

# REQUEST FOR PROPOSALS

*FOR*

*Installation of Micro-duct*



**LCOG CONTACT:**  
JACOB CALLISTER  
SENIOR PLANNER  
jcallister@lcog.org  
*DATE: December 14, 2017*  
*REVISION: 000*

Lane Council of Governments (LCOG) is requesting proposals from responsive bidders for the purposes of identifying qualified contractors from which LCOG seeks to select one or more contractor(s) meeting the required qualifications to provide services related to the installation of micro-duct related to the EUGNet project connecting buildings in downtown Eugene, Oregon. Responses to the Request for Proposals will be accepted by Jacob Callister, Lane Council of Governments, 859 Willamette Street, Suite 500, Eugene, Oregon 97401 until 2:00 p.m. prevailing local time on **Thursday, December 21, 2017**. Proposals received after the stated time will not be considered.

Copies of the Request for Proposals documents are available for download from <http://www.lcog.org/DocumentCenter/View/5359>. The list of evaluation criteria is included in the bid documents.

**No proposal will be accepted by LCOG unless it contains a statement by the contractor, as a part of the bid, that the contractor, in carrying out the contract, will comply with all applicable laws.**

**This is a public improvement contract. All contractors will be subject to prevailing wage requirements, paying employees the higher of the wages and benefits established at the time the contract is awarded by either the State of Oregon (BOLI) or the United States Department of Labor (Davis-Bacon) ( General Decision OR170027 09/22/2017 OR27). Submission of a proposal constitutes an acknowledgement by the contractor that the contractor is aware of this requirement and is capable of and intends to comply with all applicable requirements of these laws.**

Each proposal must contain a statement as to whether the Bidder is a resident of Oregon, as defined in ORS 279.029.

Responsive submissions may be held by Lane Council of Governments for a period not to exceed thirty (30) days from the date proposals are due for the purpose of reviewing and investigating the qualifications of the contractor prior to awarding the contract. Lane Council of Governments reserves the right to reject or accept any or all proposals.

Because the project for which qualifying contractors are sought to be selected will be partially supported by federal (Economic Development Administration) funds, procurement and administration must be consistent with federal procurement standards outlined at CFR §200.318 as reflected within this request for proposals.

DATE: December 14, 2017



## **I. INTRODUCTION**

### **A. General Information**

Lane Council of Governments (LCOG) is requesting proposals from responsible contractors possessing the ability to perform successfully under the terms and conditions of the proposed procurement. If more than one contractor is found to be qualified, LCOG may select more than one contractor. If more than one contractor is selected, LCOG does not commit to any percentage of the work to any selected contractor. If more than one contractor is placed on the qualified contractor's list, LCOG will select a qualified contractor for a task at their sole discretion.

The Contractor will work with, and at the direction of, staff from LCOG, and will provide information to LCOG, the City of Eugene, and the Eugene Water and Electric Board as needed.

### **B. Form of Agreement**

Because the number of buildings that will require micro-duct installation is not yet known, the contract for micro-duct installation will be based on a per unit basis (outlined under Section III). The estimated cost range for this contract is between \$30,000 and \$50,000.

## **II. PROJECT DESCRIPTION**

The project consists of the installation of micro-duct in existing communication conduits and vaults within the EUGNet project area (downtown Eugene).

### **A. Purpose**

Previously referred to as the "Downtown Fiber Project," EUGNet is an 'open access' fiber optic network. The fiber strands run underground from a central exchange to individual buildings. 'Open access' means that the fiber strands are owned by a public entity which does not provide communication services to end users. Private internet service providers lease those fiber strands to serve individual businesses in the connected buildings. As of November, 2017, EUGNet has over 40 buildings signed up and approximately 16 buildings already connected. The project may eventually connect approximately 100 buildings.

The fiber network will be installed within micro-duct tubes. Approximately eighty-five percent of the micro-duct will be installed by EWEB crews in existing EWEB conduits.

