City of Whitefish

Department of Public Works

418 E. 2nd Street | PO Box 158
Whitefish, MT 59937
(406) 863-2460 | Fax (406) 863-2419

December 10, 2019

Mayor Muhlfeld and City Councilors
City of Whitefish
Whitefish, Montana

Mayor Muhlfeld and Councilors

Award of Wastewater Treatment Plant Construction Contract to Swank Enterprises

Introduction/History

The City was issued an Administrative Order of Consent (AOC) by the Montana Department of Environmental Quality (DEQ) on October 5, 2012. The AOC currently includes a Compliance Plan detailing the completion dates that must be met in order to bring the WWTP into compliance with updated requirements for removal of ammonia, nitrogen and phosphorous in the city's updated wastewater discharge permit. As part of the AOC, the Whitefish City Council approved a Preliminary Engineering Report (PER) in 2016 recommending that a mechanical wastewater treatment facility be designed and constructed in the location of the city's existing wastewater lagoons.

Current Report

The type of wastewater treatment plant selected for construction in the Whitefish wastewater system planning process is called a Sequencing Batch Reactor, or SBR. An SBR is a type of activated sludge plant where multiple unit processes are contained within the same concrete basin, saving space and cost. Generally, when selecting a SBR system, an engineer will bid the equipment initially and design the treatment plant around a specific type of equipment, allowing for a better and more cost-effective design.

The equipment was bid in September 2018 and we received seven different bids from five vendors. Upon consideration of all the pertinent factors, the scoring of proposals was extremely close for two types of treatment processes - the Sanitaire SBR process and the Aqua-Aerobic AquaNereda (Nereda®) system. While the Nereda® equipment bid was greater than the others, the system requires much smaller basins, and a significant reduction in overall footprint.

Consequently, after factoring in concrete and foundation expense, the Nereda® system ultimately was the least expensive overall option. Additionally, the operating costs for the Nereda® system were projected to be much less than the Sanitaire system due to lower energy requirements. In more practical terms, this technology will allow us to build smaller basins which are less than ⅓ the size of more traditional SBR basins, allowing for construction savings, reduced energy consumption, and more effective use of the land at the treatment plant site. The much smaller footprint allowed moving the treatment plant outside of the existing treatment lagoon cells, resulting in further cost savings. The City ultimately decided on the Nereda® system and the equipment contract was awarded to Aqua-Aerobic on December 3, 2018.

Once the equipment procurement process was complete, the City was able to proceed with the final design for the wastewater plant improvements. The goal was to complete the design and advertise the project for bids last summer, however, the complexity of the process and the fact that Whitefish is the first "greenfield" Nereda project in the U.S., required significant communication between our design engineers, and Aqua-Aerobics and developers of the proprietary technology – Royal HaskoningDHV in the Netherlands. Early in the design phase, it was determined that improvements were necessary for the effluent outfall and diffuser, sludge drying beds, and Administration Building so the overall project scope was adjusted to incorporate these needs. Ultimately, plans were completed in September and submitted to DEQ for approval. Final approval was received from DEQ on October 16, 2019.

Financial Requirement

Once the plans were approved by DEQ, the construction of the wastewater plant was advertised, and bids were opened on Tuesday November 19. A total of two bids were received ranging from $20,370,000 (Swank Enterprises) to $23,145,616 (Dick Anderson Construction). The engineer's estimate was $16,683,973, meaning bids exceeded the estimate by 22% - 39%. The assessment of the bidding process indicates that several factors may have impacted the bid including limited number of bidders, other similarly-sized projects bidding at the same time, project complexity, use of proprietary technology, impact of the American Iron and Steel requirements, expensive dirt work and the involved control system. The low bidder, Swank Enterprises, spent a lot of time investigating the project and asking questions so we do believe that their bid is an accurate representation of the true cost of the project, in the current bidding climate.

The Nereda® system was estimated to be $1.3 million less in capital costs when considering concrete and foundation cost differences. Upon receipt of the schedule of values from Swank, a calculation was performed to determine if the Nereda® system would provide this much savings. Net estimated capital cost savings resulting from choosing the Aqua technology over Sanitaire was estimated at $2.29M.

Staff also worked with our engineers to determine whether there are elements of the project that could be eliminated or modified. While this "value engineering" exercise proved that the

system we design was extremely streamlined, we were able to identify approximately $475,000 in work that can be eliminated. Here is a brief description of those recommendations:

1. $334,461 - Omit all drying bed restoration
   The project included the restoration of the three biosolids drying beds at the plant. While this work needs to be completed, staff believes it can be done using city crews at a reduced cost.
2. $35,785 - Omit hauling and disposal of lagoon cell 3 sludge
   The contractor will move wet sludge to one of the existing drying beds for the city crew to remove at its convenience after significant dewatering has occurred.
3. $50,230 - Omit plant decommissioning
   Leave lagoon cells 1 and 2 as they are. Leave air piping to cell 2. Leave contents in flocculating clarifier. City would be responsible for pumping approximately 24MG of water to the drain to MLS or to the grit channel.
4. $54,733 - Provide continuous venting strips in lieu of specified vent/drain
   Liner system for biosolids basin would be modified to include fabric strips capable of minimizing gas accumulation beneath the liner.

