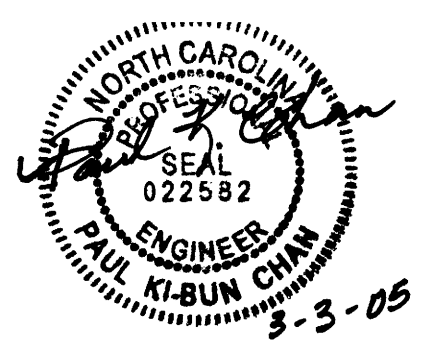


**PROJECT SPECIAL PROVISIONS**  
**Roadway Lighting**



1.00 DESCRIPTION

The work covered by this section consists of furnishing, installing, connecting, and placing into satisfactory operating condition roadway lighting at locations shown on the plans. All work shall be performed 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).

Install all bore pits outside clear zone as defined in 2002 AASHTO Roadside Design Guide or as directed by the Engineer.

All work shall be in conformance with Division 14 of the Standard Specifications except as modified or added to by these Special Provisions.

The following sections of the Standard Specifications listed below are applicable to the work on this project.

Section 1400	Roadway Lighting
Section 1401	High Mount Standard and Portable Drive Unit
Section 1402	High Mount Foundation
Section 1403	High Mount Luminaires
Section 1404	Light Standards
Section 1405	Standard Foundation
Section 1406	Light Standard Luminaires
Section 1407	Electric Service Pole and Lateral
Section 1408	Light Control System
Section 1409	Electrical Duct
Section 1410	Feeder Circuits
Section 1411	Electrical Junction Boxes

2.00 FOUNDATION COVER

2.10 DESCRIPTION

The work described in this section consists of providing and installing two (2) foundation covers on concrete median barrier at specified locations, as covers for existing light standard foundation cutouts where no light standard will be installed.

2.20 MATERIALS

The foundation cover shall be constructed of #11 Gauge AISI #304 stainless steel sheet. The Contractor shall field verify the design dimension of the foundation cover to ensure the

cover will adequately cover the existing light standard foundation cutout. The Contractor will adjust the dimension as necessary after field verification and before fabrication.

The grounding lug shall be of the appropriate type and size for the connection of the #8 copper conductor.

Nuts, bolts and washers shall be made from 18-8 stainless steel.

2.30 CONSTRUCTION METHODS

The foundation cover shall be machine fabricated from AISI #304 gauge #11 stainless steel sheet. Dimension of the cover shall be finalized after field verification of the existing light standard foundation cutout. Dimensions for the proposed foundation covers are based on the Light Standard Foundation Type M1 and M2, shown in the Standard Specifications and the Standard Drawings Section 1405.

Mount a grounding lug on the inside of the foundation cover with a 1/4" stainless steel bolt and nut. The bolt head shall be installed on the outside of the foundation cover while the nut and the lock washer are at the inside. The grounding conductor shall be #8, stranded copper and shall have enough lead wire for the foundation cover to be removed and placed on the ground without disconnecting at the grounding lug.

Install two 3/8" stainless steel expansion anchors on top of the concrete median barrier, at an equal distance from the center of the standard foundation cutout. The maximum protrusion length of these two 3/8" anchor bolts shall be less than 1". The foundation cover shall be installed on top of the concrete median barrier through the two 3/8" anchor bolts and be fastened down on the anchor bolts with stainless steel nylon lock nut.

2.40 MEASUREMENT AND PAYMENT

The quantity of foundation covers to be paid for will be the actual number which have been installed at proposed locations in a satisfactory manner and have been accepted by the Engineer.

The quantity of foundation covers, measured as provided above, will be paid for at the contract unit bid price per each "Foundation Cover \_\_\_\_\_". Such price and payment will be full compensation for all work of fabrication and installing the foundation cover with grounding lug and grounding conductor, and all incidentals necessary to complete the work.

