



PAT McCrory  
Governor

NICHOLAS J. TENNYSON  
Secretary

November 6, 2015

**Addendum No. 1**

RE: Contract ID C203658

WBS # 34182.2.FS4

F. A. # IMS-095-2(119)105

**Johnston County (I-3318BB)**

Bridges #114 and #116 Over Little River On I-95

**November 17, 2015 Letting**

To Whom It May Concern:

Reference is made to the plans and proposal form furnished to you on this project.

The following revisions have been made to the Roadway plans:

Sheet No.	Revisions
1A	Revised "Index of Sheets" to show the addition of Sheet Nos. E-1 thru E-3 Electrical Plans to the plan set. Please void Sheet No. 1A in your plans and staple the revised Sheet No. 1A thereto.
E-1 thru E-3	Electrical Plans added for some adjustments to existing high mast lights at the Bagley Road/ I-95 interchange. Please staple New Sheet Nos. E-1 thru E-3 after existing Sheet No. PMP-3 in your plans.

The following revisions have been made to the proposal:

Page No.	Revisions
Proposal Cover	Note added that reads "Includes Addendum No. 1 Dated November 6, 2015".
Table of Contents	Revised to include new Page No. G-34 which adds the new special provision entitled "Note To Contractor".
New Page No. G-34	Added to include the new special provision entitled "Note To Contractor"
New Page No. R-51	Added New Page No. R-51 to include the project special provision entitled "Mix Design-OGAFC".
New Page Nos. LT-1 thru LT-10	Add Lighting special provisions



Please void the Proposal Cover and staple the revised Proposal Cover thereto. Please void the Table of Contents in your proposal and staple the new Table of Contents thereto. Please add New Page No. G-34 after existing Page No. G-33 in your proposal. Please add New Page No. R-51 after existing Page No. R-50. Please add New Page Nos. LT-1 thru LT-10 after existing Page No. TC-6 in your proposal.

On the item sheets the following pay items have been added:

<u>Item</u>	<u>Description</u>	<u>Old Quantity</u>	<u>New Quantity</u>
206-5025000000-E-SP	High Mount Foundations	NEW ITEM	11 CY
207-5205000000-E-1410	2 #8 W/G Feeder Circuit In 1.5" Conduit	NEW ITEM	50 LF
208-5270000000-N-SP	120' High Mount Luminaire-LED	NEW ITEM	32EA
209-5270000000-N-SP	Electrical Junction Boxes PC18	NEW ITEM	1 EA
210-5270000000-N-SP	Relocate High Mast Light Standard	NEW ITEM	1 EA

The Contractor's bid must include these new pay items. The contract will be prepared accordingly.

The Expedite File has been updated to reflect this revision. Please download the Expedite Addendum File and follow the instructions for applying the addendum. Bid Express will not accept your bid unless the addendum has been applied.

Sincerely,



R. A. Garris, PE  
Contract Officer

RAG/jag  
Attachments

cc: Mr. Ron Hancock, PE  
Mr. Tim Little, PE  
Ms. D. M. Barbour, PE  
Mr. Rodger Rochelle, PE  
Mr. Mike Gwyn  
Ms. Lori Strickland  
Ms. Jaci Kincaid  
Project File (2)

Mr. Ray Arnold, PE  
Ms. Theresa Canales, PE  
Mr. Glen Mumford, PE  
Mr. R.E. Davenport, PE  
Mr. Ken Kennedy, PE  
Ms. Marsha Sample  
Ms. Penny Higgins

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH, N.C.

PROPOSAL

**INCLUDES ADDENDUM No. 1 DATED 11-06-15**

DATE AND TIME OF BID OPENING: **NOVEMBER 17, 2015 AT 2:00 PM**

CONTRACT ID      C203658  
WBS                34182.2.FS4

FEDERAL-AID NO. IMS-095-2(119)105  
COUNTY            JOHNSTON  
T.I.P. NO.         I-3318BB  
MILES                0.421  
ROUTE NO.         I 95  
LOCATION             BRIDGES #114 AND 116 OVER LITTLE RIVER ON I-95.

TYPE OF WORK     GRADING, DRAINAGE, PAVING, STRUCTURE, & SIGNALS.

**NOTICE:**

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE BIDDER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS \$30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. BIDDERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOTWITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY FEDERAL - AID FUNDED PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING.

**BIDS WILL BE RECEIVED AS SHOWN BELOW:**

**THIS IS A ROADWAY & STRUCTURE PROPOSAL**

**5% BID BOND OR BID DEPOSIT REQUIRED**

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**PROPOSAL ITEM SHEET**

ITEM SHEET(S) (TAN SHEETS)

**NOTE TO CONTRACTOR:**

The Contractor's attention is directed to the easement area on Parcel 2. This temporary easement has been purchased for a staging area for project construction activities. Direct access will be allowed from this temporary easement to I-95.

Plan sheet TMP-1C, Local Note 01, addresses material delivery time restrictions to the project. It is intended that the same time restrictions also apply to hauling materials away from the project. Contractor shall therefore consider that the time restrictions are for hauling all materials into or away from the project via direct access to I-95. Hauling and delivery of materials via direct access to other routes may occur at any time.

**MIX DESIGN - OGAFC:**

(12-15-15)

610

SP6 R95

Revise the *2012 Standard Specifications* as follows:

**Page 6-19, Article 610-3, COMPOSITION OF MIXTURES (MIX DESIGN AND JOB MIX FORMULA), lines 23-24**, replace the second sentence in the fifth paragraph with the following:

RAS material may constitute up to 6% by weigh of total mixture for any mix with the exception of OGAFC which may constitute up to 5% by weight.

**Page 6-19, Article 610-3, COMPOSITION OF MIXTURES (MIX DESIGN AND JOB MIX FORMULA), line 32**, add the following after the fifth sentence of the fifth paragraph:

For OGAFC, the maximum percent of binder contributed from RAS or a combination of RAS and RAP is 18%.

PROJECT SPECIAL PROVISIONS  
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. 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" (*2012 Standard Specifications*).

Perform all work in conformance with Division 14 of the *2012 Standard Specifications* except as modified or added to by these Special Provisions. Install all bore pits outside the clear zone, as defined in the AASHTO Roadside Design Guide or as directed by the Engineer.

In addition to the requirements of Division 1400, other specific Sections of the *2012 Standard Specifications* applicable to the work on this project are listed below.

Section 1410	Feeder Circuits
Section 1411	Electrical Junction Boxes

### 2.00 CONSTRUCTION METHODS

Modify the fourth paragraph of Standard Specification 1400-4(F) to read as follows:

Install manufactured set screw type connectors, suitable for connecting multiple wires, and which are UL Listed (UL486D) for all phase conductor splices. These precise fit connectors are insulated with high-strength dielectric material and have removable access plugs over the set screws. Direct buried and/or submersible versions of these connectors, equipped with factory made waterproof insulating boots, are required for splicing inside junction boxes. Non-direct buried and/or non-submersible connectors may be used for phase conductor splicing in normally dry areas such as inside poles and transformer bases. After tightening set screw, tape down the access plugs to keep them securely in place. Split-bolt connectors may be used for ground wire splicing. Wire nut and compression type connectors will not be allowed.

Add the following to the end of Standard Specification 1400-4:

#### **(K) Foundations**

Form foundations with prefabricated cardboard forms down to 12" min. below top of ground.

Do not erect standards before test cylinders representing the foundation concrete have attained the minimum compressive strength detailed in Section 1000 of the *2012 Standard Specifications*. Test cylinders shall be provided for each truckload of concrete used for light pole foundations. Tests shall be conducted as described in Section 1000 of the *2012 Standard Specifications*.

To avoid vehicle undercarriage snagging of any substantial remains of a breakaway support (when it is broken away), the edge of the foundation or top of anchor bolt should not extend



more than four inches (4") above a sixty inch (60") chord aligned radially to the centerline of the highway, and connecting any point within the length of the chord on the ground surface on one side of the foundation to a point on the ground surface on the other side.

### 3.00 BURN IN TEST

Add the following to the end of Standard Specification 1400-6:

The Contractor is responsible for all maintenance of the lighting system(s) installed or renovated as part of this contract until contract completion. The Department will assume maintenance responsibility for the completed lighting systems after the entire project is accepted and there is no chance of construction related damage.

### 4.00 HIGH MOUNT FOUNDATIONS

#### 4.10 DESCRIPTION

High mount foundations for high mount standards consist of drilled piers or footings with pedestals, conduit and anchor rod assemblies. Construct high mount foundations in accordance with the contract and either *2012 Roadway Standard Drawings* No. 1402.01 or the accepted submittals. Define "high mount standard foundation" as a drilled pier including the conduit and anchor rod assembly that meets Standard Drawing No. 1402.01.

