

GENERAL NOTES:

- 1 The contractor shall notify the City Of Phoenix Traffic Signal Shop ((602) 262-6733) a minimum of fourteen (14) calendar days prior to beginning any traffic signal work. Submittals of all equipment shall be furnished to the Signal Shop and approved prior to the ordering of any traffic signal equipment. The Contractor shall verify that they have the most current set of drawings prior to start and ordering of any equipment.
- 2 The Contractor shall layout all ADA ramps, junction boxes and foundation locations for approval by the traffic signal representative prior to any excavation.
- 3 The Contractor shall provide and install all traffic signal items as shown on the approved traffic signal plans.
- 4 Foundation elevations must be within 1/4" of finished sidewalk grade.
- 5 A minimum of four (4) feet of clearance is required between all traffic signal poles and the back edge of sidewalk pedestrian ramps.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.			

DR: _____ DES: _____ CK: _____ DATE: _____

TRAFFIC SIGNAL STANDARD DETAILS INDEX

POLES

SHEET NO.	DESCRIPTION	APPROVED
TS1 - 1	General Structural Notes	04-06-2020
TS1 - 2	P45, DP45, P70, DP70, # LP Poles and Mast Arm Members and Lengths	04-06-2020
TS1 - 3	Mast Arm Maximum Loading Without Damper # Pole Maximum Loading	04-06-2020
TS1 - 4	Mast Arm Maximum Loading With Damper	04-06-2020
TS1 - 5	P45, DP45, P70, DP70, # LP Poles and Mast Arm Details 1 of 2	04-06-2020
TS1 - 6	P45, DP45, P70, DP70, # LP Poles and Mast Arm Details 2 of 2	04-06-2020
TS1 - 7	GP Pole with Lumaire Arm	04-06-2020
TS1 - 8	AP Signal Pole # BP Push-Button Pole	04-06-2020

JUNCTION BOXES AND FOUNDATIONS

SHEET NO.	DESCRIPTION	APPROVED
TS2 - 1	Junction Boxes, Foundations for Controller and Power Service Pedestal	04-06-2020
TS2 - 2	Pole Foundations	04-06-2020

SIGNAL EQUIPMENT DETAILS

SHEET NO.	DESCRIPTION	APPROVED
TS3 - 1	Mounting Details - Side Mount Signal Equipment	08-01-2014
TS3 - 2	Traffic Signal Head Graphic Detail	04-01-2019
TS3 - 3	HAWK Pedestrian Crossing Beacon - Dual Mast Arm	04-01-2019
TS3 - 4	HAWK Pedestrian Crossing Beacon - Single Mast Arm	04-01-2019

WIRING

SHEET NO.	DESCRIPTION	APPROVED
TS4 - 1	Wire Code Tables	04-01-2019
TS4 - 2	Pull Box/Pole Hand Hole Wiring	04-01-2019
TS4 - 3	Color Coding/Banding Scheme, Loop Numbering	08-01-2016

DETECTION

SHEET NO.	DESCRIPTION	APPROVED
TS5 - 1	Detection Loops	05-08-2017

PUSH BUTTON DETAIL

SHEET NO.	DESCRIPTION	APPROVED
TS6 - 1	Clear Space	04-06-2020

SPECIAL USE POLES

SHEET NO.	DESCRIPTION	APPROVED
S1	Verizon SR Comm Signal Pole - Pole Details	10-31-2014
S2	Verizon SR Comm Signal Pole - Foundation Details	10-31-2014
S1	Verizon SM Comm Signal Pole - Pole Details	10-31-2014
S2	Verizon SM Comm Signal Pole - Pole Details	10-31-2014
S1	Verizon LM Comm Signal Pole - Pole & Foundation Details	10-31-2014

PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS

INDEX SHEET

TPP File Number 10164 DATE 4-6-2020

TRAFFIC SERVICES ENGINEER

TRAFFIC SIGNAL DETAIL INDEX

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

PROJECT #:

DR:	DES:	CK:	SHEET NO:
DATE:	DATE:	DATE:	TOTAL SHEETS:
SCALE:		QS. #:	

DETAIL INDEX:

PROJECT #:

General Structural Notes

1. General Structural Notes on TS 1-1 apply to City of Phoenix Street Transportation Department Traffic Signal Standard Drawings TS 1-2 through TS 1-8 and TS 2-2.
2. All materials and construction shall conform to the requirements of the City of Phoenix Street Transportation Department Traffic Signal Standard Specifications, current edition.
3. Supports and foundations are designed in accordance with "AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," 1st Edition, 2015 with revisions through 2019.
4. Design Criteria:
 - Wind Speed: 120mph
 - Mean Recurrence Interval: 1,700yr (ADT > 10,000)
 - Fatigue Category: I no damper
II with damper
5. All welding shall conform to the requirements of the American Welding Society D1.1, latest edition.
6. Pole, arm, risers and appurtenances shall be finished according to City of Phoenix Street Transportation Department Traffic Signal Standard Specifications, latest edition.
7. Poles and arms shall be permanently labeled with manufacturer's name, date manufactured, and equipment type. Pole ID shall be marked on tag and tag affixed to bottom of pole.
8. All bolt heads shall include washers against adjacent plate (except anchor plate).
9. All wire entrance and exit holes shall be free of all burrs and sharp edges.
10. Pole shafts arms shall be fabricated from not more than two pieces of sheet steel. When two pieces are used, the longitudinal welded seams shall be directly opposite each other. Seam welds in pole shall be placed to form continuous straight seams from base to top of pole. Seam welds in cantilever arm sections shall be located in the lower quadrant of the arm (compression side under dead load). Seam welds for pole and arm section shall have 60 percent minimum penetration or fusion except as follows:
 - 10.1. Longitudinal seam welds within six (6) inches of circumferential tube-to-tube-splice full penetration groove welds, tube-to-plate full penetration groove welds or luminaire, traffic signal, and sign supports shall be full penetration groove welds, and
 - 10.2. Longitudinal seam welds on the female section of telescopic (i.e. slip-type) field splices of lighting (pole-type) luminaire, traffic signal and sign-supports shall be full penetration groove welds for a length equal to the minimum splice length plus six (6) inches.
11. Orient pole bottom handhole 90-degrees from the arm(s), away from traffic.
12. Do not scale from drawings.
13. Materials:
 - A. Tubes:
 - a. Mast Arm, Pole, Insert, Riser, & Extension: ASTM A500 Gr C (46 ksi) HSS
 - b. BP Pole: ASTM A500 Gr B or C (42ksi min) HSS
 - c. AP Pole: ASTM A500 Gr B, C or D (36ksi min) HSS
 - d. LP & GP Pole, Sleeve, Tenon & Luminaire Arm: ASTM A53 Gr B or C (35 ksi min)
 - B. Steel Plates:
 - a. Reducer: ASTM A572 Gr 50
 - b. All other plates: ASTM A36
 - C. Bolts, Nuts & Washers
 - a. Bolts 1/2" to 1 1/2": ASTM F3125, Grade A325, Type 1 (92 ksi yield)
 - b. Bolts 1 3/8" to 3": ASTM A449 Type 3 (58 ksi yield)
 - c. Nuts: ASTM A563 DH3 Heavy Hex
 - d. Washers: ASTM F436 Type 1
 - D. Handhole Frame: ASTM A36 Gr 36, or A572 Gr 42
 - E. Handhole Cover: ASTM A1011 Gr 30
 - F. Stainless Steel Screws: AISI Type 316
 - G. Welding Electrodes: E-70XX low hydrogen rods

14. Weld Inspection

All welds shall be visually inspected (VT).

Full-penetration welds shall be inspected by magnetic particle testing (MT) or ultrasonic testing (UT), based on the thinnest mating material:
 Thickness < 0.25 in. MT inspection
 Thickness ≥ 0.25 in. UT inspection

Full-penetration laminated tube-to-transverse-plate welds shall be inspected by MT, after the welding of each individual ply.


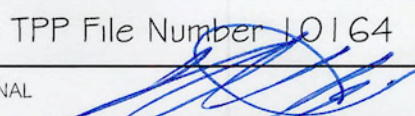
As an alternative, Contractor may inspect full penetration groove welds by radiographic testing (RT).

Full-penetration groove welds shall be inspected over their full length,.

TRAFFIC SIGNAL DETAILS:

PROJECT #:

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX."

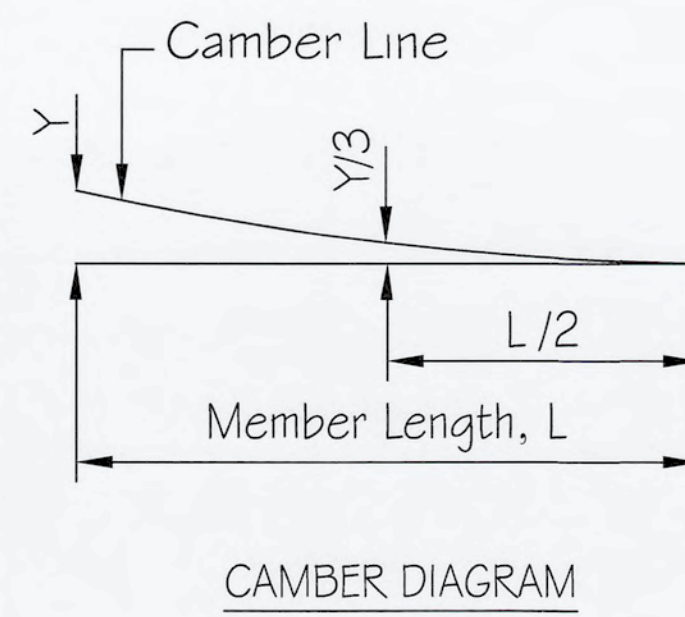
 101 N. 196 AVENUE, #2000, PHOENIX, AZ 85008 480.255.1800 480.255.1802 WWW.JACOBS.COM	CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT TRAFFIC SIGNAL STANDARD DETAILS		TRAFFIC SIGNAL DETAILS CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT			
	General Structural Notes		PROJECT #: DR: SVR DES: ANA GK: WR SHEET NO: TOTAL SHEETS DATE: 3/11/2020 DATE: 3/11/2020 DATE: 3/11/2020 SCALE: QS: #: TPP File Number: 10164 TS 1-1 TRAFFIC SIGNAL ENGINEER:  2/16/20			



Camber

Camber as shown is required to be built into the mast arms and extension members. Members shall be erected so that camber is provided above the horizontal line. Camber calculated provides for deflection due to dead load of tubular structure plus dead loads due to sign panels and attachments. Additional camber values along the arm may be interpolated.

CAMBER	
ID	Y
M55 Arm	1 1/2"
M40 Arm	4 1/2"
M30 Arm	1 3/4"
M15 Arm	1/2"
15'-0" Extension	1"
10'-0" Extension	1/2"
5'-0" Extension	1/4"
1'-0" Extension	0"



MEMBER	WEIGHT (lb)
P70 # DP70 Pole	1871
P45 # DP45 Pole	1253
LP Pole	661
20'-0" Riser	227
15'-0" Riser	170
10'-0" Riser	114
5'-0" Riser	57
1'-0" Riser	11

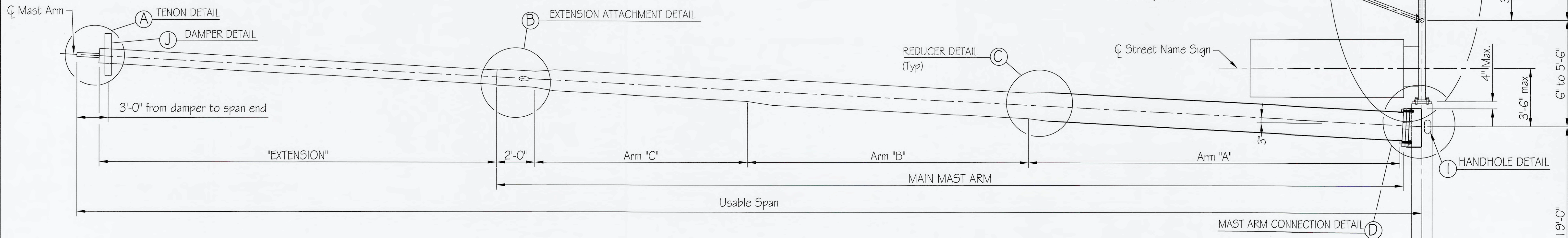
MEMBER	WEIGHT (lb)
M55P70	2966
M40P70	1703
M30P45 # M30P70	845
M15P45 # M15P70	337
15'-0" Extension	236
10'-0" Extension	157
5'-0" Extension	79
1'-0" Extension	16

MEMBER WEIGHTS

NOTES:

1. See plans for Riser lengths.

RISER # LUMINAIRE ASSEMBLY DETAIL (Typ)



TRAFFIC SIGNAL SUPPORT ASSEMBLY
(Single Arm Shown, Double Arm Similar.)

EXTENSION	
ID	Member
E15	8 5/8" O.D. x 0.188 x 15'-0"
E10	8 5/8" O.D. x 0.188 x 10'-0"
E5	8 5/8" O.D. x 0.188 x 5'-0"
E1	8 5/8" O.D. x 0.188 x 1'-0"

MAIN MAST ARM						
ID	Usable Spans*	Arm "C"	Arm "B"	Arm "A"	Attach.	Length
M55P70	53'-8" to 70'-0"	12 3/4"Ø x 0.25 x 18'-4"	14"Ø x 0.25 x 15'-0"	16"Ø x 0.625 x 17'-0"	2'-0"	52'-6"
M40P70	38'-8" to 55'-0"	12 3/4"Ø x 0.25 x 9'-4"	14"Ø x 0.25 x 11'-0"	16"Ø x 0.375 x 15'-0"	2'-0"	37'-6"
M30P45 # M30P70	28'-8" to 45'-0"	-	12 3/4"Ø x 0.25 x 13'-0"	16"Ø x 0.25 x 12'-6"	2'-0"	27'-8"
M15P45 # M15P70	13'-8" to 30'-0"	-	-	12 3/4"Ø x 0.25 x 10'-6"	2'-0"	12'-8"

POLE		
ID	Member	Allowable Arms # Appurtenances
P70 (Single Arm)	18"Ø x 0.50	M15P70, M30P70, M40P70 and M55P70 Arm(s), Extensions, Luminaire(s) and Street Name Sign(s) and one (1) riser
DP70 (Double Arm)		
P45 (Single Arm)	16"Ø x 0.375	M15P45 and M30P45 Arms, Extensions, Riser, Luminaire(s) and Street Name Sign(s)
DP45 (Double Arm)		
LP**	8 5/8"Ø x 0.375	Riser, Luminaire(s) and Street Name Sign(s)
Riser	4 1/2"Ø x 0.25	-

* Usable span = Pole centerline to "C" Plate + Mast Arms "A"+"B"+"C" + 2'-0" + Extension + Tenon

** LP pole similar to Traffic Signal Support Assembly shown, but with no mast arm

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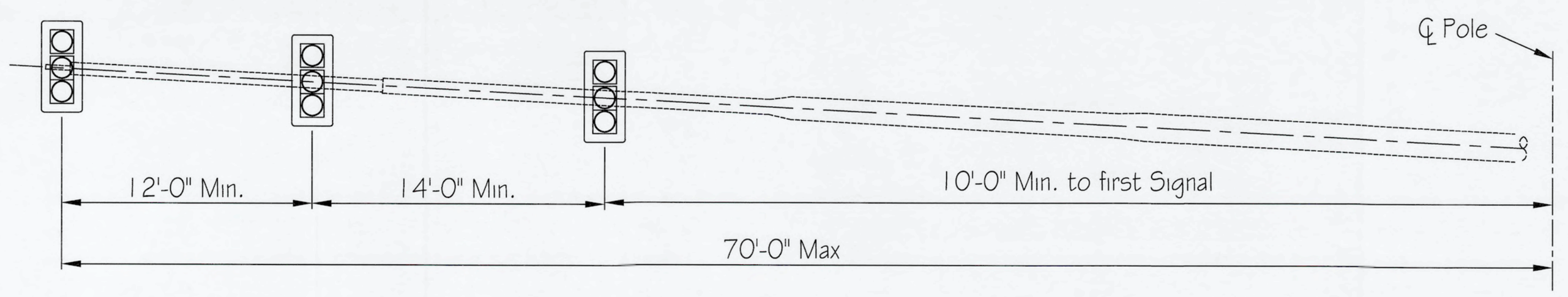
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	P45, DP45, P70, DP70, & LP Poles and Mast Arm Members and Lengths		PROJECT #: DR: SVR DES: ANA CK: WR SHEET NO: TOTAL SHEETS DATE: 3/1/2020 DATE: 3/1/2020 SCALE: Q5: #	
Expires 09/30/2022 TRAFFIC SIGNAL ENGINEER	TPP File Number: 10164 TS 1-2 DATE: 4/6/20			

TRAFFIC SIGNAL DETAILS:

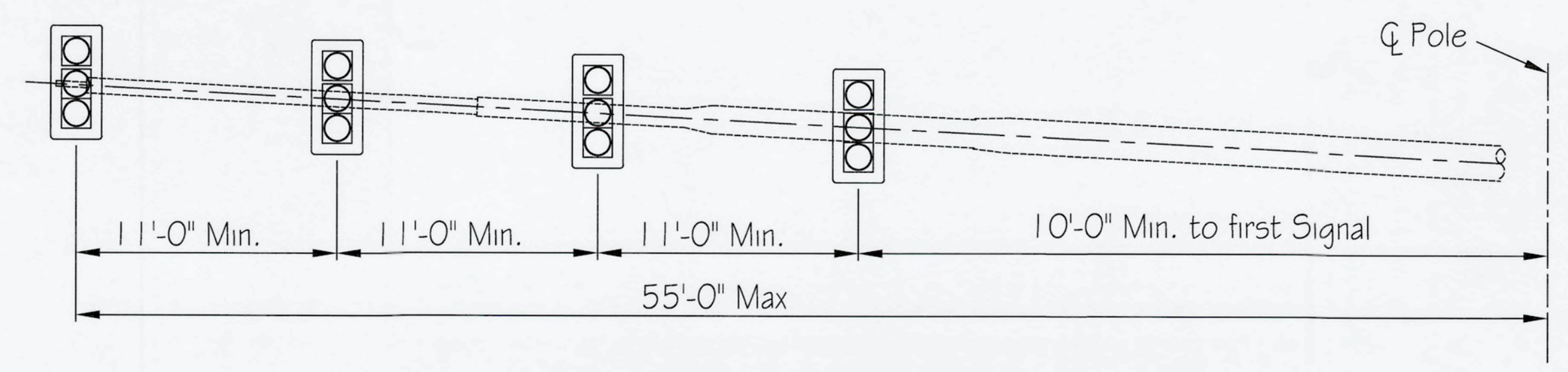
PROJECT #:

NOTES

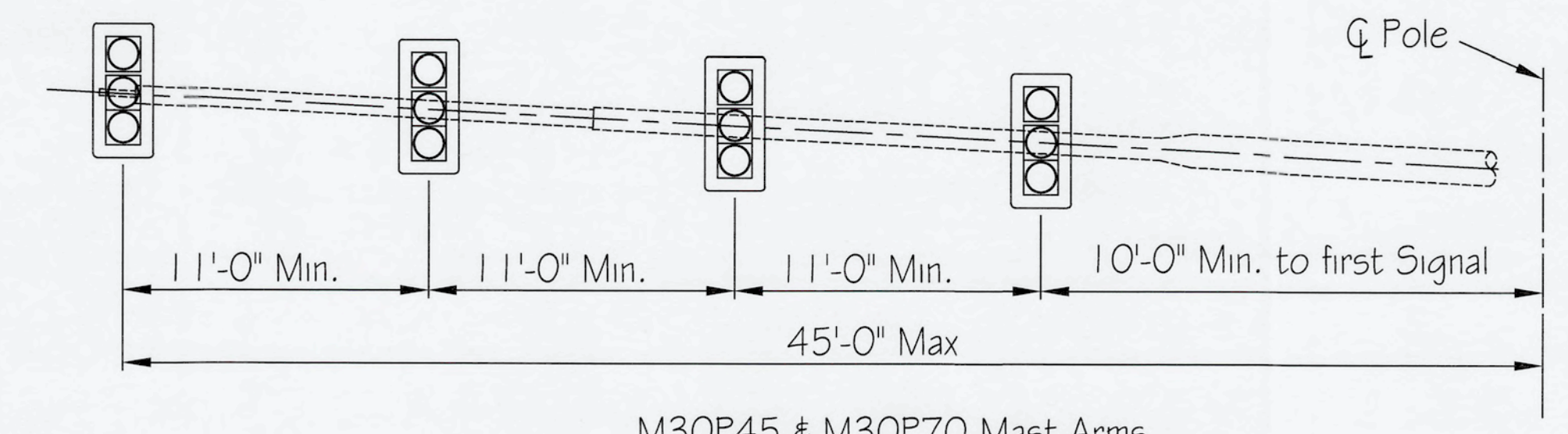
1. Maximum loading conditions are shown. Appurtenances can be removed from loading conditions shown, but not added.
2. Appurtenances without spacing noted may be placed at any point between adjacent signals as shown.



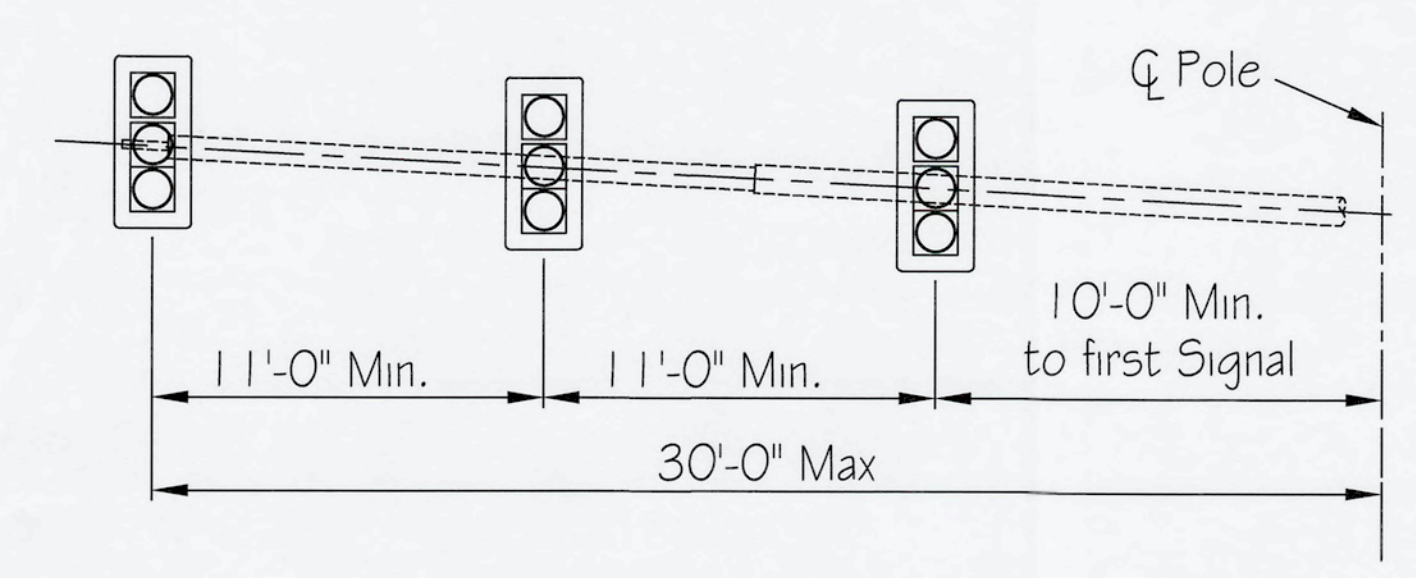
M55P70 Mast Arm



M40P70 Mast Arm

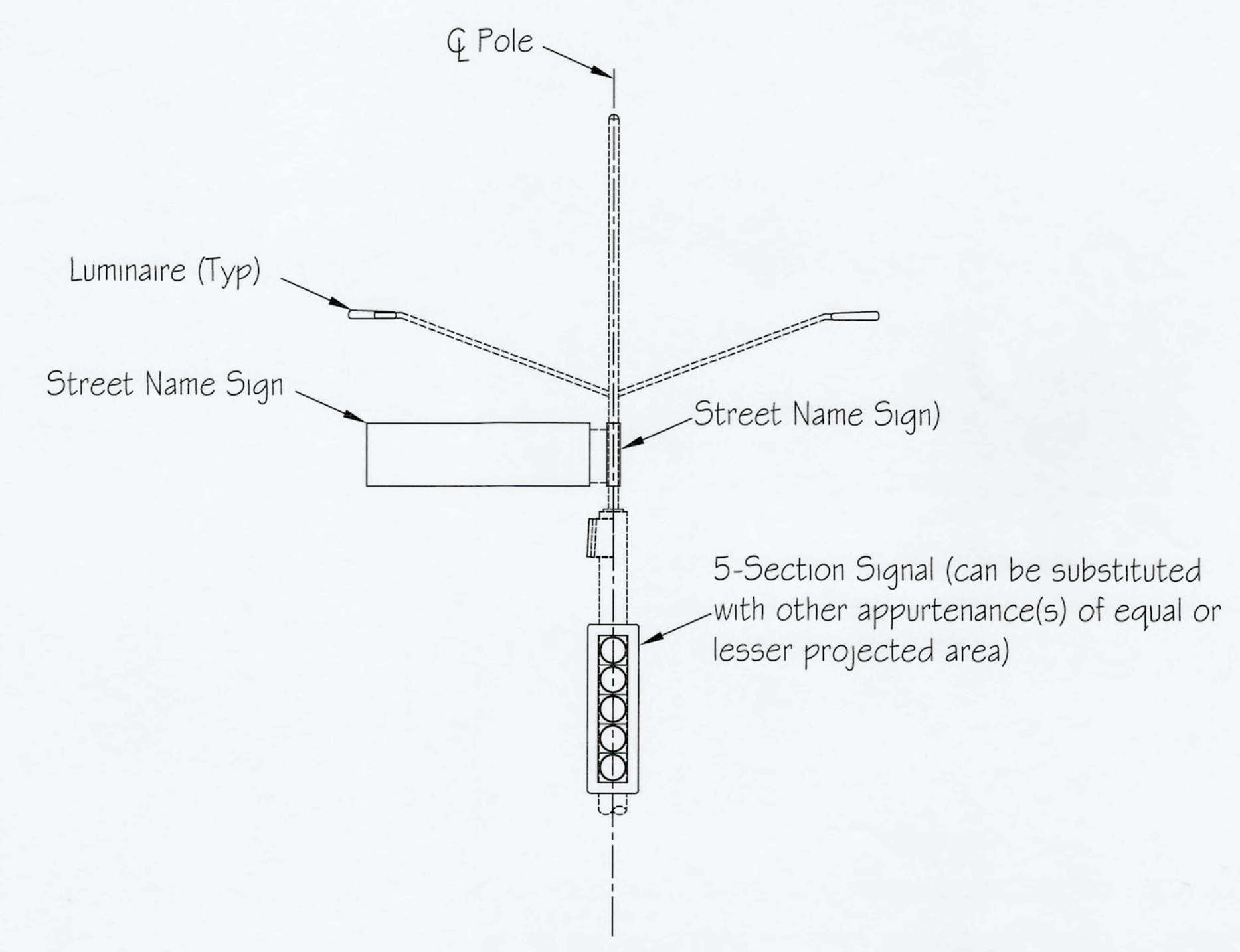


M30P45 & M30P70 Mast Arms



M15P45 & M15P70 Mast Arms

ALLOWABLE MAST ARM LOADING CONFIGURATIONS WITHOUT DAMPER
(See Note 1)



MAXIMUM POLE LOADING CONDITION
(WITH OR WITHOUT DAMPER)
(See Note 1)

APPURTENANCES				
Symbol	ID	Projected Area	Plan Area	Weight
	3-Section Signal	8.5 ft ²	0.5 ft ²	39 lb
	5-Section Signal	12.6 ft ²	0.5 ft ²	50 lb
	Street Name Sign	20.7 ft ²	2.9 ft ²	135 lb
	Sign Panel	7.5 ft ²	n/a	15 lb
	Luminaire	0.5 ft ²	2.0 ft ²	14 lb



CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS



Mast Arm Maximum Loading
Without Damper &
Pole Maximum Loading

TPP File Number 10164 TS 1-3

Expires 09/30/2022 TRAFFIC SERVICES ENGINEER 4/6/20

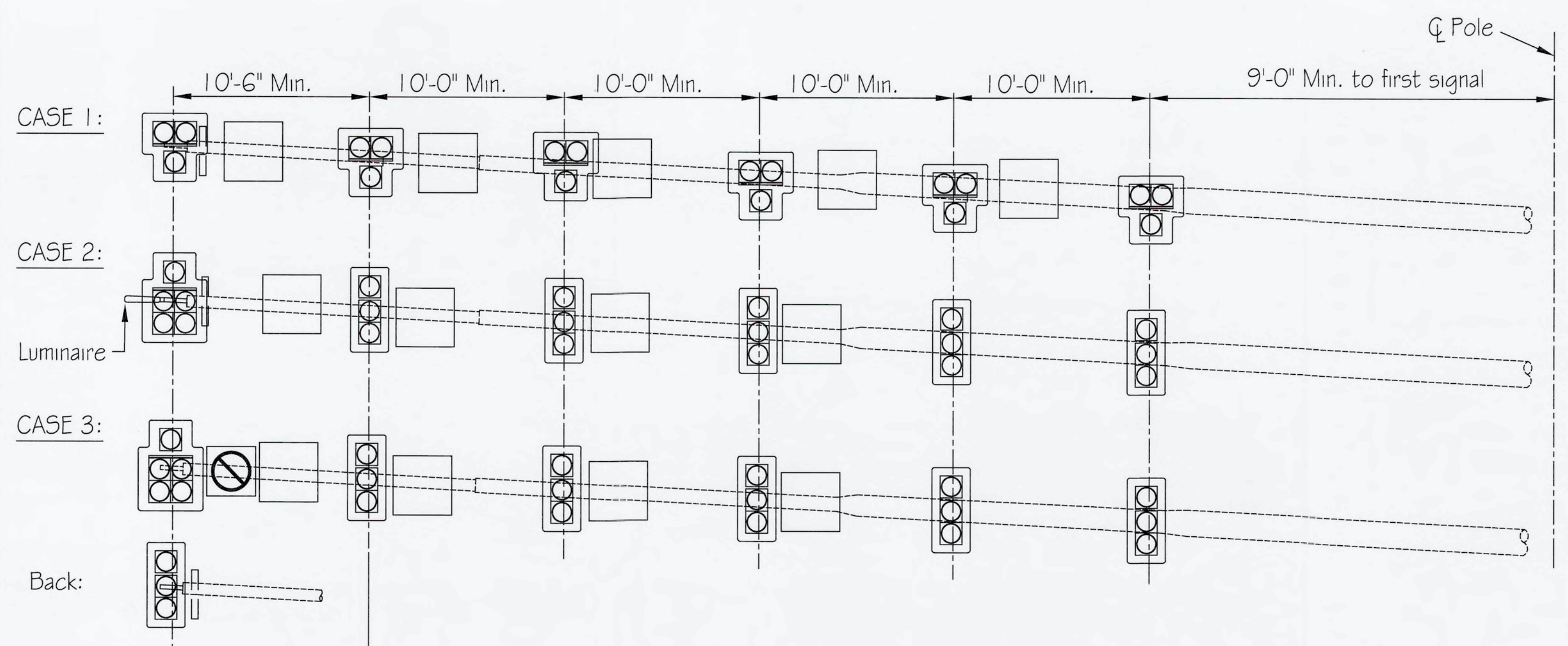
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TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

PROJECT #:	DR: SVR	DES: ANA	CK: WR	SHEET NO:	TOTAL SHEETS:
DATE: 3/1/2020	DATE: 3/1/2020	DATE: 3/1/2020	DATE: 3/1/2020	NO:	
SCALE:	Q5. #:				

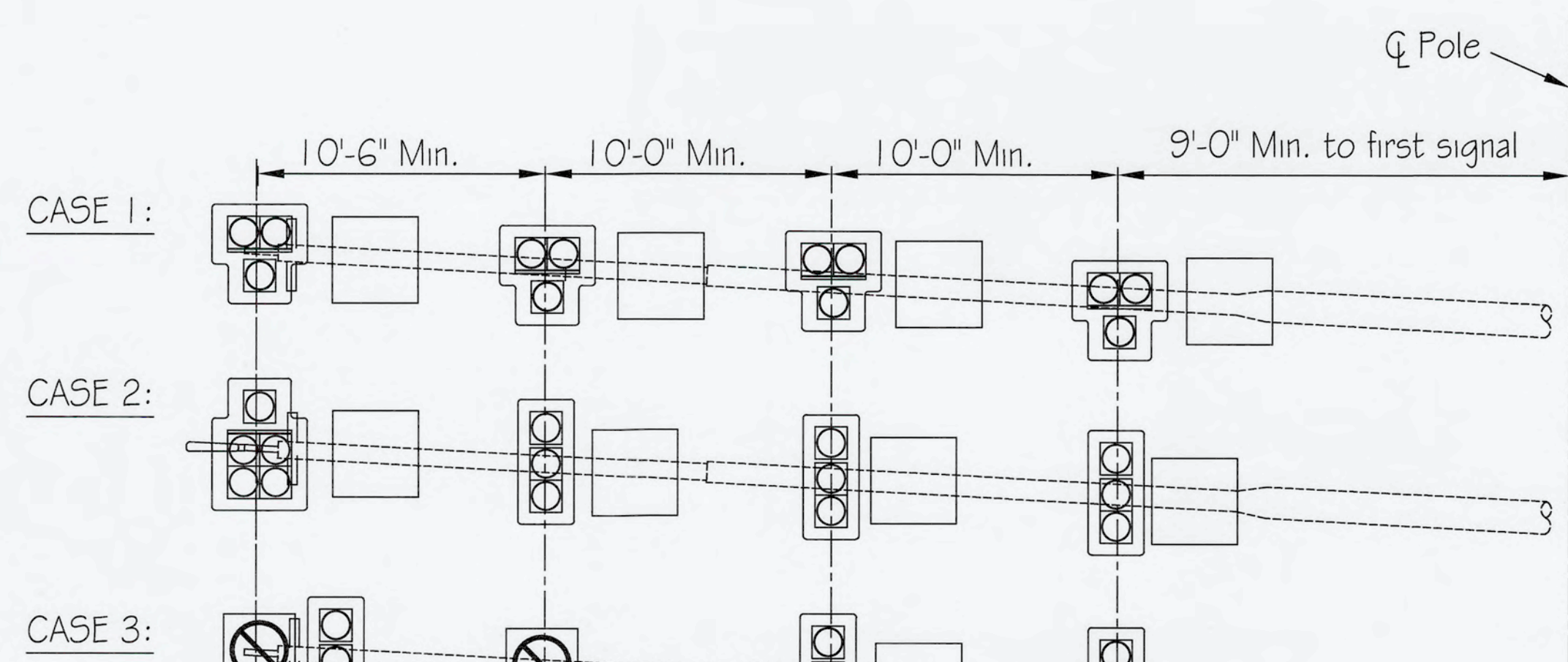
NOTES

1. Maximum loading conditions are shown. Appurtenances can be removed from loading conditions shown, but not added.
2. Appurtenances without spacing noted may be placed at any point between adjacent signals as shown.

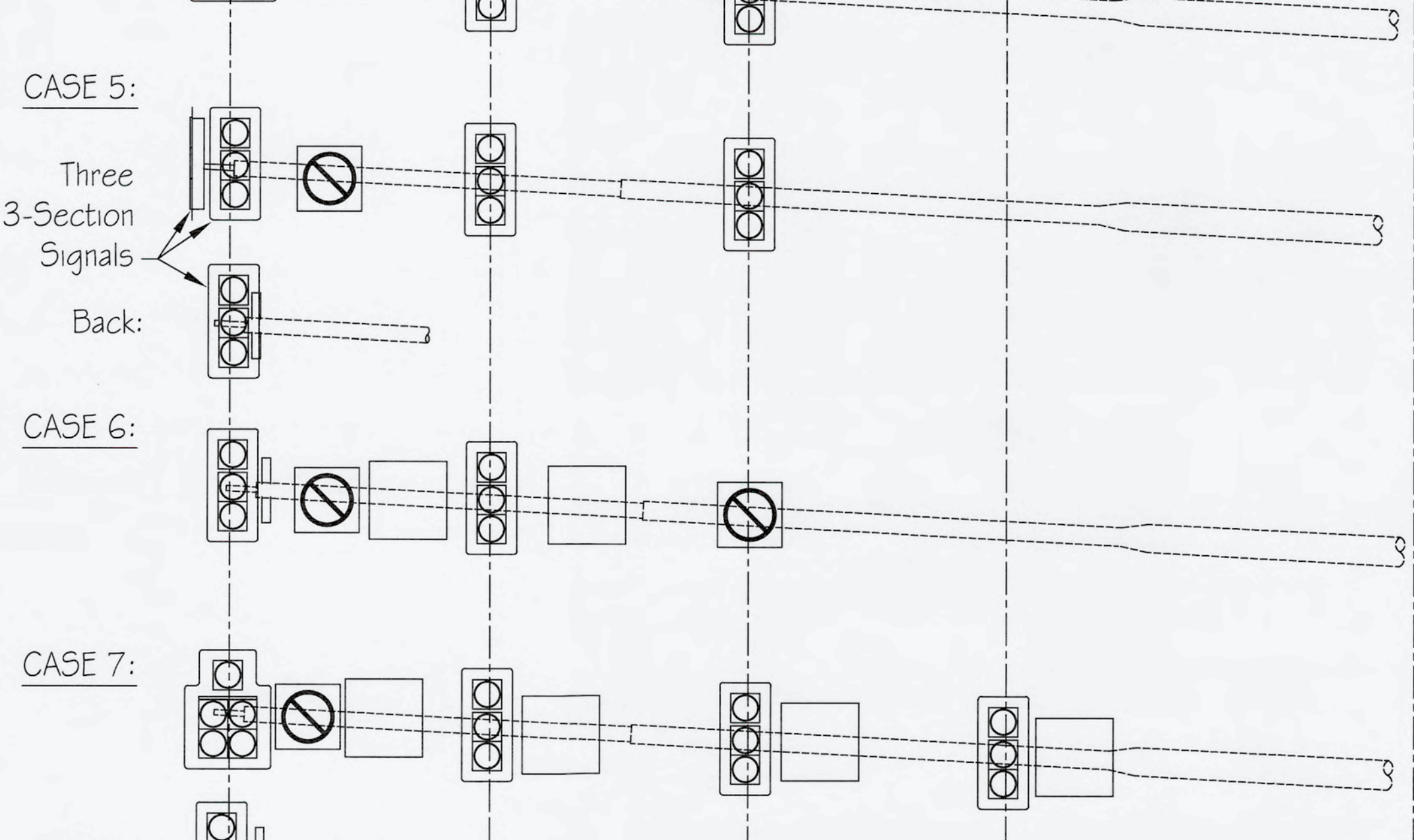


Provide any configuration of Appurtenances with:
 Net Projected Area < 29ft²,
 Plan Area < 4.5ft²,
 # Weight < 165lb

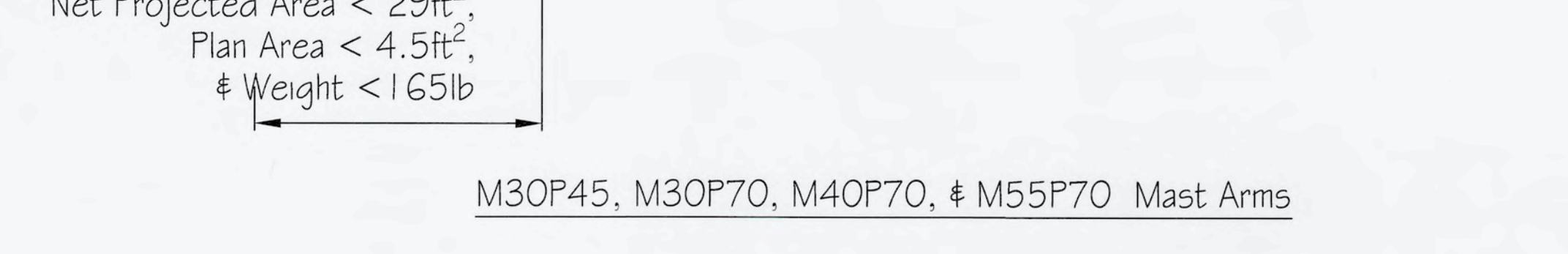
M55P70 Mast Arm



Provide any configuration of Appurtenances with:
 Net Projected Area < 29ft²,
 Plan Area < 4.5ft²,
 # Weight < 165lb

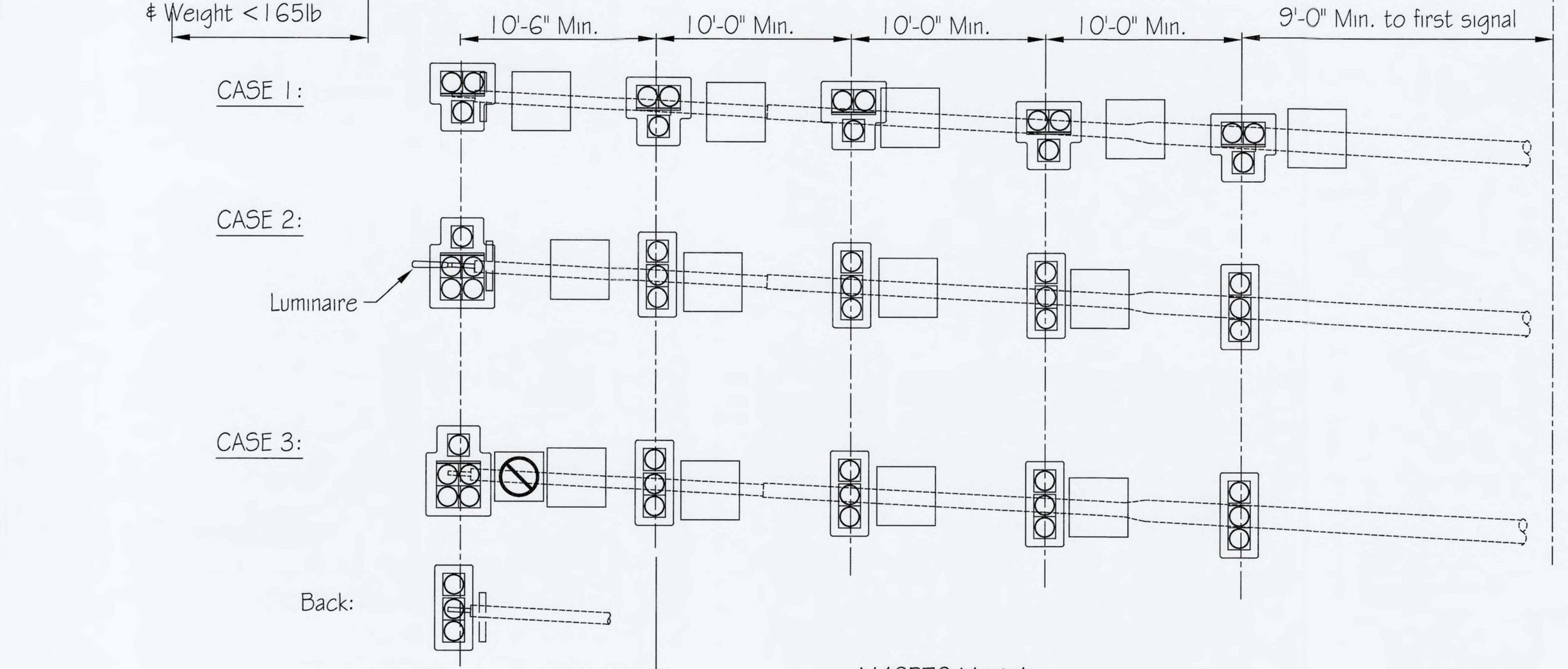


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 Net Projected Area < 29ft²,
 Plan Area < 4.5ft²,
 # Weight < 165lb



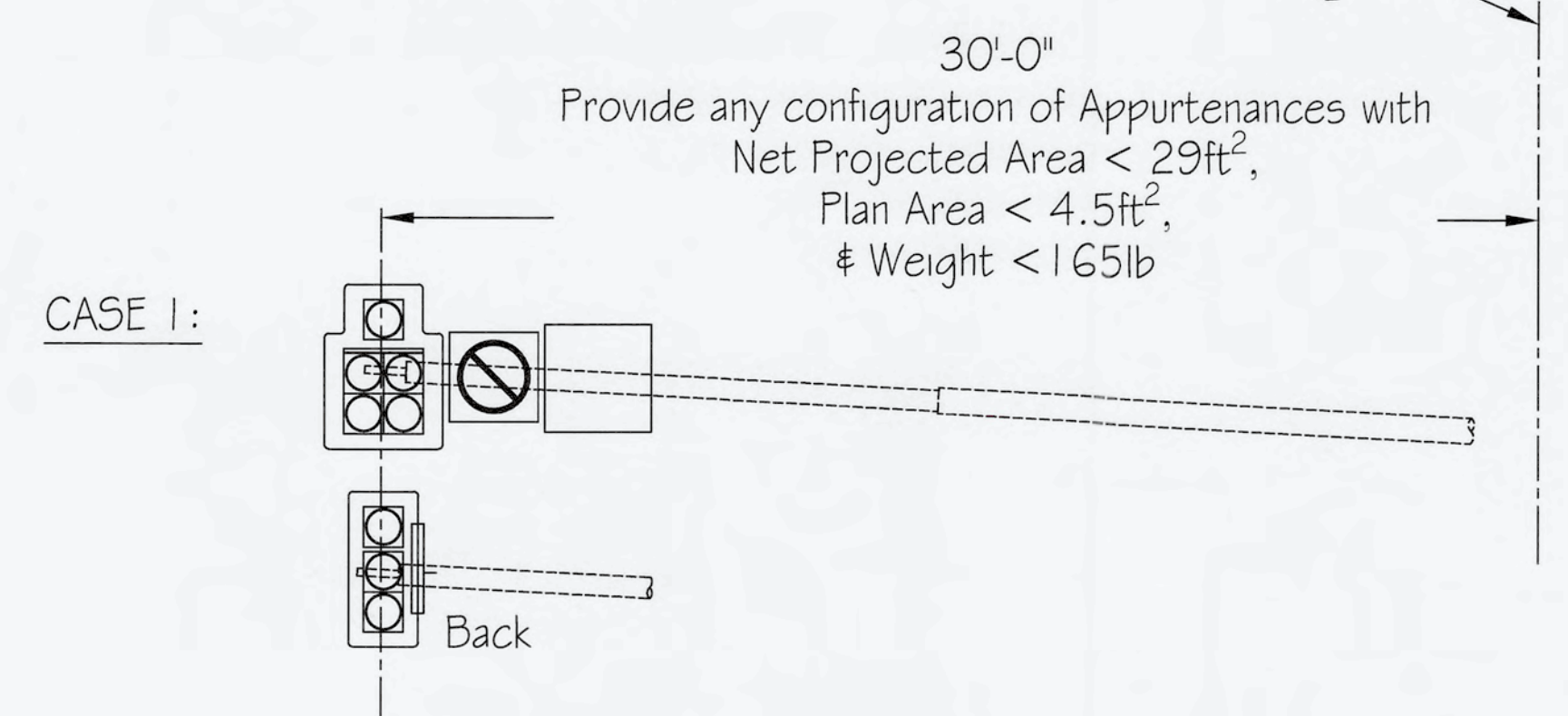
Provide any configuration of Appurtenances with:
 Net Projected Area < 29ft²,
 Plan Area < 4.5ft²,
 # Weight < 165lb

M30P45, M30P70, M40P70, & M55P70 Mast Arms



Provide any configuration of Appurtenances with:
 Net Projected Area < 29ft²,
 Plan Area < 4.5ft²,
 # Weight < 165lb

M40P70 Mast Arm



M15P45 & M15P70 Mast Arms

APPURTENANCES				
Symbol	ID	Projected Area	Plan Area	Weight
	3-Section Signal	8.5 ft ²	0.5 ft ²	39 lb
	4-Section Signal	10.5 ft ²	0.5 ft ²	48 lb
	5-Section Signal	12.6 ft ²	0.5 ft ²	50 lb
	Doghouse	13.7 ft ²	1.1 ft ²	63 lb
	HAWK	10.0 ft ²	1.1 ft ²	46 lb
	Blankout	7.3 ft ²	2.9 ft ²	48 lb
	Damper	n/a	n/a	50 lb
	Sign Panel	7.5 ft ²	n/a	15 lb
	Luminaire	0.5 ft ²	2.0 ft ²	14 lb

ALLOWABLE MAST ARM LOADING CONFIGURATIONS WITH DAMPER

Jacobs



CITY OF PHOENIX, ARIZONA
 STREET TRANSPORTATION DEPARTMENT
 TRAFFIC SIGNAL STANDARD DETAILS

Mast Arm
 Maximum Loading With Damper

TPP File Number: 10164
 TS 1-4
 DATE: 3/1/2020
 SCALE: 1/8" = 1'-0"

