



"Cedar Rapids is a vibrant urban hometown – a beacon for people and businesses that are invested in building a greater community now and for the next generation."

REQUEST FOR BID

February 22, 2016

For

FIBER INSTALLATION & MAINTENANCE SERVICES FOR JOINT COMMUNICATION NETWORK RFB #PUR0116-127

Prepared by
City of Cedar Rapids
Purchasing Services Division

TABLE OF CONTENTS

Section Number	Section Name	Page
1.0	Notice of Request for Bids (RFB)	3
2.0	Instructions to Bidders	4
3.0	Special Terms and Conditions	6
4.0	Scope of Work and Specifications	9
5.0	Bid Evaluation and Award	14
6.0	Submittal Instructions	16

Attachment	Attachment Name
A	Standard Terms and Conditions
B	Insurance Requirements
C	Submittal Forms (General Company Information, Certification Regarding Ability to Obtain Required Insurance, Bid Pricing Submittal Form, Signature Page Form, Buy Local Packet)
D	Work Order Form for General Maintenance & Repair
E	Work Order Form for Emergency Work
F	Work Order Form for New Builds
G	Fiber Optic Special Provisions
H	Material Requirements

Section 1.0 – NOTICE OF REQUEST FOR BIDS (RFB)

1.1 Notice of Request for Bid

Notice is hereby given that sealed bids will be received before 3:00 p.m. CST on Friday, March 11, 2016, at the Office of the City Clerk, in City Hall, 101 First Street SE, Cedar Rapids, Iowa 52401 for fiber installation and maintenance services for the Joint Communication Network (JCN) as requested by the City of Cedar Rapids Information Technology Department.

1.2 RFB Timeline

Name of the Bid Fiber Installation & Maintenance Services for Joint Communication Network, RFB #PUR0116-127

Date of Issuance Monday, February 22, 2016

Pre-Bid Meeting Thursday, March 3, 2016 at 10:00 a.m. CST
City Services Center, Green Square Conference Room
500 15th Ave. SW, Cedar Rapids, IA 52404

Deadline for Questions Friday, March 4, 2016 at 3:00 p.m. CST

Deadline for Bid Submittal Friday, March 11, 2016 before 3:00 p.m. CST
Bids time stamped 3:00 p.m. or after are late

Recommendation for Award April 2016

Submit Bid to: →→→→→→→→
Submit in a sealed envelope.
Address exactly as stated.
City Clerk Office Hours 8 am to 5 pm, Mon-Fri

Sealed Bid: Fiber Installation & Maintenance Services for JCN
Office of the City Clerk-City Hall
101 First Street SE
Cedar Rapids IA 52401

Method of Submittal US Mail, Overnight Delivery or In Person
Electronic and fax bids **are not** acceptable

Contact Person, Title Rebecca Johnson, CPPB, Purchasing Agent
E-mail Address r.johnson2@cedar-rapids.org

Phone/ Fax Numbers Phone: 319-286-5062 Fax: 888-815-3659

1.3 The City is not responsible for delays occasioned by the U.S. Postal Service, the internal mail delivery system of the City, or any other means of delivery employed by the Bidder. Similarly, the City is not responsible for, and will not open, any bid responses that are received on or after the time stated above. Late submittals will be retained in the RFB file, unopened. No responsibility will be attached to any person for premature opening of a bid not properly identified.

1.4 Bids will be publicly opened on Friday, March 11, 2016 at 3:00 p.m. (our clock) CST in City Hall, 101 First Street SE, Cedar Rapids 52401. The main purpose of this opening is to read the name(s) of the Bidders(s) and the submitted pricing, not to serve as a forum for determining the apparent low bidder(s).

1.5 Bids will be evaluated promptly after opening. After an award is made, a bid tabulation summary will be sent to all companies who submitted a bid. Bid results will not be given over the telephone or prior to award. Bids may be withdrawn any time prior to the scheduled closing time for receipt of bids; no bid may be modified or withdrawn for a period of sixty (60) calendar days thereafter.

----- End of Section 1.0 -----

SECTION 2.0 – INSTRUCTIONS TO BIDDERS

2.1 Federal Funding Provisions – This Project is not federally funded.

2.2 NOTICE: INSURANCE IS REQUIRED FOR THIS PROJECT

WORK SHALL NOT BEGIN UNTIL THE CERTIFICATE OF INSURANCE AND ALL REQUIRED ENDORSEMENTS ARE RECEIVED AND APPROVED BY THE CITY.

At all times during the term of the Work and the Contract, and any extensions thereof, the Contractor shall purchase, at its own expense, and maintain with insurance companies in good standing and acceptable to the City. Such insurance will protect the Contractor from liability and claims for injuries and damages which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be liable, whether such operations are by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

For the protection of the Contractor and the City, but without restricting or waiving any obligations of the Contractor herein contained, the Contractor shall insure the risks associated with the Work and the Contract with minimum coverages and limits as set forth in Attachment B, INSURANCE REQUIREMENTS.

2.3 Whenever used in this RFB the following terms shall have the meaning given as follows: City shall mean the City of Cedar Rapids, Iowa. Contractor shall mean the firm providing fiber installation and maintenance services for the JCN, as requested by the Information Technology Department. Subcontractor shall mean any person, firm, or corporation who contracts with the Contractor to perform a service for which the basis of payment or Scope of Work is identified as a part of this RFB. Project Manager shall mean Shawn Lampe, IT Infrastructure Manager, who is the designated coordinator and administrator for the Work under this project.

2.4 A company representative who is authorized to bind the Company will sign on behalf of the company to indicate to the City that you have read, understand and will comply with the instructions and all terms and conditions stated in this Request for Bid and all attachments.

2.5 Pre-Bid Meeting

In addition to the information contained in the Request for Bid, you are strongly encouraged to attend a pre-bid meeting to be held on Thursday, March 3, 2016 at 10:00 a.m. CST in the Green Square Conference Room at the City Services Center, 500 15th Avenue SW, Cedar Rapids, Iowa. The City is inviting all bidders to attend this meeting to ask specific questions and request clarifications on the specification portion of this bid document. All interested bidders are strongly encouraged to attend in order to familiarize themselves with the systems and all conditions that may affect the time or cost of performance.

2.6 This Request for Bid does not commit the City to make an award, nor will the City pay any costs incurred in the preparation and submission of bids, or costs incurred in making necessary studies for the preparation of bids.

2.7 Addenda

Any matter of this bid package that requires explanation or interpretation must be inquired into by the Bidder in writing by Friday, March 4, 2016 at 3:00 p.m. CST. FAX or E-MAIL all questions to Rebecca Johnson at (888) 815-3659 or r.johnson2@cedar-rapids.org. Any and all questions will be responded to in the form of written addenda to all Bidders. All addenda that you receive shall become a part of the Contract Documents and shall be acknowledged and dated on the bottom of the Signature Page Form (Attachment C). All Addenda will be posted on the City's website. It is the Bidder's responsibility to check for addenda.

<http://www.cedar-rapids.org/government/departments/purchasing/Pages/currentbidopportunities.aspx>

2.8 Exceptions to Documents

The Bidder shall clearly state in the submitted bid any exceptions to, or deviations from, the minimum bid requirements, and any exceptions to the terms and conditions of this RFB. Such exceptions or deviations will be considered in evaluating the bids. Bidders are cautioned that exceptions taken to this RFB may cause their bid to be rejected.

2.9 Silence of Specifications

Commercially accepted practices shall apply to any detail not covered in the specification and to any omission of the specification. Any omission or question of interpretation of the specification that affects the performance or integrity of the service being offered shall be addressed in writing and submitted with the Proposal.

2.10 Incomplete Information

Failure to complete or provide any of the information requested in this Request for Bid, including references, and/or additional information as indicated, may result in disqualification by reason of "non-responsiveness".

2.11 No responsibility will be attached to any person for premature opening of a bid not properly identified.

2.12 In the event of conflict, the Special Terms and Conditions shall take precedence over the Standard Terms and Conditions, included herein.

Be advised that any conversations (in reference to this RFB) between bidders and any City employee, City official or City Project Manager, outside of the Purchasing Services Division, during the entire competitive bidding process is strictly prohibited. Such actions will result in removal of the Contractor from the vendors list and rejection of the Contractor's bid. **The ONLY official position of the City is that position which is stated in writing and issued by the Purchasing Services Division.** No other means of communication, whether written or oral, shall be construed as a formal or official response statement.

----- End of Section 2.0 -----

SECTION 3.0 – SPECIAL TERMS AND CONDITIONS

3.1 Term of Contract

- 3.1.1 The initial term of the Contract shall be for one (1) year anticipated to be May 1, 2016 through April 30, 2017.
- 3.1.2 The City and the Contractor may renew the original Contract for four (4) additional one-year time periods by mutual agreement. A minimum of thirty (30) days' notice must be given to renew the contract for additional increments.
- 3.1.3 A Contract, prepared by the City and signed by the City Manager, shall become the document that authorizes the Work to begin, assuming the insurance requirements have been met. Each section contained herein, the attachments, and any addenda and the response from the successful Bidder shall also be incorporated by reference into the resulting agreement.
- 3.1.4 The City reserves the right to make changes to the Work to be provided which are within the Project. No assignment, alteration, change, or modification of the terms of the Contract shall be valid unless made in writing and agreed to by both the City and the Contractor. The Contractor shall not commence any additional work or change the scope of the Work until authorized in writing by the City. Contractor shall make no claim for additional compensation in the absence of a prior written approval and amendment of the Contract executed by both the Contractor and the City. The Contract may only be amended, supplemented or modified by a written document executed by the Contractor and the City Manager.
- 3.1.5 In accordance with the provisions and conditions of the Contract, Contractor shall freely enter into the Contract for the purpose of providing Work to the City and to be compensated for the Work.
- 3.1.6 No price escalation will be allowed during the initial term of the contract. If it is mutually decided to renew beyond the initial period and the Contractor requests a price increase, the Contractor shall provide sufficient written certification and documentation to substantiate the request. Documentation shall include, but not be limited to; actual materials invoices, copies of commercial price lists, provision of appropriate indices, which reflect said increases. The City reserves the right to accept or reject price increases, to negotiate more favorable terms or to terminate without cost, the future performance of the contract.

3.2 Contract Forms

- 3.2.1 If a Bidder intends to request that the City of Cedar Rapids enter into any agreement form in connection with the award of this project, the form must be submitted with the Bid for review by the City's legal counsel during the evaluation of Bids. If such agreement requires that payments be remitted to other than the Bidder, the Bidder shall indicate the name and address of the firm to whom Bidder would request payments to be made, and the firm's relationship to the Bidder.
- 3.2.2 Bidders are advised that in the event any such agreement contradicts the City of Cedar Rapids requirements, the bid may be rejected due to the contradiction unless Bidder indicated deletion of such clauses. If agreement form indicated a firm other than the Bidder is Contractor, or payee, the proposed Contractor or payee must also indicate concurrence with the deletion of such clauses.
- 3.2.3 If no agreement form is included with the bid, no such form will be approved by the City during the evaluation or award processes, or following award of contract. If the bid does not indicate the proposed Contractor, vendor or payee to be a person or company other than the Bidder, (1) only the Bidder will be considered as Contractor and (2) payments will be made only to the Bidder to whom the contract is awarded.
- 3.2.4 The City of City Rapids will in no case agree to terms not submitted for review with the bid submittal.

3.3 Payment Terms and Invoice Submittal

- 3.3.1 Payment terms for Work authorized under the contract shall be net forty-five (45) days upon receipt of an acceptable original invoice and after Work is performed, inspected and accepted and all required documentation and reports are received in a format acceptable to the City.
- 3.3.2 Invoices shall include the following information:
- Contractor name and address
 - Date of Work

- City PO number
- Description of Work
- Copy of Work Order Form (Attachment D, E, or F)
- Copy of excavation permit
- If applicable, who performed the Work, number of hours worked, hourly rate and total labor rate charged
- Unit price
- Extended price
- The total amount being invoiced
- The Project Number / Contract Number (RFB #0116-127)

3.3.3 For accounting purposes when hourly rates are billed, detailed schedules and supporting documentation apportioning the cost of time under this contract shall be included with Contractor's invoice. The schedules shall be presented in such detail, and backed up with supporting information in the format the City requests. Violation of this provision by Contractor shall constitute a material breach of this contract. Any schedule submitted may be utilized for payment requests only after it has been acknowledged, in writing, as acceptable by the City's Finance Department.

3.3.4 Surcharges (i.e. fuel surcharges, restocking) shall NOT be allowed to be added to invoices as an additional line item.

3.3.5 All invoices and supporting documentation shall be submitted at the intervals as agreed upon:

- a) In a pdf format via e-mail to: accountspayable@cedar-rapids.org
or
- b) Via US mail to: City of Cedar Rapids, Finance Department – Accounts Payable,
101 First Street SE, PO Box 2148, Cedar Rapids, IA 52406-2148.

3.3.6 The City may withhold payment for reasons including, but not limited to the following:

- a) Work that is defective, inaccurate, flawed, unsuitable, nonconforming or incomplete due to negligence of the Contractor;
- b) Damage for which Contractor is liable under the Contract;
- c) Valid liens or claims of lien;
- d) Valid claims of Subcontractors or other persons;
- e) Delay in the progress or completion of the Work;
- f) Inability of Contractor to complete the Work;
- g) Failure of Contractor to properly complete or document any pay request or invoice;
- h) Any other failure of Contractor to perform any of its obligations under the Contract; or
- i) The cost to City, including attorneys' fees and administrative costs, of correcting any of the aforesaid matters or exercising any one or more of City's remedies set forth in the Contract.

3.3.7 Actual travel time to and from the work location is not reimbursable under the Contract.

3.4 Bonds – Required for new installation projects

Payment and Performance Bonds – For any individual project costing \$25,000 or more, the awarded Contractor shall furnish payment and performance bonds, each in an amount equal to the price agreed upon on the Work Order, as security for the faithful performance and payment of all Contractor's obligations under the Work Order and Contract documents. These bonds shall remain in effect at least until two years after the Work is fully accepted by the City. Bonds shall be submitted within ten (10) days after Work Order is signed.

3.5 Treatment of Documents and Records

3.5.1 Ownership

All Documents and other materials prepared by the Contractor in connection with this project are the City's sole property in which the Contractor has no proprietary or other rights or interests. All reports, documents, information, and any materials or equipment furnished to the Contractor by the City shall remain the sole property of the City. Nothing written in this paragraph, however, will be interpreted to forbid the Contractor from retaining a single copy of information for its files.

3.5.2 Confidentiality

Any individual subcontracted or employed by the Contractor with authorized access to personnel information documents, if any, is given access to use any personnel information in the documents solely for the purpose of performing the Work of the Contract and must not divulge this information to anyone without a need to know. Confidentiality of personnel information contained in the documents shall survive the completion or termination of the Contract subject to applicable state statutes.

3.5.3 Disposal

If at any time during the performance of the Contract or following completion or termination of the Contract, Contractor and/or its subcontractors chooses to dispose of Documents, disposal of Documents shall:

- a) comply with any retention requirements of the agreement, and
- b) shall be in a manner such that documents or information in the Documents is unable to be read, interpreted, reproduced, copied or duplicated in any fashion.

3.5.4 Access/Retention

During the term of the Contract or following completion or termination of the Contract the Contractor and its Subcontractors, if any, shall maintain all accounting records and other documentation generated in performing the Work under the Contract.

The City or any duly authorized representative of the City shall have access to all such information for the purpose of inspection, audit and copying during normal business hours. All such information shall be retained for five (5) years from the date of final payment and after all other pending matters under the Contract are closed.

This access shall be made available to the City or duly authorized agent and shall be considered incidental to the Scope of Work contained herein. As such, there shall be no additional compensation allowed the Contractor for maintaining this information and allowing the herein described access.

3.6 If Project is funded in any way utilizing Federal Funds the Contractor acknowledges that it may be required to submit to an audit of funds paid through the Contract and as may be conducted in accordance with provisions of the Office of Management and Budget Circular A-133 (Audit of States, Local Government and Non-Profit Organizations).

3.7 Expenditure of Service

The City does not guarantee any minimum or maximum hours of work for the Contractor. There is no guaranteed minimum amount of work that will be required throughout the contract period.

----- End of Section 3.0 -----

SECTION 4.0 – SCOPE OF WORK, SPECIFICATIONS

4.1 Background - The City of Cedar Rapids is seeking bids from qualified Contractors to provide fiber installation for new installation projects and to provide fiber maintenance and repair services for the Joint Communication Network (JCN) in accordance with the Scope of Work below, as requested by the Information Technology Department. In addition to new installation projects, the work will include, but not be limited to, pulling of fiber, splicing, relocation of existing infrastructure, emergency repair, testing, and other work as described herein.

