"-11 UNC X 1 3/8" STUD		
80	VARIES	3/4" STAINLESS STEEL BANDING	BAND-IT	TYPE 201
90	1	HEAVY PIPE CLAMP, GALV, 3" IPS	GRINNELL	FIG. 216
94	1	5/8" OVAL EYEBOLT W/ NUT	JOSLYN	J94XX
96	1	SQ CURVED WASHER 3" X 3" X 1/4", 11/16" DIA	JOSLYN	J113
97	1	3/4" MACHINE BOLT	JOSLYN	J89XX
99	1	SQ CURVED WASHER 3" X 3" X 1/4", 13/16" DIA	JOSLYN	J6823
108	1	MAST ARM POLE END CAP	METRO STD	SA-108
109	1	MAST ARM ARM END CAP	METRO STD	SA-109
111	1	WOOD POLE MOUNTING BRACKET	METRO STD	SA-111

					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS WOOD POLE BRACKET ASSEMBLY MATERIAL LIST	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-351
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			2 OF 2



NOTES:

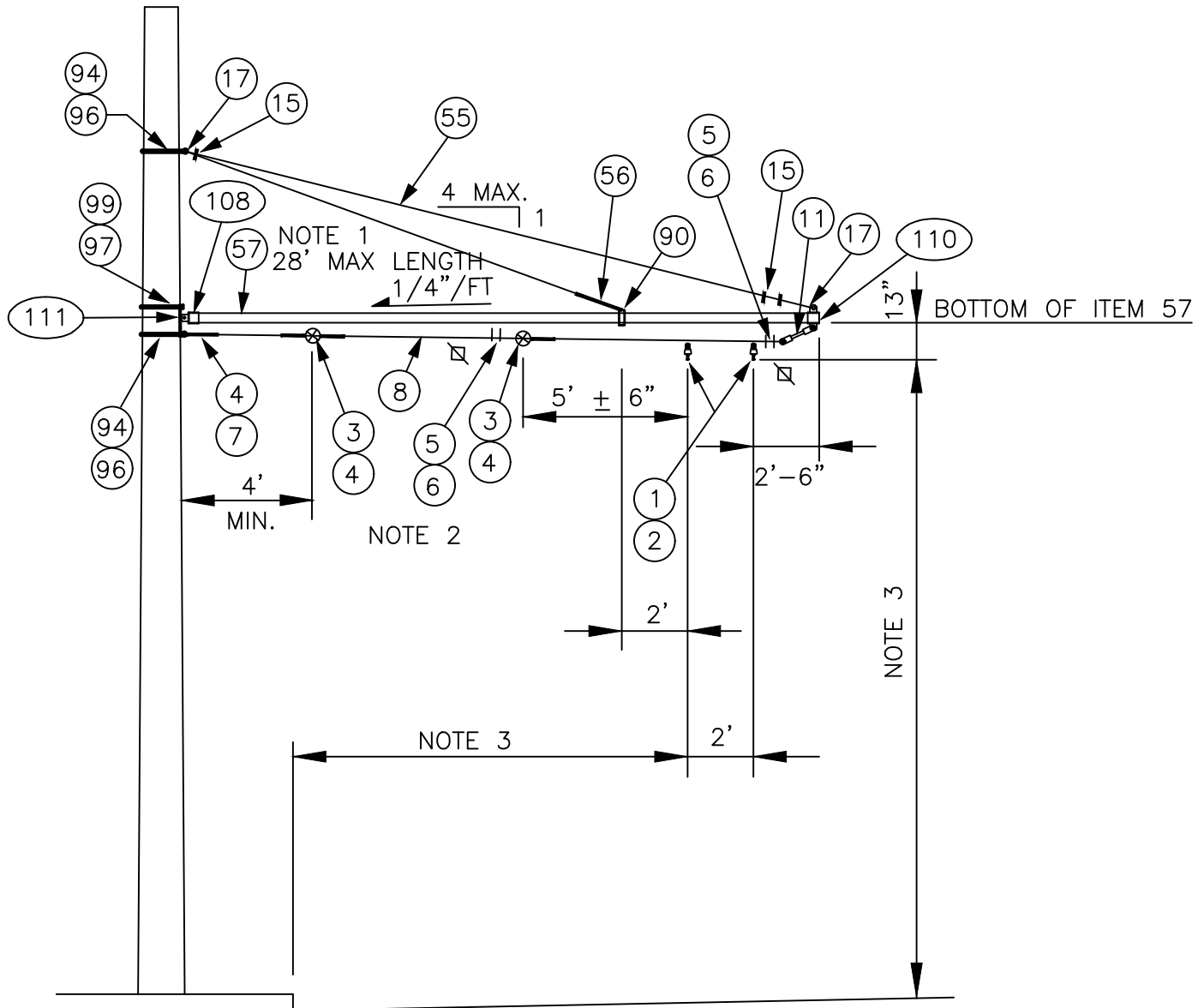
- USE ITEMS 4,7,10,11 & 53 WHEN ANGLE VARIES FROM 1° TO 5°. USE ITEMS 4,7, 10,11 & 54 WHEN ANGLE VARIES FROM 5° TO 7.5°. USE ITEMS 12, 25, & 40 WHEN ANGLE IS GREATER THAN 8°. SEGMENTS SHALL NOT BE USED FOR ANGLES GREATER THAN 12° WHEN POLE IS ON INSIDE OF CURVE.
- PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⌵". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
- SEE SA-164 FOR HORIZONTAL & VERTICAL DIMENSIONS TO TROLLEY WIRE.
- DRILL 1/2" HOLE IN TUBE TO MATCH HOLE IN ITEMS 108 & 110 FOR INSERTION OF 3/8" SS BOLT.
- LEVEL CURVE HANGER (ITEM 10) BY ADJUSTING HANGER ARMS.

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS WOOD POLE BRACKET ASSEMBLY CURVE CONSTRUCTION	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-352
					CHECKED: J. DAVIS			SHT NO: 1 OF 2
No.	REVISION	BY	APP'D	DATE				

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	2	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	VARIES	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	2	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	VARIES	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
10	VARIES	HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
11	VARIES	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6120
12	VARIES	7/8 TRANSLITE STRAIN INSUL CL-EYE	WABCO	55339-6120
15	3	WIRE ROPE CLIP, 3/8"	CROSBY	G450
17	2	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
25	VARIES SEE PLAN	CURVE SEGMENT 8-12 DEG TYPE C CURVE SEGMENT 13-27 DEG TYPE C CURVE SEGMENT 28-47 DEG TYPE C	WABCO WABCO WABCO	22301-3014 22302-3005 22303-3005
40	VARIES	7/8 TRANSLITE STRAIN INSUL CL-90	WABCO	54995-6120
53	VARIES	CURVE RAIL (1° TO 5° 2 FT LG)	K & M	851 B412/0
54	VARIES	CURVE RAIL (5.5° TO 7.5° 4 FT LG)	K & M	851 B412/1
55	VARIES	PHILLYSTRAN (3/8")	PHILLYSTRAN INC.	HPTG 6700I
56	1	PHILLYSTRAN BIG GRIP	PHILLYSTRAN INC.	PLP 2755
57	VARIES	FIBERGLASS REINFORCED PLASTIC (FRP) TUBE 5" Ø X 1/4"	MORRISON MOLDED FG	EXTREN SERIES 525
90	1	HEAVY PIPE CLAMP, GALV	GRINNELL	FIG. 216
94	2	5/8" OVAL EYEBOLT W/ NUT	JOSLYN	J94XX
96	2	SQ CURVED WASHER 3" X 3" X 1/4", 11/16" DIA	JOSLYN	J113
97	1	3/4" MACHINE BOLT	JOSLYN	J89XX
99	1	SQ CURVED WASHER 3" X 3" X 1/4", 13/16" DIA	JOSLYN	J6823
108	1	MAST ARM POLE END CAP	METRO STD	SA-108
110	1	MAST ARM UNDERSLING END CAP	METRO STD	SA-110
111	1	WOOD POLE MOUNTING BRACKET	METRO STD	SA-111
125	1	5/8" MACHINE BOLT	JOSLYN	J88XX

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS WOOD POLE BRACKET ASSEMBLY CURVE CONSTRUCTION	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-352
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			2 OF 2



NOTES:

1. DRILL 1/2" HOLE IN TUBE TO MATCH HOLE IN ITEMS 108 & 110 FOR INSERTION OF 3/8" SS BOLT.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "X". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-164 FOR HORIZONTAL & VERTICAL DIMENSIONS TO TROLLEY WIRE.
4. HANG CLAMP (ITEM 1) VERTICAL BY ADJUSTING SPAN HANGER (ITEM 2).

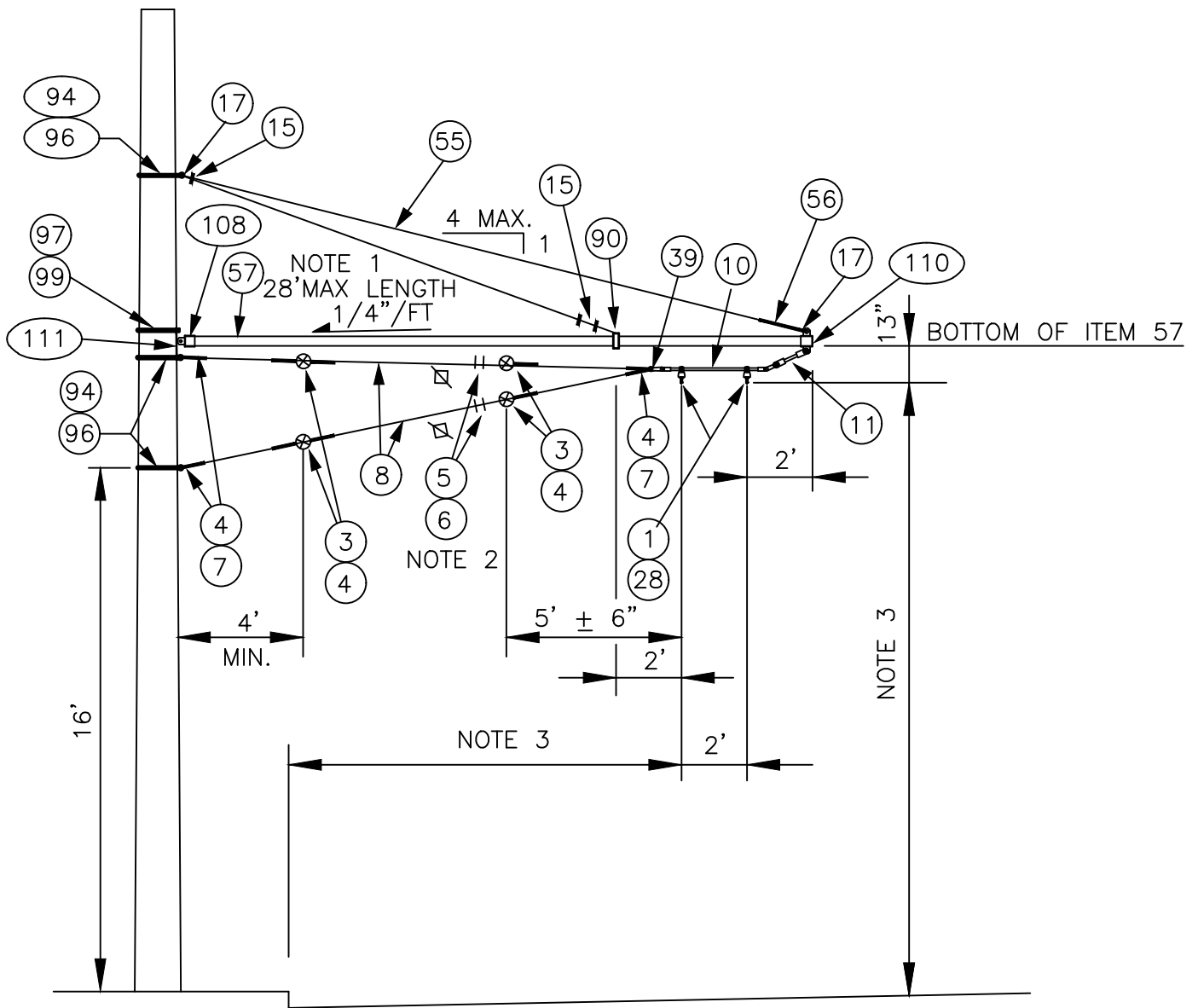
					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS WOOD POLE BRACKET ASSEMBLY UNDERSLING CONSTRUCTION	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-355
					CHECKED: J. DAVIS			SHT NO: 1 OF 2
No.	REVISION	BY	APP'D	DATE				

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	2	DETROIT CLAMP ASSY	WABCO	19293-3007
02	2	AGC TANGENT SPAN HANGER	WABCO	19360-2000
03	4	GUY STRAIN INSULATOR	PORCELAIN PRODUCTS CO.	504
04	10	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	4	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
11	1	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6120
15	3	WIRE ROPE CLIP, 3/8"	CROSBY	G450
55	VARIES	PHILLYSTRAN (3/8")	PHILLYSTRAN INC.	HPTG 6700I
56	1	PHILLYSTRAN BIG GRIP	PHILLYSTRAN INC.	PLP 2755
57	VARIES	FIBERGLASS REINFORCED PLASTIC (FRP) TUBE 5" Ø X 1/4"	STRONGWELL	EXTREN SERIES 525
90	1	HEAVY PIPE CLAMP, GALV	GRINNELL	FIG. 216
94	2	5/8" OVAL EYEBOLT WITH NUT	JOSLYN	J94XX
96	2	SQ CURVED WASHER 3" x 3" x 1/4" 11/16" DIA	JOSLYN	J113
97	1	3/4" MACHINE BOLT	JOSLYN	J89XX
99	1	SQ CURVED WASHER 3" x 3" x 1/3" 13/16" DIA	JOSLYN	J6823
102	3	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
108	1	MAST ARM POLE END CAP	METRO STD	SA-108
110	1	MAST ARM UNDERSLING END CAP	METRO STD	SA-110
111	1	WOOD POLE MOUNTING BRACKET	METRO STD	SA-111
125	1	3/4" MACHINE BOLT	JOSLYN	J88XX

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS WOOD POLE HOLDDOWN BRACKET ASSEMBLY TANGENT CONSTRUCTION	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-355
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			2 OF 2

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NOTES:

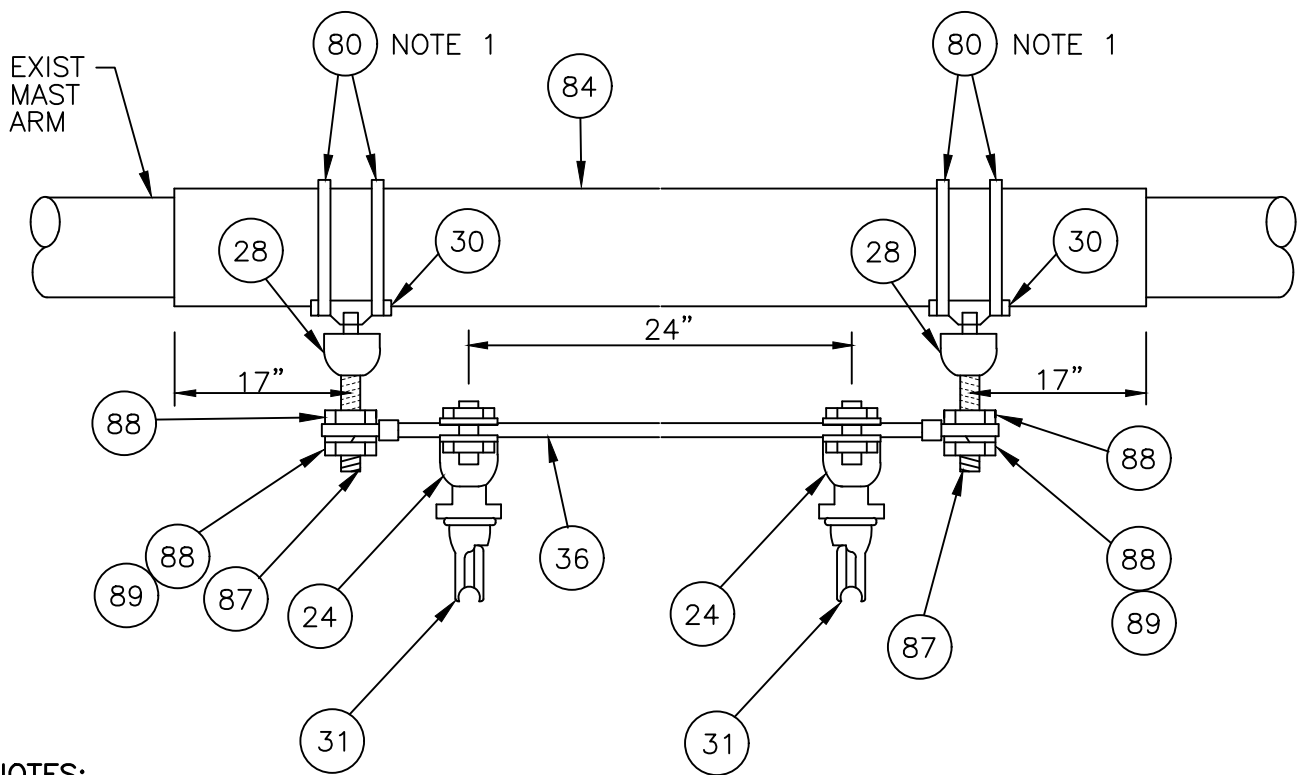
1. DRILL 1/2" HOLE IN TUBE TO MATCH HOLE IN ITEMS 108 & 109 FOR INSERTION OF 3/8" SS BOLT.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "⌵". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-164 FOR HORIZONTAL & VERTICAL DIMENSIONS TO TROLLEY WIRE.
4. LEVEL CURVE HANGER(ITEM 10) BY ADJUSTING HANGER ARMS.

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS WOOD POLE HOLDDOWN BRACKET ASSEMBLY TANGENT CONSTRUCTION	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-358
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS		1	OF 2

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
01	2	DETROIT CLAMP ASSY	WABCO	19293-3007
03	4	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	10	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	4	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	4	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
10	1	HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
11	1	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6120
15	3	WIRE ROPE CLIP, 3/8"	CROSBY	G450
17	2	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
28	2	INSULATOR SPOOL	WABCO	16835-2000
39	1	5/8" SHACKLE	WABCO	13722-2000
55	VARIES	PHILLYSTRAN (3/8")	PHILLYSTRAN INC.	HPTG 6700I
56	1	PHILLYSTRAN BIG GRIP	PHILLYSTRAN INC.	PLP 2755
57	VARIES	FIBERGLASS REINFORCED PLASTIC (FRP) TUBE 5" Ø X 1/4"	STRONGWELL	EXTREN SERIES 525
90	1	HEAVY PIPE CLAMP, GALV	GRINNELL	FIG. 216
94	3	5/8" OVAL EYEBOLT WITH NUT	JOSLYN	J94XX
96	3	SQ CURVED WASHER 3" x 3" x 1/4" 11/16" DIA	JOSLYN	J113
97	1	3/4" MACHINE BOLT	JOSLYN	J89XX
99	1	WOOD POLE MOUNTING BRACKET	METRO STD	SA-111
102	3	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
108	1	MAST ARM POLE END CAP	METRO STD	SA-108
110	1	MAST ARM UNDERSLING END CAP	METRO STD	SA-110

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS WOOD POLE HOLDDOWN BRACKET ASSEMBLY TANGENT CONSTRUCTION	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-358
					CHECKED:		SHT NO:	
No.	REVISION	BY	APP'D	DATE	J. DAVIS		2 OF 2	



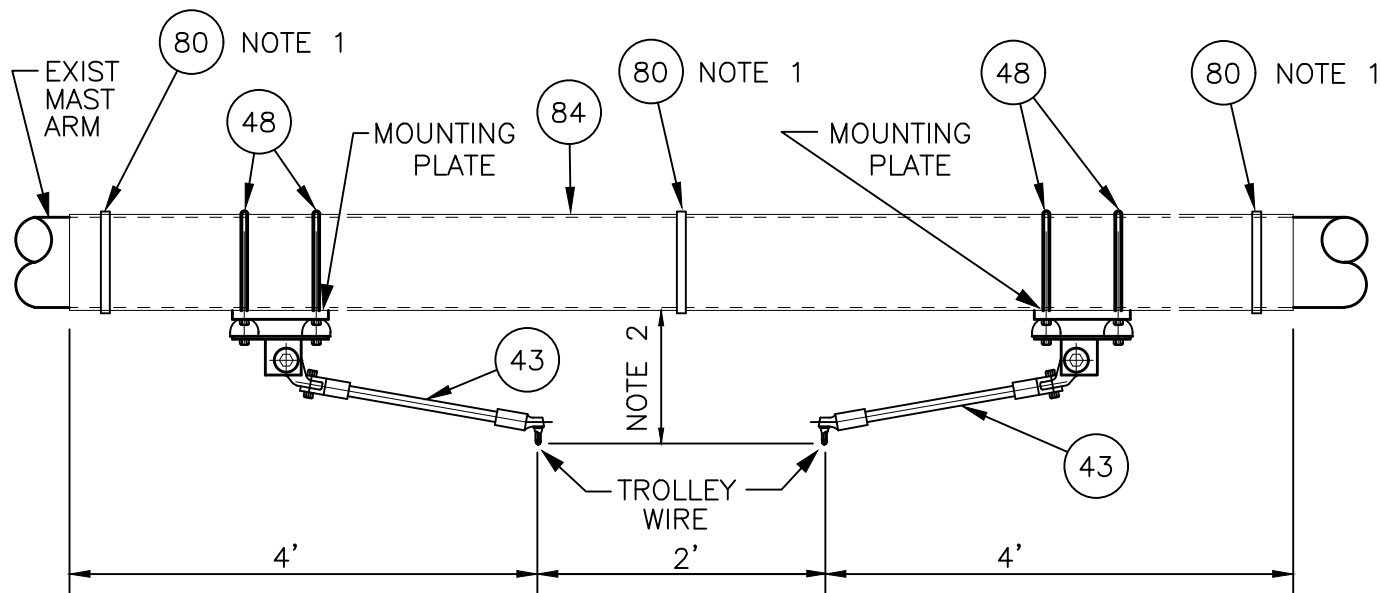
NOTES:

1. STAINLESS STEEL BANDING SHALL BE WRAPPED DOUBLE THICKNESS AROUND POLE COVERING MATERIAL PRIOR TO CLAMPING.
2. MATERIAL FOR THREADED RODS AND NUTS SHALL BE ASTM CLASS A-307 STEEL.
3. HOT DIP GALVANIZE ALL METAL AFTER FABRICATION.

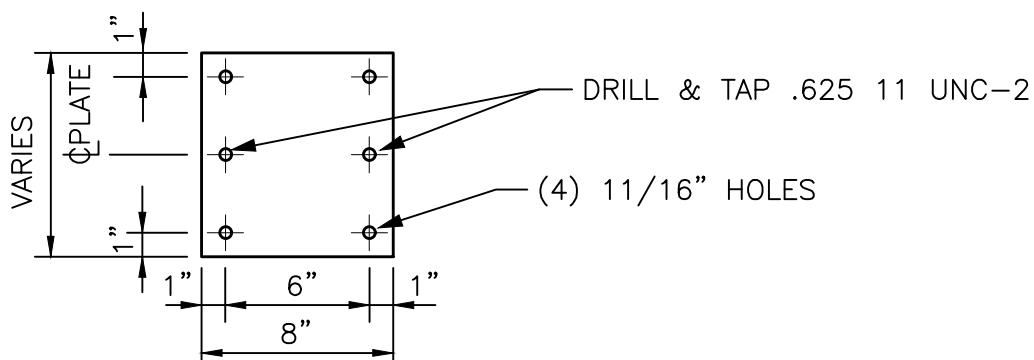
MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
24	2	TROLLEY WIRE SUPPORT ASSY	WABCO	54962-3003
28	2	INSULATOR SPOOL	WABCO	16835-2000
30	2	TROLLEY SUPPORT-LARGE PIPE ARMS	WABCO	54940-4001
31	2	SPRING DETROIT CLAMP	WABCO	54959-3001
36	1	7/8 TRANSLITE STRAIN INSUL W/ ADJUST END FITTINGS	WABCO	54980-6385
80	AS REQD	3/4" STAINLESS STEEL BANDING	BAND-IT	TYPE 201
84	6 LF	SCHED 40 PVC, GREY, SPLIT		
87	2	5/8"-11 UNC X 6" THREADED ROD, GALV, ASTM A36		
88	4	5/8"-11 UNC HVY HEX JAM NUT, GALV, ASTM A563 GRA		
89	2	11/16" LOCKWASHER		

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS TRAFFIC MAST ARM TROLLEY SUPPORT	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-361
					CHECKED: J. DAVIS			SHT NO: 1 OF 1
No.	REVISION	BY	APP'D	DATE				



OUTBOARD MOUNTING



3/4" MOUNTING PLATE

(2 REQ'D)

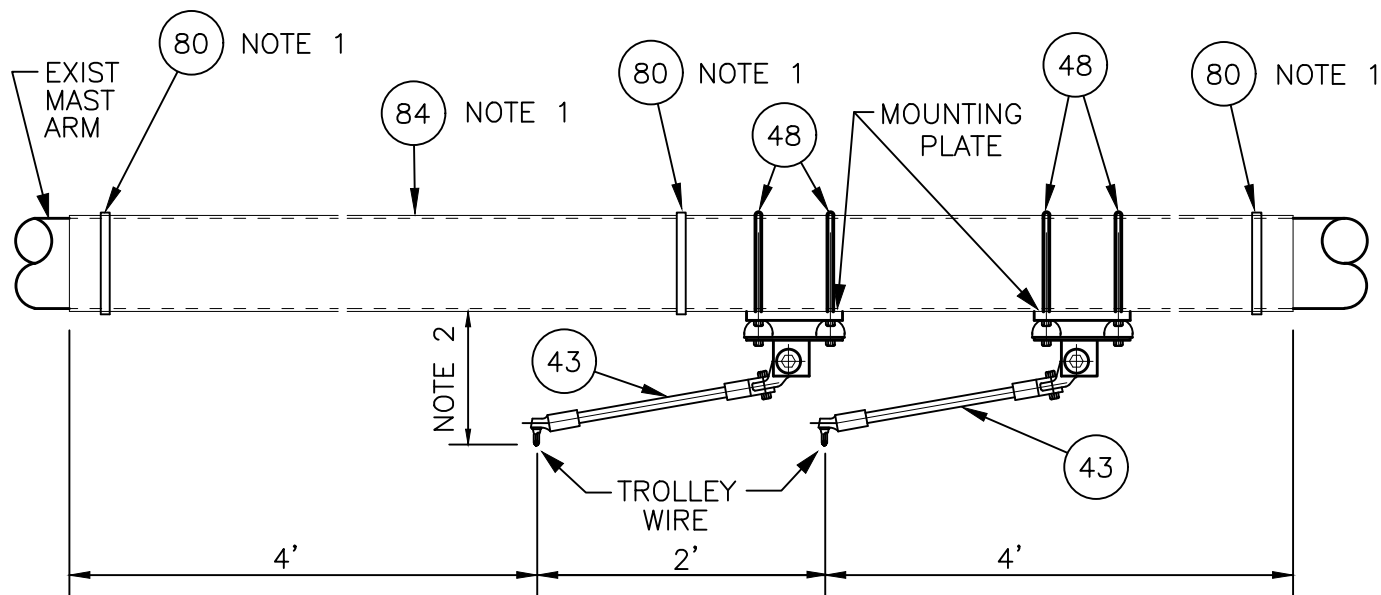
NOTES:

1. STAINLESS STEEL BANDING SHALL BE WRAPPED DOUBLE THICKNESS AROUND POLE COVERING MATERIAL PRIOR TO CLAMPING. PLACE SPLIT DOWN ON ITEM 84.
2. DISTANCE VARIES. ITEMS 43 & 48 NOT REQ'D WHEN GREATER THAN 18". USE OFFSET MOUNTING (SHEET 2) WHEN SPACE LIMITS USE OF OUTBOARD MOUNTING.

MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
43	2	TROLLEY WIRE SUPPORT ASSY	WABCO	59690-3001
48	4	5/8" U-BOLT GALV		
80	AS REQD	3/4" X 0.030" SS BANDING TYPE 201	BAND-IT	C206
84	10 LF	SCHED 40 PVC, GREY, SPLIT		

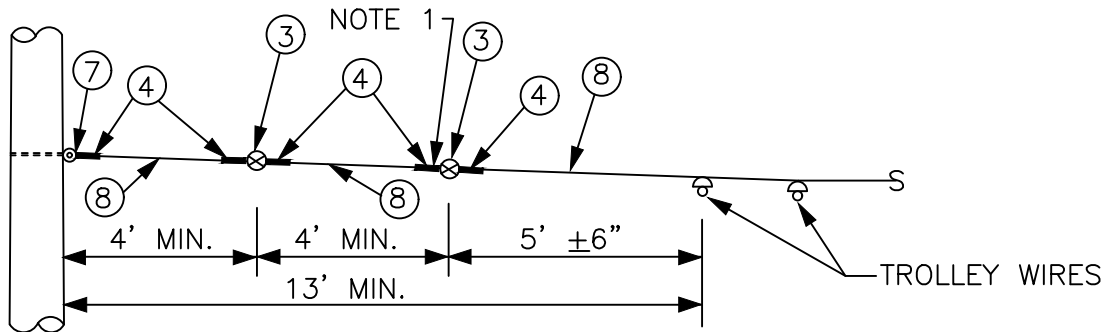
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					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-362
					CHECKED:		SHT NO:	
No.	REVISION	BY	APP'D	DATE	J. DAVIS		TRAFFIC MAST ARM TROLLEY SUPPORT	1 OF 2



OFFSET MOUNTING

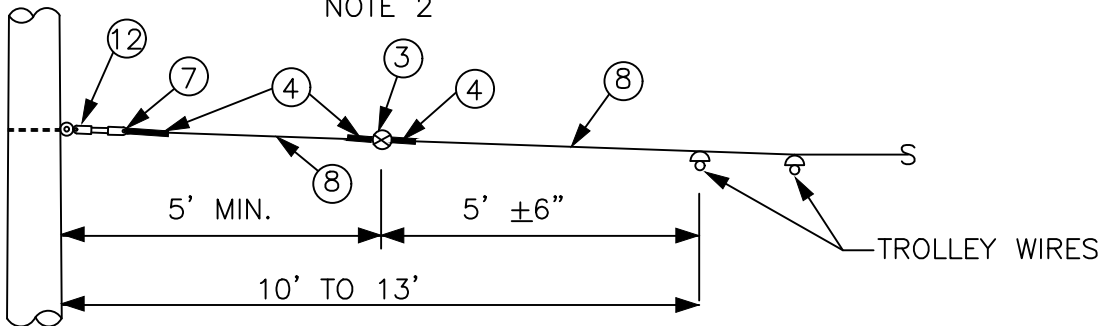
3/4" MOUNTING PLATE

MATERIAL LIST

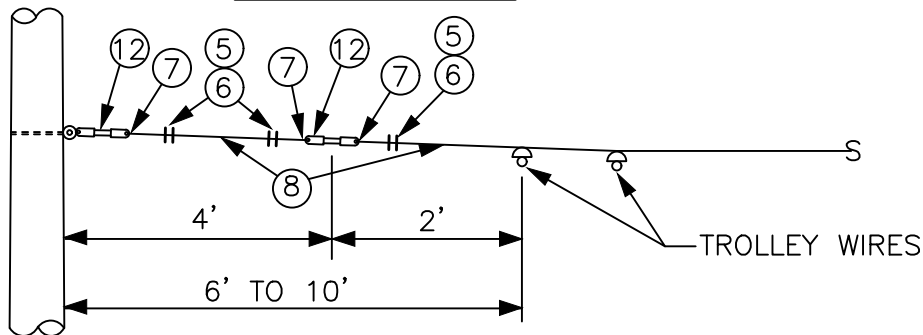


NORMAL SPAN

NOTE 2



ALTERNATE SPAN A



NOTES:

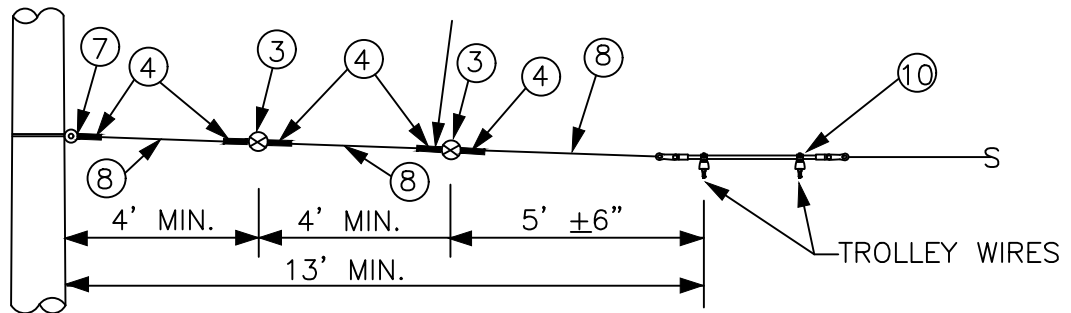
ALTERNATE SPAN B

1. WHERE ADJUSTABILITY IS REQUIRED, REPLACE GUY GRIP DEADEND (ITEM 4) WITH WIRE ROPE CLIPS (ITEM 5 & 6). SEE SA-166.
2. INCLUDES SA-301, SA-302, SA-305, SA-311, SA-312 & SA-315.

MATERIAL LIST

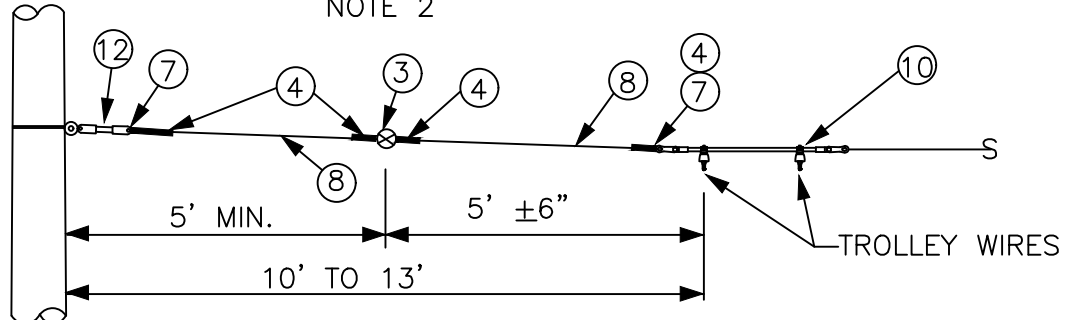
ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	VARIES	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	VARIES	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	VARIES	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	VARIES	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
12	VARIES	7/8 TRANSLITE STRAIN INSUL CL-EYE	WABCO	55339-6120

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS SPAN WIRES LIMITED SPACE TYPICAL VARIANCES	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-370
					CHECKED: J. DAVIS			SHT NO: 1 OF 2
No.	REVISION	BY	APP'D	DATE				

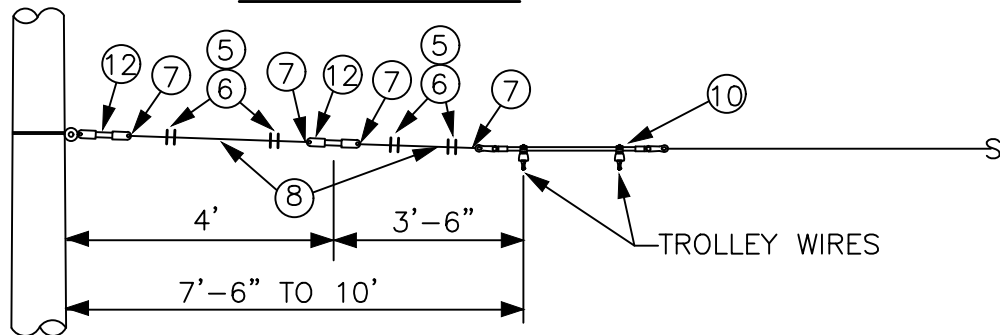


NORMAL SPAN

NOTE 2



ALTERNATE SPAN A



ALTERNATE SPAN B

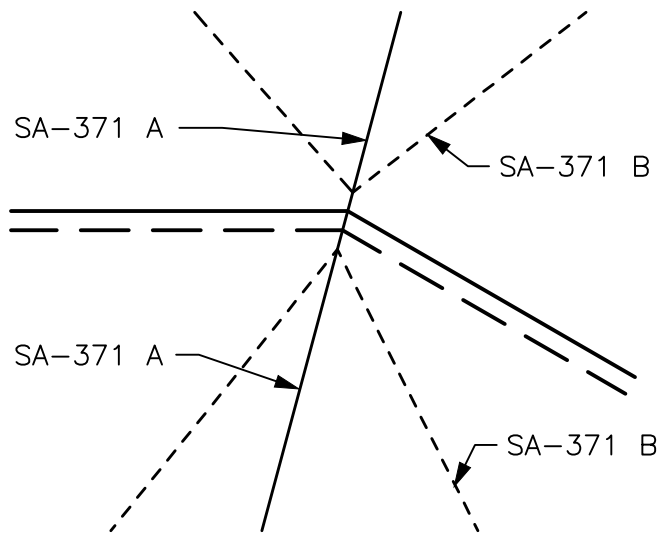
NOTES:

- WHERE ADJUSTABILITY IS REQUIRED, REPLACE GUY GRIP DEADEND (ITEM 4) WITH WIRE ROPE CLIPS (ITEM 5 & 6). SEE SA-166.
- INCLUDES SA-303, SA-304, SA-307, SA-308, SA-313 & SA-314, SA-317 & SA-318.

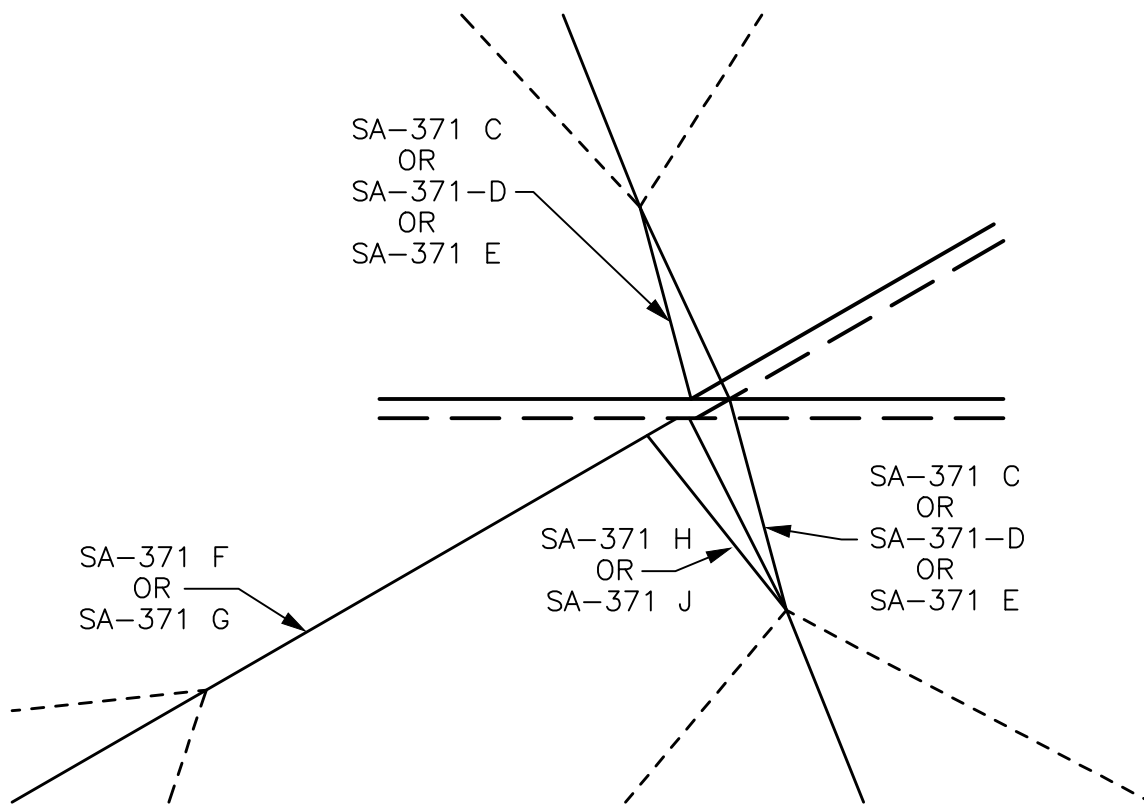
MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	VARIES	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	VARIES	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	VARIES	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	VARIES	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
10	VARIES	HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
12	VARIES	7/8 TRANSLITE STRAIN INSUL CL-EYE	WABCO	55339-6120

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS SPAN WIRES LIMITED SPACE TYPICAL VARIANCES	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-370
					CHECKED:			SHT NO:
					J. DAVIS			2 OF 2
No.	REVISION	BY	APP'D	DATE				



CURVE SEGMENT PULLOFFS



SWITCH PULLOFFS

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS SWITCH AND CURVE SEGMENT PULLOFFS	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-371
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 9

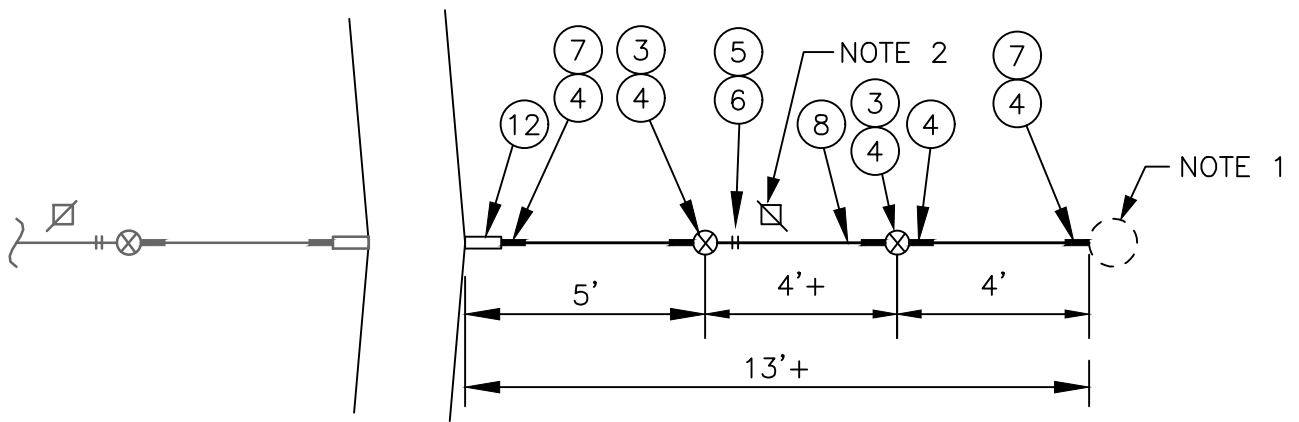
NOTES

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "N". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. LOCATION OF ADJUSTMENT POINT, INSULATORS AND USE OF INSULATED GUY STRAND GUY STRAND SHALL MEET SA-167 REQUIREMENTS.
4. OUTSIDE PULLOFFS ARE SHOWN FOR CURVE SEGMENTS, INSIDE PULLOFFS ARE SIMILAR. INSIDE PULLOFFS ARE SHOWN FOR SWITCHES, OUTSIDE PULLOFFS ARE SIMILAR.
5. TROLLEY WIRE TO STRUCTURAL ATTACHMENT DISTANCE DETERMINES IF A SHORT, MEDIUM OR LONG VERSION IS USED FOR SA-371 A THROUGH SA-371 E.
6. TROLLEY WIRE GEOMETRY AS SHOWN ON THE OVERHEAD DRAWINGS DETERMINES WHICH SA-371 A THROUGH SA-371 K TO USE.

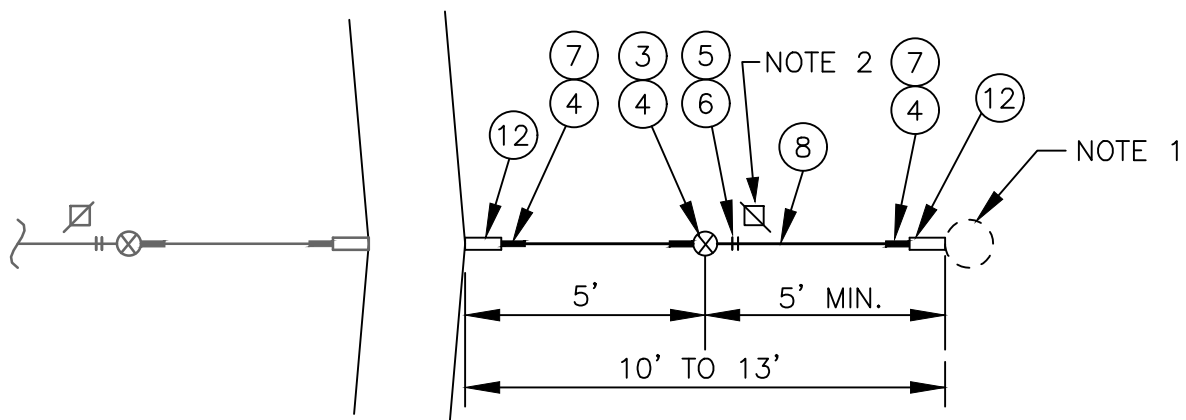
MATERIAL LIST

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
09	*	BULL RING	WABCO	18567-2000
11	*	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6120
12	*	7/8 TRANSLITE STRAIN INSUL CL-EYE	WABCO	55339-6120
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103
GUY TENSIONS- 0-2700 LBS				
03	*	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	*	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	*	WIRE ROPE CLIP, 5/16"	CROSBY	G450
07	*	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
GUY TENSIONS- 2700-5000 LBS				
13	*	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	506
14	*	GUY GRIP DEADEND	PREFORMED	CDE-3115
15	*	WIRE ROPE CLIP, 3/8"	CROSBY	G450
16	VARIES	GUY STRAND	COPPERWELD	16M
17	*	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
43	*	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	56273-6120

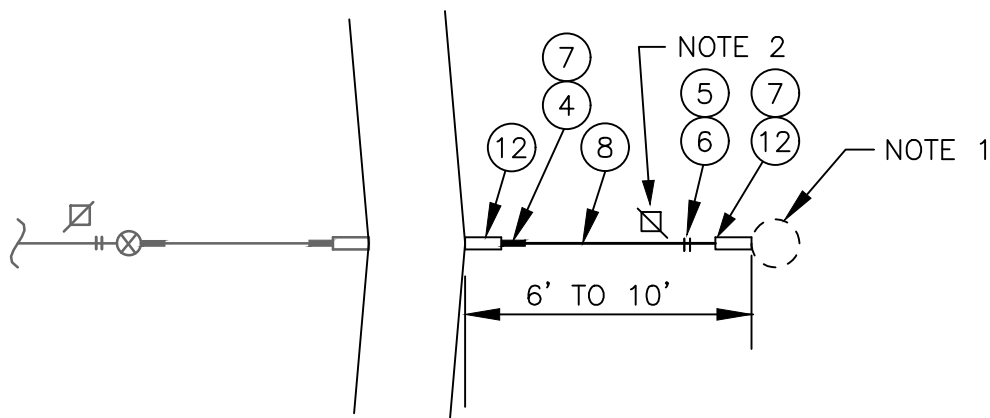
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					DRAWN: L. ANDERSON				STD DET NO: SA-371
					CHECKED: J. DAVIS				SHT NO: 2 OF 9
No.	REVISION	BY	APP'D	DATE					



SA-371 A (LONG)

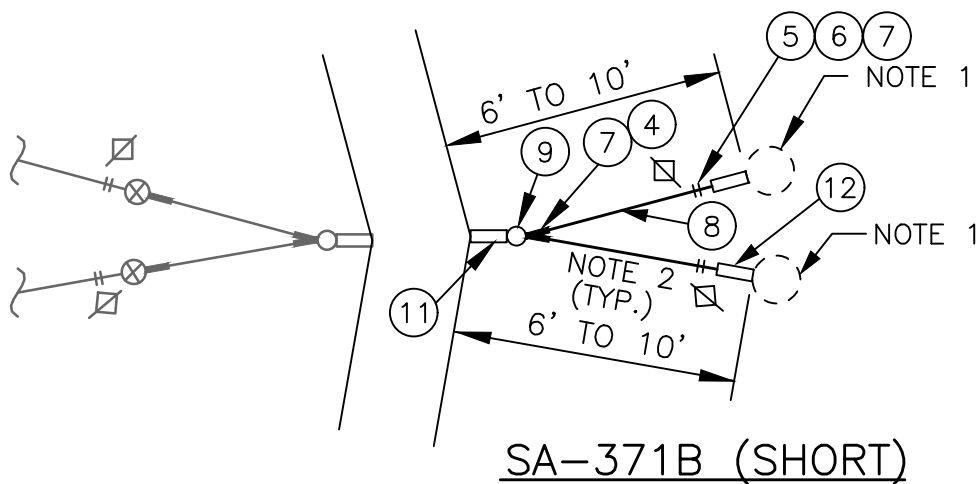
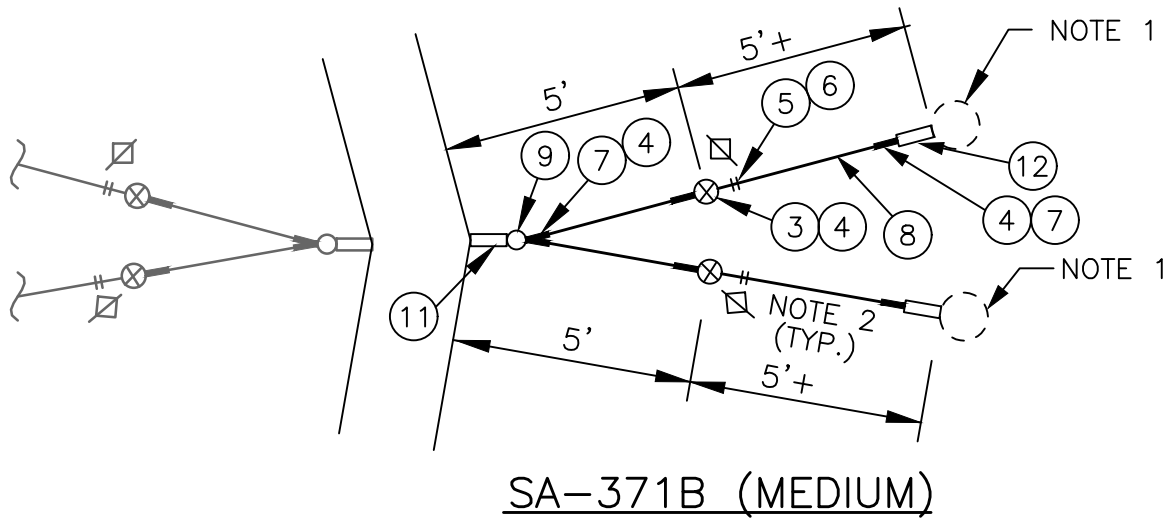
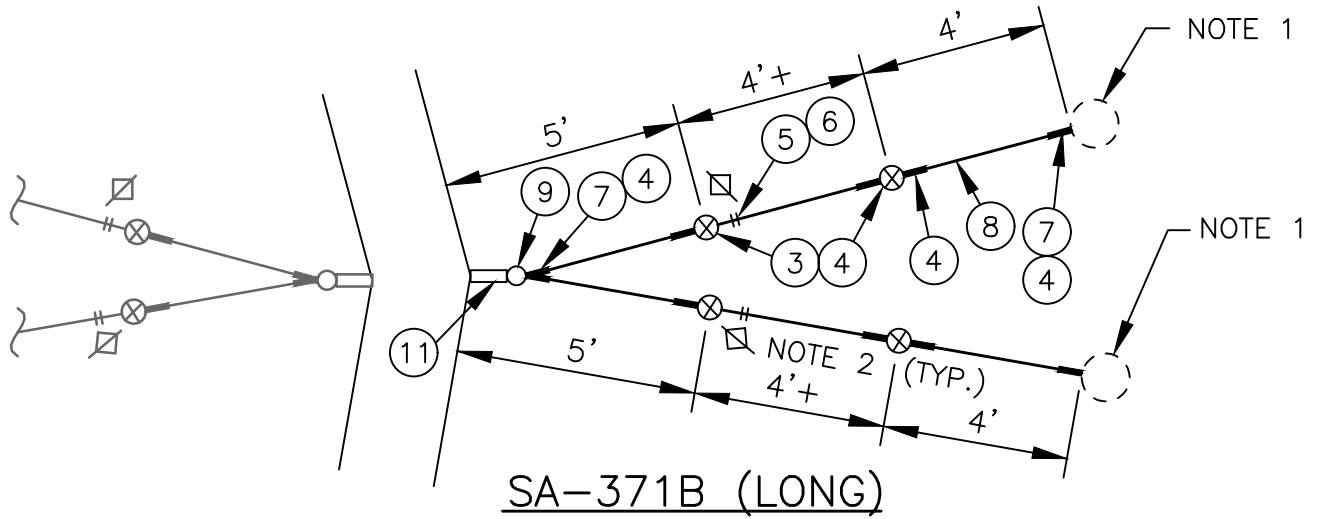


SA-371 A (MEDIUM)

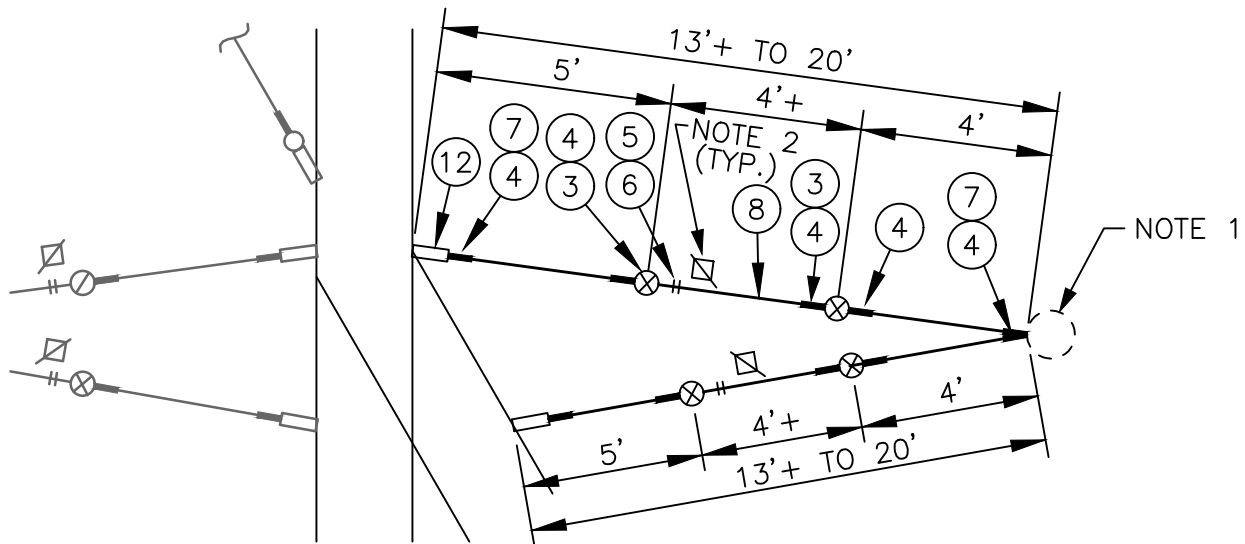


SA-371 A (SHORT)