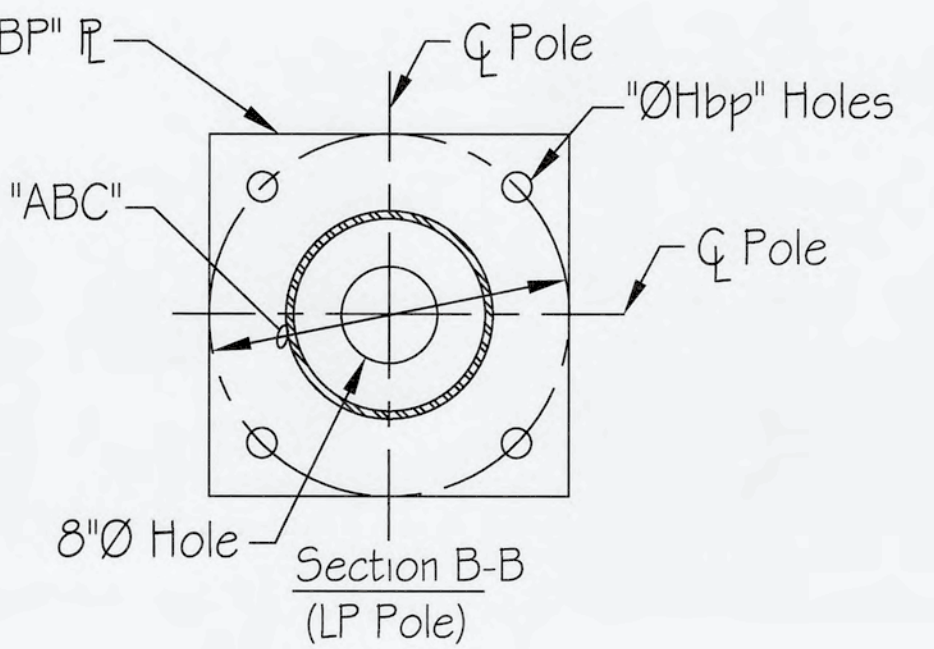
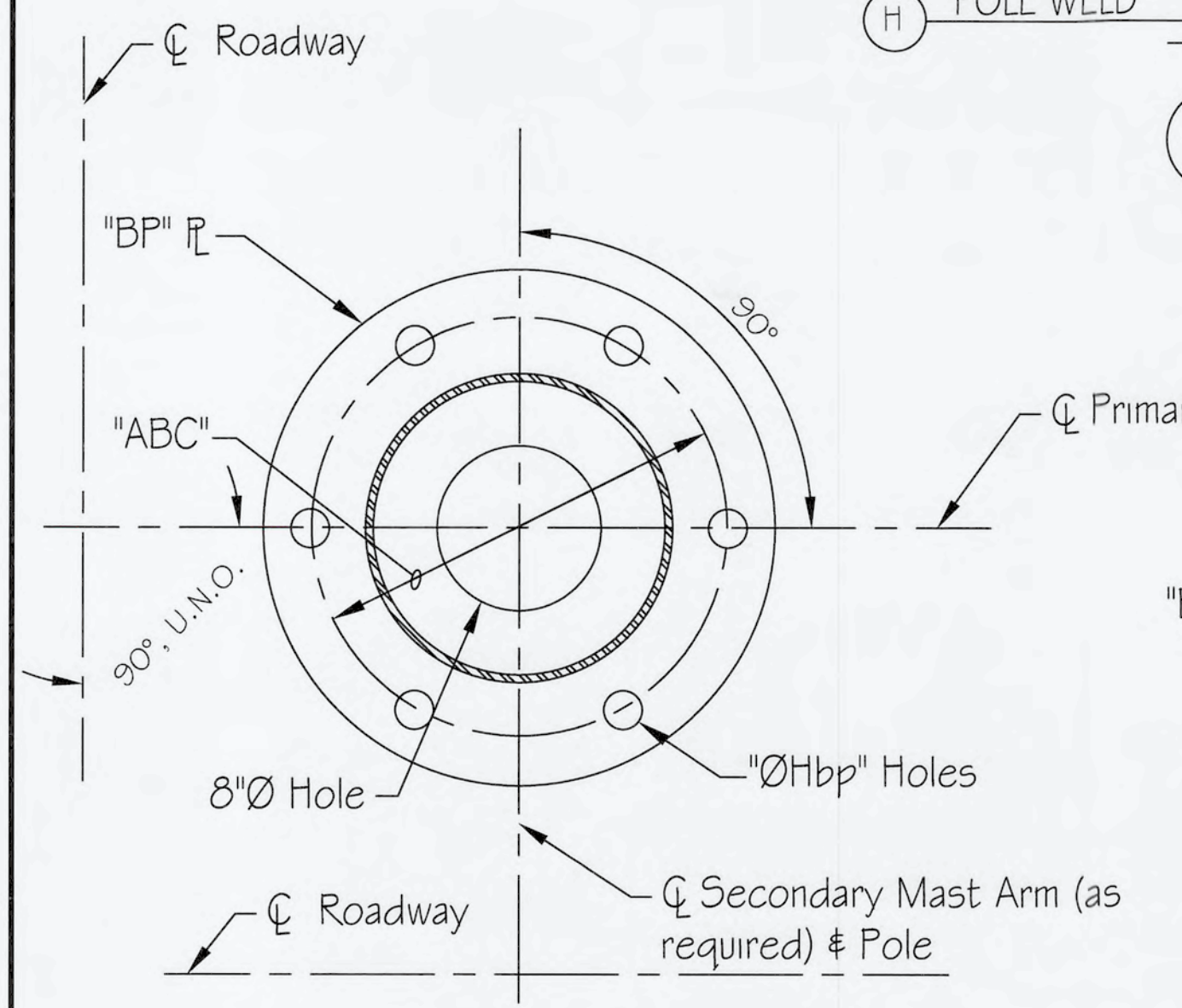
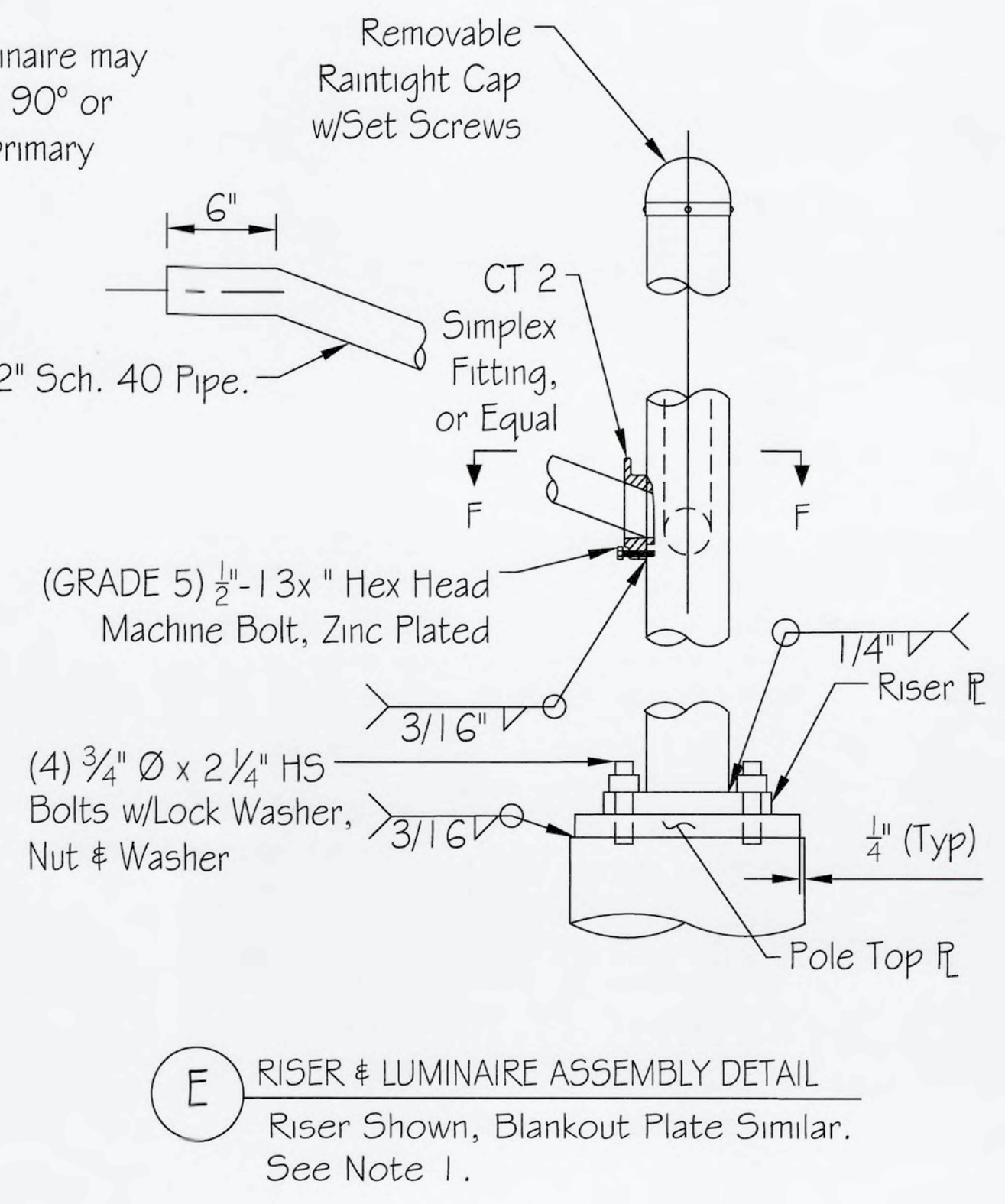
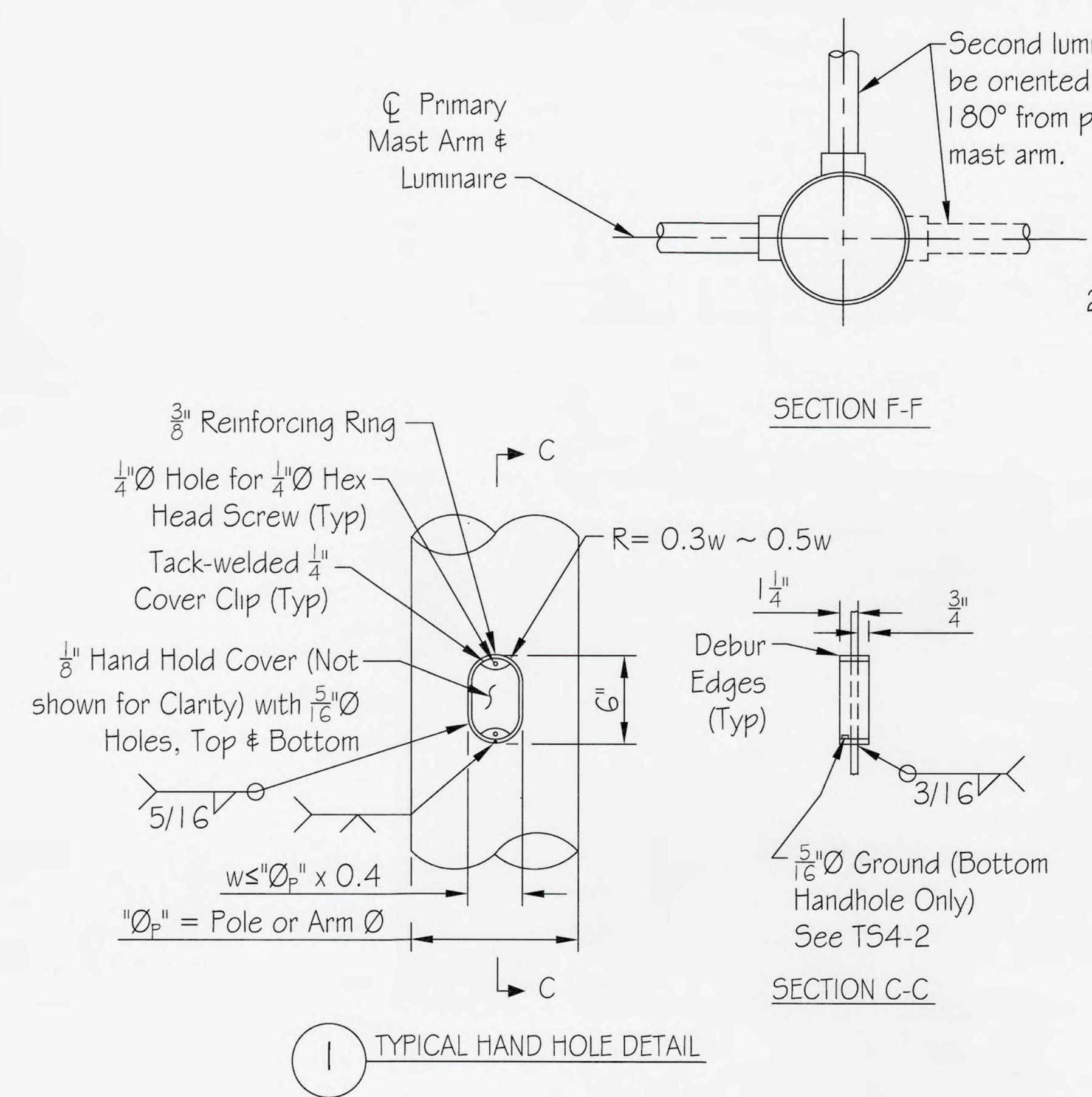
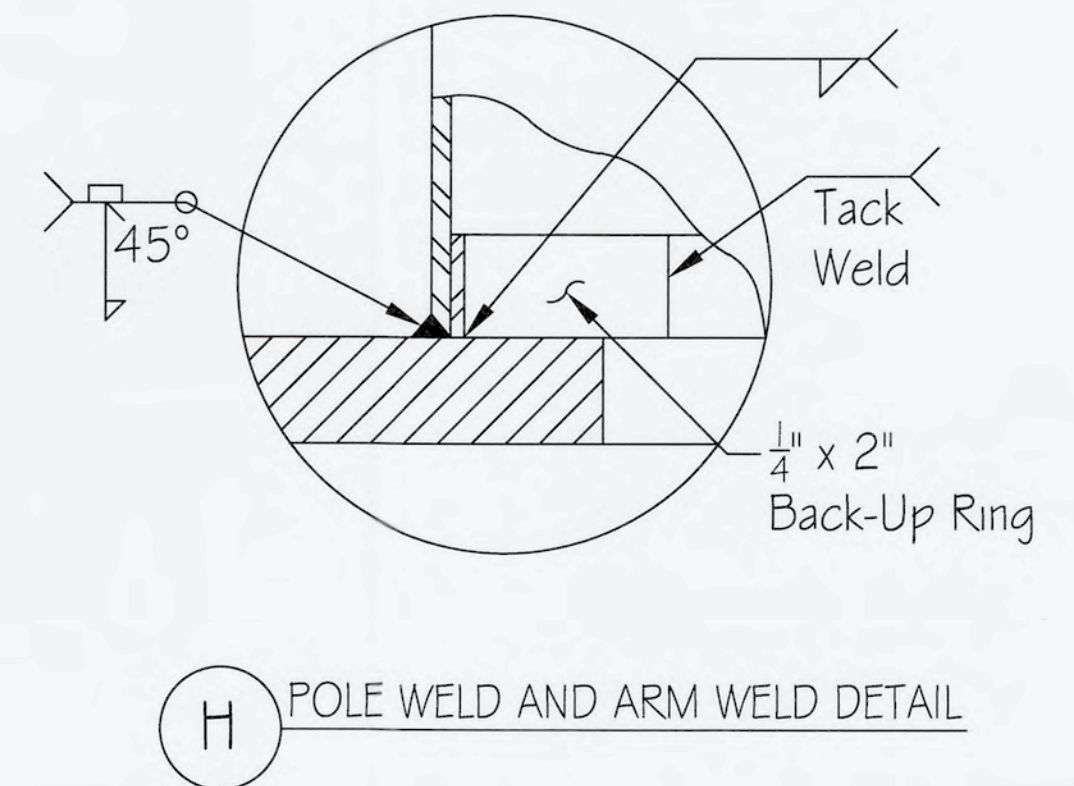
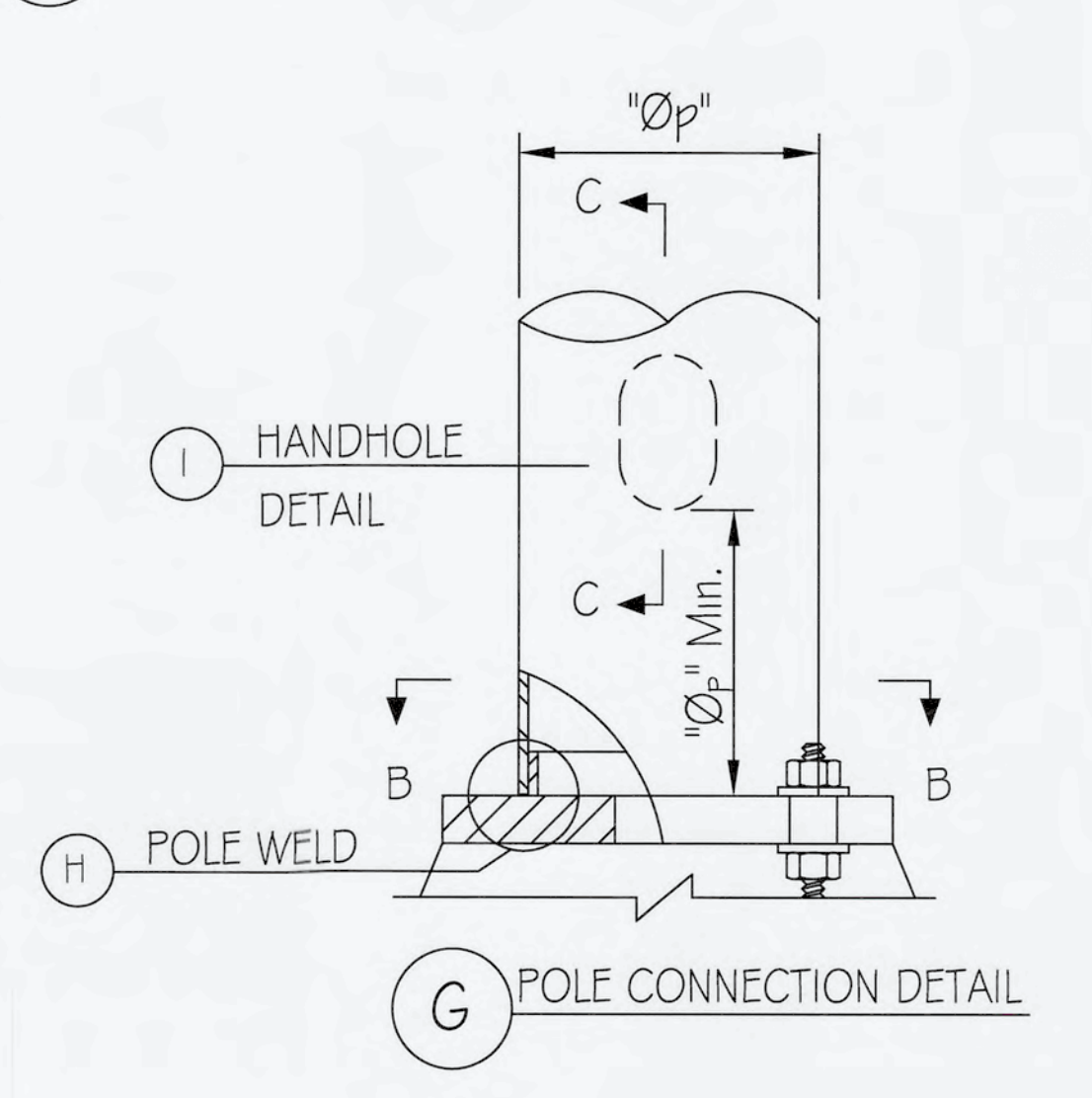
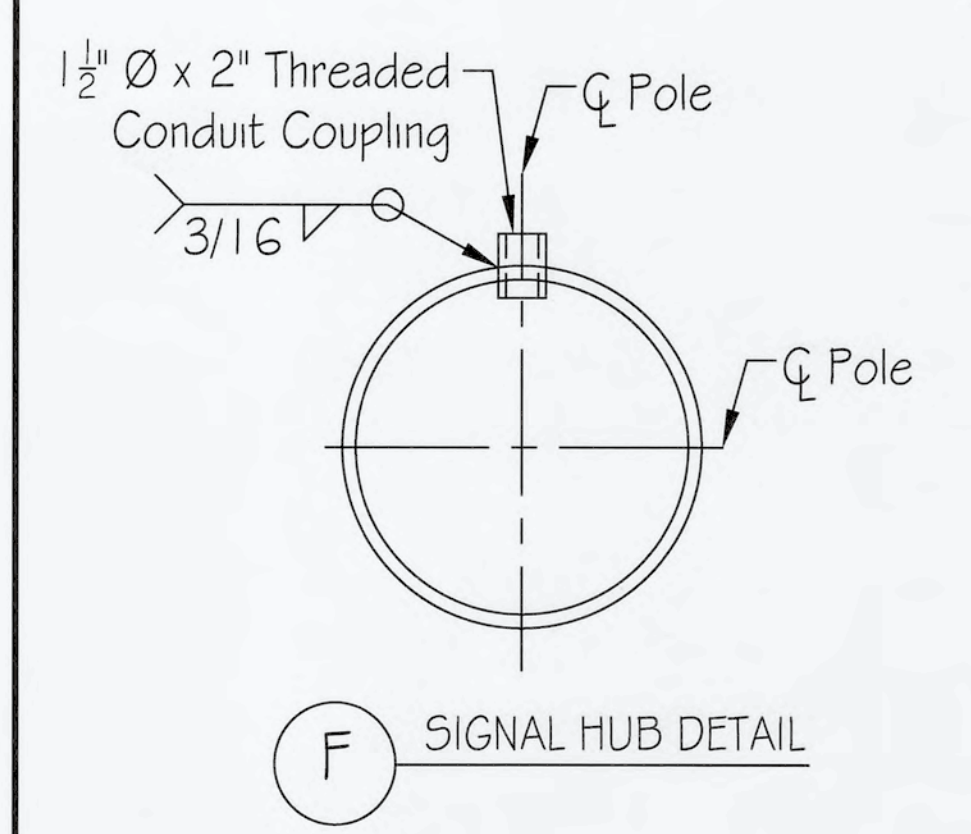
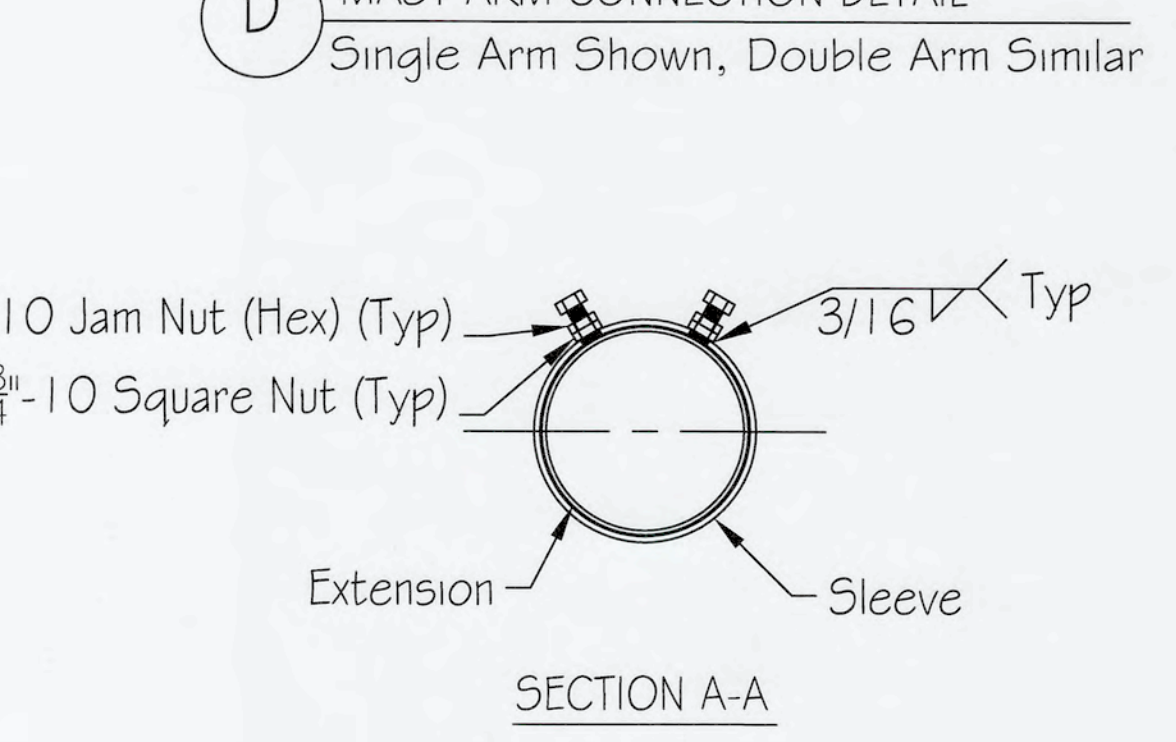
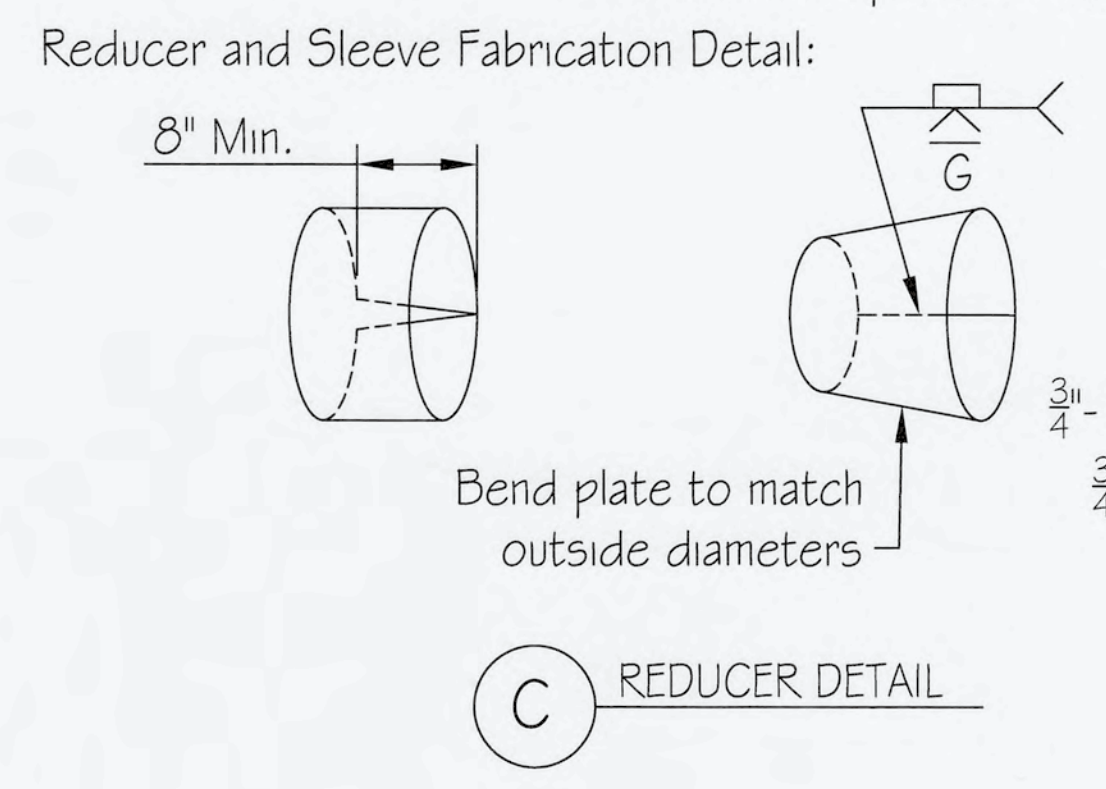
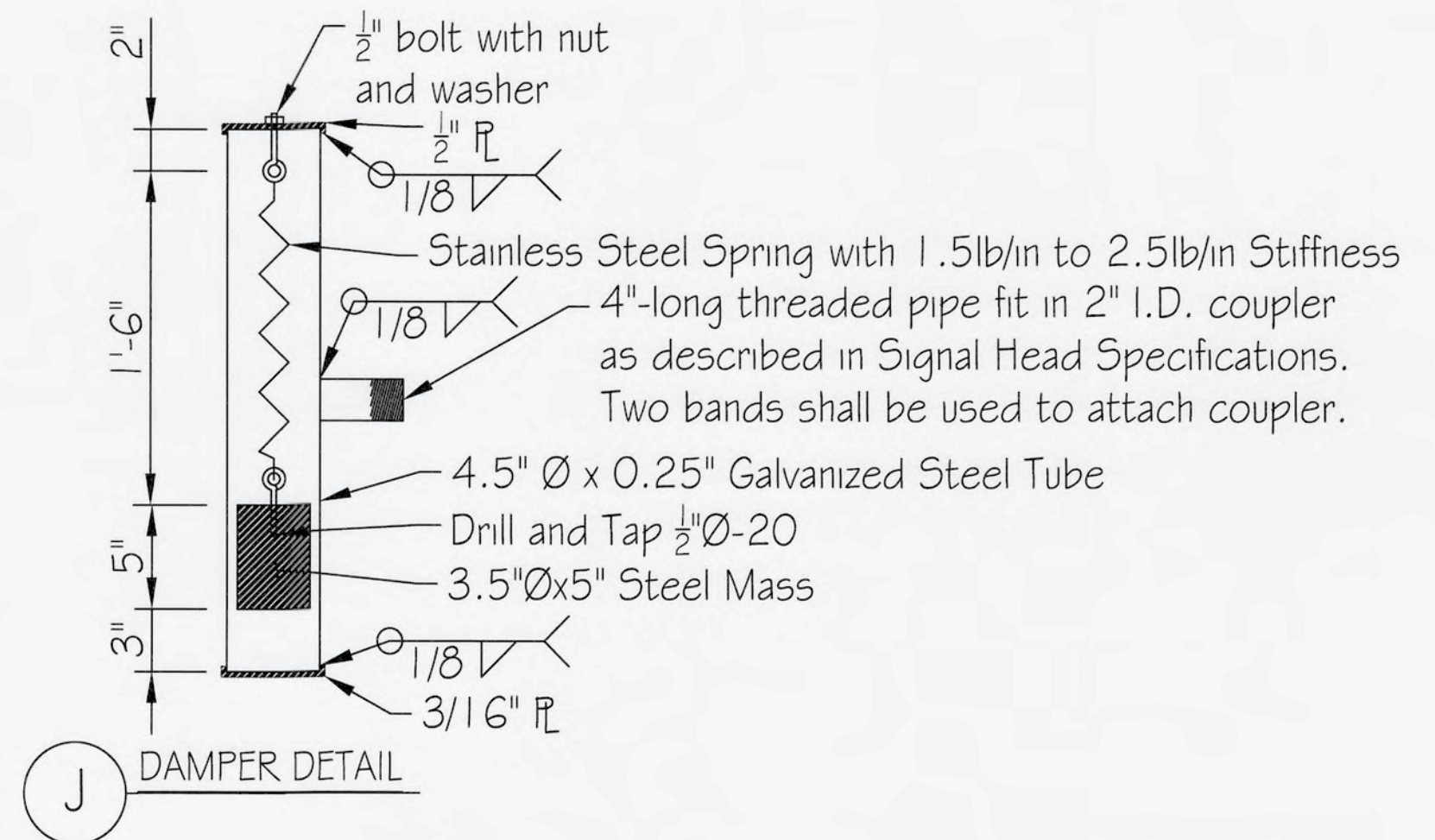
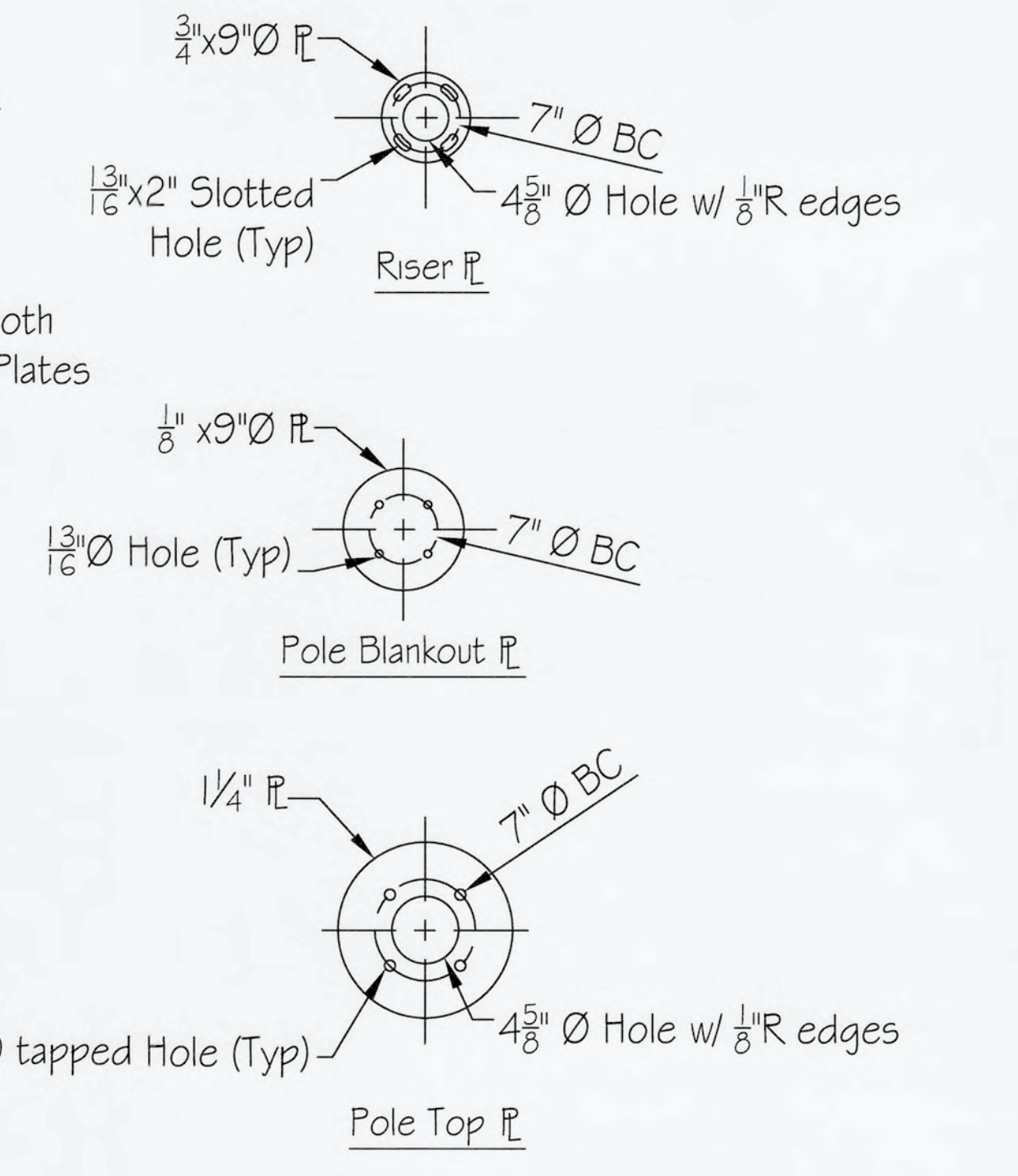
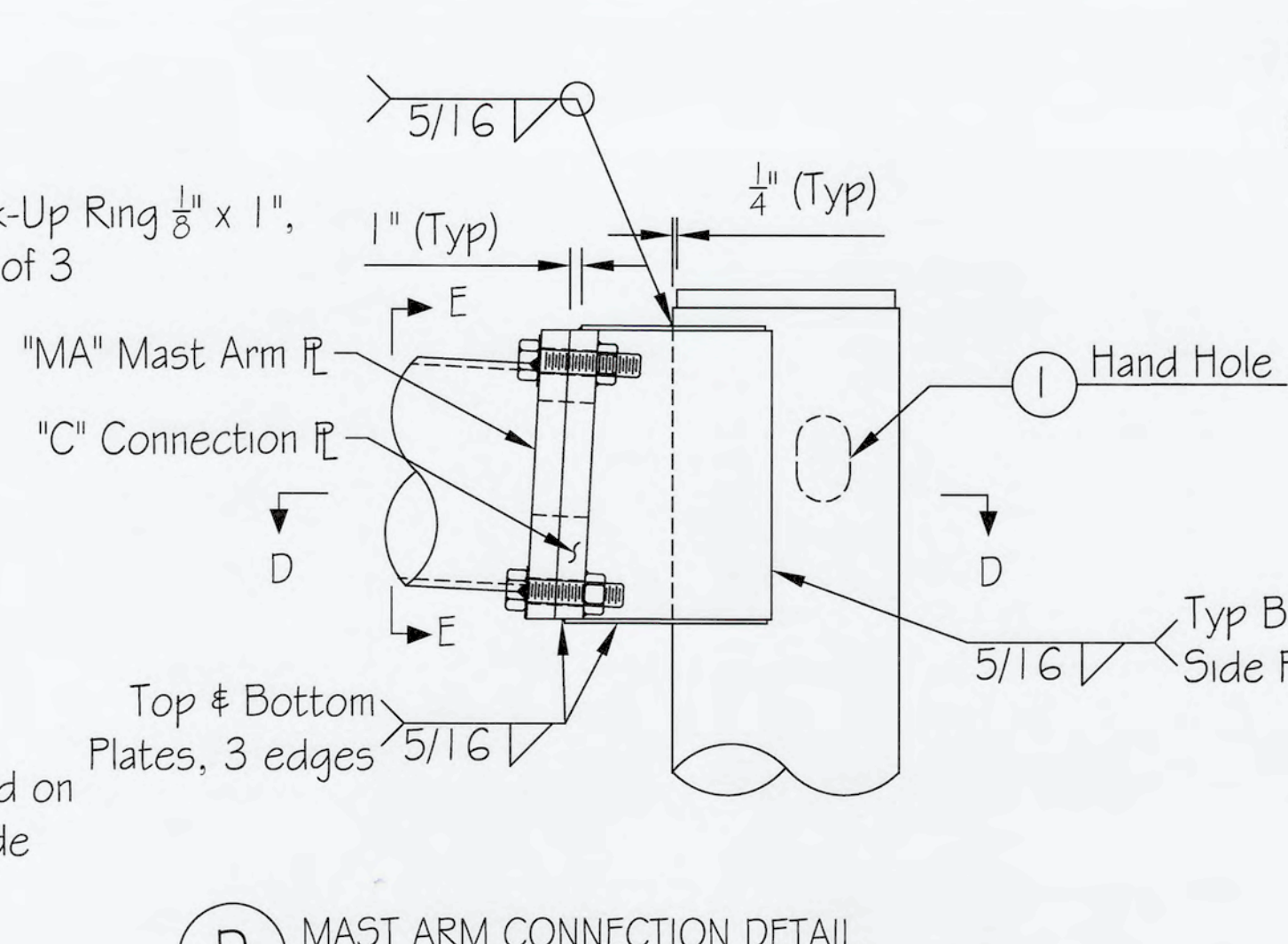
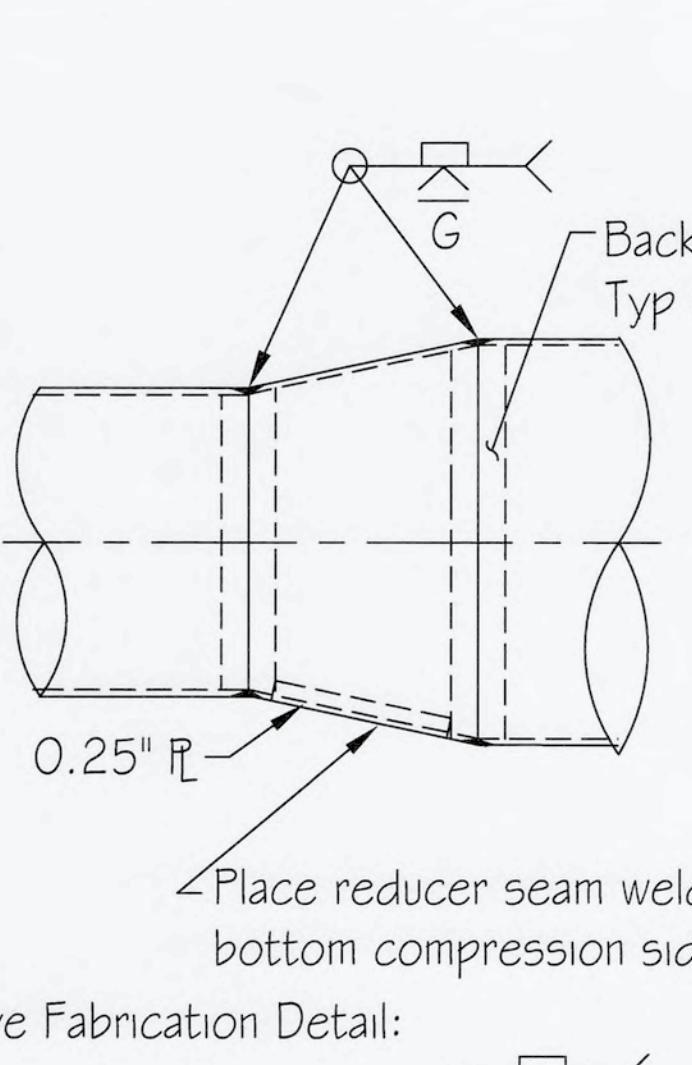
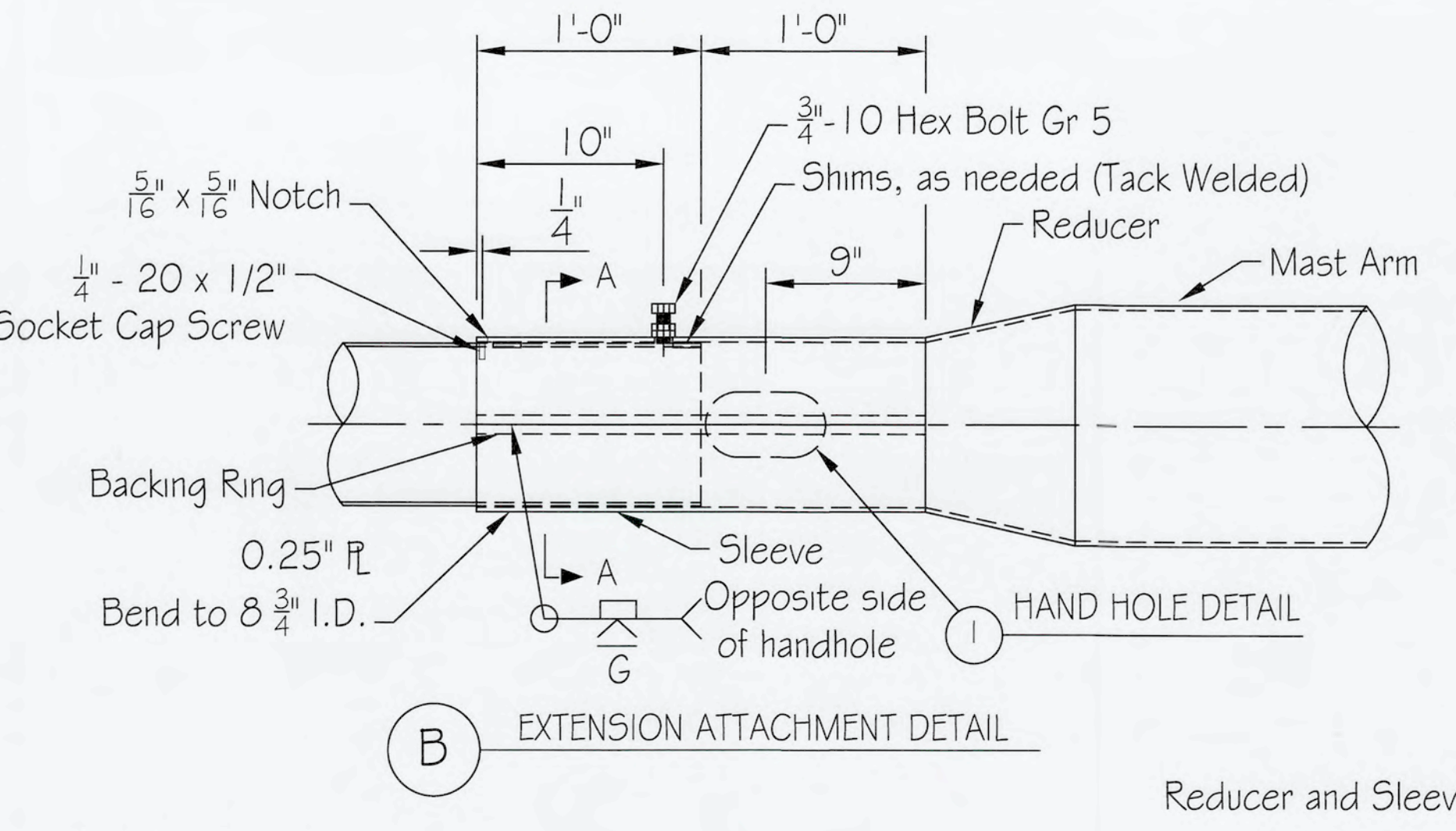
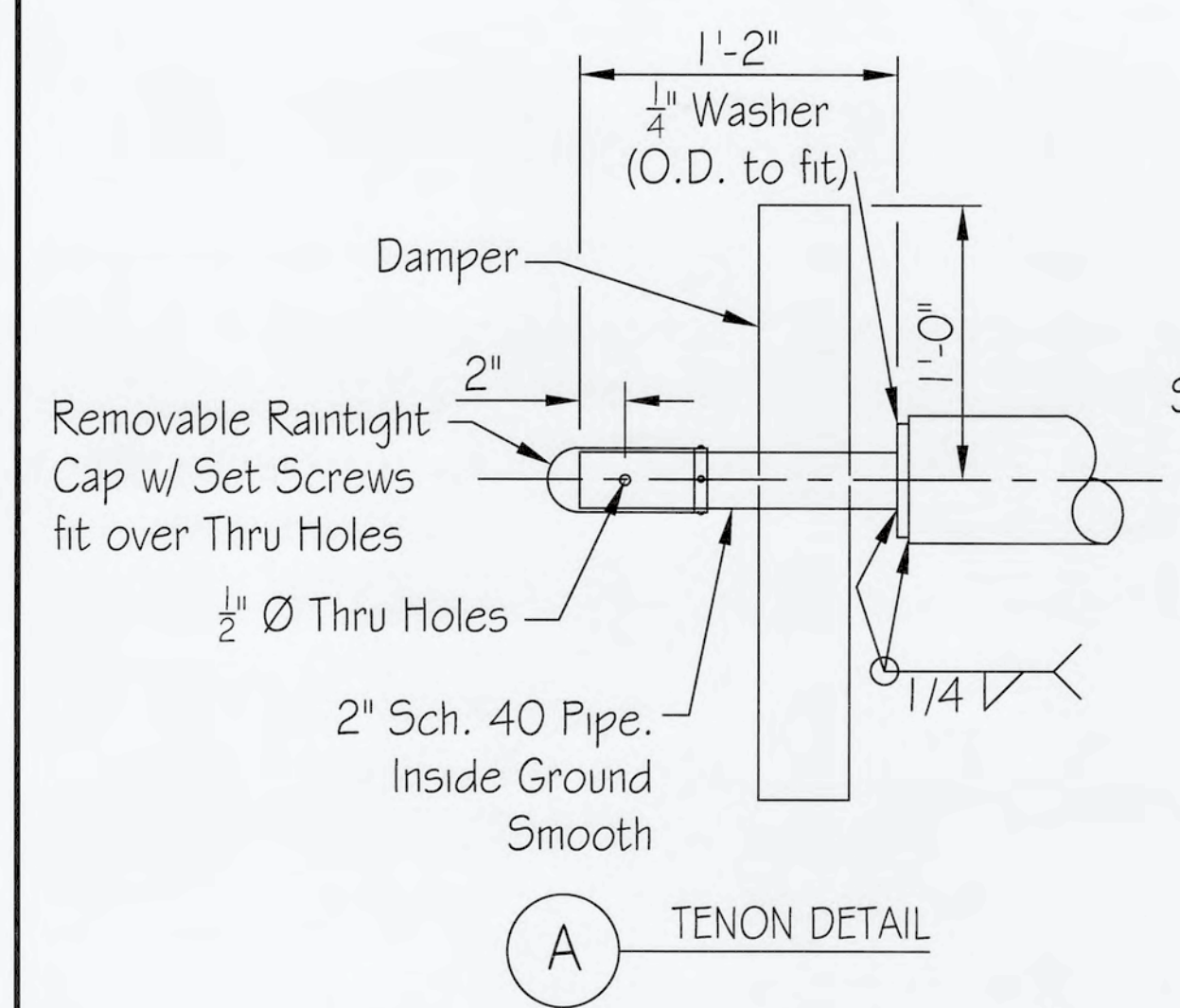
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TRAFFIC SIGNAL DETAILS
 CITY OF PHOENIX, ARIZONA
 STREET TRANSPORTATION DEPARTMENT

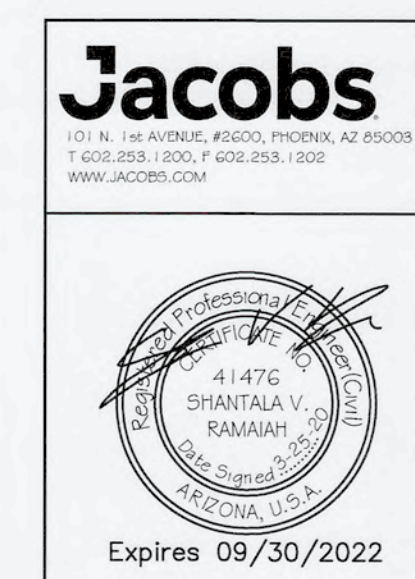
PROJECT #:	DR: SVR	DES: ANA	CK: WR	SHEET NO:	TOTAL SHEETS:
DATE: 3/1/2020	DATE: 3/1/2020	DATE: 3/1/2020	DATE: 3/1/2020	NO:	
SCALE:	Q5 #:				

NOTES:

1. Provide blankout plate at top of pole when plans do not indicate a riser.



POLE ID	POLE CONNECTION		
	"ABC" Anchor Bolt Circle	"OHbp" Holes	"BP" Plate
P70 & DP70	See TS 2-2	2 1/4"	3' x 2'-5" Ø
P45 & DP45	See TS 2-2	1 3/4"	2' x 2'-1" Ø
LP	See TS 2-2	1 3/8"	1 1/4' x 1'-1" x 1'-1"



CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS

P45, DP45, P70, DP70,
& LP Poles and Mast Arm
Details 1 of 2

TPP File Number 10164
TS 1-5
DATE: 3/17/2020 DATE: 3/17/2020
4/6/20

PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-26, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

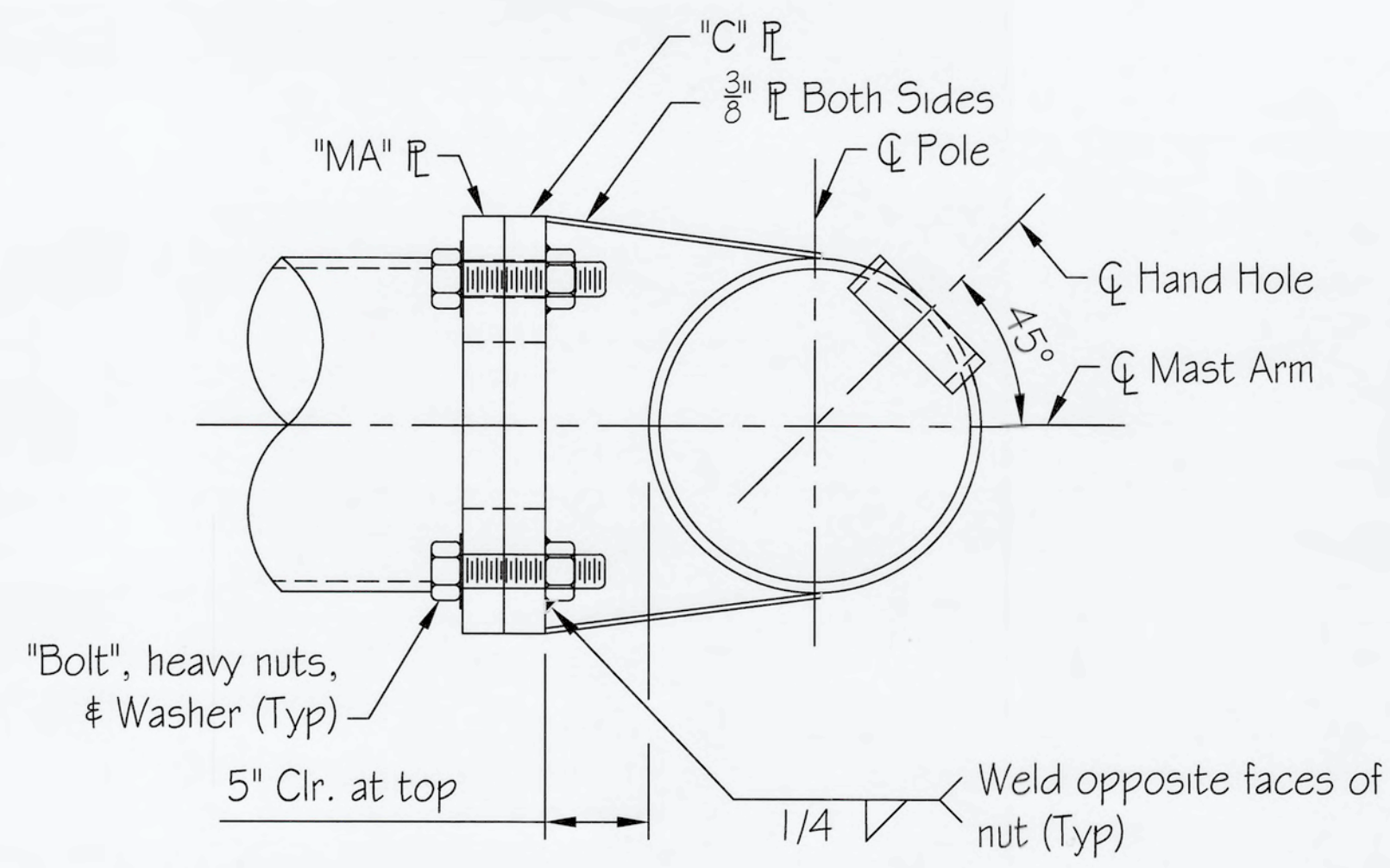
TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

PROJECT #:	DR: SVR	DES: ANA	CK: WR	SHEET NO:	TOTAL SHEETS
	DATE: 3/17/2020	DATE: 3/17/2020	DATE: 3/17/2020	4/6/20	
SCALE:		Q5. #:			

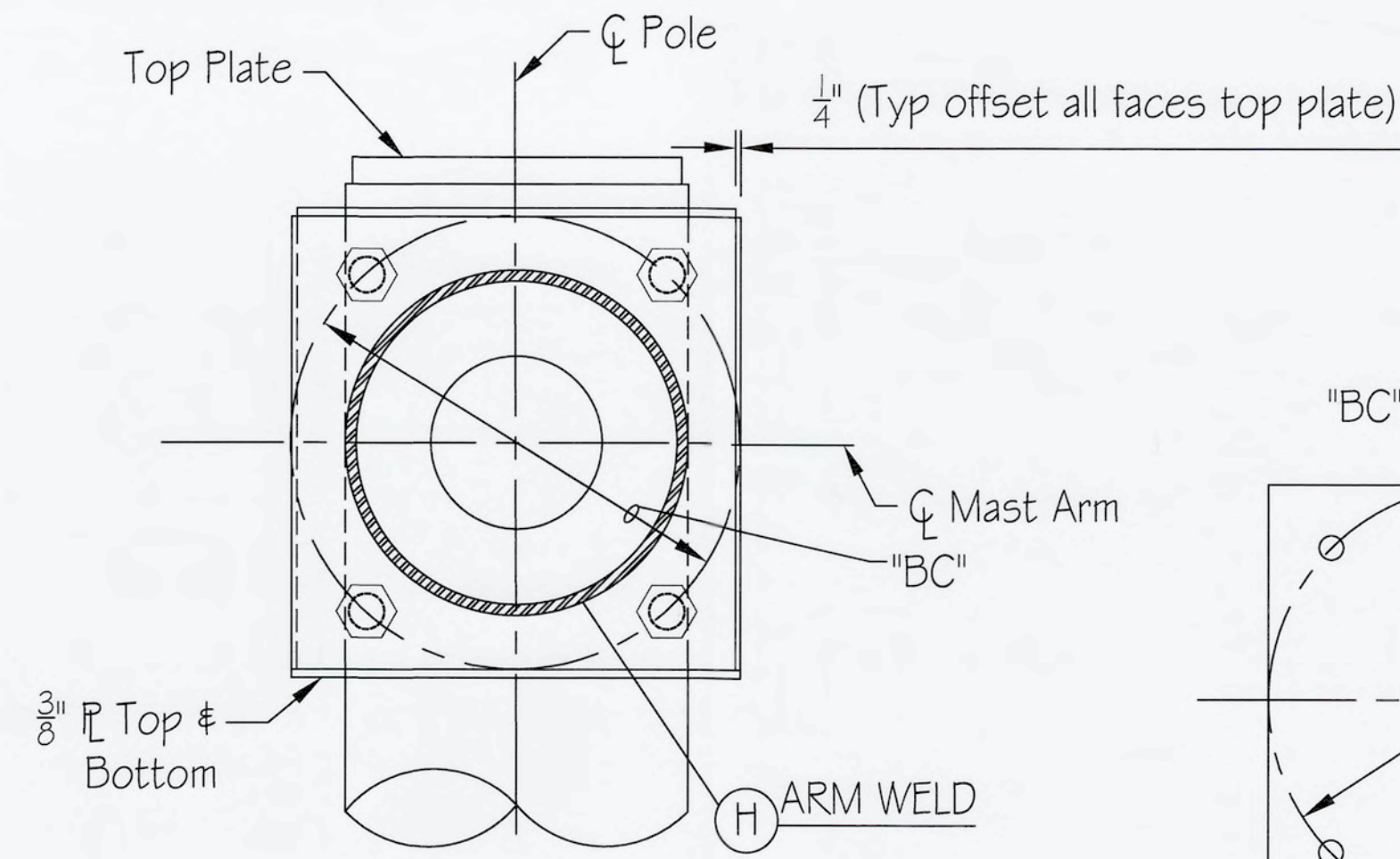
Section B-B (P45, DP45, P70, and DP70)
Primary Arm is clockwise from Secondary Arm. Ensure anchor bolts installed align with base plate holes. See TS 2-2.

NOTES:

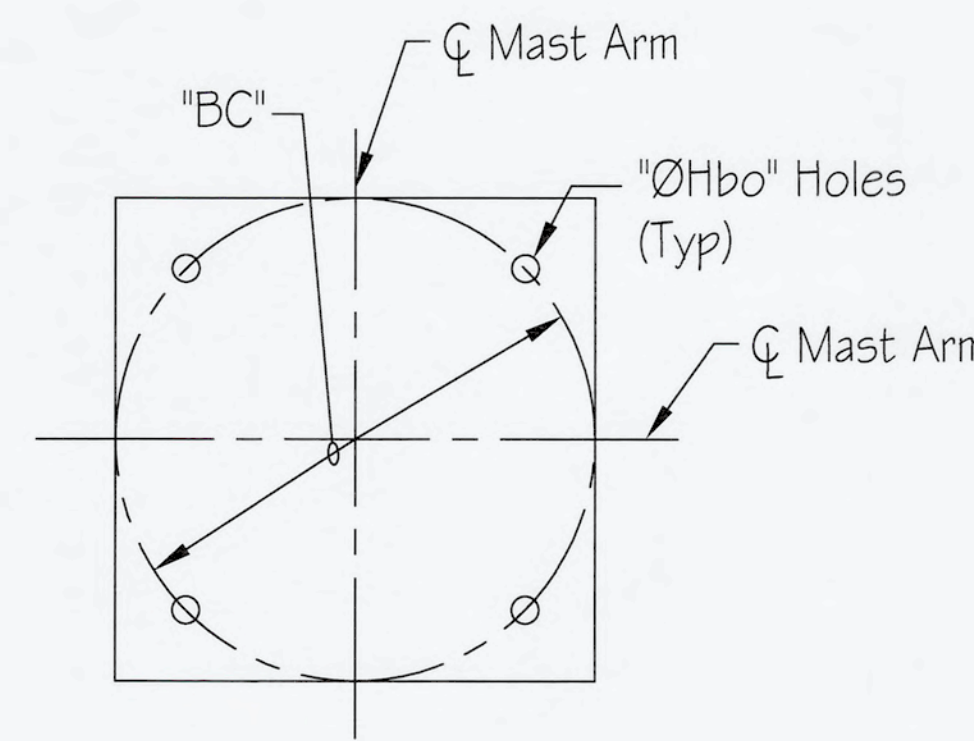
1. If blankout plate is used, bolt length shall be 3".



