

# Flow Control Gate **Replacement Project**

## Presented by Michael McClendon - Upper Basin Regional Manager

September 27, 2021





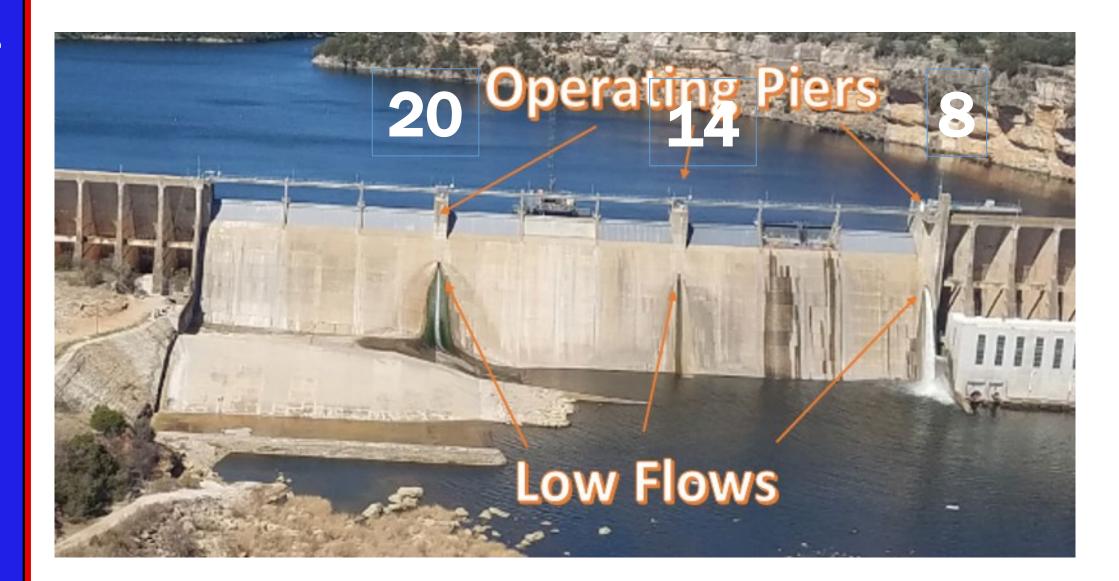


## **Overview:** Gates/Actuators

- Morris Sheppard Dam has 9 flood control gates
- Each flood gate has one 30"x 60" roller gate and actuator that allows water into the chamber to "float the gate".
- Each flood gate has one slide (sluice) gate and actuator that allows water out of the chamber.
- There are three low flow outlets that are opened and closed with a 24" x 30" slide gate and actuator.
- The Roller Gates, Sluice Gates and Low Flow Gates are controlled at Piers 8, 14 and 20
- Total Actuators = 21 9 Roller Gate + 9 Slide Gate (Sluice) + 3 Low Flow Slide Gates



## **Overview: Operating Piers**



### Pier 8 Flood Gates 1-3 Low Flow 8

### Pier 14 Flood Gates 4-6 Low Flow 14

<u>Pier 20</u> Flood Gates 7-9 Low Flow 20



### Pier 8 showing 7 actuators (Auma / Limitorque)

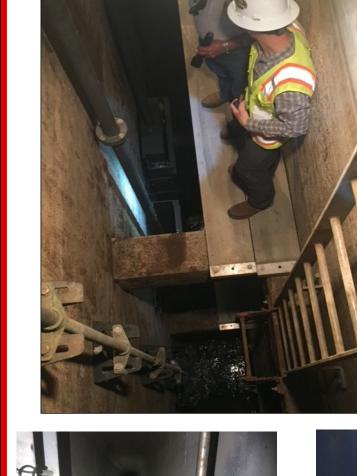
Gate ICe ow Flow #8 \*Roller Gate

### Pier 20 (14 similar) showing 6 actuators \* Low Flow 20/14 actuator is inside pier



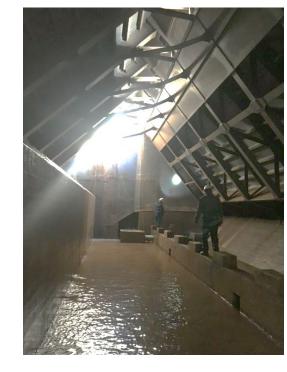
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**Roller Gate-**Water In



## **Operation**

- release.

