

DESIGN CRITERIA
 2009 EDITION AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 130 MPH WIND, FATIGUE CAT 2, NATURAL WIND GUST ONLY

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

MATERIAL SPECIFICATIONS
 1. POST & MASTARM SHAFT(S) PER ASTM A572 OR A1011 55,000 PSI MIN YIELD
 2. BASE PLATE, MOUNTING PLATES AND HANDHOLE FRAMES 36,000 PSI MIN YIELD PER ASTM A36.
 3. STRUCTURE FINISH GALVANIZED PER ASTM A123
 4. HARDWARE FINISH GALVANIZED PER ASTM A153
 5. ARM MOUNTING BOLTS PER ASTM A325

ANCHOR BOLT SPECIFICATIONS
 1. ANCHOR BOLT MATERIAL- HIGH STRENGTH STEEL ROD 55,000 PSI MIN YIELD PER AASHTO M314/F1554 GRADE 55
 2. ANCHOR BOLTS HOT DIP GALVANIZED PER ASTM A153.
 3. THREAD TO BE CLASS 2A PER AMERICAN STD. B 1.1 .030 OVER SIZE AFTER GALVANIZING
 4. ALL BOLTS ROLLED THREAD
 5. GALVANIZED HEAVY HEX NUTS .030 OVER SIZE (A194GV) PER ASTM A194 GR 2H
 6. NO WELDING IS ALLOWED ON ANCHOR BOLTS
 7. GALVANIZED FLAT WASHERS PER ASTM F436
 8. GALVANIZED LOCK WASHER PER ASME B18.21.1
 9. THE END OF ANCHOR BOLT TO PROJECT FROM CONCRETE PAINTED YELLOW

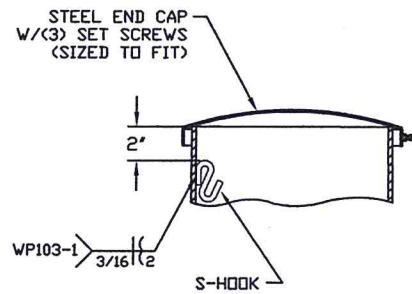
SHIPPING
 ALL HARDWARE TO BE PACKAGED ON A PER POLE BASIS. HH COVERS, PLUGS FOR BOSSES, GROUND LUG AND POLE CAPS TO BE INSTALLED AND SECURELY WRAPPED.

QTY LESS LUM ARM	SIGNAL MASTARM							SIGNAL POST				MILLERBERND PART NO W/O LUMINAIRE ARM	QTY WITH LUM ARM	LUMINAIRE EXTENSION			"E" LUM ARM LG	MILLERBERND PART NO WITH LUMINAIRE ARM (8, 10, 12 OR 15)
	"A" MASTARM LENGTH	BASE DIA	END DIA	THK & SHAFT SIZES (S)	"B" MASTARM BOLT QTY & SIZE	MFG RISE ANGLE	"C" POST HT	BASE DIA	TOP DIA	THK	"D" LUM EXT LENGTH FROM POST			BASE DIA	TOP DIA	THK		
	20'-0"	8.0	5.2	3/16 X 8.0 X 5.2 X 20'-0"	(6) 1 1/4-7NC X 4 1/2 LG	2°	21'-0"	13.0	10.06	1/4	RB3HEA-S20C8-200-LA		5'-9"	10.00	9.20	11 GA	RB3HEA-S20C8-200/300-JC"E"-LA	
	25'-0"	10.0	6.5	3/16 X 10.0 X 6.5 X 25'-0"	(6) 1 1/4-7NC X 4 1/2 LG	2°	21'-0"	13.0	10.06	1/4	RB3HEA-S25C0-200-LA		5'-9"	10.00	9.20	11 GA	RB3HEA-S25C0-200/300-JC"E"-LA	
	30'-0"	11.5	7.3	3/16 X 11.5 X 7.3 X 30'-0"	(6) 1 1/4-7NC X 5" LG	2°	21'-0"	13.5	10.56	1/4	RB35HEA-S30C15-200-LA		5'-9"	10.00	9.20	11 GA	RB35HEA-S30C15-200/300-JC"E"-LA	
	35'-0"	12.0	7.1	1/4 X 12.0 X 7.1 X 35'-0"	(6) 1 1/4-7NC X 5" LG	2°	21'-0"	14.0	11.06	1/4	RB4HEA-S35D2-200-LA		5'-9"	10.00	9.20	11 GA	RB4HEA-S35D2-200/300-JC"E"-LA	
	40'-0"	12.5	6.9	1/4 X 12.5 X 6.9 X 40'-0"	(6) 1 1/4-7NC X 5 1/2 LG	2.5°	21'-0"	15.5	12.56	1/4	RB55HEA-S40D25-200-LA		5'-9"	10.00	9.20	11 GA	RB55HEA-S40D25-200/300-JC"E"-LA	
	45'-0"	14.0	7.7	1/4 X 14.0 X 7.7 X 45'-0"	(6) 1 1/4-7NC X 5 1/2 LG	2.5°	22'-0"	17.0	13.92	1/4	RB7HEA-S45D4-200-LA		4'-9"	10.00	9.34	11 GA	RB7HEA-S45D4-200/300-JC"E"-LA	
	50'-0"	14.0	7.6	5/16 X 14.0 X 11.9 X 15'-0" 3/16 X 12.81 X 7.63 X 37'-0"	(6) 1 1/4-7NC X 6" LG	2.5°	22'-0"	17.0	13.92	5/16	RD7HEA-S50EC4-200-LA		4'-9"	10.00	9.34	11 GA	RD7HEA-S50C4-200/300-JC"E"-LA	
	55'-0"	15.0	7.93	5/16 X 15.0 X 12.2 X 20'-0" 3/16 X 13.11 X 7.93 X 37'-0"	(6) 1 1/2-6NC X 6 1/2 LG	2.5°	22'-0"	18.0	14.92	5/16	RD8HEA-S55EC5-200-LA		4'-9"	10.00	9.34	18 GA	RD8HEA-S55EC5-200/300-JC"E"-LA	

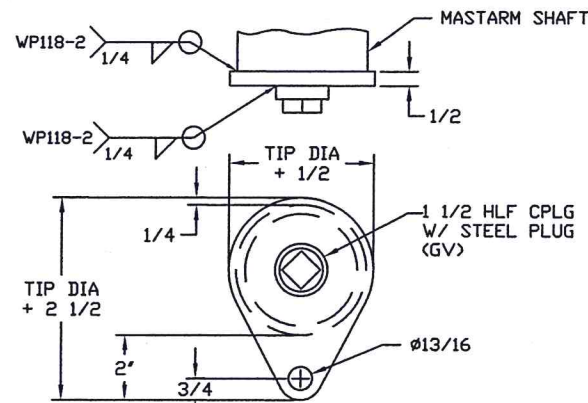
RUSSELL K. TEAL
 Reg. No. 01700
 REGISTERED
 PROFESSIONAL ENGINEER
 CIVIL ENGINEERING
 4/26/14

REV 4-17-14 UPDATED SIZING PER REVISED CALCS
 REV 12-2-13 UPDATED DETAILS 6,10 & 12 PER LADDT COMMENTS
 REV 1-16-13 UPDATED SIZING PER REVISED CALCS
 REV 1-4-13 UPDATED PER LADDT SPEC DATED 11-19-12

DWN: DOUG F.	ROUND TRAFFIC SIGNAL STANDARD 20' TO 55' MASTARM WITH 20' MTG HT & OPTIONAL (8',10',12' OR 15') LUMINAIRE ARM AT 30' MT HT LA/DOT	Millerbernd MANUFACTURING CO. WINSTED, MN	780B810 SH 1 OF 2
DATE: 9-6-11			
CHK: FLOYD F.			
SCALE: NTS			

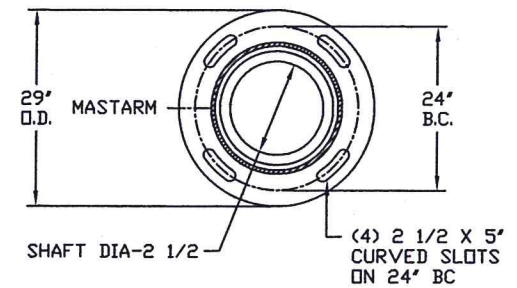
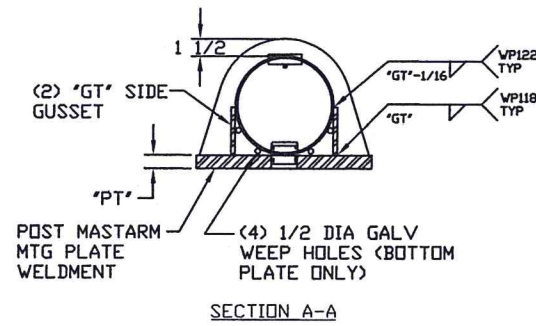