#### 4.20 MATERIALS

Use high mount foundation materials that meet the *Foundations and Anchor Rod Assemblies for Metal Poles* provision found in the Roadway Project Special Provisions.

Provide and install a polymer concrete (PC) electrical junction box measuring 18" (l) x 12" (w) x 18" (h) (PC18) and meeting the specifications found in the Special Provisions.

#### 4.30 HIGH MOUNT STANDARD FOUNDATIONS

Construct high mount standard foundations for the wind zone and high mount heights shown in the plans unless the following assumed site conditions are not applicable to high mount locations:

- A. Soil with unit weight ( $\gamma$ )  $\geq$  120 lb/cf and friction angle ( $\phi$ )  $\geq$  30°,
- B. Groundwater at least 7 ft below finished grade and
- C. Slope of finished grade 6:1 (H:V) or flatter.

A subsurface investigation and high mount foundation design are required if the Engineer determines these assumed site conditions do not apply to a high mount location and the high mount cannot be moved. Subsurface conditions requiring a high mount foundation design include but are not limited to weathered or hard rock, boulders, very soft or loose soil, muck or shallow groundwater. No extension of completion date or time will be allowed for subsurface investigations or high mount foundation designs.

#### 4.40 SUBSURFACE INVESTIGATIONS

Use a prequalified geotechnical consultant to perform one standard penetration test (SPT) boring in accordance with ASTM D1586 at each high mount location requiring a subsurface investigation. Rough grade high mount locations to within 2 ft of finished grade before beginning drilling. Drill borings to 2 drilled pier diameters below anticipated pier tip elevations or refusal, whichever is higher.

Use the computer software gINT version V8i or later manufactured by Bentley Systems, Inc. with the current NCDOT gINT library and data template to produce SPT boring logs. Provide boring logs sealed by a geologist or engineer licensed in the state of North Carolina.

#### 4.50 HIGH MOUNT FOUNDATION DESIGNS

Design high mount foundations for the wind zone and high mount heights shown in the plans and the slope of finished grade and subsurface conditions at each high mount location. Design drilled piers, footings and pedestals in accordance with the 6<sup>th</sup> Edition of the *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*.

Design drilled piers for side resistance only in accordance with Section 4.6 of the *AASHTO Standard Specifications for Highway Bridges*. Use the computer software LPILE version 6.0 or later manufactured by Ensoft, Inc. to analyze drilled piers. Provide drilled pier designs with a horizontal deflection of less than 0.5" at top of piers.

Design footings in accordance with Section 4.4 of the *AASHTO Standard Specifications for Highway Bridges*. Do not use an allowable bearing pressure of more than 3,000 lb/sf for footings.

Submit boring logs, working drawings and design calculations for acceptance in accordance with Article 105-2 of the *2012 Standard Specifications*. Submit working drawings showing plan views, required foundation dimensions and elevations and typical sections with reinforcement, conduit and anchor rod assembly details. Include all boring logs, design calculations and LPILE output for high mount foundation design submittals. Have high mount foundations designed, detailed and sealed by an engineer licensed in the state of North Carolina.

#### 4.60 CONSTRUCTION METHODS

Grade a 3 ft diameter level work area around high mount locations with cut and fill slopes as shown on Standard Drawing No. 1402.01. Construct drilled piers, footings and pedestals and install anchor rod assemblies for high mount foundations in accordance with the *Foundations and Anchor Rod Assemblies for Metal Poles* provision.

Install PC18 junction box within 10' of pole foundation. Junction box shall be used as a tee point for feeder circuitry and conductors, and as housing for the pole ground rod.

4.70 MEASUREMENT AND PAYMENT

*High Mount Foundations* will be measured and paid in cubic yards. High mount standard foundations will be measured as the cubic yards of concrete shown on Standard Drawing No. 1402.01 for the high mount height and wind zone shown in the plans. All other high mount foundations will be measured as the cubic yards of foundation concrete for drilled piers, footings and pedestals shown on the accepted submittals. The contract unit price for *High Mount Foundations* will be full compensation for providing labor, tools, equipment and foundation materials, stabilizing or shoring excavations and supplying concrete, reinforcing steel, conduit, anchor rod assemblies, junction box and any incidentals necessary to construct high mount foundations. Subsurface investigations and high mount foundation designs required by the Engineer will be paid as extra work in accordance with Article 104-7 of the *2012 Standard Specifications*.

Payment will be made under:

High Mount Foundations.....Cubic Yard

**5.00 ELECTRICAL JUNCTION BOXES**

5.10 DESCRIPTION

Same as Article 1411-1.

5.20 MATERIALS

Same as Article 1411-2, except modify referenced Article 1091-5 as follows:

- Page 10-202, revise paragraph starting on line 9 to read "Provide polymer concrete (PC) boxes which have bolted covers and open bottoms. Provide vertical extensions of 6" to 12" as required by project special provisions."
- Page 10-202, revise sentence beginning on line 14 to read "Other thermoplastic materials may be used for components which are not normally exposed to sunlight."

5.30 CONSTRUCTION METHODS

Same as Article 1411-3.

5.40 MEASUREMENT AND PAYMENT

Same as Article 1411-4.

**6.00 RELOCATE HIGH MAST LIGHT STANDARD****6.10 DESCRIPTION**

The work covered by this section consists of providing all equipment, labor and materials necessary to relocate an existing 120' high mast light standard to a new foundation at the location shown on the plans. This section also includes storage of materials to be reused, and removal of the existing foundation. Construction of a new foundation is not included in this section.

**6.20 MATERIALS**

Reuse existing materials, including the high mast light standard and lowering device. Replace materials that are to be reused if they are damaged during relocation. Materials damaged during relocation will be replaced with new materials at no additional cost to the Department.

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

**6.30 CONSTRUCTION METHODS**

Using an appropriately sized crane, secure and dismount the high mast light standard from the existing foundation. Reinstall high mast light standard on a new foundation. Use rope or web slings when hoisting or lifting the high mast light standard to prevent damage or marking. If high mast light standard is to be stored prior to installation on new foundation, provide suitable blocking and slings to prevent warping of the high mast standard during storage. Provide necessary protection against the elements.

Remove or abandon existing concrete light standard foundations. Dispose of the removed concrete, reinforcing steel, and anchor bolts in manner acceptable to the Engineer. 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. Intercept existing feeder circuitry and install new feeder circuitry as shown on the plans.

Install new luminaire and as detailed in the section of these Special Provisions titled "High Mast Light Emitting Diode (LED) Luminaires".

**6.40 MEASUREMENT AND PAYMENT**

The quantity of relocated high mast light standards to be paid for will be the actual number, which have been removed from existing locations and installed at proposed locations in a satisfactory manner and have been accepted by the Engineer.

Relocated high mast light standards measured as provided above will be paid for at the contract unit bid price per each "Relocate High Mast Light Standard". Such price and payment will be considered full compensation for disconnecting circuitry, disassembly, transportation, storage, reassembly, connection of new circuitry, removal of foundation, disposing of concrete, backfilling, compaction and all incidentals necessary to complete the work.

Payment will be made under:

Relocate High Mast Light Standard ..... Each

**7.00 HIGH MAST LIGHT EMITTING DIODE (LED) LUMINAIRES**

**7.10 DESCRIPTION**

The work covered in this section involves removing existing high pressure sodium (HPS) luminaires on 120' high mast light standards and furnishing, installing and placing into satisfactory operation, light emitting diode (LED) luminaires meeting the specifications found below.

The Contractor shall supply Holophane or Cooper LED high mount luminaires as specified below or approved equal.

Mounting Height	# of Fixtures	Holophane Part Number	Cooper Part Number
120'	8	HMLED2124KAHGAW	GLEON-AE-10-LED-480-5WQ-AP-MA
100'	6	HMLED2124KAHGAW	GLEON-AE-10-LED-480-5WQ-AP-MA
80'	8	HMLED2064KAHGAW	GLEON-AE-6-LED-480-5WQ-AP-MA
60'	4	HMLED2064KAHGAW	GLEON-AE-6-LED-480-5WQ-AP-MA

Any alternate luminaire submitted for approval must meet the minimum requirements below. The Contractor shall supply the Department with current catalog cuts and 3<sup>rd</sup> party certified photometric data files in Illuminating Engineering Society (IES) format for any alternate high mount luminaire submitted for approval. The Department will thoroughly evaluate alternate luminaires to determine if proposed alternate high mount luminaire meets or exceeds design criteria.

