

FOR THIS INFORMATION	SEE TABLE
MATERIAL DATA	1
ANCHOR BOLTS & BASE PLATE	2
POLE & SIGNAL ARM TUBES	2

WASHINGTON POLE TYPE II

DESIGN CRITERIA:
 THE SIGNAL MAST ARM TRAFFIC STRUCTURES SHOWN ON THIS DRAWING HAVE BEEN DESIGNED IN ACCORDANCE WITH THE LOADING AND NOMINAL STRENGTH REQUIREMENTS OF THE 2015 AASHTO "LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, FIRST EDITION" SLTS-1 INCLUDING LATEST INTERIMS. THE WIND LOADS WERE CALCULATED FROM AN ULTIMATE WIND VELOCITY OF 115 MPH WITH A MEAN RECURRENCE INTERVAL OF 1700 YEARS AND A FATIGUE CATEGORY OF III. THE FATIGUE LOADS WERE CALCULATED ON THE REQUIREMENTS OF SECTION 11 OF THE CODE, AND THE FOLLOWING DESIGN CONDITIONS:

- STRUCTURES ARE DESIGNED TO RESIST NATURAL WIND GUSTS BASED ON THE YEARLY MEAN WIND VELOCITY OF 11.2 MPH.
- STRUCTURES ARE DESIGNED TO RESIST GALLOPING-INDUCED CYCLIC LOADS.
- STRUCTURES ARE DESIGNED FOR TRUCK-INDUCED GUST LOADS, AS REQUIRED BY THE OWNER OF THE STRUCTURES.

LONGITUDINAL WELD SEAM:
 WELDING PROCESS:
 HYBRID LBW/GMAW. POLE/SIGNAL ARM SHAFT (0.2500, 0.3125 & 0.375)
 HIGH FREQUENCY ELECTRIC RESISTANCE WELD. POLE/SIGNAL ARM SHAFT (5 GA., 7 GA., & 11 GA.)

WELD INSPECTION:

- WELDING INSPECTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF WASHINGTON STATE DEPARTMENT STANDARD SPECIFICATION 6-03.3(25) AND 2015 AASHTO WELD INSPECTION SECTION 14.5.3.
- ALL LONGITUDINAL SEAM WELDS SHALL BE INSPECTED BY MAGNETIC PARTICLE METHOD FOR 30% OF LENGTH EXCEPT FOR SHAFT THICKNESSES 0.3125" AND GREATER SHALL BE ULTRASONIC METHOD. MAGNETIC PARTICLE TESTING SHALL BE PERFORMED ON BOTH SIDES OF 100% PENETRATION SEAM WELD WHEN BACKING IS NOT USED EXCEPT FOR TUBES LESS THAN 10.5 INCHES. FOR TUBES 6 TO 10.5 INCHES, 2" SHALL BE INSPECTED BY THE TEST METHOD BASED ON THICKNESS. FOR TUBES LESS THAN 6", VT ONLY PRIOR TO GALV.

WELDING:
 WELDING OF STRUCTURES SHALL BE IN ACCORDANCE WITH 2015 EDITION OF THE AWS STRUCTURAL WELDING CODE D1.1-STEEL. 60% PENETRATION REQUIRED FOR ALL SEAM WELDS EXCEPT FOR THE FOLLOWING LOCATIONS REQUIRE 100% PENETRATION:

- 6 INCHES ADJACENT TO BASEPLATE, FLANGE AND BUTT WELDED SHAFTS; EXCEPT FOR TUBES LESS THAN 5 INCH DIAMETER
- FOR FEMALE SECTION OF SLIP JOINTED TUBES 10" AND GREATER: 1.5 X FEMALE SECTION INSIDE DIAMETER + 6 INCHES
- FOR FEMALE SECTION OF SLIP JOINTED TUBES LESS THAN 10": FEMALE SECTION NOMINAL DIAMETER

GENERAL NOTES:

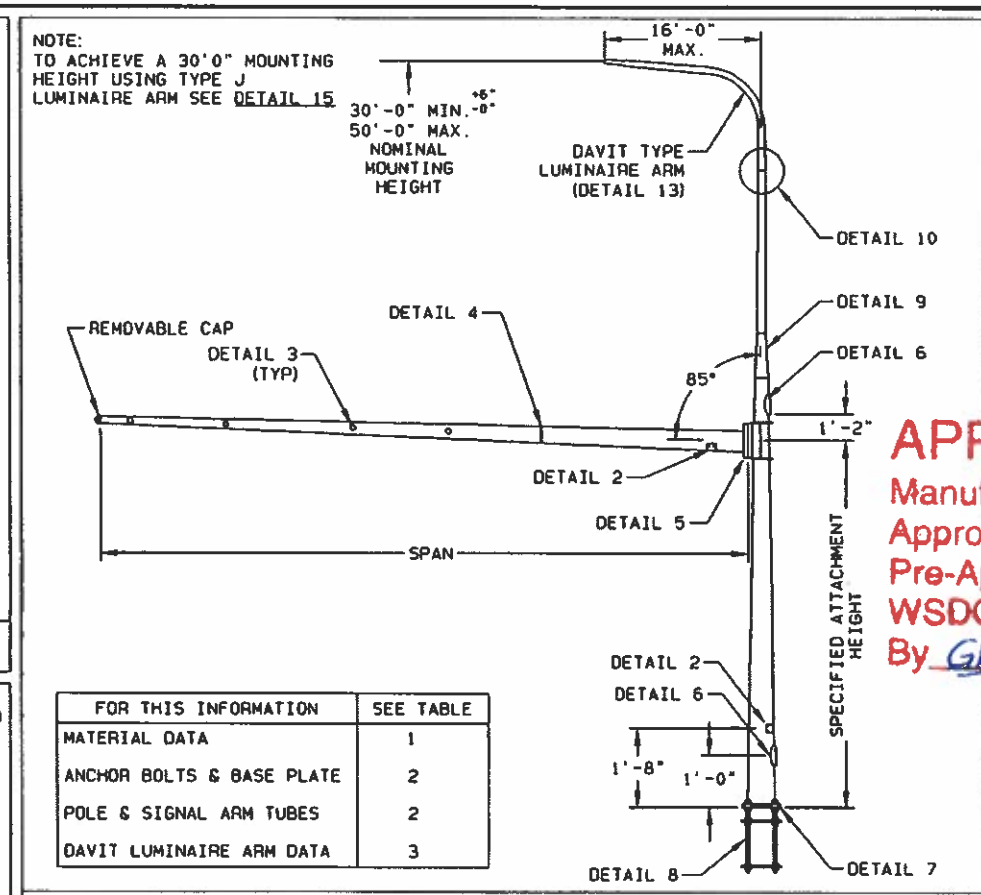
- ALL BOLT HOLES IN PLATES TO BE DRILLED.
- FINAL ASSEMBLY TO HAVE 0.06" RADIUS ON ALL EXPOSED EDGES.

