



Request for Proposals PTC 19-06 Traffic Signal Installation at Technology Parkway and Technology Parkway South

ADDENDUM #1

The following changes, additions or deletions shall be made to the following document(s); all other conditions remain the same. Each Bidder shall be responsible for ascertaining, prior to submitting a Bid, that they have received all issued Addenda.

QUESTIONS

- 1) How many contract days to complete this project?
Response: Sixty (60)
- 2) Is the City of Peachtree Corners providing the mast arm assemblies for this project?
Response: The mast arm assemblies will be provided for this project
- 3) Is the City of Peachtree Corners providing the pedestrian poles for this project?
Response: The pedestrian poles will not be provided by the City and shall be included in the traffic signal installation pay item.
- 4) Can the City please provide the size of the proposed street name signs?
Response: Overhead street name signs shall be a height of 18"
- 5) I noticed that there is not a pay item for the radar detection system please advise if the city is going to provide a pay item for the cost of the radar detection system proposed in the plans?
Response: Radar detection system shall be included in the traffic signal installation pay item.
- 6) Is the City of Peachtree Corners providing a complete ATC cabinet assembly as listed in the list of materials A-K?
Response: The City of Peachtree Corners will be providing the complete ATC cabinet assembly. Contractors shall include the installation cost in pay item for traffic signal installation
- 7) What organization will handle inspection?
Response: The City of Peachtree Corners will handle construction inspections
- 8) Whose specification does this job need to meet? Gwinnett? GDOT?
Response: The project shall used Georgia Department of Transportation specifications
- 9) Is the 60 day completion period for calendar days or working days, and is this after approval of submittals?
Response: The 60 day completion period is for calendar days and will be from the Notice to Proceed Date
- 10) When is award and notice to proceed expected after the bid date?
Response: The anticipated Notice of Award will be issued end of business day July 24, 2019. The anticipated Notice to Proceed will be issued for July 29, 2019.
- 11) The equipment to be provided by the city, where is this to be picked up from?
Response: The equipment provided by the city shall be picked up at 310 Technology Parkway, Peachtree Corners, GA 30092
- 12) For the poles provided, are the anchor bolts being provided? Also can the pole submittal data be provided to help with calculating installation cost?
Response: The mast arm poles' anchor bolts will also be provided by the City. The pole submittals are attached to this addendum.

13) Is the roadway marking and concrete sidewalk work being performed by others? If so when will the work be in place?

Response: **The roadway marking and sidewalk work is being installed by others and will be installed in conjunction to the signal project.**

14) What power will be used for the signal in this location?

Response: **Contractor will be responsible for arranging power for the installation. Georgia Power is the provider in the area.**

BID DOCUMENT CHANGES

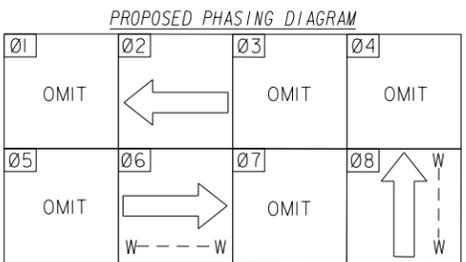
**The Bid Form was corrected to state the work must be completed within sixty days.
Bid Close Date changed to Monday July 22, 2019 11:00 a.m. EDT.**

PLAN CHANGES

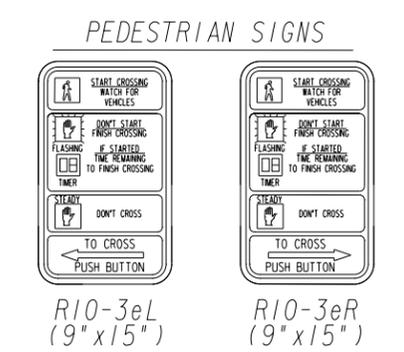
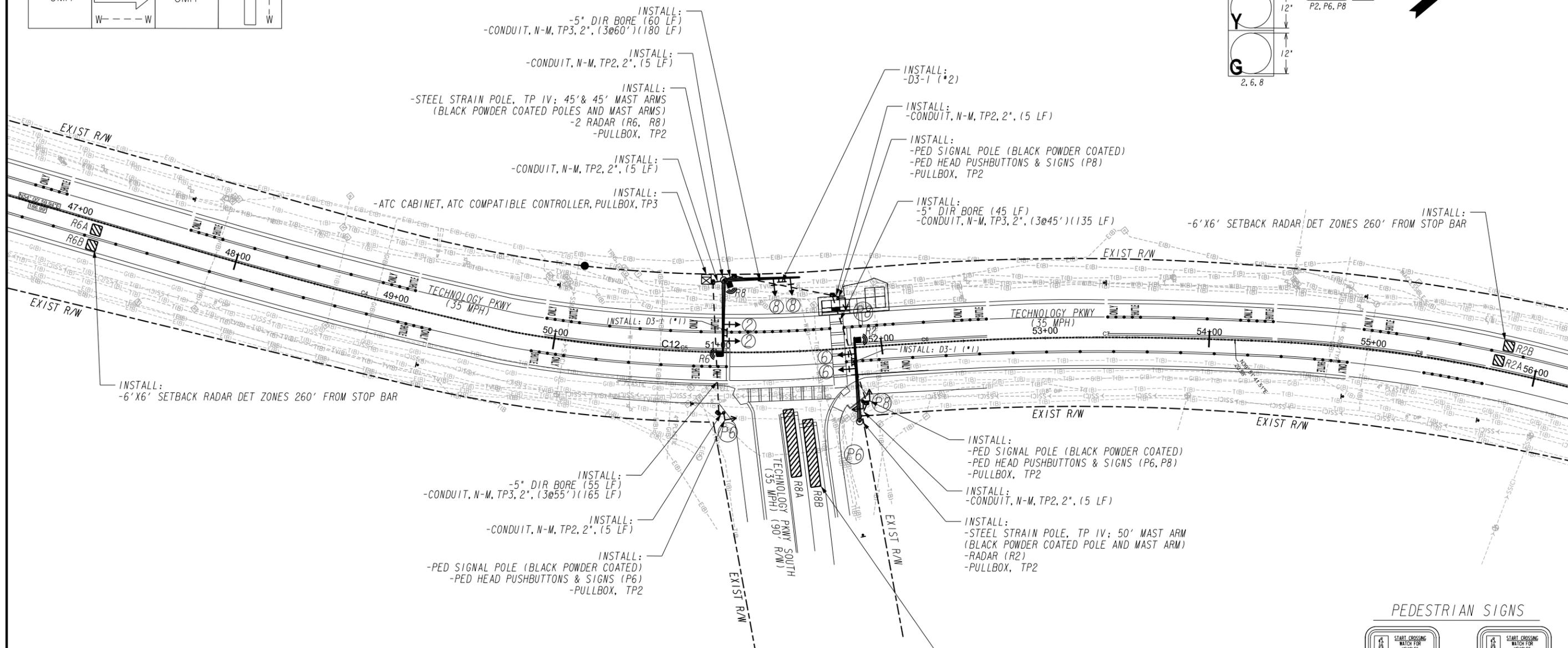
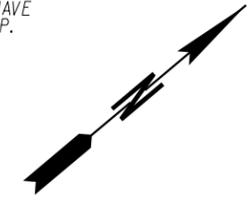
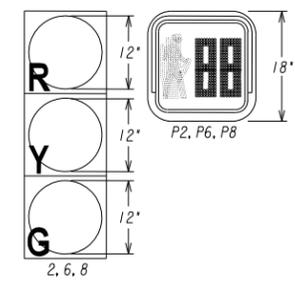
The ATC Cabinet has been relocated to the westside of Technology Parkway.

