IL HSR Fiber Project Scope

INTRODUCTION/OBJECTIVES/EXPECTATIONS

The Union Pacific Railroad Co. is soliciting proposals from qualified construction suppliers in an effort to achieve the most effective solution for its strategic requirements. Union Pacific Railroad Co. expects the most optimal proposal, which should include solutions and recommendations that support the company's desire to obtain connectivity to all signal road crossing cabins in this area by one of the following methods **(A)** install approximately 250 miles of new fiber optic duct system and 48 count single mode shielded armored cable on UPRR ROW Springfield and Joliet sub. **(B)** Install handholes, duct, and fusion splice fiber jumpers into the existing 24 count fiber optic cable system at each road crossing signal cabin on UPRR ROW Springfield and Joliet Subs, Install new vaults, handholes, duct and 48 count single mode shielded armored cable in various locations where existing 24 count fiber cable has been damaged.
This project scope will describe the two project options. Contractors will be required to submit two bids, one bid for each option. Union Pacific Railroad will analyze the bids to determine the most expedient, cost effective, and reliable installation option to meet its business plan. Both options shall require the fiber optic duct system and fiber to be installed per UPRR standards

Option (A) Supply and install approximately 248.9 miles – 1,314,192ft. of fiber optic duct system with 48 count single mode shielded armored cable on Union Pacific Railroad Right of Way. Contractor will supply all equipment, materials, and labor required to install the fiber optics system per UPRR standards and shall complete the project phases for operation on or before required due dates.

(1) The proposed fiber system shall be installed on UPRR Right of Way (property)

(2) Fiber system is to follow the proposed running line as close as possible. Any deviation requires submittal, review, and approval by the UPRR project manager.

NOTE Contractor is responsible for actual HH and Vault counts, Union Pacific will give estimated quantities of handholes and vaults to aid in the initial proposed design. Running line, number of bores, track crossings, will be determined by the contractor at the time of the Pre-Bid walk.

(3) The fiber system will have approximately 325 vaults placed at a distance of every 4000', vaults will be used at all running line splice locations. All vaults are required to have the appropriate Telecom freq locator ball or puck attached to the lid.

(4) All splice vaults will have locator post installed at the vault, locator post shall be wired and grounded as illustrated in the attached fiber specifications for cable locating purposes. Maximum fiber footage between splice vaults will be 20,000 ft.

(5) Approximately 425 plus handholes will be used, handholes will be located at all signal road crossing cabins, road, stream, river bores and other specified facilities for signal regeneration. All handholes are required to have the appropriate Telecom freq locator ball or puck attached to the lid. Contractor shall place the HH as close to the cabin as possible. Install rigid conduit through the wall of the HH to the building using sweeping 90° bends, bring rigid conduit up the exterior of the building entering building utilizing a rigid fiber Smart Pathways **TM**, LB or equivalent just above the ladder rack.

(6) All bores require a handhole installed at each end. Exception: a vault is used in place of the handhole.

(7) 12 fibers will be run in and out of each signal crossing cabin. (see drawing illustration) All 12 fiber jumpers will be Corning AnyLan jumpers, pre-terminated on the building end and prepped for fusion splicing into the main fiber run on the opposite end. All jumper slack will be neatly hung on the wall of the handholes.

At ~ 20 mile intervals all fibers will enter and exit a predetermined Comm facility.

(8) All fibers will be tested end to end, required test information can be found in the included Fiber Specifications. All results recorded and presented in .pdf form upon completion of each phase. All test results will be submitted at completion of the project with the as-built drawings.

**Contractor is responsible for all City, State, Federal, and Environmental permits needed.

Option (B) Utilize previously installed 24 count fiber optic cable to gain connectivity to the crossing cabins by the following method. It is estimated with this option ~ 900 hand holes and 32 vaults will be needed.

(1) Install (3) three handholes, duct, and fiber optics cable at all road crossing in the specified area ~250 miles.

(2) This option required exposing the existing fiber at each road crossing,
(3) setting (2) two hand holes in the existing fiber cable running line ~30' – 40' apart,

(4) cut the fiber installing a minimum of 15' of the existing fiber in each handhole,

(5) set (1) one handhole next to the crossing signal cabin, boring or trenching (depending on which side of the tracks the cabin is located on in relation to the fiber) to the cabin handhole. Contractor shall place the HH as close to the cabin as possible.

(5) Install (1) one duct from each running line hand hole to the cabin handhole,

(6) Install (1) ridged conduit through the wall of the HH to the building using sweeping 90° bends, bring rigid conduit up the exterior of the building entering building utilizing a rigid fiber Smart Pathways ™, LB or equivalent just above the ladder rack

(7) Install (1) one duct between the two running line handholes, twelve fibers will continue straight through and not run into the signal cabin.

(8) Install (2) two splice enclosures, (1) one in each running line handhole.

(9) Fusion splice the designated (12) existing cables fibers to the new IN (12) fiber jumper to the signal cabin,

(10) Fusion splice the same designated (12) fibers of the existing cables to the new OUT (12) fiber jumper to the signal cabin.

(11) Fusion splice the remaining (12) fibers in the existing cable to a new (12) fiber armor shielded jumper straight through, handhole to handhole utilizing the new running line duct in (8) above. Attach shields on each end for cable locating

(12) Install new fiber optic duct system and 48 count fiber in areas where the existing fiber has been damaged or areas that currently have no fiber. Approximately 23.6 miles – 124,608 ft.

At ~ 20 mile intervals all fibers will enter and exit a predetermined Comm facility

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NOTE* Contractor shall be responsible for obtaining all dig locates, local, state, UPRR fiber, call before you dig, signal cable locates, and provide the locate numbers and confirm all utilities and cables are clearly marked before construction commences. Contractor will provide all excavating equipment for fiber system installation. Provide materials and labor to install all in ground materials. Contactor shall conform to all Federal, State and County laws, regulations, and install requirements. Cable installation shall meet manufacturer pull and bend radius specifications.

Upon completion contractor shall have restored ROW to original or better condition, and have removed all trash, spools, debris, and excess materials from construction.