

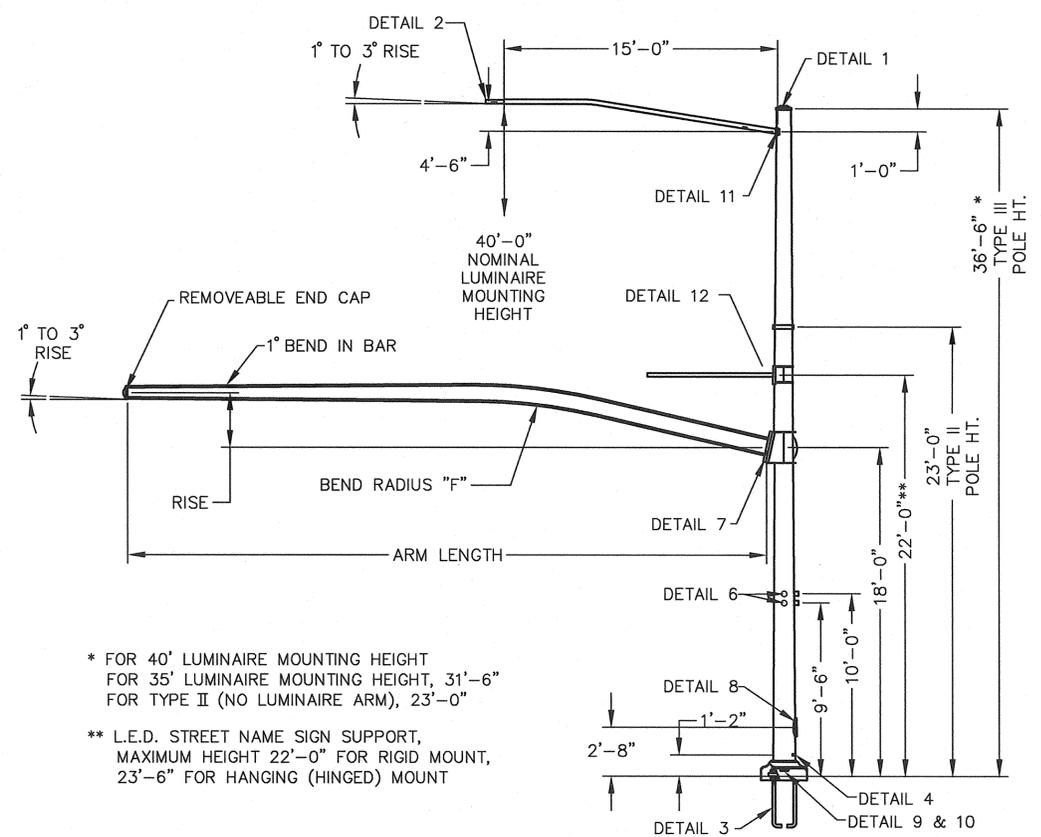
NO.	DESCRIPTION	DATE	BY
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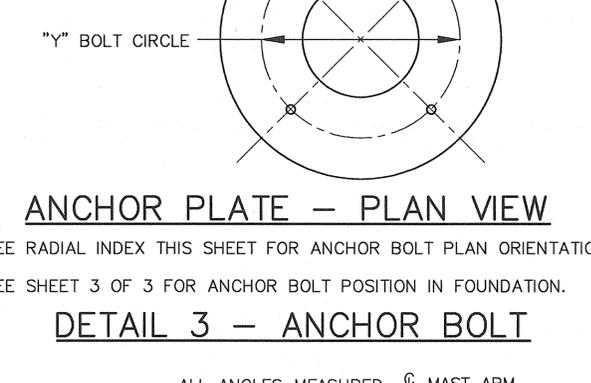
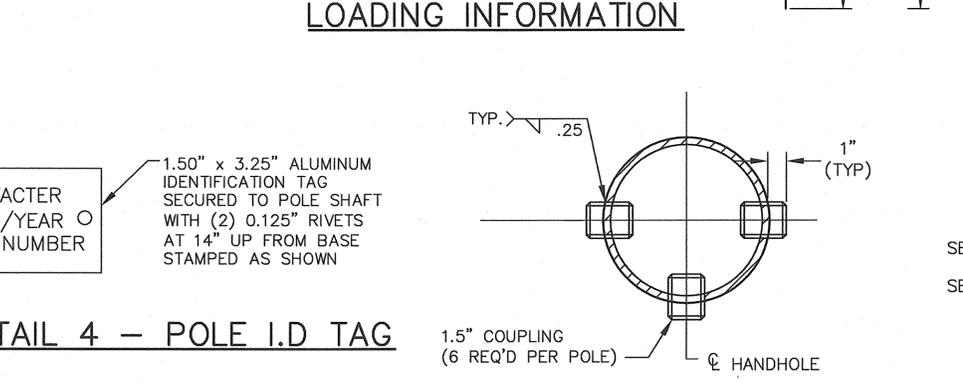
