

SEE PAGE 2 FOR APPURTENANCES

BUILDING\_CODE(S): 2009 International Building Code

Design Standard: TIA-222-G

TOWER DESIGN CRITERIA

Basic Wind Speed: 98 mph (no ice)  
40 mph (1.00" ice)  
60 mph (deflection only)

Structure Class: III  
Exposure: C  
Topographic Category: 1  
Crest Height: 0 ft.

MATERIAL STRENGTHS  
Solid Rod A36 (rod dia. <3/4")  
A572 Gr.50 (3/4" thru 1" dia.)  
A572 Gr.58 (>1" dia. T10 - T12)  
Pipe A500 Gr.B (antenna pipes)  
A572 Gr.B/C (tower legs min. Fy 50 ksi)

Angle A36 Gr.36

Plate A572 Gr.50

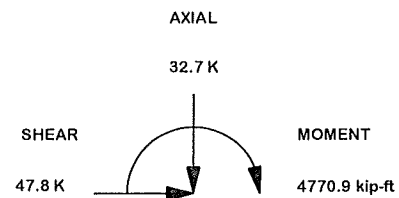
Bolts A-325/A-449 (leg & angle)

Anchor Bolts: F1554 grade 105 or A687

Finish: Tower & Hardware are hotdip galvanized

TOWER COLUMN										
SECTION	ELEVATION	FACE WIDTH	PANELS	LEG SIZE	LEG STYLE	LEG BOLT QTY & DIA	DIAGONAL BRACING SIZE	HORIZONTAL BRACING SIZE	BRACING BOLT QTY & DIA	SECTION WEIGHT
T1	160' - 180'	5.0'	4	2.50"	V	4 x 3/4"	1/8" x 2" x 2"	3/16" x 2" x 2"	1 x 3/4"	932.41
T2	140' - 160'	5.0'	3	4.00"	V	6 x 3/4"	3/16" x 2" x 2"		1 x 3/4"	1280.43
T3	120' - 140'	7.0'	3	5.00"	V	8 x 3/4"	3/16" x 2" x 2"		1 x 3/4"	1602.68
T4	100' - 120'	9.0'	3	5.00"	V	8 x 3/4"	3/16" x 2" x 2"		1 x 3/4"	1729.74
T5	80' - 100'	11.0'	3	6.00"	V	8 x 3/4"	3/16" x 2-1/2" x 2-1/2"		1 x 3/4"	2177.67
T6	60' - 80'	13.0'	3	6.00"	V	6 x 1"	3/16" x 2-1/2" x 2-1/2"		1 x 3/4"	2476.95
T7	40' - 60'	15.0'	2	1.50"	12BDFH	6 x 1"	3/16" x 3" x 3"		1 x 1"	2611.71
T8	20' - 40'	17.0'	2	1.75"	12BDFH	6 x 1 1/4"	5/16" x 3" x 3"		1 x 1"	3650.25
T9	0' - 20'	19.0'	2	1.75"	12BDFH	6 x 1 1/4"	5/16" x 3" x 3"		1 x 1"	3759.21

Reactions - No Ice

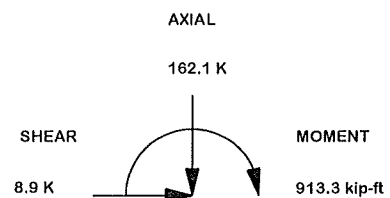


MAX. CORNER REACTIONS AT BASE:

DOWN: 296.6 K  
UPLIFT: -266.1 K  
SHEAR: 30.8 K

TORQUE 10.4 kip-ft  
REACTIONS 98.0 mph WIND (no ice)

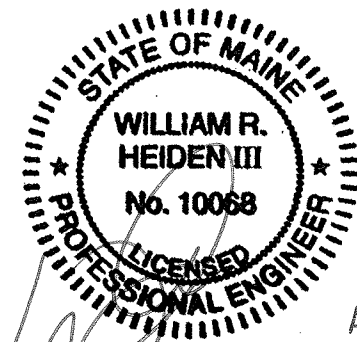
Reactions - Ice



MAX. CORNER REACTIONS AT BASE:

DOWN: 296.6 K  
UPLIFT: -266.1 K  
SHEAR: 30.8 K

TORQUE 0.9 kip-ft  
REACTIONS 40.0 mph WIND (1.00" ice)

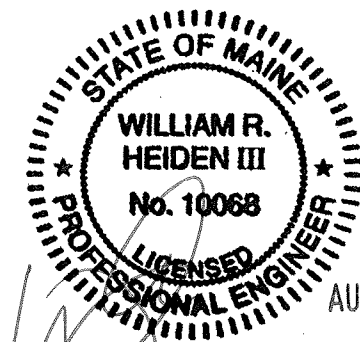


AUG 16 2016

William R. Heiden III, ME Professional Engineer #10068

		SITE		DESCRIPTION		 1-877-467-4763 Plymouth, IN 1-800-547-2151 Salem, OR	
		CITY OF PORTLAND FD, ME MOTOROLA SOLUTIONS U 19 X 180'		Tower View Page 1			
		COPYRIGHT 2013				ENG. FILE NO. 324370	
@A <ACBATCH> REV DESCRIPTION OF REVISIONS CPD BY DATE		PROPRIETARY NOTE: THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.		STRUCTURE APPROVAL SKK 8/10/2016		FOUNDATION APPROVAL DWG. NO. 268614T	

DESIGNED APPURTENANCE LOADING	
TYPE	ELEVATION
(1) 1/2" X 4' LIGHTNING ROD	180'
(1) 6' PIVOT SIDE ARM (50" PIPE)	160'
(6) 6' UNIVERSAL SIDE ARM (84" PIPE)	160'
(6) SC479-HF1LDF	160'
(1) TMA (12"X12"X8")	160'
(3) 12' V FRAME	155'
(12) 2" X 96" SCH. 40	155'
(12) PANEL (8' X 1' X 4")	155'
(3) 12' V FRAME	145'
(12) 2" X 96" SCH. 40	145'
(12) PANEL (8' X 1' X 4")	145'
(9) 8' ANTI-CLIMB	4'



William R. Heiden III, ME Professional Engineer #10068

SITE  
 CITY OF PORTLAND FD, ME  
 MOTOROLA SOLUTIONS  
 U 19 X 180'  
 COPYRIGHT 2013

DESCRIPTION  
 Tower View Page 2

**valmont**   
 1-877-467-4763 Plymouth, IN  
 1-800-547-2151 Salem, OR  
**STRUCTURES**

ENG. FILE NO. 324370  
 DWG. NO. 268614T

PAGE  
 2 OF 11

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
@A	<ACBATCH>		SKK	8/10/2016

PROPRIETARY NOTE:  
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

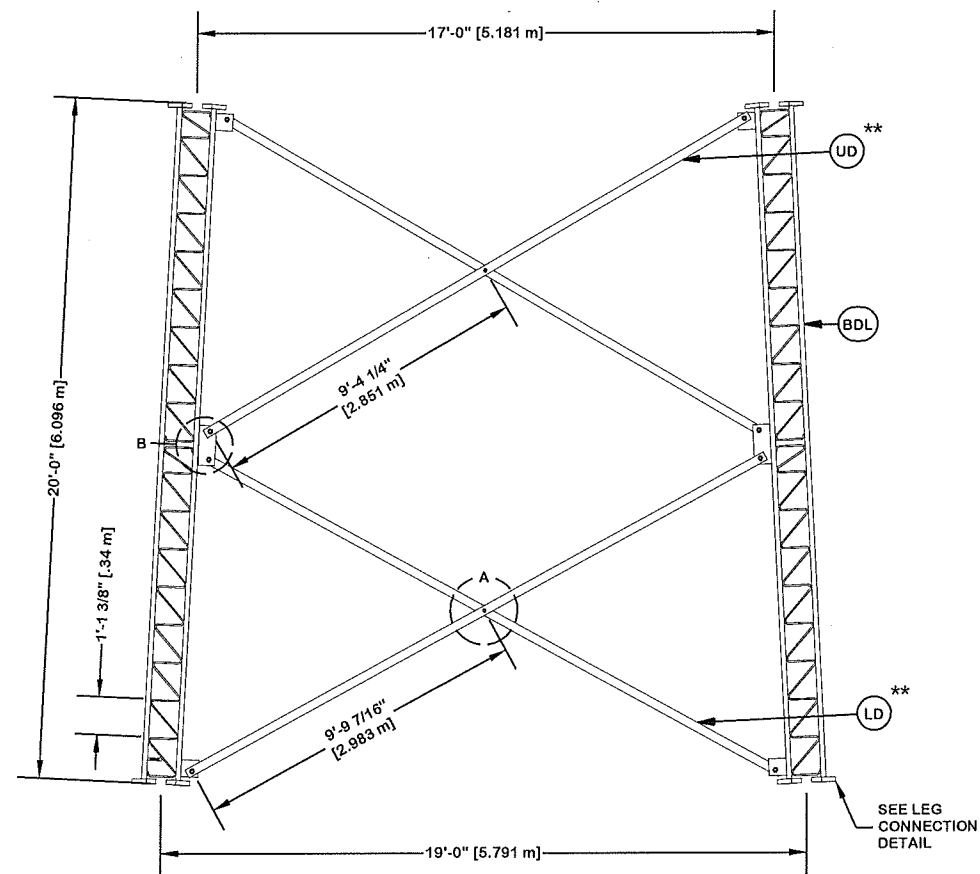
STRUCTURE APPROVAL  
 SKK 8/10/2016

FOUNDATION APPROVAL

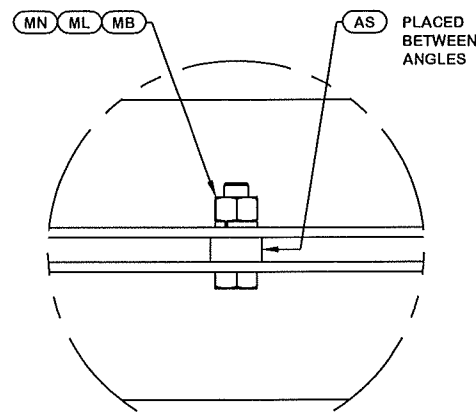
ORIENT LEGS WITH P/N STAMP  
TOWARD BOTTOM OF SECTION

ORIENT ANGLES WITH STAMPED  
END TOWARD TOP OF SECTION

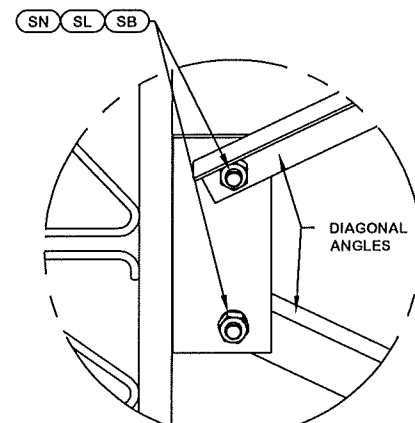
\*\* DIAGONAL ANGLES MUST BE INSTALLED  
WITH THE NON-BOLTED FACE UP,  
THIS MAY BE ON THE OPPOSITE SIDE OF THE  
SIDE PLATE THAN WHAT IS SHOWN IN THE DETAIL.