In total this exercise provided $475,209 in potential savings. An updated budget has been provided which incorporates these value engineering changes, final engineering fees, contingency, and tipping fees for landfill disposal of biosolids.

Recommendation

After continuous discussion between city staff, our engineers, Swank Enterprises, and Aqua Aerobic over the past month, the Public Works Department is confident that it is in the best interest of the city for Swank Enterprises to build the wastewater treatment plant. Swank is a reputable firm that has successfully completed countless projects throughout Montana. In addition, the plant that has been designed and bid is the most cost-effective solution to regain compliance with DEQ and will serve the city for decades to come.

Based on these factors, it is the recommendation of the Public Works Department that Council award the Wastewater Treatment Plant Construction Project to Swank Enterprises in the amount of $20,370,000. As soon as the project is awarded, a change order will be executed reducing the contract price to approximately $19,895,000 based on final value engineering negotiations.

Sincerely,

Craig Workman, P.E.
Director of Public Works

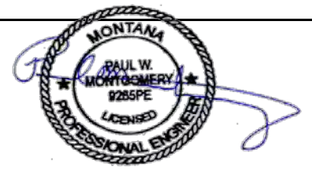
Whitefish Wastewater Treatment Plant Improvements Project 2019

Certified Bid Tabulations - November 19, 2019

Bid Items				***Engineer's Estimate***		***Dick Anderson Construction***		***Swank Enterprises***	
Item	Unit	Estimated Quantity	Item Name	Unit Price	Total Price	Unit Price	Total Price	Unit Price	Total Price
No.									
100	LS	1	Mobilization/Insurance/Bonding	$1,516,725.00	$1,516,725.00	$1,750,000.00	$1,750,000.00	$1,000,000.00	$1,000,000.00
110	LS	1	Improvements to the WFWWTP	$12,919,632.00	$12,919,632.00	$19,148,000.00	$19,148,000.00	$17,122,384.00	$17,122,384.00
120	LS	1	Price for Contractor's Payment Obligations to Aqua Aerobics	$2,247,616.00	$2,247,616.00	$2,247,616.00	$2,247,616.00	$2,247,616.00	$2,247,616.00

	Eng. Estimate	**Dick Anderson**	**Swank**
Base Bid:	**$16,683,973**	**$23,145,616.00**	**$20,370,000.00**

These Bid Tabulations are an accurate representation of the bids received on November 19, 2019 by the City of Whitefish for the WFWWTP Project 2019.



Whitefish 2019 WWTP Project

AGS Reactors - Main Lift Station - Grit Removal - Disinfection - Outfall Line and Diffuser - Renovate Adm Building

Project Budget Anticipated Grant Funding and City Cash Contribution

4 - PROJECT BUDGET FORM	SOURCE					December-19
ADMIN/FINANCIAL COSTS	**RRGL Grant**	**TSEP Grant**	**SRF Loan**	**SRF Forgiven Principal****	**Local Reserves**	**TOTAL**
Personnel Costs	$0	$0	$0	$0	$0	$0
Professional Services	$0	$0	$75,000	$0	$0	$75,000
Legal Costs	$0	$0	$70,000	$0	$0	$70,000
Travel & Training	$0	$0	$7,500	$0	$0	$7,500
Loan Reserves (½ annual P&I)	$0	$0	$649,000	$0	$0	$649,000
Interim Interest	$0	$0	$0	$0	$0	$0
Bond Cost	$0	$0	$75,000	$0	$0	$75,000
TOTAL ADMIN/FIN. COSTS	$0	$0	$876,500	$0	$0	$876,500
						3.5%
ACTIVITY COSTS:	**RRGL**	**TSEP**	**SRF**	**SRF - FP Loan**	**Local Res.**	**TOTAL**
Final Engineering Design	$0	$0	$199,900	$0	$1,436,690	$1,636,590
Construction Management & Inspection	$0	$0	$1,308,910	$0	$0	$1,308,910
AASI Design Integration					$118,295	$118,295
Construction*	$125,000	$625,000	$16,795,000	$350,000	$2,000,000	$19,895,000
Utility Relocation					$90,000	$90,000
Landfill fees					$55,000	$55,000
Contingency (5%)	$0	$0	$1,002,000	$0	$0	$1,002,000
TOTAL ACTIVITY COSTS	$125,000	$625,000	$19,305,810	$350,000	$3,699,985	$24,105,795
						96.5%
TOTAL PROJECT COSTS	**$125,000**	**$625,000**	**$20,182,310**	**$350,000**	**$3,699,985**	**$24,982,295**

Estimated Annual Debt Cost:			
Estimated Loan Amount:	$20,182,310		
CRF 2.5% Interest, 20 yr. term	0.06415		
Equivalent Uniform Annual Cost (EUAC)	$1,294,695	$647,348	
Annual Cost w/ 10% coverage	$1,424,165		

