MATERIAL SPECIFICATION	
POLE TUBE	ASTM–A595 GR A OR ASTM A572 GR 50
MAST ARM TUBE	ASTM–A595 GR A OR ASTM A572 GR 50
MAST ARM CLAMP	ASTM–A36
PLATE UNDER 1" THICK	ASTM–A36
PLATE OVER 1" THICK	ASTM–A572 GR. 42
ANCHOR BOLTS, NUTS AND WASHERS	ASTM–F1554 GR. 55
HANDHOLE FRAME	ASTM–A572 GR. 50 OR ASTM–A709 GR. 50
LIFTING PIPE	ASTM–A53 GR. B OR A501
HANDHOLE COVER	C1010 STEEL GR. 36
POLE TOP	ASTM–B26 (356F OR 43)
ST. STEEL HARDWARE	AISI–300 SERIES (18–8)
MAST ARM CONN. STUDS	ASTM–A449
"ANCO" LOCK NUTS OR EQUIVALENT	ASTM–A563 GR. DH
STRUCTURE FINISH	H.D. GALV. ASTM–123
HARDWARE FINISH	H.D. GALV. ASTM–A153
FLAT WASHERS	ASTM–F436
LOCK WASHERS	ANSI B18.21.1
BOLT & NUT OVER 1/2" DIA. GALV.	ASTM–A153
BOLT & NUT UNDER 1/2" ST. STEEL	AISI–300 SERIES
HEIGHT TOLERANCES	OVERALL HEIGHT +1%
SWEEP/CAMBER TOLERANCES	1/8 IN/FT
WELDS	CONFORM TO ANSI/AWS D1.1
REINFORCING STEEL	ASTM A615 GR 60 (UNCOATED)

100% OF WELDS SHALL BE INSPECTED. FULL–PENETRATION GROOVE WELD INSPECTION SHALL BE PERFORMED BY NONDESTRUCTIVE ULTRASONIC METHODS. OTHER WELDS SHALL HAVE A VISUAL AND/OR MAGNETIC PARTICLE INSPECTION

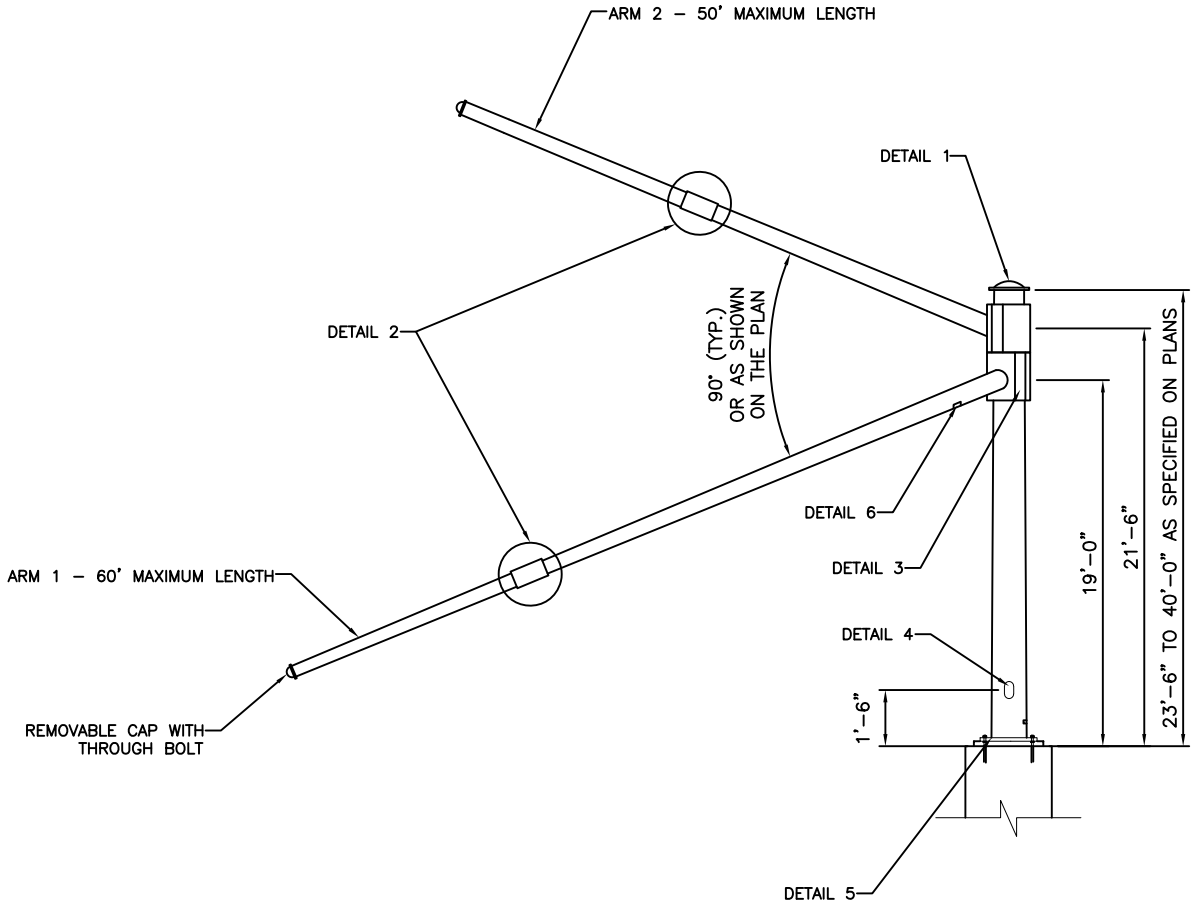
DESIGN CRITERIA:

1. DESIGNED IN ACCORDANCE WITH AASHTO 6TH EDITION, 2013 "STANDARD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS".
   THE DESIGN PARAMETERS INCLUDE:
   90 MPH WIND SPEED PER FIGURE 3–2
   50 YEAR MINIMUM DESIGN LIFE PER TABLE 3–3
   FATIGUE CATEGORY III CONSIDERATION FOR:
   GALLOPING
   TRUCK GUSTS (AT 65 MPH VEHICLE VELOCITY)
   NATURAL WIND (90 MPH)
2. ARMS MAY ROTATE ON POLES UNDER LESS THAN FULL DESIGN LOAD.
3. PER AASHTO THE MINIMUM LENGTH OF ANY TELESCOPIC FIELD JOINT SHALL BE 1.5 TIMES THE INSIDE DIAMETER OF THE END OF THE FEMALE SECTION.

ROAD COMMISSION FOR OAKLAND COUNTY
TRAFFIC–SAFETY DEPARTMENT

TRAFFIC SIGNAL MAST ARM SPECIFICATIONS

DATE				SHEET	TOTAL
02/11/2019					



THIS STANDARD MAY BE USED FOR A POLE WITH A SINGLE ARM UP TO 60' LONG OR A DUAL ARMS UP TO 50' LONG. FABRICATOR SHALL PROVIDE FABRICATION DRAWINGS VERIFYING CONSTRUCTABILITY.

