Summary of Major Changes in Standard Specifications For Road and Bridges

&

Traffic Signal Standard Details

July 26th, 2016

Outline

- Section 736
- Section 1020
- Traffic Signal Standard Details – Sheet No 5 (revised special foundation design)

Blue Book Changes

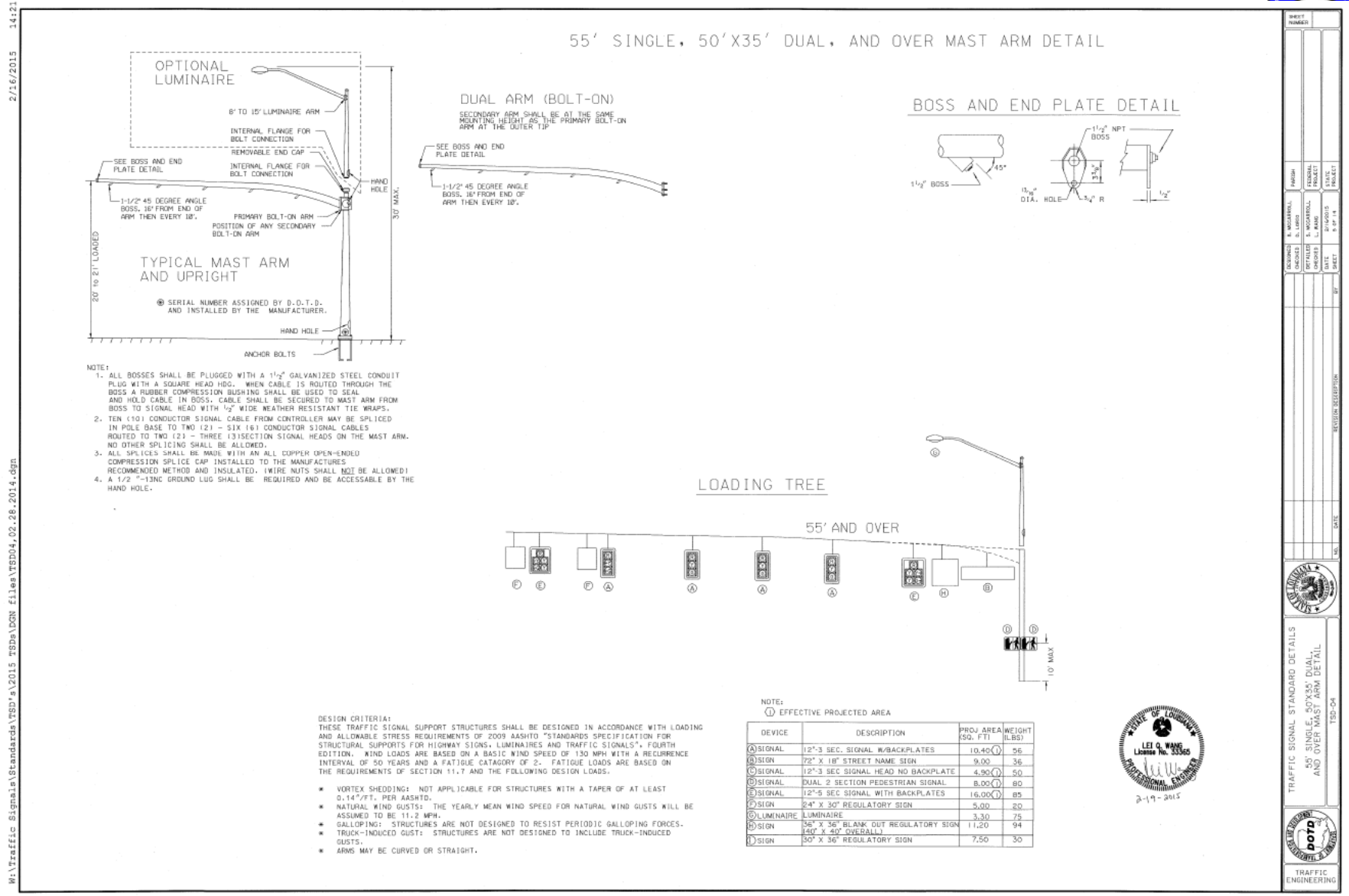
- Added IMSA certification requirements for contractors
- Clarified traffic signal contractors' maintenance and responsibility during construction including procedure when contractors fail to respond to call-out.
- Clarified signal inspection procedure and added the requirements to include Operations and Maintenance manual before final acceptance.