4.2 Scope of Work

This scope of work consists of work required on an as-needed basis for general maintenance and repair of the City's existing fiber network, emergency repairs, and fiber installation for new building projects, as requested in writing by the Information Technology Department.

All work shall be in conformance with the most current versions of the Cedar Rapids Metropolitan Area Standard Specifications and Details and the attached Fiber Optic Special Provisions (Attachment G).

Contractor must hold the required certifications for the class of work described herein. Before a contract is awarded the selected Contractor will be required to furnish evidence, to the satisfaction of the Project Manager or designee, of their qualifications and ability to perform the work. Documentation showing the following qualifications, at a minimum, shall be included with bid submittal:

- 4.2.1 Registered Communications Distribution Designer (RCDD)
- 4.2.2 International Municipal Signal Association (IMSA)
- 4.2.3 Electrical Journeyman License (can be sub-Contractor, indicate on Signature Page, Attachment C)
- 4.2.4 City Licensed Electrician (can be sub-Contractor, indicate on Signature Page, Attachment C)
- 4.2.5 Building Industry Consulting Services, International (BICSI) registered technician

In addition to installation of fiber for new building projects and general maintenance and repair which can be scheduled, the City is seeking a Contractor able to provide on-call services for emergency repairs within Linn County and specifically the City of Cedar Rapids and adjoining area. These services support the existing 911 communication routes and other critical systems. Emergency support will be required as requested by the City on a 24 hour, 7 day a week, 365 day a year basis.

The Project Manager or designee will notify the Contractor, in writing via a work order, when new installation or regularly scheduled work on the existing network is required. The Contractor shall begin the assigned work within fifteen (15) calendar days following receipt of work order. Regularly scheduled work will occur during normal work hours (M-F, 8am-5pm). This type of work will not be allowed after hours or on Saturdays, Sundays, or holidays unless it is for scheduled data center shut downs.

The Project Manager or designee will notify the Contractor by verbal (telephone or in person) or written means when emergency work is required. Once notified, the Contractor shall begin investigation of the emergency or assigned work within two (2) hours. Emergency work will be allowed at any day or time including Saturdays, Sundays, and holidays.

The City will utilize a Work Order form for each project assigned to the Contractor (Attachments D, E, or F). A copy of the work order must be submitted with all invoices.

4.3 Types of Work

Following are the individual types of work which may be required under this Contract. The unit of measure used for pricing varies from one type of work to another. Not all items will be needed for each service request. Work assigned under the Contract resulting from this RFB shall be completed in accordance with the Cedar Rapids Metropolitan Area Standard Specifications and the attached Fiber Optic Special Provisions (Attachment G).

The submittal of a bid is acknowledgement of the "General conditions" (section 00700) and measurement and payment (Section 1025) for standard Items, in the Standard Specifications referenced above. Modification of standard bid items and incorporation of non-standard bid Items with method of measurement and basis of payment is included below.

The Contractor is expected to maintain an inventory of materials needed to complete the work required. A list of materials the Contractor will be expected to have readily available for use on an as-needed basis is provided as Attachment H. Items not included within this Request for Bid will be negotiated on an as needed basis and the resulting Contract will be amended accordingly. All materials, with the exception of fiber to be provided by the City, shall be included in the bid pricing for the various types of work listed below.

- 4.3.1 01400-11 Removal of Existing Sidewalk (Firm fixed price per Square Yard)
Saw cutting and disposal of material shall be the responsibility of the Contractor.
- 4.3.2 02700-30 Portland Cement Concrete Pavement Repair (Firm fixed price per Square Yard)
Cold weather protection (if needed) shall be provided by the Contractor. Saw cutting shall be provided by the Contractor.
- 4.3.3 02700-70 Portland Cement Concrete Sidewalk, 4 inch (Firm fixed price per Square Yard)
Cold weather protection (if needed) shall be provided by the Contractor.
- 4.3.4 16580-32A 24"x36" Handhole W/ Lid (Firm fixed price per Handhole or Junction Box)
The price per each handhole or junction box installed shall be full compensation for Contractor to provide and install the box, cut longitudinal 2 INCH HDPE conduit or PVC or RSC if necessary, and provide and splice 2 INCH HDPE or RSC conduit elbows and conduit extensions to each handhole and Junction Box, excavation, backfill, gravel drainage material, sealants, lids and covers, lid imprinting, cable hooks and racks, and all other labor, equipment, and materials necessary to complete the handholes or junction boxes in place.
- 4.3.5 16580-32B 30"x48" Handhole W/ Lid (Firm fixed price per Handhole or Junction Box)
The price per each handhole or junction box installed shall be full compensation for Contractor to provide and install the box, cut longitudinal 2 INCH HDPE conduit or PVC or RSC if necessary, and provide and splice 2 INCH HDPE or RSC conduit elbows and conduit extensions to each handhole and Junction Box, excavation, backfill, gravel drainage material, sealants, lids and covers, lid imprinting, cable hooks and racks, and all other labor, equipment, and materials necessary to complete the handholes or junction boxes in place.
- 4.3.6 16580-33 Adjust Handhole (Firm fixed price per Handhole Adjustment)
The price per each handhole adjustment shall be full compensation for the raising or lowering of existing handhole. Dewatering (if needed), excavation, restoration and seeding of disturbed areas shall be the responsibility of the Contractor.
- 4.3.7 16580-50A 2" HDPE SDR-13 Conduit, bored (Firm fixed price per Linear Foot, minimum 100 LF)
The price per linear foot shall be full compensation for boring of 2" HDPE conduit provided by the Contractor. This item shall include couplings, tracer wire and pull tape. Trenching/excavating for bore pits, potholing of existing utilities where the proposed conduit crosses the existing utilities (including storm sewer), boring the conduit, installing the pull string, backfilling, surface restoration (grading, seeding and mulch) shall be provided by the Contractor. Firm fixed pricing also includes the Contractor preparing and delivering as-built documents accurately showing the completed conduits and handholes as constructed. All permits required for completion of work shall be the responsibility of the Contractor.
- 4.3.8 16580-50B 2" HDPE SDR-13 Conduit, trenched (Firm fixed price per Linear Foot, minimum 100 LF)
The price per linear foot shall be full compensation for trenching of 2" HDPE conduit provided by the Contractor. This item shall include couplings, tracer wire, and pull tape. Potholing of existing utilities where the proposed conduit crosses the existing utilities (including storm sewer), installing the pull string, backfilling, surface restoration (grading, seeding and mulch) shall be provided by the Contractor. Firm fixed pricing also includes the Contractor preparing and delivering as-built documents accurately showing the completed conduits and handholes as constructed. All permits required for completion of work shall be the responsibility of the Contractor.
- 4.3.9 16580-50C Tracer Wire (Firm fixed price per Linear Foot)
The price per linear foot shall include all costs for labor, equipment and miscellaneous materials necessary to install the tracer wire in place, complete. This item is only for installation of tracer wire other than what is incidental to items 16580-50A or 16580-50B.
- 4.3.10 16590-10 Fiber Optic Termination (Firm fixed price per Termination)
The price per each termination shall be full compensation for terminating the fiber optic cables including, but not limited to, fan out kits, breakout kits, connectors, patch cords, mechanical terminations, heat cured or epoxy terminations, factory pigtailed, couplers, trays, shrink tube,

termination housing, and all other labor, equipment, and materials necessary for proper fiber termination. Terminations shall be fusion only; no mechanical terminations (crimp, non-fusion) shall be allowed.

4.3.11 16590-20 Regularly Scheduled Fiber Optic Fusion Splice (Firm fixed price per splice)

The price per each splice shall be full compensation for permanent fusion splices including, but not limited to, splice trays, splice enclosures, heat shrink tubing, buffer tubing, patch cords, automatic splicer device, termination splice quality testing and documentation, and all other labor, equipment, and materials necessary to complete the splices in place.

4.3.12 17000-02 Regularly Scheduled Trouble Shooting (Firm fixed price per Hour)

Trouble shooting shall be paid on an hourly basis as submitted by the Contractor and verified by the Project Manager. The price per hour shall be full compensation for the evaluation and documentation of trouble shooting completed on the JCN system. All testing equipment, materials and labor shall be provided by the Contractor and included in the hourly rate.

4.3.13 17000-04 Fiber Optic Cable (Install only) (Firm fixed price per Linear Foot)

The price per linear foot, with measurement verified by the Project Manager or designee, shall be full compensation to include picking up of materials, delivery of fiber to job site, providing and operating pulling equipment, lubricants, installation of cable, coiling and securing of slack, tagging, identifying and labeling all fibers and all other labor, equipment, and materials necessary to complete the fiber optic cable installation.

4.3.14 17000-11 Emergency Fiber Optic Fusion Splice (Firm fixed price per Splice)

The price per each splice shall be full compensation for permanent fusion splices including, but not limited to, splice trays, splice enclosures, heat shrink tubing, buffer tubing, patch cords, automatic splicer device, termination splice quality testing and documentation, and all other labor, equipment, and materials necessary to complete the splices in place.

4.3.15 17000-12 Emergency Trouble Shooting (Firm fixed price per Hour)

Trouble shooting shall be paid on an hourly basis as submitted by the Contractor and verified by the Project Manager. The price per hour shall be full compensation for the evaluation and documentation of trouble shooting completed on the JCN system. All testing equipment, materials and labor shall be provided by the Contractor and included in the hourly rate.

4.3.16 17000-13 Emergency 2" HDPE Conduit Repair (Firm fixed price per Linear Foot)

The price per linear foot shall be full compensation for the locating, excavation, and repair of 2 inch HDPE conduits and backfill to grade. Replacement conduit and couplers (2) shall be provided by the Contractor. Restoration and seeding of the trenched or disturbed area shall be provided by the Contractor.

4.3.17 17000-14 Emergency Fiber Optic Cable. 24 SM (Firm fixed price per Linear Foot)

The price per linear foot shall be full compensation for installation of City-owned fiber optic cable with slack loops as specified in the contract documents, testing the cable, temporary splices for testing, pulling equipment and lubricants, test documentation, installation, coiling and securing slack, and all other labor, equipment, and materials necessary to complete the fiber optic cable installation.

4.3.18 17000-15 Emergency Fiber Optic Cable. 48 SM (Firm fixed price per Linear Foot)

The price per linear foot shall be full compensation for installation of City-owned fiber optic cable with slack loops as needed, testing the cable, temporary splices for testing, pulling equipment and lubricants, test documentation, installation, coiling and securing slack, and all other labor, equipment, and materials necessary to complete the fiber optic cable installation.

4.3.19 17000-16 Emergency Fiber Optic Cable. 144 SM (Firm fixed price per Linear Foot)

The price per linear foot shall be full compensation for installation of City-owned fiber optic cable with slack loops as needed, testing the cable, temporary splices for testing, pulling equipment and lubricants, test documentation, installation, coiling and securing slack, and all other labor, equipment, and materials necessary to complete the fiber optic cable installation.

4.4 Contractors Employees

Any person making deliveries to or working on City property must be identifiable by uniform, proper identification and a marked vehicle. The Contractor shall only furnish employees who are competent and skilled for work under the Contract.

If, in the opinion of the City, an employee of the Contractor is incompetent or disorderly, refuses to perform in accordance with the terms and conditions of the Contract, threatens or uses abusive language while on City property, or is otherwise unsatisfactory, that employee shall be removed from all work under the Contract.

4.5 Iowa Contractor Law

The State of Iowa requires that all individual contractors and businesses performing "construction" work within Iowa be registered with the Division of Labor and renew that registration annually. More information about this law can be found at <http://www.iowaworkforce.org/labor/contractor.htm>. If applicable, your Iowa Contractor Registration number is required on the Signature Page of this RFB.

4.6 Permits/Licenses/Underground Utility Locates

Awarded Contractor is responsible for all permits and/or licenses to perform the duties of this contract.

Contractor will be required to comply with the excavation permit process and Iowa One Call for digging.

- Contact Susan Heath for Excavation permit in City right-of-way, 319-286-5151 or s.heath@cedar-rapids.org.
- Contractor shall not be required to pay permit fees for work performed for the City under the Contract.
- Contractor must submit a copy of the permit with each invoice.
- For emergency projects, Contractor has 72 hours retroactively to apply for permit.
- Underground Utility Locates – The awarded vendor is solely responsible for contacting companies to locate underground facilities by contacting "One Call" at (800) 292-8989. Any damage done, or repair needed therefore, to an existing line is considered the responsibility of the awarded vendor.

4.7 Tools and Equipment

The Contractor shall be equipped with the normal tools of their trade and shall furnish all labor, tools and all other items necessary for and incidental to executing and completing all required work. Contractor shall provide all required tools, equipment, consumable products and testing instruments needed for the job.

4.8 Waste Disposal – Clean-up

Removal and off-site disposal of construction waste will be the responsibility of the Contractor and shall be included in the bid price. Debris and trash shall be removed at the end of each day's work. Upon completion, the work area shall be left clean of debris and trash associated with the work. There shall be no additional charges to the City for removal and/or disposal of materials.

4.9 Workmanship, Materials & Equipment

Unless otherwise provided in the contract requirements and specification, the Contractor shall furnish all labor, materials and equipment for satisfactory contract performance. When not specifically identified in the specifications, such materials and equipment shall be of suitable type and grade for the purpose.

4.10 Work Order Form

4.10.1 All Work requested by the Information Technology Department shall be issued on a **Work Order Form**, see Attachments D, E, and F.

4.10.2 The Project Manager or designee shall complete the **Work Order Form** and give it to the Contractor.

4.10.3 For pre-scheduled work, the Contractor shall provide a written not-to-exceed cost estimate for the project based on the billable items described above in Section 4.3.

4.10.4 Upon completion of the project, Contractors shall provide the Project Manager with the final breakdown of actual work performed. Contractor shall invoice for the actual costs, which shall not exceed the written cost estimate.

4.11 Safety

Contractor will ensure that its employees observe and exercise all necessary caution and discretion so as to avoid injury to person or damage to property of any and all kinds. All buildings, equipment and furnishings shall be protected by the Contractor from damage, which might be done or caused by work performed under the Contract. Such damages to the foregoing shall be repaired and/or replaced by approved methods so as to restore the damaged areas to their original condition at the expense of the Contractor. The Contractor shall erect,

install, and maintain all temporary public walks, warning signs, barricades, and other protective means as may be necessary for the protection of the public from injury. Contractor certifies that all items or service delivered herein comply with all ANSI Standards and with the Federal Occupational Safety and Health Act of 1970, as applicable.

Contractor shall exercise the utmost care when working on City property. The Contractor shall be responsible for, and indemnify and hold the City harmless from all damage to the facility that may occur during performance of Work under the Contract. Any damage that may occur shall be reported to the City immediately. The City may direct the Contractor to undertake immediate and reasonable steps to repair and remediate any damage. The Contractor shall maintain a written log describing all property damage reports, and the Contractor's activities to repair and remediate. This log shall include the dates for each damage report, pictures, contact information and resolution. If property damaged by the Contractor is not repaired or remediated in a timely basis as directed by the City, and to the satisfaction of the City, the City may, at its option, have the damage repaired at the Contractor's expense to be reimbursed to the City.