Payment will be made under:

Foundation Cover \_\_\_\_\_ .....Each

3.00 LIGHT STANDARD W/ BREAKAWAY BASE

3.10 DESCRIPTION

Work covered by this section shall be in accordance with Section 1404 of the Standard Specifications except as modified below and as shown on the plans.

Provide and install single-arm light standards at both the Market Street on ramp for I-240 EBL, and the on ramp for I-240 WBL at I-240/US25 (Merrimon Avenue) interchange. The locations of these single-arm light standards are shown on plan sheets E2 and E3.

### 3.20 MATERIALS

Amend Section 1404-2 by adding the following to the end of the sentence in paragraph one: ... “4<sup>th</sup> Edition, 2001”, and the Interim Specifications valid at the time of letting. Fatigue Category II shall be used in design for lighting adjacent to the traveled way.

Furnish a Davit-Style single-arm light standard, with a nominal mounting height of 35 ft and arm length of 6 ft.

Provide a light standard that is “Asheville Green” to match proposed traffic signal poles, post-top pedestrian lights and existing traffic signal poles in the area and in downtown Asheville.

Provide single-arm light standards with an approved impact attenuation feature (breakaway base) complying with one of the following descriptions.

- (a) A cast aluminum transformer base
- (b) A frangible base insert or adapter; normally cast aluminum
- (c) A breakaway or progressive shear base
- (d) A slip base

Use the same type of breakaway base throughout the entire project. Install all single-arm light standards on standard foundation Type R1 as shown in Standard Drawings section 1405.01.

### 3.30 MEASUREMENT AND PAYMENT

The measurement and payment for each light standard with breakaway base shall be in accordance with Section 1404-4 of the Standard Specifications.

## 4.00 POST-TOP FOUNDATION TYPE R1S

### 4.10 DESCRIPTION

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

#### 4.20 CONSTRUCTION METHODS

Post-top light standard foundation, type R1S, for post-top lights shall be equal to type R1 on Standard Drawings 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.

#### 4.30 MEASUREMENT AND PAYMENT

The measurement and payment for each post-top light standard foundation, type R1S, shall be in accordance with Section 1405-4 of the Standard Specifications.

#### 5.00 POST-TOP LGT W/ BREAKAWAY BASE

##### 5.10 DESCRIPTION

The work covered by this section consists of furnishing and installing a metal post with a decorative base, with side-arm bracket-mounted decorative light fixture as shown on sheet E4. The post-top light standard is mounted on approved breakaway base as shown in Standard Drawings Sheet 2 of 3 in Section 1404.01. The Section 5.20 is also applicable to the bracket-arm installed decorative luminaire mounted on twelve (12) traffic signal poles in the subject project as shown on Signal Plans, Signal Pay Item titled "Decorative Signal Support Mast Arm with Metal Pole" and Lighting Plan sheet E4.

##### 5.20 MATERIALS

###### Post

The post shall be made of either steel or aluminum alloy, round tapered, with side-arm bracket installed for a decorative fixture at a nominal mounting height of 15 ft as indicated on plan sheet E4.

Furnish the post with a "Newport" style decorative base as provided by Valmont Industries.

###### Side-Arm Bracket

The side-arm bracket shall be made of either steel or aluminum alloy, with a ductile iron pole collar for mounting to provide a 15' luminaire mounting height as shown on plan sheet E4.

Provide seven (7) side-arm bracket with appropriate collar size to mount on the post-top light standards.

Provide twelve (12) side-arm brackets with appropriate collar size to mount on the traffic signal pole under the Signal Pay Item titled “Decorative Signal Support Mast Arm with Metal Pole”.

The side-arm bracket shall be Visco, Inc., Series K-1, VI-KPM-1.

#### Fixture

The fixture shall have a Type V refractor globe with a Victorian style roof measured 16 ½” x 12 13/16” and be made of clear injection-molded acrylic as shown on plan sheet E4.

A cast aluminum finial and a decorative band shall be attached to the top of the fixture and at the top portion of the fixture respectively.