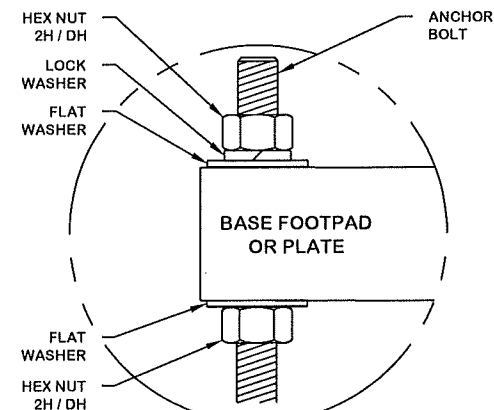
PARTS LIST					
ITEM	QTY	PART NO.	PART DESCRIPTION	UNIT WT.	NET WT.
BDL	3	195217	#12 LEG SECTION - 1-3/4" LEG - 1/2" BRACE - 1" BOL	746.710	2240.130
LD	6	198340	DIAG BRACE 5/16" X 3" X 3" 19' 4 41/64" LONG (A36)	128.000	768.000
AS	6	104291	SPACER 1/2" THICK 13/16" HOLE	0.500	3.000
MN	6	312502	3/4"-10 HOT DIPPED GALVANIZED NUT	0.190	1.140
ML	6	312153	3/4" GALVANIZED LOCKWASHER	0.030	0.180
MB	6	160427	3/4"-10 X 3" A-325T BOLT WITH FULL THREAD	0.470	2.820
SL	24	312223	1" GALVANIZED LOCKWASHER	0.080	1.920
SN	24	312504	1"-8 HOT DIPPED GALVANIZED NUT	0.430	10.320
SB	24	172265	1"-8 X 2-1/4" A-325 BOLT WITH 1-3/4" THREAD	0.840	20.160
UD	6	127612	DIAG BRACE 5/16" X 3" X 3" 18'-6 3/16" LONG (A-3)	118.590	711.540
Total Wt				3759.21 lb [1706.71 kg]	



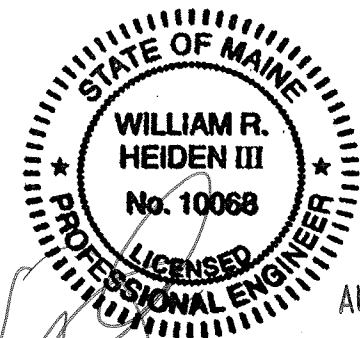
DETAIL A  
ANGLE INTERSECTION CONNECTION



DETAIL B  
MID SIDE PLATE ANGLE CONNECTION



ANCHOR BOLT ASSY. (TYP)  
SEE FOUNDATION DRAWING FOR DETAILS



AUG 16 2016

William R. Heiden III, ME Professional Engineer #10068

SITE  
**CITY OF PORTLAND FD, ME  
MOTOROLA SOLUTIONS  
U 19 X 180'**

COPYRIGHT 2013

DESCRIPTION  
**SECTION U-19.0 (0' - 20' ELEVATION)**

**valmont**   
**STRUCTURES**

1-877-467-4763 Plymouth, IN  
1-800-547-2151 Salem, OR

ENG. FILE NO. **324370**

DWG. NO. **268614T**

PAGE  
3 OF 11

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
@A	<ACBATCH>		SKK	8/10/2016


PROPRIETARY NOTE:  
THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

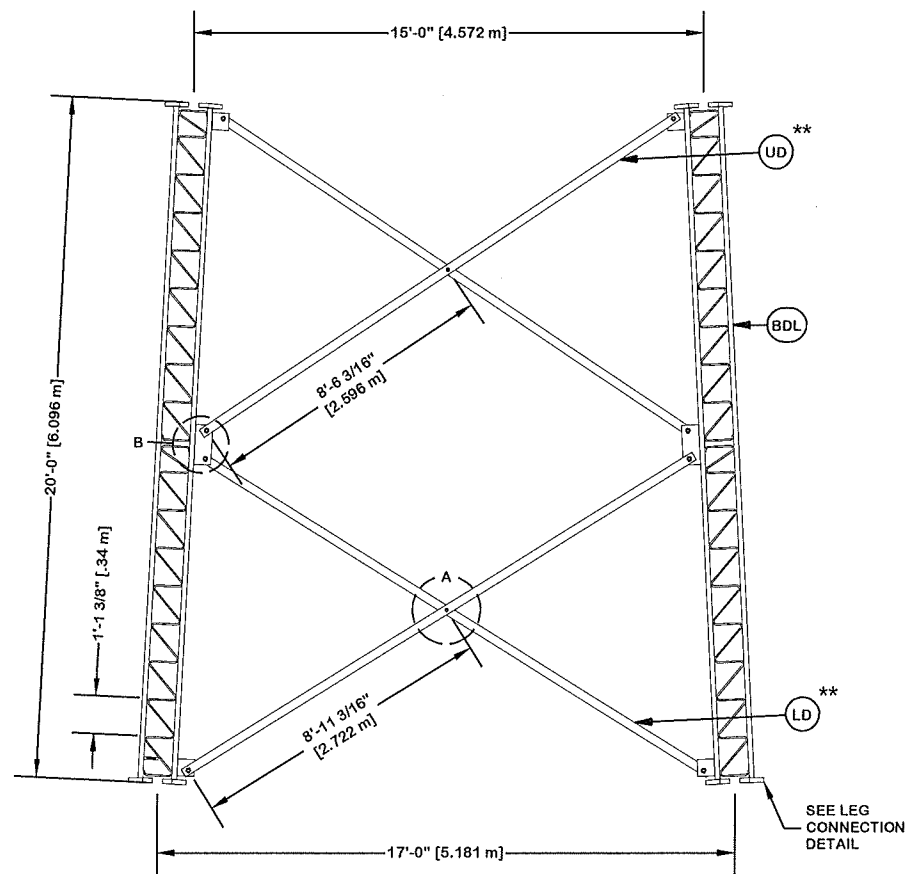
STRUCTURE APPROVAL  
**SKK 8/10/2016**

FOUNDATION APPROVAL

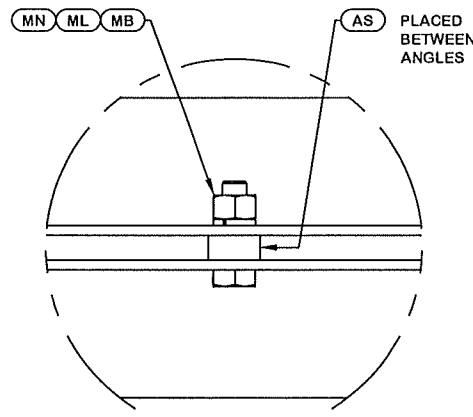
ORIENT LEGS WITH P/N STAMP  
TOWARD BOTTOM OF SECTION

ORIENT ANGLES WITH STAMPED  
END TOWARD TOP OF SECTION

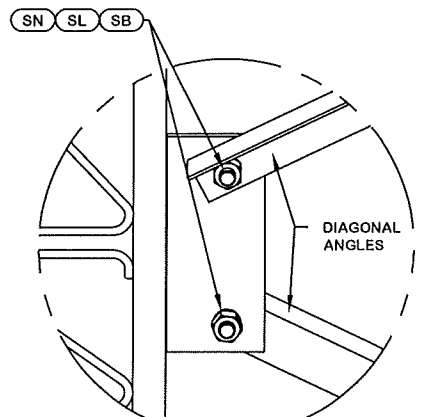
\*\* DIAGONAL ANGLES MUST BE INSTALLED  
WITH THE NON-BOLTED FACE UP,   
THIS MAY BE ON THE OPPOSITE SIDE OF THE  
SIDE PLATE THAN WHAT IS SHOWN IN THE DETAIL.



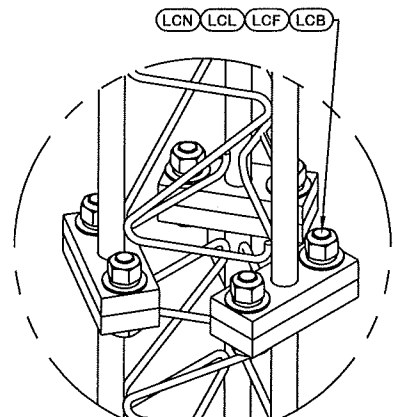
PARTS LIST					
ITEM	QTY	PART NO.	PART DESCRIPTION	UNIT WT.	NET WT.
BDL	3	195213	#12 LEG SECT - 1-3/4" TO 1-1/2" TRANS LEG - 1/2" B	739.890	2219.670
LD	6	127611	DIAG BRACE 5/16" X 3" X 3" 17'- 7-29/32" LONG (A)	113.100	678.600
AS	6	104291	SPACER 1/2" THICK 13/16" HOLE	0.500	3.000
MN	6	312502	3/4"-10 HOT DIPPED GALVANIZED NUT	0.190	1.140
ML	6	312153	3/4" GALVANIZED LOCKWASHER	0.030	0.180
MB	6	160427	3/4"-10 X 3" A-325T BOLT WITH FULL THREAD	0.470	2.820
SL	24	312223	1" GALVANIZED LOCKWASHER	0.080	1.920
SN	24	312504	1"-8 HOT DIPPED GALVANIZED NUT	0.430	10.320
SB	24	172265	1"-8 X 2-1/4" A-325 BOLT WITH 1-3/4" THREAD	0.840	20.160
UD	6	105588	DIAG BRACE 5/16" X 3" X 3" 16'- 9-27/32" LONG (A-)	107.730	646.380
LCB	18	222022	1-1/4"-7 X 5-1/2" A-325 BOLT WITH 2" THREAD	2.530	45.540
LCF	36	312282	1-1/4" GALVANIZED FLAT WASHER (F436)	0.130	4.680
LCL	18	312283	1-1/4" GALVANIZED LOCKWASHER	0.160	2.700
LCN	18	312507	1-1/4"-7 HOT DIPPED GALVANIZED NUT	0.730	13.140
Total Wt				3650.25 lb [1657.25kg]	



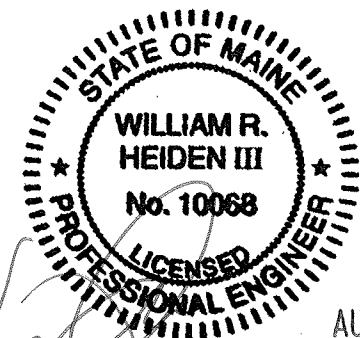
DETAIL A  
ANGLE INTERSECTION CONNECTION



DETAIL B  
MID SIDE PLATE ANGLE CONNECTION




LEG TO LEG CONNECTION  
(SIDE PLATES NOT SHOWN FOR CLARITY)



AUG 16 2016

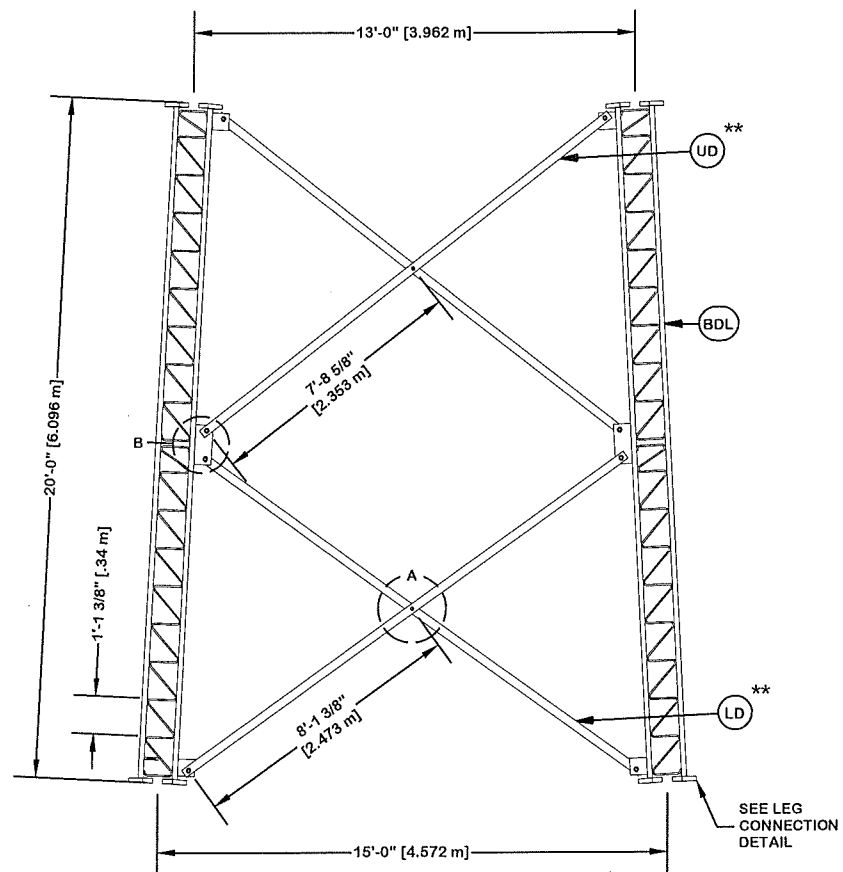
William R. Heiden III, ME Professional Engineer #10068