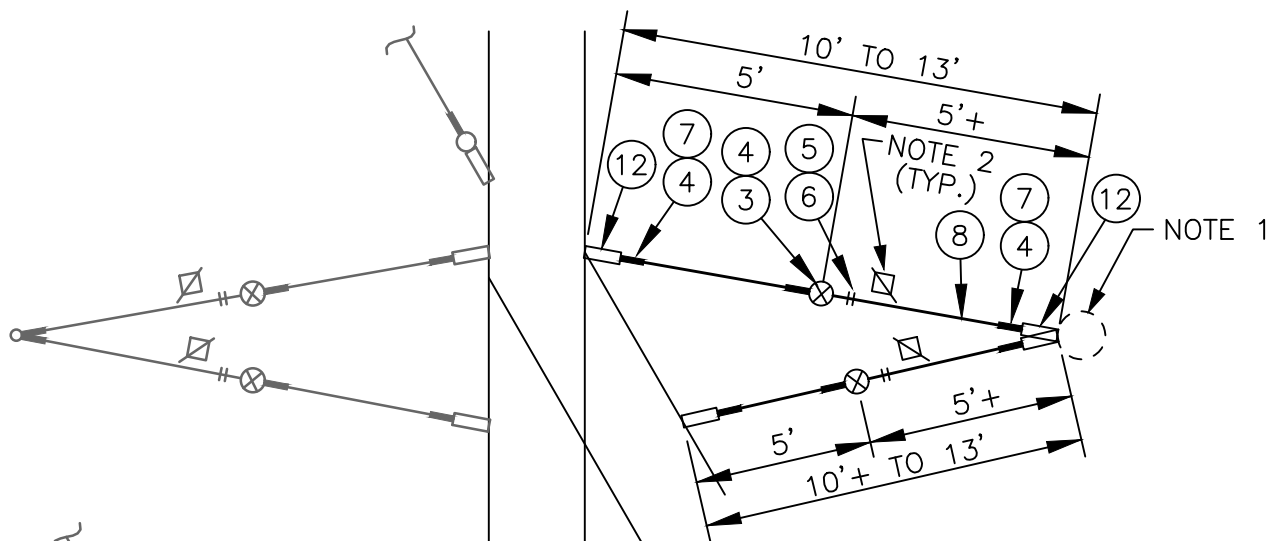
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					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-371
					CHECKED:		SHT NO:	
No.	REVISION	BY	APP'D	DATE	J. DAVIS		3 OF 9	



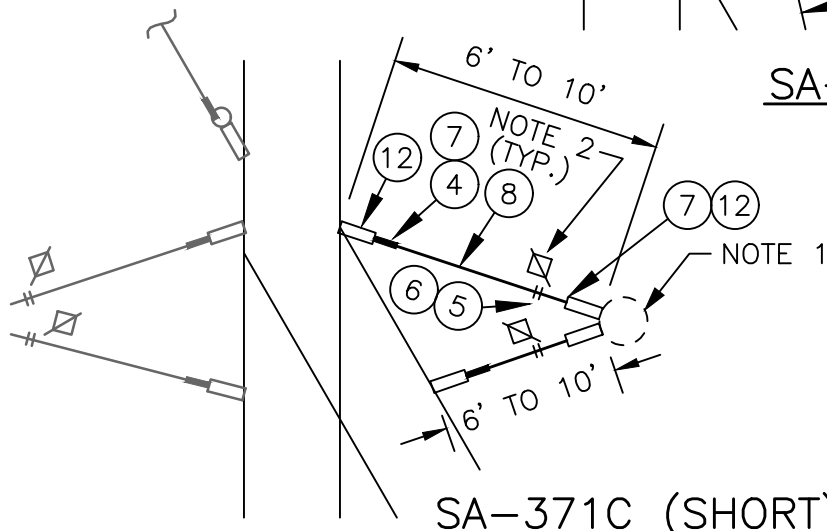
					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS SWITCH AND CURVE SEGMENT PULLOFFS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-371
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			4 OF 9



SA-371C (LONG)

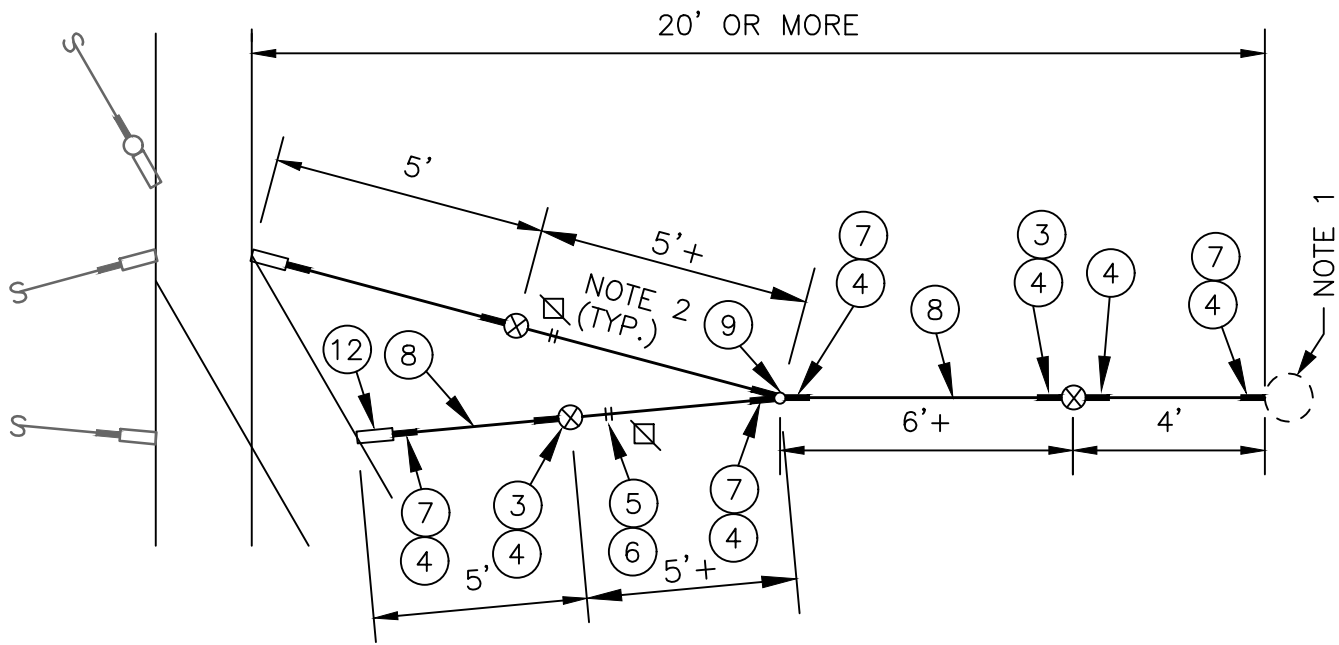


SA-371C (MEDIUM)

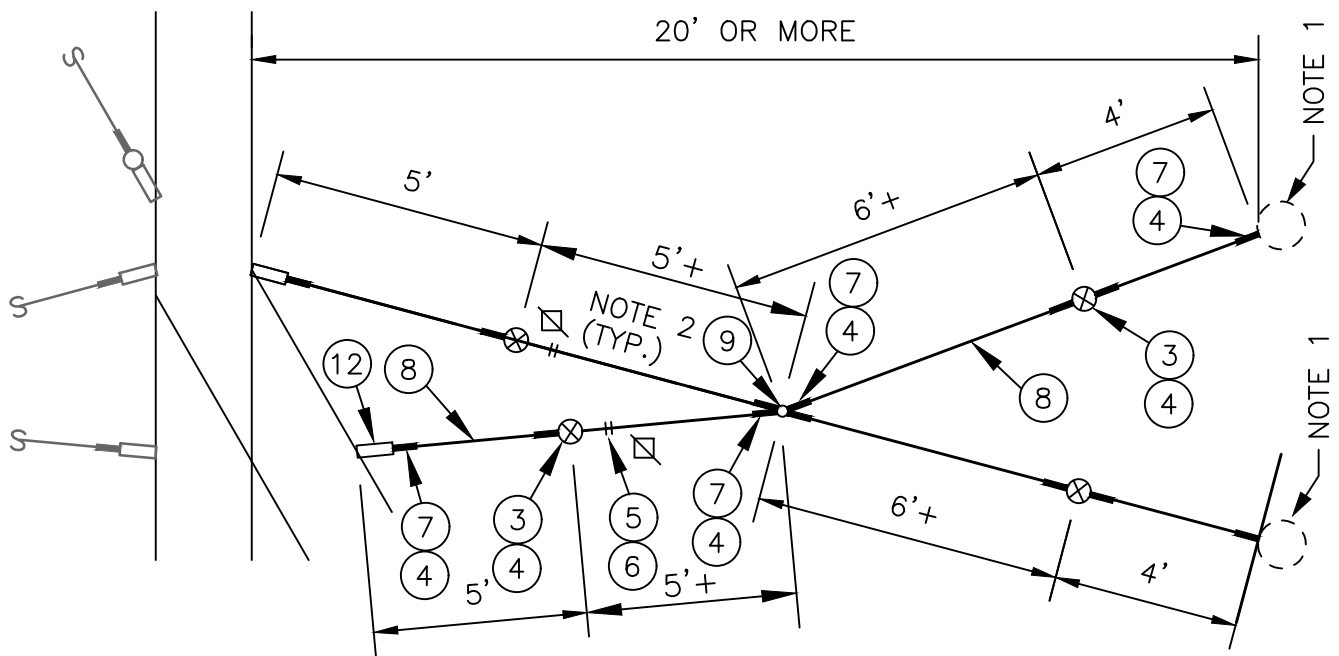


SA-371C (SHORT)

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-371
					CHECKED:		SWITCH PULLOFFS	SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			5 OF 9

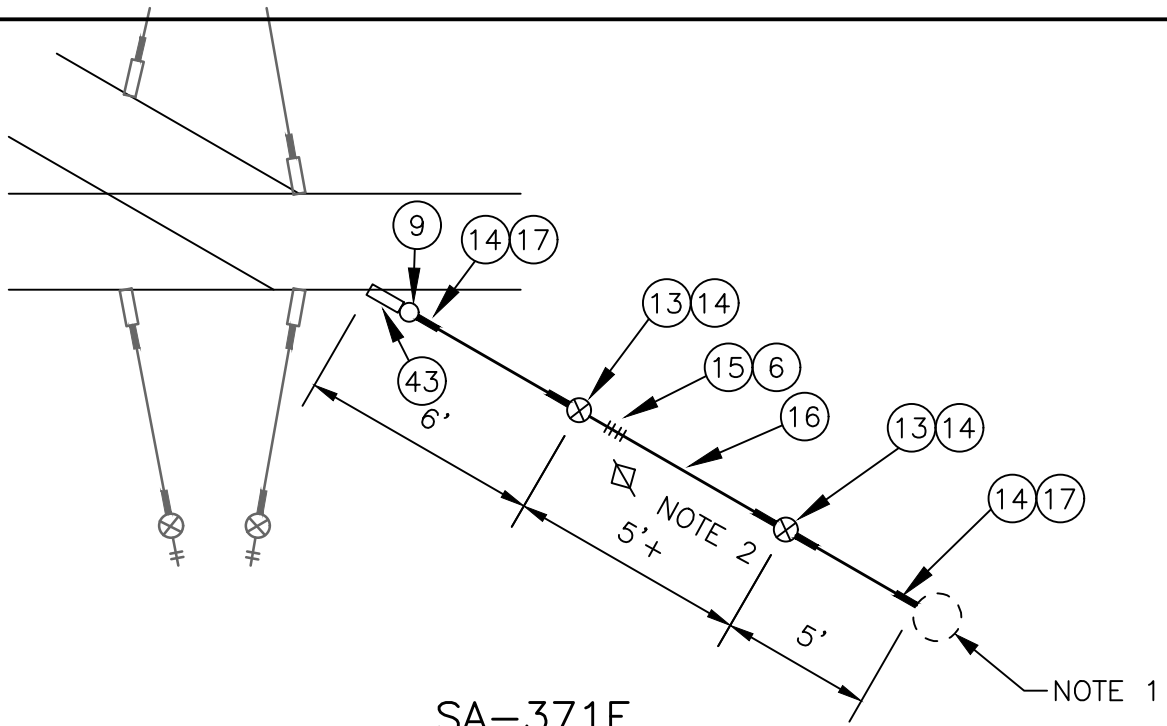


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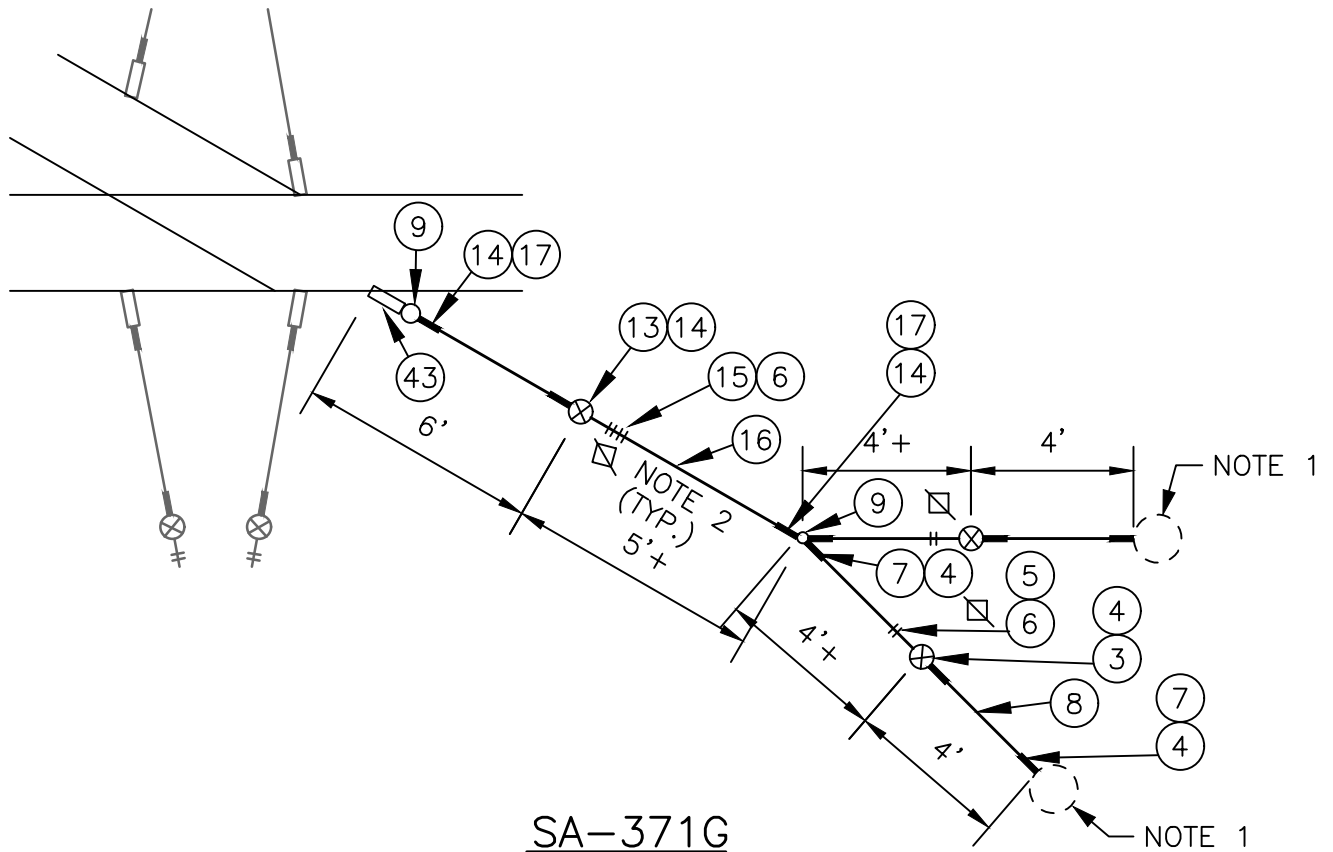


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					DRAWN: L. ANDERSON			STD DET NO: SA-371
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			6 OF 9

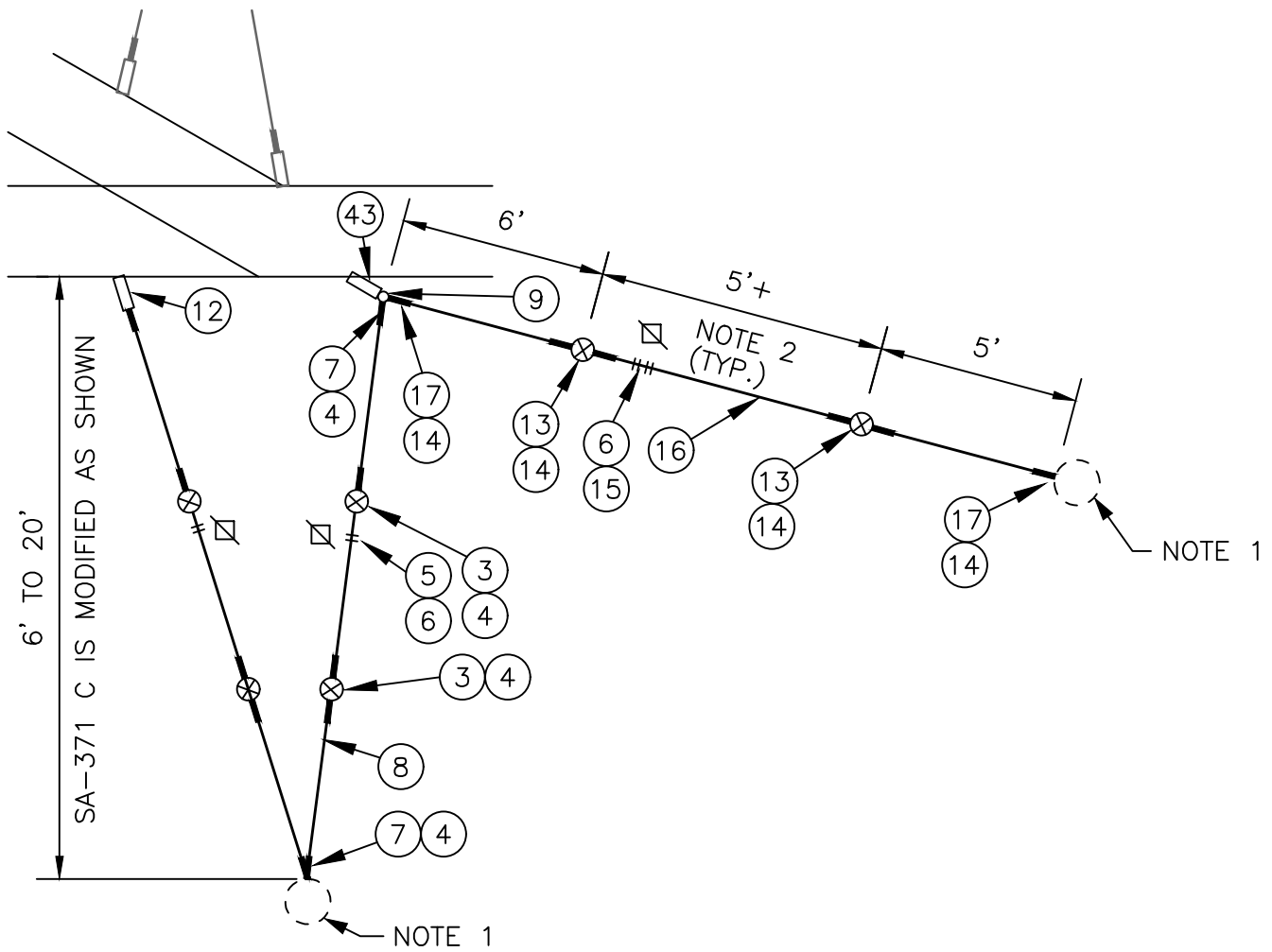


SA-371F



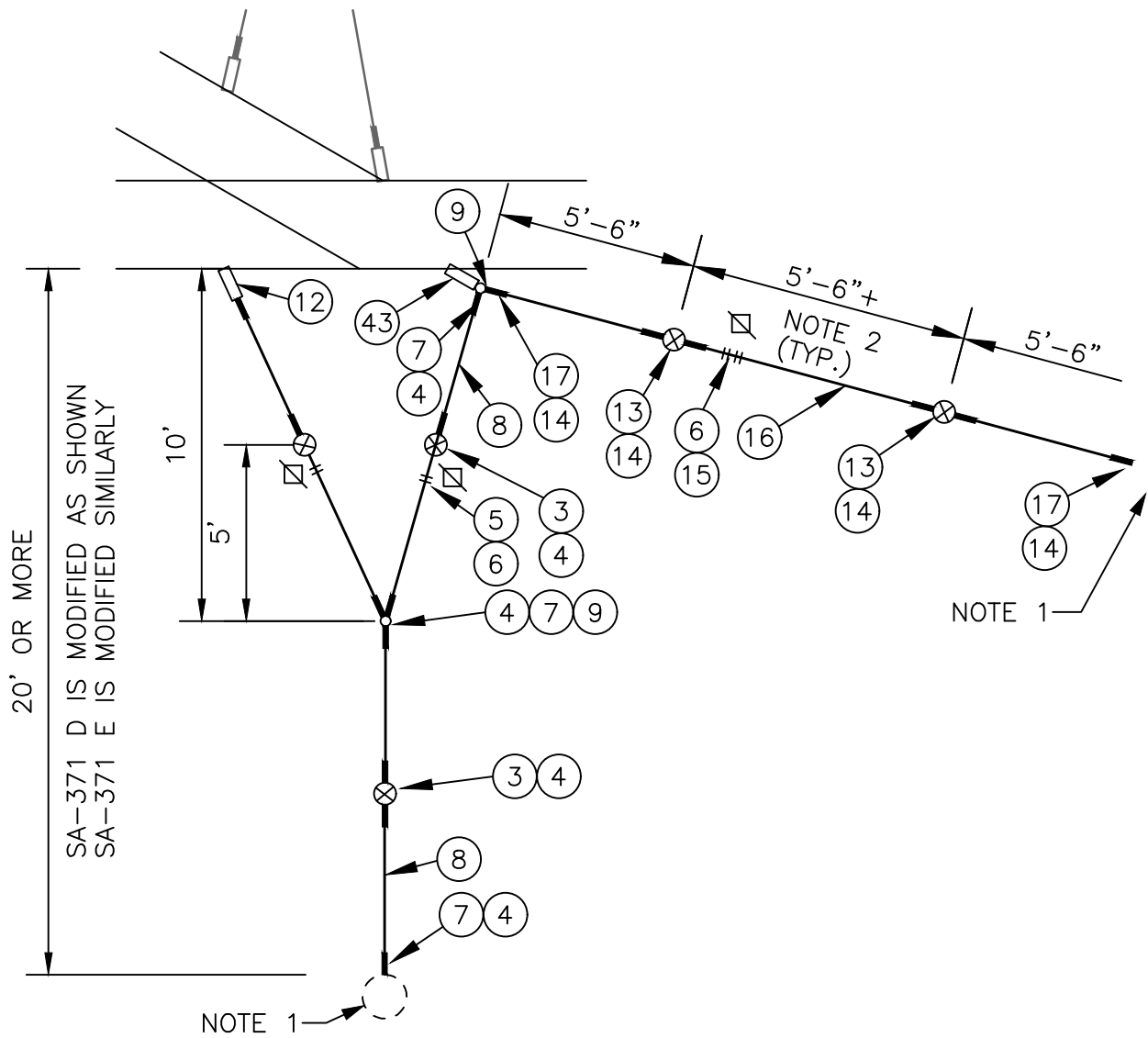
SA-371G

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-371
					CHECKED:		SWITCH PULLOFFS	SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS		7	OF



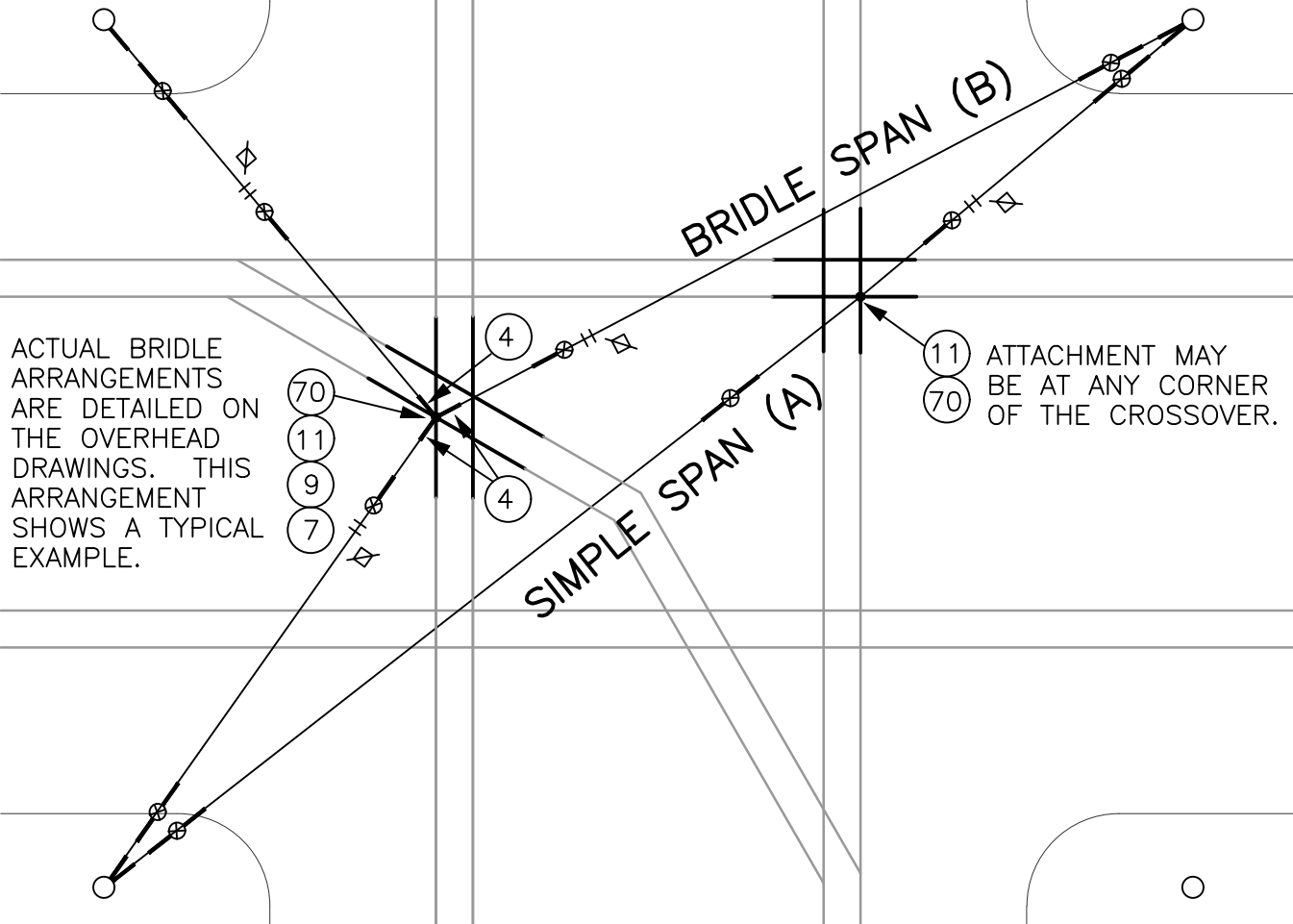
SA-371H

No.	REVISION	BY	APP'D	DATE	DESIGNED: DPG/AW	APPROVED: P. ENG 	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS SWITCH PULLOFFS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-371
					CHECKED: J. DAVIS			SHT NO: 8 OF 9

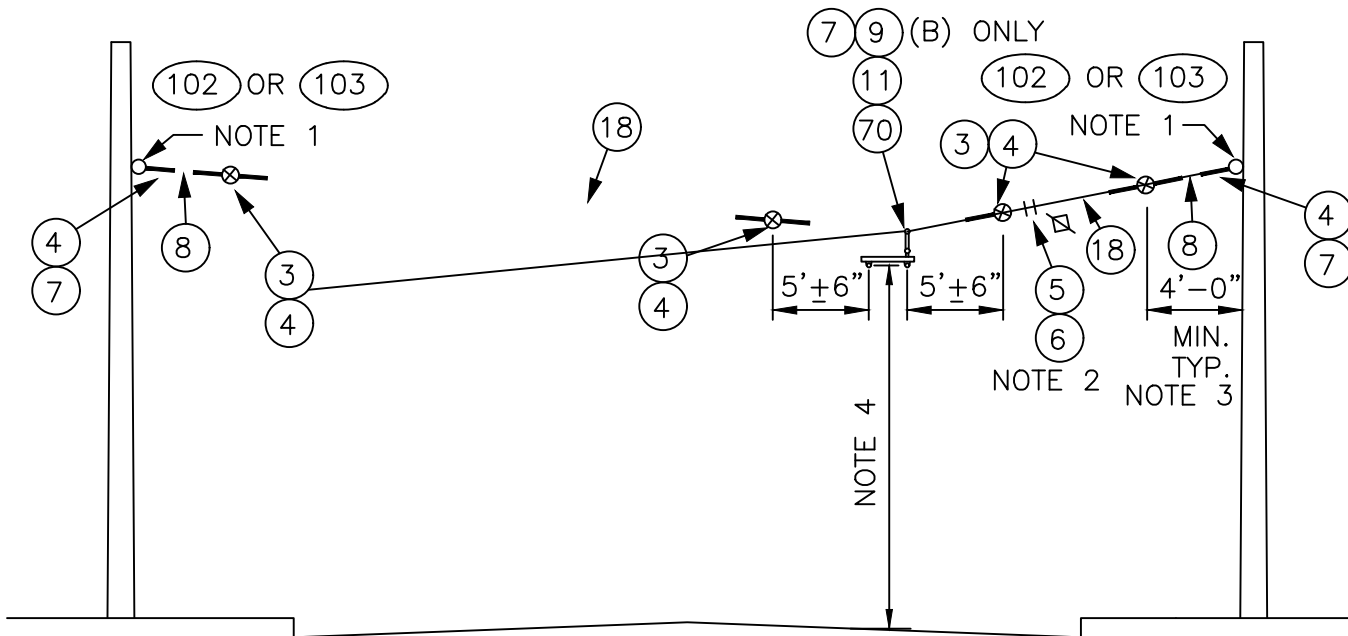


SA-371J

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE:
					DPG/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-371
					CHECKED:		SWITCH PULLOFFS	SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS		9 OF 9	



PLAN



					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS CROSSOVER HOLDUP SIMPLE SPAN(A) BRIDLE SPAN(B)	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-372
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 2

NOTES:

1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "N". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. SEE SA-370 FOR LIMITED SPACE VARIANCES. SEE SA-167 FOR INSULATED GUY CRITERIA.
4. SEE SA-164 FOR VERTICAL & HORIZONTAL DIMENSIONS TO TROLLEY WIRE.

