
10450 – SPECIALTIES

(Last Revised 7/24/2006)

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[PART 1 – GENERAL](#)

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this specification.
- B. [Division 02275 – TRENCHING, BACKFILLING, & COMPACTION OF UTILITIES](#)
- C. [Division 02920 – SEEDING, SODDING, AND GROUNDCOVER](#)
- D. NCDOT *Standard Specifications for Roads and Structures*, latest revision.
- E. AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*, latest revision.
- F. City of Jacksonville Street Lighting Policy, latest revision.

1.2 SUMMARY

- A. This specification covers signals and traffic management systems and street lighting.

1.3 DEFINITIONS

- A. **GENERAL:** For the purposes of this specification, the following definitions refer to signals and traffic management systems and street lighting items that come under the authority of the NCDOT or the City of Jacksonville as specified within this section and other sections of this manual.
 - 1) **Backplate:** A black plate attached to the perimeter of a traffic signal head for the purpose of improving visibility of signal head lenses when the signal is backlit by the sun.
 - 2) **Loop** (Inductive Detection Loop): A loop conductor placed within a sawed slot in the pavement which provides a signal to the traffic signal controller indicating either the presence of or passing of a vehicle over the loop.
 - 3) **Mast Arm:** A cantilevered steel arm attached to a pole for the purpose of carrying traffic signals, cable, signs, and appurtenances.

- 4) **Street Lighting:** The illumination of public right-of-way within the City of Jacksonville, especially intersections, to assist safe movement of vehicular and pedestrian traffic and illumination of public rights-of-way to discourage criminal acts and help secure public safety.

1.4 SUBMITTALS

- A. Submit product data and shop drawings for the following:
 - 1) Signal cabinet and controllers: Wiring and phasing diagrams for signal cabinet and controllers and appurtenances, remote cable harness connector pin diagrams, warranties, etc.
 - 2) Signal cabinet foundation bolt template
 - 3) Loop Sealant Material
 - 4) Foundation reactions for metal strain poles and support mast arms. Design assumptions shall include allowances for wind and ice loads and shall be in accordance with the current ASHTO regulations.
 - 5) Concrete break test results for steel strain pole foundations
 - 6) Soil Geotechnical analysis, if requested by Public Services Director.

1.5 QUALITY ASSURANCE

- A. Materials and operations shall comply with the latest revision of all applicable Codes and Standards.

1.6 QUALITY STANDARDS

- A. Materials and operations shall comply with the latest revision of the Codes and Standards listed below:

American Society for Testing and Materials

ASTM A27	Standard Specification for Steel Castings, Carbon, for General Application
ASTM A36	Standard Specification for Carbon Structural Steel
ASTM A123	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A595	Standard Specification for Steel Tubes, Low-Carbon, Tapered for Structural Use

1.7 STANDARD ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
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ADT	Annual Average Daily Traffic
ANSI	American National Standards Institute, Inc.
ASTM	American Society for Testing and Materials
FS	Federal Specifications
MSDS	Material Safety Data Sheets
MUTCD	Manual on Uniform Traffic Control Devices
NCDOT	North Carolina Department of Transportation
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NESC	National Electrical Safety Code
UL	Underwriters' Laboratories, Inc.
USDA	United States Department of Agriculture

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Handling/Storage:

- 1) All signal controller equipment and cabinetry, and signal heads shall be delivered to the appropriate NCDOT or City of Jacksonville department. No equipment is to be delivered direct to the field from a manufacturer or supplier.
- 2) Steel poles, mast arms, and pole bases shall be delivered to the appropriate NCDOT or City of Jacksonville department. do not store directly on the ground. Set on wooden slats or pallets.
- 3) Observe NEC and NESC requirements for handling and storage of all electrical controls, cabinets, wiring, etc.

1.9 PROJECT CONDITIONS

- A. The Contractor is responsible for obtaining all applicable permits (building permit) making application for service and paying permit fees.
- B. If applicable, before commencing construction, Contractor shall obtain a copy of approved encroachment permit and keep on site during construction.
- C. Protect structures, utilities, sidewalks, pavements, pavement markings and other facilities, as well as lawns and existing exterior plants from damage caused by traffic signal and electrical lighting operations.
- D. **Temporary Seeding:** Denuded areas to be graded during the construction phases that are not to be brought to final grade within 30 days shall receive

temporary seeding and mulching within 15 days of completing initial earthwork. Note that the time for establishment of permanent ground cover is 15 working days or 30 calendar days whichever is shorter. Temporary seeding and mulching shall also be used to stabilize finished grade areas if the time of year is outside the specified permanent seeding periods.

- E. **Safety:** The contractor shall keep the surface in a safe and satisfactory condition during the progress of the work.