@A <ACBATCH> REV DESCRIPTION OF REVISIONS CPD BY DATE REVISION HISTORY		SITE <b>CITY OF PORTLAND FD, ME          MOTOROLA SOLUTIONS          U 19 X 180'</b> COPYRIGHT 2013	DESCRIPTION <b>SECTION U-17.0 (20' - 40' ELEVATION)</b>	 1-877-467-4763 Plymouth, IN 1-800-547-2151 Salem, OR		ENG. FILE NO. <b>324370</b> DWG. NO. <b>268614T</b>	PAGE <b>4 OF 11</b>
				STRUCTURE APPROVAL <b>SKK 8/10/2016</b>	FOUNDATION APPROVAL		

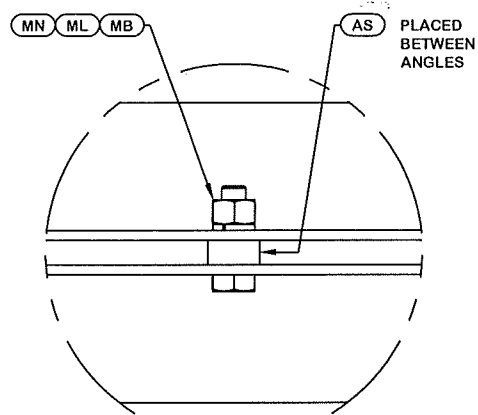
ORIENT LEGS WITH P/N STAMP  
TOWARD BOTTOM OF SECTION

ORIENT ANGLES WITH STAMPED  
END TOWARD TOP OF SECTION

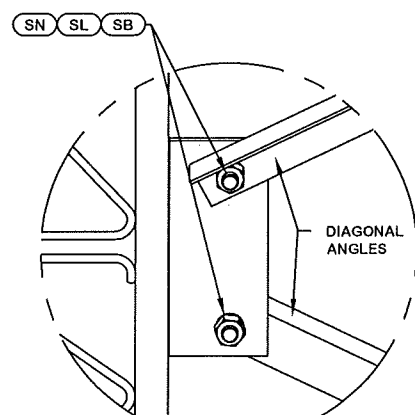
\*\* DIAGONAL ANGLES MUST BE INSTALLED  
WITH THE NON-BOLTED FACE UP,  
THIS MAY BE ON THE OPPOSITE SIDE OF THE  
SIDE PLATE THAN WHAT IS SHOWN IN THE DETAIL.



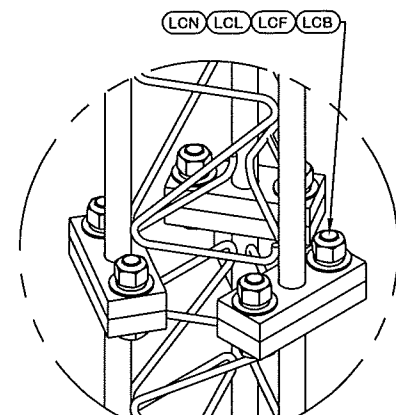
PARTS LIST					
ITEM	QTY	PART NO.	PART DESCRIPTION	UNIT WT.	NET WT.
BDL	3	194651	#12 LEG SECTION - 1-1/2" LEG - 1/2" BRACE - 1" BOL	602.830	1808.490
LD	6	105582	DIAG BRACE 3/16" X 3" X 3" 15'- 11-31/32" LONG (A)	62.150	372.900
AS	6	104291	SPACER 1/2" THICK 13/16" HOLE	0.500	3.000
MN	6	312502	3/4"-10 HOT DIPPED GALVANIZED NUT	0.190	1.140
ML	6	312153	3/4" GALVANIZED LOCKWASHER	0.030	0.180
MB	6	160427	3/4"-10 X 3" A-325T BOLT WITH FULL THREAD	0.470	2.820
SL	24	312223	1" GALVANIZED LOCKWASHER	0.080	1.920
SN	24	312504	1"-8 HOT DIPPED GALVANIZED NUT	0.430	10.320
SB	24	172265	1"-8 X 2-1/4" A-325 BOLT WITH 1-3/4" THREAD	0.840	20.160
UD	6	105579	DIAG BRACE 3/16" X 3" X 3" 15'- 2-3/8" LONG (A-36)	59.040	354.240
LCB	18	222016	1"-8 X 4-3/4" A-325 BOLT WITH 1-3/4" THREAD	1.380	24.840
LCF	18	312222	1" GALVANIZED FLAT WASHER (F436)	0.140	2.520
LCL	18	312223	1" GALVANIZED LOCKWASHER	0.080	1.440
LCN	18	312504	1"-8 HOT DIPPED GALVANIZED NUT	0.430	7.740
Total Wt				2611.71 lb [1185.74 kg]	



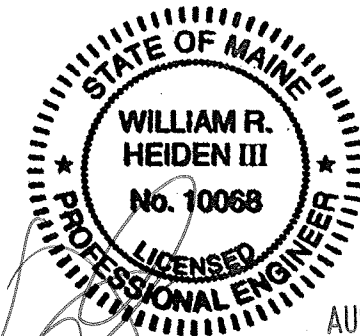
DETAIL A  
ANGLE INTERSECTION CONNECTION



DETAIL B  
MID SIDE PLATE ANGLE CONNECTION



LEG TO LEG CONNECTION  
(SIDE PLATES NOT SHOWN FOR CLARITY)



AUG 16 2016

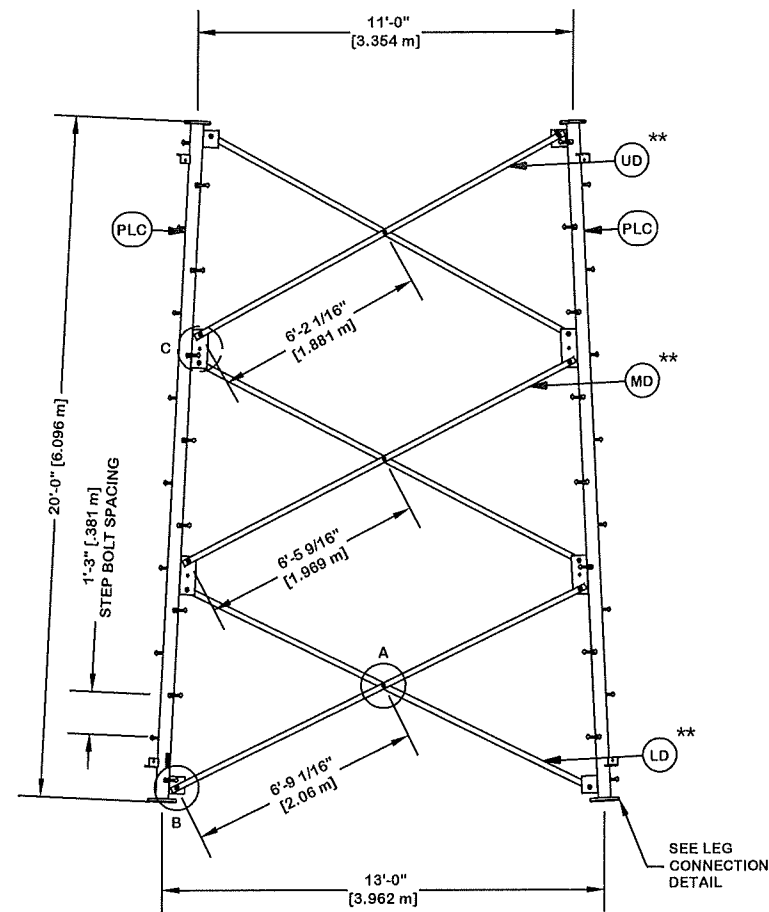
William R. Heiden III, ME Professional Engineer #10068

@A <ACBATQ> REV DESCRIPTION OF REVISIONS CPD BY DATE REVISION HISTORY		SITE <b>CITY OF PORTLAND FD, ME          MOTOROLA SOLUTIONS          U 19 X 180'</b> COPYRIGHT 2013	DESCRIPTION <b>SECTION U-15.0 (40' - 60' ELEVATION)</b>	<b>valmont</b> STRUCTURES 1-877-467-4763 Plymouth, IN 1-800-547-2151 Salem, OR	ENG. FILE NO. <b>324370</b>	PAGE 5 OF 11
		PROPRIETARY NOTE: THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.	STRUCTURE APPROVAL <b>SKK 8/10/2016</b>	FOUNDATION APPROVAL	DWG. NO. <b>268614T</b>	

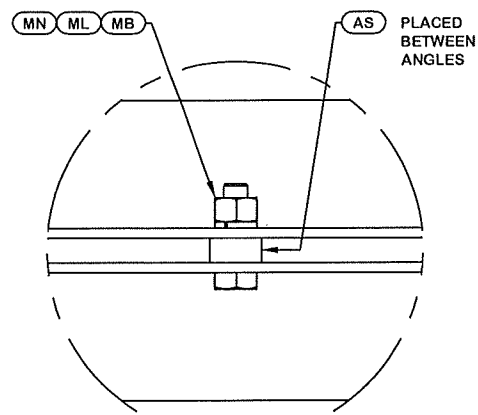
ORIENT LEGS WITH P/N STAMP  
TOWARD BOTTOM OF SECTION

ORIENT ANGLES WITH STAMPED  
END TOWARD TOP OF SECTION

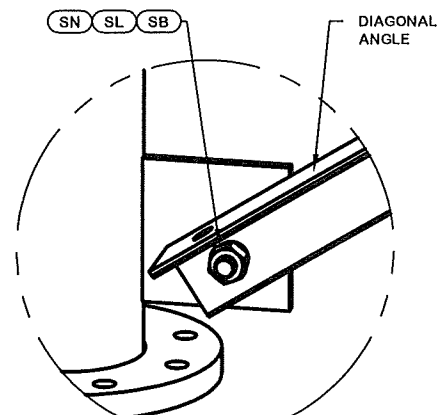
\*\* DIAGONAL ANGLES MUST BE INSTALLED  
WITH THE NON-BOLTED FACE UP, ↑  
THIS MAY BE ON THE OPPOSITE SIDE OF THE  
SIDE PLATE THAN WHAT IS SHOWN IN THE DETAIL.



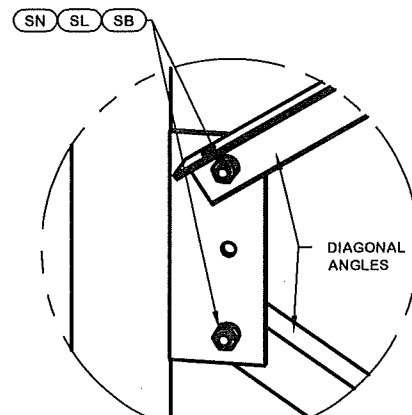
PARTS LIST					
ITEM	QTY	PART NO.	PART DESCRIPTION	UNIT WT.	NET WT.
PLC	3	229377	PIPE LEG SECTION 20'-0" (CLIMBING) 6" SCH. 40 V-SE	537.940	1613.820
STP	48	228189	STEP BOLT ASSY 5/8"-11 X 7" W/ LOCK WASHER HEAVY	1.100	52.800
LD	6	231349	ANGLE V-13 LOW 160 1/16" (W/45 CLIPPED)	43.000	258.000
MB	9	227580	5/8"-11 X 2-1/4" A325T HOT DIPPED GALV. BOLT (FULL	0.640	5.760
AS	9	124838	MID-DIAGONAL SPACER 1 1/16" HOLE 3/8" THICK	0.450	4.050
MN	9	312501	5/8"-11 HOT DIPPED GALVANIZED NUT	0.120	1.080
ML	9	312123	5/8" GALVANIZED LOCKWASHER (53-22230)	0.020	0.180
SL	36	312163	3/4" GALVANIZED LOCKWASHER	0.030	1.080
SN	36	312502	3/4"-10 HOT DIPPED GALVANIZED NUT	0.190	6.840
SB	36	227579	3/4"-10 X 2-1/4" A-325T BOLT WITH FULL THREAD	0.420	15.120
MD	6	226209	ANGLE V-13 MID 152 15/16"	41.080	246.480
UD	6	227341	ANGLE V-13 UP 145 15/16"	39.200	235.200
LCB	18	222016	1"-8 X 4-3/4" A-325 BOLT WITH 1-3/4" THREAD	1.380	24.840
LCF	18	312222	1" GALVANIZED FLAT WASHER (F436)	0.140	2.520
LCL	18	312223	1" GALVANIZED LOCKWASHER	0.080	1.440
LCN	18	312504	1"-8 HOT DIPPED GALVANIZED NUT	0.430	7.740
Total Wt				2476.95 lb [1124.56 kg]	