This RFP represents the work that LCOG is contracting out for the installation of micro-duct in existing City communication conduits.

**B. Funding Source**- This project includes federal funds from the Economic Development Agency, as well as local funds from the Urban Renewal Agency and the Telecom Fund.

### **C. Project Scope and Schedule**

Contractor will be installing micro-duct to as many as 15 buildings utilizing up to 20 City-owned communication vaults and the Willamette Internet Exchange (WIX) located at 859 Willamette

Street. Micro-duct must be installed to the point of demarcation in individual buildings, typically a location in the basement. LCOG will coordinate the Contractor(s) work of installation of micro-duct into buildings with the building manager or owner.

The micro-duct material shall be Dura-Line Enterprise Armored Future path or approved equal.

The project will also include the installation of approved tamper proof bolts at up to 20 City-owned communication vaults. The tamper proof bolt shall be a Bryce Fastener Penta-Plus® bolt or approved equal.

Contractor's work will require "Utility Public Way Use" Permits. Contractor will work with LCOG and the City of Eugene to acquire permits needed to complete this work and will be subject to requirements of the City of Eugene Public Works Department. Contractor will be reimbursed for permits.

The project boundaries are buildings served by underground electrical service within downtown Eugene. See the attached map. The Project is to be substantially complete by June of 2019.

### **III. BID INSTRUCTIONS**

**A.** Proposals are to be based on, and submitted in accordance with, the instructions contained in this section. LCOG may change these instructions at any time prior to the bid submittal deadline by addendum. Bidders are responsible for responding to all addenda.

**B.** LCOG will not pay any costs incurred by any contractor or bidder in the preparation of a response to this Request for Proposals.

**C.** Lane Council of Governments reserves the right to consider any proposals that LCOG determines are in substantial compliance with the requirements of this Request.

#### **D. Bid Submittal Requirements**

All proposals must be delivered on time. Proposals must be submitted in writing, one copy only required, in a sealed envelope addressed to "LCOG Fiber RFP" delivered to the LCOG receptionist at the specified time at 859 Willamette Street, suite 500.

All proposals must be complete and respond in full to all elements of the Request.

Each response, to be considered responsive, must include, in addition to completion of the accompanying forms and price sheets, the following:

##### ***1). Transmittal Letter***

A transmittal letter identifying the authorized representative of the business, the existing location(s) of the business and a summary of the representative's understanding of the bid requirements and applicable laws.

**2.) Statement of Assurances**

A blank Statement of Assurances is included as Exhibit B. It must be completed and signed by the authorized representative of the business identified in the Transmittal Letter. Contractor must have liability insurance, workers compensation coverage (if applicable), and a valid Oregon CCB registration. Documentation of these items may be required before work begins but is not necessary as part of the quote. Contractor will comply with Federal Davis-Bacon and/or Oregon (BOLI) prevailing wage requirements on all work awarded under this contract, and must acknowledge this responsibility in the Statement of Assurances.

**3.) Qualifications**

Include information about your capabilities related to this project that address the evaluation criteria outlined in Section IV.

**4.) Bid**

Your submission must include a cost bid for the following project tasks/elements. Each element must include all labor, materials, equipment, and incidentals for installation (including gas for jetting):

| <b>Task/Element</b>                            | <b>Unit cost</b> | <b>Unit (if not specified)</b> |
|--|------------------|--------------------------------|
| Interior micro-duct installation (single duct) |                  | <b>FT</b>                      |
| Exterior micro-duct installation (3 duct)      |                  | <b>FT</b>                      |
| Approved Tamper Proof Bolts for each vault     |                  | <b>EA</b>                      |
| Other Reimbursements                           |                  |                                |

Your submission must include the intended manufacturer and part number or supplier for the following equipment:

| <b>Nature/Function of Part</b> | <b>Proposed Part Manufacturer</b> | <b>Proposed part number or supplier</b> |
|--------------------------------|-----------------------------------|---|
| Micro-duct single duct         |                                   |   |
| Micro-duct (3 duct)            |                                   |   |
| Tamper Proof Bolts             |                                   |   |

**IV. BID EVALUATION CRITERIA**

**A. Bid Cost**

Cost is not the sole criteria for selection of a contractor. Contractor must include a work plan. The Contractor’s work plan must delineate efficient methods of procedure and effective cost controls. (30 points maximum).