All other terms & conditions remain unchanged.

End of Addendum #1



PROPOSED LED TRAFFIC/ PEDESTRIAN SIGNAL HEADS
 NOTE: EACH TRAFFIC SIGNAL HEAD SHALL HAVE A BACKPLATE AND A 2" REFLECTIVE STRIP.

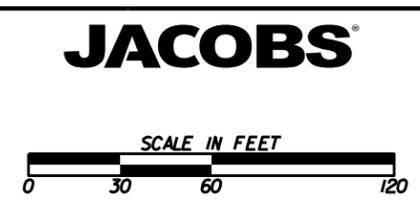


SIGNAL LEGEND

→	PROPOSED SIGNAL HEAD	→→	PROPOSED 4-SECTION SIGNAL HEAD
- >	EXISTING SIGNAL HEAD	→→	PROPOSED 5-SECTION (CLUSTER) SIGNAL HEAD
→	RELOCATED SIGNAL HEAD	⊙	PEDESTRIAN SIGNAL HEAD

DETECTION LEGEND

	PROPOSED VIRTUAL DETECTION ZONE
	PROPOSED INDUCTIVE LOOP
	PROPOSED VIDEO DETECTION CAMERA
	PROPOSED MAGNETOMETER
	PROPOSED RADAR



REVISION DATES

SIGNAL PLANS
 TECHNOLOGY PKWY @ TECHNOLOGY PKWY SOUTH

CHECKED:	DATE:	DRAWING No.
BACKCHECKED:	DATE:	27-0001
CORRECTED:	DATE:	
VERIFIED:	DATE:	



Valmont Industries, Inc.
West Highway 275
P.O. Box 358
Valley, Nebraska 68064-0358 USA
(402) 359-2201

A Light & Traffic Structure Proposal for
Technology Parkway
City of Peachtree Corners, Georgia

Valmont Order No.: 451488-P1

Prepared By:
Christopher Mack, P.E.
Design Engineer
June 5, 2019

Proprietary Information

These documents, drawings and/or calculations and all information related to them are the exclusive property and the proprietary information of Valmont Industries, Inc. and are furnished solely upon the conditions that they will be retained in strictest confidence and shall not be duplicated, used or disclosed in whole or in part for any purpose, in any way, without the prior written permission of Valmont Industries, Inc.



Valmont Industries, Inc.
West Highway 275
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SUBJECT Peachtree Corners, GA, Pole B, P21', M50', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M50A94S GUST FACTOR: 1.30

ELEVATION OF FOUNDATION ABOVE SURROUNDING TERRAIN = 0.0 (FT)
STEPS INCLUDED ? NO

WIND VELOCITY = 80 MPH CRITERIA: AASHTO-1994
AASHTO ICE INCLUDED ? YES

POLE

=====

SHAPE	=	ROUND
LENGTH	=	21.00 FT
BOT O.D.	=	12.50 IN
TOP O.D.	=	9.56 IN
TAPER	=	0.1400 IN/FT
WEIGHT	=	527 LBS

POLE SECTIONS

=====

BOTTOM SECTION

THICKNESS	=	0.2092 IN
LENGTH	=	21.00 FT
YIELD STRENGTH	=	55 KSI

BASE PLATE (SQUARE)

=====

WIDTH	=	19.00 IN
THICKNESS	=	1.500 IN
YIELD STRENGTH	=	36 KSI
BASE WELD TYPE	=	SOCKET

ANCHOR BOLTS

=====

QUANTITY	=	4
BOLT DIAMETER	=	1.50 IN
BOLT CIRCLE	=	17.50 IN
YIELD STRENGTH	=	55 KSI

SUBJECT Peachtree Corners, GA, Pole B, P21', M50', 80mph
 AASHTO 94
 FOLDER: 451488 FILE: P21M50A94S

SIGNAL AND SIGN ARM 1

```

=====
SHAPE                = Round
SPAN LENGTH          = 50.00 FT
BASE O.D.            = 10.00 IN
TAPER                = 0.14 IN/FT
ATTACH. HT. *        = 20.00 FT
ORIENTATION **       = 0 DEGREES
SLOPE AT BASE        = 0 DEGREES
CENTROID LOCATION
  HORIZONTAL          = 20.51 FT
  ABOVE ATTACH.       = 0.00 FT
UNBENT LENGTH        = 50.00 FT
MATERIAL-BASE        = S105 - 55 ksi
WEIGHT                = 633 LBS
BASE WELD TYPE = Socket
  
```

ARM 1 SECTIONS

```

=====
BASE SECTION
THICKNESS            = 0.1793 IN
LENGTH               = 50.00 FT
YIELD STRENGTH      = 55 KSI
  
```

- * THIS IS HEIGHT OF ATTACHMENT TO POLE ABOVE BOTTOM OF BASE PLATE OR TRANSFORMER BASE. SEE *** BELOW.
- ** ARM ORIENTATIONS ARE ANGLES FROM +X AXIS IN X-Y PLANE. X AND Y AXIES ARE PERPENDICULAR/PARALLEL TO SIDES OF POLE BASE PLATE. SEE *** BELOW.
- *** IF ARM IS ATTACHED WITH A CLAMP, HEIGHT AND ORIENTATION MUST NOT BE CHANGED FROM VALUES SHOWN ABOVE WITHOUT CONSULTING VALMONT.

