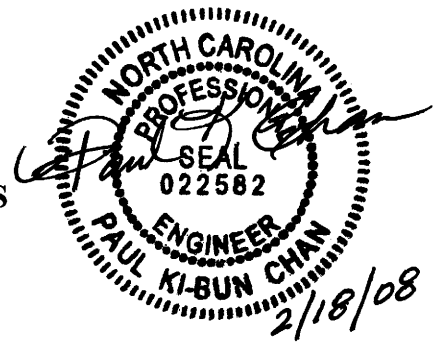


**PROJECT SPECIAL PROVISIONS
Roadway Lighting Renovation**



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. The work involves removing, and/or relocating existing lighting equipment, replacing circuitry and installing high mast light standards. All removed material shall be coordinated with the Division Traffic Engineer, Scott Cole (704-982-0101), and delivered to the NC DOT warehouse at the address below:

County Maintenance Yard
7703 District Drive
Charlotte, NC 28213

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)

Lighting renovation requires work inside Norfolk Southern Railroad right-of-way. The Contractor is required to provide railroad insurance and schedule a flagger if necessary.

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.

2.00 EXISTING UTILITIES

NC DOT owned underground signal conductors and fiber optic cables are located on the project. Duke Power Company has overhead and underground conductors on the project. Contact representatives of the Department and DPC, before construction begins, to identify and locate these facilities. Locate utilities owned by others as required to complete the work and prevent conflict with construction. Refer to Standard Specification section 1400-4(C). NC DOT and DPC contact information is listed below.

NC DOT: Traffic Signal Supervisor---Dave Davis (704-982-1998)
 Traffic Signal Technician---Frankie Vaughn (704-351-1290)
 TMS Systems Engineer-----Will Simons (704-347-6605)

Duke Power Company: Carl Sanburg (704-382-2058, office) (704-300-8411, cell)

3.00 SUPPLEMENTARY CLEARING AND GRUBBING

3.10 DESCRIPTION

Several areas behind guardrail require clearing and grubbing before trenching operations can begin. One area at Control System "G" requires clearing and grubbing, before DPC can provide electrical service. These areas are identified in the plans. Refer to Section 200-1 of the Standard Specifications for other details. Seed and mulch the areas as described in Section 1660 of the Standard Specifications.

3.20 MATERIALS

Refer to Sections 200-2 and 1660-2 of the Standard Specifications for materials, and as directed by the Engineer.

3.30 CONSTRUCTION METHODS

Clear and grub the berm area behind guardrail that will allow a trencher with a riding or walking operator, to install feeder circuits as shown in the plans, on Standard Drawing 1410.01 and as directed by the Engineer. Refer to Sections 200-3, 200-4 and 200-5 of the Standard Specifications, for other construction requirements. Clear and grub the area between proposed Control System "G" and the Control of Access fence, to allow DPC to trench secondary power for electrical service. Clear and grub other areas as directed by the Engineer. Seed and mulch affected areas, after trenching for circuitry is complete. Provide erosion control as directed by the Engineer.

3.40 MEASUREMENT AND PAYMENT

Refer to Sections 200-7 and 1660-8 of the Standard Specifications for measurement and payment.

Payment will be made under:

Supplementary Clearing and Grubbing.....Acre
Seeding and Mulching.....Acre

4.00 RELOCATE LIGHT STANDARDS

4.10 DESCRIPTION

The work covered by this section consists of providing all equipment, labor and materials necessary to move an existing light standard to a new foundation at locations shown on the plans. The standard to be relocated may be near the proposed final location, or may be one removed from another location. Refer to the plans and the section of these provisions titled "Remove Light Standards" for more information. It also includes

storage of materials to be reused, and removal of the existing foundation. It does not include construction of a new foundation.

4.20 MATERIALS

Reuse existing materials, including the light standard, breakaway base and arm. Shims and washers may be reused, but new connecting bolts are required. Replace materials that are to be reused, if they are damaged during relocation. Damaged materials will be replaced with new materials, at no additional cost to the Department.

Where existing transformer bases are damaged, use transformer bases that have been removed from the I-77 or Independence Boulevard interchanges. Refer to the plans for these locations, and to Special Provisions titled "Remove Light Standards."

The Contractor is responsible for the storage and protection of the reused materials against loss or damage.