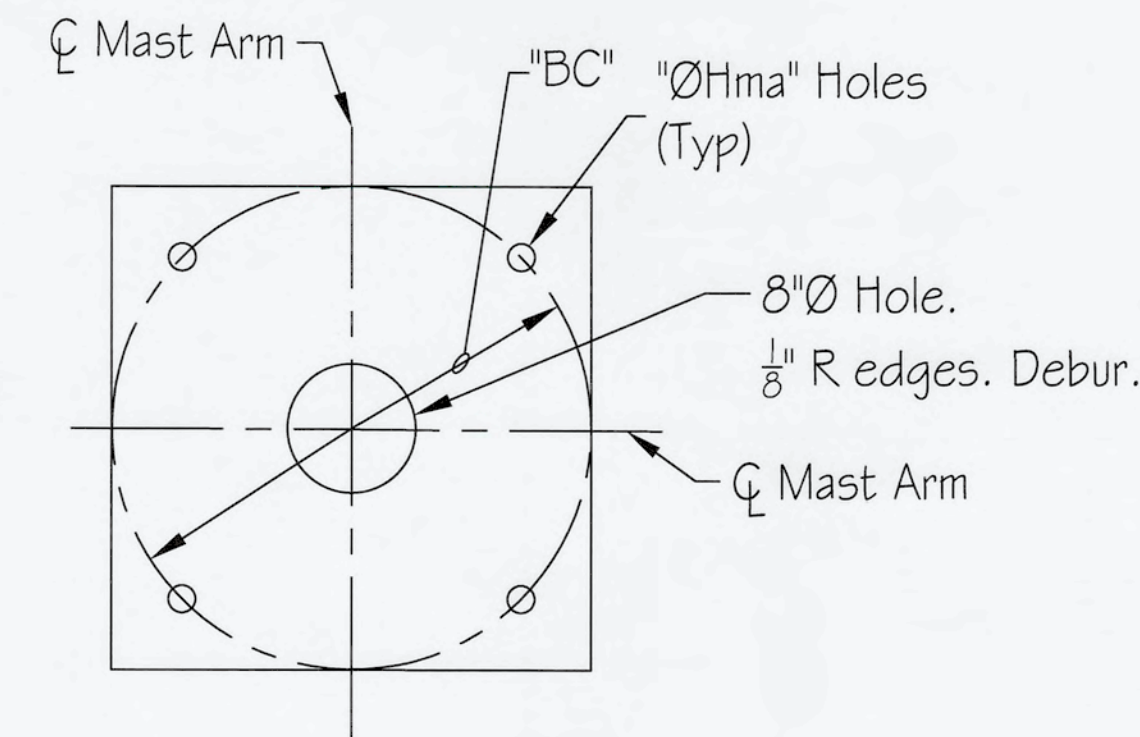
SECTION D-D for Single Arm Pole



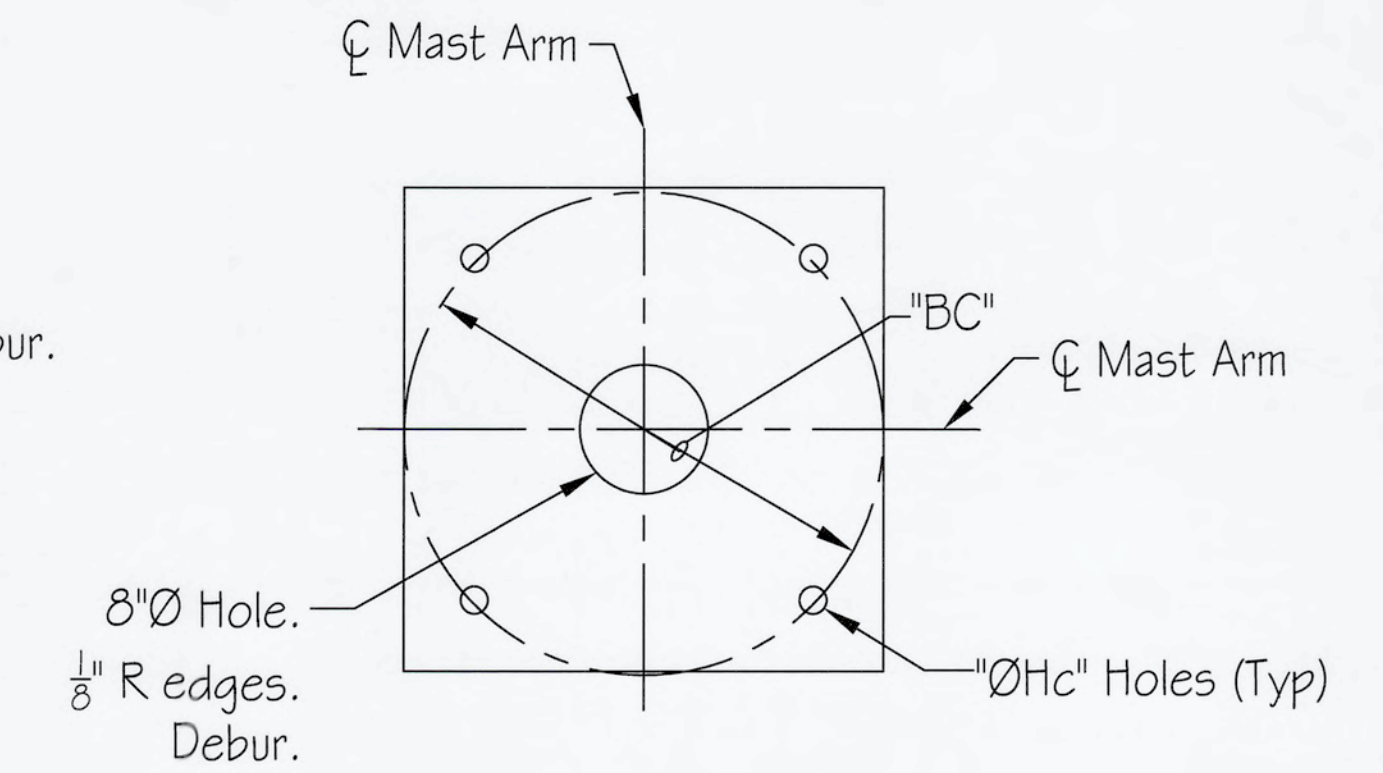
VIEW E-E for Single Arm Pole



Blank-Out "BO" Plate
See Note 1.

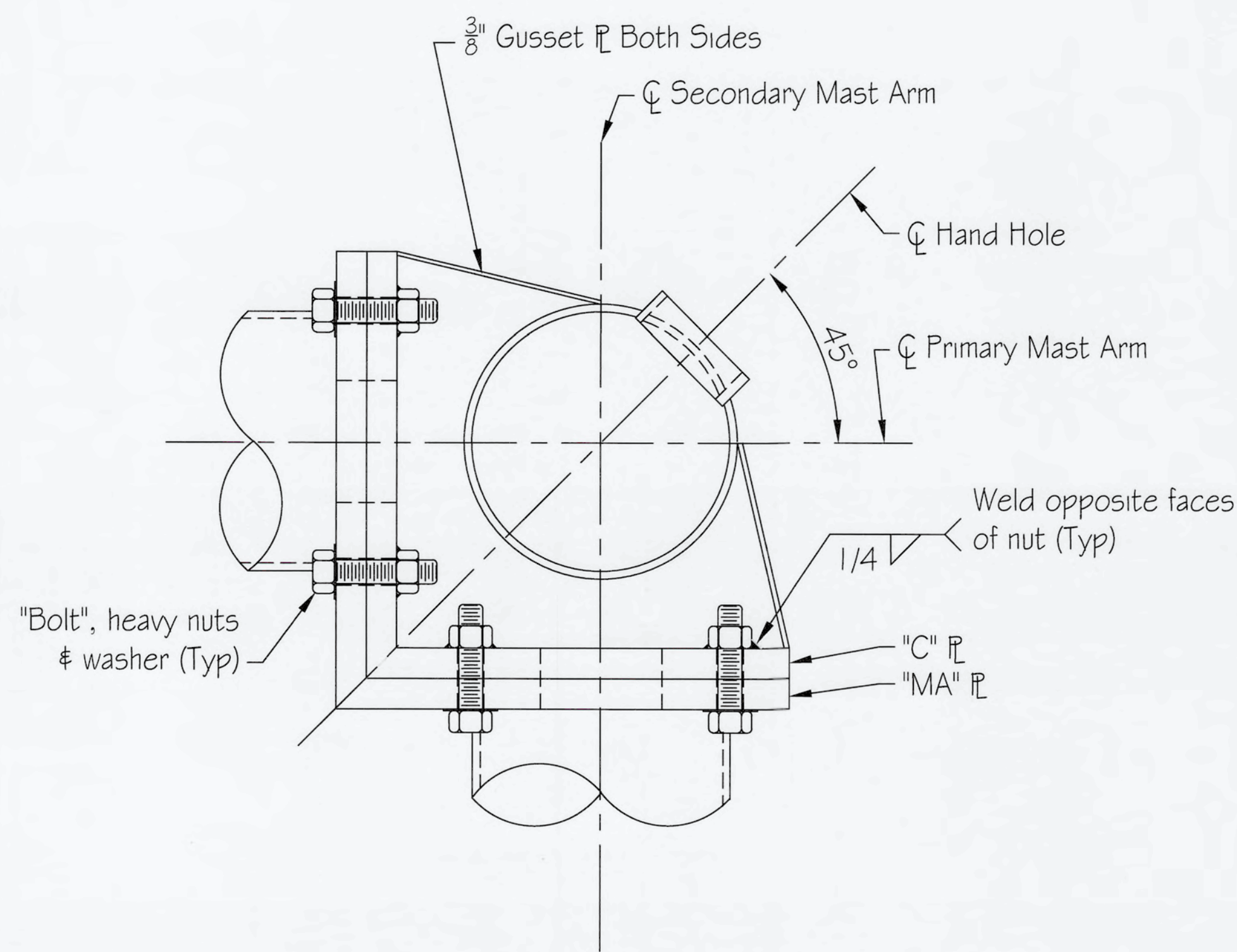


Mast Arm "MA" Plate

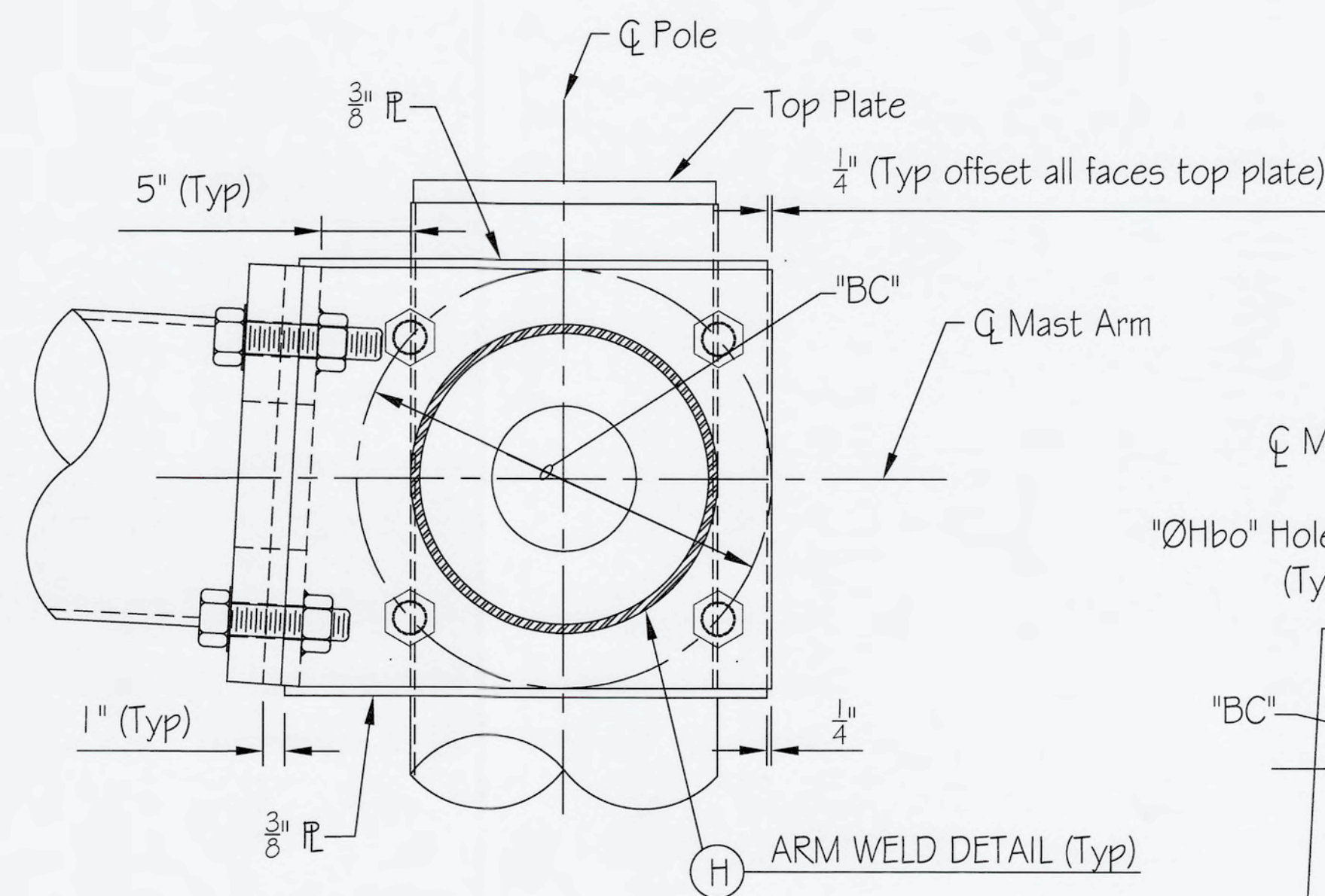


Connection "C" Plate

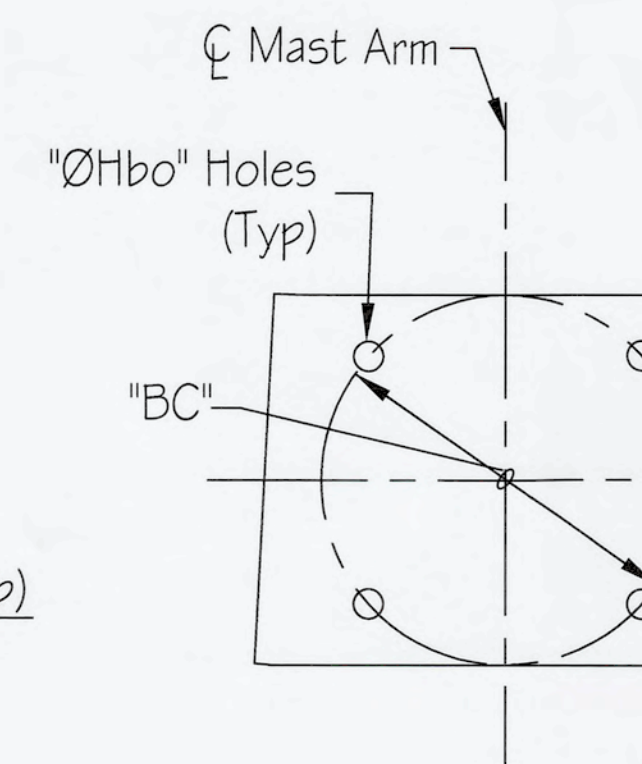
SINGLE MAST-ARM POLE



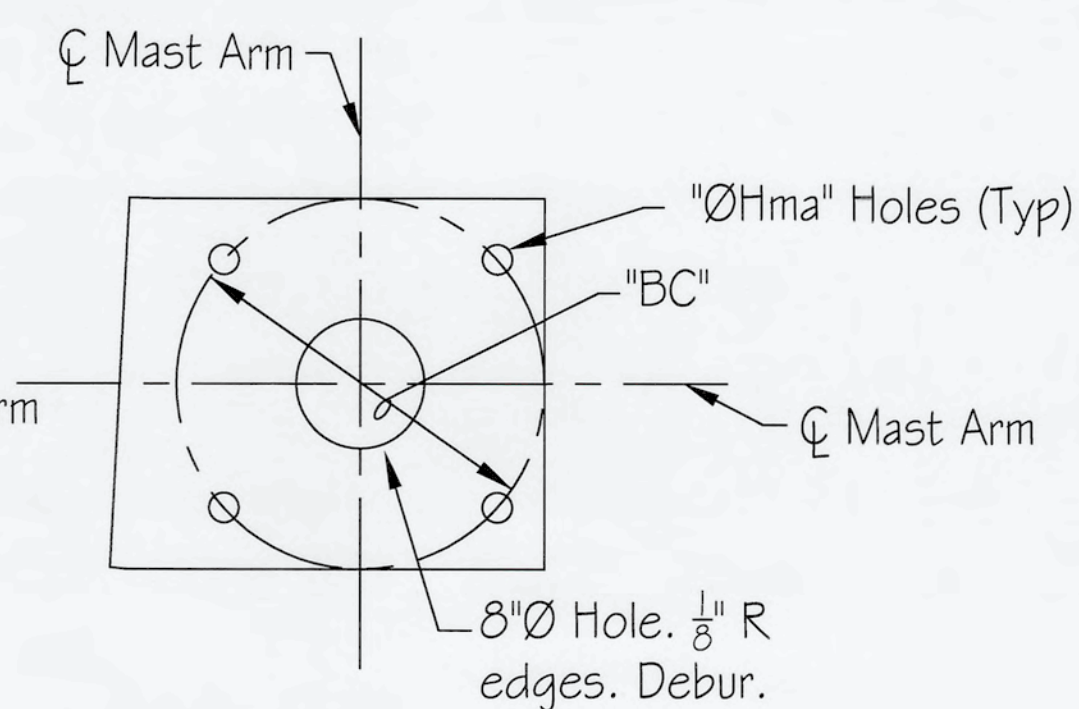
SECTION D-D for Double Arm Pole



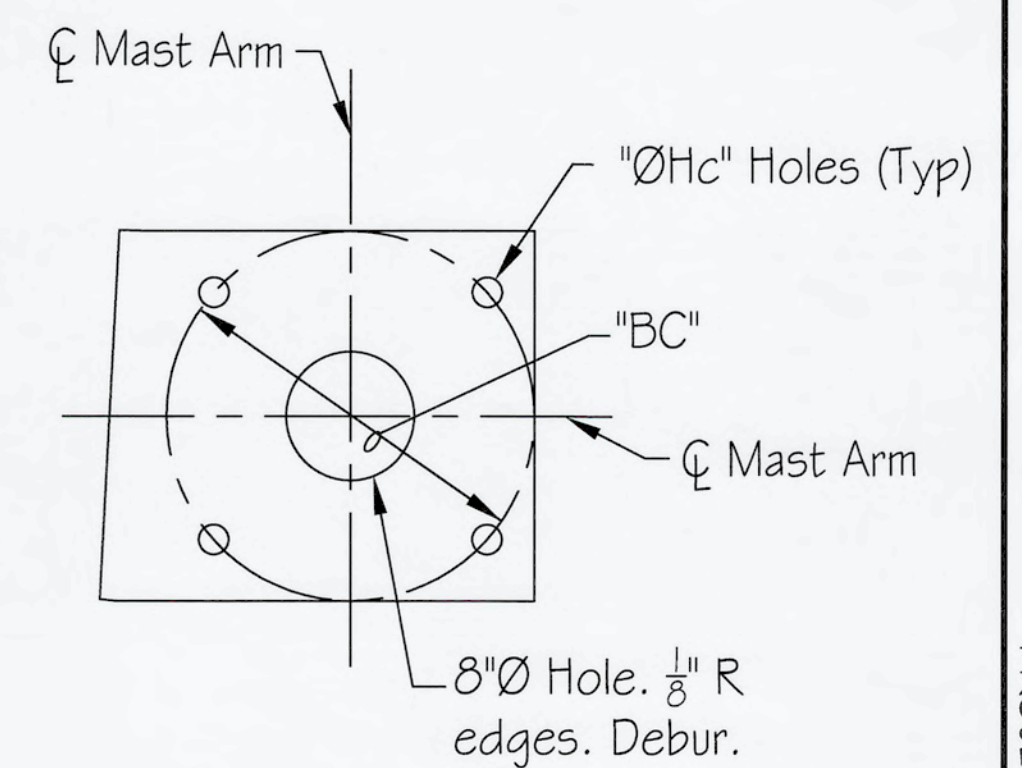
VIEW E-E for Double Arm Pole



Blank-Out "BO" Plate



Mast Arm "MA" Plate



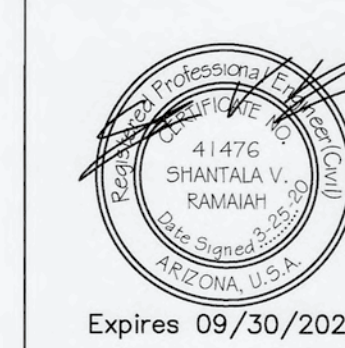
Connection "C" Plate

DOUBLE MAST-ARM POLE

MAST ARM CONNECTION										
MAST ARM ID	Compatible Poles	"Bolt"	Pretension	"BC" Bolt Circle	"C" Plate thickness	"MA" Plate thickness	"BO" Plate thickness	"ØHc" Holes	"ØHma" Holes	"ØHbo" Holes
M15P70, M30P70, M40P70 & M55P70	P70 & DP70	2Ø x 8" (See Note 1)	198 kip	22"	2"	2"	1/8"	2 1/8"	2 5/16"	2 1/8"
M15P45 & M30P45	P45 & DP45	1 1/2" Ø x 8" (See Note 1)	148 kip	21"	2"	2"	1/8"	1 5/8"	1 9/16"	1 5/8"



CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS



P45, DP45, P70, DP70,
& LP Poles and Mast Arm
Details 2 of 2

TPP File Number 10164
DATE: 3/1/2020

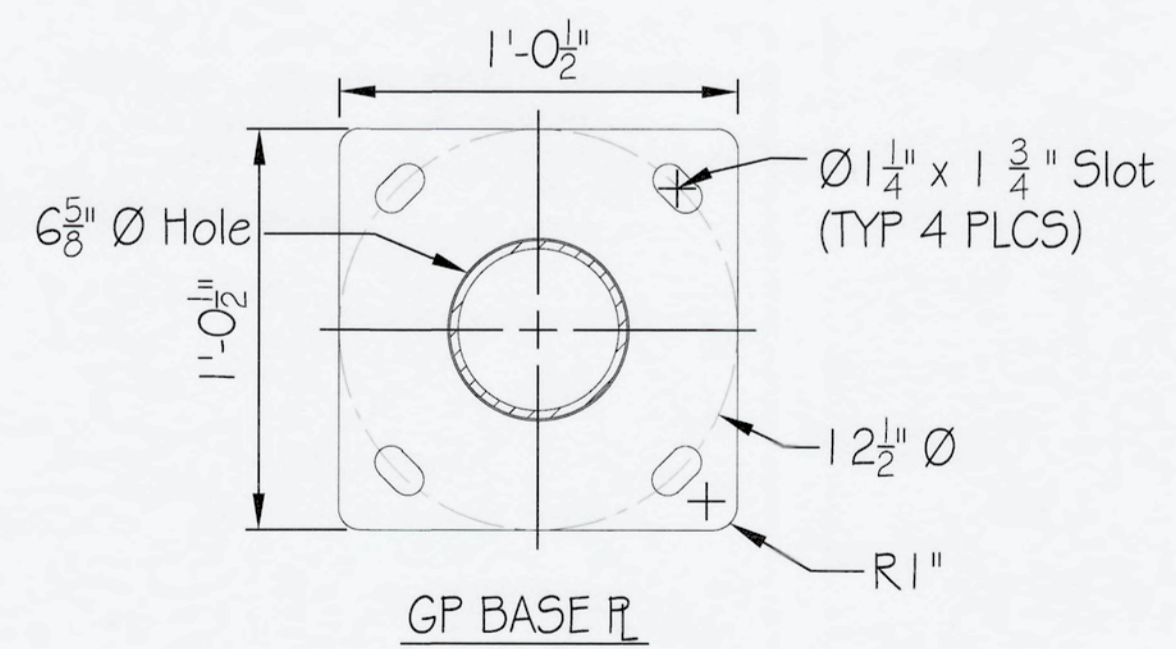
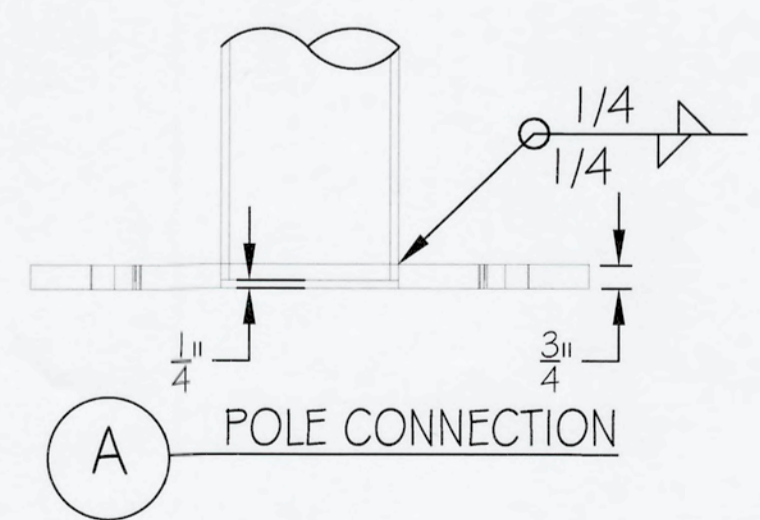
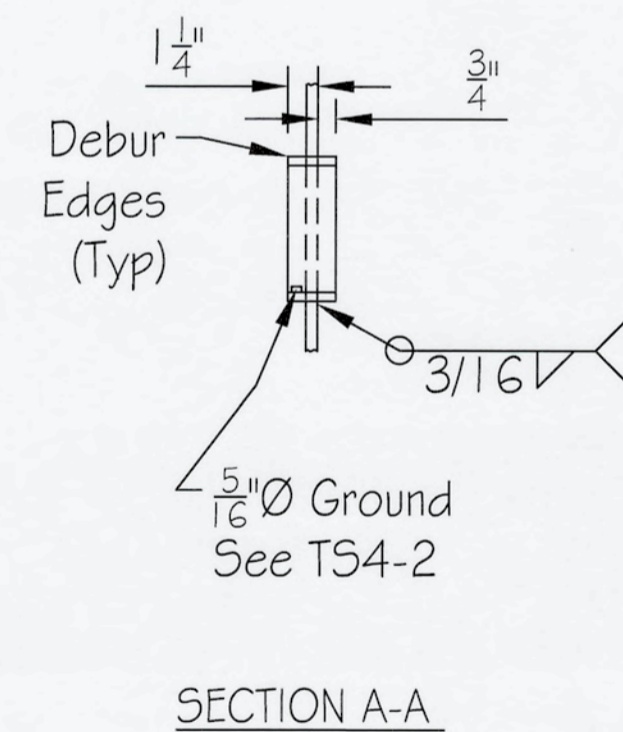
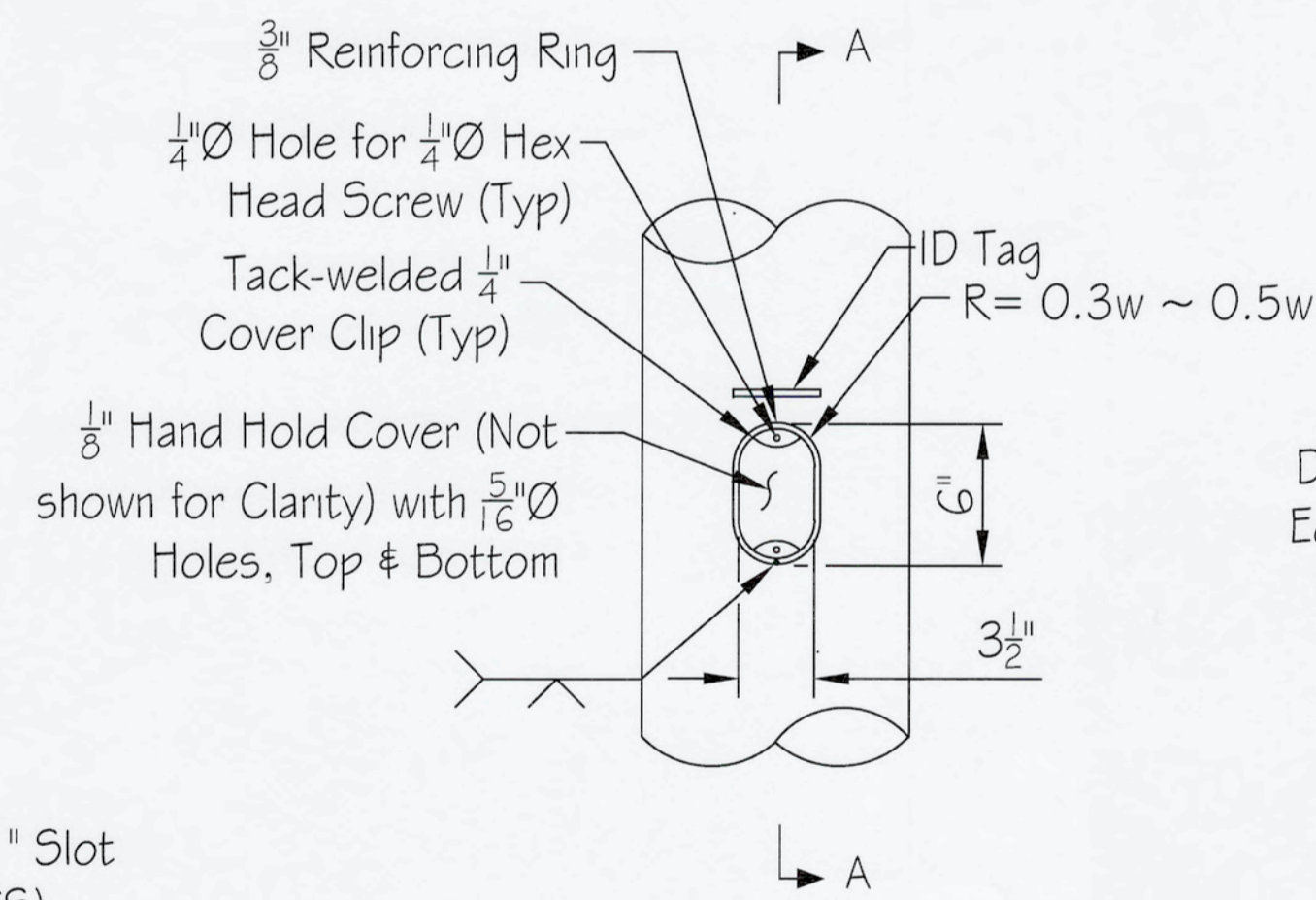
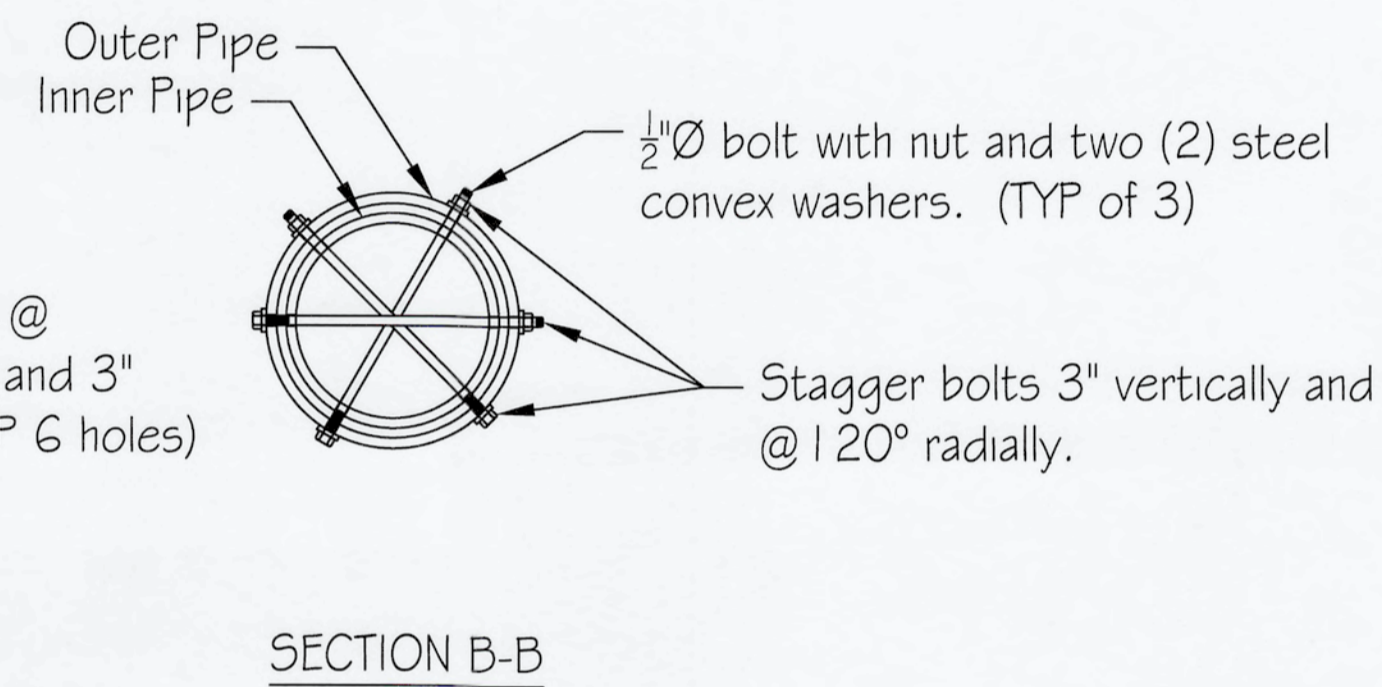
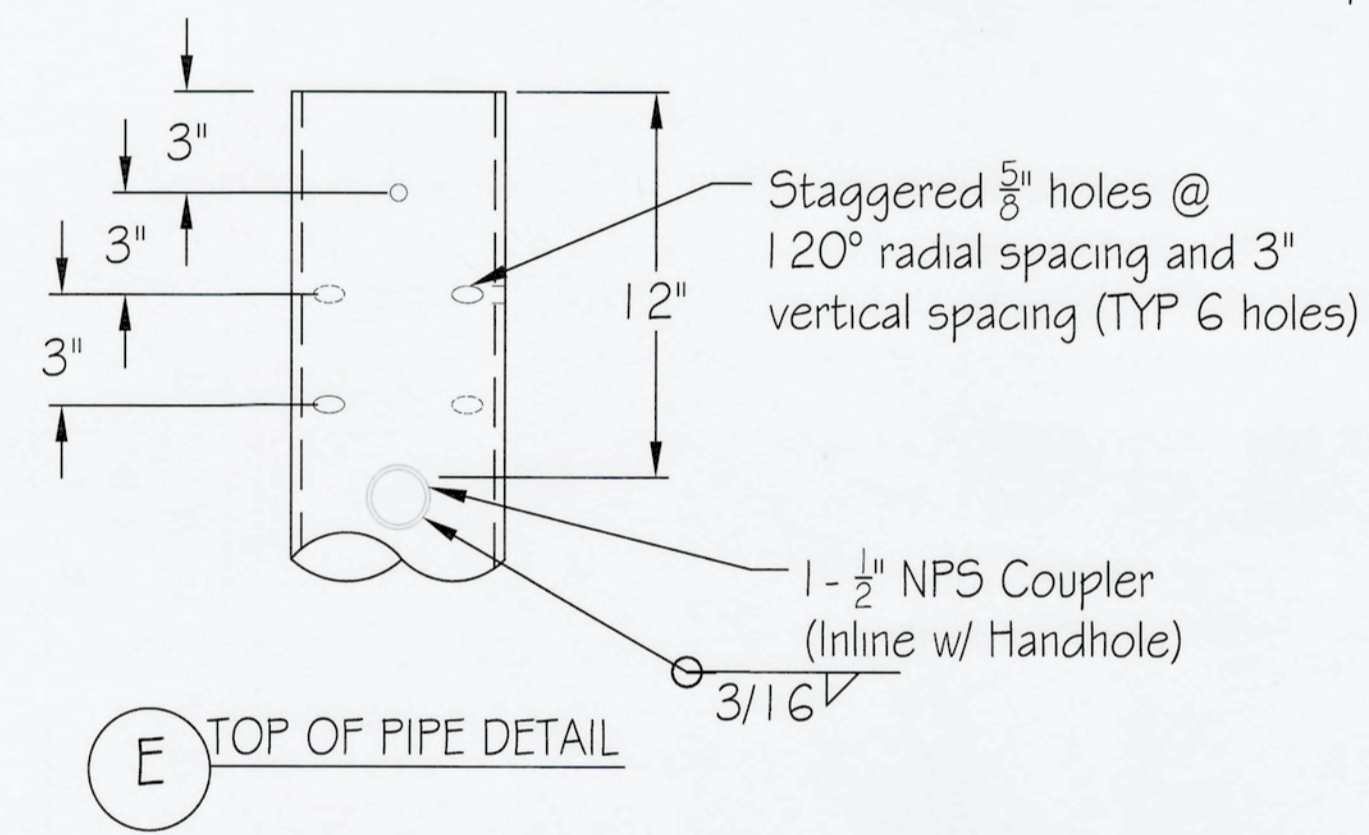
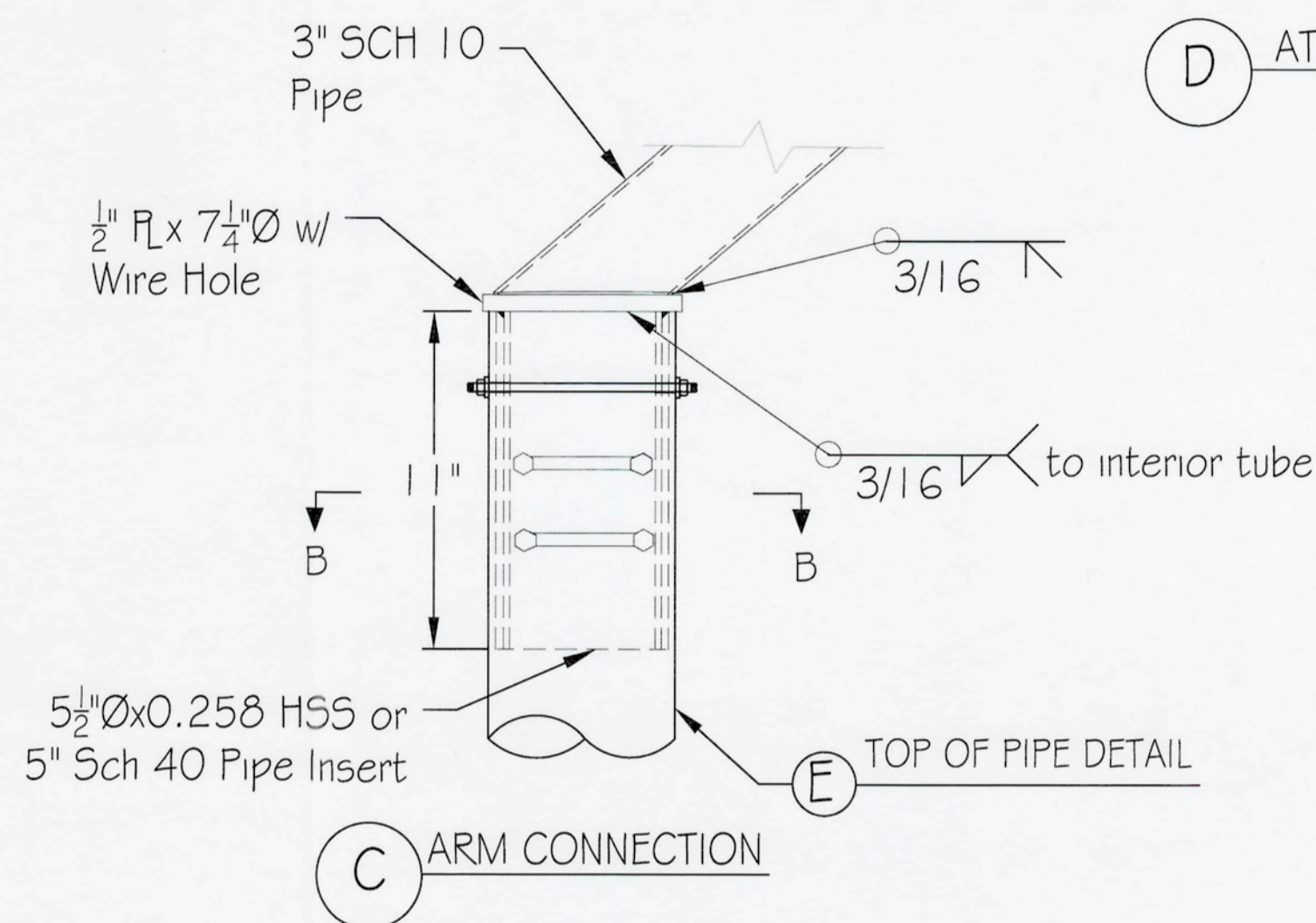
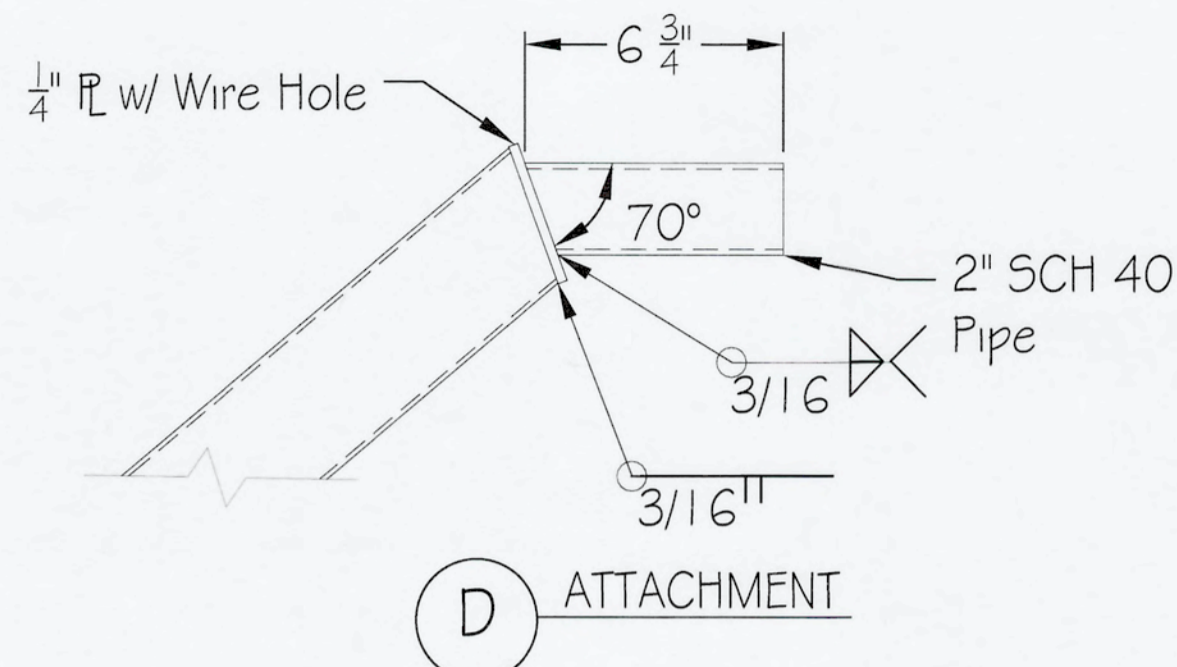
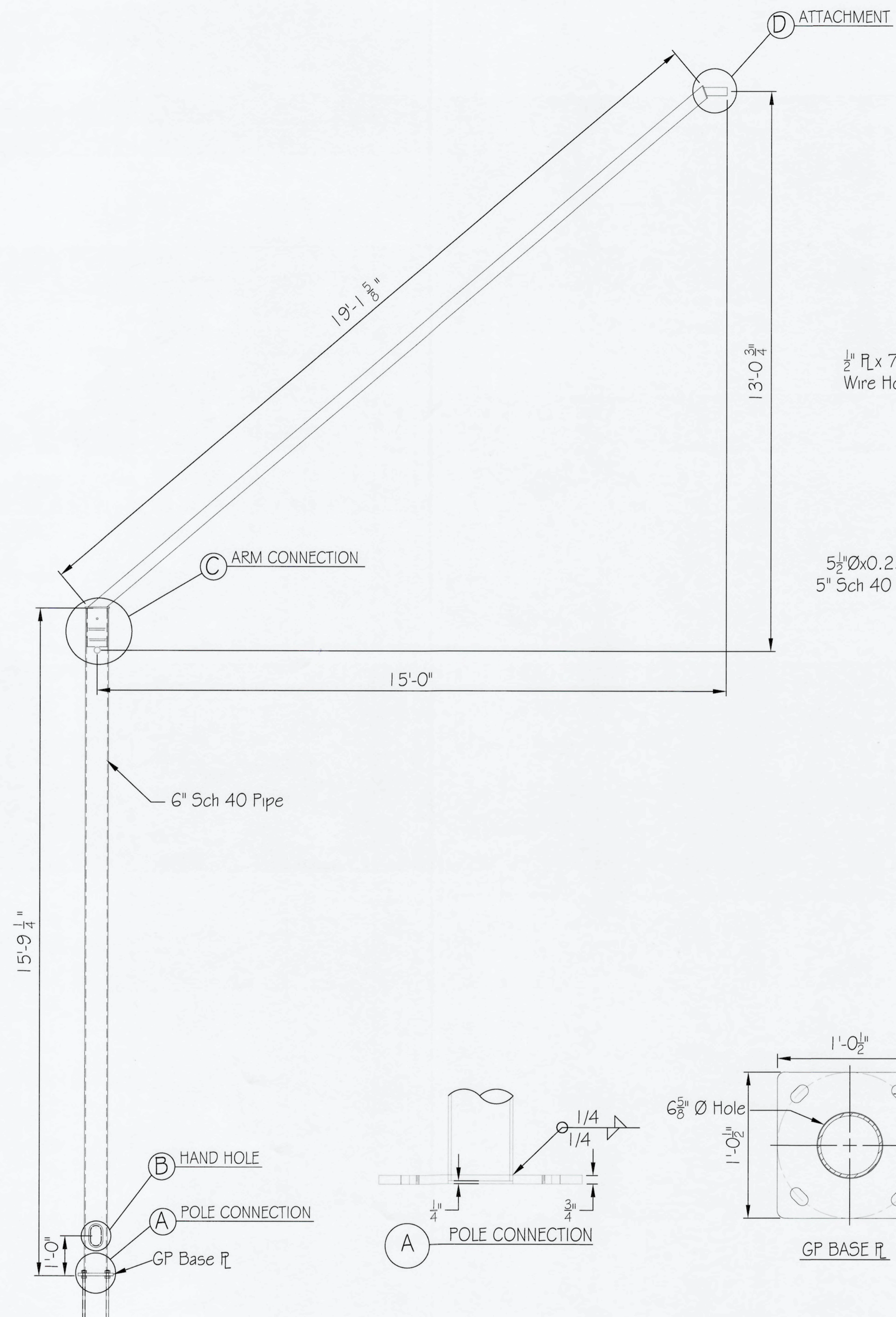
TS 1-6
DATE: 3/1/2020

Expire 09/30/2022

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX."

TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

PROJECT #:	DR: SVR	DES: ANA	CK: WR	SHEET NO:	TOTAL SHEETS:
SCALE:	DATE: 3/1/2020	DATE: 3/1/2020	DATE: 3/1/2020	NO:	
Q5. #:					



MEMBER	WEIGHT (lb)
GP Pole	300
Luminaire Arm	71

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TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT



CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS



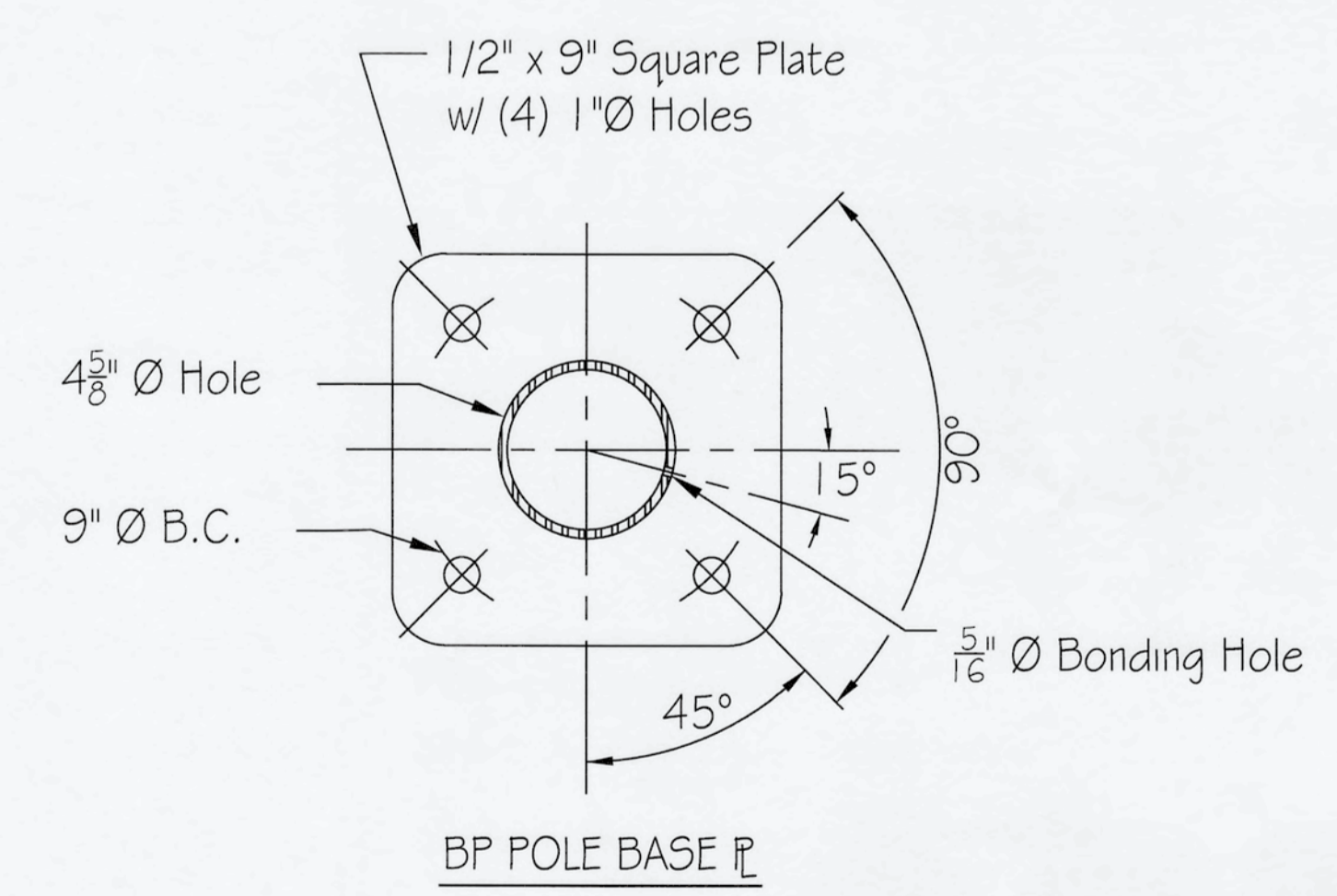
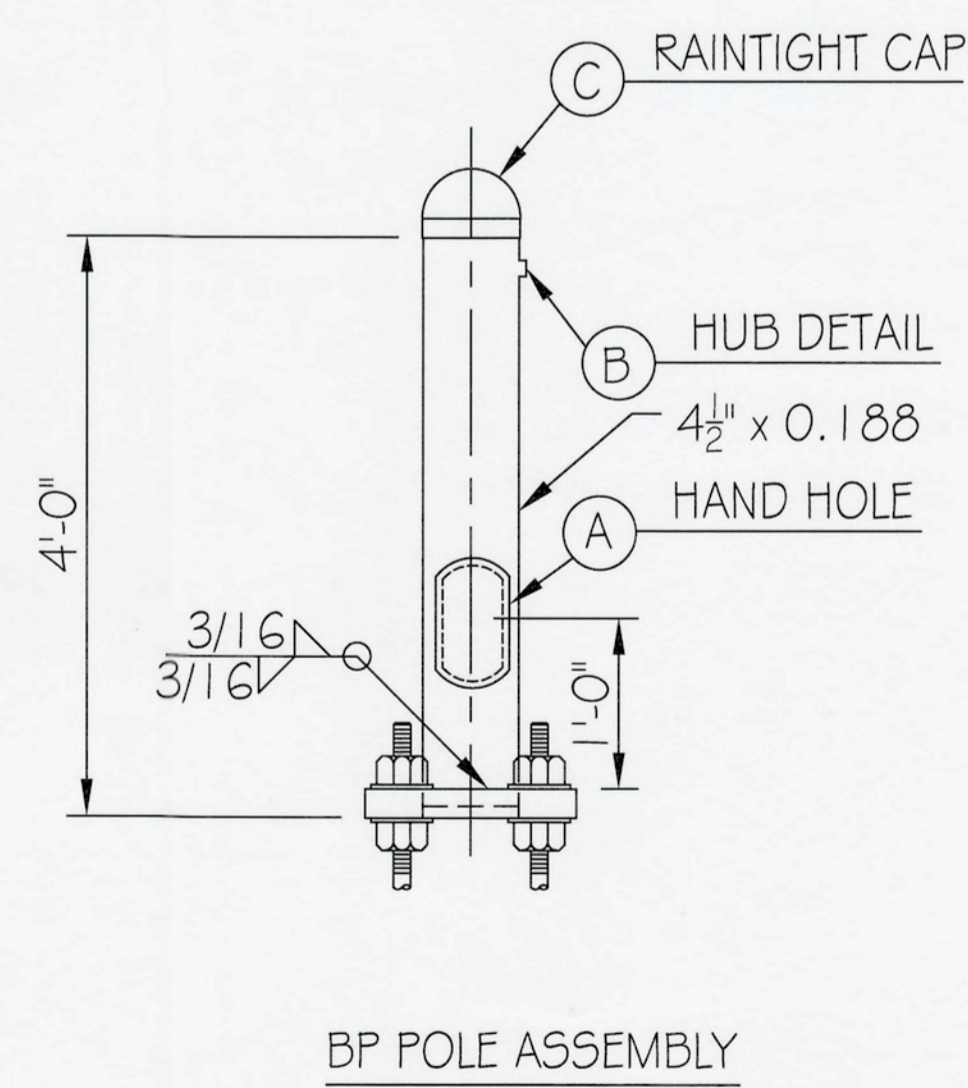
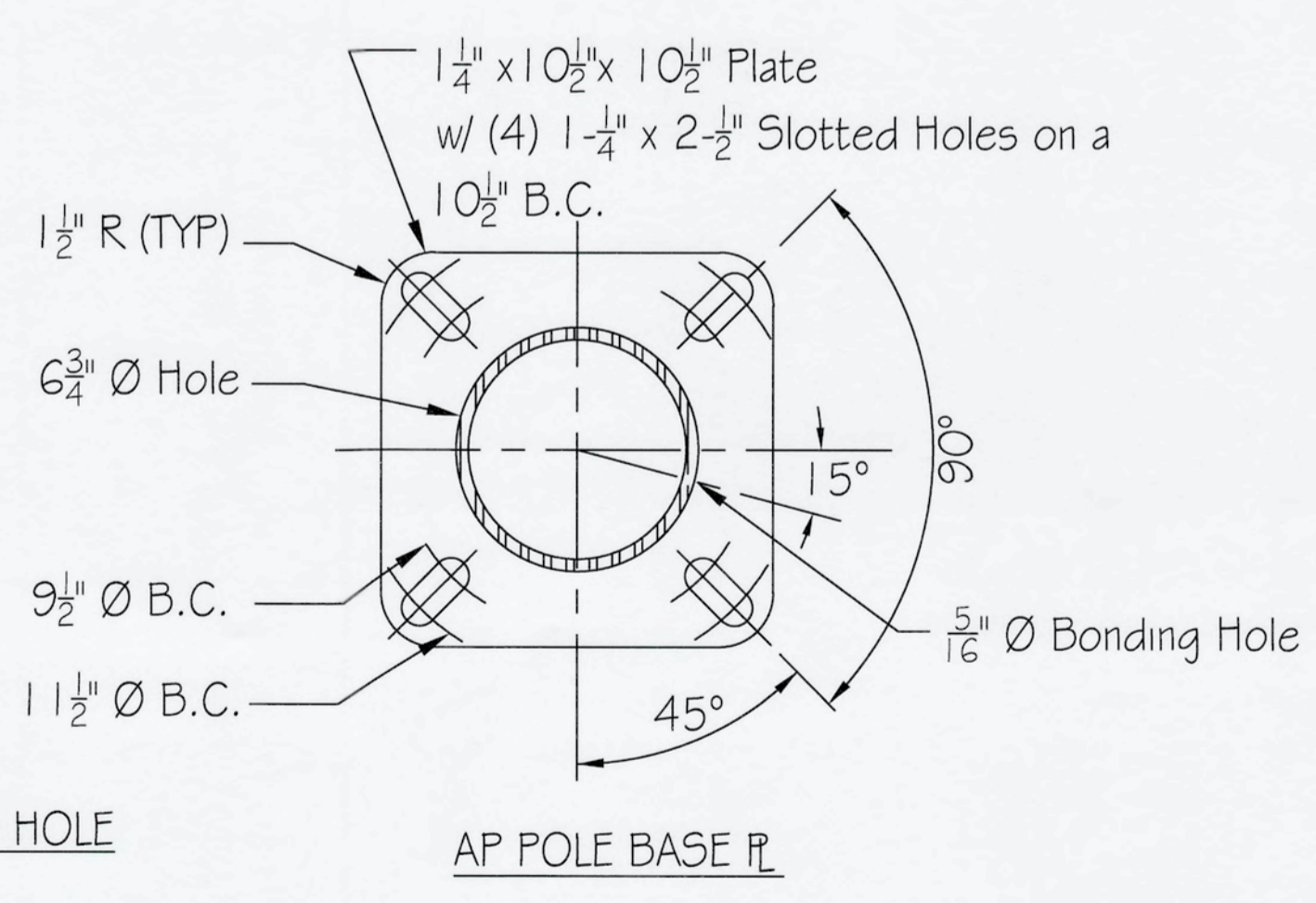
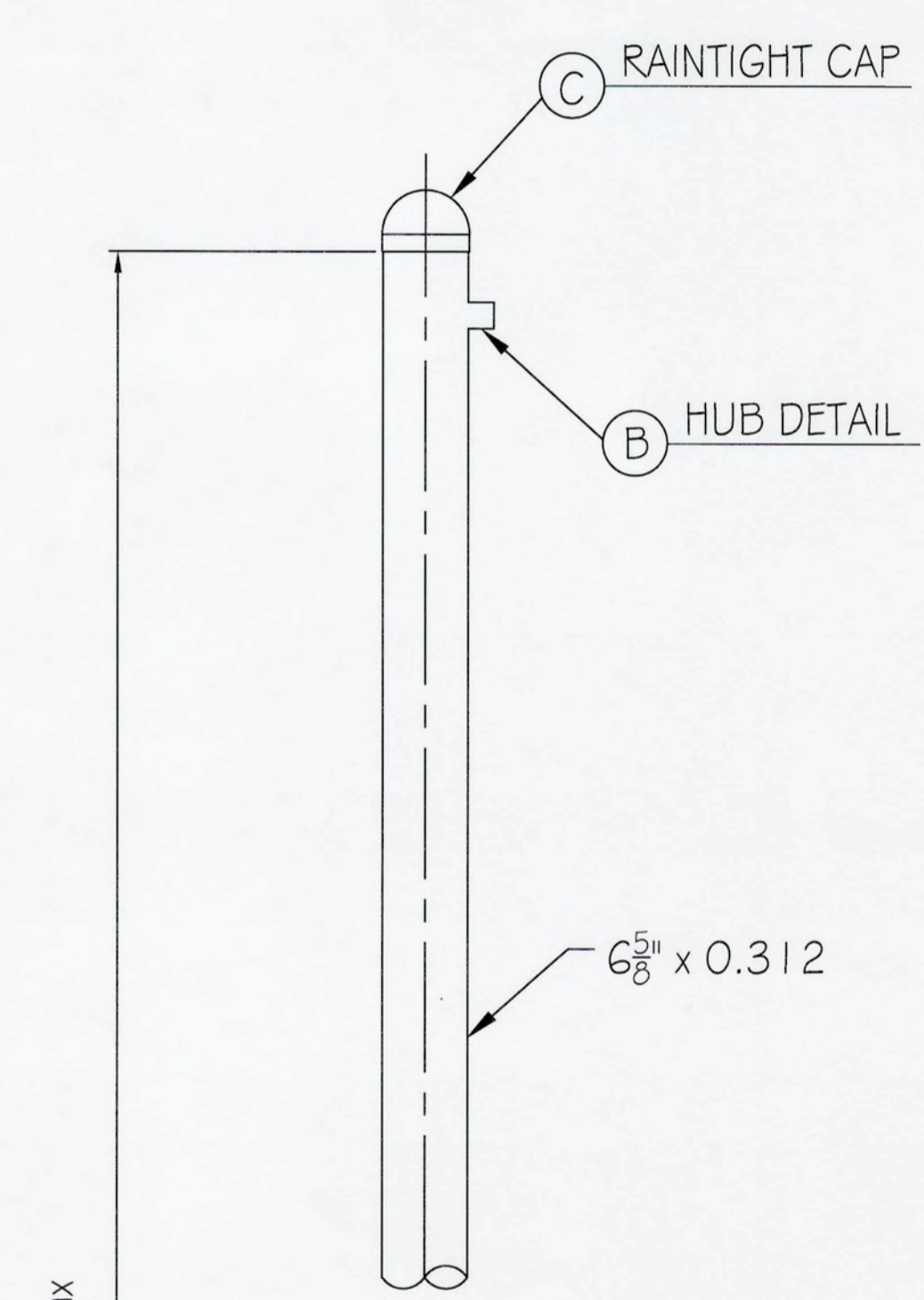
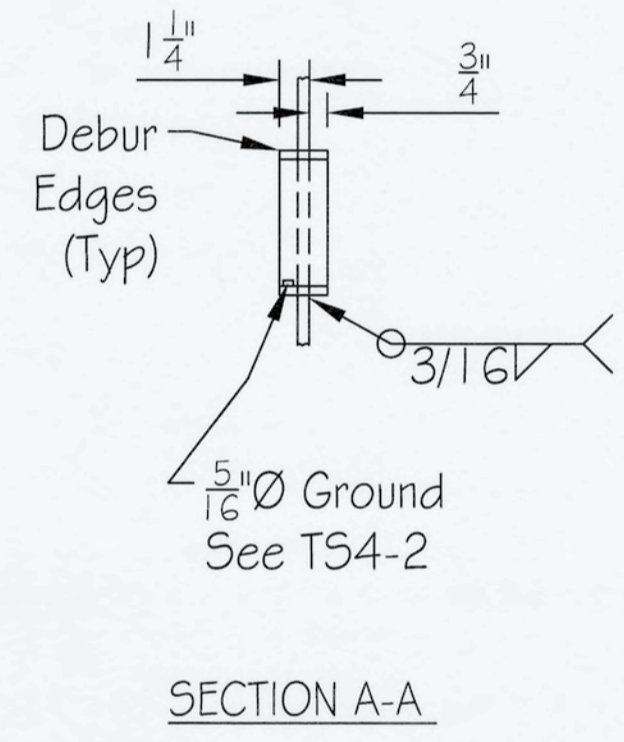
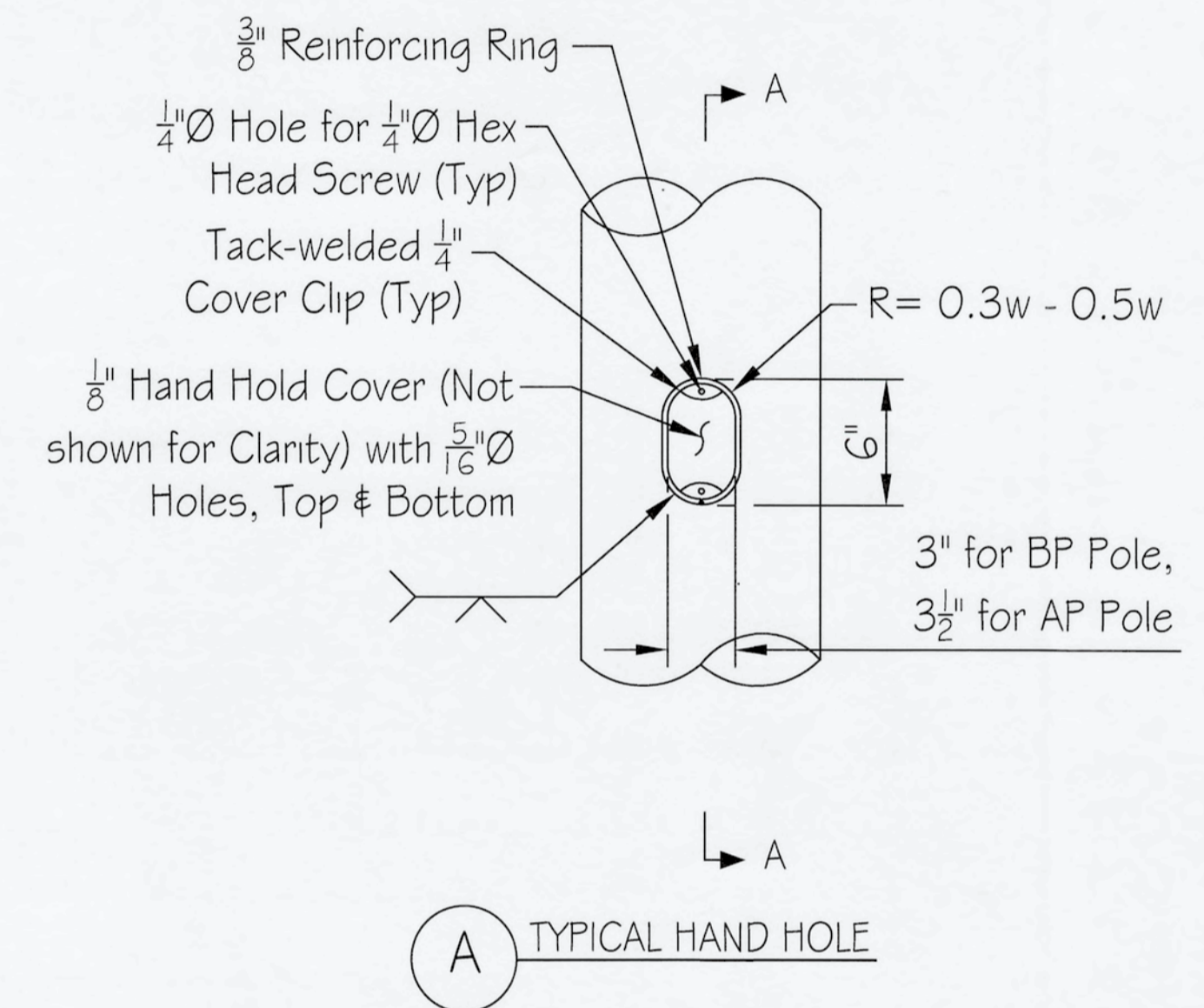
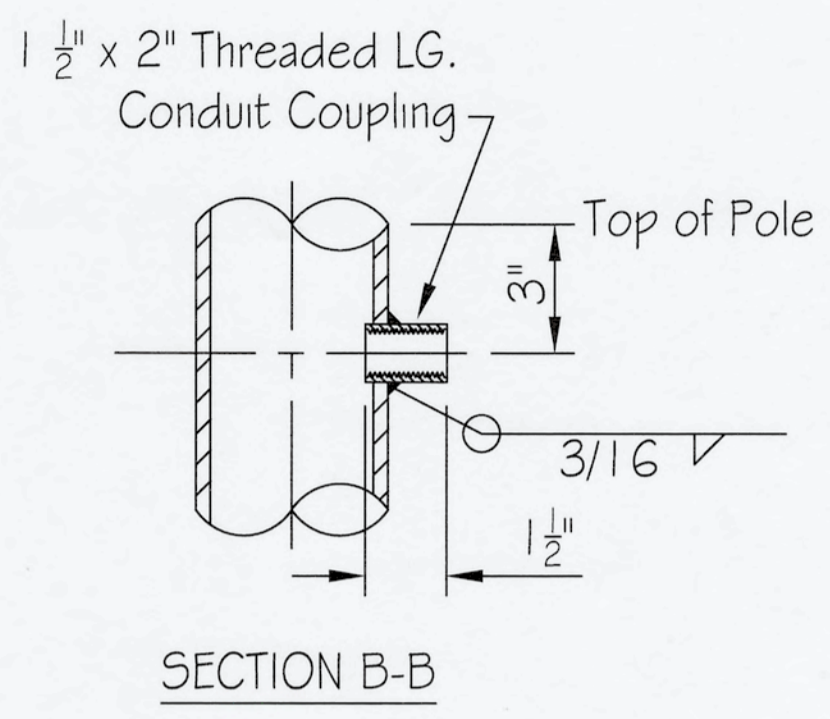
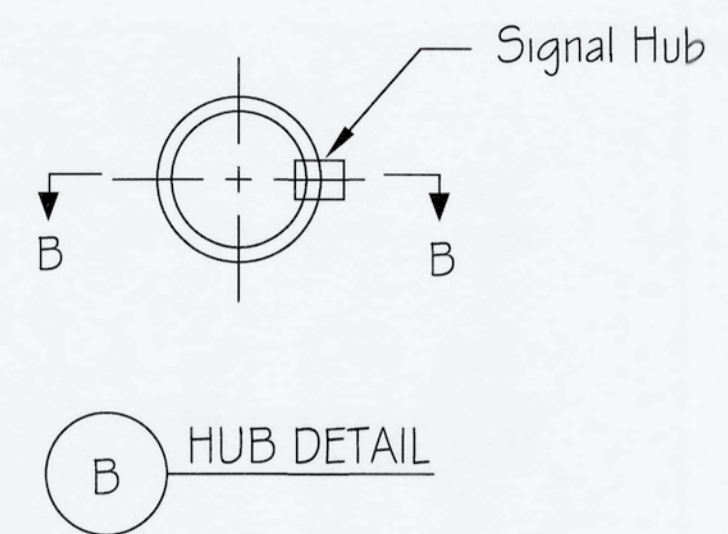
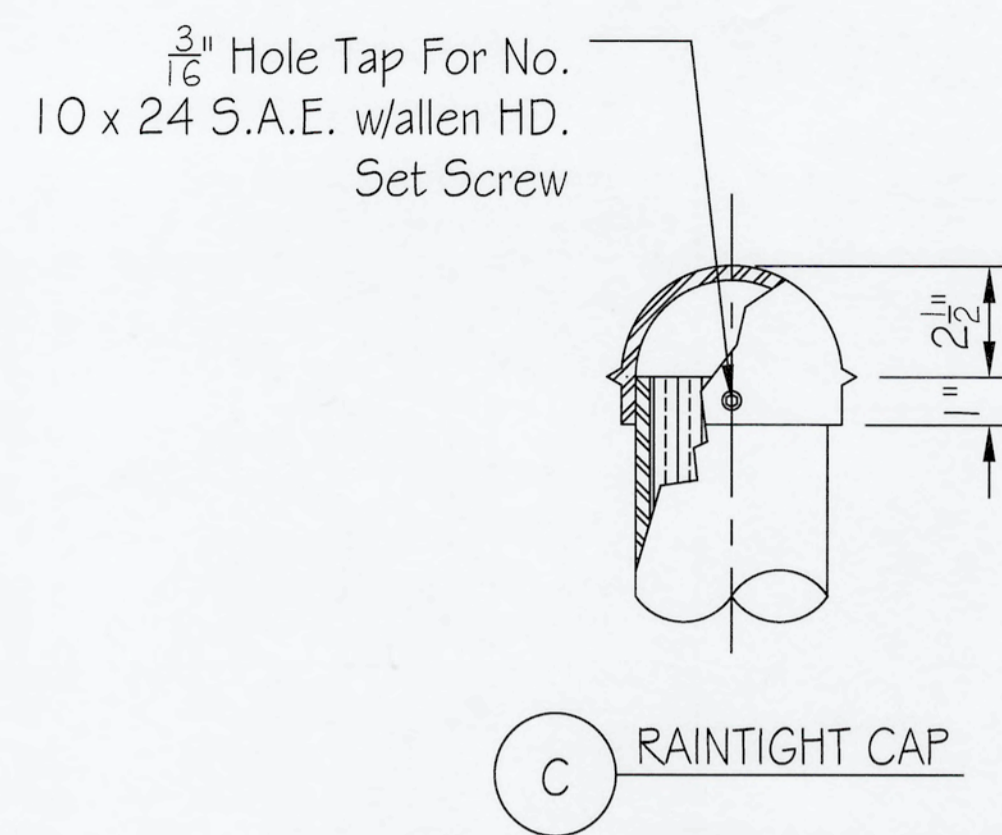
GP Pole with Lumaire Arm

TPP File Number: 10164
DATE: 3/1/2020
ENGINEER: [Signature]

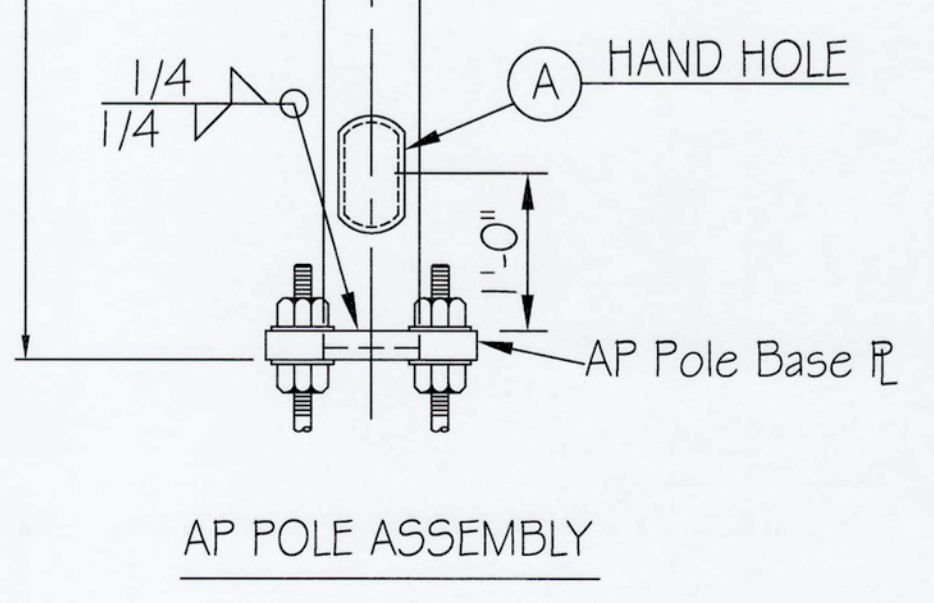
TS 1-7
DATE: 3/1/2020
SCALE: 4/16/20

PROJECT #:	DR: SVR	DES: ANA	CK: WR	SHEET NO:	TOTAL SHEETS:
	DATE: 3/1/2020	DATE: 3/1/2020	DATE: 3/1/2020		

- NOTES:
1. See Signal Plans for pole height.
 2. See TS 3-3 for allowable signal configurations.



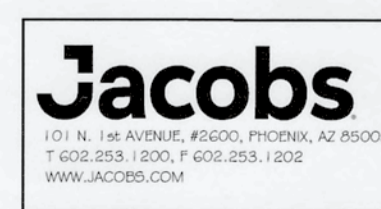
MEMBER	WEIGHT (lb)
15' AP Pole	316
20' AP Pole	421
BP Pole	35



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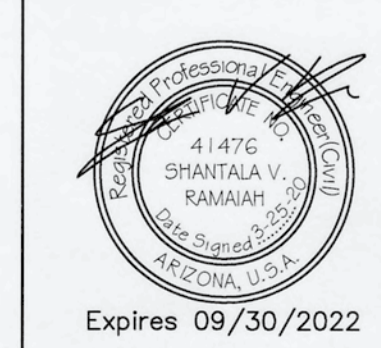
TRAFFIC SIGNAL DETAILS

CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT



CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT

TRAFFIC SIGNAL STANDARD DETAILS



AP Signal Pole & BP Push-Button Pole

TPP File Number: 10164

TS 1-8

DATE: 3/11/2020

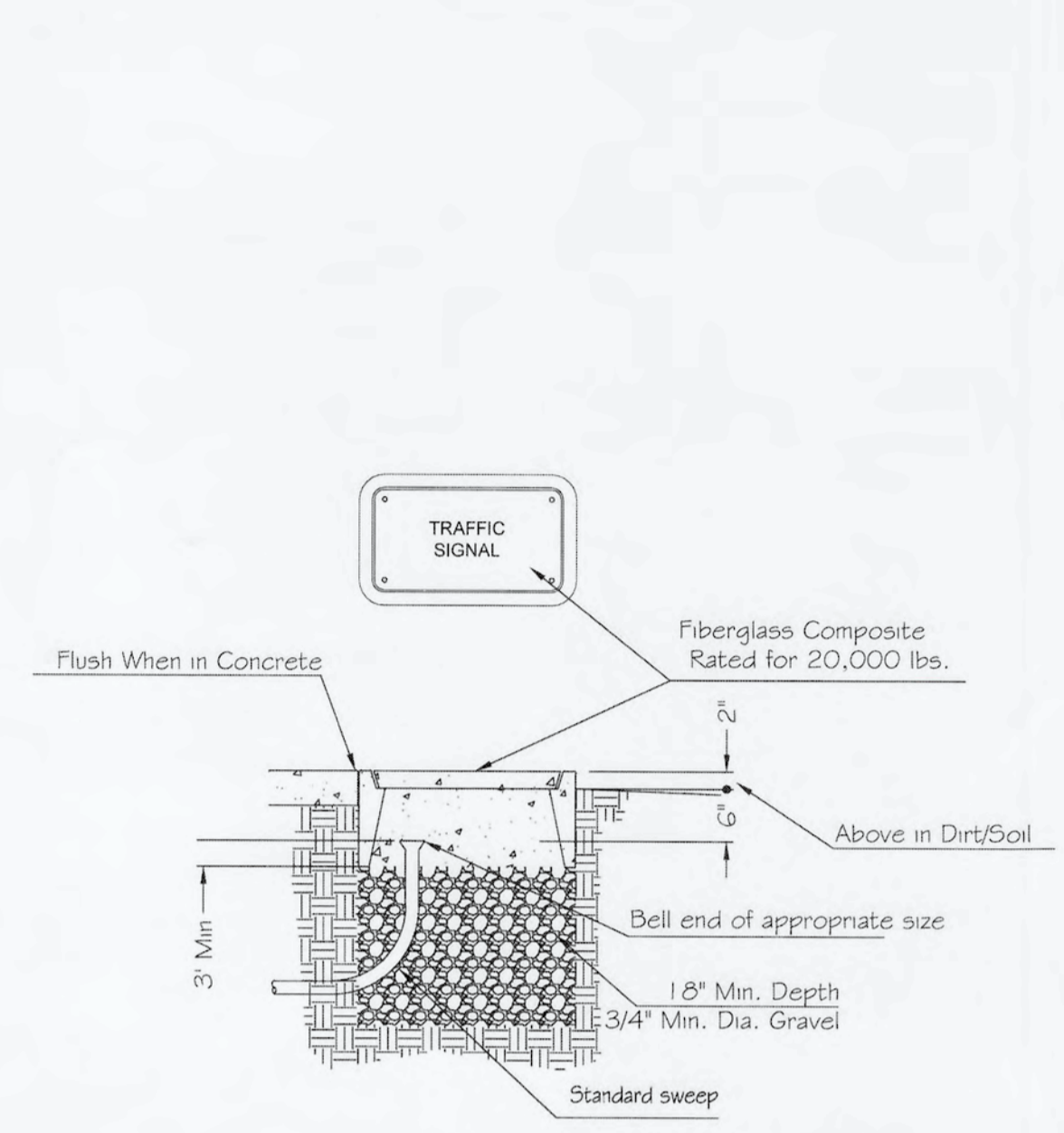
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DATE: 3/11/2020

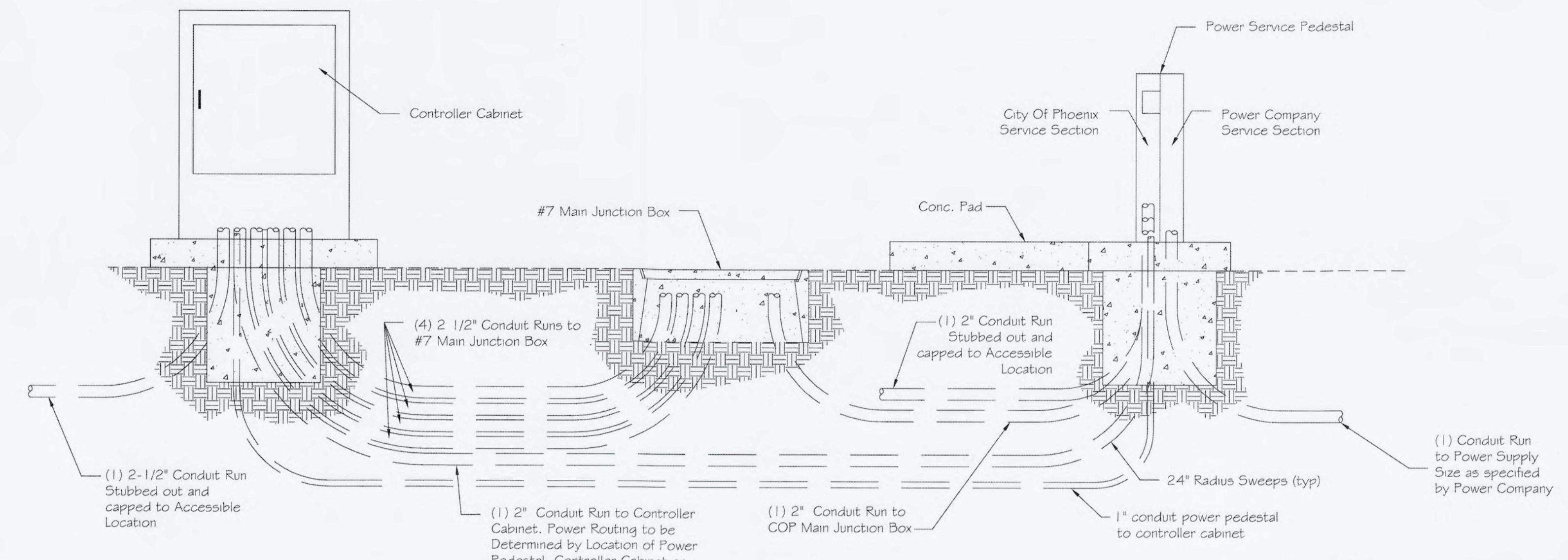
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PROJECT #:	DR: SVR	DES: ANA	CK: WR	SHEET NO:	TOTAL SHEETS:
	DATE: 3/11/2020	DATE: 3/11/2020	DATE: 3/11/2020		
			Q5. #:		

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.			
DR:	DES:	CK:	DATE:	



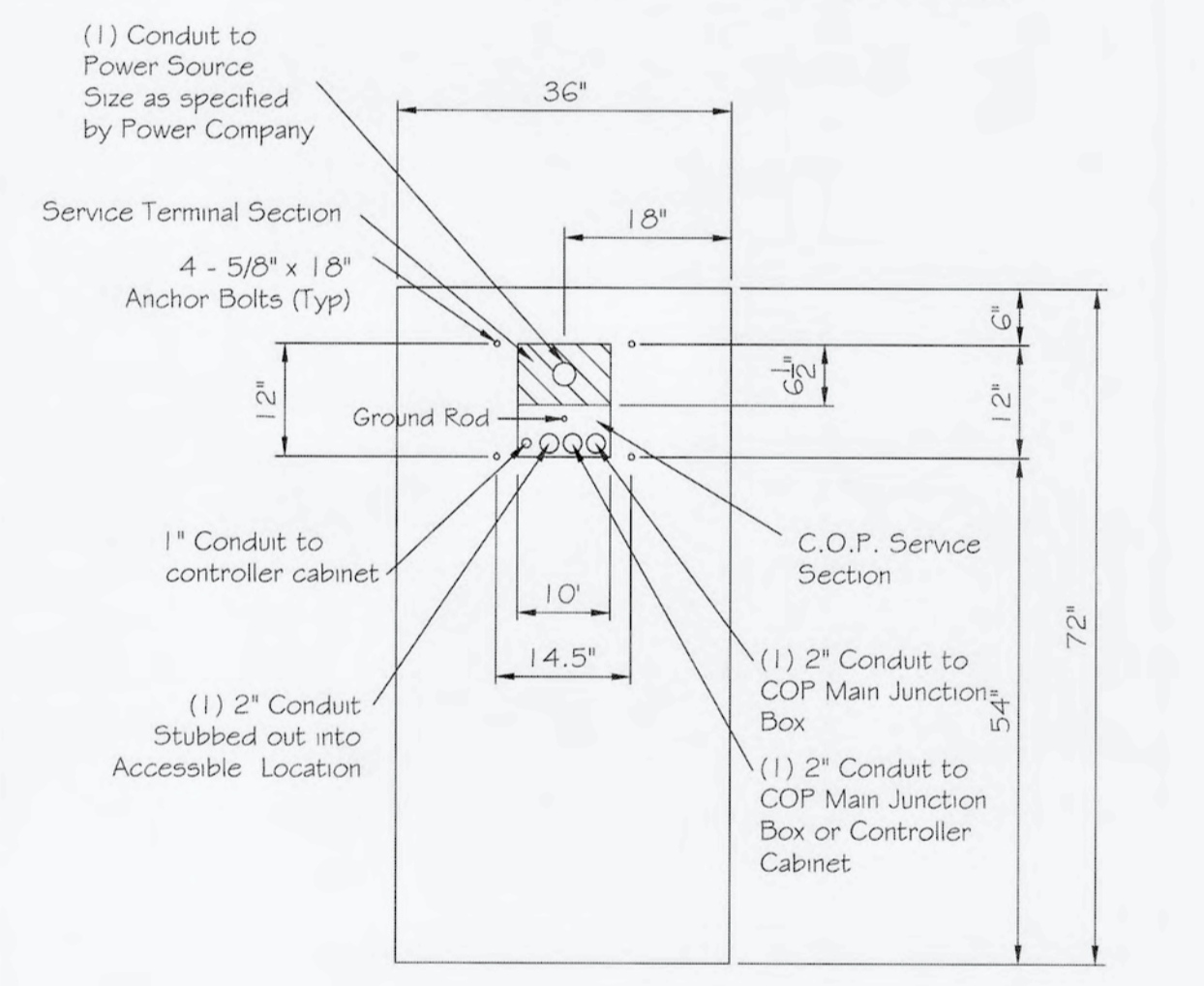
JUNCTION BOX DETAIL



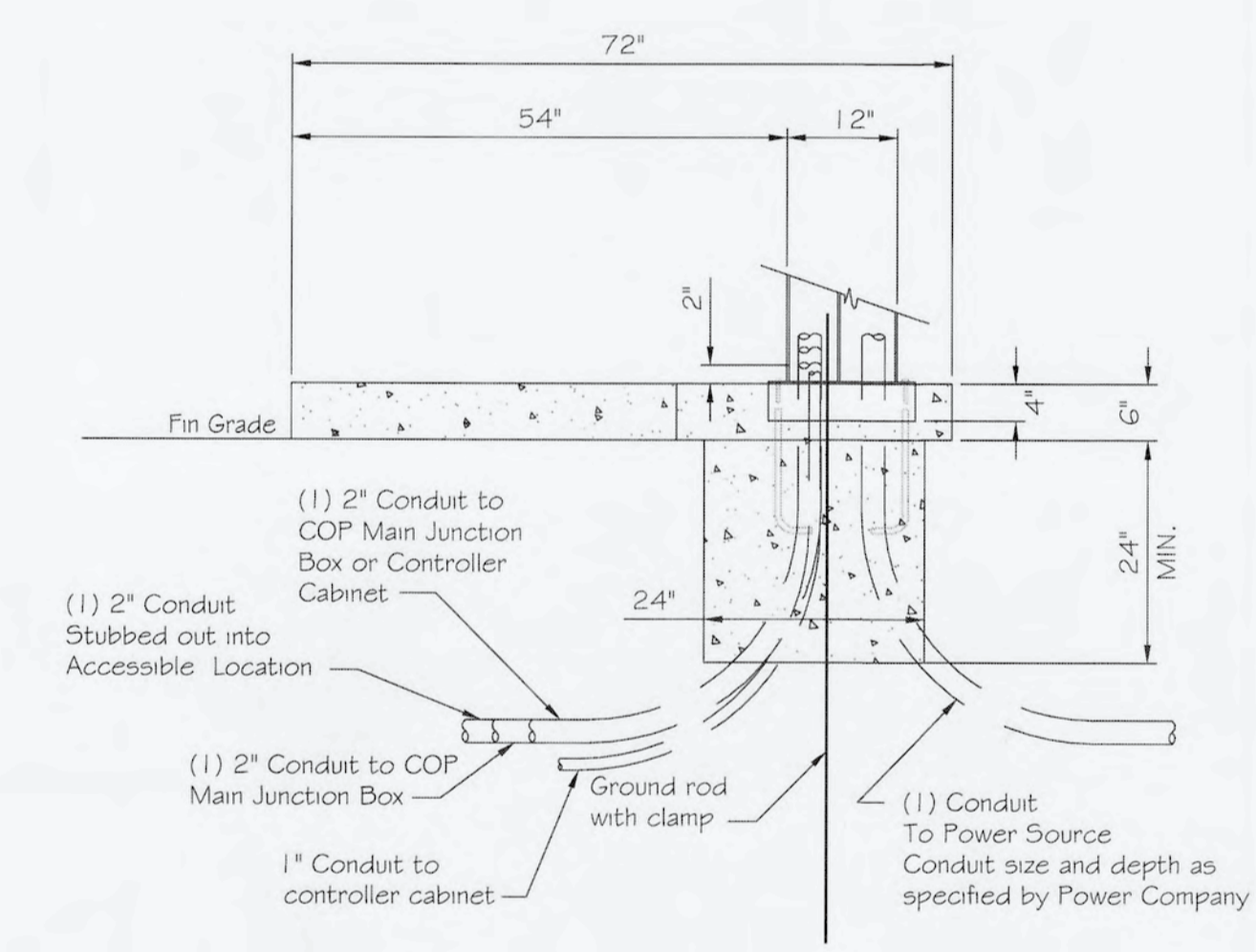
CONTROLLER CABINET POWER CONDUIT RUN

JUNCTION BOX:

- All Junction Box Lids shall be imprinted to say "TRAFFIC SIGNALS" and be a fiberglass composite rated for 20,000 lbs. and supplied with bolt lock downs. A minimum depth of eighteen (18) inches of three quarter (3/4) inch rock shall be installed under each Junction Box.
- All Conduit shall be installed between twentyfour (24) inches and forty (40) inches below finished grade, in straight lines. Junction Box to Junction Box or Junction Box to Pole Base, with one (1) 90° sweep on each end as specified in the plans. All Conduit entering Junction Boxes shall be vertical with the top of the Conduit six (6) inches below the bottom of the Junction Box cover. Conduit in all Foundations shall be located as close as possible to the center of the Foundation.

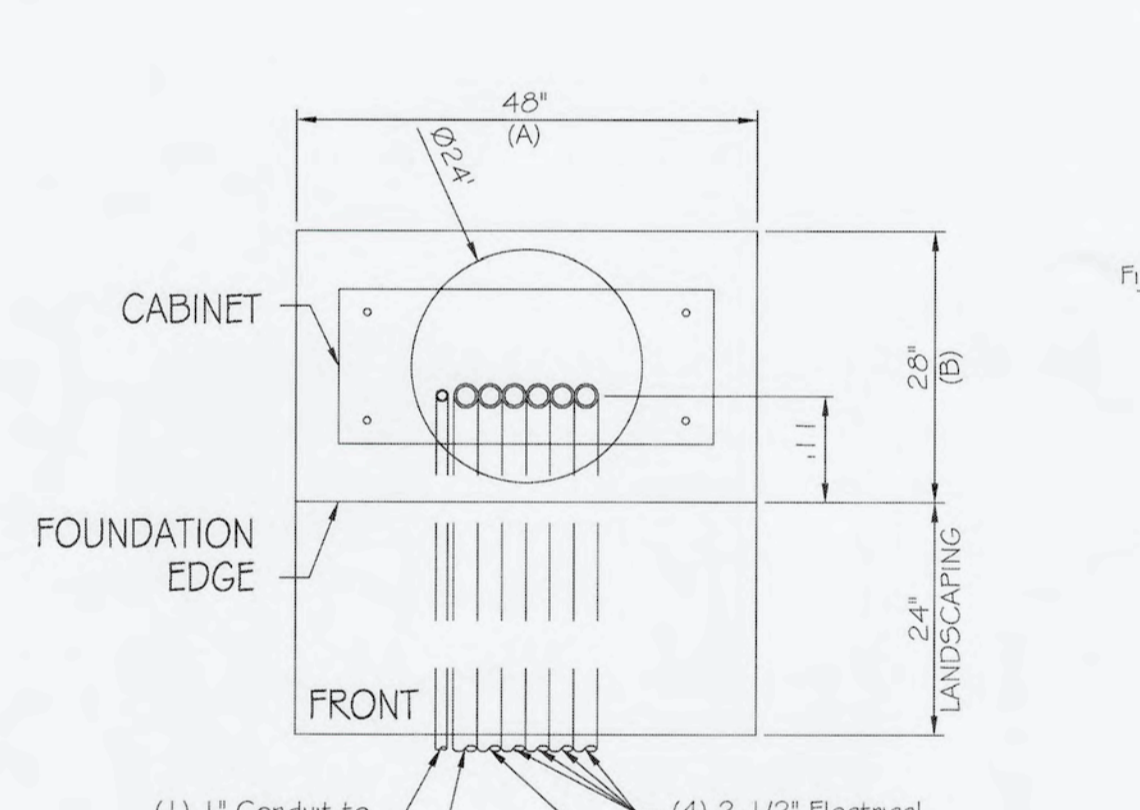


TOP VIEW

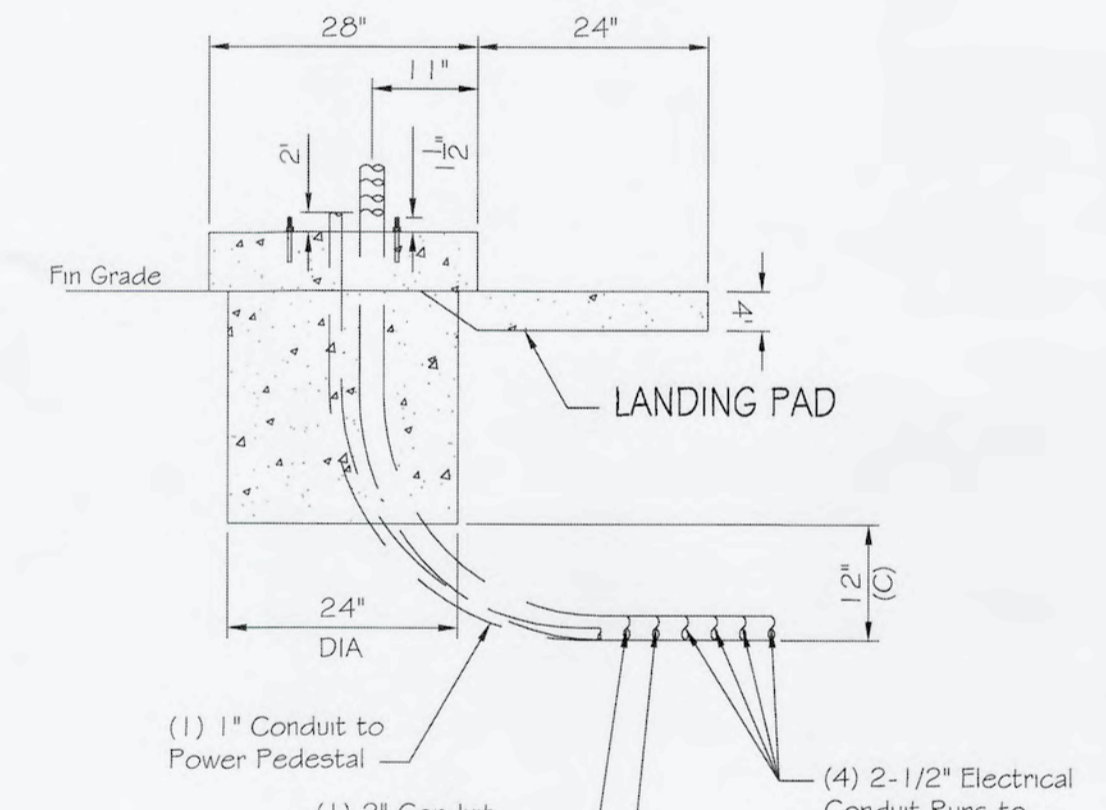


SIDE VIEW

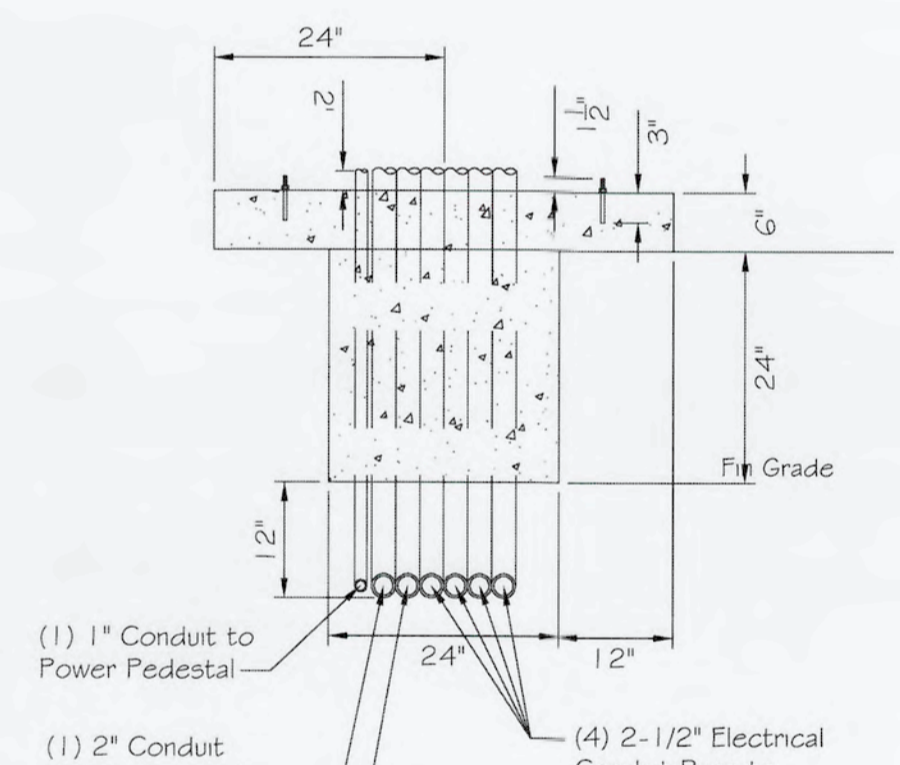
POWER PEDESTAL BASE DETAIL TYPE "A"



TOP VIEW



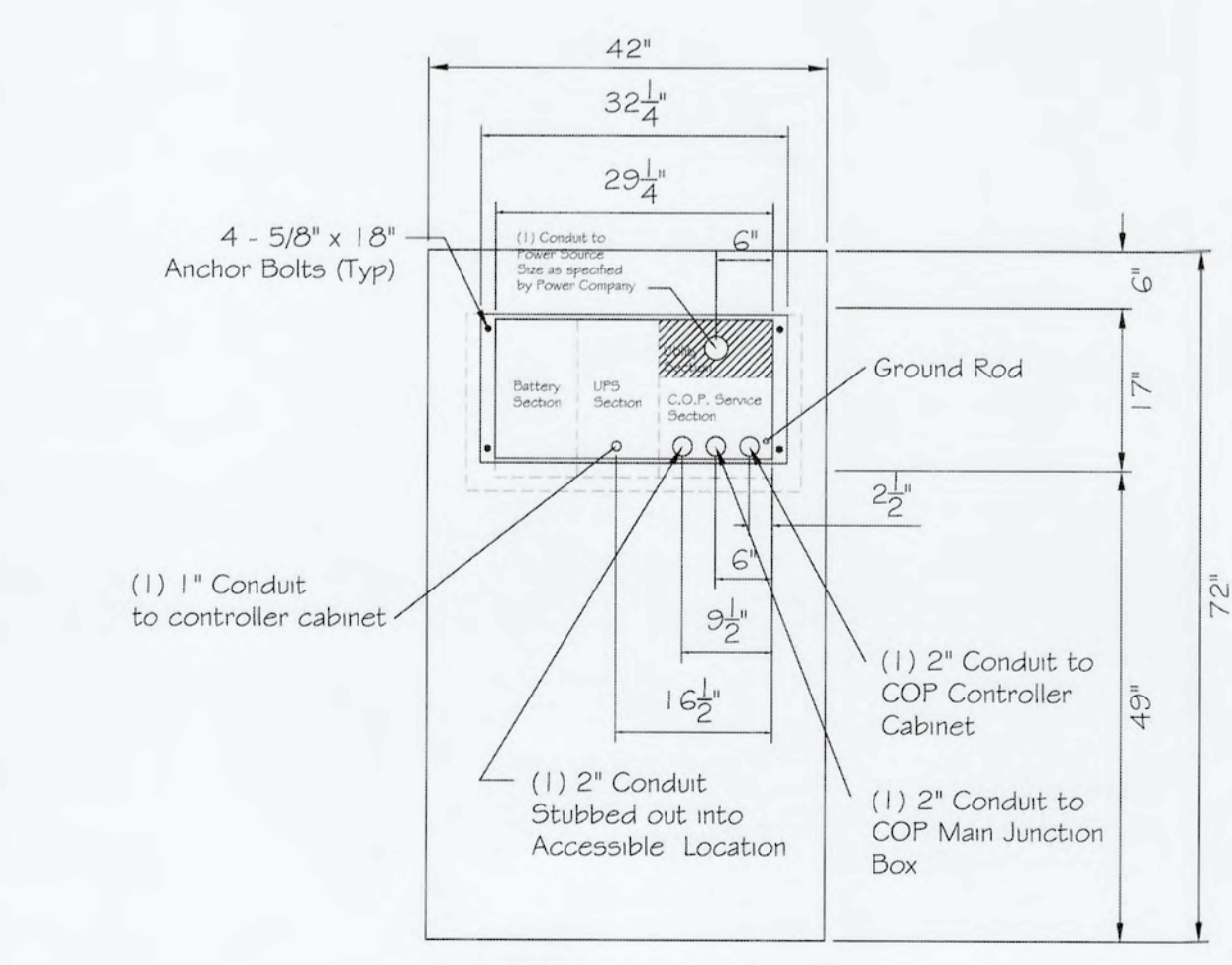
SIDE VIEW



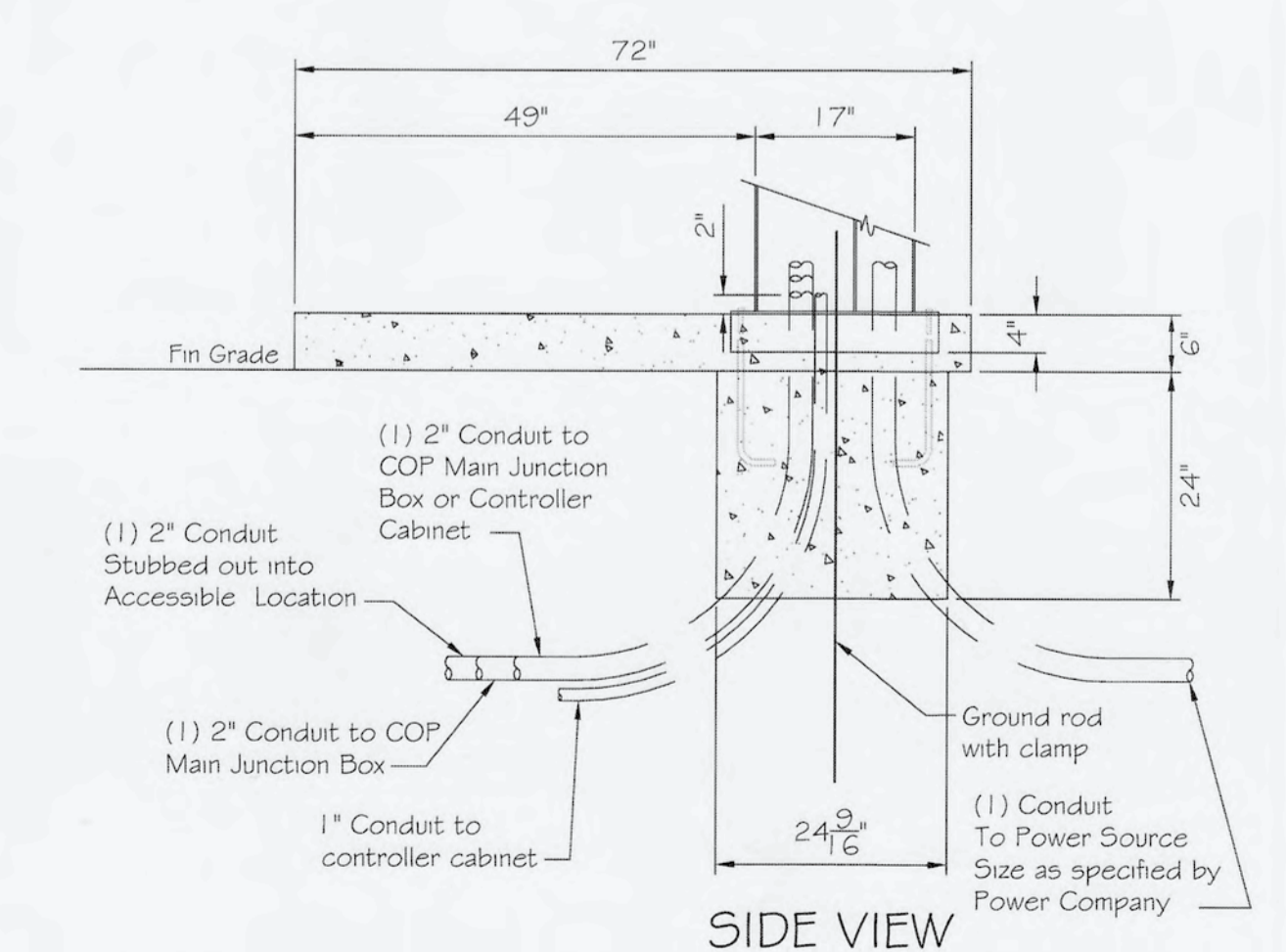
FRONT VIEW

CONTROLLER CABINET FOUNDATION BASE DETAIL

CONTROLLER TYPE	FOUNDATION LENGTH "A"	FOUNDATION WIDTH "B"	CONDUIT SWEEP "C"
Ø PHASE	48"	28"	24"

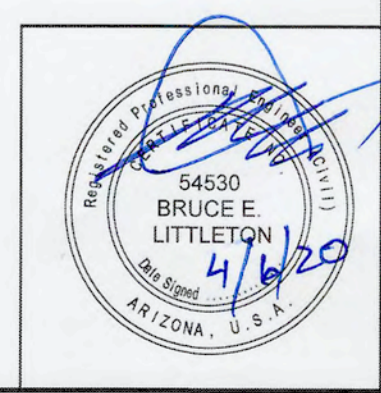


TOP VIEW



SIDE VIEW

BATTERY BACKUP POWER PEDESTAL BASE DETAIL TYPE "B"



CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS

JUNCTION BOXES
FOUNDATIONS FOR CONTROLLER
AND POWER SERVICE PEDESTAL

TPP File Number 10164
TS 2-1
4-6-2020

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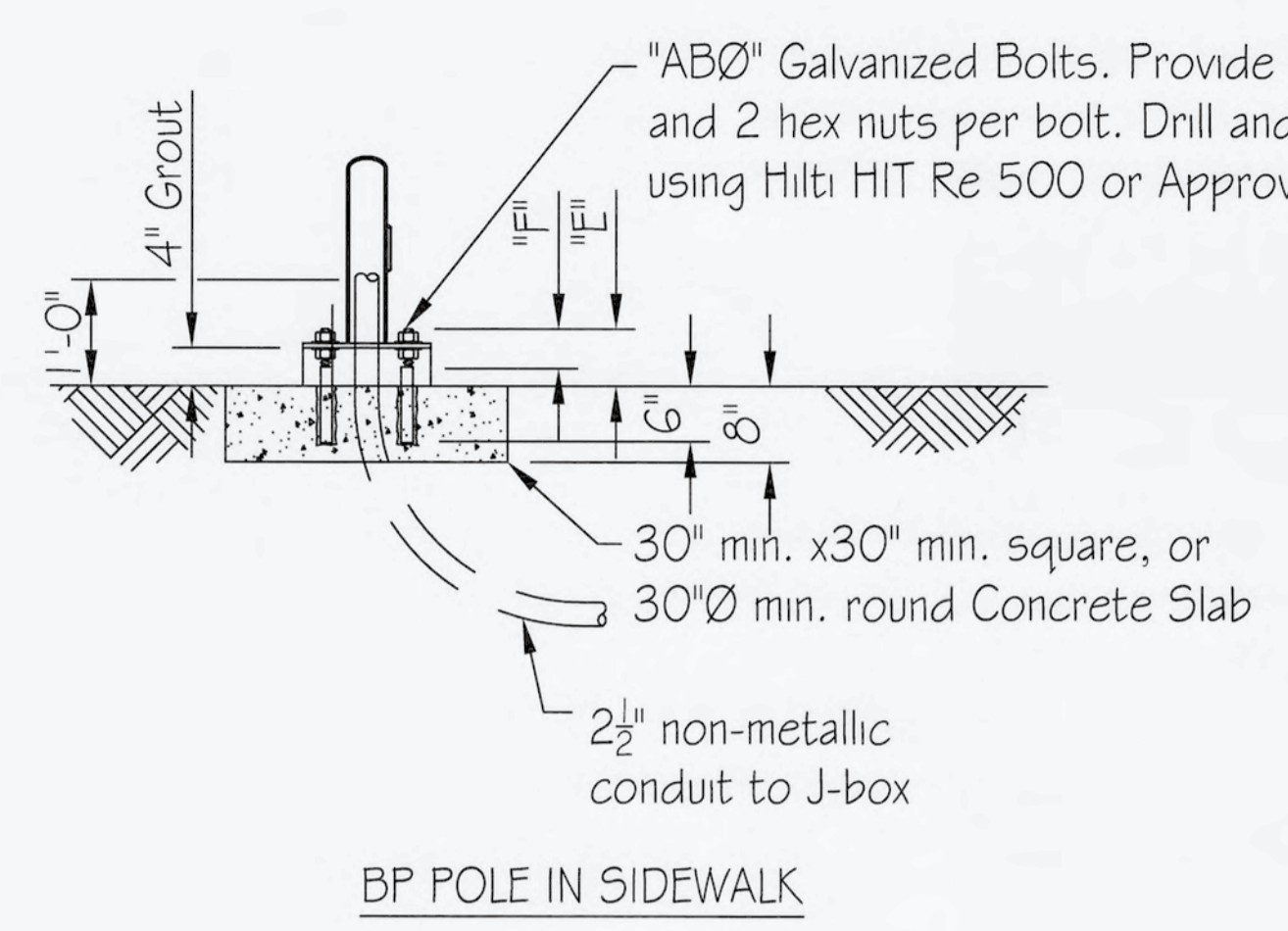
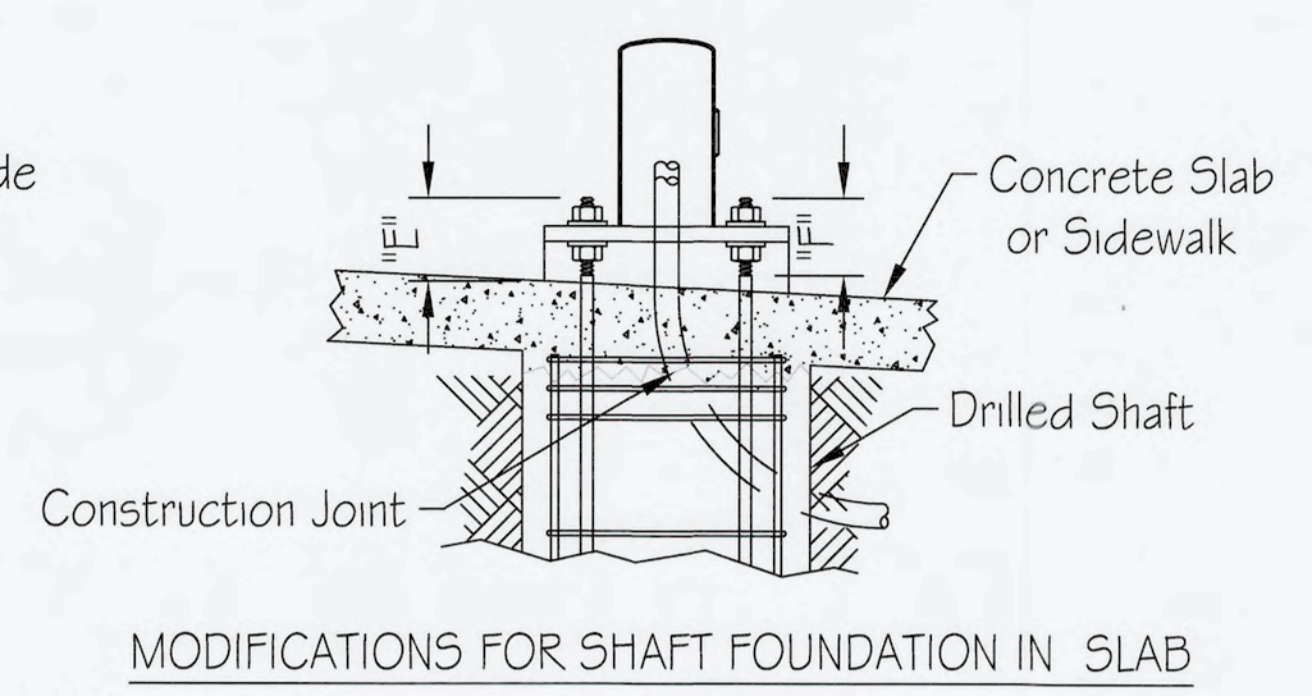
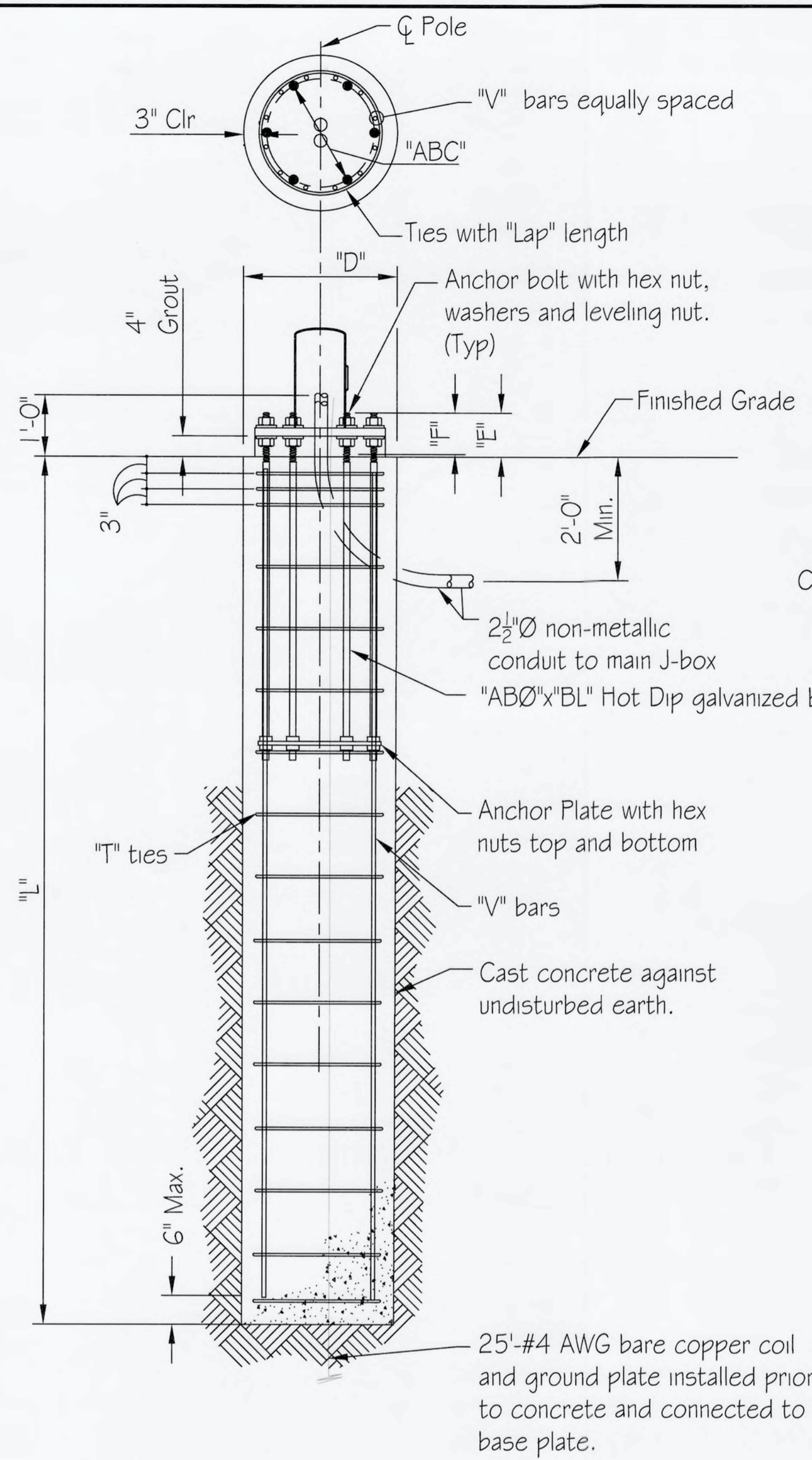
TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

PROJECT #:
DR: DES: CK: SHEET NO: TOTAL SHEETS
DATE: DATE: DATE: Q5. #:

FOUNDATION NOTES:

- Anchor Bolts, Nuts & Washers
 - Anchor Bolts: ASTM F1554, Grade as noted
 - Nuts: ASTM A563 Grade DH3 Hex
 - Plate Washer: ASTM A36
 - Grout: Non-shrink Cementitious, 28-day $f_c=5,000$ psi
- Concrete shall be MAG class A with $f_c=3,000$ psi.
- All reinforcing shall conform to ASTM A615, Gr 60.
- A 25' coil of #4 AWG bare copper conductor shall be installed 6" below bottom of foundation and covered with 6" of soil before concrete is poured. Conductor shall extend 1'-0" above the top of foundation.
- Foundation embedment is based on assumed soil properties below. If encountered material varies from value below, the Engineer shall be notified and the shaft depth adjusted appropriately:

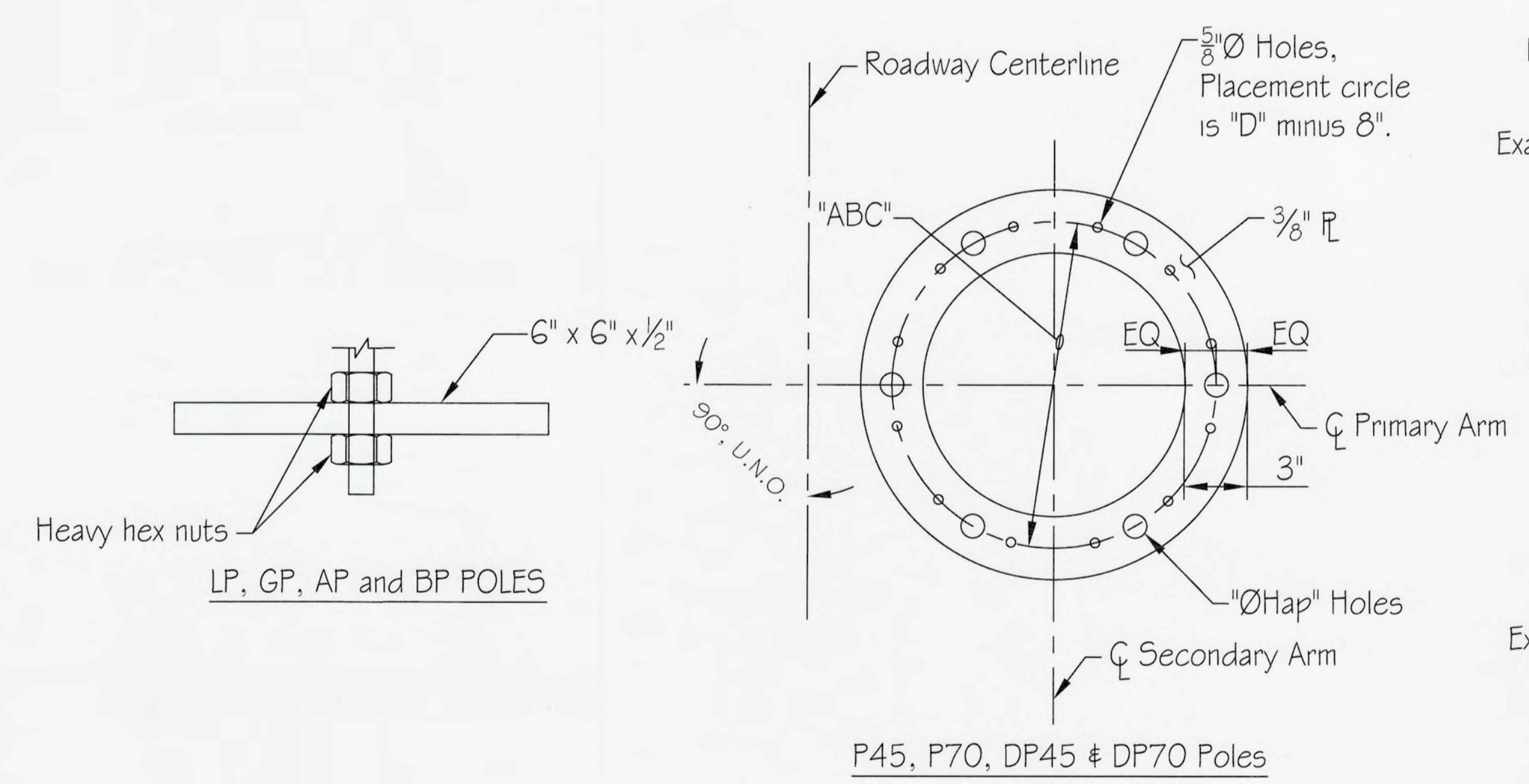
Soil shear strength:	0.5 ksf
Soil Friction Angle:	25°
Soil unit weight:	110 pcf
- Galvanize top 18" of bolts satisfying ASTM A153.
- Anchor bolts shall be equally spaced around bolt circle. Bolt circle shall be oriented so primary mast arm is perpendicular to roadway as shown on this sheet.
- Projection "E" shall be within $\frac{1}{2}$ " of table dimension.



TYPICAL DRILLED SHAFT FOUNDATION

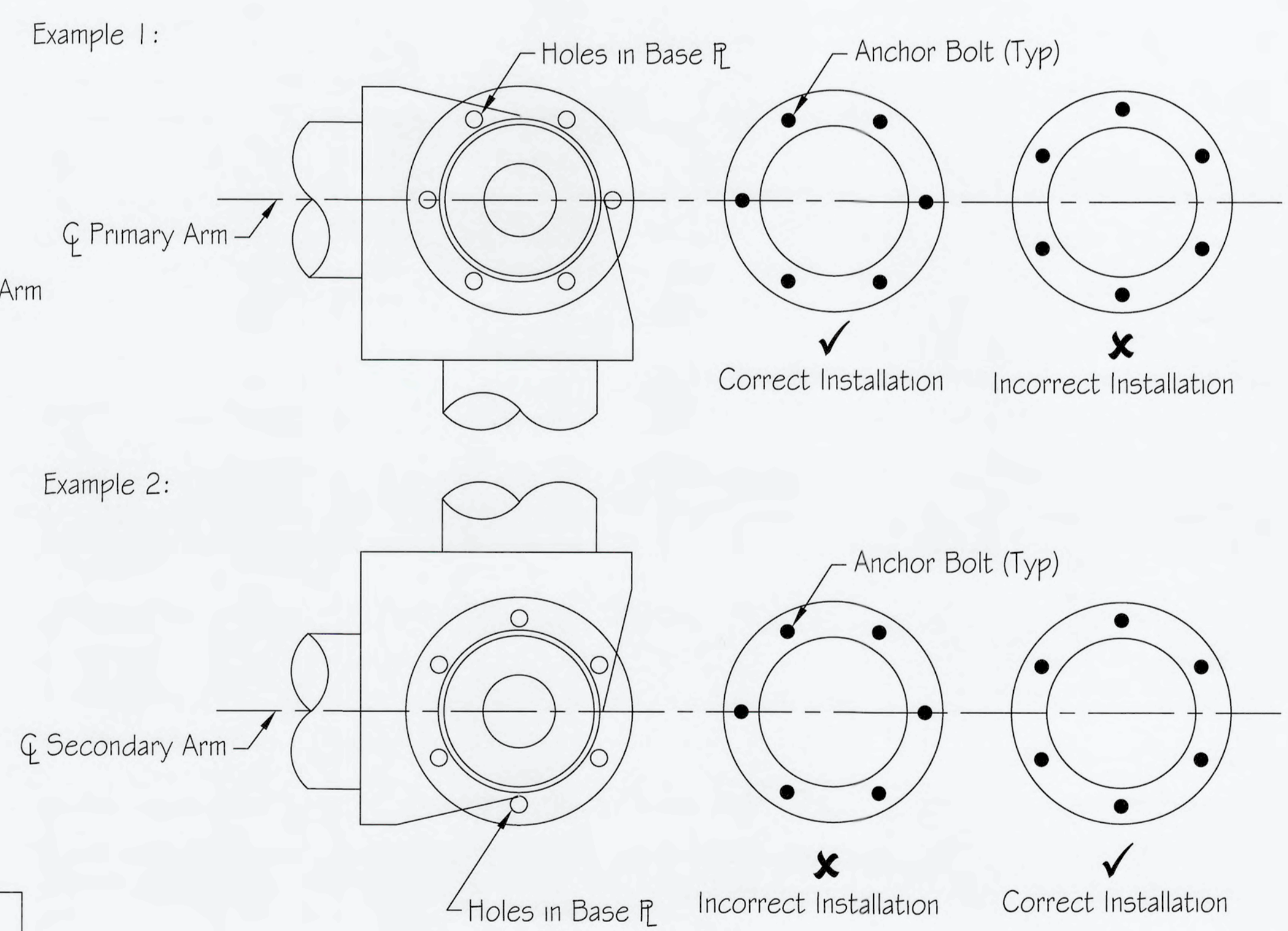
MODIFICATIONS FOR SHAFT FOUNDATION IN SLAB

BP POLE IN SIDEWALK



ANCHOR PLATE DETAIL

Install anchor bolts to yield mast arm alignment shown in plans:

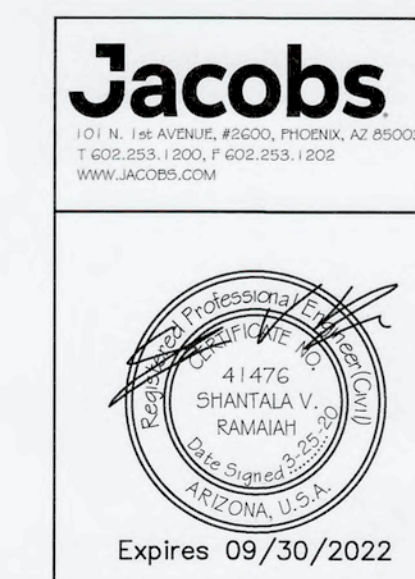


ANCHOR BOLT ORIENTATION

POLE ID	FOUNDATION						ANCHOR BOLTS								
	"D"	"L" (Depth)	"V" Bars	Conduit Quantity	"T" Ties	Tie "Lap"	Grade (ksi)	"ABØ"	No. Bolts	"BL" (Length)	"E" Proj. (See Note 9)	"F" Threaded	"ABC" Bolt Circle	"ØHap" Holes	
P70, DP70	36"	16'-0"	14 #8	2	#5@6"	2'-2"	105	2"	6	66"	10"	9"	24"	2 1/8"	
P45, DP45	30"	13'-0"	10 #8	2	#5@6"	2'-2"	105	1 1/2"	6	66"	9"	7"	21"	1 5/8"	
LP	30"	10'-0"	10 #8	2	#4@12"	1'-9"	55	1 1/8"	4	66"	7"	6"	13"	1 1/4"	
GP	24"	7'-0"	6 #8	1	#4@12"	1'-9"	36	1"	4	36"	7"	5"	12 1/2"	1 1/8"	
AP	24"	7'-0"	6 #8	1	#4@12"	1'-9"	36	1"	4	36"	7"	5"	10 1/2"	1 1/8"	
BP	24"	4'-0"	6 #8	1	#4@12"	1'-9"	36	3/4"	4	30"	6"	4"	9"	7/8"	

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TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT



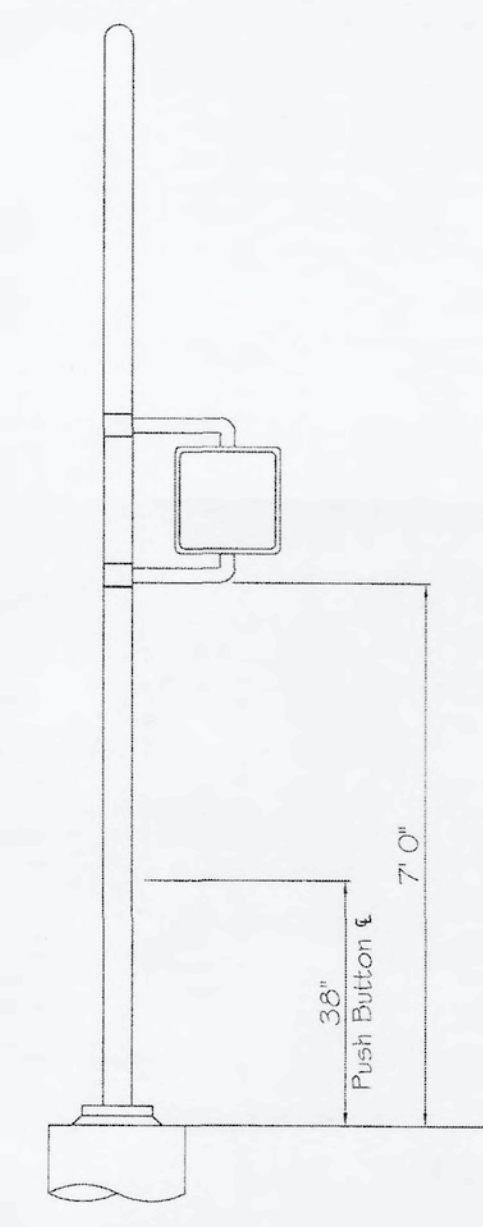
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS

Pole Foundations

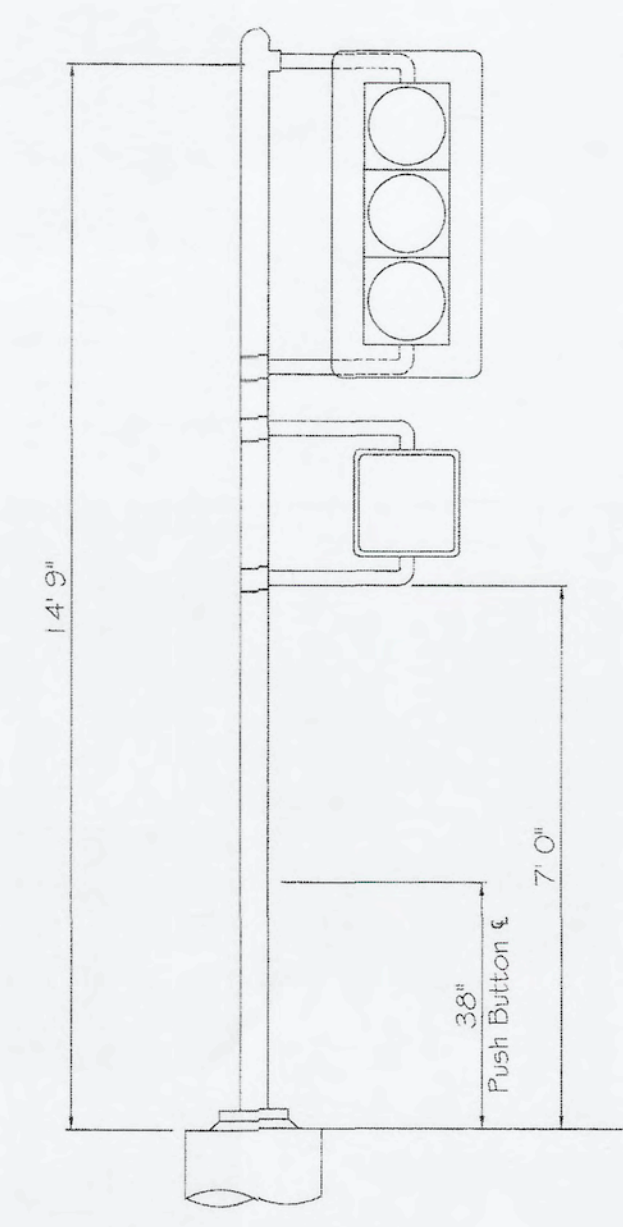
TPP File Number: 10164
TS 2-2
DATE: 3/1/2020
4/6/20

PROJECT #:	DR: SVR	DES: ANA	CK: WR	SHEET NO:	TOTAL SHEETS:
DATE: 3/1/2020	DATE: 3/1/2020	DATE: 3/1/2020	DATE: 3/1/2020	NO:	
SCALE:	Q5. #:				

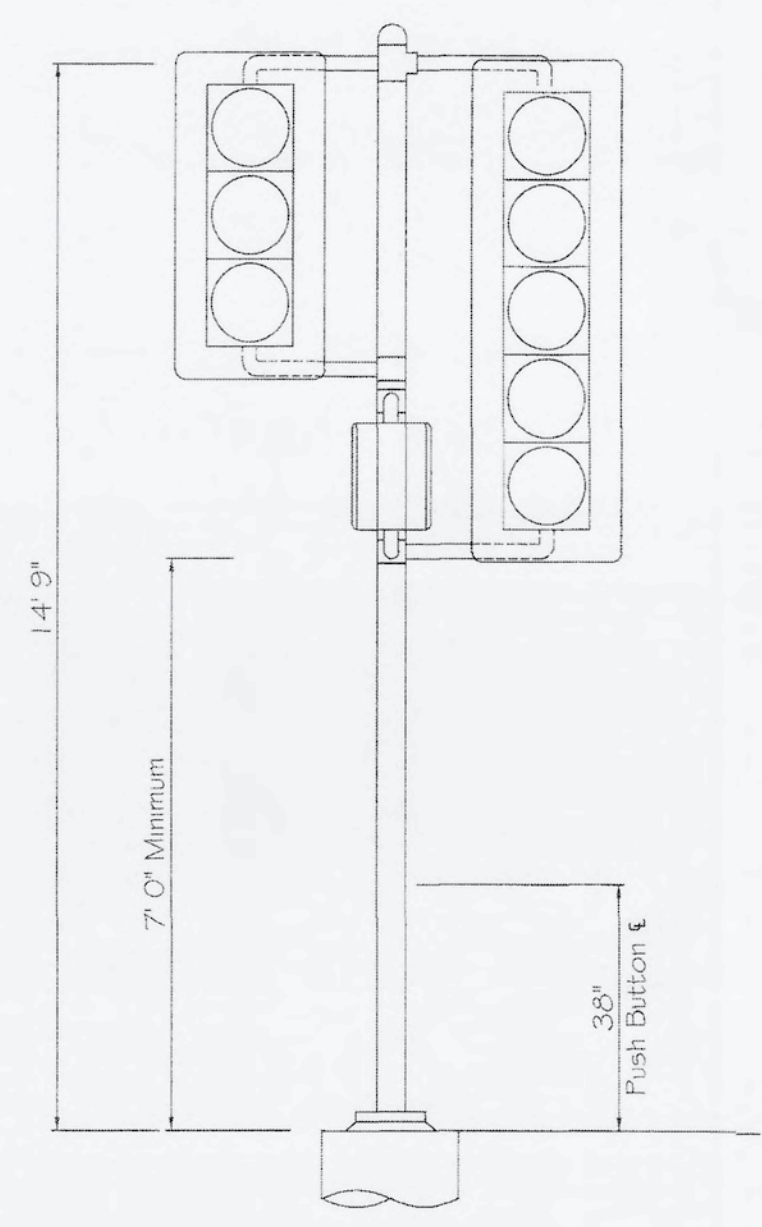
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.			
DR:	DES:	CK:	DATE:	



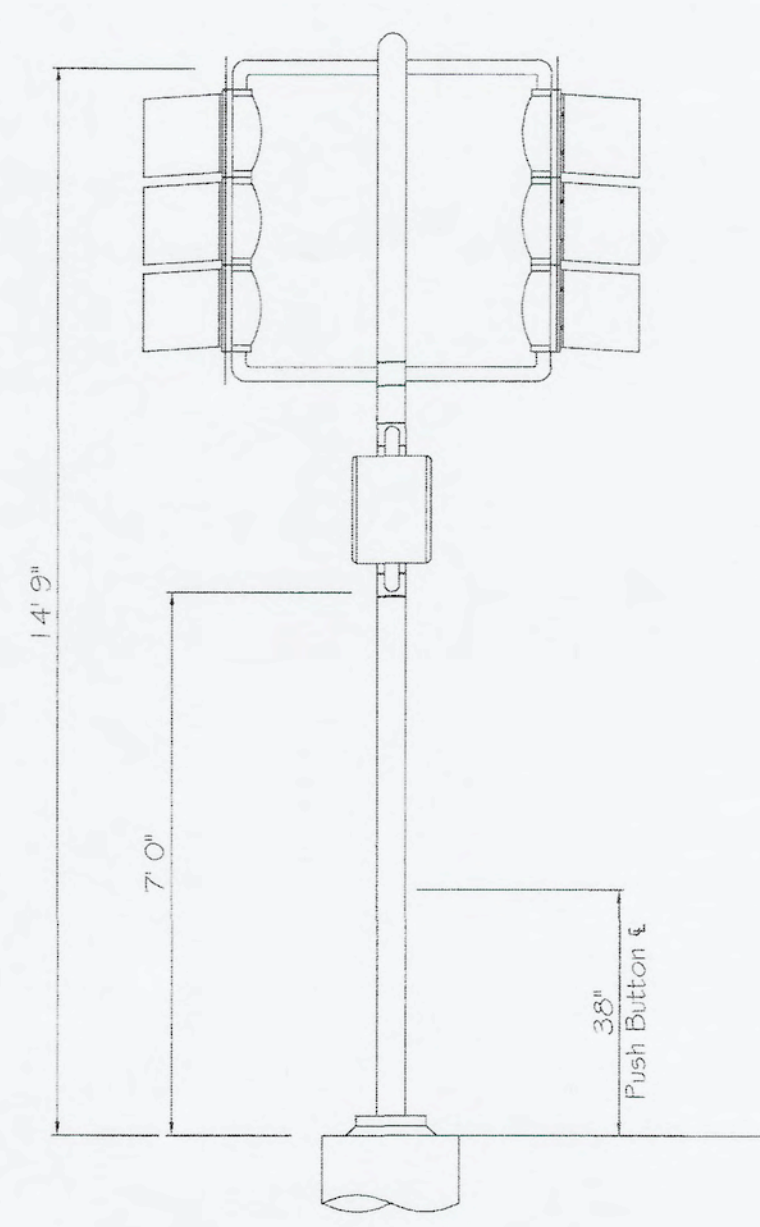
TYPE A POLE
PED SIGNAL



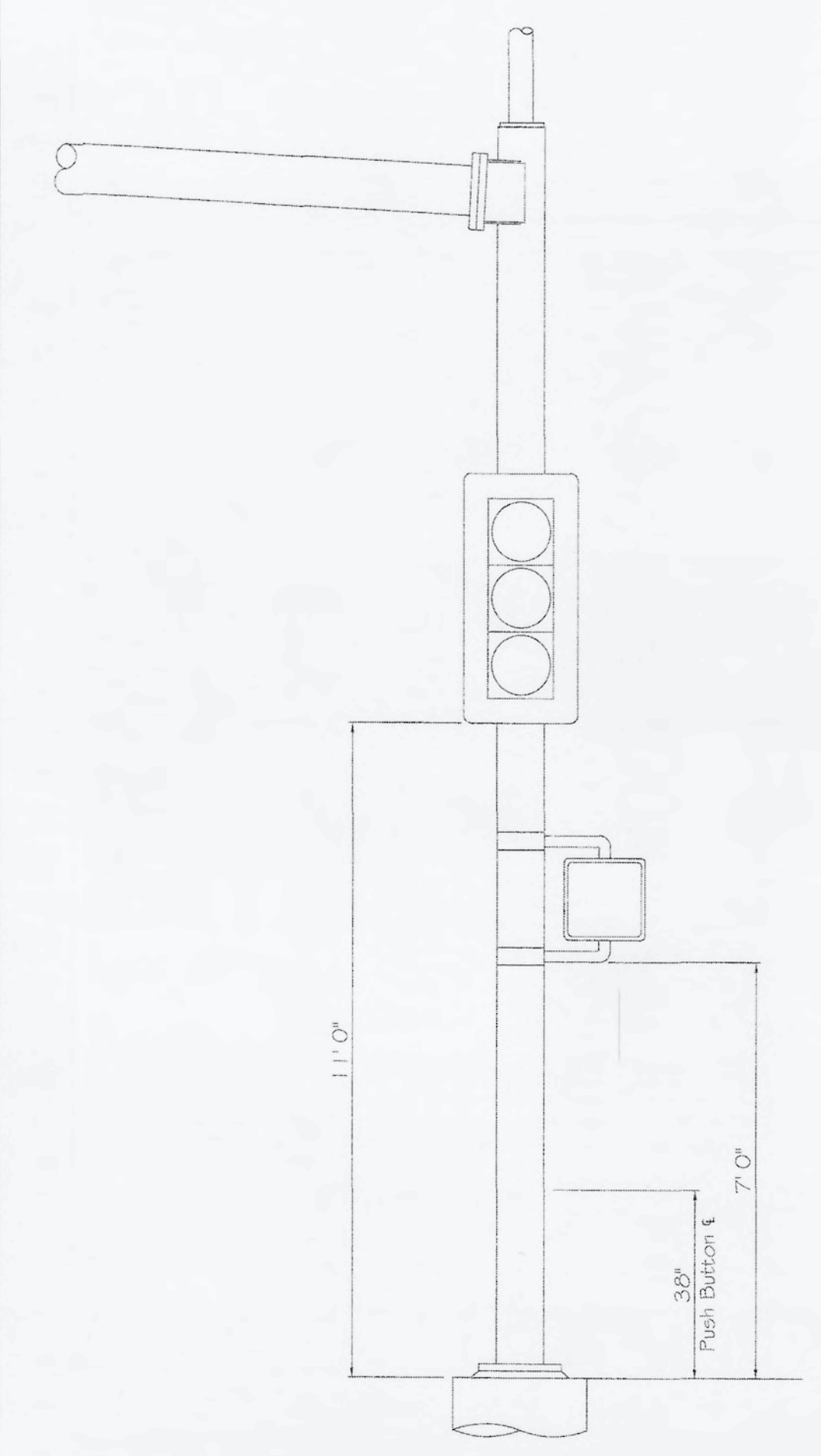
TYPE A POLE
12" VEHICLE SIGNAL AND PED SIGNAL



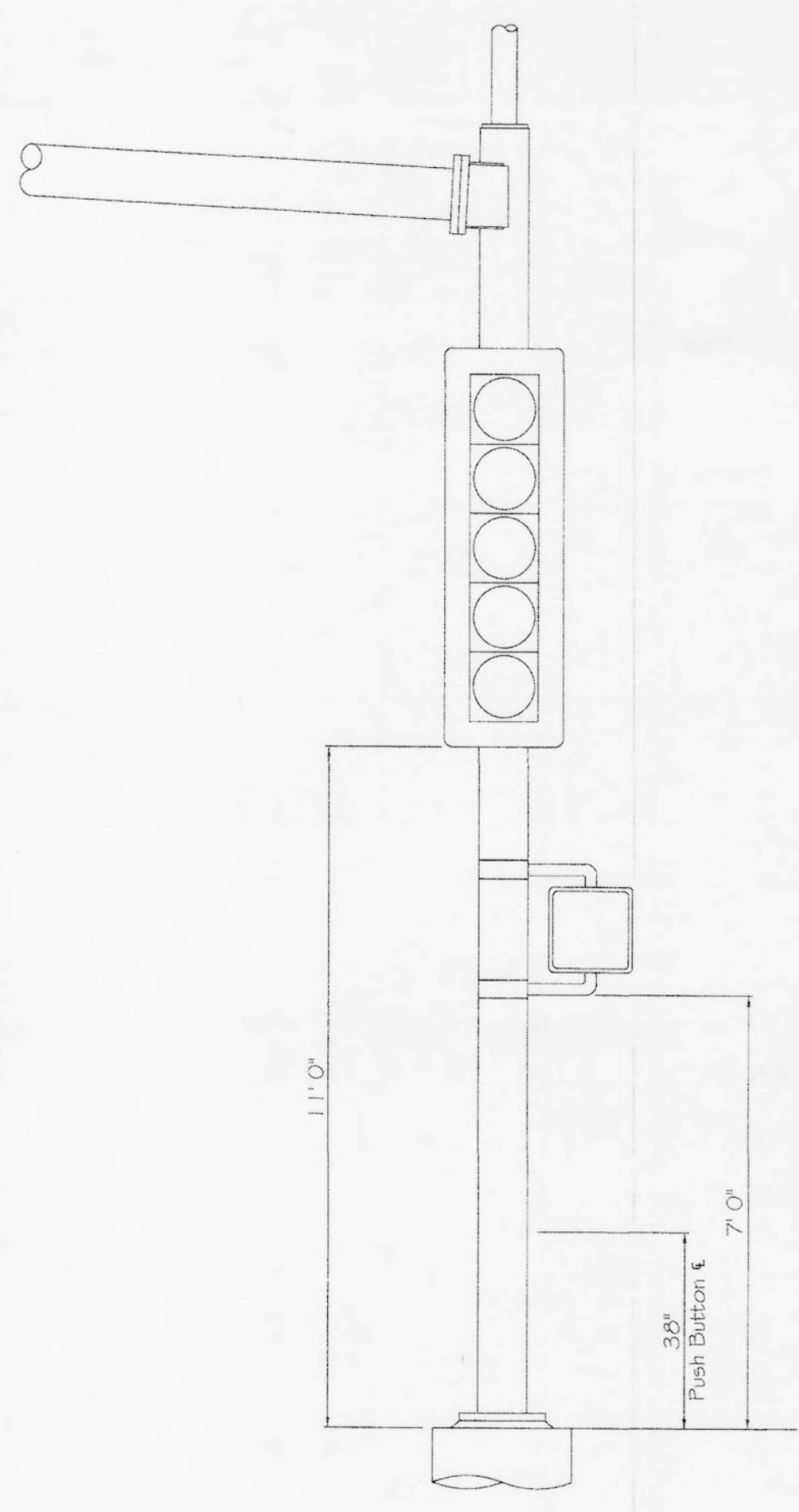
TYPE A POLE
12" 5 SECTION VEHICLE SIGNAL
AND PED SIGNAL



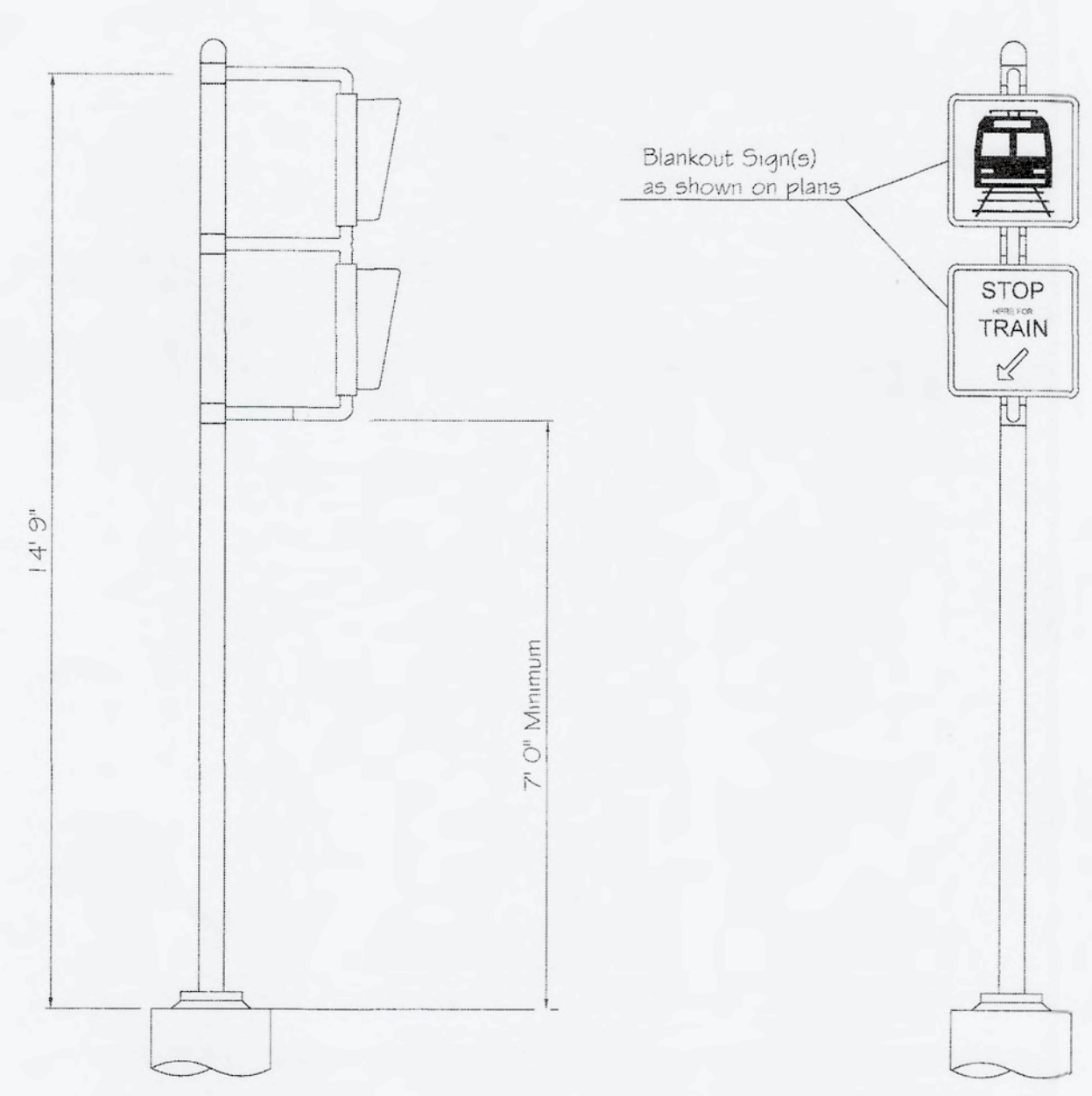
TYPE A POLE
12" BACK TO BACK VEHICLE SIGNAL
AND PED SIGNAL



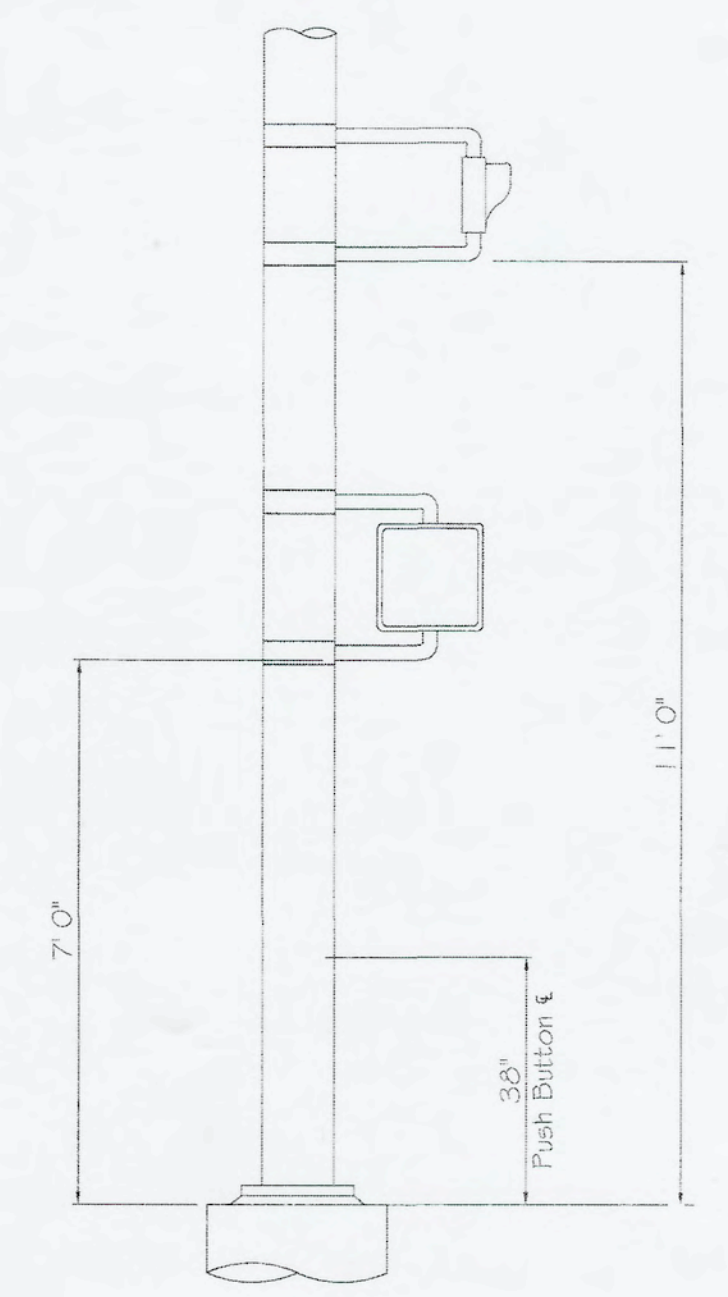
TYPE SM OR SR POLE
12" VEHICLE SIGNAL HEAD
AND PED SIGNAL



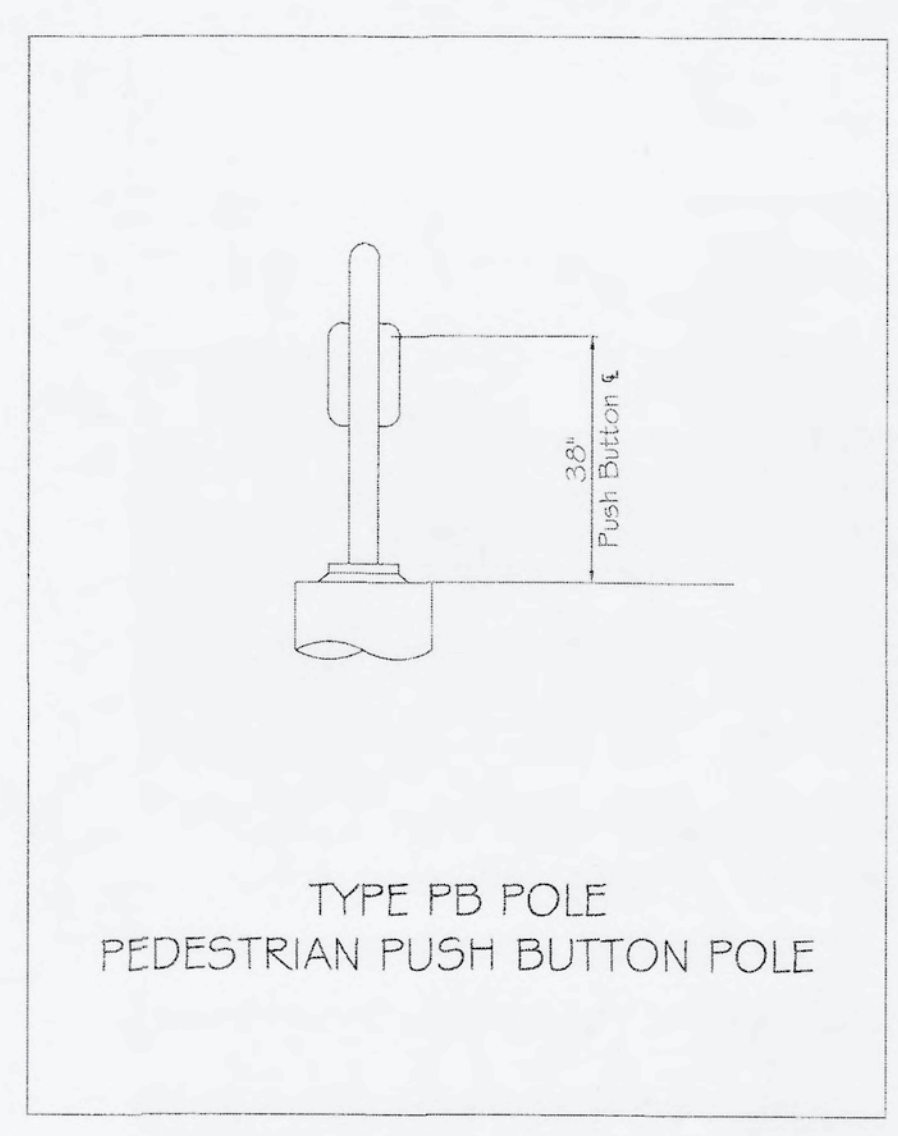
TYPE SM OR SR POLE
12" 5 SECTION VEHICLE SIGNAL HEAD
AND PED SIGNAL



TYPE A POLE
WITH BLANKOUT SIGNS



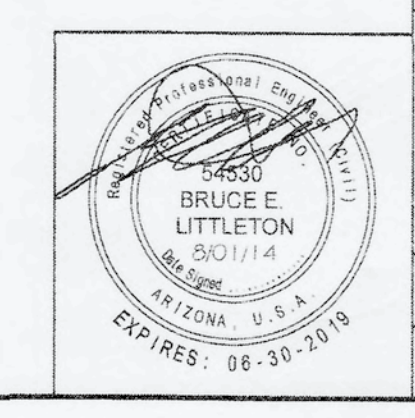
OCS POLE WITH
LRT SIGNAL, PEDESTRIAN SIGNAL
PUSHBUTTON AND SIGNS



TYPE PB POLE
PEDESTRIAN PUSH BUTTON POLE

NOTES

- 1 Height measurement for Pedestrian Pushbutton is from finished grade to center of pushbutton, regardless of pushbutton style.
- 2 Height measurement for other Traffic Signal Devices are minimums. Up to a plus 6" will be acceptable.



CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS

MOUNTING DETAILS
SIDE MOUNT SIGNAL EQUIPMENT

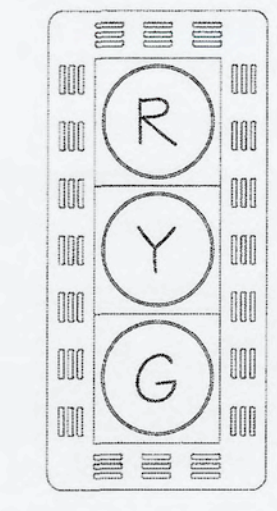
TPP File Number 10164 TS 3-1
DATE: 8-1-2014
TRAFFIC SERVICES DEPUTY DIRECTOR: *Thomas J. [Signature]*

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-2B, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX."