***VE has identifed $475,209 in potential savings which is reflected in the construction cost total**

****Whitefish on DEQ Intended Use Plan for Forgiven Principal,**

Project: **Whitefish WWTP Improvements - 2019**
Location: Whitefish, MT
Designer: AMCE - Helena
Contractor: Swank Enterprises
750 W. Reserve Drive
Kalispell, MT 59901

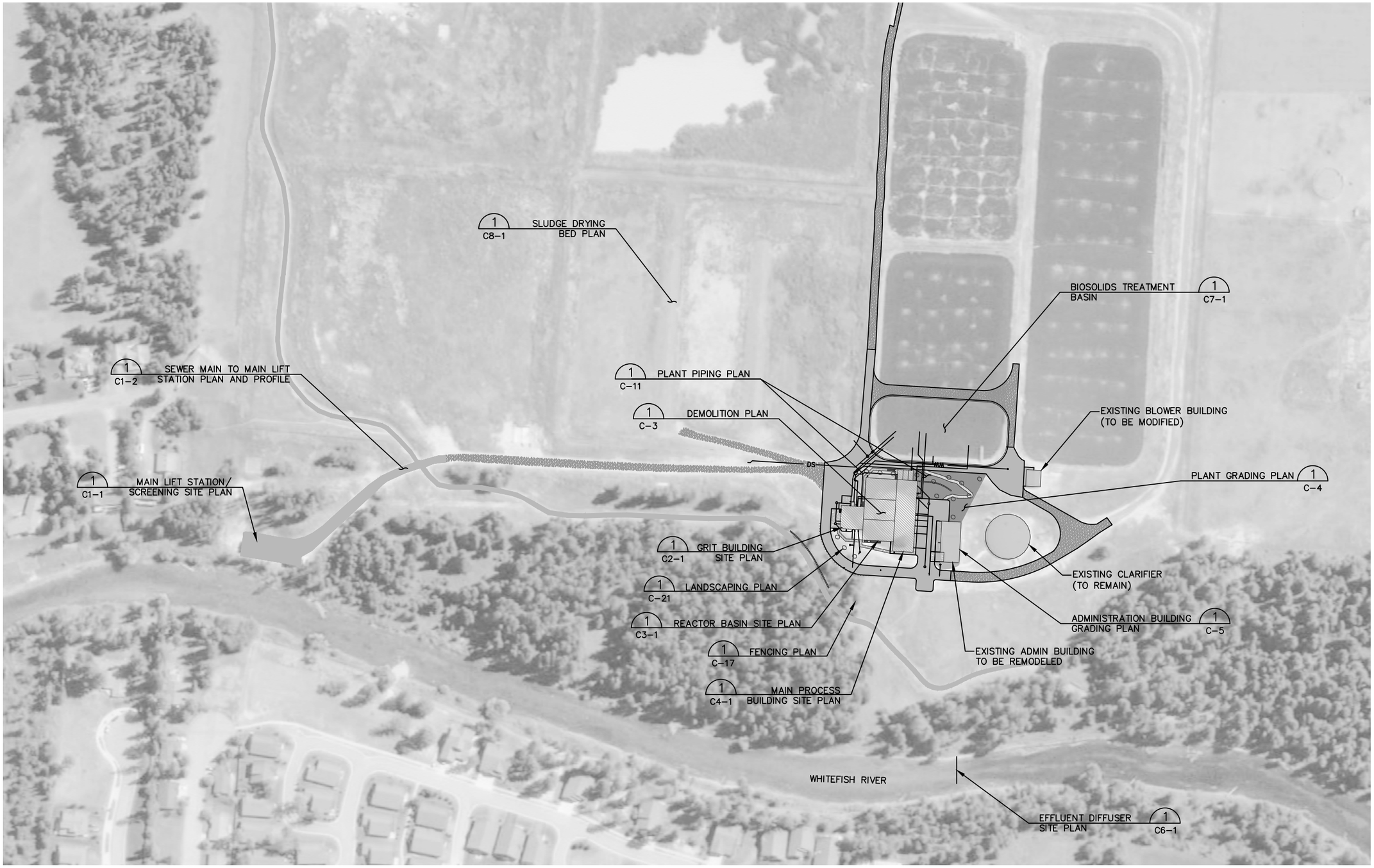
PRELIMINARY SCHEDULE OF VALUES, 11/19/19 BID