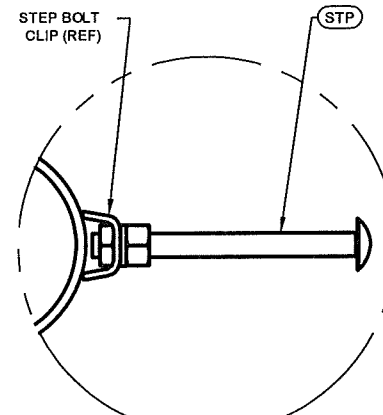
DETAIL A  
ANGLE INTERSECTION CONNECTION



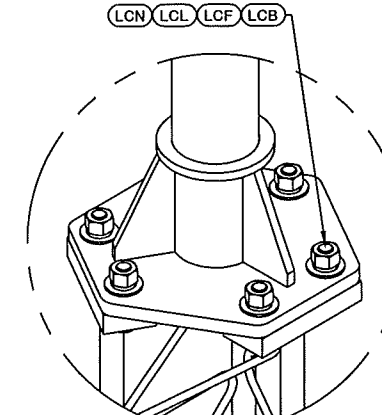
DETAIL B  
END SIDE PLATE ANGLE CONNECTION



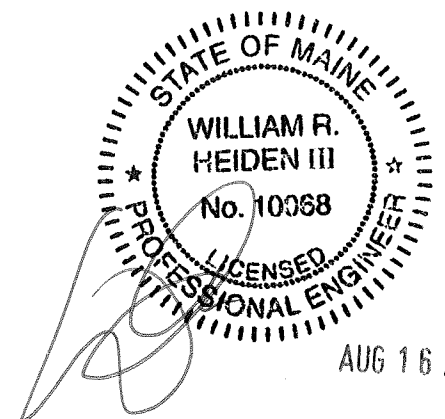
DETAIL C  
MID SIDE PLATE ANGLE CONNECTION



STEP BOLT INSTALLATION



LEG TO LEG CONNECTION  
(SIDE PLATES NOT SHOWN FOR CLARITY)



REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
@A	<ACBATQ>		SKK	8/10/2016
REVISION HISTORY				

SITE	CITY OF PORTLAND FD, ME MOTOROLA SOLUTIONS U 19 X 180'
COPYRIGHT 2013	PROPRIETARY NOTE: THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

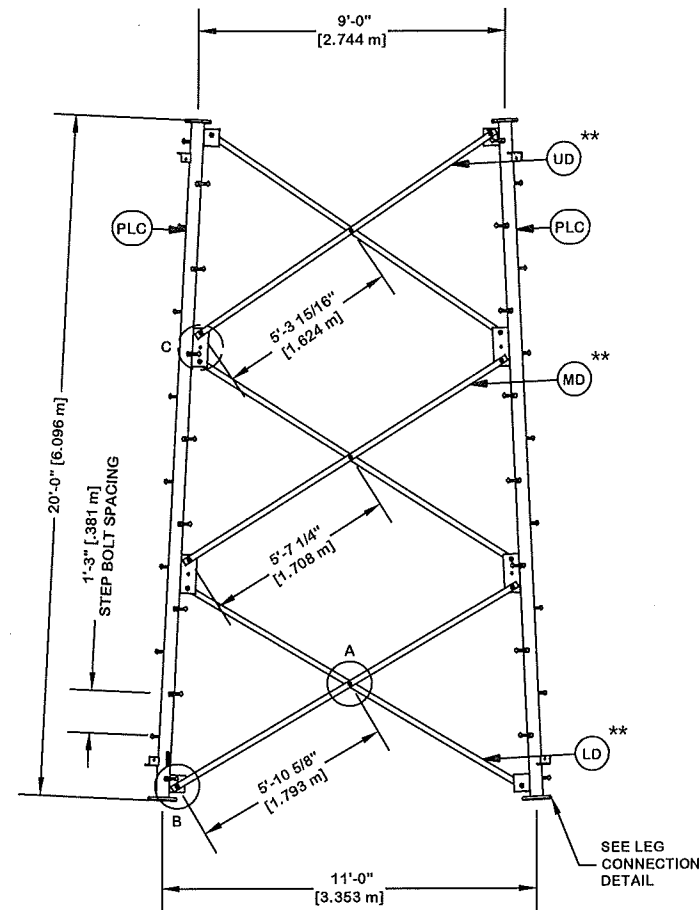
DESCRIPTION	SECTION V-13.0 (60' - 80' ELEVATION)
STRUCTURE APPROVAL	SKK 8/10/2016
FOUNDATION APPROVAL	

<b>valmont</b>	
1-877-467-4763 Plymouth, IN 1-800-547-2151 Salem, OR	
<b>STRUCTURES</b>	
ENG. FILE NO.	324370
DWG. NO.	268614T
PAGE	6 OF 11

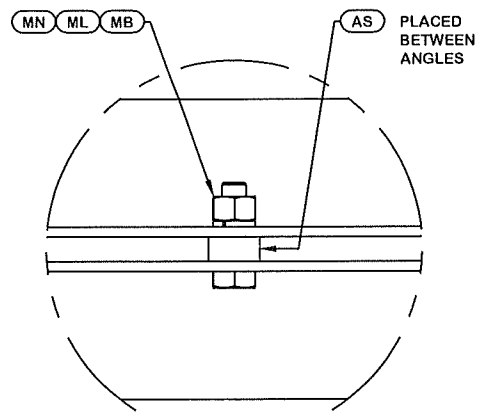
ORIENT LEGS WITH P/N STAMP  
TOWARD BOTTOM OF SECTION

ORIENT ANGLES WITH STAMPED  
END TOWARD TOP OF SECTION

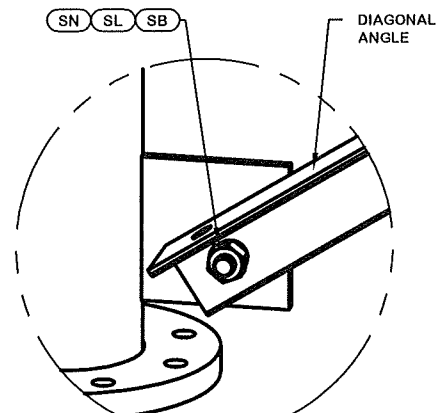
\*\* DIAGONAL ANGLES MUST BE INSTALLED  
WITH THE NON-BOLTED FACE UP, ↑  
THIS MAY BE ON THE OPPOSITE SIDE OF THE  
SIDE PLATE THAN WHAT IS SHOWN IN THE DETAIL.



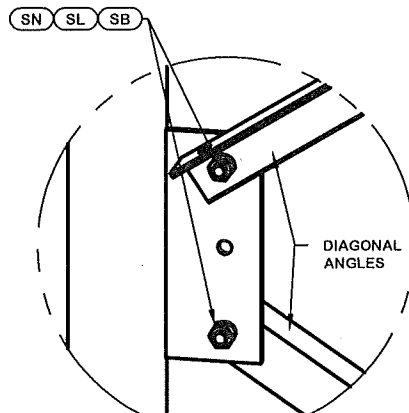
PARTS LIST					
ITEM	QTY	PART NO.	PART DESCRIPTION	UNIT WT.	NET WT.
PLC	3	226206	PIPE LEG SECTION 20' - 0" (CLIMBING) 6" SCH. 40 PI	476.980	1430.940
STP	48	228189	STEP BOLT ASSY 5/8"-11 X 7" W/ LOCK WASHER HEAVY	1.100	52.800
LD	6	231347	ANGLE V-11 LOW 139 1/32" (W/45 CLIPPED)	37.350	224.100
MB	9	227580	5/8"-11 X 2-1/4" A325T HOT DIPPED GALV. BOLT (FULL	0.640	5.760
AS	9	124838	MID-DIAGONAL SPACER 1 1/16" HOLE 3/8" THICK	0.450	4.050
MN	9	312501	5/8"-11 HOT DIPPED GALVANIZED NUT	0.120	1.080
ML	9	312123	5/8" GALVANIZED LOCKWASHER (53-22230)	0.020	0.180
SL	36	312153	3/4" GALVANIZED LOCKWASHER	0.030	1.080
SN	36	312502	3/4"-10 HOT DIPPED GALVANIZED NUT	0.190	6.840
SB	36	227579	3/4"-10 X 2-1/4" A-325T BOLT WITH FULL THREAD	0.420	15.120
MD	6	225037	ANGLE V-11 MID 132 1/4"	35.520	213.120
UD	6	225038	ANGLE V-11 UP 126 5/8"	33.740	202.440
LCB	24	227668	3/4"-10 X 3-1/2" A-325T BOLT WITH FULL THREAD	0.540	12.960
LCF	24	312152	3/4" GALVANIZED FLAT WASHER (F436)	0.080	1.920
LCL	24	312153	3/4" GALVANIZED LOCKWASHER	0.030	0.720
LCN	24	312502	3/4"-10 HOT DIPPED GALVANIZED NUT	0.190	4.560
Total Wt				2177.67 lb [988.68 kg]	



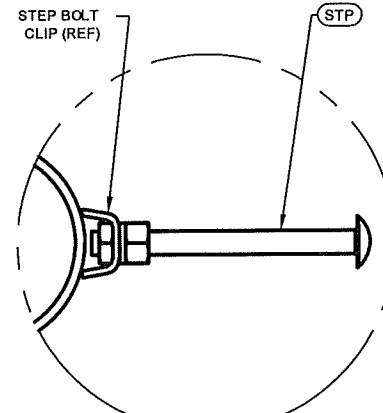
DETAIL A  
ANGLE INTERSECTION CONNECTION



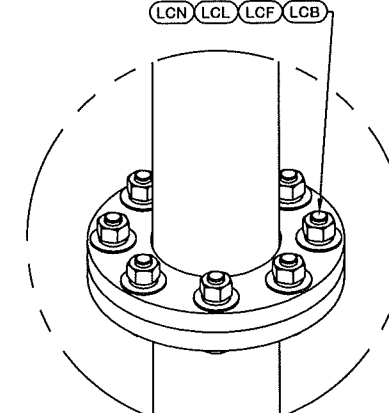
DETAIL B  
END SIDE PLATE ANGLE CONNECTION



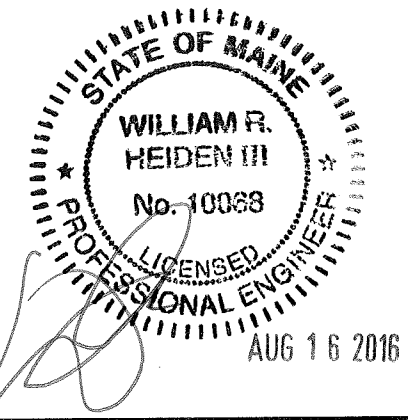
DETAIL C  
MID SIDE PLATE ANGLE CONNECTION



STEP BOLT INSTALLATION



LEG TO LEG CONNECTION  
(SIDE PLATES NOT SHOWN FOR CLARITY)



REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
@A	<ACBATQ>		SKK	8/10/2016
REVISION HISTORY				

SITE	CITY OF PORTLAND FD, ME MOTOROLA SOLUTIONS U 19 X 180'
COPYRIGHT 2013	
PROPRIETARY NOTE:	THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

