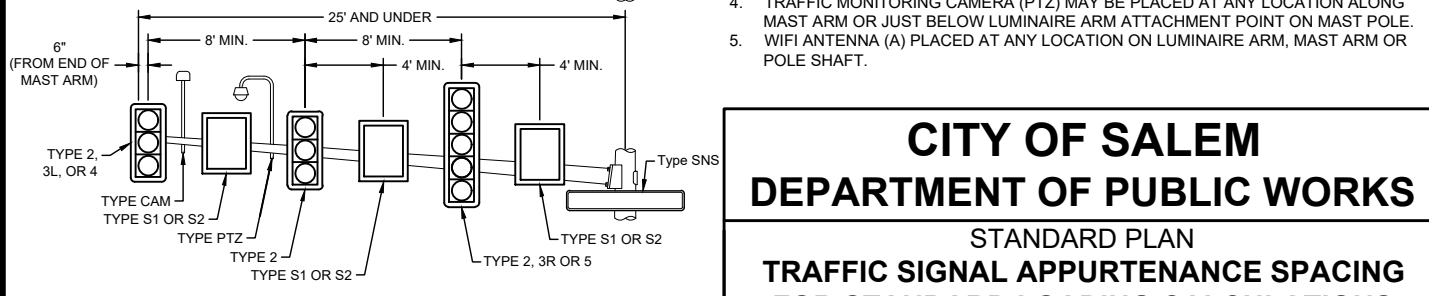
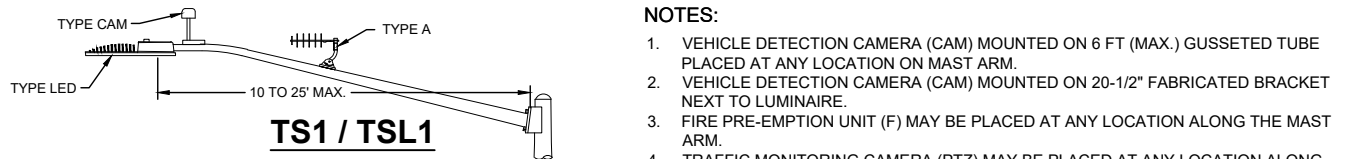
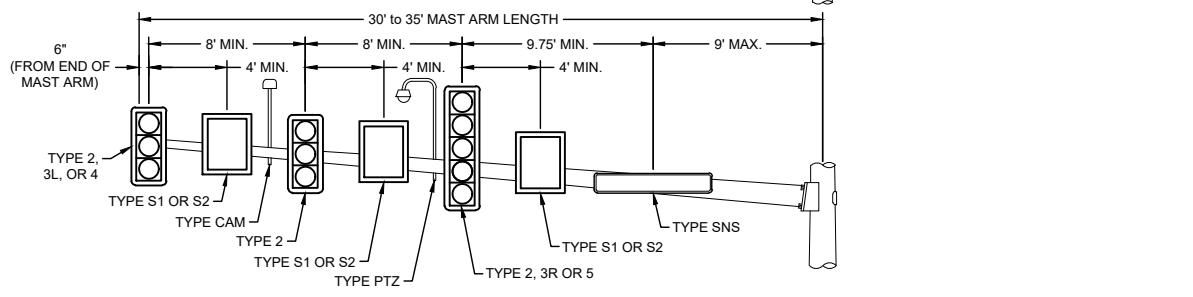
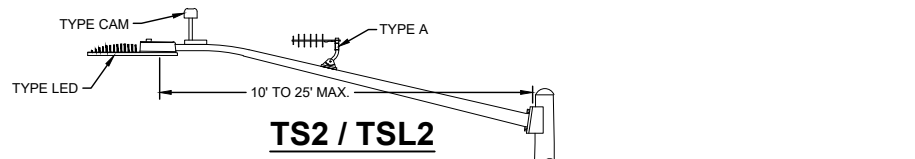
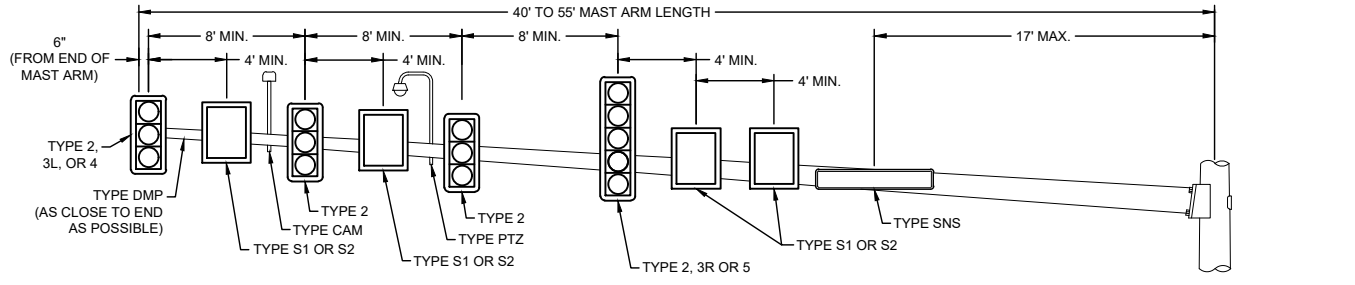
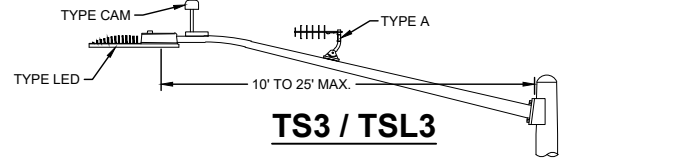
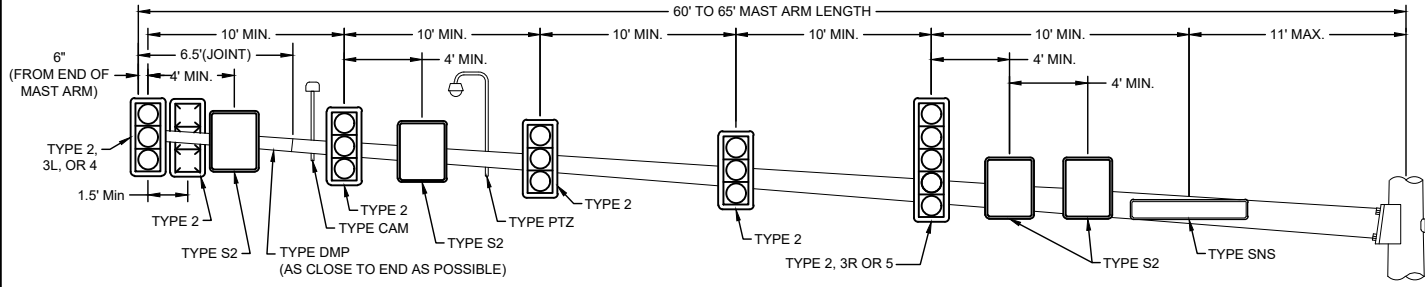
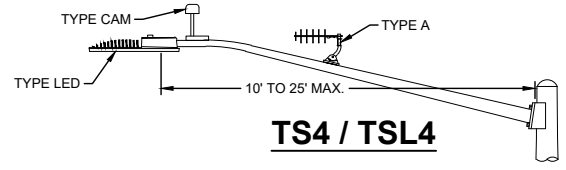


FOR REVIEW



- NOTES:**
1. VEHICLE DETECTION CAMERA (CAM) MOUNTED ON 6 FT (MAX.) GUSSETED TUBE PLACED AT ANY LOCATION ON MAST ARM.
  2. VEHICLE DETECTION CAMERA (CAM) MOUNTED ON 20-1/2" FABRICATED BRACKET NEXT TO LUMINAIRE.
  3. FIRE PRE-EMPTION UNIT (F) MAY BE PLACED AT ANY LOCATION ALONG THE MAST ARM.
  4. TRAFFIC MONITORING CAMERA (PTZ) MAY BE PLACED AT ANY LOCATION ALONG MAST ARM OR JUST BELOW LUMINAIRE ARM ATTACHMENT POINT ON MAST POLE.
  5. WIFI ANTENNA (A) PLACED AT ANY LOCATION ON LUMINAIRE ARM, MAST ARM OR POLE SHAFT.