Round fitter with flower petals (globe holder) shall be constructed of aluminum alloy with side-hinged access door to the ballast compartment.

The light source within the fixture shall be **100W, high pressure sodium**. Lamp socket shall be mogul type. The optical assembly include the prismatic refractor and full top reflector that controls the uplight, shall provide an IES Distribution of Semi-cutoff Type V, and to be considered as a Dark-Sky Friendly fixture.

The ballast shall be high power factor, constant wattage type suitable to operate high pressure sodium lamps. It shall provide lamp wattage regulation within ±5%, with line voltage variations of ±10%. The ballast shall be mounted below the lamp to avoid damage from lamp heat. Ballasts shall be factory wired and tested.

The fixture shall be UL listed and labeled.

The fixture shall be as specified in Drawing No S4732 and S4732A dated 12-21-93 by HADCO Architectural Outdoor Lighting for City of Asheville.

The following table lists the different electrical operating requirements of the decorative fixture used in Pedestrian Post-Top Lights and on Traffic Signal Poles

	<b>Line Voltage</b>	<b>Photo Control</b>	<b>Part No</b>	<b>Quantity</b>
<b>Post-Top Lights</b>	240/480V	Central	S4732D	7
<b>Traffic Signal Poles</b>	120/240V	Individual	S4732C	12

#### Breakaway Base

Provide post-top light standards with an approved impact attenuation feature (breakaway base) complying with one of the following descriptions.

- (e) A cast aluminum transformer base
- (f) A frangible base insert or adapter; normally cast aluminum
- (g) A breakaway or progressive shear base
- (h) A slip base

Use the same type of breakaway base throughout the entire project

Finish

The light standard, the bracket arm, and the fixture shall be thermoset polyester powdercoated with “Asheville Green” to match proposed traffic signal poles, post-top pedestrian lights and existing traffic signal poles in the area and in downtown Asheville.

5.30 CONSTRUCTION METHODS

Locate the post top lights as indicated on the Lighting plans. Refer to Signal plans for locations of traffic signal poles where decorative fixtures are installed on signal poles.

The post top lights shall be erected plum and secure with the space between the base and the foundation filled with grout.

The posts shall have a smooth uniform finish, free of disfiguring scratches or dents. The condition of the finish shall be acceptable to the Engineer at the time of acceptance.

The fixtures shall be mounted securely to the tenon on the arm bracket and shall be wired to the feeder circuit at the base of the pole as shown on the plans. The wiring shall include the fuseholder in conformance with other sections of these Special Provisions.

5.40 MEASUREMENT AND PAYMENT

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

The quantity of post top lights, measured as provided about, will be paid for at the contract unit price each for “Post Top Light \_\_\_\_\_” of the appropriate type, mounting height, voltage, wattage, and lamp. Such price and payment will be full compensation for all work of furnishing and installing the Post Top Light in operational condition.

Payment will be made under:

Post Top Light w/ Breakaway Base .....Each.

The quantity of decorative luminaires and arm brackets installed on traffic signal poles will be paid for separately under the Signals Section Pay Item titled “Decorative Signal Support Mast Arm with Metal Pole”.

## 6.00 REMOVE LIGHT STANDARDS

### 6.10 DESCRIPTION

The work covered by this section consists of the removal of existing metal light standards and concrete foundations at locations shown on the plans. The standards are single-arm at 35' mounting height, twin-arm at 45' mounting height, and post-top at 15' mounting height and are attached to the foundations with anchor bolts.

### 6.20 MATERIALS

No materials are required for this work except such miscellaneous items as tape and terminal devices to dead-end circuits serving the light standards.

### 6.30 CONSTRUCTION METHODS

Maintain operation of the existing lighting system until such time that it becomes in conflict with the actual construction work, or it becomes a hazard to traffic as determined by the Engineer.