DETAIL 1 END CAP

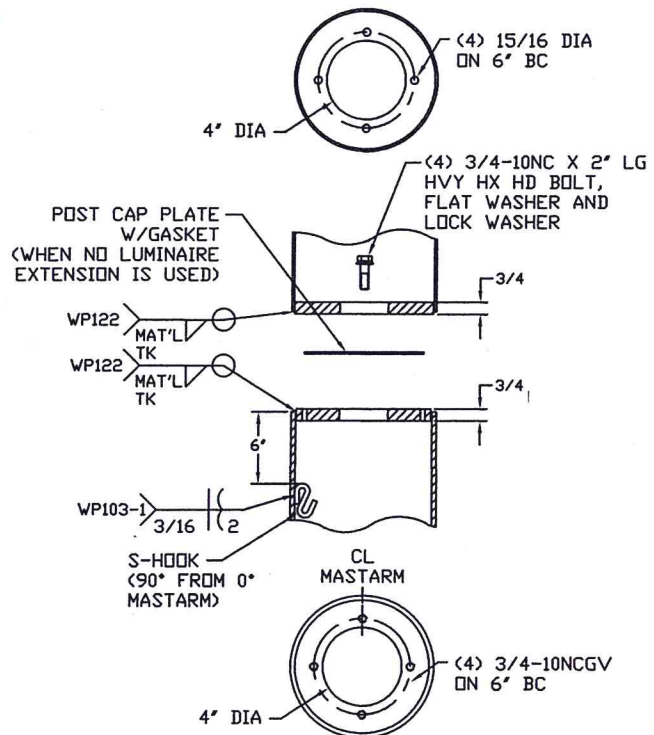


DETAIL 4 MASTARM END PLATE

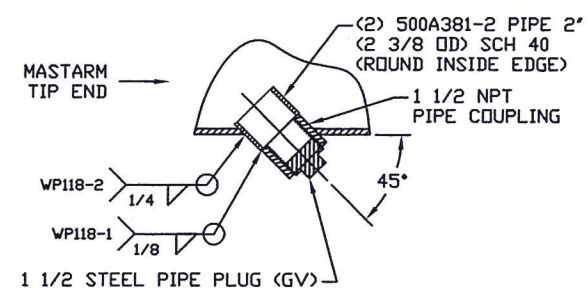
ARM LG	*PS* SQ	*PT* TK	*HC* CTRS	*HD* DIA	*GT* TK	*VC* CTRS
20'	17"	1 1/4"	14"	1 7/16"	5/16"	7"
25'	17"	1 1/4"	14"	1 7/16"	5/16"	7"
30'	18"	1 1/2"	14 1/2"	1 7/16"	5/16"	7 1/4"
35'	18 1/2"	1 1/2"	15"	1 7/16"	5/16"	7 1/2"
40'	20"	1 3/4"	16 1/2"	1 7/16"	5/16"	8 1/4"
45'	21"	1 3/4"	18"	1 7/16"	5/16"	9"
50'	22"	2"	19"	1 7/16"	3/8"	9 1/2"
55'	24"	2"	20"	1 11/16"	3/8"	10"



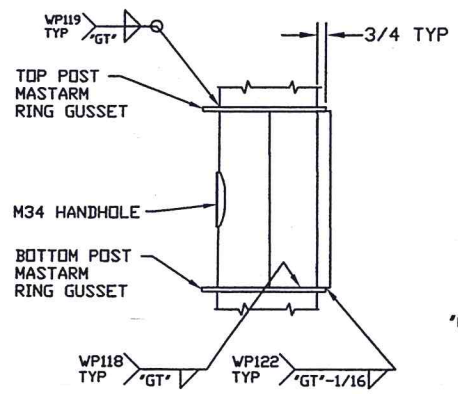
DETAIL 10 POST BASE PLATE



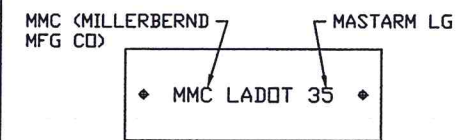
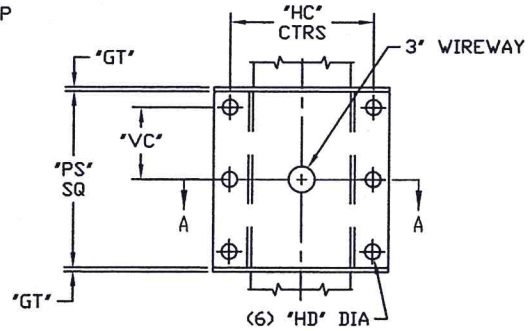
DETAIL 3 POST TOP AND LUMINAIRE EXTENSION ATTACHMENT



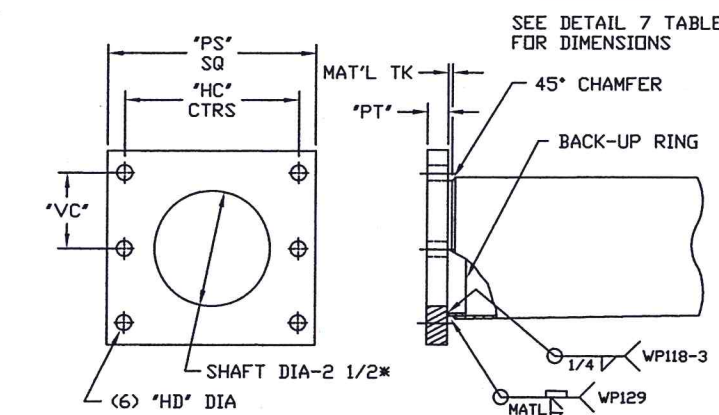
DETAIL 5 SIGNAL HEAD COUPLING



DETAIL 7 POST MASTARM MOUNTING PLATE

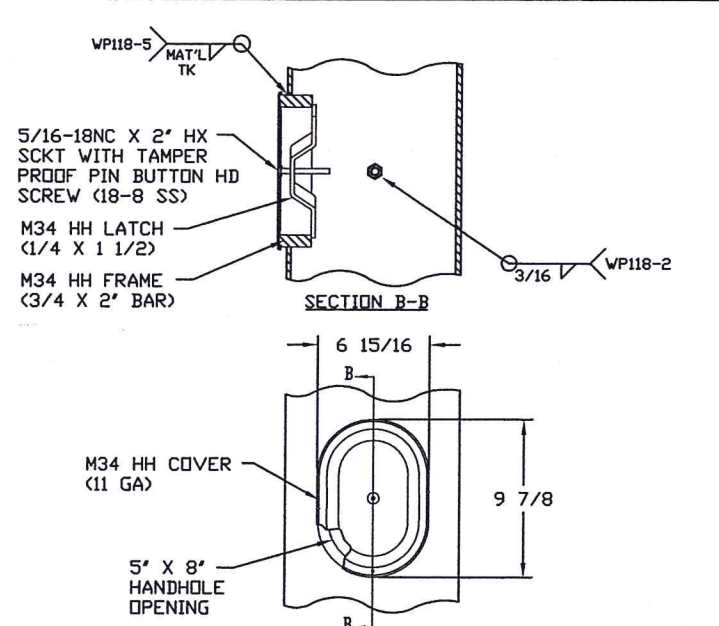


DETAIL 11 IDENTIFICATION TAGS

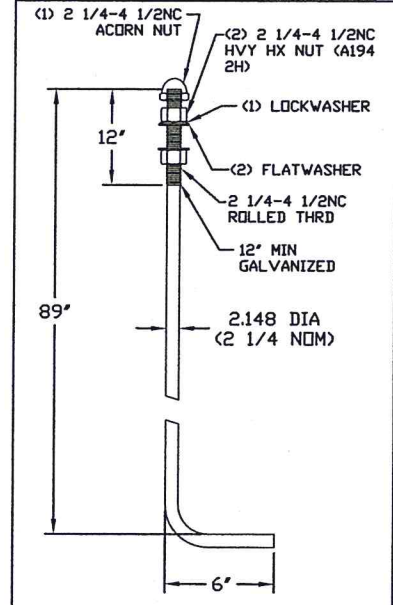


DETAIL 6 MASTARM MOUNTING PLATE

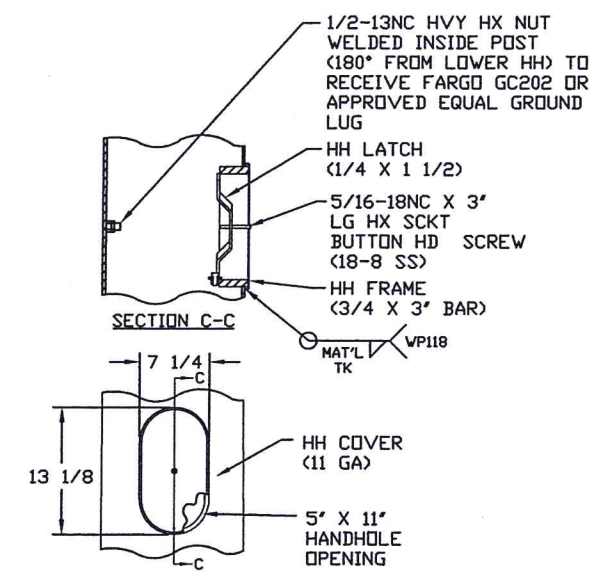
* EXAMPLE: OPENING BASED ON SMALLEST ARM (20') 8" MASTARM SHAFT DIA - 2 1/2 = 5 1/2



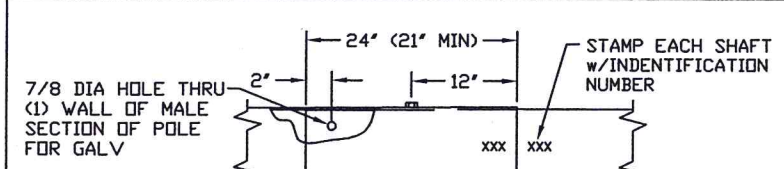
DETAIL 8 M34 HANDHOLE (5X8)



