



GWA RESOLUTION NO. 03– FY2018

**RELATIVE TO APPROVING THE CONSTRUCTION MANAGEMENT CONTRACT
FOR TUMON NO. 2, HYUNDAI, AND CHAOT NO. 2 TANK
AND SYSTEM UPGRADES**

WHEREAS, under 12 G.C.A. § 14105, the Consolidated Commission on Utilities (“CCU”) has plenary authority over financial, contractual and policy matters relative to the Guam Waterworks Authority (“GWA”); and

WHEREAS, the Guam Waterworks Authority (“GWA”) is a Guam Public Corporation established and existing under the laws of Guam; and

WHEREAS, GWA is currently working on critical reservoir projects under the 2011 Court Order (“CO”) Paragraph 29 – Storage Tank/Reservoir Repair, Replacement, and Relocation Program; and

WHEREAS, the design of Tumon No. 2, Hyundai, and Chaot No. 2 Tank designs have been completed and are out for bid (IFB-09-ENG-2017); and

WHEREAS, GWA has advertised the Request For Proposals (RFP-02-ENG-2017) soliciting statement of qualifications from experienced and qualified engineering firms to provide construction management services for the Tumon No. 2, Hyundai, and Chaot No. 2 Tank and System Upgrades project; and

WHEREAS, RFP packages were picked up by 22 interested parties, from which GWA received proposal submittals from 7 firms before the RFP submittal deadline; and

1 **WHEREAS**, the GWA A-E Selection committee reviewed and evaluated the 7 proposals
2 (See Exhibit A – Score Summary) and generated a short list of the top 3 firms with a
3 recommendation to award a contract to the firm TG Engineers (See Exhibit B – GM’s
4 Determination); and

5
6 **WHEREAS**, TG Engineers and GWA negotiated the price for the construction
7 management services for the Base Bid Construction (Tumon No. 2 tank/offsite, Hyundai tank,
8 and Chaot No. 2 offsite work) to be provided in the total amount of One Million Nine Hundred
9 Fifty Four Thousand Eighty Nine Dollars (\$1,954,089.00) (See Exhibit C – Scope of Work and
10 Fees); and

11
12 **WHEREAS**, GWA management seeks approval of the fee proposal amount of One
13 Million Nine Hundred Fifty Four Thousand Eighty Nine Dollars (\$1,954,089.00), along with a
14 ten percent (10%) contingency of One Hundred Ninety Five Thousand Four Hundred Eight
15 Dollars and Ninety Cents (\$195,408.90), to bring the total authorized funding amount to a
16 maximum of Two Million One Hundred Forty Nine Thousand Four Hundred Ninety Seven
17 Dollars and Ninety Cents (\$2,149,497.90); and

18
19 **WHEREAS**, funding for this project will be from the Bond Funds under the line items
20 “PW 09-11 Water System Reservoirs 2005 Improvements”, “PW 12-04 Agana Heights and
21 Chaot Tank Construction”, and “PW 12-06 Tank Replacement Piti and Hyundai Tanks”; and

22
23 **NOW BE IT THEREFORE RESOLVED**, the Consolidated Commission on Utilities
24 does hereby approve the following:

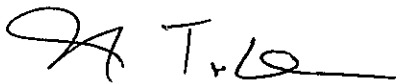
- 25
26 1. The recitals set forth above hereby constitute the findings of the CCU.
27 2. The CCU finds that the terms of the fee proposal submitted by TG Engineers
28 are fair and reasonable.
29 3. The CCU hereby authorizes the management to accept the fee proposal from
30 TG Engineers, which is also incorporated into this Resolution in its entirety.
31
32

- 1 4. The CCU hereby further authorizes the management of GWA to enter into a
2 contract with TG Engineers, in the amount of One Million Nine Hundred Fifty
3 Four Thousand Eighty Nine Dollars (\$1,954,089.00) (Exhibit C).
4 5. The CCU hereby further approves the total funding amount for this project of
5 One Million Nine Hundred Fifty Four Thousand Eighty Nine Dollars
6 (\$1,954,089.00), along with a ten percent (10%) contingency of One Hundred
7 Ninety Five Thousand Four Hundred Eight Dollars and Ninety Cents
8 (\$195,408.90), to bring the total authorized funding amount to Two Million
9 One Hundred Forty Nine Thousand Four Hundred Ninety Seven Dollars and
10 Ninety Cents (\$2,149,497.90).
11 6. Funding source shall be the following:
- 12 • PW 09-11: Water System Reservoirs 2005 Improvements
 - 13 • PW 12-04: Agana Heights and Chaot Tank Construction
 - 14 • PW 12-06: Tank Replacement Piti and Hyundai Tanks

15
16 **RESOLVED**, that the Chairman certified and the Board Secretary attests to the adoption
17 of this Resolution.

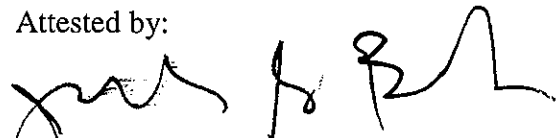
18
19 **DULY AND REGULARLY ADOPTED**, this 20th day of October 2017.

20
21 Certified by:

22 

23 **JOSEPH T. DUENAS**
24 Chairperson

21 Attested by:

22 

23 **J. GEORGE BAMBA**
24 Secretary

25 //

26 //

27 //

SECRETARY'S CERTIFICATE

I, J. George Bamba, Board Secretary of the Consolidated Commission on Utilities as evidenced by my signature above do hereby certify as follows:

The foregoing is a full, true and accurate copy of the resolution duly adopted at a regular meeting by the members of the Guam Consolidated Commission on Utilities, duly and legally held at a place properly noticed and advertised at which meeting a quorum was present and the members who were present voted as follows:

AYES: 3
NAYS: 0
ABSTENTIONS: 0
ABSENT: 2



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GUAM WATERWORKS AUTHORITY

Gloria B. Nelson Public Service Building • 688 Route 15 • Mangilao, Guam 96913

April 4, 2017

To: Thomas F. Cruz, P.E., Chief Engineer

From: Gloria P. Bensaon 
Chairperson, Consultant Selection Board

Subject: RFP-02-ENG-2017
Construction Management Services for the Central Guam Reservoirs (Tumon No. 2, Hyundai, and Chaot No. 2) Tank and System Upgrades
GWA Project No. W14-006-BND

The following information is intended to document the evaluation process undertaken for the referenced solicitation.