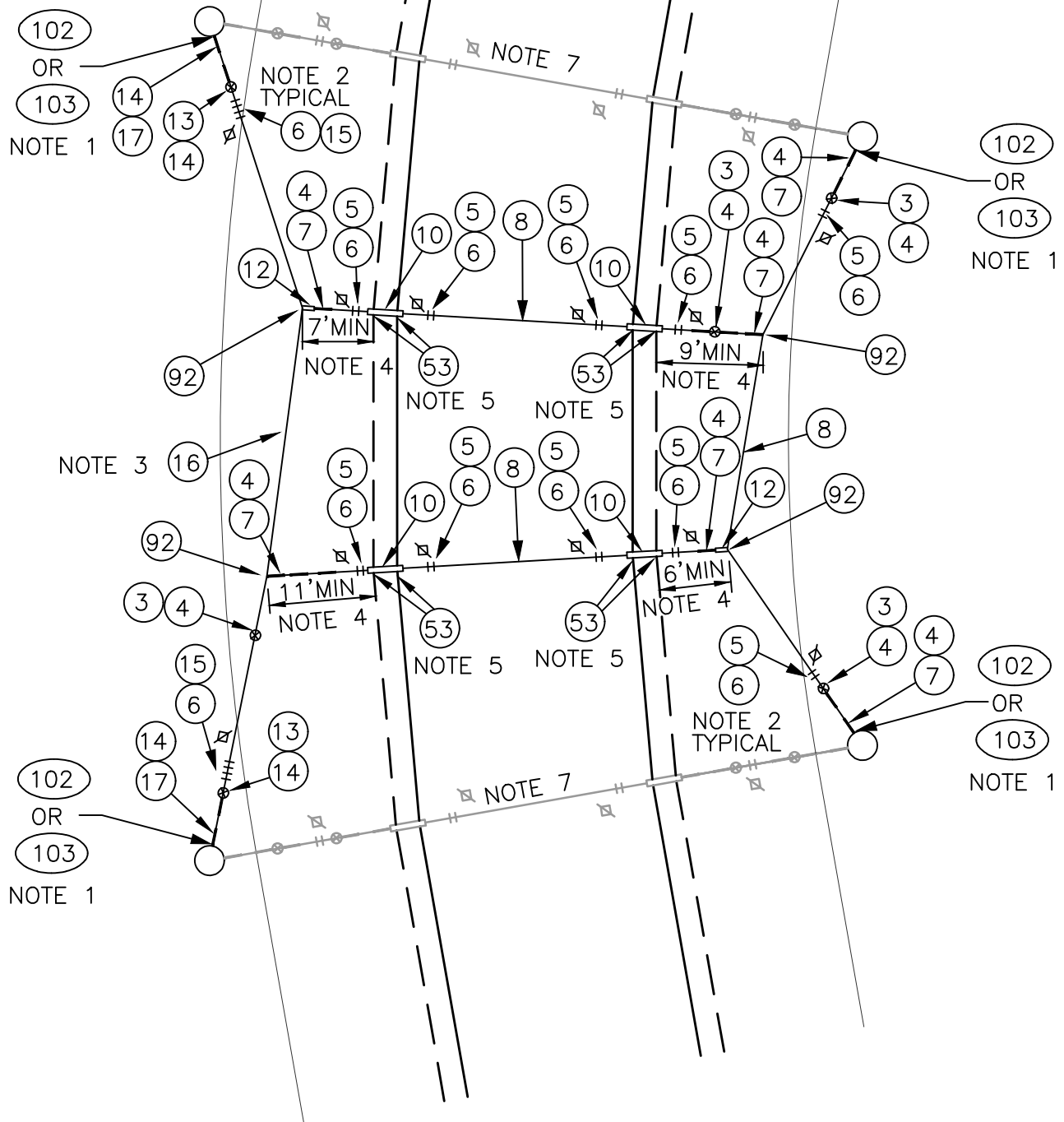
MATERIAL LIST (A)

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	4	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	9	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	2	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	2	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
11	1	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6120
18	VARIES	GUY STRAND, COVERED	COPPERWELD	8MI
70	1	EYEBOLT, 5/8" X 6" W/2 NUTS & LOCKWASHER		
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

MATERIAL LIST (B)

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	6	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	15	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	6	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	6	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
09	1	BULL RING	WABCO	18567-2000
11	1	7/8 TRANSLITE STRAIN INSUL CL-CL	WABCO	54975-6120
18	VARIES	GUY STRAND, COVERED	COPPERWELD	8MI
70	1	EYEBOLT, 5/8" X 6" W/2 NUTS & LOCKWASHER		
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

					DESIGNED: DPG/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS CROSSOVER HOLDUP SPAN NOTES AND MATERIALS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-372
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			2 OF 2



MULTI RAIL CURVE TWO WAY TRAFFIC

					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS CONVENTIONAL CURVE WITH CURVE RAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-373
					CHECKED: J. DAVIS			SHT NO: 1 OF 4
No.	REVISION	BY	APP'D	DATE				



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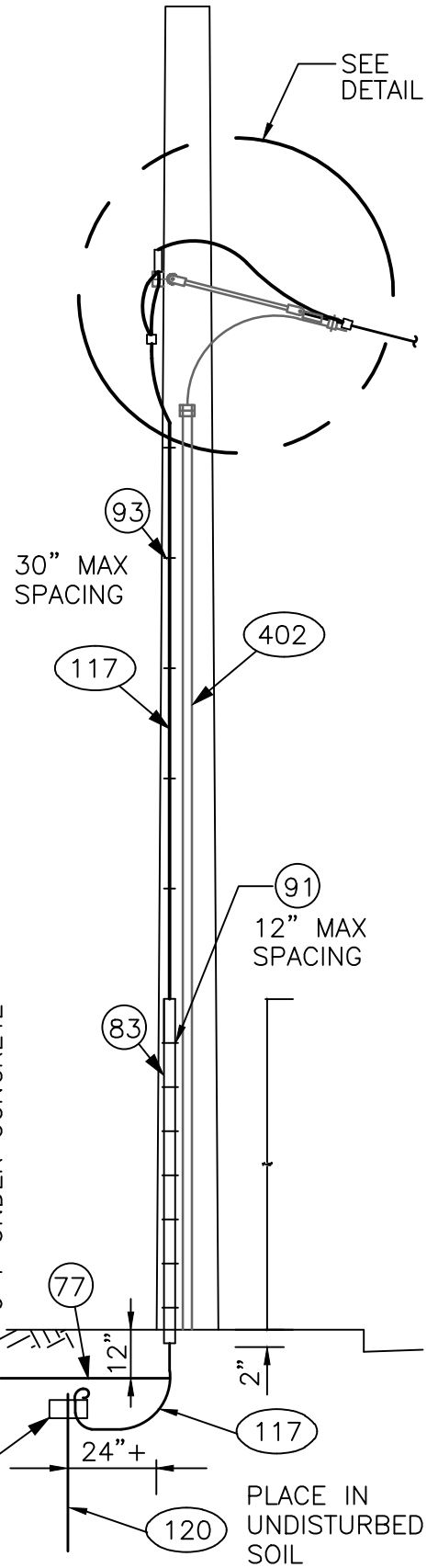
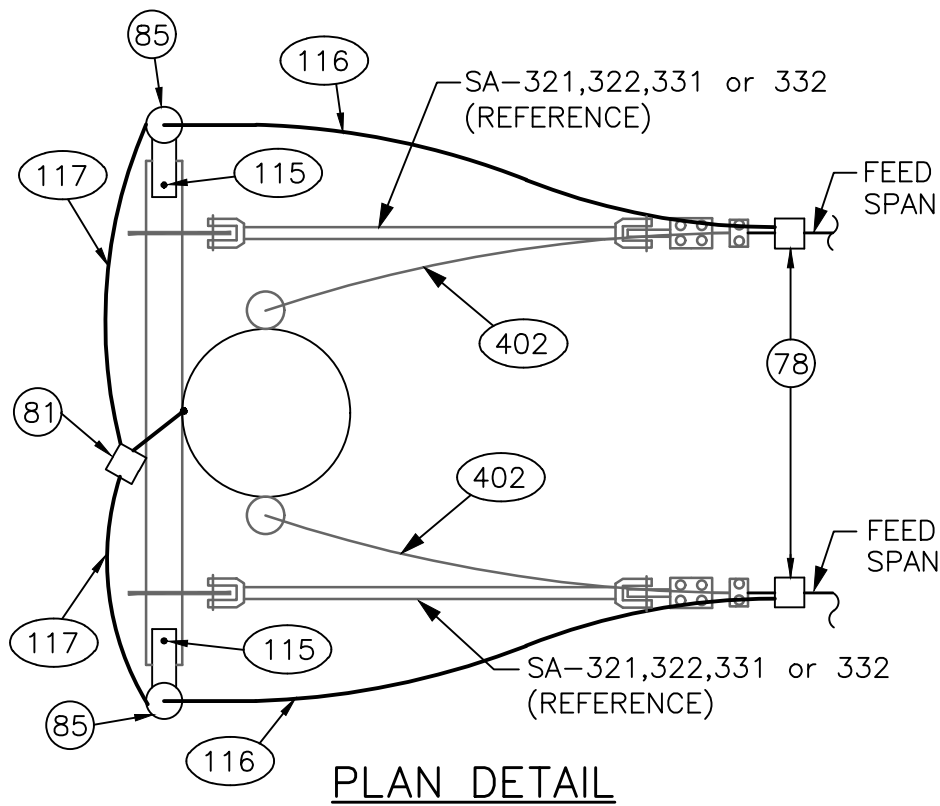
ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
03	VARIES	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	504
04	VARIES	GUY GRIP DEADEND	PREFORMED	CDE-3106
05	VARIES	WIRE ROPE CLIP, 5/16"	CROSBY	G450
06	AS REQD	FRICTION TAPE, 3/4" (6 WRAPS)		
07	VARIES	THIMBLE, 3/8" XHD, OPEN	CROSBY	G414
08	VARIES	GUY STRAND	COPPERWELD	8M
10	VARIES	HI-LITE DOUBLE CURVE HANGER	WABCO	54962-3001
12	VARIES	7/8 TRANSLITE STRAIN INSUL CL-EYE	WABCO	55339-6120
13	VARIES	GUY STRAIN INSUL	PORCELAIN PRODUCTS CO.	506
14	VARIES	GUY GRIP DEADEND	PREFORMED	CDE-3115
15	VARIES	WIRE ROPE CLIP, 3/8"	CROSBY	G450
16	VARIES	GUY STRAND	COPPERWELD	16M
17	VARIES	THIMBLE, 1/2" XHD, OPEN	CROSBY	G414
53	VARIES	CURVE RAIL (1° TO 5° 2 FT LG)	K & M	851 B412/0
54	VARIES	CURVE RAIL (>5° TO 7.5° 4 FT LG)	K & M	851 B412/1
92	VARIES	ANGLE CLAMP, DUCTILE IRON	ANDERSON/ SQUARE D	82860-2000
102	VARIES	FORGED THREE-PIECE ADJUSTABLE POLE BAND, ANNEALED & GALVANIZED	KORTICK MFG CO	
103	VARIES	WOOD POLE EYEBOLT	METRO STD	SA-103

NOTES

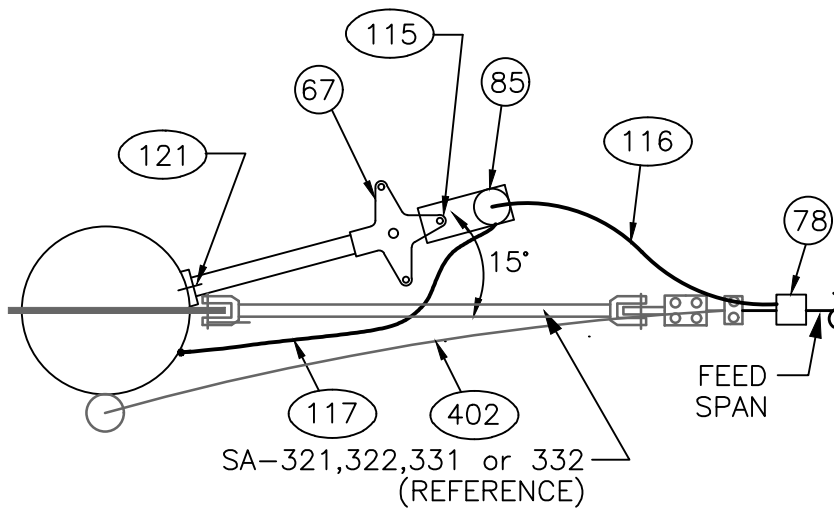
1. A POLE COLLAR OR POLE EYEBOLT IS REQUIRED PER SA-102 OR SA-103 UNLESS A BUILDING EYEBOLT ATTACHMENT IS USED. INSTALLATION HEIGHT IS INDICATED ON THE OVERHEAD DRAWINGS.
2. PROVIDE TENSION ADJUSTMENT POINTS AT LOCATIONS INDICATED BY "X". PROVIDE WIRE ROPE CLIPS AT THESE LOCATIONS. SEE SA-166.
3. IF LOAD SHOWN ON OVERHEAD DRAWINGS IS LESS THAN 2500 LBS, THEN ITEM 8 MAY BE USED INSTEAD OF ITEM 16. THE ASSOCIATED ITEMS SHALL ALSO BE CHANGED I.E. 3 FOR 13, 4 FOR 14, 5 FOR 15 AND 7 FOR 17.
4. THE DISTANCE FROM THE TROLLEY WIRE TO THE SUPPORT CATENARY WIRE SHALL BE AS SHOWN ON THE OVERHEAD DRAWINGS. THE DISTANCES ON SA-373 ARE SHOWN TO DEFINE PARTS REQUIRED FOR DISTANCE RANGES ONLY.
5. ANGLE VARIES FROM 1° TO 5°.
6. USE ITEM 53 WHEN ANGLE VARIES FROM 1° TO 5°. USE ITEM 54 WHEN ANGLE VARIES FROM 5° TO 7.5°. TROLLEY WIRE SHALL NOT BE TIED TOGETHER AS SHOWN ON SHEET 1 WHEN USING ITEM 54. USE SHEET 2, IF TWO WAY TROLLEY WIRE USES ITEM 54, AND TREAT EACH TRACK SEPARATELY.
7. END SPAN SHOWN FOR REFERENCE ONLY, ACTUAL SPAN USED SHALL BE DEFINED ON THE OVERHEAD DRAWINGS.

					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-373
					CHECKED: J. DAVIS			SHT NO: 1 OF 4
No.	REVISION	BY	APP'D	DATE			CONVENTIONAL CURVE WITH CURVE RAILS	

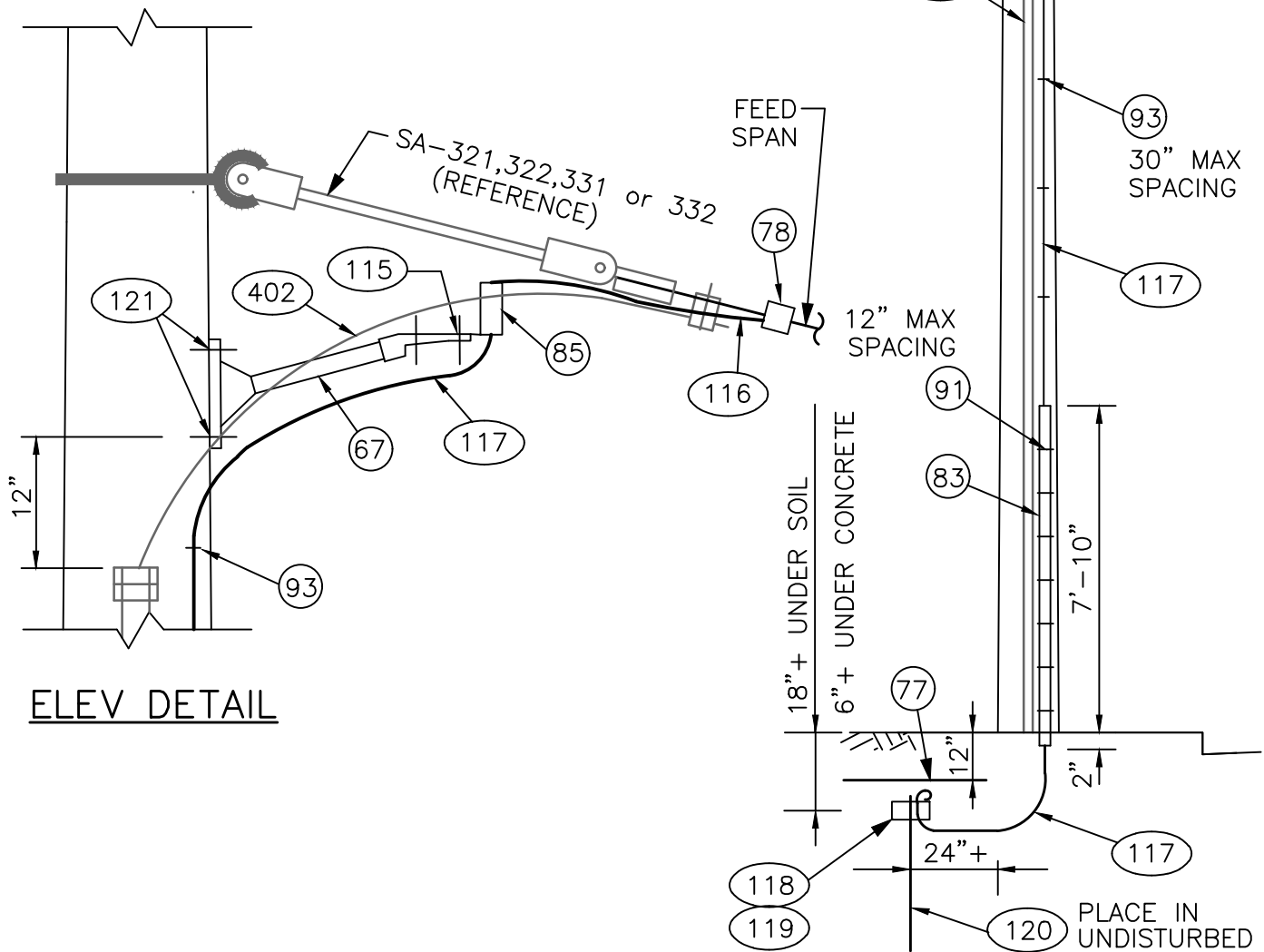
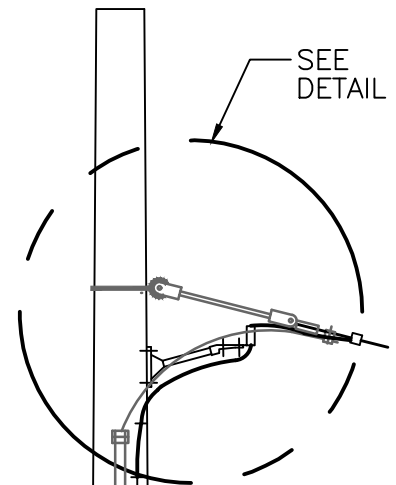
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 DESIGNED: A. WOLAK
 DRAWN: L. ANDERSON
 CHECKED: J. DAVIS
 APP'D: [Signature]
 DATE: 03/23/2021



					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS LIGHTNING ARRESTERS DOUBLE FEEDER RISER (WOOD POLE)	DATE: 03/2021	
					DRAWN: L. ANDERSON				STD DET NO: SA-401
					CHECKED: J. DAVIS				SHT NO: 1 OF 6
No.	REVISION	BY	APP'D	DATE					



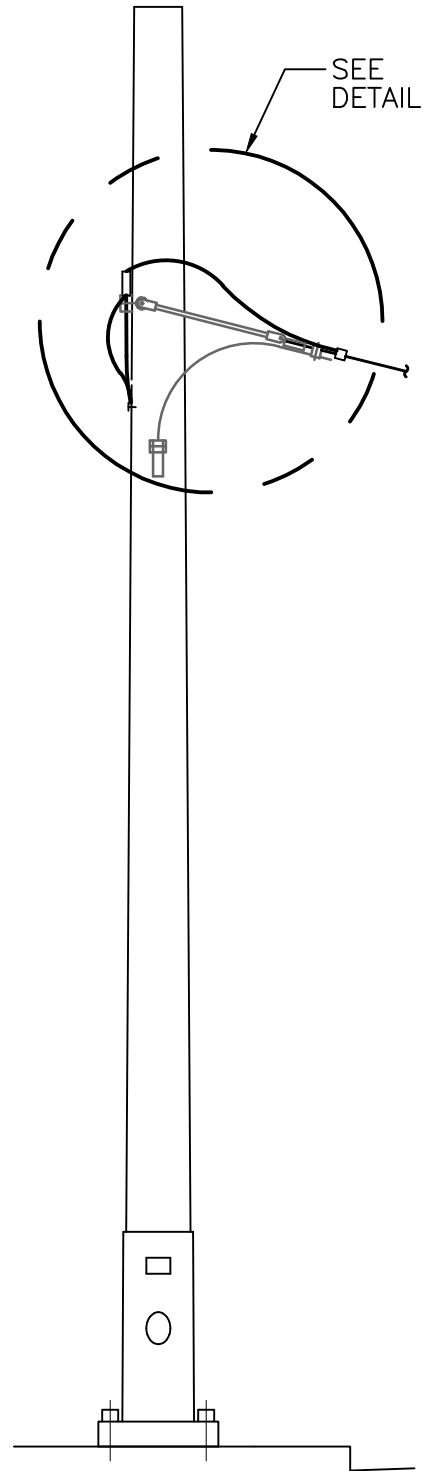
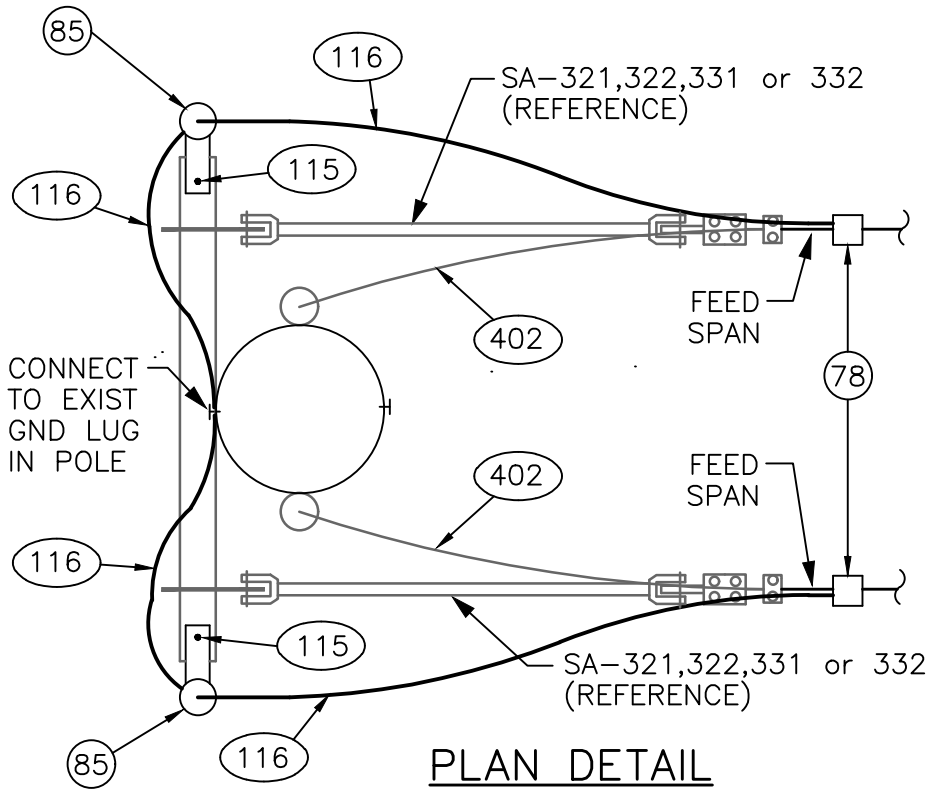
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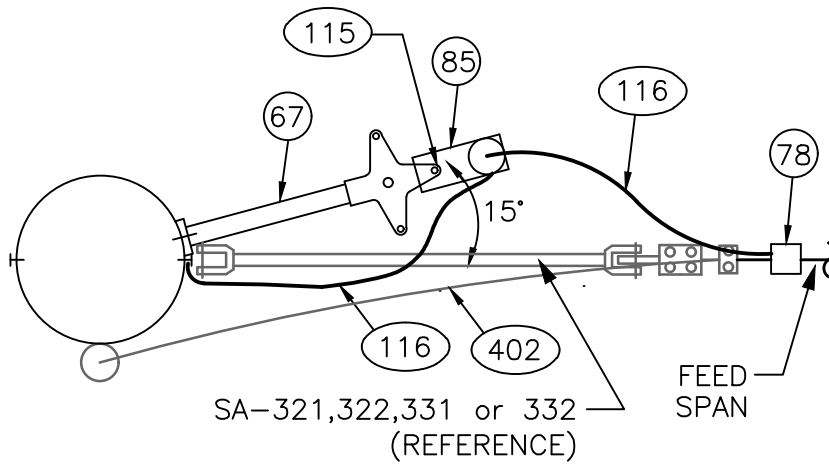
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					DESIGNED: DG/AWG	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS LIGHTNING ARRESTERS DOUBLE FEEDER RISER (WOOD POLE)	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-401
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			2 OF 6

