

## **Attachment A**

### **AGREEMENT 20021 FOR ENGINEERING SERVICES PER SOI #20022**

#### **REMOTE SITE SCADA NETWORK PROJECT**

##### **PART I**

#### **PROJECT DESCRIPTION/SCOPE OF SERVICES/TIMING**

##### **A. PROJECT DESCRIPTION**

The intent of this project is to assist Lake County Public Works (LCPW) with the Design and Implementation of SCADA network for the Southeast and former Lakes Region Sanitary District remote sites.

Lake County Public Works Department (LCPW) provides wastewater conveyance and treatment services to approximately 40% of the residential, commercial, and industrial customers in Lake County. LCPW owns and operates three treatment facilities and over 345 miles of sewer system. LCPW solicited qualifications from engineering firms to provide detailed planning, design, and systems integration for SCADA telemetry networking to service the Southeast region and former Lakes Region Sanitary District remote sites. Lift stations in the Southeast region are not currently connected to the network. The Lakes Region Sanitary District was recently acquired and serves the areas of Lake Villa, Ingleside, and portions of Round Lake and Volo.

The overall project includes Planning, Design, and Implementation of control system upgrades in the Southeast Region (28 sites) as well as the former Lakes Region (20 sites) and their respective telemetry hubs. In order to effectively evaluate and provide accurate costs for the associated improvements, the overall project will be broken into three phases as shown below.

- Phase 1 – Site Investigation and Planning
- Phase 2 – Control Panel Design
- Phase 3 – Construction

##### **B. SCOPE OF SERVICES**

Basic Services to be provided by Donohue (Engineer) for this Project under this Agreement are as follows:

#### **Phase 1 – Site Investigation and Planning (Completed)**

To start the project, Donohue will host a virtual kickoff meeting to introduce the staff, review the project plan, and coordinate on site activities.

##### **Task 1 – Inventory of Remote Sites**

Donohue will visit and document inventory of each remote site in the Southeast Region and Lakes Region. Inventory will include, but not limited to, existing equipment, physical condition rating, existing communication protocols, panel dimensions, and GPS coordinates.

### **Task 2 – Cellular Feasibility Study**

Donohue and its subconsultant, J&K Communication, will use the GPS coordinates for each of the remote sites and conduct an electronic propagation study to verify cellular communication probability for each of the selected sites. Donohue will consult with Verizon Wireless for the cellular communication.

### **Task 3 – Standardization and Cost Analysis**

Donohue will consolidate the results of the Field Investigation Report to develop a set of Standard Lift Station control panels. It is assumed that many of the 48 remote sites will be categorized or classified into smaller groupings, which will be used to develop an opinion of probable construction costs. Using a standardized approach provides commonality throughout the hardware and maintenance as well as commonality of the control panel designs, which is the most cost effective means of designing a large quantity of control panels. An example of standardization, which may be expanded or modified during the Project is as follows:

Type 1 – Radio and Antenna Replacement Only

Type 2 – Backpanel Replacement with new control hardware and radio hardware

Type 3 – Complete Control Panel Replacement

Donohue will prepare for and lead a workshop to review the deliverables of the Site Investigation and Planning Phase with the Owner. The workshop will be held at the Owner’s facility.

### **Phase 1 Deliverables**

Task 1 – Field Investigation Report

Task 2 – Cellular Feasibility Report

Task 3 – Standardization Memorandum with Cost Opinions

Phase 2 is authorized through this amendment.

### **Phase 2 – Control Panel and Site Work Design**

Upon completion of the Phase 1 Deliverables, Donohue will prepare control panel designs for each of the remote stations and telemetry hubs, as defined in Phase 1. Donohue will begin with a single control panel design for each of the standard “types” identified in Phase 1 (three types have been identified). The control panel designs will be submitted to the Owner for review, comment, and approval prior to completing the remaining control panel designs. Donohue will meet with the Owner to receive comments and resolve open issues. Control panel designs will include

detailed electrical schematics, wire numbering, scaled layout drawings, and bill of materials with manufacturer part numbers.