EVALUATION COMMITTEE MEMBERS	
Name	Title
Brett Railey, P.E.	CIP Water Engineer Supervisor
Garrett Yeoh	Senior Engineer
Marc Lopez	Associate Engineer
Vincent Pangelinan	Operations Manager

Consultant	Evaluation Score				Total	Rank
1. EMPSCO Engineering Consultants	60	74	65	73	272	6
2. SSFM	79	88	86	84	337	2
3. E.M. Chen & Associates, Inc.	65	74	60	69	268	7
4. TG Engineers, PC	80	95	92	88	355	1
5. LYON	58	76	77	80	291	4
6. AmOrient	61	75	72	77	285	5
7. Duenas, Camacho & Associates	75	78	76	84	313	3

Scores were evaluated based on sum of the individual scores. The recommendation of the evaluation committee is shown in the ranking above.

Please review and approve at your earliest convenience so that we may proceed with the notification letters.

GUAM WATERWORKS AUTHORITY

"Better Water. Better Lives."
Gloria B. Nelson Public Service Building
688 Route 15, Mangilao, Guam 96913

MEMORANDUM

To: Miguel C. Bordallo, P.E., General Manager
From: Thomas F. Cruz, P.E., Chief Engineer *Thomas F. Cruz*
Subject: RFP-02-ENG-2017
Construction Management Services for the Central Guam Reservoirs (Tumon No. 2, Hyundai, and Chaot No. 2) Tank and System Upgrades
GWA Project No. W14-006-BND
Date: April 4, 2017

The Selection Committee has completed all necessary actions for selecting the most qualified consultant for the referenced solicitation. All proposals were reviewed and scored according to the conditions established in the solicitation. The evaluation summary sheet is attached for your information.

The committee recommends the following top three (3) firms in order of preference for the project:

- 1. TG Engineers, PC
- 2. Duenas, Camacho & Associates
- 3. SSFM

Concurred:

Vincent E. Guerrero
VINCENT E. GUERRERO
Supply Management Administrator

4/5/17
Date

GENERAL MANAGER'S DETERMINATION

Consultant Firm Selected:

TG ENGINEERS

Remarks:

Miguel C. Bordallo
MIGUEL C. BORDALLO, P.E.
General Manager

4.10.17
Date

TFC/gb *TFC/gb*



September 11, 2017

Mr. Miguel C. Bordallo, P.E.
General Manager
Guam Waterworks Authority
Engineering Division
Gloria B. Nelson Public Service Building
688 Route 15, Mangilao, GU 96913

Attn: Mr. Thomas Cruz, P.E., Chief Engineer

RE: FEE PROPOSAL FOR CONSTRUCTION MANAGEMENT SERVICES: TUMON NO. 2, HYUNDAI, AND CHAOT NO. 2 TANK AND SYSTEM UPGRADES GWA PROJECT NO. W14-006-BND; RFP 02-ENG-2017

Hafa Adai Tom,

TG Engineers, PC (TGE) is pleased to submit our updated Fee Proposal for the referenced project.

1.0 PROJECT DESCRIPTION

The project is construction of the first 3-water storage tanks from the GWA Central Reservoirs project group as follows.

- Chaot No. 2 - PENDING
- Tumon No. 2 (Nissan)
- Hyundai

As requested in the email from Mr. Garrett Yeoh, dated July 14, 2017, we have evaluated 3-different Base Bid and Base Bid Plus Additive Bid scenarios. In general, we have adjusted Inspector, Office Engineer and Document Control personnel time to match the expected work requirements for each scenario.

2.0 SCOPE OF SERVICES

Please refer to the Scope of Work issued with the RFP, pages 14-26.

3.0 FEES

We estimate to complete these CM services for the fees shown as follows with the different bid scenarios. Please refer to the TGE Fee Spreadsheets attached for the time, expenses and breakdown.

BID SCENARIO	FEE ESTIMATE
<u>Base Bid</u> Chaot Tank – excluded Chaot Offsite – included Tumon No. 2 Tank and including offsite Hyundai Tank – included Hyundai Offsite – excluded	\$1,954,089.00
<u>Base Bid Plus Additive Bid 1 or 2</u> (Hyundai Offsite Part 1 or 2)	\$2,054,124.00
<u>Base Bid Plus Additive Bids 1 & 2</u> (Hyundai Offsite parts 1 & 2)	\$2,088,062.00

We have included current pricing for 1-vehicle, equipment and software expenses and assume these will be updated to incorporate any increases at the project start.

4.0 SCHEDULE & DELIVERABLES

As clarified in the email from Mr. Garrett Yeoh, dated July 14, 2017, we are planning on tentative construction schedules as follows.

- Chaot No. 2 = PENDING
- Chaot Offsite = 14-mos
- Tumon No. 2 = 14-mos
- Hyundai = 14-mos

5.0 ASSUMPTIONS

- 5.1 The schedule assumes 14-months for construction plus 2-months of closeout and post-construction services (total 14+2 = 16-months). We will evaluate if additional time requirements are needed for closeout and post-construction tasks later in the project.
- 5.2 We have adjusted labor rates matching our annual office increases in June.
- 5.3 We have increased the number of Water Pressure Data Loggers to 25, based on a request from Garrett Yeoh.

6.0 PERSONNEL SUBSTITUTION

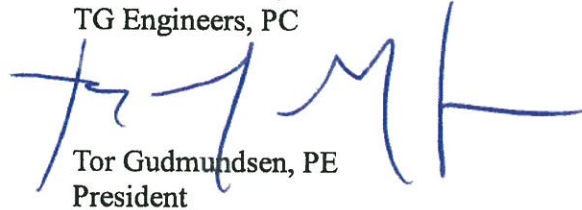
As discussed, we are Planning on including Mr. Robert Marks for the Senior Construction Manager position. We believe Mr. Marks, leading and together with the full CM team will be an effective team arrangement.

GWA reserves the right to remove the Construction Manager, Engineers, Inspectors and any onsite staff if he/she does not perform to the GWA's expectations.

We are submitting this in electronic file format and will deliver printed copies once the final pricing is accepted

Please call Teena Barnes or myself at 647-0808 with any comments or questions.

Si Yu'os Ma'ase,
TG Engineers, PC

A handwritten signature in blue ink, appearing to read 'TGM', is written over the printed name of Tor Gudmundsen.