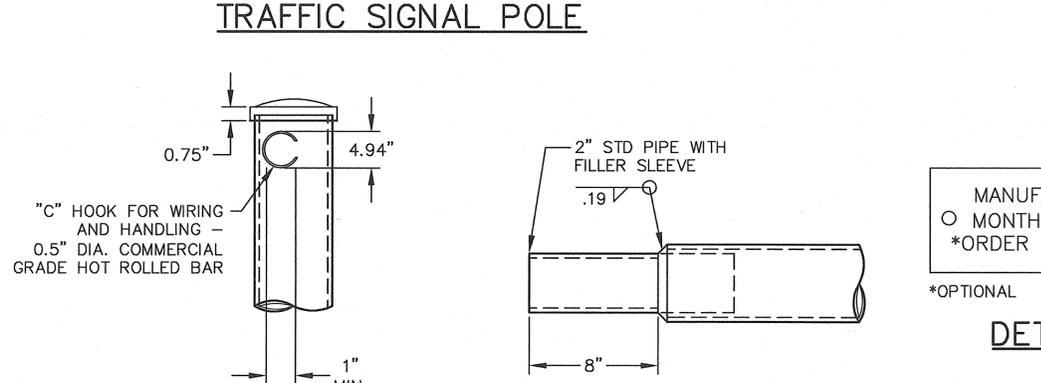
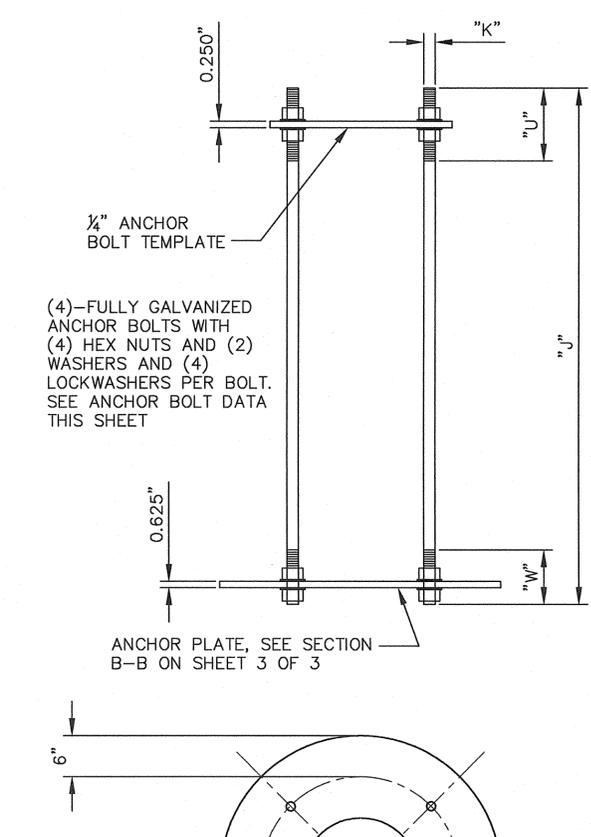
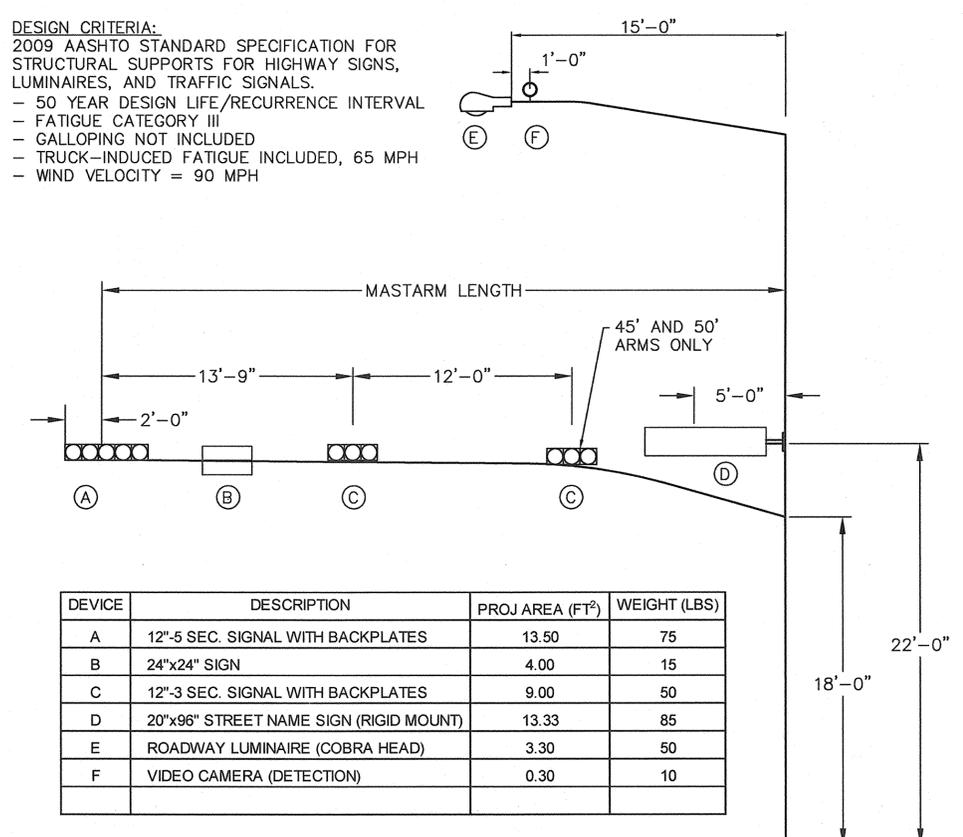
TRAFFIC SIGNAL MAST ARM
 TYPE II AND TYPE III
 (SHEET 1 OF 3)

