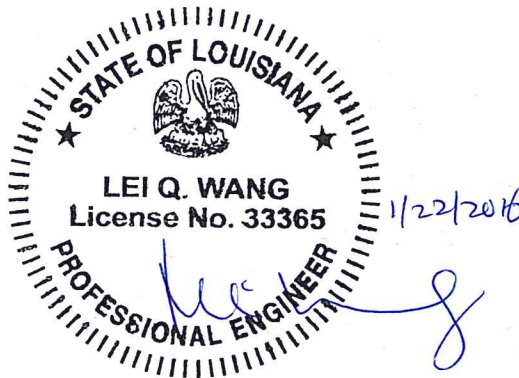


Louisiana
Department of Transportation
And
Development

Traffic Control Standard
Number 9

Bolt-On Mast Arm & Dual Mast Arm Steel Poles



Dated January 22, 2016

GENERAL

The general design of the mast arm assembly shall be as follows:

- The design shall meet the current AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaries, and Traffic current Interim Specifications. See additional design criteria in **Figures 1 & 2**.
- The mast arm(s) shall adhere to the loading trees in **Figure 1** as well as the bolt circle chart referenced under the Upright Pole Shaft section of this specification.
- The mast arm(s) shall be a straight arm bolt on design.
- The primary and/or any secondary mast arm(s) shall bolt onto the upright pole shaft.
- The upright pole and mast arm(s) may be of a round or multi-sided design. T-base designs are not allowed.
- The upright pole shall have an internal flange at the top capable of mounting an optional upright pole and optional arm for a clamp-on luminaire and/or video camera.
- Materials for mast arm assemblies must conform to the Material Data Chart shown in **Figure 2**.
- The mast arm assembly must be galvanized in accordance with the Louisiana Standard Specifications for Road & Bridges Section 811.

DESCRIPTION

Mast arm lengths are as follows:

SINGLE MAST ARM ASSEMBLIES	DUAL MAST ARM ASSEMBLIES
Description	Description
20' Single Mast Arm	25' x 20' Dual Mast Arm
25' Single Mast Arm	25' x 25' Dual Mast Arm
30' Single Mast Arm	30' x 25' Dual Mast Arm
35' Single Mast Arm	35' x 20' Dual Mast Arm
40' Single Mast Arm	35' x 25' Dual Mast Arm
45' Single Mast Arm	40' x 25' Dual Mast Arm
50' Single Mast Arm	40' x 30' Dual Mast Arm
55' Single Mast Arm	40' x 35' Dual Mast Arm
60' Single Mast Arm	45' x 25' Dual Mast Arm
65' Single Mast Arm	45' x 30' Dual Mast Arm
70' Single Mast Arm	45' x 35' Dual Mast Arm
	45' x 40' Dual Mast Arm
	50' x 35' Dual Mast Arm
	50' x 40' Dual Mast Arm
	55' x 40' Dual Mast Arm
	55' x 45' Dual Mast Arm

Upright Pole Shaft:

The upright pole shaft baseplate shall have the following bolt circle, anchor bolt size and number of anchor bolts:

ARM LENGTH	BOLT CIRCLE DIAMETER	ANCHOR BOLT DIAMETER	NUMBER OF ANCHOR BOLTS
Single 20' to 55'	24"	2.25"	4
Single 60' to 70'	30"	2.25"	6
Dual 45' x 40' and Under	24"	2.25"	4
Dual 50' x 35' and Larger	30"	2.25"	6

The upright pole shaft baseplate for 24" bolt circle diameter shall have four (4) 2.50" x 5" adjustment slots for anchor bolts. The upright pole shaft baseplate for 30" bolt circle diameter shall have six (6) 2.50" x 5" adjustment slots for anchor bolts.

The upright pole shaft shall have a metal plate permanently welded with manufacturer's name, primary mast arm length and any secondary mast arm length respectively. (Example: Pole Manufacturer Name, LADOTD 30/20). The label must be legible after galvanizing. See **Figure 2** for label location.

A 6" x 12" minimum hand hole shall be provided 2' from the bottom of the baseplate. The hand hole shall have a secure but removable cover. The hand hole shall be positioned on the opposite direction of the primary arm as to be away from traffic.

A ½" 13NC threaded grounding nut (Fargo GC202, Burndy KC22J12T13, or approved equal) shall be provided inside of the upright pole shaft opposite the hand hole.

The upright pole shaft shall be designed so that a 3" and a 1" hole can be field drilled at a location approximately 26" from the pole baseplate.