DESIGN INFORMATION

REV	DRAWN BY-DATE	CHECK BY-DATE	DESCRIPTION
B	GC7 10/01/18	RBC2 10/03/18	WELD INSPECTION, WELDING & 2015 AASHTO NOTE
A	BDB3 02/07/17	BDB3 05/12/17	REVISED WELD INSPECTION NOTE
	BDB3 08/23/16	BDB3 08/29/16	

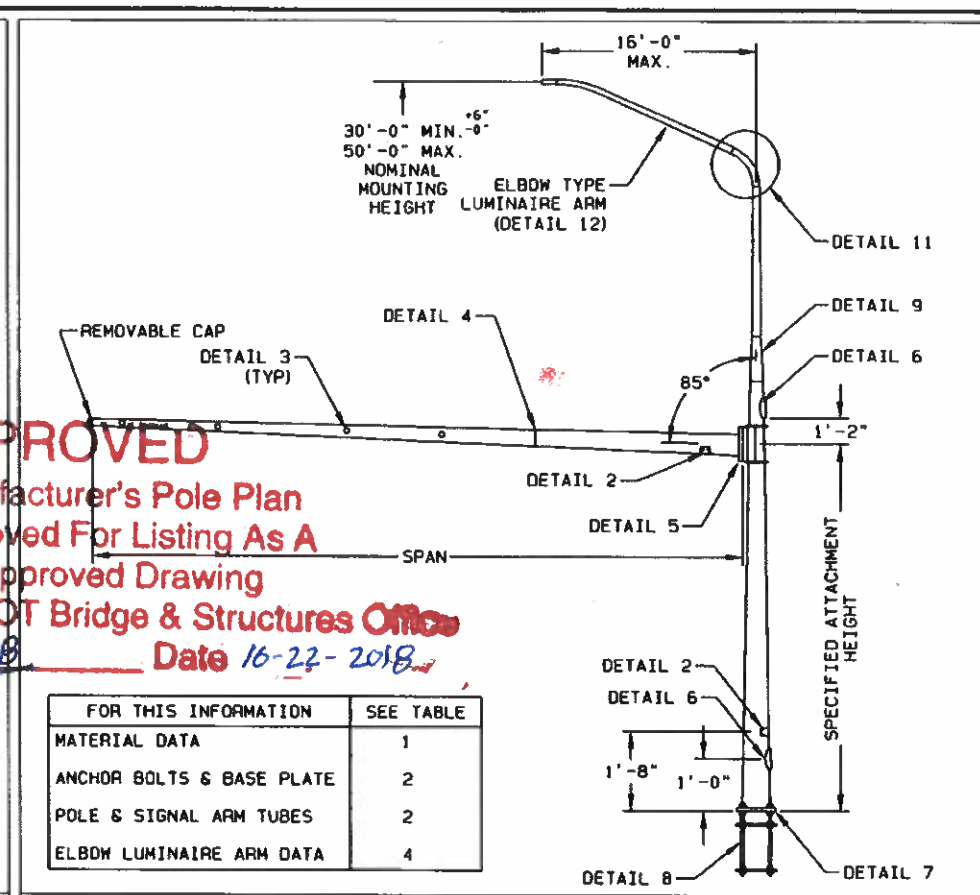
TITLE

STATE OF WASHINGTON
 TRAFFIC SIGNAL STRUCTURES
 2015 AASHTO



FOR THIS INFORMATION	SEE TABLE
MATERIAL DATA	1
ANCHOR BOLTS & BASE PLATE	2
POLE & SIGNAL ARM TUBES	2
DAVIT LUMINAIRE ARM DATA	3

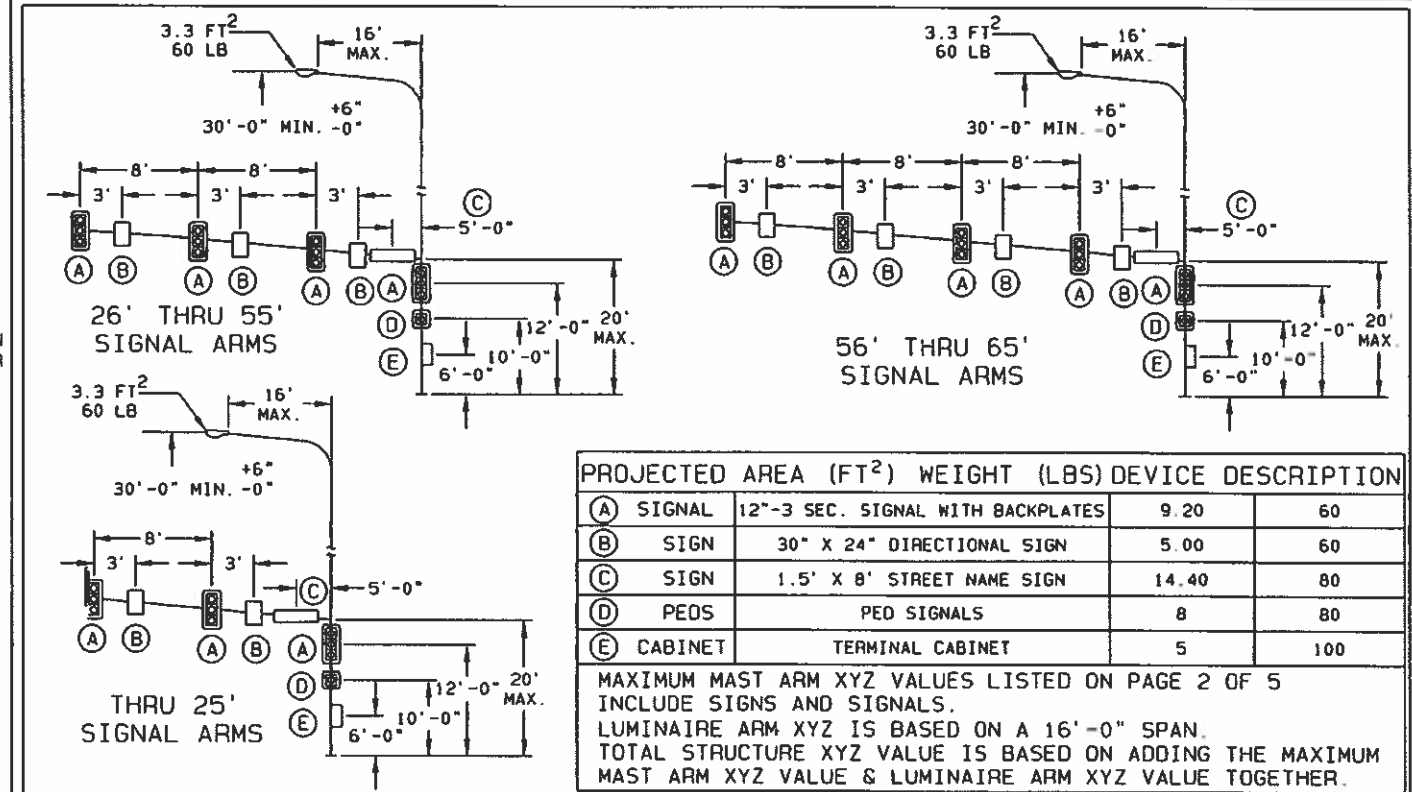
WASHINGTON POLE TYPE III-J



FOR THIS INFORMATION	SEE TABLE
MATERIAL DATA	1
ANCHOR BOLTS & BASE PLATE	2
POLE & SIGNAL ARM TUBES	2
ELBDW LUMINAIRE ARM DATA	4

WASHINGTON POLE TYPE III-T

APPROVED
 Manufacturer's Pole Plan
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 By *GB* Date 16-22-2018



	PROJECTED AREA (FT ²)	WEIGHT (LBS)	DEVICE DESCRIPTION
(A)	SIGNAL	12"-3 SEC. SIGNAL WITH BACKPLATES	9.20 60
(B)	SIGN	30" X 24" DIRECTIONAL SIGN	5.00 60
(C)	SIGN	1.5' X 8' STREET NAME SIGN	14.40 80
(D)	PEOS	PED SIGNALS	8 80
(E)	CABINET	TERMINAL CABINET	5 100

MAXIMUM MAST ARM XYZ VALUES LISTED ON PAGE 2 OF 5 INCLUDE SIGNS AND SIGNALS.
 LUMINAIRE ARM XYZ IS BASED ON A 16'-0" SPAN.
 TOTAL STRUCTURE XYZ VALUE IS BASED ON ADDING THE MAXIMUM MAST ARM XYZ VALUE & LUMINAIRE ARM XYZ VALUE TOGETHER.

