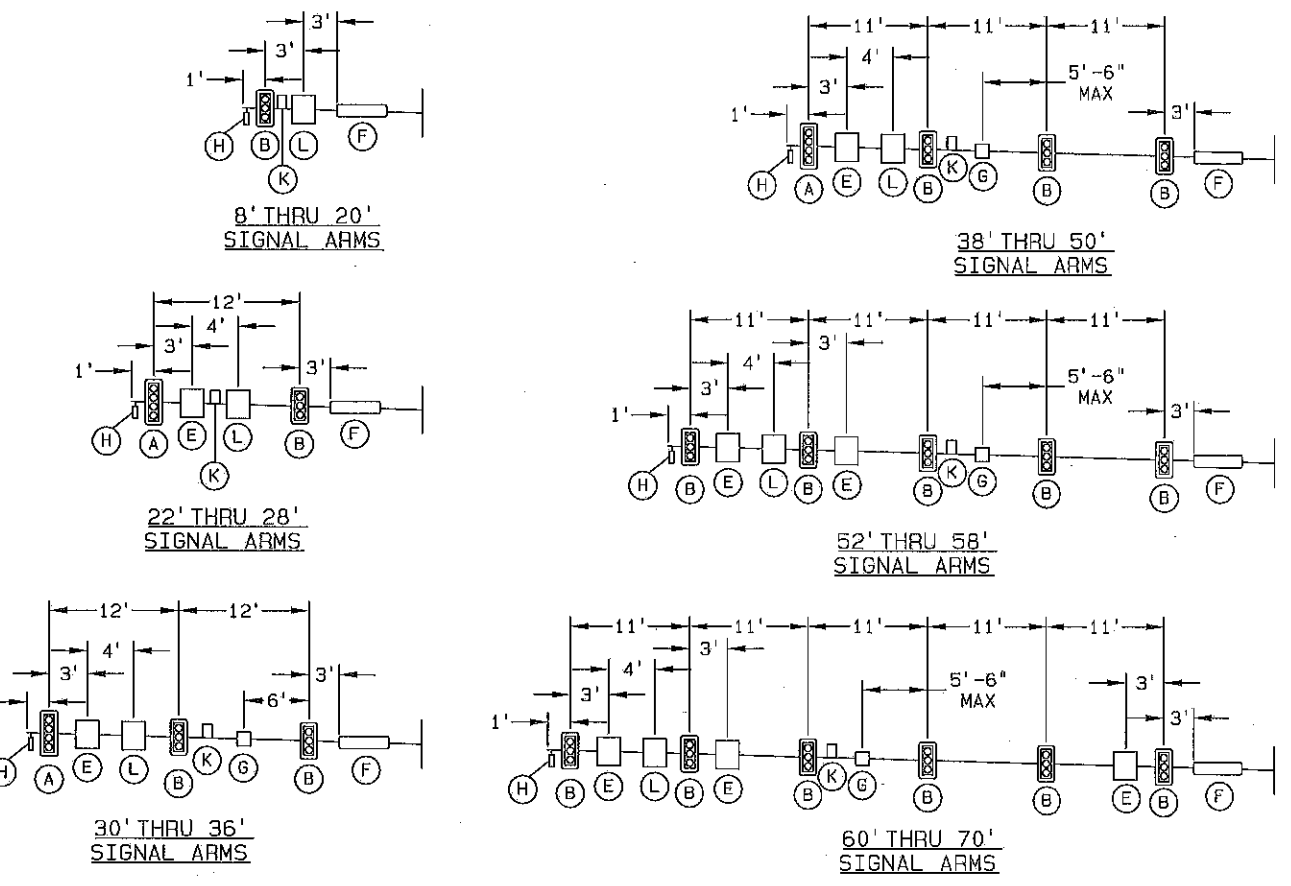
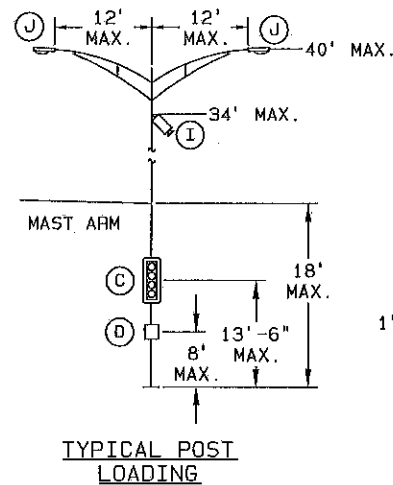