1.10 COORDINATION

- A. When traffic signals, loops, or their appurtenances are likely to be damaged or interfere as a result of the construction, coordinate temporary operation with the applicable agency having jurisdiction of the signals. Provide a minimum of 48 hours notice prior to anticipated disturbance or interruption. NCDOT is to be notified prior to performing any work within ½ mile of any traffic signal.
- B. If necessary, coordinate emergency traffic control with the City of Jacksonville Police Department and NCDOT.
- C. Coordinate bagging of new signal heads on new installations with the NCDOT and the City of Jacksonville.
- D. **Repair of pavement markings:** When cuts are made through any paved surface and the cuts extend through the pavement markings, the replaced pavement shall be marked to match the existing.
- E. Contact **“NC One Call”** 1-800-632.4949 or the current locator service before digging. Call the City of Jacksonville Public Services Department at 910-938-5249 for water/sewer location services.
- F. Protect undisturbed lawns, shrubs, and trees and promptly repair damages caused by operation.

1.11 PUBLIC CONVENIENCE

The Contractor shall at all times so conduct his work as to insure the least possible inconvenience to the general public and the residents in the vicinity of the work. Fire hydrants on or adjacent to the work shall be kept accessible to fire fighting equipment at all times. Temporary provisions shall be made by the Contractor to insure the proper functioning of all gutters, sewer inlets, drainage ditches, and irrigation ditches, which shall not be obstructed except as approved by the Public Services Director.

1.12 TRAFFIC CONTROL

- A. When working within any City or NCDOT System road or highway, conform to the *Manual on Uniform Traffic Control Devices*, latest revision (MUTCD) as well as the NCDOT *Standard Specifications for Roads and Structures*, latest revision.
- B. Traffic Maintenance shall comply with the latest revision of the NCDOT *Standard Specifications for Roads and Structures*, Division 9 – *Signing* and Division 11 – *Work Zone Traffic Control*, as well as other applicable sections.

- C. When traffic signals or their appurtenances are likely to be damaged or interfere as a result of the construction, coordinate temporary operation with the NCDOT and/or the City of Jacksonville as applicable. Provide 48 hours notice prior to anticipated disturbance or interruption. NCDOT shall be notified prior to performing any work within ½ mile of any traffic signal.
- D. Whenever it becomes necessary to leave a section of trench open after completion of the days work, the Contractor shall provide barricades and lights to protect the public. Operate warning lights during hours from dusk to dawn each day and as otherwise required for inclement weather and visibility.

1.13 WARRANTY

Warranty period: 18 months from date of substantial completion.

PART 2 – PRODUCTS

2.1 SIGNALS AND TRAFFIC MANAGEMENT SYSTEMS, STREET LIGHTING

2.2.1 SIGNALS AND TRAFFIC MANAGEMENT SYSTEMS MATERIALS

- A. Comply with the applicable sections of Section 1087, *Signals and Traffic Management Systems Materials* of the NCDOT *Standard Specifications for Roads and Structures*.
- B. **Mast arms:** See Section 1098-16, *Mast Arms* of the NCDOT *Standard Specifications for Roads and Structures*. Black powder mast arms are to be used on identified corridors approved by the City of Jacksonville.

2.2.2 SIGNAL AND STREET LIGHT POLES & ASSEMBLIES

- A. **Metal Poles:** Metal poles shall meet the applicable requirements of Section 1098-15, *Metal Poles* of the NCDOT *Standard Specifications for Roads and Structures*.
- B. **Wood Poles:** Wood poles shall meet the applicable requirements of Section 1098-6, *Wood Poles* of the NCDOT *Standard Specifications for Roads and Structures*.
- C. **Fiberglass Poles:** Poles shall be non-corroding, non-electrically conductive, and resistant to acid soil, acid rain, or salt air. Poles shall be pigmented throughout during manufacturing and coated with a polyurethane coating containing UV inhibitors to help prevent fading. The poles shall be suitable for embedment in soil or concrete and shall meet the diameter, shape, and lengths specified on the plans.
- D. **Guy Assemblies:** **Guy assemblies shall meet** the applicable requirements of Section 1098-7, *Guy Assemblies* of the NCDOT *Standard Specifications for Roads and Structures*.

- E. **Street Light Arms and Fixtures:** Fixtures shall comply with the City's standard specifications for style and wattage. Street light arms shall comply with the City's standard for length, style and material.

PART 3 – EXECUTION

3.1 CONSTRUCTION OF SIGNALS AND TRAFFIC MANAGEMENT SYSTEMS

- A. **Signals and Traffic Management Systems:** Signals and Traffic Management Systems shall meet the applicable requirements of Division 17, *Signals and Traffic Management Systems* of the NCDOT *Standard Specifications for Roads and Structures*.

3.2 CONSTRUCTION OF STREET LIGHT POLES

- A. Unless otherwise permitted by the City, the standard street light pole shall be wood. Metal poles are permitted subject to the City of Jacksonville *Street Lighting Policy*. Street Light Poles shall meet the applicable requirements of Division 17, *Signals and Traffic Management Systems* of the NCDOT *Standard Specifications for Roads and Structures*.
- B. Pole spacing, lumen output, etc. shall be as shown on the construction drawings, as specified in the City of Jacksonville *Street Lighting Policy*, or as directed by the Public Services Director, as applicable.

3.3 CLEANUP

- A. Disposal: remove surplus materials, unsuitable soil, trash, and debris and legally dispose of off-site.

END OF DIVISION 10450

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