

## **WORK AUTHORIZATION 4**

**AUTHORITY:** Guadalupe-Blanco River Authority  
**ENGINEER:** Black & Veatch Corporation  
**Project:** Guadalupe Valley Hydroelectric System, Lake McQueeney Spillgate  
Replacement and Dam Armoring

### **SCOPE OF SERVICES**

#### **BASIC SERVICES**

##### **A. General**

This Scope of Services defines the tasks, breadth, and effort anticipated to complete the preliminary investigations and detailed design provided by the ENGINEER to support the AUTHORITY in execution of the replacement of each of the three gates and dam armoring at Lake McQueeney Dam.

##### **B. Project Description**

The Guadalupe Blanco River Authority (AUTHORITY) owns and operates the Guadalupe Valley Hydroelectric System (GVHS) on the Guadalupe River near Seguin and Gonzales, Texas. The system was purchased by the AUTHORITY in 1963 and consists of six dams and associated hydroelectric generation stations that were put into service between 1928 and 1932. Due to the age of the system, all fifteen spillgates in the system are believed to be at the end of their useful life. The project will focus on the design and installation of hydraulically actuated spillgates to replace all three existing gates and dam armoring at Lake McQueeney Dam.

##### **C. The Scope of Services Described for the Project**

The following summary task items are required for completion of the overall scope of work:

1. Evaluation of existing data.
2. Site inspections of Lake McQueeney Dam as required to progress the detailed design.
3. Field survey of Lake McQueeney Dam.
4. Geotechnical field investigations.
5. Hydraulic analysis to support the detailed design of the spillgate replacement and dam armoring to evaluate scour specific to Lake McQueeney Dam.
6. Update the spillgate and river operations plan

7. Design a stop-log system.
8. Design of McQueeney spillgate improvements which include three hydraulically actuated steel crest gates.
9. Permitting and regulatory assistance.
10. On-site cultural and environmental investigations.
11. Public information program assistance.
12. Bidding assistance.
13. Gate Procurement.

**D. Milestone Schedule**

<b>MILESTONE</b>	<b>DATE</b>
Notice to Proceed	September 2020
Preliminary Investigations	November 1, 2020
Preliminary Design	January 2021
30% Design	March 2021
60% Design	May 2021
90% Design	July 2021
100% Design	September 2021
Bid and Award Services	November 2021

**PHASE 1000. PROJECT ADMINISTRATION**

**A. Project Administration.**

Prepare project management documents including project procedures manual, budget, schedule, drafting standards, and quality assurance and quality control plan. Review ongoing activities. Monitor schedule and budget and create invoices. Review progress with AUTHORITY on a regular basis. Discuss issues with the AUTHORITY as they are noted. This activity has an anticipated duration of 16 months.

1. Facilitate a project initiation meeting to review AUTHORITY’s requirements for the project, review pertinent available data, review project staffing and organization, present initial work plan, and present initial work schedule.
2. Progress Review. Coordinate informal meetings with the AUTHORITY to review progress and exchange ideas and information. Prepare and distribute minutes for project meetings. A total of nine progress meetings are anticipated over the course of preliminary and design phases. Microsoft Teams or other remote conferencing system be utilized to engage the design team or defer travel costs for half of the meetings. Half of the meetings are assumed to be in person with two staff members.

Additional meetings for document reviews (Draft Reports, and 30, 60, 90% submittals) are covered under those tasks.

3. Project Procedures Manual. Prepare a project procedures manual for use by AUTHORITY and ENGINEER. The manual will include project organization, contacts and lines of communications, code requirements, filing system, QA/QC, budget, schedule and drafting standards.
4. Invoice Submittals. Prepare and submit monthly invoices. Each submittal will include a summary of activities of which the current invoice is recovering costs incurred for that billing cycle.

## **PHASE 2100. PRELIMINARY INVESTIGATIONS**

### **A. Evaluate Existing Facilities.**

The ENGINEER will:

1. Review existing drawings, reports and other information from AUTHORITY's files.
2. Review flow records to determine history of flows regarding volume, characteristics, and flow patterns.
3. No underwater inspections will be performed as part of this work. Design will be based on data collected during previous dive inspections.