**CITY OF SALEM  
DEPARTMENT OF PUBLIC WORKS  
STANDARD PLAN  
TRAFFIC SIGNAL APPURTENANCE SPACING  
FOR STANDARD LOADING CALCULATIONS**

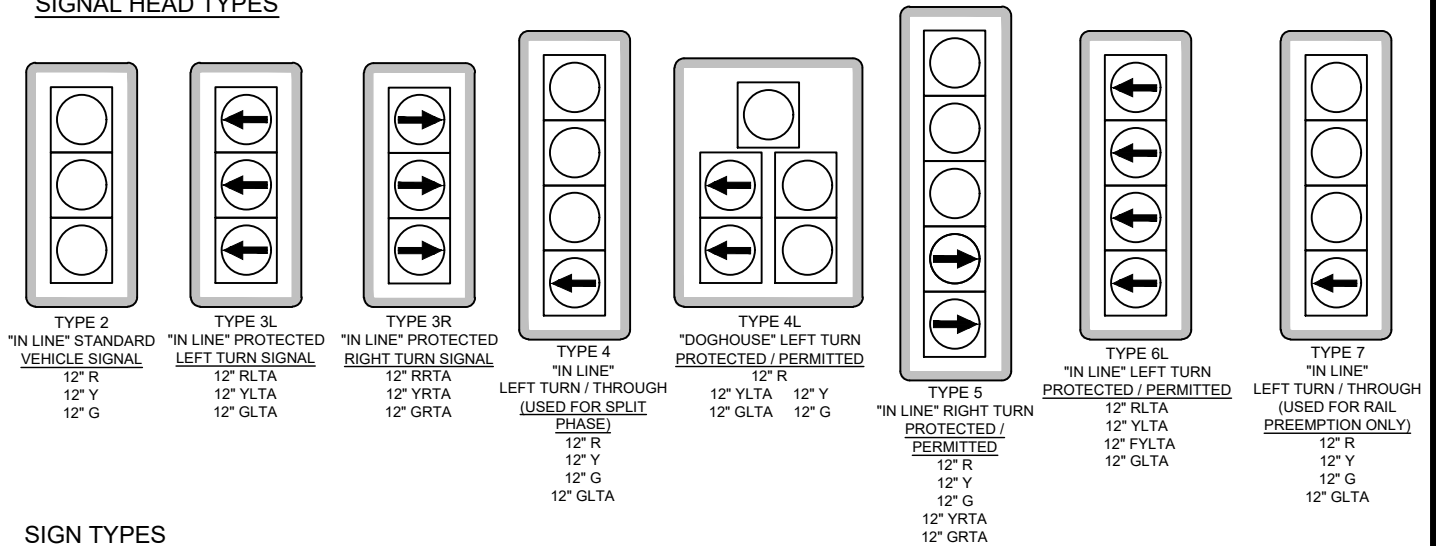
APPROVED	CITY ENGINEER	DATE	DRAWN BY	JAK	11/2019	<b>NO.751</b>
			CHECKED BY	AAE	11/2019	

FOR REVIEW

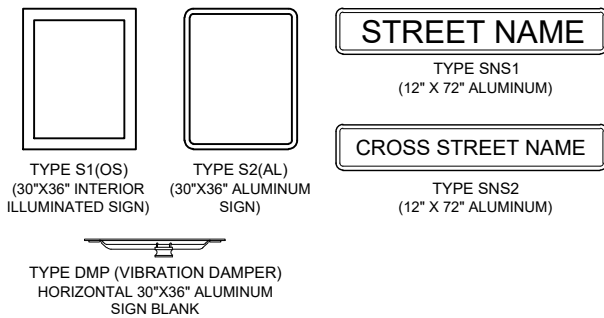
APPURTENANCE LOADS

TYPE	DESCRIPTION	HEIGHT (FT)	WEIGHT (LBS)	ICE AREA (FT <sup>2</sup> )	FACE AREA (FT <sup>2</sup> )	SIDE AREA (FT <sup>2</sup> )	BOTTOM AREA (FT <sup>2</sup> )
2	3 - SECTION SIGNAL HEAD	3.75	55	25	8.67	4	1
3L	3 - SECTION SIGNAL HEAD	3.75	55	25	8.67	4	1
3R	3 - SECTION SIGNAL HEAD	3.75	55	25	8.67	4	1
4	4 - SECTION SIGNAL HEAD	5	73	30	9.9	5	1
4L	5 - SECTION SIGNAL HEAD, "DOGHOUSE"	3.75	92	35	11.97	4	2
5	5 - SECTION SIGNAL HEAD	6.25	92	35	11.97	6	1
6L	4 - SECTION SIGNAL HEAD	5	73	30	9.9	5	1
7	4 - SECTION SIGNAL HEAD	5	73	30	9.9	5	1
S1(OS)	30" X 36" INTERIOR ILLUMINATED SIGN	3	60	20	7.5	2	1.67
S2(AL)	30" X 36" ALUMINUM SIGN ( 2.5 LB / FT <sup>2</sup> )	3	18.75	7.5	7.5	0	0
SNS	STREET NAME SIGN ( 2.5 LB / FT <sup>2</sup> )	1	15	6	6	0	0
-	SIGN CLUSTER ON SHAFT	8	120	48	48	0	0
DMP	30" X 36" ALUM. SIGN BLANK, HORIZ. ( 2.5 LB / FT <sup>2</sup> )	0	18.75	7.5	0	0	7.5
LED	LIGHT EMITTING DIODE LUMINAIRE	0.4	10.8	2.97	0.54	0.36	1.18
F	FIRE PREEMPTION DET. ( 2.75" DIA x 3.375" TALL )	0.25	1	0.24	0.2	0.06	0.04
A	ANTENNA ( 2' LONG, 1.5" TALL, 3" WIDE )	0.5	5	1.0625	0.25	0.03125	0.5
CAM	VIDEO DETECTION CAMERA	1	5	1.6	0.36	0.36	0.14
PTZ	TRAFFIC MONITORING CAMERA	11	8	3.4	0.7	0.7	0.6

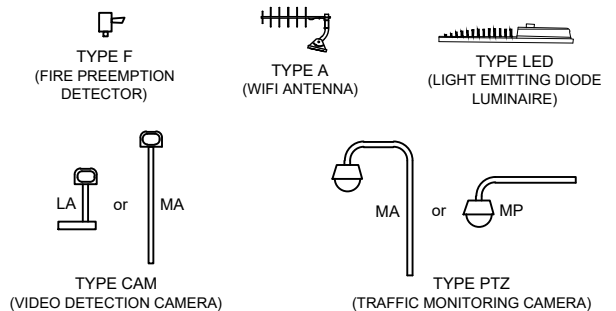
SIGNAL HEAD TYPES



SIGN TYPES



MISC.



NOTES:

1. VEHICLE DETECTION CAMERA (CAM) MOUNTED ON 6 FT (MAX.) GUSSETED TUBE PLACED AT ANY LOCATION ON MAST ARM.
2. VEHICLE DETECTION CAMERA (CAM) MOUNTED ON 20-1/2" FABRICATED BRACKET NEXT TO LUMINAIRE.
3. FIRE PRE-EMPTION UNIT (F) MAY BE PLACED AT ANY LOCATION ALONG THE MAST ARM.
4. TRAFFIC MONITORING CAMERA (PTZ) MAY BE PLACED AT ANY LOCATION ALONG MAST ARM OR JUST BELOW LUMINAIRE ARM ATTACHMENT POINT ON MAST POLE.
5. WIFI ANTENNA (A) PLACED AT ANY LOCATION ON LUMINAIRE ARM, MAST ARM OR POLE SHAFT.

