

Ms. Marta Alonso, PE
Project Manager, Public Utilities/Engineering
City of Hollywood – Department of Public Utilities
1621 North 14th Avenue
Hollywood, FL 33022

Arcadis US, Inc.
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Date: June 7, 2024
Subject: Work Order Proposal
City of Hollywood – Pump Stations Telemetry Assessment

Dear Ms. Alonso:

Arcadis U.S., Inc. (Arcadis) is pleased to present the City of Hollywood (City) with our work order proposal to provide a Telemetry Assessment Technical Memorandum (TM) for all City Pump Stations (The Project).

This work order shall be executed per the terms and conditions of the Professional Services Agreement for General Engineering Consultant Services: Water Treatment Plant and Wastewater Treatment Plant Projects No. 1324A (Agreement) executed on October 31, 2023, by and between the City and Arcadis.

INTRODUCTION

The City staff has requested a proposal for the assessment of the City's Telemetry system. Much of this equipment is original and as telemetry systems have advanced, with cyber security more prevalent, it has become apparent for the need to upgrade. The assessment will not only address equipment but also the method of how these systems communicate with each other and the central system. Recommendations for equipment and a comparison of the different communications systems available will be included in the final report document to the City.

The City wants to determine the condition of the existing radio telemetry for the water and wastewater lift stations. To determine the condition of the radio system, site visits to each site will be performed to determine the current radio signal strength, signal-to-noise ratio, existing conditions of the antenna and cable, direction and height of antenna. During each site visit a cellular analysis will be performed. In addition to the site visits, a computer path study shall be performed for each site by using modeling software to analyze the current conditions versus theoretical.

SCOPE OF WORK

For this assignment Arcadis will be the Prime Consultant supported by McKim & Creed as a Sub-consultant. McKim & Creed (M&C) will be responsible for Electrical, Instrumentation and Control assessment services, with Arcadis providing the Project Management and Quality Control. To prepare this proposal, senior staff from Arcadis and McKim & Creed will visit the sites outlined by the City to review the existing equipment and discuss current operational conditions with key Utility staff from the City.

TASK 1 – PROJECT MANAGEMENT

Arcadis with the electrical subconsultant Mckim & Creed (Arcadis Team) shall provide project management services during delivery of the project. All communications, correspondence, and submittals shall be directed through the City's Project Manager. Project Management services shall include the following:

- a) Attend and lead a project kickoff meeting with City staff to review the scope of work, project schedule, data needs, key milestones, and key contacts. Discussion of anticipated site review logistics, personnel required for access and tentative schedule will be memorialized.

- b) Prepare a meeting agenda prior to the kickoff meeting and distribute meeting minutes within 5 days following completion of the meeting.
- c) Provide updates of ongoing and completed work, as part of the monthly invoicing process to the City.
- d) Provision, monitoring and updating of schedule of services being provided. The initial project schedule will be provided in MS Project format at Project Kickoff and updated as necessary throughout the Project.
- e) Monthly design progress reporting and invoicing.
- f) Monthly Meetings with the City Project Manager and other City or Utility staff. These meetings will be held virtually via Teams.

Deliverables: The following deliverables shall be provided under Task 1:

- Kick-off Meeting Summary and Project Schedule in PDF format
- Summary of the monthly meetings in PDF format
- Monthly update reports

TASK 2 – TELEMETRY ASSESSMENT

This task includes:

Task 2.1 Site Investigations

The Arcadis Team will perform site investigations of 120 wastewater lift stations, 10 water pump stations and 1 radio repeater site. As part of the site investigations, The Arcadis Team will gather the current radio signal strength, signal-to-noise ratio, existing conditions of the antenna and cable, direction, and height of antenna. The elevation of the panel will also be measured as part of the assessment. Using an Octopus, review the signal strength for the top cellular carriers at each site (AT&T, Verizon and T-Mobile). The data from the site investigations will be compiled and incorporated into the technical memorandum.