The Contractor shall provide luminaires sized such that all luminaires will be able to properly fit on the existing tenon arms around the carrier ring, or shall supply new, longer tenon arms for mounting the new LED fixtures.

High mount luminaire retrofit LED kits are not an acceptable alternative.

## 7.20 MATERIALS

## 7.21 LUMINAIRE REQUIREMENTS

## A. General Requirements

- LM-79 photometric test reports shall be provided for all LED luminaires. LM-79 luminaire photometric reports shall be produced by an independent test laboratory and include the following:
  - Name of test laboratory. The test laboratory must hold National Voluntary Laboratory Accreditation Program (NVLAP) accreditation for the IES LM-79 test procedure or must be qualified, verified, and recognized through the U.S. Department of Energy's CALiPER program.
  - Report number
  - Date
  - Complete luminaire catalog number. Catalog number tested must match the catalog number of the luminaire submitted, except for variations which do not affect performance.
  - Description of luminaire, LED light source(s), and LED driver(s)
  - Goniophotometry
  - Colorimetry
- LM-80 lumen maintenance test report shall be provided for each respective LED light source.
- Luminaire shall be constructed of aluminum. Each luminaire shall be finished gray in color unless otherwise noted.
- The luminaire shall have a 5 pin ANSI C136.41 compliant photocontrol receptacle for future expansion capabilities. Provide shorting caps to cover photocontrol receptacle for all luminaires.
- Luminaires shall have a maximum lamp lumen depreciation (LLD) factor of 0.83 at 100,000 hours & 25°C. Provide a summary of reliability testing performed for LED driver.
- Luminaires maximum total power consumption shall not exceed the values shown in the plans. Nominal luminaire input wattage shall account for nominal applied voltage and any reduction in driver efficiency due to sub-optimal driver loading.
- Luminaire shall have a maximum Backlight, Uplight & Glare (BUG) rating of 5-0-5 and an IESNA distribution of Type V as required to meet the spacing, the average maintained footcandle level and the average to minimum uniformity ratio requirements shown on the plans. The same BUG rating and distribution type shall be used throughout the project.
- Luminaire LED modules shall meet dust and moisture rating of IP-66, minimum.
- Luminaire shall have an external label per ANSI C136.15.
- Luminaires shall have an internal label per ANSI C136.22.
- Luminaires shall start and operate in -20°C to +40°C ambient.
- Electrically test fully assembled luminaires before shipment from factory.

- Effective Projected Area (EPA) and weight of the luminaires shall not exceed 1.3 square feet and 65 lbs.
- Luminaires shall be designed for ease of electrical component replacement.
- Luminaires shall be rated for minimum 2G vibration, minimum, per ANSI C136.31-2010
- LED light sources and drivers shall be RoHS compliant.
- The luminaire manufacturer shall have no less than five (5) years of experience in manufacturing LED-based lighting products and the manufacturing facility must be ISO 9001 certified.
- 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.

#### B. Driver

- Shall be 0V-10V dimmable.
- Rated case temperature shall be suitable for operation in the luminaire operating in the ambient temperature range of -20°C to +40°C.
- Shall be rated for 480VAC at 50/60 Hz, and shall operate normally for input voltage fluctuations of  $\pm 10\%$ .
- Shall have a minimum Power Factor (PF) of 0.90 at full input power and across specified voltage range.

#### C. Surge Suppression

- Integral surge protection shall meet ANSI/IEEE C62.45 procedures based on ANSI/IEEE C62.41.2 definitions for standard and optional waveforms for location category C-High 10kV/10kA test, IEC 61000-4-2 (Electrostatic Discharge) 8kV Air/4kV Contact test and IEC 61000-4-4 (Fast Transients).

#### D. Electromagnetic interference

- Luminaires shall have a maximum Total Harmonic Distortion (THD) of 20% at full input power and across specified voltage range.
- Luminaires shall comply with FCC 47 CFR part 15 non-consumer RFI/EMI standards.

#### E. Electrical safety testing

- Luminaires shall be listed for wet locations.
- Luminaires shall be UL listed and labeled.

#### F. Finish

- Luminaires shall be painted with a corrosion resistant polyester powdered paint with a minimum 2.0 mil thickness.
- Luminaires shall exceed a rating of six per ASTM D1654 after 1000 hours of salt spray fog testing per ASTM B117.
- The coating shall exhibit no greater than 30% reduction of gloss per ASTM D523, after 500 hours of QUV testing at ASTM G154 Cycle 6.

## G. Thermal management

- Mechanical design of protruding external surfaces (heat sink fins) shall facilitate hose-down cleaning and discourage debris accumulation.

## H. Color Quality

- Minimum Color Rendering Index (CRI) of 70 with a Correlated Color Temperature (CCT) of 3500K to 4500K

## I. Optics

- Transmissive optical components shall be applied in accordance with OEM design guidelines to ensure suitability for the thermal/mechanical/chemical environment.

## J. The following shall be in accordance with corresponding sections of ANSI C136.37

- All internal components shall be assembled and pre-wired using modular electrical connections.
- Terminal blocks shall be used for incoming AC lines
- Latching and hinging

## K. Manufacturer or local sales representative shall provide installation and troubleshooting support via telephone and/or email.

## 7.30 WARRANTY

Provide a minimum five-year warranty covering maintained integrity and functionality of the luminaire housing, wiring, and connections, LED light source(s) and LED driver. Negligible light output from more than 10 percent of the LED packages constitutes luminaire failure.

Warranty period shall begin after project acceptance by the Department.

## 7.40 CONSTRUCTION METHODS

To lower the carrier ring of the high mast light standards, the portable drive unit may be obtained from the NCDOT Traffic Services Supervisor. Remove existing high mast luminaires and deliver the luminaires, in good condition, to the NCDOT Warehouse. Replace high mast luminaires with the appropriate luminaires shown in the plans and detailed in these Special Provisions.

Level and secure each luminaire in all directions. Securely terminate the wiring for each high mount luminaire and include an equipment grounding conductor to bond the housing to the supply cord grounding conductor.

Adjust any luminaires, as directed by the Engineer, to provide optimal illumination distribution.



All LED packages on all luminaires must be operating normally at contract completion. Any luminaire displaying improper operating characteristics prior to contract completion will be replaced by the Contractor at no additional cost to the Department.

7.50 MEASUREMENT AND PAYMENT

The quantity of replaced luminaires to be paid for will be the actual number and type which have been removed from the high mast light standards and delivered to the NCDOT Warehouse, in good condition, and accepted, and have been replaced and accepted with LED luminaires.

The high mount luminaires measured as provided above will be paid for at the contract unit price per each "(height) High Mount Luminaires – LED". Such price and payment will be considered full compensation for disassembly and delivery of the existing HPS luminaires, installation of the new LED high mount luminaire on the carrier ring tenon arm and connecting the LED high mount luminaire to the supply cord on the carrier ring.

Payment will be made under:

(height) High Mount Luminaire – LED ..... Each



DocuSign  
Paul Chan 11/3/2015  
F83C4985EEEF4A2...

County: Johnston

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
<b>ROADWAY ITEMS</b>						
0001	0000100000-N	800	MOBILIZATION	Lump Sum	L.S.	
0002	0000400000-N	801	CONSTRUCTION SURVEYING	Lump Sum	L.S.	
0003	0001000000-E	200	CLEARING & GRUBBING .. ACRE(S)	Lump Sum	L.S.	
0004	0008000000-E	200	SUPPLEMENTARY CLEARING & GRUB- BING	1 ACR		
0005	0022000000-E	225	UNCLASSIFIED EXCAVATION	17,200 CY		
0006	0030000000-N	SP	BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ***** (24+68.00 -L-)	Lump Sum	L.S.	
0007	0036000000-E	225	UNDERCUT EXCAVATION	1,000 CY		
0008	0106000000-E	230	BORROW EXCAVATION	48,000 CY		
0009	0134000000-E	240	DRAINAGE DITCH EXCAVATION	382 CY		
0010	0156000000-E	250	REMOVAL OF EXISTING ASPHALT PAVEMENT	7,710 SY		
0011	0163000000-E	250	REMOVAL OF EXISTING CONCRETE PAVEMENT	10,800 SY		
0012	0195000000-E	265	SELECT GRANULAR MATERIAL	1,000 CY		
0013	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZA- TION	5,600 SY		
0014	0199000000-E	SP	TEMPORARY SHORING	1,760 SF		
0015	0255000000-E	SP	GENERIC GRADING ITEM HAULING AND DISPOSAL OF PETRO- LEUM CONTAMINATED SOIL	100 TON		
0016	0318000000-E	300	FOUNDATION CONDITIONING MATE- RIAL, MINOR STRUCTURES	320 TON		
0017	0320000000-E	300	FOUNDATION CONDITIONING GEO- TEXTILE	990 SY		
0018	0342000000-E	310	*** SIDE DRAIN PIPE (30")	68 LF		