----- End of Section 4.0 -----

SECTION 5.0 – BID EVALUATION AND AWARD

- 5.1 Award - Any award(s) made by the City of Cedar Rapids is subject to prior approval by the City of Cedar Rapids City Council.
- 5.1.1 Award shall be made to the responsible Bidder submitting the lowest responsive bid with regard to the specifications set forth herein. The City reserves the right to accept or reject any or all bids; to request rebids; to award bids item-by-item, by groups or lump sum; and to waive technicalities and formalities where is it deemed advisable in protection of the best interests of the City.
- 5.1.2 If the evaluation team determines that the project should be awarded, the process shall be as follows:
- a) The evaluation team shall determine which responsible Bidder has submitted the lowest responsive bid.
 - b) For projects equal to or greater than \$50,000, the City Council shall consider a resolution awarding the contract and authorizing the City Manager to sign the Contract on behalf of the City. **Note**, as provided for by Section 4.03 of the Cedar Rapids Municipal Code, no Contract shall be deemed to be created and exist, unless and until the City Council adopts a resolution awarding the project and authorizing the City Manager to sign the Contract.
 - c) The City Manager executes the Contract.
 - d) The City must issue a purchase order to the Contractor before any work shall begin. The purchase order shall constitute authorization for the Contractor to commence the Work.
- 5.1.3 If the evaluation team determines that all the bids received should be rejected, the Bidders shall be notified by the Purchasing Services Division accordingly. At that point, the City may, or may not, re-bid the project.
- 5.2 Award of bid shall be made to the lowest responsive and responsible Bidder(s) meeting the specifications set forth herein. In addition to the quoted price, the following is a partial list of the criteria that may be used in our determination of Contractor responsibility and responsiveness:
- Adherence to specifications;
 - Service as specified in these bid documents;
 - Company's reputation and financial status;
 - Company's ability to meet the City's Insurance Requirements;
 - Current lead-time quoted;
 - Guarantees and warranties;
 - Past experience and service provided by Bidder;
 - Strength of Bidder's hiring and training program;
 - Favorable references from firms with projects of similar scopes that indicate that the Bidder has the ability to carry out the Work and provide the products specified;
 - Strength of company's safety program and history;
 - Proposed subcontractors as indicated on Signature Page Form (Attachment C).
- 5.3 The City of Cedar Rapids reserves the right to use both primary and secondary suppliers or to otherwise use multiple sources to protect the City's overall interests.
- 5.4 The Company must not have any unresolved performance issues with the City of Cedar Rapids. The Company's performance as a prime Contractor or subcontractor in previous City contracts shall be taken into account when evaluating the Company's submittal for this Request for Bid. The City may survey other local agencies during the bid evaluation period to make sure the Company does not have any unresolved or unsatisfactory performance issues. The City reserves the right to reject the Company's submittal based on its assessment of the Company's prior performance.
- 5.5 In case of tie bids, the City will make the award based on the priority factors as outlined in the City of Cedar Rapids Purchasing Policy Manual.
http://cedar-rapids.org/government/departments/purchasing/Documents/Tie%20Bid%20Procedure_14.pdf
- 5.6 Buy Local Program
- The Cedar Rapids City Council has passed a resolution adopting a Buy Local Program for the procurement of goods and/or Work by competitive bid or proposal. Preference shall be applied to acceptable bids or proposals

from businesses located within Linn County who have submitted a notarized Local Business Certificate. See Attachment C for details. If your company is already registered, or if this does not apply to your business, do not complete the form.

----- End of Section 5.0 -----

SECTION 6.0 – SUBMITTAL INSTRUCTIONS

DOCUMENTS TO BE SUBMITTED WITH THIS BID

1. General Company Information Form – Attachment C
2. Certification Regarding Ability to Obtain Required Insurance – Attachment C
3. Bid Pricing Submittal Forms – Attachment C
4. Bid Signature Page – Attachment C
5. Local Business Certificate, if applicable – Attachment C
6. Documentation of Required Certifications – Listed on page 9, Section 4.2

----- End of Section 6.0 -----

ATTACHMENT A – STANDARD TERMS AND CONDITIONS

ACCELERATED PAY DISCOUNTS - Accelerated discounts should be so stated on the Signature Page. If quick pay discounts are offered, the City reserves the right to include that discount as part of the award criteria. Prices bid must, however, be based upon payment in net forty-five (45) days after receipt, inspection and acceptance. In all cases, quick pay discounts will be calculated from the date of the invoice or the date of acceptance, whichever is later.

ADA COMPLIANCE – Bids for design, construction, programs, policies and concessions of any type shall comply with the 2010 Standards for Accessible Design, the ADA title II regulation, Section 504 of the 1973 Rehabilitation Act, and similar statutes and regulations prohibiting discrimination on the basis of disability.

ASSIGNMENT - The City and the Contractor each is hereby bound and the partners, successors, executors, administrators and legal representatives of the City and the Contractor are hereby bound to the other Party to the Contract and to the partners, successors, executors, administrators and legal representatives (and said assigns) of such other Party, in respect of all covenants, agreements and obligations of the Contract. Any assignment or attempt at assignment made without prior written consent of the City shall be void.

BID CURRENCY/LANGUAGE - All bid prices shall be shown in US Dollars (\$). All prices must remain firm for the duration of the contract regardless of the exchange rate. All bid responses must be submitted in English.

BID FORM - Each Bidder must submit an original bid and additional copies as required on the forms attached. The Bidder shall correctly sign the bid, and the bid may be rejected if it shows any omissions, alterations of the form, additions not called for in the bid, or any irregularities of any kind. In case of a discrepancy between the unit price and the extended price, the unit price shall prevail.

BID INFORMATION IS PUBLIC - All documents submitted with any bid shall become public documents and subject to Iowa Code Chapter 22, which is otherwise known as the "Iowa Open Records Law". By submitting any document to the City of Cedar Rapids in connection with a bid, the submitting party recognizes this and waives any claim against the City of Cedar Rapids and any of its officers and employees relating to the release of any document or information submitted. Each submitting party shall hold the City of Cedar Rapids and its officers and employees harmless from any claims arising from the release of any document or information made available to the City of Cedar Rapids arising from any opportunity. Bid information requested by the public or other bidders will be provided in an alternative format if the requestor is a person with a disability and requires an alternative form for comprehension.

BID REJECTION OR PARTIAL ACCEPTANCE - The City reserves the right to accept or reject any or all bids or parts thereof. The City further reserves the right to waive technicalities and formalities in bids, as well as to accept in whole or in part such bids where it is deemed advisable in protection of the best interests of the City.

CONFLICT OF INTEREST - Contractor represents, warrants, and covenants that no relationship exists or will exist during the Contract period between the Contractor and the City that is a conflict of interest. No employee, officer or agent of the Contractor shall participate in the selection or in the award if a conflict of interest, real or apparent, exists. The provisions of Iowa Code ch. 68B shall apply to the Contract. If a conflict of interest is proven to the City, the City may terminate the Contract, and Contractor shall be liable for any excess costs to the City as a result of the conflict of interest. The Contractor shall establish safeguards to prevent employees, consultants, or members of governing bodies from using their positions for purposes that are, or give the appearance of being, motivated by the desire for private gain for themselves or others with whom they have family, business, or other ties. The Contractor shall report any potential, real, or apparent conflict of interest to the City.

DISPUTES - Should any disputes arise with respect to the Contract; the Parties agree to act immediately to resolve such disputes. Time is of the essence in the resolution of disputes. The Contractor agrees that, the existence of a dispute notwithstanding, it will continue without delay to carry out all of its responsibilities under the Contract that are not affected by the dispute and the City shall continue to make payment for all work properly performed. Should the Contractor fail to continue to perform its responsibilities regarding all non-disputed work, without delay, any additional costs incurred by the City or the Contractor as a result of such failure to proceed shall be borne by the Contractor. The unintentional delayed payment by the City to the Contractor of one or more invoices not in dispute in accordance with the terms of the Contract will not be cause for Contractor to stop or delay Work.

FOB POINT AND FREIGHT/DELIVERY CHARGES – The FOB point, in terms of loss or damage, as well as where title to the goods is passed, shall be FOB-Destination. Freight/delivery charges are to be included in the quoted price of the goods, rather than as a separate line item.

FORCE MAJEURE - Force majeure shall be any of the following events: acts of God or the public enemy; compliance with any order, rule, regulation, decree, or request of any governmental authority or agency or person purporting to act therefore; acts of war, public disorder, rebellion, terrorism, or sabotage; floods, hurricanes, or other storms; strikes or labor disputes; or any other cause, whether or not of the class or kind specifically named or referred to herein, not within the reasonable control of the Party affected. A delay in or failure of performance of either Party shall not constitute a default hereunder nor be the basis for, or give rise to, any claim for damages, if and to the extent such delay or failure is caused by force majeure. The Party who is prevented from performing by force majeure shall be obligated, within a period not to exceed fourteen (14) days after the occurrence or detection of any such event, to give notice to the other Party setting forth in reasonable detail the nature thereof and the anticipated extent of the delay, and shall remedy such cause as soon as reasonably possible, as mutually agreed between the Parties.

INDEMNIFICATION - The Contractor shall, and hereby agrees to, protect, defend, indemnify and hold harmless the City of Cedar Rapids, its officers and employees from any and all claims, settlements, judgments, and damages of every kind and nature made, to include all costs associated with the investigation and defense of any claim, rendered or incurred by or on behalf of the City, its officers, and

employees, that may arise, occur, or grow out of any errors, omissions, or acts, done by the Contractor, its employees, or any independent Contractors working under the direction of either the Contractor in the performance of the Contract.

LAWS AND REGULATIONS - The Contract shall be governed, interpreted and enforced in accordance with all applicable federal, State of Iowa, and local laws, ordinances, licenses and regulations of a governmental body having jurisdiction and shall apply to the Contract throughout, as the case may be. The Contractor certifies that in performing the Contract they will comply with all applicable provisions of the federal, state, and local laws, regulations, rules, and orders.

METHOD OF AWARDING - The City reserves the right to make awards based on the entire bid or on an item by item basis. However if Contractor's bid is based on an "all or none" condition, the City may consider their bid non-responsive and reject the entire bid.

NO GIFT STANDARD - The City of Cedar Rapids is committed to upholding the highest ethical standards in all of its business practices. This standard recognizes the need to avoid even the perception of improper gifts or favors to employees. Therefore, all suppliers have been asked to abide by the City's "No Gift" standard. The "No Gift" standard also applies to all offers of discounts or free items at any place of business targeted toward a City employee and not available to the general public, regardless of the value.

NON-COLLUSION STATEMENT – Neither the Contractor, nor anyone in the employment of the Contractor, has employed any person to solicit or procure the Contract nor will the Contractor make any payment or agreement for payment of any compensation in connection with the Contract. There is no contract, agreement or arrangement, either oral or written, expressed or implied, contemplating any division of compensation for Work rendered under the Contract or participation therein, directly or indirectly, by any other person, firm or corporation, except as documented in the Contract. Neither the Contractor, nor anyone in the employment of the Contractor, has either directly or indirectly entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive procurement in connection with the Contract.

NON-DISCRIMINATION AND EQUAL OPPORTUNITY - All Contractors that engage in contracts with the City of Cedar Rapids, Iowa agree as follows: The Contractor will not discriminate against any employee or applicant for employment because of race, sex, color, creed, ancestry, national origin, marital status, families with children, religion, age, disability, sexual orientation, gender identity, genetic information, status with regard to public assistance, status as a veteran or any classification protected by federal, state, or local law, (Protected Classes) except where age and sex are essential bona fide occupational requirements, or where disability is a bona fide occupational disqualification. Such action shall include, but not be limited to the following; (a) Employment, (b) Upgrading, (c) Demotion or transfer, (d) Recruitment and advertising, (e) Layoff or termination, (f) Rate of pay or other forms of compensation, and (g) Selection for training, including apprenticeship. The Contractor further assures that managers and employees comply with both the spirit and intent of federal, state, and local legislation, government regulation, and executive orders in providing affirmative action as well as equal opportunity without regard to the protected classes, as stated above. The Contractor will include, or incorporate by reference, the provisions of the nondiscrimination clause in every contract or subcontract unless exempt by the rules, regulations or orders of the City's Affirmative Action Program and will provide in every contract or subcontract that said provision will be binding upon each Contractor.

REGULATORY AGENCY COMPLIANCE - Compliance with laws and regulations set forth by regulatory agencies is required. These agencies include, but are not limited to, OSHA – Occupational Safety & Health Agency, EPA – Environmental Protection Agency, ICC – Interstate Commerce Commission, DNR – Department of Natural Resources, and DOT – Department of Transportation. The City of Cedar Rapids expects that Contractors will offer expertise on conformance of regulations applying to the products they sell and the work they perform.

RIGHT TO PROTEST - Anyone wishing to file a protest concerning (1) the specifications, (2) the bid procedure or (3) the award of the contract must do so in writing in accordance with the City's Protest Procedure which is posted on the City's website at http://cedar-rapids.org/government/departments/purchasing/Documents/Protest%20Procedure_14.pdf

SAFETY DATA SHEETS - The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, and importers to ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged, or marked and to provide Safety Data Sheets (SDS) to communicate the hazards of hazardous chemical products. It is the chemical supplier's responsibility to determine which products are covered and to provide SDS with the initial shipment. It is also the chemical supplier's responsibility to provide any updated or revised SDS, as they become available for any products sold and delivered to the City of Cedar Rapids. City of Cedar Rapids employees shall not accept a shipment of any chemical that does not have a SDS attached or currently on file. Safety Data Sheets shall be available in alternative formats if the requestor is a person with a disability and requires an alternative format for comprehension.

SUBCONTRACTING – The Work relating to this Project, or any portion thereof, may not be subcontracted without written approval from the City. All approved Subcontractors shall be listed in the resulting contract or in a written amendment to the contract.

SPECIFICATIONS - Unless otherwise stated, every item provided in response to this Request for Bid shall be new, unused, and of current model under standard production by the manufacturer. Items shall be furnished complete with standard equipment and accessories as listed in the manufacturer's printed literature. Remanufactured, used, demonstrator models or refurbished items will not be accepted.

SUSPENSIONS AND DEBARMENT - The Contractor hereby certifies, pursuant to 48 CFR Part 9, that neither it nor its principles are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in the Contract by any federal agency. The Contractor further certifies that it is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in any contracts with the City of Cedar Rapids or the State of Iowa.

TAXES - The City of Cedar Rapids is exempt from sales tax and certain other use taxes. Any charges for taxes from which the City is exempt will be deducted from invoices before payment is made. The Cedar Rapids Tax ID number is 42-6004336.

TERMINATION OF CONTRACT FOR CONVENIENCE - The City may terminate the Contract at any time by giving written notice to the Contractor of such termination and specifying the effective date thereof, at least thirty (30) calendar days before the effective date of such termination. In that event, all finished or unfinished Work, reports, materials(s) prepared or furnished by the Contractor under the Contract shall, at the option of the City, become its property. If the Contract is terminated by the City as provided herein, the Contractor shall be paid for all Work which has been authorized, provided, and approved up to the effective date of termination. The City will not be subject to any termination fees from the Contractor.

TERMINATION FOR CAUSE AND DEFAULT - If through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligations or if the Contractor shall violate any of the terms or conditions of the Contract, the City shall thereupon have the right to terminate the Contract by giving written notice to the Contractor of such termination and specifying the effective date of termination. In that event, and as of the time notice is given by the City, all completed Work, reports, and delivered materials shall, at the option of the City, become its property, and the Contractor shall be entitled to receive compensation for any satisfactory Work completed. Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damage sustained by the City by virtue of breach of the Contract by the Contractor and the City may withhold any payments to the Contractor for the purpose of set off until such time as the exact amount of damages due the City are determined.

WARRANTIES - GOODS

The Contractor warrants that all articles, materials and goods shall be consistent with manufacturer’s specifications and will be free from defects. Without limitation of any rights which the City may have by reason of any breach of warranty, goods which are not as warranted may be returned at Contractor’s expense within thirty (30) days after delivery, for either credit or replacement, as the City may direct without additional charge to the City.

WARRANTIES – WORK - The Contractor shall perform Work for the City pertaining to the Project as set forth in the Contract.

Contractor represents that the Work and all of its components shall be free of defects; shall be performed in a manner consistent with other Contractors in a similar industry and application; and shall conform to the requirements of the Contract.

Contractor shall be responsible for the quality, technical accuracy, completeness and coordination of all Work performed under the Contract. Contractor shall, promptly and without charge, provide all corrective Work necessary as a result of Contractor’s acts, errors, or omissions with respect to the quality and accuracy of the Work.

Contractor shall be responsible for any and all damages to property or persons as a result of Contractor’s acts, errors, or omissions, and for any losses or costs to repair or remedy any Work undertaken by City based upon the Work as a result of any such acts, errors, or omissions.

Contractor’s obligations shall exist without regard to, and shall not be construed to be waived by, the availability or unavailability of any insurance, either of City or Contractor.

WARRANTIES – INTELLECTUAL PROPERTY - Contractor represents and warrants that all the materials, goods and work produced, or provided to the City pursuant to the terms of the Contract shall be wholly original with the Contractor or that the Contractor has secured all applicable interests, rights, licenses, permits or other intellectual property rights in such materials, goods and work. The Contractor represents and warrants that the materials, goods and work, and the City’s use of same, and the exercise by the City of the rights granted by the Contract shall not infringe upon any other work or violate the rights of publicity or privacy of, or constitute a libel or slander against, any person, firm, or corporation. Contractor further represents and warrants that the materials and works do not infringe upon the copyright, trademark, trade name, trade dress patent, statutory, common law or any other rights of any person, firm or corporation or other entity. The Contractor represents and warrants that it is the owner of or otherwise has the right to use and distribute the goods and work contemplated by the Contract.

----- End of Attachment A -----

ATTACHMENT B – INSURANCE REQUIREMENTS

Section I – Basic Insurance Requirements

Contractor, at its own expense, shall procure and maintain during the life of this Contract, the following insurance so as to cover all risk which shall arise directly or indirectly from Contractor's obligations and activities.

