Illinois Department of Transportation
2300 South Dirksen Parkway / Springfield, Illinois / 62764

September 12, 2024

SUBJECT FAI Route 94/FAP Route 346 (I-94/US 41)
Project HSIP BZF0(469)
Section FAP 0346 23 Sign
Cook and Lake Counties
Contract No. 62V17
Item No. 11, September 20, 2024 Letting
Addendum C

NOTICE TO PROSPECTIVE BIDDERS:

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

1. Revised pages 103, 151-153, 157, 158, & 169 of the Special Provisions

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

Very truly yours,

Jack A. Elston, P.E.
Bureau Chief, Design and Environment

MTS

Furnish and install new fiber optic transceivers of the type and quantity in the table below.:

Part Number	Description	Qty
=		
GLC-LH-SMD=	1000BASE-LH SFP transceiver module, SMF	**01**

Construction Requirements

General requirements shall be in accordance with Section 801 of the Standard Specifications.

The Contractor shall route new fiber optic jumper cables from fiber optic interconnect centers to existing network equipment as shown in the Plans or as directed by the Engineer. All work must be coordinated with the IDOT's Electrical Maintenance Contractor.

The Contractor shall install fiber optic transceivers in the existing network switch and make connections to the fiber optic jumper cables.

Method of Measurement

This work will not be measured as lump sum.

Basis of Payment

This work will be paid for at the contract lump sum price for ELECTRICAL WORK, IDOT BUILDING E.

REMOVAL OF CABLE IN CONDUIT

Description.

This work shall consist of the removal of electric cable from existing conduit, and removal of existing underground unit duct cable or fiber at locations shown on plans.

General

The Contractor shall investigate the existing conduit runs to determine the feasibility of removing existing cable from an existing conduit. If it is determined to be feasible, the existing electric cable shall be removed, as directed by the Engineer, from the conduit. Removed cable shall be salvaged or disposed of off-site in accordance with the standard specifications.

Method of Measurement.

The work will be measured for payment in feet. If two or more cable in the conduit are to be removed, each cable will be measured for payment separately.

Basis of Payment.

This work will be paid for at the contract unit price per foot for REMOVAL OF CABLE IN CONDUIT.

Revised 9/12/2024

Cable Delineator Post

Cable Delineator post shall be furnished in orange color and incorporate a premium UV inhibitor package to resist harmful effects to the sun. The post shall be capable of withstanding multiple directional impacts and provide a long lasting and extremely durable product requiring little field maintenance. The post shall have a minimum 0.20" wall thickness and shall stand up straight in all weather conditions and self-right to straight upon impact. Top of post shall be permanently sealed, partially flattened, and transition to round to afford 360 degree visibility. The post materials shall include an anchor, a non-mechanical flexible joint, and a round delineator post.

Cable Delineator Posts shall be placed adjacent to ITS or Ramp meter cabinets and approximately every 500 feet as directed by the Engineer. Contract 62V17 will require approximately 68 delineator posts

CONSTRUCTION REQUIREMENTS

Experience Requirements

Personnel involved in the installation, splicing and testing of the fiber optic cables shall meet the following requirements:

- A minimum of three (3) years' experience in the installation of fiber optic cables, including fusion splicing, terminating and testing single mode fibers.
- Install two systems where fiber optic cables are outdoors in conduit and where the systems have been in continuous satisfactory operation for at least two years. The Contractor shall submit as proof, photographs or other supporting documents, and the names, addresses and telephone numbers of the operating personnel who can be contacted regarding the installed fiber optic systems.
- One fiber optic cable system (which may be one of the two in the preceding paragraph), which the Contractor can arrange for demonstration to the Department representatives and the Engineer.

Installers shall be familiar with the cable manufacturer's recommended procedures for installing the cable. This shall include knowledge of splicing procedures for the fusion splicer being used on this project and knowledge of all hardware such as breakout (furcation) kits and splice closures. The Contractor shall be capable of installing fiber optic cable in microduct systems using jetting techniques. The Contractor shall submit documented procedures to the Engineer for approval and to be used by Construction inspectors.