**B. Experience**

Demonstrate your ability to successfully execute micro-duct installation projects. Provide project descriptions including project scope, type of facility (office building, etc.), year completed, project size, and project setting (e.g., urban, suburban, etc.). Contractor should exhibit adequate training and experience with installing micro-duct and securing vault lids: (Maximum 30 points)

**C. Key Personnel**

Identify and provide resumes for key personnel. Demonstrate specific experience for all personnel, both individually and as a team, on projects of similar size and scope as the Project(s) subject to this RFP. Provide resumes for management personnel identifying the length of their employment with their respective firm, their intended responsibilities on this Project, their primary office location and their time commitment for this Project. (Maximum 20 points)

**D. Project Management**

Describe the contractor's process for managing installation requests to ensure completion on schedule and within the allocated budget. Contractor should exhibit collaborative excellence. Describe your process for coordinating your work on a dynamic project such as the installation of micro-duct in downtown Eugene. In addition, describe your approach for minimizing errors and omissions in project documentation. Describe your approach for minimizing Change Orders during the installation process. Describe the quality control methods to be employed to ensure quality installation. (Maximum 25 points)

**E. Local participation**

Describe the Project Team's familiarity with Eugene and with pertinent local code requirements. (Maximum 20 points)

**V. AWARD PROCESS**

**A. Opening and Evaluation.**

Proposals will be opened immediately after the time that they are due. The name of the contractor submitting the proposal will be read aloud.

After opening, the proposals will be reviewed for completeness and responsiveness. Any contractor whose submission is found to be non-responsive will be notified of that evaluation. No opportunity will be allowed to amend or resubmit a proposal. Proposals found to be responsive will be submitted to an evaluation committee. The committee will be composed of LCOG employees and employees of the EUGNet partners; the City of Eugene, Eugene Water and Electric Board, and the Technology Association of Oregon. Responsive proposals will be evaluated pursuant to the criteria set forth in section IV. All proposals that score sufficiently high so that the committee determines that the proposer could provide the work at a cost within the budgeted amount will be retained in a pool for potential negotiation. LCOG will enter into negotiations regarding the award of a contract for services with one or more of the pooled proposers.

Selection for the negotiation pool will be the final appealable set in the evaluation process. Selection for negotiations does not imply or guarantee a final contract will be awarded.

**B. Appeals.**

A contractor may protest an award if LCOG committed a material violation of a provision in the RFP or of an applicable procurement statute or administrative rule. Notice of an appeal must be made within five business days of the notice of the decision being appealed. Any appeal must be submitted in writing to LCOG c/o Jacob Callister at the address given above. The appeal must set forth the decision being appealed, and the reasons for the appeal. The reason for the appeal must explain why the appellant believes that the decision made is incorrect, with direct reference to the criteria of this request for proposals that is allegedly being applied incorrectly. Appeals will be review by Brenda Wilson, LCOG Executive Director, who will issue a decision in writing. The decision of the Executive Director shall be final.

**C. Negotiations**

At the conclusion of the rated criteria evaluation process of the written qualifications and prior to selection, LCOG may continue the evaluation process by interviewing the contractors who have the highest criteria ratings. LCOG may decide to award the work to the highest rated contractor, or contractors, from evaluation of the contractor(s)' submission, subject to satisfactory agreement as to fee, budget, schedule, and remaining unresolved contract issues.

LCOG may also choose more than one contractor to perform installation work at separate times and or concurrently.

