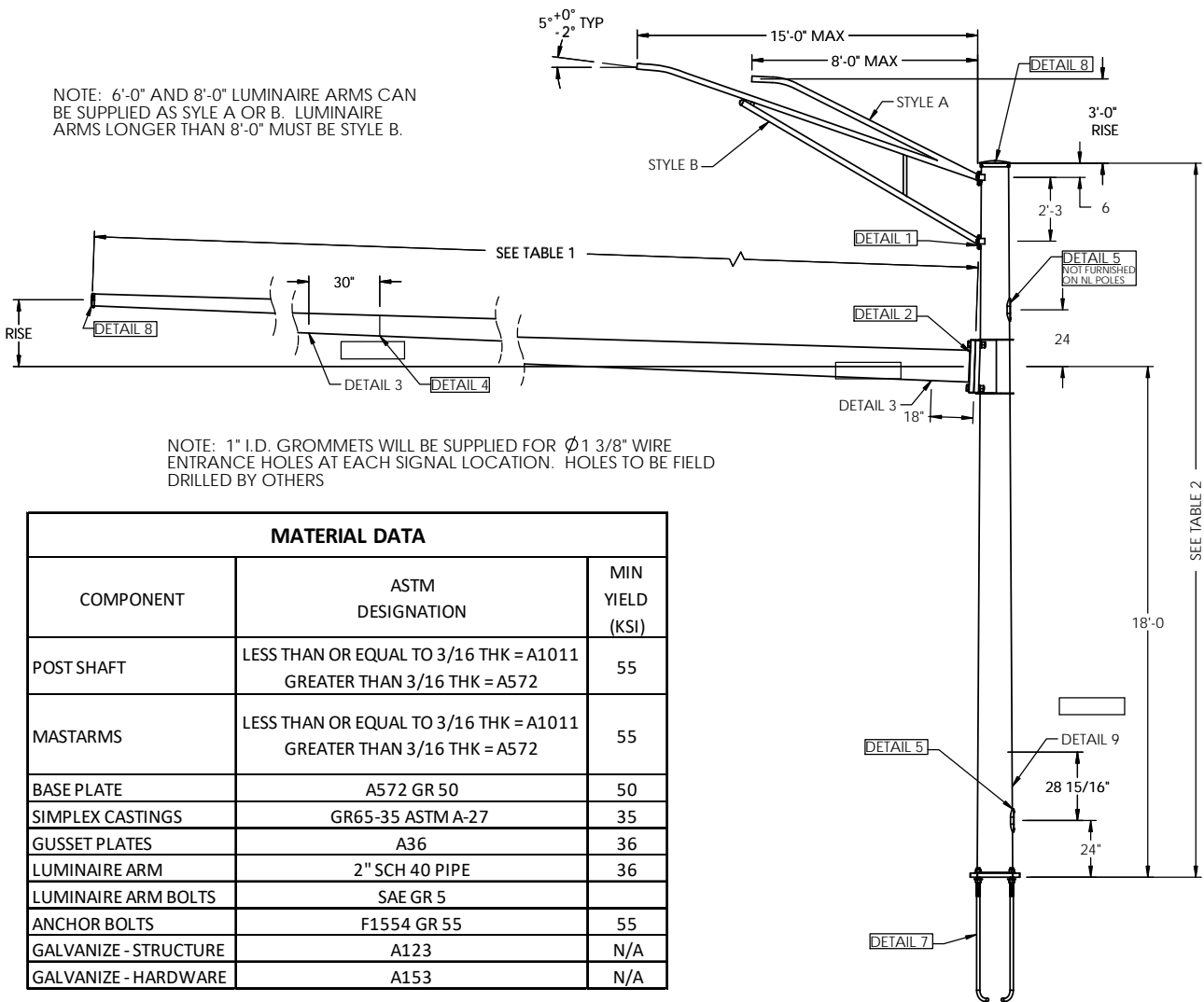


NOTE: 6'-0" AND 8'-0" LUMINAIRE ARMS CAN BE SUPPLIED AS STYLE A OR B. LUMINAIRE ARMS LONGER THAN 8'-0" MUST BE STYLE B.