ANALYSIS OF VALMONT INDUSTRIES LIGHTING STRUCTURE
IN ACCORDANCE WITH AASHTO-1994 RQMTS. (FINAL DEFLECTED POSITION) BY CM34
06/05/2019 VERSION Fuse 1.13.0.0

SUBJECT: Peachtree Corners, GA, Pole B, P21', M50', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M50A94S GUST FACTOR: 1.30

ELEVATION OF FOUNDATION ABOVE SURROUNDING TERRAIN = 0.0 (FT)
STEPS INCLUDED ? NO

WIND VELOCITY = 80 MPH CRITERIA: AASHTO-1994
AASHTO ICE INCLUDED ? YES

- * THE VALUES SHOWN IN THIS TABLE MUST NOT BE EXCEEDED WITHOUT CONSULTING VALMONT. ANY SIZES OR OTHER DIMENSIONS NOT PROVIDED BY THE SPECIFYING AGENCY HAVE BEEN ESTIMATED BY VALMONT.
- ** THESE HEIGHTS ARE ABOVE BOTTOM OF BASE PLATE OR TRANSFORMER BASE.

SUBJECT: Peachtree Corners, GA, Pole B, P21', M50', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M50A94S GUST FACTOR: 1.30

ELEVATION OF FOUNDATION ABOVE SURROUNDING TERRAIN = 0.0 (FT)
 STEPS INCLUDED ? NO

WIND VELOCITY = 80 MPH CRITERIA: AASHTO-1994
 AASHTO ICE INCLUDED ? YES

DESCRIPTION OF SIGNAL LOADING *

POSITION OF SIGNAL	MOUNTING HEIGHT** (FT)	CENTROID HEIGHT** (FT)	DISTANCE TO CENT. FROM POLE (FT)	SIGNAL WEIGHT (LBS)	PROJECTED AREA (FT^2)
ARM 1	20.00	20.00	32.00	50	8.67
ARM 1	20.00	20.00	42.00	50	8.67

DESCRIPTION OF SIGN LOADING *

POSITION OF SIGNAL OR SIGN	MOUNTING HEIGHT** (FT)	CENTROID HEIGHT** (FT)	DISTANCE TO CENT. FROM POLE (FT)	SIGN WEIGHT (LBS)	SIGN WIDTH (FT)	SIGN HEIGHT (FT)	SIGN DEPTH (FT)	SIGN CD
ARM 1	20.00	20.00	37.00	24	8.00	1.50		1.23

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** THESE HEIGHTS ARE ABOVE BOTTOM OF BASE PLATE OR TRANSFORMER BASE.

ANALYSIS OF VALMONT INDUSTRIES LIGHTING STRUCTURE
 IN ACCORDANCE WITH AASHTO-1994 RQMTS. (FINAL DEFLECTED POSITION) BY CM34
 06/05/2019 VERSION Fuse 1.13.0.0

SUBJECT: Peachtree Corners, GA, Pole B, P21', M50', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M50A94S

FORCES AND MOMENTS WITH WIND ACTING PERPENDICULAR TO EACH ARM

```

=====

```

ARM TYPE	ARM NO.	ANALYSIS LOCATION	GROUP LOAD NO.	FORCES (LBS)			MOMENTS (FT-LBS)		
				AXIAL	FY	FZ	TORSION	MY	MZ
SIGNAL	1	BASE	1	22	0	753	0	17414	0
SIGNAL	1	BASE	2	162	1550	721	5	16286	47483
SIGNAL	1	BASE	3	112	842	1295	2	33064	25280

ANALYSIS OF VALMONT INDUSTRIES LIGHTING STRUCTURE
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 BY CM34 06/05/2019 VERSION Fuse 1.13.0.0

SUBJECT: Peachtree Corners, GA, Pole B, P21', M50', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M50A94S

STRESSES WITH WIND ACTING PERPENDICULAR TO EACH ARM

```

=====
ANAL. LOCATION
=====
ARM  ARM      GROUP  COMB.  APPLIED STRESS (KSI)  ALLOW. STRESS (KSI)
TYPE NO.  SITE  LOAD  STR.  =====
                NO.  RATIO  AXIAL  BEND.  SHEAR  AXIAL  BEND.  SHEAR
SIG  1  BASE  1     0.42  0.00  15.41  0.27  33.00  36.30  18.15
SIG  1  BASE  2     0.88  0.03  44.41  0.62  33.00  50.82  25.41
SIG  1  BASE  3     0.73  0.02  36.82  0.56  33.00  50.82  25.41
  
```

SUBJECT: Peachtree Corners, GA, Pole B, P21', M50', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M50A94S

ANALYSIS OF POLE: FORCES AND MOMENTS

```

=====
SECTION GROUP          FORCES (LBS)          MOMENTS (FT-LBS)          WIND
HEIGHT* LOAD          =====          =====          DIRECT**
(FT)  NO.            FX           FY           FZ           MX           MY           MZ           (DEGREES)
-----
20.00  1              17            0           775            0          17719            0           0
20.00  2             129          1563          744           -20          16586          48108           90
20.00  3              89            854         1326           -22          33591          25618           90

  0.00  1              1            0           1278            0          17911            0           0
  0.00  2              3           1751          1280          -33477          17681          48110           90
  0.00  3             249            923          2019          -16437          38247          21816           75
  
```

* THESE HEIGHTS ARE ABOVE THE POLE BASE PLATE.

** THESE ARE DIRECTIONS TOWARD WHICH THE WIND IS FLOWING.
 THEY ARE ANGLES FROM THE +X AXIS IN THE X-Y PLANE

SUBJECT: Peachtree Corners, GA, Pole B, P21', M50', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M50A94S

ANALYSIS OF POLE: STRESSES

=====

SECTION HEIGHT* (FT)	GROUP LOAD NO.	COMB. STR. RATIO	APPLIED STRESS (KSI)			ALLOW. STRESS (KSI)		
			AXIAL	BEND.	SHEAR	AXIAL	BEND	SHEAR
20.00	1	0.40	0.12	14.39	0.01	33.00	36.30	18.15
20.00	2	0.89	0.12	13.47	20.03	33.00	50.82	25.41
20.00	3	0.72	0.21	27.27	10.67	33.00	50.82	25.41
0.00	1	0.24	0.16	8.67	0.00	33.00	36.30	18.15
0.00	2	0.59	0.16	18.33	12.08	33.00	50.82	25.41
0.00	3	0.45	0.25	20.15	5.52	33.00	50.82	25.41

* THESE HEIGHTS ARE ABOVE THE POLE BASE PLATE.