**VI. TECHNICAL ASSISTANCE / CLARIFICATION / PROTESTS**

Any contractor requiring technical assistance or clarification of the information, please do so via email to [jcallister@lcog.org](mailto:jcallister@lcog.org) or by phone: 541-682-4114. Any interested party who wishes to receive Addenda should register with Jacob Callister. Failure to register an interest will disqualify a contractor from an appeal relating to failure to conform a proposal to any Addendum.

If additional information or interpretation is necessary, such information will be supplied in the form of Addenda that will be mailed to all individuals, firms, etc., who are on the list of potential contractors who have received the RFP and those who have registered as set forth in this section. Such Addenda shall have the same binding effect as though contained in the main body of the Request for Proposals.

**VII. EXHIBITS**

The following exhibits are included in this RFP:

- Exhibit A: LCOG Standard Contract Provisions
- Exhibit B: Statement of Assurances
- Exhibit C: Project Map
- Exhibit D: Discussion of Preparing Unit Bids



## Exhibit A

### Standard Contract Provisions

- A. The following standard public contract clauses shall be included expressly or by reference where appropriate in every contract of Lane Council of Governments.
- (1) Contractor shall make payment promptly, as due, to all persons supplying to such contractor labor or material for the prosecution of the work provided for in the contract, and shall be responsible for payment to such persons supplying labor or material to any subcontractor.
  - (2) Contractor shall pay promptly all contributions or amounts due to the State Industrial Accident Fund and the State Unemployment Compensation Fund from contractor or any subcontractor in connection with the performance of the contract.
  - (3) Contractor shall not permit any lien or claim to be filed or prosecuted against Lane Council of Governments on account of any labor or material furnished, shall assume responsibility for satisfaction of any lien so filed or prosecuted and shall defend against, indemnify and hold Lane Council of Governments harmless from any such lien or claim.
  - (4) Contractor and any subcontractor shall pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.167.
  - (5) For public improvement and construction contracts only, if contractor fails, neglects or refuses to make prompt payment of any claim for labor or services furnished to the contractor or a subcontractor by any person in connection with the public contract as such claim becomes due, Lane Council of Governments may pay such claim to the person furnishing the labor or services and charge the amount of the payment against funds due or to become due the contractor by reason of the contract. The payment of a claim in the manner authorized hereby shall not relieve the contractor or its surety from the obligation with respect to any unpaid claim. If Lane Council of Governments is unable to determine the validity of any claim for labor or services furnished, Lane Council of Governments may withhold from any current payment due contractor an amount equal to said claim until its validity is determined, and the claim, if valid, is paid by the contractor or Lane Council of Governments. There shall be no final acceptance of the work under the contract until all such claims have been resolved.
  - (6) Contractor shall make payment promptly, as due, to any person, co-partnership, association or corporation furnishing medical, surgical, hospital or other needed care and attention, incident to sickness or injury, to the employees of contractor, of all sums which the contractor agreed to pay or collected or deducted from the wages of employees pursuant to any law, contract or agreement for the purpose of providing payment for such service.
  - (7) With certain exceptions listed below, contractor shall not require or permit any person to work more than 10 hours in any one day, or 40 hours in any one week except in case of necessity, emergency, or where public policy absolutely requires it, and in such cases the person shall be paid at least time and a half for:
    - (a) All overtime in excess of eight hours a day or 40 hours in any one week when the work week is five consecutive days, Monday through Friday, or
    - (b) All overtime in excess of 10 hours a day or 40 hours in any one week when the work week is four consecutive days, Monday through Friday, and
    - (c) All work performed on the days specified in ORS 279B.020(1) for non-public improvement contracts or ORS 279C.540(1) for public improvement contracts.
    - (d) For personal/professional service contracts as designated under ORS 279A.055, instead of (a) and (b) above, a laborer shall be paid at least time and a half for all overtime worked in excess of 40 hours in any one week, except for individuals under these contracts who are excluded under ORS 653.010 to 653.261 or under 29 U.S.C. Sections 201 to 209, from receiving overtime.