Tor Gudmundsen, PE
President

Attachments:

TGE Fee Spreadsheet
Dated 9/11/17, 6-pages

PERIOD OF NOVEMBER 2017 - JUNE 2018

PHASE/ TASK	TASK DESCRIPTION	Principal	Const Mgr	Chaot Insp	Tumon Insp	Hyundai Insp	Office Engr #1	Office Engr #2	Doc Ctrl #1	Doc Ctrl #2	Sr Engr	CAD	Clerical	TOTAL COST
2017 - 2018 HOURLY LABOR RATES		\$221.00	\$185.00	\$74.00	\$74.00	\$74.00	\$74.00	\$74.00	\$50.00	\$50.00	\$195.00	\$106.00	\$50.00	
A PRECONSTRUCTION														
1.0	Design Review - Chaot No. 2													\$0
2.0	Design Review - Tumon No. 2													\$0
3.0	Design Review - Hyundai													\$0
4.0	CM QA & Const Mgmt Plans	1.0	10.0				10.0						10.0	\$3,311
5.0	CM Software Training	1.0	8.0	0.0	8.0	8.0	8.0	8.0	8.0	8.0			15.0	\$5,619
6.0	Attend Pre-Bid Meeting/Process Bid RFI's		25.0				25.0						10.0	\$6,975
7.0	Bid Analysis & Award Recommendation	1.0	25.0										10.0	\$5,346
Subtotal Hours		3.0	68.0	0.0	8.0	8.0	43.0	8.0	8.0	8.0	0.0	0.0	45.0	\$21,251
B CONSTRUCTION PHASE														
1.0	Project Controls	24.0	864.0	0.0	270.0	270.0	864.0	540.0	1080.0	540.0	0.0	20.0	60.0	\$395,120
	Project Correspondence													
	Submittal Review													
	Payment Requests													
	Project Meetings													
	Requests for Information													
	Claims and Disputes													
	Project Records													
2.0	Construction Inspection		216.0	0.0	810.0	810.0	216.0	0.0			0.0			\$175,824
	Onsite Inspection													
	Acceptance of Work													
	Stop Work Orders													
	Change Orders													
	Change Order Reviews													
	Design Change													
	DCVR													
Subtotal Hours		24.0	1080.0	0.0	1,080.0	1,080.0	1080.0	540.0	1080.0	540.0	0.0	20.0	60.0	\$570,944

PERIOD OF JULY 2018 - JUNE 2019

PHASE/ TASK	TASK DESCRIPTION	Principal	Const Mgr	Chaot Insp	Tumon Insp	Hyundai Insp	Office Engr #1	Office Engr #2	Doc Ctrl #1	Doc Ctrl #2	Sr Engr	CAD	Clerical	TOTAL COST
2018 - 2019 HOURLY LABOR RATES		\$221.00	\$185.00	\$76.00	\$76.00	\$76.00	\$76.00	\$76.00	\$53.00	\$53.00	\$195.00	\$109.00	\$53.00	
B CONSTRUCTION PHASE														
1.0	Project Controls	40.0	900.0	0.0	360.0	540.0	1008.0	360.0	1440.0	720.0	0.0	20.0	80.0	\$468,608
	Project Correspondence													
	Submittal Review													
	Payment Requests													
	Project Meetings													
	Requests for Information													
	Claims and Disputes													
	Project Records													
2.0	Construction Inspection		540.0	0.0	1080.0	900.0	432.0	360.0			0.0			\$310,572
	Onsite Inspection													
	Acceptance of Work													
	Stop Work Orders													
	Change Orders													
	Change Order Reviews													
	Design Change													
	DCVR													
3.0	Construction Survey Testing													\$45,000
4.0	Project Closeout		360.0		180.0	180.0	360.0		360.0					\$140,400
	Timely Completion													
	Punchlist Development													
	Inspections													
	Training and Warranty													
5.0	Post Construction													\$0
	Final Report													
	Project Records													
	Record Drawings													
Subtotal Hours		40.0	1800.0	0.0	1,620.0	1,620.0	1800.0	720.0	1800.0	720.0	0.0	20.0	80.0	\$964,580

C SUBCONSULTANTS		
1.0	Michael Baker International	\$30,000
2.0	QA Testing	\$60,000
3.0	Onsite Cameras	\$0
4.0	TGE Sub Admin Fee (10%)	\$9,000
Subtotal - Subconsultants		\$99,000

D EXPENSES					
Expense Item	Units	Quantity	Unit Cost	Subtotal	
A PRECONSTRUCTION					
Reproduction	job	5	\$250	\$1,250	
B CONSTRUCTION PHASE					
Reproduction	month	14	\$1,000	\$14,000	
Office Supplies	month	14	\$100	\$1,400	
Vehicle - Const Manager	month	14	\$1,100	\$15,400	
Vehicle - Const Insp (Chaot)	month	0	\$1,100	\$0	
Vehicle - Const Insp (Tumon)	month	14	\$1,100	\$15,400	
Vehicle - Const Insp (Hyundai)	month	14	\$1,100	\$15,400	
Vehicle - Office Engineer	month	14	\$1,100	\$15,400	
Vehicle - Office Engineer	month	14	\$1,100	\$15,400	
Cell Phone Service - Const Manager	month	14	\$80	\$1,120	
Cell Phone Service - Const Insp (Chaot)	month	0	\$80	\$0	
Cell Phone Service - Const Insp (Tumon)	month	14	\$80	\$1,120	
Cell Phone Service - Const Insp (Hyundai)	month	14	\$80	\$1,120	
Cell Phone Service - Office Engr (2 x @25))	month	14	\$50	\$700	
EADOC Software	each	1	\$55,000	\$55,000	
Panasonic Toughbook 20	each	1	\$3,900	\$3,900	
Water Pressure Data Loggers	each	25	\$760	\$19,000	
Vehicle - GWA	each	1	\$23,472	\$23,472	
C POST CONSTRUCTION					
Final Report Reproduction	sets	2	\$250	\$500	
As-Built Drawing Reproduction	sets	2	\$250	\$500	
D TGE EXPENSE FEE (10%)				\$20,008	
Subtotal - Expenses				\$220,090	

Subtotal - A. Preconstruction	\$21,251
Subtotal - B. Construction Phase	\$1,535,524
Subtotal - C. Subconsultants	\$99,000
Subtotal - D. Expenses	\$220,090
GRT	\$78,224
GRAND TOTAL	\$1,954,089

PERIOD OF NOVEMBER 2017 - JUNE 2018

PHASE/ TASK	TASK DESCRIPTION	Principal	Const Mgr	Chaot Insp	Tumon Insp	Hyundai Insp	Office Engr #1	Office Engr #2	Doc Ctrl #1	Doc Ctrl #2	Sr Engr	CAD	Clerical	TOTAL COST
2017 - 2018 HOURLY LABOR RATES		\$221.00	\$185.00	\$74.00	\$74.00	\$74.00	\$74.00	\$74.00	\$50.00	\$50.00	\$195.00	\$106.00	\$50.00	
A PRECONSTRUCTION														
1.0	Design Review - Chaot No. 2													\$0
2.0	Design Review - Tumon No. 2													\$0
3.0	Design Review - Hyundai													\$0
4.0	CM QA & Const Mgmt Plans	1.0	10.0				10.0						10.0	\$3,311
5.0	CM Software Training	1.0	8.0	0.0	8.0	8.0	8.0	8.0	16.0	16.0			15.0	\$6,419
6.0	Attend Pre-Bid Meeting/Process Bid RFI's		25.0				25.0						10.0	\$6,975
7.0	Bid Analysis & Award Recommendation	1.0	25.0										10.0	\$5,346
Subtotal Hours		3.0	68.0	0.0	8.0	8.0	43.0	8.0	16.0	16.0	0.0	0.0	45.0	\$22,051
B CONSTRUCTION PHASE														
1.0	Project Controls	24.0	864.0	0.0	270.0	270.0	864.0	864.0	1080.0	540.0	0.0	20.0	60.0	\$419,096
	Project Correspondence													
	Submittal Review													
	Payment Requests													
	Project Meetings													
	Requests for Information													
	Claims and Disputes													
	Project Records													
2.0	Construction Inspection		216.0	0.0	810.0	810.0	216.0	216.0			0.0			\$191,808
	Onsite Inspection													
	Acceptance of Work													
	Stop Work Orders													
	Change Orders													
	Change Order Reviews													
	Design Change													
	DCVR													
Subtotal Hours		24.0	1080.0	0.0	1,080.0	1,080.0	1,080.0	1,080.0	1,080.0	540.0	0.0	20.0	60.0	\$610,904