### **B. Field Survey**

Provide through a subcontract surveying services to establish elevations of existing surfaces and structures at Lake McQueeney dam for use during final design including:

1. Establish on site survey bench marks and permanent monuments to serve as the base line for the survey and reference points.
2. Provide surface elevations for the areas surrounding the dam, upstream and downstream extending to the edge of the property/easement or maximum 100 feet outside of the intended work area. Spot elevations shall be provided for tops of walls, pipe rim/invert, floors, and other locations as directed by the ENGINEER. Contours shall be provided in 1-foot intervals.

3. Surveyor will identify all property boundaries and easements extending beyond the surveyed area. These will be included in the survey files with each property boundary and easement clearly identified.

### **C. Geotechnical Services**

Geotechnical field services will be performed as part of this work through a subcontract. Geotechnical services will include borings and a geotechnical investigations report providing parameters to be used during design.

1. Three borings will be taken upstream of the dam in the river channel. One boring will be in the center of the channel and will be extend at least 55 ft below the riverbed. The other two borings will extend at least 35 feet below the riverbed.
2. All borings will require the use of a barge mounted drill rig. AUTHORITY will be responsible to coordinate access and any requirements with the appropriate owners.
3. Two borings, 55 ft deep, and associated soil samples will be taken through the crest of the dam for design of the armoring. An additional five shallow hand auger borings will be taken on the downstream side of the embankment.

### **D. Preliminary Analysis**

A preliminary analysis will be conducted to analyze the available data to identify potential risks that could impact the project construction cost. Analysis will include preliminary evaluation of the geotechnical and survey data, basic hydraulic flow and water level impacts and preliminary dam stability. A technical memorandum will be prepared to summarize the findings. An updated estimate of construction cost will be prepared.

## **PHASE 2200. PRELIMINARY DESIGN TASKS**

### **A. Hydraulic Analysis**

Existing hydraulic modelling data will be updated to support the detailed design effort. Three-dimensional computational fluid dynamics (CFD) modelling will not be required and is not included in this scope.

The ENGINEER will evaluate the hydraulic adequacy of the existing stilling basin using available drawing information and any pertinent information from previous underwater inspections. The evaluation will include comparison of existing geometry to Bureau of Reclamation guidelines for standard stilling basins. The impacts of any recommended spillway modifications on the existing stilling basins will also be evaluated. The potential for scour downstream of the spillway will be evaluated using 2-dimensional numerical

modeling. It is anticipated that CFD modeling will not be required and is not included in this scope. If during execution of this work it is determined that CFD modeling would be valuable, AUTHORITY may choose to add it as a supplemental service.

The existing HEC-RAS model will be updated to include any recommended spillway modifications. The updated model will be used to evaluate the required dam armoring.

### **B. Spillway and River Operations Plan**

The previously developed spillway and river operations plan will be tailored to the Lake McQueeney spillgate project.

### **C. Water Management Plan**

1. Construction constraints and required mitigating measures to be implemented during construction will be developed to minimize upstream impacts of high flow events during construction. Will also evaluate impacts of various lake levels on constructability and rough order magnitude construction cost impacts.
2. A stop-log system to facilitate future maintenance of the spillway gates will be designed.

### **D. Dam Stability Analysis**

ENGINEER will perform a stability analysis of Lake McQueeney Dam spillway with the proposed crest gates to assure stability of the structure. Investigation will be based on the hydraulic analysis, survey data, and as-built drawing data developed or collected under other tasks. Analyses will include:

1. Sliding stability
2. Overturning stability
3. Soil bearing pressure

### **E. Public Information Program**

Meet with AUTHORITY's personnel and assist them with project presentation, project graphics development, and discussions in the public participation program such as public meetings, hearings, etc. A level of effort of 80 staff hours is budgeted to support the AUTHORITY's efforts in this activity. Additional effort will be addressed as supplemental services.

