

Crosslake WWTF Improvement Project

Date: August 9, 2018
To: City Council
From: Mike Rardin, PE *MR*
Cc: Ted Strand - Public Works Director
Subject: Monthly Project Update

Project Description

The Project can generally be described as follows:

1. Pretreatment improvements including replacing the existing mechanical fine screen, addition of a self-priming grit pump, adding a new blower for the aerated grit removal system, and adding a new handrail and grating system.
2. Construct a new 82,000 gallon equalization basin.
3. Construct a new rapid mix manhole with ferric chloride addition.
4. Construct a new control structure to feed the final clarifiers.
5. Construct a new effluent metering manhole.
6. Miscellaneous electric actuator valve replacements.
7. Re-routing the existing WAS line into the biosolids storage tanks.
8. Furnish and install new blowers for the existing aerated biosolids storage tank
9. Furnish and install a new backwash blower
10. Construct a 30,000 gallon backwash supply water storage tank.

Work Progress - Ninth Project Update

On September 15, 2017 the City of Crosslake awarded the 2017 Waste Water Treatment Plant Improvement Project to Eagle Construction Company, Inc. of Little Falls, MN for the amount of \$2,227,000.00. The contractor began to mobilize equipment and materials to the site on October 5 in order to prepare for the construction of the treatment plant improvements.

October thru June - the contractor completed the concrete work for the EQ Basin and Water Storage Tanks and installed most of the process piping and water mains, all of the blowers, most of the electrical conduit and some of the associated electrical wiring.

July - the last of the underground utility work was completed in July with the installation of a rapid mix manhole, yard hydrant, and effluent metering manhole. The effluent metering manhole will allow the city staff to monitor the amount of treated water leaving the plant. The rapid mix manhole will be used to mix chemicals in with the wastewater to help with treatment. The electrical subcontractor installed the remaining underground electrical conduit and most of the electrical wiring for new equipment hookup. A meeting with the City, Engineer, and Contractor was held on July 30, 2018 to discuss coordination of all final work, equipment startups, and operator training. Many startups will take place throughout the month of August as project completion approaches

Specific progress to date can be summarized as follows:

1. Pretreatment Bldg Improvements - in progress
2. Construct a new 82,000 gallon equalization basin - complete except for final pumps and controls
3. Construct a new rapid mix manhole with ferric chloride addition - in progress
4. Construct a new control structure to feed the final clarifiers - in progress
5. Construct a new effluent metering manhole - complete except for controls

6. Miscellaneous electric actuator valve replacements - complete except for controls
7. Re-routing the existing WAS line into the biosolids storage tanks - complete
8. Furnish and install new blowers for the existing aerated biosolids storage tank - complete except for controls
9. Furnish and install a new backwash blower - complete except for controls
10. Construct a 30,000 gallon backwash supply water storage tank - complete except for final pumps and controls

Contract changes 11 through 13 were identified during July. Changes 11 and 12 have been authorized by city staff. Change 13 requires City Council review and approval. All changes are summarized in the “Costs” section below.

Project Schedule

The contractor’s proposed schedule (**attached - Project Schedule - 02.02.18**), has not changed the past several months and overall construction still is estimated to take about forty (40) weeks - with a projected substantial completion date of August 31, 2018. Based on the contractor’s proposed schedule, the following is a brief summary of future construction activities:

August - Mechanical Fine Screen installation, Water Storage Tank pump installation, Rapid Mix Manhole, Electrical and System Controls, Equipment Startups and staff training, Site Grading/ Fencing/ Restoration and punchlist items.

SCADA, system controls, and associated electrical equipment has arrived at the site and installation is nearly complete.

The contractor generally appears to be on the schedule they proposed for this project. Minor concern has been raised by the contractor that completion may be delayed into September or possibly even October.

Completion Dates

The contract calls for substantial completion (defined as operation of all new structures and equipment with the ability to treat wastewater as intended) by August 31, 2018.