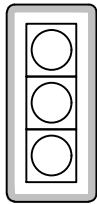
**CITY OF SALEM**  
**DEPARTMENT OF PUBLIC WORKS**  
 STANDARD PLAN  
**TRAFFIC SIGNAL MAST ARM**  
**APPURTENANCE LOADS**

APPROVED	CITY ENGINEER	DATE	DRAWN BY	JAK	11/2019	NO.752
			CHECKED BY	AAE	11/2019	

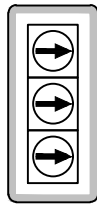
FOR REVIEW

APPURTENANCE LOADS						
TYPE	HEIGHT (FT)	WEIGHT (LBS)	ICE AREA (FT <sup>2</sup> )	FACE AREA (FT <sup>2</sup> )	SIDE AREA (FT <sup>2</sup> )	BOTTOM AREA (FT <sup>2</sup> )
2	3.75	55	25	8.67	4	1
3R	3.75	55	25	8.67	4	1
5	6.25	92	35	11.97	6	1
S1(OS)	3	60	20	7.5	2	1.67
S2(AL)	3	18.75	7.5	7.5	0	0
F	0.25	1	0.24	0.2	0.06	0.04
A	0.5	5	1.0625	0.25	0.03125	0.5
CAM	1	5	1.6	0.36	0.36	0.14
PTZ	11	8	3.4	0.7	0.7	0.6
SIGN CLUSTER ( 2.5 LB / FT <sup>2</sup> )	8	120	48	48	0	0

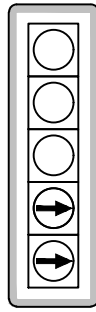
**SIGNAL HEAD TYPES**



**TYPE 2**  
"IN LINE" STANDARD VEHICLE SIGNAL  
12" R  
12" Y  
12" G

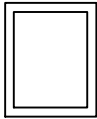


**TYPE 3R**  
"IN LINE" PROTECTED RIGHT TURN SIGNAL  
12" RRTA  
12" YRTA  
12" GRTA



**TYPE 5**  
"IN LINE" RIGHT TURN PROTECTED / PERMITTED  
12" R  
12" Y  
12" G  
12" YRTA  
12" GRTA

**SIGN TYPES**



**TYPE S1(OS)**  
(30"x36" INTERIOR ILLUMINATED SIGN)



**TYPE S2(AL)**  
(30"x36" ALUMINUM SIGN)



**TYPE SNS1**  
(12" X 72" ALUMINUM)



**TYPE SNS2**  
(12" X 72" ALUMINUM)

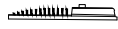
**MISC.**



**TYPE F**  
(FIRE PREEMPTION DETECTOR)



**TYPE A**  
(WIFI ANTENNA)



**TYPE LED**  
(LIGHT EMITTING DIODE LUMINAIRE)



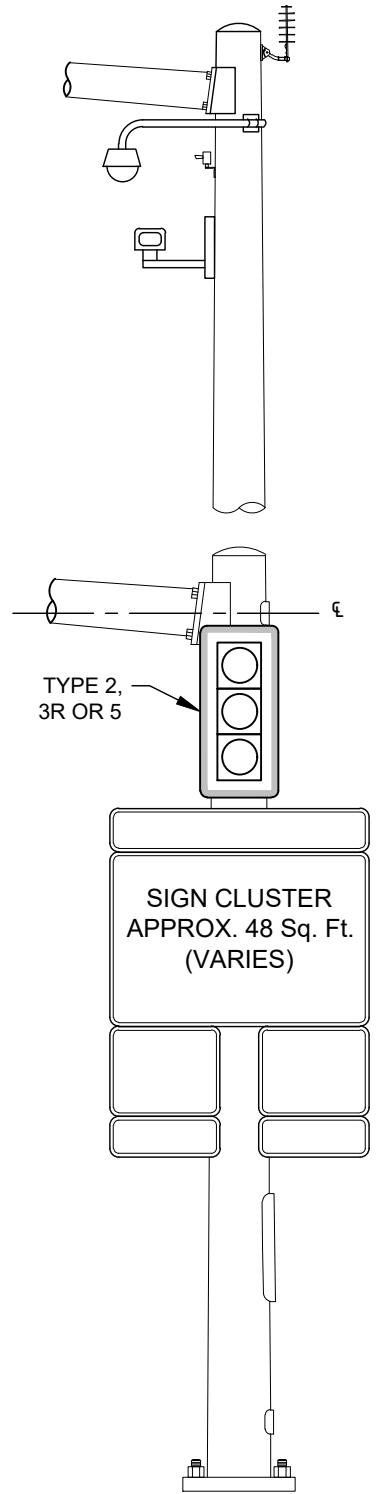
**TYPE CAM**  
(VIDEO DETECTION CAMERA)



**TYPE PTZ**  
(TRAFFIC MONITORING CAMERA)

**NOTES:**

- REFER TO PROJECT PLANS FOR ACTUAL APPURTENANCE LOCATIONS.
- VEHICLE DETECTION CAMERA (CAM) MOUNTED ON 20-1/2" FABRICATED BRACKET ON POLE SHAFT.
- FIRE PRE-EMPTION UNIT (F) MAY BE PLACED ON POLE SHAFT.
- TRAFFIC MONITORING CAMERA (PTZ) MAY BE PLACED JUST BELOW LUMINAIRE ARM ATTACHMENT POINT ON MAST POLE.
- WIFI ANTENNA (A) PLACED AT ANY LOCATION ON POLE SHAFT.

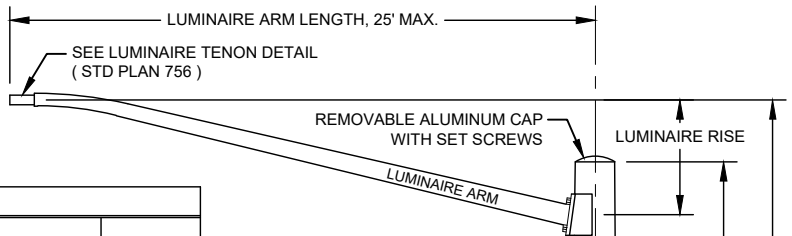


**CITY OF SALEM**  
**DEPARTMENT OF PUBLIC WORKS**  
STANDARD PLAN  
**TRAFFIC SIGNAL MAST POLE**  
**APPURTENANCE LOADS**