MATERIAL DATA		
COMPONENT	ASTM DESIGNATION	MIN YIELD (KSI)
POST SHAFT	LESS THAN OR EQUAL TO 3/16 THK = A1011 GREATER THAN 3/16 THK = A572	55
MASTARMS	LESS THAN OR EQUAL TO 3/16 THK = A1011 GREATER THAN 3/16 THK = A572	55
BASE PLATE	A572 GR 50	50
SIMPLEX CASTINGS	GR65-35 ASTM A-27	35
GUSSET PLATES	A36	36
LUMINAIRE ARM	2" SCH 40 PIPE	36
LUMINAIRE ARM BOLTS	SAE GR 5	
ANCHOR BOLTS	F1554 GR 55	55
GALVANIZE - STRUCTURE	A123	N/A
GALVANIZE - HARDWARE	A153	N/A

NOTE:

- THE MASTARM TRAFFIC STRUCTURES SHOWN ON THIS DRAWING HAVE BEEN DESIGNED IN ACCORDANCE WITH THE LOADING AND THE ALLOWABLE STRESS REQUIREMENTS OF THE 2013 ASHTO "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 50 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

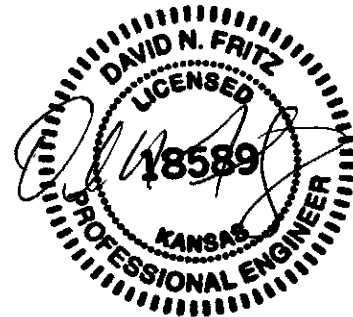
- WELD PENETRATION - SHAFT TO BE ROUND TAPERED TUBE FABRICATED WITH ONE SUBMERGED ARC LONGITUDINAL SEAM WELD WITH 100% COMPLETE JOINT PENETRATION (CJP) WELD 6" FROM CIRCUMFRENENTIAL WELD AND 60% FOR REMAINDER. GAS METAL ARC WELDING PROCESS TO BE USED FOR REMAINDER OF WELDED FABRICATION WITH 100% COMPLETE JOINT PENETRATION (CJP) CIRCUMFRENENTIAL WELD FOR SHAFT TO BASE PLATE.

- WELD TESTING:
  - 100% OF ALL WELDS VISUAL TESTED (VT)
  - 100% OF ALL COMPLETE JOINT PENETRATION (CJP) WELDS ULTRASONIC TESTED (UT)
  - A RANDOM 30% OF ALL FILLET WELDS & PARTIAL JOINT PENETRATION (PJP) LONGITUDINAL SEAM WELDS MAGNETIC PARTICLE TESTED (MT)

- WELDING PER AWS D1.1 LATEST EDITION

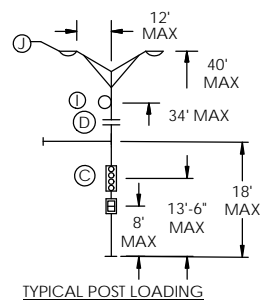
- FOR MASTARMS USING SECTION DESIGN (NOMINALLY >50'), THE OVERLAP WILL BE AT LEAST 150% OF THE MAXIMUM DIAMETER OF THE OVERLAPPING SECTION (NOMINALLY 2'-0" OVERLAP). SECTIONS WILL BE "DRY" FIT IN FACTORY TO ENSURE MINIMUM OVERLAP IS ACHIEVED.

- VIBRATION DISCLAIMER: 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.