General Liability Insurance Contractor shall carry the most recently approved ISO Commercial General Liability Insurance policy, or its equivalent, written on an occurrence-basis, with limits not less than \$1,000,000 per occurrence/ \$2,000,000 general aggregate for Bodily Injury and Property Damage, including the following coverages:

- Premises and Operations Coverage
- Contractual Liability
- Products and Completed Operations Coverage
- Broad Form Property Damage Liability
- Personal Injury Liability

Automobile Liability Insurance with a combined single limit of at least \$1,000,000 per occurrence for bodily injury and property damage. Coverage shall include all owned, hired, and non-owned motor vehicles used in the performance of this contract by the Contractor or its employees.

Workers Compensation and Employers Liability Insurance meeting the requirements of the Iowa Workers Compensation Statutes. The coverage limits shall include \$500,000 each accident for Bodily Injury by Accident, \$500,000 each employee for Bodily Injury by Disease, and \$500,000 policy limit for Bodily Injury by Disease.

THREE (3) ENDORSEMENTS REQUIRED:

1. Additional Insured Endorsement:

Except for Workers' Compensation and Professional Liability, the policies shall include the City Additional Insured Endorsement of: The City of Cedar Rapids, Iowa, including all its elected and appointed officials, all its employees and volunteers, all its boards, commissions and/or authorities and their board members, employees, and volunteers, are included as additional insureds with respect to liability arising out of the Insured's work and/or Services performed for the City of Cedar Rapids, Iowa. This coverage shall be primary to the additional insureds, and not contributing with any other insurance or similar protection available to the additional insureds, whether available coverage be primary, contributing, or excess.

2. Non-Waiver of Governmental Immunities Endorsement (Iowa):

a. **Non-waiver of Government Immunity** The insurance carrier expressly agrees and states that the purchase of this policy and the including of the City of Cedar Rapids, Iowa as an Additional Insured does not waive any of the defenses of governmental immunity available to the City of Cedar Rapids, Iowa under Code of Iowa Section 670.4 as it now exists and as it may be amended from time to time.

b. **Claims Coverage** The insurance carrier further agrees that this policy of insurance shall cover only those claims not subject to the defense of governmental immunity under the Code of Iowa Section 670.4 as it now exists and as may be amended from time to time.

c. **Assertion of Government Immunity** The City of Cedar Rapids, Iowa shall be responsible for asserting any defense of governmental immunity, and may do so at any time and shall do so upon the timely written request of the insurance carrier. Nothing contained in this endorsement shall prevent the carrier from asserting the defense of governmental immunity on behalf of the City of Cedar Rapids, Iowa.

d. **Non-Denial of Coverage** The insurance carrier shall not deny coverage under this policy and the insurance carrier shall not deny any of the rights and benefits accruing to the City of Cedar Rapids, Iowa under this policy for reasons of governmental immunity unless and until a court of competent jurisdiction has ruled in favor of the defense(s) of governmental immunity asserted by the City of Cedar Rapids, Iowa.

e. **No Other Change in Policy** The insurance carrier and the City of Cedar Rapids, Iowa agree that the above preservation of governmental immunities shall not otherwise change or alter the coverage available under the policy.

3. Cancellation and Material Changes Endorsement

Thirty (30) days Advance Written Notice of Cancellation, Non-Renewal, Reduction in insurance coverage and/or limits and ten (10) days written notice of non-payment of premium shall be sent to:

City of Cedar Rapids
Finance Department – Purchasing Services Division
101 First Street SE
Cedar Rapids IA 52401

(Please note that the City does accept a signed letter on the agent's letterhead, from the insured's insurance agent, confirming that the agent will provide notice as indicated above.)

Section II – Conditions of Contract

The Contractor is required to purchase and maintain insurance coverage to protect the Contractor and City of Cedar Rapids throughout the duration of this Contract as enumerated above in the minimum limits above written and the requirement shall be a part of the Contract. Failure on the part of the Contractor to maintain this insurance in full effect will be treated as a failure on the part of the Contractor to comply with these requirements and be considered sufficient cause to suspend the work, withhold payment(s), and/or be disqualified in the future.

The insurance policies shall be issued by insurers authorized to do business in the State of Iowa and currently having an A.M. Best Rating of "B+" or better. All policies shall be occurrence form. If Professional Liability coverage is written on a claims made policy form, the certificate of insurance must clearly state coverage is claims made and coverage must remain in effect for at least two years after final payment with the Contractor continuing to furnish the CITY certificates of insurance.

The Contractor shall be responsible for deductibles and self-insured retentions in the Contractor's insurance policies.

The Contractor is required to give the City notice of any change in coverage, specifically, any reduction in coverage and cancellation of coverage no less than thirty (30) days prior to the effective date of any non-renewal or cancellation of any policies required by the Contract.

The City intends to be an Additional Insured with coverage being primary and not contributing with any other insurance or similar protection available to the City whether any other coverage is primary, contributing or excess.

In the case of any work sublet, the Contractor shall require subcontractors and independent contractors working under the direction of either the Contractor or a subcontractor to carry and maintain the same workers compensation and liability insurance required of the Contractor.

Section III – Contract Approval

A Certificate of Insurance is required evidencing all required insurance coverage as provided above with any required endorsements attached so as to evidence their inclusion in the coverage. The Certificate of Insurance is due before the Contract can be approved. The following format is required:

List Fiber Installation & Maintenance Services for Joint Communication Network, RFB #PUR0116-127, as the Scope of Work the certificate covers in the Description of Operations section.

The following address must appear in the Certificate Holder section:

City of Cedar Rapids
Finance Department – Purchasing Services Division
101 First Street SE
Cedar Rapids IA 52401

The Producer's contact person's name, phone number and e-mail address is required.

Endorsements, as required in Section I, shall be included with the Certificate of Insurance to evidence that the policy has been endorsed.

Certificates may be sent by e-mail (r.johnson2@cedar-rapids.org), fax (888-815-3659), mail or delivery to the attention of Rebecca Johnson.

----- End of Attachment B -----

ATTACHMENT C

BID SUBMITTAL FORMS

For

FIBER INSTALLATION & MAINTENANCE SERVICES FOR JOINT COMMUNICATION NETWORK

RFB #PUR0116-127

FORM NAME	Page
General Company Information Form.....	23
Certification Regarding Ability to Obtain Required Insurance.....	24
Bid Pricing Submittal Form.....	25
Signature Page Form.....	27
Buy Local Packet (submit only if applicable).....	28

GENERAL COMPANY INFORMATION FORM

Company Name _____

Company Address _____

General Description of the Company: _____

Type of Organization (franchise, corporation, partnership, etc.) _____

Number of years in business: _____

References

List three (3) customers who are current or have been served by your company within the last three (3) years with projects of similar scopes. (Name of firm, address, contact person, phone number)

Reference #1 - Name: _____
Address: _____
Contact Person & Phone: _____
Date & Description of Job: _____
Contract Value: _____

Reference #2 - Name: _____
Address: _____
Contact Person & Phone: _____
Date & Description of Job: _____
Contract Value: _____

Reference #3 - Name: _____
Address: _____
Contact Person & Phone: _____
Date & Description of Job: _____
Contract Value: _____

Personnel

Name and title of person overseeing the City account: _____

Office Phone: _____ Mobile: _____ Email: _____

Names, titles and years of experience of persons expected to service the City account:

Safety Record

Has your company received an OSHA violation in the past five (5) years? Yes No
If yes, please attach copies of the citations and an explanation of how they have been resolved.

CERTIFICATION REGARDING ABILITY TO OBTAIN REQUIRED INSURANCE

**CERTIFICATION BY BIDDER’S INSURANCE AGENT/BROKER REGARDING BIDDER’S ABILITY TO OBTAIN
REQUIRED INSURANCE COVERAGE AND ENDORSEMENTS**

I hereby certify that my client, as identified below, will be able to meet all of the insurance requirements of Attachment B, has been advised of any additional costs associated with doing so, and has agreed to obtain such coverage and endorsements if selected as the successful bidder of the RFB to which my client has responded:

Project Name and Number: _____

Legal Name of Bidder: _____

Name/Address of Insurance Agency:

Phone: _____ Fax: _____

Email: _____

Name of Agent/Broker (Print): _____

Signature of Agent/Broker: _____

Date of Signature: _____

BID PRICING SUBMITTAL FORM

The Contractor shall, at its sole cost and expense, provide, perform and complete in the manner described and specified in this Request for Bid all necessary work, labor, services, transportation, equipment, materials, apparatus, information, data, freight and other items necessary to accomplish the Work as defined below, in accordance with the Scope of Work as described in Section 4.0. The Work will also include procuring and furnishing all approvals and authorizations, permits, and certificates and policies of insurance as specified herein necessary to complete the Work. Additional materials that may be provided for a firm fixed unit price not included in the line items for work are limited to those included in the table below.

Pricing for Work as described in Scope of Work, Section 4.3 of Request for Bid

Description of Work	Firm Fixed Unit Price		
	General Maintenance	Emergency Repairs	New Build Projects
01400-11 Removal of Existing Sidewalk –per square yard	\$	\$	\$
02700-30 Portland Cement Concrete Pavement Repair – per sq yd	\$	\$	\$
02700-70 Portland Cement Concrete Sidewalk, 4 inch – per sq yd	\$	\$	\$
16580-32A 24" x 36" Handhole with Lid – per handhole	\$	\$	\$
16580-32B 30" x 48" Handhole with Lid – per handhole	\$	\$	\$
16580-33 Adjust Handhole – per handhole adjustment	\$	\$	\$
16580-50A 2" HDPE SDR-13 Conduit, bored – per linear foot	\$	\$	\$
16580-50B 2" HDPE SDR-13 Conduit, trenched – per linear foot	\$	\$	\$
16580-50C Tracer Wire – per linear foot	\$	\$	\$
16590-10 Fiber Optic Termination – per termination	\$	\$	\$
16590-20 Fiber Optic Fusion Splice – per splice	\$	\$	\$
17000-02 Trouble Shooting – per hour	\$	\$	\$
17000-04 Fiber Optic Cable (install only) – per linear foot	\$	\$	\$
17000-11 Emergency Fiber Optic Fusion Splice – per splice	\$	\$	\$
17000-12 Emergency Trouble Shooting – per hour	\$	\$	\$
17000-13 Emergency 2" HDPE Conduit Repair – per linear foot	\$	\$	\$
17000-14 Emergency Fiber Optic Cable, 24 SM – per linear foot	\$	\$	\$
17000-15 Emergency Fiber Optic Cable, 48 SM – per linear foot	\$	\$	\$
17000-16 Emergency Fiber Optic Cable, 144 SM – per linear foot	\$	\$	\$

Pricing for Materials not included in the firm fixed pricing above

Description of Materials	Brand	Model No.	Firm Fixed Unit Price
1U Front Access, rack mountable, splice and termination panel with 12 pigtailed installed	OFS	1U-S-LIU-LC12-BLUE-PT	\$
1U Front Access, rack mountable, splice and termination panel with 24 pigtailed installed	OFS	1U-S-LIU-LC24-BLUE-PT	\$
Rack Mounted, LGX Combination, splice and termination enclosure with 48 pigtailed installed	OFS	LSC1W-048-12-LCU-LT1B-FF-PT-2CC	\$

Description of Materials	Brand	Model No.	Firm Fixed Unit Price
Rack Mounted, LGX Combination, splice and termination enclosure with 72 pigtailed installed	OFS	LSC1W-072-12-LCU-LT1B-FF-PT-2CC	\$
Rack Mounted, LGX Combination, splice and termination enclosure with 144 pigtailed installed	OFS	LSC1W-144-14-LCU-LT1B-FF-PT-2CC	\$
Rack Mounted, LGX Combination, splice and termination enclosure with 288 pigtailed installed	OFS	LSC1W-288-23-LCU-LT1B-FF-PT-2CC	\$
Rack Mounted, LGX Combination, splice and termination enclosure with 432 pigtailed installed	OFS	LSC1W-432-37-LCU-LT1B-FF-PT-2CC	\$
Single panel housing that will accept one SM ST six-pack panel or one twelve-pack panel plus a twelve splice holder	Corning	SPH-01P	\$
4 panel housing that will accept four SM ST six-pack panels plus four twelve splice trays	Corning	CMIC-024	\$
4 panel housing that will accept eight SM ST twelve-pack panels plus four 24 splice trays	Corning	CCH-04U	\$
2 panel housing that will accept two SM ST six-pack panels plus one twelve splice holder	Corning	WIC-02P	\$

All other materials listed in Attachment H shall be included in the firm fixed unit pricing for work.

Warranty Information: _____

An approved city council resolution, signed contract and purchase order will authorize work to begin.

Can your company meet the requirements for 15-day response to begin regularly scheduled work and 2-hour response to begin emergency work? Yes No

Name of Company: _____
 Authorized Signature: _____
 Date: _____

SIGNATURE PAGE FORM

The undersigned, having examined these documents and having full knowledge of the condition under which the Work described herein must be performed, hereby proposes fulfillment of the obligations contained herein in accordance with all insurance documents, instructions, terms, conditions, and specifications set forth; and that all required Work be furnished and that all incidental costs be paid in strict conformity with these documents, for the stated prices as payment in full.

Submitting Firm: _____

Address: _____

City: _____ County: _____ State: _____ Zip: _____

Authorized Representative (print): _____ Title: _____

Authorized Signature: _____

Date: _____ E-mail: _____

Phone # () _____ Fax # () _____

Federal ID Number _____

Iowa Department of Labor Registration Number, if applicable _____

The State of Iowa requires that all individual contractors and businesses performing "construction" work within Iowa be registered with the Division of Labor and renew that registration annually. More information about this law can be found at <http://www.iowaworkforce.org/labor/contractor.htm>

FIRM PRICING

Offered pricing shall remain firm for a minimum of sixty (60) days after the due date of this solicitation unless indicated otherwise. Accepted pricing shall remain firm for the duration of the contract.

ADDENDA {It is the Bidder's responsibility to check for issuance of any addenda}

The above-signed hereby acknowledges receipt of the following addenda:

Addenda Number: _____ Date: _____ Addenda Number: _____ Date: _____

Addenda Number: _____ Date: _____ Addenda Number: _____ Date: _____

PAYMENT METHOD

Do you accept a credit card for payment of purchases? Yes No

QUICK PAY DISCOUNT

If you provide a discount for quick payment, please state the discount and terms: _____ % _____ days

Does this discount apply to payments made by MasterCard? Yes No

PROPOSED SUBCONTRACTORS (Reference General Terms and Conditions, section titled *Subcontracting*).

If awarded this project, do you plan to use any subcontractors? Yes No If yes, list information below.

Subcontractor Company Name	Address	IA Contractor Registration #

We choose not to bid at this time. We would like to be considered for future solicitations.

BUY LOCAL PACKET

The Cedar Rapids City Council adopted the Buy Local Purchasing Policy through City Council Resolution No. 1239-10-10.

1. Who is local?

- a. Businesses located within Linn County, Iowa who have paid Linn County property taxes on a plant, office or store occupied by the business for the past year; or
- b. Businesses located within Linn County, Iowa who have paid rent for the past year to a landlord or owner who has paid Linn County property taxes for the past year on the plant, office or store occupied by the business.

2. How do I apply for local preference status?

- a. Complete a "Local Business Certificate". (See page 3 of this packet)
- b. Mail the notarized, completed certificate to:
City of Cedar Rapids – Purchasing Division
101 First Street SE
Cedar Rapids, IA 52401

3. After I return the notarized certificate, how do I know if my business is on the list?

A list of certified businesses can be viewed on the City's website:

www.cedar-rapids.org/government/departments/purchasing

Please allow up to 10 days for processing of the certificate before the business is listed.

4. Will the local preference policy be applied to all purchases for goods and services?

No, the following types of purchases are excluded:

- a. Purchases subject to the competitive laws of the State of Iowa
- b. Purchases subject to federal, state or county grant stipulations
- c. Purchases from the State of Iowa or other national contracts
- d. Sole source purchases

5. Do you have questions or feedback about the Buy Local Program?

Please send questions via email to buylocal@cedar-rapids.org

6. If I work out of my home, and my home is in Linn County, am I eligible to become a certified local business?

In order to qualify as local business your business must pay commercial property taxes related to the business being certified as local business. Residential property taxes paid for a home business do not qualify for the buy local certification.

7. How does the Buy Local Program work?

Preference shall be applied to acceptable quotes, bids and proposals greater than \$1,000 from businesses within Linn County, Iowa who have submitted a notarized "Local Business Certificate".

