

# **MISSION SPRINGS WATER RECLAMATION FACILITY ENGINEERING SERVICES DURING CONSTRUCTION**

## **1.0 Project Management**

The Consultant shall manage professional services to complete the project. These services shall include preparation of invoices, progress reviews, and directing staff and internal resources in a manner such that project milestones and deliverables are met as scheduled.

### **1.1 Project Progress Monitoring and Status Reports**

The Consultant shall monitor project progress and coordinate with the District:

1. Report project issues and general progress to the District monthly. This shall be achieved through a project status report that shall be submitted with each monthly invoice. The project status report shall be in narrative form and highlight the progress in each task or subtask(s) and any issues from the prior month and work effort planned for the coming month.
2. Coordinate technical and procedural issues with the District.
3. Oversee its own efforts, monitor progress and budget used, and direct project work in accordance with the project scope, schedule, and budget.

### **1.2 Quality Management**

The Consultant shall manage the quality of the project deliverables throughout the development of the project.

## **2.0 Conferences and Meetings**

### **2.1 Preconstruction Conference**

Consultant's design engineers shall attend and support pre-construction conference with the Construction Manager, the District, involved agencies, utilities, and the Contractor's team as they prepare to mobilize for the project.

### **2.2 Coordination Meetings**

Consultant design engineers and other pertinent staff will attend coordination meetings with the District and Construction Manager when/as needed. A total of 48 coordination meetings are assumed during the 24-month project.

### **2.3 Monthly Progress Meetings**

Consultant design engineers and other pertinent staff will attend monthly progress meetings with the District, Construction Manager and Contractor. A total of 18 monthly progress meetings are assumed.

## **3.0 Submittals**

Consultant shall review Contractor submittals received from the CM. A total of 100 submittals and 20 resubmittals is assumed. After completion of the review, Consultant will return submittal to the CM for distribution to the Contractor and District. It is assumed that the CM will maintain a Submittal Log and

monitor submittal schedule. Consultant will maintain a submittal log to manage reviews internally.

#### **4.0 Requests for Information (RFIs)**

Review and respond to Contractor's Requests for Information (RFI). A total of 100 RFIs is assumed. When appropriate, recommendations, suggestions and alternatives shall be provided to the CM and/or the District. It is assumed that the CM will maintain an RFI Log and monitor schedule. Consultant will maintain an RFI log to manage responses internally.

#### **5.0 Construction Contract Changes**

Consultant will support CM in preparing and investigating proposed contract change requests submitted by the Contractor or requested by the District. This may require evaluation of the change request for value and constructability, and impact on design intent. This task may include revisions to existing drawings and development of new specifications. It is assumed that the CM will prepare all documentation and forms, maintain a PCM (Proposed Contract Modification) Log and prepare formal change order packages for the District. A total of 10 Contract Change Orders is assumed.

#### **6.0 Operation and Maintenance Manuals**

6.1 Review of Manufacturers Operations Manuals. Consultant will review manufacturers O&M manuals for completeness and consistency. O&M Manuals will be reviewed for specific applicability to equipment supplied for the project.

6.2 Prepare Plant-wide Operations and Maintenance Manual

Consultant will prepare a detailed operations and maintenance (O&M) manual for the new facility. The O&M manual is an essential part of a comprehensive start up program. It will provide information on unit process operations; equipment operation and maintenance; instrumentation and electrical controls; detailed start up procedures; plant shutdown and emergency procedures; safety requirements; chemical handling; unit process performance monitoring and laboratory testing procedures; and routine maintenance procedures. The O&M manual will also contain a compilation of equipment maintenance data sheets and information provided as part of the contractor's submittal during construction; schematic diagrams; and equipment maintenance identification numbers.

Specifically, the O&M manual will cover all the unit processes of the new facility, and how those processes integrate with the existing facilities. The manual will contain the following sections: (1) introduction; (2) process description; (3) start up; (4) normal operations; (5) emergency operations; (6) monitoring and analytical requirements; (7) troubleshooting guidelines; and (8) preventative maintenance. The manual will provide step by step instructions for the operation of each unit process. The manual will specify valve, equipment and instrument numbers in the operations descriptions.

Ten (10) copies of each draft manual will be submitted to the District for review. Corrections, changes and/or additions required by the District will be performed, and ten (10) copies of each final manual will be provided in hard cover, snap three ring binders.

#### **7.0 Operator Training**

Consultant will assist the District in operations staff training. Consultant shall review training materials and qualifications of training staff for each major vendor. Consultant shall certify that training is performed in compliance with the specifications.