APPROVED			DRAWN BY	JAK	11/2019	<b>NO.753</b>
	CITY ENGINEER	DATE	CHECKED BY	AAE	11/2019	

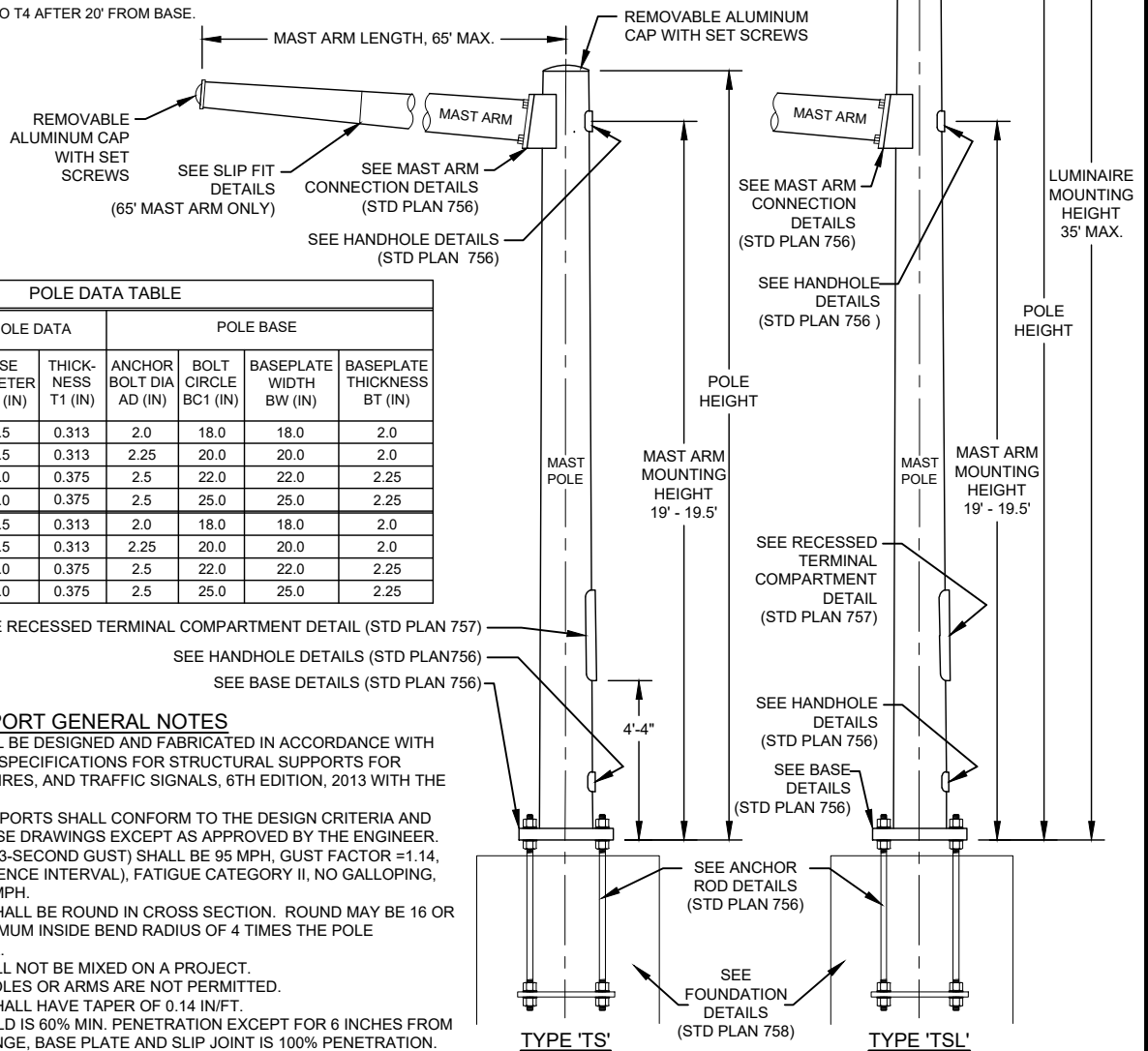
FOR REVIEW

LUMINAIRE ARM DATA				
ARM LENGTH (FT)	RISE (IN)	ARM BASE DIAMETER BD6 (IN)	ARM END DIAMETER (IN)	ARM THICKNESS T6 (IN)
10	41	4.9	3.5	0.188
15	60	5.6	3.5	0.188
20	60	6.3	3.5	0.25
25	60	6.5	3.0	0.25



MAST ARM DATA TABLE									
ARM LENGTH (FT)	MAST ARM DATA			ARM CONNECTION					
	BASE DIAMETER BD3 (IN)	BASE THICKNESS T3 (IN)	END THICKNESS T4 (IN)	BOLT CIRCLE BC2 (IN)	BOLT DIA. x LGTH. CB X CL (IN) x (IN)	PLATE WIDTH PW (IN)	ARM PLATE THICKNESS AT (IN)	POLE PLATE THICKNESS PT (IN)	ALLOWABLE LOAD (XYZ)
20	8.0	0.188	0.188	13.0	1.25 x 3.5	13.0	1.5	1.5	510
25	9.0	0.188	0.188	13.0	1.25 x 4.25	13.0	2	2	920
30	10.0	0.25	0.25	15.0	1.5 x 4.25	15.0	2	2	1050
35	11.0	0.25	0.25	15.0	1.5 x 4.25	15.0	2	2	1220
40	11.0	0.375(1)	0.25	21.0	1.5 x 4.5	21.0	2.25	2	1670
45	12.0	0.375(1)	0.25	21.0	1.5 x 4.5	21.0	2.25	2	2050
50	13.0	0.375(1)	0.25	21.0	1.5 x 4.5	21.0	2.25	2	2420
55	14.0	0.375(1)	0.25	21.0	1.5 x 4.5	21.0	2.25	2	2800
60	14.0	0.375(1)	0.313	25.0	1.75 x 4.5	25.0	2.25	2	3100
65	15.0	0.375(1)	0.313	25.0	1.75 x 4.5	25.0	2.25	2	3630

(1) ARM THICKNESS REDUCED TO T4 AFTER 20' FROM BASE.



POLE DATA TABLE							
POLE DESIGNATION	MAX ARM LENGTH (FT)	POLE DATA			POLE BASE		
		BASE DIAMETER BD1 (IN)	THICKNESS T1 (IN)	ANCHOR BOLT DIA AD (IN)	BOLT CIRCLE BC1 (IN)	BASEPLATE WIDTH BW (IN)	BASEPLATE THICKNESS BT (IN)
TS1	25.0	12.5	0.313	2.0	18.0	18.0	2.0
TS2	35.0	13.5	0.313	2.25	20.0	20.0	2.0
TS3	55.0	16.0	0.375	2.5	22.0	22.0	2.25
TS4	65.0	18.0	0.375	2.5	25.0	25.0	2.25
TSL1	25.0	12.5	0.313	2.0	18.0	18.0	2.0
TSL2	35.0	13.5	0.313	2.25	20.0	20.0	2.0
TSL3	55.0	16.0	0.375	2.5	22.0	22.0	2.25
TSL4	65.0	18.0	0.375	2.5	25.0	25.0	2.25

SEE RECESSED TERMINAL COMPARTMENT DETAIL (STD PLAN 757)  
 SEE HANDHOLE DETAILS (STD PLAN 756)  
 SEE BASE DETAILS (STD PLAN 756)

**TRAFFIC SIGNAL SUPPORT GENERAL NOTES**

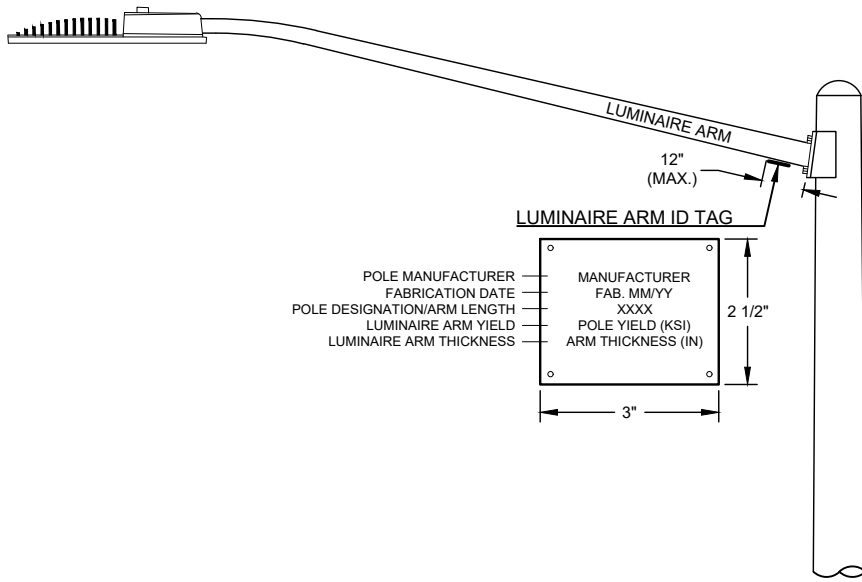
- SIGNAL SUPPORTS SHALL BE DESIGNED AND FABRICATED IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 6TH EDITION, 2013 WITH THE INTERIM 2015 REVISIONS.
- ALL TRAFFIC SIGNAL SUPPORTS SHALL CONFORM TO THE DESIGN CRITERIA AND DETAILS SHOWN ON THESE DRAWINGS EXCEPT AS APPROVED BY THE ENGINEER.
- THE BASIC WIND SPEED (3-SECOND GUST) SHALL BE 95 MPH, GUST FACTOR = 1.14, Ir = 1.0 (50 YEAR RECURRENCE INTERVAL), FATIGUE CATEGORY II, NO GALLOPING, AND TRUCK SPEED = 55 MPH.
- POLE AND MAST ARMS SHALL BE ROUND IN CROSS SECTION. ROUND MAY BE 16 OR MORE SIDES WITH A MINIMUM INSIDE BEND RADIUS OF 4 TIMES THE POLE THICKNESS OR GREATER.
- DIFFERENT SHAPES SHALL NOT BE MIXED ON A PROJECT.
- TWO PLY AND FLUTED POLES OR ARMS ARE NOT PERMITTED.
- POLE AND MAST ARMS SHALL HAVE TAPER OF 0.14 IN/FT.
- LONGITUDINAL SEAM WELD IS 60% MIN. PENETRATION EXCEPT FOR 6 INCHES FROM END OF SECTION AT FLANGE, BASE PLATE AND SLIP JOINT IS 100% PENETRATION.
- SILICON CONTENT OF THE BASE METAL SHALL BE 0.0% TO 0.06% OR 0.15% TO 0.25%.
- HUBS SHALL BE 3000# THREAD FORGED STEEL.
- ALL STRUCTURAL STEEL INCLUDING FASTENERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
- POLES AND MAST ARMS SHALL BE OF ONE PIECE CONSTRUCTION, 5' SLIP-FIT CONNECTIONS ARE PERMITTED FOR 65' MAST ARMS ONLY.
- TIGHTENING OF BOLTS WITH TAPPED HOLES SHALL CONFORM TO THE OREGON DEPARTMENT OF TRANSPORTATION'S 2018 STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 962.46(j)(2).
- ALL FASTENERS SHALL BE STAINLESS STEEL, UNLESS OTHERWISE SPECIFIED.
- REFER TO STANDARD PLAN 755 FOR MAST POLE, MAST ARM AND LUMINAIRE ARM IDENTIFICATION TAG LOCATIONS.