LOADING INFORMATION

THE FOLLOWING 2015 AASHTO REQUIREMENT IS BEING FOLLOWED:
 1. SECTION 5.6.6 FOR HANDHOLE CLEAR DISTANCE AND 40% OF POLE WIDTH REQUIREMENT. STRESSES ARE REVIEWED AT EACH HANDHOLE FOR STRUCTURAL ADEQUACY IN THE CALCULATIONS.

2015 AASHTO NOTES

VALMONT INDUSTRIES, INC. RESERVES THE RIGHT TO INSTALL VARIOUS ENGINEER APPROVED, MATERIAL HANGING ACCOMMODATIONS TO FACILITATE THE MANUFACTURING PROCESS.

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PAGE NUMBER: 1 OF 5
 DRAWING NUMBER: DB01162
 REV: B

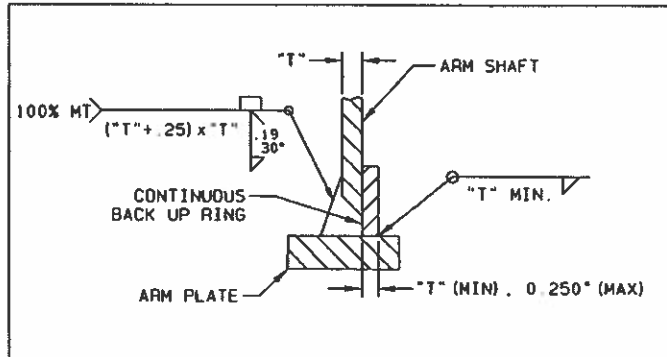
TABLE 2: POLE AND SIGNAL ARM DATA

POLE CLASS	POLE TUBE				BASE PLATE				ANCHOR BOLT				SIGNAL ARM TUBE				SIGNAL ARM ATTACHMENT DATA						MAXIMUM SIGNAL MAST ARM X Y Z (FT ³)	LUMINAIRE ARM X Y Z (FT ³)	TOTAL STRUCTURE X Y Z (FT ³)		
	BASE DIA. (IN)	TOP DIA. (IN)	* MAX LENGTH (FT)	GAUGE OR THICK (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	PLATE CENTER HOLE DIA. "BCH" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	ANCHOR PLATE O.D. (IN)	THREAD LENGTH "U" (IN)	FIXED END DIA. (IN)	FREE END DIA. (IN)	GAUGE OR THICK (IN)	SPAN (FT)	"A" (IN)	"B" (IN)	"C" (IN)	"D" (IN)	PLATE CENTER HOLE DIA. "SCH" (IN)				"E" (IN)	"F" (IN)
TYPE II	13.50	10.49	21.50	0.313	18.50	18.00	2.000	10.00	1.75	1.50	60.00	22.00	18.00	10.00	THRU 3.50	7	THRU 25	20.25	20.25	16.50	16.50	8.00	2.000	1.50-6UNC X 6.25	1077	N/A	1077
TYPE II	13.50	10.49	21.50	0.313	18.50	18.00	2.000	10.00	1.75	1.50	60.00	22.00	18.00	10.00	6.36-5.10	7	26-35	20.25	20.25	16.50	16.50	8.00	2.000	1.50-6UNC X 6.25	1166	N/A	1165
TYPE II	13.50	10.49	21.50	0.313	18.50	18.00	2.000	10.00	1.75	1.50	60.00	22.00	18.00	11.50	6.46-5.20	7	36-45	20.25	20.25	16.50	16.50	8.50	2.000	1.50-6UNC X 6.25	1592	N/A	1592
TYPE II	16.00	12.99	21.50	0.375	22.50	22.00	2.000	14.00	2.25	2.00	60.00	26.00	18.00	13.00	6.56-6.00	7	46-50	23.75	23.75	20.00	20.00	8.25	2.000	1.50-6UNC X 6.25	2033	N/A	2033
TYPE II	16.00	12.99	21.50	0.375	22.50	22.00	2.000	14.00	2.25	2.00	60.00	26.00	18.00	13.00	6.18-5.30	DET.4	51-55	23.75	23.75	20.00	20.00	8.25	2.000	1.50-6UNC X 6.25	2018	N/A	2018
TYPE II	16.25	13.24	21.50	0.375	22.50	22.00	2.000	14.00	2.25	2.00	60.00	26.00	18.00	15.00	7.16-5.90	DET.4	56-65	23.75	23.75	20.00	20.00	7.00	2.000	1.50-6UNC X 6.25	3206	N/A	3206
TYPE III	13.50	10.42	22.00	0.313	18.50	18.00	2.000	10.00	1.75	1.50	60.00	22.00	18.00	10.00	THRU 3.50	7	THRU 25	20.25	20.25	16.50	16.50	8.00	2.000	1.50-6UNC X 6.25	1077	53	1130
TYPE III	13.50	10.42	22.00	0.313	18.50	18.00	2.000	10.00	1.75	1.50	60.00	22.00	18.00	10.00	6.36-5.10	7	26-35	20.25	20.25	16.50	16.50	8.00	2.000	1.50-6UNC X 6.25	1166	53	1219
TYPE III	13.50	10.42	22.00	0.313	18.50	18.00	2.000	10.00	1.75	1.50	60.00	22.00	18.00	11.50	6.46-5.20	7	36-45	20.25	20.25	16.50	16.50	8.50	2.000	1.50-6UNC X 6.25	1592	53	1645
TYPE III	16.00	12.92	22.00	0.375	22.50	22.00	2.000	14.00	2.25	2.00	60.00	26.00	18.00	13.00	6.56-6.00	7	46-50	23.75	23.75	20.00	20.00	8.25	2.000	1.50-6UNC X 6.25	2033	53	2086
TYPE III	16.00	12.92	22.00	0.375	22.50	22.00	2.000	14.00	2.25	2.00	60.00	26.00	18.00	13.00	6.18-5.30	DET.4	51-55	23.75	23.75	20.00	20.00	8.25	2.000	1.50-6UNC X 6.25	2018	53	2071
TYPE III	16.25	13.17	22.00	0.375	22.50	22.00	2.000	14.00	2.25	2.00	60.00	26.00	18.00	15.00	7.16-5.90	DET.4	56-65	23.75	23.75	20.00	20.00	7.00	2.000	1.50-6UNC X 6.25	3206	53	3259

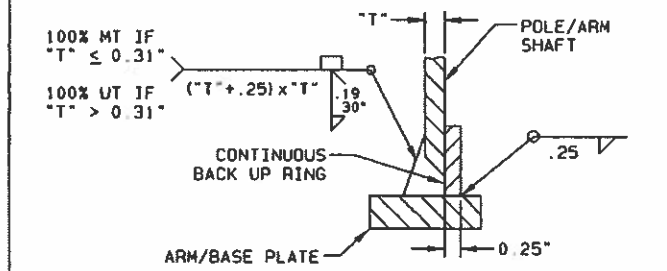
* 30'-0" MOUNTING HEIGHT POLE TUBE LENGTH FOR TYPE III STRUCTURES IS 21'-2". SEE DETAIL 15

