

CITY COUNCIL AGENDA ITEM
CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	Authorizing the City Manager to Execute Amendment 2 to Contract 8824 with DKS Associated for Phase II – Consultant Services for Outside Plant Fiber and Conduit Inventory
DEPARTMENT:	Public Works
PRESENTED BY:	Tricia Juhnke, City Engineer
ACTION:	<input type="checkbox"/> Ordinance <input type="checkbox"/> Resolution <input checked="" type="checkbox"/> Motion <input type="checkbox"/> Discussion <input type="checkbox"/> Public Hearing

PROBLEM/ISSUE STATEMENT:

Staff is requesting that Council authorize the City Manager to execute a contract with DKS Associates for the completion of the Outside Plant (OSP) Fiber and Conduit Inventory, Phase II project. DKS Associates completed Phase I of the OSP Inventory project, which explored only the fiber infrastructure along Aurora Avenue N.

The second phase of this project will focus on the fiber inventory for the remainder of the City. The cost estimate for Phase II is \$79,710. Phase II will entail gathering the remaining citywide inventory information within the City’s boundaries from record drawings of past conduit and fiber construction. This will be followed by field verification of the location, size and capacity of City-owned conduit and of other conduit owners and fiber operators. After field verification, all inventory information will be entered into a GIS mapping database and CityWorks, the City’s asset management system.

RESOURCE/FINANCIAL IMPACT:

The DKS Associates fee for services will be \$79,710. The City will use available general funds to fund Phase II of this project. The project cost and budget summary is as follows:

EXPENDITURES

City Staff and Direct Expenses	\$	15,000
Consultant Contracts		
Phase I (<i>DKS Associates</i>)	\$	19,600
Phase I Amendment 1 (<i>DKS Associates</i>)	\$	14,000
Phase II (<i>DKS Associates</i>)	\$	79,700
Consultant Contracts Total	\$	113,300
Contingency	\$	15,000
Total Expenditures	\$	143,300

REVENUE

General Fund (100%)	\$ 143,300
Total Expenditures	\$ 143,300

RECOMMENDATION

Staff recommends that Council authorize the City Manager to execute a contract amendment with DKS Associates for consultant services on the Outside Plant (OSP) Fiber and Conduit Inventory Project, Phase II with a new contract total not to exceed \$79,700.

Approved By: City Manager **DT** City Attorney **MK**

BACKGROUND

The City has developed a network of fiber optic resources that includes underground conduits and underground and overhead fiber optic lines for use in traffic control, communications and data information tasks. The City needs to expand its knowledge of the exact nature, location and capacity of the existing fiber optic resources that are located near Aurora Avenue N and throughout the city.

The City desires to create an Intelligent Transportation System (ITS) Master Plan that identifies existing fiber optic cable and conduit locations, and their current uses or capacities both overhead and underground. This information will also be used for non-transportation uses of the fiber optic network. As this does not exist, current information for existing fiber optic resources on Aurora Avenue was assembled from several sources, including record drawings from the Aurora Avenue N corridor projects. Information for other fiber optic resources outside of Aurora Avenue are obtained from as – built drawings for various projects. Because of the piecemeal nature of the available records, confirmation and consolidation of these asset records is needed.

This project seeks to identify all City of Shoreline fiber optic resources and conduit capacities within the City of Shoreline. Phase I of this project focused on fiber optic and conduit infrastructure within the Aurora Avenue N corridor in support of the interests of Verizon to lease conduit space within this conduit. Phase II will entail gathering the fiber optic resources and conduit capacity through the remainder of the city. This citywide inventory will be gathered from record drawings of past conduit and fiber construction. This will be followed by field verification of the location, size and capacity of City-owned conduits and of other conduit owners and fiber operators. After field verification, all inventory information will be entered into a GIS mapping database and CityWorks, the City's asset management system. This information will then be utilized to inform future planning and policy decisions as they relate to fiber optic resources.

