



TECHNOLOGY SERVICES

7703 NW BARRY ROAD

KANSAS CITY, MO 64153

Phone: 816-359-5864

Email: RFP_Tech@parkhill.k12.mo.us

REQUEST FOR PROPOSAL NUMBER: TE1135

The Park Hill School District, Technology Services, will accept separate sealed proposals from qualified persons or firms interested in providing the following:

OUTSIDE PLANT FIBER OPTIC CONSTRUCTION

IN ACCORDANCE WITH THE ATTACHED SPECIFICATIONS

PROPOSALS MUST BE RECEIVED AND WILL BE OPENED AT

3:00 PM CST ON OCTOBER 5, 2023

PLEASE MARK YOUR ENVELOPE "SEALED PROPOSAL TE1135" AND

RETURN 3 COPIES & 1 USB FLASH DRIVE TO:

Park Hill School District, Technology Services

7703 NW Barry Road

Kansas City, MO 64153

It is the responsibility of interested firms to check the District's website at: <https://www.parkhill.k12.mo.us/requests-for-proposals>, for any addendums prior to the opening date and time of this Proposal. All addendums must be signed and included with the submitted response.

PROPOSAL NUMBER:	TE1135
QUESTIONS DUE:	September 21, 2023 @ 3:00 PM
RESPONSE DUE:	October 05, 2023 @ 3:00 PM

SIGNATURE PAGE

The undersigned, on behalf of the Respondent, certifies that: (1) this offer is made without previous understanding, agreement or connection with any person, firm, or corporation making a bid on the same project; (2) is in all respects fair and without collusion or fraud; (3) the person whose signature appears below is legally empowered to bind the firm in whose name the bid is entered; (4) they have read the complete Request for Bid and understand all provisions; (5) if accepted by Park Hill School District, this Bid is guaranteed as written and amended and will be implemented as stated; and (6) mistakes in writing of the submitted Bid will be respondent responsibility.

Name of Respondent: _____

Primary Contact: _____

Email Address: _____

Address: _____ **City:** _____ **State:** _____ **Zip:** _____

Phone Number: _____ **Fax:** _____

Signature: _____

I. PROPOSALS

1. OBJECTIVE

Park Hill School District (hereinafter referred to as “PHSD”) intends to acquire a complete outside plant cabled telecommunications infrastructure for its sites listed in I.2 Project Sites. PHSD herein requests proposals for the installation, testing, completion, and acceptance of the communications system described in the attached specifications and drawings by interested persons (hereinafter known as “The Contractor”). Prices quoted shall be all-inclusive and represent complete installation at the sites shown on these specifications and attached drawings. The contractor shall be responsible for parts, labor, and all other associated apparatus necessary to completely install, test, and turnover for acceptance to PHSD the outside plant cabled telecommunications infrastructure detailed herein.

2. PROJECT SITES

SITE A: Elementary 12

Southwest corner of
NW Brink Meyer Rd and Jessica St
Parkville, MO 64152

3. SCHEDULE OF EVENTS

- a. The following is the required schedule of events for this project. The schedule may change depending on the results of the responses.

TABLE 1 : SCHEDULE OF EVENTS

Event	Date
Release of RFB	August 31, 2023
Pre-Proposal Conference	September 14, 2023, 1:00 PM
Questions Due	September 21, 2023, 3:00 PM
Proposal Response Due	October 05, 2023, 3:00 PM
Public Proposal Opening	October 05, 2023, 3:00 PM
Contract Award & Project Start	November 10, 2023
Installation & Testing Complete	May 3, 2024
Review of Testing	May 10, 2024
Final Punch List	May 10, 2024
Acceptance by PHSD	May 31, 2024

- b. A final schedule will be established prior to contracting with the successful contractor.

4. PROPOSALS

- a. Respondents must mail or deliver SEALED copies and USB flash drives of the proposal to:
Park Hill School District
Technology Services
7703 NW Barry Road
Kansas City, MO 64153
- b. Proposals are due on or before Proposal Response Date as listed in Table 1 : Schedule of Events
- c. Proposals must be sealed in an envelope and marked with the contractor’s name and address, proposal number, proposal opening date, and proposal opening time.
- d. PHSD will not accept responses transmitted through facsimile, e-mail, or other electronic methods.

- e. Proposals will be publicly opened and read at the time and place designated for receiving proposals.
- f. Proposals must include a completed proposal with the following attachments:
 - i. **Cost Sheet**
 - ii. **Contractor Information** - Brief contractor biography including, but not limited to, company size, years in business, mission and similar project experience.
 - iii. **References** – Please provide and attach three references of projects of similar size. Reference information must include Name, Organization, Address, Telephone Number and a short description of project including size and date of installation.
 - iv. **Proposed Project Plan with Schedule and Implementation** – Please include a project plan with a schedule that the contractor believes is reasonable to accomplish the construction within this timeframe and list any assumption used in developing the plan and schedule, including any obligations the District has to meet. The plan must identify implementation issues and associated risk management measures the contractor would propose.
 - v. **Deviations and Exceptions** – No deviations will be accepted.
 - vi. **Bid Security and Consent of Surety**

5. PRE-PROPOSAL CONFERENCE

- a. A pre-proposal conference will be held on the date and time listed in Table 1 : Schedule of Events at:
Park Hill School District
Technology Services
7703 NW Barry Rd
Kansas City, MO 64153
- b. This conference is for the purpose of reviewing the project and receiving questions from the vendors who intend to respond.
- c. Because of space allocations, only two representatives from each vendor will be allowed to attend. Vendors will be required to sign in to verify attendance.
- d. The meeting agenda is as follows:
 - i. Open Meeting
 - ii. Review of Project
 - iii. Review general requirements, proposal and proposal opening procedure
 - iv. Questions & Answers
 - v. Close Meeting

II. TERMS AND CONDITIONS OF REQUEST FOR PROPOSAL

1. SUBCONTRACTORS

- a. Should the contractor use subcontractors for portions of the work, PHSD reserves the right to reject any subcontractor without explanation or recourse by the contractor or subcontractor.
- b. Contractor shall provide a copy of an executed subcontract to PHSD for review prior to any subcontractor commencing work on this project.
- c. The selected contractor is held responsible for all work provided by any subcontractor.
- d. PHSD reserves the right to limit the total value of all Subcontracts to sixty (60) percent of the total Contract price.

2. INTERPRETATION AND ADDITIONAL INFORMATION

- a. Any interpretation, correction, or change of the RFB will be made by PHSD through an addendum. Interpretations, corrections, or changes to the RFB made in any other manner will not be binding or reliable.
- b. Addenda will be emailed to all who are known to have attended the Pre-Proposal Conference. Addenda will be issued as expeditiously as possible.

- c. Addenda will also be made available on the Technology Bid Requests web page.
- d. It is the responsibility of the contractor to determine whether all addenda have been received.
- e. It will be the responsibility of all respondents to contact PHSD prior to submitting a response to the RFP to ascertain if any addenda have been issued, and to obtain any and all addenda, execute them, and return addenda with the response to the RFP.

3. QUESTIONS

- a. Questions regarding this RFP must be submitted electronically, to rfp_tech@parkhill.k12.mo.us on or before the date listed in Table 1 : Schedule of Events. The email must contain the proposal number, name, date and individual numbered questions.
- b. Responses to all written questions received in proper time frames will be made in writing and will be listed on the Park Hill School District Requests for Proposals web page at: <https://www.parkhill.k12.mo.us/requests-for-proposals>.
- c. PHSD will not answer questions transmitted through facsimile or methods other than set forth in this section. All questions will be answered in an addendum, five (5) working days after question due date.
- d. PHSD is not responsible for questions not received on or before the due date, including emails lost due to spam filters or other technical issues.

4. OMISSIONS

- a. Omission in the proposal of any provision herein described shall not be construed as to relieve the contractor of any responsibility or obligation requisite to the complete and satisfactory delivery, operation, and support of any and all equipment or services.

5. PAYMENT CONDITIONS

- a. Payments may be requested by application on or before the first Wednesday of each month. Monthly payments will be made based upon Schedule of Values for work that is completed and inspected and determined satisfactory by PHSD.
- b. Ten (10) percent of each estimate will be retained from each monthly payment. Retainage will be paid in full in final payment.
- c. Any approved application for payment received on or before the first Wednesday of the month will be paid on the third Wednesday of that month.
- d. All Applications for Payment: The following items shall be submitted with each request for payment
 - i. Submitted on AIA Form G702–1992, Application and Certificate for Payment
 - ii. Revised Project Schedule
 - iii. Values from previous estimate highlighting values/amounts currently due
 - iv. Certified Payroll
 - v. Waiver of Liens
- e. Initial Application for Payment: The following must precede or coincide with submittal of the first Application for Payment:
 - i. List of subcontractors & suppliers
 - ii. Schedule of Values
 - iii. Certificates of insurance and insurance policies
- f. Final Application for Payment: Final Payment shall be made upon final inspection and acceptance of the job by PHSD. The following must precede or coincide with submittal of the final application for payment:
 - i. Acceptance of entire project by PHSD
 - ii. Project closeout documents
 - iii. Lien releases from suppliers
 - iv. Certified payroll (to meet requirements of Missouri Prevailing Waged Law)

6. SCHEDULE OF VALUES

- a. An approved schedule of values must be established prior to contracting with the successful contractor.
- b. This schedule shall be used as a basis for reviewing the contractor's applications for payment.
- c. Line items in the schedule of values shall be respective of the specific type and area of work.
- d. Upon request by PHSD, the contractor shall provide supportive data substantiating the correctness of the Schedule of Values.

