STATE OF NORTH CAROLINA
# DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

May 8, 2002

**Addendum No. 1**

RE: State Project: 6.052001R
Dare County
US-158 In Nags Head
And Kitty Hawk.

**MAY 21, 2002 Letting**

To Whom It May Concern:

Reference is made to the proposal form recently furnished to you on the above project.

The following revisions have been made to the proposal form:

On page no. 6, the project special provision entitled "Blankout Sign Plan Change" has been added. Please void page no. 6 in your proposal and staple the revised page no. 6 thereto.

Page nos. 17 and 19 thru 22 are being revised to change from "Fiber Optic" Blankout Signs to "LED" Blankout Signs. New page no. 19-A is being added. Please void page nos. 17 and 19 thru 22 in your proposal and staple revised page nos. 17 and 19 thru 22 and new page no.19-A thereto.

The Table of Contents has been revised to reflect the above noted changes. Please void the Table of Contents in your proposal and staple the revised Table of Contents thereto.

On page 1 of the item sheets, the quantity for line item no. "11-7216000000-N-SP Modify Existing Vehicle Signal Head" has been revised. Please draw a single line thru "87" and insert "120" and initial same in ink (Sample Attached).

**MAILING ADDRESS:**
NC DEPARTMENT OF TRANSPORTATION
CONTRACTS & PROPOSALS
1591 MAIL SERVICE CENTER
RALEIGH NC 27699-1591

TELEPHONE: 919-250-4124
FAX: 919-250-4127

*WEBSITE: WWW.DOH.DOT.STATE.NC.US*

**LOCATION:**
CENTURY CENTER COMPLEX
BUILDING B - ENTRANCE B15
1020 BIRCH RIDGE DRIVE
RALEIGH NC

On page 2 of the item sheets, line item no. "28-7660000000-N-SP Fiber Optic Blankout Sign" has been revised to "28-7675000000-N-SP LED Blankout Sign". Also the quantity for this line item has changed. Please draw a single line thru "7660", "Fiber Optic" and "36" and insert "7675", "LED" and "3" respectively and initial same in ink (Sample Attached).

We are sending revised diskettes to those bidders who requested a diskette when ordering proposals for the above referenced project. Please destroy the diskette previously furnished and replace with diskette dated May 8, 2002.

Sincerely,

R. A. Garris, P.E.
Contract Officer

RAG/jag/pa
(Attachments)

cc: Mr. J. D. Goins, P.E.
Mr. S. D. DeWitt, P.E.
Mr. D. R. Conner, P.E. (2)
Ms. D. M. Barbour, P.E
Mr. J. V. Barbour, P.E.
Mr. R. E. Mullinax, P.E.
Mr. R. E. Davenport, Jr., P.E
Ms. Kim Canady
Ms. Yang-Ju-Lin
Project File (2)

Revised 5-8-02

PROJECT: 6.052001R
DARE COUNTY

TABLE OF CONTENTS

1. Soil, sand, gravel, compost, peat, humus, muck, and decomposed manure, separately or with other articles. This includes movement of articles listed above that may be associated with cut/waste, ditch pulling, and shoulder cutting.

2. Plants with roots including grass sod.

3. Plant crowns and roots.

4. Bulbs, corms, rhizomes, and tubers of ornamental plants.

5. Hay, straw, fodder, and plant litter of any kind.

6. Clearing and grubbing debris.

7. Used agricultural cultivating and harvesting equipment.

8. Used earth-moving equipment.

9. Any other products, articles, or means of conveyance, of any character, if determined by an inspector to present a hazard of spreading witchweed, imported fire ant or other noxious weeds.

SP1G130

**SAFETY VESTS:** **6-19-01**

All Contractors' personnel, all subcontractors and their personnel, and any material suppliers and their personnel must wear an OSHA approved reflective vest or outer garment at all times while on the project.

SP1G139

**BLANKOUT SIGN PLAN CHANGE:**

Although the plans for this project call for "Fiber Optic" Blankout Signs the Contractor shall provide "LED" Blankout Signs as called for in the project special provisions. Revised plan sheets indicating "LED Blankout Signs" will be furnished to the successful bidder at the Preconstruction Conference.