Line	*Section*	*Scope of Work*	*Scheduled Value*		
001	01 00 00	Bonds & Insurance	181,422		
002		Mobilization & Jobsite Setup	61,727		
003		Supervision & Management	381,315		
004		Surveying, Staking & Layout	43,600		
005		Equipment Rental & Repair	292,660		
006		Crane & Operator	284,276		
007		Temporary Facilities	64,010		
008		General Conditions	536,328		
009		Winter Conditions/Snow Removal/Heat	93,876		
010		Quality Control Testing	103,550		
011		Plant Startup & Functional Testing	78,507		
012		Plant Decommissioning	17,682		
013	02 41 00	Admin Building Demolition	33,373		
014	03 20 00	Rebar Package - Materials Only	307,925		
015		Rebar Installation	241,163		
016	03 30 00	Site Concrete Structures	41,094		
017		Side Stream Lift Station Pad/Walls	18,547		
018		Grit Building Foundations	18,050		
019		Grit Building Slabs	17,947		
020		Grit Vortex & Influent Splitter Structure	103,024		
021		Grit Building Topping Slab	7,831		
022		Reactor Basin Mat Slab	236,135		
023		Reactor Basin Walls	569,186		
024		Reactor Basin Effluent Launders/Walks	118,127		
025		UV Channels & Foundations	60,776		
026		Main Process Building Foundations	28,722		
027		Main Process Building Slabs	62,486		
028		Main Process Topping Slab	19,437		
029		SBB Mat Slab	34,723		
030		SBB Walls & Catwalks	105,468		
031		Admin Building Concrete	14,893		
032	03 41 00	Precast Panel Package - Materials Only	684,520		
033		Grit Buildling - Precast Installation	32,496		
034		Main Process Building - Precast Installation	68,329		
035	05 12 00	Steel & Handrail Package - Materials Only	207,069		
036		Grit Building - Steel Installation	21,124		
037		Main Process Building - Steel Installation	14,753		
038		Reactor Basins - Steel Installation	46,851		
039		SBB - Steel Installation	9,306		
040		Retaining Wall Handrail Installation	4,474		

041	07 00 00	Thermal & Moisture Protection Complete	175,519
042	08 11 00	HM Doors, Frames & Hardware	28,853
043	08 33 36	OHC Doors	85,986
044	08 34 83	Floor Hatches	5,828
045	08 43 13	Aluminum Storefronts, Glazing	13,020
046	08 45 00	Translucent Roof and Wall Assemblies	49,030
047	09 20 00	LGS Framing, Gypsum Board & FRP	37,994
048	09 65 00	Floor Coverings	10,320
049	09 90 00	Paint & Coatings	703,802
050	10 00 00	Division 10 Specialties	18,449
051	12 32 16	Casework & Countertops	22,776
052	22 00 00	Plumbing & HVAC Complete	863,934
053	22 13 29	Side Stream Lift Sta. Pumps	48,900
054	26 00 00	Electrical & Communications	1,079,427
055		Electrical Trenching & Ductbanks	64,846
056	31 00 00	Site & Civil Package	
057		Site & Civil Mobilization	103,550
058		Excavation Dewatering	51,025
059		Lagoon Decanting	17,767
060		Site Pipe & Process Demolition	134,881
061		Clearing & Grubbing	24,638
062		Site Cut & Fill	158,159
063		Import Fill	201,814
064		Mass Excavation for Rigid Inclusions	79,679
065		12" Ballast/Working Surface	70,782
066		Remove Contaminated Ballast	72,184
067		Excavate, prep, BF for UV channels	23,467
068		Load Transfer Pad for Rigid Inclusions	25,786
069		Reactor Slab Prep	5,216
070		Backfill Reactors	36,720
071		Main Process Foundation Fill Ex/Prep/BF	93,797
072		Main Process Slab Gravels/Prep	18,037
073		Grit Building Fill/Pad	123,223
074		Grit Buildling Foundation Ex/Prep/BF	6,269
075		Grit Building Slab Gravel/Prep	7,197
076		Topsoil	72,178
077		Site Concrete Prep	7,377
078		Gravel Surfacing (Inc. Walking Paths)	32,606
079		Asphalt Sub Base	63,879
080		Asphalt Base	20,919
081		Asphalt Pavement	96,990
082		Guardrails	16,590
083		Retaining Walls	215,603
084		Grade Biosolids Basin	23,789
085		Biosolids Liner Cusion Course	66,551
086		Prep Biosolids Basin for Concrete & Liner	112,816

087		Biosolids Drying Bed Rehabilitation		
088		Remove & Dispose of Organics/Sludge	222,320	
089		Remove Sand & Gravel	92,255	
090		Extend 6" Perf Pipe	16,482	
091		Manholes	12,511	
092		3" Minus Import	92,128	
093		Fabric & Sand	161,268	
094		Valve Replacement	9,156	
095		Yard Piping		
096		16" Temp Influent Line	61,858	
097		Linestop Tap	50,031	
098		16" Permanent Effluent Line	64,314	
099		4" Temp Sludge	28,539	
100		12" Effluent Bypass	30,473	
101		6" Domestic Water	31,025	
102		60" AR Vault	8,448	
103		10" Sewer/Drain & MH Replacement	75,018	
104		Bypass Pumping	21,473	
105		16" Plant Influent	28,081	
106		8" Grit Building Sanitary Service & MH's	17,309	
107		Influent Splitter Drains	12,092	
108		4" Grit NPW Service	8,779	
109		6"/4" Grit W Service	19,994	
110		6" Scum w/Cleanout	7,347	
111		8"/4" Main Process Sanitary Srvc &MH's	34,503	
112		6" SBB Decant	12,598	
113		3" TWAS	23,318	
114		6"/4" Main Process W Service	20,634	
115		16" SBB Overflow	15,214	
116		14" TDW & MH's	158,450	
117		Effluent Diffuser	99,299	
118		3" NPW to Screening	87,513	
119		6" NPW	25,360	
120		60" AR Vault	8,339	
121		18" TWAS	47,608	
122		16" TWAS	56,076	
123		4" VFA	6,223	
124		8" Super	9,034	
125		6" DS	37,031	
126		6" DS Recirc	16,600	
127		Biosolids Control Structure	11,009	
128		Biosolids Waste Flow Metering MH	14,279	
129		Biosolids Waste Control Valve MH	20,645	
130		Low Pressure Air	90,386	
131	31 35 26	RPP Liner & Vent System	103,991	
132	31 66 00	Rigid Inclusions	899,170	Hayward Baker
133	32 31 13	Chain Link Fencing	15,478	
134	32 80 00	Irrigation/Landscaping	156,873	
135	33 38 33	Lemna Package (Cover/Baffle/Diffusers/Blowers)	554,281	Lemna/Aerzen
136	40 05 60	Slide/Weir Gates	58,061	Whipps
137	40 15 71	Telescoping Valves	73,862	