7. BID SECURITY AND CONSENT OF SURETY

- a. Each bid shall be accompanied by a Certified Check, Cashier's Check or Bid Bond duly executed by the respondent as principal, and having as surety thereon a Surety Company approved by PHSD, in an amount not less than ten percent (10%) of the amount bid. Any such bid shall be without endorsement or conditions. Bid shall be accompanied with a certificate letter from a surety company stating that it will provide the respondent with the requisite completion performance and payment bonds, i.e., a Consent of Surety.
- b. Such bid guarantee will be returned to all respondents, except to the three apparent lowest responsible respondents, within ten business days after the formal opening of bids.
- c. The bid guarantee will be returned to the remaining unsuccessful respondents within three business days after PHSD and the accepted respondent have executed the Contract and PHSD has approved the Respondent's Performance Bond, or if no Contract has been accepted within 60 days after the date of opening of bids, any respondent upon demand made after the expiration of said 60 day period, shall be entitled to the return of his bid guarantee, so long as he has not been notified by PHSD of the acceptance of his bid.
- d. Any such guarantee shall be forfeited and become the property of PHSD if the respondent whose bid is accepted shall fail: to give a satisfactory performance bond and labor and material payment bond, or a combination performance and labor and material payment bond, and/or fails to execute a contract within then (10) days after notice from PHSD to do so.

8. PERFORMANCE BOND AND PAYMENT BOND

- a. The contractor shall provide Performance and Labor and Material Payment Bonds in the amount of 100% of the Contract Sum. The contractor's cost of the bonds shall be included in the Contract Sum.
 - i. The Surety shall have, at a minimum, a "Best Rating" of "A" as stated in the most current publication of "Best's Key Rating Guide, Property-Casualty." In addition, the Surety shall have a minimum "Best Financial Strength Category" no less than five (5) times the contract amount.
 - ii. The Performance Bond and the Payment Bond both shall be made payable to PHSD.
 - iii. The Performance and Labor and Material Payment Bonds shall:
 - Be issued by a surety company licensed to do business in Missouri; and,
 - Be accompanied by a current power of attorney and certified by the attorney-in-fact who executes the bond on the behalf of the surety company; and,
 - Remain in effect for a period not less than one (1) year following the date of project acceptance, or the time required to resolve any items of incomplete Work and the payment of any disputed amounts, whichever time period is longer; and,
 - Display the Surety's Bond Number. A rider including the following provisions shall be attached to each Bond stating that:
 - The Surety hereby agrees that it consents to and waives notice of any addition, alteration, omission, change, or other modification of the Construction Documents or Contract Documents. Any addition, alteration, change, extension of time, or other modification of the Construction Documents or Contract Documents, or a forbearance on the part of either PHSD or the Contractor to the other, shall not release the Surety of its obligations hereunder, and notice to the Surety of such matters is hereby waived.

- The Surety agrees that it is obligated under the bonds to any successor, grantee, or assignee of PHSD.
 - Notwithstanding the foregoing, any bonds required by this Contract shall meet the requirements of the Missouri Statutes, as amended.
- b. Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.
 - c. The Contractor shall furnish the required bonds to PHSD no later than eight (8) days following execution of the Agreement. The Contractor shall keep the Surety informed of the progress of the Work, and, where necessary, obtain the Surety's consent to, or waiver of:
 - i. Notice of changes in the Work;
 - ii. Request for reduction or release of retention;
 - iii. Request for final payment; and
 - iv. Any other item required by the Surety.
 - d. PHSD may, in PHSD's sole discretion, inform the Surety of the progress of the work and obtain consents as necessary to protect PHSD's rights, interest, privileges, and benefits under and pursuant to any bond issued in connection with the work.

9. PRICING REQUIREMENTS

- a. Pricing shall include the furnishing of all materials, equipment, maintenance and training manuals, tools, and the provision of all labor and services necessary or proper for the completion of the work, except as may be otherwise expressly provided in the contract documents. PHSD will not be liable for any costs beyond those proposed herein and awarded. Time and materials quotes will be unacceptable.
- b. Prices MUST be free of federal, state, and local taxes unless otherwise imposed by a governmental body, and applicable to the material on the proposal.
- c. In case of discrepancy in computed proposal prices, the lowest combined value of individual unit costs shall prevail.
- d. Proposals submitted may not be withdrawn for a period of 60 days immediately following the opening of this Request for Proposal.
- e. Unless specified elsewhere in this document, all prices quoted must be F.O.B. specified destination and will include all delivery, handling, and any other charges related to delivery including surcharges.
- f. Contract prices and discounts shall be fixed at the time of contract approval by PHSD and The Contractor. In the event of price changes, replacement equipment shall be purchased at the lower of contract or then current market price. In no case shall a price higher than contract price be paid for equipment proposed.
- g. In no case shall the price exceed the favored Contractors prices.
- h. Price complications arising from material availability must be communicated in writing for review by PHSD.

10. CONTRACTOR QUALIFICATIONS

- a. The selected Contractor shall be fully capable and experienced in the communications system specified. To ensure the system has continued support, PHSD will contract only with Contractors having a successful history of installation, service, and support. During the evaluation process, PHSD may, with full cooperation of The Contractor, visit The Contractors' places of business, observe operations, and inspect records. The Contractor must have a minimum of five (5) years of experience on similar projects.
- b. PHSD may, with full cooperation of the contractors, visit client installations to observe equipment operations and consult with references. Specified visits and discussion shall be arranged through the contractors; however, the contractors personnel shall not be present during discussions with references. The contractor must provide a minimum of three (3) reference accounts at which similar work, both in scope and size, have been completed by the contractor within the last two (2) years.

11. EQUAL EMPLOYMENT OPPORTUNITY

- a. In connection with the execution of this Contract, The Contractors and subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age, or national origin. Contractors shall take affirmative action to ensure that minority and disadvantaged applicants are employed and employees are treated during their employment without regard to race, religion, color, sex, age, or national origin.
- b. All project participants, consultants, engineers, contractors and subcontractors, must comply with all applicable Federal, state and local laws pertaining to contracts entered into by governmental agencies. All participants must comply with the Americans with Disabilities Accessibility Guidelines (ADAAG).

12. COMPLIANCE WITH LAWS AND REGULATIONS

- a. The Contractors performance of the work shall comply with applicable federal, state, and local laws, rules, and regulations. The Contractor shall give required notices, shall procure necessary governmental licenses and inspections, and shall pay without burden to PHSD, all fees and charges in connection therewith unless specifically provided otherwise. In the event of violation, The Contractor shall pay all fines and penalties, including attorney's fees, and other defense costs and expenses in connection therewith.
- b. Contracts entered into based on submitted proposals are revocable if contrary to law.
- c. The agreement and contract documents shall be deemed to have been entered into in the State of Missouri, and all questions concerning the validity, interpretation or performance of any of its terms or provisions, or of any rights or obligations of the parties hereof, shall be governed by and resolved in accordance with the internal laws of the State of Missouri, including, without limitation, the statute of limitations.
- d. All disputes arising under the contract documents and agreement shall be submitted to the Missouri State Court for the County of Platte which shall have subject matter jurisdiction over the claim or controversy or to the United States District Court for the Western District of Missouri, sitting in Kansas City, Missouri. Buyer and Seller expressly consent to the exercise of personal jurisdiction by the Platte County, Missouri State Court or by the United States District Court for the Western District of Missouri, sitting in Kansas City, Missouri, and expressly consent to service of process by either certified mail or registered mail and waive any objections to venue.
- e. No prepayment of any kind will be made prior to shipment. Payment will be made upon verification of delivery, compliance with specifications, assurance that the product/service performs as specified and warranted, and receipt of correct invoicing.
- f. The contractor certifies that it meets the requirements of the Missouri Prevailing Wage Law. Certified payroll to meet requirements of Missouri Prevailing Wage Law is required as part of final request for payment.

13. CODES, STANDARDS, AND ORDINANCES

- a. All work shall conform to the latest edition of the National Electrical Code®, the Building Code, and all local codes and ordinances, as applicable. ANSI/TIA/EIA-568-C.1 through ANSI/TIA/EIA-568-C.3, TIA-569-B, TIA/EIA-606-A, ANSI-J-STD-607-A, NECS/BICSI-568-2006 and shall be adhered to during all installation activities. Methodologies outlined in the latest edition of the BICSI Telecommunications Distribution Methods Manual and BICSI Outside Plant Design Reference Manual, 5th Edition shall also be used during all installation activities.
- b. Should conflicts exist between any of the codes, standards, ordnances or this document, PHSD or the authority having jurisdiction for enforcement will have responsibility for making interpretation.

14. PATENTS AND ROYALTIES

- a. The Contractor, without exception, shall indemnify and hold harmless PHSD and its employees from any liability of any nature or kind, including costs and expenses for, or on account of, any trademarked, copyrighted, patented, or non-

patented invention, process, or article manufactured or used in the performance of the Contract, including its use by PHSD.

- b. If The Contractor or subcontractor uses any design, device, or materials covered by letters, patent, trademark, or copyright, it is mutually understood and agreed without exception that the proposal prices shall include all royalties or cost arising from the use of such design, device, or materials in any way involved in the work.