4.30 CONSTRUCTION METHODS

For light standards near the proposed final location, dismount the light standard from the existing standard foundation. For light standards removed from other locations, refer to Special Provisions titled "Remove Light Standard," for dismounting and transportation specifications. Reassemble and reinstall light standards on a new foundation, and reuse the existing breakaway base. Replace the connecting bolts joining the standard to the breakaway base and attachment hardware for the standard-to-arm connection. Use rope or web slings when hoisting or lifting the light standard, to prevent damage or marking. If the light standards are to be stored between dismounting and reinstalling, provide proper transportation and supports to prevent warping. Provide protection against the elements.

Remove or abandon existing concrete light standard foundations. 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.

Abandon or remove the conductors and conduit as required by construction. Refer to Standard Specifications Section 1400-10. Install new circuitry inside the standard, and install new feeder circuitry as shown on the plans.

4.40 MEASUREMENT AND PAYMENT

The quantity of relocated light standards 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.

Relocated light standards measured as provided above will be paid for at the contract unit bid price per each "Relocate Light Standard". Such price and payment will be considered full compensation for disconnecting circuitry, disassembly, transportation, storage, reassembly, installing new connecting bolts, connection of new circuitry, removal of foundation, disposing of concrete, backfilling, compaction and all incidentals necessary to complete the work. Payment for disconnecting circuitry, disassembly, transportation and storage for light standards brought in from other locations will be paid for under "Remove Light Standard."

Payment will be made under:

Relocate Light Standard Each

5.00 REMOVE CONTROL SYSTEM

5.10 DESCRIPTION

The work covered by this section consists of the removal of an existing lighting control system, pad mounted transformer and concrete foundations.

The control system consists of electrical components mounted inside a steel enclosure, a photocell, feeder circuits in conduit, a pad mounted transformer and concrete foundations. The transformer at the Graham Street location is the property of Duke Power. Coordinate the removal of this transformer with Carl Sanburg, DPC engineer (704-382-2058).

5.20 MATERIALS

No materials are required for this work except such miscellaneous items as terminal devices to seal openings in the steel enclosure, after all conduits have been removed.

5.30 CONSTRUCTION METHODS

Leave the existing lighting control system in operation until the new proposed lighting system can be used to maintain the normal nightly operation of the roadway lights.

Coordinate work with NC DOT Traffic Services Supervisor, Donald Griffith (704-982-1998), to assure that circuits can be de-energized where and when necessary.

Conduct work so those portions of the lighting system, which are not in conflict with construction, will be maintained in continuous nighttime operation.

Remove the control system enclosure with all its internal electrical components intact. Remove all conduit and wiring entering the enclosure. The enclosure and its contents shall become the property of the Contractor, removed from the project, and disposed of in a manner acceptable to the Engineer.

Remove pad-mounted transformers with all internal electrical components intact. Remove all conduit and wiring entering the transformer cabinet. The transformer and its contents shall become the property of the Contractor, removed from the project, and disposed of in a manner acceptable to the Engineer.

Remove the existing foundations, and dispose the removed concrete and reinforcing steel in a manner acceptable to the Engineer. Backfill the holes with suitable material and compact the material as required.

5.40 MEASUREMENT AND PAYMENT

The quantity of removed control systems to be paid for will be the actual number, which have been removed in a satisfactory manner, and have been accepted by the Engineer.

Removed control systems, measured as provided above, will be paid for at the contract unit bid price per each "Remove Control System". Such price and payment will be considered full compensation for disconnecting circuitry, removing and disposing of control system and transformer, disposing of concrete, backfilling, compaction and all incidentals necessary to complete the work.

Payment will be made under:

Remove Control System.....Each

6.00 REMOVE LIGHT STANDARDS

6.10 DESCRIPTION

The work covered by this section consists of the removal of existing metal light standards on breakaway bases and concrete foundations at locations shown on the plans. The standards are single-arm at 50' mounting height and 35' mounting height, and are attached to the foundations with anchor bolts. Removed light standards may be re-installed in locations where the plans require light standards to be replaced. Doors for breakaway bases may be re-used at locations shown on the plans. Refer to the plans and to the sections of these provisions titled "Relocate Light Standard" and "Replace Doors."

Concrete foundations to be removed or abandoned may be located in areas where there are no light standards to be removed. Refer to the plans for locations requiring the removal of a foundation only.