Costs

Approved and proposed changes to date have the potential to increase construction costs for the waste water portion of the project by \$63,739.04 as follows:

Approved Changes	Cost
1 - Field Order #1 - Add Rebar: Water Storage Tank Base Slab	\$ 424.00
2 - Field Order #2:	
a - RAS Piping Relocation to EQ Basin	\$ 11,923.13
b - Remove and Replace Three (3) Four Inch Plug Valves	\$ 2,464.93
c - Relocate 6" Oxidation Ditch Drain Line	\$ (4,221.27)
3 - Field Order #3 - Pipe Insulation (EQ Basin to Oxidation Ditch)	\$ 1,822.51
4 - Relocate 6" RW Piping to South Oxidation Ditch	TBD - \$2,500
5 - Pipe Insulation (extra as needed)	TBD - \$2,000
6 - Sludge Tank Diffuser Modifications (revised from coarse to fine nozzles)	TBD - \$2,500
7 - Field Order #4:	
a - Modify Clarifier Splitter Box	TBD - \$500
b - Clarifier Tank Weir Gates (2)	TBD - \$1,000
8 - BMI Proposal Request #4 - Minor Electrical Modifications	

a - Minor Wiring and Conduit Additions at WWTP	\$4,417.97
b - Transfer Switch Modifications at PW Bldg	\$21,601.98
c - Emergency Lighting Revisions at PW Bldg	\$4,657.30
9 - EQ Basin Mixer	\$16,086.86
10 - SCADA System - Computer Modifications (deduct)	(\$7,580.09)
11 - Revise Pre-Treatment Exhaust Fan Wiring and Controls	\$1,641.72
12 - Raise Rapid Mix Manhole	\$2,000.00

The following information is provided for the items identified above:

1. During construction review of the Water Storage Tank plans, additional rebars were needed for the base slab - cost determined to be \$424.00. This work is complete.
2. Field Orders:
 - a. Staff found the existing 6" RW piping to be improperly installed and full of solids. As a result, it was decided the existing RAS piping should be relocated / extended to the EQ Basin to avoid future use of this piping - cost estimated at \$11,923.13. This work is complete.
 - b. RAS pump inlet isolation valves (3) have been identified by staff as failing. These can be replaced as a part of the project - cost determined to be \$2,464.93. This work is complete.
 - c. The oxidation ditch drains are being relocated to a location which avoids a building conflict - contractor has offered a credit (deduct) of \$4,221.27 for this change. This work is complete.
3. EQ Basin and Oxidation Ditch pipe connections will result in less than 7-ft of bury depth. To prevent freezing, 4-inch thick insulation 4-ft wide is to be placed over these pipes where there is less than 7-ft of cover. \$1,822.51 of work has been completed.
4. The new 12" EQ basin pipe conflicted with the existing 6" RW pipe to the south oxidation ditch. No records from the original construction plan were found during design or by City staff that show the RW pipe elevation. The 6" RW pipe was raised / reinstalled when it was encountered - contractor is to submit costs associated with this work for review and approval. Costs are tentatively estimated at about \$2,500.
5. Some additional existing tank and pipe connections may result in less than a 7-ft of bury depth. To prevent freezing, 4-inch thick insulation 4-ft wide is to be placed over pipe locations with less than 7-ft of cover - costs to be determined where this situation is encountered. Costs are tentatively estimated at \$2,000 or less.
6. Sludge Tank Diffuser Modifications - BMI design called for coarse nozzle diffusers, City staff directed those be changed to fine nozzle diffusers. Final costs for this change remain to be determined, but are tentatively estimated at \$2,500 or less. This work is essentially complete at this time.
7. Field Order #4:
 - a. Modify Clarifier Splitter Box - modifications provide for temporary pipe closures and structure drainage while structure remains unused. Costs should be minimal, not expected to be more than \$500. Work is in progress.
 - b. Clarifier Tank Weir Gates - gates provided were based on faulty as-built information. The gates provided allow for 12" lift while the existing gates provide for 18" lift. BMI directed gates be modified to provide for the 18" lift needed to operate the clarifiers. Costs to modify the gates are estimated at about \$1,000.00. This work is complete.
8. BMI Proposal Request #4 - Minor Electrical Modifications requested by BMI.
 - a. Minor Wiring and Conduit Additions at WWTP - provides for wiring and conduits to grit pump and EQ Blower that were not shown in the plans. Final cost of this work is determined to be \$4,417.97 based on a proposal provided by Eagle. This work is complete.