Example A: Preference shall be given in the procurement of goods and/or services by bid or quote when a local Contractor's bid or quote exceeds the acceptable low bid by no more than:

10% for bids less than \$25,000

5% for bids equal to or greater than \$25,000 but less than \$200,000

1% for bids equal to or greater than \$200,000

Bid Tabulation for a 20' Enclosed Trailer			
	Contractor A	Contractor B	Contractor C
	Marion, IA	Des Moines, IA	Davenport, IA
BID PRICE	\$ 15,147.99	\$ 14,770.55	\$ 18,250.00

- This bid is less than \$25,000 so the preference is 10%
- Contractor B submitted the lowest bid of \$14,770.55
- Contractor B is not a local business
- Contractor A submitted the next lowest bid of \$15,147.99
- Contractor A is a certified local business
- $\$15,147.99 - \$14,770.55 = \$377.44 / 14,770.55 = 2.56\%$
- The difference between the two bids is 2.56% which is within 10% so the local preference applies
- The bid is awarded to the local Contractor A for \$15,147.99

Example B: Preference shall be given in the procurement of goods and/or services by Request for Proposal (RFP) by awarding additional points to the evaluation scores of proposals received from certified local businesses as follows:

10% of all available points for proposals less than \$25,000

5% of all available points for proposals equal to or greater than \$25,000 but less than \$200,000

1% of all available points for proposals equal to or greater than \$200,000

Proposal Summary			
	Contractor A	Contractor B	Contractor C
	Iowa City, IA	Cedar Rapids, IA	Hiawatha, IA
Points	976.7	723	636.8
Points for Local Preference	0	50	50
TOTAL POINTS	976.7	773	686.8

- This proposal is greater than \$25,000 but less than \$200,000 so the preference is 5%
- The total available points are 1,000 (5% of 1,000 points = 50 points)
- The proposal received from Contractor A was given 976.7 points by the evaluation team
- Contractor B and Contractor C each received 50 additional points per the local preference policy
- After the additional points were applied, Contractor A remained the highest ranked proposal
- Local preference did not change the award in this case



STATEMENT OF POLICY

CITY OF CEDAR RAPIDS LOCAL BUSINESS CERTIFICATE

Pursuant to Cedar Rapids City Council Resolution 1239-10-10, in conducting the procurement of goods and/or services by competitive solicitation, the City of Cedar Rapids shall give preference to a responsive bid or proposal from a business located within the limits of Linn County, Iowa over an acceptable bid or proposal submitted by a business located outside of Linn County.

Preference shall be given in conducting procurement of goods and/or services by bid or quote when a local bidder's bid or quote exceeds the acceptable low bid by no more than:

- 10% for bids less than \$25,000
- 5% for bids equal to or greater than \$25,000 but less than \$200,000
- 1% for bids equal to or greater than \$200,000

Preference shall be given in conducting procurement of goods and/or services by request for proposal by awarding additional points to each proposal where the business is located in Linn County as follows:

- 10% of all available points for proposals less than \$25,000
- 5% of all available points for proposals equal to or greater than \$25,000 and less than \$200,000
- 1% of all available points for proposals equal to or greater than \$200,000

The local preference is not applicable to goods and services purchased with the assistance of federal, state or county grants or funds, or pursuant to the competitive laws of the State of Iowa.

WRITTEN STATEMENT REQUESTING LOCAL BUSINESS STATUS

I, _____, am an authorized representative of _____ (name of business) and on behalf of the business request that it be deemed to be a local business for purposes of the City of Cedar Rapids "Buy Local" program. Answering yes to question 1 **and** either question 2 or 3 listed below will qualify the business as a local business. In support of this request I certify the following information as being true and correct:

Name of Business Here →→→		
(1) Is your business located within the limits of Linn County, Iowa?	<input type="checkbox"/> Yes <input type="checkbox"/> No	No. of Years: _____
(2) Did your business pay Linn County property taxes on a plant, office or store occupied by the business for the past year?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Street address of property: _____ Is this your home residence? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, see page 1, #6
(3) Did your business pay rent for the past year to a landlord or owner who has paid Linn County property taxes for the past year on a plant, office or store occupied by your business?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Street address of property: _____ Is this your home residence? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, see page 1, #6

I understand that misrepresentation of any facts in connection with this request may be cause for removal from the certified local business list. I also agree the business is required to notify the City in writing should it cease to qualify as a local business.

Signature _____ Title _____ Date _____
 Address _____ City/State _____ Zip _____
 Phone _____ Email _____ County _____

Subscribed and sworn to this _____ day of _____, 20____ before the undersigned Notary Public.

NOTARY PUBLIC, STATE OF IOWA

To confirm your status, check the certified local business list which is posted on the City's website:
www.cedar-rapids.org/government/departments/purchasing.

Questions about the Buy Local program may be emailed to buylocal@cedar-rapids.org.

Mail the notarized, completed certificate to →→→ City of Cedar Rapids
 Finance Department – Purchasing Services Division
 101 First Street SE
 Cedar Rapids, IA 52401

Internal Use Only:

Contractor ID: _____ Contractor Location ID: _____ Updated by: _____

ATTACHMENT D – WORK ORDER FORM FOR GENERAL MAINTENANCE & REPAIR
 FIBER OPTIC MAINTENANCE & REPAIR FOR JCN
 PURSUANT TO CONTRACT #PUR0116-127 BETWEEN THE CITY OF CEDAR RAPIDS AND CONTRACTOR

Date: _____ Purchase Order Number, if applicable: _____

Project Title and Address _____

Commencement Date _____ Completion Date _____

Project Description: _____

Description	UOM or Model #	Firm Fixed Unit Price	Est. Qty	Extended Price
WORK – Pricing is all-inclusive with exception of materials included on this Work Order Form below				
01400-11 Removal of Existing Sidewalk	SqYd	\$		\$
02700-30 Portland Cement Concrete Pavement Repair	SqYd	\$		\$
02700-70 Portland Cement Concrete Sidewalk, 4 inch	SqYd	\$		\$
16580-32A 24" x 36" Handhole with Lid	Handhole	\$		\$
16580-32B 30" x 48" Handhole with Lid	Handhole	\$		\$
16580-33 Adjust Handhole	Handhole	\$		\$
16580-50A 2" HDPE SDR-13 Conduit, bored	LF	\$		\$
16580-50B 2" HDPE SDR-13 Conduit, trenched	LF	\$		\$
16580-50C Tracer Wire	LF	\$		\$
16590-10 Fiber Optic Termination	Termination	\$		\$
16590-20 Fiber Optic Fusion Splice	Splice	\$		\$
17000-02 Trouble Shooting	Hour	\$		\$
17000-04 Fiber Optic Cable (install only)	LF	\$		\$
MATERIALS – Pricing for materials not included in firm-fixed prices above				
1U Front Access, rack mountable, splice and termination panel with 12 pigtailed installed	OFS' 1U-S-LIU-LC12-BLUE-PT	\$		\$
1U Front Access, rack mountable, splice and termination panel with 24 pigtailed installed	OFS; 1U-S-LIU-LC24-BLUE-PT	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 48 pigtailed installed	OFS; LSC1W-048-12-LCU-LT1B-FF-PT-2CC	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 72 pigtailed installed	OFS; LSC1W-072-12-LCU-LT1B-FF-PT-2CC	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 144 pigtailed installed	OFS; LSC1W-144-14-LCU-LT1B-FF-PT-2CC	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 288 pigtailed installed	OFS; LSC1W-288-23-LCU-LT1B-FF-PT-2CC	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 432 pigtailed installed	OFS; LSC1W-432-37-LCU-LT1B-FF-PT-2CC	\$		\$
Single panel housing that will accept one SM ST six-pack panel or one twelve-pack panel plus twelve splice holder	Corning; SPH-01P	\$		\$
4 panel housing that will accept four SM ST six-pack panels plus four twelve splice trays	Corning; CMIC-024	\$		\$
4 panel housing that will accept eight SM ST twelve-pack panels plus four 24 splice trays	Corning; CCH-04U	\$		\$
2 panel housing that will accept two SM ST six-pack panels plus one twelve splice holder	Corning; WIC-02P	\$		\$
TOTAL NOT-TO-EXCEED COST ESTIMATE FOR PROJECT DESCRIBED ABOVE:				\$

Bill to: _____

Contractor agrees to perform the work above and on the attached forms (if applicable) in accordance with the terms and conditions contained in the Contract between parties. In the event of a conflict between ambiguity in the terms of the Contract and this work order, the Contract shall control.

Contractor, Authorized Signature

Date

The attached forms (if applicable) are hereby accepted and incorporated herein by the reference and Notice to Proceed is hereby given.

City of Cedar Rapids, Authorized Signature

Date

ATTACHMENT E – WORK ORDER FORM FOR EMERGENCY REPAIRS
 FIBER OPTIC MAINTENANCE & REPAIR FOR JCN
 PURSUANT TO CONTRACT #PUR0116-127 BETWEEN THE CITY OF CEDAR RAPIDS AND CONTRACTOR

Date: _____ Purchase Order Number, if applicable: _____

Project Title and Address _____

Commencement Date _____ Completion Date _____

Project Description: _____

Description of Work	UOM or Model #	Firm Fixed Unit Price	Est. Qty	Extended Price
WORK – Pricing is all-inclusive with exception of materials included on this Work Order Form below				
01400-11 Removal of Existing Sidewalk	SqYd	\$		\$
02700-30 Portland Cement Concrete Pavement Repair	SqYd	\$		\$
02700-70 Portland Cement Concrete Sidewalk, 4 inch	SqYd	\$		\$
16580-32A 24" x 36" Handhole with Lid	Handhole	\$		\$
16580-32B 30" x 48" Handhole with Lid	Handhole	\$		\$
16580-33 Adjust Handhole	Handhole	\$		\$
16580-50A 2" HDPE SDR-13 Conduit, bored	LF	\$		\$
16580-50B 2" HDPE SDR-13 Conduit, trenched	LF	\$		\$
16580-50C Tracer Wire	LF	\$		\$
16590-10 Fiber Optic Termination	Termination	\$		\$
16590-20 Fiber Optic Fusion Splice	Splice	\$		\$
17000-02 Trouble Shooting	Hour	\$		\$
17000-04 Fiber Optic Cable (install only)	LF	\$		\$
17000-11 Emergency Fiber Optic Fusion Splice	Splice	\$		\$
17000-12 Emergency Trouble Shooting	Hour	\$		\$
17000-13 Emergency 2" HDPE Conduit Repair	LF	\$		\$
17000-14 Emergency Fiber Optic Cable, 24 SM (install only)	LF	\$		\$
17000-15 Emergency Fiber Optic Cable, 48 SM (install only)	LF	\$		\$
17000-16 Emergency Fiber Optic Cable, 144 SM (install only)	LF	\$		\$
MATERIALS – Pricing for materials not included in firm-fixed prices above				
1U Front Access, rack mountable, splice and termination panel with 12 pigtailed installed	OFS' 1U-S-LIU-LC12-BLUE-PT	\$		\$
1U Front Access, rack mountable, splice and termination panel with 24 pigtailed installed	OFS; 1U-S-LIU-LC24-BLUE-PT	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 48 pigtailed installed	OFS; LSC1W-048-12-LCU-LT1B-FF-PT-2CC	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 72 pigtailed installed	OFS; LSC1W-072-12-LCU-LT1B-FF-PT-2CC	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 144 pigtailed installed	OFS; LSC1W-144-14-LCU-LT1B-FF-PT-2CC	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 288 pigtailed installed	OFS; LSC1W-288-23-LCU-LT1B-FF-PT-2CC	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 432 pigtailed installed	OFS; LSC1W-432-37-LCU-LT1B-FF-PT-2CC	\$		\$

ATTACHMENT F – WORK ORDER FORM FOR NEW BUILD PROJECTS
 FIBER OPTIC MAINTENANCE & REPAIR FOR JCN
 PURSUANT TO CONTRACT #PUR0116-127 BETWEEN THE CITY OF CEDAR RAPIDS AND **CONTRACTOR**

Date: _____ Purchase Order Number, if applicable: _____

Project Title and Address _____

Commencement Date _____ Completion Date _____

Project Description: _____

Description of Work	UOM or Model #	Firm Fixed Unit Price	Est. Qty	Extended Price
WORK – Pricing is all-inclusive with exception of materials included on this Work Order Form below				
01400-11 Removal of Existing Sidewalk	SqYd	\$		\$
02700-30 Portland Cement Concrete Pavement Repair	SqYd	\$		\$
02700-70 Portland Cement Concrete Sidewalk, 4 inch	SqYd	\$		\$
16580-32A 24" x 36" Handhole with Lid	Handhole	\$		\$
16580-32B 30" x 48" Handhole with Lid	Handhole	\$		\$
16580-50A 2" HDPE SDR-13 Conduit, bored	LF	\$		\$
16580-50B 2" HDPE SDR-13 Conduit, trenched	LF	\$		\$
16580-50C Tracer Wire	LF	\$		\$
16590-10 Fiber Optic Termination	Termination	\$		\$
16590-20 Fiber Optic Fusion Splice	Splice	\$		\$
17000-04 Fiber Optic Cable (install only)	LF	\$		\$
MATERIALS – Pricing for materials not included in firm-fixed prices above				
1U Front Access, rack mountable, splice and termination panel with 12 pigtailed installed	OFS' 1U-S-LIU-LC12-BLUE-PT	\$		\$
1U Front Access, rack mountable, splice and termination panel with 24 pigtailed installed	OFS; 1U-S-LIU-LC24-BLUE-PT	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 48 pigtailed installed	OFS; LSC1W-048-12-LCU-LT1B-FF-PT-2CC	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 72 pigtailed installed	OFS; LSC1W-072-12-LCU-LT1B-FF-PT-2CC	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 144 pigtailed installed	OFS; LSC1W-144-14-LCU-LT1B-FF-PT-2CC	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 288 pigtailed installed	OFS; LSC1W-288-23-LCU-LT1B-FF-PT-2CC	\$		\$
Rack Mounted, LGX Combination, splice and termination enclosure with 432 pigtailed installed	OFS; LSC1W-432-37-LCU-LT1B-FF-PT-2CC	\$		\$
Single panel housing that will accept one SM ST six-pack panel or one twelve-pack panel plus twelve splice holder	Corning; SPH-01P	\$		\$
4 panel housing that will accept four SM ST six-pack panels plus four twelve splice trays	Corning; CMIC-024	\$		\$
4 panel housing that will accept eight SM ST twelve-pack panels plus four 24 splice trays	Corning; CCH-04U	\$		\$
2 panel housing that will accept two SM ST six-pack panels plus one twelve splice holder	Corning; WIC-02P	\$		\$
TOTAL NOT-TO-EXCEED COST ESTIMATE FOR PROJECT DESCRIBED ABOVE:				\$

Bill to: _____

Contractor agrees to perform the work above and on the attached forms (if applicable) in accordance with the terms and conditions contained in the Contract between parties. In the event of a conflict between ambiguity in the terms of the Contract and this work order, the Contract shall control.

Contractor, Authorized Signature

Date

The attached forms (if applicable) are hereby accepted and incorporated herein by the reference and Notice to Proceed is hereby given.

City of Cedar Rapids, Authorized Signature

Date

ATTACHMENT E – FIBER OPTIC SPECIAL PROVISIONS

FIBER OPTIC CONDUIT, CABLE INSTALLATION, SPLICING AND TERMINATION

TABLE OF CONTENTS

I GENERAL REQUIREMENTS

- 1.1 RELATED SPECIFICATIONS AND STANDARDS
- 1.2 LOCAL REQUIREMENTS
- 1.3 CONTRACTOR'S RESPONSIBILITY
- 1.4 TRAFFIC CONTROL
- 1.5 ORDER OF WORK
- 1.6 SALVAGE
- 1.7 UTILITIES
- 1.8 EQUIPMENT AND MATERIALS
- 1.9 MEASUREMENT AND PAYMENT
- 1.10 FIBER OPTIC CABLE
- 1.11 QUALITY ASSURANCE

II MATERIAL REQUIREMENTS

- 2.1 ELECTRICAL
- 2.2 CONDUIT
- 2.3 GROUND RODS AND GROUND WIRE
- 2.4 SPECIFIED EQUIPMENT

III INSTALLATION REQUIREMENTS

- 3.1 GENERAL
- 3.2 HANDHOLES
- 3.3 CONDUIT
- 3.4 STRUCTURE ENTRANCES
- 3.5 FIBER OPTIC CABLE INSTALLATION AND TESTING
- 3.6 MISCELLANEOUS WORK

PART I – GENERAL REQUIREMENTS

This part consists of the general provisions necessary when performing maintenance and repair of fiber optic system, as described in these special provisions.