DETAIL 12 ANCHOR BOLT



DETAIL 9 6' X 12' HANDHOLE



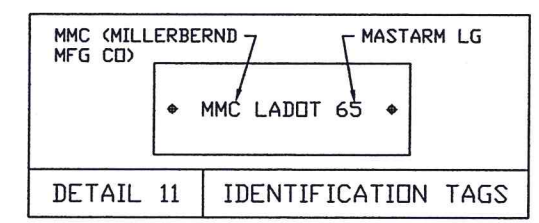
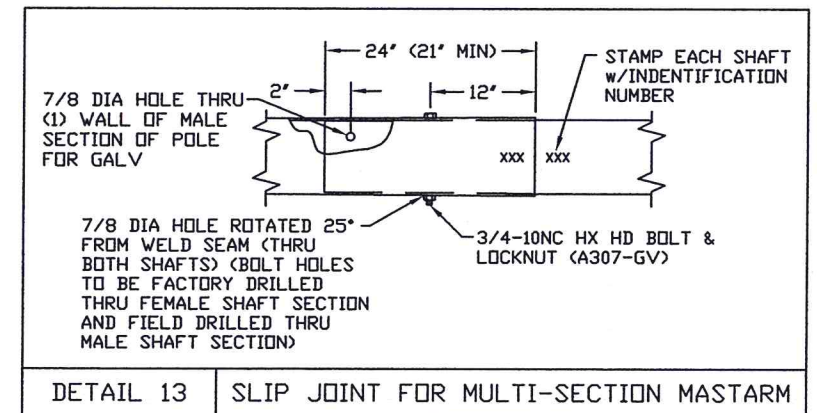
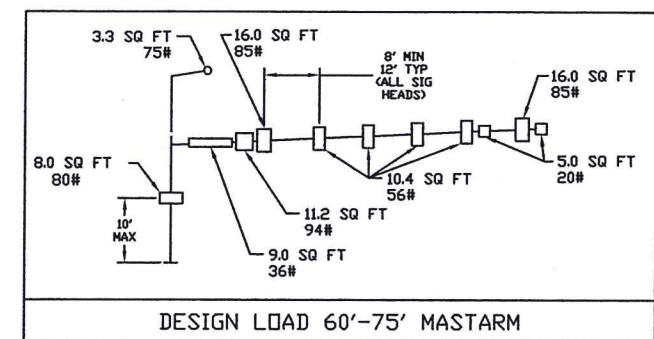
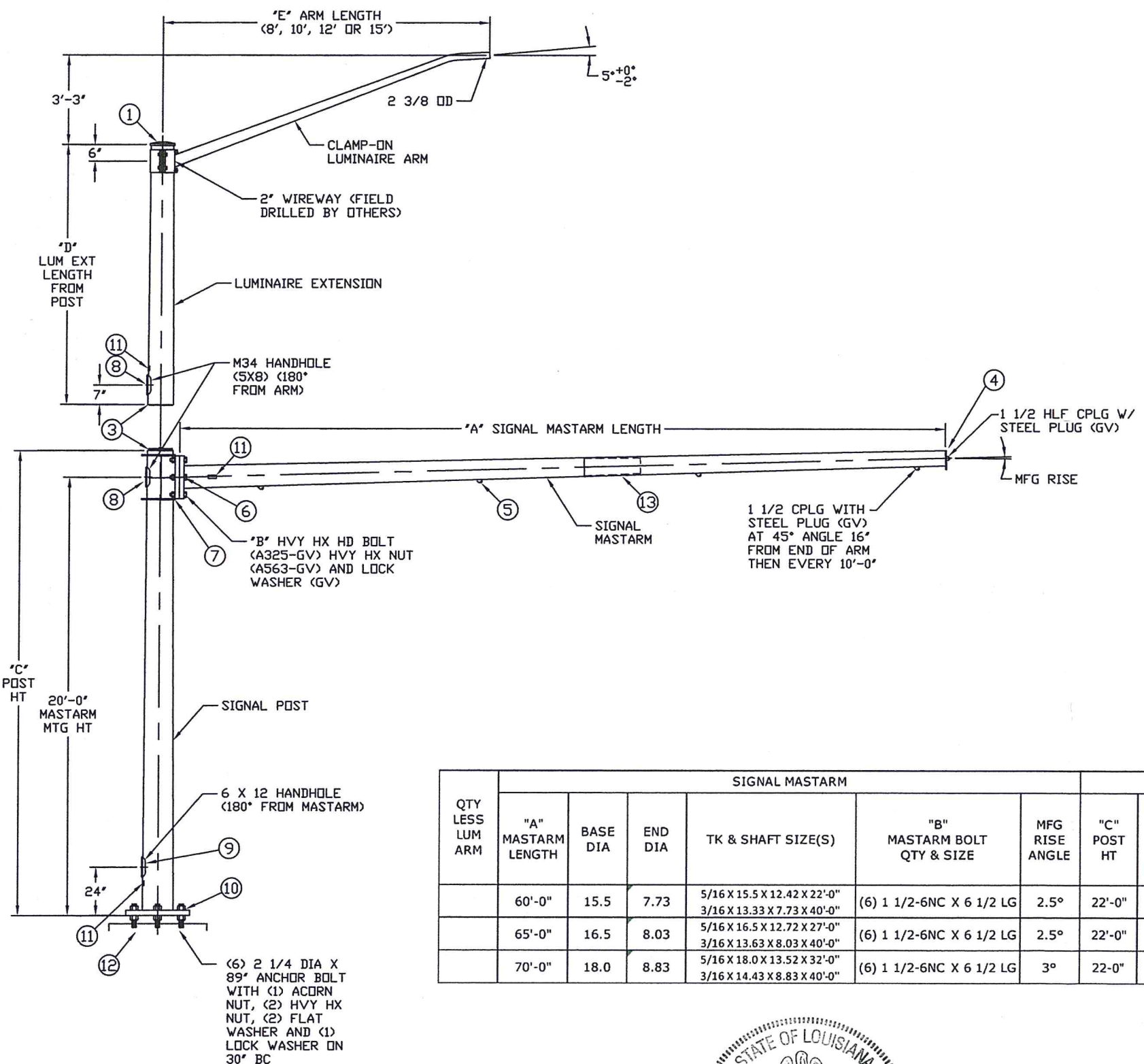
DETAIL 13 SLIP JOINT FOR MULTI-SECTION MASTARM



DWN: DOUG F. DATE: 9-6-11 CHK: FLOYD F. SCALE: NTS

ROUND TRAFFIC SIGNAL STANDARD LA/DOT 20' TO 55' MASTARM WITH 20' MTG HT & OPTIONAL (8', 10', 12' OR 15') LUMINAIRE ARM AT 30' MT HT LA/DOT

Millerbernd MANUFACTURING CO. WINSTED, MN 780B810 SH 2 OF 2



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 2. BASE PLATE, MOUNTING PLATES AND HANDHOLE FRAMES 36,000 PSI MIN YIELD PER ASTM A36
 3. STRUCTURE FINISH GALVANIZED PER ASTM A123
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ANCHOR BOLT SPECIFICATIONS
 1. ANCHOR BOLT MATERIAL- HIGH STRENGTH STEEL ROD 55,000 PSI MIN YIELD PER AASHTO M314/F1554 GRADE 55
 2. ANCHOR BOLTS HOT DIP GALVANIZED PER ASTM A153
 3. THREAD TO BE CLASS 2A PER AMERICAN STD. B 1.1 .030 OVER SIZE AFTER GALVANIZING
 4. ALL BOLTS ROLLED THREAD
 5. GALVANIZED HEAVY HEX NUTS .030 OVER SIZE (A194GV) PER ASTM A194 GR 2H
 6. NO WELDING IS ALLOWED ON ANCHOR BOLTS
 7. GALVANIZED FLAT WASHERS PER ASTM F436
 8. GALVANIZED LOCK WASHER PER ASME B18.21.1
 9. THE END OF ANCHOR BOLT TO PROJECT FROM CONCRETE PAINTED YELLOW