138	40 27 00	Process Piping		
139		Biosolids Basin	77,794	
140		Main Lift Station	78,072	
141		Grit Building	300,229	
142		Main Process Building	646,613	
143		Reactor Basins	268,029	
144		SBB Basins	110,367	
145		(E) Blower Building	8,494	
146		UV	232,738	
147		Small Bore Process	308,112	
148	40 63 00	PCS Equipment & Flow Meters	74,890	
149	41 22 13	Bridge Cranes	55,432	
150	41 65 13	Air Compressors	16,928	Gardner Denver
151	43 23 13	Main Lift Station Pumps	247,039	Ghorman Rupp
152	43 23 31	Vertical Turbine Pumps	37,370	Sultzer
153	43 41 43	PE Storage Tanks	37,210	
154	43 42 23	Hydro-Pnuematic Tank	7,177	
155	46 00 01	AquaNereda AGS System (PO)	2,449,901	AES
156		Installation	225,107	
157	46 23 23	Grit Removal System	158,682	Smith & Loveless
158	46 23 63	Grit Washer	156,190	Huber
159	46 23 66	Grit Storage Container	16,350	
160	46 33 42	Alum Metering Pumps & Skid	87,113	Prominent
161	46 41 21	Sludge Mixing System	176,015	Vaughan
162	46 66 56	UV Disinfection System	204,757	Trojan
163		1% GRT	203,700	
		TOTAL	**$20,370,000**	



CIVIL SITE PLAN

SCALE: 1"=100'-0"

100 0 100 200
(SCALE IN FEET)

VERIFY SCALES
BAR SCALE IS ONE INCH ON FULL SIZE DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

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MONTANA
Scott Anderson
7978PE
REGISTERED PROFESSIONAL ENGINEER

Revision	Date	By
Draft	1-2017	SA
Final		

Revision: Draft
Plot Scale: 1:2
Drawn By: A. Eckhart
Approved By: S.Anderson, P.E.
Checked By: P.Montgomery, P.E.
Designed By: S.Anderson, P.E.
Project Number:

Engineer
Anderson~Montgomery
CONSULTING ENGINEERS
1064 N. Warren
Helena, Mt 59601