## **8.0 Startup and Commissioning**

### **8.1 Review Startup and Testing Plan**

Consultant will review and comment on detailed testing and startup plans prepared by the Contractor. Consultant will meet with contractor to review and discuss the draft startup and testing plans. For fee estimating purposes, we have anticipated one full time startup and testing specialist for up to 4 weeks during startup and commissioning. An instrumentation specialist will attend factory tests and oversee field verification testing of plant-wide SCADA systems.

### **8.2 Preliminary Tasks**

As part of initial start-up activities, Consultant will conduct a thorough systems checkout, including troubleshooting of equipment and instrumentation throughout the treatment system. This checkout will identify any deficiencies that require correction or adjustments that should be made to ensure an efficient start up.

### **8.3 Commissioning**

The Consultant will assist the District in the testing and start-up of the completed facilities by providing on-site advice and troubleshooting, as required. Maintain records indicating problems encountered and system changes. Recommend project acceptance upon completion of the commissioning period in accordance with the contract documents.

## **9.0 Project Closeout**

### **9.1 Closeout Documentation**

Consultant will provide copies of construction-related documents (memoranda, phone conversation records, calculations) required for project files, delivered to the CM and District.

### **9.2 Certification of Compliance**

Consultant will provide certification that the completed project is in substantial conformance to the engineering design and design intent.

### **9.3 Record Drawings**

CM will maintain a set of as-built drawings during construction and will review the contractor's as-built drawings periodically to verify that changes are being documented. CM will collect as-built drawings from the contractor at contract close-out and submit to the Consultant for processing. Drawings will be updated in CADD, stamped and dated as Record Drawings, and signed by an authorized AECOM engineer.

**MSWD - Regional Water Reclamation Facility  
Engineering Services During Construction (ESDC)**

Task No.	Task Description	AECOM Labor Hours												Total Hours - AECOM	Total Labor - AECOM	Other Direct Costs	Total AECOM	Subcontract SOMAM - Architect	Administrative Fee 5%	TOTAL
		Project Manager IV	Project Manager IV	Project Manager III	Engineer VI	Engineer VI	Engineer IV	Engineer VI	Engineer IV	Engineer II	Senior Designer	Designer/CADD Operator	Clerical							
		Project Manager	Senior Electrical	Senior Structural	Electrical	I&C	Structural Designer	Civil	Civil/Process	Process	Senior CADD	Electrical CADD								
	Hourly Billing Rate	\$ 287	\$ 287	\$ 253	\$ 175	\$ 191	\$ 157	\$ 191	\$ 157	\$ 129	\$ 180	\$ 121	\$ 117							
<b>Task 1 - Project Management</b>																				
1.1	Progress Monitoring and Reporting	80	0							40			40	160	\$ 32,800	\$ 5,000	\$ 37,800	\$ -	\$ 250	\$ 38,050
1.2	Quality Management	40	40	40									40	160	\$ 37,760		\$ 37,760	\$ -	\$ -	\$ 37,760
Task 1 - Subtotal		120	40	40	0	0	0	0	0	40	0	0	80	320	\$ 70,560	\$ 5,000	\$ 75,560	\$ -	\$ 250.00	\$ 75,810
<b>Task 2 - Conferences and Meetings</b>																				
2.1	Preconstruction Meeting	8												8	\$ 2,296		\$ 2,296	\$ -	\$ -	\$ 2,296
2.2	Coordination Meetings (48)	60	40	24				24	24	60				232	\$ 50,864		\$ 50,864	\$ -	\$ -	\$ 50,864
2.3	Monthly Progress Meetings (18)	40	24	0					24	40				128	\$ 27,296		\$ 27,296	\$ -	\$ -	\$ 27,296
Task 2 - Subtotal		108	64	24	0	0	0	24	48	100	0	0	0	368	\$ 80,456	\$ -	\$ 80,456	\$ -	\$ -	\$ 80,456
<b>Task 3 - Submittals</b>																				
3.1	Submittal Review (100)	32	24	24	80	60	60	24	40	60		32		436	\$ 79,500		\$ 79,500	\$ 20,000	\$ 1,000	\$ 100,500
Task 3 - Subtotal		32	24	24	80	60	60	24	40	60	0	32	0	436	\$ 79,500	\$ -	\$ 79,500	\$ 20,000	\$ 1,000	\$ 100,500
<b>Task 4 - Requests for Information</b>																				
4.1	Requests for Information (100)	32	24	24	80	40	60	40	60	80				440	\$ 80,584		\$ 80,584	\$ 5,000	\$ 250	\$ 85,834
Task 4 - Subtotal		32	24	24	80	40	60	40	60	80	0	0	0	440	\$ 80,584	\$ -	\$ 80,584	\$ 5,000	\$ 250	\$ 85,834
<b>Task 5 - Construction Contract Changes</b>																				
5.1	Construction Contract Changes (10)	24	24	24	32	40	120	80	120	80	80	80		704	\$ 120,448		\$ 120,448	\$ -	\$ -	\$ 120,448
Task 5 - Subtotal		24	24	24	32	40	120	80	120	80	80	80	0	704	\$ 120,448	\$ -	\$ 120,448	\$ -	\$ -	\$ 120,448
<b>Task 6 - Operation and Maintenance Manuals</b>																				
6.1	Review of Manufacturers Operations Manuals	4	4		16	16			24	40				104	\$ 17,080		\$ 17,080	\$ -	\$ -	\$ 17,080
6.2	Plant-wide Operations and Maintenance Manual	32	16		40	60		24	120	140	24	24	80	560	\$ 90,304		\$ 90,304	\$ -	\$ -	\$ 90,304
Task 6 - Subtotal		36	20	0	56	76	0	24	144	180	24	24	80	664	\$ 107,384	\$ -	\$ 107,384	\$ -	\$ -	\$ 107,384
<b>Task 7 - Operator Training</b>																				
7.1	Operator Training	16	16		60				40	40				172	\$ 32,084	\$ 1,000	\$ 33,084	\$ -	\$ 50	\$ 33,134
Task 7 - Subtotal		16	16	0	60	0	0	0	40	40	0	0	0	172	\$ 32,084	\$ 1,000	\$ 33,084	\$ -	\$ 50	\$ 33,134
<b>Task 8 - Startup and Commissioning</b>																				
8.1	Review Startup and Testing Plan	8	8		8	8			40	24				96	\$ 16,896		\$ 16,896	\$ -	\$ -	\$ 16,896
8.2	Preliminary Tasks	8	8		16	40			16	24				112	\$ 20,640		\$ 20,640	\$ -	\$ -	\$ 20,640
8.3	Commissioning	16	24		80	120			32	80	8			360	\$ 65,184	\$ 10,000	\$ 75,184	\$ -	\$ 500	\$ 75,684
Task 8 - Subtotal		32	40	0	104	168	0	0	88	128	8	0	0	568	\$ 102,720	\$ 10,000	\$ 112,720	\$ -	\$ 500	\$ 113,220
<b>Task 9 - Project Closeout</b>																				
9.1	Closeout Documentation	16	16	8	24	24		16	24	40				168	\$ 31,976		\$ 31,976	\$ -	\$ -	\$ 31,976
9.2	Certification of Compliance	8	8	8		8								32	\$ 8,144		\$ 8,144	\$ -	\$ -	\$ 8,144
9.3	Record Drawings	8	8	8	40	24	160		40	24	40	120		472	\$ 74,416	\$ 5,000	\$ 79,416	\$ 5,000	\$ 500	\$ 84,916
Task 9 - Subtotal		32	32	24	64	56	160	16	64	64	40	120	0	672	\$ 114,536	\$ 5,000	\$ 119,536	\$ 5,000	\$ 500	\$ 125,036
TOTAL Hours		432	284	160	416	500	400	208	604	772	152	256	160	4,344	\$ 788,272	\$ 21,000	\$ 809,272	\$ 30,000	\$ 2,550	\$ 841,822