The Contractor shall coordinate his work with Mr. Mark Teague, Division Traffic Engineer of Division 13 at DOT to assure that circuits can be de-energized where and when necessary, and for time and location of DOT warehouse to deliver removed standards.

The Contractor shall conduct his work so that portions of the lighting system, which are not in conflict with construction, will be maintained in continuous nighttime operation.

Remove luminaires from pole-arms and deliver the luminaires in good condition to a DOT warehouse.

Detach breakaway devices, including transformer bases with doors, couplings, anchor nuts, washers and connecting bolts, from the standard and bundle together and deliver to a DOT warehouse.

Breakaway fuse holders shall be disconnected from the circuitry. If circuitry connections to the fuse holders are by compression connectors, then the connector shall be left intact, and the conductors shall be cut leaving a 12" lead to the connector. Deliver the fuse holders in good condition to a DOT warehouse.

Use rope or web slings to hoist and lift the light standard to prevent damage to the standard. Provide proper blocking support to prevent warping. Protect the luminaire and the circuitry from the elements. Provide materials, equipment and labor to transport and unload the removed materials.

Remove existing concrete light standard foundations or abandon foundations as defined in Standard Specifications Section 1400-10. Dispose the removed concrete, reinforcing steel, and anchor bolts in waste areas furnished by the Contractor. Backfill the holes with suitable material and compact the material as required. Repair existing brick lined ditch as required as discussed in Standard Specifications Section 1400-4(B).

Abandon or remove the conductors and the conduit for the removed light standards as shown on the plans

6.40 MEASUREMENT AND PAYMENT

The quantity of removed light standards to be paid for will be the actual number which have been dismantled from existing foundations and delivered to a DOT warehouse in good condition and accepted.

The removed light standards measured as provided above will be paid for at the contract unit price per each "Remove Light Standard". Such price and payment will be considered full compensation for disassembly and delivery of the base, shaft with arm, luminaire, fuseholders and hardware. It also includes the removal, disposal and backfilling, compaction, and the repair of brick lined ditch at the I-240 WBL on ramp as needed and all incidentals necessary to complete the work.

Payment will be made under:

Remove Light Standard.....Each

7.00 HIGH MOUNT LUMINAIRES 400W W/ GLARE SHIELDS

7.10 DESCRIPTION

Work covered in this section shall be in conformance with Section 1403 of the Standard Specifications except as modified below.

7.20 MATERIALS

Amend Section 1403-2 of the Standard Specifications to include the following:

Provide ballast capable of operating a 400 watt high pressure sodium (HPS) lamp from a source with a nominal voltage of 240/480 Volt as shown on the plans with a tolerance of ± 10%

Provide 400 watt HPS high mount luminaires with a Medium, Cut-Off, Type V IES light distribution pattern. Provide glare shield for each luminaire to minimize spill light outside of the right of way.

7.30 MEASUREMENT AND PAYMENT



The measurement and payment for each high mount luminaire (400W with glare shield) shall be in accordance with Section 1403-4 of the Standard Specifications.

## 8.00 HIGH MOUNT STANDARD

### 8.10 DESCRIPTION

Provide High Mount Standards as specified in Section 1401 of the 2002 *NCDOT Standard Specifications for Roads and Structures*, and the *Roadway Standard Drawings* and as amended below:

### 8.20 MATERIALS

Amend Section 1401-2 (A) by replacing the first sentence in paragraph five with the following two sentences:

Have the design of the support including the base plate and anchorage conform to AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 4<sup>th</sup> Edition, 2001", and the Interim Specifications valid at the time of letting. Fatigue Category I shall be used in design. The welding design and fabrication must be in accordance with the Article 1072-20 of the Standard Specifications.

Test all base plate to upright welds using magnetic particle testing (MPT) prior to galvanizing. All base plates must be tested at 100%.

### 8.30 MEASUREMENT AND PAYMENT

The measurement and payment for High Mount Standards shall be in accordance with Section 1401-4 of the Standard Specifications.