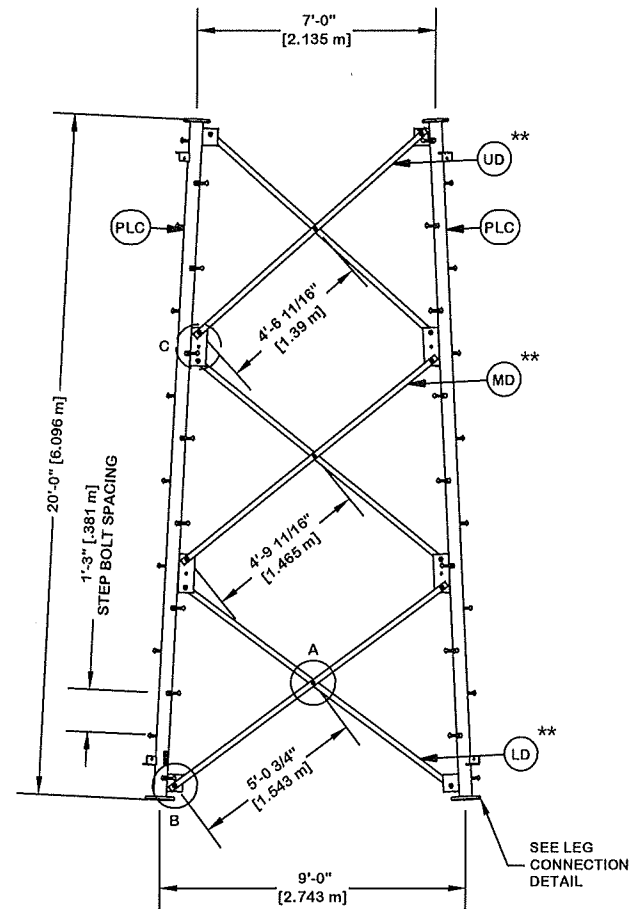
DESCRIPTION	SECTION V-11.0 (80' - 100' ELEVATION)
STRUCTURE APPROVAL	SKK 8/10/2016
FOUNDATION APPROVAL	

1-877-467-4763 Plymouth, IN 1-800-547-2151 Salem, OR	
ENG. FILE NO.	324370
DWG. NO.	268614T

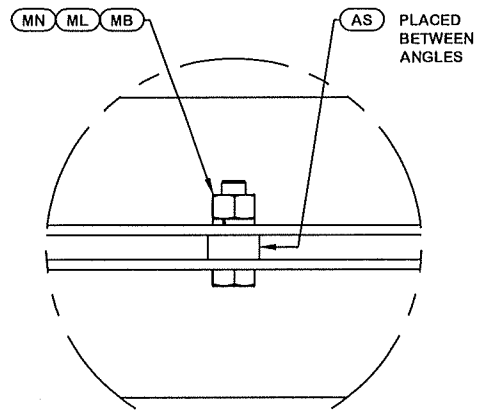
ORIENT LEGS WITH P/N STAMP  
TOWARD BOTTOM OF SECTION

ORIENT ANGLES WITH STAMPED  
END TOWARD TOP OF SECTION

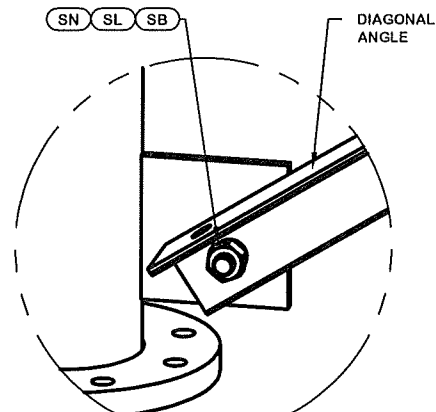
\*\* DIAGONAL ANGLES MUST BE INSTALLED  
WITH THE NON-BOLTED FACE UP, ↑↑  
THIS MAY BE ON THE OPPOSITE SIDE OF THE  
SIDE PLATE THAN WHAT IS SHOWN IN THE DETAIL.



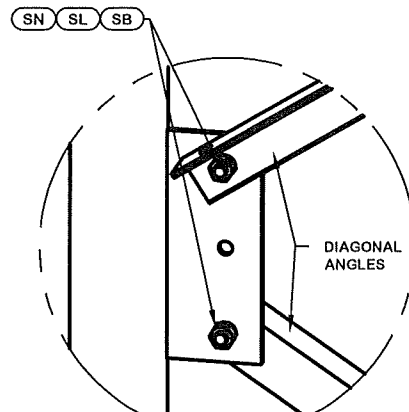
PARTS LIST					
ITEM	QTY	PART NO.	PART DESCRIPTION	UNIT WT.	NET WT.
PLC	3	226192	PIPE LEG SECTION 20'-0" (CLIMBING) 5" SCH. 40 V-SE	396.130	1188.390
STP	48	228189	STEP BOLT ASSY 5/8"-11 X 7" W/ LOCK WASHER HEAVY	1.100	52.800
LD	6	231344	ANGLE V-9 LOW 119 5/32" (W/45 CLIPPED)	25.440	152.640
MB	9	227580	5/8"-11 X 2-1/4" A325T HOT DIPPED GALV. BOLT (FULL)	0.640	5.760
AS	9	124838	MID-DIAGONAL SPACER 11/16" HOLE 3/8" THICK	0.450	4.050
MN	9	312501	5/8"-11 HOT DIPPED GALVANIZED NUT	0.120	1.080
ML	9	312123	5/8" GALVANIZED LOCKWASHER (53-22230)	0.020	0.180
SL	36	312153	3/4" GALVANIZED LOCKWASHER	0.030	1.080
SN	36	312502	3/4"-10 HOT DIPPED GALVANIZED NUT	0.190	6.840
SB	36	227579	3/4"-10 X 2-1/4" A-325T BOLT WITH FULL THREAD	0.420	15.120
MD	6	226195	ANGLE V-9 MID 112 29/32"	24.110	144.660
UD	6	226196	ANGLE V-9 UP 106 29/32"	22.830	136.980
LCB	24	227668	3/4"-10 X 3-1/2" A-325T BOLT WITH FULL THREAD	0.540	12.960
LCF	24	312152	3/4" GALVANIZED FLAT WASHER (F436)	0.080	1.920
LCL	24	312153	3/4" GALVANIZED LOCKWASHER	0.030	0.720
LCN	24	312502	3/4"-10 HOT DIPPED GALVANIZED NUT	0.190	4.560
Total Wt				1729.74 lb [785.32 kg]	



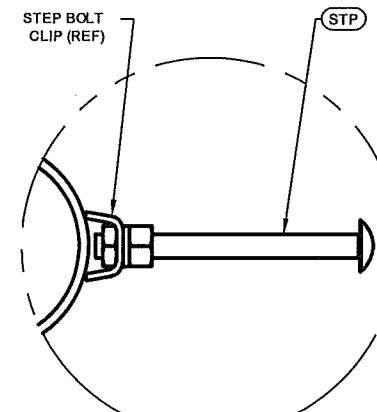
DETAIL A  
ANGLE INTERSECTION CONNECTION



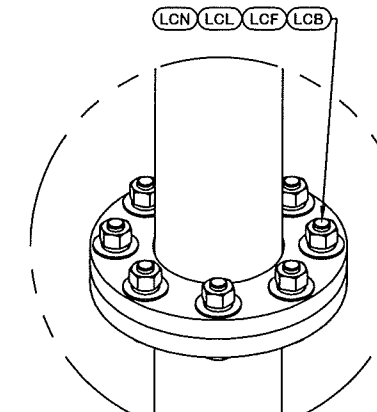
DETAIL B  
END SIDE PLATE ANGLE CONNECTION



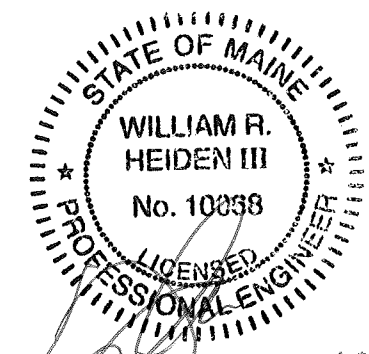
DETAIL C  
MID SIDE PLATE ANGLE CONNECTION



STEP BOLT INSTALLATION



LEG TO LEG CONNECTION  
(SIDE PLATES NOT SHOWN FOR CLARITY)



AUG 16 2016

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
@A	<ACBATCH>		SKK	8/10/2016
REVISION HISTORY				

SITE	CITY OF PORTLAND FD, ME MOTOROLA SOLUTIONS U 19 X 180'
COPYRIGHT 2013	
PROPRIETARY NOTE:	THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION	SECTION V-9.0 (100' - 120' ELEVATION)
STRUCTURE APPROVAL	SKK 8/10/2016
FOUNDATION APPROVAL	

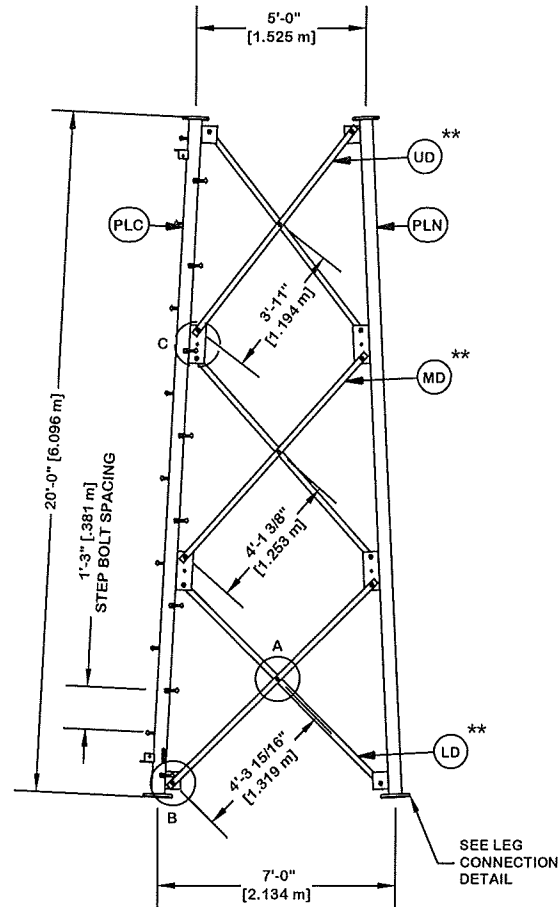
<b>valmont</b>	
1-877-467-4763 Plymouth, IN 1-800-547-2151 Salem, OR	
<b>STRUCTURES</b>	
ENG. FILE NO.	324370
DWG. NO.	268614T



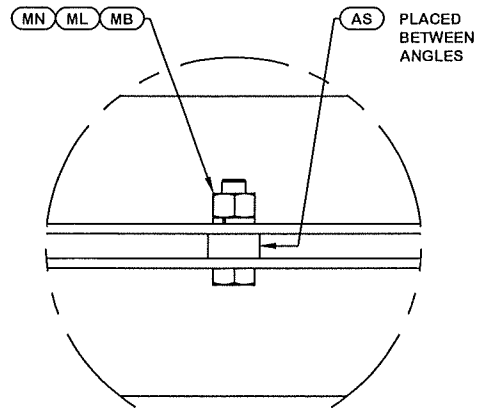
ORIENT LEGS WITH P/N STAMP  
TOWARD BOTTOM OF SECTION

ORIENT ANGLES WITH STAMPED  
END TOWARD TOP OF SECTION

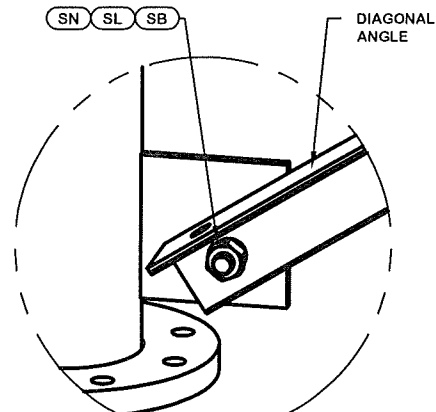
\*\* DIAGONAL ANGLES MUST BE INSTALLED  
WITH THE NON-BOLTED FACE UP, ↑↑  
THIS MAY BE ON THE OPPOSITE SIDE OF THE  
SIDE PLATE THAN WHAT IS SHOWN IN THE DETAIL.