GARY W. KINCHEN
 REGISTERED PROFESSIONAL ENGINEER
 NEW MEXICO
 14368
 01/17/12

PROJECT NO.
 DESIGNED BY: TVE
 DRAWN BY:
 CHECKED BY: TVE
 DATE: 06/22/10
 DPW CHK:
 SHEET



DESIGN CRITERIA:
 2009 AASHTO STANDARD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.
 - 50 YEAR DESIGN LIFE/RECURRENCE INTERVAL
 - FATIGUE CATEGORY III
 - GALLOPING NOT INCLUDED
 - TRUCK-INDUCED FATIGUE INCLUDED, 65 MPH
 - WIND VELOCITY = 90 MPH



DETAIL 1 - POLE TOP DETAIL 2 - LUMINAIRE ARM END TENON

DETAIL 4 - POLE I.D. TAG DETAIL 6 - POLE COUPLINGS

DETAIL 3 - ANCHOR BOLT

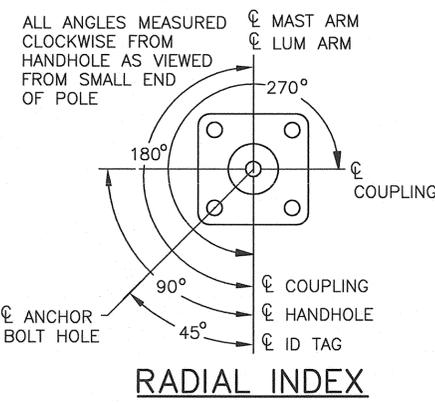
MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YEILD (KSI)	COMPONENT	ASTM DESIGNATION	MIN. YEILD (KSI)
TAPERED TUBES	A595 GR. A OR A572	55			
POLE BASE	A36	36	SIGN ARM SHAFT	A53	36
ARM ATTACHMENT	A36	36	SIGN ARM CLAMP	A36	36
CONNECTING BOLTS	A325		SIGN ARM CONN. BOLTS	A325	
ANCHOR BOLTS	F-1554	55	GALVANIZING	A123 & A153	

