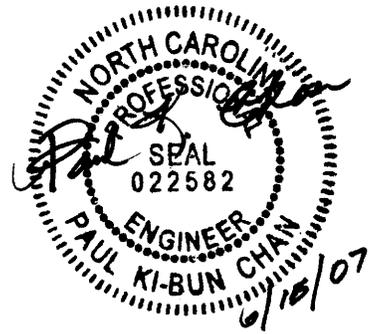


PROJECT SPECIAL PROVISIONS
Rest Area Lighting



1.00 GENERAL

1.10 DESCRIPTION

The work described by these special provisions includes providing and installing new light standards, luminaires and underground circuitry, complete with junction boxes and a lighting control system. Also included are a low voltage lighting system and provisions for lighting a sign and a flag pole, and a step down transformer for power to a telephone.

Perform all work in accordance with these Special Provisions, the Plans, the National Electrical Code, and North Carolina Department of Transportation "Standard Specifications for Roads and Structures" (Standard Specifications).

Use Division 14 of the Standard Specifications for materials, construction methods and payment for all work, except as modified or added to by these Special Provisions. Specific sections of the Standard Specifications applicable to the work on this project are listed below:

Section 1405	Standard Foundation
Section 1406	Light Standard Luminaires
Section 1409	Electrical Duct
Section 1410	Feeder Circuits
Section 1411	Electrical Junction Boxes

1.20 ELECTRICAL POWER

Electrical power will be provided through the building electrical service.

2.00 DAVIT STYLE LIGHT STANDARD

2.10 DESCRIPTION

The work covered by this section consists of furnishing and installing light standards complete with davit style arms, and 35 foot mounting height with breakaway bases.

2.20 MATERIALS

Provide a standard that meets the 90-mph design criteria of the AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals."
Provide all poles from the same manufacturer.

Provide 35 foot mounting height, tapered shaft poles with 6-foot davit arms and breakaway base.

The standard shaft shall be one piece round tapered shaft from seamless tubing. The davit arm shall be one piece round tapered that slip fits onto a tapered pole top tenon where it is fastened with stainless steel through bolts. Both shall be designed to support a luminaire with minimum weight, projected area and center of gravity as indicated in the standard specifications for the light standard luminaire.

Provide a protective grommet at the arm-to-pole connection, to protect wiring during installation and maintenance.

Provide a cast aluminum transformer base that complies with AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals." Use anchor bolts, washers, nuts and shims which comply with the Specifications and details shown in the plans. Use connecting bolts as recommended by the light standard and transformer base manufacturer(s).

The finish of the shaft and the davit arm shall be thermoset polyester powder coated in "Dark Bronze". The finish shall be smooth and shall be free of scratches or dents and shall have suitable protection for handling during erection. Color chips shall be submitted for the Engineer's approval of the appropriate color.

Pole hardware, nuts, bolts, and washers, etc. shall be made from 18-8 stainless steel, or steel conforming to ASTM A307 galvanized in accordance with ASTM A153.

Drawings submitted for approval shall show material specifications for each component and shall have a certification statement concerning conformance with AASHTO design criteria.

2.30 CONSTRUCTION METHODS

Lay out and identify light standards as shown on the plans. Adjust final location as per direction of the engineer to avoid conflicts with other objects. Protect the shaft during storage and installation to ensure against scratches or dents. Use proper blocking and protection to prevent warping or discoloration when laid on the ground, and to prevent damage by other construction work.

Install standards vertically plumb, and use connecting bolts, washers and nuts compatible with the transformer base as recommended by the light standard manufacturer and which comply with the contract. Provide the required luminaire mounting height which is defined as vertical distance from luminaire to pavement surface of traveled lane.

2.40 MEASUREMENT AND PAYMENT

The quantity of light standards to be paid for will be the actual number of light standards with davit style arms and transformer bases that have been installed and accepted.

The quantity of light standards measured as provided above will be paid for at the contract unit price each for " Davit Style Light Standard, _____ " of the appropriate type.

Such price and payment will be full compensation for all work of furnishing and installing the standard with davit style arm and transformer base.

Payment will be made under:

Davit Style Light Standard, MH 35' SA 6'Each

3.00 POST TOP LIGHT

3.10 DESCRIPTION

The work covered by this section consists of furnishing and installing post top light standards with luminaires pendant mounted onto side mounted arms, and breakaway base.