During field investigations, it was determined that some site will require new full size electrical enclosure that houses transfer switch, generator plug, meter socket, and a control panel for remote communication and local pump monitoring control. These sites will typically require concrete pads, revised conduit and wire installation, and minor site grading/tree removal. Donohue will visit the site to produce site layouts and typical installation details for the related concrete, electrical, and civil work required at those sites. Nineteen sites are expected to require this level of work. Figure 1 shows a typical site requiring the larger “standard” enclosure design. Figure 2 shows a recently upgraded site with the enclosure, concrete work, etc.



*Figure 1- Typical Site Pre-Improvements*



*Figure 2- Typical Post-Improvement Site - Electrical/Control Enclosure*

Several sites are space limited and can only accommodate the smaller exterior control panel. Donohue will provide panel design and typical mounting details for the control panel. It is estimated that approximately five sites can only fit these smaller control panels.

The remaining sites include a building where the control panel can be installed inside and do not require site work.

Donohue will prepare the detailed control panel designs for each site and the site improvements where applicable (15 sites) and submit to the Owner for review. Donohue will meet with the Owner to receive comments and resolve open issues.

Upon completion of the detailed control panel design, Donohue will work with the County to bid panel construction and materials from reputable UL listed panel shops. In addition to the material bid assistance, Donohue will solicit subcontractor pricing from three site subcontractors for installation of concrete, grading, control panels, conduit, and field wiring in order to provide an estimate for Phase 3 of this project.

### **Phase 2 Deliverables**

Standard Control Panel Designs (three types)

Detailed Control Panel Designs (one for each remote site)

Site work Designs (15, with standard details of construction)

Bidding Results

Following Phase 2, Future Phase 3 may be authorized through amendments.

### **Future Phase 3 – Construction**

Upon completion of Phase 2 Deliverables, Donohue will work with the Owner to award subcontracts for the control panel construction and electrical installation. Subcontracts for these services will be negotiated under Donohue's contract with the Owner.

Donohue will provide PLC and HMI programming for the remote sites, telemetry polling hubs, and associated SCADA application development to incorporate the Southeast Region and former Lakes Region remote sites into the existing SCADA system.

Donohue, in cooperation with subcontractors, will complete the installation and functional testing to incorporate the Southeast Region and former Lakes Region remote sites into the existing SCADA system.

Donohue will prepare for and lead biweekly workshops or progress meetings throughout the Construction Phase of the project. Workshops will be used to review progress, coordinate installation, and review Owner concerns throughout the project.

### **Phase 3 Deliverables**

As Built Control Panel Drawings (PDF and AutoCAD Electrical format)

Application programs for all PLC, HMI, radio configurations, or other programmable devices

## C. PROJECT TIMING

Donohue shall be authorized to commence the Services set forth herein upon execution of this Agreement. Engineering Services for Task 1 to be completed within 100 days after execution of this Agreement. The following target milestone dates are anticipated:

Standard Control Panel Designs: November 6, 2020

Detailed Control Panel Designs: December 18, 2020

Site work Designs (159, with standard details of construction): December 18, 2020

Bid Ready Designs: January 15, 2021

## PART II

### OWNER RESPONSIBILITIES

- A. In addition to other responsibilities of Owner set forth in this Agreement, Owner shall:
1. Identify a person authorized to act as the Owner's representative to respond to questions and make decisions on behalf of Owner, accept completed documents, approve payments to Donohue, and serve as liaison with Donohue as necessary for Donohue to complete its Services.
  2. Furnish to Donohue copies of existing documents and data pertinent to Donohue's Scope of Services.

## PART III

### COMPENSATION, BILLING AND PAYMENT

- A. Compensation for the work for Phase 2 as defined in the Scope of Services (Part I) of this Agreement shall be in accordance with Donohue's standard chargeout rates in effect at the time the Services are performed. Routine expenses will be billed at cost. The amended total cost for these Services will not exceed \$82,595, without prior written approval from Owner. Total agreement cost for Phases 1 and 2 is \$152,275.
- A. Donohue will bill Owner monthly, with net payment due in 30 days.
- B. Donohue will notify Owner if Project scope changes require modifications to the above-stated contract value. Services relative to scope changes will not be initiated without authorization from Owner.