LADOTD

Traffic Signal Standard Details Update

June 25th, 2015

Outline

- Summary of changes between TSD 2009 version and TSD 2015 version
- Overview on the Traffic Signal Mast Arm Specifications and foundation design details for arms longer than 50’(single) and 45’X40’ (dual)
- Upcoming TSD that will be published with the new Louisiana Standard Specifications For Roads and Bridges

TSD 2009 vs. 2015

- 2015 TSD is an interim version between now and when the new standard specs book is published
- A few minor revisions.
- Three sheets are added to show longer traffic signal mast arm specifications and details

Revisions

2009

- Sheet 05-pedestrian signal
- Sheet 06-mast arm bracket for signals and signs
- Sheet 07-wiring details for flashing beacon
- Sheet 09

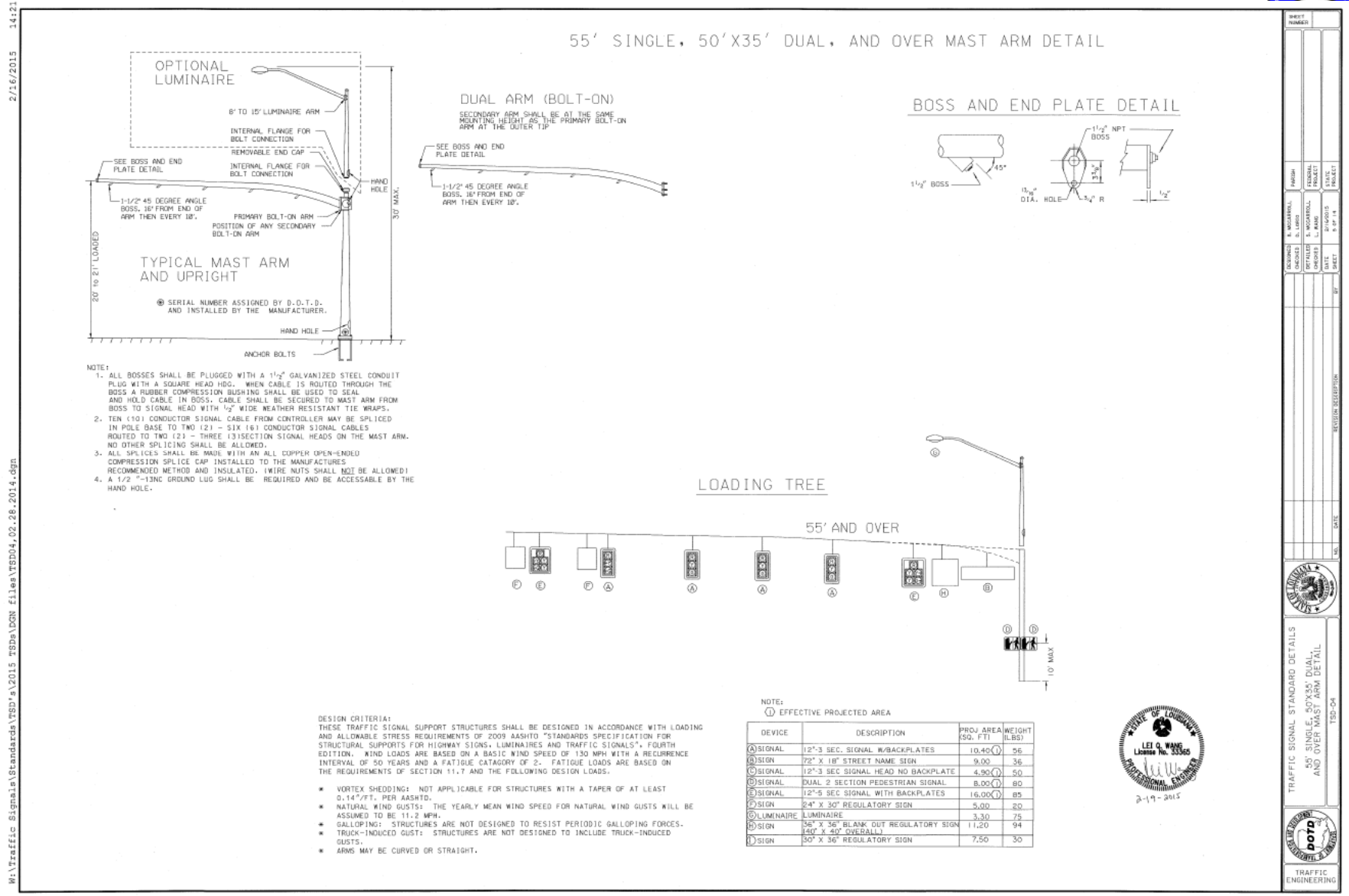
2015

- Sheet 08-count down ped

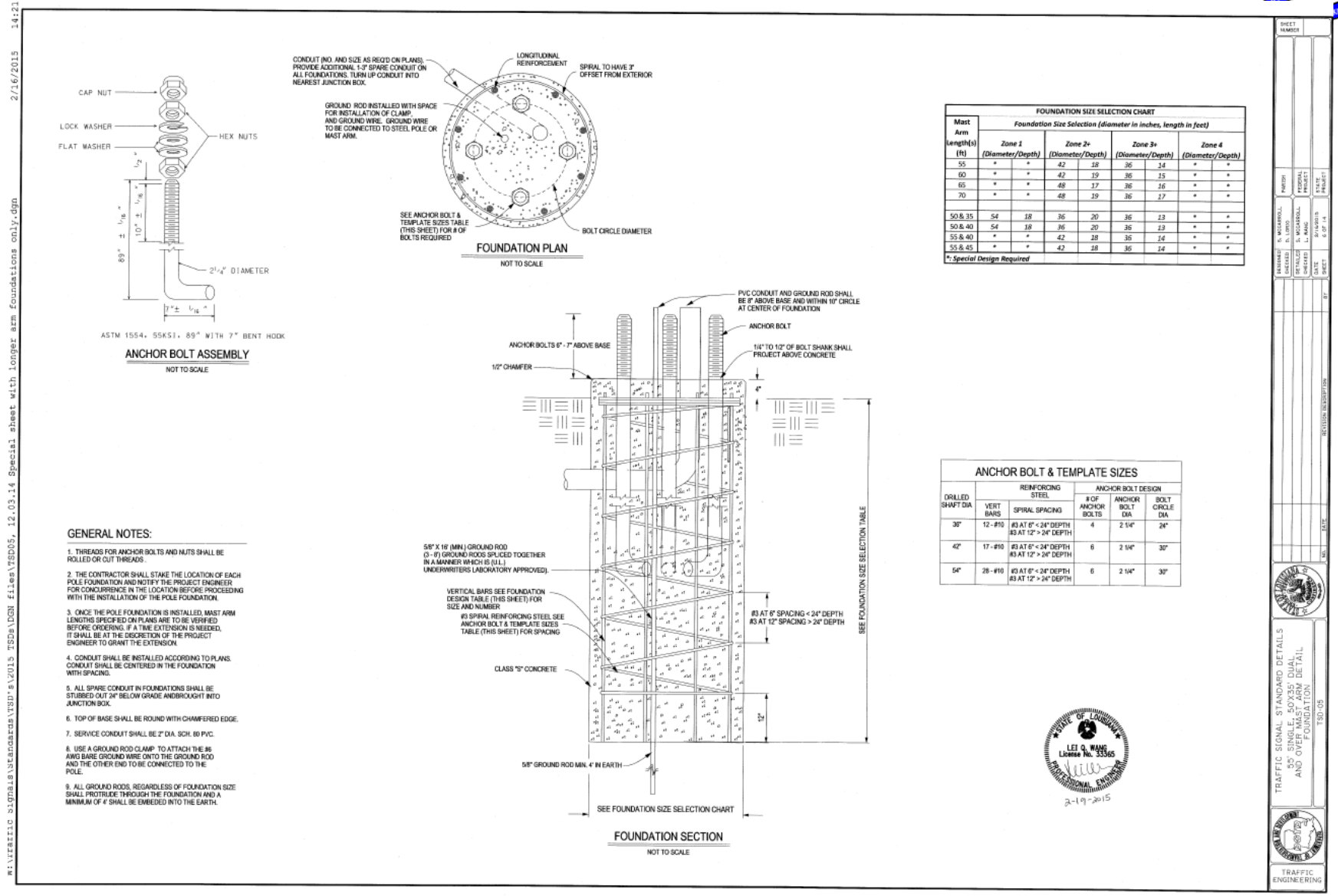
and delete the outdated crossing signs.