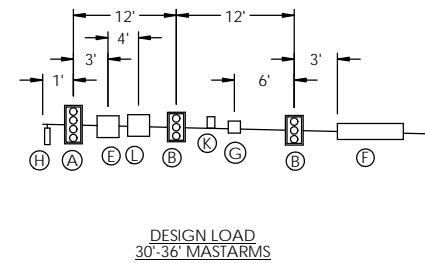


9/30/22

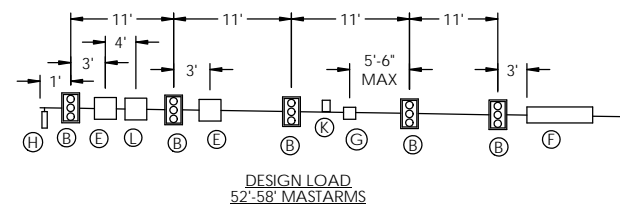
DESIGN LOAD CHART			
DEVICE	DESCRIPTION	PROJ AREA (SQ FT)	WEIGHT (LBS)
(A)	12"-4 SEC. SIGNAL HEAD W/BACK PLATES	12.00	54
(B)	12"-3 SEC. SIGNAL HEAD W/BACK PLATES	10.00	42
(C)	12"-4 SEC. SIGNAL HEAD W/NO BACK PLATES	6.00	40
(D)	16"x18" 1-SEC PEDESTRIAN SIGNAL	3.00	20
(E)	36"x36" FLATSHEET ALUMINUM SIGN (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



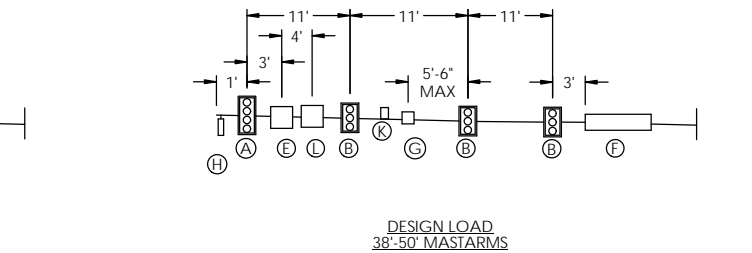
TYPICAL POST LOADING



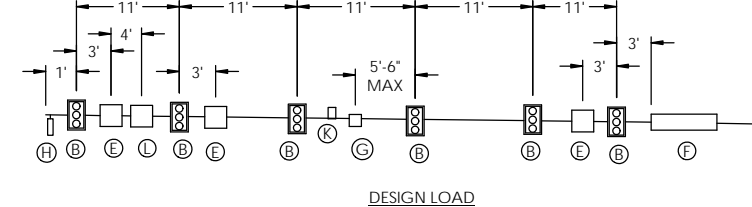
DESIGN LOAD 30'-36' MASTARMS



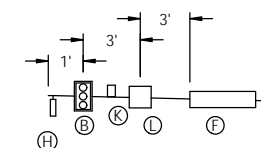
DESIGN LOAD 52'-58' MASTARMS



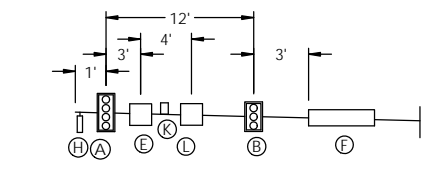
DESIGN LOAD 38'-50' MASTARMS



DESIGN LOAD 60'-70' MASTARMS



DESIGN LOAD 20' MASTARMS



DESIGN LOAD 22'-28' MASTARMS

REVISIONS			
REV.	DESCRIPTION	DATE	DRAFTER
A	MULTIPLE CHANGES ON ALL 3 SHEETS PER SUTOMER REQUEST	10/3/2014	RLK
B	UPDATED SHEET 3 CHART LUM SIZES AND ADDED 19'6" POLE TO CHART FOR ARMS 52'0" AND GREATER	9/15/2016	JA
C	REMOVED NUT COVERS (DETAIL 6)	2/28/2017	RK
D	NOT WAS 1 WAS RECURRENCE INTERVAL OF 25 YEARS	9/15/2022	RK

- NOTES:
- REV 11-03-14 ADDED ID TAGS TO POST AND MASTARM.
  - REV 7-30-15 ADDED 55'-0" ARM TO TABLE. (JEFF A)
  - REV 2-28-17: REMOVED NUT COVERS (DETAIL 6) REBEKAH