- (e) Contractor shall follow all other exceptions, pursuant to ORS 279B.235 (for non-public improvement contracts) and ORS 279C.540 (for public improvement contracts), including contracts involving a collective bargaining agreement, contracts for services, and contracts for fire prevention or suppression. For contracts other than construction or public improvements, this subsection (7) does not apply to contracts for purchase of goods or personal property.
  - (f) Contractor must give notice to employees who work on a public contract in writing, either at the time of hire or before commencement of work on the contract, or by posting a notice in a location frequented by employees, of the number of hours per day and days per week that the employees may be required to work.
- (8) The hourly rate of wage to be paid by any contractor or subcontractor to workers upon all public works shall be not less than the applicable prevailing rate of wage for an hour's work in the same trade or occupation in the locality where such labor is performed, in accordance with ORS 279C.800 to ORS 279C.850. For projects covered by the federal Davis-Bacon Act (40 USC 276a), contractors and subcontractors shall pay workers the higher of the state or federal prevailing rate of wage. The appropriate federal wage rate is General Decision Number: OR100071 07/02/2010 OR71 modification 3. The appropriate state prevailing wage rate can be found at <http://www.wdol.gov/wdol/scafiles/davisbacon/OR71.dvb>
- (9) The contractor, its subcontractors, if any, and all employers working under the contract are subject employers under the Oregon Workers' Compensation Law and shall comply with ORS 656.017, or otherwise be exempt under ORS 656.126.
- (10) As to public improvement and construction contracts, Contractor shall comply with all applicable federal, state, and local laws and regulations, including but not limited to those dealing with the prevention of environmental pollution and the preservation of natural resources that affect the performance of the contract. A list of entities who have enacted such laws or regulations is found in the Oregon Attorney General's Model Public Contract Rules Manual, OAR 137-030-0010, Commentary 4. If new or amended statutes, ordinances, or regulations are adopted, or the contractor encounters a condition not referred to in the bid document not caused by the contractor and not discoverable by reasonable site inspection which requires compliance with federal, state, or local laws or regulations dealing with the prevention of environmental pollution or the preservation of natural resources, both Lane Council of Governments and the contractor shall have all the rights and obligations specified in ORS 279C.525 to handle the situation.
- (11) The contract may be canceled at the election of Lane Council of Governments for any substantial breach, willful failure or refusal on the part of contractor to faithfully perform the contract according to its terms. Lane Council of Governments may terminate the contract by written order or upon request of the contractor, if the work cannot be completed for reasons beyond the control of either the contractor or Lane Council of Governments, or for any reason considered to be in the public interest other than a labor dispute, or by reason of any third party judicial proceeding relating to the work other than one filed in regards to a labor dispute, and when circumstances or conditions are such that it is impracticable within a reasonable time to proceed with a substantial portion of the work. In either case, for public improvement contracts, if the work is suspended but the contract not terminated, the contractor is entitled to a reasonable time extension, costs and overhead per ORS 279C.655. Unless otherwise stated in the contract, if the contract is terminated, the contractor shall be paid per ORS 279C.660 for a public improvement contract.
- (12) If Lane Council of Governments does not appropriate funds for the next succeeding fiscal year to continue payments otherwise required by the contract, the contract will terminate at the end of the last fiscal year for which payments have been appropriated. Lane Council of Governments will notify the contractor of such non-appropriation not later than 30 days before the beginning of the year within which funds are not appropriated. Upon termination pursuant to this clause, Lane Council of Governments shall have no further obligation to the contractor for payments beyond the termination date. This provision

does not permit Lane Council of Governments to terminate the contract in order to provide similar services or goods from a different contractor.

