

ANALYSIS OF VALMONT INDUSTRIES LIGHTING STRUCTURE  
 IN ACCORDANCE WITH AASHTO-2009 RQMTS. (FINAL DEFLECTED POSITION)  
 BY BNS 5/12/2014 VERSION Fuse 1.10.0.540 32-bit

SUBJECT: VERMONT, 34' & 31' MAST ARMS W/12' LUM ARM

FOLDER: VTTRAF FILE: 3431L12

THIS PAGE PROVIDES THE PERTINENT INFORMATION CONCERNING THE ANALYSIS  
 OF THE ARM-TO-POLE ATTACHMENT COMPONENTS OF THE SIGNAL AND SIGN ARMS.

\*\*\*\*\* INPUT DATA \*\*\*\*\*  
 ARM 1 ARM 2

CONNECTION BOLT DATA

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=====
NUMBER                =      4      4
BOLT DIAMETER (IN)    =    1.250  1.250
ASTM SPECIFICATION    =    A325   A325
HORIZONTAL SPACING (IN) =    14.50  14.50
VERTICAL SPACING (IN) =    14.50  14.50
  
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ATTACHMENT PLATE DATA

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=====
HORIZONTAL WIDTH (IN) =    17.75  17.75
VERTICAL WIDTH (IN)  =    17.75  17.75
THICKNESS (IN)       =    1.500  1.500
YIELD STRENGTH (KSI) =      36    36
GUSSET THICKNESS (IN)
- VERTICAL            =    0.250  0.250
- HORIZONTAL          =    0.250  0.250
  
```

ATTACHMENT TYPE

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ARM 1:  SIMPLEX - RING-STIFFENED BOX, TAPPED,  BASE WELD TYPE = Full-Pen
ARM 2:  SIMPLEX - RING-STIFFENED BOX, TAPPED,  BASE WELD TYPE = Full-Pen
  
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\*\*\*\*\* RESULTS \*\*\*\*\*

ANALYSIS OF SIGNAL/SIGN ARM SIMPLEX BOLTS

ARM	MAX. BOLT CSR	GROUP LOAD NO.	TENSION LBS	APPLIED STRESS KSI	ALLOWABLE STRESS KSI
1	0.42	3	22642	18.45	44.22
2	0.36	3	19609	15.98	44.22

ANALYSIS OF SIGNAL/SIGN ARM SIMPLEX PLATES

ARM	MAX. PLATE CSR	GROUP LOAD NO.	APPLIED STRESS KSI	ALLOWABLE STRESS KSI	ANGLE OF FAILURE LINE DEGREES	LENGTH OF BEND LINE IN
1	0.63	3	19.96	31.60	45	13.56
2	0.56	3	17.60	31.60	45	14.06