PERIOD OF JULY 2018 - JUNE 2019

PHASE/ TASK	TASK DESCRIPTION	Principal	Const Mgr	Chaot Insp	Tumon Insp	Hyundai Insp	Office Engr #1	Office Engr #2	Doc Ctrl #1	Doc Ctrl #2	Sr Engr	CAD	Clerical	TOTAL COST
2018 - 2019 HOURLY LABOR RATES		\$221.00	\$185.00	\$76.00	\$76.00	\$76.00	\$76.00	\$76.00	\$53.00	\$53.00	\$195.00	\$109.00	\$53.00	
B CONSTRUCTION PHASE														
1.0	Project Controls	40.0	900.0	0.0	360.0	540.0	1008.0	1008.0	1440.0	720.0	0.0	20.0	80.0	\$517,856
	Project Correspondence													
	Submittal Review													
	Payment Requests													
	Project Meetings													
	Requests for Information													
	Claims and Disputes													
	Project Records													
2.0	Construction Inspection		540.0	0.0	1080.0	900.0	432.0	432.0			0.0			\$316,044
	Onsite Inspection													
	Acceptance of Work													
	Stop Work Orders													
	Change Orders													
	Change Order Reviews													
	Design Change													
	DCVR													
3.0	Construction Survey Testing													\$45,000
4.0	Project Closeout		360.0		180.0	180.0	360.0		360.0					\$140,400
	Timely Completion													
	Punchlist Development													
	Inspections													
	Training and Warranty													
5.0	Post Construction													\$0
	Final Report													
	Project Records													
	Record Drawings													
Subtotal Hours		40.0	1,800.0	0.0	1,620.0	1,620.0	1,800.0	1,440.0	1,800.0	720.0	0.0	20.0	80.0	\$1,019,300

C SUBCONSULTANTS		
1.0	Michael Baker International	\$30,000
2.0	QA Testing	\$60,000
3.0	Onsite Cameras	\$0
4.0	TGE Sub Admin Fee (10%)	\$9,000
Subtotal - Subconsultants		\$99,000

D EXPENSES					
Expense Item	Units	Quantity	Unit Cost	Subtotal	
A PRECONSTRUCTION					
Reproduction	job	5	\$250	\$1,250	
B CONSTRUCTION PHASE					
Reproduction	month	14	\$1,000	\$14,000	
Office Supplies	month	14	\$100	\$1,400	
Vehicle - Const Manager	month	14	\$1,100	\$15,400	
Vehicle - Const Insp (Chaot)	month	0	\$1,100	\$0	
Vehicle - Const Insp (Tumon)	month	14	\$1,100	\$15,400	
Vehicle - Const Insp (Hyundai)	month	14	\$1,100	\$15,400	
Vehicle - Office Engineer	month	14	\$1,100	\$15,400	
Vehicle - Office Engineer	month	14	\$1,100	\$15,400	
Cell Phone Service - Const Manager	month	14	\$80	\$1,120	
Cell Phone Service - Const Insp (Chaot)	month	0	\$80	\$0	
Cell Phone Service - Const Insp (Tumon)	month	14	\$80	\$1,120	
Cell Phone Service - Const Insp (Hyundai)	month	14	\$80	\$1,120	
Cell Phone Service - Office Engr (2 x @25))	month	14	\$50	\$700	
EADOC Software	each	1	\$55,000	\$55,000	
Panasonic Toughbook 20	each	1	\$3,900	\$3,900	
Water Pressure Data Loggers	each	25	\$760	\$19,000	
Vehicle - GWA	each	1	\$23,472	\$23,472	
C POST CONSTRUCTION					
Final Report Reproduction	sets	3	\$250	\$750	
As-Built Drawing Reproduction	sets	3	\$250	\$750	
D TGE EXPENSE FEE (10%)				\$20,058	
Subtotal - Expenses				\$220,640	

Subtotal - A. Preconstruction	\$22,051
Subtotal - B. Construction Phase	\$1,630,204
Subtotal - C. Subconsultants	\$99,000
Subtotal - D. Expenses	\$220,640
GRT	\$82,228
GRAND TOTAL	\$2,054,124

PERIOD OF NOVEMBER 2017 - JUNE 2018

PHASE/ TASK	TASK DESCRIPTION	Principal	Const Mgr	Chaot Insp	Tumon Insp	Hyundai Insp	Office Engr #1	Office Engr #2	Doc Ctrl #1	Doc Ctrl #2	Sr Engr	CAD	Clerical	TOTAL COST
2017 - 2018 HOURLY LABOR RATES		\$221.00	\$185.00	\$74.00	\$74.00	\$74.00	\$74.00	\$74.00	\$50.00	\$50.00	\$195.00	\$106.00	\$50.00	
A PRECONSTRUCTION														
1.0	Design Review - Chaot No. 2													\$0
2.0	Design Review - Tumon No. 2													\$0
3.0	Design Review - Hyundai													\$0
4.0	CM QA & Const Mgmt Plans	1.0	10.0				10.0						10.0	\$3,311
5.0	CM Software Training	1.0	8.0	0.0	8.0	8.0	8.0	8.0	16.0	16.0			15.0	\$6,419
6.0	Attend Pre-Bid Meeting/Process Bid RFI's		25.0				25.0						10.0	\$6,975
7.0	Bid Analysis & Award Recommendation	1.0	25.0										10.0	\$5,346
	Subtotal Hours	3.0	68.0	0.0	8.0	8.0	43.0	8.0	16.0	16.0	0.0	0.0	45.0	\$22,051
B CONSTRUCTION PHASE														
1.0	Project Controls	24.0	864.0	0.0	270.0	270.0	864.0	864.0	1080.0	810.0	0.0	20.0	60.0	\$432,596
	Project Correspondence													
	Submittal Review													
	Payment Requests													
	Project Meetings													
	Requests for Information													
	Claims and Disputes													
	Project Records													
2.0	Construction Inspection		216.0	0.0	810.0	810.0	216.0	216.0			0.0			\$191,808
	Onsite Inspection													
	Acceptance of Work													
	Stop Work Orders													
	Change Orders													
	Change Order Reviews													
	Design Change													
	DCVR													
	Subtotal Hours	24.0	1080.0	0.0	1,080.0	1,080.0	1080.0	1080.0	1080.0	810.0	0.0	20.0	60.0	\$624,404