1.1 RELATED SPECIFICATIONS AND STANDARDS

Unless otherwise specified in the special provisions the work completed under this specification shall comply with:

- A. The Cedar Rapids Metropolitan Standard Specifications and Details
- B. Latest series of the Standard Specifications of the Iowa Department of Transportation
- C. Specifications of the Underwriters Laboratories Inc.
- D. National Electrical Code
- E. Manual on Uniform Traffic Control Devices (MUTCD)
- F. BICSI - Building Industry Consulting Services, International
- G. NFPA 70 - National Electrical Code; National Fire Protection Association; 1999
- H. EIA/TIA - 568 Commercial Building Telecommunications Wiring Standard
- I. EIA/TIA - 607 Telecommunications Systems Grounding and Building Requirements
- J. EIA/TIA - 758 Customer-Owned Outside Plant Telecommunications Cabling Standard

1.2 LOCAL REQUIREMENTS

Local requirements such as requiring the CONTRACTOR to be a licensed electrical CONTRACTOR in accordance with Cedar Rapids CITY Ordinance and adherence to local Building Code shall be met.

1.3 CONTRACTOR'S RESPONSIBILITY

- A. The CONTRACTOR will be responsible for incidental sidewalk removal and replacement necessary to complete the construction. All waste material and debris shall be disposed of at a sanitary landfill at no expense to the Contracting Authority.
- B. The CONTRACTOR shall perform all work required and furnish all labor, materials, equipment, tools, transportation and supplies necessary to complete the work in accordance with the contract documents. The Contracting Authority or their representative shall have full freedom to observe all phases of the work performed by the CONTRACTOR and to discuss all matters dealing with the quality and progress of the work. Should any misunderstanding arise as to the intent or meaning of specifications, or should any discrepancy appear, the decision of the Contracting Authority or their representative shall be final and conclusive.
- C. The CONTRACTOR agrees to indemnify and hold harmless the CITY of Cedar Rapids, for all liability arising out of the negligent acts, errors or omissions of the CONTRACTOR, their employees, or agents as respects the contract.
- D. All work included under this contract shall be done in accordance with the Occupational Safety and Health Act of 1970 (Williams Steiger Act) as amended and enforced by the governmental authority responsible for the enforcement of the Act. Enforcement and responsibility for fulfilling this provision of the specifications shall rest solely with the CONTRACTOR, their superintendents, and their foremen and in no way shall rest with the Contracting Authority or the Project Manager. The presence of the Project Manager, the Contracting Authority, or their representatives shall not obligate the Project Manager, Contracting Authority, or their representatives to the CONTRACTOR's responsibilities. The CONTRACTOR shall inform their SUBCONTRACTORS to this also.
- E. The CONTRACTOR shall return all excess materials to the Contracting Authority.

1.4 TRAFFIC CONTROL

- A. Through traffic shall be maintained at all times.
- B. Existing traffic signal installations shall be kept in effective operation, if required, except for shutdown to allow for alterations. The CONTRACTOR shall notify the local traffic enforcement agencies prior to any operational shutdown of a traffic signal installation. Any and all operational shutdowns will be coordinated with the Traffic Engineering Division, and the CONTRACTOR may be required to provide temporary electrical service, and it will be considered incidental. The CONTRACTOR shall schedule their work such that not more than one intersection at a time is operationally shut down.
- C. The CONTRACTOR shall be responsible for appropriate traffic control, which may include flaggers, off duty police officers, or other traffic control as specified by the Traffic Engineering Division.

- D. All traffic control shall be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways, as adopted by the Department per 761 of the Iowa Administrative Code (IAC), Chapter 130.

1.5 ORDER OF WORK

- A. The order of work shall be determined by the CONTRACTOR, subject to approval of Project Manager.
- B. Upon completion of the work the CONTRACTOR shall thoroughly clean the site and restore it to a condition at least equal to that existing prior to construction.

1.6 SALVAGE

- A. All materials removed as part of the contract documents shall become the property of the CONTRACTOR and removed from the area at the CONTRACTOR's expense.

1.7 UTILITIES

- A. The CONTRACTOR must determine the exact location and elevation of all public utilities.
- B. The CONTRACTOR shall be responsible for completing a One Call for each segment of work prior to start. This will include notification to the Iowa One Call system
- C. The CONTRACTOR shall replace or repair any existing utilities damaged by their operations at their own expense within 48 hours. The CONTRACTOR is responsible for repair or replacement of damaged utilities regardless of marking or locating by Iowa One Call.

1.8 EQUIPMENT AND MATERIALS

- A. Equipment and materials shall be of new stock unless using equipment furnished by others. New equipment and materials shall be the product of reputable manufacturers of electrical equipment and shall meet the approval of the Project Manager.
- B. Before beginning work, the CONTRACTOR shall submit six copies of catalog cuts for all equipment and materials supplied by the CONTRACTOR.
- C. Prior to ordering any materials the CONTRACTOR shall provide certification from the manufacturers of all electrical equipment, conduit, and cable stating said material complies with the specifications.
- D. All miscellaneous electrical equipment shall be UL approved.

1.9 MEASUREMENT AND PAYMENT

Refer to Scope of Work (Attachment A) and Work Order Form (Attachment C) for information

1.10 FIBER OPTIC CABLE

THIS WORK SHALL CONSIST OF INSTALLING A FIBER OPTIC CABLE OF THE TYPE, SIZE AND NUMBER OF FIBERS SPECIFIED.

A. CONTRACTOR Qualifications

Trained and experienced personnel shall supervise the fiber optic cable installation. The following qualifications are required:

1. The Termination and Testing CONTRACTOR must have a minimum of five (5) years' experience in terminating and testing fiber optic cable and associated equipment.
2. The Termination and Testing CONTRACTOR shall have at least one BICSI registered technician on staff, in a supervisory position, and be available for reference and supervision of installation, termination, and testing of all equipment specified in this section.
3. A copy of BICSI registered personnel must be submitted with bid.
4. Provide all labor required for splicing, termination, and testing of CITY of Cedar Rapids supplied materials.

B. Codes Requirements

The fiber optic cable installation shall be in accordance with or exceed all minimal requirements of State codes, National codes, and manufacturer codes as applicable.

C. Miscellaneous Equipment

The CONTRACTOR shall furnish and install all necessary miscellaneous connectors and equipment to make a complete and operating installation in accordance with specifications accepted good practice of the industry.

D. Identification

1. All individual fibers and their enclosing cable shall be tagged at each end with a unique identifying number as directed by the Owner. Cable tags shall be machine-embossed metal tags securely attached to the cables with nylon ties.
2. Hand-written labels are not acceptable.
3. Terminations in each rack-mount and wall-mount termination housing shall be machine-print labeled on termination housing plastic call-out sheet with fiber identification scheme provided by owner.

1.11 Quality Assurance

- A. Perform in accordance with EIA/TIA and BICSI instructions for installation and testing of fiber optic cable.
- B. Conform to requirements of NFPA 70.

PART II – MATERIAL REQUIREMENTS

2.1 ELECTRICAL

- A. Service Conductor (Power Cable) shall be 600 volt, single conductor cable and shall comply with 4185.12 of the Standard Specifications and shall be U.L. listed for type "USE." The sheath shall be black for the positive cable and white for the negative cables.
- B. Connectors shall be insulated setscrew connectors.
The setscrew connectors shall be Ideal, Series 30200; Holub, Catalog No. 10307, Model SS2 or approved equal. The Project Manager prior to incorporation in the work shall approve connectors.
- C. Tracer wire shall be a #10 AWG single conductor, stranded copper, Type THHN, with UL approval and orange colored jacket.

2.2 CONDUIT

- A. Galvanized rigid steel conduit (RSC) where called for shall meet the requirements of ANSI Standard Specification C 80.1, latest revision. Conduit fittings shall conform to the requirements of ANSI Standard Specification C 80.4, latest revision.
- B. If called for, Polyvinyl Chloride (PVC) conduit shall be Schedule 80. The number and size of the conduits shall be as determined by the Project Manager. Installation of ground wire in the conduit to complete the grounding system shall be incidental.
- C. Unless otherwise specified all conduit used for the electrical system shall be galvanized rigid steel having the Underwriters Laboratories approval. Conduit shall be of standard lengths with each length bearing the UL approved label.
- D. All fittings used with rigid steel conduit shall be galvanized steel. Fittings of aluminum or zinc alloys are not acceptable.
- E. Conduit sizes are as designed by the Project Manager. These are the minimum sizes permitted for the application, the CONTRACTOR may, at their own expense, substitute a larger size.
- F. HDPE Conduit
High Density Polyethylene (HDPE) conduit conforming to ASTM F2160.
Conduit shall be schedule 40, SDR 13.5, and shall be made with Prime Resins for conduit.
Conduit shall have tracer wire and pullrope installed, incidental to installation of HDPE.
Conduit fittings and couplings shall conform to the requirements of ASTM F2176, latest revision. Couplings shall be e-loc type couplings. When connecting to risers, use double e-loc couplings.
Conduit shall be tested in accordance with ASTM D2122 "Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings".
Minimum elongation at break shall be 400% when tested according to Test Method D638 "Standard Test Method for Tensile Properties of Plastics".
The conduit and couplings shall not fail when tested at the low-temperature conditions of -4° F as specified in ASTM F2160 and using the test apparatus as described in Test Method ASTM D2444 "Test Method for Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)".

The manufacture of couplings shall be in accordance with good commercial practice, uniform in color and free of visual defects such as burns, cracks, holes, foreign materials or voids so as to produce fittings meeting the requirements of ASTM F2176.

The coupling/conduit joint shall not fail by leakage when subjected to sustained internal and sustained external pressure testing as noted in ASTM F2176. The coupling/conduit joint assemblies shall comply with tensile loading requirements, and shall not fail by pullout when loaded to axial tensile load requirements as specified in ASTM F2176.

2.3 GROUND RODS AND GROUND WIRE

- A. Ground rods shall be high strength steel rods with chemically bonded copper coverings to provide high conductivity and to prevent electrolytic action. Rods shall be full length and shall have a nominal diameter of five eighths inch unless otherwise specified. Ground rods shall conform to the requirements of IMSA specification No. 621956. Ground wires shall be connected to ground rods with one-piece nonferrous clamps which employ setscrews as tightening devices. Connections to ground rods need not be taped.
- B. All ground wires shall be #6 AWG, bare, solid annealed copper wire unless otherwise specified. Each steel pole or pedestal shall be firmly connected to the ground rod provided, by means of the grounding terminal specified in these special provisions. Placing the ground wire under an anchor bolt nut, anchor bolt cover, or similar device will not be permitted.

2.4 SPECIFIED MATERIALS

See Material Requirements (Attachment F) for details

PART III – INSTALLATION REQUIREMENTS

3.1 GENERAL

- A. The CONTRACTOR shall be prepared to furnish, upon request from the Project Manager, a sample for evaluation, of any item or material, which they propose to furnish.
- B. Unless otherwise specified in these contract documents, the installation of all signal equipment shall be in accordance with the Traffic Signal Manual of the International Municipal Signal Association (IMSA).

3.2 HANDHOLES

- A. Handholes shall be either built in place in an excavation made in a neat workmanlike manner or shall be a precast unit conforming to the requirements of the specifications.
- B. When the use of forms is required, they shall be set level and of sufficient thickness to prevent warping or other deflections from the specified pattern. A means shall be provided for holding them rigidly in place while the concrete is being placed.
- C. The ends of all conduits leading into the handhole shall fit approximately 2 inches beyond the inside wall. A drain conforming to the dimensions noted shall be constructed in the bottom of the handhole unless otherwise specified.
- D. When installed in sidewalk or pavement, top of handhole cover shall be set flush with the sidewalk or pavement surface. When installed in an earth shoulder away from the pavement edge, the top surface of the handhole shall be approximately one inch above the surface of ground. When constructed in unpaved driveways, the top surface of the handhole shall be approximately level with the surface of the driveway.
- E. All conduit openings in the handholes shall be sealed with an approved sealing compound after the cables are in place. This compound shall be a readily workable soft plastic. It shall be workable at temperatures as low as 30° F, and shall not melt or run at temperatures as high as 300° F.
- F. Precast polymer concrete handholes shall be stackable, have bolted covers, and be sized 24" X 36" or 30" X 48" with minimum depth 30", unless otherwise specified. The polymer concrete material shall meet or exceed all appropriate ANSI/ SCTE 77 tests and requirements. The bottom shall be "open" unless otherwise specified. The lid shall be imprinted with the legend "FIBER", and satisfy loading requirements of ANSI Tier 15. A minimum of four cable hooks will be installed in each junction box to support cables.
- G. Fiber optic marker posts shall be installed at each hand hole located in rural areas. A rural area is defined as outside the CITY of Cedar Rapids CITY limits. It is estimated that 56 hand holes will require posts. The maximum spacing between fiber optic marker posts shall be 1700 ft. at locations that hand

holes are farther apart than 1700 ft a fiber optic marker post shall be installed at a point half the distance between hand holes.

3.3 CONDUIT

A. INSTALLATION

1. Conduit shall be placed as designed.
2. Conduit shall be installed without change in direction directly from one structure to another, unless approved by the Project Manager. Change in direction may be allowed for physical restriction such as right-of-way restrictions, utilities, location of roadway slopes, retrofitting existing conduit stubs, and certain short sections of conduits.
3. Change in direction of rigid steel conduit, when approved, shall be accomplished by bending the conduit uniformly to a radius, which will fit the location (minimum radius 6 times the internal diameter of the conduit), or by the use of standard bends or elbows. Sharp kinks in the conduit will not be permitted.
4. Nipples shall be used to eliminate cutting and threading where short lengths of conduit are required. Where it is necessary to cut and thread steel conduit, exposed threads will be field galvanized.
5. All conduit and fittings shall be free from burrs and rough places. Standard manufactured elbows, nipples, tees, reducers, bends, couplings, union, etc. of the same materials and treatment as the straight conduit pipe shall be tightly connected to the conduit.
6. All conduit ends shall be provided with a bushing to protect the cable from abrasion, except for open ends of conduit being placed for future use. Bushings shall have grounding fittings, which shall be connected to grounding system by a #6 ground wire as contained in these specifications.
7. All conduits placed for future use shall be plugged with a push penny cap and secured by electrical tape before backfill.
8. All conduits shall drain, except for specific locations approved by the Project Manager. CONTRACTOR will not be allowed to bend conduits upward to accomplish the conduit clearances shown on the handhole details.
9. GPS and depth measurements will be taken immediately following conduit installation and provided to the Project Manager. The measurements shall be taken 50 linear feet from every handhole and at 200 linear foot intervals thereafter until the next handhole is reached. This work is incidental to the conduit installation.

B. TRENCHING AND BACKFILLING

1. Secure written approval of the CITY Arborist prior to any trenching or excavation within the drip line of any tree.
2. Trenches shall be excavated to such depth as necessary to provide 36 inch cover over the conduit. All cinders, broken concrete or other hard abrasive materials shall be removed and shall not be used for backfilling. The trench shall be free of such materials before the conduit is placed. No conduit shall be placed prior to inspection of the trench by the Project Manager.
3. All trenches shall be backfilled **immediately** to level ground after installation of conduit. Backfill material shall be deposited in the trench in layers not to exceed 6 inches in depth and each layer shall be thoroughly compacted before the next layer is placed. Hard materials shall not be placed within 6 inches of the conduit.
4. Whenever excavation is made across parkways, gravel driveways, or sodded areas, the sod, topsoil, crushed stone and gravel shall be replaced or restored as nearly as possible in its original position and the whole area involved shall be left in a neat and presentable condition. Concrete sidewalk pavements, and base courses and bituminous surfaces shall be replaced with new materials and the cost shall be incidental to the work.

C. PUSHED OR BORED CONDUIT

1. When the term "pushed" or "bored" is used, it is intended that all conduits be placed without disturbing the existing surface. Such conduit shall be placed by jacking, pushing, boring or any other means necessary to place the conduit without cutting or removing pavement or disturbing existing surfaces except at the bore pit or push equipment location.
2. Removal of pavement will require prior approval of the Traffic Engineering Division. Replacement of removed pavement will be done according to details and no additional payment will be made.

3. Quantities for pushed conduit include at least two feet of pushed conduit behind each curb.
4. The maximum conduit depth at handholes for all conduits, including pushed conduit, is 36 inches. CONTRACTOR must push their mole (without conduit) at least four (4) times before consideration will be given to allowing an upward bend in the conduit.