15. INDEMNIFICATION

- a. The Contractor shall indemnify and hold harmless PHSD, its agents, and employees from or on account of any injuries or damages, received or sustained by any person or persons, during or on account of the performance of work or any operation connected with this Contract; or by consequence of any negligence (excluding negligence by PHSD, its agents, or employees) in connection with the same; or by use of any improper materials or by or on account of any act or omission of said Contractor or its subcontractors, agents, servants, or employees.
- b. The Contractor further agrees to indemnify and hold harmless PHSD, its agents, or employees, against claims or liability arising from or based upon the violation of any federal, state, county, city, or other applicable laws, bylaws, ordinances, or regulations by The Contractor, its agents, associates, or employees.
- c. The indemnification provided above shall obligate The Contractor to defend at its own expense or to provide for such defense, at PHSD's option, of any and all claims of liability and all suits and actions of every name and description that may be brought against PHSD which may result from work, the operations and activities under this Contract whether or not the installation operations be performed by The Contractor, subcontractor, or by anyone directly or indirectly employed or directed by them.
- d. The award of this Contract to The Contractor shall obligate The Contractor to comply with the foregoing indemnity provision; however, the collateral obligation of insuring this indemnity must be complied with as set forth.
- e. The respondent will certify and warrant that goods, personal property, chattels, and equipment sold and delivered are free and clear of any and all liens, or claims of liens, for materials or services arising under, and by virtue of the provisions of M.O. Sections 429, et seq., and any other lien, right, or claim of any nature or kind whatsoever.

16. FORCE MAJEURE

- a. Neither party shall be held responsible for delay or failure to perform when such delay or failure is due to any of the following unless the act or occurrence could have been foreseen and reasonable action could have been taken to prevent the delay or failure, provided the defaulting party gives notice as soon as possible to the other party regarding the inability to perform.
 - i. Fire
 - ii. Flood
 - iii. Epidemic
 - iv. Strikes
 - v. Wars
 - vi. Acts of God
 - vii. Unusually severe weather (except normally expected weather in Missouri)
 - viii. Acts of public authorities
 - ix. Delays or defaults caused by public carriers
- b. The contractor shall make every reasonable effort to maintain staff, facilities, and equipment to deliver the system or service purchased by PHSD. The contractor shall immediately notify PHSD in writing whenever it is unable to, or reasonably believes it is going to be unable to, provide the agreed-upon quality and quantity of services. Expected normal weather for the season is exempted from being considered unusually severe weather. Upon such notification, PHSD shall determine whether such inability requires a modification or cancellation of the contract.
- c. Both parties shall use their best efforts to mitigate any damages that might be suffered by reason of any event giving rise to remedy hereunder.

17. LIABILITY AND INSURANCE

- a. The Contractor shall assume the full duty, obligation, and expense of obtaining and maintaining necessary insurance.
- b. Insurance Coverage
 - i. The Contractor shall be fully liable to provide and maintain in force during the life of this Contract, such insurance, including Public Liability Insurance, Product Liability Insurance, Auto Liability Insurance, Worker's Compensation, and Employer's Liability Insurance as will assure to PHSD the protection contained in the foregoing indemnification provision undertaken by The Contractor. Such policies shall be issued by United States Treasury-approved companies authorized to do business in the State of Missouri and having agents upon whom service of process may be made in PHSD and shall contain as a minimum, the following provisions, coverage, and policy limits of liability.
- c. General Liability
 - i. General Liability Insurance shall protect PHSD, The Contractor, subcontractor, agents, and employees from claims for damages. The limits of liability provided by such policy shall be no less than Five Hundred Thousand Dollars (U.S. \$500,000.00) per occurrence combined single limit bodily injury and property damage, and an amount not less than One Million Dollars (U.S. \$1,000,000.00) for damages on account of all occurrences.
- d. Product Liability
 - i. Product Liability or Completed Operations Insurance shall have bodily injury limits of liability of not less than Five Hundred Thousand Dollars (U.S. \$500,000.00) per person; Five Hundred Thousand Dollars (U.S. \$500,000.00) per occurrence, and Five Hundred Thousand Dollars (U.S. \$500,000.00) aggregate.
- e. Auto Liability
 - i. Auto Liability Insurance shall have bodily injury limits of not less than Five Hundred Thousand Dollars (U.S. \$500,000.00) per occurrence and property damage limits of not less than Five Hundred Thousand Dollars (U.S. \$500,000.00).
- f. Workers' Compensation and Employer's Liability
 - i. Workers' Compensation and Employer's Liability Insurance shall meet minimum requirements set by the State of Missouri, but in no case less than One Hundred Thousand Dollars (U.S. \$100,000.00).
- g. Proof of Insurance
 - i. The Contractor shall furnish to PHSD a Certificate of Insurance or duplicate policies of insurance described above which specifically protect PHSD. This will be accomplished by naming PHSD as a named insured under the policy and by providing an endorsement under the terms of which the insurer specifically agrees not only to pay any claims incurred by or resulting to PHSD, but also agrees to enter a defense on behalf of PHSD. The defense includes any and all suits or actions, in which the liability of PHSD is vicarious and is predicated upon allegation of some act of omission by The Contractor, subcontractor, or his or her agents. This proof shall be received within two (2) working days after notice of award. Purchase order(s) will not be issued until Certificates of Insurance are received.
 - ii. Such certification must contain a provision for notification of PHSD thirty (30) days in advance of any material change in coverage or cancellation. Notification shall be in writing and signed in ink by a duly authorized officer of the Insurer.
 - iii. Insurance Companies are subject to approval and may be rejected by PHSD without stated cause.
- h. Claims
 - i. In any and all claims against PHSD, or any of their agents or employees by any employee of the Contractor, any subcontractor, or anyone directly or indirectly employed by any of the contracting parties, or anyone for whose acts any of them may be liable, the indemnification obligations contained herein, specifically including, without limitation, those obligations contained in Paragraphs 18 and 20 of this Article II shall not be limited in any way by any limitation on the amount or types of damages, compensation acts, disability benefit acts, or other employee benefit acts.

18. FAILURE TO COMPLETE AND LIQUIDATED DAMAGES

- a. Time is of the essence in all phases of the work. It is specifically understood and agreed by and between PHSD and the Contractor that time is of the essence in the Final Completion of the Project and PHSD shall sustain actual damages as a result of the Contractor's failure, neglect or refusal to achieve said deadlines. Such actual and direct damages are, and will continue to be, impractical and extremely difficult to determine. Execution of this Agreement under these specifications shall constitute agreement by PHSD and the contractor that the amounts stated below are the minimum value of the costs and actual and direct damages caused by failure of the contractor to complete the work within the allotted time, that such sums are liquidated direct damages and shall not be construed as a penalty, and that such sums may be deducted from payments due to the contractor if such delay occurs. It is expressly understood that the said sum per day is agreed upon as a fair estimate of the pecuniary damages which will be sustained by the PHSD in the event that the Work is not completed within the agreed time, or within the extended time, if any, otherwise provided for herein. Said sum shall be considered as liquidated damages only and in no sense shall be considered a penalty, said damages being caused by additional compensation to personnel, for loss of interest on money, and other miscellaneous increased costs, all of which are difficult to exactly ascertain. Failure to complete the Work within the designated period, or as it may be extended, shall be construed as a breach of this Agreement.
- b. It is expressly agreed as a part of the consideration inducing PHSD to execute this Agreement that PHSD may deduct from the Final Payment made to the Contractor a sum equal to a dollar amount per day for each and every additional calendar day beyond the agreed date of project acceptance for the projects and improvements as set forth herein.
- c. The successful Contractor and its sureties shall be liable for and shall pay to PHSD the sum of Five Hundred Dollars (U.S. \$500.00) for each calendar day of delay beyond the project acceptance date until all work is completed and accepted. PHSD will notify the Contractor in writing if the project schedule is not being met. The Contractor will have (10) working days to remedy the problem before liquidated damages begin.
- d. If the respondent refuses or fails to make deliveries of the materials, or complete work, within the times specified in this document, project schedule or purchase order, PHSD may, by written notice, terminate the contract or purchase order.
- e. If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of PHSD, or of a separate contractor employed by PHSD, or by changes ordered in the work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by PHSD pending mediation and arbitration, or by other causes which PHSD determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as PHSD may determine.

19. PROPOSAL EVALUATION

- a. Proposals will be evaluated against the following criteria:
 - i. Price (Primary Factor)
 - ii. Compliance with proposal requirements
 - iii. Completeness of proposal
 - iv. Contractor qualifications
 - v. Contractor reputation and experience
 - vi. References
 - vii. Local Presence
- b. PHSD interprets the term "Lowest Responsible and Best Respondent" as requiring PHSD to: (a) choose between the kinds of materials, goods, wares, or services subject to the bid, and (b) determine which bid is most suitable for its intended use or purpose. PHSD can consider, among other factors, such things as references, past performance, the availability of service(s), part(s) material(s) and/or supply(s), warranty, maintenance, freight costs, performance of product and labor cost of items upon which bids are received. Bid responses will be rejected if all bid specifications are not met.
- c. Alternate proposals (two or more proposals submitted) will be considered for an award. PHSD reserves the right to make the final determination of actual equivalency or suitability of such proposals with respect to requirements outlined herein. The proposals submitted, and any further information acquired through interviews, will become and is to be considered a part of the final completed contract. If there is any variance or conflict, the this document will control.
- d. PHSD will issue a purchase order/contract for the acquisition of products/services specified as a result of an award made in reference to this document. Contract documents will be subject to any regulations governed by the laws of the State of Missouri and any local resolutions specifically applicable to the purchase.
- e. PHSD reserves the right to determine whether a contractor is responsive and has the ability and resources to perform the contract in full and comply with the specifications. Inability to demonstrate contractor experience will result in rejection of the response.

