

2023C001 - SECTION XX-DESIGN STUDY REPORTS
EKLUTNA WATER TREATMENT FACILITY
SHIP CREEK WATER TREATMENT FACILITY
WELL #12

1.0 Executive Summary

Eklutna Water Treatment Facility (EWTF) has building damages (including door, ceiling, wall, floor, and exterior finish) sustained by the M7.1 earthquake on November 30th, 2018. This project includes the repair of the existing facility and restoration to its preexisting (pre-disaster) condition.

FEMA and the Utility have provided an accounting of the repairs to be considered and these are indicated below along with their anticipated repair schemes.

2.0 Existing Conditions

2.1 Existing Construction

The EWTF is located approximately 25 miles Northeast of downtown Anchorage. The EWTF was originally constructed in the mid-1980s and has undergone significant upgrades in recent years including a programmatic SCADA upgrade and a recent filter-to-waste project. It is a conventional filtration plant providing potable finished water to customers immediately downstream of the facility. The structure has not been significantly altered since the original construction. A facility plan was completed in March 2018 (by CDM Smith).

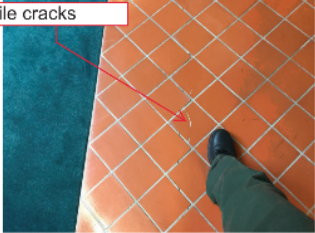
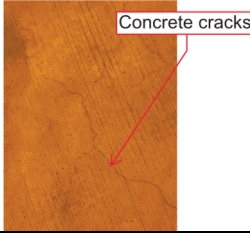

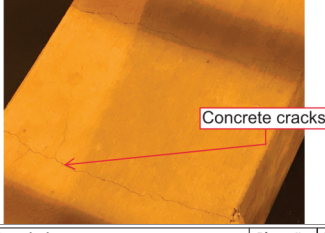
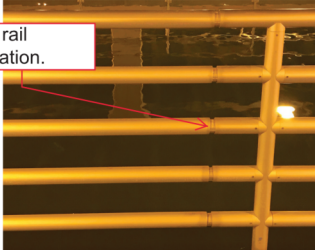
2.2 Current Problem




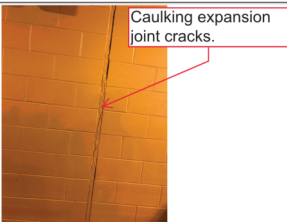
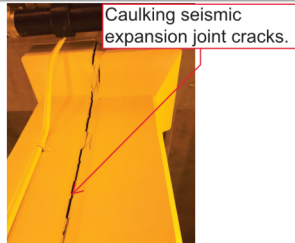
After the M7.1 November 30, 2018 earthquake, multiple structural and non-structural elements of the building were damaged. This damage was assessed and temporarily shored to prevent continued deterioration. This project will repair all documented earthquake damage.


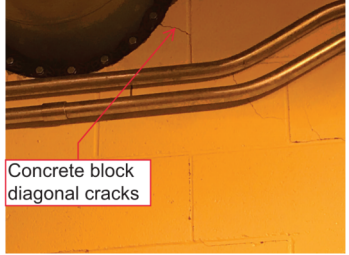
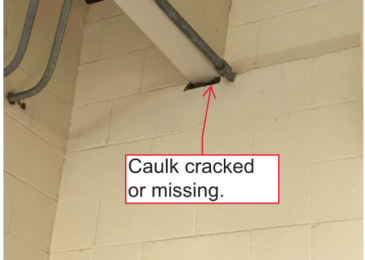

3.0 Repair Items

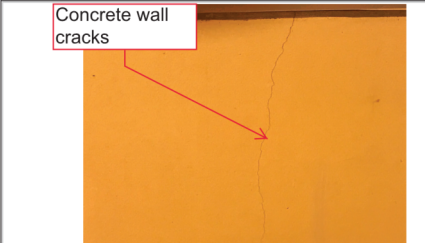
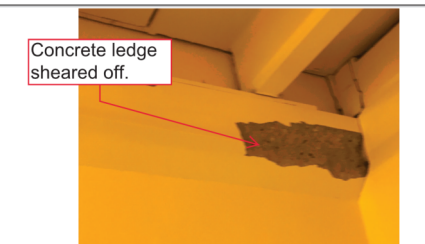

The items listed below are accumulated from the post-earthquake FEMA and Utility documentation.