**CITY OF SALEM**  
**DEPARTMENT OF PUBLIC WORKS**  
 STANDARD PLAN  
**TRAFFIC SIGNAL SUPPORTS**  
**ASSEMBLY DETAILS**

APPROVED	CITY ENGINEER	DATE	DRAWN BY	JAK	11/2019	<b>NO.754</b>
			CHECKED BY	AAE	11/2019	

FOR REVIEW

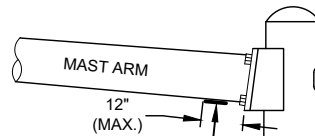
- TAGS SHALL BE ATTACHED WITH (4) STAINLESS #6 U-DRIVE SCREWS.
- TAGS SHALL BE 1/16" THICK STAINLESS STEEL.
- TEXT HEIGHT SHALL BE 1/4".



POLE MANUFACTURER  
FABRICATION DATE  
POLE DESIGNATION/ARM LENGTH  
LUMINAIRE ARM YIELD  
LUMINAIRE ARM THICKNESS

MANUFACTURER  
FAB. MM/YY  
XXXX  
POLE YIELD (KSI)  
ARM THICKNESS (IN)

3"  
2 1/2"



POLE MANUFACTURER  
FABRICATION DATE  
POLE DESIGNATION - ARM LENGTH  
MAST ARM YIELD  
MAST ARM THICKNESS

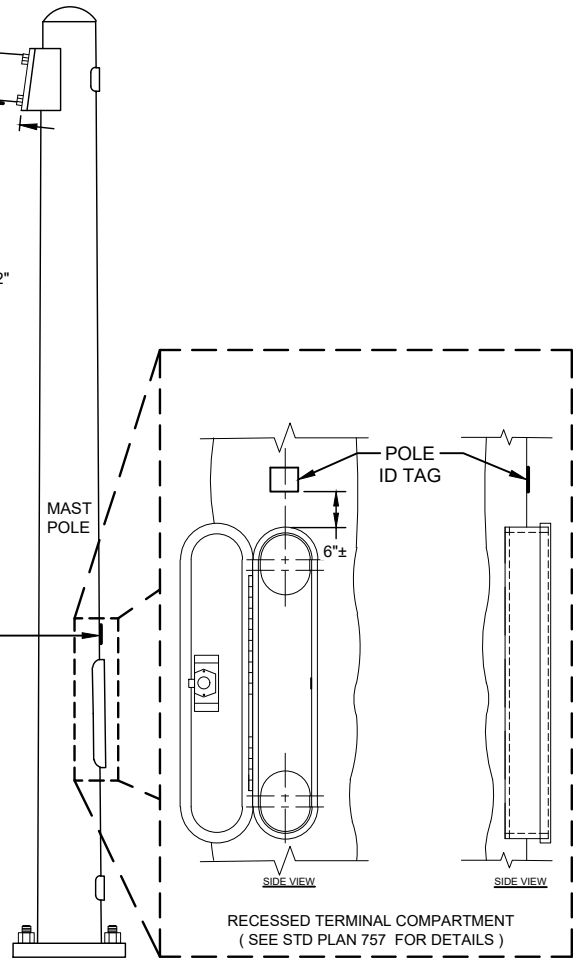
MANUFACTURER  
FAB. MM/YY  
XXXX  
POLE YIELD (KSI)  
ARM THICKNESS (IN)

3"  
2 1/2"

POLE MANUFACTURER  
FABRICATION DATE  
POLE DESIGNATION  
POLE YIELD  
POLE THICKNESS  
BASE PLATE YIELD

MANUFACTURER  
FAB. MM/YY  
XXXX  
POLE YIELD (KSI)  
POLE THICKNESS (IN)  
BASE PLATE YIELD (KSI)

3"  
2 1/2"



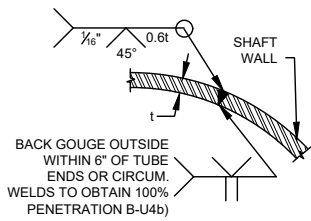
**CITY OF SALEM  
DEPARTMENT OF PUBLIC WORKS**

**STANDARD PLAN  
TRAFFIC SIGNAL EQUIPMENT  
IDENTIFICATION TAGS**

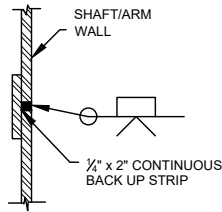
APPROVED			DRAWN BY	JAK	11/2019
	CITY ENGINEER	DATE	CHECKED BY	AAE	11/2019

**NO.755**

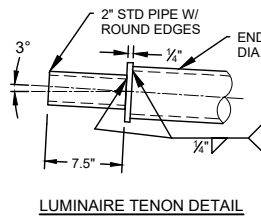
FOR REVIEW



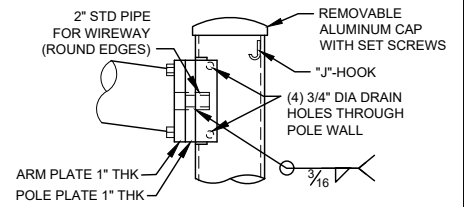
LONGITUDINAL WELD DETAIL



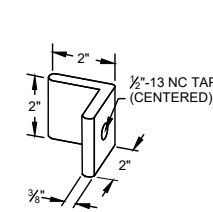
CIRCUMFERENTIAL WELD DETAIL



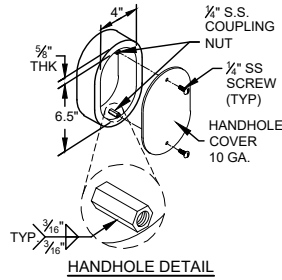
LUMINAIRE TENON DETAIL



LUMINAIRE ARM CONNECTION DETAIL 1



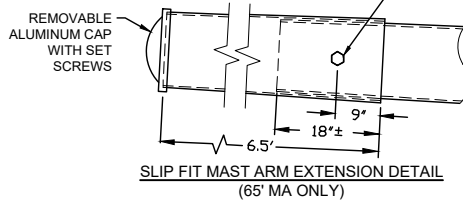
POLE GROUNDING ANGLE DETAIL



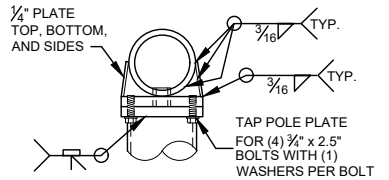
HANDHOLE DETAIL

MATERIAL DATA	
COMPONENT	GRADE
STEEL TUBES	ASTM A572 GR. 50 OR A595 GR. A
BASE PLATES	ASTM A572 GR. 50
FLANGE PLATES	ASTM A572 GR. 50
GUSSET PLATES	ASTM A572 GR. 50
HANDHOLE FRAMES	ASTM A572 GR. 50
HANDHOLE COVERS	ASTM A1011
ANCHOR BOLTS	ASTM F1554 GR. 55
NUTS	ASTM A563 GR. DH
WASHERS	ASTM F436 TYPE 1
ANCHOR PLATE / TEMPLATE	ASTM A36
CONNECTION BOLTS	ASTM A325 OR A449
GALVANIZING	ASTM A123, A153, & F2329
PIPE	ASTM A53 GR. B OR ASTM A500 GR. B