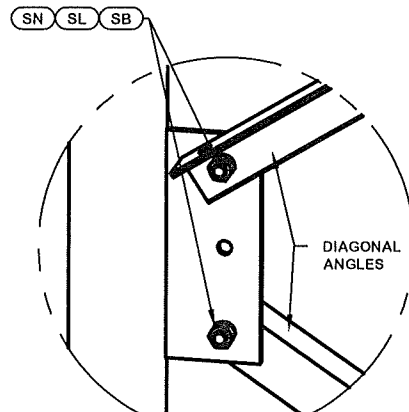
PARTS LIST					
ITEM	QTY	PART NO.	PART DESCRIPTION	UNIT WT.	NET WT.
PLC	1	226200	PIPE LEG SECTION 20'-0" (CLIMBING) 5" SCH. 40 V-SE	389.610	389.610
PLN	2	226201	PIPE LEG SECTION 20'-0" (NON-CLIMBING) 5" SCH. 40	386.250	772.500
STP	16	228189	STEP BOLT ASSY 5/8"-11 X 7" W/ LOCK WASHER HEAVY	1.100	17.600
LD	6	231342	ANGLE V-7 LOW 101 3/16" (W/45 CLIPPED)	21.600	129.600
MB	9	227580	5/8"-11 X 2-1/4" A325T HOT DIPPED GALV. BOLT (FULL)	0.640	5.760
AS	9	124838	MID-DIAGONAL SPACER 11/16" HOLE 3/8" THICK	0.450	4.050
MN	9	312501	5/8"-11 HOT DIPPED GALVANIZED NUT	0.120	1.080
ML	9	312123	5/8" GALVANIZED LOCKWASHER (53-22230)	0.020	0.180
SL	36	312153	3/4" GALVANIZED LOCKWASHER	0.030	1.080
SN	36	312502	3/4"-10 HOT DIPPED GALVANIZED NUT	0.190	6.840
SB	36	227579	3/4"-10 X 2-1/4" A-325T BOLT WITH FULL THREAD	0.420	15.120
MD	6	226189	ANGLE V-7 MID 95 13/16"	20.460	122.760
UD	6	226190	ANGLE V-7 UP 90 27/32"	19.390	116.340
LCB	24	227668	3/4"-10 X 3-1/2" A-325T BOLT WITH FULL THREAD	0.540	12.960
LCF	24	312152	3/4" GALVANIZED FLAT WASHER (F436)	0.080	1.920
LCL	24	312153	3/4" GALVANIZED LOCKWASHER	0.030	0.720
LCN	24	312502	3/4"-10 HOT DIPPED GALVANIZED NUT	0.190	4.560
Total Wt				1602.68 lb [727.63 kg]	



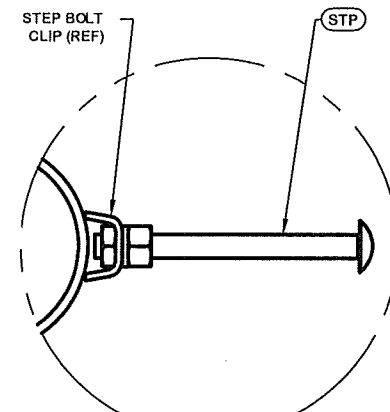
DETAIL A  
ANGLE INTERSECTION CONNECTION



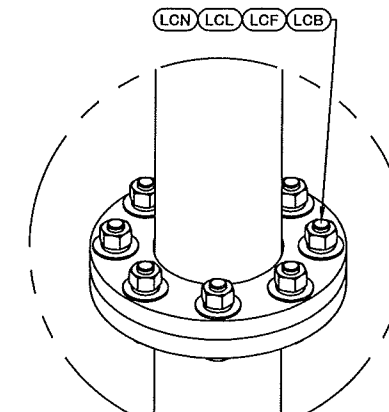
DETAIL B  
END SIDE PLATE ANGLE CONNECTION



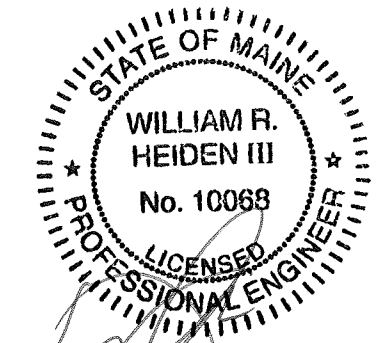
DETAIL C  
MID SIDE PLATE ANGLE CONNECTION



STEP BOLT INSTALLATION



LEG TO LEG CONNECTION  
(SIDE PLATES NOT SHOWN FOR CLARITY)



AUG 16 2016

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
@A	<ACBATCH>		SKK	8/10/2016
REVISION HISTORY				

SITE	CITY OF PORTLAND FD, ME MOTOROLA SOLUTIONS U 19 X 180'
COPYRIGHT 2013	
PROPRIETARY NOTE:	THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

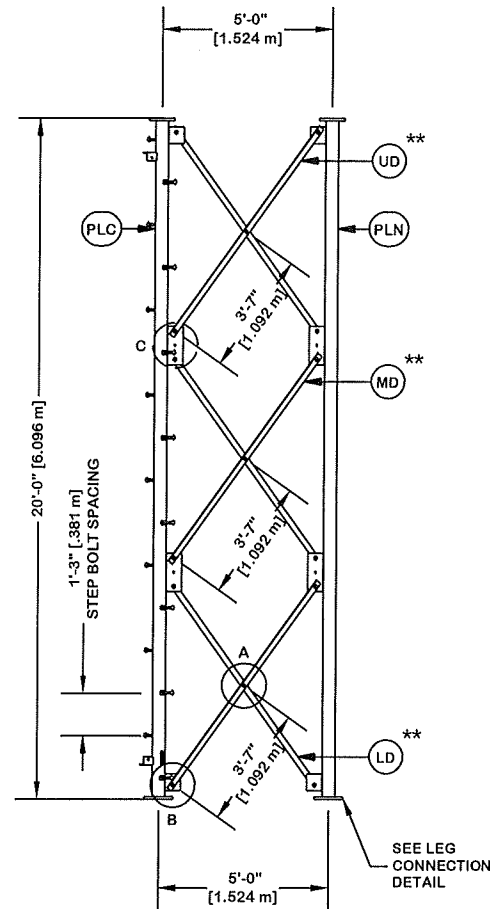
DESCRIPTION	SECTION V-7.0 (120' - 140' ELEVATION)
STRUCTURE APPROVAL	SKK 8/10/2016
FOUNDATION APPROVAL	

<b>valmont</b>	
1-877-467-4763 Plymouth, IN 1-800-547-2151 Salem, OR	
<b>STRUCTURES</b>	
ENG. FILE NO.	324370
DWG. NO.	268614T

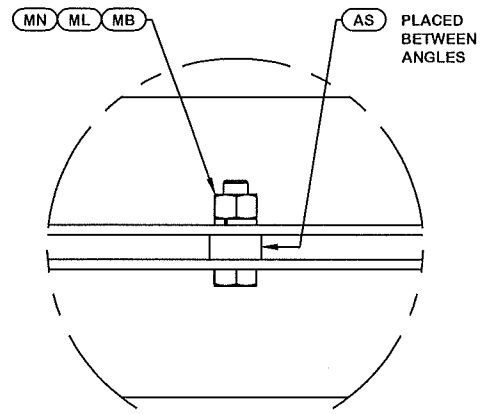
ORIENT LEGS WITH P/N STAMP  
TOWARD BOTTOM OF SECTION

ORIENT ANGLES WITH STAMPED  
END TOWARD TOP OF SECTION

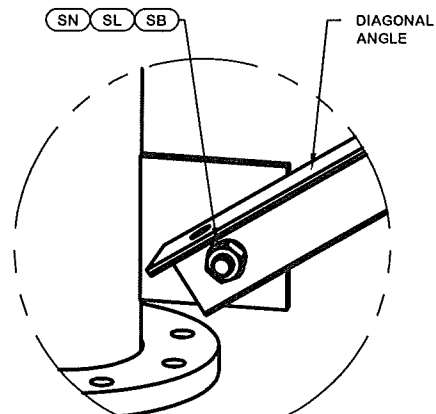
\*\* DIAGONAL ANGLES MUST BE INSTALLED  
WITH THE NON-BOLTED FACE UP, ↑  
THIS MAY BE ON THE OPPOSITE SIDE OF THE  
SIDE PLATE THAN WHAT IS SHOWN IN THE DETAIL.



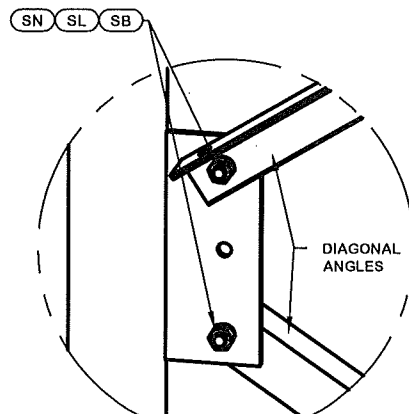
PARTS LIST					
ITEM	QTY	PART NO.	PART DESCRIPTION	UNIT WT.	NET WT.
PLC	1	226184	PIPE LEG SECTION 20'-0" (CLIMBING) 4" SCH. 40 V-SE	302.080	302.080
PLN	2	226185	PIPE LEG SECTION 20'-0" (NON-CLIMBING) 4" SCH. 40	284.670	569.340
STP	16	228189	STEP BOLT ASSY 5/8"-11 X 7" W/ LOCK WASHER HEAVY	1.100	17.600
UD, MD, AND LD	18	227113	ANGLE V-5 STR 89 17/32"	19.110	343.980
ML	9	312123	5/8" GALVANIZED LOCKWASHER (53-22230)	0.020	0.180
AS	9	116467	SPACER 1/4" THICK 11/16" DIA HOLE	0.250	2.250
MB	9	227580	5/8"-11 X 2-1/4" A325T HOT DIPPED GALV. BOLT (FULL	0.640	5.760
MN	9	312501	5/8"-11 HOT DIPPED GALVANIZED NUT	0.120	1.080
SL	36	312153	3/4" GALVANIZED LOCKWASHER	0.030	1.080
SN	36	312502	3/4"-10 HOT DIPPED GALVANIZED NUT	0.190	6.840
SB	36	227579	3/4"-10 X 2-1/4" A-325T BOLT WITH FULL THREAD	0.420	15.120
LCB	18	227668	3/4"-10 X 3-1/2" A-325T BOLT WITH FULL THREAD	0.540	9.720
LCF	18	312152	3/4" GALVANIZED FLAT WASHER (F436)	0.080	1.440
LCL	18	312153	3/4" GALVANIZED LOCKWASHER	0.030	0.540
LCN	18	312502	3/4"-10 HOT DIPPED GALVANIZED NUT	0.190	3.420
Total Wt				1280.43 lb [581.33 kg]	



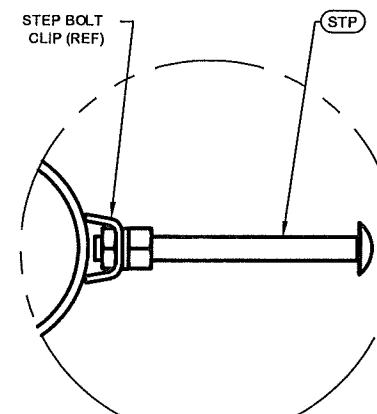
DETAIL A  
ANGLE INTERSECTION CONNECTION



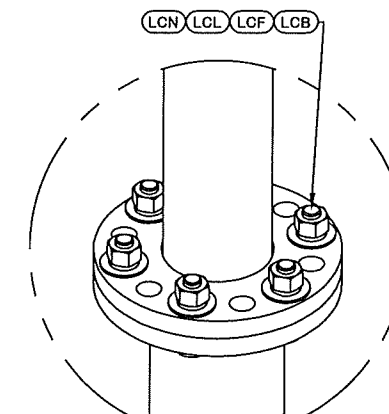
DETAIL B  
END SIDE PLATE ANGLE CONNECTION



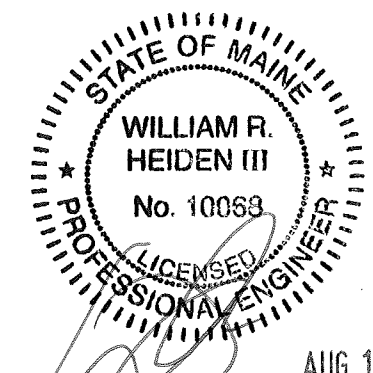
DETAIL C  
MID SIDE PLATE ANGLE CONNECTION



STEP BOLT INSTALLATION



LEG TO LEG CONNECTION  
(SIDE PLATES NOT SHOWN FOR CLARITY)