DEVICE	DESCRIPTION	PROJ. AREA (FT ²)	WEIGHT (LBS)
(A)	12"-4 SEC. SIGNAL HEAD W/ BACK PLATES	12.00	54
(B)	12"-3 SEC. SIGNAL HEAD W/ BACK PLATES	10.00	42
(C)	12"-4 SEC. SIGNAL HEAD W/ NO BACK PLATES	6.00	40
(D)	16"x18"-1 SEC. PEDESTRIAN SIGNAL	3.00	20
(E)	36"x36" FLATSHEET ALUMINUM SIGN (MAX)	9.00	20
(F)	24"x96" ILLUMINATED STREET NAME SIGN (MAX)	16.00	120
(G)	ADVANCE RADAR DETECTOR	1.00	15
(H)	PRESENCE RADAR DETECTOR	1.00	15
(I)	CCTV CAMERA	1.00	15
(J)	LUMINAIRE	1.00	30
(K)	EMERGENCY VEHICLE PRE-EMPTION DETECTOR	0.50	5
(L)	36"x36" FLATSHEET ALUMINUM SIGN (MAX)	9.00	20

THE MAST ARM TRAFFIC STRUCTURES SHOWN ON THIS DRAWING HAVE BEEN DESIGNED IN ACCORDANCE WITH THE LOADING AND THE ALLOWABLE STRESS REQUIREMENTS OF THE 2013 AASHTO "STANDARDS SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", SIXTH EDITION, LTS-6. THE WIND LOADS WERE CALCULATED FROM A BASIC WIND VELOCITY OF 90 MPH WITH A RECURRENCE INTERVAL OF 25 YEARS, AND A FATIGUE CATEGORY OF 2. 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 NOT DESIGNED TO RESIST GALLOPING-INDUCED CYCLIC LOADS.
- TRUCK-INDUCED GUST LOADS ARE EXCLUDED PER THE REQUIREMENTS OF THE CODE