County: Johnston

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0019	0343000000-E	310	15" SIDE DRAIN PIPE	56 LF		
0020	0344000000-E	310	18" SIDE DRAIN PIPE	276 LF		
0021	0345000000-E	310	24" SIDE DRAIN PIPE	412 LF		
0022	0348000000-E	310	*** SIDE DRAIN PIPE ELBOWS (15")	2 EA		
0023	0348000000-E	310	*** SIDE DRAIN PIPE ELBOWS (18")	4 EA		
0024	0348000000-E	310	*** SIDE DRAIN PIPE ELBOWS (30")	2 EA		
0025	0448200000-E	310	15" RC PIPE CULVERTS, CLASS IV	300 LF		
0026	0448300000-E	310	18" RC PIPE CULVERTS, CLASS IV	1,276 LF		
0027	0588000000-E	310	18" CS PIPE CULVERTS, 0.064" THICK	76 LF		
0028	0636000000-E	310	*** CS PIPE ELBOWS, ***** THICK (18", 0.064")	2 EA		
0029	0973100000-E	330	*** WELDED STEEL PIPE, ***** THICK, GRADE B IN SOIL (18", 0.25")	285 LF		
0030	0973100000-E	330	*** WELDED STEEL PIPE, ***** THICK, GRADE B IN SOIL (24", 0.25")	75 LF		
0031	0973300000-E	330	*** WELDED STEEL PIPE, ***** THICK, GRADE B NOT IN SOIL (18", 0.25")	95 LF		
0032	0973300000-E	330	*** WELDED STEEL PIPE, ***** THICK, GRADE B NOT IN SOIL (24", 0.25")	25 LF		
0033	0995000000-E	340	PIPE REMOVAL	342 LF		
0034	1011000000-N	500	FINE GRADING	Lump Sum	L.S.	
0035	1077000000-E	SP	#57 STONE	3 TON		

County : Johnston

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0036	1099500000-E	505	SHALLOW UNDERCUT	1,500 CY		
0037	1099700000-E	505	CLASS IV SUBGRADE STABILIZATION	3,000 TON		
0038	1110000000-E	510	STABILIZER AGGREGATE	250 TON		
0039	1220000000-E	545	INCIDENTAL STONE BASE	2,500 TON		
0040	1297000000-E	607	MILLING ASPHALT PAVEMENT, **** DEPTH (3/4")	9,200 SY		
0041	1330000000-E	607	INCIDENTAL MILLING	2,230 SY		
0042	1489000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0B	2,190 TON		
0043	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	8,030 TON		
0044	1503000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	3,380 TON		
0045	1508000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0D	1,990 TON		
0046	1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	2,500 TON		
0047	1524200000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5D	1,570 TON		
0048	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	850 TON		
0049	1577000000-E	620	POLYMER MODIFIED ASPHALT BINDER FOR PLANT MIX	145 TON		
0050	1663000000-E	650	OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-2 MODIFIED	850 TON		
0051	1840000000-E	665	MILLED RUMBLE STRIPS (ASPHALT CONCRETE)	7,400 LF		
0052	1847000000-E	710	***** PORT CEM CONC PAVEMENT, THROUGH LANES (WITH DOWELS) (11")	9,400 SY		

County: Johnston

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0053	1881000000-E	SP	GENERIC PAVING ITEM MILLED RUMBLE STRIPS (CONCRETE SHOULDER)	2,250 LF		
0054	1902000000-N	710	SURFACE TESTING CONCRETE PAVE- MENT	Lump Sum	L.S.	
0055	1924000000-N	725	FIELD LABORATORY RENTAL, PORT CEM CONC PAVEMENT	Lump Sum	L.S.	
0056	2000000000-N	806	RIGHT OF WAY MARKERS	19 EA		
0057	2022000000-E	815	SUBDRAIN EXCAVATION	179.2 CY		
0058	2033000000-E	815	SUBDRAIN FINE AGGREGATE	134.4 CY		
0059	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	800 LF		
0060	2070000000-N	815	SUBDRAIN PIPE OUTLET	2 EA		
0061	2077000000-E	815	6" OUTLET PIPE	12 LF		
0062	2209000000-E	838	ENDWALLS	2.3 CY		
0063	2275000000-E	SP	FLOWABLE FILL	8 CY		
0064	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	22 EA		
0065	2308000000-E	840	MASONRY DRAINAGE STRUCTURES	4.5 LF		
0066	2354000000-N	840	FRAME WITH GRATE, STD 840.22	4 EA		
0067	2364200000-N	840	FRAME WITH TWO GRATES, STD 840.20	12 EA		
0068	2365000000-N	840	FRAME WITH TWO GRATES, STD 840.22	9 EA		
0069	2396000000-N	840	FRAME WITH COVER, STD 840.54	1 EA		
0070	2556000000-E	846	SHOULDER BERM GUTTER	1,620 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0071	2995000000-N	SP	GENERIC DRAINAGE ITEM CONVERT EXT TRAFFIC BEARING JUNCTION BOX TO TRAFFIC BEARING DROP INLET	2 EA		
0072	3000000000-N	SP	IMPACT ATTENUATOR UNIT, TYPE 350	2 EA		
0073	3030000000-E	862	STEEL BM GUARDRAIL	6,600 LF		
0074	3060000000-E	862	STEEL BM GUARDRAIL, DOUBLE FACED	725 LF		
0075	3105000000-N	862	STEEL BM GUARDRAIL TERMINAL SECTIONS	2 EA		
0076	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	10 EA		
0077	3210000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE CAT-1	4 EA		
0078	3270000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE 350	6 EA		
0079	3285000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE M-350	1 EA		
0080	3317000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE B-77	4 EA		
0081	3360000000-E	863	REMOVE EXISTING GUARDRAIL	5,750 LF		
0082	3380000000-E	862	TEMPORARY STEEL BM GUARDRAIL	2,450 LF		
0083	3387000000-N	862	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ***** (CAT-1)	1 EA		
0084	3387000000-N	862	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ***** (FOR PCB)	2 EA		
0085	3389100000-N	SP	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE 350	1 EA		
0086	3503000000-E	866	WOVEN WIRE FENCE, 47" FABRIC	3,160 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0087	3509000000-E	866	4" TIMBER FENCE POSTS, 7'-6" LONG	180	EA	
0088	3515000000-E	866	5" TIMBER FENCE POSTS, 8'-0" LONG	90	EA	
0089	3628000000-E	876	RIP RAP, CLASS I	180	TON	
0090	3649000000-E	876	RIP RAP, CLASS B	110	TON	
0091	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	3,675	SY	
0092	4048000000-E	902	REINFORCED CONCRETE SIGN FOUNDATIONS	7	CY	
0093	4054000000-E	902	PLAIN CONCRETE SIGN FOUNDATIONS	1	CY	
0094	4060000000-E	903	SUPPORTS, BREAKAWAY STEEL BEAM	1,543	LB	
0095	4066000000-E	903	SUPPORTS, SIMPLE STEEL BEAM	2,965	LB	
0096	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	205	LF	
0097	4078000000-E	903	SUPPORTS, 2-LB STEEL U-CHANNEL	2	EA	
0098	4096000000-N	904	SIGN ERECTION, TYPE D	4	EA	
0099	4102000000-N	904	SIGN ERECTION, TYPE E	5	EA	
0100	4108000000-N	904	SIGN ERECTION, TYPE F	1	EA	
0101	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)	2	EA	
0102	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)	1	EA	
0103	4114000000-N	904	SIGN ERECTION, MILEMARKERS	2	EA	
0104	4116100000-N	904	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (A)	3	EA	

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0105	4138000000-N	907	DISPOSAL OF SUPPORT, STEEL BEAM	6 EA		
0106	4152000000-N	907	DISPOSAL OF SIGN SYSTEM, STEEL BEAM	2 EA		
0107	4155000000-N	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	14 EA		
0108	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	2,022 SF		
0109	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	1,366 SF		
0110	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	306 SF		
0111	4415000000-N	1115	FLASHING ARROW BOARD	4 EA		
0112	4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	8 EA		
0113	4430000000-N	1130	DRUMS	1,012 EA		
0114	4435000000-N	1135	CONES	100 EA		
0115	4445000000-E	1145	BARRICADES (TYPE III)	240 LF		
0116	4450000000-N	1150	FLAGGER	96 HR		
0117	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	5 EA		
0118	4470000000-N	1160	RESET TEMPORARY CRASH CUSHION	9 EA		
0119	4480000000-N	1165	TMA	2 EA		
0120	4485000000-E	1170	PORTABLE CONCRETE BARRIER	4,840 LF		
0121	4490000000-E	1170	PORTABLE CONCRETE BARRIER (ANCHORED)	1,820 LF		
0122	4500000000-E	1170	RESET PORTABLE CONCRETE BARRIER	7,280 LF		
0123	4510000000-N	SP	LAW ENFORCEMENT	40 HR		