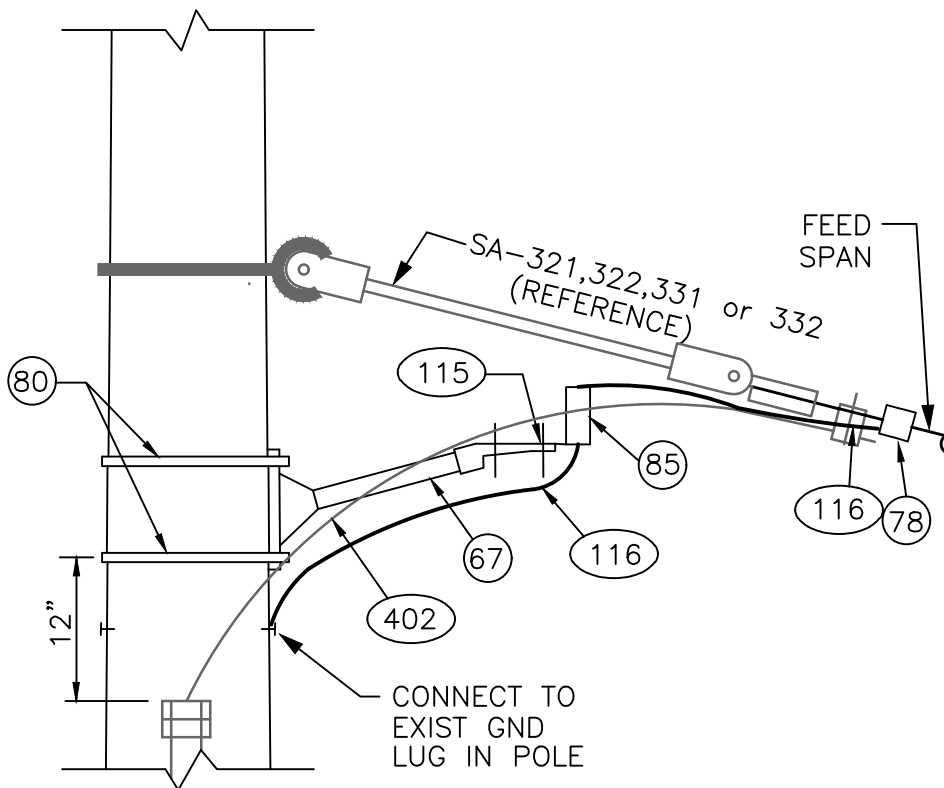
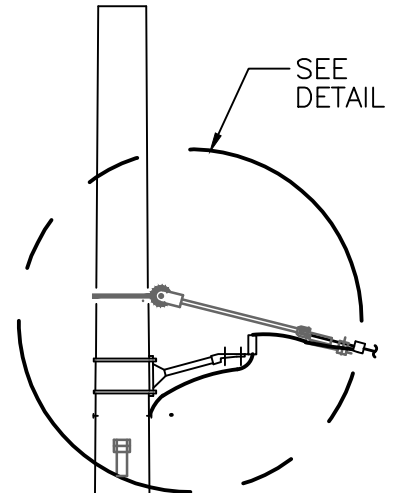
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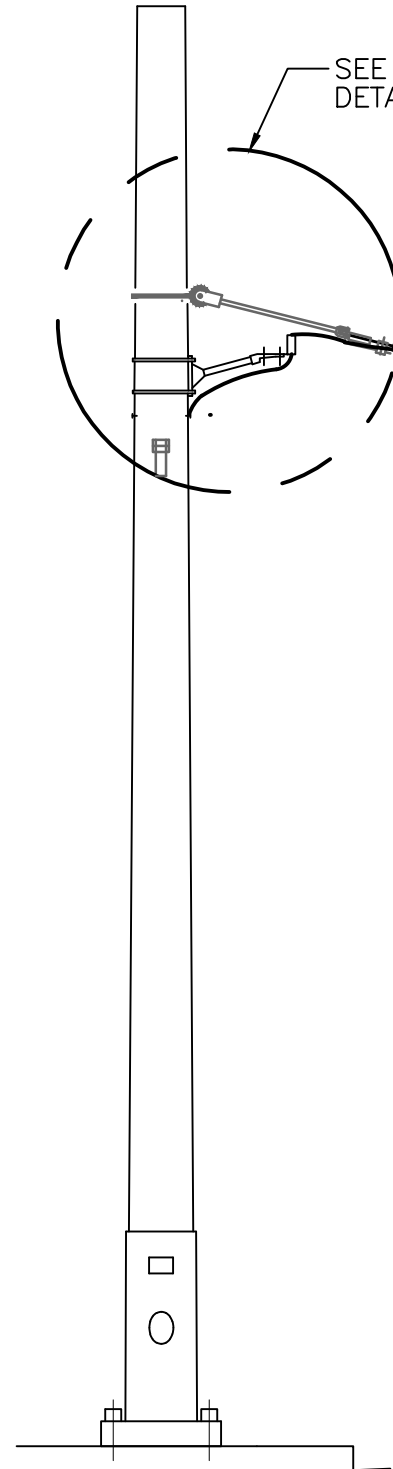
					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS LIGHTNING ARRESTERS DOUBLE FEEDER RISER (STEEL POLE)	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-401
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			3 OF 6



PLAN DETAIL



ELEV DETAIL



					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS LIGHTNING ARRESTERS SINGLE FEEDER RISER (STEEL POLE)	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-401
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			4 OF 6

WOOD POLE SINGLE FEEDER MATERIAL LIST (SEE PAGE 2)

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
67	1	CLOVERLEAF EPOXIROD STANDOFF	CHANCE	C653-1038
77	AS REQD	ELEC WARNING TAPE, 6" YELLOW	BRADY	UT 20-Y6
78	1	CONNECTOR, PARALLEL CLAMP	BURNDY	QPX342C
83	1	MOLDING, PLASTIC, GROUND WIRE, 1/2" X 1/16" X 8'	JOSLYN	PM128
85	1	1000 VOLT DC ARRESTOR 970 MCOV	IMPULSE	P/N 1057
91	AS REQD	STAPLES, ROLLED POINT, GALV, 2" X 1/2" X 0.162"	JOSLYN	J156
93	AS REQD	STAPLES, ROLLED POINT, GALV, 1 3/4" X 1/4" X 0.148"	JOSLYN	J1673
115	1	STAINLESS STEEL BOLT WITH WASHERS & LOCK WASHERS		
116	*	WIRE, 2 OR 5 KV, #4 AWG CU, JACKETED, UNSHIELDED		
117	VARIES	WIRE, #4 AWG CU, SOLID, SOFT, 0.031" POLYETHYLENE INSULATED		
118	1	GROUND ROD CLAMP	COPPERWELD	ABH58
119	AS REQD	CONDUCTIVE & ANTI-SEIZE COMPOUND (KOPR-SHIELD)	THOMAS & BETTS	CP-8 OR CP-16
120	1	GROUND ROD, 5/8" X 10'	COPPERWELD OR JOSLYN	GR5810 J8340
121	2	LAG SCREW, FETTER DRIVE, 5/8" X 5"	JOSLYN	J8765
402	AS REQD	FEEDER RISER	METRO STD	SA-402

STEEL POLE SINGLE FEEDER MATERIAL LIST (SEE PAGE 4)

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
67	1	CLOVERLEAF EPOXIROD STANDOFF	CHANCE	C653-1038
78	1	CONNECTOR, PARALLEL CLAMP	BURNDY	QPX342C
80	AS REQD	3/4" X 0.030" SS BANDING TYPE 201	BAND-IT	C206
85	1	1000 VOLT DC ARRESTOR 970 MCOV	IMPULSE	P/N 1057
115	1	STAINLESS STEEL BOLT WITH WASHERS & LOCK WASHERS		
116	*	WIRE, 2 OR 5 KV, #4 AWG CU, JACKETED, UNSHIELDED		
402	AS REQD	FEEDER RISER	METRO STD	SA-402

		DESIGNED: A. WOLAK		APPROVED: P. ENG		METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS LIGHTNING ARRESTER SINGLE FEEDER RISER (MATERIAL LIST)	DATE: 03/2021
		DRAWN: L. ANDERSON					STD DET NO: SA-401
		CHECKED: J. DAVIS					SHT NO: 5
No.	REVISION	BY	APP'D				DATE

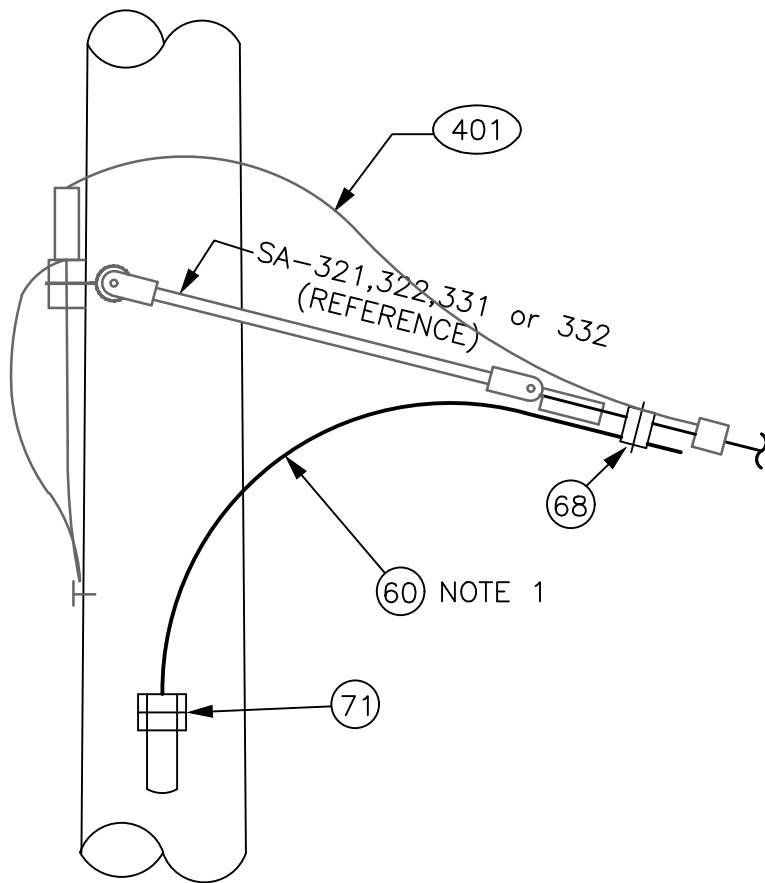
WOOD POLE DOUBLE FEEDER MATERIAL LIST (SEE PAGE 1)

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
77	AS REQD	ELEC WARNING TAPE, 6" YELLOW	BRADY	UT 20-Y6
78	2	CONNECTOR, PARALLEL CLAMP	BURNDY	QPX342C
81	1	CONNECTOR, SERVICE, SPLIT BOLT	BURNDY	KS20
83	1	MOLDING, PLASTIC, GROUND WIRE, 1/2" X 1/16" X 8'	JOSLYN	PM128
85	2	1000 VOLT DC ARRESTOR 970 MCOV	IMPULSE	P/N 1057
91	AS REQD	STAPLES, ROLLED POINT, GALV, 2" X 1/2" X 0.162"	JOSLYN	J156
93	AS REQD	STAPLES, ROLLED POINT, GALV, 1 3/4" X 1/4" X 0.148"	JOSLYN	J1673
115	2	STAINLESS STEEL BOLT WITH WASHERS & LOCK WASHERS		
116	*	WIRE, 2 OR 5 KV, #4 AWG CU, JACKETED, UNSHIELDED		
117	VARIES	WIRE, #4 AWG CU, SOLID, SOFT, 0.031" POLYETHYLENE INSULATED		
118	1	GROUND ROD CLAMP	JOSLYN	J8492
119	AS REQD	CONDUCTIVE & ANTI-SEIZE COMPOUND (KOPR-SHIELD)	THOMAS & BETTS	CP-8 OR CP-16
120	1	GROUND ROD, 5/8" X 10'	JOSLYN	J8340
402	AS REQD	FEEDER RISER	METRO STD	SA-402

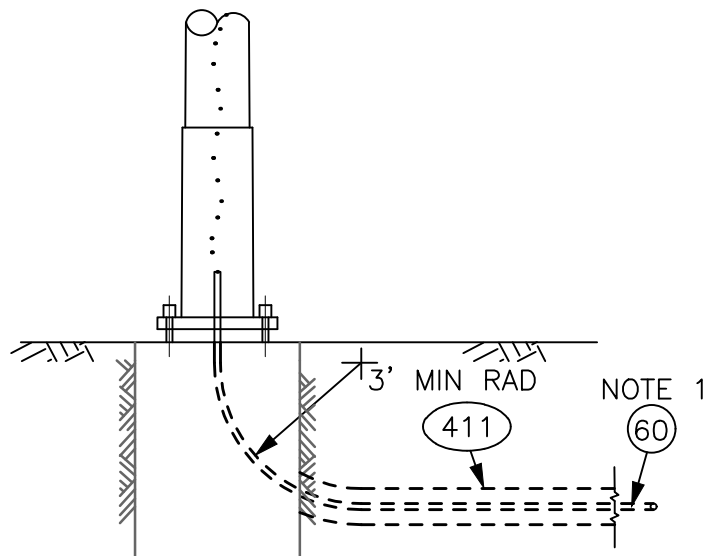
STEEL POLE DOUBLE FEEDER MATERIAL LIST (SEE PAGE 3)

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
78	2	CONNECTOR, PARALLEL CLAMP	BURNDY	QPX342C
85	2	1000 VOLT DC ARRESTOR 970 MCOV	IMPULSE	P/N 1057
115	2	STAINLESS STEEL BOLT WITH WASHERS & LOCK WASHERS		
116	*	WIRE, 2 OR 5 KV, #4 AWG CU, JACKETED, UNSHIELDED		
402	AS REQD	FEEDER RISER	METRO STD	SA-402

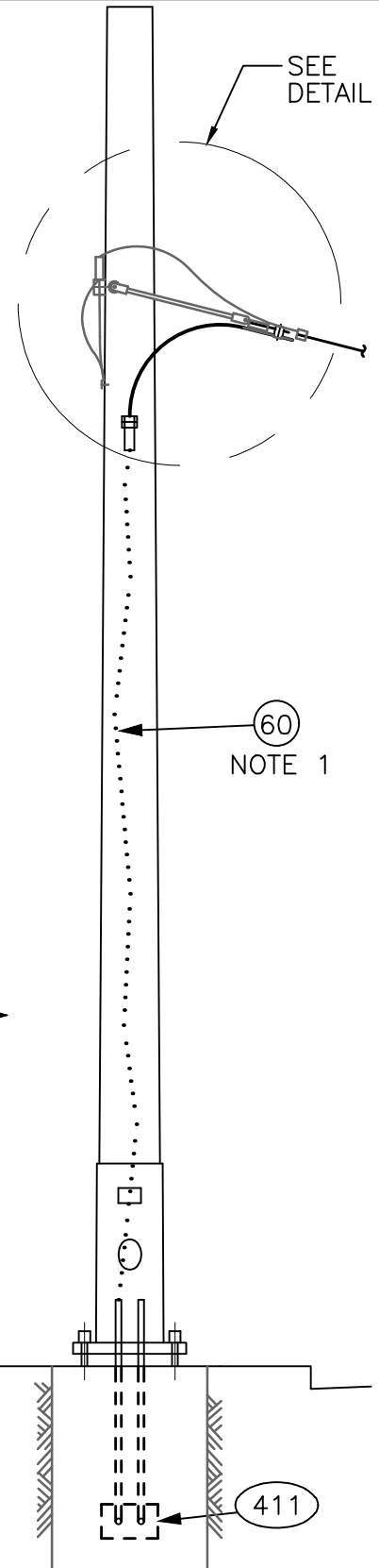
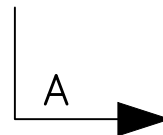
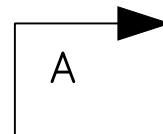
					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS LIGHTNING ARRESTERS DOUBLE FEEDER (MATERIAL LIST)	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-401
					CHECKED: J. DAVIS			SHT NO: 6
No.	REVISION	BY	APP'D	DATE				OF 6



ELEV DETAIL

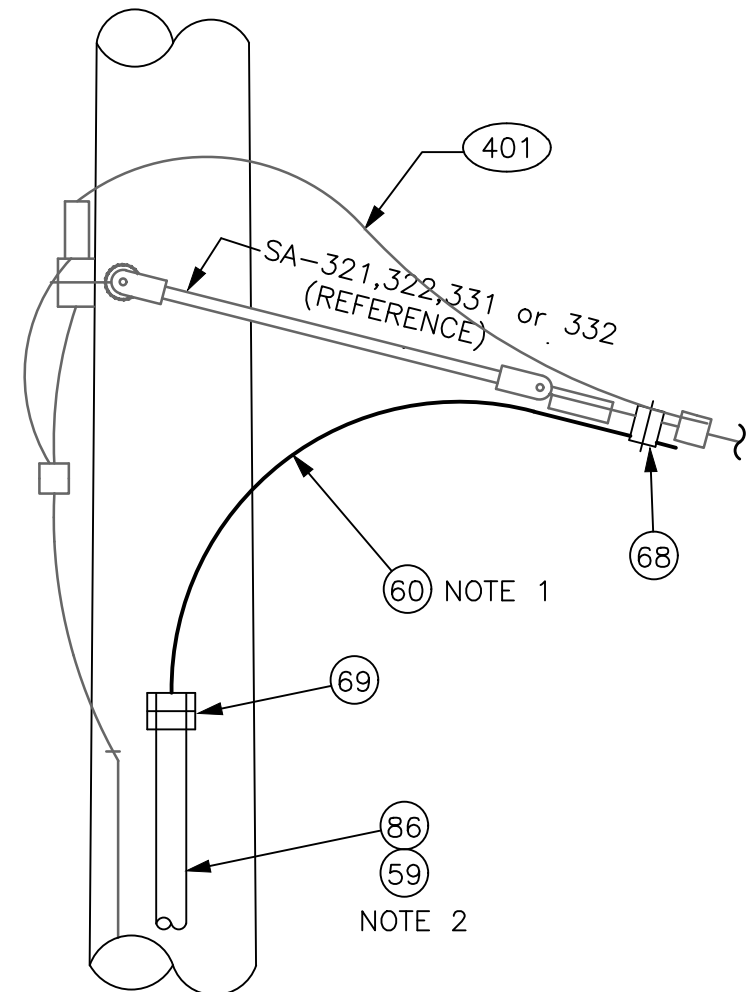


SECTION A-A

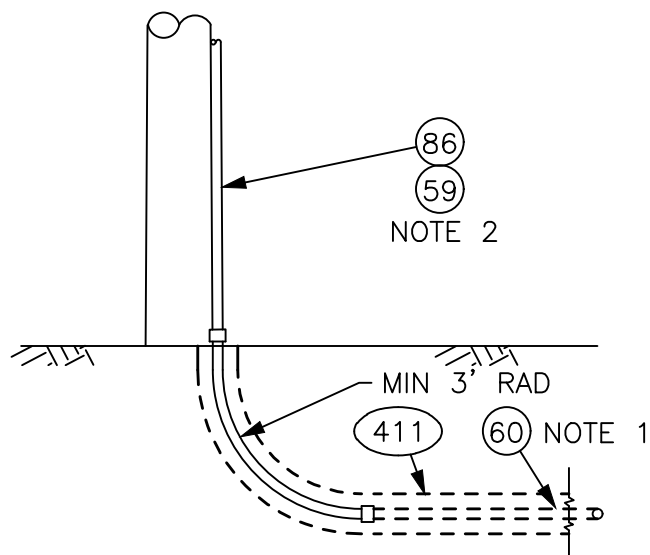


					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS FEEDER RISER (STEEL POLE)	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-402
					CHECKED: J. DAVIS			SHT NO: 1 OF 3
No.	REVISION	BY	APP'D	DATE				

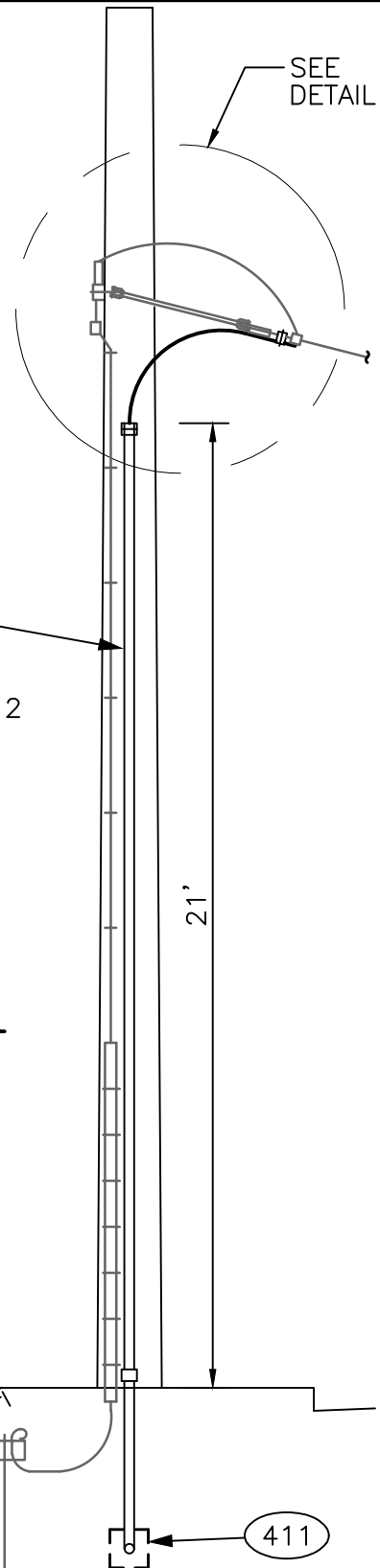
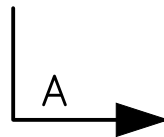
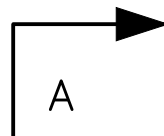
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 IMAGES:



ELEV DETAIL



SECTION A-A



					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-402
					CHECKED: J. DAVIS			SHT NO: 2 OF 3
No.	REVISION	BY	APP'D	DATE			FEEDER RISER (WOOD POLE)	

STEEL POLE MATERIAL LIST (SEE PAGE 1)

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
60	AS REQD	FEED SPAN CABLE 500 KCM CU, UN-SHIELDED, 5 KV EPR W/ PVC JACKET		
68	1 or 2	UNIVERSAL SERVICE CONNECTOR	BURNDY	KVSU 34
71	1 or 2	WATERTIGHT STR STRAIN RELIEF CONN 1 1/2" CONDUIT	Q-Z-GEDNEY	SR 15012 H. D. GALV.
401	AS REQD	LIGHTNING ARRESTER	METRO STD	SA-401
411	AS REQD	DUCTBANK	METRO STD	SA-411

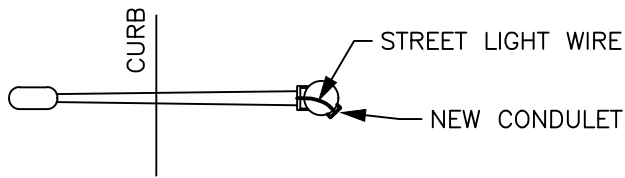
WOOD POLE MATERIAL LIST (SEE PAGE 2)

ITEM #	QTY	DESCRIPTION	MANUFACTURER	CAT. NO.
59	AS REQD	CONDUIT CLAMP W/2" MTG SCREW		
60	AS REQD	FEED SPAN CABLE 500 KCM CU, UN-SHIELDED, 5 KV EPR W/ PVC JACKET		
68	1 or 2	UNIVERSAL SERVICE CONNECTOR	BURNDY	KVSU 34
69	1 or 2	SEALING BUSHING, TYPE KR W/ TYPE M CABLE SUPPORT 2-1/2" CONDUIT	Q-Z-GEDNEY	KR250 & RPLG-2001-1
86	AS REQD	GALV RIGID STEEL CONDUIT		
401	AS REQD	LIGHTNING ARRESTER	METRO STD	SA-401
411	AS REQD	DUCTBANK	METRO STD	SA-411

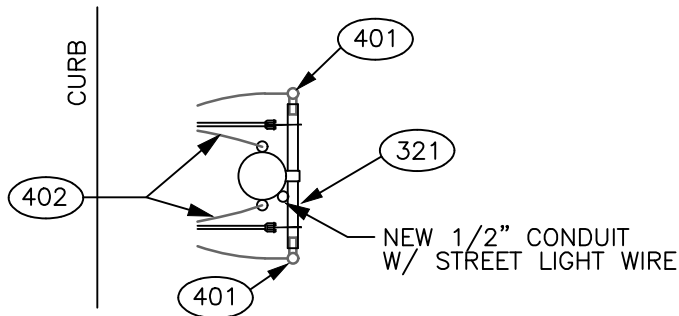
NOTES:

- ITEM 60 SHALL INCLUDE SUFFICIENT LENGTH TO CONNECT FEED SPAN WITH VAULT SHOWN ON DRAWINGS. COIL 20' AT VAULT END, AND COIL 10' AT FEED SPAN END.
- ITEMS 59 & 86 TO MEET REQUIREMENTS OF SEATTLE CITY LIGHT SPEC U7-10. SINGLE RISER IS SHOWN, A SECOND CONDUIT SHALL BE ADDED FOR DOUBLE FEED RISER.
- ITEM 86 & 411 CONDUIT TO BE PLASTIC COATED GALV RIGID STEEL IN BENDS.