Bluebook Changes

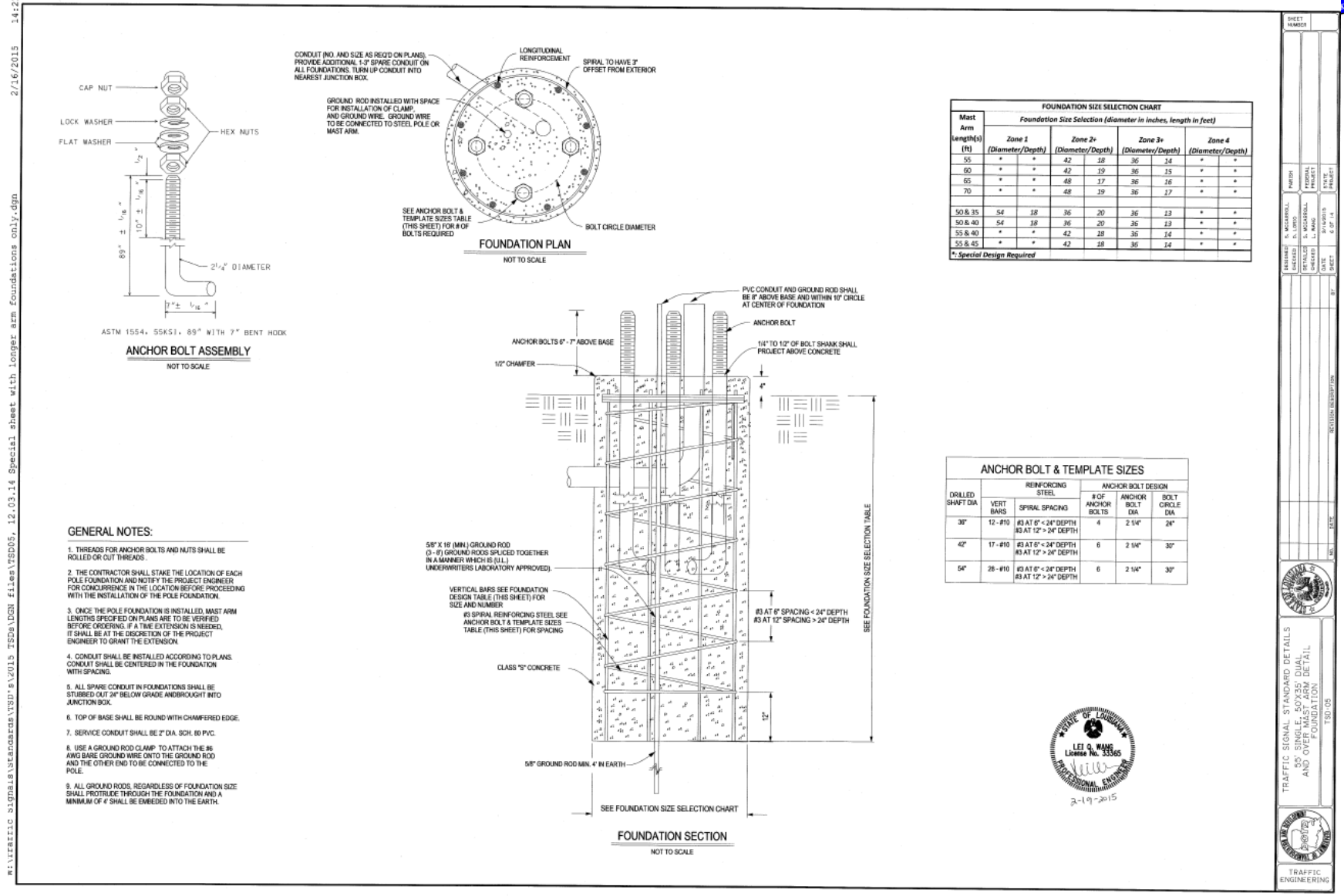
- Added temporary traffic signal installation item
- Added TS2 cabinet and ATC controller pay items
- A lot of the lengthy material specifications in section 1020 are replaced with TOAPL reference