TABLE 1: MATERIAL DATA

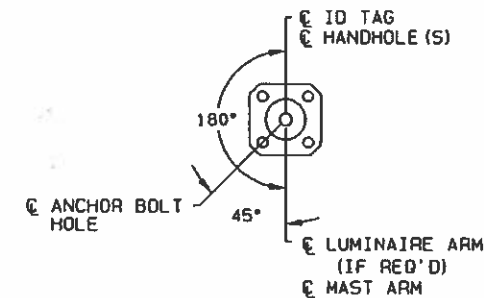
COMPONENT	ASTM DESIGNATION	MIN YIELD (KSI)
POLE AND SIGNAL ARM TAPERED TUBES	A595 GR. A OR A572	55
BASE PLATE	A36 OR A572 GR. 50 OR 55	36 50
SIGNAL ARM ATTACHMENT PLATES AND GUSSET PLATES	A36 OR A572 GR. 50 OR 55	36 50
SIGNAL ARM CONN. BOLTS	F3125, A325 TYPE 1	
LUMINAIRE ARM	A595 GR. A	55
POLE TOP EXTENSION	A595 GR. A	55
REDUCING CONE	A1011-50 HSLAS	50
HANDHOLE RIM	A500 GR. B OR C A513 GR. 1035 OR 1040 *WITH FURTHER RESTRICTION ON MINIMUM YIELD STRENGTH HELD TO 50 KSI.	50* 50
PIPE / TUBING	A53 GR. B A501 A513 GR. 1015 A618 A500 GR. B	35 36 35 50 42
ELBOW	A513 TYPE 5 GR. 1026	45
ANCHOR BOLTS	F1554	105
ANCHOR BOLT NUTS	ASTM A563 GR. DH	--
ANCHOR BOLT WASHERS	ASTM F436	--
GALVANIZING - STRUCTURE	A123	--
GALVANIZING - HARDWARE	F2329	--



ARM SHAFTS - 7 GA.



POLE/ARM SHAFTS - 0.250", 0.313", 0.375"
ARM PLATE & BASE PLATE WELD DETAIL

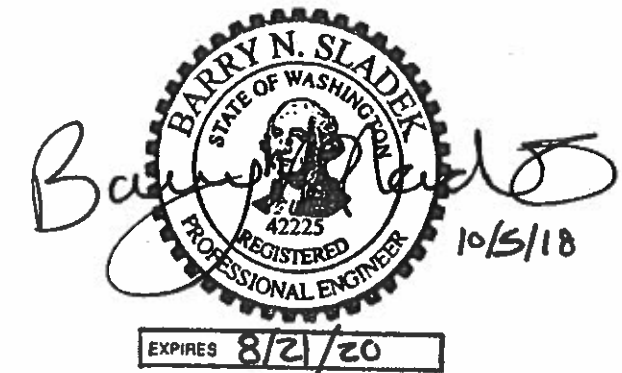


TYPICAL ORIENTATION

ALL ANGLES MEASURED CLOCKWISE FROM MAST ARM AS VIEWED FROM SMALL END OF POLE.

RADIAL INDEX

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 Manufacturer's Pole Plan
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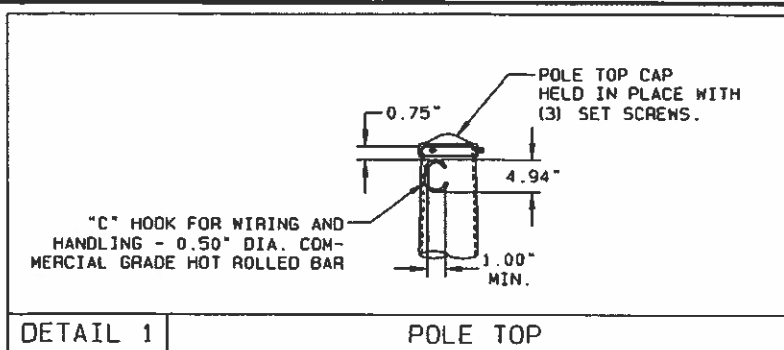


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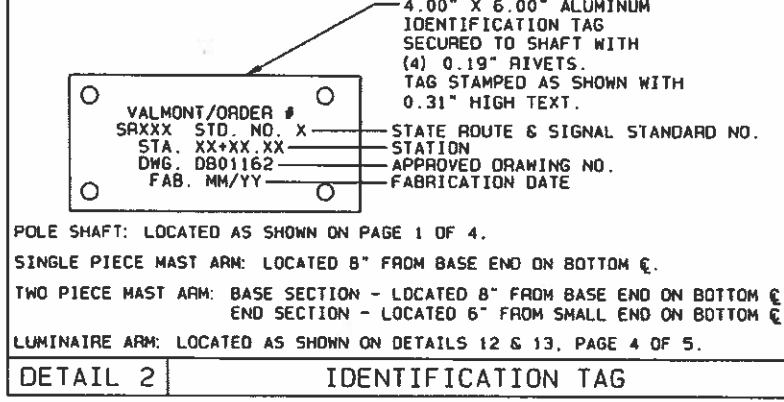
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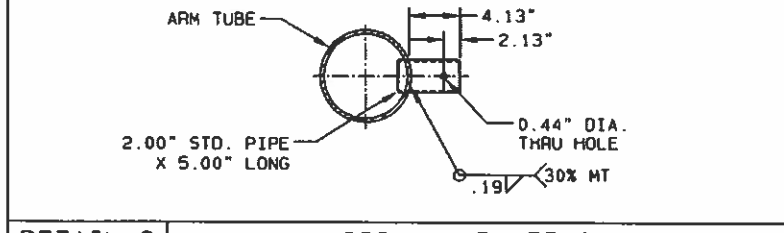
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 REV: B