3.20 MATERIALS

Post

Provide a post top light standard that meets the 90-mph design criteria of the AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals."

Provide King Luminaire, Canterbury Series Pole (KM90RF-17). The pole shall be 17 ft in length and a nominal luminaire mounting height of 15 ft with a side mount arm.

Side Mount Arm

Provide King Luminaire, Bishops Crook Side Mount Arm (KA15-S). The side arm shall accept King Luminaire pendant style luminaire, and provide a 15' luminaire mounting height.

Luminaire

Provide King Luminaire, Satellite Series Luminaire, (K209-F) w/ Flat Glass Lens, that will produce either an IES distribution of Type III cutoff or a Type V cutoff as shown on the plans.

Luminaire	IES Distribution	Quantity
King Luminaire K209-F	Cutoff, Type III	11
King Luminaire K209-F	Cutoff, Type V	12

The luminaires shall be rated to operate a 100-watt metal halide lamp at 208 volts AC.

The ballast shall be high power factor, constant wattage type suitable to operate metal halide lamps. It shall provide lamp wattage regulation within ±5%, with line voltage variations of ±10%. Ballasts shall be factory wired and tested.

The luminaire shall be UL listed and labeled.

Breakaway Base

Provide a cast aluminum transformer base for each post top light standard that complies with AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals." Use anchor bolts, washers, nuts and shims which comply with the Specifications and details shown in the plans. Use connecting bolts as recommended by the post top light standard and transformer base manufacturer(s).

Finish

The light standard, side mount arm, and the luminaire shall be thermoset polyester powder coated in "Dark Bronze" to match with the davit style roadway light standards inside the rest area.

Drawings submitted for approval shall show material specifications, dimensions and shall have a certification statement concerning conformance with AASHTO design criteria.

3.30 CONSTRUCTION METHODS

Identify light standards as shown on the plans. Use scaled dimensions to locate light standards. Adjust final location as per direction of the engineer to avoid conflicts with other objects. Protect the shaft during storage and installation to ensure against scratches or dents. Use proper blocking and protection to prevent warping or discoloration when laid on the ground, and to prevent damage by other construction work.

Install all standards vertically plumb, and provide the required luminaire mounting height. The pendant mounted luminaire shall be mounted securely onto the side arm through the plumbizer housing.

3.40 MEASUREMENT AND PAYMENT

The quantity of post top lights to be paid for will be the actual number that have been installed and accepted.

The quantity of post top standards and luminaires measured as provided above will be paid for at the contract unit price each for "Post Top Light Standard" and "Post Top Luminaire, _____" of the appropriate type. Such price and payment will be full compensation for all work of furnishing and installing the standard, the side mount arm, the luminaire, and the breakaway base.

Payment will be made under:

Post Top Light Standard	Each
Post Top Light Luminaire, _____	Each

4.00 LIGHT STANDARD LUMINAIRES

4.10 DESCRIPTION

The work covered by this section consists of providing luminaires in accordance with Section 1406 of the Standard Specifications with the following exceptions.

4.20 MATERIALS

Amend section 1406-2 of the Standard Specifications to include the following. Provide 250-watt high-pressure sodium luminaires with flat glass lens and provide an IES light distribution of Cutoff, Type II (C2) or Cutoff, Type III, (C3) as shown on the plans. Provide the luminaire with a thermoset polyester powder coat in "Dark Bronze" to match with the davit style roadway light standards.

Light Standard Luminaire	IES Distribution	Quantity
Cobrahead, Flat Glass	Cutoff, Type II	21
Cobrahead, Flat Glass	Cutoff, Type III	8

4.30 CONSTRUCTION METHODS

Use 1406-3 of the Standard Specifications.

4.40 MEASUREMENT AND PAYMENT

Use section 1406-4 of the Standard Specifications.

Payment will be made under:

Light Standard Luminaires, 250 W HPS, Type C2Each

Light Standard Luminaires, 250 W HPS, Type C3Each

5.00 LIGHT CONTROL SYSTEM

5.10 DESCRIPTION

The work covered by this section includes the furnishing and installing of all materials necessary to provide a wall mounted lighting control system in a rest area service building as shown on the plans.

5.20 MATERIALS

Provide a 5/8" thick Exterior Grade AD plywood back panel slightly larger than the layout of the control system components.