## **F. Preliminary Design Drawings**

ENGINEER will prepare preliminary design drawings of several critical project features to establish the basis for detailed design and for AUTHORITY's use including:

1. 3D graphics of the site, dam and spillway
2. General site plan
3. Spillway cross sections
4. Preliminary dam armoring
5. Gate & dam plan and sections

## **PHASE 3100 – DESIGN AND CONSTRUCTION CONTRACT DOCUMENTS**

The McQueeney Dam Construction Contract Documents shall be prepared for selection of a general construction contractor.

### **A. Specifications**

The AUTHORITYS's standard front-end documents based on the Engineers Joint Contract Documents Committee (EJCDC) General Conditions will be used for this project. The ENGINEER's standard technical specifications will be used as the basis for the technical portions of the bid documents.

Meet with AUTHORITY and their contracting team to resolve and review comments, and revise ENGINEER's standard documents accordingly.

### **B. Detailed Design – Construction Contract Documents Level 1 (30% Design)**

Construction Contract Documents Level 1 progress review meeting deliverables are as follows:

1. Vertical control sketches
2. Site plan
3. General site arrangements
4. Preliminary armoring plans
5. Major facility plans and sections
6. Preliminary structural plans
7. Gate and ancillary equipment specifications.
8. Instrumentation input and output lists

9. Instrumentation device schedules
10. Class 3 opinion of probable construction cost
11. Project schedule update
12. Project trend register update.

Provide an electronic copy of drawings and specifications to AUTHORITY for review. Attend one meeting with AUTHORITY to receive and discuss AUTHORITY's review comments. Revise documents as necessary to reflect decisions taken at this level and provide a comment review matrix to document the responses.

### **C. Detailed Design - Construction Contract Documents Level 2 (60% Design)**

Level 2 design shall commence after AUTHORITY has accepted Level 1 deliverables. Level 2 progress review meeting deliverables are as follows:

1. Detailed armoring plans and details
2. Sections and details showing gates
3. Structural framing plans and sections
4. Power and lighting plans
5. Commodity specifications (concrete, pipe, wire, masonry block, etc.)
6. Class 2 opinion of probable construction cost update
7. Project schedule update
8. Project trend register update.

Provide an electronic copy of drawings and specifications to AUTHORITY for review. Attend one meeting with AUTHORITY to receive and discuss AUTHORITY's review comments. Revise documents as necessary to reflect decisions taken at this level and provide a comment review matrix to document the responses.

### **D. Detailed Design - Construction Contract Documents Level 3 (90% Design)**

Level 3 design shall commence after AUTHORITY has accepted Level 2 deliverables. Level 3 progress review meeting deliverables are as follows:

1. Final review set of specifications and construction contract documents
2. Class 2 opinion of probable construction cost update
3. Project schedule update
4. Project trend register update.

Provide an electronic copy of drawings and specifications to AUTHORITY for review. Attend one meeting with AUTHORITY to receive and discuss AUTHORITY's review comments. Revise documents as necessary to reflect decisions taken at this level and provide a comment review matrix to document the responses.

#### **E. Detailed Design - Construction Contract Documents Level 4 (100% Design)**

The final Construction Contract Documents will incorporate all review comments and corrections and be published for advertisement to general contractors. A final comment review matrix will be provided to document the final comments and responses. Provide one electronic copy of drawings and specifications to AUTHORITY for record. The AUTHORITY will distribute and reproduce copies as described under Bid Services.

#### **F. Permitting and Regulatory Requirements**

ENGINEER will assist AUTHORITY in obtaining permits and meet with representatives of affected agencies to discuss the impact of the project. It is expected that permit/notification requirements will be required for TCEQ, TWDB, USACE (Fort Worth district), FEMA, US F&W, TPWD, Guadalupe County and Texas Historical Commission.

A level of effort of 200 staff hours is budgeted to support the AUTHORITY's efforts in the permitting which may include attendance and participation in meetings. Additional effort will be addressed as supplemental services.

#### **G. Cultural and Environmental Investigations**

A specialized sub-consultant will perform field investigation to validate and quantify concerns as required by the governing agencies. The field investigations will identify cultural and environmental features that need to be protected or mitigated to facilitate permitting during the construction phase of the project.