SIGNAL ARM ATTACHMENT DATA

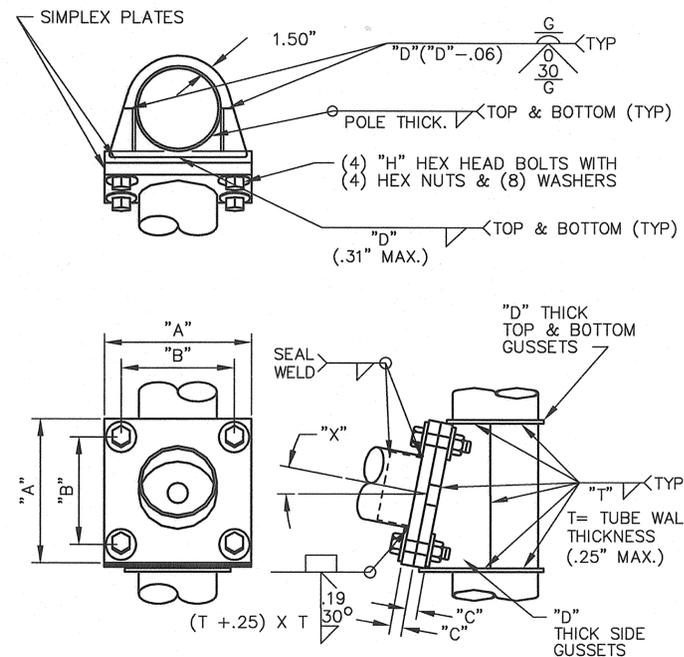
ARM LENGTH (FT)	ARM BASE DIA. (IN)	THICK (IN)	BOLT PATTERN "B" (IN)	HIGH STRENGTH BOLT "H" (IN)	PLATE SQUARE "A" (IN)	PLATE THICKNESS "C" (IN)	GUSSET THICKNESS "D" (IN)	RISE ANGLE "X"	BEND RADIUS "F" (FT)	RISE (FT)
20	7.00	0.179	13.50	1.25-7UNC x 5.00	18.5	1.500	0.25	16'	30.00	3.00
25	8.00	0.179	13.50	1.25-7UNC x 5.00	18.5	1.500	0.25	16'	30.00	3.00
30	9.00	0.179	13.50	1.25-7UNC x 5.00	18.5	1.500	0.25	16'	30.00	3.25
35	10.00	0.179	13.50	1.25-7UNC x 5.00	19.75	1.500	0.25	11'	70.00	3.00
40	10.50	0.179	15.00	1.25-7UNC x 5.00	19.75	1.500	0.25	11'	70.00	3.25
45	10.14	0.239	15.00	1.25-7UNC x 5.00	19.75	1.500	0.25	11'	70.00	3.50
50	11.00	0.239	15.00	1.25-7UNC x 5.00	19.75	1.500	0.25	11'	70.00	3.50

SIGNAL ARM (FT)	POLE TYPE	POLE DATA			BASE PLATE DATA			ANCHOR BOLT DATA					
		POLE LEGTH (FT)	POLE BASE DIA. (IN)	POLE TOP DIA. (IN)	THKNESS (IN)	SQUARE OR DIA. "S" (IN)	BOLT CIRCLE "Y" (IN)	THICKNESS "M" (IN)	HOLE OR CONCENTRIC SLOT "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	THREAD LENGTH "U" (IN)	THREAD LENGTH "W" (IN)
20-30	A	36.50	12.00	6.89	0.179	17.00	16.00	1.50	1.75	1.50	64.00	9.00	9.00
35-50	B	36.50	13.00	7.89	0.239	18.50	17.50	1.75	2.00	1.75	64.00	9.00	9.00