OP POLE SERIES

MAXIMUM LOADING INFORMATION

TABLE 1: POLE AND SIGNAL ARM DATA

POLE SERIES	SIGNAL ARM SPAN (FT)	DESIGNATION KEY				POLE DATA		BASE PLATE DATA					ANCHOR BOLT DATA				SIGNAL ARM DATA				SIGNAL ARM ATTACHMENT DATA						
		LUMINAIRE ARM				BASE DIA. (IN)	LENGTH	WALL GAUGE OR THK.	SQUARE "S" (IN)	BOLT CIRCLE "F" (IN)	THK. "M" (IN)	CENTER HOLE "P" (IN)	BOLT HOLE "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "U" (IN)	BOLT QTY.	FIXED END DIA (IN)	FREE END DIA (IN)	GAUGE OF THK (IN)	SIGNAL ARM SPAN (FT)	SQUARE "A" (IN)	THK. "D" (IN)	BOLT SIZE "N" (IN)	BOLT PATTERN "B" (IN)	CENTER HOLE "C" (IN)
		TYPE	ARM 1 STYLE	ARM 1 SPAN (FT)	ARM 2 STYLE																						
OP	20	NL, LR, MR, HR	A OR B	6-12	A OR B	6-12	12.00	7	17.00	16.00	2.00	10.50	1.75	1.50	54.00	6.00	8.00	4	8.00	5.20	7	20.00	17.25	2.00	1.25 X 6.25	14.00	7.00
OP	22	NL, LR, MR, HR	A OR B	6-12	A OR B	6-12	12.50	5	17.50	16.50	2.00	11.00	1.75	1.50	54.00	6.00	8.00	4	9.00	5.92	7	22.00	17.75	2.00	1.25 X 6.25	14.50	7.64
	24																		9.00	5.64	7	24.00	17.75	2.00	1.25 X 6.25	14.50	7.64
	26																		9.00	5.36	7	26.00	17.75	2.00	1.25 X 6.25	14.50	7.50
	28																		9.00	5.08	7	28.00	17.75	2.00	1.25 X 6.25	14.50	7.50
OP	30	NL, LR, MR, HR	A OR B	6-12	A OR B	6-12	13.00	3	18.50	17.50	2.00	11.50	2.00	1.75	84.00	6.00	8.00	4	10.00	5.80	7	30.00	18.25	2.00	1.25 X 6.25	15.00	8.50
	32																		10.50	6.02	7	32.00	18.25	2.00	1.25 X 6.25	15.00	8.75
	34																		11.00	6.24	7	34.00	18.25	2.00	1.25 X 6.25	15.00	9.00
	36																		11.00	5.96	7	36.00	18.25	2.00	1.25 X 6.25	15.00	9.00
	38																		13.00	7.68	3	38.00	21.25	2.00	1.25 X 6.25	18.00	11.50
OP	40	NL, LR, MR, HR	A OR B	6-12	A OR B	6-12	16.00	0.250	22.00	21.00	2.25	14.00	2.00	1.75	84.00	6.00	8.00	4	13.00	7.76	DET. 4	40.00	21.25	2.00	1.25 X 6.25	18.00	10.50
	42																		13.00	7.48	DET. 4	42.00	21.25	2.00	1.25 X 6.25	18.00	10.50
	44																		13.00	7.20	DET. 4	44.00	21.25	2.00	1.25 X 6.25	18.00	10.50
	46																		14.00	7.92	DET. 4	46.00	21.25	2.00	1.25 X 6.25	18.00	11.25
	48																		14.00	7.64	DET. 4	48.00	21.25	2.00	1.25 X 6.25	18.00	11.25
	50																		14.50	7.86	DET. 4	50.00	21.25	2.00	1.25 X 6.25	18.00	11.75
	52																		14.00	7.08	DET. 4	52.00	23.25	2.50	1.50 X 7.50	19.50	11.75
OP	54	NL, LR, MR, HR	A OR B	6-12	A OR B	6-12	17.00	0.250	23.00	22.00	2.25	14.75	2.25	2.00	84.00	6.00	10.00	4	15.00	7.80	DET. 4	54.00	23.25	2.50	1.50 X 7.50	19.50	12.50
	56																		15.00	7.52	DET. 4	56.00	23.25	2.50	1.50 X 7.50	19.50	12.50
	58																		15.50	7.74	DET. 4	58.00	23.25	2.50	1.50 X 7.50	19.50	13.00
	60																		16.00	7.98	DET. 4	60.00	26.75	2.50	1.50 X 7.50	23.00	8.75
OP	62	NL, LR, MR, HR	A OR B	6-12	A OR B	6-12	20.00	0.250	28.00	27.00	2.25	14.25	2.25	2.00	84.00	6.00	10.00	4	16.50	8.20	DET. 4	62.00	26.75	2.50	1.50 X 7.50	23.00	9.25
	64																		17.00	8.42	DET. 4	64.00	26.75	2.50	1.50 X 7.50	23.00	9.50
	66																		17.50	8.64	DET. 4	66.00	26.75	2.50	1.50 X 7.50	23.00	9.75
	68																		18.50	9.36	DET. 4	68.00	26.75	2.50	1.50 X 7.50	23.00	10.50
	70																		18.50	9.08	DET. 4	70.00	26.75	2.50	1.50 X 7.50	23.00	10.50

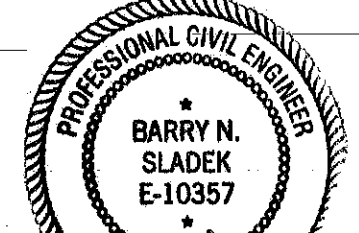
SEE TABLE 2

TABLE 2: ELEVATIONS

ELEVATIONS	TYPE			
	NO LUM (NL)	LOW RISE (LR)	MEDIUM RISE (MR)	HIGH RISE (HR)
LUMINAIRE MOUNTING HEIGHT	N/A	30'-0"	35'-0"	40'-0"
POLE LENGTH	19'-0"	27'-0"	32'-0"	37'-0"