- (13) By execution of this contract, contractor certifies, under penalty of perjury that:
  - (a) To the best of contractor's knowledge, contractor is not in violation of any tax laws described in ORS 305.380(4), and
  - (b) Contractor has not discriminated against minority, women or small business enterprises in obtaining any required subcontracts.
  - (c) Contractor is in full compliance with all applicable state and federal laws and is not debarred under either state or federal regulations.
- (14) Contractor agrees to prefer goods or services that have been manufactured or produced in this State if price, fitness, availability or quality are otherwise equal.
- (15) Contractor agrees to not assign this contract or any payments due hereunder without the proposed assignee being first approved and accepted in writing by Lane Council of Governments.
- (16) Contractor agrees to make all provisions of the contract with Lane Council of Governments applicable to any subcontractor performing work under the contract.
- (17) Lane Council of Governments will not be responsible for any losses or unanticipated costs suffered by contractor as a result of the contractor's failure to obtain full information in advance in regard to all conditions pertaining to the work.
- (18) All modifications and amendments to the contract shall be effective only if in writing and executed by both parties.
- (19) The contractor certifies he or she has all necessary licenses, permits, or certificates of registration (including Construction Contractors Board registration or Landscape Contractors Board license, if applicable), necessary to perform the contract and further certifies that all subcontractors shall likewise have all necessary licenses, permits or certificates before performing any work. The failure of contractor to have or maintain such licenses, permits, or certificates is grounds for rejection of a bid or immediate termination of the contract.
- (20) Unless otherwise provided, data which originates from this contract shall be "works for hire" as defined by the U.S. Copyright Act of 1976 and shall be owned by Lane Council of Governments. Data shall include, but not be limited to, reports, documents, pamphlets, advertisements, books, magazines, surveys, studies, computer programs, films, tapes, and/or sound reproductions. Ownership includes the right to copyright, patent, register and the ability to transfer these rights. Data which is delivered under the contract, but which does not originate therefrom shall be transferred to Lane Council of Governments with a nonexclusive, royalty-free, irrevocable license to publish, translate, reproduce, deliver, perform, dispose of, and to authorize others to do so; provided that such license shall be limited to the extent which the contractor has a right to grant such a license. The contractor shall exert all reasonable effort to advise Lane Council of Governments, at the time of delivery of data furnished under this contract, of all known or potential invasions of privacy contained therein and of any portion of such document which was not produced in the performance of this contract. Lane Council of Governments shall receive prompt written notice of each notice or claim of copyright infringement received by the contractor with respect to any data delivered under this contract. Lane Council of Governments shall have the right to modify or remove any restrictive markings placed upon the data by the contractor.
- (21) If as a result of this contract, the contractor produces a report, paper, publication, brochure, pamphlet or other document on paper which uses more than a total 500 pages of 8 1/2" by 11" paper, the contractor shall conform to the Lane Council of Governments Recycled Paper Procurement and Use policy, LM 2.440 through 2.448, by using recycled paper with at least 25% post-consumer content which meets printing specifications and availability requirements.
- (22) The Oregon Standard Specifications for Construction adopted by the State of Oregon, and the Manual on Uniform Traffic Control Devices, each as is currently in effect, shall be applicable to all road construction projects.

- (23) When a public contract is awarded to a nonresident bidder and the contract price exceeds \$10,000, the contractor shall promptly report to the Department of Revenue on forms to be provided by the department the total contract price, terms of payment, length of contract and such other information as the department may require before Lane Council of Governments will make final payment on the contract.

**Exhibit B**  
**Statement of Assurances**

Accompanying a Response to LCOG's Request for Proposals for Micro-duct Installation

Contractor \_\_\_\_\_

Contractor's Address: \_\_\_\_\_

\_\_\_\_\_

Telephone contact: \_\_\_\_\_ Textable? Y N

Email contact \_\_\_\_\_

Authorized Representative: \_\_\_\_\_

By signing below Contractor acknowledges and affirms:

That Contractor has read and understands the request for proposals and, except for any submissions in writing made before submission of this statement, waives all defects in the request for proposals.