A 5" x 8" minimum hand hole shall be provided at the union of the arm and pole shaft to provide access into the wire way and bolts for the optional upright. The hand hole shall have a secure but removable cover.

The wire way into the arm shall be a minimum of 3".

The top of the upright pole shaft shall have an internal flange at the top capable of bolting an optional upright pole and/or optional arm for luminaire and/or video camera. This flange shall have threaded bolt holes.

A removable cap or bolted flat top plate with waterproof gasket must be provided for the top of pole.

The upright pole from the bottom of the baseplate to the center of mast arm(s) should be 20' in height.

Anchor Bolts:

Anchor bolts shall be furnished in accordance with the **Figure 2**. Anchor bolts must be 2 ¼" (57.2 mm), with a yield strength of 55 ksi., be hot dipped galvanized for the top 12" (300 mm), and comply with ASTM F1554 Grade 55. One (1) additional anchor bolt must be supplied with each shipment for acceptance testing by the Department.

Mast Arm:

The mast arm(s) shall have a metal plate permanently welded with the manufacturer's name, primary mast arm length and any secondary mast arm length respectively. (Example: Pole Manufacturer Name, LADOTD 30/20). The label must be legible after galvanizing. See **Figure 2** for label locations.

The height of the arm(s) at the tip shall be a minimum 20', maximum 22' to the bottom of the

upright pole shaft baseplate after the deflection from the loaded weight of the arm.

Bosses in the mast arm(s) shall be 1-1/2" minimum threaded rigid conduit on the underside of the arm(s) and set at 45 degrees (pointing toward the end of arm). Bosses shall be located at a horizontal distance of 10' apart, with the first located 16" from the tip of the arm(s). The bosses shall be flush with the inside of the arm(s) wall and have no burs. The bosses shall have galvanized 1-1/2" minimum rigid conduit threaded plugs installed to the full depth by the manufacturer.

A 1-1/2" minimum horizontal boss with end cap shall be at the tip of arm(s).

Optional Upright Extension Pole:

The bottom of the optional upright extension pole shall have an internal flange with unthreaded holes capable of bolting easily to the upright pole shaft.

A 5" x 8" minimum hand hole shall be provided above the internal flange for tightening bolts. The hand hole shall have a secure but removable cover.

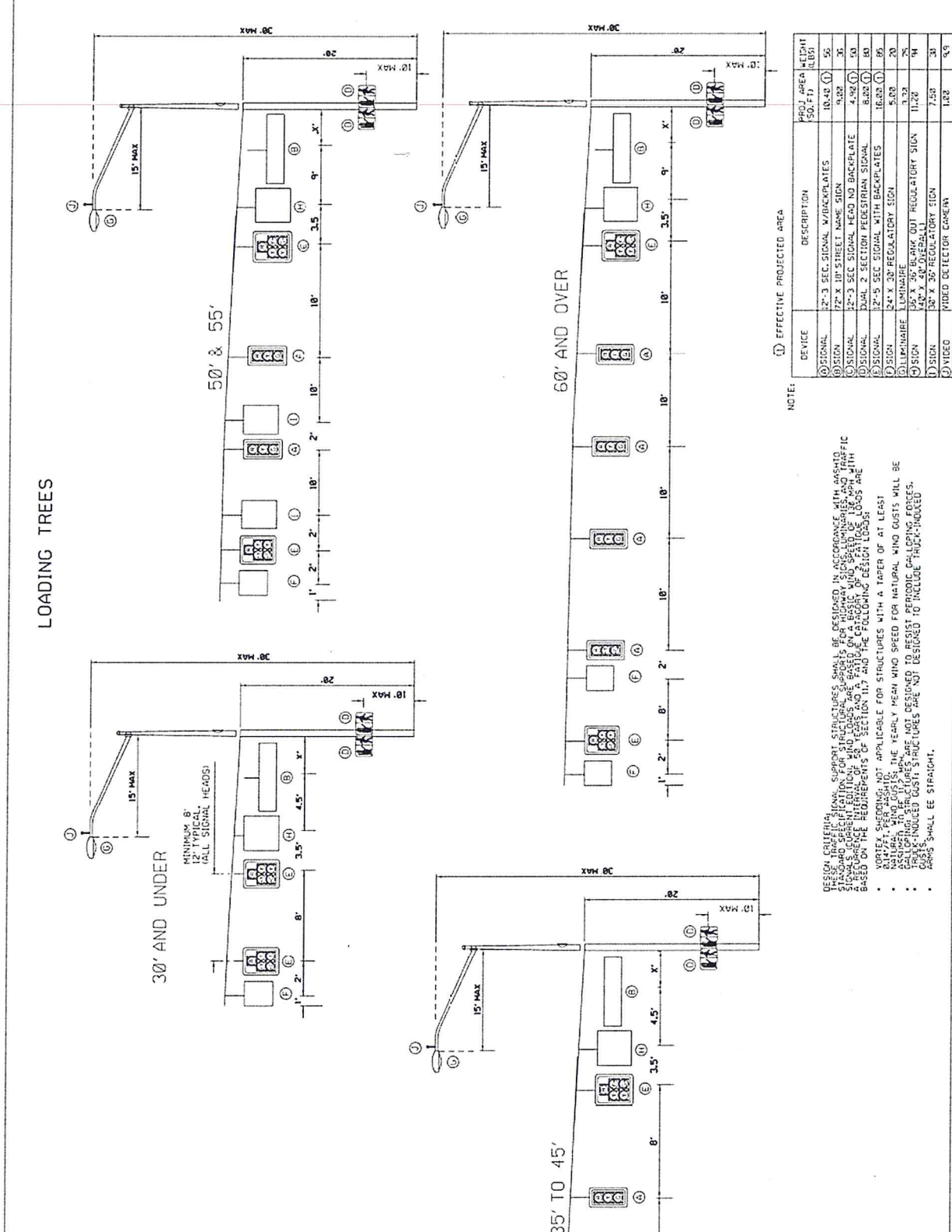
A removable cap with set screw(s) shall be provided for the top of pole.