TABLE 3: MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
ALL TAPERED SHAFTS	A595 GR. A OR A572	55
BASE PLATE	A572 GR. 50	50
SIMPLEX PLATE	A572 GR. 50	50
LUM ARM ATTACHMENT	A27 GR. 65-35 OR A36	35
LUMINAIRE ARM	ASTM A501, A513, A518 OR A500 GR. B	36
LUMINAIRE CONN. BOLTS	SAE GR. 5	---
ANCHOR BOLTS	F1554 GR. 55	55
GALVANIZING-STRUCTURES	A123	---
GALVANIZING-HARDWARE	HOT DIP ZINC	---



Barry N. Sladek 7/28/14

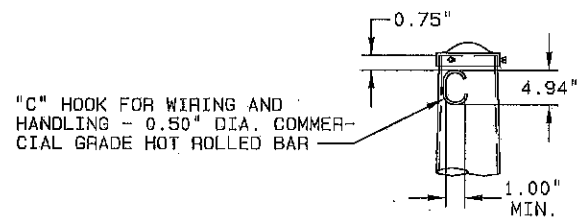
REV	DRAWN BY-DATE	CHECK BY-DATE	DESCRIPTION
B	JWK3 07/23/14		REVISED HANDHOLE SIZE
A	JWK3 05/23/14	BD4 05/28/14	ADDED EXTRA HH/ AB DETAIL/ WELD SEAM DETAIL
	JWK3 05/02/14	NKL 05/07/14	

TITLE CITY OF OVERLAND PARK, KANSAS
2013 AASHTO DESIGNS
TRAFFIC SIGNAL STRUCTURES

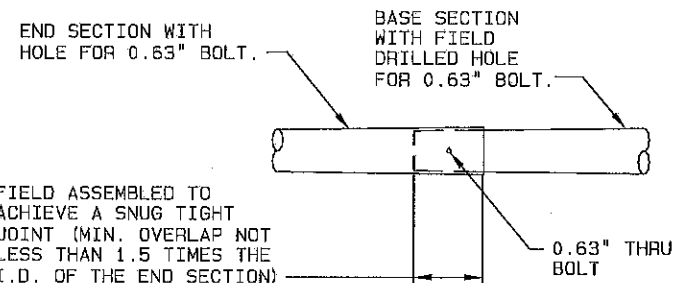
VALMONT INDUSTRIES, INC. RESERVES THE RIGHT TO INSTALL VARIOUS, ENGINEER APPROVED, MATERIAL HANGING ACCOMMODATIONS TO FACILITATE THE MANUFACTURING PROCESS.