RPA

CONFIDENTIAL SUBJECT TO NON DISCLOSURE AGREEMENT

Owner: City of Whitefish, Montana

Project Title: Whitefish WWTP Improvements Project

Sheet Title: **Civil Site Plan**

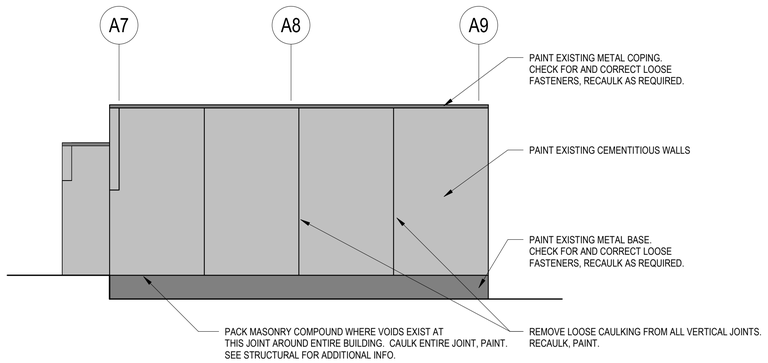
Sheet: **C-1**
Of


WHITEFISH WASTEWATER SYSTEMS IMPROVEMENTS PROJECT
SCHEMATIC DESIGN
MAY 7, 2019

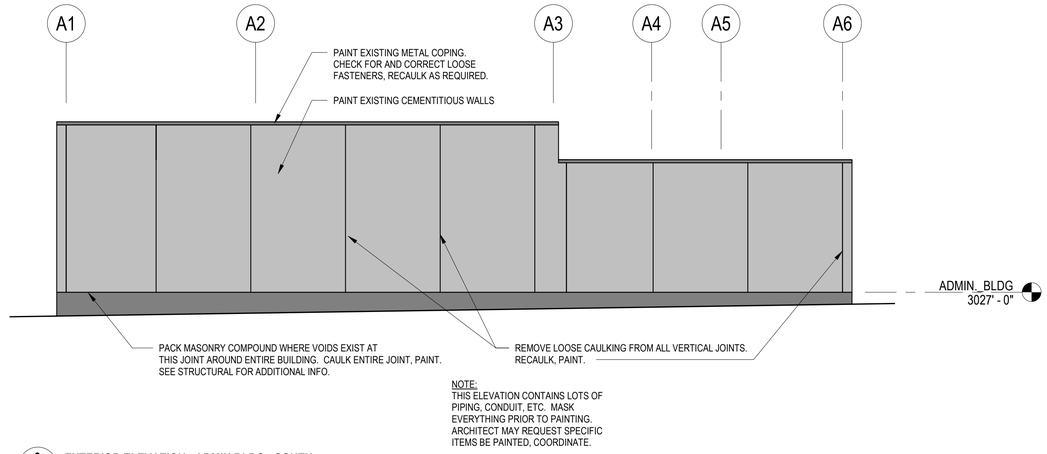
WHITEFISH WASTEWATER SYSTEMS IMPROVEMENTS PROJECT

SCHEMATIC DESIGN

MAY 7, 2019

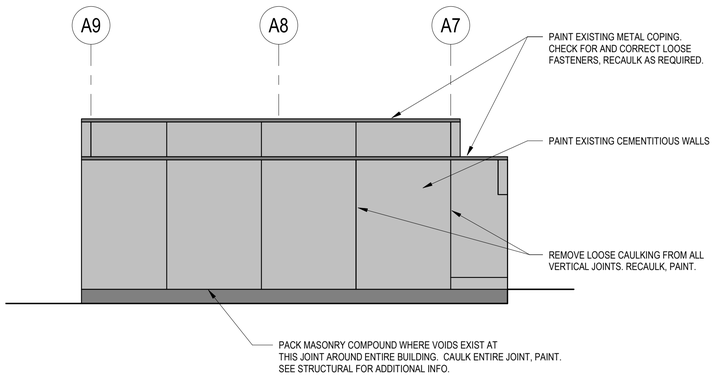


4 A4-1 **EXTERIOR ELEVATION - ADMIN BLDG - WEST**
1/8" = 1'-0"



NOTE:
THIS ELEVATION CONTAINS LOTS OF PIPING, CONDUIT, ETC. MASK EVERYTHING PRIOR TO PAINTING. ARCHITECT MAY REQUEST SPECIFIC ITEMS BE PAINTED, COORDINATE.

3 A4-1 **EXTERIOR ELEVATION - ADMIN BLDG - SOUTH**
1/8" = 1'-0"



2 A4-1 **EXTERIOR ELEVATION - ADMIN BLDG - EAST**
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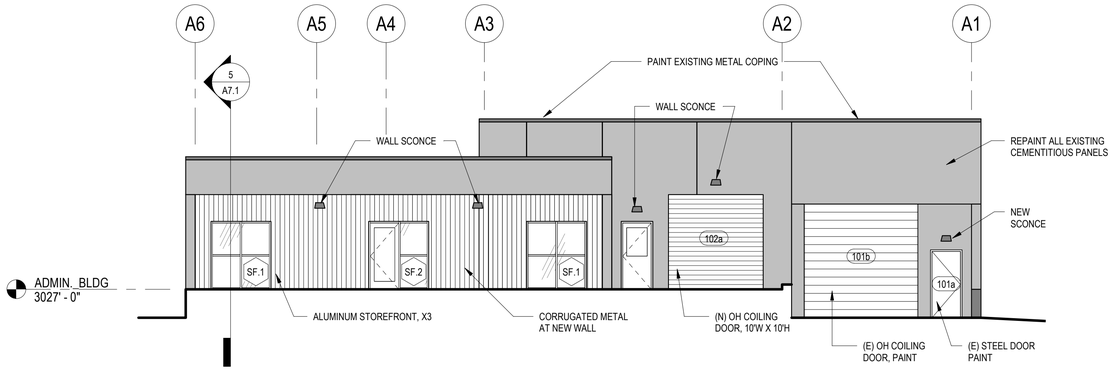


1 A4-1 **EXTERIOR ELEVATION - ADMIN BLDG - NORTH**
1/8" = 1'-0"

Revision	Date	By
Draft	08/27/19	
Final		

Revision: Draft
Plot Scale: 1:2
Drawn By: Author
Approved By: -
Checked By: Checker
Designed By: Designer
Project Number: 19-05