20. RIGHT TO REJECT

- a. PHSD reserves the right to reject any and/or all proposals and responses to these and/or related documents, to accept any item(s) in the proposal, to waive any irregularity in the proposals, and further if determined to be non-responsive in any form, or if determined to be in the best interest of PHSD.

21. RIGHT TO ALTER CONTRACT

- a. PHSD may at any time alter or modify this document, and the Contractor shall conform to such alterations or modifications after PHSD and the Contractor shall have entered into a Change Order in writing. The Contractor shall perform no work and furnish no material in connection with the alterations or modifications, nor shall he receive any additional payment, unless and until such a Change Order has been executed, as required by law.
- b. PHSD and the Contractor agree that alterations and modifications thus made shall in no way compromise the validity or coverage of the original Contract or Bond, or the liability of the signers. All work performed under any such Change Order shall be subject to all the provisions of the original Contract not expressly altered or modified.
- c. When ordered by PHSD, the Contractor shall make minor changes in the location of the work, installation of equipment, and other things called for in the Contract, at no change in Contract value. Such minor changes shall be limited to matters that do not alter the character, quantity or cost of the work as a whole. PHSD shall be the sole judge of what constitutes a minor change.

22. QUALITY ASSURANCE

- a. The contractor shall have worked satisfactorily for a minimum of five (5) years on systems of this type and size.
- b. Equipment and materials of the type for which there are independent standard testing requirements, listings, and labels shall be listed and labeled by the independent testing laboratory.
- c. Where equipment and materials have industry certification, labels, or standards (i.e., NEMA - National Electrical Manufacturers Association), this equipment shall be labeled as certified or complying with standards.
- d. Material and equipment shall be new, and conform to grade, quality, and standards specified. Equipment and materials of the same type shall be a product of the same manufacturer throughout.
- e. Subcontractors shall assume all rights and obligations toward the contractor that the contractor assumes toward the PHSD and engineer/designer.

23. WARRANTY

- a. Transfer manufacturer's warranties to the PHSD in addition to the General System Guarantee. Submit these warranties on each item in list form with shop drawings. Detail specific parts within equipment that are subject to separate conditional warranty. Warranty proprietary equipment and systems involved in this contract during the guarantee period. Final payment shall not relieve you of these obligations.
- b. Effect replacement or substitutions of equipment within 24 hours of first notification. Complete repairs to equipment within 72 hours. If repairs cannot be completed during this time period, or if ordering of parts is required, forward to the PHSD every 72 hours, documentation of progress of repairs. This repair capability is mandatory. Include costs anticipated to comply with this requirement in the proposal.

24. TERMS AND CONDITIONS

- a. In submitting a response to this Request for Proposal, contractors hereby understand the following:
 - i. All requested information must be supplied. If respondent cannot respond to any part of this request, respondents should state the reason they cannot respond and note an exception. Respondents may provide supplemental information to assist PHSD in analyzing its proposal.
 - ii. The respondent responding to this proposal solicitation proposes to furnish all materials, labor, supplies, equipment and incidentals necessary to provide the equipment/materials/services described herein in accordance with the Notification of Solicitation (if applicable), Request for Information (if applicable), Request for Proposal, Addenda, Contract, Bonds, Insurance, Plans, Specifications, any Instructions, Mandatory Requirements and Conditions.
 - iii. The respondent hereby certifies that he or she has carefully examined all of the documents for the project, has carefully and thoroughly reviewed this Request for Proposal, has inspected the location of the project (if applicable), and understands the nature and scope of the work to be done; and that this proposal is based upon the terms, specifications, requirements, and conditions of the Request for Proposal documents. The respondent further agrees that the performance time specified is a reasonable time, having carefully considered the nature and scope of the project as aforesaid.
 - iv. It will be understood that any proposal and any and/or all referencing information submitted in response to this Request for Proposal will become the property of PHSD, and will not be returned. As an educational entity, PHSD is subject to making records available for disclosure after Board of Education approval of the recommendation.
 - v. PHSD will not be responsible for any expenses incurred by any contractor in the development of a response to this Request for Proposal including any onsite (or otherwise) interviews and/or presentations, and/or supplemental information provided, submitted, or given to PHSD and/or its representatives. Further, PHSD will reserve the right to cancel the work described herein prior to issuance and acceptance of any contractual agreement/purchase order by the recommended contractor even if the Board of Education has formally accepted a recommendation.
 - vi. By submission of a response, the respondent agrees that at the time of submittal, he or she: (I) has no interest (including financial benefit, commission, finder's fee, or any other remuneration) and will not acquire any interest, either direct or indirect, that would conflict in any manner or degree with the performance of respondent's services,

or (2) benefit from an award resulting in a "Conflict of Interest". A "Conflict of Interest" will include holding or retaining membership, or employment, on a board, elected office, department, or committee sanctioned by and/or governed by the PHSD Board of Education. Respondents will identify any interests, and the individuals involved, on separate paper with the response and will understand that PHSD may reject their proposal. The respondent certifies that this proposal is submitted without collusion, fraud or misrepresentation as to other respondents, so that all proposals for the project will result from free, open and competitive bidding among all contractors.

- vii. Verbal discussions pertaining to modifications or clarifications of this proposal will not be considered part of the proposal unless confirmed in writing. Any information provided by the contractor verbally will not be considered as part of that contractor's response until written confirmation is received by PHSD as noted in II.3 Questions.
- viii. PHSD is responsible for locating or securing any information that is not identified in the proposal and reasonably available to PHSD. To ensure that sufficient information is available, the contractor must furnish as part of the response, all descriptive material necessary for PHSD to determine whether the response meets the requirement of the proposal and establish exactly what the contractor proposes to furnish as to supplies, materials, and services.
- ix. The specifications provided herein are intended to facilitate an understanding of PHSD's needs and are to be considered the minimum requirements. It is the contractor's responsibility to propose a technically sound and operationally functional system.
- x. At the election of PHSD (and subject to applicable laws, rules, codes, and regulations), other school districts, public entities, political subdivisions, or state, city, or county government bodies shall be allowed to contract with Contractor for certain portions of the Work on the same terms and conditions as contained in the proposal submitted by Contractor, during the period of time that the proposal is in effect.
- xi. From the date the proposal is issued until the date the contract is awarded, there shall be no contact by any contractor to any district employee (excluding the designated project contact) or board member in relation to this proposal, unless authorized by the designated project contact. For the purposes of this proposal the project contact is:

Trevor Lamme
Manager of Network and Infrastructure
Technology Services
Park Hill School District
7703 NW Barry Rd
Kansas City, MO 64153
816-359-5000

III. GENERAL

1. SUMMARY

- a. Provide all equipment, materials, labor, and services, not specifically mentioned or shown, which may be necessary to complete or perfect all parts of the installation. Ensure that they are in compliance with requirements stated or reasonably inferred by the contract documents.
- b. Work not included. The following work will be done by others:
 - i. Providing electrical wiring and outlets
 - ii. Providing data concentrators, hubs, switches, servers, computers, and other electronic devices
 - iii. Painting

2. INSPECTION AND ACCEPTANCE

- a. Inspection and Acceptance will be at destination and upon successful installation unless otherwise provided. Title to/or risk of loss or damage to all items shall be the responsibility of the successful Contractor until acceptance by PHSD, unless loss or damage results from negligence by PHSD. If the materials or services supplied to PHSD are found to be defective or do not conform to the specifications, PHSD reserves the right to immediately cancel the contract upon written notice to the contractor and return products at the contractor's expense, based upon the terms of the Contract. PHSD will cease any future payments and seek return of any payments made.
- b. PHSD shall at all times have access to the work wherever it is in preparation or progress, and the contractor shall provide proper facilities for such access and for inspection.
- c. The contractor shall not close up any work until PHSD has inspected the work. Should the contractor close up the work prior to inspection by PHSD, the contractor shall uncover the work for inspection by PHSD at no cost to PHSD, and then recover the work according to the specification contained herein.
- d. The contractor shall notify PHSD in writing when the work is ready for inspection. PHSD will inspect the work as expeditiously as possible after receipt of notification from the contractor.

3. CONTRACTOR'S REPRESENTATIVE

- a. The Contractor will designate an on-site, full-time, Representative who will act as a single point of contact for all activities regarding this project.
- b. The Representative should be a Registered Telecommunication Project Manager (RTPM), Outside Plant (OSP) Designer or other equivalent certificate (as approved by PHSD)
- c. The Representative will be required to make on-site decisions regarding the scope of the work and any changes required by the work.
- d. The Representative must be on the job site at any time workers are present or work is being performed by workers of either the contractors or subcontractors.
- e. The Representative will be totally responsible for all aspects of the work and shall have the authority to make immediate decisions regarding implementation or changes to the work.

4. CONSTRUCTION MANAGER

- a. PHSD will provide a Construction Manager who will act as a single point of contact for all activities regarding this project. The Construction Manager will be responsible for all decisions required of PHSD and shall coordinate with all departments during installation activities. The Construction Manager will provide inspection of completed systems.