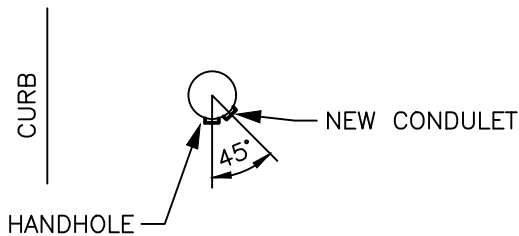
						DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
						DRAWN: L. ANDERSON			STD DET NO: SA-402
						CHECKED: J. DAVIS			SHT NO: 3
No.	REVISION	BY	APP'D	DATE					OF 3



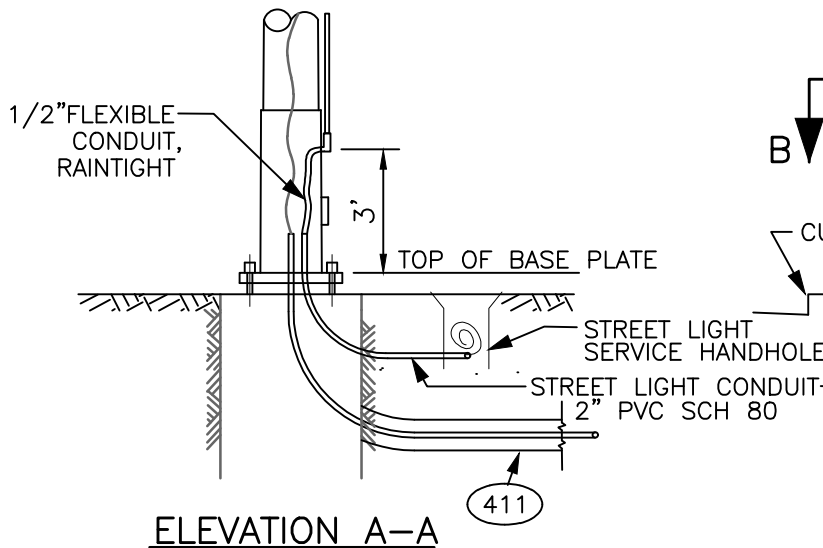
PLAN D-D



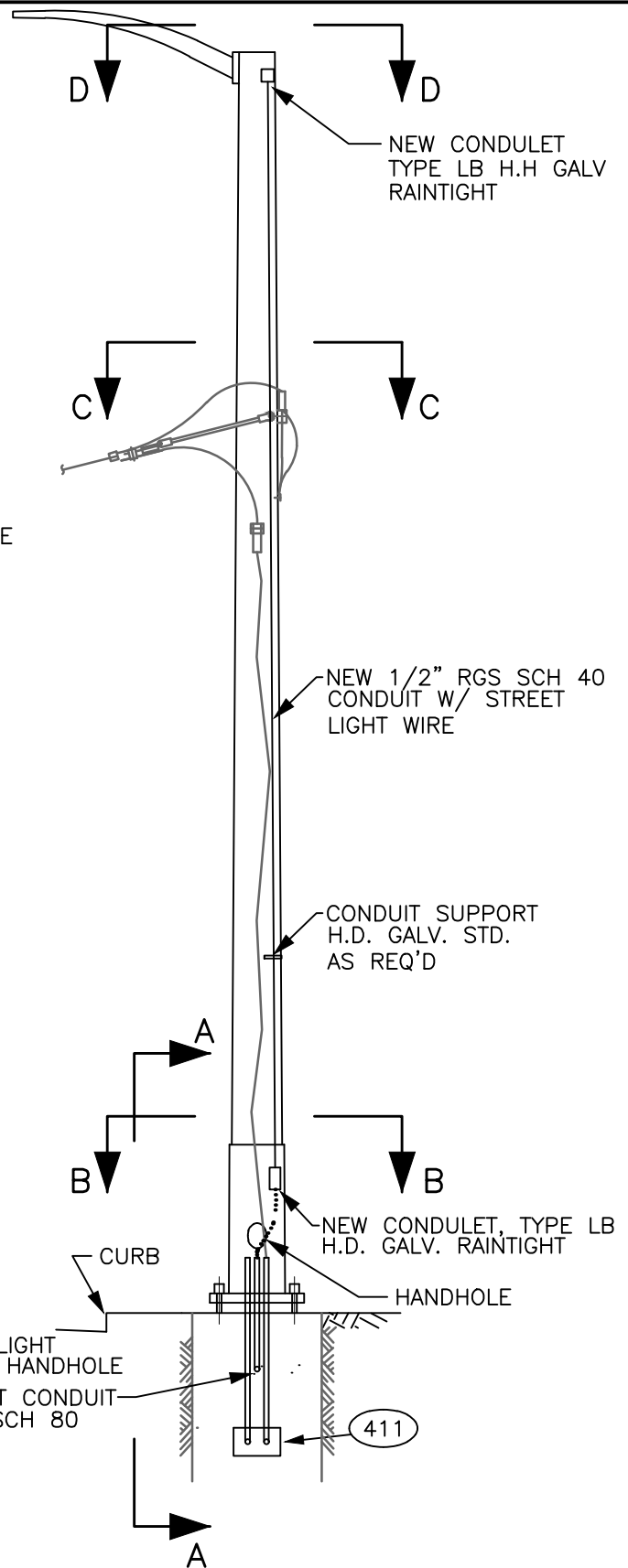
PLAN C-C



PLAN B-B



ELEVATION A-A



					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STEEL POLE FEEDER RISER WITH STREETLIGHT SPECIAL DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-403
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 1



					DESIGNED: A. WOLAK	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SA-411
					CHECKED: J. DAVIS			SHT NO: 1 OF 2
No.	REVISION	BY	APP'D	DATE				

NOTES:

1. PVC conduit, fittings, and solvent shall meet the requirements of USDC Commercial Standard CS 207, UL 651, ASTM 2564, NEMA TC2, NEMA TC6 & NEMA TC9.
2. All work shall meet the requirements of City of Seattle Board of Public Works Rules: Chapter 4.40 – Street and Sidewalk Pavement Opening and Restoration Rules if duct is in Street Right of Way.
3. Concrete for duct shall develop a minimum compressive strength of 3000 PSI at 28 days, and shall be colored red by adding ten pounds of iron oxide per cubic yard of concrete. Max. aggregate size shall be 3/8".
4. All reinforcing bars shall be deformed billet steel and shall meet the requirements of ASTM A615 Grade 60. All detailing of reinforcement shall meet the requirements of the MANUAL OF STANDARD PRACTICE For Detailing Reinforced Concrete Structures ACI-315 current edition.
5. Compacted trench backfill shall be suitable excavated native material, that is acceptable to the engineer. Backfill shall be firmly and thoroughly machine tamped to 95% maximum dry density under streets or sidewalks, and 90% maximum dry density under landscaped or unimproved areas.
6. Pavement patching shall meet the requirements of City of Seattle Department of Engineering Standard Plan No. 404A, if the duct is in street.
7. Burial depth shall be 48" minimum at street intersections (maximum depth shall be 72"). Maximum grade shall be 10%. Minimum grade shall be 0.25%.
8. Plastic coated GRS conduit shall be used to accommodate horizontal direction changes greater than 15°. The sweep shall be effected with a 12.5 ft minimum radius, and PVC adapter couplings as required. The

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS DUCTBANK CONCRETE ENCASED NOTES	DATE:
					A. WOLAK	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SA-411
					CHECKED:		SHT NO:	
No.	REVISION	BY	APP'D	DATE	J. DAVIS		2 OF 2	

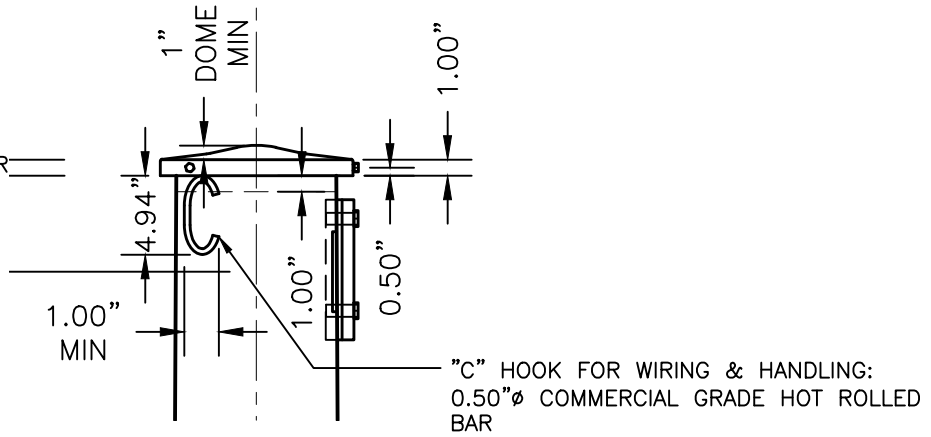
TROLLEY POLE CONTRACT PURCHASE REQUIREMENTS SP-201 DETAIL DRAWINGS

- 1 STANDARD AND (S) STEEL POLE DETAILS
- 2 (C) AND (CS) STEEL POLE DETAILS
- 3 STANDARD STEEL EMBEDDED POLE DETAIL
- 4 STANDARD STEEL POLE FIXTURE ORIENTATION
- 5 STANDARD STEEL POLE SCHEDULE & NOTES
- 6 STANDARD AND (S) STEEL POLE PLATE AND SLEEVE DETAILS
- 7 (C) AND (CS) STEEL POLE PLATE & SLEEVE DETAILS
- 8 STANDARD STEEL POLE IDENTIFICATION TAG DETAIL
- 9 STANDARD STEEL POLE LIGHT MOUNTING DETAIL
- 10 STANDARD STEEL DAVIT ARM POLE DETAILS
- 11 STANDARD STEEL POLE RISER OUTLET DETAILS
- 12 STANDARD STEEL POLE OUTLET DETAILS
- 13 STANDARD STEEL POLE PEDESTRIAN LIGHT MOUNTING DETAIL-BELLTOWN
- 14 STANDARD STEEL POLE PEDESTRIAN LIGHT MOUNTING DETAIL-WESTLAKE
- 15 STANDARD STEEL POLE GENERAL NOTES
- 16 STANDARD STEEL POLE GENERAL NOTES
- 17 STANDARD STEEL POLE ANCHOR BASE POLE DETAILS
- 18 STANDARD STEEL POLE ANCHOR BASE POLE DETAILS

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS	DATE:
					DGP/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			G0-01
					CHECKED:		SHEET INDEX	SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 1

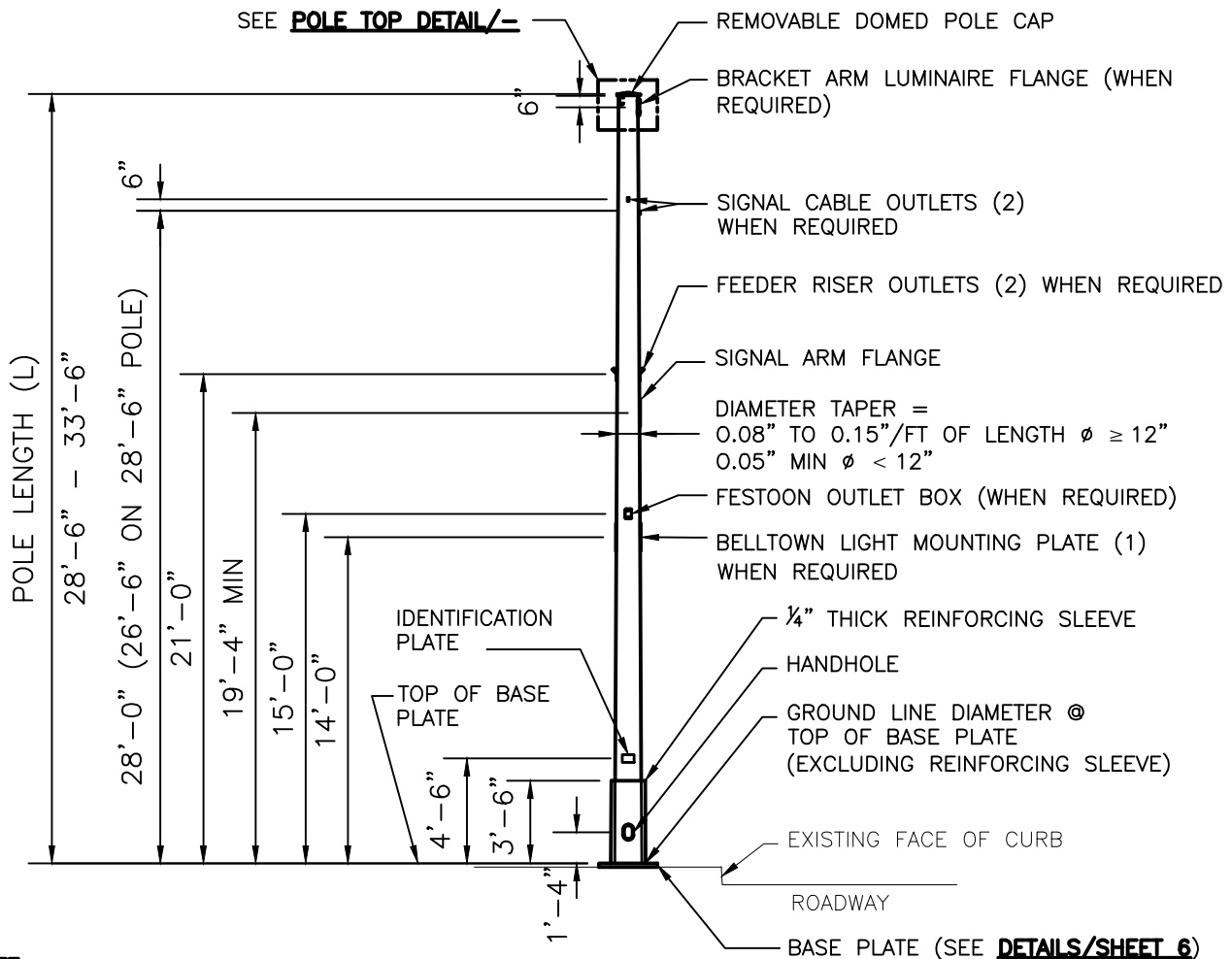
NOTES:

1. CAST POLE TOP CAP HELD IN PLACE W/ (3) $\frac{3}{8}$ " - 16UNC STAINLESS STEEL SET SCREWS.
2. CAP WILL BE SIZED TO FIT OVER ALADDIN TOP PLATE WHEN REQUIRED
3. STEEL SHALL BE 0.1" MINIMUM THICKNESS.



POLE TOP DETAIL

SCALE: 1" = 1'-0"



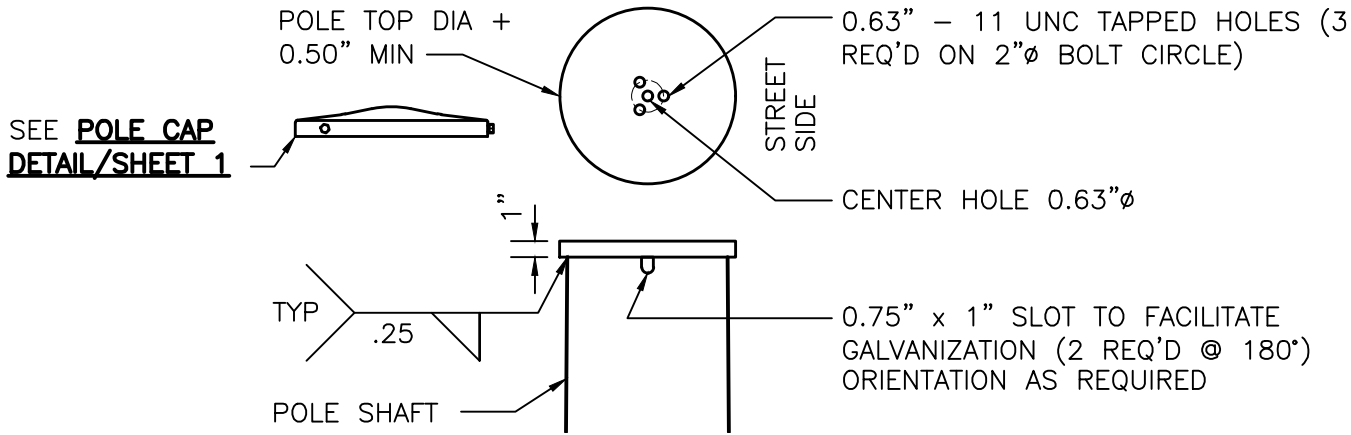
NOTE:

SPECIAL = (S) OVERSIZED
POLE ON EXISTING FOUNDATION

STANDARD AND SPECIAL STEEL POLES

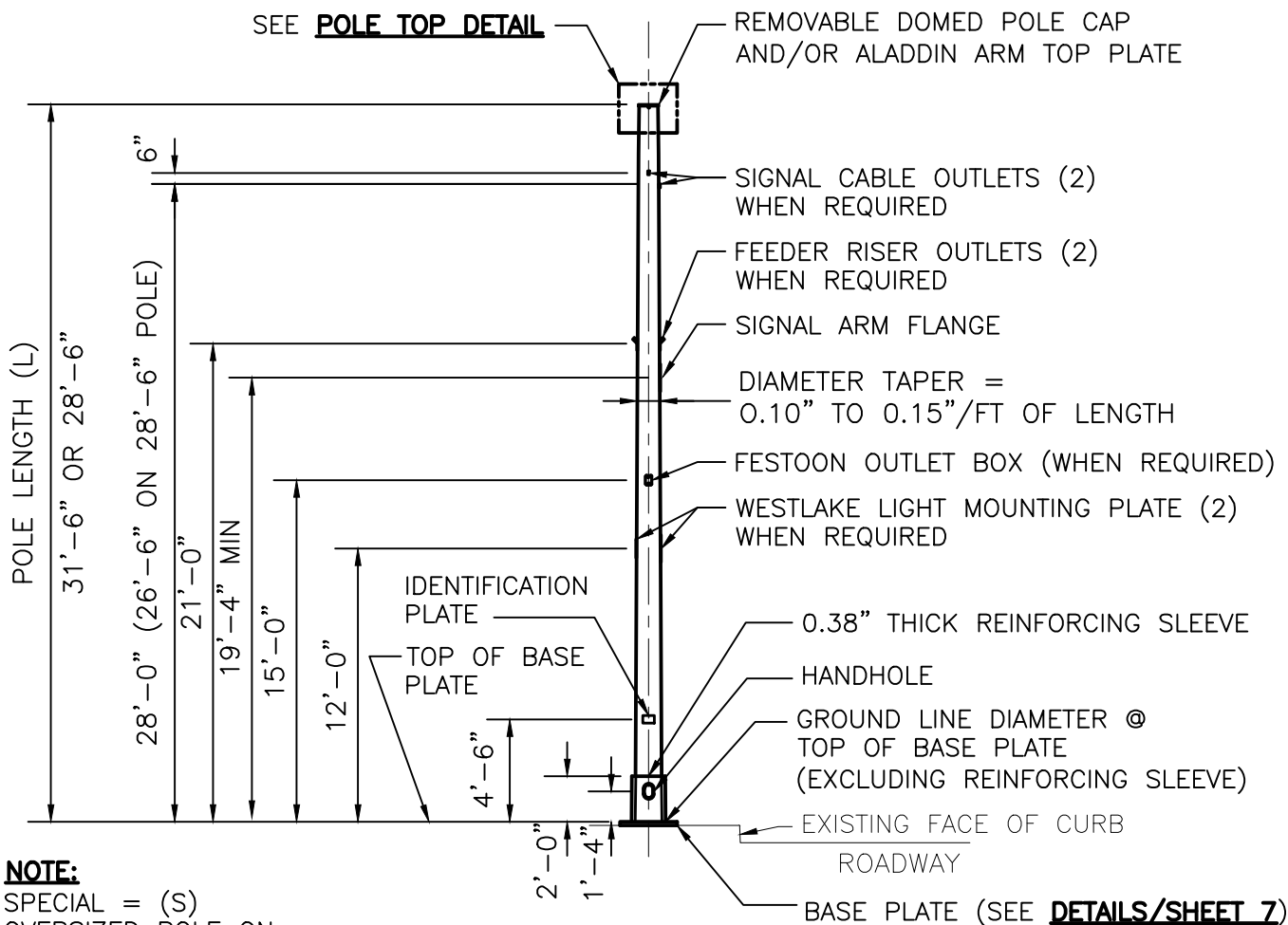
SCALE: $\frac{1}{8}$ " = 1'-0"

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STANDARD &(S) STEEL POLE PURCHASE REQUIREMENTS POLE DETAILS	DATE:
					DGP/AW	P. ENG		03/2021
					DRAWN:	 King County METRO		STD DET NO:
					L. ANDERSON			SP-201
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			1 OF 18



POLE TOP DETAIL

SCALE: 1" = 1'-0"



NOTE:

SPECIAL = (S)
OVERSIZED POLE ON
EXISTING FOUNDATION

CHIEF SEATTLE BASE = (C)

CHIEF SEATTLE BASE SPECIAL = (CS)

CHIEF SEATTLE BASE AND CHIEF SEATTLE BASE SPECIAL STEEL POLES

SCALE: 1/8" = 1'-0"

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS (C)&(CS) STEEL POLE PURCHASE REQUIREMENTS POLE DETAILS	DATE:
					DGP/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SP-201
					CHECKED:	J. DAVIS	SHT NO:	
No.	REVISION	BY	APP'D	DATE			2 OF 18	

POLE LENGTH (L)

35'-0"

REMOVABLE DOMED POLE CAP
(**SHEET 1**)

SEE POLE DETAILS & POLE
SCHEDULE, **SHEET 5**

DIAMETER TAPER =
0.10" TO 0.15"/FT OF LENGTH

IDENTIFICATION
PLATE

$\frac{3}{16}"$

GROUND LINE DIAMETER @ GRADE
(EXCLUDING REINFORCING SLEEVE)

GRADE LINE

10'-6"

8'-8"

6'-0"

5'-6"

0.38" REINFORCING SLEEVE

$\frac{1}{2}"$ - 13 UNC NUT WITH CAP
SCREW FOR GROUNDING

$\frac{3}{16}"$

$\frac{3}{16}"$

EMBEDDED STEEL POLE

SCALE: 1" = 5'-0"

DESIGNED:

DGP/AW

DRAWN:

L. ANDERSON

CHECKED:

J. DAVIS

APPROVED:

P. ENG



King County

METRO

METRO TRANSIT CAPITAL DIVISION
TROLLEY STANDARD DETAILS

STANDARD STEEL POLE
PURCHASE REQUIREMENTS
EMBEDDED POLE DETAIL

DATE:

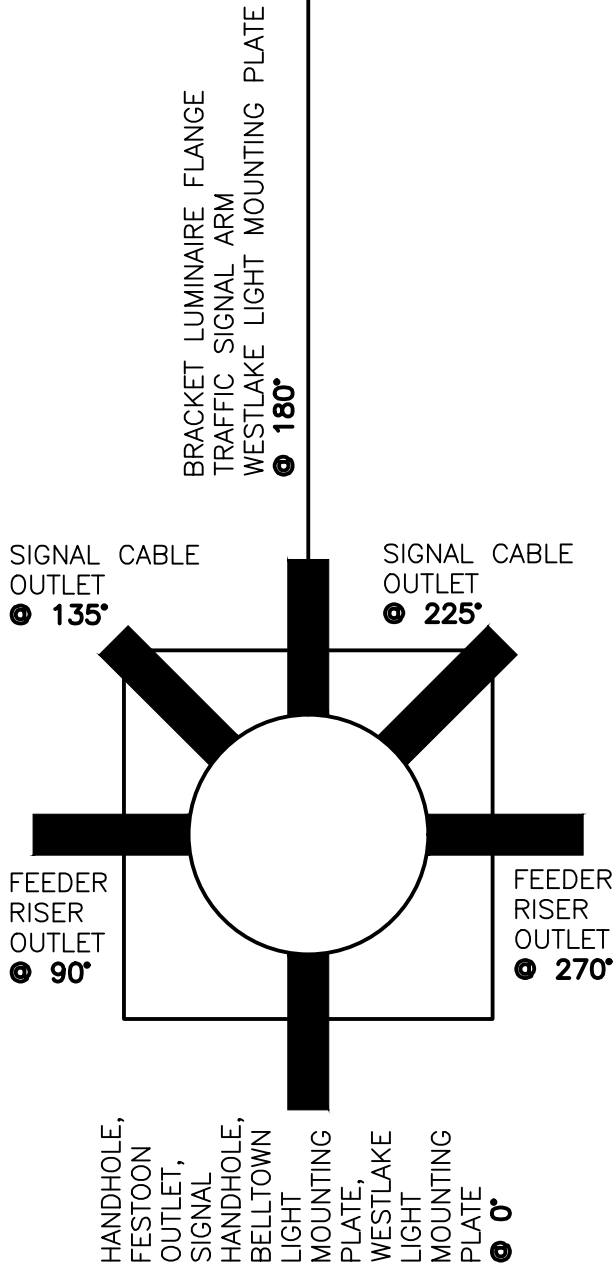
03/2021

STD DET NO:

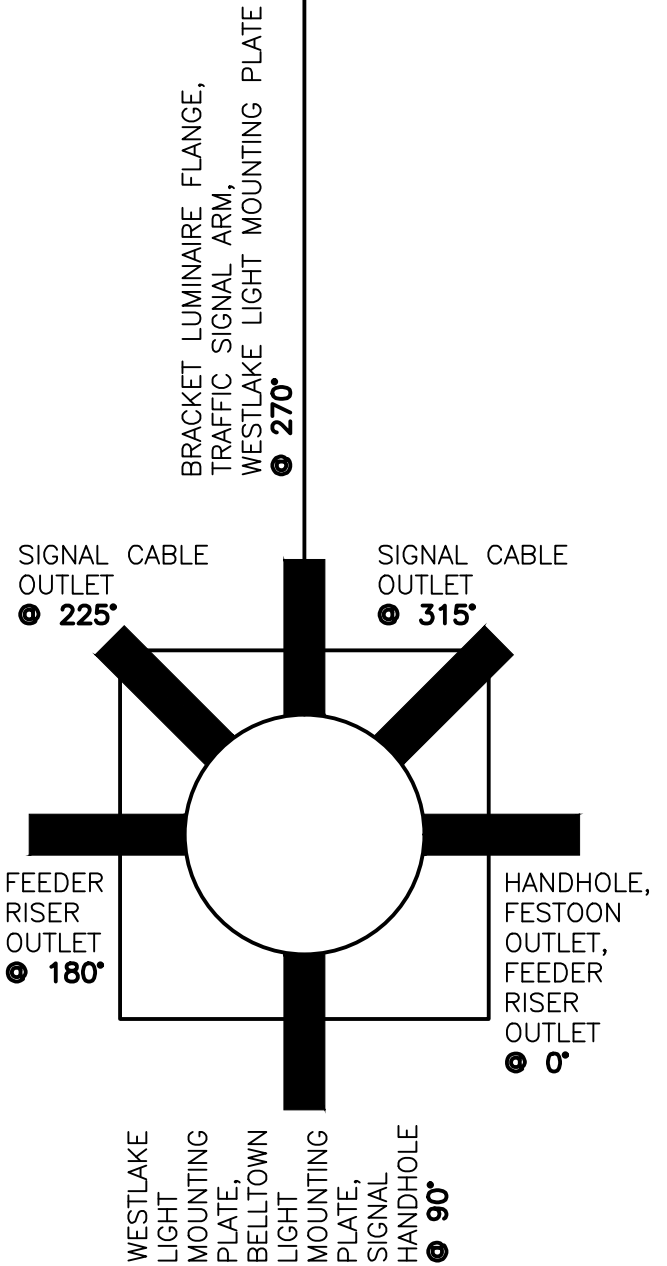
SP-201

SHT NO:

3 OF 18



NON-STANDARD TYPE FIXTURE ORIENTATION



STANDARD TYPE FIXTURE ORIENTATION

					DESIGNED: DGP/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STANDARD STEEL POLE PURCHASE REQUIREMENTS FIXTURE ORIENTATION	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SP-201
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			4 OF 18

POLE SCHEDULE (WITHOUT SLEEVES)

POLE TYPE	POLE STYLE	NORMAL LENGTH (L) (FEET)	MAX. GROUND LINE ACROSS FLATS (INCHES)	WORKING LOAD (LB) @25' FOR ΔD ONLY	(My) GROUND LINE MOMENT (LB-FT)	POLE FOUNDATION TYPE
SA-201H SA-201K SA-201M	EMBEDDED	35	12 14 15	2200 3600 6600	110,000 180,000 330,000	SA-212B SA-212D SA-212F
SA-203-1 SA-203-2	ANCHOR BASE	30	8 10	1600 2000	80,000 100,000	SA-213A SA-213A
SA-201V SA-201X SA-201X(S) SA-201Y(S) SA-201Z SA-201ZZ SA-201ZZZ	ANCHOR BASE	28.5 OR 33.5	12 14 12½ 14 15 15 16	2200 3600 3600 5400 6600 8000 12,000	110,000 180,000 180,000 270,000 330,000 400,000 600,000	SA-213B SA-213D SA-213B SA-213D SA-213F SA-213F SA-213H
SA-201V(C) SA-201X(C) SA-201Y(C) SA-201X(CS) SA-201Y(CS) SA-201Z(C)	ANCHOR BASE W/ SMALL DIAMETER SHAFT FOR CHIEF SEATTLE CASTING	28.5 OR 31.5	11¾* 11¾* 11¾* 11¾* 11¾* 11¾*	2200 3600 5400 3600 5400 6600	110,000 180,000 270,000 180,000 270,000 330,000	SA-213B SA-213D SA-213F SA-213B SA-213D SA-213F

ΔD = DEFLECTION

(S) = SPECIAL: OVERSIZED POLE ON EXISTING FOUNDATION (C) = CHIEF SEATTLE BASE

(CS) = CHIEF SEATTLE BASE, SPECIAL; *12¾"Ø ROUND OK AS ALTERNATIVE.