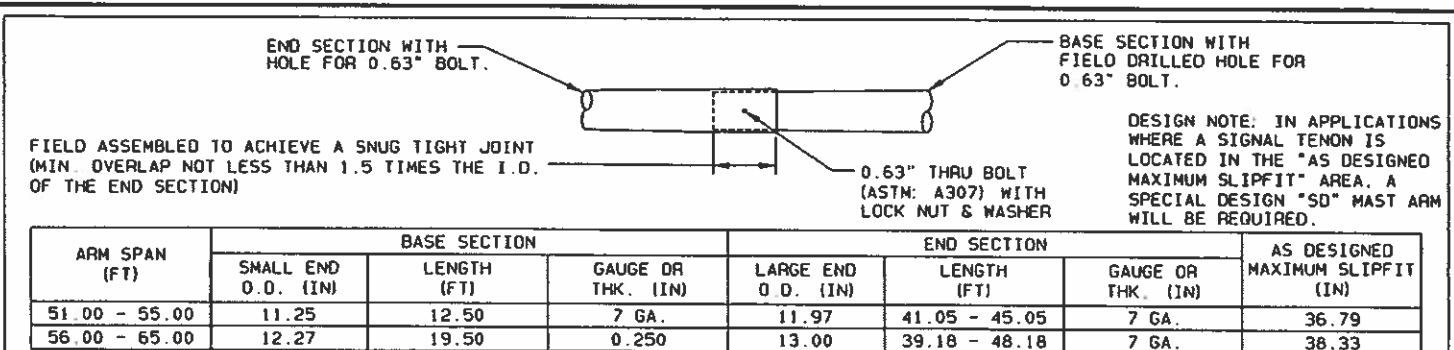
DETAIL 1 POLE TOP



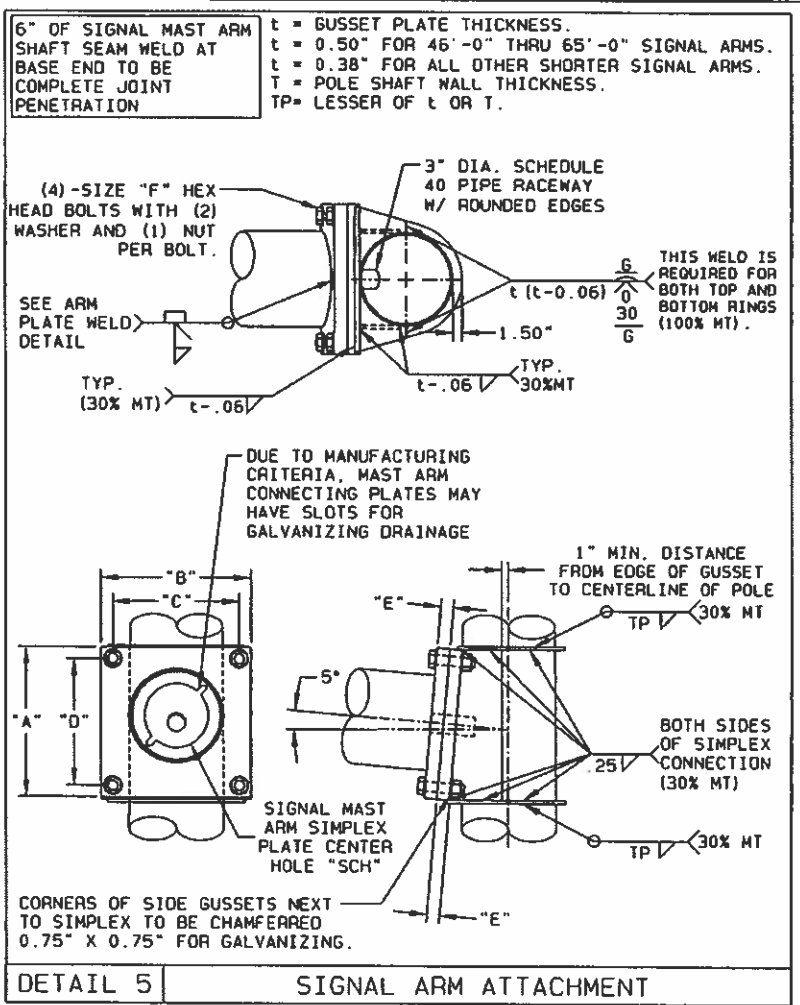
DETAIL 2 IDENTIFICATION TAG



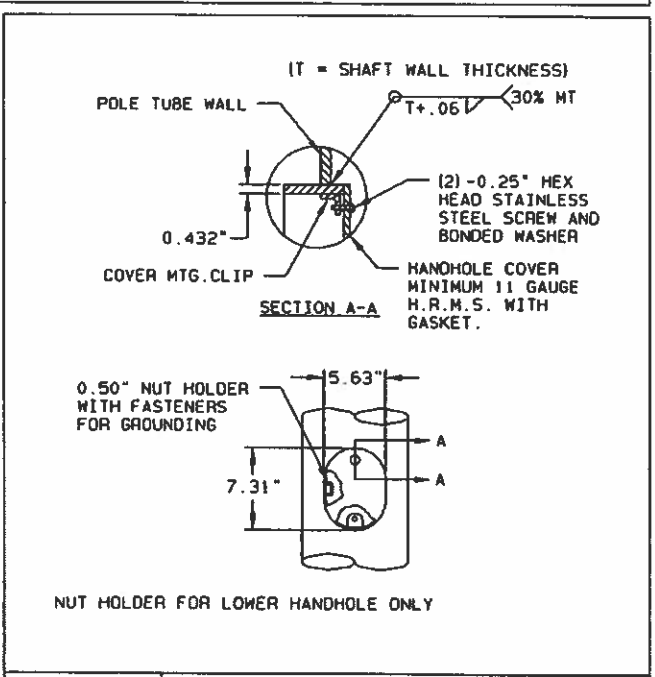
DETAIL 3 SIGNAL ARM TENON



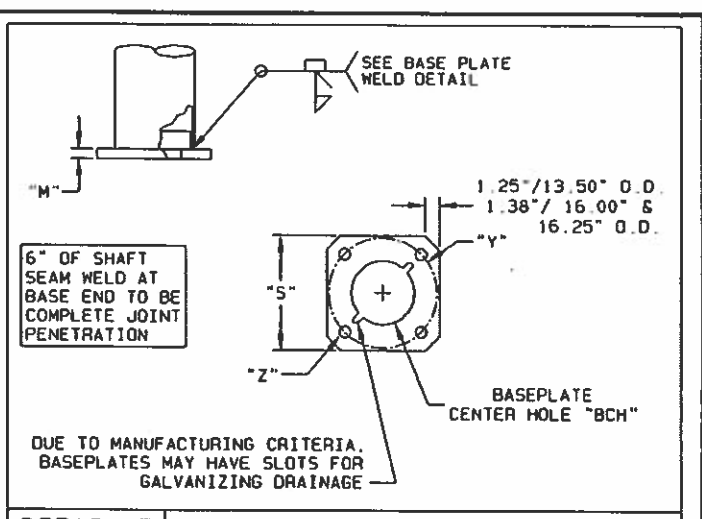
DETAIL 4 SIGNAL ARM SLIP JOINT - SIGNAL ARM LENGTHS OVER 51'-0" ONLY



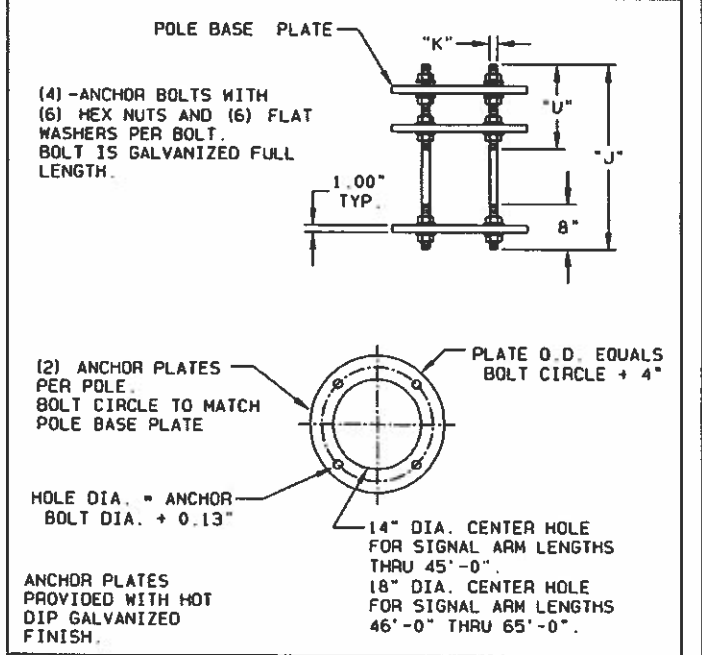
DETAIL 5 SIGNAL ARM ATTACHMENT



DETAIL 6 HANDHOLE



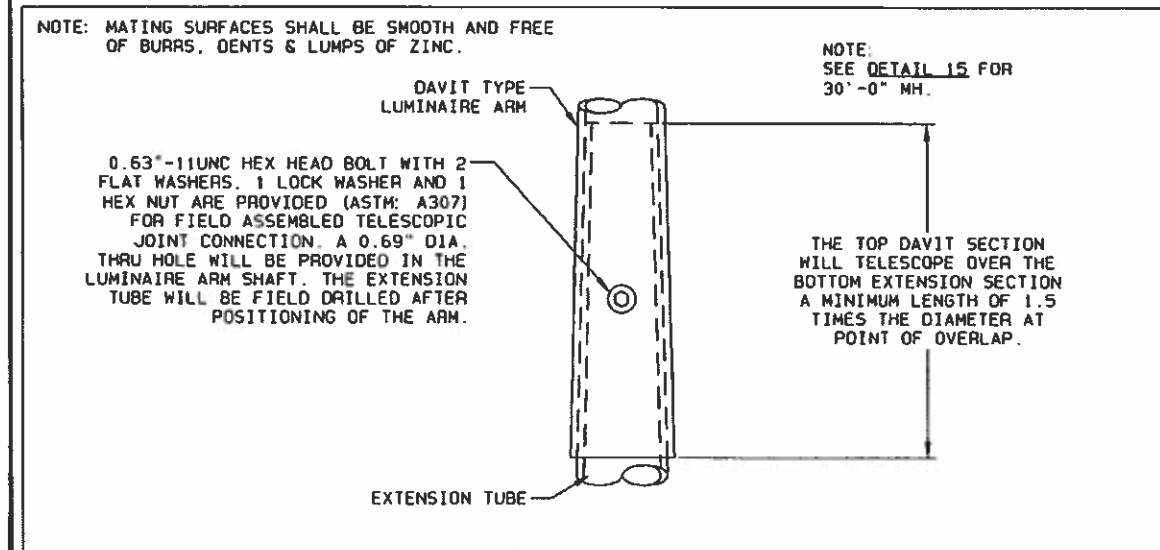
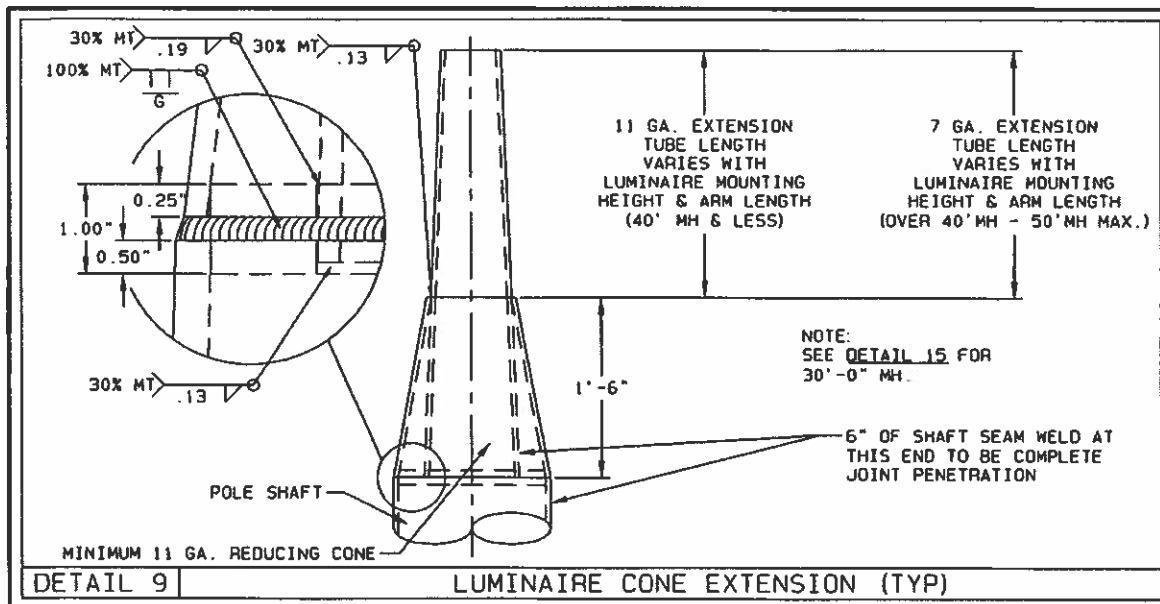
DETAIL 7 POLE BASE



DETAIL 8 ANCHOR BOLTS W/ANCHOR PLATES

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 By GB Date 10-22-2018

BARRY N. SLADEK
 STATE OF WASHINGTON
 REGISTERED PROFESSIONAL ENGINEER
 42225
 10/5/18
 EXPIRES 8/2/20



DETAIL 10 DAVIT TYPE TELESCOPIC JOINT

TABLE 3: DAVIT TYPE LUMINAIRE ARM DATA

SPAN (FT)	BASE O.D. (IN)	FREE END (IN)	LONG (FT)	GAUGE
6	5.41	3.77	11.55	11
8	5.41	3.52	13.50	11
10	5.41	3.26	15.33	11
12	5.41	3.00	17.16	11
14	5.41	2.75	19.00	11
16	5.41	2.40	21.50	11