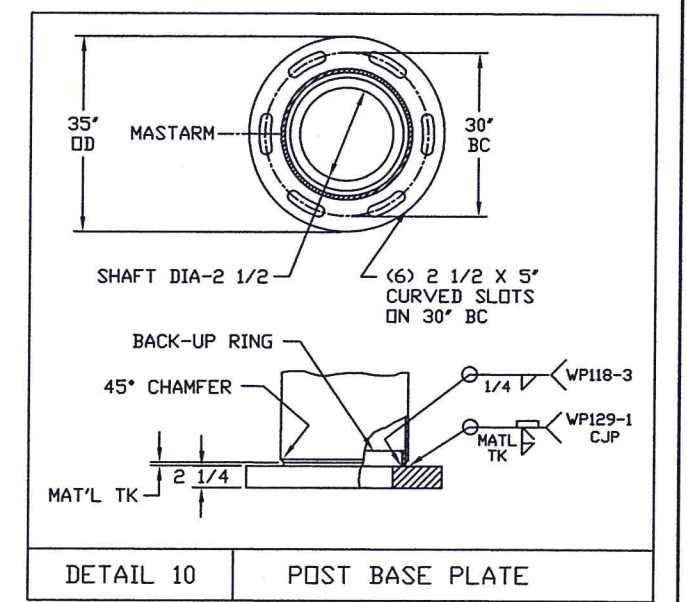
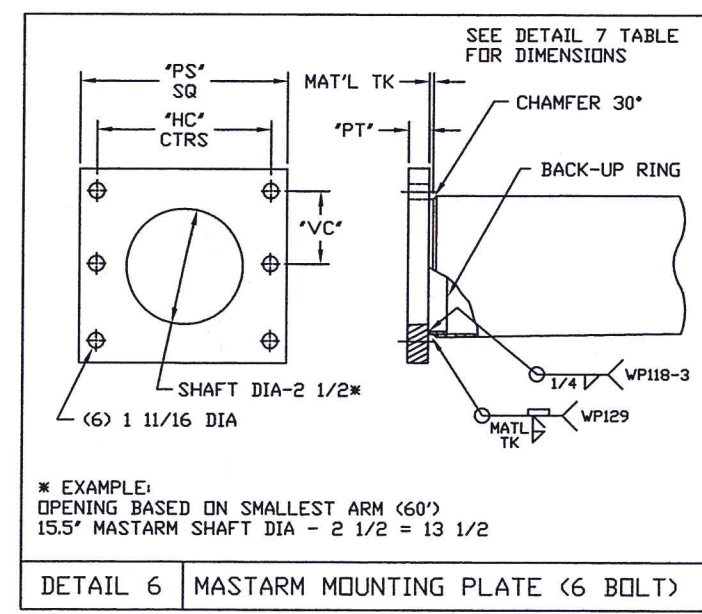
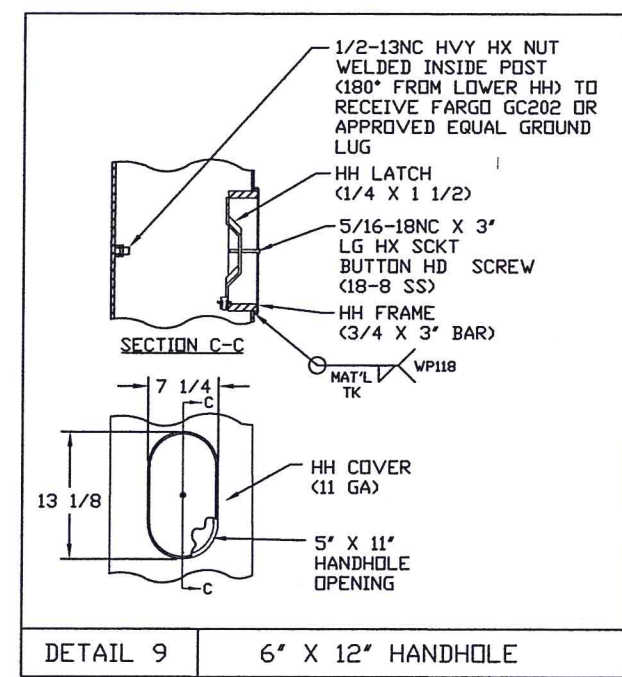
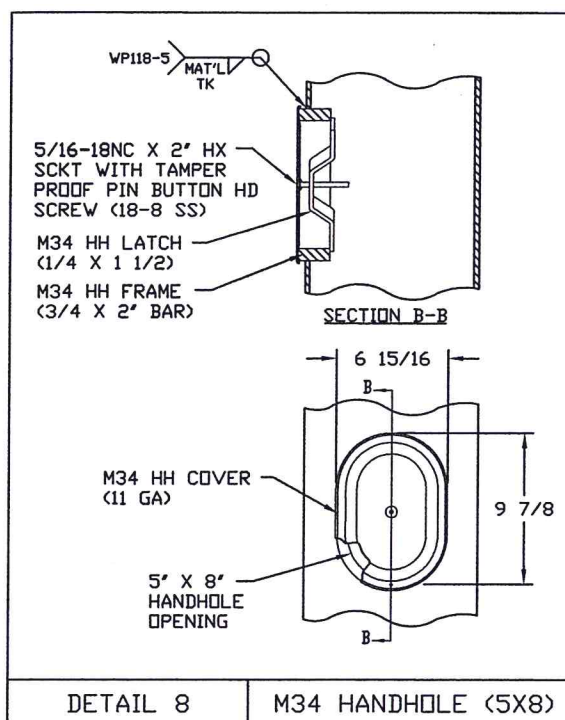
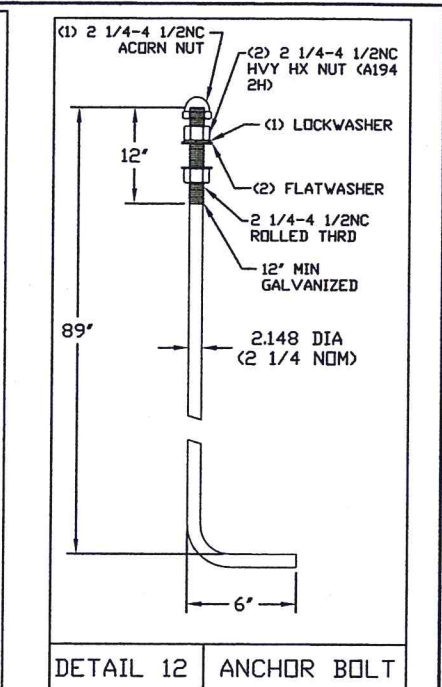
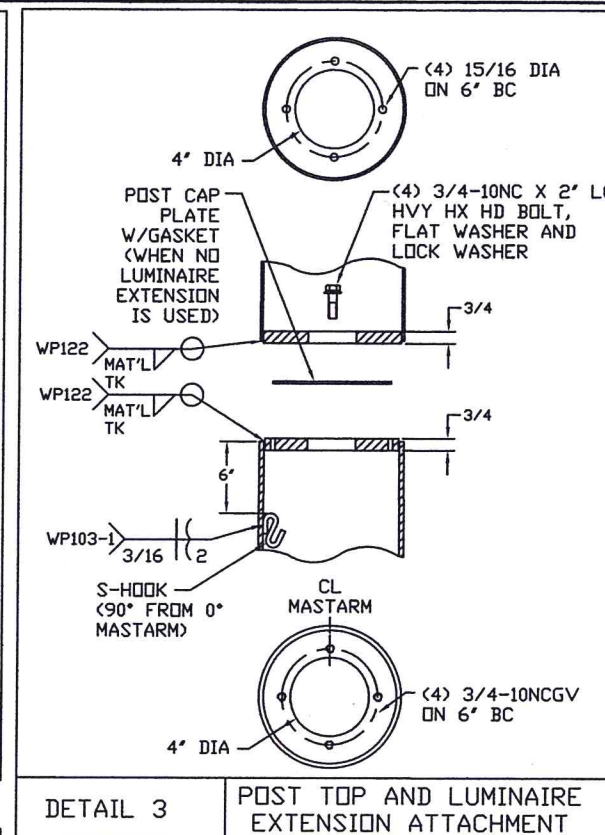
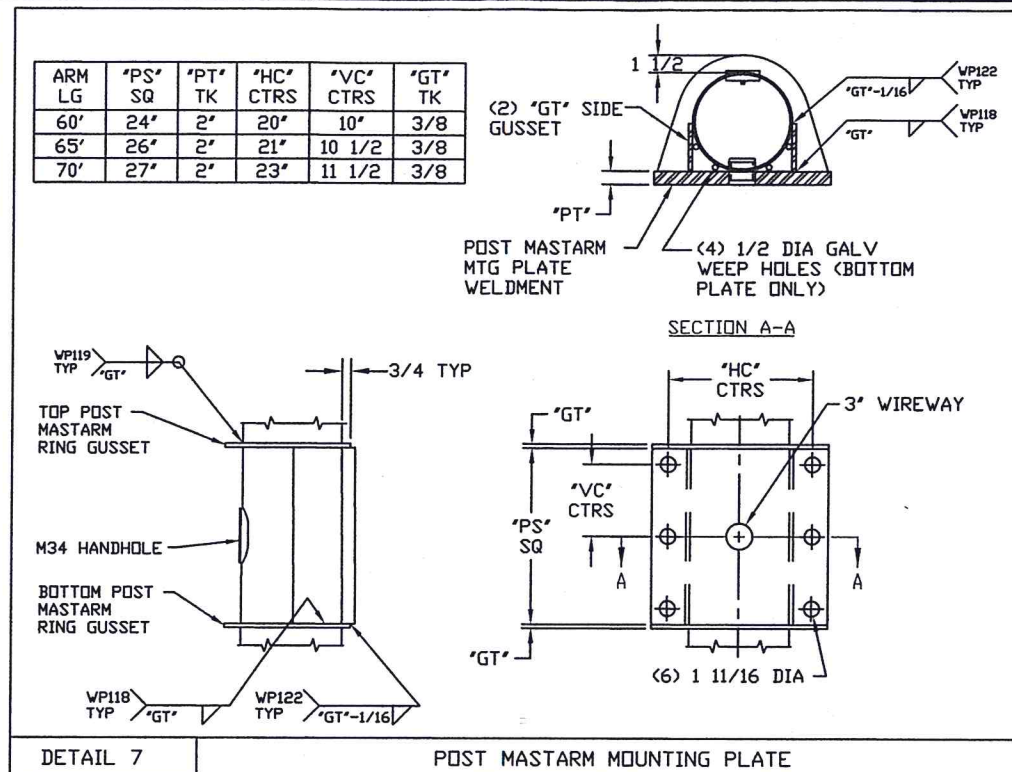
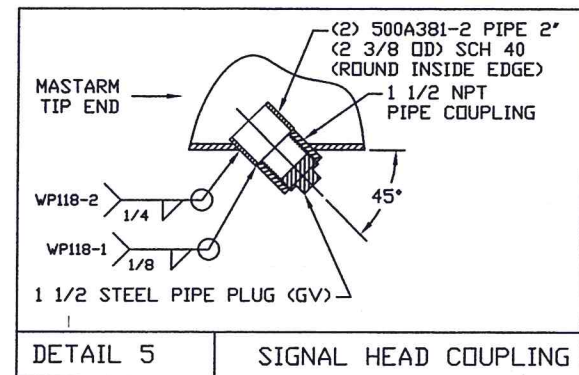
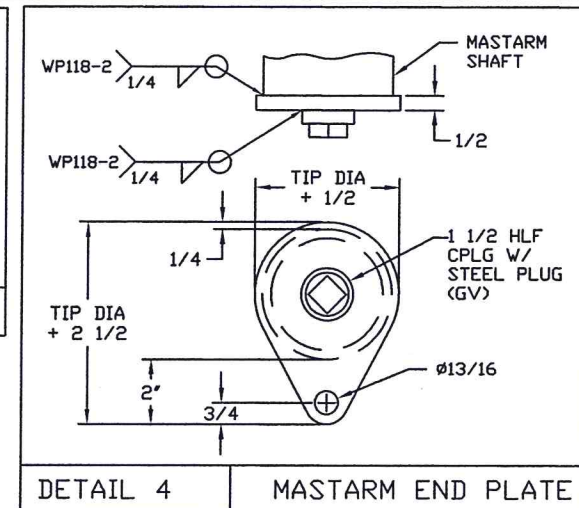
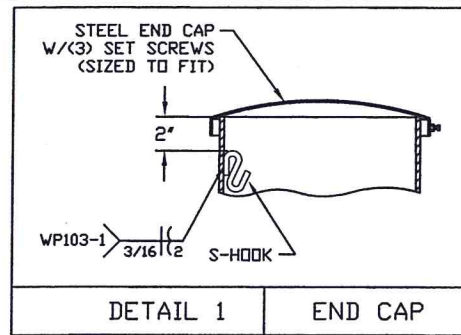
SHIPPING
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QTY LESS LUM ARM	SIGNAL MASTARM						SIGNAL POST				MILLERBERND PART NO W/O LUMINAIRE ARM	QTY WITH LUM ARM	LUM EXTENSION			"E" LUM ARM LG	MILLERBERND PART NO WITH LUMINAIRE ARM (8, 10, 12 OR 15)
	"A" MASTARM LENGTH	BASE DIA	END DIA	TK & SHAFT SIZE(S)	"B" MASTARM BOLT QTY & SIZE	MFG RISE ANGLE	"C" POST HT	BASE DIA	TOP DIA	THK			"D" LUM EXT LENGTH FROM POST	BASE DIA	TOP DIA		
	60'-0"	15.5	7.73	5/16 X 15.5 X 12.42 X 22'-0" 3/16 X 13.33 X 7.73 X 40'-0"	(6) 1 1/2-6NC X 6 1/2 LG	2.5°	22'-0"	18.00	14.92	5/16	RD8HEA-S60EC55-200-LA		4'-9"	10.00	9.34	11 GA	RD8HEA-S60EC55-200/300-JC"D"-LA
	65'-0"	16.5	8.03	5/16 X 16.5 X 12.72 X 27'-0" 3/16 X 13.63 X 8.03 X 40'-0"	(6) 1 1/2-6NC X 6 1/2 LG	2.5°	22'-0"	19.00	15.92	5/16	RD9HEA-S65EC65-200-LA		4'-9"	10.00	9.34	11 GA	RD9HEA-S65EC65-200/300-JC"D"-LA
	70'-0"	18.0	8.83	5/16 X 18.0 X 13.52 X 32'-0" 3/16 X 14.43 X 8.83 X 40'-0"	(6) 1 1/2-6NC X 6 1/2 LG	3°	22'-0"	20.50	17.42	5/16	RD205HEA-S70EC8-200-LA		4'-9"	10.00	9.34	11 GA	RD205HEA-S70EC8-200/300-JC"D"-LA