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### In order to operate a flood gate, water is admitted into the gate chamber utilizing a roller gate to float the gate.

• Once gate is unlocked, water is drained from the gate chamber utilizing a sluice gate which allows the gate leaves to collapse in on themselves resulting in flood



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- Replace 9 Roller Gates with slide gates and replace associated actuators/gate stems/pedestals with stainless steel.
- Replace 9 Sluice (Slide) Gate actuators/gate stems/pedestals with stainless steal. The 9 Sluice (Slide) Gates will not be replaced.



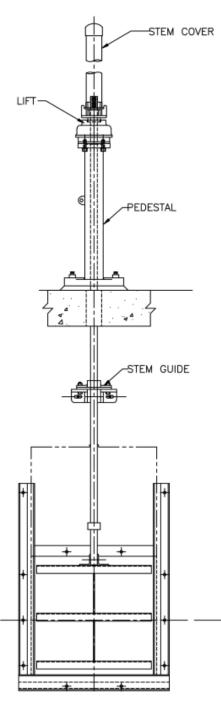
Stem Guide

Replace 3 Low Flow Slide Gates and associated actuators/gate stems/pedestals with stainless steel.



**Roller Gate** 







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## **Project Overview**

- Replace 240 volt electrical system with a 480 volt system that is currently available on the dam.
- Evaluate and assess the safe working load of the Pedestrian Bridge







#### Walkway Bridge

480v Power Feed

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#### **Roller Gate**





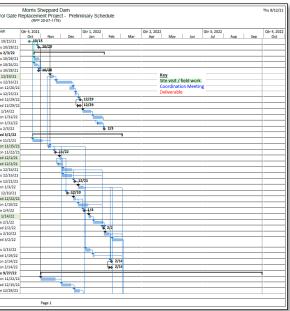
## **PROJECT SCHEDULE**

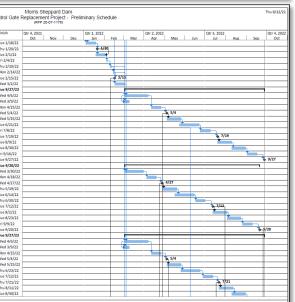
- NTP October 2021
- Task 1: Walking Bridge Structural Eval.
- Task 2.1: Regulating Pier Site Visit/Lidar Survey
- Task 2.2: Regulating Piers Gate Replacement Design
  - Pier 8 Gate Design
  - Pier 26 480v Feed/Generator Design
  - Pier 14 Gate Design
  - Pier 20 Gate Design
- Sept. 2022: Construction Cost Estimate
- Sept. 2022: Final Design