Revised 5-8-02

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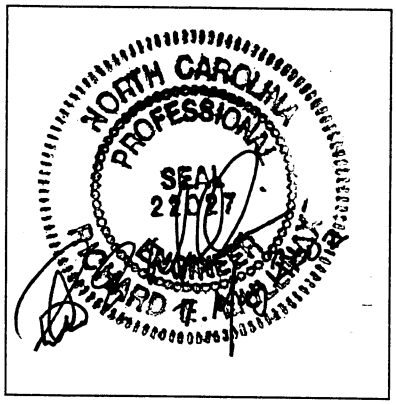


# PROJECT SPECIAL PROVISIONS
*(Version 02.4)*
# SIGNALS AND TRAFFIC MANAGEMENT SYSTEMS

*Prepared By: blw*
*7-May-02*

## Contents

Provide a high resolution, annular, incremental lens. Ensure that the lens and door are sealed to provide a moisture and dust proof seal. Provide a red, yellow, or green ball or arrow indication as specified by the bid list, plans, or purchase order.

## 2.3. CONSTRUCTION METHODS

### A. Modify Existing Vehicle Signal Heads:

Modify existing vehicle signal heads by removing incandescent lamp hardware and replacing with new LED modules with all necessary hardware.

### B. Optically-Programmed Vehicle Signal Sections:

Install vehicle signal heads with optically programmed vehicle signal sections so that movement of the vehicle signals head is restricted. Tightly tether vehicle signal heads at the top and bottom when installed on messenger cable. Attach vehicle signal heads using a mounting-bracket assembly that locks the vehicle signal head into position from the back and restricts movement when installed on mast arms.

## 2.4. METHOD OF MEASUREMENT

Actual number of existing vehicle signal heads modified and accepted.

Actual number of vehicle signal heads with a single optically programmed section furnished, installed, and accepted.

Actual number of vehicle signal heads with multiple optically programmed sections furnished, installed, and accepted.

## 2.5. BASIS OF PAYMENT

The quantity of modified vehicle signal heads, measured as provided above, will be paid for at the contract unit price each for "Modify Existing Vehicle Signal Head."

The quantity of vehicle signal heads with single optically programmed sections, measured as provided above, will be paid for at the contract unit price each for "Vehicle Signal Head with Single Optically-Programmed Section."

The quantity of vehicle signal heads with multiple optically programmed sections, measured as provided above, will be paid for at the contract unit price each for "Vehicle Signal Head with Multiple Optically-Programmed Section."

Payment will be made under:

Modify Existing Vehicle Signal Head ..... Each
Vehicle Signal Head with Single Optically-Programmed Section ..... Each
Vehicle Signal Head with Multiple Optically-Programmed Sections ..... Each

# 3. LED BLANKOUT SIGNS

## 3.1. DESCRIPTION

Furnish and install Light Emitting Diode (LED) blank out signs with all necessary hardware as set forth in the plans and specifications. Fabricate the sign to be between 27 inches (685 mm) and 29 inches (736 mm) wide, between 37 inches (940 mm) and 39 inches (990 mm) high, and approximately 8 inches (200 mm) deep.

19-A

Revised 5-8-02 19 A

## 3.2. MATERIALS

Provide a modular design with the following self-contained modules: message display, rack mounted message drivers, driver rack assembly, and enclosure. Ensure that all internal components are adequately supported to withstand mechanical shock and vibration from ratings meeting AASHTO's requirements of 80 mph (130 km/h) with a 30% gust factor. Design the display to operate without moving parts.

Provide a message display that is a PCB matrix with a mat black solder mask that has a minimum thickness of 0.093 inches (2.36 mm) and a silk screened component identifier. Mount the LEDs on the front of the PCB matrix. Mount all other components on the back of the black matrix. Ensure that a person with 20/20 vision can read a fully intensified, legible message from 500 feet in front of the sign under any light conditions. Ensure the message is not legible when the sign is off, even if in direct sunlight.

Use white LEDs that are the latest InGaN technology or better with a minimum luminous intensity of 6,000 mcd at 20 mA. Distribute the LEDs evenly. Ensure that the maximum distance, center to center, between consecutive LEDs is 0.5 inches (12.7 mm), plus or minus 10%. Connect the individual LED light sources so that failure of a single LED will result in a loss of no more than 5 LEDs. Ensure the sign is still legible. Fabricate the message using 6 inch (150 mm) high Series "E" letters or 5 inch (125 mm) high Series "D" letters.