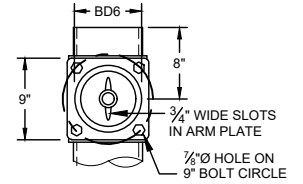
1/16" Ø THRU-HOLE FOR A 3/8" Ø BOLT WITH (1) NUT AND (2) WASHERS. POLE IS TO BE FIELD DRILLED AFTER THE ARM HAS BEEN DRIVEN-FIT OVER THE MAST ARM END



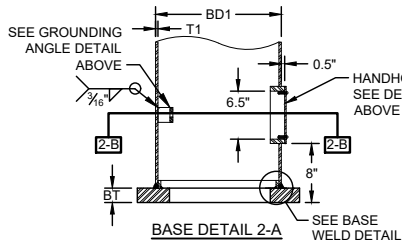
SLIP FIT MAST ARM EXTENSION DETAIL (65" MA ONLY)



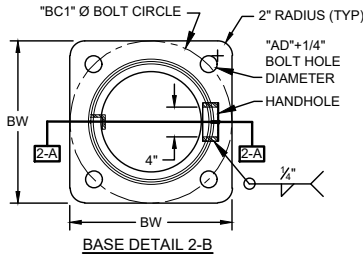
LUMINAIRE ARM CONNECTION DETAIL 2



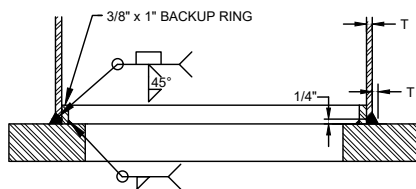
LUMINAIRE ARM CONNECTION DETAIL 3



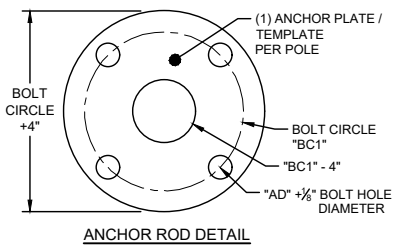
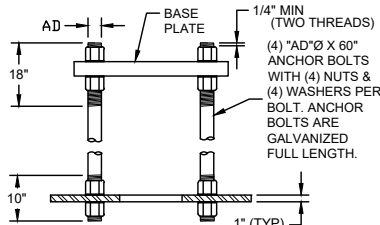
BASE DETAIL 2-A



BASE DETAIL 2-B



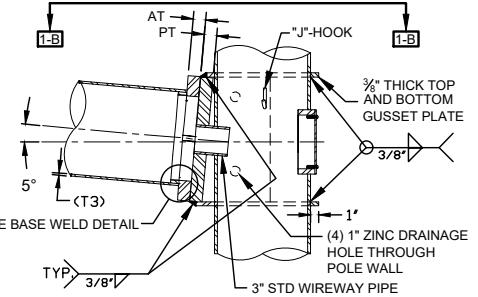
BASE WELD DETAIL (MAIN SHAFT, MAST ARMS & LUMINAIRE)



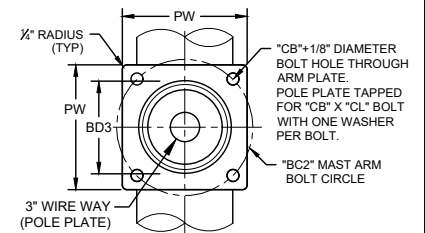
ANCHOR ROD DETAIL

**TRAFFIC SIGNAL SUPPORT GENERAL NOTES**

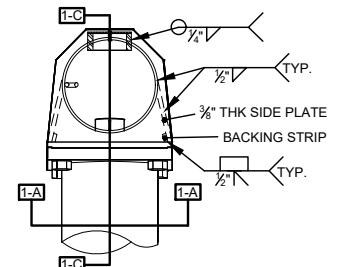
- SIGNAL SUPPORTS SHALL BE DESIGNED AND FABRICATED IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 6TH EDITION, 2013 WITH THE INTERIM 2015 REVISIONS.
- ALL TRAFFIC SIGNAL SUPPORTS SHALL CONFORM TO THE DESIGN CRITERIA AND DETAILS SHOWN ON THESE DRAWINGS EXCEPT AS APPROVED BY THE ENGINEER.
- THE BASIC WIND SPEED (3-SECOND GUST) SHALL BE 95 MPH, GUST FACTOR G=1.14, Ir = 1.0 (50 YEAR RECURRENCE INTERVAL), FATIGUE CATEGORY II, NO GALLOPING, AND TRUCK SPEED = 55 MPH.
- POLE AND MAST ARMS SHALL BE ROUND IN CROSS SECTION. ROUND MAY BE 16 OR MORE SIDES WITH A MINIMUM INSIDE BEND RADIUS OF 4 TIMES THE POLE THICKNESS OR GREATER.
- DIFFERENT SHAPES SHALL NOT BE MIXED ON A PROJECT.
- TWO PLY AND FLUTED POLES OR ARMS ARE NOT PERMITTED.
- POLE AND MAST ARMS SHALL HAVE TAPER OF 0.14 IN/FT.
- LONGITUDINAL SEAM WELD IS 60% MIN. PENETRATION EXCEPT FOR 6 INCHES FROM END OF SECTION AT FLANGE, BASE PLATE AND SLIP JOINT IS 100% PENETRATION.
- SILICON CONTENT OF THE BASE METAL SHALL BE 0.0% TO 0.06% OR 0.15% TO 0.25%.
- HUBS SHALL BE 3000# THREAD FORGED STEEL.
- ALL STRUCTURAL STEEL INCLUDING FASTENERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
- POLES AND MAST ARMS SHALL BE OF ONE PIECE CONSTRUCTION, 5" SLIP-FIT CONNECTIONS ARE PERMITTED FOR 65" MAST ARMS ONLY.
- TIGHTENING OF BOLTS WITH TAPPED HOLES SHALL CONFORM TO THE OREGON DEPARTMENT OF TRANSPORTATION'S 2018 STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 962.46(j)(2).
- ALL FASTENERS SHALL BE STAINLESS STEEL, UNLESS OTHERWISE SPECIFIED.
- POLE AND MAST ARM CAPS SHALL BE CAST ALUMINUM.
- PREINSTALLED "J"-HOOKS FOR WIRE STRAIN RELIEF AT ALL ACCESS ENTRANCES FOR LUMINAIRE AND SIGNAL ARMS.