5. CHANGE ORDERS

- a. A Change Order is a written instrument prepared by the PHSD and signed by PHSD and the contractor, stating their agreement upon all of the following
 - i. change in the Work
 - ii. the amount of the adjustment, if any, in the contract sum
 - iii. the extent of the adjustment, if any, in the contract time
- b. PHSD, without invalidating the Contract, may make changes by altering, adding to or deducting from the work the contract sum being adjusted accordingly. All such work shall be executed in conformity with the terms and conditions of the original Contract, unless otherwise provided in the order for same. Any claim for extension of time caused thereby shall be adjusted at the time of ordering such change.
- c. No instructions, either written or verbal, shall be construed as an order for changes unless it be in the form of a Change Order, bearing the signed approval of PHSD and the signed acceptance of the Contractor, except in the case of disagreement as to value of changes, when the Contractor's signature to the order will not be mandatory.
- d. Change Order shall describe or enumerate the work to be performed and state the price, if any, to be added to or deducted from the Contract sum. If the nature of the work is such that a Change Order, as above, cannot be issued until the work has been advanced sufficiently to obtain exact quantities, said work will be authorized in writing by PHSD, with the accompanying statement that a Change Order will be issued when the necessary information is at hand.

6. SUBMITTALS & DOCUMENTATION

- a. Submit to PHSD shop drawings, product data (including cut sheets and catalog information).
- b. Shop drawings must include detailed product drawings and installation notes. Shop drawings should also include detailed proposed fiber route maps. Maps should have notation of underground placement (including method of placement), aerial attachment, underground enclosure (hand hole) locations, splice case locations and fiber entry points.
- c. Submit shop drawings, product data, and samples with such promptness and in such sequence as to cause no delay in the work or in the activities of separate contractors.
- d. PHSD will indicate approval of shop drawings, product data, and samples submitted by stamping such submittals "No Exceptions Noted" with a stamp.
- e. Submitted shop drawings shall be signed by the contractor, showing the date and the contractor's legitimate firm name.
- f. By submitting shop drawings, product data, and samples, the contractor represents that he or she has carefully reviewed and verified materials, quantities, field measurements, and field construction criteria related thereto. It also represents that the contractor has checked, coordinated, and verified that information contained within shop drawings, product data, and samples conform to the requirements of the work and of the contract documents.
- g. PHSD's approval of shop drawings, product data, and samples submitted by the contractor shall not relieve the contractor of responsibility for deviations from requirements of the contract documents, unless the contractor has specifically informed PHSD in writing of such deviation at time of submittal, and PHSD has given written approval of the specific deviation. The contractor shall continue to be responsible for deviations from requirements of the contract documents not specifically noted by the contractor in writing, and specifically approved by the engineer in writing.
- h. PHSD's review and approval, or other appropriate action upon shop drawings, product data, and samples, is for the limited purpose of checking for conformance with information given and design concept expressed in the contract documents. PHSD's review of such submittals is not conducted for the purpose of determining accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the contractor as required by the contract documents. The review shall not constitute approval of safety precautions or of construction means, methods, techniques, sequences, or procedures. PHSD's approval of a specific item shall not indicate approval of an assembly of which the item is a component.
- i. Perform no portion of the work requiring submittal and review of shop drawings, product data, or samples, until PHSD has approved the respective submittal. Such work shall be in accordance with approved submittals.
- j. Submit shop drawings, product data, and samples as a complete set within thirty (30) days of award of contract.

- i. For initial submission and for resubmission required for approval, submit electronically to RFP_Tech@parkhill.k12.mo.us.
- ii. Illegible submittals will not be checked by PHSD.
- k. The Following Submittals are required:
 - i. Complete Bill of materials, noting long lead time items.
 - ii. Submit copies of the certification of the company and names of the staff that will be performing the installation and termination of the installation to provide proof of compliance with this specification.
 - iii. Submit proof from the manufacturer of contractor's good standing in manufacturer's program.
 - iv. Fabrication drawings for custom-built equipment
 - v. Product Data -- Provide catalog cut sheets and information for the following:
 - Wire, cable, and optical fiber
 - Outlets, jacks, and connectors
 - All metallic and nonmetallic raceways and cable support systems
 - Terminal blocks and patch panels
 - Enclosures, and equipment housings
 - Alternate products requiring approval. No alternate or substituted materials shall be installed except by written approval of PHSD.
 - vi. Project record drawings system documentation: Upon completion of the installation, the telecommunications contractor shall provide three (3) full documentation sets for approval. Documentation shall include the items described in the sub-sections below.
 - Fiber Splice Tables (Fiber Tree)
 - Warranty documents
 - Hand drawing of as-built for PHSD to use and to update CAD files.
 - Test Results Documentation
 - Photos of completed splice trays and handholes
 - vii. The Contractor shall provide one hand marked plan set denoting all field adjustments for PHSD to use in preparation of final As-Built Plans.

7. DELIVERY, STORAGE, AND HANDLING

- a. Protect equipment during transit, storage, and handling to prevent damage, theft, soiling, and misalignment.
- b. If needed, the contractor will be required to maintain its' own storage area on the site. Storage space will not be provided.
- c. Do not install damaged equipment; remove from site and replace damaged equipment with new equipment at own expense.
- d. If non-outdoor rated cable is stored outside, it must be covered with opaque plastic or canvas for protection from the elements, with adequate ventilation to prevent condensation.
- e. Lost, stolen or damaged material must be replaced at contractor's expense.
- f. The Contractor shall obtain approval of PHSD of the type, size, and location of such office, shanties or other temporary structures for the project prior to their use, or deployment.

8. SEQUENCE AND SCHEDULING

- a. Prior to installation starting, submit schedule for installation of equipment and cabling. Indicate delivery, installation, and testing for conformance to specific job completion dates. As a minimum, dates are to be provided for:
 - i. Installation start date
 - ii. Permitting
 - iii. Underground duct installation start and completion
 - iv. Building site installation start and completion
 - v. Underground fiber optic placement
 - vi. Completion of testing and labeling
 - vii. Completion of the final punch list
 - viii. PHSD acceptance
- b. Prior to installation of equipment or service, the installation plan shall be provided to and accepted by PHSD.
- c. The rate of progress shall be as uniform as practicable and such that all the work will be completed within the time specified, or within any time extensions that may be granted by PHSD.
- d. PHSD shall notify the Contractor in writing if, at any time, he is of the opinion the work is unnecessarily delayed and will not be completed on time. The Contractor shall, within 10 days after receipt of such notice, take such action as will, in the opinion of PHSD, improve the rate of progress to an extent that will insure completion of the work within the time specified.
- e. Since the provisions of this project relating to the commencement and completion of the work are to enable PHSD to construct and place in use an improvement or facility in accordance with a pre-determined program, such provisions are of the essence of this Contract. It is agreed that PHSD will suffer damages if the work is not completed in the time specified. Including, but not limited to, the extension of current agreements and or services that currently provide the same need that this project is planned to fulfill.

9. USE OF THE SITE

- a. Access to building where work is to be performed shall be as directed by PHSD.
- b. Proceed with the work without interfering with ordinary use of streets, aisles, passages, exits, and operations of PHSD.
- c. The contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under this document. At completion of the Work, the contractor shall remove any waste materials, rubbish, tools, construction equipment, machinery and surplus materials used by the contractor.
- d. The contractor shall provide timely cleanup of the jobsite so as not to interfere with the progress of other trades or themselves. After a 24 hour notice, any of the contractor's cleanup performed by others will be charged to the contractor at \$75/hr., with a four hour minimum.
- e. The contractor must obtain the permission from PHSD before proceeding with any work necessitating construction on property or cutting through any part of any PHSD facility.
- f. Contractor shall supply mobile sanitary facilities. The sanitary facilities must be taken to the Contractor's storage yard at the end of each work day. Sanitary facilities are not allowed in the streets overnight. Contractor may not use PHSD sanitary facilities.
- g. All water will be provided by off-site sources at Contractor's expense.
- h. Contractor shall be responsible for ensuring each employee, performing work which requires their presence on school property, to sign-in, daily, at the school's office. This applies to all Subcontractor's and Contractor's employees. General Contractor shall be responsible for ensuring all necessary employees have signed-in.
- i. If an employee will be conducting work inside a school building, the contractor will be responsible for obtaining a criminal sex offender background check. For any such employee. If such background check reveals that such employee has committed an offense that, if committed within the state of Missouri, would be a violation of RSMo 566.149, then such employee shall not be allowed within 500 feet of any PHSD property.

10. SAFETY

- a. The Contractor shall take the necessary precautions and bear the sole responsibility for the safety of the methods employed in performing the work.
- b. The contractor shall bear full responsibility for work stoppages due to safety concerns.
- c. The Contractor shall at all times comply with the regulations set forth by federal, state, and local laws, rules, and regulations concerning "OSHA" and all applicable state labor laws, regulations, and standards.
- d. The Contractor shall indemnify and hold harmless PHSD from and against all liabilities, suits, damages, costs, and expenses (including attorney's fees and court costs) which may be imposed on PHSD because of The Contractor, subcontractor, or supplier's failure to comply with the regulations, laws, rules, and other requirements stated herein.
- e. The contractor is responsible for adhering to the latest versions of the above referenced documents/standards as of the date of contract award.
- f. The contractor shall take the necessary precautions when working on Public Right-of-Way and near private School property. Including but not limited to the use of temporary fencing and barricades around open holes and equipment.
- g. Excavated sites or construction areas left unattended and/or overnight, including but not limited to, bore pits and handhole locations shall be staked and provided with temporary construction fencing.
- h. The ignition of motorized self-propelled equipment shall be secured at all times to prevent unauthorized use. Keys shall not be left on the equipment or the vehicle unless the operator is actively using and in full control of that equipment or vehicle.