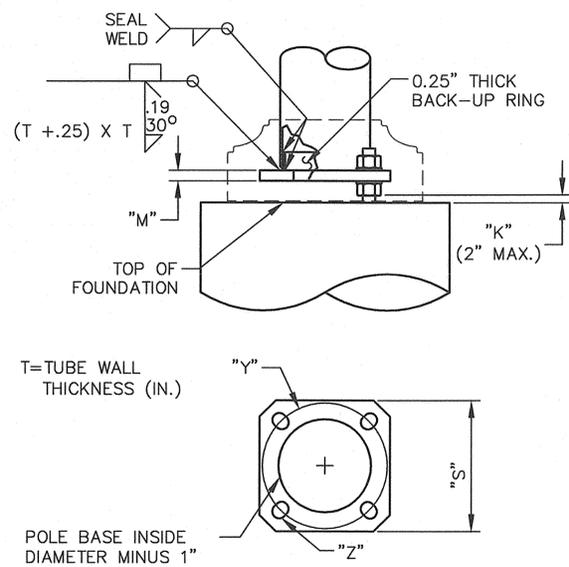


VIBRATION WARNING

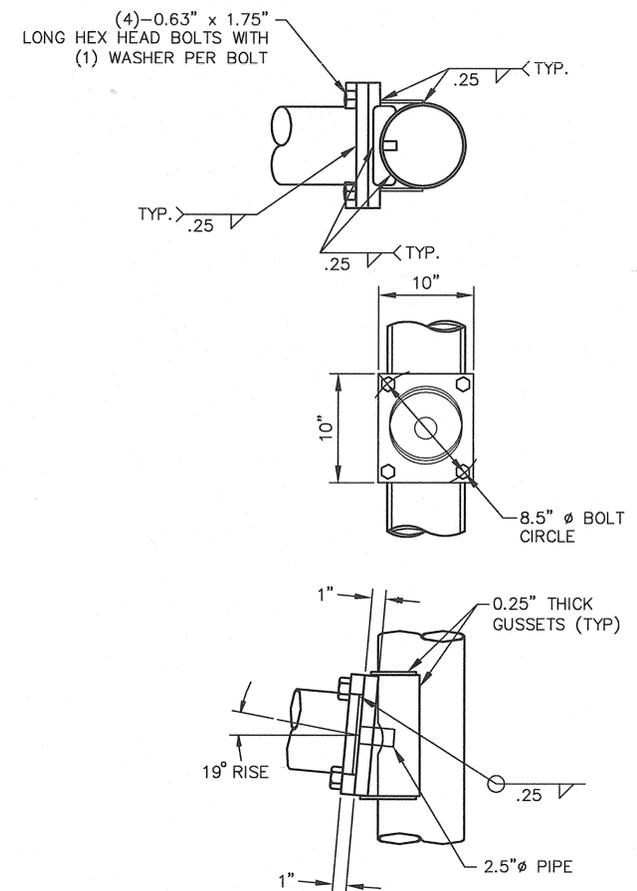
MAST ARMS MAY BE SUBJECT TO POSSIBLE HARMONIC VERTICAL VIBRATIONS IN LIGHT WIND CONDITIONS DUE TO SPECIFIC COMBINATIONS OF SIGNAL NUMBERS, WEIGHTS OR POSITIONS, ARM-WIND ORIENTATION AND ARM-POLE STIFFNESS. ARMS SHALL BE VISUALLY INSPECTED IN 5 TO 20 MPH WIND CONDITIONS AFTER INSTALLATION AND IF VERTICAL MOVEMENTS WITH A TOTAL EXCURSION (MAX POSITIVE TO MAX NEGATIVE) OF MORE THAN APPROXIMATELY 8" ARE OBSERVED AT THE ARM TIP, DAMPING DEVICES OR OTHER MEANS SHALL BE FITTED TO THE ARMS. THE NECESSARY DAMPING DEVICE(S) OR OTHER REMEDIAL MEASURES SHALL BE AS RECOMMENDED BY THE MANUFACTURER. EXCESSIVE VIBRATIONS SHALL NOT BE ALLOWED TO CONTINUE FOR MORE THAN TWO DAYS.