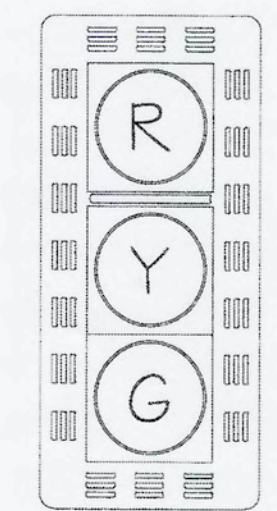
TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

PROJECT #:	DR:	DES:	CK:	SHEET NO:	TOTAL SHEETS
	DATE:	DATE:	DATE:		
	SCALE:	QS #:			

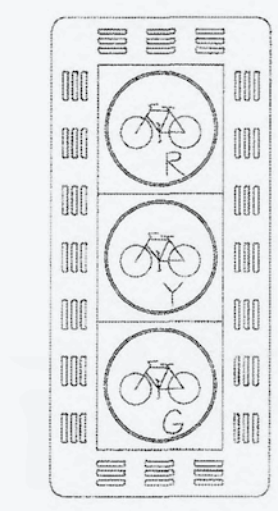
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.			
DR: _____ DES: _____ CK: _____ DATE: _____				



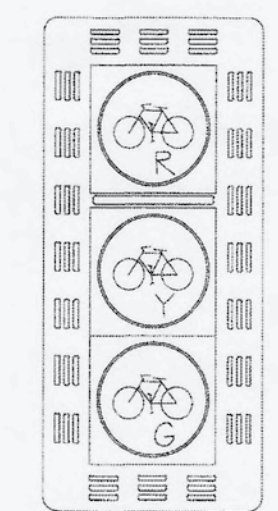
Type "F"
3 Section 12" Vehicle Signal Head
Mounted on Signal Pole



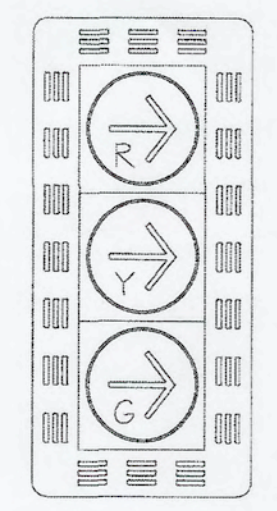
Type "F1" with Plumbizer
3 Section 12" Vehicle Signal Head
Mounted on Signal Mast Arm



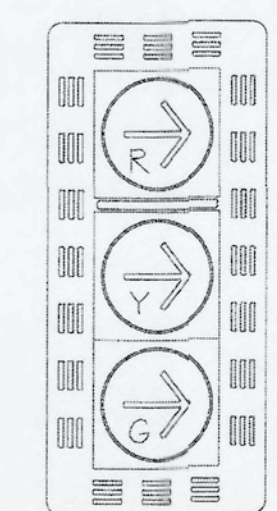
Type "B"
3 Section 12" Bike Signal Head
Mounted on Signal Pole



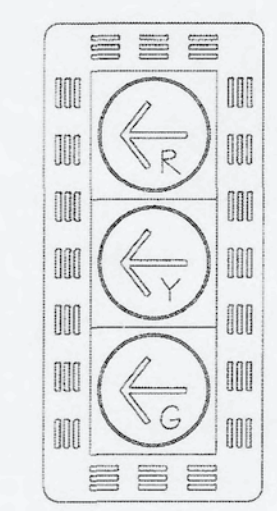
Type "B1" with Plumbizer
3 Section 12" Bike Signal Head
Mounted on Signal Mast Arm



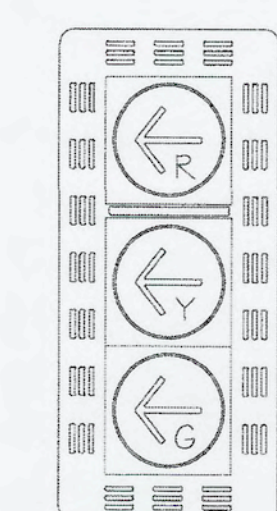
Type "R" (Right Turns)
3 Section 12" Vehicle Signal Head
with Arrows
Mounted on Signal Pole



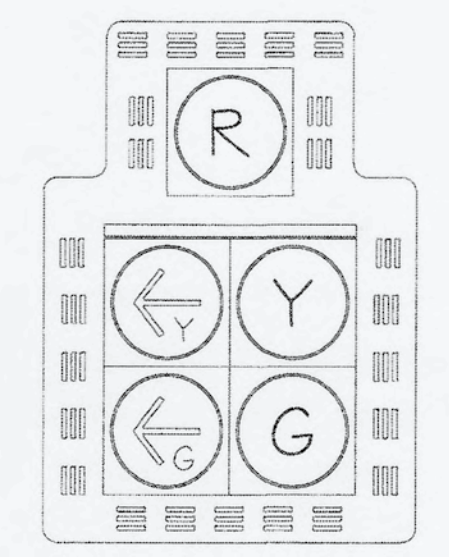
Type "R1" (Right Turns) with Plumbizer
3 Section 12" Vehicle Signal Head
with Arrows
Mounted on Signal Mast Arm



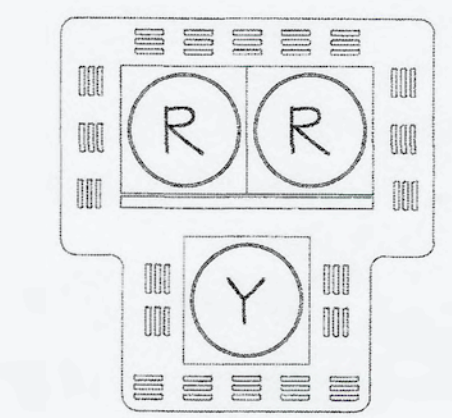
Type "R"
3 Section 12" Vehicle Signal Head
with Arrows
Mounted on Signal Pole



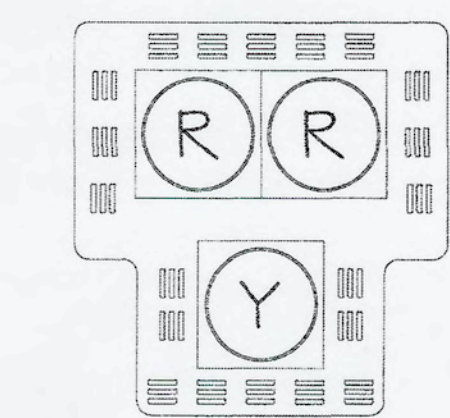
Type "R1" with Plumbizer
3 Section 12" Vehicle Signal Head
with Arrows
Mounted on Signal Mast Arm



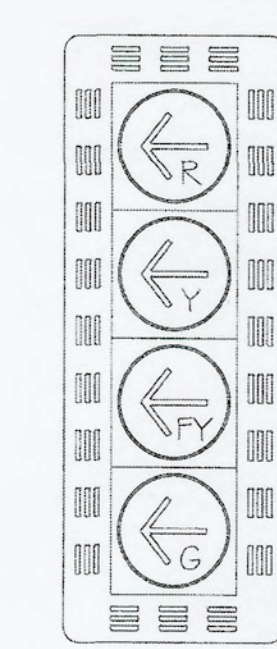
Type "Q2" with Plumbizer
5 Section 12" Signal Head
Mounted on Signal Mast arm



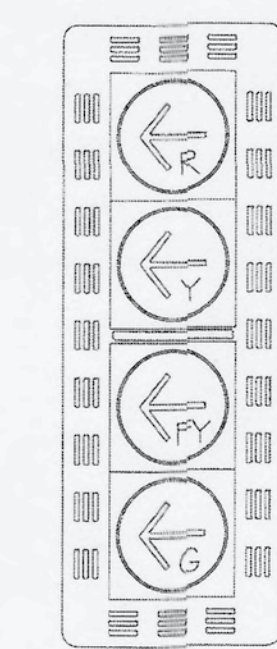
Type "T1" with Plumbizer
3 Section 12" HAWK Signal Head
Mounted on Signal Mast arm



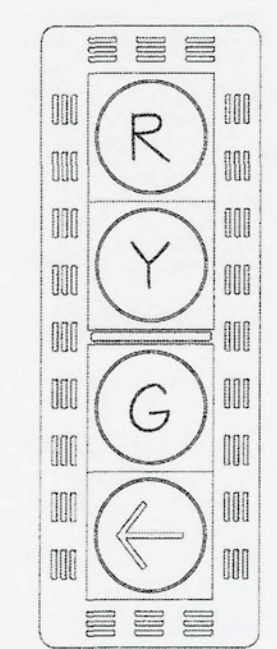
Type "T"
3 Section 12" HAWK Signal Head
Mounted on Signal Pole



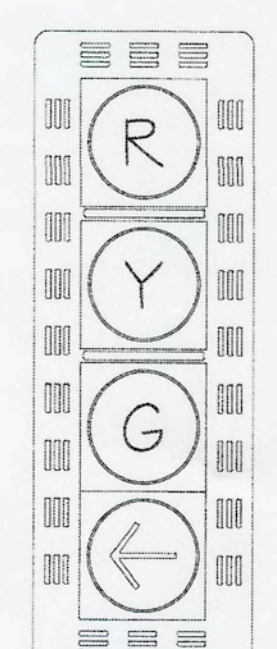
Type "FA"
4 Section 12" Signal Head
Mounted on Signal Pole
FLASHING YELLOW



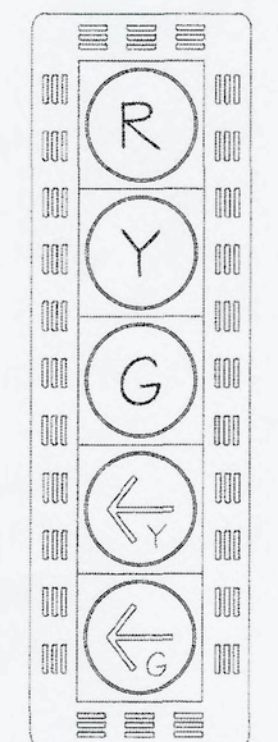
Type "FA1" with Plumbizer
4 Section 12" Signal Head
Mounted on Signal Mast Arm
FLASHING YELLOW



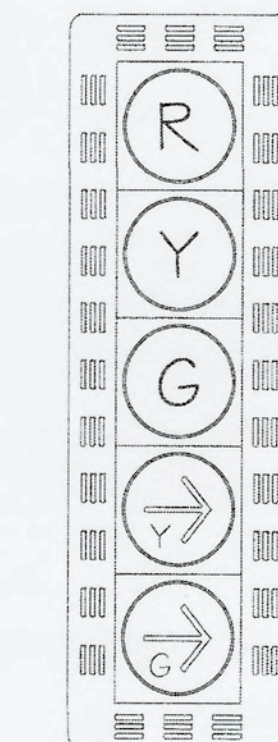
Type "G"
4 Section 12" Signal Head
Mounted on Signal Pole



Type "G1" with Plumbizer
4 Section 12" Signal Head
Mounted on Signal Mast Arm



Type "Q"
5 Section 12" Vehicle Signal Head
Mounted on Signal Pole

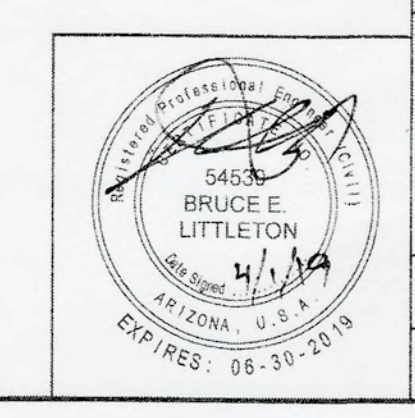


Type "Q" (Right Turns)
5 Section 12" Vehicle Signal Head
Mounted on Signal Pole

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CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS

TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT



TRAFFIC SIGNAL HEAD
GRAPHIC DETAIL

TPP File Number 10164
TS 3-2
DATE: 4-1-2019
SCALE: _____

PROJECT #:	DR:	DES:	CK:	SHEET NO:	TOTAL SHEETS:
	DATE:	DATE:	DATE:		
	SCALE:	QS. #:			

- GENERAL NOTES**
- All IMSA Cable shall be pulled continuous (no splices) from the Terminal Compartment in each Signal Head or Push Button Station to the Hand Hole at the base of Pole.
 - Cable shall be utilized as follows:
 - 3 Conductor - All ADA Push Button Stations, Luminaires, Illuminated Street Signs, Detection Cameras
 - 5 Conductor - All 3 Section, 4 Section Signal Heads, HAWK Signal Heads, Pedestrian Heads, Audible pushbutton Stations
 - 7 Conductor - All outside Mast Arm and Type Q Signal Heads
 - Orange (North or East) or blue (South or West) Tape shall be applied six (6) inches above PVC bell end on IMSA Cable Jacket in Junction Box.
 - All Cable shall be tagged in the Hand Hole with orange (North or East) or blue (South or West) tape as follows:

MAST ARM VEHICLE INDICATIONS		
HEAD	CONDUCTORS	TAPES
On Pole	5	1
First on Mast Arm	3	2
Next Outside	5	3
Next Outside	5	4
End of Mast Arm	7	5*

* Band Number corresponds to Head Number

- IMSA Cables for Pedestrian Heads shall be identified in Hand Hole using Brown tape in addition to color of phase.
- IMSA Cable for Luminaires shall be run continuous to Junction Box and identified with one (1) band of purple tape.
- IMSA Cable for Illuminated Street Signs shall be run continuous to Junction Box and identified with two (2) bands of purple tape.
- IMSA Power Cable for wireless Radio shall be pulled continuous from radio to dedicated circuit in Power Service Pedestal when available. Connect to luminaire circuit in junction box at base of pole when PSP is not available. Identified cable in junction boxes with three (3) bands of purple tape.
- CAT 5e Cable shall be pulled continuous from Wireless Radio to inside the Controller Cabinet.
- CCTV Cable and Video Detection Cable shall be pulled continuous from the device to inside the Controller Cabinet.
- All IMSA Cable to be #16 AWG Stranded unless otherwise noted on approved signal plans. When terminating in Signal Heads use suitable manufactured crimp on connector of appropriate size.

HAWK SIGNAL HEAD		
5 CONDUCTOR CABLE		
NO.	COLOR	FUNCTION
1	Black	Left Red Signal
2	White	
3	Red	Right Red Signal
4	Green	
5	Orange	Yellow

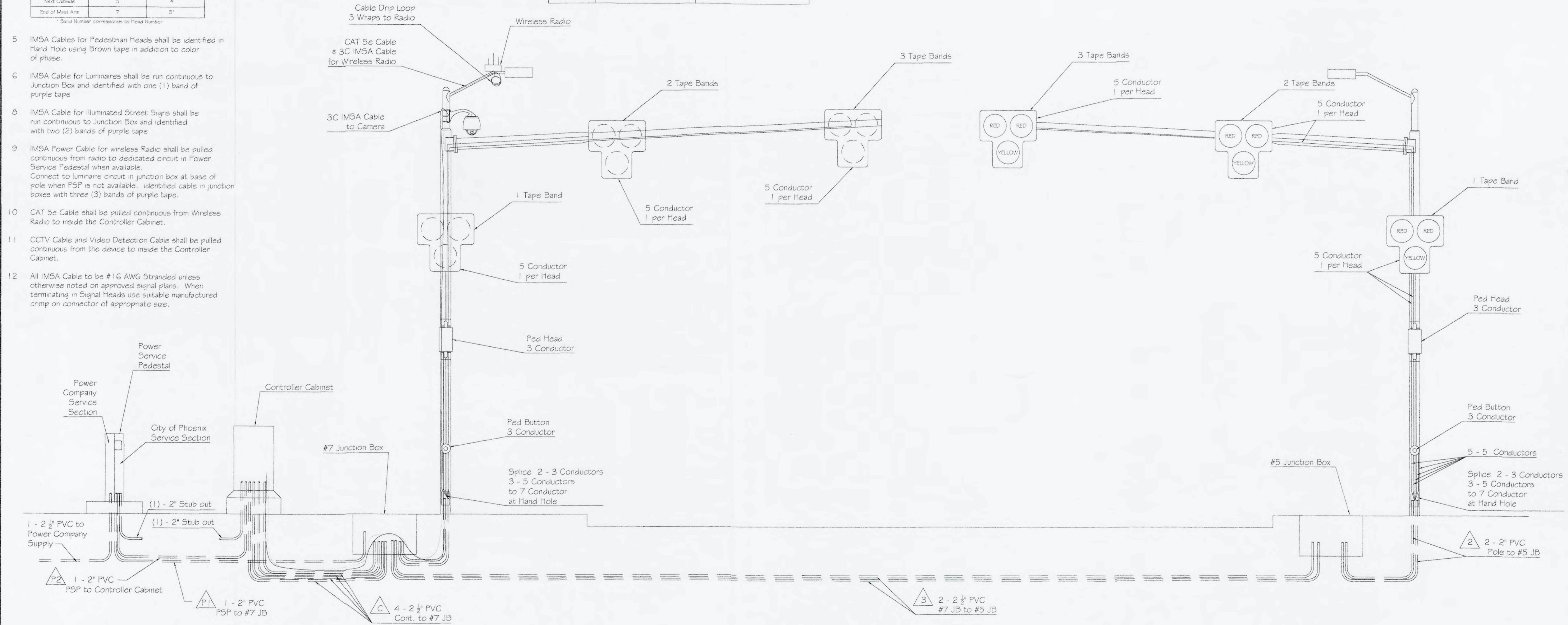
COMMUNICATION RADIO			
3 CONDUCTOR CABLE			
NO.	BASIC COLOR	FUNCTION	
1	Black	Load	
2	White	Neutral	
3	Green	Ground	

LUMINAIRE (FROM LUMINAIRE)			
3 CONDUCTOR CABLE			
NO.	BASIC COLOR	FUNCTION	
1	Black	Load	
2	White	Neutral	
3	Green	Ground	

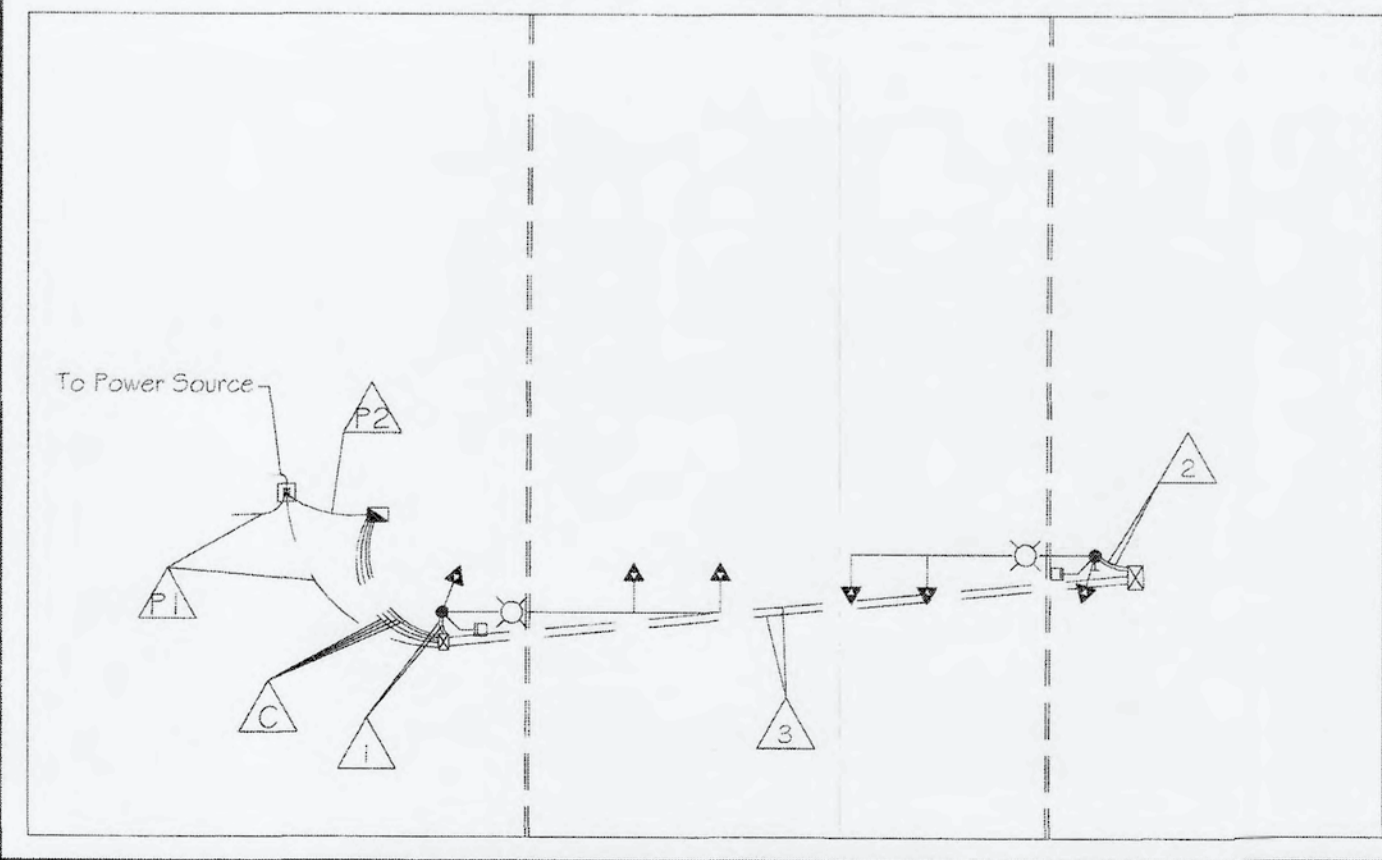
7 CONDUCTOR HAWK ONLY	
INSULATION COLOR	SIGNAL INTERVAL
Black	Left Red Signal
Red	Right Red Signal
Orange	Yellow
Blue	Don't Walk
Green	Walk
White/Black	Push Button
White	Push Button Common

ADA PUSH BUTTON		
3 CONDUCTOR CABLE		
NO.	BASIC COLOR	PUSH BUTTON STATION
1	Black	Push Button
2	White	Push Button Common
3	Green	Spare

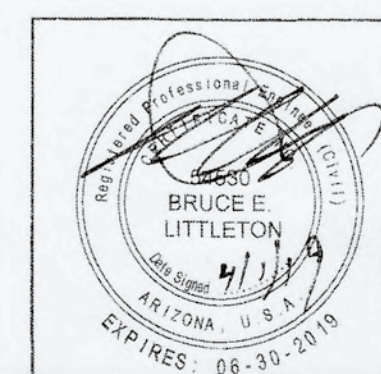
PEDESTRIAN HEAD			
5 CONDUCTOR CABLE			
NO.	BASIC COLOR	SIGNAL INTERVAL	
1	Black	Don't Walk	
2	White	Pedestrian Common	
3	Red	Spare	
4	Green	Walk	
5	Orange	Spare	



High Intensity Activated CrossWalk (HAWK) Schematic - Dual Mast Arm



<p>Controller to #7 Junction Box</p> <table border="1"> <tr> <th>CONDUIT 1</th> <th>CONDUIT 2</th> <th>CONDUIT 3</th> <th>CONDUIT 4</th> <th>CONDUIT 5 to PSP</th> <th>CONDUIT 6 Stub-Out</th> </tr> <tr> <td>#10 Bare Copper #10 AWG White 7C IMSA Cable</td> <td>#10 Bare Copper 179 Cable</td> <td>#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green</td> <td>Detachable Mule Tape</td> <td>#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green</td> <td>Detachable Mule Tape</td> </tr> </table>	CONDUIT 1	CONDUIT 2	CONDUIT 3	CONDUIT 4	CONDUIT 5 to PSP	CONDUIT 6 Stub-Out	#10 Bare Copper #10 AWG White 7C IMSA Cable	#10 Bare Copper 179 Cable	#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green	Detachable Mule Tape	#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green	Detachable Mule Tape	<p>Power Service Pedestal to #7 Junction Box</p> <table border="1"> <tr> <th>CONDUIT 1</th> <th>CONDUIT 2</th> </tr> <tr> <td>#10 Bare Copper 5C IMSA Cable 3C Radio 3C Luminaire</td> <td>Stub-Out</td> </tr> </table>	CONDUIT 1	CONDUIT 2	#10 Bare Copper 5C IMSA Cable 3C Radio 3C Luminaire	Stub-Out	<p>Power Service Pedestal to Controller</p> <table border="1"> <tr> <th>CONDUIT 3</th> </tr> <tr> <td>#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green 5C IMSA Cable</td> </tr> </table>	CONDUIT 3	#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green 5C IMSA Cable
CONDUIT 1	CONDUIT 2	CONDUIT 3	CONDUIT 4	CONDUIT 5 to PSP	CONDUIT 6 Stub-Out															
#10 Bare Copper #10 AWG White 7C IMSA Cable	#10 Bare Copper 179 Cable	#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green	Detachable Mule Tape	#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green	Detachable Mule Tape															
CONDUIT 1	CONDUIT 2																			
#10 Bare Copper 5C IMSA Cable 3C Radio 3C Luminaire	Stub-Out																			
CONDUIT 3																				
#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green 5C IMSA Cable																				
<p>#7 Junction Box to Mast Arm Pole</p> <table border="1"> <tr> <th>CONDUIT 1</th> <th>CONDUIT 2</th> </tr> <tr> <td>#10 Bare Copper #10 AWG White</td> <td>Detachable Mule Tape</td> </tr> </table>	CONDUIT 1	CONDUIT 2	#10 Bare Copper #10 AWG White	Detachable Mule Tape	<p>#5 Junction Box to Mast Arm Pole</p> <table border="1"> <tr> <th>CONDUIT 1</th> <th>CONDUIT 2</th> </tr> <tr> <td>#10 Bare Copper 5C IMSA Cable 7C IMSA Cable N or E 7C IMSA Cable S or W</td> <td>Detachable Mule Tape</td> </tr> </table>	CONDUIT 1	CONDUIT 2	#10 Bare Copper 5C IMSA Cable 7C IMSA Cable N or E 7C IMSA Cable S or W	Detachable Mule Tape	<p>Junction Box to Junction Box</p> <table border="1"> <tr> <th>CONDUIT 1</th> <th>CONDUIT 2</th> </tr> <tr> <td>#10 Bare Copper #10 AWG White 5C IMSA Cable 7C IMSA Cable E or N 7C IMSA Cable W or S</td> <td>Detachable Mule Tape</td> </tr> </table>	CONDUIT 1	CONDUIT 2	#10 Bare Copper #10 AWG White 5C IMSA Cable 7C IMSA Cable E or N 7C IMSA Cable W or S	Detachable Mule Tape						
CONDUIT 1	CONDUIT 2																			
#10 Bare Copper #10 AWG White	Detachable Mule Tape																			
CONDUIT 1	CONDUIT 2																			
#10 Bare Copper 5C IMSA Cable 7C IMSA Cable N or E 7C IMSA Cable S or W	Detachable Mule Tape																			
CONDUIT 1	CONDUIT 2																			
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CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS

TYPICAL HAWK
PEDESTRIAN CROSSING BEACON
DUAL MAST ARM

TPP File Number 10164
TS 3-3
4-1-2019

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.			

DR: _____ DES: _____ CK: _____ DATE: _____

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX."

TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

PROJECT #:	DR:	DES:	CK:	SHEET NO:	TOTAL SHEETS:
	DATE:	DATE:	DATE:		
SCALE:	CS. #:				

- GENERAL NOTES**
- All IMSA Cable shall be pulled continuous (no splicing) from the Terminal Compartment in each Signal Head or Push Button Station to the Hand Hole at the base of Pole
 - Cable shall be utilized as follows:
 3 Conductor - All ADA Push Button Stations
 Luminaires, Illuminated Street Signs, Detection Cameras
 5 Conductor - All 3 Section, 4 Section Signal Heads, HAWK Signal Heads, Pedestrian Heads, Audible pushbutton Stations
 7 Conductor - All outside Mast Arm and Type Q Signal Heads
 - Orange (North or East) or blue (South or West) Tape shall be applied six (6) inches above PVC bell end on IMSA Cable Jacket in Junction Box
 - All Cable shall be tagged in the Hand Hole with orange (North or East) or blue (South or West) tape as follows:

MAST ARM VEHICLE INDICATIONS		
HEAD	CONDUCTORS	TAPES
On Pole	5	1
First on Mast Arm	5	2
Next Outside	5	3
Next Outside	5	4
End of Mast Arm	7	5*

* Band Number corresponds to Head Number

- IMSA Cables for Pedestrian Heads shall be identified in Hand Hole using Brown tape in addition to color of phase.
- IMSA Cable for Luminaires shall be run continuous to Junction Box and identified with one (1) band of purple tape
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- CCTV Cable and Video Detection Cable shall be pulled continuous from the device to inside the Controller Cabinet.
- All IMSA Cable to be #16 AWG Stranded unless otherwise noted on approved signal plans. When terminating in Signal Heads use suitable manufactured crimp on connector of appropriate size.
- See sheet TS3-5 for variations of pole configuration based on project.

HAWK SIGNAL HEAD		
5 CONDUCTOR CABLE		
NO.	COLOR	FUNCTION
1	Black	Left Red Signal
2	White	
3	Red	Right Red Signal
4	Green	
5	Orange	Yellow

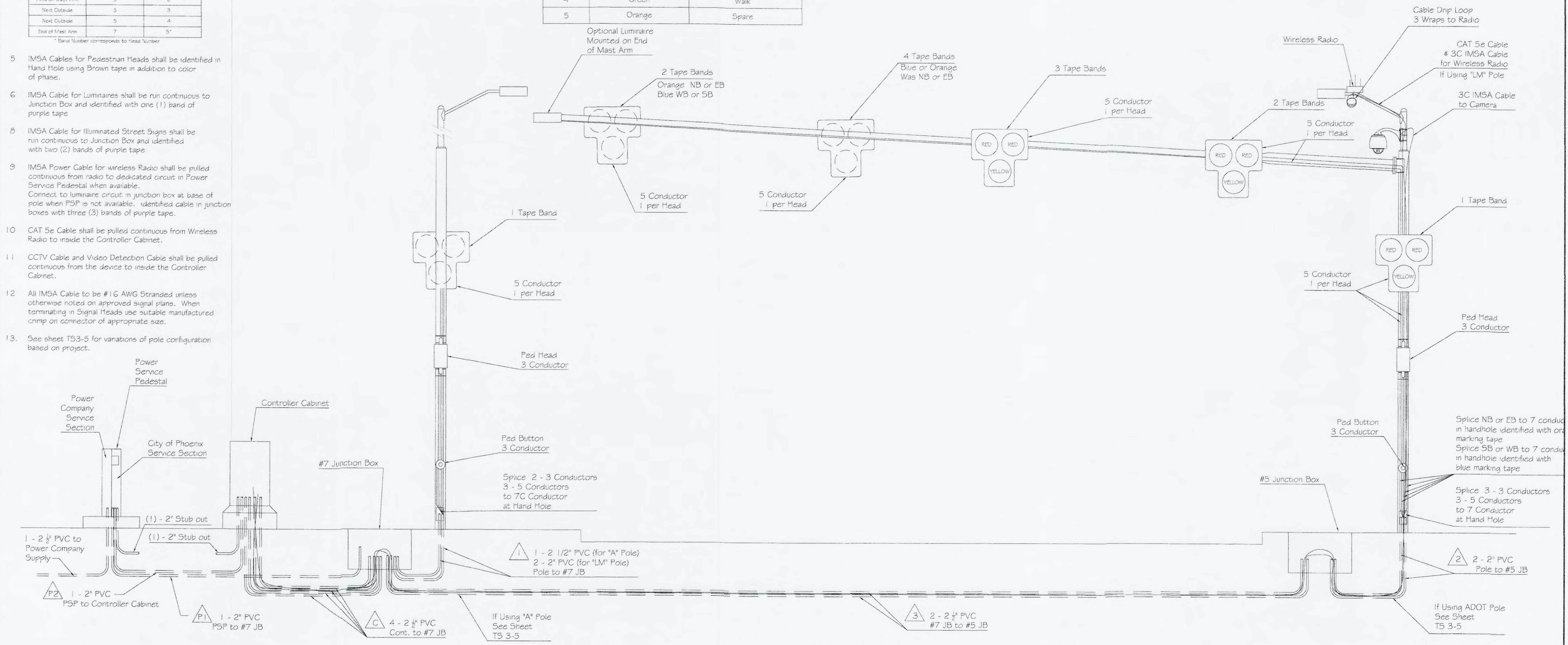
COMMUNICATION RADIO		
3 CONDUCTOR CABLE		
NO.	BASIC COLOR	FUNCTION
1	Black	Load
2	White	Neutral
3	Green	Ground

LUMINAIRE (FROM LUMINAIRE)		
3 CONDUCTOR CABLE		
NO.	BASIC COLOR	FUNCTION
1	Black	Load
2	White	Neutral
3	Green	Ground

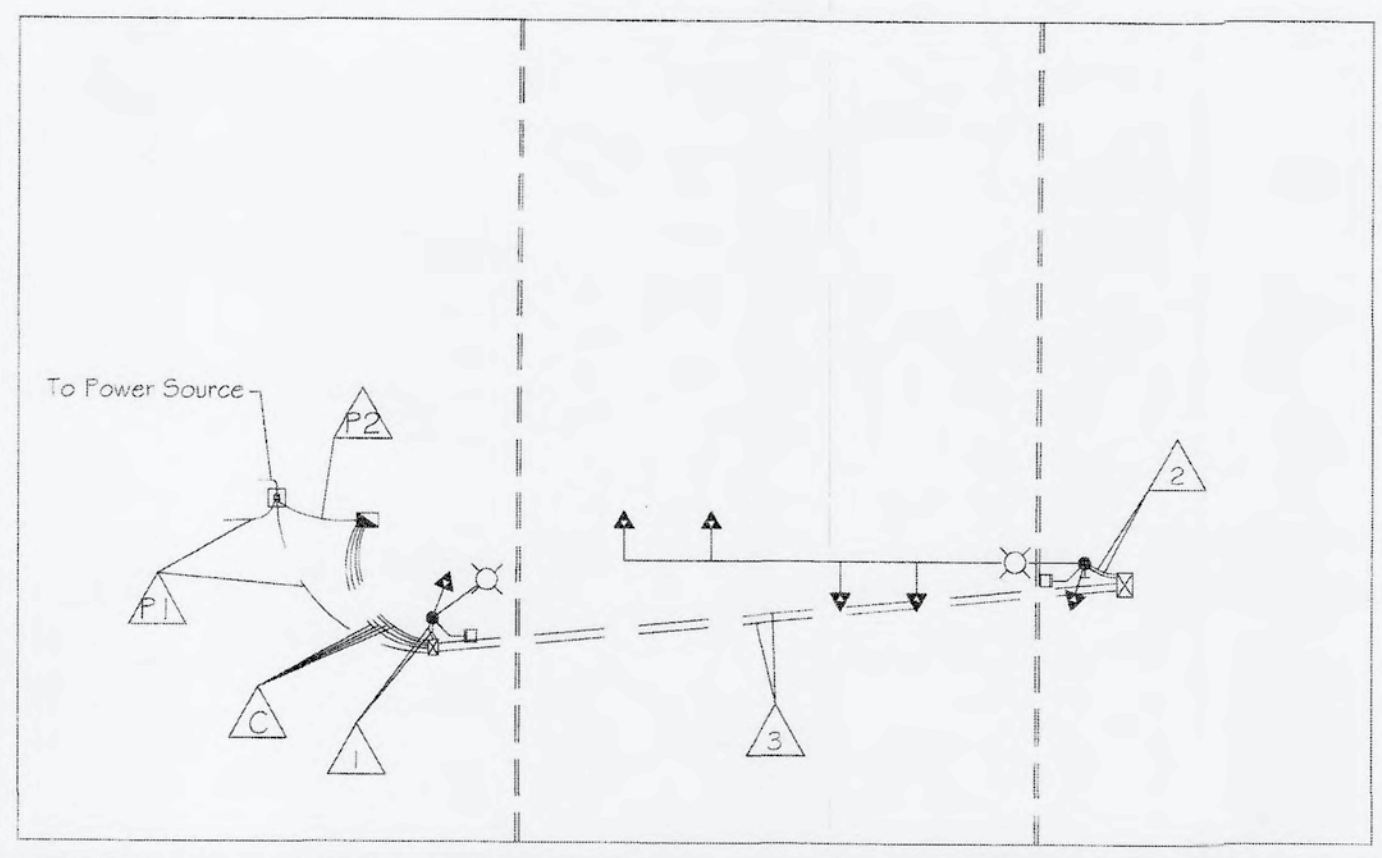
7 CONDUCTOR HAWK ONLY	
INSULATION COLOR	SIGNAL INTERVAL
Black	Left Red Signal
Red	Right Red Signal
Orange	Yellow
Blue	Don't Walk
Green	Walk
White/Black	Push Button
White	Push Button Common

ADA PUSH BUTTON		
3 CONDUCTOR CABLE		
NO.	BASIC COLOR	PUSH BUTTON STATION
1	Black	Push Button
2	White	Push Button Common
3	Green	Spare

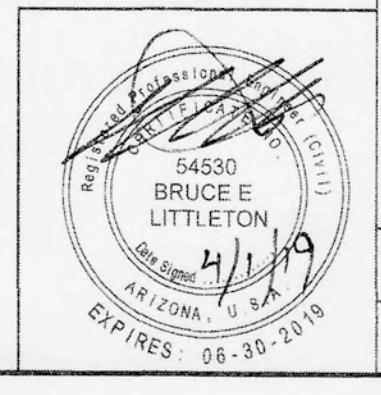
PEDESTRIAN HEAD		
5 CONDUCTOR CABLE		
NO.	BASIC COLOR	SIGNAL INTERVAL
1	Black	Don't Walk
2	White	Pedestrian Common
3	Red	Spare
4	Green	Walk
5	Orange	Spare



High Intensity Activated CrossWalk (HAWK) Schematic - Single Mast Arm



<p>C Controller to #7 Junction Box</p> <table border="1"> <tr> <th>CONDUIT 1</th> <th>CONDUIT 2</th> <th>CONDUIT 3</th> <th>CONDUIT 4</th> <th>CONDUIT 5 to PSP</th> <th>CONDUIT 6 Stub Out</th> </tr> <tr> <td>#10 Bare Copper #10 AWG White 7C IMSA Cable</td> <td>#10 Bare Copper ITS Cable</td> <td>#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green</td> <td>Detectable Mule Tape</td> <td>#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green</td> <td>Detectable Mule Tape</td> </tr> </table>	CONDUIT 1	CONDUIT 2	CONDUIT 3	CONDUIT 4	CONDUIT 5 to PSP	CONDUIT 6 Stub Out	#10 Bare Copper #10 AWG White 7C IMSA Cable	#10 Bare Copper ITS Cable	#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green	Detectable Mule Tape	#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green	Detectable Mule Tape	<p>F Power Service Pedestal to #7 Junction Box</p> <table border="1"> <tr> <th>CONDUIT 1</th> <th>CONDUIT 2</th> </tr> <tr> <td>#10 Bare Copper 5C IMSA Cable 3C Radio 3C Luminaire</td> <td>Stub Out</td> </tr> </table>	CONDUIT 1	CONDUIT 2	#10 Bare Copper 5C IMSA Cable 3C Radio 3C Luminaire	Stub Out	<p>P2 Power Service Pedestal to Controller</p> <table border="1"> <tr> <th>CONDUIT 3</th> </tr> <tr> <td>#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green 5C IMSA Cable</td> </tr> </table>	CONDUIT 3	#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green 5C IMSA Cable
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CONDUIT 3																				
#10 Bare Copper #10 AWG Black #10 AWG White #10 AWG Green 5C IMSA Cable																				
<p>1 #7 Junction Box to Mast Arm Pole</p> <table border="1"> <tr> <th>CONDUIT 1</th> <th>CONDUIT 2</th> </tr> <tr> <td>#10 Bare Copper #10 AWG White</td> <td>Detectable Mule Tape</td> </tr> </table>	CONDUIT 1	CONDUIT 2	#10 Bare Copper #10 AWG White	Detectable Mule Tape	<p>2 #5 Junction Box to Mast Arm Pole</p> <table border="1"> <tr> <th>CONDUIT 1</th> <th>CONDUIT 2</th> </tr> <tr> <td>#10 Bare Copper #10 AWG White 5C IMSA Cable 7C IMSA Cable N or E 7C IMSA Cable S or W</td> <td>Detectable Mule Tape</td> </tr> </table>	CONDUIT 1	CONDUIT 2	#10 Bare Copper #10 AWG White 5C IMSA Cable 7C IMSA Cable N or E 7C IMSA Cable S or W	Detectable Mule Tape	<p>3 Junction Box to Junction Box</p> <table border="1"> <tr> <th>CONDUIT 1</th> <th>CONDUIT 2</th> </tr> <tr> <td>#10 Bare Copper #10 AWG White 5C IMSA Cable 7C IMSA Cable E or N 7C IMSA Cable W or S</td> <td>Detectable Mule Tape</td> </tr> </table>	CONDUIT 1	CONDUIT 2	#10 Bare Copper #10 AWG White 5C IMSA Cable 7C IMSA Cable E or N 7C IMSA Cable W or S	Detectable Mule Tape						
CONDUIT 1	CONDUIT 2																			
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CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS

TYPICAL HAWK
PEDESTRIAN CROSSING BEACON
SINGLE MAST ARM

TPP File Number 10164
DATE: 4-1-2019
TRAFFIC SERVICES DEPUTY DIRECTOR

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX."

TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

PROJECT #:	DR:	DES:	CK:	SHEET NO:	TOTAL SHEETS:
	DATE:	DATE:	DATE:	4-1-2019	
SCALE:	OS #:				

TRAFFIC SIGNAL COLOR CODE TABLE					
SIGNAL INDICATION	PHASE / DIRECTION	INSIDE/OUTSIDE BUNDLE COLOR	42 CONDUCTOR CABLE	25 CONDUCTOR CABLE	20 CONDUCTOR CABLE
		OUTSIDE BUNDLE ORANGE			
Red Yellow Green	Eastbound	Outside Outside Outside	Red Orange Green	Red Orange Green	Red Orange Green
Red Yellow Green	Northbound	Outside Outside Outside	Red/Black Orange/Black Green/Black	Red/Black Orange/Black Green/Black	Red/Black Orange/Black Green/Black
L/T Red Arrow L/T Yellow Arrow L/T Green Arrow	Eastbound to Northbound	Outside Outside Outside	Red/White Orange/Red Green/White	Red/White Orange/Red Green/White	Red/White Orange/Red Green/White
L/T Red Arrow L/T Yellow Arrow L/T Green Arrow	Northbound to Westbound	Outside Outside Outside	Red/Green Orange/Green Blue/Red	Red/Green Orange/Green Blue/Red	Red/Green Orange/Red Blue/Red
Walk Don't Walk	East/West North Leg	Outside Outside	Blue Black	Blue Black	Blue Black
Walk Don't Walk	North/South East Leg	Outside Outside	Blue/White Black/White	Blue/White Black/White	Blue/White Black/White
Ped Push Button	East/West North Leg	Outside	White/Black	White/Black	White/Black
Ped Push Button	North/South East Leg	Outside	White/Red	White/Red	White/Red
Ped Common	All	Outside	White	White	White
Spare	North to West Flashing Yellow Arrow	Outside	Blue/Black	Blue/Black	Blue/Black
Spare	East to North Flashing Yellow Arrow	Outside	Black/Red	Black/Red	
Spare				Yellow/Red	
Spare				Yellow/Blue	
Spare				Brown	
Spare				Brown/White	
		INSIDE BUNDLE BLUE			
Red Yellow Green	Westbound	Inside Inside Inside	Red Orange Green	Red Orange Green	Red Orange Green
Red Yellow Green	Southbound	Inside Inside Inside	Red/Black Orange/Black Green/Black	Red/Black Orange/Black Green/Black	Red/Black Orange/Black Green/Black
L/T Red Arrow L/T Yellow Arrow L/T Green Arrow	Westbound to Southbound	Inside Inside Inside	Red/White Orange/Red Green/White	Red/White Orange/Red Green/White	Red/White Orange/Red Green/White
L/T Red Arrow L/T Yellow Arrow L/T Green Arrow	Southbound to Eastbound	Inside Inside Inside	Red/Green Orange/Green Blue/Red	Red/Green Orange/Green Blue/Red	Red/Green Orange/Red Blue/Red
Walk Don't Walk	East/West South Leg	Inside Inside	Blue Black	Blue Black	Blue Black
Walk Don't Walk	North/South West Leg	Inside Inside	Blue/White Black/White	Blue/White Black/White	Blue/White Black/White
Ped Push Button	East/West South Leg	Inside	White/Black	White/Black	White/Black
Ped Push Button	North/South West Leg	Inside	White/Red	White/Red	White/Red
Ped Common	All	Inside	White	White	White
Spare	South to East Flashing Yellow Arrow	Inside	Blue/Black	Blue/Black	Blue/Black
Spare	West to South Flashing Yellow Arrow	Inside	Black/Red	Black/Red	
Spare				Yellow/Red	
Spare				Yellow/Blue	
Spare				Brown	
Spare				Brown/White	

TYPE F SIGNAL HEADS INSIDE & SIDE MOUNT		
5 CONDUCTOR CABLE		
NO.	BASIC COLOR	SIGNAL INTERVAL
1	Black	Spare
2	White	Vehicle Common
3	Red	Red
4	Green	Green
5	Orange	Yellow

OUTSIDE MAST ARM AND TYPE Q HEADS		
7 CONDUCTOR CABLE		
NO.	BASIC COLOR	SIGNAL INTERVAL
1	Black	Yellow Arrow
2	White	Vehicle Common
3	Red	Red
4	Green	Green
5	Orange	Yellow
6	Blue	Green Arrow
7	White/Black	Spare

4 SECTION FLASHING YELLOW ARROW MAST ARM AND SIDE MOUNT		
7 CONDUCTOR CABLE		
NO.	BASIC COLOR	SIGNAL INTERVAL
1	Black	Flashing Yellow Arrow
2	White	Vehicle Common
3	Red	Red Arrow
4	Green	Green Arrow
5	Orange	Yellow Arrow
6	Blue	Spare
7	White/Black	Spare

LRT 2 Indication Signal		
7 CONDUCTOR CABLE		
NO.	BASIC COLOR	INDICATION
1	Black	Diagonal
2	White	Neutral
3	Red	Horizontal Bar W/B
4	Green	Vertical Bar E/B
5	Orange	Horizontal Bar E/B
6	Blue	Vertical Bar W/B
7	White/Black	Spare

LRT 3 Indication Signal		
7 CONDUCTOR CABLE		
NO.	BASIC COLOR	INDICATION
1	Black	Diagonal
2	White	Neutral
3	Red	Horizontal Bar
4	Green	Vertical Bar
5	Orange	Spare
6	Blue	Spare
7	White/Black	Spare

LRT Signal 5 Conductor Head to Hand Hole		
5 CONDUCTOR CABLE		
NO.	BASIC COLOR	INDICATION
1	Black	Diagonal
2	White	Neutral
3	Red	Horizontal Bar
4	Green	Vertical Bar
5	Orange	Spare

NOTES
5 conductor cable from all LRV head to hand hole
2-7 conductor to all 3 headed LRV signal poles

120V ILLUMINATED STREET SIGN AND LUMINAIRE		
5 CONDUCTOR CABLE		
NO.	COLOR	FUNCTION
1	Black	Sign
2	White	Neutral (Shared)
3	Red	Luminaire
4	Green	Ground
5	Orange	Spare

240V ILLUMINATED STREET SIGN AND LUMINAIRE		
5 CONDUCTOR CABLE		
NO.	COLOR	FUNCTION
1	Black	Sign
2	White	Sign
3	Red	Luminaire
4	Green	Ground
5	Orange	Luminaire

LUMINAIRE (FROM LUMINAIRE)		
3 CONDUCTOR CABLE		
NO.	BASIC COLOR	FUNCTION
1	Black	Load
2	White	Neutral
3	Green	Ground

ILLUMINATED STREET SIGN (FROM SIGN)		
3 CONDUCTOR CABLE		
NO.	BASIC COLOR	FUNCTION
1	Black	Load
2	White	Neutral
3	Green	Ground

ADA PUSH BUTTON		
3 CONDUCTOR CABLE		
NO.	BASIC COLOR	PUSH BUTTON STATION
1	Black	Push Button
2	White	Push Button Common
3	Green	Spare

PEDESTRIAN HEAD		
5 CONDUCTOR CABLE		
NO.	BASIC COLOR	SIGNAL INTERVAL
1	Black	Don't Walk
2	White	Pedestrian Common
3	Red	Spare
4	Green	Walk
5	Orange	Spare

COMMUNICATION RADIO		
3 CONDUCTOR CABLE		
NO.	BASIC COLOR	FUNCTION
1	Black	Load
2	White	Neutral
3	Green	Ground

BLANK OUT SIGN		
5 CONDUCTOR CABLE		
NO.	COLOR	FUNCTION
1	Black	BO Sign
2	White	Neutral
3	Red	BO Sign *
4	Orange	Spare
5	Green	Spare

* Where second function is required

OUTSIDE BUNDLE MARKED WITH ORANGE TAPE

INSIDE BUNDLE MARKED WITH BLUE TAPE

F.P.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.			

DR: _____ DES: _____ CK: _____ DATE: _____

- GENERAL NOTES
- All IMSA Cable shall be pulled continuous (no splicing) from the Terminal Compartment in each Signal Head or Push Button Station to the Hand Hole at the base of Pole
 - Cable shall be utilized as follows:
3 Conductor - All ADA Push Button Stations
Luminaires, Illuminated Street Signs, Detection Cameras
5 Conductor - All 3 Section, 4 Section Signal Heads, HAWK Signal Heads, Pedestrian Heads, Audible pushbutton Stations
7 Conductor - All outside Mast Arm and Type Q Signal Heads
 - Orange (North or East) or blue (South or West) Tape shall be applied six (6) inches above PVC bell end on IMSA Cable Jacket in Junction Box
 - All Cable shall be tagged in the Hand Hole with orange (North or East) or blue (South or West) tape as follows:

MAST ARM VEHICLE INDICATIONS		
HEAD	CONDUCTORS	TAPE(S)
On Pole	5	1
First on Mast Arm	5	2
Next Outside	5	3
Next Outside	5	4
End of Mast Arm	7	5*

* Band Number corresponds to Head Number

- IMSA Cables for Pedestrian Heads shall be identified in Hand Hole using Brown tape in addition to color of phase.
- IMSA Cable for Luminaires shall be run continuous to Junction Box and identified with one (1) band of purple tape
- IMSA Cable for illuminated Street Signs shall be run continuous to Junction Box and identified with two (2) bands of purple tape
- IMSA Power Cable for wireless Radio shall be pulled continuous from radio to dedicated circuit in Power Service Pedestal when available. Connect to luminaire circuit in junction box at base of pole when PSP is not available. Identified cable in junction boxes with three (3) bands of purple tape.
- CAT 5e Cable shall be pulled continuous from Wireless Radio to inside the Controller Cabinet.
- CCTV Cable and Video Detection Cable shall be pulled continuous from the device to inside the Controller Cabinet.
- All IMSA Cable to be #16 AWG Stranded unless otherwise noted on approved signal plans. When terminating in Signal Heads use suitable manufactured crimp on connector of appropriate size.

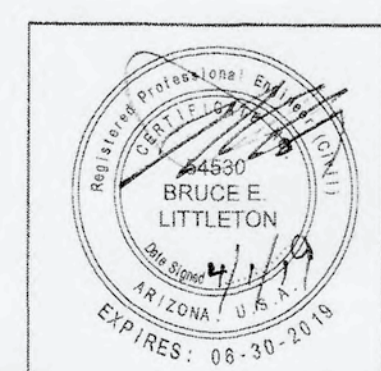
PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-26, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS

TPP File Number: 10164
TS 4-1
DATE: 4-1-2019

TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

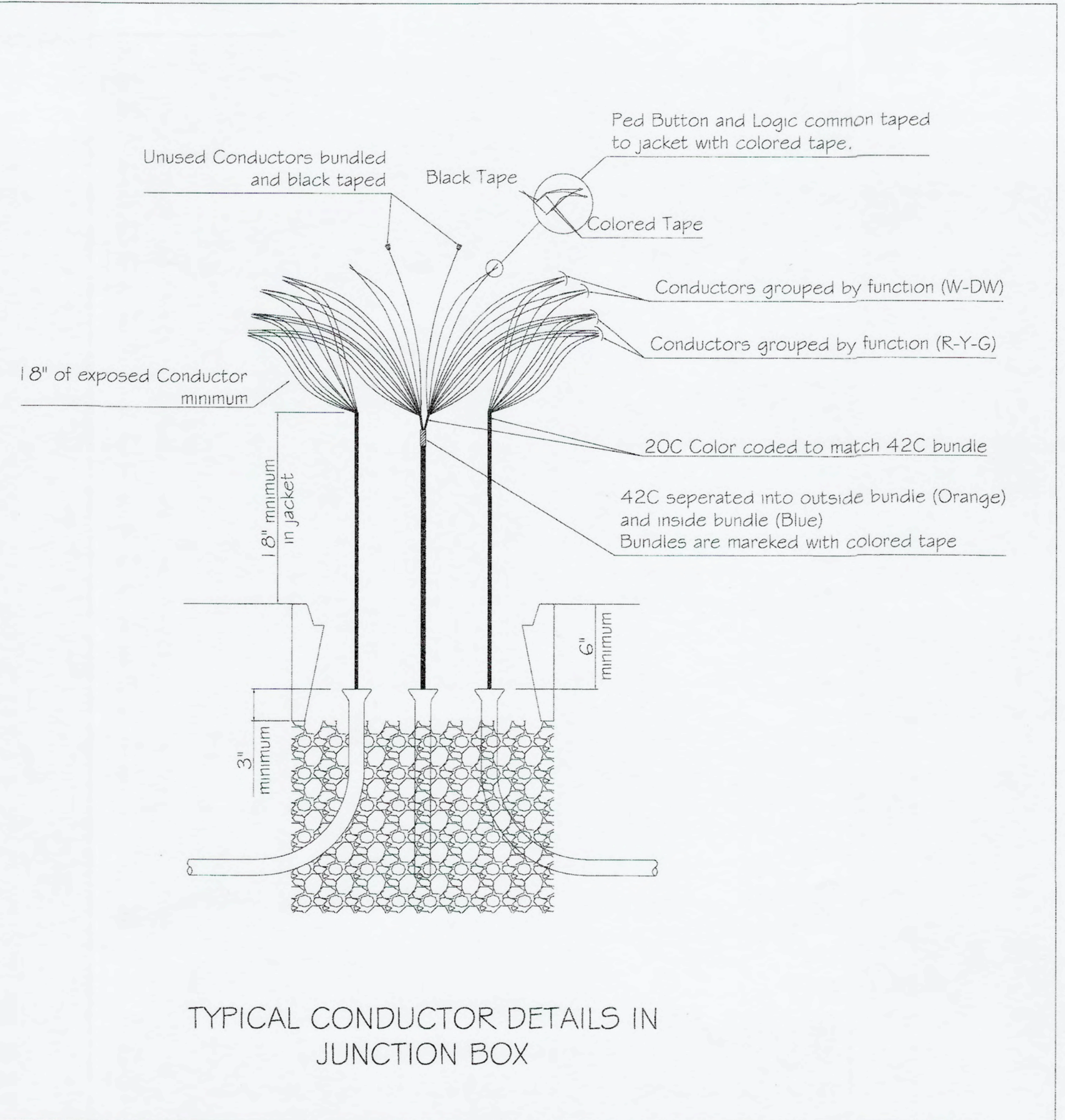
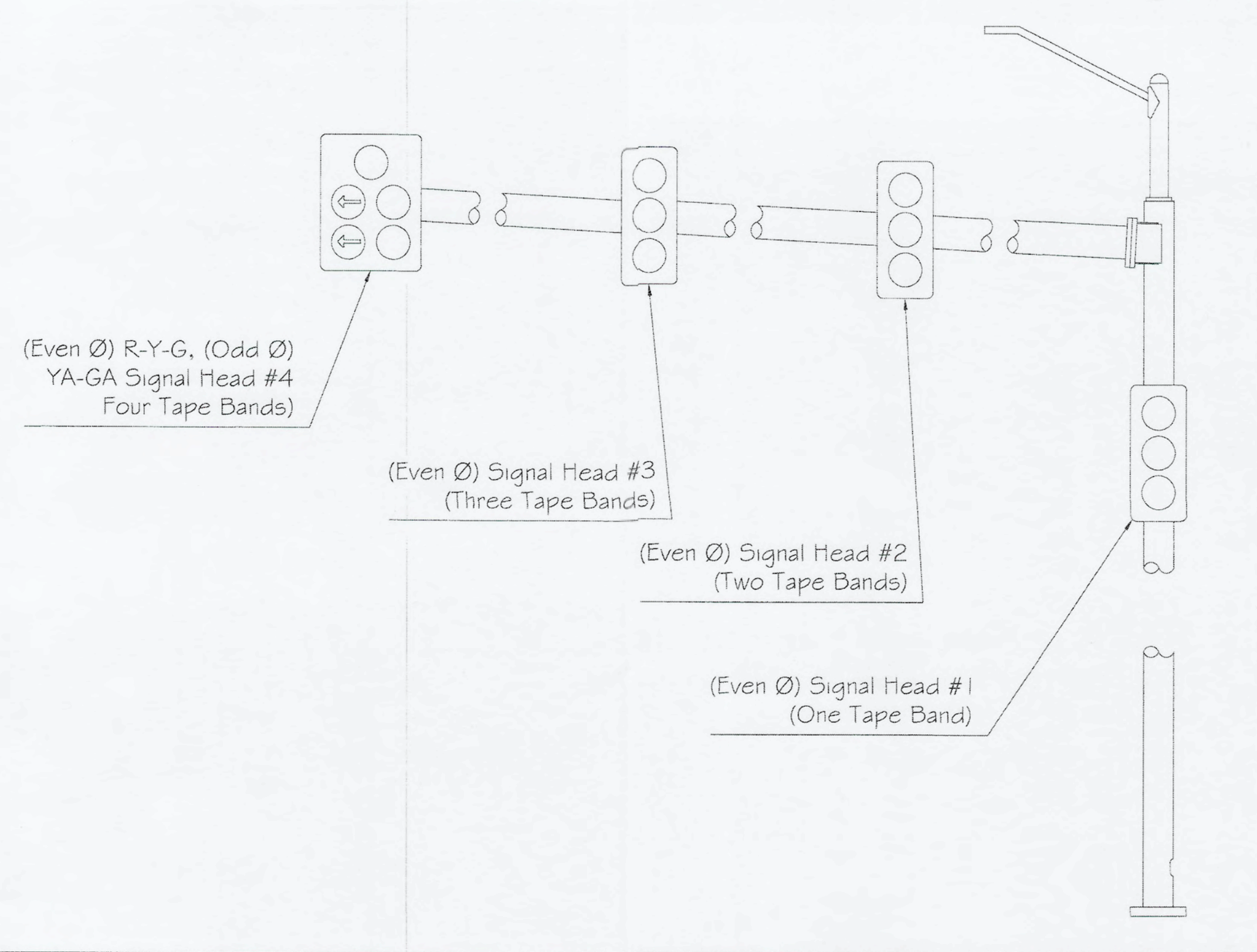
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SCALE: _____ Q5 #:



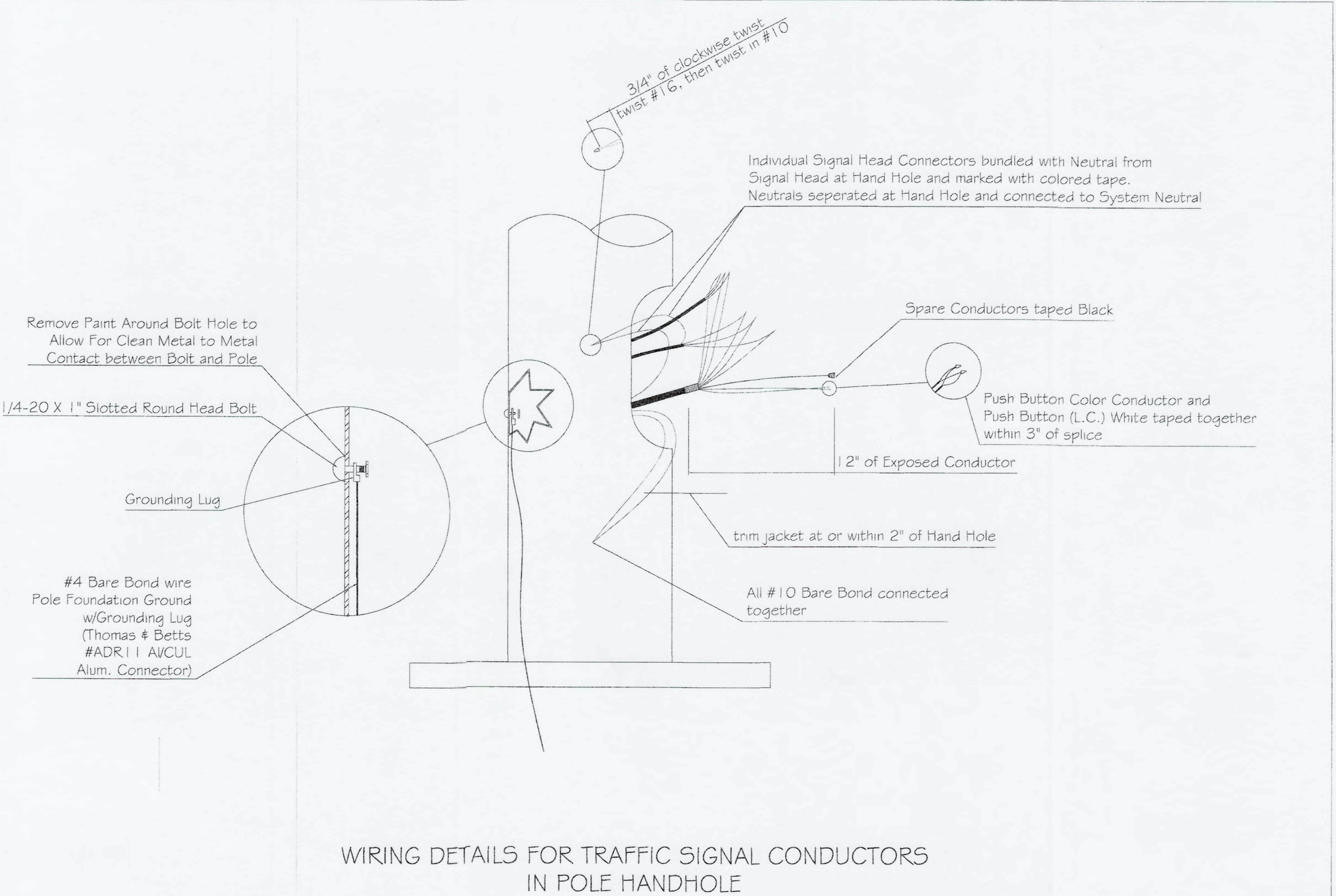
WIRE CODE TABLES

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.			
DR:	DES:	CK:	DATE:	

PROJECT #:



TYPICAL CONDUCTOR DETAILS IN JUNCTION BOX



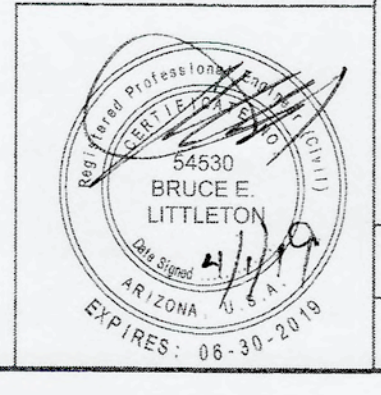
WIRING DETAILS FOR TRAFFIC SIGNAL CONDUCTORS IN POLE HANDHOLE

PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2.26, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS

PULL BOX/POLE HAND HOLE WIRING



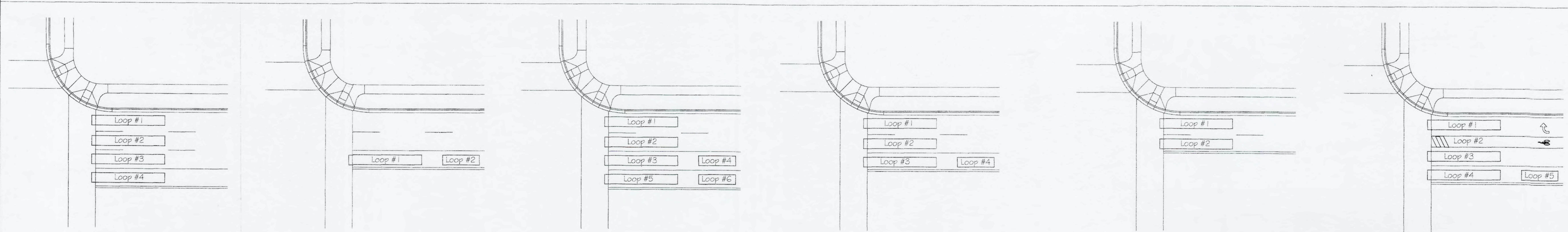
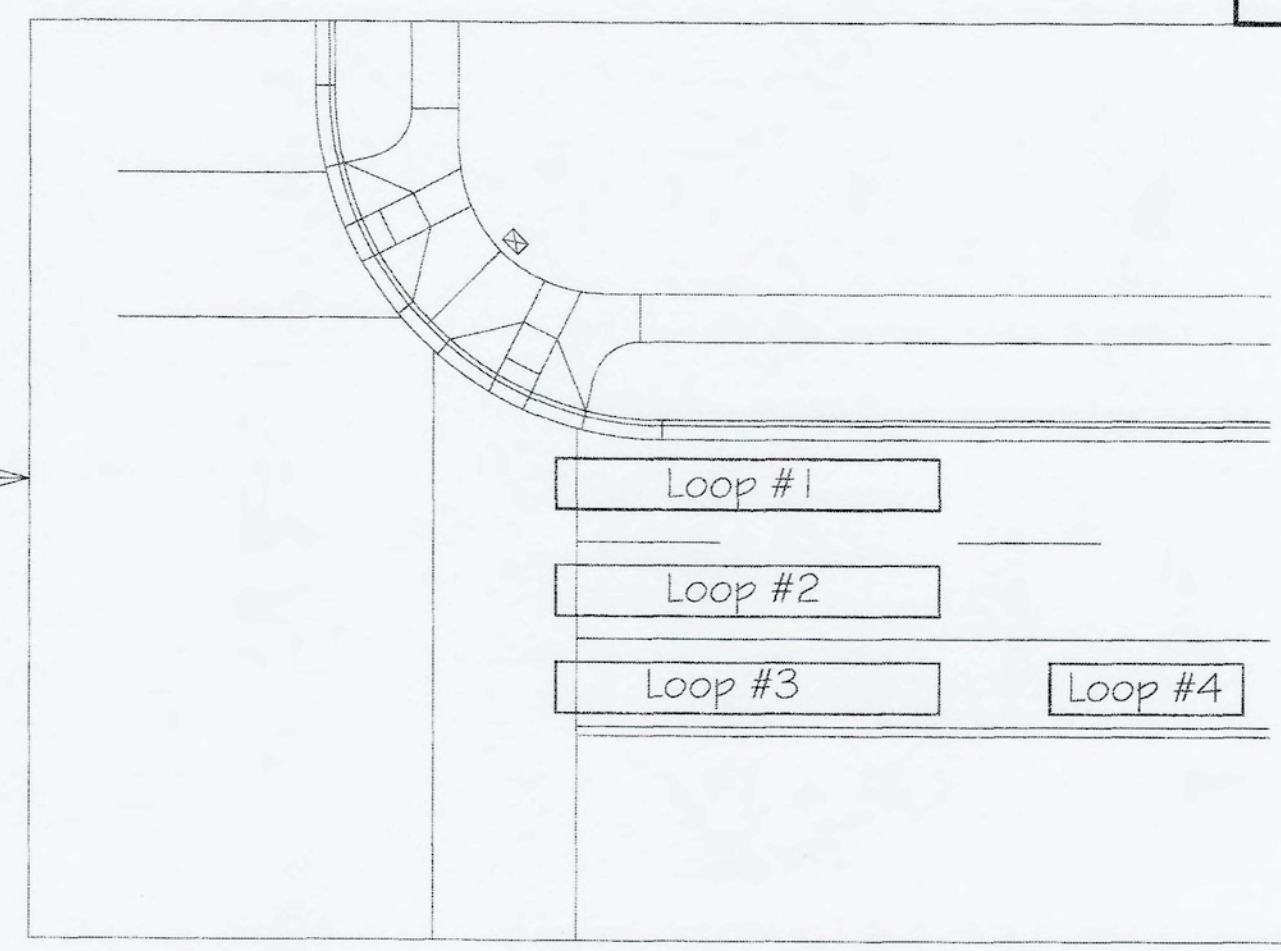
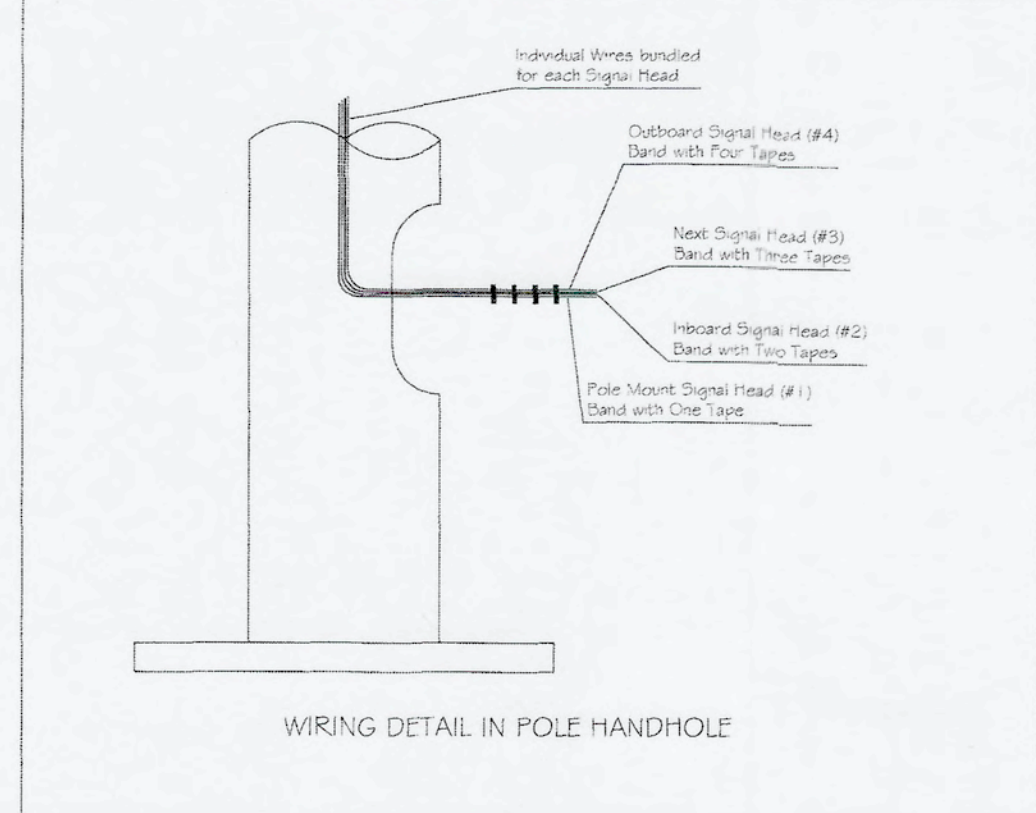
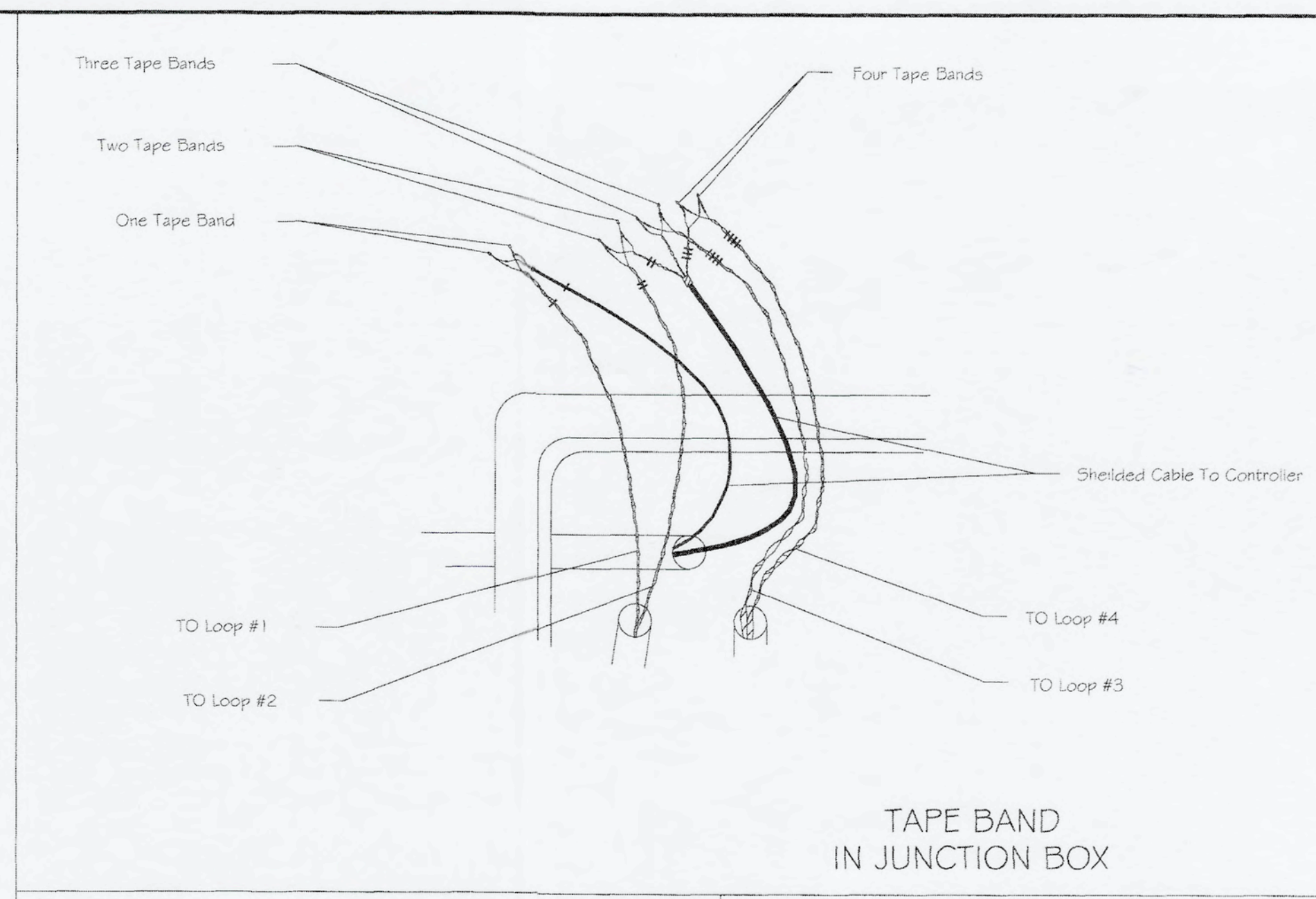
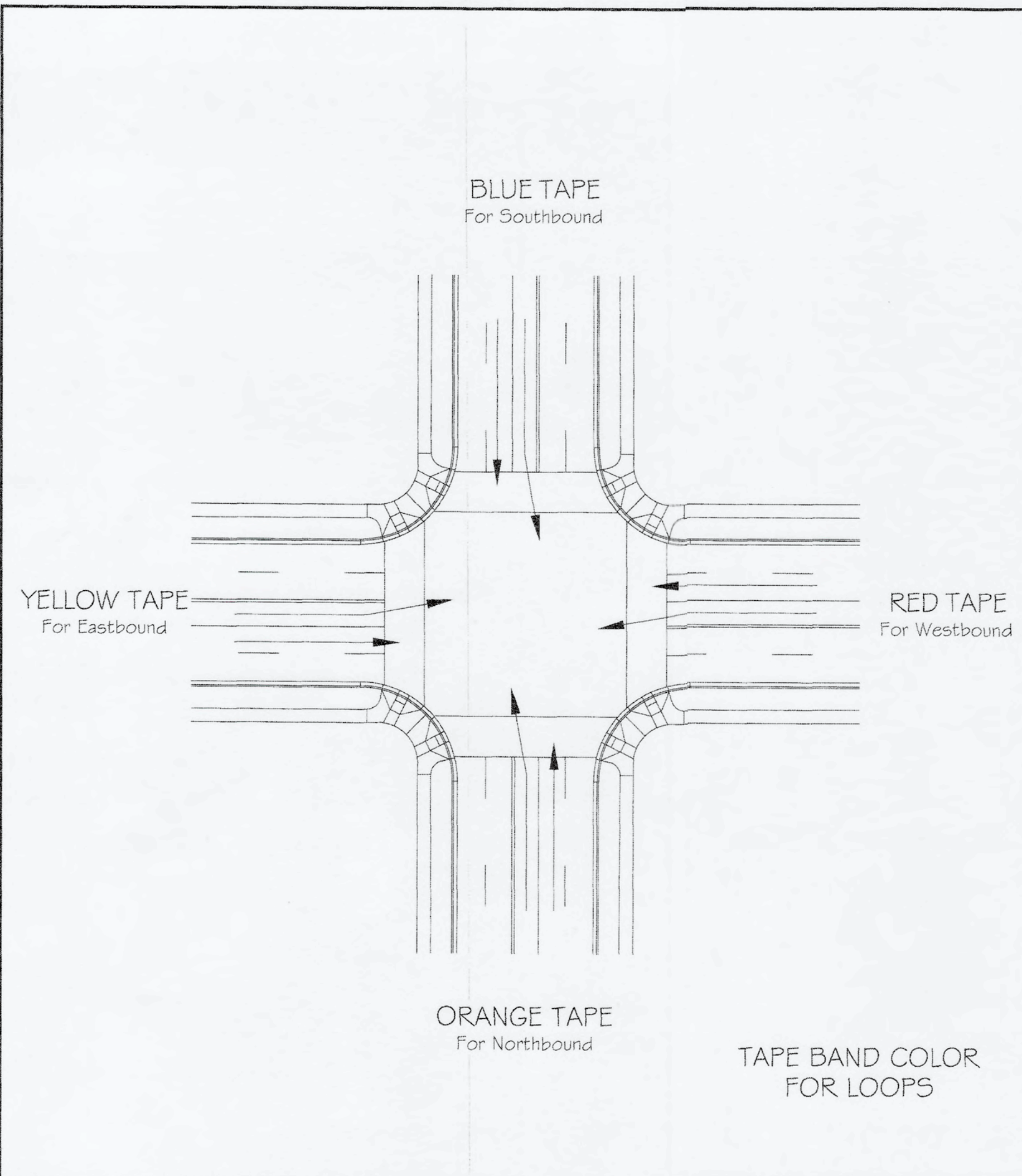
TPP File Number 10164
DATE: 4-1-2019
TRAFFIC SERVICES DEPARTMENT
DEPUTY DIRECTOR

PROJECT #:	DR:	DES:	CK:	SHEET NO:	TOTAL SHEETS:
	DATE:	DATE:	DATE:		
SCALE:	Q5 #:				

PROJECT #:

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.			

DR: DES: CK: DATE:



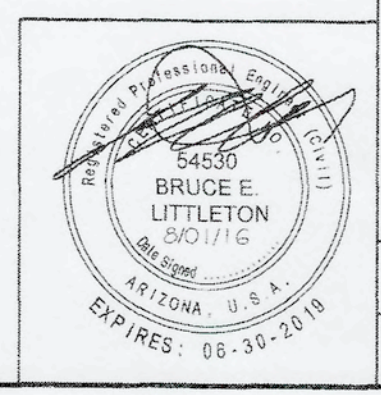
LOOP NUMBERING SCHEME

- 1 - Loop numbering begins with the right most internal loop numbered #1
- 2 - Loops are numbered sequentially in the lane, then to the adjacent lane
- 3 - Numbering starts over with each approach
- 4 - See approved plans for loop locations

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-26, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX."

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS

TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

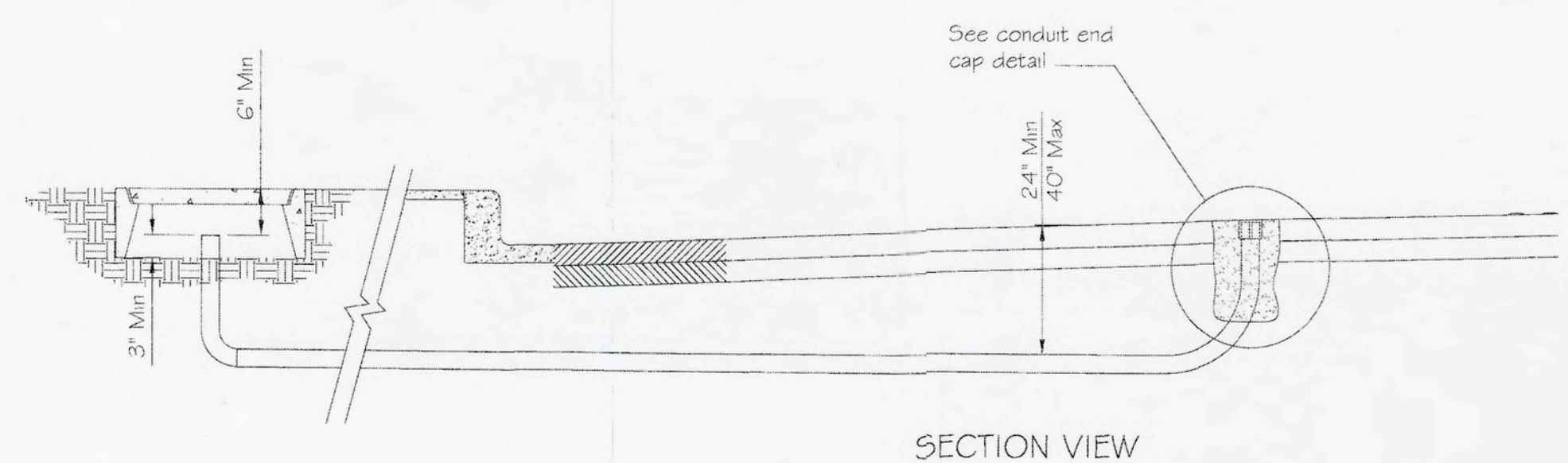


COLOR CODING/BANDING SCHEME
LOOP NUMBERING

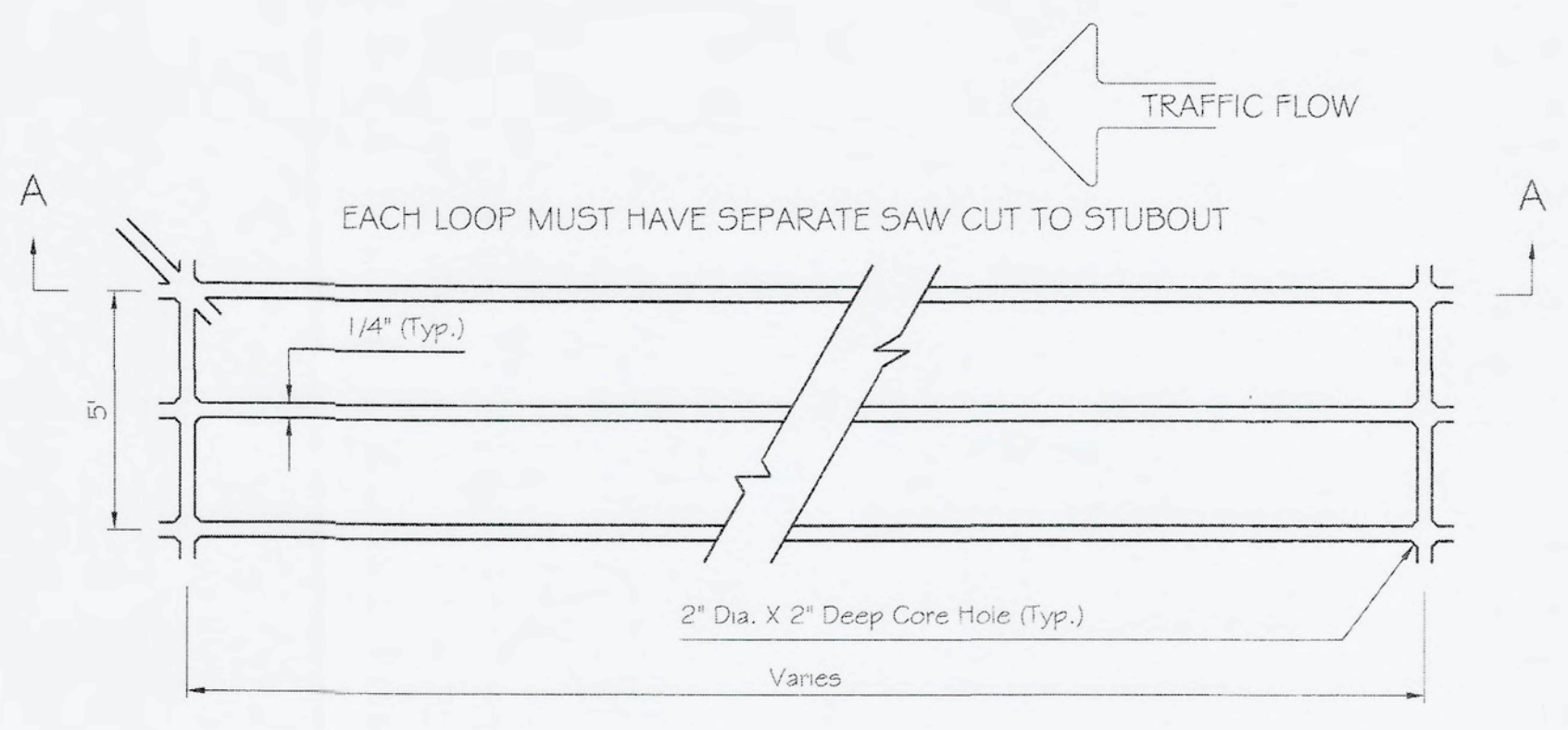
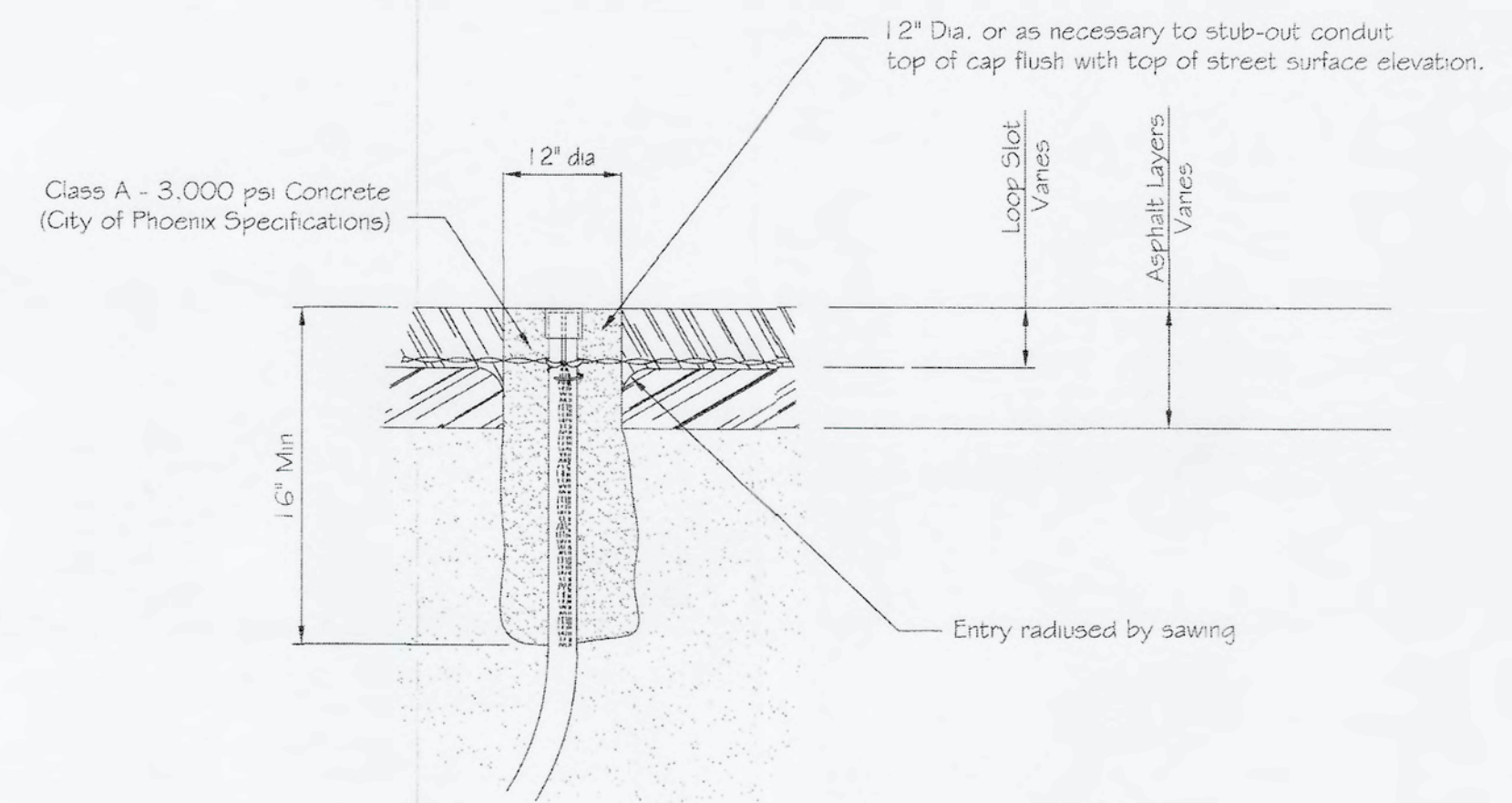
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SCALE:		QS: #:		

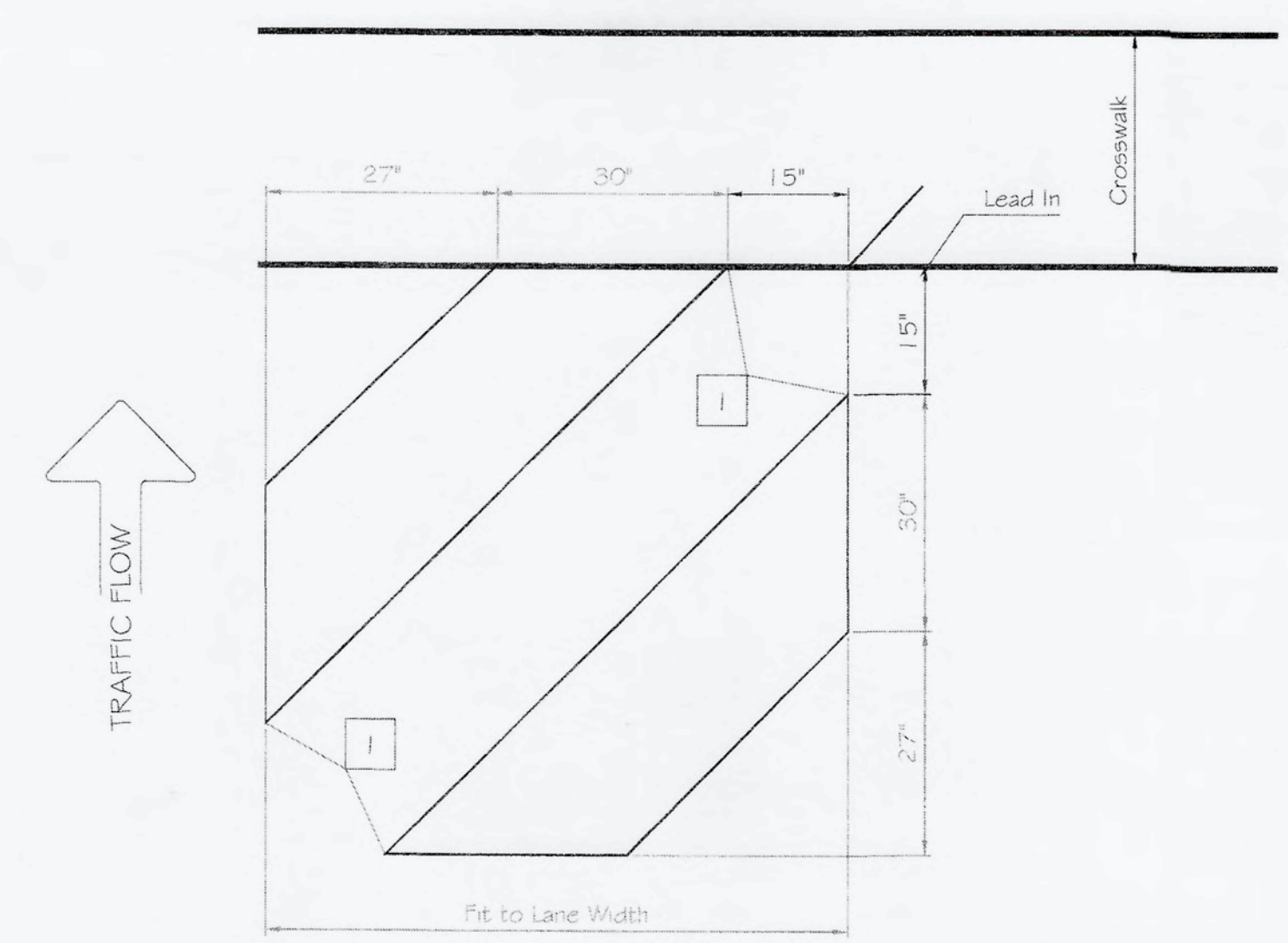
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9	ARIZ.			
DR:	DES:	CK:	DATE:	



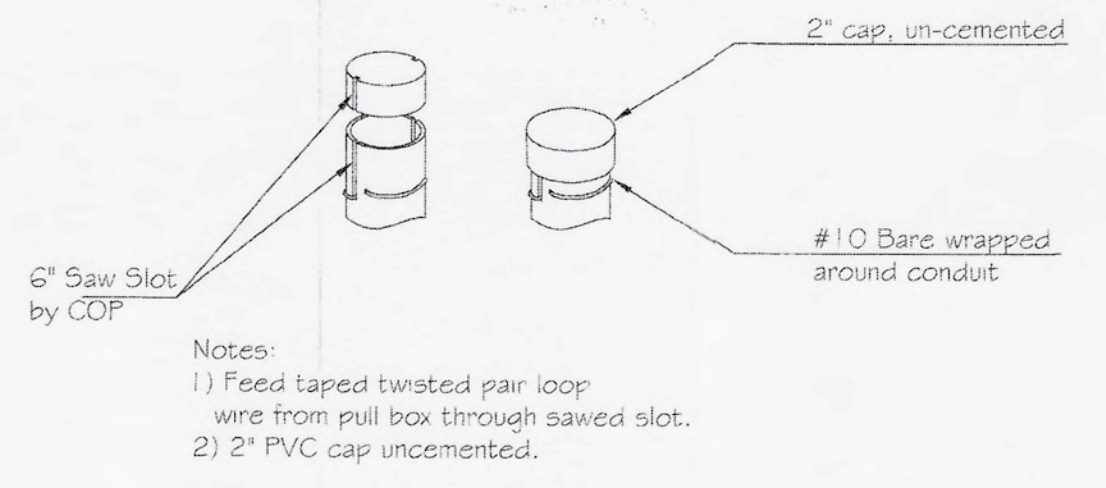
SECTION VIEW
LOOP TO JUNCTION BOX DETAIL



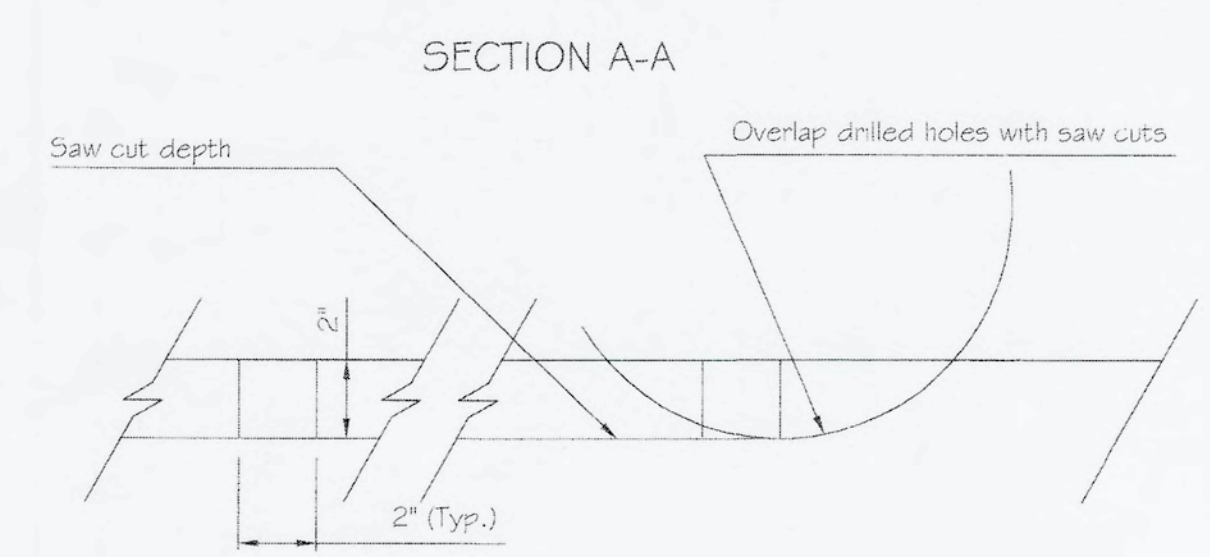
QUADRUPOLE DETECTOR LOOP SAW CUT DETAIL



BICYCLE DETECTOR LOOP SAW CUT DETAIL

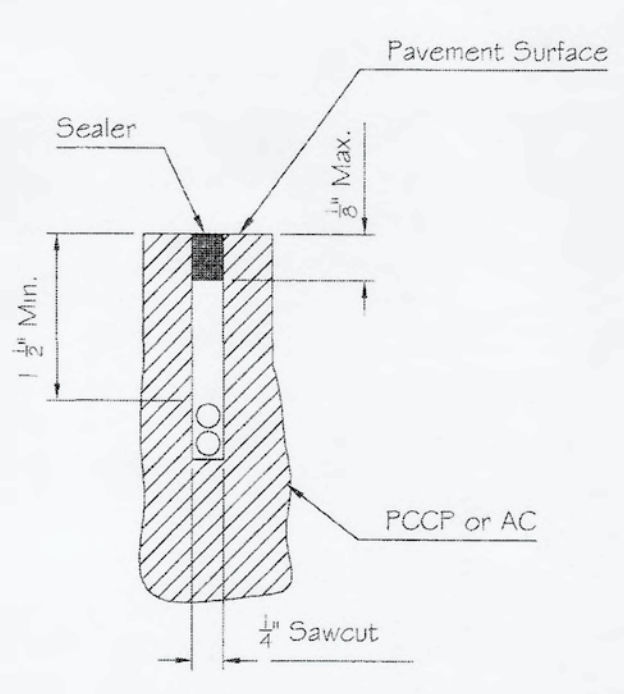


CONDUIT END CAP DETAIL

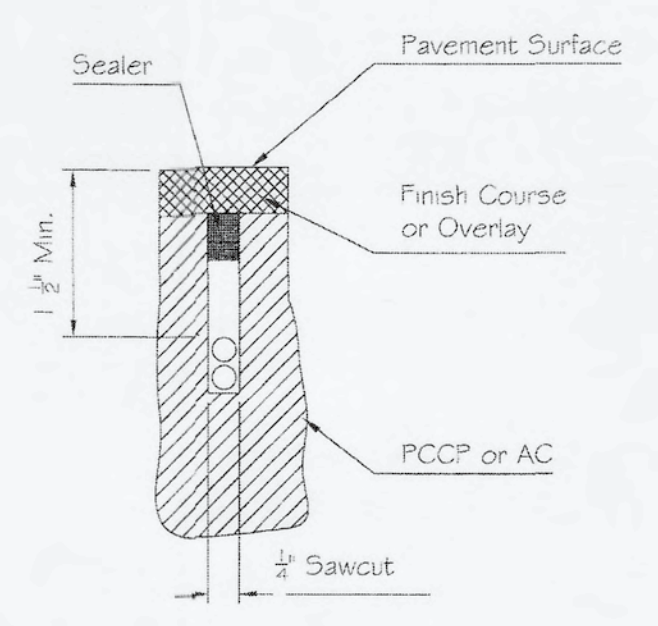


SECTION A-A

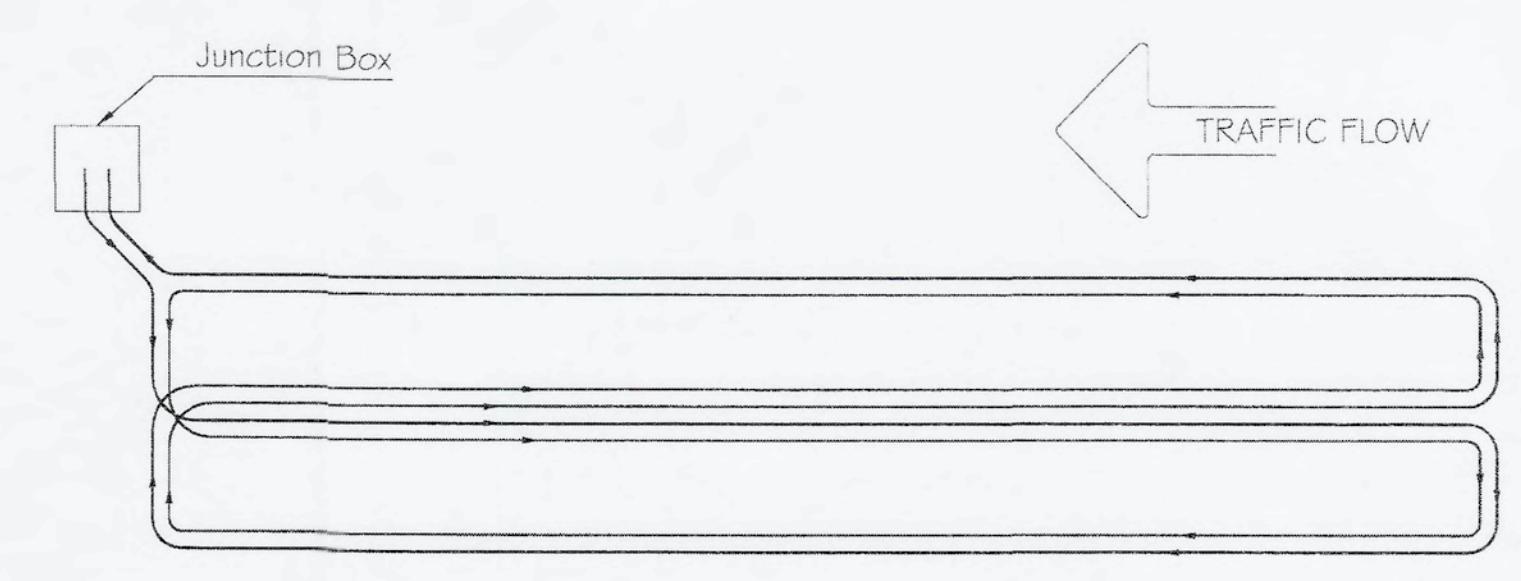
- 1 Round corners of acute angle sawcuts to prevent damage to conductors
- 2 5 Turns



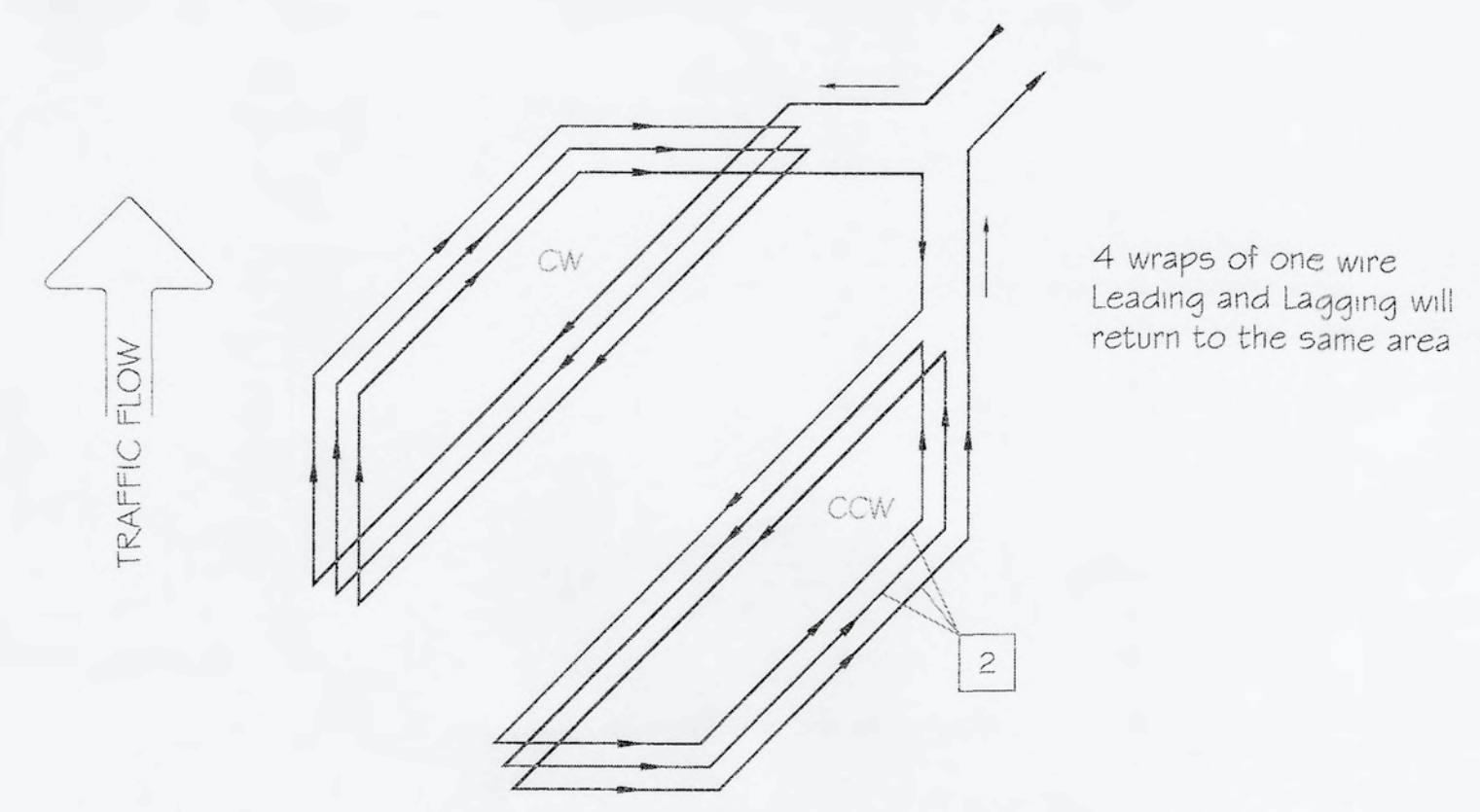
DETAIL 1



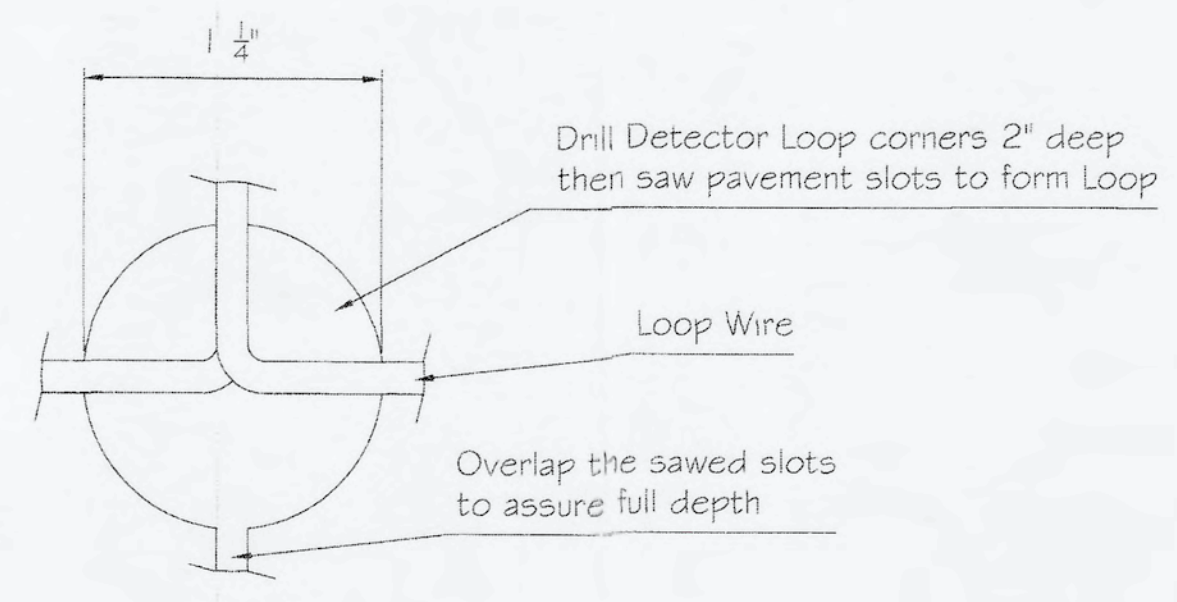
DETAIL 2



QUADRUPOLE DETECTOR LOOP CONDUCTOR PLACEMENT



BICYCLE DETECTOR LOOP CONDUCTOR PLACEMENT

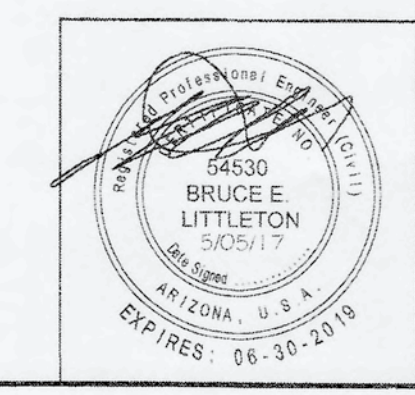


DRILLING DETAIL

PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-26, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS



DETECTION LOOPS

TPP File Number: 0164
TS 5-1
DATE: 5-08-2017
SCALE: 1" = 1'-0"

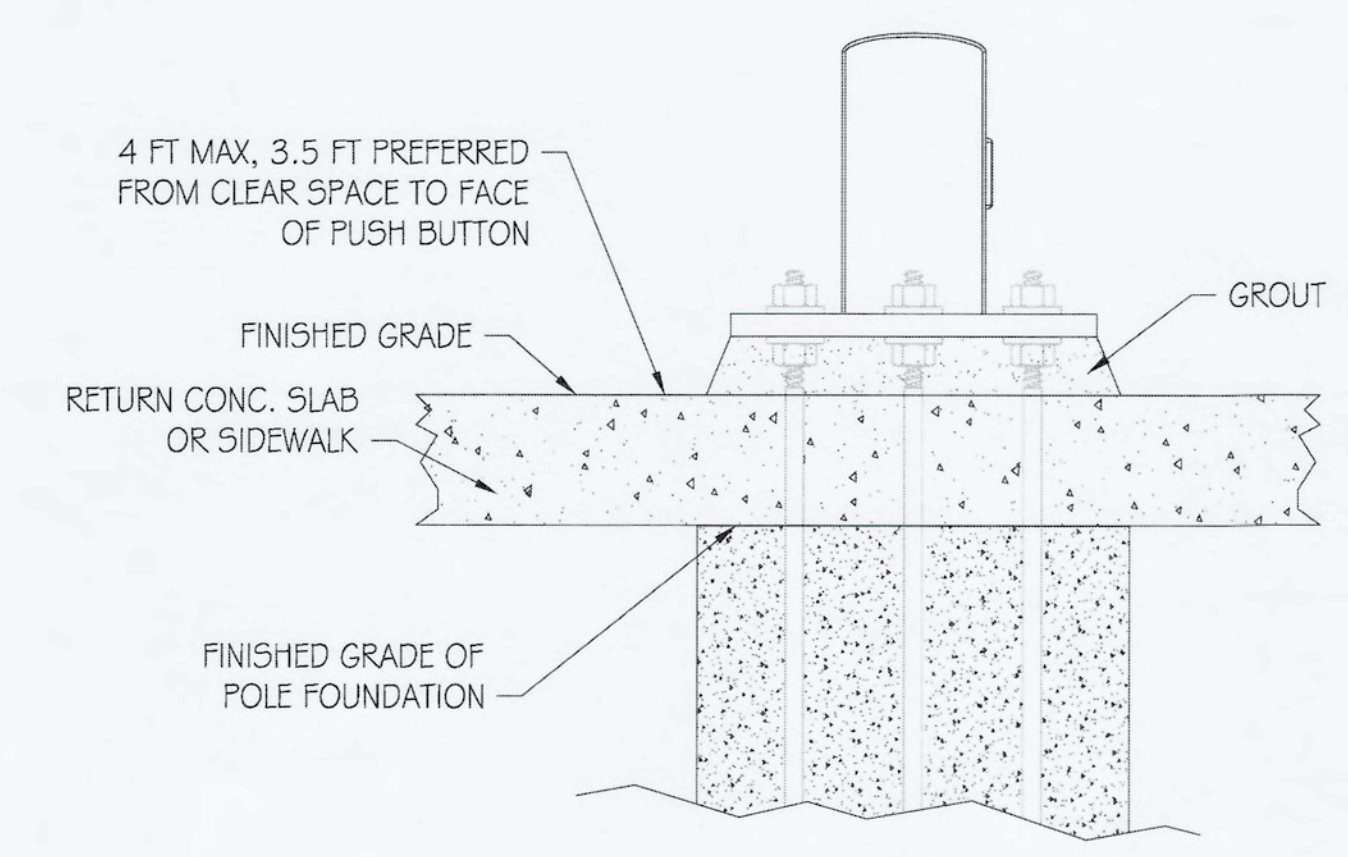
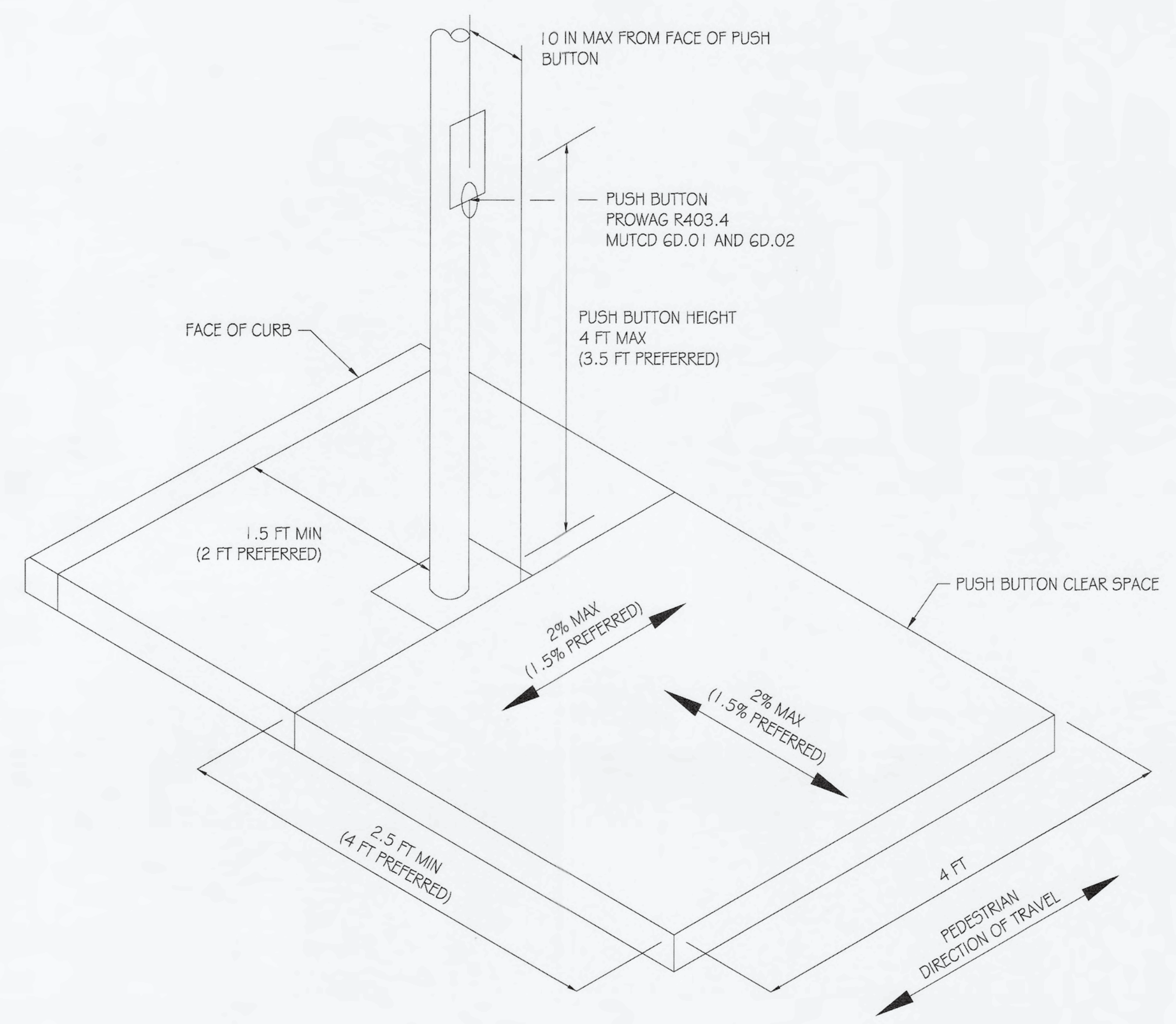
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DATE:	DATE:	DATE:	DATE:	NO:	SHEETS:
SCALE:	QS #:				

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.			