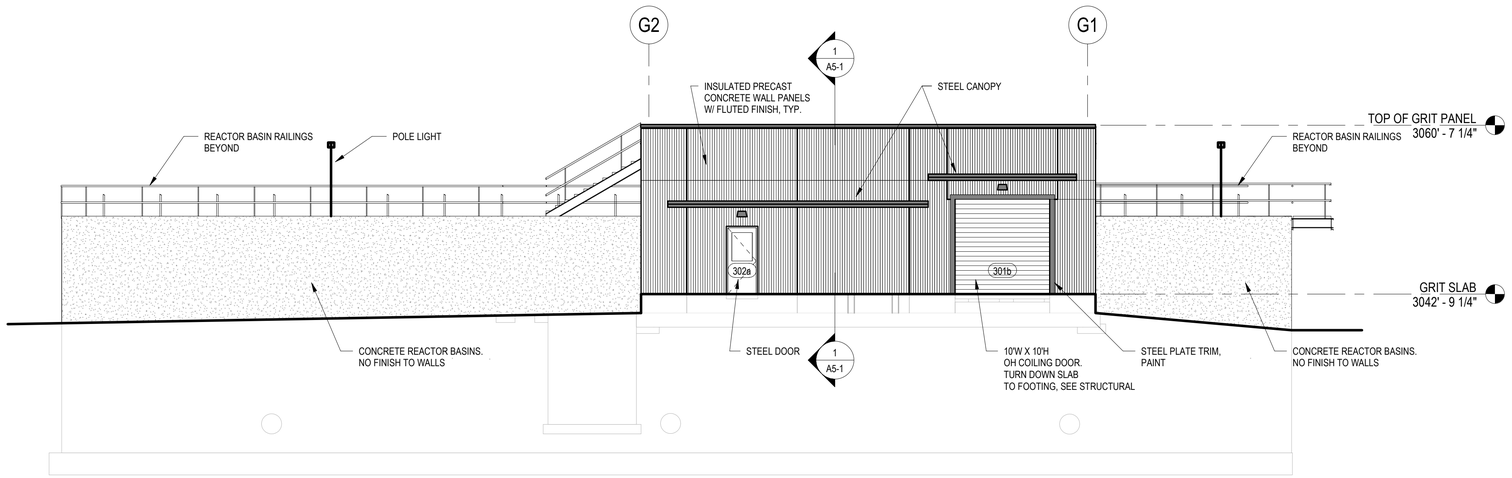
Engineer
Anderson~Montgomery CONSULTING ENGINEERS
1064 N. Warren
Helena, Mt 59601
RPA
Comma-Q Architecture

Owner: City of Whitefish, Montana

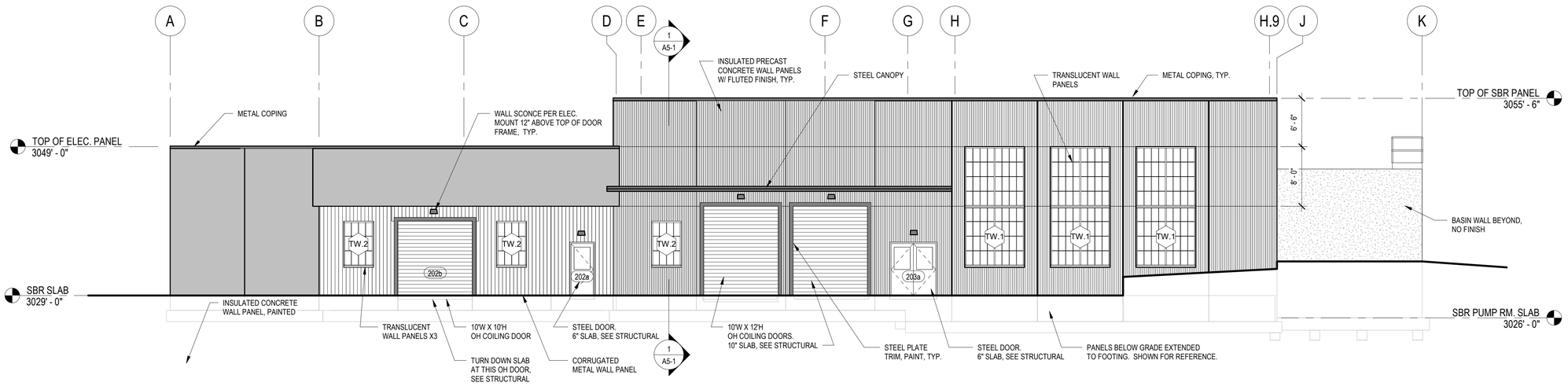
Project Title: Whitefish WWTP Improvements Project

Sheet Title: Exterior Elevations - Administration Building

Sheet: **A4-1**



1 A4-2 **EXTERIOR ELEVATION - NORTH**
1/8" = 1'-0"



2 A4-2 **EXTERIOR ELEVATION - SOUTH**
1/8" = 1'-0"

Revision	Date	By
Draft	08/27/19	
Final		

Revision: Draft
Plot Scale: 1:2
Drawn By: SD
Approved By: -
Checked By: Checker
Designed By: Designer
Project Number: 19-05