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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0124	4516000000-N	1180	SKINNY DRUM	300 EA		
0125	4650000000-N	1251	TEMPORARY RAISED PAVEMENT MARKERS	544 EA		
0126	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	4 EA		
0127	4845000000-N	1205	PAINT PAVEMENT MARKING SYMBOL	6 EA		
0128	4847000000-E	1205	POLYUREA PAVEMENT MARKING LINES (4", *****) (HIGHLY REFLECTIVE ELEMENTS)	3,260 LF		
0129	4847100000-E	1205	POLYUREA PAVEMENT MARKING LINES (6", *****) (HIGHLY REFLECTIVE ELEMENTS)	20,155 LF		
0130	4847120000-E	1205	POLYUREA PAVEMENT MARKING LINES (12", *****) (HIGHLY REFLECTIVE ELEMENTS)	766 LF		
0131	4855000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (6")	15,770 LF		
0132	4865000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (12")	410 LF		
0133	4890000000-E	SP	GENERIC PAVEMENT MARKING ITEM WORK ZONE "PERFORMANCE" PAVEMENT MARKING LINES, 12"	1,650 LF		
0134	4890000000-E	SP	GENERIC PAVEMENT MARKING ITEM WORK ZONE "PERFORMANCE" PAVEMENT MARKING LINES, 6"	40,050 LF		
0135	4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS	18 EA		
0136	4905000000-N	1253	SNOWPLOWABLE PAVEMENT MARKERS	172 EA		
0137	5255000000-N	1413	PORTABLE LIGHTING	Lump Sum	L.S.	
0138	6000000000-E	1605	TEMPORARY SILT FENCE	5,000 LF		
0139	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	435 TON		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0140	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	570 TON		
0141	6012000000-E	1610	SEDIMENT CONTROL STONE	1,550 TON		
0142	6015000000-E	1615	TEMPORARY MULCHING	15 ACR		
0143	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	1,000 LB		
0144	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEED- ING	6 TON		
0145	6024000000-E	1622	TEMPORARY SLOPE DRAINS	1,275 LF		
0146	6029000000-E	SP	SAFETY FENCE	400 LF		
0147	6030000000-E	1630	SILT EXCAVATION	1,500 CY		
0148	6036000000-E	1631	MATTING FOR EROSION CONTROL	4,300 SY		
0149	6037000000-E	SP	COIR FIBER MAT	2,500 SY		
0150	6038000000-E	SP	PERMANENT SOIL REINFORCEMENT MAT	90 SY		
0151	6042000000-E	1632	1/4" HARDWARE CLOTH	1,050 LF		
0152	6043000000-E	SP	LOW PERMEABILITY GEOTEXTILE	25 SY		
0153	6048000000-E	SP	FLOATING TURBIDITY CURTAIN	100 SY		
0154	6070000000-N	1639	SPECIAL STILLING BASINS	40 EA		
0155	6071010000-E	SP	WATTLE	300 LF		
0156	6071012000-E	SP	COIR FIBER WATTLE	60 LF		
0157	6071020000-E	SP	POLYACRYLAMIDE (PAM)	90 LB		
0158	6071030000-E	1640	COIR FIBER BAFFLE	275 LF		
0159	6071050000-E	SP	*** SKIMMER (1-1/2")	1 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0160	6084000000-E	1660	SEEDING & MULCHING	17 ACR		
0161	6087000000-E	1660	MOWING	8.5 ACR		
0162	6090000000-E	1661	SEED FOR REPAIR SEEDING	200 LB		
0163	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	0.5 TON		
0164	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	375 LB		
0165	6108000000-E	1665	FERTILIZER TOPDRESSING	11 TON		
0166	6114500000-N	1667	SPECIALIZED HAND MOWING	10 MHR		
0167	6117000000-N	SP	RESPONSE FOR EROSION CONTROL	25 EA		
0168	6123000000-E	1670	REFORESTATION	0.5 ACR		
0169	6132000000-N	SP	GENERIC EROSION CONTROL ITEM CONCRETE WASHOUT STRUCTURE	6 EA		
0170	7060000000-E	1705	SIGNAL CABLE	650 LF		
0171	7120000000-E	1705	VEHICLE SIGNAL HEAD (12", 3 SECTION)	8 EA		
0172	7264000000-E	1710	MESSENGER CABLE (3/8")	375 LF		
0173	7300100000-E	1715	UNPAVED TRENCHING FOR TEMP- ORARY LEAD-IN	1,070 LF		
0174	7360000000-N	1720	WOOD POLE	4 EA		
0175	7372000000-N	1721	GUY ASSEMBLY	8 EA		
0176	7408000000-E	1722	1" RISER WITH WEATHERHEAD	1 EA		
0177	7420000000-E	1722	2" RISER WITH WEATHERHEAD	5 EA		
0178	7444000000-E	1725	INDUCTIVE LOOP SAWCUT	500 LF		
0179	7456000000-E	1726	LEAD-IN CABLE (***** (14-2)	2,175 LF		

County: Johnston

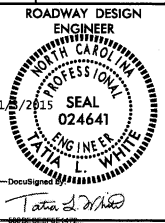
Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0180	7636000000-N	1745	SIGN FOR SIGNALS	4 EA		
0181	7768000000-N	1751	CONTROLLER WITH CABINET (TYPE 2070L, POLE MOUNTED)	1 EA		
0182	7780000000-N	1751	DETECTOR CARD (TYPE 2070L)	5 EA		
0206	5025000000-E	SP	HIGH MOUNT FOUNDATIONS	11 CY		
0207	5205000000-E	1410	** #8 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1.5")	50 LF		
0208	5270000000-N	SP	GENERIC LIGHTING ITEM 120' HIGH MOUNT LUMINARE - LED	32 EA		
0209	5270000000-N	SP	GENERIC LIGHTING ITEM ELECTRIC JUNCTION BOX PC18	1 EA		
0210	5270000000-N	SP	GENERIC LIGHTING ITEM RELOCATE HIGH MAST LIGHT STANDARD	1 EA		

**STRUCTURE ITEMS**

0183	8017000000-N	SP	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ***** (24+68.00 -L-)	Lump Sum	L.S.	
0184	8042000000-N	402	REMOVAL OF EXISTING STRUCTURES AT STATION ***** (24+68.00 -L-)	Lump Sum	L.S.	
0185	8108000000-E	411	***.*** DIA DRILLED PIERS (4'-0")	551.4 LF		
0186	8111600000-E	411	PERMANENT STEEL CASING FOR 4'-0" DIA DRILLED PIER	120.5 LF		
0187	8113000000-N	411	SID INSPECTIONS	2 EA		
0188	8114000000-N	411	SPT TESTING	10 EA		
0189	8115000000-N	411	CSL TESTING	4 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0190	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ***** (24+68.00 -L-)	Lump Sum	L.S.	
0191	8147000000-E	420	REINFORCED CONCRETE DECK SLAB	45,807 SF		
0192	8161000000-E	420	GROOVING BRIDGE FLOORS	53,414 SF		
0193	8182000000-E	420	CLASS A CONCRETE (BRIDGE)	692.5 CY		
0194	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ***** (24+68.00 -L-)	Lump Sum	L.S.	
0195	8217000000-E	425	REINFORCING STEEL (BRIDGE)	170,814 LB		
0196	8238000000-E	425	SPIRAL COLUMN REINFORCING STEEL (BRIDGE)	23,302 LB		
0197	8265000000-E	430	54" PRESTRESSED CONCRETE GIRDERS	5,082.5 LF		
0198	8364000000-E	450	HP12X53 STEEL PILES	1,220 LF		
0199	8503000000-E	460	CONCRETE BARRIER RAIL	582.19 LF		
0200	8510000000-E	460	CONCRETE MEDIAN BARRIER	291.34 LF		
0201	8608000000-E	876	RIP RAP CLASS II (2'-0" THICK)	1,524 TON		
0202	8622000000-E	876	GEOTEXTILE FOR DRAINAGE	1,694 SY		
0203	8657000000-N	430	ELASTOMERIC BEARINGS	Lump Sum	L.S.	
0204	8706000000-N	SP	EXPANSION JOINT SEALS	Lump Sum	L.S.	
0205	8860000000-N	SP	GENERIC STRUCTURE ITEM APPLICATION OF BRIDGE COATING	Lump Sum	L.S.	