- http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Operations/Traffic_Services/Pages/Traffic_Operations_Approved_Products_List.aspx

2015 TSD sheet 04

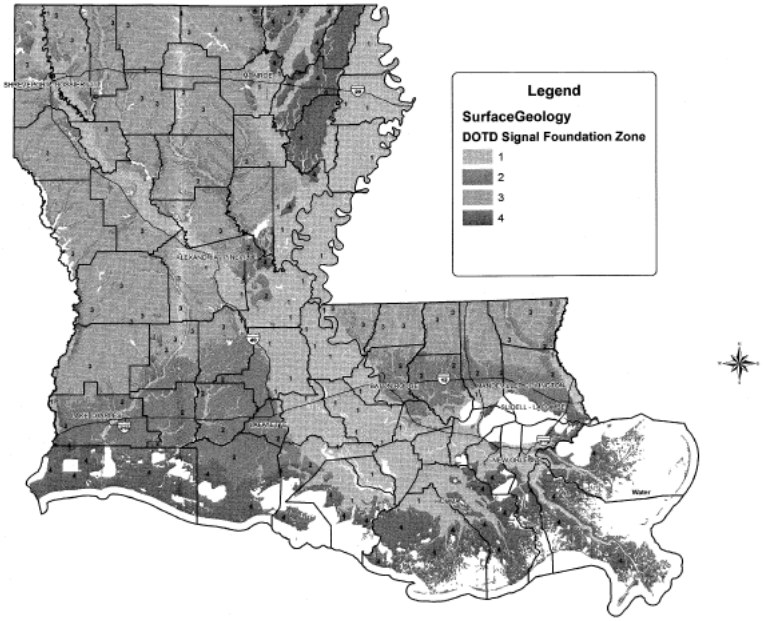


2015 TSD sheet 05



2015 TSD sheet 06

GENERAL STATIC MAP FOR FOUNDATION REQUIREMENTS SHOWN HERE.
SEE http://goo.gl/QHv2o3 FOR LOCATION SPECIFIC CLASSIFICATION.
ALTERNATIVE: LADOTD WEBSITE/HOME/INSIDE LADOTD/DIVISIONS/OPERATIONS /TRAFFIC SERVICES/TRAFFIC OPERATIONS/APPROVED PRODUCT LIST/TOAPL 165.



FOUNDATION SIZE ZONING:

1. FOUNDATION ZONES ARE BASED ON THE 1984 GEOLOGICAL MAP OF LOUISIANA PUBLISHED BY THE LOUISIANA GEOLOGICAL SURVEY. LOCAL GEOLOGICAL VARIATIONS ARE LIKELY DUE TO HUMAN ACTIVITIES OR NATURAL EVENTS.
2. THE ZONING MAP IS INTENDED TO ASSIST IN SIZING FOUNDATION FOR SELECTED SIGNAL POLES AND SHOULD NOT BE VIEWED AS A SUBSTITUTE OF ENGINEERING JUDGMENT OR PROPER DESIGN.
3. SOME SOILS SUCH AS GRAVEL OR CEMENTED SOILS MAY NOT BE AMENABLE TO THE CONVENTIONAL DRILLED SHAFT CONSTRUCTION. EXERCISE CAUTION AND SEEK CONFIRMATION OF THE SOIL CONDITIONS DURING DESIGN AND/OR DURING SHAFT EXCAVATION.