Engineer

Anderson~Montgomery
CONSULTING ENGINEERS
1064 N. Warren
Helena, Mt 59601

RPA

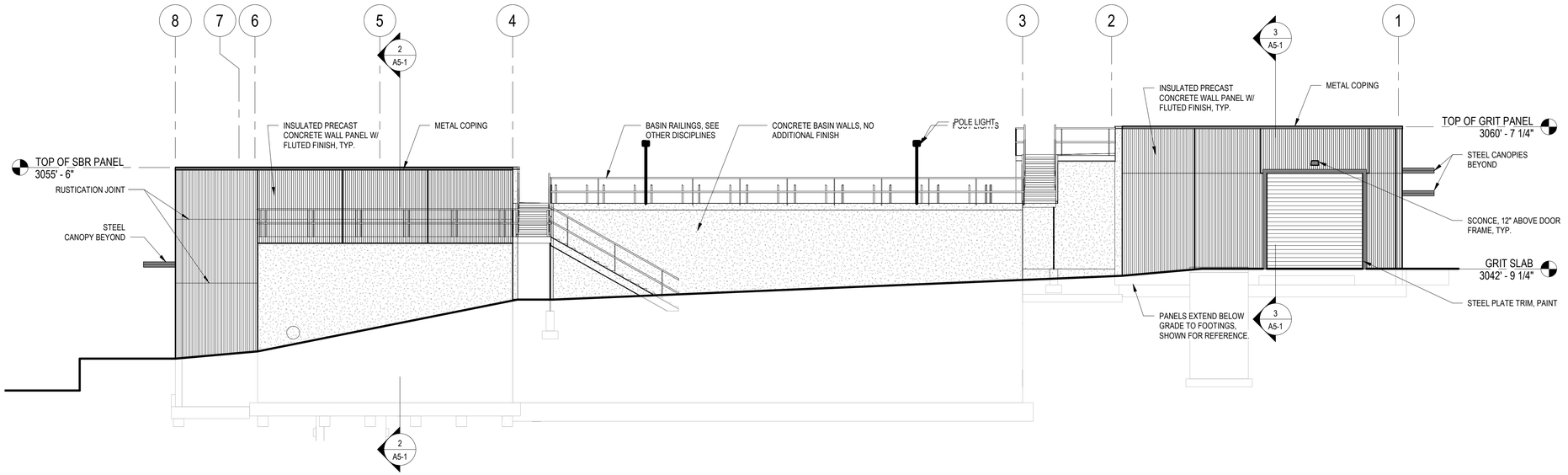
Comma-Q
Architecture

Owner
City of Whitefish, Montana

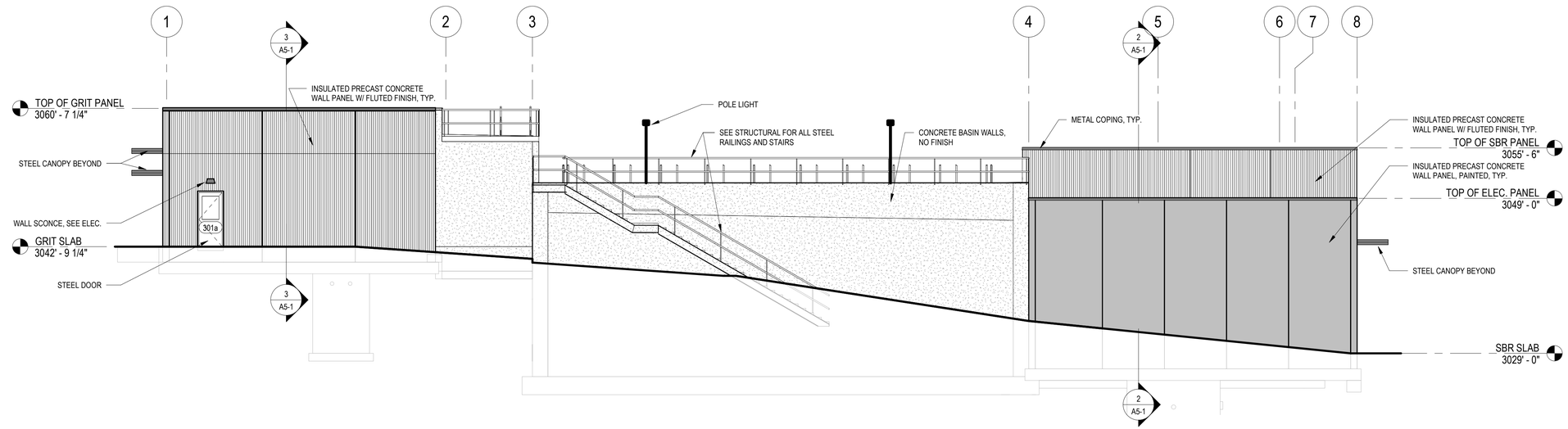
Project Title
Whitefish WWTP Improvements Project

Sheet Title
Exterior Elevations

Sheet
A4-2



1 A4-3 **EXTERIOR ELEVATION - EAST**
1/8" = 1'-0"



2 A4-3 **EXTERIOR ELEVATION - WEST**
1/8" = 1'-0"

Revision	Date	By
Draft	08/27/19	
Final		

Revision: Draft
Plot Scale: 1:2
Drawn By: Author
Approved By: -
Checked By: Checker
Designed By: Designer
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Engineer
Anderson~Montgomery
CONSULTING ENGINEERS
1064 N. Warren
Helena, Mt 59601
RPA
Comma-Q Architecture

Owner: City of Whitefish, Montana

Project Title: Whitefish WWTP Improvements Project

Sheet Title: Exterior Elevations

Sheet: **A4-3**