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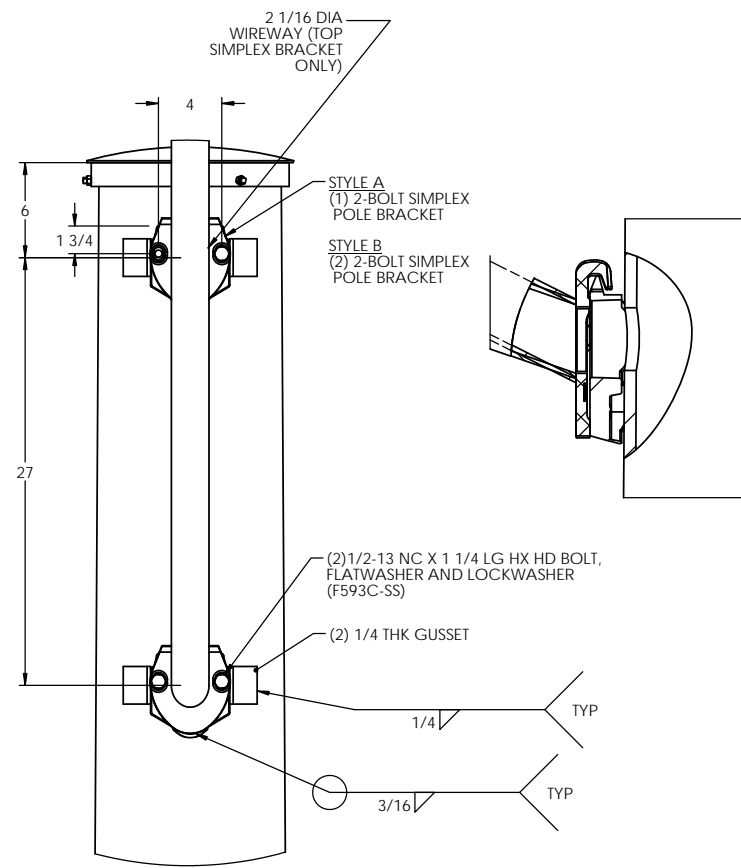
PROJECT: **MILLERBERND** 622 6TH ST. SO. WINSTED, MN 55395

