



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

May 27, 2010

SUBJECT: FAI Route 55 (I-55)
Project CMI-055-6 (245) 252
Section 2009-139 SG
Will County
Contract No. 60K06
Item No. 188, June 11, 2010 Letting
Addendum A

NOTICE TO PROSPECTIVE BIDDERS:

Attached is an addendum to the plans or proposal. This addendum involves revised and/or added material.

1. Revised the Table of Contents to the Special Provisions.
2. Revised pages 36 - 38 of the Special Provisions.
3. Added pages 129 - 132 to the Special Provisions.

Prime contractors must utilize the enclosed material when preparing their bid and must include any Schedule of Prices changes in their bidding proposal.

Bidders using computer-generated bids are cautioned to reflect any and all Schedule of Prices changes, if involved, into their computer programs.

Very truly yours,

Scott E. Stitt, P.E.
Acting Engineer of Design and Environment

A handwritten signature in cursive script, reading "Ted B. Walschleger P.E.".

By: Ted B. Walschleger, P. E.
Engineer of Project Management

cc: Diane O'Keefe, Region 1, District 1; Mike Renner; Estimates

TBW:MS:jc

TABLE OF CONTENTS

LOCATION OF PROJECT 1
 DESCRIPTION OF PROJECT 1
 TRAFFIC CONTROL PLAN 1
 TRAFFIC SURVEILLANCE (I55/I80 TO NORTH OF NAPERVILLE RD.) 2
 TRAFFIC SURVEILLANCE. - GENERAL 2
 GENERAL ELECTRICAL REQUIREMENTS..... 8
 INDUCTION LOOP 11
 GALVANIZED STEEL CONDUIT 16
 POLYETHYLENE DUCT..... 20
 EXPOSED RACEWAYS 23
 GROUNDING OF ITS SUBSYSTEMS 25
 ELECTRICAL CABLE IN CONDUIT, (EPR) 26
 WIRE AND CABLE 29
 ELECTRICAL CABLE IN CONDUIT, 4C/NO. 18 SHIELDED LOOP DETECTOR WIRE 31
 FIBER OPTIC PATCH PANEL..... 33
 ETHERNET SWITCH..... 34
 FIBER OPTIC TERMINATION PANEL, 12F OR 24F 38
 ETHERNET SWITCH (12 PORT OR HIGHER)..... 39
 FIBER OPTIC SPLICE 41
 FIBER OPTIC CABLE, SINGLE MODE (I55) 43
 ELECTRIC SERVICE DISCONNECT..... 60
 ELECTRIC UTILITY SERVICE CONNECTION..... 62
 CONCRETE FOUNDATION 63
 CONCRETE FOUNDATION, SURVEILLANCE CABINET, MODEL 334 64
 HANDHOLE 65
 TRENCH AND BACKFILL..... 66
 2070 LITE CONTROLLER 68
 DETECTOR RACK (I55) 72
 CONTROL OF TRAFFIC SURVEILLANCE MATERIALS 74
 SURVEILLANCE CABINET, MODEL 334 75
 CABINET HOUSING EQUIPMENT, MOUNTING AND SIZE AS SPECIFIED (CCTV)..... 80
 KEEPING THE EXPRESSWAY OPEN TO TRAFFIC 82
 FAILURE TO OPEN TRAFFIC LANES TO TRAFFIC: 83
 TRAFFIC CONTROL AND PROTECTION (EXPRESSWAYS)..... 84

Revised 05/27/2010

COMMUNICATIONS VAULT 87
MODIFY EXISTING CCTV INSTALLATION FOR FIBER OPTIC COMMUNICATIONS..... 89
MODIFICATION OF EXISTING CCTV DISTRIBUTION SYSTEM..... 93
ATMS SYSTEM INTEGRATION..... 97
ALKALI-SILICA REACTION FOR CAST-IN-PLACE CONCRETE (BDE) 98
APPROVAL OF PROPOSED BORROW AREAS, USE AREAS, AND/OR WASTE AREAS INSIDE
ILLINOIS STATE BORDERS (BDE) 101
CEMENT (BDE) 101
CONCRETE ADMIXTURES (BDE) 104
CONSTRUCTION AIR QUALITY – DIESEL RETROFIT (BDE)..... 107
CONSTRUCTION AIR QUALITY - DIESEL VEHICLE EMISSIONS CONTROL (BDE) 109
CONSTRUCTION AIR QUALITY - IDLING RESTRICTIONS (BDE)..... 110
DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE) 111
ENGINEER’S FIELD OFFICE TYPE A (BDE) 118
EQUIPMENT RENTAL RATES (BDE)..... 120
LIQUIDATED DAMAGES (BDE)..... 121
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM / EROSION AND SEDIMENT
CONTROL DEFICIENCY DEDUCTION (BDE) 122
NIGHTTIME WORK ZONE LIGHTING (BDE) 123
PAYMENTS TO SUBCONTRACTORS (BDE) 125
PERSONAL PROTECTIVE EQUIPMENT (BDE) 126
REFLECTIVE SHEETING ON CHANNELIZING DEVICES (BDE) 126
SUBCONTRACTOR MOBILIZATION PAYMENTS (BDE) 127
TRUCK MOUNTED/TRAILER MOUNTED ATTENUATORS (BDE) 127
WORKING DAYS (BDE) 128
FIBER OPTIC CABLE INNERDUCT 129