- b. Transfer Switch Modifications at PW Bldg - this work is necessary to power the PW Bldg from the new stand by generator. Location of the new switch in the PW Bldg must be revised from that shown in the plans due to location of main power line feeding the PW Bldg. Final cost of this work determined to be \$21,601.98 based on a proposal provided by Eagle. This work is complete.
 - a. Emergency Lighting Revisions at PW Bldg - provides for emergency lighting, per code, to be on a dedicated circuit which is not currently the case for the existing lighting. Final cost of this work determined to be \$4,657.30 based on a proposal provided by Eagle. This work is complete.
- 9. EQ Basin Mixer - as a result of the RAS Piping rerouting (change 2.a described above) a mixer is to be installed in the EQ Basin to avoid solids settlement issues. Final cost of this work determined to be \$16,086.86 based on a proposal provided by Eagle. Pump and controls have been ordered.
- 10. SCADA System - Computer Modifications (deduct) - the existing computer at the WWTP can be used versus a new one planned to be supplied by the contractor. A credit of \$7,580.09 has been provided the city for continued use of their existing computer for SCADA purposes. This work is complete.
- 11. Exhaust Fan Wiring and Controls - during construction the existing wiring and controls for the pre-treatment building exhaust fan were determined to be inadequate. Estimated cost of this work is \$1,641.72 based on a proposal provided by Eagle (**attached - Change Order Request #1**). This work was authorized by city staff and is in progress.
- 12. Rapid Mix Manhole - during construction the existing piping was found to be 2 feet lower than that shown in the plans and the new manhole had to be lowered as a result. The new manhole needs to be extended 2 feet higher to properly function. Costs for this work remain to be determined, but are tentatively estimated at \$2,000. This work was authorized by city staff and is in progress.

Proposed Changes	Cost
13 - Revise Site Grading and Pavement (deduct)	TBD

The following information is provided for the above item:

- 13. Revise Site Grading and Pavement - the contract requires replacement of disturbed surfaces to original condition. Localized flooding of buildings, walks, and pavements has been increasing and site drainage should be revised in conjunction with the restoration process. Staff is currently working with a subcontractor to develop the work and costs associated with this - contractor will offer a credit (deduct), amount yet to be determined, for restoration they are not required to perform.

Items 1 through 10 above have been previously reviewed by staff and City Council and these changes have been found to be acceptable. Changes 11 and 12 have been authorized by City staff and are provided for City Council review. Costs for change 13 are currently being developed. Changes 1 through 3 have been authorized by BMI and have been incorporated into pay requests as appropriate (totaling \$12,413.30). Costs for changes 4 through 12 will be reported back to Council and incorporated into pay requests as final costs are determined (currently estimated at \$42,825.74). Change 13 should be reviewed by Council and direction provided to staff accordingly.

A construction allowance of \$75,000 to pay for possible contract changes was incorporated into the construction contract for this project. So far, \$12,413.30 has been charged towards that allowance. Assuming all changes above are approved and costs remain as estimated, the charges towards the construction allowance would increase to \$63,739.04.

Well construction has been completed and final costs are \$67,940, which is \$455 less than contracted for.

Engineering services for the project have been continuing as agreed to according to the existing “Not to Exceed” contract. No cost changes are anticipated at this time.