PAGE NUMBER: 1 OF 2	REV
DRAWING NUMBER	DB01086
	B

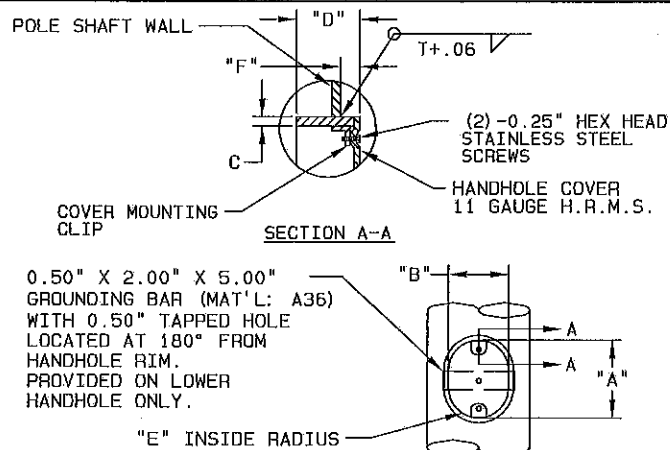


DETAIL 1 POLE TOP



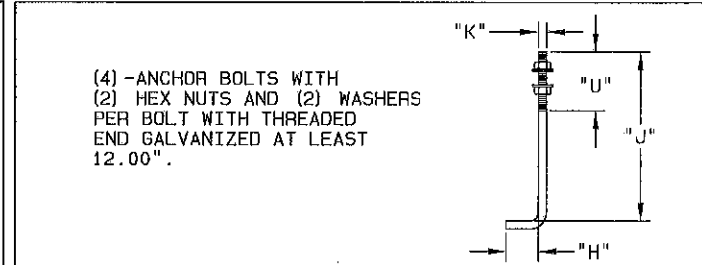
SPAN (FT)	BASE SECTION		END SECTION		GAUGE/THK. (IN)
	LENGTH (FT)	GAUGE/THK. (IN)	BASE DIA. (IN)	LENGTH (FT)	
40.00	19.29	0.313	11.00	23.15	7
42.00	19.29	0.313	11.00	25.15	7
44.00	19.29	0.313	11.00	27.15	7
46.00	26.43	0.313	11.00	22.01	7
48.00	26.43	0.313	11.00	24.01	7
50.00	15.97	0.313	13.00	36.72	7
52.00	19.42	0.375	12.00	35.15	7
54.00	19.54	0.375	13.00	37.15	7
56.00	19.54	0.375	13.00	39.15	7
58.00	23.11	0.375	13.00	37.58	7
60.00	19.75	0.375	14.00	43.07	0.188
62.00	19.83	0.375	14.50	45.05	0.188
64.00	19.92	0.375	15.00	47.02	0.188
66.00	27.00	0.375	14.50	41.88	0.188
68.00	27.08	0.375	15.50	43.93	0.188
70.00	27.08	0.375	15.50	45.93	0.188