### **PHASE 4100 - BID AND AWARD SERVICES**

#### **A. Bid Services**

1. Invitations to Bid. Assist AUTHORITY to finalize front end documents and identify project advertisement date, date to receive bids, and in placing the Invitation to Bid. It is assumed the bids will be received as part of a competitive sealed proposal solicitation process. ENGINEER will assist AUTHORITY in developing proposal requirements and to establish evaluation criteria and weighting. Identify potential contractors and suppliers, review with AUTHORITY, and distribute copies of Invitation to Bid. Maintain a record of prospective bidders to whom invitations have been sent.
2. Distribution. Support AUTHORITY's procedures for reproduction and distribution of construction contract documents. It is understood that the

AUTHORITY will handle all aspects of bidding document reproduction and distribution, both hard copies and electronic copies.

3. Prebid Conference. Participate with the AUTHORITY to conduct a prebid conference to:
  - a. Confirm the types of information required by the Contract Documents and the format in which bids should be presented.
  - b. Review special project requirements and Contract Documents in general.
  - c. Receive requests for interpretations that will be issued to plan holders.
4. Interpretation of bidding documents. Prepare and issue addenda to the construction contract documents when required.

**B. Bid Opening.** The AUTHORITY will take bids, document the receipt, and read bids in according to their standard procedures.

### **C. Preaward Services Included in Engineering Services Contract**

The following services are anticipated after receipt of bids:

1. Questionnaire. Examine the questionnaire to identify any supplier whose equipment or materials may not conform to the construction contract documents. This examination will be based on the knowledge and experience of the ENGINEER.
2. Qualifications of Apparent Successful Bidder. Review and evaluate the qualifications of the bidders and the proposed major or specialty subcontractors. The review and evaluation will include financial resources and check of references on previous experience.
3. Bid Tabulations. Prepare and distribute formal bid tabulation sheets, evaluate bids, and make written recommendations to AUTHORITY concerning contract award.
4. Bid Evaluations. An evaluated bid is anticipated for this contract which will score the contractors on price, experience, references, suppliers and other factors. ENGINEER will evaluate the bids and make observations regarding these criteria for AUTHORITY's use to score and rank contractors.
5. Notification and Award. The AUTHORITY will evaluate bonding documents and contract compliance. The AUTHORITY will notify the successful Contractor and post scoring results based on their normal contracting procedures.

## **PHASE 4150 – GATE PROCUREMENT SERVICES**

### **Spillgate Procurement Bid Document.**

At the direction of the AUTHORITY, ENGINEER will prepare a separate procurement bid document for the gates and related appurtenances. Document will include Front end documents as provided by AUTHORITY and will be coordinated with the bid package. The Spillgate Procurement Bid Document will include:

- Bid and advertisement forms including the development of bid evaluation criteria.
- Technical specifications for all equipment items.
- Coordination requirements assuming the bid package/contract will be assumed by the general contractor whom will take over the coordination and payment for the gates.

### **Spillgate Procurement Bid Document Evaluation.**

At the direction of the AUTHORITY, ENGINEER will review and evaluate the procurement bid document for the gates and related appurtenances. Evaluation will include review of the bid documents, evaluation of the bidder, preparation of the bid tabulations, and evaluation of the bids. Notification and award will be managed by the AUTHORITY.

## **PHASE 4200 CONSTRUCTION PHASE SERVICES – To be negotiated at later date.**

**COMPENSATION**

- A. For the services covered by this Work Authorization, the AUTHORITY agrees to pay the ENGINEER based on time and material in a not-to-exceed amount of \$1,313,154 for the Basic Services described herein.

The following table establishes the estimated budget for each phase. ENGINEER shall not proceed with a phase without authorization from the AUTHORITY.

Phase 1000. Project Administration	\$ 38,462
Phase 2100. Preliminary Investigation	\$ 286,383
Phase 2200. Preliminary Design Tasks	\$ 216,764
Phase 3100. Design and Construction Contract Documents	\$ 690,312
Phase 4100. Bid and Award Services	\$ 38,383
Phase 4150. Gate Procurement Services	\$ 42,850

- B. The ENGINEER shall be compensated for the services in accordance with the following billing rates.