AUG 16 2016

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
@A	<ACBATC>		SKK	8/10/2016
REVISION HISTORY				

SITE  
CITY OF PORTLAND FD, ME  
MOTOROLA SOLUTIONS  
U 19 X 180'

COPYRIGHT 2013

PROPRIETARY NOTE:  
THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION  
SECTION V-5.0 (140' - 160' ELEVATION)

STRUCTURE APPROVAL  
SKK 8/10/2016

FOUNDATION APPROVAL

**valmont** STRUCTURES

1-877-467-4763 Plymouth, IN  
1-800-547-2151 Salem, OR

ENG. FILE NO. 324370

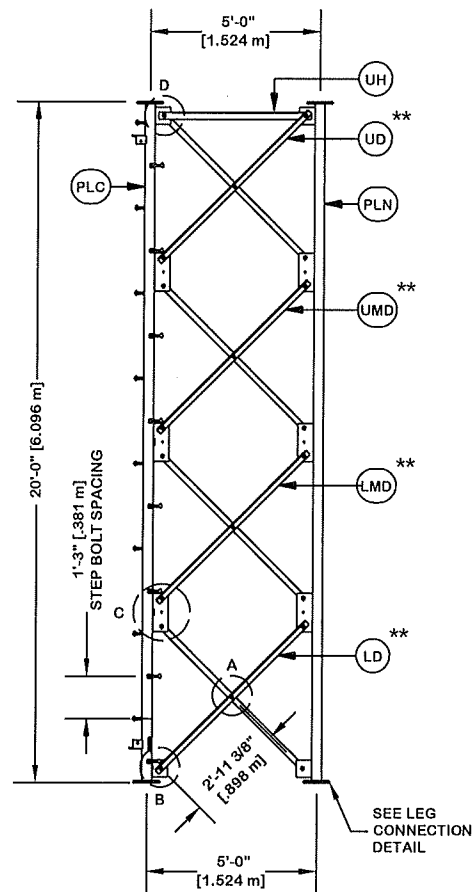
DWG. NO. 268614T

PAGE 10 OF 11

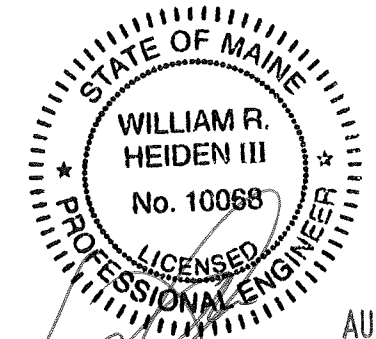
ORIENT LEGS WITH P/N STAMP  
TOWARD BOTTOM OF SECTION

INSTALL ANGLES WITH STAMPED  
END TOWARD TOP OF SECTION

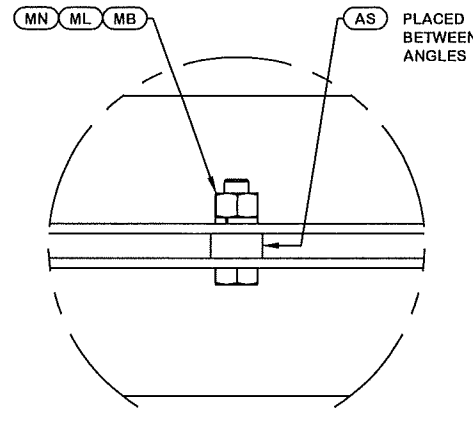
\*\* DIAGONAL ANGLES MUST BE INSTALLED  
WITH THE NON-BOLTED FACE UP, ↑↑  
THIS MAY BE ON THE OPPOSITE SIDE OF THE  
SIDE PLATE THAN WHAT IS SHOWN IN THE DETAIL.



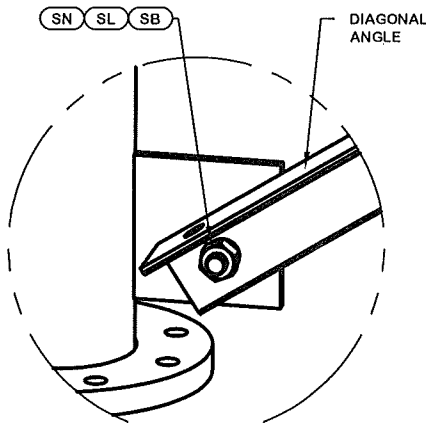
PARTS LIST					
ITEM	QTY	PART NO.	PART DESCRIPTION	UNIT WT.	NET WT.
PLC	1	226160	PIPE LEG SECTION 20'-0" (CLIMBING) 2 1/2" SCH. 40	194.380	194.380
PLN	2	226161	PIPE LEG SECTION 20'-0" (NON-CLIMBING) 2 1/2" SCH.	189.170	378.340
STP	16	228189	STEP BOLT ASSY 5/8"-11 X 7" W/ LOCK WASHER HEAVY	1.100	17.600
UD, UMD, LMD, AND LD	24	227077	ANGLE V-5 STR 74 7/32" - 2" X 2" X 1/8" ANGLE (A36)	10.710	257.040
ML	12	312123	5/8" GALVANIZED LOCKWASHER (53-22230)	0.020	0.240
AS	12	116467	SPACER 1/4" THICK 1 1/16" DIA HOLE	0.250	3.000
MB	12	227580	5/8"-11 X 2-1/4" A325T HOT DIPPED GALV. BOLT (FULL	0.640	7.680
MN	12	312501	5/8"-11 HOT DIPPED GALVANIZED NUT	0.120	1.440
SL	48	312153	3/4" GALVANIZED LOCKWASHER	0.030	1.440
SN	48	312502	3/4"-10 HOT DIPPED GALVANIZED NUT	0.190	9.120
SB	48	227579	3/4"-10 X 2-1/4" A-325T BOLT WITH FULL THREAD	0.420	20.160
UH	3	227584	UPPER HORIZONTAL BRACE ANGLE FOR V-SERIES TOWER (2	10.630	31.890
LCB	12	227668	3/4"-10 X 3-1/2" A-325T BOLT WITH FULL THREAD	0.540	6.480
LCF	12	312152	3/4" GALVANIZED FLAT WASHER (F436)	0.080	0.960
LCL	12	312153	3/4" GALVANIZED LOCKWASHER	0.030	0.360
LCN	12	312502	3/4"-10 HOT DIPPED GALVANIZED NUT	0.190	2.280
Total Wt				932.41 lb [423.32 kg]	



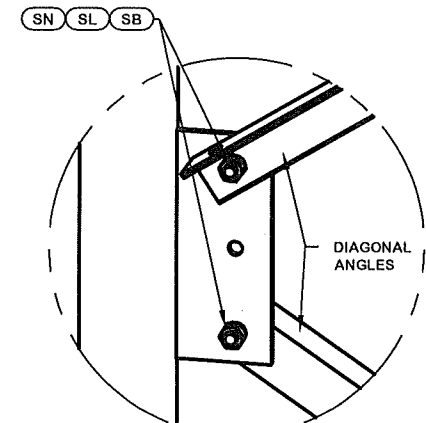
AUG 16 2016



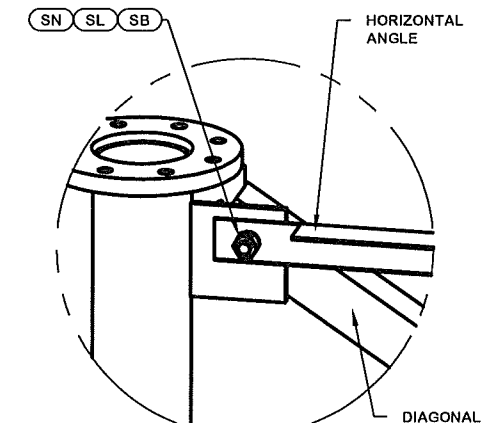
DETAIL A  
ANGLE INTERSECTION CONNECTION



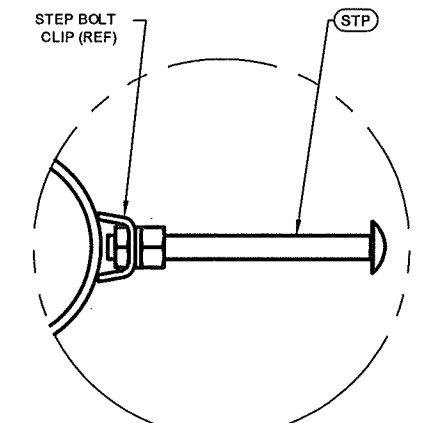
DETAIL B  
END SIDE PLATE ANGLE CONNECTION



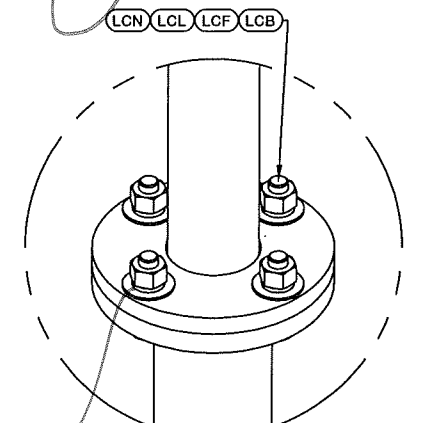
DETAIL C  
MID SIDE PLATE ANGLE CONNECTION



DETAIL D  
UPPER HORIZONTAL ANGLE CONNECTION

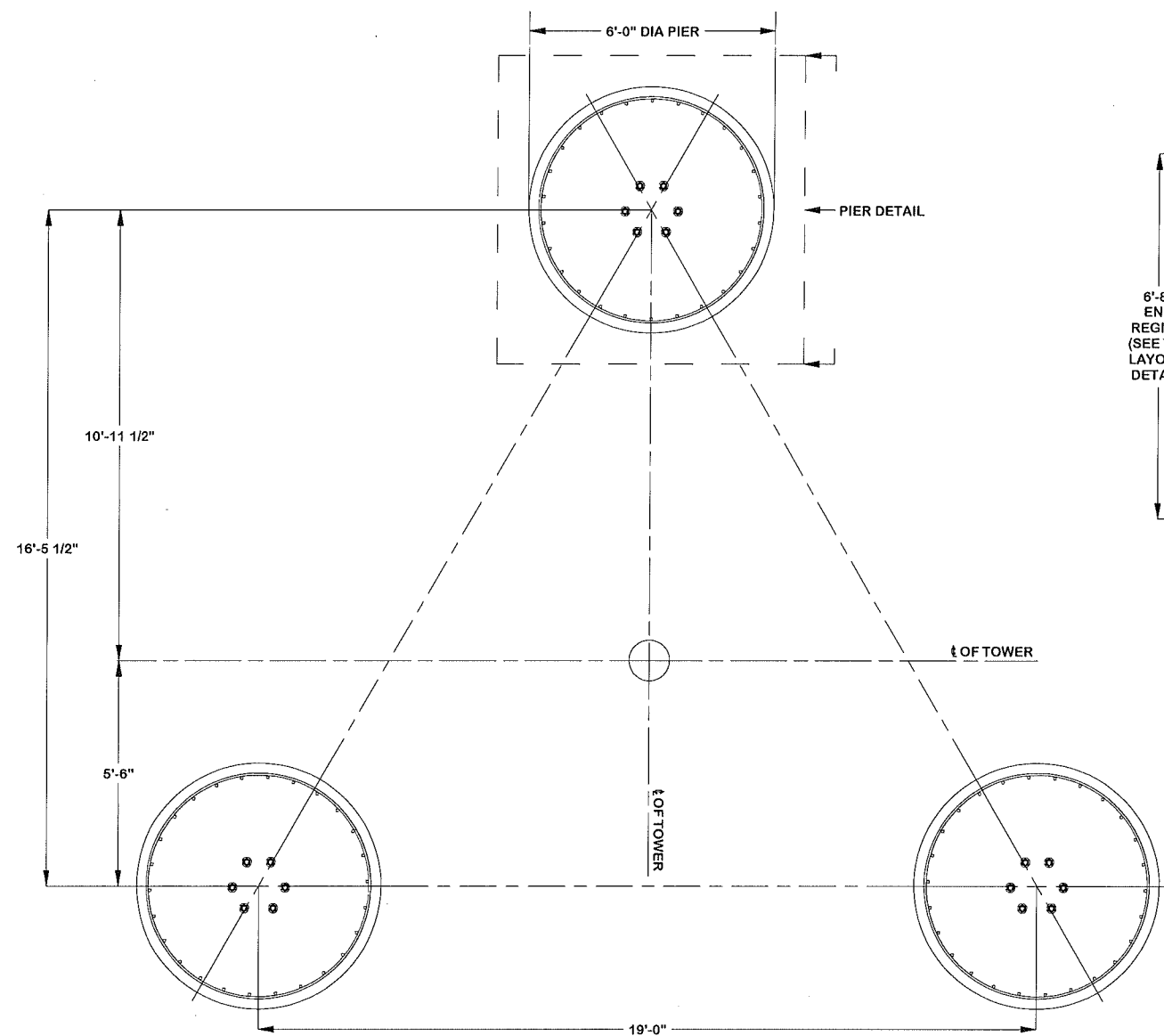


STEP BOLT INSTALLATION



LEG TO LEG CONNECTION  
(SIDE PLATES NOT SHOWN FOR CLARITY)