**AECOM**  
**2022 RATE SCHEDULE FOR PROFESSIONAL SERVICES**  
**Effective October 1, 2021**

**Engineers, Planners, Architects, Scientists:**

Technician	\$ 96.00
Engineer I/ Specialist I	\$ 111.00
Engineer II/ Specialist II	\$ 129.00
Engineer III/ Specialist III	\$ 146.00
Engineer IV	\$ 157.00
Engineer V	\$ 175.00
Engineer VI	\$ 191.00
Engineer VII	\$ 209.00
Engineer VIII	\$ 225.00
Project Manager I/ Senior Engineer I	\$ 235.00
Project Manager II/ Senior Engineer II	\$ 253.00
Project Manager III/ Senior Engineer III	\$ 266.00
Project Manager IV/ Senior Engineer IV	\$ 287.00

**Construction Administration Personnel:**

Resident Project Representative	\$ 156.00
Senior Resident Project Representative	\$ 182.00
Resident Engineer	\$ 223.00
Construction Services Manager	\$ 282.00

**Technical Support Staff:**

Clerical/ General Office	\$ 96.00
Administrative Specialist	\$ 117.00
Drafter/ CADD Technician	\$ 99.00
Assistant CADD Operator	\$ 121.00
Designer/ CADD Operator	\$ 138.00
Senior Designer/ Design CADD Operator	\$ 159.00
Design/ CADD Supervisor	\$ 180.00

**Direct Project Expenses**

Subcontracted or Subconsultant Services / Reproduction	Cost + 5%
--	-----------

*Fee schedule is subject to change annually, upon mutual agreement. Rates for additional classifications not identified above will be submitted to the client for approval prior to work on a task order.*