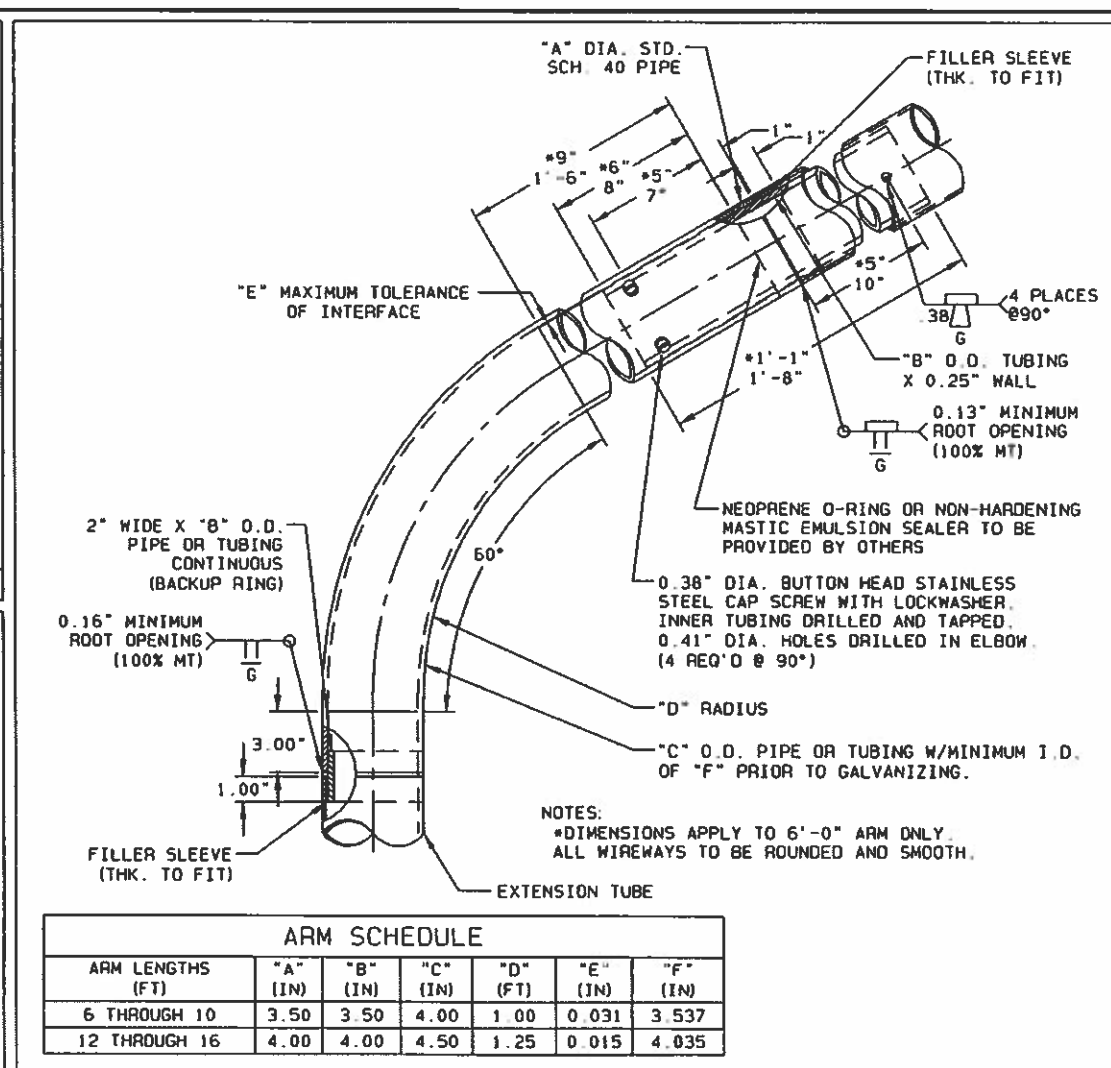
SEE TABLE 5 FOR 30'-0" MOUNTING HEIGHT DAVIT ARM DATA

TABLE 4: ELBOW TYPE LUMINAIRE ARM DATA

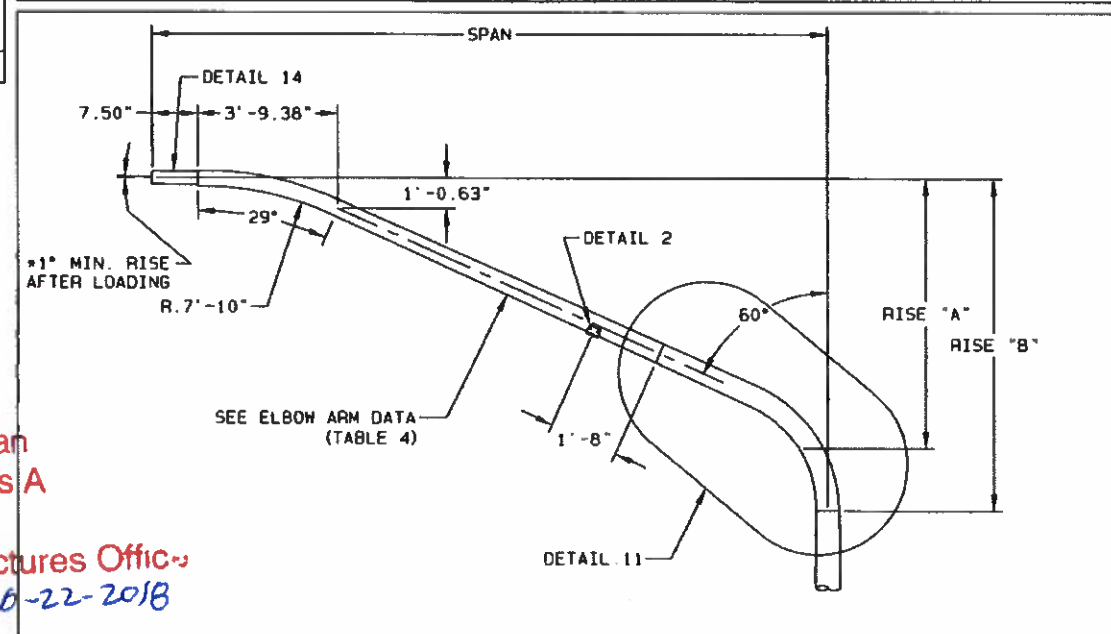
SPAN (FT)	RISE	
	"A" (FT)	"B" (FT)
6	1.98	2.83
8	3.13	4.00
10	4.28	5.08
12	5.44	6.42
14	6.59	7.58
*14	4.09	5.08
16	7.75	8.75
*16	5.33	6.33

*FOR 30'-0" MOUNTING HEIGHT

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DETAIL 11 ELBOW TYPE ARM ATTACHMENT