11. CORRECTION OF WORK

- a. Any materials, plant or equipment delivered to the Site for use in the work which may be disapproved by PHSD as unsuitable or not in keeping with the Specifications shall be immediately removed by the Contractor from the Site.
- b. If any portion of the work is damaged in any way, or if defects or faults develop before the project acceptance, or before the expiration of the 24-month guarantee period, the Contractor shall repair, replace or otherwise make good the damage or defects to the satisfaction of the Engineer, regardless of whether the work may have previously passed the specified inspections and tests. No additional payment will be made for such remedial work.
- c. Failure on the part of PHSD to condemn defective work shall not imply acceptance of the work, nor act to release the Contractor from his obligations to repair, replace or otherwise make good the work at his own expense, notwithstanding that such work may have been estimated for payment or that partial or full payments may have been made thereof.

12. RESPONSIBILITY TO REPAIR

- a. The Contract Drawings show the location and character of certain existing subsurface structures and facilities apt to be encountered in excavations or located in such proximity to the work as to require precautions for their protection.
- b. The sizes, materials, locations and depths shown are only approximate, and the Contractor shall satisfy himself as to the accuracy and completeness of such information. The Contractor shall not be relieved from any of his obligations, nor be entitled to claim for damages or additional compensation, sustained or arising out of inadequacy or inaccuracy of the information given.
- c. In the event of accidental disruption of utility service, it shall be deemed an emergency, and the Contractor shall proceed with the necessary repairs immediately and continuously, giving this work priority over all other operations, until service has been satisfactorily restored. The Contractor shall give immediate notice of such break or service interruption to PHSD, the Utility, and all customers affected. All lines and connections shall be restored to the satisfaction of the Engineer and the Utility.
- d. All portions of the foregoing provisions regarding utility service are applicable to water, sewer, gas, telephone or other services shall apply to maintenance and emergency repair of such services.

13. NOTIFICATION OF OTHER PARTIES

- a. The Contractor shall give written notice of his proposed construction operations to the owners of all public and private utilities at least seven days in advance of breaking ground in any area in which a utility is located.
- b. The Contractor shall give written notice of his proposed construction operations to the property owners at least seven days in advance of breaking ground in any area in which work will begin.
- c. Copies of each such notice shall be simultaneously sent to PHSD.

14. PROJECT MANAGEMENT AND INSPECTION

- a. When the work embraced in this project is not accepted on or before the date specified therein, or within any time extensions granted by PHSD, project management and inspection expenses incurred by PHSD in connection with the work from the specified or extended date of project acceptance until the date of actual acceptance shall be charged to the Contractor.
- b. The date of actual acceptance shall be determined as the date of issuance of the Notice of Acceptance.
- c. Supplementary Agreements or Change Orders added to the original Contract, as well as extenuating circumstances beyond the control of the Contractor, will be given due consideration by PHSD prior to assessing project management and inspection charges against the Contractor.
- d. In addition, should the Contractor apply for and receive dispensation to work more than eight hours per day or forty hours per week by the appropriate legal authority, the Contractor will be charged the associated overtime premium rate for PHSD's on-site inspection representative(s).
- e. Should the remaining minor punch list items not be completed within sixty (60) days of the Notice of Acceptance or within any time extensions granted by PHSD, the Contractor shall pay PHSD for any project management and inspection expenses incurred by PHSD from the specified or extended date of minor punch list completion until when such punch list items are fully complete.
- f. These additional project management and inspection charges shall be in the form of agreed-upon damages to PHSD and shall be deducted from moneys due or to become due to the Contractor. For this project, the charges are stipulated to be \$750/day.

IV. PRODUCTS

1. MANUFACTURERS

- a. Provide products of manufacturers as named in individual articles.
- b. Where no manufacturer is specified, provide products of manufacturers in compliance with requirements.

2. FABRICATION

- a. Fabricate custom-made equipment with careful consideration given to aesthetic, technical, and functional aspects of equipment and its installation.
- b. All fabricated equipment shall be pre-approved by PHSD.

3. SUITABILITY

- a. Provide products that are suitable for intended use, including, but not limited to environmental, regulatory, and electrical.

4. FIBER OPTIC CABLE (FOC)

- a. Fiber Optic Cable will be provided by PHSD, but pre-installation testing is to be completed by contractor.
- b. Fiber Optic Cables shall be single-mode cable constructed with industry standard buffer tubes stranded around a central strength member. The cable core shall be water blocked with dry water blocking materials to improve access and handling of individual tubes. The cables shall be designed for point-to-point applications as well as mid-span access, and provide a high-level of protection for fiber installed in the outside plant environment. The cable shall be single-mode, dispersion-unshifted fiber meeting ITUT G.652c requirements. The fiber shall be fully capable of handling existing and legacy single-mode applications which traditionally operate in the 1310 nm and 1550 nm regions shall also be designed to handle the new and emerging applications that utilize the "Extended" E-band, 1360 nm to 1460 nm. The fiber shall be designed to provide optimum performance from 1265 nm to 1625 nm intended for 16-channel Course Wavelength Division Multiplexing applications.
- c. Outside Plant Fiber Optic Cable:
 - ii. Outside Plant Fiber Optic Cable shall be OFC Single-mode, single-jacket, single-armor, loose tube outdoor with fiber counts as necessary to fulfill the requirements and as indicated on the plans.
 - iii. The buffer tubes shall be compatible with standard hardware, cable routing and fan-out kits.
 - iv. Cable shall have mechanical and transmission performance specifications that meet or exceed TIA/EIA-568-C.3.

5. UNDERGROUND CONDUIT

- a. Underground Conduit will be provided by PHSD. All other materials needed (fittings, couplers, duct plugs, etc.) to provide a complete raceway system will be provided by contractor.
- b. 2" or 4", Orange, SDR 11 HDPE, smooth wall Duct as designated in the plans.
- c. Underground Conduit shall be Carlon or approved equal.
- d. Provide all fittings to form a complete integrated raceway system per manufacturers recommendations.
- e. Only 1 splice per 500' of innerduct is permitted. Splicing of the duct shall be either mechanical or chemical and be approved by PHSD prior to use.
- f. Underground Enclosures (IV.11 Underground Enclosures (Handholes)) shall be installed along route as per plan. Underground duct may not be used inside PHSD buildings.
- g. All fiber must be placed into a duct. The inside diameter of the duct must be such as to maintain not more than 50-percent fill ratio with the fiber optic cables installed.
- h. Minimum depth must be 36 inches on rights-of-way except for roadway crossing where minimum depth must be 48 inches or per permitting agency requirements including a minimum typical depth that MoDOT requires of 72 inches for perpendicular roadway crossings.
- i. Noninvasive construction (directional boring) must be used under parking lots, roadways and railroad crossings.
- j. Railroad crossings must comply with the specific permits for depth.
- k. Installation of Underground Duct through rock shall be included and subsidiary to Construction. No additional payment or "Rock Adder" will be provided.
- l. PHSD and their Engineer assume no responsibility for existing right-of-way placement. The existing right-of-way shown on the plans have been plotted from the best available information. It is however the responsibility of the contractor to field verify the right-of-way prior to commencement of any construction. MODOT requires utilities to be placed in the last 6' of their right-of-way in the "utility corridor" in HDPE conduit running parallel at a 30" minimum depth and perpendicular crossings at a 72" minimum depth. Perpendicular crossings may be placed at 48" minimum depth if placed in steel casing.

6. UNDERGROUND ENCLOSURES (HANDHOLES)

- a. Underground Enclosures (Handholes) will be provided by PHSD.
- b. Enclosures, boxes and covers are required to conform to all test provisions of the most current ANSI/SCTE 77 "Specification For Underground Enclosure Integrity" for Tier 15 applications. All covers are required to have the Tier level rating embossed on the surface. In no assembly can the cover design load exceed the design load of the box. All components in an assembly (box & cover) are manufactured using matched surface tooling. Independent third party verification or test reports stamped by a registered professional engineer certifying that all test provisions of this specification have been met are required with each submittal.
- c. Enclosures shall be Oldcastle Polymer, Open Bottom polymer concrete enclosure
 - i. 24 x 36 x 36 - Oldcastle Part# 24361470 (Requires 1 marking plate)
 - ii. 30 x 48 x 36 - Oldcastle Part# 30481470 (Requires 2 marking plates)
 - iii. 48 x 48 x 36 - Oldcastle Part# 48481470 (Requires 2 marking plates)
- d. Enclosure lid shall be factory customized and permanently stamped with a custom logo as defined by PHSD at time of construction (design already on file with Oldcastle).
- e. Enclosure shall be installed level, plumb and flush with ground level on top of 12" of compacted crushed gravel.
- f. Enclosures shall not be installed in roadways or where non-incident traffic occurs.
- g. Enclosure sizing shall be per plan.

7. UNDERGROUND SPLICE CASES

- a. Underground Splice Cases will be provided by PHSD.
- b. All underground\airial fiber optic splices shall be made in appropriate splice cases.
- c. Splice cases shall be quick to assemble with no special tools required.
- d. Splice cases shall be butt type. Inline splice cases are not permitted.
- e. Splice cases shall be Commscope FOSC 450 Closures of appropriate size based upon the number of buffer tubes entering the enclosure as described below and per plan.
- f. Smaller splice case shall be Commscope FOSC450-B6-6-NT-0-B3V
- g. Larger splice case shall be Commscope FOSC450-D6-6-NT-0-D6V.
- h. Splice trays for "B6" splice cases shall be Commscope 863927-000. No more than 24 splices per tray will be accepted.
- i. Splice trays for "D6" splice cases shall be Commscope 915167-000. No more than 48 splices per tray will be accepted.
- j. No direct burial of splice cases is allowed.