SUBJECT: Peachtree Corners, GA, Pole B, P21', M50', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M50A94S

ANALYSIS OF ANCHOR BOLTS

GROUP LOAD NO.	CRITICAL	MAX.	AXIAL FORCE (LBS)	SHEAR FORCE (LBS)	APPLIED		ALLOWABLE		BOLT CONST "K"
	WIND DIRECT* (DEG)	COMB. STRESS RATIO			STRESS (KSI)	STRESS (KSI)	AXIAL	SHEAR	
1	0	0.23	9004	0	6.39	0.00	27.50	16.50	0.60
2	90	0.69	25123	16807	17.82	11.92	38.50	23.10	0.60
3	90	0.56	26669	8976	18.91	6.37	38.50	23.10	0.60

ANALYSIS OF BASE PLATE

COMBINED STRESS RATIO	=	0.38
GROUP LOAD NUMBER	=	3
CRITICAL WIND DIRECT.*	=	70.00 DEGREES
ALIGNMENT OF THE BEND LINE	=	315.00 DEGREES
BOLT FORCE	=	27052 LBS
BOLT-TO-BEND LINE MOMENT ARM	=	2.50 IN
WIDTH OF BENDING SECTION	=	14.37 IN
APPLIED BENDING STRESS	=	12.55 KSI
ALLOWABLE BENDING STRESS	=	33.26 KSI

* THESE ARE DIRECTIONS TOWARD WHICH THE WIND IS FLOWING.

SUBJECT: Peachtree Corners, GA, Pole B, P21', M50', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M50A94S

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

CONNECTION BOLT DATA

```
=====
NUMBER                =      4
BOLT DIAMETER (IN)   =     1.250
ASTM SPECIFICATION    =     A325
HORIZONTAL SPACING (IN) =     9.00
VERTICAL SPACING (IN) =    10.25
```

ATTACHMENT PLATE DATA

```
=====
HORIZONTAL WIDTH (IN) =     12.25
VERTICAL WIDTH (IN)  =     13.50
THICKNESS (IN)       =     1.500
YIELD STRENGTH (KSI) =      36
GUSSET THICKNESS (IN)
- VERTICAL            =     0.239
- HORIZONTAL          =     0.239
```

ATTACHMENT TYPE

```
=====
ARM 1:   SIMPLEX - TAPPED PLATE,   BASE WELD TYPE = Socket
```

***** RESULTS *****

ANALYSIS OF SIGNAL/SIGN ARM SIMPLEX BOLTS

```
=====
MAX.   GROUP   APPLIED   ALLOWABLE
BOLT   LOAD    TENSION   STRESS    STRESS
ARM    CSR     NO.       LBS       KSI       KSI
=====
1     0.72     2        41229    33.60    46.55
```

ANALYSIS OF SIGNAL/SIGN ARM SIMPLEX PLATES

```
=====
MAX.   GROUP   APPLIED   ALLOWABLE   ANGLE OF   LENGTH OF
PLATE  LOAD    STRESS    STRESS     FAILURE LINE BEND LINE
ARM    CSR     NO.       KSI       KSI       DEGREES   IN
=====
1     0.72     2        24.05    33.26     45        8.17
```

SUBJECT: Peachtree Corners, GA, Pole B, P21', M50', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M50A94S

R E S U L T S S U M M A R Y

MAXIMUM COMBINED STRESS RATIO
 IN EACH MAJOR COMPONENT
 =====(GROUPS I,II & III)=====

MAXIMUM REACTIONS APPLIED TO FOUNDATION
 =====

POLE (AT 20.00 (FT)) = 0.89
 SIGNAL AND SIGN ARM 1 = 0.88
 BASE PLATE = 0.38
 ANCHOR BOLTS = 0.69
 S/S ARM 1 ATTACH. BOLTS = 0.72
 S/S ARM 1 ATTACH. PLATE = 0.72

BENDING MOMENT = 43619 FT-LBS
 TORSION = 48110 FT-LBS
 SHEAR FORCE = 1750 LBS
 AXIAL FORCE = 2022 LBS

MAXIMUM BENDING + AXIAL DEAD WT. STRESS
 =====

POLE = 14.51 KSI
 SIGN/SIGNAL ARM 1 = 15.41 KSI

RESULTANT DEFLECTION OF POLE TOP
 CAUSED BY DEAD WEIGHT
 =====

0.99 DEGREES

SHAFT PROPERTIES: NUMER OF SIDES = Round
 DIAMETER (D) = 12.500 IN
 THICKNESS (T) = 0.20920 IN
 YIELD STRENGTH (KSI) = 55
 MOM. OF INERTIA (IX) = 152.323 IN^4
 SECTION MODULUS (SX) = 24.372 IN^3

MB: ALLOWABLE SHAFT MOMENT

$$MB = (F_b * S_x) / 12$$

$$= (55000 * 24.372) / 12 = 111704$$

MB = 111704 FT-LB

ANALYSIS OF VALMONT INDUSTRIES LIGHTING STRUCTURE

IN ACCORDANCE WITH AASHTO-1994 RQMTS. (FINAL DEFLECTED POSITION) BY CM34
06/05/2019 VERSION Fuse 1.13.0.0

SUBJECT: Peachtree Corners, GA, Pole A, P21', M45'&45', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M4545A94A GUST FACTOR: 1.30

ELEVATION OF FOUNDATION ABOVE SURROUNDING TERRAIN = 0.0 (FT)
STEPS INCLUDED ? NO

WIND VELOCITY = 80 MPH CRITERIA: AASHTO-1994
AASHTO ICE INCLUDED ? YES

POLE

=====

SHAPE	=	ROUND
LENGTH	=	21.00 FT
BOT O.D.	=	12.50 IN
TOP O.D.	=	9.56 IN
TAPER	=	0.1400 IN/FT
WEIGHT	=	527 LBS

POLE SECTIONS

=====

BOTTOM SECTION

THICKNESS	=	0.2092 IN
LENGTH	=	21.00 FT
YIELD STRENGTH	=	55 KSI

BASE PLATE (SQUARE)

=====

WIDTH	=	19.00 IN
THICKNESS	=	1.500 IN
YIELD STRENGTH	=	36 KSI
BASE WELD TYPE	=	SOCKET

ANCHOR BOLTS

=====

QUANTITY	=	4
BOLT DIAMETER	=	1.50 IN
BOLT CIRCLE	=	17.50 IN
YIELD STRENGTH	=	55 KSI

SUBJECT: Peachtree Corners, GA, Pole A, P21', M45'&45', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M4545A94A