POLE SCHEDULE NOTES

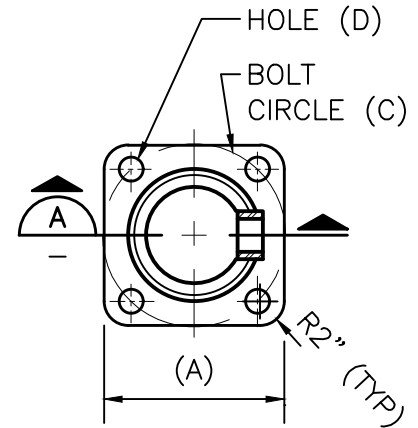
- POLE MANUFACTURER SHALL DESIGN POLE BASED ON THE DATA SHOWN HERE AND IN CONFORMANCE TO THE SPECIFICATIONS.
- MINIMUM WALL THICKNESS SHALL BE 3 GAGE. WALL SHALL BE SINGLE PLY AND THE SAME MATERIAL FULL LENGTH.
- MINIMUM GROUND LINE MOMENT AT YIELD SHALL BE (My).
- NOT USED
- THE LATERAL DEFLECTION OF THE TOP OF EACH POLE RESULTING FROM THE WORKING LOAD SHALL NOT EXCEED 2.5% OF THE POLE LENGTH FOR POLE DIAMETERS ≥ 12" AND 3% FOR POLE DIAMETERS < 12"
- STRENGTH CALCULATIONS SHALL BE BASED ON GROUND LINE DIAMETER ONLY AND SHALL NOT INCLUDE THE REINFORCING SLEEVE.

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STANDARD STEEL POLE PURCHASE REQUIREMENTS POLE SCHEDULE & NOTES	DATE:
					DGP/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SP-201
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			5 OF 18

POLE BASE PLATE DIMENSIONS

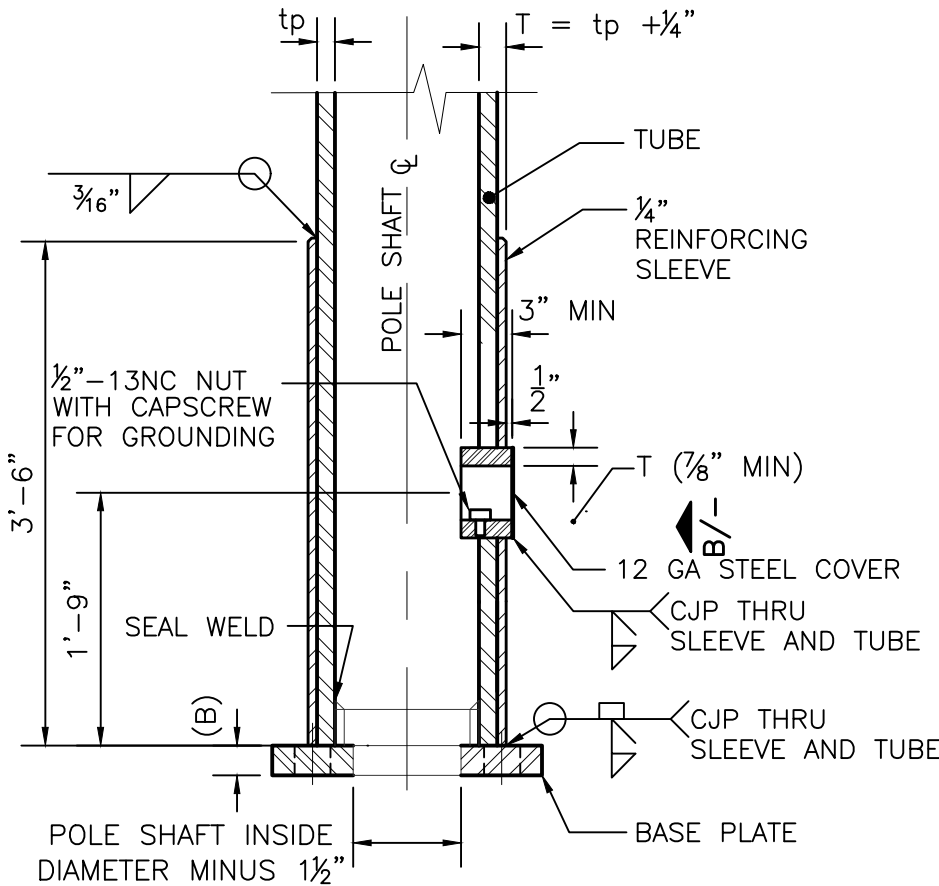
POLE TYPE	PLATE WIDTH x LENGTH (A)	PLATE THICKNESS (B)	BOLT CIRCLE (C)	HOLE DIAMETER (D)
SA-203-1	14 x 14	1½	11½-13½	1¼-1⅜
SA-203-2	16 x 16	1¾	14½-16½	1⅜-1⅝
SA-201V	18 x 18	2	18	2⅛
SA-201X	20 x 20	2	20	2⅝
SA-201X(S)	20 x 20	2	18	2⅛
SA-201Y(S)	23 x 23	2¼	20	2⅝
SA-201Z	23 x 23	2½	22	2⅜
SA-201ZZ	23 x 23	2½	22	2⅜
SA-201ZZZ	25 x 25	3	24	3⅛

(S) = SPECIAL: OVERSIZED POLE ON EXISTING FOUNDATION



BASE PLATE
NOT TO SCALE

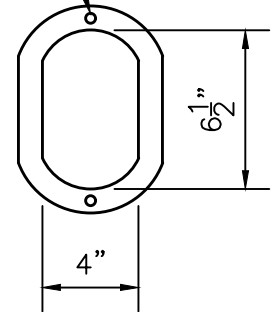
NOTE:
SEE
GENERAL
NOTES



SECTION A
REINFORCING SLEEVE,
BASE PLATE, AND HANDHOLE

SCALE: ¾" = 1'-0"

DRILL AND TAP
FRAME FOR (2)
¼"- 20 UNC ¾"
LONG STAINLESS
HEX HEAD CAP
SCREWS



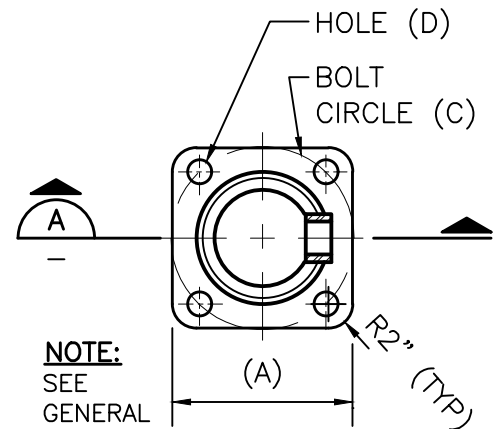
ELEVATION B
HANDHOLE
(WITHOUT COVER)

SCALE: 3" = 1'-0"

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STANDARD &(S) STEEL POLE PURCHASE REQUIREMENTS PLATE & SLEEVE DETAILS	DATE:
					DGP/AW	P. ENG		03/2021
					DRAWN:	 King County METRO		STD DET NO:
					L. ANDERSON			SP-201
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			6 OF 18

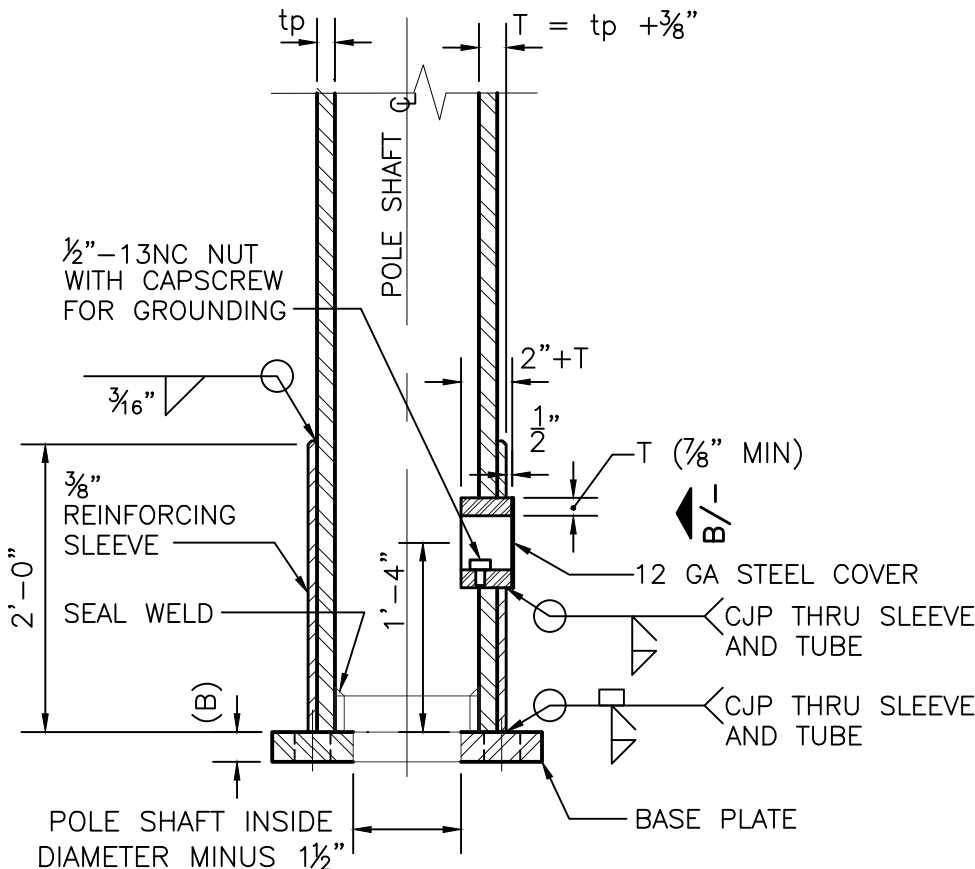
POLE BASE PLATE DIMENSIONS

POLE TYPE	PLATE WIDTH x LENGTH (A)	PLATE THICKNESS (B)	BOLT CIRCLE (C)	HOLE DIA (D)
SA-201V(C)	23 x 23	2	18	2 $\frac{1}{16}$
SA-201X(C)	23 x 23	2	20	2 $\frac{5}{16}$
SA-201Y(C)	23 x 23	2 $\frac{1}{4}$	22	2 $\frac{13}{16}$
SA-201X(CS)	23 x 23	2	18	2 $\frac{1}{16}$
SA-201Y(CS)	23 x 23	2 $\frac{1}{4}$	20	2 $\frac{5}{16}$
SA-201Z(C)	23 x 23	2 $\frac{1}{2}$	22	2 $\frac{13}{16}$



BASE PLATE
NOT TO SCALE

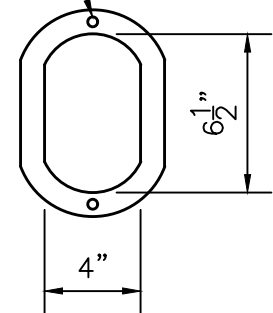
(S) = SPECIAL: OVERSIZED POLE ON EXISTING FOUNDATION
(C) = CHIEF SEATTLE BASE
(CS) = CHIEF SEATTLE BASE, SPECIAL



SECTION A
REINFORCING SLEEVE,
BASE PLATE, AND HANDHOLE

SCALE: 3/4" = 1'-0"

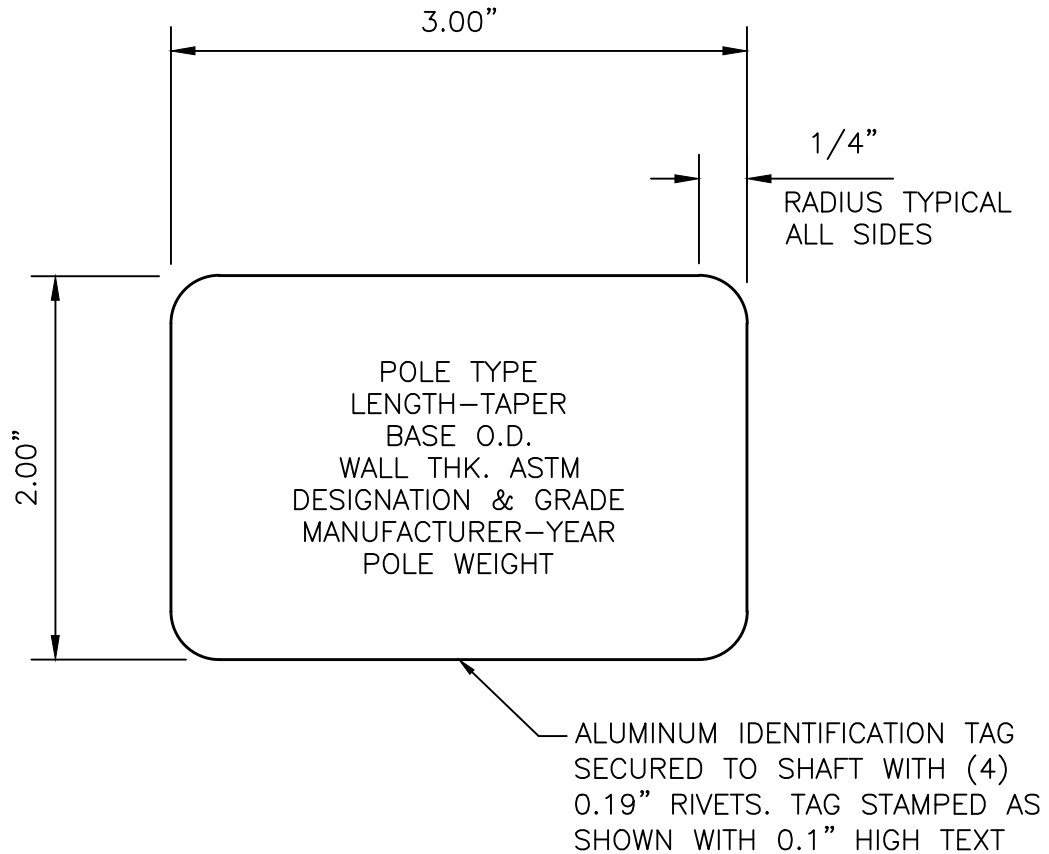
DRILL AND TAP
FRAME FOR (2)
1/4"- 20 UNC 3/4"
LONG STAINLESS
HEX HEAD CAP
SCREWS



ELEVATION B
HANDHOLE
(WITHOUT COVER)

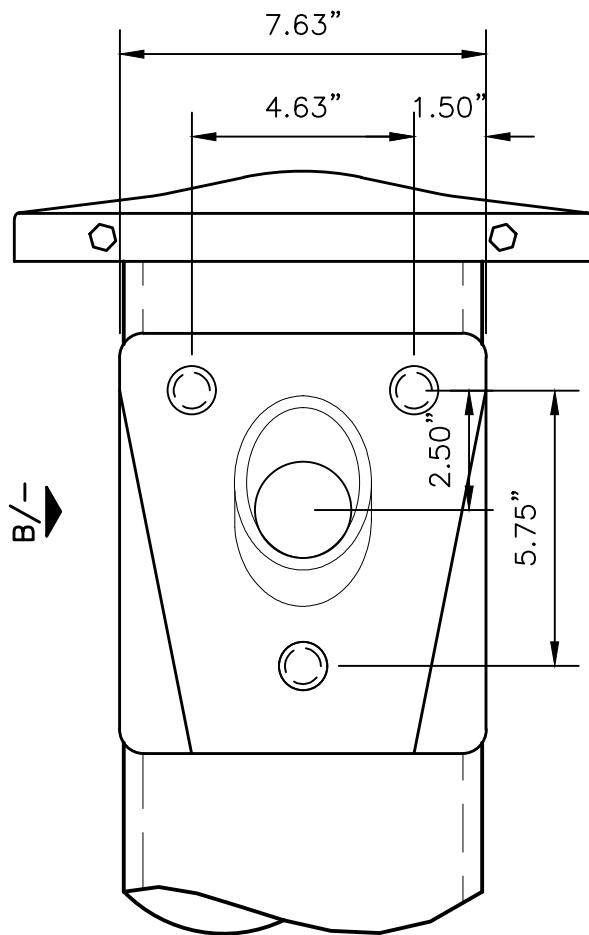
SCALE: 3" = 1'-0"

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS (C) & (CS) STEEL POLE PURCHASE REQUIREMENTS PLATE & SLEEVE DETAILS	DATE:
					DGP/AW	P. ENG		03/2021
					DRAWN:	 King County METRO		STD DET NO:
					L. ANDERSON			SP-201
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			7 OF 18

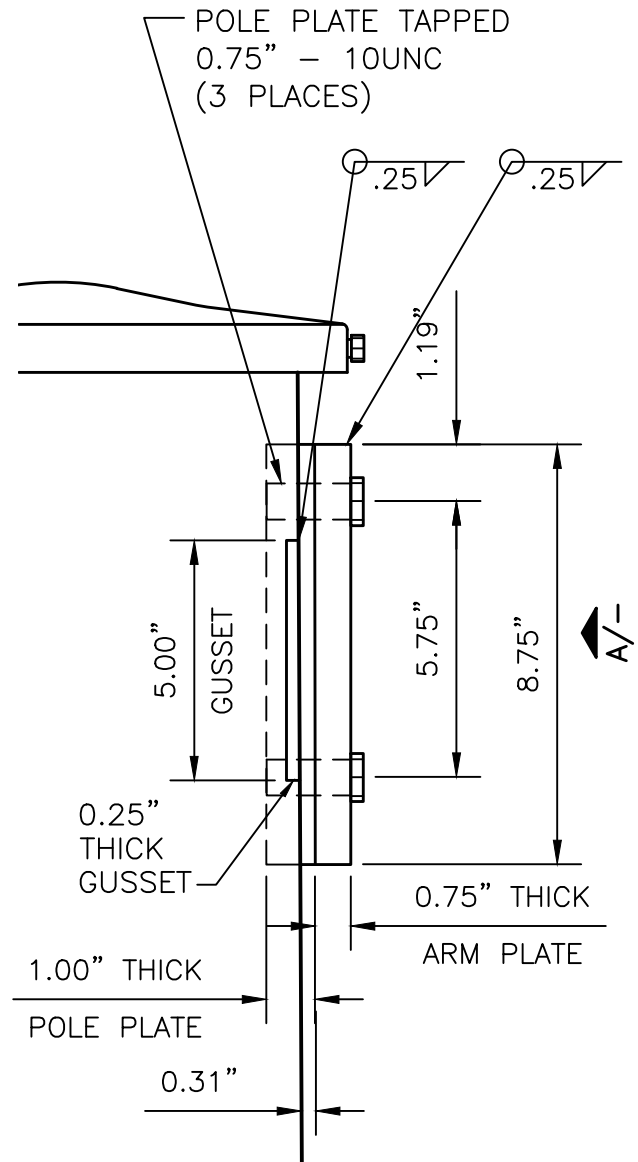


POLE IDENTIFICATION TAG DETAIL

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STANDARD STEEL POLE PURCHASE REQUIREMENTS POLE IDENTIFICATION TAG	DATE:
					DGP/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SP-201
					CHECKED:		SHT NO:	
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SIDE VIEW A

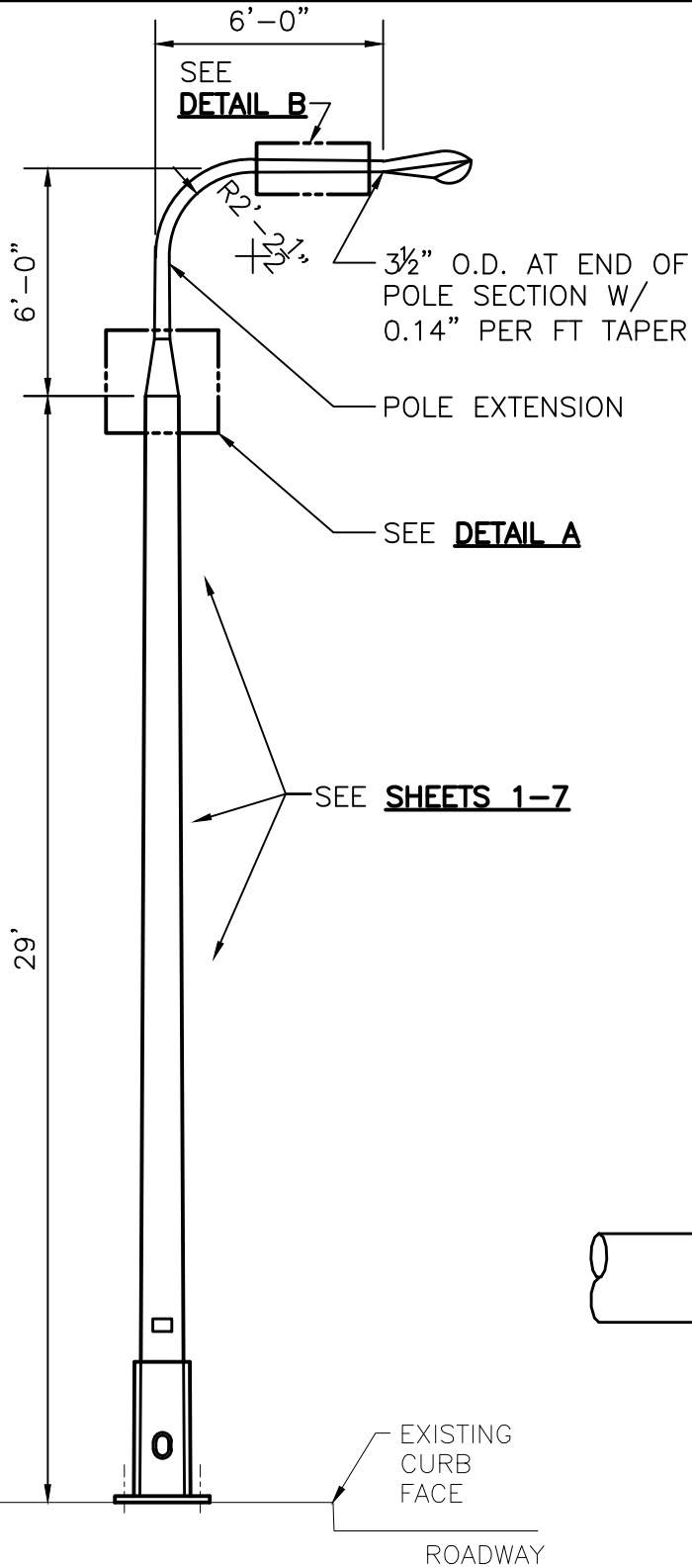


FRONT VIEW B

BRACKET ARM LUMINAIRE FLANGE

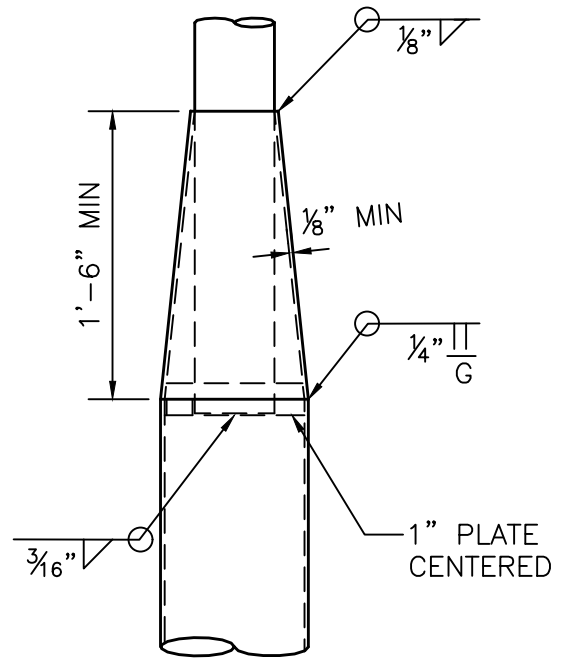
SCALE: 3" = 1'-0"

					DESIGNED: DGP/AW	APPROVED: P. ENG	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STANDARD STEEL POLE PURCHASE REQUIREMENTS LIGHT MOUNTING DETAIL	DATE: 03/2021
					DRAWN: L. ANDERSON			STD DET NO: SP-201
					CHECKED:			SHT NO:
No.	REVISION	BY	APP'D	DATE	J. DAVIS			9 OF 18



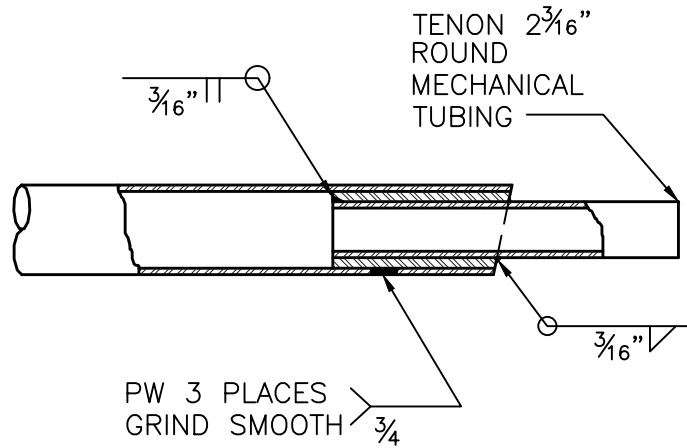
DAVIT ARM STEEL POLE

SCALE: 1" = 5'-0"



DETAIL A REDUCING CONE

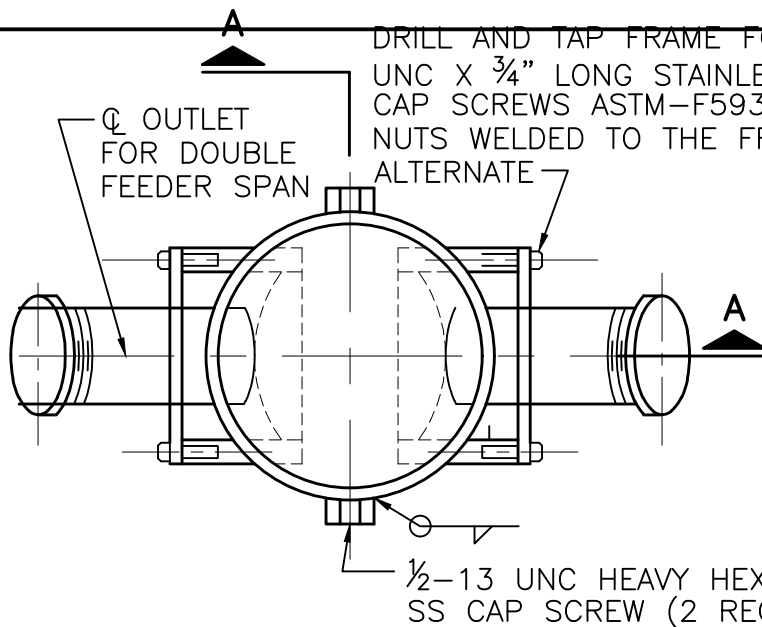
SCALE: 1" = 1'-0"