V. Execution

1. PRE-INSTALLATION SITE SURVEY

- a. Prior to start of systems installation, meet at the project site with the PHSD's representative and representatives of trades performing related work to coordinate efforts. Review areas of potential interference and resolve conflicts before proceeding with the work.
- b. Examine areas and conditions under which the system is to be installed. Do not proceed with the work until satisfactory conditions have been achieved.

2. HANDLING AND PROTECTION OF EQUIPMENT AND MATERIALS

- a. Be responsible for safekeeping of your own and your subcontractors' property, such as equipment and materials, on the job site. PHSD assumes no responsibility for protection of above named property against fire, theft, and environmental conditions.

3. PRE-INSTALLATION TESTING OF FIBER OPTIC CABLE

- a. The Contractor shall test all fiber optic cables prior to installation, regardless of source (PHSD or Contractor).
- b. Cable delivered to the job site shall be tested on the reels prior to installation.
- c. Unidirectional testing of at least one strand from each buffer tube, with an Optical Time Domain Reflectometer (OTDR), is required.
- d. The test equipment shall meet the requirements found in the TIA/EIA-568-C series of standards.
- e. OTDR Reports shall have the following information for correct cable and fiber identification
 - i. Cable ID (Spool #)
 - ii. End-to-end cable length, in feet, from cable markings
 - iii. Fiber ID, including tube and fiber color
 - iv. Operator Name
 - v. Date & Time
- f. The following test parameters shall be recorded on each trace
 - i. Wavelength
 - ii. Pulse width
 - iii. Refractory index
 - iv. Range
 - v. Scale
- g. The following test results shall be recorded for each trace
 - i. Total Fiber Trace distance in kilometers
 - ii. Splice Loss attenuation in dB per km
- h. All test equipment shall be factory certified within the last year.
- i. Cables shall be tested at 1310 and 1550 nm for singlemode optical fibers.
- j. Testing procedures shall utilize "Method B" – One jumper reference.
- k. OTDR testing shall use a launch and receiving cables, minimum of 500 meters or greater than the dead zone for the OTDR used for this test.
- l. All fiber connectors must be cleaned and checked for dirt, scratches or chips before installed in adapters and testing.
- m. Test documentation shall be provided, electronically, prior to installation.
- n. Contractor provided Fiber Optic Cable that does not pass testing
 - i. Cable must be replaced at Contractors expense
 - ii. Test replacement cable upon arrival
 - iii. No additional expenses shall be passed on to PHSD
- o. PHSD provided Fiber Optic Cable that does not pass testing
 - i. Notify PHSD immediately
 - ii. Replacement will be procured\provided
 - iii. Test replacement cable upon arrival

4. PROTECTION OF PHSD'S FACILITIES

- a. Effectively protect all PHSD facilities, equipment, and materials from dust, dirt, and damage during construction.
- b. Remove protection at completion of the work.
- c. The contractor shall, at its sole cost and expense, promptly repair or replace any damage resulting from the performance of its work.

5. UTILITY CLEARANCES & LOCATES

- a. For projects involving excavation, trenching, borings, etc., the contractor is required to contact Missouri One-Call, Inc., for location of underground telephone, electrical lines, water, sewer, or natural gas lines, prior to digging. The contractor will verify the Missouri One-Call, Inc. work prior to any digging on public and private properties and rights-of way.
- b. The Contractor shall locate existing utility systems (including other hazards such as sprinkler systems, tunnels, etc.) on PHSD property prior to any work.
- c. Any damage as a result of failure to do so shall be the contractor's responsibility at no cost to PHSD.
- d. The contractor is responsible until final acceptance, for all locating (including on PHSD property) of installed fiber and duct.

6. SERVICE LOOPS

- a. Service loops shall be provided along the route to allow for adds, moves, changes and repairs to the plant.
- b. Service loops in underground enclosures (hand holes) shall be loose or secured only with electrical tape to allow for easy payout in the event fiber is accidentally caught by a piece of equipment.
- c. At a minimum, service loops shall be provided at these locations with the minimum amount of excess
 - i. Underground Enclosures (Hand Holes) without splice cases: 50 ft (15 m)
 - ii. Underground Enclosures (Hand Holes) with splice cases: 50 ft (15 m) on both sides of the enclosure plus excess to allow fully assembled splice closure to be brought above ground for maintenance purposes.
 - iii. Building Service Entry: 50 ft (15 m)
- d. Service loops shall be installed with bend radius at least 10 times the outside diameter of the cable.

7. FIBER SPLICING

- a. All splices must be of heat-shrink fusion type. Mechanical splicing is not allowed.
- b. Perform all fusion splicing and install all splice enclosures according to the manufacturer's recommended guidelines.
- c. Maximum attenuation per splice shall be 0.10 dB, with the average across all splices not to exceed 0.07 dB. The splicing equipment shall provide three axis core alignment using light injection and loss measurement techniques.
- d. Adequately protect all fusion splices in splice trays or organizers in an enclosure. When splicing inside a building; use a splice center where rack or wall space is available.
- e. Provide the splice with strain relief and protection of the stripped fiber splice in a manner recommended by the splice tray or organizer manufacturer. Use splice types compatible with the tray design.
- f. Protect fusion splices with a heat shrink tubing that protects the splice and extends over the fiber coating. Do not leave bare fiber exposed.
- g. End of reel splices will not be accepted for this project.

8. WORK IN EXISTING HANDHOLES AND SPLICE CASES

- a. All work in existing Handholes and Splice Cases with live fiber must be coordinated with PHSD prior to work starting.
- b. Care shall be taken during work as any damage to existing material shall be repaired at the contractor's expense.
- c. All work in existing handholes and splice cases shall meet or exceed this specification regardless of current condition.

9. PERMITS AND FEES

- a. The contractor shall secure permits for this project as required.
- b. PHSD will assist the contractor in obtaining these right-of-ways and permits as needed but the responsibility remains with the contractor.
- c. Permit cost shall be included as part of the response broken out by jurisdiction on the cost sheet.
- d. The contractor shall obtain all private entities (e.g., railways, highways) utilities, city, and state approvals needed for installation and meet construction requirements for crossing of all sidewalks, streets, railroad crossings and wetlands.

10. TRAVEL NOT OBSTRUCTED

- a. Provide traffic control (signs, lane closures, etc.) as needed and as required by local and state traffic authorities.
- b. The Contractor shall not needlessly hinder or inconvenience travel on any public or private way, nor shall he wholly obstruct same without written permission of the Owner. If he is permitted to obstruct a traveled way, the Contractor shall provide plain and appropriately worded signs and adequate barricades and lighting at the nearest cross streets, and at each end of the obstructed portion, announcing such obstruction and directing traffic to and along an approved detour.
- c. Unless otherwise specified or permitted, all entrances and exits of fire houses, industrial plants, commercial buildings and public buildings shall be kept open and maintained in passable condition at all times. The Contractor shall give notice to the owner of each traveled way before interfering therewith.

11. INSTALLATION

- a. All work shall be performed in a good and workman like manner.
- b. Fiber plant is to be fully installed underground. Aerial installation will not be permitted.
- c. All fiber optic cable, provided by PHSD or the contractor, must be tested prior to installation.
- d. Receive, check, unload, handle, store, and adequately protect equipment and materials to be installed as part of the contract. Store in areas as directed in *3.07 Delivery, Storage and Handling*. Include delivery, unloading, setting in place, fastening to walls, floors, ceilings, or other structures where required, interconnecting wiring of system components, equipment alignment and adjustment, and other related work whether or not expressly defined herein.
- e. Cables shall have no physical defects such as cuts, tears or bulges in the other jacket. Cables with defects shall be replaced at no additional cost to PHSD.
- f. Install cable in neat and workmanlike manner. Neatly bundle and tie all cable in closets.
- g. Do not install cables with more than the allowed pull force as specified in ANSI/TIA/EIA and BICSI TDDM practices. Utilize appropriate cable lubricant in sufficient quantity to reduce pulling friction to acceptable levels on long pulls inside conduit, pulls of multiple cables into a single small bore conduit, on conduit runs greater than 100 linear feet with bends of opposing directions, and in conduit runs that exceed 180 degrees of accumulated bends. Use of tensile rated cords (i.e., fishing line) should be used for difficult or questionable pulls – to judge to go/no-go condition of the conduit and pulling setup.
- h. Install materials and equipment in accordance with applicable standards, codes, requirements, and recommendations of national, state, and local authorities having jurisdiction, and National Electrical Code® (NEC) 2008 and with manufacturer's printed instructions.
- i. Adhere to manufacturer's published specifications for pulling tension, minimum bend radius, and sidewall pressure when installing cables.
- j. At a minimum, all installed fiber optic cables shall conform to a bending radius of 10x the diameter of the cable.
- k. Arrange and mount equipment and materials as described in this document, and in a manner acceptable to PHSD. Where this document does not specify how equipment is to be arranged or mounted, the contractor must consult PHSD for prior approval.
- l. Installation shall conform to the following basic guidelines:
 - i. Use of approved wire, cable, and wiring devices