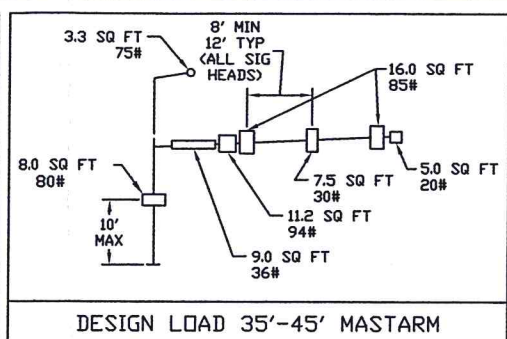
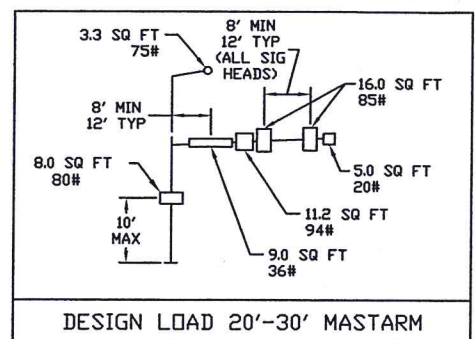
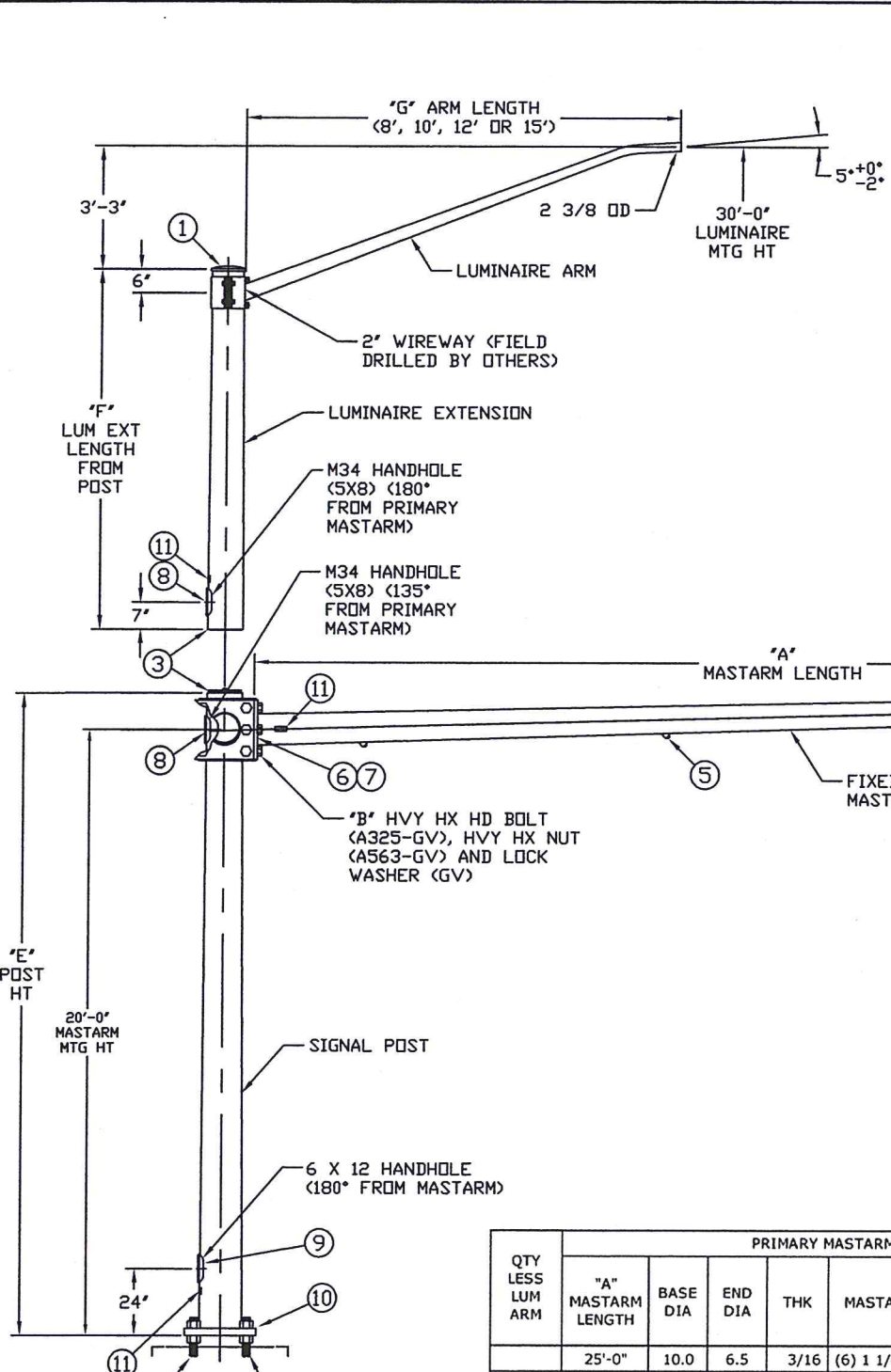
REV 4-17-14 UPDATED SIZING PER REVISED CALCS
 REV 12-2-13 UPDATED DETAILS 6,7,10 & 12 PER LADDT COMMENTS, ALSO UPDATED CHART ON SHEET 1 TO BE CONSISTENT WITH OTHER SUBMITTALS
 REV 1-16-13 UPDATED SIZING PER REVISED CALCS
 REV 1-4-13 UPDATED PER LADDT SPEC DATED 11-19-12

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DATE: 9-6-11	
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780B811 SH 1 OF 2	



STATE OF LOUISIANA
 RUSSELL K. TEAL
 Reg. No. 31700
 REGISTERED
 PROFESSIONAL ENGINEER
 CIVIL
 4/26/14

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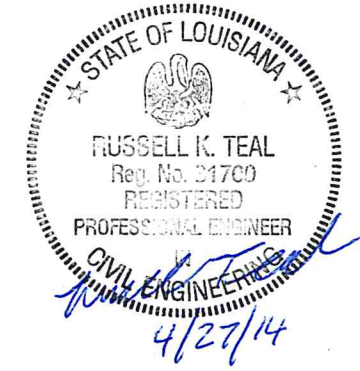
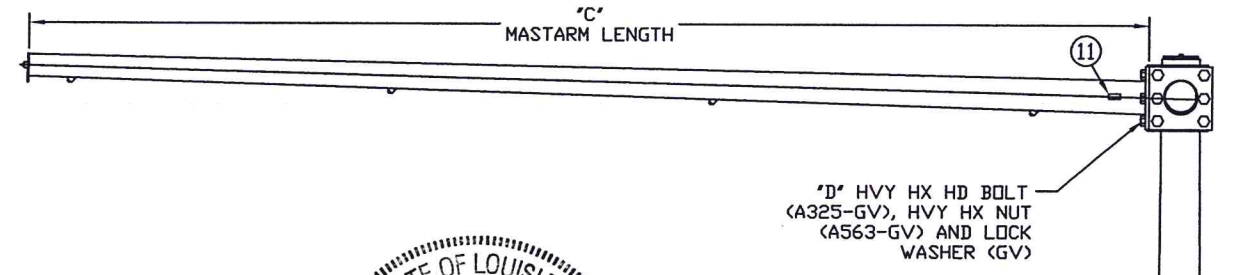
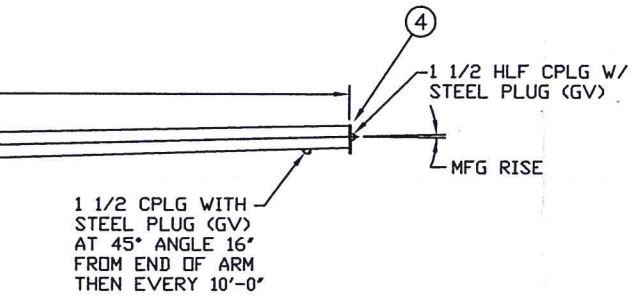
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 3. THREAD TO BE CLASS 2A PER AMERICAN STD. B 1.1 .030 OVER SIZE AFTER GALVANIZING
 4. ALL BOLTS ROLLED THREAD
 5. GALVANIZED HEAVY HEX NUTS .030 OVER SIZE (A194GV) PER ASTM A194 GR 2H
 6. NO WELDING IS ALLOWED ON ANCHOR BOLTS
 7. GALVANIZED FLAT WASHERS PER ASTM F436
 8. GALVANIZED LOCK WASHER PER ASME B18.21.1
 9. THE END OF ANCHOR BOLT TO PROJECT FROM CONCRETE PAINTED YELLOW