ALTERNATIVES ANALYZED

Between May and June 2017, the City reviewed the Municipal Research Services Center (MRSC) Roster and identified Butsko Utility Design, Inc., Northwest, Casne Engineering, Inc., and DKS Associates as potential consultants to deliver the Outside Plant (OSP) Fiber and Conduit Inventory Project. Through evaluation of qualifications, DKS Associates was selected based on ability to meet schedule and historical experience with the City.

DKS Associates conducted Phase I of this contract and provided good results for the City. Attachment A to this staff report provides a proposed Scope of Work for DKS Associates for Phase II of the project. To proceed with this contract amendment, a waiver has been approved by the City Manager to waive the requirement to advertise for selection on projects over \$50,000. This approach was recommended primarily because of the unique skills and abilities of DKS to perform this type of work.

The alternatives to this contract amendment include:

1. Not proceeding with Phase II of the project and not completing the inventory of the City's fiber system, and

2. Not executing this contract with DKS Associates and preparing a formal Request for Proposal (RFP) to solicit and select a consultant to conduct Phase II.

Given DKS Associates' familiarity with the City of Shoreline and their work on Phase I of the project, staff recommends that Council authorize the City Manager to execute this contract amendment.

COUNCIL GOAL ADDRESSED

This project addresses Council Goal #2, Improve Shoreline's infrastructure to continue the delivery of highly valued public services.

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ATTACHMENTS

Attachment A: DKS Associates OSP Fiber and Conduit Inventory Project, Phase II Scope of Work and Fee



Attachement A: Scope and Fee
Scope of Work
City of Shoreline
Outside Plant (OSP) Fiber and Conduit
Inventory Amendment 2, Phase II – Citywide

OCTOBER 20, 2017

Purpose

The purpose of this effort is to allow for the consolidation of existing information on the City's Outside Plant (OSP) fiber optic and conduit network into a comprehensive, connected GIS database.

It is important for the City to know where its OSP infrastructure is located, available capacity and ownership. This information is used for many strategic partnerships, including:

- Requests from service providers requesting access to available conduit or unused fiber to achieve their business goals. This supports economic development goals within the city and provides residents and business with greater choice.
- The City needs to do long-term planning for its infrastructure, including knowing the age and condition of assets for repair, maintenance and replacement purposes to ensure the networks that ride on the OSP remain highly available.
- There are regional partnerships connecting schools, hospitals, universities and other cities, where connectivity between agencies is needed and information must be shared to achieve project goals.
- The City's network is expanding beyond its facilities with greater IT mobility and wireless connectivity to support work that is done outside city facilities.

This phase will entail gathering existing inventory information from record drawings of past conduit and fiber design work along with capturing and confirming the information in the field. All inventory information will be inputted into a GIS database and map clearly showing the available City owned conduit pathway, including location, size, conduit available capacity, and conduit owner and fiber operator within the City limits.

Assumptions

This scope of work is based on the following assumptions:

- a. Budget for the project scope is based on a project schedule of 4 months.
- b. The fee for this Phase II level of effort will be as shown in the attached fee schedule. CONSULTANT reserves the right to move time between tasks as needed to accomplish the overall goals of the project.
- c. See "Items and Services to be Furnished by CITY" below.



Information Provided by City

The following Information will be provided by the CITY:

- The CITY will provide any pertinent GIS, spreadsheet and as-built record drawings to the CONSULTANT including but not limited to: fiber documentation, splicing information, termination information, interconnect plans, signal plans, ITS plans.
- The CITY will provide all available as-built drawings for the existing fiber and conduit equipment for use by the CONSULTANT at the time of notice to proceed

Project Management

The Consultant shall manage the project schedule and budget; keep the City's project manager updated on the progress of the work effort; prepare monthly invoices with progress reports; and track all project decisions and action items.

The estimate for project management is based on the project being completed in four months.