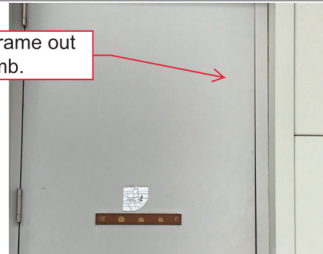
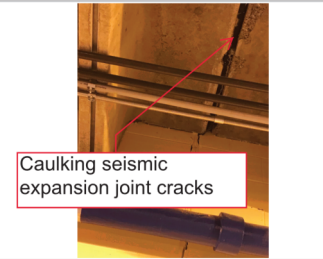
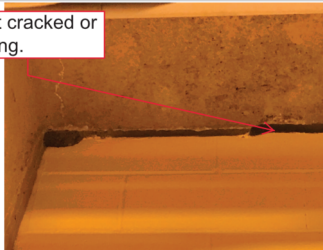
- Work Order WO#44404
- FIPS #020-00A20-00
- Damage Inventory DI#278401
- GPS 61.449608, -149.321688

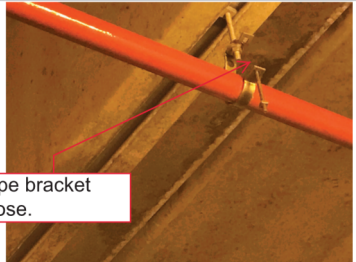

Item Number	Description	Quantity (FEMA / RMI)	Repair	Photo
A	Floor			
A1	Cracked Ceramic Tiles, 6" x 6"	104 tiles / 80 tiles	Remove broken tile, replace with similar tile	<p>Damage Description: Photo# 1 Ceramic tile cracked. 6 in. x 6 in.</p> 
A2	Cracked Concrete floor, 24" thick	50 ft / (see A3)	Seal crack outlets, inject epoxy, grind smooth (all faces)	<p>Damage Description: Photo# 13 Concrete floor 24 in. thick.</p> 
A3	Cracked Concrete floor, 12" thick Coord w/ A2	2,367 ft / 1853 ft	Seal crack outlets, inject epoxy, grind smooth (all faces)	<p>Damage Description Photo# 14 Concrete floor 12 in. thick.</p> 
A4	Cracked Concrete Support Beam, 20"x20"	88 cracks / 88 cracks	Seal crack outlets, inject epoxy, grind smooth (all faces)	<p>Damage Description: Photo# 15 Concrete floor connecting support beam cracked, 20 in x 20 in.</p> 
A5	Handrails, 3/4" wide joint	8 loc / 8 loc	Loosen all joints, reset to minimize joint	<p>Damage Description Photo# 16 Aluminum hand rail separated at expansion joint.</p> 

A6	Cracked Concrete floor	321 ft / (see A3)	Seal crack outlets, inject epoxy, grind smooth (all faces)	<p>Damage Description: Concrete floor cracks. Photo# 17</p> 
A7	Cracked Concrete floor, 4" tank slab	40 ft / NOT FOUND	N/A	<p>Damage Description: 4 inch concrete slab cracked, painted. Photo# 20</p> 
B	Walls			
B1	Cracked Ceramic Tiles, 16" x 7"	14 tiles / 6 tiles	Remove broken tile, replace with similar tile	<p>Damage Description: Ceramic tile cracks. 7 in. x 16 in. Photo# 2</p> 
B2	Cracked Caulking at Expansion Joint (painted) Coord w/ B3	309 ft / 357 ft	Remove caulking, reinstall new caulking	<p>Damage Description: Caulk, (Expansion joint painted) Photo# 3</p> 
B3	Cracked Caulking at Seismic Joint (painted) Coord w/ D1	104 ft / (see B2)	Remove caulking, reinstall new caulking	<p>Damage Description: Caulk, (Seismic Expansion joint painted) Photo# 4</p> 