- Sheet 09-more drawings
- Sheet 10-delete the drawing
- Sheet 10-add wiring diagram for bridge/railroad preemption

2015 TSD sheet 04



2015 TSD sheet 05



FOUNDATION SIZE SELECTION CHART

Mast Arm Length(s) (ft)	Foundation Size Selection (diameter in inches, length in feet)							
	Zone 1 (Diameter/Depth)		Zone 2+ (Diameter/Depth)		Zone 3+ (Diameter/Depth)		Zone 4 (Diameter/Depth)	
55	*	*	42	18	36	14	*	*
60	*	*	42	19	36	15	*	*
65	*	*	48	17	36	16	*	*
70	*	*	48	19	36	17	*	*
50 & 35	54	18	36	20	36	13	*	*
50 & 40	54	18	36	20	36	13	*	*
55 & 40	*	*	42	18	36	14	*	*
55 & 45	*	*	42	18	36	14	*	*

*: Special Design Required

ANCHOR BOLT & TEMPLATE SIZES

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"	17 - #10	#3 AT 6" < 24" DEPTH #3 AT 12" > 24" DEPTH	6	2 1/4"	30"
54"	28 - #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 SPACING.
5. ALL SPARE CONDUIT IN FOUNDATIONS SHALL BE STUBBED OUT 24" BELOW GRADE ANDBROUGHT 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 EMBEDED INTO THE EARTH.

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TRAFFIC SIGNAL STANDARD DETAILS
55' SINGLE, 50'X35' DUAL AND OVERHEAD SIGN DETAIL FOUNDATION
TSD 05

TRAFFIC ENGINEERING

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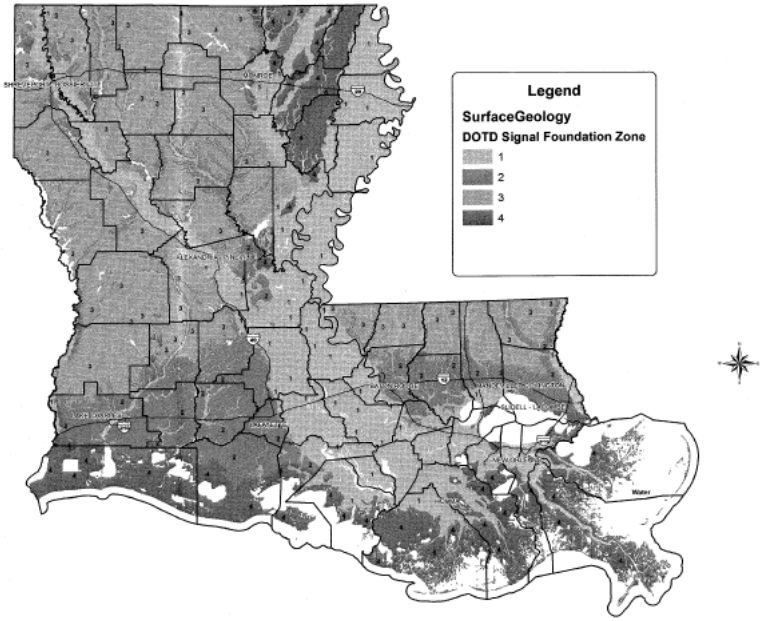
2015 TSD sheet 06

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.

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

TRAFFIC ENGINEERING

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Mast Arm Specs overview

- For mast arms 50’ or shorter singles and 45’by 40’ or shorter duals: no change in specifications or foundation design
- For longer mast arms, the poles have to be on the Traffic Operations Approved Product List (TOAPL). Traffic Services
- Foundation design varies depending on soil type shown in sheet 05 2015. soil zone map is a interactive GIS based map on LADOTD Traffic Services website.

Questions?