



AKM Consulting Engineers

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September 25, 2019

**City of Garden Grove
Public Works Department Water Services**

13802 Newhope Street

Garden Grove, CA 92843

Attn: Ms. Liyan Jin, P.E. (Associate Engineer)

Subject: Proposal to Provide Design and Inspection Services for the Partridge Lift Station Improvements

Dear Ms. Jin:

Pursuant to your request, AKM is pleased to submit this proposal to provide engineering design and inspection services for improvements at the Partridge Sewage Lift Station. These improvements are for the installation of a grinder (muffin monster) to the station's influent sewer and converting the existing SCE electrical service to three-phase power. Our understanding of the work, scope, fee, and schedule are provided in the paragraphs below:

Project Understanding

The Partridge Lift Station is located behind the curb, in the Partridge Lane cul-de-sac, south of Garden Grove Boulevard. The Lift Station serves the Thunderbird Mobile Home Park, and two professional lots (currently vacant) on Partridge Street.

The Lift Station was constructed in 2010, and consists of: an 8-foot diameter wet well with two 160 GPM, slide rail submersible pumps; a 10'-9" x 8' valve vault with a flow meter and by-pass pump connection; 400 L.F. of 4-inch PVC forcemain which terminates in Garden Grove Boulevard; pump control panel with an alarm dialer; and a natural gas fueled emergency generator.

The Lift Station's power is provided by SCE through a 240/120 volt, 1 phase, 3 wire service. Originally, the sewage pumps operated on the 240 volt, single phase power. However, due to repeated failures of the single phase motor capacitors, and frequent pump clogging, the pumps were replaced with units incorporating 3 phase motors. Single phase power to each pump was changed to 3 phase power through a converter mounted to the outside of the pump station control enclosure.

The Lift Station continues to be plagued by pump ragging issues. To remedy the problem, the District conducted a preliminary investigation to add a mechanical sewage grinder upstream of the lift station. JWC Environmental (manufacturers of the muffin monster) reviewed the potential application and determined that an installation of a grinder would be feasible.

AKM investigated the use of a mechanical sewage grinder and developed a Preliminary Design Report. AKM determined installation of an open channel grinder in the Partridge Lift Station upstream manhole is feasible to construct. A muffin monster model 30005-0008 open channel grinder is recommended for the project. The grinder is equipped with a 5 HP explosion proof motor, guiderail system and lifting chain for removal from the manhole, and control panel for operation of the equipment. The grinder should be installed on the upstream end of the manhole, with approximately 12-inches of clearance from the manhole wall to prevent blockage of the sewer if it should stop operating. The installation will require the manhole channel to be widened to 16-inches and deepened to 24-inches. The manhole access shaft will need to be relocated over the grinder and

increased in size to 30 or 36 inches to allow for removal of the equipment using the guiderail system. By-pass pumping will be required while the manhole is being modified. By-pass operations are expected to last one week.

SCE has indicated that 3-phase power may be available in front of the Orange County Emergency Pet Clinic, located on the southeast corner of Garden Grove Boulevard and Partridge Street. Approximately 475 LF of 4-inch conduit will need to be installed from the pick-up location to a new transformer located adjacent to the Partridge Lift Station. The District will be responsible for all trenching, conduit, and structure installation. SCE will install the cable, transformer, and meter. The transformer and meter pedestal will need to be located in public right-of-way.

With three-phase power, the existing Ronk Add-A-Phase converters for the sewage pumps can be removed. The muffin monster can be installed without the Rotoverter Phase Converter. The existing 30 kW generator will need to be replaced with a 30 kW, 3-phase, natural gas generator, which has the same footprint as the existing single-phase unit. A new 3-phase automatic transfer switch will be provided and installed in the existing electrical enclosure.

Scope of Work

Our scope of work includes the following tasks:

Task 1 – Coordinate with SCE

AKM will have the site surveyed and will coordinate with SCE to develop a Service Plan. We will begin Task 3 once we receive a Service Plan from SCE.

Task 2 – Research and Investigation

AKM will reach out to Dig Alert and obtain all the utility plans in the project location.