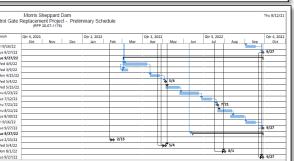
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ID	0	Task Mode	Task Name	Duration	Start	Fi
1	-	*	NTP (Tasks 1 and 2)	0 days	Fri 10/15/21	Fr
2			Kickoff Meeting	0 days	Thu 10/28/21	Th
3			Task 1 - Existing Walking Bridge Structural Evaluation	69 days	Fri 10/22/21	T
4			Review Bridge Plans and Record Documents	5 days	Fri 10/22/21	T
5		-	Prepare HASP	3 days	Fri 10/22/21	Tu
6		-	Field Work Coordination Meeting with BRA	0 days	Thu 10/28/21	т
7			Condition Evaluation Field Work	5 days	Mon 11/15/23	1 Fr
8			Structural Analysis and Modeling	15 days	Wed 11/24/21	17
9		-	Prepare Draft Bridge Report	5 days	Tue 12/14/21	N
10			QAQC	2 days	Wed 12/22/21	171
11			Submit Draft Report to BRA	0 days	Wed 12/29/21	1 W
12			Draft Report Submittal Meeting	0 days	Wed 12/29/21	1 W
13		-	BRA Review	10 days	Mon 1/3/22	F
14			Address Comments and Prepare Final Report	10 days	Tue 1/18/22	N
15		-	QAQC	3 days	Thu 1/27/22	N
16		-	Submit Final Report to BRA	0 days	Thu 2/3/22	т
17		-	Task 2.1 - Regulating Piers Site Visit and LiDAR Surveys	89 days	Wed 10/20/2	1W
18		-	CP&Y Subcontracting	10 days	Wed 10/20/23	1Т
19		-	Site Visit	1 day	Mon 11/15/23	1 N
20		-	Pier 8 & 26 survey field work coordination meeting	0 days	Mon 11/22/23	1 N
21		-	Pier 8 LIDAR survey field work (CP&Y)	3 days	Mon 11/29/23	1 W
22		-	Pier 26 LiDAR survey field work (CP&Y)	3 days	Mon 11/29/2:	1 W
23	1	-	Pier 8 post-processing and Revit model generation (CP&Y)	10 days	Fri 12/3/21	T
24	-	1	Pier 26 post-processing and Revit model generation (CP&Y)	10 days	Fri 12/3/21	T
25		-	CP&Y Deliverable to GF - Pier 8 & 26 Point cloud and Revit n	0 days	Tue 12/21/21	T
26	1	-	QAQC (Pier 8 & 26 Revit models)	5 days	Mon 12/27/2	1 N
27	-	1	Pier 14 survey field work coordination meeting	0 days	Fri 12/10/21	E
28	1	-	Pier 14 survey field work (CP&Y)	3 days	Mon 12/20/2:	
29		-	Pier 14 post-processing and Revit model generation (CP&Y)		Mon 12/27/2:	
30	-	-	Pier 20 survey field work coordination meeting	0 days	Tue 1/4/22	Т
31	1	-	Pier 20 LIDAR Survey field work (CP&Y)	3 days	Wed 1/12/22	F
32	1	-	Pier 20 post-processing and Revit model generation (CP&Y)	10 days	Wed 1/19/22	Т
33		-	CP&Y Deliverable to GF Pier 14 & 20 Point cloud and Revit n		Wed 2/2/22	v
34	-	-	QAQC (Pier 14 and 20 Revit models)	5 days	Fri 2/4/22	T
35		-	Insert Revit Models (Piers 8, 14, 20, and 26 into overall MS Model (w/ conduits and boxes)	10 days	Wed 2/16/22	w
36			Create exist. 480v feed one-line diagram	5 days	Fri 1/7/22	Т
37		-	QAQC (Exist. 480v one-line)	2 days	Tue 1/18/22	W
38		-	Submit Task 2.1 Deliverables	0 days	Mon 2/14/22	N
39			Task 2.1 Deliverable Coordination Meeting	0 days	Mon 2/14/22	N
40		-	Task 2.2 - Regulating Piers Gate Replacement Design	227 days	Mon 11/1/21	T
41	1	-	Data collection and review	15 days	Mon 11/1/21	N
42		-	Prepare Draft Basis-of-Design Memorandum	10 days	Thu 12/2/21	W
43		-	QAQC (BOD Memorandum)	5 days	Tue 12/21/21	'n