B4	Cracked CMU Mortar Joints	978 ft / 1080 ft	Remove paint 3” each side of cracked mortar joint; remove cracked mortar & repoint with new mortar; repaint 8” on each side of repair (1304 sf) to match surrounding	<p>Damage Description Photo# 6</p> <p>Cinder block mortar joints cracked, painted.</p> 
B5	Cracked CMU Face Shells (diagonal)	104 ft / 179 ft	Remove broken face shell (156 loc); replace face shell with new face shell to match (156 loc); adhesive in place; repaint to match surrounding (139 sf)	<p>Damage Description: Photo# 7</p> <p>Concrete blocks cracked diagonally, painted.</p> 
B6	Cracked of Missing Caulk at Purlin Ledge	203 ft / 50 ft	Remove damaged caulking, then reinstall new caulking	<p>Damage Description Photo# 8</p> <p>Caulk at purlin ledge cracked or missing, painted.</p> 
B7	Cracked Concrete at Wall Corner	11 ft / 28 ft	Remove paint 3” each side of cracked mortar joint; Seal crack outlets, inject epoxy, grind smooth (all faces); repaint to match surrounding (6 sf)	<p>Damage Description Photo# 10</p> <p>Concrete cracked at corner wall section, painted.</p> 

B8	Cracked Concrete Walls	1,298 ft / 1,176 ft	Remove paint 3” each side of cracked mortar joint; Seal crack outlets, inject epoxy, grind smooth (all faces); repaint to match surrounding (649 sf)	<p>Damage Description: Photo# 11</p> <p>Concrete wall cracks, painted.</p> 
B9	Loose Bracket supporting 6” Roof Drainpipe	1 bracket / 1 bracket	Remove broken bracket; Provide new bracket and anchor to existing wall; re-slope pipe to provide proper drainage	No FEMA Photo
B10	Sheered Concrete Ledge	8 ft /	Install new 3/16” x 2” concrete screws @ 4” on-center each way, reinforce with 4x4 welded wire fabric and patch with Quikrete Patch	<p>Damage Description: Photo# 21</p> <p>Roof panel support ledge sheered off, painted.</p> 
B11	Dropped Concrete Beam Ledge Support	9 ft /	Remove corbel and all cracked concrete; provide new reinforcing and adhesive dowel to existing wall; recast new concrete corbel; install new bearing pad; remove shoring	<p>Damage Description Photo# 22</p> <p>Concrete structural beam support ledge cracked.</p> 
B12	Cracked Concrete Beam	1 in /	Seal crack outlets, inject epoxy, grind smooth (all faces)	No FEMA Photo

B13	Missing Fire Caulk	6 loc / 6 loc	Install new fire caulk	<p>Damage Description: Photo# 25 Fire break caulk broken, cracked.</p>  <p>Fire break caulk cracked</p>
C Doors				
C1	Doors out of plumb	2 loc / 2 loc	Adjust hinges of door	<p>Damage Description Photo# 26 Exterior door frame out of plumb.</p>  <p>Door frame out of plumb.</p>
C2	Caulking Cracked around door frames	60 ft / 51 ft	Remove existing caulk, reinstall new caulk	No FEMA Photo
D Ceilings				
D1	Cracked Caulking at Seismic Joint (painted); Coord w/ B3	170 ft / 170 ft	No repair; part of roofing	<p>Caulk (Seismic Expansion joint) Photo# 5</p>  <p>Caulking seismic expansion joint cracks</p>
D2	Cracked or missing grout at roof to wall panel connection	197 ft / 891 ft	Remove existing grout; reseal joint with new flexible sealant	<p>Grout, roof panel to wall cracked or missing, painted. Photo# 9</p>  <p>Grout cracked or missing.</p>

D3	Loose Bracket supporting 2" natural gas piping, painted	7 brackets/ 9 brackets	Remove broken bracket; replace with new bracket	<div style="float: right; border: 1px solid black; padding: 2px;">Photo# 12</div> <div style="border: 1px solid black; padding: 2px;">Damage Description Pipe bracket loose, 2 inch painted.</div> 
D4	Loose Bracket supporting 4" water line, painted	1 bracket / NOT FOUND	N/A	No FEMA Photo
D5	Cracked Concrete ceiling	42 ft / 72 ft	No repair; part of roofing	<div style="float: right; border: 1px solid black; padding: 2px;">Photo# 18</div> <div style="border: 1px solid black; padding: 2px;">Damage Description Concrete ceiling cracks.</div> 

4.0 Limitations

The professional services described in this report were performed based on limited visual observation of the structures and review of the original drawings. No destructive testing was performed to qualify as-built conditions or to verify the quality of materials and workmanship. No other warranty is made as to the professional advice included in this report. This report has been prepared for the exclusive use of AWWU and is not intended for use by other parties, nor does it contain sufficient information for purposes of other parties or their uses.