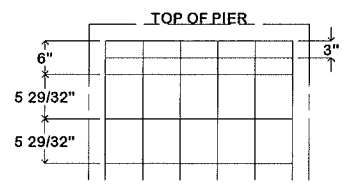
@A <ACBATCH>		SSK 8/10/2016		SITE <b>CITY OF PORTLAND FD, ME          MOTOROLA SOLUTIONS          U 19 X 180'</b>		DESCRIPTION <b>SECTION V-5.0 (160' - 180' ELEVATION)</b>				ENG. FILE NO. <b>324370</b>	DWG. NO. <b>268614T</b>	PAGE <b>11 OF 11</b>
PROPRIETARY NOTE: THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.		REVISION HISTORY		COPYRIGHT 2013		STRUCTURE APPROVAL <b>SKK 8/10/2016</b>		FOUNDATION APPROVAL				



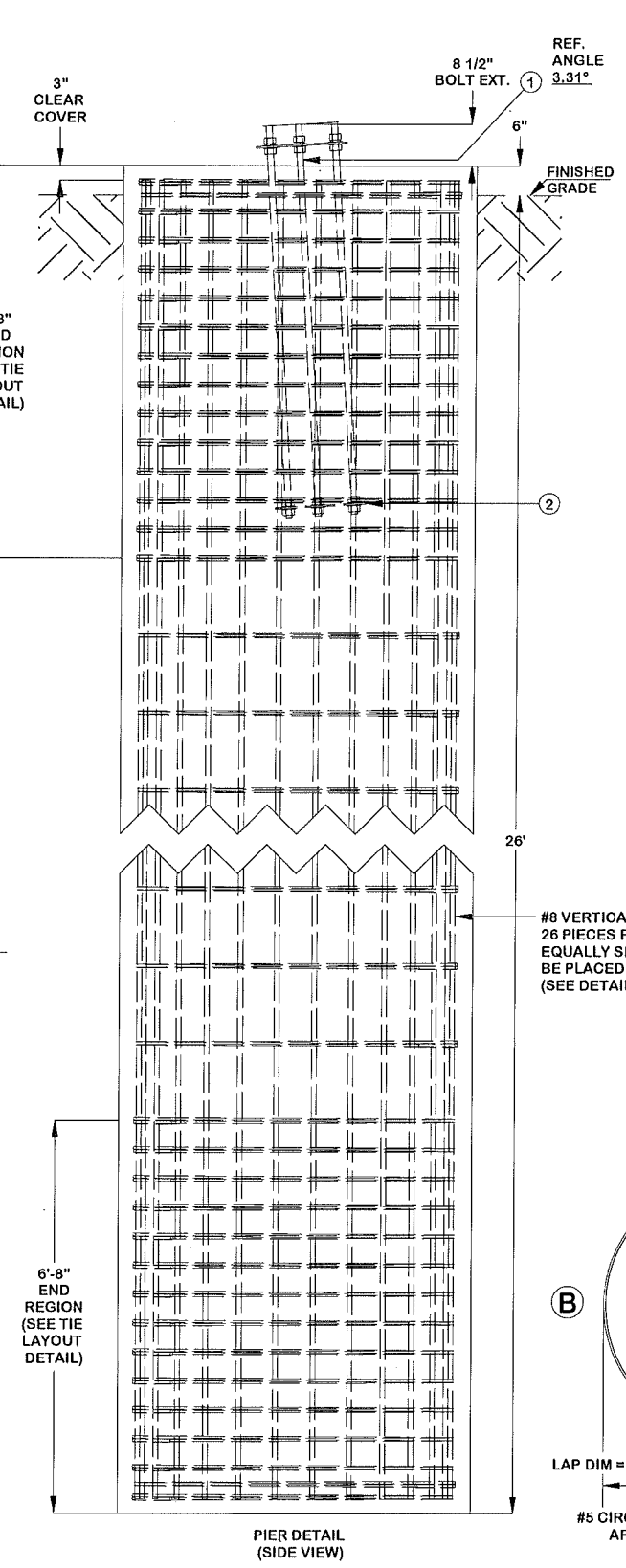
PACK NON-SHRINK STRUCTURAL GROUT UNDER FLANGE AFTER LEVELING TOWER  
 NON-SHRINK GROUT TO HAVE COMPRESSIVE STRENGTH OF 5000 PSI @ 28 DAYS  
 CONCRETE NOTES: 27.8 CUBIC YARDS OF CONCRETE PER PIER REQUIRED (83.3 TOTAL).  
 CONCRETE TO HAVE MIN COMPRESSIVE STRENGTH OF 4000 PSI @ 28 DAYS.

ATTENTION CONTRACTOR INSTALLING ANCHOR BOLTS!  
 1 1/4" DIA. ANCHOR BOLTS REQUIRED.  
 VERIFY THE PART NUMBER AND SIZES FOR ALL COMPONENTS ON THIS PAGE.  
 IF THERE ARE ANY DISCREPANCIES, PLEASE NOTIFY VALMONT/PIROD, INC  
 PRIOR TO INSTALLATION.

- TEMPLATE INSTALLATION NOTES:
1. TEMPLATE PLACEMENT MUST BE +/- 3".
  2. TEMPLATE ASSEMBLY MUST BE LEVEL +/- 1".
  3. BASE LEG REFERENCE ANGLE 3.31°.
  4. INSTALLED TEMPLATE CLEARANCE: 2" MIN - 4" MAX
  5. MUST USE TEMPLATE ASSEMBLY #213280



CIRCULAR TIE LAYOUT  
 (NOT TO SCALE)  
 PLACE ONE TIE 3" FROM THE END TIE  
 AT THE TOP AND BOTTOM OF PIER.  
 PLACE REMAINING TIES @ 5 29/32"  
 NOMINAL SPACING WITHIN END REGIONS  
 & 15 13/16" NOMINAL SPACING  
 IN THE REMAINDER OF PIER.  
 PLACE CIRCULAR TIES SO  
 LAPS ON ADJACENT TIES  
 ARE 180 DEGREES APART.

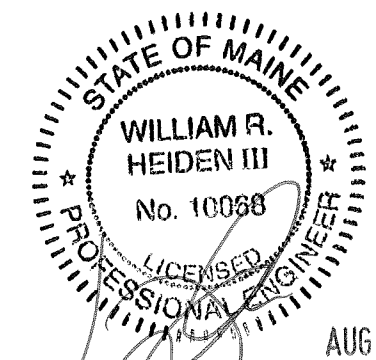
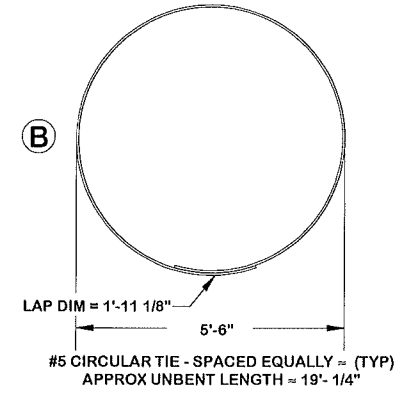
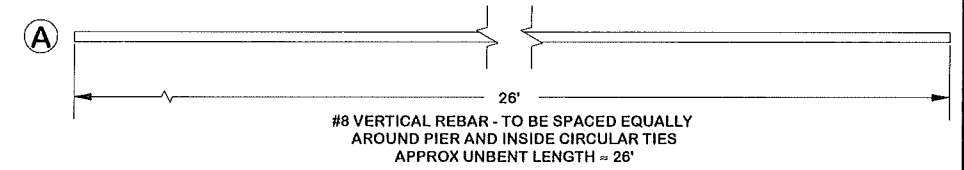


REBAR/ANCHOR STEEL TABLE				
ITEM	QTY	PART DESCRIPTION	UNIT WT.	NET WT.
1	18	1 1/4" DIA. x 80" LONG ANCHOR BOLT - 109881	27.88	501.80
2	3	EMBEDMENT PLATE - 217970	19.39	58.17
A	78	VERTICAL REBAR (#8 REBAR)	69.58	5427.47
B	117	CIRCULAR TIE (#5 REBAR)	19.89	2326.96
APPROX TOTAL WT #				8314.40

REBAR NOTES: ALL REINFORCING BARS MUST CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS

FOUNDATION NOTES:

1. SOIL AS PER REPORT BY TERRACON, PROJECT# J3165017, DATED 08/04/16 (REVISED 08/16/16)
2. CONCRETE TO BE 4000 PSI @ 28 DAYS. REINFORCING BAR TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. CONCRETE INSTALLATION TO CONFORM TO ACI-318 (2008) BUILDING REQUIREMENTS FOR REINFORCED CONCRETE. ALL CONCRETE TO BE PLACED AGAINST UNDISTURBED EARTH FREE OF WATER AND ALL FOREIGN OBJECTS AND MATERIALS. A MINIMUM OF THREE INCHES OF CONCRETE SHALL COVER ALL REINFORCEMENT. WELDING OF REBAR NOT PERMITTED.
3. A COLD JOINT IS PERMISSIBLE UPON CONSULTATION WITH PIROD. ALL COLD JOINTS SHALL BE COATED WITH BONDING AGENTS PRIOR TO SECOND POUR.
4. ALL REINFORCING STEEL TO BE FORMED INTO A CAGE PRIOR TO SETTING INTO POSITION IN THE EXCAVATED PIER.
5. PERMANENT STEEL CASING SHALL NOT BE USED WITHOUT CONSENT FROM FOUNDATION DESIGNERS.
6. BENDING, STRAIGHTENING OR REALIGNING (HOT OR COLD) OF THE ANCHOR BOLTS BY ANY METHOD IS PROHIBITED.
7. CROWN TOP OF FOUNDATION FOR PROPER DRAINAGE.
8. FOUNDATION IS TO BEAR ON INSITU GNEISS BEDROCK AT APPROXIMATELY 26.0' BELOW GRADE. THE BEARING SURFACE IS TO BE FREE OF ANY LOOSE MATERIAL & SUBSEQUENTLY INSPECTED BY A QUALIFIED ON-SITE GEOTECHNICAL ENGINEER.
9. A TEMPORARY, FULL LENGTH STEEL CASING MAY BE REQUIRED DURING INSTALLATION.
10. DRILLING SLURRY AND TREMIE METHODS OF CONCRETE PLACEMENT MAY BE REQUIRED DURING INSTALLATION.
11. DIFFICULTIES DURING EXCAVATION MAY ARISE DUE TO THE PRESENCE OF BOULDERS, COBBLES, AND/OR SHALLOW BEDROCK. THE DRILLING CONTRACTOR SHOULD BE PREPARED TO REMOVE ROCK AND/OR ROCK CORES FROM THE EXCAVATION.



AUG 16 2016

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
REVISION HISTORY				

SITE	CITY OF PORTLAND FD, ME MOTOROLA SOLUTIONS U 19 X 180'
COPYRIGHT 2013	
PROPRIETARY NOTE: THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.	

DESCRIPTION	DRILLED PIERS TOWER FOUNDATION #1
STRUCTURE APPROVAL	FOUNDATION APPROVAL
	MS13 8/16/2016

1-877-467-4763 Plymouth, IN 1-800-547-2151 Salem, OR	
ENG. FILE NO.	324370
DWG. NO.	268614F