Deliverables:

Monthly invoices and progress reports

Existing Documentation Review

The City of Shoreline has documentation of the existing conduit and fiber network in the following formats:

- Map and tabular data in the City's GIS Database recorded previously using GPS data collection
- PDF copies of all relevant Transportation Department project plans and Utilities Department's record drawings

The Consultant shall begin this project by reviewing all of this existing data and determine where holes in the data may exist. The Consultant will use the following steps to complete this task.

Record Drawings Review

The Consultant shall review all record drawing/design plans and identify any inconsistencies.

The Consultant shall review all fiber cable documentation that includes strand assignments and confirm it matches the splicing and termination tables provided by the City. The Consultant shall hold up to one meeting with City staff to determine fiber existing conditions and gather any information about fiber elements not covered in any of the documentation.

Assumptions

All record drawing/design plan information related to the fiber network will be made available as soon as the Consultant receives notice to proceed. The Consultant will not be required to obtain any other records from the City.



Deliverables:

Meeting notes from up to one fiber interview meeting.

Missing Link Identification

The Consultant shall compile all record drawings/design plans for fiber related inventory citywide. The Consultant shall also create a map that shows the City depicting information from the as-builts for confirmation and missing links to be filled in through field investigation.

Deliverables:

Map showing locations where fieldwork shall be performed.

Field Data Collection

The field data collection shall be performed through the following sub-tasks.

Field Work Preparation

Record drawings/design plans shall also be used in the field to help locate junction boxes, vaults and cabinets. The Consultant shall prepare a one page summary sheet describing data to be collected in the field.

Deliverables

Data collection summary sheet
Map showing proposed segmentation of the data collection

Field Work Data Collection

The Consultant shall field verify fiber cables that are identified in the Missing Link Identification task. The Consultant shall field verify conduit runs, fiber cables, by opening and recording information as needed from junction boxes, poles, vaults and cabinets to complete the fiber tracing necessary.

Assumptions

- City staff will be available, as needed, to help track fiber routes at intersections and to open cabinets.
- Traffic control will not be needed for any field inventory work. All conduit/fiber routes in the street are well documented in record drawings/design plans.
- Photos will be taken of any junction boxes, poles or vaults that are field located. However, a complete photo inventory of all junction boxes and vaults will not be a final deliverable of this project.
- Precise line segments for conduit or fiber will not be collected in the field. Fiber and conduit will be represented as straight line segments between junction boxes, vaults and cabinets. Precision will not be to a GPS level, rather an approximation.
- Only conduit containing, or intended to contain, fiber will be included in the data collection.
- Fiber testing tools will not be required for any inventory work.



GIS Mapping

The GIS mapping and database shall be prepared for the City's fiber network through the following subtasks:

Needs Assessment

The Consultant shall work with the GIS, Transportation and IT departments to confirm the project needs that reflect the desired use and functionality of the GIS mapping by all three departments. The Consultant shall meet with City staff to identify and confirm the information that is critical, and how the City would like to use the information.

Level of detail in GIS mapping shall be discussed between the Consultant and all City departments and an agreement on GIS level of detail will be approved prior to beginning work on the geometric network. The level of detail requested by the City shall consider the level of effort described in this scope related to the amount data collected. If additional detail is required, the Consultant's level of effort may need to be revised.

It is assumed that up to two meetings will be needed for all three City departments to attend with the Consultant to discuss needs for use and functionality. It is assumed that one additional meeting will be required between the GIS department, IT department and the Consultant to discuss and confirm schema and proposed information for feature classes.

Assumptions

- City GIS staff will be available for in person meeting to discuss needs and functionality.

- City GIS staff will be available to discuss schema and proposed information for feature classes.

- City GIS staff will develop schema. (If not, optional task provided for schema development by the Consultant)

- Expected information to be provided by Consultant for incorporation into GIS includes the following:

 - Junction Box/Vault type and size, conduit type and size, fiber count, signal controller cabinet, splice points, and pole location and ID

Deliverables

- Draft and final Excel spreadsheet with proposed information for GIS feature classes

Prepare Geometric Network

The Consultant shall use record drawings and all field collected data to map the fiber network of the City. This will include work collected and documented in Phase I of the project for the Aurora Trunk Line.