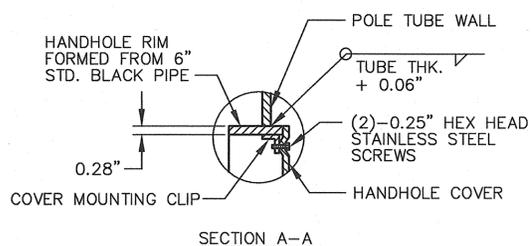
DETAIL 7 - SIGNAL ARM ATTACHMENT



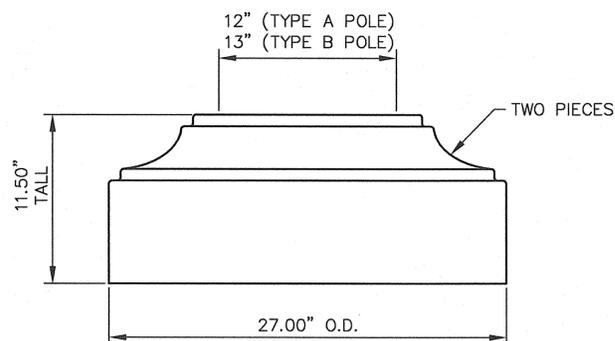
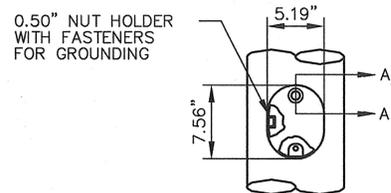
DETAIL 9 - POLE BASE



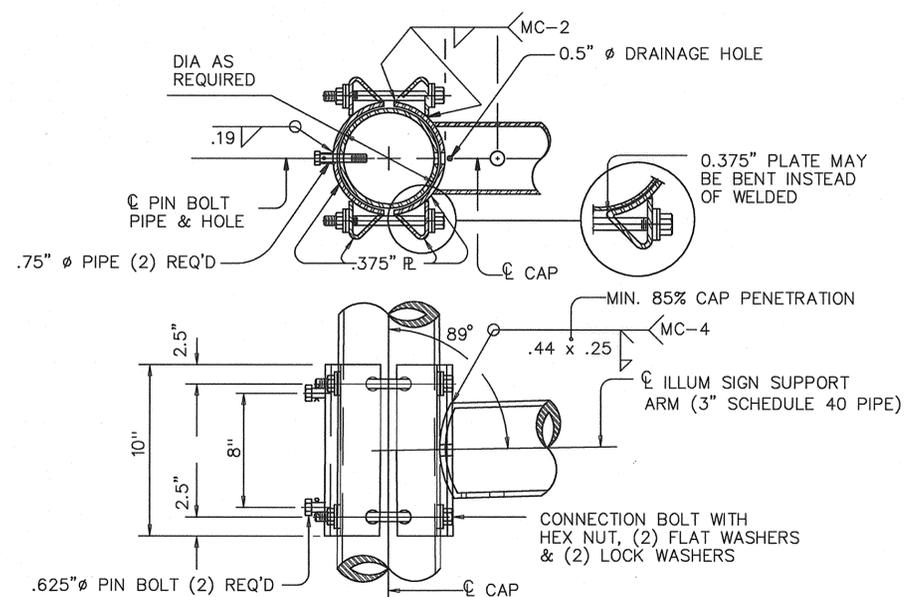
DETAIL 11 - LUMINAIRE ARM



DETAIL 8 - HANDHOLE



DETAIL 10 - DECORATIVE BASE



DETAIL 12 - ILLUM SIGN SUPPORT ARM AND CLAMP



City of Rio Rancho

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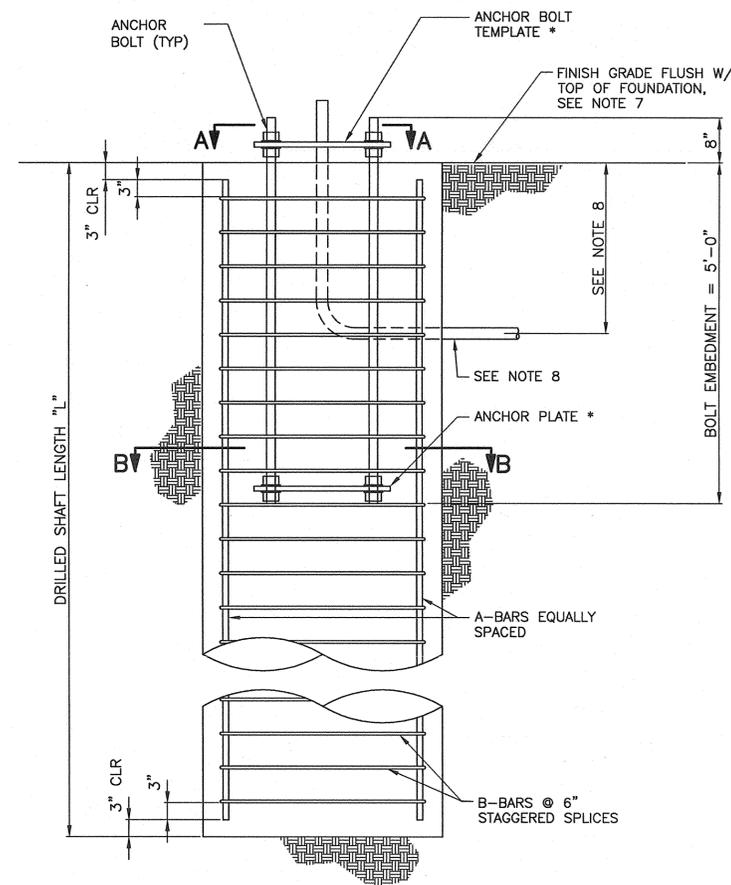
REVISIONS (OR CHANGE NOTICES)