Task 2.2 Software Radio Path Analysis

Use the path study modeling software and the location coordinates provided by the City to perform the path analysis of up to 120 wastewater lift stations, 10 water pump stations and 1 radio repeater site and 1 master site. The path analysis will be based on the current radio frequency and assuming Ethernet communications. As part of the software analysis, we will determine the theoretical tower heights and azimuths required at the master and the sites as well as the expected signal losses from equipment and perceived obstacles. The analysis will be based on a 20 dB fade margin need for long term viability and the radio's operating specifications. The findings of the computer model will be compared to the actual field readings and documented in a technical memorandum and submitted for City review. Following the review, any comments will be discussed, with agreed upon comments incorporated into a final technical memorandum report.

Task 2.3 Technical Memorandum

- g) Develop Technical Memorandum based on the findings of the site investigations and the software radio path analysis. Recommendations will include changes to the existing equipment or complete replacement.

Estimated costs for equipment will be included.

- h) The memorandum will also include a comparison of cellular versus radio communications with recommendations for communications for each site. This would also include the City’s desire to possibly use both with one service as a backup system.
- i) The memorandum will include any modifications needed to the existing radio antenna heights, cabling, hardware, modem, radio, etc. Prepare and provide an estimate of cost for the modifications recommended in the technical memorandum for the communication system.
- j) The memorandum will provide research of the different Cellular Providers available in the area and provide preliminary comparative costs.

Task 2.4 Progress Meetings and Report Review Meetings

- a) During the investigation and memorandum writing, informal communications will be needed to provide updates and to ask questions of City staff. City project management along with Arcadis staff will be kept informed as to any choices made with City staff.
- b) After QAQC review, a draft report will be sent to the City for a review period. A virtual review meeting will be held to discuss the draft technical memorandum. From this meeting, modifications based on the City review meeting will be made to the draft technical memorandum and a final report sent out to the CITY.

Deliverables as part of this Task will include:

- Draft Technical Memorandum.
- Final Technical Memorandum.

ASSUMPTIONS

- Design Services, Construction Administration, Inspection and Design Services during construction are not included as part of this Task Order.
- In-person meetings with permitting agencies are not anticipated nor included in this scope of work.
- The City will provide physical access to antenna. Climbing the antennas and usage of lift truck for equipment is not included on this scope.

SCHEDULE

Currently supply chain pressures are causing significant delays for projects requiring electrical equipment. Medium voltage (4160V) equipment may require even longer lead times, so a realistic construction schedule could potentially be in the order of 16 to 24 months after approved shop drawings. Allowing 13 months for design, permitting and bidding indicates a potential earliest project completion date of 29 months but could extend to 37 months or more from Authorization to Proceed (ATP). The City is therefore encouraged to expedite the ATP in any way possible. Depending on the issuance of the ATP, estimates for completion of key milestones are as follows:

Task	Estimated Duration (months)	Time from ATP (months)
Kick Off Meeting (Virtual	1	2
Site Visits	14	6

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Data Modeling, Equipment Research, Cellular Provider Investigation	30	10
Draft TM	30	14
Permitting	3	11 (Finish)
City Review	14	16
Draft Review Meeting	1	17
Final Report	14	19
TOTAL	74	19

BUDGET

Arcadis shall perform the services for a total fee (Time and Materials Not-to-Exceed) of **\$153,490** based on the approved hourly rate schedule. The terms of compensation shall be in conformance with the Agreement dated October 31, 2023, between the City and Arcadis. **Attachment A** includes anticipated budget allocations for the tasks discussed herein.

Task	Cost
Project Management	\$22,285
Telemetry Assessment and Report	\$131,205
TOTAL	<u>\$153,490</u>

Arcadis is excited about this opportunity to provide the engineering design and bidding services for this Project. Should you have any questions regarding this work order proposal, please do not hesitate to contact me.

Sincerely,

Arcadis U.S., Inc.