Provide a 6" X 6" X 4' wire trough of formed and welded steel that is painted or galvanized, with one removable side plate that is secured in place with corrosion resistant screws, and has only the holes necessary for the conduits shown in the plans. Wire trough with knockouts is not acceptable.

Provide a lighting panel consisting of a surface mount load center, with copper bus, factory installed main breaker, 22,000 Amps short circuit current rating sized as shown in the plans, a minimum of 16 single-pole branch breaker spaces and an equipment ground bar. Use double-pole branch breakers with 10,000 Amps short circuit current rating sized as shown in the plans.

Provide electrically operated, mechanically held contactors with coil clearing contacts. Ensure latching without the use of hooks or semi-permanent magnets. Use contactors rated 208 VAC, 30 amps, with 120 VAC coils and 4 poles each.

Provide a control relay rated 600 VAC, with one normally open contact, one normally closed contact, and "continuous load" rating and "inductive make and break" rating greater than that required by the mechanically held contactors. Install control relay in a NEMA 1 enclosure.

Use a control selector switch rated standard duty, with three positions, and maintained contacts, in a surface mount NEMA 1 enclosure. Provide contacts with an inductive rating of 5 amps continuous, 3600 VA make, and 3600 VA break. Provide a legend plate that indicates "On-Off-Auto".

Use a "dual voltage" photocontrol with surge protection and single pole, single throw, contact with a minimum contact rating of 1000 watts. Provide a normally closed contact that is "daylight energized," with a turn on range of approximately 3 footcandles. Mount the photocontrol in a three-prong locking type receptacle, conforming to NEMA Standard C136.10.

Use number 8 AWG type THHN stranded copper conductors on the line side of the mechanically held contactors, and number 12 AWG stranded copper conductors for the control circuit, conforming to the requirements of Article 1400-2C of the Standard Specifications titled "Wire". Size all other conductors as shown in the plans.

Use rigid galvanized steel conduit in accordance with Article 1400-2B of the Standard Specifications titled "Conduit".

5.30 CONSTRUCTION METHODS

Use the plywood panel for mounting components on all walls other than masonry. Arrange the components as shown on the equipment layout detail in the plans.

Install conductors and conduit in accordance with Articles 1400-4F of the Standard Specifications titled "Wiring Methods" and 1400-4E "Conduit Installation". Clearly identify the phase, neutral, and contact conductors for the photocontrol in the wire trough.

Install flashing around the conduit extended through the roof to the photo control.

Securely fasten each component to the wall or panel with corrosion resistant bolts and inserts. Utilize all mounting holes in each component. Install a galvanized washer between the component and masonry walls to assure a minimum of 1/4" air space.

Paint the plywood panel the same color as the wall. After the control system components are installed, clean, prime, and paint all exposed surfaces of enclosures and conduit with a premium quality paint that best matches the color of the adjacent walls. Mask all legend plates, nameplates, etc. while painting.

5.40 MEASUREMENT AND PAYMENT

The quantity of light control systems to be paid for will be the actual number of light control systems that have been installed and accepted.

The quantity of light control systems, measured as provided above, will be paid for at the contract unit price each for "Light Control Equipment _____" of the appropriate type. Such price and payment will be full compensation for all work of furnishing and installing an entire control system, including mounting panel, control circuit, photocontrol, contactors, breakers, and selector switch.

Payment will be made under:

Light Control Equipment Type RA 120/208V 80A.....Each

6.00 LOW VOLTAGE LIGHT SYSTEM

6.10 DESCRIPTION

The work covered by this section consists of furnishing and installing a low voltage lighting system with a separate photo control and circuitry to provide power to low voltage lights. These lights are used as landscape accent lights for the proposed stone retaining wall and the front entrance wall of the building.

6.20 MATERIALS

Low Voltage Transformer

Provide Cast-Lighting, 600W "Journeyman Series" Multi-Tap Transformer (CJ600PSMT), to step down from 120 VAC to 12 VAC to provide power to the directional bullet lights.

Photocell

Provide a roof top pole mounted photocell with a normally closed contact that is “daylight energized,” with a turn on range of approximately 3 footcandles. Provide all necessary mounting hardware and wiring to the low voltage transformer.