(4) 2 1/4 DIA X 89" ANCHOR BOLT WITH (1) ACORN NUT, (2) HVY HX NUT, (2) FLAT WASHER AND (1) LOCK WASHER ON 24" BC

QTY LESS LUM ARM	PRIMARY MASTARM						SECONDARY MASTARM						SIGNAL POST			MILLERBERND PART NO W/O LUMINAIRE EXTENSION	QTY WITH LUM ARM	LUMINAIRE EXTENSION				MILLERBERND PART NO WITH LUMINAIRE ARM (8, 10, 12 OR 15)
	"A" MASTARM LENGTH	BASE DIA	END DIA	THK	"B" MASTARM BOLT QTY & SIZE	MFG RISE ANGLE	"C" MASTARM LENGTH	BASE DIA	END DIA	THK	"D" MASTARM BOLT QTY & SIZE	MFG RISE ANGLE	"E" POST HT	BASE DIA	TOP DIA			THK	"F" LUM EXT LENGTH FROM POST	BASE DIA	TOP DIA	
	25'-0"	10.0	6.5	3/16	(6) 1 1/4-7NC X 3 1/2 LG	2°	20'-0"	8.0	5.2	3/16	(6) 1 1/4-7NC X 3 1/2 LG	2°	21'-0"	13.0	10.06	1/4	RB3HEA-S25C0/S20C8-200-LA	5'-9"	10.00	9.20	11 GA	RB3HEA-S25C0/S20C8-200/300-JC"G"-LA
	25'-0"	10.0	6.5	3/16	(6) 1 1/4-7NC X 3 1/2 LG	2°	25'-0"	10.0	6.5	3/16	(6) 1 1/4-7NC X 3 1/2 LG	2°	21'-0"	13.0	10.06	1/4	RB3HEA-S25C0/S25C0-200-LA	5'-9"	10.00	9.20	11 GA	RB3HEA-S25C0/S25C0-200/300-JC"G"-LA
	30'-0"	11.5	7.3	3/16	(6) 1 1/4-7NC X 3 1/2 LG	2°	25'-0"	10.0	6.5	3/16	(6) 1 1/4-7NC X 3 1/2 LG	2°	21'-0"	14.0	11.06	1/4	RB4HEA-S30C15/S25C0-200-LA	5'-9"	10.00	9.20	11 GA	RB4HEA-S30C15/S25C0-200/300-JC"G"-LA
	35'-0"	12.0	7.1	1/4	(6) 1 1/4-7NC X 3 1/2 LG	2°	20'-0"	8.0	5.2	3/16	(6) 1 1/4-7NC X 3 1/2 LG	2°	21'-0"	15.0	12.06	1/4	RB5HEA-S35D2/S20C8-200-LA	5'-9"	10.00	9.20	11 GA	RB5HEA-S35D2/S20C8-200/300-JC"G"-LA
	35'-0"	12.0	7.1	1/4	(6) 1 1/4-7NC X 3 1/2 LG	2°	25'-0"	10.0	6.5	3/16	(6) 1 1/4-7NC X 3 1/2 LG	2°	21'-0"	15.0	12.06	1/4	RB5HEA-S35D2/S25C0-200-LA	5'-9"	10.00	9.20	11 GA	RB5HEA-S35D2/S25C0-200/300-JC"G"-LA
	40'-0"	12.5	6.9	1/4	(6) 1 1/4-7NC X 4" LG	2.5°	25'-0"	10.0	6.5	3/16	(6) 1 1/4-7NC X 3 1/2 LG	2°	21'-0"	17.0	14.06	1/4	RB7HEA-S40D25/S25C0-200-LA	5'-9"	10.00	9.20	11 GA	RB7HEA-S40D25/S25C0-200/300-JC"G"-LA
	40'-0"	12.5	6.9	1/4	(6) 1 1/4-7NC X 4" LG	2.5°	30'-0"	11.5	7.3	3/16	(6) 1 1/4-7NC X 3 1/2 LG	2°	21'-0"	17.0	14.06	1/4	RB7HEA-S40D25/S30C15-200-LA	5'-9"	10.00	9.20	11 GA	RB7HEA-S40D25/S30C15-200/300-JC"G"-LA
	40'-0"	12.5	6.9	1/4	(6) 1 1/4-7NC X 4" LG	2.5°	35'-0"	12.0	7.1	1/4	(6) 1 1/4-7NC X 3 1/2 LG	2°	21'-0"	17.0	14.06	1/4	RB7HEA-S40D25/S35D2-200-LA	5'-9"	10.00	9.20	11 GA	RB7HEA-S40D25/S35D2-200/300-JC"G"-LA
	45'-0"	14.0	7.7	1/4	(6) 1 1/4-7NC X 4" LG	2.5°	25'-0"	10.0	6.5	3/16	(6) 1 1/4-7NC X 3 1/2 LG	2°	22'-0"	17.0	13.92	1/4	RD7HEA-S45D4/S25C0-200-LA	4'-9"	10.00	9.34	11 GA	RD7HEA-S45D4/S25C0-200/300-JC"G"-LA
	45'-0"	14.0	7.7	1/4	(6) 1 1/4-7NC X 4" LG	2.5°	30'-0"	11.5	7.3	3/16	(6) 1 1/4-7NC X 3 1/2 LG	2°	22'-0"	17.0	13.92	1/4	RD7HEA-S45D4/S30C15-200-LA	4'-9"	10.00	9.34	11 GA	RD7HEA-S45D4/S30C15-200/300-JC"G"-LA
	45'-0"	14.0	7.7	1/4	(6) 1 1/4-7NC X 4" LG	2.5°	35'-0"	12.0	7.1	1/4	(6) 1 1/4-7NC X 3 1/2 LG	2°	22'-0"	17.0	13.92	5/16	RD7HEA-S45D4/S35D2-200-LA	4'-9"	10.00	9.34	11 GA	RD7HEA-S45D4/S35D2-200/300-JC"G"-LA
	45'-0"	14.0	7.7	1/4	(6) 1 1/4-7NC X 4" LG	2.5°	40'-0"	12.5	6.9	1/4	(6) 1 1/4-7NC X 4" LG	2.5°	22'-0"	17.0	13.92	5/16	RD7HEA-S45D4/S40D25-200-LA	4'-9"	10.00	9.34	11 GA	RD7HEA-S45D4/S40D25-200/300-JC"G"-LA

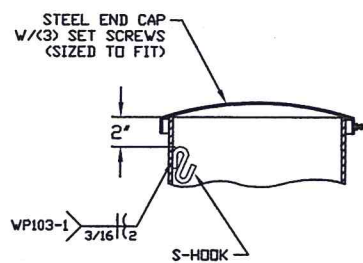
REV 4-17-14 UPDATED SIZING PER REVISED CALCS
 REV 12-2-13 UPDATED DETAILS 6,7,10 & 12 PER LADOT COMMENTS
 REV 1-16-13 UPDATED SIZING PER REVISED CALCS
 REV 1-4-13 UPDATED PER LADOT SPEC DATED 11-19-12

DWN: DOUG F.
 DATE: 9-9-11
 CHK: FLOYD F.
 SCALE: NTS

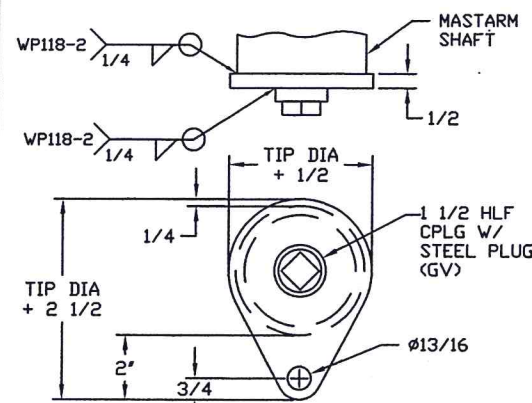
ROUND TRAFFIC SIGNAL STANDARD
 25' TO 45' PRIMARY W/25'-40' TWIN MASTARM AT 20' MTG HT
 & OPTIONAL (8',10',12' OR 15') LUMINAIRE ARM AT 30' MT HT LA/DOT