Revised 05/27/2010

Loss off Link Management: The Ethernet switch shall be able to automatically switch to a backup port if the main port fails. It shall disable link signals when required

Command Line Interface (CLI): A CLI can be used in conjunction with remote shell to automate data retrieval, configuration updates and firmware upgrades

Switch Properties: The Ethernet switch shall meet the following requirements:

- Switching method: store and forward
- Switching latency shall be less than 10 us.
- Switching bandwidth shall be more than 1.5 Gbps
- MAC address table size shall be at least 16 Kbytes
- Priority Queues: 4 or greater
- Frame buffer memory: 1MBit or greater
- VLANs: 4096 or greater
- IGMP multicast groups: 256 or greater
- Port rate limiting: 128 kbps, 256, 512, 4, 8 Mbps

Approvals: The Ethernet switch must have the following approvals:

- ISO: Designed, and manufactured using ISO 9001: 2000 certified quality program
- Emissions: FCC Part 15 (Class A) EN 55022 (CISPR22 Class A)
- Safety: UL 60950
- Laser Eye Safety: (FDA/CDRH): complies with 21 CFR Chapter 1, Subchapter J
- IETF RFC 894 – IP over Ethernet

Warranty: The Ethernet switch shall have a minimum 5 year warranty in design and manufacture

METHOD OF MEASUREMENT

This items shall be measured ETHERNET SWITCH, installed each, tested, operational and complete

BASIS OF PAYMENT

This work shall consist of furnishing all labor, materials, equipment, setup and testing to supply and install an ETHERNET SWITCH, complete in accordance with the contract drawings and these special provisions. Miscellaneous connectors, cables and Ethernet cables shall be included in the unit price.

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FIBER OPTIC TERMINATION PANEL, 12F OR 24F

Effective: Dec. 28, 2009

Description Work under this item shall consist of furnishing and installing a fiber optic termination panel, type and size as specified on the plans and described herein. This equipment will be used to link field equipment using single-mode fiber optic cable.

Materials The fiber optic termination panel shall comply with the following requirements:

- The fiber optic termination panel shall be rack mountable or wall mounted
- Rack mounted termination panels shall be installed in 19" racks inside of ITS or 334 Type Cabinets or Pump Houses w/19" racks
- The fiber patch panel shall terminate pigtail fibers as called out on the Plans.
- The fiber optic termination panel shall allow termination of a fiber patch cord to interconnect outside plant fibers to fiber optic communication equipment
- Shall be supplied with optical splice tray and holder
- Wall mounted termination panels shall be installed in Pump Station, Type III, Type IV, or Type V control Cabinets
- Wall-mounted termination panels shall be made out of solid steel construction, shall be powder coated, and feature top or bottom cable entry w/dust resistant grommets.
- Rack-mounted units shall be aluminum material per ATSMB 209, powder coated, and modular design.
- The approved type optical connectors on the end of each pigtail shall screw into a sleeve securely mounted to a patch panel within the controller cabinet. The maximum optical loss across the connection shall not exceed 0.25 dB.
- The fibers with the optical connectors on the pigtail cable shall be routed through and secured in the fiber optic termination panel as directed by and to the satisfaction of the Engineer.
- The bulkheads or single-mode adapter types shall be single-mode ST compatible, ceramic, unless a substitute is approved by the Engineer.

CONSTRUCTION REQUIREMENTS

The Fiber Optic Termination Panel shall be installed in the Traffic Signals surveillance cabinets or pump stations as specified on the Plans. The panels shall come with cable strain relief hardware and pull out label for administrative documentation. All work shall be neat and in a workmanlike manner. Particular care shall be taken as to not crush or kink the fiber optic cable. If in the opinion of the engineer the cable has been crushed or kinked, the entire cable span shall be removed and replaced at the Contractor's expense.

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FIBER OPTIC CABLE INNERDUCT

Effective: May 1, 2010

1. Description.

This item shall consist of furnishing, installing, splicing, connecting and demonstrating continuity of fiber optic cable innerduct of sizes specified herein and as shown on the contract drawings. The innerduct shall be High Density Polyethylene.

3. Materials.

3.1 General:

The duct shall be a plastic duct which is intended for underground use and which can be manufactured and coiled or reeled in continuous transportable lengths and uncoiled for further processing and/or installation without adversely affecting its properties of performance. The duct shall be either smooth wall or have internally designed ribs. The type of duct interior, smooth wall or ribbed wall, shall be coordinated with the contractor's proposed method of fiber optic cable installation. Documentation shall be submitted demonstrating that the proper combination of interior duct finish and fiber installation method is optimal for the installation method.