SIGNAL AND SIGN ARM 1

```

=====
SHAPE                = Round
SPAN LENGTH         = 45.00 FT
BASE O.D.           = 10.00 IN
TAPER               = 0.14 IN/FT
ATTACH. HT. *      = 20.00 FT
ORIENTATION **     = 0 DEGREES
SLOPE AT BASE      = 0 DEGREES
CENTROID LOCATION
  HORIZONTAL        = 19.05 FT
  ABOVE ATTACH.    = 0.00 FT
UNBENT LENGTH      = 45.00 FT
MATERIAL-BASE      = S105 - 55 ksi
WEIGHT             = 601 LBS
BASE WELD TYPE     = Socket
  
```

ARM 1 SECTIONS

```

=====
BASE SECTION
THICKNESS          = 0.1793 IN
LENGTH             = 45.00 FT
YIELD STRENGTH    = 55 KSI
  
```

SIGNAL AND SIGN ARM 2

```

=====
SHAPE                = Round
SPAN LENGTH         = 45.00 FT
BASE O.D.           = 10.00 IN
TAPER               = 0.14 IN/FT
ATTACH. HT. *      = 20.00 FT
ORIENTATION **     = 90 DEGREES
SLOPE AT BASE      = 0 DEGREES
CENTROID LOCATION
  HORIZONTAL        = 19.05 FT
  ABOVE ATTACH.    = 0.00 FT
UNBENT LENGTH      = 45.00 FT
MATERIAL-BASE      = S105 - 55 ksi
WEIGHT             = 601 LBS
BASE WELD TYPE     = Socket
  
```

ARM 2 SECTIONS

```

=====
BASE SECTION
THICKNESS          = 0.1793 IN
LENGTH             = 45.00 FT
YIELD STRENGTH    = 55 KSI
  
```

- * THIS IS HEIGHT OF ATTACHMENT TO POLE ABOVE BOTTOM OF BASE PLATE OR TRANSFORMER BASE. SEE *** BELOW.
- ** ARM ORIENTATIONS ARE ANGLES FROM +X AXIS IN X-Y PLANE. X AND Y AXIES ARE PERPENDICULAR/PARALLEL TO SIDES OF POLE BASE PLATE. SEE *** BELOW.
- *** IF ARM IS ATTACHED WITH A CLAMP, HEIGHT AND ORIENTATION MUST NOT BE CHANGED FROM VALUES SHOWN ABOVE WITHOUT CONSULTING VALMONT.

ANALYSIS OF VALMONT INDUSTRIES LIGHTING STRUCTURE
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SUBJECT: Peachtree Corners, GA, Pole A, P21', M45'&45', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M4545A94A GUST FACTOR: 1.30

ELEVATION OF FOUNDATION ABOVE SURROUNDING TERRAIN = 0.0 (FT)
STEPS INCLUDED ? NO

WIND VELOCITY = 80 MPH CRITERIA: AASHTO-1994
AASHTO ICE INCLUDED ? YES

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SUBJECT: Peachtree Corners, GA, Pole A, P21', M45'&45', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M4545A94A GUST FACTOR: 1.30

ELEVATION OF FOUNDATION ABOVE SURROUNDING TERRAIN = 0.0 (FT)
 STEPS INCLUDED ? NO

WIND VELOCITY = 80 MPH CRITERIA: AASHTO-1994
 AASHTO ICE INCLUDED ? YES

DESCRIPTION OF SIGNAL LOADING *

POSITION OF SIGNAL	MOUNTING HEIGHT** (FT)	CENTROID HEIGHT** (FT)	DISTANCE TO CENT. FROM POLE (FT)	SIGNAL WEIGHT (LBS)	PROJECTED AREA (FT^2)
ARM 1	20.00	20.00	31.00	50	8.67
ARM 1	20.00	20.00	41.00	50	8.67
ARM 2	20.00	20.00	26.00	50	8.67
ARM 2	20.00	20.00	36.00	50	8.67

DESCRIPTION OF SIGN LOADING *

POSITION OF SIGNAL OR SIGN	MOUNTING HEIGHT** (FT)	CENTROID HEIGHT** (FT)	DISTANCE TO CENT. FROM POLE (FT)	SIGN WEIGHT (LBS)	SIGN WIDTH (FT)	SIGN HEIGHT (FT)	SIGN DEPTH (FT)	SIGN CD
ARM 1	20.00	20.00	36.00	24	8.00	1.50		1.23
ARM 2	20.00	20.00	31.00	24	8.00	1.50		1.23

* THE VALUES SHOWN IN THIS TABLE MUST NOT BE EXCEEDED WITHOUT CONSULTING VALMONT. ANY SIZES OR OTHER DIMENSIONS NOT PROVIDED BY THE SPECIFYING AGENCY HAVE BEEN ESTIMATED BY VALMONT.

** THESE HEIGHTS ARE ABOVE BOTTOM OF BASE PLATE OR TRANSFORMER BASE.

SUBJECT: Peachtree Corners, GA, Pole A, P21', M45'&45', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M4545A94A

FORCES AND MOMENTS WITH WIND ACTING PERPENDICULAR TO EACH ARM

```

=====

```

ARM TYPE	ARM NO.	ANALYSIS LOCATION	GROUP LOAD NO.	FORCES (LBS)			MOMENTS (FT-LBS)		
				AXIAL	FY	FZ	TORSION	MY	MZ
SIGNAL	1	BASE	1	17	15	721	0	15786	330
SIGNAL	1	BASE	2	131	1505	654	1	13637	44964
SIGNAL	1	BASE	3	93	877	1216	1	29576	25260
SIGNAL	2	BASE	1	17	16	721	0	15169	330
SIGNAL	2	BASE	2	119	1507	653	1	13268	40266
SIGNAL	2	BASE	3	85	881	1214	0	27630	22832

ANALYSIS OF VALMONT INDUSTRIES LIGHTING STRUCTURE
 IN ACCORDANCE WITH AASHTO-1994 RQMTS. (FINAL DEFLECTED POSITION)
 BY CM34 06/05/2019 VERSION Fuse 1.13.0.0

SUBJECT: Peachtree Corners, GA, Pole A, P21', M45'&45', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M4545A94A