Task 3 – Develop Plans, Specifications, and Estimates

- A. Construction Plans: AKM will prepare construction plans and submit at the 60 and 90 percent stages, each followed by GGSD review. They will be prepared on 24" x 36" with standard GGSD title block in 2017 AutoCAD format and will be signed and sealed by a registered professional engineer in the State of California. Electronic files in PDF and AutoCAD formats will also be submitted.

List of drawings anticipated are:

- | | |
|---|---|
| 1. Title Sheet | 9. Civil Details |
| 2. General Notes, Symbols and Abbreviations | 10. Existing Electrical Demolition Plan |
| 3. Existing Lift Station Site Demolition Plan | 11. Electrical Site Plan |
| 4. Lift Station Site Plan | 12. Conduit Plan |
| 5. Lift Station Site Section | 13. Single Line Diagram |
| 6. Muffin Monster / Manhole Plan | 14. Electrical Details |
| 7. Muffin Monster / Manhole Section | 15. SCE Details |
| 8. Muffin Monster / Manhole Details | |

- B. Technical Specifications: GGSD will provide AKM with the Front End documents. AKM will modify the Front End documents as it relates to this project. A bid schedule will also be developed which will be broken out into sufficiently detailed tasks to assist in evaluating the bids and preparing progress payments. GGSD furnished contract and insurance documents as well as a reduced set of drawings will be included to complete the contract document package. Technical Specifications will be submitted at the 60 and 90 percent stages, each followed by GGSD review. The final specification will be submitted as a hardcopy, signed and sealed by the Engineer of Record and electronically in PDF and Microsoft Word formats.

- C. Cost Estimates: Detailed construction cost estimates will be developed for each plan submittal to the District. The estimates will incorporate price quotes from equipment vendors, and will reflect the most recent trends in construction pricing.

Task 4 – Bid Phase Support

AKM will provide the following engineering services during bidding:

- A. Respond to Questions during Bidding: This task will involve responding to contractor questions during the bid. It is understood that GGSD will receive all the questions and issue the responses in order to properly control the flow of information.
- B. Prepare Addenda: If needed, the plans and specifications will be revised to address the bidding period issues and addenda will be prepared. Preparation of two addenda are included in our proposal.

Task 5 – Construction Phase Support

During the construction of the proposed improvements, AKM will provide the following construction phase services and include the appropriate fee in the submitted Proposal:

- A. Pre-Construction Meeting: Attend pre-construction meeting with the District and Contractor prior to beginning construction.
- B. Contractor's RFI: Respond to five (5) Requests for Information from the Contractor and the District.
- C. Shop Drawing Reviews: Review of up to ten (10) shop drawing submittals. AKM will include an adequate fee amount to perform a second review of each shop drawing submittal.
- D. Site Visit: Three (3) visits of four hours as requested by District staff.
- E. Record Drawings: At the conclusion of construction, the Contractor and Project Inspector will provide AKM with a single, consolidated set of red-lined as-built drawings. AKM will prepare the final record drawings based on same. Record drawings shall be prepared in AutoCad.

Task 6 – Inspection Support (OPTIONAL)

AKM will provide the following inspection services, if directed by the City:

- A. Attend Pre-Construction meeting.
- B. Observation of construction for compliance with the Contract Documents, permits, and favorably reviewed shop drawings.
- C. Preparing Daily Construction Reports which includes summary of day's activities and photographs
- D. Coordinating Submittals and RFI.
- E. Participating in testing and start-up work as needed.

Inspection work will be on a time and materials basis, 8 hours per day minimum.

Task 7 – Unforeseen Engineering Support (OPTIONAL)

AKM will provide unforeseen engineering support on a time and materials basis, if directed by the District.

Fee Estimate

To complete the above described scope of services, we estimate a budget of \$104,586 will be required. Optional inspection support will be \$37,500 and optional unforeseen engineering support will be \$15,000. The work will be billed on a time and material, not to exceed basis, in accordance with AKM's established billing rates. AKM will not exceed the District established budget without prior written authorization from the District.

Schedule

Our schedule to complete the design phase of the project is attached. Assuming an October 1, 2019 start date, we anticipate the work to be completed by mid-February 2020.

We appreciate the opportunity to be of service to the District. If you should have any questions or comments regarding our proposal, please feel free to contact us by phone or e-mail at your convenience.