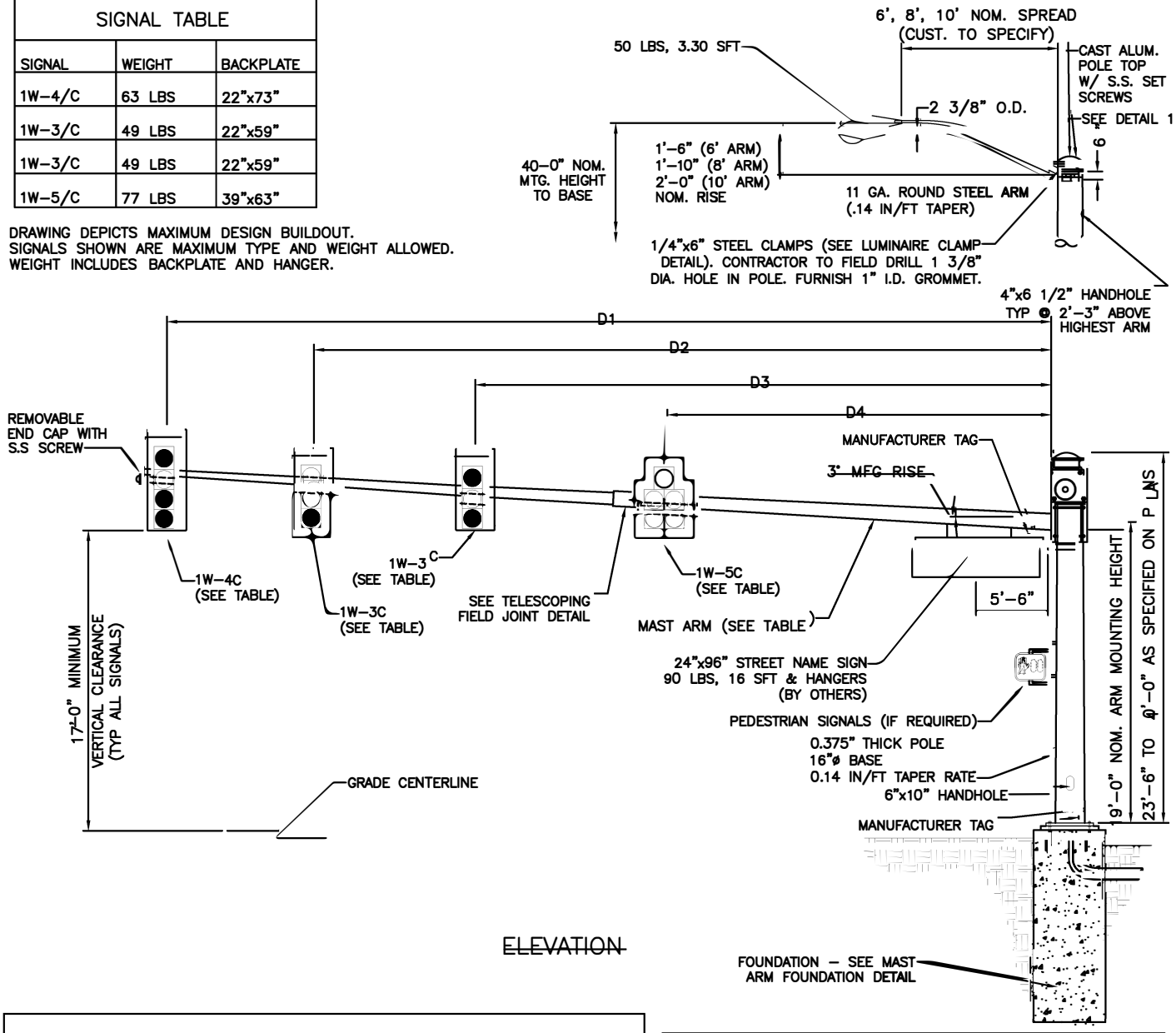
ROAD COMMISSION OF OAKLAND COUNTY
TRAFFIC–SAFETY DEPARTMENT

MAST ARM CONFIGURATION

DATE				SHEET	TOTAL
02/11/2019					

SIGNAL TABLE		
SIGNAL	WEIGHT	BACKPLATE
1W–4/C	63 LBS	22"x73"
1W–3/C	49 LBS	22"x59"
1W–3/C	49 LBS	22"x59"
1W–5/C	77 LBS	39"x63"

DRAWING DEPICTS MAXIMUM DESIGN BUILDOUT.
SIGNALS SHOWN ARE MAXIMUM TYPE AND WEIGHT ALLOWED.
WEIGHT INCLUDES BACKPLATE AND HANGER.



~~ELEVATION~~

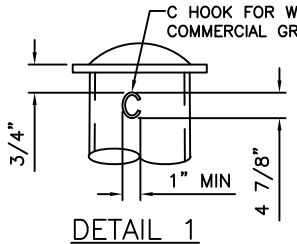
MAST ARM DATA				
MAST ARM SPAN (FT)	BASE END DIA. (IN)	TIP END DIA. (IN)	WALL THICKNESS (IN)	SECTION LENGTH (FT)
20.00	8.00	5.20	0.2500	20.00
25.00	8.50	5.00	0.2500	25.00
30.00	9.20	5.00	0.2500	30.00
35.00	9.90	5.00	0.2500	35.00
40.00	11.00	5.40	0.2500	40.00
45.00	9.30	5.10	0.1793	30.00
	11.00	8.60	0.3125	16.75
50.00	9.18	5.75	0.1793	25.00
	12.25	8.54	0.2391	26.50
60.00	9.18	4.28	0.2500	35.00
	12.25	8.54	0.3125	26.50