STRESSES WITH WIND ACTING PERPENDICULAR TO EACH ARM

```

=====
ANAL. LOCATION
=====
ARM  ARM      GROUP  COMB.  APPLIED STRESS (KSI)  ALLOW. STRESS (KSI)
TYPE NO.  SITE    LOAD  STR.  =====
                NO.  RATIO  AXIAL  BEND.  SHEAR  AXIAL  BEND.  SHEAR
=====
SIG  1    BASE    1     0.39   0.00  13.97  0.26  33.00  36.30  18.15
SIG  1    BASE    2     0.82   0.02  41.54  0.59  33.00  50.82  25.41
SIG  1    BASE    3     0.68   0.02  34.39  0.54  33.00  50.82  25.41

SIG  2    BASE    1     0.37   0.00  13.42  0.26  33.00  36.30  18.15
SIG  2    BASE    2     0.74   0.02  37.51  0.59  33.00  50.82  25.41
SIG  2    BASE    3     0.62   0.02  31.70  0.54  33.00  50.82  25.41
=====

```

SUBJECT: Peachtree Corners , GA, Pole A, P21', M45'&45', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M4545A94A

ANALYSIS OF POLE: FORCES AND MOMENTS

```

=====
SECTION GROUP          FORCES (LBS)          MOMENTS (FT-LBS)          WIND
HEIGHT* LOAD          =====          =====          DIRECT**
(FT)  NO.             FX             FY             FZ             MX             MY             MZ             (DEGREES)
-----
20.00  1              30              28             1465          -15461          16078              0              0
20.00  2             165             2122            1374          -14284          13898             44007             90
20.00  3             139             1236            2494          -28526          30058             24050             90

  0.00  1              1              1              1969          -15756          16385              0              0
  0.00  2              3             2265            1971          -58486          15117             44009             90
  0.00  3              3             1347            3240          -54570          31212             24053             90
  
```

* THESE HEIGHTS ARE ABOVE THE POLE BASE PLATE.
 ** THESE ARE DIRECTIONS TOWARD WHICH THE WIND IS FLOWING.
 THEY ARE ANGLES FROM THE +X AXIS IN THE X-Y PLANE

SUBJECT: Peachtree Corners, GA, Pole A, P21', M45'&45', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M4545A94A

ANALYSIS OF POLE: STRESSES

=====

SECTION HEIGHT* (FT)	GROUP LOAD NO.	COMB. STR. RATIO	APPLIED STRESS (KSI)			ALLOW. STRESS (KSI)		
			AXIAL	BEND.	SHEAR	AXIAL	BEND	SHEAR
20.00	1	0.51	0.23	18.11	0.01	33.00	36.30	18.15
20.00	2	0.86	0.22	16.17	18.54	33.00	50.82	25.41
20.00	3	0.83	0.40	33.64	10.16	33.00	50.82	25.41
0.00	1	0.31	0.24	11.00	0.00	33.00	36.30	18.15
0.00	2	0.78	0.24	29.24	11.21	33.00	50.82	25.41
0.00	3	0.67	0.40	30.43	6.15	33.00	50.82	25.41

* THESE HEIGHTS ARE ABOVE THE POLE BASE PLATE.

SUBJECT: Peachtree Corners, GA, Pole A, P21', M45'&45', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M4545A94A

ANALYSIS OF ANCHOR BOLTS

GROUP LOAD NO.	CRITICAL WIND DIRECT*	MAX. COMB. STRESS RATIO	AXIAL FORCE (LBS)	SHEAR FORCE (LBS)	APPLIED STRESS (KSI)		ALLOWABLE STRESS (KSI)		BOLT CONST "K"
	(DEG)				AXIAL	SHEAR	AXIAL	SHEAR	
1	0	0.41	16076	0	11.40	0.00	27.50	16.50	0.60
2	75	0.82	40089	11581	28.43	8.21	38.50	23.10	0.60
3	55	0.85	45932	2846	32.58	2.02	38.50	23.10	0.60

ANALYSIS OF BASE PLATE

COMBINED STRESS RATIO	=	0.64
GROUP LOAD NUMBER	=	3
CRITICAL WIND DIRECT.*	=	45.00 DEGREES
ALIGNMENT OF THE BEND LINE	=	315.00 DEGREES
BOLT FORCE	=	46163 LBS
BOLT-TO-BEND LINE MOMENT ARM	=	2.50 IN
WIDTH OF BENDING SECTION	=	14.37 IN
APPLIED BENDING STRESS	=	21.42 KSI
ALLOWABLE BENDING STRESS	=	33.26 KSI

* THESE ARE DIRECTIONS TOWARD WHICH THE WIND IS FLOWING.

SUBJECT: Peachtree Corners, GA, Pole A, P21', M45'&45', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M4545A94A

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

```
=====
NUMBER                =      4      4
BOLT DIAMETER (IN)   =    1.250  1.250
ASTM SPECIFICATION    =     A325  A325
HORIZONTAL SPACING (IN) =     9.00  9.00
VERTICAL SPACING (IN) =    10.25  10.25
```

ATTACHMENT PLATE DATA

```
=====
HORIZONTAL WIDTH (IN) =    12.25  12.25
VERTICAL WIDTH (IN)  =    13.50  13.50
THICKNESS (IN)       =     1.500  1.500
YIELD STRENGTH (KSI) =       36    36
GUSSET THICKNESS (IN)
- VERTICAL           =     0.239  0.239
- HORIZONTAL         =     0.239  0.239
```

ATTACHMENT TYPE

```
=====
ARM 1:  SIMPLEX - TAPPED PLATE,  BASE WELD TYPE = Socket
ARM 2:  SIMPLEX - TAPPED PLATE,  BASE WELD TYPE = Socket
```

***** RESULTS *****

ANALYSIS OF SIGNAL/SIGN ARM SIMPLEX BOLTS

```
=====
MAX.   GROUP   APPLIED   ALLOWABLE
BOLT   LOAD    TENSION   STRESS    STRESS
ARM    CSR     NO.       LBS       KSI       KSI
=====
1     0.67     2        37992    30.96    46.55
2     0.61     2        34640    28.23    46.55
```

ANALYSIS OF SIGNAL/SIGN ARM SIMPLEX PLATES

```
=====
MAX.   GROUP   APPLIED   ALLOWABLE   ANGLE OF   LENGTH OF
PLATE  LOAD    STRESS    STRESS     FAILURE   BEND LINE
ARM    CSR     NO.       KSI       KSI       DEGREES   IN
=====
1     0.67     2        22.16    33.26     45        8.17
2     0.61     2        20.21    33.26     45        8.17
```