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.

Coordinate work with Donald Griffith (704-982-1998), the NC DOT Traffic Services Supervisor, to assure that circuits can be de-energized where and when necessary.

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

Remove light standard arms and deliver in good condition to the NC 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 the NC 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 the NC DOT warehouse.

Use rope or web slings to hoist and lift the light standard to prevent damage. 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 or abandon existing concrete light standard 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.

Abandon or remove the conductors and the conduit for the removed light standards as shown on the plans. Refer to Standard Specifications Section 1400-10.

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 the NC DOT warehouse in good condition and accepted. It also includes light standards that are removed and delivered to a new location on the project, as shown on the plans.

The quantity of removed foundations to be paid for will be the actual number, which have been removed or abandoned 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, arm, luminaire, fuseholders and hardware.

The removed foundations measured as provided above will be paid for at the contract unit price per each "Remove Light Standard Foundation". Such price and payment will be considered full compensation for removing or abandoning foundation concrete, reinforcing steel, and anchor bolts. It also includes backfilling the holes with suitable material and compacting the material as required.

Payment will be made under:

- Remove Light Standard.....Each
- Remove Light Standard Foundation.....Each

7.00 REPLACE UNDERPASS LIGHTS

7.10 DESCRIPTION

Amend Section 1412-1 of the Standard Specifications to read the following. The work covered by this section consists of replacing existing underpass lights installed on bridge bents, at locations shown in the plans. Delivering removed luminaires to the NC DOT warehouse is also included.

7.20 MATERIALS

Amend Section 1412-2 of the Standard Specifications to include the following. Use luminaires similar to GE Wallighter 400 series, with 150-Watt high pressure sodium lamps, and heavy duty polycarbonate vandal guards.

7.30 CONSTRUCTION METHODS

Amend Section 1412-3 of the Standard Specifications to include the following. Remove all luminaires, lamps and circuit breaker disconnects and deliver to the NC DOT warehouse identified in other sections of these provisions. Install new luminaires, lamps and disconnect circuit breakers. Leave existing conduit in place, and install new conductors. Extend existing conduit as required to maintain a continuous conduit system to the new luminaires.

7.40 MEASUREMENT AND PAYMENT

Underpass luminaires will be paid for as the actual number that have been installed and accepted. Such price and payment will be considered full compensation for installing new luminaires with lamps.

Removed underpass luminaires will be paid for as the actual number that have been delivered to the NC DOT warehouse and accepted. Such price and payment will be considered full compensation for the materials, equipment and labor required to remove the luminaires and deliver them in good condition.

Underpass Circuitry will be paid for at the contract lump sum price for Underpass Circuitry at the appropriate location. Such price and payment will be considered full compensation for installing new conductors in existing conduit, installing new conduit to maintain a continuous conduit system to the new luminaires if required and installing a new disconnect.

Payment will be made under:

Underpass Luminaire.....Each
 Remove Underpass Luminaire.....Each
 Underpass Circuitry at _____.....Lump Sum

8.00 RIGID GALVANIZED CONDUIT

8.10 DESCRIPTION

The work covered in this section involves attaching rigid galvanized conduit to the edge of bridge decks, to end bent caps and to other portions of bridges required to install a complete conduit system for installing conductors. The conduit is intended to connect circuitry to existing light standards mounted on bridges, to carry circuitry across and under bridges, and to connect circuitry to underpass lights.

8.20 MATERIALS

Provide and install materials as described below.

Conduit is Schedule 40 rigid galvanized steel in accordance with Section 1098-4 of the Standard Specifications. Use 1 ½” and 2” conduit as shown in the plans.

Use liquidtight flexible metal conduit and fittings in accordance with Section 1098-4 of the Standard Specifications.

Use AWG number 10 Type USE copper conductors for circuitry from outrigger junction boxes to existing poles.

Expansion fittings are weatherproof designed for rigid galvanized conduit, with a minimum of eight inches of conduit movement, insulating bushings, a bonding jumper and a hot dip galvanized finish.

Conduit clamps and conduit spacers are mechanically galvanized malleable iron designed for rigid galvanized conduit.

Concrete bolt anchors are one-piece, pre-assembled, stainless steel that are 3/8" in diameter and 3 1/2" long and 1/2" in diameter and 3 1/2" long to be used with 1 1/2" and 2" conduit respectively.