Personnel involved in testing shall have been trained by the manufacturer of the fiber optic cable test equipment to be used, in fiber optic cable testing procedures. Proof of this training shall be submitted to the Engineer for approval. In addition, the Contractor shall submit documentation of the testing procedures and a copy of the test equipment operation manual for approval by the Engineer.

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Installation

Prior to installation, the Contractor shall provide a Cable-Pulling Plan. The plan shall include the following information:

- Identify where each cable will enter the underground system and the direction each pull.
- Identify locations where the cable is pulled out of a handhole, coiled in a figure eight, and pulled back into the hand-hole.
- The plan shall address the physical protection of the cable during installation and during periods of downtime.
- Identify the location of slack storage locations
- Identify the locations of splices.
- Identify distances between fiber access points and crossings.

The Cable **installation plan** shall be provided to the Engineer for approval a minimum of 15 working days prior to the start of installation. The Engineer's approval shall be for the operation on the freeway and does not include an endorsement of the proposed procedures. The Contractor is **responsible for** the technical adequacy of the proposed procedures.

During cable pulling operations, the Contractor shall ensure that the minimum bending of the cable is maintained during the unreeling and pulling operations. Unless specified otherwise by the fiber optic cable manufacturer, the outside bend radius of the cable during installation shall be no less than 20 times the outside diameter of the fiber optic cable. Entry guide chutes shall be used to guide the cable into the handhole conduit ports. Lubricating compound shall be used to minimize friction. Corner rollers (wheels), if used, shall not have radii less than the minimum installation-bending radius of the cable. A series array of smaller wheels can be used for accomplishing the bend if the cable manufacturers specifically approve the array.

If figure-eight techniques are used during cable installation, the cable shall be handled manually and stored on the ground. The cable shall be placed on tarps to prevent damage from gravel, rocks, or other abrasive surfaces. Tarps should also be used in muddy conditions to keep the cable clean. Enough area to accommodate cable length to be stored and sufficient personnel to maintain the required minimum-bending diameter as well as avoid kinking or otherwise damaging the cable shall be provided. If the cable has been placed in a figure-eight pattern in preparation for a forward feed, the figure-eight must be flipped over to access the outside cable end. Provide sufficient personnel to avoid kinking the cable as the figure-eight is flipped over. When removing the cable from the figure-eight, use care to avoid kinking the cable and violating the minimum-bending diameter.

Power assisted or figure-eight eliminator equipment, which is used to eliminate manual figure-eight procedures, shall not be used unless specifically allowed by the cable manufacturer in writing.

The cable shall be blown or jetted into the microduct. The Contractor shall use a micro cable blowing machine designed for use with the particular cable being installed. A Compressed air cooler shall be used when ambient air temperatures reach 68° F or more.

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Where cable is to be pulled through existing conduit which contains existing cables, optical or other, the existing cables shall be removed and reinstalled with the fiber optic cable as indicated in the Plans. The removal of the cable(s) shall be paid for separately. Reinstallation of the existing cables, if indicated in the Plans, along with the fiber optic cable shall be included in this item for payment.

Tracer Wire

A tracer wire shall be installed with all fiber optic cable runs. One tracer wire shall be installed along with the fiber optic cable in each raceway. If a raceway has more than one fiber optic cable, only one tracer wire per raceway is required. If there are parallel raceways, a tracer wire is required in each raceway that contains a fiber optic cable. Tracer wire shall be installed in raceway segments which are metallic to provide a continuous tracer wire system.

The tracer wire shall be a direct burial rated, number 12 AWG (minimum) solid (.0808” diameter), steel core soft drawn high strength tracer wire. The wire shall have a minimum 380 pound average tensile break strength. The wire shall have a 30 mil high density yellow polyethylene (HDPE) jacket complying with ASTM-D-1248, and a 30 volt rating.

Connection devices used shall be as approved by the tracer wire manufacturer, except wire nuts of any type are not acceptable and shall not be used.

The cost of the tracer wire shall be included in the cost of the fiber optic cable and not paid for separately.

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Splicing Requirements

Splices shall be made at locations shown on the Plans. Any other splices shall be permitted only with the approval of the Engineer. Splices will be paid for separately. All splice locations must be identified in the Record Drawings. Cable runs which dead-end at a handhole, communications vault, interconnect cabinet, or any other type of enclosure, shall be dead ended in a splice enclosure.