The duct shall be made of high density polyethylene which shall meet the requirements of ASTM D 3035. The innerduct material shall be composed of high density polyethylene meeting the requirements of PE334470E/C as defined in ASTM D3350.

Submittal information shall demonstrate compliance with the details of these requirements.

3.2 Dimensions:

Duct dimensions shall conform to the standards listed in ASTM D3035, SDR-11. Submittal information shall demonstrate compliance with these requirements.

Nominal Size (Diameter)	Inside Diameter (minimum)	Outside Diameter (Average)	Wall Thickness (Min.)	Bend Radius (minimum)	Pull Strength	Weight Average (lbs/100ft.)
1"	1.030"	1.315"	0.120"	14"	500	19
1.25"	1.313"	1.660"	0.151"	17"	750	31
1.5"	1.506"	1.900"	0.173"	19"	1000	40
2"	1.885"	2.375"	0.216"	24"	1600	60

3.3 Marking:

As specified in NEMA Standard Publication No. TC-7, the duct shall be clearly and durably marked at least every 10 feet with the material designation (HDPE for high density polyethylene), nominal size of the duct, and the name and/or trademark of the manufacturer.

Added 05/27/2010

3.4 Color:

Innerduct shall be colored as follows or as directed by the Engineer.

Usage Designation	Color
Fiber Optic Trunk Cable (Ducts containing cables of 96 fibers or larger)	Orange
Fiber Optic Distribution Cable (Ducts containing cables of 12, 6 or 4 fibers and 96 fiber ducts designated as distribution fibers)	Blue

4. Installation.

4.1 Pulling Tension.

Pulling tension of the duct shall be monitored throughout the pull and pulling tension shall not exceed those listed in the table or the specific manufacturer maximum pulling tensions as indicated in the catalog cut submittals. Failure to monitor the pulling tension will result in non-payment of that particular duct span and the span may be reinstalled with new duct at no additional cost to the State. Lubricants used shall be compatible with the duct.

4.2 Junction boxes.

Where duct passes through junction and/or pull boxes, the duct shall remain continuous unless a break is specifically indicated in the plans or as directed by the Engineer.

4.3 Handholes.

Where duct passes through handholes, the duct shall be looped uncut within the handhole unless otherwise indicated on the Plans or directed by the Engineer.

Bends.

Minimum bending radius shall be in accordance with the above table or the manufacturer's recommended radius, whichever is larger. Bends shall be made so that the duct will not be damaged and the internal diameter of the duct will not be effectively reduced. The degrees of bend in one duct run shall not exceed 360° between termination points.

4.4 In ground

Where duct is shown to be installed in ground, it shall be installed at a depth not less than 30 inches unless otherwise indicated or specifically directed by the Engineer.

Added 05/27/2010

The duct may be installed in trench, plowed or bored and pulled.

Where duct is installed in trench, it shall be placed in the bottom of the trench after all loose stones have been removed and all protruding stones have been removed or covered with backfill material as directed by the Engineer.

Where the specification for trench and backfill permits plowing in lieu of trench and backfill, the inner duct may be plowed into place. Unless otherwise indicated or specifically approved by the Engineer, plowing of inner duct shall lay the duct in place and shall not pull the duct through the length of the cut behind a bullet-nose mandrel or similar apparatus. In all cases, plowing operations shall be non-injurious to the duct.

4.5 In Raceway

Where duct is installed in raceways, lubricating compounds shall be used where necessary to assure smooth installation.

5. Joints

5.1 All HDPE duct to HDPE duct joints shall be made with an approved duct fusion splicing device.

5.2 HDPE coilable non-metallic conduit to non-HDPE coilable non-metallic conduit joints shall be either made with an approved mechanical connector or with a chemical compound. Both methods must be specifically designed for joining HDPE coilable non-metallic conduit. Minimum pullout force for the chemical compound shall be as listed in the following table.

Nominal Size		Pullout Force	
mm	in	N	Lbs
31.75	1.25	2400	540
38.1	1.50	2535	570
50.8	2.0	3335	750
63.5	2.5	4445	1,000
76.2	3.0	6225	1,400
101.6	4.0	8890	2,000

7. Measurement.

The innerduct shall be measured for payment in linear feet in place as described herein. Measurements shall be made in straight lines between horizontal changes in direction between the centers of the terminating points (poles, cabinets, junction boxes). Vertical measurement of the duct shall be as follows:

For runs terminating at junction boxes and/or control cabinets, the vertical measurement shall be taken from the bottom of the trench, or horizontal raceway, to a point 18-inches beyond the center of the junction box or control cabinet.

Added 05/27/2010

For runs terminating at poles, the vertical measure shall be taken from the bottom of the trench, or horizontal raceway, to a point 18-inch beyond the center of the light pole handhole regardless of light pole mounting method

Innerduct installed in excess of the limits describes herein shall not be paid for.

8. Basis of Payment.

This item will be paid for at the contract unit price per foot for **INNERDUCT**, of the size of duct as indicated, which shall be payment in full for all material and work as specified herein.

Added 05/27/2010