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 WINSTED, MN

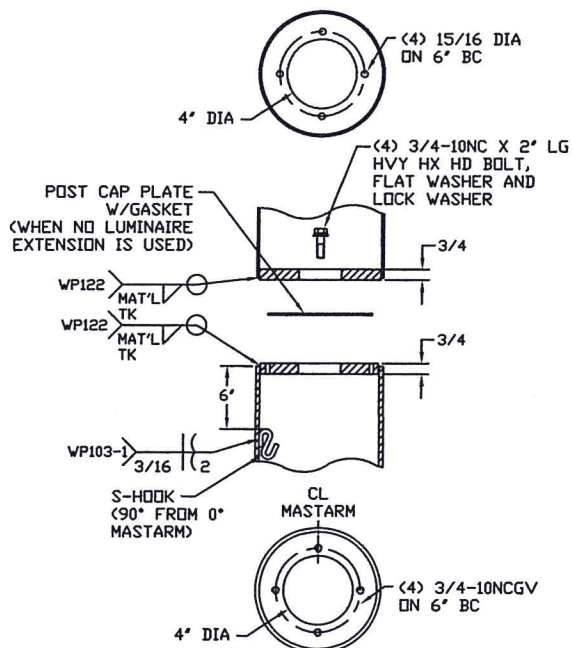
780B812 SHEET 1 OF 2



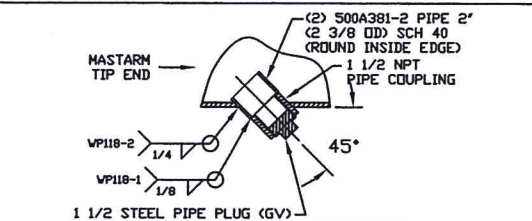
DETAIL 1 END CAP



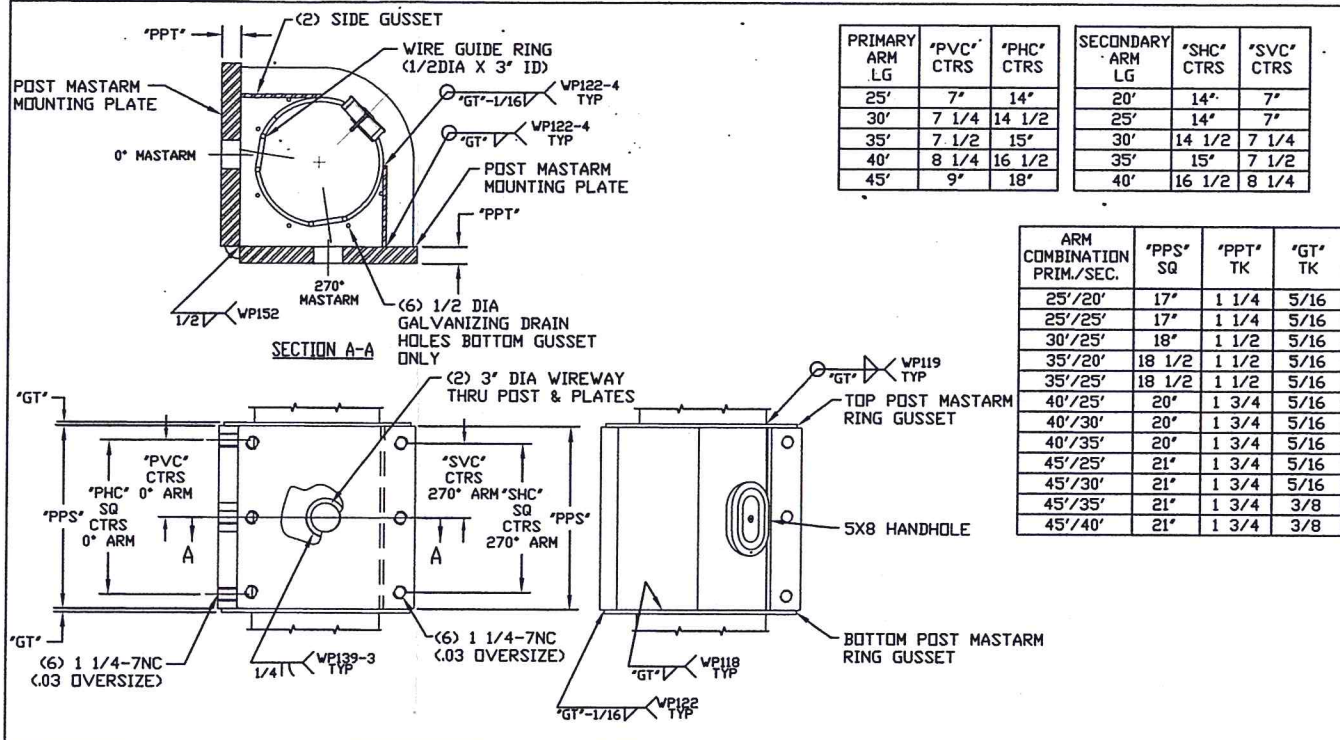
DETAIL 4 MASTARM END PLATE



DETAIL 3 POST TOP AND LUMINAIRE EXTENSION ATTACHMENT



DETAIL 5 SIGNAL HEAD COUPLING

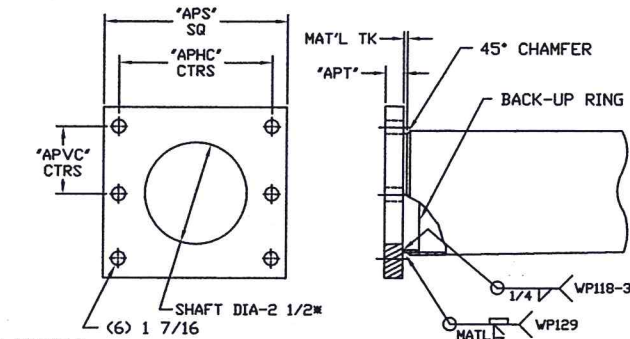


DETAIL 7 POST MASTARM MOUNTING PLATES

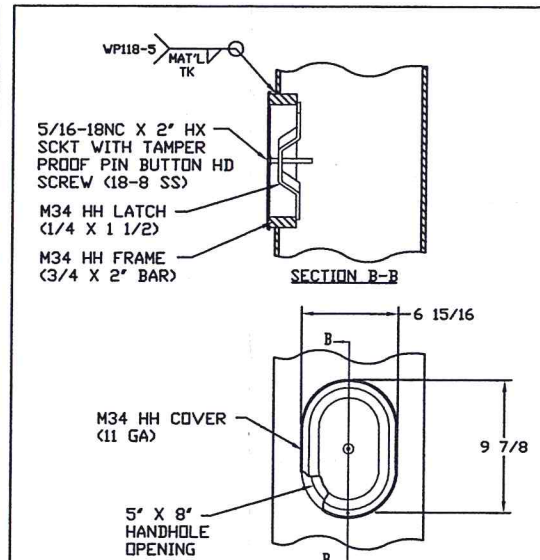
PRIMARY ARM LG	'PVC' CTRS	'PHC' CTRS	SECONDARY ARM LG	'SHC' CTRS	'SVC' CTRS
25'	7"	14"	20'	14"	7"
30'	7 1/4"	14 1/2"	25'	14"	7"
35'	7 1/2"	15"	30'	14 1/2"	7 1/4"
40'	8 1/4"	16 1/2"	35'	15"	7 1/2"
45'	9"	18"	40'	16 1/2"	8 1/4"

ARM COMBINATION PRIM./SEC.	'PPS' SQ	'PPT' TK	'GT' TK
25'/20'	17"	1 1/4"	5/16"
25'/25'	17"	1 1/4"	5/16"
30'/25'	18"	1 1/2"	5/16"
35'/20'	18 1/2"	1 1/2"	5/16"
35'/25'	18 1/2"	1 1/2"	5/16"
40'/25'	20"	1 3/4"	5/16"
40'/30'	20"	1 3/4"	5/16"
40'/35'	20"	1 3/4"	5/16"
45'/25'	21"	1 3/4"	5/16"
45'/30'	21"	1 3/4"	5/16"
45'/35'	21"	1 3/4"	3/8"
45'/40'	21"	1 3/4"	3/8"

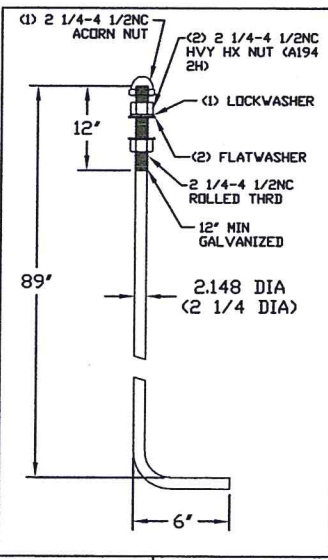
ARM LG	'APS' SQ	'APT' TK	'APHC' CTRS	'APVC' CTRS
20'	17"	1 1/4"	14"	7"
25'	17"	1 1/4"	14"	7"
30'	18"	1 1/2"	14 1/2"	7 1/4"
35'	18 1/2"	1 1/2"	15"	7 1/2"
40'	20"	1 3/4"	16 1/2"	8 1/4"
45'	21"	1 3/4"	18"	9"



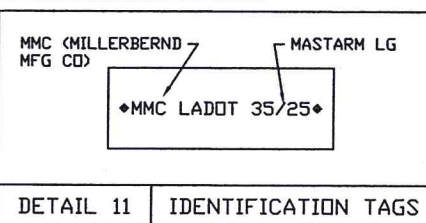
DETAIL 6 MASTARM MOUNTING PLATE



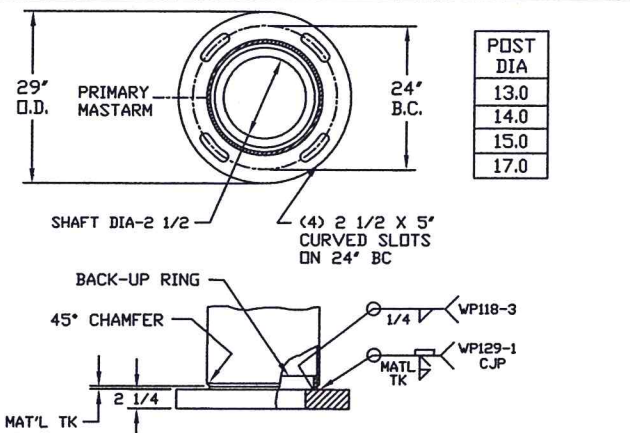
DETAIL 8 M34 HANDHOLE (5X8)