Total project costs to date and estimated final costs can be summarized as follows:

Total Estimated Project Cost	Original Cost	Changes	Costs to Date	Estimated Final Costs
WWTF Construction	\$2,152,000	\$ 63,739	\$1,955,478	\$ \$2,215,739
Well Construction	\$ 68,395	\$ (455.00)	\$ 67,940	\$ 67,940
Engineering	\$ 198,400	\$ (514.00)	\$ 196,173	\$ 197,886
Totals	\$ 2,418,795	\$ 62,770	\$ 2,219,591	\$ 2,481,565
Other City Costs (pre 2018)			\$188,016	\$2,669,582

Please see project cost summary (**attached - Project Cost Summary - 08.08.18**) for project cost details.

Attachments

1. Project Schedule - 02.02.18
2. Change Order Request #1 - 07.24.18
3. Project Cost Summary - 08.08.18



Schedule

Project Name: **Crosslake WWTF Improvements**

Project No:

Page 1 of 1

Proposed Start:

Prepared by: **Eagle Construction**

Completion: **August 30, 2018**

Date: November 21, 2017

Revised: 2/2/18

		2017																2018																															
		SEPTEMBER				OCTOBER				NOVEMBER				DECEMBER				JANUARY				FEBRUARY				MARCH				APRIL				MAY				JUNE				JULY				AUGUST			
No.	Work Item	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
	Concrete EQ Basin																																																
	EQ Tank Coatings																																																
	Coarse Bubbling System (EQ Basin)																																																
	Blower EQ Basin																																																
	EQ Basin Pump Installation/ Piping																																																
	EQ Basin Pump Start-up																																																
	Water Storage Tank Concrete																																																
	Existing Filter/ Pump Room Valve Replacement																																																
	Pre-Treatment Bldg Piping Modifications																																																
	Mech. Fine Screen Installation																																																
	Pre-Treatment Bldg Stairs, Railings, Grating																																																
	Blower & Air Piping																																																
	6" WM Water Storage to Loadout																																																
	WM; Water Storage to Clarifier																																																
	4" WM; Well to water Storage																																																
	Water Storage Pump Installation																																																
	Control Structure Concrete / Piping																																																
	Rapid Mix Manhole & Piping																																																
	Meter Manhole & Piping																																																
	Sludge Storage Tank Piping & Modifications																																																
	Site Grading/ Fencing/ Restoration																																																
	Punchlist																																																
	Owner Training/ Start-up																																																
	Substantial Completion																																																

*** Disclaimer: Construction schedule is for informational purposes only subject to alterations by contract amendment. Contractual dates are as specified in the Contract Agreement. Interim activities and their durations are an approximation and not contractual.



EAGLE
CONSTRUCTION COMPANY, INC.

ATTN: John Graupman - BMI
1960 Premier Drive
Mankato, MN 56001

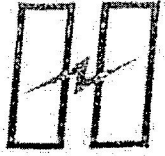
Description: For installation of new j-box below the panel and install contact with overloads to run the Pre-treatment building fan. Existing fan is fed from control panel that is to be removed.

DESCRIPTION	Qty	Units	RATE	TOTAL
Subcontractor Cost	1	LS	\$1,545.00	\$1,545.00
Mark- up 5%				\$77.25
Bond 1.2%				\$19.47

TOTAL AMOUNT	\$1,641.72
---------------------	-------------------

Regards,

Jayd Newman
Eagle Construction Company, Inc.
320-632-5429



Holden Electric Co., Inc.



Construction and Maintenance

7669 COLLEGE ROAD, P.O. BOX 2688

BAXTER, MN 56425-2688

TELEPHONE: (218) 829-4759

FAX# (218) 829-4121

7/24/2018

Jayd Newman
Eagle Construction

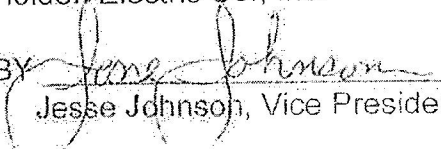
RE: Crosslake WWTP Exhaust Fan for Pre -Treatment

Jayd,
The following will be our cost change for Pre Treatment Exhaust Fan.
See attached Breakdowns.