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TRAFFIC SIGNAL MAST ARM
 TYPE II AND TYPE III
 (SHEET 2 OF 3)

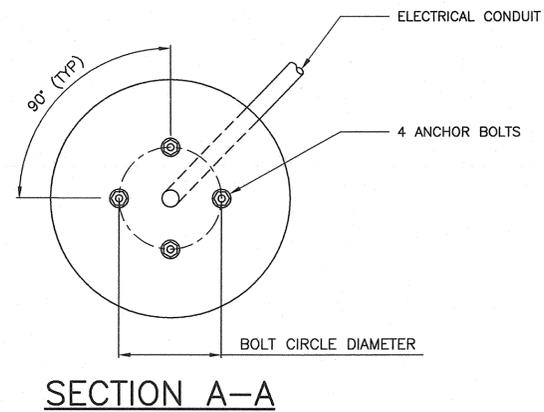
GARY W. KINCHEN
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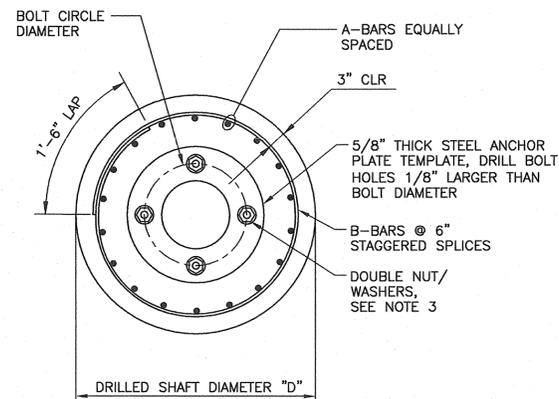


FOUNDATION ELEVATION

*SEE DETAIL 3 - ANCHOR BOLT AND ANCHOR BOLT DATA ON SHEET 1 OF 3 FOR ADDITIONAL INFORMATION.



SECTION A-A



SECTION B-B

DRILLED SHAFTS

SIGNAL POLE MAST ARM LENGTH (ft)	DRILLED SHAFT DIAMETER 'D' (in)	DRILLED SHAFT LENGTH 'L' (ft)	A-BARS			B-BARS			ESTIMATED QUANTITIES		
			SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	CONCRETE (cu. yd.)	BARS (lbs.)	EXCAVATION (cu. yd.)*
20-30	36	11	#8	14	10'-6"	#4	22	9'-4"	2.9	530	3
35-50	42	11	#8	18	10'-6"	#4	22	11'-0"	4.0	670	4