3.4 STRUCTURE ENTRANCES

- A. The CONTRACTOR shall photograph the facilities of each building installation in the vicinity of the new building entrance and the plenum installation, prior to beginning work, to document any existing conditions or existing building damage. CONTRACTOR shall bring any existing damage in the vicinity of the proposed work to the attention of the CITY construction manager prior to beginning the work. If CONTRACTOR does not adequately document existing conditions prior to beginning work, any damage claims against the CONTRACTOR subsequent to beginning the work shall be the CONTRACTOR's sole responsibility to resolve.
- B. Any building damage caused by the CONTRACTOR shall be repaired at the CONTRACTOR's expense.
- C. All fittings and conduit runs must not have any locations where fiber cable will exceed the minimum bend radius. CONTRACTOR shall supply LBs that are prefabricated with the appropriate cable bends. CONTRACTOR shall exercise care when installing fiber optic cabling around bends so as not to kink or bend the fiber optic cabling beyond the minimum bend radius.
- D. All cabling and conduit installations must meet building codes.
- E. All new entrances and holes created in the building to allow the construction of the conduit and plenum runs shall be sealed with sealant designed for exterior or interior use, as appropriate.
- F. CONTRACTOR shall review the building entrance and work with the building owner's representative and with the CITY's construction manager to confirm the proposed conduit and plenum alignment and attachment method prior to installing the work or ordering fittings and materials.
- G. CONTRACTOR shall coordinate with the building owner's representative building access and working times. It is anticipated the CONTRACTOR will have access to work during the normal workday from 8:00 a.m. to 5:00 p.m. Monday through Friday, but not on national holidays.
- H. CONTRACTOR shall secure conduit, plenum ducts, and enclosures to the building and to existing structure in a neat and orderly installation.
- I. CONTRACTOR shall control dust and debris generated by the Structure Entrance construction so as not to interfere with the normal operations of the building.
- J. CONTRACTOR shall clean up any waste, dust, debris, and trash generated by the Structure Entrance construction and contact the building owner's representative prior to leaving the building site to confirm the installation and cleanup is complete.

3.5 FIBER OPTIC CABLE INSTALLED IN DUCTS AND CONDUITS

- A. A suitable cable feeder guide shall be used between the cable reel and the face of the duct and conduit to protect the cable and guide it into the duct off the reel. It shall be carefully inspected for jacket defects. If defects are noticed, the pulling operation shall be stopped immediately and the Project Manager notified. Precautions shall be taken during installation to prevent the cable from being "kinked" or "crushed". A pulling eye shall be attached to the cable and used to pull the cable through the duct and conduit system. A pulling swivel shall be used to eliminate twisting of the cable. As the cable is played off the reel into the cable feeder guide, it shall be sufficiently lubricated with a type of lubricant recommended by the cable manufacturer. Dynamometers or breakaway pulling swing shall be used to ensure that the pulling line tension does not exceed the installation tension value specified by the cable manufacturer. The mechanical stress placed on a cable during installation shall not be such that the cable is twisted or stretched. The pulling of cable shall be hand assisted at each controller cabinet. The cable shall not be crushed kinked or forced around a sharp corner. If a lubricant is used it shall be of water based type and approved by the cable manufacturer. The CONTRACTOR shall be required transport, deliver and install a minimum roll of 20,000 LF of fiber cables of the type specified in the contract documents. Sufficient slack shall be left at each end of the cable to allow proper cable termination, minimum of 100 feet. This slack shall be in addition to installation slack as hereinafter specified. Additional slack cable shall be left in each hub cabinet, handhole, and at the top of each conduit riser. Excess slack at hub cabinets shall be re-pulled into the nearest handhole to provide a neat and orderly installation. The minimum slack amounts, post-termination, shall be as follows:

Fiber Handhole – 100 feet

- B. Storage of minimum slack cable in controller cabinets and additional slack at pull boxes shall be coiled. The slack coils shall be bound at a minimum of 3 points around the coil perimeter and supported in their static storage positions. The binding material and installation shall not bind or kink the cable. Storage of additional slack cable adjacent to conduit risers and support poles shall be as visibly marked/tagged as "CAUTION – FIBER OPTIC CABLE". Maximum length of cable pulling tensions shall not exceed the cable manufacturer's recommendations. Along with the fiber optic cable, one (1) tracer cable shall be pulled with ten feet (10') slack in each pull box, except where existing tracer cable is installed.
- C. All fiber cables shall be marked with a metallic identifier in the handhole adjacent to the traffic signal cabinet or hub cabinet and on the cable in the traffic signal cabinet or hub cabinet at point of termination. The identifier, both in the cabinet and in the handhole, shall indicate the direction the cable is going, cable contents [SM or SM/MM], and the abbreviated location for the other end destination.

Minimum Bend Radius

- D. For static storage, the cable shall not be bent at any location to less than ten times the diameter of the cable outside diameter or as recommended by the manufacturer. During installation, the cable shall not be bent at any location to less than twenty times the diameter of the cable outside diameter or as recommended by the manufacturer.

After the Fiber Optic Cable Installation

- E. Each section of the cable shall be tested for continuity and attenuation as a minimum. If the attenuation is found not to be within the acceptable nominal values, the CONTRACTOR shall use an optical time domain reflectometer (OTDR) to locate points of localized loss caused by bends or kinks. If this is not successful the CONTRACTOR shall replace the damaged section of cable with no additional payment. Splices will not be allowed to repair the damaged section. After all fiber cable is installed between traffic controller cabinets and fiber links between fiber distribution points (FDP) complete links, whether terminated or non-terminated, shall be tested with an OTDR. All fibers terminated shall be tested with a power meter. The CONTRACTOR may jumper termination points at controller cabinets to minimize the number of tests and run a single OTDR test between several controller cabinets, subject to the range of the OTDR. Links between FDPs shall be tested separately. Multimode fiber may be tested using 1300 nm and single mode may be tested at 1310 nM. The results of the OTDR test shall be provided on an electronic media (disk) and paper printout. The OTDR wave, pictorial diagram of dB loss over the length of fiber tested, shall be provided along with the measured data values. The printout shall contain the manufacturer's fiber optic Index of Refraction to the third decimal point for the fiber provided. The CONTRACTOR shall provide the Project Manager with a written report showing all the values measured compared to the calculated values for length and coupler/connector losses at the completion of these tests.
- F. Data documentation shall include for each test between cabinets or between FDP sites, the length of fiber as measured by OTDR, frequency used in test on OTDR by each fiber type, distance to each splice, termination or patch cord jumper, dB loss rating by manufacture from spool documentation, index of refraction by type of fiber in section, and the dB loss of each section as measured in the final test for each fiber. A special test shall be made on all continuous spliced fiber from start to end that includes the total dB loss measured and the OTDR plot on electronic disk. Outdoor patch cords between FDP and controller units less than 151 feet do not need be OTDR tested.
- G. Documentation provided to the Project Manager shall include a written indication of every splice, termination, patch cord, etc. for cable being measured. Power meter measurement recordings shall indicate the exact measured distance [OTDR or field measurement with cross reference for oscillation multiplier] on the sheet showing the power meter readings. Any deviations between fiber readings in the same tube shall be notated for OTDR graphs as well as deviations greater than 5% on power meter readings. Rated values for acceptable installation shall be based on the following parameters:

Patch cords/Pigtails:	0.60 MM & 0.15 SM dB each
Unicam Terminations:	1.0 dB set of 2 [In and Out]
Splices:	0.08 each
1 KM = 0.3077 KF where KF is 1000 feet	

- H. Data documentation shall include for each test between cabinets or between FDP sites, the length of fiber as measured by OTDR, frequency used in test on OTDR by each fiber type, distance to each splice, termination or patch cord jumper, dB loss rating by manufacture from spool documentation, index of refraction by type of fiber in section, and the dB loss of each section as measured in the final test for each fiber. A special test shall be made on all continuous spliced fiber from start to end that includes the total dB loss measured and the OTDR plot on electronic disk. Splice points shall be identified on the trace.

Cable Termination

- I. Terminations shall be made using the method recommended by the connector manufacturer. All fibers shall utilize a fanout kit of the size and type recommended by the manufacturer and of the number of fibers provided in each fiber tube. All fibers terminated shall utilize a ceramic ferrule (outdoor connections), ST, mechanical termination equal to Siecor UniCam connectors, or be a wide temperature (-40 to +170 degrees Fahrenheit) epoxy. Heat cured or epoxy type connections meeting the full temperature ratings are acceptable for this contract, including factory manufactured pigtailed. The CONTRACTOR shall be required to provide proof of purchase of sufficient quantities of ceramic terminations for outdoor terminations to verify ceramic connector usage or temperature ratings on epoxy or heat cured processes prior to terminating any fibers. The CONTRACTOR may terminate fibers by splicing factory pigtailed to the fiber ends and then connecting the pigtail to the fiber coupler in the fiber tray. When splicing pigtailed to terminate, all splices shall be provided with the metal reinforced shrink tube protector. The CONTRACTOR may terminate fibers by the use of UniCam mechanical termination connectors. All termination ST couplers shall be rated for dual fiber application, MM and SM.

Breakout Kits

- J. The breakout kits or termination boxes used to terminate each fiber cable in the cabinet shall provide for the separation and protection of the individual fibers with the buffer tubing and jacketing materials. The termination housing shall be installed within a wall or shelf mountable interconnect housing which shall provide for storing fibers, ample room for feed through cable, strain relief for multiple cables within unit, and accommodate ST compatible connectors. All fiber pigtailed shall be terminated through ST connectors on the wall or shelf mounted interconnect panel. All terminations shall be ST type, ceramic core (outdoor connections), and plug into the provided controller unit internal fiber optic modem. Acceptable enclosures for combination termination/splice points shall be MIC024 or WDC012 enclosures or preapproved equal. Splices to pigtail fiber, where used, shall utilize fan out kit protection to the fiber, heat shrink tubing with metal bar reinforcement and 900 micron rated pigtail insulation. Splices to factory pigtailed shall use pigtailed that are rated for a minimum temperature range of zero degrees to +150 degrees Fahrenheit. In the absence of pigtailed meeting this temperature rating, fibers shall utilize loose tube fiber in fanout kit tubes and UniCam mechanical ST or epoxy approved connectors. These splices, fiber cable to pigtailed, may be external to splice trays mounted internally to the enclosure, when shown on the wiring diagrams. All other splices, not specified to be installed external to the fiber splice tray, shall be installed in splice trays and be supported with heat shrink tubing. Acceptable splice trays include MIC024048 or 067 series or preapproved equal.

Splices

- K. The fiber cable shall be installed in continuous runs between cabinets. No splices shall be allowed, unless designed, for testing. For testing of unterminated fibers, only mechanical splices may be used. Mechanical splices shall:
1. The CONTRACTOR shall submit a splicing plan to the Owner or Owner's designated representative for review and approval. Approval of the splicing plan shall occur prior to any splicing of fiber optic cable. The CONTRACTOR's splicing plan shall include all information required to adequately depict splicing locations, breakout of buffer tubes, breakout of individual fibers, color coding, and splice tray layout. Splicing plan details should reference locations that are consistent with the locations defined elsewhere in the specification.
 2. The CONTRACTOR shall cut only the fibers to be terminated/spliced at designated location. Unused fibers or fibers that are continuous through a splice location are to be coiled, labeled and left loose in the tray.

3. All optical fiber splices including pigtail splicing at fiber distribution panel shall be fusion type splices utilizing heat shrink protection as opposed to bare fusion splices. Alignment shall be via fiber cores and not via fiber diameters. Mechanical splices shall not be permitted.
4. Splice all optical fibers, including spares, to provide continuous runs. Splices shall be allowed only in equipment cabinets except as specified.
5. Make all splices using a core-alignment fusion splicer that automatically positions the fibers using the Light Injection and Detection (LID) system. Provide all equipment and consumable supplies.
6. Secure each spliced fiber in a protective groove. Completely re-coat bare fibers with a protective room temperature vulcanizing (RTV) coating, gel or similar substance, prior to insertion in the groove, so as to protect the fiber from scoring, dirt or micro-bending.
7. Use a different splice tray for each buffer tube color. If an enclosure contains multiple buffer tubes of the same color, but none of the fibers in one of the tubes are spliced to fibers in other tubes of the same color, use a separate splice tray for that tube.
8. Termination splices shall join the fibers in the F/O cable span to the fibers in pigtails. The termination splices shall be placed in a splice tray and the splice tray(s) shall then be placed in the fiber distribution panel. The individual fibers shall be looped one full turn within the splice tray to avoid micro bending. A 51mm (2 inches) minimum bend radius shall be maintained during installation and after placing in the optical fiber splice tray. Each fiber shall be individually restrained in a splice tray. The optical fibers in buffer tubes and the placement of the optical fibers in the splice tray shall be such that there is no discernable tensile force on the optical fiber.
9. All fiber cables shall be labeled at all splice locations with permanent machine printed vinyl markers. Labels shall identify the destination end of the fiber optic cable.
10. The overall system mean loss of all splices shall not exceed 0.05 dB per splice. No splice may exceed 0.10 dB loss. Any splice tested at greater than 0.10 dB must be recleaved and respliced. The CONTRACTOR must submit to the Owner a record of estimated splice loss from each fiber optic splice identified by location and fiber number. This record must be recorded at the time of the splicing function. Hand-written test results are not acceptable. All data must be provided in Microsoft Excel format at the completion of the splicing.

All other splices, where specified, shall be by fusion splice and shall be installed using an automatic fusion splicer. Splices between two fibers leaving the cabinet shall be supported in splice trays installed in splice enclosures. All splices shall be protected by heat shrink tubing designed for fiber optic splicing applications. Fibers being terminated in two separate termination/splice enclosures shall be supported between enclosures by the use of buffer tubing or approved equal support material or shall be pigtail patch cords. Termination / splice enclosures shall be separated by less than 12 inches unless a conduit is installed between enclosures. All splices shall be performed by an automated splicer device that verifies the final splice termination quality. All splices shall be nominally .03 to .05 dB loss but shall be less than a 0.08 dB loss.

Light Source

- L. An LED light source with a wavelength that is the system wavelength, 850 and 1300 nm for multimode and 1310 and 1550 nm for single mode, shall be used. The LED shall be stable within 0.1 dB in intensity over a time period sufficiently long to perform the measurement. The output of the LED shall overfill the input end of the launch fiber/cable in both numerical apertures (NA) and core diameter. The accuracy of the combined light source and power meter shall be less than .05 dB and be temperature compensated stabilized to 0.01 dB over the operating range of the meter(s).

Power Meter

- M. The detector in the power meter shall have an effective numerical aperture and active region that is larger than the receive reference cable and/or the fiber under test. The power meter shall have a minimum range from +3 DBMS to -40 DBMS. The power meter shall have an accuracy of +/-0.5 dB through the operating temperature and minimum resolution of 0.1 dB.

Launch Reference Attenuator

- N. The launch attenuator, two each for single and multimode fiber testing, shall be utilized for all OTDR tests such that one launch cable shall be at the beginning of the fiber being tested and the second launch cable shall be on the end of the fiber being tested past the final connector. Only one launch cable shall be required when testing non-terminated fiber. The launch attenuator(s) shall be of the same fiber core size and type as the fiber under test. The attenuator shall emulate 300 hundred foot fiber length,

minimum, for multimode and 900 feet length, minimum, for single mode fiber or as specified by the OTDR manufacturer for stabilization of the pulse generation. Launch cables shall be of identical length for incoming and outgoing light during tests. ST connectors shall be utilized with each attenuator to connect the device to the test device, OTDR. One launch cable shall be installed on the start of the fiber being tested and one launch cable shall be installed on the end of each terminated to view the dB loss of the final connector.

- O. The OTDR shall have the Threshold Loss set at a value to show each splice or termination junction of a single fiber in each tube without showing the extraneous noise caused by handhole coils or turns into the cabinets. This level is normally a value [Threshold Loss] between 0.3 and 0.8 on the OTDR. This trace shall be provided for one fiber in each tube tested and each "event" shall be marked as to splice, jumper or patch cord. The Threshold Loss shall then be set to a value of 0.25 for multimode fiber tests and to a value of 0.10 for single mode fiber tests. The test of each fiber installed shall be conducted and any recorded events above this threshold shall be identified, such as jumper or patch cord. Events that are in excess the provided values shall be corrected prior to documentation submittal, such as terminations in excess of the rated value or bends in the fiber at the point of a splice entering or leaving the splice tray (See Testing). For measured values recorded in excess of the above (0.25 MM and 0.10 SM) listed values, refer to the paragraph 3.11 E. specification as hereinbefore defined. The Project Manager reserves the right to spot test fiber terminations, splices, or retesting of all fibers in a section to insure proper quality assurance both during and after installation and testing. Deviations from Project Manager testing and report documentation shall be reviewed and the CONTRACTOR shall be able to retest any or all challenged measurements to verify a valid test. Inconsistent test results, in the sole opinion of the Project Manager, shall be cause for the CONTRACTOR to retest the entire fiber installation.