PERIOD OF JULY 2018 - JUNE 2019

PHASE/ TASK	TASK DESCRIPTION	Principal	Const Mgr	Chaot Insp	Tumon Insp	Hyundai Insp	Office Engr #1	Office Engr #2	Doc Ctrl #1	Doc Ctrl #2	Sr Engr	CAD	Clerical	TOTAL COST
2018 - 2019 HOURLY LABOR RATES		\$221.00	\$185.00	\$76.00	\$76.00	\$76.00	\$76.00	\$76.00	\$53.00	\$53.00	\$195.00	\$109.00	\$53.00	
B CONSTRUCTION PHASE														
1.0	Project Controls	40.0	900.0	0.0	360.0	540.0	1008.0	1008.0	1440.0	1080.0	0.0	20.0	80.0	\$536,936
	Project Correspondence													
	Submittal Review													
	Payment Requests													
	Project Meetings													
	Requests for Information													
	Claims and Disputes													
	Project Records													
2.0	Construction Inspection		540.0	0.0	1080.0	900.0	432.0	432.0			0.0			\$316,044
	Onsite Inspection													
	Acceptance of Work													
	Stop Work Orders													
	Change Orders													
	Change Order Reviews													
	Design Change													
	DCVR													
3.0	Construction Survey Testing													\$45,000
4.0	Project Closeout		360.0		180.0	180.0	360.0		360.0					\$140,400
	Timely Completion													
	Punchlist Development													
	Inspections													
	Training and Warranty													
5.0	Post Construction													\$0
	Final Report													
	Project Records													
	Record Drawings													
	Subtotal Hours	40.0	1800.0	0.0	1,620.0	1,620.0	1800.0	1440.0	1800.0	1080.0	0.0	20.0	80.0	\$1,038,380

C SUBCONSULTANTS		
1.0	Michael Baker International	\$30,000
2.0	QA Testing	\$60,000
3.0	Onsite Cameras	\$0
4.0	TGE Sub Admin Fee (10%)	\$9,000
Subtotal - Subconsultants		\$99,000

D EXPENSES					
Expense Item	Units	Quantity	Unit Cost	Subtotal	
A PRECONSTRUCTION					
Reproduction	job	5	\$250	\$1,250	
B CONSTRUCTION PHASE					
Reproduction	month	14	\$1,000	\$14,000	
Office Supplies	month	14	\$100	\$1,400	
Vehicle - Const Manager	month	14	\$1,100	\$15,400	
Vehicle - Const Insp (Chaot)	month	0	\$1,100	\$0	
Vehicle - Const Insp (Tumon)	month	14	\$1,100	\$15,400	
Vehicle - Const Insp (Hyundai)	month	14	\$1,100	\$15,400	
Vehicle - Office Engineer	month	14	\$1,100	\$15,400	
Vehicle - Office Engineer	month	14	\$1,100	\$15,400	
Cell Phone Service - Const Manager	month	14	\$80	\$1,120	
Cell Phone Service - Const Insp (Chaot)	month	0	\$80	\$0	
Cell Phone Service - Const Insp (Tumon)	month	14	\$80	\$1,120	
Cell Phone Service - Const Insp (Hyundai)	month	14	\$80	\$1,120	
Cell Phone Service - Office Engr (2 x @25)	month	14	\$50	\$700	
EADOC Software	each	1	\$55,000	\$55,000	
Panasonic Toughbook 20	each	1	\$3,900	\$3,900	
Water Pressure Data Loggers	each	25	\$760	\$19,000	
Vehicle - GWA	each	1	\$23,472	\$23,472	
C POST CONSTRUCTION					
Final Report Reproduction	sets	3	\$250	\$750	
As-Built Drawing Reproduction	sets	3	\$250	\$750	
D TGE EXPENSE FEE (10%)				\$20,058	
Subtotal - Expenses				\$220,640	

Subtotal - A. Preconstruction	\$22,051
Subtotal - B. Construction Phase	\$1,662,784
Subtotal - C. Subconsultants	\$99,000
Subtotal - D. Expenses	\$220,640
GRT	\$83,587
GRAND TOTAL	\$2,088,062

SCOPE OF WORK

Construction Management Services for the Tumon No. 2, Hyundai, and Chaot No. 2 Tank and System Upgrades

A. CONSTRUCTION DESCRIPTION:

The proposer will provide construction management (CM) services on behalf of GWA for construction of Tumon No. 2, Hyundai, and Chaot No. 2 water system improvement projects. The projects are located at several different sites.

The following are the general description of water system improvements to be completed at each location:

1. PW 09-11: Tumon No. 2

- Demolition of existing facilities, including 1 MG steel tank, yard piping, vaults, and appurtenances.
- Installation of new piping from Route No. 1 to the new Tumon No. 2 tank.
- Construction of a new 1 MG concrete tank.
- Off-site improvements, to include new pressure reducing valves, flow meters, and vaults.
- SCADA

2. PW 12-06: Hyundai

- Demolition of existing facilities, including 1 MG steel tank, yard piping, vaults, and appurtenances.
- Construction of a new 1 MG concrete tank.
- Installation of new transmission lines.
- Construction of the new Hyundai booster station.
- Refurbishment of the Barrigada booster station.
- Off-site improvements, to include new pressure reducing valves, flow meters, and vaults.
- SCADA

3. PW 12-04: Chaot No. 2

- Construction of a new 0.5 MG concrete tank.
- Modification to the central chlorination system at the Chaot and Agana Heights tank sites.
- Off-site improvements, to include new pressure reducing valves, flow meters, and vaults.
- Disconnection of A-series deep wells to the distribution line.
- Commissioning of the Sinajana-Agana Heights system, which includes the Chaot No. 1, and Chaot No. 2, and Agana Heights tanks, booster station, deep wells, SCADA, and chlorination.
- SCADA

B. GENERAL CONSTRUCTION MANAGEMENT SCOPE OF WORK

The CM will provide all services relating to the daily field observation, inspection, testing, supervision, management, coordination, and compliance monitoring for the construction projects. The projects generally consists of geo-technical ground improvements, demolition of existing tank structures, construction of pre-stressed concrete tanks conforming to AWWA/ANSI D110 for Type I Wire- and Strand- Wound, Circular Prestressed Concrete Water Tanks (site adapted for each location), installation of new water lines, construction and refurbishment of booster pump stations, chlorination systems,

electrical, instrumentation and control, SCADA controls, plus all associated utilities for each site. Additionally, GWA seeks pre-construction services including constructability review prepared by others.