Copyright © 2022 by Reid Middleton, Inc. All rights reserved.

1.0 Executive Summary

Ship Creek Water Treatment Facility (SCWTF) has building damages (including door, ceiling, wall, floor, and exterior finish) sustained by the M7.1 earthquake on November 30th, 2018. This project includes the repair of the existing facility and restoration to its preexisting (pre-disaster) condition.

FEMA and the Utility have provided an accounting of the repairs to be considered and these are indicated below along with their anticipated repair schemes.

2.0 Existing Conditions

2.1 Existing Construction

The SCWTF was constructed in the early 1960s and underwent a major upgrade and expansion in the mid 1980s. A facility plan was completed in June 2012 (by CDM Smith), which resulted in a major remodel that was completed in 2018. The 2018 remodel removed outdated equipment and processes and strengthened the structural system against earthquakes.





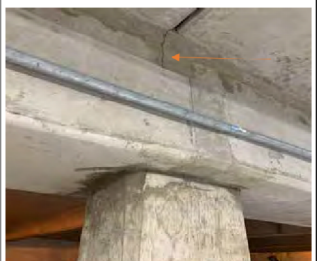
2.2 Current Problem


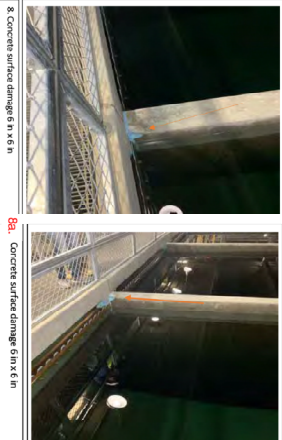

After the M7.1 November 30, 2018 earthquake, multiple structural and non-structural elements of the building were damaged. This damage was assessed and documented. This project will repair all documented earthquake damage.



3.0 Repair Items





The items listed below are accumulated from the post-earthquake FEMA and Utility documentation.

- Work Order WO#44645
- FIPS #020-00A20-00
- Damage Inventory DI#278390
- GPS 61.22751, -149.71412

Item Number	Description	Quantity (FEMA / RMI)	Repair	Photo
A	Ceiling			
A1	Cracked Concrete	900 ft / 2568 ft	Remove paint 3" each side of each crack; Seal crack outlets, inject epoxy, grind smooth (all faces); repaint to match surrounding (450 sf)	<p>1. Concrete cracking ultrasonic</p>  <p>2. Concrete cracking throughout.</p>   <p>3. Concrete cracking throughout.</p>
A2	Cracked Concrete Corbel	2 ft / 14 ft	Remove cracked grout; reinstall flexible sealant	<p>4. 2 SF of concrete corbel</p>  <p>5. 2 SF of concrete corbel</p> 

A3	Damaged Concrete	4 ft / REPAIRED	Plastic and blue tape may be removed – this is part of the 2018 repair project and is not damaged	 <p>7. Concrete damage 4ft long X 1 ft wide</p>
B				
Floor				
B1	Damaged Concrete, 6” x 6”	0.25 sf / 3.0 sf	Seal crack outlets, inject epoxy, grind smooth (all faces)	
B2	Cracked Tiles, 7.5” x 7.5”	9 tiles / 10 tiles	Remove broken tile, replace with similar tile	 <p>17. 9 tiles 7.5 X 7.5 inches</p>
B3	Damaged Concrete, 2’ x 2’	4 sf / NOT FOUND	N/A	No FEMA Photo
B4	Cracked Tiles, 16” x 8”	15 tiles / 18 tiles	Remove broken tile, replace with similar tile	No FEMA Photo