Protect and seal the rear side of the PCB with a molded polymeric back cover. Mount the display PCB with back cover into the front door, which consist of an aluminum frame and face lens. Provide a clear 0.25 inch (6.0 mm), non glare, mat finish polycarbonate lens with a UV resistant surface treatment. Ensure that the lens has light transmission properties equal to or greater than 80%

Design the entire display face and door as a one piece, self contained module that can be removed from the sign housing in less than one minute without using tools. Seal the module against dust and moisture intrusion to meet the requirements of NEMA Standard 250-1991 sections 4.7.2.1 and 4.7.3.2 for type 4 enclosures.

Mount the module on the sign housing with three stainless steel "lift-off" hinges, and latch it with a minimum of two stainless steel ¼ turn link locks. Provide a retaining rod to hold the door in the open position. Configure the front door frame assembly to cover a gutter surrounding the full perimeter of the housing body and fit flush to the exterior of the body.

Fabricate the weatherproof housing out of 0.125 inch (3.2 mm) aluminum with all corner seams welded their full length. Weld the full length of all corner seams using tungsten inert gas method. Provide a 1 inch (25 mm) diameter vent plug in four bottom corners of the housing to prevent the collection of water from possible gasket leaks. Ensure each vent plug has a corrosion resistant screen, which allows the passage of water but does not allow insects to enter the housing. Install a terminal block that accommodates a spade lug sized for a number 10 terminal screw. Provide 4 terminals with each having 2 terminal screws that have a shorting bar between them.

Fabricate a mounting fitting and entrance for wires to be compatible with standard traffic signal mounting hardware using Pelco type die cast aluminum mounting hubs with 1.5 inch (40 mm) threaded nipples. Provide stainless steel nuts, bolts, screws, washers, lock washers, etc. Do not use self-tapping fasteners on the exterior of the sign. Ensure that all mechanical fasteners are stainless steel.

Provide a standard 7 inch (178 mm) deep sun visor made of 1/16 inch (1.58 mm) aluminum. Paint the inside of the visor with two (2) coats of dull black paint. Paint the exterior and interior of the sign case and the outside of the visor Federal Standard 595A yellow by the dry powder method. Apply the yellow finish by electrostatic spray and heat cure. Ensure the thickness of the finish is a minimum of 2.5 mils (64 μm) thick. Apply no paint to the latching hardware.

Provide an aluminum driver rack assembly that is a single part, self contained module consisting of an interconnect PCB and an anodized aluminum frame. Ensure that it is vented from top to bottom and has latches to lock the modules in place. Design the driver rack assembly to be easily removable in less than one minute without the use of tools.

Design the driver modules to be industry standard 6.5 inches (165 mm) X 4.5 inches (114 mm) rack mounted. Provide driver modules that consist of a PCB with aluminum front plate and handle as used for inductive loop detectors. Ensure that the LED current does not exceed the manufacturer's maximum current rating. Ensure that the driver modules are fused. Provide voltage surge protection to withstand high repetition noise transients and low repetition high energy transients as stated in section 2.1.6 of the NEMA Standard TS-2, 1992.

Ensure compatibility and proper triggering and operation with load switches and conflict monitors in signal controllers currently used by the Department. Ensure the on-board circuitry meets FCC title 47, sub-part B, section 15 regulations on the emission of electronic noise. Design the driver modules to maintain a constant LED drive current regardless of the outside temperature.

Design the driver modules to automatically reduce the light intensity of the display by 35% based on the ambient light to reduce long term degradation of the LEDs. Include a 30 second delay to prevent interference caused by extraneous light. Provide an alarm signal that will appear as a high impedance to the power source from the controller cabinet if the display is not operational. Provide a green LED for power status and a red LED for alarm status on the drive module.

Design the interconnect PCB to include terminals for all field wiring, 120VAC controls, external photocell, and alarm signals. Design all interconnections within the sign to be accomplished through the PCB with no internal wiring with the exception of a single cable for the message display and wires from the input terminal block. Provide a multi-conductor cable with an individual 2 pin connector for each word. Identify all connectors and terminals by the silk screen identifier on the surface of the PCB. Mount all PCBs vertically to facilitate air-cooling and to prevent collection of dust and moisture

Design and certify the LED blank out sign to operate over a temperature range of –35°F (-37°C) to 165°F (74°C) with an operating voltage range of 105 to 130 volts (60 Hertz). Ensure that all electronic components are standard industry items that are available from wholesale electronics distributors. Provide components that are "solid state" type. Do not use electro-mechanical components such as relays, transformers or solenoids.