# INDEX OF SHEETS

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1B	CONVENTIONAL SYMBOLS
1C-1 THROUGH 1C-2	SURVEY CONTROL SHEETS
2A-1 THROUGH 2A-3	TYPICAL SECTIONS, PAVEMENT SCHEDULE, AND WEDGING DETAILS
2B-1 THROUGH 2B-3	DETAIL OF ON-SITE DETOURS
2B-4 THROUGH 2B-5	DETAIL OF OFF-SITE DETOURS
2B-6 THROUGH 2B-7	DETAIL OF TEMPORARY SHORING LOCATIONS
2C-1	DETAIL OF COAL COMBUSTION PRODUCT PLACEMENT
2C-2	DETAIL OF CONVERTING EXISTING TBJB TO TB2-GI
2C-3	DETAIL OF TEMPORARY ANCHOR UNIT FOR PCB
2C-4	DETAIL OF SPECIAL 3GI
2C-5	DETAIL OF STRUCTURE ANCHOR UNIT, TYPE B-77
2G-1 THROUGH 2G-4	DETAILS OF TEMPORARY SHORING
2H-1	DETAIL OF STOCKPILE CONTAINMENT
3B-1	SUMMARY OF ASPHALT PAVEMENT REMOVAL, SUMMARY OF CONCRETE PAVEMENT REMOVAL, SUMMARY OF SHOULDER BERM GUTTER AND SUMMARY OF WOVEN WIRE FENCE
3B-2	SUMMARY OF GUARDRAIL
3B-3	SUMMARY OF EARTHWORK
3D-1 THROUGH 3D-2	SUMMARY OF DRAINAGE QUANTITIES
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3P-1	PARCEL INDEX
4 THROUGH 6	PLAN SHEETS
7 THROUGH 11	PROFILE SHEETS
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# GENERAL NOTES

2012 SPECIFICATIONS  
EFFECTIVE: 01-17-2012  
REVISED: 10-31-2014

**GRADING AND SURFACING OR RESURFACING AND WIDENING:**  
THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

**CLEARING:**  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

**SUPERELEVATION:**  
ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 OR STD. NO. 225.05 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

**SHOULDER CONSTRUCTION:**  
ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01 OR STD. NO. 560.02

**SIDE ROADS:**  
THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

**UNDERDRAINS:**  
UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

**GUARDRAIL:**  
THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

**TEMPORARY SHORING:**  
SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

**END BENTS:**  
THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

**UTILITIES:**  
UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY PROGRESS. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

**RIGHT-OF-WAY MARKERS:**  
ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

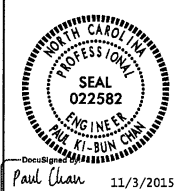
# STANDARD DRAWINGS

2012 ROADWAY ENGLISH STANDARD DRAWINGS  
EFF. 01-17-2012  
REV. 10-30-2012

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
<b>DIVISION 2 - EARTHWORK</b>	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation
<b>DIVISION 4 - MAJOR STRUCTURES</b>	
422.11	Reinforced Bridge Approach Fills - Sub Regional Tier
<b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b>	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II (Sheet 2 of 3 is no longer applicable)
<b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>	
665.01	Asphalt Shoulders - Milled Rumble Strips
<b>DIVISION 7 - CONCRETE PAVEMENTS AND SHOULDERS</b>	
700.01	Concrete Pavement Joints - Construction and Contraction Joints
700.02	Expansion Joint Layout - for Rigid Doweled Pavement at Bridges
700.03	Dowel Assembly
700.04	Concrete Pavement Header Board
700.05	Tying Proposed Pavement to Existing
720.01	Concrete Shoulders - Stamped or Rolled Rumble Strips, Milled Rumble Strips
<b>DIVISION 8 - INCIDENTALS</b>	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
854.04	Concrete Median Barrier - Precast Permanent
862.01	Guardrail Placement
862.02	Guardrail Installation
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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# PLANS AND DETAILS FOR PROPOSED LIGHTING /ELECTRICAL CONSTRUCTION

## NOTES

- 1 INSTALL ALL BORE PITS OUTSIDE THE CLEAR ZONE, AS DEFINED BY THE 2011 AASHTO ROADSIDE DESIGN GUIDE OR AS DIRECTED BY THE ENGINEER.
- 2 LOCATE ALL JUNCTION BOXES OUTSIDE CLEAR ZONE AND IN AN AREA UNLIKELY TO BE USED BY TRAFFIC.
- 3 INSTALL RIGID GALVANIZED CONDUIT (RGC) ABOVE GROUND, AND POLYVINYL CHLORIDE (PVC) SCHEDULE 40 CONDUIT UNDERGROUND, EXCEPT AS MODIFIED ON THESE PLANSHEETS OR IN APPLICABLE SECTIONS OF THE ROADWAY STANDARD DRAWINGS FOR THIS PROJECT.
- 4 TYPE PC18 JUNCTION BOXES ARE 18" L X 12" W X 18" H. UNLESS OTHERWISE NOTED ON THE PLANS, ALL JUNCTION BOXES ARE TO BE TYPE PC18
- 5 RELOCATE EXISTING HIGH MAST HM1 AS SHOWN. ABANDON OR REMOVE POLE FOUNDATION. REMOVE AND DISPOSE OF EXISTING JUNCTION BOX JB4. INSTALL NEW JUNCTION BOX JB11 WITHIN 10' OF FOUNDATION OF RELOCATED HM1 AND INTERCEPT EXISTING CIRCUITRY. INSTALL NEW CONDUCTOR FROM JB11 TO RELOCATED HM1.
- 6 ORIGINAL LIGHTING PLANS GENERATED FROM TIP PROJECT I-3605.
- 7 ENSURE THAT LED LUMINAIRES WILL BE ABLE TO BE PROPERLY MOUNTED ON THE EXISTING 24" TENON ARMS ON THE HIGH MAST CARRIER RING. PROVIDE LONGER TENON ARMS IF REQUIRED.

## SCOPE OF WORK

RENOVATE EXISTING ROADWAY LIGHTING SYSTEM BY REPLACING ALL HIGH PRESSURE SODIUM (HPS) HIGH MAST LUMINAIRES WITH LIGHT EMITTING DIODE LUMINAIRES (LED) HIGH MAST LUMINAIRES. ALSO RELOCATE HIGH MAST POLE, REMOVE FEEDER CIRCUIT CONDUCTORS IN CONFLICT WITH CONSTRUCTION AND INSTALL NEW JUNCTION BOX.

## DESIGN CRITERIA

- 0.8 AVERAGE FOOTCANDLE ON TRAVEL LANES
- 4:1 AVERAGE TO MINIMUM UNIFORMITY RATIO ON TRAVEL LANES
- 2005 AASHTO ROADWAY LIGHTING DESIGN GUIDE
- 2014 NATIONAL ELECTRICAL CODE
- 2011 AASHTO ROADSIDE DESIGN GUIDE

## ROADWAY STANDARDS

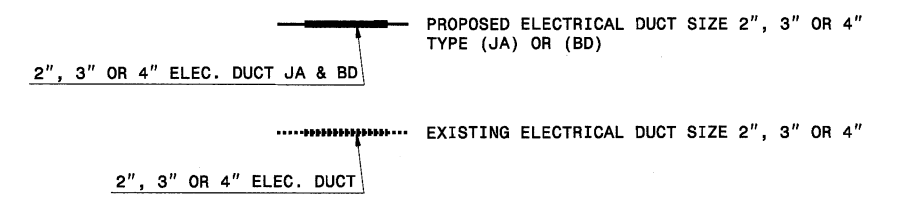
THE FOLLOWING ROADWAY ENGLISH STANDARDS AS APPEAR IN "NCDOT ROADWAY STANDARD DRAWINGS", ROADWAY DESIGN UNIT-N.C. DEPARTMENT OF TRANSPORTATION RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD NO.	TITLE
1410.01	FEEDER CIRCUITS
1411.01	ELECTRICAL JUNCTION BOXES

ALL WORK SHALL BE IN CONFORMANCE WITH DIVISION 14 OF THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, DATED JANUARY 2012.