It is assumed that the fiber network detail shall include junction boxes, poles, conduits, fiber cables, termination points and splice points. For cables entering buildings, the cable segment shall be drawn to a point representing the building. Cable segments are drawn between each splice/termination point and through other access points.



Fiber shall be mapped to the cable level and not the strand level. Based on needs assessment, strand level data, if provided by City, may be incorporated in attribute table for cable segments.

The City departments will review the GIS database and map of fiber network for GIS functionality, and accuracy of fiber network data. The City will provide consolidated comments and will send those comments to the Consultant.

Deliverables

Draft and Final GIS database and map of fiber network

Assumptions

City will provide all splicing information for fiber up to termination points.

GIS department staff will work with Transportation and IT department staff to review database and GIS map and provide comments to the Consultant to finalize GIS database.

Final Submittal

The Consultant shall package the following written documentation into one hard copy and one electronic submittal to represent the completion of the project:

- Map of field work to be performed.
- Approved Data collection field checklist
- GIS database and map of fiber optic resources
 - Fiber cables
 - Junction boxes and poles
 - Termination and splice points
 - Conduit location
 - Conduit size

Develop GIS Schema and Relationship Tables (Optional)

The Consultant shall develop GIS schema and relationship tables for GIS fiber network and database reflecting needs assessment. It is assumed that one meeting will be required between the GIS department, IT department and the Consultant to develop and confirm schema requirements.

Assumptions

GIS and IT staff will provide input on schema.

Deliverables

Draft and final schema

City of Shoreline - Outside Plant (OSP) Fiber and Conduit Inventory Project Amendment 2 Phase II - Citywide
 Fee Estimate for Engineering Services

Position	Principal Engineer	Senior Engineer	Associate Engineer	Assistant Engineer	Admin	Total Hours by Task	Total Costs by Task
Standard Billing Rate	\$ 210.00	\$ 155.00	\$ 130.00	\$ 110.00	\$ 90.00		
Project Management	13	2	10	0	12	37	\$ 5,420.00
Project Set-Up	1		2		8		
Invoicing and Progress Reports	4				4		
Project Coordination	2	2	2				
Meetings (4)	6		6				
Existing Documentation Review	4	8	28	60	0	100	\$ 12,320.00
Records Drawing Review	2	4	20	40			
Review Splicing and Termination Information		2	4	12			
Missing Link Identification	2	2	4	8			
Field Data Collection	4	10	104	104	0	222	\$ 27,350.00
Field Work Preparation	2	2	8	8			
Field Work Data Collection	2	8	96	96			
GIS Mapping	0	16	64	64	0	144	\$ 17,840.00
Needs Assessment		8	16	16			
Prepare Geometric Network		8	48	48			
GIS Mapping (Optional Task)	4	10	26	24	0	64	\$ 8,410.00
Meeting (1)	2		2				
Develop GIS Schema and Relationship Tables	2	10	24	24			
Total Hours	21	46	232	252	12	563	
Labor Costs	\$ 4,410.00	\$ 7,130.00	\$ 30,160.00	\$ 27,720.00	\$ 1,080.00	\$ 70,500.00	
Total Hours (Optional Task)	4	10	26	24	0	64	
Labor Costs (Optional Task)	\$ 840.00	\$ 1,550.00	\$ 3,380.00	\$ 2,640.00	\$ -	\$ 8,410.00	
SUMMARY							
Labor Costs							\$ 70,500.00
Expenses	Mileage						\$ 800.00
Optional Task Labor Costs							\$ 8,410.00
TOTAL COST (Labor + Overhead + Expenses + Fee)							\$ 71,300.00
TOTAL COST WITH OPTIONAL TASK (Labor + Overhead + Expenses + Fee)							\$ 79,710.00