Guarantee the materials and workmanship of all equipment provided under this section for a period of five years. All warranties and guarantees that are customarily issued by the equipment manufacturers that exceed this requirement shall be acceptable to the Department. Begin the warranty period on the date of the final acceptance of all work if contractor supplied, or on the date of installation if supplied to the Department by a manufacturer or manufacturer's representative. Guarantee all parts and labor necessary or incidental to the repair of any defect in equipment or workmanship and malfunctions that arise during the guarantee period. Provide the guarantee to the

Department in writing prior to final acceptance of the work and material. Obtain the engineer's approval of the guarantee's wording.

Ensure that the manufacturer's warranties and guarantees delivered to a contractor includes the provision that they are subject to transfer to the Department or its designated maintaining agency, and provide proper validation from the manufacturer. Transfer warranties and guarantees to the Department at the time of acceptance of the work.

The state shall have the discretion to perform warranty work at the Traffic Electronics Center by NCDOT electronics technicians or to have warranty work performed by the vendor. The vendor shall provide bench repair training on the manufacturer's equipment as required by the bid document or plans at no additional cost to the State unless otherwise specified. In addition to any formal training requirements, the vendor agrees to provide the following upon request: 1) Prompt technical support to the State repair personnel during the contract and for a period of one year after the end of the warranty period at no cost to the State; 2) Provide parts to the Traffic Electronics Center for all warranty repairs at no cost to the State (defective parts replaced under warranty by the Traffic Electronics Center will be returned to the vendor for examination at the vendor's request); 3) Provide schematics and other documentation required to perform bench repair to the Traffic Electronics Center within two weeks of request. Upon request from the vendor, the Department agrees not to divulge any proprietary information contained in those documents.

At the request of the State, the vendor shall perform warranty repairs to equipment that fails during the warranty period at no cost to the State including freight costs to ship repaired equipment back to the NCDOT Traffic Electronics Center. The State shall pay freight charges to ship equipment to the vendor or manufacturer. All equipment shall be repaired and returned to the Department Traffic Electronics Center within 21 calendar days of receipt by the vendor.

### 3.3. CONSTRUCTION METHODS

Install LED blank out signs with wire entrance fittings, span wire cable mounting assemblies, pedestal mounting assemblies, signal cable, lashing wire, and all necessary hardware.

### 3.4. METHOD OF MEASUREMENT

Actual number of LED blankout signs with mounting hardware furnished, installed, and accepted.

### 3.5. BASIS OF PAYMENT

The quantity of LED blankout signs, measured as provided above, will be paid for at the contract unit price each for "LED Blankout Sign."

Payment will be made under:

LED Blankout Sign.....Each

## 4. REUSE OF METAL POLE AND MASTARM SIGNAL SUPPORTS

### 4.1. DESCRIPTION

Determine the capacity of the existing metal poles, mastarms, and foundations for supporting the loads as shown in the signal plans. Select intersections in this project reuse existing metal signal supports. The actual reuse of the metal signal supports and foundations shall be the responsibility of

the contractor. The contractor shall examine each support for reuse. Comply with the provisions of section 1700.

### 4.2. BASIS OF PAYMENT

The determination of each metal pole, mastarm, and foundation for reuse shall be considered incidental to the intersection signal work.

## 5. INSTALLATION OF DEPARTMENT-FURNISHED SIGNAL SUPPORT MAST ARMS WITH METAL POLES

### 5.1. DESCRIPTION

Install Department-furnished signal support mast arms with metal poles, and all necessary hardware in accordance with the plans and specifications. Comply with the provisions of Section 1700.

### 5.2. MATERIALS

The Department will furnish signal support mast arms with metal poles.

Provide all other incidentals not provided by the Department, including all necessary hardware, in compliance with Section 1741.

### 5.3. CONSTRUCTION METHODS

Notify the Department a minimum of 4 months prior to requiring the mast arms and metal poles.

Comply with Section 1741.

### 5.4. METHOD OF MEASUREMENT

Actual number of signal support mast arms with metal poles installed and accepted.

### 5.5. BASIS OF PAYMENT

The quantity of installed signal support mast arms with metal poles, measured as provided above, will be paid for at the contract unit price each for "Install Signal Support Mast Arm with Metal Pole."