That Contractor has taken steps to become acquainted with all applicable laws, specifically including federal procurement standards outlined at CFR §200.318 and state and federal prevailing wage laws, and asserts Contractor's intent to comply with all applicable laws and regulations.

That Contractor is not on any list of contractors who are prohibited or limited from contracting with public agencies.

That Contractor IS IS NOT a resident Oregon bidder (Circle one).

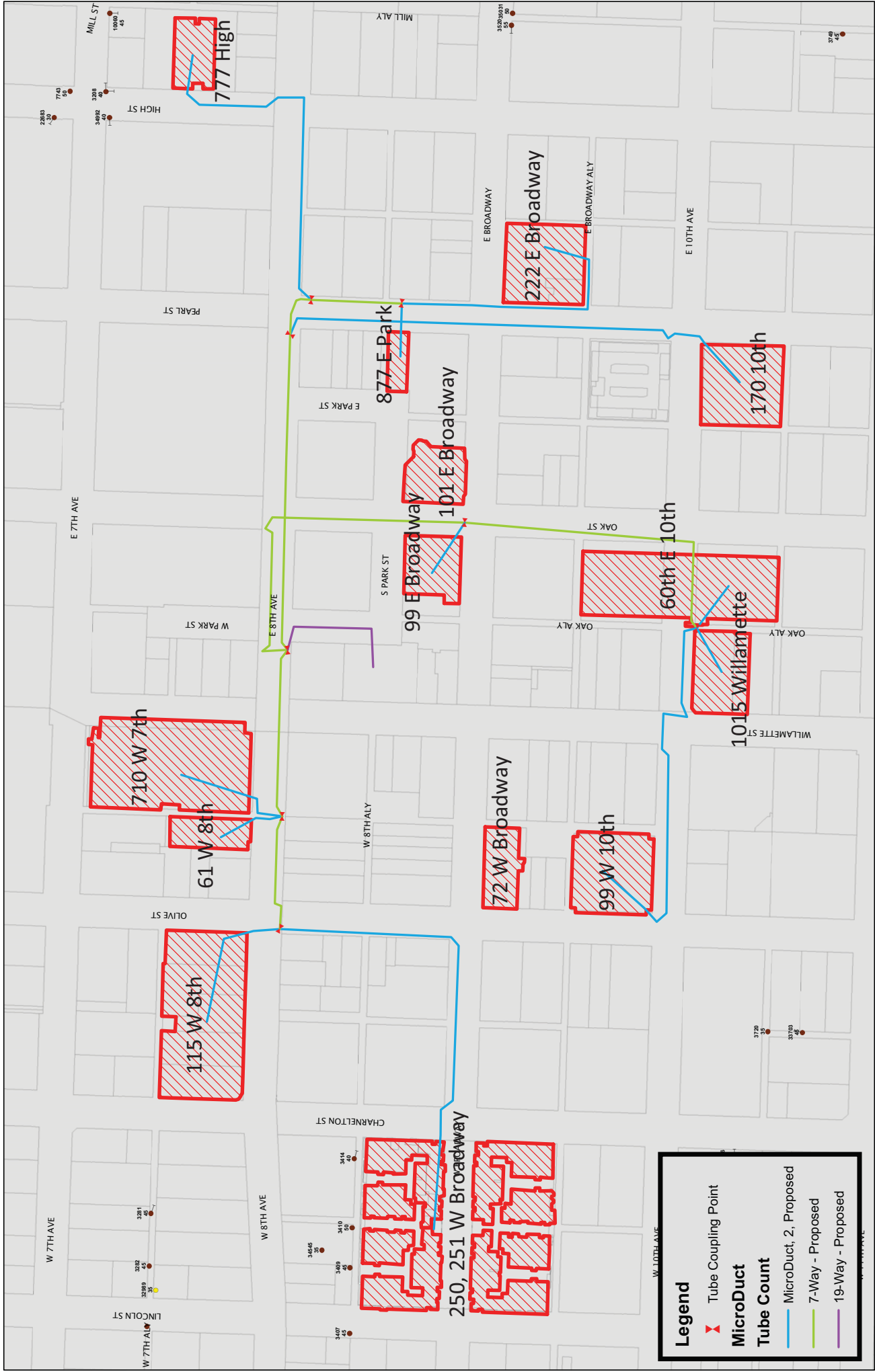
Contractor has or will obtain all required insurance and keep it in effect during the continuance of contractual relations with LCOG.