SUBJECT Peachtree Corners, GA, Pole A, P21', M45'&45', 80mph AASHTO 94

FOLDER: 451488 FILE: P21M4545A94A

R E S U L T S S U M M A R Y

MAXIMUM COMBINED STRESS RATIO
 IN EACH MAJOR COMPONENT
 =====(GROUPS I,II & III)=====

MAXIMUM REACTIONS APPLIED TO FOUNDATION
 =====

POLE (AT 20.00 (FT)) = 0.86
 SIGNAL AND SIGN ARM 1 = 0.82
 SIGNAL AND SIGN ARM 2 = 0.74
 BASE PLATE = 0.64
 ANCHOR BOLTS = 0.85
 S/S ARM 1 ATTACH. BOLTS = 0.67
 S/S ARM 1 ATTACH. PLATE = 0.67
 S/S ARM 2 ATTACH. BOLTS = 0.61
 S/S ARM 2 ATTACH. PLATE = 0.61

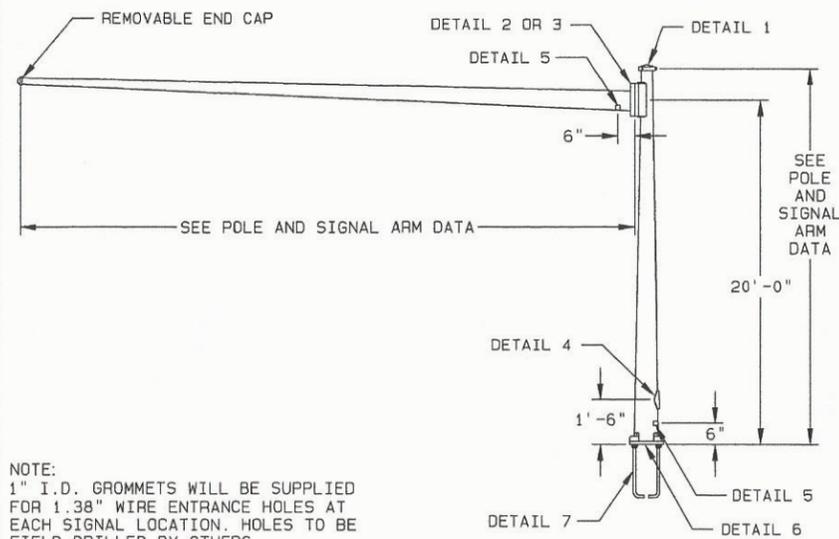
BENDING MOMENT = 66150 FT-LBS
 TORSION = 44010 FT-LBS
 SHEAR FORCE = 2263 LBS
 AXIAL FORCE = 3243 LBS

MAXIMUM BENDING + AXIAL DEAD WT. STRESS
 =====
 POLE = 18.34 KSI
 SIGN/SIGNAL ARM 1 = 13.97 KSI
 SIGN/SIGNAL ARM 2 = 13.42 KSI

RESULTANT DEFLECTION OF POLE TOP
 CAUSED BY DEAD WEIGHT
 =====
 1.25 DEGREES

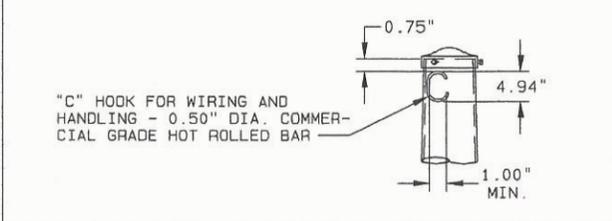
SHAFT PROPERTIES: NUMER OF SIDES = Round
 DIAMETER (D) = 12.500 IN
 THICKNESS (T) = 0.20920 IN
 YIELD STRENGTH (KSI) = 55
 MOM. OF INERTIA (IX) = 152.323 IN^4
 SECTION MODULUS (SX) = 24.372 IN^3

MB: ALLOWABLE SHAFT MOMENT
 MB = (Fb * Sx) / 12
 = (55000 * 24.372 / 12 = 111704
 MB = 111704 FT-LB

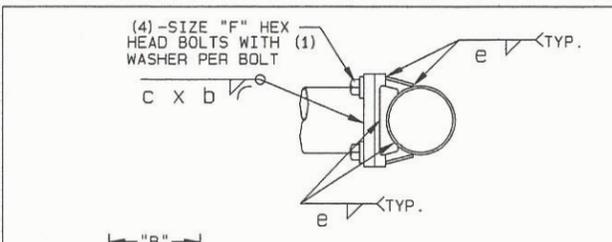


NOTE:
 1" I.D. GROMMETS WILL BE SUPPLIED FOR 1.38" WIRE ENTRANCE HOLES AT EACH SIGNAL LOCATION. HOLES TO BE FIELD DRILLED BY OTHERS.

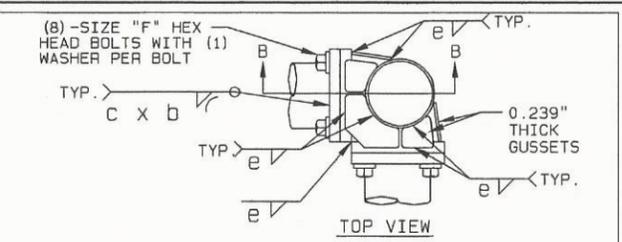
FINISH:
 SYSTEM: FINISH PAINT/GALVANIZED (FPGV)
 BASE COAT: HOT-DIP GALVANIZED TO ASTM A123
 PRIME COAT: NONE
 FINISH COAT: TGIC OR URETHANE POLYESTER POWDER
 COLOR: BLACK
 SPEC: F283A