DWN: REBEKAH DATE: 07-29-14

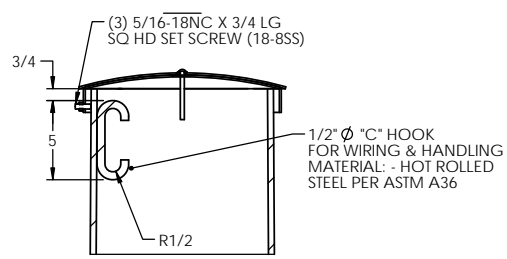
CHK BY: DOUG F. DATE: 8/1/14

DESCRIPTION: ROUND TRAFFIC SIGNAL STANDARD OVERLAND PARK, KS 2013 AASHTO

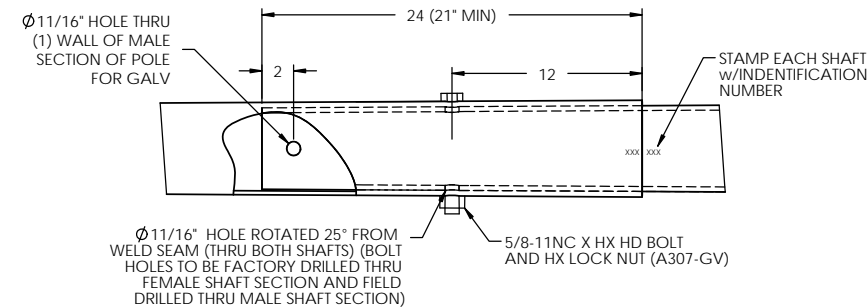
WEIGHT: SCALE: NTS SHT-SIZE: B DRWG NO.: 780B1885 SHEET: 1 OF 3 REV LEVEL: D



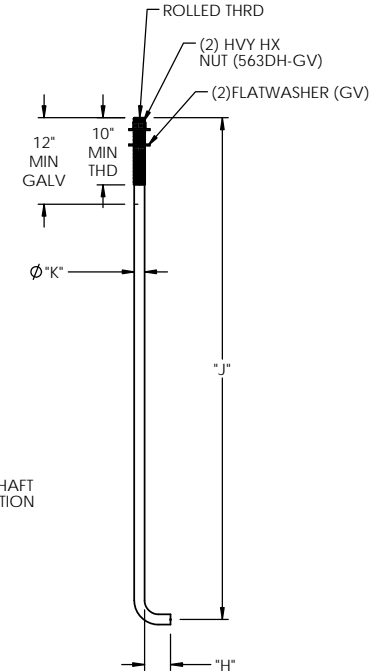
DETAIL 1 - LUMINAIRE ARM ATTACHMENT



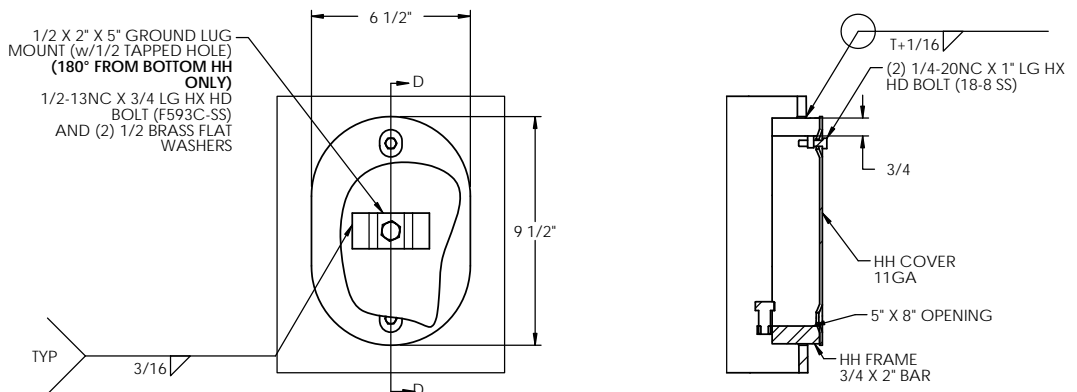
DETAIL 8 - END CAPS & POLE TOP



DETAIL 4 - MASTARM SPLICE

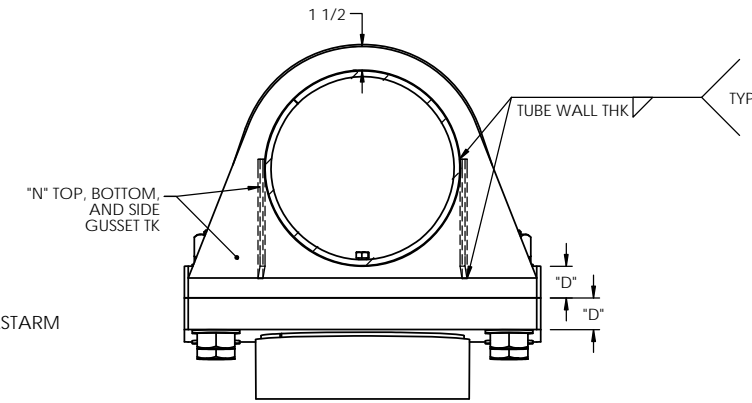


DETAIL 7 - ANCHOR BOLT DETAIL



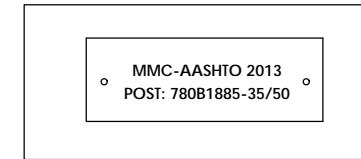
DETAIL 5 - M34 (5 X 8) HANDHOLE