## LEGEND

- EXISTING 120' HIGH MAST STANDARD. RELOCATE AS SHOWN. ABANDON OR REMOVE RELOCATED POLE FOUNDATION. REMOVE LUMINAIRES ON ALL POLES AND REPLACE WITH 550W MAXIMUM, 53,000 MINIMUM DELIVERED LUMENS, TYPE V LED LUMINAIRES. MAXIMUM BUG RATING 5-0-5.
- EXISTING CONTROL SYSTEM. NO CHANGE REQUIRED.
- EXISTING ELECTRICAL JUNCTION BOX. NO CHANGE REQUIRED UNLESS OTHERWISE NOTED ON THE PLANS.
- PROPOSED ELECTRICAL JUNCTION BOX SEE DETAILS & TABLE B, THIS SHEET
- REFERENCE TO CORRESPONDING NOTE AS NUMBERED
- PROPOSED FEEDER CIRCUIT CONTROL SYSTEM(A), CIRCUIT(1) PLAN SYMBOL (6) SEE TABLE A, THIS SHEET
- EXISTING FEEDER CIRCUIT CONTROL SYSTEM(A), CIRCUIT(1)



PLAN SYMBOL	DESCRIPTION	CONTRACT ITEM
8	2 #8 Ø 1 #10G 1.5" P	2 AWG SIZE 8 CONDUCTOR (BK & RD) 1 AWG SIZE 10 GROUNDING CONDUCTOR 1.5" PVC CONDUIT
*8	2 #8 Ø 1 #10G	2 AWG SIZE 8 CONDUCTOR (BK & RD) 1 AWG SIZE 10 GROUNDING CONDUCTOR

NUMBER	LOCATION	TYPE	SHEET
JB1	EXISTING	PC18	E2
JB2	EXISTING	PC18	E2
JB3	EXISTING	PC18	E2
JB4	EXISTING - TO BE REMOVED	PC18	E2
JB5	EXISTING	PC18	E2
JB6	EXISTING	PC18	E2
JB7	EXISTING	PC18	E2
JB8	EXISTING	PC18	E2
JB9	EXISTING	PC18	E2
JB10	EXISTING	PC18	E2
JB11	-LRPA- STA. 15+10 38' LT	PC18	E2
TOTALS		1	

BD	BURIED	PVC	PVC SCHEDULE 40 CONDUIT
LT	LIGHT	RGC	RIGID GALVANIZED STEEL CONDUIT
JA	JACKED	C	CONDUIT
MH	MOUNTING HEIGHT	CKT	CIRCUIT
Ø	PHASE	N	NEUTRAL
SER	SERVICE LATERAL	G	GROUND
ABN	ABANDON OR REMOVE	HM	HIGH MAST

COMPUTED BY: RGH DATE: 11/3/15  
 CHECKED BY: PL DATE: 11/3/2015

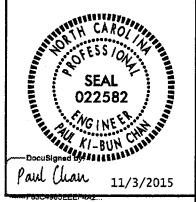
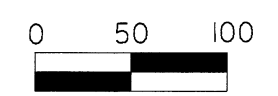
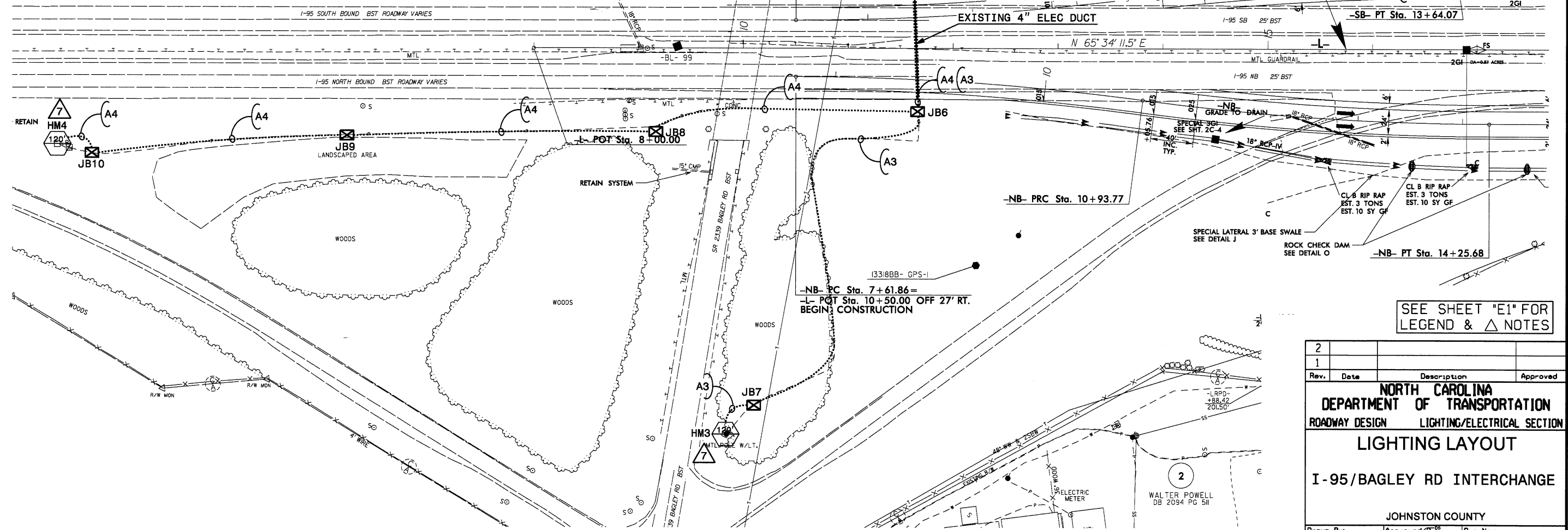
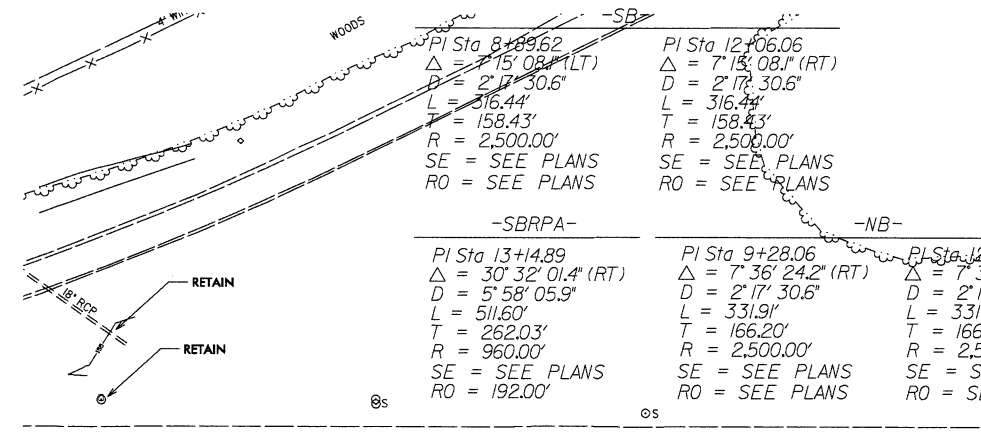
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USE FOR LIGHTING CONSTRUCTION ONLY

LOAD SCHEDULE INSIDE QUADRANT A					CONTROL SYSTEM "A"		
BEFORE PROPOSED WORK					AFTER PROPOSED WORK		
CIRCUIT ID	120' HIGH MAST W/ 8 750W HPS LUMINAIRES	AMPS @ 480V	KW LOAD	BREAKER SIZE (AMPS)	120' HIGH MAST W/ 8 550W MAX. LED LUMINAIRES	AMPS @ 480V	KW LOAD
A1	HM1	14.2	6.8	20	HM1	9.2	4.4
A2	HM2	14.2	6.8	20	HM2	9.2	4.4
A3	HM3	14.2	6.8	20	HM3	9.2	4.4
A4	HM4	14.2	6.8	20	HM4	9.2	4.4
TOTAL		56.8	27.2			36.8	17.6

\*NO CHANGES REQUIRED TO EXISTING BREAKER SIZES.