Principal Leader	\$257
Project Manager	\$257
Sr. Engineering Manager	\$246
Sr. Structural & Gate Engineer	\$246
Project Manager (QA/QC Lead)	\$206
Structural Engineer	\$190
Mechanical Engineer	\$185
Design Engineer/Project Eng.	\$163
Geotechnical Engineer	\$185
Sr. Hydraulic/CFD Engineer	\$257
Hydraulic/CFD Engineer	\$209
Staff Engineer	\$138
Sr. Technician	\$139
Technician	\$126
Drafter/Graphics	\$108
I&C Engineer	\$210
Electrical Engineer	\$211
Project Scheduler	\$206
Cost Estimator	\$155
Project Accountant	\$97
Admin. Asst.	\$83

The above billing rates are applicable through December 31, 2020. A 3% adjustment will be made for each subsequent year for the duration of this work authorization.

Expenses will be billed at cost. Travel expenses will be billed in accordance with the requirements found in the Engineering Master Services Agreement.

- C. Supplementary Services may include additional tasks that will be billed based on negotiated billing rates and unit prices or as additional tasks negotiated for a not to exceed amount.
- D. ENGINEER agrees to use best efforts to perform the Services within the billing limits stated above and in accordance with the agreed upon performance schedules. If, at any time, ENGINEER has reason to believe that the cost of the services will be greater or substantially less than the billing limits, ENGINEER shall promptly notify the AUTHORITY to that effect.
- E. For Supplemental Services, the scope of work and billing limit shall be established before any supplemental work is started. Each item of supplemental service shall be specifically authorized by the ENGINEER.
- F. ENGINEER shall keep records on the basis of generally accepted accounting practices of costs and expenses and which records shall be available for inspection by ENGINEER at reasonable times. ENGINEER'S records shall be subject to audit as indicated in the Engineering Master Services Agreement.

#### **SUPPLEMENTARY SERVICES**

The following additional services may be performed based on the findings of previous tasks and as authorized by the AUTHORITY:

1. CFD modeling
2. Permitting and Regulatory Requirements assistance above 200 staff hours.
3. Public Information Program assistance above 80 hours.

IN WITNESS WHEREOF, the parties acting under authority of their respective governing bodies have caused this Agreement to be executed in several counterparts, each of which is deemed to be an original, as of the day and date first written above.

Black & Veatch Corporation

Guadalupe-Blanco River Authority

  
\_\_\_\_\_  
Joseph R. Aillet  
Associate Vice President

  
\_\_\_\_\_  
Kevin Patteson  
General Manager/CEO

Date: 09/11/2020

Date: 9/15/2020

Approved as to form:

Approved as to form:

  
\_\_\_\_\_  
Matthew Richart  
Project Manager

  
\_\_\_\_\_  
Tom Bohl  
General Counsel

Owner: Guadalupe Blanco River Authority

Project: McQueeney Dam Gate Replacement

PHASE/Task	PHASE	Project Director	Project Manager	Admin	Civil Sr. Engineer	Civil Engineer	Civil Director/QC	Structural Director/QC	Structural Sr. Engineer	Structural Engineer	Senior Architect	Architect	Proc Mech Director/QC	Proc Mech Sr. Engineer	Proc Mech Engineer
		\$263.00	\$211.00	\$86.00	\$167.00	\$141.00	\$211.00	\$251.00	\$195.00	\$141.00	\$195.00	\$152.00	\$210.00	\$158.00	\$126.00
(Billing Rate, \$\$, Hr.)															
<b>WORK BREAKDOWN STRUCTURE</b>	<b>PHASE</b>														
Phase 1000 - Administration		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Administration	1000	16	54	54	18	-	-	-	-	-	-	-	-	-	-
Phase 2100 - Preliminary Investigations		-	-	-	-	-	-	-	-	-	-	-	-	-	-
A. Evaluate Existing Facilities	2101	2	16	-	32	8	-	-	24	24	-	-	-	-	-
B. Field Survey	2102	-	8	2	8	-	-	-	-	-	-	-	-	-	-
C. Geotechnical Services	2103	-	8	2	24	-	-	-	4	-	-	-	-	-	-
D. Preliminary Analysis	2104	4	16	-	24	-	-	-	24	40	-	-	-	-	-
Phase 2200 - Preliminary Design		-	-	-	-	-	-	-	-	-	-	-	-	-	-
A. Hydraulic Analysis	2201	-	8	-	10	-	-	-	-	-	-	-	-	-	-
B. Spillway & River Operations Plan	2202	-	4	-	8	-	-	-	-	-	-	-	-	-	-
C. Water Management Plan	2203	-	8	-	16	-	-	-	-	-	-	-	-	-	-
D. Dam Stability Analysis	2204	-	8	-	10	-	-	-	42	70	-	-	-	-	-
E. Public Information Program	2205	-	16	-	40	-	-	-	-	-	-	-	-	-	-
F. Preliminary Design Drawings	2206	2	16	-	60	32	-	8	24	40	-	4	-	-	-
Phase 3100 - Design & Construction Contract Documents		-	-	-	-	-	-	-	-	-	-	-	-	-	-
A. Specifications	3101	2	24	2	80	30	8	-	-	-	-	-	-	-	-
B. Level 1 (30%)	3102	2	24	-	100	40	16	16	72	84	2	8	-	-	-
C. Level 2 (60%)	3103	2	24	-	100	40	16	18	72	72	8	18	2	16	20
D. Level 3 (90%)	3104	2	24	-	106	40	16	18	72	72	8	18	2	6	16
E. Level 4 (100%)	3105	2	18	2	80	16	-	8	24	28	4	8	-	2	6
F. Permitting and Regulatory Requirements	3106	-	24	2	80	40	-	-	-	-	-	-	-	-	-
G. Cultural and Environmental Investigations	3107	-	4	2	8	16	-	-	-	-	-	-	-	-	-
Phase 4100 - Bid and Award Services		-	-	-	-	-	-	-	-	-	-	-	-	-	-
A. Bid Services	4101	-	8	-	24	16	-	-	4	8	-	-	-	2	2
B. Bid Opening	4102	2	8	-	16	8	-	-	-	-	-	-	-	-	-
C. Preaward Services	4103	-	4	-	8	-	-	-	-	-	-	-	-	-	-
Phase 4150 - Gate Procurement Services	4150	2	24	4	48	44	8	-	8	-	-	-	-	-	-
<b>Total, Hours</b>		<b>38</b>	<b>348</b>	<b>70</b>	<b>900</b>	<b>330</b>	<b>64</b>	<b>68</b>	<b>370</b>	<b>438</b>	<b>22</b>	<b>56</b>	<b>4</b>	<b>26</b>	<b>44</b>
<b>Total, Billings</b>		<b>\$ 9,994</b>	<b>\$ 73,428</b>	<b>\$ 6,020</b>	<b>\$ 150,300</b>	<b>\$ 46,530</b>	<b>\$ 13,504</b>	<b>\$ 17,068</b>	<b>\$ 72,150</b>	<b>\$ 61,758</b>	<b>\$ 4,290</b>	<b>\$ 8,512</b>	<b>\$ 840</b>	<b>\$ 4,108</b>	<b>\$ 5,544</b>