The construction management, testing, and field observation services for the tank replacement projects will require general construction management and observation, as well as specialized inspection and testing.

In addition to general construction management duties, the specialized inspection and testing will include, but not limited to:

- Concrete placement
- Concrete anchors/Adhesive anchoring systems/Expansion bolts
- Grading
- Excavation
- Compaction grouting
- Compaction testing
- Pre-stressing operations
- Concrete cylinder testing
- Shotcrete application
- High strength bolting
- Earthwork/Soil analysis
- Instrumentation and SCADA
- Hydrostatic testing
- Disinfection
- System commissioning

In general, the proposer will be the CM as an independent contractor Owner's Representative of GWA whose primary function are to:

- Keep GWA advised and informed as to project progress and cost
- Manage the change process
- Disclose any information relevant to GWA's interest
- Make proactive recommendations to GWA for action to maintain progress and achieve the project schedule and budget
- Act in the best interest of GWA

The CM shall administer the Contract, except that the CM is not authorized to make any decisions on the behalf of GWA that materially affect the intent of the design or financially obligate GWA in any manner.

C. PRE-CONSTRUCTION PHASE SERVICES

1. Design Document Review

The CM shall perform review of the design documents. The CM will provide redline mark-up of the plans and specifications and annotated comments. The review will also verify that the design is clearly presents and poses no potential construction related conflicts or deficiencies which may lead to substantive changes to the design, schedule, or cost of the

project. Review will identify any contractual and technical deficiencies and contradictions in the construction documents.

Deliverables (electronic pdf files and hard copies):

- Final Design Review Report

2. CM Quality Assurance

The Construction Management consultant and/or sub-consultants shall have experience in managing the construction of concrete water reservoirs conforming to AWWA design and construction guidelines or similar concrete construction, construction of water lines, booster pump stations, and all relevant water utility work.

The CM will review, record, and comment on submittal on Quality Control Plan submitted by the Construction Contractor. The CM will develop, implement, and maintain a Quality Assurance Plan for civil, structural, electrical, mechanical, and instrumentation elements including specialized work related to the construction of concrete water reservoirs conforming to AWWA/ANSI D110 Type I Wire- and Strand- Wound, Circular Prestressed Concrete Water Tanks.

The CM Quality Assurance shall incorporate all the required testing listed Section D. Construction Phase Services, 16 and 18.

The CM will file contractor certifications: review, file, and submit inspection test results; and assess substantial completion.

Content of the Quality Assurance Plan will include the following at the minimum:

- Documentation of site conditions prior to beginning construction
- Review of approved submittals from the Contractor prior to fabrication or installation of materials and equipment
- Inspection, observation, and documentation of daily field work
- Monitoring of the Contractor's Quality Control Plan
- In-plant fabrication and/or witness testing at place of manufacture (where applicable)
- Reports and record keeping
- Non-conforming and deficient work resolution process
- Monitoring the Construction Contractor's implementation of their Quality Control Plan
- Complete list of specialized inspections for the tank structure and under tank

It is important to note that the CM is responsible for monitoring the Contractor's compliance with the Contract Documents, but not responsible for the Contractor's means and methods the Contractor may use to perform the work.

Deliverables (electronic pdf files and hardcopies):

- Quality Assurance Plan

3. Construction Management Plan

The CM will develop and implement the Construction Management Plan (CM Plan) including guidelines for project organization and coordination in the field, standard daily operations, change order procedures, safety, quality, schedule, and cost control. The CM Plan sets forth the procedures and approach for the construction of the project. The CM Plan will serve the CM, the Owner's Representative, and Contractors by defining the project, project team members and their roles, coordination among team members, procedure, key milestones, and schedule constraints. By establishing these parameters early in the project, the CM Plan will help control resources and costs, establish communication and coordination between the CM, Constructor, and GWA.

Deliverables (electronic pdf files and hardcopies):

- Construction Management Plan

4. Contract Bidding

Upon receipt of the construction bid packages, the CM will review the bid packages and provide GWA with a recommendation and/or concurrence of the proposed selected Contractor. Recommendation shall include document review to ensure compliance with all bid requirements and procurement regulations, bid analysis, and contractor selection.

Deliverables (electronic pdf files and hardcopies):

- Technical Memorandum(s) – Document Review, Bid Analysis, and Contractor Selection

D. CONSTRUCTION PHASE SERVICES

1. Project Records and Document Control

These services and tools shall be provided by the CM to insure that the project is efficiently managed and constructed according to the terms of the Contract and the Request for Proposal. The function is concerned with proper collection and organization of construction documents, gathering data regarding project progresses, producing progress reports, and monitoring time, cost, and quality.

The CM will use a construction management and project collaboration applications, such as Bentley EADOC, Procore Construction Project Management, NewForma Project Center, to track communication, design documents, construction documents, finances, and reporting. GWA shall approve the software before implementation.

- Communication documents: Memos, daily inspector logs for both contractor and CM, meeting minutes, and all other relevant documentation
- Construction documents: Submittals, RFIs, testing results, photo logs, special inspection, change orders, corrective actions, punch list, various construction logs, payment applications, wage rate reporting, and all other relevant documentation
- Design documents: Specifications, drawings, permits, bid documents, contract documents, and all other relevant documentation

The CM will use Primavera P6 project management software to track the Contractor's project schedule, construction cost, resource tracking, and cost management.

2. Daily Construction Reports

The onsite inspectors shall maintain a log of material deliveries, daily site production, site condition, field orders, progress photos, material testing, special inspections, documentation of delays, non-conformance, punch lists, and other material and work facts and issues regarding the prosecution of the work. The daily reports and logs shall be available to GWA project team for review at any time via the project management software.

3. Progress Photo Log and Live Video Feed

The CM shall prepare and retain a construction progress photo log in an organized album with phases of the project clearly labeled. The photo log shall capture all phases of the project – pre-construction, construction, and post-construction. The photo log shall be digital.

The CM shall provide 24 hour monitoring camera(s) to be installed at each project sites to allow for continuous monitoring of the project work. The camera system will allow for remote view and playback functions. Monthly progress videos shall be submitted to GWA.

4. Submittal and Shop Drawings

The CM shall review and act on (approve or reject) all submittals required by the Contract documents. The CM shall review and provide comments regarding shop drawings, work drawings, material submittals, traffic control plan, safety plan, demolition plan, and all other submittals for conformance with the Contract documents. CM reviewer shall be a competent person. In the event of a Contractor request for a time extension or material or equipment substitution, the CM shall make a recommendation to GWA regarding the substitution. The GWA Chief Engineer or his authorized representative will approve the substitution.