D	0	Task Mode	Task Name	Duration	Start	F
44			Prepare conceptual design drawings (based on Pier 8)	10 days	Tue 1/4/22	T
45			Workshop Coordination Meeting	0 days	Thu 1/20/22	Т
46			Wokshop packet preparation	10 days	Wed 1/19/22	T
47		-	Preliminary Design and Constructability Workshop	1 day	Fri 2/4/22	F
48			Prepare draft Workshop Summary Notes	2 days	Wed 2/9/22	1
49			QAQC (Workshop Sumary Notes)	1 day	Mon 2/14/22	1
50		-	Submit Workshop Summary Notes to BRA	0 days	Tue 2/15/22	T
51		-	Update BOD Memorandum	10 days	Wed 2/16/22	۷
52		- 4	Pier 8 Gate Design	146 days	Thu 3/3/22	T
53			Pier 8 Gate 60% Design Documents (plans/spec outline)	25 days	Thu 3/3/22	۷
54		-	Gate calculations (Pier 8)	5 days	Thu 3/3/22	۷
55		-	QAQC (Pier 8 Gate 60% Package and Constructability Revie	10 days	Tue 4/12/22	,
56			Submit 60% Pier 8 Gate Package	0 days	Wed 5/4/22	١
57			BRA Review (Pier 8 Gate 60% package)	15 days	Thu 5/5/22	١
58		-	Pier 8 Gate 90% Design Documents (plans/specifications)	20 days	Tue 5/24/22	h
59		- 4	QAQC (Pier 8 Gate 90% Package)	10 days	Fri 6/24/22	F
60			Submit 90% Pier 8 Gate Package	0 days	Tue 7/19/22	h
61		-	BRA Review (Pier 8 Gate 90% package)	15 days	Wed 7/20/22	h
62		-	Pier 8 Final Design Documents (plans/specifications)	15 days	Wed 8/10/22	h
63			QAQC (Pier 8 Final Package Review)	10 days	Fri 9/2/22	F
64			Submit Final Pier 8 Gate Package	0 days	Tue 9/27/22	1
65		-	Pier 26 480v Feed/Generator Design	141 days	Thu 3/3/22	1
66		-	Pier 26 480v/Gen 60% Design Documents (plans/spec out)	20 days	Thu 3/3/22	١
67			QAQC (Pier 26 480v/Gen 60% Package)	10 days	Tue 4/5/22	,
68		-	Submit 60% Pier 26 480v/Gen Package	0 days	Wed 4/27/22	Ň
69		-	BRA Review (Pier 26 60% package)	15 days	Fri 4/29/22	h
70		-	Pier 26 480v/Gen 90% Design Documents (plans/specifical	20 days	Tue 5/17/22	h
71		-	QAQC (Pier 26 480v/Gen 90% Package)	10 days	Fri 6/17/22	h
72		-	Submit 90% Pier 26 480v/Gen Package	0 days	Tue 7/12/22	h
73		-	BRA Review (Pier 26 90% package)	15 days	Wed 7/13/22	ĥ
74		-	Pier 26 480v/Gen Final Design Documents (plans/specifica	15 days	Wed 8/3/22	h
75		-	QAQC (Pier 26 480v/Gen Final Package Review)	10 days	Fri 8/26/22	F
76		-	Submit Final Pier 26 480v/Gen Package	0 days	Tue 9/20/22	h
77		-	Pier 14 Gate Design	146 days	Thu 3/3/22	1
78		-	Pier 14 Gate 60% Design Documents (plans/spec outline)	25 days	Thu 3/3/22	N
79		-	Gate calculations (Pier 14)	5 days	Thu 3/3/22	Ň
80		-	QAQC (Pier 14 Gate 60% Package and Constructability Rev	10 days	Tue 4/12/22	,
81		-	Submit 60% Pier 14 Gate Package	0 days	Wed 5/4/22	٧
82		-	BRA Review (Pier 14 60% package)	15 days	Thu 5/5/22	N
83		-	Pier 14 Gate 90% Design Documents (plans/specifications)	20 days	Thu 5/26/22	h
84	1	-	QAQC (Pier 14 Gate 90% Package)	10 days	Tue 6/28/22	h
85		-	Submit 90% Pier 14 Gate Package	0 days	Thu 7/21/22	h
86	1	-	BRA Review (Pier 14 Gate 90% package)	15 days	Fri 7/22/22	h
87	1	-	Pier 14 Final Design Documents (plans/specifications)	15 days	Wed 8/10/22	f

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0	Task Mode	Task Name	Duration	Start	Fir
88	-	QAQC (Pier 14 Final Package Review)	10 days	Fri 9/2/22	Fri
89	-	Submit Final Pier 14 Gate Package	0 days	Tue 9/27/22	Tu
90	-	Pier 20 Gate Design	146 days	Thu 3/3/22	Tu
91	-	Pier 20 Gate 60% Design Documents (plans/spec outline)	25 days	Thu 3/3/22	W
92	-	Gate calculations (Pier 20)	5 days	Thu 3/3/22	W
93	-	QAQC (Pier 20 Gate 60% Package and Constructability Rev	10 days	Tue 4/12/22	M
94	-	Submit 60% Pier 20 Gate Package	0 days	Wed 5/4/22	W
95	-	BRA Review (Pier 20 60% packages)	15 days	Thu 5/5/22	W
96	-	Pier 20 Gate 90% Design Documents (plans/specifications)	20 days	Thu 5/26/22	Th
97	-	QAQC (Pier 20 Gate 90% Package)	10 days	Tue 6/28/22	Tu
98	-	Submit 90% Pier 20 Gate Package	0 days	Thu 7/21/22	Th
99	-	BRA Review (Pier 20 Gate 90% package)	15 days	Fri 7/22/22	Th
100	-	Pier 20 Final Design Documents (plans/specifications)	15 days	Wed 8/10/22	Tu
101	-	QAQC (Pier 20 Final Package Review)	10 days	Fri 9/2/22	Fri
102	-	Submit Final Pier 20 Gate Package	0 days	Tue 9/27/22	Tu
103	-	Construction Cost Estimate	73 days	Wed 6/15/22	Tu
112	-	Submittal Coordination Meeting #2	0 days	Tue 2/15/22	Tu
113	-		0 days	Wed 5/4/22	W
114	-	Submittal Coordination Meeting #4 (90%)	0 days	Mon 8/1/22	M
115	-	Submittal Coordination Meeting #5 (Final)	0 days	Tue 9/27/22	Tu









## **Scope of Services**

**Goal** – Provide Engineering Services, Sealed Drawings, and Engineering Support to allow for replacement of current roller gates and upgrades to actuators to allow for a longer service life.

**Result** – BRA will self perform construction portion of this project in house utilizing the RSMU Crew.

**Construction Schedule** – Roughly 10 months per pier if ideal conditions exist.

Pier 14 will be first, followed by Pier 20, then lastly Pier 8. By completing Pier 8 last, RSMU crew will have the benefit of doing other piers first which should allow for increased efficiency of work performance and the desire to minimize its downtime.



•	Task 1: Walking Bridge Structural Eval
٠	Task 2.1: Regulating Piers Site Visit/Lidar Survey
•	<ul> <li>Task 2.2: Regulating Piers Gate Replacement Design</li> <li>Pier 8 Gate Design</li> <li>Pier 26 480v Feed/Generator Design</li> <li>Pier 14 Gate Design</li> <li>Pier 20 Gate Design</li> </ul>
•	Task 3 Flow Control Construction Phase Eng
•	Sept. 2022: Construction Cost Estimate
•	Sept. 2022: Final Record Drawings Total:

\$60,570 .\$175,700 \$614,055

#### .\$499,650

### 1,349,975



"BE IT RESOLVED that the Board of Directors of the Brazos River Authority hereby authorizes the General Manager/CEO to enter into a contract with Gannett Fleming Inc. to provide engineering services for the Flow Control Gate Replacement Project at Morris Sheppard Dam in an amount not exceed \$1,400,000."