DETAIL B LUMINAIRE TENON

SCALE: NONE

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STANDARD STEEL POLE PURCHASE REQUIREMENTS DAVIT ARM POLE DETAILS	DATE:
					DGP/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SP-201
					CHECKED:		SHT NO:	
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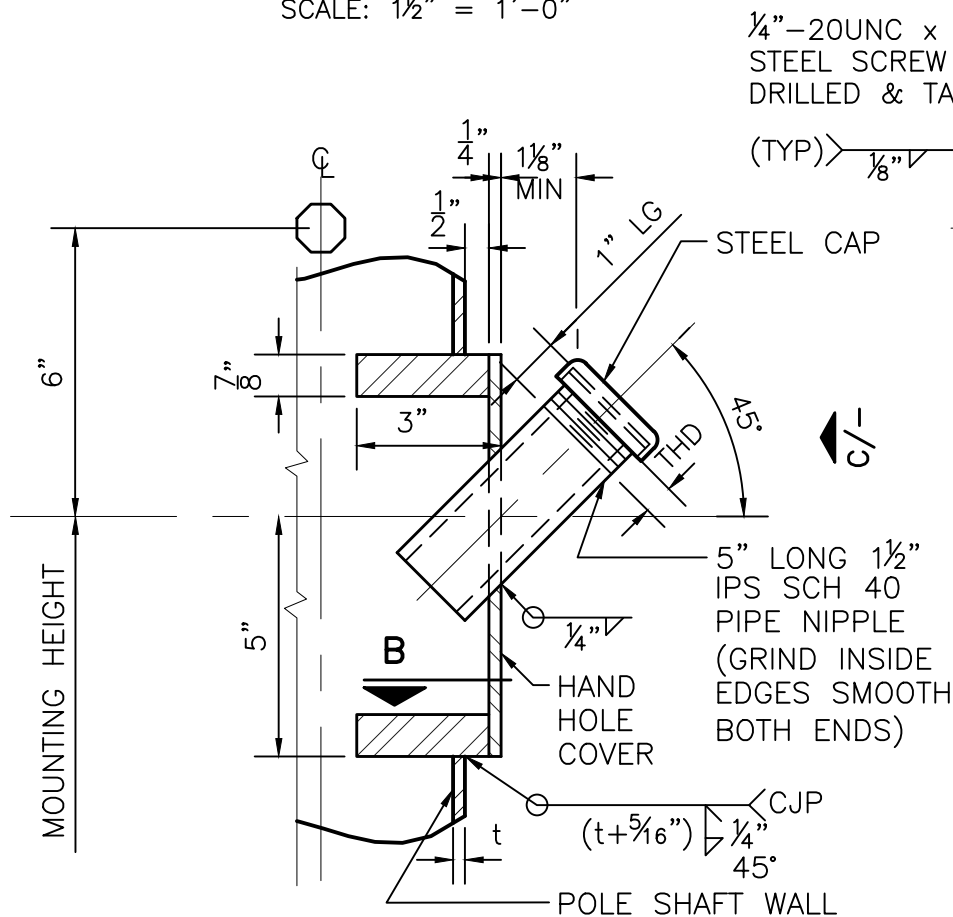
FEEDER OUTLET PLAN

SCALE: $1\frac{1}{2}" = 1'-0"$



SECTION B

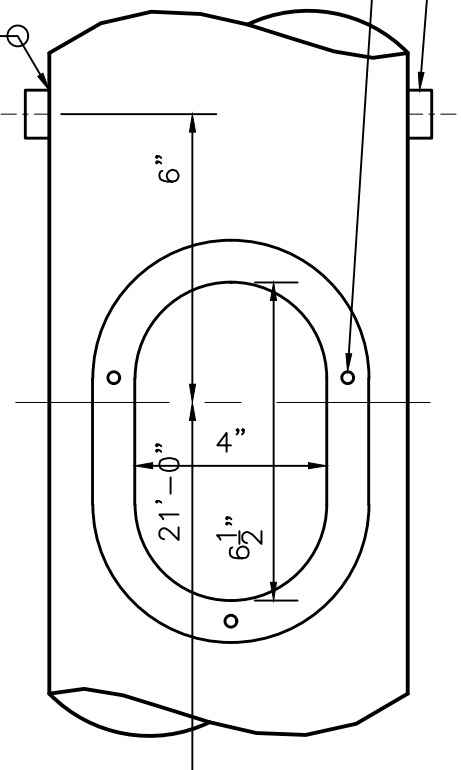
SCALE $3" = 1'-0"$



SECTION A-A

FEEDER RISER OUTLET DETAIL

SCALE: $3" = 1'-0"$

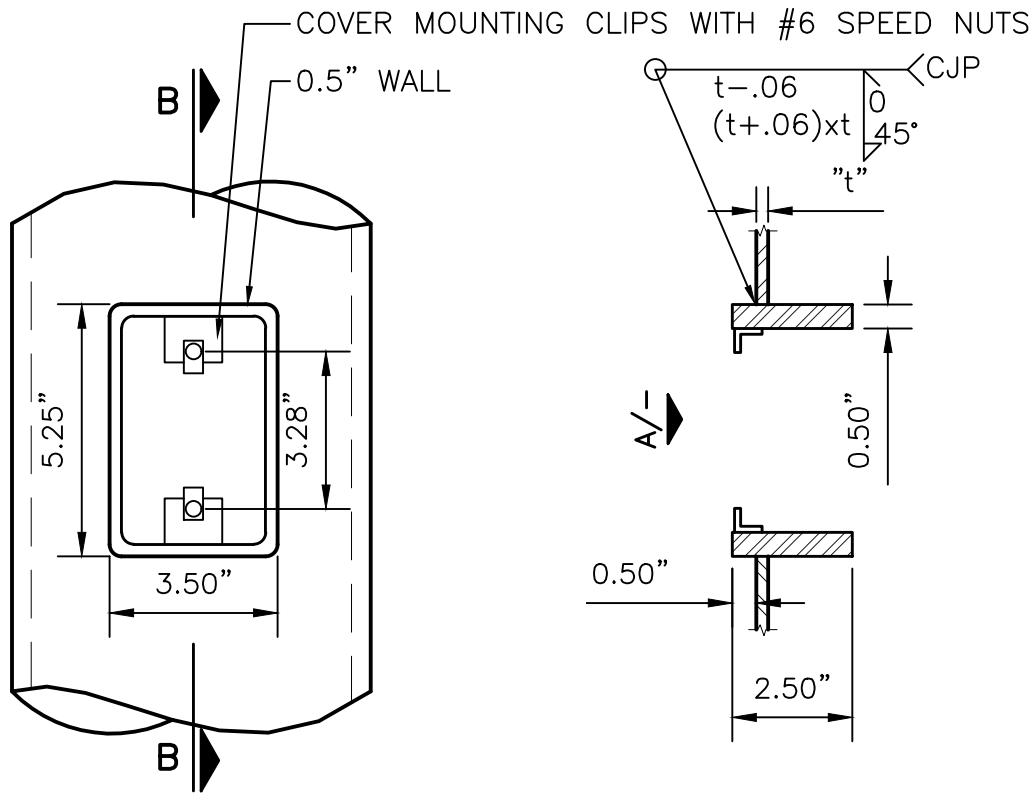


ELEVATION C

OUTLET WITHOUT COVER

SCALE $3" = 1'-0"$

				DESIGNED: DGP/AW	APPROVED: P. ENG 	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STANDARD STEEL POLE PURCHASE REQUIREMENTS RISER OUTLET DETAILS	DATE: 03/2021
				DRAWN: L. ANDERSON			STD DET NO: SP-201
				CHECKED: J. DAVIS			SHT NO: 11 OF 18
No.	REVISION	BY	APP'D	DATE			

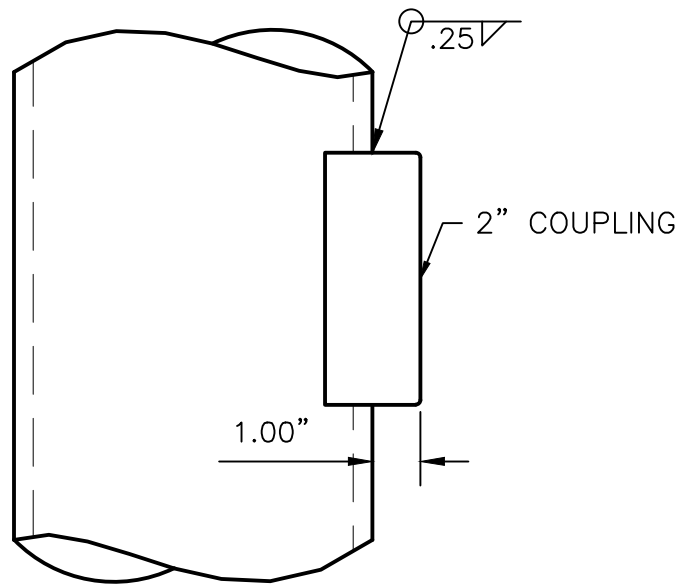


ELEVATION VIEW A

SECTION B

FESTOON OUTLET BOX

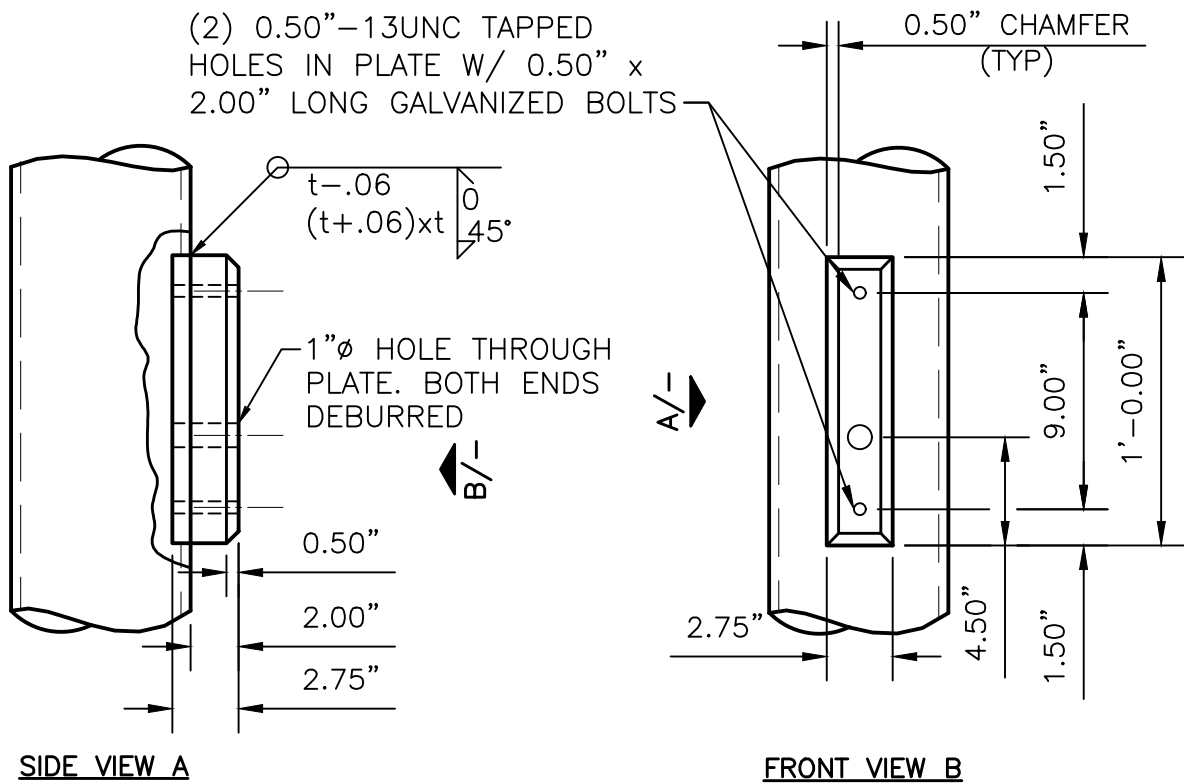
SCALE: 3" = 1'-0"



CABLE OUTLET

SCALE: 3" = 1'-0"

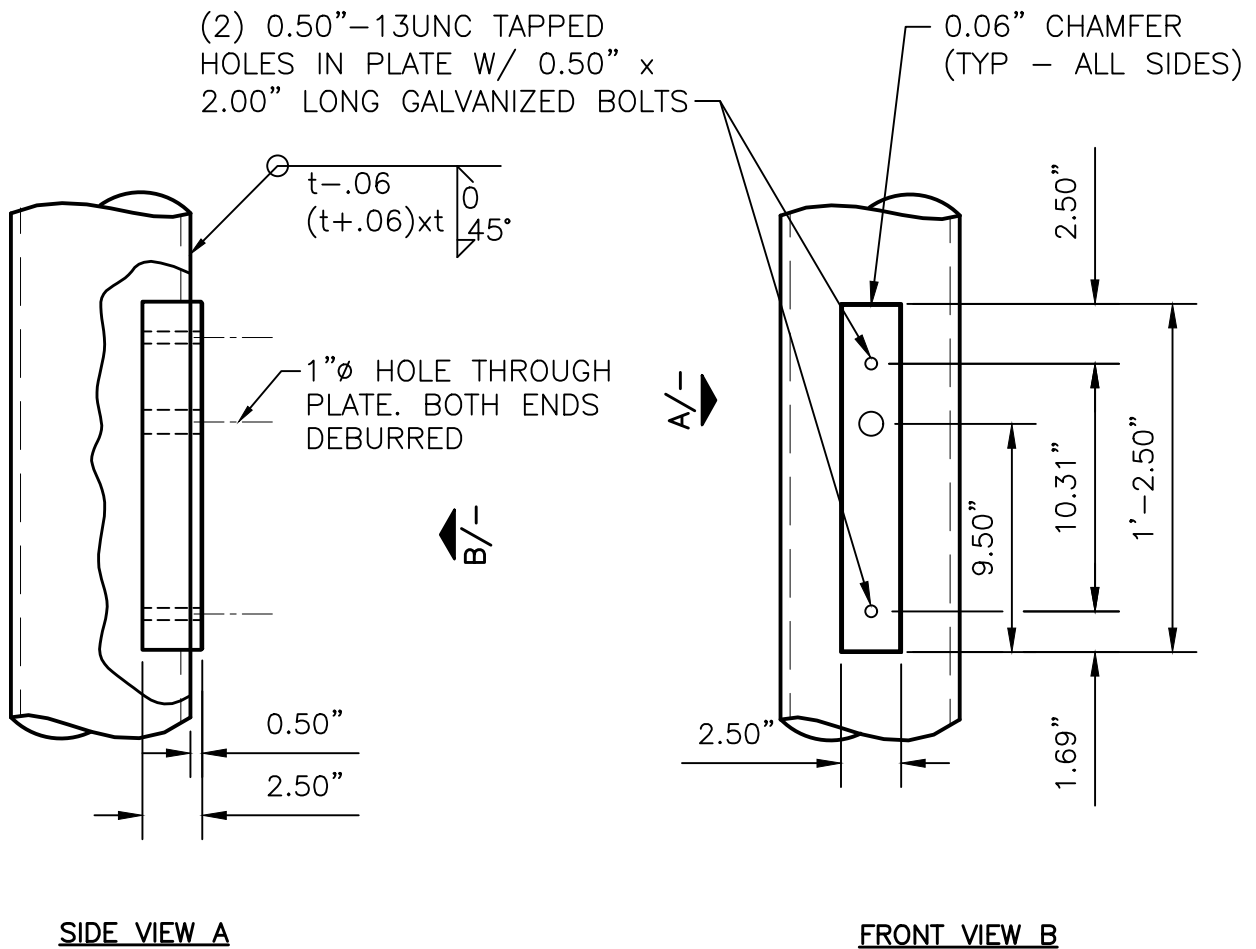
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					DGP/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SP-201
					CHECKED:		SHT NO:	
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BELLTOWN PEDESTRIAN LIGHT MOUNTING PLATE

SCALE: 1½" = 1'-0"

					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STANDARD STEEL POLE PURCHASE REQUIREMENTS LIGHT MOUNTING DETAIL	DATE:
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					CHECKED:			SHT NO:
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WESTLAKE PEDESTRIAN LIGHT MOUNTING PLATE

SCALE: 1½" = 1'–0"

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					DESIGNED:	APPROVED:	METRO TRANSIT CAPITAL DIVISION TROLLEY STANDARD DETAILS STANDARD STEEL POLE PURCHASE REQUIREMENTS LIGHT MOUNTING DETAIL	DATE:
					DGP/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
					L. ANDERSON			SP-201
					CHECKED:		SHT NO:	
No.	REVISION	BY	APP'D	DATE	J. DAVIS		14 OF 18	

GENERAL NOTES

1. MATERIALS

- A. POLE SHAFTS, REINFORCING SLEEVES, HANDHOLE FRAMES, FESTOON FRAMES AND FEEDER RISER FRAMES SHALL CONFORM TO ASTM A595 GRADE A OR B, A572 GRADE 50, 60 OR 65 OR OTHER MATERIAL IN ACCORD WITH AWS D1.1 SECTION 10.2. ASTM A588 AND A242 MATERIALS ARE NOT ALLOWED. HANDHOLE FRAMES AND FEEDER RISER FRAMES SHALL BE FABRICATED FROM PLATE WITH THE SAME YIELD STRENGTH MATERIAL AS THE POLE SHAFT. THE POLE SHAFT AND REINFORCING SLEEVE SHALL BE FABRICATED OF THE SAME MATERIAL TYPE AND YIELD STRENGTH.
- B. BASE PLATES SHALL CONFORM TO ASTM A572 GRADE 50.
- C. POLE CAPS SHALL BE CAST ALUMINUM, GALVANIZED CAST IRON OR GALVANIZED PRESSED STEEL, FITTED WITH THREE STAINLESS STEEL SET SCREWS
- D. FEEDER RISER NIPPLES SHALL BE STANDARD STEEL PIPE CONFORMING TO ASTM A53, GRADE B.
- E. GROUNDING NUTS SHALL BE 1/2 INCH X 13 NC. CAP SCREWS SHALL BE HEX HEAD STAINLESS STEEL OR BRONZE. TAPPED HOLES IN THE HANDHOLE FRAMES MAY BE FURNISHED IN LIEU OF NUTS WELDED TO THE HANDHOLE FRAMES.
- F. HANDHOLE COVER AND FEEDER RISER SCREWS SHALL BE STAINLESS STEEL HEX HEAD CAP SCREWS.
- G. IMPACT TOUGHNESS TESTS SHALL BE PERFORMED FOR ALL STRUCTURAL STEEL MATERIALS OVER 0.5 INCH THICK OR WITH FY>42 KSI. BASE PLATES, HANDHOLE FRAMES, FEEDER RISER FRAMES, POLE SHAFTS AND POLE SLEEVES SHALL BE TESTED IN ACCORDANCE WITH THE CHARPY V-NOTCH TEST AS SPECIFIED IN ASTM A370. THE MINIMUM ENERGY VALUE SHALL BE 15 FT-LBS AT 0 DEGREES FAHRENHEIT.
- H. SILICON CONTENT IN THE STEEL SHALL BE 0.06% MAXIMUM.

2. FABRICATION

- A. POLES SHALL BE MINIMUM 8-SIDED WITH 2" MINIMUM BEND RADIUS FOR ALL TYPE C POLES. ALL OTHERS SHALL BE MINIMUM 10-SIDED.
- B. ALL WELDS, MATERIAL, PROCEDURES AND OPERATIONS SHALL CONFORM TO THE AWS D1.1; SECTION 2, DESIGN OF WELDED CONNECTIONS; SECTION 3, WORKMANSHIP; SECTION 4, TECHNIQUE; AND SECTIONS 8, 9 OR 10.
- C. ALL POLES SHALL BE FABRICATED PER THE CURRENT EDITION OF THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.

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GENERAL NOTES, CONTINUED

FABRICATION, CONTINUED

COMPLETE PENETRATION WELDS SHALL BE GROUND TO ELIMINATE SURFACE CRACKS, NOTCHES AND OTHER LIKELY STRESS CONCENTRATORS.

CIRCUMFERENTIAL WELDS ON POLE SHAFTS SHALL BE COMPLETE PENETRATION FOR THEIR FULL LENGTH. MAXIMUM NUMBER OF LONGITUDINAL WELDS ON POLE SHAFTS SHALL BE TWO.

REINFORCING SLEEVE WELDED JOINTS SHALL BE WATERTIGHT.

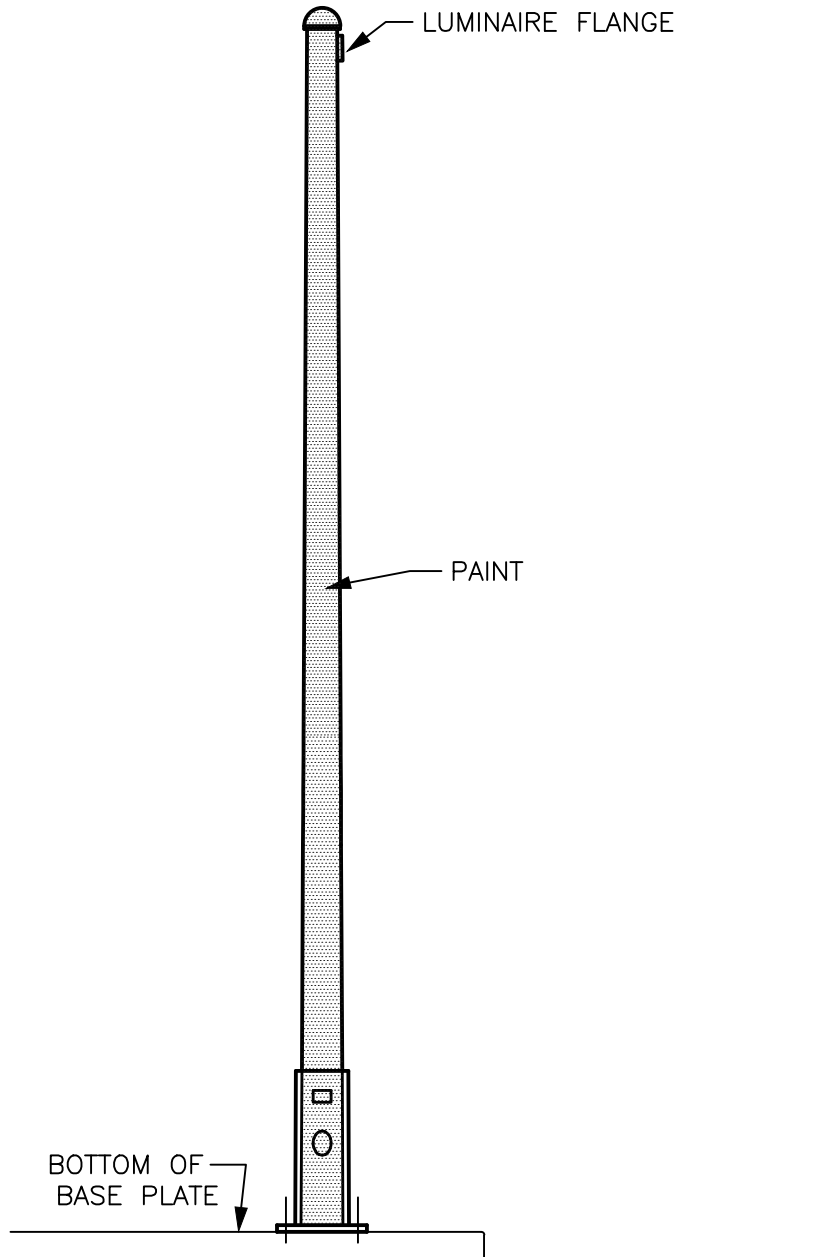
- C. HOT-DIP GALVANIZING SHALL BE PERFORMED AFTER FABRICATION. THE POLES, FITTINGS AND ACCESSORIES SHALL BE GALVANIZED INSIDE AND OUT, IN CONFORMANCE WITH ASTM A123 OR ASTM A153 WITH PRECAUTIONS AGAINST EMBRITTLEMENT IN ACCORDANCE WITH ASTM A143. ALL POLE FABRICATIONS SHALL BE GALVANIZED FOR THEIR ENTIRE LENGTH, AT ONE TIME IN A SINGLE HOT-DIP GALVANIZING BATH. GALVANIZING BY SUCCESSIVE DIPPINGS OF PARTIAL POLE LENGTHS WILL NOT BE PERMITTED.

BEFORE GALVANIZING, POLE SHAFT LONGITUDINAL AND CIRCUMFERENTIAL WELDS SHALL BE GROUND FLUSH WITH BASE METAL TO ELIMINATE SURFACE CRACKS. ALL OTHER WELDS AND CUT EDGES SHALL BE GROUND TO ELIMINATE SHARP EDGES AND BURRS.

ZINC REPAIR PAINT SHALL BE IN ACCORDANCE WITH DOD P-21035.

- D. A POLE IDENTIFICATION PLATE SHALL BE ATTACHED TO EACH POLE. THE PLATE SHALL SHOW METRO POLE DESIGNATION, POLE LENGTH, WALL THICKNESS, GROUND LINE DIAMETER, TAPER, POLE SHAFT MATERIAL SPECIFICATION AND GRADE, THE MANUFACTURER'S NAME, AND DATE OF MANUFACTURE. THE PLATE DESIGN, STYLE OF LETTERING AND METHOD OF ATTACHMENT SHALL BE REVIEWED BY THE ENGINEER.

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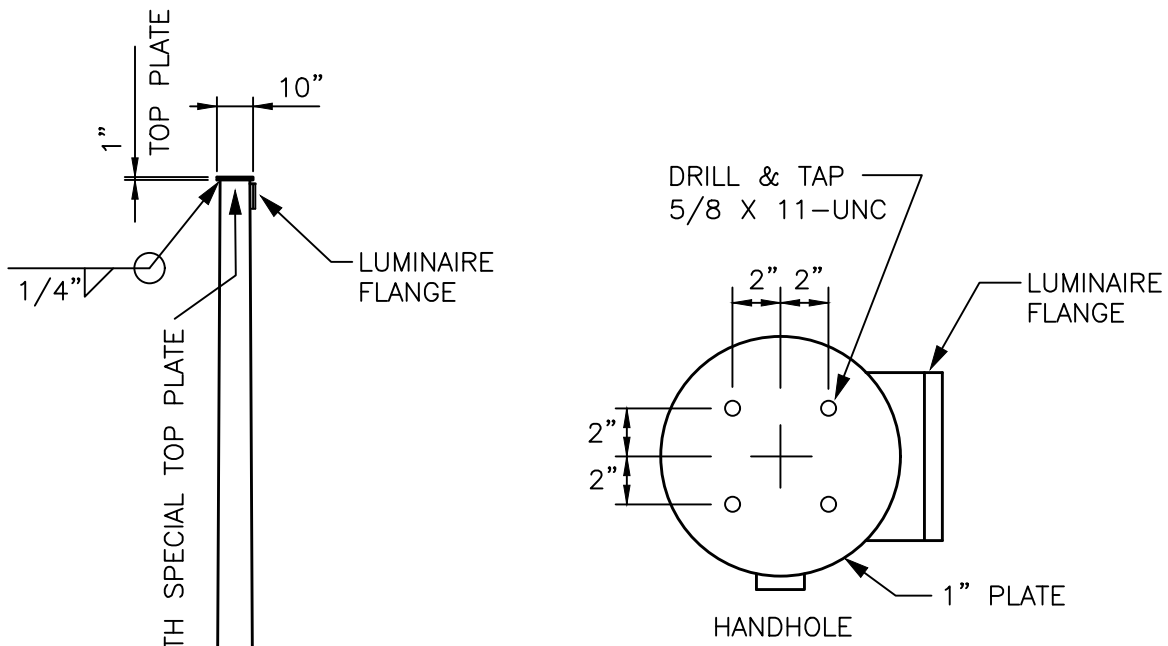


ITEM 4 POLE PAINTING EXAMPLE

- A. COATING MATERIAL: Epoxy primer, polyurethane finish.
- B. SURFACE PREPARATION: Wash with a mild solution of detergent and hot water. Rinse complete and allow to dry, prepare for paint application by providing a SSPC SP-2(Hand Tool Clean).
- C. COATING:
 Primer: One coat of Tnemec's 135 Chembuild, applied at 7–8 mils dry film thickness.
 Finish: One coat of Tnemec's Series 74, applied at 4–5 mils dry film thickness.
- D. COLOR: As Specified by project requirement.

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					DRAWN:			STD DET NO:
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SPECIAL TOP PLATE DETAIL

PLAN VIEW

SEE POLE DETAIL SHEETS

EXISTING CURB (POLE ORIENTATION)
ROADWAY

ANCHOR BASE STEEL POLE

SPECIAL TOP PLATE DETAIL

EXISTING CURB

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					DGP/AW	P. ENG		03/2021
					DRAWN:			STD DET NO:
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