Jose Custodio, PE
 Project Manager

Copies:

Plantation Files (Arcadis)

Enclosures:

Attachment A - Detailed Fee Breakdown

Attachment B – Fee Proposal from Mckim & Creed

This proposal and its contents shall not be duplicated, used or disclosed — in whole or in part — for any purpose other than to evaluate the proposal. This proposal is not intended to be binding or form the terms of a contract. The scope and price of this proposal will be superseded by the contract. If this proposal is accepted and a contract is awarded to Arcadis as a result of — or in connection with — the submission of this proposal, Arcadis and/or the client shall have the right to make appropriate revisions of its terms, including scope and price, for purposes of the contract. Further, client shall have the right to duplicate, use or disclose the data contained in this proposal only to the extent provided in the resulting contract.

EXHIBIT A
Work Break Down Fee Schedule
Project: Pump Station Telemetry Assessment

TASK		CATEGORIES (ARCADIS) - PRIME										ARCADIS
Task No.	Description	Principal In Charge	Project Manager	Technical Expert	Senior Engineer II	Engineer I	Administrative	Total Hours	Labor Fee	Other Direct Costs	Subconsultant (Mckim & Creed)	Total Labor + Other Service Fees
1	Project Management	4	38		2	32	8	84	\$17,360		\$4,925	\$22,285
2	Telemetry Assessment		16	24		120		160	\$27,000		\$104,205	\$131,205
Totals		4	54	24	2	152	8	244	\$44,360	\$0	\$109,130	\$153,490.00
Approved Billing Rates - 2023 (\$/hr)		\$295	\$285	\$285	\$235	\$130	\$90					
TOTAL AUTHORIZED NOT-TO-EXCEED FEE												\$153,490.00

Arcadis US Inc.
City of Hollywood Switchgear, MCC Replacement and Telemetry Assessment
MCKIM & CREED ELECTRICAL MANPOWER AND COSTS
M&C PROPOSAL # 240941
4/25/2024

R0 \$109,130

TASK	Project Manager	I&C Specialist	I&C Specialist	Designer	Senior Project Admin	Labor Hours Total	Labor Cost Total	Airline/Car \$	Meals/Lodging \$	Expenses Sub Total	Sub Total
Task 1: Project Management											
1											
Project Setup, Management and Administration (5-mth duration)	5				5	10	\$1,625.00			\$0.00	\$1,625.00
Monthly Meetings (Virtual)	5					5	\$1,100.00			\$0.00	\$1,100.00
Client In Person Meetings (total 1)		8				8	\$1,800.00	\$400		\$400.00	\$2,200.00
						0	\$0.00			\$0.00	\$0.00
Subtotal Hours	10	8	0	0	5	23					
Subtotal Cost	\$2,200	\$1,800	\$0	\$0	\$525		\$4,525			\$400	\$4,925
6 Task 2 Telemetry Assessment											
Kickoff Meeting (Virtual)	2		2			4	\$810.00			\$0.00	\$810.00
Wastewater Site Investigations (130)	2		216			218	\$40,400.00	\$ 1,600	\$9,100	\$10,700.00	\$51,100.00
Water Site Investigations (10) & Tank Repeater Site	2		24			26	\$4,880.00	\$ 400	\$1,100	\$1,500.00	\$6,380.00
Data Review from Site Visits	2		16	16		34	\$5,480.00			\$0.00	\$5,480.00
Software Radio Path Analysis	4			130		134	\$17,780.00			\$0.00	\$17,780.00
Draft Tech Memo	4		56			60	\$11,240.00			\$0.00	\$11,240.00
Cost Estimate	2		24			26	\$4,880.00			\$0.00	\$4,880.00
Review Meeting (Virtual)	3		3			6	\$1,215.00			\$0.00	\$1,215.00
Final Tech Memo	4		24			28	\$5,320.00			\$0.00	\$5,320.00
						0	\$0.00			\$0.00	\$0.00
Subtotal Hours	25	0	365	146	0	536					
Subtotal Cost	\$5,500	\$0	\$67,525	\$18,980	\$0		\$92,005			\$12,200	\$104,205
TASK MANPOWER AND COSTS SUMMARY							Labor			Expenses	Subtotal
Task 1: Project Management							\$4,525			\$400	\$4,925
Task 2 Telemetry Assessment							\$92,005			\$12,200	\$104,205
							\$96,530			\$12,600	\$109,130
											Checksum
Total Hours & Budget							559				\$109,130