SIGNAL LOCATIONS (TO BE FIELD VERIFIED)				
LENGTH	D1	D2	D3	D4
20'	20'–0"	8'–0"	--	--
25'	25'–0"	13'–0"	--	--
30'	30'–0"	18'–0"	--	--
35'	35'–0"	23'–0"	--	--
40'	40'–0"	28'–0"	16'–0"	--
45'	45'–0"	33'–0"	21'–0"	--
50'	50'–0"	38'–0"	26'–0"	14'–0"
55'	54'–6"	43'–0"	31'–0"	19'–0"
60'	59'–9"	48'–0"	36'–0"	24'–0"

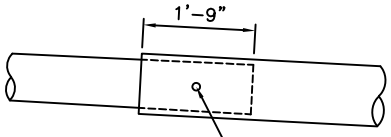
ROAD COMMISSION OF OAKLAND COUNTY
TRAFFIC–SAFETY DEPARTMENT

MAST ARM ELEVATION

DATE				SHEET	TOTAL
02/11/2019					

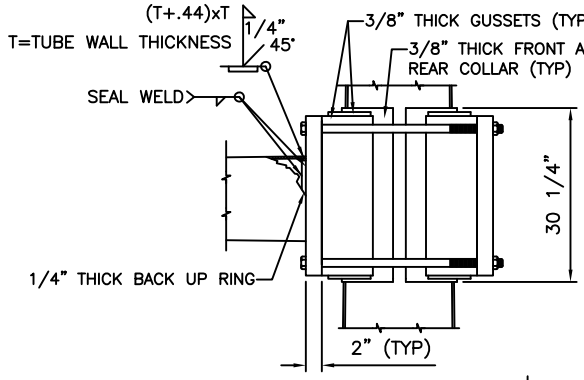


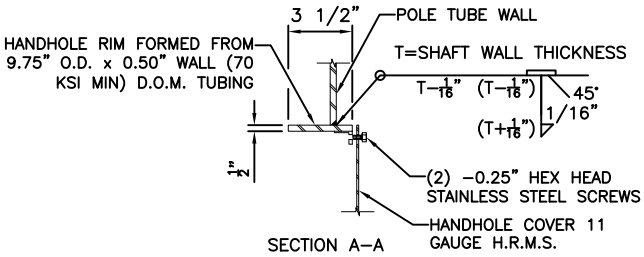
DETAIL 1



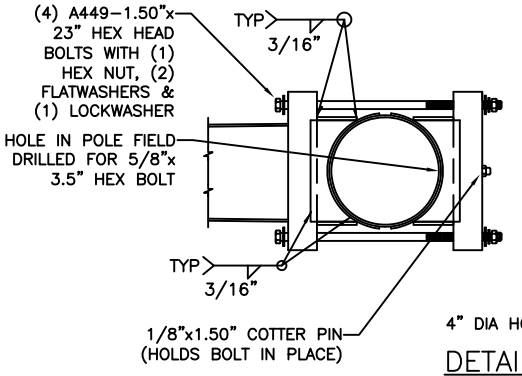
5/8" ø GALV. STUD WITH (2) "ANCO" LOCK NUTS, 3/4" ø HOLE FACTORY DRILLED IN OUTBOARD TUBE, FIELD DRILL INBOARD TUBE TO ASSURE SNUG FIT (ORIENTATION SHALL BE HORIZONTAL)