That Contractor makes these representations knowing that LCOG will rely on the representations in making its selection.

Signature of Authorized Representative: \_\_\_\_\_

Date: \_\_\_\_\_

# Exhibit C: Buildings Designed to Utilize City of Eugene Conduit



## **Exhibit D**

### **Discussion regarding preparing a unit bid for LCOG RFP**

The federal funding requirements for the EUGNet project require unit bids rather than time and materials bids. This is based on a determination that unit bids will provide greater cost savings. LCOG is aware that the work anticipated by the RFP is most often provided on a time and material basis.

This discussion is provided in an effort to assist any potential responding parties. It is not intended to be explicit instructions or guidelines, merely expositions of possible approaches.

#### **1. Identify Cost Elements**

The work being sought must be presented as a unit or as several component parts. For example, the blowing and installation of fiber might consist of four components: 1) blowing the fiber from the LCOG basement to the target building, 2) purchasing and installing the terminal box and terminating the fiber in the target building, 3) installing the fiber in the splice tray in the LCOG basement, and 4) testing and OTDRing the fiber, with a written report of the results. (This list assumes that EWEB does the integrity test ("blowing the sponge and the BB") for the microduct if not, then that would be an additional component.) There will be some other components of the overall work: installing a new splice tray case in the LCOG basement; pulling a terminated 144 strand cable between the basement and the WIX for every 20 buildings connected, installing a new FODU in the WIX for every 144 strand cable, terminating the cable in the FODU and in splice trays in the basement, and so forth. For the installation of microduct in the identified City of Eugene conduit, the work will include, in addition to the components above, the installation and testing of the microduct from the basement to the target buildings.

All of this work will also include the purchase of the necessary materials; the compressed air, the FODU, the splice tray case, and so on.

#### **2. Identify Units**

One possible approach might be to consider each building as a single unit, including all of the component parts of blowing, installing splicing and testing as one unit, and giving a price for that. The only variable in the cost of different units would be the distance and time involved in blowing the fiber, since some buildings are less than 1000 feet and some are as much as 2000 feet. If you wanted to use the single unit per building approach, you might select what you would expect to be an average cost of the unit. If you did this, then your discussion of cost savings elements might include selecting a projected average on the low side. There probably would still be some elements that would be broken into discrete units, such as purchasing, pulling and installing the pre-terminated fiber between the basement and the WIX, or purchasing and installing the splice tray case, because these are either one time actions, or will vary according to the number of buildings targeted, an item that is not clear going into the project.

An alternative approach would be to have multiple units where, for example, purchasing and installing the termination box in the building is one unit, blowing the fiber is another unit, perhaps based on the number of feet blown, and so on. This approach might more easily allow for the occasional variation in the routine, where for example, the best location for the terminal point in the building is not immediately adjacent to where EWEB terminates the microduct in the building, but is somewhere distant, involving the purchase and installation of additional microduct. Breaking the component parts

down into smaller component units may also make it easier to account for some elements that require more than one person (testing for example). The cost saving element here might be that, by breaking down the unit into its smallest component unit, the unit is more closely tied to the reality of each building and there is less need for rounding costs up to cover unforeseen elements.

Note that, in all of these approaches, the purchase of the necessary materials is included in the unit cost, so that the time and material is combined in one unit proposal.

### **3. Present the Unit Pricing**

Whichever approach is selected, or some combination of the two approaches, the final step is to present the units, with sufficient description to be sure that all the component actions are included, and establish a price for each unit.