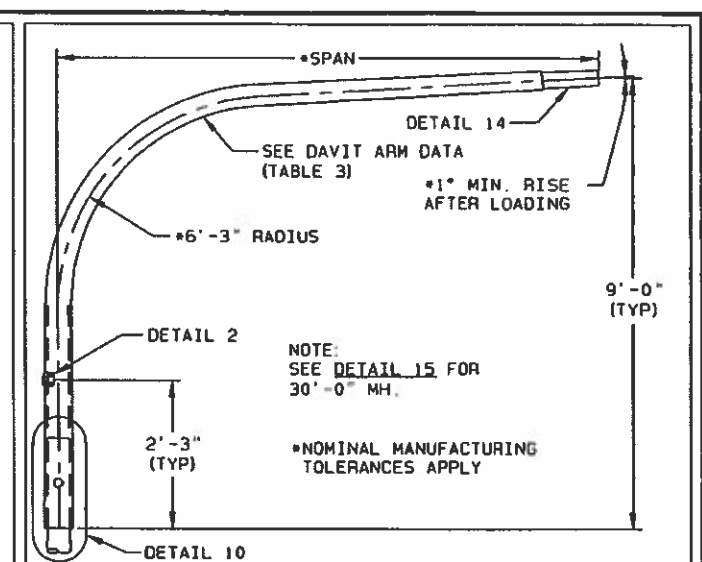


DETAIL 12 ELBOW TYPE LUMINAIRE ARM

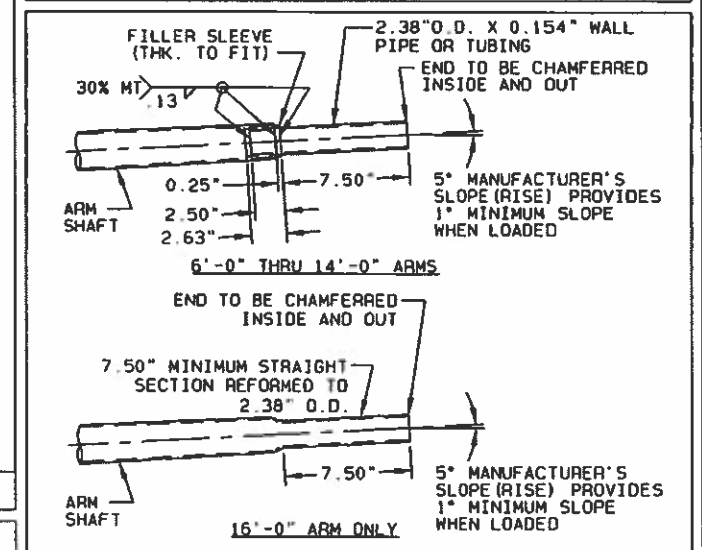
STATE OF WASHINGTON
 TRAFFIC SIGNAL STRUCTURES
 2015 AASHTO

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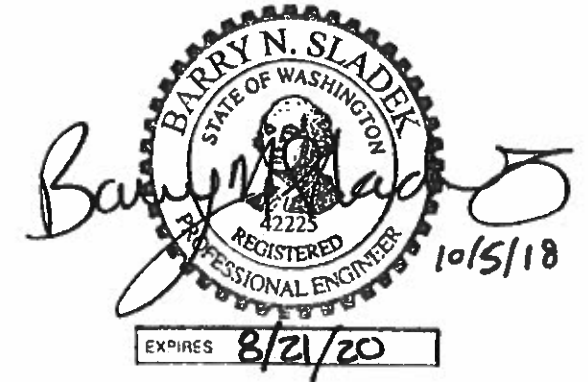
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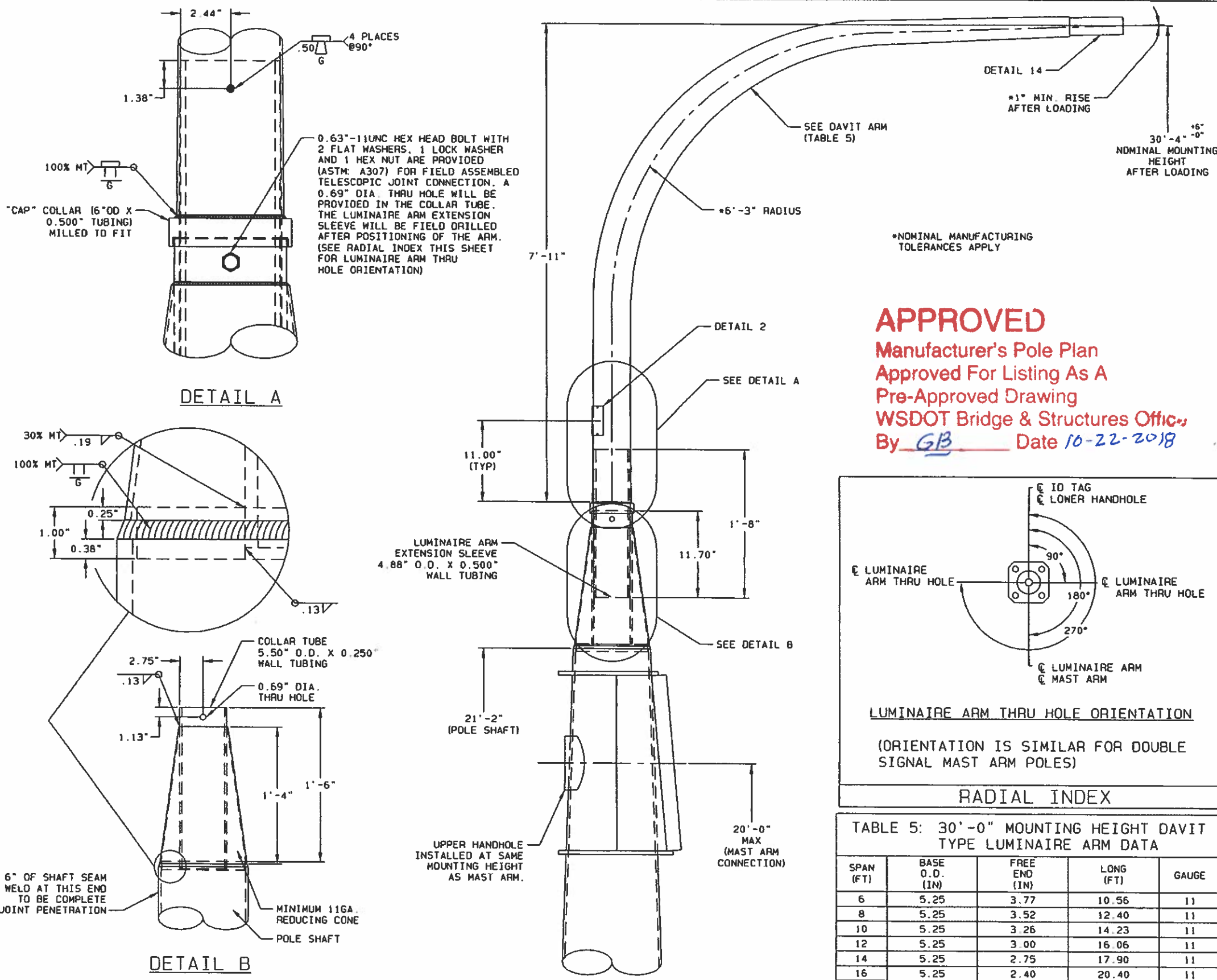


DETAIL 13 DAVIT TYPE LUMINAIRE ARM

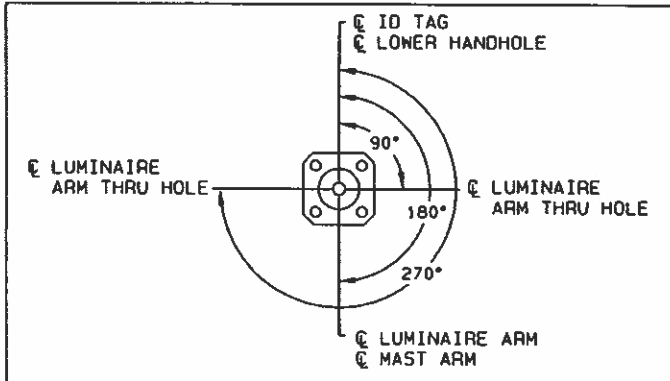


DETAIL 14 SLIPFITTER





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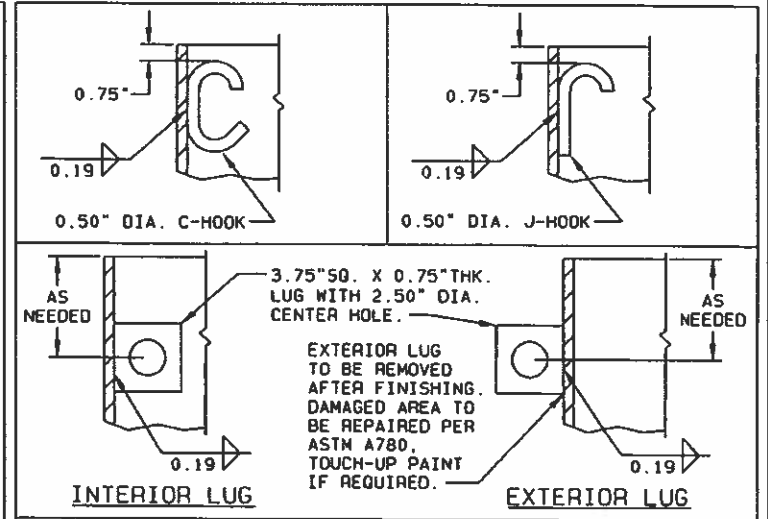


LUMINAIRE ARM THRU HOLE ORIENTATION
 (ORIENTATION IS SIMILAR FOR DOUBLE SIGNAL MAST ARM POLES)

RADIAL INDEX

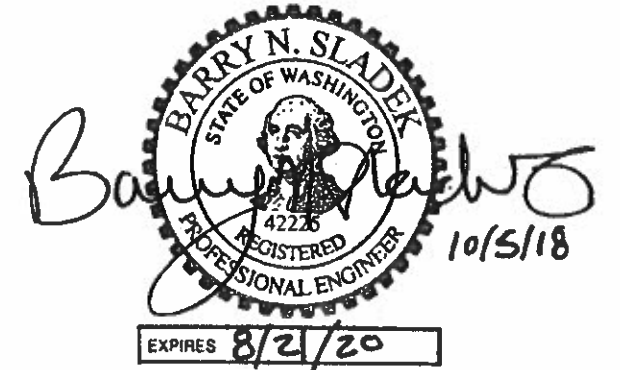
TABLE 5: 30'-0" MOUNTING HEIGHT DAVIT TYPE LUMINAIRE ARM DATA

SPAN (FT)	BASE O.D. (IN)	FREE END (IN)	LONG (FT)	GAUGE
6	5.25	3.77	10.56	11
8	5.25	3.52	12.40	11
10	5.25	3.26	14.23	11
12	5.25	3.00	16.06	11
14	5.25	2.75	17.90	11
16	5.25	2.40	20.40	11



LUMINAIRE ARM - 0.75" DIA. HOLE, VISUALLY LOCATED AT END OF ARM
 SIGNAL ARM - 1,000 LBS. OR LESS = (1) J-HOOK
 1,001 LBS. THRU 2,000 LBS. = (2) J-HOOKS
 OVER 2,000 LBS. = (1) LUG
 END SECTION OF TWO PIECE ARM = (1) J-HOOK @ SMALL END OF ARM, (1) 0.75" DIA. HOLE @ LARGE END OF ARM
 POLE - 1,000 LBS. OR LESS - (1) C-HOOK OR J-HOOK
 1,001 LBS. THRU 2,000 LBS. - (2) C-HOOKS OR J-HOOKS
 OVER 2,000 LBS. - (1) LUG
 MATERIAL NOTE:
 J-HOOK OR C-HOOK = HOT ROLLED MILD STEEL
 LUG = ASTM: A36, 36 KSI
 OR
 A572 GR. 50 OR 55, 50 KSI MIN.

STANDARD MATERIAL HANGING ACCOMMODATIONS TO FACILITATE MANUFACTURING PROCESS



DETAIL 15 | 30'-0" MOUNTING HEIGHT DAVIT LUMINAIRE ARM