SECTION D-D

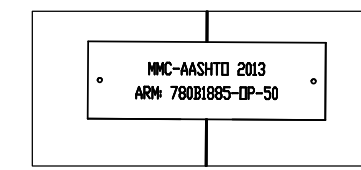


SECTION C-C

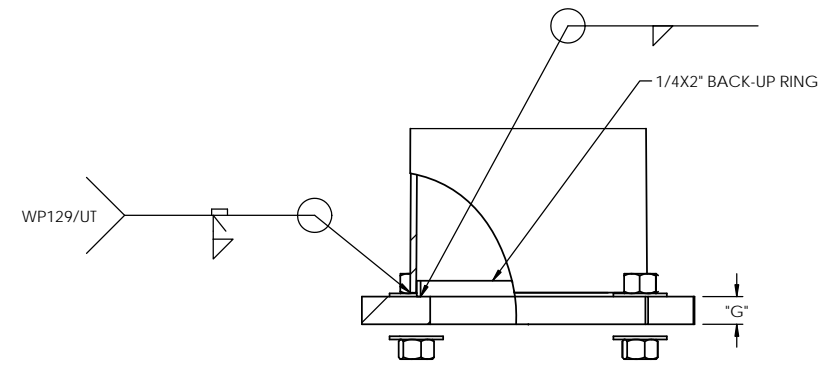
NOTE: T = TUBE WALL THK FOR POST AND MASTARM



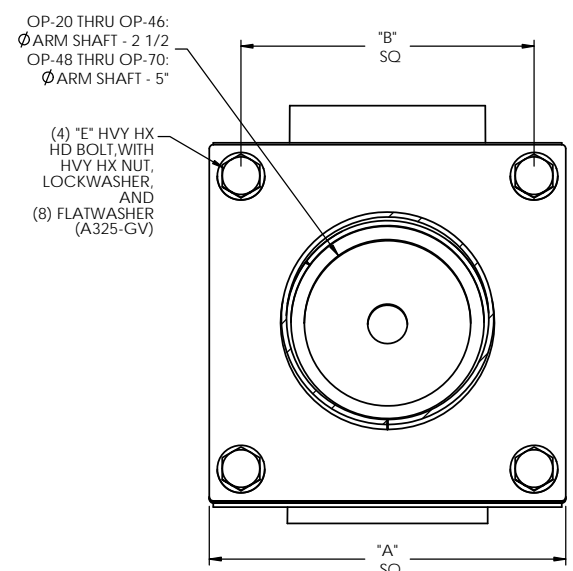
DETAIL 9 - POST ID TAG EXAMPLE DETAIL



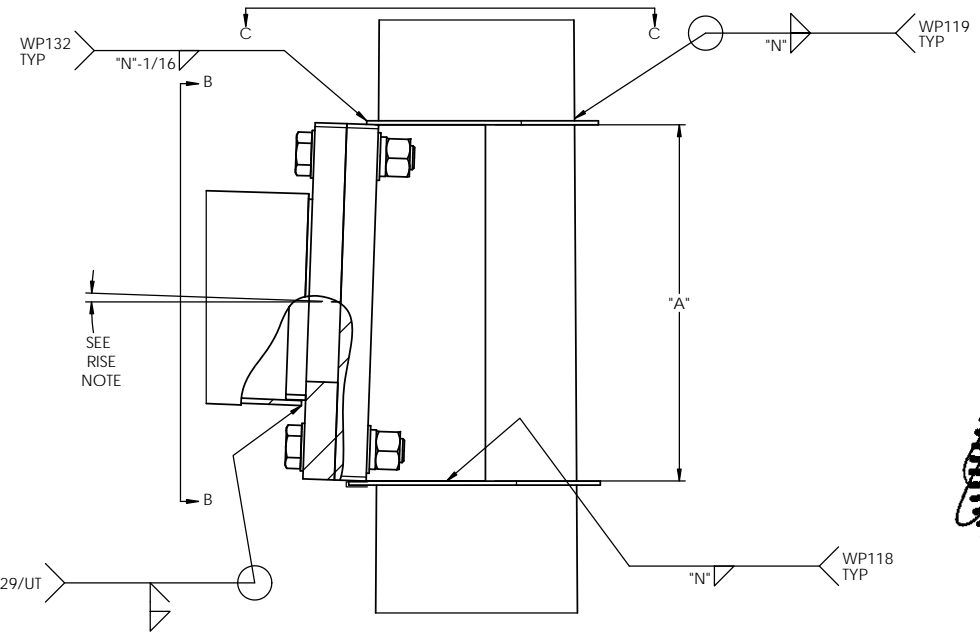
DETAIL 3 - MASTARM ID TAG EXAMPLE DETAIL



DETAIL 6 - POST BASE AND ATTACHMENT

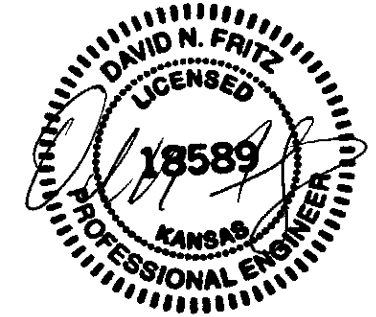


SECTION B-B



DETAIL 2 - MASTARM ATTACHMENT

RISE NOTE: RISE SHALL BE BUILT INTO THE MOUNTING PLATE ATTACHED TO THE POST. RISE IN MTG PLATES MAY VARY DEPENDING ON POLE SIZE AND MASTARM LOADING.