Optional Luminaire Arm:

The luminaire arm shall be a clamp-on design with a maximum arm length of 15'. The wire way shall be a minimum of 2".

PACKAGING

All hardware shall be packaged together on a per pole basis. Hand hole covers, plugs for bosses, ground lugs, and pole caps shall be installed and securely wrapped by a protective material in the factory before shipping.



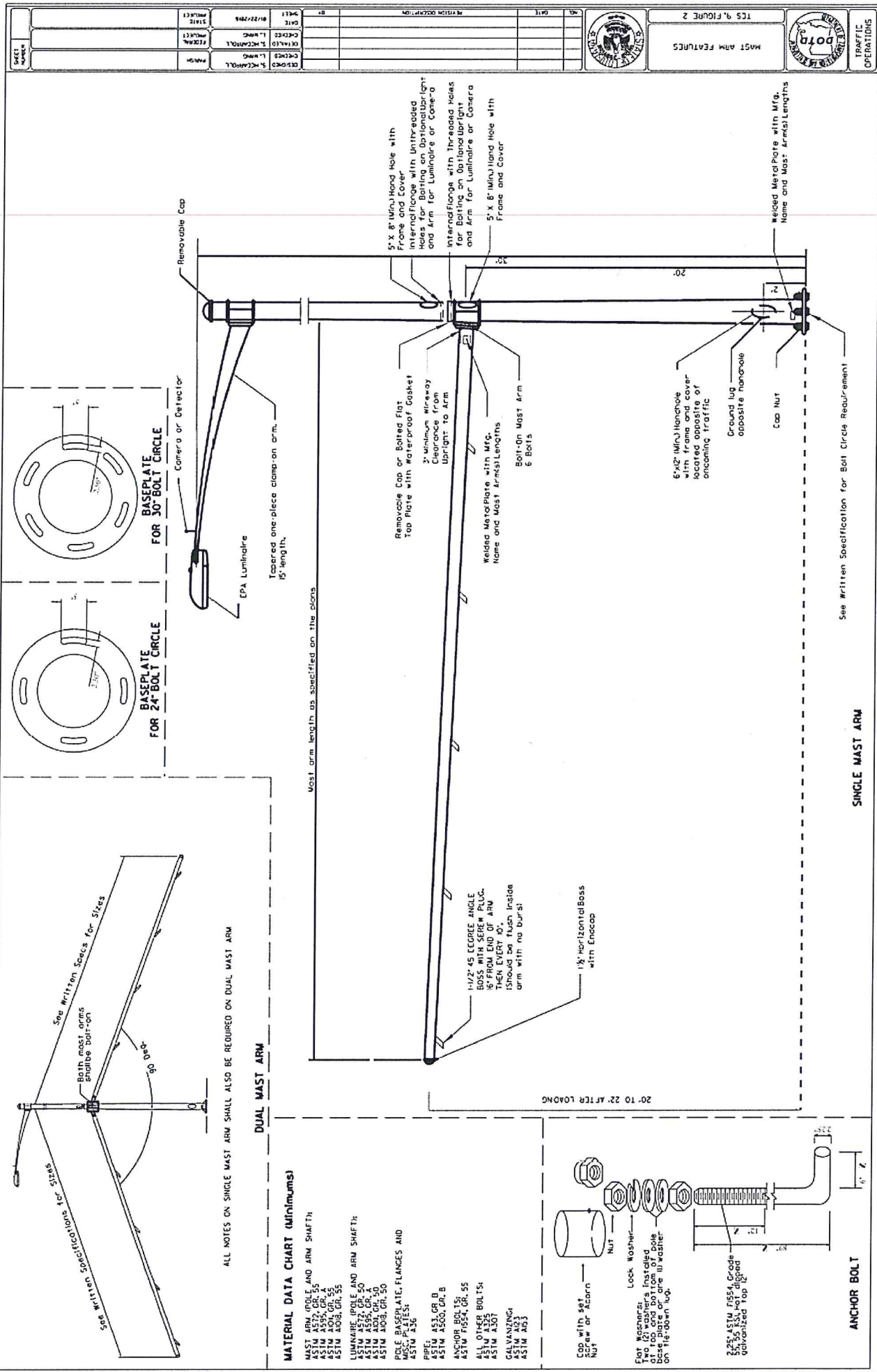
NOTE: (A) EFFECTIVE PROJECTED AREA

DEVICE	DESCRIPTION	PROJ AREA (50' FT HEIGHT)	HEIGHT (FEET)
(A) SIGNAL	12" x 3" SEC. SIGNAL W/BACKPLATES	10.40 (A)	55
(B) SIGN	72" x 10" STREET NAME SIGN	9.62	35
(C) SIGNAL	12" x 3" SEC. SIGNAL HEAD NO BACKPLATE	4.92 (A)	50
(D) SIGNAL	DUAL 2 SECTION PEDESTRIAN SIGNAL	16.62 (A)	80
(E) SIGNAL	12" x 5" SEC. SIGNAL WITH BACKPLATES	16.62 (A)	80
(F) SIGNAL	24" x 30" REGULATORY SIGN	8.82	70
(G) LUMINAIRE	LUMINAIRE	3.72	70
(H) SIGNAL	36" x 36" BLANK OUT REGULATORY SIGN	11.22	74
(I) SIGNAL	36" x 36" REGULATORY SIGN	7.50	30
(J) VIDEO	VIDEO DETECTOR CAMERA	1.20	5.9

DESIGN CRITERIA:
 ALL STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH ILLINOIS
 STRUCTURAL CODE. ALL SIGNAGES SHALL BE DESIGNED IN ACCORDANCE WITH ILLINOIS
 SIGNALS CURRENT EDITION. WIND LOADS ARE BASED ON A BASIC WIND SPEED OF 100 MPH WITH
 VORTICE SHEDDING NOT APPLICABLE FOR STRUCTURES WITH A TAPER OF AT LEAST
 0.1475:1 PER ASPECT. THE WINDY WIND SPEED FOR NATURAL WIND GUSTS WILL BE
 ASSUMED TO BE 12 MPH. ALL STRUCTURES SHALL BE DESIGNED TO RESIST UP-LIFTING FORCES.
 ALL TRUCK-INCLINED GUST STRUCTURES ARE NOT DESIGNED TO INCLUDE TRUCK-INCLINED
 GUSTS SHALL BE STRAIGHT.

TCS #9, FIGURE 1

DRAWN D. L. WARD	CHECKED S. MCCARDLL	DATE 10/28/13	PROJECT M1111111111
DESIGN D. L. WARD	CHECKED S. MCCARDLL	SCALE	JOB NO.



PROJECT NUMBER		DATE		REVISION DESCRIPTION		DATE		NO.		NO.	
S.M. #		01/22/2016		REVISED		01/22/2016		1		1	
S.M. #		01/22/2016		REVISED		01/22/2016		2		2	
S.M. #		01/22/2016		REVISED		01/22/2016		3		3	
S.M. #		01/22/2016		REVISED		01/22/2016		4		4	

TCS #9, FIGURE 2

MAST ARM FEATURES

TRAFFIC OPERATIONS