5. Contractor Project Schedules

The CM shall review the Contractor's work schedule for accuracy and for efficient sequencing of the work. The CM will direct the Contractor to make any changes deemed necessary and coordinate approval of the revised schedule with GWA. Any delays shall be documented and notified to GWA and the Contractor when actual progress is behind schedule. The CM shall adhere to the requirements set forth in the Contract document for contractor project schedule tracking and review.

6. Payment Request

The CM shall receive and process payment requests from the Contractor. Payment requests shall be reviewed compliance with the Contract document and with the actual work completed. Upon completion of the review, the CM shall make any necessary adjustments, certify, and forward the request to GWA for processing of the payment. The CM shall submit their review, recommendation, acceptance, or rejection within 5 working days of receipt from the Contractor.

7. Payroll Report

The CM shall also review any payroll submittals required by the Contract documents including prevailing wage submissions. At the minimum, the Contractor and its

subcontractors shall provide bi-weekly pay records for each of its employees on the project. The proposer will also conduct random employee interviews to verify the pay request information. Upon completion of the review, the CM shall require the Contractor to make any necessary adjustments, certify, and forward the Payroll report along with the pay request to GWA for processing.

8. Project Meetings

The CM shall schedule, arrange, and conduct conferences and meeting as required for clear communication of the Contract requirements and adherence to project schedules.

The CM shall arrange for a weekly progress meeting with the Contractor and GWA to discuss progress of work, Contract requirements, and other issues related to the administration and prosecution of work. The CM shall prepare meeting minutes for all progress meetings with contractors, sub-contractors, GWA, and all other parties. The meeting minutes shall include action items from week to week until it has been completed.

The CM shall arrange meetings between the Contractor and GWA, and other parties such as GEPA and DPW as necessary to address project issues that require decisions that cannot be made by the CM or to resolve regulatory concerns.

9. As-Built Drawing Reviews

After each weekly meeting, the CM shall review the Contractor's Review drawings to ensure that they are current and capture any deviations from the original plan set.

The CM shall maintain a separate set of red-line as-built drawing on site. Drawings shall be available for GWA at any time. Monthly as-builts documents shall be uploaded to the project management software system.

10. Request for Information

Track all Request for Information and maintain an RFI log. Coordinate receipt of answers from other sources. Provide RFI response with GWA's input regarding any aspect of the Contract documents, which includes the plans and technical specifications.

11. General Compliance Monitoring

The CM shall evaluate and ensure Contractor compliance with all local and federal labor laws applicable to the Project. Any violations shall be immediately reported to GWA. Compliance monitoring shall include but not limited to the following:

- Regulations and Laws: Monitor compliance with Territorial and/or Federal laws, regulations, and rules.
- Labor laws: Monitor Contractor and subcontractor procedures to verify legal status of employees on site. Verify bi-weekly compliance with labor requirements for federally funded projects including posting of wage rate schedules at the job site and safety requirements.
- Licensure: Confirm that the Contractor and its subcontractor and their workers have all required licenses and ensure that said licenses are valid throughout the terms of the Contract.

- **Permit Compliance:** Monitor and track Contractor's compliance in obtaining required permit and approvals.
- **Insurance:** Review Contractor's insurance documents submitted to GWA for compliance with Contractor requirements. Track insurance documents, ensure insurance is valid throughout the term of Contract and maintain insurance certificate log.

12. Claims and Disputes

The CM shall promptly the GWA regarding any issues that arise during construction of the Project that could result in claims and/or disputes. The CM shall provide the following services to assist GWA with the resolution of claims and disputes:

- **Claim Records:** Maintain copies of all verbal and written communications, submittals, testimony, photos, and meetings regarding a potential dispute and promptly submit all originals to the Chief Engineer and Attorney for GWA.
- **Claims Reviews & Interpretation:** Reviews claims submitted by the Contractor, provide GWA with interpretation of Contract drawings and specifications and provide written recommendations to GWA regarding the solution of the dispute. At the outset of the Contract, the CM shall work with the Contractor to provide pricing for equipment, material, personnel, and other relevant considerations as specified in the bid. Prices agreed upon shall be used in any subsequent Change Order. No amounts shall be paid except for actual losses incurred by the Contractor through no fault of their own or for risks not allocated to the Contractor under the bid.

13. Change Order Negotiations and Review

Prepare independent cost estimates and negotiate change orders with the Contractor subject to GWA approval (final approval of negotiated change orders can only be made by the GWA General Manager).

Track all change orders and maintain a change order log. Provide change order evaluations, negotiations, and recommendations for approval by GWA. Change orders shall not be made when the Contractor has assumed such risk in the bid. Change orders may include requests for additional payments for differing site conditions and the CM shall utilize the bid document to determine if a change order is warranted. CM shall submit change order requests and supporting documentation to GWA for approval within 5 working days of receipt from the Contractor wherever practical.

The CM shall maintain copies for all approved change orders (originals to be provided to GWA) and insure that subsequent pay requests accurately represent these change orders. Approved change orders shall be administered by the CM along with other work elements according to the provisions of this scope of work.

14. Design Changes and Verification Request

As directed by GWA, prepare changes to the Contract technical documents (design and specifications) required to address a change order. GWA will direct the CM to make design changes only when changes are deemed by the GWA Chief Engineer and the Engineer of

Record to have no material effect on the original intent of the design. All other design changes shall be forwarded to the Engineer of Record for processing.

If the request for change will materially change the original design, the CM shall coordinate with the Engineer of Record to accomplish the necessary design changes. The CM shall prepare a design change/verification request (DCVR) for submission to and for the approval of the Engineer of Record. If the required changes to the design are not covered within the original design scope of service, the CM will prepare a design scope amendment; solicit a fee proposal for the amendment on behalf of GWA, and assist with the negotiations.

15. Construction Monitoring, Special Inspection, and Quality Control Monitoring

The CM shall provide full time inspection observation and special inspection services to ensure that the work is accomplished in accordance with the Contract documents. A full time Resident Engineer shall be assigned to manage all sites and will be at one of the sites during normal working hours unless attending project related meetings or during holidays, vacation, or sick days.

The CM shall provide full time construction inspector staff at each of the 3 sites to monitor the construction. The Resident Engineer and onsite field staff shall have demonstrable experience (satisfactory to GWA) relative to the discipline and type of work being performed. Project field staff shall review project documents, conduct daily observations, special inspections (where applicable), prepare and submit Daily Observation and Special Inspection Reports; communicate deficiency issues and resolve with Contractor; and update Non-Compliance log.

In addition to general compliance inspections, the CM shall provide Special Inspections services in accordance with IBC 2009, Chapter 17 by a person with demonstrable experience (satisfactory to GWA) related to concrete placement, structural field welding, fielding welding of reinforcement, concrete anchoring, expansion bolts, shotcrete application, high strength bolting, reinforcing steel placement, pre-stressing operations, grading, excavation, backfilling, foundation probing and injection, and other operations that require special inspections. The Special Inspections staff shall be approved by GWA before inspection.