Owner: Guadalupe Blanco River Authority

Project: McQueeney Dam Gate Replacement

PHASE/Task  (Billing Rate, \$\$, Hr.)	PHASE	Electrical Director/QC	Electrical Sr. Engineer	Electrical Engineer	Electrical Technician	I&C Director/QC	I&C Sr. Engineer	I&C Engineer	I&C Technician	Water Res Sr. Engineer	Modeler	BIM Sr Technician	BIM Technician	Estimator Director/QC	Sr. Estimator
		\$215.00	\$215.00	\$141.00	\$129.00	\$215.00	\$215.00	\$141.00	\$129.00	\$208.00	\$141.00	\$126.00	\$111.00	\$211.00	\$158.00
<b>WORK BREAKDOWN STRUCTURE</b>															
Phase 1000 - Administration		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Administration	1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase 2100 - Preliminary Investigations		-	-	-	-	-	-	-	-	-	-	-	-	-	-
A. Evaluate Existing Facilities	2101	-	16	48	-	-	8	-	-	16	-	-	-	-	-
B. Field Survey	2102	-	-	-	-	-	-	-	-	-	-	4	-	-	-
C. Geotechnical Services	2103	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D. Preliminary Analysis	2104	-	-	-	-	-	-	-	-	40	32	-	-	2	16
Phase 2200 - Preliminary Design		-	-	-	-	-	-	-	-	-	-	-	-	-	-
A. Hydraulic Analysis	2201	-	-	-	-	-	-	-	-	56	48	-	-	-	-
B. Spillway & River Operations Plan	2202	-	-	-	-	-	16	4	-	8	-	-	-	-	-
C. Water Management Plan	2203	-	-	-	-	-	16	4	-	16	16	-	-	-	-
D. Dam Stability Analysis	2204	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E. Public Information Program	2205	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Preliminary Design Drawings	2206	2	16	30	-	2	8	26	4	-	-	220	256	-	-
Phase 3100 - Design & Construction Contract Documents		-	-	-	-	-	-	-	-	-	-	-	-	-	-
A. Specifications	3101	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B. Level 1 (30%)	3102	-	8	18	16	4	8	40	8	12	24	104	180	2	30
C. Level 2 (60%)	3103	-	24	40	44	8	8	42	8	6	18	112	180	2	24
D. Level 3 (90%)	3104	16	24	44	44	10	8	42	6	6	18	112	180	2	24
E. Level 4 (100%)	3105	-	8	16	16	8	4	32	4	-	-	64	64	2	24
F. Permitting and Regulatory Requirements	3106	-	-	-	-	-	-	-	-	24	12	-	-	-	-
G. Cultural and Environmental Investigations	3107	-	-	-	-	-	-	-	-	4	4	-	-	-	-
Phase 4100 - Bid and Award Services		-	-	-	-	-	-	-	-	-	-	-	-	-	-
A. Bid Services	4101	-	8	16	-	-	-	-	-	-	-	-	-	-	-
B. Bid Opening	4102	-	-	-	-	-	-	-	-	-	-	-	-	2	8
C. Preaward Services	4103	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase 4150 - Gate Procurement Services	4150	-	12	-	-	-	8	4	-	-	-	24	-	-	-
<b>Total, Hours</b>		<b>18</b>	<b>116</b>	<b>212</b>	<b>120</b>	<b>32</b>	<b>84</b>	<b>194</b>	<b>30</b>	<b>188</b>	<b>172</b>	<b>640</b>	<b>860</b>	<b>12</b>	<b>126</b>
<b>Total, Billings</b>		<b>\$ 3,870</b>	<b>\$ 24,940</b>	<b>\$ 29,892</b>	<b>\$ 15,480</b>	<b>\$ 6,880</b>	<b>\$ 18,060</b>	<b>\$ 27,354</b>	<b>\$ 3,870</b>	<b>\$ 39,104</b>	<b>\$ 24,252</b>	<b>\$ 80,640</b>	<b>\$ 95,460</b>	<b>\$ 2,532</b>	<b>\$ 19,908</b>