MAST ARM CONNECTION DETAIL 1-C



MAST ARM CONNECTION DETAIL 1-A



MAST ARM CONNECTION DETAIL 1-B

**CITY OF SALEM DEPARTMENT OF PUBLIC WORKS**

**STANDARD PLAN TRAFFIC SIGNAL MAST POLE FABRICATION DETAILS**

APPROVED		
	CITY ENGINEER	DATE

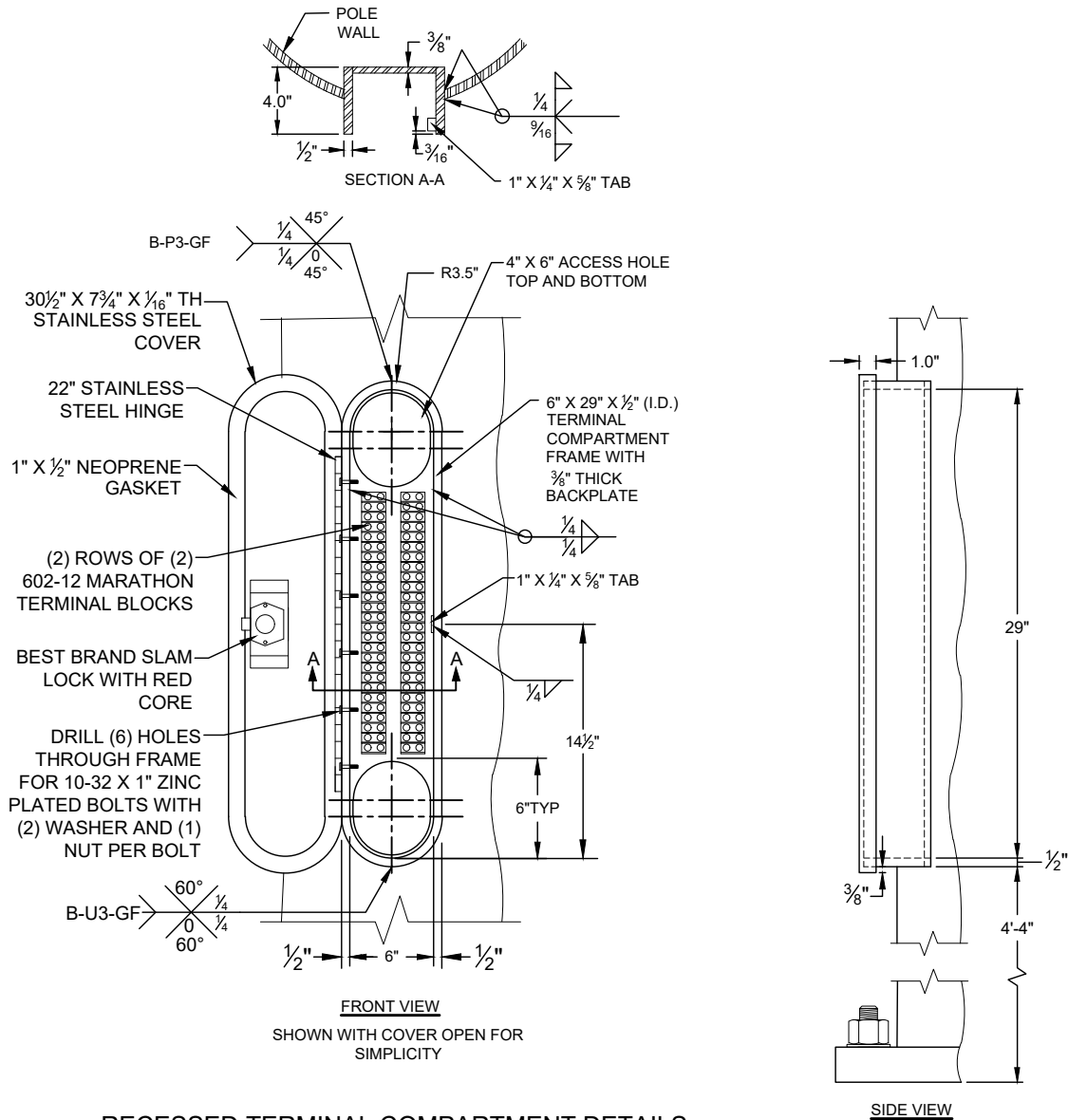
DRAWN BY	JAK	11/2019
CHECKED BY	AAE	11/2019

**NO.756**

FOR REVIEW

**NOTES:**

- ROUND AND SMOOTH ALL EDGES ALONG ELECTRICAL WAY.
- ALL FASTENERS SHALL BE STAINLESS STEEL.

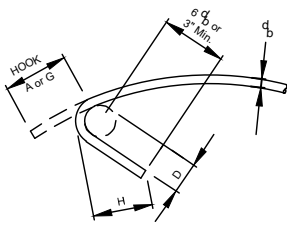


**RECESSED TERMINAL COMPARTMENT DETAILS**

**CITY OF SALEM**  
**DEPARTMENT OF PUBLIC WORKS**  
 STANDARD PLAN  
**TRAFFIC SIGNAL RECESSED TERMINAL**  
**COMPARTMENT DETAILS**

APPROVED			DRAWN BY	JAK	11/2019	<b>NO.757</b>
	CITY ENGINEER	DATE	CHECKED BY	AAE	11/2019	

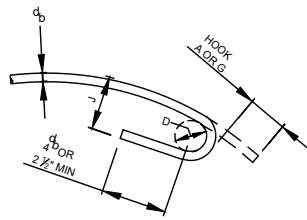
FOR REVIEW



SEISMIC STIRRUP / TIE

BAR SIZE	135° SEISMIC HOOK		
	D	A or G	H*
#5	2 1/2"	5 1/2"	3 3/4"

\*H DIMENSION IS MINIMUM  
 $d_b$  = BAR DIAMETER  
 D = FINISHED INSIDE BEND DIAMETER

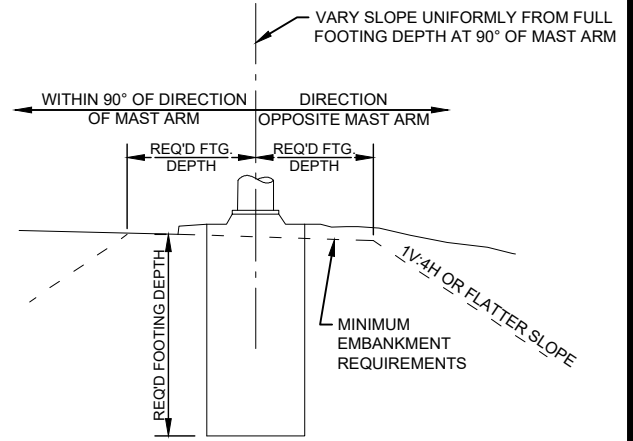


STANDARD STIRRUP / TIE

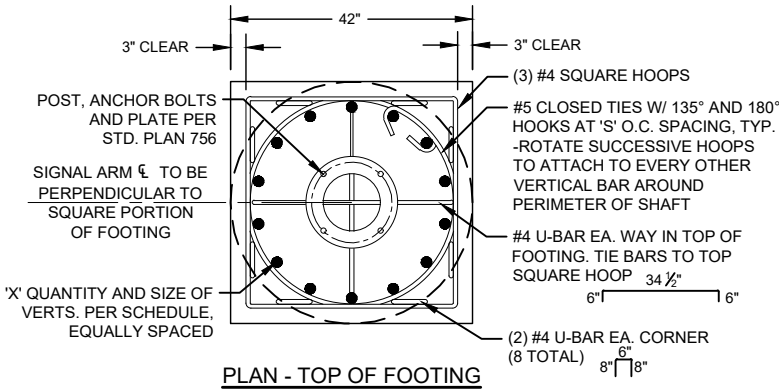
BAR SIZE	180° STANDARD HOOK		
	D	A or G	J
#5	3 3/4"	7"	5"

$d_b$  = BAR DIAMETER  
 D = FINISHED INSIDE BEND DIAMETER

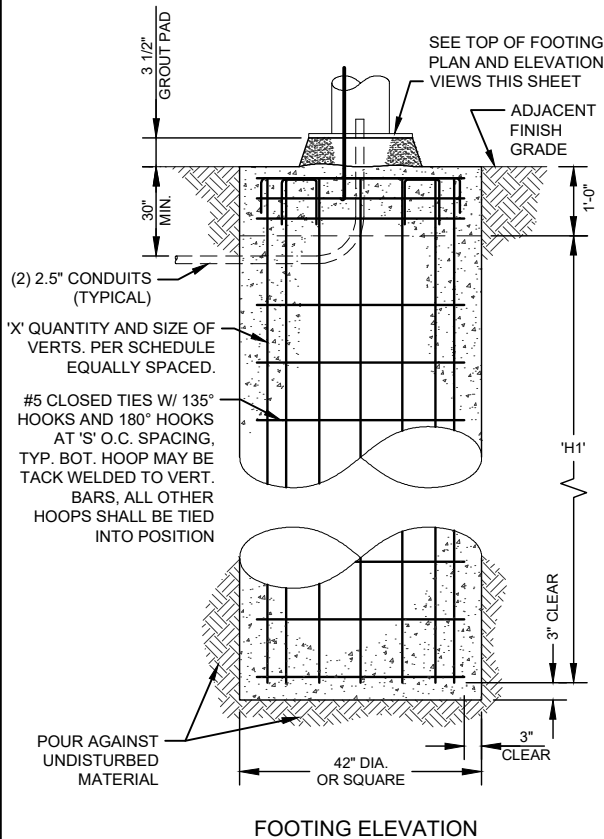
NOTE:  
 135 DEGREE AND 180 DEGREE HOOKS ARE TO BE DETAILS AS RECOMMENDED PER THE REQUIREMENTS OF THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI).