9/30/22

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PROJECT:		<b>MILLERBERND</b> 622 6TH ST. SO. WINSTED, MN 55395			
DWN: REBEKAH	DATE: 07-29-14				
CHK BY: DOUG F.	DATE: 8/1/14	DESCRIPTION: ROUND TRAFFIC SIGNAL STANDARD OVERLAND PARK, KS 2013 AASHTO			
MATERIAL:		DRWG NO.: 780B1885			
WEIGHT:	SCALE: NTS	SHT-SIZE: B	SHEET: 2 OF 3	REV LEVEL: D	

TABLE 1: POST AND SIGNAL MASTARM

SIGNAL MASTARM SPAN (FT)	DESIGNATION KEY					POST DATA			BASE PLATE			ANCHOR BOLT			SIGNAL MASTARM DATA					SIGNAL MASTARM ATTACHMENT				
	TYPE	LUMINAIRE ARM (IF ANY)				BASE DIA. (IN)	WALL THK (IN)	LENGTH	"C" SQ (IN)	"F" BOLT CIRCLE (IN)	"G" THK (IN)	"K" DIA (IN)	"J" LENGTH (IN)	"H" HOOK (IN)	SPAN LENGTH	FIXED END DIA (IN)	FREE END DIA (IN)	WALL THK (IN)	LENGTH (FT)	"A" SQ (IN)	"D" THK (IN)	"E" BOLT SIZE	"B" BOLT CTRS (IN)	"N" GUSSET THK (IN)
		ARM 1 STYLE	ARM 1 SPAN (FT)	ARM 2 STYLE	ARM 2 SPAN (FT)																			
20	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	12	3/16	17	16	2	1 1/2	54	6	20'-0"	8.0	5.20	3/16	20	17 1/4	2	1 1/4-7NC	14	1/4	
22	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	12.5	3/16	17 1/2	16 1/2	2	1 1/2	54	6	22'-0"	9.0	5.92	3/16	22	17 3/4	2	1 1/4-7NC	14 1/2	1/4	
24	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	12.5	3/16	17 1/2	16 1/2	2	1 1/2	54	6	24'-0"	9.0	5.64	3/16	24	17 3/4	2	1 1/4-7NC	14 1/2	1/4	
26	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	12.5	3/16	17 1/2	16 1/2	2	1 1/2	54	6	26'-0"	9.0	5.36	3/16	26	17 3/4	2	1 1/4-7NC	14 1/2	1/4	
28	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	12.5	3/16	17 1/2	16 1/2	2	1 1/2	54	6	28'-0"	9.0	5.08	3/16	28	17 3/4	2	1 1/4-7NC	14 1/2	1/4	
30	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	13	1/4	18 1/2	17 1/2	2	1 3/4	84	6	30'-0"	9.5	5.30	3/16	30	18 1/4	2	1 1/4-7NC	15	1/4	
32	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	13	1/4	18 1/2	17 1/2	2	1 3/4	84	6	32'-0"	10.5	6.02	3/16	32	18 1/4	2	1 1/4-7NC	15	1/4	
34	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	13	1/4	18 1/2	17 1/2	2	1 3/4	84	6	34'-0"	10.5	5.74	3/16	34	18 1/4	2	1 1/4-7NC	15	1/4	
36	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	13	1/4	18 1/2	17 1/2	2	1 3/4	84	6	36'-0"	11.0	5.96	3/16	36	18 1/4	2	1 1/4-7NC	15	5/16	
38	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	16	1/4	22	21	2 1/4	1 3/4	84	6	38'-0"	14.5	9.18	3/16	38	21 1/4	2	1 1/4-7NC	18	5/16	
40	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	16	1/4	22	21	2 1/4	1 3/4	84	6	40'-0"	13.0	7.40	1/4	40	21 1/4	2	1 1/4-7NC	18	5/16	
42	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	16	1/4	22	21	2 1/4	1 3/4	84	6	42'-0"	14.0	8.12	1/4	42	21 1/4	2	1 1/4-7NC	18	5/16	
