

**South Carolina Department of Transportation**  
**Engineering Directive Memorandum**

Number: 33

Primary Department: Traffic Engineering

Referrals: None

Subject: SCDOT Mast Arm Standards

This directive provides SCDOT's mast arm standards for traffic signals installed on the state highway system.

SCDOT Traffic Signal Design Guidelines and Engineering Directive Memorandum 2, *Fiscal and Maintenance Responsibilities for Traffic Signal Installations on the State Highway System*, state that SCDOT does not install or maintain mast arms for traffic signals.

*“Special equipment such as decorative poles or mast arms are not considered to be standard equipment and are to be paid for by the requesting agency. If replacement for any reason is required the Department will replace with standard equipment unless the requesting agency agrees to provide funding for special equipment.”*

From Engineering Directive Memorandum 2, *Fiscal and Maintenance Responsibilities for Traffic Signal Installations on the State Highway System*, p. 1.

SCDOT recognizes that local governments often desire mast arm installations for aesthetic purposes. However, mast arm installation costs typically exceed the costs of standard signal supports, such as span wire with steel or concrete poles. Consequently, SCDOT will not pay costs above those required to install steel or concrete poles at an intersection. SCDOT will allow the installation of mast arms only in those instances where the local government having jurisdictional authority at the signalized intersection enters into an agreement with SCDOT concerning installation and maintenance of the mast arms. This agreement will stipulate that the local government must pay the difference in cost between a mast arm installation and a steel or concrete pole installation, including the cost of additional conduit required by the mast arm installation.

SCDOT may elect to install mast arms if circumstances indicate that mast arms are the most economically feasible. For example, right-of-way constraints or wind loading may dictate the use of mast arms. When these situations occur, documentation must be submitted detailing the benefits of mast arms over other types of installations.

The following pages contain SCDOT's standards for the installation and maintenance of mast arms.

Submitted by: \_\_\_\_\_  
Director of Traffic Engineering

Recommended by: \_\_\_\_\_  
Deputy State Highway Engineer

Approved by: \_\_\_\_\_  
State Highway Engineer

Effective Date: \_\_\_\_\_

Original signed by State Highway Engineer Tony L. Chapman February 26, 2007. All original EDMs maintained by State Highway Engineer's Office.

## SCDOT Mast Arm Standards (page 1 of 3)

### Mast Arm Installation

- A mast arm agreement must be in place between SCDOT and the appropriate local government prior to installation of mast arms. SCDOT shall not enter into a mast arm agreement with a private entity.
- All work must be performed under an approved encroachment permit or within the scope of signal work planned during an SCDOT construction project. The local government must be the applicant on the encroachment permit.
- Mast arm installation, necessary conduit placements, and signal head or sign installation (directional boring, wiring, signal head placement, etc.) shall be the responsibility of the local government and performed by an SCDOT approved contractor.
- All signal work shall meet SCDOT standards and specifications and conform to the Manual on Uniform Traffic Control Devices (MUTCD). The local government or the SCDOT-approved contractor shall contact the appropriate SCDOT signal shop at least two weeks prior to beginning the installation.
- The local government shall be responsible for maintenance of the traffic signal during installation and responsible for any work required for up to sixty days after construction (typical burn-in period).
- The local government shall include a signal plan with the permit. This plan shall be developed within the guidelines and format of SCDOT's standards and specifications and stamped by a professional engineer.
- The local government shall be responsible for mast arm and foundation design and provide approved drawings stamped by a professional engineer. The local government shall also be responsible for maintenance, repairs, and replacement of mast arms, all associated hardware in or on the mast arm, all conduit maintenance and replacements, and signal head attachments throughout the use of mast arms at the signal location.
- Documentation for each mast arm, as indicated on the Mast Arm Information form, must be provided with the encroachment permit application. This documentation should include manufacturer cut sheets and specifications. A copy of this information should also be retained by the local government.
- SCDOT shall approve the desired color of the mast arm. The manufacturer information and color code shall be included on the mast arm information form. Mast arms are to be powder-coated, not painted.
- Electrical service meter enclosure must be in accordance with SCDOT specifications.
- The design engineer shall ensure that conduit runs are sufficient and of proper size to meet the electrical codes for the required number of conductors. The controller conduit must be placed in the controller pole.
- Luminaries on top of the mast must be separately metered, since SCDOT will not pay electricity costs for these devices.
- The local government must perform an annual inspection of all mast arms and certify that the mast arms are in good repair. A copy of these inspection forms must be sent to the appropriate SCDOT signal shop, along with photos of the mast arms. Any visual damage to mast arms must be detailed on the inspection form. SCDOT reserves the right to require the local government to replace damaged mast arms. If the local government does not have sufficient funding to replace a mast arm, SCDOT will install a wood, concrete, or steel pole and span wire mount the associated signals until the local government can fund the mast arm replacement, as stipulated in the Emergency Repairs section.