DETAIL 4 40'-70' SIGNAL ARM SLIP JOINT

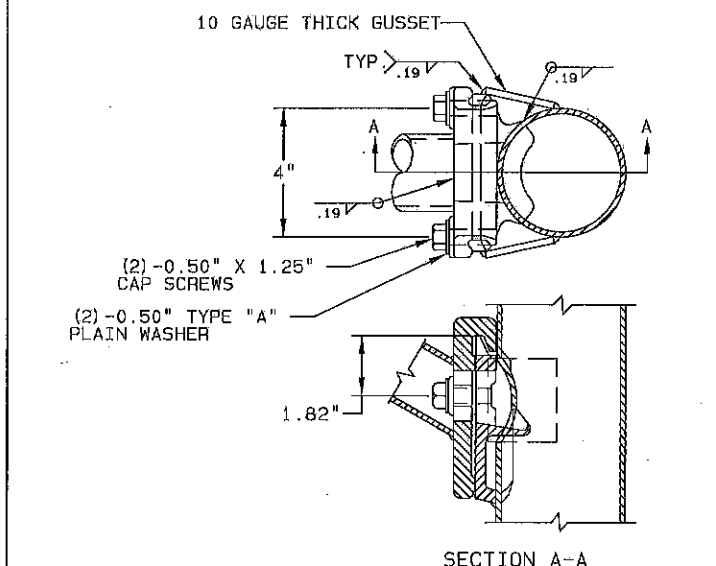


"A" I.D. (IN)	"B" I.D. (IN)	"C" THK (IN)	"D" DEPTH (IN)	"E" RADIUS (IN)	"F" PROJ (IN)
6.45	4.77	0.43	3.00	2.38	1.50

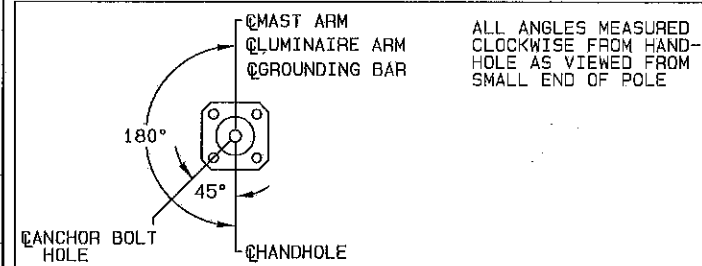
DETAIL 6 UPPER & LOWER HANDHOLE



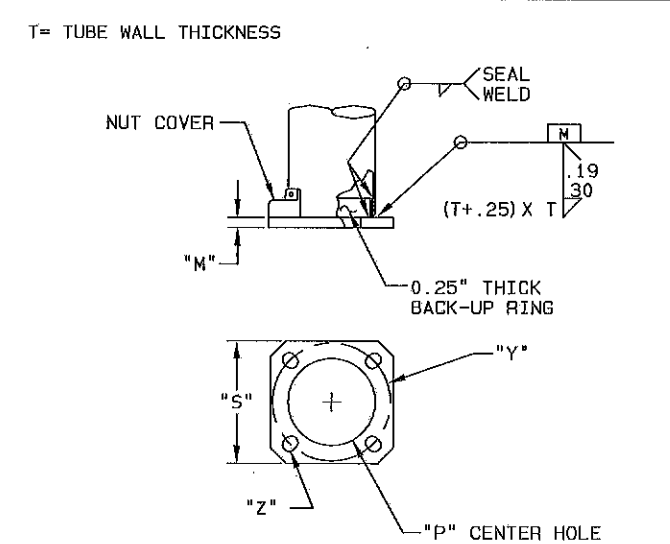
DETAIL 9 ANCHOR BOLT



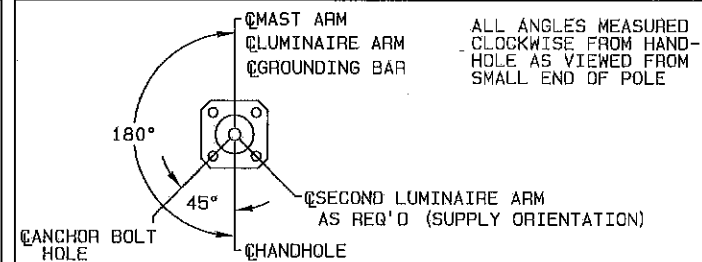
DETAIL 2 LUMINAIRE ARM ATTACHMENT



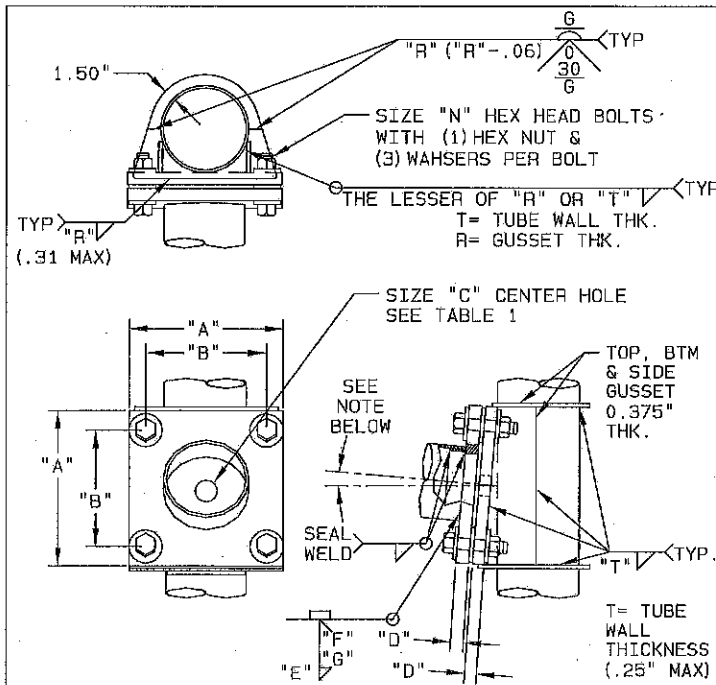
RADIAL INDEX - SINGLE LUMINAIRE



DETAIL 7 POLE BASE



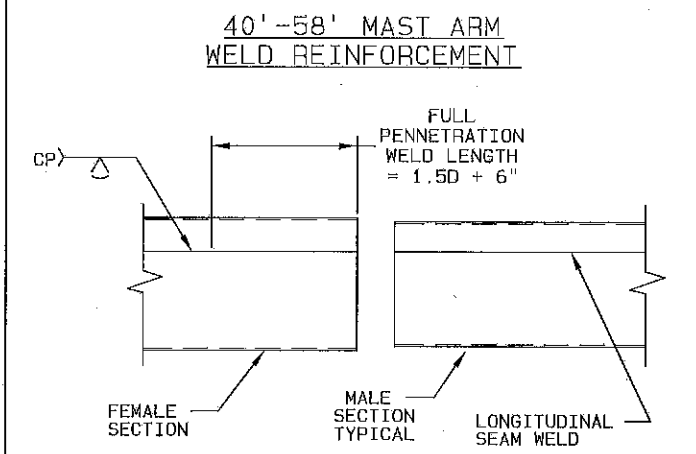
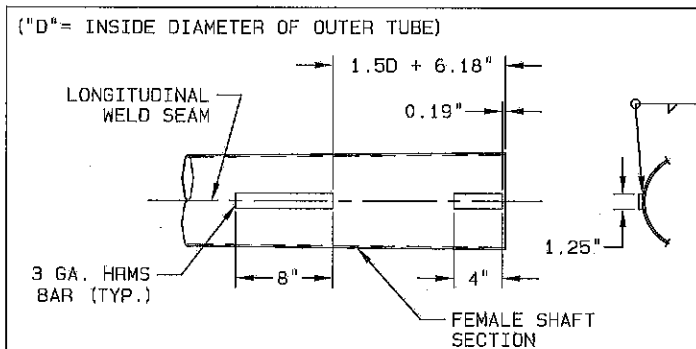
RADIAL INDEX - DOUBLE LUMINAIRE



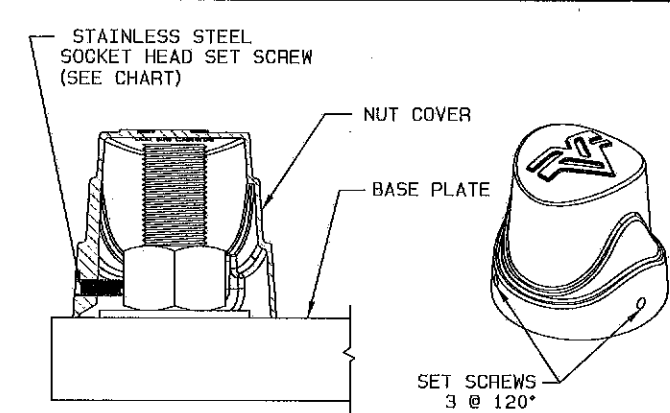
RISE NOTE:
RISE SHALL BE BUILT IN THE MOUNTING PLATE ATTACHED TO THE POLE. RISE IN MTG PLATES MAY VARY DEPENDED UPON POLE SIZE AND MAST ARM LOADING.

ARM SHAFT WALL THK.	ARM-TO-PLATE WELD "E"	BEVEL "F"X"G"
ALL	(ARM THK.+.25") X ARM THK.	.19" X 30°

DETAIL 3 SIGNAL ARM ATTACHMENT