- ii. Neat and uncluttered wire termination
- m. Attach cables to permanent structure with suitable attachments at intervals of up to 48 inches. Support cables installed above removable ceilings.
- n. Install cables in one continuous piece. Splices shall not be allowed except where multiple cables are joining.
- o. Whenever cable from the reel is placed on the pavement or other surfaces, it should be protected with barricades or cones to prevent possible vehicular or pedestrian traffic damage. A "figure-eight" configuration should be used when the cable is removed from the reel and piled on the ground. This prevents kinking and twisting of the cable, which could cause damage. Fiber optic cable should not be coiled in a continuous direction except for lengths of 100 ft (30 meters) or less. The minimum size for the "figure-eight" is about 15 ft (4.5 meters) in length with each loop 5 ft (1.5 meters) to 8 ft (2.4 meters) in diameter.
- p. Standard fiber optic cable has a maximum recommended pulling tension of 600 lbs. The maximum pulling tension is not to be exceeded.
- q. Fiber optic cables under tension should not be exposed to a bend radius less than 20 times the cable diameter and a cable with no tension should not be exposed to a bend radius less than 10 times the cable diameter.
- r. Never during the pull-in should the fiber optic cable experience sags, bends or twists, that produce a bend in the cable whose radius meets or exceeds that specified as the minimum bend radius for the cable being installed. Failure to observe proper cable handling procedures during cable placement can void the cable warranty and may result in permanent damage to the transmission characteristics of the cable.
- s. Repair and restore to original condition any street, sidewalks, grass area or other public or private area, which might be disturbed during installation.
- t. Construct temporary fencing and maintain to isolate and protect others from the work area.

12. LABELING

- a. Label fiber optic splice cases and termination enclosures with self-adhesive permanent polyester label with minimum 3/16 in. high characters. Use black print on white tape labels.
 - i. Dymo Rhino 18766
 - ii. Brother TZ221
 - iii. Panduit T038X000VPC-BK
- b. Labels shall be machine-printed. Hand-lettered labels shall not be acceptable.
- c. All fiber optic cables and connectors must be clearly labeled in accordance with EIA/TIA standards. Labeling convention must be consistent PHSD's existing labeling plan and be reviewed and approved by PHSD.

13. TESTING

- a. The test equipment shall meet the requirements found in the TIA/EIA-568-C series of standards.
- b. OTDR Reports shall have the following information for correct cable and fiber identification
 - i. Cable ID
 - ii. Cable Location – Begin and end point
 - iii. End-to-end cable length in kilometers calculated from cable markings
 - iv. Fiber ID, including tube and fiber color
 - v. Measurement direction
 - vi. Operator Name
 - vii. Date & Time
- c. The following test parameters shall be recorded on each trace
 - i. Wavelength
 - ii. Pulse width
 - iii. Refractory index
 - iv. Range
 - v. Scale

- d. The following test results shall be recorded for each trace
 - i. Total Fiber Trace distance in kilometers
 - ii. Splice Loss attenuation in dB per km
 - iii. Events > 0.01 dB
 - iv. Trace analysis detailing all events exceeding 0.01 dB
- e. One hundred percent of the cable's fiber count shall be tested with an Optical Time Domain Reflectometer (OTDR) at 1310 nm and 1550 nm in addition; an Optical Loss Test Set (OLTS) shall be used to test the fiber. The contractor shall provide the Engineer with up to five copies of any software required for viewing electronic files of the OLTS and OTDR traces Use an EXFO FTB-500 or equal OTDR meter and a Fluke DTX-CLT or equal OLTS meter.
- f. All test equipment shall be factory certified within the last year. The Contractor shall provide copies of the certification 10 days prior to testing.
- g. The installed span loss (span shall be termination to termination) shall be a bi-directional average of 0.40 dB/km at 1310nm and 0.30 dB/km at 1550nm or less, as calculated using an industry-accepted optical loss test set at 1310 and 1550 nm. The installed span loss includes the inherent attenuation of the optical fiber, the backbone splice losses, the pigtail splice losses, the inherent loss in the pigtails, and the connector losses.
- h. Cables shall be tested at 1310 and 1550 nm for singlemode optical fibers.
- i. Testing procedures shall utilize "Method B" – One jumper reference.
- j. Bi-directional testing of optical fibers is required.
- k. OTDR testing shall use a launch and receiving cables, minimum of 500 meters or greater than the dead zone for the OTDR used for this test.
- l. The objective for all fiber optic cable testing is to have a maximum attenuation of 0.40 dB/km at 1310 nm and 0.30 dB/km at 1550 nm when measured bi-directionally with an OTDR. Fibers that exceed the max attenuation loss specification will be identified as Out Of Specification (OOS) and subject to penalties of \$150.00 of each OOS trace.
- m. The objective for each connector is an averaged loss value of 0.25 dB or less when measured bi-directionally with an OTDR at 1310 nm and 1550 nm. Connectors not meeting the max loss of 0.50 dB and average loss of 0.25 dB (no negative losses will be accepted) specification will be identified as Out Of Specification (OOS).
- n. The contractor will be required to review the fiber test results prior to submitting them to PHSD for review. Fiber testing results submitted to PHSD for review that are found to be out of specification will be subject to a penalty of \$150.00 per trace.
- o. The objective for each splice is an averaged loss value of 0.07 dB or less when measured bi-directionally with an OTDR at 1310 nm and 1550 nm. Fibers not meeting the 0.10 dB or less specification will be identified as Out Of Specification (OOS) and subject to penalties of \$150.00 of each OOS trace.
- p. All fiber connectors must be cleaned and checked for dirt, scratches or chips before installed in adapters and testing. All dust covers must be installed after testing is complete.
- q. Test documentation shall be provided on digital media upon completion of the project. The media shall be clearly marked on the outside front cover with the words "Project Test Documentation", the project name, and the date of completion (month and year). The test equipment name, manufacturer, model number, serial number, software version, and last calibration date will also be provided. Unless the manufacturer specifies a more frequent calibration cycle, proof of annual calibration must be documented for all test equipment used in this installation.
- r. Where any portion of system does not meet the specifications, correct deviation and repeat applicable testing at no additional cost to the PHSD.

VI. APPENDIX I – ACRONYMS

AHJ	Authority having jurisdiction	lbf	Pound-force
ANEXT	Alien near-end crosstalk	LC	Limited combustible
ANSI	American National Standards Institute	LSOH	Low smoke zero halogen
ASTM	American Society for Testing and Materials	LSZH	Low smoke zero halogen
AWG	American wire gauge	m	Meter(s)
BICSI	Building Industry Consulting Service International	MHz	Megahertz
C	Celsius	mm	Millimeter(s)
CAD	Computer Aided Drafting	N	Newton(s)
Cat 6A	Augmented Category 6	NEC	National Electrical Code
CDT	Cable Design Technologies	NEXT	Near-end crosstalk
CMP	Communications plenum	nF	Nanofarad(s)
CMR	Communications riser	ns	Nanosecond(s)
CP	Consolidation point	NVP	Nominal velocity of propagation
CSC	Construction Specifications Canada	OTDR	Optical Time Domain Reflectometer
CSI	The Construction Specifications Institute	OD	Outside diameter
CSV	Certified System Vendor	PCB	Printed circuit board
CT	Count	PE	Professional Engineer
dB	Decibel(s)	pF	Picofarad(s)
DC	Direct current	PSACRF	Power-sum attenuation-to-crosstalk ratio far-end
EF	Entrance facility	PSAACRF	Power-sum attenuation-to-alien crosstalk ratio far-end
EIA	Electronic Industries Alliance	PSANEXT	Power-sum alien near-end crosstalk
ELFEXT	Equal level far-end crosstalk	PSELFEXT	Power-sum equal level far-end crosstalk
EMT	Electrical metallic tubing	PSNEXT	Power-sum near-end crosstalk
ER	Equipment room	RFB	Request for proposal
F	Fahrenheit	RU	Rack unit [45 mm (1.75 in)]
FCC	Federal Communications Commission	SPIN	Service Provider Identification Number
FOB	Free On Board (Regarding Freight)	TBB	Telecommunications bonding backbone
FOC	Fiber Optic Cable	TDR	Time domain reflectometer
ft	Foot/feet	TE	Telecommunications enclosure
Gb/s	Gigabits per second	TGB	Telecommunications grounding busbar
IBDN	Integrated Building Distribution Network	TIA	Telecommunications Industry Association
IDC	Insulation displacement contact	TMGB	Telecommunications main grounding busbar
IEC	International Electrotechnical Commission	TO	Telecommunications outlet/connector
IEEE	Institute of Electrical and Electronics Engineers	TR	Telecommunications room
in	Inch(es)	UL	Underwriters Laboratories
ISO	International Organization for Standardization	USAC	Universal Service Administrative Company
kg	Kilogram(s)	WA	Work area
lb	Pound(s)		

VII. ATTACHMENT 1 – COST SHEET

The following page includes a copy of the Cost Sheet Form.

Park Hill School District Technology Services		TE1135 – Outside Plant Fiber Optic Construction Cost Worksheet		
Unit Description	Unit of Measure	QTY	Unit Price	Extended Cost
Install 1-2" HDPE Duct	LF	19417		
Install 24"X36"X36" Handhole	EA	19		
Install 30"X48"X36" Handhole	EA	4		
Supply & Install 12awg Tracer Wire	LF	19417		
Install Underground Splice Enclosure	EA	3		
Install 96CT Fiber Optic Cable	LF	21717		
Fiber Splice	EA	120		
Marker Post	EA	23		
			Total	\$