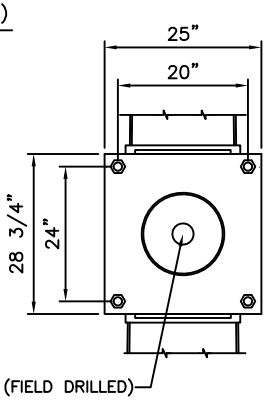
DETAIL 2



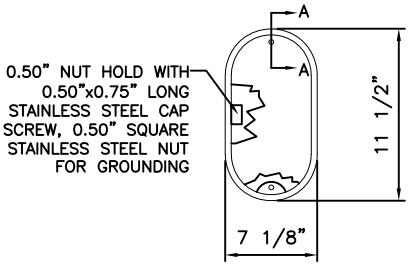


SECTION A–A

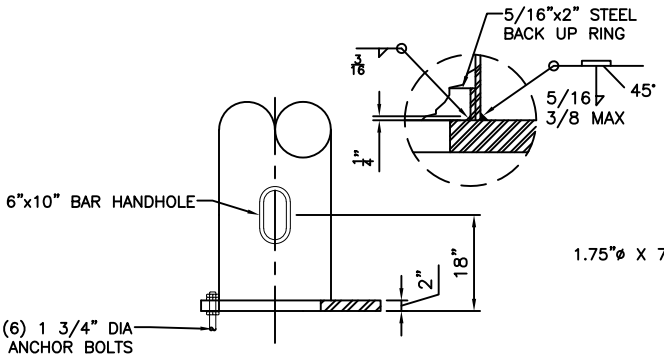


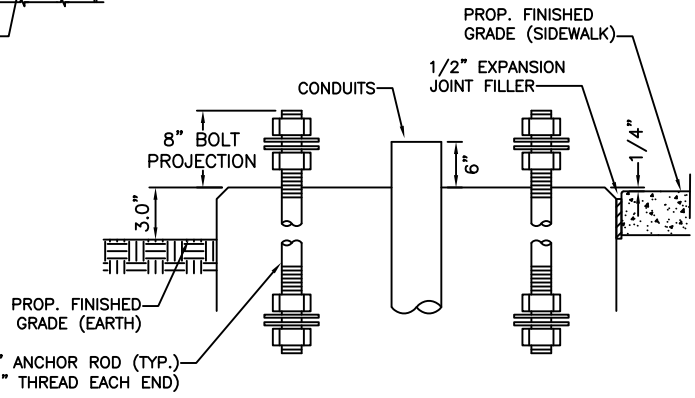


DETAIL 3



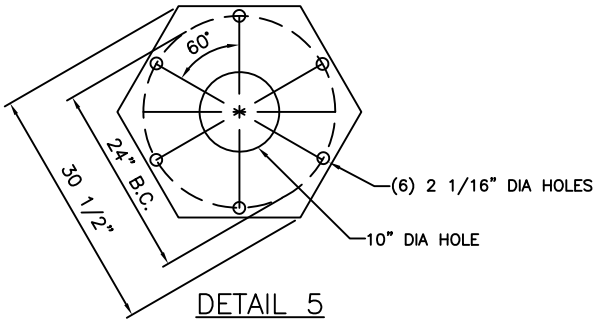
DETAIL 4



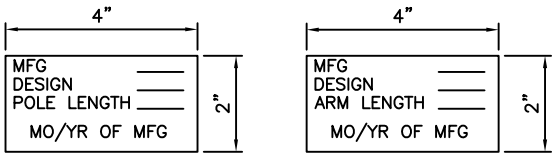


CONFIRM TOP OF FOUNDATION ELEVATION / PROJECTION WITH THE ENGINEER PRIOR TO CONSTRUCTION

FOUNDATION ELEVATION



DETAIL 5



SAMPLE POLE AND ARM STAINLESS STEEL TAGS DETAIL

TO BE ATTACHED TO POLE OR ARM 4" FROM BASE OF TUBE (STAMPED IN 3/8" CHARACTERS) ATTACHED TO POLE/ARM WITH (4) #8x3/8" SS TYPE U SCREWS EACH