DETAIL 5 MAST ARM WELD REINFORCEMENT



HARDWARE	
ANCHOR BOLT SIZE	SET SCREW SIZE
2.00"	0.38"-16UNC X 1.25"

DETAIL 8 NUT COVER 60'-70' SPAN

ALTHOUGH RARE, VIBRATIONS SEVERE ENOUGH TO CAUSE DAMAGE CAN OCCASIONALLY OCCUR IN STRUCTURES OF ALL TYPES. BECAUSE THEY ARE INFLUENCED BY MANY INTERACTING VARIABLES, VIBRATIONS ARE GENERALLY UNPREDICTABLE. THE USER'S MAINTENANCE PROGRAM SHOULD INCLUDE OBSERVATION FOR EXCESSIVE VIBRATION AND EXAMINATION FOR ANY STRUCTURAL DAMAGE OR BOLT LOOSENING. THE VALMONT WARRANTY SPECIFICALLY EXCLUDES FATIGUE FAILURE OR SIMILAR PHENOMENA RESULTING FROM INDUCED VIBRATION, HARMONIC OSCILLATION OR RESONANCE ASSOCIATED WITH MOVEMENT OF AIR CURRENTS AROUND THE PRODUCT.

VIBRATION DISCLAIMER



Barry N. Sladek
7/28/14

TITLE CITY OF OVERLAND PARK, KANSAS
2013 AASHTO DESIGNS
TRAFFIC SIGNAL STRUCTURES

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

valmont
Valley, NE 68064
(402) 359-2201

PAGE NUMBER: 2 OF 2
DRAWING NUMBER DB01086
REV B