Slack Storage of Fiber Optic Cables

Included as a part of this item, slack fiber shall be supplied as necessary to allow splicing the fiber optic cables in a controlled environment, such as a splicing van or tent. After splicing has been completed, the slack fiber shall be stored underground in handholes or in the raised base adapters of ground mounted cabinets in accordance with the fiber optic cable manufacturer's guidelines. Fiber optic cable slack shall be 100 feet for each cable at each splice location or communication vault, above or below ground. Fiber optic cable slack shall be 50 feet for each cable heavy duty handholes and access points, above or below ground, where splicing is not involved. If the innerduct is cut, the ends of the innerduct should extend beyond the first vertical rack so they can be secured at that point. This slack shall be measured for payment.

Fiber optic cable shall be tagged inside handholes with yellow tape containing the text: "CAUTION - FIBER OPTIC CABLE." In addition, permanent tags, as approved by the Engineer, shall be attached to all cable in a hand-hole or other break-out environment. These tags shall be stainless steel, nominally 0.75" by 1.72", and permanently embossed. These tags shall be attached with stainless steel straps, and shall identify the cable number, the number of fibers, and the specific fiber count. Tags and straps shall be Panduit or approved equal. The Contractor shall label the destination of each trunk cable onto the cable in each handhole, vault, or cable termination panel.

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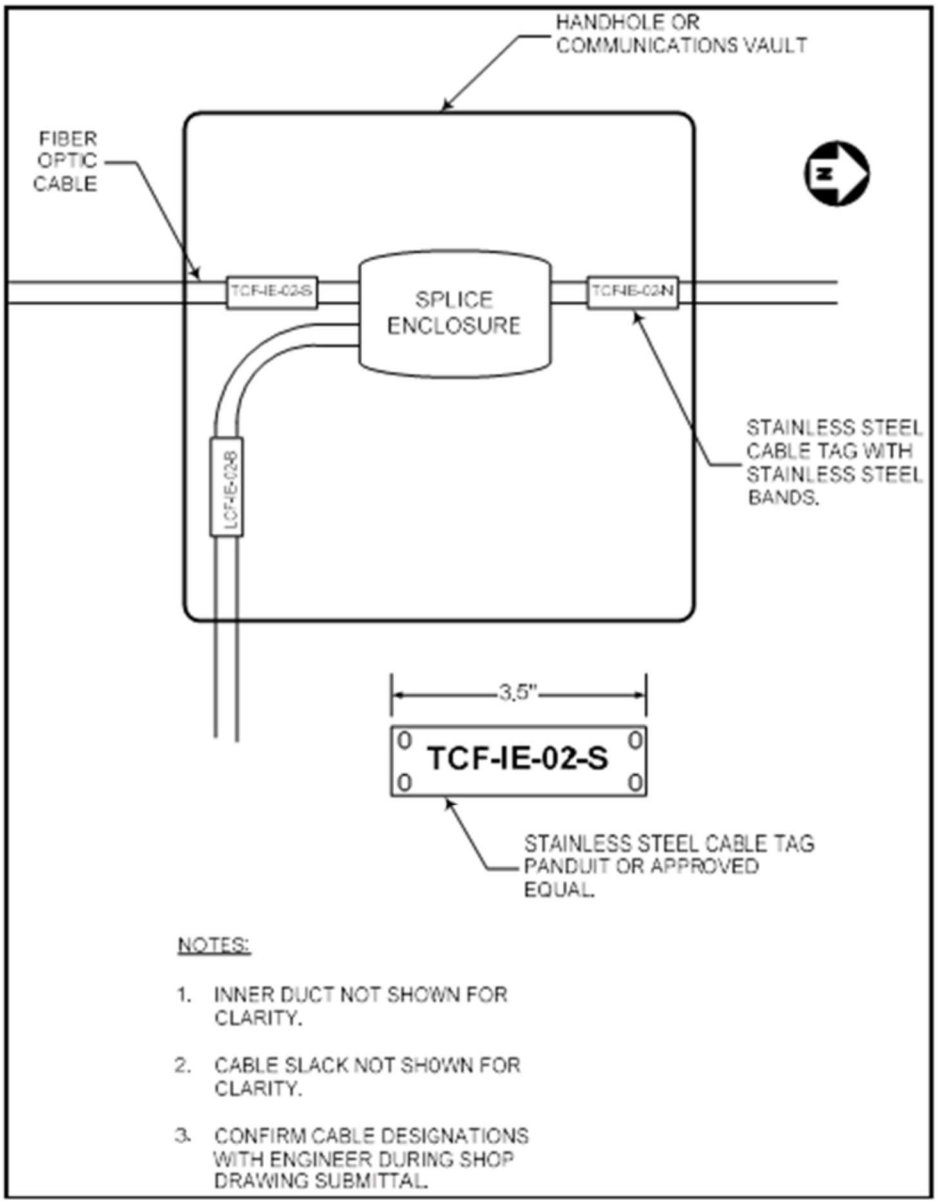
See figure below for labeling diagram:



Label the destination of each trunk cable into the cable in each handhole, vault or cable termination panel.

Method of Measurement

This work will be measured for payment in feet in place. Cable will be measured horizontally and vertically between the changes in direction, including the cable in the vertical conduit riser and any extra cable as specified in this special provision. The cable length in the foundations of a controller cabinet and a vertical pole will be accounted as 3 ft (1 m) each

Basis of Payment

This work will be paid for at the contract unit price per foot for FIBER OPTIC CABLE of the number of fibers and type specified.

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ACTIVE WRONG WAY DETECTION SYSTEM

Description

This work shall consist of furnishing, installing and commissioning a commercially off-the-shelf solution that can detect a vehicle traveling in the incorrect direction, immediately trigger a flashing beacon alert system on the ramp to notify the driver and relay a notification to the Department.
The active wrong way detection system will consist of the following components.

- Detection Units
- Supporting Infrastructure
- User Software

The active wrong way detection system shall consist of an initial alert zone, self-correction zone, and confirmation zone. The initial alert zone shall utilize microwave detection units to detect a wrong way driver and activate the confirmation beacons. The correction zone is the area immediately downstream where motorists can self-correct. The confirmation zone is near the gore area before the vehicle enters the expressway going the wrong direction.

Materials

Detection Units – The detection units will consist of a **state-of-the-art camera(s) capable of detecting wrong way vehicles in all weather conditions. The number of detection cameras is dependent on the ability of the Contractor selected technology to monitor both an initial activation and confirmation zone. Video detection unit(s) shall not be impacted by non-vehicle disturbances such as animals, glare, or headlights. The video detection unit(s) shall be connected to the wrong way detection cabinet using a manufacture recommended cable. Detection shall be configurable and be able to monitor vehicle travel across the entire ramp travel lane.**

Supporting infrastructure –

i. Pole mounted cabinet. The pole mounted cabinet shall be installed as shown on the plans. The size, layout and number of cabinets is based on the selected supplier. All cabinet shall be 120 VAC powered. The main cabinet shall include the processor unit, and cellular modem.
ii. CCTV camera. Two (2) high-definition color cameras shall be installed to provide visibility of the three detection zones.
iii. Poles. The supporting infrastructure includes six (6) poles. Poles that support detection equipment shall be thirteen (13) foot galvanized steel poles with a Type A concrete foundation. Posts that do not support detection units shall be twelve (12) foot aluminum poles on a helix foundation.
iv. Conduit/Handholes – Conduits under paved surfaces shall be 2” galvanized steel conduits. Conduits outside the roadway shall be coilable non-metallic conduit. Handholes shall be heavy duty handholes.

Signage -

i. Signage shall include MUTCD-complaint static “Do Not Enter” (R5-1) 36” x 36” and an edge illuminated “Wrong Way” (R5-1a) 36” x 48” sign with flashing LEDs.
ii. Signs shall be mounted on both sides of the ramp as shown in the plans. Signs shall be dimensioned in accordance with freeway sizing, per MUTCD. All signs shall be compliant with Section 720.
iii. Signs shall be mounted a minimum of 7’ above the pavement.
iv. Illuminated Wrong Way signs shall be gasketed and watertight, with proper drain holes located in lower portions of the housing. Illumination shall be high intensity red flashing LED lights with a minimum of 100,000-hour life expectancy. A minimum of eight (8) LEDs must be included on each sign. LEDs shall automatically dim based on ambient light.

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