Testing

P. General

The CONTRACTOR shall provide all personnel, equipment, instrumentation and supplies necessary to perform all testing. All testing shall be performed in an accepted manner and in accordance with the testing equipment manufacturer's recommendations. All data shall be recorded and submitted to the Project Manager as hereinbefore specified. The Project Manager may perform or require supplemental testing at any time. The CONTRACTOR shall provide one copy of operating software to read and view all OTDR traces.

Q. Attenuation

The end to end attenuation shall be measured for each fiber for each link after installation and termination. A patch cord jumper cable shall be connected to both the light source and the receive cable to the power meter by the use of a connector (barrel). The two reference cables shall then be connected via a termination coupler and the power meter "zeroed" to eliminate the line loss. This process results in a reading of the actual line loss (dB) of the input connector, fiber cable, exiting connector and any other splices or jumpers installed in the measured test link. The calculated "loss" shall not include the input or departing cables in the loss calculation. The calculated fiber loss measured shall list the number of terminations, including the input and departing connectors, the number of splices and the number of patch cords used to jumper the link(s) into the measured final link. The measured values for each terminated fiber in each tube shall include the Tube number, fiber number, number of feet in the link, the number of splices, the number of patch cords and the number of connectors, if any. The length of optical cable shall be as measured by the OTDR rather than the fiber cable jacket as the fiber is a reverse oscillation process resulting in a greater optical distance than the fiber cable jacket. The value for both the OTDR length and the cable jacket shall be provided in the recorded documentation for each link distance. All distances shall be recorded in feet rather than meters for both recorded lengths.

- R. Fibers that are not continuous from beginning of the link to the end of the link shall be noted in the documentation; otherwise, all fibers in a single tube may be listed with a single data entry for all required data listed above for all fibers in the tube. The fiber documentation for each fiber shall identify the fiber being tested by either fiber number or fiber coating color and be recorded by complete tube, Tube 1 through Tube 6, fiber 1 through fiber 12. The direction of the test shall be recorded for information purposes only to resolve discrepancies in replicating the test during inspections of the final installation. The power meter reading recordings shall log total dB loss over the length of the fiber measured, equivalent to a dB loss budget.

- S. The output power levels at the network hardware transmitters and receivers shall be measured and recorded for system documentation. The power meter shall be connected to the transmitter side of the equipment with a system jumper. The transmit power level shall then be read and recorded
- T. Each tube of a cable shall be in the same file divider where the tube cover OTDR page shows the overview of all splices, patch cords, terminations from start to end. The second section shall include all Power Meter readings and the mandated documentation to show the calculated line loss (losses). The third section shall contain all OTDR traces, one trace per screen. The fourth section shall include the spool sheet for the fiber installed on the test section. An "explanation" sheet may be included where required to clarify an unusual reading that is valid but difficult to be explained through traditional data presentation, such as a video feed fiber that is attached to a jumper to provide continuous feed from the start to end of the tube length where other fibers in the same tube are simply spliced. The above format shall be repeated for each tube of a cable. Traffic multimode fiber measured in sections marked by traffic controller cabinets between Hub Sites may be subsectioned in an easy to understand format or may be jumpered using patch cords as a single OTDR Link with each section separated for power meter readings.

Continuity

- U. Continuity tests shall be used to determine whether a test or system jumper does or does not pass light. A continuity test shall also be used to assure the fibers have not been crossed over in the jumper and that the transmit fiber goes to the receiver fiber. The visible light tester shall be utilized to illuminate faulty terminations or fibers with excessive bends failing to pass light.
- V. To perform continuity test, a high intensity red light (Visible Fault Identifier) light source shall be aimed into the connector at one end, while an observer watches for a flicker of light at the other end. One each 650 nm red NFL light source shall be furnished to the Project Manager by the CONTRACTOR on request during the testing of the fiber by the CONTRACTOR for spot testing. This device shall be made available during testing of continuity to the Project Manager to assist in verifying fault locations and connector bleeding.

OTDR Testing

- W. An Optical Time Domain Reflectometer (OTDR) shall be used to evaluate the quality and length of cable reels prior to their use. A minimum of one fiber per tube per reel shall be tested if payment for stored goods is requested.

The fiber loss in dB/km and the length of each reel shall be recorded in the documentation. The maximum attenuation of the cable shall be as hereinbefore specified. A minimum of one fiber per tube per reel shall be tested if payment for stored goods is requested. The fiber loss in dB/km and the length of each reel shall be recorded in the documentation. The maximum attenuation of the cable shall be as hereinbefore specified. This test does not require an electronic document; but is provided to insure that the fiber has been received in useable quality without shipment damage. The test results of the CONTRACTOR OTDR tests of received spools shall be provided to the Project Manager, in a minimum of hard copy print, prior to receiving payment for stored goods.
- X. An Optical Time Domain Reflectometer (OTDR) shall be used to evaluate the quality and length of cable installed. This test shall be conducted on all fibers, terminated and not terminated, and shall be conducted after all terminations on the fibers for a link have been completed. The fiber loss in dB/km and the length of each reel shall be recorded in the documentation. The index of refraction, minimum of three decimal points, provided by the manufacturer on the spool documentation shall be used for the test on the OTDR. The maximum attenuation of the cable shall be as hereinbefore specified. A hard copy of OTDR signature traces, electronically and in printed form, for all fiber links shall be made and provided in the documentation as specified. The data provided shall be in easy to understand format and of sufficient detail to verify the results. Fiber testing shall include only one fiber trace per graph. One copy of the operating system software to view the fiber graphs shall be provided with the final documentation.

Documentation

- Y. The result of all testing shall be recorded along with date of test, name of person performing test, brand name, model number, serial number of equipment used during test, and any other pertinent information and data. The CONTRACTOR shall be responsible to provide input to the Project Manager reviewing the recorded data documentation to resolve all questions or data discrepancies. The

3.6 MISCELLANEOUS WORK

- A. No trees or shrubs shall be disturbed during construction except as approved by the Project Manager.
- B. All sampling and testing for CONTRACTOR supplied items (e.g., PCC for sidewalks and street patches, etc.) shall be CONTRACTOR expense and shall be incidental to the item.
- C. All surveying and construction staking shall be provided by the CONTRACTOR to the extent necessary to construct the work. Construction survey shall include locating all features necessary to complete the work including, but not limited to curbs, driveways, curb cuts, sawcuts, removals, sidewalks, and all staking or locations necessary to complete the Work in conformance with the specifications. CONTRACTOR shall review removals and removal limits with the CITY representative for any adjustments prior to the commencement of removal operations. It should be noted the handholes in sidewalks, conflicting utilities or structures, or other field conditions that justify moving the handholes or conduit alignments. **It is critical no handholes be within a sidewalk. Any handholes built in a sidewalk shall be relocated at CONTRACTOR expense unless previously approved by the CITY (e.g., Some downtown locations are paved from the curb line to the building face. However, handhole locations should be adjusted out of the main walking path.)**
- D. All new sidewalks shall conform to the Americans with Disabilities Act (ADA). All sidewalks constructed that do not meet this requirement shall be removed, corrected to comply with ADA, and be replaced at CONTRACTOR's expense. This includes sidewalk segments through driveways.
- E. CONTRACTOR shall perform all one-calls for utility locates and schedule work accordingly to avoid conflicts with existing utilities. CONTRACTOR shall "pothole" all new conduit crossings of existing utilities to confirm depths of existing infrastructure prior to boring and installing the new conduit. All this work is incidental to the contract.
- F. CONTRACTOR will be required to remobilize and reseed all areas which are determined by the PROJECT MANAGER to not have germination by the current Spring seeding window.
- G. CONTRACTOR shall provide the CITY with "as-built" documentation showing the horizontal and vertical locations of all conduits and handholes/manholes constructed with the work. Horizontal locations shall be based on State Plane Coordinate System Northing/Easting (NAD 1983 State Plane Iowa North FIPS 1401 Feet) within 0.5' +/- accuracy, minimum. Vertical data shall include conduit depths at regular intervals along the alignment per the specification, on the City of Cedar Rapids vertical datum. The documentation shall be in electronic format. The preferred format is ESRI Shapefile or Geodatabase, or an acceptable CAD format (AutoCAD DWG, DXF, or Microstation DGN files).
- H. Any construction activities that require the closure of an existing driveway must be coordinated by the CONTRACTOR with the property owner in advance of the driveway closure. Under no circumstances will it be acceptable to completely block access to a property. CONTRACTOR must take whatever measures are necessary to maintain at least one lane of traffic, or better, into and out of each driveway at all times. No such driveway access infringement can last longer than 3 calendar days. The CONTRACTOR may, at CONTRACTOR'S expense, provide and maintain temporary gravel driveway access until permanent pavement can be restored. All driveway closures must be reviewed and approved by the CITY before closure activities will be allowed.

ATTACHMENT H – MATERIAL REQUIREMENTS

All materials specified shall require cut sheets to be submitted prior to use acceptance

1. ELECTRICAL

- A. Service Conductor (Power Cable) shall be 600 volt, single conductor cable and shall comply with 4185.12 of the Standard Specifications and shall be U.L. listed for type "USE." The sheath shall be black for the positive cable and white for the negative cables.
- B. Connectors shall be insulated setscrew connectors.
The setscrew connectors shall be Ideal, Series 30200; Holub, Catalog No. 10307, Model SS2 or approved equal.
The Engineer prior to incorporation in the work shall approve connectors.
- C. Tracer wire shall be a #10 AWG single conductor, stranded copper, Type THHN, with UL approval and orange colored jacket.
- D. Torpedo tube shall be Tyco FOSC 400B-2 torpedo tube, with up to 96 fusion splices and up to two drop ports.

2. CONDUIT

- A. Galvanized rigid steel conduit (RSC) where called for on the plans shall meet the requirements of ANSI Standard Specification C 80.1, latest revision. Conduit fittings shall conform to the requirements of ANSI Standard Specification C 80.4, latest revision. The number and size of conduits shall be as called for on the plans.
- B. If called for in the Plans, Polyvinyl Chloride (PVC) conduit shall be Schedule 80. The number and size of the conduits shall be as called for on the plans. Installation of ground wire in the conduit to complete the grounding system shall be incidental.
- C. Unless otherwise specified all conduit used for the electrical system shall be galvanized rigid steel having the Underwriters Laboratories approval. Conduit shall be of standard lengths with each length bearing the UL approved label.
- D. All fittings used with rigid steel conduit shall be galvanized steel. Fittings of aluminum or zinc alloys are not acceptable.
- E. Conduit sizes are as shown on the plans. These are the minimum sizes permitted for the application, the CONTRACTOR may, at their own expense, substitute a larger size.
- F. HDPE Conduit
High Density Polyethylene (HDPE) conduit conforming to ASTM F2160.
Conduit shall be schedule 40, SDR 13.5, and shall be made with Prime Resins for conduit. Conduit shall have tracer wire and pullrope installed, incidental to installation of HDPE. Conduit fittings and couplings shall conform to the requirements of ASTM F2176, latest revision. Couplings shall be e-loc type couplings. When connecting to risers, use double e-loc couplings.
Conduit shall be tested in accordance with ASTM D2122 "Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings".
Minimum elongation at break shall be 400% when tested according to Test Method D638 "Standard Test Method for Tensile Properties of Plastics".
The conduit and couplings shall not fail when tested at the low-temperature conditions of -4° F as specified in ASTM F2160 and using the test apparatus as described in Test Method ASTM D2444 "Test Method for Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)".
The manufacture of couplings shall be in accordance with good commercial practice, uniform in color and free of visual defects such as burns, cracks, holes, foreign materials or voids so as to produce fittings meeting the requirements of ASTM F2176.
The coupling/conduit joint shall not fail by leakage when subjected to sustained internal and sustained external pressure testing as noted in ASTM F2176. The coupling/conduit joint assemblies shall comply with tensile loading requirements, and shall not fail by pullout when loaded to axial tensile load requirements as specified in ASTM F2176.

3. GROUND RODS AND GROUND WIRE

- A. Ground rods shall be high strength steel rods with chemically bonded copper coverings to provide high conductivity and to prevent electrolytic action. Rods shall be full length as shown on the plans and shall have a nominal diameter of five eighths inch unless otherwise specified. Ground rods shall conform to the requirements of IMSA specification No. 621956. Ground wires shall be connected to ground rods with one-piece nonferrous clamps which employ setscrews as tightening devices. Connections to ground rods need not be taped.
- B. All ground wires shall be #6 AWG, bare, solid annealed copper wire unless otherwise specified on the plans. Each steel pole or pedestal shall be firmly connected to the ground rod provided, by means of the grounding terminal specified in these special provisions. Placing the ground wire under an anchor bolt nut, anchor bolt cover, or similar device will not be permitted.

4. SPECIFIED MATERIALS

Material	Brand(s)	Model No(s)
24"x36"x30" Polymer Concrete Hand Hole w/ Tier 15 Lid; Label – Fiber Optic	NewBasis	PCA243630-00078
24"x36"x30" Polymer Concrete Hand Hole w/ Tier 22 Lid; Label – Fiber Optic	NewBasis	PCA243630-20036
24" x 36" Polymer Concrete Hand Hole Lid (Tier 15); Label – Fiber Optic	NewBasis	PCC2436P1-00000
24" x 36" Polymer Concrete Hand Hole Lid (Tier 22); Label – Fiber Optic	NewBasis	PCC2436P1-90022
30"x48"x36" Polymer Concrete Hand Hole w/ Tier 15 Lid; Label – Fiber Optic	NewBasis	PCA304836-00156
30"x48"x36" Polymer Concrete Hand Hole w/ Tier 22 Lid; Label – Fiber Optic	NewBasis	PCA304836-20228
30"x48" Polymer Concrete Hand Hole Lid (Tier 15); Label – Fiber Optic	NewBasis	PCC3048P2-90066
30"x48" Polymer Concrete Hand Hole Lid (Tier 22); Label – Fiber Optic	NewBasis	PCC3048P2-90022
Single 72 Count Splice Enclosure	Tyco	FOSC 450 B6-6-NT-0-B3V
Single 288 Count Splice Enclosure	Tyco	FOSC450D6-6-NT-0-D3V
24 Fiber Splice Tray	Tyco	FOSC-ACC-B-TRAY-24
2 Inch HDPE-Schedule 40-SDR 13.5	Carlson/Lamson	A13C9N1JNNA4000
1.25 Inch Flex Plenum Interior Conduit	Carlson/Lamson	DG4X1C-1600
2 Inch Polyurethane Elastomeric Conduit Coupling	Condux-Comfit	08566120
1200 lb. Tensile Strength Pull Tape	Lamson	TL14505
Tracer Puck	Pro-Trace	739010250
66 Inch Marker Posts; orange w/ "Fiber Optic" decal	Rhino	TVS660B
66 Inch Marker Posts w/ Test Points	Rhino	TVI660B5
24 Count Fiber Optic Cable	PRYSMIAN	FEDH1JKT12CE024E3
48 Count Fiber Optic Cable	PRYSMIAN	FEDH1JKT12CE048E3
144 Count Fiber Optic Cable	PRYSMIAN	FEDH1JKT12CE144E3
Wall Mount Enclosure-Lockable-24port-2 Sided, Accessories needed: 1000LC1-6 E/W,1000BK,301-002-762	OFS	400A2 LIU
1U Front Access, rack mountable, splice and termination panel with 12 pigtails installed	OFS	1U-S-LIU-LC12-BLUE-PT
1U Front Access, rack mountable, splice and termination panel with 24 pigtails installed	OFS	1U-S-LIU-LC24-BLUE-PT
Rack Mounted, LGX Combination, splice and termination enclosure with 48 pigtails installed	OFS	LSC1W-048-12-LCU-LT1B-FF-PT-2CC
Rack Mounted, LGX Combination, splice and termination enclosure with 72 pigtails installed	OFS	LSC1W-072-12-LCU-LT1B-FF-PT-2CC
Rack Mounted, LGX Combination, splice and termination enclosure with 144 pigtails installed	OFS	LSC1W-144-14-LCU-LT1B-FF-PT-2CC

Material	Brand(s)	Model No(s)
Rack Mounted, LGX Combination, splice and termination enclosure with 288 pigtails installed	OFS	LSC1W-288-23-LCU-LT1B-FF-PT-2CC
Rack Mounted, LGX Combination, splice and termination enclosure with 432 pigtails installed	OFS	LSC1W-432-37-LCU-LT1B-FF-PT-2CC
Single panel housing that will accept one SM ST six-pack panel or one twelve-pack panel plus a twelve splice holder	Corning	SPH-01P
4 panel housing that will accept four SM ST six-pack panels plus four twelve splice trays	Corning	CMIC-024
4 panel housing that will accept eight SM ST twelve-pack panels plus four 24 splice trays	Corning	CCH-04U
2 panel housing that will accept two SM ST six-pack panels plus one twelve splice holder	Corning	WIC-02P