RFQ: 16-C-000026 DESIGN-BUILD SERVICES FOR THE SAN CARLOS PUMPING STATION REHABILITATION

DESIGN CRITERIA PACKAGE

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DESIGN CRITERIA:

The City of Tampa has prepared the Design Criteria Package for RFQ: 16-C-00026 Design-Build Services related to San Carlos Pumping Station Rehabilitation. The scope shall include, but not be limited to the following:

- Design services that will include:
  - Assessment and identification of equipment replacement needs to restore, update, maintain, and improve continued station operation
  - Development of an alternatives analysis of potential improvements that will be used to evaluate and finalize required improvements
- Comprehensive design services of selected improvements
- Site planning
- Regulatory permitting
- Preconstruction Services with Development of Guaranteed Maximum Price for construction
- Construction of selected improvements, including any demolition and rehabilitation of the pumping station
- Logistic sequencing for improvements while the pumping station is operational
- Start-up and testing
- Operation and Maintenance manuals
- Training in the operation of the selected improvements
- Scheduling of all logistics
- Public Relation activities to maintain a positive responsive to the project from affected neighborhoods
- Estimated Construction Budget: $9,000,000.00

In addition, the following pages contain the project overview and description of requirements.

1. Purpose

1.1 This document provides the criteria for the design and rehabilitation of the San Carlos Pumping Station. The intent is to list the minimum design-build criteria necessary for achieving this rehabilitation.

1.2 This package is not a specification or prescriptive checklist and is not intended to replace the professional judgment by a competent licensed professional engineer after coordination with the end-user and stakeholders of the City of Tampa.

1.3 Additionally, nothing in this document should preclude consideration and use of emerging technologies and commercially available products if they can be proven to result in a successful and satisfactory design for the rehabilitation of the San Carlos Pumping Station.

2. Design Criteria

2.1 The design is based on providing facilities that will meet the needs of the Wastewater Department to effectively and efficiently operate the San Carlos Pumping Station. These needs are based on mission and operation requirements. The design should consider existing conditions and the current and future needs of the departments. It is imperative that the final designer and preparer of construction documents fully understand the operational requirements, permitting, site logistics and all related requirements to design this facility accordingly.

2.2 The San Carlos pumping station was placed into service in 1981. Several of the station's components are original and have reached the end of their useful life. The station currently uses three (3) pumps. Pump #1 and Pump #3 are variable speed pumps rated at 37,000 gpm (1500 hp). Each of these pumps are controlled by a medium voltage eddy current clutch system. Pump #2 is a variable speed pump rated at 13,400 gpm (250 hp). This pump is controlled by a variable frequency drive. The station discharges through a force main consisting of 48-inch pipe that connects directly to the Howard F. Curren AWTP. The majority of this equipment is currently in operable condition; however, there have been several equipment failures that have required repairs to maintain the reliability of the pumping station.

2.3 Design build services shall include, but not be limited to, demolition, replacement of all pumps, motors, pump discharge valves, electrical and control components, flow meters, and other equipment needed to restore station reliability and provide improved operations. The design build services shall also include the installation of new equipment to improve system reliability including, but not limited to, methods and equipment to improve and possibly automate removal and handling of wet well screenings to prevent clogging and wear on pumping equipment, methods and equipment to improve odor control, and equipment to provide back-up power to maintain continuous station operation in case of power loss. Building additions and other improvements may also be needed to accommodate and provide suitable environment for selected equipment.

2.4 Pump selection and pumping strategy shall provide station capacity to meet peak wet weather flows of 38,000 GPM (55 MGD), the average daily flow requirements of 12-14 MGD, and the minimum flow requirements of 3,500 gpm (5 MGD) without excessive pump cycling. The pump selection and pumping strategy shall be designed to maintain a constant wet well water elevation and to maximize energy efficiency using variable speed control. The pump selection and operating strategy shall be designed so that backup pumping capacity is provided to meet maximum wet weather flow rates in the event that one of the primary pumps fails. The pumping equipment shall be designed to handle and properly convey wastewater containing considerable volume of solids and rags and shall be designed not to develop problems associated with the accumulation of rags.

2.5 The station is located in a residential area and the City has received several complaints on how the appearance of the station impacts the adjacent properties. To address this issue, the rehabilitation shall include architectural updates to the existing building so that the building exterior is modernized, blends with the adjacent properties, and enhances the neighborhood.

Landscaping improvements shall also be included to further improve the appearance and acceptance of the station from the adjacent properties.