NOTES:
 DRILLED SHAFT LENGTH 'L' IS MEASURED AS THE LENGTH OF SHAFT IN SOIL
 * FOR CONTRACTOR'S INFORMATION ONLY

FOUNDATION NOTES

1. CONCRETE: CONFORM TO NMDOT SPECIFICATIONS, SECTION 510 - PORTLAND CEMENT CONCRETE, FOR CLASS "G" CONCRETE.
2. REINFORCING STEEL: CONFORM TO AASHTO M-31 (ASTM A 615 GRADE 60). DIMENSIONS SHOWN REFER TO THE CENTERLINE OF BARS UNLESS NOTED OTHERWISE.
3. ANCHOR BOLTS: CONFORM TO AASHTO M-314 (ASTM F 1554 GRADE 55). PROVIDE A HEX NUT, LEVELING NUT, AND 2 WASHERS TOP AND BOTTOM OF EACH BOLT. ANCHOR BOLTS ARE INCIDENTAL TO THE FOUNDATION CONSTRUCTION.
4. STRUCTURAL STEEL (ANCHOR PLATE): CONFORM TO AASHTO M-183 (ASTM A-36).
5. PLACE CONCRETE IN DRILLED HOLES. USE CASING WHERE REQUIRED BY SOIL CONDITIONS. PULL CASING DURING CONCRETE PLACEMENT, MAINTAINING A 6" MINIMUM OVERLAP.
6. CONSTRUCT FOUNDATIONS IN UNDISTURBED EARTH OR IN DISTURBED SOILS THAT HAVE BEEN COMPACTED TO 95% DENSITY IN ACCORDANCE WITH AASHTO T 180.
7. FINISHED GRADE FOR ALL FOUNDATIONS TO BE DETERMINED BY THE PROJECT ENGINEER. CONSTRUCT TOP OF STANDARD FOUNDATIONS FLUSH WITH ADJACENT SIDEWALK OR PAVED AREAS WHEN PRESENT AND CONFORM TO THE AMERICANS WITH DISABILITIES ACT.
8. REFER TO PROJECT SIGNAL PLANS FOR ELECTRICAL CONDUIT DETAILS AND TYPES. FURNISHING AND INSTALLING ELECTRICAL CONDUIT IS INCIDENTAL TO THE FOUNDATION CONSTRUCTION.
9. INSTALL COPPERWELD GROUND RODS AS REQUIRED BY THE PROJECT SIGNAL PLANS AND SPECIFICATIONS. FURNISHING AND INSTALLING COPPERWELD GROUND RODS IS INCIDENTAL TO THE FOUNDATION CONSTRUCTION.
10. FOUNDATION DETAILS SHOWN ARE FOR THE TRAFFIC SIGNAL STANDARD DIAMETERS INDICATED. IF A LARGER DIAMETER IS FURNISHED, CONSTRUCT A LARGER DIAMETER FOUNDATION AS DETERMINED BY THE PROJECT ENGINEER. NO ADDITIONAL PAYMENT OR COMPENSATION WILL BE MADE.
11. FOUNDATION DESIGN IS BASED ON THE DATA SHOWN BELOW. WHERE SOIL CONDITIONS DIFFER SIGNIFICANTLY FROM THOSE DESCRIBED BELOW, IN TERMS OF SOIL TYPE AND/OR STRENGTH, CONSULT WITH PROJECT ENGINEER TO DETERMINE REMEDIAL MEASURES PRIOR TO FOUNDATION CONSTRUCTION. WHERE DEEMED NECESSARY BY THE PROJECT ENGINEER, PROVIDE ALTERNATE FOUNDATION DESIGNS, SEALED BY A NEW MEXICO REGISTERED ENGINEER, TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

DESIGN DATA

DESIGN SPECIFICATIONS: 2009 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS.

- CONCRETE: $f'c = 3.0$ KSI
- STEEL REINFORCING: $f_y = 60$ KSI
- ANCHOR BOLTS: $f_y = 55$ KSI

ASSUMED SOIL DESIGN PARAMETERS (LOOSE TO MEDIUM DENSE SANDY SOILS):

- NON - COHESIVE SOIL
- SOIL UNIT WEIGHT, $\gamma = 110$ lb/ft³
- INTERNAL FRICTION ANGLE, $\phi = 26^\circ$
- SOIL MODULUS, $k = 90$ lb/in³
- THE TOP 1.0 FT OF SOIL IS IGNORED FOR DESIGN

- WIND SPEED: 90 MPH
- TRUCK GUST: INCLUDED
- GALLOPING: NOT INCLUDED



City of Rio Rancho

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TRAFFIC SIGNAL MAST ARM
 FOUNDATION DETAILS
 SHEET 3 OF 3



PROJECT NO.	
DESIGNED BY:	GWK
DRAWN BY:	CRH
CHECKED BY:	TVE
DATE:	06/16/10
DPW CHK:	
SHEET	