44	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	16	1/4	22	21	2 1/4	1 3/4	84	6	44'-0"	14.5	8.34	1/4	44	21 1/4	2	1 1/4-7NC	18	5/16	
46	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	16	1/4	22	21	2 1/4	1 3/4	84	6	46'-0"	14.5	8.06	1/4	46	21 1/4	2	1 1/4-7NC	18	5/16	
48	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	16	1/4	22	21	2 1/4	1 3/4	84	6	48'-0"	14.5	7.78	5/16	48	21 1/4	2	1 1/4-7NC	18	5/16	
50	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	16	1/4	22	21	2 1/4	1 3/4	84	6	50'-0"	14.5	7.50	5/16	50	21 1/4	2	1 1/4-7NC	18	5/16	
52	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	17	1/4	23	22	2 1/4	2	84	6	52'-0"	15.0	10.8	5/16	30	23 1/4	2 1/2	1 1/2-6NC	19 1/2	5/16	
54	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	17	1/4	23	22	2 1/4	2	84	6	54'-0"	15.0	10.8	3/8	30	23 1/4	2 1/2	1 1/2-6NC	19 1/2	5/16	
55	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	17	1/4	23	22	2 1/4	2	84	6	55'-0"	15.0	10.8	3/8	30	23 1/4	2 1/2	1 1/2-6NC	19 1/2	5/16	
56	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	17	1/4	23	22	2 1/4	2	84	6	56'-0"	15.0	10.8	3/8	30	23 1/4	2 1/2	1 1/2-6NC	19 1/2	5/16	
58	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	17	1/4	23	22	2 1/4	2	84	6	58'-0"	15.5	11.3	3/8	30	23 1/4	2 1/2	1 1/2-6NC	19 1/2	5/16	
60	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	20	1/4	28	27	2 1/4	2	84	6	60'-0"	16.0	11.8	3/8	30	26 3/4	2 1/2	1 1/2-6NC	23	5/16	
62	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	20	1/4	28	27	2 1/4	2	84	6	62'-0"	16.5	12.3	3/8	30	26 3/4	2 1/2	1 1/2-6NC	23	5/16	
64	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	20	1/4	28	27	2 1/4	2	84	6	64'-0"	17.0	12.8	3/8	30	26 3/4	2 1/2	1 1/2-6NC	23	5/16	
66	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	20	1/4	28	27	2 1/4	2	84	6	66'-0"	17.5	13.3	3/8	30	26 3/4	2 1/2	1 1/2-6NC	23	5/16	
68	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	20	1/4	28	27	2 1/4	2	84	6	68'-0"	18.5	14.3	3/8	30	26 3/4	2 1/2	1 1/2-6NC	23	5/16	
70	NL, LR, MR, HR	A OR B	6-15	A OR B	6-15	20	1/4	28	27	2 1/4	2	84	6	70'-0"	18.5	14.3	3/8	30	26 3/4	2 1/2	1 1/2-6NC	23	5/16	

SEE TABLE 2

TABLE 2: ELEVATIONS		
POLE ELEV. TYPE	LUM. MTG HEIGHT	POLE SHAFT LENGTH
NO LUMINAIRE (NL)	----	19'-0"
NO LUM (NL) FOR 52'0" & GREATER ARMS	----	19'-6"
LOW RISE (LR)	30'-0"	27'-0"
MEDIUM RISE (MR)	35'-0"	32'-0"
HIGH RISE (HR)	40'-0"	37'-0"



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PROJECT: \_\_\_\_\_

DWN: REBEKAH DATE: 07-29-14

CHK BY: DOUG F. DATE: 8/1/14

MATERIAL: \_\_\_\_\_

WEIGHT: \_\_\_\_\_ SCALE: NTS SHT-SIZE: B

DRWG NO.: 780B1885 SHEET: 3 OF 3 REV LEVEL: D

DESCRIPTION: ROUND TRAFFIC SIGNAL STANDARD OVERLAND PARK, KS 2013 AASHTO

MILLERBERND 622 6TH ST. SO. WINSTED, MN 55395