C	Exterior Walls			
C1	Cracked Concrete (throughout outside of window)	45 ft / 194 ft	Remove paint 3" each side of each crack; Seal crack outlets, inject epoxy, grind smooth (all faces); repaint to match surrounding	No FEMA Photo
C2	RegROUT of Exterior Concrete Wall	44 ft / 48 ft	Remove paint 3" each side of each crack; Seal crack outlets, inject epoxy, grind smooth (all faces); repaint to match surrounding (24 sf)	No FEMA Photo
D	Interior Walls			
D1	RegROUT Throughout	176 ft / see below	Non-distinct, split into two categories below	
D1.i	Tile RegROUTing	85 ft	Remove existing cracked grout, reinstall new grout to match surrounding	 <p>9 RegROUT throughout 176 lf</p>
D1.ii	CMU Corner RegROUTing	138 ft	Remove paint 3" each side of crack; Remove existing cracked grout, repoint with new grout or flexible sealant; repaint to match surrounding	 <p>10. RegROUT throughout 176 lf</p> <p>11. RegROUT throughout 176 lf</p>

D2	Cracked CMU	12 ft / 9 ft	Remove broken face shell (15 loc); replace face shell with new face shell to match (15 loc); adhesive in place; repaint to match surrounding (14 sf)	12. CMU cracking throughout 121F 
D3	Damaged GWB (4x6)	20 ft / REPAIRED	N/A	13. GWB 4x6 
D4	Damaged Concrete Wall, Exterior	6 sf / 6 sf	Remove patched concrete; cover and finish as needed	14. Concrete wall damage 3 ft x 2 ft 
D5	Split Concrete Support	31 ft / 31 ft	Seal crack outlets, inject epoxy, grind smooth (all faces); repaint to match surrounding	15. Concrete support beam 

4.0 Limitations

The professional services described in this report were performed based on limited visual observation of the structures and review of the original drawings. No destructive testing was performed to qualify as-built conditions or to verify the quality of materials and workmanship. No other warranty is made as to the professional advice included in this report. This report has been prepared for the exclusive use of AWWU and is not intended for use by other parties, nor does it contain sufficient information for purposes of other parties or their uses.

Copyright © 2022 by Reid Middleton, Inc. All rights reserved.

1.0 Executive Summary

Well Number 12 has building damage sustained by the M7.1 earthquake on November 30th, 2018. This project includes the repair of the existing facility and restoration to its preexisting (pre-disaster) condition.

FEMA and the Utility have provided an accounting of the repairs to be considered and these are indicated below along with their anticipated repair schemes.

2.0 Existing Conditions

2.1 Existing Construction

Well Number 12 was constructed in the early 1980s. No major renovations have changed the structure since the original construction.



2.2 Current Problem

After the M7.1 November 30, 2018 earthquake, one structural element of the building was damaged. This damage was assessed and documented. This project will repair all documented earthquake damage.

3.0 Repair Items

The items listed below are accumulated from the post-earthquake FEMA and Utility documentation.

- Work Order WO#44462
- FIPS #020-00A20-00
- Damage Inventory DI#278391
- GPS 61.183472, -149.885618

Item Number	Description	Quantity (FEMA / RMI)	Repair	Photo
a	Exterior Wall			
a.1	Cracked CMU Joint, SE Corner	20 ft / 20 ft	From exterior, install #3 x 12" adhesive dowels across crack at each CMU course (8" on-center); remove cracked CMU, repoint CMU, paint/seal to match surrounding	<div style="border: 1px solid black; padding: 5px;"> <p>Damage Description Photo# 2</p> <p>SE corner, .75 IN corner separation. Applicant stated similar crack existed on other side of the corner, but was inaccessible due to locked fence.</p> </div> 
a.2	Cracked CMU Joint, SW Corner	10 ft / 10 ft	From exterior, install #3 x 12" adhesive dowels across crack at each CMU course (8" on-center); remove cracked CMU, repoint CMU, paint/seal to match surrounding	<div style="border: 1px solid black; padding: 5px;"> <p>Damage Description Photo# 4</p> <p>SW corner, .5 IN corner separation.</p> </div> 

4.0 Limitations

The professional services described in this report were performed based on limited visual observation of the structures and review of the original drawings. No destructive testing was performed to qualify as-built conditions or to verify the quality of materials and workmanship. No other warranty is made as to the professional advice included in this report. This report has been prepared for the exclusive use of AWWU and is not intended for use by other parties, nor does it contain sufficient information for purposes of other parties or their uses.

Copyright © 2022 by Reid Middleton, Inc. All rights reserved.