



Florida Department of Transportation

CHARLIE CRIST
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

STEPHANIE KOPELOUSOS
SECRETARY

January 16, 2009

Monica Gourdine
Program Operations Engineer
Federal Highway Administration
545 John Knox Road, Suite 200
Tallahassee, Florida 32303

Re: Office of Design, Specifications
Section 649
Proposed Specification: 6490500.D01, Galvanized Steel Strain Poles, Mast Arms and
Monotube Assemblies - Installation

Dear Ms. Gourdine:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

These changes were proposed by Tim Ruelke, District 2 Construction Engineer, to require foundations for strain poles, mast arms and monotube assemblies be tested for concrete strength prior to loading of the foundations, and to bring the loading requirement into compliance with concrete strength requirements for loading of structural concrete as stated in the table in 400-14. Please review and transmit your comments, if any, within four weeks. Comments should be sent via Email to ST986RP or rudy.powell@dot.state.fl.us.

If you have any questions relating to this specification change, please call Rudy Powell, State Specifications Engineer at 414-4110.

Sincerely,

Rudy Powell, Jr., P.E.
State Specifications Engineer

RP/dr

Attachment

cc: Gregory Jones, Chief Civil Litigation
Florida Transportation Builders' Assoc.
State Construction Engineer

GALVANIZED STEEL STRAIN POLES, MAST ARMS AND MONOTUBE ASSEMBLIES – INSTALLATION.

(REV ~~1-16-09~~10-06-08)

ARTICLE 649-5 (of the Supplemental Specifications) is deleted and the following substituted:

649-5 Installation.

Install foundations for strain poles, mast arm and monotube assemblies in accordance with Section 455. Do not install the mast arm pole, strain poles or monotube pole until the foundation has ~~cured for a minimum of seven days~~ *achieved 70% of the specified 28-day concrete strength and verifying test results have been provided to the Engineer. Determine concrete strength from tests on a minimum of two test cylinders prepared and tested in accordance with ASTM C 31 and ASTM C 39.* Before erecting the pole, clean the top of the foundation of any laitance, oils, grease or any other deleterious materials. Erect strain poles in an orientation which considering the rake and the application, cable forces will produce a plumb pole. Erect monotubes plumb at the time of installation. Plumb the pole supporting mast arms after the mast arms, traffic signals or sign panels have been placed.

If the traffic signals and/or sign panels are not in place within two working days after the mast arm is erected, furnish and install a 3 by 2 foot blank sign panel on the bottom of each mast arm within 6 feet of the mast arm tip and plumb the pole. Re-plumb the pole supporting mast arms after installation of traffic signals and sign panels.

Install ASTM A325 bolt, nut and washer assemblies in accordance with the following. Use bolt, nut and washer assemblies that are free of rust and corrosion and that are lubricated properly as demonstrated by being able to easily hand turn the nut on the bolt thread for its entire length. Tighten nuts to the full effort of an ironworker using an ordinary spud wrench to bring the faying surfaces of the assembly into full contact which is referred to as "snug tight." After bringing the faying surfaces to a snug tight condition, tighten nuts in accordance with the turn-of-nut method in Table 460-7 of Specification 460-5. Maintain uniform contact pressure on the faying surfaces during snugging and turn-of-nut process, by using a bolt tightening pattern that balances the clamping force of each bolt, as closely as possible, with the equal clamping force of a companion bolt.

Use ASTM F1554 anchor bolt assemblies that are free of rust and corrosion, and lubricate these assemblies prior to installation so that the nut turns easily by hand the entire length of the bolt thread. Install nuts on anchor bolts in accordance with the sequence that follows. Ensure that the base plate is level by incrementally adjusting the leveling nuts all of which must be in direct contact with the bottom surface of the base plate at the conclusion of the leveling process. The distance from the bottom of leveling nuts to the top of the concrete foundation must not exceed one anchor bolt diameter. Tighten all the anchor bolt nuts so they are in direct contact with the top surface of the base plate and are "snug tight." Snug tight is attained by applying the full tightening effort of an ironworker using an ordinary spud wrench. If the top surface of the base plate has a slope that exceeds 1:40, use a beveled washer under the anchor bolt nut. Tighten the leveling nuts until they are snug tight. Match mark the anchor bolt nut relative to the anchor bolt to ensure that the anchor bolt nut is rotated by the fraction of a turn specified

in Table A and apply the turn to the nut. Do not exceed the Table A value by more than 20 degrees. Tighten each "retainer" or "jam" nut until it is in firm contact with the top surface of the anchor bolt nut then while preventing the anchor bolt nut from rotating, tighten the jam nut until it is snug tight. During each stage of leveling nut, anchor bolt nut and jam nut tightening, use a pattern of tightening that, as nearly as possible, produces a balanced distribution of clamping forces on the base plate as tightening progresses.

Table A	
Anchor Bolt Diameter (in.)	Nut Rotation from Snug Tight Condition
$\leq 1 \frac{1}{2}$	1/3 turn
$> 1 \frac{1}{2}$	1/6 turn

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Use ASTM F1554 anchor bolt assemblies that are free of rust and corrosion, and lubricate these assemblies prior to installation so that the nut turns easily by hand the entire length of the bolt thread. Install nuts on anchor bolts in accordance with the sequence that follows. Ensure that the base plate is level by incrementally adjusting the leveling nuts all of which must be in direct contact with the bottom surface of the base plate at the conclusion of the leveling process. The distance from the bottom of leveling nuts to the top of the concrete foundation must not exceed one anchor bolt diameter. Tighten all the anchor bolt nuts so they are in direct contact with the top surface of the base plate and are "snug tight." Snug tight is attained by applying the full tightening effort of an ironworker using an ordinary spud wrench. If the top surface of the base plate has a slope that exceeds 1:40, use a beveled washer under the anchor bolt nut. Tighten the leveling nuts until they are snug tight. Match mark the anchor bolt nut relative to the anchor bolt to ensure that the anchor bolt nut is rotated by the fraction of a turn specified in Table A and apply the turn to the nut. Do not exceed the Table A value by more than

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Table A	
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