Total Price \$1545.00

Please call with any questions.

Respectfully Submitted,
Holden Electric Co., Inc.

BY 
Jesse Johnson, Vice President

Phone: 218-829-4759 Fax: 218-829-4121

CROSSLAKE WTP IMPROVEMENTS

Job Number: 29361

Extension By Section

Item #	Description	Quantity	Price U	Ext Price	Labor Hr U	Ext Lab Hr
--- Exhaust Fan --- <i>Prc-Treatment</i>						
1063	3/4" GRC (Difficult)	10.00	203.14 C	2031	5.25 C	0.53
1587	3/4" Locknut	2.00	14.82 C	30	0.01 E	0.02
1599	3/4" Plastic Bushing	1.00	8.46 C	8	0.01 E	0.01
1663	3/4" Myers Hub	2.00	11.25 E	22.50	0.10 E	0.20
2790	#12 THHN CU Stranded Wire	85.00	108.43 M	9215	5.50 M	0.47
3551	Heater Element	3.00	101.25 E	303.75	0.05 E	0.15
3559	Sz 00/240V Non-Rev Mag Starter-Nema1	1.00	276.17 E	276.17	0.90 E	0.90
6489	12x12x8" Screw Cover Pull Box-Nema 3R	1.00	64.98 E	64.98	1.35 E	1.35
T0026	Matt Misc Labor	1.00	OPEN	0.00	4.00 E	4.00
--- Exhaust Fan Total ---				697.31		7.63

Job Total

697.31

7.63

54.94

77.50

\$752.25

591.32

752.25

1343.57

1343.57

15% 201.53

Total

\$1545.00

City of Crosslake
Waste Water Treatment Facility Project
BMI Project # - M25.113425

Project Cost Summary
August 8, 2018

Item	Contract Amounts	Changes	Estimated Final Amounts	Notes
Eagle - Contract Amount				
Construction	\$ 2,152,000.00		\$ 2,152,000.00	construction amount
Allowance	\$ 75,000.00			contingency
Contract Changes				
1 - Field Order #1 - Add Rebar: Water Storage Tank Base Slab		\$ 424.00	\$ 424.00	required - requested by BMI
2 - Field Order #2:				
a - BMI Proposal Request #1 - RAS Piping Relocation to EQ Basin		\$ 11,923.13	\$ 11,923.13	optional - requested by city
b - BMI Proposal Request #2 - Remove and Replace Three (3) Four Inch Plug Valves		\$ 2,464.93	\$ 2,464.93	optional - requested by city
c - Eagle Proposal Request #1 - Relocate 6" Oxidation Ditch Drain Line (deduct)		\$ (4,221.27)	\$ (4,221.27)	optional - requested by Eagle
3 - Field Order #3 - Pipe Insulation (Eq Basin to Oxidation Ditch)		\$ 1,822.51	\$ 1,822.51	optional - requested by city
4 - Relocate 6" RW Piping to South Oxidation Ditch		\$ 2,500.00	TBD	required - requested by BMI
5 - Pipe Insulation (additional - as needed)		\$ 2,000.00	TBD	optional - requested by city
6 - Sludge Tank Diffuser Modifications (revised from coarse to fine nozzles)		\$ 2,500.00	TBD	optional - requested by city
7 - Field Order #4:				
a - Modify Clarifier Splitter Box		\$ 500.00	TBD	required - requested by BMI
b - Lengthen Clarifier Weir Gates (2)		\$ 1,000.00	TBD	required - requested by BMI
8 - BMI Proposal Request #4 - Minor Electrical Modifications				
a - Minor Wiring and Conduit Additions at WWTP		\$ 4,417.97	\$ 4,417.97	required - requested by BMI
b - Transfer Switch Modifications at PW Bldg (T & M - NTE)		\$ 21,601.98	\$ 21,601.98	required - requested by BMI
c - Emergency Lighting Revisions at PW Bldg (T & M - NTE)		\$ 4,657.30	\$ 4,657.30	required- Electrical Inspector
9 - EQ Basin Mixer		\$ 16,086.86	\$ 16,086.86	optional - requested by city
10 - SCADA System - Computer Modifications (deduct)		\$ (7,580.09)	\$ (7,580.09)	required - requested by Eagle
11 - Revise Pre-Treatment Exhaust Fan Wiring and Controls		\$ 1,641.72	\$ 1,641.72	required - requested by BMI
12 - Raise Rapid Mix Manhole		\$ 2,000.00	TBD	required - requested by BMI
13 - Revise Site Grading and Pavement		TBD	TBD	optional - requested by City
Totals	\$ 2,227,000.00	\$ 63,739.04	\$ 2,205,239.04	
Pay Request # / Date	#11 - 07/30/18			
Eagle - Work Completed to Date	\$ 1,955,478.30			
Eagle - Paid to Date	\$ 1,487,211.04			
Eagle - Retainage	\$ 97,773.92			
Eagle - Pay Request	\$ 370,493.35			