DETAIL 6

SH. 4 OF 5

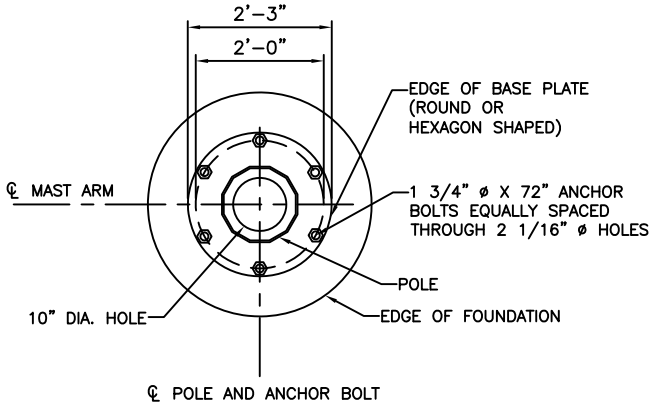
OC–

ROAD COMMISSION OF OAKLAND COUNTY

TRAFFIC–SAFETY DEPARTMENT

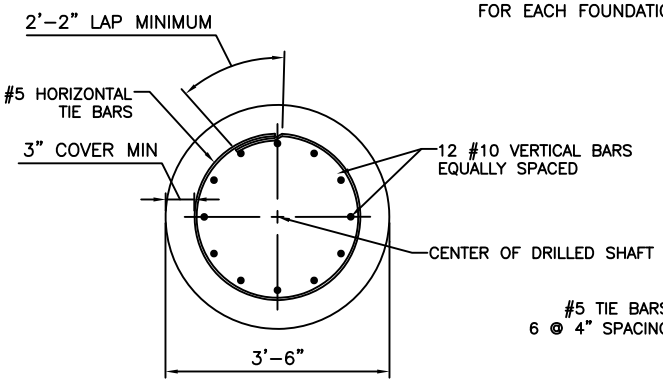
MAST ARM DETAILS

DATE				SHEET	TOTAL
02/11/2019					



BASE PLATE
(6 ANCHOR BOLTS MIN.)

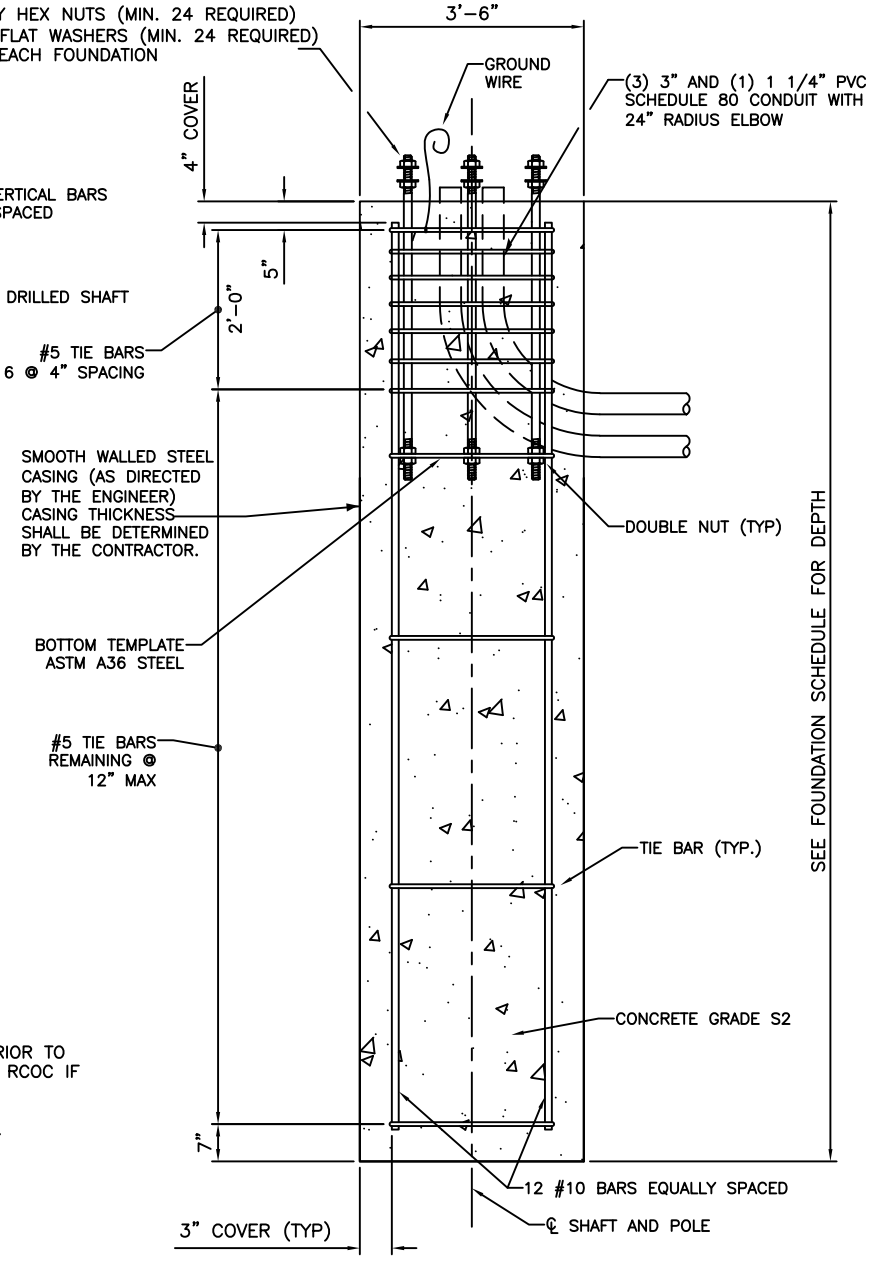
NOTES:
1. ALL GROUND RODS SHALL BE 3/4"x10' COPPER CLAD ROD. A MINIMUM OF 2 GROUND RODS SHALL BE USED (ONE FOR THE SERVICE DISCONNECT AND ONE FOR THE MESSENGER CABLE & POLE).
2. GROUND ROD SHALL BE LOCATED IN THE NEAREST HANDHOLE OR AS DIRECTED BY THE ENGINEER AND IN COMPLIANCE WITH THE N.E.C.
3. GROUND WIRE CONNECTION TO GROUNDING ROD(S) SHALL UTILIZE A NON–SOLDER TYPE CONNECTION.
4. INDICATE THE DIRECTION OF CONDUIT SWEEPS IN FOUNDATION TOP WITH AN ARROW SCORED INTO THE CONCRETE.
5. INSTALL POLE SO THAT THE FOUNDATION AND ANCHOR BOLTS ARE PLUMB
6. ALL GROUNDS SHALL PROVIDE LESS THAN 10 OHM RESISTANCE TO GROUND
7. GROUNDING OF POLE INCLUDES A #4 BARE COPPER GROUND WIRE MECHANICALLY CONNECTED TO THE FOUNDATION REINFORCING STEEL (PROVIDE 24" SLACK ABOVE THE TOP OF FOUNDATION.)