Owner: Guadalupe Blanco River Authority

Project: McQueeney Dam Gate Replacement

PHASE/Task  (Billing Rate, \$\$, Hr.) <b>WORK BREAKDOWN STRUCTURE</b>	PHASE	Finance	Sr. Project Controls	Project Controls	Geotech Sr. Engineer	Hydro Civil Sr. Engineer	Hydro Civil Engineer	Hydro Mech Engineer	SUBTOTAL, hours	SUBTOTAL, Billings \$	SUBTOTAL, EXPENSES	SUBTOTAL, SUBCONTRACTS	TOTAL Billings
		\$99.00	\$211.00	\$99.00	\$190.00	\$251.00	\$168.00	\$190.00					
Phase 1000 - Administration		-	-	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -
Administration	1000	54	-	54	-	18	-	-	268	\$ 38,462	\$ -	\$ -	\$ 38,462
Phase 2100 - Preliminary Investigations		-	-	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ 286,383
A. Evaluate Existing Facilities	2101	-	-	-	-	16	-	-	210	\$ 37,710	\$ -	\$ -	\$ 37,710
B. Field Survey	2102	-	-	-	-	-	-	-	22	\$ 3,700	\$ -	\$ 33,525	\$ 37,225
C. Geotechnical Services	2103	-	-	-	16	4	-	-	58	\$ 10,692	\$ -	\$ 158,186	\$ 168,878
D. Preliminary Analysis	2104	-	-	-	-	32	-	-	230	\$ 42,570	\$ -	\$ -	\$ 42,570
Phase 2200 - Preliminary Design		-	-	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ 216,764
A. Hydraulic Analysis	2201	-	-	-	-	4	40	-	166	\$ 29,498	\$ -	\$ -	\$ 29,498
B. Spillway & River Operations Plan	2202	-	-	-	-	4	-	-	44	\$ 8,852	\$ -	\$ -	\$ 8,852
C. Water Management Plan	2203	-	-	-	-	8	-	-	84	\$ 15,956	\$ 995	\$ -	\$ 16,951
D. Dam Stability Analysis	2204	-	-	-	8	16	-	-	154	\$ 26,954	\$ -	\$ -	\$ 26,954
E. Public Information Program	2205	-	-	-	-	24	-	-	80	\$ 16,080	\$ -	\$ -	\$ 16,080
F. Preliminary Design Drawings	2206	-	-	-	16	16	40	8	830	\$ 117,234	\$ 1,195	\$ -	\$ 118,429
Phase 3100 - Design & Construction Contract Documents		-	-	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ 690,312
A. Specifications	3101	-	-	-	-	20	-	-	166	\$ 30,060	\$ -	\$ -	\$ 30,060
B. Level 1 (30%)	3102	-	8	-	60	52	40	24	1,002	\$ 159,932	\$ 4,180	\$ -	\$ 164,112
C. Level 2 (60%)	3103	-	2	-	48	52	20	48	1,094	\$ 173,816	\$ 3,185	\$ -	\$ 177,001
D. Level 3 (90%)	3104	-	2	-	24	52	20	40	1,074	\$ 170,830	\$ 3,185	\$ -	\$ 174,015
E. Level 4 (100%)	3105	-	-	-	8	24	4	8	484	\$ 76,582	\$ -	\$ -	\$ 76,582
F. Permitting and Regulatory Requirements	3106	-	-	-	-	16	-	-	198	\$ 34,936	\$ -	\$ -	\$ 34,936
G. Cultural and Environmental Investigations	3107	-	-	-	-	2	-	-	40	\$ 6,506	\$ 100	\$ 27,000	\$ 33,606
Phase 4100 - Bid and Award Services		-	-	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ 38,383
A. Bid Services	4101	-	-	-	4	24	8	4	128	\$ 23,292	\$ -	\$ -	\$ 23,292
B. Bid Opening	4102	-	-	-	-	16	-	-	60	\$ 11,716	\$ 1,195	\$ -	\$ 12,911
C. Preaward Services	4103	-	-	-	-	-	-	-	12	\$ 2,180	\$ -	\$ -	\$ 2,180
Phase 4150 - Gate Procurement Services	4150	-	-	-	-	40	-	8	234	\$ 42,850	\$ -	\$ -	\$ 42,850
<b>Total, Hours</b>		<b>54</b>	<b>12</b>	<b>54</b>	<b>184</b>	<b>440</b>	<b>172</b>	<b>140</b>	<b>6,638</b>				
<b>Total, Billings</b>		<b>\$ 5,346</b>	<b>\$ 2,532</b>	<b>\$ 5,346</b>	<b>\$ 34,960</b>	<b>\$ 110,440</b>	<b>\$ 28,896</b>	<b>\$ 26,600</b>		<b>\$ 1,080,408</b>	<b>\$ 14,035</b>	<b>\$ 218,711</b>	<b>\$ 1,313,154</b>