ZONE 1 - ALLUVIAL SOILS FORMED BY THE RED RIVER, THE OUACHITA RIVER, THE ATCHAFALAYA RIVER, AND THE MISSISSIPPI RIVER. ASSUMED AVERAGE SOIL SHEAR STRENGTH IS AT LEAST 250 POUNDS PER SQUARE FOOT (PSF).

ZONE 2 - PLEISTOCENE AGE PRAIRIE TERRACES DEPOSITS. ASSUMED AVERAGE SOIL SHEAR STRENGTH IS AT LEAST 500 PSF.

ZONE 3 – PLEISTOCENE AGE OR OLDER DEPOSITS OTHER THAN ZONE 2. ASSUMED AVERAGED SHEAR STRENGTH IS AT LEAST 1,000 PSF.

ZONE 4 - MOSTLY COASTAL MARSH AND SAND/GRAVEL DEPOSITS. SPECIAL DESIGN IS REQUIRED FOR THE SIGNAL POLE WITHIN THIS ZONE.

CONSTRUCTION NOTES:

1. IF GROUNDWATER IS ENCOUNTERED DURING FOUNDATION EXCAVATION AND NO CAVE IN IS OBSERVED, THE GROUNDWATER SHOULD BE PUMPED OUT PRIOR TO STEEL CAGE PLACEMENT. THE WATER REMAINS IN THE EXCAVATION SHOULD BE NO MORE THAN ½ INCH.
2. IF GROUNDWATER IS ENCOUNTERED DURING FOUNDATION EXCAVATION AND CAVE IN IS OBSERVED, THE EXCAVATION SHOULD BE CEASED. CONTACT THE PROJECT ENGINEER IMMEDIATELY. SHOULD THE CAVING IS EXCESSIVE, BACKFILL THE EXCAVATION IMMEDIATELY.
3. FREE FALL CONCRETE IS ALLOWED FOR DRY HOLES ONLY. THE CONCRETE SHALL BE PLACED WITH A HOPPER OR A TREMIE. WHEN FREE FALL METHOD IS USED, CONTROL THE CONCRETE TO FALL VERTICALLY WITHOUT CONTACTING SHAFT WALL OR STEEL CAGE TO PREVENT SEGREGATION.
4. CONCRETE PLACEMENT WITH A TREMIE IS REQUIRED IF EXCESSIVE GROUNDWATER (MORE THAN 6 INCHES ACCUMULATION) IS ENCOUNTERED.

WHEN THE SOIL CONDITIONS ARE SUSPECTED TO BE DIFFERENT THAN THOSE DESCRIBED IN THE FOUNDATION SIZE ZONING, CONTACT THE PROJECT ENGINEER IMMEDIATELY TO EVALUATE THE SUITABILITY OF THE FOUNDATION DESIGN.

STATE OF LOUISIANA
LEI Q. WANG
License No. 33365
PROFESSIONAL ENGINEER
2-19-2015

TRAFFIC SIGNAL STANDARD DETAILS
55' SINGLE, 50'X35' DUAL, AND OVER MAST ARM DETAIL FOUNDATION DETAILS POLE DISTRIBUTION DETAILS
TSD-06

TRAFFIC ENGINEERING

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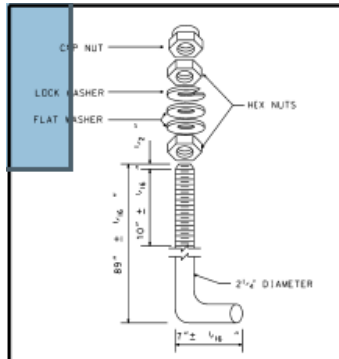
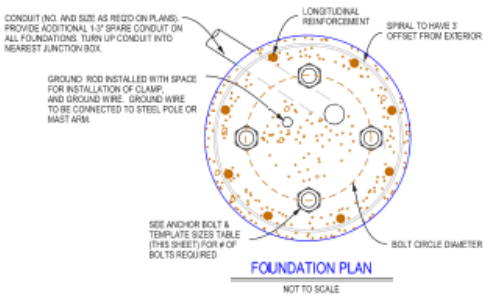
2016 TSD sheet 05