16. Testing (Quality Assurance)

Contractor Testing: Schedule, observe, approve or reject, and document testing required under the Contract to be performed by the Contractor.

Construction Quality Assurance Testing: The CM shall provide, at the minimum, the following CQA testing to monitor the Contractor’s independent testing firm:

SPECIAL TESTING	STANDARD	FREQUENCY
Concrete Tests:	ASTM C-39	10% of Contractor’s
<ul style="list-style-type: none"> • Pipe encasement: Inlet piping, outlet piping, overflow piping, drain line piping, wash down piping • Tank foundation 		

<ul style="list-style-type: none"> • Tank wall • Tank roof slab • Tank column • Tank column footing • Shotcrete • Vaults • Detention basin: footing and walls • Electrical and communication encasement • Electrical and communication hand hold 		
Compaction grouting	ASTM C-1019	10% of Contractor's
Compaction testing: <ul style="list-style-type: none"> • Over Excavation: Bottom of Over Excavation, Type G – Crushed Aggregate, Top of Type H – Drain Rock, Type E – Certification of Observation • Vaults: First lift, middle lift, and final lift. • Electrical Hand Holes: First lift, middle lift, and final lift • Communication Hand Holes: First lift, middle lift, and final lift • Detention Basin: Footing • Pavement: Ribbon gutter and pavement 	ASTM D-698 ASTM D-6938	10% of Contractor's
Soil and Aggregate Analysis <ul style="list-style-type: none"> • Type G – Crushed Aggregate • Type H – Drain Rock • Type E – Pea Gravel • Type I – Backfill Material 	ASTM C-136 ASTM C-117 ASTM C-40 ASTM D-1140 ASTM D-1183 ASTM D-4318	10% of Contractor's
All other required testing for Contract conformance.		

17. Acceptance

The CM shall promptly reject, orally, or in writing, any construction work that does not fully comply with Contract documents. Within 24 hours of notification to the Contractor that work elements have been rejected, the CM shall provide a written description of the deficiency to the GWA Chief Engineer for his/her concurrence. When concurrence has been obtained, the Contractor shall be directed to correct the work. The CM shall promptly advise the GWA Project Manager or the GWA Chief Engineer if the Contractor fails to correct or remove the defective work.

The CM shall issue written stop work orders to the Contractor and immediately provide GWA with a copy for a portion of or the entire Contract non-compliance issues as follows:

- If condition of work or Contractor actions threatens the health and safety of Contractor personnel, GWA representatives, or public in such cases, stop work orders may be oral depending on the circumstances with written stop work order to follow.
- With prior notification and approval of the GWA Chief Engineer or Project Manager in all other cases.

18. Construction Survey Services (Quality Assurance)

The CM shall conduct survey and field measurements as necessary to verify that the work is located according to the plans and specifications. Changes to the horizontal and vertical alignments and elevations shall be made only with the approval of the GWA Chief Engineer.

- Pipeline Alignments and Location of Structures: Spot check Contractor's construction staking to verify the pipeline alignments and structure locations are as called for on the plan and specifications and in order to insure that the work and its location within lawful and approved Rights-of-Way and easements.
- Elevations: Spot check with Contractor's elevations for foundations, pads, pipe line inverts, backfill thickness, manholes, and other structures for which vertical elevations is a critical design element.
- Construction Survey Quality Assurance: The CM shall provide, at the minimum, the following CQA survey to monitor the Contractor's independent survey firm:

Under Tank Piping

- Inlet piping & top of flange
- Outlet piping & top of flange
- Over flow piping & top of flange
- Drain line piping & top of flange
- Wash down piping & top of flange
- Ring drain, high points and outlets

Over Excavation

- Bottom of over excavation
- Top of Type G – fine aggregate
- Top of Type H – drain rock

Tank Foundation

- Top of formwork

Vaults

- Top inlet vault footing formwork
- Top inlet vault roof slab formwork
- Top outlet vault footing formwork
- Top outlet vault roof slab formwork
- Top drain vault footing formwork
- Top drain vault roof slab formwork
- Top electrical hand hold
- Top communication hand hold
- PRSV

Pavement

- a. Ribbon gutter formwork
- b. Pavement formwork

Water Line

- a. Invert of newly installed pipe
- b. Location of fittings
- c. Utility nodes, such as vertical and horizontal bends in pipes
- d. Exposed utilities
- e. New chambers, manholes, vaults, or structures

Bench Marks

- a. Establish bench marks on the top of all vaults, top of footing at water height gauge, overflow, drain, and outlet

19. Project Closeout (Punch List and Project Closeout Inspections)

Throughout the construction of the project, prepare and maintain a list of defects and deficiencies in the work which must be corrected by the Contractor prior to final acceptance of work. The list shall be provided to all members of the pre-final and final inspection team. The list shall be revised after inspections to reflect additional items identified during the inspection. Coordinate with the Contractor to ensure that all punch list items have been completed. When all items have been completed, inform GWA in writing recommending that the work be accepted.

Schedule, arrange, and conduct interim, pre-final, and final inspections of work with Contractor, GWA, GEPA, DPW, and other stakeholders in this project.

- Preliminary Inspection: Preliminary inspections shall be arranged as necessary for specific work elements that require the certification and approval of other agencies
- Pre-final Inspection: A pre-final inspection shall be conducted after substantial completion of the work
- Final Inspection: The final inspection shall be conducted after correction of pre-final inspection punch list items.

20. Train and Warranty Periods

The CM shall coordinate with the Contractor to schedule and conduct startup training and standard maintenance procedures required by the Contract document.

The CM shall maintain a copy of the warranties and compile associated Manufacturer and Contractor warranty documents. Warranty information shall be included in the final project report. All original warranty documents shall be provided to GWA along with Lien Release Information from the Contractor.

21. Equipment

The CM shall provide GWA with 15 water pressure data loggers, batteries, lock boxes, chains, padlocks, and associated fittings. The water pressure data loggers shall be USB downloading, water resistant case, delay start feature, and 0-300 PSI range.

The CM shall provide GWA with a Panasonic Toughbook 20 or approved equal. Windows 10 Pro shall be the operating system.

E. POST CONSTRUCTION SERVICES

1. Final Report

The CM shall prepare a final report after written acceptance of the work by GWA. The final report shall include a narrative documentation of all significant design and construction events and issues and shall become a historical record for the project. The Final Report shall include:

- All communication documentation
- All design documentation
- All construction documentation
- Warranty information
- Operation and maintenance information
- Asset management registry

Deliverables (electronic pdf files and 5 hard copies):

- CM Final Report

2. Record Drawings

After the conclusion of the project, the CM shall review and approve the official record drawings prepared by the Contractor. Record drawings shall be marked and sealed by a professional engineer licensed on Guam in accordance with Guam PEALS regulations.

Deliverables (electronic pdf files and 5 hard copies):

- As-Built Record Drawings