Grounding bushings are zinc plated malleable iron, insulated, with tin plated aluminum lugs, steel clamping screws, nylon plastic liners and steel set screws.

Outrigger cast iron junction boxes are hinged, NEMA 4, raintight, galvanized cast iron, with stainless steel wing nut closing screws, grounding kit and factory provided mounting lugs. Use boxes similar to O Z Gedney Type YW, and sized as shown in the plans.

End wall cast iron junction boxes are hinged, NEMA 3R, raintight, galvanized cast iron, with Butt Type hinges, lockable hasp, grounding kit, and factory provided mounting lugs. Provide lugs on the narrow ends of the junction box. Use boxes similar to O Z Gedney Type YU, with required options, and sized as shown in the plans.

8.30 CONSTRUCTION METHODS

Install conduit using clamps and spacers secured with 3/8" or 1/2" concrete anchors to be used with 1 1/2" or 2" conduit respectively, at 2 1/2" minimum imbedment. Use standard conduit sweeps or field bend as required to install conduit as shown in the plans. Conduit bodies will not be allowed. Offset conduit at expansion fittings to ensure proper operation and prevent contact with the bridge concrete. Install number and size of conduits as shown in the plans, for connection to underpass lights, bridge mounted light standards and continuation of feeder circuits. Terminate rigid galvanized conduit and liquidtight flexible metal conduit inside junction boxes, using insulated grounding bushings. Transition from rigid galvanized conduit, in exposed areas, to PVC conduit, underground, using approved adapters.

Install bonding jumpers at all expansion fittings.

Install end wall and outrigger junction boxes, using manufacturer provided mounting lugs. Where existing junction boxes are in the bridge end wall, install end wall junction boxes over top, to completely cover the existing box. Install outrigger junction boxes on the side opposite the light standard access door, allowing continued access to the wiring compartment. Install weep holes in the bottom of each junction to allow water entering the box to drain.

Install liquidtight flexible metal conduit from outrigger junction boxes, using manufacturer provided box connectors and grounding bushings. Install AWG number 10 copper conductors in flexible conduit, to provide a complete circuit from feeder circuits in outrigger junction boxes, to fuse holders in the base of existing light standards. Drill a hole in the light standard transformer base sized small enough to accommodate box connectors, without using reducing bushings or oversized washers.

8.40 MEASUREMENT AND PAYMENT

Rigid Galvanized Conduit, of each size, will be measured and paid for as the actual number of linear feet of conduit, measured in place to the nearest whole foot that has been installed and accepted.

Cast iron Junction Boxes, of each type, will be measured and paid for as the actual number of the appropriate type junction boxes that have been installed and accepted. Payment for installing liquidtight flexible metal conduit and AWG number 10 conductors will be considered incidental to the price bid for outrigger junction boxes.

Payment will be made under:

Rigid Galvanized Conduit (size).....Linear Foot
CI Junction Boxes (type).....Each

9.00 REPLACE LUMINAIRES

9.10 DESCRIPTION

The work covered in this section involves removing existing luminaires, at 35' and 50' mounting height, and installing new luminaires and circuitry. It also includes numbering the poles with numbers shown in the plans.

9.20 MATERIALS

Provide materials as described in Section 1406-2 of the Standard Specifications. Amend the third paragraph to read as follows:

Provide a heat resistant drop-glass prismatic refractor and a reflector with a hard glasslike highly reflective corrosion resistant finish. Use luminaires with IES light distribution of MSC III, for 50' mounting height light standards, and MSC II, for 35' mounting height light standards. Provide luminaires made by GE or Cooper.

Amend Section 1400-2 (C) of the Standard Specifications to read as follows:

For branch circuits in light standards use UL Type SO cable.

9.30 CONSTRUCTION METHODS

Leave existing light standards in tact on the foundations. Remove existing luminaires, fuseholders and circuitry inside the standard, at locations shown in the plans. Deliver the luminaires and fuseholders, in good condition, to the NC DOT warehouse. Replace each luminaire with the appropriate luminaire shown in the plans. Replace the circuitry inside the standard, from the luminaire to feeder circuitry at the base, and replace the breakaway fuseholders. Install identifying numbers on each light standard, as shown on Standard Drawing 1404.01, sheet 1 of 3.