ASTM 1554, 55KSI, 89° WITH 7" BENT HOOK

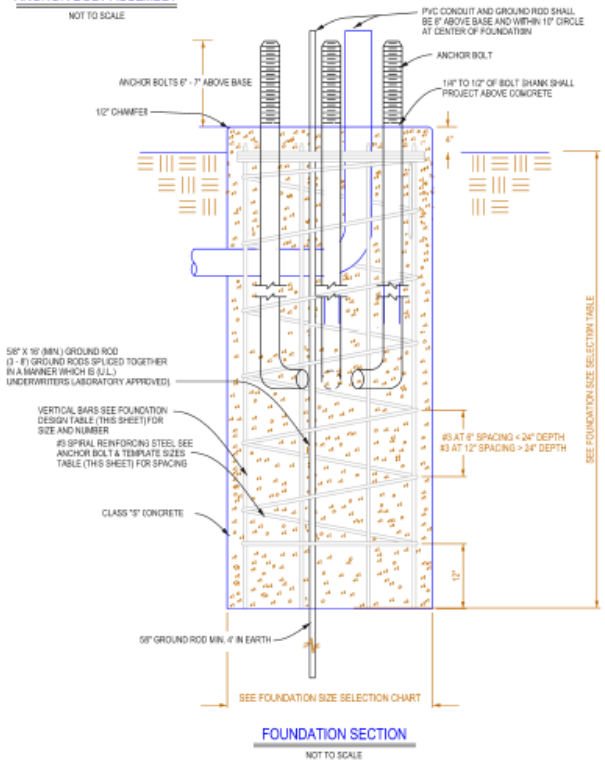
ANCHOR BOLT ASSEMBLY

NOT TO SCALE



FOUNDATION PLAN

NOT TO SCALE



FOUNDATION SECTION

NOT TO SCALE

FOUNDATION SIZE SELECTION TABLE

Mast Arm Length(s) (ft)	Bending Moment (ft-lb)	Torsion (ft-lb)	Shear (lb)	Axial Force (lb)	Foundation Size Selection (diameter in inches, depth in feet)							
					Zone 1 (Diameter/Depth)		Zone 2+ (Diameter/Depth)		Zone 3+ (Diameter/Depth)		Zone 4 (Diameter/Depth)	
55	125,120	121,100	5,508	5,862	*	*	42	18	36	14	*	*
60	141,805	128,940	5,938	6,561	*	*	42	19	36	15	*	*
65	161,259	150,480	6,138	6,965	*	*	48	17	36	16	*	*
70	182,103	169,590	6,628	7,377	*	*	48	19	36	17	*	*
50 & 35	142,210	101,630	5,868	7,572	54	18	36	20	36	13	*	*
50 & 40	147,540	101,610	5,868	7,798	54	18	36	20	36	13	*	*
55 & 40	159,408	119,900	5,918	8,195	*	*	42	18	36	14	*	*
55 & 45	165,981	119,870	5,918	8,425	*	*	42	18	36	14	*	*

*: Special Design Foundation Required

ANCHOR BOLT & TEMPLATE SIZE TABLE

DRILLED SHAFT DIA	REINFORCING STEEL		ANCHOR BOLT DESIGN		
	VERT BARS	SPIRAL SPACING	# OF ANCHOR BOLTS	ANCHOR BOLT DIA	BOLT CIRCLE DIA
36"	12 - #10	#3 AT 6" < 24" DEPTH #3 AT 12" > 24" DEPTH	4	2 1/4"	24"
42"	18 - #10	#3 AT 6" < 24" DEPTH #3 AT 12" > 24" DEPTH	6	2 1/4"	30"
54"	25 - #10	#3 AT 6" < 24" DEPTH #3 AT 12" > 24" DEPTH	6	2 1/4"	30"

GENERAL NOTES:

1. THREADS FOR ANCHOR BOLTS AND NUTS SHALL BE ROLLED OR CUT THREADS .
2. THE CONTRACTOR SHALL STAKE THE LOCATION OF EACH POLE FOUNDATION AND NOTIFY THE PROJECT ENGINEER FOR CONCURRENCE IN THE LOCATION BEFORE PROCEEDING WITH THE INSTALLATION OF THE POLE FOUNDATION.
3. ONCE THE POLE FOUNDATION IS INSTALLED, MAST ARM LENGTHS SPECIFIED ON PLANS ARE TO BE VERIFIED BEFORE ORDERING. IF A TIME EXTENSION IS NEEDED, IT SHALL BE AT THE DISCRETION OF THE PROJECT ENGINEER TO GRANT THE EXTENSION.
4. CONDUIT SHALL BE INSTALLED ACCORDING TO PLANS. CONDUIT SHALL BE CENTERED IN THE FOUNDATION WITH EVEN SPACING.
5. ALL SPARE CONDUIT IN FOUNDATIONS SHALL BE STUBBED OUT 24" BELOW GRADE AND BROUGHT INTO JUNCTION BOX.
6. TOP OF BASE SHALL BE ROUND WITH CHAMFERED EDGE.
7. SERVICE CONDUIT SHALL BE 2" DIA. SCH. 80 PVC.
8. USE A GROUND ROD CLAMP TO ATTACH THE #6 AWG BARE GROUND WIRE ONTO THE GROUND ROD AND THE OTHER END TO BE CONNECTED TO THE POLE.
9. ALL GROUND RODS, REGARDLESS OF FOUNDATION SIZE SHALL PROTRUDE THROUGH THE FOUNDATION AND A MINIMUM OF 4' SHALL BE EMBEDDED INTO THE EARTH.

SPECIAL DESIGN FOUNDATION NOTES:

1. THE CONSULTANT SHALL SIZE THE FOUNDATION BASED ON THE SITE SPECIFIC STRUCTURAL REACTIONS IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES, AND TRAFFIC SIGNALS, AND LADOTD MAST ARM DESIGN CRITERIA (TSD-04). A 25-YR RECURRENCE INTERVAL AND A WIND SPEED OF 110 MPH FOR THE ENTIRE STATE SHALL BE USED TO SIZE THE FOUNDATION ONLY. THE FOUNDATION SIZE DETERMINATION SHALL CONSIDER LATERAL, BENDING MOMENTS, AND TORSIONAL MOMENTS. AN ADEQUATE SAFETY FACTOR SHALL BE APPLIED.
2. THE FOUNDATION SIZE SELECTION TABLE IS BASED ON THE MANUFACTURER PROVIDED FOUNDATION REACTIONS USING A 25-YEAR RECURRENCE INTERVAL AND A WIND SPEED OF 110 MPH. THE MAST ARM STRUCTURAL DESIGN SHALL CONFORM TO THE CODE REQUIREMENTS FOR THE RECURRENCE INTERVAL AND A WIND SPEED OF 130 MPH. THE CONSULTANT MAY AT HIS/HER DISCRETION USES THE FOUNDATION SIZE SELECTION TABLE SHOULD THE STRUCTURAL REACTIONS CALCULTED BASED ON THE REQUIREMENTS SETFORTH IN NOTE 1 BE WITHIN THE LOADS SPECIFIED.
3. SHOULD THE STRUCTURAL REACTIONS EXCEED THE LOADS SPECIFIED IN THE FOUNDATION SIZE SELECTION TABLE, THE CONSULTANT SHALL PROCURE SITE SPECIFIC GEOTECHNICAL DESIGN DATA FOR FOUNDATION DESIGN.
4. THE SPECIAL DESIGN, AT THE DISCRETION OF THE TRAFFIC SERVICES SECTION, MAY SUBJECT TO DOTD'S BRIDGE DESIGN AND/OR GEOTECHNICAL AND PAVEMENT SERVICES SECTIONS' REVIEW PRIOR TO FINAL PLAN ACCEPTANCE.

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Questions?