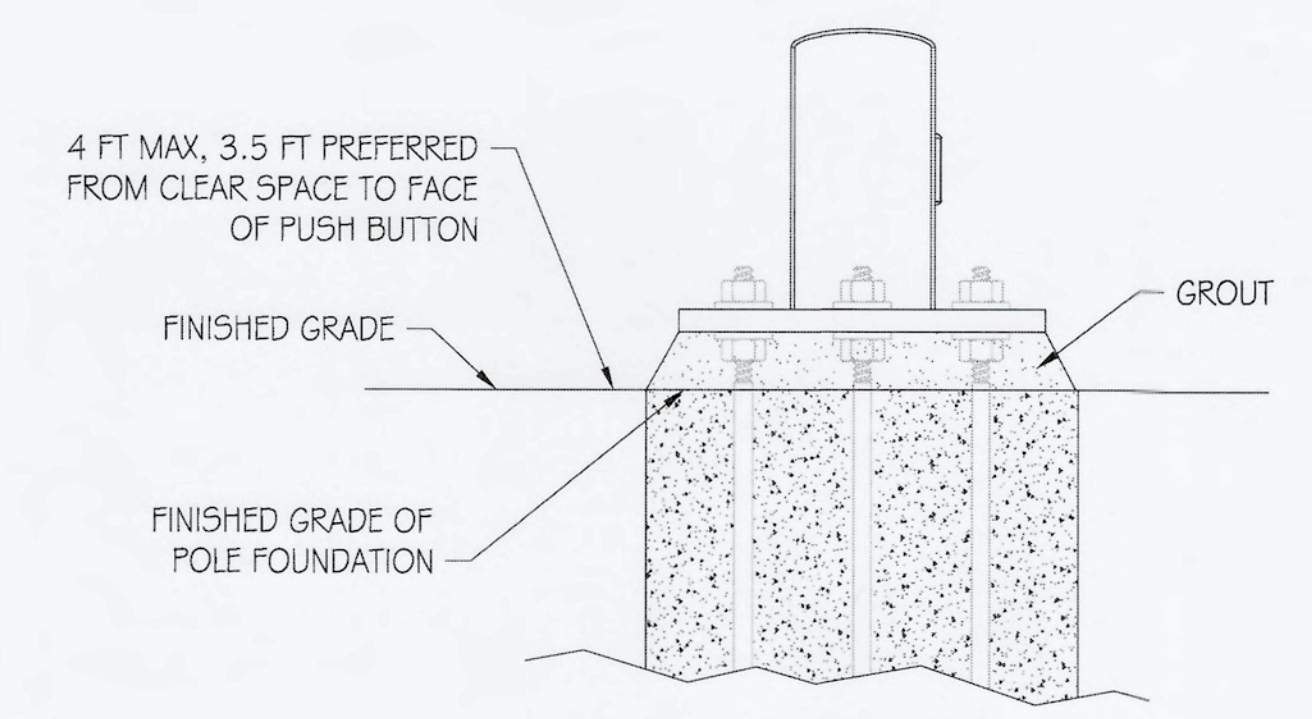
DR: _____ DES: _____ CK: _____ DATE: _____

CLEAR SPACE NOTES:

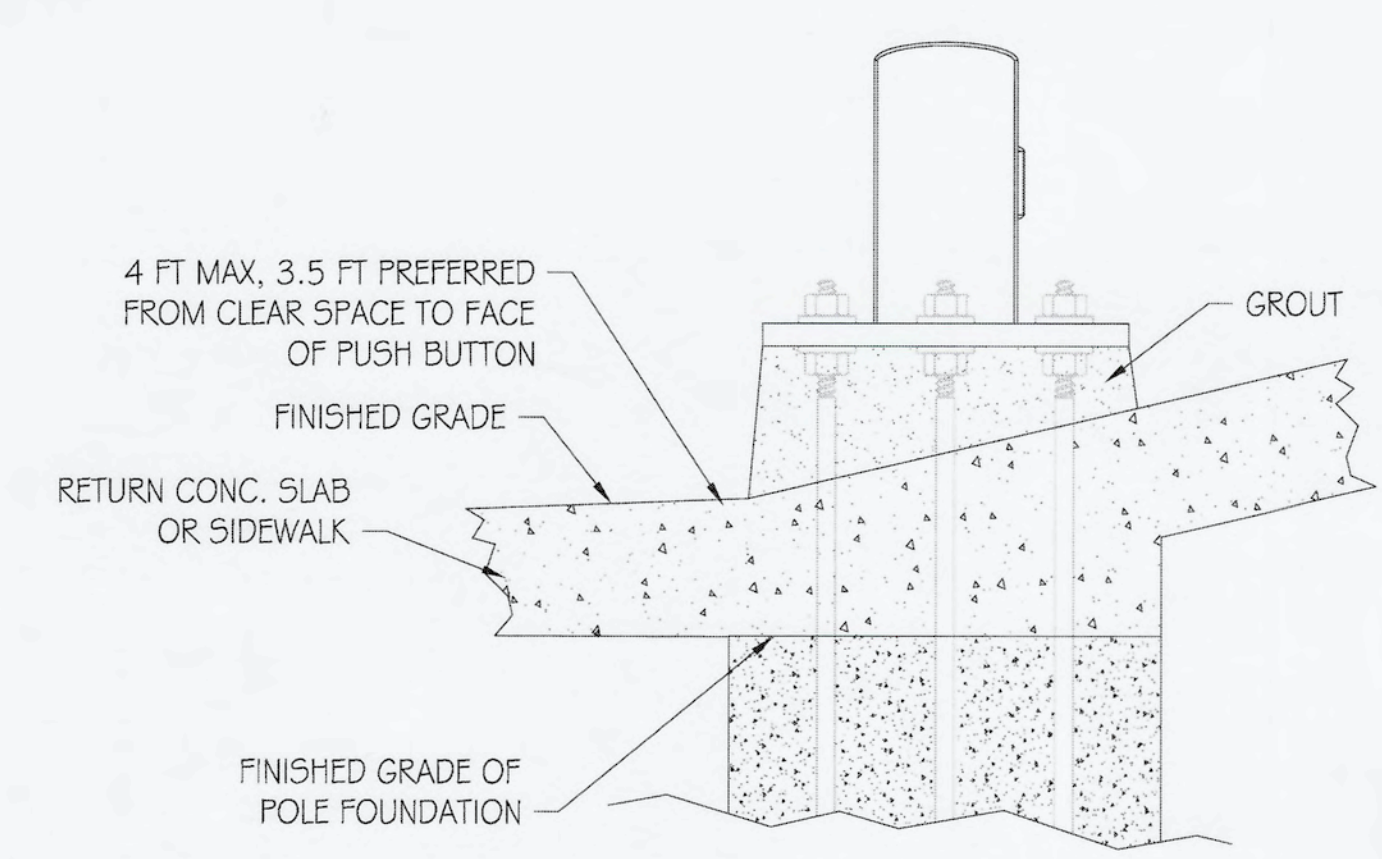
1. PUSH BUTTON SHALL HAVE A 2.5 FT MIN (4 FT PREFERRED) X 4 FT CLEAR SPACE CENTERED AT PUSH BUTTON.
2. CONCRETE CURB AND GUTTER AT CURB RETURNS WITH CURB RAMPS SHALL BE M.A.G. CLASS A. CONCRETE SIDEWALKS AND CURB RAMPS AT CURB RETURNS SHALL BE M.A.G. CLASS A.
3. PUSH BUTTON FACE SHALL BE ALIGNED WITH PEDESTRIAN DIRECTION OF TRAVEL.
4. MAINTAIN THE PLANE OF THE LANDING ONE FOOT (FT.) BEYOND THE TOP OF LANDING.
5. ADDITIONAL SIDEWALK PER NOTES 2 & 5 WHEN SIGNAL POLES WITH PUSH BUTTONS ARE LOCATED IN THESE MINIMUM 1.5 FT OF SIDEWALK MUST BE PROVIDED BETWEEN FACE OF CURB AND EDGE OF PUSH BUTTON POLE (2 FT PREFERRED).
6. PUSH BUTTON SHOULD BE 1.5 FT TO 6 FT FROM EDGE OF CURB. IF PUSH BUTTON CANNOT BE LOCATED WITHIN 6 FT FROM EDGE OF CURB, IT SHOULD NOT BE FURTHER THAN 10 FT FROM EDGE OF CURB.
7. PUSH BUTTON CLEAR SPACE AREA TO BE CONCRETE SIDEWALK.
8. BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE OF 4 FT MINIMUM BY 4 FT MINIMUM SHALL BE PROVIDED WITH THE WIDTH OF THE PEDESTRIAN STREET CROSSING AND WHOLLY OUTSIDE THE PARALLEL VEHICLE TRAVEL LANE.
9. A 4 FT PEDESTRIAN ACCESS ROUTE IS REQUIRED FROM THE ACCEPTABLE AREA FOR PUSH BUTTON LOCATION TO THE EDGE OF CURB RAMP.
10. TWO POLES WITH PEDESTRIAN PUSH BUTTONS ON THE SAME CORNER, MUST HAVE A MINIMUM OF 10 FEET SEPARATION.



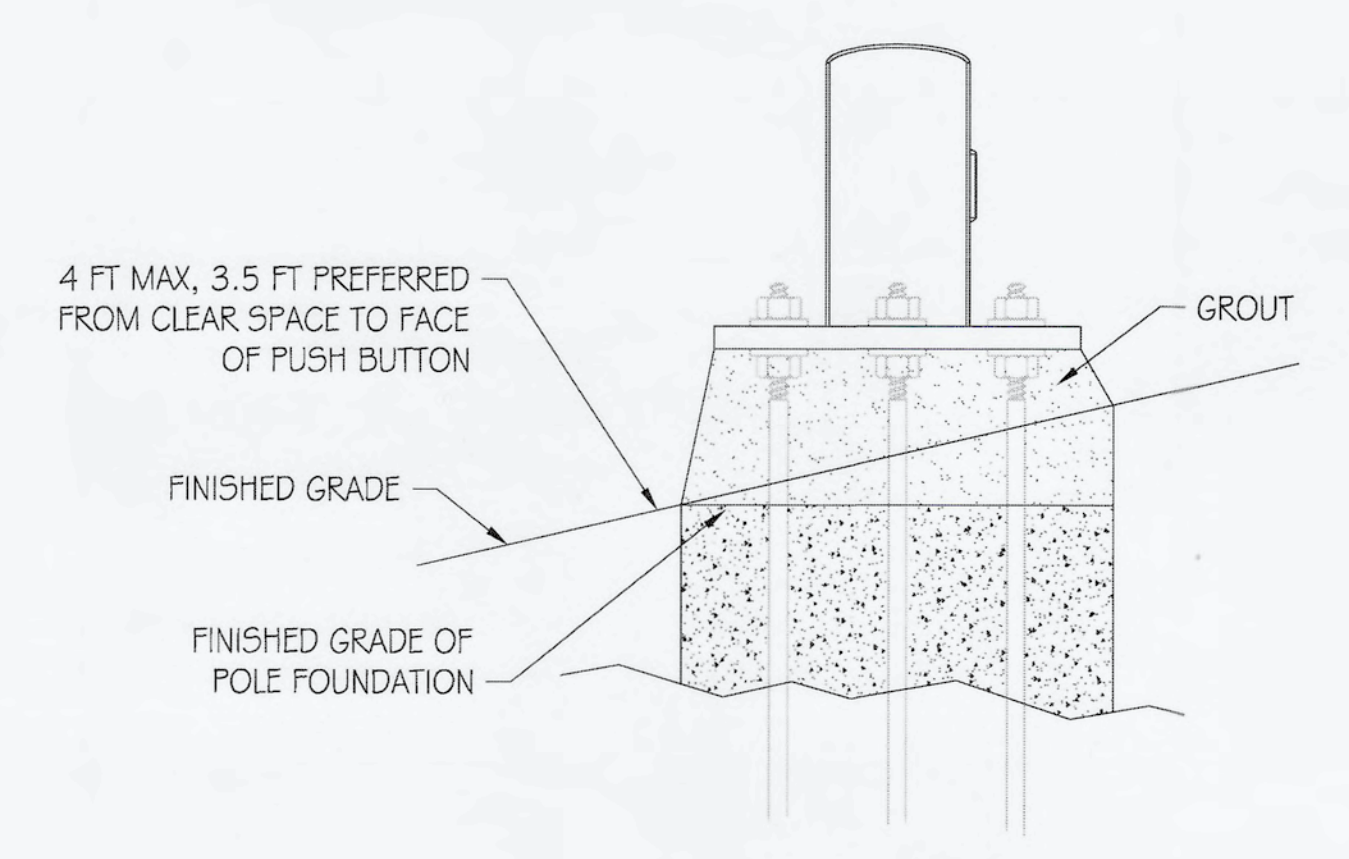
TYPICAL POLE LOCATED WITHIN LEVEL SIDEWALK SLAB



TYPICAL POLE LOCATED WITHIN LEVEL FINISHED GRADE



TYPICAL POLE LOCATED WITHIN ANGLED SIDEWALK SLAB



TYPICAL POLE LOCATED WITHIN ANGLED FINISHED GRADE

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX."

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
TRAFFIC SIGNAL STANDARD DETAILS

TRAFFIC SIGNAL DETAILS
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

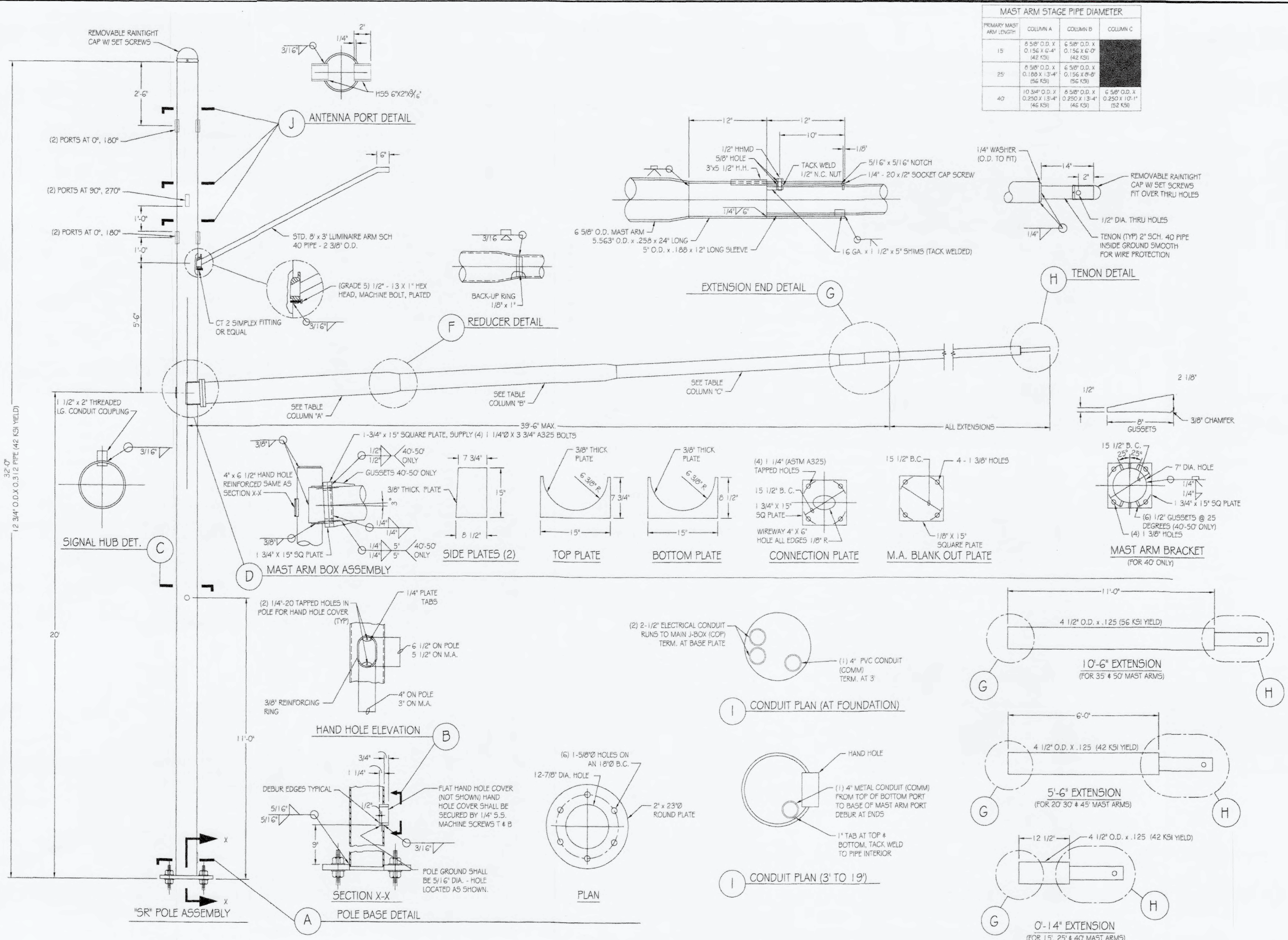


CLEAR SPACE DETAIL
TPP File Number 10164
TS 6-1
4-6-2020

PROJECT #:	DR:	DES:	CK:	SHEET NO:	TOTAL SHEETS:
	DATE:	DATE:	DATE:		
	SCALE:		QS. #:		

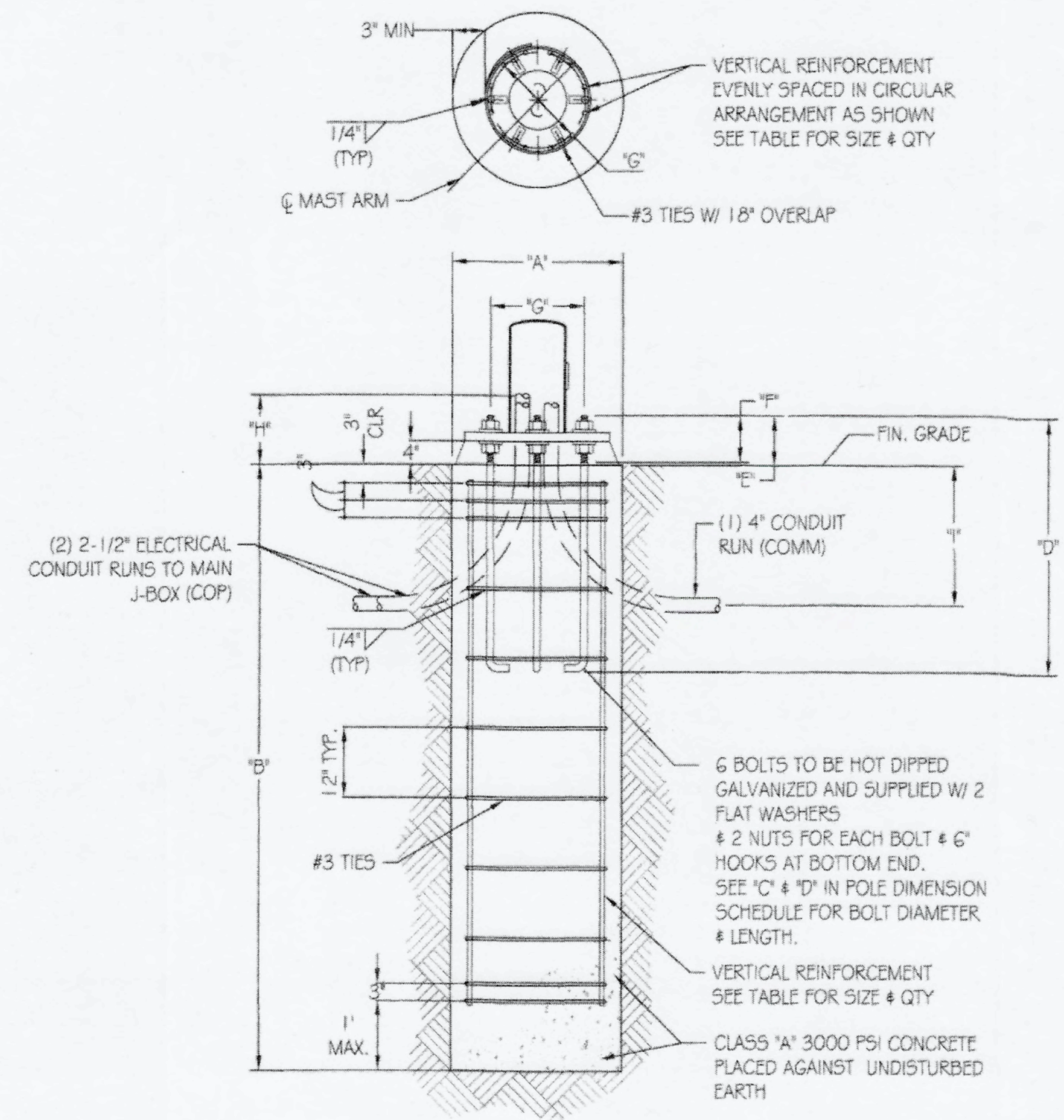
CITY OF PHOENIX
'SR' COMM SIGNAL POLE
POLE DETAILS

MAST ARM STAGE PIPE DIAMETER			
PRIMARY MAST ARM LENGTH	COLUMN A	COLUMN B	COLUMN C
15'	6 5/8" O.D. X 0.156 X 6'-4" (42 KSI)	6 5/8" O.D. X 0.156 X 6'-0" (42 KSI)	
25'	6 5/8" O.D. X 0.188 X 13'-4" (56 KSI)	6 5/8" O.D. X 0.156 X 8'-0" (56 KSI)	
40'	10 3/4" O.D. X 0.250 X 13'-4" (46 KSI)	6 5/8" O.D. X 0.250 X 13'-4" (46 KSI)	6 5/8" O.D. X 0.250 X 10'-1" (52 KSI)



PROGRESS LOG	
0	8/9/14 ISSUED TO CLIENT
SHEET NUMBER	PROGRESS
S1	0
DRAWING DATE August 09, 2014	

CITY OF PHOENIX
 'SR' COMM SIGNAL POLE
 FOUNDATION DETAILS



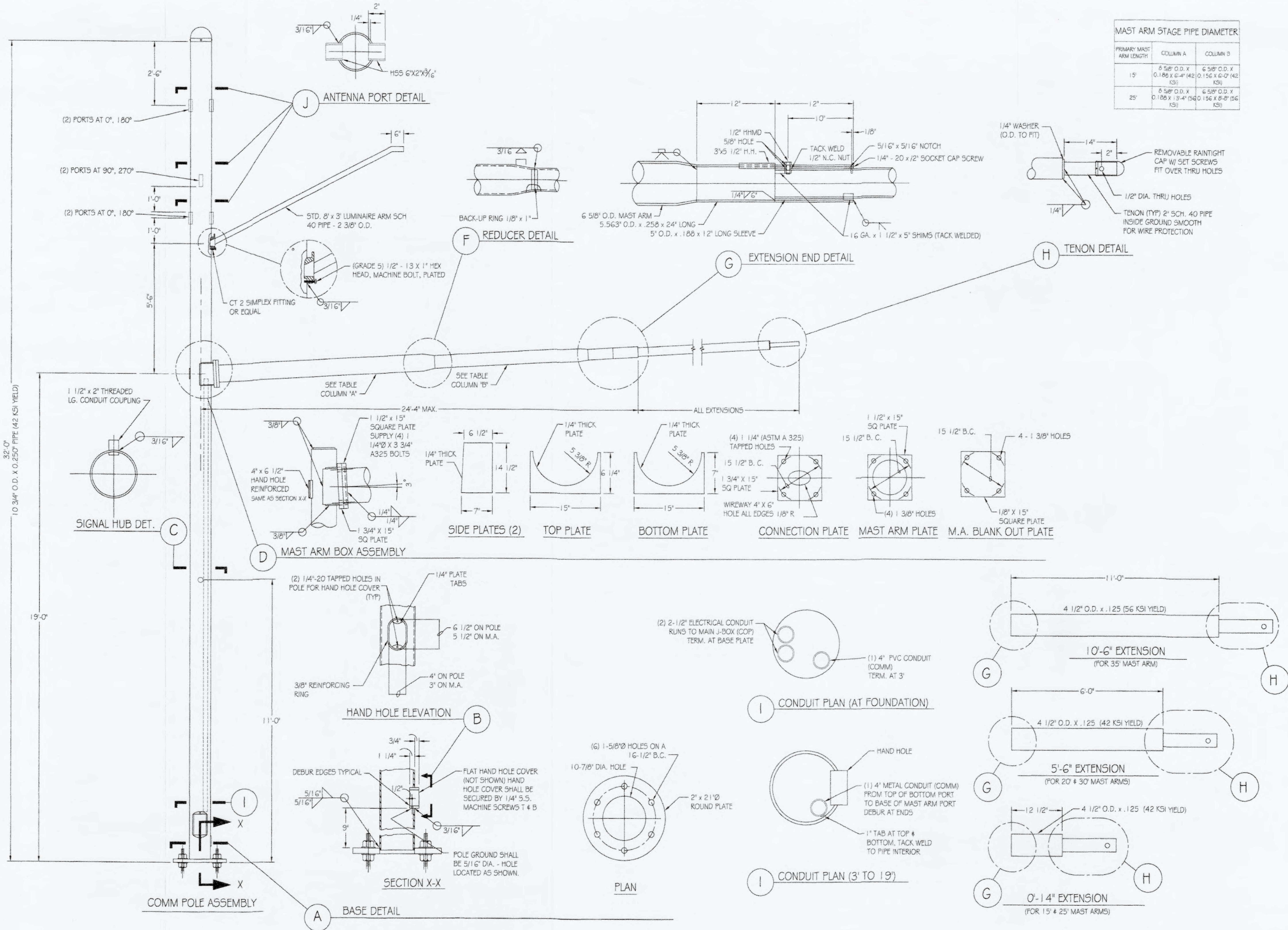
FOUNDATION, ANCHOR BOLT & REBAR CAGE DETAIL

FOUNDATION POLE TYPE	POLE DETAIL (ft.)		FOUNDATION DETAIL (in.)		VERT. REINFORCEMENT		BOLT DETAIL (in.)						* CONDUIT DETAIL		
	POLE HEIGHT	MAST ARM LENGTH	'A' WIDTH	'B' DEPTH	REBAR QUANTITY	REBAR SIZE	ASTM MATERIAL GRADE	'C' DIAMETER	'D' LENGTH OVERALL	'E' PROJECTION	'F' THREAD	'G' BOLT CIRCLE	'H' CLEAR	'I' MIN. DEPTH	CONDUIT QUANTITY
'SR' COMM POLE	32	15-50	36	138	12	#6	F1554-55	1-3/4	66	8 1/2	10	18	12	24	2 C.O.P. 1 COMM
			30	168	10	#6									

* CONDUIT SHALL ENTER 24" MINIMUM DEPTH, VERTICALLY, THROUGH THE BOTTOM OF THE FOUNDATION



PROGRESS LOG	
0	8/9/14 ISSUED TO CLIENT
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S2	0
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MAST ARM STAGE PIPE DIAMETER

PRIMARY MAST ARM LENGTH	COLUMN A	COLUMN B
15'	6 5/8" O.D. x 0.188 x 6'-4" (42 KSI)	6 5/8" O.D. x 0.156 x 6'-0" (42 KSI)
25'	6 5/8" O.D. x 0.188 x 13'-4" (56 KSI)	6 5/8" O.D. x 0.156 x 8'-0" (56 KSI)



ISE JOB #: 8344

CITY OF PHOENIX
'SM' COMM SIGNAL POLE
POLE DETAILS



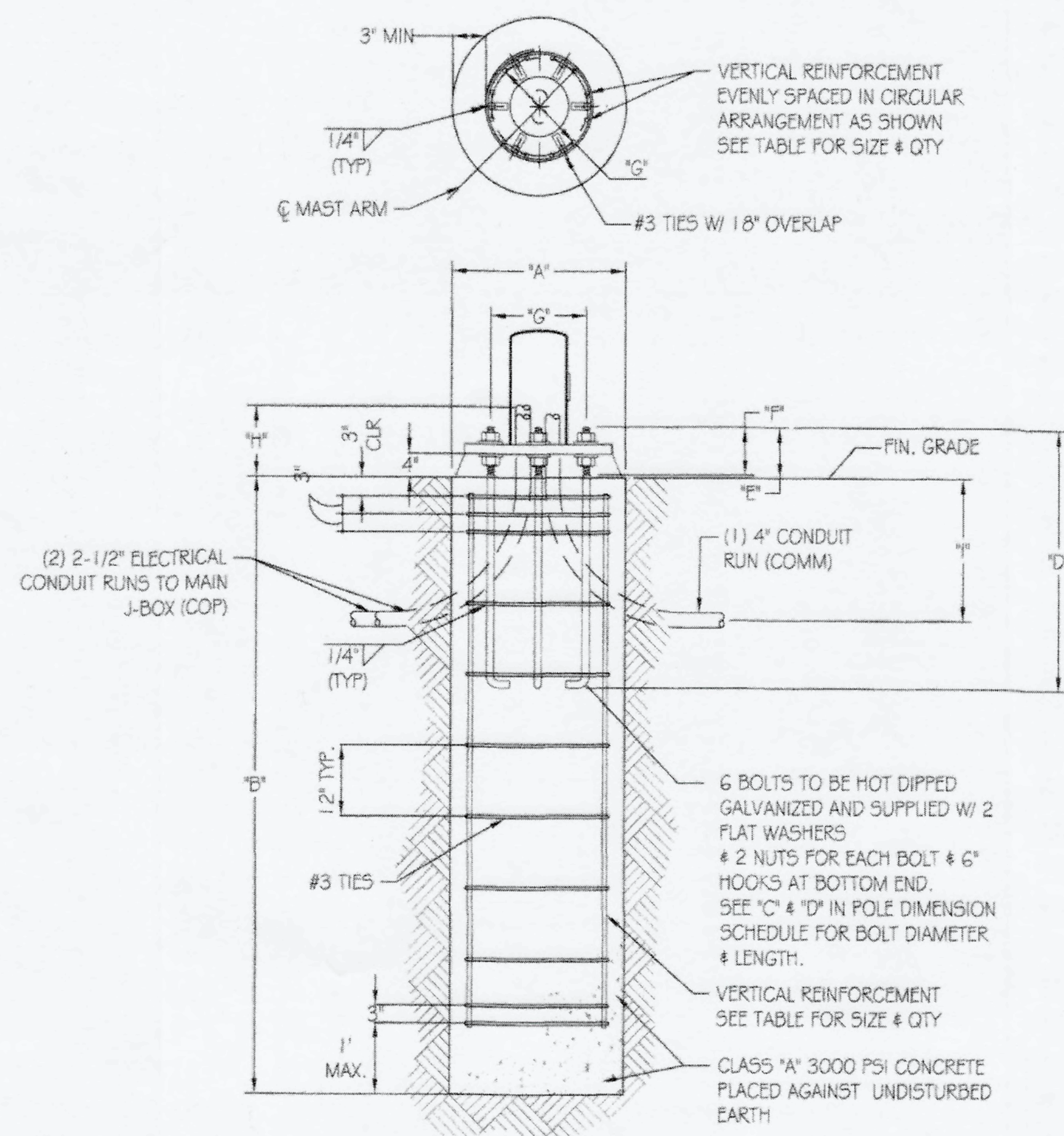
PROGRESS LOG

DATE	ISSUED TO CLIENT	PROGRESS
0 8/6/14	ISSUED TO CLIENT	

SHEET NUMBER: **S1** PROGRESS: **0**

DRAWING DATE: **August 09, 2014**

CITY OF PHOENIX
 'SM' COMM SIGNAL POLE
 FOUNDATION DETAILS



FOUNDATION, ANCHOR BOLT & REBAR CAGE DETAIL

FOUNDATION POLE TYPE	POLE DETAIL (ft.)		FOUNDATION DETAIL (in.)		VERT. REINFORCEMENT		BOLT DETAIL (in.)						* CONDUIT DETAIL		
	POLE HEIGHT	MAST ARM LENGTH	'A' WIDTH	'B' DEPTH	REBAR QUANTITY	REBAR SIZE	ASTM MATERIAL GRADE	'C' DIAMETER	'D' LENGTH OVERALL	'E' PROJECTION	'F' THREAD	'G' BOLT CIRCLE	'H' CLEAR	'I' MIN. DEPTH	CONDUIT QUANTITY
COMM POLE	32	15-35	36	120	12	#6	F1554-55	1 1/2	54	8 1/2	8	16 1/2	12	24	2 C.O.P. 1 COMM

* CONDUIT SHALL ENTER 24" MINIMUM DEPTH, VERTICALLY, THROUGH THE BOTTOM OF THE FOUNDATION



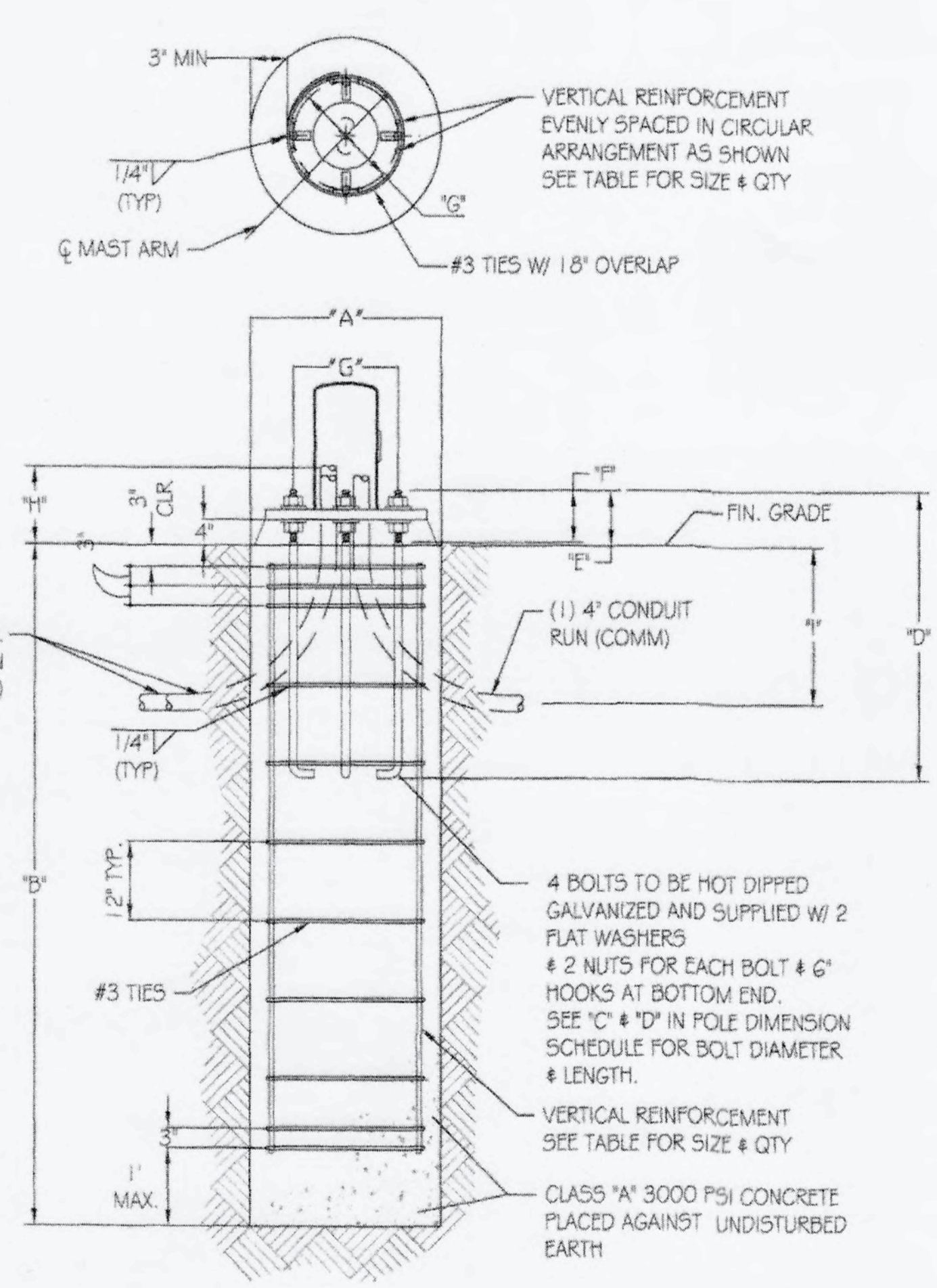
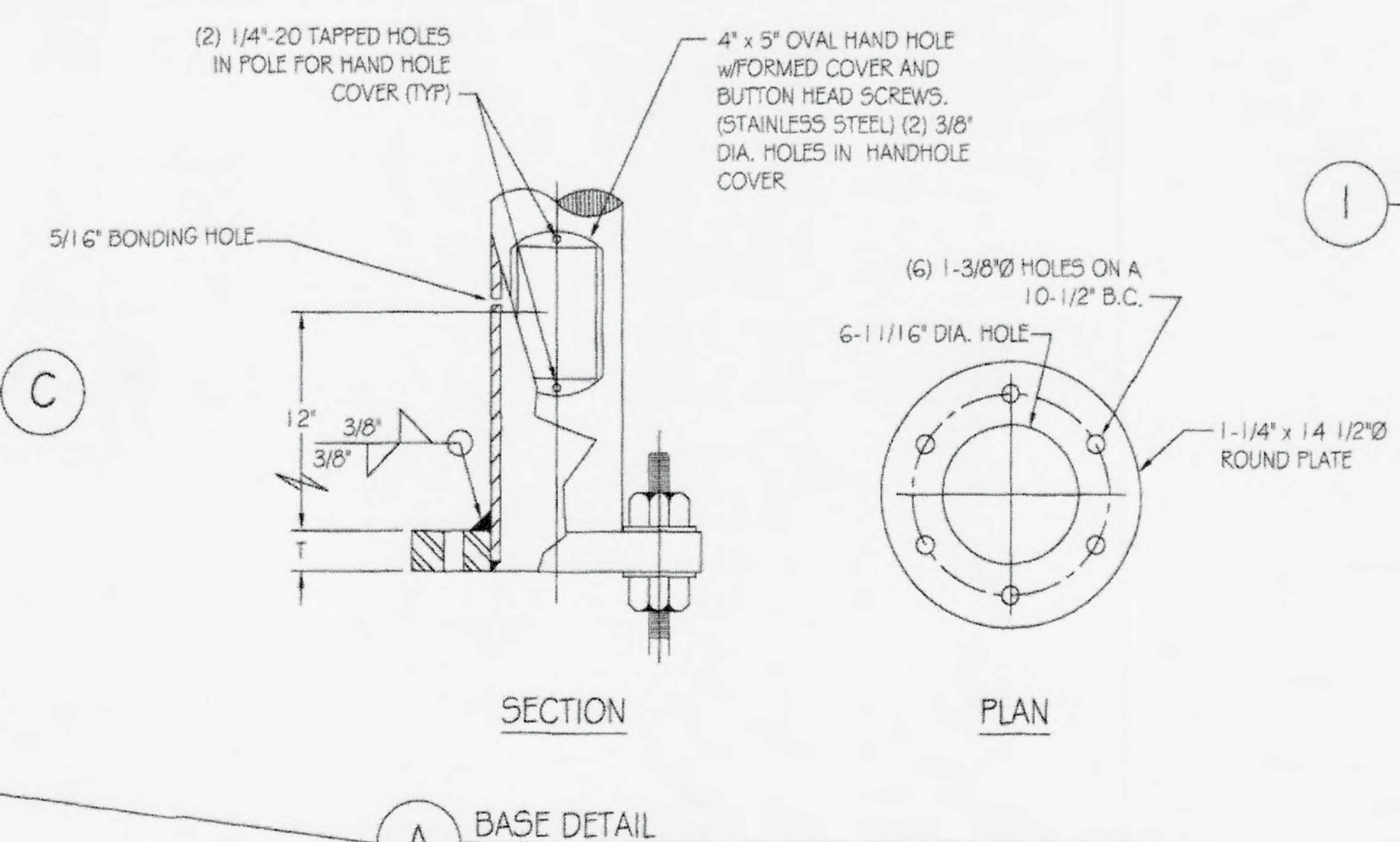
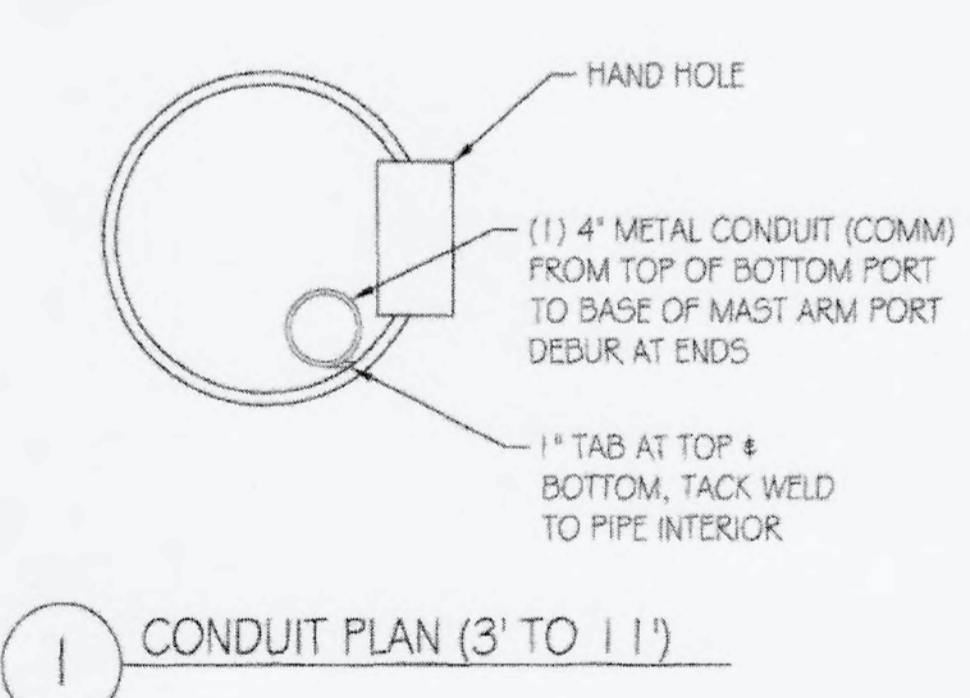
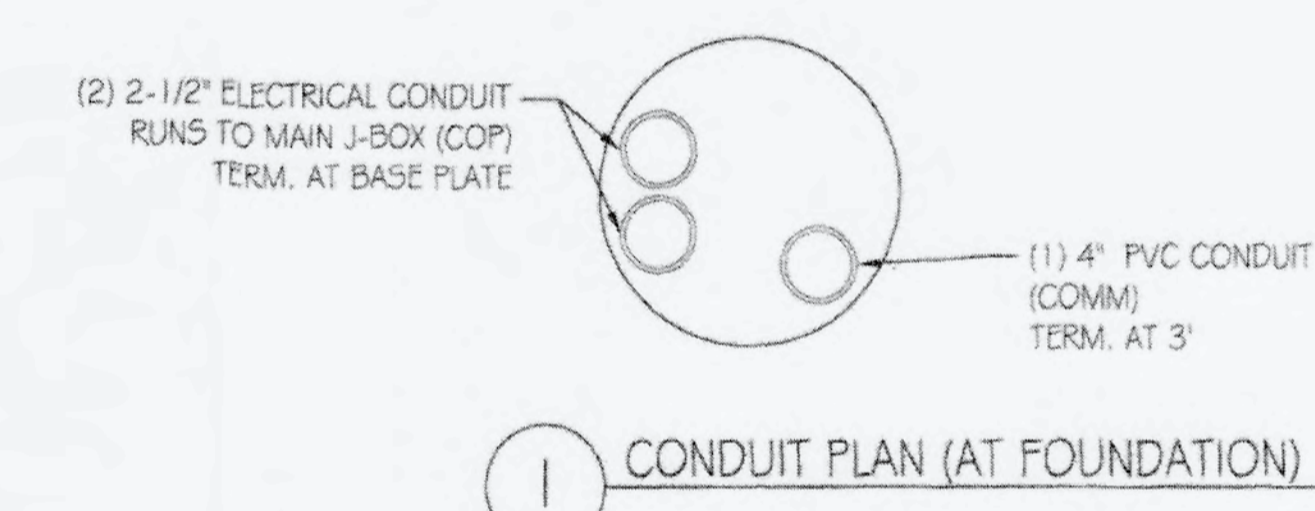
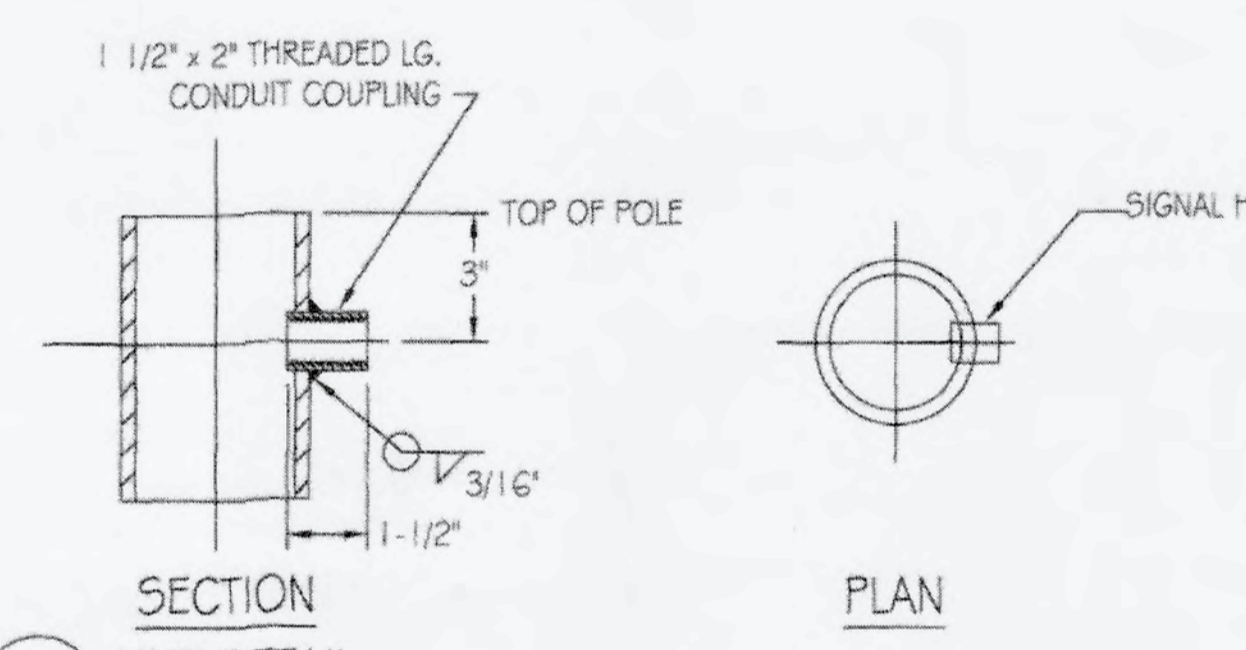
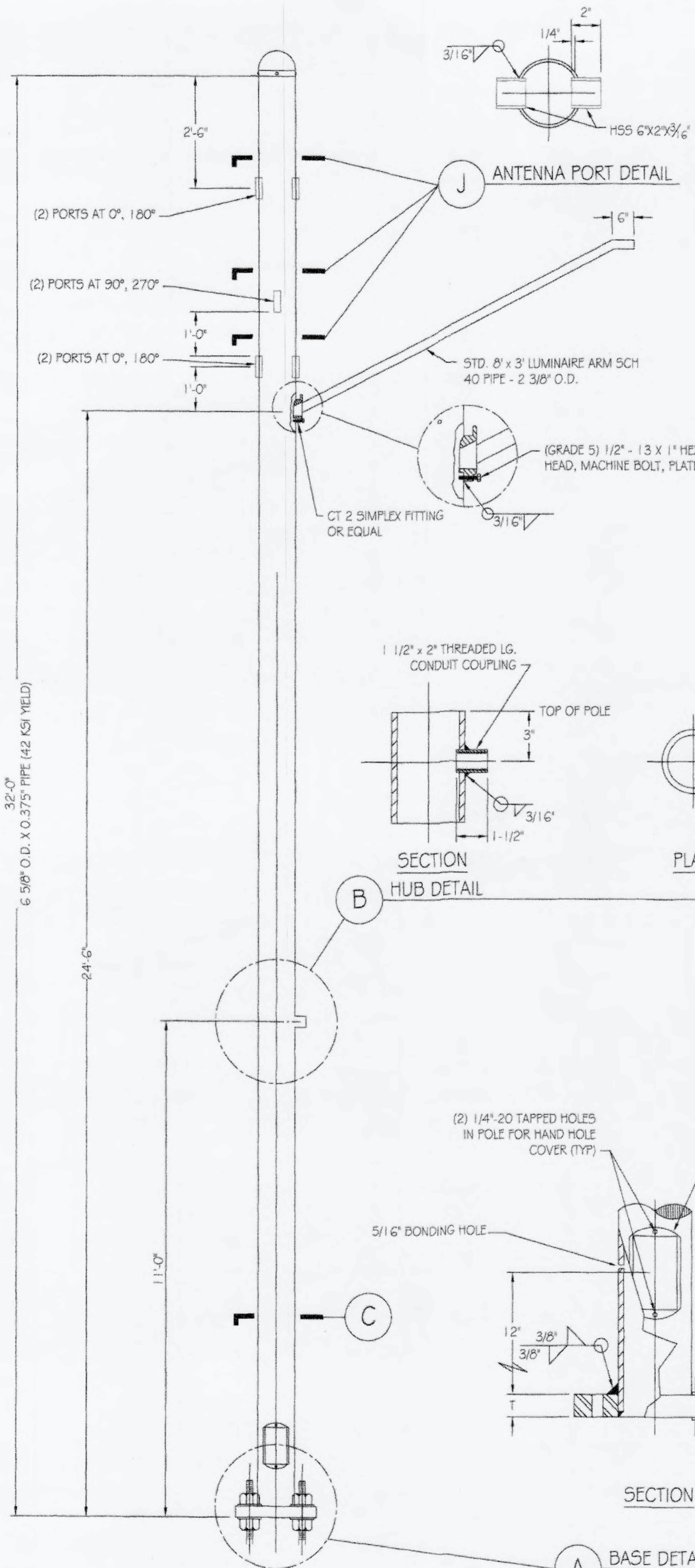
PROGRESS LOG

0	8/9/14	ISSUED TO CLIENT	JH
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SHEET NUMBER	PROGRESS
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S2 0

DRAWING DATE
 August 09, 2014



FOUNDATION POLE TYPE	POLE DETAIL (ft.)		FOUNDATION DETAIL (m.)		VERT. REINFORCEMENT		BOLT DETAIL (m.)					* CONDUIT DETAIL			
	POLE HEIGHT	MAST ARM LENGTH	'A' WIDTH	'B' DEPTH	REBAR QUANTITY	REBAR SIZE	ASTM MATERIAL GRADE	'C' DIAMETER	'D' LENGTH OVERALL	'E' PROJECTION	'F' THREAD	'G' BOLT CIRCLE	'H' CLEAR	'I' MIN. DEPTH	CONDUIT QUANTITY
TYPE 'LM'	32	N/A	36	96	12	#6	F1554-55	1-1/4	44	7	6	10 1/2	12	24	2 COP 1 COMM

* CONDUIT SHALL ENTER 24" MINIMUM DEPTH, VERTICALLY, THROUGH THE BOTTOM OF THE FOUNDATION

CITY OF PHOENIX
'LM' COMM SIGNAL POLE
POLE & FOUNDATION DETAILS



PROGRESS LOG	
0 8/6/14	ISSUED TO CLIENT
SHEET NUMBER	PROGRESS
S1	0
DRAWING DATE August 09, 2014	