The photocell shall be Cast-Lighting, Remote Photocell (CTRPC)

Low Voltage Luminaire

Provide Cast-Lighting, Directional Bullet Light, (CBL1CB), with solid bronze body and ground stake, a 360-degree adjustable shroud and seamless knuckle for the directional light control. Use a MR-16 35-watt halogen lamp for each luminaire. Pre-wire the luminaire with a 25 ft #16-2 No-Ox marine grade cable.

Manufacturer	Fixture	Quantity
Cast-Lighting	Directional Bullet Light	6

Conduit and Circuitry

Provide and install conduits, conductors and junction boxes sized as shown on the plans to provide power to the low voltage directional bullet lights.

6.30 CONSTRUCTION METHODS

Install low voltage lights as shown on the plans. Use scaled dimensions to locate lights. Adjust final location as per direction of the engineer to avoid conflicts with other objects. Protect the light during storage and installation to ensure against scratches or dents, and to prevent damage by other construction work.

Install all lights vertically by driving stake into ground and keep stake top flush with ground. Make final light direction adjustment to accent wall with shroud and knuckle.

Install the low voltage transformer, primary and secondary conductors and conduits below the light control equipment panel, as shown on the plans.

Install conductors and conduit in accordance with Articles 1400-4F of the Standard Specifications titled "Wiring Methods" and 1400-4E "Conduit Installation", and manufacturer’s recommendations.

Install flashing around the conduit extended through the roof to the photo control. Clearly identify the phase, neutral, and contact conductors for the photocontrol in the wire trough.

6.40 MEASUREMENT AND PAYMENT

No direct measurement will be made for the work covered by this section, since it will be paid for on a lump sum basis.

Payment for this work will be made at the contract lump sum price for " Low Voltage Light System ".

Such price and payment for this work will be considered full compensation for all materials, equipment, and labor necessary to complete the work in accordance with the plans and these special provisions.

Payment will be made under:

Low Voltage Light System Lump Sum

7.00 STANDARD FOUNDATION TYPE R1S

7.10 DESCRIPTION

Work covered by this section shall be in conformance with Section 1405 of the Standard Specifications except as modified below.

7.20 MATERIALS

Same as Standard Specifications Section 1405-2

7.30 CONSTRUCTION METHODS

Light standard foundation type R1S for post top lights shall be equal to type R1 on standard drawing 1405.01 except as stated below.

The type R1S foundation shall be 24" diameter by 48" deep.

Anchor bolts supplied by the post top light manufacturer shall be cast into the concrete base and positioned per the manufacturer's template.

7.40 MEASUREMENT AND PAYMENT

Same as Standard Specifications Section 1405-4

8.00 FEEDER CIRCUITS

8.10 DESCRIPTION

Work covered by this section shall be in conformance with Section 1410 of the Standard Specifications except as modified below.

8.20 MATERIALS

This section shall be in conformance with Section 1410-2 of the Standard Specifications except as modified below.

Provide step down transformer to provide power to the telephone pedestal located along the sidewalk at the truck parking lot. The transformer shall be 0.5 kVA, rated at 600 VAC, dry type with shielded and isolated windings. The primary voltage shall be 208 VAC and the secondary voltage shall be 120 VAC. The transformer shall have at least (2) 5% taps below normal full capacity (BNFC). Provide NEMA Type 3R enclosure for the transformer.

Install ¾" conduit and conductors from in-ground junction box to transformer at telephone pedestal. Specification for telephone is shown in other section of the Rest Area Special Provisions.

Install ¾" conduit and conductors from in-ground junction box to the spot lights at the flag pole and the sign and as shown on the plans. Specification for lights is shown in other section of the Rest Area Special Provisions.

8.30 CONSTRUCTION METHODS

This section shall be in conformance with Section 1410-3 of the Standard Specifications except as modified below.

Use stainless steel strap and miscellaneous hardware to securely mount the transformer enclosure onto the telephone post.

Provide and install conduits and conductors as shown on the plans to provide power to the telephone pedestal, the lights at the flag pole and the sign, from the roadway lighting feeder circuits.

8.40 MEASUREMENT AND PAYMENT

Same as Standard Specifications Section 1410-4 except as modified below.

Compensation for all materials, equipment, and labor necessary to complete the work described above in accordance with the plans and these special provisions is considered as incidental to the feeder circuits pay items in the project.