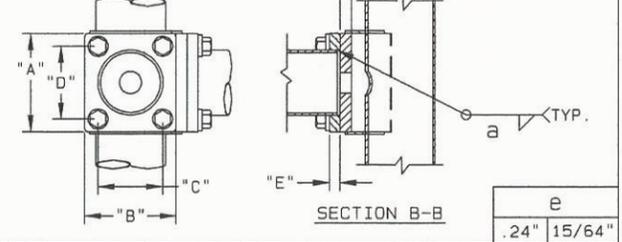
DETAIL 1 POLE TOP



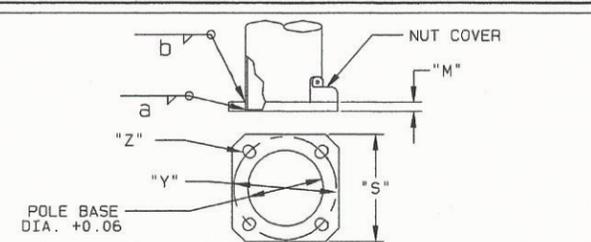
DETAIL 2 SIGNAL ARM ATTACHMENT



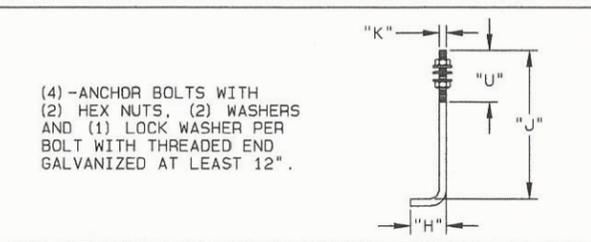
DETAIL 3 DOUBLE SIGNAL ARM ATTACHMENT



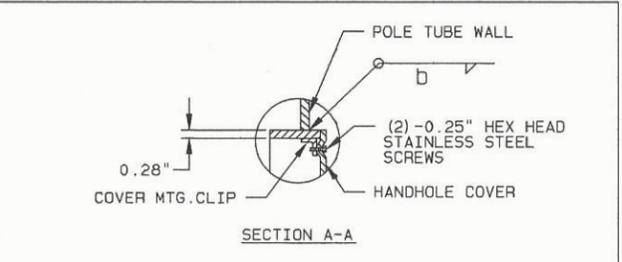
DETAIL 3 SECTION B-B



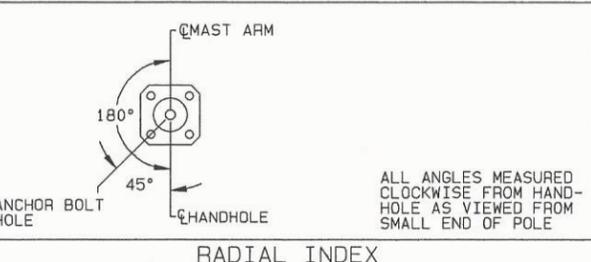
DETAIL 6 POLE BASE



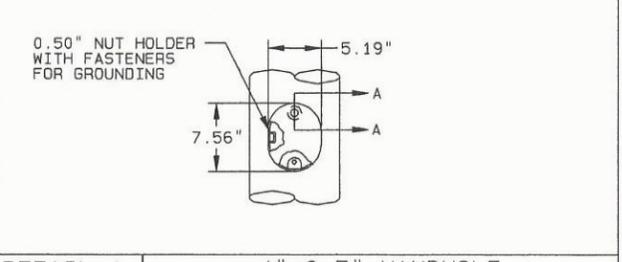
DETAIL 7 ANCHOR BOLT



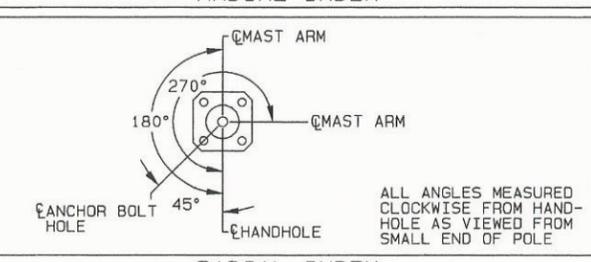
DETAIL 4 4" x 6.5" HANDHOLE



RADIAL INDEX



DETAIL 5 I.D. TAG



RADIAL INDEX

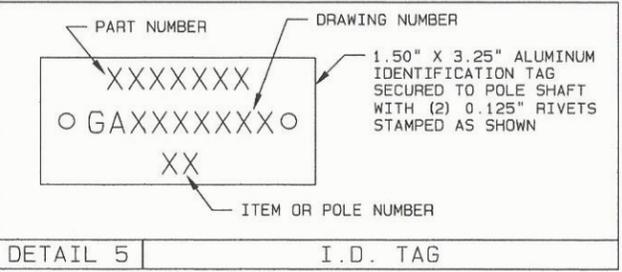
MATERIAL DATA			SIGNAL ARM ATTACHMENT DATA		
COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)	COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
TAPERED TUBES	A595 GR. A OR A572	55	BASE PLATE	A36	36
HARDWARE COATING	HOT DIP ZINC		SIGNAL ARM ATTACHMENT	A36	36
			SIG. ARM CONN. BOLTS	A325	
			ANCHOR BOLTS	F1554 GR. 55	55
			NUTS AND WASHERS	A563, F436	

HARDWARE < 0.50" IS STAINLESS STEEL

POLE BASE DIA.	"A"	"B"	"C"	"D"	"E"	"F"
12.50"	13.50"	12.25"	9.00"	10.25"	1.50"	1.25" X 3.50"
12.50"	13.50"	12.25"	9.00"	10.25"	1.50"	1.25" X 3.50"

POLE AND SIGNAL ARM DATA																	
POLE	QTY.	POLE TUBE				POLE BASE				ANCHOR BOLT				SIGNAL ARM TUBE			
		BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	GAUGE OR THICK. (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "U" (IN)	FIXED END DIA. (IN)	FREE END DIA. (IN)	GAUGE OR THICK (IN)	SPAN (FT)
B	1	12.50	9.56	21.00	5	19.00	17.50	1.50	1.75	1.50	54.00	6.00	8.00	10.00	3.00	7	50.00
A	1	12.50	9.56	21.00	5	19.00	17.50	1.50	1.75	1.50	54.00	6.00	8.00	10.00	3.70	7	45.00

Pole Foundations			
Pole	Diameter	Depth	Rebar
B	3'-0"	10'-0"	8 - #8's
A	3'-0"	10'-0"	8 - #8's



DETAIL 5 I.D. TAG

THE TRAFFIC SIGNAL SUPPORT STRUCTURES SHOWN ON THIS DRAWING HAVE BEEN DESIGNED IN ACCORDANCE WITH LOADING AND ALLOWABLE STRESS REQUIREMENTS OF 1994 AASHTO "STANDARDS SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", THIRD EDITION. WIND LOADS ARE BASED ON A WIND VELOCITY OF 80 MPH WITH A MEAN RECURRENCE INTERVAL OF 50 YEARS.

DESIGN CRITERIA-1994

TUBE THICKNESS	WELD SIZE TABLE					
	a		b		c	
11 GA (0.1196")	.12	7/64"	.19	3/16"	.31	5/16"
7 GA (0.1793")	.18	11/64"	.25	1/4"	.44	7/16"
5 GA (0.2092")	.21	13/64"	.31	5/16"	.56	9/16"
3 GA (0.2391")	.24	15/64"	.31	5/16"	.56	9/16"
0.219"	.22	7/32"	.31	5/16"	.56	9/16"
0.250"	.25	1/4"	.31	5/16"	.56	9/16"
0.313"	.31	5/16"	.38	3/8"	.69	11/16"