9.40 MEASUREMENT AND PAYMENT

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

The quantity of replaced luminaires to be paid for will be the actual number and type, which have been replaced and accepted.

The removed luminaires measured as provided above will be paid for at the contract unit price per each "Remove Luminaire (type)". Such price and payment will be considered full compensation for disassembly and delivery of the luminaire and fuseholder.

The replaced luminaires measured as provided above will be paid for at the contract unit price per each "Replace Luminaire (type)". Such price and payment will be considered full compensation for installing the luminaire, circuitry inside the light standard and breakaway fuseholder at the base of the standard. It also includes numbering each light standard.

Payment will be made under:

Remove Luminaire (type).....Each
 Replace Luminaire (type).....Each

10.00 REPLACE DOORS

10.10 DESCRIPTION

The work covered in this section involves the replacement of missing doors, on breakaway transformer bases, at locations shown on the plans. The doors may be taken from removed light standards, or fabricated to the specifications of the Division Traffic Engineer.

10.20 MATERIALS

Use doors taken from transformer bases on removed light standards. Use doors that are from the same manufacturer as doors that are to be replaced. Refer to the section of the special provisions titled "Remove Light Standard."

If compatible doors from removed light standards are not available, fabricate new doors using 10-gauge aluminum. Use stainless steel screws that meet the Division Traffic Engineer's requirements.

10.30 CONSTRUCTION METHODS

Remove compatible doors from transformer bases on light standards that have been removed under other sections of the special provisions. Install on transformer bases with missing doors, at locations shown on the plans.

Fabricate doors using 10-gauge aluminum. Ensure that the opening in the transformer base is completely covered. Remove sharp edges. Drill and tap threads in the transformer base that will accept a 1/4" screw with 20 threads per inch (1/4-20). Attach doors with screws meeting the requirements of the Division Traffic Engineer.

10.40 MEASUREMENT AND PAYMENT

The quantity of replaced doors to be paid for will be the actual number that have been installed and accepted.

Replaced doors measured as provided above will be paid for at the contract unit price per each "Replace door". Such price and payment will be considered full compensation for installing a door salvaged from removed light standards, or fabricating a new door with attachment screws.

Payment will be made under:

Replace Door.....Each

11.00 LIGHT STANDARD JUNCTION BOX

11.10 DESCRIPTION

The work covered by this section consists of furnishing and installing junction boxes that include liquidtight flexible non-metallic conduit, to facilitate pulling conductors into existing foundations.

11.20 MATERIALS

Provide polymer concrete junction boxes in accordance with Section 1411-2 of the Standard.

Provide Type LFNC-B liquidtight flexible non-metallic conduit that is UL listed and labeled as suitable for direct burial, outdoor use and sunlight resistance. Type LFNC-B liquidtight flexible non-metallic conduit must meet all of the requirements contained in UL 1660, and 356.2 (2) of the National Electrical Code.

Use AWG number 10 Type USE copper conductors for circuitry from light standard junction boxes to existing poles.

11.30 CONSTRUCTION METHODS

Amend Section 1411-3 of the Standard Specifications to include the following. Install Type PC junction boxes a maximum of 5' from the existing foundation. Locate and terminate existing conduit, flush with the light standard foundation base. Ream the remaining portion of conduit, to remove sharp edges and burrs. Insert Type LFNC-B liquidtight flexible non-metallic conduit into the remaining portion of the existing conduit, and continue into the transformer base, leaving a minimum of 1" protruding beyond the existing conduit. Refer to installation details in the plans. Trench Type LFNC-B liquidtight flexible non-metallic conduit to the junction box and terminate inside, similar to other conduits containing feeder circuits. Backfill the trench and around the junction box, as shown in Standard Drawings 1410.01 and 1411.01 respectively.

Install AWG number 10 copper conductors in flexible conduit, to provide a complete circuit from feeder circuits in light standard junction boxes, to fuse holders in the base of existing light standards

11.40 MEASUREMENT AND PAYMENT

Light standard junction boxes will be measured and paid for as the actual number of junction boxes that have been installed and accepted.

Light standard junction boxes measured as provided above will be paid for at the contract unit price per each "Light Standard Junction Box". Such price and payment will be considered full compensation for installing the junction box, Type LFNC-B liquidtight flexible non-metallic conduit, copper conductors, trenching and backfilling.

Payment will be made under:

Light Standard Junction Box.....Each