Very truly yours,

AKM Consulting Engineers



Jared Lee, P.E.
Senior Engineer

Attachments: Fee and Schedule

City of Garden Grove Design and Inspection Services for Partridge Lift Station Proposal - September 25, 2019										
Task No.	Description					Fees				Total Cost
		Project Engineer	Inspector	CADD	Office Support	Total Hours	Labor Total	Survey	Expenses	
		\$202	\$150	\$101	\$72					
1	Coordination with SCE	8		12		20	\$2,828	\$5,800		\$8,628
2	Research and Investigation	8				8	\$1,616		\$250	\$1,866
3	Develop Plans, Specifications, and Estimates	200		320	24	544	\$74,448		\$300	\$74,748
4	Bid Phase Support	8			4	12	\$1,904			\$1,904
5	Construction Phase Support	72		20	8	100	\$17,140		\$300	\$17,440
6	Optional -- Inspection Support		240			240	\$36,000		\$1,500	\$37,500
7	Optional -- Unforeseen Engineering Support	72				72	\$14,544		\$456	\$15,000
Total Hours		368	240	352	36	924				
TOTAL FEE		\$74,336		\$35,552	\$2,592		\$97,936	\$5,800	\$850	\$104,586
OPTIONAL FEE		\$14,544	\$36,000				\$50,544		\$1,956	\$52,500

**Garden Grove Sanitary District
Partridge Lift Station
Open Channel Grinder
Construction Schedule**

ID	Task Name	Duration	Start	Finish	Oct '19	Nov '19	Dec '19	Jan '20	Feb '20	Mar '20	Apr '20	May '20	Jun '20	Jul '20																												
					9/29/19	10/6/19	10/13/19	10/20/19	10/27/19	11/3/19	11/10/19	11/17/19	11/24/19	12/1/19	12/8/19	12/15/19	12/22/19	12/29/19	1/5/20	1/12/20	1/19/20	1/26/20	2/2/20	2/9/20	2/16/20	2/23/20	3/1/20	3/8/20	3/15/20	3/22/20	3/29/20	4/5/20	4/12/20	4/19/20	4/26/20	5/3/20	5/10/20	5/17/20	5/24/20	5/31/20	6/7/20	6/14/20
1	Coordinate with SCE	43 days	Mon 9/30/19	Wed 11/27/19	[Blue bar]																																					
2	Project Design	55 days	Mon 12/2/19	Fri 2/14/20			[Blue bar]																																			
3	Bid	11 days	Wed 3/4/20	Wed 3/18/20						[Blue bar]																																
4	Award	1 day	Tue 3/24/20	Tue 3/24/20							[Blue dot]																															
5	Contract and Insurance	13 days	Wed 3/25/20	Fri 4/10/20							[Blue bar]																															
6	Notice to Proceed	1 day	Mon 4/13/20	Mon 4/13/20								[Blue dot]																														
7	Shop Drawings	20 days	Mon 4/13/20	Fri 5/8/20							[Blue bar]																															
8	Equipment Procurement	35 days	Mon 4/27/20	Fri 6/12/20							[Blue bar]																															
9	Install SCE Conduit, Transformer, and Service	15 days	Mon 4/27/20	Fri 5/15/20							[Blue bar]																															
10	Control Panel Modifications	5 days	Mon 6/15/20	Fri 6/19/20									[Blue bar]																													
11	Manhole Modifications / By-Pass Pumping	5 days	Mon 6/22/20	Fri 6/26/20									[Blue bar]																													
12	Conduit Installation / Wire Terminations	5 days	Mon 6/29/20	Fri 7/3/20									[Blue bar]																													
13	Generator Installation	5 days	Mon 7/6/20	Fri 7/10/20									[Blue bar]																													
14	Start-Up	1 day	Mon 7/13/20	Mon 7/13/20										[Blue dot]																												
15	Punch List and Site Restoration	4 days	Tue 7/14/20	Fri 7/17/20									[Blue bar]																													
16	Project Closeout / Demobilization	5 days	Mon 7/20/20	Fri 7/24/20									[Blue bar]																													

Task		Summary		External Milestone		Inactive Summary		Manual Summary Rollup		Finish-only	
Split		Project Summary		Inactive Task		Manual Task		Manual Summary		Progress	
Milestone		External Tasks		Inactive Milestone		Duration-only		Start-only		Deadline	

Figure 8-2