## **SCDOT Mast Arm Standards (page 2 of 3)**

### **Mast Arm Maintenance**

Typical maintenance required for a mast arm can include, but is not limited to, inspection and repair of any dents, structural failures, or other damage. The most critical aspect of maintenance is the timely replacement of damaged or downed mast arms. SCDOT recommends that the responsible party either have spare mast arms available or have an established agreement with the mast arm vendor to quickly supply replacement mast arms.

### **Emergency Repairs**

#### **Where SCDOT Maintains the Signal**

If the signal is not part of a signal maintenance agreement, SCDOT is responsible for the day-to-day operation of the traffic signal. When a mast arm pole is damaged or knocked down, SCDOT signal maintenance crews will contact the local government to make repairs. If the local government has access to spare mast arms, it or an SCDOT approved signal contractor must immediately repair the signal. If spare mast arms are not readily available, SCDOT will remove the damaged mast arm and install a temporary pole(s) (wood, concrete, or steel) to restore operation. SCDOT will not be liable for any further damage to the mast arms upon removal. The local government is responsible for acquiring the replacement mast arm and for having it re-installed, including the moving and/or adjusting of the signal heads to the mast arm. The local government is not required to have permanent staff to provide this service, but may hire an SCDOT approved signal contractor. Any work done within SCDOT right-of-way must be done under an approved encroachment permit. Furthermore, any work performed to install, repair, or revise a traffic signal must be coordinated through the appropriate SCDOT signal shop. All maintenance for the signal during the repair and replacement process will be the responsibility of the SCDOT approved signal contractor and will be completed at the local government's expense.

#### **Where the Local Government Maintains the Signal**

If the signal is part of a signal maintenance agreement, the local government is responsible for the day-to-day operation and maintenance of the signal, including the mast arm pole. When a mast arm pole is damaged or knocked down, the local government is responsible for restoring signal operation. If a replacement mast arm is not immediately available, a temporary pole and span wire shall be installed.

### **Equipment Upgrades/Replacements**

When SCDOT provides funds for signal upgrades and/or equipment replacements, mast arm replacements will not be included as part of this funding (unless mast arms are necessary due to space limitations or other special conditions) regardless of whether or not the signal is part of a signal maintenance agreement. The local government responsible for mast arm maintenance will provide the necessary resources for replacement and obtain an approved encroachment permit prior to replacing a mast arm. All mast arm replacements must meet the current SCDOT specifications in place at the time of the replacement. Documentation for each mast arm, as indicated on the Mast Arm Information Form, must be provided to SCDOT.

**SCDOT Mast Arm Standards (page 3 of 3)**

**Mast Arm Information Form**

Documentation for each mast arm must be provided to SCDOT. A copy of this information should also be retained by the local government. All mast arms should meet the SCDOT specification in effect at the time of installation.

County: \_\_\_\_\_

City/Town: \_\_\_\_\_

Intersection: \_\_\_\_\_

**Mast Arm Information**

NE Quad    SE Quad    NW Quad    SW Quad

Arm Length 

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Pole Height 

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Pole Manufacturer \_\_\_\_\_

Pole Color (Number) \_\_\_\_\_

Install date \_\_\_\_\_

Installed by (Signal Contractor) \_\_\_\_\_

PE of Record \_\_\_\_\_

Maintained by \_\_\_\_\_

Replacement poles purchased (yes/no) \_\_\_\_\_

If yes, located where? \_\_\_\_\_

If no, ordering information and delivery time frame. \_\_\_\_\_

Specs attached (yes/no) \_\_\_\_\_

The mast arms installed meet the current SCDOT specification in place during the pole installation. (Yes/No) \_\_\_\_\_

Contact Person for Mast Arm Maintenance / Replacement \_\_\_\_\_

Title: \_\_\_\_\_

Affiliation \_\_\_\_\_

Address \_\_\_\_\_

City / State / Zip \_\_\_\_\_

Phone \_\_\_\_\_

Cell \_\_\_\_\_

Fax \_\_\_\_\_