SECTION THROUGH SHAFT

FOUNDATION SCHEDULE (FOR INFORMATION ONLY. FOUNDATION DEPTH PER PLANS)		
CONFIGURATION	SOIL TYPE	FOUNDATION DEPTH
DUAL 50' ARMS	AVERAGE	19'–0"
	POOR	21'–0"
50' ARM + 45' OR LESS ARM	AVERAGE	17'–0"
	POOR	**18'–0"**
45' OR LESS ARM + 45' OR LESS ARM	AVERAGE	15'–0"
	POOR	**18'–0"**
SINGLE 60' ARM	AVERAGE	15'–0"
	POOR	19'–0"
SINGLE 45' OR LESS ARM	AVERAGE	14'–0"
	POOR	18'–0"

FOUNDATION ASSUMPTIONS (FOR INFORMATION ONLY):
1. CONTRACTOR SHALL VERIFY ALL ASSUMPTIONS PRIOR TO INSTALLING FOUNDATION AND MAST ARM. CONTACT RCOC IF CONDITIONS DIFFER.
2. ALLOWABLE SOIL BEARING CAPACITY = 2,000 PSF.
3. SAND SOILS, MINIMUM PHI=30 DEGREES.
4. COHESIVE SOILS MINIMUM C=2,000 PSF.
5. MINIMUM BLOW COUNTS:
   POOR 5<N<10
   AVERAGE 10<N<20
6. MINIMUM SOIL DENSITY = 50 PCF



ELEVATION

SH. 5 OF 5

OC–

ROAD COMMISSION OF OAKLAND COUNTY

TRAFFIC–SAFETY DEPARTMENT

FOUNDATION

DATE				SHEET	TOTAL
02/11/2019					