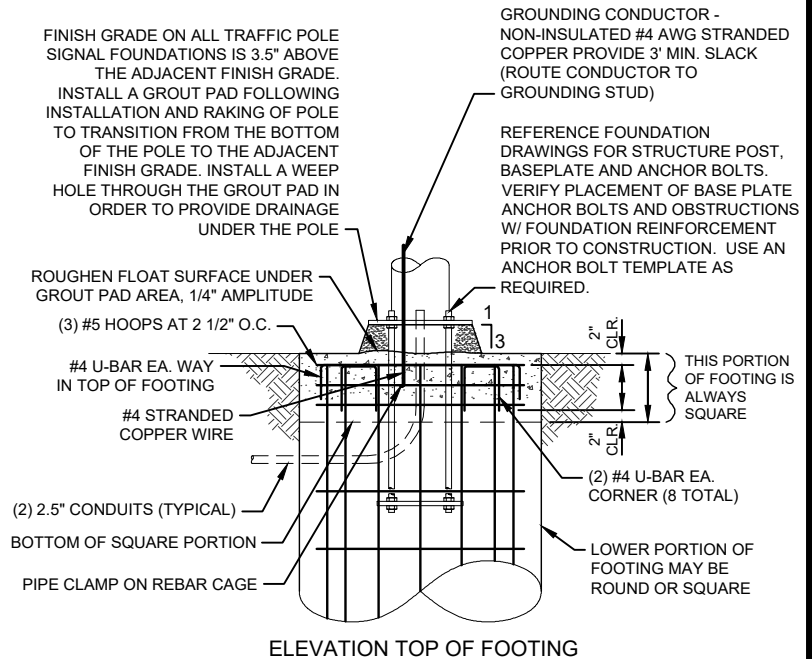
MINIMUM EMBANKMENT REQUIREMENTS



PLAN - TOP OF FOOTING



FOOTING ELEVATION



ELEVATION TOP OF FOOTING

**CITY OF SALEM**  
**DEPARTMENT OF PUBLIC WORKS**  
 STANDARD PLAN  
**TRAFFIC SIGNAL SUPPORT**  
**FOUNDATION DETAILS**

APPROVED			DRAWN BY	JAK	11/2019	<b>NO.758</b>
	CITY ENGINEER	DATE	CHECKED BY	AAE	11/2019	



FOR REVIEW

FOUNDATION SCHEDULE						
POLE No.	SOIL TYPE	DEPTH 'H1''	VERT. BARS 'X'	#5 CLOSED TIES		
				MAX. 'S' O.C. SPACING WITHIN 'H1''	MIN. NUMBER OF TIES	
TS1 / TSL1	1	11'-6"	(14) #9 BARS	12"	12	
TS1 / TSL1	2	8'-6"	(14) #9 BARS	12"	9	
TS1 / TSL1	3	8'-0"	(14) #9 BARS	12"	9	
TS2 / TSL2	1	11'-6"	(14) #9 BARS	12"	12	
TS2 / TSL2	2	8'-6"	(14) #9 BARS	12"	9	
TS2 / TSL2	3	8'-0"	(14) #9 BARS	12"	9	
TS3 / TSL3	1	15'-6"	(14) #9 BARS	8"	24	
TS3 / TSL3	2	12'-6"	(14) #9 BARS	8"	19	
TS3 / TSL3	3	9'-0"	(14) #9 BARS	8"	14	
TS4 / TSL4	1	21'-0"	(14) #9 BARS	6"	43	
TS4 / TSL4	2	17'-0"	(14) #9 BARS	6"	35	
TS4 / TSL4	3	11'-6"	(14) #9 BARS	6"	24	

\*H1 DEPTH ASSUMES NATIVE/UNDISTURBED SOILS. EXTEND FOUNDATION DEPTH AS NECESSARY FOR DISTURBED SOILS. TOTAL FOUNDATION DEPTH SHALL BE H1+1' PER STD. PLAN 758 (+ ANY ADDITIONAL DEPTH FOR DISTURBED SOILS).

POLE No.	DESIGN LOADS					
	AXIAL (lbs)	SHEAR-y (lbs)	SHEAR-z (lbs)	TORQUE (in-lbs)	MOMENT-y (in-lbs)	MOMENT-z (in-lbs)
TS1 / TSL1	2,736	996	4,980	422,400	1,088,400	417,600
TS2 / TSL2	3,360	1,020	5,100	699,600	1,138,800	694,800
TS3 / TSL3	4,632	1,200	6,000	1,425,600	1,410,000	1,107,600
TS4 / TSL4	6,300	1,380	6,840	1,936,800	1,644,000	1,624,800

GOOD SOIL TYPES	SOIL FRICTION ANGLE (φ)	SOIL UNIT WEIGHT ABOVE WATER TABLE (γ) (pcf)	SOIL UNIT WEIGHT BELOW WATER TABLE (γ) (pcf)	FRICTION CAPACITY (psf)	p-y MODULUS (K) (pci)	SOIL BEARING PRESSURE (PSF)
TYPE 1: MEDIUM STIFF TO STIFF CLAY, SILT OR SILT W/ SAND	28°	105	42	400	100	1500
TYPE 2: MEDIUM DENSE COHESIONLESS SOIL	34°	120	57	500	100	1500
TYPE 3: DENSE COHESIONLESS SOIL	36°	125	62	750	100	1500

- SOIL PARAMETERS AND TYPES DESCRIBED ARE FOR "GOOD SOIL CONDITIONS" THAT INCLUDE:
  - MEDIUM STIFF TO STIFF CLAY, SILT, OR SILT WITH SAND (TYPE 1) - MEDIUM TO HIGH PLASTICITY CLAY WITH VARYING AMOUNTS OF SILT AND FINE SAND, OR SILT WITH VARYING AMOUNTS OF CLAY AND FINE SAND.
  - MEDIUM DENSE COHESIONLESS SOIL (TYPE 2) - FINE TO COARSE SAND OR GRAVEL, OR SANDY GRAVEL WITH VARYING AMOUNTS OF SILT OR CLAY.
  - DENSE COHESIONLESS SOIL (TYPE 3) - FINE TO COARSE GRAVEL THAT IS GENERALLY DENSELY CONSOLIDATED OR CEMENTED.
- "POOR SOIL CONDITIONS" ARE SOFT, SOFT TO MEDIUM STIFF, OR LOOSE SOILS, OR SOILS WITH ORGANICS, OR SITES WHERE SIGNAL FOUNDATIONS WILL BE LOCATED WITHIN A HORIZONTAL DISTANCE LESS THAN THE MINIMUM EMBANKMENT REQUIREMENT. POOR SOIL OR NEAR-SLOPE CONDITIONS SHOULD BE DESIGNED BASED ON A SITE-SPECIFIC SOIL INVESTIGATION.

**NOTES:**

- MINIMUM CONCRETE COMPRESSIVE STRENGTH = 3000 PSI AT 28 DAYS. A CONCRETE MIX DESIGN SHALL BE FURNISHED BY THE CONTRACTOR FOR REVIEW AND VERIFICATION PRIOR TO CONSTRUCTION.
- STEEL TO BE 60 KSI YIELD STRENGTH FOR ALL REINFORCING BARS
- DESIGN LOADS (SERVICE):
  - AXIAL: SEE SCHEDULE
  - SHEAR: SEE SCHEDULE (RESULTANT)
  - MOMENT: SEE SCHEDULE (RESULTANT)
  - TORSION: SEE SCHEDULE (LOADS APPLIED AT TOP OF PILE)
- DESIGN ASSUMPTIONS:
  - c = 0 = 0.01
  - E 50
  - L-PILE PLUS VERSION 5.0 UTILIZED FOR DESIGN
- SIGNAL POLE FOUNDATION DRILLING IS TO BE MONITORED BY THE CITY OF SALEM TO VERIFY SUB-SURFACE CONDITIONS ENCOUNTERED MATCH DESIGN ASSUMPTIONS OR IF APPROPRIATE RECOMMEND CHANGES TO DESIGN OR CONSTRUCTION PROCEDURES, BASED ON SPECIFIC CONDITIONS AT DRILLING SITE. NO PERMANENT CASING IS ALLOWED TO REMAIN AROUND SHAFT.
- POLE MANUFACTURER SHALL PROVIDE CALCULATIONS AND A RESULTS SUMMARY FOR BOTH STANDARD DESIGN LOADS AND PROJECT SPECIFIC LOADS.

**CITY OF SALEM  
DEPARTMENT OF PUBLIC WORKS**

**STANDARD PLAN  
TRAFFIC SIGNAL SUPPORT  
DESIGN SPECIFICATIONS**

APPROVED			DRAWN BY	JAK	11/2019
	CITY ENGINEER	DATE	CHECKED BY	AAE	11/2019

NO.759