2.6 Wastewater flow must be maintained throughout all phases of the construction. There has been a history of complaints associated with odors and noise related to other construction projects and the use of a bypass pumping systems. Specialized design, construction approaches and sequencing shall be developed and utilized to eliminate and minimize these issues. If the construction sequencing requires bypass pumping, the bypass pumping system must include a reliable and redundant back-up pumping system and measures must be implemented to minimize odors and associated noise. Bypass pumping systems shall be designed to handle the same peak wet weather flow as the proposed pumping station. In the event the primary conveyance system fails, there must be an adequately sized, redundant back-up system capable of delivering the design peak wet weather flow. Bypass pumping systems shall be designed with variable speed control such that the pumped bypass flows match the influent flows. Bypass systems relying on electrical power must have sufficiently sized back-up generators or equivalent diesel pumping equipment in case of a power outage.

2.7 The new pumping station will contain substantial electrical gear operating at 480 volts and higher voltages including 4160 volts. The design build services shall include an arc flash assessment for all selected electrical equipment and implementation of the safety measures needed to protect personnel from the potential Arc Flash Risks.

3. **Site Development Criteria** (Pictured below is the existing San Carlos Pumping Station.)

The site street address is 4406 W San Carlos Street, Tampa Florida, 33629. The entire existing site consist of 0.54 acres and is currently zoned RS-50. The site is bounded by San Carlos Street to the North; Manhattan Avenue to the East; San Jose Street to the south and residential homes to the west.

Adjacent to this property are retail and commercial developments to the east, with residential developments to the north, south and west.

All components and required building improvements of the rehabilitated station shall be contained within the limits of the existing site.

4. Facilities Development Criteria

Provide a property Survey including all existing site utilities, in the work area. Conduct preliminary design services that will include the following:

Determine the rehabilitation needs of the San Carlos pumping station by assessing the existing pumping station's equipment including all pumps, motors, valves, electrical and control components, flow meters and other equipment and identifying replacement needs to restore station reliability, update equipment and systems, and provide improved operation, and the associated building and other improvements needed to accommodate and provide suitable environment for selected equipment:

- Development of an alternatives analysis containing alternatives for pump selection and operation strategy, control equipment, methods and equipment to improve operating efficiency, methods and equipment to improve and possibly automate removal and handling of wet well screenings to prevent clogging and wear on pumping equipment, methods to improve odor control, equipment selection, layout, construction sequencing, methods and strategies to maintain continuous wastewater service during all phases of construction, and methods to minimize disruption to the adjacent properties during construction.
- Development of alternatives for building, architectural, and landscaping improvements
- Preparation of associated cost estimates for the various alternatives

The City will evaluate the various alternatives and will make a final selection of the required improvements that will be used for the final design.

Create final plans and specifications for the selected pumping station improvements that will include: Finalized Auto CAD and pdf drawings, technical specification and provide pricing proposals developed to a GMP document with all associated exhibits (scope, pricing,

qualifications). Present final design; site plan, site preparation, build schedule, equipment purchases and placement, utility agreements, building permits and all required approvals from regulatory agencies and local authorities.

5. Environmental Criteria

The Design Build team will be responsible for all required environmental testing and permitting needed to complete the project. The scope of these requirements will be determined by the Design Build team based on the selected improvements and construction requirements. At a minimum it is anticipated the following tasks shall be completed:

- Preparation of a FDEP Application for Constructing a Domestic Wastewater Collection/Transmission System
- Performance of an Asbestos and Lead Paint survey. If the survey indicates any asbestos or lead paint that is designated to be removed, these items must be removed and disposed by a licensed contractor in accordance with EPC Standards.

6. Operations/Training

The Design Build team shall provide start-up of the rehabilitated pumping station. The design build team will be completely responsible for the operation and maintenance of the pumping station during the construction phase. The City will not take over operation and maintenance of the pumping station until the project is substantially complete as determined by the City.

The Design Build team shall provide detailed operation and maintenance (O&M) manuals to the City for review and approval. Upon approval, an electronic copy and a specific number of hard copies of the O&M manuals will be required. The actual quantity and specific format of the O&M manuals will be clearly defined during the design phase of the project. Specific equipment information will also need to be compiled through the City's Asset Tracking form and conveyed to the City so that the equipment's asset data can be entered in the City's Maintenance Management System.

The Design Build team shall provide AutoCAD as-builts drawings accurately depicting the as-built conditions of the pumping station. Hard copies of the as-built drawings will also be required as will be determined during the design phase.

The Design Build team shall provide all Training on the various pumping station equipment necessary for the proper maintenance and operation of the pumping station. The specific training requirements and equipment requiring training will be provided during the final design phase of the project.

7. Public Relations

The station is located in a residential area and there have been a history of complaints associated with station odors and concerns during construction. Contact with the neighborhood association and retail/commercial business is necessary through the design and construction of this project. Inquiries and questions about design and construction will be handled by the Design Build Firm, after coordination of the responses with the City of Tampa.