Payment will be made under:

Install Signal Support Mast Arm with Metal Pole.....Each

County : DARE

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|---|---|---|---|---|---|---|
| | | | **ROADWAY ITEMS** | | | |
| 0001 | 0000100000-N | 800 | MOBILIZATION | Lump Sum | L.S. | |
| 0002 | 7036000000-E | 1705 | PEDESTRIAN SIGNAL HEAD (12", 1 SECTION) | 2 EA | | |
| 0003 | 7048000000-E | 1705 | PEDESTRIAN SIGNAL HEAD (12", 2 SECTION) | 12 EA | | |
| 0004 | 7060000000-E | 1705 | SIGNAL CABLE | 3,260 LF | | |
| 0005 | 7120000000-E | 1705 | VEHICLE SIGNAL HEAD (12", 3 SECTION) | 11 EA | | |
| 0006 | 7132000000-E | 1705 | VEHICLE SIGNAL HEAD (12", 4 SECTION) | 2 EA | | |
| 0007 | 7144000000-E | 1705 | VEHICLE SIGNAL HEAD (12", 5 SECTION) | 5 EA | | |
| 0008 | 7156000000-N | SP | VEHICLE SIGNAL HEAD WITH SINGLE OPTICALLY-PROGRAMMED SECTION | 2 EA | | |
| 0009 | 7168000000-N | SP | VEHICLE SIGNAL HEAD WITH MULTIPLE OPTICALLY-PROGRAMMED SECTION | 2 EA | | |
| 0010 | 7180000000-N | 1706 | BACKPLATE | 138 EA | | |
| 0011 | 7216000000-N | SP | MODIFY EXISTING VEHICLE SIGNAL HEAD | ~~87~~ 120 JAG EA | | |
| 0012 | 7279000000-E | 1715 | TRACER WIRE | 64,491 LF | | |
| 0013 | 7288000000-E | 1715 | TRENCHING (PAVED) | 495 LF | | |
| 0014 | 7300000000-E | 1715 | TRENCHING (UNPAVED) | 51,157 LF | | |
| 0015 | 7324000000-N | 1716 | JUNCTION BOX (STANDARD SIZE) | 84 EA | | |
| 0016 | 7336000000-N | 1716 | JUNCTION BOX (OVER-SIZED) | 267 EA | | |
| 0017 | 7444000000-E | 1725 | INDUCTIVE LOOP SAWCUT | 4,968 LF | | |
| 0018 | 7456000000-E | 1726 | LEAD-IN CABLE | 20,090 LF | | |

County : DARE

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|---|---|---|---|---|---|---|
| 0019 | 7516000000-E | 1730 | COMMUNICATIONS CABLE (**FIBER) (12) | 59,030 LF | | |
| 0020 | 7552000000-N | 1731 | INTERCONNECT CENTER | 20 EA | | |
| 0021 | 7564000000-N | 1732 | FIBER-OPTIC TRANSCEIVER | 20 EA | | |
| 0022 | 7568000000-N | SP | FURNISH FIBER-OPTIC RESTORATION KIT | 1 EA | | |
| 0023 | 7570000000-N | SP | FURNISH FIBER-OPTIC POWER METER | 1 EA | | |
| 0024 | 7572000000-N | SP | FURNISH OPTICAL LIGHT GENERATOR | 1 EA | | |
| 0025 | 7574000000-N | SP | FURNISH FIBER-OPTIC TRANSCEIVER | 1 EA | | |
| 0026 | 7612000000-N | 1742 | METAL SIGNAL POLE FOUNDATION | 8 EA | | |
| 0027 | 7636000000-N | 1745 | SIGN FOR SIGNALS | 4 EA | | |
| 0028 | ~~7660~~7675 JAG 000000-N | SP | ~~FIBER-OPTIC~~ LED JAG BLANKOUT SIGN | ~~36~~ 3 JAG EA | | |
| 0029 | 7684000000-N | 1750 | SIGNAL CABINET FOUNDATION | 18 EA | | |
| 0030 | 7756000000-N | 1751 | CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED) | 20 EA | | |
| 0031 | 7768000000-N | 1751 | CONTROLLER WITH CABINET (TYPE 2070L, POLE MOUNTED) | 1 EA | | |
| 0032 | 7780000000-N | 1751 | DETECTOR CHANNEL (TYPE 2070L) | 232 EA | | |
| 0033 | 7936000000-N | SP | CENTRAL COMPUTER | 1 EA | | |
| 0034 | 7938000000-N | SP | NOTEBOOK COMPUTER | 1 EA | | |
| 0035 | 7942000000-N | SP | PRINTER | 1 EA | | |
| 0036 | 7980000000-N | SP | GENERIC SIGNAL ITEM INSTALL SIGNAL SUPPORT MAST ARM WITH METAL POLE | 8 EA | | |