Item	Contract Amounts	Changes	Final Amounts
Blue Water Wells - Construction Costs			
Construction	\$ 68,395.00	\$ -	\$ 68,395.00
Contract Changes			
1 - Test Pump		\$ (2,000.00)	\$ (2,000.00)
2 - Water Analysis		\$ (1,750.00)	\$ (1,750.00)
3 - Casing		\$ (1,080.00)	\$ (1,080.00)
4 - Open Hole		\$ (1,125.00)	\$ (1,125.00)
5 - Increase Pump and Casing Sizes (to 500 gpm capacity)		\$ 5,500.00	\$ 5,500.00
Totals	\$ 68,395.00	\$ (455.00)	\$ 67,940.00
Pay Request # / Date	#1 (Final) - 9/18/17		\$ 67,940.00

Item	Contract Amount	Changes	Cost to Date	Estimated Final Amounts
BMI - Design and Construction Services Costs				
Task 1 - Site Work Design	\$ 8,400.00	\$ (9.00)	\$ 8,391.00	\$ 8,391.00
Task 2 - Waste Water Facility Design	\$ 82,000.00	\$ -	\$ 82,000.00	\$ 82,000.00
Task 3 - Bidding Services	\$ 8,000.00	\$ (505.00)	\$ 7,495.00	\$ 7,495.00
Task 4 - Water Supply Well and Storage Tank Design (Alternate)	\$ 30,000.00	\$ -	\$ 30,000.00	\$ 30,000.00
Task 5 - Construction Services	\$ 70,000.00	\$ -	\$ 68,286.73	\$ 70,000.00
Totals	\$ 198,400.00	\$ (514.00)	\$ 196,172.73	\$ 197,886.00

Total Estimated Project Cost	Original Cost	Changes	Costs to Date	Estimated Final Amounts
WWTF Construction	\$ 2,152,000.00	\$ 63,739.04	\$ 1,955,478.30	\$ 2,215,739.04
Well Construction	\$ 68,395.00	\$ (455.00)	\$ 67,940.00	\$ 67,940.00
Engineering	\$ 198,400.00	\$ (514.00)	\$ 196,172.73	\$ 197,886.00
Totals	\$ 2,418,795.00	\$ 62,770.04	\$ 2,219,591.03	\$ 2,481,565.04

Other Related City Costs:			Costs to Date	Estimated Final Amounts
City costs prior to 2016 - WIP at 12/31/2016			\$ 142,416.61	\$ 142,416.61
Other 2017 City Costs - USA Bluebook, Fiber Upgrades, Elite Fence and Deck, Etc			\$ 45,599.90	\$ 45,599.90
Other 2018 City Costs -			TBD	TBD
Totals			\$ 188,016.51	\$ 188,016.51

	TOTAL CITY COSTS	\$ 2,407,607.54	\$ 2,669,581.55
--	-------------------------	------------------------	------------------------

Legend:

- Proposed change or estimated cost
- Authorized / approved changes / costs