DETAIL 12 ANCHOR BOLT

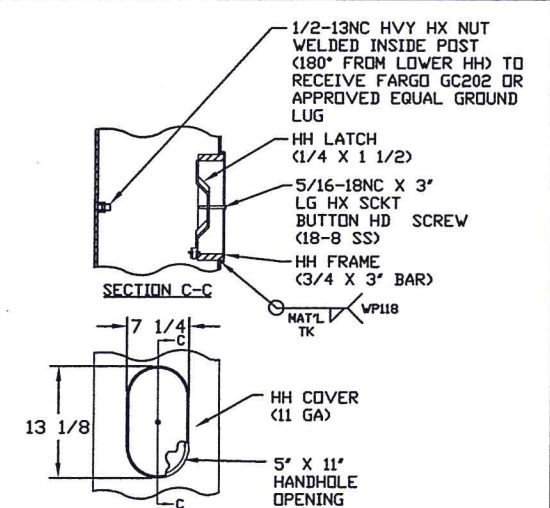


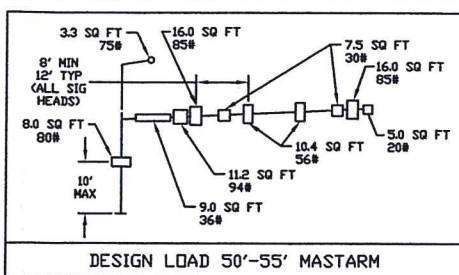
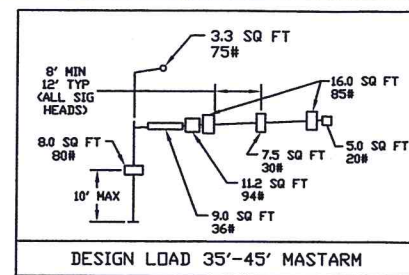
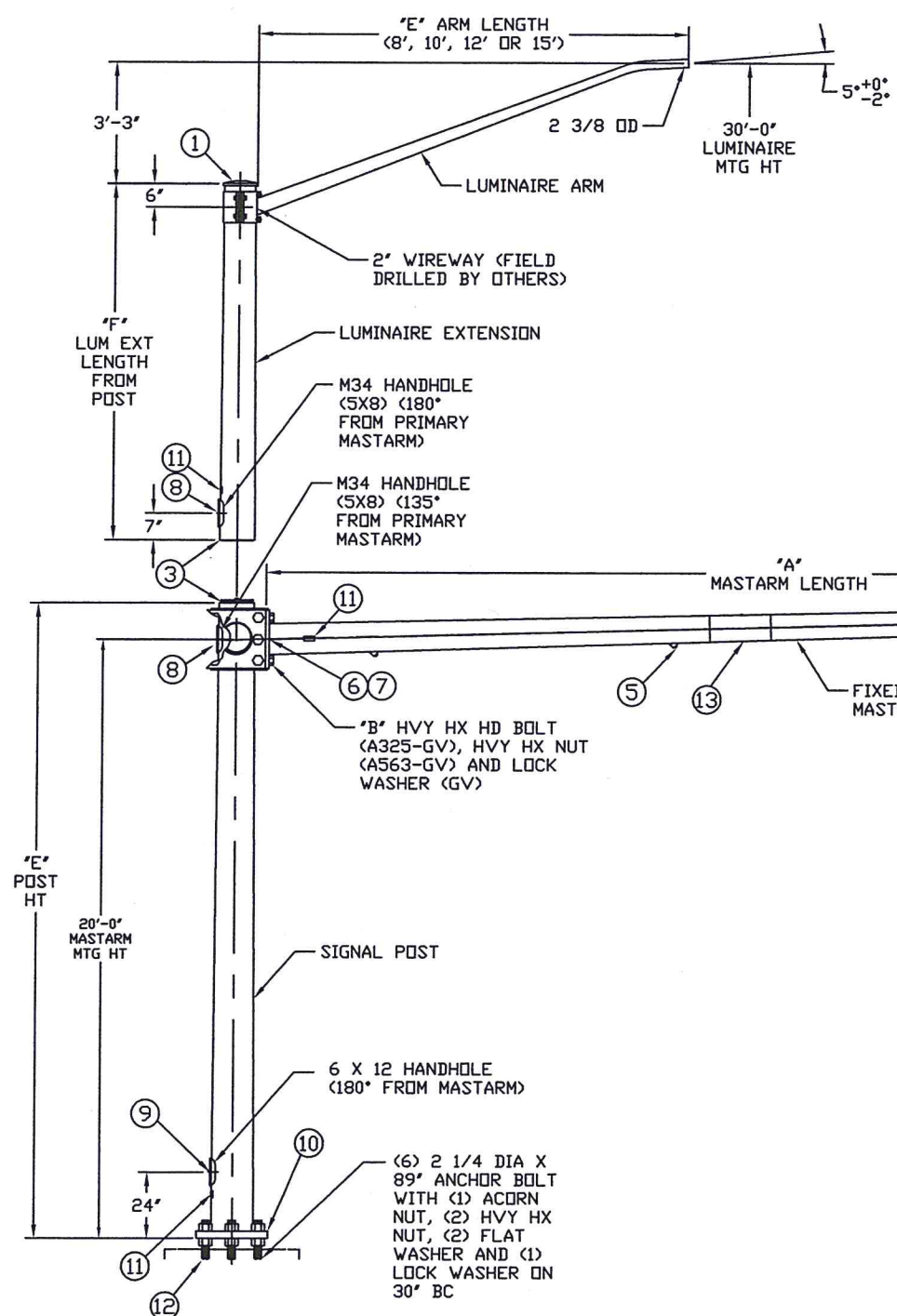
DETAIL 11 IDENTIFICATION TAGS



DETAIL 10 POST BASE PLATE

DETAIL 9 6" X 12" HANDHOLE





DESIGN CRITERIA
 2009 EDITION AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 130 MPH WIND, FATIGUE CAT 2, NATURAL WIND GUST ONLY

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

SHIPPING
 ALL HARDWARE TO BE PACKAGED ON A PER POLE BASIS. HH COVERS, PLUGS FOR BOSSES, GROUND LUG AND POLE CAPS TO BE INSTALLED AND SECURELY WRAPPED.

MATERIAL SPECIFICATIONS

1. POST & MASTARM SHAFT(S) PER ASTM A572 OR A1011 55,000 PSI MIN YIELD
2. BASE PLATE, MOUNTING PLATES AND HANDHOLE FRAMES 36,000 PSI MIN YIELD PER ASTM A36.
3. STRUCTURE FINISH GALVANIZED PER ASTM A123
4. HARDWARE FINISH GALVANIZED PER ASTM A153
5. ARM MOUNTING BOLTS PER ASTM A325

ANCHOR BOLT SPECIFICATIONS

1. ANCHOR BOLT MATERIAL- HIGH STRENGTH STEEL ROD 55,000 PSI MIN YIELD PER AASHTO M314/F1554 GRADE 55
2. ANCHOR BOLTS HOT DIP GALVANIZED PER ASTM A153.
3. THREAD TO BE CLASS 2A PER AMERICAN STD. B 1.1 .030 OVER SIZE AFTER GALVANIZING
4. ALL BOLTS ROLLED THREAD
5. GALVANIZED HEAVY HEX NUTS .030 OVER SIZE (A194GV) PER ASTM A194 GR 2H
6. NO WELDING IS ALLOWED ON ANCHOR BOLTS
7. GALVANIZED FLAT WASHERS PER ASTM F436
8. GALVANIZED LOCK WASHER PER ASME B18.21.1
9. THE END OF ANCHOR BOLT TO PROJECT FROM CONCRETE PAINTED YELLOW



QTY	PRIMARY MASTARM					SECONDARY SIGNAL MASTARM					SIGNAL POST				MILLERBERND PART NO W/O LUMINAIRE EXTENSION	QTY WITH LUM ARM	LUM EXTENSION			"E" LUM ARM LG	MILLERBERND PART NO WITH LUMINAIRE ARM (8, 10, 12 OR 12)		
	"A" ARM LENGTH	BASE DIA	END DIA	SHAFT TK & SIZE(S)	"B" MASTARM BOLT QTY & SIZE	MFG RISE ANGLE	"C" ARM LENGTH	BASE DIA	END DIA	SHAFT TK & SIZE(S)	"D" MASTARM BOLT QTY & SIZE	MFG RISE ANGLE	POST HT	BASE DIA			TOP DIA	THK	LUM EXT LENGTH FROM POST			BASE DIA	TOP DIA
	50'-0"	14.0	7.63	5/16 X 14.0 X 11.90 X 15'-0" 3/16 X 12.81 X 7.63 X 37'-0"	(6) 1 1/4-7NC X 4" LG	2.5°	35'-0"	12.0	7.1	1/4 X 12.0 X 7.1 X 35'-0"	(6) 1 1/4-7NC X 3 1/2 LG	2°	22'-0"	18.0	14.92	5/16	RD8HEA-S50EC4/S35D2-200-LA		4'-9"	10.00	9.34	11 GA	RD8HEA-S50EC4/S35D2-200/300-JC"E"-LA
	50'-0"	14.0	7.63	5/16 X 14.0 X 11.90 X 15'-0" 3/16 X 12.81 X 7.63 X 37'-0"	(6) 1 1/4-7NC X 4" LG	2.5°	40'-0"	2.5	6.9	1/4 X 12.5 X 6.9 X 40'-0"	(6) 1 1/4-7NC X 4" LG	2.5°	22'-0"	18.0	14.92	5/16	RD8HEA-S50EC4/S40D25-200-LA		4'-9"	10.00	9.34	11 GA	RD8HEA-S50EC4/S40D25-200/300-JC"E"-LA
	55'-0"	15.0	7.93	5/16 X 15.0 X 12.2 X 20'-0" 3/16 X 13.11 X 7.93 X 37'-0"	(6) 1 1/2-6NC X 4 1/2" LG	2.5°	40'-0"	12.5	6.9	1/4 X 12.5 X 6.9 X 40'-0"	(6) 1 1/2-6NC X 4" LG	2.5°	22'-0"	19.0	15.92	5/16	RD9HEA-S55EC5/S40D25-200-LA		4'-9"	10.00	9.34	11 GA	RD9HEA-S55EC5/S40D25-200/300-JC"E"-LA
	55'-0"	15.0	7.93	5/16 X 15.0 X 12.2 X 20'-0" 3/16 X 13.11 X 7.93 X 37'-0"	(6) 1 1/2-6NC X 4 1/2" LG	2.5°	45'-0"	14.0	7.7	1/4 X 14.0 X 7.7 X 45'-0"	(6) 1 1/2-6NC X 4" LG	2.5°	22'-0"	19.0	15.92	5/16	RD9HEA-S55EC5/S45D4-200-LA		4'-9"	10.00	9.34	11 GA	RD9HEA-S55EC5/S45D4-200/300-JC"E"-LA

REV 4-17-14 UPDATED SIZING PER REVISED CALCS
 REV 12-2-13 UPDATED DETAILS 6,7,10 & 12 PER LADOT COMMENTS
 REV 1-16-13 UPDATED SIZING PER UPDATED CALCS
 REV 1-4-13 UPDATED PER LADOT SPEC DATED 11-19-12

DWN: DOUG F.
 DATE: 9-12-11
 CHK: FLOYD F.
 SCALE: NTS

ROUND TRAFFIC SIGNAL STANDARD
 50'-55' PRIMARY MASTARM W/35'-45' TWIN MASTARM AT 20' MTG HT & OPTIONAL (8',10', 12', OR 15') LUMINAIRE ARM AT 30' MTG HT LA/DOT

Millerbernd MANUFACTURING CO. WINSTED, MN

780B813 SHEET 1 OF 2