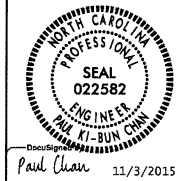


SEE SHEET "E1" FOR LEGEND & Δ NOTES

2			
1			
Rev.	Date	Description	Approved
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION <b>LIGHTING LAYOUT</b> I-95/BAGLEY RD INTERCHANGE JOHNSTON COUNTY			
Drawn By:	RGH	Approved By:	[Signature]
Dwg No.:			

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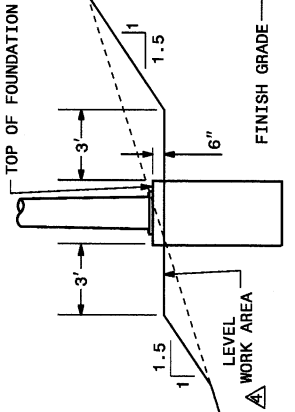
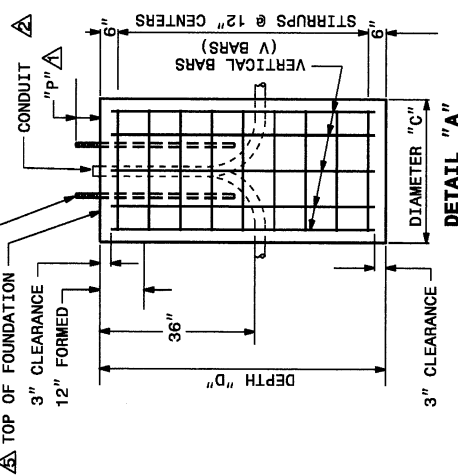
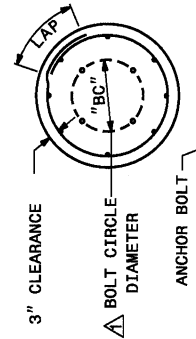
Paul Chan 11/3/2015

STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

TABLE OF FOUNDATION DIMENSIONS AND QUANTITIES

HEIGHT OF HIGH MOUNT FT	STIRRUPS		WIND VELOCITY MPH														
	DIAMETER "C" FT	SIZE	90					110					130				
			DEPTH "D" FT	V BARS QTY	SIZE	REINF. STEEL LBS	CONCRETE CY	DEPTH "D" FT	V BARS QTY	SIZE	REINF. STEEL LBS	CONCRETE CY	DEPTH "D" FT	V BARS QTY	SIZE	REINF. STEEL LBS	CONCRETE CY
60	3.5	#3	11	8	#8	280	3.9	12	8	#8	306	4.3	13	8	#8	331	4.6
80	3.5	#3	12	8	#8	306	4.3	13	8	#8	331	4.6	15	8	#8	382	5.3
100	4.0	#3	13	8	#9	413	6.1	15	8	#9	477	7.0	16	8	#9	509	7.4
120	4.5	#3	15	8	#10	557	8.2	16	8	#10	636	9.4	18	8	#10	716	10.6

\* INCLUDES STIRRUPS AND VERTICAL BARS (V BARS)



DETAIL "B"

NOTES

- ANCHOR BOLTS: CONFORM NUMBER, SIZE, AND LENGTH OF ANCHOR BOLTS, BOLT CIRCLE DIAMETER "BC", AND ANCHOR BOLT PROJECTION "P" TO APPROVED HIGH MOUNT STANDARD DRAWINGS.
- CONDUITS: MATCH ORIENTATION, QUANTITY, TYPE, AND SIZE OF CONDUITS TO THE LAYOUT SHEETS. STUB AND CAP ONE SPARE CONDUIT AT EACH FOUNDATION. PROJECT CONDUIT A MAXIMUM OF 2" ABOVE TOP OF FOUNDATION. PLACE CONDUIT 30" BENEATH FINISH GRADE. INCLUDE 3/4" CONDUIT FOR GROUNDING ELECTRODE CONDUCTOR TO GROUND ROD AT HIGH MAST FOUNDATION.
- DIMENSIONS & QUANTITIES: DIMENSIONS AND QUANTITIES OF CONCRETE AND REINFORCING STEEL ARE GIVEN FOR THE PURPOSE OF OBTAINING BID PRICES ONLY. SEE PROJECT SPECIAL PROVISIONS FOR OTHER STRUCTURAL REQUIREMENTS.
- WORK AREA: PROVIDE A LEVEL WORK AREA AROUND EACH FOUNDATION. CUT/FILL SLOPES MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.
- ELEVATION: SET TOP OF FOUNDATION AT 6" ABOVE LEVEL WORK AREA. SEE DETAIL "B".
- GUARDRAIL: WHERE GUARDRAIL IS REQUIRED TO BE INSTALLED AS PART OF LIGHTING WORK, SET GUARDRAIL NO MORE THAN 6' FROM CENTER OF HIGH MAST FOUNDATION.

SHEET 1 OF 1  
 1402D01

ENGLISH STANDARD DRAWING FOR  
 HIGH MOUNT FOUNDATION

STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR  
 HIGH MOUNT FOUNDATION

SHEET 1 OF 1  
 1402D01

STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

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ENGLISH STANDARD DRAWING FOR  
 HIGH MOUNT LED LUMINAIRES

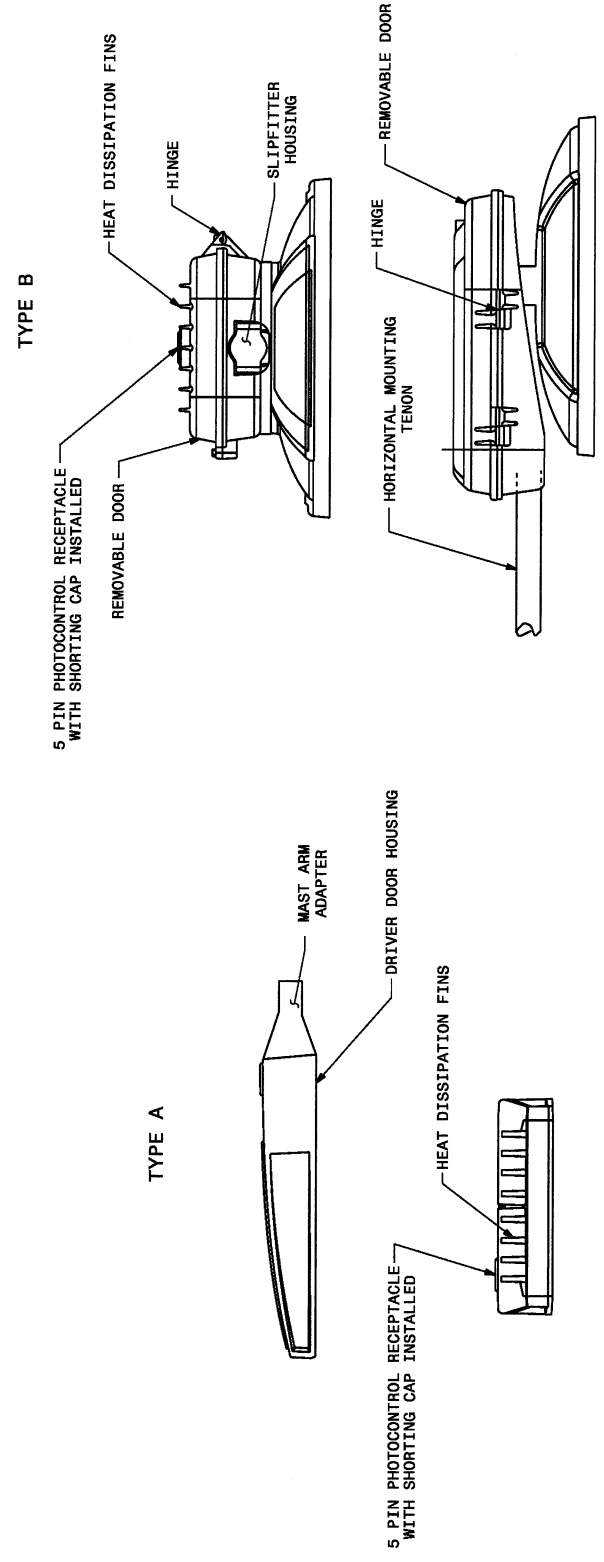
STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

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ENGLISH STANDARD DRAWING FOR  
 HIGH MOUNT LED LUMINAIRES

SHEET 1 OF 1  
 1403D01

TYPICAL CONFIGURATION TYPES



LED LUMEN PACKAGES

MOUNTING HEIGHT	# OF LUMINAIRES	MAXIMUM LUMINAIRE WATTAGE	MINIMUM LUMINAIRE DELIVERED LUMENS	MAXIMUM LAMP LUMEN MAINTENANCE FACTOR (100K HOURS & 25° C)	COLOR TEMP.
60'	4	320	30,000	0.83	4,000K
80'	8	320	30,000	0.83	4,000K
100'	6	550	53,000	0.83	4,000K
120'	8	550	53,000	0.83	4,000K

NOTES

- SEE PLANS FOR IES DISTRIBUTION
- ENSURE THAT LED LUMINAIRES WILL BE ABLE TO BE PROPERLY MOUNTED ON THE EXISTING 24" TENON ARMS ON THE HIGH MAST CARRIER RING. PROVIDE LONGER TENON ARMS IF REQUIRED.

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Rev.	Date	Description	Approved

NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION

HIGH MOUNT FOUNDATION  
 AND HIGH MOUNT LED  
 LUMINAIRE DETAILS  
 I-95/SR2339 INTERCHANGE  
 JOHNSTON COUNTY

Drawn By: RGH Approved By: [Signature] Dwg No.: